

OPERATION & MAINTENANCE MANUAL

FLUIDTROL INDUSTRIAL STRAINER - GX SERIES



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**SPC-FRP-002: SPECIFICATION FOR MOLDED FIBERGLASS
REINFORCED PLASTIC (FRP) BASKET STRAINERS MADE FOR
INDUSTRIAL WATER SYSTEMS- GX SERIES**

1. SCOPE

The molded fiberglass reinforced plastic basket strainer shall be designed for the suction or discharge side of water and chemical systems. These strainers are designed for easy operation, assuming maintenance personnel have limited training and minimal tools to clean the basket. Baskets are designed to remove all foreign objects larger than basket perforation size.

2. DESIGN REQUIREMENTS

2.1. Configuration

- 2.1.1. Strainer type shall be flanged basket
- 2.1.2. Effluent shall be in-line with the influent
- 2.1.3. Height, drain port, basket size, and face-face dimensions shall be interchangeable with Fluidtrol GS series design

2.2. Flanges

- 2.2.1. Flanges shall allow easy installation into piping system by limiting rotational nozzle stress and flange bolt hole misalignments
 - 2.2.1.1. Flanges 12" and smaller shall be ANSI 150# Van Stone type- PVC SCH80.
 - 2.2.1.2. Flanges 14" and larger shall be fabricated- dual laminate.
- 2.2.2. Flange material shall be PVC Cell Class 23447-B ASTM D-1784

2.3. Basket

- 2.3.1. Basket material shall be 316 Stainless Steel- or as specified.
- 2.3.2. Basket perforation shall be 1/8" on 3/16" centers- or as specified.
- 2.3.3. Basket shall have handle welded to body, capable of holding 50lbs of debris
- 2.3.4. Basket shall be able to withstand 15 psi pressure drop across the perforated wall
- 2.3.5. Basket open area shall be a minimum of 4 times greater than influent cross-section area

2.4. Basket Maintenance

- 2.4.1. No tools shall be required to remove the lid
- 2.4.2. The lid shall be molded FRP with a minimum thickness of 1" and flexural strength greater than 15,000 psi
- 2.4.3. Lid attachment shall be with 316 Stainless Steel Tee Handles / Swing Bolts
- 2.4.4. Gasket grooves shall be in the strainer body to prevent accidental misplacement
- 2.4.5. Basket shall self-center and remove in one simple motion
- 2.4.6. Basket shall be suspended to ensure positive seal at the basket flange
- 2.4.7. Vent plugs shall allow for gas removal without lid removal
- 2.4.8. Drain plugs shall be minimum 1 inch off floor to prevent plugging from debris

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2.5. Operating Conditions

- 2.5.1. Normal operating temperature is 75 deg F with no effect on longevity
- 2.5.2. Maximum fluid temperature shall be 140 deg F with reduced pressure rating
- 2.5.3. Normal operating pressure is 2 psi suction
- 2.5.4. Maximum operating pressure is 75 psi with no surge
- 2.5.5. Maximum suction pressure is 14 psig vacuum

2.6. Pressure Rating

- 2.6.1. The shell thickness shall be at least 2 times greater than the minimum thickness specified using ASME BPVC SEC X design equations for FRP vessels
- 2.6.2. Hydrostatic testing of strainer at 85 psig shall be conducted every unit.

2.7. Materials of Construction

- 2.7.1. Gaskets shall be EPDM or Silicone
- 2.7.2. Shell shall be FRP with high grade, corrosive resistant vinyl ester resin matrix
- 2.7.3. Strainer shall be constructed from components certified to NSF/ANSI 61
- 2.7.4. Exterior shall have UV protective inhibitors to maximize service life
- 2.7.5. Flanges shall be PVC Cell class 23447-B, ASTM D-1784

