

Y-STRAINERS

FLANGED SERIES | CATALOG

FSCA9000





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 processes ensure a consistency of production, testing, quality and availability. You can be assured that Conbraco flow control products will deliver long term reliability. All manufacturing facilities are ISO 9001:2008 certified.

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.



PAGELAND, SC

Bronze Foundry and Manufacturing Plant

PAGELAND, SC

Final Assembly and Distribution Center

CONWAY, SC

Steel Foundry and Manufacturing Plant

MATTHEWS, NC

Corporate Headquarters

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APOLLO® YCF SERIES



DESCRIPTION

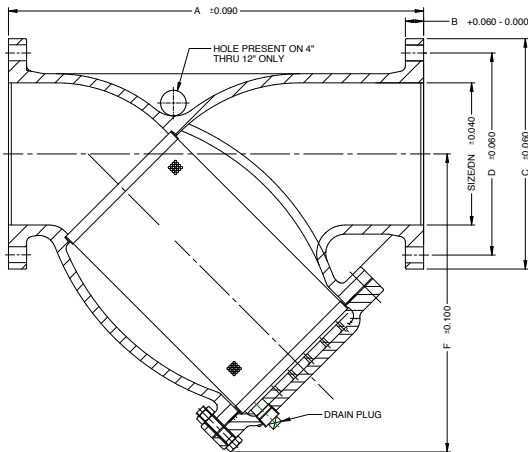
The **Apollo International™** YCF Strainers are designed to protect piping systems and process equipment from unwanted foreign particles with minimum pressure loss.

FEATURES

- Iron strainer with flat face flanges conforms to ASME/ANSI 16.1 Class 125
- One piece cast body meets ASME standard
- Lead free (NSF-372 ANSI)
- All models epoxy coating (FDA CFR21, Section 175.300)
- Equipped with bolted cover employing flat gasket seal
- Upper and lower machined seats for screen for Self-Aligning Screen Design
- 304 SS perforated screens are standard, (P045 STD 2"-3", P125 STD 4"-12")
- Tapped blow off connection with plug
- 100% factory pressure tested

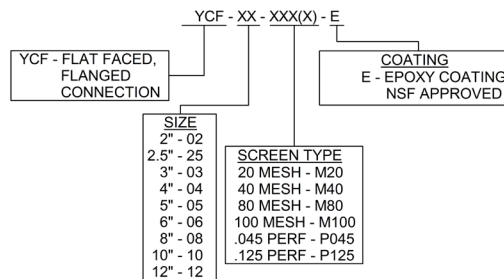
PERFORMANCE RATING

Working pressure (non-shock):
 STEAM 150 PSIG @ 353°F
 CWP 200 PSIG @ 150°F



Apollo Model YCF – 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
Body Material		Lower Limit °F (°C)	
A126-B, A395		-20 (-28.9)	

PART NUMBERING MATRIX



MATERIAL SPECIFICATIONS

Body	Cast Iron, ASTM A126-B
Cap/Cover	Cast Iron, ASTM A126-B
Plug	Carbon Steel, ASTM A307
Bolt/Stud/Nut	Carbon Steel, ASTM A307
Screen	304 Stainless Steel
Gasket	Graphite
Coating	Epoxy, FDA Approved

PHYSICAL SPECIFICATIONS

Part Number	Size/DN		A		B		C		D		E		F		Drain Plug		Weight	
	IN	MM	IN	MM	IN	MM	IN	MM	IN	MM	IN	MM	IN	MM	IN	MM	LBS.	KG.
YCF02P045E	2"	50	8.86	255	0.63	16	5.98	152	4.75	121	0.75	19	6.30	160	1/2"	4	23	11
YCF25P045E	2-1/2"	65	10.75	273	0.69	18	7.01	178	5.50	140	0.75	19	7.64	194	1"	4	34	15
YCF03P045E	3"	80	11.50	292	0.75	19	7.48	190	6.00	153	0.75	19	8.86	225	1"	4	47	21
YCF04P125E	4"	100	13.86	352	0.94	24	8.98	228	7.50	191	0.75	19	10.63	270	1-1/4"	8	72	33
YCF05P125E	5"	125	16.38	416	0.94	24	10.00	254	8.50	216	0.88	22	12.60	320	1-1/4"	8	111	50
YCF06P125E	6"	150	18.50	470	1.00	25	10.98	279	9.50	242	0.88	22	14.69	373	1-1/2"	8	150	68
YCF08P125E	8"	200	21.38	543	1.12	29	13.46	342	11.75	299	0.88	22	17.72	450	1-1/2"	8	235	107
YCF10P125E	10"	250	25.98	660	1.18	30	15.98	406	14.25	362	1.00	25	20.67	525	2"	12	369	168
YCF12P125E	12"	300	30.00	762	1.25	32	19.02	483	17.00	432	1.00	25	23.94	608	2"	12	552	250



FLANGED SERIES Y-STRAINERS

engineering data - screen openings

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					
1/8" Dia. - 40% O.A. (P125)	1/16" Dia. - 37% O.A. (P045)	20 Mesh - 49% O.A. 0.035" Openings	40 Mesh - 41% O.A. 0.016" Openings	80 Mesh - 36% O.A. 0.008" Openings	100 Mesh - 30% O.A. 0.006" Openings

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

Notes:

- All screens not available for all sizes
- All mesh screens include liner;
 - .045 Perf 3" and smaller
 - .125 Perf 4" and larger.

