

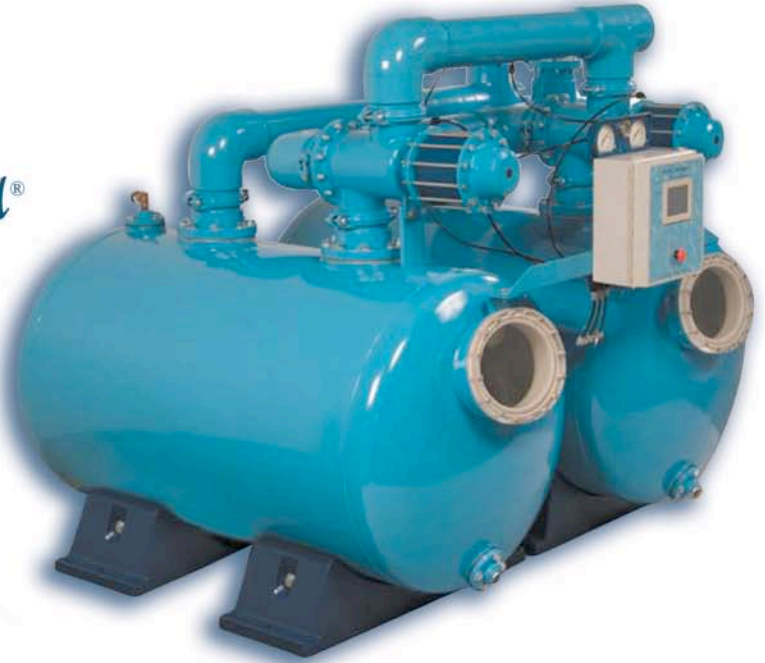


EPD (USA), Inc.

*Clean Water for the World®*

# INSTALLATION GUIDE

## Filter Systems



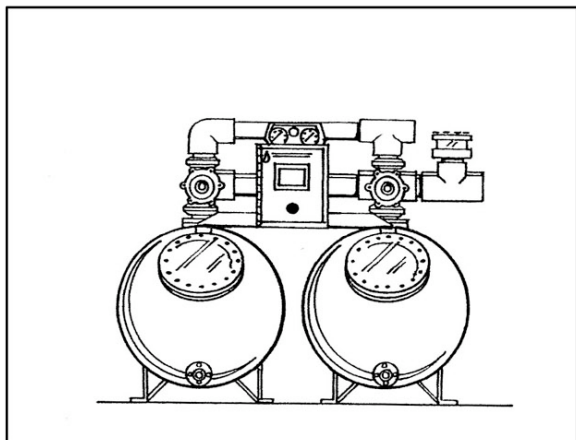
	8.2 Steel	13.5 Steel	16.5 Steel	20 Steel	17 FRP	20 FRP
Single Systems	138	150 & 104	S104	120	104F	120F
Multiple Systems		200	S206	240	206F	240F
		201 & 206	S306	360	308F	360F
		300	S308	480	408F	480F
		1 & 306	S408	5100	510F	5100F
		400	S510	6120	610F	6120F
		401 & 408	S610	7140	710F	7140F
		500	S710	8160	810F	8160F
		501 & 508	S810			
		600				
		601 & 608				
		602				
		700 & 710				
		701				
		800 & 810				

# INTRODUCTION

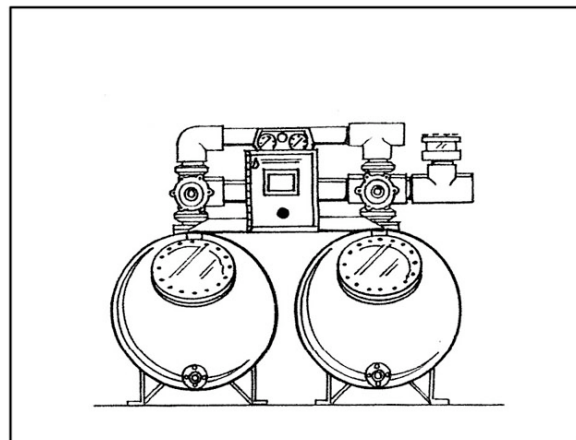
THE ASSEMBLY AND INSTALLATION OF THESE MULTIPLE TANK FILTER SYSTEMS INCORPORATE COMMON ASSEMBLY PROCEDURES. THE VARIABLES ARE TANK SIZES IN DIAMETER, LENGTH, MATERIAL CONSTRUCTION, TANK FEET OR MOLDED BASE TANK SUPPORT AND SIZE OF BACKWASH VALVE. INFLUENT AND EFFLUENT MANIFOLD SIZES RANGE FROM 4" THROUGH 12" DEPENDING ON THE FILTER SYSTEM MODEL. BACKWASH WASTE LINES ARE 4" OR 6" AND ALL MANIFOLDS MAY BE DIRECTED RIGHT OR LEFT OR A COMBINATION AS DESIRED. FOR DRINKING WATER SYSTEMS, BUTTERFLY VALVES ARE INSTALLED AT THE TANK INLET AND OUTLET PORTS.

WHEN ASSEMBLING THE VICTAULIC CONNECTIONS (SEAL AND GROOVED PORTS), APPLY A LIGHT FILM OF SILICONE LUBRICANT.

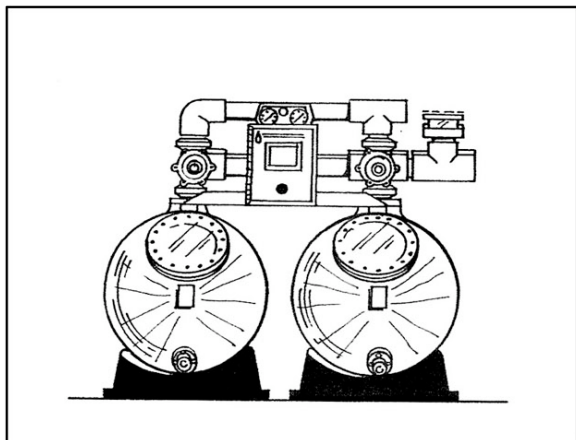
THE FOLLOWING SHOWS THE FOUR FILTER SERIES AS DEPICTED IN THESE ASSEMBLY AND INSTALLATION INSTRUCTIONS.



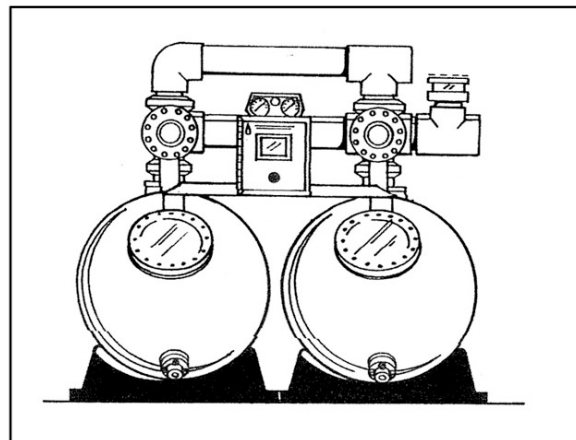
FILTER SYSTEM UTILIZING 13.5 FT<sup>2</sup> STEEL TANKS WITH 4" BACKWASH VALVES



FILTER SYSTEMS UTILIZING 16.5 FT<sup>2</sup> STEEL TANKS WITH 4" BACKWASH VALVES



FILTER SYSTEMS UTILIZING 17 FT<sup>2</sup> FIBERGLASS TANKS WITH BASE AND 4" BACKWASH VALVES



FILTER SYSTEMS UTILIZING 20 FT<sup>2</sup> STEEL AND FRP TANKS WITH BASE AND 4" OR 6" BACKWASH VALVES

## DESIGN FEATURES OF THE EPD FILTER SYSTEM

EACH EPD FILTER SYSTEM IS MANUFACTURED TO STRINGENT ENGINEERING SPECIFICATIONS AND IS SUBJECTED TO RIGID QUALITY CONTROL, PERFORMANCE AND MATERIAL STANDARDS. WE AT EPD PROUDLY MANUFACTURE A FILTER SYSTEM THAT WILL PROVIDE MANY YEARS OF TROUBLE-FREE OPERATION.

YOUR FILTER SYSTEM EMPLOYS STATE-OF-THE-ART TECHNOLOGY IN COMPONENT FUNCTION AND DESIGN. ALL OF THE COMPONENTS MAKING UP THE EPD FILTER SYSTEM ARE MANUFACTURED IN OUR FACILITIES.

HYDRAULICALLY OPERATED BACKWASH VALVES ARE USED ON ALL EPD FILTER SYSTEMS, PROVIDING SMOOTH TROUBLE-FREE OPERATIONS.

AN UNDERWRITERS LABORATORY LISTED SYSTEM CONTROLLER, AVAILABLE WITH EACH EPD FULLY AUTOMATIC FILTER SYSTEM, CONTROLS AND FAIL-SAFE GUARDS THE OPERATION OF THE FILTER SYSTEM WITH LOGIC PROVIDED BY A PROGRAMMABLE LOGIC CONTROLLER (PLC) WHILE PROVIDING DIRECT READOUTS FOR MODES OF OPERATION.

EPD'S SEMI-AUTOMATIC FILTER SYSTEMS ARE PROVIDED WITH A MANUALLY ACTUATED MULTI-PORT VALVE ASSEMBLY WITH INDICATOR DIAL WHICH PROVIDES FOR MANUAL MANIPULATION OF THE BACKWASH VALVES. THE MANUALLY MANIPULATED MULTI-PORT VALVE ALLOWS FOR FILTER SYSTEM BACKWASH. CONTROL OF CIRCULATION PUMP, ACCESSORIES, AND FAIL-SAFE GUARDS ARE NOT PROVIDED.

