

Owner's Manual Commercial Plus Filter Series



Models

CP 213f OD Carbon
CP 213f OD Macrolite[®]
CP 213f, Empty

TABLE OF CONTENTS

GENERAL INFORMATION

About this Manual.....	3
Filtration Technology.....	4
The KineticoPRO Commercial Plus (CP) Product Line	4

EQUIPMENT SPECIFICATIONS

System Configuration.....	5
Component Functionality	6-7
System Specifications	8-10

INSTALLATION

Getting Started.....	11
Pre-installation Review	11-12
KineticoPRO Filter Installation CP213f.....	12-13

TROUBLESHOOTING

Eight steps to determine the problem... ..	14-15
Unfiltered Water	16
Water Running to Drain.....	16
Iron Bleed-Through	17
Pressure Loss.....	17
Leaks.....	17
Taste, Color & Odor.....	18
Frequent Backwashing	18
Equipment Noise.....	18
Unit Sticks in Cycle.....	18

PARTS

Level 1.....	19-20
Gearing	21
Level 2 & 3	22
Level 4.....	23
Level 5	24
Bases, Tanks and Tubes.....	25

GENERAL INFORMATION

About this Manual

This manual will cover information needed for the proper installation and operation of your KineticoPRO Filtering System. We have also included information regarding the frequently asked questions about filtering systems. This information may be more technical in nature, but provides further insight to the continued operation of this equipment at its highest levels

This manual will use various icons to help highlight issues that are relevant to the safe operation of this equipment. The following icons will be used as described:



General information regarding the application of this product will be highlighted by this icon. This will include technical specifications and expected operational results.



Maintain safe pressure

This sign indicates the safe operating pressure range.



Consult Maintenance Section

Refer to the maintenance section for specific instructions.



Consult Equipment Specifications Section

Refer to the equipment specifications section for specific instructions.



Consult MSDS Sheets



A **caution icon** will be used to present any information that may hold a potential hazard or concern during the installation, use or maintenance of this product. Should this information not be followed, it may result in damage to this equipment and its surroundings.



Pinch point or crushing hazard



Chemical hazard



The **warning icon** will be used to present any information that may result in a severe hazard or concern during the installation, use or maintenance of this product. Should this information not be followed, it may result in severe physical harm.



Stay Clear



Do Not Touch



No Access

Only properly trained and authorized persons can enter area or open panel.



Any tools or materials required during the installation, use or maintenance of this equipment will be preceded by this icon. Using these specific tools will minimize time and effort. Not using the proper tool may result in damage to this equipment, its surroundings or even physical harm.

If there are any additional questions pertaining to this equipment, please contact your local KineticoPRO Dealer for further assistance.

Filtration Technology

Many water supplies contain suspended solids. This material can cause excessive wear on equipment such as water heaters, boilers, steamers and humidifiers. By removing the solids from the water, the filtered water extends the life of many appliances. Water may also contain disinfectant chemicals such as chlorine. In many commercial processes, the chlorine must be removed before the water can be used.

With the KineticoPRO product line, two types of filters are used: Activated Carbon and Macrolite. Each media offers a different type of filtration property, and selection of the proper filter will depend upon site conditions.

Activated Carbon

Activated carbon is used for the removal of taste, odor and color. Granular activated carbon, used in KineticoPRO equipment, is an excellent filtration medium with efficient adsorption characteristics. The most common application is for the removal of chlorine from the water supply. Activated carbon requires only periodic backwashing to eliminate accumulated suspended matter and re-grade the filter bed. When the filter bed loses the capacity for chlorine removal, the bed must be replaced. If the unit is used in conjunction with a chlorine feed system for the removal of oxidized iron, the unit should be set to backwash 1-2 times per week of operation.

Macrolite

Macrolite is a processed mineral oxide manufactured exclusively by Kinetico, that can be used as a highly efficient filter media for the removal of oxidized iron and suspended matter. 40-70 mesh ceramic media has a tremendous loading capacity and an extremely fast cleanup time when backwashing at 6-7 gpm/ft². This ceramic media is chemically inert and is not affected by acids and bases. Tests have shown that its attrition rate is nearly zero. This media typically removes suspended solids down to the 5 micron range.

The Commercial Plus Filter Product Line

KineticoPRO's Filters can be installed in a multiple configuration to accommodate higher flow rates.

CP Filter Models

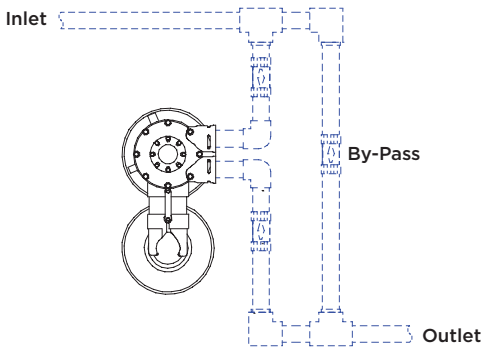
Part Number	Model	Description	Overdrive® @psid	
			@15 psid	@30 psid
11244A	CP 213f OD	CP 213f OD, Activated Carbon Filter, Filled	15.0 gal/min	20.0 gal/min
11246	CP 213f OD	CP 213f OD, Macrolite® Filter, Filled	15.0 gal/min	20.0 gal/min
11289	CP 213f OD	CP 213f OD, Empty Filter	-	-

EQUIPMENT SPECIFICATIONS

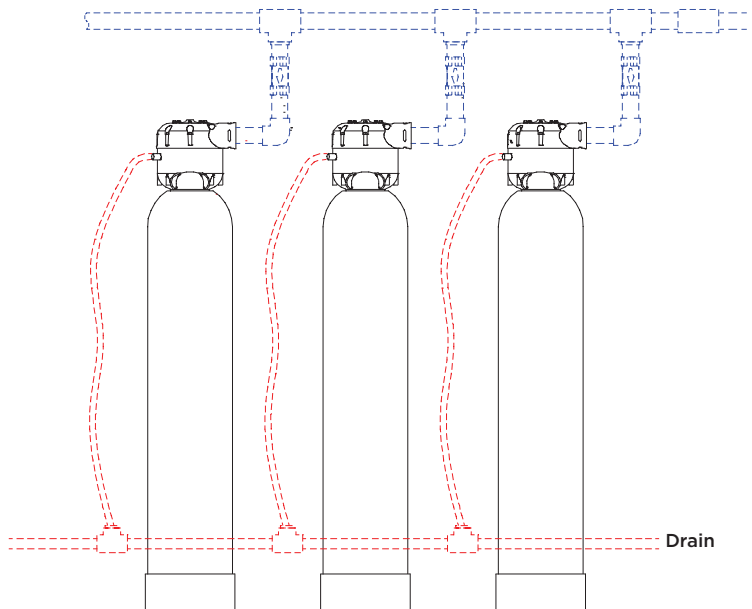
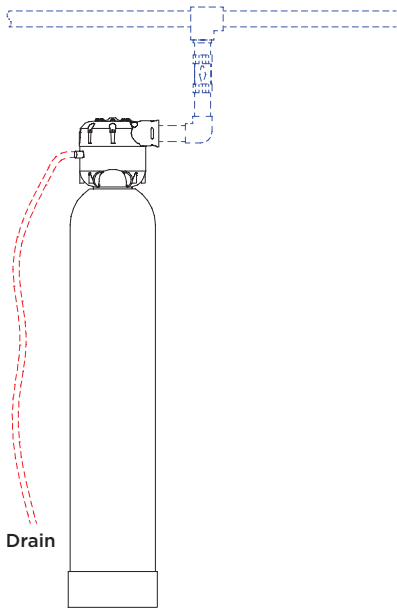
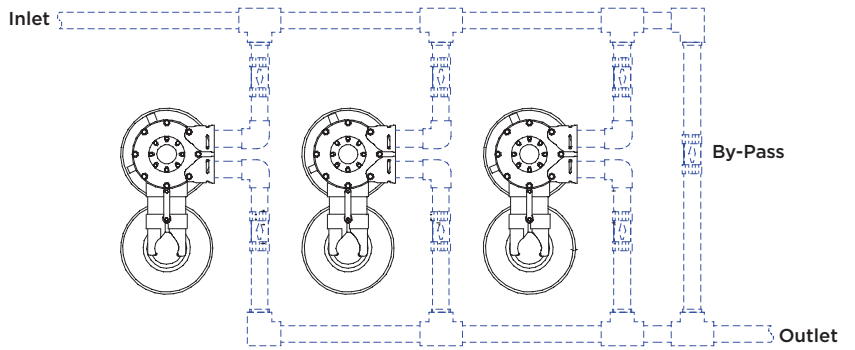
System Configuration

After determining the flow requirements for the system, the next step is to determine the number of units required in parallel to satisfy flow requirement needs.

Single System Configuration
A three valve by-pass is recommended for the unit



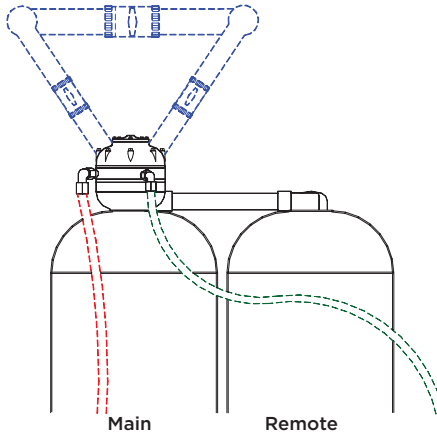
Multi-System Configuration
A three valve bypass is recommended for each unit. Each system is plumbed in parallel, using a balanced header (first in/last out) configuration.



