

# FLANGED SERIES Y-STRAINERS



# "Apollo" Valves

manufactured in the USA  
by CONBRACO Industries

## A history of Quality, Service and Innovation

Now in its ninth decade, Conbraco Industries, Inc. is a leading manufacturer of flow control products for U.S. and international markets. The company's headquarters is based in Matthews, North Carolina with manufacturing plants and foundries located in Pageland and Conway, South Carolina.

Conbraco has a history of new product development and innovation that dates back to the company's inception in 1928. Today, the Conbraco line of products is marketed under the "Apollo Valves" brand and includes: ball valves, butterfly valves, backflow prevention devices, water pressure reducing valves, mixing valves, safety relief valves, water gauges, strainers, actuation and ApolloXpress products.

Conbraco's vertically integrated manufacturing ensures a consistency of production, testing, quality and availability. You can be assured that Conbraco flow control products will deliver long term reliability. All Conbraco plants are registered to ISO 9001:2008 quality standards.

The Conbraco line continues to expand with new products, designs and advanced materials to better serve the needs of our customers. Markets served include: chemical processing, pulp and paper, petroleum, residential and commercial plumbing and heating, OEM, irrigation, water works, and fire protection.



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Bronze Foundry and Manufacturing Plant



**PAGELAND, SC**  
Final Assembly and Distribution Center



**CONWAY, SC**  
Steel Foundry and Manufacturing Plant



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Corporate Headquarters

## TABLE OF CONTENTS

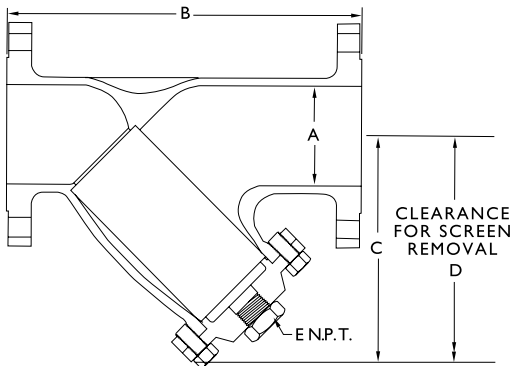
Y-Strainers .....	3
ENGINEERING DATA	
Screen Openings for Y-Strainers .....	4
Y-Strainer Pressure Drop – Liquids.....	5
Screen Correction Factor Chart.....	6
Y-Strainer Pressure Drop – Saturated Steam .....	7
Y-Strainer Effective Screen Area.....	10
Check List and Suggested Specifications .....	8
Installation and Maintenance Instructions .....	9
Apollo Flanged Y-Strainer Order Schematic .....	10
Warranty Info .....	11

# FLANGED SERIES Y-STRAINERS

## Y-Strainers

### APOLLO® SERIES 125YF

### IRON PIPE FLANGED Y-STRAINERS



#### FEATURES

- Iron strainers are complete with Flat Face flanges in accordance with ASME B16.1.
- Strainer body meets applicable ASME Standard.
- One piece cast body.
- Strainers equipped with bolted cover flange that utilize a flat gasket seal.
- Low pressure drop.
- Upper and lower machined seats.
- 304 SS perforated screens are standard.
- Drain/Blow-off connection furnished with plug as standard.
- Generous screen area and properly proportioned straining chamber to minimize initial pressure drop while maximizing time between cleanings.
- Compact end to end dimension.

**Apollo Model 125YF – Upper Pressure Limits (Non-Shock)**

Size	Body Material	M.A.W.P. PSIG (Bars)	Ends
up to 12" size	A126-B - Cast iron	200 (13.79)	FF
14" and up	A126-B - Cast iron	150 (10.34)	FF
Body Material		Lower Limit °F (°C)	
A126-B, A395		-20 (-28.9)	

**Parts List and Standard Materials**

Part - Apollo Model	Cast Iron - 125YF
Body	A126-B
Cover	A126-B
Screen <sup>1</sup>	304 SS
Plug <sup>2</sup>	A126-B
Gasket <sup>1</sup>	Graphite
Bolt/Stud <sup>2</sup>	A307-B
Nut <sup>2</sup>	A563

#### Notes:

1. Recommended Spares.
2. Materials of equivalent strength may be substituted at manufacturer's option.

**125YF – Dimensional Data – Iron Class 125**

Size	A	B	C	D	E	Weight
2"	2.00	8.88	6.00	8.50	1/2	22
50	51	226	152	216	15	10
2-1/2"	2.50	10.75	8.00	11.25	1	35
65	64	273	203	286	25	16
3"	3.00	11.50	8.75	12.25	1	43
80	76	292	222	311	25	20
4"	4.00	13.88	9.50	13.38	11/4	75
100	102	353	241	340	32	34
5"	5.00	16.38	11.50	16.13	11/4	115
125	127	416	292	410	32	52
6"	6.00	18.50	12.63	17.69	11/2	154
150	152	470	321	449	40	70
8"	8.00	21.38	16.38	23.00	11/2	243
200	203	543	416	584	40	110
10"	10.00	26.00	19.00	26.70	2	390
250	254	660	483	678	50	177
12"	12.00	30.00	22.00	31.00	2	650
300	305	762	559	787	50	295
14"	14.00	37.38	29.00	41.00	2	815
350	356	949	737	1041	50	370
16"	16.00	42.50	33.00	46.00	2	1224
400	406	1080	838	1168	50	555

