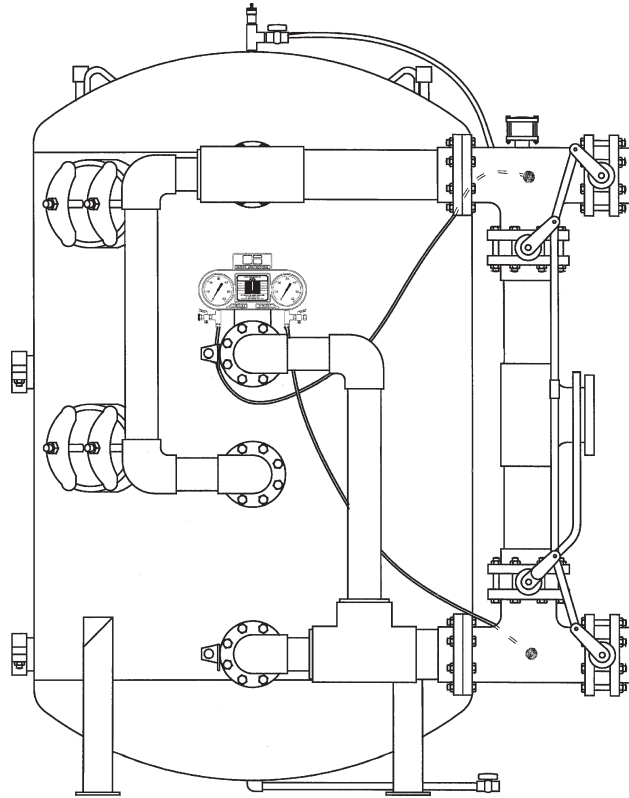


# Commercial Hi-Rate Dual Cell Permanent Media Filters



## Operating and Maintenance Manual

Owner:

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Contractor:

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Equipment Supplier:

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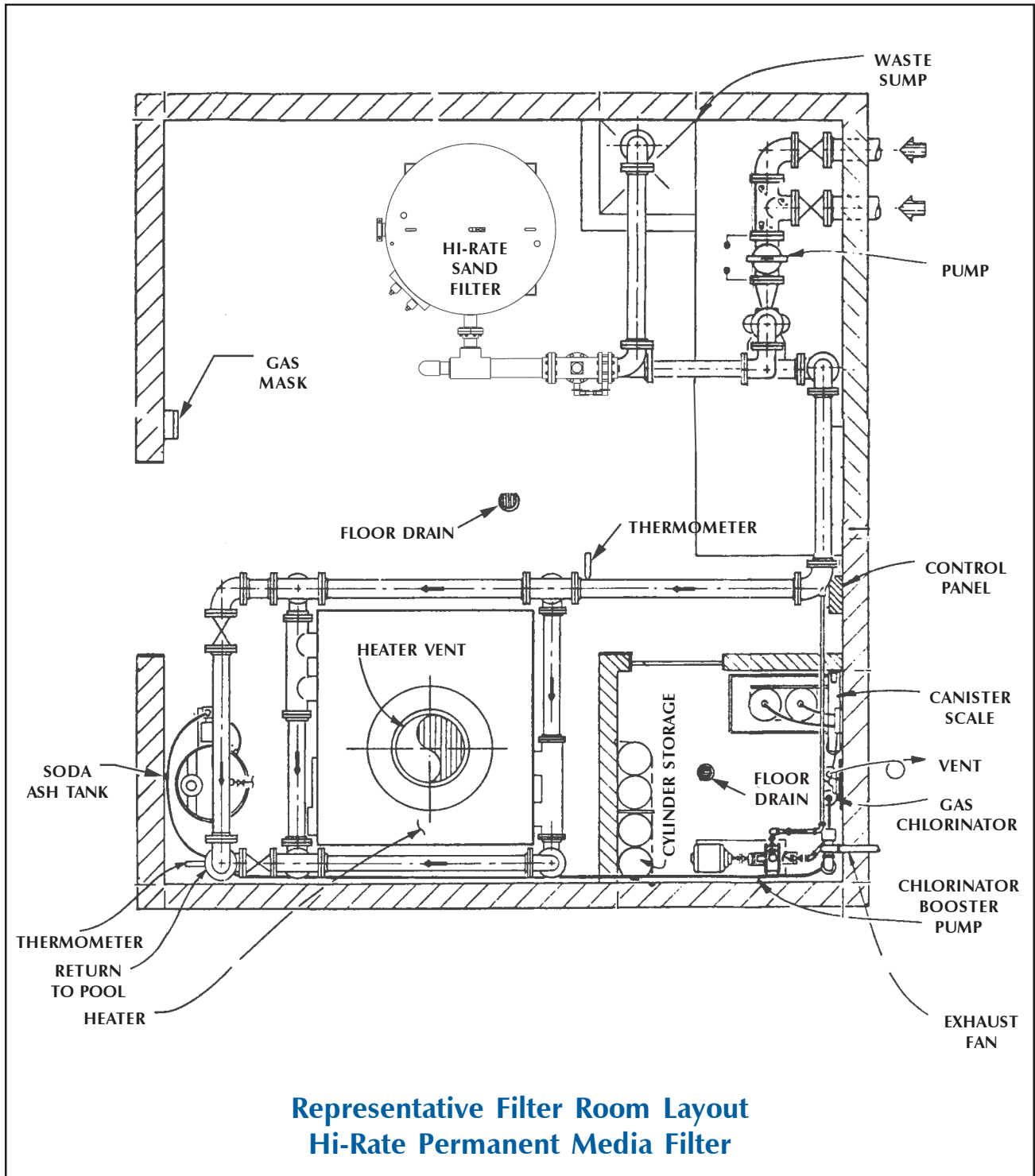


## Table of Contents

Typical Filter Room Layout .....	3
Dual Cell Filter Specifications.....	4
Internal Components Installations Procedure .....	6
Filter Assembly Procedures .....	7
Gauge Panel Assembly.....	8
Gauge Panel Hook-Up Procedure.....	9
Anode Inspection and Replacement .....	9
Filter Capacity & Valve Sequence Charts.....	10
Initial Filter Operation .....	11
Filter/Backwash Operation .....	12
Troubleshooting Guide.....	13
Single Lever Linkage Adjustment .....	13
Face Pipe Assembly: Bolt Torque .....	14
Internal Replacement Parts.....	15
Linkage Assembly.....	17
Typical Daily Operation Log .....	18



# Typical Filter Room Layout



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# Dual Cell Filter Specifications

## Part I - General

### Prologue:

.01 It is the intent of these specifications to describe a swimming pool High-Rate Sand Filter constructed of A-36 carbon steel.

.02 This specification includes but is not limited to the following components:

- Filter Tank
- Interior Lining
- Interior Distribution System
- Face Piping with Valves
- Single Lever Control Linkage
- Fully Automatic Backwash
- Backwash Alarm Unit
- Filter media

.03 The filter system described in these specifications reflect the Model #HRL2C series filter, fabricated by Eureka Manufacturing Company, Eureka, South Dakota.

.04 It is not the intent of these specifications to limit competition. Any substitute system must be approved by the Architect/Engineer ten (10) days prior to the bid date. All base bids must include the specified filter. Any substitutes shall be quoted by the bidding contractors as an alternate.

