



Culligan®

Culligan Heavy Duty Commercial Filters

assisted living facilities

cafeterias

casinos

corporate campuses

educational facilities

food service

grocery

hotel/hospitality

institutions

laundry

theme parks

vehicle wash



Hi-Flo® 2 Heavy Duty Commercial Filter

***Culligan Hi-Flo 2* Water Filter Standard Features**

- Choice of Granular Activated Carbon or mixed media depth filters.
- *Culligan* Tripl-Hull™ Tanks—Durable carbon steel with the corrosion resistance of plastic. A 20 mil inner liner hermetically sealed within the steel tank.
- *Culligan* Power Valve—Constructed of durable, corrosion-resistant plastic.
- 1 1/2" Flo-Paks—Corrosion resistant hard anodized, polymer coated aluminum alloy Flo-Paks allow system flows up to 21 gpm per tank for depth filters and 14 gpm per tank for carbon filters.
- Mechanical clock timer—Simple design assures reliable operation year after year.
- Top-Mount Control Valve—Keeps plumbing connections simple and adaptable.



The Culligan Hi-Flo 2 Water Filter

Applications and Benefits

- Food and Beverage—Superior taste and increased cost savings.
- Drinking Water—Reduces turbidity and chlorine; improves taste and clarity.
- Boilers—Turbidity reduction, minimize sludge blowdown.
- Light Industry Processes—Reduces particulate matter.
- Pretreatment—For softeners, RO's and DI systems.
- Vehicle Wash—Turbidity reduction.

Options

- Alternating controls for use with a single signal such as a pressure differential switch or standard time clock alternator.
- Duplex Kit to eliminate raw water bypass
- Pressure Differential Switch

Warranty

Culligan Hi-Flo 2 water filters are backed by a 1-year limited warranty against defects in material and workmanship. In addition, the control valve body (excluding internal parts) and all of its component parts are warranted for a limited period of 5 years. Tripl-Hull™ tanks carry a limited 12-year warranty against internal corrosion.*

* See printed warranty for details. Culligan will provide a copy of the warranty upon request.

System Specifications

Pressure:	30–100 psig 207–690 kPa
Power:	120 VAC/24 VAC 50/60 Hz
Temperature:	33–120°F 4–38°C

Specifications Table

	Model	Water Quality						Backwash Flow Rate (GPM)	Valve Size (inches)
		Superior ¹		High ²		Utility ³			
		Flow Rate (GPM)	Pressure Loss (PSI)	Flow Rate (GPM)	Pressure Loss (PSI)	Flow Rate (GPM)	Pressure Loss (PSI)		
Carbon Filters	PV-12R	3	1	4.5	1	6	3	8	1.5
	PV-16R	6	1	8.5	2	11	3	15	1.5
Depth Filters	PV-12D	8	2	12	4	16	10	10	1.5
	PV-16D	14	3	21	7	28	14	20	1.5

¹Superior – Best quality water with lowest pressure loss. Recommended for influent suspended solid loads up to and greater than 300 ppm.

²High – Very good quality water with increased pressure loss. Recommended for influent suspended solid loads less than 300 ppm.

³Utility – Satisfactory quality water with greatest pressure loss. Shorter on-line time between backwashing. Recommended for influent suspended solid loads less than 150 ppm.

All pressure drop figures are based on new filter media and a water temperature of 60°F.

Depth filters are capable of 10 micron effluent water quality, whereas all other filter types are capable of 40 micron effluent water quality.

The contaminants or other substances removed or reduced by this water treatment device are not necessarily in your water.

“Hey Culligan Man!”