Component Functionality

KineticoPRO System

The Kinetico 1250 Valve mounts on top of the Main Tank. Both the Main Tank and the Remote Tank operate identically: the only difference is that one has the Kinetico Valve mounted on it and is supplied directly by the valve (Main); the other is supplied through connecting pipes from the valve (Remote).



System By-pass

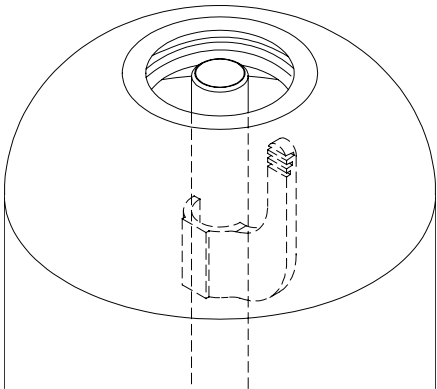
For each system, a by-pass is recommended. This can be installed using three ball valves. This allows the system to be isolated during any service operations. By-pass valving is not included as a part of the system package.

Media Tanks

Each system uses two media tanks. The main tank includes the control valve. The secondary tank is referred to as the remote tank.

Upper Distributor (Carbon System Only)

The distributor prevents channeling of the inlet stream into the top of the media bed. A plastic molded distributor is attached to the top of the control valve. The distributor also prevents the media from backwashing out of the tanks.



Riser Tube

A riser tube is used to connect the lower distributor to the control valve. The riser tube is 1.0 inch in diameter and it includes a handle. This helps lock the distributor in place when the control valve is removed.

Distributors

The lower distributors for the CP units are a slot design. The slot configuration minimizes pressure loss through the system. The ABS and polypropylene construction of the distributor assembly gives it excellent durability.

Gravel

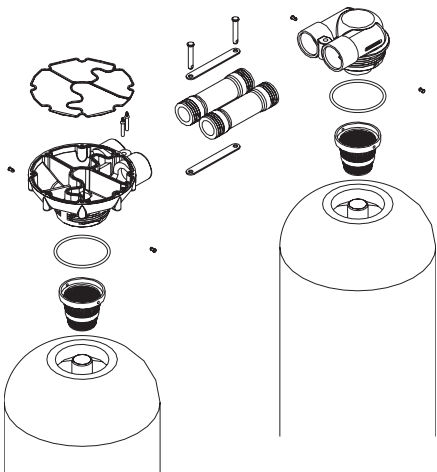
A gravel underbed is used to provide support to the lower distributor assembly. The underbed also improves flow distribution and reduces system pressure drop. Note: Garnet is used on the Macrolite systems instead of gravel.

Media

Two types of media are used. They are Carbon and Macrolite.

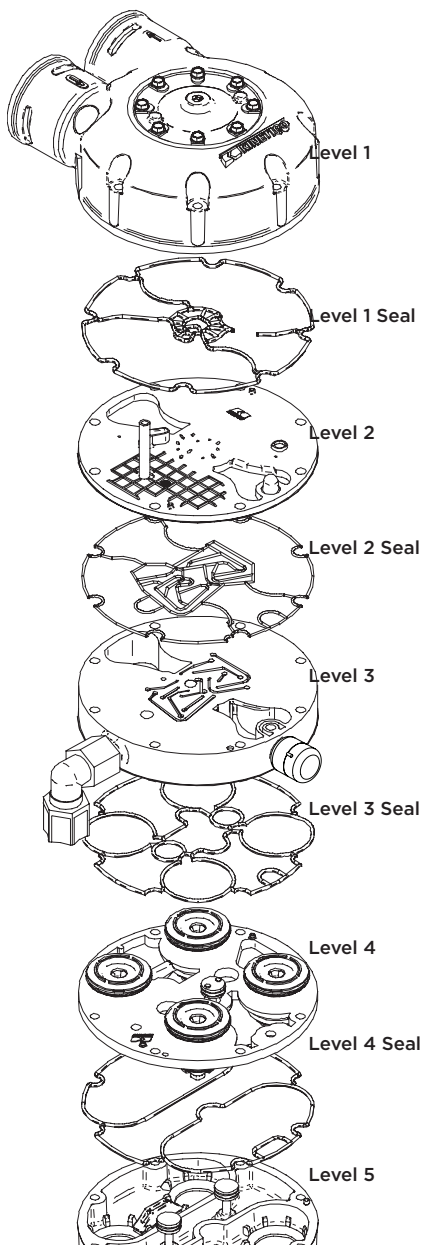
Tank Interconnection

Each twin tank system uses a set of inter-connectors to provide a water path from the main control valve to the remote tank. This interconnecting plumbing is included with the system package. It uses a double O-ring seal to provide a leak-free connection. A connector link and pins hold the pipes in place while the unit is pressurized.



Kinetico 1250 Control Valve

Operation of KineticoPRO's twin tank water filters is controlled by the Kinetico 1250 Valve. Knowledge of the basic functions and components of this valve is key to understanding system operation.



Level 1 Operation

Level 1 assembly consists of three chambers: inlet, outlet and regeneration chambers.

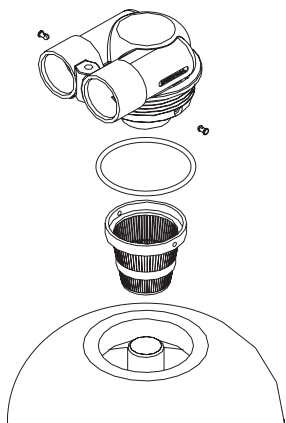
Raw water enters the inlet chamber and travels to the media tank where it is treated. Treated water moves from the media tank to the outlet chamber. Contained in the outlet chamber is a water meter turbine which turns only when water is used. Gears connect the water meter turbine to the water meter disc. When the water meter disc has advanced enough, the regeneration start pawl drops into one of the segments of the meter disc and engages with the teeth of the control disc. Once the regeneration start pawl has engaged the teeth of the control disc, both the water meter disc and the control disc advance together clockwise as water is used. They advance together until the control disc uncovers one of the holes in the ceramic disc located directly beneath the control disc. This opens the regeneration control valve, which starts regeneration.

When open, the regeneration control valve allows water to pass through a nozzle where it is directed to the regeneration turbine in the regeneration chamber. As the regeneration turbine spins, it drives the regeneration drive pawl which advances the control disc. The control disc covers and uncovers holes in a ceramic disc beneath it to open and close servo valves, completing the regeneration cycle.

It is important to realize that there are two regeneration pawls: the regeneration start pawl and the regeneration drive pawl. The regeneration start pawl advances the control disc enough to open the regeneration control valve. Once the valve has opened, the regeneration drive pawl continues to advance the control disc through the regeneration cycle.

Lower Valve Section

The lower valving section consists of Level 2, Level 3, Level 4 and Level 5 assemblies and seven valves: 2 Main Tank valves; 2 Remote Tank valves; 2 Drain valves and 1 Regeneration Control valve. These valves are controlled by the control disc and ceramic disc. There are also two Check Stems that function as one way valves (Check valves).



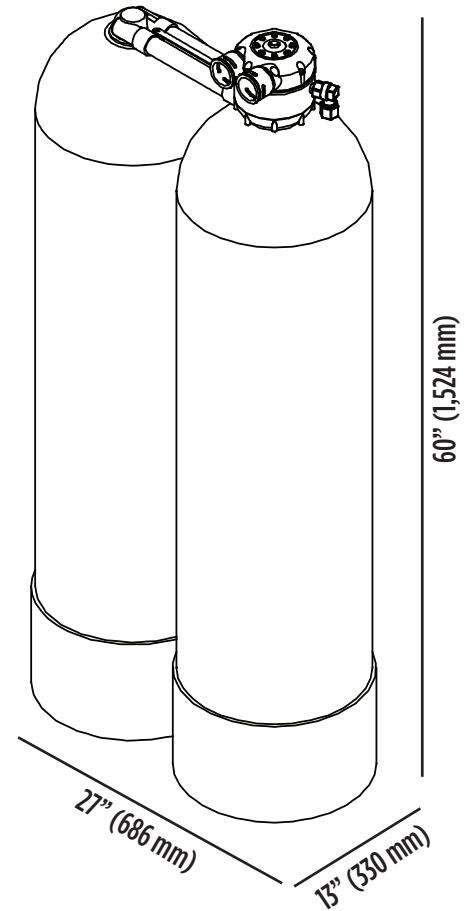
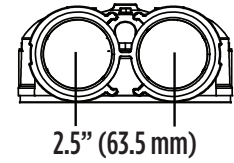
Remote Adapter

This tank adapter is used to provide a quick connection, via the interconnecting piping to the control valve.

