SALT CHLORINE GENERATOR

USER'S MANUAL

IRCF20，IRCF40，IRCF60

READ AND SAVE THESE INSTRUCTIONS

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IMPORTANT SAFETY INSTRUCTIONS

When using electrical equipment, please take basic safety precautions, including the following:

Please note, the total working hours for the CWPC should be less than 8 hours total per day. If you are using a variable speed pump for 24 hours a day be sure to adjust the chlorine output to 25-30%. If the pump is only running 10 hours per day adjust the chlorine output between 60-80%.
You can use this calculation to calculate the appropriate chlorine output for your pool, suggest at 6 hours per day.

Pump running 24(Hours a day)*25%(Chlorine Output)=6hr (cell run time per day at 25%).
Pump running 20(Hours a day)*30%(Chlorine Output)=6hr (cell run time per day at 30%).
Pump running 15(Hours a day)*40%(Chlorine Output)=6hr (cell run time per day at 40%).
Pump running 12(Hours a day)*50%(Chlorine Output)=6hr (cell run time per day at 50%).
Pump running 8(Hours a day)*75%(Chlorine Output)=6hr (cell run time per day at 75%).
Start the VS pump on a low speed and kick the speed up until the salt system works.
ATTN: We are not affiliated with Pentair Pool Products, The use of above trademarks herein is for informational purposes only.

READ AND FOLLOW ALL INSTRUCTIONS

- Please disconnect all AC power supplies during installation.
- Do not let children use this product.
- To reduce the risk of personal injury, the power pack must be installed and wired to the load side of the clock or the load side of the relay.
- To reduce the risk of electric shock, the power pack must be grounded.
- All metal parts installed on site, such as railings, ladders, drainage pipes or other similar hardware located within 10 feet (3 meters) of swimming pools, spas or hot baths, should be connected to the equipment grounding bus, American AWG/ Canadian 6 AWG, with a copper conductor not less than 8.
- Please consult professional swimming pool service personnel to provide you with correct use suggestions, especially material selection, installation suggestions and swimming pool maintenance.Because salt is an inherently corrosive substance, IRCF cannot ensure that any other equipment in or around the pool will not corrode.
- Avoid chlorine gas buildup.When the pump is turned off, a buildup of flammable gas will result in a hazardous situation.
- Add the acid to the water, not the other way around.

WATER CHEMISTRY

Note: Dry acid can cause a build-up of by-products that can damage the chlorinator cells.

CHEMISTRY NOTICE

NEW POOL WATER: Newly filled or refurbished pools may contain undesirable substances.Such undesirable substances may interfere with the IRCF's ability to properly chlorinate.Before turning on the IRCF, make sure the water has been tested and properly balanced by a professional pool.

Super Chlorination: Burns off swimmer waste that is bound to chlorine.This releases chlorine for disinfection.This can be accomplished by quickly and dramatically increasing the chlorine level.The water in the pool is considered super chlorinated when the chlorine level is raised to ten (10) times the total amount of chlorine.At the time the unit is turned on, the water inside the IRCF is highly chlorinated because the pool water is constantly flowing through the IRCF.

Note: When the pool is first started up, it is best to use an outside source for hyper chlorination, i.e., an electric shock treatment from your local pool supplier.

Chloramine should not be present in the pool water.Ammonia (found in urine and sweat) combines with free chlorine to form chloramines.This will bind the free chlorine in the pool and will not allow the pool to be disinfected with chlorine.Chloramine can also burn eyes and give off a foul smell.At the initial start-up of the tank, chloramine is removed from the super chlorate as required to maintain an appropriate level of free chlorine.

Cyanuric acid is needed in outdoor pools to help stabilize and maintain proper levels of chlorine.Within two hours, UV rays from the sun will destroy 90% of the unstable chlorine.Cyanuric acid stabilizes the chlorine in the water and prevents UV degradation.Cyanuric acid levels should be maintained between 30-50 ppm when using IRCF.(See page 8)

Note: DO NOT USE CYANURIC ACID IN INDOOR POOLS.

Total Dissolved Solids (TDS): Adding salt to swimming pool water will raise the TDS level, while this does not adversely affect the pool water chemistry.For clarity, the pool water TDS professional testing personnel must be aware that salt has been added to the IRCF system.The person performing the TDS test (see page 17) can then subtract the salinity level to achieve a TDS level that is compatible with the TDS reading of a salt-free pool.

Metals: Certain metals, such as copper and iron, can cause chlorine loss.In addition, metals can stain your pool.Metals can also damage the IRCF.Have your local pool professional check for metals and recommend removal methods.

Nitrates and phosphates can cause extremely high chlorine demand and can deplete the pool of chlorine.In some cases, nitrates may even reduce your chlorine levels to zero.Your local pool professional can test for nitrates and phosphates.While the ideal nitrate level is 0 ppm, pool owners should ensure that nitrate levels do not exceed 10 ppm.

IDEAL WATER CHEMISTRY LEVEL

Voltage input	230VAC/115VAC
PH	7.2-7.8
Calcium Hardness	50-300 for vinyl 220-320 for fiberglass 350-450 for plaster
Total Alkalinity	60-180 ppm
Ideal Salt Level	2600-4450 ppm
Cyanuric Acid	30-50 ppm
Chlorine	1-4 ppm

How to test chlorine?

It is recommended that chlorine test samples be collected and compared from two (2) locations in the pool.A higher level should be found at the pool return line.The high liquid level in the tank return line indicates that IRCF is producing chlorine gas.Collect chlorine samples for testing at the following locations:

- The pool return line.
- 18 inches (457 mm) below the water surface, away from the pool return line.

What kind of salt?

It is important to use only 99% pure sodium chloride (NaCl).This is a common food-grade salt or soft water salt, which is available in your local store, with a bag of 40-80 pounds.Water can also be used to adjust salt particles; However, they take longer to dissolve.It is prohibited to use rock salt, salt containing more than 1% yellow sodium cyanide, salt containing more than 1% anti-caking additive or iodized salt.