ALL INTERCONNECTING PIPING AND CONTROL VALVES PROVIDED WITH YOUR EPD FILTER SYSTEM ARE MANUFACTURED OF NONCORROSIVE OR SYNTHETIC MATERIALS AND ARE FACTORY ASSEMBLED AND TESTED.

THE FEATURES OF THESE SYSTEMS ARE IDENTICAL TO ALL OF THE SYSTEMS AS MANUFACTURED BY EPD WEARNES (USA), INC. VARIATIONS IN MANIFOLD SIZES, NUMBER AND MATERIAL OF TANKS, VALVES AND TYPE OF OPERATING CONTROLS CONSTITUTE THE DIFFERENT MODELS OFFERED. ALL EPD SYSTEMS ARE PRE-ENGINEERED FOR COMMONALITY OF MAJOR COMPONENTS SUCH AS TANKS, VALVES, PIPING, FILTER CONTROLLER, ETC. PIPING MANIFOLDS ARE REVERSIBLE FOR RIGHT OR LEFT PIPING CONFIGURATIONS AT THE INSTALLATION SITE.

ALL EPD FILTRATION SYSTEMS HAVE UNDERGONE EXTENSIVE PERFORMANCE AND SAFETY TESTING CONDUCTED BY INDEPENDENT, NATIONALLY RECOGNIZED TESTING LABORATORIES AND ARE LISTED AS DESIGNATED BY THEIR APPROPRIATE SEALS: U.L. (UNDERWRITERS LABORATORIES, INC.) AND NSF (NATIONAL SANITATION FOUNDATION).

MANY YEARS OF TROUBLE-FREE PERFORMANCE MAY BE EXPECTED FROM YOUR EPD FILTRATION SYSTEM WITH A MINIMAL AMOUNT OF ATTENTION REQUIRED.

# BASIC PRINCIPLE OF OPERATION

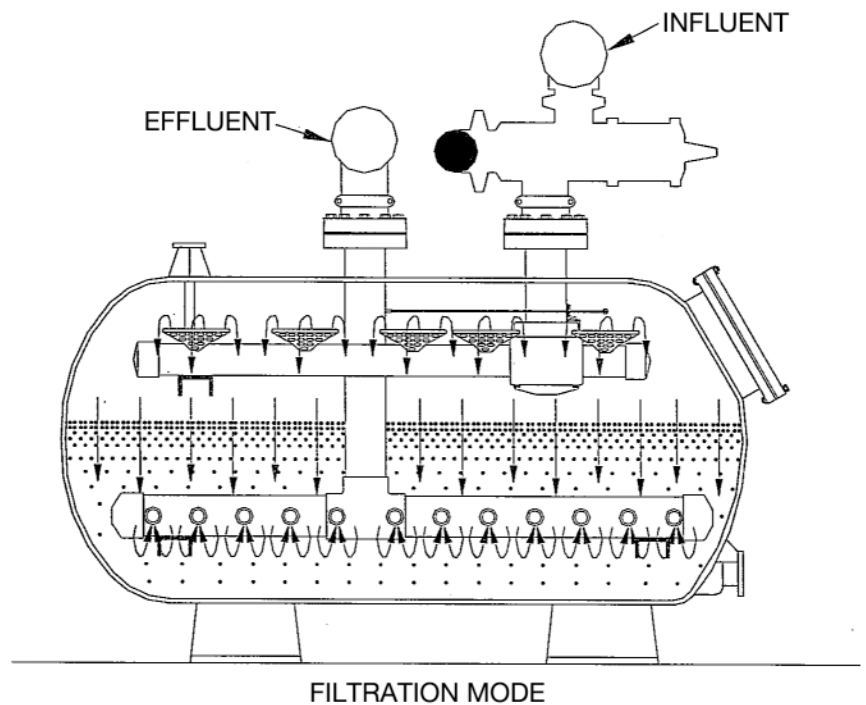
## FILTRATION

INFLUENT (UNFILTERED) WATER IS DIRECTED INTO THE TANK AND ITS HYDRAULICALLY BALANCED DISTRIBUTOR. HIGH EFFICIENCY FILTRATION IS ACHIEVED THROUGH THE BALANCED HYDRAULIC FLOW DESIGN, RESULTING IN LOW DIFFERENTIAL PRESSURE LOSSES THROUGH THE EPD PERMANENT MEDIA FILTER. WATER TURBULENCE IS REDUCED TO VERY LOW LIMITS, AND FLOW PATHS AT THE MEDIA SURFACE ARE ALMOST WHOLLY PARALLEL AND VERTICAL. FLOW RATES UP TO 20 GALLONS PER MINUTE, PER SQUARE FOOT ( $.81\text{M}^3/\text{MIN}/\text{M}^2$ ) OF FILTER AREA, CAN BE ACHIEVED WITHOUT CHANNELING THE MEDIA BED.

AT HIGH FLOW RATES, COLLECTED SOLIDS ARE FORCED INTO THE MEDIA, BUT SELECTION OF SMALL MEDIA ENABLES EXCELLENT FILTRATION TO BE ACHIEVED. LONG FILTER CYCLES BETWEEN BACKWASH CYCLES ARE ACCOMPLISHED, AS THE VOLUME OF SOLIDS COLLECTED ARE CONTAINED IN THE DEPTH OF THE MEDIA SELECTED.

THE LOWER COLLECTION SYSTEM RECEIVES WATER THROUGH ITS “V” SLOTTED LATERALS WHICH ARE DESIGNED TO RETAIN VERY FINE FILTER MEDIA. THE CLEAN FILTERED WATER EXITS VIA THE EFFLUENT TANK PORT.

FLOW DIAGRAM OF A FILTER TANK IN FILTRATION MODE



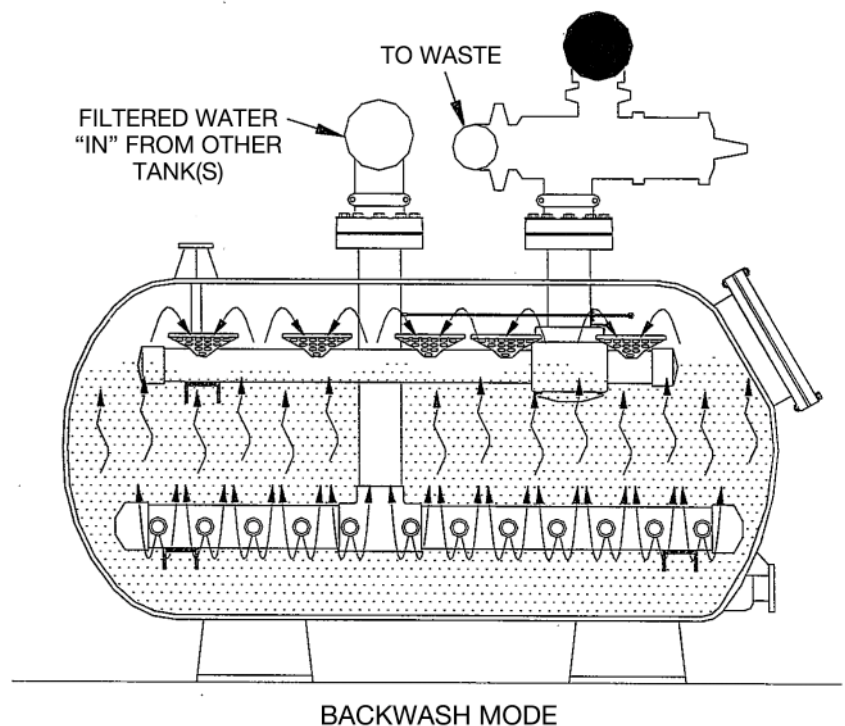
## BACKWASH (REVERSE FLOW)

BACKWASHING IS A REVERSAL OF FLOW THROUGH THE FILTER TANK. EPD'S SINGLE TANK SYSTEMS USE SOURCE WATER FOR BACKWASHING. EPD MULTIPLE TANK SYSTEMS USE FILTERED WATER FROM THE ADJACENT TANK(S) IN THE SYSTEM. THE BACKWASH VALVE BEING ACTIVATED, ROUTES WATER THROUGH THE UNDERDRAIN COLLECTION SYSTEM OF THE FILTER TANK TO BE BACKWASHED. THIS REVERSAL OF FLOW DIRECTION FLUIDIZES THE MEDIA BED, CAUSING THE RELEASE OF COLLECTED SOLIDS.

CIRCULATION PATTERNS ARE ESTABLISHED TO PROGRESSIVELY PRESENT EACH PARTICLE OF THE MEDIA AT THE SURFACE ON APPROXIMATELY 30 SECOND CYCLES. THE BALANCED FLOW CONDITIONS, INDUCED BY EPD'S COLLECTION SYSTEM, REDUCES WATER VELOCITY TO BELOW THAT OF THE SETTLING RATE, PREVENTING LOSS OF FILTER MEDIA DURING THIS PHASE OF OPERATION.

THE UNWANTED SOLIDS, WHICH ARE RELEASED FROM THE MEDIA BED, ARE COLLECTED BY THE INFLUENT DIVERTER AND ARE DISCHARGED OUT OF THE TANK TO THE WASTE LINE PIPING.