System Specifications

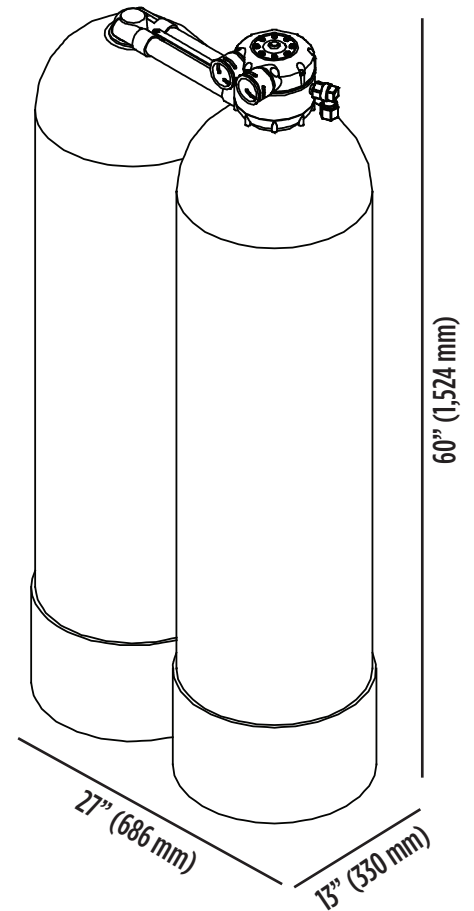
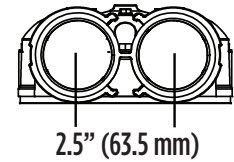
Model CP213f OD

Design Specifications								
Service Flow Rate - 15 psid (1 bar)	15.0 gpm			57.0 Lpm				
Service Flow Rate - 30 psid (2 bar)	20.0 gpm			76.0 Lpm				
Pressure Range	25 - 125 psi Dynamic Pressure			1.7 - 8.6 bar Dynamic Pressure				
Temperature Range	35° - 120° F			1.7° - 49° C				
pH Range				5 - 10 SU				
Flow Configuration				Overdrive®				
System Components								
Media Vessel (Qty. 2)	13" x 54"			330 mm x 1,372 mm				
Media Vessel Construction				Wrapped Polyethylene				
Empty Bed Volume	3.69 ft³			104 L				
Media Volume	1.50 ft³			43 L				
Under Bedding (each tank)				30/40 Mesh Garnet				
Under Bedding Volume (each tank)	0.25 ft³ (32.4 lb)			7 L (14.5 kg)				
Riser Tube	1" ABS			25.4 mm ABS				
Upper Distributor				None				
Lower Distributor	0.007" Slots, Engineered Plastic Basket			0.18 mm Slots, Engineered Plastic Basket				
Regeneration Control				Non-electric Use Meter				
Service				Downflow				
Backwash				Upflow				
Meter Type - Polypropylene Turbine (Kinetic Full Louver)	0.75 - 40.0 gpm			2.8 - 151.4 Lpm				
Connections								
Inlet / Outlet Connection				Custom Adapter and E-clip (1 1/2" Sweat Fittings Included)				
Drain Connection	0.625" Tube			15.9 mm Tube				
Brine Line Connection	0.375" Tube			9.5 mm Tube				
Power				None				
System Part Number								
CP 213f OD, No Media				11289				
Optional Accessory: Lockout Kit (For Installation with a Softener)				8070A				
Dimensions and Weight								
Overall Height	60"			1,524 mm				
Overall Width	27"			686 mm				
Overall Depth	13"			330 mm				
Shipping Weight	160 lb			72.6 kg				
Operating Weight	600 lb			272 kg				
Regeneration Specifications								
Backwash Volume	130 gal			492 L				
Backwash Time				20 min				
Backwash Flow Control	6.0 gpm			22.7 Lpm				
Disc Selection								
Meter Disc	1	2	3	4	5	6	7	8
Usable Gallons between Backwash gal (L):	13,715 (51,916.9)	6,857 (25,956.6)	4,751 (17,984.5)	3,428 (12,976.4)	2,743 (10,383.4)	2,285 (8,649.7)	1,959 (7,415.6)	1,714 (6,488.2)



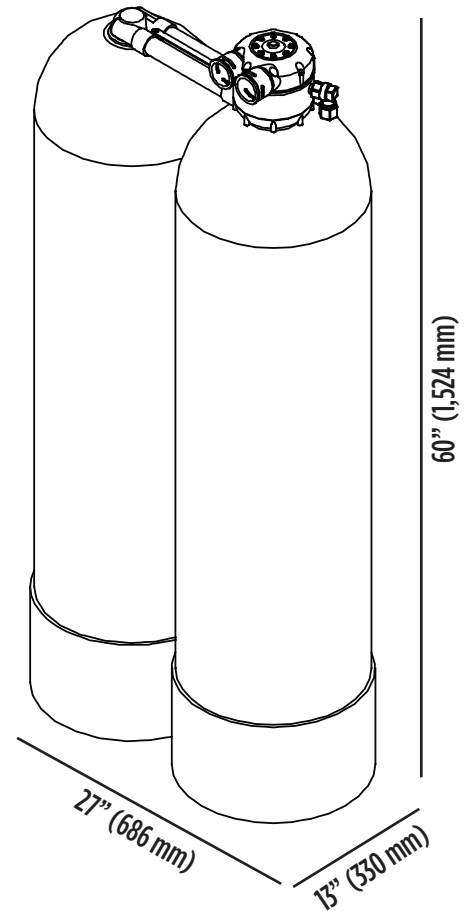
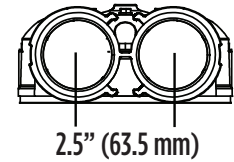
Model CP213f OD (Carbon)

Design Specifications								
Service Flow Rate - 15 psid (1 bar)	15.0 gpm	57.0 Lpm						
Service Flow Rate - 30 psid (2 bar)	20.0 gpm	76.0 Lpm						
Optimal Media Flow Rate (Service)	10.0 gpm	38.0 Lpm						
Pressure Range	25 - 125 psi Dynamic Pressure	1.7 - 8.6 bar Dynamic Pressure						
Temperature Range	35° - 120° F	1.7° - 49° C						
pH Range	5 - 10 SU							
Flow Configuration	Overdrive®							
System Components								
Media Vessel (Qty. 2)	13" x 54"	330 mm x 1,372 mm						
Media Vessel Construction	Wrapped Polyethylene							
Empty Bed Volume	3.69 ft³	104 L						
Media Type	Acid Washed Carbon							
Media Volume	2.0 ft³	57 L						
Under Bedding (each tank)	30/40 Mesh Garnet							
Under Bedding Volume (each tank)	0.25 ft³ (32.4 lb)	7 L (14.5 kg)						
Riser Tube	1" ABS	25.4 mm ABS						
Upper Distributor	0.014" Slots, ABS Basket	0.36 mm Slots, ABS Basket						
Lower Distributor	0.007" Slots, Engineered Plastic Basket	0.18 mm Slots, Engineered Plastic Basket						
Regeneration Control	Non-electric Use Meter							
Service	Downflow							
Backwash	Upflow							
Meter Type - Polypropylene Turbine (Kinetic Full Louver)	0.75 - 40.0 gpm	2.8 - 151.4 Lpm						
Connections								
Inlet / Outlet Connection	Custom Adapter and E-clip (1/2" Sweat Fittings Included)							
Drain Connection	0.625" Tube	15.9 mm Tube						
Brine Line Connection	0.375" Tube	9.5 mm Tube						
Power	None							
System Part Number								
CP 213f OD, Carbon	11244A							
CP 213f OD, No Media	11289							
Optional Accessory: Lockout Kit (For Installation with a Softener)	8070A							
Dimensions and Weight								
Overall Height	60"	1,524 mm						
Overall Width	27"	686 mm						
Overall Depth	13"	330 mm						
Shipping Weight	300 lb	136 kg						
Operating Weight	600 lb	272 kg						
Regeneration Specifications								
Backwash Volume	130 gal	492 L						
Backwash Time	20 min							
Backwash Flow Control	6.0 gpm	22.7 Lpm						
Disc Selection								
Meter Disc	1	2	3	4	5	6	7	8
Usable Gallons between Backwash gpm (Lpm):	13,715 (51,916.9)	6,857 (25,956.6)	4,751 (17,984.5)	3,428 (12,976.4)	2,743 (10,383.4)	2,285 (8,649.7)	1,959 (7,415.6)	1,714 (6,488.2)



Model CP213f OD (Macrolite®)

Design Specifications								
Service Flow Rate - 15 psid (1 bar)	15.0 gpm	57.0 Lpm						
Service Flow Rate - 30 psid (2 bar)	20.0 gpm	76.0 Lpm						
Optimal Media Flow Rate (Service)	12.0 gpm	45.4 Lpm						
Pressure Range	25 - 125 psi Dynamic Pressure	1.7 - 8.6 bar Dynamic Pressure						
Temperature Range	35° - 120° F	1.7° - 49° C						
pH Range	5 - 10 SU							
Flow Configuration	Overdrive®							
System Components								
Media Vessel (Qty. 2)	13" x 54"	330 mm x 1,372 mm						
Media Vessel Construction	Wrapped Polyethylene							
Empty Bed Volume	3.69 ft³	104 L						
Media Type	40x60 Mesh Macrolite							
Media Volume	1.5 ft³	43 L						
Under Bedding (each tank)	30/40 Mesh Garnet							
Under Bedding Volume (each tank)	0.25 ft³ (32.4 lb)	7 L (14.5 kg)						
Riser Tube	None							
Upper Distributor	0.014" Slots, ABS Basket	0.36 mm Slots, ABS Basket						
Lower Distributor	0.007" Slots, Engineered Plastic Basket	0.18 mm Slots, Engineered Plastic Basket						
Regeneration Control	Non-electric Use Meter							
Service	Downflow							
Backwash	Upflow							
Meter Type - Polypropylene Turbine (Kinetic Full Louver)	0.75 - 40.0 gpm	2.8 - 151.4 Lpm						
Connections								
Inlet / Outlet Connection	Custom Adapter and E-clip (1/2" Sweat Fittings Included)							
Drain Connection	0.625" Tube	15.9 mm Tube						
Brine Line Connection	0.375" Tube	9.5 mm Tube						
Power	None							
System Part Number								
CP 213f OD, Macrolite	11246							
CP 213f OD, No Media	11289							
Optional Accessory: Lockout Kit (For Installation with a Softener)	8070A							
Dimensions and Weight								
Overall Height	60"	1,524 mm						
Overall Width	27"	686 mm						
Overall Depth	13"	330 mm						
Shipping Weight	300 lb	136 kg						
Operating Weight	600 lb	272 kg						
Regeneration Specifications								
Backwash Volume	130 gal	492 L						
Backwash Time	20 min							
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Disc Selection								
Meter Disc	1	2	3	4	5	6	7	8
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INSTALLATION

Getting Started

The following procedures have been developed to assist during the installation of your KineticoPRO Filter.



