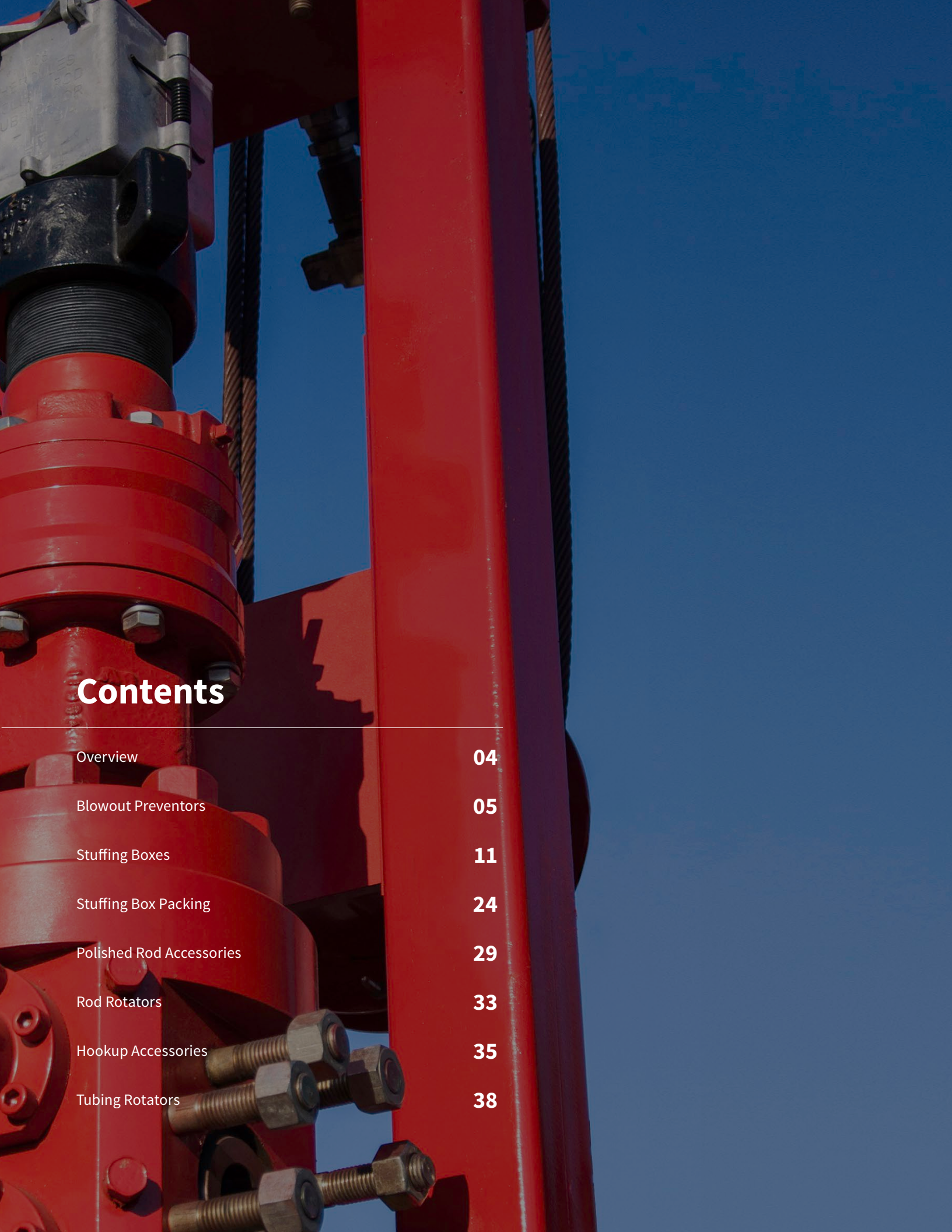


Production Service Hookup



**Completion &
Production Solutions**





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Overview - Artificial lift

We deliver a field-proven, highly engineered, comprehensive resource for artificial lift equipment and packaged solutions all over the world. Our breakthrough innovations in high pressure control, automation, and advanced materials enable operators to produce their wells more effectively and safely. Our artificial lift professionals will collaborate with you to properly evaluate well conditions and provide customized solutions, helping you to optimize your production for the life of your wells. Let us be your 24/7 production partner.

Production service hookup

Our products are recognized for superior quality and designs, which are unsurpassed in the oilfield. From the largest range of stuffing boxes and production blowout preventers (BOPs) to the most comprehensive line of polished rod accessories, our equipment can complete a total hookup for your artificial lift applications.

With more than 70 years of manufacturing experience, we offer specific designs of production service hookup configurations based on the demands of your well and type of application. Our customers are constantly seeking solutions that allow them to meet their operational goals. To achieve their objectives, we focus our designs on:

- Safety
- Pressure control
- Wear prevention
- Maximizing production
- Minimizing downtime
- Well monitoring

Types of configurations

Our available production service hookup can be designed as a complete system:

- Low-pressure rod pump service hookup
- High-pressure rod pump service hookup
- Progressing cavity pump service hookup

Aftermarket

Our products are backed by the reliability and responsiveness of our Services and Aftermarket group. Highly trained field service technicians are on call to handle on-site service needs 24 hours a day, seven days a week. For the long-term support of our products, we offer refurbishment services to bring your existing equipment back to original factory specification.

Our services include:

- Equipment installation and commissioning
- On-site service repair
- Remote diagnostic service
- Equipment refurbishment

A close-up photograph of a red, cast-iron blowout preventer (BOP) component. The word "HERCULES" is embossed in a circular pattern on the red surface. A metal pin tool joint is inserted into the center of the component. The background is blurred, showing more industrial equipment.

Blowout Preventers

- Hercules Blowout Preventers
- Hercules High-Pressure (HP) Blowout Preventers
- Specialty BOPs

Blowout preventers

We provide the most extensive offering of BOPs for well control and monitoring. Our various BOP designs can handle a wide range of pressures and extreme applications.

Hercules Blowout Preventers



150H Single Ram BOP

- 1,500 psi max working pressure
- Caps have hammer lugs and ACME threads for fast removal and replacement (ACME threads eliminate cross-threading)
- Cap with internal threads protected from the environment
- Lug-less cap option for installation on API flanged bonnets
- Blowout-proof ram screw
- Full opening
- Reinforced ram block reduces extrusion
- Cap O-ring provides reliable, pressure-tight seal
- Ram screw and packing gland made of carbon steel

150H Single Ram BOP

Connections (pin x box)	2 3/8 in. EUE	2 7/8 in. EUE	2 7/8 in. NUE	2 in. 11.5V LP	2 1/2 in. 8V LP	3 in. 8V LP
Vertical bore	1.975 in.	2.560 in.	2.422 in.	1.975 in..	2.422 in.	2.970 in.
Working pressure	1,500 psi					
Height	9 1/2 in.					
Body and cap material	Ductile iron*					
Ram seal material	See table 150H ram material table below					
Ram size options	Blind, 5/8, 1, 1 1/8, 1 1/4, 1 1/2, 1 3/4 in.					
Ram screw packing	Acrylic braided PTFE					
Width (rams open)	20 in.					
Handles	Optional					
Average weight	43 lb					

Note: 150H and discontinued 200P rams are not interchangeable. Also, they are "directional" due to the internal reinforcement plate. Always install with "THIS SIDE UP" sticker facing up.

* Corrosion-resistant materials and coatings available; contact customer service.

150H Ram Materials

	Maximum temperature	Maximum H ₂ S	Maximum CO ₂
Nitrile (NBR)	250°F (121°C)	2%	NR
Compound C	300°F (149°C)	2%	10%
Highly saturated nitrile (HSN)	325°F (163°C)	10%	20%
Fluoroelastomer (FKM)	400°F (204°C)	20%	5%
AFLAS	450°F (232°C)	35%	15%

Always install with yellow "THIS SIDE UP" lettering facing up to minimize extrusion under pressure. Note: Above temperatures are suggested maximum short-term ratings and should not be considered as a "continuous operating temperature."

Hercules High-Pressure (HP) Blowout Preventers

Our various high-pressure BOP designs can handle a wide range of pressures in the most extreme applications. Our market-leading manufacturing, quality, engineering, and service teams set the highest standard in the industry for supporting our customers' production needs.

3K BOPs



Non-NACE 3K Single Ram BOP

- 3,000 psi max working pressure
- Connections: 2 3/8 in. EUE, 2 7/8 in. EUE, 3 1/2 in. EUE, and 3 in. 8V LP
- Box x pin (standard)
- Rams: Blind, 1 1/4 in., 1 1/2 in.
- HSN ram seal material only
- 1/4 in. NPT ports above and below rams for bleeding pressure



NACE 3K Single Ram BOP

- 3,000 psi max working pressure
- Meets NACE MR0175
- Connections: 2 3/8 in. EUE, 2 7/8 in. EUE, 3 1/2 in. EUE, and 3 in. 8V LP
- Box x pin (standard)
- Rams: Blind, 1 1/4 in., 1 1/2 in.
- HSN ram seal material standard; AFLAS® seals available upon request
- 1/4 in. NPT ports above and below rams for bleeding pressure



2K and 3K Single Ram Integral Tee BOP (ITBOP)

- Available in 2,000 psi and 3,000 psi max working pressure
- Meets NACE MR0175
- Integral flow tee reduces stack height
- Connections (flanged): 3 1/8 in. 2K/3K R31, 4 1/16 in. 2K/3K R37, 7 1/16 in. 2K/3K R45, and 11 in. 2K/3K R53 (see table below)
- Side outlets: 2 in. 11.5V LP, 3-in. 8V LP, 3 1/8 in. studed
- Rams: Blind, 1 1/4 in., 1 1/2 in.
- HSN ram seal material standard; AFLAS seals available upon request
- All-steel construction eliminates risk of casting porosity



3K BOPs

Specifications		Non-NACE 3K Single Ram BOP				NACE 3K Single Ram BOP				2K and 3K Single Ram ITBOP	
Working pressure		3,000 psi				3,000 psi				2,000 psi or 3,000 psi	
Top connection	Thread (box)	2 3/8 in. EUE	2 7/8 in. EUE	3 1/2 in. EUE	3 in. 8V LP*	2 3/8 in. EUE	2 7/8 in. EUE	3 1/2 in. EUE	3 in. 8V LP	N/A	
	Flanged/studded	N/A				N/A				3 1/8 in. 2K R31 3 1/8 in. 3K R31	4 1/16 in. 2K R37* 4 1/16 in. 3K R37*
Bottom connection	Thread (pin)	2 3/8 in. EUE	2 7/8 in. EUE	3 1/2 in. EUE	3 in. 8V LP*	2 3/8 in. EUE	2 7/8 in. EUE	3 1/2 in. EUE	3 in. 8V LP	N/A	
	Flanged/studded	N/A				N/A				3 1/8 in. 2K/3K R31, 4 1/16 in. 2K/3K R37 7 1/16 in. 2K/3K R45, 11 in. 2K/3K R53	
Vertical bore		1.995 in.	2.441 in.	2.992 in.	3 in.	1.995 in.	2.441 in.	2.992 in.	3 in.	3 in.	4 in.
Height		11.42 in.				11.15 in.				10 to 15.88 in.	
Body and cap materials		Body: Ductile iron Caps/Rams/Stems: Alloy steel				Alloy steel				Alloy steel	
Seal material options (ram + stem + end cap) – Specify requirement when ordering		HSN (HNBR)				HSN (HNBR) and AFLAS				HSN (HNBR) and AFLAS	
Ram size options		Blind, 1 1/4 in. and 1 1/2 in.				Blind, 1 1/4 in. and 1 1/2 in.				Blind, 1 1/4 in. and 1 1/2 in.	
Side outlets		N/A				N/A				2 in. 11.5V LP, 3 in. 8V LP, 4 in. 8V LP	
Test ports		1/4 in. NPT above and below ram seals				1/4 in. NPT above and below ram seals				N/A	
Width (rams open/closed)		21.14 in. / 17.86 in.				21.14 in. / 17.86 in.				20.53 in./17.63 in.	24.78 in./28.06 in.
Weight		63 lb				94 lb				220 to 680 lb	

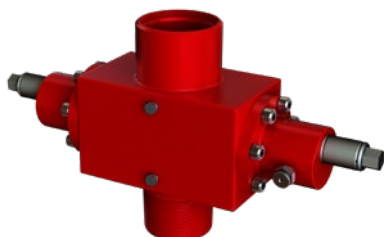
* This is a special order item with extended lead times.