# FLANGED SERIES Y-STRAINERS

## ENGINEERING DATA Screen Openings for Y-Strainers

### FACTORS TO CONSIDER

#### PURPOSE

If the basket strainer is being used for protection rather than direct filtration, Apollo's standard screens will suffice in most applications.

#### SERVICE

With services that require extremely sturdy screens, such as high pressure/ temperature applications or services with high viscosities, Apollo® recommends that perforated screens without mesh liners be used. If mesh is required to obtain a certain level of filtration, then Apollo recommends a trapped perf./mesh/perf. combination.

#### FILTRATION LEVEL

When choosing a perf. or a mesh/perf. combination attention should be given to ensure overstraining does not occur. As a general rule the specified level of filtration should be no smaller than half the size of the particle to be removed. If too fine a filtration is specified the pressure drop through the strainer will increase very rapidly, possibly causing damage to the basket.

SCREEN TYPES/DIMENSIONS														
1/4" Dia. - 40% O.A.	3/16" Dia. - 50% O.A.	5/32" Dia. - 58% O.A.	1/8" Dia. - 40% O.A.	3/32" Dia. - 39% O.A.	1/16" Dia. - 37% O.A.	3/64" Dia. - 36% O.A.	1/32" Dia. - 40% O.A.	0.027" Dia. - 23% O.A.	20 Mesh - 49% O.A. 0.035" Openings	30 Mesh - 45% O.A. 0.022" Openings	40 Mesh - 41% O.A. 0.016" Openings	60 Mesh - 38% O.A. 0.010" Openings	80 Mesh - 36% O.A. 0.008" Openings	100 Mesh - 30% O.A. 0.006" Openings

#### Notes:

1. Screen openings other than those shown above are available.
2. Custom manufactured screens are available upon request. Please consult factory.
3. All mesh screens include liner;  
 .045 Perf      3" and smaller  
 .125 Perf      4" and larger.

Standard Screens	
Size Range	Opening
2" - 3"	0.045 in.
50mm - 80mm	1.2mm
4" and larger	0.125 in.
100mm and larger	3.2mm

# FLANGED SERIES Y-STRAINERS

## ENGINEERING DATA Y-Strainer Pressure Drop – Liquids

### FEATURES & AVAILABILITY

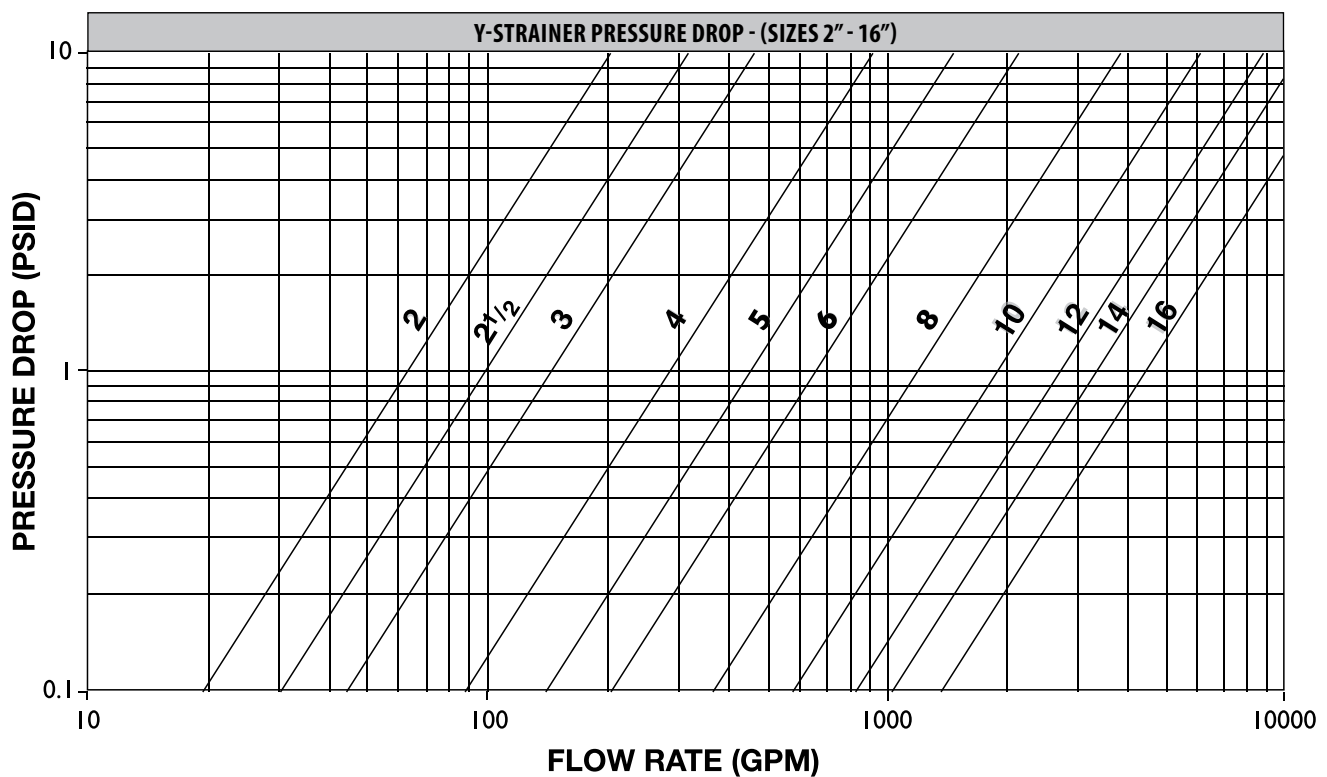
The following optional features are available for most Apollo Y-Strainers. Please consult factory if required feature not shown.