FLANGED SERIES Y-STRAINERS

engineering data - pressure drop (liquids)



FEATURES & AVAILABILITY

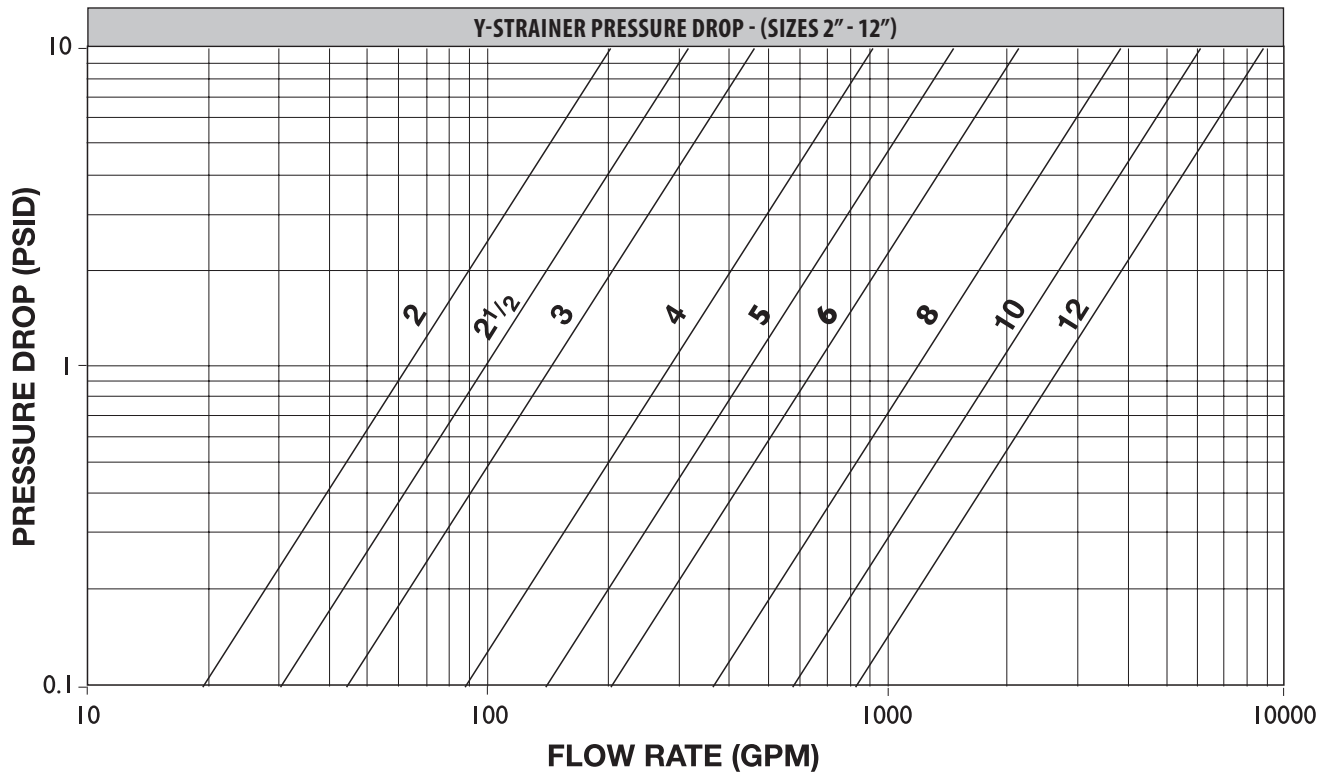
The following optional features are available for most Apollo Y-Strainers. Please consult factory if required feature not shown.

Feature	Description of Availability
Screen openings	Range 150 micron to 1/4" perf.
Screen materials	stainless steel (304)
Screen construction	Perforated plate/mesh wire.
Gaskets	Graphite
Standard coatings	FDA Epoxy Coating

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" - 12"	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" - 12"	0.35

Chart #3

Viscosity CP	Body Loss Factor (BF)	Screen Loss Factor			
		Perf Alone (PF)	20 Mesh Lined (MF)	40 Mesh Lined (MF)	60 to 100 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