Culligan

Culligan Commercial @ Work™

www.culligan.com

1-800-CULLIGAN

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MOORE PART NO. 46915



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HI-FLO[®] 2

AUTOMATIC FILTERS FOR SEDIMENT REMOVAL, DECHLORINATION AND ORGANIC ADSORPTION

SPECIFICATIONS AND OPERATING DATA

		HI-FLO 2 MULTI-MEDIA DEPTH FILTERS		HI-FLO 2 ACTIVATED CARBON FILTERS W/COLLAR, D PLUS MEDIA	
MODEL NUMBER		PV-12D	PV-16D	PV-12R	PV-16R
Peak ¹ Rate, Depth Filters	gpm	12	21	8	14
Dechlorination Rate	@ psi	4	7	7	4
Carbon Filters					
Flow Rate	L/min.	45	79	30	53
@ Pressure Drop	@ kPa	28	48	14	28
Normal Rate, Depth Filters	gpm	8	14	5	7
Organic Adsorption Rate	psi	2	3	1	1
Carbon Filters					
Flow Rate	L/min.	30	53	19	26
@ Pressure Drop	@ kPa	14	21	7	7
Backwash Rate	gpm	10	20	8	15
	L/min.	38	76	30	57
Tank Size	in	12 x 38	16 x 37	12 x 38	16 x 48
	mm	300 x 965	410 x 940	300 x 965	410 x 1220
Inlet/Outlet Pipe Size	in	1.5	1.5	1.5	1.5
Drain Pipe Size	in	0.75	1	0.75	1
Media Volume, Std.	ft ³	2	3	2	3
	L	57	85	57	85
Approx. Ship. Weight	lb	222	410	141	305
	kg	101	186	64	138

NOTES:

- Peak flow rates are not recommended for extended periods of time.
- Depth filter flow rates are based on 10 gpm/ft² (37 L/m²/min) for Normal and 15 gpm/ft² (57 L/m²/min) for Peak Flow rates. Actual service rate may vary from 2 to 20 gpm/ft² (8 - 76 L/m²/min) depending upon the application and the raw water.
- Depth filter backwash flow rates are based on 12 - 14 gpm/ft² (45 - 53 L/m²/min) using 50° F (10° C) water. A different backwash rate may be required depending upon water temperature or other water conditions.
- Carbon filter flow rates are based on 5 gpm/ft² (19 L/m²/min) for Organics Adsorption and 10 gpm/ft² (38 L/m²/min) for Dechlorination. Actual service rate may vary depending upon the application and the raw water.
- Carbon filter backwash flow rates are based on 10 gpm/ft² (38 L/m²/min) using 50° F (10° C) water. A different backwash rate may be required depending upon water temperature or the type of carbon used.
- Operational, maintenance and replacement requirements are essential for this product to perform as advertised. Service is available through independently operated Culligan dealerships.

Culligan

Commercial Systems
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LIMITED WARRANTY

CULLIGAN® HI-FLO® 2 and 2e AUTOMATIC WATER CONDITIONERS

You have purchased one of the finest water conditioners made. As an expression of our confidence in Culligan products, your water conditioner is warranted to the original end-user, when installed in accordance with Culligan International Company specifications, against defects in material and workmanship from the date of original installation, as follows:

For a period of ONE YEAR	The entire conditioner The circuit board and meter					
For a period of FIVE YEARS	<table border="0"> <tr> <td style="font-size: 3em; vertical-align: middle;">}</td> <td style="vertical-align: top;">The control valve body, but excluding its internal parts</td> <td style="vertical-align: top;">The salt storage container and The brine valve and all its components parts</td> <td style="font-size: 3em; vertical-align: middle;">}</td> <td style="vertical-align: top;">On models so equipped</td> </tr> </table>	}	The control valve body, but excluding its internal parts	The salt storage container and The brine valve and all its components parts	}	On models so equipped
}	The control valve body, but excluding its internal parts	The salt storage container and The brine valve and all its components parts	}	On models so equipped		
For a period of TWELVE YEARS	The conditioner tank, if it contains a plastic inner liner					

If a part described above becomes defective, within the specified period, you should notify your independently operated Culligan dealer and arrange a time during normal business hours for the dealer to inspect the water conditioner on your premises. Any part found defective within the terms of this warranty will be repaired or replaced by the dealer. You pay only freight from our factory and local dealer charges.

