

The Hydraulic CONNECTION

An Informative Industry Newsletter Published By:

2011 Cylinder Catalogs Now Available

The latest edition of the Hercules Cylinder Catalog is now available and ready for shipment to our customers. New to this 9th edition is a complete line of 3000 PSI Double Acting Tie Rod Cylinder – The HSTR Olympus Line. These new cylinders will be available in August 2011. Other new products include: IT and ITW Threadless Heads for mobile cylinder applications, Return Spin-On Filters and a series of Installation and Removal Tools. To view a PDF of the new catalog or order these new products today, go to the Hercules' website www.Herculesus.com. To request copies of the 2011 Cylinder Catalog call 1-800-777-5617 and ask your regional sales team to add to your next order, or order via the on-line Catalog Request Form found under the "Company Literature" tab on the Hercules website. Prices effective June 13, 2011.



JULY WEB SPECIAL

\$9.95 Net

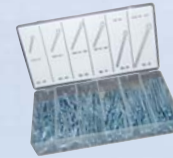
(\$33.30 Retail Value)

Offer Available

7/1/11 - 7/31/11

While Supplies Last

When Ordering Online Use



Part# COTTER PIN KIT PROMO

This sturdy kit contains 555 pieces in 6 various sizes.

Seals On Demand Program Expanded

New 3:00 p.m. Cut-Off Time For Custom Manufactured Seals

Hercules has expanded the Seals On Demand program with a new order cut-off time, additional machines and an expanded workforce to accommodate your custom seal needs.

Place your custom seal order by 3:00 p.m. EST and receive it the next day Guaranteed!* Visit the "Custom Seals" link on our website (left menu bar) to receive a same day quote, or view a complete list of styles, materials, and size ranges.

MATERIAL	SIZE RANGE
HPU	(0 - 24.80") (0 - 630mm)
Virgin-TFE	(0 - 10.00") (0 - 254mm)
Glass-TFE	(0 - 12.24") (0 - 311mm)
Bronze-TFE	(0 - 23.97") (0 - 609mm)
POM	(0 - 13.77") (0 - 350mm)
NBR	(0 - 24.60") (0 - 625mm)
FKM	(0 - 14.17") (0 - 360mm)
Nylon	(12.59" - 22.44") (320 - 570mm)

*Orders placed by 3:00 p.m. EST ship Next Day Air or your freight is FREE! Standard styles and materials only. Limits on quantity, style, and materials.



Customer Testimonial:

"I'm writing today to let you know what a great resource the Hercules Seals On Demand has been for us. We had a job recently where their ability to produce non-catalogued items saved us and our customer major downtime and cost. Two large telescopic cylinders came in for a time sensitive repair and upon disassembly we found that the manufacturer decided to use completely arbitrary rod sizes in these items. With no idea who made the cylinders and time becoming major factor, we contacted Ken with the seal profiles, material and sizes for nine different items. They were at our door on the UPS truck the next day, fit and operated perfectly." - **John Shuff, Shop Coordinator, Airhydropower Inc.**

If you'd like to share your Hercules success story, please e-mail sales@herculesus.com.

Reverse Engineering

As a reminder to customers, Hercules has an entire Technical Sales Team and Engineering Department on-site to assist with special seals needs. Simply mail your old seal, with a letter describing the part and your contact information to Hercules Sealing Products, 1016 N. Belcher Rd., Clearwater, FL 33765. A member of our Technical Sales Team will quickly identify and reverse engineer your product and get back to you with order instructions.

Hercules E-Newsletter

Would you like to receive notice of web-only specials, new product releases and industry articles before the general public? Sign up to receive the Hercules bi-monthly e-newsletter. Simply go to the homepage at www.HerculesUS.com, key your e-mail address into the e-newsletter space provided at the bottom left. That's it! You're ready to receive your copy of the Hercules e-newsletter. You can opt-out at any time by simply clicking the opt-out link at the bottom of each e-newsletter. Join in today!