Feature	Description of Availability
Screen openings	Range 5 micron to 1/2" perf.
Screen materials	Carbon steel, stainless steel (304/316 and L grades), alloy 20, monel 400, hastalloy C, Titanium, etc.
Screen construction	Perforated plate, mesh and wedge wire.
Gaskets	Any material commercially available.
Special body materials	Consult factory.
Special coatings	FDA Epoxy Coating
Silicon free contamination	Specially cleaned and packed - performed on request.
Canadian Registration (CRN)	Available on most models in province of installation.

**Note:**

1. Strainer size may effect the ability to apply certain coatings and linings.

**Figure 1**



**Notes:**

1. Pressure drop curves are based on water flow with standard screens.
2. See next page for correction factors to be used with other fluids and/or screen openings.

# FLANGED SERIES Y-STRAINERS

## ENGINEERING DATA Screen Correction Factor Chart

### FOR NON-STANDARD AND MESH LINED SCREENS

Chart #1

Size Range	SCREEN OPENINGS							
	Perforated Plate % Screen Material Open Area					Mesh Lined Standard Screens % Screen Material Open Area		
	60%	50%	40%	30%	20%	50%	40%	30%
2" - 16"	0.65	0.8	1	1.4	2.15	1.05	1.05	1.2

\* Multiply values obtained from figure 1 thru 4 by the appropriate values shown below

**Notes:**

- See page 4 for % Open Area's of Apollo inventoried perforated plate.
- Standard screens for sizes 2" and larger is approximately a 40% open area screen media.
- All mesh screens include liner;
  - .045 Perf      3" and smaller
  - .125 Perf      4" and larger.

**EXAMPLE**

Strainer Size: 2"  
 Filtration: 100 Mesh lined  
 Flow rate: 65 GPM  
 Service: Water

- Using Figure 1 the pressure drop is determined to be 1.0 psid with Apollo's standard screen.
- Looking at page 4 we find that the % open area of 100 mesh is 30%.
- Using Chart #1 we read the correction factor to be 1.2 for 100 mesh lined .045" perf.
- Total pressure drop equals  $1.0 \times 1.2 = 1.2$  psid clean.

### VISCOSITY AND DENSITY CORRECTION FACTOR CHART

Chart #2

Size Range	Component Factor (CF)
2" - 16"	0.35

Chart #3

Viscosity CP	Body Loss Factor (BF)	Screen Loss Factor			
		Perf Alone (PF)	20 Mesh Lined (MF)	30, 40 Mesh Lined (MF)	60 to 300 Mesh Lined (MF)
10	1	1.15	1.3	1.4	1.5
25	1.2	1.25	2	2.2	2.5
100	1.6	1.4	3	4	6.5
200	2.2	1.5	4.5	7	11.5
500	4.4	1.6	10	15	25
1000	8	1.7	15	30	50
2000	15.2	1.9	30	60	100

**HOW TO USE**

- Using Figure 1 see page 5 determine the pressure drop (P1) through the strainer with water flow and standard screens.
- If non-standard screens (i.e. 40 mesh, etc.) are being used apply factors in Chart #1 to determine corrected pressure drop (P2).
- Multiply P1 or P2 (is used) by the specific gravity of the fluid actually flowing through the strainer to get P3.
- Using Chart #2 multiply P3 by the appropriate Component Factor (CF) to get P4.
- Let  $P5 = P3 - P4$ .
- Multiply P4 by the appropriate Body Loss Factor (BF) in Chart #3 to get P6.
- Multiply P5 by the appropriate Screen Loss factor (PF or MF) in Chart #3 to get P7.
- Total pressure drop  $P8 = P6 + P7$ .