ALL STATE AND LOCAL PLUMBING CODES MUST BE MET, including, but not limited to:

Distances that equipment should be placed from the main panel box and electrical outlets.

Air gaps that must be provided for all drain lines.

Pre-installation Review

Before beginning the installation of the KineticoPRO system, confirm system configuration to be installed and components that have been ordered. Please review KineticoPRO system specification sheets on pages 8-10 that include required components.

Review of the customer's facility is also recommended, especially critical operating data that could affect the operation of the system:



Water pressure to the KineticoPRO system affects the performance during regeneration. The KineticoPRO system will not operate properly if the inlet pressure fluctuates below a dynamic pressure of 25 psi. This minimum pressure must be maintained to the system at all times. Should the pressure fluctuate below this level, a booster pump may be required.



Do not use on water pressure that exceeds 125 psi or water temperature that exceeds 120°F.



Do not install the KineticoPRO Filter in an area where the temperature can cause the unit to freeze. Damage to the system will result.



It is recommended that a WQA certified installer perform the installation. Failure to install the system as instructed will void the limited warranty.



Proper ventilation must be provided when using PVC cleaner or glue.



A ladder should be used for all work over head that would be beyond your natural reach. If working continuously at a height of six feet or more, the appropriate safety devices must be employed.





An appliance dolly should be used when transporting equipment on stairways.



When soldering, the following MUST be met and followed:

- LEAD FREE solder must be used.
- PVC containers and other flammable materials must be closed or removed to prevent fire or explosions.
- Loose clothing (ie: shirt tails, sleeves, etc.) should not be worn or should be addressed before using a torch for soldering.
- The customer must be notified if you will be disabling smoke alarm(s) during installation. Be sure to reconnect the smoke alarm(s).
- A scorch pad must be used to protect any surface that may be exposed to a torch flame or excessive heat. Wear protective eyewear while installing to prevent eye injury caused by splattering soldering materials or metal/plastic shavings.
- Do not solder brass adapters while inserted in the module main base. Damage to the plastic and rubber parts may occur due to the heat and may result in water damage.
- The materials used in the soldering process may attack certain types of plastics. Care should be taken during the installation process to assure that solder and flux do not come in contact with media tanks, the control module and related plastic components.
- Clear an area along wall where PVC drain line will be run to floor drain. KineticoPRO does not recommend running flexible tubing across the floor or along walls, as it may be kicked out of discharge point at floor drain, or line may become pinched resulting in improper back washing.


 When installing a plastic component in line, it is recommended that grounding straps be put in place BEFORE the lines are actually cut to ensure that the ground is never broken.

 When installation is complete, plumbing lines must be chlorinated for sanitation. Common household bleach may be used. The amount of bleach will vary on plumbing size, lengths and fixtures.

 Read all steps, guides and rules carefully before installing and using the KineticoPRO Filter.


KineticoPRO Filter Installation CP213f

1. Determine location to install equipment. Make sure that the unit will be on a flat surface. Test the water to confirm unit is properly sized for the installation.

 A ladder should be used for all work over head that would be beyond your natural reach. If working continuously at a height of six feet or more, the appropriate safety devices must be employed.

2. FOR UNFILLED MODELS CP 213f:


- a. Remove module and remote base from media tanks.
- b. Properly cover the distributor tubes to prevent media from getting inside.
- c. For the Model CP 213f (carbon), place 25 lb or 0.25 ft³ of gravel into each tank.
For the Model CP 213f (Macrolite), place 0.24 ft³ of garnet into each tank.
- d. For the Model CP 213f (carbon), place 2 ft³ of media into each tank.
For the Model CP 213f (Macrolite), place 1.5 ft³ of media into each tank.
- e. Remove covering from distributor tubes, and replace the module and remote base onto tanks.


 Verify installation complies with state and local plumbing codes before continuing.


3. Install with by-pass valve. Note the inlet and outlet arrows on valve head.

4. Install a pressure gauge and sample tap in the outlet piping.


5. Connect the inlet/outlet adapters leading to the filter using the proper size plumbing. Plumb as necessary to accommodate the by-pass valve and to complete the installation. **Follow All State and Local Codes.**

 A scorch pad must be used to protect any surface that may be exposed to a torch flame or excessive heat.

 When installing a plastic component in line, it is recommended that grounding straps be put in place before the lines are actually cut to ensure that the ground is never broken.

 Do not solder brass adapters while inserted in the module main base. Damage to the plastic and rubber parts may result due to the heat. Also, the materials used in the soldering process may attack certain types of plastics. Care should be taken during the installation process to assure that solder and flux do not come in contact with media tanks, the control module and related plastic components.

 Proper ventilation must be provided when using PVC cleaner or glue.

 Loose clothing (ie.- shirt tails, sleeves, etc.) should not be worn or should be addressed before using a torch for soldering or a drill for drilling.

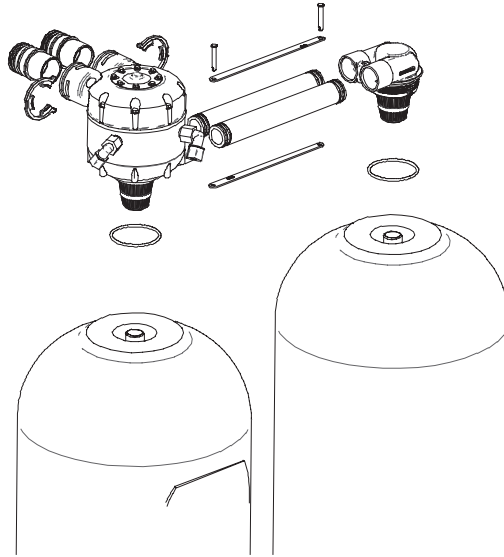
6. After all plumbing is completed, but before connecting equipment, flush both the inlet and outlet lines by opening the by-pass valve and allowing water to rinse out any debris in the lines.

7. Locate the enclosed kit containing: four O-rings, two pipes with O-rings and a silicone packet. Apply a liberal amount of silicone to the four O-rings and the O-rings on the two pipes. Install the four O-rings on the inlet/outlet adapters.

-
8. Connect the main tank with filter valve to the inlet/outlet adapter. The inlet/outlet adapter is inserted into the Control Valve and locked in place by the plastic E-clips.



It is important that the E-clips are fully inserted into the Control Valve. Check that all three tabs on the E-clips are fully inserted. Do not reuse the old E-clips, replace with new E-clips.



9. Connect the remote tank to the main tank using connector pipes, connector links and connector pins. (Always use both links.)



An air gap must be provided for all drain lines. Check local and state plumbing codes for the proper setup of drain line air gaps.

10. Run a drain line to the discharge point. **FOLLOW STATE AND LOCAL CODES.** Before connecting unit, check for any obstructions or kinks. Apply Teflon® tape to pipe threads on side of filter valve, and install the two fittings supplied. Connect drain line to valve.



On drain lines for the CP 213 that must travel more than 8 ft up and 30 ft over, it is best to take the 5/8" drain line that fits the valve and attach it in a larger diameter line or pipe.

11. Place main tank in backwash position and then open the inlet valve and then allow tanks to fill slowly with water. Water will run at the drain until unit is full and pressurized. Allow the tank to backwash for several minutes, then repeat the process with the other tank.

12. After the unit is fully pressurized, purge air from the lines by opening the filter outlet.



When installation is complete, plumbing lines must be chlorinated for sanitation. Common household bleach may be used. The amount of bleach will vary on plumbing size, length and fixtures.

13. Before leaving installation, check plumbing for leaks.

TROUBLESHOOTING

Eight steps to determine the problem...

1. Gather Information

Ask the customer questions. Any information obtained can reduce your time on the job. Many times, the customer's response to questions will allow you to skip directly to the next section.

2. Test the water

Test hot, cold and raw.

- Hot water, stored in the water heater, can tell you what the water was like yesterday.
- Cold water, directly from the filter, tells you what the water is like right now.
- Raw water, before treatment, tells you if the water to be treated has changed and if the correct meter disc was installed originally.

Is there really a problem with the filter? Or does the problem lie elsewhere at the customer site?

3. Observe the Installation

Look for customer-related problems.

- Is the by-pass open or leaking?

Look for obvious installation mistakes.

- Is the meter disc correct according to raw water?
- Is the by-pass disc correct?
- Are the inlet and outlet lines reversed?
- Drain installation - Are there any kinks, restrictions or T's from other appliances using water?

Is the unit running water to drain?

Refer to the section for problems and solutions.

4. Run the filtered water faucet

Watch the meter disc.

- Is it turning?

Watch the no back pawl.

- As the meter disc turns clockwise, the no back pawl should drop into the next tooth, preventing the meter disc from turning backwards. Does it?