**NEW**

KOMATSU® EXCAVATOR KITS

Manufacturer	Machine Type	Model No	Application	Cylinder No	Serial No	Kit No	List Price
KOMATSU	Excavators	PC200LC-8	ARM	707-01-0H600	300001-	KOM-707-98-48610	\$ 211.60
KOMATSU	Excavators	PC200LC-8	ARM	707-01-0H600	A88001-	KOM-707-98-48610	211.60
KOMATSU	Excavators	PC200LC-8	ARM	707-01-0H600	C60001-	KOM-707-98-48610	211.60
KOMATSU	Excavators	PC200LC-8	BOOM LH	707-01-0H580	300001-	KOM-707-98-46280	138.38
KOMATSU	Excavators	PC200LC-8	BOOM LH	707-01-0H580	C60001-	KOM-707-98-46280	138.38
KOMATSU	Excavators	PC200LC-8	BOOM LH	707-01-0H650	300001-	KOM-707-98-47710	161.85
KOMATSU	Excavators	PC200LC-8	BOOM LH	707-01-0H650	A88001-	KOM-707-98-47710	161.85
KOMATSU	Excavators	PC200LC-8	BOOM LH	707-01-0H650	C60001-	KOM-707-98-47710	161.85
KOMATSU	Excavators	PC200LC-8	BOOM LH (Lrg Dia Type)	707-01-0H650	A88001-	KOM-707-98-47710	161.85
KOMATSU	Excavators	PC200LC-8	BOOM RH	707-01-0H580	300001-	KOM-707-98-46280	138.38
KOMATSU	Excavators	PC200LC-8	BOOM RH	707-01-0H580	C60001-	KOM-707-98-46280	138.38
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KOMATSU	Excavators	PC200LC-8	BOOM RH	707-01-0H650	C60001-	KOM-707-98-47710	161.85
KOMATSU	Excavators	PC200LC-8	BOOM RH (Lrg Dia Type)	707-01-0H650	A88001-	KOM-707-98-47710	161.85
KOMATSU	Excavators	PC200LC-8	BUCKET	707-01-0H740	300001-	KOM-707-98-39610	160.07
KOMATSU	Excavators	PC200LC-8	BUCKET	707-01-0H740	A88001-	KOM-707-98-39610	160.07
KOMATSU	Excavators	PC200LC-8	BUCKET	707-01-0H740	C60001-	KOM-707-98-39610	160.07
KOMATSU	Excavators	PC200LC-8	BUCKET	707-01-0J270	A88001-	KOM-707-98-39610	160.07

**NEW**

CAT® EXCAVATOR KITS

For a Complete Description and
Price Listing of CAT®, Kits
Visit Our Website At

www.HerculesUS.com

Or,
Download A PDF
Of The Catalog
Or Order A Catalog

Model D3G - For Crawler Dozers
Model D4G - For Crawler Dozers
Model D5G - For Crawler Dozers
Model D5N - For Crawler Dozers
Model D6N - For Crawler Dozers
Model D6T - For Crawler Dozers
Model D8T - For Crawler Dozers
Model 302.5 - For Excavators
Model 303.5 - For Excavators
Model 308C CR - For Excavators
Model E70B - For Excavators
Model 930G - For Wheel Loaders
Model IT38G - For Wheel Loaders

TECH TIP - *Pressure Trap*

B versus D LIP U-SEALS

What is the difference between a “B” lip u-seal and a “D” lip u-seal? When do you use one style and when should you use the other?

Before we discuss the two styles of u-seal lips, let’s briefly look at the evolution of the u-seal and how different lip styles came about.

The u-seal shape evolved from the vee ring. Initially the u-seal was a vee ring with a flat back or heel and all u-seals were symmetrical in shape. Gradually the shape evolved and instead of a sharp pointed lip design the “D” lip style was used on all u-seals to improve sealing effectiveness.

In the late 1950’s a major seal manufacture introduced the bevel lip or “B” lip design. The characteristics of the “B” lip and the new geometry of the u-seal created a more effective seal.

Loaded u-seals were introduced as a cost effective way to improve low pressure fluid leakage. When the “B” lip design is utilized in conjunction with an energizer (o-ring / quad shaped ring, etc.) in the u-seal, a very high radial loading is created at the seal lips which provides very effective sealing and a very dry surface. In rod sealing applications this is a very desirable situation. However, in double action piston sealing applications the effectiveness of the loaded “B” lip seal may actually create problems.

In piston sealing applications the primary purpose of the piston u-seal is to keep significant amounts of fluid from passing through the gap between the piston OD and bore of the cylinder. A slight amount of leakage past the seal lips is not a problem like in rod sealing. Due to the cycling of the piston and alternating high / low pressure cycles of the fluid, some leakage past the seal lip is normal and not a problem.

However when loaded “B” lip seals are used in piston sealing applications, their sealing effectiveness may actually be too good. As fluid bypasses the sealing lip on the high pressure side of the piston it will accumulate between the two seals and should be able to “leak” past the seal on the low pressure side of the piston relieving the pressure build up between the two seals. But, if the “B” lip seal on the low pressure side of the piston seals too effectively, the pressure between the two seals begins to build up. As the pressure builds it causes each of the two seals to seal more effectively and trap more fluid increasing the pressure even more.

As the pressure trapped between the two seals increases, it causes the seals to twist in the groove towards the outside edge of the piston (away from the center of the piston) until one of the seals eventually fails – pressure trap failure. This type of failure is typically indicated by one or both of the piston u-seals showing evidence of extrusion of the seal lip towards the edge of the piston (away from the center of

the piston) as well as evidence of a twisting of the seal cross section.

Typically pressure trap is more likely to occur in applications where there is a very rapid cycling of the cylinders.