### Reference:

.01 The following standards shall be incorporated herein, but not limited to:

- NSF - NSF *International*
- AISI - American Iron and Steel Institute
- ANSI - American National Standards Institute
- AWS - American Welding Society
- ASTM - American Society for Testing Metals
- ASME - American Society of Mechanical Engineers

### Quality Assurance:

.01 The manufacturer shall have a minimum of ten (10) years experience in the fabrication of High-Rate Sand Filters for public swimming pools. The filter system shall be of the vertical type and be tested and Certified by NSF *International* for a maximum flow of 20 gallons per minute per square foot of filter area.

.02 The hydraulic calculations shall be performed to assure compliance with code requirements as well as guarantee the proper recirculation rates.

.03 The loading and storage of the filter system shall be performed by the contractor. The materials shall not be stacked or stored in a manner that may cause damage.

### Submittals:

.01 Product data and shop drawings: Submit product data, shop drawings and installation instructions for the filter and related components clearly indicating rated capacities, gauges of material, finishes, etc. . .

### Warranty:

.01 The filter(s) shall be guaranteed by the manufacturer for workmanship, materials and performance for a period of \_\_\_\_ ( ) years. The warranty will not include abusive or improper treatment of the filter during construction or under operation. The company shall have no liability to correct any damage caused by neglect, misuse, improper chemical treatment of pool water, or any other external causes. Failure to conduct regular anode inspection and replacement shall be considered abuse under the terms of the warranty agreement.

.02 The manufacturer shall provide complete instructions detailing proper care, maintenance and cleaning of the filter system.

## Part II - Products:

### Filter System Capacity:

.01 The filter system shall consist of \_\_\_\_ ( ) filter tank(s), complete with face piping, operating valves, complete gauge panel with 4.5" gauges, automatic air relief vent, backwash sight glass, bottom drain connection with internal media retainer, and internal distribution system.

.02 The system shall be fabricated and fully assembled by the original equipment manufacturer. The face piping and system accessories shall be removed from the system and shipped individually. The collection and diverter headers are to be factory installed and internally braced for transit.

### Filter Area:

.01 The filter system shall consist of \_\_\_\_ ( ) High-Rate permanent media filter(s), each with two cells, with a total effective area of \_\_\_\_ sq. ft. When operating at \_\_\_\_ gpm per square foot of filter area the filter system will have a capacity of filtering \_\_\_\_ gallons in \_\_\_\_ hours.

### Filter Tank:

.01 Two (2) standard 12" x 16" manways complete with flange, steel cover, gasket, bolts, nuts and yokes, shall be located in the side shell.

.02 The filter tank(s) shall be \_\_\_\_ in diameter with a side shell height of \_\_\_\_ and shall be constructed of high quality type A36 carbon steel. The tank shall be \_\_\_\_ thick. Dished and flanged heads shall be \_\_\_\_ thick. The tank(s) shall be suitable for a working pressure of 50 psi and hydrostatically tested at 75 psi.

.03 A media dump port and drain shall be provided in the side shell. Influent and effluent connections shall be located in the tank side shell and shall be schedule 80 steel pipe.

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# Dual Cell Filter Specifications



.04 Each filter tank shall be equipped with replaceable sacrificial anodes that protect the tank from corrosion caused by electrolysis.

.05 Filter tank(s) shall be supported by angle iron legs up to and including 120".

## **Interior Lining:**

.01 All interior, wetted surfaces of the filter tank(s) and all penetrations shall be degreased and sandblasted prior to lining installation.

.02 Tank lining shall be an epoxy-type coating, and shall be applied to all wetted surfaces of the tank and tank penetrations in two successive coats. Twelve hours curing time shall be allowed between coats, and the total thickness shall be 8 to 12 mils.

.03 The finished lining shall be smooth, dust free, and completely nontoxic. The lining shall be visually examined and spark tested for pinholes.

## **Exterior Coating:**

.01 The filter shall be painted with one (1) coat of zinc oxide primer by the original equipment manufacturer.

## **Internal Distribution System:**

.01 Filter internal equipment shall include an upper distribution assembly and a lower collection system, hydraulically balanced to prevent turbulence and/or displacement of the media during filtration. Standard pipe arrangement or internal valving systems will not be acceptable.

.02 The upper distribution system shall include hydraulic injection molded ABS plastic distribution lenses located uniformly over the filter bed. They shall be joined to the influent connection by means of a schedule 80 PVC pipe header.

.03 The lower collection system shall consist of a schedule 80 PVC pipe header and cyclac laterals designed to retain the filter media with minimum head loss. The internal distribution system shall be designed to promote media bed circulation during backwash.

## **Face Piping with Valves:**

.01 The Hi-Rate Sand Filter(s) shall be provided with all the necessary face piping and valves which shall be pre-assembled by the original equipment manufacturer. The piping shall consist of schedule 80 PVC pipe with standard PVC fittings and a sight glass.

.02 Face piping shall be \_\_\_\_\_ inch I.P.S. with flanged fittings, mating influent and effluent connections on the filter tank.

.03 The butterfly valves up to and including 8" shall be of the wafer type with a PVC body, PVC disc, stainless steel stem, with a 100 psi bubble tight shut off.

.04 Piping is to be drilled and tapped at the influent and effluent ports to accommodate gauge panel tubing.

.05 A sight glass designed for 150 psi working pressure shall be fitted on the backwash line. It shall consist of a 1.5" I.P.S. cast brass base and cap with a 3" diameter lens.

## **Single Lever Control Linkage:**

.01 The linkage shall consist of a unilever operator linkage complete with double operator arms of aluminum which shall be heat treated to a T6 temper for strength and durability. Couplings and jam nuts shall be provided to facilitate adjustment of linkage. Connecting rods and high strength shear pins shall also be provided.

.02 Valves shall be set to move concurrently with one pair opening and the other pair closing to avoid water hammer and to simplify operation.

## **Fully Automatic Backwash:**

.01 (*option*) The automatic backwash controller shall switch the filter system from filtration to the backwash cycle. Electronic systems control the timing and duration of the backwash while automatically interrupting operation to a safe mode if failure occurs.

## **Backwash Alarm Unit:**

.01 (*option*) The backwash alarm unit shall function on a preset pressure differential. When the preset high is reached on the differential switch it will alert the operator with a pulse type audible beeper. The unit shall continue to beep until the filter is backwashed thoroughly enough for the differential pressure to return to normal and allow the panel to reset itself. All components are to be enclosed in a weather resistant box. Incoming power is 120V, and all components are reduced to 12V for safety.

## **Filter Media:**

.01 (*not included*) Filter media shall consist of uniformly graded silica sand which shall be free of limestone or clay. Filter media shall be grade #20, effective size of .45 - .55 millimeter with a uniformity coefficient of 1.6 maximum. Support media shall be hard, uniformly graded 1/8" to 3/8" gravel. No limestone or clay shall be present. Alternative media must be approved by Eureka Manufacturing Company.