Measure the metering rate.

- Wait for the no back pawl to drop into a tooth. Let the meter disc turn for another tooth or two. The approximate metering rate is shown below.

CP Filter

Model Number	CP 213f
Gallons/Tooth	143

5. Look for leaks in the piping system Make sure the customer is not using any water.

- Is the meter disc still turning?

Some leaks may be so slow that the meter disc will not turn.

- Are there any leaky faucets?
- Are there any toilets that run continuously?

Place the unit in service position (6 o'clock or 12 o'clock).

Close the filtered water side of the by-pass and leave it closed for one minute. On a Kinetico by-pass, turn it to the off position.

Open it.

- Did you hear a surge of water through the valve when it was opened? If so, there is a leak somewhere down stream.

6. Measure the water pressure Low water pressure can cause problems with the filtering process.

Measure the water pressure:

1. Adapt a pressure gauge to the brine fitting port on Level 3, if one is not installed in the outlet piping.
2. Turn on one cold water faucet wide open.
3. Place either tank in the backwash portion of cycle.
 - Did the pressure drop below 25 psi at the brine fitting?

The Kinetico valve requires a minimum of 25 psi for the CP 213 to function properly.

7. Measure backwash flow Too little backwash flow can cause problems.

Measure the amount of water coming out of the drain line during the backwash portion of cycle.

- Is it less than the backwash rate on the specification sheet?

8. Check unit shutoff The drain should be dry at the service positions (12 o'clock and 6 o'clock).

An occasional drip may occur. Measure the drip rate. There should be less than 5 ml of water collected in 22 seconds.

- Is the drain running or dripping excessively in the service positions?

Solving the Problem

Having run through the above 8 steps, you are now ready to solve whatever problems have been uncovered. The next section tells specifically how to resolve common complaints and problems with water treatment systems.

Unfiltered Water

Problem	Reason	Solution
1. Water meter disc not turning	<input type="checkbox"/> Non-conforming meter drive pawl. <input type="checkbox"/> Meter drive spring installed wrong. <input type="checkbox"/> No back pawl not installed. <input type="checkbox"/> Damaged tooth on the meter disc. <input type="checkbox"/> Damaged gear in the gearing stack.	<input checked="" type="checkbox"/> Replace meter drive pawl. <input checked="" type="checkbox"/> Reinstall meter drive spring. <input checked="" type="checkbox"/> Install no back pawl. <input checked="" type="checkbox"/> Replace meter disc. <input checked="" type="checkbox"/> Regear Level 1 Assembly and check allowable flow rates.
2. Unit will not regenerate automatically	<input type="checkbox"/> Water meter disc is not turning. <input type="checkbox"/> Control disc will not automatically advance out of service position. <input type="checkbox"/> Damaged teeth on control disc.	<input checked="" type="checkbox"/> See number 1 above. <input checked="" type="checkbox"/> Replace regeneration start pawl. <input checked="" type="checkbox"/> Replace control disc.
3. The by-pass is open	<input type="checkbox"/> An open by-pass allows water to flow around the system without any treatment at all.	<input checked="" type="checkbox"/> Close the by-pass.
4. The by-pass is leaking	<input type="checkbox"/> This can be determined by testing the water before the by-pass and after the by-pass.	<input checked="" type="checkbox"/> Repair or replace the by-pass.

Water Running to Drain

Note: With softeners and filter/softeners, start by testing the drain water. If the drain water is hard, the tank currently in service has a problem with its drain valve. If the drain water is soft, start with number 1 below.

Problem	Reason	Solution
1. The balance piston O-ring is not seated properly	<input type="checkbox"/> Water will leak past an improperly seated balance piston O-ring and out the drain.	<input checked="" type="checkbox"/> Depress the actuator several times to seat the O-ring. Replace worn or non-conforming O-ring.
2. Bad control disc	<input type="checkbox"/> A scored control disc will allow a fast drip to a pencil-sized stream to flow through the drain.	<input checked="" type="checkbox"/> Replace the control disc.
3. The drain or control valve seals are not seating properly	<input type="checkbox"/> Foreign matter under the seals will not allow them to seat properly.	<input checked="" type="checkbox"/> Disassemble and remove the foreign matter from seals or replace seals.
4. Low water pressure	<input type="checkbox"/> If the water pressure is less than 25 psi at the brine fitting, the system may not operate properly. <input type="checkbox"/> Test Backwashing Filters with the unit in Backwash and 1 faucet (cold) running water.	<input checked="" type="checkbox"/> Increase water pressure.
5. The Main Valve piston quad rings or Level 4 internal quad rings are not sealing	<input type="checkbox"/> The quad rings may be rolled, pinched, torn or just dirty. <input type="checkbox"/> The quad rings may be chloramine or chlorine damaged if on a chlorine treated water supply.	<input checked="" type="checkbox"/> Replace and re-silicone the quad rings. <input checked="" type="checkbox"/> Replace quad rings with silicone seals. Order chloramine kit, part number 10534A.

Iron Bleed-through

Problem	Reason	Solution
1. Customer plumbing	<input type="checkbox"/> Previous iron buildup inside existing plumbing after the filter.	<input checked="" type="checkbox"/> Verify that customer plumbing is the problem by testing the water quality at the 1/4" capped fitting on the Level 3 with water running.
2. The water meter disc is not set properly for current raw water conditions	<input type="checkbox"/> The composition of raw water can change with time.	<input checked="" type="checkbox"/> Check the hardness and iron content of raw water. Install the correct disc for current raw water conditions.
3. The customer's plumbing may include a galvanized pressure tank	<input type="checkbox"/> A galvanized pressure tank will create oxidized iron.	<input checked="" type="checkbox"/> Replace the galvanized pressure tank with a bladder style pressure tank.

Pressure loss

Problem	Reason	Solution
1. Media bed may be fouled	<input type="checkbox"/> The unit may not be backwashing often enough due to changed water conditions or selection of too low a meter disc.	<input checked="" type="checkbox"/> Clean up media beds and go to a higher meter disc.
2. Flint gravel underbed may have shifted	<input type="checkbox"/> The unit may have been laid on its side during shipping or installation.	<input checked="" type="checkbox"/> Re-bed the unit.
3. Drain flow is less than what is listed in the Specifications. Media beds may not be getting backwashed properly	<input type="checkbox"/> Backwash flow control plugged. <input type="checkbox"/> Drain line is restricted.	<input checked="" type="checkbox"/> Clean backwash flow control. <input checked="" type="checkbox"/> Clear any obstructions in drain line.

**On backwashing filters only, the upper baskets may need to be removed. If they are removed, watch the drain line for media loss during the backwash cycle.*

Leaks

Problem	Reason	Solution
1. Water leaks from any of the assembly levels	<input type="checkbox"/> Main Valve screws are not tightened. <input type="checkbox"/> One of the seals between assembly levels (L-1 through L-4) is pinched or missing. <input type="checkbox"/> One of the screw holes is stripped or cracked. <input type="checkbox"/> There is a crack on the seal area near a screw hole.	<input checked="" type="checkbox"/> Depressurize the unit and tighten the Main Valve screws. <input checked="" type="checkbox"/> Replace the non-conforming seal. <input checked="" type="checkbox"/> Replace the base. <input checked="" type="checkbox"/> Replace the level.
2. Water feed pressure is too high (125 psi maximum)	<input type="checkbox"/> No pressure regulator installed. <input type="checkbox"/> The pressure regulator is broken.	<input checked="" type="checkbox"/> Install pressure regulator. <input checked="" type="checkbox"/> Replace pressure regulator.
3. Water leaks at the main base or remote base	<input type="checkbox"/> The base is not tightened properly. <input type="checkbox"/> The O-ring on the base is pinched or missing.	<input checked="" type="checkbox"/> Tighten base. <input checked="" type="checkbox"/> Replace base O-ring.

Equipment Noise

Problem	Reason	Solution
1. The unit makes a squealing noise	<input type="checkbox"/> The control disc is not flat on the ceramic, causing the drain valve to flutter.	<input checked="" type="checkbox"/> Replace the control disc balance piston spring and the balance piston O-ring. You may also want to change the drain valves and seals.
2. The unit makes a gurgling, hissing or bubbling sound	<input type="checkbox"/> On new installations, there may be some air trapped in the unit initially. <input type="checkbox"/> Air is being drawn into the plumbing.	<input checked="" type="checkbox"/> Run through an entire cycle to allow the air to escape. <input checked="" type="checkbox"/> Identify air leaks in the plumbing and fix them.

Taste, Color & Odor

Problem	Reason	Solution
1. Treated water has a metallic or iron taste	<input type="checkbox"/> See the section entitled "Iron Bleed-Through."	<input checked="" type="checkbox"/> See the section entitled "Iron Bleed-Through."
2. Treated water has chlorine odor and/or taste	<input type="checkbox"/> This is due to heavily chlorinated raw city water.	<input checked="" type="checkbox"/> Install a carbon filter.

Frequent Backwashing

Problem	Reason	Solution
1. High water usage	<input type="checkbox"/> The customer may be using more water than he realizes.	<input checked="" type="checkbox"/> Obtain a water bill (if customer is on a city water system) and determine how much water should be used. Average water consumption is 75 gallons per day per person.
2. The unit backwashes too frequently	<input type="checkbox"/> Incorrectly labeled meter disc. Verify that the number of slots on the disc match the number molded on the disc.	<input checked="" type="checkbox"/> Install the correct meter disc.

