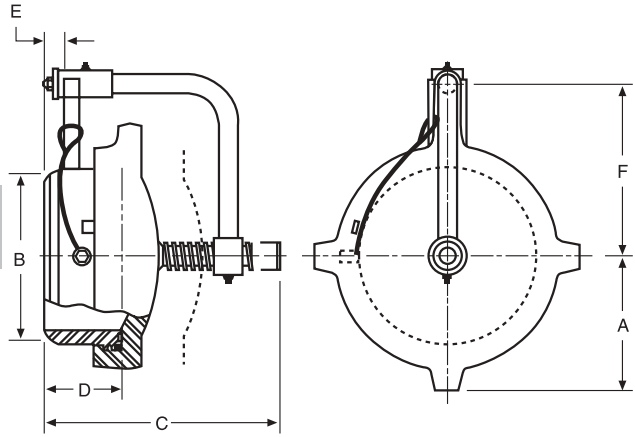
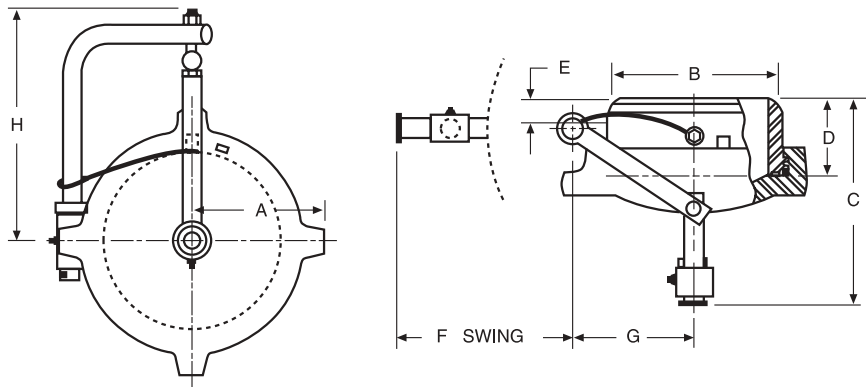


CLOSURE DIMENSIONS



SIZES 6" - 12" CLASS 150/900TV VERTICAL WITH HINGE							
Nominal Size In (DN)	A In (cm)	B In (cm)	C In (cm)	D In (cm)	E In (cm)	F In (cm)	Approximate Weight Lbs (Kg)
6 (150)	5 ⁵ / ₈ (14.29)	6 ⁵ / ₈ (16.83)	12 ³ / ₄ (32.39)	4 (10.16)	1 ¹ / ₈ (2.86)	9 ¹ / ₁₆ (23.03)	55 (25)
8 (200)	6 ¹⁵ / ₁₆ (17.62)	8 ⁵ / ₈ (21.90)	15 (38.10)	4 ¹ / ₂ (11.43)	1 ¹ / ₈ (2.86)	10 ³ / ₈ (26.35)	95 (43)
10 (250)	8 ⁵ / ₈ (21.91)	10 ³ / ₄ (27.31)	16 ¹ / ₄ (41.28)	5 (12.70)	1 ¹ / ₄ (3.18)	11 ¹ / ₂ (29.21)	150 (68)
12 (300)	9 ⁷ / ₈ (25.08)	12 ³ / ₄ (32.39)	17 ¹ / ₂ (44.45)	5 ¹ / ₂ (13.97)	1 ⁵ / ₁₆ (3.33)	12 ¹³ / ₁₆ (32.54)	240 (109)



SIZES 6" - 12" CLASS 150/900TH HORIZONTAL WITH HINGE									
Nominal Size In (DN)	A In (cm)	B In (cm)	C In (cm)	D In (cm)	E In (cm)	F In (cm)	G In (cm)	H In (cm)	Approximate Weight Lbs (Kg)
6 (150)	5 ⁵ / ₈ (14.29)	6 ⁵ / ₈ (16.83)	10 ⁷ / ₈ (25.72)	4 (10.16)	1 ³ / ₈ (3.49)	9 ³ / ₄ (24.77)	5 ⁷ / ₁₆ (13.81)	14 ³ / ₈ (36.51)	55 (25)
8 (200)	6 ¹⁵ / ₁₆ (17.62)	8 ⁵ / ₈ (21.90)	11 (27.94)	4 ¹ / ₂ (11.43)	1 ¹ / ₁₆ (3.65)	11 (27.94)	6 ⁷ / ₁₆ (16.35)	14 ³ / ₈ (36.51)	95 (43)
10 (250)	8 ⁵ / ₈ (21.91)	10 ³ / ₄ (27.31)	13 ³ / ₈ (33.97)	5 (12.70)	1 ¹ / ₂ (3.81)	13 ¹ / ₄ (33.66)	7 ¹³ / ₁₆ (19.84)	17 ¹ / ₈ (43.50)	155 (70)
12 (300)	9 ⁷ / ₈ (25.08)	12 ³ / ₄ (32.39)	14 ³ / ₈ (36.51)	5 ¹ / ₂ (13.97)	1 ⁵ / ₈ (4.13)	14 ¹ / ₂ (36.83)	8 ¹³ / ₁₆ (22.38)	17 ¹ / ₈ (43.50)	250 (113)