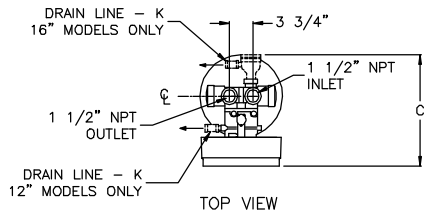
Of course, damage caused by accident, fire, flood, freezing, Act of God, misuse, misapplication, neglect, alteration, installation or operation contrary to our printed instructions, or by the use of accessories or components which do not meet Culligan specifications, is not covered by this warranty.

Our product performance specifications are furnished with each water conditioning unit. TO THE EXTENT PERMITTED BY LAW, CULLIGAN DISCLAIMS ALL IMPLIED WARRANTIES INCLUDING, WITHOUT LIMITATION, WARRANTIES OF MERCHANTABILITY AND FITNESS FOR PARTICULAR PURPOSE; TO THE EXTENT REQUIRED BY LAW, ANY SUCH IMPLIED WARRANTIES ARE LIMITED IN DURATION TO THE ONE-YEAR PERIOD SPECIFIED ABOVE FOR THE PARTS DESCRIBED IN THIS LIMITED WARRANTY. As manufacturer, we do not know the characteristics of your water supply or the purpose for which you are purchasing a water conditioner. Please understand that the quality of water supplies may vary seasonally or over a period of time, and that your water usage rate may vary as well. Water characteristics can also change considerably if your water conditioner is moved to a new location. For these reasons, we assume no liability for the determination of the proper equipment necessary to meet your requirements, and we do not authorize others to assume such obligations for us. Further, we assume no liability and extend no warranties, express or implied, for the use of this product on a non-potable water source. OUR OBLIGATIONS UNDER THIS WARRANTY ARE LIMITED TO THE REPAIR OR REPLACEMENT OF THE FAILED PARTS OF THE WATER CONDITIONER, AND WE ASSUME NO LIABILITY WHATSOEVER FOR DIRECT, INCIDENTAL, CONSEQUENTIAL, SPECIAL, GENERAL, OR OTHER DAMAGES, WHETHER FROM CORROSION OR OTHER CAUSES.

CONSUMERS:

Some states do not allow limitations on how long an implied warranty lasts, so the above limitation may not apply to you. Similarly, some states do not allow the exclusion of incidental or consequential damages, so the above limitation or exclusion may not apply to you. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state. Consult your telephone directory for your local independently-operated Culligan dealer, or write Culligan International Company, for warranty and service information.