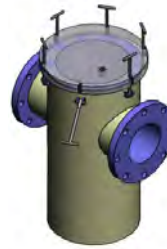
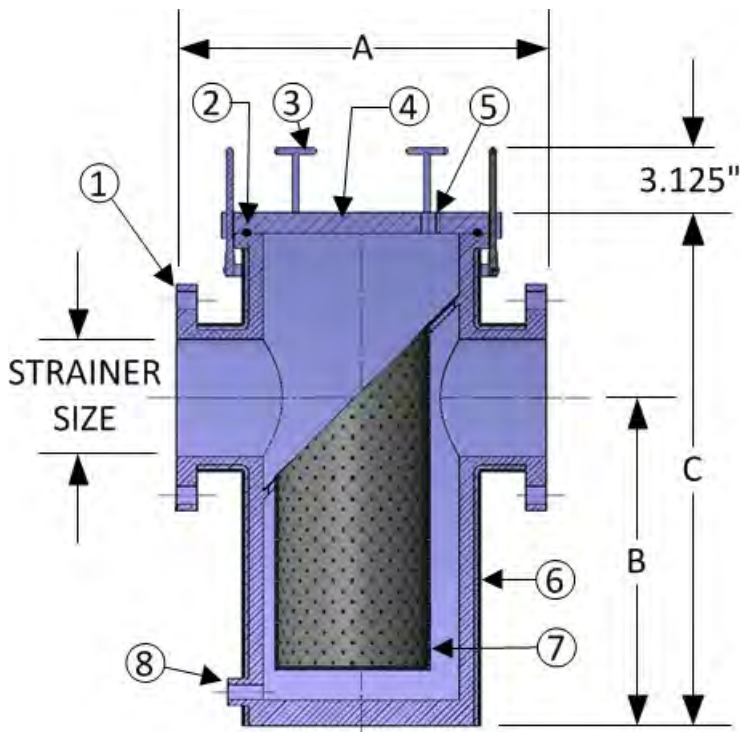
3. CONSTRUCTION

- 3.1. Manufacturer shall have minimum five year service history in industry
- 3.2. Manufacturer shall maintain as-built dimensions of each strainer
- 3.3. Manufacturer shall be ISO 9001:2008 Certified
- 3.4. Manufacturer shall supply minimum one year warranty on lids, baskets, and gaskets to cover defect in material or workmanship
- 3.5. Manufacturer shall supply minimum five year warranty on FRP shell to cover defect in material or workmanship
- 3.6. Approved manufacturer
 - 3.6.1. Fluidtrol Process Technologies, Inc. www.fluidtrol.com

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Fluidtrol GX Series FRP Molded Industrial Basket Strainer



Pressure Rating: 75 psi
Max Temp: 140 °F

ITEM	PART	MATERIAL
1	FLANGE	PVC
2	GASKET	O-RING
3	T-HANDLE	SS316
4	COVER	FRP
5	VENT	½" FPT IN COVER
6	BODY	FRP, VINYL ESTER
7	BASKET	1/8" PERF SS316
8	DRAIN	PVC NPT INLET SIDE

Qty	PN	Strainer Size	Face to Face A	Center Line B	Height C	Weight Lbs	Notes
	GX186102031	2	11	10 ½	18	33	
	GX186103031	3	11	10 ½	18	34	
	GX186104031	4	13 ¾	11 5/8	21.25	39	
	GX186105031	5	17	16	26	55	
	GX186106031	6	18	16	26	57	
	GX186108031	8	20	21 ½	33.5	82	
	GX186110031	10	22	23	37.5	108	
	GX186112031	12	27 ½	31 5/8	46	185	
	GX186114031	14	35	32 ½	48	220	
16" Sizes and Up- Please Inquire							

The Fluidtrol GX Series is a non-metallic housing inline basket strainer engineered for general water through moderately corrosive industrial water systems. Wetted surfaces are comprised of FRP (Fiberglass Reinforced Plastic with High Quality Vinyl Ester Resin), PVC and EPDM. This composite construction offers the highest corrosion resistance along with the structural integrity to project 20-30 year lifespan. FRP has strength to weight ratio approximately 4 times that of steel. Housing and cover weight will reduce cost of shipping, installation and operation. FRP has excellent electrical insulation properties. The standard basket is SS316- 1/8" Perforations, but many options exist for clients requiring a different filtration level or material of construction. Contact Fluidtrol if custom configurations or dimensions are required.

INSTALLATION

Prior to connecting this strainer or reducer to your piping system, check the following:

1. Directional flow.
2. Compatibility of connecting piping to the inlet and outlet connections provided on the strainer or reducer
3. Piping supports. Be sure that the

strainer is **NOT SUPPORTING ANY PIPING OR TANKS** as this can cause excessive stresses in the strainer body.

We recommend avoiding suspended strainer applications. Please support strainer bodies at the bottom of the vertical housing.