## **Part III - Execution:**

### **Quality Control:**

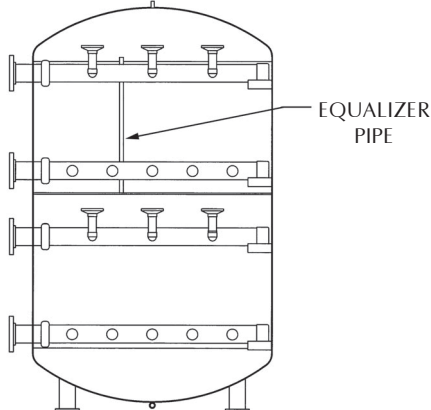
.01 The entire filter system shall be inspected prior to shipment to verify compliance with the fabrication drawings.

.02 The filter manufacturer shall provide an operating and maintenance manual with the system. This document shall include a list of replacement parts and instructions regarding the operation and maintenance of the system.

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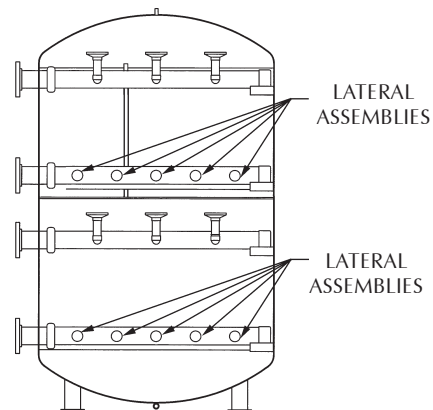
## 1. Equalizer Pipe Installation



1. Thread equalizer pipe into plate in top cell, as illustrated above.

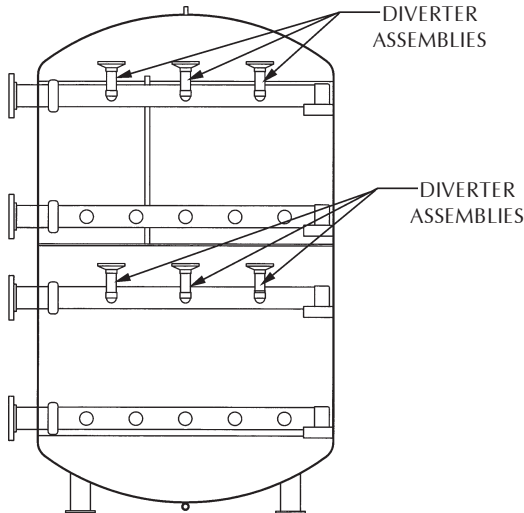
**NOTE:** Throughout the installation process, the installer must be careful not to step on any laterals during this procedure. The laterals may crack under the weight. Cracked laterals are a serious problem and must be replaced before the filter will operate properly.

## 2. Lateral Installation



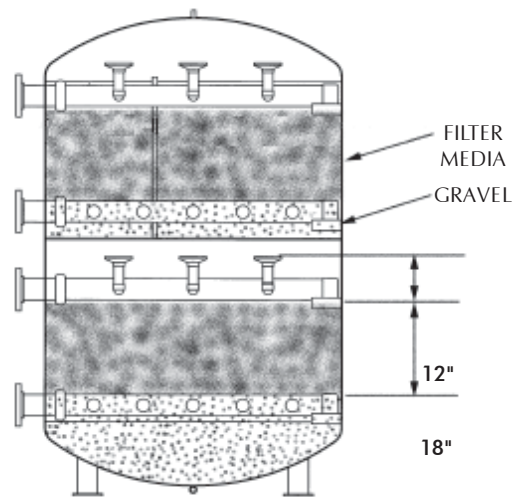
1. Carefully begin to fill the lower portion of the tank with the specified pea gravel. Continue to fill the tank with gravel until it is nearly level with the bottom of the effluent header.
2. Remove plastic sleeving from laterals and effluent header.
3. Begin threading laterals into position at one end, and work toward opposite end. Care must be taken not to cross thread laterals into header. Do not stand on lateral assembly at any time, as excess weight concentrations can cause damage to the parts. Slots in lateral assemblies must face down to ensure proper filter operation.
4. Repeat steps 1-3 in the remaining cell.

## 3. Diverter Installation



1. Remove plastic from influent header.
2. Begin threading diverters into the diverter header. Begin at one end, and work toward the opposite end. Do not install the diverter nearest the manway. This will be done later.
3. Cover the uninstalled diverter's hole in the influent header with tape.
4. Repeat steps 1-3 in the remaining cell.

## 4. Media Installation



1. Gently pour pea gravel into the filter until all laterals are covered. Again, be extremely careful not to crack the laterals. Continue filling tank with pea gravel until the gravel is level with the top of the effluent header.
2. Fill cell with recommended filter media until the level is approximately 18" deep, and 12" from the top of the diverters.
3. Install the last diverter in the influent header.
4. Repeat steps 1-3 in the remaining cell.



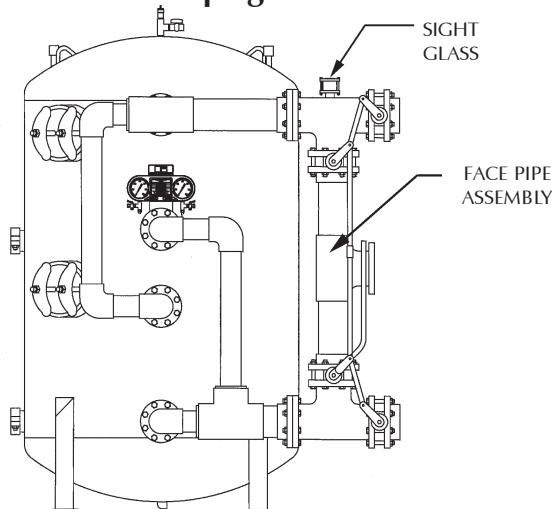
# Filter Assembly Procedures

5.

## Manifold Assembly & Drain Pipe Installation

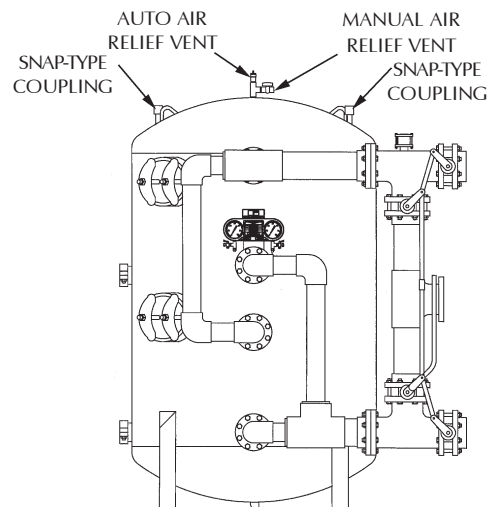
1. Install the effluent manifold and backwash valves to filter. The valves must be installed with handles on the left hand side when facing tank, with handle down when closed and facing away from tank when open. Use longer bolts on the top 2 holes on upper effluent flange for mounting gauge panel later. Do not tighten bolts at this time simply snug flanges securely.
2. Fasten the influent manifold to filter at this time. Do not tighten bolts at this time simply snug flanges securely.
3. It is recommended that a 3/4" pipe (not included) be threaded into the 3/4" threaded elbow at the bottom of each tank. It is further suggested that a valve (not included) be added to the pipe in order to ensure that winterization and maintenance procedures may be performed. See the "Front View" illustration above.