For all newly laid gypsum pools: Do not use newly surfaced gypsum to operate IRCF.Salt is a corrosive element, and your swimming pool may be seriously damaged by salt.Wait at least one (1) month after construction to allow the gypsum to cure, then add salt and operate IRCF.Follow the pool surface manufacturer's guidelines for your specific pool.Salt and operation IRCF.

For new vinyl-lined pools, contact the manufacturer for recommended guidelines prior to adding.

How Much Salt to Use?

The amount of salt needed is determined by using the table on page 7. It is specifically depended on the water source and the chemicals used to disinfect it, as for most pools contain some salt.Therefore, pool owners must always test the salt level before adding salt.A handheld meter calibrated for NaCl (salt) can be used to determine the salt content of the water.The LEDs will provide information about the salt level.

- A salt level of 3400 ppm is recommended for optimal water quality.
- Low salt concentrations below 2300 ppm or above 6000 ppm will cause the unit to shut down

Note: Salt measurement values will vary depending on the measuring device (salt test strips, electronic testers and titrators).Salt sensor readings are accurate to within +/- 300 ppm.For more troubleshooting information on high salinity, see "Troubleshooting" on page 21.

Saturation Index

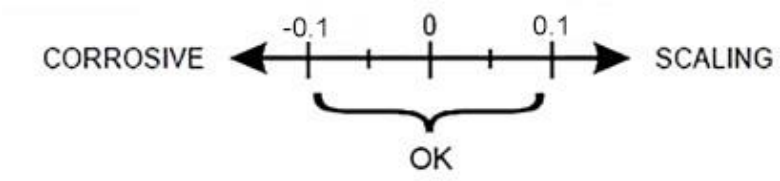
The saturation index is a formula that measures the ability to dissolve or deposit calcium carbonate and is used as an indicator of the corrosiveness and temperature.The formula for well balanced water results in a range between -0.3 and +0.3, outside of which the pool water is considered out of balance and may damage the pool equipment or cause scaling of the IRCF.

The formula for Si: **SI = pH + CHF + AF + TF + TDSF.**

Cyanuric acid in the form of cyanurate ions contributes to the alkalinity.Therefore, the total alkalinity must be corrected.We subtract 1/3 of the cyanuric acid level from the reading obtained in the total alkalinity test.

Total Alkalinity - 1/3 Cyanuric Acid = Corrected Alkalinity

This correction can be considerable in established pools with high Cyanuric Acid levels; for example, at 100 ppm Cyanuric Acid, the correction amounts to 33 ppm (100/3 = 33.3).



℃	℉	Ti	Calcium Hardness	Ci	Total Alkalinity	Ai
12	53	0.3	75	1.5	75	1.9
16	60	0.4	100	1.6	100	2.0
19	66	0.5	125	1.7	125	2.1
24	76	0.6	150	1.8	150	2.2
29	84	0.7	200	1.9	200	2.3
34	94	0.8	250	2.0	250	2.4
39	103	0.9	300	2.1	300	2.5
			400	2.2	400	2.6
			600	2.4	600	2.8
			800	2.5	800	2.9

Note: Use the closest reading on the chart

Total alkalinity in this document is the sum of carbonate and bicarbonate alkalinity.If cyanuric acid is used, a correction factor must be used.

How to Add or Remove Salt

Check the salt level before adding or removing salt

In ground pools:
Turn on the filter pump and add salt directly to the shallow end pool.

Above ground pool with main drainage:
add directly to the pool in front of the return nozzle.Run the filter pump for 24 hours with suction coming from the main drain (use pool vacuum if there is no main drain) to disperse the salt evenly throughout the pool.

Above ground pool with no main drainage:
add directly to the pool.Brush salt to speed up the dissolution process-salt is not allowed to pile up at the bottom of the pool.Eliminate the following:Run the filter pump for 24 hours

with suction coming from the main drain (use pool vacuum if there is no main drain) to disperse the salt evenly throughout the pool.

In any pool, do not add salt directly to skiers or to the main drain port.This will close or shorten the life of the cell due to high salt concentration and reduced pump flow

POUNDS and (Kg) OF SALT NEEDED FOR 3400 PPM

Adding Salt

Approximate Pounds (kg) of Salt Needed to Obtain Ideal Salinity (3,400 PPM)