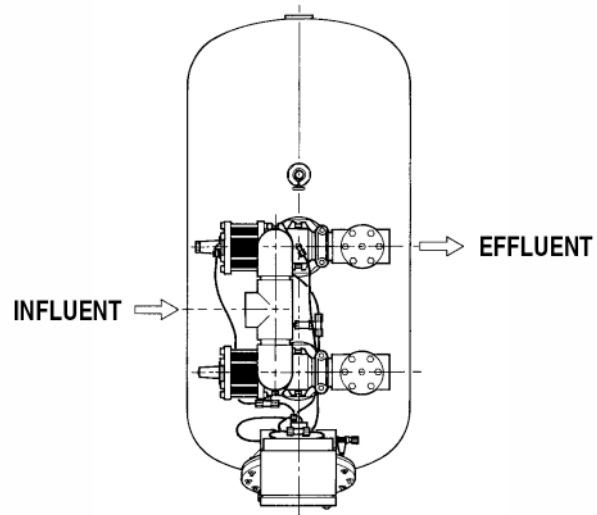
FLOW DIAGRAM OF FILTER TANK IN BACKWASH MODE



## SYSTEM FLOW DIAGRAM FOR EPD SINGLE TANK SYSTEMS

WATER TO BE FILTERED ENTERS THE INFLUENT MANIFOLD AND PASSES THROUGH THE BACKWASH VALVES, FILTERS OUT PARTICLES THROUGH THE MEDIA BEDS AND THEN FLOWS OUT THE EFFLUENT.

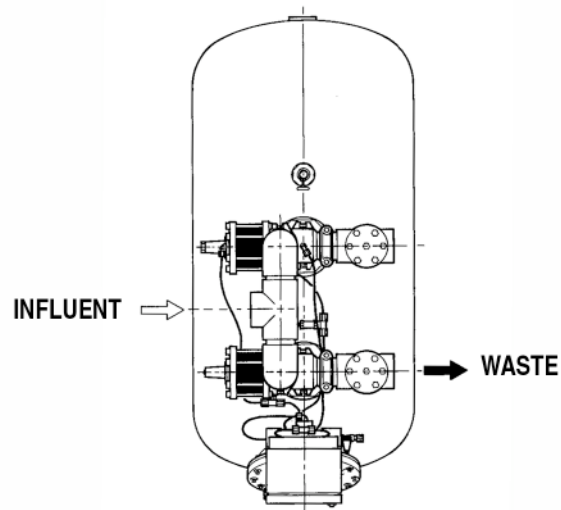
EPD SINGLE TANK FILTER SYSTEM  
IN FILTRATION MODE



### BACKWASH FLOW

BACKWASH IS ACCOMPLISHED WHEN WATER IS DIRECTED IN A REVERSE FLOW, TO THAT OF FILTRATION, FLUIDIZING THE MEDIA IN AN AGGRESSIVE SCRUBBING ACTION. THE COLLECTED SUSPENDED SOLIDS ARE RELEASED TO FLOW OUT OF THE FILTER SYSTEM TO WASTE.

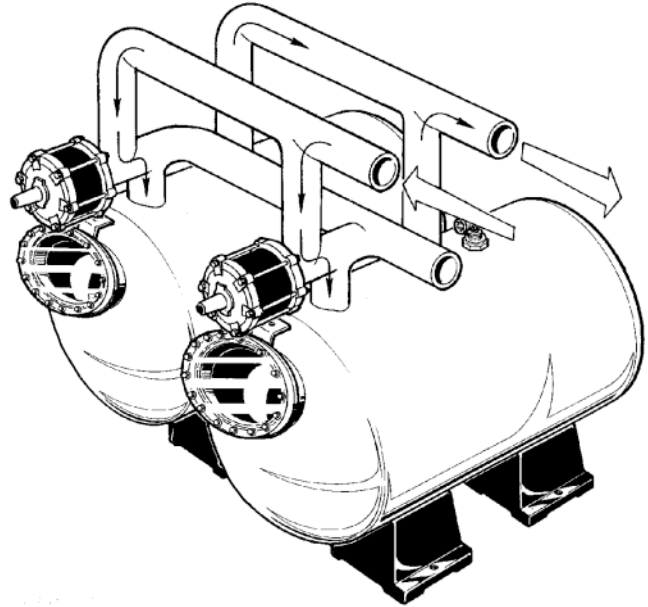
EPD SINGLE TANK FILTER  
SYSTEM IN BACKWASH MODE



## SYSTEM FLOW DIAGRAM FOR EPD MULTIPLE TANK SYSTEMS

WATER TO BE FILTERED ENTERS THE FILTER THROUGH THE INFLUENT MANIFOLD AND BACKWASH VALVE. THE WATER PASSES THROUGH THE FILTER MEDIA BED, LEAVING BEHIND SUSPENDED PARTICLES, AND PASSES OUT OF THE FILTER VIA THE REVERSE FLOW BACKWASH VALVE.

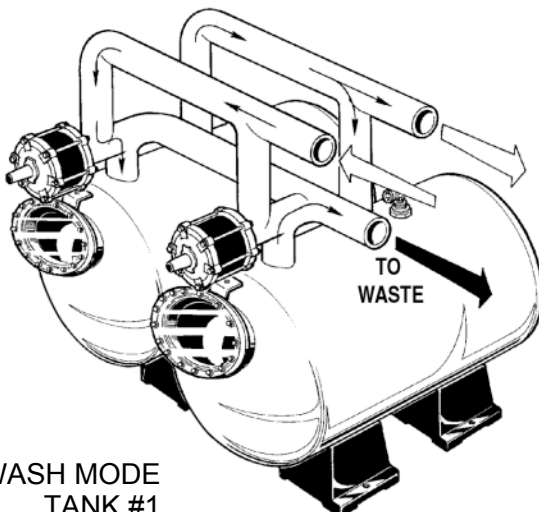
EPD TWO TANK FILTER SYSTEM  
IN FILTRATION MODE.



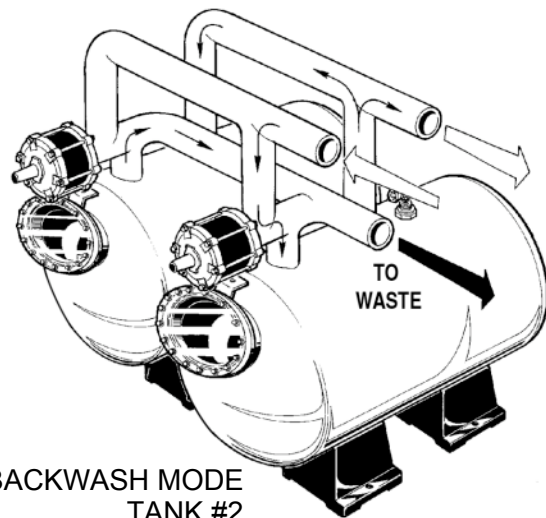
### FILTRATE BACKWASH FLOW

BACKWASH IS ACCOMPLISHED BY ROUTING HYDRAULIC PRESSURE VIA A MULTI-PORT VALVE (AUTOMATICALLY OR MANUALLY) TO EACH OF THE SYSTEMS BACKWASH VALVES IN A TIMED SEQUENCE.

EACH FILTER TANK IS BACKWASHED INDEPENDENT OF THE OTHER FILTER TANKS WITHIN THE SYSTEM. FILTERED WATER FROM THE OTHER TANK(S) IS DIRECTED IN REVERSE THROUGH THE TANK BEING BACKWASHED TO FLUIDIZE THE MEDIA IN AN AGGRESSIVE SCRUBBING ACTION. THE COLLECTED SUSPENDED SOLIDS ARE RELEASED TO FLOW OUT OF THE FILTER SYSTEM TO WASTE.



BACKWASH MODE  
TANK #1

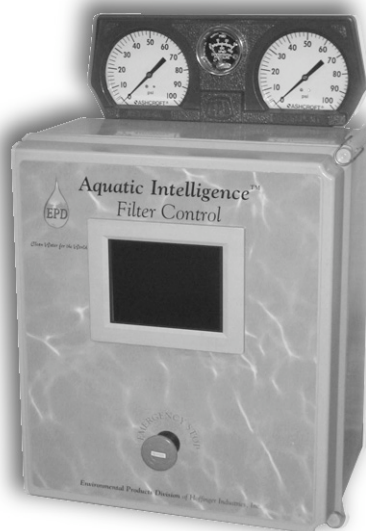


BACKWASH MODE  
TANK #2

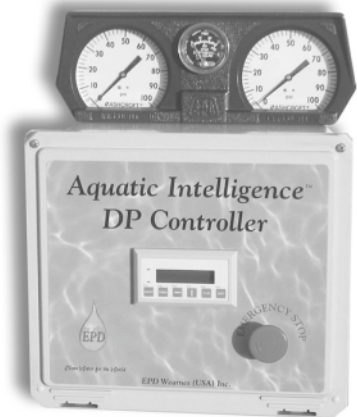
## OPTIONAL FILTER CONTROLS ARE PROVIDED SEPARATELY



MANUAL SELECTOR  
DIAL VALVE



(AIF) AQUATIC INTELLIGENCE  
FILTER CONTROLLER



(DP) DIFFERENTIAL  
PRESSURE CONTROLLER

REFER TO THE RESPECTIVE OWNERS GUIDE FOR THE FILTER CONTROL PROVIDED FOR INSTALLATION, ACCESSORIES, TUBING, ELECTRICAL REQUIREMENTS AND OPERATIONS.

# ASSEMBLY AND INSTALLATION

FOLLOW THE EXPLODED SEQUENTIAL STEPS OF ASSEMBLY AND INSTALLATION REFERRING TO THE **ARCHITECTURAL AND/OR ENGINEERING INSTALLATION DRAWINGS** FOR THE POSITIONING OF FILTER AND FLOW DIRECTIONS OF ALL PIPING.

## ASSEMBLY/INSTALLATION

### 1 REMOVE COMPONENTS FROM SHIPPING CRATES

REMOVE THE FILTER TANKS FROM THEIR CRATES. **DO NOT REMOVE THE PROTECTIVE WRAPPING FROM THE FILTER TANKS.** THE FOAM WRAPPING IS INTENDED TO PROTECT THE FINISH COAT SURFACE DURING TRANSIT AND INSTALLATION. IT WILL PROTECT THE FINISH COAT FROM SOLVENT DRIPS, OVER-SPRAY, DUST, DIRT AND OTHER CONSTRUCTION CONTAMINANTS. REMOVE THE WRAPPING AFTER COMPLETING THE ENTIRE INSTALLATION PROCEDURE.