5K and 10K BOPs



Texas Longhorn ITBOP

- 5,000 psi max working pressure
- Meets NACE MR0175
- Connections: 2 $\frac{3}{8}$ in. EUE, 2 $\frac{7}{8}$ in. EUE, 3 $\frac{1}{2}$ in. EUE
- Rams: Blind, 1 $\frac{1}{4}$ in., 1 $\frac{1}{2}$ in.
- Greaseable ram blocks while in service
- HSN ram seal with unique Teflon-blended backup ring
- Unique visual indication for fully open or closed ram position on adjusting screw
- Two 2 in. LP flowing outlets at 45°
- 1 in. NPT ports above and below rams for bleeding/monitoring pressure



5K Single Ram BOP

- 5,000 psi max working pressure
- Meets NACE MR0175
- Connections: 2 $\frac{3}{8}$ in. EUE, 2 $\frac{7}{8}$ in. EUE, 3 $\frac{1}{2}$ in. EUE
- Rams: Blind, 1 $\frac{1}{4}$ in., 1 $\frac{1}{2}$ in.
- Greaseable ram blocks while in service
- HSN ram seal with unique Teflon-blended backup ring
- Unique visual indication for fully open or closed ram position on adjusting screw
- $\frac{1}{4}$ in. NPT ports above and below rams for bleeding pressure



5K Dual Ram ITBOP

- 5,000 psi max working pressure
- Meets NACE MR0175
- Integral flow tee reduces stack height
- Two independent ram blocks, above and below the flowline
- Connections: 2 $\frac{9}{16}$ in. 5K R27 flange bottom x studed top
- Side outlets: 2 in. LP, 2 $\frac{1}{16}$ in. 5K R24 studed
- Rams: Blind, 1 $\frac{1}{4}$ in., 1 $\frac{1}{2}$ in.
- HSN ram seal, AFLAS available
- Two $\frac{1}{2}$ in. and one 1 in. test ports for bleeding pressure and testing ram seal integrity



5K Rota ITBOP

- 5,000 psi max working pressure
- Meets NACE MR0175
- Two independent, offset ram blocks, above and below the flowline
- Offset ram design used when BOP must be placed close to the pumping unit and access to the rams is limited
- Hydraulic rams optional
- Connections: 2 $\frac{9}{16}$ in. 5K R27 flange bottom x studed top
- Side outlets: 2 $\frac{1}{16}$ in. 5K R24 studed
- Rams: 1 $\frac{1}{4}$ in., 1 $\frac{1}{2}$ in.
- Greaseable ram blocks while in service
- HSN ram seal with unique Teflon-blended backup ring
- Unique visual indication for fully open or closed ram position on adjusting screw
- Three $\frac{1}{2}$ in. NPT ports for bleeding pressure and testing ram seal integrity

5K and 10K BOPs



5K Rota Stubbie ITBOP

- 5,000 psi max working pressure
- Meets NACE MR0175
- Shorter overall height when installed due to studded 7 $\frac{1}{16}$ in. 5K R46 base
- Two independent, offset ram blocks, above and below the flowline
- Connections: 7 $\frac{1}{16}$ in. 5K R46 bottom x 3 $\frac{1}{8}$ in. R35 studded top
- Side outlets: 2 $\frac{1}{16}$ in. 5K R24 studded
- Rams: 1 $\frac{1}{4}$ in., 1 $\frac{1}{2}$ in.
- Greaseable ram blocks while in service
- HSN ram seal with unique Teflon-blended backup ring
- Unique visual indication for fully open or closed ram position on adjusting screw
- Three $\frac{1}{2}$ in. NPT ports for bleeding pressure and testing ram seal integrity



10K Dual Ram ITBOP

- 10,000-psi max working pressure
- Meets NACE MR0175
- Integral flow tee reduces stack height
- Two independent ram blocks, above and below the flowline
- Connections: 2 $\frac{9}{16}$ in. 10K BX153 flanged bottom x studded top
- Side outlets: 2 $\frac{1}{16}$ in. 10K BX152 studded
- Rams: Blind, 1 $\frac{1}{4}$ in., 1 $\frac{1}{2}$ in.
- HSN ram seal, AFLAS available
- Three $\frac{1}{2}$ in. NPT ports for bleeding pressure and testing ram seal integrity

5K and 10 BOPs and ITBOPs

Specifications		Texas Longhorn	5K Single Ram	5K Dual Ram	5K Rota	5K Rota Stubbie	10K Dual Ram
Style		ITBOP	BOP	ITBOP	ITBOP	ITBOP	ITBOP
Working pressure		5,000 psi	5,000 psi	5,000 psi	5,000 psi	5,000 psi	10,000 psi
Top connection	Thread (Box)	2 $\frac{3}{8}$ in. EUE 2 $\frac{1}{2}$ in. EUE 3 $\frac{1}{2}$ in. EUE	2 $\frac{3}{8}$ in. EUE 2 $\frac{1}{2}$ in. EUE 3 $\frac{1}{2}$ in. EUE	N/A	2 $\frac{3}{8}$ in. EUE 3 $\frac{1}{2}$ in. EUE	2 $\frac{3}{8}$ in. EUE 3 $\frac{1}{2}$ in. EUE	N/A
	Flanged/Studded	N/A	N/A	2 $\frac{9}{16}$ in. 5K R27	2 $\frac{9}{16}$ in. 5K R27 3 $\frac{1}{8}$ in. 5K R35	2 $\frac{9}{16}$ in. 5K R27 3 $\frac{1}{8}$ in. 5K R35	2 $\frac{9}{16}$ in. 10K BX153
Bottom connection	Thread (Box)	2 $\frac{3}{8}$ in. EUE 2 $\frac{1}{2}$ in. EUE 3 $\frac{1}{2}$ in. EUE	2 $\frac{3}{8}$ in. EUE 2 $\frac{1}{2}$ in. EUE 3 $\frac{1}{2}$ in. EUE	N/A	N/A	N/A	N/A
	Flanged/Studded	N/A	N/A	2 $\frac{9}{16}$ in. 5K R27 2 $\frac{9}{16}$ in. 10K BX153	2 $\frac{9}{16}$ in. 5K R27 3 $\frac{1}{8}$ in. 5K R35	7 $\frac{1}{16}$ in. 5K R46 7 $\frac{1}{16}$ in. 10K BX156	2 $\frac{9}{16}$ in. 10K BX153
Vertical bore		1.995 in. 2.441 in. 2.992 in.	1.995 in. 2.441 in. 2.992 in.	2.563 in.	2.563 in.	3.125 in.	2.563 in.
Ram size options		Blind, 1 $\frac{1}{4}$ in., and 1 $\frac{1}{2}$ in.	Blind, 1 $\frac{1}{4}$ in., and 1 $\frac{1}{2}$ in.	Blind, 1 $\frac{1}{4}$ in., and 1 $\frac{1}{2}$ in.	1 $\frac{1}{4}$ in. and 1 $\frac{1}{2}$ in.	1 $\frac{1}{4}$ in. and 1 $\frac{1}{2}$ in.	Blind, 1 $\frac{1}{4}$ in., and 1 $\frac{1}{2}$ in.
Seal material options (ram + stem + end cap) – Specify requirement when ordering		HSN (HNBR) AFLAS (*)	HSN (HNBR) AFLAS	HSN (HNBR) AFLAS	Urethane (1 $\frac{1}{4}$ in.) HSN (1 $\frac{1}{2}$ in.)	Urethane (1 $\frac{1}{4}$ in.) HSN (1 $\frac{1}{2}$ in.)	HSN (HNBR) AFLAS
Side outlet connections		2 in. 11.5V LP	N/A	2 in. 11.5V LP 2 $\frac{1}{16}$ in. 5K R24	2 in. 11.5V LP 2 $\frac{1}{16}$ in. 5K R24	2 in. 11.5V LP 2 $\frac{1}{16}$ in. 5K R24	2 $\frac{1}{16}$ in. 10K BX152
Height		12 in.	13 in.	16 $\frac{1}{2}$ in.	20 $\frac{3}{4}$ in.	17 in.	18 $\frac{1}{2}$ in.
Weight (average)		107 lb	74 lb	260 lb	530 lb	660 lb	334 lb
Width (rams open/closed)		21.14 in./17.86 in.	21.14 in./17.86 in.	23.63 in./20.50 in.	21.96 in./19.46 in.	21.96 in./19.46 in.	23.45 in./20.64 in.

*AFLAS available for 3 in. and up connection

Specialty BOPs

Crooked BOP

- 5,000 psi max working pressure
- Meets NACE MR0175
- Can be moved laterally over the tubing up to ½ in. in any direction to compensate for unlevel wellhead
- Flowline orientation can be rotated 360°
- Two independent, offset ram blocks above and below the flowline
- Connections: 2⅞ in. 5K R27 flange bottom x studded top
- Side outlets: 2⅞ in. 5K R24 studded
- Rams: 1¼ in., 1½ in.
- Greaseable ram blocks while in service
- HSN ram seal with unique Teflon-blended backup ring
- Unique visual indication for fully open or closed ram position on adjusting screw
- Three ½ in. NPT ports for bleeding pressure and testing ram seal integrity



Universal Wellhead

- 5,000- (standard) and 10,000 psi (custom-built) max working pressure
- Meets NACE MR0175
- Patented design allows operator to switch between artificial lift methods using one body
- Consistent flowline configuration for the life of the well
- Integral master valves
- Multifunctional tubing hanger design
- Rams: 1¼ in., 1½ in.
- Greaseable ram blocks while in service
- Unique visual indication for fully open or closed ram position on adjusting screw
- Contact customer service for available configurations



Specialty BOPs

Specifications		Crooked BOP		Universal Wellhead	
Working pressure		5,000 psi			
Top connection	Thread (Box)	2⅞ in. EUE	3½ in. EUE	2⅞ in. EUE	3½ in. EUE
	Flanged/Studded	2⅞ in. 5K R27	3⅞ in. 5K R35	2⅞ in. 5K R27	3⅞ in. 5K R35
Bottom connection		2⅞ in. 5K R27	3⅞ in. 5K R35	7⅞ in. 10K BX156	7⅞ in. 5K R46
Vertical bore		2.563 in.	3.125 in.	2.563 in.	3.125 in.
Ram size options		1¼ in., 1½ in.			
Seal material options (ram + stem + end cap)		HSN (HNBR)			
Side outlet		2 in. LP, 2⅞ in. 5K R24			
Height		22½ in.	20½ in.	27¾ in.	31½ in.
Weight (average)		428 lb	624 lb	1,073 lb	1,364 lb
Width (rams open/closed)		21.86 in./19.50 in.	23.20 in./19.50 in.	21.86 in./19.50 in.	23.20 in./19.50 in.

Ram Materials

Ram material	AISI 4130	AISI 4130
Ram seal	HSN	AFLAS
Maximum temperature	325°F (163°C)	450°F (232°C)
Maximum H ₂ S	10%	35%
Maximum CO ₂	20%	15%



Stuffing Boxes

- Hercules Classic Stuffing Boxes
- Hercules Classic Inverted Stuffing Boxes
- Hercules Big Stuff Stuffing Boxes
- Hercules NACE Big Stuff Stuffing Boxes
- Hercules High Pressure (HP) Stuffing Boxes
- Hercules Specialty Stuffing Boxes
- Stuffing Box Accessories

Stuffing Boxes

Our range of Hercules™ stuffing boxes provides superior protection and seal against all types of applications. We offer classic, high-pressure, pollution-control, high-temperature products, and accessories.



