Applications

- Process Industry
- Power Industry
- Chemical Industry
- Oil and Gas
- Metals and Mining
- Water and Waste
- Pulp and Paper

"Y" Strainers

Pressures to 3705 PSIG
Temperatures to 800ºF

FEATURES

- Low pressure drop streamlined design
- Large strainer screens
- Compact end to end dimension
- Cast or Fabricated Construction

END CONNECTIONS

- Flat Faced
- Raised Face
- RTJ Flanged
- Buttweld
- Threaded (NPT)
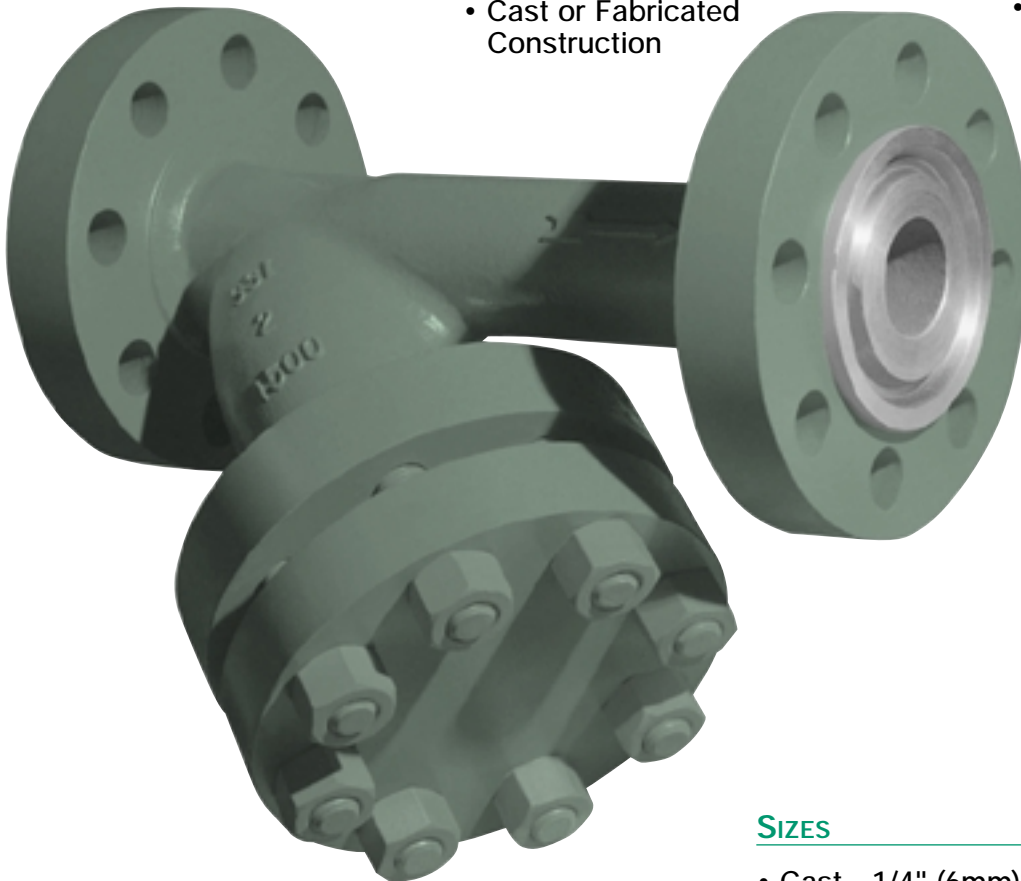- Socketweld
- Sweat

MATERIALS

- Cast Iron
- Ductile Iron
- Bronze
- Carbon Steel
- Low Temp Steel
- Chrome Molly
- Stainless Steel
- Other Materials Upon Request

SIZES

- Cast - 1/4" (6mm) up to 16" (400mm)
- Fabricated - Custom sizes to meet any requirements

RATINGS

- ANSI 125 psig
- ANSI 150 psig
- ANSI 300 psig
- ANSI 600 psig
- ANSI 900 psig
- ANSI 1500 psig
- ANSI 2500 psig

Y STRAINERS FEATURES

SPENCE

Y STRAINER DESIGN FEATURES

BODY-COVER FLANGED JOINTS

Flanged body-cover joints are designed to meet the requirements of ASME Section VIII, Div. 1 and/or ASME B16.5.

