

# Sentry™ Closure

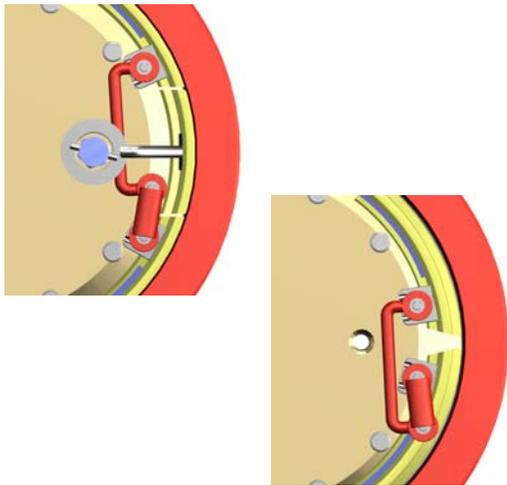
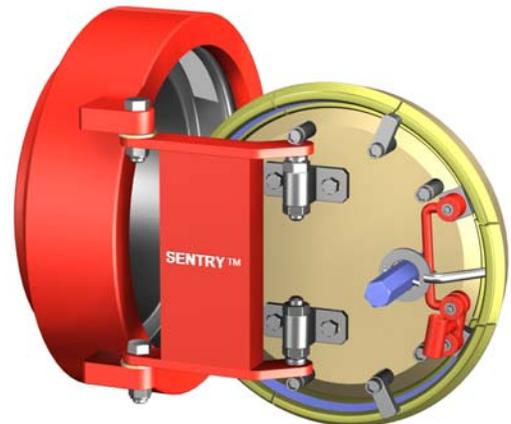
The Sentry™ closure was designed to meet a simple criteria to provide a ‘Simple design incorporating an improved locking arrangement, permitting operation of any size closure in less than 90 seconds and integral safety to prevent unsafe operation’. The Sentry™ closure not only meets, but surpasses these needs.

Designed using the classical formulas of ASME Section VIII Div. 1, validated by Finite Element Analysis and verified with extensive proof testing, the Sentry™ closure can be supplied in accordance with all international design codes.

## General Design

The Sentry™ closure concept relies on a simple ring of material that slides within a groove machined into the outer flange or hub. When expanded to the closed position, the locking ring securely locks the door into position.

This design methodology is well proven within the industry and provides distinct advantages of integral safety and avoids the reliance on threaded components for pressure retaining.



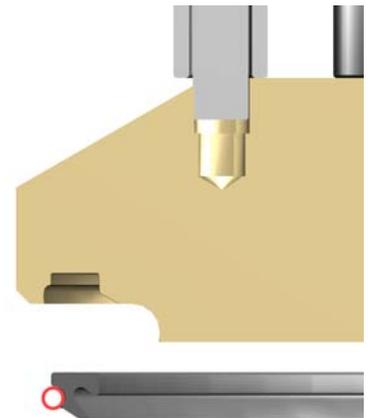
## Closure Operation

The Sentry™ closure operating cycle consists of removing the Pressure Alert Valve / Safety Segment assembly and then rotation of the actuator lever 180°. This simple operation contracts the locking ring sufficiently to clear the outer flange, allowing the door to be pulled opened. Closing is simply a reversal of this operation.

## Closure Sealing

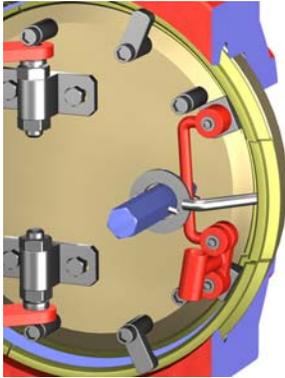
A key feature of the Sentry™ closure is the pressure energized lip seal. Located within the face of the door for protection, the seal is available in a wide range of materials and suitable for both full vacuum and ultra-high pressure ratings.

Designed to provide extended service life, the Sentry™ seal is a two part design consisting of an elastomeric seal and a separate coiled spring back up.



## Closure Safety

Safety is paramount in today's industry and the Sentry™ closure not only provides speed of operation but also the benefit of integral safety to prevent unsafe operation. With the locking ring in the locked closed position, internal pressure creates a seating force that physically traps the locking element between the door and outer hub, making it impossible for the door to open.



This design characteristic is then further enhanced by the integral Pressure Alert Valve (PAV) that threads into a pressure sensing port. A small removable segment of the locking ring is attached to the PAV, preventing accidental opening.

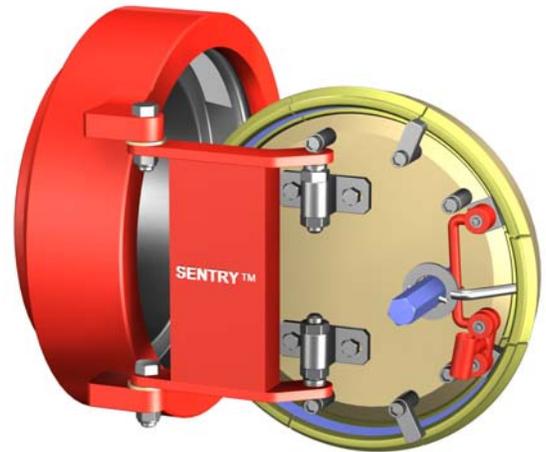
Operation of the PAV provides positive indication as to the pressurized state of the pressure vessel.