Hercules Classic Stuffing Boxes

Single Pack Stuffing Box (SB)

- Original design
- Standard model has lube upper gland (LUG) with grease zerk
- Optional oil reservoir gland (ORG) and anti-pollution adapter (APA)
- Unique misalignment feature reduces need for exact alignment with the pumping unit
- LUG and ORG have two heavy hex nuts on each bolt which can support up to 20,000 lbs when engaged during well servicing

Tee Base Stuffing Box (SBT)

- Combines IVSB and cross tee with 1 in. 11.5V LP bleeder/test port
- Eliminates one threaded connection resulting in a shorted hookup
- Standard model has LUG with grease zerk
- Optional HPLUG, ORG, and APA control device
- LUG and ORG have two heavy hex nuts on each bolt which can support up to 20,000 lbs when engaged during well servicing
- Side Outlets: (See table for all configurations)
 - 2 in 11.5V LP box
 - 3 in NUE box
 - 3 in 8V LP box

Hercules Stuffing Boxes

Specifications		SB	SBT
Working pressure (max)			1,500 psi
Bottom connections	Thread (pin unless otherwise stated)	2 3/8 in. EUE 2 1/2 in. EUE 3 1/2 in. EUE 3 in. 8V LP 4 in. 8V LP	2 in 11.5V LP box *, 2 3/8 in EUE box * 2 3/8 in NUE box *, 2 1/2 in 8V LP box ** 2 3/8 in EUE box **, 2 3/8 in NUE box ** 3 in 8V LP box ***, 3 1/2 in EUE box *** 3 1/2 in NUE box ***
	Flanged	N/A	N/A
Average Weight ****		26 lb	37 lb
Height		13 1/2 in.	16 in.
Material		Ductile Iron *****	
Polished Rod Sizes		1 1/8, 1 1/4, 1 3/8, 1 1/2, 1 3/4 in	
Quantity required - Top cone packing		4	
Quantity required - Bottom cone packing		1	
HPLUG	Packing OD	N/A	
	Stack Height		

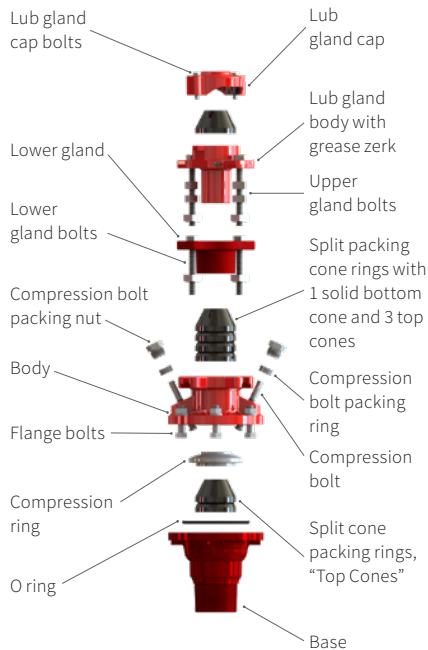
* Available with 2 in 11.5V LP box side outlet

** Available with 3 in 8V LP box or 3 in NUE box side outlet

*** Available with 3 in 8V LP box side outlet

**** Add 11 lbs if equipped with optional HPLUG

***** Corrosion-resistant coatings available; contact customer service



Double Packed Stuffing Box (DPSB)

Double Packed Stuffing Box (DPSB)

- Primary packing can be changed under pressure by tightening compression bolts to temporarily engage lower packing
- Unique misaligning feature reduces need for exact alignment with the pumping unit
- Standard model has LUG with grease zerk
- Optional HPLUG, ORG, and APA control device
- LUG has two heavy hex nuts on each bolt which can support up to 20,000 lbs when engaged during well servicing



Classic Pollution Control Stuffing Box (PCSB)

- Flapper assembly closes automatically if polished rod breaks below the stuffing box, protecting the surrounding environment from wellbore pressure
- Primary packing can be changed under pressure by tightening compression bolts to temporarily engage lower packing
- Adaptable to APA control device or Hercules leak detector
- Base has ½ in. NPT test port

Note: V-Ring packing for PCSB is not interchangeable with HTD V-Ring packing.

Hercules Stuffing Boxes

Specifications		DPSB	Classic PCSB
Working pressure (max)			1,500 psi
Bottom connections	Thread (pin unless otherwise stated)	2 3/8 in. EUE 2 7/8 in. EUE 3 1/2 in. EUE 3 in. 8V LP 4 in. 8V LP	2 3/8 in. EUE 2 7/8 in. EUE 3 1/2 in. EUE 3 in. 8V LP
	Flanged	2 9/16 in. 5K R-27	2 9/16 in. 5K R-27 3 1/8 in. 3K R-31 3 1/8 in. 5K R-35
Average Weight ****		52 lb	110 lb
Height		17 in.	24 1/2 in.
Material			Ductile Iron *****
Polished Rod Sizes			1 1/8, 1 1/4, 1 3/8, 1 1/2, 1 3/4 in.
Quantity required - Top cone packing		6	5
Quantity required - Bottom cone packing			1
HPLUG	Packing OD	N/A	2 1/2 in
	Stack Height		3 in

* Available with 2 in 11.5V LP box side outlet

** Available with 3 in 8V LP box or 3 in NUE box side outlet

*** Available with 3 in 8V LP box side outlet

**** Add 11 lbs if equipped with optional HPLUG

***** Corrosion-resistant coatings available; contact customer service

Hercules Classic Inverted Stuffing Boxes



Inverted Stuffing Box (IVSB)

- Lowest profile design
- Ideal for smaller pumping units



Tee Base Inverted Stuffing Box (IVSBT)

- Combines IVSB and cross tee with 1 in. 11.5V LP bleeder/test port
- Eliminates one threaded connection
- Lower profile than classic models
- Side Outlets: (See table for all configurations)
 - 2 in 11.5V LP box
 - 3 in NUE box
 - 3 in 8V LP box



Double-Packed Inverted Stuffing Box (IVDPSB)

- Primary packing can be changed under pressure by tightening compression bolts to temporarily engage lower packing
- Lower profile than classic models

Hercules Stuffing Boxes

Specifications	IVSB	IVSBT	IVDPSB
Working pressure (max)		1,500 psi	
Bottom connections	Thread (pin unless otherwise stated) 2½ in. EUE 2½ in. EUE 3½ in. EUE 3 in. 8V LP 4 in. 8V LP Flanged	2 in 11.5V LP box * 2½ in EUE box * 2½ in NUE box * 2½ in 8V LP box ** 2½ in EUE box ** 2½ in NUE box ** 3 in 8V LP box *** 3½ in EUE box *** 3½ in NUE box ***	2½ in. EUE 2½ in. EUE 3½ in. EUE 3 in. 8V LP 4 in. 8V LP
Average weight ****	21 lb	32 lb	47 lb
Height	10 in.	12 in.	14 in.
Maximum body/cap load		20,000 lbf	
Material		Ductile Iron *****	
Polished rod sizes		1½, 1¼, 1½, 1½, 1½ in.	
Quantity required - Top cone packing	3	3	5
Quantity required - Bottom cone packing	1	1	1

* Available with 2 in 11.5V LP box side outlet

** Available with 3 in 8V LP box or 3 in NUE box side outlet

*** Available with 3 in 8V LP box side outlet

**** Add 11 lbs if equipped with optional HPLUG

***** Corosion-resistant coatings available; contact customer service



Hercules Big Stuff Stuffing Boxes



Big Stuff™

- Easy to adjust threaded cap with no bolts to tighten
- Cone packing is inverted to achieve a pressure-assisted seal
- Ideal for short stroke pumping units
- Packing compression forces are distributed evenly
- Convenient protection of packing from weight of rod string
- A Hercules polished rod lubricator is highly recommended as a grease zerk is not available due to the low profile
- HPLUG required when using APA control device or Hercules leak detector



Big Stuff Double Pack Stuffing Box (DPSB)

- Easy to adjust threaded cap with no bolts to tighten
- Cone packing is inverted to achieve a pressure-assisted seal
- Primary packing can be changed under pressure by tightening compression bolts to temporarily engage lower packing
- Two ¼ in. NPT ports (180 apart) for grease zerk and pressure gauge
- Convenient protection of packing from weight of rod string
- Available with Dome or cone packing
- HPLUG required when using APA control device or Hercules leak detector
- Available with Dome or cone packing



Big Stuff Pollution Control Stuffing Box (PCSB)

- Flapper assembly closes automatically if polished rod breaks below the stuffing box, protecting the surrounding environment from wellbore pressure
- Primary packing can be changed under pressure by tightening compression bolts to temporarily engage lower packing
- HPLUG required when using APA control device or Hercules leak detector
- Base has ½ in. NPT test port
- Two independently adjustable packing chambers - primary inverted cone packing in upper body and V-Ring packing in HPLUG
- Available with Dome or cone packing

Note: V-Ring packing for PCSB is not interchangeable with HTD V-Ring packing.

Hercules Big Stuff Stuffing Boxes

Specifications		Big Stuff	Big Stuff DPSB	Big Stuff PCSB
Working pressure (max)			1,500 psi	
Main cap Identification			Black with rounded tabs	
Bottom connections	Thread (pin unless otherwise stated)		2 3/8 in. EUE, 2 7/8 in. EUE, 3 1/2 in. EUE, 3 in. 8V LP, 4 in. 8V LP	
	Flanged	N/A	2 5/8 in. 5K R-27, 3 1/8 in. 3K R-31 3 1/8 in. 5K R-35	2 5/8 in. 5K R-27, 3 1/8 in. 3K R-31 3 1/8 in. 5K R-35
Average weight ****		22 lb	46 lb	128 lb
Height		9 3/4 in.	15 in.	24 1/2 in.
Maximum body/cap load			30,000 lbf for 2 3/8 in. base and 40,000 lbf for all other sizes	
Material			Ductile Iron	
Polished rod sizes			1 1/8, 1 1/4, 1 1/2, 1 3/4 in	
Lower packing	Qty Req. - Top Cone	N/A	2	2
	Qty Req. - Bottom Cone		0	0
Primary packing (upper)	Qty Req. - Top Cone		3	
	Qty Req. - Bottom Cone		1	
	Qty Req. - Opt. Dome		3 (These replace Top and Bottom Working Packing)	
HPLUG	Packing OD			2 1/2 in.
	Stack Height		N/A	3 in.

* 3,000 psi cap is not interchangeable with 2,500 psi models

Hercules NACE Big Stuff Stuffing Boxes



NACE Big Stuff

- Cone packing is inverted to achieve a pressure-assisted seal
- Ideal for short stroke pumping units
- HPLUG required when using APA control device or Hercules leak detector
- Packing compression forces are distributed evenly
- Convenient protection of packing from weight of rod string
- A Hercules polished rod lubricator is highly recommended as a grease zerk is not available due to the low profile
- Available with Dome or cone packing



NACE Big Stuff Double Pack Stuffing Box (DPSB)

- Cone packing is inverted to achieve a pressure-assisted seal
- Primary packing can be changed under pressure by tightening compression bolts to temporarily engage lower packing
- HPLUG required when using APA control device or Hercules leak detector
- Two 1/4 in NPT ports (180 apart) for grease zerk and pressure gauge
- Convenient protection of packing from weight of rod string
- Available with Dome or cone packing



NACE Big Stuff Pollution Control Stuffing Box (PCSB)

- Flapper assembly closes automatically if polished rod breaks below the stuffing box, protecting the surrounding environment from wellbore pressure
- Primary packing can be changed under pressure by tightening compression bolts to temporarily engage lower packing
- HPLUG required when using APA control device or Hercules leak detector
- Base has 1/2 in NPT test port
- Two independently adjustable packing chambers - primary inverted cone packing in upper body and V-Ring packing in HPLUG
- Available with Dome or cone packing

Note: V-Ring packing for PCSB is not interchangeable with HTD V-Ring packing.

