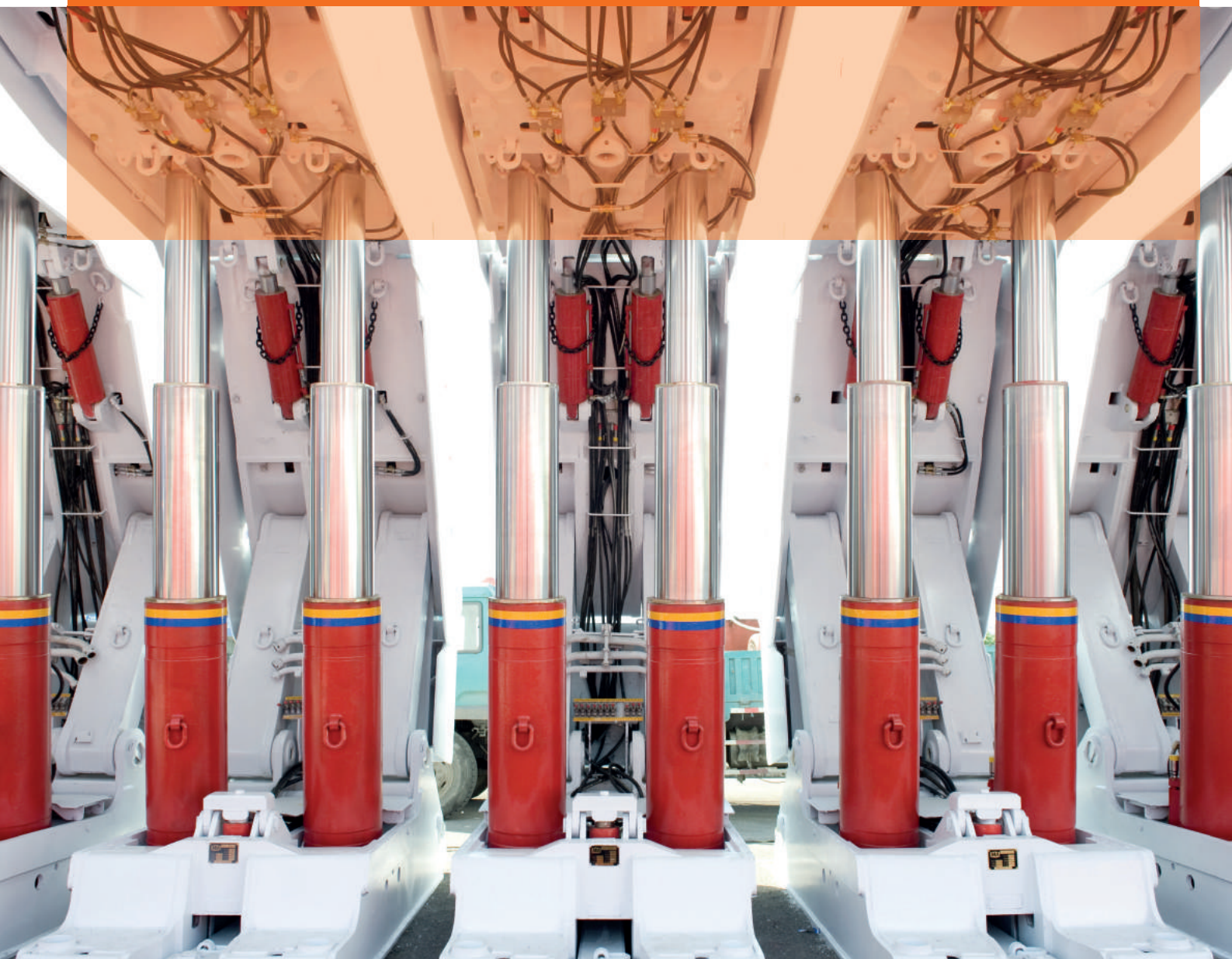
Hallite

HALLITE

SEALING SYSTEMS FOR THE MINING INDUSTRY



HOW TO USE THIS CATALOGUE

Within the next few pages you'll find an introductory section of technical data to assist you with seal selection including information about our materials.

On each product datasheet we will provide you with the technical details of that particular product along with size listings where applicable. Parts suitable for ISO standard housings and Asian housings are clearly identified within each product part number range.

The information contained within this catalogue is based on many years of fluid sealing experience, along with extensive in-house testing and is given in good faith. No warranty or guarantee is expressed save in our standard terms and conditions of sale (available upon request) since the conditions of use are beyond our control.

Hallite is continuously improving our range of profiles and sizes. We reserve the right to withdraw or modify any item shown in this catalogue. For the most up-to-date size and part listings, please visit our website at www.hallite.com and contact your nearest Hallite sales office or official Hallite distributor for further information.

DISTRIBUTOR:

LEGAL LIABILITIES

All descriptions, design and performance information, and recommended uses for the products described herein are based generally on our design and manufacturing experience, product testing in specific conditions, and industry standards. The catalogue is for general guidance only, does not constitute professional advice or a guarantee or warranty of design or warranty of performance and should not be relied upon or treated as a substitute for specific consideration and advice relevant to particular circumstances. The information provided herein is provided "as is," and we reserve the right to make product changes from time to time, without prior notification, which may change some of the information provided herein. Hallite and its affiliated companies disclaim all express and implied warranties with regard to the information, materials, and opinions contained in this brochure, including without limitation implied warranties of merchantability, fitness for a particular purpose, compatibility, and non-infringement. All warranties applicable to Hallite products are found exclusively in the terms and conditions of sale, as stated in sales contracts related to the sale of such products. Each purchaser of such products must decide if the products are suitable to the intended use of such purchaser. This edition supersedes all previous brochures.

CONTENTS

65 Years of getting our hands dirty

Hallite is known throughout the hydraulics industry as the mark of quality, and our extensive mining sealing range is no exception.

For over 60 years Hallite has designed, developed, and manufactured hydraulic seals and bearings for the mining industry creating an unsurpassed wealth of speciality knowledge in mining applications.

Technological advancements continue to push the limits of underground mining equipment. Increased cutting heights demand larger cylinder diameters and the rate of shearer operation needs to be maximised. Densely packed coal and potash formations and cavity roof loads place extreme performance requirements on shearers, longwall roof support systems, and related equipment. Productivity and efficiency are paramount to minimizing downtime and unscheduled maintenance.

Operating requirements and service duty dictate the design of hydraulic systems and cylinders in the mining space. Fluid compatibility, lubricity, and contamination are all critical concerns for the optimal performance. The components within hydraulic systems must be built to ensure extended life cycles under extreme conditions.

THE HALLITE WAY

Whatever You Need, We Can Help
A robust portfolio of catalogued products and value-added engineering and manufacturing services that meet and exceed customer needs and expectations.

One High Standard, Everywhere
A commitment to global quality and production standards that ensure consistency everywhere in the world.

Service As Reliable As Our Seals
A dedication to getting it done right and on time — the first time. Ensuring products and value-added services are delivered on time and to exact specifications.

TYPICAL MINING APPLICATIONS

- Advancing Ram
- Base Lift Ram
- Crushing Equipment
- Cutting Machines
- Double Telescopic Legs
- Drilling Equipment
- Drilling Machines
- Excavators
- Longwall Roof Support Systems
- Mining Haul Trucks
- Rock-Breaker Attachments
- Roof Bolters
- Scoop Trams
- Shearers
- Shield Ram
- Shuttle Cars
- Surface Mining Equipment
- Tunnelling Machines
- Underground Vehicles
- Wash Plants

COMPLETE PRODUCT OFFERING

Our portfolio of mining products provides a complete range of sealing solutions to tackle your biggest challenges. Our products offer:

- Superb static holding capabilities
- Reduced contamination and moisture
- Advanced shock loading protection

For speciality applications, we can also produce high-performance, large-diameter moulded and custom machined seals up to 600 mm diameter, with an extremely quick turnaround for delivery of spare parts for repair and refurbishment.

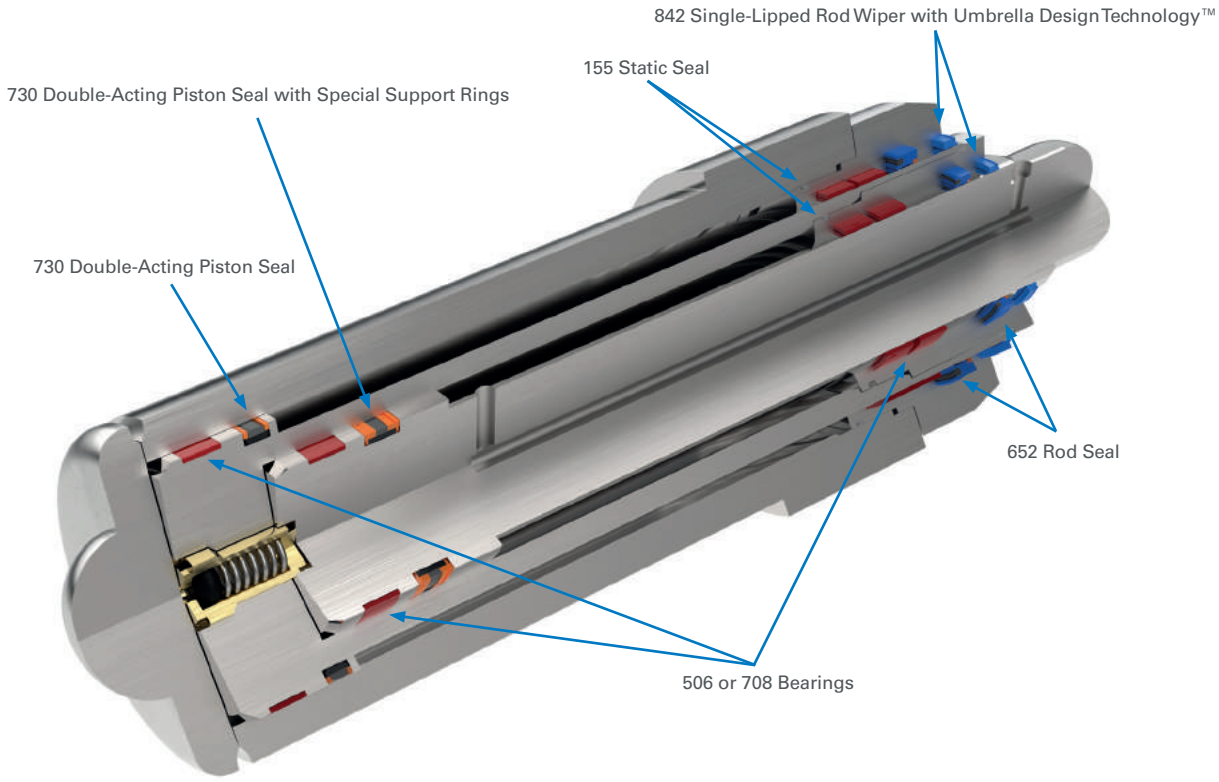
This catalogue concentrates on seals for cylinders in longwall roof supports, which use high water-based fluids (HFA). For further seals for use in standard hydraulic oils please see the Hallite Fluid Power Seal Catalogues.

MINING MATERIALS

Cylinders used in mining equipment operate under many different conditions.

The materials we use perform exceptionally well in applications with variations in temperature, pressure and media. The result is a sealing solution capable of performing in dynamic, hostile mining environments where standard elastomeric seals would typically fail.

Cylinder sealing products manufactured in nitrile rubbers, thermoplastic elastomers, and high-performance polyurethanes are best suited for use in the mining environment where high water content hydraulic fluids (HFAs) are used for fire resistance.



Constant yield, double-acting telescopic mining roof support leg cylinder showing positions of major seals and bearings

TESTING

Our seal profiles are subjected to extensive testing that reproduces continuous operating conditions where leakage, dynamic, and breakout friction are recorded and performance factors like pressure, speed and temperature are carefully monitored with results that typically outperform previous products and frequently exceed customer expectations.

In-house test and development facilities include:

- Friction and leakage test rigs for simulating the operating conditions of ancillary cylinders using water-based fluids
- High pressure pulse test rig
- Finite element analysis
- Hydraulic cylinder test rig
- All manufacturing and design systems are approved to ISO 9001

PROVEN PARTNERSHIPS

Hallite's global reputation is built on more than our capabilities as engineers and manufacturers. It is a result of the trust we have earned. Our engineers work directly with you to ensure that our products meet every requirement that your mining application demands.

Working in partnership and liaising with manufacturers worldwide, Hallite fully understands the demanding applications and the severe working conditions in which mining equipment operates.

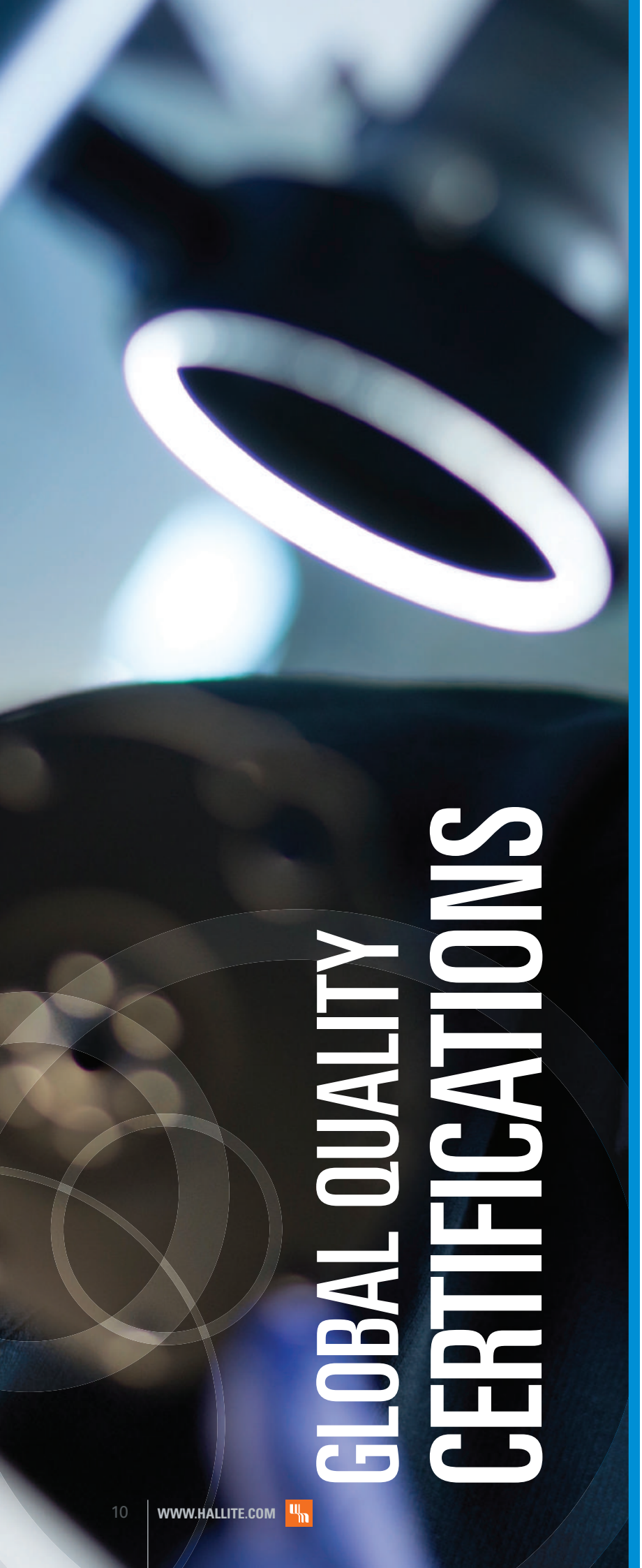
Knowing that operating conditions vary greatly, Hallite works closely with every customer to determine the best solution for each application. This cooperation enables Hallite to provide the safe and reliable products demanded in today's mining industry.

For more complete information on Hallite products and technical details, visit us on the web at **www.hallite.com**

HYDRAULIC SEALS FOR MINING

PROFILE DESIGNATION	Page	Profile	Maximum Pressure bar	Temperature Range °C	Maximum Speed m/sec
ROD SEALS					
621	143		700	0°C +60°C	0.3
652	151		700	0°C +60°C	0.3
DOUBLE-ACTING PISTON SEALS					
730	107		700	0°C +60°C	0.3
730 Inner Stage	131		1200	0°C +60°C	0.1
WIPERS					
38	107		-	0°C +60°C	4.0
842	131		-	0°C +60°C	4.0
BEARINGS					
506	107		-	-40°C +120°C	5.0
708	131		-	-40°C +100°C	5.0
STATIC SEAL					
155	285		500	0°C +60°C	Static

NOTE	The temperature range given in the table above is governed by the high water-based fluid (HFA) that is used in longwall roof supports. The temperature ranges given in the datasheets that follow are for general hydraulic use



GLOBAL QUALITY CERTIFICATIONS

It's more than simply what we do, it's who we are.

At Hallite, quality, health, safety, and environmental concerns are more than checklist items. Our focus on QHSE is ingrained into our company culture and is an integral component of corporate responsibility. A safe, healthy work environment positions our global team to provide the highest quality, on-time delivery, and service excellence. Industry standards such as the ISO 14001, ISO 9001:2010, and the OHSAS 18001 management systems help us continually improve on all elements of QHSE while ensuring regulatory compliance.

Our commitment to QHSE comes from genuine concern about our people, our customers, the environment, and corporate responsibility. The health and safety culture at Hallite is based on personal empowerment, encouraging each employee to take personal responsibility in following the protocols and procedures that ensure QHSE compliance.

MANUFACTURING FACILITIES WITH QHSE CERTIFICATIONS

WIXOM, MI, USA	• ISO 9001 Quality • ISO 14001 Environmental • OHSAS 18001 Health and Safety
TORONTO, ON, CANADA	• ISO 9001 Quality
HAMPTON, UK	• ISO 9001 Quality • AS 9100 Aerospace Quality • ISO 14001 Environmental • OHSAS 18001 Health and Safety
LIVORNO, ITALY	• ISO 9001 Quality
HAMBURG, GERMANY	• ISO 9001 Quality • ISO 14001 Environmental • OHSAS 18001 Health and Safety
BANGALORE, INDIA	• ISO 9001 Quality • ISO 14001 Environmental
JIADING, SHANGHAI, CHINA	• ISO 9001 Quality • OHSAS 18001 Health and Safety
AUSTRALIA	• ISO 9001 Quality

OTHER DIVISIONAL MANUFACTURING SITES

CDI ENERGY PRODUCTS	• Houston, TX, USA • Singapore • Leeds, UK • Stavanger, Norway • Hampton, UK
EGC CRITICAL COMPONENTS	• Houston, TX, USA
AIP PRECISION MACHINING	• Daytona Beach, FL, USA

MINING MATERIAL CHART

Hallite has an extensive portfolio of materials and not all materials are listed below. If your application requires alternative materials or if you're unsure which material best suits your application, please contact your local Hallite team.

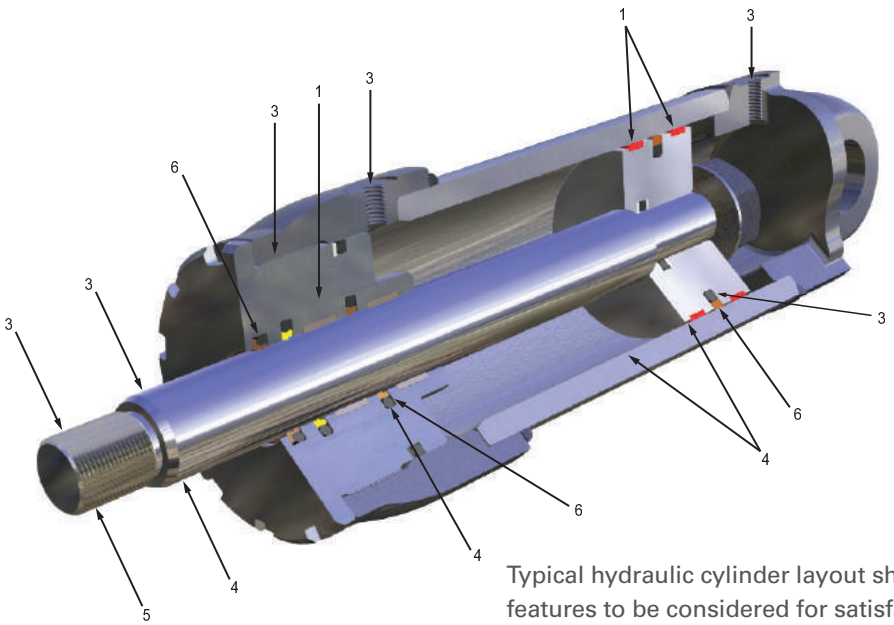
MATERIAL NAME	MATERIAL GROUP	MATERIAL TYPE	TEMPERATURE RANGE °C (INTERMITTENT)	TEMPERATURE RANGE °F (INTERMITTENT)	
Hythane® 181	Polyether Urethane	TPU-EU	-45 +110	-50 +230	
Hythane® 221	Polyether Urethane	TPU-EU	-45 +110	-50 +230	
Hythane® 251	Polyether Urethane	TPU-EU	-45 +110	-50 +230	
Hythane® 321	Polyester Urethane	TPU-AU	-40 +100	-40 +212	
Hythane® 361	Polyester Urethane	TPU-AU	-30 +110	-22 +230	
Hythane® 371	Polyether Urethane	TPU-EU	-40 +100	-40 +212	
Hythane® 441	Polyester Urethane	TPU-AU	-30 +110	-22 +230	
Hythane® 591	Polyester Urethane	TPU-AU	-30 +110	-22 +230	
PU 021	Polyester Urethane	TPU-AU	-30 +111	-22 +231	
TPE 051	Polyester	TPE	-40 +120	-40 +250	
TPE 061	Polyester	TPE	-40 +120	-40 +250	
TPE 111	Polyester	TPE	-40 +120	-40 +250	
TPE 201	Polyester	TPE	-30 +100	-22 +212	
TPE 261	Polyester	TPE	-40 +120	-40 +250	
TPE 121	Polyester	TPE	-40 +120	-40 +250	
Armorlene® 702	Engineered Plastic	PTFE	-73 +260	-100 +500	
Armorlene® HLX	Engineered Plastic	PTFE	-73 +288	-100 +550	
TSE 041	Composite	Thermoset Polyester	-40 +120	-40 +250	
TSE 042	Composite	Thermoset Polyester (Reduced Friction)	-40 +120	-40 +250	
POM 0011	Engineered Plastic	POM	-45 +120	-50 +250	
POM 0172	Engineered Plastic	POM w Filler	-45 +120	-50 +250	
PA 041	Engineered Plastic	PA	-40 +120	-40 +250	
PA 533	Engineered Plastic	PA-GF	-40 +120	-40 +250	
PA 707	Engineered Plastic	POM w Filler	-40 +120	-40 +250	
Hallprene C-FKM 0051	Synthetic Rubber	FKM	-20 +200	-4 +392	
Hallprene C-NBR 0251	Composite	Cotton/NBR	-30 +120	-40 +250	
Hallprene C-FKM 0431	Composite	Cotton/FKM	-20 +150	-4 +302	
Nitrile 70°	Synthetic Rubber	NBR	-30 +100	-22 +212	
Nitrile 75°	Synthetic Rubber	NBR	-30 +100	-22 +212	
Nitrile 90°	Synthetic Rubber	NBR	-30 +100	-22 +212	
Nitrile 0041	Synthetic Rubber	NBR	-10 +140	-14 +284	
Nitrile 0141	Synthetic Rubber	NBR	-30 +100	-22 +212	
Nitrile 0211	Synthetic Rubber	NBR	-45 +100	-50 +212	
Nitrile 0271	Synthetic Rubber	NBR	-30 +100	-22 +212	
Nitrile 0471	Synthetic Rubber	NBR	-45 +100	-50 +212	
Nitrile 0801	Synthetic Rubber	NBR	-30 +100	-22 +212	
Nitrile 1411	Synthetic Rubber	NBR	-30 +100	-22 +212	