Unit Sticks in Cycle

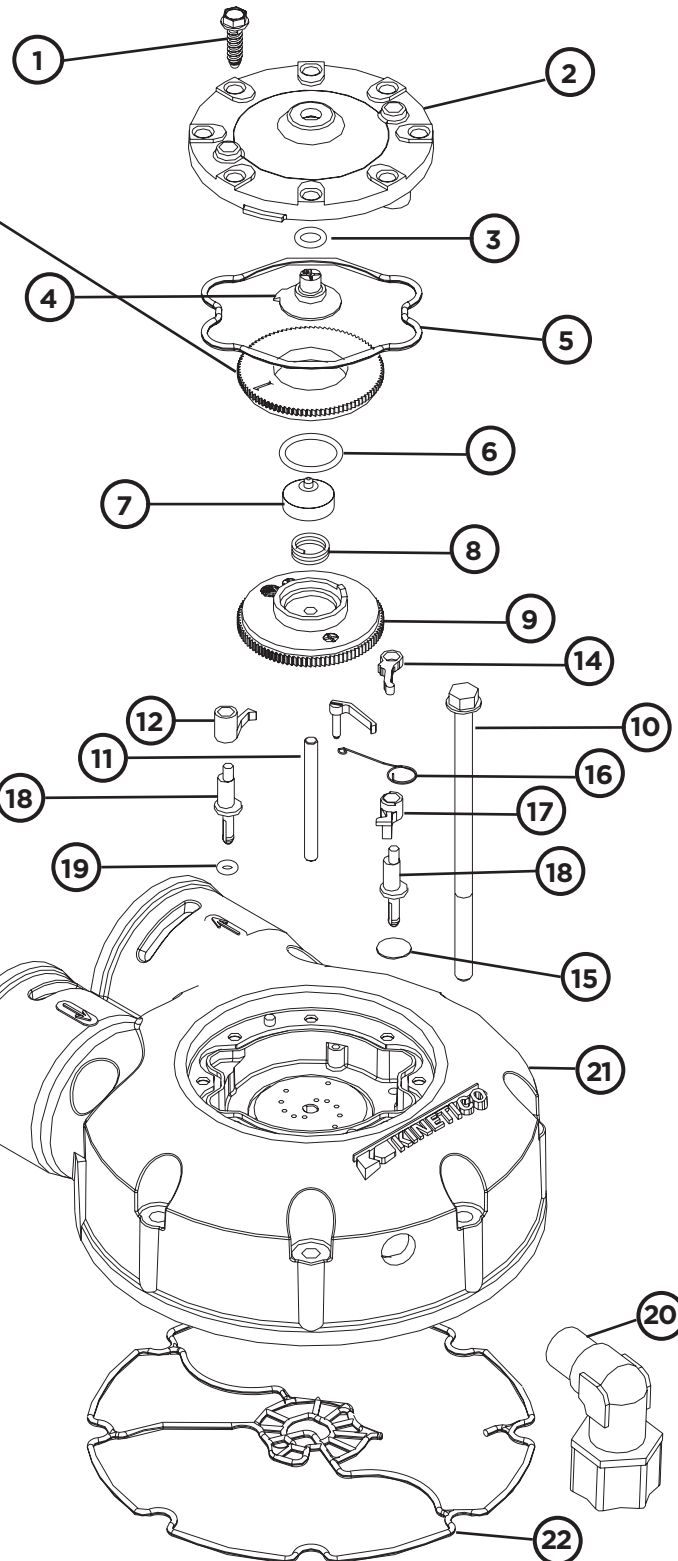
Problem	Reason	Solution
1. The unit sticks in regeneration or backwash cycle	<input type="checkbox"/> The regeneration flow path is plugged at the regeneration nozzle or flow control. <input type="checkbox"/> The regeneration drive pawl and/or spring is weak or broken. <input type="checkbox"/> There is a damaged tooth on the control disc. <input type="checkbox"/> The eccentric pinion is worn. <input type="checkbox"/> On backwashing filters, low pressure or poor backwashing may cause a plugged bed.	<input checked="" type="checkbox"/> Clean the regeneration flow path. <input checked="" type="checkbox"/> Replace the regeneration drive pawl. <input checked="" type="checkbox"/> Replace the control disc. <input checked="" type="checkbox"/> Replace the eccentric pinion (snap fit). <input checked="" type="checkbox"/> Increase inlet pressure or the frequency of backwash. Unit may need re-bedding.
2. The unit sticks in service cycle	<input type="checkbox"/> The regeneration start pawl is broken or missing. <input type="checkbox"/> The control disc has a worn or missing tooth.	<input checked="" type="checkbox"/> Replace or install the regeneration start pawl. <input checked="" type="checkbox"/> Replace control disc.

PARTS

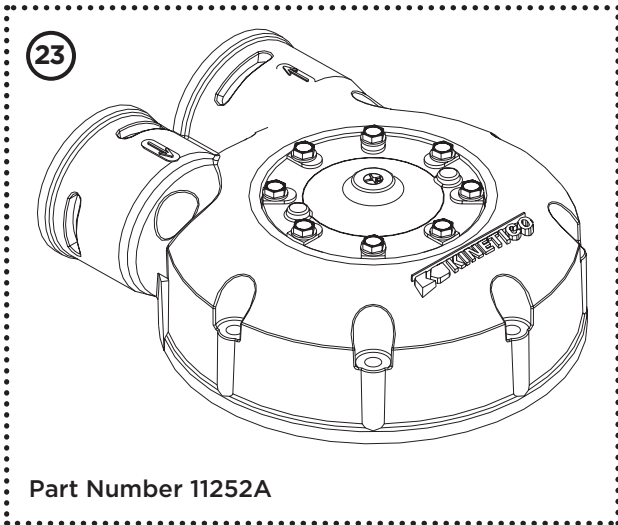
Level 1 Assembly

For Part Number 11252A only

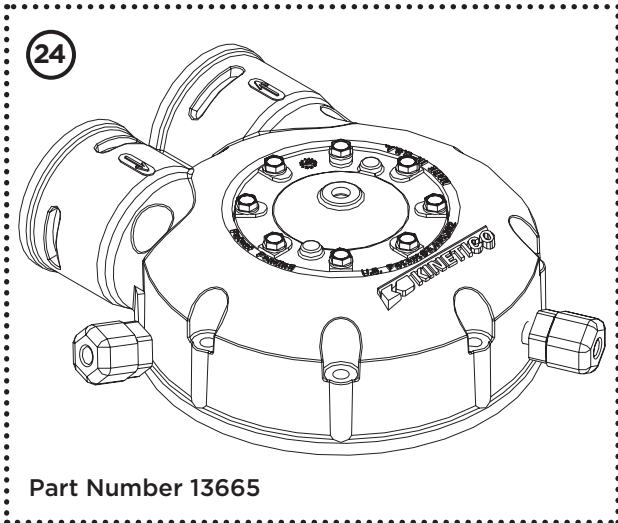
Meter Disc	Part Number
1	1504
2	1505
3	1506
4	1507
5	1508
6	1509
7	1510
8	1511



Level 1 Complete Assemblies



Complete Assembly



Part numbers can be found on parts page 20

CP Filter Series Technical Manual

Notes:

1. Metering Discs are the same for all models and should be chosen from the appropriate disc selection chart. Part numbers for meter discs are on the previous page.
2. Locate the correct part from the exploded drawing on previous page, and use it to find the correct row in the table below. The standard model number determines the correct column.

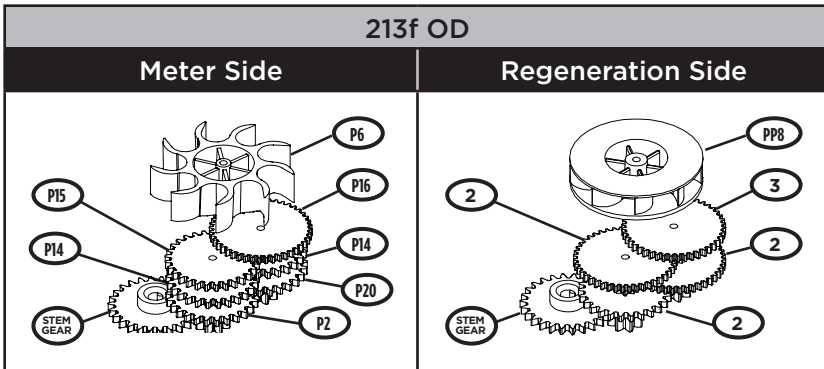
Note: The drawings are representative of Downflow Fast Rinse (DFFR) units.

Dwg. No.	Description	Qty. Req'd	Model Number	
			213f OD	213f OD Remote Start
1	Cap, Screw	8	1010	1010
2	Cap	1	8697B	8697B
3	Actuator O-ring	1	1460	1460
4	Actuator	1	9284A	9284A
5	Seal, Cap	1	8628	8628
6	O-ring, Balance Piston	1	1070	1070
7	Balance Piston	1	14927	14927
8	Spring, Balance Piston	1	5448	5448
9	Control Disc	1	8635 (purple)	8635 (purple)
10	Screw, Main Valve	8	1830	1830
11	Support Pin	1	1023	1023
12	Pawl, Regeneration Drive	1	5511	5511 (x2)
13	Pawl, No Back	1	7097	--
14	Pawl, Meter Drive	1	7014	--
15	Filter, Level 1 (35 M)	1	10781	10781
16	Spring, Meter Drive	1	7010A	--
17	Pawl, Regeneration Start	1	1783	--
18	Eccentric Pin	2	1520	1520
19	Regeneration O-ring	1	2657	2657
20	Elbow, Level 1 Drain, ½"	1	72631	72631
21	Level 1 Shell	1	1111A	--
22	Level 1 Seal	1	8471	8471
23	Level 1 Assembly UT	1	11252A	--
24	Level 1 Assembly OD, Remote Start	1	--	13665
--	Meter Nozzle	1	11019	--

Notes:

1. Use the model number to locate the correct set of drawings.
2. Use the side (Meter and Regeneration) to locate the correct stack.
3. Use the table to correlate drawing number to part number.