## Configurations

The Sentry™ closure is available in both:

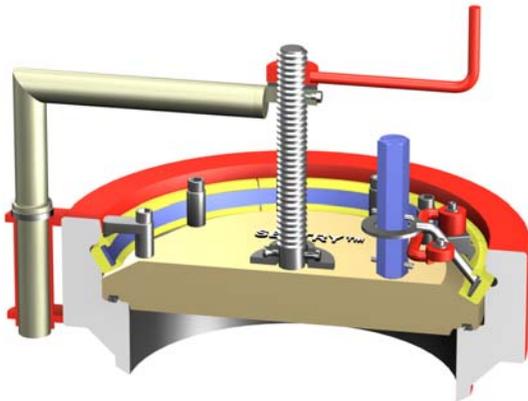
### Horizontal

For horizontal operation, the Sentry™ closure is supplied with a heavy duty, double pivot hinge arrangement that fully supports the weight of the closure door, minimizes the swing radius and insures repetitive operation.



### Vertical

For vertical operation, the Sentry™ closure is supplied with a heavy-duty davit arm arrangement, capable of supporting the weight of the door and being positioned to provide safe access to the vessel interior.



For larger diameter closures, where the weight of the door becomes a restraining factor, the door is supplied with three lifting eyes for use with overhead lifting equipment.

## Sentry™ Closure Product Overview

<b><u>Size range:</u></b>	6" to 72" Nominal
<b><u>Pressures:</u></b>	Full vacuum to 2220 psig working pressure
<b><u>Ratings:</u></b>	ANSI 150, 300, 600, and 900
<b><u>Design specifications:</u></b>	ASME Section VIII Div. 1 'U' stamp ASME Section VIII Div. 2 ANSI B31.3, B31.4, B31.8 BS 5500
<b><u>Configurations available:</u></b>	Horizontal Vertical
<b><u>Materials of construction:</u></b>	Carbon steel Low temp carbon steel Stainless steel Duplex stainless steel Specialty alloys Clad / weld overlay alloys
<b><u>Sealing:</u></b>	Elastomeric pressure energized lip seal with stainless steel anti-extrusion back up ring. Elastomeric seal available in: Nitrile, Viton, Elast-O-Lion, Aflas and other specialty grades.
<b><u>Accessories:</u></b>	Protective weather covers Non-venting Pressure Alert Valve Key interlock system Position indicators

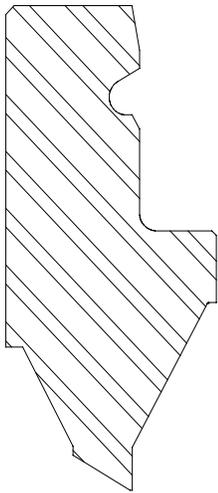
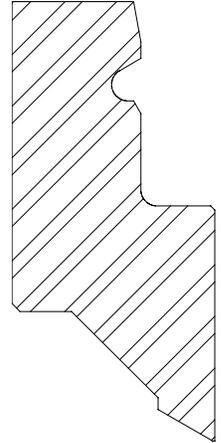
# Sentry™ Design Variations

To meet the demanding requirements of pressure vessels supplied in today's market, the Sentry™ closure can be supplied in various configurations:

## Standard (Full Bore)

Standard weld bevel configuration is produced in accordance with ANSI B16.5 (or applicable design code) with bevel machined to meet customers' specifications (single V, double V, J, inside or outside bevel)

The closure bore is machined to match the internal bore of the mating vessel or pipe.



## Tapered Bore (Reduced Bore)

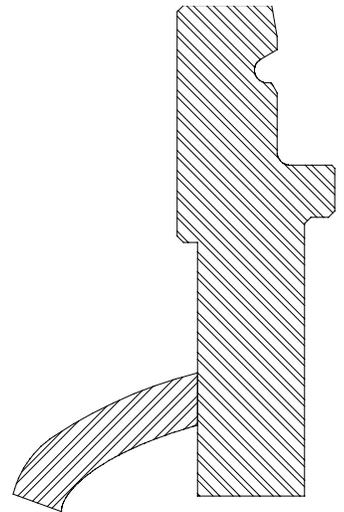
The weld joint configuration is machined to meet the customers' specification and is positioned towards the outer diameter of the closure flange. An internal taper is provided for transition to the smaller closure opening.

This configuration is especially suited for use on filtration equipment where access is required but a small reduction in opening size does not hinder removal of the filter elements.

## Self reinforced

Designed specifically for access to large diameter vessels where full diameter access is not required or economically justified.

The closure hub is supplied with an extended length to provide the required nozzle projection and reinforcement to satisfy the applicable code requirements.



## Customer Service Departments

U.S.A.

1-800-654-5603 or 281-351-2222

Canada

1-800-661-5659 or 780-437-6316