Current salt level (ppm)	0	200	400	600	800	1000	1200	1400	1600	1800	2000	2200	2400	2600	2800	3000	3200	3400	3600	3800	4000	4200	4400
14,000G 52,500L	419 lbs 190 kg	396 lbs 180 kg	373 lbs 170 kg	350 lbs 159 kg	327 lbs 148 kg	303 lbs 138 kg	280 lbs 127 kg	257 lbs 117 kg	233 lbs 106 kg	210 lbs 95 kg	187 lbs 85 kg	163 lbs 74 kg	140 lbs 64 kg	117 lbs 53 kg	93 lbs 42 kg	OK	OK	Ideal	OK	OK	OK	High	Dilute
16,000G 60,000L	481 lbs 218 kg	454 lbs 206 kg	427 lbs 194 kg	400 lbs 182 kg	373 lbs 170 kg	347 lbs 158 kg	320 lbs 145 kg	293 lbs 133 kg	267 lbs 121 kg	240 lbs 109 kg	213 lbs 97 kg	187 lbs 85 kg	160 lbs 73 kg	133 lbs 61 kg	107 lbs 48 kg	OK	OK	Ideal	OK	OK	OK	High	Dilute
18,000G 67,500L	540 lbs 245 kg	510 lbs 232 kg	480 lbs 218 kg	450 lbs 205 kg	420 lbs 191 kg	390 lbs 177 kg	360 lbs 164 kg	330 lbs 150 kg	300 lbs 136 kg	270 lbs 123 kg	240 lbs 109 kg	210 lbs 95 kg	180 lbs 82 kg	150 lbs 68 kg	120 lbs 55 kg	OK	OK	Ideal	OK	OK	OK	High	Dilute
20,000G 75,000L	599 lbs 272 kg	566 lbs 257 kg	533 lbs 242 kg	500 lbs 227 kg	467 lbs 212 kg	433 lbs 197 kg	400 lbs 182 kg	367 lbs 167 kg	333 lbs 152 kg	300 lbs 136 kg	267 lbs 121 kg	233 lbs 106 kg	200 lbs 91 kg	167 lbs 76 kg	133 lbs 61 kg	OK	OK	Ideal	OK	OK	OK	High	Dilute
22,000G 82,500L	661 lbs 300 kg	624 lbs 284 kg	587 lbs 267 kg	550 lbs 250 kg	513 lbs 233 kg	477 lbs 217 kg	440 lbs 200 kg	403 lbs 163 kg	367 lbs 167 kg	330 lbs 150 kg	293 lbs 133 kg	257 lbs 117 kg	220 lbs 100 kg	183 lbs 83 kg	147 lbs 67 kg	OK	OK	Ideal	OK	OK	OK	High	Dilute
24,000G 90,000L	720 lbs 327 kg	680 lbs 309 kg	640 lbs 291 kg	600 lbs 273 kg	560 lbs 255 kg	520 lbs 236 kg	480 lbs 218 kg	440 lbs 200 kg	400 lbs 182 kg	360 lbs 164 kg	320 lbs 145 kg	280 lbs 127 kg	240 lbs 109 kg	200 lbs 91 kg	160 lbs 73 kg	OK	OK	Ideal	OK	OK	OK	High	Dilute
26,000G 97,500L	779 lbs 354 kg	736 lbs 335 kg	693 lbs 315 kg	650 lbs 295 kg	607 lbs 276 kg	563 lbs 256 kg	520 lbs 236 kg	477 lbs 217 kg	433 lbs 197 kg	390 lbs 177 kg	347 lbs 158 kg	303 lbs 138 kg	260 lbs 118 kg	217 lbs 98 kg	173 lbs 79 kg	OK	OK	Ideal	OK	OK	OK	High	Dilute
28,000G 105,000L	841 lbs 381 kg	794 lbs 360 kg	747 lbs 339 kg	700 lbs 318 kg	653 lbs 297 kg	607 lbs 276 kg	560 lbs 255 kg	513 lbs 233 kg	467 lbs 212 kg	420 lbs 191 kg	373 lbs 170 kg	327 lbs 148 kg	280 lbs 127 kg	233 lbs 106 kg	187 lbs 85 kg	OK	OK	Ideal	OK	OK	OK	High	Dilute
30,000G 112,500L	900 lbs 409 kg	850 lbs 387 kg	800 lbs 364 kg	750 lbs 341 kg	700 lbs 318 kg	650 lbs 297 kg	600 lbs 273 kg	550 lbs 250 kg	500 lbs 227 kg	450 lbs 205 kg	400 lbs 182 kg	350 lbs 159 kg	300 lbs 136 kg	250 lbs 114 kg	200 lbs 91 kg	OK	OK	Ideal	OK	OK	OK	High	Dilute
32,000G 120,000L	962 lbs 436 kg	908 lbs 413 kg	854 lbs 388 kg	800 lbs 363 kg	747 lbs 339 kg	693 lbs 317 kg	640 lbs 291 kg	587 lbs 267 kg	533 lbs 243 kg	480 lbs 218 kg	427 lbs 195 kg	373 lbs 169 kg	320 lbs 145 kg	267lbs 121 kg	213 lbs 96 kg	OK	OK	Ideal	OK	OK	OK	High	Dilute
34,000G 127,500L	1021 lbs 463 kg	964 lbs 439 kg	907 lbs 412 kg	850 lbs 385 kg	793 lbs 360 kg	737 lbs 337 kg	680 lbs 310 kg	623 lbs 283 kg	567 lbs 258 kg	510 lbs 232 kg	453 lbs 207 kg	397 lbs 180 kg	340 lbs 154 kg	283 lbs 129 kg	227 lbs 104 kg	OK	OK	Ideal	OK	OK	OK	High	Dilute
36,000G 135,000L	1080 lbs 490 kg	1020 lbs 464 kg	960 lbs 436 kg	900 lbs 408 kg	840 lbs 382 kg	780 lbs 358 kg	720 lbs 328 kg	660 lbs 300 kg	600 lbs 274 kg	540 lbs 246 kg	480 lbs 219 kg	420 lbs 190 kg	360 lbs 163 kg	300 lbs 137 kg	240 lbs 110 kg	OK	OK	Ideal	OK	OK	OK	High	Dilute
38,000G 142,500L	1139 lbs 517 kg	1076 lbs 490 kg	1013 lbs 460 kg	950 lbs 430 kg	887 lbs 403 kg	823 lbs 378 kg	760 lbs 346 kg	697 lbs 317 kg	633 lbs 289 kg	570 lbs 259 kg	507 lbs 231 kg	443 lbs 201 kg	380 lbs 172 kg	317 lbs 144 kg	253 lbs 117 kg	OK	OK	Ideal	OK	OK	OK	High	Dilute
40,000G 150,000L	1201 lbs 545 kg	1134 lbs 515 kg	1067 lbs 484 kg	1000 lbs 453 kg	933 lbs 424 kg	867 lbs 398 kg	800 lbs 364 kg	733 lbs 333 kg	667 lbs 304 kg	600 lbs 263 kg	533 lbs 243 kg	467 lbs 211 kg	400 lbs 181 kg	333 lbs 152 kg	267 lbs 123 kg	OK	OK	Ideal	OK	OK	OK	High	Dilute

Amount of stabilizer (Cyanuric Acid) needed to obtain 40 ppm in pool (The Cyanuric Acid should be at 30-50 ppm)