THREADED CLOSURES

Pipeline
Quick-Opening
Threaded Hinged
Closures





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12" CL900 threaded
closure under 5,000 psi
hydrostatic test

The information contained herein is based on data and information developed in the Laboratories of Sypris Technologies ("Seller"), but is presented without guarantee or warranty, and the seller disclaims any liability incurred from the use thereof. Nothing contained herein is to be construed as a recommendation for any use, including without limitation, any use in a commercial process not controlled by seller, nor for a use which is in violation of any existing patent, foreign or domestic or of applicable laws and regulations.

For forty years, Sypris Technologies has provided HINGED CLOSURES for a wide range of applications such as Pipeline Scraper Traps, Pig Launchers/ Receivers, Filters, Meter Provers and Pressure Vessels. The Threaded Type Closure in sizes 2" through 12" in classes 150 through 900 has been added to compliment this wide product line to provide a simple design that consists only of a Head, Welding Hub and Hinging Hardware. Tube Turns Threaded Closures are manufactured utilizing the precision of CNC machining equipment to provide accurate and consistent dimensions.

THREADED CLOSURES

SAFETY

Each Threaded Closure has a Pressure Warning Device to alert the operator of any internal pressure in the pipe or vessels before opening the Head.

Also, the O-ring Gasket Seal is broken before the Hub/Head ACME Threads are completely disengaged which allows pressure to bleed and provides an additional warning to the operator of existing internal pressure.

OPERATIONAL ASSURANCE

To assure that the Threaded Closure will consistently open and close easily, **Sypris Technologies has coated the Acme Threads on the Head with a Fluoropolymer coating that provides corrosion resistance and solid film lubrication.** This is used in combination with liberal grease on the threads to assure reliable closure operation.

The Pressure Warning Device is manufactured from Stainless Steel to provide corrosion protection for this safety item. In addition, Grease fittings are installed in all Hinge sliding areas and Bronze Bushings are used at Hub/Hinge pivot points.

QUALITY ASSURANCE

Sypris Technologies Quality Control System is in accordance with the American Society of Mechanical Engineers Boiler and Pressure Vessel Code, Section VIII, Division I, Appendix 10 and is audited by an Authorized Inspection Agency.

The System covers Order Analysis, Drawing Control, Procurement Control, Receiving of Material, Process Control, Welding, Non-destructive Examination and Inspection.

Raw materials are inspected for dimensional acceptability and proper heat code identification. Mill test reports are checked to insure proper physical and chemical properties.

A serial number is assigned to each closure and is permanently stamped on the unit. The actual heats of material used for the individual closure are permanently recorded for this serial number and this provides traceability to the material test reports for every closure.

O-RING MATERIALS

MATERIALS

Frequency of replacement will depend upon such factors as operating pressure and temperature, shrinkage and swelling caused by product absorption, the corrosiveness of the product in the system and frequency of operation.

The materials most often used for closure O-rings are discussed below. Technical information as to properties and usages of gasket material are based on data and recommendations of the manufacturers of the materials.

Determination of the compatibility of the O-ring material is the responsibility of the purchaser.

The maximum temperatures are based 100% compression set in 1,000 hours. The O-rings may be used at higher temperatures but with undetermined decreased life.

Buna-N

General service. Resistant to petroleum base hydraulic and lubricating oils; animal and vegetable oils; gases such as butane, propane, acetylene and natural gas, aromatic and nonaromatic fuels such as gasoline, kerosene, diesel fuel and fuel oils, anhydrous ammonia and water. Temperature limits -30°F to 250°F; special compounds suitable to -65°F.