Hercules NACE Big Stuff Stuffing Boxes

Specifications		NACE Big Stuff	NACE Big Stuff DPSB	NACE Big Stuff PCSB
Working pressure (max)			3,000 psi	
Main cap Identification			Grey with square tabs*	
Bottom connections	Thread (pin unless otherwise stated)		2 3/8 in. EUE, 2 7/8 in. EUE, 3 1/2 in. EUE, 3 in. 8V LP, 4 in. 8V LP	
	Flanged	3 1/8 in. 3K R-31 4 1/8 in. 5K R-37	2 9/16 in. 5K R-27, 3 1/8 in. 3K R-31 3 1/8 in. 5K R-35	2 9/16 in. 5K R-27, 3 1/8 in. 3K R-31 3 1/8 in. 5K R-35
Average weight ****		21 lb	47 lb	128 lb
Height		15 in.	24 1/2 in.	25 1/4 in.
Maximum body/cap load			30,000 lbf for 2 3/8 in. base and 40,000 lbf for all other sizes	
Material			Ductile Iron (Meets NACE MR0175)	
Polished rod sizes			1 1/8, 1 1/4, 1 1/2, 1 3/4 in	
Lower packing	Qty Req. - Top Cone	N/A	1	1
	Qty Req. - Bottom Cone		1	1
Primary packing (upper)	Qty Req. - Top Cone		3	
	Qty Req. - Bottom Cone		1	
	Qty Req. - Opt. Dome		3 (These replace Top and Bottom Working Packing)	
HPLUG	Packing OD			2 1/2 in.
	Stack Height		N/A	3 in.

* 3,000 psi cap is not interchangeable with 2,500 psi models

Hercules High Pressure (HP) Stuffing Boxes



Hercules 5K SB

- Uses Hercules Dome packing
- Reduces costly packing maintenance time
- Packing compression forces are distributed evenly
- Ideal for short stroke pumping units
- Convenient protection of packing from weight of rod string
- A Hercules polished rod lubricator is highly recommended as a grease zerk is not available due to the low profile



Hercules 5K DPSB

- Uses Hercules Dome packing
- Exceptionally rugged; built for performance under tough conditions
- Primary packing can be changed under pressure by tightening the lower body
- Convenient protection of packing from weight of rod string
- Two ports (180 apart) for grease zerk and pressure gauge



Hercules 5K PCSB

- Uses Hercules Dome packing for primary and secondary chambers
- Exceptionally rugged; built for performance under tough conditions
- Primary packing can be changed under pressure by tightening the lower body
- Flapper valve closes automatically to prevent leakage
- Two independently adjustable packing chambers - primary Dome packing in main body and V-Ring packing in PCSB upper gland (V-Rings contain full working pressure)
- Adaptable to APA control device of Hercules SB leak detector
- Convenient protection of packing from weight of rod string
- Two ports (180 apart) for grease zerk and pressure gauge

Hercules High Pressure (HP) Stuffing Boxes

Specifications	5K SB	5K DPSB	5K PCSB
Working pressure (max)		5,000 psi	
Bottom connections	Thread (pin)	2 ⁷ / ₁₆ in. EUE, 3 ¹ / ₂ in. EUE	
	Flanged	2 ⁹ / ₁₆ in. 5K R-27, 2 ⁹ / ₁₆ in. 10K BX-153	
Weight (flanged)	69 lbs	129 lbs	167 lbs (196 lbs with HPLUG)
Height	9 ¹ / ₁₆ in.	19 ¹ / ₁₆ in.	24 ⁹ / ₁₆ in. (29 ⁹ / ₁₆ in. with HPLUG)
Maximum body/cap load		40,000 lbf	
Material		4130 (Meets NACE MR0175)	
Polished rod sizes		1 ¹ / ₈ , 1 ¹ / ₄ , 1 ¹ / ₂ , 1 ³ / ₄ in.	
Quantity required - Dome packing	3		7
HPLUG	Packing OD	N/A	2 ¹ / ₄ in.
	Stack height	N/A	2 ¹ / ₂ in.
Flapper valve material		N/A	Duplex SS

Hercules Specialty Stuffing Boxes

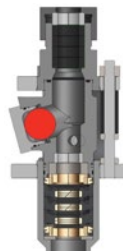


Flapperball - 1,500, 3K, and 5K

- Upper 2¼ in. OD packing/ lower cone packing specific to the flapperball
- Replaces conventional spring-loaded flapper system with a specifically engineered floating ball, which can be easily inspected or replaced on the well
- Pollution control capabilities in a more compact design
- Center housing doubles as lubrication chamber
- Easy-to-replace packing
- Offset packing compatible



Flapperball XL
with cone



Flapperball XL
with Dome

Flapperball XL - 1,500, 3K, 5K

- Utilizes full set of cone or dome packing for working packing
- Uses 2¼ in. OD donut ring packing for secondary packing
- Replaces conventional spring-loaded flapper system with a specifically engineered floating ball, which can be easily inspected or replaced on the well
- Pollution control capabilities in a more compact design
- Center housing doubles as lubrication chamber
- Easy-to-replace packing



High-Temperature Double-Packed Stuffing Box (HTD)

- Designed for high pressure and high temperature applications
- Lower packing can be temporarily energized by loosening lock ring and tightening upper body to allow changing primary packing under pressure.
- Dual packing chamber
- Versatile chamber design accepts different types of packing, including V-ring, standard crown ring compression, and *Kevlar/PTFE square braid rope packing
- Single-pack version available for low-profile installations



Packing type	Maximum temperature
NBR V-ring	250° (121°C)
HSN V-ring	325° (163°C)
FKM V-ring	400° (204°C)
Kevlar/PTFE	540° (282°C)

Hercules Specialty Stuffing Boxes

Specifications		Flapper Ball	Flapper Ball XL	HTD
Working pressure (max)		1,500, 3,000, 5,000 psi		3,000 psi
Bottom connections	Thread (pin)	2½ in. EUE, 2¾ in. EUE, 3½ in. EUE		2¾ in. EUE, 2¾ in. EUE, 3½ in. EUE, 3 in. 8V LP, 4 in. 8V LP
	Flanged	2¾ in. 5K R-24, 3½ in. 5K R-35		3½ in. 3K R-31, 4¼ in. 3K R-37
Average weight		83 lbs	87 lbs	40 lbs
Height		17¾ in.	20 in.	14 in.
Maximum body/cap load		20,000 lbf		
Material		4130 (Meets NACE MR0175)		
Polished rod sizes		1½, 1¼, 1½		1½, 1¼, 1½, 1¾ in
Primary packing (lower)	Qty Req. - Top Cone	1	3	N/A
	Qty Req. - Bottom Cone	1	1	
	Qty Req. - Opt. Dome	N/A	3	
Upper Packing	Packing OD	2¼ in.		
	Stack Height	3 in.		
Lower Packing	Packing OD			2¼ in.
	Stack Height			2½ in.
Primary packing (upper)	Packing OD	N/A		2¼ in.
	Stack Height			2½ in.

Stuffing Box Accessories



Lubricating Upper Gland (LUG)

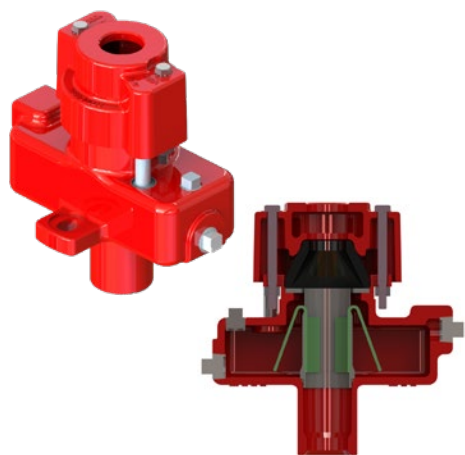
- Standard on classic models
- Zerk fitting for periodic greasing
- Top split cone wiper controls oil film on polished rod
- Extends packing life and reduces maintenance costs
- Rod sizes: 1¼, 1⅜, 1½, and 1¾ in.
- Material: Ductile iron



Standard Oil Reservoir Gland (ORG)

- Designed for use on problem wells that pump or flow off
- Holds one quart of 30W motor oil (or other viscosity as necessary for extreme high- or low-temperature applications)
- ¾ in. NPT port for installation of APA control device
- Solid bottom cone wiper controls oil film on polished rod
- Optional for all Hercules classic models
- Rod sizes: 1¼, 1⅜, 1½, and 1¾ in.
- Material: Ductile iron
- Standard ORG cap and drain nipple capture oil that escapes past loose or worn top wiper cone
- If using with Hercules APA control device, Lug gland cap option is recommended to prevent rainwater from prematurely shutting down well

Note: Cannot be used with leak detector



High-Performance Oil Reservoir Gland (HPORG)

- Provides polished rod lubrication and extends packing life
- Wicks reduce oil consumption
- ¾-in. NPT port for installation of APA control device
- Solid bottom cone wiper controls oil film on polished rod
- Optional for all Hercules classic models
- Rod sizes: 1¼, 1⅜, 1½, and 1¾ in.
- Material: Ductile iron
- Standard ORG cap and drain nipple capture oil that escapes past loose or worn top wiper cone
- If using with Hercules APA control device, Lug gland cap option is recommended to prevent rainwater from prematurely shutting down well

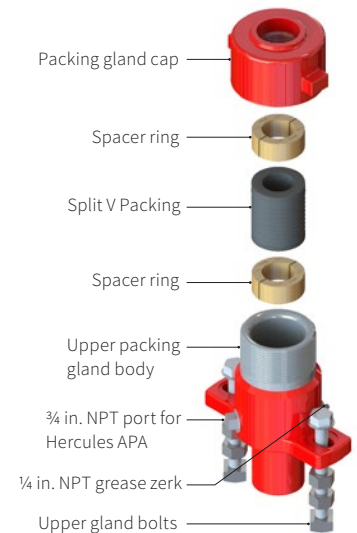
Note: Cannot be used with leak detector

Stuffing Box Accessories



High-Performance Lubricating Upper Gland (HPLUG)

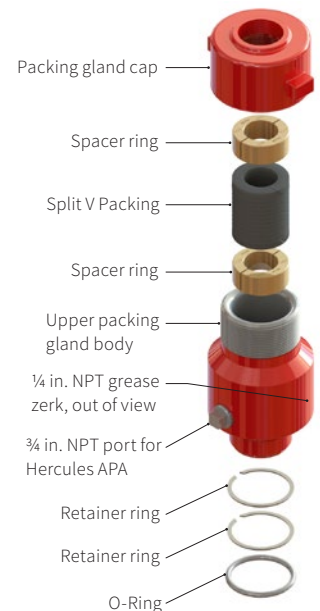
- Provides a secondary seal for stuffing boxes
- Uses same bolts as Hercules LUG
- Allows installation of Hercules stuffing box leak detector or APA control device
- Fits any Hercules classic model stuffing box (SB, SBT, DPSB, PCSB)
- Zerk fitting for periodic greasing
- NBR V-ring packing standard (optional: HSN or FKM V-ring; or braided Kevlar)
- Upper/lower packing spacer rings: MDS nylon supplied with NBR Packing
- Upper/lower bronze packing spacer rings are supplied with HSN, FKM, or Kevlar packing
- Rod sizes: 1¼, 1⅜, 1½, and 1¾ in.
- Body and cap: Ductile iron



NACE Big Stuff PCSB with HPLUG installed.

