



FLO KING CARBON/RESIN CANISTER INSTRUCTIONS

CAUTION!

Do not attempt to carbon treat a solution before you have thoroughly filtered it! This almost certainly will result in poor carbon performance and possibly plugging of your Carbon/Resin Canister!

Follow this procedure ...

Using Flo King Magnum MCA Reusable or FK50 Poly-Spun Disposable Filter Cartridge in the appropriate length (see Catalog Bulletins 24 and 26), filter until the solution is clean or until the cartridge clogs. Inspect the cartridge for solids accumulation and also observe movement in the tank. When the pump produces little or no solution movement, the filter cartridge has likely clogged. At this point, change or clean the filter cartridge and continue filtering until the cartridge is able to run several hours without plugging up. Ten bath turnovers using the above cartridges generally removes particles down to 10-15 microns; 20 turnovers typically results in even finer removal. Now you're ready to carbon treat.

Note: If there are a lot of solids, it may be necessary to DE-SLUDGE your tank before carbon treatment (see Flo King Bulletin 27.1).

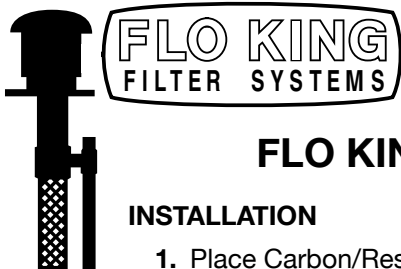
Precautionary Procedure to Avoid Introduction of Carbon Dust Into Solution

Under normal circumstances, the Flo King Carbon/Resin Canister (CRC) will not introduce appreciable carbon dust into the solution being treated. However, rough shipping and handling or even reactions with certain chemical solutions could cause a small amount of carbon dust to be expelled when the CRC is first submerged in solution.

Caution: Carbon dust is very fine and can cause roughness on parts! Complete removal of large amounts of carbon dust can generally be achieved only with an out-of-tank filter system and cartridges pre-coated with Filter Aid (diatomaceous earth slurry).

Therefore, carefully follow the precautionary procedures described on Page 2 to avoid the introduction of carbon dust into solution.

**CAUTION: WEAR GLOVES, GOGGLES AND PROTECTIVE CLOTHING
AND FOLLOW ALL PERTINENT SAFETY PROCEDURES TO PREVENT
INJURY TO PERSONNEL AND DAMAGE TO THE ENVIRONMENT!**