	HARDNESS	COLOUR	PRODUCTS (STANDARD SHOWN IN BOLD)
	93 IRHD	Blue	**80, 601, 605, 606, 607, 609, 610, 616, 620, 616, 620, 621, 622, 652, 653, 657, 658, 659, 660, 661, 663, 667, 668,** 673, 755, 770, **800, 834, 839, 839N, 842,** 844, **846, 851, 853,** 864
	93 IRHD	Black	511, 512, 513
	93 IRHD	Dark Blue	520, 521, 820, 831
	94 IRHD	Dark Blue	860, 862
	96 IRHD	Orange	511, 512, 513, 520, 653, 663, **764, 775,** 820, 842, **844, 864**
	55D	Dark Green	820, 842, **847**
	93 IRHD	Grey	Special material option
	96 IRHD	Orange	660, **673**
	93 IRHD	Dark Blue	657
	72D	Dark Red	754, 755, 770
	55D	Red	**38, 754, 755**, 770
	55D	Grey	**730,** 755, 770
	40D	Light Grey	**155**
	55D	Cream	**770,** 755
	55D	Orange	511, 512, 513, 520, 521,770
	62D	Grey	See Hallite's Armorlene® PTFE Catalogue
	66D	Gold	See Hallite's Armorlene® PTFE Catalogue
	NA	Red	**506**
	NA	Red	506
	R115	Orange	**AE Rings 621, 652, 653, 660, 730; Bearings 780**
	R120	Red	**708**
	72D	Brown	Special material option
	R124	Black	**533, 714, 720**
	R115	Black	Special material option
	75 IRHD	Black	Special material option for standard rubber and rubber/ fabric products (Additional tooling may be required)
	NA	Black	Special material option
	NA	Black	Special material option for standard rubber and rubber/ fabric products (Additional tooling may be required)
	70 IRHD	Black	Standard O-Ring / Square Ring / X-Ring
	75 IRHD	Black	Standard O-Ring / Square Ring / X-Ring
	90 IRHD	Black	Standard O-Ring / Square Ring / X-Ring
	80 IRHD	Black	Special material option
	90 IRHD	Black	Special material option
	70 IRHD	Black	Special material option
	73 IRHD	Black	Special material option
	80 IRHD	Black	Special material option
	75 IRHD	Black	Special material option
	80 IRHD	Black	**730, 780**

USE & FITTING OF SEALS

Our quality control methods for material and manufacturing processes ensure that all seals leaving our factories are in a condition capable of giving a long and reliable service life. We have found, from many years of experience, that premature seal failure can be avoided if the following recommendations are considered at the design and manufacturing stage of the cylinder:

1. Specify piston and gland bearings which are adequately proportioned to support the cylinder loads. As a result of mounting misalignments and/or the working action of the cylinder, piston and gland bearings will be subjected to sideloading, causing damage to the rod or the tube surface and hence the seal, if the bearings are inadequate.
2. Ensure that seals are stored distortion free in a cool, dry, and dark place prior to fitting. See "Storage of Seals" directions.
3. Check that the seal housing is free from damage likely to harm the seal. Remove all sharp edges and burrs from metal parts, paying particular attention to ports, grooves, and threads over or through which the seal passes during assembly.
4. Clean all seal housing areas, ensuring that all metallic particles and other contaminants have been removed. Check that other surfaces adjacent to the passage of the seal upon fitting are also free of dirt, swarf, or other contaminants. Check that both static and dynamic housing surface finishes meet specifications.
5. Where the difference between a thread diameter over which the seal must pass and the seal diameter is small, use some form of protection over the thread, such as a fitting sleeve made of hard plastic.
6. Check that the seal is of the correct type, part number, and size, and that the specified material is correct. If there is any doubt regarding the material, contact your local Hallite sales office.
7. Lubricate all seals and metal components liberally with clean operating fluid or a compatible grease prior to assembly. N.B. silicone grease should not be used in normal hydraulic applications.
8. Where seals fitted to sub-assemblies, such as pistons, are awaiting further fitting operations, ensure that the seals are not subjected to any misaligned or localized loading which will cause local deformation. Ensure that sub-assemblies remain clean.
9. The use of metal levers is not recommended, but should they be used it is imperative that they are completely smooth and free from nicks and burrs. When using them, ensure that the metal surfaces adjacent to the seal are not damaged.
10. Flush the hydraulic system thoroughly before connecting the cylinder to it.



Typical hydraulic cylinder layout showing installation features to be considered for satisfactory seal life.

CYLINDER OPERATING CONDITIONS

CYLINDER SPECIFICATION		LIGHT-DUTY	MEDIUM-DUTY	HEAVY-DUTY
PRESSURE	Max	350 bar 5000 psi	500 bar 7500 psi	700 bar 10000 psi
	Normal Working	160 bar 2300 psi No pressure peaks	250 bar 3625 psi Intermittent pressure peaks	400 bar 5800 psi Regular pressure peaks
Design		Lower operating stresses. Rigid well- aligned mounting, minimal side loading.	Steady operating stresses with intermittent high stress, some side loading.	Highly stressed for the majority of its working life. Side loading common.
Condition of Fluid		Good system filtration. No cylinder contamination likely.	Good system filtration, but some cylinder contamination likely.	Contamination unavoidable from internal and external sources.
Working Environment		Clean and inside a building. Operating temperature variations limited.	Mixture of indoors and outdoors but some protection from the weather.	Outdoors all the time or dirty indoor area. Wide variations in temperature, both ambient and working. Difficult service conditions.
Usage		Irregular with short section of stroke at working pressures. Regular usage but at low pressure.	Regular usage with most of the stroke at working pressure.	Large amount of usage at high pressure with peaks throughout the stroke.
Typical Applications		Machine tools Lifting equipment Mechanical handling Injection moulding machines Control and robot equipment Agricultural machinery Packaging equipment Aircraft equipment Light duty tippers	Heavy duty lifting equipment Agricultural equipment Light duty off-road vehicles Cranes and lifting platforms Heavy duty machine tools Injection moulding machines Some auxiliary mining machinery Aircraft equipment Presses Heavy duty tippers (telescopic) Heavy duty mechanical handling	Foundry and metal fabrication plant Mining machinery Roof supports Heavy duty earthmoving machinery Heavy duty off-road vehicles Heavy duty presses

NOTE	Data given are maximum values and can apply depending on specific application. Maximum ratings of temperature, pressure, or operating speeds are dependent on fluid medium, surface, gap value, and other variables such as dynamic or static service. Maximum values are not intended for use together at the same time, e.g. max temperature and max pressure. Please contact your Hallite technical representative for application support.

PRESSURE, SPEED, AND TEMPERATURE RANGE

From many years of application experience with sealing hydraulic equipment, supported by the results from an extensive test program, we know that it is necessary to link the three main operating features — speed, pressure, and temperature — to achieve a satisfactory seal performance. After carefully considering each product, we are able to specify the maximum speed and pressure with a temperature range within which the seal will operate safely. If your operating conditions do not comply with those recommended, please send details to your local Hallite sales office.

BEARING MATERIALS AND DIMENSIONAL TOLERANCES

HALLITE 87, 506, 533, & 708 BEARING STRIP

Hallite 87 strip is a low-friction bronze-filled PTFE compound produced in a flat tape style ready to be cut to size to suit individual applications. It is particularly effective in friction-conscious applications, such as servo cylinders.

Hallite 506 can be supplied in spiral lengths, generally in 10 metre lengths, as individual cut bearings, and also in 10 metre lengths, packed flat in a box dispenser. Hallite 506 bearing strip is manufactured to extremely accurate thickness tolerances, ensuring reliable cylinder alignment. Other sizes of Hallite 506 are available on request; special sections and diameters can also be produced to suit individual requirements.

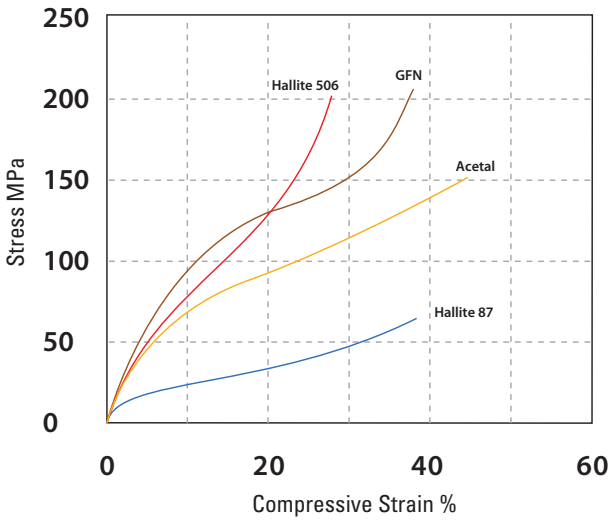
Hallite 533 bearings are formed glass-filled nylon rings made for many different housing sizes.

Hallite 708 bearings are manufactured from POM 0172, an advanced proprietary material for exceptional load bearing and wear resistant capabilities.

BEARING STRIP HOUSING TOLERANCES

Please refer to the detailed bearing information located in the bearing section of this catalogue or on our website.

Compressive bearing stress versus strain for non-metallic materials



BEARING TYPE	STANDARD MATERIAL
87	PTFE + Bronze
506	Polyester + PTFE
533	GFN
708	POM 0172

	METRIC		INCH	
SPECIFIED TOLERANCES	BEARING LENGTH	BEARING CROSS SECTION	BEARING LENGTH	BEARING CROSS SECTION
	L_1	S	L_1	S
Hallite 87	-0.10 to -0.50	+0.03 to -0.05	-	-
Hallite 708	-0.10 to -0.60	-0.02 to -0.10	-	-
Hallite 506	-0.10 to -0.60	-0.02 to -0.08	-0.005 to -0.025	-0.001 to -0.003
Hallite 533	-	-	-0.000 to -0.010	-0.001 to -0.004

HALLITE 87, 506, 533 & 708 BEARING STRIP

Hallite's product data sheets give information indicating the allowable extrusion gap a seal can see at pressure during its working life. The extrusion gap can be calculated using the tolerance build-ups within the cylinder and any dilation that may occur under pressure.

- Maximum extrusion gap = F max (see drawing below).
- F max is the maximum extrusion gap for the seal.
- Minimum metal-to-metal clearance = F min (see drawing below).

F min for cylinders with minimal side loading should be >0.01mm (0.004 in).

RODS

Maximum extrusion gap

$$F\ max = \frac{(ØD_3\ max + ØD_2\ max)}{2} - S\ min - Ød_1\ min$$

Minimum metal-to-metal clearance (extrusion gap)

$$F\ min = S\ min - \frac{(ØD_2\ max - ØD_3\ min)}{2}$$

PISTONS

Maximum extrusion gap

$$F\ max = ØD_1\ max - S\ min - \frac{(Ød_3\ min + Ød_2\ min)}{2} + dilation$$

Minimum metal-to-metal clearance (extrusion gap)

$$F\ min = S\ min - \frac{(Ød_3\ max - Ød_2\ min)}{2}$$

Calculate both F max and F min

Ensure the F min is greater than 0.1mm (0.004 in) and F max is less than the maximum extrusion gap stated on the seal data sheet at the application's working pressure.

For built-in metal bearings, the extrusion gap calculation is simpler.

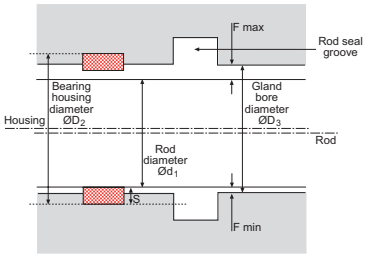
For F max:

Rod = $ØD_3$ max - $Ød_1$ min
Piston = $ØD_1$ max - $Ød_3$ min + dilation

F min must be zero.

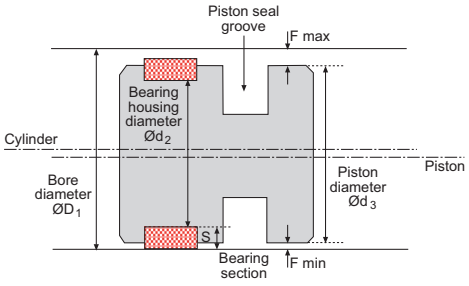
ROD BEARING

Note: Rod is not concentric with gland, because of clearances. (shown exaggerated)



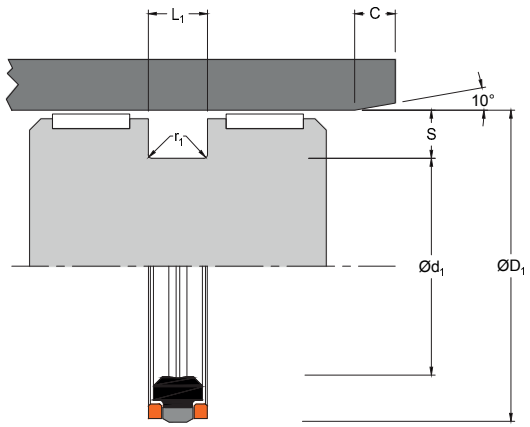
PISTON BEARING

Note: Piston is not concentric with cylinder bore, because of clearances. (shown exaggerated)



Hallite

DOUBLE-ACTING PISTON SEALS



730

PISTON SEAL

Double-Acting
Four Part Assembly with AE Rings
for Heavy-Duty Applications

DESIGN

The Hallite 730 double-acting piston seal in a four part assembly is designed for use in heavy-duty applications where position holding ability is important, such as longwall mining roof support applications using water-based fluids and large diameter crane cylinders using standard hydraulic oils.

The Hallite 730 is comprised of a tough, wear resistant thermoplastic polyester elastomer (TPE) face seal pre-loaded by a profiled nitrile rubber energiser. The Hallite 730 design also contains a pair of rectangular polyacetal anti-extrusion rings.

The standard TPE face material is suitable for both roller-burnished and honed tubing. While rarely used in alternate material, the face material can be provided in a number of material options including lubricated polyester and PTFE.

For your reference, we have included an installation guide for the Hallite 730 double-acting piston seal which you can find after the part number range pages of this data sheet.

FEATURES

- Excellent position holding characteristics under load
- Extremely well proven in longwall mining applications
- Extremely well proven in HFA water-based fluids
- High pressure and shock load capability
- Proven on both roller-burnished and honed tubing

MATERIALS

As standard, this product comes in the following materials. Contact your local Hallite technical team if you would like to find out if this profile can be made in a custom material to suit your application. For further material details, please refer to the Hallite Material Table.

MATERIAL OPTIONS	Name	Face Type	Face Colour
Standard	TPE 111-Nitrile 1411-POM 0011	TPE	Grey

TECHNICAL DETAILS

OPERATING CONDITIONS	METRIC	INCH
Maximum Speed	0.3 m/sec	1.0 ft/sec
Temperature Range Hydraulic Oils	-40°C +110°C	-40°F +230°F
Temperature Range Water-Based Fluids	-0°C +60°C	32°F +140°F
Maximum Pressure	700 bar	10000 psi

NOTE

Data given are maximum values and can apply depending on specific application. Maximum ratings of temperature, pressure, or operating speeds are dependent on fluid medium, surface, gap value, and other variables such as dynamic or static service. Maximum values are not intended for use together at the same time, e.g. max temperature and max pressure. Please contact your Hallite technical representative for application support.

MAXIMUM EXTRUSION GAP				
Pressure bar	160	250	500	700
Maximum Gap mm	1.00	0.80	0.40	0.25
Pressure psi	1.00	0.80	0.40	0.25
Maximum Gap in	0.040	0.032	0.016	0.010

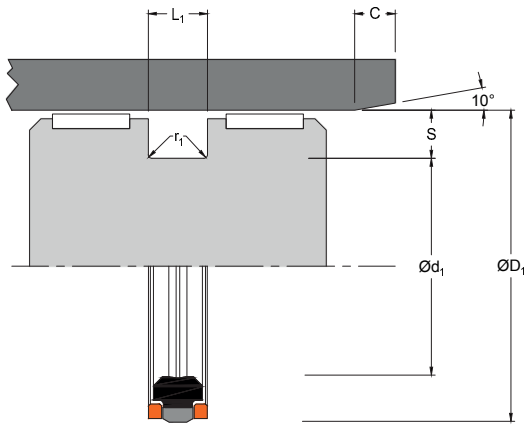
NOTE

Figures show the maximum permissible gap all on one side using minimum rod Ø and maximum clearance Ø. Refer to Housing Design section.

SURFACE ROUGHNESS	µmRa	µmRz	µmRt	µinRa	µinRz	µinRt
Dynamic Sealing Face $ØD_1$	0.1 - 0.4	1.6 max	4 max	4 - 16	63 max	157 max
Static Sealing Face $Ød_1$	1.6 max	6.3 max	10 max	63 max	250 max	394 max
Static Housing Faces L_1	3.2 max	10 max	16 max	125 max	394 max	630 max

CHAMFERS & RADII				
Groove Section ≤ S mm	7.50	10.00	12.50	15.00
Min Chamfer C mm	8.00	10.00	13.00	15.00
Max Fillet Rad r_1 mm	0.20	0.40	0.80	0.80

TOLERANCES	$ØD_1$	$Ød_1$	L_1
mm	H10	h9	+0.20 -0



730

PISTON SEAL

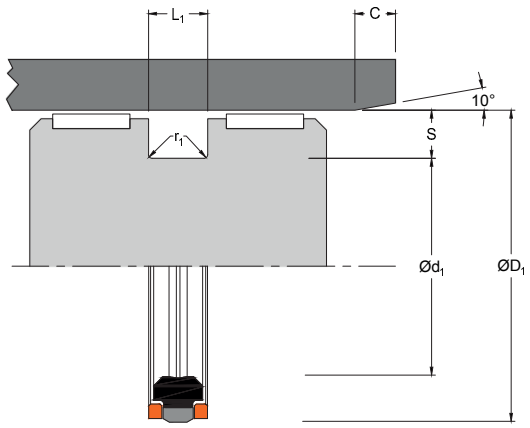
Double-Acting
Four Part Assembly with AE Rings
for Heavy-Duty Applications

PART NUMBER RANGE

METRIC					
$ØD_1$	TOL H10	$Ød_1$	TOL h9	L_1 +0.20-0	PART No.
40.00	+0.10 0.00	28.00	0.00 -0.05	11.50	2390810
50.00	+0.10 0.00	38.00	0.00 -0.06	11.50	2335410
60.00	+0.12 0.00	44.00	0.00 -0.06	13.00	2390710
60.00	+0.12 0.00	44.00	0.00 -0.06	20.50	2356710
63.00	+0.12 0.00	50.00	0.00 -0.06	14.50	2331210
75.00	+0.12 0.00	55.00	0.00 -0.07	23.00	2346420
80.00	+0.12 0.00	66.00	0.00 -0.07	17.00	2330310
90.00	+0.14 0.00	75.00	0.00 -0.07	13.50	2331310
90.00	+0.14 0.00	76.00	0.00 -0.07	16.00	2364810
100.00	+0.14 0.00	82.00	0.00 -0.09	22.50	2331410
100.00	+0.14 0.00	85.00	0.00 -0.09	12.50	2342910*
100.00	+0.14 0.00	85.00	0.00 -0.09	13.50	2335010
100.00	+0.14 0.00	86.00	0.00 -0.09	22.50	2359710
105.00	+0.14 0.00	80.00	0.00 -0.07	22.50	2346710
105.00	+0.14 0.00	91.00	0.00 -0.09	16.50	2348210
110.00	+0.14 0.00	95.00	0.00 -0.09	12.50	2343010*
110.00	+0.14 0.00	95.00	0.00 -0.09	16.00	2331610

NOTE Part numbers suffixed by "*" indicate use of Hallite 754 face ring.

PART NUMBERS ON THIS PAGE ARE LISTED IN THE STANDARD MATERIAL OPTION. FOR MATERIAL VARIATIONS OR FOR CUSTOM SIZES, MATERIALS, OR SEAL DESIGNS, PLEASE CONTACT YOUR LOCAL HALLITE REPRESENTATIVE.



PART NUMBER RANGE

METRIC					
$ØD_1$	TOL H10	$Ød_1$	TOL h9	L_1 +0.20-0	PART No.
115.00	+0.14 0.00	90.00	0.00 -0.09	21.00	2329110
115.00	+0.14 0.00	97.00	0.00 -0.09	22.50	2356110
115.00	+0.14 0.00	100.00	0.00 -0.09	16.00	2329210
120.00	+0.14 0.00	105.00	0.00 -0.09	16.00	2337410
125.00	+0.16 0.00	110.00	0.00 -0.09	15.80	2331510
130.00	+0.16 0.00	113.00	0.00 -0.09	12.50	2339110*
130.00	+0.16 0.00	113.00	0.00 -0.09	20.50	2369010
135.00	+0.16 0.00	118.00	0.00 -0.09	20.50	2348110
135.00	+0.16 0.00	120.00	0.00 -0.09	16.00	2334010
140.00	+0.16 0.00	123.00	0.00 -0.10	16.00	2357910
140.00	+0.16 0.00	125.00	0.00 -0.10	16.00	2329410
150.00	+0.16 0.00	130.00	0.00 -0.10	16.00	2339010
150.00	+0.16 0.00	133.00	0.00 -0.10	20.00	2360510
150.00	+0.16 0.00	135.00	0.00 -0.10	16.00	2338210
160.00	+0.16 0.00	143.00	0.00 -0.10	20.00	2365510
160.00	+0.16 0.00	145.00	0.00 -0.10	16.00	2331910
165.00	+0.16 0.00	145.00	0.00 -0.10	20.00	2348910

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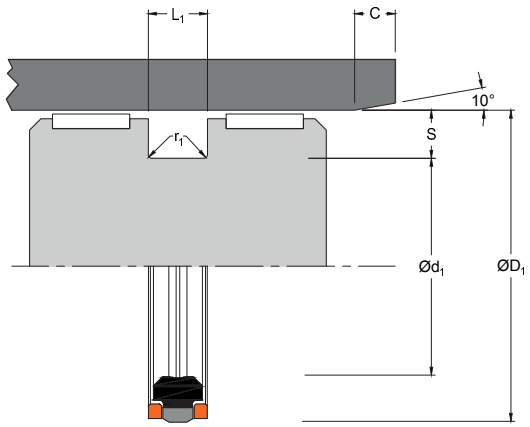


730

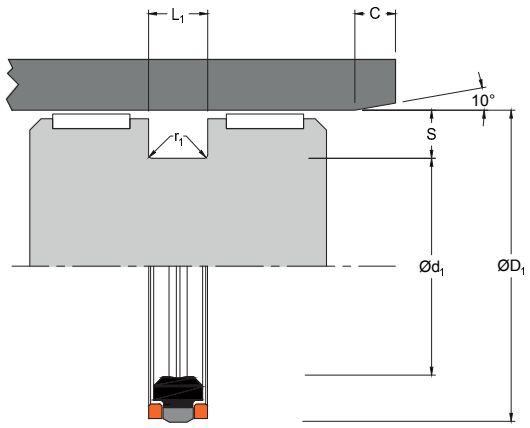
PISTON SEAL

Double-Acting
Four Part Assembly with AE Rings
for Heavy-Duty Applications

PART NUMBER RANGE

METRIC					
$ØD_1$	TOL H10	$Ød_1$	TOL h9	L_1 +0.20-0	PART No.
165.00	+0.16 0.00	150.00	0.00 -0.10	16.00	2332010
170.00	+0.16 0.00	145.00	0.00 -0.10	25.00	2345510
170.00	+0.16 0.00	150.00	0.00 -0.10	16.00	2331110
175.00	+0.16 0.00	155.00	0.00 -0.10	16.00	2335110
180.00	+0.16 0.00	160.00	0.00 -0.10	16.00	2328510
180.00	+0.16 0.00	163.00	0.00 -0.10	20.00	2365210
185.00	+0.19 0.00	165.00	0.00 -0.10	16.00	2328410
185.00	+0.19 0.00	165.00	0.00 -0.10	20.00	2364010
190.00	+0.19 0.00	170.00	0.00 -0.10	16.00	2332210
195.00	+0.19 0.00	175.00	0.00 -0.10	16.00	2334710
200.00	+0.19 0.00	180.00	0.00 -0.10	16.00	2329310
200.00	+0.19 0.00	180.00	0.00 -0.10	20.00	2348810
200.00	+0.19 0.00	183.00	0.00 -0.12	20.00	2365010
210.00	+0.19 0.00	190.00	0.00 -0.12	16.00	2332410
210.00	+0.19 0.00	190.00	0.00 -0.12	20.00	2364710
215.00	+0.19 0.00	195.00	0.00 -0.12	16.00	2332510
215.00	+0.19 0.00	195.00	0.00 -0.12	20.00	2345110

NOTE Part numbers suffixed by "*" indicate use of Hallite 754 face ring.