## 6. Face Piping Installation



1. Orient the face pipe assembly with the influent gauge port and sight glass ports on the uppermost tee.
2. Fasten to the filter manifolds using the supplied bolts and gaskets. Snug flanges securely.
3. Tighten all Bolts on the influent and effluent manifolds and face pipe assembly at this time. Review the Bolt Torque Recommendations on page 14.
4. Install the sight glass using thread sealant. Be careful not to cross thread the sight glass.

## 7. Anode and Air Relief Assembly



1. Snap open couplings on the anode ports in the top head and remove plugs. Thread one anode into each plug. Insert plugs and anodes into tank and close each coupling.
2. Using pipe thread sealant, thread the air relief assembly onto the relief port on top of filter. Connect supplied drain hose to the air relief valve vent and run the hose down the side of tank toward a floor drain. Ensure that the small cap on the air relief vent has been removed.

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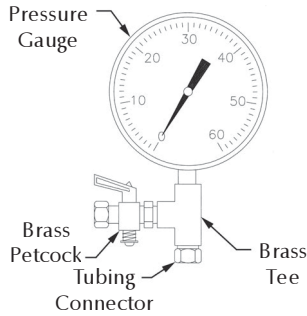
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# Gauge Panel Assembly

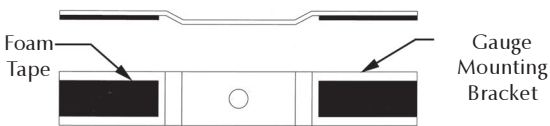


## 8. Air Bleed Assembly



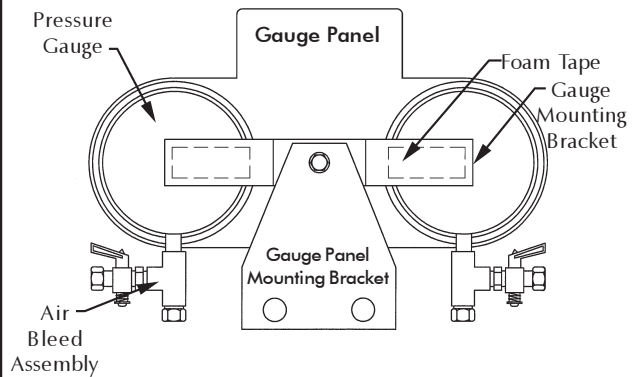
1. To build air bleed assemblies, attach one brass tee to one pressure gauge.
2. Screw one brass petcock into the side of the tee as illustrated.
3. Attach the tubing connector to the lower end of the tee.
4. Repeat steps 1 through 3 to build the opposite air bleed assembly. Refer to illustration above.

## Gauge Bracket Preparation



1. Apply foam tape to the gauge mounting bracket as illustrated above.

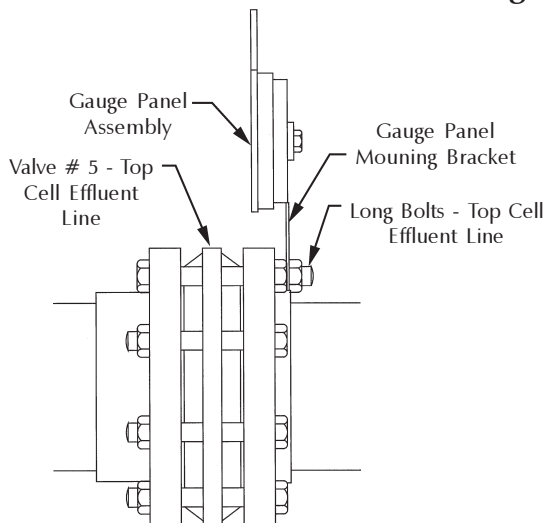
## 9. Gauge Panel Assembly



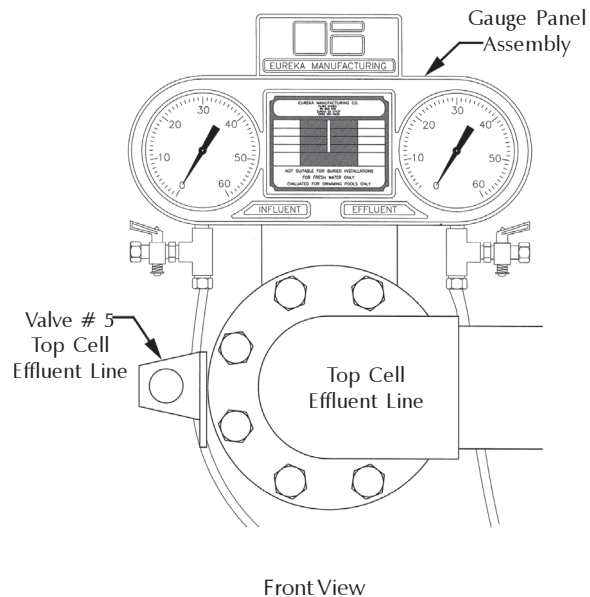
1. Construct the gauge panel assembly. Lay the gauge panel face down on a flat surface. Insert the gauges complete with air bleed assemblies into the panel as illustrated above.
2. Lay the mounting bracket, tape side down, atop the gauges. Place the gauge panel mounting bracket atop the gauge mounting bracket. Ensure that both brackets are straight.
3. Affix the brackets to the gauge panel with the supplied bolt and lockwasher.

## 10.

## Mounting the Gauge Panel



1. Slip the gauge panel mounting bracket onto the two long bolt legs extending from the top cell's effluent flange.
2. Affix the gauge panel assembly with nuts provided as shown.
3. Install pressure gauges, gauge panel assembly and influent and effluent lines as instructed in step 13.



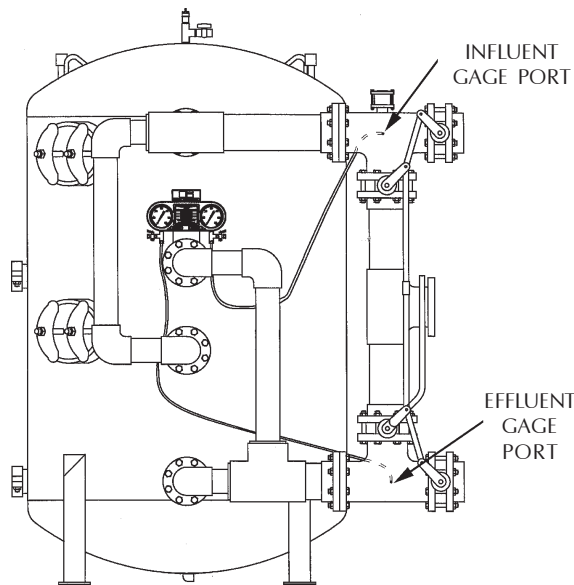
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# Gauge Panel Hook-Up Procedure

## 11. Pressure Gauge Hook-Up



1. Install tubing connectors into the influent and effluent gauge ports tapped into the face pipe assembly.
2. Attach one length of tubing to influent gauge at the lower leg of the brass tee. Use enough tubing to make smooth bends: be careful not to kink tubing. Attach the other end of this length of tubing to the influent gauge port on the upper tee of the face pipe assembly.
3. Attach one length of tubing to effluent gauge at the lower leg of the brass tee. Use enough tubing to make smooth bends: be careful not to kink tubing. Attach the other end of this length of tubing to the effluent gauge port on the upper tee of the face pipe assembly.
4. Position the air bleed valves in the closed position.
5. Run the filter through the initial start-up procedure detailed on page 11.
6. After the filter has run to waste, then thoroughly backwashed, air must be bled from the influent and effluent gauge lines. While the system is in the filter mode, open one petcock and release all air. Close petcock. Repeat with the remaining line. This procedure will help ensure accurate pressure gauge readings.