POUNDS and (kg) of STABILIZER CYANURIC ACIDL NEEDED FOR 80 PPM									
Current Stabilizer Level (ppm)	0 ppm	10 ppm	20 ppm	30 ppm	40 ppm	50 ppm	60 ppm	70 ppm	80 ppm
14,000G 52,500L	9.4 lbs 4.3 kg	8.2 lbs 3.7 kg	7.0 lbs 3.2 kg	5.9 lbs 2.7 kg	4.7 lbs 2.1 kg	3.5 lbs 1.6 kg	2.4 lbs 1.1 kg	1.2 lbs 0.54 kg	0.0
16,000G 60,000L	10.7 lbs 4.9 kg	9.4 lbs 4.3 kg	8.0 lbs 3.6 kg	6.7 lbs 3.0 kg	5.4 lbs 2.4 kg	4.0 lbs 1.8 kg	2.7 lbs 1.2 kg	1.4 lbs 0.64 kg	0.0
18,000G 67,500L	12.0 lbs 5.4 kg	10.5 lbs 4.8 kg	9.0 lbs 2.2 kg	7.5 lbs 3.4 kg	6.0 lbs 2.7 kg	4.5 lbs 2.0 kg	3.0 lbs 1.4 kg	1.5 lbs 0.68 kg	0.0
20,000G 75,000L	13.4 lbs 6.1 kg	11.7 lbs 5.3 kg	10.0 lbs 4.5 kg	8.4 lbs 3.8 kg	6.7 lbs 3.0 kg	5.0 lbs 2.3 kg	3.3 lbs 1.5 kg	1.7 lbs 0.77 kg	0.0
22,000G 82,500L	14.7 lbs 6.7 kg	12.9 lbs 5.9 kg	11.0 lbs 5.0 kg	9.2 lbs 4.2 kg	7.4 lbs 3.3 kg	5.5 lbs 2.5 kg	3.7 lbs 1.7 kg	1.8 lbs 0.82 kg	0.0
24,000G 90,000L	16.0 lbs 7.3 kg	14.0 lbs 6.4 kg	12.0 lbs 5.4 kg	10.0 lbs 4.5 kg	8.0 lbs 3.6 kg	6.0 lbs 2.7 kg	4.0 lbs 1.8 kg	2.0 lbs 0.91 kg	0.0
26,000G 97,500L	17.3 lbs 7.9 kg	15.2 lbs 6.9 kg	13.0 lbs 5.9 kg	10.8 lbs 4.9 kg	8.7 lbs 3.9 kg	6.5 lbs 2.9 kg	4.3 lbs 2.0 kg	2.2 lbs 1.0 kg	0.0
28,000G 105,000L	18.7 lbs 8.5 kg	16.4 lbs 7.4 kg	14.0 lbs 6.4 kg	11.7 lbs 5.2 kg	9.3 lbs 4.2 kg	7.0 lbs 3.2 kg	4.7 lbs 2.1 kg	2.3 lbs 1.1 kg	0.0
30,000G 112,500L	20.0 lbs 9.1 kg	17.2 lbs 8.0 kg	15.0 lbs 6.8 kg	12.5 lbs 5.6 kg	10.0 lbs 4.5 kg	7.5 lbs 3.4 kg	5.0 lbs 2.3 kg	2.5 lbs 1.2 kg	0.0
32,000G 120,000L	21.3 lbs 9.7 kg	18.7 lbs 8.5 kg	16.0 lbs 7.2 kg	13.3 lbs 6.0 kg	10.7 lbs 4.8 kg	8.0 lbs 3.6 kg	5.3 lbs 2.4 kg	2.7 lbs 1.2 kg	0.0
34,000G 127,500L	22.7 lbs 10.3 kg	19.8 lbs 9.0 kg	17.0 lbs 7.7 kg	14.2 lbs 6.3 kg	11.3 lbs 5.1 kg	8.5 lbs 3.9 kg	5.7 lbs 2.6 kg	2.8 lbs 1.3 kg	0.0
36,000G 135,000L	24.0 lbs 10.9 kg	21.0 lbs 9.5 kg	18.0 lbs 8.1 kg	15.0 lbs 6.7 kg	12.0 lbs 5.4 kg	9.0 lbs 4.1 kg	6.0 lbs 2.7 kg	3.0 lbs 1.3 kg	0.0
38,000G 142,500L	25.3 lbs 11.5 kg	22.2 lbs 10.0 kg	19.0 lbs 8.6 kg	15.8 lbs 7.1 kg	12.7 lbs 5.7 kg	9.5 lbs 4.3 kg	6.3 lbs 2.8 kg	3.2 lbs 1.4 kg	0.0
40,000G 150,000L	26.7 lbs 12.0 kg	23.3 lbs 10.5 kg	20.0 lbs 9.0 kg	16.7 lbs 7.5 kg	13.3 lbs 6.0 kg	10.0 lbs 4.5 kg	6.7 lbs 3.0 kg	3.3 lbs 1.5 kg	0.0

INTRODUCTION

The IRCF chlorine generator generates chlorine gas by electrolysis, and disinfects the swimming pool from salt molecules (NaCL) in water.A small amount of charge is applied to a group of titanium plates in the electrolytic cell.Sodium hypochlorite (NaOCl) is generated.In water, sodium hypochlorite is decomposed into sodium ion (NA+) and hypochlorite ion (OCl-).It is a hypochlorite ion that forms hypochlorous acid (HOCl) with hydrogen (H+) ions (from water). Hypochloric acid is an active agent that destroys bacteria and algae and oxidizes organic matter.This form of chlorine acts quickly in the pipeline, leaving only a small amount of residue in the pool.In addition, the electrolytic bath constantly "impacts" the incoming water and burns any oil, organic matter or other particles that need to be oxidized.