PART NUMBER RANGE

METRIC					
$ØD_1$	TOL H10	$Ød_1$	TOL h9	L_1 +0.20-0	PART No.
220.00	+0.19 0.00	195.00	0.00 -0.12	16.00	2345810
220.00	+0.19 0.00	195.00	0.00 -0.12	22.00	2333920
220.00	+0.19 0.00	195.00	0.00 -0.12	25.00	2333910
220.00	+0.19 0.00	200.00	0.00 -0.12	20.50	2356510
224.00	+0.19 0.00	204.00	0.00 -0.12	20.50	2348510
225.00	+0.19 0.00	205.00	0.00 -0.12	16.00	2332610
225.00	+0.19 0.00	205.00	0.00 -0.12	20.00	2346810
230.00	+0.19 0.00	210.00	0.00 -0.12	16.00	2332710
230.00	+0.19 0.00	210.00	0.00 -0.12	20.00	2344510
240.00	+0.19 0.00	215.00	0.00 -0.12	25.00	2333010
240.00	+0.19 0.00	220.00	0.00 -0.12	25.00	2364310
245.00	+0.19 0.00	220.00	0.00 -0.12	25.00	2328810
250.00	+0.19 0.00	225.00	0.00 -0.12	25.00	2348310
255.00	+0.21 0.00	230.00	0.00 -0.12	25.00	2348320
260.00	+0.21 0.00	230.00	0.00 -0.12	30.00	2347810
260.00	+0.21 0.00	235.00	0.00 -0.12	25.00	2347910
275.00	+0.21 0.00	250.00	0.00 -0.12	25.00	2362210

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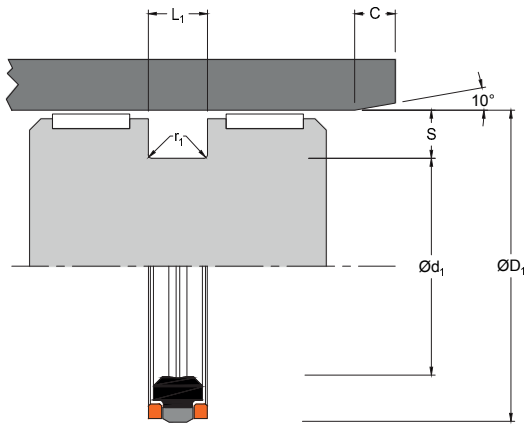

730

PISTON SEAL

Double-Acting
Four Part Assembly with AE Rings
for Heavy-Duty Applications

PART NUMBER RANGE

METRIC					
$ØD_1$	TOL H10	$Ød_1$	TOL h9	L_1 +0.20-0	PART No.
280.00	+0.21 0.00	255.00	0.00 -0.13	25.00	2333510
285.00	+0.21 0.00	260.00	0.00 -0.13	25.00	2362410
290.00	+0.21 0.00	265.00	0.00 -0.13	27.00	2364410
300.00	+0.21 0.00	275.00	0.00 -0.13	25.00	2333610
305.00	+0.21 0.00	280.00	0.00 -0.13	25.00	2333630
310.00	+0.21 0.00	285.00	0.00 -0.13	25.00	2333710
320.00	+0.23 0.00	290.00	0.00 -0.13	30.00	2348010
340.00	+0.23 0.00	310.00	0.00 -0.13	30.00	2366010
340.00	+0.23 0.00	310.00	0.00 -0.13	32.00	2390910
345.00	+0.23 0.00	315.00	0.00 -0.13	30.00	2363610
350.00	+0.23 0.00	320.00	0.00 -0.14	30.00	2345410
360.00	+0.23 0.00	330.00	0.00 -0.14	30.00	2345430
360.00	+0.23 0.00	330.00	0.00 -0.14	31.50	2365410
370.00	+0.23 0.00	340.00	0.00 -0.14	30.00	2362710
380.00	+0.23 0.00	350.00	0.00 -0.14	32.00	2362110
390.00	+0.23 0.00	360.00	0.00 -0.14	32.00	2362120
400.00	+0.23 0.00	370.00	0.00 -0.14	32.00	2359810

NOTE Part numbers suffixed by "*" indicate use of Hallite 754 face ring.

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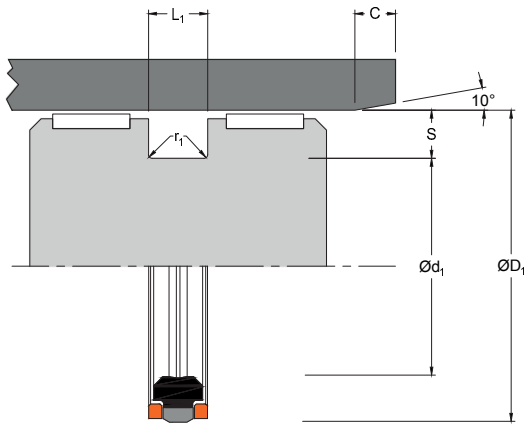

PART NUMBER RANGE

METRIC					
$ØD_1$	TOL H10	$Ød_1$	TOL h9	L_1 +0.20-0	PART No.
410.00	+0.25 0.00	380.00	0.00 -0.14	32.00	2359820
420.00	+0.25 0.00	390.00	0.00 -0.14	32.00	2366410
440.00	+0.25 0.00	410.00	0.00 -0.16	32.00	2365910
450.00	+0.25 0.00	410.00	0.00 -0.16	32.00	2390510
480.00	+0.25 0.00	440.00	0.00 -0.16	32.00	2391010
500.00	+0.25 0.00	470.00	0.00 -0.16	32.00	2369410
530.00	0.28 0.00	500.00	0.00 -0.16	32.00	2391910
600.00	0.28 0.00	560.00	0.00 -0.18	35.00	2392610

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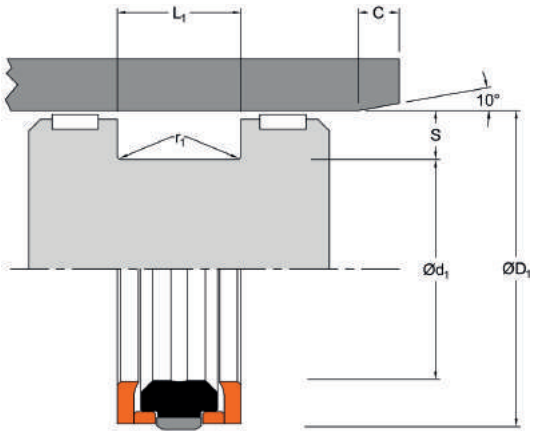

730

PISTON SEAL

Double-Acting
Assembly with Special Support Rings
for Inner Stage of Leg Cylinder

PART NUMBER RANGE

METRIC					
$ØD_1$	TOL H10	$Ød_1$	TOL h9	L_1 +0.20-0	PART No.
110.00	0.14 0.00	95.00	0.00 -0.09	18.00	2331640*
115.00	0.14 0.00	97.00	0.00 -0.09	30.00	2328910*
130.00	0.16 0.00	105.00	0.00 -0.09	30.00	2356610*
135.00	0.16 0.00	110.00	0.00 -0.09	30.00	2346610*
155.00	0.16 0.00	135.00	0.00 -0.10	20.00	2356210*
165.00	0.16 0.00	145.00	0.00 -0.10	25.40	2329010*
170.00	0.16 0.00	150.00	0.00 -0.10	20.00	2331130*
175.00	0.16 0.00	155.00	0.00 -0.10	20.00	2335130*
180.00	0.16 0.00	160.00	0.00 -0.10	18.00	2328520*
180.00	0.16 0.00	163.00	0.00 -0.10	25.00	2365220(1)
190.00	0.19 0.00	160.00	0.00 -0.10	30.00	2338610*
200.00	0.19 0.00	175.00	0.00 -0.10	28.00	2334320(2)
200.00	0.19 0.00	183.00	0.00 -0.12	25.00	2365020(1)
210.00	0.19 0.00	190.00	0.00 -0.12	24.00	2332420(2)
220.00	0.19 0.00	200.00	0.00 -0.12	28.50	2356540(2)
225.00	0.19 0.00	205.00	0.00 -0.12	25.00	2332620*
230.00	0.19 0.00	205.00	0.00 -0.12	25.00	2360720*

NOTE

Part numbers suffixed by "*" indicate use of special full depth support rings.
Part numbers suffixed by (1) indicate 730 with one full depth support ring.
Part nubers suffixed by (2) indicate 730 with two full depth support rings.
For further information about our 730 support ring products, please contact your local Hallite sales office.

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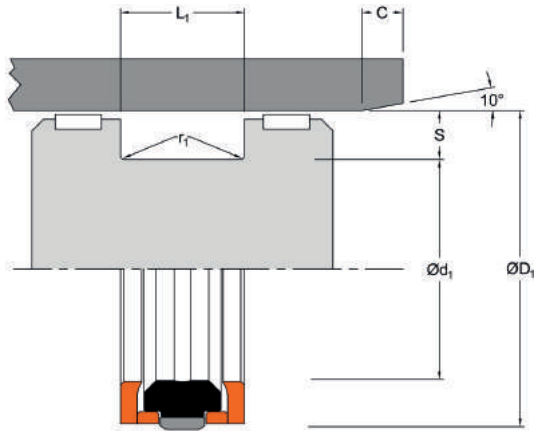

PART NUMBER RANGE

METRIC					
$ØD_1$	TOL H10	$Ød_1$	TOL h9	L_1 +0.20-0	PART No.
230.00	0.19 0.00	205.00	0.00 -0.12	30.00	2360730*
235.00	0.19 0.00	210.00	0.00 -0.12	30.00	2338720*
240.00	0.19 0.00	215.00	0.00 -0.12	33.00	2333030(2)
250.00	0.19 0.00	225.00	0.00 -0.12	33.00	2348330(2)
260.00	0.21 0.00	235.00	0.00 -0.12	30.00	2347920(1)
260.00	0.21 0.00	235.00	0.00 -0.12	35.00	2347930(2)
270.00	0.21 0.00	245.00	0.00 -0.12	24.00	2363210*
270.00	0.21 0.00	245.00	0.00 -0.12	29.00	2363220*
280.00	0.21 0.00	255.00	0.00 -0.13	30.00	2333540(1)
280.00	0.21 0.00	255.00	0.00 -0.13	33.00	2333530(2)
290.00	0.21 0.00	265.00	0.00 -0.13	37.00	2364440(2)
300.00	0.21 0.00	275.00	0.00 -0.13	33.00	2333620(2)
305.00	0.21 0.00	280.00	0.00 -0.13	30.00	2333640(1)
310.00	0.21 0.00	285.00	0.00 -0.13	33.00	2333720(2)
330.00	0.23 0.00	305.00	0.00 -0.13	25.00	2341610*
360.00	0.23 0.00	330.00	0.00 -0.14	35.00	2345440(1)
360.00	0.23 0.00	330.00	0.00 -0.14	41.50	2365420(2)
380.00	0.23 0.00	350.00	0.00 -0.14	37.00	2362130(1)

NOTE

Part numbers suffixed by "*" indicate use of special full depth support rings.
Part numbers suffixed by (1) indicate 730 with one full depth support ring.
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For further information about our 730 support ring products, please contact your local Hallite sales office.

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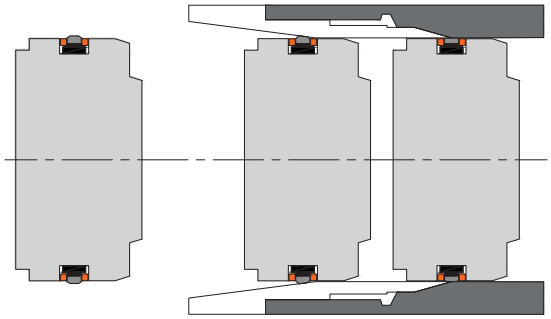


730

PISTON SEAL

Double-Acting
Four Part Assembly with AE Rings
for Heavy-Duty Applications

INSTALLATION INSTRUCTIONS FOR HALLITE 730

NOTE

Before installation of the seals onto the piston, check that the piston is free of dirt and sharp edges. Sharp edged tools which could damage the seal during installation must not be used.

INSTALLATION

The rubber energiser must be installed first. It can be pulled over the piston with a circling movement using a flexible plastic installation strip to stretch the energiser.

The energiser should then be positioned in the centre of the groove with a clearance on either side.

The first AE-ring is fitted next. It must be positioned opposite the installation side for the TPE face. The face is fitted over the NBR energiser using a flexible plastic installation strip. Please note that the TPE face ring needs to be installed directly against the AE ring. This can be easily achieved by circling movements with a circling movement using a flexible plastic installation strip.

The second AE ring can now be snapped on. To provide the necessary seal interference, the seal will be considerably larger than the piston diameter. The assembly chamfer on the cylinder tube should be as long and as flat as possible. Ensure that all edges are deburred and the intersection points of the assembly chamfers with the bore are smoothly rounded. A maximum slope angle of 10° is recommended.

Before the cylinders are assembled, the seal surface should be well greased. The grease also helps the seal to slip into the tube easily. For tubes longer than 800 mm the bore needs to be greased as well.

FURTHER POINTS

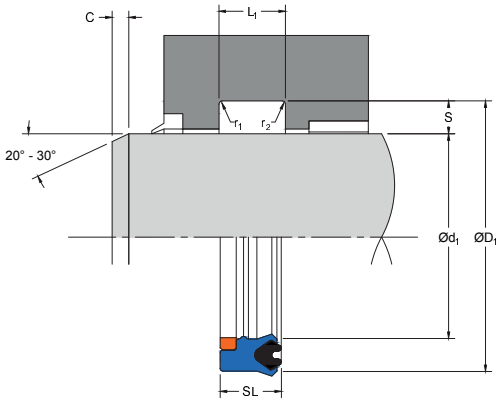
Keep the surface between energiser and face ring free of grease.

For Hallite 730 with nominal groove lengths above 16 mm, an installation sleeve is required. An installation sleeve may also be helpful for groove lengths up to 16 mm. This sleeve is needed to extend the assembly chamfer. A slope angle between 7° and 10° is required to prevent the face ring deforming into conical shape, which would allow the rear AE-ring to slip under the TPE face ring. The installation sleeve should be machined from a suitable plastic, such as polyacetal or polyamide. It can be made as a one piece design or as two half shells.

When automatic screwing equipment is used for the installation of the associated gland the maximum surface speed of the seal, with respect to the bore, must not exceed 0.1 m/s.

Hallite

ROD SEALS



621

ROD SEAL

Twin Lip
Polyurethane with AE Ring and Profiled
Rubber Energiser for Heavy-Duty Applications

DESIGN

The Hallite 621 is a top-of-the-range twin lip rod seal designed to provide a dry sealing solution in heavy-duty applications.

The secondary sealing lip located behind the primary sealing lip improves stability of the seal in the gland. The unique profile of the NBR energiser ensures the precision trimmed primary sealing lips maintain contact under low or no pressure situations while ensuring proper sealing at higher pressures. This unique profile is also used in the Hallite 622 twin lip rod seal. The Hallite 621 also incorporates an acetal anti-extrusion ring to withstand side loads and extreme pressure peaks even with the extrusion gaps, which are the result of using remote plastic bearing strips like the Hallite 506 or 708.

The Hallite 621's seal shell is molded in Hythane® 181, Hallite's high-performance polyurethane, for easy installation and excellent low temperature performance.

FEATURES

- High pressure and shock load capability
- Low temperature capabilities
- Low friction
- Increased seal stability
- Primary lip protection
- Easy to install

MATERIALS

As standard, this product comes in the following materials. Contact your local Hallite technical team if you would like to find out if this profile can be made in a custom material to suit your application. For further material details, please refer to the Hallite Material Table.

MATERIAL OPTIONS	Name	Shell Type	Shell Colour
Standard	Hythane® 181-NBR-POM 0011	TPU-EU	Blue

TECHNICAL DETAILS

OPERATING CONDITIONS	METRIC	INCH
Maximum Speed	1.0 m/sec	3.0 ft/sec
Temperature Range	-45°C +110°C	-50°F +230°F
Maximum Pressure	700 bar	10000 psi

NOTE

Data given are maximum values and can apply depending on specific application. Maximum ratings of temperature, pressure, or operating speeds are dependent on fluid medium, surface, gap value, and other variables such as dynamic or static service. Maximum values are not intended for use together at the same time, e.g. max temperature and max pressure. Please contact your Hallite technical representative for application support.

MAXIMUM EXTRUSION GAP					
Pressure bar	160	250	400	500	700
Maximum Gap mm	0.60	0.50	0.60	0.40	0.25
Pressure psi	2400	3750	6000	7500	10000
Maximum Gap in	0.024	0.020	0.024	0.016	0.010

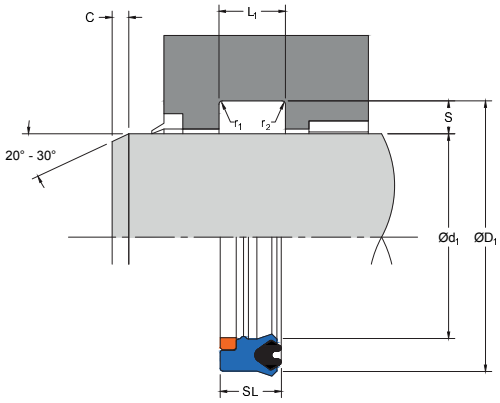
NOTE

Figures show the maximum permissible gap all on one side, for rod seals using minimum rod Ø and maximum clearance Ø and for piston seals using the minimum clearance Ø and maximum bore Ø. Refer to Housing Design section.

SURFACE ROUGHNESS	µmRa	µmRz	µmRt	µinRa	µinRz	µinRt
Dynamic Sealing Face $Ød_1$	0.1 - 0.4	1.6 max	4 max	4 - 16	63 max	157 max
Static Sealing Face $ØD_1$	1.6 max	6.3 max	10 max	63 max	250 max	394 max
Static Housing Faces L_1	3.2 max	10 max	16 max	125 max	394 max	630 max

CHAMFERS & RADII						
Groove Section <S mm	4.00	5.00	7.50	10.00	12.50	15.00
Min Chamfer C mm	3.00	3.50	5.00	6.50	7.00	8.00
Max Fillet Rad r_1 mm	0.20	0.40	0.80	0.80	2.30	1.60
Max Fillet Rad r_2 mm	0.400	0.800	1.200	1.60	1.60	2.40
Groove Section <S in	0.125	0.187	0.250	0.312	0.375	0.500
Min Chamfer C in	0.093	0.093	0.125	0.156	0.187	0.217
Max Fillet Rad r_1 in	0.008	0.008	0.016	0.016	0.032	0.032
Max Fillet Rad r_2 in	0.016	0.016	0.032	0.032	0.047	0.047

TOLERANCES	$Ød_1$	$ØD_1$	L_1
mm	f9	Js11	+0.25 -0
in	f9	Js11	+0.010 -0



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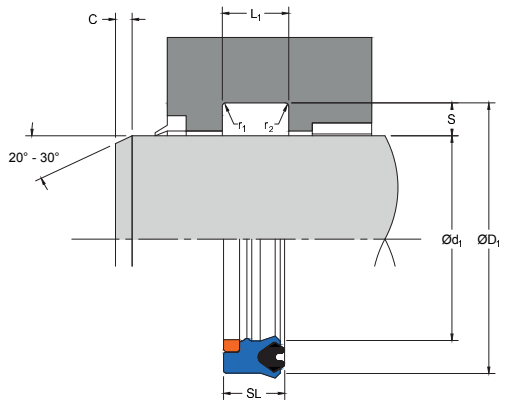
ROD SEAL

Twin Lip
Polyurethane with AE Ring and Profiled
Rubber Energiser for Heavy-Duty Applications

PART NUMBER RANGE

METRIC						
$Ød_1$	TOL f9	$ØD_1$	TOL Js11	SL	L_1 +0.25-0	PART No.
30.00	-0.02 -0.07	40.00	+0.08 -0.08	7.30	8.00	4577110
30.00	-0.02 -0.07	40.00	+0.08 -0.08	10.00	11.00	4831310
35.00	-0.03 -0.09	45.00	+0.08 -0.08	10.00	11.00	4831410
35.00	-0.03 -0.09	50.00	+0.08 -0.08	9.50	10.50	4335310
36.00	-0.03 -0.09	46.00	+0.08 -0.08	7.30	8.00	4317010‡
40.00	-0.03 -0.09	50.00	+0.08 -0.08	7.30	8.00	4317110‡
40.00	-0.03 -0.09	50.00	+0.08 -0.08	10.00	11.00	4755010
45.00	-0.03 -0.09	55.00	+0.10 -0.10	7.30	8.00	4317210‡
45.00	-0.03 -0.09	55.00	+0.10 -0.10	10.00	11.00	4831510
45.00	-0.03 -0.09	60.00	+0.10 -0.10	11.40	12.50	4295510‡
50.00	-0.03 -0.09	60.00	+0.10 -0.10	7.30	8.00	4317310‡
50.00	-0.03 -0.09	60.00	+0.10 -0.10	10.00	11.00	4802310†
50.00	-0.03 -0.09	65.00	+0.10 -0.10	10.00	11.00	4752910
50.00	-0.03 -0.09	65.00	+0.10 -0.10	11.40	12.50	4293410‡
55.00	-0.03 -0.10	65.00	+0.10 -0.10	10.00	11.00	4831210
55.00	-0.03 -0.10	70.00	+0.10 -0.10	9.00	10.00	4810210†
55.00	-0.03 -0.10	70.00	+0.10 -0.10	11.40	12.50	4403610

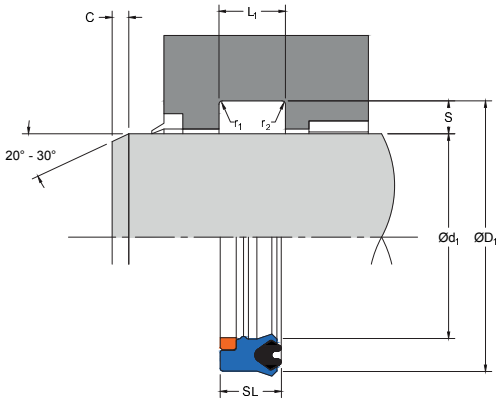
NOTE
Part numbers suffixed by "†" are designed to suit popular Asian housings.
Part numbers suffixed by "‡" indicate housing sizes to meet ISO 5597.