### SACRIFICIAL ANODES MUST BE INSPECTED AND REPLACED REGULARLY

Each tank is equipped with two or more sacrificial magnesium anodes which help extend the life and usefulness of your filter(s). The anode(s) is installed through the top of the tank, but is designed to be serviced and inspected from the outside.

It is essential that the sacrificial anodes are inspected no less than once every six months. If the anode's diameter has increased, or if its surface has a honeycomb-like texture, or if it appears to have been eaten away, the anodes must be replaced. Failure to conduct regular inspection and replacement shall be considered abuse under the terms of the warranty agreement.

### YOU MUST FOLLOW THE SAFETY PROCEDURES BELOW BEFORE ANODE INSPECTIONS AND/OR REPLACEMENT

Before inspecting the anode, it is necessary that you check your system to ensure that there is no pressure in the tank. Relieve the pressure through your automatic air relief vent, or through manual bleeders. Then, check your pressure gauges to ensure that there is no pressure in the tank before proceeding.

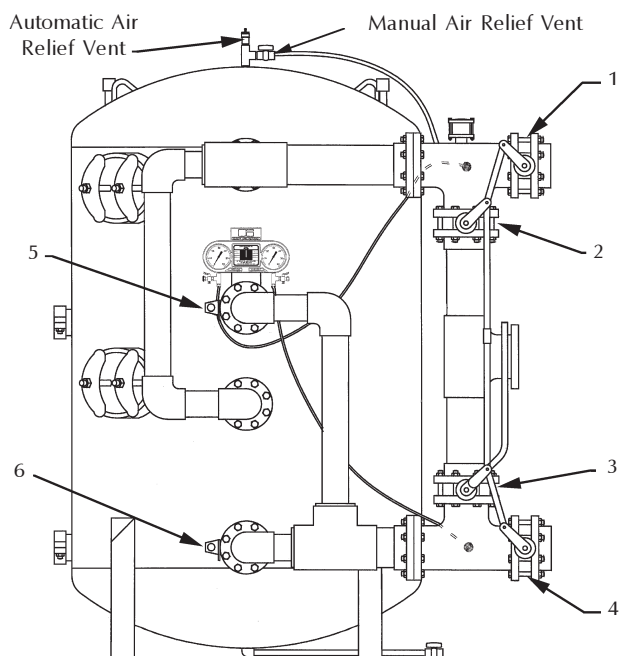
If you fail to follow these safety precautions, the anode could be forced up and out of the tank due to the pressure within the system, like a champagne cork popping from its bottle. This could result in disabling or fatal injuries.

**Special note:** Saltwater users must check the tank's anodes no less often than once every three months. Saltwater affects the system differently than standard swimming pool water does, and subsequently, the anodes must be inspected more often.

# Filter Capacities & Valve Sequences



Model Number	Tank Diameter	Sq. Ft. of Filter Area	Rate and Capacity				Cubic Feet 1/8" x 3/8" Gravel Req.	Cubic Feet #20 Sand Req.	Approx. Bed Depth Req. per Cell	Approx. Shipping Weight (lbs)	Approx. Operating Weight (lbs)
			15 GPM	20 GPM	Gal. per 6 Hours	Gal. per 8 Hours					
HRL2C48	48"	25.1	378	-	136,080	181,440	18.5	38	18"	6,755	13,850
			-	504	181,440	241,920					
HRL2C54	54"	31.8	477	-	171,720	228,960	24.5	48	18"	8,360	15,375
			-	636	228,960	305,280					
HRL2C60	60"	39.2	588	-	211,680	282,240	31.5	59	18"	10,155	19,180
			-	784	282,240	376,320					
HRL2C66	66"	47.5	711	-	255,960	341,280	39.5	71.5	18"	12,170	23,240
			-	948	341,280	455,040					
HRL2C72	72"	56.5	849	-	305,640	407,520	47	85	18"	14,720	27,860
			-	1,132	407,520	543,360					
HRL2C78	78"	66.3	996	-	358,560	478,080	59	99.5	18"	17,855	33,710
			-	1,328	478,080	637,440					
HRL2C84	84"	77	1,155	-	415,800	554,400	71	115.5	18"	20,570	39,195
			-	1,540	554,400	739,200					
HRL2C90	90"	88.4	1,326	-	477,360	636,480	84.5	132.5	18"	23,535	45,190
			-	1,768	636,480	848,640					



Mode of Operation	Valve 1	Valve 2	Valve 3	Valve 4	Valve 5	Valve 6
<b>Filter-to-Waste Operation</b> Note: Disconnect linkage; operate each valve individually	Open	Open	Closed	Closed	Closed	Closed
<b>Filter Operation</b>	Single Lever in the Up Position				Open	Open
	Closed	Open	Closed	Open		
<b>Top Cell Backwash Operation</b>	Single Lever in the Down Position				Open	Closed
	Open	Closed	Open	Closed		
<b>Bottom Cell Backwash Operation</b>	Single Lever in the Down Position				Closed	Open
	Open	Closed	Open	Closed		

Note: The manual air relief valve should be opened only upon initial filter start-up, or whenever the filter is refilled, such as after it has been serviced, in order to facilitate air flow. During normal filter operation, the automatic air relief valve will relieve air trapped within the vessel.

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# Initial Filter Operation

Prior to initial start-up, the owner or contractor must have on hand, the proper chemicals to balance the pool water. These materials are generally called for in the building specifications and are normally supplied by the contractor.

Read the following instructions carefully before attempting to operate the filter, as damage may be caused by improper valve settings. Prior to actual start-up, it is recommended the operator go through several dry runs, becoming familiar with the mechanics of the particular system. Once familiar with the operation, proceed with the actual initial start-up.

Please remember that this equipment will last many years if *PROPER maintenance procedures are followed and the unit is not abused*. Misuse and lack of maintenance will cause short life and frequent shutdown time for major maintenance and troubleshooting procedures. If the maintenance instructions are followed, trouble-free operation will be provided by the filter.

If, and when, replacement parts are necessary, please refer to the particular part by number when ordering. A parts breakdown of the filter tank is located in the back of this booklet, as well as on our website, [www.eurekamanufacturing.com](http://www.eurekamanufacturing.com).

## PREPARATION FOR INITIAL START-UP

A newly constructed swimming pool will normally have debris in the suction lines, such as pipe compound, oil, grease, dirt, and/or plaster. In order to protect the filter media from this debris, the filter must be run directly to waste for several minutes to clean all suction lines before starting the filter operation.