**EXAMPLE**

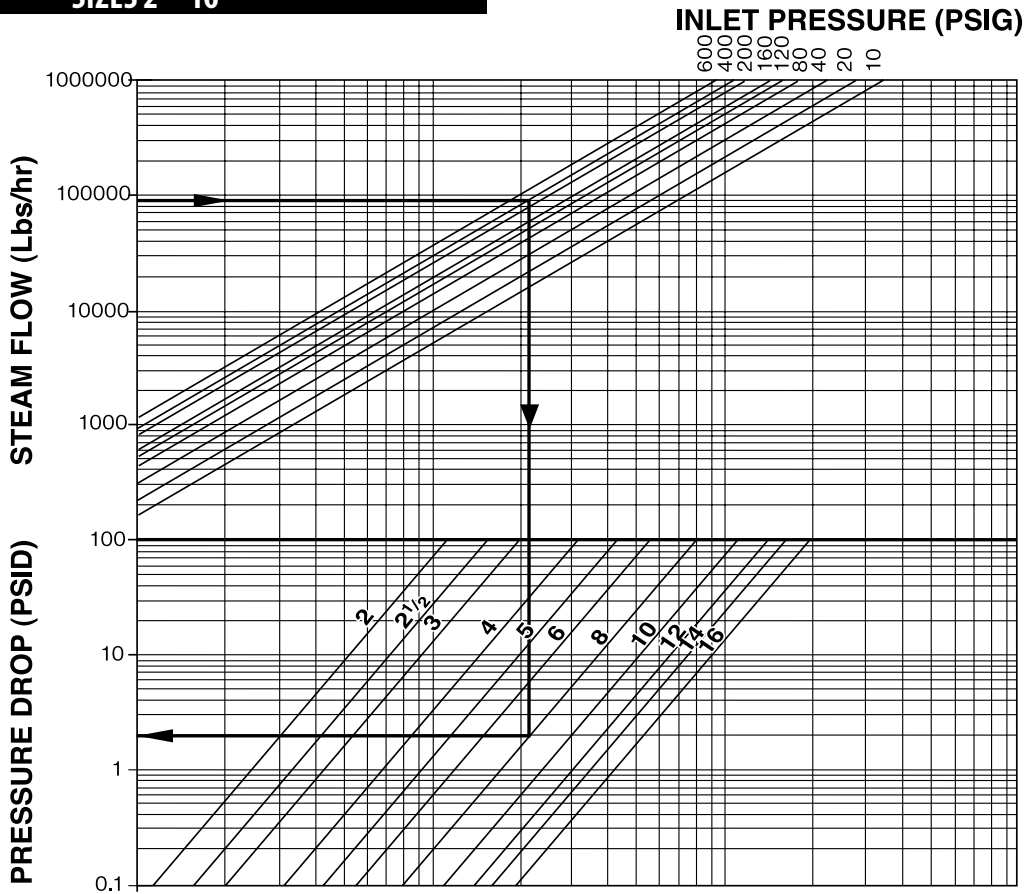
Strainer Size: 2"  
 Filtration: 100 Mesh lined  
 Flow rate: 65 GPM  
 Specific Gravity: 1  
 Viscosity: 25 cP

- As shown in the above example, the corrected pressure drop (P2) = 1.2 psid
- Since S.G. = 1,  $P3 = P2 = 1.2$  psid
- Using Chart #2  $P4 = 0.35 \times P3 = 0.42$  psid
- $P5 = 1.2 - 0.4 = 0.8$  psid
- Using Chart #3  $P6 = 0.4 \times 1.2 = 0.48$  psid
- Again using Chart #3  $P7 = 0.8 \times 2.5 = 2.0$  psid
- Total pressure drop  $P8 = 0.48 + 2.0 = 2.48$  psid

# FLANGED SERIES Y-STRAINERS

## ENGINEERING DATA Y-Strainer Pressure Drop – Saturated Steam

SIZES 2" - 16"



**Notes:**

1. Pressure drop curve is based on saturated steam flow with standard screens. See page 5 for correction factors to be used with other screen openings.
2. Chart can be used for air and gas by using the following formula:

$$Q_s = 0.138 Q_g \sqrt{(460+t) \text{ s.g.}} \left\{ \frac{DP}{P_2} < 1.0 \right\}$$