For Series 150Y2 and 300Y2 strainers, the body-cover joint is designed using the equations found in Appendix II of the ASME Pressure Vessel Code. Calculations are performed using standard gaskets and with the existence of a edge moment. The gasket cavity is fully enclosed ensuring proper gasket alignment while preventing unwinding of spiral wound gaskets if used.

Exclusive

Series 600Y2, 900Y2 and 1500Y2 strainers incorporate a body-cover joint that is in dimensional accordance with the flange dimensions specified in ASME B16.5. Among the advantages of this strong leak-proof design is the convenience of using gaskets that are in accordance with ASME B16.20 and ASME B16.21. This feature eliminates the need for dimensionally special gaskets when maintenance is performed.
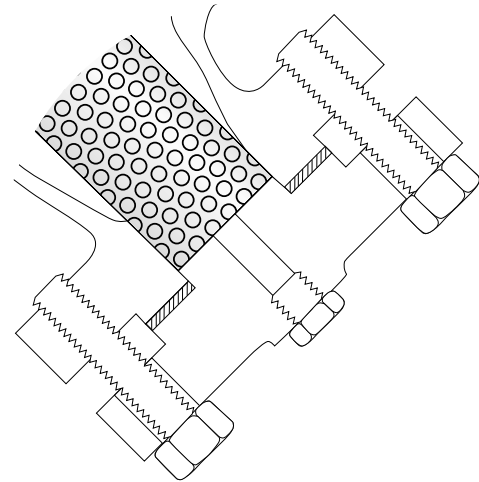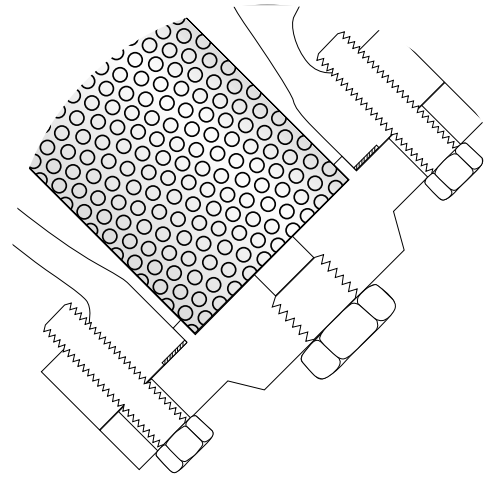
BODY-COVER THREADED JOINTS

The design of a strong threaded body-cover joint is dependent on many factors. When designing these joints for strainers, calculations are performed taking into account thread shear (ASME B16.34), cover thickness and operating/gasket seating loads (ASME Sect. VIII, Div. 1). Basic dimensions such as wall thickness and band diameters are in accordance with ASME codes.

Y STRAINERS DESIGN FEATURES
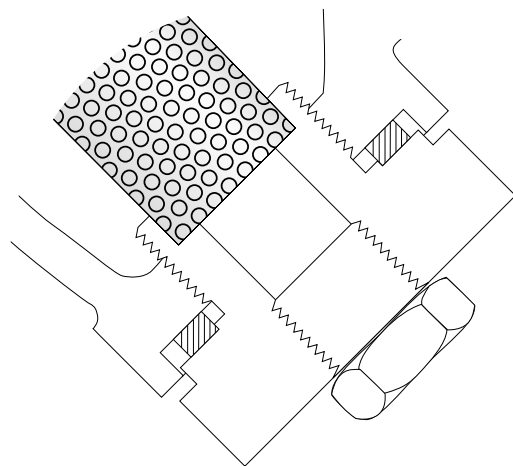
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Y STRAINER DESIGN FEATURES

SCREEN SEATING

All Spence Y-Strainers are manufactured with both upper and lower machined seats. This feature eliminates debris by-pass while also acts to securely hold the screen in position when in service.

For assembly and disassembly purposes, Spence Y-Strainers are designed so that the screen is securely slid over or into a machined lip on the cover bonnet. This allows the screen to be easily guided into the upper machined seat during assembly.