Most importantly, this process continuously recovers salt: after cleaning the pool, the original molecules are re-formed and the whole process starts again.You can't eat all the salt!

THE CWPC CHLORINATOR CONSISTS OF A CELL UNIT AND A POWER CENTER:

The cell unit has LED screen readings and buttons, as well as temperature sensors and salt level sensors, which can produce chlorine gas at a specified output.

If the salinity in the pool water is too low or too high, the red LED will light up and the cell will be turned off until salt or water is added to the pool.

IRCF has self-cleaning cycle, which can reverse polarity and reduce calcium accumulation.This function turns the cell on and off regularly to minimize the accumulation of calcium and scale and further extend the cell life.

CWPC includes: Flow sensor,Temperature sensor, Salt sensor

Mark: The salt reading is around +/-300 ppm accuracy.

IRCF Dual Voltage 115V-230V Power Center:IRCF Power Center is a dual-voltage power supply, which means that there is no need for 115V/230V wiring. This power supply converts AC current into low-voltage DC current needed to generate chlorine gas.

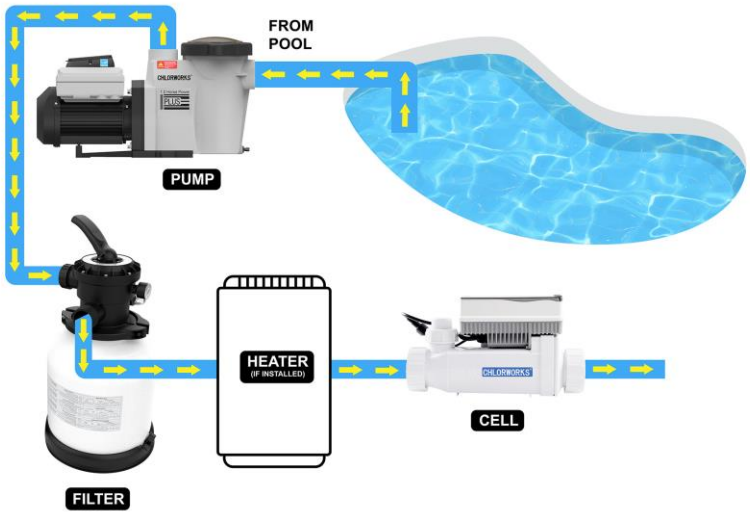
The power center contains transformers, fuses, cell connectors and AC current wiring configuration, and DC current output cables are connected to IRCF.Fuses are installed in the housing to provide additional protection.For information about installing and using Power Center correctly, please refer to IRCF Installation.

Warning: Incorrect wiring may lead to chlorine leakage:
To reduce the risk of personal injury, the Power Center must be installed on the load side of the clock, the load side of the electronic control switch or relay and connected

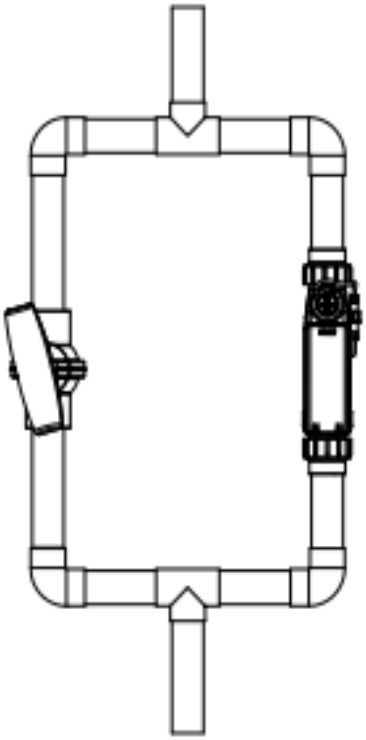
to the load side, so as to receive power only when the pool pump is turned on.Otherwise, dangerous chlorine gas accumulation may occur.When the pool pump is turned off and water is not flowing through the equipment, IRCF should never be energized.

Turn off the AC power supply before inserting and unplugging the model.

IRCF can be used in 115v/230v and automatically converted.



INSTALLATION



Ensure that chlorine/bromine feeder is installed after IRCF Cell.

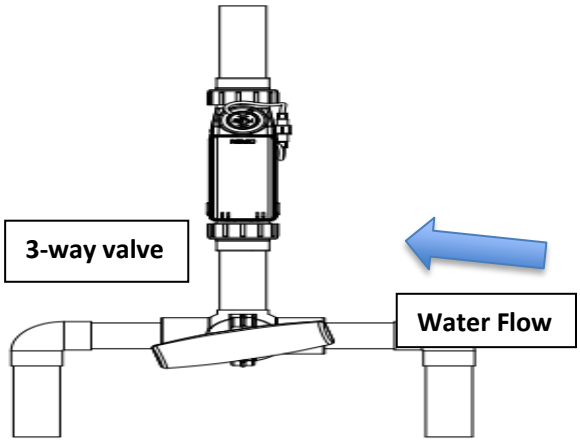
When IRCF is used with the in-floor cleaning system, it is suggested to use a separate return pipe for the cleaner to reduce the increased hydraulic stress on the IRCF cell.

Loop Plumbing Diagram

IRCF is designed to operate at a water flow rate of 25 +/- 5 gallons per minute (gpm) to 105 gpm.When the speed exceeds 80 gallons per minute, you must use the bypass circuit to obtain the best chlorine production.Installation with flow rate exceeding 80 gallons per minute includes installation with floor cleaning system or booster pump.These systems must use IRCF bypass loop with flow control valve to ensure that the flow through IRCF is kept within its designed working water flow.

Plumbing Diagram

- Please be sure to install IRCF after the filter and heater.The IRCF shall be at least three (3) feet from the outlet of the heater.
- If IRCF is installed on the combined swimming pool/spa system, please install it before the backflow valve of the swimming pool/spa (see the figure below), so that both the swimming pool and spa can be properly chlorinated, and gas accumulation in the swimming pool water pipes can be avoided.
- Install IRCF cell horizontally.