PART NUMBER RANGE

METRIC						
$Ød_1$	TOL f9	$ØD_1$	TOL Js11	SL	L_1 +0.25-0	PART No.
56.00	-0.03 -0.10	71.00	+0.10 -0.10	11.40	12.50	4317410‡
60.00	-0.03 -0.10	73.00	+0.10 -0.10	13.00	14.00	4526010†
60.00	-0.03 -0.10	75.00	+0.10 -0.10	11.40	12.50	4298410
63.00	-0.03 -0.10	78.00	+0.10 -0.10	11.40	12.50	4317510‡
63.00	-0.03 -0.10	83.00	+0.11 -0.11	11.80	13.00	4520510†
65.00	-0.03 -0.10	75.00	+0.10 -0.10	10.00	11.00	4755110
65.00	-0.03 -0.10	80.00	+0.10 -0.10	10.00	11.00	4761810
65.00	-0.03 -0.10	80.00	+0.10 -0.10	11.40	12.50	4783710
65.00	-0.03 -0.10	80.00	+0.10 -0.10	13.00	14.00	4810310
70.00	-0.03 -0.10	83.00	+0.11 -0.11	13.00	14.00	4810410
70.00	-0.03 -0.10	85.00	+0.11 -0.11	10.00	11.00	4893010†
70.00	-0.03 -0.10	85.00	+0.11 -0.11	11.40	12.50	4317610‡
75.00	-0.03 -0.10	88.00	+0.11 -0.11	13.00	14.00	4526110†
75.00	-0.03 -0.10	90.00	+0.11 -0.11	12.00	13.00	4810510
75.00	-0.03 -0.10	90.00	+0.11 -0.11	13.00	14.00	4784710
75.00	-0.03 -0.10	95.00	+0.11 -0.11	11.40	12.50	4810610
75.00	-0.03 -0.10	95.00	+0.11 -0.11	14.60	16.00	4801510†

NOTE Part numbers suffixed by "†" are designed to suit popular Asian housings.
Part numbers suffixed by "‡" indicate housing sizes to meet ISO 5597.



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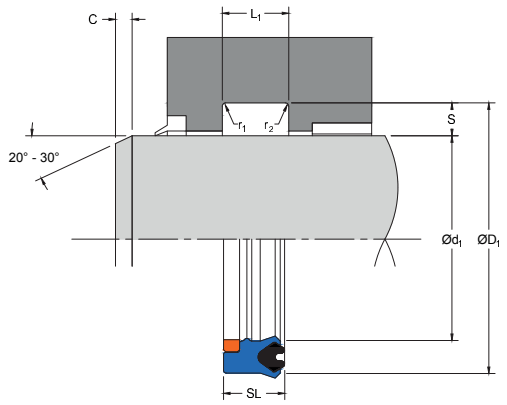
ROD SEAL

Twin Lip
Polyurethane with AE Ring and Profiled
Rubber Energiser for Heavy-Duty Applications

PART NUMBER RANGE

METRIC						
$Ød_1$	TOL f9	$ØD_1$	TOL Js11	SL	L_1 +0.25-0	PART No.
80.00	-0.03 -0.10	93.00	+0.11 -0.11	13.00	14.00	4810710†
80.00	-0.03 -0.10	95.00	+0.11 -0.11	11.40	12.50	4317710‡
80.00	-0.03 -0.10	95.00	+0.11 -0.11	13.00	14.00	4540610†
85.00	-0.04 -0.12	100.00	+0.11 -0.11	11.80	13.00	4766410
85.00	-0.04 -0.12	100.00	+0.11 -0.11	13.00	14.00	4540710†
85.00	-0.04 -0.12	105.00	+0.11 -0.11	14.60	16.00	4810810†
90.00	-0.04 -0.12	105.00	+0.11 -0.11	11.40	12.50	4317810‡
90.00	-0.04 -0.12	105.00	+0.11 -0.11	13.00	14.00	4526310†
90.00	-0.04 -0.12	110.00	+0.11 -0.11	14.60	16.00	4810910†
95.00	-0.04 -0.12	110.00	+0.11 -0.11	12.00	13.00	4811010†
95.00	-0.04 -0.12	110.00	+0.11 -0.11	13.00	14.00	4540810†
95.00	-0.04 -0.12	115.00	+0.11 -0.11	14.60	16.00	4811110†
100.00	-0.04 -0.12	115.00	+0.11 -0.11	13.00	14.00	4540910†
100.00	-0.04 -0.12	120.00	+0.11 -0.11	14.60	16.00	4317910‡
105.00	-0.04 -0.12	120.00	+0.11 -0.11	12.00	13.00	4811210†
105.00	-0.04 -0.12	120.00	+0.11 -0.11	13.00	14.00	4811310†
105.00	-0.04 -0.12	125.00	+0.13 -0.13	14.60	16.00	4811410†

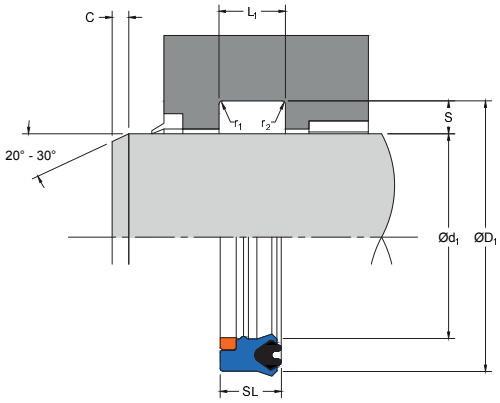
NOTE
Part numbers suffixed by "†" are designed to suit popular Asian housings.
Part numbers suffixed by "‡" indicate housing sizes to meet ISO 5597.



PART NUMBER RANGE

METRIC						
$Ød_1$	TOL f9	$ØD_1$	TOL Js11	SL	L_1 +0.25-0	PART No.
110.00	-0.04 -0.12	125.00	+0.13 -0.13	13.00	14.00	4811510†
110.00	-0.04 -0.12	130.00	+0.13 -0.13	13.00	14.00	4541010†
110.00	-0.04 -0.12	130.00	+0.13 -0.13	14.60	16.00	4318010‡
115.00	-0.04 -0.12	135.00	+0.13 -0.13	14.60	16.00	4783810
120.00	-0.04 -0.12	135.00	+0.13 -0.13	14.60	16.00	4318110
120.00	-0.04 -0.12	140.00	+0.13 -0.13	13.00	14.00	4541110†
120.00	-0.04 -0.12	140.00	+0.13 -0.13	14.60	16.00	4783910†
125.00	-0.04 -0.14	145.00	+0.13 -0.13	14.60	16.00	4318210‡
130.00	-0.04 -0.14	145.00	+0.13 -0.13	13.00	14.00	4811610†
130.00	-0.04 -0.14	150.00	+0.13 -0.13	14.60	16.00	4709810†
140.00	-0.04 -0.14	155.00	+0.13 -0.13	13.00	14.00	4811710†
140.00	-0.04 -0.14	160.00	+0.13 -0.13	13.00	14.00	4541210†
140.00	-0.04 -0.14	160.00	+0.13 -0.13	14.60	16.00	4318310‡
150.00	-0.04 -0.14	170.00	+0.13 -0.13	14.60	16.00	4784010
160.00	-0.04 -0.14	180.00	+0.13 -0.13	14.60	16.00	4454810
160.00	-0.04 -0.14	185.00	+0.14 -0.14	14.60	16.00	4723410‡
180.00	-0.04 -0.14	200.00	+0.14 -0.14	14.60	16.00	4454910

NOTE
Part numbers suffixed by "†" are designed to suit popular Asian housings.
Part numbers suffixed by "‡" indicate housing sizes to meet ISO 5597.



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ROD SEAL

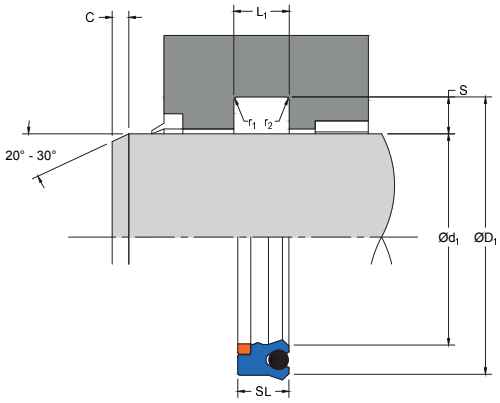
Twin Lip
Polyurethane with AE Ring and Profiled
Rubber Energiser for Heavy-Duty Applications

PART NUMBER RANGE

METRIC						
$Ød_1$	TOL f9	$ØD_1$	TOL Js11	SL	L_1 +0.25-0	PART No.
200.00	-0.05 -0.17	220.00	+0.14 -0.14	14.60	16.00	4455110
215.00	-0.05 -0.17	235.00	+0.14 -0.14	14.60	16.00	4705610

NOTE

Part numbers suffixed by "†" are designed to suit popular Asian housings.
Part numbers suffixed by "‡" indicate housing sizes to meet ISO 5597.



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ROD SEAL

Polyurethane with AE Ring and Rubber Energiser for Heavy-Duty Applications

DESIGN

The Hallite 652 is a rod seal designed designed to provide a dry sealing solution specifically for heavy-duty longwall mining applications using water-based fluids. The design is also suitable for standard hydraulic oil applications.

The seal is manufactured in a polyurethane shell energised by a high quality O-ring, or in some cases a profiled NBR energiser as used in the Hallite 621 twin lip rod seal. The Hallite 652 also incorporates an acetal anti-extrusion ring to withstand side loads and extreme pressure peaks even with the extrusion gaps, which are the result of using remote plastic bearing strips like the Hallite 506 or 708.

The Hallite 652's seal shell is moulded in Hythane® 181, Hallite's high-performance polyurethane, for easy installation.

FEATURES

- Extremely well proven in longwall mining applications
- Extremely well proven in HFA water-based fluids
- High pressure and shock load capability
- Responsive sealing
- Easy to install

MATERIALS

As standard, this product comes in the following materiala. Contact your local Hallite technical team if you would like to find out if this profile can be made in a custom material to suit your application. For further material details, please refer to the Hallite Material Table.

MATERIAL OPTIONS	Name	Shell Type	Shell Colour
Standard	Hythane® 181-NBR-POM 0011	TPU-EU	Blue

TECHNICAL DETAILS

OPERATING CONDITIONS	METRIC	INCH
Maximum Speed	1.0 m/sec	3.0 ft/sec
Temperature Range Hydraulic Oils	-45°C +110°C	-50°F +230°F
Temperature Range Water-Based Fluids	-0°C +60°C	32°F +140°F
Maximum Pressure	700 bar	10000 psi

NOTE

Data given are maximum values and can apply depending on specific application. Maximum ratings of temperature, pressure, or operating speeds are dependent on fluid medium, surface, gap value, and other variables such as dynamic or static service. Maximum values are not intended for use together at the same time, e.g. max temperature and max pressure. Please contact your Hallite technical representative for application support.

MAXIMUM EXTRUSION GAP					
Pressure bar	160	250	400	500	700
Maximum Gap mm	0.60	0.50	0.60	0.40	0.25
Pressure psi	2400	3750	6000	7500	10000
Maximum Gap in	0.024	0.020	0.024	0.016	0.010

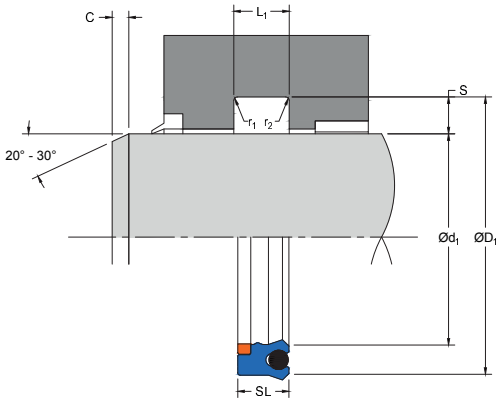
NOTE

Figures show the maximum permissible gap all on one side, for rod seals using minimum rod Ø and maximum clearance Ø and for piston seals using the minimum clearance Ø and maximum bore Ø. Refer to Housing Design section.

SURFACE ROUGHNESS	µmRa	µmRz	µmRt	µinRa	µinRz	µinRt
Dynamic Sealing Face $Ød_1$	0.1 - 0.4	1.6 max	4 max	4 - 16	63 max	157 max
Static Sealing Face $ØD_1$	1.6 max	6.3 max	10 max	63 max	250 max	394 max
Static Housing Faces L_1	3.2 max	10 max	16 max	125 max	394 max	630 max

CHAMFERS & RADII						
Groove Section <S mm	4.00	5.00	7.50	10.00	12.50	15.00
Min Chamfer C mm	3.00	3.50	5.00	6.50	7.00	8.00
Max Fillet Rad r_1 mm	0.20	0.40	0.80	0.80	2.30	1.60
Max Fillet Rad r_2 mm	0.40	0.80	1.20	1.60	1.60	2.40

TOLERANCES	$Ød_1$	$ØD_1$	L_1
mm	f9	Js11	+0.25 -0



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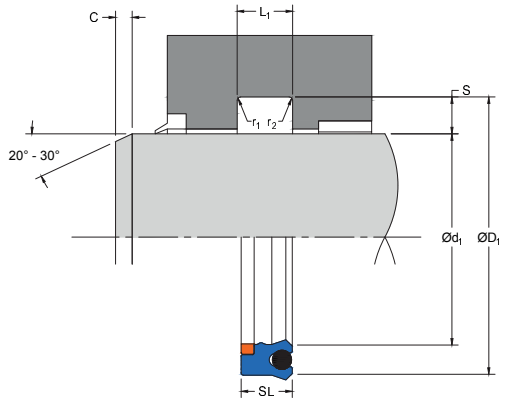
ROD SEAL

Polyurethane with AE Ring and Rubber Energiser for Heavy-Duty Applications

PART NUMBER RANGE

METRIC						
$Ød_1$	TOL f9	$ØD_1$	TOL Js11	SL	L_1 +0.25-0	PART No.
32.00	-0.03 -0.09	44.00	+0.08 -0.08	8.70	9.60	4344111
40.00	-0.03 -0.09	52.00	+0.10 -0.10	8.70	9.60	4326311
50.00	-0.03 -0.09	62.00	+0.10 -0.10	8.70	9.60	4326411
60.00	-0.03 -0.10	69.80	+0.10 -0.10	11.40	12.50	4534910*
60.00	-0.03 -0.10	72.00	+0.10 -0.10	8.70	9.60	4344211*
60.00	-0.03 -0.10	75.00	+0.10 -0.10	11.90	13.00	4451211
63.00	-0.03 -0.10	75.00	+0.10 -0.10	8.70	9.60	4326511*
70.00	-0.03 -0.10	82.00	+0.11 -0.11	8.70	9.60	4344311*
75.00	-0.03 -0.10	95.00	+0.11 -0.11	12.50	14.00	4547810*
80.00	-0.03 -0.10	95.00	+0.11 -0.11	11.80	13.00	4797410
80.00	-0.03 -0.10	95.00	+0.11 -0.11	14.50	16.00	4446511
85.00	-0.04 -0.12	97.00	+0.11 -0.11	8.70	9.60	4344511
90.00	-0.04 -0.12	105.00	+0.11 -0.11	11.80	13.00	4875010
90.00	-0.04 -0.12	105.00	+0.11 -0.11	14.50	16.00	4428011
100.00	-0.04 -0.12	115.00	+0.11 -0.11	11.00	12.00	4528010*
100.00	-0.04 -0.12	115.00	+0.11 -0.11	14.50	16.00	4397611*
105.00	-0.04 -0.12	120.00	+0.11 -0.11	11.80	13.00	4406711*

NOTE Part numbers suffixed by "*" indicate profiled NBR energiser

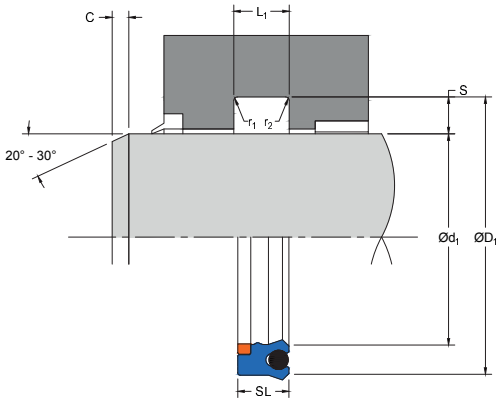


PART NUMBER RANGE

METRIC						
$Ød_1$	TOL f9	$ØD_1$	TOL Js11	SL	L_1 +0.25-0	PART No.
105.00	-0.04 -0.12	120.00	+0.11 -0.11	14.50	16.00	4781810
110.00	-0.04 -0.12	125.00	+0.13 -0.13	14.50	16.00	4445611
115.00	-0.04 -0.12	130.00	+0.13 -0.13	14.50	16.00	4455411
120.00	-0.04 -0.12	135.00	+0.13 -0.13	14.50	16.00	4452011
125.00	-0.04 -0.14	140.00	+0.13 -0.13	14.50	16.00	4446911
128.00	-0.04 -0.14	143.00	+0.13 -0.13	14.50	16.00	4581611
130.00	-0.04 -0.14	145.00	+0.13 -0.13	14.50	16.00	4782410
135.00	-0.04 -0.14	155.00	+0.13 -0.13	13.60	15.00	4475410*
140.00	-0.04 -0.14	155.00	+0.13 -0.13	14.50	16.00	4753210
150.00	-0.04 -0.14	165.00	+0.13 -0.13	14.50	16.00	4389111*
160.00	-0.04 -0.14	175.00	+0.13 -0.13	11.70	12.80	4484010
160.00	-0.04 -0.14	175.00	+0.13 -0.13	14.50	16.00	4405011*
160.00	-0.04 -0.14	177.00	+0.13 -0.13	14.50	16.00	4767610
160.00	-0.04 -0.14	185.00	+0.14 -0.14	18.80	20.00	4401711*
165.00	-0.04 -0.14	182.00	+0.14 -0.14	14.50	16.00	4537411
170.00	-0.04 -0.14	185.00	+0.14 -0.14	14.50	16.00	4745610
177.00	-0.04 -0.14	192.00	+0.14 -0.14	14.50	16.00	4445711

NOTE Part numbers suffixed by "*" indicate profiled NBR energiser

PART NUMBERS ON THIS PAGE ARE LISTED IN THE STANDARD MATERIAL OPTION. FOR MATERIAL VARIATIONS OR FOR CUSTOM SIZES, MATERIALS, OR SEAL DESIGNS, PLEASE CONTACT YOUR LOCAL HALLITE REPRESENTATIVE.



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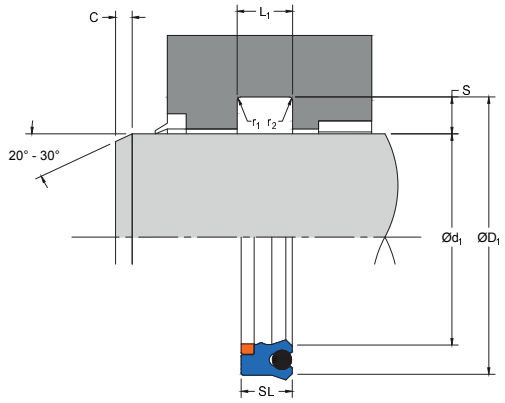
ROD SEAL

Polyurethane with AE Ring and Rubber Energiser for Heavy-Duty Applications

PART NUMBER RANGE

METRIC						
$Ød_1$	TOL f9	$ØD_1$	TOL Js11	SL	L_1 +0.25-0	PART No.
180.00	-0.04 -0.14	195.00	+0.14 -0.14	14.50	16.00	4734610
185.00	-0.05 -0.17	200.00	+0.14 -0.14	14.50	16.00	4777210
185.00	-0.05 -0.17	210.00	+0.14 -0.14	18.00	20.00	4546611
190.00	-0.05 -0.17	205.00	+0.14 -0.14	14.50	16.00	4430811
195.00	-0.05 -0.17	210.00	+0.14 -0.14	14.50	16.00	4459311
195.00	-0.05 -0.17	215.00	+0.14 -0.14	14.50	16.00	4550511
200.00	-0.05 -0.17	220.00	+0.14 -0.14	14.50	16.00	4387611*
205.00	-0.05 -0.17	220.00	+0.14 -0.14	14.50	16.00	4762110
210.00	-0.05 -0.17	230.00	+0.14 -0.14	14.50	16.00	4472911
220.00	-0.05 -0.17	235.00	+0.14 -0.14	14.50	16.00	4759610
220.00	-0.05 -0.17	240.00	+0.14 -0.14	14.50	16.00	4544510*
225.00	-0.05 -0.17	240.00	+0.14 -0.14	14.50	16.00	4445811
225.00	-0.05 -0.17	250.00	+0.14 -0.14	18.00	20.00	4537511
230.00	-0.05 -0.17	247.00	+0.14 -0.14	14.50	16.00	4767710
230.00	-0.05 -0.17	249.30	+0.14 -0.14	14.50	16.00	4439411
230.00	-0.05 -0.17	250.00	+0.14 -0.14	14.50	16.00	4707210
230.00	-0.05 -0.17	255.00	+0.16 -0.16	22.80	25.00	4555511

NOTE Part numbers suffixed by "*" indicate profiled NBR energiser

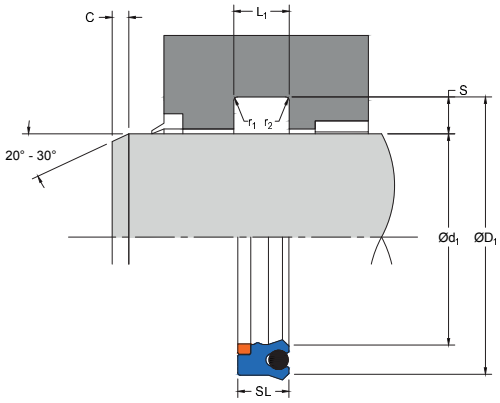


PART NUMBER RANGE

METRIC						
$Ød_1$	TOL f9	$ØD_1$	TOL Js11	SL	L_1 +0.25-0	PART No.
235.00	-0.05 -0.17	255.00	+0.16 -0.16	14.50	16.00	4771410
240.00	-0.05 -0.17	260.00	+0.16 -0.16	14.50	16.00	4496511
245.00	-0.05 -0.17	270.00	+0.16 -0.16	18.00	20.00	4546711
250.00	-0.05 -0.17	270.00	+0.16 -0.16	14.50	16.00	4728810
255.00	-0.06 -0.19	275.00	+0.16 -0.16	14.50	16.00	4578611
260.00	-0.06 -0.19	280.00	+0.16 -0.16	16.40	18.00	4499011
265.00	-0.06 -0.19	285.00	+0.16 -0.16	14.50	16.00	4722110
275.00	-0.06 -0.19	295.00	+0.16 -0.16	14.50	16.00	4807310
280.00	-0.06 -0.19	300.00	+0.16 -0.16	14.50	16.00	4713910
285.00	-0.06 -0.19	305.00	+0.16 -0.16	16.40	18.00	4767810
285.00	-0.06 -0.19	310.00	+0.16 -0.16	18.00	20.00	4537611
290.00	-0.06 -0.19	310.00	+0.16 -0.16	16.40	18.00	4475111
290.00	-0.06 -0.19	315.00	+0.16 -0.16	18.00	20.00	4759410
295.00	-0.06 -0.19	315.00	+0.16 -0.16	16.40	18.00	4598211
300.00	-0.06 -0.19	320.00	+0.18 -0.18	14.50	16.00	4525110*
305.00	-0.06 -0.19	325.00	+0.18 -0.18	16.40	18.00	4473011
305.00	-0.06 -0.19	330.00	+0.18 -0.18	18.00	20.00	4546811

NOTE Part numbers suffixed by "*" indicate profiled NBR energiser

PART NUMBERS ON THIS PAGE ARE LISTED IN THE STANDARD MATERIAL OPTION. FOR MATERIAL VARIATIONS OR FOR CUSTOM SIZES, MATERIALS, OR SEAL DESIGNS, PLEASE CONTACT YOUR LOCAL HALLITE REPRESENTATIVE.



