



Hallite Seals



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This copy of the 1999 Hallite Seals Australia catalogue has been supplied courtesy of Transeals Pty Ltd.

For more information on Transeals additional range of Hydraulic Seals, including Custom Seals Kits, and our comprehensive range of Power Transmission products, please contact our technical sales people, or go to <http://www.transeals.com.au> for our latest catalogues.

Hallite Seals



For optimum seal life and performance, seal selection is critical. There are many factors to consider, including the cylinder itself. Although the introductory section, pages 4 - 26, provides technical data to help you with selection, we strongly suggest you contact our sales engineers to confirm your choice.

Products are grouped according to their prime use, i.e. rod seals, piston seals, wipers, etc. Design data is provided for each product within the group and is listed by product type. These are followed by a list of all parts within the group by size order - metric sizes first and then inch sizes.

Parts suitable for ISO standard housings and Asian housings are clearly identified within product group size lists.

Commitment to research and development means we are constantly adding to our range of products. If you cannot locate the style or size you require, or if you have any special requirement, please contact us or your nearest Hallite distributor.

The information contained in 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 on request), since the conditions of use are beyond our control.

Hallite Seals is continuously improving its range and reserves the right to withdraw or modify any item shown in this catalogue.

All our activities conform to the highest quality assurance systems. Hallite Seals International is accredited to ISO 9001 and are approved by many of the worlds foremost O.E.M.s Hallite Seals Australia is accredited to ISO 9002 .



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Hallite Seals

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Seal Designs



Section	Hallite Type	Page	Metric	Inch	Profile	bar							°C						m/s							
						0	100	200	300	400	500	600	700	-50	0	+50	+100	+150	+200	0	1	2	3	4	5	
Rod Seals	15	1/1	•	•					300								-30	+100°C			0.5					
	16	1/2	•	•					300								-30	+100°C						4.0		
	18	1/3	•	•						500							-30	+100°C			0.5					
	21	1/4	•	•					400								-30	+100°C			0.5					
	25	1/5	•	•					400		700*						-45	+110°C			1.0					
	26	1/6		•		30											-30	+100°C			0.5					
	511	1/7		•					350								-40	+110°C			0.5					
	513	1/8		•					350								-40	+110°C			0.5					
	601	1/9	•	•					400		700*						-45	+110°C			1.0					
	605	1/10	•	•					400		700*						-45	+110°C			1.0					
	610	1/11		•					400								-45	+110°C			1.0					
	611	1/12		•					240								-45	+110°C			1.0					
	616	1/13		•					240								-45	+110°C			1.0					
	620	1/14		•					400								-45	+110°C			1.0					
	621	1/15	•	•							700						-45	+110°C			1.0					



Seal Designs

Section	Hallite Type	Page	Metric	Inch	Profile	bar							°C						m/s						
						0	100	200	300	400	500	600	700	-50	0	+50	+100	+150	+200	0	1	2	3	4	5
Rod Seals	631	1/16	•									700		-45	+110°C					0.5					
	652	1/17	•									700		-45	+110°C					1.0					
	653	1/18	•	•								700		-45	+110°C					1.0					
	658	1/19		•					400					-45	+110°C					1.0					
	902	1/20	•					350						-35	+100°C					0.5					
	903	1/21	•					350						-35	+100°C					0.5					
Section	Hallite Type	Page	Metric	Inch	Profile																				
Piston Seals - Double Acting	43	2/1		•								700 + →				200°C + →							5.0 + →		
	50	2/2	•					350						-30	+100°C					0.5					
	51	2/3	•									700		-30	+100°C					0.5					
	52	2/4	•									600		-30	+100°C					0.8					
	53	2/5	•	•								500		-30	+100°C					0.5					
	54	2/6	•	•				350						-30	+100°C								4.0		
	56	2/7	•	•								500		-30	+100°C					0.5					
	57	2/8	•	•								700		-30	+100°C					0.5					

Seal designs



Section	Hallite Type	Page	Metric	Inch	Profile	bar							°C						m/s						
						0	100	200	300	400	500	600	700	-50	0	+50	+100	+150	+200	0	1	2	3	4	5
Piston Seals - Double Acting	58	2/9	•	•					400							-30	+100°C			0.5					
	64	2/10	•						400							-30	+100°C			0.5					
	65	2/11	•	•			200									-30	+100°C			0.5					
	68	2/12	•							500						-30	+100°C			0.5					
	76	2/13		•			200									-40	+100°C			0.5					
	77	2/14	•	•					350							-30	+100°C			0.5					
	83	2/15		•					400							-30	+100°C			0.5					
	707	2/16	•				250									-30	+100°C			0.5					
	714	2/17		•						700 + →						-30	+150°C				2.0				
	730	2/18	•								700					-40	+110°C			1.0					
	735	2/19	•	•						500						-40	+120°C				1.5				
	753	2/20	•						350							-30	+100°C			0.5					
	754	2/21	•						350							-40	+110°C			1.0					
	755	2/22		•					350							-40	+110°C			1.0					
	770	2/23		•					350							-40	+110°C			1.0					



Seal Designs

Section	Hallite Type	Page	Metric	Inch	Profile	bar							°C					m/s								
						0	100	200	300	400	500	600	700	-50	0	+50	+100	+150	+200	0	1	2	3	4	5	
Piston Seals - Double Acting	917	2/24	•																							
	918	2/25	•																							
Piston Seals - Single Acting	18	3/1	•	•																						
	25	3/2	•	•																						
	26	3/3		•																						
	66	3/4		•																						
	67	3/5		•																						
	71	3/6	•	•																						
	511	3/7		•																						
	512	3/8		•																						
	601	3/9	•	•																						
	606	3/10	•	•																						
	611	3/11		•																						
	655 *See note																									
						*655 are a group of non standard piston seals. Please contact Hallite seals for detailed information																				

Seal Designs



Section	Hallite Type	Page	Metric	Inch	Profile	bar							°C						m/s							
						0	100	200	300	400	500	600	700	-50	0	+50	+100	+150	+200	0	1	2	3	4	5	
Piston Seals - Single Acting	659	3/12	•	•						400							-45	+110°C			1.0					
	906	3/13	•							350							-40	+100°C			0.5					
	923	3/14	•							300							-30	+90°C			1.0					
Vee Pack Sets	07	4/1	•	•									700				-30	+100°C			0.5					
	08	4/2	•							400							-30	+100°C			0.5					
	09	4/3	•	•						400							-30	+100°C			0.5					
	11	4/4	•							400							-30	+100°C			0.5					
	12	4/5	•							400							-30	+100°C			0.5					
	13	4/6	•										700				-30	+100°C			0.5					
	14	4/7	•										700				-30	+100°C			0.5					
	51	4/8	•										700				-30	+100°C			0.5					



Seal Designs

Section	Hallite Type	Page	Metric	Inch	Profile	°C						m/s					
						-50	0	+50	+100	+150	+200	0	1	2	3	4	5
Wipers	31	5/1	•	•				-30	+100°C							4.0	
	33	5/2	•	•				-30	+100°C							4.0	
	35	5/3	•					-30	+90°C				1.0				
	36	5/4	•					-30	+100°C				1.0				
	37	5/5	•					-30	+100°C				1.0				
	38	5/6	•					-40	+120°C							4.0	
	41	5/7	•					-30	+100°C				1.0				
	420	5/8	•					-40	+110°C				1.0				
	421	5/9	•					-40	+110°C				1.0				
	424	5/10	•					-30	+90°C				1.0				
	425	5/11	•					-25	+90°C					2.0			
	520	5/12	•					-40	+110°C							4.0	
	831	5/13	•					-30	+100°C							4.0	
	834	5/14	•					-45	+110°C							4.0	
	839	5/15	•					-45	+110°C							4.0	

Seal Designs

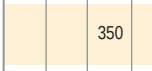
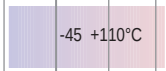
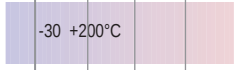
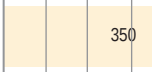
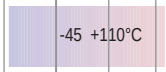


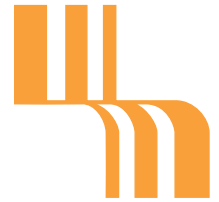
Section	Hallite Type	Page	Metric	Inch	Profile	°C						m/s					
						-50	0	+50	+100	+150	+200	0	1	2	3	4	5
Wipers	840	5/16	•					-45	+110°C							4.0	
	841	5/17	•					-45	+110°C							4.0	
	842	5/18	• •					-45	+110°C							4.0	
	846	5/19	•					-45	+110°C							4.0	
	860	5/20	• •					-40	+100°C				1.0				
	862	5/21	•					-40	+100°C				1.0				
	904	5/22	•					-30	+100°C							4.0	
	905	5/23	•					-30	+100°C				1.0				
	913	5/24	•					-30	+100°C							4.0	
	915	5/25	•					-30	+90°C					2.0			
	919	5/26	•					-30	+100°C					2.0			
	921	5/27	•					-30	+100°C				1.0				



Seal Designs

Section	Hallite Type	Page	Metric	Inch	Profile	°C							m/s						Notes
						-60	0	50	100	150	200	250	0	1	2	3	4	5	
Bearings	63	6/1	•	•					-40	+110°C								5.0	Hallite 87, 506, 920 wear strip are also suitable for oscillating and rotary applications. Hallite 87 and 506 include cross sections that satisfy the requirements of ISO 10766. Hallite 506 is available in three different formats; spiral lengths, cut rings and flat coils, see the relevant data sheet for additional information.
	87	6/2	•						-50	+200°C								5.0	
	506	6/4	•	•					-40	+120°C								5.0	
	533	6/9	•	•					-40	+120°C								5.0	
	910	6/10	•						-40	+120°C								5.0	
	920	6/11	•						-50	+200°C								5.0	

Section	Hallite Type	Page	Metric	Inch	Profile	bar							°C					m/s								
						0	100	200	300	400	500	600	700	-50	0	+50	+100	+150	+200	0	1	2	3	4	5	
Additional products	01	7/1	•	•		Nitrile rubber (70 & 90 durometer Shore A) and Viton O rings. Full inch range to BS1806:1962; and American standards AS568, AN6227 and AN6230. Comprehensive metric range to British Standards BS 4518 and German standard DIN3770																				
	05	7/1		•		Nitrile rubber (70 durometer) X ring. Large inch range corresponding to BS1806:1962																				
	80	7/5	•																					SWIVEL SEAL		
	90	7/6	•															STATIC								
	117	7/6	•			Endless composite Nylon back up ring for use with metric rod and piston seals.																				
	130	7/10	•	•		Large range of bonded washers available in metric and inch sizes Also available in a variety of different metals and rubber compounds.																				
	480	7/6		•		Nitrile rubber (90 durometer) contoured back up ring. Full imperial range.																				
	657	7/12	•	•														STATIC								



Selecting a seal

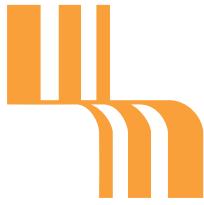
The selection of the correct seal for the application is vital to the operation and performance of both the equipment and the seal. Seals sometimes get a bad name simply because they were selected to do a job they were not designed for.

Considering this and the many factors used in seal selection, some technical, some commercial, it is wise to always **OVER SPECIFY**.

We strongly recommend Hallite's technical department be consulted if there is any doubt in this extremely important aspect.

<u>FACTOR</u>	<u>CONSIDERATIONS</u>
Pressure	Is it known ? Are there pressure spikes ?
Temperature	Where will the equipment be used ?
Speed	Is it constant ? If very slow is 'Stick Slip' a problem ?
Media	What is the fluid ? - Oil, Water, etc.
Design	Bearings?, Extrusion Gaps?, Split Housing?
Bore surface	How is the cylinder made?, what is the surface finish?
Rod surface	How is the rod made?, what is the surface finish?
Contamination	Where will the equipment be used? What contamination will there be, water, dust?
Application	Where is the equipment to be used? What does it do?
Customer	What does he prefer? Rubber? P.U.?
Friction	Good position control required. ?

IF IN DOUBT, ASK HALLITE SEALS



ISO reference list

ISO reference	Scope	Hallite product group codes
5597	Single acting seals	21, 601, 605, 606, 610, 621
6195 A	Wipers A	33, 38, 838
6195 B	Wipers B	860
6195 C	Wipers C	839
6547	Piston seals with integral bearings	50, 68
7425-1	Piston seals	54, 754
7425-2	Rod seals	16, 616
10766	Rod / piston bearings	87, 506

Relevant International and British Standards

Standard	HFP: Hydraulic fluid power FP: Fluid power
ISO 3601-1	FP Systems - O rings - Part 1: Inside diameters, cross sections, tolerances and size identification code.
ISO 3601-2	FP Systems - O rings - Part 2: Design criteria for standard applications.
ISO 3601-3	FP Systems - O rings - Part 3: Quality acceptance criteria.
ISO 3601-4	FP Systems - O rings - Part 4: Inside diameters, cross sections, tolerances and size identification code for O rings used with fluid power and general use fittings.
ISO 3601-5	FP Systems - O rings - Part 5: Anti-extrusion rings.
ISO 3601-6	FP Systems - O rings - Part 6: Materials.
ISO 3939	FP Systems and components - Multiple lip packing sets - Method for measuring stack height.
ISO 5597	HFP - Cylinders - Housings for piston and rod seals in reciprocating applications - Dimensions and tolerances.
ISO 6072	HFP Compatibility between elastomeric materials and fluids.
ISO 6195	FP systems and components - Single rod cylinders - Housings for rod wiper rings in reciprocating applications - Dimensions and tolerances.
ISO 6547	HFP - Cylinders - Piston seal housings incorporating bearing rings - Dimensions and tolerances.
ISO 6743-4	Lubricants, industrial oils and related products (class L) - Classification - Family H (Hydraulic systems).
ISO 7425-1	HFP - Housings for elastomer-energised plastic -faced seals - Dimensions and tolerances - Part 1: Piston seal housings.
ISO 7425-2	HFP - Housings for elastomer-energised plastic -faced seals - Dimensions and tolerances - Part 2: Rod seal housings
ISO 7986	HFP - Sealing devices - Standard test methods to assess the performance of seals used in oil hydraulic reciprocating applications.
ISO 10766	HFP - Cylinders - Housing dimensions for rectangular-section cut bearings for pistons and rods.
BS 1806: 1989	Dimensions of toroidal sealing rings (O rings) and housings
BS 4518: 1982	Specification for metric dimensions of O rings and their housings
BS 5016: 1988	Dimensions of anti-extrusion back-up rings and their housings
BS 7714: 1993	Guide for the care and handling of seals for fluid power applications



Use and fitting of seals

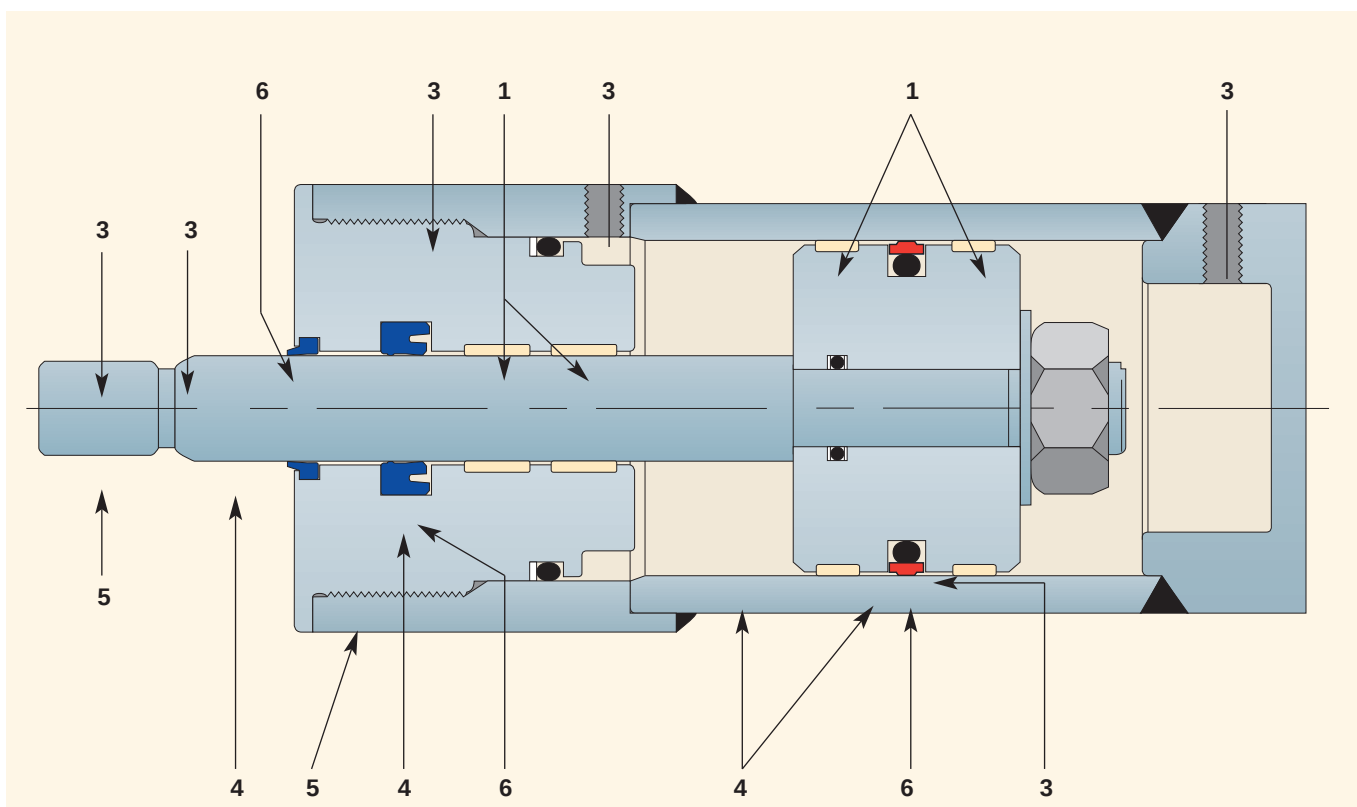
Our quality control methods for material and manufacturing processes ensure that all seals leaving our factories are in a condition capable of giving a long and reliable service life. We have found from many years experience, that premature seal failure can be avoided if the following recommendations 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 side-loading, 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.
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 on fitting are also free of dirt, swarf or other contaminants. Check that both static and dynamic

housing surface finishes meet specifications.

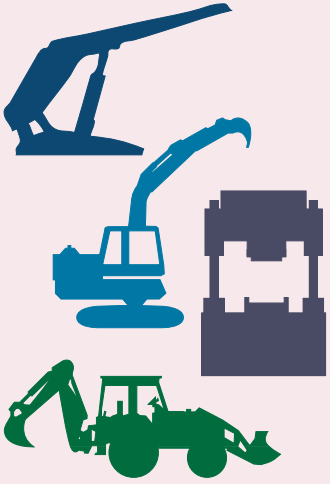
5. Where the difference between a thread diameter over which the seal must pass and the seal diameter is small, use some form of protection over the thread, such as a fitting sleeve made of hard plastic.
6. Check that the seal is of the correct type, part number and size, and that the specified material 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 localised 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.





Operating conditions

Cylinder Specification	Light Duty	Medium Duty	Heavy Duty
Pressure Max. Normal Working	350 bar 5000 psi 160 bar 2300 psi No Pressure Peaks	500 bar 7500 psi 250 bar 3600 psi Intermittent Pressure Peaks	700 bar 10000 psi 400 bar 6000 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 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 indoor & outdoors but some protection from the weather.	Outdoors all the time or a dirty indoor area. Wide variations in temperature, both ambient & 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 & lifting platforms, heavy duty machine tool & injection moulding machines, some auxiliary mining machinery, aircraft equipment, presses, heavy duty tippers (telescopic), heavy duty mechanical handling. 	Foundry & metal fabrication plant, mining machinery, roof supports, heavy duty earth moving machinery, heavy duty off-road vehicles, heavy duty presses. 

Pressure, Speed, Temperature Range

From many years of application experience with sealing hydraulic equipment, supported by the results from an extensive test programme, we know that it is necessary to link the three main operating features of 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 your details to your local Hallite sales office.



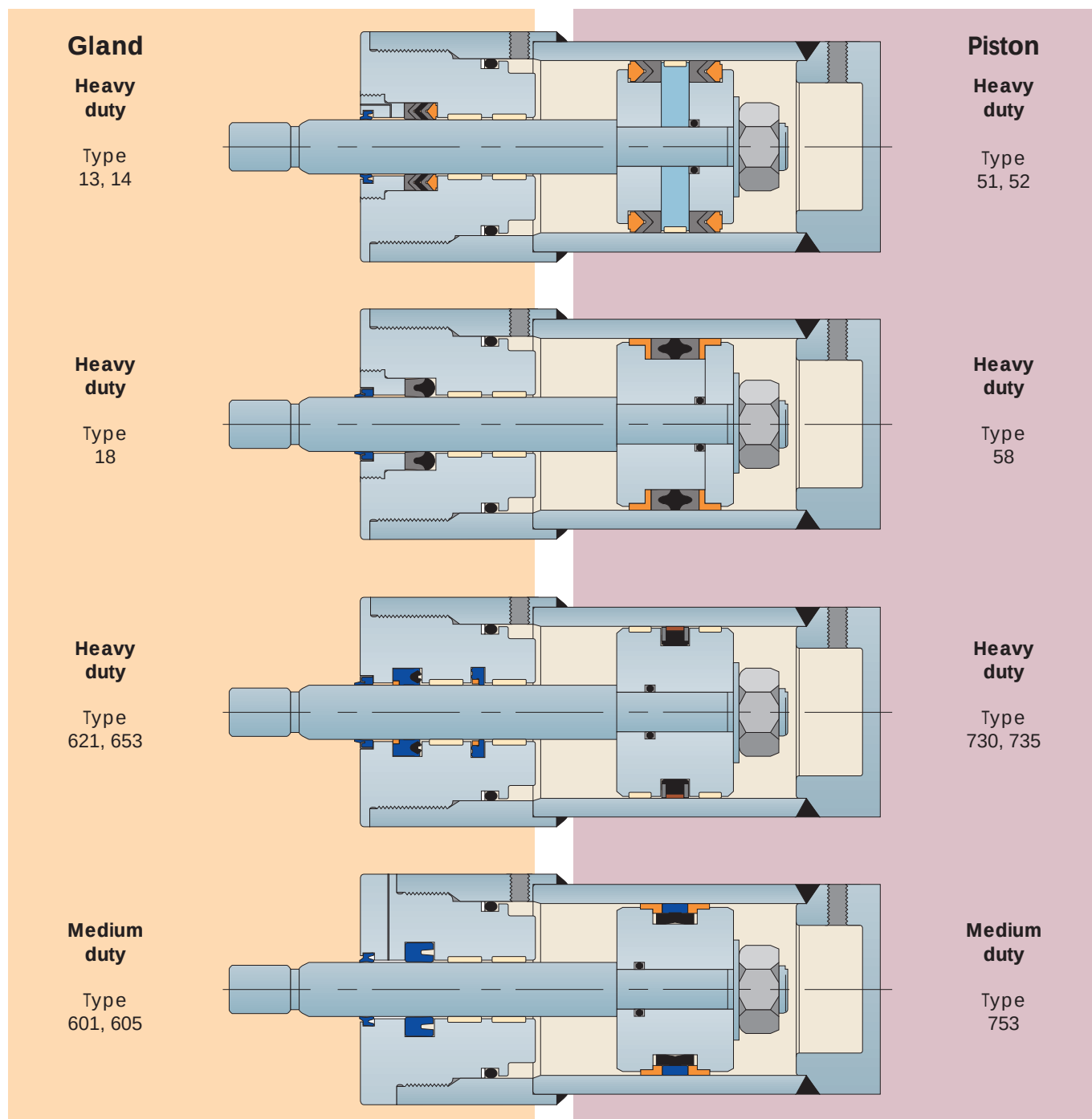
Housing designs & seal options

Cylinder housings and seal options

The following diagrams illustrate how Hallite's wide range of products can be applied to a selection of some of the most popular cylinder designs servicing the world's fluid power industry.

The diagrams show different gland and piston arrangements to illustrate alternative sealing methods currently in use and a suitable Hallite product.

If the application which you are interested in is of a non-standard nature please contact Hallite's technical department.

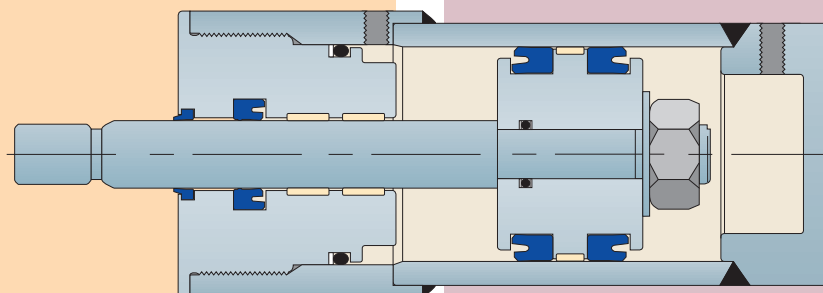


Housing designs & seal options

Gland

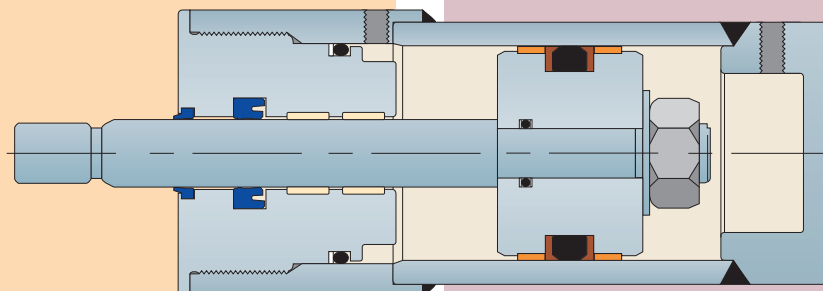
Medium
duty

Type
601, 605



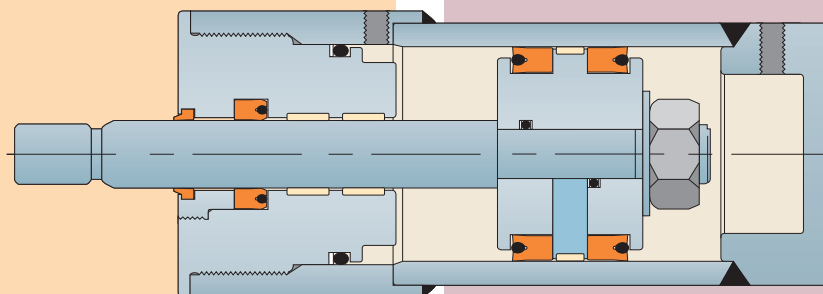
Medium
duty

Type
605



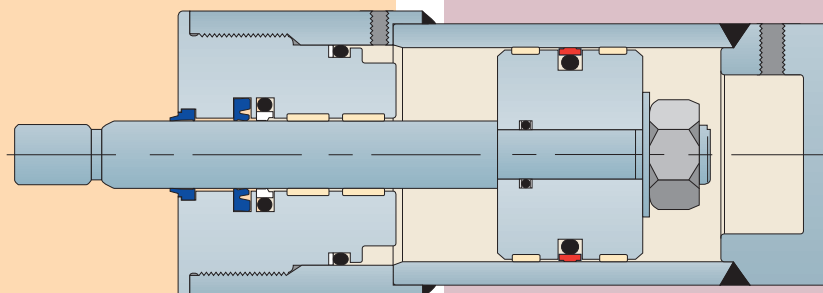
Medium
duty

Type
513



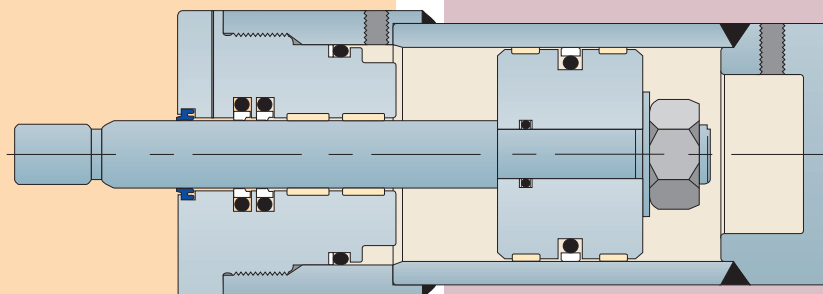
Light to medium
duty

Type
616, 16



High speed
light duty

Type
16



Piston

Medium
duty

Type
601, 606

Medium
duty

Type
53

Medium
duty

Type
511, 512

Light to medium
duty

Type
754, 755, 770

High speed
light duty

Type
54

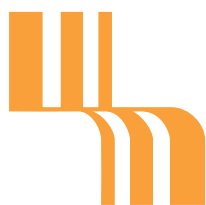


Materials & fluid compatibility

Max. continuous working temperatures C° and temperature ranges for materials, within fluid power fluids

			SERVICE FLUIDS								
			Fluids based on mineral oils				Greases		Fuels		
Material	Continuous material service temperature range °C	Intermittent material service temperature range °C	Motor oils	Hypoid gear oils	Automatic transmission fluid	ISO 6743-4 Hydraulic oils (HL, HM, HV)	Mineral oil based greases	Silicon based greases	Diesel fuel	Fuel for gasoline/ petrol engines - normal	Fuel for gasoline/ petrol engines - super
Temperature range for fluid °C			+ 150 - 40	+ 150 - 40	+ 160 - 50	+ 100 - 30	+ 100 - 30	+ 250 - 50			
			Maximum continuous service temperature in fluids °C								
NBR 70 IRHD NBR 90 IRHD Nitrile (medium)	+ 100 - 30	+ 120 - 30	100	90	100	100	100	100	*	*	*
FKM 75 IRHD FKM 90 IRHD Fluoro-elastomer	+ 200 - 20	+ 250 - 20	150	150	160	100	100	200	150	150	150
EPDM 70 IRHD EPDM 80 IRHD	+ 120 - 50	+ 150 - 50	NS	NS	NS	NS	NS	120	NS	NS	NS
VMQ 70 IRHD Silicone	+ 200 - 55	+ 250 - 55	*	*	*	*	100	*	NS	NS	NS
HNBR 75 IRHD Hydrogenated nitrile	+ 130 - 30	+ 150 - 30	130	110	130	100	100	130	*	*	*
IIR Butyl	+ 120 - 40	+ 140 - 40	NS	NS	NS	NS	NS	120	NS	NS	NS
FFKM Perfluoro-elastomer	+300 +200 +40 -20		150	150	160	100	100	200	150	150	150
AU Polyester PU	+ 100 - 30	+ 110 - 30	100	100	100	100	100	100	60	60	60
EU Polyether PU	+ 100 - 40	+ 110 - 45	100	100	100	100	100	100	60	60	60
Polyester elastomer	+ 100 - 40	+ 120 - 40	100	100	100	100	100	100	60	60	60
PA Polyamide	+ 100 - 40	+ 120 - 40	100	100	100	100	100	100	100	100	100
POM Acetal	+ 100 - 45	+ 120 - 45	100	100	100	100	100	100	100	100	100
PPS Polyphenylene sulphide	+ 200 - 40	+ 200 - 40	150	150	160	100	100	200	150	150	150
PTFE Polytetrafluoroethylene	+ 200 - 200	+ 200 - 200	150	150	160	100	100	200	150	150	150
Thermosetting polyester resin	+ 100 - 50	+ 130 - 200	100	100	100	100	100	100	100	100	100
PEEK Polyether-etherketone	+ 250 - 65	+ 300 - 65	150	150	160	100	100	250	150	150	150

* Denotes values vary greatly for individual elastomers within this group NS Denotes that the elastomer is not suitable
The work of the BFPA technical working group 'TC16/WG8' in the compilation of this table is acknowledged.



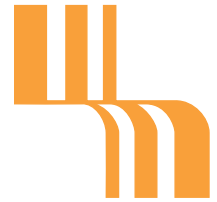
Materials & fluid compatibility

Max. continuous working temperatures C° and temperature ranges for materials, within fluid power fluids

SERVICE FLUIDS											
Fire-resistant hydraulic fluids					Environmentally acceptable fluids				Other service fluids		
ISO 6743-4 HFA fluids (5/95 water based)	ISO 6743-4 HFB fluids (60/40 invert emulsion)	ISO 6743-4 HFC fluids (water glycol)	ISO 6743-4 HFDR fluids (phosphate ester ALKYL (aero))	ISO 6743-4 HFDR fluids (phosphate ester ARYL (ind.))	ISO 6743-4 HETG fluids (Vegetable oil based)	ISO 6743-4 HEES fluids (Synthetic ester based)	ISO 6743-4 HEPG fluids (Synthetic glycol based)	ISO 6743-4 HEPR fluids (Synthetic hydrocarbons)	Water	Air	Brake fluids
+ 60 + 5	+ 60 + 5	+ 60 - 30	+ 100 - 50	+ 150 - 0	+ 60 - 10	+ 100 - 40	+ 100 - 50	+ 150 - 50	+ 60 (1) + 5	+ 200 + 2	+ 130 - 50
Maximum continuous service temperature in fluids °C											
60	60	60	NS	NS	60	60	60	100	80	100	NS
60	60	NS	NS	150	60	100	80	150	100	200	NS
NS	NS	60	80	80	NS	NS	NS	NS	120	120	120
NS	NS	NS	NS	NS	NS	NS	NS	★	100	200	80
60	60	60	NS	NS	60	60	80	130	130	130	NS
NS	NS	60	100	120	NS	NS	NS	NS	120	120	80
60	60	60	100	150	60	100	100	150	150	200	130
40	40	NS	NS	NS	60	60	60	100	40	40	NS
60	60	40	NS	NS	60	80	60	100	60	80	NS
60	60	NS	NS	NS	60	80	60	100	60	80	NS
60	60	60	100	100	60	100	100	100	60	80	80
60	60	60	100	100	60	100	100	100	80	80	80
60	60	60	100	150	60	100	100	150	150	200	130
60	60	60	100	150	60	100	100	150	150	200	130
60	60	40	100	100	60	100	100	100	80	100	NS
60	60	60	100	150	60	100	100	150	150	200	130

In view of the variations in formulation of both oils and polymers, the compatibility of all combinations should be confirmed by testing and field service performance for each application.

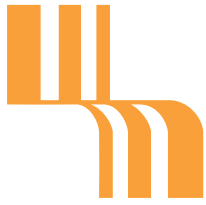
(1) Temperature range for water in fluid power applications.



Materials

Material Name	Material Group	Designation	Temperature		Hardness	Colour	Rod	Piston	Wiper	Bearing
			°C	°F						
Nitrile - medium	Synthetic rubber	NBR	-30 +120	-22 +250	93 IRHD	Black	H			
Nitrile - medium	Synthetic rubber	NBR	-30 +120	-22 +250	90 IRHD	Black			H	
Nitrile - high	Synthetic rubber	NBR	-10 +140	-14 +284	80 IRHD	Black	P	P	P	
Nitrile - low	Synthetic rubber	NBR	-45 +100	-45 +212	80 IRHD	Black			H	
Nitrile - medium	Synthetic rubber	NBR	-30 +120	-22 +250	78 IRHD	Black		H		M(1)
Nitrile - medium	Synthetic rubber	NBR	-30 +120	-22 +250	75 IRHD	Black	H	H		
Nitrile - medium	Synthetic rubber	NBR	-30 +120	-22 +250	73 IRHD	Black	H	H		
Nitrile - medium	Synthetic rubber	NBR	-30 +120	-22 +250	70 IRHD	Black	H	H		
Nitrile - low	Synthetic rubber	NBR	-45 +100	-45 +212	70 IRHD	Black	H	H		
Nitrile - medium 407	Synthetic rubber	NBR	-30 +120	-22 +250	70 IRHD	Black		H		
Nitrile - low 407 LT	Synthetic rubber	NBR	-56 +100	-70 +212	70 IRHD	Black		H		
Nitrile - medium	Synthetic rubber	NBR	-30 +120	-22 +250	65 IRHD	Black		H		
Hallprene - rubber/fabric	Composite	Cotton/NBR	-30 +120	-22 +250		Black	H	H		
Fluoroelastomer rubber/fabric	Composite	Cotton/FKM	-20 +150	-4 +302		Black	H	H		
Fluoroelastomer	Synthetic rubber	FKM	-20 +200	-4 +392	75 IRHD	Black	HP	HP	HP	
Hythane 181	TPE	EU	-45 +110	-50 +230	93 IRHD	Blue	HP	HP	HP	M
Hythane 282	TPE		-30 +125	-22 +255	93 IRHD	Purple	H	H	H	
Polyurethane	TPE	AU	-40 +100	-40 +212	94 IRHD	Dark blue			H	
Polyurethane	TPE	AU	-30 +100	-22 +212	93 IRHD	Dark blue		H	H	
Standard polyester elastomer	TPE		-40 +120	-40 +250	55 D	Red		H	H	
Hydrolysis stabilised polyester elastomer	TPE		-40 +120	-40 +250	55 D	Grey	H	H		M
Hydrolysis stabilised polyester elastomer	TPE		-40 +140	-40 +284	72 D	Red		H		M
Lubricated stabilised polyester elastomer	TPE		-40 +120	-40 +250	55 D	Dark brown		HP		
Acetal	Eng. plastic	POM	-45 +120	-50 +250	R 115	Orange	H	H		HP M
PTFE glass filled	Eng. plastic	PTFE	-50 +200	-58 +392	60 D	White	HP	HP		
PTFE Glass / MoS ₂ filled	Eng. plastic	PTFE	-50 +200	-58 +392	62 D	Grey	H	H		H
PTFE Bronze filled	Eng. plastic	PTFE	-50 +200	-58 +392	72 D	Bronze	HP	HP		HP
Hallite 506 polyester / polyester	Composite		-40 +120	-40 +250		Red				HP M
Nylon 12	Eng. plastic	PA	-40 +120	-40 +250	72 D	Brown		H		
Nylon 6 / MoS ₂	Eng. plastic	PA	-40 +120	-40 +250	R 115	Black	H	H		
Glass filled Nylon	Eng. plastic	PA	-40 +120	-40 +250	R 124	Black	H	H		H

H - Hydraulic P - Pneumatic
M - Suitable for water based fluids
(1) Static applications only



Housing & installation data

Specified tolerances

Nominal sizes mm		Shafts (outside diameter) Units 0.001 mm									Bores (outside diameter) Units 0.001 mm			
over	to	f8	f9	h8	h9	h10	h11	js10	js11	H8	H9	H10	H11	Js11
1.6	3	-6 -20	-6 -31	0 -14	0 -25	0 -40	0 -60	+20 -20	+30 -30	+14 0	+25 0	+40 0	+60 0	+30 -30
3	6	-10 -28	-10 -40	0 -18	0 -30	0 -48	0 -75	+24 -24	+37.5 -37.5	+18 0	+30 0	+48 0	+75 0	+37.5 -37.5
6	10	-13 -35	-13 -49	0 -22	0 -36	0 -58	0 -90	+29 -29	+45 -45	+22 0	+36 0	+58 0	+90 0	+45 -45
10	18	-16 -43	-16 -59	0 -27	0 -43	0 -70	0 -110	+35 -35	+55 -55	+27 0	+43 0	+70 0	+110 0	+55 -55
18	30	-20 -53	-20 -72	0 -33	0 -52	0 -84	0 -130	+42 -42	+65 -65	+33 0	+52 0	+84 0	+130 0	+65 -65
30	50	-25 -64	-25 -87	0 -39	0 -62	0 -100	0 -160	+50 -50	+80 -80	+39 0	+62 0	+100 0	+160 0	+80 -80
50	80	-30 -76	-30 -104	0 -46	0 -74	0 -120	0 -190	+60 -60	+95 -95	+46 0	+74 0	+120 0	+190 0	+95 -95
80	120	-36 -90	-36 -123	0 -54	0 -87	0 -140	0 -220	+70 -70	+110 -110	+54 0	+87 0	+140 0	+220 0	+110 -110
120	180	-43 -106	-43 -143	0 -63	0 -100	0 -160	0 -250	+80 -80	+125 -125	+63 0	+100 0	+160 0	+250 0	+125 -125
180	250	-50 -122	-50 -165	0 -72	0 -115	0 -185	0 -290	+92 -92	+145 -145	+72 0	+115 0	+185 0	+290 0	+145 -145
250	315	-56 -137	-56 -186	0 -81	0 -130	0 -210	0 -320	+105 -105	+160 -160	+81 0	+130 0	+210 0	+320 0	+160 -160
315	400	-62 -151	-62 -202	0 -89	0 -140	0 -230	0 -360	+115 -115	+180 -180	+89 0	+140 0	+230 0	+360 0	+180 -180
400	500	-68 -165	-68 -223	0 -97	0 -155	0 -250	0 -400	+125 -125	+200 -200	+97 0	+155 0	+250 0	+400 0	+200 -200
500	630	-76 -186	-76 -251	0 -110	0 -175	0 -280	0 -440	+140 -140	+220 -220	+110 0	+175 0	+280 0	+440 0	+220 -220
630	800	-80 -205	-80 -280	0 -125	0 -200	0 -320	0 -500	+160 -160	+250 -250	+125 0	+200 0	+320 0	+500 0	+250 -250

Nominal sizes in.		Shafts (outside diameter) Units 0.001 in.									Bores (outside diameter) Units 0.001 in.			
over	to	f8	f9	h8	h9	h10	h11	js10	js11	H8	H9	H10	H11	Js11
0.04	0.12	-0.3 -0.9	-0.3 -1.2	0 -0.6	0 -1.0	0 -1.6	0 -2.5	+0.8 -0.8	+1.3 -1.3	+0.6 0	+1.0 0	+1.6 0	+2.5 0	+1.3 -1.3
0.12	0.24	-0.4 -1.1	-0.4 -1.6	0 -0.7	0 -1.2	0 -1.8	0 -3.0	+0.9 -0.9	+1.5 -1.5	+0.7 0	+1.2 0	+1.8 0	+3.0 0	+1.5 -1.5
0.24	0.40	-0.5 -1.4	-0.5 -1.9	0 -0.9	0 -1.4	0 -2.2	0 -3.5	+1.1 -1.1	+1.8 -1.8	+0.9 0	+1.4 0	+2.2 0	+3.5 0	+1.8 -1.8
0.40	0.71	-0.6 -1.6	-0.6 -2.3	0 -1.0	0 -1.6	0 -2.8	0 -4.0	+1.4 -1.4	+2.0 -2.0	+1.0 0	+1.6 0	+2.8 0	+4.0 0	+2.0 -2.0
0.71	1.19	-0.8 -2.0	-0.8 -2.8	0 -1.2	0 -2.0	0 -3.5	0 -5.0	+1.8 -1.8	+2.5 -2.5	+1.2 0	+2.0 0	+3.5 0	+5.0 0	+2.5 -2.5
1.19	1.97	-1.0 -2.6	-1.0 -3.4	0 -1.6	0 -2.5	0 -4.0	0 -6.0	+2.0 -2.0	+3.0 -3.0	+1.6 0	+2.5 0	+4.0 0	+6.0 0	+3.0 -3.0
1.97	3.15	-1.2 -3.0	-1.2 -4.1	0 -1.8	0 -3.0	0 -4.5	0 -7.0	+2.3 -2.3	+3.5 -3.5	+1.8 0	+3.0 0	+4.5 0	+7.0 0	+3.5 -3.5
3.15	4.73	-1.4 -3.6	-1.4 -4.8	0 -2.2	0 -3.5	0 -5.0	0 -9.0	+2.5 -2.5	+4.5 -4.5	+2.2 0	+3.5 0	+5.0 0	+9.0 0	+4.5 -4.5
4.73	7.09	-1.6 -4.1	-1.6 -5.6	0 -2.5	0 -4.0	0 -6.0	0 -10.0	+3.0 -3.0	+5.0 -5.0	+2.5 0	+4.0 0	+6.0 0	+10.0 0	+5.0 -5.0
7.09	9.85	-2.0 -4.8	-2.0 -6.5	0 -2.8	0 -4.5	0 -7.0	0 -12.0	+3.5 -3.5	+6.0 -6.0	+2.8 0	+4.5 0	+7.0 0	+12.0 0	+6.0 -6.0
9.85	12.41	-2.2 -5.2	-2.2 -7.3	0 -3.0	0 -5	0 -8.0	0 -12.0	+4.0 -4.0	+6.0 -6.0	+3.0 0	+5.0 0	+8.0 0	+12.0 0	+6.0 -6.0
12.41	15.75	-2.5 -6.0	-2.5 -8.0	0 -3.5	0 -6.0	0 -9.0	0 -14.0	+4.5 -4.5	+7.0 -7.0	+3.5 0	+6.0 0	+9.0 0	+14.0 0	+7.0 -7.0
15.75	19.69	-2.8 -6.5	-2.8 -8.8	0 -4.0	0 -6.0	0 -10.0	0 -16.0	+5.0 -5.0	+8.0 -8.0	+4.0 0	+6.0 0	+10.0 0	+16.0 0	+8.0 -8.0
19.69	24.80	-3.0 -7.0	-3.0 -9.9	0 -4.3	0 -6.9	0 -11.0	0 -17.3	+5.5 -5.5	+8.7 -8.7	+4.3 0	+6.9 0	+11.0 0	+17.3 0	+8.7 -8.7
24.80	31.49	-3.1 -8.1	-3.1 -11.0	0 -4.9	0 -7.9	0 -12.6	0 -19.7	+6.3 -6.3	+9.8 -9.8	+4.9 0	+7.9 0	+12.6 0	+19.7 0	+9.8 -9.8



Housing & installation data

Hallite 87 & 506 bearing strip

Hallite 87 strip is a low friction PTFE & Bronze compound produced in a flat tape style ready for easy cutting to size to suit individual applications and is particularly effective in friction conscious applications such as servo cylinders.

Hallite 506 can be supplied in spiral lengths, generally in 10 metre, 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 type 506 are available on request, special sections and diameters can also be produced to suit individual requirements.

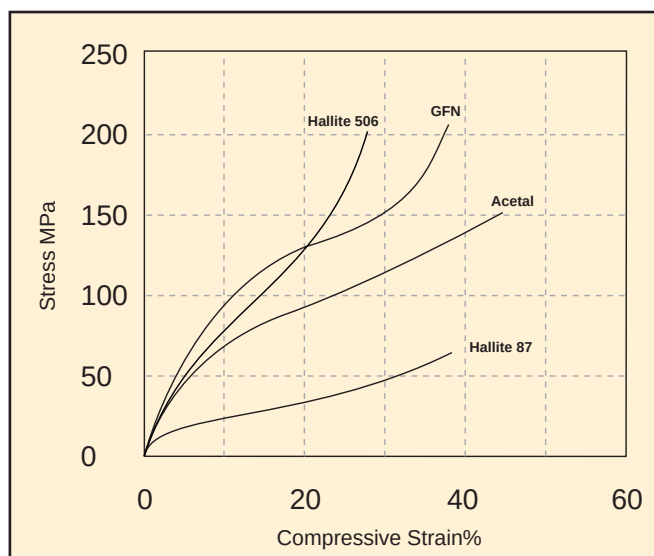
Bearing Type	Standard material
87	PTFE + Bronze
506	Polyester + PTFE

Bearing strip housing tolerances

As tolerances are not specified "on line" for types 87 & 506, please refer to the information below for tolerances as indicated on the product's data sheet.

Hallite 506 specified tolerances		
	Bearing length L_1	Bearing cross section S
Tolerances (mm)	-0.1 to -0.6	-0.02 to -0.1

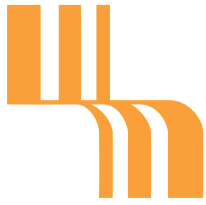
Type 506 & 87 specified tolerances					
Nominal dimension range (mm)		Tolerances (units 0.001 mm)			
over	to	f9	H9	H10	H11
10	18	-16 -59	+43 0	+70 0	+110 0
18	30	-20 -72	+52 0	+84 0	+130 0
30	50	-25 -87	+62 0	+100 0	+160 0
50	80	-30 -104	+74 0	+120 0	+190 0
80	120	-36 -123	+87 0	+140 0	+220 0
120	180	-43 -143	+100 0	+160 0	+250 0
180	250	-50 -165	+115 0	+185 0	+290 0
250	315	-56 -186	+130 0	+210 0	+320 0
315	400	-62 -212	+140 0	+230 0	+360 0
400	500	-68 -223	+155 0	+250 0	+400 0
500	630	-76 -251	+175 0	+280 0	+440 0
630	800	-80 -280	+200 0	+320 0	+500 0
800	1000	-86 -316	+230 0	+360 0	+560 0



Compressive bearing stress versus strain for non metallic materials

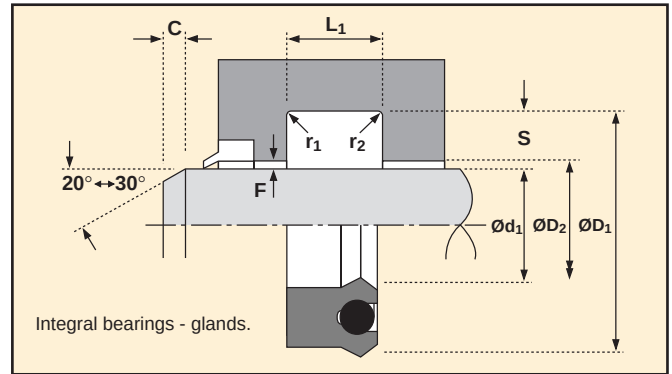
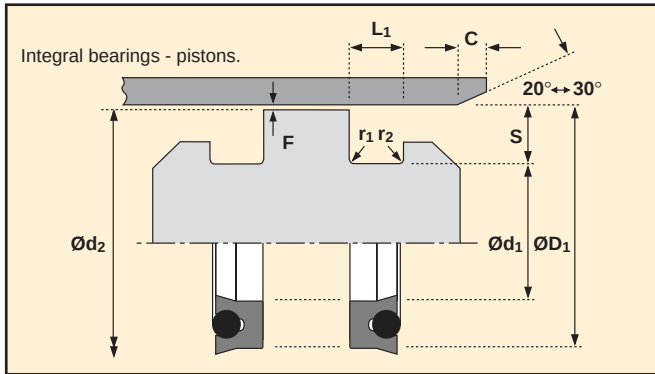
Hallite 506 specified tolerances		
	Bearing length L_1	Bearing cross section S
Tolerances (in.)	-0.005 to -0.015	-0.001 to -0.004

Type 506 & 87 specified tolerances					
Nominal dimension range (in.)		Tolerances (units 0.001 in.)			
over	to	f9	H9	H10	H11
0.40	0.71	-0.6 -2.3	+1.6 0	+2.8 0	+4.0 0
0.71	1.19	-0.8 -2.8	+2.0 0	+3.5 0	+5.0 0
1.19	1.97	-1.0 -3.4	+2.5 0	+4.0 0	+6.0 0
1.97	3.15	-1.2 -4.1	+3.0 0	+4.5 0	+7.0 0
3.15	4.73	-1.4 -4.8	+3.5 0	+5.0 0	+9.0 0
4.73	7.09	-1.6 -5.6	+4.0 0	+6.0 0	+10.0 0
7.09	9.85	-2.0 -6.5	+4.5 0	+7.0 0	+12.0 0
9.85	12.41	-2.2 -7.3	+5.0 0	+8.0 0	+12.0 0
12.41	15.75	-2.5 -8.3	+6.0 0	+9.0 0	+14.0 0
15.75	19.69	-2.8 -8.8	+6.0 0	+10.0 0	+16.0 0
19.69	24.80	-3.0 -9.9	+6.9 0	+11.0 0	+17.3 0
24.80	31.49	-3.1 -11.0	+7.9 0	+12.6 0	+19.7 0
31.49	39.37	-3.4 -12.4	+9.1 0	+14.2 0	+22.0 0



Housing & installation data

Hallite 500 Series rods & piston seals



Extrusion Gaps

Extrusion gaps can be minimised by the use of glands or pistons with integral bearings. However, better bearing performance is often achieved by the use of remote bearings, which inevitably means that the extrusion gap is increased to achieve adequate metal to metal clearance, (refer to data sheets for individual seal types). For this reason, guidance should be sought from the Hallite technical department if remote bearings are to be used with seals under 1/4" cross section.

500 series (inch) - specified tolerances for piston applications

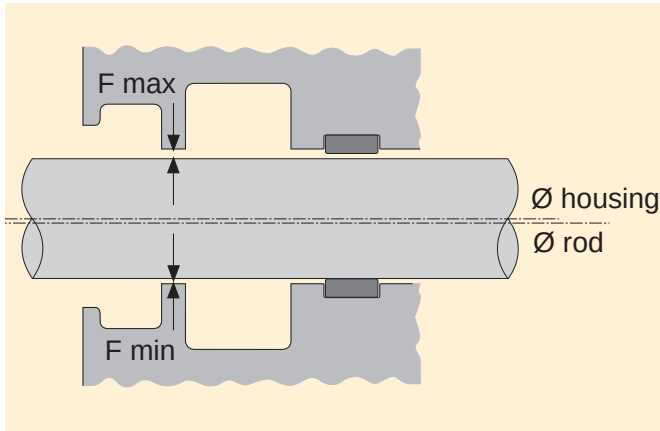
Seal Cross Section (S)	Bore Tolerance (ØD1)	Piston Spigot Tolerance (Ød1)	Piston Diameter Tolerance (Ød2)	Groove Width Tolerance (L1)
1/8" (.125)	+0.002 -0.000	+0.000 -0.002	-0.001 -0.002	+0.015 -0.000
3/16" (.187)	+0.002 -0.000	+0.000 -0.002	-0.001 -0.003	+0.015 -0.000
1/4" (.250)	+0.003 -0.000	+0.000 -0.003	-0.001 -0.003	+0.015 -0.000
5/16" (.312)	+0.003 -0.000	+0.000 -0.004	-0.002 -0.004	+0.015 -0.000
3/8" (.375)	+0.004 -0.000	+0.000 -0.005	-0.002 -0.004	+0.015 -0.000
1/2" (.500)	+0.005 -0.000	+0.000 -0.007	-0.002 -0.004	+0.015 -0.000

500 series (inch) - specified tolerances for rod applications

Seal Cross Section (S)	Rod Tolerance (Ød1)	Groove Bore Tolerance (ØD1)	Gland Diameter Tolerance (ØD2)	Groove Width Tolerance (L1)
1/8" (.125)	+0.000 -0.001	+0.002 -0.000	+0.001 +0.003	+0.015 -0.000
3/16" (.187)	+0.000 -0.002	+0.002 -0.000	+0.001 +0.003	+0.015 -0.000
1/4" (.250)	+0.000 -0.002	+0.003 -0.000	+0.001 +0.004	+0.015 -0.000
5/16" (.312)	+0.000 -0.002	+0.004 -0.000	+0.002 +0.005	+0.015 -0.000
3/8" (.375)	+0.000 -0.002	+0.005 -0.000	+0.002 +0.006	+0.015 -0.000
1/2" (.500)	+0.000 -0.003	+0.007 -0.000	+0.002 +0.006	+0.015 -0.000



Extrusion gaps



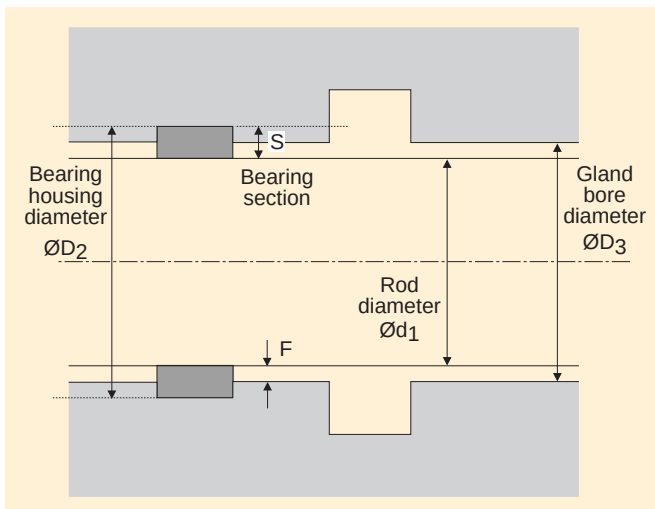
Hallite Seals' product data sheets give information indicating the allowable extrusion gap a seal can see at pressure during its working life. The extrusion gap can be calculated using the tolerance build ups within the cylinder and any dilation that may occur under pressure.

Maximum extrusion gap = F max

F max is the maximum extrusion gap for the seal.

Minimum metal to metal clearance = F min

F min for cylinders with minimal side loading should be $\geq 0.1\text{mm}$ (0.004").



For separate bearings, for example Hallite 87, 506 & 533

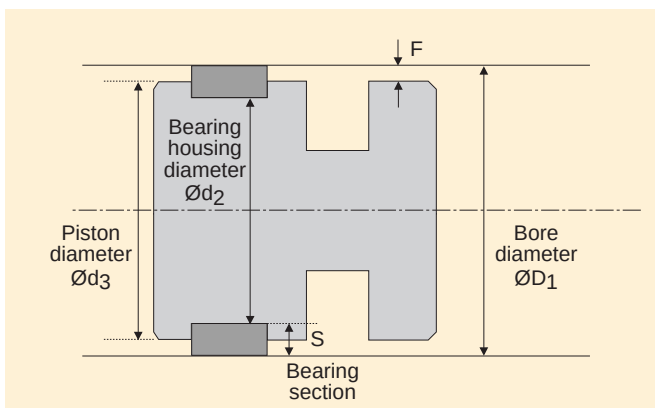
Rods

Maximum extrusion gap

$$F \text{ max} = \frac{(\text{ØD}_3 \text{ max} + \text{ØD}_2 \text{ max})}{2} - S \text{ min} - \text{Ød}_1 \text{ min} + \text{dilation}$$

Minimum extrusion gap

$$F \text{ min} = S \text{ min} - \frac{(\text{ØD}_2 \text{ max} - \text{ØD}_3 \text{ min})}{2}$$



Pistons

Maximum extrusion gap

$$F \text{ max} = \text{ØD}_1 \text{ max} - S \text{ min} - \frac{(\text{Ød}_3 \text{ min} + \text{Ød}_2 \text{ min})}{2} + \text{dilation}$$

Minimum extrusion gap

$$F \text{ min} = S \text{ min} - \frac{(\text{Ød}_3 \text{ max} - \text{Ød}_2 \text{ min})}{2}$$

Calculate both F max and F min. Ensure the F min is greater than 0.1mm (0.004") 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:

$$\text{Rod} = \text{ØD}_3 \text{ max} - \text{Ød}_1 \text{ min} + \text{dilation}$$

$$\text{Piston} = \text{ØD}_1 \text{ max} - \text{Ød}_3 \text{ min} + \text{dilation}$$

For F min: Must be zero

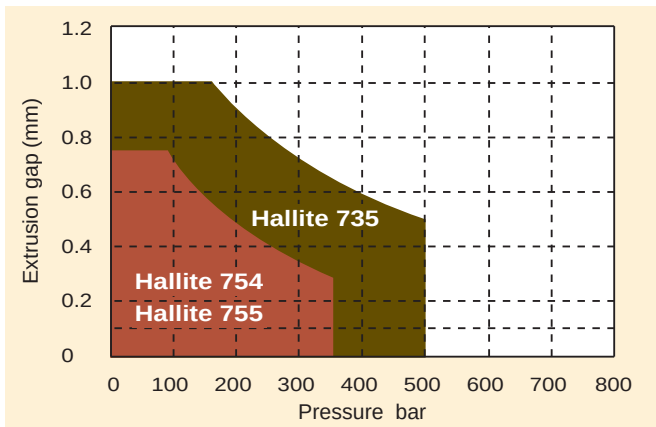


Extrusion versus pressure

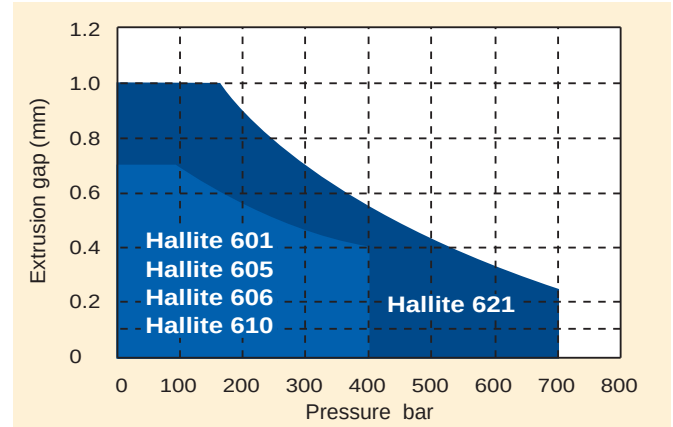
Extrusion is closely linked to pressure and temperature. In general, the best seal performance and life is provided by specifying the smaller extrusion gap.

The figures shown for extrusion gap 'F' within the operating conditions of Hallite's product data sheets, relate to the maximum permissible, worst case situation with the gap all on one side.

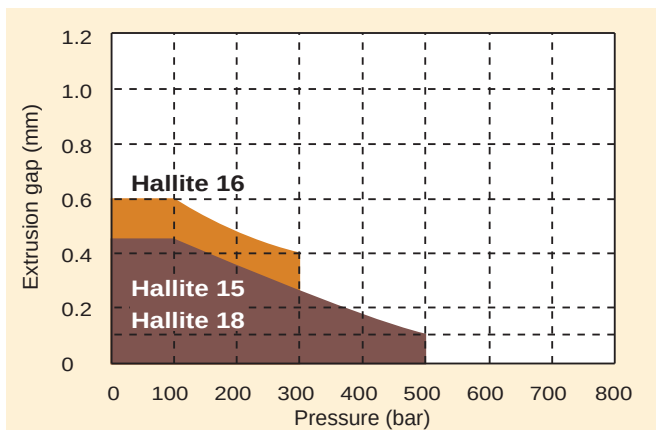
Type 735, 754, 755



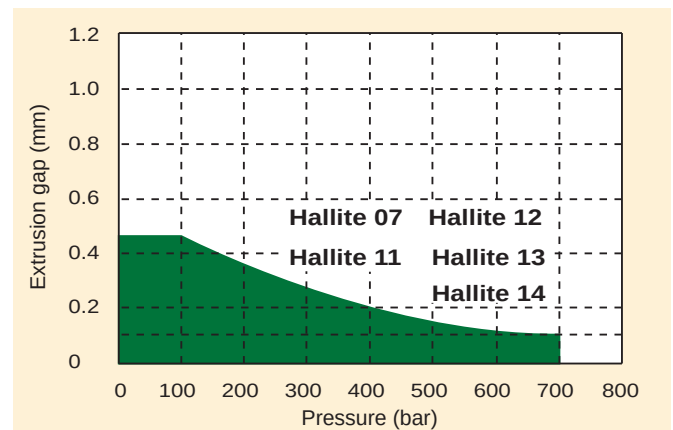
Type 621, 601, 605, 606, 610



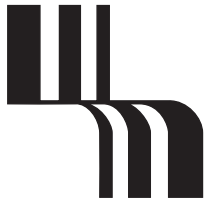
Type 16, 15, 18



Vee pack sets







Rod seals

Hallite



TECHNICAL DETAILS

OPERATING CONDITIONS

MAXIMUM SPEED
MAXIMUM TEMPERATURE
MAXIMUM PRESSURE

0.5 m/sec
-30°C + 100°C
300 bar

1.5 ft/sec
-22°F + 212°F
4500 p.s.i.

MAXIMUM EXTRUSION GAP

PRESSURE bar
MAXIMUM GAP mm
PRESSURE p.s.i.
MAXIMUM GAP in

Figures show the maximum permissible gap all on one side using minimum rod $\varnothing$ and maximum clearance $\varnothing$.

100	160	250	300
0.45	0.4	0.3	0.25
1500	2400	3750	4500
0.018	0.016	0.012	0.010

SURFACE ROUGHNESS

DYNAMIC SEALING FACE $\varnothing d_1$
STATIC SEALING FACE $\varnothing D_1$
STATIC HOUSING FACES L_1

μmRa	μmRt	$\mu inCLA$	$\mu inRMS$
0.1 $\leftrightarrow$ 0.4	4 max	4 $\leftrightarrow$ 16	5 $\leftrightarrow$ 18
1.6 max	10 max	63 max	70 max
3.2 max	16 max	125 max	140 max

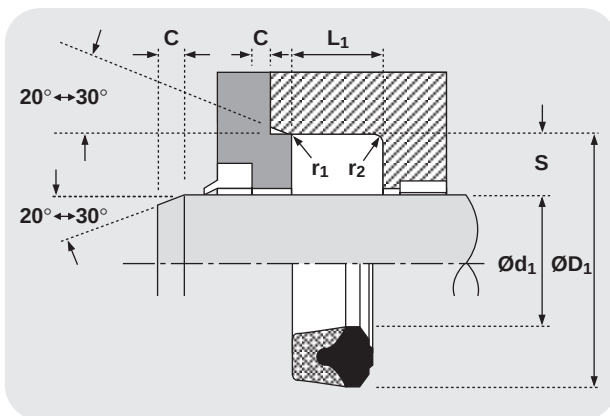
CHAMFERS & RADII

GROOVE SECTION $\leq S$ mm
MIN CHAMFER C mm
MAX FILLET RAD r_1 mm
MAX FILLET RAD r_2 mm
GROOVE SECTION $\leq S$ in
MIN CHAMFER C in
MAX FILLET RAD r_1 in
MAX FILLET RAD r_2 in

4.0	5.0	6.0	7.5	10.0
2.0	2.5	3.0	4.0	5.0
0.2	0.4	0.8	0.8	0.8
0.4	0.8	1.2	1.2	1.2
0.250	0.312	0.375	0.500	
0.125	0.156	0.187	0.217	
0.016	0.032	0.032	0.032	
0.032	0.047	0.047	0.047	

TOLERANCES

$\varnothing d_1$	$\varnothing D_1$	L_1 mm	L_1 in
f9	Js11	+0.25 -0	+0.010 -0



FEATURES

- WELL PROVEN SEAL
- CONTAMINATION RESISTANCE
- GOOD WEAR RESISTANCE

DESIGN

The Hallite 15 rod seal has been well proven in many applications requiring a compact, low friction seal to work efficiently both at low and high pressures.

The seal comprises a rubberised fabric U ring to give strength and durability, to which is moulded a rubber header. It is designed to have a controlled pre-load across the angled rubber lips which are accurately machine trimmed, to ensure a good seal at low pressure.

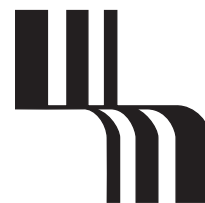
The seal becomes more effective as the pressure increases and the rubberised fabric deforms to the housing increasing the seal contact area. The surface of the fabric has pockets which retain lubrication to reduce friction and wear.

The proportions of the range have been determined to give a satisfactory performance when used with the recommended operating conditions. Many other sizes are available outside this range.



Rod seals

Hallite



16

TECHNICAL DETAILS

METRIC

INCH

OPERATING CONDITIONS

MAXIMUM SPEED
MAXIMUM TEMPERATURE
MAXIMUM PRESSURE

4.0 m/sec
-30°C + 100°C
300 bar

12.0 ft/sec
-22°F + 212°F
4500 p.s.i.

MAXIMUM EXTRUSION GAP

PRESSURE bar
MAXIMUM GAP mm
PRESSURE p.s.i.

Figures show the maximum permissible gap all on one side using minimum rod $\varnothing$ and maximum clearance $\varnothing$.