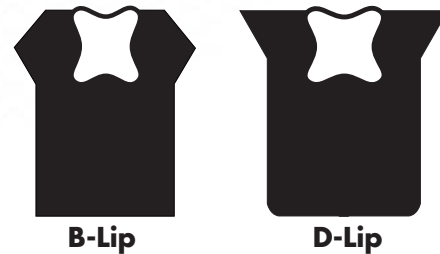
There are several ways to avoid this situation. One way would be to use non-loaded u-seals. Two unloaded seals could be used or just one unloaded seal and one loaded seal.

If using two loaded seals, using a “D” lip seal will lessen the sealing effectiveness of the seal and reduce the possibility of pressure trap between the two seals. Since the “D” lip seals less effectively it is less likely to trap pressure.

“D” lip seals were specifically designed by seal manufactures to be used in double action piston applications to avoid the problem of pressure trap.

However, if only “B” lip seals are available, they may be used by removing the energizer from one of the two seals. This reduces the low pressure sealing effectiveness of the seal which has the energizer removed (thus allowing the pressure between the two seals to by-pass the seal to the low pressure side of the piston) but has no effect on seal performance at high pressure.

Using unloaded u-seals, “D” lip seals, or “B” lip seals with the energizer removed offers no guarantee of avoiding pressure trap. But it is less likely to occur if these steps are taken. The only way to avoid pressure trap is to use a piston designed for a single piston seal.



- *Sonny Goldsmith, Territory Manager*



Piston u-seals showing evidence of pressure trap.

HERCULES[®] SEALING PRODUCTS

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Clearwater, Florida 33765
www.HerculesUS.com
1-800-777-5617

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RETURN LINE SPIN-ON FILTERS

NEW



FILTER HEADS			ELEMENTS			CLOGGING GAUGE		
PART NUMBER	DESCRIPTION	LIST PRICE	PART NUMBER	DESCRIPTION	LIST PRICE	PART NUMBER	DESCRIPTION	LIST PRICE
STF-SAF-07-25-1	25 GPM Return Line 3/4" NPT Port Connection 25 PSI By-Pass Return Gauge Port Drilled	\$ 20.00	STF-SF6520	10 µm filter paper 5.76" long x 3.67" diam 200 psi max	\$ 12.00	STF-CI-20	Visual Red/ Green Gauge 25 PSI By- Pass 1/8" NPTF	\$ 13.00
			STF-SF6510	25 µm filter paper 5.76" long x 3.67" diam 200 psi max	\$ 12.00			
STF- SSF-150-25-1	80 GPM Return Line 1 1/2" NPT Port Connection 25 PSI By-Pass Return Gauge Port Drilled	\$ 42.00	STF-SF6720	10 µm filter paper 6.6" long x 5.1" diam 200 psi max	\$ 21.00			
			STF-SF6710	25 µm filter paper 6.6" long x 5.1" diam 200 psi max	\$ 21.00 <small>Price Correction</small>			

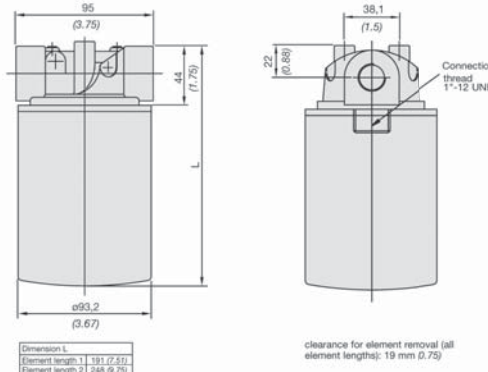
SPECIFICATIONS:

- Stauff SF6500 Series spin-on elements are used with the Stauff SAF series spin-on filters.
- Stauff SF6700 Series spin-on elements are used with the Stauff SSF150 spin-on filters.
- Seals: NBR
- Working pressure: Max 14 bar (200 PSI), maximum pressure differential of 5.5 bar (80PSI) for any application with no bypass valve
- Temperature range: -32°C to 100°C (-25°F to 212°F)
- Mineral oils, other fluids on request

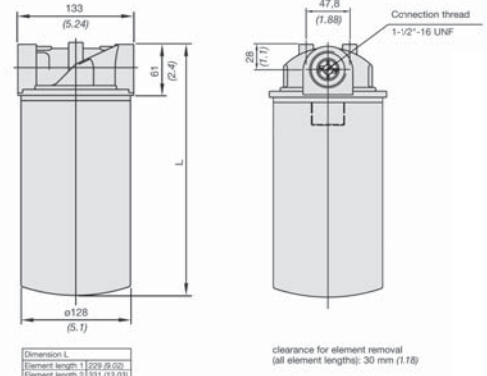
Clogging Gauge

Type	Thread Type G
CI-20	1/8" NPTF

SAF07 Spin-On Filter Dimensions



SSF150 Spin-On Filter Dimensions



For a complete listing and drawings of our Stauff® Filters, visit our website at www.HerculesUS.com