Big Stuff HPLUG

- Provides a secondary seal for all Big Stuff and Big Stuff DPSB stuffing box models
- Allows installation of Hercules stuffing box leak detector or APA control device
- Zerk fitting for periodic greasing
- NBR V-ring packing standard (optional: HSN or FKM V-ring; or braided Kevlar)
- Brass/bronze packing spacer rings are supplied with HSN, FKM, or Kevlar packing
- Rod sizes: 1¼, 1⅜, 1½, and 1¾ in.
- Upper/lower packing support rings: MDS nylon (standard) or bronze (for high-temperature applications)
- Special top follower required for retrofitting existing Big Stuff models (state polished rod size when ordering)
- Can also be used with models equipped with Dome packing (requires special Big Stuff Dome APA/HPLUG top follower)
- ¾ in. NPT side port allows attachment of leak detector or APA control device



Stuffing Box Accessories



Dynamic Alignment Tool

- Allows for continuous self-alignment between the polished rod and stuffing box
- Designed to account for angular deviations in a range of $\pm 4^\circ$ respective to the vertical direction and eccentricity in a span of ± 0.25 in.
- Intended for installation between the BOP and stuffing box
- HSN seal material standard; AFLAS and Viton available upon request



Leak Detector

- Adapts to all Hercules classic stuffing boxes and Hercules Big Stuff stuffing boxes equipped with HPLUG
- Pressure-activated shutdown switch
 - Meets NEC Class 1, Div. 1 requirements
 - Provides positive shutdown of the flow
 - Easily wired to SCADA or a controller
- Manifold connection
 - Two $\frac{1}{2}$ in. ports and one $\frac{3}{4}$ in. port allow custom installation
 - $\frac{3}{4}$ in. end cap allows easy cleanout of blockage
- HPLUG required for installation (not included; must purchase separately as part of the stuffing box assembly)
- Set at 18 psi as standard
- Available in 1,500, 2,500, and 3,000 psi



Anti-Pollution Adapter (APA) Control Device

- Original Hercules leak detection system used to prevent costly stuffing box spills
- Can be installed with ORG, HPLUG, or HPORG
- Can be used with Flapperball and Flapperball XL
- Adjustable to complement all production viscosities
- Durable stainless-steel container, additional containers available upon request
- Meets NEC Class 1, Div. 1 (with explosion-proof switch)
- Switch options
 - UL/CSA
 - ATEX/IECEX/EAC
- Approximately 3 L capacity

Stuffing Box Accessories



Pollution-Control Adapter

- For retrofitting existing Hercules (DPSB, IVDPSB, Big Stuff DPSB, NACE Big Stuff DPSB) to locate the polished rod flapper below the working packing
- Compatible with any Hercules and Hercules Big Stuff DPSB
- Can be retrofitted on existing double-packed stuffing box
- Comprehensive spill protection from polished rod breaks
- Meets NACE MR0175
- 1/2 in NPT test port located on threaded or flanged base

Base Options	
Threaded base	API flanged base
2 in. EUE male	2 1/16 in. 2,000 psi, R-23
2 1/2 in. EUE male	2 9/16 in. 2,000 psi, R-26
3 in. 8V LP male	2 9/16 in. 5,000 psi, R-27
3 in. EUE male	3 1/8 in. 3,000 psi, R-31
-	3 1/8 in. 5,000 psi, R-35



Hercules Roller Derby

- Reduces or eliminates problems caused by misaligned polished rods, especially effective for a long-stroke pumping unit
- Promotes packing longevity
- Simple design – no adjustments necessary
- Available in solid or 240° split design to retrofit any Hercules Flapperball, Flapperball XL in 1 1/4 in. and 1 1/2 in. polished rod
- Solid and 240° split design also available to retrofit any Classic Hercules HPLUG and Big Stuff HPLUG for 1 1/2 in. polished rod only
- Easy-to-install repair kit available, includes: three brass rollers, guard, and cap screws



Stuffing Box Packing

- Dome Packing
- Sure-Pak Packing
- Packing Pullers
- Dome Packing Configurations
- Cone, V-ring and Donut -ring Packing

Stuffing Box Packing

We offer a broad range of sizes, materials, and designs to best fit your stuffing box configuration. Our Hercules packing is compatible with various models of stuffing boxes. Whether you have a mild or extreme application, our various packing compounds will match your well conditions.



Dome Packing

- Automatically compensates for changes in flowline pressure
- Dramatically reduces stuffing box failures and maintenance costs
- Rubber packing with PTFE-blended seal ring
- Rubber available in NBR, HSN, and AFLAS
- PTFE-blended seal ring minimizes contact between rubber and polished rod
- Low coefficient of friction
- Less heat buildup
- Lower drag on polished rod
- Unique bowl shape converts vertical compression forces into radial forces for a tight seal around polished rod
- One-time conversion kit to retrofit most cone-packed stuffing boxes
- Rod sizes: 1 1/8, 1 1/4, 1 3/8, 1 1/2, and 1 3/4 in.
- Designed for easy replacement using packing pullers
- Pressure-handling capabilities to 5,000 psi

Sure-Pak™ Packing

- Rubber cone packing with unique PTFE seal ring
- Rubber available in Soft +, Compound G
- Effectively dissipates heat
- Enhances fluid sealing control
- Longer packing service life
- Fewer packing gland adjustments required
- No bronze ring conversion kit required
- Rod sizes: 1 1/8, 1 1/4, 1 1/2, and 1 3/4 in.
- Pressure-handling capabilities to 3,000 psi
- U.S. patent number: 5845909

H₂S and Conversion CO₂ Table

1,000 PPM	0.196
2,000 PPM	0.296
10,000 PPM	1.096
20,000 PPM	2.096
50,000 PPM	5.096
100,000 PPM	10.096
150,000 PPM	15.096
200,000 PPM	20.096
350,000 PPM	35.096

Packing Pullers

- Unique tool to efficiently change Dome- and cone-style packing
- Pigtail connection penetrates rubber compound for effective packing removal from the stuffing box
- Pigtail can quickly be unscrewed to reveal threaded tool
- Threaded tool screws perfectly into brass split rings utilized with Dome packing

Packing Material	Maximum % H ₂ S	Maximum % CO ₂	Maximum Temperature
NBR Dome	2%	Not recommended	250°F (121°C)
HSN Dome	10%	20%	325°F (163°C)
TFEP (Aflas) Dome	35%	15%	450°F (232°C)
Sure-Pak Soft+	2%	Not recommended	160°F (71°C)
Sure-Pak "G"	10%	20%	325°F (163°C)

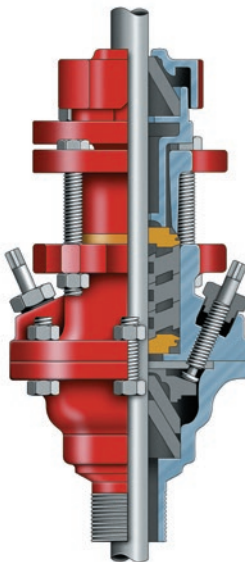
Dome Packing Configurations

Dome Packing Conversion Kit

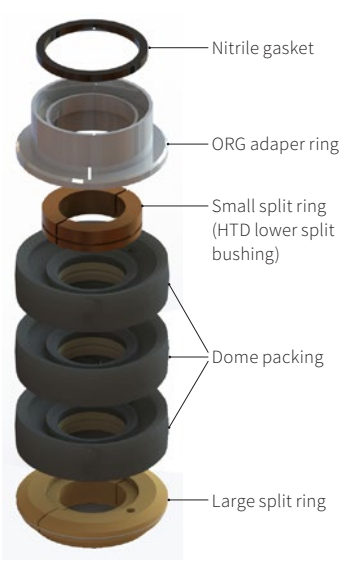
Dome Packing Conversion Kit



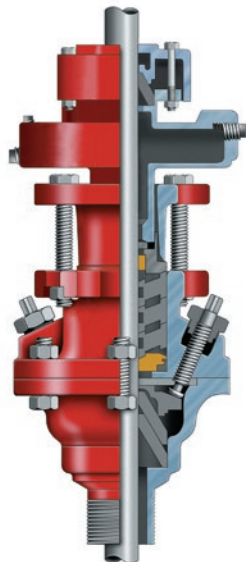
DPSB with LUG and Dome Packing



ORG adapter kit with Dome Packing



DPSB with ORG and Dome Packing



Hercules PCSB with HPLUG and Dome Packing



Hercules PCSB with ORG and Dome Packing



NACE Big Stuff PCSB with HPLUG and Dome Packing



Big Stuff 5K PCSB with Integral HPLUG and Dome Packing





Selection Criteria for Rubber Compounds in Stuffing Boxes and BOPs

Name	ASTM Type	Maximum service temperature with concentrations of H ₂ S and CO ₂ below 1%	Maximum service temperature with concentrations of H ₂ S and CO ₂ at maximum tolerance levels	Maximum tolerances for H ₂ S	Maximum tolerances for CO ₂	Resistance to explosive decompression in CO ₂ concentrations up to 20%	Performance in steam environments	Mechanical, tear, and abrasive resistance
Soft, hard, special lubricated, heavy-duty, PTFE filled, Hercules gold	SBR	160°F (71°C)	160°F (71°C)	2%	NR	Poor	Poor	Good
Compound C Compound D	NBR	300°F (149°C)	250°F (121°C)	2%	10%	Good	Good	Excellent
Compound G	HNBR	325°F (163°C)	300°F (149°C)	10%	20%	Good to excellent	Very good	Excellent
Compound H	EPDM	425°F (218°C)	350°F (177°C)	5%	NR	Poor	Good	Fair
Compound S™ Compound ST	SBR	160°F (71°C)	160°F (71°C)	2%	2%	Poor	Poor	Good
Kevlar Brass	-	650°F (345°C)	450°F (232°C)	30%	30%	-	Excellent	Good
Rainbow	-	400°F (204°C)	400°F (204°C)	12%	15%	-	Good	Good
Polymer	AU	212°F (100°C)	150°F (65°C)	10%	10%	Poor	Poor	Excellent
Nitrile Dome	NBR	250°F (121°C)	150°F (65°C)	2%	5%	Fair	Poor	Good
HSN Dome	HNBR	325°F (163°C)	300°F (149°C)	10%	20%	Good to excellent	Very good	Excellent
*AFLAS Dome	TFEP	450°F (232°C)	350°F (177°C)	35%	15%	Fair	Excellent	Fair

Note: Above temperatures are suggested "maximum short-term" ratings and should not be considered as a "continuous operating temperature."

NR- Not recommended, SBR- Styrene butadiene rubber, NBR- Nitrile rubber, HSN- Highly saturated nitrile or hydrogenated nitrile, EPDM- Ethylene propylene, AU - Urethane

Stuffing Box Packing

Cone, V-ring, and Donut-ring Packing

The most important feature of stuffing box packing is long-lasting performance. NOV continually tests new and improved materials to meet the demands for ever-changing well conditions. Extensive field tests ensure new packing stands up to stringent durability and performance standards. Cone packing is available in sizes for all polished rods from 1 to 1¾ in. in sets of four (three top cones and one bottom cone) and five (four top cones and one bottom cone).