652

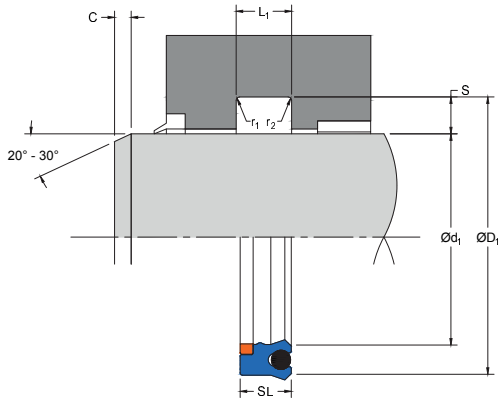
ROD SEAL

Polyurethane with AE Ring and Rubber Energiser for Heavy-Duty Applications

PART NUMBER RANGE

METRIC						
Ød$_1$	TOL f9	ØD$_1$	TOL Js11	SL	L$_1$ +0.25-0	PART No.
305.00	-0.06 -0.19	335.00	+0.18 -0.18	16.40	18.00	4721910
320.00	-0.06 -0.20	340.00	+0.18 -0.18	14.50	16.00	4544410*
320.00	-0.06 -0.20	340.00	+0.18 -0.18	16.40	18.00	4707310
325.00	-0.06 -0.20	355.00	+0.18 -0.18	18.00	20.00	4555711
330.00	-0.06 -0.20	350.00	+0.18 -0.18	16.40	18.00	4796710
335.00	-0.06 -0.20	355.00	+0.18 -0.18	16.40	18.00	4496611
335.00	-0.06 -0.20	360.00	+0.18 -0.18	18.00	20.00	4831710
340.00	-0.06 -0.20	360.00	+0.18 -0.18	18.50	20.50	4788110
340.00	-0.06 -0.20	365.00	+0.18 -0.18	18.00	20.00	4732810
350.00	-0.06 -0.20	375.00	+0.18 -0.18	18.00	20.00	4718010
355.00	-0.06 -0.20	380.00	+0.18 -0.18	18.00	20.00	4578411
360.00	-0.06 -0.20	385.00	+0.18 -0.18	18.00	20.00	4781110
370.00	-0.06 -0.20	395.00	+0.18 -0.18	18.00	20.00	4579710
380.00	-0.06 -0.20	405.00	+0.20 -0.20	18.00	20.00	4752010
390.00	-0.06 -0.20	415.00	+0.20 -0.20	18.00	20.00	4730010
395.00	-0.06 -0.20	420.00	+0.20 -0.20	18.00	20.00	4807110
400.00	-0.06 -0.20	425.00	+0.20 -0.20	18.00	20.00	4797210

NOTE Part numbers suffixed by "*" indicate profiled NBR energiser



PART NUMBER RANGE

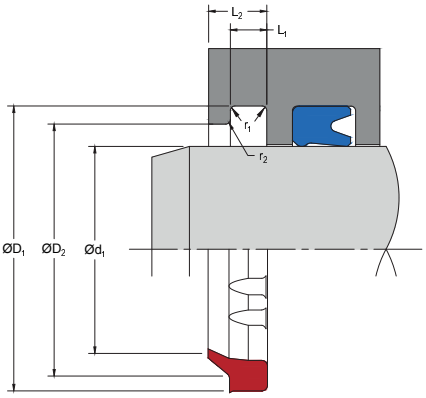
METRIC						
$Ød_1$	TOL f9	$ØD_1$	TOL Js11	SL	L_1 +0.25-0	PART No.
410.00	-0.07 -0.22	435.00	+0.20 -0.20	18.00	20.00	4785110*
415.00	-0.07 -0.22	445.00	+0.20 -0.20	20.50	22.50	4820510
430.00	-0.07 -0.22	455.00	+0.20 -0.20	18.00	20.00	4862310
445.00	-0.07 -0.22	475.00	+0.20 -0.20	20.50	22.50	4838010
470.00	-0.07 -0.22	495.00	+0.20 -0.20	18.00	20.00	4814610
490.00	-0.07 -0.22	515.00	+0.22 -0.22	18.00	20.00	4888810
560.00	-0.08 -0.25	585.00	0.22 -0.22	18.00	20.00	4913210

NOTE Part numbers suffixed by "*" indicate profiled NBR energiser

PART NUMBERS ON THIS PAGE ARE LISTED IN THE STANDARD MATERIAL OPTION. FOR MATERIAL VARIATIONS OR FOR CUSTOM SIZES, MATERIALS, OR SEAL DESIGNS, PLEASE CONTACT YOUR LOCAL HALLITE REPRESENTATIVE.

Hallite

WIPERS



38

WIPER

Single-Lipped
Polyester
for Heavy-Duty Applications

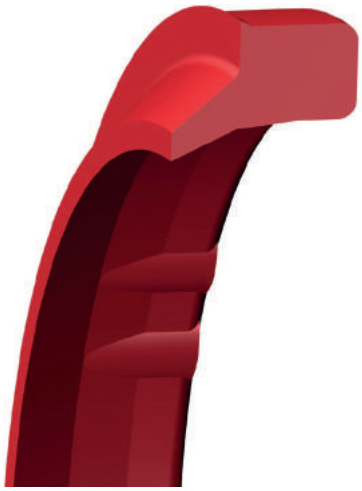
DESIGN

The Hallite 38 single-lipped wiper/scraper is designed to fit metric housings including those of ISO 6195A. The proportions of the wiping lip ensure that contact is maintained with the surface of the rod to remove heavily deposited containments such as mud and ice.

The outside diameter of the wiper incorporates a crush lip to provide an interference fit with the housing. This feature help prevent contamination from entering the groove.

The Hallite 38 is molded in a polyester-based material to provide a tough, abrasion-resistant wiper for the difficult conditions usually found in mining or earth moving applications.

The complete range can be used with a split housing, and the majority can be installed in a blind housing with care.



FEATURES

- Crush lip design provides effective seal on housing
- Ribs relieve pressure and improve stability
- Effective scraping lip to scrape off heavily deposited containments including ice

MATERIALS

As standard, this product comes in the following material. Contact your local Hallite technical team if you would like to find out if this profile can be made in a custom material to suit your application. For further material details, please refer to the Hallite Material Table.

MATERIAL OPTIONS	Name	Type	Colour
Standard	TPE 061	TPE	Red

TECHNICAL DETAILS

OPERATING CONDITIONS	METRIC	INCH
Maximum Speed	4.0 m/sec	12.0 ft/sec
Temperature Range	-40°C +120°C	-40°F +250°F

NOTE

Data given are maximum values and can apply depending on specific application. Maximum ratings of temperature, pressure, or operating speeds are dependent on fluid medium, surface, gap value, and other variables such as dynamic or static service. Maximum values are not intended for use together at the same time, e.g. max temperature and max pressure. Please contact your Hallite technical representative for application support.

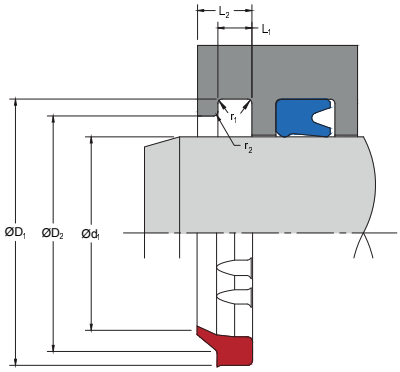
SURFACE ROUGHNESS	µmRa	µmRz	µmRt	µinRa	µinRz	µinRt
Dynamic Sealing Face $Ød_1$	0.1 - 0.4	1.6 max	4 max	4 - 16	63 max	157 max
Static Sealing Face $ØD_1$, $ØD_2$	1.6 max	6.3 max	10 max	63 max	250 max	394 max
Static Housing Faces L_1	3.2 max	10 max	16 max	125 max	394 max	630 max

RADII				
Rod Diameter $Ød_1$	≤ 50	≤ 90	≤ 200	> 200
Max Fillet Rad r_1 mm	0.40	0.40	0.40	0.80
Max Fillet Rad r_2 mm	0.20	0.40	0.60	0.80

NOTE

Assembly chamfers are governed by the associated rod seal.

TOLERANCES	$Ød_1$	$ØD_1$	$ØD_2$	L_1
mm	f9	H11	H11	+0.20-0



38

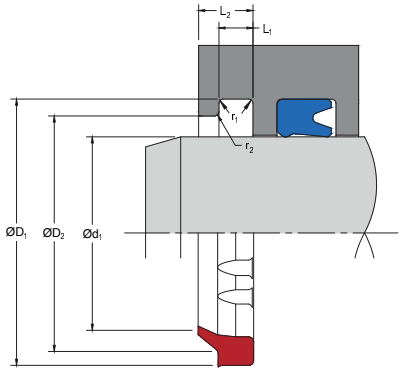
WIPER

Single-Lipped
Polyester
for Heavy-Duty Applications

PART NUMBER RANGE

METRIC								
$Ød_1$	TOL f9	$ØD_1$	TOL H11	$ØD_2$	TOL H11	L_1 +0.20-0	L_2	PART No.
8.00	-0.01 -0.05	15.30	+0.11 0.00	12.30	+0.11 0.00	3.20	4.90	4860700
18.00	-0.02 -0.06	24.00	+0.13 0.00	21.00	+0.13 0.00	5.00	7.00	4392000
20.00	-0.02 -0.07	28.00	+0.13 0.00	25.50	+0.13 0.00	5.00	8.00	4321900‡
22.00	-0.02 -0.07	30.00	+0.13 0.00	27.50	+0.13 0.00	5.00	8.00	4322000‡
25.00	-0.02 -0.07	33.00	+0.16 0.00	30.50	+0.16 0.00	5.00	8.00	6617700‡
28.00	-0.02 -0.07	36.00	+0.16 0.00	33.50	+0.16 0.00	5.00	8.00	6617800‡
30.00	-0.02 -0.07	38.00	+0.16 0.00	35.50	+0.16 0.00	5.00	8.00	4419200
30.00	-0.02 -0.07	41.20	+0.16 0.00	37.00	+0.16 0.00	7.50	10.00	4528900
32.00	-0.03 -0.09	40.00	+0.16 0.00	37.50	+0.16 0.00	5.00	8.00	6617900‡
35.00	-0.03 -0.09	43.00	+0.16 0.00	40.50	+0.16 0.00	5.00	8.00	4724800
36.00	-0.03 -0.09	44.00	+0.16 0.00	41.50	+0.16 0.00	5.00	8.00	6618000‡
40.00	-0.03 -0.09	48.00	+0.16 0.00	45.50	+0.16 0.00	5.00	8.00	6618100‡
40.00	-0.03 -0.09	50.60	+0.19 0.00	43.00	+0.16 0.00	5.30	7.00	4784100
41.28	-0.03 -0.09	49.28	+0.16 0.00	46.80	+0.16 0.00	5.00	8.00	4599900
45.00	-0.03 -0.09	53.00	+0.19 0.00	50.50	+0.19 0.00	5.00	8.00	6618200‡
45.00	-0.03 -0.09	55.60	+0.19 0.00	48.00	+0.16 0.00	5.30	7.00	4531201
50.00	-0.03 -0.09	58.00	+0.19 0.00	55.50	+0.19 0.00	5.00	8.00	6618300‡

NOTE Part numbers suffixed by "‡" indicate housing sizes to meet ISO 6195A.

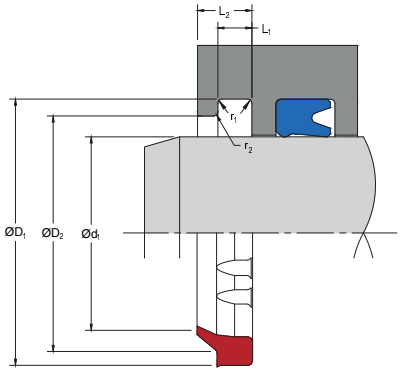


PART NUMBER RANGE

METRIC								
$Ød_1$	TOL f9	$ØD_1$	TOL H11	$ØD_2$	TOL H11	L_1 +0.20-0	L_2	PART No.
50.00	-0.03 -0.09	58.60	+0.19 0.00	53.00	+0.19 0.00	5.30	7.00	4300400
50.00	-0.03 -0.09	60.60	+0.19 0.00	53.00	+0.19 0.00	5.30	7.00	4458000
55.00	-0.03 -0.10	65.00	+0.19 0.00	62.00	+0.19 0.00	6.30	10.00	4869300
55.00	-0.03 -0.10	65.60	+0.19 0.00	58.00	+0.19 0.00	5.30	7.00	4531401
56.00	-0.03 -0.10	66.00	+0.19 0.00	63.00	+0.19 0.00	6.30	10.00	6618400‡
56.00	-0.03 -0.10	66.60	+0.19 0.00	59.00	+0.19 0.00	5.30	7.00	4458100
60.00	-0.03 -0.10	70.00	+0.19 0.00	66.00	+0.19 0.00	5.30	7.00	4386200
60.00	-0.03 -0.10	70.00	+0.19 0.00	67.00	+0.19 0.00	6.30	10.00	4270200
60.00	-0.03 -0.10	70.60	+0.19 0.00	63.00	+0.19 0.00	5.30	7.00	4456400
63.00	-0.03 -0.10	73.00	+0.19 0.00	70.00	+0.19 0.00	6.30	10.00	6618500‡
63.00	-0.03 -0.10	73.60	+0.19 0.00	66.00	+0.19 0.00	5.30	7.00	4283600
65.00	-0.03 -0.10	75.00	+0.19 0.00	72.00	+0.19 0.00	6.30	10.00	4343800
65.00	-0.03 -0.10	75.60	+0.19 0.00	68.00	+0.19 0.00	5.30	7.00	4784200
70.00	-0.03 -0.10	80.00	+0.19 0.00	77.00	+0.19 0.00	6.30	10.00	6618600‡
70.00	-0.03 -0.10	80.60	+0.22 0.00	73.00	+0.19 0.00	5.30	7.00	4454000
70.00	-0.03 -0.10	82.20	+0.22 0.00	76.00	+0.19 0.00	7.20	12.00	4243900
75.00	-0.03 -0.10	83.60	+0.22 0.00	78.00	+0.19 0.00	5.30	7.00	4539500

NOTE Part numbers suffixed by "‡" indicate housing sizes to meet ISO 6195A.

PART NUMBERS ON THIS PAGE ARE LISTED IN THE STANDARD MATERIAL OPTION. FOR MATERIAL VARIATIONS OR FOR CUSTOM SIZES, MATERIALS, OR SEAL DESIGNS, PLEASE CONTACT YOUR LOCAL HALLITE REPRESENTATIVE.



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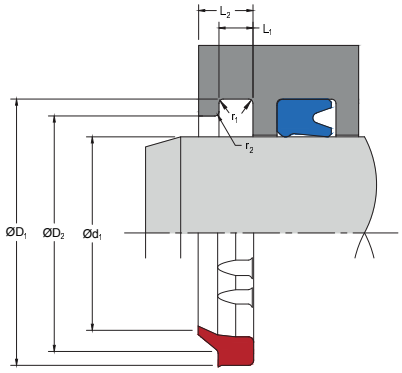
WIPER

Single-Lipped
Polyester
for Heavy-Duty Applications

PART NUMBER RANGE

METRIC								
$Ød_1$	TOL f9	$ØD_1$	TOL H11	$ØD_2$	TOL H11	L_1 +0.20-0	L_2	PART No.
75.00	-0.03 -0.10	85.00	+0.22 0.00	82.00	+0.22 0.00	6.30	10.00	4532500
75.00	-0.03 -0.10	87.20	+0.22 0.00	81.00	+0.22 0.00	7.20	12.00	4384400
80.00	-0.03 -0.10	90.00	+0.22 0.00	87.00	+0.22 0.00	6.30	10.00	6618700‡
80.00	-0.03 -0.10	91.00	+0.22 0.00	85.00	+0.22 0.00	7.50	11.00	4493200
80.00	-0.03 -0.10	92.20	+0.22 0.00	86.00	+0.22 0.00	7.20	12.00	4242800
82.60	-0.04 -0.12	92.20	+0.22 0.00	85.70	+0.22 0.00	5.30	7.10	4415500
85.00	-0.04 -0.12	93.60	+0.22 0.00	88.00	+0.22 0.00	5.30	7.00	4292100
85.00	-0.04 -0.12	97.20	+0.22 0.00	91.00	+0.22 0.00	7.20	12.00	4784300
85.00	-0.04 -0.12	98.00	+0.22 0.00	92.00	+0.22 0.00	7.50	11.50	4332800
88.00	-0.04 -0.12	100.20	+0.22 0.00	94.00	+0.22 0.00	7.20	12.00	4269400
90.00	-0.04 -0.12	100.00	+0.22 0.00	97.00	+0.22 0.00	6.30	10.00	6618800‡
90.00	-0.04 -0.12	102.20	+0.22 0.00	96.00	+0.22 0.00	7.20	12.00	4324500
92.00	-0.04 -0.12	112.00	+0.22 0.00	102.00	+0.22 0.00	7.00	11.00	4874200
95.00	-0.04 -0.12	107.20	+0.22 0.00	101.00	+0.22 0.00	7.20	12.00	6667600
100.00	-0.04 -0.12	110.60	+0.22 0.00	104.00	+0.22 0.00	5.30	7.00	4300200
100.00	-0.04 -0.12	112.20	+0.22 0.00	106.00	+0.22 0.00	7.20	12.00	4324600
100.00	-0.04 -0.12	115.00	+0.22 0.00	110.00	+0.22 0.00	9.50	14.00	6618900‡

NOTE Part numbers suffixed by "‡" indicate housing sizes to meet ISO 6195A.

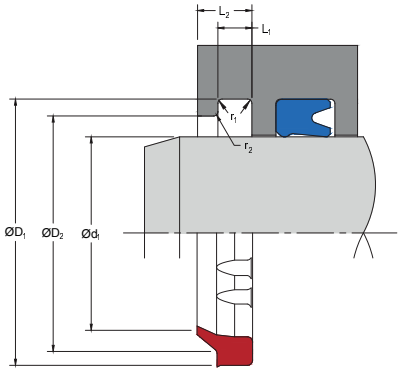


PART NUMBER RANGE

METRIC								
$Ød_1$	TOL f9	$ØD_1$	TOL H11	$ØD_2$	TOL H11	L_1 +0.20-0	L_2	PART No.
101.60	-0.04 -0.12	116.60	+0.22 0.00	111.60	+0.22 0.00	9.50	14.00	6619010
105.00	-0.04 -0.12	113.00	+0.22 0.00	110.50	+0.22 0.00	5.00	8.00	4290300
105.00	-0.04 -0.12	120.00	+0.22 0.00	112.00	+0.22 0.00	7.20	12.00	4539100
110.00	-0.04 -0.12	122.20	+0.25 0.00	116.00	+0.22 0.00	7.20	12.00	4459200
110.00	-0.04 -0.12	125.00	+0.25 0.00	120.00	+0.22 0.00	9.50	14.00	6619000‡
115.00	-0.04 -0.12	127.20	+0.25 0.00	121.00	+0.25 0.00	7.20	12.00	4324800
120.00	-0.04 -0.12	132.20	+0.25 0.00	126.00	+0.25 0.00	7.20	12.00	4454300
120.00	-0.04 -0.12	135.00	+0.25 0.00	130.00	+0.25 0.00	9.50	14.00	4385600
125.00	-0.04 -0.14	133.00	+0.25 0.00	130.80	+0.25 0.00	5.30	7.00	4393000
125.00	-0.04 -0.14	137.20	+0.25 0.00	131.00	+0.25 0.00	7.70	12.00	4233500
125.00	-0.04 -0.14	140.00	+0.25 0.00	132.60	+0.25 0.00	10.20	16.00	4784400
125.00	-0.04 -0.14	140.00	+0.25 0.00	135.00	+0.25 0.00	9.50	14.00	6619100‡
128.00	-0.04 -0.14	143.00	+0.25 0.00	138.00	+0.25 0.00	9.50	14.00	4581800
130.00	-0.04 -0.14	142.20	+0.25 0.00	136.00	+0.25 0.00	7.20	12.00	4304300
130.00	-0.04 -0.14	145.00	+0.25 0.00	137.60	+0.25 0.00	10.20	16.00	4784500
132.00	-0.04 -0.14	144.20	+0.25 0.00	138.00	+0.25 0.00	7.20	12.00	4269500
135.00	-0.04 -0.14	147.20	+0.25 0.00	141.00	+0.25 0.00	7.20	12.00	4869500

NOTE Part numbers suffixed by "‡" indicate housing sizes to meet ISO 6195A.

PART NUMBERS ON THIS PAGE ARE LISTED IN THE STANDARD MATERIAL OPTION. FOR MATERIAL VARIATIONS OR FOR CUSTOM SIZES, MATERIALS, OR SEAL DESIGNS, PLEASE CONTACT YOUR LOCAL HALLITE REPRESENTATIVE.