FOR NON-CRITICAL FLOW

**WHERE**

- Q<sub>s</sub> = Equivalent Steam Flow, lbs./hr.
- Q<sub>g</sub> = Air or gas flow, SCFM.
- t = Temperature, °F.
- s.g. = Specific gravity (s.g. = 1 for air.)
- DP = Pressure Drop, psid
- P<sub>2</sub> = Outlet Pressure

**EXAMPLE**

Service: Saturated Steam Flow  
 Pressure: 400 psig  
 Steam Flow: 90,000 Lbs/hr  
 Size: 8"

- A) Locate steam flow.
- B) Follow horizontal line to required pressure.
- C) Follow vertical line downwards to required strainer size.
- D) Follow horizontal line to read pressure drop
- E) Pressure drop equals 2.0 psid.



For additional information, submittal sheets and manuals, visit [www.apollovalves.com](http://www.apollovalves.com)

Customer Service (704) 841-6000

# FLANGED SERIES Y-STRAINERS

## Check List and Suggested Specifications

### STRAINER CHECK LIST

When selecting a strainer, please take the factors listed below into account. This will assist us when recommending a strainer to suit your specific requirements. Please photocopy this page and fill out the pertinent information.

1. Fluid to be strained \_\_\_\_\_
2. Flow rate \_\_\_\_\_
3. Density of fluid \_\_\_\_\_
4. Viscosity of fluid \_\_\_\_\_
5. Fluid working pressure \_\_\_\_\_  
Maximum pressure \_\_\_\_\_
6. Fluid working temp. \_\_\_\_\_  
Maximum temp. \_\_\_\_\_
7. Preferred material of strainer construction \_\_\_\_\_  
\_\_\_\_\_
8. Present pipeline size & material \_\_\_\_\_
9. Nature of solids to be strained out \_\_\_\_\_
10. Size of solids to be strained out \_\_\_\_\_  
Size of mesh or perf. req. \_\_\_\_\_
11. Clearance Limitation Above \_\_\_\_\_ Below \_\_\_\_\_  
Left side facing inlet \_\_\_\_\_  
Right side facing inlet \_\_\_\_\_
12. Maximum pressure drop with clean screen \_\_\_\_\_
13. Expected cleaning frequency \_\_\_\_\_
14. Any other information deemed relevant \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

### SUGGESTED SPECIFICATIONS

The strainer shall be a Y-Type and have \_\_\_\_\_ (size) inlet/outlet connections. The end connections shall be flanged and the body shall be complete with a bolted cover assembly. The strainer shall be suitable for \_\_\_\_\_ PSIG operating pressure at \_\_\_\_\_°F operating temperature. The body shall be constructed of \_\_\_\_\_ (body material) while the screen shall be constructed of \_\_\_\_\_ (screen material). A mesh lining of \_\_\_\_\_ (size of mesh) is required, allowing a maximum pressure drop of \_\_\_\_\_ psig. The strainer shall be equipped with a \_\_\_\_\_ (gasket material) gasket and the strainer screen shall be able to withstand \_\_\_\_\_ psig differential pressure without any deformation.

Strainers shall be Apollo Model # \_\_\_\_\_ or approved equivalent.

Name \_\_\_\_\_

Company \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_

State \_\_\_\_\_ Zip Code \_\_\_\_\_

Telephone ( \_\_\_\_\_ ) \_\_\_\_\_

Fax( \_\_\_\_\_ ) \_\_\_\_\_



# FLANGED SERIES Y-STRAINERS

## Installation and Maintenance Instructions

### STRAINER INSTALLATION INSTRUCTIONS

- A. Ensure all machined surfaces are free of defects and that the inside of the strainer is free of foreign objects.
- B. For horizontal pipelines, the strainer should be installed so that the drain connection is pointed downwards.
- C. For flanged end strainers, the flange bolting should be tightened gradually in a back and forth clockwise motion.
- D. Once installed, increase line pressure gradually and check for leakage around joints.
- E. If the strainer is supplied with a start-up screen, monitor pressure drop carefully.

**NOTE:** Flat face mating flanges and full face gaskets must be used with 125YF series strainers to avoid damage to the cast iron body.

### IMPORTANT

Ultimate responsibility for strainer and material selection rests with the customer, as only the customer knows the particular use to which the strainer will be put and the exact operating parameters to which it will be subjected.

### STRAINER REMOVAL INSTRUCTIONS

- A. Drain piping.
- B. Vent line to relieve pressure.
- C. Secure necessary lifting equipment to strainer assembly.
- D. Loosen flange bolts (Pipe flanges only).
- E. Remove inlet/outlet flange bolts and carefully remove strainer.