Gearing Stacks



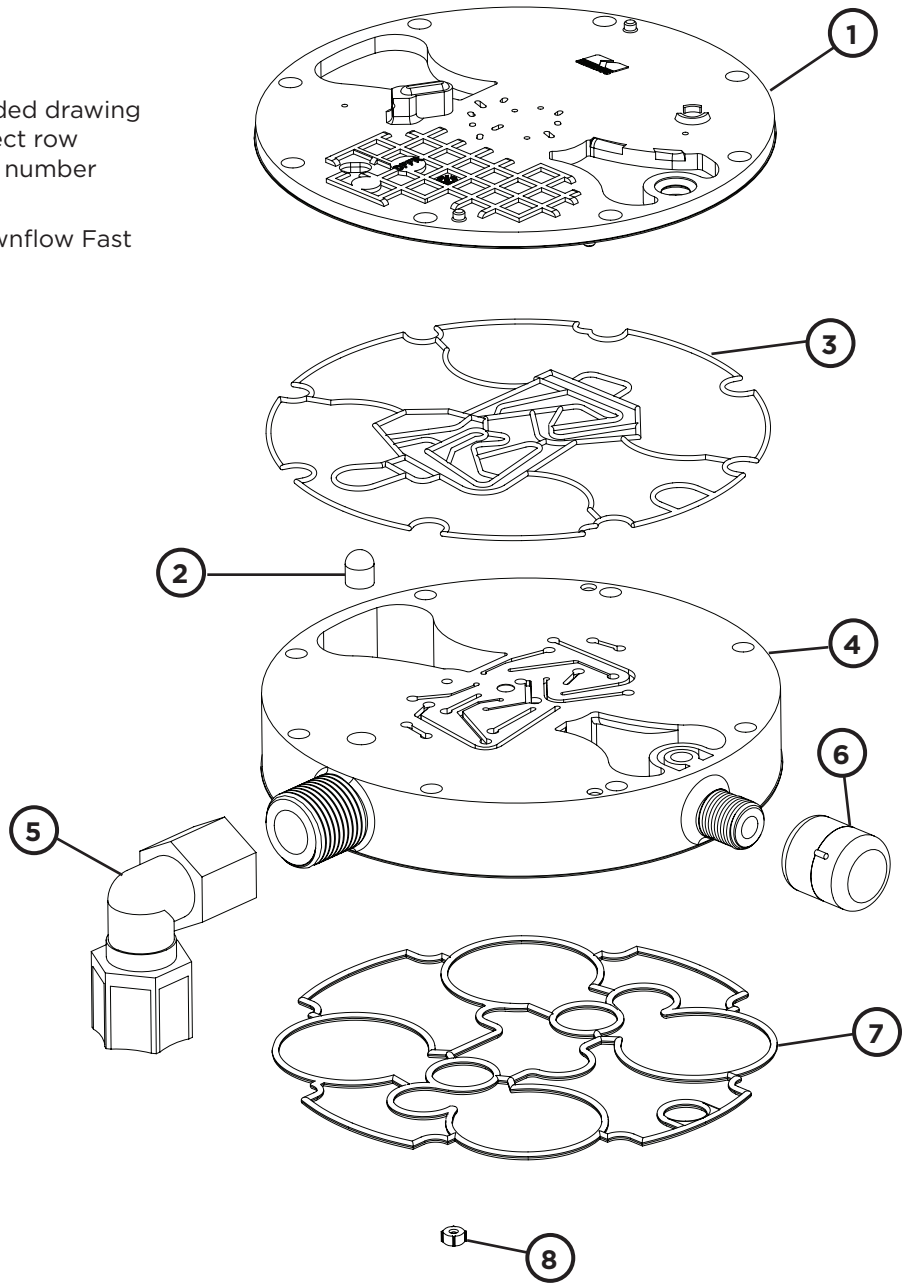
Description	Part Number
Gear #1	1522
Gear #2	1523
Gear #3	1524
Gear #4	1525
Gear #P2	7886A
Gear #14	7894A
Gear #P15	7895A
Gear #P16	7896A
Gear #P20	7898A
Gear #5	1526
Gear #6	1527
Gear #7	1528
Turbine #P6	7855A
Turbine #PP8	9272A
Turbine #PP9	9258
Stem Gear	1521
E-rings	1022
Washers	1773
Meter Turbine Retainer	7859

Note: Meter gearing does not apply to Level 1 with Remote Start. Regeneration gearing is the same for both types of Level 1.

Level 2 and 3 Assemblies

Notes:

1. Locate the correct part from the exploded drawing on the right, and use it to find the correct row in the table below. The standard model number determines the correct column.
1. The drawings are representative of Downflow Fast Rinse (DFFR) units.

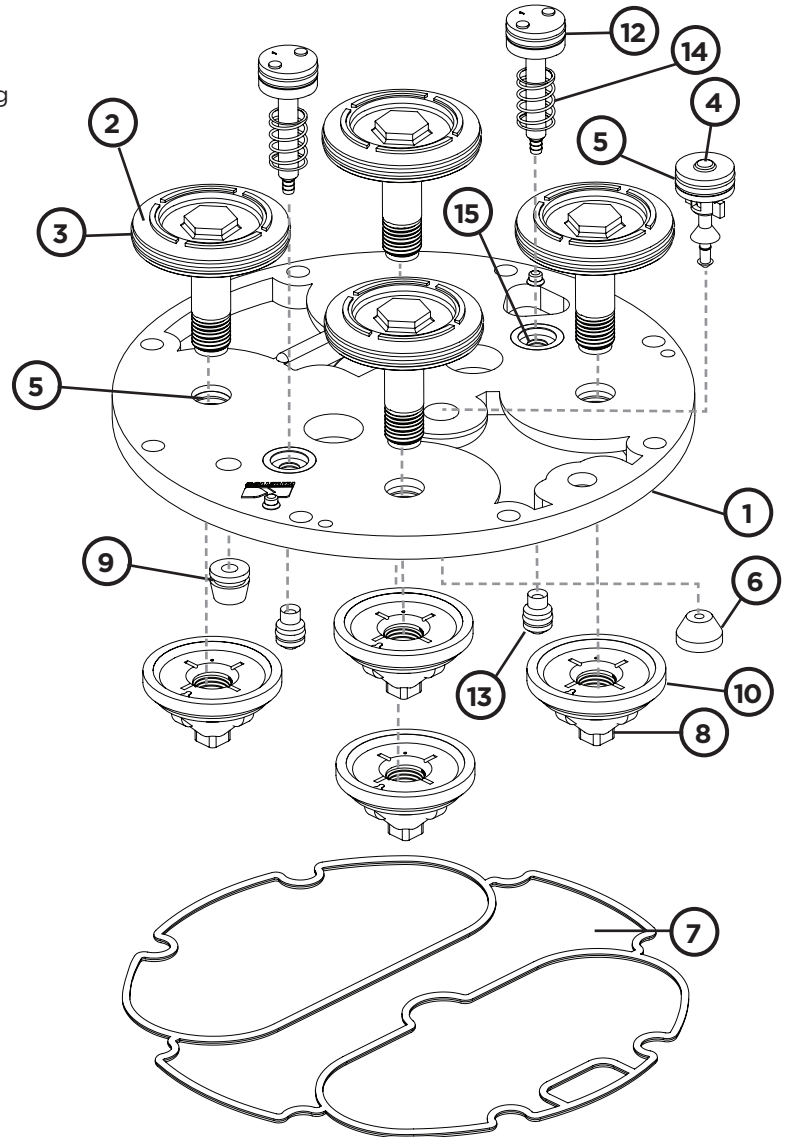


Dwg. No.	Description	Qty. Req'd	Model Number
			213f OD
1	Level 2	1	8603A
2	Level 3 Vent Plug	1	7624
3	Level 2 Seal	1	8618
4	Level 3 with 1/2" Drain	1	8653C
5	Drain Elbow	1	7873
6	Brine Cap Fitting	1	1771A
7	Level 3 Seal	1	8619
8	Regeneration Flow Control	1	6587

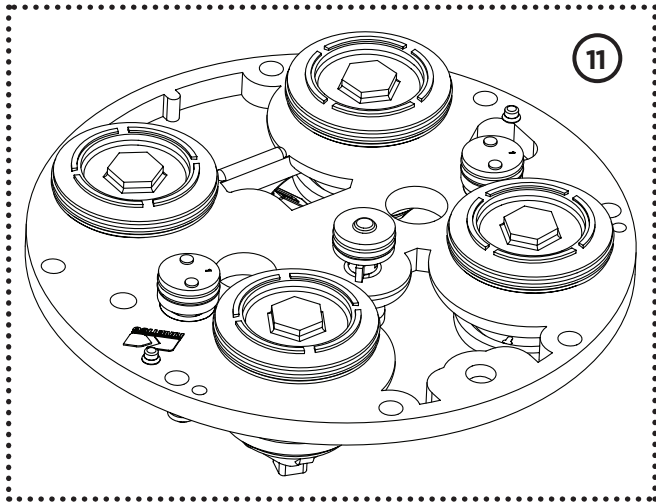
Level 4 Assembly

Notes:

1. Locate the correct part from the exploded drawing on the right, and use it to find the correct row in the table below. The standard model number determines the correct column.
2. The drawings are representative of Downflow Fast Rinse (DFFR) units.