100	150	250	300
0.6	0.5	0.45	0.4
1500	2400	3750	4500

SURFACE ROUGHNESS

DYNAMIC SEALING FACE $\varnothing d_1$
STATIC SEALING FACE $\varnothing D_1$
STATIC HOUSING FACES L_1

μmRa	μmRt	μinCLA	μinRMS
0.1 $\leftrightarrow$ 0.4	4 max	4 $\leftrightarrow$ 16	5 $\leftrightarrow$ 18
1.6 max	10 max	63 max	70 max
3.2 max	16 max	125 max	140 max

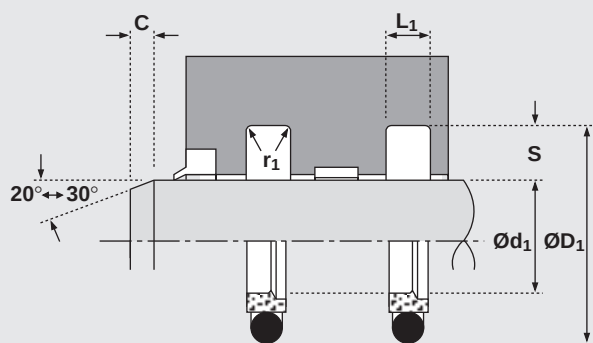
CHAMFERS & RADII

GROOVE SECTION $\leq S$ mm
MIN CHAMFER C mm
MAX FILLET RAD r_1 mm

3.75	5.50	7.75	10.50	12.25
2.00	3.00	5.00	7.50	8.00
0.40	0.80	1.20	1.50	1.50

TOLERANCES

$\varnothing d_1$	$\varnothing D_1$	L_1 mm
f9	H11	+0.2 -0



FEATURES

- ULTRA LOW FRICTION
- COMPACT HOUSING
- INCH SIZES AVAILABLE ON REQUEST
- THE SEAL RING COMPONENT IS MACHINED BY HALLITE, THEREFORE ANY SIZE CAN BE CATERED FOR

MATERIALS

Face material - O-Ring last two digits of part number

Standard material

15% Glass/PTFE - NBR _ _ _ _ **10**

Material options:

15% Glass/PTFE - FKM _ _ _ _ **11**

Bronze/PTFE - NBR _ _ _ _ **20**

Bronze/PTFE - FKM _ _ _ _ **21**

Technical details shown are for 15% Glass/PTFE and NBR energiser. Technical details for material options should be requested from Hallite Seals.

DESIGN

Used in tandem, the Hallite 16 rod seal provides the designer with a compact low friction seal for light to medium duty hydraulic cylinders.

It has a special filled PTFE ring with a pre-loaded lip energised by an O ring. The lip is designed to have a contact area with the rod adequate to retain the media at low pressure. As high pressure acts on the O ring it compresses the lip against the rod increasing the contact area and the effectiveness of the seal.

The special PTFE ring has the low frictional properties normally associated with this material but is strengthened by additives to reduce creep. It has a low breakout friction so stick-slip is eliminated.

Standard seals are supplied with a nitrile O ring but other materials can be provided.

For the best results it is recommended two seals are fitted. The PTFE ring should always be mounted with the sealing lip on the pressure side. Sizes above 30mm are easily installed by deforming the PTFE ring into a kidney shape, sizes under 30mm are best installed using a tool, details of which can be provided.

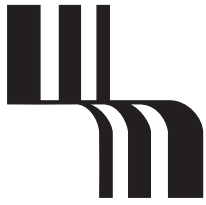
A number of material options can be provided to extend operating conditions. Please ensure that the correct part number is specified for the material option as indicated.

NB: Part numbers suffixed by "+" indicate housing sizes to meet ISO7425-2.

Part numbers suffixed by "+" are designed to suit popular Asian housings.

Transeals Pty Ltd

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Email seals@transeals.com.au Fax 61 (8) 9458 5766



Rod / Piston seals

Hallite



18

TECHNICAL DETAILS

METRIC

INCH

OPERATING CONDITIONS

MAXIMUM SPEED
MAXIMUM TEMPERATURE
MAXIMUM PRESSURE

0.5 m/sec
-30°C + 100°C
500 bar

1.5 ft/sec
-22°F + 212°F
7500 p.s.i.

MAXIMUM EXTRUSION GAP

PRESSURE bar
MAXIMUM GAP mm
PRESSURE p.s.i.
MAXIMUM GAP in

Figures show the maximum permissible gap all on one side, for rod seals using minimum rod $\varnothing$ and maximum clearance $\varnothing$ and for piston seals using the minimum clearance $\varnothing$ and maximum bore $\varnothing$

160	250	400	500
0.4	0.3	0.2	0.1
2400	3750	6000	7500
0.016	0.012	0.008	0.004

SURFACE ROUGHNESS

DYNAMIC SEALING FACE - ROD $\varnothing d_1$
STATIC SEALING FACE - ROD $\varnothing D_1$
DYNAMIC SEALING FACE - PISTON $\varnothing d_1$
STATIC SEALING FACE - PISTON $\varnothing d_1$
STATIC HOUSING FACES L_1

μmRa	μmRt	$\mu inCLA$	$\mu inRMS$
0.1 $\leftrightarrow$ 0.4	4 max	4 $\leftrightarrow$ 16	5 $\leftrightarrow$ 18
1.6 max	10 max	63 max	70 max
0.1 $\leftrightarrow$ 0.4	4 max	4 $\leftrightarrow$ 16	5 $\leftrightarrow$ 18
1.6 max	10 max	63 max	70 max
3.2 max	16 max	125 max	140 max

CHAMFERS & RADII

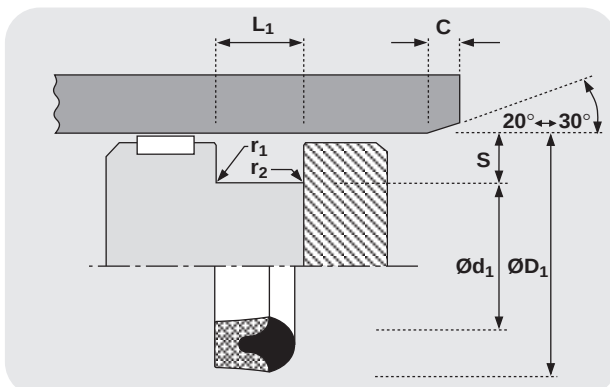
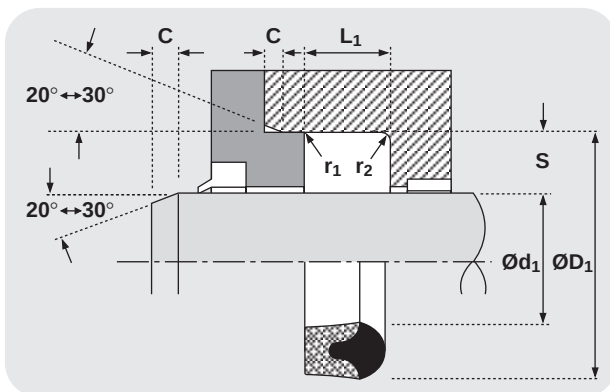
GROOVE SECTION $\leq S$ mm
MIN CHAMFER C mm
MAX FILLET RAD r_1 mm
MAX FILLET RAD r_2 mm
GROOVE SECTION $\leq S$ in
MIN CHAMFER C in
MAX FILLET RAD r_1 in
MAX FILLET RAD r_2 in

4.0	5.0	7.5	10.0	12.5	15.0	20.0
2.0	2.5	4.0	5.0	6.5	7.5	10.0
0.2	0.4	0.8	0.8	1.2	1.6	1.6
0.4	0.8	1.2	1.2	1.6	2.4	2.4
0.187	0.250	0.312	0.375	0.500	0.625	0.750
0.093	0.125	0.156	0.187	0.217	0.250	0.375
0.008	0.016	0.032	0.032	0.032	0.047	0.047
0.016	0.032	0.047	0.047	0.047	0.062	0.062

TOLERANCES

ROD
PISTON

$\varnothing d_1$	$\varnothing D_1$	L_1 mm	L_1 in
f9	Js11	+0.25 -0	+0.010 -0
js11	H9	+0.25 -0	+0.010 -0



DESIGN

A medium to heavy duty single acting seal, the Hallite 18 has shown itself over many years to be an effective and robust seal in a wide variety of applications.

The seal comprises a rubberised fabric U form base to which is bonded a rubber energiser.

The seal section is pre-loaded by the housing when installed to ensure effective sealing at low pressure. When the pressure increases the rubber energises the U form to increase the sealing area and hence the efficiency of the seal. The strength and durability of the rubberised fabric combines with its ability to retain lubricant keeping friction and wear to a minimum.

FEATURES

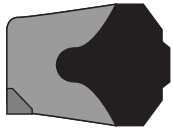
- THE ORIGINAL HALLITE FLUID SEAL
- GENERAL PURPOSE SEAL
- LONG LIFE

NB:

Size lists give "on line" tolerances for rod applications.

Transeals Pty Ltd

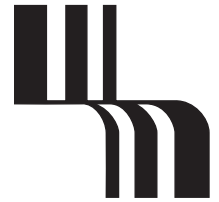
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Rod seals

Hallite



TECHNICAL DETAILS

METRIC

INCH

OPERATING CONDITIONS

MAXIMUM SPEED
MAXIMUM TEMPERATURE
MAXIMUM PRESSURE

0.5 m/sec
-30°C + 100°C
400 bar

1.5 ft/sec
-22°F + 212°F
6000 p.s.i.

MAXIMUM EXTRUSION GAP

PRESSURE bar
MAXIMUM GAP mm
PRESSURE p.s.i.
MAXIMUM GAP in

Figures show the maximum permissible gap all on one side using minimum rod $\varnothing$ and maximum clearance $\varnothing$.

100	160	250	400
1.0	0.9	0.8	0.6
1500	2400	3750	6000
0.040	0.036	0.032	0.024

SURFACE ROUGHNESS

DYNAMIC SEALING FACE $\varnothing d_1$
STATIC SEALING FACE $\varnothing D_1$
STATIC HOUSING FACES L_1

μmRa	μmRt	$\mu inCLA$	$\mu inRMS$
0.1 $\leftrightarrow$ 0.4	4 max	4 $\leftrightarrow$ 16	5 $\leftrightarrow$ 18
1.6 max	10 max	63 max	70 max
3.2 max	16 max	125 max	140 max

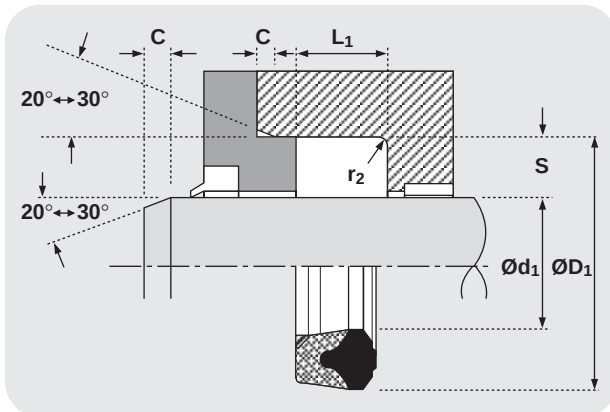
CHAMFERS & RADII

GROOVE SECTION $\leq S$ mm
MIN CHAMFER C mm
MAX FILLET RAD r_2 mm
GROOVE SECTION $\leq S$ in
MIN CHAMFER C in
MAX FILLET RAD r_2 in

4.0	5.0	7.5	10.0	12.5	15.0
2.0	2.5	4.0	5.0	6.5	7.5
0.2	0.4	0.8	0.8	1.2	1.6
0.187	0.250	0.312	0.375		
0.093	0.125	0.156	0.187		
0.008	0.016	0.032	0.032		

TOLERANCES

$\varnothing d_1$	$\varnothing D_1$	L_1 mm	L_1 in
f9	Js11	+0.25 -0	+0.010 -0



FEATURES

- HIGH PRESSURE CAPABILITY
- CONTAMINATION RESISTANT
- GENERAL PURPOSE SEAL
- LONG LIFE

NB: Part numbers suffixed by “±” indicate housing sizes to meet ISO5597.

DESIGN

The Hallite 21 is a compact, low friction seal with the advantage of an internal anti-extrusion ring.

A rubberised fabric U ring, which gives strength and durability, and a rubber header are moulded together forming the seal. It is designed to have a controlled pre-load across the angled rubber lips, which are accurately machine trimmed, to ensure a good seal at low pressure. The seal becomes more effective as the pressure increases and the rubberised fabric deforms to the housing, increasing the seal contact area. The surface of the fabric has pockets which retain lubrication to reduce friction and wear.

The range has a reinforced plastic anti-extrusion ring at the internal heel of the seal, to protect it against damage by extrusion, which enables the designer to use a large clearance. Where possible, triangular anti-extrusion rings are used, but in some cases a rectangular section may be supplied. Certain sizes are designed to suit housing requirements of ISO 5597.

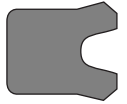
The proportions of the range have been determined to give a satisfactory performance when used with the recommended operating conditions.

Many other sizes are available outside this range, please contact your local Hallite sales office for additional information.



Rod / Piston seals

Hallite



25

TECHNICAL DETAILS

METRIC

INCH

OPERATING CONDITIONS

MAXIMUM SPEED 1.0 m/sec
MAXIMUM TEMPERATURE -45°C + 110°C
MAXIMUM PRESSURE 400 bar*

3.0 ft/sec
-50°F + 230°F
6,000 p.s.i.*

MAXIMUM EXTRUSION GAP

PRESSURE bar
MAXIMUM GAP mm
PRESSURE p.s.i.
MAXIMUM GAP in

160	250	400
0.6	0.5	0.4
2400	3750	6000
0.024	0.020	0.016

Figures show the maximum permissible gap all on one side, for rod seals using minimum rod $\varnothing$ and maximum clearance $\varnothing$ and for piston seals using the minimum clearance $\varnothing$ and maximum bore $\varnothing$

SURFACE ROUGHNESS

DYNAMIC SEALING FACE - ROD $\varnothing d_1$
STATIC SEALING FACE - ROD $\varnothing D_1$
DYNAMIC SEALING FACE - PISTON $\varnothing d_1$
STATIC SEALING FACE - PISTON $\varnothing d_1$
STATIC HOUSING FACES L_1

μmRa	μmRt	$\mu inCLA$	$\mu inRMS$
0.1 $\leftrightarrow$ 0.4	4 max	4 $\leftrightarrow$ 16	5 $\leftrightarrow$ 18
1.6 max	10 max	63 max	70 max
0.1 $\leftrightarrow$ 0.4	4 max	4 $\leftrightarrow$ 16	5 $\leftrightarrow$ 18
1.6 max	10 max	63 max	70 max
3.2 max	16 max	125 max	140 max

CHAMFERS & RADII

GROOVE SECTION $\leq S$ mm
MIN CHAMFER C mm
MAX FILLET RAD r_1 mm
MAX FILLET RAD r_2 mm
GROOVE SECTION $\leq S$ in
MIN CHAMFER C in
MAX FILLET RAD r_1 in
MAX FILLET RAD r_2 in

4.0	5.0	7.5	10.0	12.5	15.0	20.0
3.0	3.5	5.0	6.5	7.0	8.0	10.0
0.2	0.4	0.8	0.8	1.2	1.6	1.6
0.4	0.8	1.2	1.2	1.6	2.4	2.4
0.125	0.187	0.250	0.312	0.375	0.500	
0.093	0.093	0.125	0.156	0.187	0.217	
0.008	0.008	0.016	0.032	0.032	0.032	
0.016	0.016	0.032	0.047	0.047	0.047	

TOLERANCES

ROD
PISTON

$\varnothing d_1$	$\varnothing D_1$	L_1 mm	L_1 in
f9	Js11	+0.25 -0	+0.010 -0
js11	H9	+0.25 -0	+0.010 -0

* Pressure rating of seal can be extended to 700 bar /10,000p.s.i. with the use of a back up ring.
If this option is required seek advice from your local Hallite Seals sales office.

DESIGN

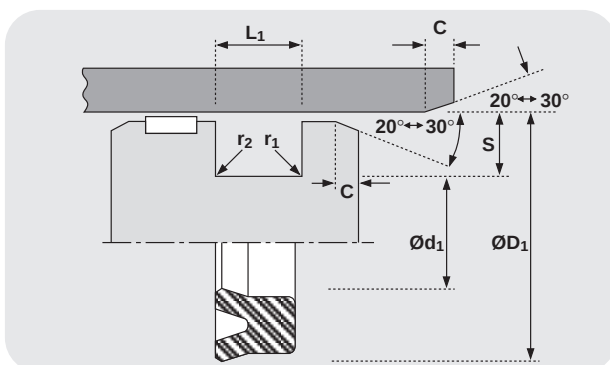
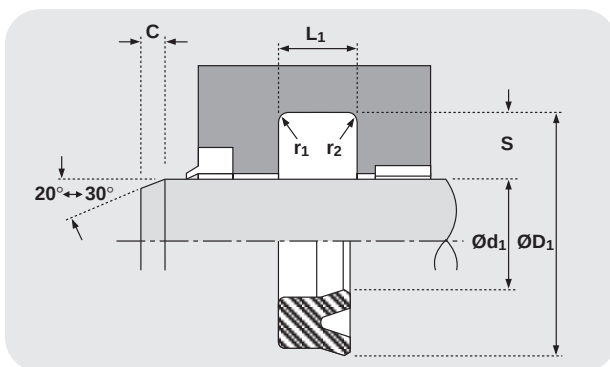
The Hallite 25 is a high performance general purpose seal suitable for rod and piston use.

Manufactured in Hythane 181, Hallite's 25 is engineered to effect a good seal in most industrial cylinder applications.

The sealing lips are accurately machine trimmed to ensure good low pressure sealing while the material resists extrusion at high pressures.

FEATURES

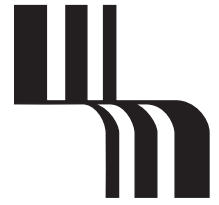
- GENERAL PURPOSE SEAL
- EXCELLENT TEMPERATURE RESISTANCE
- EASE OF INSTALLATION



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TECHNICAL DETAILS

METRIC

INCH

OPERATING CONDITIONS

MAXIMUM SPEED 0.5 m/sec
 MAXIMUM TEMPERATURE -30°C +100°C
 MAXIMUM PRESSURE 30 bar

1.5 ft/sec
 -22°F +212°F
 500 p.s.i.

MAXIMUM EXTRUSION GAP

PRESSURE bar
 PRESSURE p.s.i.
 MAXIMUM GAP in

Figures show the maximum permissible gap all on one side, for rod seals using minimum rod $\varnothing$ and maximum clearance $\varnothing$ and for piston seals using the minimum clearance $\varnothing$ and maximum bore $\varnothing$

10	30
150	500
0.028	0.024

SURFACE ROUGHNESS

DYNAMIC SEALING FACE - ROD $\varnothing d_1$
 STATIC SEALING FACE - ROD $\varnothing D_1$
 DYNAMIC SEALING FACE - PISTON $\varnothing d_1$
 STATIC SEALING FACE - PISTON $\varnothing D_1$
 STATIC HOUSING FACES L_1

μmRa	μmRt	$\mu inCLA$	$\mu inRMS$
0.1 $\leftrightarrow$ 0.4	4 max	4 $\leftrightarrow$ 16	5 $\leftrightarrow$ 18
1.6 max	10 max	63 max	70 max
0.1 $\leftrightarrow$ 0.4	4 max	4 $\leftrightarrow$ 16	5 $\leftrightarrow$ 18
1.6 max	10 max	63 max	70 max
3.2 max	16 max	125 max	140 max

CHAMFERS & RADII

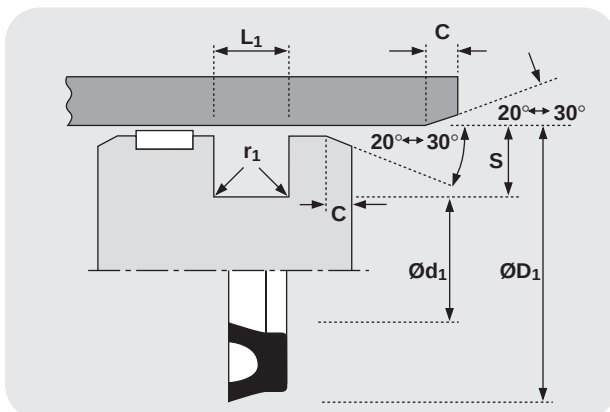
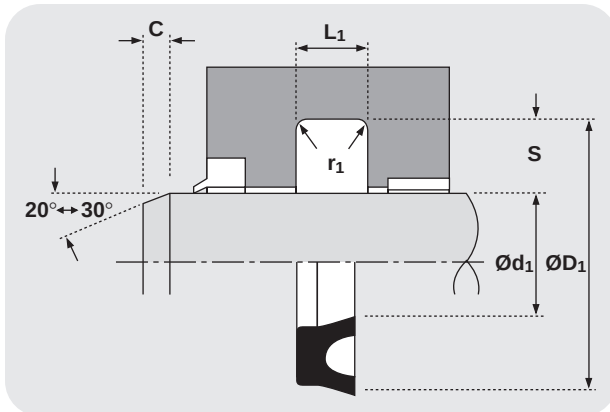
GROOVE SECTION $\leq S$ in
 MIN CHAMFER C in
 MAX FILLET RAD r_1 in

0.187	0.250	0.312	0.375	0.500
0.093	0.125	0.156	0.187	0.217
0.008	0.016	0.016	0.032	0.032

TOLERANCES

ROD
 PISTON

$\varnothing d_1$	$\varnothing D_1$	L_1 mm	L_1 in
f9	Js11	+0.25 -0	+0.010 -0
js11	H9	+0.25 -0	+0.010 -0



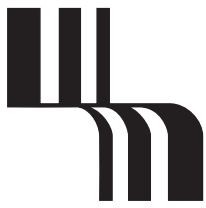
DESIGN

Hallite 26 U rings are normally supplied in an 80 durometer nitrile material.

The AN style U ring is designed for use in low pressure pneumatic applications. The Block U ring style can be used for light pressure applications in pneumatic or hydraulic cylinders.

The pressure rating can be extended by the use of back-up rings.

*Hallite also manufacture a full range of rectangular nitrile U rings, please contact your nearest Hallite sales office or Hallite distributor for the sizes available.



Rod / Piston seals

Hallite



TECHNICAL DETAILS

METRIC

INCH

OPERATING CONDITIONS

MAXIMUM SPEED
MAXIMUM TEMPERATURE
MAXIMUM PRESSURE

0.5 m/sec
-40°C + 110°C
350 bar

1.5 ft/sec
-40°F + 230°F
5000 p.s.i.

MAXIMUM EXTRUSION GAP

(1/4" section and above)

PRESSURE bar
PRESSURE p.s.i.
MAXIMUM GAP in

Figures show the maximum permissible gap all on one side, for rod seals using minimum rod $\varnothing$ and maximum clearance $\varnothing$ and for piston seals using the minimum clearance $\varnothing$ and maximum bore $\varnothing$

160 250 350

2400 3750 5000
0.024 0.020 0.016

SURFACE ROUGHNESS

DYNAMIC SEALING FACE - ROD $\varnothing d_1$
STATIC SEALING FACE - ROD $\varnothing D_1$
DYNAMIC SEALING FACE - PISTON $\varnothing d_1$
STATIC SEALING FACE - PISTON $\varnothing d_1$
STATIC HOUSING FACES L_1

μmRa	μmRt	$\mu inCLA$	$\mu inRMS$
0.1 $\leftrightarrow$ 0.4	4 max	4 $\leftrightarrow$ 16	5 $\leftrightarrow$ 18
1.6 max	10 max	63 max	70 max
0.1 $\leftrightarrow$ 0.4	4 max	4 $\leftrightarrow$ 16	5 $\leftrightarrow$ 18
1.6 max	10 max	63 max	70 max
3.2 max	16 max	125 max	140 max

CHAMFERS & RADII

GROOVE SECTION $\leq S$ in
MIN CHAMFER C in
MAX FILLET RAD r_1 in
MAX FILLET RAD r_2 in

0.125	0.187	0.250	0.312	0.375	0.500	0.625
0.093	0.093	0.125	0.156	0.187	0.187	0.217
0.008	0.008	0.016	0.032	0.032	0.032	0.047
0.016	0.016	0.032	0.047	0.047	0.047	0.062

TOLERANCES

Please refer to specified tolerances in the introduction
- Housing & installation data - Hallite 500 Series

DESIGN

The Hallite 511 is a standard profile loaded U cup utilising a polyurethane or polyester shell energised by a high specification resilient O ring.

At zero or low pressure, the O ring helps to increase the sealing force preventing any bypass. As pressure rises the sealing force increases and the O ring ensures complete lip actuation under most conditions.

The symmetry of the seal allows it to be used on both rod and piston applications and its flexibility enables easy installation. Ideally suited for single acting applications, the Hallite 511 can also be fitted back to back for use in double acting applications. Although used as a rod seal, other profiles such as 513, 605 or 621 are a better option.

FEATURES

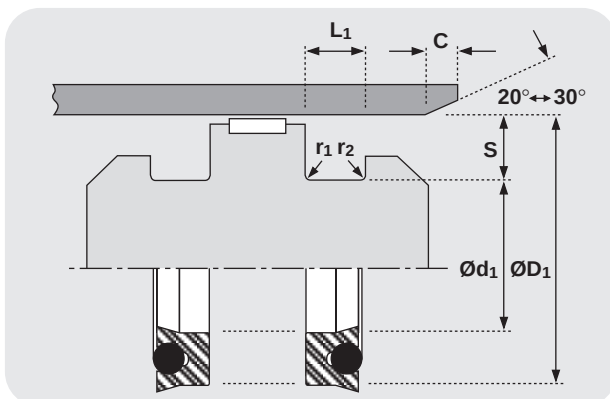
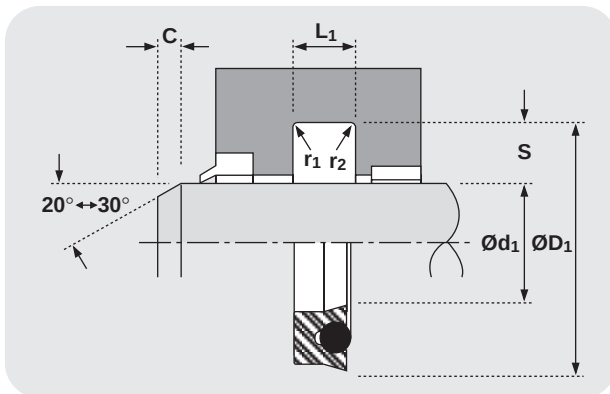
- FLEXIBLE FOR EASY INSTALLATION
- EXCELLENT RESISTANCE TO ABRASION
- POSITIVE LIP ACTUATION
- KNIFE TRIMMED PRECISION SEALING LIPS
- COMPACT HOUSING
- WIDE RANGE OF SIZES
- MATERIAL OPTIONS

MATERIALS

Seal material - O-Ring last digit of part number

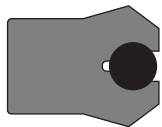
Standard material:
Polyurethane - NBR _ _ _ _ _ **10**

Material options:
Polyester - NBR _ _ _ _ _ **11**
Polyester - FKM _ _ _ _ _ **12**



Transeals Pty Ltd

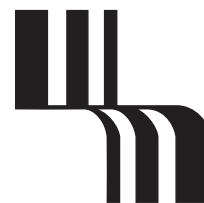
Web <http://www.transeals.com.au> Phone 61 (8) 9451 6011
Email seals@transeals.com.au Fax 61 (8) 9458 5766



513

Rod seals

Hallite



TECHNICAL DETAILS

METRIC

INCH

OPERATING CONDITIONS

MAXIMUM SPEED 0.5 m/sec
MAXIMUM TEMPERATURE -40°C + 110°C
MAXIMUM PRESSURE 350 bar

1.5 ft/sec
-40°F + 230°F
5000 p.s.i.

MAXIMUM EXTRUSION GAP

(1/4" section and above)

PRESSURE bar
PRESSURE p.s.i.
MAXIMUM GAP in

Figures show the maximum permissible gap all on one side using minimum rod $\varnothing$ and maximum clearance $\varnothing$.

160	250	350
2400	3750	5000
0.024	0.020	0.016

SURFACE ROUGHNESS

DYNAMIC SEALING FACE $\varnothing d_1$
STATIC SEALING FACE $\varnothing D_1$
STATIC HOUSING FACES L_1

μmRa	μmRt	$\mu inCLA$	$\mu inRMS$
0.1 $\leftrightarrow$ 0.4	4 max	4 $\leftrightarrow$ 16	5 $\leftrightarrow$ 18
1.6 max	10 max	63 max	70 max
3.2 max	16 max	125 max	140 max

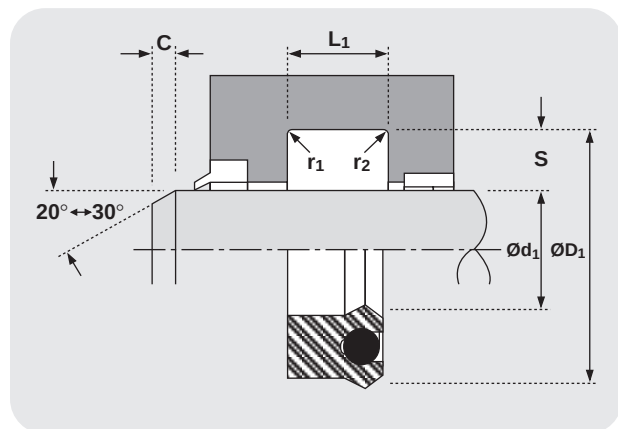
CHAMFERS & RADII

GROOVE SECTION $\leq S$ in
MIN CHAMFER C in
MAX FILLET RAD r_1 in
MAX FILLET RAD r_2 in

0.125	0.187	0.250	0.312	0.375	0.500
0.093	0.093	0.125	0.156	0.187	0.187
0.008	0.008	0.016	0.032	0.032	0.032
0.016	0.016	0.032	0.047	0.047	0.047

TOLERANCES

Please refer to specified tolerances in the introduction
- Housing & installation data - Hallite 500 Series



DESIGN

The Hallite 513 is a standard profile loaded U cup utilising a polyurethane or polyester shell energised by a high specification resilient O ring.

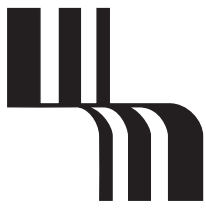
At zero or low pressure, the O ring helps to increase the sealing force preventing any bypass. As pressure rises the sealing force increases and the O ring provides complete lip actuation under most conditions. The precision trimmed sealing lips ensure optimum sealing action.

FEATURES

- FLEXIBLE FOR EASY INSTALLATION
- EXCELLENT RESISTANCE TO ABRASION
- POSITIVE LIP ACTUATION
- KNIFE TRIMMED PRECISION SEALING LIPS
- COMPACT HOUSING
- WIDE RANGE OF SIZES
- MATERIAL OPTIONS

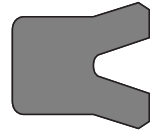
MATERIALS

Seal material - O-Ring	last digit of part number
Standard material: Polyurethane - NBR	— — — — 10
Material options: Polyester - NBR	— — — — 11
Polyester - FKM	— — — — 12



Rod / Piston seals

Hallite



601

TECHNICAL DETAILS

METRIC

INCH

OPERATING CONDITIONS

MAXIMUM SPEED 1.0 m/sec
MAXIMUM TEMPERATURE -45°C + 110°C
MAXIMUM PRESSURE 400 bar*

3.0 ft/sec
-50°F + 230°F
6,000 p.s.i.*

MAXIMUM EXTRUSION GAP

PRESSURE bar
MAXIMUM GAP mm
PRESSURE p.s.i.
MAXIMUM GAP in

Figures show the maximum permissible gap all on one side, for rod seals using minimum rod $\varnothing$ and maximum clearance $\varnothing$ and for piston seals using the minimum clearance $\varnothing$ and maximum bore $\varnothing$

160	250	400
0.6	0.5	0.4
2400	3750	6000
0.024	0.020	0.016

SURFACE ROUGHNESS

DYNAMIC SEALING FACE - ROD $\varnothing d_1$
STATIC SEALING FACE - ROD $\varnothing D_1$
DYNAMIC SEALING FACE - PISTON $\varnothing d_1$
STATIC SEALING FACE - PISTON $\varnothing d_1$
STATIC HOUSING FACES L_1

μmRa	μmRt	$\mu inCLA$	$\mu inRMS$
0.1 $\leftrightarrow$ 0.4	4 max	4 $\leftrightarrow$ 16	5 $\leftrightarrow$ 18
1.6 max	10 max	63 max	70 max
0.1 $\leftrightarrow$ 0.4	4 max	4 $\leftrightarrow$ 16	5 $\leftrightarrow$ 18
1.6 max	10 max	63 max	70 max
3.2 max	16 max	125 max	140 max

CHAMFERS & RADII

GROOVE SECTION $\leq S$ mm
MIN CHAMFER C mm
MAX FILLET RAD r_1 mm
MAX FILLET RAD r_2 mm
GROOVE SECTION $\leq S$ in
MIN CHAMFER C in
MAX FILLET RAD r_1 in
MAX FILLET RAD r_2 in

4.0	5.0	7.5	10.0	12.5	15.0	20.0
3.0	3.5	5.0	6.5	7.0	8.0	10.0
0.2	0.4	0.8	0.8	1.2	1.6	1.6
0.4	0.8	1.2	1.2	1.6	2.4	2.4
0.125	0.187	0.250	0.312	0.375	0.500	
0.093	0.093	0.125	0.156	0.187	0.217	
0.008	0.008	0.016	0.032	0.032	0.032	
0.016	0.016	0.032	0.047	0.047	0.047	

TOLERANCES

ROD
PISTON

$\varnothing d_1$	$\varnothing D_1$	L_1 mm	L_1 in
f9	Js11	+0.25 -0	+0.010 -0
js11	H9	+0.25 -0	+0.010 -0

* Pressure rating of seal can be extended to 700 bar /10,000p.s.i. with the use of a back up ring.
If this option is required seek advice from your local Hallite Seals sales office.

DESIGN

The Hallite 601 is a high performance general purpose seal suitable for rod and piston use.

Manufactured in Hythane® 181 - Hallite's 601 is engineered to effect a good seal in most industrial cylinder applications.

The sealing lips are accurately machine trimmed to ensure good low pressure sealing while the material resists extrusion at high pressures.

FEATURES

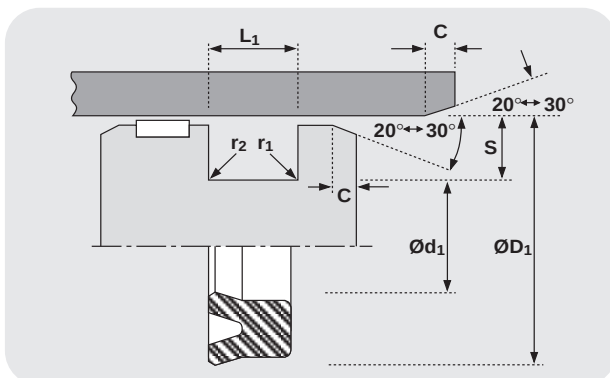
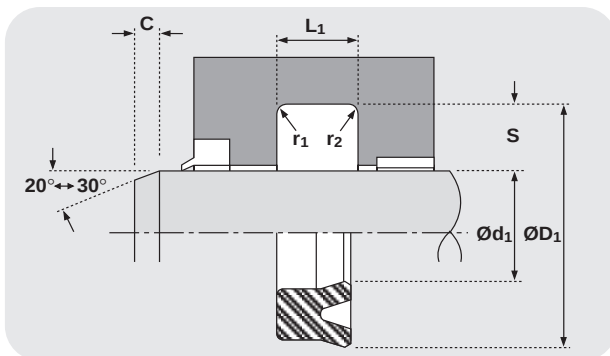
- GENERAL PURPOSE SEAL
- EXCELLENT TEMPERATURE RESISTANCE
- EASE OF INSTALLATION

NB:

Part numbers commencing 46 are designed to suit popular Asian housings.

Part numbers suffixed by "‡" indicate housing sizes to meet ISO5597.

Size lists give "on line" tolerances for rod applications.



Transeals Pty Ltd

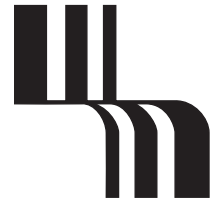
Web <http://www.transeals.com.au> Phone 61 (8) 9451 6011
Email seals@transeals.com.au Fax 61 (8) 9458 5766



605

Rod seals

Hallite



TECHNICAL DETAILS

METRIC

INCH

OPERATING CONDITIONS

MAXIMUM SPEED 1.0 m/sec
MAXIMUM TEMPERATURE -45°C + 110°C
MAXIMUM PRESSURE 400 bar

3.0 ft/sec
-50°F + 230°F
6000 p.s.i.

MAXIMUM EXTRUSION GAP

PRESSURE bar
MAXIMUM GAP mm
PRESSURE p.s.i.
MAXIMUM GAP in

Figures show the maximum permissible gap all on one side using minimum rod $\varnothing$ and maximum clearance $\varnothing$.

160	250	400
0.6	0.5	0.4
2400	3750	6000
0.024	0.020	0.016

SURFACE ROUGHNESS

DYNAMIC SEALING FACE $\varnothing d_1$
STATIC SEALING FACE $\varnothing D_1$
STATIC HOUSING FACES L_1

μmRa	μmRt	$\mu inCLA$	$\mu inRMS$
0.1 $\leftrightarrow$ 0.4	4 max	4 $\leftrightarrow$ 16	5 $\leftrightarrow$ 18
1.6 max	10 max	63 max	70 max
3.2 max	16 max	125 max	140 max

CHAMFERS & RADII

GROOVE SECTION $\leq S$ mm
MIN CHAMFER C mm
MAX FILLET RAD r_1 mm
MAX FILLET RAD r_2 mm
GROOVE SECTION $\leq S$ in
MIN CHAMFER C in
MAX FILLET RAD r_1 in
MAX FILLET RAD r_2 in

4.0	5.0	7.5	10.0	12.5	15.0
3.0	3.5	5.0	6.5	7.0	8.0
0.2	0.4	0.8	0.8	1.2	1.6
0.4	0.8	1.2	1.2	1.6	2.4
0.125	0.187	0.250	0.312	0.375	0.500
0.093	0.093	0.125	0.156	0.187	0.217
0.008	0.008	0.016	0.032	0.032	0.032
0.016	0.016	0.032	0.047	0.047	0.047

TOLERANCES

$\varnothing d_1$	$\varnothing D_1$	L_1 mm	L_1 in
f9	Js11	+0.25 -0	+0.010 -0

DESIGN

The Hallite 605 is an asymmetric seal offering superlative dry rod sealing for light and medium duty applications.

The 605 has become an industry standard seal worldwide owing to its twin lip profile and consistent performance.

Manufactured in Hythane® - 181, the Hallite 605 is an extremely flexible seal making installation very easy.

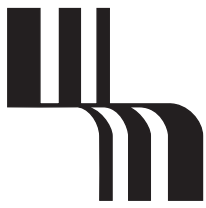
The ranges cover most standard housings used in Europe, North America and Asia.

FEATURES

- TWIN LIP DESIGN OFFERING:
LOWER FRICTION,
IMPROVED SEALING,
PRIMARY LIP PROTECTION,
INCREASED SEAL STABILITY.
- EASY INSTALLATION

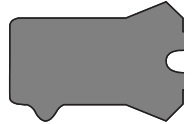
NB: Part numbers commencing 46 or suffixed by “+” are designed to suit popular Asian housings.

Part numbers suffixed by “±” indicate housing sizes to meet ISO5597.



Rod seals

Hallite



610

TECHNICAL DETAILS

METRIC

INCH

OPERATING CONDITIONS

MAXIMUM SPEED
MAXIMUM TEMPERATURE
MAXIMUM PRESSURE

1.0 m/sec
-45°C + 110°C
400 bar

3.0 ft/sec
-50°F + 230°F
6000 p.s.i.

MAXIMUM EXTRUSION GAP

PRESSURE bar
MAXIMUM GAP mm
PRESSURE p.s.i.

Figures show the maximum permissible gap all on one side using minimum rod $\varnothing$ and maximum clearance $\varnothing$.

160	250	400
0.6	0.5	0.4
2400	3750	6000

SURFACE ROUGHNESS

DYNAMIC SEALING FACE $\varnothing d_1$
STATIC SEALING FACE $\varnothing D_1$
STATIC HOUSING FACES L_1

μmRa	μmRt	$\mu inCLA$	$\mu inRMS$
0.1 $\leftrightarrow$ 0.4	4 max	4 $\leftrightarrow$ 16	5 $\leftrightarrow$ 18
1.6 max	10 max	63 max	70 max
3.2 max	16 max	125 max	140 max

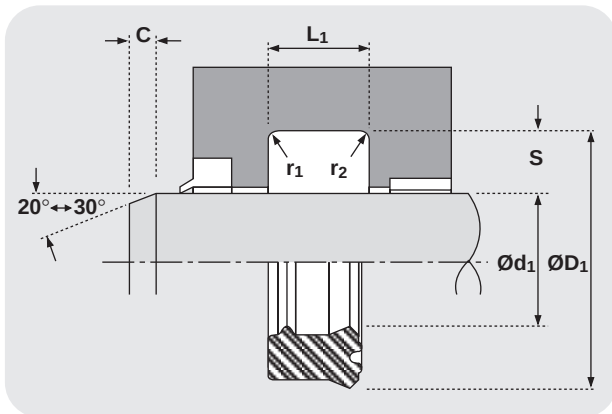
CHAMFERS & RADI

GROOVE SECTION $\leq S$ mm
MIN CHAMFER C mm
MAX FILLET RAD r_1 mm
MAX FILLET RAD r_2 mm

4.0	5.0	7.5
3.0	3.5	5.0
0.2	0.4	0.8
0.4	0.8	1.2

TOLERANCES

$\varnothing d_1$	$\varnothing D_1$	L_1 mm
f9	Js11	+0.25 -0



DESIGN

The Hallite 610 is an asymmetric "solid" seal offering excellent dry rod sealing for light and medium duty applications.

It is designed to be less sensitive to pressure fluctuations than Hallite 605 'U' ring design.

Manufactured in Hallite's high performance polyurethane - Hythane® ~ 181 - the type 610 is an extremely flexible seal making installation very easy

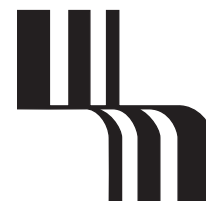
FEATURES:

- INSENSITIVE TO PRESSURE FLUCTUATION.
- TWIN LIP DESIGN OFFERING: LOWER FRICTION, IMPROVED SEALING, PRIMARY LIP PROTECTION, INCREASED SEAL STABILITY.

NB: Part numbers suffixed by "+" indicate housing sizes to meet ISO5597.



Hallite



INCH

MAXIMUM SPEED
MAXIMUM TEMPERATURE
MAXIMUM PRESSURE

1.0 m/sec
-45°C + 110°C
240 bar

3.0 ft/sec
-50°F + 230°F
3500 p.s.i.

Figures show the maximum permissible gap all on one side ,for rod seals using minimum rod $\varnothing$ and maximum clearance $\varnothing$ and for piston seals using the minimum clearance $\varnothing$ and maximum bore $\varnothing$

PRESSURE bar
PRESSURE p.s.i.
MAXIMUM GAP in

100	170	240
1500	2500	3500
0.020	0.012	0.008

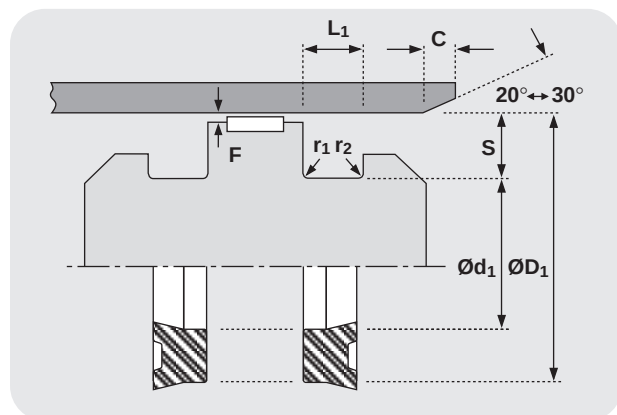
DYNAMIC SEALING FACE - ROD ϕd_1
 STATIC SEALING FACE - ROD ϕD_1
 DYNAMIC SEALING FACE - PISTON ϕD_1
 STATIC SEALING FACE - PISTON ϕd_1
 STATIC HOUSING FACES L_1

μmRa	μmRt	μinCLA	μinRMS
0.1 ↔ 0.4	4 max	4 ↔ 16	5 ↔ 18
1.6 max	10 max	63 max	70 max
0.1 ↔ 0.4	4 max	4 ↔ 16	5 ↔ 18
1.6 max	10 max	63 max	70 max
3.2 max	16 max	125 max	140 max

GROOVE SECTION $\leq S$ in
MIN CHAMFER C in
MAX FILLET RAD r_1 in
MAX FILLET RAD r_2 in

0.125	0.187
0.093	0.093
0.008	0.008
0.016	0.016

Please use specified tolerances in the introduction
- Housing & installation data - Hallite 500 Series



The Hallite 611 is a one piece symmetrical seal suitable for rod and piston use. It is a compact seal for "square" type housings, for light duty applications.

It is manufactured from Hallite's high performance polyurethane- HYTHANE 181, which is an extremely flexible material and makes installation very easy.

The sealing lips are accurately machine trimmed to ensure good low pressure sealing whilst the material resists extrusion at high pressure.

- EASY INSTALLATION
- EXCELLENT TEMPERATURE RANGE
- LIGHT DUTY SEAL FOR "SQUARE" NORTH AMERICAN HOUSINGS

Size lists give "on line" tolerances for rod applications.



Rod seals

Hallite



616

TECHNICAL DETAILS

METRIC

INCH

OPERATING CONDITIONS

MAXIMUM SPEED	1.0 m/sec
MAXIMUM TEMPERATURE	-45°C + 110°C
MAXIMUM PRESSURE	240 bar

3.0 ft/sec
-50°F + 230°F
3500 p.s.i.

MAXIMUM EXTRUSION GAP

Figures show the maximum permissible gap all on one side using minimum rod $\varnothing$ and maximum clearance $\varnothing$.

PRESSURE bar	160	240
MAXIMUM GAP mm	0.6	0.5
PRESSURE p.s.i.	2400	3750

SURFACE ROUGHNESS

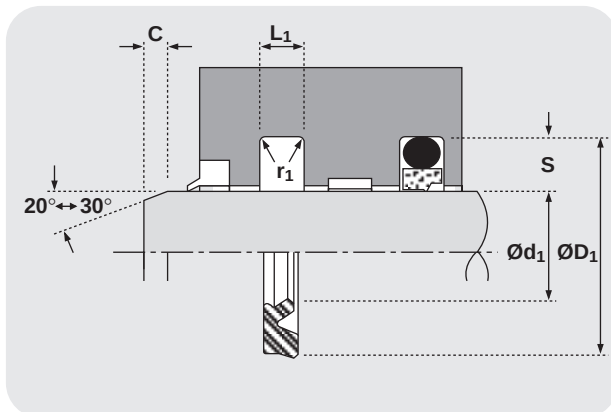
DYNAMIC SEALING FACE $\varnothing d_1$	0.1 $\leftrightarrow$ 0.4	4 max	μ inCLA	4 $\leftrightarrow$ 16	5 $\leftrightarrow$ 18
STATIC SEALING FACE $\varnothing D_1$	1.6 max	10 max		63 max	70 max
STATIC HOUSING FACES L_1	3.2 max	16 max		125 max	140 max

CHAMFERS & RADII

GROOVE SECTION $\leq S$ mm	3.75	5.50	7.75
MIN CHAMFER C mm	2.00	3.00	5.00
MAX FILLET RAD r_1 mm	0.40	0.80	1.20

TOLERANCES

$\varnothing d_1$	$\varnothing D_1$	L_1 mm
f9	H11	+0.25 -0



NOTE

Hallite 616 is used either as a single seal or in a combination with Hallite 16. The latter arrangement is recommended when pressure peaks can occur, as in cylinders with cushioning, in this case the Hallite 16 is fitted into the pressure side of the housing while the Hallite 616 ensures minimal leakage sealing.

It is recommended that the Hallite technical department be consulted when considering this arrangement.

DESIGN

The Hallite 616 is a revolutionary seal from Hallite. Incorporating the sealing efficiency of the Hallite 605 with the compact grooves used by PTFE rod seals.

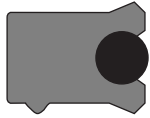
Hallite's 616 is an asymmetric twin lip seal, designed for light and medium duty applications where space and friction are at a premium.

Manufactured in Hallite's high performance polyurethane Hythane 181, the Hallite 616 is an extremely flexible seal making installation very easy.

FEATURES:

- EASY ASSEMBLY
- TWIN LIP PERFORMANCE
- ISO 7425 HOUSINGS

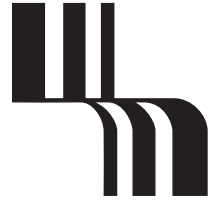
NB: Part numbers suffixed by "+" indicate housing sizes to meet ISO7425-2.



620

Rod seals

Hallite



TECHNICAL DETAILS

METRIC

INCH

OPERATING CONDITIONS

MAXIMUM SPEED
MAXIMUM TEMPERATURE
MAXIMUM PRESSURE

1.0 m/sec
-45°C + 110°C
400 bar

3.0 ft/sec
-50°F + 230°F
6000 p.s.i.

MAXIMUM EXTRUSION GAP

PRESSURE bar
PRESSURE p.s.i.
MAXIMUM GAP in

Figures show the maximum permissible gap all on one side using minimum rod $\varnothing$ and maximum clearance $\varnothing$.

160	250	400
2400	3750	6000
0.020	0.016	0.012

SURFACE ROUGHNESS

DYNAMIC SEALING FACE $\varnothing d_1$
STATIC SEALING FACE $\varnothing D_1$
STATIC HOUSING FACES L_1

μmRa	μmRt	$\mu inCLA$	$\mu inRMS$
0.1 $\leftrightarrow$ 0.4	4 max	4 $\leftrightarrow$ 16	5 $\leftrightarrow$ 18
1.6 max	10 max	63 max	70 max
3.2 max	16 max	125 max	140 max

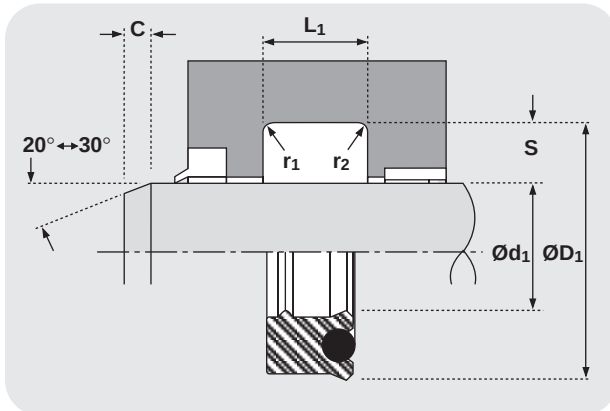
CHAMFERS & RADII

GROOVE SECTION $\leq S$ in
MIN CHAMFER C in
MAX FILLET RAD r_1 in
MAX FILLET RAD r_2 in

0.125	0.187	0.250	0.312	0.375	0.500
0.093	0.093	0.125	0.156	0.187	0.217
0.008	0.008	0.016	0.016	0.032	0.032
0.016	0.016	0.032	0.032	0.047	0.047

TOLERANCES

$\varnothing d_1$	$\varnothing D_1$	L_1 in
f9	Js11	+0.010 -0



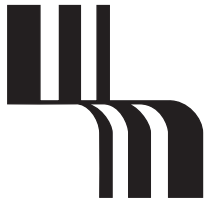
DESIGN

Hallite's 620 design incorporates features from the Hallite 621 to provide a twin lip alternative to Hallite's 500 series products.

The shell is moulded in Hallite's high performance polyurethane - Hythane 181 - ensuring flexibility for easy installation and performance at low temperatures. The 620 benefits from the Hallite's twin lip profile for dry rod sealing.

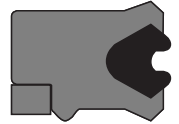
FEATURES:

- TWIN LIP DESIGN OFFERING:
 - LOWER FRICTION
 - IMPROVED SEALING
 - PRIMARY LIP PROTECTION
 - INCREASED SEAL STABILITY
- IMPROVED SHOCK HANDLING
- COMPLETE LIP ACTUATION



Rod seals

Hallite



621

TECHNICAL DETAILS

METRIC

INCH

OPERATING CONDITIONS

MAXIMUM SPEED 1.0 m/sec
MAXIMUM TEMPERATURE -45°C + 110°C
MAXIMUM PRESSURE 700 bar

3.0 ft/sec
-50°F + 230°F
10,000 p.s.i.

MAXIMUM EXTRUSION GAP

Figures show the maximum permissible gap all on one side using minimum rod $\varnothing$ and maximum clearance $\varnothing$.

PRESSURE bar
MAXIMUM GAP mm
PRESSURE p.s.i.
MAXIMUM GAP in

160	250	400	500	700
1.0	0.8	0.6	0.4	0.25
2400	3750	6000	7500	10,000
0.040	0.032	0.024	0.016	0.010

SURFACE ROUGHNESS

DYNAMIC SEALING FACE $\varnothing d_1$
STATIC SEALING FACE $\varnothing D_1$
STATIC HOUSING FACES L_1

μmRa	μmRt	$\mu inCLA$	$\mu inRMS$
0.1 $\leftrightarrow$ 0.4	4 max	4 $\leftrightarrow$ 16	5 $\leftrightarrow$ 18
1.6 max	10 max	63 max	70 max
3.2 max	16 max	125 max	140 max

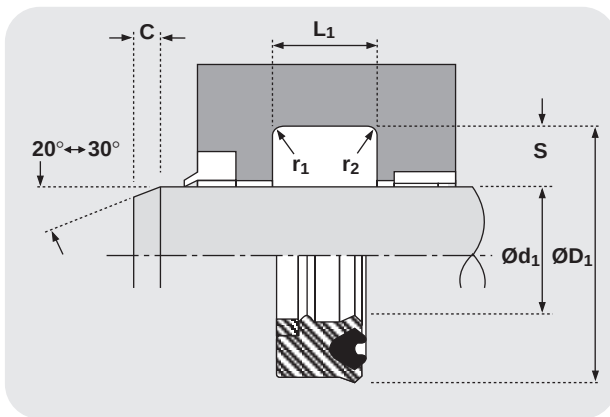
CHAMFERS & RADII

GROOVE SECTION $\leq S$ mm
MIN CHAMFER C mm
MAX FILLET RAD r_1 mm
MAX FILLET RAD r_2 mm
GROOVE SECTION $\leq S$ in
MIN CHAMFER C in
MAX FILLET RAD r_1 in
MAX FILLET RAD r_2 in

4.0	5.0	7.5	10.0	12.5	15.0
3.0	3.5	5.0	6.5	7.0	8.0
0.2	0.4	0.8	0.8	1.2	1.6
0.4	0.8	1.2	1.2	1.6	2.4
0.125	0.187	0.250	0.312	0.375	0.500
0.093	0.093	0.125	0.156	0.187	0.217
0.008	0.008	0.016	0.016	0.032	0.032
0.016	0.016	0.032	0.032	0.047	0.047

TOLERANCES

$\varnothing d_1$	$\varnothing D_1$	L_1 mm	L_1 in
f9	Js11	+0.25 -0	+0.010 -0



DESIGN

The Hallite 621 is a top of the range high pressure rod seal. The design of the seal incorporates a unique profiled NBR energiser to ensure complete lip actuation under all pressure conditions and to cushion the seal against shock loadings.

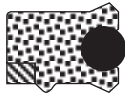
The shell is moulded in Hallite's high performance polyurethane Hythane 181, ensuring flexibility for installation and performance at low temperatures. The Hallite 621 also benefits from Hallite's twin lip profile for dry rod sealing.

FEATURES

- HIGH PRESSURE/SHOCK LOAD CAPABILITY
- TWIN LIP DESIGN OFFERING:
 - LOWER FRICTION
 - IMPROVED SEALING
 - PRIMARY LIP PROTECTION
 - INCREASED SEAL STABILITY
- POLYACETAL ANTI-EXTRUSION RING.

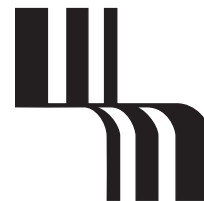
NB: Part numbers suffixed by "†" are designed to suit popular Asian housings.

Part numbers suffixed by "‡" indicate housing sizes to meet ISO5597.



Rod seals

Hallite



631

TECHNICAL DETAILS

METRIC

INCH

OPERATING CONDITIONS

MAXIMUM SPEED 0.5 m/sec
 MAXIMUM TEMPERATURE -45°C + 110°C
 MAXIMUM PRESSURE 700 bar

1.5 ft/sec
 -50°F + 230°F
 10,000 p.s.i.

MAXIMUM EXTRUSION GAP

PRESSURE bar
 MAXIMUM GAP mm
 PRESSURE p.s.i.

Figures show the maximum permissible gap all on one side using minimum rod $\varnothing$ and maximum clearance $\varnothing$.

160	250	400	500	700
1.0	0.8	0.6	0.4	0.25
2400	3750	6000	7500	10,000

SURFACE ROUGHNESS

DYNAMIC SEALING FACE $\varnothing d_1$
 STATIC SEALING FACE $\varnothing D_1$
 STATIC HOUSING FACES L_1

μmRa	μmRt	$\mu inCLA$	$\mu inRMS$
0.1 $\leftrightarrow$ 0.4	4 max	4 $\leftrightarrow$ 16	5 $\leftrightarrow$ 18
1.6 max	10 max	63 max	70 max
3.2 max	16 max	125 max	140 max

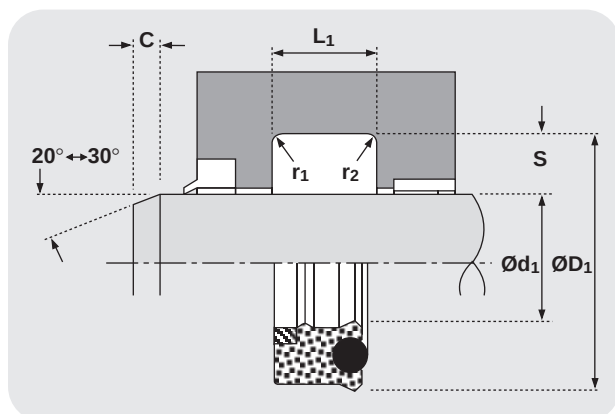
CHAMFERS & RADII

GROOVE SECTION $\leq S$ mm
 MIN CHAMFER C mm
 MAX FILLET RAD r_1 mm
 MAX FILLET RAD r_2 mm

4.0	5.0	7.5	10.0	12.5	15.0
3.0	3.5	5.0	6.5	7.0	8.0
0.2	0.4	0.8	0.8	1.2	1.6
0.4	0.8	1.2	1.2	1.6	2.4

TOLERANCES

$\varnothing d_1$	$\varnothing D_1$	L_1 mm
f9	Js11	+0.25 -0

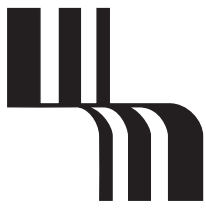


DESIGN

The Hallite 631 is a high pressure rod seal. The thermoplastic polyester elastomer seal generally has an O ring energiser to ensure complete lip actuation under all pressure conditions and to cushion the seal against shock loadings. The Hallite 631 is also available without an anti extrusion ring (Hallite 630). The operating conditions given are for general use with hydraulic mineral oil.

FEATURES:

- HIGH PRESSURE/SHOCK LOAD CAPABILITY
- POLYACETAL ANTI-EXTRUSION RING



Rod seals

Hallite



652

TECHNICAL DETAILS

METRIC

INCH

OPERATING CONDITIONS

MAXIMUM SPEED 1.0 m/sec
MAXIMUM TEMPERATURE -45°C + 110°C
MAXIMUM PRESSURE 700 bar

3.0 ft/sec
-50°F + 230°F
10,000 p.s.i.

MAXIMUM EXTRUSION GAP

PRESSURE bar
MAXIMUM GAP mm
PRESSURE p.s.i.

Figures show the maximum permissible gap all on one side using minimum rod $\varnothing$ and maximum clearance $\varnothing$.

160	250	400	500	700
1.0	0.8	0.6	0.4	0.25
2400	3750	6000	7500	10,000

SURFACE ROUGHNESS

DYNAMIC SEALING FACE $\varnothing d_1$
STATIC SEALING FACE $\varnothing D_1$
STATIC HOUSING FACES L_1

μmRa	μmRt	μinCLA	μinRMS
0.1 $\leftrightarrow$ 0.4	4 max	4 $\leftrightarrow$ 16	5 $\leftrightarrow$ 18
1.6 max	10 max	63 max	70 max
3.2 max	16 max	125 max	140 max

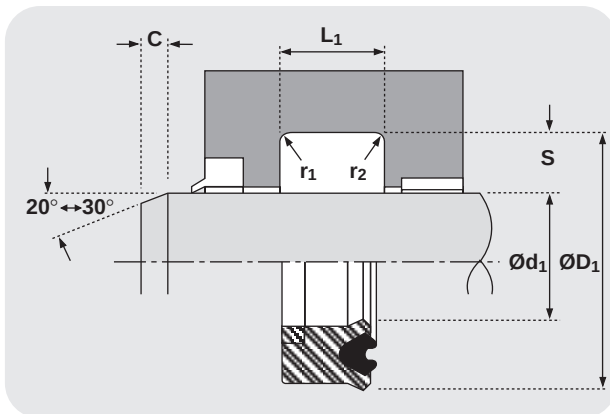
CHAMFERS & RADII

GROOVE SECTION $\leq S$ mm
MIN CHAMFER C mm
MAX FILLET RAD r_1 mm
MAX FILLET RAD r_2 mm

4.0	5.0	7.5	10.0	12.5	15.0
3.0	3.5	5.0	6.5	7.0	8.0
0.2	0.4	0.8	0.8	1.2	1.6
0.4	0.8	1.2	1.2	1.6	2.4

TOLERANCES

$\varnothing d_1$	$\varnothing D_1$	L_1 mm
f9	Js11	+0.25 -0



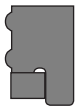
DESIGN

The Hallite 652 is a high pressure rod seal designed specifically for longwall mining applications. The seal design comprises three elements; a unique profiled NBR energiser*, a polyurethane shell and a polyacetal anti-extrusion ring. The shell is manufactured in Hythane 181 to provide flexibility for installation and responsiveness to the sealing lip. The rubber energiser ensures complete lip actuation under all pressure conditions and cushions the seal against shock loadings. The anti-extrusion ring enables the seal to withstand side loads and extreme pressure peaks during operation, even with the extrusion gaps which are the result of using remote plastic bearing strips such as Hallite 506.

*In some cases an O ring energiser is used

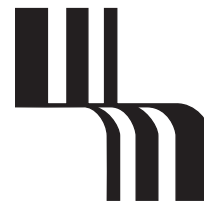
FEATURES

- HIGH PRESSURE/SHOCK LOAD CAPABILITY
- POLYACETAL ANTI-EXTRUSION RING.
- RESPONSIVE SEALING



Rod buffer seals

Hallite



653

TECHNICAL DETAILS

METRIC

INCH

OPERATING CONDITIONS

MAXIMUM SPEED 1.0 m/sec
MAXIMUM TEMPERATURE -45°C + 110°C
MAXIMUM PRESSURE 700 bar

3.0 ft/sec
-50°F + 230°F
10,000 p.s.i.

MAXIMUM EXTRUSION GAP

PRESSURE bar
MAXIMUM GAP (S ≤ 6) mm
MAXIMUM GAP (S > 6) mm
PRESSURE p.s.i.
MAXIMUM GAP (S ≤ 0.250) in
MAXIMUM GAP (S > 0.250) in

Figures show the maximum permissible gap all on one side using minimum rod Ø and maximum clearance Ø.

	160	250	400	500	700
0.6	0.6	0.5	0.4	0.3	0.2
1.0	1.0	0.8	0.6	0.4	0.25
2400	2400	3750	6000	7500	10,000
0.024	0.024	0.020	0.016	0.012	0.008
0.040	0.040	0.032	0.024	0.016	0.010

SURFACE ROUGHNESS

DYNAMIC SEALING FACE Ød₁
STATIC SEALING FACE ØD₁
STATIC HOUSING FACES L₁

µmRa	µmRt	µinCLA	µinRMS
0.1 ↔ 0.4	4 max	4 ↔ 16	5 ↔ 18
1.6 max	10 max	63 max	70 max
3.2 max	16 max	125 max	140 max

CHAMFERS & RADII

GROOVE SECTION ≤ S mm
MIN CHAMFER C mm
MAX FILLET RAD r₁ mm
GROOVE SECTION ≤ S in
MIN CHAMFER C in
MAX FILLET RAD r₁ in

3.75	5.50	7.75
3.00	3.50	5.00
0.50	0.70	1.20
0.150	0.215	0.306
0.093	0.125	0.156
0.020	0.028	0.047

TOLERANCES

Ød ₁	ØD ₁	L ₁
f9	H11	+0.25 -0
f9	Js11	+0.010 -0

DESIGN

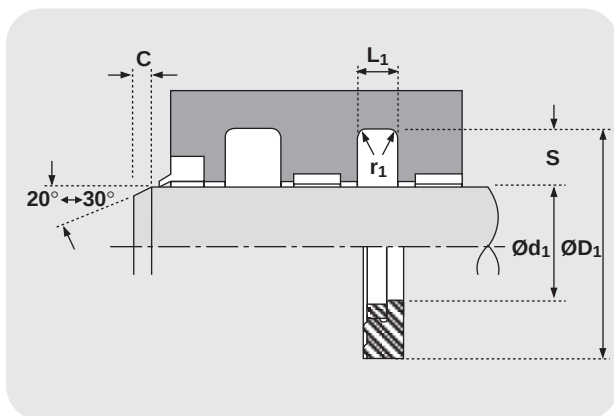
The Hallite 653 is a buffer seal developed to work in conjunction with high performance rod seals, such as the Hallite 605 and 621. It is also interchangeable with common PTFE buffer seal housings.

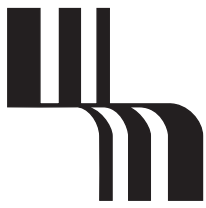
The seal, which is manufactured in Hythane 181, is designed to provide a valve action to prevent excessive pressure build up in the cavity between the buffer seal and the rod seal. An polyacetal anti- extrusion ring is fitted to provide maximum extrusion resistance against shock pressure loads.

The Hallite 653 is a patented product :
European patent no. 0427554Bl.
U.S.A. patent no. 5088747.

FEATURES

- PREVENTS INTER-SEAL PRESSURE BUILD UP
- INTERCHANGEABLE WITH COMMON PTFE BUFFER SEAL HOUSINGS
- EASY INSTALLATION
- LONG LIFE
- EXCELLENT TEMPERATURE RANGE





Rod seals

Hallite



8
5
6

TECHNICAL DETAILS

METRIC

INCH

OPERATING CONDITIONS

MAXIMUM SPEED 1.0 m/sec
MAXIMUM TEMPERATURE -45°C + 110°C
MAXIMUM PRESSURE 400 bar

3.0 ft/sec
-50°F + 230°F
6000 p.s.i.

MAXIMUM EXTRUSION GAP

Figures show the maximum permissible gap all on one side using minimum rod $\varnothing$ and maximum clearance $\varnothing$.

PRESSURE bar	160	250	400
PRESSURE p.s.i.	2400	3750	6000
MAXIMUM GAP in	0.024	0.020	0.016

SURFACE ROUGHNESS

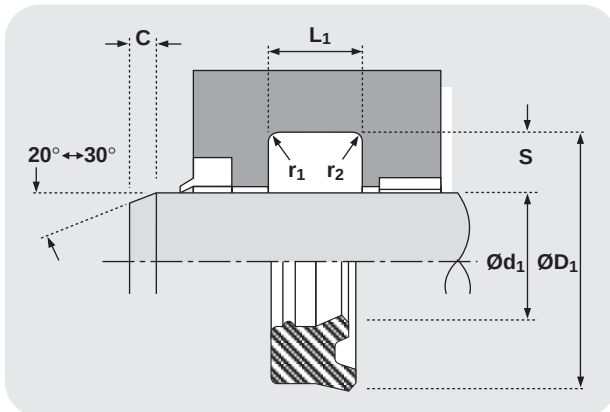
	μmRa	μmRt	μinCLA	μinRMS
DYNAMIC SEALING FACE $\varnothing d_1$	0.1 $\leftrightarrow$ 0.4	4 max	4 $\leftrightarrow$ 16	5 $\leftrightarrow$ 18
STATIC SEALING FACE $\varnothing D_1$	1.6 max	10 max	63 max	70 max
STATIC HOUSING FACES L_1	3.2 max	16 max	125 max	140 max

CHAMFERS & RADII

	0.125	0.187	0.250
GROOVE SECTION $\leq S$ in	0.093	0.093	0.125
MIN CHAMFER C in	0.008	0.008	0.016
MAX FILLET RAD r_1 in	0.016	0.016	0.032

TOLERANCES

$\varnothing d_1$	$\varnothing D_1$	L_1 in
f9	Js11	+0.010 -0



DESIGN

The Hallite 658 is an asymmetric seal designed specifically to replace an O ring and one back up sealing arrangement.