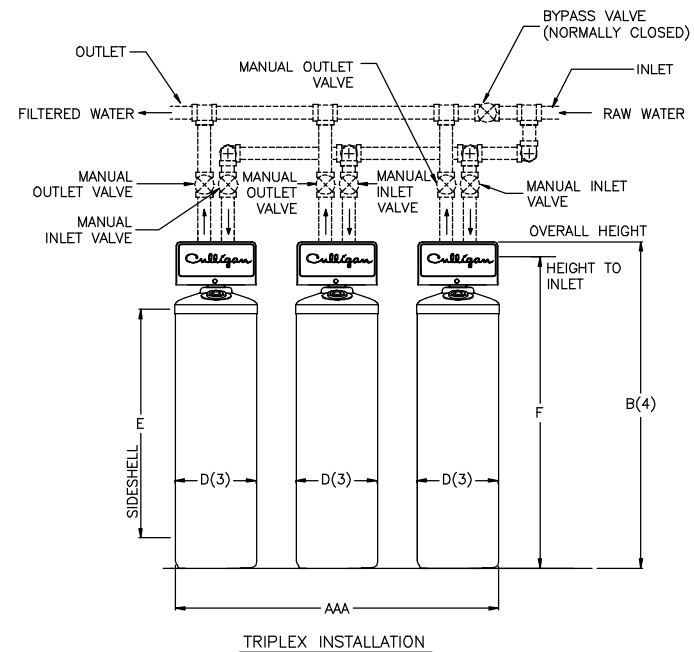
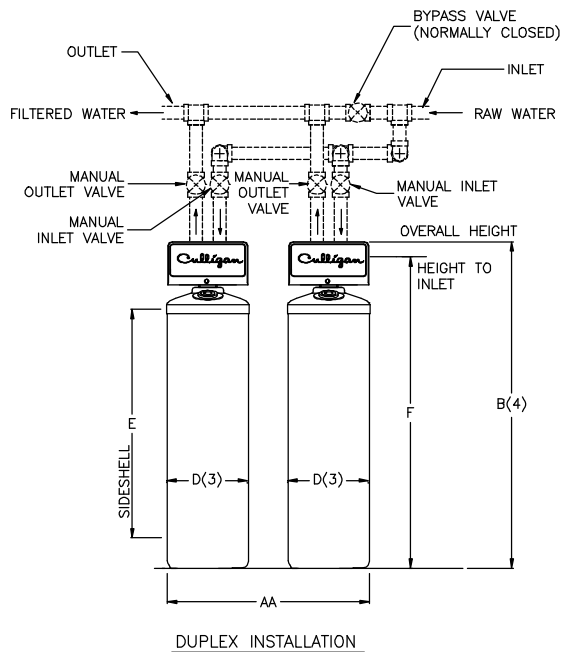
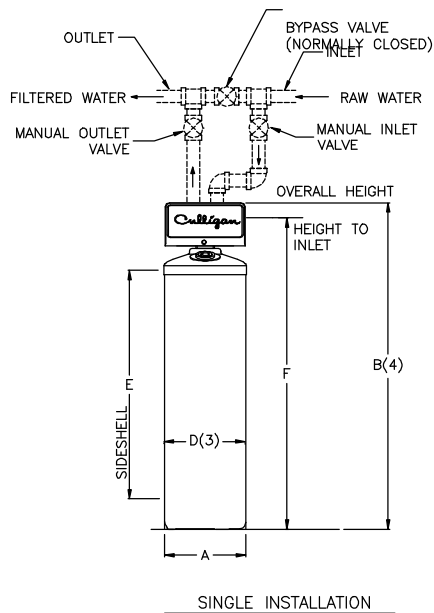
**CULLIGAN INTERNATIONAL COMPANY
One Culligan Parkway
Northbrook, Illinois 60062**



NOTES:

- (1) ITEMS SHOWN IN BROKEN LINES TO BE FURNISHED BY OTHERS.
 - (2) AN ELECTRICAL OUTLET SHOULD BE PROVIDED WITHIN 5 FEET OF THE EQUIPMENT.
 - (3) INSIDE DIAMETER - ALLOW A MINIMUM OF 1-INCH FOR OUTSIDE CLEARANCE.
 - (4) ALLOW A 2 FOOT WORKING SPACE ABOVE THE FILTER FOR FILLING THE TANK.
 - (5) ALL DIMENSIONS ARE ± 1 INCH (25mm) AND SUBJECT TO CHANGE WITHOUT NOTICE.
- * DO NOT MAKE A DIRECT CONNECTION TO THE DRAIN. PROVIDE AN AIR GAP OF AT LEAST FOUR TIMES THE DIAMETER OF THE DRAIN PIPE TO CONFORM TO SANITATION CODES AND TO PERMIT THE OBSERVATION OF THE DRAIN FLOW. DO NOT INSTALL A VALVE IN DRAIN LINE OR USE PIPE SMALLER THAN LISTED IN TABLE.