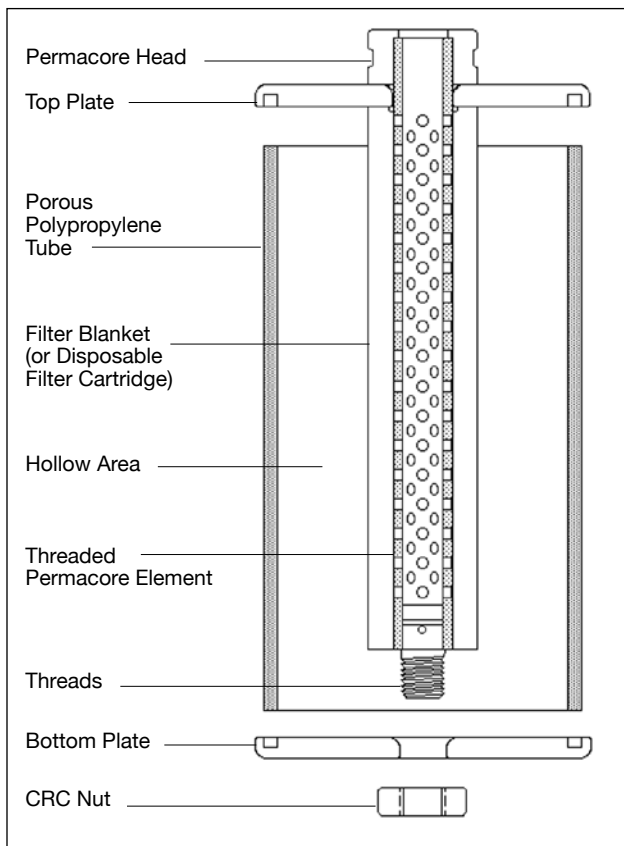
FLO KING CARBON/RESIN CANISTER INSTRUCTIONS

INSTALLATION

1. Place Carbon/Resin Canister (CRC) upside down on table (with Nut facing up).
2. Turn Nut counterclockwise by hand and remove.
3. With one hand, grasp middle of Porous Polypropylene Tube; with other hand, remove Bottom Plate by lifting up. Inside, note that CRC contains 1-1/2"-diameter (approximately 4-cm-diameter) reusable filter core with reusable filter blanket and red plastic webbing to secure blanket to core. (Core, blanket and webbing are collectively known as "Inner Filter Element.") If disposable filter cartridge is preferred, remove Inner Filter Element and install disposable cartridge directly onto Threaded Permacore Element.

CAUTION! READ THIS BEFORE FILLING CANISTER WITH CARBON OR RESIN! The Permacore Head, Top Plate, and Threaded Permacore Element are welded together as one assembled unit (see illustration). However, the Porous Polypropylene Tube is not attached to the Permacore Head/Top Plate/Element Assembly. Therefore, when filling CRC with carbon or resin, do not pick up Porous Polypropylene Tube! This will cause SPILLAGE!

4. Use funnel to pour carbon or resin—slowly and evenly—into hollow area of CRC. Continue filling until carbon or resin reaches no higher than top of filter cartridge. (Note: CRC can also be safely operated without full canister of carbon or resin. Use any amount desired.)



CAUTION! DO NOT PICK UP POROUS POLYPROPYLENE TUBE UNTIL SECURING BOTTOM PLATE WITH NUT! THIS WILL CAUSE SPILLAGE!

5. Place Bottom Plate on CRC and hand-tighten Nut by turning clockwise. (Do not use tools to tighten!)

Precautions: Do not fill CRC with powdered carbon. Use only pelletized or granular carbon. Flo King pelletized carbon is recommended. One of its many advantages is that pelletized carbon contains little dust compared with granular and powdered carbon. However, during rough shipping and handling, some dust still may emerge from CRC after filling with carbon. Therefore, all steps below are recommended prior to carbon treatment. (Note: If small amount of carbon dust does enter solution to be treated, Flo King filter system and CRC generally will remove it in a short time.)

6. Place CRC in bucket, drum or other reservoir. Use ordinary hose to spray water through CRC Permacore Head for 1 to 2 minutes until water emerging from Porous Polypropylene Tube is clear and dust-free.

7. Attach CRC to Flo King pump by tightening Filter Screws (thumbscrews) to CRC Permacore Head.

7a. Optional: Immerse CRC, with pump attached, in small vessel (for example, 5-gallon bucket) of solution to be carbon treated for up to 5 minutes. Do not turn pump on. In some cases, gassing caused by contact of carbon with solution to be treated will cause some additional dusting.

8. Immerse CRC, with pump attached, in production tank containing solution to be treated. Mount pump to tank. (Note: Some acid solutions may cause gassing and bubbling when carbon is introduced. In these cases, to minimize dispersion of gas bubbles throughout solution, leave CRC in bath for 30 seconds to 1 minute before turning pump on. If pump traps air, turn pump off and allow air to bubble out, then turn back on.)

9. Turn pump on. Little or no carbon dust should enter tank at this point. Treat solution as long as necessary (see Page 5 for guidance).



FLO KING CARBON/RESIN CANISTER INSTRUCTIONS (continued)

WHEN TO CLEAN CRC

Observing the flow rate and bath agitation is a means of determining if the CRC Porous Polypropylene Tube or filter cartridge is clogged. CRC should be cleaned when it is visually apparent that agitation and solution circulation have decreased. CRC can also be cleaned based on anticipated life of carbon or resin in solution being treated.

EMPTYING CRC

1. Turn pump off and wait 15 seconds before slowly withdrawing Flo King pump and CRC from solution. Slow removal will minimize loss of any particles that may adhere to exterior of Porous Polypropylene Tube.
2. Allow CRC to drain in bucket or other receptacle.
3. Remove CRC from Flo King pump by hand-loosening Filter Screws (thumbscrews) on pump.
4. Place CRC upside down (with Nut facing up) in bucket or other suitable receptacle. Spray with hose and water to remove sludge buildup (if present) on Porous Polypropylene Tube.
5. Remove Nut by turning counterclockwise. Then remove Bottom Plate and dump contents into suitable container.
6. Hose out remaining traces of carbon and rest of CRC assembly.
7. Remove filter cartridge.
8. If using disposable filter cartridge, install new cartridge. If using reusable filter cartridge, remove Inner Filter Element and refer to cleaning instructions on Page 4.