Manufactured in Hallite's high performance polyurethane - Hythane 181, the Hallite 658 is an extremely flexible seal making installation very easy. See Hallite 605 for more details.

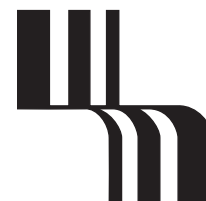
FEATURES

- TWIN LIP DESIGN OFFERING:
LOWER FRICTION,
IMPROVED SEALING,
PRIMARY LIP PROTECTION,
INCREASED SEAL STABILITY.
- EASY INSTALLATION

Hallite 902

Rod seals

Hallite



TECHNICAL DETAILS

METRIC

INCH

OPERATING CONDITIONS

MAXIMUM SPEED 0.5 m/sec
 MAXIMUM TEMPERATURE -35°C + 100°C
 MAXIMUM PRESSURE 350 bar

1.5 ft/sec
 -30°F + 212°F
 5000 p.s.i.

MAXIMUM EXTRUSION GAP

PRESSURE bar 160 250 350
 MAXIMUM GAP mm 0.6 0.5 0.4
 PRESSURE p.s.i. 2400 3750 5000

Figures show the maximum permissible gap all on one side using minimum rod $\varnothing$ and maximum clearance $\varnothing$.

SURFACE ROUGHNESS

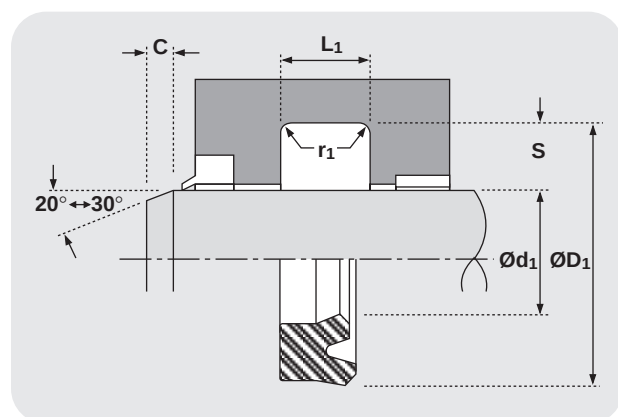
	μmRa	μmRt	μinCLA	μinRMS
DYNAMIC SEALING FACE $\varnothing d_1$	0.1 $\leftrightarrow$ 0.4	4 max	4 $\leftrightarrow$ 16	5 $\leftrightarrow$ 18
STATIC SEALING FACE $\varnothing D_1$	1.6 max	10 max	63 max	70 max
STATIC HOUSING FACES L_1	3.2 max	16 max	125 max	140 max

CHAMFERS & RADII

	4.0	5.0	7.5	10.0	12.5	15.0	20.0
GROOVE SECTION $\leq S$ mm	4.0	5.0	7.5	10.0	12.5	15.0	20.0
MIN CHAMFER C mm	3.0	3.5	5.0	6.5	7.0	8.0	10.0
MAX FILLET RAD r_1 mm	0.3	0.3	0.3	0.3	0.3	0.3	0.3

TOLERANCES

$\varnothing d_1$	$\varnothing D_1$	L_1 mm
f8	H10	+0.3 0



DESIGN

Suitable for standard Asian housings, Hallite 902 is a general purpose polyurethane rod seal. As a possible indent item, minimum quantities may apply when ordering this product.



Rod seals

Hallite



309

TECHNICAL DETAILS

METRIC

INCH

OPERATING CONDITIONS

MAXIMUM SPEED 0.5 m/sec
 MAXIMUM TEMPERATURE -30°C + 100°C
 MAXIMUM PRESSURE 700 bar

1.5 ft/sec
 -30°F + 212°F
 10,000 p.s.i.

MAXIMUM EXTRUSION GAP

PRESSURE bar
 MAXIMUM GAP mm
 PRESSURE p.s.i.

Figures show the maximum permissible gap all on one side using minimum rod $\varnothing$ and maximum clearance $\varnothing$.

160	250	350	500	700
0.6	0.5	0.4	0.3	0.2
2400	3750	5000	7500	10,000

SURFACE ROUGHNESS

DYNAMIC SEALING FACE $\varnothing d_1$
 STATIC SEALING FACE $\varnothing D_1$
 STATIC HOUSING FACES L_1

μmRa	μmRt	$\mu inCLA$	$\mu inRMS$
0.1 $\leftrightarrow$ 0.4	4 max	4 $\leftrightarrow$ 16	5 $\leftrightarrow$ 18
1.6 max	10 max	63 max	70 max
3.2 max	16 max	125 max	140 max

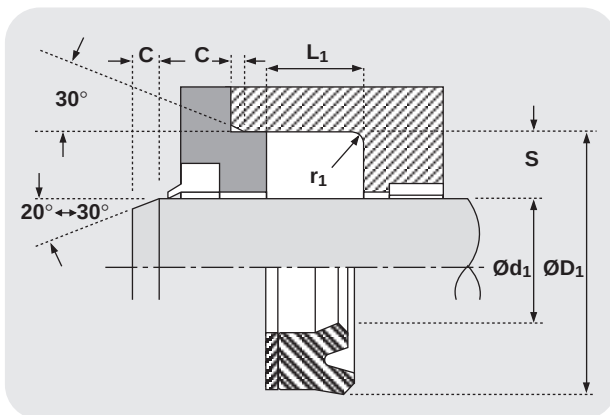
CHAMFERS & RADII

GROOVE SECTION $\leq S$ mm
 MIN CHAMFER C mm
 MAX FILLET RAD r_1 mm

4.0	5.0	7.5	10.0	12.5	15	20.0
3.0	3.5	5.0	6.5	7.0	8.0	10.0
0.3	0.3	0.3	0.3	0.3	0.3	0.3

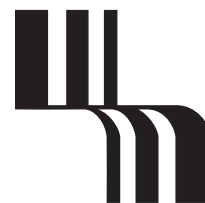
TOLERANCES

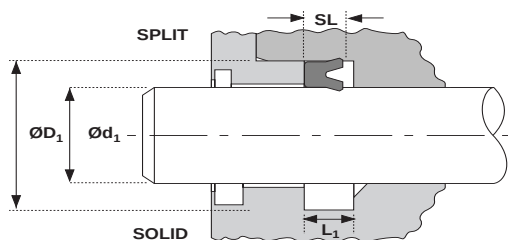
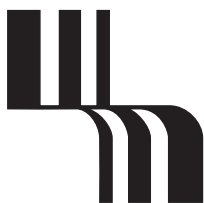
$\varnothing d_1$	$\varnothing D_1$	L_1 mm
h9	H10	+0.3 0



DESIGN

Suitable for standard Asian housings, Hallite 903 is a general purpose polyurethane rod seal supplied with a back up ring. As a possible indent item, minimum quantities may apply when ordering this product.





Rod seals

Hallite

metric



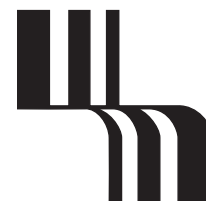
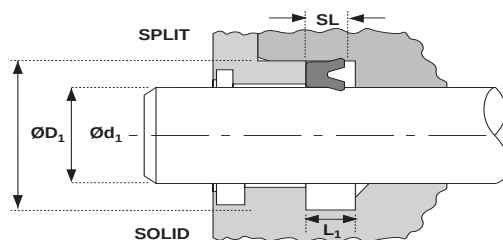
Type	Ød ₁	NOMINALS ØD ₁	SL	L ₁	PART No.
601	4.50	12.50	4.40	5.00	4506701
601	5.00	12.00	5.50	6.50	4508601
601	6.00	13.00	8.00	9.00	4460300
18	6.00	14.00	6.00	6.50	0202200
605	6.00	16.00	7.00	8.00	4580600
610	8.00	16.00	5.30	6.00	4581000
18	8.00	16.00	6.00	6.50	0202400
605	8.00	18.00	7.00	8.00	4580500
605	10.00	15.00	3.60	4.00	4402300
18	10.00	18.00	6.00	6.50	0202500
601	10.00	18.00	6.00	6.60	4299900
601	10.00	20.00	8.00	9.00	4600000
18	10.00	25.00	13.00	13.50	0907200
605	12.00	18.00	4.00	4.50	4578000
605	12.00	18.00	5.70	6.30	4314900
605	12.00	19.00	4.50	5.00	4341600
16	12.00	19.50	2.80	3.20	86106__‡
601	12.00	20.00	4.40	5.00	4182501‡
605	12.00	20.00	5.70	6.30	4310900‡
18	12.00	20.00	6.00	6.50	0202600
605	12.00	22.00	7.70	9.00	4315000
601	12.00	25.00	8.00	9.00	4600100
18	12.00	25.00	10.00	10.50	0615800
605	12.70	18.00	5.50	6.00	4370400
605	13.00	20.00	4.50	5.00	4351600
616	14.00	21.50	2.80	3.20	4577700‡
16	14.00	21.50	2.80	3.20	86098__‡
601	14.00	22.00	4.40	5.00	4182601‡
601	14.00	22.00	5.00	5.70	4604000
610	14.00	22.00	5.30	6.00	4580900
605	14.00	22.00	5.70	6.30	4311000‡
605	14.00	24.00	7.30	8.00	4310000‡
18	14.00	24.00	7.50	8.00	0202700
601	14.00	24.00	8.00	9.00	4600200

Type	Ød ₁	NOMINALS ØD ₁	SL	L ₁	PART No.
16	15.00	22.50	2.80	3.20	86179__
18	15.00	25.00	7.50	8.00	0202800
25	15.00	25.00	8.00	7.30	4196301
601	15.00	25.00	8.00	9.00	4600300
15	15.00	25.00	9.00	9.50	1798200
605	15.37	25.50	6.35	7.40	4333800
605	16.00	22.00	4.50	5.00	4341700
605	16.00	22.00	5.00	6.00	4314100
16	16.00	23.50	2.80	3.20	66225__‡
601	16.00	24.00	4.40	5.00	4182701‡
601	16.00	24.00	5.00	5.70	4604100
605	16.00	24.00	5.80	6.30	4295200‡
610	16.00	24.00	6.00	7.00	4319300
15	16.00	24.00	6.40	6.90	2174100
18	16.00	26.00	7.50	8.00	0615900
605	16.00	26.00	7.70	9.00	4311100
15	16.00	26.00	8.00	8.50	0754300
601	16.00	26.00	8.00	9.00	4600400
18	18.00	24.40	4.80	5.30	0050600
610	18.00	25.00	4.60	5.60	4334600‡
605	18.00	25.00	5.00	6.00	4314200
616	18.00	25.50	2.80	3.20	4341800‡
16	18.00	25.50	2.80	3.20	66226__‡
601	18.00	26.00	4.40	5.00	4182901‡
601	18.00	26.00	5.00	5.70	4604200
605	18.00	26.00	5.00	5.70	4611000
605	18.00	26.00	5.70	6.30	4311200‡
15	18.00	26.00	6.00	6.50	0074800
605	18.00	26.00	6.00	7.00	4333900
601	18.00	28.00	7.30	8.00	4547900
18	18.00	28.00	7.50	8.00	0202900
605	18.00	28.00	7.70	9.00	4305100
25	18.00	28.00	8.00	7.30	4196401
601	18.00	28.00	8.00	9.00	4600500
18	18.00	35.00	13.00	13.50	1293000
605	20.00	25.00	3.20	3.50	4332100

Rod seals

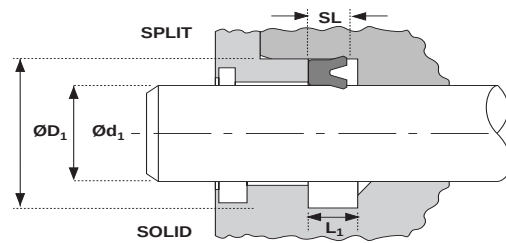
Hallite

metric



Type	Ød ₁	NOMINALS ØD ₁	SL	L ₁	PART No.
610	20.00	26.00	4.50	5.50	4319400
605	20.00	26.00	5.00	5.50	4315100
601	20.00	28.00	4.40	5.00	4183001‡
601	20.00	28.00	5.00	5.70	4604300
605	20.00	28.00	5.00	5.70	4611100
605	20.00	28.00	5.70	6.30	4362100‡
610	20.00	28.00	6.00	7.00	4307500
15	20.00	28.00	6.40	6.90	2137000
25	20.00	28.00	7.10	6.50	4160301
605	20.00	30.00	6.00	7.00	4611200
18	20.00	30.00	7.50	8.00	0200500
605	20.00	30.00	7.70	9.00	4305200
21	20.00	30.00	8.00	8.50	2176120‡
601	20.00	30.00	8.00	9.00	4600600
605	20.00	30.00	10.00	11.00	4310300
616	20.00	31.00	3.90	4.20	4367400‡
16	20.00	31.00	3.90	4.20	65948__‡
18	20.00	35.00	11.00	11.50	0472300
25	20.00	35.00	13.10	12.00	4501201
18	20.00	40.00	12.50	13.00	1377900
25	20.00	40.00	13.50	12.50	4509301
610	22.00	28.00	4.50	5.50	4356000
610	22.00	29.00	4.60	5.60	4324200‡
601	22.00	30.00	4.40	5.00	4183101‡
605	22.00	30.00	5.70	6.30	4305300‡
18	22.00	30.00	6.00	6.50	0817600
610	22.00	30.00	6.00	7.00	4316100
15	22.00	30.00	6.40	6.90	2137100
610	22.00	30.00	7.00	8.00	4389300
605	22.00	30.00	7.30	8.00	4356800
605	22.00	32.00	7.30	8.00	4310800‡
18	22.00	32.00	7.50	8.00	0203300
15	22.00	32.00	9.00	9.50	0377300
605	22.00	32.00	10.00	11.00	4311300
616	22.00	33.00	3.90	4.20	4341900‡
16	22.00	33.00	3.90	4.20	65949__‡
18	22.00	34.00	9.00	9.50	0615600
601	22.00	35.00	10.00	11.00	4600700

Type	Ød ₁	NOMINALS ØD ₁	SL	L ₁	PART No.
18	22.00	37.00	11.00	11.50	0203900
601	22.00	40.00	10.00	11.00	4572900
601	22.40	30.00	5.00	5.70	4604400
605	22.40	30.00	5.00	5.70	4611300
601	22.40	32.40	8.00	9.00	4600800
18	23.00	38.00	11.00	11.50	0204100*
25	24.00	32.00	7.10	6.50	4504101
601	25.00	33.00	4.40	5.00	4183301‡
601	25.00	33.00	5.00	5.70	4604500
605	25.00	33.00	5.00	5.70	4610100
605	25.00	33.00	5.70	6.30	4305400‡
610	25.00	33.00	6.00	7.00	4316200
15	25.00	33.00	6.40	6.90	2137200
605	25.00	33.00	6.80	7.50	4333500
610	25.00	33.00	8.00	9.00	4299000
605	25.00	33.00	10.00	11.00	4315200
605	25.00	35.00	7.30	8.00	4512000‡
605	25.00	35.00	7.70	9.00	4311400
601	25.00	35.00	8.00	9.00	4600900
605	25.00	35.00	10.00	11.00	4310500
601	25.00	35.00	10.00	11.00	4362600
616	25.00	36.00	3.90	4.20	4367500‡
16	25.00	36.00	3.90	4.20	65950__‡
605	25.00	37.00	10.00	11.00	4379900
601	25.00	38.00	8.00	9.00	4601000
605	25.00	40.00	10.00	11.00	4322900
601	25.00	40.00	10.00	11.00	4601100
18	25.00	40.00	11.00	11.50	0472800
616	25.40	32.90	2.80	3.20	4469000
605	26.00	36.00	7.00	8.00	4459400
601	26.00	40.00	9.20	10.00	4584900
18	26.00	45.00	14.00	14.50	0474000*
601	28.00	35.50	5.00	5.70	4604600
605	28.00	35.50	5.00	5.70	4611400
610	28.00	36.00	5.30	6.30	4334700‡



Rod seals

Hallite

metric



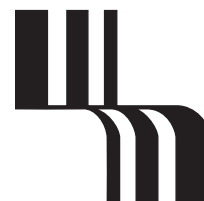
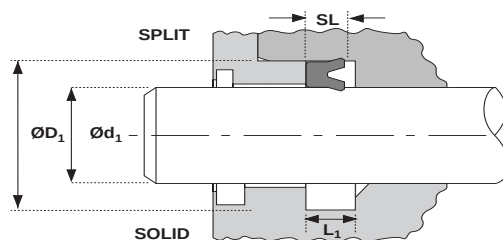
Type	Ød1	NOMINALS ØD1	SL	L1	PART No.
18	28.00	36.00	6.00	6.50	0050700
610	28.00	36.00	6.00	7.00	4323200
15	28.00	36.00	6.40	6.90	2137300
601	28.00	36.00	6.50	7.10	4506201
610	28.00	36.00	8.00	9.00	4307700
601	28.00	38.00	5.60	6.30	4183401‡
605	28.00	38.00	7.30	8.00	4305500‡
21	28.00	38.00	8.00	8.50	6583220‡
616	28.00	39.00	3.90	4.20	4367600‡
16	28.00	39.00	3.90	4.20	66227__‡
15	28.00	40.00	9.00	9.50	0690700
601	28.00	40.00	10.00	11.00	4601200
601	28.00	43.00	10.00	11.00	4601300
18	28.00	43.00	11.00	11.50	0204300
605	28.00	43.00	11.40	12.50	4399000‡
18	28.00	48.00	11.40	11.90	0850400*
601	30.00	37.00	6.00	7.00	4596800
610	30.00	38.00	6.00	7.00	4308900
605	30.00	38.00	6.30	7.00	4402700
15	30.00	38.00	6.40	6.90	2137400
610	30.00	38.00	8.00	9.00	4362400
601	30.00	40.00	5.60	6.30	4183501
601	30.00	40.00	6.00	7.00	4604700
605	30.00	40.00	6.00	7.00	4610200
610	30.00	40.00	7.00	8.00	4558300
621	30.00	40.00	7.30	8.00	4577110
15	30.00	40.00	7.50	8.00	0032400
601	30.00	40.00	8.00	9.00	4596900
605	30.00	40.00	10.00	11.00	4304600
601	30.00	40.00	10.00	11.00	4362700
616	30.00	41.00	3.90	4.20	4404500
16	30.00	41.00	3.90	4.20	65951__
605	30.00	42.00	10.90	12.00	4383100
21	30.00	45.00	9.00	9.50	2176420
601	30.00	45.00	10.00	11.00	4601400
18	30.00	45.00	11.00	11.50	0204400
605	30.00	50.00	10.00	11.00	4328500
18	30.00	50.00	14.00	14.50	0282100

Type	Ød1	NOMINALS ØD1	SL	L1	PART No.
601	31.50	41.50	6.00	7.00	4604800
605	32.00	40.00	6.00	7.00	4310700
610	32.00	40.00	6.00	7.00	4316300
15	32.00	40.00	6.40	6.90	2137500
605	32.00	40.00	6.70	7.70	4334000
605	32.00	40.00	7.70	9.00	4315300
605	32.00	41.50	7.90	8.90	4334100
601	32.00	42.00	5.60	6.30	4183601‡
605	32.00	42.00	5.70	6.30	4360100‡
601	32.00	42.00	6.00	7.00	4604900
605	32.00	42.00	6.00	7.00	4616100
605	32.00	42.00	7.30	8.00	4374200‡
21	32.00	42.00	8.00	8.50	6583320‡
605	32.00	42.00	10.00	11.00	4305600
601	32.00	42.00	10.00	11.00	4362800
616	32.00	43.00	3.90	4.20	4367700‡
16	32.00	43.00	3.90	4.20	65952__‡
631	32.00	44.00	8.10	9.60	4344110
18	32.00	44.50	8.50	9.00	0524600*
18	32.00	45.00	10.00	11.00	4597700
18	32.00	46.00	10.00	10.50	0615700*
605	32.00	47.00	9.10	10.00	4329600
601	32.00	47.00	10.00	11.00	4621200
605	32.00	47.00	10.00	11.00	4338900†
18	32.00	47.00	11.00	11.50	0204600
605	32.00	48.00	10.00	11.00	4492500
902	34.00	50.00	12.00	13.00	9034006*
610	35.00	43.00	6.00	7.00	4301700
605	35.00	43.00	6.30	7.00	4402800
15	35.00	43.00	6.40	6.90	2137600
610	35.00	43.00	8.00	9.00	4592800
605	35.00	43.00	8.20	9.00	4309000
601	35.00	45.00	6.00	7.00	4605000
605	35.00	45.00	6.00	7.00	4611500
601	35.00	45.00	7.00	8.00	4496000
18	35.00	45.00	7.50	8.00	0052300
605	35.00	45.00	7.70	9.00	4314300

Rod seals

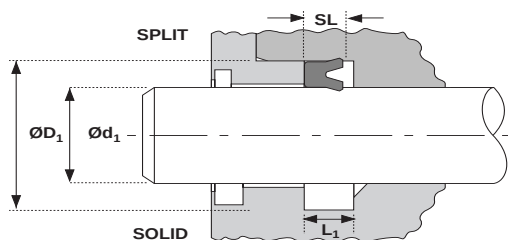
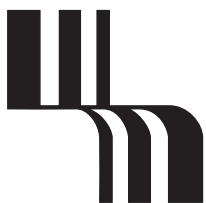
Hallite

metric



Type	----- Ød ₁	NOMINALS ØD ₁	----- SL	----- L ₁	PART No.
610	35.00	45.00	10.00	11.00	4299300
605	35.00	45.00	10.00	11.00	4305700
25	35.00	45.00	11.00	10.00	4508401
16	35.00	46.00	3.90	4.20	66228__
601	35.00	48.00	10.00	11.00	4360300
605	35.00	50.00	9.00	10.00	4611600
621	35.00	50.00	9.50	10.50	4335310
605	35.00	50.00	10.00	11.00	4322500
601	35.00	50.00	10.00	11.00	4601500
18	35.00	50.00	11.00	11.50	0474600
15	35.00	50.00	11.00	11.50	0874400
902	35.00	50.00	12.00	13.00	9035036*
601	35.50	45.00	6.00	7.00	4605100
902	35.50	50.50	10.00	11.00	4621100
902	35.50	51.50	12.00	13.00	9035046*
610	36.00	44.00	5.30	6.30	4324300‡
18	36.00	44.00	6.00	6.50	1204900
15	36.00	44.00	6.40	6.90	2137700
605	36.00	44.00	6.40	7.50	4373900
610	36.00	44.00	8.00	9.00	4308000
605	36.00	44.00	8.20	9.00	4395000
601	36.00	46.00	5.60	6.30	4183701‡
605	36.00	46.00	5.70	6.30	4372100‡
605	36.00	46.00	7.30	8.00	4304900‡
621	36.00	46.00	7.30	8.00	4317010‡
21	36.00	46.00	8.00	8.50	6583420‡
610	36.00	46.00	10.00	11.00	4299400
605	36.00	46.00	10.00	11.00	4305000
616	36.00	47.00	3.90	4.20	4353100‡
16	36.00	47.00	3.90	4.20	65953__‡
15	36.00	48.00	9.00	9.50	0690600
18	36.00	51.00	11.00	11.50	0978800
601	38.00	48.00	6.00	7.00	4605200
605	38.00	48.00	10.00	11.00	4515500
605	38.00	50.00	10.00	11.00	4586300
605	38.00	53.00	10.00	11.00	4480900
601	38.00	55.00	9.70	11.00	4366000

Type	----- Ød ₁	NOMINALS ØD ₁	----- SL	----- L ₁	PART No.
601	38.00	58.00	9.70	11.00	4560100
610	40.00	48.00	5.40	6.40	4329200
15	40.00	48.00	6.40	6.90	2137800
610	40.00	48.00	6.50	7.50	4323300
610	40.00	48.00	8.00	9.00	4301800
605	40.00	48.00	8.20	9.00	4396800
605	40.00	49.50	9.50	10.50	4334200
601	40.00	50.00	5.60	6.30	4183801‡
601	40.00	50.00	6.00	7.00	4605300
605	40.00	50.00	6.00	7.00	4610300
605	40.00	50.00	7.30	8.00	4311600‡
621	40.00	50.00	7.30	8.00	4317110‡
15	40.00	50.00	7.50	8.00	0188600
21	40.00	50.00	8.00	8.50	6583520‡
605	40.00	50.00	10.00	11.00	4293800
601	40.00	50.00	10.00	11.00	4362900
18	40.00	50.00	10.50	11.00	0202000
15	40.00	50.00	10.50	11.00	1252100
652	40.00	52.00	8.70	9.60	4326311
605	40.00	52.00	10.90	12.00	4381800
605	40.00	55.00	9.00	10.00	4611700
601	40.00	55.00	9.90	11.00	4388500
605	40.00	55.00	10.00	11.00	4328300
601	40.00	55.00	10.00	11.00	4601600
21	40.00	55.00	10.50	11.00	2176920
18	40.00	55.00	11.00	11.50	0475000
616	40.00	55.50	6.00	6.30	4367800
16	40.00	55.50	6.00	6.30	65954__
902	40.00	56.00	12.00	13.00	9040036*
601	40.00	60.00	12.00	13.00	4601700
18	40.00	60.00	14.00	14.50	0282000
18	40.00	60.00	18.00	19.00	1106200
605	42.00	50.00	7.50	8.00	4373800
605	42.00	52.00	10.00	11.00	4338200
18	42.00	57.00	11.00	11.50	0205100*
18	42.00	73.00	23.00	24.00	6502900*
16	43.00	58.50	6.00	6.30	86193__



Rod seals

Hallite

metric



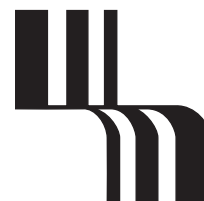
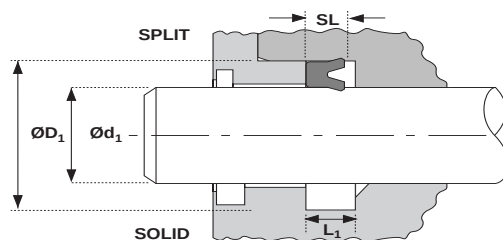
Type	Ød ₁	NOMINALS ØD ₁	SL	L ₁	PART No.
18	43.00	63.00	14.00	14.50	0646700
610	45.00	52.00	10.00	11.00	4330000
610	45.00	53.00	5.30	6.30	4334800‡
610	45.00	53.00	8.00	9.00	4308100
605	45.00	53.00	8.10	9.00	4402900
605	45.00	53.00	11.80	13.00	4315600
601	45.00	55.00	5.60	6.30	4183901‡
605	45.00	55.00	5.60	6.30	4479700‡
601	45.00	55.00	6.00	7.00	4605400
605	45.00	55.00	6.00	7.00	4610400
605	45.00	55.00	7.30	8.00	4305900‡
621	45.00	55.00	7.30	8.00	4317210‡
15	45.00	55.00	8.00	8.50	2137900
21	45.00	55.00	8.00	8.50	6583620‡
605	45.00	55.00	10.00	11.00	4302600
601	45.00	55.00	10.00	11.00	4363000
610	45.00	55.00	10.00	11.00	4389400
653	45.00	56.00		4.20	4575510
616	45.00	56.00	3.90	4.20	4556300‡
601	45.00	56.00	7.00	8.00	4605500
605	45.00	57.70	9.50	10.50	4322800
15	45.00	60.00	10.00	10.50	1022800
605	45.00	60.00	10.00	11.00	4315400
601	45.00	60.00	10.00	11.00	4601800
18	45.00	60.00	11.00	11.50	0979400
621	45.00	60.00	11.40	12.50	4295510‡
616	45.00	60.50	6.00	6.30	4367900
16	45.00	60.50	6.00	6.30	65955_ _
902	45.00	61.00	12.00	13.00	9045036*
605	45.00	65.00	10.00	11.00	4315500
601	45.00	65.00	10.00	11.00	4575000
902	45.00	65.00	12.00	13.00	9045046*
18	45.00	65.00	14.00	14.50	0281700
601	46.00	56.00	6.00	7.00	4543900
902	47.00	63.00	12.00	13.00	9047006*
605	48.00	60.00	10.00	11.00	4432600

Type	Ød ₁	NOMINALS ØD ₁	SL	L ₁	PART No.
601	48.00	63.00	10.00	11.00	4601900
18	48.00	63.00	11.00	11.50	0205200
605	50.00	57.00	9.00	10.00	4538600
610	50.00	58.00	5.30	6.30	4356900
610	50.00	58.00	8.00	9.00	4299100
601	50.00	60.00	5.60	6.30	4184001‡
601	50.00	60.00	6.00	7.00	4605600
605	50.00	60.00	6.00	7.00	4611800
605	50.00	60.00	7.30	8.00	4306000‡
621	50.00	60.00	7.30	8.00	4317310‡
18	50.00	60.00	7.50	8.00	0179300
15	50.00	60.00	8.00	8.50	1204400
21	50.00	60.00	8.00	8.50	2192722‡
605	50.00	60.00	10.00	11.00	4304500
601	50.00	60.00	10.00	11.00	4363100
610	50.00	60.00	10.00	11.00	4389500
605	50.00	60.00	11.80	13.00	4314400
652	50.00	62.00	8.70	9.60	4326411
18	50.00	62.00	9.50	10.00	1352700
605	50.00	62.70	9.50	10.50	4334400
18	50.00	64.50	10.50	11.00	0747700*
605	50.00	65.00	9.00	10.00	4611900
605	50.00	65.00	9.50	0.50	4344000
18	50.00	65.00	10.00	10.50	0208400
601	50.00	65.00	10.00	11.00	4602000
605	50.00	65.00	10.90	12.00	4291700
18	50.00	65.00	11.00	11.50	0383800
621	50.00	65.00	11.40	12.50	4293410‡
605	50.00	65.00	14.50	16.00	4381900
653	50.00	65.50		6.30	4403210
616	50.00	65.50	6.00	6.30	4368000
16	50.00	65.50	6.00	6.30	65956_ _
902	50.00	66.00	12.00	13.00	9050036*
601	50.00	70.00	12.00	13.00	4602100
605	50.00	70.00	12.00	13.00	4612000
18	50.00	70.00	14.00	14.50	0294600
18	50.00	80.00	25.00	26.00	0394000

Rod seals

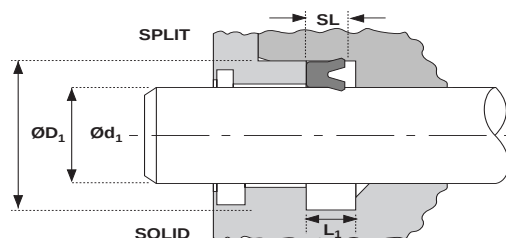
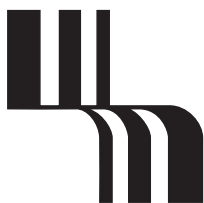
Hallite

metric



Type	----- Ød ₁	NOMINALS ØD ₁	----- SL	----- L ₁	PART No.
601	52.00	62.00	10.00	11.00	4559000
601	53.00	63.00	6.00	7.00	4605700
605	53.00	65.00	9.00	10.00	4371700
610	55.00	63.00	8.00	9.00	4323000
601	55.00	65.00	6.00	7.00	4605800
605	55.00	65.00	6.00	7.00	4615600
610	55.00	65.00	7.00	8.00	4385500
15	55.00	65.00	8.00	8.50	0208700
18	55.00	65.00	8.00	8.50	0242600
605	55.00	65.00	8.20	9.00	4360400
605	55.00	65.00	10.00	11.00	4306100
610	55.00	65.00	10.00	11.00	4389600
21	55.00	65.00	10.50	11.00	2177320
605	55.00	65.00	11.80	13.00	4323400
610	55.00	65.00	11.80	13.00	4389700
605	55.00	68.00	10.00	11.00	4593800
605	55.00	70.00	9.00	10.00	4612100
621	55.00	70.00	11.40	12.50	4403610
605	55.00	70.00	11.80	13.00	4319200
16	55.00	70.50	6.00	6.30	86193__
653	55.00	70.50		6.30	4403310
902	55.00	71.00	12.00	13.00	9055026*
601	55.00	75.00	12.00	13.00	4602200
605	55.00	75.00	12.00	13.00	4612200
902	55.00	75.00	13.00	13.00	9055036*
18	55.00	75.00	14.00	14.50	0818600
610	56.00	64.00	8.00	9.00	4316400
601	56.00	66.00	6.00	7.00	4605900
610	56.00	66.00	6.80	7.50	4334900†
15	56.00	66.00	8.00	8.50	2138000
605	56.00	66.00	10.00	11.00	4311800
18	56.00	68.00	9.00	9.50	0184900
601	56.00	71.00	8.40	9.50	4184201†
605	56.00	71.00	10.00	11.00	4311900
605	56.00	71.00	11.40	12.50	4306200†
621	56.00	71.00	11.40	12.50	4317410†
652	56.00	71.00	11.40	12.50	4557110

Type	----- Ød ₁	NOMINALS ØD ₁	----- SL	----- L ₁	PART No.
15	56.00	71.00	12.00	12.50	0332600
21	56.00	71.00	12.50	13.00	6583720†
616	56.00	71.50	6.00	6.30	4368100†
16	56.00	71.50	6.00	6.30	65957__
902	56.00	72.00	12.00	13.00	9056016*
902	56.00	76.00	12.00	13.00	9056026*
18	56.00	76.00	14.00	14.50	0646100
610	60.00	68.00	8.00	9.00	4299200
605	60.00	68.00	11.00	12.50	4538000
610	60.00	68.00	11.40	12.50	4329900
652	60.00	69.80	11.40	12.50	4534910
601	60.00	70.00	6.00	7.00	4606000
605	60.00	70.00	6.00	7.00	4610500
610	60.00	70.00	7.00	8.00	4303200
15	60.00	70.00	8.00	8.50	0208500
25	60.00	70.00	8.75	8.00	4160401
605	60.00	70.00	10.00	11.00	4310600
601	60.00	70.00	10.00	11.00	4363200
605	60.00	70.00	11.80	13.00	4306300
610	60.00	70.00	11.80	13.00	4389800
902	60.00	70.00	12.00	13.00	9060036*
616	60.00	70.60	3.90	4.20	4410800
601	60.00	71.00	7.00	8.00	4606100
605	60.00	71.00	7.00	8.00	4615700
18	60.00	71.00	9.00	9.50	1436300*
652	60.00	72.00	8.70	9.60	4344211
18	60.00	72.00	9.50	10.00	1397700
605	60.00	72.00	10.00	11.00	4323500
605	60.00	73.00	10.00	11.00	4593900
621	60.00	73.00	13.00	14.00	4526010†
605	60.00	75.00	9.00	10.00	4612300
605	60.00	75.00	10.00	11.00	4378700
621	60.00	75.00	11.40	12.50	4298410
605	60.00	75.00	11.80	13.00	4306400
652	60.00	75.00	11.80	13.00	4451211
605	60.00	75.00	20.50	22.50	4391800
653	60.00	75.50		6.30	4403410
16	60.00	75.50	6.00	6.30	65958__



Rod seals

Hallite

metric



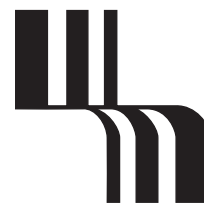
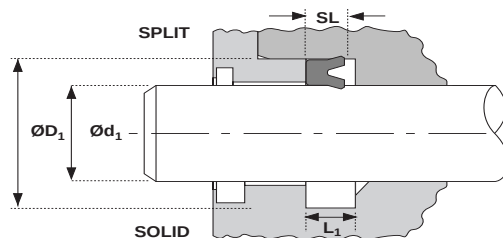
Type	Ød ₁	NOMINALS ØD ₁	SL	L ₁	PART No.
601	60.00	76.00	12.00	13.00	4608000
902	60.00	76.00	12.00	13.00	9060046*
605	60.00	80.00	11.40	12.50	4514300
601	60.00	80.00	12.00	13.00	4602300
605	60.00	80.00	12.00	13.00	4612400
18	60.00	80.00	14.00	14.50	0294900
15	60.00	80.00	14.00	14.50	0391400
18	61.00	85.00	12.00	12.50	0814000*
610	63.00	71.00	8.00	9.00	4316500
601	63.00	73.00	6.00	7.00	4606200
605	63.00	73.00	6.00	7.00	4612500
605	63.00	73.00	11.80	13.00	4312000
601	63.00	73.00	11.80	13.00	4363300
610	63.00	75.00	8.60	9.60	4360500
652	63.00	75.00	8.70	9.60	4326511
15	63.00	75.00	9.60	10.10	2138100
601	63.00	78.00	8.40	9.50	4184301‡
605	63.00	78.00	10.00	11.00	4312100
605	63.00	78.00	11.40	12.50	4306500‡
621	63.00	78.00	11.40	12.50	4317510‡
21	63.00	78.00	12.50	13.00	2192822‡
616	63.00	78.50	6.00	6.30	4368200‡
16	63.00	78.50	6.00	6.30	65959__‡
902	63.00	79.00	12.00	13.00	9063016*
621	63.00	83.00	11.80	13.00	4520510†
902	63.00	83.00	12.00	13.00	9063026
18	63.00	83.00	14.00	14.50	0646300
902	64.00	80.00	12.00	13.00	9064006*
18	65.00	73.00	6.00	6.50	0900400
610	65.00	73.00	8.00	9.00	4362500
601	65.00	75.00	6.00	7.00	4606300
605	65.00	75.00	6.00	7.00	4615900
605	65.00	75.00	7.70	9.00	4314500
605	65.00	75.00	11.80	13.00	4306600
610	65.00	75.00	11.80	13.00	4389900
15	65.00	77.00	9.60	10.10	2138200

Type	Ød ₁	NOMINALS ØD ₁	SL	L ₁	PART No.
605	65.00	77.70	9.50	10.50	4334500
605	65.00	78.00	10.00	11.00	4616200
601	65.00	80.00	8.40	9.50	4184401‡
605	65.00	80.00	9.00	10.00	4612600
18	65.00	80.00	11.00	11.50	0740700
605	65.00	80.00	11.80	13.00	4312200
902	65.00	80.00	12.00	13.00	9065026*
616	65.00	80.50	6.00	6.30	4548000
16	65.00	80.50	6.00	6.30	65960__
601	65.00	85.00	12.00	13.00	4602400
605	65.00	85.00	12.00	13.00	4612700
18	65.00	85.00	14.00	14.50	0388600
605	67.00	77.00	6.00	7.00	4612800
902	67.00	87.00	15.00	16.00	9067006*
610	70.00	78.00	8.00	9.00	4316600
601	70.00	80.00	6.00	7.00	4606400
605	70.00	80.00	6.00	7.00	4615800
610	70.00	80.00	6.50	7.50	4335000‡
15	70.00	80.00	7.50	8.00	0057700
605	70.00	80.00	11.80	13.00	4312300
601	70.00	80.00	11.80	13.00	4363400
610	70.00	80.00	11.80	13.00	4390000
652	70.00	82.00	8.70	9.60	4344311
605	70.00	82.00	8.70	9.60	4494700
15	70.00	82.00	9.60	10.10	2146800
605	70.00	82.00	10.00	11.00	4323600
605	70.00	83.00	10.00	11.00	4616400
18	70.00	84.00	12.00	12.50	1438800
601	70.00	85.00	8.40	9.50	4184501‡
605	70.00	85.00	9.00	10.00	4612900
18	70.00	85.00	9.50	10.00	0392600
605	70.00	85.00	10.00	11.00	4302700
605	70.00	85.00	11.40	12.50	4301200‡
621	70.00	85.00	11.40	12.50	4317610‡
18	70.00	85.00	12.00	12.50	0071900
15	70.00	85.00	12.00	12.50	0384500
21	70.00	85.00	12.50	13.00	6583820‡

Rod seals

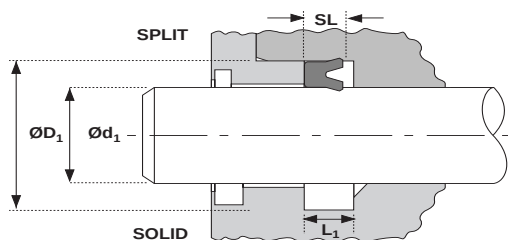
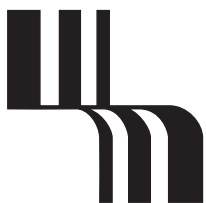
Hallite

metric



Type	----- Ød ₁	NOMINALS ØD ₁	----- SL	----- L ₁	PART No.
605	70.00	85.00	20.50	22.50	4401400
616	70.00	85.50	6.00	6.30	4368300‡
16	70.00	85.50	6.00	6.30	65961_ _‡
601	70.00	90.00	12.00	13.00	4602500
605	70.00	90.00	12.00	13.00	4613000
18	70.00	90.00	14.00	14.50	0296000
902	70.00	90.00	15.00	16.00	9070046*
25	70.00	90.00	15.50	14.50	4131801
601	70.00	92.00	12.00	13.00	4602600
18	70.00	100.00	25.00	26.00	1403100*
601	71.00	80.00	6.00	7.00	4606500
902	71.00	91.00	12.00	13.00	9071016*
902	71.00	91.00	15.00	16.00	9071026*
610	75.00	83.00	8.00	9.00	4539400
601	75.00	85.00	6.00	7.00	4606600
605	75.00	85.00	11.80	13.00	4312400
601	75.00	85.00	11.80	13.00	4363500
605	75.00	88.00	10.00	11.00	4616300
621	75.00	88.00	13.00	14.00	4526110†
605	75.00	90.00	9.00	10.00	4613100
18	75.00	90.00	12.00	12.50	0740600
16	75.00	90.50	6.00	6.30	65962_ _
601	75.00	95.00	12.00	13.00	4602700
605	75.00	95.00	12.00	13.00	4613200
652	75.00	95.00	12.50	14.00	4547810
18	75.00	95.00	14.00	14.50	0412700
21	75.00	95.00	14.00	14.50	0896220
902	75.00	95.00	15.00	16.00	9075036*
18	75.00	100.00	15.50	15.50	0891600*
601	75.00	100.00	22.00	24.00	4584700
605	78.00	86.00	9.00	10.00	4538700
16	78.00	93.50	6.00	6.30	86112_ _
610	80.00	88.00	8.00	9.00	4316700
601	80.00	90.00	6.00	7.00	4606700
605	80.00	90.00	6.00	7.00	4616000
601	80.00	90.00	8.00	8.70	4159001

Type	----- Ød ₁	NOMINALS ØD ₁	----- SL	----- L ₁	PART No.
605	80.00	90.00	10.00	11.00	4390400
605	80.00	90.00	11.80	13.00	4312500
601	80.00	90.00	11.80	13.00	4363600
605	80.00	92.00	8.70	9.60	4494800
15	80.00	92.00	9.60	10.10	2138300
605	80.00	93.00	10.00	11.00	4615200
601	80.00	95.00	8.40	9.50	4184601‡
605	80.00	95.00	9.00	10.00	4613300
605	80.00	95.00	10.00	11.00	4383500
621	80.00	95.00	11.40	12.50	4317710‡
605	80.00	95.00	11.80	13.00	4306700
18	80.00	95.00	12.00	12.50	0732700
21	80.00	95.00	12.50	13.00	2192922‡
621	80.00	95.00	13.00	14.00	4540610†
652	80.00	95.00	14.50	16.00	4446511
631	80.00	95.00	14.50	16.00	4446510
616	80.00	95.50	6.00	6.30	4368400‡
16	80.00	95.50	6.00	6.30	65963_ _‡
18	80.00	100.00	11.30	11.80	0178400
601	80.00	100.00	12.00	13.00	4602800
605	80.00	100.00	12.00	13.00	4613400
18	80.00	100.00	14.00	14.50	0295100
605	80.00	100.00	14.50	16.00	4382800‡
902	80.00	100.00	15.00	16.00	9080036*
18	80.00	105.00	19.00	20.00	0413100
605	80.00	110.00	16.40	18.00	4342900
605	85.00	93.00	10.00	11.00	4392700
605	85.00	93.00	11.00	12.50	4537900
631	85.00	97.00	8.70	9.60	4344510
610	85.00	97.00	9.00	10.00	4328100
18	85.00	97.00	12.00	12.50	1436100
601	85.00	100.00	8.40	9.50	4184701‡
601	85.00	100.00	8.90	10.00	4606800
605	85.00	100.00	9.00	10.00	4610600
605	85.00	100.00	10.00	11.00	4615300
605	85.00	100.00	11.80	13.00	4306800
18	85.00	100.00	12.00	12.50	0529700
621	85.00	100.00	13.00	14.00	4540710†



Rod seals

Hallite

metric



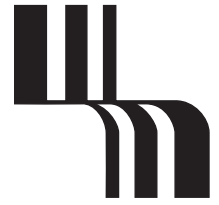
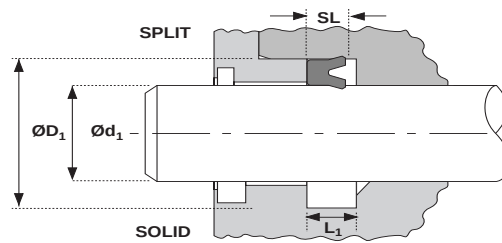
Type	Ød ₁	NOMINALS ØD ₁	SL	L ₁	PART No.
616	85.00	100.50	5.60	6.30	4538400
16	85.00	100.50	6.00	6.30	65964__
18	85.00	105.00	12.00	12.50	1252700
601	85.00	105.00	12.00	13.00	4602900
605	85.00	105.00	12.00	13.00	4613500
18	85.00	105.00	14.00	14.50	0070100
18	85.00	105.00	15.00	15.50	0242000*
610	87.00	95.00	8.00	9.00	4323700
610	90.00	98.00	8.00	9.00	4316800
25	90.00	100.00	5.75	5.00	4126601
605	90.00	100.00	6.80	7.50	4493500‡
18	90.00	100.00	9.00	9.50	0185000
605	90.00	100.00	9.00	10.00	4366900
605	90.00	100.00	11.80	13.00	4314600
601	90.00	100.00	11.80	13.00	4363700
605	90.00	102.00	8.70	9.60	4333000
15	90.00	102.00	9.60	10.10	2138400
601	90.00	105.00	8.40	9.50	4184801‡
601	90.00	105.00	8.90	10.00	4606900
605	90.00	105.00	9.00	10.00	4613600
15	90.00	105.00	9.50	10.00	2174600
605	90.00	105.00	10.00	11.00	4615400
605	90.00	105.00	11.40	12.50	4306900‡
621	90.00	105.00	11.40	12.50	4317810‡
21	90.00	105.00	12.50	13.00	6583920‡
621	90.00	105.00	13.00	14.00	4526310†
652	90.00	105.00	14.50	16.00	4428011
653	90.00	105.50		6.30	4523710
616	90.00	105.50	6.00	6.30	4368500‡
16	90.00	105.50	6.00	6.30	65965__‡
18	90.00	110.00	10.00	10.50	0306700
601	90.00	110.00	12.00	13.00	4603000
605	90.00	110.00	12.00	13.00	4613700
18	90.00	110.00	14.00	14.50	0071700
18	90.00	110.00	15.00	15.50	0712400
902	90.00	110.00	15.00	16.00	9090036*
18	90.00	120.00	15.50	15.50	1006600

Type	Ød ₁	NOMINALS ØD ₁	SL	L ₁	PART No.
601	95.00	110.00	8.90	10.00	4607000
605	95.00	110.00	9.00	10.00	4610700
605	95.00	110.00	10.00	11.00	4615500
621	95.00	110.00	13.00	14.00	4540810†
616	95.00	110.50	5.60	6.30	4538500
16	95.00	110.50	6.00	6.30	65966__
18	95.00	115.00	11.00	11.50	0808400
601	95.00	115.00	12.00	13.00	4603100
605	95.00	115.00	12.00	13.00	4613800
18	95.00	115.00	14.00	14.50	0796400
902	95.00	115.00	15.00	16.00	9095036*
605	96.00	104.00	10.90	12.00	4380300
16	97.00	112.50	6.00	6.30	86113__
610	100.00	108.00	8.00	9.00	4316900
25	100.00	110.00	8.75	8.00	4160601
605	100.00	110.00	10.90	12.00	4461700
601	100.00	115.00	8.90	10.00	4607100
605	100.00	115.00	9.00	10.00	4610800
652	100.00	115.00	11.00	12.00	4528010
605	100.00	115.00	11.80	13.00	4312600
18	100.00	115.00	12.00	12.50	0740500
15	100.00	115.00	12.00	12.50	2138500
621	100.00	115.00	13.00	14.00	4540910†
652	100.00	115.00	14.50	16.00	4397611
616	100.00	115.50	6.00	6.30	4368600‡
16	100.00	115.50	6.00	6.30	65967__‡
18	100.00	120.00	10.00	10.50	0039000
601	100.00	120.00	11.00	12.50	4184901‡
605	100.00	120.00	11.80	13.00	4312700†
601	100.00	120.00	12.00	13.00	4603200
18	100.00	120.00	14.00	14.50	0296100
21	100.00	120.00	14.00	14.50	2178720
605	100.00	120.00	14.50	16.00	4307000‡
621	100.00	120.00	14.60	16.00	4317910‡
15	100.00	120.00	15.00	15.50	0466100
18	100.00	120.00	15.00	15.50	1432300*
902	100.00	120.00	15.00	16.00	9100036*

Rod seals

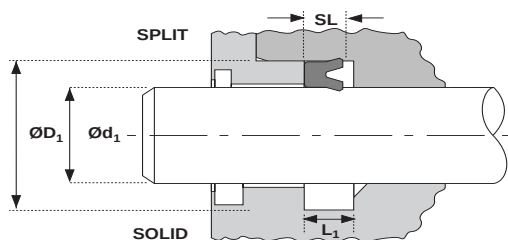
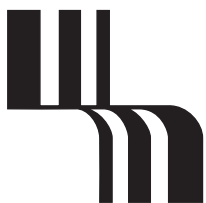
Hallite

metric



Type	Ød ₁	NOMINALS ØD ₁	SL	L ₁	PART No.
21	100.00	120.00	16.00	17.00	6581720†
18	100.00	125.00	19.00	20.00	0418600
18	104.00	130.00	19.00	20.00	0244300
605	105.00	113.00	10.00	11.00	4392800
605	105.00	115.00	13.20	14.50	4390500
18	105.00	120.00	12.00	12.50	1212100
605	105.00	120.00	14.50	16.00	4379500
16	105.00	120.50	5.90	6.30	86478_ _ †
18	105.00	125.00	9.50	10.00	0390500
601	105.00	125.00	11.40	12.50	4185001‡
25	105.00	125.00	12.50	11.40	4185001
601	105.00	125.00	15.00	17.00	4603300
902	105.00	125.00	16.00	17.00	9105026*
18	105.00	130.00	19.00	20.00	0070200*
902	106.00	126.00	15.00	16.00	9106006*
902	106.00	126.00	16.00	17.00	9106016*
605	108.00	123.00	10.90	12.00	4329100
605	110.00	125.00	9.00	10.00	4459700†
18	110.00	125.00	11.00	11.50	0558300
605	110.00	125.00	11.00	12.00	4537800
15	110.00	125.00	12.00	12.50	0749300
25	110.00	125.00	13.20	12.00	4134401
652	110.00	125.00	14.50	16.00	4445611
605	110.00	125.00	14.50	16.00	4481600
616	110.00	125.50	6.00	6.30	4545400‡
16	110.00	125.50	6.00	6.30	66229_ _ ‡
601	110.00	130.00	11.00	12.50	4185101‡
605	110.00	130.00	11.80	13.00	4312800†
621	110.00	130.00	13.00	14.00	4541010†
18	110.00	130.00	14.00	14.50	0555900
605	110.00	130.00	14.50	16.00	4307100‡
621	110.00	130.00	14.60	16.00	4318010‡
601	110.00	130.00	15.00	17.00	4603400
21	110.00	130.00	16.00	17.00	2193022‡
902	110.00	130.00	16.00	17.00	9110026*
605	110.00	135.00	14.50	16.00	4343000

Type	Ød ₁	NOMINALS ØD ₁	SL	L ₁	PART No.
18	110.00	135.00	19.00	20.00	0304300
18	110.00	135.00	25.50	26.50	1426600
601	112.00	125.00	8.90	10.00	4607200
605	112.00	125.00	9.00	10.00	4610900
902	112.00	132.00	15.00	16.00	9112016
902	112.00	132.00	16.00	17.00	9112026*
902	112.00	135.00	15.00	16.00	9112036*
605	115.00	130.00	9.00	10.00	4459800
605	115.00	130.00	10.90	12.00	4434600
15	115.00	130.00	12.00	12.50	2136900
605	115.00	130.00	14.50	16.00	4342600
652	115.00	130.00	14.50	16.00	4455411
16	115.00	130.50	6.00	6.30	66391_ _
902	115.00	135.00	12.00	13.00	9115006
18	115.00	135.00	14.00	14.50	0639900
601	115.00	135.00	15.00	17.00	4608100
18	115.00	140.00	19.00	20.00	0070300
902	118.00	133.00	9.00	10.00	9118026
902	118.00	138.00	15.00	16.00	9118006*
902	118.00	138.00	16.00	17.00	9118016*
605	120.00	130.00	10.90	12.00	4461800
605	120.00	135.00	9.00	10.00	4614000
631	120.00	135.00	14.50	16.00	4452010
621	120.00	135.00	14.60	16.00	4318110
16	120.00	135.50	5.90	6.30	86099_ _ †
18	120.00	140.00	12.00	12.50	0250500
605	120.00	140.00	12.00	13.00	4614100
621	120.00	140.00	13.00	14.00	4541110†
605	120.00	140.00	14.50	16.00	4312900
601	120.00	140.00	14.50	16.00	4319600
601	120.00	140.00	15.00	17.00	4603500
902	120.00	140.00	16.00	17.00	9120036*
18	120.00	145.00	19.00	20.00	0070400
18	120.00	150.00	24.00	25.00	1289500
18	124.00	136.00	14.00	14.50	1285600



Rod seals

Hallite

metric



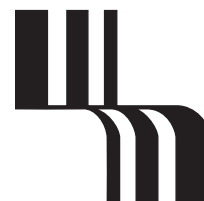
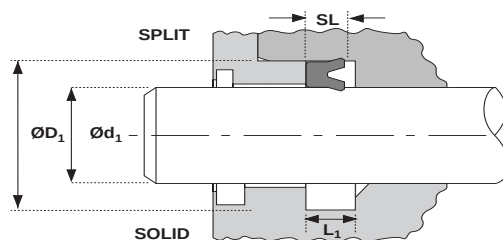
Type	Ød ₁	NOMINALS ØD ₁	SL	L ₁	PART No.
605	125.00	133.00	10.00	11.00	4392900
601	125.00	140.00	8.90	10.00	4607300
605	125.00	140.00	9.00	10.00	4614200
25	125.00	140.00	13.20	12.30	4160701
652	125.00	140.00	14.50	16.00	4446911
911	125.00	140.50	5.90	6.30	9125086*
616	125.00	140.50	6.00	6.30	4545500‡
16	125.00	140.50	6.00	6.30	66392_ _‡
601	125.00	145.00	11.00	12.50	4185201‡
605	125.00	145.00	12.00	13.00	4614300
18	125.00	145.00	14.00	14.50	0640100
605	125.00	145.00	14.50	16.00	4307300‡
621	125.00	145.00	14.60	16.00	4318210‡
601	125.00	145.00	15.00	17.00	4603600
21	125.00	145.00	16.00	17.00	6581820‡
902	125.00	145.00	16.00	17.00	9125036*
605	125.00	150.00	12.50	14.00	4367000
18	125.00	150.00	19.00	20.00	0070500
902	125.00	150.00	19.00	20.00	9125046*
902	125.00	150.00	20.00	21.00	9125056*
631	128.00	143.00	14.50	16.00	4581610
605	130.00	140.00	14.50	16.00	4390600
605	130.00	145.00	9.00	10.00	4614400
18	130.00	145.00	11.30	11.80	0634500*
16	130.00	145.50	6.00	6.30	86102_ _
605	130.00	150.00	12.00	13.00	4614500
605	130.00	150.00	14.50	16.00	4313000
601	130.00	150.00	15.00	17.00	4603700
902	130.00	150.00	16.00	17.00	9130026*
18	130.00	155.00	19.00	20.00	0080300
902	132.00	157.00	20.00	21.00	9132006*
605	132.50	157.50	13.20	14.50	4329400
610	134.00	147.00	12.00	13.30	4588100
605	135.00	150.00	11.00	12.50	4537700
16	135.00	150.50	6.00	6.30	86103_ _

Type	Ød ₁	NOMINALS ØD ₁	SL	L ₁	PART No.
18	135.00	157.00	15.00	15.50	0302600*
18	135.00	160.00	19.00	20.00	0080400
902	135.00	160.00	19.00	20.00	9135006*
902	135.00	160.00	20.00	21.00	9135016*
601	136.00	150.00	8.50	9.50	4607400
605	140.00	150.00	10.90	12.00	4461900
601	140.00	154.00	9.00	10.00	4607900
601	140.00	155.00	8.90	10.00	4607500
605	140.00	155.00	9.00	10.00	4614600
605	140.00	155.00	11.80	13.00	4555300
616	140.00	155.50	6.00	6.30	4545600‡
16	140.00	155.50	6.00	6.30	66393_ _‡
18	140.00	160.00	11.50	12.00	0391300*
605	140.00	160.00	11.80	13.00	4313100†
621	140.00	160.00	13.00	14.00	4541210†
18	140.00	160.00	14.00	14.50	0304600
605	140.00	160.00	14.50	16.00	4307400‡
621	140.00	160.00	14.60	16.00	4318310‡
601	140.00	160.00	15.00	17.00	4603800
21	140.00	160.00	16.00	17.00	2193122‡
902	140.00	160.00	16.00	17.00	9140036*
902	140.00	165.00	12.00	13.00	9140046*
18	140.00	165.00	19.00	20.00	0080500
902	140.00	165.00	19.00	20.00	9140056*
902	140.00	165.00	20.00	21.00	9140066*
601	145.00	160.00	8.90	10.00	4607600
16	145.00	160.50	6.00	6.30	86156_ _
601	145.00	165.00	15.00	17.00	4608200
18	145.00	170.00	19.00	20.00	0080700
902	145.00	170.00	19.00	20.00	9145016*
902	145.00	170.00	20.00	21.00	9145026*
605	150.00	160.00	11.00	12.00	4595200‡
601	150.00	165.00	8.90	10.00	4607700
605	150.00	165.00	9.00	10.00	4614700
652	150.00	165.00	14.50	16.00	4389111
16	150.00	165.50	6.00	6.30	86157_ _

Rod seals

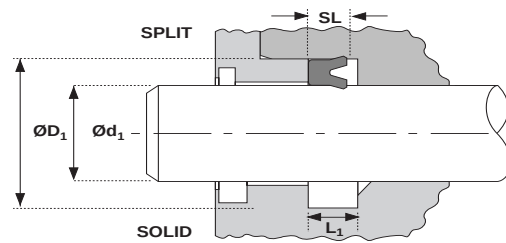
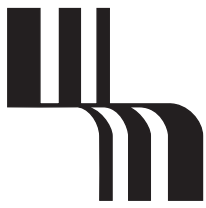
Hallite

metric



Type	$\varnothing d_1$	NOMINALS $\varnothing D_1$	SL	L_1	PART No.
605	150.00	170.00	12.00	13.00	4614800
605	150.00	170.00	13.20	14.50	4367100
18	150.00	170.00	14.00	14.50	0303300
15	150.00	170.00	14.00	14.50	1704300
605	150.00	170.00	14.50	16.50	4342800
601	150.00	170.00	15.00	17.00	4603900
902	150.00	170.00	16.00	17.00	9150036*
902	150.00	175.00	16.00	17.00	9150046*
18	150.00	175.00	19.00	20.00	0080800
902	150.00	175.00	20.00	21.00	9150056*
605	151.00	159.00	9.00	10.00	4538800
605	155.00	170.00	14.50	16.00	4342700
601	155.00	180.00	15.00	17.00	4608300
902	155.00	180.00	19.00	20.00	9155006*
902	155.00	180.00	20.00	21.00	9155016*
601	160.00	175.00	9.00	10.00	4608400
605	160.00	175.00	9.00	10.00	4614900
605	160.00	175.00	10.90	12.00	4462000
652	160.00	175.00	11.70	12.80	4484010
652	160.00	175.00	14.50	16.00	4405011
616	160.00	175.50	6.00	6.30	4548100‡
16	160.00	175.50	6.00	6.30	66394_ _‡
21	160.00	176.00	12.00	12.50	2120120
652	160.00	177.00	12.30	13.50	4483110
605	160.00	180.00	12.00	13.00	4615000
605	160.00	180.00	14.50	16.00	4345000
621	160.00	180.00	14.60	16.00	4454810
18	160.00	180.00	15.00	15.50	1283100
902	160.00	180.00	16.00	17.00	9160016*
601	160.00	185.00	15.00	17.00	4608500
902	160.00	185.00	16.00	17.00	9160026*
631	160.00	185.00	18.80	20.00	4401710
902	160.00	185.00	19.00	20.00	9160036*
21	160.00	185.00	20.00	21.00	6581920‡
902	160.00	185.00	20.00	21.00	9160046*
18	160.00	190.00	24.00	25.00	0136100
18	160.00	200.00	35.00	36.00	1269100*

Type	$\varnothing d_1$	NOMINALS $\varnothing D_1$	SL	L_1	PART No.
601	165.00	180.00	9.00	10.00	4608600
605	165.00	180.00	9.00	10.00	4616500
911	165.00	180.50	5.90	6.30	9165016*
631	165.00	182.00	14.50	16.00	4537410
652	165.00	182.00	14.50	16.00	4537411
601	165.00	183.00	10.00	11.00	4607800
601	165.00	190.00	15.00	17.00	4608700
16	170.00	185.50	6.00	6.30	86083_ _
902	170.00	190.00	12.00	13.00	9170006
605	170.00	190.00	14.50	16.00	4398800
18	170.00	190.00	15.00	15.50	0478100
902	170.00	190.00	16.00	17.00	9170016*
601	170.00	195.00	15.00	17.00	4608800
902	170.00	195.00	16.00	17.00	9170026*
902	170.00	195.00	20.00	21.00	9170036*
18	170.00	200.00	24.00	25.00	0087100
902	175.00	200.00	12.00	13.00	9175006*
601	175.00	200.00	15.00	17.00	4608900
18	175.00	200.00	19.00	20.00	0838800
902	175.00	200.00	19.00	20.00	9175016*
902	175.00	200.00	20.00	21.00	9175026*
652	177.00	192.00	14.50	16.00	4445711
16	180.00	195.50	6.00	6.30	66395_ _‡
18	180.00	200.00	11.50	12.00	1173800
605	180.00	200.00	11.80	13.00	4314700†
601	180.00	200.00	12.00	13.00	4609000
605	180.00	200.00	14.50	16.00	4560900
621	180.00	200.00	14.60	16.00	4454910
18	180.00	200.00	15.00	15.50	0582300*
902	180.00	200.00	16.00	17.00	9180016*
601	180.00	205.00	15.00	17.00	4609100
902	180.00	205.00	16.00	17.00	9180026*
902	180.00	205.00	19.00	20.00	9180036*
21	180.00	205.00	20.00	21.00	6582020‡
902	180.00	205.00	20.00	21.00	9180046*
18	180.00	210.00	24.00	25.00	0087200



Rod seals

Hallite

metric



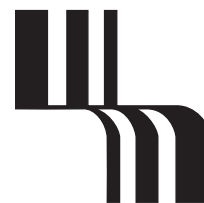
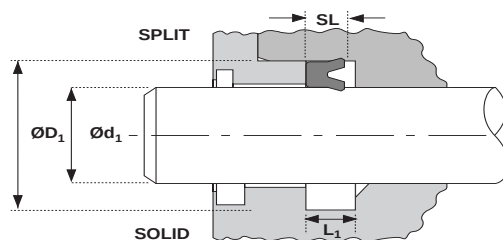
Type	Ød ₁	NOMINALS ØD ₁	SL	L ₁	PART No.
605	185.00	200.00	10.90	12.00	4462100
631	185.00	210.00	18.20	20.00	4546610
631	190.00	205.00	14.50	16.00	4430810
16	190.00	205.50	6.00	6.30	86074__
601	190.00	210.00	12.00	13.00	4609200
902	190.00	210.00	16.00	17.00	9190016*
601	190.00	215.00	15.00	17.00	4609300
902	190.00	215.00	16.00	17.00	9190026*
902	190.00	215.00	20.00	21.00	9190036*
18	190.00	220.00	24.00	25.00	0087300
652	195.00	210.00	14.50	16.00	4459311
652	195.00	215.00	14.50	16.00	4550511
601	200.00	220.00	12.00	13.00	4609400
605	200.00	220.00	12.00	13.00	4615100
605	200.00	220.00	14.50	16.00	4380200
652	200.00	220.00	14.50	16.00	4387611
621	200.00	220.00	14.60	16.00	4455110
18	200.00	220.00	15.00	15.50	1284100
902	200.00	220.00	16.00	17.00	9200016*
16	200.00	221.00	7.80	8.10	66396__‡
601	200.00	225.00	15.00	17.00	4609500
902	200.00	225.00	16.00	17.00	9200026*
902	200.00	225.00	19.00	20.00	9200036*
21	200.00	225.00	20.00	21.00	6582220‡
902	200.00	225.00	20.00	21.00	9200046*
18	200.00	230.00	24.00	25.00	2010000*
902	204.00	224.00	12.00	13.00	9204006*
605	205.00	220.00	12.20	13.50	4522400
902	210.00	230.00	12.00	13.00	9210006
652	210.00	230.00	14.50	16.00	4472911
902	210.00	230.00	16.00	17.00	9210016*
16	210.00	231.00	7.80	8.10	86094__
902	210.00	235.00	16.00	17.00	9210026*
601	210.00	235.00	18.00	20.00	4609600
902	210.00	235.00	19.00	20.00	9210036*

Type	Ød ₁	NOMINALS ØD ₁	SL	L ₁	PART No.
902	210.00	235.00	20.00	21.00	9210046*
18	210.00	240.00	24.00	25.00	0094300*
601	220.00	240.00	12.00	13.00	4609700
652	220.00	240.00	14.50	16.00	4544510
605	220.00	240.00	14.50	16.00	4555400
902	220.00	240.00	16.00	17.00	9220016*
16	220.00	241.00	7.80	8.10	66397__‡
902	220.00	245.00	16.00	17.00	9220026*
902	220.00	245.00	19.00	20.00	9220036*
902	220.00	245.00	20.00	21.00	9220046*
601	220.00	250.00	17.00	19.20	4426600
18	220.00	250.00	22.00	23.00	0958900
18	220.00	250.00	24.00	25.00	1056300
631	225.00	240.00	14.50	16.00	4445810
652	225.00	240.00	14.50	16.00	4445811
902	225.00	245.00	12.00	13.00	9225006*
902	225.00	245.00	16.00	17.00	9225016*
902	225.00	250.00	16.00	17.00	9225026*
18	225.00	250.00	18.00	19.00	0348300
652	225.00	250.00	18.00	20.00	4537511
902	225.00	250.00	19.00	20.00	9225036*
902	225.00	250.00	20.00	21.00	9225046*
631	230.00	249.30	14.50	16.00	4439410
601	230.00	250.00	12.00	13.00	4609800
902	230.00	250.00	12.00	13.00	9230006
902	230.00	250.00	16.00	17.00	9230016*
902	230.00	255.00	16.00	17.00	9230026*
902	230.00	255.00	19.00	20.00	9230036*
902	230.00	255.00	20.00	21.00	9230046*
652	230.00	255.00	22.00	25.00	4555511
18	230.00	260.00	24.00	25.00	0094500
601	240.00	260.00	12.00	13.00	4621000
652	240.00	260.00	14.50	16.00	4496511
902	240.00	260.00	16.00	17.00	9240016*
18	240.00	260.00	17.00	18.00	0157000
16	240.00	261.00	7.80	8.10	86159__

Rod seals

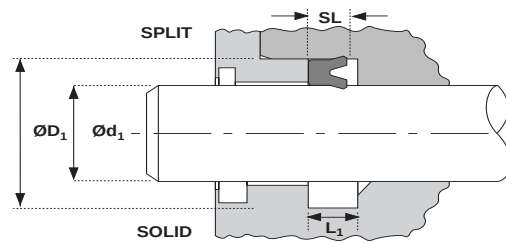
Hallite

metric



Type	Ød ₁	NOMINALS ØD ₁	SL	L ₁	PART No.
902	240.00	265.00	15.00	16.00	9240026*
902	240.00	265.00	16.00	17.00	9240036*
601	240.00	265.00	18.00	20.00	4609900
902	240.00	265.00	19.00	20.00	9240046*
902	240.00	265.00	20.00	21.00	9240056*
18	240.00	270.00	24.00	25.00	0094600
631	245.00	270.00	18.20	20.00	4546710
902	250.00	270.00	16.00	17.00	9250016
16	250.00	271.00	7.80	8.10	66398_ _ ‡
902	250.00	275.00	16.00	17.00	9250026*
601	250.00	275.00	18.00	20.00	4610000
902	250.00	275.00	19.00	20.00	9250036*
902	250.00	275.00	20.00	21.00	9250046*
18	250.00	280.00	24.00	25.00	1055500
18	250.00	280.00	31.00	32.00	1323800*
652	255.00	275.00	14.50	16.00	4578611
652	260.00	280.00	16.40	18.00	4499011
902	260.00	285.00	16.00	17.00	9260006*
902	260.00	285.00	19.00	20.00	9260016
601	260.00	290.00	18.00	20.00	4620100
902	260.00	290.00	19.00	20.00	9260026*
18	260.00	290.00	24.00	25.00	0094700*
601	265.00	295.00	18.00	20.00	4620200
16	270.00	294.50	7.80	8.10	86069_ _
902	270.00	295.00	16.00	17.00	9270006*
902	270.00	295.00	19.00	20.00	9270016*
601	270.00	300.00	18.00	20.00	4620300
902	270.00	300.00	19.00	20.00	9270026*
18	270.00	300.00	24.00	25.00	0094800
902	270.00	300.00	24.00	25.00	9270036*
16	280.00	304.50	7.80	8.10	66399_ _ ‡
902	280.00	305.00	16.00	17.00	9280006*
902	280.00	305.00	19.00	20.00	9280016*
601	280.00	310.00	18.00	20.00	4620400
902	280.00	310.00	19.00	20.00	9280026*

Type	Ød ₁	NOMINALS ØD ₁	SL	L ₁	PART No.
18	280.00	310.00	24.00	25.00	0094900*
18	280.00	320.00	30.00	31.00	1055300
652	285.00	310.00	18.00	20.00	4537611
18	290.00	310.00	15.00	15.50	1325200*
631	290.00	310.00	16.40	18.00	4475110
16	290.00	314.50	7.80	8.10	86173_ _
902	290.00	315.00	16.00	17.00	9290006*
902	290.00	315.00	19.00	20.00	9290016*
601	290.00	320.00	18.00	20.00	4620500
902	290.00	320.00	19.00	20.00	9290026*
18	290.00	320.00	22.00	23.00	0959100*
18	290.00	320.00	24.00	25.00	0136200*
652	295.00	315.00	16.40	18.00	4598211
652	300.00	320.00	14.50	16.00	4525110
16	300.00	324.50	7.80	8.10	66400_ _
902	300.00	325.00	16.00	17.00	9300006*
902	300.00	325.00	19.00	20.00	9300016*
601	300.00	330.00	18.00	20.00	4620600
902	300.00	330.00	19.00	20.00	9300026*
902	300.00	330.00	22.00	23.00	9300036*
18	300.00	330.00	24.00	25.00	0095000
631	305.00	325.00	16.40	18.00	4473010
652	305.00	330.00	18.00	20.00	4546811
18	310.00	330.00	17.00	18.00	0157100
652	320.00	340.00	14.50	16.00	4544410
16	320.00	344.50	7.80	8.10	86082_ _ ‡
18	320.00	360.00	30.00	31.00	1054000*
652	325.00	355.00	18.20	20.00	4555711
605	330.00	350.00	10.00	11.00	4587400
16	330.00	354.50	7.80	8.10	86196_ _
652	335.00	355.00	16.40	18.00	4496611
902	335.00	385.00	22.00	23.00	9335006*
18	340.00	360.00	15.00	15.50	1325300*



Rod seals

Hallite

metric

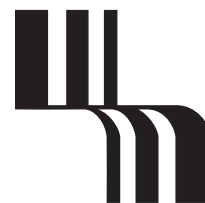


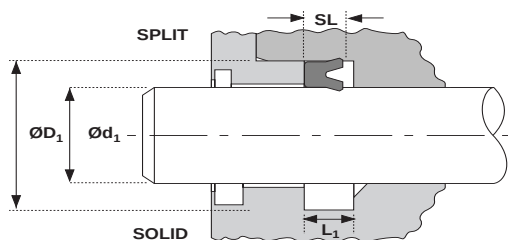
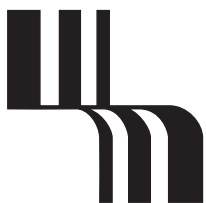
Type	Ød ₁	NOMINALS ØD ₁	SL	L ₁	PART No.
16	340.00	364.50	7.80	8.10	86197__
18	340.00	370.00	25.00	26.00	2176000*
16	350.00	374.50	7.80	8.10	86198__
652	355.00	380.00	18.00	20.00	4578411
18	360.00	380.00	30.00	30.50	0785600
16	360.00	384.50	7.80	8.10	86199__‡
18	360.00	400.00	30.00	31.00	1054300
16	370.00	394.50	7.80	8.10	86200__
601	375.00	405.00	22.00	24.00	4620700
16	380.00	404.50	7.80	8.10	86201__
18	380.00	420.00	30.00	31.00	0095100*
16	390.00	414.50	7.80	8.10	86202__
16	400.00	424.50	7.80	8.10	86203__
601	400.00	425.00	25.00	27.00	4620800
902	400.00	430.00	22.00	23.00	9400006*
18	400.00	440.00	30.00	31.00	0095200*
18	407.00	457.00	38.00	38.50	1328800*
18	420.00	460.00	30.00	31.00	0095300*

Type	Ød ₁	NOMINALS ØD ₁	SL	L ₁	PART No.
18	440.00	480.00	30.00	31.00	0095400*
18	444.00	495.00	48.00	49.00	1326500*
601	450.00	485.00	25.00	27.00	4620900
18	460.00	500.00	30.00	31.00	0134700*
18	470.00	515.00	35.00	35.50	2007000*
18	485.00	517.00	40.00	40.50	1322000*
18	500.00	530.00	25.00	26.00	1344000*
18	500.00	540.00	30.00	31.00	2018200*
18	560.00	600.00	30.00	31.00	2109800*
18	580.00	620.00	34.00	35.00	0163000*
18	580.00	650.00	53.00	54.00	1700200*
18	620.00	700.00	68.00	70.00	1320500*
18	640.00	720.00	68.00	70.00	2111400*
18	780.00	820.00	30.00	31.00	0150800*

* Denotes possible indent item -
minimum quantity may apply.