MODEL	DIMENSIONS (INCHES)									DRAIN FLOW	SIMPLEX OPER. WT.
	A	AA	AAA	B(4)	C	D(3)	E	F	K		
PV-12D	14	32	50	55	18	12	38	52	3/4	10gpm	365 lb.
PV-12R	14	32	50	55	18	12	38	52	3/4	8gpm	285 lb.
PV-16D	18	40	62	55	20	16	37	52	1	20gpm	615 lb.
PV-16R	18	40	62	66	20	16	48	63	1	15gpm	520 lb.



				Culligan NORTHBROOK, ILLINOIS			
SCALE	00.00	DETAILED BY	KMR	CHECKED BY		APPROVED	
REF. NO.		DATE	2/26/99	DATE		DATE	
LET	CHANGE	BY	APP	DATE	NAME		PART NO.
PRINT & BILL OF MATERIALS ARE NOT TO BE USED WITHOUT THE WRITTEN CONSENT OF CULLIGAN USA						HI-FLO@ 2 FILTERS PV-D/PV-R 12 & 16 MODELS TECHNICAL DATA SHEET	
DO NOT SCALE FROM DRAWING						F2 SHEET 1 OF 1	



ENGINEER'S SPECIFICATION

AUTOMATIC WATER FILTER HI-FLO® 2	CUSTOMER:
	DATE:

1.0 SCOPE

1.1 Provide as indicated a vertical pressure type water filter system complete with pressure vessel, filter media, control valve and controller. The system will be of an approved design as fabricated by a manufacturer regularly engaged in the production of water treatment equipment. All equipment and material will be supplied in compliance with the specifications as intended for a complete and operational system.

(Open Bidding Arrangement)

1.2 Qualified manufacturers of water treatment equipment of the type specified are Culligan International Company or the Engineer's approved equal.

(Closed Bidding Arrangement)

1.2 Qualified manufacturers of water filter equipment must be engaged in the manufacture of this equipment for a period of not less than fifteen (15) years. Acceptable manufacturers are Culligan International Company or the Engineer's approved equal.

2.0 GENERAL DESCRIPTION

(Selection for statement of specific model)

2.1 The system specifications are based on Culligan International model _____.

(Depth Filter)

The purpose of the Culligan International Series Hi-Flo® 2 automatic depth filter will be to remove suspended solids from a known water supply to a level not to exceed 10 microns in size, when the system is operated at _____ gpm and in accordance with the operating instructions.

(Carbon Filter)

The purpose of the Culligan International Series Hi-Flo® 2 automatic carbon filter will be to remove tastes and odors, reduce organics and/or remove chlorine from a known water supply, when the system is operated at _____ gpm and in accordance with the operating instructions.

(All)

The systems performance is rated at a design flow rate of _____ gpm with a rated pressure drop of _____ psi, and will be capable of a peak flow rate of _____ gpm for sustained periods of 90 minutes with a pressure drop of _____ psi.

There shall be a quantity of _____ of the above described systems.

(Selection for general statement)

2.1 The system, in compliance with the equipment specification, is described as an automatic _____ water filter system meeting the performance and design data requirements as hereinafter specified.

3.0 PERFORMANCE AND DESIGN DATA

3.1 INFLUENT WATER ANALYSIS

Free Chlorine: _____ *(Carbon Only)*
(Constituents above are expressed in ppm or mg/l.)

Turbidity, NTU: _____

Color: _____

pH: _____

3.2 DESIGN PARAMETERS

Normal System Flow & Pressure Drop: _____ gpm @ _____ PSI
Maximum System Flow & Pressure Drop: _____ gpm @ _____ PSI
Backwash/Rinse Flow: _____ gpm
Backwash Volume: _____ gallons nominal
Daily Water Usage: _____ gallons per day (gpd)
Daily Hours of Water Demand: _____
Operating Temperature Range: 40°–120°F
Operating Pressure Range (System): 30–100 PSI
Electrical Requirements: 120 Volt, 60 Hz, 1 phase (receptacle required)
System Dimension (L x W x H): _____"L x _____"W x _____"H

4.0 EQUIPMENT SPECIFICATIONS

4.1 FILTER TANK(S)

Each system shall include _____ tank(s). Each filter tank shall be _____ inches in diameter. The sideshell height shall be _____ inches, sufficient to allow for proper freeboard space above the filter bed for adequate expansion of the media during backwashing.