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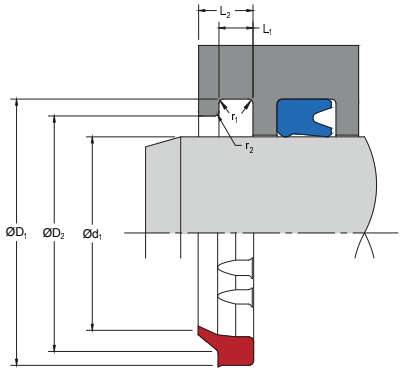
WIPER

Single-Lipped
Polyester
for Heavy-Duty Applications

PART NUMBER RANGE

METRIC								
$Ød_1$	TOL f9	$ØD_1$	TOL H11	$ØD_2$	TOL H11	L_1 +0.20-0	L_2	PART No.
135.00	-0.04 -0.14	150.00	+0.25 0.00	145.00	+0.25 0.00	9.50	14.00	4278700
140.00	-0.04 -0.14	148.60	+0.25 0.00	143.00	+0.25 0.00	5.30	7.00	4763800
140.00	-0.04 -0.14	152.20	+0.25 0.00	146.00	+0.25 0.00	7.70	12.00	4324900
140.00	-0.04 -0.14	155.00	+0.25 0.00	147.60	+0.25 0.00	10.20	16.00	4784600
140.00	-0.04 -0.14	155.00	+0.25 0.00	150.00	+0.25 0.00	9.50	14.00	6619200‡
145.00	-0.04 -0.14	153.60	+0.25 0.00	148.00	+0.25 0.00	5.30	7.00	4732200
145.00	-0.04 -0.14	160.00	+0.25 0.00	155.00	+0.25 0.00	9.50	14.00	4560600
150.00	-0.04 -0.14	162.20	+0.25 0.00	156.00	+0.25 0.00	7.70	12.00	4278900
150.00	-0.04 -0.14	165.00	+0.25 0.00	157.60	+0.25 0.00	10.20	16.00	4342500
150.00	-0.04 -0.14	165.00	+0.25 0.00	158.00	+0.25 0.00	7.20	12.00	6668500
150.00	-0.04 -0.14	166.00	+0.25 0.00	161.00	+0.25 0.00	8.00	12.00	4336700
155.00	-0.04 -0.14	163.00	+0.25 0.00	160.50	+0.25 0.00	5.00	8.00	4290200
155.00	-0.04 -0.14	167.20	+0.25 0.00	161.00	+0.25 0.00	7.70	12.00	4288200
155.00	-0.04 -0.14	175.00	+0.25 0.00	165.00	+0.25 0.00	10.20	18.00	4226400
160.00	-0.04 -0.14	172.20	+0.25 0.00	166.00	+0.25 0.00	7.70	12.00	4405700
160.00	-0.04 -0.14	175.00	+0.25 0.00	167.60	+0.25 0.00	10.20	16.00	4454100
160.00	-0.04 -0.14	175.00	+0.25 0.00	170.00	+0.25 0.00	9.50	14.00	6619300‡

NOTE Part numbers suffixed by "‡" indicate housing sizes to meet ISO 6195A.



PART NUMBER RANGE

METRIC								
$Ød_1$	TOL f9	$ØD_1$	TOL H11	$ØD_2$	TOL H11	L_1 +0.20-0	L_2	PART No.
165.00	-0.04 -0.14	180.00	+0.25 0.00	175.00	+0.25 0.00	9.50	14.00	4537000
170.00	-0.04 -0.14	180.60	+0.29 0.00	174.00	+0.25 0.00	5.30	7.00	4732300
170.00	-0.04 -0.14	182.20	+0.29 0.00	176.00	+0.25 0.00	7.70	12.00	4233600
170.00	-0.04 -0.14	185.00	+0.29 0.00	180.00	+0.25 0.00	9.50	14.00	4745100
177.00	-0.04 -0.14	192.00	+0.29 0.00	187.00	+0.29 0.00	9.50	14.00	4287900
180.00	-0.04 -0.14	195.00	+0.29 0.00	190.00	+0.29 0.00	9.50	14.00	6619400‡
180.00	-0.04 -0.14	200.00	+0.29 0.00	190.00	+0.29 0.00	10.20	18.00	4460900
185.00	-0.05 -0.17	200.00	+0.29 0.00	192.60	+0.29 0.00	10.20	16.00	4777300
185.00	-0.05 -0.17	205.00	+0.29 0.00	195.00	+0.29 0.00	10.20	18.00	4776100
190.00	-0.05 -0.17	198.60	+0.29 0.00	193.00	+0.29 0.00	5.30	7.00	4771100
190.00	-0.05 -0.17	205.00	+0.29 0.00	200.00	+0.29 0.00	9.50	14.00	4753100
190.00	-0.05 -0.17	210.00	+0.29 0.00	200.00	+0.29 0.00	10.20	18.00	4781000
195.00	-0.05 -0.17	210.00	+0.29 0.00	202.50	+0.29 0.00	10.20	16.00	4325100
200.00	-0.05 -0.17	208.60	+0.29 0.00	203.00	+0.29 0.00	5.30	7.00	4391600
200.00	-0.05 -0.17	215.00	+0.29 0.00	210.00	+0.29 0.00	9.50	14.00	6619500‡
200.00	-0.05 -0.17	220.00	+0.29 0.00	210.00	+0.29 0.00	10.20	18.00	4387100
205.00	-0.05 -0.17	213.60	+0.29 0.00	208.00	+0.29 0.00	5.30	7.00	4773800

NOTE Part numbers suffixed by "‡" indicate housing sizes to meet ISO 6195A.

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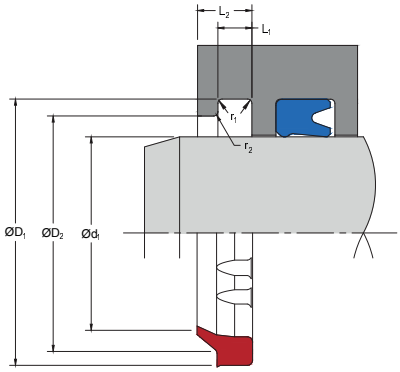

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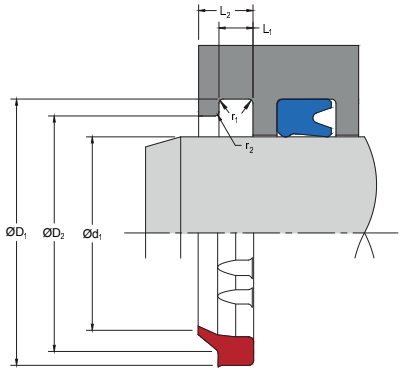
WIPER

Single-Lipped
Polyester
for Heavy-Duty Applications

PART NUMBER RANGE

METRIC								
$Ød_1$	TOL f9	$ØD_1$	TOL H11	$ØD_2$	TOL H11	L_1 +0.20-0	L_2	PART No.
205.00	-0.05 -0.17	220.00	+0.29 0.00	215.00	+0.29 0.00	9.50	14.00	4560500
210.00	-0.05 -0.17	225.00	+0.29 0.00	220.00	+0.29 0.00	9.50	14.00	4598000
210.00	-0.05 -0.17	226.00	+0.29 0.00	221.00	+0.29 0.00	8.00	12.00	4336600
210.00	-0.05 -0.17	230.00	+0.29 0.00	220.00	+0.29 0.00	10.20	18.00	4325300
212.00	-0.05 -0.17	232.00	+0.29 0.00	225.50	+0.29 0.00	12.50	18.00	4293900
220.00	-0.05 -0.17	235.00	+0.29 0.00	227.60	+0.29 0.00	10.20	16.00	4325400
220.00	-0.05 -0.17	240.00	+0.29 0.00	230.00	+0.29 0.00	10.20	18.00	4799000
220.00	-0.05 -0.17	240.00	+0.29 0.00	233.50	+0.29 0.00	12.50	18.00	6619600‡
225.00	-0.05 -0.17	240.00	+0.29 0.00	235.00	+0.29 0.00	9.50	14.00	4287800
225.00	-0.05 -0.17	245.00	+0.29 0.00	235.00	+0.29 0.00	10.20	18.00	4325500
230.00	-0.05 -0.17	238.60	+0.29 0.00	233.00	+0.29 0.00	5.30	7.00	4514000
230.00	-0.05 -0.17	245.00	+0.29 0.00	240.00	+0.29 0.00	9.50	14.00	4767400
230.00	-0.05 -0.17	246.00	+0.29 0.00	240.70	+0.29 0.00	7.50	12.00	4290700
230.00	-0.05 -0.17	250.00	+0.29 0.00	240.00	+0.29 0.00	10.20	18.00	4325600
235.00	-0.05 -0.17	255.00	+0.32 0.00	245.00	+0.29 0.00	10.20	18.00	4325700
240.00	-0.05 -0.17	255.00	+0.32 0.00	250.00	+0.29 0.00	9.50	14.00	4745200
240.00	-0.05 -0.17	260.00	+0.32 0.00	250.00	+0.29 0.00	10.20	18.00	4520900

NOTE Part numbers suffixed by "‡" indicate housing sizes to meet ISO 6195A.



PART NUMBER RANGE

METRIC								
$Ød_1$	TOL f9	$ØD_1$	TOL H11	$ØD_2$	TOL H11	L_1 +0.20-0	L_2	PART No.
240.00	-0.05 -0.17	260.00	+0.32 0.00	253.50	+0.32 0.00	12.50	18.00	4787100
245.00	-0.05 -0.17	265.00	+0.32 0.00	258.50	+0.32 0.00	12.50	18.00	4539600
250.00	-0.05 -0.17	270.00	+0.32 0.00	260.00	+0.32 0.00	10.20	18.00	4460100
250.00	-0.05 -0.17	270.00	+0.32 0.00	263.50	+0.32 0.00	12.50	18.00	6619700‡
255.00	-0.06 -0.19	270.00	+0.32 0.00	265.00	+0.32 0.00	9.50	14.00	4578200
260.00	-0.06 -0.19	275.00	+0.32 0.00	270.00	+0.32 0.00	9.50	14.00	4573100
260.00	-0.06 -0.19	280.00	+0.32 0.00	270.00	+0.32 0.00	10.20	18.00	4325900
265.00	-0.06 -0.19	280.00	+0.32 0.00	272.60	+0.32 0.00	10.20	16.00	4762900
265.00	-0.06 -0.19	285.00	+0.32 0.00	275.00	+0.32 0.00	10.20	15.00	4560400
270.00	-0.06 -0.19	278.60	+0.32 0.00	273.00	+0.32 0.00	5.30	7.00	4391700
270.00	-0.06 -0.19	286.00	+0.32 0.00	280.70	+0.32 0.00	7.50	12.00	4786400
270.00	-0.06 -0.19	290.00	+0.32 0.00	280.00	+0.32 0.00	10.20	15.00	4868900
275.00	-0.06 -0.19	295.00	+0.32 0.00	285.00	+0.32 0.00	10.20	15.00	4807400
280.00	-0.06 -0.19	295.00	+0.32 0.00	290.00	+0.32 0.00	9.50	14.00	4716100
280.00	-0.06 -0.19	300.00	+0.32 0.00	290.00	+0.32 0.00	10.20	15.00	4763900
285.00	-0.06 -0.19	300.00	+0.32 0.00	295.00	+0.32 0.00	9.50	14.00	4767300
285.00	-0.06 -0.19	305.00	+0.32 0.00	298.50	+0.32 0.00	12.50	18.00	4537100

NOTE Part numbers suffixed by "‡" indicate housing sizes to meet ISO 6195A.

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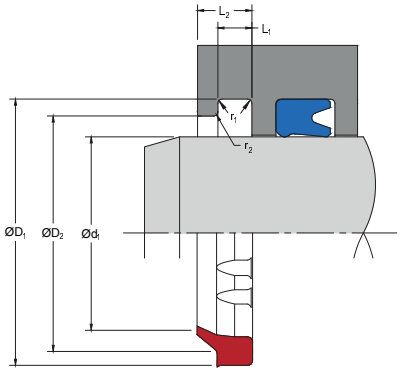

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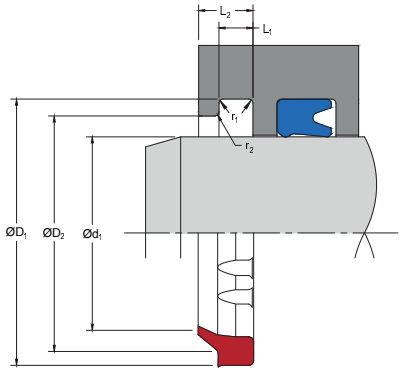
WIPER

Single-Lipped
Polyester
for Heavy-Duty Applications

PART NUMBER RANGE

METRIC								
$Ød_1$	TOL f9	$ØD_1$	TOL H11	$ØD_2$	TOL H11	L_1 +0.20-0	L_2	PART No.
288.00	-0.06 -0.19	308.00	+0.32 0.00	301.50	+0.32 0.00	10.20	15.00	4265300
290.00	-0.06 -0.19	310.00	+0.32 0.00	303.50	+0.32 0.00	12.50	18.00	4467300
295.00	-0.06 -0.19	315.00	+0.32 0.00	308.50	+0.32 0.00	12.50	18.00	4598100
300.00	-0.06 -0.19	316.00	+0.36 0.00	310.70	+0.32 0.00	7.50	12.00	4290800
300.00	-0.06 -0.19	320.00	+0.36 0.00	310.00	+0.32 0.00	10.20	18.00	4885400
300.00	-0.06 -0.19	320.00	+0.36 0.00	313.50	+0.32 0.00	12.50	18.00	4525300
305.00	-0.06 -0.19	325.00	+0.36 0.00	318.50	+0.36 0.00	12.50	18.00	4473200
320.00	-0.06 -0.20	340.00	+0.36 0.00	330.00	+0.36 0.00	10.20	18.00	4454200
325.00	-0.06 -0.20	345.00	+0.36 0.00	335.00	+0.36 0.00	10.20	18.00	4801100
330.00	-0.06 -0.20	346.00	+0.36 0.00	340.70	+0.36 0.00	7.50	12.00	4587300
335.00	-0.06 -0.20	355.00	+0.36 0.00	345.00	+0.36 0.00	10.20	18.00	4776800
340.00	-0.06 -0.20	360.00	+0.36 0.00	350.00	+0.36 0.00	10.20	18.00	4732500
350.00	-0.06 -0.20	370.00	+0.36 0.00	360.00	+0.36 0.00	10.20	18.00	4717900
355.00	-0.06 -0.20	375.00	+0.36 0.00	365.00	+0.36 0.00	10.20	18.00	4578300
360.00	-0.06 -0.20	380.00	+0.36 0.00	370.00	+0.36 0.00	10.20	18.00	4781200
370.00	-0.06 -0.20	390.00	+0.36 0.00	380.00	+0.36 0.00	10.20	18.00	4763000
370.00	-0.06 -0.20	390.00	+0.36 0.00	383.50	+0.36 0.00	12.50	18.00	4579800

NOTE Part numbers suffixed by "‡" indicate housing sizes to meet ISO 6195A.



PART NUMBER RANGE

METRIC								
$Ød_1$	TOL f9	$ØD_1$	TOL H11	$ØD_2$	TOL H11	L_1 +0.20-0	L_2	PART No.
380.00	-0.06 -0.20	400.00	+0.36 0.00	393.50	+0.36 0.00	12.50	18.00	4752100
390.00	-0.06 -0.20	410.00	+0.40 0.00	400.00	+0.36 0.00	10.20	18.00	4851600
395.00	-0.06 -0.20	415.00	+0.40 0.00	405.00	+0.40 0.00	10.20	18.00	4807200
400.00	-0.06 -0.20	420.00	+0.40 0.00	410.00	+0.40 0.00	10.20	18.00	4769900
415.00	-0.07 -0.22	435.00	+0.40 0.00	425.00	+0.40 0.00	10.20	18.00	4820800
445.00	-0.07 -0.22	465.00	+0.40 0.00	455.00	+0.40 0.00	10.20	18.00	4838400
455.00	-0.07 -0.22	475.00	+0.40 0.00	465.00	+0.40 0.00	10.20	18.00	4777900
460.00	-0.07 -0.22	490.00	+0.40 0.00	475.00	+0.40 0.00	15.00	25.00	4849800
470.00	-0.07 -0.22	490.00	+0.40 0.00	480.00	+0.40 0.00	10.20	18.00	4814800
NOTE	Part numbers suffixed by "‡" indicate housing sizes to meet ISO 6195A.							

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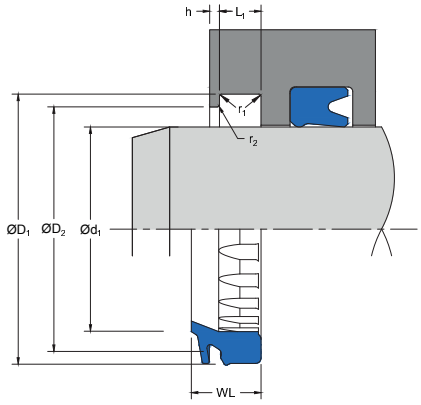

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WIPER

Single-Lipped
Polyurethane with Umbrella Design Technology™

DESIGN

The Hallite 842 single-lipped, snap-in rod wiper is developed specifically for use in harsher environments with heavy contamination, such as in agriculture, off-highway, forestry, and long wall mining equipment.

The unique feature of the Hallite 842 is the Umbrella Wiper Technology™, which is a protective debris guard flap on the wiping lip that entirely covers the gland housing and prevents the water/slurry trap that is common with conventional wipers. This feature offers added protection to the integrity of the hydraulic system by reducing corrosion and preventing the ingress of contamination into the wiper housing groove and hydraulic cylinder gland which will result in increased system life.

The moulded ribs on the internal diameter provide extra stability to the wiper and help prevent the possibility of blow-out due to pressure trapping between the wiper and the main rod seal.

The standard Hallite 842 is moulded in Hythane® 181, Hallite's high-performance polyurethane, for easy installation and excellent low temperature performance. The Hallite 820 is also offered in a number of other high-performance polyurethanes, such as Hythane® 371, a very aggressive scrapping material with proven track record in forestry, mining, and aggregate industries. The wiper has been proven compatible with HFA (95/5) fluids, as used in longwall mining equipment, and with mineral oil.

A number of sizes, indicated by "*", do not have an interference fit between the outside diameter of the wiper and the wiper housing bore $ØD_1$. They float on the retaining lip.

FEATURES

- Precision trimmed wiper lips
- Umbrella Wiper Technology™ protects housing from contaminants
- Long life and long wear
- Easy to install

MATERIALS

This product comes in a number of material options to extend operating conditions. Contact your local Hallite technical team to decide which is best for your application. Use the part designator in the table below as the last digit of the part number to specify material choice when ordering. For further material details, please refer to the Hallite Material Table.

MATERIAL OPTIONS	Name	Type	Colour	Part Designator
Standard	Hythane® 181	TPU-EU	Blue	0
Optional	Hythane® 361	TPU-AU	Orange	6
Optional	Hythane® 371	TPU-AU	Dark Green	7

TECHNICAL DETAILS

OPERATING CONDITIONS	METRIC	INCH
Maximum Speed	4.0 m/sec	12.0 ft/sec
Temperature Range	-45°C +110°C	-50°F +230°F

NOTE

Data given are maximum values and can apply depending on specific application. Maximum ratings of temperature, pressure, or operating speeds are dependent on fluid medium, surface, gap value, and other variables such as dynamic or static service. Maximum values are not intended for use together at the same time, e.g. max temperature and max pressure. Please contact your Hallite technical representative for application support.

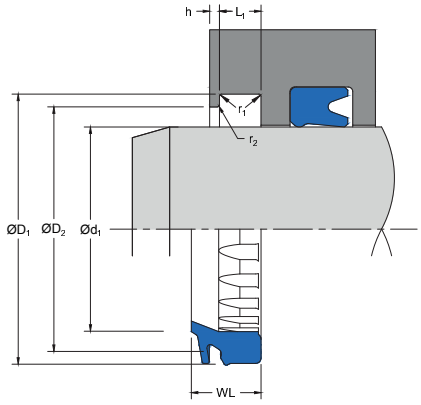
SURFACE ROUGHNESS	µmRa	µmRz	µmRt	µinRa	µinRz	µinRt
Dynamic Sealing Face $Ød_1$	0.1 - 0.4	1.6 max	4 max	4 - 16	63 max	157 max
Static Sealing Face $ØD_1$, $ØD_2$, h	1.6 max	6.3 max	10 max	63 max	250 max	394 max
Static Housing Faces L_1	3.2 max	10 max	16 max	125 max	394 max	630 max

RADII				
Rod Diameter $Ød_1$ mm	≤ 50	> 90	≤ 200	> 200
Max Fillet Rad r_1 mm	0.40	0.40	0.40	0.80
Max Fillet Rad r_2 mm	0.20	0.40	0.60	0.80
Rod Diameter $Ød_1$ in	≤ 2.000	≤ 3.500	≤ 7.875	> 7.875
Max Fillet Rad r_1 in	0.016	0.016	0.016	0.032
Max Fillet Rad r_2 in	0.008	0.016	0.024	0.032

NOTE

Assembly chamfers are governed by the associated rod seal.

TOLERANCES	$Ød_1$	$ØD_1$	$ØD_2$	L_1	h
mm	f9	H11	H11	+0.20 -0	+0.10 +0
in	f9	H11	H11	+0.008 -0	+0.004 +0



842

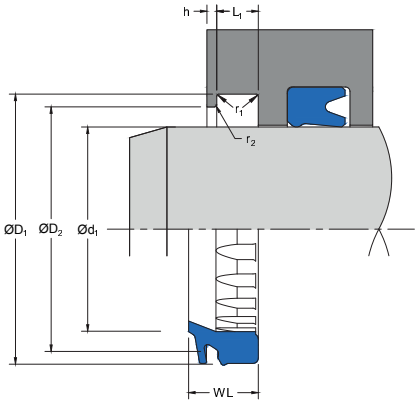
WIPER

Single-Lipped
Polyurethane with Umbrella Design Technology™

PART NUMBER RANGE

METRIC									
$Ød_1$	TOL f9	$ØD_1$	TOL H11	$ØD_2$	TOL H11	L_1 +0.20-0	h +0.10-0	WL	PART No.
20.00	-0.02 -0.07	26.00	+0.13 0.00	24.00	+0.13 0.00	4.00	1.00	6.00	4787000
32.00	-0.03 -0.09	40.00	+0.16 0.00	37.50	+0.16 0.00	5.00	1.50	8.00	4714900‡
35.00	-0.03 -0.09	45.00	+0.16 0.00	42.00	+0.16 0.00	6.30	1.50	10.00	4515300
36.00	-0.03 -0.09	44.00	+0.16 0.00	41.50	+0.16 0.00	5.00	1.50	8.00	4715000‡
38.00	-0.03 -0.09	46.00	+0.16 0.00	43.00	+0.16 0.00	5.30	1.50	8.00	4568700
40.00	-0.03 -0.09	48.00	+0.16 0.00	45.50	+0.16 0.00	5.00	1.50	8.00	4536500‡
45.00	-0.03 -0.09	53.00	+0.19 0.00	50.50	+0.19 0.00	5.00	1.50	8.00	4715100‡
50.00	-0.03 -0.09	58.00	+0.19 0.00	55.50	+0.19 0.00	5.00	1.50	8.00	4533600‡
55.00	-0.03 -0.10	65.00	+0.19 0.00	62.00	+0.19 0.00	6.30	1.50	10.00	4764600
56.00	-0.03 -0.10	66.00	+0.19 0.00	63.00	+0.19 0.00	6.30	1.50	10.00	4715200‡
60.00	-0.03 -0.10	70.00	+0.19 0.00	67.00	+0.19 0.00	6.30	1.50	10.00	4557800
60.00	-0.03 -0.10	72.00	+0.19 0.00	67.00	+0.19 0.00	4.10	2.50	10.00	4739300*
63.00	-0.03 -0.10	73.00	+0.19 0.00	70.00	+0.19 0.00	6.30	1.50	10.00	4536600‡
70.00	-0.03 -0.10	82.60	+0.22 0.00	78.40	+0.19 0.00	8.00	2.00	12.00	4480800
70.00	-0.03 -0.10	85.00	+0.22 0.00	78.00	+0.19 0.00	5.10	3.00	12.00	4739400*
75.00	-0.03 -0.10	90.00	+0.22 0.00	83.00	+0.22 0.00	5.10	3.00	12.00	4744000*

NOTE
Part numbers suffixed by "‡" indicate housing sizes to meet ISO6195A..
Part numbers suffixed by "*" indicate these wipers float on the retaining lip.