Complete Assembly

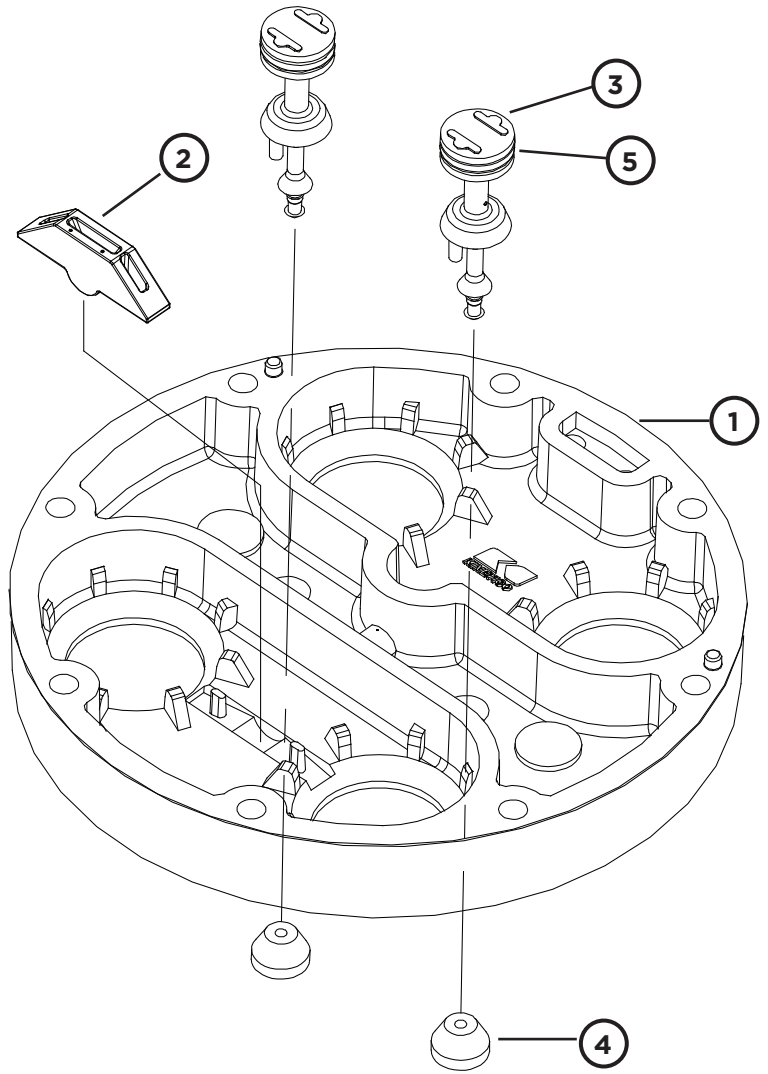


Dwg. No.	Description	Qty. Req'd	Model Number
			213f OD
1	Level 4 w/Retainers	1	11819
2	Main Valve Piston	4	17398
3	Quad Ring 125, Piston	4	1550
4	Control Valve - Spring Loaded	1	13720A
5	Quad Ring, Drain/Control Valve	2	1590
6	Seal, Drain/Control Valve	1	7869
7	Level 4 Seal	1	8632
8	Main Valve Seat	4	13696A
9	Flow Control, Backwash	1	1584 (6x red)
10	Main Valve Seat Seal	4	7865
11	Level 4 Assembly	1	9086B
12	Purge Valve Body w/Quad	2	8657
13	Purge Valve Head w/Seal	2	8656
14	Purge Valve Spring	2	8624
15	Quad Ring, Purge Valve	2	8654

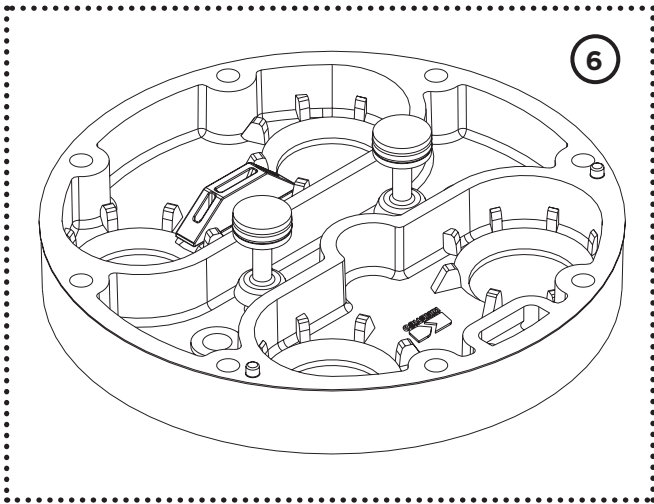
Level 5 Assembly

Notes:

1. Locate the correct part from the exploded drawing on the right, and use it to find the correct row in the table below. The standard model number determines the correct column.
2. The drawings are representative of Downflow Fast Rinse (DFFR) units.



Complete Assembly

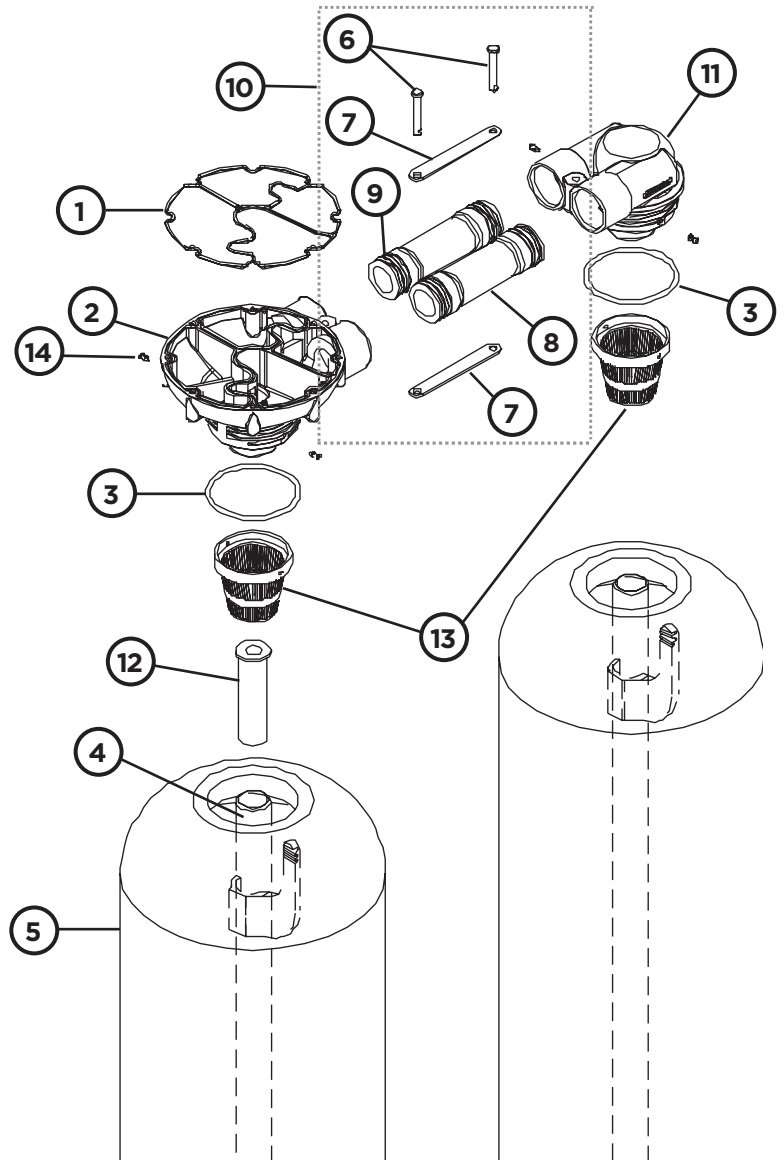


Dwg. No.	Description	Qty. Req'd	Model Number
			213f OD
1	Level 5 DFFR	1	8612A
2	Interlock	1	9261
3	Drain Valve w/Quad	2	7872A
4	Drain/Control Valve Seal	2	7869
5	Quad, Drain/Control Valve	2	1590
6	Level 5 Assembly	1	8695

Bases, Tanks and Tubes

Notes:

1. Locate the correct part from the exploded drawing on the right, and use it to find the correct row in the table below. The standard model number determines the correct column.
2. The drawings are representative of Downflow Fast Rinse (DFFR) units.



Dwg. No.	Description	Qty. Req'd	Model Number
			213f OD
1	Seal, Main Base	1	8620
2	Main Base, Standard	1	8651D
3	O-ring, Base	1	8925
4	Distributor Tube	2	8322A-CAR 11360-Mac
5	Media Tank	2	13417
6	Connector Pin	2	4742
7	Connector Link	2	8079
8	Connector Pipe	2	13675
9	O-ring, Connector	4	1328
10	Kit, Tank Connector	1	11042
11	Remote Base	1	13705A
12	Flow Restrictor	1	---
13	Upper Distributor	2	2160A (carbon only)
14	Distributor Clip	4	10279

Notes:



Owner's Manual

Commercial Plus Filter Series

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Product No. 11248D
Rev. 02.01.2023