Packing type	Description
Hercules Gold	For sweet crudes with high oil-to-water ratios, low sand content, and where salt or corrosion buildups on the polished rod have caused premature wear of other packings
Soft	For sweet crudes with high oil-to-water ratios and low sand content
Hard	For sweet crudes with low oil-to-water ratios
Slick Pack™ (Compound S™)	For reducing polished rod noise "squeaking" in noise-sensitive locations on crudes with high oil-to-water ratios and low sand content
Special lubricated	For sweet crudes with high oil-to-water ratios and low sand content
Heavy-duty	For prolonged service on sweet crudes and wells without constant flow
PTFE filled	For sweet crudes and wells with long-stroke and fast pumping cycles
Compound C	For steam injection wells producing sweet crudes with added brass for abrasive and scaly environments
Compound C (no brass)	For steam injection wells producing sweet crudes
Compound G	For H ₂ S and CO ₂ wells
Slick pack with Teflon flakes (Compound ST)	For reducing polished rod noise "squeaking" in noise-sensitive locations on sweet crudes that pump off or have long-stroke and fast pumping cycles
Kevlar Brass	High temperature and high SPM, long surface stroke for high H ₂ S wells. Reinforced for abrasives.
Rainbow	Low gas-to-oil with high water cut
Polymer	High water cut wells with produced sand and saltwater
Compound D	For steam injection wells where polished rod scoring is a concern
Compound H	For steam injection wells

Note: The guidelines on this page are for general reference purposes only and should not be used as the sole determining factor for packing material selection. Each downhole condition is different and must be addressed on a case-by-case basis to determine the best material solution for each well.

Material	Product	Maximum % H ₂ S	Maximum temperature
NBR V-ring	PCSB and HTD	2%	250°F (121°C)
HSN V-ring	PCSB and HTD	10%	325°F (163°C)
FKM V-ring	PCSB and HTD	20%	400°F (204°C)
Kevlar/PTFE ring	HTD	20%	540°F (282°C)
Kevlar/Brass ring	Classic, HP, Flapperball, Flapperball XL	30%	450°F (232°C)
Rainbow ring	Classic, HP, Flapperball, Flapperball XL	12%	400°F (204°C)

Note: PCSB and HTD V-ring are not interchangeable. HTD packing OD is 2¼ in.; PCSB HPLUG OD is 2½ in.



Cone packing



Hercules polymer packing



Polished Rod Accessories

- Figure Clamps
- Rod Boss and Rod Boss Jr. Clamps
- Leveling Plate
- Polished Rod Lubricator
- Polished Rod Bullet

Polished Rod Accessories

We manufacture Hercules polished rod accessories to assist with maintenance and prolong the life of your polished rod. With years of field-proven experience, our products are engineered to meet your quality expectations.

Polished Rod Clamps



Figure Clamps

- Indention style
- Highest clamping capacity at any bolt torque
- Bolts only require to be torqued once to 250 ft/lb with a calibrated torque wrench
- Most economical design in the industry
- Rugged, yet light and easy to handle
- Independent clamping segments on a common hinge
- Ends are precision machined perpendicular to axis of polished rod
- Small rotating diameter for use with rod rotators
- Zinc phosphate coating for corrosion resistance

Caution: All models can only be used on piston steel polished rods. Rod clamps are not capable of gripping the spray-metal section of “hard-faced” or “hard-coated” polished rods. Installation of rod clamps on the spray-metal portion of a hard-faced/hard-coated polished rod may also crack the hard coating.



Rod Boss and Rod Boss Jr. Clamps

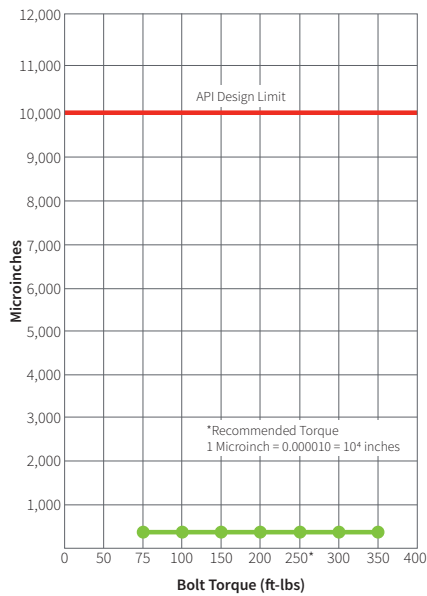
- Friction style – Rod Boss
- Indention style – Rod Boss Jr.
- Zinc phosphate coating for better corrosion resistance

Polished Rod Clamps

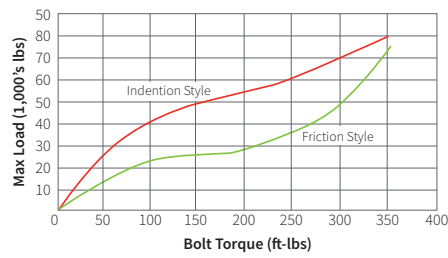
Specifications	Figure Clamp 1	Figure Clamp 2	Figure Clamp 3	Rod Boss	Rod Boss Jr.
Style	Indention	Indention	Indention	Friction	Indention
Rated load	13,000 lb	26,000 lb	40,000 lb	40,000 lb	25,000 lb
Maximum test load	32,000 lb	64,000 lb	76,000 lb	55,000 lb	35,000 lb
Polished rod size	1, 1½, 1¼, 1½ in.	1, 1½, 1¼, 1½ in.	1, 1½, 1¼, 1½ in.	1¼, 1½ in.	1½, 1¼, 1½ in.
Required bolt torque	250 ft-lb	250 ft-lb	250 ft-lb	550 ft-lb	250 ft-lb
Weight	3¾ lb	7½ lb	11¼ lb	25 lb	10½ lb
Height	2½ in.	5 in.	7½ in.	6¾ in.	4½ in.
Rotating diameter	Forged steel				
Nut hex size	1¼ in.	1¼ in.	1¼ in.	1½ in.	1½ in.

Caution: Do not exceed the bolt torque values specified above; otherwise, galling of bolt threads may occur.

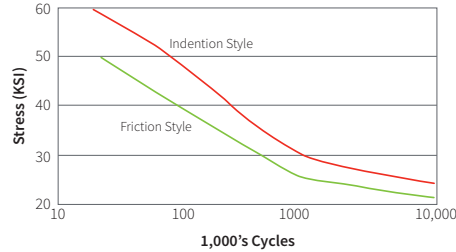
Depth of Polished Rod Indentations from Figure* Clamps



Clamping Capacity



Stress-Cycle Endurance Strength



Indention Style

(Figure and Rod Boss Jr. Clamps)



Friction Style

(Rod Boss Clamp)

- Indention style clamps have greater clamping capacity at any given bolt torque
- Polished rod indentions are 27 times less than design limits in API specification 11B
- Polished rod endurance strengths are greater with indention clamps



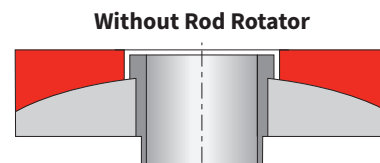
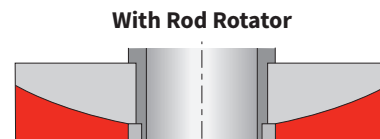


Leveling Plate

- Minimizes polished rod breaks
- Compensates for carrier bar misalignment up to 2°
- Installed under rod rotator or under polished rod clamp if rotators are not used
- Available for all polished rod sizes
- Ensures uniform engagement between polished rod clamp and carrier bar

Note: Mating convex and concave surfaces should be lubricated with grease prior to installation.

See Rod Rotator Installation instructions for installation with or without a rod rotator



Pilot installed in this configuration assures that polished rod will not rub the carrier bar



Polished Rod Lubricator

- Provides convenient polished rod lubrication
- Lubrication extends stuffing box packing life
- Easy installation – use with any style of stuffing box
- Uses one quart of ordinary motor oil
- Uses replaceable felt wicks (specify rod size when ordering)
- Available for all polished rod sizes
- 5½ in. height



Heavy Duty Stuffing Box Clamp

- Assists operator in safely changing out primary packing in stuffing boxes
- Holds top portion of stuffing box on the polished rod to allow access to the primary packing
- Can be used on polished rod sizes from 1¼ to 1¾ in.



Polished Rod Bullet

- Used to assist in the installation of a polished rod through a stuffing box
- Reduces risk of damaging polished rod threads, stuffing box packing, and flapper valve on PCSB stuffing boxes
- Includes cross-hole to assist removal from polished rod
- Available sizes:
 - 1½ in. OD x 1 in. box thread
 - 1½ in. OD x 7⁄8 in. box thread
 - 1¼ in. OD x 7⁄8 in. box thread



Rod Rotators

- T-164, T-164SG, T-252, T-253, T-302, T-302SG, T-303, T-303SG Rod Rotators
- Smart Rod Rotator

Rod Rotators

Rod rotation is the most effective means of removing paraffin from inside the tubing and distributing wear evenly. Our Hercules rod rotators are field-proven leaders in the industry.

Rod Rotators					
Specifications	T-164	T-164SG	T-252	T-253 ¹	T-302
Max output torque	106 ft-lb	106 ft-lb	120 ft-lb	280 ft-lb	240 ft-lb
Max recommended load	13,000 lb	13,000 lb	33,000 lb	33,000 lb	40,000 lb
Required opening between bridle lines	4 in.	4 in.	6 in.	6 in.	7 in.
Polished rod sizes	1½ to 1¼ in.	1½ to 1¼ in.	1½ to 1½ in.	1½ to 1½ in.	1½ to 1¼ in.
Shipping weight	18 lb	18 lb	35 lb	36 lb	47 lb
Height	4¼ in.	4¼ in.	5½ in.	5¾ in.	6½ in.
Rotation type	Helical gear	Helical gear	Ratchet table	Helical gear	Helical gear
Actuator cable length**	16 ft	16 ft	16 ft	16 ft	25 ft
90° lever pulls per revolution	28	42	24	35	77
Actuator type	Ratchet	Ratchet	Ratchet	Clutch	Ratchet
Identifying colors	Body: Red Cap: Red Nut: Unpainted	Body: Yellow Cap: Yellow Nut: Unpainted	Body: Red Cap: Red Nut: Unpainted	Body: Red Cap: Red Nut: Gray	Body: Red Cap: Red Nut: Unpainted
					

Specifications	T-302SG	T-303 ¹	T-303SG ¹	Smart Rod Rotator*
Max output torque	240 ft-lb	240 ft-lb	240 ft-lb	240 ft-lb
Max recommended load	40,000 lb	40,000 lb	40,000 lb	40,000 lb
Required opening between bridle lines	7 in.	7 in.	7 in.	7 in.
Polished rod sizes	1½ to 1¼ in.	1½ to 1¼ in.	1½ to 1¼ in.	1½ to 1¼ in.
Shipping weight	47 lb	48 lb	48 lb	48 lb
Height	6½ in.	6½ in.	6½ in.	6½ in.
Rotation type	Helical gear	Helical gear	Helical gear	Helical gear
Actuator cable length**	25 ft	25 ft	25 ft	25 ft
90° lever pulls per revolution	154	77	154	154
Actuator type	Ratchet	Clutch	Clutch	Clutch
Identifying colors	Body: Yellow Cap: Yellow Nut: Unpainted	Body: Red Cap: Gray Nut: Gray	Body: Yellow Cap: Gray Nut: Gray	Body: Yellow Cap: Gray Nut: Gray
				

Note: Rotators must be under load to operate (except for no-slip models). Body material is ductile iron.

¹ Patented

*Contact customer service for more information.

**The cable lengths available upon request are 10, 16 and 25 ft.



Hookup Accessories

- Well King Back Pressure Regulators
- Adjustable Choke B-29 Rod Boss Jr. Clamps
- Flow Tee

Hookup Accessories

In order to achieve a complete and tailored configuration for the production service hookup, we offer a range of products to suit the needs of your application: valves, unions, flow tees, chokes, and pressure regulators.