### Valve Positions for Filter to Waste

HRL2C Models: Valves 1 & 2 Open  
Valves 3 & 4 Closed  
Valves 5 & 6 Closed  
Manual Air Relief Vent Closed  
(see Valve Sequence Chart)

**Note: Disconnect linkage: operate each valve individually for this procedure.**

## PROCEDURE:

**A.** Follow the priming procedure established for your particular pump. Water may need to be added to the strainer or the priming valve may need to be opened if so equipped.

**B.** Turn on the pump and operate the system to waste for approximately two minutes on each individual suction line (Main drain, vacuum, gutter or skimmer lines) by throttling the appropriate valves.

**C.** When the lines have been "blown out," turn off the pump, close all suction valves, drain the filter tank, (if the water has entered) and open the manual air relief, allowing air to enter tank, thus draining the water. After filter has drained, remove hair and lint strainer basket, clean thoroughly and replace.

After this initial starting procedure has been accomplished, the filter system is ready for the initial filtering operation.

**D.** Always commence initial operation with filter valves in the backwash position. The procedure is required as the filter is seeking its operating free board level and any excess media will be discharged to waste. Each cell must be backwashed separately during initial start-up as well as during routine filter operation.

## Initial Backwash Valve Positions

### Top Cell Backwash:

HRL2C Models: Valves 1, 3, & 5 Open  
Valves 2, 4, & 6 Closed  
Manual Air Relief must be open  
(see Valve Sequence Chart)

### Lower Cell Backwash:

HRL2C Models: Valves 1, 3, & 6 Open  
Valves 2, 4, & 5 Closed  
Manual Air Relief must be open  
(see Valve Sequence Chart)

Backwash the cell until the presence of sand and suspended particles in the backwash water has disappeared, and the water appears clear.

After this initial starting procedure has been accomplished, the filter system is ready for the normal filter operation.

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# Filter/Backwash Operation



## FILTER OPERATION VALVE SEQUENCE

- Valve settings for filtration are:  
  
**All suction valves.....OPEN**  
**Note:(except vacuum lines)**
- Set valves on the HRL2C series as follows:  
  
**Single Lever ..... UP POSITION**  
**Valve # 5 ..... OPEN**  
**Valve # 6 ..... OPEN**  
**(see Valve Sequence Chart below)**
- Start main circulating pump. The HRL Series Single and Multi-Cell Hi-Rate filters are designed to operate in the filtration cycle until a differential pressure reading of 15 to 20 psi is reached between the effluent and influent pressure gauges or after seven (7) days, (whichever comes first). At this time, the unit must be backwashed.

**Note:**  
The filtration and backwash procedures may have to be performed several times during the first few days of operation, depending on the source of water and its clarity.

## BACKWASH MODE

Backwash should occur when a 15 psi differential pressure is indicated on the gauge panel or every seven days, whichever is sooner.

**Example:**  
 Influent Gauge Reading of            20 psi  
 Effluent Gauge Reading of        - 5 psi(20 minus 5)  
    =15 psi differential

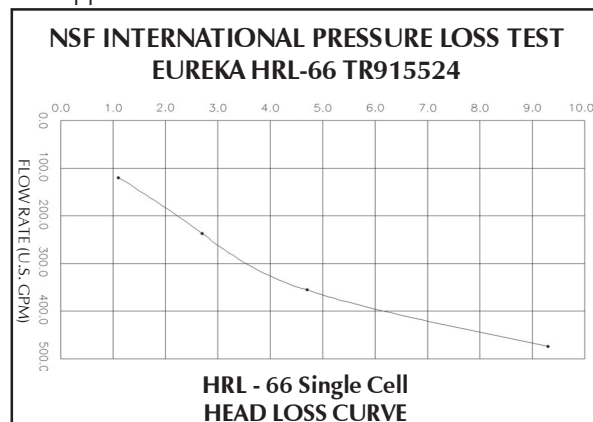
When this differential or time is indicated, shut off the main circulating pump. Set the valves in the backwash position, start circulating pump.

The water is now flowing from the bottom of the tank, through the sand and out the top to waste.

## BACKWASH OPERATION VALVE SEQUENCE

- Top Cell
- Stop the main circulation pump.
  - Set the valves on the HRL2C series filter as follows:  
  
**Single Lever ..... DOWN POSITION**  
**Valve # 5 ..... OPEN**  
**Valve # 6 ..... CLOSED**  
**(see Valve Sequence Chart below)**
  - Start main circulation pump. Backwash for approximately four (4) minutes. Observe the backwash water through the sight glass, if turbid water continues to appear, backwash until clear water appears.

- Bottom Cell
- Stop the main circulation pump.
  - Set the valves on the HRL2C series filter as follows:  
  
**Single Lever ..... DOWN POSITION**  
**Valve # 5 ..... CLOSED**  
**Valve # 6 ..... OPEN**  
**(see Valve Sequence Chart below)**
  - Start main circulation pump. Backwash for approximately four (4) minutes. Observe the backwash water through the sight glass, if turbid water continues to appear, backwash until clear water appears.



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## TROUBLESHOOTING

Eureka Manufacturing's Hi-Rate filters are void of moving parts and therefore, require a minimum of maintenance. The filter media is the most important item which requires periodic examination.

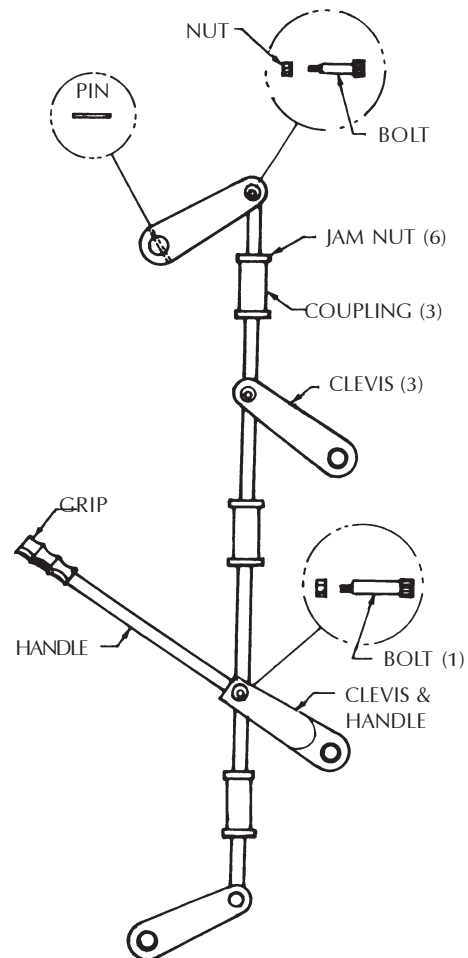
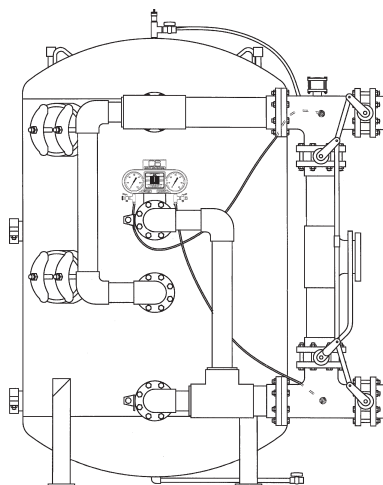
There are two common problems which occur with the Hi-Rate sand filters, none of these are related to the unit itself, but are the result of human error.