Flanged end connectors are standard with the Fluidtrol AQUATIC strainers and reducers. The proper installation technique is outlined below.*

FLANGED CONNECTIONS

A. 1/8" thick soft full face gaskets are preferred for use with plastic flanges

B. Make sure that all the bolt holes of the mating flanges match up with the strainer flange bolt holes. The flanges on the strainers and reducers are lined up such that the bolt holes straddle the vertical centerline. Strainer flanges up to 12" are loose ring flanges, so rotating is possible if existing plumbing is not aligned properly.

C. Insert all bolts only after strainer is in its final position-- see "H" to the right for more info.

D. Make sure that the faces of the mating flanges are not separated by more than 1/16" after gasket insertion. If there is a larger gap, it may be necessary to insert a spacer ring between the two flanges.

E. The bolts on the plastic flanges should be tightened by pulling down the nuts diametrically opposite each other using a torque wrench- see FIG 1. Complete tightening should be accomplished in stages and the final torque values in the following table should be followed for the various sizes of flanges. Uniform stress across the flange will help prevent leaky gaskets. Refer to TABLE 1 for recommended torques.

F. Required bolt sizes are given in TABLE 2. These are based on average SCH 80 PVC Flanges.

G. The drain and lid vent should be plumbed for use. Drain fittings are typically hard-piped to a suitable drain. The lid vent is typically plumbed with flexible hose to allow for lid removal. Quick disconnects (i.e. Cam-Lock) are also a good practice for the lid vent line. Valves should be affixed to both positions

H. Strainer positioning is very important when tightening the flange bolts. Fluidtrol strainer and reducer flange flush tolerance is +/- 0.5 degrees. Fitting flanges must be flush with piping flanges prior to tightening. Please do not attempt to pull the strainer housing into an upright, flush-flange position by tightening the flange bolts. This routinely results in flange hub cracking and is considered installation error, which possibly will void the warranty on the strainer repair.

I. All Threaded Fittings (NPT Drains/Pressure Taps) are to be tightened the standard torque- hand tight plus 1 turn. Over tightening can result in broken fittings.

FIG 1

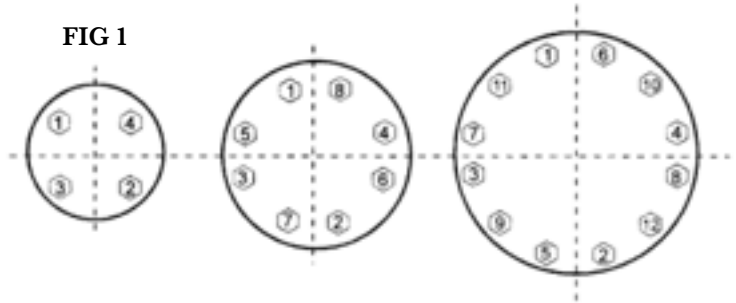


Table 1

Flange Size	Torque Value
3" and 4"	20-30 ft lbs
6" and 8"	30-50 ft lbs
10" and 12"	53-75 ft lbs

Table 2

Flange Size	Bolt Size
3"	5/8-11 x 3 5/8"
4"	5/8-11 x 3 3/4"
6"	3/4-10 x 4 3/8"
8"	3/4-10 x 4 3/8"
10"	7/8-9 x 4 1/2"
12"	7/8-9 x 4 5/8"

Fluidtrol does not recommend the practice of drilling/tapping into our dual laminate housings and reducers for pressure taps. This may result in voided warranty. Please contact factory if pressure tap is required.

MAINTENANCE

When cleaning becomes necessary the guidelines listed below should be followed. NEVER ATTEMPT TO OPEN A STRAINER WHILE UNDER PRESSURE. Attempting to do so can result in a catastrophic failure causing personal injury and voiding warranty. Strainer basket cleaning is completely system dependent and should be performed as any preventative maintenance task once the frequency has been determined. Fluidtrol recommends cleaning the basket prior to the observance of a 3 psid pressure drop across the vessel. This is calculated by the difference between the gauge pressure just upstream and the gauge pressure just downstream of the strainer. After the initial cleaning of the system, begin to monitor the pressure drop every hour to determine the cleaning frequency. Using the pressure drop charts on the pages at the end of this manual can provide some assistance, but generating data on your particular system will be necessary to determine proper cleaning frequency.

1. Stop flow through strainer. For simplex units this requires stopping the process flow. For duplex units, the process flow must be redirected into the secondary housing by means of the valves/ valve mechanism.