Viton

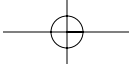
Generally used for high temperature services. Resistant to synthetic lubricants, petroleum base products, some chlorinated solvents, benzene, toluene and many acids and alkalis. Viton is also used for sour gas and oil service. Temperature limits -20°F to 400°F.

Ethylene Propylene

Superior resistance to phosphate-ester type fluids, Skydrol, Pydrol, Cellulubes and glycol type coolants. Excellent resistance to mild acids and alkalis. Can be used in steam service. Replacing butyl rubber in most applications. Temperature limits -70°F to 300°F.

Silicone Rubber

Good resistance to high and low temperature dry gases, air, oxygen and ozone. May be satisfactory in high-aniline oils, but not recommended for use with most petroleum base products and steam. Temperature limits -65°F to 450°F.



INFORMATION NEEDED WITH INQUIRIES

In order to reply promptly to inquiries, the following basic order data requirements are needed:

1. Size
2. Maximum wall thickness of attached pipe and yield strength
3. Maximum design pressure
4. Maximum and minimum design temperature
5. Corrosion allowance
6. Code requirements (stamp, certifications, etc.)
7. Quantity
8. Maximum test pressure
9. O-ring material (Buna-N is normal)
10. Hinge requirements (right hand, left hand, vertical)

PRESSURE RATINGS

ALLOWABLE WORKING PRESSURE RATING

The maximum allowable working pressures are the same as those established for ANSI/ASME B16.5 Flange Ratings for carbon steel materials.

PRESSURE RATINGS					
Closure Pressure Class	150	300	400	600	900
Maximum Working Pressure (PSI)*	285	740	990	1,480	2,220
*Temperature range for the Working Pressure is -50° F to +450° F. The lower range is based on Impact Test temperature for SA350 Grade LF2 material. The overall temperature range depends on the type of elastomer material used for the O-Ring Gasket. The materials most often used for closure O-Rings are discussed on the previous page.					

CLOSURE MATERIALS

MATERIALS OF CONSTRUCTION

Threaded Closure Hubs and Heads are made from forgings dual certified to ASME SA 105/SA 350 Grade LF2 Carbon Steel. Standard Hub material has a minimum specified yield strength of 46,000 psi (F46) to facilitate mating higher pipe yield strengths as provided by Figure I5 of ASME B31.8 and Figure 434.8.6(a)-(2) of ASME B31.4. Higher yield materials such as A694 or A707 are available upon request.

The SA 105/SA 350 standard materials can be certified so that they comply with the hardness requirements of NACE MRO175.

The self-energized Elastomer O-ring seals are used in Tube Turns Threaded Closures. The standard seal is 70 Durometer Buna-N which has temperature range of -30° to 250°F. For the higher pressure Class 900 closures a 90 Durometer Buna-N seal is standard. Other seal materials, at extra cost, are available as described under "O-ring Materials."

CODE COMPLIANCE

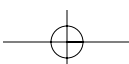
All Tube Turns Threaded Closures are designed and built in accordance with the ASME Boiler and Pressure Vessel Code, Section VIII, Division I. Prototype testing was conducted to prove the

design basis and strength requirements for the Closure geometry.

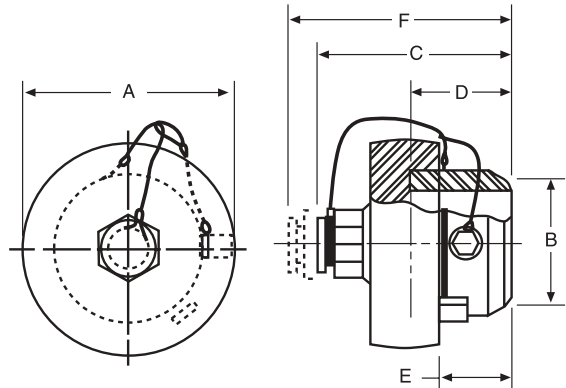
ASME Code Stamping and Partial Data Reports are available at the time of order at a nominal extra cost, verifying shop inspection of the unit by a commissioned inspector of the National Board of Boiler and Pressure vessel Inspectors.

Alternately we can supply at no extra charge our Manufacturer's Statement of Code Compliance to ASME Section VIII. We can certify D.O.T. Title 49 Part 192 or Part 195, ASME B31.3, ASME B31.4 or ASME B31.8.