**CAUTION SHOULD BE TAKEN DUE TO POSSIBLE EMISSION OF PROCESS MATERIAL FROM PIPING. ALWAYS ENSURE NO LINE PRESSURE EXISTS WHEN OPENING COVER.**

### MAINTENANCE INSTRUCTIONS

For maximum efficiency, determine the length of time it takes for the pressure drop to double that in the clean condition. Once the pressure drop reaches an unacceptable value, shut down line and follow the "Screen Replacement Instructions". A pressure gauge installed before and after the strainer in-line will indicate pressure loss due to clogging and may be used to determine when cleaning is required.

### SCREEN REPLACEMENT

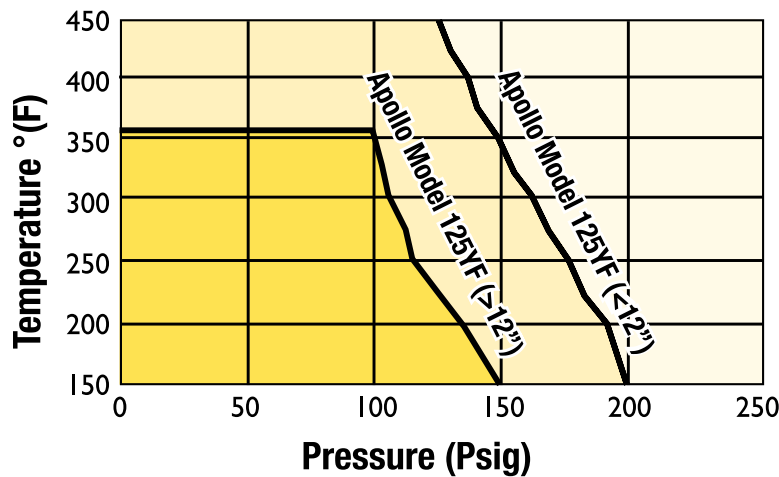
It is recommended that the system and strainer be depressurized before attempting any repair work. After removing all pressure, the system should be drained, any connections to the blow-off plug should be removed, and the following procedure should be used to replace the screen.

- A. Attach cable or chain to strainer cover (1) and apply sufficient tension to prevent cover from dropping.
- B. Remove bolts from cover.
- C. Remove cover, clean and inspect gasket surface of cover.
- D. Remove and discard old gasket.
- E. Remove and clean or discard old screen.
- F. Clean and inspect gasket surface of body. If gasket surface of cover or body is damaged, the damaged component must be replaced.
- G. Push clean screen into position in body.
- H. Position new gasket in place on body.
- I. Line up screen and put cover in place on body.
- J. Be sure gasket, bolt holes, and screen are properly aligned.
- K. Put in bolts and nuts as required.
- L. Tighten bolts, using "star" pattern to prevent damaging parts. Alternate tightening 180° apart. Tighten bolts sufficiently to stop leakage under test and service conditions.

# FLANGED SERIES Y-STRAINERS

## ENGINEERING DATA Y-Strainer Effective Screen Area

SERIES 125YF					
Pipe Size (In.)	Std. Opening (In.)	Nominal Area of Pipe Fitting (Sq. In.)	Gross Screen Area (Sq. In.)	Free Area (Sq. In.)	Ratio Free Area to Pipe Area
2	0.045	3.14	30.07	10.82	3.45
2-1/2	0.045	4.91	44.33	15.96	3.25
3	0.045	7.07	56.45	20.32	2.88
4	0.125	12.57	98.91	39.56	3.15
5	0.125	19.63	147.11	58.85	3.00
6	0.125	28.27	179.19	71.68	2.54
8	0.125	50.27	334.38	133.75	2.66
10	0.125	78.54	505.21	202.08	2.57
12	0.125	113.10	665.77	266.31	2.35
14	0.125	137.89	1186.34	474.54	3.44
16	0.125	182.65	1446.85	578.74	3.17



## Apollo Flanged Y-Strainer Order Schematic

MODEL	VALVE TYPE/CONNECTION SIZE	SCREEN TYPE	COATING
125Y (Flat Face)	Flanged 2" = F02	20 Mesh = M20	Blank Standard No Coating
	Flanged 2.5" = F25	40 Mesh = M40	E Epoxy Coating, FDA Approved
	Flanged 3" = F03	60 Mesh = M60	
	Flanged 4" = F04	80 Mesh = M80	
	Flanged 5" = F05	100 Mesh = M100	
	Flanged 6" = F06	.045 Perf = P045	
	Flanged 8" = F08	.062 Perf = P062	
	Flanged 10" = F10	.125 Perf = P125	
	Flanged 12" = F12	.250 Perf = P250	
	Flanged 14" = F14		
	Flanged 16" = F16		

### NOTES:

\*All mesh screens are reinforced with a perforated liner.