MOUNTED TO THE FILTER TANK CRATE, JUST BENEATH THE FILTER TANK, IS A “TANK POSITIONING TEMPLATE.” REMOVE THESE TEMPLATES AND SET ASIDE FOR FUTURE USE.



### 2 INSTALL AIR RELIEF VALVES

BEFORE POSITIONING THE FILTER TANK(S), ASSEMBLE THE AIR RELIEF VALVE(S) TO THE FILTER TANK(S) AIR RELIEF PORT(S). IF THE AIR RELIEF VALVE(S) ARE NOT INSTALLED AT THIS TIME, IT MAY BE NECESSARY TO CLIMB ON TOP OF THE FILTER TANK(S) TO ACCOMPLISH THIS ASSEMBLY LATER.

ELBOW(S), TEE(S) OR ADAPTOR(S) MAY BE INSTALLED INTO THE AIR RELIEF VALVE(S) TO DIRECT DISCHARGE TO FLOOR DRAIN. **NOTE: MANUAL AIR RELIEF SHOWN. TANKS ARE EQUIPPED WITH INTERNAL AUTOMATIC AIR RELIEF SYSTEM.** THE EXTERNAL AUTOMATIC AIR RELIEF VALVE IS INTENDED FOR DRINKING WATER SYSTEMS ONLY.



SOME TANKS MAY BE FITTED WITH A COMBINATION  
VACUUM \ AIR RELIEF **COMBINATION VACUUM\**  
**AIR RELIEF SHOWN.**



### 3 TANK POSITIONING

LAY OUT CHALK LINES ARE RECOMMENDED FOR MULTIPLE TANK INSTALLATIONS AND SHOULD BE LAID FOR POSITIONING THE FOUR ANCHOR BOLTS OF EACH TANK. POSITIONING AND ANCHOR BOLT HOLE TEMPLATES ARE PROVIDED TO AID IN POSITIONING THE EPD FILTER TANK(S).

### 4 POSITION TANKS & INSTALL ANCHORS

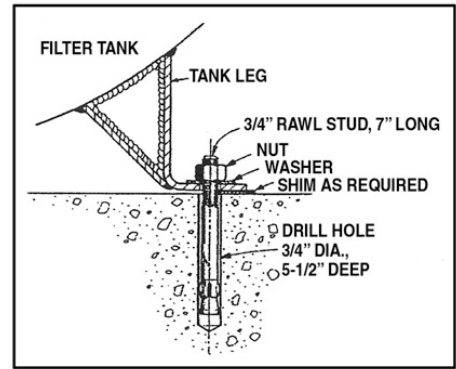
POSITION THE “TANK POSITIONING TEMPLATES,” REMOVED FROM THE SHIPPING CRATE EARLIER, ALONG THE CHALK LINE. THE TEMPLATES, WHEN BUTTED TOGETHER SIDE BY SIDE, WILL ASSURE THE PROPER ALIGNMENT OF THE FILTER TANK TO FILTER TANK AND TANKS TO PIPING.

PICTURED ARE POSITIONING TEMPLATES BEING LAID OUT ON THE FLOOR. USE OF THE TEMPLATES ASSURES THAT THE TANKS WILL BE LOCATED ON EXACT 39”(99CM) CENTERS.

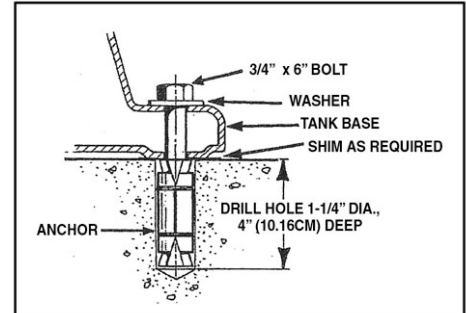


### STEEL STRAP TANK LEGS:

MARK THE ANCHOR HOLE LOCATIONS AND DRILL THE FOUR 3/4" (1.9CM) DIAMETER BY 5-1/2" (14CM) DEEP HOLES FOR EACH TANK. POSITION ONE TANK AT A TIME AND INSTALL THE ANCHOR BOLTS, WASHERS AND NUTS. SHIMS ARE PROVIDED TO LEVEL THE FILTER TANKS IN CASE OF AN UNEVEN FLOOR. FIRMLY SECURE ALL ANCHOR BOLTS.



FIBERGLASS/ROTATIONALLY MOLDED BASE LEGS: MARK THE HOLE LOCATIONS AND DRILL THE FOUR 1-1/4" (3.17CM) DIAMETER BY 4" (10.16CM) DEEP HOLES FOR EACH TANK. POSITION ONE TANK AT A TIME AND INSTALL THE ANCHOR BOLTS, WASHERS AND NUTS. SHIMS ARE PROVIDED TO LEVEL THE FILTER TANKS IN CASE OF AN UNEVEN FLOOR. FIRMLY SECURE ALL ANCHOR BOLTS.



## 5 INSTALL BUTTERFLY VALVES (DRINKING WATER SYSTEMS ONLY)

FOR DRINKING WATER SYSTEMS ONLY, BUTTERFLY ISOLATION VALVES ARE REQUIRED ON EACH TANK INLET AND OUTLET PORTS BY MOST REGULATORY AGENCIES.

POSITION THE BUTTERFLY VALVES AND LIGHTLY LUBRICATED COUPLING SEALS ON EACH PORT WITH HANDLE LOCATED TO ALLOW FULL OPERATION OF THE HANDLE. ADJUST THE COUPLING SEAL ONTO THE VALVE TO A POINT THAT THE SEAL IS HALF ON THE TANK PORT AND HALF ON THE VALVE CONNECTION.



ASSEMBLE THE COUPLING HALVES AROUND THE COUPLING SEAL AND INTO THE GROOVES OF THE PORT AND VALVE CONNECTION. SQUEEZE THE COUPLING HALVES TOGETHER AND INSERT THE COUPLING BOLTS AND ATTACH THE NUTS FINGER TIGHT. NEXT, INSTALL ANOTHER LIGHTLY LUBRICATED SEAL ON THE OTHER END OF THE VALVE.



## 6 INSTALL EFFLUENT MANIFOLD

PLACE COUPLING SEAL ON THE FILTER TANK EFFLUENT PORT NIPPLES, CENTER TANK PORTS. PUSH THEM DOWN SO THAT THEY ARE FLUSH WITH THE TOP OF THE NIPPLE. POSITION THE EFFLUENT MANIFOLD CONNECTION PORTS ON THE CENTER TANK PORTS. **NOTE: OPEN END (DISCHARGE) OF MANIFOLD MAY BE POSITIONED FOR EITHER RIGHT OR LEFT DISCHARGE. CONSULT ARCHITECTURAL AND/OR ENGINEERING INSTALLATION DRAWINGS FOR THIS FLOW DIRECTION INFORMATION.** ADJUST THE COUPLING SEALS ONTO THE MANIFOLD CONNECTIONS TO A POINT THAT THE SEALS ARE HALF ON THE TANK PORT (VALVE PORT FOR DW SYSTEMS) AND HALF ON THE MANIFOLD CONNECTION PORTS. ASSEMBLE THE COUPLING HALVES AROUND THE COUPLING SEAL AND INTO THE GROOVES OF THE CENTER TANK PORTS OR TOP GROOVE OF BUTTERFLY VALVE (DW SYSTEM ONLY) AND MANIFOLD CONNECTION PORTS. SQUEEZE THE COUPLING HALVES TOGETHER AND INSERT THE COUPLING BOLTS ATTACHING THE NUTS FINGER TIGHT. IF EITHER THE INFLUENT OR EFFLUENT MANIFOLDS HAVE DEVELOPED A BOW, A TRUCKER'S CINCH, WITH A HEAVY ROPE WRAPPED AROUND THE TANK (WHICH REPORTS NO CONTACT) MAY PROVIDE CONTACT ON LARGE DIAMETER MANIFOLDS.

**NOTE: ALL COUPLING NUTS AND BOLTS SHOULD BE SECURE BUT NOT COMPLETELY TIGHTENED. ALL COUPLING NUTS AND BOLTS WILL BE TIGHTENED AFTER ALL MANIFOLDS ARE INSTALLED, AS SLIGHT ADJUSTMENTS TO THE TANKS' ALIGNMENT MAY BE REQUIRED.**

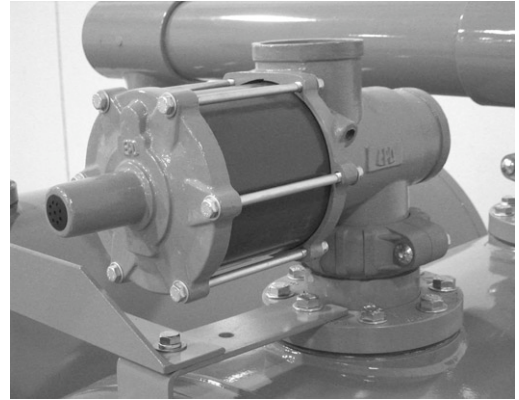
CARE SHOULD BE EXERCISED IN THE INSTALLATION OF THE MANIFOLD AND CLAMP ASSEMBLIES. DO NOT DROP THESE COMPONENTS ON THE FILTER TANK AS THEY MAY DAMAGE THE FINISH.