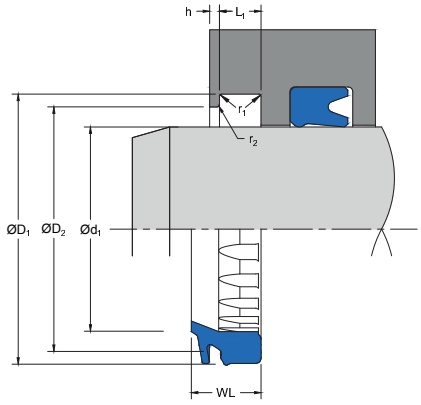


PART NUMBER RANGE

METRIC									
$Ød_1$	TOL f9	$ØD_1$	TOL H11	$ØD_2$	TOL H11	L_1 +0.20-0	h +0.10-0	WL	PART No.
80.00	-0.03 -0.10	90.00	+0.22 0.00	87.00	+0.22 0.00	6.30	1.50	10.00	4715300‡
80.00	-0.03 -0.10	95.00	+0.22 0.00	88.00	+0.22 0.00	5.10	3.00	12.00	4739500*
85.00	-0.04 -0.12	97.60	+0.22 0.00	93.40	+0.22 0.00	8.00	2.00	12.00	4521800
85.00	-0.04 -0.12	100.00	+0.22 0.00	93.00	+0.22 0.00	5.10	3.00	12.00	4744100*
90.00	-0.04 -0.12	102.20	+0.22 0.00	96.00	+0.22 0.00	7.10	2.80	12.40	4727300
90.00	-0.04 -0.12	102.60	+0.22 0.00	98.40	+0.22 0.00	8.00	2.00	12.00	4512500
90.00	-0.04 -0.12	105.00	+0.22 0.00	98.00	+0.22 0.00	5.10	3.00	12.00	4744600‡
95.00	-0.04 -0.12	110.00	+0.22 0.00	105.00	+0.22 0.00	9.50	2.80	14.00	4536900
100.00	-0.04 -0.12	112.20	+0.22 0.00	106.00	+0.22 0.00	7.10	2.80	12.40	4727400
100.00	-0.04 -0.12	114.00	+0.22 0.00	109.90	+0.22 0.00	8.00	1.50	12.00	4536000
100.00	-0.04 -0.12	115.00	+0.22 0.00	108.00	+0.22 0.00	5.10	3.00	12.00	4584800*
100.00	-0.04 -0.12	115.00	+0.22 0.00	110.00	+0.22 0.00	9.50	2.00	14.00	4589500‡
105.00	-0.04 -0.12	120.00	+0.22 0.00	115.00	+0.22 0.00	9.50	2.50	14.00	4532100
110.00	-0.04 -0.12	125.00	+0.25 0.00	118.00	+0.22 0.00	5.10	3.00	12.00	4739600*
110.00	-0.04 -0.12	125.00	+0.25 0.00	120.00	+0.22 0.00	9.50	2.00	14.00	4715400‡
120.00	-0.04 -0.12	135.00	+0.25 0.00	130.00	+0.25 0.00	9.50	2.00	14.00	4580800

NOTE
Part numbers suffixed by "‡" indicate housing sizes to meet ISO6195A..
Part numbers suffixed by "*" indicate these wipers float on the retaining lip.

PART NUMBERS ON THIS PAGE ARE LISTED IN THE STANDARD MATERIAL OPTION. FOR MATERIAL VARIATIONS OR FOR CUSTOM SIZES, MATERIALS, OR SEAL DESIGNS, PLEASE CONTACT YOUR LOCAL HALLITE REPRESENTATIVE.



842

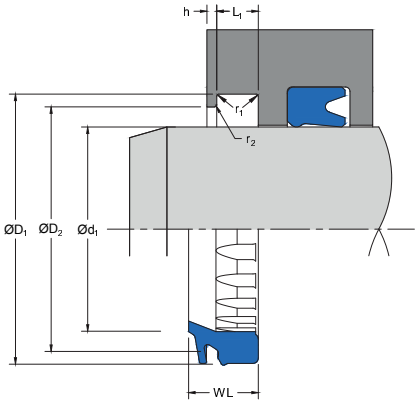
WIPER

Single-Lipped
Polyurethane with Umbrella Design Technology™

PART NUMBER RANGE

METRIC									
$Ød_1$	TOL f9	$ØD_1$	TOL H11	$ØD_2$	TOL H11	L_1 +0.20-0	h +0.10-0	WL	PART No.
125.00	-0.04 -0.14	137.20	+0.25 0.00	131.00	+0.25 0.00	7.60	2.80	12.90	4727500
125.00	-0.04 -0.14	140.00	+0.25 0.00	133.00	+0.25 0.00	5.10	3.00	12.00	4748300*
125.00	-0.04 -0.14	140.00	+0.25 0.00	135.00	+0.25 0.00	9.50	2.00	14.00	4715500‡
130.00	-0.04 -0.14	145.00	+0.25 0.00	140.00	+0.25 0.00	9.50	2.25	14.00	4491700
140.00	-0.04 -0.14	152.20	+0.25 0.00	146.00	+0.25 0.00	7.60	2.80	12.90	4727600
140.00	-0.04 -0.14	155.00	+0.25 0.00	150.00	+0.25 0.00	9.50	2.00	14.00	4555900‡
145.00	-0.04 -0.14	160.00	+0.25 0.00	155.00	+0.25 0.00	9.50	2.25	14.00	4570200
150.00	-0.04 -0.14	169.00	+0.25 0.00	159.00	+0.25 0.00	6.10	4.00	14.00	4748400*
155.00	-0.04 -0.14	170.00	+0.25 0.00	165.00	+0.25 0.00	9.50	2.25	14.00	4535200
170.00	-0.04 -0.14	189.00	+0.29 0.00	179.00	+0.25 0.00	6.10	4.00	14.00	4749200*
175.00	-0.04 -0.14	190.00	+0.29 0.00	185.00	+0.29 0.00	9.50	2.25	14.00	4552100
180.00	-0.04 -0.14	195.00	+0.29 0.00	190.00	+0.29 0.00	9.50	2.25	14.00	4491300‡
190.00	-0.05 -0.17	209.00	+0.29 0.00	199.00	+0.29 0.00	6.10	4.00	14.00	4749300*
200.00	-0.05 -0.17	223.00	+0.29 0.00	211.00	+0.29 0.00	8.30	4.80	20.00	4748700*
215.00	-0.05 -0.17	230.00	+0.29 0.00	225.00	+0.29 0.00	9.50	2.00	14.00	4705500
220.00	-0.05 -0.17	240.00	+0.29 0.00	230.00	+0.29 0.00	10.20	3.80	18.00	4859800

NOTE
Part numbers suffixed by "‡" indicate housing sizes to meet ISO6195A..
Part numbers suffixed by "*" indicate these wipers float on the retaining lip.



PART NUMBER RANGE

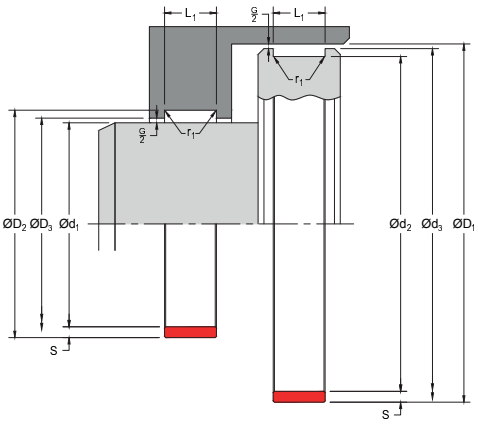
METRIC									
$Ød_1$	TOL f9	$ØD_1$	TOL H11	$ØD_2$	TOL H11	L_1 +0.20-0	h +0.10-0	WL	PART No.
230.00	-0.05 -0.17	250.00	+0.29 0.00	240.00	+0.29 0.00	10.20	3.80	18.00	4750500
235.00	-0.05 -0.17	255.00	+0.32 0.00	245.00	+0.29 0.00	10.20	3.80	18.00	4773300
250.00	-0.05 -0.17	270.00	+0.32 0.00	260.00	+0.32 0.00	10.20	3.80	18.00	4725100
260.00	-0.06 -0.19	280.00	+0.32 0.00	270.00	+0.32 0.00	10.20	3.80	18.00	4864300
265.00	-0.06 -0.19	285.00	+0.31 0.00	275.00	+0.32 0.00	10.20	3.80	18.00	4914300
295.00	-0.06 -0.19	315.00	+0.32 0.00	305.00	+0.32 0.00	10.20	3.80	18.00	4851900
320.00	-0.06 -0.20	340.00	+0.36 0.00	330.00	+0.36 0.00	10.20	3.80	18.00	4750400
335.00	-0.06 -0.20	355.00	+0.36 0.00	345.00	+0.36 0.00	10.20	3.80	18.00	4773400
350.00	-0.06 -0.20	370.00	+0.36 0.00	360.00	+0.36 0.00	10.20	3.80	18.00	4725200
370.00	-0.06 -0.20	390.00	+0.36 0.00	380.00	+0.36 0.00	10.20	3.80	18.00	4914400
380.00	-0.06 -0.20	400.00	+0.36 0.00	393.50	+0.36 0.00	12.50	2.30	18.00	4870000
415.00	-0.07 -0.22	435.00	+0.40 0.00	425.00	+0.40 0.00	10.20	3.80	18.00	4851800
420.00	-0.07 -0.22	445.00	+0.40 0.00	430.00	+0.40 0.00	12.50	3.00	19.00	4913700
445.00	-0.07 -0.22	465.00	+0.40 0.00	455.00	+0.40 0.00	10.20	3.80	18.00	4915000
560.00	-0.08 -0.25	585.00	+0.44 0.00	570.00	+0.44 0.00	12.50	3.00	19.00	4913800

NOTE

Part numbers suffixed by "‡" indicate housing sizes to meet ISO6195A..
Part numbers suffixed by "*" indicate these wipers float on the retaining lip.

Hallite

BEARINGS



506

BEARING

Polyester Fabric, Rod and Piston and Coil

DESIGN

The Hallite 506 bearing strip is designed to provide an extremely effective, hard wearing, and easy-to-use bearing solution for reciprocating, oscillating, and slow rotary movement applications. Manufactured to very tight tolerances, the Hallite 506 is capable of withstanding extreme side loads and preventing metal-to-metal contact between the piston and the bore or the rod and the gland. The Hallite 506 has become the industry standard favoured by designers and specifiers alike in many of today's most arduous hydraulic applications around the world.

The Hallite 506 is available in three forms: cut bearing rings, spiral lengths, and flat coils. Spiral lengths and flat coils are recommended to customers who want to cut their own custom sizes. Spiral lengths are recommended to distributors or customers who may need to fit a wide range of application sizes in a particular cross section.

The Hallite 506 bearing strip is manufactured by a patented process, using a woven fabric reinforced polyester resin material, and is proven to be compatible with a wide range of fluids including: mineral oils, water-based fluids, and phosphate esters. The construction of the bearing strip incorporates micro-indentations on the surface to trap fluid and provide built-in lubrication to the bearing.

The rectangular section strip is available in a wide range of inch and metric sizes, including cross sections specified in ISO 10766.

FEATURES

- Tight tolerances
- Available in ready-made bearings cut to size and to customer specifications
- Available in spiral lengths and flat coils
- Low friction

MATERIALS

This product comes in a number of material options to extend operating conditions. Contact your local Hallite technical team to decide which is best for your application. Use the part designator in the table below as the last digit of the part number to specify material choice when ordering. For further material details, please refer to the Hallite Material Table in front of catalogue.

MATERIAL OPTIONS	Name	Type	Colour
Standard	TSE 041	Thermoset Polyester	Red
Optional	TSE 042	Thermoset Polyester (Reduced Friction)	Red

TECHNICAL DETAILS

OPERATING CONDITIONS	METRIC		INCH	
Temperature Range	-40°C +120°C		-40°F +250°F	
Limiting PV Values Lubricated*	Speed(V) m/sec	Pressure(P) MN/m2	Speed(V) ft/sec	Pressure(P) psi.
	0.1	10.0	0.3	1500
	1.0	6.0	3.0	900
	5.0	0.8	16.0	120

NOTE

Please note that for reciprocating applications, the compressive stress at yield should be used for design calculations. For rotary shafts use the limiting P.V. values, it is suggested that a 2:1 factor of safety is applied

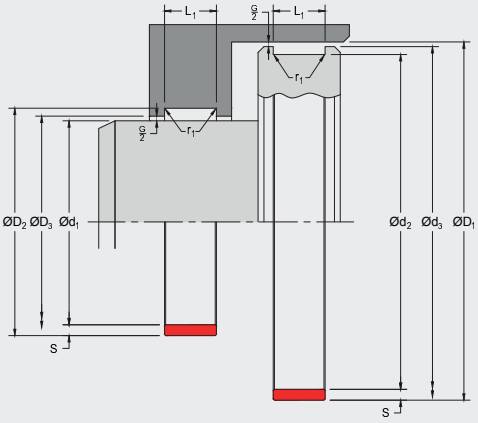
NOTE

Data given are maximum values and can apply depending on specific application. Maximum ratings of temperature, pressure, or operating speeds are dependent on fluid medium, surface, gap value, and other variables such as dynamic or static service. Maximum values are not intended for use together at the same time, e.g. max temperature and max pressure. Please contact your Hallite technical representative for application support.

TYPICAL PHYSICAL PROPERTIES	METRIC	INCH
Specific Gravity	1.27	1.27
Compression Stress at Failure	450 MN/m² @ 23°C	65000 psi @ 73°F
Compression Stress at Yield	115 MN/m² @ 23°C	16500 psi @ 73°F
Compression Stress at Yield	58 MN/m² @ 80°C	8500 psi @ 176°F
Coefficient of Thermal Conductivity	0.27 W/mK	0.16 Btu/hft °F
Coefficient of Thermal Expansion - Thickness	9 X 10^{-5} per °C	5 X 10^{-5} per °F
Coefficient of Thermal Expansion - Length	13 X 10^{-5} per °C	7.3 X 10^{-5} per °F
Coefficient of Dynamic Friction on Steel Surface (0.2 µmRa) / (8 µinCLA)	Dry 0.50	Dry 0.50
	Lubricated 0.06	Lubricated 0.06

BEARING STRIP TOLERANCES	L_1 mm	S mm	L_1 in	S in
	-0.10 -0.60	-0.02 -0.08	-0.005 -0.025	-0.001 -0.003

WIDTH OF BEARING SPLIT – W	$Ød_1$, $ØD_1$ mm	W mm	$Ød_1$, $ØD_1$ in	W in
	≤50	3.00 - 1.50	≤2	0.12 - 0.06
	≤120	5.00 - 3.50	≤5	0.19 - 0.14
	≤250	9.00 - 7.25	≤10	0.35 - 0.29
	≤550	17.00 - 15.00	≤ 22	0.67 - 0.59



506

BEARING

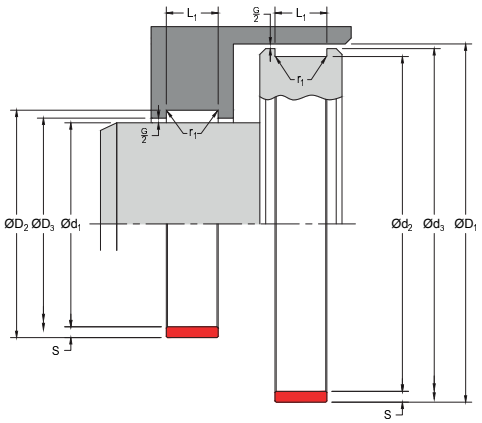
Polyester Fabric, Rod and Piston and Coil

HOUSING DETAILS & TOLERANCES	METRIC		INCH	
Rod	$Ød_1$ mm	f9	$Ød_1$ in	f9
	$ØD_2 = Ød_1 + 2S$ mm	≤ Ø80.00 H10 > Ø80.00 H9	$ØD_2 = Ød_1 + 2S$ in	≤ Ø3.000 H10 > Ø3.000 H9
	$ØD_3 = Ød_1 + G$ mm	G min / max	$ØD_3 = Ød_1 + G$ in	G min / max
	L_1 mm	+0.20 -0	L_1 in	+0.008 -0
	Max Fillet Rad r_1 mm	0.40	Max Fillet Rad r_1 in	0.016
Piston	$ØD_1$ mm	H11	$ØD_1$ in	H11
	$Ød_2 = ØD_1 - 2S$ mm	h8	$OD_2 = ØD_1 - 2S$ in	f9
	$Ød_3 = ØD_1 - G$ mm	G min / max	$Ød_3 = ØD_1 - G$ in	G min / max
	L_1 mm	+0.20 -0	L_1 in	+0.008 -0
	Max Fillet Rad r_1 mm	0.40	Max Fillet Rad r_1 in	0.016

HOUSING SURFACE ROUGHNESS	µmRa	µmRz	µmRt	µinRa	µinRz	µinRt
Dynamic Sealing Face $Ød_1$, $ØD_1$	0.4	1.6 max	4 max	16	63 max	157 max
Static Sealing Face $ØD_2$, L_1, $Ød_2$	3.2 max	10 max	16 max	125 max	394 max	630 max

NOTE

G min controls the minimum metal-to-metal clearance between the gland and rod or between bore and piston. G max controls the maximum extrusion gap seen by a seal associated with the bearing. Typically, G min should be 0.70mm/0.0280in but can be reduced when required by the extrusion gap for the seal and the build up of tolerances. The absolute minimum metal-to-metal clearance recommended is 0.10mm/0.004in. More information can be found in the Housing Designs and Extrusion Gaps pages at the front of the catalogue. For applications not using a seal, see part number range for G Max values.



IDENTIFICATION & INSTALLATION

The ranges shown on the following pages are Hallite's most popular sizes. The section ranges identify section and groove width; from these nearly any diameter of cut ring or spiral length can be manufactured. If you cannot find the size you are looking for, please contact your local Hallite sales office for additional size information.

- Cut rings are ready made bearings cut to size to suit either rod or piston housings or ready for installation. These are ideal for medium to high volume user. A comprehensive list of cut ring sizes can be found on the Hallite web site or, in the future, the Hallite Product Finder app.
- Spiral lengths are available in a wide range of preformed diameters and are supplied in continuous lengths to suit a range of inside and outside diameters. These are ideal for lower volume users required various diameters. A range of the spiral sizes can be found in the part number listing on the following pages.
- Flat coils are packaged in a dispenser for ease of storage and handling. The flat coils are supplied in 10 metre lengths suitable for a wide range of diameters. These are ideal for using or supplying one-off bearings for small volume requirements. A range of the flat coil sizes can be found in the part number listing on the following pages.

All standard bearing strips are printed with a size reference and include distance marking every 100mm on metric size sections and every six inches on inch size sections for guidance only.

When ordering please clearly state whether cut rings, spiral lengths or flat coils are required.

For cut rings and spiral lengths please state whether the application is for a rod or piston and provide inside (Ød) or outside (ØD) diameters, groove width (L1) and section (S) dimensions. Where spiral lengths are ordered also specify length required.

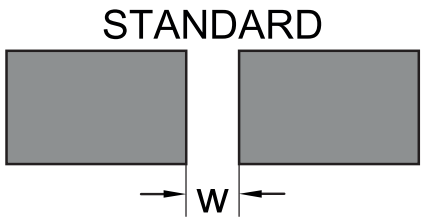
For flat coils please specify groove width (L1) and section (S) dimensions.

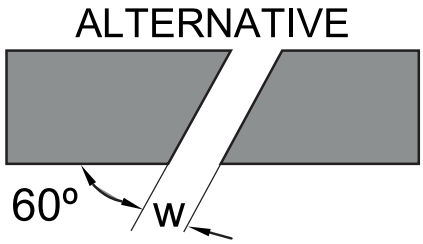
INSTRUCTIONS FOR CUTTING BEARING STRIP TO SIZE:

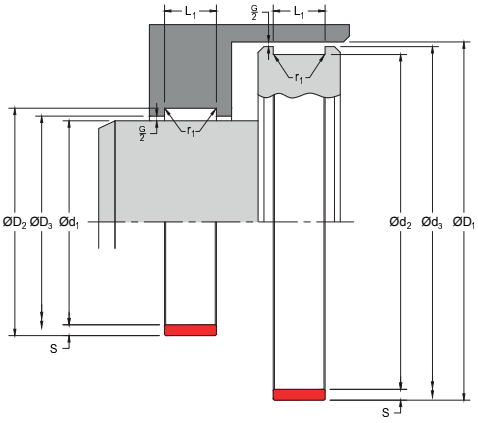
1. Select the groove width (L1) and section (S) required.
2. In the case of a rod bearing, position the bearing strip around the rod or in the case of a piston bearing, fit the bearing strip in the piston groove and mark the point of overlap. Determine the correct width of bearing split (W) for the Ød or ØD being used, as indicated in the technical details, and make a second mark.
3. Remove the strip and cut at the second marked position to the desired angle using anvil cutters or other similar cutting tool.

It is recommended that the standard cutting angle is used for the majority of applications.

If necessary, coil diameters can be resized by curing on a suitable mandrel in an oven for one hour at 120°C (250°F) and allowing to cool on the mandrel.







506

BEARING

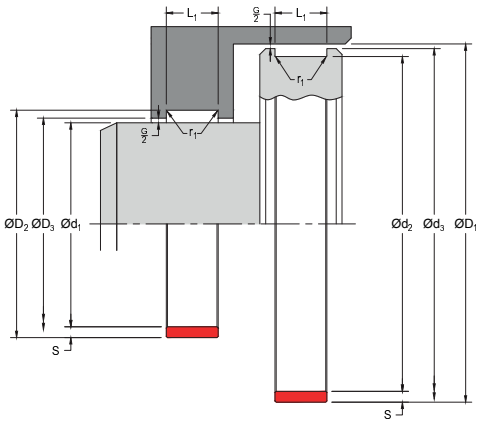
Polyester Fabric, Rod and Piston and Coil

SECTION RANGE

METRIC					
S	L_1	S	L_1	S	L_1
1.50	5.60	2.50	15.00‡	3.00	30.00
2.00	6.30	2.50	16.00	3.00	35.00
2.00	8.10	2.52	19.50	3.00	40.00
2.00	9.70	2.50	20.00	3.20	9.70
2.00	10.00	2.50	25.00‡	3.20	19.70
2.00	15.00	2.52	30.00	3.50	25.00
2.00	20.00	2.50	35.00	4.00	5.00
2.00	22.00	2.50	40.00	4.00	6.10
2.00	25.00	2.50	50.00	4.00	9.70
2.50	5.60‡	3.00	9.70	4.00	15.00
2.50	6.30	3.00	12.00	4.00	20.00
2.50	7.00	3.00	12.80	4.00	25.00‡
2.50	8.00	3.02	15.00	4.00	30.00
2.50	9.70‡	3.00	16.00	4.00	35.00
2.50	12.00	3.00	20.00	4.00	40.10
2.50	13.00	3.00	25.00		

NOTE Within the size range, items suffixed ‡ indicate cross sections to ISO 10766.