2. Remove pressure from housing. The drain plug at the base of the strainer or vent valve on the lid can be used for this purpose if other pressure relief methods are unavailable. NEVER remove the lid prior to depressurizing.

3. Remove lid. SW and RSW Strainers utilize T-Handles/ Swing Latch lid assembly. Loosen the I-bolts of the lid by alternating between diametrically opposite bolts. Once all bolts are loose, swing the T-Handles to the side. If you chose to utilize your swivel lid retaining bracket- swivel the cover to this location of housing and it will be held in place.

4. Remove and clean basket. Various methods of cleaning are utilized, depending on the material in the basket and it's tenacity to the perforated surface. It is common to have 2 baskets to allow for the fouled basket to be quickly replaced with a clean basket. This allows for the minimum flow interruption and for the dirty basket to be cleaned as convenient at some point prior to the next basket change.

5. Refill vessel with process fluid. Reducing the air pocket at the top of the housing is critical for minimizing the potential to air lock the system pump. If possible, fill the vessel with process/pool water to approximately 1" from the lid gasket.

6. Replace lid and secure. Tighten as tight as necessary to avoid water drips through the gasket and to avoid air in leakage due to vacuum. Follow an alternating pattern when tightening- just as tightening lug nuts on a tire or flange bolts.

7. Return to service and vent. SLOWLY OPEN NECESSARY VALVES TO PUT THE STRAINER ON LINE. After the strainer is returned to service- it may be necessary to bleed off any remaining air trapped at the top of the housing. This is done with the ½" vent on the lid that the strainer is supplied with. The strainer housings are common air traps for the system, so routine bleeding at this location may help efforts to minimize air in system.



Fluidtrol Industrial Strainers

SPARE PARTS AND TECHNICAL SUPPORT

Your strainers are shipped with a 5-7 digit serial number on the permanent equipment tag. This number should be preserved in the event technical support or parts are required. Many of the parts will be commercially available from a local plumbing distributor, but items such as the basket and special gaskets will require you to contact your Fluidtrol dealer.

You can contact Fluidtrol Process Technologies, Inc. at 888-551-0511 for support at any time during installation, commission or operation of your strainer. Unlimited technical support is part of the product that you have purchased.

IMPORTANT STRAINER/SYSTEM DATA

In the event troubleshooting is required- it is optimum to have as much system/ equipment data collected as possible. The below lists represent most of the variables that may be relevant.