Notes





Rod seals

Hallite

inch



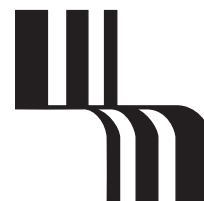
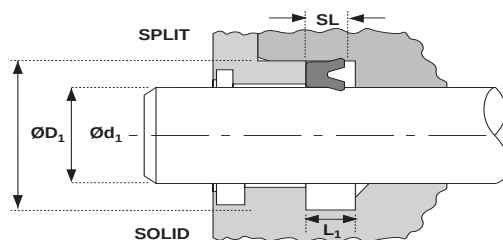
Type	Ød ₁	NOMINALS ØD ₁	SL	L ₁	PART No.
26	0.125	0.375	0.125	0.138	28-41
511	0.125	0.375	0.125	0.138	8900810
26	0.125	0.500	0.187	0.207	28-01
26	0.187	0.437	0.125	0.138	28-42
18	0.187	0.437	0.187	0.203	1417800
511	0.187	0.438	0.125	0.138	8800110
18	0.187	0.500	0.250	0.270	1358600
26	0.187	0.562	0.187	0.207	28-02
26	0.250	0.500	0.125	0.138	28-43
511	0.250	0.500	0.125	0.138	8800210
513	0.250	0.500	0.187	0.207	8845910
513	0.250	0.500	0.250	0.275	8878510
18	0.250	0.562	0.250	0.270	1023800
26	0.250	0.625	0.187	0.207	28-03
26	0.250	0.750	0.250	0.275	28-08
26	0.312	0.562	0.125	0.138	28-44
25	0.312	0.625	0.217	0.240	4220801
18	0.312	0.625	0.250	0.270	1417900
26	0.312	0.687	0.187	0.207	28-04
26	0.312	0.812	0.250	0.275	28-09
26	0.375	0.625	0.125	0.138	28-45
511	0.375	0.625	0.125	0.138	8800410
605	0.375	0.625	0.198	0.218	4544300
513	0.375	0.625	0.250	0.275	8823810
26	0.375	0.750	0.187	0.207	28-05
15	0.375	0.750	0.281	0.300	0036400
18	0.375	0.750	0.281	0.300	1379300
18	0.375	0.750	0.375	0.395	6504000*
26	0.375	0.875	0.250	0.275	28-10
511	0.375	0.875	0.250	0.275	8865810
18	0.375	0.875	0.312	0.332	1412500
18	0.375	0.937	0.406	0.426	1231400*
511	0.375	1.000	0.312	0.344	8824910
18	0.437	0.625	0.096	0.111	1411300*
18	0.437	0.625	0.150	0.165	0407200
26	0.437	0.687	0.125	0.138	28-46

Type	Ød ₁	NOMINALS ØD ₁	SL	L ₁	PART No.
513	0.437	0.687	0.250	0.275	8846910
26	0.437	0.812	0.187	0.207	28-06
18	0.437	0.812	0.250	0.270	6503800
18	0.437	0.812	0.281	0.300	1374300
26	0.437	0.937	0.250	0.275	28-11
18	0.437	0.937	0.375	0.395	1377000
18	0.500	0.687	0.096	0.111	1418300
26	0.500	0.750	0.125	0.138	28-47
611	0.500	0.750	0.125	0.138	4418100
511	0.500	0.750	0.125	0.138	8800610
18	0.500	0.750	0.187	0.203	1292100
605	0.500	0.750	0.187	0.207	4576100
601	0.500	0.750	0.250	0.275	4566500
513	0.500	0.750	0.250	0.275	8834010
18	0.500	0.812	0.218	0.238	1465900*
26	0.500	0.875	0.187	0.207	28-07
511	0.500	0.875	0.187	0.207	8800710
601	0.500	0.875	0.197	0.218	4300000
513	0.500	0.875	0.250	0.275	8848010
18	0.500	0.875	0.281	0.300	0406700
513	0.500	0.875	0.312	0.344	8852910
18	0.500	0.937	0.344	0.364	1468400*
26	0.500	1.000	0.250	0.275	28-12
601	0.500	1.000	0.250	0.275	4110201
511	0.500	1.000	0.250	0.275	8806310
18	0.500	1.000	0.375	0.395	0780000
513	0.500	1.000	0.375	0.413	8837710
18	0.500	1.125	0.355	0.375	1386900*
18	0.562	0.750	0.096	0.111	0577000
611	0.562	0.812	0.125	0.138	4466600
18	0.562	0.812	0.187	0.203	1465800
605	0.562	0.813	0.187	0.207	4576200
18	0.562	0.937	0.281	0.300	1384000
26	0.562	1.062	0.250	0.275	28-13
18	0.562	1.062	0.375	0.395	0922200*
511	0.562	0.812	0.125	0.138	8844610
611	0.625	0.875	0.125	0.138	4399500

Rod seals

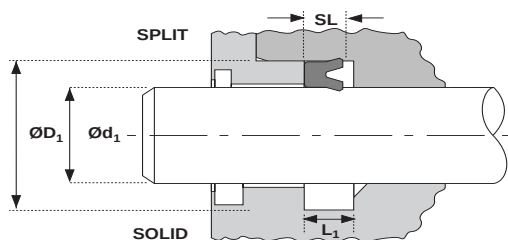
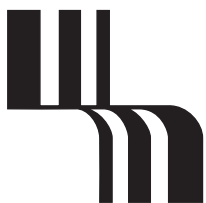
Hallite

inch



Type	Ød ₁	NOMINALS ØD ₁	SL	L ₁	PART No.
511	0.625	0.875	0.125	0.138	8800810
25	0.625	0.875	0.156	0.175	4166001
620	0.625	0.875	0.160	0.176	4498600
620	0.625	0.875	0.175	0.190	4528700
18	0.625	0.875	0.187	0.203	1435600
605	0.625	0.875	0.187	0.207	4493700
513	0.625	0.875	0.187	0.207	8848710
605	0.625	0.875	0.241	0.265	4329000
620	0.625	0.875	0.250	0.275	4459900
513	0.625	0.875	0.250	0.275	8834110
16	0.625	0.921	0.116	0.125	6623010
26	0.625	1.000	0.187	0.207	28-48
511	0.625	1.000	0.187	0.207	8800910
601	0.625	1.000	0.190	0.218	4298300
18	0.625	1.000	0.281	0.300	1247600
605	0.625	1.000	0.281	0.312	4447200
26	0.625	1.125	0.250	0.275	28-14
601	0.625	1.125	0.250	0.275	4509101
511	0.625	1.125	0.250	0.275	8806410
513	0.625	1.125	0.312	0.344	8849210
18	0.625	1.125	0.375	0.395	0855000
18	0.625	1.250	0.375	0.395	1053200*
18	0.687	0.937	0.121	0.136	1362200
611	0.687	0.937	0.125	0.138	4410100
511	0.687	0.937	0.125	0.138	8801010
605	0.687	0.937	0.187	0.207	4572000
18	0.687	1.125	0.375	0.395	1374700*
26	0.687	1.187	0.250	0.275	28-15
18	0.687	1.187	0.375	0.395	0412400*
658	0.750	0.937	0.156	0.172	4472400
611	0.750	1.000	0.125	0.138	4410000
605	0.750	1.000	0.125	0.138	4552900
511	0.750	1.000	0.125	0.138	8801110
18	0.750	1.000	0.132	0.145	1424900
25	0.750	1.000	0.156	0.175	4166101
18	0.750	1.000	0.187	0.202	1424900
605	0.750	1.000	0.187	0.207	4571000

Type	Ød ₁	NOMINALS ØD ₁	SL	L ₁	PART No.
605	0.750	1.000	0.250	0.275	4345100
620	0.750	1.000	0.250	0.275	4498500
513	0.750	1.000	0.250	0.275	8834210
18	0.750	1.093	0.281	0.300	1364200
26	0.750	1.125	0.187	0.207	28-49
511	0.750	1.125	0.187	0.207	8801210
513	0.750	1.125	0.187	0.207	8849810
513	0.750	1.125	0.250	0.275	8846010
605	0.750	1.125	0.312	0.344	4512200
513	0.750	1.125	0.312	0.344	8834310
513	0.750	1.125	0.375	0.413	8855810
16	0.750	1.183	0.150	0.165	6623110
26	0.750	1.250	0.250	0.275	28-16
601	0.750	1.250	0.250	0.275	4102901
511	0.750	1.250	0.250	0.275	8806510
18	0.750	1.250	0.312	0.332	0783000
18	0.750	1.250	0.375	0.395	0403700
15	0.750	1.250	0.375	0.395	0893300
513	0.750	1.250	0.375	0.413	8837810
18	0.750	1.500	0.500	0.525	0405100*
18	0.750	1.625	0.375	0.395	1387000
18	0.812	1.062	0.121	0.136	1394900*
611	0.812	1.062	0.125	0.138	4521200
511	0.812	1.062	0.125	0.138	8815310
605	0.812	1.062	0.187	0.207	4576300
605	0.812	1.062	0.250	0.275	4558700
26	0.812	1.312	0.250	0.275	28-17
18	0.812	1.312	0.375	0.395	0512600
18	0.812	1.375	0.500	0.520	0413800
18	0.875	1.125	0.121	0.136	1356800
611	0.875	1.125	0.125	0.138	4416700
511	0.875	1.125	0.125	0.138	8801410
18	0.875	1.125	0.163	0.187	6503400
658	0.875	1.125	0.187	0.207	4527500
605	0.875	1.125	0.187	0.207	4576400
605	0.875	1.125	0.250	0.275	4442500
513	0.875	1.125	0.250	0.275	8845310



Rod seals

Hallite

inch



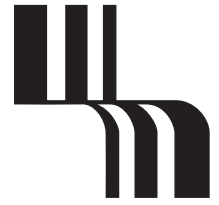
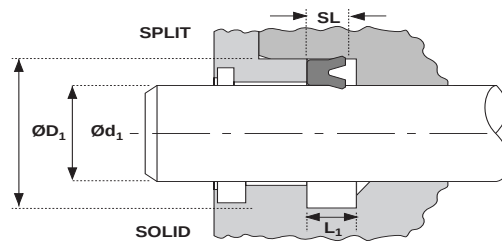
Type	Ød ₁	NOMINALS ØD ₁	SL	L ₁	PART No.
611	0.875	1.250	0.187	0.206	4415700
26	0.875	1.250	0.187	0.207	28-50
511	0.875	1.250	0.187	0.207	8801510
513	0.875	1.250	0.312	0.344	8900210
18	0.875	1.250	0.375	0.395	1072500
26	0.875	1.375	0.250	0.275	28-18
601	0.875	1.375	0.250	0.275	4507101
511	0.875	1.375	0.250	0.275	8806610
25	0.875	1.375	0.250	0.280	4507101
513	0.875	1.375	0.312	0.344	8830210
605	0.875	1.375	0.341	0.375	4373100
18	0.875	1.375	0.375	0.395	0401300
15	0.875	1.375	0.375	0.395	0893800
513	0.875	1.375	0.375	0.413	8864610
18	0.875	1.500	0.375	0.395	0422200
18	0.875	1.750	0.750	0.790	1013400*
511	0.937	1.187	0.125	0.138	8844810
18	0.937	1.250	0.187	0.203	1362000
26	0.937	1.437	0.250	0.275	28-19
18	0.937	1.437	0.312	0.332	6500700
18	0.937	1.437	0.375	0.395	0415200
18	0.985	1.500	0.380	0.400	0542200*
620	1.000	1.240	0.187	0.207	4477200
605	1.000	1.240	0.187	0.211	4371800
18	1.000	1.250	0.121	0.136	0852400
611	1.000	1.250	0.125	0.138	4457300
511	1.000	1.250	0.125	0.138	8801610
605	1.000	1.250	0.187	0.207	4442600
620	1.000	1.250	0.187	0.207	4457500
658	1.000	1.250	0.187	0.207	4569000
513	1.000	1.250	0.187	0.207	8860110
605	1.000	1.250	0.250	0.275	4345200
620	1.000	1.250	0.250	0.275	4498400
513	1.000	1.250	0.250	0.275	8834410
511	1.000	1.312	0.156	0.172	8810110
605	1.000	1.312	0.219	0.241	4493800
26	1.000	1.375	0.187	0.207	28-51

Type	Ød ₁	NOMINALS ØD ₁	SL	L ₁	PART No.
511	1.000	1.375	0.187	0.207	8801710
513	1.000	1.375	0.187	0.207	8806110
18	1.000	1.375	0.250	0.270	0282600
620	1.000	1.375	0.250	0.275	4410400
605	1.000	1.375	0.250	0.275	4456800
513	1.000	1.375	0.250	0.275	8860510
605	1.000	1.375	0.312	0.344	4345900
513	1.000	1.375	0.312	0.344	8834510
16	1.000	1.433	0.150	0.165	6623210
18	1.000	1.500	0.250	0.270	1441100
26	1.000	1.500	0.250	0.275	28-20
601	1.000	1.500	0.250	0.275	4111101
511	1.000	1.500	0.250	0.275	8806810
605	1.000	1.500	0.255	0.275	4430200
605	1.000	1.500	0.341	0.375	4330100
18	1.000	1.500	0.375	0.395	0422400
15	1.000	1.500	0.375	0.395	0623400
605	1.000	1.500	0.375	0.413	4308400
513	1.000	1.500	0.375	0.413	8837910
511	1.000	1.625	0.312	0.344	8806910
513	1.000	1.625	0.375	0.413	8828310
18	1.000	1.625	0.437	0.457	0540600*
513	1.000	1.625	0.500	0.550	8838010
18	1.000	1.750	0.375	0.395	0407700
511	1.000	1.750	0.375	0.413	8819110
18	1.000	1.750	0.656	0.676	1052600
18	1.000	2.000	0.750	0.790	1138600*
605	1.062	1.302	0.187	0.203	4410300
658	1.062	1.302	0.187	0.207	4549400
511	1.062	1.312	0.125	0.138	8801810
611	1.062	1.312	0.125	0.138	4597800
605	1.062	1.312	0.250	0.275	4394500
513	1.062	1.312	0.250	0.275	8845710
513	1.062	1.437	0.312	0.344	8850010
26	1.062	1.562	0.250	0.275	28-21
605	1.125	1.365	0.192	0.211	4384500
658	1.125	1.368	0.187	0.207	4466200

Rod seals

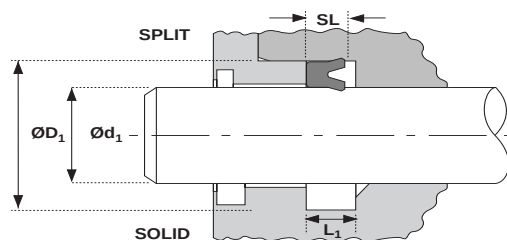
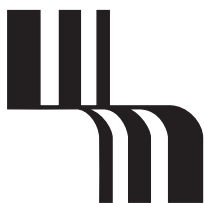
Hallite

inch



Type	Ød ₁	NOMINALS ØD ₁	SL	L ₁	PART No.
511	1.125	1.375	0.125	0.138	8801910
18	1.125	1.375	0.187	0.203	1000200
605	1.125	1.375	0.187	0.207	4442700
605	1.125	1.375	0.250	0.275	4388000
620	1.125	1.375	0.250	0.275	4461100
513	1.125	1.375	0.250	0.275	8855610
513	1.125	1.375	0.312	0.344	8848810
605	1.125	1.399	0.187	0.211	4371900
611	1.125	1.500	0.187	0.206	4455300
26	1.125	1.500	0.187	0.207	28-52
511	1.125	1.500	0.187	0.207	8802010
18	1.125	1.500	0.219	0.238	1362100
620	1.125	1.500	0.250	0.275	4410500
513	1.125	1.500	0.250	0.275	8844910
605	1.125	1.500	0.312	0.344	4392600
513	1.125	1.500	0.312	0.344	8834610
605	1.125	1.562	0.325	0.360	4568800
26	1.125	1.625	0.250	0.275	28-22
605	1.125	1.625	0.250	0.275	4370900
511	1.125	1.625	0.250	0.275	8807010
18	1.125	1.625	0.375	0.395	0287000
513	1.125	1.625	0.375	0.413	8856110
511	1.125	1.750	0.312	0.344	8807110
605	1.125	1.750	0.397	0.437	4373000
18	1.125	1.750	0.437	0.457	0778200
513	1.125	1.750	0.500	0.550	8879810
513	1.187	1.437	0.250	0.275	8848910
511	1.187	1.500	0.156	0.172	8811010
611	1.187	1.562	0.187	0.206	4536400
511	1.187	1.562	0.187	0.207	8851710
605	1.187	1.562	0.250	0.275	4458600
26	1.187	1.687	0.250	0.275	28-23
18	1.187	1.687	0.375	0.395	1423700
658	1.250	1.491	0.197	0.217	4359610
511	1.250	1.500	0.125	0.138	8802210
620	1.250	1.500	0.187	0.207	4398900
513	1.250	1.500	0.187	0.207	8860210

Type	Ød ₁	NOMINALS ØD ₁	SL	L ₁	PART No.
18	1.250	1.500	0.250	0.270	1372100
605	1.250	1.500	0.250	0.275	4345300
620	1.250	1.500	0.250	0.275	4461000
513	1.250	1.500	0.250	0.275	8834710
18	1.250	1.562	0.148	0.163	1395200*
511	1.250	1.562	0.156	0.172	8813810
611	1.250	1.625	0.187	0.206	4535600
26	1.250	1.625	0.187	0.207	28-53
605	1.250	1.625	0.187	0.207	4552600
511	1.250	1.625	0.187	0.207	8802310
605	1.250	1.625	0.227	0.250	4330200
605	1.250	1.625	0.250	0.275	4460600
513	1.250	1.625	0.250	0.275	8860610
18	1.250	1.625	0.281	0.300	0282400
605	1.250	1.625	0.312	0.344	4346000
620	1.250	1.625	0.312	0.344	4410600
513	1.250	1.625	0.312	0.344	8834810
513	1.250	1.625	0.375	0.413	8860710
18	1.250	1.625	0.500	0.520	0415600*
26	1.250	1.750	0.250	0.275	28-24
601	1.250	1.750	0.250	0.275	4502701
605	1.250	1.750	0.250	0.275	4513500
511	1.250	1.750	0.250	0.275	8807210
18	1.250	1.750	0.281	0.300	1447500
18	1.250	1.750	0.375	0.395	1158100
601	1.250	1.750	0.375	0.413	4107001
605	1.250	1.750	0.375	0.413	4335800
513	1.250	1.750	0.375	0.413	8838110
18	1.250	1.875	0.312	0.332	1094600
26	1.250	1.875	0.312	0.344	28-25
511	1.250	1.875	0.312	0.344	8870010
605	1.250	1.875	0.397	0.437	4330300
18	1.250	1.875	0.406	0.426	6500200*
15	1.250	1.875	0.437	0.457	0332400
18	1.250	1.875	0.437	0.457	0404100
513	1.250	1.875	0.500	0.550	8838210
511	1.250	2.000	0.375	0.413	8814310
18	1.250	2.000	0.469	0.489	0405500



Rod seals

Hallite

inch



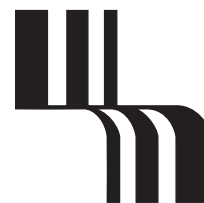
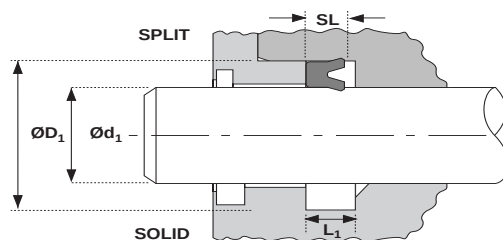
Type	Ød ₁	NOMINALS ØD ₁	SL	L ₁	PART No.
513	1.250	2.000	0.500	0.550	8842010
18	1.250	2.250	0.625	0.665	1015800*
18	1.281	1.656	0.375	0.395	0061400*
18	1.359	2.000	0.370	0.390	1419900*
658	1.375	1.616	0.197	0.217	4392210
511	1.375	1.625	0.125	0.138	8802410
513	1.375	1.625	0.187	0.207	8860310
605	1.375	1.625	0.250	0.275	4345400
513	1.375	1.625	0.250	0.275	8834910
18	1.375	1.687	0.148	0.163	1394800
511	1.375	1.687	0.156	0.172	8813910
605	1.375	1.687	0.219	0.241	4493900
611	1.375	1.750	0.187	0.206	4491500
605	1.375	1.750	0.187	0.207	4552800
511	1.375	1.750	0.187	0.207	8802510
513	1.375	1.750	0.250	0.275	8844710
18	1.375	1.750	0.281	0.300	0332500
605	1.375	1.750	0.312	0.344	4346100
620	1.375	1.750	0.312	0.344	4410700
513	1.375	1.750	0.312	0.344	8835010
601	1.375	1.750	0.375	0.413	4353400
513	1.375	1.750	0.375	0.413	8835110
18	1.375	1.875	0.219	0.238	0608700*
511	1.375	1.875	0.250	0.275	8807310
605	1.375	1.875	0.375	0.413	4403100
513	1.375	1.875	0.375	0.413	8878610
18	1.375	1.875	0.400	0.420	1426500*
601	1.375	2.000	0.266	0.312	4236201
18	1.375	2.000	0.312	0.332	1094400
26	1.375	2.000	0.312	0.344	28-26
511	1.375	2.000	0.312	0.344	8807410
18	1.375	2.000	0.375	0.395	0282300
605	1.375	2.000	0.397	0.437	4330400
18	1.375	2.000	0.437	0.457	0778400
15	1.375	2.000	0.437	0.457	0981500
513	1.375	2.000	0.500	0.550	8873510
18	1.375	2.000	0.750	0.790	1471300*

Type	Ød ₁	NOMINALS ØD ₁	SL	L ₁	PART No.
511	1.375	2.125	0.375	0.413	8814410
513	1.437	1.687	0.250	0.275	8849010
605	1.437	1.812	0.312	0.344	4442800
18	1.437	1.937	0.375	0.395	0545000
18	1.485	2.000	0.340	0.360	1420200*
658	1.500	1.743	0.187	0.207	4480600
511	1.500	1.750	0.125	0.138	8802610
605	1.500	1.750	0.250	0.275	4345500
513	1.500	1.750	0.250	0.275	8835210
18	1.500	1.820	0.160	0.175	1366000*
658	1.500	1.872	0.295	0.324	4386020
18	1.500	1.875	0.172	0.187	1039800
611	1.500	1.875	0.187	0.206	4466700
605	1.500	1.875	0.187	0.207	4576600
511	1.500	1.875	0.187	0.207	8802710
605	1.500	1.875	0.250	0.275	4322100
621	1.500	1.875	0.250	0.275	4484410
513	1.500	1.875	0.250	0.275	8835310
605	1.500	1.875	0.312	0.344	4346200
621	1.500	1.875	0.312	0.344	4484510
513	1.500	1.875	0.312	0.344	8849710
605	1.500	1.875	0.375	0.413	4385400
513	1.500	1.875	0.375	0.413	8835410
513	1.500	1.875	0.406	0.447	8848110
601	1.500	2.000	0.250	0.275	4111001
605	1.500	2.000	0.250	0.275	4394400
511	1.500	2.000	0.250	0.275	8807510
18	1.500	2.000	0.281	0.300	1447800
513	1.500	2.000	0.312	0.344	8867710
605	1.500	2.000	0.341	0.375	4330500
18	1.500	2.000	0.375	0.395	0921400
605	1.500	2.000	0.375	0.413	4322200
621	1.500	2.000	0.375	0.413	4484910
513	1.500	2.000	0.375	0.413	8838310
18	1.500	2.000	0.469	0.489	0855800*
18	1.500	2.000	0.656	0.676	0420400*
16	1.500	2.110	0.235	0.250	8619410

Rod seals

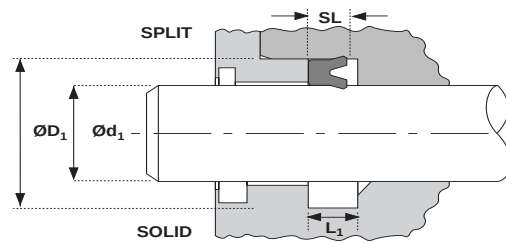
Hallite

inch



Type	Ød ₁	NOMINALS ØD ₁	SL	L ₁	PART No.
18	1.500	2.125	0.312	0.332	1441200
26	1.500	2.125	0.312	0.344	28-27
511	1.500	2.125	0.312	0.344	8807610
25	1.500	2.125	0.312	0.360	4124801
605	1.500	2.125	0.375	0.413	4442900
513	1.500	2.125	0.375	0.413	8846510
605	1.500	2.125	0.397	0.437	4330600
15	1.500	2.125	0.437	0.457	0894900
18	1.500	2.125	0.437	0.457	0967600
513	1.500	2.125	0.500	0.550	8838410
18	1.500	2.187	0.437	0.457	0560400
511	1.500	2.250	0.375	0.413	8814510
18	1.500	2.250	0.469	0.489	0782200
513	1.500	2.250	0.500	0.550	8874810
18	1.500	2.250	0.562	0.582	0689800
513	1.500	2.250	0.625	0.688	8842710
18	1.500	2.375	0.687	0.727	0403100*
511	1.500	2.500	0.500	0.550	8814610
18	1.500	2.500	0.625	0.665	0979000
511	1.625	1.875	0.125	0.138	8802810
513	1.625	1.875	0.187	0.207	8849110
605	1.625	1.875	0.250	0.275	4345600
513	1.625	1.875	0.250	0.275	8873110
611	1.625	2.000	0.187	0.206	4469700
511	1.625	2.000	0.187	0.207	8802910
18	1.625	2.000	0.250	0.270	1369900*
513	1.625	2.000	0.250	0.275	8868410
18	1.625	2.000	0.276	0.296	0606700
605	1.625	2.000	0.281	0.312	4542800
605	1.625	2.000	0.312	0.344	4443000
513	1.625	2.000	0.312	0.344	8864210
605	1.625	2.000	0.375	0.413	4443100
513	1.625	2.000	0.375	0.413	8835510
511	1.625	2.125	0.250	0.275	8807710
25	1.625	2.125	0.250	0.290	4101201
605	1.625	2.125	0.375	0.413	4512100
513	1.625	2.125	0.375	0.413	8849610
26	1.625	2.250	0.312	0.344	28-28

Type	Ød ₁	NOMINALS ØD ₁	SL	L ₁	PART No.
511	1.625	2.250	0.312	0.344	8850910
15	1.625	2.250	0.437	0.457	0895000
18	1.625	2.250	0.437	0.457	1432600
511	1.625	2.375	0.375	0.413	8814710
18	1.625	2.375	0.625	0.665	0463600
18	1.687	2.500	0.625	0.665	1382600*
18	1.735	2.250	0.340	0.360	1422100*
511	1.750	2.000	0.125	0.138	8803010
605	1.750	2.000	0.250	0.275	4345700
513	1.750	2.000	0.250	0.275	8835610
658	1.750	2.119	0.281	0.311	4456200
18	1.750	2.125	0.172	0.187	1112900
611	1.750	2.125	0.187	0.206	4490400
511	1.750	2.125	0.187	0.207	8803110
513	1.750	2.125	0.230	0.250	8852010
605	1.750	2.125	0.250	0.275	4357200
621	1.750	2.125	0.250	0.275	4484610
18	1.750	2.125	0.276	0.296	0606900
18	1.750	2.125	0.310	0.330	0376500*
605	1.750	2.125	0.312	0.344	4346300
513	1.750	2.125	0.312	0.344	8865410
605	1.750	2.125	0.375	0.413	4366800
620	1.750	2.125	0.375	0.413	4460000
621	1.750	2.125	0.375	0.413	4484710
513	1.750	2.125	0.375	0.413	8835710
601	1.750	2.250	0.250	0.275	4502601
605	1.750	2.250	0.250	0.275	4552700
511	1.750	2.250	0.250	0.275	8807810
18	1.750	2.250	0.312	0.332	1404300
605	1.750	2.250	0.341	0.375	4330700
18	1.750	2.250	0.375	0.395	1464700
601	1.750	2.250	0.375	0.413	4140901
605	1.750	2.250	0.375	0.413	4337000
621	1.750	2.250	0.375	0.413	4485010
513	1.750	2.250	0.375	0.413	8838510
18	1.750	2.250	0.437	0.457	0924000
605	1.750	2.250	0.500	0.550	4376800



Rod seals

Hallite

inch



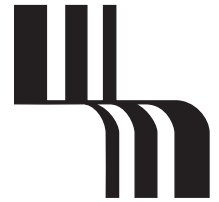
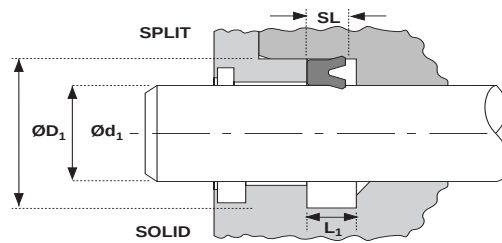
Type	Ød ₁	NOMINALS ØD ₁	SL	L ₁	PART No.
16	1.750	2.360	0.235	0.250	6623310
601	1.750	2.375	0.266	0.312	4236301
26	1.750	2.375	0.312	0.344	28-29
511	1.750	2.375	0.312	0.344	8807910
513	1.750	2.375	0.375	0.413	8868810
15	1.750	2.375	0.437	0.457	0895100
18	1.750	2.375	0.437	0.457	0939800
605	1.750	2.375	0.437	0.481	4443200
513	1.750	2.375	0.500	0.550	8873610
601	1.750	2.375	0.562	0.619	4250901
18	1.750	2.437	0.437	0.457	0780200
511	1.750	2.500	0.375	0.413	8814810
18	1.750	2.500	0.500	0.520	1162900
513	1.750	2.500	0.500	0.550	8874910
513	1.750	2.500	0.625	0.688	8875010
18	1.750	2.750	0.625	0.665	0785800
513	1.750	2.750	0.750	0.825	8847010
18	1.812	3.000	1.000	1.040	0897600
18	1.860	2.375	0.380	0.400	1423000*
511	1.875	2.125	0.125	0.138	8803210
513	1.875	2.125	0.187	0.207	8845810
513	1.875	2.125	0.250	0.275	8845410
658	1.875	2.246	0.281	0.311	4576700
511	1.875	2.250	0.187	0.207	8803310
605	1.875	2.250	0.375	0.413	4476200
513	1.875	2.250	0.375	0.413	8835810
511	1.875	2.375	0.250	0.275	8808010
18	1.875	2.375	0.375	0.395	0917200*
605	1.875	2.375	0.375	0.413	4391200
513	1.875	2.375	0.375	0.413	8859410
26	1.875	2.500	0.312	0.344	28-30
511	1.875	2.500	0.312	0.344	8808110
18	1.875	2.500	0.375	0.395	6502200
605	1.875	2.500	0.397	0.437	4331500
18	1.875	2.500	0.437	0.457	0867200
15	1.875	2.500	0.437	0.457	0895200
513	1.875	2.500	0.500	0.550	8873710

Type	Ød ₁	NOMINALS ØD ₁	SL	L ₁	PART No.
18	1.875	2.625	0.625	0.665	0403300*
25	1.937	2.437	0.250	0.280	4124501
18	1.937	2.437	0.375	0.395	0560600*
18	1.985	2.500	0.360	0.380	1422200*
18	1.985	2.755	0.439	0.459	1419800*
511	2.000	2.250	0.125	0.138	8803410
513	2.000	2.250	0.187	0.207	8860410
605	2.000	2.250	0.250	0.275	4345800
513	2.000	2.250	0.250	0.275	8873210
658	2.000	2.371	0.281	0.311	4466300
18	2.000	2.375	0.172	0.187	1445400
511	2.000	2.375	0.187	0.207	8803510
513	2.000	2.375	0.230	0.250	8806210
605	2.000	2.375	0.250	0.275	4458700
601	2.000	2.375	0.250	0.275	4508301
513	2.000	2.375	0.250	0.275	8868110
605	2.000	2.375	0.312	0.344	4346400
601	2.000	2.375	0.312	0.344	4509201
513	2.000	2.375	0.312	0.344	8860810
605	2.000	2.375	0.375	0.413	4380100
621	2.000	2.375	0.375	0.413	4484810
513	2.000	2.375	0.375	0.413	8835910
653	2.000	2.424		0.166	4521310
18	2.000	2.500	0.250	0.270	0185900
605	2.000	2.500	0.250	0.275	4496900
511	2.000	2.500	0.250	0.275	8808210
605	2.000	2.500	0.312	0.344	4382900
605	2.000	2.500	0.341	0.375	4330900
18	2.000	2.500	0.344	0.364	0112600
18	2.000	2.500	0.375	0.395	1431000
605	2.000	2.500	0.375	0.413	4337100
601	2.000	2.500	0.375	0.413	4353500
621	2.000	2.500	0.375	0.413	4485110
513	2.000	2.500	0.375	0.413	8838610
605	2.000	2.500	0.781	0.859	4491400
16	2.000	2.610	0.235	0.250	6623410
18	2.000	2.625	0.312	0.332	1441300

Rod seals

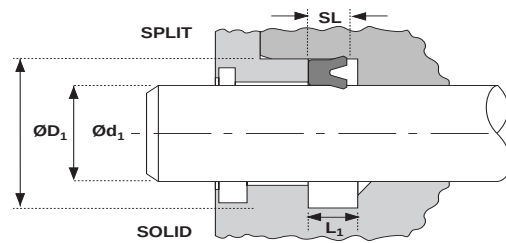
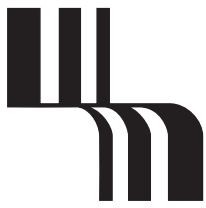
Hallite

inch



Type	Ød ₁	NOMINALS ØD ₁	SL	L ₁	PART No.
26	2.000	2.625	0.312	0.344	28-31
605	2.000	2.625	0.312	0.344	4333100
511	2.000	2.625	0.312	0.344	8808310
25	2.000	2.625	0.312	0.360	4006801
605	2.000	2.625	0.397	0.437	4331000
15	2.000	2.625	0.437	0.457	0895300
18	2.000	2.625	0.437	0.457	1371000
601	2.000	2.625	0.500	0.550	4225101
605	2.000	2.625	0.500	0.550	4346500
513	2.000	2.625	0.500	0.550	8873810
601	2.000	2.625	0.562	0.619	4159801
513	2.000	2.625	0.562	0.619	8862210
511	2.000	2.750	0.375	0.413	8814910
18	2.000	2.750	0.437	0.457	0783200
513	2.000	2.750	0.500	0.550	8875110
18	2.000	2.750	0.562	0.582	1369100
18	2.000	2.750	0.625	0.665	6503700*
605	2.000	2.750	0.625	0.688	4347300
513	2.000	2.750	0.625	0.688	8842810
18	2.000	2.875	0.625	0.665	0416100*
511	2.000	3.000	0.500	0.550	8815010
18	2.000	3.000	0.625	0.665	0406100*
513	2.000	3.000	0.750	0.825	8876810
511	2.125	2.500	0.187	0.207	8803710
601	2.125	2.500	0.250	0.275	4508201
513	2.125	2.500	0.250	0.275	8845010
605	2.125	2.500	0.375	0.413	4443300
513	2.125	2.500	0.375	0.413	8836010
511	2.125	2.625	0.250	0.275	8808410
601	2.125	2.625	0.375	0.413	4156101
621	2.125	2.625	0.375	0.413	4592510
513	2.125	2.625	0.375	0.413	8856310
26	2.125	2.750	0.312	0.344	28-32
511	2.125	2.750	0.312	0.344	8808510
18	2.125	2.750	0.375	0.395	0945200
513	2.125	2.750	0.500	0.550	8879910
513	2.125	2.750	0.625	0.688	8864810
511	2.125	2.875	0.375	0.413	8815110

Type	Ød ₁	NOMINALS ØD ₁	SL	L ₁	PART No.
18	2.125	2.875	0.562	0.582	0779600
511	2.125	3.125	0.500	0.550	8853110
511	2.250	2.500	0.125	0.138	8803810
511	2.250	2.625	0.187	0.207	8803910
513	2.250	2.625	0.312	0.344	8860910
605	2.250	2.625	0.335	0.375	4372200
513	2.250	2.625	0.375	0.413	8873310
511	2.250	2.750	0.250	0.275	8808610
605	2.250	2.750	0.341	0.375	4331100
18	2.250	2.750	0.375	0.395	1431100
601	2.250	2.750	0.375	0.413	4128701
605	2.250	2.750	0.375	0.413	4337200
621	2.250	2.750	0.375	0.413	4485210
513	2.250	2.750	0.375	0.413	8838710
26	2.250	2.875	0.312	0.344	28-33
511	2.250	2.875	0.312	0.344	8808710
18	2.250	2.875	0.437	0.457	0424300
513	2.250	2.875	0.500	0.550	8838810
18	2.250	3.000	0.375	0.395	0246000
511	2.250	3.000	0.375	0.413	8869910
18	2.250	3.000	0.500	0.520	6502400*
513	2.250	3.000	0.500	0.550	8875210
605	2.250	3.000	0.511	0.562	4331200
15	2.250	3.000	0.562	0.582	0897100
18	2.250	3.000	0.562	0.582	1098400
513	2.250	3.000	0.625	0.688	8842910
18	2.250	3.250	0.750	0.790	0990200*
511	2.375	2.625	0.125	0.138	8815610
511	2.375	2.750	0.187	0.207	8804010
605	2.375	2.750	0.375	0.413	4443400
513	2.375	2.750	0.375	0.413	8861010
511	2.375	2.875	0.250	0.275	8808810
18	2.375	2.875	0.281	0.300	1447600
605	2.375	2.875	0.375	0.413	4443500
621	2.375	2.875	0.375	0.413	4485310
513	2.375	2.875	0.375	0.413	8850110
26	2.375	3.000	0.312	0.344	28-34



Rod seals

Hallite

inch



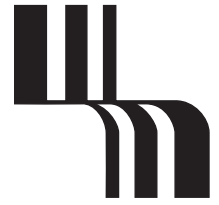
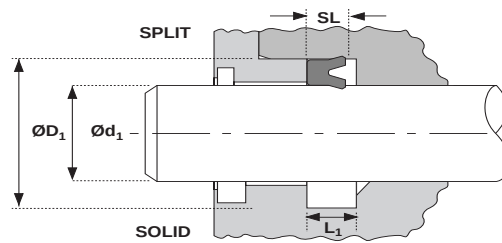
Type	Ød ₁	NOMINALS ØD ₁	SL	L ₁	PART No.
601	2.375	3.000	0.312	0.344	4107201
511	2.375	3.000	0.312	0.344	8808910
18	2.375	3.000	0.469	0.489	0716600
513	2.375	3.000	0.500	0.550	8838910
18	2.375	3.125	0.562	0.582	1024800
513	2.375	3.125	0.625	0.688	8846810
18	2.484	3.000	0.350	0.370	1422300*
658	2.500	2.871	0.281	0.311	4576800
511	2.500	2.875	0.187	0.207	8804110
605	2.500	2.875	0.312	0.344	4443600
605	2.500	2.875	0.375	0.413	4458500
513	2.500	2.875	0.375	0.413	8836210
653	2.500	2.924		0.166	4514610
605	2.500	2.937	0.284	0.312	4535900
605	2.500	3.000	0.250	0.275	4553000
511	2.500	3.000	0.250	0.275	8809010
605	2.500	3.000	0.284	0.312	4331300
18	2.500	3.000	0.312	0.332	0641200
15	2.500	3.000	0.312	0.332	0974500
513	2.500	3.000	0.312	0.344	8867810
601	2.500	3.000	0.375	0.413	4119501
605	2.500	3.000	0.375	0.413	4335900
621	2.500	3.000	0.375	0.413	4485410
513	2.500	3.000	0.375	0.413	8839010
16	2.500	3.110	0.235	0.250	6623510
26	2.500	3.125	0.312	0.344	28-35
601	2.500	3.125	0.312	0.344	4124401
511	2.500	3.125	0.312	0.344	8870110
513	2.500	3.125	0.375	0.413	8836110
18	2.500	3.125	0.437	0.457	0541300
605	2.500	3.125	0.500	0.550	4346600
513	2.500	3.125	0.500	0.550	8873910
18	2.500	3.125	0.625	0.665	1298400*
18	2.500	3.250	0.375	0.395	1441400
26	2.500	3.250	0.375	0.413	28-36
511	2.500	3.250	0.375	0.413	8815410
513	2.500	3.250	0.500	0.550	8875310

Type	Ød ₁	NOMINALS ØD ₁	SL	L ₁	PART No.
18	2.500	3.250	0.562	0.582	0782400
15	2.500	3.250	0.562	0.582	0897400
18	2.500	3.250	0.625	0.665	6501900
605	2.500	3.250	0.625	0.688	4347400
513	2.500	3.250	0.625	0.688	8843010
511	2.500	3.500	0.500	0.550	8815510
18	2.500	3.500	0.625	0.665	0541900*
18	2.500	3.500	0.750	0.790	0438800*
513	2.500	3.500	0.750	0.825	8847110
511	2.625	3.000	0.187	0.207	8804210
513	2.625	3.000	0.250	0.275	8868510
25	2.625	3.000	0.250	0.280	4134701
513	2.625	3.000	0.312	0.344	8864310
605	2.625	3.000	0.375	0.413	4443700
513	2.625	3.000	0.375	0.413	8836310
511	2.625	3.125	0.250	0.275	8809110
601	2.625	3.125	0.375	0.413	4224701
513	2.625	3.125	0.375	0.413	8849310
605	2.625	3.125	0.500	0.550	4514900
511	2.625	3.250	0.312	0.344	8851110
18	2.625	3.250	0.500	0.520	1378200*
605	2.625	3.250	0.625	0.688	4376900
26	2.625	3.375	0.375	0.413	28-37
18	2.625	3.375	0.562	0.582	0773800
513	2.625	3.375	0.625	0.688	8863710
18	2.625	3.375	0.750	0.790	0777400*
18	2.735	3.250	0.340	0.360	1422400*
511	2.750	3.000	0.125	0.138	8817910
511	2.750	3.125	0.187	0.207	8804410
513	2.750	3.125	0.187	0.207	8849910
513	2.750	3.125	0.312	0.344	8846110
605	2.750	3.125	0.375	0.413	4379100
513	2.750	3.125	0.375	0.413	8836410
653	2.750	3.174		0.166	4533510
511	2.750	3.250	0.250	0.275	8809210
18	2.750	3.250	0.281	0.300	1447900
18	2.750	3.250	0.375	0.395	1476100

Rod seals

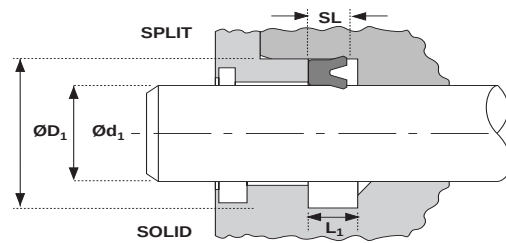
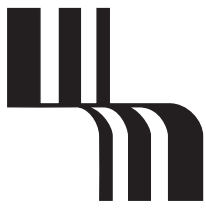
Hallite

inch



Type	Ød1	NOMINALS ØD1	SL	L1	PART No.
605	2.750	3.250	0.375	0.413	4336000
621	2.750	3.250	0.375	0.413	4485510
513	2.750	3.250	0.375	0.413	8839110
511	2.750	3.375	0.312	0.344	8809310
605	2.750	3.375	0.375	0.413	4456900
513	2.750	3.375	0.375	0.413	8868910
18	2.750	3.375	0.437	0.457	0942200
605	2.750	3.375	0.500	0.550	4346700
513	2.750	3.375	0.500	0.550	8839210
601	2.750	3.375	0.562	0.619	4250701
605	2.750	3.375	0.805	0.885	4467400
26	2.750	3.500	0.375	0.413	28-38
511	2.750	3.500	0.375	0.413	8815710
18	2.750	3.500	0.500	0.520	6500500*
513	2.750	3.500	0.500	0.550	8875410
18	2.750	3.500	0.562	0.582	0437800*
15	2.750	3.500	0.562	0.582	0897500
605	2.750	3.500	0.625	0.688	4347500
513	2.750	3.500	0.625	0.688	8843110
18	2.750	3.625	0.750	0.790	0779800*
18	2.750	3.750	0.500	0.520	0296200
511	2.750	3.750	0.500	0.550	8900010
18	2.750	3.750	0.750	0.790	0967400
511	2.750	4.000	0.625	0.688	8819310
511	2.875	3.125	0.125	0.138	8814210
513	2.875	3.125	0.250	0.275	8847410
511	2.875	3.250	0.187	0.207	8851010
25	2.875	3.250	0.250	0.280	4136401
605	2.875	3.250	0.375	0.413	4443800
513	2.875	3.250	0.375	0.413	8861110
511	2.875	3.375	0.250	0.275	8809410
513	2.875	3.375	0.562	0.619	8900610
511	2.875	3.500	0.312	0.344	8809510
25	2.875	3.500	0.312	0.360	4129701
18	2.875	3.500	0.470	0.490	1422900*
513	2.875	3.500	0.500	0.550	8874010
26	2.875	3.625	0.375	0.413	28-39
18	2.875	3.625	0.562	0.582	1474500

Type	Ød1	NOMINALS ØD1	SL	L1	PART No.
18	2.875	3.875	0.625	0.665	1424300
511	3.000	3.250	0.125	0.138	8804510
511	3.000	3.375	0.187	0.207	8804610
513	3.000	3.375	0.187	0.207	8806710
513	3.000	3.375	0.250	0.275	8868210
513	3.000	3.375	0.312	0.344	8861210
605	3.000	3.375	0.375	0.413	4468300
513	3.000	3.375	0.375	0.413	8836510
605	3.000	3.438	0.281	0.310	4539900
511	3.000	3.500	0.250	0.275	8809610
18	3.000	3.500	0.375	0.395	1431200
605	3.000	3.500	0.375	0.413	4336100
621	3.000	3.500	0.375	0.413	4485610
513	3.000	3.500	0.375	0.413	8839310
513	3.000	3.500	0.500	0.550	8842110
513	3.000	3.500	0.562	0.619	8852210
605	3.000	3.500	0.625	0.688	4399600
605	3.000	3.500	0.781	0.859	4476900
16	3.000	3.610	0.235	0.250	6623610
653	3.000	3.616		0.247	4515910
511	3.000	3.625	0.312	0.344	8809710
15	3.000	3.625	0.375	0.395	0389100
513	3.000	3.625	0.375	0.413	8828510
605	3.000	3.625	0.500	0.550	4346800
621	3.000	3.625	0.500	0.550	4486810
513	3.000	3.625	0.500	0.550	8874110
601	3.000	3.625	0.562	0.619	4160001
18	3.000	3.750	0.375	0.395	0246100
26	3.000	3.750	0.375	0.413	28-40
511	3.000	3.750	0.375	0.413	8815910
18	3.000	3.750	0.500	0.520	6500400*
513	3.000	3.750	0.500	0.550	8875510
18	3.000	3.750	0.562	0.582	0410500
15	3.000	3.750	0.562	0.582	0897700
605	3.000	3.750	0.625	0.688	4347600
621	3.000	3.750	0.625	0.688	4489310
513	3.000	3.750	0.625	0.688	8843210
18	3.000	3.750	0.687	0.727	0545700*



Rod seals

Hallite

inch



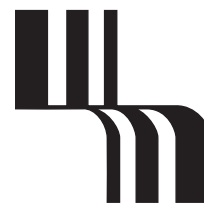
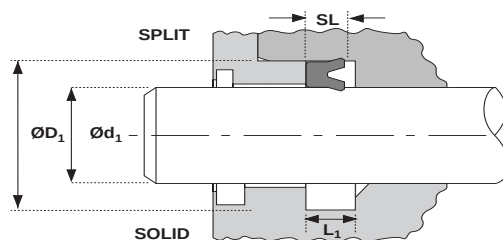
Type	Ød ₁	NOMINALS ØD ₁	SL	L ₁	PART No.
18	3.000	3.875	0.781	0.821	0778800*
511	3.000	4.000	0.500	0.550	8816010
18	3.000	4.000	0.625	0.665	0854400
513	3.000	4.000	0.750	0.825	8863310
18	3.000	4.000	0.812	0.852	6502100*
18	3.000	4.000	0.875	0.915	0445600*
18	3.062	4.062	0.750	0.790	0559400*
511	3.125	3.500	0.187	0.207	8804710
513	3.125	3.500	0.250	0.275	8845110
513	3.125	3.500	0.375	0.413	8836610
605	3.125	3.500	0.625	0.688	4399700
513	3.125	3.625	0.375	0.413	8856210
511	3.125	3.750	0.312	0.344	8809910
513	3.125	3.750	0.500	0.550	8869810
18	3.125	3.875	0.562	0.582	0295800
513	3.125	3.875	0.625	0.688	8900310
18	3.125	3.875	1.000	1.040	1363100
18	3.235	3.750	0.360	0.380	1420400*
511	3.250	3.500	0.125	0.138	8819610
511	3.250	3.625	0.187	0.207	8804810
513	3.250	3.625	0.312	0.344	8861310
513	3.250	3.625	0.375	0.413	8873410
605	3.250	3.625	0.562	0.619	4476800
511	3.250	3.750	0.250	0.275	8810010
605	3.250	3.750	0.375	0.413	4336200
621	3.250	3.750	0.375	0.413	4485710
513	3.250	3.750	0.375	0.413	8839410
511	3.250	3.875	0.312	0.344	8879610
605	3.250	3.875	0.500	0.550	4415400
513	3.250	3.875	0.500	0.550	8869710
26	3.250	4.000	0.375	0.413	28-60
25	3.250	4.000	0.375	0.413	4003401
511	3.250	4.000	0.375	0.413	8816210
18	3.250	4.000	0.500	0.520	6503900*
513	3.250	4.000	0.500	0.550	8875610
15	3.250	4.000	0.562	0.582	0897800

Type	Ød ₁	NOMINALS ØD ₁	SL	L ₁	PART No.
18	3.250	4.000	0.562	0.582	1407700
513	3.250	4.000	0.625	0.688	8843310
511	3.250	4.500	0.625	0.688	8822410
511	3.375	3.750	0.187	0.207	8854210
513	3.375	3.750	0.375	0.413	8836710
511	3.375	3.875	0.250	0.275	8850710
513	3.375	3.875	0.375	0.413	8849410
18	3.375	3.875	0.437	0.457	0296400
15	3.375	3.875	0.437	0.457	2190500
513	3.375	3.875	0.562	0.619	8900710
511	3.375	4.000	0.312	0.344	8810210
18	3.375	4.000	0.437	0.457	1256000*
513	3.375	4.000	0.500	0.550	8874210
605	3.375	4.000	0.594	0.653	4377000
511	3.375	4.125	0.375	0.413	8857710
18	3.375	4.125	0.562	0.582	0295000
513	3.375	4.125	0.625	0.688	8852110
511	3.375	4.375	0.500	0.550	8866910
18	3.375	4.375	0.750	0.790	1354600
511	3.500	3.750	0.125	0.138	8815810
511	3.500	3.875	0.187	0.207	8805010
605	3.500	3.875	0.375	0.413	4468400
513	3.500	3.875	0.375	0.413	8836810
511	3.500	4.000	0.250	0.275	8810310
605	3.500	4.000	0.312	0.344	4540000
513	3.500	4.000	0.312	0.344	8867910
18	3.500	4.000	0.375	0.395	1468200
605	3.500	4.000	0.375	0.413	4336300
621	3.500	4.000	0.375	0.413	4485810
513	3.500	4.000	0.375	0.413	8839510
16	3.500	4.110	0.235	0.250	6623710
653	3.500	4.116		0.247	4514810
511	3.500	4.125	0.312	0.344	8810410
18	3.500	4.125	0.375	0.395	0442200*
513	3.500	4.125	0.375	0.413	8837410
605	3.500	4.125	0.500	0.550	4346900
621	3.500	4.125	0.500	0.550	4486910

Rod seals

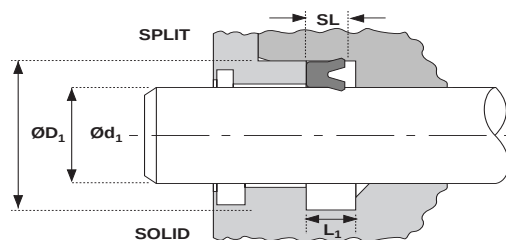
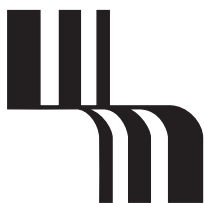
Hallite

inch



Type	Ød ₁	NOMINALS ØD ₁	SL	L ₁	PART No.
513	3.500	4.125	0.500	0.550	8874310
511	3.500	4.250	0.375	0.413	8816410
513	3.500	4.250	0.500	0.550	8875710
15	3.500	4.250	0.562	0.582	0897900
18	3.500	4.250	0.562	0.582	1128800
605	3.500	4.250	0.625	0.688	4347700
621	3.500	4.250	0.625	0.688	4573610
513	3.500	4.250	0.625	0.688	8843410
18	3.500	4.250	0.687	0.727	0623900*
18	3.500	4.500	0.750	0.790	0448800
18	3.500	4.500	0.875	0.915	0443400*
18	3.505	4.245	0.480	0.500	1419600*
511	3.625	4.000	0.187	0.207	8805110
513	3.625	4.000	0.250	0.275	8868610
513	3.625	4.000	0.312	0.344	8864410
513	3.625	4.000	0.375	0.413	8836910
511	3.625	4.125	0.250	0.275	8810510
605	3.625	4.125	0.375	0.413	4436200
513	3.625	4.125	0.375	0.413	8849510
511	3.625	4.250	0.312	0.344	8851210
511	3.625	4.375	0.375	0.413	8824610
513	3.625	4.375	0.625	0.688	8865310
18	3.625	4.625	0.500	0.520	0240800*
18	3.625	4.625	0.750	0.790	0449000
511	3.750	4.000	0.125	0.138	8818710
513	3.750	4.125	0.187	0.207	8850210
511	3.750	4.125	0.187	0.207	8879410
513	3.750	4.125	0.312	0.344	8846210
513	3.750	4.125	0.375	0.413	8837010
605	3.750	4.125	0.375	0.413	4702500
511	3.750	4.250	0.250	0.275	8810610
605	3.750	4.250	0.375	0.413	4443900
513	3.750	4.250	0.375	0.413	8839710
605	3.750	4.250	0.500	0.550	4456500
513	3.750	4.250	0.562	0.619	8839810
605	3.750	4.250	0.562	0.625	4436100
511	3.750	4.375	0.312	0.344	8870210

Type	Ød ₁	NOMINALS ØD ₁	SL	L ₁	PART No.
513	3.750	4.375	0.375	0.413	8869010
513	3.750	4.375	0.500	0.550	8874410
601	3.750	4.500	0.375	0.413	4119201
511	3.750	4.500	0.375	0.413	8816610
18	3.750	4.500	0.500	0.520	1414800
513	3.750	4.500	0.500	0.550	8875810
513	3.750	4.500	0.625	0.688	8875910
18	3.750	4.500	0.875	0.915	0786000*
15	3.750	4.750	0.750	0.790	0898800
18	3.750	4.750	0.750	0.790	1007000
511	3.875	4.125	0.125	0.138	8816510
513	3.875	4.125	0.250	0.275	8845510
511	3.875	4.250	0.187	0.207	8823510
513	3.875	4.250	0.375	0.413	8861410
511	3.875	4.375	0.250	0.275	8810710
513	3.875	4.375	0.375	0.413	8832510
511	3.875	4.500	0.312	0.344	8870310
513	3.875	4.500	0.500	0.550	8839910
511	3.875	4.625	0.375	0.413	8819210
18	3.875	4.875	0.750	0.790	1370200*
511	4.000	4.250	0.125	0.138	8805210
511	4.000	4.375	0.187	0.207	8805310
513	4.000	4.375	0.187	0.207	8820010
513	4.000	4.375	0.250	0.275	8868310
513	4.000	4.375	0.312	0.344	8861510
605	4.000	4.375	0.375	0.413	4468500
513	4.000	4.375	0.375	0.413	8837110
511	4.000	4.500	0.250	0.275	8810810
605	4.000	4.500	0.312	0.355	4586700
18	4.000	4.500	0.375	0.395	1447400
605	4.000	4.500	0.375	0.413	4336400
621	4.000	4.500	0.375	0.413	4486010
513	4.000	4.500	0.375	0.413	8840010
513	4.000	4.500	0.500	0.550	8867510
601	4.000	4.500	0.511	0.562	4373400
605	4.000	4.500	0.562	0.619	4385700
621	4.000	4.500	0.562	0.619	4486110



Rod seals

Hallite

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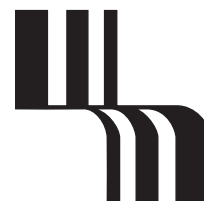
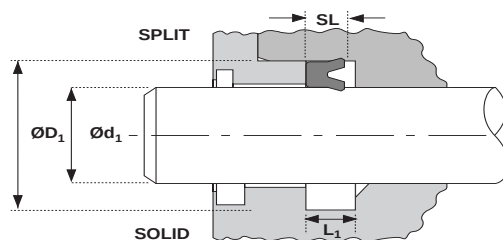
Type	Ød ₁	NOMINALS ØD ₁	SL	L ₁	PART No.
513	4.000	4.500	0.562	0.619	8840110
605	4.000	4.500	0.781	0.859	4399800
16	4.000	4.610	0.235	0.250	6623810
653	4.000	4.616		0.247	4524610
511	4.000	4.625	0.312	0.344	8810910
605	4.000	4.625	0.375	0.413	4520100
605	4.000	4.625	0.500	0.550	4347000
513	4.000	4.625	0.500	0.550	8874510
621	4.000	4.625	0.562	0.619	4487010
513	4.000	4.625	0.562	0.619	8862310
601	4.000	4.750	0.375	0.413	4120501
511	4.000	4.750	0.375	0.413	8816810
605	4.000	4.750	0.500	0.550	4444000
513	4.000	4.750	0.500	0.550	8876010
601	4.000	4.750	0.536	0.600	4422500
605	4.000	4.750	0.625	0.688	4347800
621	4.000	4.750	0.625	0.688	4483310
513	4.000	4.750	0.625	0.688	8843510
18	4.000	4.750	0.687	0.727	0641900*
18	4.000	4.875	0.656	0.676	1424100
511	4.000	5.000	0.500	0.550	8816910
18	4.000	5.000	0.625	0.665	6500600*
18	4.000	5.000	0.750	0.790	0443000
15	4.000	5.000	0.750	0.790	0898900
513	4.000	5.000	0.750	0.825	8877410
511	4.125	4.500	0.187	0.207	8805410
513	4.125	4.500	0.250	0.275	8845210
513	4.125	4.500	0.375	0.413	8837210
513	4.125	4.625	0.375	0.413	8856410
511	4.125	4.750	0.312	0.344	8811110
513	4.125	4.750	0.500	0.550	8869610
513	4.125	4.750	0.625	0.688	8869510
511	4.125	4.875	0.375	0.413	8853210
18	4.125	5.000	0.562	0.582	0923000*
18	4.125	5.125	0.750	0.790	0853400*
511	4.250	4.500	0.125	0.138	8819710
511	4.250	4.625	0.187	0.207	8805510

Type	Ød ₁	NOMINALS ØD ₁	SL	L ₁	PART No.
513	4.250	4.625	0.312	0.344	8861610
513	4.250	4.625	0.375	0.413	8837310
511	4.250	4.750	0.250	0.275	8811210
18	4.250	4.750	0.375	0.395	1468100
513	4.250	4.750	0.375	0.413	8840210
511	4.250	4.875	0.312	0.344	8811310
513	4.250	4.875	0.500	0.550	8869410
25	4.250	5.000	0.375	0.413	4006901
511	4.250	5.000	0.375	0.413	8817010
513	4.250	5.000	0.500	0.550	8876110
18	4.250	5.000	0.562	0.582	0783400
605	4.250	5.000	0.625	0.688	4347900
513	4.250	5.000	0.625	0.688	8843610
511	4.250	5.250	0.500	0.550	8858910
18	4.250	5.250	0.750	0.790	0892200
513	4.250	5.250	0.750	0.825	8847210
18	4.250	5.250	0.875	0.915	0573600*
511	4.250	5.500	0.625	0.688	8819810
511	4.375	4.750	0.187	0.207	8854310
513	4.375	4.750	0.375	0.413	8861710
511	4.375	4.875	0.250	0.275	8811410
18	4.375	4.875	0.375	0.395	0924200*
513	4.375	4.875	0.562	0.616	8900510
511	4.375	5.000	0.312	0.344	8811510
18	4.375	5.000	0.375	0.395	0752100*
513	4.375	5.000	0.500	0.550	8874610
513	4.375	5.000	0.625	0.688	8840410
18	4.375	5.375	0.750	0.790	0919000*
511	4.500	4.875	0.187	0.207	8805710
513	4.500	4.875	0.375	0.413	8837510
511	4.500	5.000	0.250	0.275	8811610
513	4.500	5.000	0.312	0.344	8868010
18	4.500	5.000	0.375	0.395	0036300
601	4.500	5.000	0.375	0.413	4129801
605	4.500	5.000	0.375	0.413	4379200
621	4.500	5.000	0.375	0.413	4486210
513	4.500	5.000	0.375	0.413	8840510