CAUTION: FAILURE TO INSTALL DISPOSABLE FILTER CARTRIDGE OR REUSABLE INNER FILTER ELEMENT WILL RESULT IN CARBON SPILLAGE WHEN CRC IS REFILLED!

CLEANING POROUS POLYPROPYLENE TUBE

After extended use, Porous Polypropylene Tube may require thorough cleaning in a hot cleaner or stripping solution, followed by immersion in a water rinse.

FLO KING ACTIVATED CARBON PELLETS

Because of its unique size and shape, Flo King pelletized carbon presents little flow restriction and allows for uniform mechanical packing. This results in fast, thorough adsorption of organic contaminants.

Flo King offers two types of activated carbon pellets. The acid-washed **HIGH TECH** pelletized carbon is used for most plating applications. It is cleaner (less dusty) and especially recommended for low-pH solutions and others in which iron and sulfur contamination is a concern. The standard **HIGH GRADE** pelletized carbon may be used for some plating solutions but is primarily recommended for non-critical applications like rinses. For further information on pelletized carbon, refer to Bulletin 30 and Price List PL38 in Flo King catalog.



MAGNUM REUSABLE FILTER CLEANING & ASSEMBLY INSTRUCTIONS

CAUTION: WEAR GLOVES, GOGGLES AND PROTECTIVE CLOTHING AND FOLLOW ALL PERTINENT SAFETY PROCEDURES TO PREVENT INJURY TO PERSONNEL AND DAMAGE TO THE ENVIRONMENT!

1. Remove Magnum filter cartridge from pump housing. Let drain and/or place in container.
2. Remove outside plastic Web. Stand cartridge assembly on flat surface in upright position. Grasp with both hands and slide web down about 2 or 3 inches (5 or 10 cm). Hold on to exposed filter blanket with one hand and pull web off Magnum assembly with twisting motion. (NOTE: If web is "locked on" with sludge, it may be necessary to spray outside of Magnum with water to "unlock" web.)
3. Unroll filter blanket from filter core. Most users then lay blanket on piece of grating over suitable tank, drum, reservoir or wastewater treatment pit and spray each side using an ordinary hose and spray nozzle (or, if available, pressure spray washer). Normally, this is sufficient for cleaning; however, some contaminants may build up and not flush out completely. In many applications, these contaminants can be removed easily by placing Magnum blanket in an appropriate chemical solution.

CAUTION: Never mix cyanide-laden materials with acids; this combination produces hydrogen cyanide gas, which is lethal if inhaled! The process solution to which the Magnum has been exposed must be compatible with the acid from a SAFETY and USE standpoint.

4. To wrap Magnum blanket around filter Core, lay blanket on flat surface. Blanket can be rolled while wet. Place core on blanket, making sure that top of blanket is even with core, and roll as tight as possible. (Note: If using PERMACORE filter element, allow PERMACORE head to lay off edge of flat surface while rolling blanket.)
5. Rest Magnum assembly in one plastic loading slat and place other loading slat on opposite side of Magnum filter to form a tube. Make sure plastic loading slats extend 2 inches (5 cm) beyond one end of Magnum.
6. Grasp Magnum about 4 inches (10 cm) from extended end. Slip plastic web over loading slats and pull down to end of assembly. Remove loading slats. Magnum is now ready to be used again.



Clean blanket.



Re-roll blanket around core.



(L-r) Place plastic loading slats over filter. Then slide web over slats and pull down. Remove slats and cartridge is ready to reuse.



Why is Carbon Treatment Necessary?

Organic impurities are a fact of life in many metal-finishing facilities. In the case of electroplating, these organic impurities may cause pitting, peeling, blistering, highly stressed deposits, high brightener consumption and other problems.

Organic impurities are introduced to solution in several ways. Common sources include drag-in of contaminated rinsewater, airborne contaminants, and brightener breakdown products. Among the frequently encountered organic impurities are: oil, grease, drawing compounds, lubricants, buffing compounds, masking agents, and cleaner and acid wetter drag-in. Over-additions of intentionally added chemicals are another source of organic contamination.