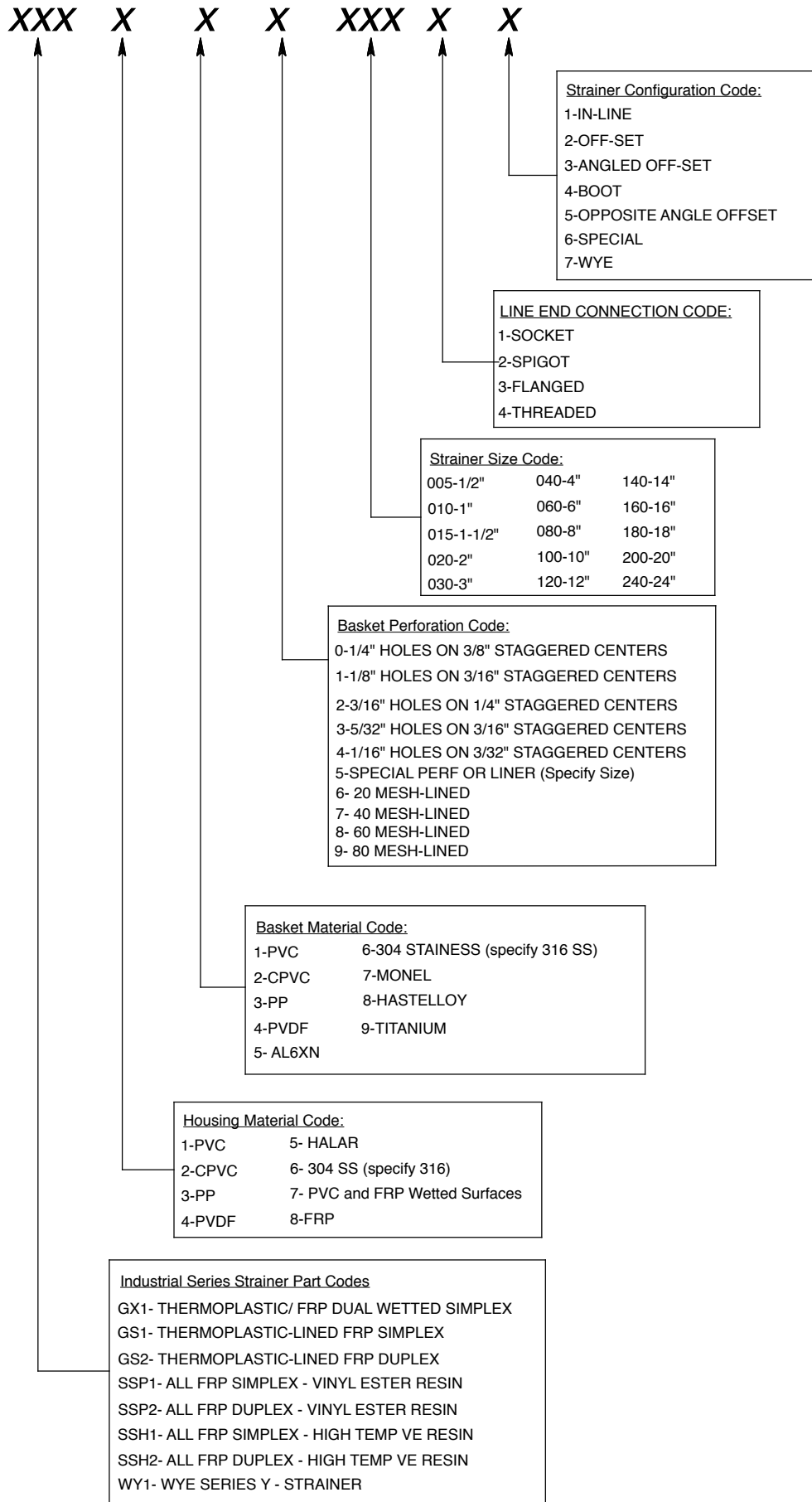
FLUID CHARACTERISTICS

Composition
Operating Temperature F
Operating Pressure
Viscosity centipoise
Minimum Size To Filter mesh micron inch mm
Allowable Pressure Drop PSI (clean basket)
Flow Rate GPM

STRAINER CHARACTERISTICS

Type of Strainer
Size
Design Flow Rate GPM
Design Pressure PSI
Max Temperature
Max Pressure
Housing Material
Gasket Material
Basket Perforation
Basket Material
Liner Rating
Liner Material
Drain Size/Type
End Connections
Vent Size/Type
Pressure Taps
Model Number
Date of Manufacture
Serial Number

INDUSTRIAL SERIES STRAINER PART NUMBER CODE



Swivel Lid Retaining Bracket Installation/ Operation Guide

Fluidtrol now offers a new feature that allows single hand operation while strainer baskets are being removed and serviced. Newly manufactured aquatic series strainers and some industrial models are being supplied with these machined PVC brackets and associated hardware to serve as resting locations for the cover while strainer housings are open. These kits are universal and will be compatible on all aquatic strainers manufactured after November 2015.

Step One: Identify Location

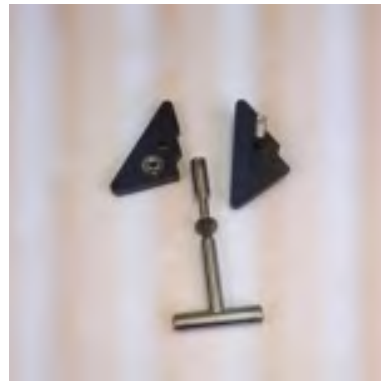
You will have a minimum of 6 locations to choose from that will be the most convenient location for this retaining bracket. Variables such as which side of strainer you will be servicing from, walkways, other equipment and even right/left handedness will impact your decision. If you decide a different location is better- you will be able to change.

Step Two: Install the Housing O-Ring and Lid Retainer on the Housing SS Bracket of choice.

Your lid and fastener package includes one set of longer hardware for installing the bracket- as shown in picture to the right. Position the wedge-shaped PVC brackets on either side of U-Brackets that hold the I-Bolts to the strainer- along with the I-Bolts. The cover will have slots- except for one single 1/2" dia through-hole. This is the correct lid location for your bracket site.