Rod seals

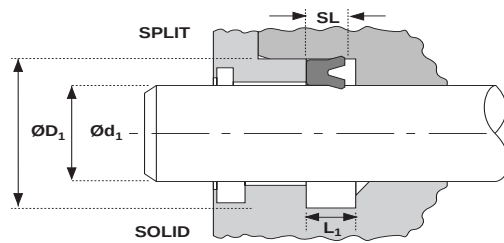
Hallite

inch



Type	Ød ₁	NOMINALS ØD ₁	SL	L ₁	PART No.
513	4.500	5.000	0.500	0.550	8864710
621	4.500	5.000	0.562	0.619	4486310
513	4.500	5.000	0.562	0.619	8840610
16	4.500	5.110	0.235	0.250	8620910*
511	4.500	5.125	0.312	0.344	8811710
513	4.500	5.125	0.375	0.413	8840710
605	4.500	5.125	0.500	0.550	4347100
605	4.500	5.125	0.625	0.688	4444100
621	4.500	5.125	0.625	0.688	4486410
513	4.500	5.125	0.625	0.688	8840810
511	4.500	5.250	0.375	0.413	8817310
18	4.500	5.250	0.469	0.489	0447800
513	4.500	5.250	0.500	0.550	8876210
605	4.500	5.250	0.625	0.688	4348000
621	4.500	5.250	0.625	0.688	4483410
513	4.500	5.250	0.625	0.688	8843710
18	4.500	5.375	0.687	0.727	1289300
511	4.500	5.500	0.500	0.550	8817410
15	4.500	5.500	0.750	0.790	0081200
18	4.500	5.500	0.750	0.790	0133200
513	4.500	5.500	0.750	0.825	8847310
511	4.625	5.000	0.187	0.207	8879510
513	4.625	5.000	0.250	0.275	8868710
513	4.625	5.000	0.312	0.344	8864510
513	4.625	5.000	0.375	0.413	8837610
511	4.625	5.125	0.250	0.275	8811810
605	4.625	5.250	0.625	0.688	4377100
511	4.750	5.000	0.125	0.138	8818110
513	4.750	5.125	0.375	0.413	8846610
511	4.750	5.250	0.250	0.275	8811910
18	4.750	5.250	0.375	0.395	1431400
513	4.750	5.250	0.375	0.413	8861910
513	4.750	5.250	0.500	0.550	8846310
513	4.750	5.250	0.562	0.619	8840910
605	4.750	5.250	0.625	0.688	4451100
511	4.750	5.375	0.312	0.344	8879710
513	4.750	5.375	0.500	0.550	8869310

Type	Ød ₁	NOMINALS ØD ₁	SL	L ₁	PART No.
513	4.750	5.375	0.625	0.688	8862410
601	4.750	5.500	0.360	0.437	4154701
511	4.750	5.500	0.375	0.413	8817510
513	4.750	5.500	0.500	0.550	8876310
18	4.750	5.500	0.625	0.665	1181100*
513	4.750	5.500	0.625	0.688	8876410
15	4.750	5.750	0.750	0.790	1190300
18	4.750	5.750	0.750	0.790	1366900
511	4.750	6.000	0.625	0.688	8819410
511	4.875	5.125	0.125	0.138	8816710
513	4.875	5.125	0.250	0.275	8845610
511	4.875	5.250	0.187	0.207	8823610
513	4.875	5.250	0.375	0.413	8861810
511	4.875	5.375	0.250	0.275	8856510
513	4.875	5.375	0.375	0.413	8832910
18	4.875	5.875	0.750	0.790	1450500
513	5.000	5.375	0.375	0.413	8842510
511	5.000	5.500	0.250	0.275	8812010
18	5.000	5.500	0.375	0.395	1456200
605	5.000	5.500	0.375	0.413	4495000
513	5.000	5.500	0.375	0.413	8841010
513	5.000	5.500	0.500	0.550	8866810
605	5.000	5.500	0.562	0.619	4386100
621	5.000	5.500	0.562	0.619	4486510
513	5.000	5.500	0.562	0.619	8841110
605	5.000	5.500	0.781	0.859	4399900
605	5.000	5.531	0.557	0.619	4391400
16	5.000	5.610	0.235	0.250	8621010*
511	5.000	5.625	0.312	0.344	8812110
605	5.000	5.625	0.500	0.550	4347200
621	5.000	5.625	0.625	0.688	4487110
513	5.000	5.625	0.625	0.688	8874710
511	5.000	5.750	0.375	0.413	8817610
601	5.000	5.750	0.482	0.539	4224801
15	5.000	5.750	0.500	0.520	0179600
18	5.000	5.750	0.500	0.520	0448000
513	5.000	5.750	0.500	0.550	8876510



Rod seals

Hallite

inch



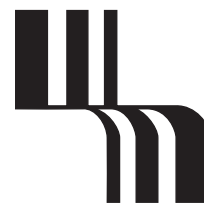
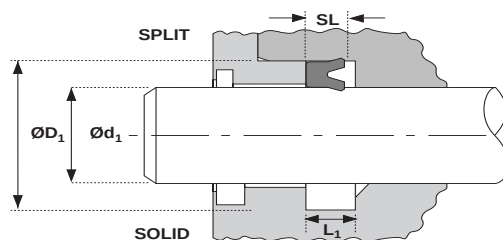
Type	Ød ₁	NOMINALS ØD ₁	SL	L ₁	PART No.
605	5.000	5.750	0.625	0.688	4348100
621	5.000	5.750	0.625	0.688	4483510
513	5.000	5.750	0.625	0.688	8843810
511	5.000	6.000	0.500	0.550	8817710
18	5.000	6.000	0.750	0.790	1367000
18	5.000	6.000	0.875	0.915	6503600*
18	5.062	6.062	0.875	0.915	1295100*
605	5.125	5.625	0.562	0.619	4436000
605	5.125	6.000	0.500	0.550	4444200
511	5.125	6.125	0.500	0.550	8851810
511	5.250	5.750	0.250	0.275	8812210
513	5.250	5.750	0.562	0.619	8862010
511	5.250	5.875	0.312	0.344	8856910
513	5.250	5.875	0.625	0.688	8862510
511	5.250	6.000	0.375	0.413	8817810
513	5.250	6.000	0.500	0.550	8865010
18	5.250	6.000	0.562	0.582	0487700
513	5.250	6.000	0.625	0.688	8843910
513	5.250	6.000	0.750	0.825	8854410
511	5.250	6.250	0.500	0.550	8900110
18	5.250	6.250	0.750	0.790	0083300
513	5.250	6.250	0.750	0.825	8847510
18	5.263	6.020	0.562	0.582	0553100*
605	5.375	5.875	0.625	0.688	4475800
511	5.375	6.000	0.312	0.344	8812310
605	5.375	6.000	0.625	0.688	4448300
513	5.375	6.000	0.625	0.688	8841210
511	5.375	6.375	0.500	0.550	8863610
511	5.500	6.000	0.250	0.275	8812410
18	5.500	6.000	0.375	0.395	1604500
605	5.500	6.000	0.375	0.413	4379300
513	5.500	6.000	0.375	0.413	8841310
605	5.500	6.000	0.562	0.619	4468600
621	5.500	6.000	0.562	0.619	4486610
513	5.500	6.000	0.562	0.619	8841410

Type	Ød ₁	NOMINALS ØD ₁	SL	L ₁	PART No.
16	5.500	6.110	0.235	0.250	8621110
605	5.500	6.125	0.312	0.344	4540100
511	5.500	6.125	0.312	0.344	8812510
601	5.500	6.250	0.375	0.413	4119301
511	5.500	6.250	0.375	0.413	8818010
513	5.500	6.250	0.500	0.550	8863010
605	5.500	6.250	0.625	0.688	4348200
513	5.500	6.250	0.625	0.688	8844010
18	5.500	6.250	0.687	0.727	1194300
18	5.500	6.500	0.750	0.790	1164100
511	5.625	6.375	0.375	0.413	8814110
18	5.625	6.625	1.250	1.312	1604700*
511	5.750	6.250	0.250	0.275	8812610
18	5.750	6.250	0.375	0.395	1604900*
513	5.750	6.250	0.375	0.413	8866410
513	5.750	6.250	0.562	0.619	8841610
511	5.750	6.375	0.312	0.344	8857010
601	5.750	6.500	0.375	0.413	4135301
511	5.750	6.500	0.375	0.413	8818210
513	5.750	6.500	0.500	0.550	8866110
513	5.750	6.500	0.625	0.688	8878010
18	5.750	6.750	0.750	0.790	1286100
18	5.750	7.000	0.937	0.977	1183400*
513	5.875	6.500	0.625	0.688	8900410
18	5.875	6.875	0.750	0.790	1604400*
511	6.000	6.500	0.250	0.275	8812810
513	6.000	6.500	0.375	0.413	8852310
513	6.000	6.500	0.500	0.550	8867610
605	6.000	6.500	0.562	0.619	4436500
621	6.000	6.500	0.562	0.619	4486710
513	6.000	6.500	0.562	0.619	8841710
605	6.000	6.500	0.781	0.859	4400000
605	6.000	6.531	0.562	0.619	4391000
16	6.000	6.610	0.235	0.250	8618010*
511	6.000	6.625	0.312	0.344	8812910
513	6.000	6.625	0.625	0.688	8862610

Rod seals

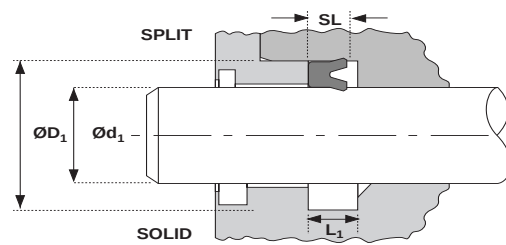
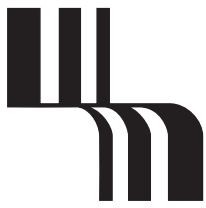
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inch



Type	Ød ₁	NOMINALS ØD ₁	SL	L ₁	PART No.
511	6.000	6.750	0.375	0.413	8818310
513	6.000	6.750	0.500	0.550	8866210
18	6.000	6.750	0.625	0.665	0179000
605	6.000	6.750	0.625	0.688	4348300
621	6.000	6.750	0.625	0.688	4487210
513	6.000	6.750	0.625	0.688	8844110
511	6.000	7.000	0.500	0.550	8818410
15	6.000	7.000	0.750	0.790	0045400
18	6.000	7.000	0.750	0.790	1188800
513	6.000	7.000	0.750	0.825	8863410
18	6.000	7.125	0.750	0.790	0492900*
18	6.000	7.250	1.000	1.040	0424100
511	6.250	6.750	0.250	0.275	8856610
511	6.250	6.875	0.312	0.344	8857110
511	6.250	7.000	0.375	0.413	8818510
513	6.250	7.000	0.625	0.688	8844210
511	6.250	7.250	0.500	0.550	8857810
513	6.250	7.250	0.750	0.825	8847710
18	6.250	7.250	1.000	1.040	0416700*
18	6.250	7.500	1.000	1.040	1255200*
511	6.375	7.000	0.312	0.344	8813010
513	6.375	7.000	0.625	0.688	8841810
511	6.500	7.000	0.250	0.275	8813110
513	6.500	7.000	0.250	0.275	8899410
18	6.500	7.000	0.375	0.395	1431600
513	6.500	7.000	0.375	0.413	8852610
513	6.500	7.000	0.500	0.550	8846410
513	6.500	7.000	0.562	0.619	8841910
511	6.500	7.125	0.312	0.344	8876610
513	6.500	7.125	0.625	0.688	8869110
511	6.500	7.250	0.375	0.413	8818610
513	6.500	7.250	0.500	0.550	8853310
605	6.500	7.250	0.625	0.688	4348400
513	6.500	7.250	0.625	0.688	8844310
18	6.500	7.250	0.687	0.727	0489900*
511	6.500	7.500	0.500	0.550	8815210
18	6.500	7.500	0.875	0.915	1270600*

Type	Ød ₁	NOMINALS ØD ₁	SL	L ₁	PART No.
18	6.500	7.750	1.000	1.040	1192700
511	6.500	8.000	0.625	0.688	8819910
511	6.750	7.250	0.250	0.275	8813210
18	6.750	7.250	0.375	0.395	0673400*
513	6.750	7.250	0.375	0.413	8865910
513	6.750	7.250	0.500	0.550	8866010
513	6.750	7.250	0.562	0.619	8866310
511	6.750	7.375	0.312	0.344	8857210
513	6.750	7.375	0.625	0.688	8862710
511	6.750	7.500	0.375	0.413	8818810
18	6.750	7.500	0.437	0.457	1433300
513	6.750	7.500	0.500	0.550	8854610
513	6.750	7.500	0.625	0.688	8854710
18	6.750	7.750	1.000	1.040	1191200
511	6.750	8.000	0.625	0.688	8819510
18	6.750	8.000	1.000	1.040	0426500
511	7.000	7.500	0.250	0.275	8813310
513	7.000	7.500	0.375	0.413	8852410
513	7.000	7.500	0.500	0.550	8842410
605	7.000	7.500	0.562	0.619	4436600
513	7.000	7.500	0.562	0.619	8877910
605	7.000	7.500	0.780	0.859	4456600
605	7.000	7.531	0.562	0.619	4391100
16	7.000	7.610	0.235	0.250	8621210*
653	7.000	7.610		0.247	4588310
511	7.000	7.625	0.312	0.344	8879310
513	7.000	7.625	0.625	0.688	8854810
511	7.000	7.750	0.375	0.413	8877010
513	7.000	7.750	0.500	0.550	8854010
605	7.000	7.750	0.625	0.688	4348500
621	7.000	7.750	0.625	0.688	4588210
513	7.000	7.750	0.625	0.688	8844410
601	7.000	8.000	0.500	0.550	4124901
511	7.000	8.000	0.500	0.550	8851310
18	7.000	8.000	0.687	0.727	0224300
513	7.000	8.000	0.750	0.825	8870410
18	7.000	8.000	0.875	0.915	6501200



Rod seals

Hallite

inch



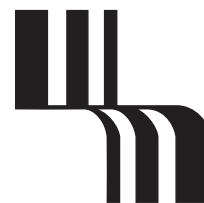
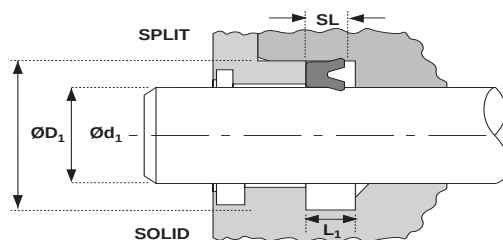
Type	Ød ₁	NOMINALS ØD ₁	SL	L ₁	PART No.
18	7.000	8.250	1.000	1.040	1219200
511	7.250	7.750	0.250	0.275	8856710
513	7.250	7.750	0.562	0.619	8862110
511	7.250	7.875	0.312	0.344	8857310
513	7.250	7.875	0.625	0.688	8862810
511	7.250	8.000	0.375	0.413	8818910
513	7.250	8.000	0.500	0.550	8865110
513	7.250	8.000	0.625	0.688	8844510
18	7.250	8.000	0.687	0.727	0546300*
513	7.250	8.000	0.750	0.825	8854510
511	7.250	8.250	0.500	0.550	8857910
513	7.250	8.250	0.750	0.825	8847810
18	7.250	8.500	1.000	1.040	1286400
511	7.375	8.000	0.312	0.344	8876710
513	7.375	8.000	0.500	0.550	8842610
513	7.375	8.000	0.625	0.688	8864910
511	7.375	8.375	0.500	0.550	8863910
511	7.500	8.000	0.250	0.275	8813410
513	7.500	8.000	0.375	0.413	8852510
513	7.500	8.000	0.500	0.550	8833810
513	7.500	8.000	0.562	0.619	8852810
511	7.500	8.125	0.312	0.344	8813510
511	7.500	8.250	0.375	0.413	8877110
513	7.500	8.250	0.500	0.550	8863210
18	7.500	8.250	0.562	0.582	0362200*
513	7.500	8.250	0.625	0.688	8878110
511	7.500	8.500	0.500	0.550	8851610
18	7.500	8.500	0.750	0.790	0692500*
18	7.500	8.500	1.250	1.312	1282500
18	7.500	8.750	1.000	1.040	0418100
18	7.500	9.000	1.000	1.040	1266600
511	7.625	8.375	0.375	0.413	8814010
511	7.750	8.375	0.312	0.344	8857410
511	7.750	8.500	0.375	0.413	8853910
513	7.750	8.500	0.500	0.550	8865210
605	7.750	8.500	0.625	0.688	4353900

Type	Ød ₁	NOMINALS ØD ₁	SL	L ₁	PART No.
513	7.750	8.500	0.625	0.688	8853610
513	7.750	8.750	0.750	0.825	8847910
511	8.000	8.500	0.250	0.275	8813610
513	8.000	8.500	0.250	0.275	8899710
15	8.000	8.500	0.375	0.395	2190800
605	8.000	8.500	0.562	0.619	4468700
513	8.000	8.500	0.562	0.619	8842310
511	8.000	8.625	0.312	0.344	8876910
513	8.000	8.625	0.500	0.550	8866610
511	8.000	8.750	0.375	0.413	8869210
605	8.000	8.750	0.625	0.688	4510500
621	8.000	8.750	0.625	0.688	4573210
513	8.000	8.750	0.625	0.688	8878210
16	8.000	8.827	0.305	0.320	8621310*
511	8.000	9.000	0.500	0.550	8819010
18	8.000	9.000	0.750	0.790	1269400
513	8.000	9.000	0.750	0.825	8863510
18	8.000	9.250	1.000	1.040	0455700
18	8.000	9.250	1.187	1.250	0455600*
18	8.000	9.500	1.500	1.562	0430900*
18	8.000	10.000	1.375	1.375	0477300*
605	8.125	8.625	0.781	0.859	4477000
511	8.125	9.125	0.500	0.550	8853810
511	8.250	8.750	0.250	0.275	8856810
511	8.250	8.875	0.312	0.344	8857510
511	8.250	9.000	0.375	0.413	8851410
18	8.250	9.000	0.625	0.665	1269500
513	8.250	9.000	0.625	0.688	8854110
18	8.250	9.375	0.875	0.915	1604100*
18	8.250	9.500	1.000	1.040	1332200
511	8.500	9.000	0.250	0.275	8813710
513	8.500	9.000	0.375	0.413	8852710
513	8.500	9.000	0.500	0.550	8833910
513	8.500	9.000	0.562	0.619	8853010
511	8.500	9.125	0.312	0.344	8857610
513	8.500	9.125	0.625	0.688	8862910
18	8.500	9.750	1.000	1.040	1332300

Rod seals

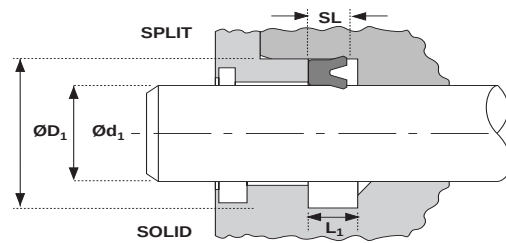
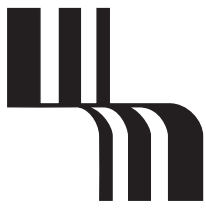
Hallite

inch



Type	----- Ød ₁	NOMINALS ØD ₁	----- SL	----- L ₁	PART No.
18	8.500	10.000	0.937	0.977	0450600
18	8.750	10.000	1.000	1.040	0436100
605	9.000	9.500	0.562	0.619	4468800
18	9.000	10.000	0.812	0.852	0451400
18	9.000	10.250	1.000	1.040	0437500
18	9.000	10.500	1.250	1.312	0509600*
605	9.250	10.000	0.625	0.688	4499300
18	9.250	10.500	1.000	1.040	1331900
605	9.375	9.875	0.781	0.859	4477100
18	9.500	10.750	1.000	1.040	1320400
18	9.750	11.000	1.000	1.040	0433900
605	10.000	10.500	0.562	0.619	4468900
18	10.000	11.250	1.000	1.040	0452200
18	10.000	11.500	1.312	1.375	0046900
18	10.250	11.500	1.000	1.040	1331600*
18	10.500	11.750	0.750	0.790	0694800*
18	10.500	11.750	1.000	1.040	1331300
18	10.500	12.250	1.000	1.040	1224600*
18	10.500	12.500	1.500	1.562	0155100
18	10.625	12.000	1.125	1.187	1338300*
18	10.750	12.000	1.000	1.040	1331400
18	11.000	12.000	0.750	0.780	0454000
18	11.000	12.250	1.000	1.040	1331000*
18	11.000	13.000	1.500	1.562	1336900
18	11.250	12.500	1.000	1.040	0436300
18	11.250	12.750	1.375	1.400	0478300
18	11.500	12.750	1.000	1.040	1331800
18	11.750	13.000	1.000	1.040	0436500
18	12.000	13.000	1.000	1.040	1050300*
18	12.000	13.250	1.000	1.040	1329100

Type	----- Ød ₁	NOMINALS ØD ₁	----- SL	----- L ₁	PART No.
18	12.000	13.250	1.312	1.375	0438300
18	12.000	13.500	1.125	1.187	1327900
18	12.000	14.000	1.250	1.312	0453600
18	12.375	13.875	1.125	1.150	0782900
18	12.750	14.000	1.000	1.040	2008600
18	13.000	14.250	1.000	1.040	0864800
18	13.000	15.500	1.500	1.562	0964900*
18	13.750	15.000	1.000	1.040	0787000*
18	13.937	15.000	0.812	0.852	1326600
18	14.000	15.250	1.208	1.270	0174900
18	14.000	15.500	1.500	1.562	0475700*
18	14.000	15.750	1.500	1.562	1319300
18	14.500	16.000	1.500	1.562	1345000*
18	15.000	16.500	1.375	1.375	1316200*
18	15.000	17.000	1.500	1.562	1345300*
18	15.750	16.750	1.000	1.025	1315700
18	16.000	17.500	1.375	1.375	0093000
18	16.000	18.000	1.500	1.562	2006200
18	16.500	17.750	1.000	1.040	1318800*
18	16.500	18.000	1.125	1.187	2004400*
18	16.500	18.000	1.250	1.312	2206700*
18	16.500	18.500	1.500	1.562	2001400
18	17.000	17.750	0.625	0.665	1345900
18	17.000	19.000	1.250	1.312	1318000
18	17.875	19.534	1.312	1.337	2004000*
18	18.000	19.250	1.250	1.312	1314500*
18	18.000	19.500	1.500	1.562	2108200*
18	18.000	20.000	1.500	1.562	2109000*
18	19.000	20.750	1.312	1.375	1342200*
18	19.125	20.125	0.750	0.775	2108500*



Rod seals

Hallite
inch



15



16



18



25



26



511



513



601



605



611



620



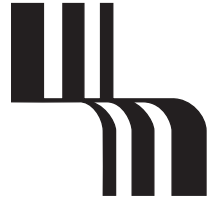
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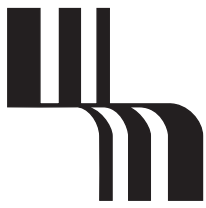
Type	----- Ød ₁	NOMINALS ØD ₁	----- SL	----- L ₁	PART No.
18	19.500	21.500	1.500	1.562	2006100
18	20.000	21.500	1.000	1.040	2003900*
18	20.000	21.500	1.750	1.812	0093600*
18	20.500	21.750	1.250	1.312	0093800
18	21.500	23.500	1.750	1.812	0150500*
18	22.000	23.500	1.125	1.187	0159100
18	22.000	24.000	1.500	1.562	2110600
18	22.500	24.000	1.125	1.187	2001600
18	23.000	25.000	1.500	1.562	0158700
18	24.000	25.500	1.125	1.187	1900200*
18	24.000	26.000	1.500	1.562	0151000
18	26.000	27.750	1.500	1.562	2106800*

Type	----- Ød ₁	NOMINALS ØD ₁	----- SL	----- L ₁	PART No.
18	26.000	28.000	1.500	1.562	2110500*
18	27.000	28.500	1.125	1.187	0155300*
18	27.000	29.000	1.500	1.562	2003500*
18	30.000	31.500	1.125	1.187	1337900*
18	30.000	32.000	1.500	1.562	2109700*
18	32.000	34.000	1.500	1.562	2110700*
18	37.000	38.500	1.125	1.187	1790400*
18	38.000	39.500	1.125	1.187	0159200*
18	38.000	40.000	1.500	1.562	2105500*

* Denotes possible indent item -
minimum quantity may apply.

Notes





Piston seals

Hallite



43

TECHNICAL DETAILS

METRIC

INCH

OPERATING CONDITIONS

MAXIMUM SPEED
MAXIMUM TEMPERATURE
MAXIMUM PRESSURE

} See below

MAXIMUM EXTRUSION GAP

PRESSURE bar
MAXIMUM GAP $\varnothing D_1$ in
PRESSURE psi

} See below

SURFACE ROUGHNESS

DYNAMIC SEALING FACE $\varnothing D_1$
STATIC SEALING FACE $\varnothing d_1$
STATIC HOUSING FACES L_1

μmRa	μmRt	$\mu inCLA$	$\mu inRMS$
3.2 max	16 max	125 max	16 $\leftrightarrow$ 40
			140 max
			43 max

CHAMFERS & RADII

GROOVE SECTION $\leq S$ in
MIN CHAMFER C in
MAX FILLET RAD r_2 in

Not applicable
0.125
0.005

PORT DIAMETER

MAX $\varnothing H$ in

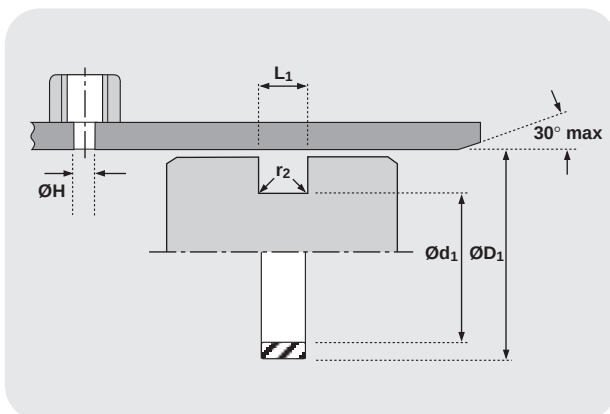
If the ring is to pass over the port

$L_1 \times 4$

TOLERANCES

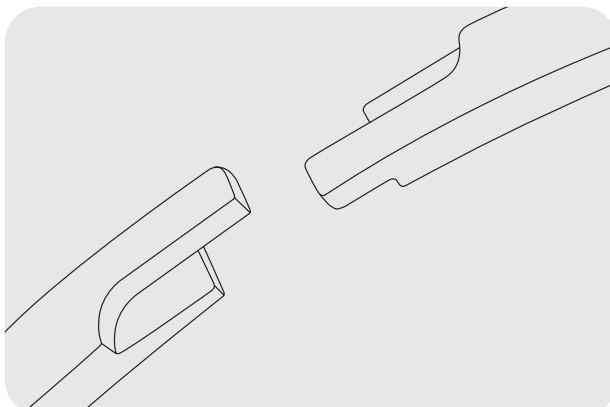
in

$\varnothing D_1$	$\varnothing d_1$	L_1
H10	+0 -0.006	+0.003 -0



FEATURES

- COMPACT GROOVE DESIGN
- NO 'GAPPING' REQUIRED
- LARGE PORT PASSING CAPABILITY
- CONTAMINATION TOLERANT
- UNIQUE JOINT DESIGN



DESIGN

The Hallite 43 cast iron piston ring is designed for heavy duty, high speed, or port passing applications where elastomeric seals are not suitable..

The joint design has become the industry standard, ensuring ring 'gapping' is not required on assembly and that fewer rings are required in double acting applications. Generally, a maximum of three rings are recommended.

As the ring presses against the cylinder wall an initial seal is established. The effect of fluid pressure causes the side face of the ring to seal against the side face of the groove. These surfaces and the joint design ensure that fluid bypass is maintained at or below acceptable levels in the majority of applications.

Pressure, temperature and speed ratings have little effect on the piston ring. Thermal expansion is allowed for in the joint design.

The extrusion gap (or piston diameter) can vary with each individual ring size. To maintain concentricity and alignment however, it is recommended the piston be a neat fit in the cylinder bore. If in doubt, please consult Hallite Seals for this dimension.



Piston seals

Hallite



50

TECHNICAL DETAILS

METRIC

INCH

OPERATING CONDITIONS

MAXIMUM SPEED 0.5 m/sec
 MAXIMUM TEMPERATURE -30°C + 100°C
 MAXIMUM PRESSURE 350 bar

1.5 ft/sec
 -22°F + 212°F
 5000 p.s.i.

SURFACE ROUGHNESS

DYNAMIC SEALING FACE $\varnothing D_1$ 0.1 ↔ 0.4 4 max
 STATIC SEALING FACE $\varnothing d_1$ $\varnothing d_2$ 1.6 max 10 max
 STATIC HOUSING FACES $\varnothing d_3$ L_1 L_2 3.2 max 16 max

μinCLA μinRMS
 4 ↔ 16 5 ↔ 18
 63 max 70 max
 125 max 140 max

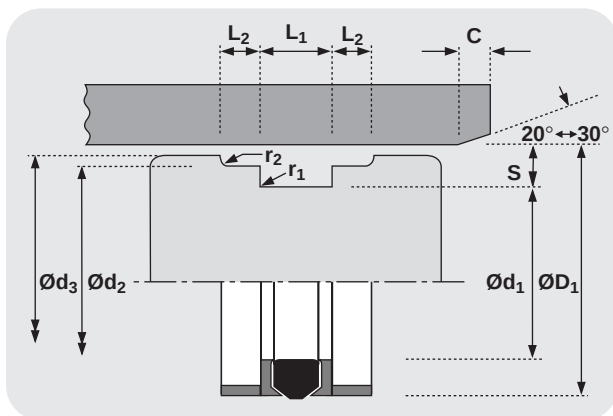
CHAMFERS & RADII

GROOVE SECTION $\leq S$ mm 4.0 5.0 7.5 10.0
 MIN CHAMFER C mm 2.0 2.5 4.0 5.0
 MAX FILLET RAD r_1 mm 0.4 0.4 0.4 0.4
 MAX FILLET RAD r_2 mm 0.4 0.4 0.4 0.4

TOLERANCES

mm

$\varnothing D_1$ $\varnothing d_1$ $\varnothing d_2$ $\varnothing d_3$ L_1 L_2
 H10 h9 h9 h11 +0.35 +0.1 +0.1 -0



DESIGN

The Hallite 50 is a double acting seal designed for light duty applications using either one piece or split pistons to ISO 6547 housings.

It comprises of a rubber seal, two split support rings and two split bearings, located either side of the seal. The nitrile rubber seal has proved itself to be extremely wear resistant in service. It is designed to be compressed by the housing to ensure a low pressure seal and when pressurised be protected from extrusion damage by the extending lips of the support ring. A tough flexible polymer is used for the support ring which is scarf cut for assembly and to protect the seal from damage.

A rectangular reinforced nylon bearing completes the assembly and provides the seal and piston with support and guidance.

The proportions of this range of piston seals have been determined to give a satisfactory performance when used with the recommended operating conditions.

Note : Other sizes of this design of seal are shown under Hallite 53, 64 and 68.

FEATURES

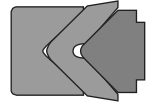
- COMPACT GROOVE DESIGN
- EASY ASSEMBLY
- POSITIVE NO DRIFT SEAL

NB: Part numbers suffixed by “+” indicate housing sizes to meet ISO 6547.



Piston seals

Hallite



TECHNICAL DETAILS

METRIC

INCH

OPERATING CONDITIONS

MAXIMUM SPEED 0.5 m/sec
MAXIMUM TEMPERATURE -30°C + 100°C
MAXIMUM PRESSURE 700 bar

1.5 ft/sec
-22°F + 212°F
10,000 p.s.i.

MAXIMUM EXTRUSION GAP

PRESSURE bar
MAXIMUM GAP mm
PRESSURE p.s.i.

Figures show the maximum permissible gap all on one side using the minimum clearance $\emptyset$ and maximum bore $\emptyset$

160	250	400	700
0.35	0.3	0.2	0.1
2400	3750	6000	10,000

SURFACE ROUGHNESS

DYNAMIC SEALING FACE $\emptyset D_1$
STATIC SEALING FACE $\emptyset d_1$
STATIC HOUSING FACES L_1

μmRa	μmRt	$\mu inCLA$	$\mu inRMS$
0.1 $\leftrightarrow$ 0.4	4 max	4 $\leftrightarrow$ 16	5 $\leftrightarrow$ 18
1.6 max	10 max	63 max	70 max
3.2 max	16 max	125 max	140 max

CHAMFERS & RADII

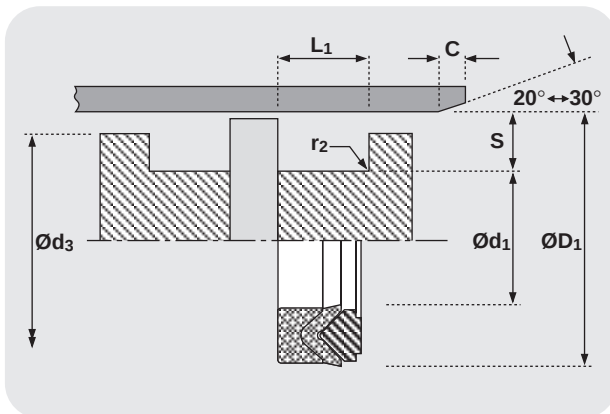
GROOVE SECTION $\leq S$ mm
MIN CHAMFER C mm
MAX FILLET RAD r_2 mm

7.5	10.0	12.5	15.0
4.0	5.0	6.5	7.5
0.8	1.2	1.6	1.6

TOLERANCES

$\emptyset D_1$	$\emptyset d_1$	$\emptyset d_3$	L_1
H9	h11	+0 -0.3	+0.25 -0

mm



DESIGN

The Hallite 51 is a heavy duty piston seal which, when installed in pairs, provides an excellent double acting piston design. It is particularly suitable for difficult operating conditions such as pressure surging, vibration or some misalignment.

The seal is an assembly of three parts, a male adaptor, a V ring and a female adaptor. Both the V ring and the female adaptor are made from rubberised fabric which has durability and strength, it also retains lubricant at the sliding surfaces so friction and wear are kept to a minimum. The V ring being the primary seal is more flexible than the adaptor which supports it and prevents extrusion damage. At higher pressures the adaptor deforms and becomes a secondary seal.

The polyacetal male adaptor has grooves across the face to ensure pressure is evenly applied to the V ring.

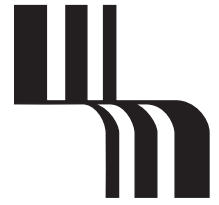
FEATURES

- EFFECTIVE SEAL FOR EXTREME APPLICATIONS
- PRECISION MOULDED VEE PACKS
- HIGH LOAD CAPABILITY
- PRESSURE ACTIVATING GROOVES



Piston seals

Hallite



52

TECHNICAL DETAILS

METRIC

INCH

OPERATING CONDITIONS

MAXIMUM SPEED 0.8 m/sec
MAXIMUM TEMPERATURE -30°C + 100°C
MAXIMUM PRESSURE 600 bar

2.4 ft/sec
-22°F + 212°F
9000 p.s.i.

MAXIMUM EXTRUSION GAP

PRESSURE bar
MAXIMUM GAP mm
PRESSURE p.s.i.

Figures show the maximum permissible gap all on one side using the minimum clearance $\emptyset$ and maximum bore $\emptyset$

160	250	400	600
0.35	0.3	0.2	0.1
2400	3750	6000	9000

SURFACE ROUGHNESS

DYNAMIC SEALING FACE $\emptyset D_1$
STATIC SEALING FACE $\emptyset d_1$
STATIC HOUSING FACES L_1

μmRa	μmRt	$\mu inCLA$	$\mu inRMS$
0.1 $\leftrightarrow$ 0.4	4 max	4 $\leftrightarrow$ 16	5 $\leftrightarrow$ 18
1.6 max	10 max	63 max	70 max
3.2 max	16 max	125 max	140 max

CHAMFERS & RADII

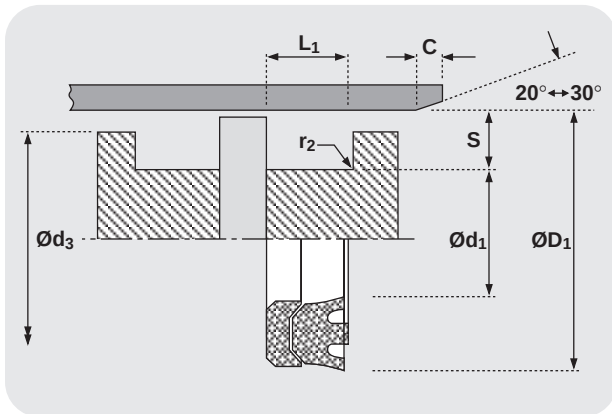
GROOVE SECTION $\leq S$ mm
MIN CHAMFER C mm
MAX FILLET RAD r_2 mm

5.0	7.5	10.0	12.5	15.0
2.5	4.0	5.0	6.5	7.5
0.8	0.8	0.8	1.2	1.6

TOLERANCES

$\emptyset D_1$	$\emptyset d_1$	$\emptyset d_3$	L_1
H9	h11	+0 -0.3	+0.3 -0

mm



DESIGN

The Hallite 52 is a two piece piston seal for heavy duty applications which, when installed in pairs, provides an excellent double-acting piston design. It is suitable for difficult operating conditions such as pressure surging, vibration or some misalignment.

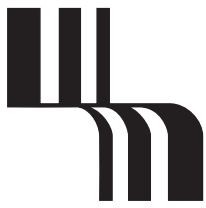
Both parts are manufactured from rubberised fabric which gives strength and durability and retains lubrication to keep friction low and reduce wear. By extending the centre of the seal past the sealing edges, they are protected from damage should inter-seal pressure force the seal against the housing wall. Grooves across the protruding face allow pressure to reach both sealing edges.

The support ring is manufactured from a hard rubberised fabric to protect the seal from extrusion damage. The 'U' shape of the ring provides a secondary seal as pressure deforms the lips to increase the sealing area.

NB: Part numbers suffixed by “#” indicate housing sizes to meet ISO 5597.

FEATURES

- EFFECTIVE SEAL FOR EXTREME APPLICATIONS
- PRECISION MOULDED VEE PACKS
- HIGH LOAD CAPABILITY
- PRESSURE ACTIVATING GROOVES



Piston seals

Hallite



TECHNICAL DETAILS

METRIC

INCH

OPERATING CONDITIONS

MAXIMUM SPEED 0.5 m/sec
 MAXIMUM TEMPERATURE -30°C + 100°C
 MAXIMUM PRESSURE 500 bar

1.5 ft/sec
 -22°F + 212°F
 7500 p.s.i.

SURFACE ROUGHNESS

DYNAMIC SEALING FACE $\varnothing D_1$ 0.1 ↔ 0.4 4 max
 STATIC SEALING FACE $\varnothing d_1$ $\varnothing d_2$ 1.6 max 10 max
 STATIC HOUSING FACES $\varnothing d_3$ L_1 L_2 3.2 max 16 max

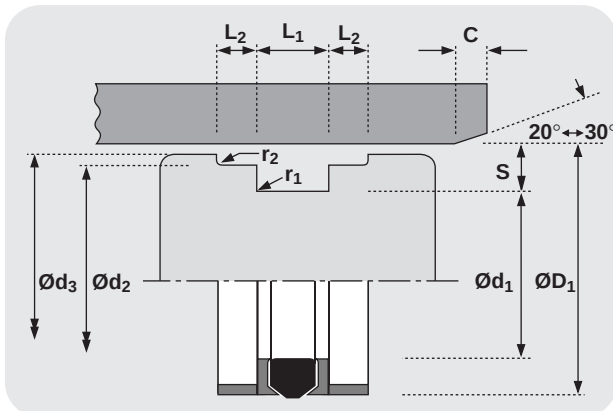
μ inCLA μ inRMS
 4 ↔ 16 5 ↔ 18
 63 max 70 max
 125 max 140 max

CHAMFERS & RADII

	5.0	7.5	8.0	10.0	12.5	15.0
GROOVE SECTION $\leq S$ mm	5.0	7.5	8.0	10.0	12.5	15.0
MIN CHAMFER C mm	2.4	4.0	5.0	5.0	6.5	7.5
MAX FILLET RAD r_1 mm	0.4	0.4	0.4	0.4	0.8	0.8
MAX FILLET RAD r_2 mm	0.4	0.4	0.4	0.4	0.8	0.8
GROOVE SECTION $\leq S$ in	0.312	0.375	0.500			
MIN CHAMFER C in	0.156	0.187	0.217			
MAX FILLET RAD r_1 in	0.16	0.16	0.32			
MAX FILLET RAD r_2 in	0.16	0.16	0.32			

TOLERANCES

	$\varnothing D_1$	$\varnothing d_1$	$\varnothing d_2$	$\varnothing d_3$	L_1	L_2
mm	H11	h10	f9	h11	+0.4 +0.15	+0.1 -0
in	H11	h10	f9	h11	+0.016 +0.005	+0.004 -0



DESIGN

A robust assembly designed specifically for one piece pistons, the Hallite 53 double acting seal uses a rubber sealing element which has proved itself in service to be extremely wear resistant and capable of working most effectively in a wide variety of medium duty applications. The seal is also suitable for two piece pistons.

The assembly comprises a rubber seal, two split support rings and two split bearings, one of each located either side of the seal.

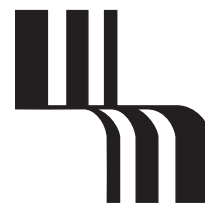
The nitrile rubber seal is designed to have its section compressed by the housing, to ensure a low pressure seal and, when pressurised be protected from extrusion damage by the extending lips of the support ring. The support ring is manufactured from a tough flexible polymer and scarf cut for assembly.

The proportions of the range have been determined to give a satisfactory performance when used with the recommended operating conditions.

Note : Other sizes of this design are shown under Hallite 50, 64 and 68. Also see Hallite 753 for interchangeable sizes.

FEATURES

- WELL PROVEN DESIGN
- LONG LIFE



TECHNICAL DETAILS

METRIC

INCH

OPERATING CONDITIONS

MAXIMUM SPEED 4.0 m/sec
MAXIMUM TEMPERATURE -30°C + 100°C
MAXIMUM PRESSURE 350 bar

12.0 ft/sec
-22°F + 212°F
5000 p.s.i.

MAXIMUM EXTRUSION GAP

PRESSURE bar
MAXIMUM GAP mm
PRESSURE p.s.i.
MAXIMUM GAP in

Figures show the maximum permissible gap all on one side using the minimum clearance $\emptyset$ and maximum bore $\emptyset$

100	160	250	350
0.60	0.50	0.45	0.35
1500	2400	3750	5250
0.024	0.020	0.018	0.014

SURFACE ROUGHNESS

DYNAMIC SEALING FACE $\emptyset D_1$
STATIC SEALING FACE $\emptyset d_1$
STATIC HOUSING FACES L_1

μmRa	μmRt	$\mu inCLA$	$\mu inRMS$
0.1 $\leftrightarrow$ 0.4	4 max	4 $\leftrightarrow$ 16	5 $\leftrightarrow$ 18
1.6 max	10 max	63 max	70 max
3.2 max	16 max	125 max	140 max

CHAMFERS & RADII

GROOVE SECTION $\leq S$ mm
MIN CHAMFER C mm
MAX FILLET RAD r_1 mm
GROOVE SECTION $\leq S$ in
MIN CHAMFER C in
MAX FILLET RAD r_1 in

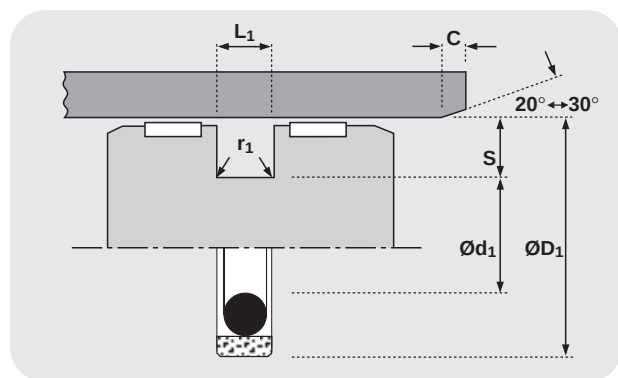
3.75	5.50	7.75	10.50	12.25
2.00	2.50	5.00	7.50	10.00
0.40	0.80	1.20	1.60	2.00
0.147	0.216	0.305	0.413	0.483
0.093	0.125	0.156	0.187	0.305
0.016	0.016	0.032	0.032	0.032

TOLERANCES

mm

in

$\emptyset D_1$	$\emptyset d_1$	L_1
H9	f8	+0.2 -0
H9	f8	+0.008 -0



FEATURES

- LOW STICK/SLIP
- LOW BREAKOUT & RUNNING FRICTION
- HIGH MAXIMUM SPEED
- COMPACT PISTON DESIGN
- THE SEAL RING COMPONENT CAN BE MACHINED TO ANY SIZE

MATERIALS

Face material - O-Ring last two digits of part number

Standard material
15% Glass/PTFE - NBR - - - - - 10

Material options:
15% Glass/PTFE - FKM - - - - - 11
Bronze/PTFE - NBR - - - - - 20
Bronze/PTFE - FKM - - - - - 21

DESIGN

The Hallite 54 double acting piston seal provides the designer with a compact, low friction seal for light to medium duty hydraulic cylinders.

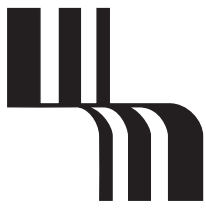
It comprises a PTFE ring, strengthened with additives to resist creep, which is pre-loaded by an O ring to be effective for the operating pressure range recommended. As the pressure rises the O ring deforms and compresses the PTFE ring against the tube wall increasing the sealing force and the effectiveness of the seal. As only the PTFE ring is in contact with the sliding surface, friction is very low and stick-slip movement is eliminated.

The housing width allows the designer to use a narrow width piston, but it is recommended an adequate bearing is mounted either side of the seal as shown.*

A number of material options can be provided to extend operating conditions. Please ensure that the correct part number is specified for the material option as indicated. Technical details shown are for 15% Glass/PTFE and NBR energiser. Technical details for material options should be requested from Hallite Seals. The Hallite 54 seal is not recommended for applications where it is necessary for the pressurised cylinder to maintain the load in a set position.

*See Hallite 87 and 506 wear ring data sheets.

NB: Part numbers suffixed by “+” indicate housing sizes to meet ISO 7425-1.



Piston seals

Hallite



TECHNICAL DETAILS

METRIC

INCH

OPERATING CONDITIONS

MAXIMUM SPEED 0.5 m/sec
MAXIMUM TEMPERATURE -30°C + 100°C
MAXIMUM PRESSURE 500 bar

1.5 ft/sec
-22°F + 212°F
7500 p.s.i.

MAXIMUM EXTRUSION GAP

Figures show the maximum permissible gap all on one side using the minimum clearance $\emptyset$ and maximum bore $\emptyset$

PRESSURE bar	160	250	400	500
MAXIMUM GAP mm	0.35	0.3	0.2	0.1
PRESSURE p.s.i.	2400	3750	6000	7500
MAXIMUM GAP in	0.016	0.012	0.008	0.004

SURFACE ROUGHNESS

DYNAMIC SEALING FACE $\emptyset D_1$	μmRa	μmRt	μinCLA	μinRMS
STATIC SEALING FACE $\emptyset d_1$	0.1 $\leftrightarrow$ 0.4	4 max	4 $\leftrightarrow$ 16	5 $\leftrightarrow$ 18
STATIC HOUSING FACES L_1	1.6 max	10 max	63 max	70 max
	3.2 max	16 max	125 max	140 max

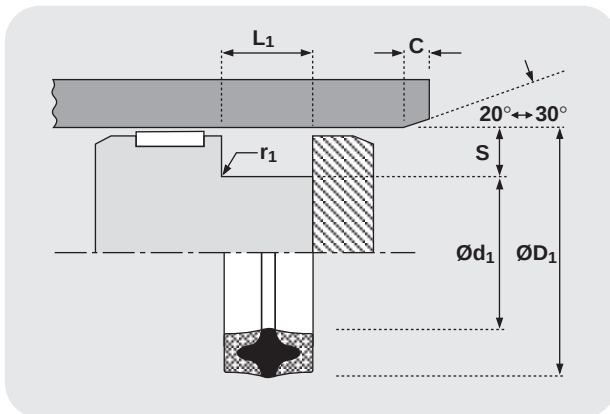
CHAMFERS & RADII

GROOVE SECTION $\leq S$ mm	5.0	7.5	8.0	10.0	12.5
MIN CHAMFER C mm	2.4	4.0	5.0	5.0	6.5
MAX FILLET RAD r_1 mm	0.4	0.8	0.8	1.2	1.6
GROOVE SECTION $\leq S$ in	0.250	0.312	0.375	0.500	0.625
MIN CHAMFER C in	0.125	0.156	0.187	0.217	0.250
MAX FILLET RAD r_1 in	0.016	0.016	0.032	0.032	0.046

TOLERANCES

$\emptyset D_1$	$\emptyset d_1$	L_1
H11	js11	+0.25 +0
H11	js11	+0.030 +0.020

mm
in



FEATURES

- WELL PROVEN DESIGN
- TOLERANT TO CONTAMINATION
- WIDE RANGE OF NON STANDARD SIZES

DESIGN

A medium to heavy duty double acting seal, the Hallite 56 has shown itself over many years to be an effective and robust piston seal in a wide variety of applications. Designed for split pistons it offers the benefits in terms of sealing efficiency and low friction gained from rubber/fabric and a specific proportion of rubber in contact with the cylinder surface.

The centre of the seal is rubber which is bonded to two 'U' section bases of rubberised fabric, and is compressed by the housing to obtain an effective low pressure seal. When the pressure increases the rubber energises the 'U' section and deforms it to the housing, increasing the sealing area and improving the seal.

Rubberised fabric is used to protect the rubber because it has strength and durability which combines with its ability to retain lubricant, to help keep friction low and reduce wear.

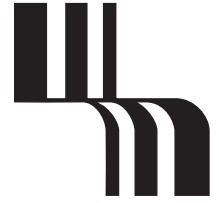
The proportions of the range have been determined to give a satisfactory performance when used with the recommended operating conditions. Many other sizes are available outside this range.



57

Piston seals

Hallite



TECHNICAL DETAILS

METRIC

INCH

OPERATING CONDITIONS

MAXIMUM SPEED 0.5 m/sec
MAXIMUM TEMPERATURE -30°C + 100°C
MAXIMUM PRESSURE 700 bar

1.5 ft/sec
-22°F + 212°F
10,000 p.s.i.

MAXIMUM EXTRUSION GAP

PRESSURE bar
MAXIMUM GAP mm
PRESSURE p.s.i.
MAXIMUM GAP in

Figures show the maximum permissible gap all on one side using the minimum clearance $\emptyset$ and maximum bore $\emptyset$

160	250	400	700
0.7	0.6	0.5	0.3
2400	3750	6000	10,000
0.028	0.024	0.020	0.012

SURFACE ROUGHNESS

DYNAMIC SEALING FACE $\emptyset D_1$
STATIC SEALING FACE $\emptyset d_1$
STATIC HOUSING FACES L_1

μmRa	μmRt	$\mu inCLA$	$\mu inRMS$
0.1 $\leftrightarrow$ 0.4	4 max	4 $\leftrightarrow$ 16	5 $\leftrightarrow$ 18
1.6 max	10 max	63 max	70 max
3.2 max	16 max	125 max	140 max

CHAMFERS & RADII

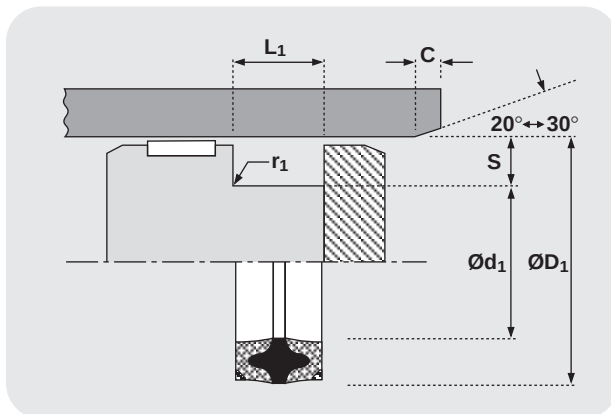
GROOVE SECTION $\leq S$ mm
MIN CHAMFER C mm
MAX FILLET RAD r_1 mm
GROOVE SECTION $\leq S$ in
MIN CHAMFER C in
MAX FILLET RAD r_1 in

7.5	10.0	12.5	15.0
4.0	5.0	6.5	7.5
0.8	0.8	1.2	1.6
0.250	0.312	0.375	0.500
0.125	0.156	0.187	0.217
0.016	0.016	0.032	0.046

TOLERANCES

mm
in

$\emptyset D_1$	$\emptyset d_1$	L_1
H11	js11	+0.25 +0
H11	js11	+0.030 +0.020



FEATURES

- WELL PROVEN DESIGN
- TOLERANT TO CONTAMINATION
- ANTI-EXTRUSION RINGS

DESIGN

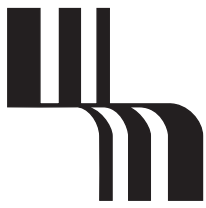
The Hallite 57 piston seal, designed for split pistons, is a medium to heavy duty double acting seal. It has the advantage of external anti-extrusion rings which enable the designer to use larger clearances.

The anti-extrusion rings are usually triangular section glass filled nylon but some seals use rectangular section polyacetal rings.

The centre of the seal is rubber which is bonded to two 'U' section bases of rubberised fabric and is compressed by the housing to obtain an effective low pressure seal. When the pressure increases the rubber energises the 'U' section and deforms it to the housing, increasing the sealing area and improving the seal. The movement of the base expands the diameter of the anti-extrusion ring to close the gap and protect the seal from damage.

Rubberised fabric is used to protect the rubber because it has strength and durability which combines with its ability to retain lubricant, to help keep friction low and reduce wear.

The proportions of the range have been determined to give a satisfactory performance when used with the recommended operating conditions.



Piston seals

Hallite



TECHNICAL DETAILS

METRIC

INCH

OPERATING CONDITIONS

MAXIMUM SPEED 0.5 m/sec
 MAXIMUM TEMPERATURE -30°C + 100°C
 MAXIMUM PRESSURE 700 bar

1.5 ft/sec
 -22°F + 212°F
 10,000 p.s.i.

SURFACE ROUGHNESS

DYNAMIC SEALING FACE $\varnothing D_1$ 0.1 ↔ 0.4 4 max
 STATIC SEALING FACE $\varnothing d_1$ $\varnothing d_2$ 1.6 max 10 max
 STATIC HOUSING FACES $\varnothing d_3$ L_1 L_2 3.2 max 16 max

μinCLA μinRMS
 4 ↔ 16 5 ↔ 18
 63 max 70 max
 125 max 140 max

CHAMFERS & RADII

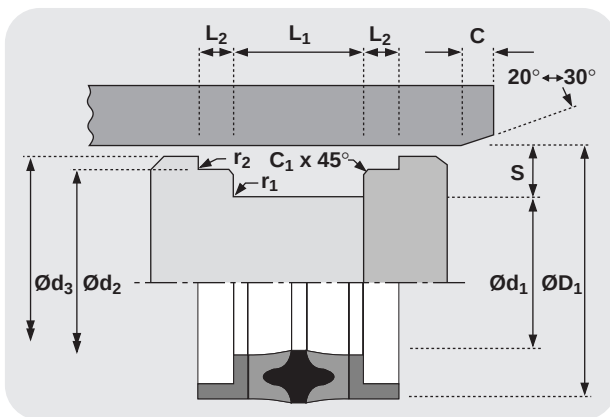
GROOVE SECTION $\leq S$ mm 5.0 7.5 10.0 12.5 15.0
 MIN CHAMFER C mm 2.5 4.0 5.0 6.5 7.5
 MIN CHAMFER C_1 mm 1.0 1.0 1.0 1.5 1.5
 MAX FILLET RAD r_1 mm 0.2 0.2 0.2 0.4 0.4
 MAX FILLET RAD r_2 mm 0.2 0.2 0.2 0.4 0.4

GROOVE SECTION $\leq S$ in 0.187 0.250 0.312 0.375 0.500 0.625
 MIN CHAMFER C in 0.093 0.125 0.156 0.187 0.217 0.250
 MIN CHAMFER C_1 in 0.032 0.032 0.032 0.062 0.062 0.062
 MAX FILLET RAD r_1 in 0.008 0.008 0.008 0.008 0.016 0.016
 MAX FILLET RAD r_2 in 0.008 0.008 0.008 0.008 0.016 0.016

TOLERANCES

mm
 in

$\varnothing D_1$ $\varnothing d_1$ $\varnothing d_2$ $\varnothing d_3$ L_1 L_2
 H11 js11 h9 js11 +0.25 -0 0 -0.15
 H11 js11 h9 js11 +0.035 +0.025 0 -0.005



FEATURES

- WELL PROVEN DESIGN
- TOLERANT TO CONTAMINATION
- HIGH PRESSURE CAPABILITY

DESIGN

The Hallite 58 double acting piston seal combines the Hallite 56 seal with bearing rings to give a very robust heavy duty seal assembly for split pistons. It enables the designer to use larger clearances and, with the integral bearing rings, to restrict the piston length.

The assembly comprises a seal and two L shaped bearings. The centre of the seal is rubber which is bonded to two 'U' section bases of rubberised fabric, and is compressed by the housing to obtain an effective low pressure seal. When the pressure increases the rubber energises the 'U' section and deforms it to the housing, increasing the sealing area and improving the seal.

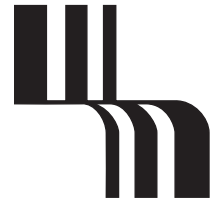
Rubberised fabric is used to protect the rubber, because it has strength and durability which combines with its ability to retain lubricant to help keep friction low and reduce wear.

Supporting the seal at either end is a polyacetal bearing proportioned to react to the pressure on the seal to prevent extrusion damage, and support the piston and its side load.



Piston seals

Hallite



64

TECHNICAL DETAILS

METRIC

INCH

OPERATING CONDITIONS

MAXIMUM SPEED 0.5 m/sec
MAXIMUM TEMPERATURE -30°C + 100°C
MAXIMUM PRESSURE 400 bar

1.5 ft/sec
-22°F + 212°F
6000 p.s.i.

SURFACE ROUGHNESS

DYNAMIC SEALING FACE $\varnothing D_1$ 0.1 ↔ 0.4 4 max
STATIC SEALING FACE $\varnothing d_1$ $\varnothing d_2$ 1.6 max 10 max
STATIC HOUSING FACES $\varnothing d_3$ L_1 L_2 3.2 max 16 max

μinCLA μinRMS
4 ↔ 16 5 ↔ 18
63 max 70 max
125 max 140 max

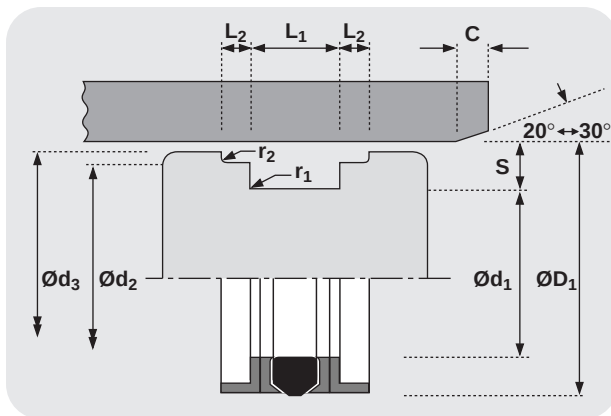
CHAMFERS & RADII

	5.0	7.0	8.0	9.0	11.0	12.5
GROOVE SECTION $\leq S$ mm	5.0	7.0	8.0	9.0	11.0	12.5
MIN CHAMFER C mm	2.5	4.0	5.0	5.0	6.5	6.5
MAX FILLET RAD r_1 mm	0.4	0.4	0.4	0.4	0.4	0.4
MAX FILLET RAD r_2 mm	0.2	0.2	0.2	0.2	0.4	0.4

TOLERANCES

mm

$\varnothing D_1$	$\varnothing d_1$	$\varnothing d_2$	$\varnothing d_3$	L_1	L_2
H10	h9	h9	h11	+0.2 -0	+0.1 -0



FEATURES

- COMPACT SEAL DESIGN
- EASY ASSEMBLY
- POSITIVE NO DRIFT SEAL

DESIGN

A robust seal assembly designed specifically for one piece pistons, the Hallite 64 double acting seal uses a rubber sealing element which has proved itself in service to be extremely wear resistant and capable of working most effectively in a wide variety of medium to heavy duty applications.

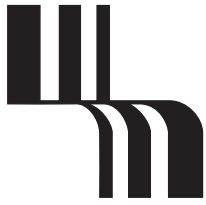
The assembly comprises a rubber seal, two split support rings and two split bearings, one of each located either side of the seal. The nitrile rubber seal is designed to have its section compressed by the housing, to ensure a low pressure seal, and when pressurised be protected from extrusion damage by the extending lips of the support ring. The support ring is manufactured from a tough but flexible polymer and scarf cut for assembly.

L section bearings provide the support and guidance for the piston and the other parts of the seal.

For seals up to 90mm diameter $\varnothing d_3$ is not required. Above 90mm diameter the seals benefit from the additional support of the L-section bearings.

All seals are also suitable for two piece housings.

Note : Other sizes of this design of seal are shown under Hallite 50, 53 and 68. Also see Hallite 753 for interchangeable sizes.



Piston seals

Hallite



TECHNICAL DETAILS

METRIC

INCH

OPERATING CONDITIONS

MAXIMUM SPEED 0.5 m/sec
 MAXIMUM TEMPERATURE -30°C + 100°C
 MAXIMUM PRESSURE 200 bar

1.5 ft/sec
 -22°F + 212°F
 3000 p.s.i.

SURFACE ROUGHNESS

DYNAMIC SEALING FACE $\varnothing D_1$ 0.1 ↔ 0.4 4 max
 STATIC SEALING FACE $\varnothing d_1$ $\varnothing d_2$ 1.6 max 10 max
 STATIC HOUSING FACES $\varnothing d_3$ L_1 L_2 3.2 max 16 max

μinCLA μinRMS
 4 ↔ 16 5 ↔ 18
 63 max 70 max
 125 max 140 max

CHAMFERS & RADII

GROOVE SECTION $\leq S$ mm 3.75 5.00 6.50 8.00 10.00
 MIN CHAMFER C mm 2.00 2.50 4.00 5.00 5.00
 MAX FILLET RAD r_1 mm 0.40 0.40 0.40 0.80 0.80
 MAX FILLET RAD r_2 mm 0.20 0.20 0.20 0.40 0.40

GROOVE SECTION $\leq S$ in 0.156 0.187 0.250 0.312 0.375
 MIN CHAMFER C in 0.078 0.093 0.125 0.156 0.187
 MAX FILLET RAD r_1 in 0.016 0.016 0.016 0.032 0.032
 MAX FILLET RAD r_2 in 0.008 0.008 0.008 0.016 0.016

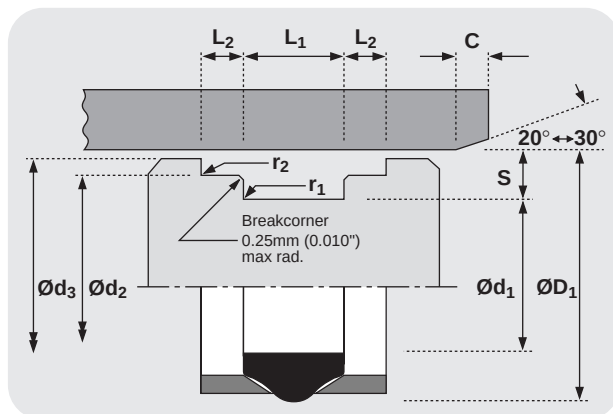
TOLERANCES

mm

$\varnothing D_1$ $\varnothing d_1$ $\varnothing d_2$ $\varnothing d_3$ L_1 L_2
 H10 h9 h9 h11 +0.4 +0.13 0 -0.13

in

H10 h9 h9 h11 +0.015 +0.005 0 -0.005



DESIGN

Ideal for light to medium duty one piece piston applications, the Hallite 65 double acting seal is a simple, effective and economical design for pressures up to 200 bar/3000 p.s.i. Its compact dimensions enable the designer to keep the length of the piston to a minimum.

It is an assembly of a continuous rubber seal and two scarf cut bearings.

The nitrile rubber seal is designed to be pre-loaded by the housing to ensure an effective seal at low pressure. The outward thrust of the rubber seal on the bearings as it reacts to increasing pressure prevents any extrusion damage in the sealing area.

The polyacetal bearings are proportioned to support the piston and its side load.

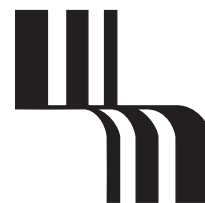
FEATURES

- COMPACT DESIGN
- EASY ASSEMBLY
- LOW WEAR
- LONG LIFE



Piston seals

Hallite



68

TECHNICAL DETAILS

METRIC

INCH

OPERATING CONDITIONS

MAXIMUM SPEED 0.5 m/sec
 MAXIMUM TEMPERATURE -30°C + 100°C
 MAXIMUM PRESSURE 500 bar

1.5 ft/sec
 -22°F + 212°F
 7500 p.s.i.

SURFACE ROUGHNESS

DYNAMIC SEALING FACE $\varnothing D_1$ 0.1 ↔ 0.4 4 max
 STATIC SEALING FACE $\varnothing d_1$ $\varnothing d_2$ 1.6 max 10 max
 STATIC HOUSING FACES $\varnothing d_3$ L_1 L_2 3.2 max 16 max

μinCLA μinRMS
 4 ↔ 16 5 ↔ 18
 63 max 70 max
 125 max 140 max

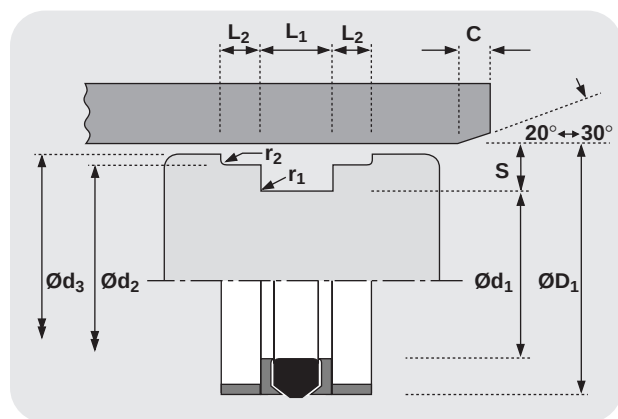
CHAMFERS & RADII

	5.0	7.5	10.0	12.5	15.0
GROOVE SECTION $\leq S$ mm	5.0	7.5	10.0	12.5	15.0
MIN CHAMFER C mm	2.5	4.0	5.0	6.5	7.5
MAX FILLET RAD r_1 mm	0.4	0.4	0.4	0.8	0.8
MAX FILLET RAD r_2 mm	0.4	0.4	0.4	0.8	0.8

TOLERANCES

mm

$\varnothing D_1$	$\varnothing d_1$	$\varnothing d_2$	$\varnothing d_3$	L_1	L_2
H10	h9	h9	h11	+0.35 +0.1	+0.1 -0



FEATURES

- ISO 6547 HOUSING
- COMPACT GROOVE DESIGN
- POSITIVE NO DRIFT SEAL

DESIGN

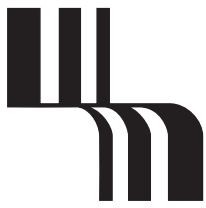
A robust seal assembly designed specifically for one piece pistons, the Hallite 68 double acting seal uses a rubber sealing element which has proved itself in service to be extremely wear resistant and capable of working most effectively in a wide variety of medium to heavy duty applications. The seal is also suitable for two piece pistons.

The assembly comprises a rubber seal, two split support rings and two split bearings, one of each located either side of the seal. The nitrile rubber seal is designed to have its section compressed by the housing, to ensure a low pressure seal, and when pressurised be protected from extrusion damage by the extending lips of the support ring. The support ring is manufactured from a tough but flexible polymer and scarf cut for assembly.

Polyacetal rectangular section bearings provide the support and guidance for the piston and the other parts of the seal.

NB: All sizes are suitable for the larger radial section housings to ISO 6547 and are suffixed ‡

Other sizes of this design of seal are shown under Hallite 50, 53 and 64.