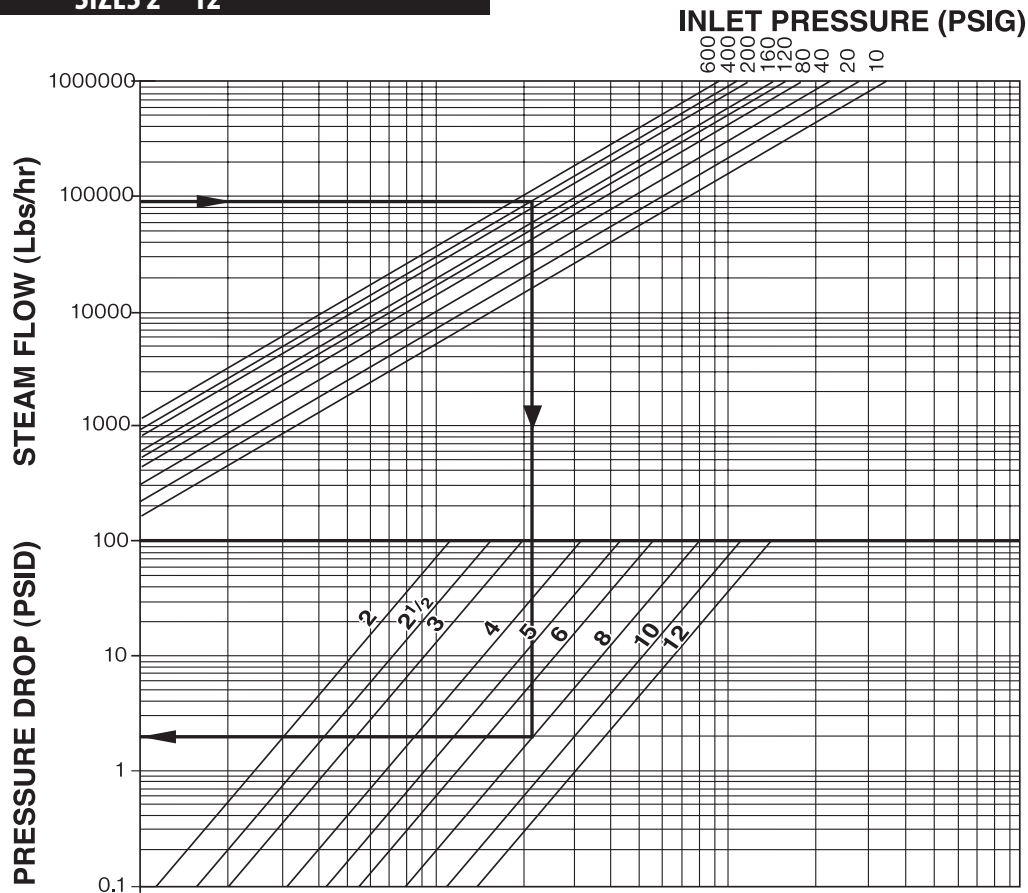


FLANGED SERIES Y-STRAINERS

engineering data - pressure drop (saturated steam)



SIZES 2" - 12"



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_s = Equivalent Steam Flow, lbs./hr.
- Q_g = Air or gas flow, SCFM.
- t = Temperature, °F.
- s.g. = Specific gravity (s.g. = 1 for air.)
- DP = Pressure Drop, psid
- P₂ = 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.



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 YCF 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 recommend 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.

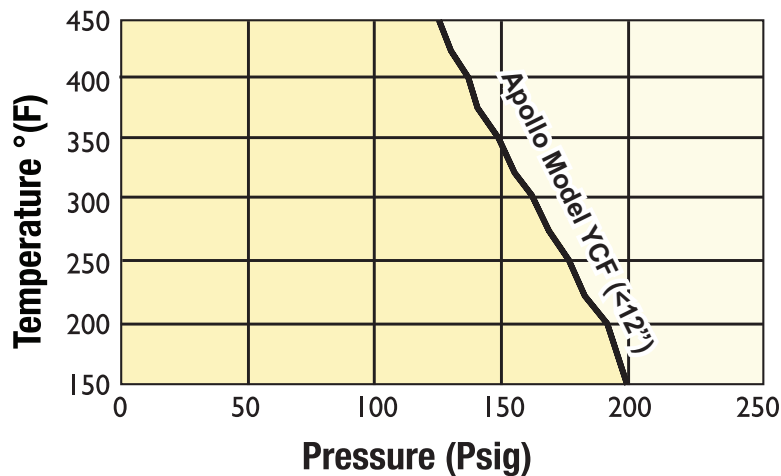
- A. Attach cable or chain to strainer cover (1) and apply sufficient tension to prevent cover from dropping.
- B. Remove bolts from cover.
- C. Remove cover, clean and inspect gasket surface of cover.
- D. Remove and discard old gasket.
- E. Remove and clean or discard old screen.
- F. Clean and inspect 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 - effective screen area

SERIES YCF					
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



Apollo Flanged Y-Strainer Order Schematic

MODEL	VALVE TYPE/CONNECTION SIZE	SCREEN TYPE	COATING
YCF (Flat Face)	Flanged 2" = F02 Flanged 2.5" = F25 Flanged 3" = F03 Flanged 4" = F04 Flanged 5" = F05 Flanged 6" = F06 Flanged 8" = F08 Flanged 10" = F10 Flanged 12" = F12	20 Mesh = M20 40 Mesh = M40 80 Mesh = M80 100 Mesh = M100 .045 Perf = P045 .125 Perf = P125	E Standard Epoxy Coating, FDA Approved

NOTES:

*All mesh screens are reinforced with a perforated liner.

2" - 3": .045 Perf

4" - Larger: .125 Perf



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.



Regional Management List now available online at <http://conbra.co/rmlist>



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