Step Three: Operation

Swing all I-Bolts open except the one that will be used to swivel. The countersink in the lid will allow you to securely retain the acrylic cover. Loosen this location only to take the tension off the O-Ring.

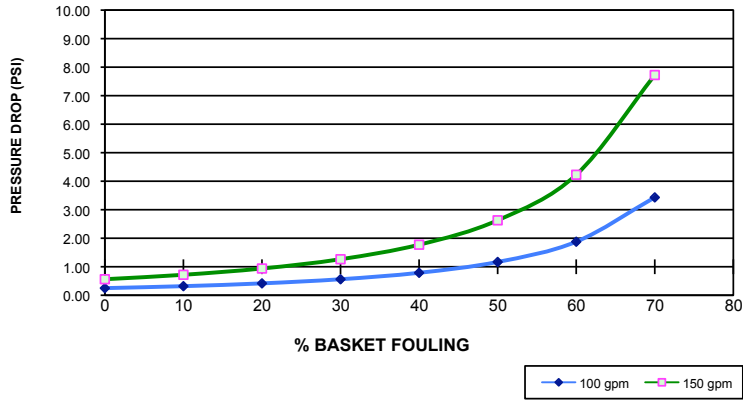


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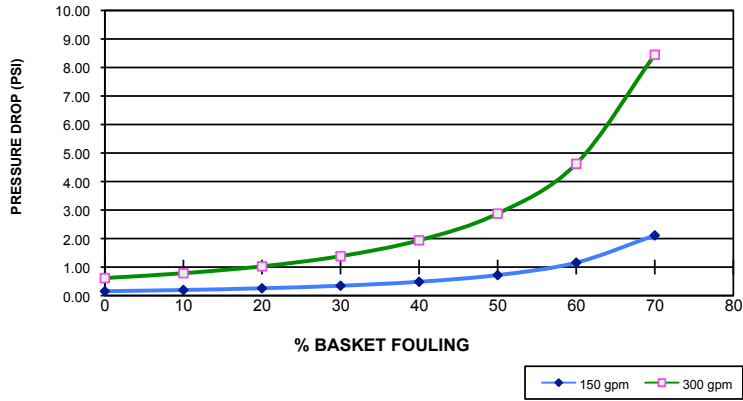
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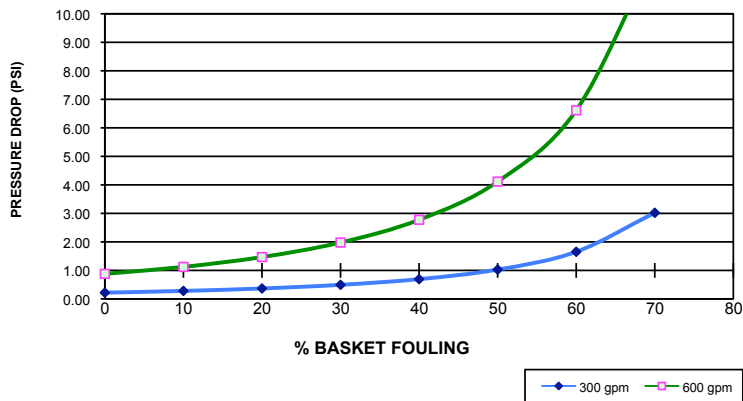
3 " Strainer