Piston seals

Hallite



6
7

TECHNICAL DETAILS

METRIC

INCH

OPERATING CONDITIONS

MAXIMUM SPEED
MAXIMUM TEMPERATURE
MAXIMUM PRESSURE

0.5 m/sec
-40°C + 100°C
200 bar

1.5 ft/sec
-40°F + 212°F
3000 p.s.i.

MAXIMUM EXTRUSION GAP

PRESSURE bar
PRESSURE p.s.i.
MAXIMUM GAP in

Figures show the maximum permissible gap all on one side using the minimum clearance $\emptyset$ and maximum bore $\emptyset$

70	140	200
1000	2000	3000
0.018	0.010	0.005

SURFACE ROUGHNESS

DYNAMIC SEALING FACE $\emptyset D_1$
STATIC SEALING FACE $\emptyset d_1$
STATIC HOUSING FACES L_1

μmRa	μmRt	$\mu inCLA$	$\mu inRMS$
0.1 $\leftrightarrow$ 0.4	4 max	4 $\leftrightarrow$ 16	5 $\leftrightarrow$ 18
0.8 max	5 max	32 max	35 max
1.6 max	10 max	63 max	70 max

CHAMFERS & RADII

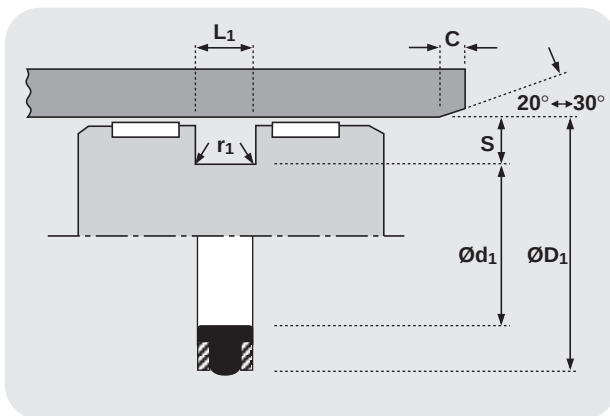
GROOVE SECTION $\leq S$ in
MIN CHAMFER C in
MAX FILLET RAD r_1 in

0.125	0.187	0.250
0.093	0.125	0.187
0.016	0.016	0.016

TOLERANCES

$\emptyset D_1 \leq 2.625$ in
 $\emptyset D_1 \leq 6.250$ in
 $\emptyset D_1 > 6.250$ in

$\emptyset D_1$	$\emptyset d_1$	L_1
± 0.001	$+ 0.002 - 0.000$	$+ 0.005 - 0.000$
± 0.002	$+ 0.003 - 0.001$	$+ 0.005 - 0.000$
± 0.003	$+ 0.004 - 0.002$	$+ 0.005 - 0.000$



DESIGN

The Hallite 76, also known as a T seal, is an extremely compact seal comprising a T shaped nitrile rubber sealing element and two split nylon anti-extrusion rings. Originally designed to replace a standard O ring, this seal offers lower friction and vastly improved resistance to extrusion. Its compact size allows the designer to keep the length of the piston to a minimum. A one piece aluminium, cast iron or bronze piston can be used, or a steel piston with remote bearing rings can also house this seal.

The rubber element is simply stretched over the piston and snapped into the groove. Then the anti-extrusion rings are clipped into position on each side of the element.

FEATURES

- COMPACT GROOVE DESIGN
- WELL PROVEN DESIGN
- LOW FRICTION SEAL TO REPLACE O-RINGS

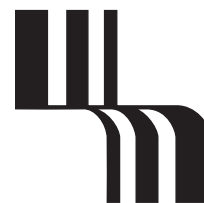
Please contact your local Hallite sales office for availability.

NOTE: Also see Hallite 770



Piston seals

Hallite



TECHNICAL DETAILS

METRIC

INCH

OPERATING CONDITIONS

MAXIMUM SPEED 0.5 m/sec
MAXIMUM TEMPERATURE -30°C + 100°C
MAXIMUM PRESSURE 350 bar

1.5 ft/sec
-22°F + 212°F
6000 p.s.i.

SURFACE ROUGHNESS

DYNAMIC SEALING FACE $\varnothing D_1$ 0.1 ↔ 0.4 4 max
STATIC SEALING FACE $\varnothing d_1$ $\varnothing d_2$ 1.6 max 10 max
STATIC HOUSING FACES $\varnothing d_3$ L_1 L_2 3.2 max 16 max

μinCLA μinRMS
4 ↔ 16 5 ↔ 18
63 max 70 max
125 max 140 max

CHAMFERS & RADII

GROOVE SECTION $\leq S$ mm 3.75 5.00 6.50
MIN CHAMFER C mm 2.00 2.50 4.00
MAX FILLET RAD r_1 mm 0.40 0.40 0.40
MAX FILLET RAD r_2 mm 0.20 0.20 0.20

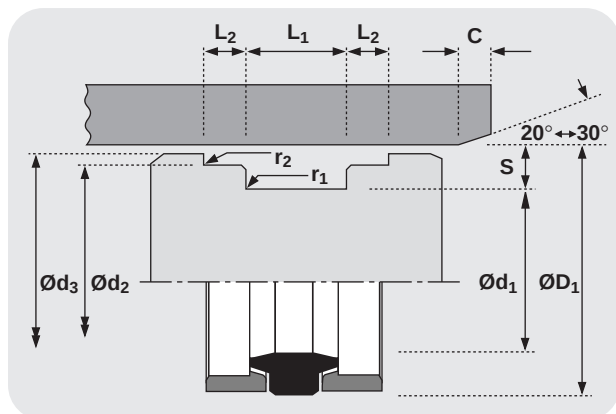
GROOVE SECTION $\leq S$ in 0.156 0.187 0.250
MIN CHAMFER C in 0.078 0.093 0.125
MAX FILLET RAD r_1 in 0.016 0.016 0.016
MAX FILLET RAD r_2 in 0.008 0.008 0.008

TOLERANCES

mm

in

$\varnothing D_1$	$\varnothing d_1$	$\varnothing d_2$	$\varnothing d_3$	L_1	L_2
H10	h9	h9	h11	+0.4 +0.13	0 -0.13
H10	h9	h9	h11	+0.015 +0.005	0 -0.005



DESIGN

Ideal for light to medium duty one piece piston applications, the Hallite 77 seal is a simple, effective and economical design. Its compact dimensions enable the designer to keep the length of the piston to a minimum.

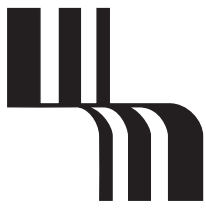
It is an assembly of a continuous rubber seal and two scarf cut bearings.

The nitrile rubber seal is designed to be pre-loaded by the housing to ensure an effective seal at low pressure. The outward thrust of the rubber seal on the bearings as it reacts to increasing pressure prevents any extrusion damage in the sealing area.

The pair of polyacetal bearings are proportioned to support the piston and its side load.

FEATURES

- COMPACT DESIGN
- EASY ASSEMBLY
- LOW WEAR
- LONG LIFE



Piston seals

Hallite



TECHNICAL DETAILS

METRIC

INCH

OPERATING CONDITIONS

MAXIMUM SPEED
MAXIMUM TEMPERATURE
MAXIMUM PRESSURE

0.5 m/sec
-30°C + 100°C
400 bar

1.5 ft/sec
-22°F + 212°F
6000 p.s.i.

MAXIMUM EXTRUSION GAP

PRESSURE bar
PRESSURE p.s.i.
MAXIMUM GAP in

Figures show the maximum permissible gap all on one side using the minimum clearance $\emptyset$ and maximum bore $\emptyset$

160	250	400
2400	3750	6000
0.024	0.020	0.016

SURFACE ROUGHNESS

DYNAMIC SEALING FACE $\emptyset D_1$
STATIC SEALING FACE $\emptyset d_1$ $\emptyset d_2$
STATIC HOUSING FACES $\emptyset d_3$ L_1 L_2

μmRa	μmRt	$\mu inCLA$	$\mu inRMS$
0.1 $\leftrightarrow$ 0.4	4 max	4 $\leftrightarrow$ 16	5 $\leftrightarrow$ 18
1.6 max	10 max	63 max	70 max
3.2 max	16 max	125 max	140 max

CHAMFERS & RADII

GROOVE SECTION $\leq S$ in
MIN CHAMFER C in
MAX FILLET RAD r_1 in
MAX FILLET RAD r_2 in

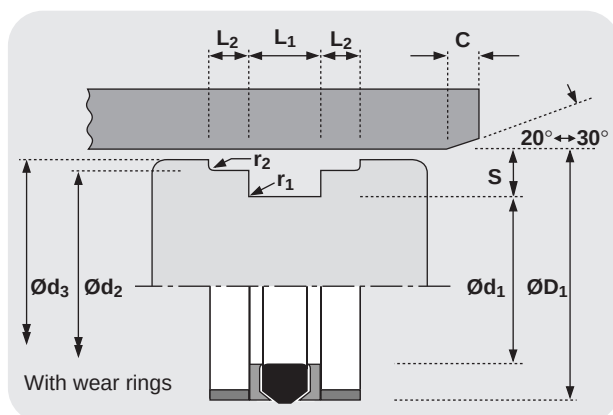
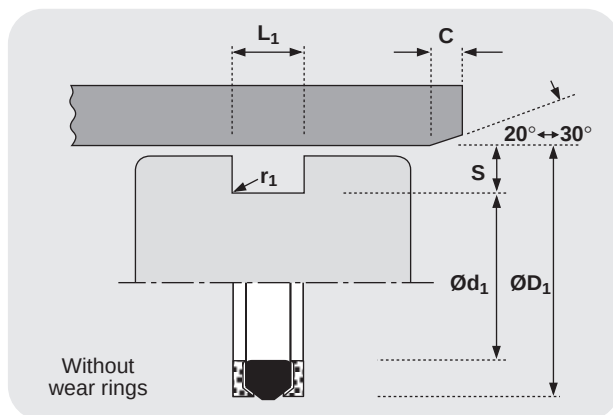
0.187	0.250	0.375
0.156	0.187	0.250
0.010	0.016	0.016
0.010	0.016	0.016

TOLERANCES

in
 $\emptyset d_2$ in $\geq$

$\emptyset D_1$	$\emptyset d_1$	$\emptyset d_3$	L_1	L_2
± 0.005	± 0.005	± 0.005	± 0.005	$+0.004 -0$
1.5	2.5	3.5		
-0.001 -0.003	-0.001 -0.004	-0.001 -0.005		

83



DESIGN-

The Hallite 83 Tri-Seal assembly offers the engineer many advantages when considering the design of cast iron, bronze, alloy etc. one-piece pistons in double-acting hydraulic cylinders, not the least being cost effectiveness with long and efficient seal life.

The Tri-Seal consists of two split plastic anti-extrusion rings and a nitrile synthetic rubber sealing member. Under pressure, the seal exerts a wedging action on the anti-extrusion ring, reducing the clearance between the cylinder bore and the piston, thus minimising the possibility of extrusion of the seal.

Wear rings are also available for this assembly, allowing the designer to benefit from the following advantages :

- Eliminate metal to metal contact in the bore
- One piece steel piston
- Improved alignment for optimum seal life
- Smoother operation

Note : For availability of sizes not listed please consult your local Hallite sales department.

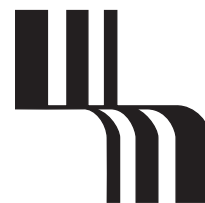
When ordering Hallite 83 with wear rings please replace the last digit of the part number as indicated:

Without wear rings									
Last digit of part no.									0
With wear rings									
Last digit of part no.									9



Piston seals

Hallite



707

TECHNICAL DETAILS

OPERATING CONDITIONS

MAXIMUM SPEED
MAXIMUM TEMPERATURE
MAXIMUM PRESSURE

0.5 m/sec
-30°C + 100°C
250 bar

1.5 ft/sec
-22°F + 212°F
3500 p.s.i.

SURFACE ROUGHNESS

DYNAMIC SEALING FACE $\varnothing D_1$
STATIC SEALING FACE $\varnothing d_1$ $\varnothing d_2$
STATIC HOUSING FACES $\varnothing d_3$ L_1 L_2

μmRa μmRt
0.1 ↔ 0.4 4 max
1.6 max 10 max
3.2 max 16 max

μinCLA μinRMS
4 ↔ 16 5 ↔ 18
63 max 70 max
125 max 140 max

CHAMFERS & RADII

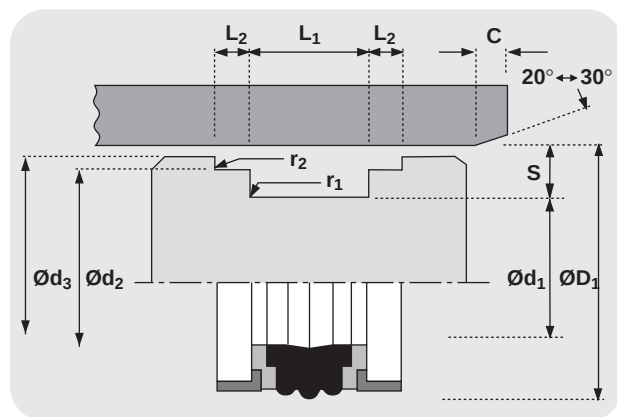
GROOVE SECTION $\leq S$ mm
MIN CHAMFER C mm
MAX FILLET RAD r_1 mm
MAX FILLET RAD r_2 mm

5.0	7.5	8.0	10.0	12.5	15.0
2.4	4.0	5.0	5.0	6.5	7.5
0.4	0.4	0.4	0.4	0.8	0.8
0.4	0.4	0.4	0.4	0.8	0.8

TOLERANCES

mm

$\varnothing D_1$	$\varnothing d_1$	$\varnothing d_2$	$\varnothing d_3$	L_1	L_2
H10	-0 +0.1	+0 -0.05	±0.2	-0 +0.2	± 0.1



DESIGN

The Hallite 707 is a compact double acting seal assembly for one piece pistons.

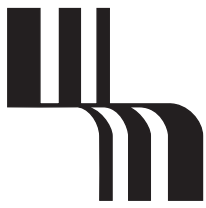
The assembly comprises a rubber sealing element, two split support rings and two split wear rings.

The nitrile rubber seal is designed to have its section compressed by the housing to ensure a good low pressure seal. When pressurised, it is protected from extrusion damage by the profiled support rings which are manufactured from a tough flexible polymer and scarf-cut for assembly.

The wear rings are fitted into a recess in the support ring; being pressure activated, they help to guide and support the piston, eliminating any metal to metal contact.

FEATURES

- COMPACT DESIGN
- EASY INSTALLATION
- WIDE RANGE OF APPLICATIONS



Piston seals

Hallite

TECHNICAL DETAILS

OPERATING CONDITIONS

MAXIMUM SPEED
MAXIMUM TEMPERATURE
MAXIMUM PRESSURE

2.0 m/sec
-30°C + 150°C
800 bar

6.0 ft/sec
-22°F + 300°F
11,600 p.s.i.

MAXIMUM EXTRUSION GAP

PRESSURE bar
MAXIMUM GAP $\varnothing D_1 \leq 5.000$ in
MAXIMUM GAP $\varnothing D_1 > 5.000$ in
PRESSURE psi

Figures show the maximum permissible gap all on one side using the minimum clearance $\varnothing$ and maximum bore $\varnothing$

350	550	750
0.055	0.047	0.040
0.070	0.062	0.055
5000	8000	11,000

SURFACE ROUGHNESS

DYNAMIC SEALING FACE $\varnothing D_1$
STATIC SEALING FACE $\varnothing d_1$
STATIC HOUSING FACES L_1

μmRa	μmRt	μinCLA	μinRMS
0.1 $\leftrightarrow$ 0.4	4 max	4 $\leftrightarrow$ 16	5 $\leftrightarrow$ 18
1.6 max	10 max	63 max	70 max
3.2 max	16 max	125 max	140 max

CHAMFERS & RADII

MIN FILLET RAD r_1 in
MAX FILLET RAD r_1 in
MAX FILLET RAD r_2 in

0.020
0.040
0.005

PORT DIAMETER

MAX $\varnothing H$ in

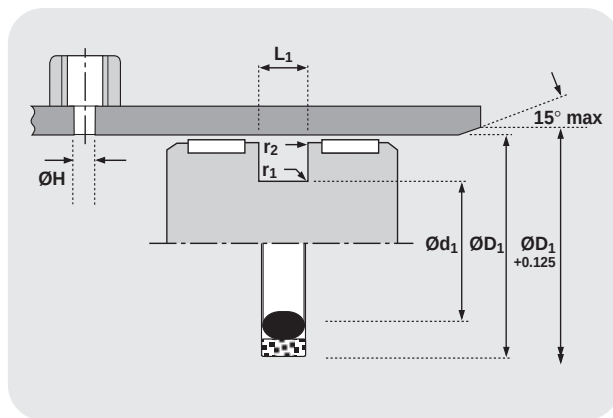
IF THE SEAL IS TO PASS OVER THE PORT

$L_1 \times 1.167$

TOLERANCES

in

$\varnothing D_1$	$\varnothing d_1$	L_1	$\varnothing D_2$
+0.005 -0	+0 -0.005	+0.005 -0	MIN



MATERIAL OPTIONS

Please contact your local Hallite sales office for additional information.

DESIGN

The Hallite 714 is a double acting seal capable of passing over ports. The reinforced, heat stabilised, thermoplastic sealing face, which is internally lubricated to reduce wear, expands and contracts to precisely fill gaps between the piston and the cylinder wall. The seal face has an integrated step joint for easy installation and has an oval section elastomeric energiser.

The seal can totally eliminate hydraulic piston drift, cold flow and leakage while avoiding metal to metal contact and greatly reducing abrasion and wear.

FEATURES

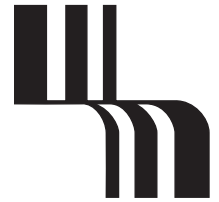
- SELF LUBRICATING
- EXPANDS TO FILL GAPS
- NO GALLING OR SCORING
- EXPANDS FOR EASY INSTALLATION
- OPERATES ON ALL COMMERCIAL HYDRAULIC TUBING
- INCREASES CYLINDER EFFECTIVENESS
- PASSES OVER PORTS
- REPLACES MULTIPLE PISTON RINGS
- BROAD MEDIA COMPATIBILITY



730

Piston seals

Hallite



METRIC

INCH

TECHNICAL DETAILS

OPERATING CONDITIONS

MAXIMUM SPEED
MAXIMUM TEMPERATURE
MAXIMUM PRESSURE

1.0 m/sec
-40°C +110°C
700 bar

3.0 ft/sec
-40°F + 230°F
10,000 p.s.i.

MAXIMUM EXTRUSION GAP

PRESSURE bar
MAXIMUM GAP mm
PRESSURE p.s.i.

Figures show the maximum permissible gap all on one side using the minimum clearance $\emptyset$ and maximum bore $\emptyset$

160	250	500	700
1.00	0.80	0.40	0.25
2400	3750	7500	10,000

SURFACE ROUGHNESS

DYNAMIC SEALING FACE $\emptyset D_1$
STATIC SEALING FACE $\emptyset d_1$ $\emptyset d_2$
STATIC HOUSING FACES L_1

μmRa	μmRt	μinCLA	μinRMS
0.1 $\leftrightarrow$ 0.4	4 max	4 $\leftrightarrow$ 16	5 $\leftrightarrow$ 18
1.6 max	10 max	63 max	70 max
3.2 max	16 max	125 max	140 max

CHAMFERS & RADII

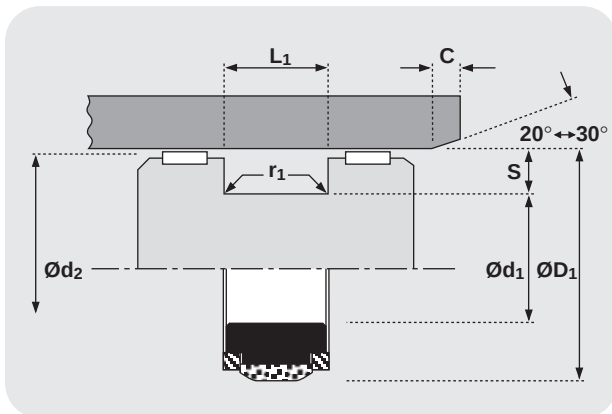
GROOVE SECTION $\leq S$ mm
MIN CHAMFER C mm
MAX FILLET RAD r_1 mm

7.5	10.0	12.5
4.0	5.0	6.5
0.2	0.4	0.8

TOLERANCES

mm

$\emptyset D_1$	$\emptyset d_1$	L_1
H10	h9	+0.2 -0



DESIGN

The Hallite 730 is a top of the range double acting piston seal. It is constructed with a tough wear resistant thermoplastic polyester elastomer (TPE) face, which is loaded by a profiled nitrile energiser. Material options can be provided for the sealing face, including lubricated polyester and PTFE. All designs have rectangular polyacetal anti-extrusion rings. The TPE face material is suitable for both roller-burnished and honed tubing.

FEATURES

- HIGH SHOCK LOAD CAPABILITY
- HIGH PRESSURE CAPABILITY
- PROVEN ON BOTH ROLLER-BURNISHED AND HONED TUBING



Piston seals

Hallite



735

TECHNICAL DETAILS

METRIC

INCH

OPERATING CONDITIONS

MAXIMUM SPEED
MAXIMUM TEMPERATURE
MAXIMUM PRESSURE

1.5 m/sec
-40°C +120°C
500 bar

4.5 ft/sec
-40°F + 250°F
7500 p.s.i.

MAXIMUM EXTRUSION GAP

PRESSURE bar
MAXIMUM GAP mm
PRESSURE p.s.i.
MAXIMUM GAP in

Figures show the maximum permissible gap all on one side using the minimum clearance $\emptyset$ and maximum bore $\emptyset$

160	250	400	500
1.0	0.8	0.6	0.5
2400	3750	6000	7500
0.040	0.030	0.024	0.020

SURFACE ROUGHNESS

DYNAMIC SEALING FACE $\emptyset D_1$
STATIC SEALING FACE $\emptyset d_1$
STATIC HOUSING FACES L_1

μmRa	μmRt	μinCLA	μinRMS
0.1 $\leftrightarrow$ 0.4	4 max	4 $\leftrightarrow$ 16	5 $\leftrightarrow$ 18
1.6 max	10 max	63 max	70 max
3.2 max	16 max	125 max	140 max

CHAMFERS & RADII

GROOVE SECTION $\leq S$ mm
MIN CHAMFER C mm
MAX FILLET RAD r_1 mm
GROOVE SECTION $\leq S$ in
MIN CHAMFER C in
MAX FILLET RAD r_1 in

7.0	7.5	11.5	14.0
4.0	5.0	7.0	8.0
0.8	0.8	0.8	0.8

0.187	0.240	0.365	0.470
0.160	0.200	0.250	0.280
0.016	0.016	0.035	0.035

TOLERANCES

mm
in
 $\emptyset D_1$ in
* $\emptyset d_1$ Tol =
*NB

$\emptyset D_1$	$\emptyset d_1$	L_1
H9	+0 -0.2	+0.2 -0
H9	*see below	+0.01 -0
≤ 3.000	≤ 4.500	≥ 4.500
+0 - 0.002	+0 - 0.003	+0 - 0.004
Part numbers 710600_ and 710800_ Tol = ± 0.003		

DESIGN

Hallite's 735 is a compact double acting piston seal assembly designed for one piece pistons and is suitable for low to high pressure, medium to heavy duty applications. The assembly comprises as standard a self lubricating wear resistant bronze filled or glass / MoS₂ filled PTFE cap ring, which is loaded by a NBR energiser. Thermoplastic split anti-extrusion rings support the seal on both sides and prevent contamination of the the energiser and cap ring.

Hallite's 735 piston seal is designed to be used in a variety of equipment and is particularly suited to use in earthmoving and other off-highway equipment.

The range consists of seals to suit popular North American and Asian housings.

FEATURES

- HIGH PRESSURE
- HEAVY DUTY
- PTFE CAP RING
- COMPACT DESIGN
- LOW FRICTION
- LONG LIFE
- RANGE OF MATERIAL OPTIONS TO EXTEND SERVICE TEMPERATURE RANGE

MATERIALS

Please ensure the correct part number is used for the required cap ring.

PTFE, 40% bronze
Last digit of part no. _ _ _ _ 0

or

PTFE, 15% glass 5% MoS₂
Last digit of part no. _ _ _ _ 1

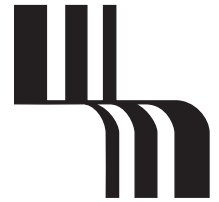
Products suffixed † are designed to suit popular Asian housings

For information about other material options available, please contact your local Hallite Seals office.



Piston seals

Hallite



753

TECHNICAL DETAILS

METRIC

INCH

OPERATING CONDITIONS

MAXIMUM SPEED 0.5 m/sec
 MAXIMUM TEMPERATURE -30°C + 100°C
 MAXIMUM PRESSURE 350 bar

1.5 ft/sec
 -22°F + 212°F
 5000 p.s.i.

SURFACE ROUGHNESS

DYNAMIC SEALING FACE $\varnothing D_1$ 0.1 ↔ 0.4 4 max
 STATIC SEALING FACE $\varnothing d_1$ $\varnothing d_2$ 1.6 max 10 max
 STATIC HOUSING FACES $\varnothing d_3$ L_1 L_2 3.2 max 16 max

μinCLA μinRMS
 4 ↔ 16 5 ↔ 18
 63 max 70 max
 125 max 140 max

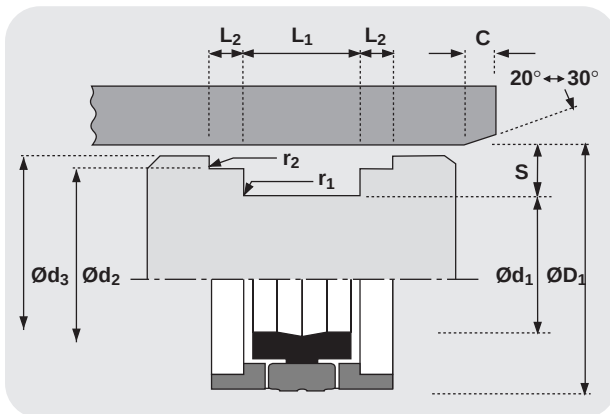
CHAMFERS & RADII

	5.0	7.5	8.0	10.0	12.5	15.0
GROOVE SECTION $\leq S$ mm	5.0	7.5	8.0	10.0	12.5	15.0
MIN CHAMFER C mm	4.0	4.0	5.0	5.0	6.5	7.5
MAX FILLET RAD r_1 mm	0.2	0.2	0.4	0.4	0.4	0.8
MAX FILLET RAD r_2 mm	0.2	0.2	0.2	0.2	0.2	0.4

TOLERANCES

mm

$\varnothing D_1$	$\varnothing d_1$	$\varnothing d_2$	$\varnothing d_3$	L_1	L_2
H11	h10	f9	h11	+0.4	+0.1 -0



PROFILE A

PROFILE B

Hallite 753 is manufactured using two different profiles as illustrated above. The parts list clearly indicates which profile is used for each size.

DESIGN

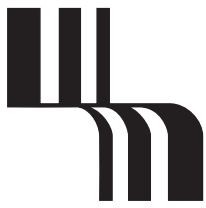
The Hallite 753 is a compact assembly designed and developed specifically for one piece pistons.

The assembly comprises a wear-resistant polyurethane slip ring which is loaded by an NBR ring. There are split 'L' shaped anti-extrusion bearings made from polyacetal resin on both sides of the seal.

The proportions of the range have been determined to give a satisfactory performance when used with the recommended operating conditions.

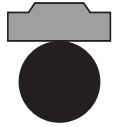
FEATURES

- LONG LIFE - DUE TO THE WEAR-RESISTANT POLYURETHANE SLIP RINGS
- EASY INSTALLATION



Piston seals

Hallite



452

TECHNICAL DETAILS

METRIC

INCH

OPERATING CONDITIONS

MAXIMUM SPEED 1.0 m/sec
MAXIMUM TEMPERATURE -40°C + 110°C
MAXIMUM PRESSURE 350 bar

3.0 ft/sec
-40°F + 230°F
5000 p.s.i.

MAXIMUM EXTRUSION GAP

Figures show the maximum permissible gap all on one side using the minimum clearance $\emptyset$ and maximum bore $\emptyset$

PRESSURE bar	100	160	250	350
MAXIMUM GAP (S>7) mm	1.0	0.8	0.6	0.4
MAXIMUM GAP (S<7) mm	0.8	0.6	0.5	0.3
PRESSURE p.s.i.	1500	2400	3750	5000

SURFACE ROUGHNESS

	μmRa	μmRt	μinCLA	μinRMS
DYNAMIC SEALING FACE $\emptyset D_1$	0.1 $\leftrightarrow$ 0.4	4 max	4 $\leftrightarrow$ 16	5 $\leftrightarrow$ 18
STATIC SEALING FACE $\emptyset d_1$	1.6 max	10 max	63 max	70 max
STATIC HOUSING FACES L_1	3.2 max	16 max	125 max	140 max

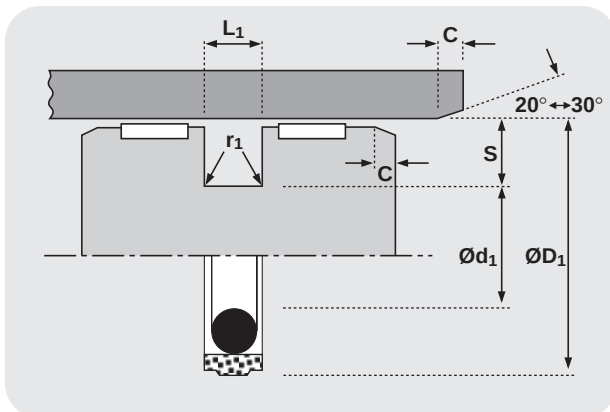
CHAMFERS & RADII

GROOVE SECTION $\leq S$ mm	3.75	5.50	7.50	10.50
MIN CHAMFER C mm	2.00	2.50	5.00	5.00
MAX FILLET RAD r_1 mm	0.40	0.80	1.20	1.60

TOLERANCES

$\emptyset D_1$	$\emptyset d_1$	L_1
H9	f8	+0.2 -0

mm



DESIGN

The Hallite 754 double acting piston seal is a compact low friction seal for light to medium duty hydraulic cylinders. As standard, it comprises a tough, wear resistant thermoplastic elastomer face, (see left for face material options) which is pre-loaded by an O ring. The housing width allows a narrow width piston to be used, but it is recommended that an adequate bearing is mounted on one or both sides of the seal. Housing dimensions for use with Hallite 87 and 506 bearing strip are given in the installation details. For further details of bearing strip grooves, please refer to the appropriate data sheets.

NB: Part numbers suffixed by “‡” indicate housing sizes to meet ISO 7425-1.

FEATURES

- LOW BREAK-OUT AND OPERATING FRICTION LEVELS.
- RAPID RECOVERY OF FACE AFTER ASSEMBLY. UNLIKE COMMON PTFE FACES, NO RE-SIZING IS REQUIRED.
- MORE TOLERANT TO CONTAMINATION THAN COMMON PTFE EQUIVALENTS.
- EXCELLENT POSITION HOLDING CHARACTERISTICS UNDER LOAD
- COMPATIBLE WITH MOST HYDRAULIC FLUIDS.
- EXCELLENT WEAR RESISTANCE.
- OPERATES ON A WIDE RANGE OF SURFACE FINISHES.
- IDEAL FOR USE WITH HALLITE 506 OR 87 BEARING STRIP.
- ISO 7425 HOUSINGS.

MATERIAL OPTIONS

Face material

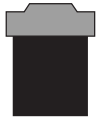
Polyester elastomer - standard (Red 55D)
Last digit of part no. **0**

Lubricated polyester elastomer
Last digit of part no. **2**

Hydrolysis stabilised polyester elastomer (Red 72D)
Last digit of part no. **3**

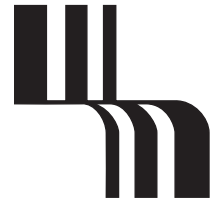
Hythane 181 - *A limited number of sizes are available in this material option*
Last digit of part no. **4**

For full details and availability please contact your local Hallite sales office. Technical details shown are for standard Red 55D polyester elastomer.



Piston seals

Hallite



755

TECHNICAL DETAILS

METRIC

INCH

OPERATING CONDITIONS

MAXIMUM SPEED 1.0 m/sec
MAXIMUM TEMPERATURE -40°C + 110°C
MAXIMUM PRESSURE 350 bar

3.0 ft/sec
-40°F + 230°F
5000 p.s.i.

MAXIMUM EXTRUSION GAP

PRESSURE bar
PRESSURE p.s.i.
MAXIMUM GAP (S>0.280) in
MAXIMUM GAP (S<0.280) in

Figures show the maximum permissible gap all on one side using the minimum clearance $\emptyset$ and maximum bore $\emptyset$

	100	160	250	350
1500	2400	3750	5000	
0.030	0.025	0.020	0.010	
0.025	0.020	0.015	0.005	

SURFACE ROUGHNESS

DYNAMIC SEALING FACE $\emptyset D_1$
STATIC SEALING FACE $\emptyset d_1$
STATIC HOUSING FACES L_1

μmRa	μmRt	$\mu inCLA$	$\mu inRMS$
0.1 $\leftrightarrow$ 0.4	4 max	4 $\leftrightarrow$ 16	5 $\leftrightarrow$ 18
1.6 max	10 max	63 max	70 max
3.2 max	16 max	125 max	140 max

CHAMFERS & RADII

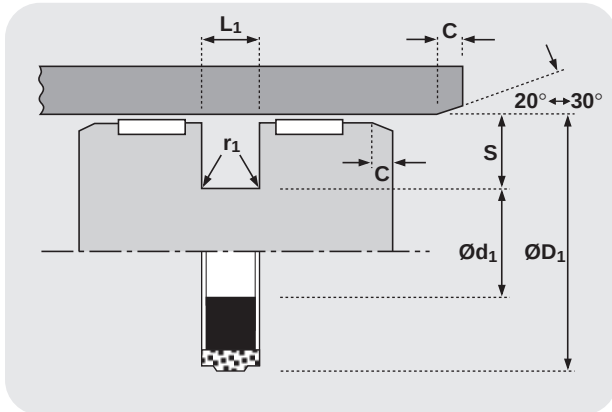
GROOVE SECTION $\leq S$ in
MIN CHAMFER C in
MAX FILLET RAD r_1 in

0.154	0.269	0.373	0.431
0.100	0.150	0.200	0.200
0.016	0.016	0.016	0.016

TOLERANCES

in
 $\emptyset D_1^* \geq$ in
 L_1
NB

$\emptyset D_1$	$\emptyset d_1$	
H9	js10	
1.000	3.000	5.250
± 0.002	± 0.003	± 0.004
Part numbers 449002_ and 443931_ $L_1 = \pm 0.003$		



MATERIALS

Standard face material:

Polyester elastomer - (red 55D)

Last digit of part no. - - - - - 0

Face material options:

Hydrolysis stabilised polyester elastomer (Grey 55D)

Last digit of part no. - - - - - 1

Lubricated polyester elastomer

Last digit of part no. - - - - - 2

Hydrolysis stabilised polyester elastomer (Red 72D)

Last digit of part no. - - - - - 3

Hythane 181 - A limited number of sizes are available in this material option

Last digit of part no. - - - - - 4

Technical details shown are for standard Red 55D polyester elastomer.

DESIGN

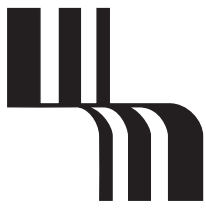
The Hallite 755 seal is a compact, low friction seal for light to medium duty hydraulic cylinders. Designed originally to the North American housing standards, the 755 is an inch version of Hallite's 754. It comprises of a very tough elastomeric face (see material options) which is pre-loaded by a square section ring (as North American convention). Please note part numbers marked * are supplied with an O ring energiser.

It is recommended that an adequate bearing is mounted on both sides of the seal. See Hallite 506 bearing strip.

For full details and availability please contact your local Hallite sales office.

FEATURES

- LOW BREAK-OUT AND OPERATING FRICTION LEVELS.
- RAPID RECOVERY OF FACE AFTER ASSEMBLY. UNLIKE COMMON PTFE FACES, NO RE-SIZING IS REQUIRED.
- MORE TOLERANT TO DIRT AND CONTAMINATION THAN COMMON PTFE EQUIVALENTS.
- EXCELLENT POSITION HOLDING CHARACTERISTICS UNDER LOAD
- COMPATIBLE WITH MOST HYDRAULIC FLUIDS.
- EXCELLENT WEAR RESISTANCE.
- OPERATES ON A WIDE RANGE OF SURFACE FINISHES.
- IDEAL FOR USE WITH HALLITE'S 506 BEARING STRIP



Piston seals

Hallite



TECHNICAL DETAILS

OPERATING CONDITIONS

MAXIMUM SPEED
MAXIMUM TEMPERATURE
MAXIMUM PRESSURE

1.0 m/sec
-40°C + 110°C
350 bar

3.0 ft/sec
-40°F + 230°F
5000 p.s.i.

MAXIMUM EXTRUSION GAP

PRESSURE bar
PRESSURE p.s.i.
MAXIMUM GAP in

Figures show the maximum permissible gap all on one side using the minimum clearance $\emptyset$ and maximum bore $\emptyset$

100	160	250	350
1500	2400	3750	5000
0.030	0.025	0.020	0.010

SURFACE ROUGHNESS

DYNAMIC SEALING FACE $\emptyset D_1$
STATIC SEALING FACE $\emptyset d_1$
STATIC HOUSING FACES L_1

μmRa	μmRt	$\mu inCLA$	$\mu inRMS$
0.1 $\leftrightarrow$ 0.4	4 max	4 $\leftrightarrow$ 16	5 $\leftrightarrow$ 18
1.6 max	10 max	63 max	70 max
3.2 max	16 max	125 max	140 max

CHAMFERS & RADII

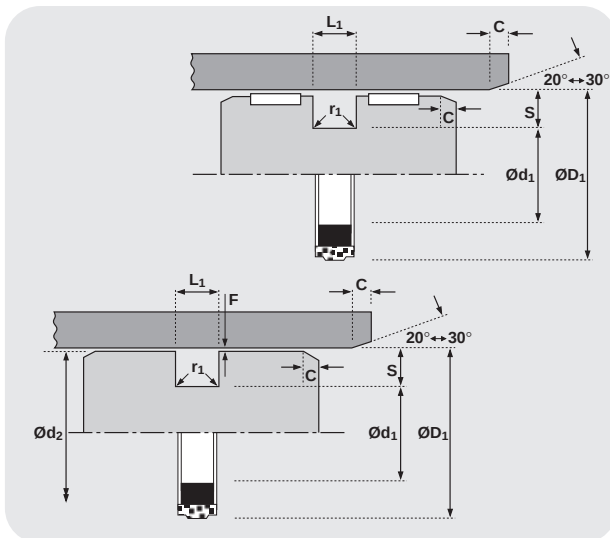
GROOVE SECTION $\leq S$ in
MIN CHAMFER C in
MAX FILLET RAD r_1 in

0.125	0.187	0.250
0.100	0.150	0.200
0.016	0.016	0.016

TOLERANCE

in

$\emptyset D_1$	$\emptyset d_1$	$\emptyset d_2$	L_1
+0.002 -0	+0 -0.002	+0 -0.001	+0.005 -0



DESIGN

The Hallite 770 seal is a double acting compact, low friction seal for light to medium duty hydraulic cylinders. It has been designed to fit standard inch O ring housings. It comprises a tough self lubricated elastomeric face which is pre-loaded by a rectangular cross-section expander. It can be used on SG iron pistons or on a piston where there is an adequate remote bearing (see Hallite 506 and 533 bearings).

The standard material is only suitable for hydraulic mineral oil applications. Other material options are available for water based (HFA and HFB) fluids and synthetic esters (HEES). In certain sizes a Hythane face material option is available, particularly for intermittent single acting applications.

For full details and availability please contact your local Hallite Sales office.

MATERIAL OPTIONS

Standard face material: (Brown 55D)

Lubricated polyester elastomer

Last digit of part no. - - - - - 2

Face material options:

Polyester elastomer (Red 55D)

Last digit of part no. - - - - - 0

Hydrolysis stabilised polyester elastomer (Grey 55D)

Last digit of part no. - - - - - 1

Hydrolysis stabilised polyester elastomer (Red 72D)

Last digit of part no. - - - - - 3

Hythane 181 - A limited number of sizes are available in this material option

Last digit of part no. - - - - - 4

Technical details shown are for standard Brown 55D lubricated polyester elastomer.

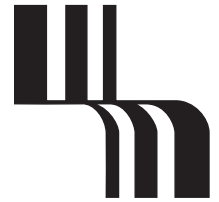
FEATURES

- LOW BREAK-OUT AND OPERATING FRICTION LEVELS.
- RAPID RECOVERY OF FACE AFTER ASSEMBLY. UNLIKE COMMON PTFE FACES, NO RE-SIZING IS REQUIRED.
- MORE TOLERANT TO DIRT AND CONTAMINATION THAN COMMON PTFE EQUIVALENTS.
- EXCELLENT WEAR RESISTANCE.
- OPERATES ON A WIDE RANGE OF SURFACE FINISHES.
- IDEAL FOR USE WITH HALLITE HALLITE 506 OR 533 GFN WEAR RINGS



Piston seals

Hallite



917

TECHNICAL DETAILS

METRIC

INCH

OPERATING CONDITIONS

MAXIMUM SPEED 1.5 m/sec
 MAXIMUM TEMPERATURE -30°C + 100°C
 MAXIMUM PRESSURE 350 bar

4.5 ft/sec
 -22°F + 212°F
 5000 p.s.i.

MAXIMUM EXTRUSION GAP

PRESSURE bar
 MAXIMUM GAP mm
 PRESSURE p.s.i.

Figures show the maximum permissible gap all on one side using the minimum clearance $\emptyset$ and maximum bore $\emptyset$

100	160	250	350
0.6	0.5	0.4	0.3
1500	2400	3750	5000

SURFACE ROUGHNESS

DYNAMIC SEALING FACE $\emptyset D_1$
 STATIC SEALING FACE $\emptyset d_1$
 STATIC HOUSING FACES L_1

μmRa	μmRt	μinCLA	μinRMS
0.1 $\leftrightarrow$ 0.4	4 max	4 $\leftrightarrow$ 16	5 $\leftrightarrow$ 18
1.6 max	10 max	63 max	70 max
3.2 max	16 max	125 max	140 max

CHAMFERS & RADII

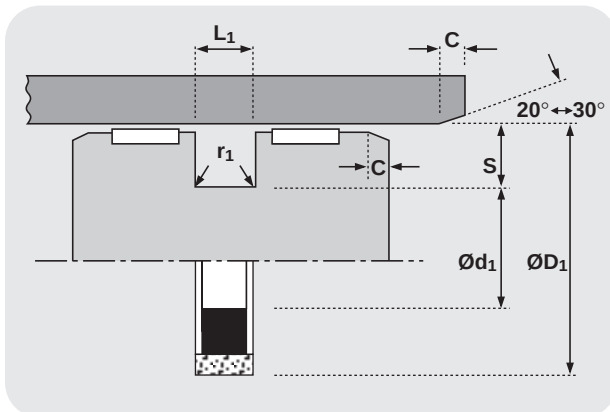
GROOVE SECTION $\leq S$ mm
 MIN CHAMFER C mm
 MAX FILLET RAD r_1 mm

3.75	5.50	7.50	10.50	12.25
2.00	2.50	5.00	5.00	7.50
0.50	0.50	0.50	0.50	0.50

TOLERANCES

mm

$\emptyset D_1$	$\emptyset d_1$	L_1
H9	+0 -0.2	+0.2 -0



FEATURES

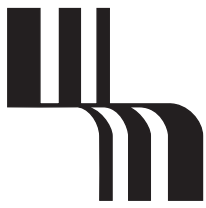
- LOW STICK/SLIP
- LOW BREAKOUT & RUNNING FRICTION
- HIGH MAXIMUM SPEED
- COMPACT PISTON DESIGN

DESIGN

The Hallite 917 double acting piston seal provides the designer with a compact, low friction seal for light duty hydraulic cylinders.

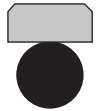
It comprises a PTFE ring which is pre-loaded by an square section energiser to be effective for the operating pressure range recommended. As the pressure rises the energiser deforms and compresses the PTFE ring against the tube wall increasing the sealing force and the effectiveness of the seal. As only the PTFE ring is in contact with the sliding surface, friction is very low and stick-slip movement is eliminated.

The Hallite 917 range is suitable for popular Asian sizes.



Piston seals

Hallite



TECHNICAL DETAILS

METRIC

INCH

OPERATING CONDITIONS

MAXIMUM SPEED	4.0 m/sec
MAXIMUM TEMPERATURE	-30°C + 100°C
MAXIMUM PRESSURE	350 bar

12.0 ft/sec
-22°F + 212°F
5000 p.s.i.

MAXIMUM EXTRUSION GAP

Figures show the maximum permissible gap all on one side using the minimum clearance $\emptyset$ and maximum bore $\emptyset$

PRESSURE bar	100	160	250	350
MAXIMUM GAP mm	0.6	0.5	0.45	0.35
PRESSURE p.s.i.	1500	2400	3750	5000

SURFACE ROUGHNESS

DYNAMIC SEALING FACE $\emptyset D_1$	μmRa	μmRt	μinCLA	μinRMS
STATIC SEALING FACE $\emptyset d_1$	0.1 $\leftrightarrow$ 0.4	4 max	4 $\leftrightarrow$ 16	5 $\leftrightarrow$ 18
STATIC HOUSING FACES L_1	1.6 max	10 max	63 max	70 max
	3.2 max	16 max	125 max	140 max

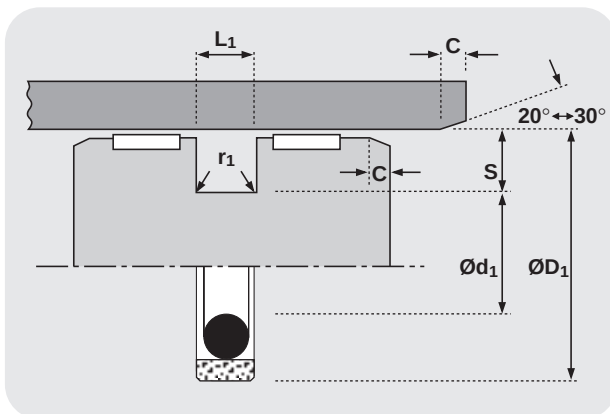
CHAMFERS & RADII

GROOVE SECTION $\leq S$ mm	3.75	5.50	7.50	10.5	12.25
MIN CHAMFER C mm	2.00	2.50	5.00	5.00	7.50
MAX FILLET RAD r_1 mm	0.50	0.50	0.50	0.5	0.50

TOLERANCES

mm

$\emptyset D_1$	$\emptyset d_1$	L_1
H9	+0 -0.2	+0.2 -0



DESIGN

The Hallite 918 double acting piston seal is a very compact, extremely low friction seal for medium to heavy duty applications.

The bronze filled PTFE face is pre-loaded by a nitrile rubber O ring. As the pressure rises, the O ring energiser deforms to force the PTFE face against the cylinder wall, increasing the sealing force and the effectiveness of the seal.

The ultra low friction of the PTFE allows this seal to operate at speeds up to 4m/sec - 12.0 ft/sec.

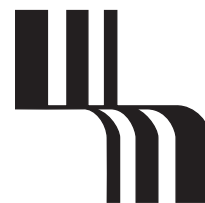
Also see Hallite 54.

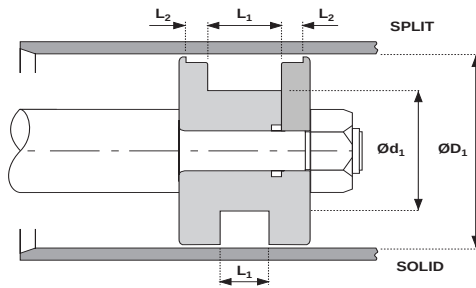
FEATURES

- TOUGH, SELF LUBRICATING BRONZE PTFE FACE
- ULTRA LOW FRICTION
- ELIMINATES STICK SLIP EFFECT
- EXCELLENT WEAR RESISTANCE
- ROBUST CONSTRUCTION
- LONG LIFE
- BROAD FLUID COMPATIBILITY BY CHANGING COMPOUND OF O RING

Hallite 918 are designed to suitable for popular Asian housings.

Notes

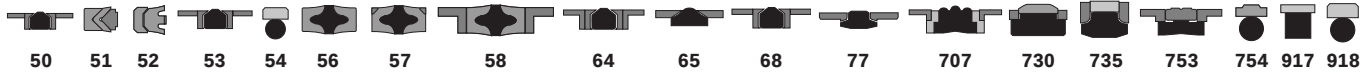




Piston Seals

Hallite

metric - double acting



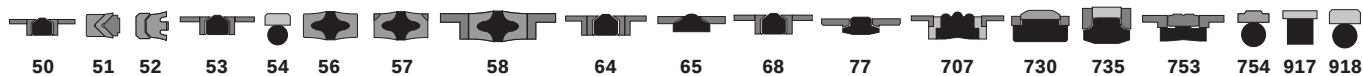
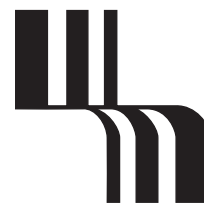
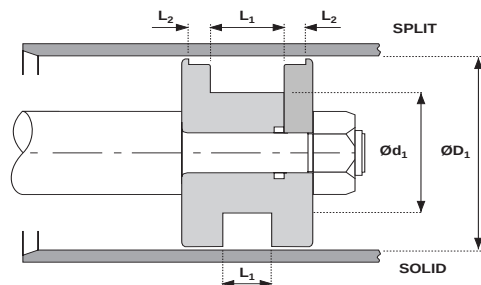
Type	ØD1	NOMINALS Ød1	L1	L2	PART No.
54	12.00	7.10	2.20		66239_ _
754	15.00	7.50	3.20		444641_
54	15.00	7.50	3.20		86163_ _
754	16.00	8.50	3.20		440061_ ‡
54	16.00	8.50	3.20		66240_ _ ‡
754	20.00	12.50	3.20		436231_ ‡
54	20.00	12.50	3.20		66241_ _ ‡
54	24.00	16.50	3.20		66154_ _
52	25.00	15.00	6.60		6619810‡
68	25.00	15.00	12.50	4.00	6594610‡*
53	25.00	17.00	8.00	4.00	2249212
50	25.00	17.00	10.00	4.00	6607810‡*
754	25.00	17.50	3.20		433961_ ‡
54	25.00	17.50	3.20		66242_ _ ‡
65	25.00	17.50	8.50	3.25	2218210
77	25.00	17.50	8.50	3.25	6111410
51	30.00	20.00	9.60		4208310*
56	30.00	20.00	12.50		0200540
917	30.00	20.50	4.30		9030017*
707	30.00	21.00	13.50	2.10	DA030021
754	30.00	22.50	3.20		433971_
54	30.00	22.50	3.20		65968_ _
52	32.00	20.00	7.80		1791610
52	32.00	22.00	6.60		6619910‡
53	32.00	22.00	10.00	5.00	2249312
65	32.00	22.00	11.00	4.00	2218110
68	32.00	22.00	12.50	4.00	2249320‡*
64	32.00	22.00	15.50	2.60	6600100
917	32.00	22.50	4.30		9032027*
50	32.00	24.00	10.00	4.00	6607910‡
754	32.00	24.50	3.20		433981_ ‡
54	32.00	24.50	3.20		65969_ _ ‡
917	35.00	22.50	4.30		9035027*
707	35.00	25.00	15.50	2.80	DA035025/1
707	35.00	25.00	16.40	6.35	DA035025

Type	ØD1	NOMINALS Ød1	L1	L2	PART No.
754	35.00	27.50	3.20		435241_
54	35.00	27.50	3.20		65970_ _
54	38.00	30.50	3.20		66475_ _
707	40.00	24.00	18.40	6.35	DA040024
52	40.00	25.00	10.00		2149810
51	40.00	25.00	11.80		4208010
56	40.00	25.00	19.00		0472840
58	40.00	25.00	24.00	6.00	0472850
64	40.00	26.00	15.50	2.60	6600200
753B	40.00	26.00	15.50	2.60	6916500
754	40.00	29.00	4.20		433921_ ‡
54	40.00	29.00	4.20		65971_ _ ‡
917	40.00	30.00	4.30		9040057
52	40.00	30.00	6.60		6620010‡
53	40.00	30.00	10.00	5.00	2249412
753A	40.00	30.00	10.00	5.00	6915100
65	40.00	30.00	11.00	4.00	2218010
77	40.00	30.00	11.00	4.00	6111210
68	40.00	30.00	12.50	4.00	2249420‡*
707	40.00	30.00	12.50	4.00	DA040030/1
707	40.00	30.00	12.50	4.00	DA040030/2
707	40.00	30.00	16.40	6.35	DA040030
50	40.00	32.00	10.00	4.00	6608010‡
707	40.00	32.00	15.50	3.20	DA040032
54	42.00	31.00	4.20		65972_ _
707	45.00	29.00	18.40	6.35	DA045029
52	45.00	30.00	10.30		2150010
707	45.00	31.00	15.50	2.60	DA045031
754	45.00	34.00	4.20		434231_
54	45.00	34.00	4.20		65973_ _
917	45.00	35.00	4.30		9045037*
53	45.00	35.00	16.40	6.35	2199411
707	45.00	35.00	16.40	6.35	DA045035
53	50.00	34.00	18.00	6.35	0209912
753A	50.00	34.00	18.40	6.35	6915200
64	50.00	34.00	20.50	3.10	6600300

Piston Seals

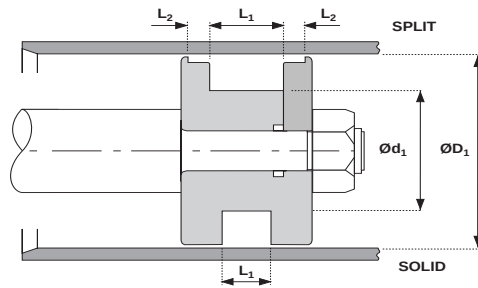
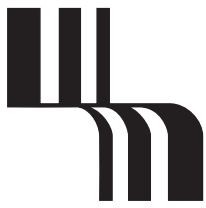
Hallite

metric - double acting



Type	NOMINALS ØD ₁	NOMINALS Ød ₁	NOMINALS L ₁	NOMINALS L ₂	PART No.
753B	50.00	34.00	20.50	3.10	6916600
754	50.00	34.50	6.30		442741_‡
52	50.00	35.00	9.80		2150210‡
51	50.00	35.00	11.80		4207610
53	50.00	35.00	15.00	7.50	0074012
56	50.00	35.00	19.00		0474640
68	50.00	35.00	20.00	5.00	0074020‡
58	50.00	35.00	24.00	6.00	0474650
735	50.00	36.00	9.00		715100_†
730	50.00	38.00	11.50		2335410
707	50.00	38.00	20.50	4.20	DA050038
754	50.00	39.00	4.20		432711_‡
54	50.00	39.00	4.20		65974_‡
917	50.00	40.00	4.30		9050047
65	50.00	40.00	11.00	4.00	2217910
77	50.00	40.00	11.00	4.00	2326110
50	50.00	40.00	12.50	4.00	6608110‡
53	55.00	39.00	18.00	6.35	1352212
64	55.00	39.00	20.50	3.10	6600400
754	55.00	39.50	6.30		435561_
52	55.00	40.00	10.30		2150410
51	55.00	40.00	11.80		4207110
56	55.00	40.00	19.00		0475040
58	55.00	40.00	24.00	6.00	0475050
754	55.00	44.00	4.20		446551_
54	55.00	44.00	4.20		65975_
917	55.00	45.00	4.30		9055027
56	60.00	40.00	25.00		0282040
58	60.00	40.00	31.00	7.00	0282050
53	60.00	44.00	18.00	6.35	1361412
753A	60.00	44.00	18.40	6.35	2341410
730	60.00	44.00	20.50		2356710
64	60.00	44.00	20.50	3.10	6600500
753A	60.00	44.00	20.50	3.10	6916300
754	60.00	44.50	6.30		439071_
52	60.00	45.00	10.30		2150610
51	60.00	45.00	11.80		4207210
56	60.00	45.00	19.00		0979440

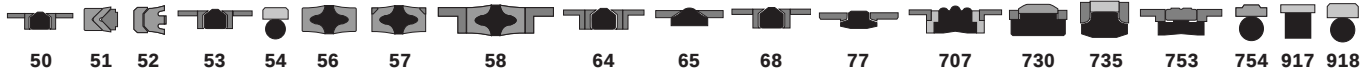
Type	NOMINALS ØD ₁	NOMINALS Ød ₁	NOMINALS L ₁	NOMINALS L ₂	PART No.
735	60.00	46.00	9.00		715150_†
707	60.00	48.00	20.50	4.20	DA060048
77	60.00	48.00	20.50	4.30	2326210*
754	60.00	49.00	4.20		432701_
54	60.00	49.00	4.20		65976_
917	60.00	50.00	4.30		9060047
56	63.00	43.00	25.00		0646740
58	63.00	43.00	31.00	7.00	0646750
753A	63.00	47.00	18.40	6.35	6915300
53	63.00	47.00	19.00	6.35	0209712
64	63.00	47.00	20.50	3.10	6600600
753A	63.00	47.00	20.50	3.10	6916100
754	63.00	47.50	6.30		443111_‡
917	63.00	48.00	7.30		9063047
52	63.00	48.00	9.80		2150810‡
735	63.00	48.00	11.00		715200_†
51	63.00	48.00	13.30		4207410
57	63.00	48.00	19.00		0456360*
68	63.00	48.00	20.00	5.00	6594710‡
58	63.00	48.00	24.00	6.00	0205250
754	63.00	50.00	6.30		447231_
730	63.00	50.00	14.50		2331210
707	63.00	51.00	20.50	4.20	DA063055
754	63.00	52.00	4.20		432691_‡
54	63.00	52.00	4.20		66243_‡
65	63.00	53.00	11.00	4.00	2217810
77	63.00	53.00	11.00	4.00	2325810
50	63.00	53.00	12.50	4.00	2199513‡
64	65.00	49.00	20.50	3.10	1705210
753B	65.00	49.00	20.50	3.10	6916700
754	65.00	49.50	6.30		436201_
917	65.00	50.00	7.30		9065037*
735	65.00	50.00	11.00		715250_†
53	65.00	50.00	18.00	6.35	1350512
56	65.00	50.00	19.00		0383840
58	65.00	50.00	24.00	6.00	0383850
754	65.00	52.00	6.30		438491_
754	65.00	54.00	4.20		435301_



Piston Seals

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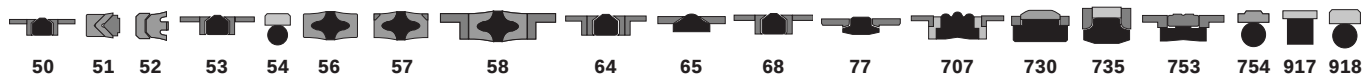
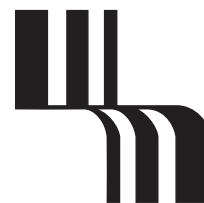
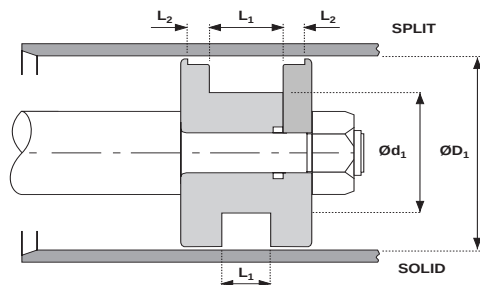
Type	ØD ₁	NOMINALS Ød ₁	L ₁	L ₂	PART No.
54	65.00	54.00	4.20		86118_ _
917	69.00	54.00	7.30		9069007*
52	70.00	50.00	13.30		2151010
51	70.00	50.00	15.30		4208210
53	70.00	50.00	22.00	6.35	0075122
53	70.00	50.00	22.00	10.00	0075112
753A	70.00	50.00	22.40	6.35	6915400
56	70.00	50.00	25.00		0294640
58	70.00	50.00	31.00	7.00	0294650
64	70.00	54.00	20.50	3.10	6600700
753B	70.00	54.00	20.50	3.10	6916800
917	70.00	55.00	7.30		9070067
735	70.00	55.00	11.00		715300_†
754	70.00	57.00	6.30		439081_
707	70.00	58.00	20.50	4.20	DA070058
754	70.00	59.00	4.20		432681_
54	70.00	59.00	4.20		65977_ _
53	75.00	55.00	22.00	6.35	0075622
53	75.00	55.00	22.00	10.00	0075612
730	75.00	55.00	23.00		2346420
56	75.00	55.00	25.00		0818640
58	75.00	55.00	31.00	7.00	0818650
917	75.00	60.00	7.30		9075017
735	75.00	60.00	11.00		715350_†
754	75.00	64.00	4.20		433991_
54	75.00	64.00	4.20		66244_ _
54	80.00	59.50	8.10		8612220†
52	80.00	60.00	12.80		2151210‡
51	80.00	60.00	15.30		4208110
53	80.00	60.00	22.00	6.35	0073822
753A	80.00	60.00	22.40	6.35	6915500
56	80.00	60.00	25.00		0294940
57	80.00	60.00	25.00		0461160
68	80.00	60.00	25.00	6.30	0073830‡*
58	80.00	60.00	31.00	7.00	0294950
53	80.00	60.00	22.00	10.00	0073812
753B	80.00	62.00	22.40	3.60	6916400

Type	ØD ₁	NOMINALS Ød ₁	L ₁	L ₂	PART No.
64	80.00	62.00	22.50	3.60	1705110
753A	80.00	62.00	22.50	3.60	6916000
754	80.00	64.50	6.30		427091_‡
54	80.00	64.50	6.30		65978_ _ ‡
917	80.00	65.00	7.30		9080067
735	80.00	65.00	11.00		715400_†
50	80.00	65.00	20.00	5.00	6608210‡
730	80.00	66.00	17.00		2330310
707	80.00	66.00	22.50	5.20	DA080066
65	80.00	70.00	11.00	4.00	2217610
77	80.00	70.00	11.00	4.00	2325710
918	85.00	64.50	8.10		9085027
53	85.00	65.00	22.00	6.35	0075722
56	85.00	65.00	25.00		0388640
58	85.00	65.00	31.00	7.00	0388650
754	85.00	69.50	6.30		456401_
917	85.00	70.00	7.30		9085017
735	85.00	70.00	11.00		715450_†
54	90.00	69.50	8.10		8614420†
52	90.00	70.00	13.30		2151410
51	90.00	70.00	21.50		4207710
53	90.00	70.00	22.00	6.35	0075822
53	90.00	70.00	22.00	10.00	0075812
753A	90.00	70.00	22.40	6.35	6915600
56	90.00	70.00	25.00		0296040
58	90.00	70.00	31.00	7.00	0296050
64	90.00	72.00	22.50	3.60	6600800
753B	90.00	72.00	22.50	3.60	6916900
754	90.00	74.50	6.30		437271_
54	90.00	74.50	6.30		65979_ _
917	90.00	75.00	7.30		9090067
735	90.00	75.00	11.00		715500_†
730	90.00	75.00	13.50		2331310
707	90.00	76.00	22.50	5.20	DA090076
65	92.00	82.00	11.00	4.00	2240410
918	95.00	74.50	8.10		9095027
53	95.00	75.00	22.00	6.35	1352512

Piston Seals

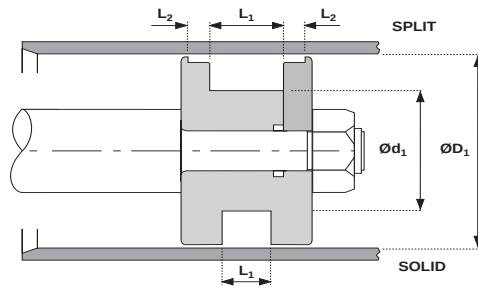
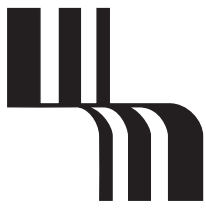
Hallite

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Type	ØD ₁	NOMINALS Ød ₁	L ₁	L ₂	PART No.
58	95.00	75.00	31.00	7.00	0412750
754	95.00	79.50	6.30		456951_
54	95.00	79.50	6.30		86084_ _
917	95.00	80.00	7.30		9095017
735	95.00	80.00	11.00		715550_†
53	100.00	75.00	22.00	6.35	0073712
58	100.00	75.00	22.00	6.45	0034950*
753A	100.00	75.00	22.40	6.35	6915700
58	100.00	75.00	26.00	9.50	0891650
54	100.00	79.50	8.10		8609320†
52	100.00	80.00	12.80		2151610‡
51	100.00	80.00	21.50		4207510
53	100.00	80.00	22.00	10.00	0083612
56	100.00	80.00	25.00		0295140
57	100.00	80.00	25.00		0454360
68	100.00	80.00	25.00	6.30	0083620‡
58	100.00	80.00	31.00	7.00	0295150
730	100.00	82.00	22.50		2331410
64	100.00	82.00	22.50	3.60	6600900
754	100.00	84.50	6.30		433931_‡
54	100.00	84.50	6.30		65980_ _ ‡
917	100.00	85.00	7.30		9100067
735	100.00	85.00	12.50		715600_†
730	100.00	85.00	13.50		2335010
50	100.00	85.00	20.00	5.00	6608310‡
730	100.00	86.00	22.50		2359710
707	100.00	86.00	22.50	5.20	DA100086
65	100.00	87.00	14.00	6.00	0352510
77	100.00	87.00	14.00	6.00	2326010
53	105.00	80.00	22.00	6.35	1352812
730	105.00	80.00	22.50		2346710
58	105.00	80.00	38.00	9.50	0413150*
918	105.00	84.50	8.10		9105017
754	105.00	89.50	6.30		437251_
735	105.00	90.00	12.50		715650_†
730	105.00	91.00	16.50		2348210
917	108.00	92.00	7.30		9108017*

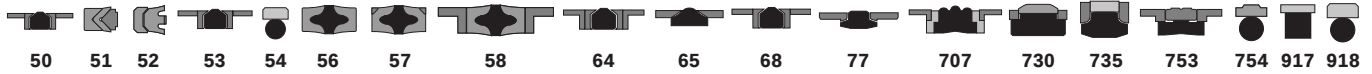
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53	110.00	85.00	22.00	6.35	0091113
58	110.00	85.00	22.00	6.45	1188250
753A	110.00	85.00	22.40	6.35	6915800
58	110.00	85.00	25.00	6.45	0820650*
58	110.00	85.00	45.00	12.80	2181350
54	110.00	89.00	8.10		8637020
54	110.00	89.50	8.10		8637020†
52	110.00	90.00	13.30		2151810
51	110.00	90.00	21.50		4207910
56	110.00	90.00	25.00		0712440
58	110.00	90.00	31.00	7.00	0712450
64	110.00	92.00	22.50	3.60	6601000
917	110.00	94.00	7.30		9110067*
754	110.00	94.50	6.30		441931_
54	110.00	94.50	6.30		65981_ _
735	110.00	95.00	12.50		715700_†
730	110.00	95.00	16.00		2331610
707	110.00	96.00	22.50	5.20	DA115096
730	115.00	90.00	21.00		2329110
53	115.00	90.00	22.00	6.35	0084222
918	115.00	94.50	8.10		9115037
58	115.00	95.00	31.00	7.00	0796450
730	115.00	97.00	22.50		2356110
707	115.00	97.00	22.50	3.60	DA115097
754	115.00	99.50	6.30		435581_
54	115.00	99.50	6.30		65982_ _
735	115.00	100.00	12.50		715750_†
730	115.00	100.00	16.00		2329210
53	120.00	95.00	22.00	6.35	0090012
754	120.00	99.00	8.10		453501_
54	120.00	99.50	8.10		8616720†
56	120.00	100.00	25.00		0296140
57	120.00	100.00	25.00		1269760
58	120.00	100.00	31.00	7.00	0296150
754	120.00	104.50	6.30		446541_
54	120.00	104.50	6.30		66361_ _
735	120.00	105.00	12.50		715800_†
730	120.00	105.00	16.00		2337410