2 in. Tee Back Pressure Regulator



2 in. Cross Back Pressure Regulator



2 in. Inline Back Pressure Regulator

Well King™ Back Pressure Regulators

- Liquid or gas service
- Reduces paraffin by keeping gas in solution
- Less free gas and better lubrication at the stuffing box
- Increases pump efficiency by keeping bottomhole pressure above the bubble point
- Differential pressure type – recommended for systems where downstream pressure is less than 10% of set pressure
- All models have ¼ in. NPT pressure port for upstream pressure gauge installation
- Connections:
 - Standard: 2 in. pin LP inlet x single 2 in. box LP outlet
 - Four-way cross: 2 in. pin LP inlet x dual 2 in. box LP outlet
 - In-line: 2 in. box LP inlet x single 2 in. box LP outlet
- External body shell components for all assemblies have a 2,000-psi “shell test pressure” capability

Optional Sand Trim

- Carbide-tipped plunger and carbide seat, which replaces ball and seat and lower spring keeper
- Available in 200, 500, 900, and 1,000 psi (not available in 1,500 psi)
- 10- to 1,000 psi model fully meets NACE MR0175
- Less vibration
- Smoother flow
- More abrasion resistance
- Greater control sensitivity

2 in. Back Pressure Regulator

Pressure range	Orifice	Ball size	Spring material
5 to 200 psi	0.875 in.	1.125 in.	Monel
10 to 500 psi	0.875 in.	1.125 in.	302 SS
10 to 900 psi	0.875 in.	1.125 in.	Carbon steel
10 to 1,000 psi	0.683 in.	1.000 in.	Elgiloy
10 to 1,500 psi	0.683 in.	1.000 in.	Carbon steel*

*Same spring used in 10- to 900-psi model

Adjustable Choke B-29

- Thumb screw secures stem-setting position
- Stem can be lubricated with standard grease gun
- Available carbide trim for increased abrasion resistance
- Stainless steel model available by special order for NACE applications

Size	2-in. 11.5V LP inlet and outlet
Working pressure	2,000 psi
Maximum orifice size	¾ in.
Height (open)	17⅞ in.
Height (closed)	16⅞ in.
Weight	20 lb

Note: Adjustable chokes are not intended to be used as shutoff valves.





Pumping Flow Tees 3,000-psi WP

Flow Tee

- Ductile iron construction
- Most precise alignment in the industry
- Hundreds of thread combinations
- 2, 2½, and 3 in. cast steel tees meeting NACE MR0175 available
- Corrosion-resistant coatings available
- Four-way cross configuration available in 2 in. 11.5V LP and 4 in. 8V LP
- 1 in. NPT standard (or smaller) bleeder port
- 2 in. 11.5V LP bleeder available in some sizes (bleeder port can be left blank by request)

Bottom thread (EUE or LP)	Top thread (EUE or LP)	Major side outlet (LP)	Height	Weight
2 in.	2 in.	2 in.	6 in.	9 lb
2 in. pin	2 in.	2 in.	7¼ in.	7 lb
2 in.	2½ in.	2 in.	7¼ in.	13 lb
2 in.	3 in.	2 in.	8 in.	21 lb
2 in.	3 in.	3 in.	8 in.	18 lb
2½ in.	2 in.	2 in.	7¼ in.	13 lb
2½ in.	2½ in.	2 in.	7¼ in.	13 lb
2½ in. pin	2½ in.	2 to 2½ in.	8 in.	10 lb
2½ in.	2½ in.	2½ in.	7¼ in.	12 lb
2½ in.	2½ in.	3 in.	8 in.	20 lb
2½ in.	3 in.	2 in.	8 in.	20 lb
2½ in.	3 in.	2½ in.	8 in.	20 lb
2½ in.	3 in. pin	2 in.	8 in.	10 lb
2½ in.	3 in.	3 in.	8 in.	18 lb
3 in.	2½ in.	2 in.	8 in.	20 lb
3 in.	2½ in.	2½ in.	8 in.	20 lb
3 in.	2½ in.	3 in.	8 in.	20 lb
3 in.	3 in.	2 in.	8 in.	20 lb
3 in.	3 in.	3 in.	8 in.	18 lb
3 in. pin	3 in.	2 to 3 in.	9½ in.	19 lb
4 in.	3 in.	3 in.	7¾ in.	22 lb
4 in.	4 in.	3 in.	7¾ in.	21 lb
4 in.	4 in.	4 in.	7¾ in.	18 lb

3,000-psi working pressure heavy-duty tee (Connections are box thread unless otherwise indicated)

- Notes:**
- Pumping tee test pressure > 1.5 x working pressure for pin threads and 2 x working pressure for box threads.
 - Corrosion-resistant coatings available.
 - Other models available, including flanged options.
 - Contact customer service for available coatings and additional sizes.



RODEC

Tubing Rotators

- RODEC Tubing Rotators
- Downhole Tubing Swivels

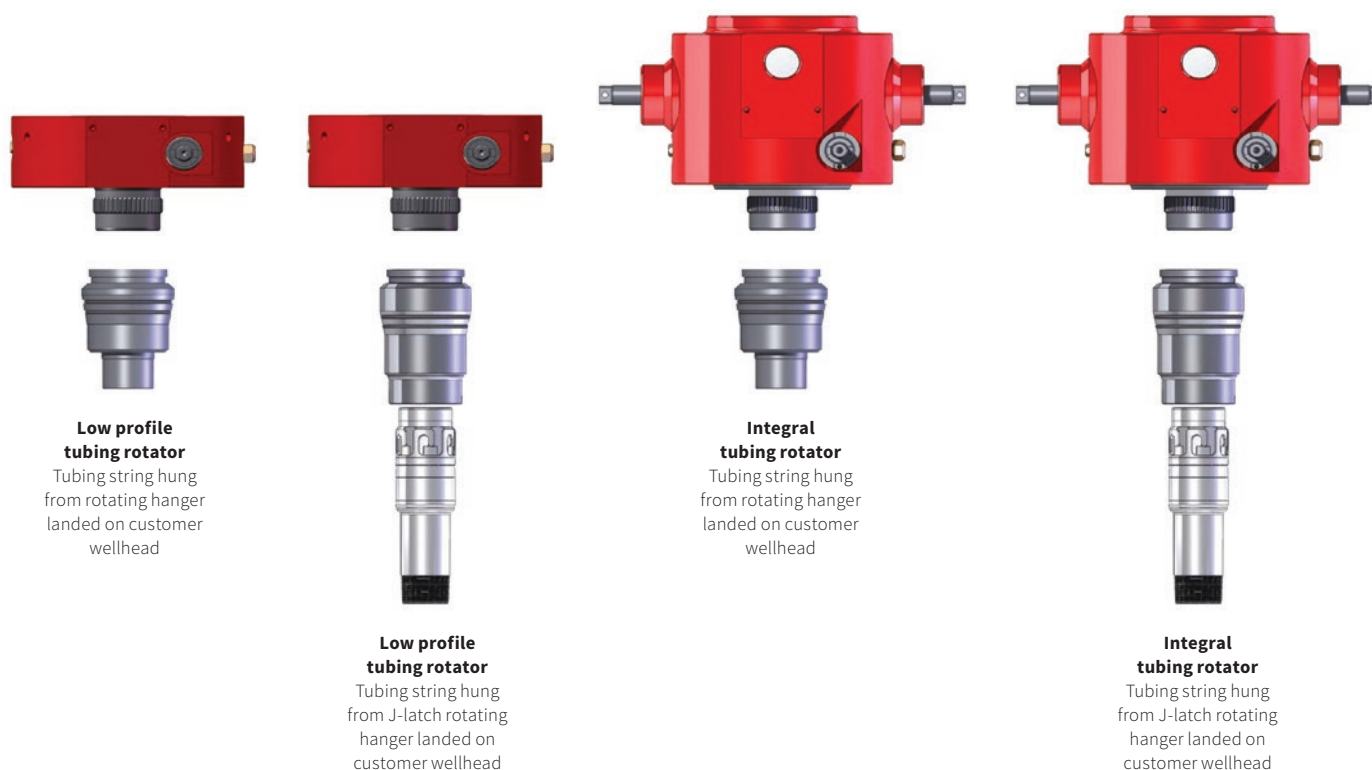
Tubing Rotators

We have been providing effective tubing wear solutions for more than 70 years. Our RODEC™ tubing rotators and swivels cover a wide range of products designed to effectively distribute wear evenly around the entire internal circumference of the production tubing. The application of these products can dramatically increase tubing life span and reduce operating costs proportionately. Whether using rod pumping units or progressing cavity downhole pumps, we offer the most complete package of wear-prevention solutions, including tubing rotators.

RODEC “C” Low-Profile Rotator/RODEC “C” Integral Rotator (3-in-1)

Field-proven with years of effective service performance, our RODEC “C” models significantly decrease production costs per barrel. The RODEC “C” tubing rotators’ patented technology radically slows tubing wear, resulting in savings of service rig costs and downtime. The compact design allows for easy installation on any existing well or new completion.

- Uses separate rotating hanger that sits in the customer tubing head. Hanger and rotator are coupled through a spline connection.
- Split rotating hanger option (J-slot) for setting tubing in tension is available.
- Rotating elements and mechanism are isolated from the wellbore, annular fluid, and gases, preventing corrosion damage.
- Overall height for the RODEC “C” low-profile rotator is 5 in., while the RODEC “C” integral rotator is about 12 in.



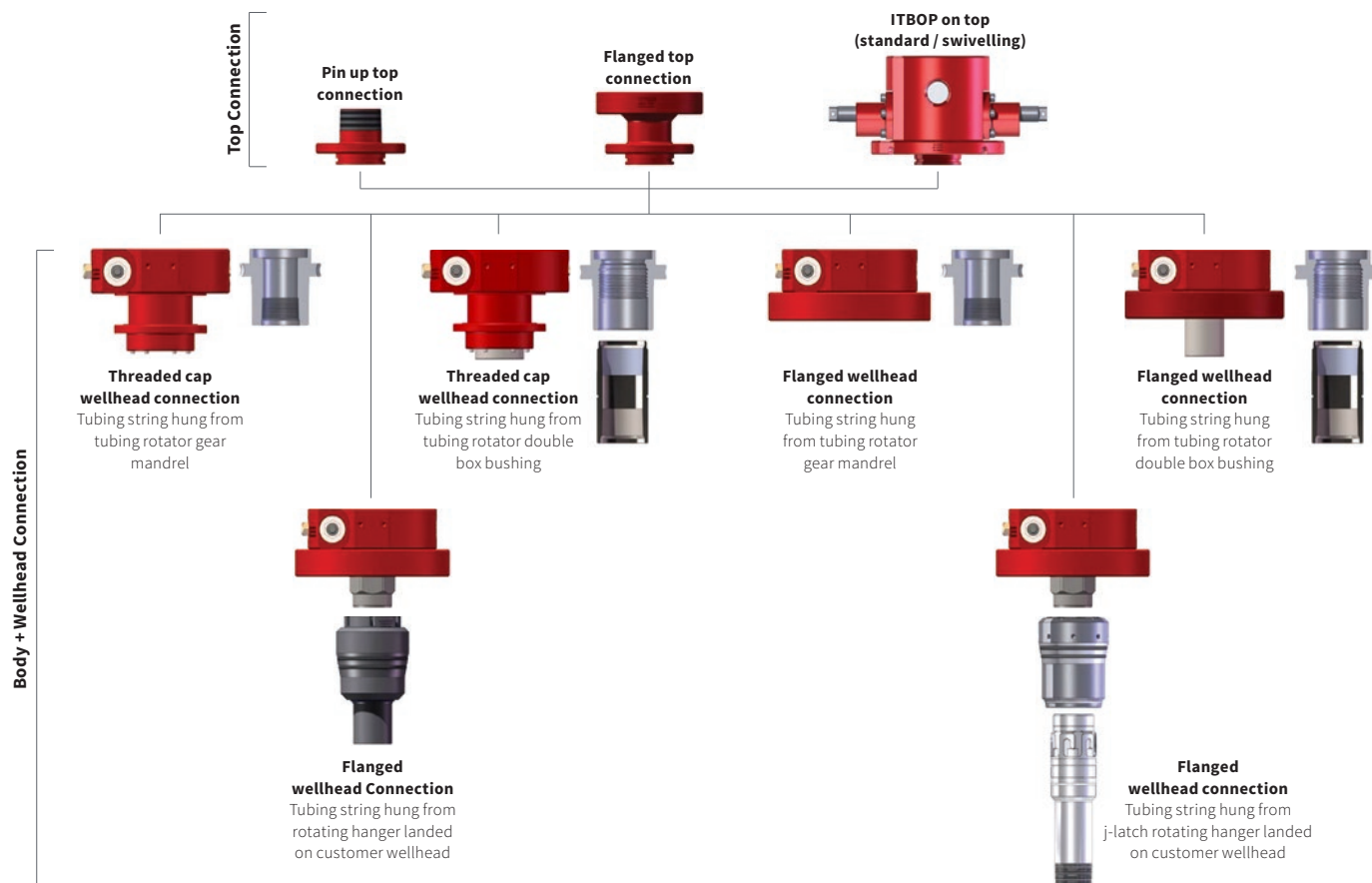
Tubing Rotators

RODEC RII Tubing Rotator

Featuring a modular design, the RODEC RII tubing rotator is the most versatile unit in the market due to its ability to adapt to flanged and threaded cap wellheads. The main body or spool is the same for all configurations having a wide variety of top and bottom connectors.