## 7 INSTALL BACKWASH VALVES

### 4" BACKWASH VALVE

A LABEL IS AFFIXED TO THE SIDE OF THE BACKWASH VALVE AND INDICATES PROPER INSTALLATION. AFFIX THE COUPLING SEAL, COUPLING HALVES AND HARDWARE AS PREVIOUSLY DESCRIBED. TIGHTEN THE COUPLING ASSEMBLIES SUFFICIENTLY TO SUPPORT THE VALVE AND MANIFOLD TO BE ADDED. BRONZE BACKWASH VALVE SHOWN.

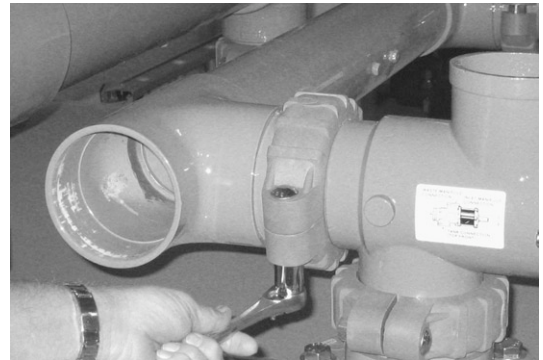


## 8 INSTALL WASTE MANIFOLD

THE WASTE MANIFOLD WILL NOW BE INSTALLED. LOCATE THE PROPER NUMBER OF COUPLINGS, COUPLING SEALS, NUTS AND BOLTS AND THE WASTE MANIFOLD. LUBRICATE AND POSITION THE COUPLING SEALS AS PREVIOUSLY DESCRIBED.

ATTACH THE WASTE MANIFOLD TO THE BACKWASH VALVES WASTE PORT. ALIGN THE COUPLINGS SEALS, INSTALL THE CLAMP ASSEMBLIES AND TIGHTEN SUFFICIENTLY TO SUPPORT THE WASTE MANIFOLD.

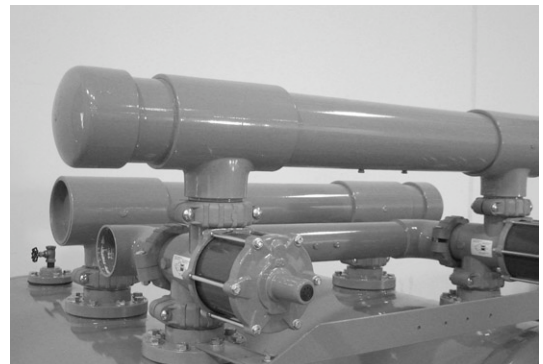
ONE END OF THE WASTE LINE MANIFOLD MAY BE SECURED WITH THE COUPLING HALVES, BUT NOT COMPLETELY TIGHTENED. THE OPPOSITE END MAY BE MOVED INTO POSITION AND SECURED WITH THE COUPLING HALVES. THEN, COMPLETE THE ASSEMBLY.



## 9 INSTALL INFLUENT MANIFOLD

THE INFLUENT MANIFOLD IS INSTALLED AS SHOWN WITH COUPLING ASSEMBLIES INSTALLED AND SECURED AS PREVIOUSLY DESCRIBED.

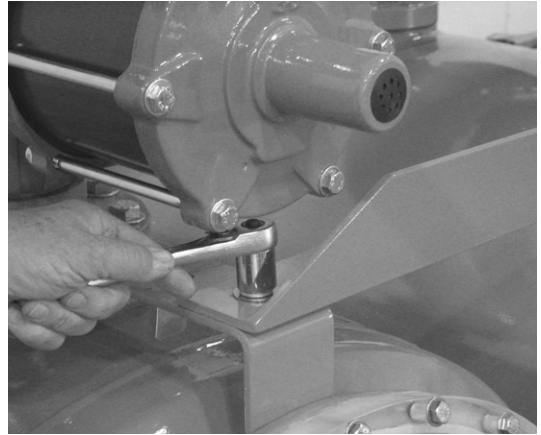
INFLUENT MANIFOLD SHOWN WITH COUPLING ASSEMBLIES SECURED IN PLACE.



## 10 INSTALL FILTER CONTROL MOUNTING BRACKET

LOCATE THE FILTER CONTROL MOUNTING BRACKET AND NECESSARY HARDWARE IN THE HOOK-UP PACK. REFER TO THE PARTS LIST FOR PROPER BOLTS, NUTS AND WASHERS FOR THIS ASSEMBLY.

INSTALL THE MOUNTING BRACKET BETWEEN TWO TANKS. FOR SYSTEMS LARGER THAN TWO TANKS, THE FILTER CONTROL MAY BE INSTALLED BETWEEN TWO TANKS AT THE FAR RIGHT OR FAR LEFT. CONSULT ARCHITECTURAL AND/OR ENGINEERING DRAWINGS FOR PROPER LOCATION.



IT MAY BE NECESSARY TO ADJUST EITHER OF THE TWO TANKS TO ALIGN THE MOUNTING HOLES TO MATCH THE MOUNTING BRACKET HOLES. INSTALL 5/6" X 1" BOLT, WASHER AND NUT IN THE LEFT SIDE OF THE MOUNTING BRACKET AND TANK BRACKET FINGER TIGHT.

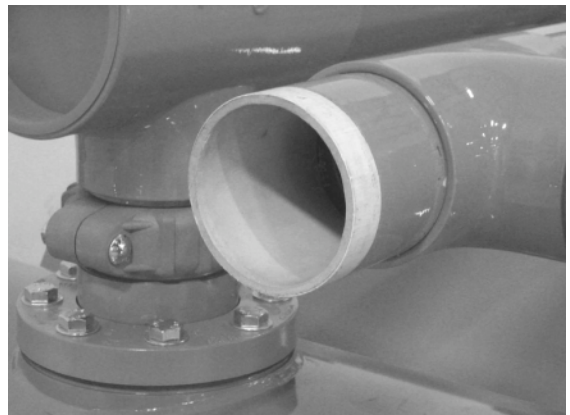
PLACE THE FILTER CONTROL MOUNTING BRACKET ON TANK MOUNTING BRACKETS WITH FLANGE OF BRACKET POINTING UP AND AWAY FROM TANK, AND ALIGN HOLES.

## 11 INSTALL NIPPLES INTO 4" MANIFOLDS FOR:

- A. EFFLUENT (PRIORITY OR RATE OF FLOW VALVE)
- B. BACKWASH SIGHT GLASS VALVE

VALVES FOR THE EFFLUENT AND WASTE LINES HAVE NOT BEEN INSTALLED TO ALLOW FOR INSTALLATION OPTIONS. IF 90° ELBOWS ARE DESIRED, THEY SHOULD BE INSTALLED NOW.

SYSTEMS WITH 4" PIPING REQUIRES A PVC NIPPLE (PROVIDED) TO BE SOLVENT WELDED INTO THE SOCKET PRIOR TO SOLVENT WELDING A 4" VALVE IN PLACE. FOLLOW SOLVENT CEMENT MANUFACTURERS INSTRUCTIONS.

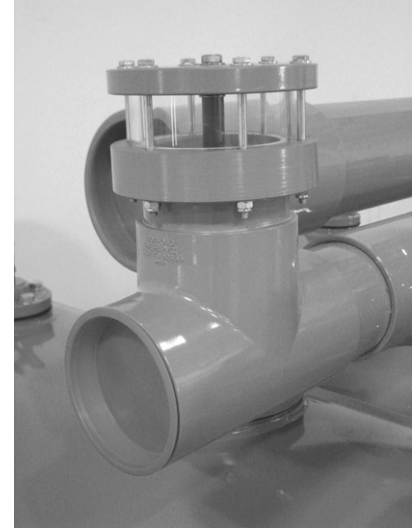


COAT NIPPLE AND SOCKET GENEROUSLY WITH PVC SOLVENT CEMENT. QUICKLY PUSH THE 4" X CLOSE NIPPLE INTO THE SOCKET OF THE 4" WASTE MANIFOLD, ROTATING A 1/8 TO 1/4 TURN UNTIL BOTTOMING OUT. WIPE OFF ANY EXCESS SOLVENT CEMENT.

## 12 INSTALL BACKWASH SIGHT GLASS VALVE

APPLY A GENEROUS AMOUNT OF SOLVENT TO THE 4" X CLOSE NIPPLE AND THE SOCKET OF THE 4" BACKWASH SIGHT GLASS VALVE ASSEMBLY. QUICKLY PUSH THE BACKWASH SIGHT GLASS VALVE ASSEMBLY ONTO THE 4" NIPPLE, ROTATING A 1/8 TO 1/4 TURN UNTIL BOTTOMING OUT AND PROPER ALIGNMENT IS ACHIEVED. **CAUTION:** DO NOT ALLOW SOLVENT CEMENT TO RUN INSIDE THE VALVE BODY. EXCESSIVE SOLVENT WILL RENDER THE VALVE INOPERATIVE.

WHEN SOLVENT WELDING ONTO THE 4" X CLOSE NIPPLE, ALIGN THE ASSEMBLY SO THE TOP OF THE SIGHT GLASS IS LEVEL. WIPE OFF ANY EXCESS SOLVENT CEMENT.



DETERMINE THE PHYSICAL TANK SIZES AND THE TYPE OF MEDIA IN YOUR SYSTEM. THE CHART SHOWS YOU MINIMUM AND MAXIMUM FLOWS REQUIRED FOR BACKWASHING. 2-3 MINUTES BACKWASH TIME PER TANK.

MEDIA	FILTER AREA (FT SQ. PER TANK/FLOW GPM)		
	13.5 FT SQ.	16.5 FT SQ.	20.0 FT SQ.
#20 SILICA SAND	200–275	247–330	300–400
#30 SILICA SAND	175–225	215–264	260–320
#50 GARNET	270–325	330–396	400–480
#60/80 GARNET	270–300	330–363	400–440

## 13 INSTALL RATE OF FLOW/PRIORITY VALVES

### 4" VALVE

FOLLOWING THE SAME PROCEDURE FOR INSTALLING THE 4" BACKWASH SIGHT GLASS VALVE, INSTALL THE PRIORITY OR RATE OF FLOW VALVE TO THE EFFLUENT MANIFOLD.