Determine the size of the pool (gallons of water in the pool)

Rectangular Pools	Length x width x average depth x 7.5
Round Pools	Diameter x diameter x average depth x 5.9
Oval Pools	Length x width x average depth x 6.7
Bevel	Multiply total gallons by 0.85 = gallon capacity

Determine the size of the pool (liter of water in the pool)

Rectangular Pools	Length x width (meters) x average depth x 1000
Round Pools	Diameter x diameter x average depth x 785
Oval Pools	Length x width (meters) x average depth x 893
Bevel	Multiply total liters by 0.85 = liter capacity

Caution:In order to protect the service life of IRCF, do not use dry acid (sodium bisulfate) to adjust the pH value in arid geographical areas, which will cause excessive evaporation and minimize the dilution of pool water with fresh water.

ATTENTION: Make sure you have disconnected the power supply before installing!
Grounding (earthing) is required.This unit should be installed and grounded by qualified service personnel.Installed to allow access to unit buttons and power centers.

Please read the safety precautions and important instructions on page 1.Be sure to read and observe the safety instructions before making any electrical wiring.Wiring can only be done by qualified professionals.

- The IRCF shall be installed at least three (3) feet from the outlet of the heater.
- Pipe coupling: Schedule 80, with a maximum pressure of 75 psi at 70F(21℃).

How to install Cell:

1. Install the PVC coupling to the plumbing pipe with PVC glue.Let the glue dry.

2. Install the cell vertically.Allow access to the unit operator control panel.Install the cell on the coupling.Make sure that the O-ring is properly seated.

3. Turn on the pump and visually check whether there is leakage around the coupling.

Connecting the CWPC Cell Cable to the Power Center

Warning-Please turn off the power of the main system before making any connection.

1. Before connecting the power cord to the power center, please make sure that the AC power supply is turned off.

2. Align the two (2) pins of the cell power cord connector with the socket on the top of the power supply.

3. Center and insert the connector.Turn the round socket nut until the connector is locked in place.

The power center is a dual voltage of 115V-230V, which will automatically switch without additional wiring.

LED LIGHT INSTRUCTION

SUPERCL / SALINITY：

SHORT PRESS：

Show the salinity.

LONG TIME PRESS (Until the long press light become green) ：

Enter into SuperChlor mode, long time press again to exit setup. SuperChlor mode will auto-exit after 24 hours.

GENERATE：

The light stably on means it is operating. The light off means it is something wrong.

COLD-WATER：

Warning:the water temperature lower than 10℃ or higher than 50℃ -the system is shut down.

SALT：

GOOD LED ON: Good salt.
It shows salt salinity is within the working range of 2600PPM-4450PPM.

INSPECT SALT RED ON:
Salt Level below 2300 PPM or above 6000 PPM

INSPECT SALT RED (flashing)
Salt Level: 2300 PPM to 2800 PPM/4500 PPM to 6000 PPM

CELL: GOOD LED ON:
The cell is good and produces chlorine gas.

INSPECT CELL RED:
The cell needs to be inspected. The blades may contain calcium.The cell does not produce chlorine gas.

FLOW:
GOOD FLOW LED ON: enough water flows to produce chlorine gas.

NO FLOW LED FLASHING:
There is water flow. Continuous detection of water for one minute is necessary when the system starts. Or the flow of water is unstable.

NO FLOW LED ON:
No water in the cell.

SANITIZE OUTPUT SETTING:
Press the button MIN and MAX, 10% for each setting.

OPERATION

IMPORTAN： An external pool pump timer required.

IRCF aims to provide enough chlorine to disinfect the pool water every day.If the pool pump runs continuously for 24 hours and IRCF runs at 100%, it will produce more chlorine than most swimming pools' need (1-4 ppm).IRCF has its own internal timer, which cycles the electrolytic cell on and off according to a set percentage of disinfectant output.For example, when the pool pump is running, the cell always keeps 100% working state.When set to 80%, the cell is allowed to rest for 20% when the pool pump is running, and the cell life is prolonged.In order to adjust IRCF to the size of your pool, just reduce the output time of disinfectant from 10% to 100% .

The IRCF can only produce chlorine.The IRCF cannot monitor or control the chlorine level in the pool or spa water.It is the pool owner's responsibility to monitor and maintain free chlorine levels between 1.0 and 4.0 parts per million (ppm) as recommended by the APSP.It is the pool owner's responsibility to check the free chlorine level during regular pool pump operation and adjust the sanitizer output on the IRCF accordingly.

Start-up Procedure (Super Chlorination)

Super chlorination is recommended prior to pool startup.

Super chlorination should begin with clean chlorinated pool water.

The IRCF will accumulate sufficient levels of chlorine for sanitation within a few hours.The IRCF will not be able to produce enough chlorine to reach breakpoint chlorination.Super chlorination works better when performed at pool startup until the chlorine level returns to 1.0 to 4.0 ppm prior to turning on the IRCF.

Output Settings and Adjustments

The output of chlorine is displayed by LED DISPLAY, and the salt concentration will be checked for 1/2 minute before work.If the salt content is normal, it will start to work, otherwise, please adjust according to the warning displayed on the LED display.
For example, if the salt concentration is 2600 ppm, both the LED display screen and the LED salt inspection salt will indicate that there is not enough salt in the pool to produce chlorine.

To set the output, just press the **MIN** or **MAX** button.

For the first installation (after 24 hours of operation), please use a reliable test method to test the free chlorine in the pool water.The ideal range of maintenance is 1.0-4.0 ppm.

If the level of free chlorine in the swimming pool water is too low, please press the "Maximum" button to increase chlorine production.If the free chlorine level in the pool water is too high, press the MIN button to reduce chlorine production.