4.1.0 Tank Construction

Tank(s) shall be electrical welded pressure vessel quality low carbon steel construction rated for 100 psig working pressure. Tank(s) will be of the Culligan Tripl-Hull™ construction.

4.1.1 Access Openings

Each tank will be equipped with openings for mineral filling and periodic inspection.

4.1.2 Tank Finish – Exterior

The tank exterior will be protected by a molded plastic jacket for corrosion resistance. The jacket will also act as an insulator to minimize condensation on the surface of the tank.

4.1.3 Tank Finish – Interior

The tank interior will consist of a 20 mil thick vinyl bag liner, hermetically sealed within the steel tank to protect against internal corrosion.

4.2 INTERNAL DISTRIBUTION

4.2.1 The upper distribution system shall be of the single point distributor type, constructed of a fine slotted strainer to dispense water evenly over the filter bed.

4.2.2 The lower distribution system shall be of the single point distributor type, constructed of PVC pipe and a fine slotted strainer to provide even flow distribution through the filter bed. The distribution system shall be embedded in a subfill of washed inorganic material to support the filter bed.

4.3 MAIN OPERATING VALVE

The main operating valve shall be of a top mount design constructed of phenylene oxide thermoplastic to resist attack by substances found in natural water supplies.

The main operating valve will be of the three (3) position, motor driven, piston type to positively locate the internal valve piston to route the flow of water through the filter during service, backwash and fast rinse. The internal piston and seal assembly will be of a modular cartridge design for ease of replacement and service.

The main operating valve shall incorporate self adjusting flow regulators to control the rate of flow and prevent resin loss during backwash and fast rinse steps of regeneration, regardless of system pressure fluctuations between 30 and 100 psi.

The main operating valve will provide water to service through 1-1/2 inch inlet and outlet Flo-Pak™ cartridge design, diaphragm valves. The Flo-Pak diaphragm valves shall be slow opening and closing, free of water hammer and will control the flow of water through the filter during the service cycle to permit high flow rates with

minimum pressure drop. The main operating valve will control water flow through the filter during the regeneration process.

The main operating valve shall be designed and manufactured by the same manufacturer as the water filter system and will be fully tested prior to shipment.

(Single units only – untreated water bypass)

The unit shall be supplied so that the valve will allow automatic bypass of untreated water during regeneration. The bypass shall be integral to the main operating valve body and be capable of being easily modified to prevent untreated water bypass.

(Single units only – NO untreated water bypass)

The unit shall be supplied so that the valve will not allow automatic bypass of untreated water during regeneration. The bypass shall be integral to the main operating valve body and be capable of being easily modified to allow untreated water bypass.

4.4 CONTROLS

The main operating valve will be controlled by an integral clock timer. The timer will permit adjustment of the backwash and fast rinse times. An extra recharge lever will be provided to permit manual regeneration initiation at any time.

4.4.1 System control options

(Time Clock Systems)

An integral time clock control will be provided to initiate and control the reconditioning process of the water filter. The clock timer will be capable of regenerating the filter at any time of day or night and on any or every day of the week.

(Differential Pressure Switch Systems)

A Differential Pressure Switch will be installed across the inlet and outlet pipe of the filter. The pressure switch will initiate reconditioning of the filter at a preset pressure drop across the system. The differential pressure switch will be field adjustable within a range of 3 to 20 psi. Simultaneous reconditionings shall not be possible.

(Meter Initiated, Single Unit, PV-12R & PV-12D ONLY)

A volumetric meter, electrically connected to the timer control, shall set the timer for reconditioning at a preset time of day or night after the preset volume of water has passed through the water filter. The timer will activate a motor drive that will perform the reconditioning functions on the exhausted tank and return it to the service position.

