High Pressure Equipment Company

Series “R” Reactors O-Ring Closure

Assembly Instructions

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Series “R” Reactors O-Ring Closure

Description:

The Series "R" O-ring Closure Reactors are easily assembled and disassembled with minimal torque required for complete engagement.

Material of construction for standard models is Type 4340 alloy steel (or equivalent) properly heat treated for use at elevated pressures. (Some models can be provided in stainless steel construction at reduced pressures - consult factory).

Sealing is accomplished by a highly reliable combination of O-ring and separate metal back-up ring. The wedge shaped back-up ring is designed to expand and contract as pressure increases or decreases. Consequently, the O-ring is continuously confined with no clearance for extrusion. Minimal initial torque is required to affect a positive seal.

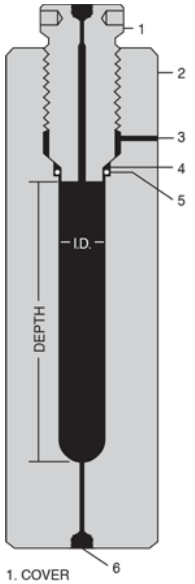
Temperature on these vessels must be restricted to 250°F maximum, due to the BUNA-N (nitrile) O-ring. Included with each vessel is a removable handle bar for removal of the cover nut and necessary eye bolt holes for lifting of the body and components. Outer surfaces are blackened to prevent rusting.

Vent holes are provided to prevent pressure build up behind the closure in the event of a worn or damaged seal.

Connections include a top and bottom high pressure coned and threaded 1/4" O.D. (HF4) tubing connection. Other sizes or locations for connections can easily be provided when preferred. Consult factory.

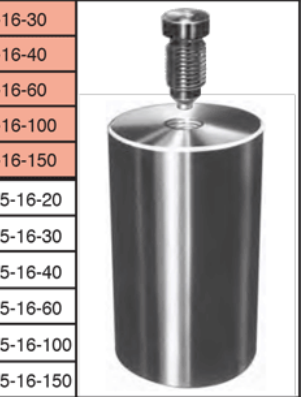
Closures are designed in one-piece (cover) for vessels up to 2" I.D. and two-piece (cover and main nut) for vessels larger than 2" I.D.

O-Ring Closure Reactors – One Piece Cover:

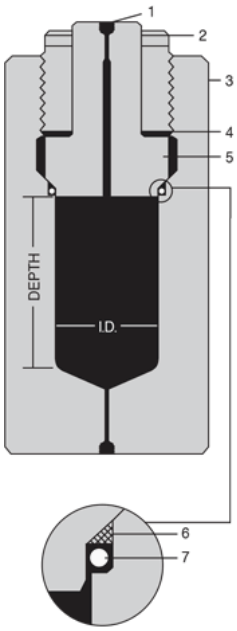


1. COVER
2. BODY
3. VENT HOLE
4. BACK UP RING
5. "O" RING
6. PRESSURE CONNECTION

I.D.	O.D.	Pressure Rating psi	Material	Inside Depth 6"	10"	12"	16"	20"	24"
1"	3 1/8"	30,000	4340 Alloy Steel or equivalent	R1-6-30	R1-10-30	R1-12-30	R1-16-30		
	3 1/2"	40,000		R1-6-40	R1-10-40	R1-12-40	R1-16-40		
	4 1/4"	60,000		R1-6-60	R1-10-60	R1-12-60	R1-16-60		
	5 1/2"	100,000		R1-6-100	R1-10-100	R1-12-100	R1-16-100		
	6 3/4"	150,000		R1-6-150	R1-10-150	R1-12-150	R1-16-150		
1 1/2"	3 5/8"	20,000	4340 Alloy Steel or equivalent	R1.5-6-20	R1.5-10-20	R1.5-12-20	R1.5-16-20		
	4 1/8"	30,000		R1.5-6-30	R1.5-10-30	R1.5-12-30	R1.5-16-30		
	4 3/4"	40,000		R1.5-6-40	R1.5-10-40	R1.5-12-40	R1.5-16-40		
	6 1/2"	60,000		R1.5-6-60	R1.5-10-60	R1.5-12-60	R1.5-16-60		
	8"	100,000		R1.5-6-100	R1.5-10-100	R1.5-12-100	R1.5-16-100		
	10 1/2"	150,000		R1.5-6-150	R1.5-10-150	R1.5-12-150	R1.5-16-150		
2"	4 1/4"	20,000	4340 Alloy Steel or equivalent	R2-6-20	R2-10-20	R2-12-20	R2-16-20	R2-20-20	R2-24-20
	5"	30,000		R2-6-30	R2-10-30	R2-12-30	R2-16-30	R2-20-30	R2-24-30
	6 1/2"	40,000		R2-6-40	R2-10-40	R2-12-40	R2-16-40	R2-20-40	R2-24-40
	8 1/2"	60,000		R2-6-60	R2-10-60	R2-12-60	R2-16-60	R2-20-60	R2-24-60
	12"	100,000		R2-6-100	R2-10-100	R2-12-100	R2-16-100	R2-20-100	R2-24-100