In particular, for Series 600Y2, 900Y2 and 1500Y2 strainers, where the cover flange tends to be heavy and difficult to maneuver, the screen is also guided around it's circumference by the strainer body. This feature eliminates the possibility of misaligning the strainer screen during assembly while providing additional support to the screen when in service. This circumferential support reduces maintenance time and costs since the strainer can be assembled quicker and safer than with other designs.
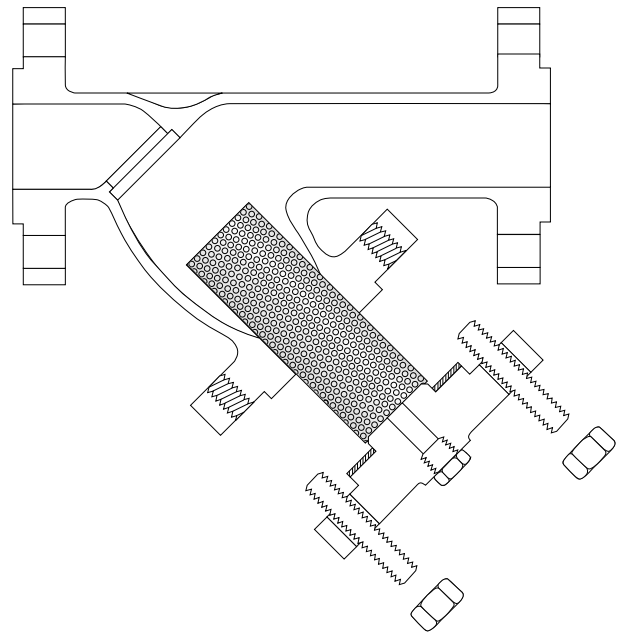
STRAINER SCREENS

All Spence Y-Strainers are equipped with screens that have an open flow area many times greater than the pipe nominal cross-sectional area. This is important in order to reduce initial pressure drop and decrease the rate in which the pressure drop increases as the strainer screen becomes clogged. As shown in the figure the larger the screen area the lower the rate of increase in pressure drop.

A Y-Strainer screen must be strong enough to handle the resulting differential pressure that occurs when in service. In general all Spence strainer screens are designed to handle a minimum burst pressure of 50 psid. Spence calculates the burst pressure of screens using the formula:
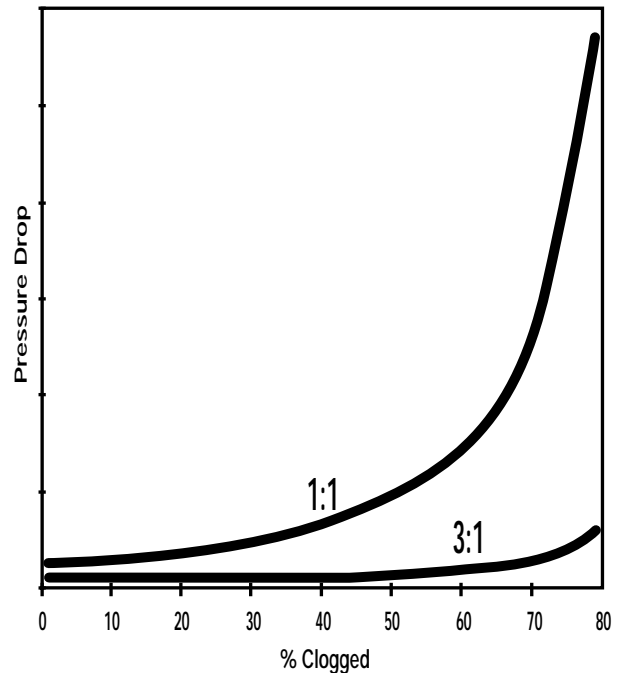
$$P = \frac{St}{R-0.4t}$$

P = Burst Pressure
S = Reduced allowable stress
t = Thickness of screen material
R = Outside radius of screen

SOURCE: ASME Section VIII, Div. 1, Appendix 1.

Using the above formula, Spence can design and manufacture any strainer screen to suit your specific strength requirements.

EFFECT OF SCREEN AREA ON PRESSURE DROP

Note: Curves are for different ratios of free area to pipe area.

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