2" - 3": .045 Perf

4" - Larger: .125 Perf

# FLANGED SERIES Y-STRAINERS

## WARRANTY AND LIMITATIONS OF LIABILITY

Conbraco Industries, Inc. warrants, to its initial purchaser only, that its products which are delivered to the initial purchaser will be of the kind described in the order or pricelist and will be free of defects in workmanship or material for a period of TWO years from the date of delivery to you, our initial purchaser.

Should any failure to conform to this warranty appear within two years after the date of the initial delivery to our initial purchaser, Conbraco will, upon written notification thereof and substantiation that the goods have been stored, installed, maintained and operated in accordance with Conbraco's recommendations and standard industry practice, correct such defects by suitable repair or replacement at Conbraco's own expense.

THIS WARRANTY IS EXCLUSIVE AND IS IN LIEU OF ANY IMPLIED WARRANTY OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR OTHER WARRANTY OF QUALITY WHETHER EXPRESSED OR IMPLIED, EXCEPT THE WARRANTY OF TITLE AND AGAINST PATENT INFRINGEMENT. Correction of non-conformities, in the manner and for the period of time provided above, shall constitute fulfillment of all liabilities of Conbraco to our initial purchaser, with respect to the goods, whether based on contract, negligence, strict tort or otherwise. It is the intention of Conbraco Industries, Inc. that no warranty of any kind, whether express or implied, shall pass through our initial purchaser to any other person or corporation.

LIMITATION OF LIABILITY: Conbraco Industries, Inc. SHALL NOT UNDER ANY CIRCUMSTANCES BE LIABLE FOR SPECIAL OR CONSEQUENTIAL DAMAGES SUCH AS, BUT NOT LIMITED TO, DAMAGES OR LOSS OF OTHER PROPERTY OR EQUIPMENT, LOSS OF PROFITS OR REVENUE, COST OF CAPITAL, COST OF PURCHASED OR INITIAL PURCHASER, AND ALL OTHERS, SET FORTH HEREIN ARE EXCLUSIVE, AND THE LIABILITY OF CONBRACO WITH RESPECT TO SAME SHALL NOT, AS EXPRESSLY PROVIDED HEREIN, EXCEED THE PRICE OF THE GOODS UPON WHICH SUCH LIABILITY IS BASED.

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	Jimmy White	Central	jwhite@lascofittings.com	731-234-2372	731-779-3608
Ben Freeman	Southeast	bfreeman@lascofittings.com	205-919-4944		
Rick Williamson	Eastern Specifications Manager	rwilliamson@lascofittings.com	386-451-2307		