Depending on customer needs, the following tubing hanger options are available:

- Available in 5,000 psi max working pressure
- Tubing string hung from:
 - Tubing rotator inner mandrel (separate hanger not required)
 - Double box bushing that connects to the tubing rotator (separate hanger not required)
 - this option allows for landing an anchor catcher and setting the tubing string in tension
 - Rotating hanger landed in the tubing head body
 - Split rotating hanger landed in the tubing head body – this option incorporates a J-slot connection enabling for landing an anchor catcher and setting the tubing string in tension
- Low-profile design
- Compatible with a wide range of wellhead configurations (either threaded cap style or flanged)
- Top-end connections can be either API male threads or stud-through flanges
- Top-end connections can be either API male threads, stud-through flanges, or ITBOP





RODEC High-Temperature Tubing Rotator

Capable of operating in temperatures up to 650°F (343°C) and pressures up to 3,000 psi, the RODEC high-temperature tubing rotator can be installed on any wellhead configuration that complies with API specifications. In addition, it can rotate any size of production tubing with an API thread connection.

The RODEC high-temperature tubing rotator has a self-energized sealing mechanism that does not require service or adjustment.

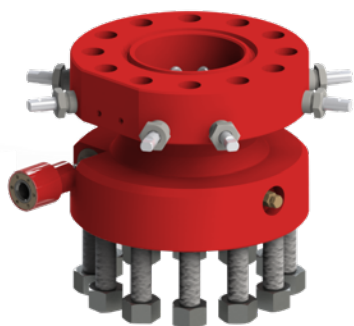
- Low-profile design
- Does not require a separate tubing hanger



RODEC Ultimate Tubing Rotator

Adding 9-to-10½ in. of height to the wellhead, the RODEC Ultimate tubing rotator is one of the most compact rotators in the market. As a fixed component of the wellhead, it remains in place during well servicing, having the BOP installed on top. The unit acts as a tubing head, complete with lockdown screws. It is studded down to fit any existing API tubing head and flanged up to rigidly support other components. The tubing hanger is landed in the tubing rotator spool and replaces the need for a conventional tubing hanger.

- Retrofits any well with an existing tubing head
- Compatible with rotating and reciprocating applications
- Minimum maintenance and field repairable



RODEC Ultimate XTS Tubing Rotator

The RODEC™ Ultimate XTS tubing rotator system suspends and rotates the tubing. It is unique in its robustness and lean design, which allows for adaptation to challenging applications. The spool houses the gear set that turns the tubing string. The gear set is completely sealed from wellbore fluids and external contaminants, and the gear mandrel has an internal spline for engaging with the hanger.

- Retrofits any well with an existing tubing head
- Compatible with rotating and reciprocating applications
- Minimum maintenance



RODEC Dual String Tubing Rotator

Including a side-entry access for chemical injection or coiled tubing jobs, the RODEC dual string hanger and tubing rotator is a powerful solution for complex applications. Two tubing strings can be independently hung from the custom-built spool furnished with lockdown screws, but only the production tubing is rotated.

- Separate connections for hanging each tubing string
- Secondary hold-down mechanism included for the production tubing hanger
- ITBOP optional

Tubing Rotators

Tubing Rotators

		RII	C Low-Profile	C Integral	Ultimate	Ultimate XTS	Dual String Hanger	High Temperature
Wellhead connection	Flange	7½ in. 2K R-45 7½ in. 3K R-45 7½ in. 5K R-46 7½ in. 10K BX-156 9 in. 2K R-49 9 in. 3K R-49 11 in. 2K R-53 11 in. 3K R-53	7½ in. 2K R-45 7½ in. 3K R-45 9 in. 2K R-49 9 in. 3K R-49	7½ in. 2K R-45 9 in. 2K R-49	7½ in. 2K R-45 7½ in. 3K R-45 9 in. 2K R-49 9 in. 3K R-49 11 in. 2K R-53 11 in. 3K R-53	7½ in. 2K R-45 7½ in. 3K R-45 7½ in. 5K R-46 7½ in. 10K BX-156	11 in. 2K R-53	7½ in. 3K R-45 7½ in. 5K R-46 11 in. 5K R-54
	Screw cap	7½ in. 8½ in.	N/A	N/A	N/A	N/A	N/A	N/A
Top connection	Flange	2¾ in. 3K R-24 3½ in. 3K R-31 7½ in. 3K R-45	7½ in. 2K R-45 7½ in. 3K R-45 9 in. 2K R-49 9 in. 3K R-49	N/A	7½ in. 2K R-45 7½ in. 3K R-45 9 in. 2K R-49 9 in. 3K R-49 11 in. 2K R-53 11 in. 3K R-53	7½ in. 2K R-45 7½ in. 3K R-45 7½ in. 5K R-46	N/A	N/A
	Thread	2⅞ in. EUE 3½ in. EUE 4 in. 8V LP	N/A	N/A	N/A	N/A	N/A	2⅞ in. EUE 3½ in. EUE 4½ in. NUE 5½ in. LTC
	ITBOP	3½ in. 3K R-31	N/A	3½ in. 3K R-31	N/A	N/A	3½ in. 3K R-31	N/A
	ITBOP	Polished rod	1¼ in. 1½ in.	N/A	1¼ in.	N/A	N/A	1¼ in. 1½ in.
Side outlets		2 in 11.5V LP 3 in. 8V LP	N/A	2 in 11.5V LP 3 in. 8V LP	N/A	N/A	2 in 11.5V LP 3 in. 8V LP	N/A
Pressure rating		2,000 psi 3,000 psi 5,000 psi	2,000 psi 3,000 psi	2,000 psi	2,000 psi 3,000 psi	2,000 psi 3,000 psi 5,000 psi	2,000 psi	3,000 psi
Tubing connections		2⅜ in. EUE 2⅞ in. EUE 3½ in. EUE 4½ in. NUE	2⅞ in. EUE 3½ in. EUE	2⅞ in. EUE 3½ in. EUE	2⅜ in. EUE 2⅞ in. EUE 3½ in. EUE 4½ in. EUE 5½ in. LTC	2⅞ in. EUE 3½ in. EUE	2⅜ in. EUE 3½ in. EUE	2⅞ in. EUE 3½ in. EUE 4½ in. NUE 5½ in. LTC
Torque rating		2,400 ft-lbf	2,200 ft-lbf	2,200 ft-lbf	1,800 ft-lbf (7½ in. series) 2,250 ft-lbf (9 in. series) 1,200 ft-lbf (11 in. series)	3,400 ft-lbf	2,200 ft-lbf	2,400 ft-lbf
Temperature rating	Standard seals (*)	320°F (160°C)	320°F (160°C)	320°F (160°C)	320°F (160°C)	320°F (160°C)	320°F (160°C)	N/A
	High-temperature seals	450°F (230°C)	N/A	N/A	450°F (230°C)	450°F (230°C)	N/A	650°F (340°C)
Maximum hanging load (rotator or hanger, as applicable)		60,000 lbf (standard)	60,000 lbf (standard)	60,000 lbf (standard)	60,000 lbf (standard)	219,000 lbf (heavy duty)	60,000 lbf	132,840 lbf (7½ in. series)
		128,750 lbf (heavy-duty)	128,750 lbf (heavy-duty)	128,750 lbf (heavy-duty)	128,750 lbf (heavy-duty)	160,000 lbf (custom/J-Latch)		204,370 lbf (11 in. series)
		160,000 lbf (custom/J-Latch)	160,000 lbf (custom/J-Latch	160,000 lbf (custom/J-Latch)				
Drive system	Mechanical input	Manual (hand cranked) BPU (chain/cable actuated)						BPU (chain/cable actuated)
	Electric motor	12 V, 110 V, 240/460 V						

* Standard seals are highly saturated nitrile (HSN).

Downhole Tubing Swivels

RODEC Slimline Tubing Swivel

Conceived for applications requiring a tubing swivel in a smaller envelope, the RODEC downhole tubing swivel allows for installing and removing mechanically set tools. Working in conjunction with a RODEC tubing rotator, it enables the tubing string to be rotated during production while keeping the downhole pump anchored.

- Mechanical clockwise rotation setting/counterclockwise rotation unsetting
- Reduced outside diameter
- Redundant seals to protect against wellbore fluids
- Extended length on the pin thread for applying power tongs

RODEC Anchor Catcher Swivel

Engineered for using with a right-hand set anchor catcher in applications where the production tubing is installed in tension, the RODEC Anchor Catcher (AC) swivel allows for mechanically setting the anchor in a clockwise direction upon installation. The tubing can then be pulled into tension and rotated during production.

- Mechanical clockwise rotation setting/counterclockwise rotation unsetting

RODEC High-Pressure Swivel

Designed to meet demanding applications with optimized wall thickness to manage higher pressures, the RODEC High-Pressure Swivel is compatible with a right-hand set anchor catcher and a good fit for applications where the production tubing is installed in tension.

- Mechanical clockwise rotation setting/counterclockwise rotation unsetting
- Redundant seals to protect against wellbore fluids
- Optimized geometry for higher pressure capability
- Higher bearing load capacity



RODEC Slimline Tubing Swivel

Downhole Tubing Swivels

		Slimline			Anchor Catcher		High Pressure
Connections		2½ in. EUE	2½ in. EUE	3½ in. EUE	2½ in. EUE	3½ in. EUE	2½ in. EUE
Pressure rating		3,000 psi	3,000 psi	3,000 psi	5,000 psi	5,000 psi	7,500 psi
Dimensions	Max. OD	3.84 in. (97.5 mm)	3.84 in. (97.5 mm)	4.50 in. (114.3 mm)	4.63 in. (117.5 mm)	5.13 in. (130.2 mm)	4.46 in. (113.3 mm)
	Drift	2.38 in. (60.3 mm)	2.38 in. (60.3 mm)	2.90 in. (73.7 mm)	2.50 in. (63.5 mm)	3.00 in. (76.2 mm)	2.44 in. (62.0 mm)
	Overall length	23.3 in.	27.8 in.	29.1 in.	20.9 in.	20.9 in.	28.3 in.
Shear torque (shear pins)*		576 ft-lbf	576 ft-lbf	684 ft-lbf	540 ft-lbf	700 ft-lbf	524 ft-lbf
Continuous torque rating					2,000 ft-lbf		
Thrust-bearing load rating		49,760 lbf	49,760 lbf	61,000 lbf	59,670 lbf	69,660 lbf	75,000 lbf
Temperature rating (standard seals)**					320°F (160°C)		

*For higher shear torque requirements, please consult your sales representative.

**Standard seals are highly saturated nitrile (HSN)

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