Due to the different demand for free chlorine in swimming pool water, it may take several days to determine the daily working hours of the swimming pool and the percentage setting of "disinfectant output" of the swimming pool.According to the suggestion of APSP, the adjustment should be continued as needed, and the interval between each adjustment should be 24 hours until the free chlorine level in the pool water is stable at 1.0-4.0 ppm.

Precautions:

- Don't fertilize your swimming pool.Fertilizer contains nitrate, which will lead to a high demand for chlorine.
- Never use dry acid to adjust pH value in arid areas, where evaporation is excessive and fresh water rarely dilutes pool water.The accumulation of by-products will damage IRCF.
- Do not add any pool water balancing chemicals (including salt) unless IRCFis turned off.
- Do not let the cyanuric acid content in the outdoor swimming pool drop below 30 ppm.

Note: **DO NOT USE CYANURIC ACID IN INDOOR POOLS.**

MAINTENANCE

Every salt system requires maintenance after use, which is the focus of this section.

Weekly Service

PH level test: 7.4 to 7.6, although 7.2 to 7.8 is an acceptable range under the APSP guidelines.

Note: Never use dry acid (Sodium bisulfate) to adjust pH value in arid areas, where evaporation is excessive and fresh water rarely dilutes pool water.The accumulation of by-products will damage IRCF.

Total Alkalinity Test: Use a reliable test method to test the total alkalinity of the pool water.Adjust according to the advice of swimming pool professionals.The ideal range of total alkalinity is 80-100 ppm.

Chlorine Test: Use a reliable test method to test the free chlorine of the pool water.Maintain the ideal range by adjusting the IRCF Sanitize output setting.See "minimum" and "maximum".Free chlorine needed: 1.0-4.0.

Note: Chlorine exceeding 4.0 ppm may cause excessive corrosion of metal parts and may damage related swimming pool equipment.

Monthly Service

To ensure that your swimming pool maintains the correct chemical balance, it is very important to perform the following recommended salt and pool water tests every month with reliable test methods.

- Adjust salinity according to LED warning and LED DISPLAY.
- **Test salinity:** Press the salinity key to check the reading,or take the pool water samples to the local pool shop for testing.
- **Cyanuric Acid:** The pool water is sampled and the content of cyanuric acid is detected by reliable detection method.When IRCF is used, the recommended ideal cyanuric acid level is 30-50 ppm.
- **Calcium Hardness:** Use a reliable test method to test the calcium hardness of the pool water.Adjust according to the advice of swimming pool professionals if necessary.The ideal range of pool water calcium is 200-400 ppm recommended by APSP .
- **Metals Detection:** It is recommended to regularly sample the pool water to detect whether there are metals such as copper, iron and manganese.These metals can damage batteries and other related swimming pool equipment, so they should not appear in swimming pool water.If these metals are present, please contact your pool professional.
- **TDS (Total Dissolved Solids):** Use a test kit or let a pool professional test the water sample to test the TDS level of the pool water.Adjust according to the advice of swimming pool professionals if necessary.It is suggested that the APSP standard of salt pond should be at least 3000 to at most 5700-6000 ppm (including salt).

Cleaning Blades

Note: **Remove calcium buildup from the cell before acid cleaning:** Use a garden hose on the spray setup and spray directly into the ends of the cell.Most of this calcium buildup has a muddy consistency and will be blown out of the cell.Once most of the calcium has been removed, continue with the acid wash as most of the calcium has been removed and the acid wash will now be more effective.

Auto Clean: The IRCF has an automatic cell blade cleaning feature (cell reversal) that helps remove scale deposits from the IRCF. ***Note:*** Automatic cleaning does not interrupt chlorine production."Scale" is a white crusty deposit that forms when the water is too hard or when the pool water is out of balance and scales.If excessive scale is present on the blade, acid cleaning is required.

Acid Cleaning: If the IRCF blades show a tendency to scale, it is recommended that the IRCF be removed and inspected for scale and/or debris formation on the IRCF blades every two (2) months.Areas of high hardness may require more frequent cleaning.Some filters allow debris to pass through the IRCF and may become trapped between the blades of the IRCF.A small amount of scale formation is normal.If a look through the IRCF reveals excessive scale formation between the blades or the presence of debris, the IRCF must be cleaned as follows:

- Use a high pressure water jet from a garden hose.If the blades cannot be reasonably cleaned, disconnect the AC power from the power center.
- Mix one (1) quart of hydrochloric acid with one (1) gallon of tap water in a plastic bucket.

Note: **Always wear rubber gloves and goggles when cleaning the IRCF.Always add acid to water; do not add water to acid.**

- Screw the cap with gasket and o-ring onto the threaded end of the IRCF pool (cap, o-ring, and gasket are included with the cleaning kit).
- Place the IRCF horizontally in a five (5) gallon bucket.Pour the acid solution (as described in step) into the IRCF until it just covers the cell blades and salinity probe.Allow the acid solution to froth, then clean the blade.

Note: **The acid should only be contained in the IRCF covering the blade.Try not to sprinkle acid on the outside of IRCF.If acid does spill on the outside of IRCF, please clean it with water.**

- The foaming action begins, which is caused by the dissolution of scale (calcium carbonate) from the blade.If intense foaming is not started, there is no need to clean the blade to stop the cleaning process and continue to the next step.

Otherwise, keep the blade immersed in the solution until the foam stops.However, do not leave the acid in the IRCF for more than thirty (30) minutes.Too much pickling will damage the blade.

- Take the IRCF out of the barrel and put it into an empty five (5) gallon barrel.Please rinse and inspect the inside and outside of the CFPT by using clean tap water thoroughly. Repeat the acid cleaning process if deposits are still visible.
- After cleaning, replace the cell and return to normal operation.
- If an acid cleaning procedure is required, it is recommended that the pool water sample be analyzed by a pool professional for excessive calcium hardness (i.e., ideal range of 200 to 400 ppm) and/or improper water balance.