### 6" THRU 12" VALVES

FOLLOWING THE SAME PROCEDURE FOR INSTALLING THE 6" BACKWASH SIGHTGLASS VALVE, INSTALL THE 6" THRU 12" PRIORITY OR RATE OF FLOW VALVE TO THE EFFLUENT MANIFOLD.



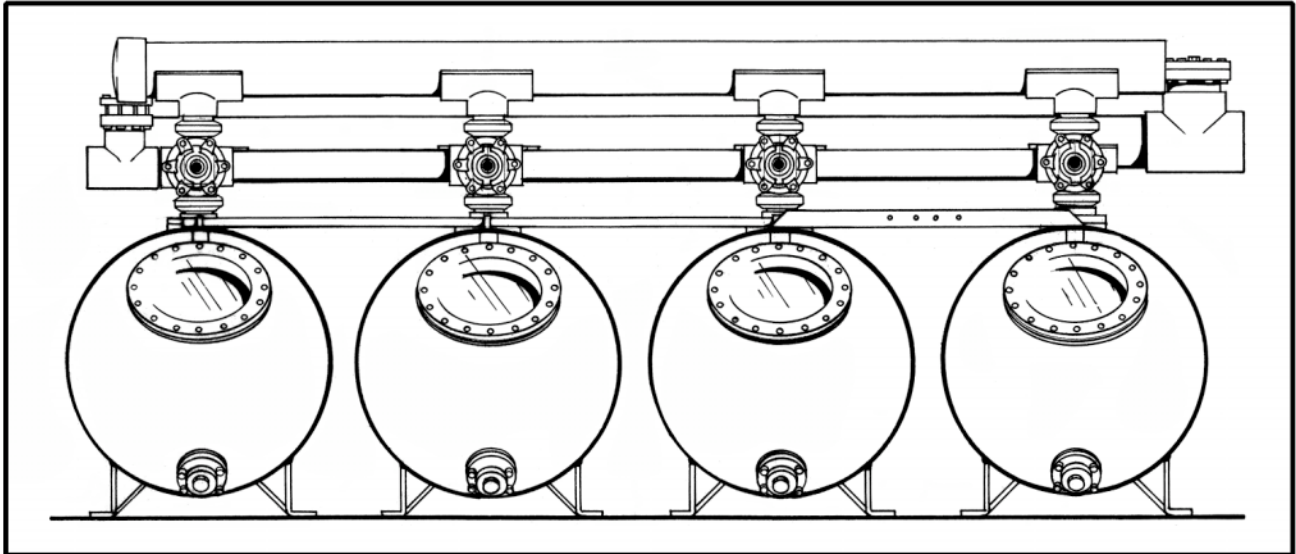
## 14 SECURE ALL COUPLINGS, NUTS & BOLTS

AT THIS TIME, MAKE SURE ALL COUPLINGS ARE SEATED IN THEIR RESPECTIVE GROOVES. TIGHTEN COUPLING NUTS AT ALL CONNECTIONS, I.E.; TANK INLET AND OUTLET PORTS, VALVES AND MANIFOLDS.

## 15 INSTALL TUBING CONDUIT

A TUBING CONDUIT IS PROVIDED WITH ALL NECESSARY MOUNTING HARDWARE FOR THE CONTAINMENT OF THE MANY PIECES OF TUBING CONNECTING THE FILTER CONTROL MULTI-PORT VALVE TO EACH BACKWASH VALVE. THE FILTER CONTROL MAY BE INSTALLED BETWEEN TWO TANKS AT THE FAR RIGHT OR FAR LEFT. THE TUBING CONDUIT SHOULD BE MOUNTED, STARTING AT THE OPPOSITE FAR END OF THE FILTER FROM THE FILTER CONTROLLER. REFER TO THE ARCHITECTURAL AND/OR ENGINEERING INSTALLATION DRAWINGS FOR THE FILTER CONTROL LOCATION.

POSITION THE TUBING CONDUIT ON TOP OF THE TANK MOUNTING BRACKETS AT THE FRONT OF THE TANKS. THE SLOT OPENINGS MUST BE FACING INWARD TOWARDS THE TANKS. POSITION THE TUBE CONDUIT CLAMPS AS SHOWN AND SECURE WITH HARDWARE PROVIDED. REFER TO EXPLODED PARTS LIST.



## 16 INSTALL WATER PRESSURE SUPPLY SOURCE (PRESSURE AMPLIFICATION SYSTEM)

ALL EPD FILTER SYSTEMS REQUIRE 50 PSI (344.76kPa) WATER PRESSURE SUPPLY TO THE FILTER CONTROL TO OPERATE THE FILTER'S BACKWASH VALVES.

TO AVOID THE NECESSITY OF INSTALLING EXPENSIVE BACKFLOW PREVENTOR AND PRESSURE SUSTAINING DEVICES, IT IS RECOMMENDED THAT A PRESSURE AMPLIFICATION SYSTEM BE INSTALLED.

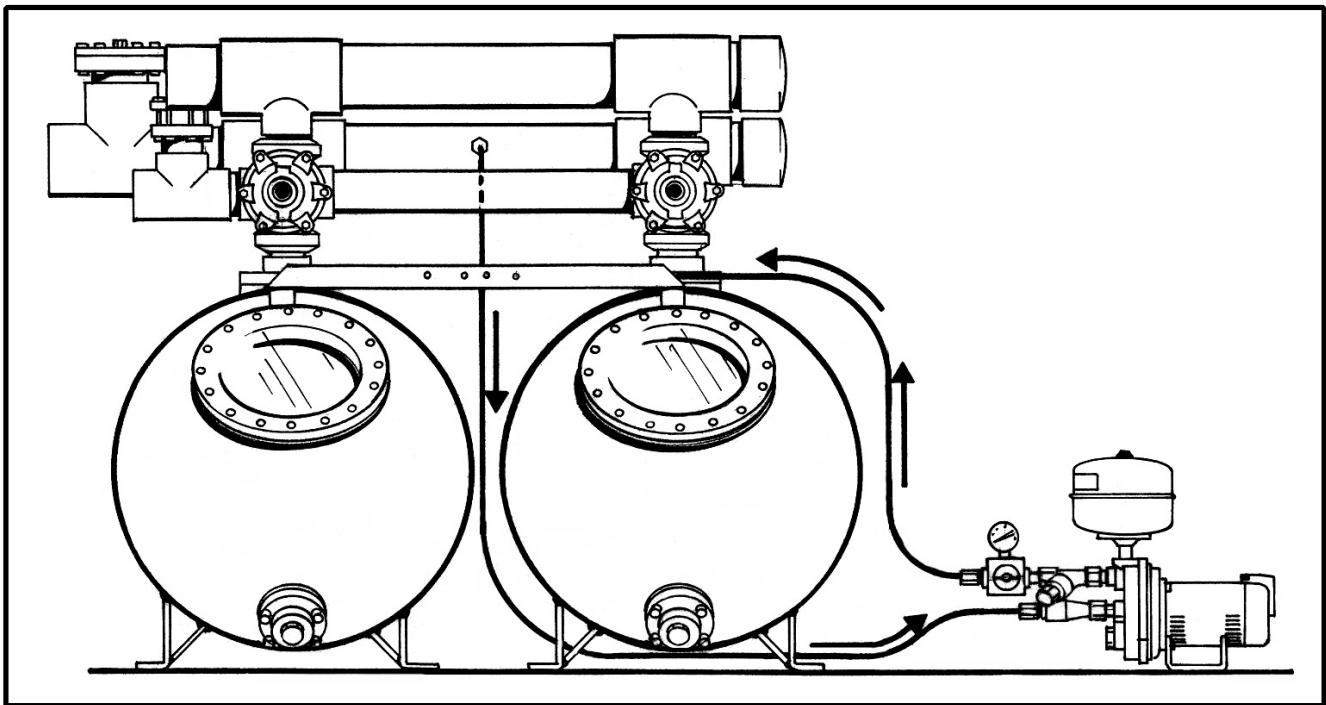
PRESSURE AMPLIFICATION SYSTEM  
PART NO. 2-0020-076 60 Hz MODELS  
PART NO. 2-0020-115 50 Hz MODELS



THE PRESSURE AMPLIFICATION SYSTEM IS A DEVICE DESIGNED TO PROVIDE AND MAINTAIN A CONSTANT REGULATED SOURCE OF WATER PRESSURE WITHIN THE HYDRAULIC SYSTEM OF THE EPD FILTER SYSTEM FOR HYDRAULICALLY ACTUATING THE VALVES DURING BACKWASH. WHEN THE BACKWASH CYCLE IS INITIATED, THE PRESSURE AMPLIFICATION SYSTEM IS ACTIVATED EITHER MANUALLY BY WAY OF AN ON/OFF SWITCH OR AUTOMATICALLY THROUGH THE CONTROLLER. FILTERED WATER FLOWS FROM THE FILTERS EFFLUENT MANIFOLD INTO THE PRESSURE

AMPLIFICATION SYSTEM AND IS PRESSURIZED TO A REGULATED 50 PSI (344.7 kPa) IN THE HYDRO PNEUMATIC TANK. ON DEMAND, PRESSURE IS RELEASED INTO THE VALVE HYDRAULIC ACTUATING SYSTEM.