### 1. Media being discharged into the pool.

- Cause:
- A. Underdrain damaged or installed incorrectly.
  - B. Incorrect media (excessive fines)
- Solution:
- A. Remove media (by way of media dump port); repair underdrain and reinstall media.
  - B. Check media size, if incorrect replace it with proper grade. (See page 5)

### 2. Pool water not clearing up.

- Cause:
- A. Incorrect media
  - B. Rate of flow in excess of 20 gpm.
  - C. Pool chemistry.
  - D. Original water source.
- Solution:
- A. Remove media and install correct media.
  - B. Adjust flow rate.
  - C. Consult local water chemist.
  - D. Special pretreatment or special treatment after pool is filled - consult local water chemist or factory representative.



LINKAGE ILLUSTRATION

### Procedure for Adjusting Linkage

All butterfly valves supplied with the system have a slot on the end of the stem or shaft indicating the position of the disc.

To adjust linkage, remove the respective clevis bearing, bolt and nut. Place the indicator mark in desired position. Loosen the respective jam nut. The linkage rod may now be extended or retracted into the adjustment coupling to the necessary length.

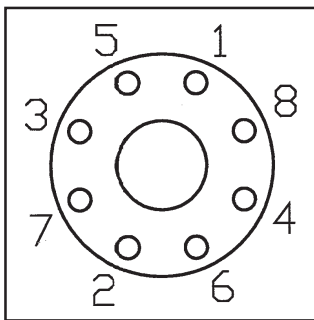
Replace the bearing, bolt and nut.

The assembly is now ready for operation.

# Rate and Capacity Charts



Model Number	Tank Diameter	Sq. Ft. of Filter Area	Rate and Capacity				Cubic Feet 1/8" x 3/8" Gravel Req.	Cubic Feet #20 Sand Req.	Approx. Bed Depth Req. per Cell	Approx. Shipping Weight (lbs)	Approx. Operating Weight (lbs)
			15 GPM	20 GPM	Gal. per 6 Hours	Gal. per 8 Hours					
HRL2C48	48"	25.1	378	-	136,080	181,440	18.5	38	18"	6,755	13,850
			-	504	181,440	241,920					
HRL2C54	54"	31.8	477	-	171,720	228,960	24.5	48	18"	8,360	15,375
			-	636	228,960	305,280					
HRL2C60	60"	39.2	588	-	211,680	282,240	31.5	59	18"	10,155	19,180
			-	784	282,240	376,320					
HRL2C66	66"	47.5	711	-	255,960	341,280	39.5	71.5	18"	12,170	23,240
			-	948	341,280	455,040					
HRL2C72	72"	56.5	849	-	305,640	407,520	47	85	18"	14,720	27,860
			-	1,132	407,520	543,360					
HRL2C78	78"	66.3	996	-	358,560	478,080	59	99.5	18"	17,855	33,710
			-	1,328	478,080	637,440					
HRL2C84	84"	77	1,155	-	415,800	554,400	71	115.5	18"	20,570	39,195
			-	1,540	554,400	739,200					
HRL2C90	90"	88.4	1,326	-	477,360	636,480	84.5	132.5	18"	23,535	45,190
			-	1,768	636,480	848,640					



## IMPORTANT FACE PIPE ASSEMBLY INFORMATION

- Piping runs joined to the flanges must be installed in a straight line position to the flange to avoid stress at the flange due to misalignment. Piping must also be secured and supported to prevent lateral movement which can create stress and damage the flange.
- With gasket in place, align the bolt holes of the mating flanges by rotating the ring into position.
- Insert all bolts, washers (two standard flat washers per bolt), and nuts.
- Make sure the faces of the mating surfaces are flush against the gasket prior to bolting down the flanges.
- Tighten the nuts by hand until they are snug. Establish uniform pressure over the flange face by tightening the bolts in 5 ft. lbs. increments according to the sequence shown above following a 180° opposing sequence as shown above left.
- Do not use bolts to bring together improperly mated flanges.

Recommended Bolt Torque	
Threads should be clean and well lubricated. Actual field conditions may require variations in these recommendations. <b>Note:</b> Unnecessary over torquing will damage the flange.	
Flange Size (in.)	Recommended Torque (ft. lbs.)
4	25
6	40
8	40

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# Internal Replacement Parts

## HRL2C SERIES HI-RATE SAND FILTER REPLACEMENT DIVERTER ASSEMBLIES

Chart I

TANK SIZE	QTY. & LENGTH	DIVERTER ASSEMBLY REQUIRED			
		A	B	C	D
48"	Quantity	8	4		
	Length	8-5/16	15-5/16		
54"	Quantity	8		4	
	Length	12-5/16		19	
60"	Quantity	8		4	
	Length	12-5/16		19	
66"	Quantity	8	8	4	
	Length	8-5/16	15-5/16	25	
72"	Quantity	8	8	4	
	Length	8-5/16	15-5/16	25	
78"	Quantity	8	8	4	
	Length	8-5/16	15-5/16	25	
84"	Quantity	8		8	4
	Length	12-5/16		25	27-1/2"
90"	Quantity	8		8	4
	Length	15-5/16		25	27-1/2"

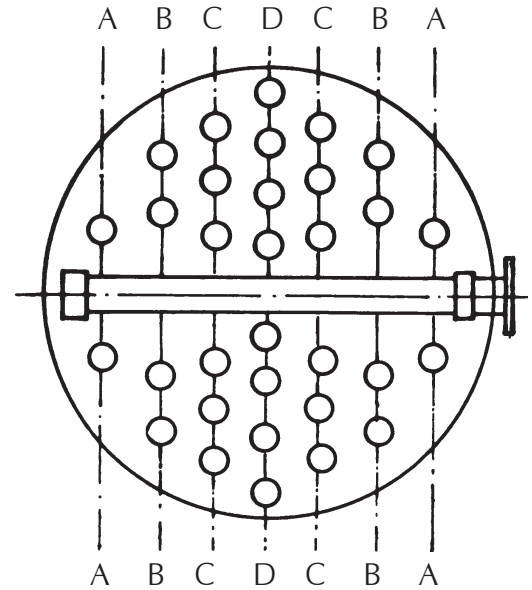


Illustration (above) used to show relative types of diverter assemblies. Positions shown do not necessarily correspond to actual position in filter.

**Note:**

Some columns indicate two A, B, or C's. This is necessary because the type is the same, only the length is different. To determine correct part number when ordering, refer to proper tank size, Chart I, and read across to the desired length. Refer to Chart II, "L" column for the corresponding length and read the part number immediately to the left in Part No. column.