➢ Check the interior of the IRCF every two (2) months (or more frequently in hard water areas).If no scale or debris deposits are observed inside the IRCF after four (4) months, it is not necessary to check.

➢ Continue to check every two (2) months. However, due to possible changes in pool water chemistry and filtration, it is recommended that the cell be removed for inspection at least twice a year.

➢ Reconnect the IRCF communication cable plug at the power center, then reconnect AC power to the IRCF power center.

TROUBLESHOOTING

PROBLEM	POSSIBLE CAUSE	SUGGESTED ACTION
Low or no chlorine residual in pool	Sanitizer Output percentage set too low or off at 0%	Increase Output Level.
	Insufficient run time	Increase run time to at least 1 hour per 10° ambient temp.
	Heavy pool use, inclement weather, organic matter	Activate Super CL mode or chemically shock pool.
	Water chemistry issues: Low Chlorine Stabilizer Low salt in the pool (less than 2300 ppm) Phosphates in pool Nitrates in pool	Contact pool professional, ensure all chemicals
	The cell is dirty, clogged, or Has excessive scaling or mineral build-	Remove Cell from plumbing, inspect and clean (see p.13).
Low or no chlorine residual in pool after recent installation	Water chemistry was not balanced prior to system installation and a high chlorine demand persists.	Contact pool professional, ensure all chemicals on p.6 are within range, chemically shock pool if necessary.
Red Inspect Cell Led is on.	It is time to clean the Electrolytic Cell.	The Cell must be cleaned.
	Cell efficiency has been greatly reduced.	Inadequate water flow exists, or Cell must be replaced.
Red Inspect Salt Led is on.	Pool water salt is too low or too high, system is off. Less than 2300 or Over 6000 ppm	Correct the salinity level.
Red Inspect Salt Led is flashing	Pool water salt is low or high, 2300 PPM to 2800 PPM/4500 PPM to 6000 PPM. 2300-2600, the system is still working.	Correct the salinity level.
No Power	Fuse/Reset has tripped.	Check fuses on power center

	No AC Power to the power center	Check the connection
No Flow LED is on.	Incorrect installation	Verify Sensor probe correct orientation
	Sensor probe is dirty or clogged.	Ensure correct connection, clean the sensor probe if necessary.
	Insufficient circulation	Ensure operation of the pump, at least 25-30 GPM. Check water level, filter pressure, or for air or blockages in PVC plumbing.
Water leak	O-Ring improperly seated	Ensure O-Rings are clean and in good condition.
	Threaded collars are cross-threaded.	Inspect threads for damage, ensure that each screws back on without resistance.
Cell frequently has mineral buildup	This is due to imbalanced water chemistry and a high Saturation Index.	Ensure that your Saturation Index is at or near zero, to avoid damage or premature cell failure.
Cell never or rarely has mineral buildup.	Water may be corrosive due to imbalanced water chemistry and a low Saturation Index.	Ensure that your Saturation Index is at or near zero, to avoid damage or premature cell failure.
COLD WATER Led is on.	Water temperature is too hot or cold for operation.	Check operation of the heater, or turn off until the water temp is between 50° F TO 122 °F.
	Bad contact line contact of Sensor problem	Ensure Sensor probe is well-connected.
	Damaged Sensor problem	Contact manufacturer.

How to calibrate salinity?

If you need to calibrate the salinity, please press "MIN" and "MAX" at the same time, and press several times quickly.When the display shows "SALT Tsys:", press "MAX" to lower the salinity, and press "MIN" to increase the salinity.

For example, the current salinity is 3720ppm, if you want to reduce 107ppm, press "MAX", then the current salinity is 3720-107=3613ppm.The number 107,108 etc. means 107ppm and 108ppm.If you want to increase the salinity, please press "MIN".

LIMITED WARRANTY

IRCF warrants that it will be free from defects in materials and workmanship for one (1) year under normal use and non-commercial application.Proof of purchase is required.

This limited warranty only applies to the original purchaser of IRCF system and is not transferable.IRCF is exclusively used for residential swimming pools, and any commercial application will invalidate all guarantees.

This limited warranty is subject to the following terms, conditions, and exclusions:

1. According to the manufacturer's suggestion, as described in the user manual, problems caused by failure to maintain an appropriate water chemistry level.

2. Problems caused by failure to use IRCF according to the manufacturer's recommendations, as described in the user manual.

3. Problems caused by tampering, accident, surge, abuse, negligence, unauthorized or unqualified maintenance, product modification, fire, flood, freezing injury, natural disasters or natural disasters.

4. Damage or degradation of concrete, natural stone, wood or synthetic surface near swimming pool or spa.
Problems or damage caused by improper installation and/or improper power supply.

Disclaimer: This limited warranty constitutes the entire warranty.No other express or implied warranties apply.This limited warranty gives you specific legal rights, which vary from state to state.Under no circumstances shall the Salt Pool System (IRCF) or the authorized agent/installer be responsible for any kind of indirect, special or incidental damage, including but not limited to personal injury, property loss or equipment damage or loss. The Salt Pool System (IRCF) or the agent/installer shall not be responsible for any other expenses that may occur during installation or maintenance.Authorized agents/installers may charge travel expenses for warranty service work.

Some states do not allow the exclusion of collateral or indirect damages.The exclusions and restrictions listed may not apply to you.

Note:

Swimming pool water circulation purification system installation sequence: pump - cartridge (sand filter) - heat pump - chlorination tank.

1. Chlorination tank is installed in horizontal plane, make sure the arrow of water flow direction on the chlorinator shell is the same as the water flow direction of the purification system.

2. Chlorination tank is installed in vertical plane, make sure the arrow of water flow direction on the chlorinator shell is the same as the water flow direction of the purification system and the water flow direction can only flow from bottom to top.

3. Important information of the complete system:
When installing the complete system, please ensure that the cell cable is connected to the power supply, and then turn on the power supply.

4. Please note that our complete system can't connect to automation, please add this note on your website, thank you.