These organic impurities are often soaked up by solids—particles, sediment or sludge—that have been allowed to accumulate in the process bath. So it is only logical that filtration of these solids will result in the removal of a high percentage of organic impurities as well. That means less carbon and less time will be needed for carbon treatment, and that removal of valuable brighteners and wetting agents will be minimized.

Warning! Failure to filter large solids from solution before carbon treatment will clog the carbon treatment device (Cartridge, Bag or Canister) before it has had the chance to remove organic impurities. Continuous or periodic filtration using a **Flo King** In-Tank Filter System is recommended to prevent sludge from accumulating and to reduce the buildup of organic impurities.

Regular in-tank treatment using **Flo King** carbon products can minimize or even eliminate the need for batch carbon treatment—the traditional method of transferring solutions from production plating tanks to holding tanks and adding powdered carbon to remove organic impurities.

How Often and How Long?

Bright nickel and acid copper plating typically require frequent carbon treatment. But other solutions may need only occasional treatment or none at all.

Most platers conduct Hull Cell tests to detect the onset of plating problems, such as loss of deposit brightness. At the first sign of trouble, they implement carbon treatment.

A good preventive maintenance schedule can usually be established based on Hull Cell test results. Some platers have learned from experience that they need to carbon treat once a week or once a month, for example.

A typical carbon treatment lasts four to 24 hours. However, results vary, depending on the severity of contamination, and some processes may require longer treatment times or even continuous carbon treatment.

After a single treatment, the carbon is often saturated with organics (“spent”) and should be properly disposed of. How do you know if the carbon is totally spent? Unfortunately, there is no simple way to test the carbon and make this assessment. Most practitioners therefore rely on Hull Cell tests and experience, though a few have expensive ion chromatography or other analytical equipment to help determine when fresh carbon is required.



Optional: Continuous Carbon Treatment

Some platers use processes that may require filtration to remove particulates (dirt) and continuous carbon “polishing” to prevent the buildup of organic impurities. This can sometimes be accomplished using a single **Flo King** BX650, BX1200, BX3000, BX5000, BXL2500 or BXL5000 along with a **Carbon/Resin Canister**. Or, as an alternative, consider a Double Cartridge Holder (DCH), Quad Cartridge Holder (QCH), or Extended Double Cartridge Holder (DCHE) with a carbon treatment attachment. See Multiple Cartridge Holders on Bulletin 18 in our catalog. Examples:

- **Carbon Cartridge with Filter Cartridge:** Use a carbon cartridge on one side of the DCH and a filter cartridge on the other. Or use two filter cartridges and two carbon cartridges on a Quad Cartridge Holder.
- **Carbon Bag with One Filter Cartridge:** Use a DCHE with Carbon Bag on one side and filter cartridge on the other.
- **Carbon Bag with Two Filter Cartridges:** Use a Carbon Bag on one side of a DCHE. On the other side, install a DCH equipped with two filter cartridges.

The carbon treatment attachment can be disposed of or replenished weekly, or as needed.

Hull Cell Test for Organic Contamination

The Hull Cell is used to check the condition of an electroplating solution. It replicates the plating bath on a laboratory scale and helps determine the effects of organic impurities. Hull Cells are available from a number of suppliers that can be found on the internet.

The following procedure is suggested for **Flo King** carbon treatment:

1. When organic contamination is suspected, stop production plating.
2. Plate Hull Cell test panels to determine the degree and effect of the suspected organic contamination.
3. Recirculate the production plating solution through the **Flo King** pump and carbon treatment device (Cartridge, Bag or Canister) for at least one hour, then plate more Hull Cell panels. Check the panels to see if there is any improvement.
4. If there is improvement in the Hull Cell panels but not to the degree desired, continue to carbon treat and plate additional Hull cell panels every hour until contaminants have been removed to an acceptable level. This can usually be accomplished in one to eight hours, though some users treat overnight or up to 24 hours.
5. When plating is restored to normal, remove the carbon treatment device and replace it with filter cartridges to remove dirt and other particulates.

Caution! Any carbon or carbon treatment device that has been saturated with organic impurities should be removed from solution. This will prevent the possible release of these contaminants back into solution.