Piston Seals

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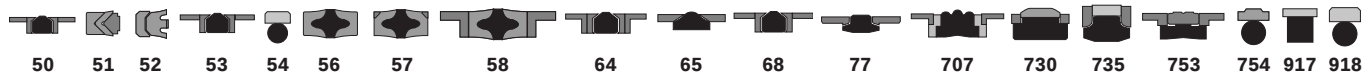
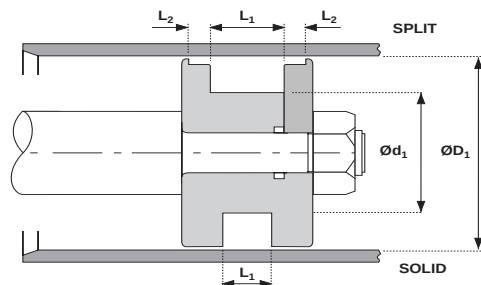
Type	----- ØD ₁	NOMINALS Ød ₁	----- L ₁	----- L ₂	PART No.
707	120.00	106.00	22.50	5.20	DA120106
52	125.00	100.00	16.30		2152010‡
56	125.00	100.00	19.00		1007440
57	125.00	100.00	25.00		0044460*
53	125.00	100.00	25.00	6.35	0087522
58	125.00	100.00	25.00	6.45	1007450
753A	125.00	100.00	25.40	6.35	6915900
51	125.00	100.00	26.10		4207810
56	125.00	100.00	32.00		0418640
57	125.00	100.00	32.00		1368160
68	125.00	100.00	32.00	10.00	0087540‡
58	125.00	100.00	38.00	9.50	0418650
54	125.00	101.50	8.10		8625120†
735	125.00	102.00	16.00		715850_
64	125.00	103.00	26.50	5.10	6601100
753B	125.00	103.00	26.50	5.10	6917000
754	125.00	104.00	8.10		437651_‡
50	125.00	105.00	25.00	6.30	6608410‡
707	125.00	108.00	26.50	7.20	DA125108
754	125.00	109.50	6.30		434001_‡
54	125.00	109.50	6.30		65983_ _‡
730	125.00	110.00	15.80		2331510
65	125.00	112.00	14.00	6.00	0315810
77	125.00	112.00	14.00	6.00	2325910
58	130.00	104.00	38.00	9.50	0244350
58	130.00	105.00	25.00	6.45	0044850
53	130.00	105.00	25.00	9.52	0089622
707	130.00	105.00	25.40	6.35	DA130105/1
735	130.00	107.00	16.00		715900_†
754	130.00	109.00	8.10		440241_
54	130.00	109.50	8.10		8647620†
754	130.00	114.50	6.30		434221_
54	130.00	114.50	6.30		66476_ _
53	135.00	110.00	25.00	9.52	0091222
53	135.00	110.00	25.00	12.70	0091212
707	135.00	110.00	25.40	6.35	DA135110/1
57	135.00	110.00	25.50		2148260

Type	----- ØD ₁	NOMINALS Ød ₁	----- L ₁	----- L ₂	PART No.
58	135.00	110.00	38.00	9.50	0304350
735	135.00	112.00	16.00		715950_†
754	135.00	114.00	8.10		453511_
54	135.00	114.00	8.10		66477_ _
730	135.00	118.00	20.50		2348110
730	135.00	120.00	16.00		2334010
52	140.00	115.00	16.50		2152210
53	140.00	115.00	25.00	6.35	0091032
58	140.00	115.00	25.00	6.45	1008450
53	140.00	115.00	25.00	9.52	0091022
51	140.00	115.00	26.10		4208410
735	140.00	117.00	16.00		716000_†
753A	140.00	118.00	26.50	5.10	2356010
64	140.00	118.00	26.50	5.10	6601200
754	140.00	119.00	8.10		434011_
54	140.00	119.00	8.10		65984_ _
50	140.00	120.00	25.00	6.3	2317030
56	140.00	120.00	25.00		0250540
57	140.00	120.00	25.00		2192560
58	140.00	120.00	31.00	7.00	0250550
730	140.00	123.00	16.00		2357910
707	140.00	123.00	26.50	7.20	DA140123
917	140.00	124.00	7.30		9140077*
65	140.00	124.00	17.50	8.75	0317710
754	140.00	124.50	6.30		449941_
730	140.00	125.00	16.00		2329410
53	145.00	120.00	25.00	9.52	0091422
707	145.00	120.00	25.40	6.35	DA145120/1
57	145.00	120.00	25.50		2169460
735	145.00	122.00	16.00		716050_†
54	145.00	124.00	8.10		86080_ _
58	145.00	125.00	31.00	7.00	0640150
51	150.00	120.00	29.30		4208510
56	150.00	120.00	38.00		1289540
57	150.00	120.00	38.00		1365260
58	150.00	120.00	44.00	9.50	1289550
53	150.00	125.00	25.00	9.52	0091522

Piston Seals

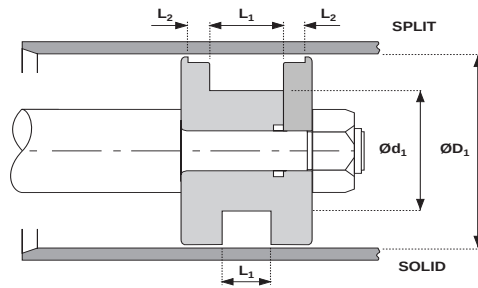
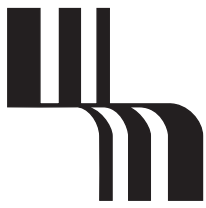
Hallite

metric - double acting



Type	----- ØD ₁	NOMINALS Ød ₁	----- L ₁	----- L ₂	PART No.
53	150.00	125.00	25.00	12.70	0091512
707	150.00	125.00	25.40	6.35	DA150125/1
735	150.00	127.00	16.00		716100_†
753A	150.00	128.00	26.50	5.10	2349910
707	150.00	128.00	26.50	5.10	DA150128
754	150.00	129.00	8.10		439691_
54	150.00	129.00	8.10		65985_
730	150.00	130.00	16.00		2339010
707	150.00	133.00	26.50	7.20	DA150133
730	150.00	135.00	16.00		2338210
53	155.00	130.00	25.00	9.52	0091622*
707	155.00	130.00	25.40	9.50	DA155130
57	155.00	130.00	25.50		0083460
54	155.00	134.00	8.10		86177_
52	160.00	130.00	20.10		2152410
58	160.00	130.00	25.00	6.45	1008250
707	160.00	130.00	25.40	6.35	DA160130
51	160.00	130.00	29.30		4208710
52	160.00	135.00	16.30		6620110‡
53	160.00	135.00	25.00	9.52	0089922
56	160.00	135.00	32.00		0080440
57	160.00	135.00	32.00		0456160
68	160.00	135.00	32.00	10.00	0089930‡*
58	160.00	135.00	38.00	9.50	0080450
735	160.00	137.00	16.00		716150_†
753A	160.00	138.00	26.50	5.10	2349810
64	160.00	138.00	26.50	5.10	6601300
754	160.00	139.00	8.10		434021_‡
54	160.00	139.00	8.10		65986_ ‡
50	160.00	140.00	25.00	6.30	6608510‡*
65	160.00	140.00	25.00	12.50	0315910
58	160.00	140.00	31.00	7.00	0304650
707	160.00	143.00	26.50	7.20	DA160143
730	160.00	145.00	16.00		2331910
53	165.00	140.00	25.00	9.52	1257622*
53	165.00	140.00	25.00	12.70	1257612
57	165.00	140.00	32.50		1202260

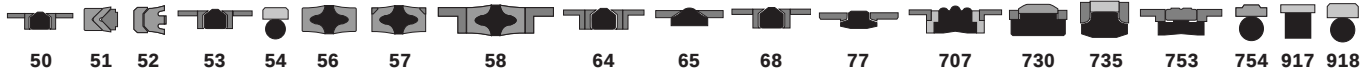
Type	----- ØD ₁	NOMINALS Ød ₁	----- L ₁	----- L ₂	PART No.
735	165.00	142.00	16.00		716200_†
754	165.00	144.00	8.10		445221_
54	165.00	144.00	8.10		66491_
730	165.00	145.00	20.00		2348910
730	165.00	150.00	16.00		2332010
58	170.00	140.00	25.00	6.45	1222250*
730	170.00	145.00	25.00		2345510
53	170.00	145.00	25.00	12.70	0088012
735	170.00	147.00	16.00		716250_†
707	170.00	148.00	25.50	5.10	DA170148
754	170.00	149.00	8.10		434031_
54	170.00	149.00	8.10		65987_
730	170.00	150.00	16.00		2331110
56	170.00	150.00	25.00		0303340
58	170.00	150.00	31.00	7.00	0303350
53	175.00	150.00	25.00	12.70	1260712*
735	175.00	152.00	16.00		716280_
730	175.00	155.00	16.00		2335110
51	180.00	150.00	31.80		4208610
52	180.00	150.00	20.10		2152610
57	180.00	150.00	35.00		1196160
58	180.00	150.00	35.00	6.45	0679850
707	180.00	150.00	35.40	6.35	DA180150
57	180.00	150.00	38.00		1378960
53	180.00	155.00	25.00	12.70	0091712
735	180.00	157.00	16.00		716300_†
753A	180.00	158.00	26.50	5.10	2349510
754	180.00	159.00	8.10		434041_
54	180.00	159.00	8.10		65988_
730	180.00	160.00	16.00		2328510
56	180.00	160.00	25.00		1283140
65	180.00	160.00	25.00	12.50	0316010
58	180.00	160.00	31.00	7.00	1283150
735	185.00	162.00	16.00		716350_†
54	185.00	164.00	8.10		66478_
730	185.00	165.00	16.00		2328410



Piston Seals

Hallite

metric - double acting



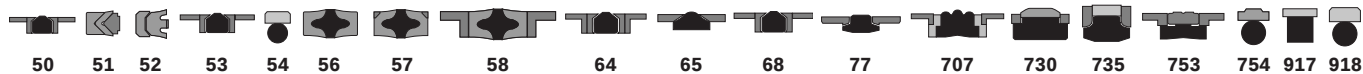
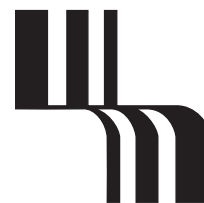
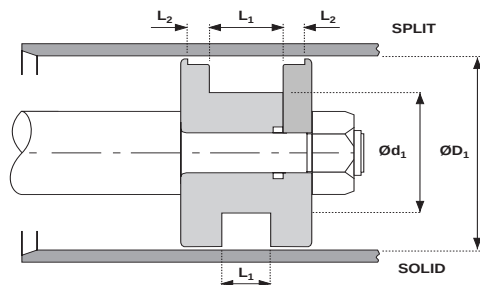
Type	----- ØD ₁	NOMINALS Ød ₁	----- L ₁	----- L ₂	PART No.
56	190.00	160.00	38.00		0838440
58	190.00	160.00	44.00	9.50	0838450
53	190.00	165.00	25.00	12.70	1270012
735	190.00	167.00	16.00		716400_†
754	190.00	169.00	8.10		434241_
54	190.00	169.00	8.10		65989_ _
730	190.00	170.00	16.00		2332210
53	195.00	170.00	25.00	12.70	1265412
707	195.00	170.00	25.40	12.70	DA195170
730	195.00	175.00	16.00		2334710
52	200.00	170.00	20.30		2152810‡
53	200.00	170.00	30.00	15.00	1270112
51	200.00	170.00	31.80		4209010
68	200.00	170.00	36.00	12.50	1270120‡*
56	200.00	170.00	38.00		0087140
57	200.00	170.00	38.00		2144560
58	200.00	170.00	44.00	12.00	0087150
53	200.00	175.00	25.00	12.70	0089712
753A	200.00	175.00	31.50	6.60	2347010
58	200.00	175.00	38.00	9.50	0838850
735	200.00	177.00	16.00		716450_†
754	200.00	179.00	8.10		434051_ ‡
54	200.00	179.00	8.10		65990_ _ ‡
730	200.00	180.00	16.00		2329310
730	200.00	180.00	20.00		2348810
65	200.00	180.00	25.00	12.50	0316910
58	210.00	180.00	31.70	6.45	1198450
707	210.00	185.00	25.40	12.70	DA210185
735	210.00	187.00	16.00		716500_†
754	210.00	189.00	8.10		435151_
54	210.00	189.00	8.10		86146_ _
730	210.00	190.00	16.00		2332410
735	215.00	192.00	16.00		716280_
730	215.00	195.00	16.00		2332510
730	215.00	195.00	20.00		2345110
53	220.00	190.00	30.00	15.00	1714810

Type	----- ØD ₁	NOMINALS Ød ₁	----- L ₁	----- L ₂	PART No.
707	220.00	190.00	35.40	6.35	DA220190
56	220.00	190.00	38.00		0087340
730	220.00	195.00	16.00		2345810
730	220.00	195.00	25.00		2333910
707	220.00	195.00	25.40	12.70	DA220195
735	220.00	197.00	16.00		716550_†
54	220.00	199.00	8.10		66245_ _*
730	220.00	200.00	20.50		2356510
58	220.00	200.00	31.00	7.00	1056450
730	224.00	204.00	20.50		2348510
52	225.00	195.00	20.10		2197010
51	225.00	195.00	31.80		6582110*
735	225.00	202.00	16.00		716600_†
754	225.00	204.00	8.10		451281_
54	225.00	204.00	8.10		66246_ _*
730	225.00	205.00	16.00		2332610
730	225.00	205.00	20.00		2346810
56	230.00	200.00	38.00		2010040*
57	230.00	200.00	38.00		2172560
707	230.00	205.00	25.40	12.70	DA230205
735	230.00	207.00	16.00		716650_†
54	230.00	209.00	8.10		66247_ _*
730	230.00	210.00	16.00		2332710
730	230.00	210.00	20.00		2344510
56	240.00	210.00	38.00		0094340*
730	240.00	215.00	25.00		2333010
707	240.00	215.00	25.40	12.70	DA240215
735	240.00	217.00	16.00		716700_†
754	240.00	219.00	8.10		455361_
54	240.00	219.00	8.10		86154_ _
730	245.00	220.00	25.00		2328810
52	250.00	220.00	20.30		2197210‡
53	250.00	220.00	30.00	15.00	1264312
51	250.00	220.00	31.80		6582310
753A	250.00	220.00	35.40	6.35	2340710
707	250.00	220.00	35.40	6.35	DA250220

Piston Seals

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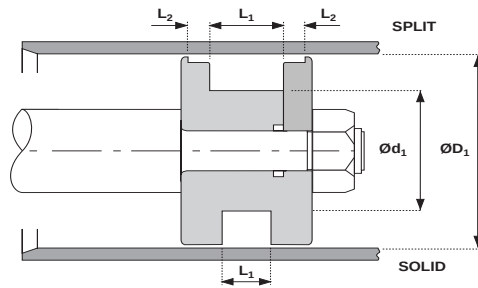
metric - double acting



Type	----- ØD ₁	NOMINALS Ød ₁	----- L ₁	----- L ₂	PART No.
68	250.00	220.00	36.00	12.50	1264320†*
56	250.00	220.00	38.00		1056340
57	250.00	220.00	38.00		2021960
58	250.00	220.00	44.00	12.00	1056350
735	250.00	222.00	17.50		716750_†
730	250.00	225.00	25.00		2348310
64	250.00	225.00	31.50	6.60	6601400
754	250.00	229.00	8.10		439371_‡
54	250.00	229.00	8.10		66401_ _ ‡
730	260.00	230.00	30.00		2347810
56	260.00	230.00	38.00		0094540*
735	260.00	232.00	17.50		716800_†
730	260.00	235.00	25.00		2347910
54	260.00	239.00	8.10		66479_ _
52	275.00	245.00	20.10		2197410
51	275.00	245.00	31.80		6582410*
53	280.00	250.00	30.00	15.00	1261712
58	280.00	250.00	44.00	12.00	1055550
730	280.00	255.00	25.00		2333510
54	280.00	259.00	8.10		66402_ _ *
52	300.00	270.00	20.10		2188310
51	300.00	270.00	31.80		6582510*
56	300.00	270.00	38.00		0094840
730	300.00	275.00	25.00		2333610
754	300.00	279.00	8.10		457281_
54	300.00	279.00	8.10		66403_ _ *
56	310.00	280.00	38.00		0094940*
730	310.00	285.00	25.00		2333710
54	310.00	289.00	8.10		66480_ _

Type	----- ØD ₁	NOMINALS Ød ₁	----- L ₁	----- L ₂	PART No.
730	320.00	290.00	30.00		2348010
51	320.00	290.00	31.80		6582610
54	320.00	299.00	8.10		86086_ _ ‡
56	330.00	300.00	38.00		0095040*
54	330.00	305.50	8.10		86081_ _
54	340.00	315.50	8.10		66481_ _
730	350.00	320.00	30.00		2345410
735	350.00	322.00	17.50		716950_
54	350.00	325.50	8.10		86155_ _
56	360.00	320.00	45.00		1054040
54	360.00	335.50	8.10		86218_ _
54	370.00	345.50	8.10		86219_ _
54	380.00	355.50	8.10		86220_ _
54	390.00	365.50	8.10		86221_ _
56	400.00	360.00	45.00		1054340
54	400.00	375.50	8.10		66482_ _ ‡
56	420.00	380.00	45.00		0095140*
56	460.00	420.00	45.00		0095340*
56	480.00	440.00	45.00		0095440*
56	500.00	460.00	45.00		0134740*
56	540.00	500.00	45.00		2018240*
56	580.00	540.00	50.00		2020940*

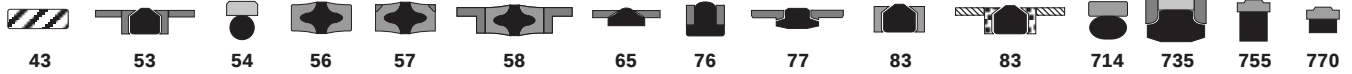
* Denotes possible indent item -
minimum quantity may apply



Piston seals

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inch - double acting



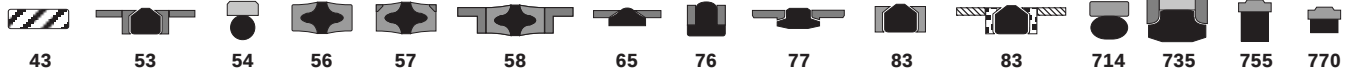
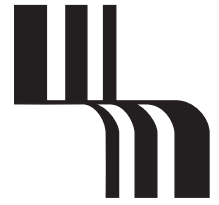
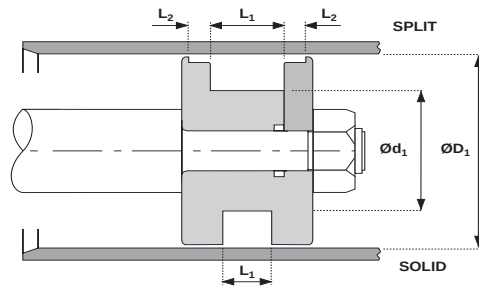
Type	ØD ₁	Ød ₁	NOMINALS L ₁	L ₂	PART No.
58	1.000	0.500	0.625	0.188	0723850
56	1.000	0.625	0.469		1247640
58	1.000	0.625	0.594	0.187	1247650
65	1.000	0.687	0.343	0.125	2221210
755	1.000	0.691	0.129		891000_
54	1.000	0.690	0.128		PR1000RG
54	1.000	0.704	0.125		66248_
54	1.000	0.741	0.083		PR1000GFT
58	1.125	0.625	0.750	0.250	0855050
56	1.250	0.750	0.625		0403740
58	1.250	0.750	0.750	0.250	0403750
65	1.250	0.937	0.343	0.125	2221310
77	1.250	0.937	0.343	0.125	6567790
54	1.250	0.940	0.128		PR1250RG
755	1.250	0.941	0.129		891010_
54	1.250	0.991	0.083		PR1250GFT
770	1.250	1.008	0.187		455441_
58	1.375	0.875	0.625	0.254	6503550*
58	1.375	0.875	0.750	0.250	0401350
56	1.500	1.000	0.625		0422440
58	1.500	1.000	0.625	0.188	6504850
58	1.500	1.000	0.625	0.254	1441150
58	1.500	1.000	0.750	0.250	0422450
754	1.500	1.068	0.165		443231_
65	1.500	1.125	0.437	0.150	2219610
83	1.500	1.125	0.452	0.250	611191_
54	1.500	1.190	0.128		PR1500RG
755	1.500	1.191	0.129		891020_
54	1.500	1.204	0.125		66249_
754	1.500	1.204	0.125		442871_
54	1.500	1.240	0.083		PR1500GFT
76	1.500	1.250	0.187		MPT019
43	1.500	1.286	0.125		P1001
43	1.500	1.286	0.187		P1001-06
58	1.625	1.000	0.937	0.250	0540650
56	1.750	1.125	0.750		0778240
58	1.750	1.125	0.750	0.254	6504450
58	1.750	1.125	0.937	0.250	0778250

Type	ØD ₁	Ød ₁	NOMINALS L ₁	L ₂	PART No.
54	1.750	1.360	0.122		PR1750GFT
65	1.750	1.375	0.437	0.150	2220910
735	1.750	1.377	0.424		710030_
54	1.750	1.440	0.128		PR1750RG
755	1.750	1.441	0.129		891030_
43	1.750	1.510	0.125		P1003
58	1.875	1.250	0.937	0.250	0404150
56	2.000	1.375	0.750		0778440
57	2.000	1.375	0.750		1204160
53	2.000	1.375	0.750	0.250	6593410
58	2.000	1.375	0.750	0.254	0639150
58	2.000	1.375	0.937	0.250	0778450
714	2.000	1.462	0.282		CC2000
755	2.000	1.462	0.283		455352_
83	2.000	1.500	0.587	0.250	232631_
54	2.000	1.568	0.165		66250_
755	2.000	1.606	0.129		891310_*
54	2.000	1.606	0.130		PR2000GFT
76	2.000	1.625	0.281		MPT024
65	2.000	1.625	0.437	0.150	2224010
735	2.000	1.627	0.424		710050_
770	2.000	1.630	0.281		455351_
54	2.000	1.642	0.190		PR2000KCN
54	2.000	1.690	0.128		PR2000RG
755	2.000	1.691	0.129		891040_
43	2.000	1.750	0.125		P1005
43	2.000	1.750	0.187		P1005-06
58	2.125	1.500	0.937	0.250	0967650
714	2.125	1.587	0.282		CC2125*
56	2.250	1.625	0.750		1432640
53	2.250	1.625	0.750	0.250	6593510
58	2.250	1.625	0.750	0.254	0640450
58	2.250	1.625	0.937	0.250	1432650
714	2.250	1.712	0.282		CC2250
54	2.250	1.856	0.130		PR2250GFT
65	2.250	1.875	0.437	0.150	2221110
54	2.250	1.940	0.128		PR2250RG
755	2.250	1.941	0.129		891050_
43	2.250	1.980	0.125		P1007-04
43	2.250	1.980	0.188		P1007

Piston seals

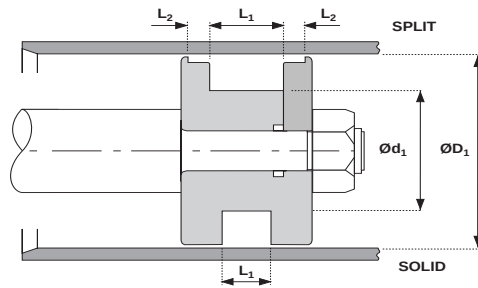
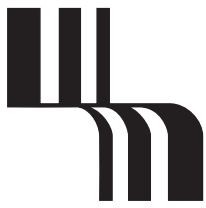
Hallite

inch - double acting



Type	ØD ₁	Ød ₁	NOMINALS L ₁	L ₂	PART No.
56	2.375	1.750	0.750		0939840
58	2.375	1.750	0.750	0.250	0890850
58	2.375	1.750	0.937	0.250	0939850
714	2.375	1.837	0.282		CC2375*
77	2.375	2.000	0.437	0.150	6918060
57	2.500	1.875	0.730		1255460
56	2.500	1.875	0.750		0867240
53	2.500	1.875	0.750	0.250	6593610
58	2.500	1.875	0.750	0.254	6502250
58	2.500	1.875	0.937	0.250	0867250
755	2.500	1.962	0.283		449002_
714	2.500	1.962	0.282		CC2500
83	2.500	2.000	0.587	0.250	212201_
54	2.500	2.068	0.165		66251_
755	2.500	2.106	0.129		443931_*
54	2.500	2.106	0.130		PR2500GFT
76	2.500	2.125	0.281		MPT028
65	2.500	2.125	0.437	0.150	2224110
77	2.500	2.125	0.437	0.150	2360210
770	2.500	2.130	0.281		449001_
54	2.500	2.190	0.128		PR2500RG
755	2.500	2.191	0.129		891060_
43	2.500	2.206	0.125		P1009-04
43	2.500	2.206	0.188		P1009
58	2.625	2.000	0.937	0.250	1371050
714	2.625	2.087	0.282		CC2625*
56	2.750	2.000	0.937		1369140
53	2.750	2.000	0.937	0.250	6593710
58	2.750	2.000	0.937	0.254	0783250
58	2.750	2.000	1.187	0.250	1369150
714	2.750	2.212	0.282		CC2750
54	2.750	2.356	0.130		PR2750GFT
65	2.750	2.375	0.437	0.150	2219510
54	2.750	2.392	0.190		PR2750KCN
43	2.750	2.437	0.125		P1011-04
43	2.750	2.437	0.188		P1011
54	2.750	2.440	0.128		PR2750RG
755	2.750	2.441	0.129		891070_
56	2.875	2.125	0.937		0779640
58	2.875	2.125	1.187	0.250	0779650

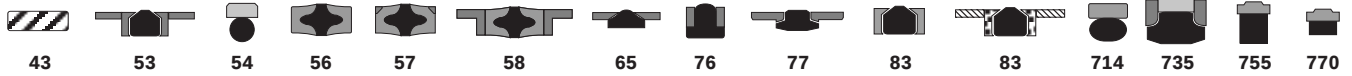
Type	ØD ₁	Ød ₁	NOMINALS L ₁	L ₂	PART No.
714	2.875	2.337	0.282		CC2875*
65	2.875	2.500	0.437	0.150	2225210
56	3.000	2.250	0.937		1098440
53	3.000	2.250	0.937	0.250	1377612
58	3.000	2.250	0.937	0.254	6502450
58	3.000	2.250	1.187	0.250	1098450
54	3.000	2.442	0.280		PR3000RG
714	3.000	2.442	0.282		CC3000
54	3.000	2.452	0.200		PR3000KCN
755	3.000	2.462	0.283		891080_
83	3.000	2.500	0.587	0.250	212211_
735	3.000	2.522	0.579		710100_
54	3.000	2.568	0.165		66252_
54	3.000	2.606	0.130		PR3000GFT
76	3.000	2.625	0.281		MPT032
65	3.000	2.625	0.437	0.150	2224210
770	3.000	2.630	0.281		434941_
43	3.000	2.680	0.125		P1013-04
43	3.000	2.680	0.188		P1013
43	3.000	2.680	0.250		P1013-08
58	3.125	2.375	1.187	0.250	1024850
714	3.125	2.567	0.282		CC3125*
56	3.250	2.500	0.937		0782440
53	3.250	2.500	0.937	0.250	6593910
58	3.250	2.500	0.937	0.254	1154150
58	3.250	2.500	1.187	0.250	0782450
54	3.250	2.640	0.250		66253_
754	3.250	2.640	0.250		442881_
54	3.250	2.692	0.280		PR3250RG
714	3.250	2.692	0.282		CC3250
54	3.250	2.702	0.200		PR3250KCN
755	3.250	2.712	0.283		891090_
83	3.250	2.750	0.587	0.250	232761_
735	3.250	2.772	0.579		710150_
54	3.250	2.856	0.130		PR3250GFT
76	3.250	2.875	0.281		MPT034
65	3.250	2.875	0.437	0.150	2219710
77	3.250	2.875	0.437	0.150	2360310
770	3.250	2.880	0.281		434951_
43	3.250	2.914	0.188		P1015



Piston seals

Hallite

inch - double acting



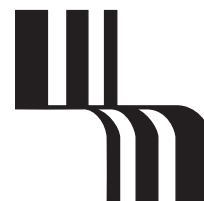
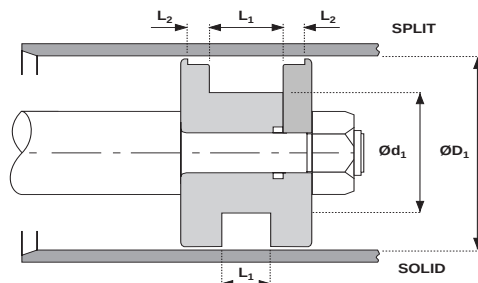
Type	ØD ₁	NOMINALS Ød ₁	L ₁	L ₂	PART No.
43	3.250	2.914	0.250		P1015-08
56	3.375	2.625	0.937		0773840
58	3.375	2.625	1.000	0.250	2199650
58	3.375	2.625	1.187	0.250	0773850
714	3.375	2.817	0.282		CC3375*
56	3.500	2.750	0.937		0437840
53	3.500	2.750	0.937	0.250	0082412
58	3.500	2.750	0.937	0.254	6500550
58	3.500	2.750	1.187	0.250	0437850
54	3.500	2.890	0.250		66254__
54	3.500	2.942	0.280		PR3500RG
714	3.500	2.942	0.282		CC3500
54	3.500	2.952	0.200		PR3500KCN
755	3.500	2.962	0.283		891100_
65	3.500	3.000	0.562	0.210	0177610
83	3.500	3.000	0.587	0.250	212221_
735	3.500	3.022	0.579		710200_
54	3.500	3.106	0.130		PR3500GFT
76	3.500	3.125	0.281		MPT035
770	3.500	3.130	0.281		434961_
43	3.500	3.148	0.188		P1017
43	3.500	3.148	0.250		P1017-08
43	3.500	3.148	0.312		P1017-10
58	3.625	2.875	1.187	0.250	1474550
53	3.750	3.000	0.937	0.250	2361010
56	3.750	3.000	0.937		0410540
58	3.750	3.000	1.187	0.250	0410550
54	3.750	3.192	0.280		PR3750RG
714	3.750	3.192	0.282		CC3750
54	3.750	3.202	0.200		PR3750KCN
755	3.750	3.212	0.283		891110_
65	3.750	3.250	0.562	0.210	0178810
735	3.750	3.272	0.579		710250_
54	3.750	3.356	0.130		PR3750GFT
43	3.750	3.380	0.250		P1019
770	3.750	3.380	0.281		434971_
58	3.875	3.125	1.187	0.250	0295850
714	3.875	3.317	0.282		CC3875*

Type	ØD ₁	NOMINALS Ød ₁	L ₁	L ₂	PART No.
56	4.000	3.250	0.716		6504740
83	4.000	3.250	0.780	0.250	232641_
56	4.000	3.250	0.937		1407740
53	4.000	3.250	0.937	0.250	0082313
58	4.000	3.250	0.937	0.254	6504750
58	4.000	3.250	1.187	0.250	1407750
54	4.000	3.302	0.250		PR4000KCN
54	4.000	3.390	0.250		66255__
754	4.000	3.390	0.250		442891_
54	4.000	3.442	0.280		PR4000RG
714	4.000	3.442	0.282		CC4000
755	4.000	3.462	0.283		891120_
65	4.000	3.500	0.562	0.210	1172310
735	4.000	3.522	0.579		710300_
54	4.000	3.606	0.130		PR4000GFT
43	4.000	3.612	0.250		P1021
43	4.000	3.612	0.312		P1021-10
76	4.000	3.625	0.281		MPT039
770	4.000	3.630	0.281		434981_
714	4.125	3.567	0.282		CC4125*
56	4.250	3.500	0.937		1128840
53	4.250	3.500	0.937	0.250	0082211
58	4.250	3.500	0.937	0.254	6504550
58	4.250	3.500	1.187	0.250	1128850
54	4.250	3.552	0.250		PR4250KCN
54	4.250	3.692	0.280		PR4250RG
714	4.250	3.692	0.282		CC4250
755	4.250	3.712	0.283		891130_
65	4.250	3.750	0.562	0.210	0309210
735	4.250	3.772	0.579		710350_
43	4.250	3.844	0.250		P1022
54	4.250	3.856	0.130		PR4250GFT
770	4.250	3.880	0.281		434991_
56	4.500	3.500	1.250		0448840
57	4.500	3.500	1.250		0733560
53	4.500	3.500	1.250	0.250	6594210
58	4.500	3.500	1.500	0.375	0448850
83	4.500	3.750	0.780	0.250	236041_
54	4.500	3.802	0.250		PR4500KCN
54	4.500	3.890	0.250		66256__

Piston seals

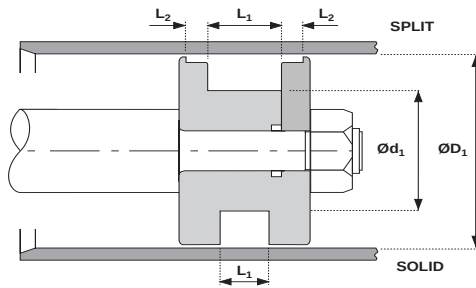
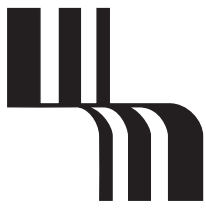
Hallite

inch - double acting



Type	NOMINALS				PART No.
	ØD ₁	Ød ₁	L ₁	L ₂	
54	4.500	3.942	0.280		PR4500RG
714	4.500	3.942	0.282		CC4500
755	4.500	3.962	0.283		891140_
65	4.500	4.000	0.562	0.210	0418910
735	4.500	4.022	0.579		710400_
43	4.500	4.074	0.250		P1023
43	4.500	4.074	0.312		P1023-10
54	4.500	4.106	0.130		PR4500GFT
770	4.500	4.130	0.281		435001_
76	4.500	4.130	0.281		MPT043
56	4.625	3.625	1.250		0449040
58	4.625	3.625	1.250	0.254	6504350*
56	4.750	3.750	1.250		1007040
58	4.750	3.750	1.250	0.254	0038250
53	4.750	3.750	1.250	0.375	2360910
58	4.750	3.750	1.500	0.375	1007050
54	4.750	4.052	0.250		PR4750KCN
54	4.750	4.192	0.282		PR4750RG
714	4.750	4.192	0.282		CC4750
755	4.750	4.212	0.283		891150_
65	4.750	4.250	0.562	0.210	1155810
43	4.750	4.308	0.250		P1024
54	4.750	4.356	0.130		PR4750GFT
770	4.750	4.380	0.281		435011_
56	5.000	4.000	1.250		0443040
57	5.000	4.000	1.250		0554760
58	5.000	4.000	1.250	0.254	6500650
53	5.000	4.000	1.250	0.375	6594310
58	5.000	4.000	1.500	0.375	0443050
54	5.000	4.182	0.375		PR5000KCN
83	5.000	4.250	0.780	0.375	232651_
735	5.000	4.274	0.750		710450_
65	5.000	4.375	0.687	0.344	1175410
54	5.000	4.390	0.250		66257_
754	5.000	4.390	0.250		442901_
54	5.000	4.442	0.280		PR5000RG
714	5.000	4.442	0.282		CC5000
755	5.000	4.462	0.283		891160_
76	5.000	4.525	0.366		MPT047/1
43	5.000	4.540	0.250		P1025

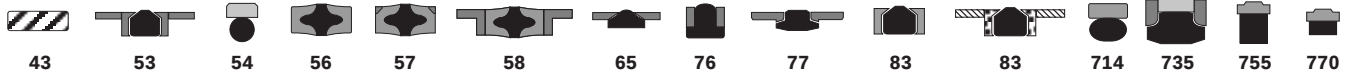
Type	NOMINALS				PART No.
	ØD ₁	Ød ₁	L ₁	L ₂	
43	5.000	4.540	0.312		P1025-10
54	5.000	4.606	0.130		PR5000GFT
76	5.000	4.625	0.281		MPT047
770	5.000	4.630	0.281		435021_
57	5.250	4.250	1.250		0197160
56	5.250	4.250	1.250		0892240
58	5.250	4.250	1.500	0.375	0892250
54	5.250	4.432	0.375		PR5250KCN
54	5.250	4.490	0.377		PR5250RG
714	5.250	4.490	0.377		CC5250
755	5.250	4.504	0.378		891170_
735	5.250	4.524	0.750		710500_
65	5.250	4.625	0.687	0.344	1173710
43	5.250	4.782	0.250		P1026
54	5.250	4.856	0.130		PR5250GFT
58	5.500	4.500	1.000	0.238	1216550*
56	5.500	4.500	1.250		0133240
58	5.500	4.500	1.250	0.254	6504150
53	5.500	4.500	1.250	0.375	6594410
58	5.500	4.500	1.500	0.375	0133250
54	5.500	4.682	0.375		PR5500KCN
54	5.500	4.740	0.377		PR5500RG
714	5.500	4.740	0.377		CC5500
755	5.500	4.754	0.378		891180_
735	5.500	4.774	0.750		710550_
65	5.500	4.875	0.687	0.344	1173610
43	5.500	5.020	0.250		P1027
43	5.500	5.020	0.312		P1027-10
735	5.500	5.022	0.579		710600_
54	5.500	5.106	0.130		PR5500GFT
58	5.750	4.750	1.500	0.375	1366950
54	5.750	4.990	0.377		PR5750RG
714	5.750	4.990	0.377		CC5750
755	5.750	5.004	0.378		891320_
54	5.750	5.232	0.160		PR5750GFT
57	6.000	5.000	1.250		0043660
56	6.000	5.000	1.250		1367040
58	6.000	5.000	1.250	0.254	0557950
53	6.000	5.000	1.250	0.375	6594510
58	6.000	5.000	1.500	0.375	1367050



Piston seals

Hallite

inch - double acting



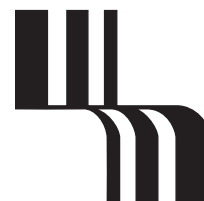
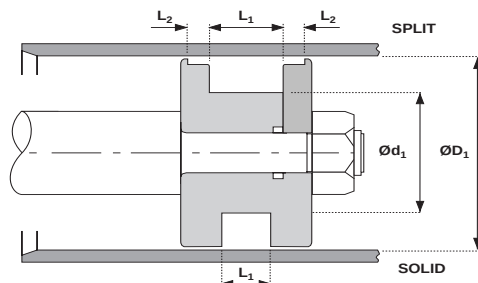
Type	ØD ₁	Ød ₁	L ₁	L ₂	PART No.
54	6.000	5.074	0.375		PR6000KCN
54	6.000	5.174	0.320		66258_
54	6.000	5.240	0.377		PR6000RG
714	6.000	5.240	0.377		CC6000
83	6.000	5.250	0.780	0.375	232661_
65	6.000	5.250	1.000	0.500	0300110
755	6.000	5.254	0.378		891190_
735	6.000	5.274	0.750		710650_
54	6.000	5.482	0.160		PR6000GFT
43	6.000	5.488	0.250		P1029-08
43	6.000	5.488	0.313		P1029
76	6.000	5.500	0.366		6112310
56	6.125	5.125	1.250		0165540*
58	6.250	5.250	1.500	0.375	0083350
54	6.250	5.324	0.375		PR6250KCN
54	6.250	5.490	0.377		PR6250RG
714	6.250	5.490	0.377		CC6250
755	6.250	5.504	0.378		891200_
735	6.250	5.524	0.750		710700_
735	6.250	5.772	0.579		710690_
54	6.250	5.732	0.160		PR6250GFT
56	6.500	5.500	1.250		1164140
58	6.500	5.500	1.250	0.254	6504650
58	6.500	5.500	1.500	0.375	1164150
54	6.500	5.574	0.375		PR6500KCN
54	6.500	5.740	0.377		PR6500RG
714	6.500	5.740	0.377		CC6500
65	6.500	5.750	1.000	0.500	0047010
755	6.500	5.754	0.378		891210_
735	6.500	5.774	0.750		710750_
54	6.500	5.982	0.160		PR6500GFT
43	6.500	5.984	0.313		P1031
735	6.500	6.022	0.579		710800_
58	6.750	5.750	1.500	0.375	1286150
54	6.750	6.232	0.160		PR6750GFT
56	7.000	6.000	1.250		1188840
57	7.000	6.000	1.250		1197760
58	7.000	6.000	1.500	0.375	1188850
54	7.000	6.074	0.375		PR7000KCN

Type	ØD ₁	Ød ₁	L ₁	L ₂	PART No.
54	7.000	6.174	0.320		66259_
54	7.000	6.240	0.377		PR7000RG
714	7.000	6.240	0.377		CC7000
755	7.000	6.250	0.312		439481_*
65	7.000	6.250	1.000	0.500	0314110
755	7.000	6.254	0.378		891220_
735	7.000	6.274	0.750		710850_
43	7.000	6.414	0.313		P1033
54	7.000	6.482	0.160		PR7000GFT
76	7.000	6.500	0.366		MPT060
54	7.250	6.324	0.375		PR7250KCN
54	7.250	6.490	0.377		PR7250RG
56	7.250	6.500	1.625		0424140*
755	7.250	6.504	0.378		891230_
43	7.250	6.646	0.312		P1034
54	7.250	6.732	0.160		PR7250GFT
56	7.500	6.250	1.625		1255240
58	7.500	6.250	1.875	0.375	1255250
54	7.500	6.574	0.375		PR7500KCN
54	7.500	6.740	0.377		PR7500RG
714	7.500	6.740	0.377		CC7500
65	7.500	6.750	1.000	0.500	0363410
755	7.500	6.754	0.378		891240_
735	7.500	6.774	0.750		710900_
43	7.500	6.882	0.312		P1035
54	7.500	6.982	0.160		PR7500GFT
56	7.750	6.500	1.625		1192740*
54	7.750	6.824	0.375		PR7750KCN
54	7.750	7.232	0.160		PR7750GFT
56	8.000	6.750	1.625		0426540
57	8.000	6.750	1.625		1199960
56	8.000	7.000	1.000		0224340
58	8.000	7.000	1.250	0.375	0224350
54	8.000	7.174	0.320		66260_
54	8.000	7.240	0.377		PR8000RG
714	8.000	7.240	0.377		CC8000
65	8.000	7.250	1.000	0.500	0045110
58	8.000	7.250	1.187	0.375	0362950
755	8.000	7.254	0.378		891250_
735	8.000	7.274	0.750		710950_

Piston seals

Hallite

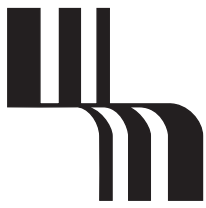
inch - double acting



Type	NOMINALS ØD ₁	NOMINALS Ød ₁	NOMINALS L ₁	NOMINALS L ₂	PART No.
43	8.000	7.350	0.312		P1037-10
43	8.000	7.350	0.375		P1037
54	8.000	7.482	0.160		PR8000GFT
76	8.000	7.500	0.366		MPT064
56	8.250	7.000	1.625		1219240*
54	8.250	7.180	0.375		PR8250KCN
54	8.250	7.732	0.160		PR8250GFT
755	8.437	7.691	0.378		891300_
714	8.437	7.677	0.377		CC8437
56	8.500	7.250	1.625		1286440*
54	8.500	7.430	0.375		PR8500KCN
54	8.500	7.740	0.377		PR8500RG
714	8.500	7.740	0.377		CC8500
755	8.500	7.754	0.378		891260_
735	8.500	7.774	0.750		711000_
43	8.500	7.820	0.312		P1039-10
54	8.500	7.982	0.160		PR8500GFT
714	8.531	7.771	0.377		CC8531
56	8.750	7.500	1.625		0418140*
57	9.000	7.750	1.625		1199160
56	9.000	7.750	1.625		1266640
58	9.000	7.750	1.875	0.375	1266650
58	9.000	8.000	1.250	0.375	1273750
54	9.000	8.124	0.377		PR9000RG
755	9.000	8.137	0.378		891270_
65	9.000	8.250	1.000	0.500	0045510
735	9.000	8.274	0.750		711050_
54	9.000	8.482	0.160		PR9000GFT
56	9.250	8.000	1.625		0455740*
56	9.500	8.250	1.625		1332240*
54	9.500	8.624	0.377		PR9500RG
755	9.500	8.637	0.378		891280_
54	9.500	8.982	0.160		PR9500GFT
56	9.750	8.500	1.625		1332340*
714	9.875	9.000	0.377		CC9875
57	10.000	8.750	1.312		1200060

Type	NOMINALS ØD ₁	NOMINALS Ød ₁	NOMINALS L ₁	NOMINALS L ₂	PART No.
56	10.000	8.750	1.625		0436140
58	10.000	9.000	1.250	0.375	0697650
54	10.000	9.124	0.377		PR10000RG
755	10.000	9.137	0.378		891290_
43	10.000	9.236	0.312		P1044-10
735	10.000	9.275	0.750		711100_
54	10.000	9.482	0.160		PR10000GFT
56	10.250	9.000	1.625		0437540*
56	10.500	9.250	1.625		1331940*
56	10.750	9.500	1.625		1320440*
56	11.000	9.750	1.625		0433940*
54	11.000	10.124	0.377		PR11000RG
735	11.000	10.275	0.750		711150_
56	11.250	10.250	1.625		1331640*
57	12.000	10.500	1.750		1199260
56	12.000	10.750	1.625		1331440
54	12.000	11.124	0.377		PR12000RG
735	12.000	11.275	0.750		711200_
56	12.500	11.250	1.625		0436340*
56	13.000	11.750	1.625		0436540*
54	13.000	12.124	0.377		PR13000RG
54	14.000	13.124	0.377		PR14000RG
56	14.500	13.000	1.500		0270940*
56	15.000	13.750	1.500		0787040*
56	15.000	14.275	0.750		711300_
56	16.000	14.750	1.800		2117440
56	17.000	15.000	2.250		1345340
56	18.000	16.000	2.062		2002040
56	19.500	18.000	2.500		2108240*
56	20.000	18.500	1.750		2111240*

* Denotes possible indent item -
minimum quantity may apply



Piston / Rod seals

Hallite



18

TECHNICAL DETAILS

METRIC

INCH

OPERATING CONDITIONS

MAXIMUM SPEED
MAXIMUM TEMPERATURE
MAXIMUM PRESSURE

0.5 m/sec
-30°C + 100°C
500 bar

1.5 ft/sec
-22°F + 212°F
7500 p.s.i.

MAXIMUM EXTRUSION GAP

PRESSURE bar
MAXIMUM GAP mm
PRESSURE p.s.i.
MAXIMUM GAP in

Figures show the maximum permissible gap all on one side, for rod seals using minimum rod $\varnothing$ and maximum clearance $\varnothing$ and for piston seals using the minimum clearance $\varnothing$ and maximum bore $\varnothing$

160	250	400	500
0.4	0.3	0.2	0.1
2400	3750	6000	7500
0.016	0.012	0.008	0.004

SURFACE ROUGHNESS

DYNAMIC SEALING FACE - ROD $\varnothing d_1$
STATIC SEALING FACE - ROD $\varnothing D_1$
DYNAMIC SEALING FACE - PISTON $\varnothing d_1$
STATIC SEALING FACE - PISTON $\varnothing d_1$
STATIC HOUSING FACES L_1

μmRa	μmRt	$\mu inCLA$	$\mu inRMS$
0.1 $\leftrightarrow$ 0.4	4 max	4 $\leftrightarrow$ 16	5 $\leftrightarrow$ 18
1.6 max	10 max	63 max	70 max
0.1 $\leftrightarrow$ 0.4	4 max	4 $\leftrightarrow$ 16	5 $\leftrightarrow$ 18
1.6 max	10 max	63 max	70 max
3.2 max	16 max	125 max	140 max

CHAMFERS & RADII

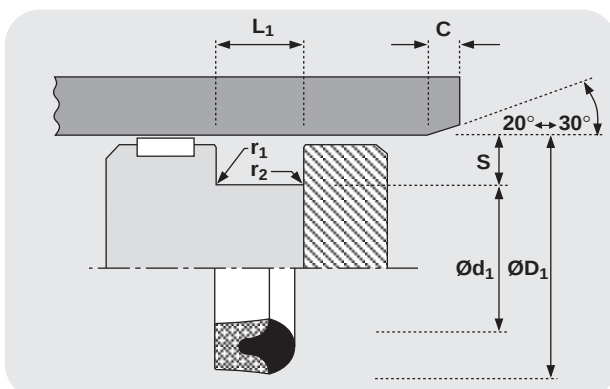
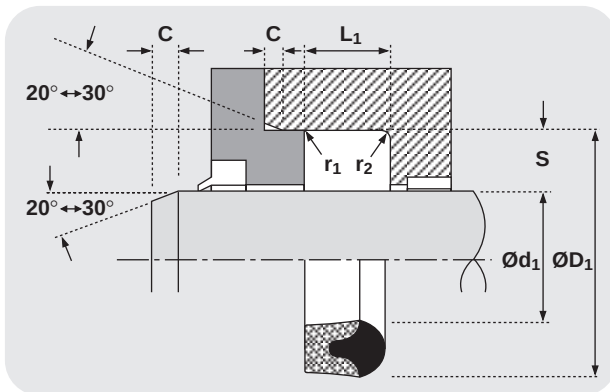
GROOVE SECTION $\leq S$ mm
MIN CHAMFER C mm
MAX FILLET RAD r_1 mm
MAX FILLET RAD r_2 mm
GROOVE SECTION $\leq S$ in
MIN CHAMFER C in
MAX FILLET RAD r_1 in
MAX FILLET RAD r_2 in

4.0	5.0	7.5	10.0	12.5	15.0	20.0
2.0	2.5	4.0	5.0	6.5	7.5	10.0
0.2	0.4	0.8	0.8	1.2	1.6	1.6
0.4	0.8	1.2	1.2	1.6	2.4	2.4
0.187	0.250	0.312	0.375	0.500	0.625	0.750
0.093	0.125	0.156	0.187	0.217	0.250	0.375
0.008	0.016	0.032	0.032	0.032	0.047	0.047
0.016	0.032	0.047	0.047	0.047	0.062	0.062

TOLERANCES

ROD
PISTON

$\varnothing d_1$	$\varnothing D_1$	L_1 mm	L_1 in
f9	Js11	+0.25 -0	+0.010 -0
js11	H9	+0.25 -0	+0.010 -0



DESIGN

A medium to heavy duty single acting seal, the Hallite 18 has shown itself over many years to be an effective and robust seal in a wide variety of applications.

The seal comprises a rubberised fabric U form base to which is bonded a rubber energiser.

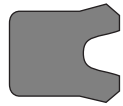
The seal section is pre-loaded by the housing when installed to ensure effective sealing at low pressure. When the pressure increases the rubber energises the U form to increase the sealing area and hence the efficiency of the seal. The strength and durability of the rubberised fabric combines with its ability to retain lubricant keeping friction and wear to a minimum.

FEATURES

- THE ORIGINAL HALLITE FLUID SEAL
- GENERAL PURPOSE SEAL
- LONG LIFE

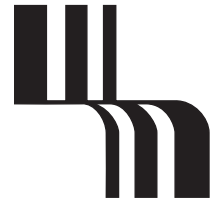
NB:

Size lists give "on line" tolerances for rod applications.



Piston / Rod seals

Hallite



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TECHNICAL DETAILS

METRIC

INCH

OPERATING CONDITIONS

MAXIMUM SPEED 1.0 m/sec
MAXIMUM TEMPERATURE -45°C + 110°C
MAXIMUM PRESSURE 400 bar*

3.0 ft/sec
-50°F + 230°F
6,000 p.s.i.*

MAXIMUM EXTRUSION GAP

PRESSURE bar
MAXIMUM GAP mm
PRESSURE p.s.i.
MAXIMUM GAP in

Figures show the maximum permissible gap all on one side, for rod seals using minimum rod $\varnothing$ and maximum clearance $\varnothing$ and for piston seals using the minimum clearance $\varnothing$ and maximum bore $\varnothing$

160	250	400
0.6	0.5	0.4
2400	3750	6000
0.024	0.020	0.016

SURFACE ROUGHNESS

DYNAMIC SEALING FACE - ROD $\varnothing d_1$
STATIC SEALING FACE - ROD $\varnothing D_1$
DYNAMIC SEALING FACE - PISTON $\varnothing d_1$
STATIC SEALING FACE - PISTON $\varnothing d_1$
STATIC HOUSING FACES L_1

μmRa	μmRt	$\mu inCLA$	$\mu inRMS$
0.1 $\leftrightarrow$ 0.4	4 max	4 $\leftrightarrow$ 16	5 $\leftrightarrow$ 18
1.6 max	10 max	63 max	70 max
0.1 $\leftrightarrow$ 0.4	4 max	4 $\leftrightarrow$ 16	5 $\leftrightarrow$ 18
1.6 max	10 max	63 max	70 max
3.2 max	16 max	125 max	140 max

CHAMFERS & RADII

GROOVE SECTION $\leq S$ mm
MIN CHAMFER C mm
MAX FILLET RAD r_1 mm
MAX FILLET RAD r_2 mm
GROOVE SECTION $\leq S$ in
MIN CHAMFER C in
MAX FILLET RAD r_1 in
MAX FILLET RAD r_2 in

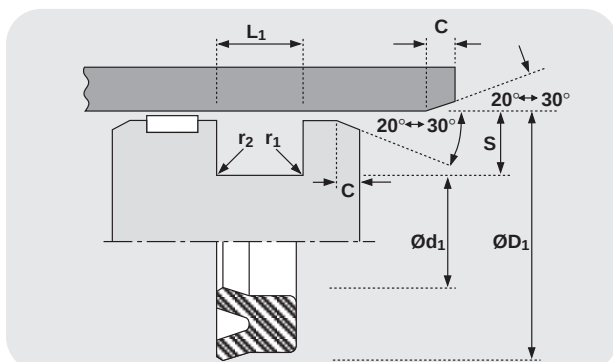
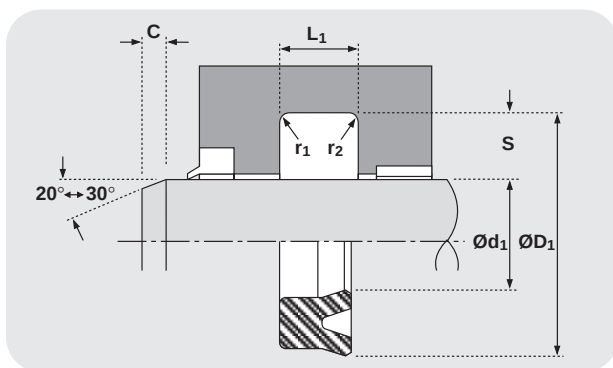
4.0	5.0	7.5	10.0	12.5	15.0	20.0
3.0	3.5	5.0	6.5	7.0	8.0	10.0
0.2	0.4	0.8	0.8	1.2	1.6	1.6
0.4	0.8	1.2	1.2	1.6	2.4	2.4
0.125	0.187	0.250	0.312	0.375	0.500	
0.093	0.093	0.125	0.156	0.187	0.217	
0.008	0.008	0.016	0.032	0.032	0.032	
0.016	0.016	0.032	0.047	0.047	0.047	

TOLERANCES

ROD
PISTON

$\varnothing d_1$	$\varnothing D_1$	L_1 mm	L_1 in
f9	Js11	+0.25 -0	+0.010 -0
js11	H9	+0.25 -0	+0.010 -0

* Pressure rating of seal can be extended to 700 bar /10,000p.s.i. with the use of a back up ring.
If this option is required seek advice from your local Hallite Seals sales office.



DESIGN

The Hallite 25 is a high performance general purpose seal suitable for rod and piston use.

Manufactured in Hythane 181, Hallite's 25 is engineered to effect a good seal in most industrial cylinder applications.

The sealing lips are accurately machine trimmed to ensure good low pressure sealing while the material resists extrusion at high pressures.

FEATURES

- GENERAL PURPOSE SEAL
- EXCELLENT TEMPERATURE RESISTANCE
- EASE OF INSTALLATION



Piston / Rod seals

Hallite



26

TECHNICAL DETAILS

METRIC

INCH

OPERATING CONDITIONS

MAXIMUM SPEED
MAXIMUM TEMPERATURE
MAXIMUM PRESSURE

0.5 m/sec
-30°C +100°C
30 bar

1.5 ft/sec
-22°F +212°F
500 p.s.i.

MAXIMUM EXTRUSION GAP

PRESSURE bar
PRESSURE p.s.i.
MAXIMUM GAP in

Figures show the maximum permissible gap all on one side, for rod seals using minimum rod $\varnothing$ and maximum clearance $\varnothing$ and for piston seals using the minimum clearance $\varnothing$ and maximum bore $\varnothing$

10	30
150	500
0.028	0.024

SURFACE ROUGHNESS

DYNAMIC SEALING FACE - ROD $\varnothing d_1$
STATIC SEALING FACE - ROD $\varnothing D_1$
DYNAMIC SEALING FACE - PISTON $\varnothing d_1$
STATIC SEALING FACE - PISTON $\varnothing D_1$
STATIC HOUSING FACES L_1

μmRa	μmRt	$\mu inCLA$	$\mu inRMS$
0.1 $\leftrightarrow$ 0.4	4 max	4 $\leftrightarrow$ 16	5 $\leftrightarrow$ 18
1.6 max	10 max	63 max	70 max
0.1 $\leftrightarrow$ 0.4	4 max	4 $\leftrightarrow$ 16	5 $\leftrightarrow$ 18
1.6 max	10 max	63 max	70 max
3.2 max	16 max	125 max	140 max

CHAMFERS & RADII

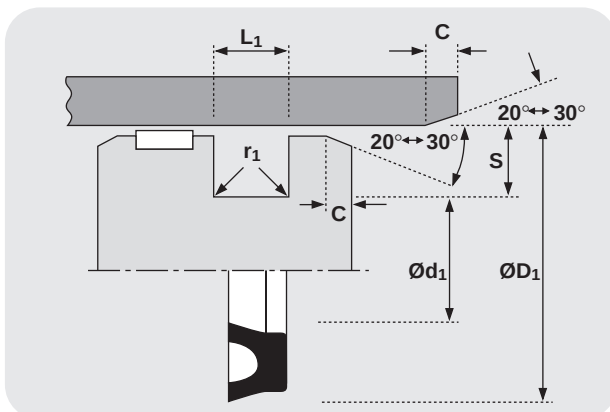
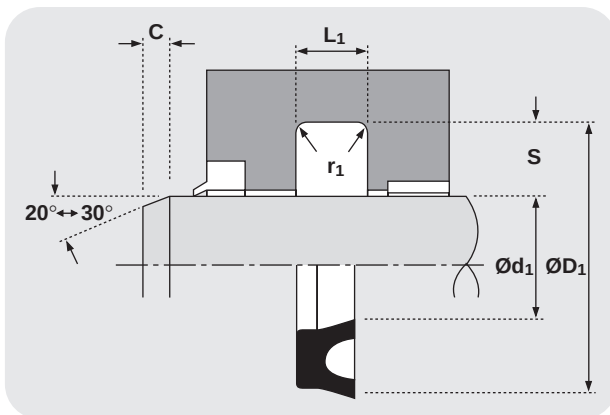
GROOVE SECTION $\leq S$ in
MIN CHAMFER C in
MAX FILLET RAD r_1 in

0.187	0.250	0.312	0.375	0.500
0.093	0.125	0.156	0.187	0.217
0.008	0.016	0.016	0.032	0.032

TOLERANCES

ROD
PISTON

$\varnothing d_1$	$\varnothing D_1$	L_1 mm	L_1 in
f9	Js11	+0.25 -0	+0.010 -0
js11	H9	+0.25 -0	+0.010 -0



DESIGN

Hallite 26 U rings are normally supplied in an 80 durometer nitrile material.

The AN style U ring is designed for use in low pressure pneumatic applications. The Block U ring style can be used for pneumatic or light pressure applications in hydraulic cylinders.

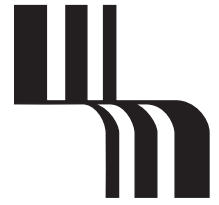
The pressure rating can be extended by the use of back-up rings.

Hallite also manufacture a full range of rectangular nitrile U rings, please contact your nearest Hallite sales office or Hallite distributor for the sizes available.

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Piston seals

Hallite



TECHNICAL DETAILS

METRIC

INCH

OPERATING CONDITIONS

MAXIMUM SPEED 0.5 m/sec
 MAXIMUM TEMPERATURE -30°C + 100°C
 MAXIMUM PRESSURE 170 bar

1.5 ft/sec
 -22°F + 212°F
 2500 p.s.i.

MAXIMUM EXTRUSION GAP

PRESSURE bar
 PRESSURE p.s.i.
 MAXIMUM GAP mm

Figures show the maximum permissible gap all on one side using the minimum clearance $\emptyset$ and maximum bore $\emptyset$

50	100	140	170
750	1500	2000	2500
0.020	0.018	0.017	0.016

SURFACE ROUGHNESS

DYNAMIC SEALING FACE $\emptyset D_1$
 STATIC SEALING FACE $\emptyset d_1$
 STATIC HOUSING FACES L_1

μmRa	μmRt	$\mu inCLA$	$\mu inRMS$
0.8 max	5 max	32 max	35 max
1.6 max	10 max	63 max	70 max
3.2 max	16 max	125 max	140 max

CHAMFERS & RADII

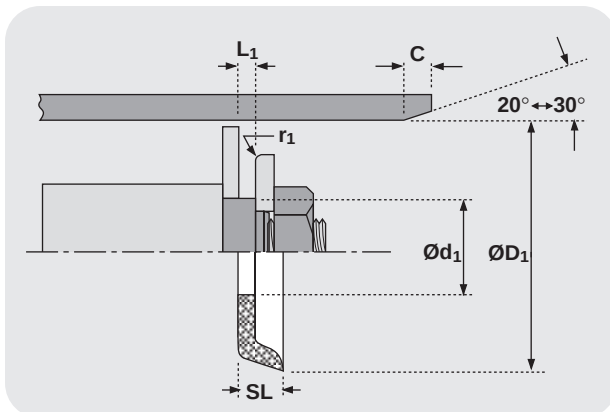
SEAL DIAMETER $\leq \emptyset D_1$ in
 MIN CHAMFER C in
 MAX FILLET RAD r_1 in

2.000	3.000	6.500
0.187	0.217	0.250
0.062	0.093	0.125

TOLERANCES

in

$\emptyset D_1$	$\emptyset d_1$	$\emptyset d_2$	L_1
See overleaf	h11	max	0 -0.005

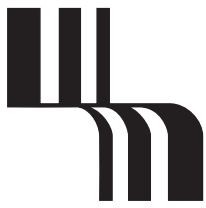


DESIGN

Hallite 66 fabric cup seal is designed for pistons in either single or double acting medium duty applications. Manufactured from rubberised fabric, this provides the seal with a lip which has strength and durability, capable of operating in wide tolerance tube with a generous surface finish. Wear and friction are kept to a minimum because of the ability of the rubberised fabric to retain lubricant in the seal area. The standard range is designed to give a satisfactory performance when used with the recommended operating conditions and installation details. Each size in the standard range can be supplied with different diameter centre holes, $\emptyset d_1$, by specifying the appropriate number for the sixth digit in the part number. Many other sizes are available so if your requirements are not met by the standard range please contact your Hallite representative.

FEATURES

- PRECISION MOULDED
- LONG LIFE
- WIDE SIZE RANGE
- TOLERATES CONTAMINATION



Piston seals

Hallite

TECHNICAL DETAILS

METRIC

INCH

OPERATING CONDITIONS

MAXIMUM SPEED
MAXIMUM TEMPERATURE
MAXIMUM PRESSURE

0.55 m/sec
-30°C + 90°C
17 bar

1.5 ft/sec
-22°F + 194°F
250 p.s.i.

MAXIMUM EXTRUSION GAP

PRESSURE bar
PRESSURE p.s.i.
MAXIMUM GAP mm

Figures show the maximum permissible gap all on one side using the minimum clearance $\emptyset$ and maximum bore $\emptyset$

17
250
0.030

SURFACE ROUGHNESS

DYNAMIC SEALING FACE $\emptyset D_1$
STATIC SEALING FACE $\emptyset d_1$
STATIC HOUSING FACES L_1

μmRa	μmRt	$\mu inCLA$	$\mu inRMS$
0.8 max	5 max	32 max	35 max
1.6 max	10 max	63 max	70 max
3.2 max	16 max	125 max	140 max

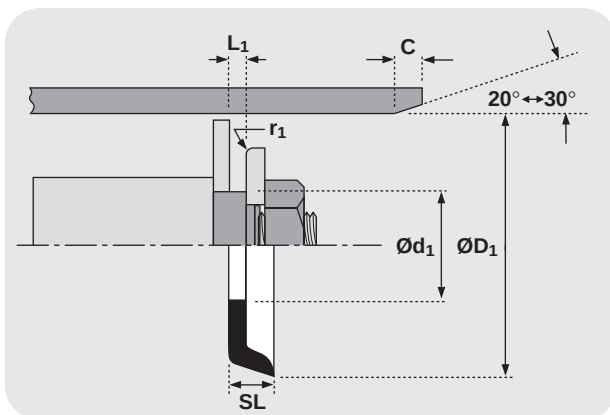
CHAMFERS & RADII

SEAL DIAMETER $\leq \emptyset D_1$ in
MIN CHAMFER C in
MAX FILLET RAD r_1 in

2.000	3.000	6.500
0.187	0.217	0.250
0.062	0.093	0.125

TOLERANCES

Please refer to local Hallite sales office



DESIGN

The Hallite 67 cup seal is designed for use in either single or double acting light duty applications.

Manufactured from nitrile rubber, the seal is responsive to low pressure fluctuations and has very low friction. Ideal for use in pneumatic applications, the Hallite 67 is also suitable for use in mineral oil based fluids and water.

The range is supplied without a centre hole $\emptyset d_1$, however the centre is marked for your convenience.

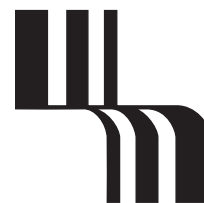
FEATURES

- FLEXIBLE FOR EASY INSTALLATION
- LONG LIFE
- WIDE RANGE OF SIZES



Piston seals

Hallite



TECHNICAL DETAILS

METRIC

INCH

OPERATING CONDITIONS

MAXIMUM SPEED 0.5 m/sec
MAXIMUM TEMPERATURE -30°C + 100°C
MAXIMUM PRESSURE 700 bar

1.5 ft/sec
-22°F + 212°F
10,000 p.s.i.

SURFACE ROUGHNESS

DYNAMIC SEALING FACE $\varnothing D_1$ 0.1 ↔ 0.4 4 max
STATIC SEALING FACE $\varnothing d_1$ $\varnothing d_2$ 1.6 max 10 max
STATIC HOUSING FACES $\varnothing d_3$ L_1 L_2 3.2 max 16 max

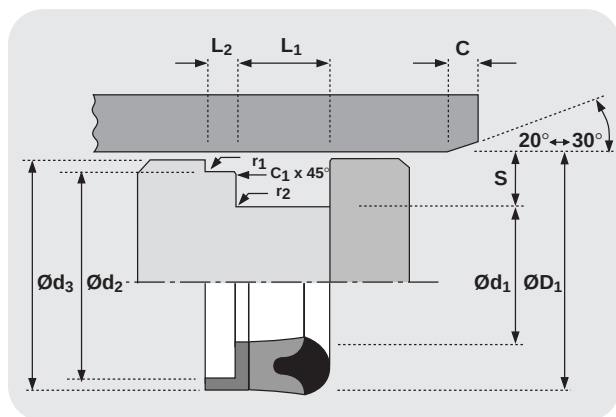
μinCLA μinRMS
4 ↔ 16 5 ↔ 18
63 max 70 max
125 max 140 max

CHAMFERS & RADII

	5.0	7.5	10.0	12.5	15.0
GROOVE SECTION $\leq S$ mm	5.0	7.5	10.0	12.5	15.0
MIN CHAMFER C mm	2.5	4.0	5.0	6.5	7.5
MIN CHAMFER C_1 mm	1.0	1.0	1.0	1.5	1.5
MAX FILLET RAD r_1 mm	0.2	0.2	0.2	0.4	0.4
MAX FILLET RAD r_2 mm	0.2	0.2	0.2	0.4	0.4
GROOVE SECTION $\leq S$ in	0.187	0.250	0.312	0.375	0.500
MIN CHAMFER C in	0.093	0.125	0.156	0.187	0.217
MIN CHAMFER C_1 in	0.032	0.032	0.032	0.062	0.062
MAX FILLET RAD r_1 in	0.008	0.008	0.008	0.008	0.016
MAX FILLET RAD r_2 in	0.008	0.008	0.008	0.008	0.016

TOLERANCES

	$\varnothing D_1$	$\varnothing d_1$	$\varnothing d_2$	$\varnothing d_3$	L_1	L_2
mm	H8	js11	h9	js11	+0.50 +0.25	0 -0.15
in	H8	js11	h9	js11	+0.02 +0.01	0 -0.005



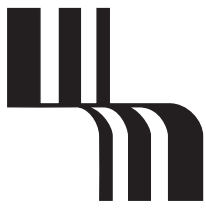
DESIGN

The Hallite 71 single acting fluid seal assembly consists of the standard Hallite 18 single acting fluid seal and the Hallite 62 L shaped bearing ring (wear ring). Manufactured in very hard wearing polyacetal resin, the bearing ring was originally designed to replace conventional bronze or cast iron piston bearings, reducing the problem of cylinder bore scoring to a minimum and allowing the designer to use compact, strong, cost effective steel pistons. The inherent nature of the material enables it to settle to the bore size once it has been pressurized, therefore providing an excellent anti-extrusion member and also increasing seal life.