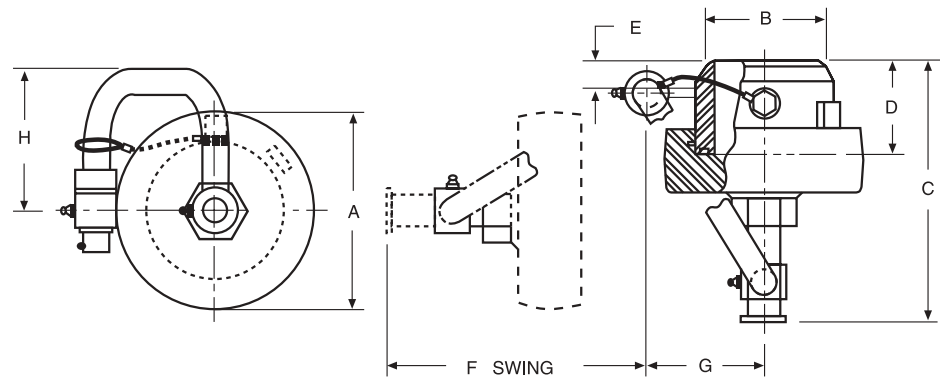
BORES/WALL THICKNESS		
Class 150 Thru Class 900	2" Thru 8" Sizes	Maximum wall thickness to match XS pipe (Sch.80)
Class 150 Thru Class 900	10" Thru 12" Sizes	Maximum wall thickness to match Sch. 100 pipe
Closure Hub I.D. is Taperbored from Schedule 80 to match lighter walls such as standard Weight. Heavier wall thicknesses are available at extra cost.		



CLOSURE DIMENSIONS



SIZES 2" - 4" CLASS 150/900T HORIZONTAL OR VERTICAL								
Nominal Size In (DN)	A In (cm)	B In (cm)	C In (cm)	D In (cm)	E In (cm)	F In (cm)	Approximate Weight Lbs (Kg)	
2 (50)	4 ³ / ₄ (12.07)	2 ³ / ₈ (6.03)	5 ¹ / ₁₆ (12.86)	2 ³ / ₄ (6.99)	2 (5.08)	5 ¹³ / ₁₆ (14.76)	9	(4)
3 (80)	5 ³ / ₄ (14.61)	3 ¹ / ₂ (8.89)	5 ⁵ / ₁₆ (13.49)	2 ³ / ₄ (6.99)	2 (5.08)	6 ¹ / ₁₆ (15.40)	15	(7)
4 (100)	6 ³ / ₄ (17.15)	4 ¹ / ₂ (11.43)	5 ¹³ / ₁₆ (14.76)	3 ¹ / ₈ (7.94)	2 ¹ / ₈ (5.40)	6 ¹³ / ₁₆ (17.30)	22	(10)



SIZES 2" - 4" CLASS 150/900TH HORIZONTAL WITH HINGE									
Nominal Size In (DN)	A In (cm)	B In (cm)	C In (cm)	D In (cm)	E In (cm)	F In (cm)	G In (cm)	H In (cm)	Approximate Weight Lbs (Kg)
2 (50)	4 ³ / ₄ (12.07)	2 ³ / ₈ (6.03)	7 ³ / ₈ (18.75)	2 ³ / ₄ (6.99)	1 ³ / ₁₆ (2.06)	7 ³ / ₁₆ (18.26)	2 ¹⁵ / ₁₆ (7.46)	4 ³ / ₁₆ (10.64)	11 (5)
3 (80)	5 ³ / ₄ (14.61)	3 ¹ / ₂ (8.89)	7 ⁵ / ₈ (19.35)	2 ³ / ₄ (6.99)	1 ³ / ₁₆ (2.06)	7 ⁷ / ₁₆ (18.89)	3 ³ / ₈ (8.59)	4 ³ / ₁₆ (10.64)	17 (8)
4 (100)	6 ³ / ₄ (17.15)	4 ¹ / ₂ (11.43)	8 ¹ / ₈ (20.62)	3 ¹ / ₈ (7.94)	1 ⁵ / ₁₆ (2.38)	8 ¹ / ₈ (20.64)	3 ⁷ / ₈ (9.84)	4 ¹¹ / ₁₆ (11.91)	25 (11)