Information regarding our complete line of replacement parts for all HRL and HRL2C Series Hi-Rate Permanent Media Filters is available on-line at: [www.eurekamanufacturing.com](http://www.eurekamanufacturing.com)

Chart II

PART NO.	"L" LENGTH	DIVERTER ASSEMBLY
FE-24312-0039	8-5/16"	
FE-24312-0037	12-5/16"	
FE-24312-0035	15-5/16"	
FE-24312-0033	19"	
FE-24312-0031	25"	
FE-24312-0009	27-1/2"	

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## Dual Cell Hi-Rate Sand Filter Replacement Lateral Assemblies

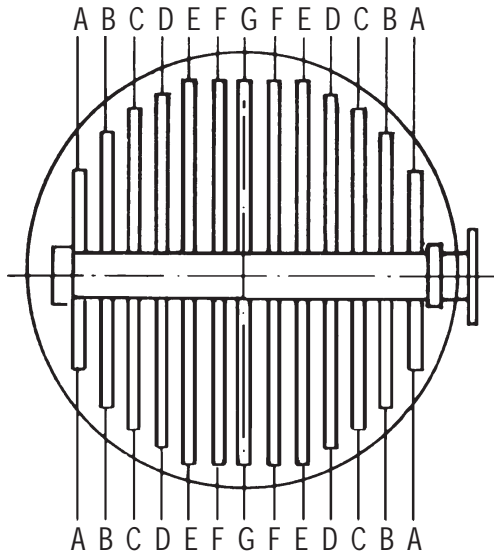


Illustration shown (above) is for 120" diameter vessels. Smaller diameter filters contain fewer lateral assemblies.

Chart I

TANK SIZE	QTY. & DASH NO.	LATERAL ASSEMBLY REQUIRED						
		A	B	C	D	E	F	G
48"	Quantity					8	8	4
	Dash No.					-31	-33	-34
54"	Quantity					8	8	4
	Dash No.					-31	-34	-35
60"	Quantity					8	8	4
	Dash No.					-31	-35	-36
66"	Quantity				8	8	8	4
	Dash No.				-32	-35	-36	-36
72"	Quantity				8	8	8	4
	Dash No.				-32	-36	-37	-37
78"	Quantity				8	8	8	4
	Dash No.				-32	-36	-38	-38
84"	Quantity			8	8	8	8	4
	Dash No.			-32	-36	-38	-39	-39
90"	Quantity			8	8	8	8	4
	Dash No.			-33	-36	-38	-41	-41

**Note:**

To determine correct part number for ordering, refer to the proper tank size, Chart I. Read across to the desired assembly and read the dash number under quantity. Refer to Chart II for dash number located in part number column. Lengths are given for reference along with illustration.

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Chart II

PART NO.	"L" LENGTH	LATERAL ASSEMBLY
FE-24300-0031	13"	
FE-24300-0032	15"	
FE-24300-0033	17"	
FE-24300-0034	21"	
FE-24300-0035	23"	
FE-24300-0036	25"	
FE-24300-0037	30"	
FE-24300-0038	33"	
FE-24300-0039	34"	
FE-24300-0041	38"	

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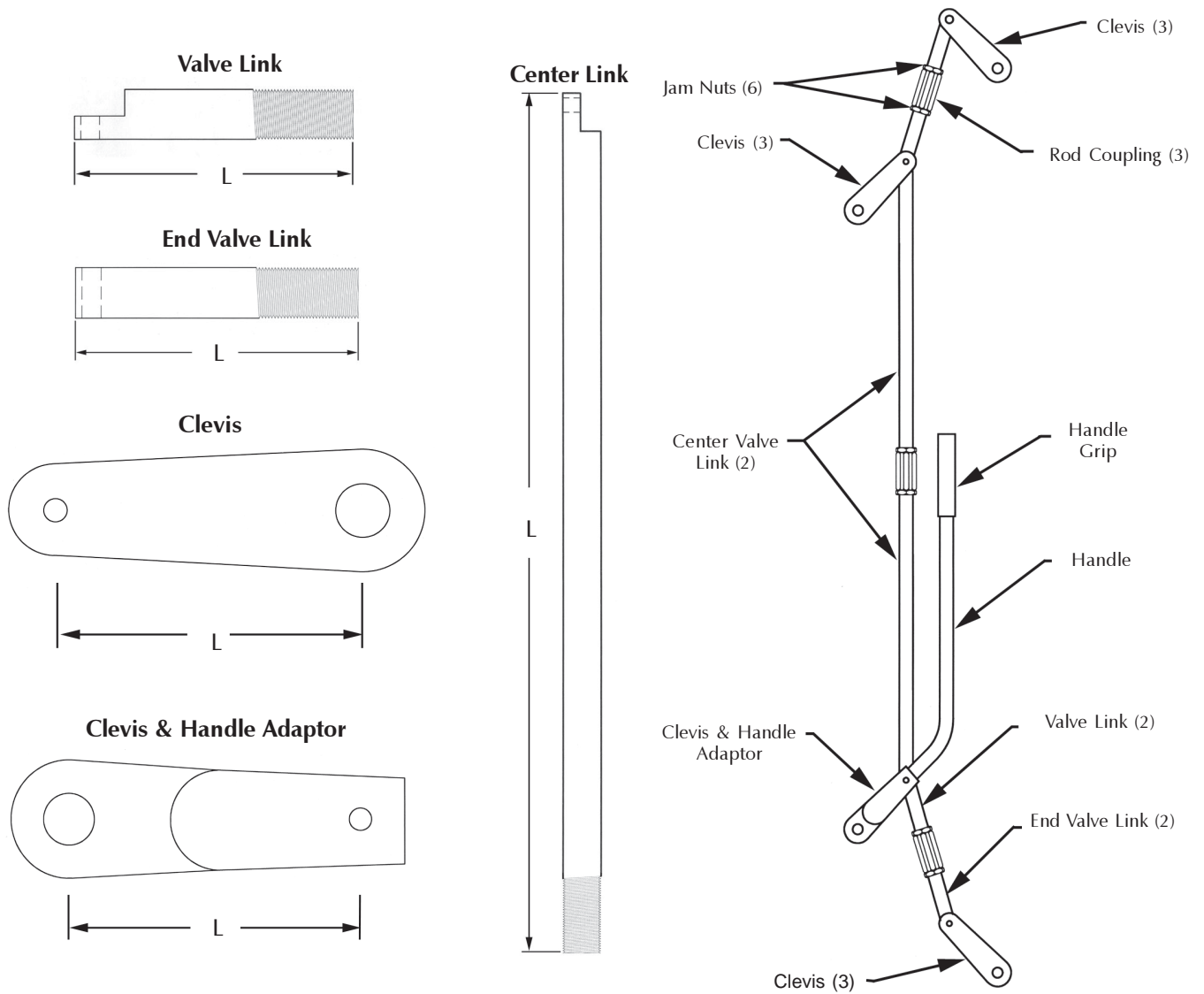


# Dual Cell Linkage Assemblies

Complete Linkage Assemblies	
Linkage Assembly 6" Face Piping Dual Cell System	FE-LA004-0000
Linkage Assembly 8" Face Piping Single Tank System	FE-LA006-0000

## Dual Cell Systems

Tank Diam.	Pipe Size	Clevis & Handle Adaptor	Clevis	Valve End Linkage	Valve Linkage	Center Valve Linkage
48" - 66"	6"	L=5"	L=5"	L=5 1/4"	L=5 1/4"	L=22 1/4"
		FE-24306-0017	FE-24306-0025	FE-24303-0032	FE-24308-0525	FE-24308-0225
66" - 90"	8"	L=7 1/2"	L=5"	L=5 3/4"	L=5 3/4"	L=20 3/4"
		FE-24309-0043	FE-24309-0045	FE-24308-0576	FE-24308-0575	FE-24308-0207



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