O-Ring Closure Reactors – Two Piece Cover:



SEALING DETAIL

1. PRESSURE CONNECTION
2. MAIN UNIT NUT
3. BODY
4. VENT HOLE
5. COVER
6. BACK UP RING
7. "O" RING

I.D.	O.D.	Pressure Rating psi	Material	Inside Depth 6"	10"	12"	16"	20"	24"
3"	6"	20,000	4340 Alloy Steel or equivalent	R3-6-20	R3-10-20	R3-12-20	R3-16-20	R3-20-20	R3-24-20
	7"	30,000		R3-6-30	R3-10-30	R3-12-30	R3-16-30	R3-20-30	R3-24-30
	8 1/2"	40,000		R3-6-40	R3-10-40	R3-12-40	R3-16-40	R3-20-40	R3-24-40
	11 1/2"	60,000		R3-6-60	R3-10-60	R3-12-60	R3-16-60	R3-20-60	R3-24-60
	15"	100,000		R3-6-100	R3-10-100	R3-12-100	R3-16-100	R3-20-100	R3-24-100
4"	8"	20,000		R4-6-20	R4-10-20	R4-12-20	R4-16-20	R4-20-20	R4-24-20
	9 1/4"	30,000		R4-6-30	R4-10-30	R4-12-30	R4-16-30	R4-20-30	R4-24-30
	11"	40,000		R4-6-40	R4-10-40	R4-12-40	R4-16-40	R4-20-40	R4-24-40
	13"	50,000		R4-6-50	R4-10-50	R4-12-50	R4-16-50	R4-20-50	R4-24-50
	15"	60,000		R4-6-60	R4-10-60	R4-12-60	R4-16-60	R4-60-60	R4-24-60
5"	9 1/4"	20,000		R5-6-20	R5-10-20	R5-12-20	R5-16-20	R5-20-20	R5-24-20
	11 1/4"	30,000		R5-6-30	R5-10-30	R5-12-30	R5-16-30	R5-20-30	R5-24-30
	13 1/4"	40,000		R5-6-40	R5-10-40	R5-12-40	R5-16-40	R5-20-40	R5-24-40
	15 1/4"	50,000		R5-6-50	R5-10-50	R5-12-50	R5-16-50	R5-20-50	R5-24-50
6"	9 1/2"	10,000		R6-6-10	R6-10-10	R6-12-10	R6-16-10	R6-20-10	R6-24-10
	11 1/2"	20,000		R6-6-20	R6-10-20	R6-12-20	R6-16-20	R6-20-20	R6-24-20
	13 1/4"	30,000		R6-6-30	R6-10-30	R6-12-30	R6-16-30	R6-20-30	R6-24-30
	15"	40,000		R6-6-40	R6-10-40	R6-12-40	R6-16-40	R6-20-40	R6-24-40
7"	10 3/4"	10,000		R7-6-10	R7-10-10	R7-12-10	R7-16-10	R7-20-10	
	13"	20,000		R7-6-20	R7-10-20	R7-12-20	R7-16-20	R7-20-20	
	15 1/4"	30,000		R7-6-30	R7-10-30	R7-12-30	R7-16-30	R7-20-30	
8"	12 1/2"	10,000		R8-6-10	R8-10-10	R8-12-10	R8-16-10	R8-20-10	
	14 1/4"	20,000		R8-6-20	R8-10-20	R8-12-20	R8-16-20	R8-20-20	
9"	13"	10,000		R9-6-10	R9-10-10	R9-12-10	R9-16-10	R9-20-10	
10"	14 3/4"	10,000		R10-6-10	R10-10-10	R10-12-10	R10-16-10	R10-20-10	

Assembly Instructions for Series “R” Reactors:

General Information:

The R Series reactors utilize a simple yet highly reliable sealing design. This design consists of a metal back-up ring located directly above the O-ring. The wedge shape of the back-up ring prevents extrusion of the O-ring, even during expansion and contraction of the reactor body during pressurization and depressurization. This is a "self-sealing" type closure and does not require any significant amount of torque to affect a proper seal. Assembly and disassembly can be accomplished by hand even on the larger size reactors.

Assembly Instructions for Series “R” Reactors:

1. Place the O-Ring into the groove of the reactor body.
2. Place metal back-up ring directly on top of the O-Ring with the flat surface down in contact with the O-Ring.
3. Lower the cover down into the reactor body. “R” series reactors having a diameter of 2 inches or smaller use the one-piece closure.
4. Rotate the main nut clockwise into the reactor body until firmly contacts the cover and pushes the cover into its most downward position.

In order to guard against thread galling:

1. The weight of the main nut may be significant and must be offset (neutralized) prior to assembly or disassembly.
2. Thread lubricant must be applied to the main nut threads prior to each reassembly.
3. The use of a bar inserted into the main nut may be helpful in assembling or disassembling the closure. However, excessive force on the bar should never be used.