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	Pro Marketing, Inc.	NC/SC/TN-East	sales@promarketinginc.net	864-578-4334	864-578-4889
	Spirit Group	FL (except Panhandle)	info@spiritgroupinc.com	407-291-6035	407-299-0378
	Tim Morales & Associates, Inc.	AL/FL Panhandle	sales@timmorales.com	251-602-8333	251-602-8339
	White Wolf Group	GA	info@whitewolfgroupinc.com	800-401-4870	888-908-9372
<b>SOUTHERN REGION</b>	BWC Inc.	LA (Commercial Products)	chuck@bwcassoc.com	504-734-0229	504-734-3711
	Marathon Flow Control	TX, OK, KS except Northeast, LA (Industrial)	sales@marathonflowcontrol.com	214-201-0100	214-201-0104
	Southern Marketing Group	MS/TN-West/AR/Bowie Cty.-TX	SMG49@bellsouth.net	901-547-0042	901-547-0035
<b>MIDWESTERN REGION</b>	FourMation Sales	MN/ND/SD/WI-West	ryan@fourmationsales.com	763-420-6900	763-420-6993
	Marshall-Rodeno Heartland	NE/IA (Except River Counties)	trodeno@marshallrodeno.com	303-575-6701	303-575-6706
	Midwest Spec	KY/OH/PA-West/WV-West	glsales@mwspec.com	330-538-0406	330-538-0410
	New Tech Marketing	Northern-IL/WI-East/IN/MI-UP/IA-River Counties	sales@new-techmarketing.com	630-378-4300	630-378-0343
	New Tech Marketing	MO/Southern IL/Northeast Kansas	ntm112@aol.com	618-394-0329	618-394-0427
	V.E. Sales Co., Inc.	MI (Except Upper Peninsula)	tomv@vesalesinc.com	586-774-7760	586-774-1490
<b>WESTERN REGION</b>	Elmco Duddy	CA - South	tduddy@elmcoduddy.com	626-333-9942	626-855-4811
	Gordon & Associates	WA, OR, AK, Northern counties ID	laura@gordonandassoc.com	360-566-1470	360-566-1478
	HC Fletcher	CA - North (AB 1953 compliant product)	apollosales@hcfletcher.com	800-432-7047	949-660-9072
	Marshall-Rodeno Associated	CO/WY/MT/ID-SE/UT/NV-NE/NM/El Paso-TX	trodeno@marshallrodeno.com	303-575-6701	303-575-6706
	Romatec	CA - North PVF (non AB 1953)	apollo@romatec.com	877-530-3530	661-588-3534
	Southwest Valves	CA (Waterworks and Fire Protection)	d.burell@southwestvalve.com	559-261-2703	559-261-2711
	Southwestern Industrial Sales Co.	AZ/Nevada-SW	eduardop@sw-ind.com	480-458-5838	480-458-5843
	Spec Management Group	HI	msmarch4@cox.net	949-481-4225	949-487-0990
<b>NORTHEAST REGION</b>	Conroy & Griese Sales, Inc.	NY-East/NJ-North	iezzi52@aol.com	856-663-4440	856-663-6644
	Keith Engle & Associates	OEM accounts	keith.enge@verizon.net	610-827-9560	610-827-9561
	Layden Company	NY-Upstate/PA-East/DE/NJ-South	joejr@laydencompany.com	610-363-6657	877-529-3361
	Urell, Inc.	MA/New England States	conbraco@urell.com	617-923-9500	617-926-9414
<b>IRRIGATION ONLY REPS</b>	Active Sales Northwest, Inc.	OR, WA, Western ID	skactive@aol.com	541-726-0320	541-726-1148
	Biz Sales Company	OH, KY, MI, IN, parts of PA, WV, WI	dzavelson@bizpvf.com	216-595-2888	216-595-2899
	Fourmation Sales	MN/ND/SD/WI-West	dean@fourmationsales.com	763-262-4700	763-262-4740
	Hall Marketing	AL, LA	hallmarketing@bellsouth.net	228-547-4637	228-832-6666
	J&J Midwest Sales	NE, IA, MO, KS	john@jandjmidwestsales.com	314-422-8419	
	Jim Benton & Associates	AL, FL Panhandle	jim@bentonandassoc.com	205-664-1221	205-664-1277
	John Hart	FL	jhart@lascofittings.com	772-595-7773	772-489-4305
	Larry Perkins	TX - Southern	lperkins@lascofittings.com	936-443-1096	
	Marel Enterprises	New England, NY, DE, MD, VA, DC, parts of PA & WV	marelenterprise@gmail.com	631-271-1718	631-427-8558
	Marshall-Rodeno Associated	CO/WY/MT/ID-SE/UT/NV-NE	trodeno@marshallrodeno.com	303-575-6701	303-575-6706
	NSC Marketing Group Inc.	OK	nsc_tulsa@sbcglobal.net	918-627-5340	918-664-1408
	Pro Marketing, Inc.	NC/SC/TN-East	sales@promarketinginc.net	864-578-4334	864-578-4889
	Sherman Dobbs	TX - Northern	sdobbs@lascofittings.com	469-442-8510	972-417-9733
	Southern Marketing Group	MS/TN-West/AR/Bowie Cty.-TX	SMG49@bellsouth.net	901-547-0042	901-547-0035
	Spec Management Group	CA-South	msmarch4@cox.net	949-481-4225	949-487-0990
	VPC Sales	AZ	chudson@vpcsales.com	661-257-3923	661-257-3928
<b>CANADA</b>	Ventes Techniques Nimatec	Quebec	nimatec@nimatec.com	450-691-9427	450-691-4949
	Barclay Sales Ltd.	British Columbia	bbarclay@barclaysales.com	604-945-1010	604-945-3030
	Conbraco Industries, Canada	178 Pennsylvania Ave., Unit 1, Concord, Ontario L4K 4B1	conbraco.canada@conbraco.com	905-761-6161	905-761-6666
	D & M Mechanical Sales	Ontario/East	don@dandmsales.ca	613-384-7084	613-384-3407
	Dynamic Agencies, Ltd.	Saskatchewan	doug.dynamicage@sasktel.net	306-343-1901	306-343-1901
	J. Levandier Sales, Inc.	Nova Scotia, New Brunswick, Prince Edward Island & Newfoundland	service@jlevandiersales	506-858-1615	506-858-1084
	Kern Industries, Ltd.	Alberta-North	kernind@telusplanet.net	780-451-2056	780-454-6687
	Kern Industries Calgary, Ltd.	Alberta-South	marty.yucytus@kernindustries.ca	403-730-7791	403-239-8179
	Key to the North Sales Agency, Inc.	Ontario-North	hmehes@keytothenorth.ca	705-524-6714	705-566-0148
	Task Controls, Inc.	Ontario	infotoronto@taskcontrols.com	416-291-3004	416-754-3481
	Tom Beggs Agencies Ltd.	Manitoba/NW Ontario	tba@mts.net	204-953-1900	204-774-6915