INCH	
S	L_1
0.063	0.375
0.125	0.375
0.125	0.500
0.125	0.625
0.125	0.750
0.125	1.000
0.125	1.500

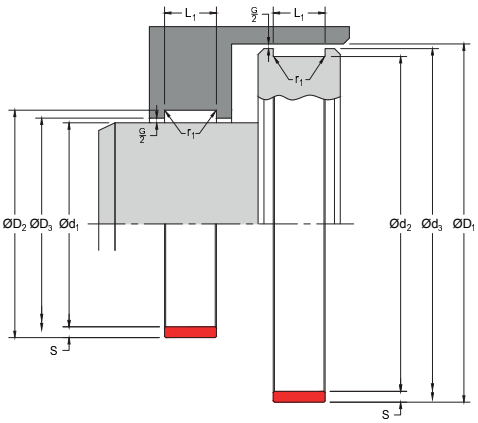


SPIRAL LENGTHS

METRIC						
$Ød_1$	$ØD_1$	S	L_1	G MAX	G MIN*	PART NO.
25 - 41	45 - 90	2.00	10.00	As required by the seal extrusion gap For applications not using a seal G MAX can be 1.6mm	0.70	8501310
35 - 70	74 - 160	2.00	10.00		0.70	8502610
70 - 155	159 - 310	2.00	10.00		0.70	8502252
35 - 50	54 - 110	2.00	15.00		0.70	8503357
50 - 100	104 - 210	2.00	15.00		0.70	8503175
90 - 180	184 - 370	2.00	15.00		0.70	8503358
25 - 30	35 - 70	2.50	5.60		0.70	8502000‡
25 - 50	55 - 110	2.50	5.60		0.70	8502020‡
50 - 100	105 - 210	2.50	5.60		0.70	8502040‡
25 - 40	45 - 90	2.50	9.70		0.70	8502100‡
35 - 70	75 - 150	2.50	9.70		0.70	8502120‡
70 - 150	155 - 310	2.50	9.70		0.70	8502140‡
40 - 50	55 - 110	2.50	13.00		0.70	8502200
50 - 100	105 - 210	2.50	13.00		0.70	8502220
90 - 180	185 - 370	2.50	13.00		0.80	8502230
40 - 50	55 - 110	2.50	15.00		0.70	8502300‡
50 - 100	105 - 210	2.50	15.00		0.70	8502330‡
90 - 180	185 - 370	2.50	15.00		0.80	8502350‡
50 - 80	85 - 170	2.50	20.00		0.70	8502400
75 - 150	155 - 310	2.50	20.00		0.80	8502410
125 - 250	255 - 510	2.50	20.00		0.80	8502430
60 - 80	85 - 170	2.50	25.00		0.70	8502500‡
70 - 150	155 - 310	2.50	25.00		0.80	8502520‡
125 - 250	255 - 510	2.50	25.00		0.80	8502530‡
40 - 50	56 - 100	3.00	9.70		0.80	8503369
50 - 100	106 - 210	3.00	9.70		0.80	8503370
100 - 150	156 - 310	3.00	9.70		0.80	8503371
50 - 60	66 - 120	3.00	12.80		0.70	8503037
60 - 104	110 - 220	3.00	12.80		0.80	8503038
90 - 149	155 - 300	3.00	12.80		0.80	8503039
55 - 80	86 - 170	3.00	20.00		0.80	8503124
80 - 150	156 - 310	3.00	20.00		0.80	8502635
140 - 250	256 - 510	3.00	20.00		0.80	8503189
50 - 75	81 - 160	3.02	15.00		0.70	8502734
60 - 80	68 - 170	4.00	6.10		0.80	8503359

NOTE *G MIN value can be reduced if required by the seal's maximum extrusion gap. Refer to Housing Design section in the front of catalogue. ‡ Within the size range, items suffixed ‡ indicate cross sections to ISO 10766.

PART NUMBERS ON THIS PAGE ARE LISTED IN THE STANDARD MATERIAL OPTION. FOR MATERIAL VARIATIONS OR FOR CUSTOM SIZES, MATERIALS, OR SEAL DESIGNS, PLEASE CONTACT YOUR LOCAL HALLITE REPRESENTATIVE.



506

BEARING

Polyester Fabric, Rod and Piston and Coil

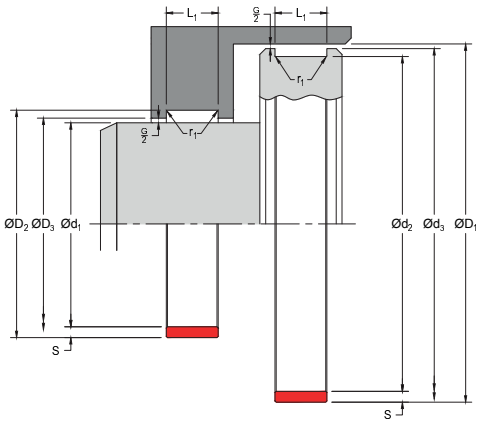
SPIRAL LENGTHS - CONTINUED

METRIC						
$Ød_1$	$ØD_1$	S	L_1	G MAX	G MIN*	PART NO.
80 - 150	158 - 310	4.00	6.10	As required by the seal extrusion gap For applications not using a seal G MAX can be 1.6mm	0.80	8503360
150 - 250	258 - 510	4.00	6.10		0.80	8503361
60 - 80	88 - 170	4.00	9.70		0.80	8503362
80 - 150	158 - 310	4.00	9.70		0.80	8503363
150 - 250	258 - 510	4.00	9.70		0.80	8503364
60 - 80	88 - 170	4.00	20.00		0.80	8503365
80 - 150	158 - 310	4.00	20.00		0.80	8503366
150 - 250	258 - 510	4.00	20.00		0.80	8503191
120 - 150	158 - 310	4.00	25.00		0.80	8503367‡
150 - 250	258 - 510	4.00	25.00		0.80	8503192‡
120 - 150	158 - 310	4.00	30.00		0.80	8503368
150 - 250	258 - 510	4.00	30.00		0.80	8503193
170 - 200	208 - 410	4.00	40.10		0.80	8503179
200 - 300	308 - 610	4.00	40.10		0.80	8503180

NOTE *G MIN value can be reduced if required by the seal's maximum extrusion gap. Refer to Housing Design section in the front of catalogue. ‡ Within the size range, items suffixed ‡ indicate cross sections to ISO 10766.

INCH						
$Ød_1$	$ØD_1$	S	L_1	G MAX	G MIN*	PART NO.
1.000 - 1.375	1.625 - 3.500	0.125	0.375	As required by the seal extrusion gap For applications not using a seal, G MAX can be 0.080in	0.031	8502098
1.250 - 1.875	2.125 - 4.250	0.125	0.375		0.031	8502099
2.000 - 3.500	3.750 - 6.250	0.125	0.375		0.031	8502183
1.250 - 1.750	2.000 - 4.000	0.125	0.500		0.031	8502089
1.750 - 3.500	3.750 - 6.250	0.125	0.500		0.031	8502090
3.500 - 6.000	6.250 - 10.000	0.125	0.500		0.031	8502091
8.000 - 12.500	12.750 - 25.000	0.125	0.500		0.031	8502720
2.000 - 3.500	3.750 - 6.250	0.125	0.625		0.031	8502092
3.500 - 6.000	6.250 - 10.000	0.125	0.625		0.031	8502093
2.000 - 3.500	3.750 - 6.250	0.125	0.750		0.031	8502094
3.500 - 6.000	6.250 - 10.000	0.125	0.750		0.031	8502095
2.500 - 3.500	3.750 - 6.250	0.125	1.000		0.031	8502096
3.500 - 6.000	6.250 - 10.000	0.125	1.000		0.031	8502097
8.000 - 12.500	12.750 - 25.000	0.125	1.000		0.031	8502222

NOTE *G MIN value can be reduced if required by the seal's maximum extrusion gap. Refer to Housing Design section in front of catalogue.



FLAT COILS

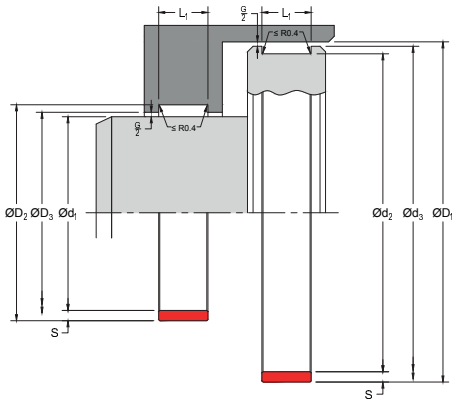
METRIC						
$Ød_1$	$ØD_1$	S	L_1	G MAX	G MIN*	PART NO.
140.00	190.00	1.50	5.60	As required by the seal extrusion gap For applications not using a seal G MAX can be 1.6mm	0.70	8581810
140.00	210.00	2.00	9.70		0.70	8581910
140.00	210.00	2.00	10.00		0.70	8584610
140.00	210.00	2.00	20.00		0.70	8582210
140.00	210.00	2.00	15.00		0.70	8581210
140.00	230.00	2.50	5.60		0.70	8580010‡
140.00	230.00	2.50	6.30		0.70	8581310
140.00	230.00	2.50	8.00		0.70	8581610
140.00	230.00	2.50	9.70		0.70	8580110‡
140.00	230.00	2.50	13.00		0.70	8581110
140.00	230.00	2.50	15.00		0.70	8580210‡
140.00	230.00	2.50	20.00		0.80	8580310
140.00	230.00	2.50	25.00		0.80	8580410‡
140.00	230.00	2.50	30.00		0.70	8582010
140.00	240.00	3.00	9.70		0.70	8581410
140.00	240.00	3.00	12.80		0.70	8581010
140.00	240.00	3.00	20.00		0.70	8581510
140.00	240.00	3.02	15.00		0.70	8581710

NOTE * G MIN value can be reduced if required by the seal's maximum extrusion gap. Refer to Housing Design section in the front of catalogue. ‡ Within the size range, items suffixed ‡ indicate cross sections to ISO 10766.

INCH						
$Ød_1$	$ØD_1$	S	L_1	G MAX	G MIN*	PART NO.
5.500	9.750	0.125	0.375	As required by the seal extrusion gap For applications not using a seal, G MAX can be 0.080in	0.031	8580510
5.500	9.750	0.125	0.500		0.031	8580610
5.500	9.750	0.125	0.625		0.031	8580710
5.500	9.750	0.125	0.750		0.031	8580810
5.500	9.750	0.125	1.000		0.031	8580910

NOTE *G MIN value can be reduced if required by the seal's maximum extrusion gap. Refer to Housing Design section in front of catalogue.

NOTE For a comprehensive list of all Hallite 506 cut ring sizes and part numbers for rod and piston applications, please refer to the Hallite website.



708

BEARING

Filled Acetal, Piston and Rod

DESIGN

The Hallite 708 bearing strip is designed to provide an extremely effective, hard wearing, and easy-to-use bearing solution for reciprocating, oscillating, and slow rotary movement applications. Manufactured to very tight tolerances, the Hallite 708 is capable of withstanding extreme side loads and preventing metal-to-metal contact between the piston and the bore or the rod and the gland.

Hallite 708 bearings are manufactured from POM 0172, an advanced proprietary material, for exceptional load bearing and wear resistant capabilities. The 708 is ideal for extreme applications where fabric-reinforced polymer bearings are not suitable, especially in heavy-duty cylinder applications, such as forestry equipment and longwall mining roof support cylinders of all diameters.

In addition to the part number listing in the following pages, the Hallite 708 is available to suit bore diameters up to 500 mm with a maximum length of 60 mm and a maximum section of 3.5 mm. If you cannot find the size you are looking for, please contact your local Hallite sales office for additional size information.

FEATURES

- Exceptional load bearing capabilities
- Outstanding wear resistance with low lubricity fluids
- High compressive strength
- Very low water absorption
- Low friction
- Easy to install

PART NUMBER STRUCTURE

708MXXXRXXXDXXX

- Type
- M = Metric
- E = Inch
- **Active Diameter**
- Bore Dia. for Piston
- Rod Dia. for Gland
- R = Rod
- P = Piston
- Housing Length L_1 x 10
- Cut Angle
- A : Solid
- B : 90°
- C : 30°
- D : 45°
- E : 60°
- S x 100

MATERIALS

As standard, this product comes in the following material. Contact your local Hallite technical team if you would like to find out if this profile can be made in a custom material to suit your application. For further material details, please refer to the Hallite Material Table.

MATERIAL OPTIONS	Name	Type	Colour
Standard	POM 0172	POM w Filler	Red

TECHNICAL DETAILS

OPERATING CONDITIONS	METRIC	INCH
Maximum Speed	5.0 m/sec	16.0 ft/sec
Temperature Range	-40°C +100°C	-40°F +212°F

NOTE

Data given are maximum values and can apply depending on specific application. Maximum ratings of temperature, pressure, or operating speeds are dependent on fluid medium, surface, gap value, and other variables such as dynamic or static service. Maximum values are not intended for use together at the same time, e.g. max temperature and max pressure. Please contact your Hallite technical representative for application support.

TYPICAL PHYSICAL PROPERTIES	METRIC	INCH
Specific Gravity	1.42	1.42
Coefficient of Dynamic Friction on Steel Surface (0.2 µmRa) / (8 µinCLA)	Dry 0.22	Dry 0.22
	Lubricated 0.05	Lubricated 0.05

BEARING TOLERANCES	L_1 mm	S mm	L_1 in	S in
	-0.10 -0.60	-0.02 -0.10	-0.005 -0.025	-0.001 -0.004

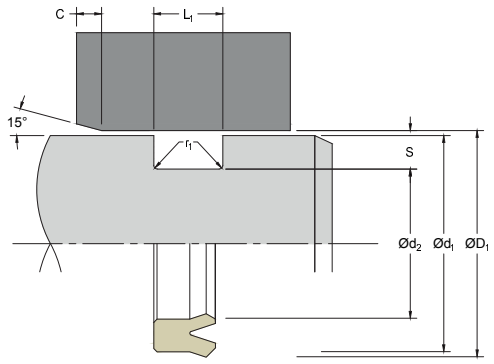
WIDTH OF BEARING SPLIT – W	$Ød_1$, $ØD_1$ mm	W mm	$Ød_1$, $ØD_1$ in	W in
	≤50	3.00 - 1.50	≤2	0.12 - 0.06
	≤120	5.00 - 3.50	≤5	0.19 - 0.14
	≤550	7.00 - 5.50	≤20	0.35 - 0.29

HOUSING DETAILS & TOLERANCES	METRIC		INCH	
Rod	$Ød_1$ mm	f9	$Ød_1$ in	f9
	$ØD_2 = Ød_1 + 2S$ mm	≤ Ø80 H10 > Ø80 H9	$ØD_2 = Ød_1 + 2S$ in	≤ Ø3.000 H10 > Ø3.000 H9
	$ØD_3 = Ød_1 + G$ mm	G min / max	$ØD_3 = Ød_1 + G$ in	G min / max
	L_1 mm	+0.20 -0	L_1 in	+0.008 -0
Piston	$ØD_1$ mm	H11	$ØD_1$ in	H11
	$Ød_2 = ØD_1 - 2S$ mm	h8	$Ød_2 = ØD_1 - 2S$ in	f9
	$Ød_3 = ØD_1 - G$ mm	G min / max	$Ød_3 = ØD_1 - G$ in	G min / max
	L_1 mm	+0.20 -0	L_1 in	+0.008 -0

SURFACE ROUGHNESS	µmRa	µmRz	µmRt	µinRa	µinRz	µinRt
Dynamic Sealing Face $Ød_1$, $ØD_1$	0.4	1.6 max	4 max	16	63 max	157 max
Static Sealing Face $ØD_2$, L_1, $Ød_2$	3.2 max	10 max	16 max	125 max	394 max	630 max

Hallite

ADDITIONAL PRODUCTS

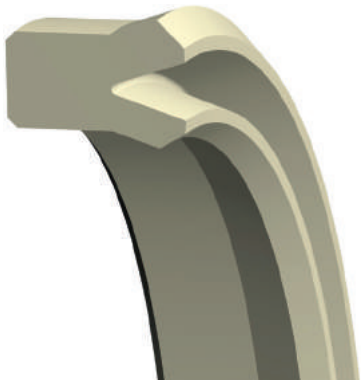


155

ADDITIONAL PRODUCT

Polyester Static Seal
for Bore Sealing Applications

DESIGN



The Hallite 155 U-ring static seal designed to seal the joint between the gland and the cylinder bore. The Hallite 155 replaces the conventional O-ring and back-up ring combination.

Through its special design and polyester material compound, the seal will work with a maximum extrusion gap of 0.40 mm at 500 bar pressure.

Every nominal diameter of the Hallite 155 is suitable for a range of bore diameters, $ØD_1$. See part number range for details.

This seal was developed for water-based, HFA, applications, but can also be used with standard mineral oil fluids.

FEATURES

- Replaces an O-ring and back-up combination
- Provides reliable high pressure sealing

MATERIALS

As standard, this product comes in the following material. Contact your local Hallite technical team if you would like to find out if this profile can be made in a custom material to suit your application. For further material details, please refer to the Hallite Material Table.

MATERIAL OPTIONS	Name	Type	Colour
Standard	TPE 201	TPE	Light Grey

TECHNICAL DETAILS

OPERATING CONDITIONS	METRIC	INCH
HFA Fluids		
Temperature Range	-0°C +60°C	+32°F +140°F
Maximum Pressure	500 bar	7500 psi
Mineral Oil		
Temperature Range	-30°C +100°C	-22°F +212°F
Maximum Pressure	500 bar	7500 psi

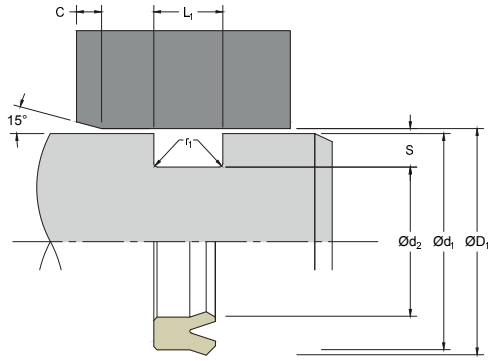
NOTE

Data given are maximum values and can apply depending on specific application. Maximum ratings of temperature, pressure, or operating speeds are dependent on fluid medium, surface, gap value, and other variables such as dynamic or static service. Maximum values are not intended for use together at the same time, e.g. max temperature and max pressure. Please contact your Hallite technical representative for application support.

SURFACE ROUGHNESS	µmRa	µmRz	µmRt	µinRa	µinRz	µinRt
Static Sealing Face $ØD_1$	1.6 max	6.3 max	10 max	63 max	250 max	394 max
Static Sealing Face $Ød_2$	1.6 max	6.3 max	10 max	63 max	250 max	394 max
Static Housing Faces L_1	3.2 max	10 max	16 max	125 max	394 max	630 max

RADII			
Groove Section ≤ S mm	4.00	5.60	6.80
Min Chamfer C mm	6.00	8.00	10.00
Max Fillet Rad r_1 mm	0.20	0.40	0.40

TOLERANCES	$Ød_1$	$Ød_2=ØD_1-2S$	$ØD_1$	L_1
mm	f7	h9	H8	+0.30 -0



155

ADDITIONAL PRODUCT

Polyester Static Seal
for Bore Sealing Applications

PART NUMBER RANGE

METRIC				
$ØD_1$ RANGE	L_1	S	NOMINALS	PART No.
72 - 75	8.20	4.00	72 x 64.0 x 8.2	4543600
80 - 85	8.20	4.00	80 x 72.0 x 8.2	4858600
90 - 91	8.20	4.00	90 x 82.0 x 8.2	4525900
92 - 100	8.20	4.00	92 x 84.0 x 8.2	4439800
100 - 105	8.20	4.00	100 x 92.0 x 8.2	4796900
105 - 112	8.20	4.00	105 x 97.0 x 8.2	4788200
112 - 120	8.20	4.00	112 x 104.0 x 8.2	4419500
127 - 135	8.20	4.00	127 x 119.0 x 8.2	4414500
137 - 144	8.20	4.00	137 x 129.0 x 8.2	4383000
145 - 153	8.20	4.00	145 x 137.0 x 8.2	4764700
154 - 164	8.20	4.00	154 x 146.0 x 8.2	4414600
165 - 174	8.20	4.00	165 x 157.0 x 8.2	4777400
175 - 184	8.20	4.00	175 x 167.0 x 8.2	4405400
188 - 197	8.20	4.00	188 x 180.0 x 8.2	4405500
198 - 204	8.20	4.00	198 x 190.0 x 8.2	4759800
205 - 212	8.20	4.00	205 x 197.0 x 8.2	4428300
216 - 225	8.20	4.00	216 x 208.0 x 8.2	4396600
230 - 240	11.20	5.60	230 x 218.8 x 11.2	4432500
242 - 249	11.20	5.60	242 x 230.8 x 11.2	4402600
250 - 260	8.20	4.00	250 x 242.0 x 8.2	4767500
258 - 270	11.20	5.60	258 x 246.8 x 11.2	4405600
274 - 286	11.20	5.60	274 x 262.8 x 11.2	4732600
284 - 290	11.20	5.60	284 x 272.8 x 11.2	4797000
290 - 300	11.20	5.60	290 x 278.8 x 11.2	4414700
300 - 311	11.20	5.60	300 x 288.8 x 11.2	4777600
312 - 322	10.30	5.00	312 x 302.0 x 10.3	4712100
320 - 332	11.20	5.60	320 x 308.8 x 11.2	4387000
340 - 350	11.20	5.60	340 x 328.8 x 11.2	4473300
355 - 365	11.20	5.60	355 x 343.8 x 11.2	4756400
370 - 380	11.20	5.60	370 x 358.8 x 11.2	4774700
375 - 385	15.00	6.80	375 x 361.4 x 15.0	4838200
385 - 394	15.00	6.80	385 x 371.4 x 15.0	4773200
395 - 405	15.00	6.80	395 x 381.4 x 15.0	4732700
405 - 415	15.00	6.80	405 x 391.4 x 15.0	4578100
420 - 430	15.00	6.80	420 x 406.4 x 15.0	4777500
430 - 440	15.00	6.80	430 x 416.4 x 15.0	4807500
465 - 475	15.00	6.80	465 x 451.4 x 15.0	4862500
475 - 485	15.00	6.80	475 x 461.4 x 15.0	4820700
500 - 510	15.00	6.80	500 x 486.4 x 15.0	4838300
520 - 530	15.00	6.80	520 x 506.4 x 15.0	4815500

PART NUMBERS ON THIS PAGE ARE LISTED IN THE STANDARD MATERIAL OPTION. FOR MATERIAL VARIATIONS OR FOR CUSTOM SIZES, MATERIALS, OR SEAL DESIGNS, PLEASE CONTACT YOUR LOCAL HALLITE REPRESENTATIVE.

HALLITE SEALS

As a global provider of high-performance sealing solutions, Hallite's reputation is backed by 100 years of excellence in engineering, manufacturing, sustained technical support, and customer service. With some of the industry's shortest lead times, we bring to market a diverse portfolio of catalogued and customised sealing solutions made from materials that are formulated for performance-critical environments. From the off-highway equipment used in construction and infrastructure to the landing gear used in aerospace, Hallite fluid seals are key components utilised in the most demanding applications.

To meet growing worldwide demand, Hallite combines carefully chosen and managed inventory in local markets, supported by fast-track moulding and machining capabilities to provide high service levels. Hallite offers a broad range of catalogue products, OEM custom moulded and machined designs and custom on-demand machining capabilities from design to shipment.

Hallite operations can be found in strategic geographies throughout Asia Pacific, Western Europe, and North America. Combining an expansive global footprint with a dense network of strategic service partners completes our global presence; ensuring that the full range of Hallite products, capabilities, and expertise are always available when and where you need them most.

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