4 " Strainer



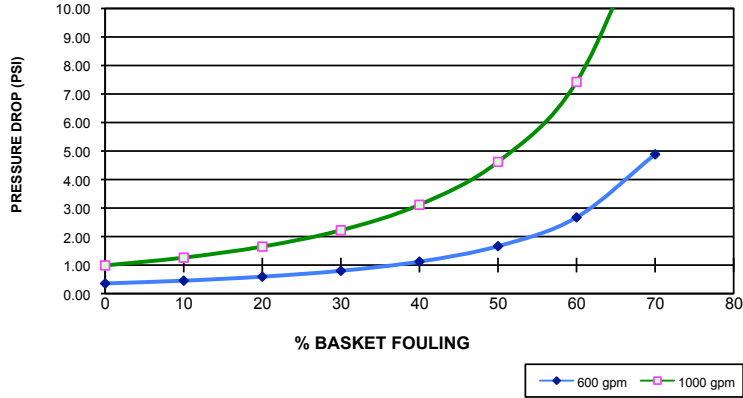
6 " Strainer



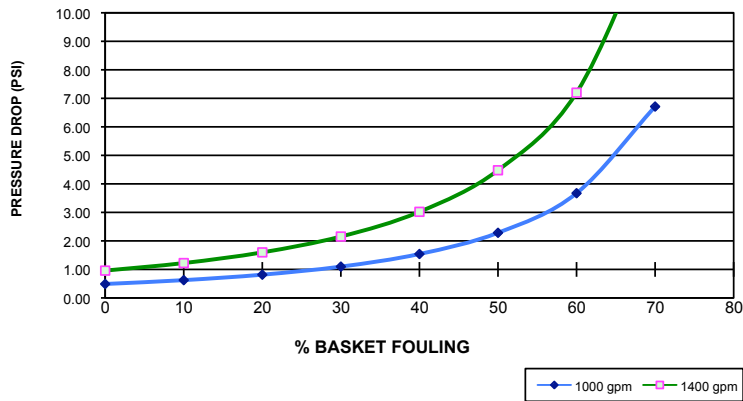
40 % OPEN AREA PERFORATION PATTERN- STANDARD 1/8" OR 1/4"

NOTE: PRESSURE DROP PROFILES DO NOT INCLUDE REDUCERS

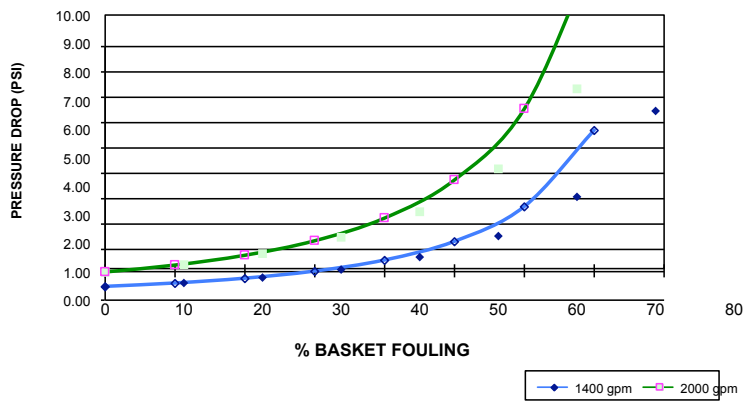
8 " Strainer



10 " Strainer



12 " Strainer



40 % OPEN AREA PERFORATION PATTERN- STANDARD 1/8" OR 1/4"

NOTE: PRESSURE DROP PROFILES DO NOT INCLUDE REDUCERS

WARRANTY

FLUIDTROL PROCESS TECHNOLOGIES, INC. (“SELLER”) warrants that its products will be of the kind and quality described in the Sales Order or Contract and will be free of defects in workmanship or material. Should any failure to conform to this warranty appear within twelve (12) months after the initial date of delivery the Seller will, upon notification and substantiation that the product has been stored, installed and maintained in accordance with the Seller’s recommendation and standard industry practice, correct such defects by suitable repair or replacement at Seller’s expense. Seller shall be given the opportunity to inspect the product. Basket strainers are manufactured to meet specific specifications and no warranty is made where the original configuration is altered or modified for specialized applications or requirements.

THIS WARRANTY IS EXCLUSIVE AND IS IN LIEU OF ANY WARRANTY OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR OTHER WARRANTY OF QUALITY, WHETHER EXPRESS OR IMPLIED, EXCEPT OF TITLE.

NO WARRANTY IS INCLUDED AGAINST ANY EXPENSE FOR REMOVAL, REINSTALLATION OR OTHER CONSEQUENTIAL DAMAGES ARISING FROM ANY DEFECT.

Correction of non-conformities, in the manner and for the period of time provided above, shall constitute fulfillment of all liabilities of the Seller to the purchase, with respect to, or arising out of, the product, whether based on contract, negligence, strict tort or other legal theory.

The Seller shall not under any circumstances be liable for special or consequential damages such as, but not limited to, damage or loss of property or equipment, loss of profits or revenue, cost of capital, cost of purchased or replacement goods, or claims of customers for service interruptions. The remedies of the purchaser set forth herein are exclusive and the liability of Seller with respect to any contract or anything done in connection therewith, such as the performance or breach thereof or from the manufacture, sale, delivery, resale, installation or use of any goods covered by or furnished under contract, whether arising out of contract negligence, strict tort or under any warranty, or otherwise shall not, except as expressly provided herein, exceed the price of the goods upon which such liability is based.