THE SYSTEM IS DESIGNED TO OPERATE INTERMITTENTLY. DURING THE BACKWASH CYCLE, THE PUMP RUNNING TIME IS GOVERNED BY AN ADJUSTABLE PRESSURE (CUT IN/CUT OUT) SWITCH. THIS FEATURE ALLOWS FOR DELIVERY OF ADEQUATE WATER UNDER PRESSURE BETWEEN PUMP CYCLES, PROVIDES ECONOMICAL SYSTEM OPERATION BY MINIMIZING PUMP STARTS, EXTENDS MOTOR LIFE AND SAVES ENERGY.



PLACE ASSEMBLED PRESSURE AMPLIFICATION SYSTEM IN ITS DESIRED LOCATION, ANCHORING THE UNIT TO THE FLOOR OR ITS MOUNTING PEDESTAL WITH APPROPRIATE HARDWARE (NOT PROVIDED BY EPD).

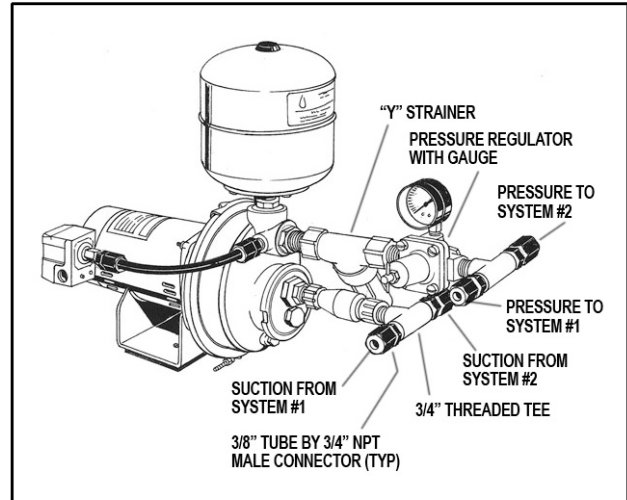
CONNECT THE PRESSURE AMPLIFICATION SYSTEM'S PUMP SUCTION (CHECK VALVE ASSEMBLY) TO THE EFFLUENT MANIFOLD. 1/4" NPT X TUBE FITTING AND TUBING ARE PROVIDED FOR THESE CONNECTIONS.

**NOTE:** THE CONNECTION TO THE MULTIPLE FILTER TANK SYSTEM EFFLUENT MANIFOLD MUST BE MADE BETWEEN THE FILTER TANKS AND THE PRIORITY VALVE OR THE RATE OF FLOW ADJUSTMENT VALVE. DO NOT MAKE THIS CONNECTION AFTER THE PRIORITY/RATE OF FLOW ADJUSTMENT VALVE. A SINGLE PRESSURE AMPLIFICATION SYSTEM WILL PROVIDE THE NECESSARY OPERATING PRESSURE TO EACH FILTER SYSTEM WHEN TWO FILTER SYSTEMS ARE INSTALLED.

## 17 INSTALLATION OF PAS SYSTEM FOR TWO FILTER SYSTEMS

THIS SPECIAL INSTALLATION WILL REQUIRE THAT YOU MAKE AN ADDITIONAL PURCHASE OF ONE (1) 3/4" X CLOSE NIPPLE, TWO (2) 3/4" THREADED TEES, ONE (1) 3/4" X 1/2" REDUCING BUSHING, ONE (1) 1/2" X CLOSE NIPPLES AND THREE (3) 3/4"NPT X 3/8" TUBING CONNECTORS. THESE FITTINGS REPLACE THE SINGLE TUBING CONNECTIONS TO THE PRESSURE AMPLIFICATION SYSTEM'S SUCTION AND PRESSURE CONNECTIONS TO PROVIDE BRANCH CONNECTIONS TO BOTH FILTER SYSTEMS.

PRESSURE AMPLIFICATION SYSTEM SHOWN WITH "TEES", "Y" STRAINER AND PRESSURE REGULATOR.



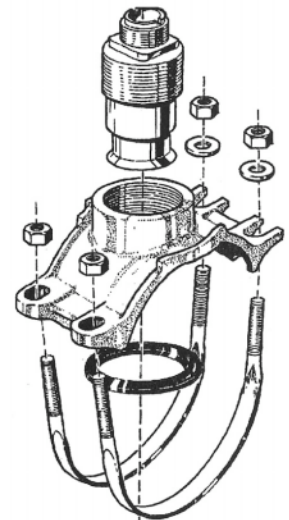
### NOTE:

1. FOR WATER PRESSURE SUPPLY FROM CITY WATER SOURCE (WITHOUT THE EPD PRESSURE AMPLIFICATION SYSTEM), INSTALL THE "Y" STRAINER AND PRESSURE REGULATOR DIRECTLY TO THE CITY WATER LINE AND ROUTE 3/8" TUBING TO SOLENOID(S) ON THE FILTER SYSTEM. REGULATE PRESSURE TO 50 P.S.I.
2. THE WATER PRESSURE REGULATOR AND "Y" STRAINER IS PACKED WITH THE CONTROLLER.

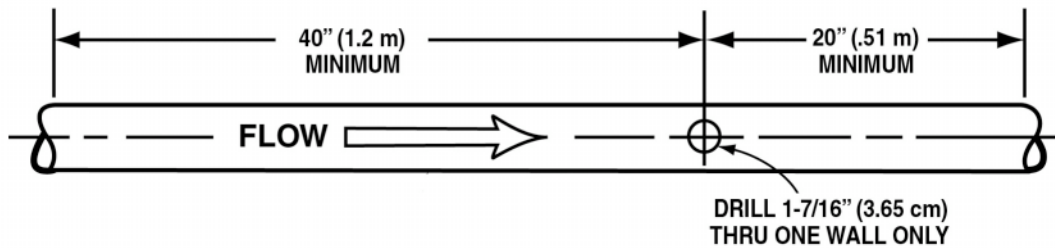
## 18 INSTALL EFFLUENT FLOW METER

IF A FLOW METER IS PROVIDED WITH YOUR FILTER SYSTEM, ESTABLISH THE DESIRED LOCATION OF THE FLOW METER SENSOR IN THE FILTER EFFLUENT LINE. DO NOT INSTALL THE FLOW METER SADDLE IN THE INFLUENT LINE AS DEBRIS MAY CLOG THE FLOW SENSOR RESULTING IN FALSE READING.

FLOW METER SADDLE ASSEMBLY



INSTALL THE FLOW METER SENSOR SADDLE ALLOWING A MINIMUM OF 10 PIPE DIAMETERS OF STRAIGHT PIPE UPSTREAM FROM THE SENSOR SADDLE AND FIVE (5) PIPE DIAMETERS DOWNSTREAM.



Pipe Size	A	B
4" (10cm)	40" (1.20m)	20" (.51m)
6" (15cm)	60" (1.52m)	30" (.76m)
8" (20cm)	80" (2.03m)	40" (1.02m)
10"(25cm)	100" (2.45m)	50" (1.27m)
12"(30cm)	120" (3.05m)	60" (1.52m)

AVOID INSTALLATION DIRECTLY DOWNSTREAM FROM HIGH TURBULENCE SUCH AS BUTTERFLY VALVES OR CHECK VALVES. A PARTIALLY OPENED BUTTERFLY VALVE MAY REQUIRE 20 TO 30 PIPE DIAMETERS OF FREE FLOW FOR ADEQUATE LIQUID STABILITY AT THE FLOW METER SENSOR.

TO ACCURATELY REGULATE THE BACKWASH FLOW RATE, INSTALL A FLOW METER SADDLE ASSEMBLY INTO THE WASTE LINE ACCORDING TO THE PREVIOUS INSTRUCTIONS FOR THE EFFLUENT FLOW METER. INSTALL THE SPECIAL SENSOR PLUG. YOUR REPRESENTATIVE WILL INSTALL A FLOW SENSOR AND REGULATE THE FLOW BY ADJUSTING THE BACKWASH SIGHT GLASS VALVE DURING THE INITIAL START-UP. THE SPECIAL SENSOR PLUG WILL BE RE-INSTALLED.

ASSEMBLE SADDLE, U-BOLTS AND NUTS AROUND PIPE OVER THE DRILLED HOLE. POSITION FLAT GASKET, PROVIDED, BETWEEN PIPE AND SADDLE PRIOR TO ASSEMBLY. SECURE IN PLACE BY TIGHTENING NUTS ON U-BOLTS.



## 19 COMPLETE ALL MECHANICAL ROOM PLUMBING

COMPLETE THE MECHANICAL ROOM PLUMBING CONNECTIONS. REFER TO ARCHITECTURAL AND/OR ENGINEERING DRAWINGS FOR PROPER LINE SIZING AND LOCATIONS.

**NOTE:** ALL WATER HEATING EQUIPMENT (BOILERS AND/OR HEAT EXCHANGER) AND CHEMICAL FEED EQUIPMENT (CHLORINATION, SODA ASH, CAUSTICS, ETC.), MUST BE INSTALLED ON THE EFFLUENT (DOWNSTREAM) SIDE OF THE FILTER SYSTEM. IT IS FURTHER RECOMMENDED THAT A CHECK VALVE ASSEMBLY BE INSTALLED BETWEEN HEATERS, FEED EQUIPMENT AND THE FILTER SYSTEM. BACKFLOW OF BOILER WATER AND CHEMICAL CONCENTRATES MAY CAUSE DAMAGE TO THE FILTER TANK INTERNALS. ALL PLUMBING SHOULD BE PERFORMED IN ACCORDANCE WITH LOCAL CODE REQUIREMENTS. ALLOW SUFFICIENT CURING OF PLUMBING JOINTS BEFORE PRESSURIZING THE PLUMBING. REFER TO PVC SOLVENT MANUFACTURER'S RECOMMENDATIONS FOR THE CURING TIME. EPD RECOMMENDS 72 HOUR OF CURE TIME BEFORE PRESSURIZATION AND SYSTEM START-UP.