(Meter Initiated, Parallel Twin Unit, PV-12R & PV-12D ONLY)

Each unit shall include a volumetric meter, electrically connected to the timer control. Upon exhaustion of either tank, its control shall activate a motor drive that will immediately, or at a preset time of day or night, perform the reconditioning functions on the exhausted tank and return it to the service position. The controls shall include an electrical interlock to prevent simultaneous reconditioning of both filters in the event the second tank exhausts while the first tank is in reconditioning.

(Meter Initiated, Alternating Twin Unit, PV-12R & PV-12D ONLY)

A single volumetric meter shall signal the filters to regenerate on an alternating basis after the preset volume of water has passed through the water filter. One unit remains in a fully regenerated stand-by condition while the other unit is in service. Upon exhaustion of the service unit, the stand-by unit shall immediately be placed into service and the exhausted unit shall be removed from service and the reconditioning initiated. The timer will activate a motor drive that will perform the reconditioning functions on the exhausted tank and return it to the stand-by position. No external alternating devices will be acceptable. Simultaneous reconditionings shall not be possible.

(Duplex Alternating Time Clock or Differential Pressure Switch Models)

A duplex alternator will be included in the system. It will permit only one unit of a duplex system to be in the service mode at any given time, while keeping the other unit in reconditioning, or in stand-by after reconditioning. The Duplex Alternator will be adaptable to Time Clock or Differential Pressure Switch reconditioning and will be fitted with lights to indicate which unit is in the service cycle.

4.4.2 Flow Sensor(s)

(*Meter Initiated, Hi-Flo 2 models using DDS controller – PV-12R and PV-12D ONLY*)

A flow meter package shall be provided consisting of a turbine-type Hall effect meter; the package shall include one (1) controller and _____ flow sensors with fittings.

The fitting(s) provided shall be **<1.0/2.0>** inch, compatible with existing piping.

The flow sensor provided shall be functional within the flow range of **<1.0”: 0.25-50 gpm/2.0”: 2-250 gpm>**.

The operating temperature/pressure range of the flow sensor fittings shall be 34°-120°F at 120 psi max.

The flow sensor shall have an accuracy of +/-3%.

4.5 EXCHANGE RESIN

(*Depth Filter*)

Each filter tank shall have a granular media bed, consisting of three (3) distinct layers and designed to operate as a depth filter rather than a surface filter. The filter layers shall stratify with the coarsest layer at the top and the finest layer at the bottom. Mineral density, particle size, uniformity coefficient and depth of each layer will be carefully controlled to assure proper stratification after backwashing and optimum performance in service. The top layer will remove large debris and collect coarse turbidity. The center layer will accumulate particles normally trapped by sand filters. The bottom layer will polish the water by removing particles down to 10 microns in size.

(*Carbon Filter*)

The media will be a 12 x 40 mesh activated carbon made from selected grades of bituminous coal combined with suitable binders to give superior hardness, long life and resistance to attrition. The activated carbon filtration media will be designed to handle a broad range of adsorption applications including efficient dechlorination and reduction of dissolved organics including those causing tastes and odors. The activated carbon filtration media will not impart taste, odor or color to the water being filtered.

(*All*)

The system shall include _____ cubic feet of filter media per vessel and a total of _____ cubic feet of filter media for the system.

4.6 ACCESSORIES

(*All Optional selections*)

4.6.1 Pressure Gauges for raw water inlet and filtered water outlet.

4.6.2 Sampling Cocks for raw water inlet.

5.0 INSTRUCTIONS

_____ complete sets of installation, operating and maintenance manuals shall be provided.

6.0 FIELD SERVICE

The services of a factory authorized service representative can be made available to supervise, inspect and provide operator training as required for initial start-up and system operation. Contact your local Culligan dealer for service rates and scheduling.

7.0 WARRANTY

A single written warranty must be provided from the manufacturer of the water filter system covering workmanship and materials.