## 20 MEDIA SPECIFICATIONS AND REQUIRED AMOUNTS

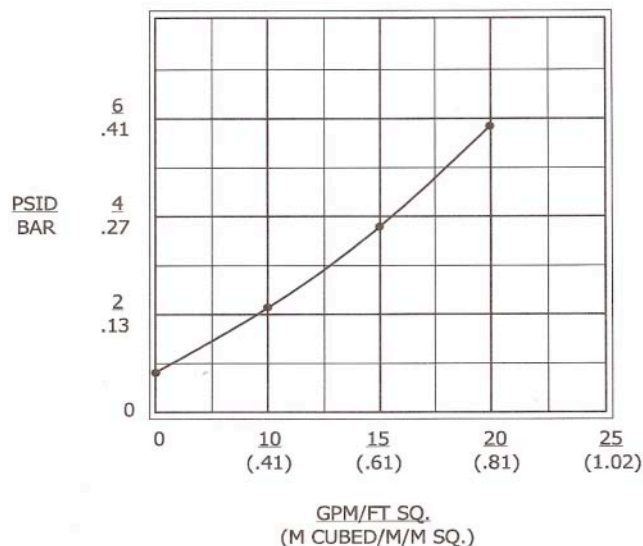
THE FOLLOWING CHART INDICATES THE QUANTITIES OF FILTER MEDIA SHOWN IN CUBIC FEET OR CUBIC METERS REQUIRED FOR YOUR FILTER SYSTEM.

### MEDIA REQUIREMENTS\*

No. of Tanks	13.5 Steel Tank		16.5 Steel Tank		17 Fiberglass Tank		20.0 Steel & Fiberglass	
	FT <sup>3</sup>	M <sup>3</sup>	FT <sup>3</sup>	M <sup>3</sup>	FT <sup>3</sup>	M <sup>3</sup>	FT <sup>3</sup>	M <sup>3</sup>
2	42	1.19	46	1.30	48	1.36	54	1.53
3	63	1.78	69	1.95	72	2.04	81	2.29
4	84	2.38	92	2.61	96	2.72	108	3.06
5	105	2.97	115	3.26	120	3.40	135	3.82
6	126	3.57	138	3.91	144	4.08	162	4.59
7	147	4.16	161	4.56	168	4.76	189	5.35
8	168	4.76	184	5.21	192	5.44	216	6.12

\*(EPD filters certified for use with #20 silica sand only)

**HEAD LOSS CURVE FOR # 20 SILICA SAND**  
AS REQUIRED BY THE NATIONAL  
SANITATION FOUNDATION (NSF) FOR  
HIGH RATE SAND FILTERS STANDARD 50.



## MEDIA SPECIFICATIONS

**#20 SILICA SAND - EFFECTIVE SIZE OF .45 MILLIMETER WITH UNIFORMITY COEFFICIENT OF 1.5 MAXIMUM.**

SIEVE NO. (U.S. SERIES)	OPENING IN MILLIMETERS (MM)	OPENING IN INCHES (IN.)	PERCENT RETAINED ON SIEVE (BY WEIGHT)
20	0.833 MM	0.333 IN.	2
30	0.589 MM	0.023 IN.	58
40	0.417 MM	0.016 IN.	36
50	0.295 MM	0.012 IN.	4

**#30 SILICA SAND - EFFECTIVE SIZE OF .27 MILLIMETER WITH A UNIFORMITY COEFFICIENT OF 1.6 MAXIMUM.**

SIEVE NO. (U.S. SERIES)	OPENING IN MILLIMETERS (MM)	OPENING IN INCHES (IN.)	PERCENT RETAINED ON SIEVE (BY WEIGHT)
30	0.589 MM	0.023 IN.	2
40	0.417 MM	0.016 IN.	36
50	0.295 MM	0.012 IN.	46
70	0.208 MM	0.008 IN.	11
100	0.147 MM	0.0005 IN.	5

**#50X GARNET - EFFECTIVE SIZE OF .27 MILLIMETER WITH A UNIFORMITY COEFFICIENT OF 1.7 MAXIMUM.**

SIEVE NO. (U.S. SERIES)	OPENING IN MILLIMETERS (MM)	OPENING IN INCHES (IN.)	PERCENT RETAINED ON SIEVE (BY WEIGHT)
30	0.589 MM	0.023 IN.	2
40	0.417 MM	0.016 IN.	52
50	0.295 MM	0.012 IN.	35
70	0.208 MM	0.008 IN.	10
100	0.147 MM	0.0005 IN.	1

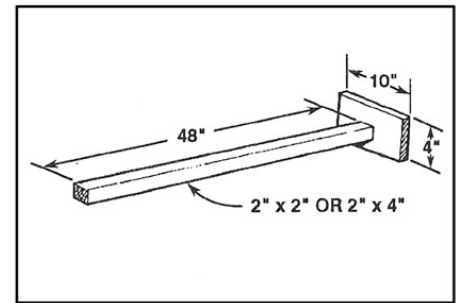
**#60/80 GARNET - EFFECTIVE SIZE OF .18 MILLIMETER WITH A UNIFORMITY COEFFICIENT OF 1.61 MAXIMUM**

SIEVE NO. (U.S. SERIES)	OPENING IN MILLIMETERS (MM)	OPENING IN INCHES (IN.)	PERCENT RETAINED ON SIEVE (BY WEIGHT)
40	0.417 MM	0.016 IN.	3
50	0.295 MM	0.012 IN.	35
70	0.208 MM	0.008 IN.	32
80	0.178 MM	0.007 IN.	12
100	0.147 MM	0.0005 IN.	10
PAN			8

## 21 INSTALL FILTER MEDIA

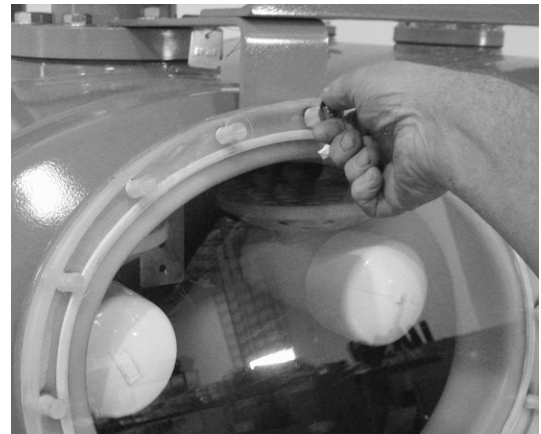
### MAKE MEDIA LEVELING TOOL

CONSTRUCT A MEDIA LEVELING TOOL FROM SCRAP LUMBER AS SHOWN. IT WILL MAKE THE JOB MUCH EASIER.



### REMOVE CLEAR COVERS

REMOVE THE CLEAR MANHOLE COVERS, NUTS AND BOLTS OR BOLTS AND REMOVE THE GASKETS. TAKE CARE NOT TO DROP THE CLEAR COVERS TO PREVENT DAMAGE TO THE CLEAR VIEWING AREAS OR BREAKAGE.

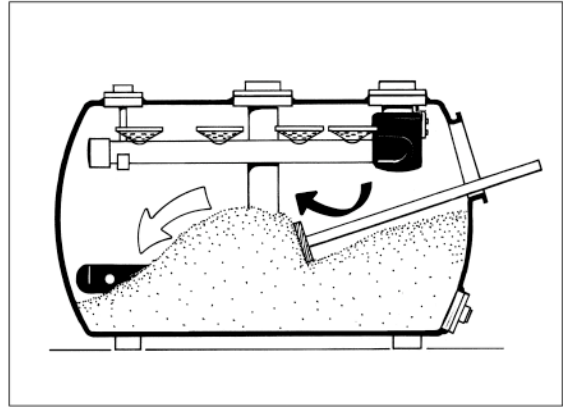


### FILL TANKS

CUT OPEN TOP OF MEDIA BAG AND REST ON EDGE OF MANHOLE RING OPENING WHILE POURING MEDIA INTO TANK.

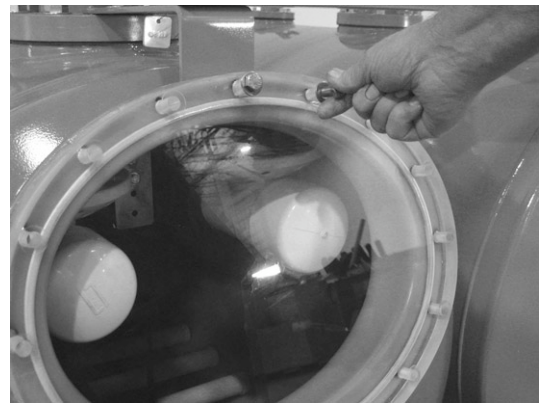


AS THE MEDIA PILES UP INSIDE THE TANK BEHIND THE MANHOLE RING, PUSH THE MEDIA TO THE REAR, LEVELING THE SURFACE AS YOU PROGRESS, USING THE LEVELING TOOL. TAKE CARE NOT TO DAMAGE THE INTERNAL LATERALS.



## REPLACE CLEAR COVERS

RINSE OFF ANY MEDIA GRAINS FROM THE MANHOLE RING SURFACE. REPLACE THE CLEAR COVER AND GASKET WITH THE HARDWARE REMOVED DURING REMOVAL OF COVER. TIGHTEN NUTS AND BOLTS OR BOLTS ALTERNATELY UNTIL FIRMLY SECURED. DO NOT OVERTIGHTEN!



## 22 FINAL REVIEW

DOUBLE CHECK ALL PIPING CONNECTIONS TO MAKE SURE THEY ARE ALL SECURED. MAKE SURE ALL SOLVENT WELD JOINTS HAVE BEEN CEMENTED. REFER TO THE FILTER CONTROL INSTRUCTIONS GUIDE AND FOLLOW THE STEPS OF INSTALLATION.