Due to its flexibility it should not be used primarily as a bearing where severe knuckling or excessive side loading may occur. Under these conditions we suggest the use of conventional bronze or cast iron bearings or the additional use of the Hallite 506 bearings.

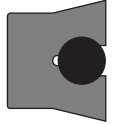
The proportions of the range have been determined to give a satisfactory performance when used with the recommended operating conditions.

Other sizes are available outside this range.



Piston / Rod seals

Hallite



TECHNICAL DETAILS

METRIC

INCH

OPERATING CONDITIONS

MAXIMUM SPEED
MAXIMUM TEMPERATURE
MAXIMUM PRESSURE

0.5 m/sec
-40°C + 110°C
350 bar

1.5 ft/sec
-40°F + 230°F
5000 p.s.i.

MAXIMUM EXTRUSION GAP

(1/4" section and above)

PRESSURE bar

PRESSURE p.s.i.

MAXIMUM GAP in

Figures show the maximum permissible gap all on one side, for rod seals using minimum rod $\varnothing$ and maximum clearance $\varnothing$ and for piston seals using the minimum clearance $\varnothing$ and maximum bore $\varnothing$

160 250 350

2400 3750 5000
0.024 0.020 0.016

SURFACE ROUGHNESS

DYNAMIC SEALING FACE - ROD $\varnothing d_1$
STATIC SEALING FACE - ROD $\varnothing D_1$
DYNAMIC SEALING FACE - PISTON $\varnothing d_1$
STATIC SEALING FACE - PISTON $\varnothing d_1$
STATIC HOUSING FACES L_1

μmRa	μmRt	$\mu inCLA$	$\mu inRMS$
0.1 $\leftrightarrow$ 0.4	4 max	4 $\leftrightarrow$ 16	5 $\leftrightarrow$ 18
1.6 max	10 max	63 max	70 max
0.1 $\leftrightarrow$ 0.4	4 max	4 $\leftrightarrow$ 16	5 $\leftrightarrow$ 18
1.6 max	10 max	63 max	70 max
3.2 max	16 max	125 max	140 max

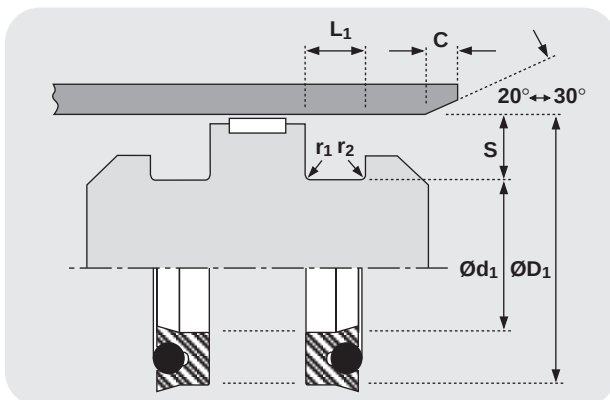
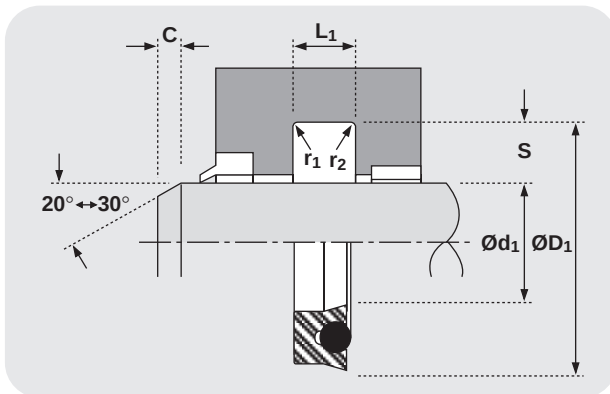
CHAMFERS & RADII

GROOVE SECTION $\leq S$ in
MIN CHAMFER C in
MAX FILLET RAD r_1 in
MAX FILLET RAD r_2 in

0.125	0.187	0.250	0.312	0.375	0.500	0.625
0.093	0.093	0.125	0.156	0.187	0.187	0.217
0.008	0.008	0.016	0.032	0.032	0.032	0.047
0.016	0.016	0.032	0.047	0.047	0.047	0.062

TOLERANCES

Please refer to specified tolerances in the introduction
- Housing & installation data - Hallite 500 Series



DESIGN

The Hallite 511 is a standard profile loaded U cup utilising a polyurethane or polyester shell energised by a high specification resilient O ring.

At zero or low pressure, the O ring helps to increase the sealing force preventing any bypass. As pressure rises the sealing force increases and the O ring ensures complete lip actuation under most conditions.

The symmetry of the seal allows it to be used on both rod and piston applications and its flexibility enables easy installation. Ideally suited for single acting applications, the Hallite 511 can also be fitted back to back for use in double acting applications. Although used as a rod seal, other profiles such as 513, 605 or 621 are a better option.

FEATURES

- FLEXIBLE FOR EASY INSTALLATION
- EXCELLENT RESISTANCE TO ABRASION
- POSITIVE LIP ACTUATION
- KNIFE TRIMMED PRECISION SEALING LIPS
- COMPACT HOUSING
- WIDE RANGE OF SIZES
- MATERIAL OPTIONS

MATERIALS

Seal material - O-Ring last digit of part number

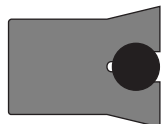
Standard material:

Polyurethane - NBR - - - - - 10

Material options:

Polyester - NBR - - - - - 11

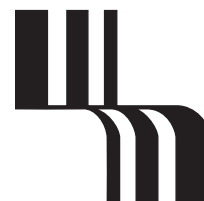
Polyester - FKM - - - - - 12



512

Piston / Rod seals

Hallite



TECHNICAL DETAILS

METRIC

INCH

OPERATING CONDITIONS

MAXIMUM SPEED 0.5 m/sec
MAXIMUM TEMPERATURE -40°C + 110°C
MAXIMUM PRESSURE 350 bar

1.5 ft/sec
-40°F + 230°F
5000 p.s.i.

MAXIMUM EXTRUSION GAP

(1/4" section and above)

PRESSURE bar
PRESSURE p.s.i.
MAXIMUM GAP in

Figures show the maximum permissible gap all on one side, for rod seals using minimum rod $\varnothing$ and maximum clearance $\varnothing$ and for piston seals using the minimum clearance $\varnothing$ and maximum bore $\varnothing$

160	250	350
2400	3750	5000
0.024	0.020	0.016

SURFACE ROUGHNESS

DYNAMIC SEALING FACE $\varnothing d_1$
STATIC SEALING FACE $\varnothing D_1$
STATIC HOUSING FACES L_1

μmRa	μmRt	$\mu inCLA$	$\mu inRMS$
0.1 $\leftrightarrow$ 0.4	4 max	4 $\leftrightarrow$ 16	5 $\leftrightarrow$ 18
1.6 max	10 max	63 max	70 max
3.2 max	16 max	125 max	140 max

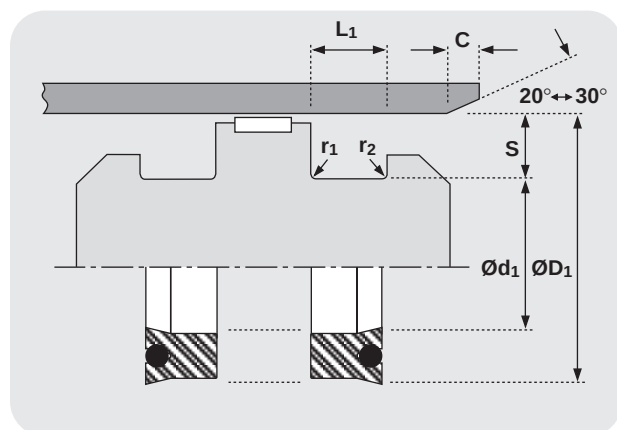
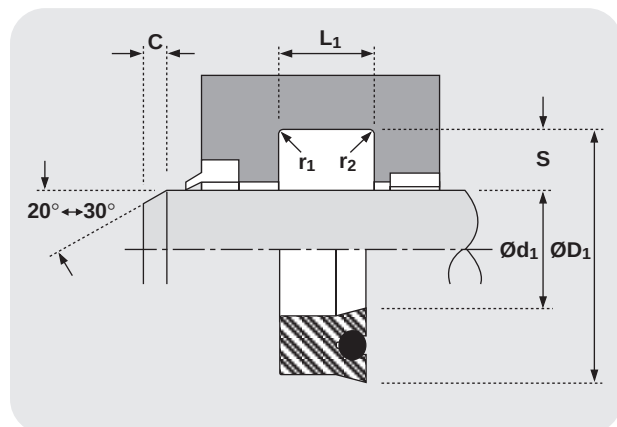
CHAMFERS & RADII

GROOVE SECTION $\leq S$ in
MIN CHAMFER C in
MAX FILLET RAD r_1 in
MAX FILLET RAD r_2 in

0.125	0.187	0.250	0.312	0.375	0.500
0.093	0.093	0.125	0.156	0.187	0.187
0.008	0.008	0.016	0.032	0.032	0.032
0.016	0.016	0.032	0.047	0.047	0.047

TOLERANCES

Please refer to specified tolerances in the introduction
- Housing & installation data - Hallite 500 Series



DESIGN

The Hallite 512 is a standard profile loaded U cup utilising a polyurethane or polyester shell energised by a high specification O ring.

At zero or low pressure, the O ring helps to increase the sealing force, preventing any by-pass. As pressure rises, so the sealing force increases, with the O ring ensuring complete lip actuation under most conditions.

The deep profile of this seal provides extra stability needed to resist rolling in the groove and together with the knife trimmed precision sealing lips, the results are improved life and sealing. The 512 can be used for single acting applications or fitted back to back for double acting applications. Although it can also be used as a rod seal, Other profiles like 513, 605 or 621 are a better option.

Technical details shown are for standard material option.

FEATURES

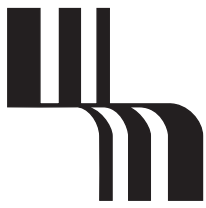
- FLEXIBLE FOR EASY INSTALLATION
- EXCELLENT RESISTANCE TO ABRASION
- POSITIVE LIP ACTUATION
- DEEP PROFILE FOR STABILITY
- WIDE RANGE OF SIZES AND MATERIAL OPTIONS

MATERIALS

Seal material - O-Ring last digit of part number

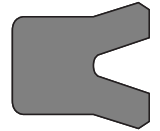
Standard material:
Polyurethane - NBR - - - - - 10

Material options:
Polyester - NBR - - - - - 11
Polyester - FKM - - - - - 12



Piston / Rod seals

Hallite



601

TECHNICAL DETAILS

METRIC

INCH

OPERATING CONDITIONS

MAXIMUM SPEED 1.0 m/sec
MAXIMUM TEMPERATURE -45°C + 110°C
MAXIMUM PRESSURE 400 bar*

3.0 ft/sec
-50°F + 230°F
6,000 p.s.i.*

MAXIMUM EXTRUSION GAP

PRESSURE bar
MAXIMUM GAP mm
PRESSURE p.s.i.
MAXIMUM GAP in

Figures show the maximum permissible gap all on one side, for rod seals using minimum rod $\varnothing$ and maximum clearance $\varnothing$ and for piston seals using the minimum clearance $\varnothing$ and maximum bore $\varnothing$

160	250	400
0.6	0.5	0.4
2400	3750	6000
0.024	0.020	0.016

SURFACE ROUGHNESS

DYNAMIC SEALING FACE - ROD $\varnothing d_1$
STATIC SEALING FACE - ROD $\varnothing D_1$
DYNAMIC SEALING FACE - PISTON $\varnothing d_1$
STATIC SEALING FACE - PISTON $\varnothing d_1$
STATIC HOUSING FACES L_1

μmRa	μmRt	$\mu inCLA$	$\mu inRMS$
0.1 $\leftrightarrow$ 0.4	4 max	4 $\leftrightarrow$ 16	5 $\leftrightarrow$ 18
1.6 max	10 max	63 max	70 max
0.1 $\leftrightarrow$ 0.4	4 max	4 $\leftrightarrow$ 16	5 $\leftrightarrow$ 18
1.6 max	10 max	63 max	70 max
3.2 max	16 max	125 max	140 max

CHAMFERS & RADII

GROOVE SECTION $\leq S$ mm
MIN CHAMFER C mm
MAX FILLET RAD r_1 mm
MAX FILLET RAD r_2 mm
GROOVE SECTION $\leq S$ in
MIN CHAMFER C in
MAX FILLET RAD r_1 in
MAX FILLET RAD r_2 in

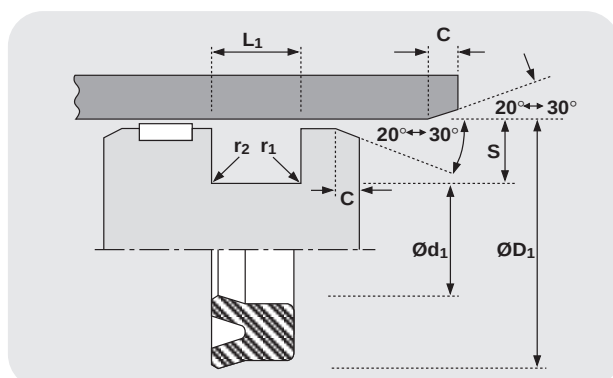
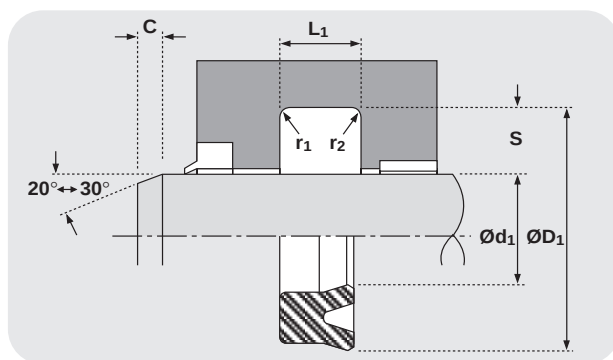
4.0	5.0	7.5	10.0	12.5	15.0	20.0
3.0	3.5	5.0	6.5	7.0	8.0	10.0
0.2	0.4	0.8	0.8	1.2	1.6	1.6
0.4	0.8	1.2	1.2	1.6	2.4	2.4
0.125	0.187	0.250	0.312	0.375	0.500	
0.093	0.093	0.125	0.156	0.187	0.217	
0.008	0.008	0.016	0.032	0.032	0.032	
0.016	0.016	0.032	0.047	0.047	0.047	

TOLERANCES

ROD
PISTON

$\varnothing d_1$	$\varnothing D_1$	L_1 mm	L_1 in
f9	Js11	+0.25 -0	+0.010 -0
js11	H9	+0.25 -0	+0.010 -0

* Pressure rating of seal can be extended to 700 bar /10,000p.s.i. with the use of a back up ring.
If this option is required seek advice from your local Hallite Seals sales office.



DESIGN

The Hallite 601 is a high performance general purpose seal suitable for rod and piston use.

Manufactured in Hythane® 181 - Hallite's 601 is engineered to effect a good seal in most industrial cylinder applications.

The sealing lips are accurately machine trimmed to ensure good low pressure sealing while the material resists extrusion at high pressures.

FEATURES

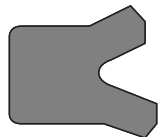
- GENERAL PURPOSE SEAL
- EXCELLENT TEMPERATURE RESISTANCE
- EASE OF INSTALLATION

NB:

Part numbers commencing 46 are designed to suit popular Asian housings.

Part numbers suffixed by "‡" indicate housing sizes to meet ISO5597.

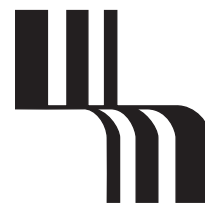
Size lists give "on line" tolerances for rod applications.



606

Piston seals

Hallite



TECHNICAL DETAILS

METRIC

INCH

OPERATING CONDITIONS

MAXIMUM SPEED 1.0 m/sec
MAXIMUM TEMPERATURE -45°C + 110°C
MAXIMUM PRESSURE 400 bar*

3.0 ft/sec
-50°F + 230°F
6,000 p.s.i.*

MAXIMUM EXTRUSION GAP

PRESSURE bar
MAXIMUM GAP mm
PRESSURE p.s.i.
MAXIMUM GAP in

Figures show the maximum permissible gap all on one side using the minimum clearance $\varnothing$ and maximum bore $\varnothing$

160	250	400
0.6	0.5	0.4
2400	3750	6000
0.024	0.020	0.016

SURFACE ROUGHNESS

DYNAMIC SEALING FACE $\varnothing D_1$
STATIC SEALING FACE $\varnothing d_1$
STATIC HOUSING FACES L_1

μmRa	μmRt	$\mu inCLA$	$\mu inRMS$
0.1 $\leftrightarrow$ 0.4	4 max	4 $\leftrightarrow$ 16	5 $\leftrightarrow$ 18
1.6 max	10 max	63 max	70 max
3.2 max	16 max	125 max	140 max

CHAMFERS & RADII

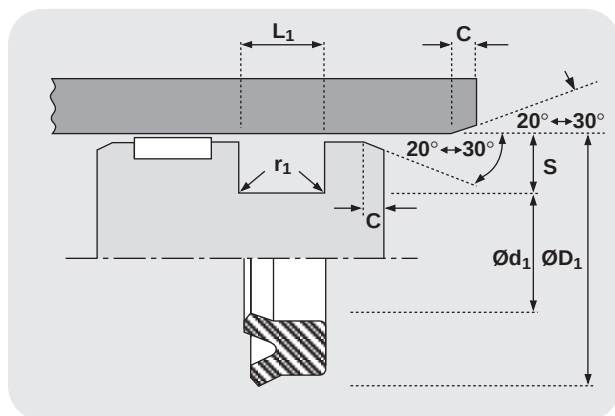
GROOVE SECTION $\leq S$ mm
MIN CHAMFER C mm
MAX FILLET RAD r_1 mm
GROOVE SECTION $\leq S$ in
MIN CHAMFER C in
MAX FILLET RAD r_1 in

4.0	5.0	7.5	10.0		
3.0	3.5	5.0	6.5		
0.2	0.4	0.8	0.8		
0.125	0.187	0.250	0.312	0.375	0.500
0.093	0.093	0.125	0.156	0.187	0.217
0.008	0.008	0.016	0.032	0.032	0.032

TOLERANCES

$\varnothing D_1$	$\varnothing d_1$	L_1 mm	L_1 in
H9	js11	+0.25 -0	+0.010 -0

* Pressure rating of seal can be extended to 700 bar /10,000p.s.i. with the use of a back up ring.
If this option is required seek advice from your local Hallite Seals sales office.



DESIGN

The Hallite 606 is an asymmetric piston seal designed to offer effective bore sealing in a wide variety of applications.

The outer *dynamic* lip is shorter and more robust to provide improved sealing and compression set characteristics over conventional U rings.

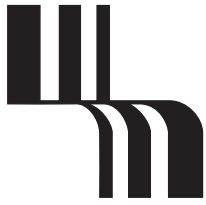
The seal can be used by itself as a single acting seal or fitted back to back in separate grooves for double acting applications.

Manufactured in Hallite's high performance polyurethane Hythane 181, The Hallite 606 provides the following benefits:

FEATURES

- FLEXIBLE FOR EASY INSTALLATION
- EXCELLENT WEAR RESISTANCE
- HIGH RESISTANCE TO EXTRUSION
- ROBUST DESIGN
- WIDE TEMPERATURE RANGE

NB: Part numbers suffixed by “+” indicate housing sizes to meet ISO5597.



Piston / Rod seals

Hallite

TECHNICAL DETAILS

METRIC

INCH

OPERATING CONDITIONS

MAXIMUM SPEED 1.0 m/sec
 MAXIMUM TEMPERATURE -45°C + 110°C
 MAXIMUM PRESSURE 240 bar

3.0 ft/sec
 -50°F + 230°F
 3500 p.s.i.

MAXIMUM EXTRUSION GAP

PRESSURE bar
 PRESSURE p.s.i.
 MAXIMUM GAP in

Figures show the maximum permissible gap all on one side, for rod seals using minimum rod $\varnothing$ and maximum clearance $\varnothing$ and for piston seals using the minimum clearance $\varnothing$ and maximum bore $\varnothing$

100	170	240
1500	2500	3500
0.020	0.012	0.008

SURFACE ROUGHNESS

DYNAMIC SEALING FACE - ROD $\varnothing d_1$
 STATIC SEALING FACE - ROD $\varnothing D_1$
 DYNAMIC SEALING FACE - PISTON $\varnothing d_1$
 STATIC SEALING FACE - PISTON $\varnothing d_1$
 STATIC HOUSING FACES L_1

μmRa	μmRt	$\mu inCLA$	$\mu inRMS$
0.1 $\leftrightarrow$ 0.4	4 max	4 $\leftrightarrow$ 16	5 $\leftrightarrow$ 18
1.6 max	10 max	63 max	70 max
0.1 $\leftrightarrow$ 0.4	4 max	4 $\leftrightarrow$ 16	5 $\leftrightarrow$ 18
1.6 max	10 max	63 max	70 max
3.2 max	16 max	125 max	140 max

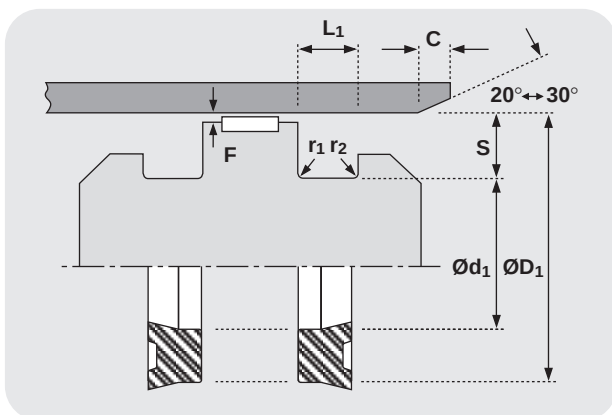
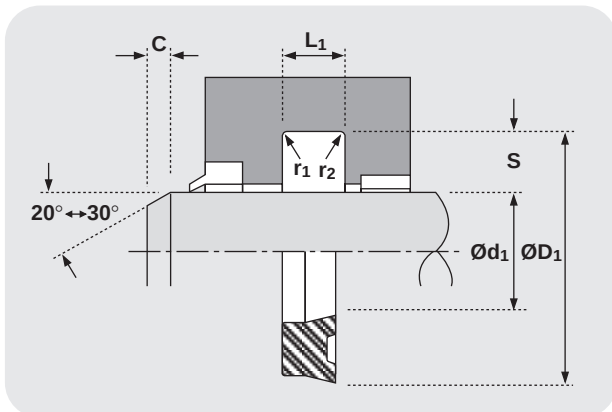
CHAMFERS & RADII

GROOVE SECTION $\leq S$ in
 MIN CHAMFER C in
 MAX FILLET RAD r_1 in
 MAX FILLET RAD r_2 in

0.125	0.187
0.093	0.093
0.008	0.008
0.016	0.016

TOLERANCES

Please use specified tolerances in the introduction
 - Housing & installation data - Hallite 500 Series



DESIGN

The Hallite 611 is a one piece symmetrical seal suitable for rod and piston use. It is a compact seal for "square" type housings, for light duty applications.

It is manufactured from Hallite's high performance polyurethane- HYTHANE 181, which is an extremely flexible material and makes installation very easy.

The sealing lips are accurately machine trimmed to ensure good low pressure sealing whilst the material resists extrusion at high pressure.

FEATURES

- EASY INSTALLATION
- EXCELLENT TEMPERATURE RANGE
- LIGHT DUTY SEAL FOR "SQUARE" NORTH AMERICAN HOUSINGS

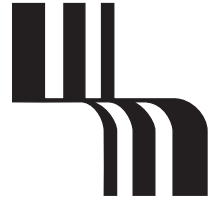
NB:

Size lists give "on line" tolerances for rod applications.



Piston seals

Hallite



659

TECHNICAL DETAILS

METRIC

INCH

OPERATING CONDITIONS

MAXIMUM SPEED 1.0 m/sec
MAXIMUM TEMPERATURE -45°C + 110°C
MAXIMUM PRESSURE 400 bar

3.0 ft/sec
-50°F + 230°F
6000 p.s.i.

MAXIMUM EXTRUSION GAP

PRESSURE bar
MAXIMUM GAP mm
PRESSURE p.s.i.
MAXIMUM GAP in

Figures show the maximum permissible gap all on one side using the minimum clearance $\varnothing$ and maximum bore $\varnothing$

160	250	400
0.6	0.5	0.4
2400	3750	6000
0.024	0.020	0.016

SURFACE ROUGHNESS

DYNAMIC SEALING FACE $\varnothing D_1$
STATIC SEALING FACE $\varnothing d_1$
STATIC HOUSING FACES L_1

μmRa	μmRt	$\mu inCLA$	$\mu inRMS$
0.1 $\leftrightarrow$ 0.4	4 max	4 $\leftrightarrow$ 16	5 $\leftrightarrow$ 18
1.6 max	10 max	63 max	70 max
3.2 max	16 max	125 max	140 max

CHAMFERS & RADII

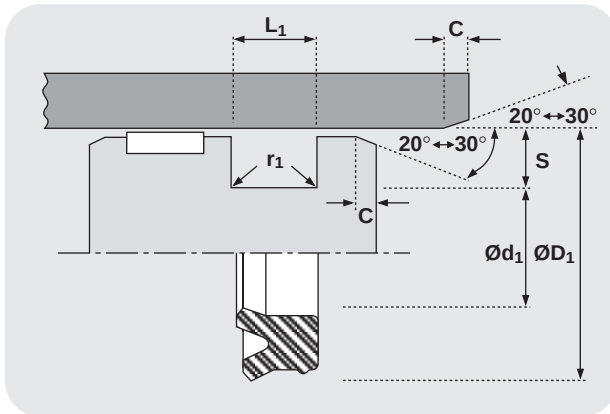
GROOVE SECTION $\leq S$ mm
MIN CHAMFER C mm
MAX FILLET RAD r_1 mm
GROOVE SECTION $\leq S$ in
MIN CHAMFER C in
MAX FILLET RAD r_1 in

4.0	5.0	7.5
3.0	3.5	5.0
0.2	0.4	0.8
0.125	0.187	0.250
0.093	0.093	0.125
0.008	0.008	0.016

TOLERANCES

mm
in

$\varnothing D_1$	$\varnothing d_1$	L_1
H9	js11	+0.25 -0
+0.004 -0	0 -0.002	+0.010 -0



FEATURES

- FLEXIBLE FOR EASY INSTALLATION
- EXCELLENT WEAR RESISTANCE
- HIGH RESISTANCE TO EXTRUSION
- WIDE TEMPERATURE RANGE
- TWIN LIP DESIGN FOR:
 - IMPROVED SEALING
 - LOWER FRICTION
 - INCREASED SEAL STABILITY
 - PRIMARY LIP PROTECTION

DESIGN

The Hallite 659 is an asymmetric piston seal designed to offer effective bore sealing in a wide variety of applications.

The outer *dynamic* lip is shorter and more robust to provide improved sealing and compression set characteristics over conventional U rings. The seal also features a secondary lip that provides a pocket for lubrication as well as the benefits listed below.

For use in single acting applications only, the seal is manufactured in Hallite's high performance polyurethane Hythane 181. The Hallite 659 provides the following benefits:

Note: Variations of this seal are available in other sizes, please contact your local Hallite sales office for additional information and technical details.



Piston seals

Hallite



TECHNICAL DETAILS

METRIC

INCH

OPERATING CONDITIONS

MAXIMUM SPEED
MAXIMUM TEMPERATURE
MAXIMUM PRESSURE

0.5 m/sec
-40°C + 100°C
350 bar

1.5 ft/sec
-40°F + 212°F
5000 p.s.i.

SURFACE ROUGHNESS

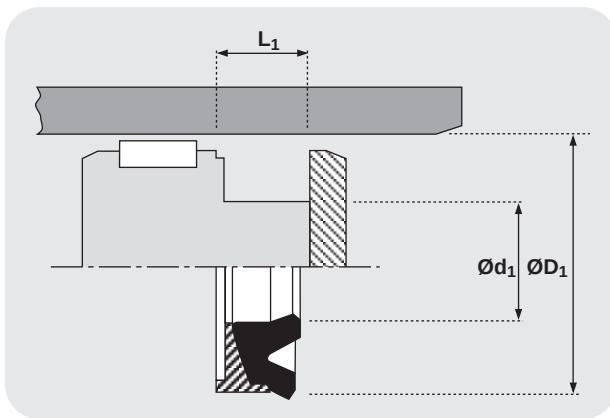
DYNAMIC SEALING FACE $\varnothing D_1$
STATIC SEALING FACE $\varnothing d_1$
STATIC HOUSING FACES L_1

μmRa	μmRt
0.1 $\leftrightarrow$ 0.4	4 max
1.6 max	10 max
3.2 max	16 max

μinCLA	μinRMS
4 $\leftrightarrow$ 16	5 $\leftrightarrow$ 18
63 max	70 max
125 max	140 max

TOLERANCES

$\varnothing D_1$	$\varnothing d_1$	L_1 mm
H9	0 -0.2	+0.2 -0



DESIGN

The Hallite 906 is a single acting seal assembly comprising of a nitrile rubber seal and a contoured nylon back-up.

Usually fitted back to back on double acting pistons found in Japanese and Asian construction equipment, this product is stocked as a replacement part only, not recommended for new designs.

906



Piston seals

Hallite

923

TECHNICAL DETAILS

METRIC

INCH

OPERATING CONDITIONS

MAXIMUM SPEED 0.5 m/sec
 MAXIMUM TEMPERATURE -30°C + 90°C
 MAXIMUM PRESSURE 300 bar

1.5 ft/sec
 -22°F + 194°F
 4500 p.s.i.

MAXIMUM EXTRUSION GAP

PRESSURE bar
 MAXIMUM GAP mm
 PRESSURE p.s.i.

Figures show the maximum permissible gap all on one side using the minimum clearance $\emptyset$ and maximum bore $\emptyset$

160	250	300
0.6	0.5	0.4
2400	3750	4500

SURFACE ROUGHNESS

DYNAMIC SEALING FACE $\emptyset D_1$
 STATIC SEALING FACE $\emptyset d_1$
 STATIC HOUSING FACES L_1

μmRa	μmRt	$\mu inCLA$	$\mu inRMS$
0.1 $\leftrightarrow$ 0.4	4 max	4 $\leftrightarrow$ 16	5 $\leftrightarrow$ 18
1.6 max	10 max	63 max	70 max
3.2 max	16 max	125 max	140 max

RADII

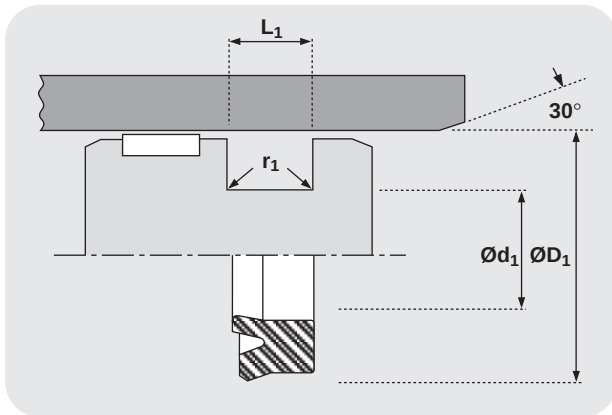
MAX FILLET RAD r_1 mm

0.5

TOLERANCES

mm

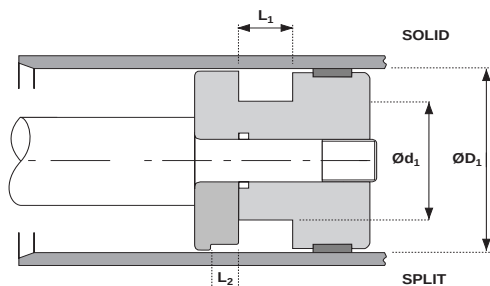
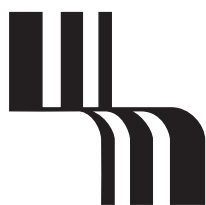
$\emptyset D_1$	$\emptyset d_1$	L_1
H9	0 -0.2	+0.3 0



DESIGN

The Hallite 923 single acting piston seal is a good general purpose seal with the excellent wear resistance characteristics of polyurethane. Hallite 923 can also be used back-to-back for double acting hydraulic applications.

Hallite's 923 can be stretched onto a solid piston, the range fits popular Asian housings.



Piston Seals

Hallite

metric - single acting



18



25



71



601



606



655



659



906



923

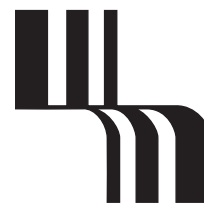
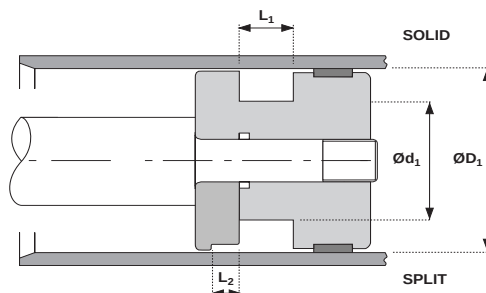
Type	ØD ₁	NOMINALS Ød ₁ SL	L ₁ L ₂	PART No.
601	12.00	5.00 5.50	6.50	4508601
601	12.50	4.50 4.40	5.00	4506701
601	13.00	6.00 8.00	9.00	4460300
18	14.00	6.00 6.00	6.50	0202200
18	16.00	8.00 6.00	6.50	0202400
18	18.00	10.00 6.00	6.50	0202500
601	18.00	10.00 6.00	6.60	4299900
601	20.00	10.00 8.00	9.00	4600000
601	20.00	12.00 4.40	5.00	4182501‡
18	20.00	12.00 6.00	6.50	0202600
601	22.00	14.00 4.40	5.00	4182601‡
601	22.00	14.00 5.00	5.70	4604000
18	24.00	14.00 7.50	8.00	0202700
601	24.00	14.00 8.00	9.00	4600200
601	24.00	16.00 4.40	5.00	4182701‡
601	24.00	16.00 5.00	5.70	4604100
18	24.40	18.00 4.80	5.30	0050600
18	25.00	10.00 13.00	13.50	0907200
601	25.00	12.00 8.00	9.00	4600100
18	25.00	12.00 10.00	10.50	0615800
25	25.00	15.00 7.30	8.00	4196301
18	25.00	15.00 7.50	8.00	0202800
601	25.00	15.00 8.00	9.00	4600300
655	25.00	15.00 8.00	9.00	4581310
606	25.00	15.00 8.20	9.00	4390100
606	25.00	17.00 5.70	6.30	4418000
18	26.00	16.00 7.50	8.00	0615900
601	26.00	16.00 8.00	9.00	4600400
601	26.00	18.00 4.40	5.00	4182901‡
601	26.00	18.00 5.00	5.70	4604200
25	28.00	18.00 7.30	8.00	4196401
601	28.00	18.00 7.30	8.00	4547900
18	28.00	18.00 7.50	8.00	0202900

Type	ØD ₁	NOMINALS Ød ₁ SL	L ₁ L ₂	PART No.
601	28.00	18.00 8.00	9.00	4600500
601	28.00	20.00 4.40	5.00	4183001‡
601	28.00	20.00 5.00	5.70	4604300
25	28.00	20.00 6.50	7.10	4160301
18	30.00	20.00 7.50	8.00	0200500
606	30.00	20.00 8.00	9.00	4354200
601	30.00	20.00 8.00	9.00	4600600
655	30.00	20.00 9.00	10.00	4581410
601	30.00	22.00 4.40	5.00	4183101‡
18	30.00	22.00 6.00	6.50	0817600
601	30.00	22.40 5.00	5.70	4604400
655	32.00	20.00 10.00	11.00	4581510
18	32.00	22.00 7.50	8.00	0203300
606	32.00	24.00 5.70	6.30	4351900‡
25	32.00	24.00 6.50	7.10	4504101
601	32.40	22.40 8.00	9.00	4600800
601	33.00	25.00 4.40	5.00	4183301‡
601	33.00	25.00 5.00	5.70	4604500
659	33.00	28.80 4.30	4.70	4581200
18	34.00	22.00 9.00	9.50	0615600
18	35.00	18.00 13.00	13.50	1293000
18	35.00	20.00 11.00	11.50	0472300
25	35.00	20.00 12.00	13.10	4501201
601	35.00	22.00 10.00	11.00	4600700
606	35.00	25.00 7.30	8.00	4365700
601	35.00	25.00 8.00	9.00	4600900
601	35.00	25.00 10.00	11.00	4362600
601	35.50	28.00 5.00	5.70	4604600
18	36.00	28.00 6.00	6.50	0050700
601	36.00	28.00 6.50	7.10	4506201
606	37.00	21.00 11.80	13.00	4354100
18	37.00	22.00 11.00	11.50	0203900
601	37.00	30.00 6.00	7.00	4596800

Piston Seals

Hallite

metric - single acting



18



25



71



601



606



655



659



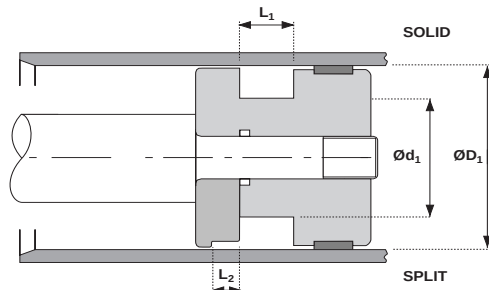
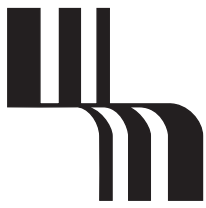
906



923

Type	----- ØD ₁	NOMINALS Ød ₁	SL	----- L ₁	L ₂	PART No.
18	38.00	23.00	11.00	11.50		0204100*
601	38.00	25.00	8.00	9.00		4601000
601	38.00	28.00	5.60	6.30		4183401‡
18	40.00	20.00	12.50	13.00		1377900
25	40.00	20.00	12.50	13.50		4509301
601	40.00	22.00	10.00	11.00		4572900
71	40.00	25.00		13.50	6.00	0472810
601	40.00	25.00	10.00	11.00		4601100
18	40.00	25.00	11.00	11.50		0472800
601	40.00	26.00	9.20	10.00		4584900
601	40.00	28.00	10.00	11.00		4601200
601	40.00	30.00	5.60	6.30		4183501
601	40.00	30.00	6.00	7.00		4604700
606	40.00	30.00	7.30	8.00		4299500‡
601	40.00	30.00	8.00	9.00		4596900
601	40.00	30.00	10.00	11.00		4362700
606	40.00	30.00	10.00	11.00		4400900
601	41.50	31.50	6.00	7.00		4604800
601	42.00	32.00	5.60	6.30		4183601‡
601	42.00	32.00	6.00	7.00		4604900
601	42.00	32.00	10.00	11.00		4362800
601	43.00	28.00	10.00	11.00		4601300
18	43.00	28.00	11.00	11.50		0204300
18	44.00	36.00	6.00	6.50		1204900
18	44.50	32.00	8.50	9.00		0524600*
18	45.00	26.00	14.00	14.50		0474000*
601	45.00	30.00	10.00	11.00		4601400
18	45.00	30.00	11.00	11.50		0204400
601	45.00	35.00	6.00	7.00		4605000
601	45.00	35.00	7.00	8.00		4496000
606	45.00	35.00	7.30	8.00		4315700
18	45.00	35.00	7.50	8.00		0052300
25	45.00	35.00	10.00	11.00		4508401
601	45.00	35.50	6.00	7.00		4605100

Type	----- ØD ₁	NOMINALS Ød ₁	SL	----- L ₁	L ₂	PART No.
18	46.00	32.00	10.00	10.50		0615700*
601	46.00	36.00	5.60	6.30		4183701‡
601	47.00	32.00	10.00	11.00		4621200
18	47.00	32.00	11.00	11.50		0204600
18	48.00	28.00	11.40	11.90		0850400*
601	48.00	35.00	10.00	11.00		4360300
601	48.00	38.00	6.00	7.00		4605200
18	50.00	30.00	14.00	14.50		0282100
906	50.00	32.00	12.10	12.50		9050057
71	50.00	35.00		13.50	6.00	0474610
601	50.00	35.00	10.00	11.00		4601500
18	50.00	35.00	11.00	11.50		0474600
601	50.00	40.00	5.60	6.30		4183801‡
601	50.00	40.00	6.00	7.00		4605300
606	50.00	40.00	7.30	8.00		4319500‡
601	50.00	40.00	10.00	11.00		4362900
18	50.00	40.00	10.50	11.00		0202000
601	50.50	35.50	10.00	11.00		46221100
18	51.00	36.00	11.00	11.50		0978800
906	55.00	37.00	12.10	12.50		9055037
601	55.00	38.00	9.70	11.00		4366000
601	55.00	40.00	9.90	11.00		4388500
601	55.00	40.00	10.00	11.00		4601600
18	55.00	40.00	11.00	11.50		0475000
601	55.00	45.00	5.60	6.30		4183901‡
601	55.00	45.00	6.00	7.00		4605400
606	55.00	45.00	7.30	8.00		4380000
601	55.00	45.00	10.00	11.00		4363000
601	56.00	45.00	7.00	8.00		4605500
601	56.00	46.00	6.00	7.00		4543900
18	57.00	42.00	11.00	11.50		0205100*
601	58.00	38.00	9.70	11.00		4560100
71	60.00	40.00		17.00	7.00	0282010



Piston Seals

Hallite

metric - single acting



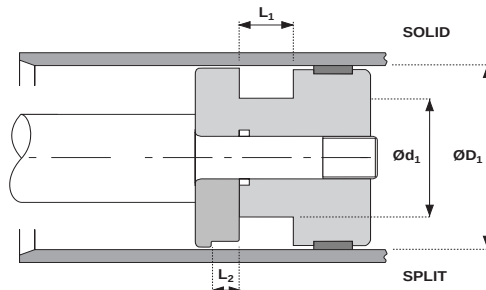
Type	ØD ₁	NOMINALS Ød ₁ SL	L ₁	L ₂	PART No.
601	60.00	40.00 12.00	13.00		4601700
18	60.00	40.00 14.00	14.50		0282000
18	60.00	40.00 18.00	19.00		1106200
906	60.00	42.00 12.10	12.50		9060057
606	60.00	45.00 10.00	11.00		4407000
601	60.00	45.00 10.00	11.00		4601800
18	60.00	45.00 11.00	11.50		0979400
601	60.00	50.00 5.60	6.30		4184001‡
601	60.00	50.00 6.00	7.00		4605600
18	60.00	50.00 7.50	8.00		0179300
601	60.00	50.00 10.00	11.00		4363100
18	62.00	50.00 9.50	10.00		1352700
601	62.00	52.00 10.00	11.00		4559000
18	63.00	43.00 14.00	14.50		0646700
71	63.00	48.00	13.50	6.00	0205210
601	63.00	48.00 10.00	11.00		4601900
18	63.00	48.00 11.00	11.50		0205200
606	63.00	48.00 11.40	12.50		4383200
601	63.00	53.00 6.00	7.00		4605700
606	63.00	53.00 7.30	8.00		4341500‡
606	63.00	53.00 11.80	13.00		4318800
18	64.50	50.00 10.50	11.00		0747700*
601	65.00	45.00 10.00	11.00		4575000
18	65.00	45.00 14.00	14.50		0281700
906	65.00	47.00 12.10	12.50		9065007
71	65.00	50.00	13.50	6.00	0383810
18	65.00	50.00 10.00	10.50		0208400
601	65.00	50.00 10.00	11.00		4602000
18	65.00	50.00 11.00	11.50		0383800
601	65.00	55.00 6.00	7.00		4605800
18	65.00	55.00 8.00	8.50		0242600
601	66.00	56.00 6.00	7.00		4605900
18	68.00	56.00 9.00	9.50		0184900
906	70.00	48.00 14.50	15.00		9070007
71	70.00	50.00	17.00	7.00	0294610

Type	ØD ₁	NOMINALS Ød ₁ SL	L ₁	L ₂	PART No.
601	70.00	50.00 12.00	13.00		4602100
18	70.00	50.00 14.00	14.50		0294600
606	70.00	55.00 10.00	11.00		4448000
601	70.00	60.00 6.00	7.00		4606000
25	70.00	60.00 8.00	8.75		4160401
601	70.00	60.00 10.00	11.00		4363200
601	71.00	56.00 8.40	9.50		4184201‡
601	71.00	60.00 7.00	8.00		4606100
18	71.00	60.00 9.00	9.50		1436300*
606	71.00	61.00 6.00	7.00		4492600
18	72.00	60.00 9.50	10.00		1397700
18	73.00	42.00 23.00	24.00		6502900*
601	73.00	63.00 6.00	7.00		4606200
601	73.00	63.00 11.80	13.00		4363300
18	73.00	65.00 6.00	6.50		0900400
71	75.00	55.00	17.00	7.00	0818610
601	75.00	55.00 12.00	13.00		4602200
18	75.00	55.00 14.00	14.50		0818600
601	75.00	65.00 6.00	7.00		4606300
606	75.00	67.00 8.80	9.70		4322300
18	76.00	56.00 14.00	14.50		0646100
601	76.00	60.00 12.00	13.00		4608000
601	78.00	63.00 8.40	9.50		4184301‡
18	80.00	50.00 25.00	26.00		0394000
906	80.00	58.00 14.50	15.00		9080007
71	80.00	60.00	17.00	7.00	0294910
655	80.00	60.00 10.00	11.00		4525510
601	80.00	60.00 12.00	13.00		4602300
18	80.00	60.00 14.00	14.50		0294900
601	80.00	65.00 8.40	9.50		4184401‡
18	80.00	65.00 11.00	11.50		0740700
606	80.00	65.00 11.40	12.50		4363800‡
601	80.00	70.00 6.00	7.00		4606400
606	80.00	70.00 6.80	7.50		4370300
601	80.00	70.00 11.80	13.00		4363400

Piston Seals

Hallite

metric - single acting



18



25



71



601



606



655



659



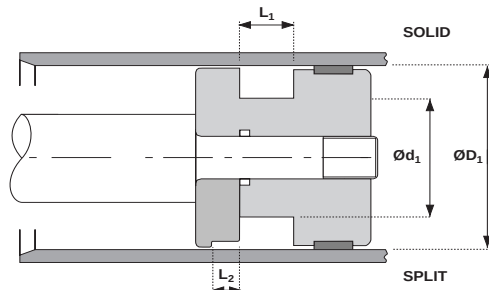
906



923

Type	----- ØD ₁	NOMINALS Ød ₁ SL	----- L ₁ L ₂	PART No.
601	80.00	71.00 6.00	7.00	4606500
18	83.00	63.00 14.00	14.50	0646300
18	84.00	70.00 12.00	12.50	1438800
18	85.00	61.00 12.00	12.50	0814000*
71	85.00	65.00	17.00 7.00	0388610
601	85.00	65.00 12.00	13.00	4602400
18	85.00	65.00 14.00	14.50	0388600
601	85.00	70.00 8.40	9.50	4184501‡
18	85.00	70.00 9.50	10.00	0392600
18	85.00	70.00 12.00	12.50	0071900
601	85.00	75.00 6.00	7.00	4606600
601	85.00	75.00 11.80	13.00	4363500
606	85.70	70.70 10.30	11.40	4493400
906	90.00	68.00 14.50	15.00	9090007
71	90.00	70.00	17.00 7.00	0296010
655	90.00	70.00 10.00	11.00	4525410
601	90.00	70.00 12.00	13.00	4602500
18	90.00	70.00 14.00	14.50	0296000
25	90.00	70.00 14.50	15.50	4131801
923	90.00	75.00 9.00	10.00	9090087
655	90.00	75.00 11.80	13.00	4527810
18	90.00	75.00 12.00	12.50	0740600
601	90.00	80.00 6.00	7.00	4606700
601	90.00	80.00 8.00	8.70	4159001
601	90.00	80.00 11.80	13.00	4363600
601	92.00	70.00 12.00	13.00	4602600
601	95.00	75.00 12.00	13.00	4602700
18	95.00	75.00 14.00	14.50	0412700
601	95.00	80.00 8.40	9.50	4184601‡
18	95.00	80.00 12.00	12.50	0732700
18	97.00	85.00 12.00	12.50	1436100
18	100.00	70.00 25.00	26.00	1403100*
18	100.00	75.00 15.50	15.50	0891600*
601	100.00	75.00 22.00	24.00	4584700

Type	----- ØD ₁	NOMINALS Ød ₁ SL	----- L ₁ L ₂	PART No.
906	100.00	78.00 14.50	15.00	9100007
71	100.00	80.00	17.00 7.00	0295110
18	100.00	80.00 11.30	11.80	0178400
601	100.00	80.00 12.00	13.00	4602800
18	100.00	80.00 14.00	14.50	0295100
659	100.00	80.00 14.50	16.00	4580300
601	100.00	85.00 8.40	9.50	4184701‡
601	100.00	85.00 8.90	10.00	4606800
606	100.00	85.00 11.40	12.50	4363900‡
655	100.00	85.00 11.40	12.50	4521910‡
18	100.00	85.00 12.00	12.50	0529700
25	100.00	90.00 5.00	5.75	4126601
606	100.00	90.00 6.80	7.50	4375900
18	100.00	90.00 9.00	9.50	0185000
601	100.00	90.00 11.80	13.00	4363700
18	105.00	80.00 19.00	20.00	0413100
655	105.00	85.00 11.80	13.00	4415210
18	105.00	85.00 12.00	12.50	1252700
601	105.00	85.00 12.00	13.00	4602900
655	105.00	85.00 12.00	13.00	4549810
18	105.00	85.00 14.00	14.50	0070100
18	105.00	85.00 15.00	15.50	0242000*
601	105.00	90.00 8.40	9.50	4184801‡
601	105.00	90.00 8.90	10.00	4606900
906	110.00	88.00 14.50	15.00	9110007
71	110.00	90.00	18.00 7.00	0712410
18	110.00	90.00 10.00	10.50	0306700
601	110.00	90.00 12.00	13.00	4603000
18	110.00	90.00 14.00	14.50	0071700
659	110.00	90.00 14.50	16.00	4580400
18	110.00	90.00 15.00	15.50	0712400
601	110.00	95.00 8.90	10.00	4607000
25	110.00	100.00 8.00	8.75	4160601
606	110.00	100.00 8.00	9.00	4533100
906	115.00	93.00 14.50	15.00	9115007
18	115.00	95.00 11.00	11.50	0808400
655	115.00	95.00 11.80	13.00	4378210



Piston Seals

Hallite

metric - single acting



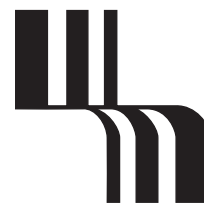
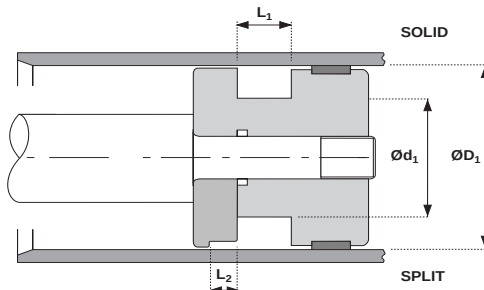
Type	ØD ₁	NOMINALS Ød ₁ SL	L ₁	L ₂	PART No.
601	115.00	95.00 12.00	13.00		4603100
655	115.00	95.00 12.00	13.00		4549910
18	115.00	95.00 14.00	14.50		0796400
601	115.00	100.00 8.90	10.00		4607100
18	115.00	100.00 12.00	12.50		0740500
18	120.00	90.00 15.50	15.50		1006600
906	120.00	98.00 14.50	15.00		9120087
71	120.00	100.00	17.00	7.00	0296110
18	120.00	100.00 10.00	10.50		0039000
601	120.00	100.00 11.00	12.50		4184901‡
601	120.00	100.00 12.00	13.00		4603200
18	120.00	100.00 14.00	14.50		0296100
18	120.00	100.00 15.00	15.50		1432300*
18	120.00	105.00 12.00	12.50		1212100
71	125.00	100.00	22.00	9.50	0418610
18	125.00	100.00 19.00	20.00		0418600
906	125.00	103.00 14.50	15.00		9125007
18	125.00	105.00 9.50	10.00		0390500
25	125.00	105.00 11.40	12.50		4185001
601	125.00	105.00 11.40	12.50		4185001‡
606	125.00	105.00 14.50	16.00		4364000‡
601	125.00	105.00 15.00	17.00		4603300
18	125.00	110.00 11.00	11.50		0558300
25	125.00	110.00 12.00	13.20		4134401
601	125.00	112.00 8.90	10.00		4607200
71	130.00	104.00	22.00	9.50	0244310
18	130.00	104.00 19.00	20.00		0244300
18	130.00	105.00 19.00	20.00		0070200*
906	130.00	108.00 14.50	15.00		9130007
601	130.00	110.00 11.00	12.50		4185101‡
18	130.00	110.00 14.00	14.50		0555900
601	130.00	110.00 15.00	17.00		4603400
18	135.00	110.00 19.00	20.00		0304300
18	135.00	110.00 25.50	26.50		1426600
18	135.00	115.00 14.00	14.50		0639900
601	135.00	115.00 15.00	17.00		4608100

Type	ØD ₁	NOMINALS Ød ₁ SL	L ₁	L ₂	PART No.
18	136.00	124.00 14.00	14.50		1285600
18	140.00	115.00 19.00	20.00		0070300
906	140.00	118.00 14.50	15.00		9140007
71	140.00	120.00	15.00	7.00	0250510
18	140.00	120.00 12.00	12.50		0250500
601	140.00	120.00 14.50	16.00		4319600
601	140.00	120.00 15.00	17.00		4603500
601	140.00	125.00 8.90	10.00		4607300
25	140.00	125.00 12.30	13.20		4160701
18	145.00	120.00 19.00	20.00		0070400
601	145.00	125.00 11.00	12.50		4185201‡
18	145.00	125.00 14.00	14.50		0640100
601	145.00	125.00 15.00	17.00		4603600
18	145.00	130.00 11.30	11.80		0634500*
71	150.00	120.00	27.00	9.50	1289510
18	150.00	120.00 24.00	25.00		1289500
18	150.00	125.00 19.00	20.00		0070500
906	150.00	128.00 14.50	15.00		9150007
606	150.00	130.00 14.50	16.00		4390200
601	150.00	130.00 15.00	17.00		4603700
601	150.00	136.00 8.50	9.50		4607400
606	150.00	140.00 13.60	15.00		4390300
601	154.00	140.00 9.00	10.00		4607900
18	155.00	130.00 19.00	20.00		0080300
601	155.00	140.00 8.90	10.00		4607500
18	157.00	135.00 15.00	15.50		0302600*
71	160.00	135.00	22.00	9.50	0080410
18	160.00	135.00 19.00	20.00		0080400
906	160.00	138.00 14.50	15.00		9160007
18	160.00	140.00 11.50	12.00		0391300*
18	160.00	140.00 14.00	14.50		0304600
601	160.00	140.00 15.00	17.00		4603800
606	160.00	140.00 18.20	20.00		4364100
601	160.00	145.00 8.90	10.00		4607600

Piston Seals

Hallite

metric - single acting



18



25



71



601



606



655



659



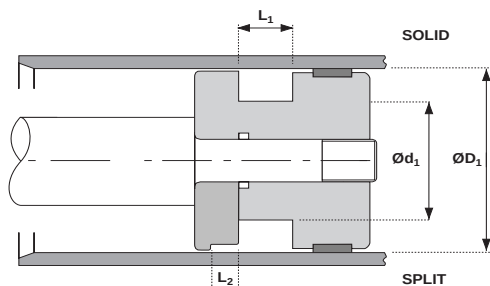
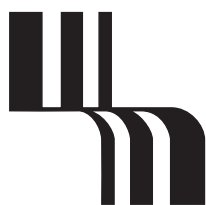
906



923

Type	----- ØD ₁	NOMINALS Ød ₁	SL	----- L ₁	L ₂	PART No.
18	165.00	140.00	19.00	20.00		0080500
601	165.00	145.00	15.00	17.00		4608200
601	165.00	150.00	8.90	10.00		4607700
18	170.00	145.00	19.00	20.00		0080700
906	170.00	148.00	14.50	15.00		9170007
18	170.00	150.00	14.00	14.50		0303300
601	170.00	150.00	15.00	17.00		4603900
18	175.00	150.00	19.00	20.00		0080800
601	175.00	160.00	9.00	10.00		4608400
601	180.00	155.00	15.00	17.00		4608300
906	180.00	158.00	14.50	15.00		9180007
71	180.00	160.00		18.00	7.00	1283110
18	180.00	160.00	15.00	15.50		1283100
601	180.00	165.00	9.00	10.00		4608600
601	183.00	165.00	10.00	11.00		4607800
601	185.00	160.00	15.00	17.00		4608500
18	190.00	160.00	24.00	25.00		0136100
601	190.00	165.00	15.00	17.00		4608700
906	190.00	168.00	14.50	15.00		9190007
18	190.00	170.00	15.00	15.50		0478100
601	195.00	170.00	15.00	17.00		4608800
18	200.00	160.00	35.00	36.00		1269100*
18	200.00	170.00	24.00	25.00		0087100
601	200.00	175.00	15.00	17.00		4608900
18	200.00	175.00	19.00	20.00		0838800
906	200.00	178.00	14.50	15.00		9200007
18	200.00	180.00	11.50	12.00		1173800
601	200.00	180.00	12.00	13.00		4609000
606	200.00	180.00	14.50	16.00		4392300
18	200.00	180.00	15.00	15.50		0582300*
601	205.00	180.00	15.00	17.00		4609100
18	210.00	180.00	24.00	25.00		0087200
601	210.00	190.00	12.00	13.00		4609200

Type	----- ØD ₁	NOMINALS Ød ₁	SL	----- L ₁	L ₂	PART No.
601	215.00	190.00	15.00	17.00		4609300
18	220.00	190.00	24.00	25.00		0087300
601	220.00	200.00	12.00	13.00		4609400
18	220.00	200.00	15.00	15.50		1284100
601	225.00	200.00	15.00	17.00		4609500
906	225.00	203.00	14.50	15.00		9225007
18	230.00	200.00	24.00	25.00		2010000*
906	230.00	225.00	14.50	15.00		9230007*
601	235.00	210.00	18.00	20.00		4609600
18	240.00	210.00	24.00	25.00		0094300*
601	240.00	220.00	12.00	13.00		4609700
601	250.00	220.00	17.00	19.20		4426600
18	250.00	220.00	22.00	23.00		0958900
18	250.00	220.00	24.00	25.00		1056300
18	250.00	225.00	18.00	19.00		0348300
601	250.00	230.00	12.00	13.00		4609800
18	260.00	230.00	24.00	25.00		0094500
601	260.00	240.00	12.00	13.00		4621000
18	260.00	240.00	17.00	18.00		0157000
601	265.00	240.00	18.00	20.00		4609900
18	270.00	240.00	24.00	25.00		0094600
601	275.00	250.00	18.00	20.00		4610000
18	280.00	250.00	24.00	25.00		1055500
18	280.00	250.00	31.00	32.00		1323800*
601	290.00	260.00	18.00	20.00		4620100
18	290.00	260.00	24.00	25.00		0094700*
601	295.00	265.00	18.00	20.00		4620200
601	300.00	270.00	18.00	20.00		4620300
18	300.00	270.00	24.00	25.00		0094800
601	310.00	280.00	18.00	20.00		4620400
18	310.00	280.00	24.00	25.00		0094900*



Piston Seals

Hallite

metric - single acting



18



25



71



601



606



655



659



906



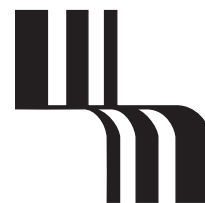
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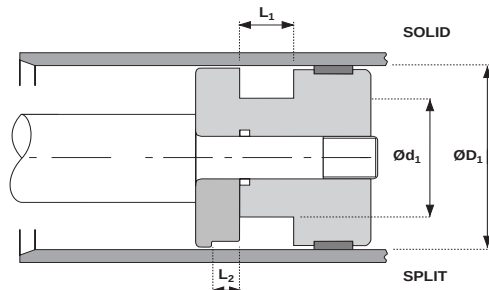
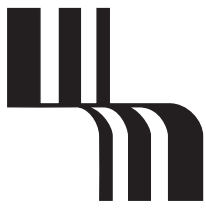
Type	ØD ₁	NOMINALS Ød ₁ SL	L ₁	L ₂	PART No.
18	310.00	290.00 15.00	15.50		1325200*
18	320.00	280.00 30.00	31.00		1055300
601	320.00	290.00 18.00	20.00		4620500
18	320.00	290.00 22.00	23.00		0959100*
18	320.00	290.00 24.00	25.00		0136200*
601	330.00	300.00 18.00	20.00		4620600
18	330.00	300.00 24.00	25.00		0095000
18	330.00	310.00 17.00	18.00		0157100
18	360.00	320.00 30.00	31.00		1054000*
18	360.00	340.00 15.00	15.50		1325300*
18	370.00	340.00 25.00	26.00		2176000*
18	380.00	360.00 30.00	30.50		0785600
18	400.00	360.00 30.00	31.00		1054300
601	405.00	375.00 22.00	24.00		4620700
18	420.00	380.00 30.00	31.00		0095100
601	425.00	400.00 25.00	27.00		4620800
18	440.00	400.00 30.00	31.00		0095200
18	457.00	407.00 38.00	38.50		1328800
18	460.00	420.00 30.00	31.00		0095300*

Type	ØD ₁	NOMINALS Ød ₁ SL	L ₁	L ₂	PART No.
18	480.00	440.00 30.00	31.00		0095400
601	485.00	450.00 25.00	27.00		4620900
18	495.00	444.00 48.00	49.00		1326500*
18	500.00	460.00 30.00	31.00		0134700*
18	515.00	470.00 35.00	35.50		2007000
18	517.00	485.00 40.00	40.50		1322000*
18	530.00	500.00 25.00	26.00		1344000*
18	540.00	500.00 30.00	31.00		2018200*
18	600.00	560.00 30.00	31.00		2109800*
18	620.00	580.00 34.00	35.00		0163000*
18	650.00	580.00 53.00	54.00		1700200*
18	700.00	620.00 68.00	70.00		1320500*
18	720.00	640.00 68.00	70.00		2111400*
18	820.00	780.00 30.00	31.00		0150800*

* Denotes possible indent item -
minimum quantity may apply.

Notes





Piston seals

Hallite

inch - single acting



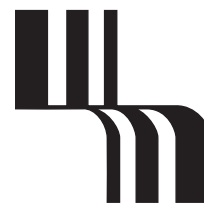
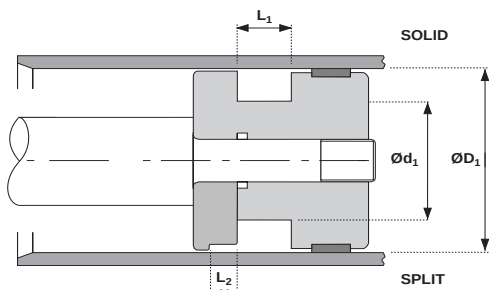
Type	----- ØD ₁	NOMINALS Ød ₁	SL	----- L ₁	----- L ₂	PART No.
26	0.375	0.125	0.125	0.138		28-41
511	0.375	0.125	0.125	0.138		8900810
26	0.437	0.187	0.125	0.138		28-42
18	0.437	0.187	0.187	0.203		1417800
511	0.438	0.187	0.125	0.138		8800110
67	0.500		0.500	0.062		67-0500
26	0.500	0.125	0.187	0.207		28-01
18	0.500	0.187	0.250	0.270		1358600
26	0.500	0.250	0.125	0.138		28-43
511	0.500	0.250	0.125	0.138		8800210
512	0.500	0.250	0.250	0.275		8820210
67	0.562		0.250	0.094		67-0562
26	0.562	0.187	0.187	0.207		28-02
18	0.562	0.250	0.250	0.270		1023800
26	0.562	0.312	0.125	0.138		28-44
67	0.625		0.500	0.094		67-0625
26	0.625	0.250	0.187	0.207		28-03
25	0.625	0.312	0.217	0.240		4220801
18	0.625	0.312	0.250	0.270		1417900
26	0.625	0.375	0.125	0.138		28-45
511	0.625	0.375	0.125	0.138		8800410
18	0.625	0.437	0.096	0.111		1411300*
18	0.625	0.437	0.150	0.165		0407200
26	0.687	0.312	0.187	0.207		28-04
26	0.687	0.437	0.125	0.138		28-46
18	0.687	0.500	0.096	0.111		1418300
67	0.750		0.250	0.094		67-0750
26	0.750	0.250	0.250	0.275		28-08
26	0.750	0.375	0.187	0.207		28-05
18	0.750	0.375	0.281	0.300		1379300
18	0.750	0.375	0.375	0.395		6504000*
26	0.750	0.500	0.125	0.138		28-47
611	0.750	0.500	0.125	0.138		4418100
511	0.750	0.500	0.125	0.138		8800610
18	0.750	0.500	0.187	0.203		1292100

Type	----- ØD ₁	NOMINALS Ød ₁	SL	----- L ₁	----- L ₂	PART No.
601	0.750	0.500	0.250	0.275		4566500
512	0.750	0.500	0.250	0.275		8870510
18	0.750	0.562	0.096	0.111		0577000*
26	0.812	0.312	0.250	0.275		28-09
26	0.812	0.437	0.187	0.207		28-06
18	0.812	0.437	0.250	0.270		6503800*
18	0.812	0.437	0.281	0.300		1374300
18	0.812	0.500	0.218	0.238		1465900*
611	0.812	0.562	0.125	0.138		4466600
511	0.812	0.562	0.125	0.138		8844610
18	0.812	0.562	0.187	0.203		1465800*
67	0.875	0.375	0.250	0.125		67-0875
26	0.875	0.375	0.250	0.275		28-10
511	0.875	0.375	0.250	0.275		8865810
18	0.875	0.375	0.312	0.332		1412500
66	0.875	0.375	0.437	0.125		1352400
26	0.875	0.500	0.187	0.207		28-07
511	0.875	0.500	0.187	0.207		8800710
601	0.875	0.500	0.197	0.218		4300000
18	0.875	0.500	0.281	0.300		0406700
611	0.875	0.625	0.125	0.138		4399500
511	0.875	0.625	0.125	0.138		8800810
25	0.875	0.625	0.156	0.175		4166001
18	0.875	0.625	0.187	0.203		1435600
512	0.875	0.625	0.250	0.275		8820510
18	0.937	0.375	0.406	0.426		1231400*
26	0.937	0.437	0.250	0.275		28-11
18	0.937	0.437	0.375	0.395		1377000
18	0.937	0.500	0.344	0.364		1468400*
18	0.937	0.562	0.281	0.300		1384000
18	0.937	0.687	0.121	0.136		1362200*
611	0.937	0.687	0.125	0.138		4410100
511	0.937	0.687	0.125	0.138		8801010
67	1.000		0.500	0.125		67-1000
66	1.000	0.250	0.375	0.115		1106600
511	1.000	0.375	0.312	0.344		8824910

Piston seals

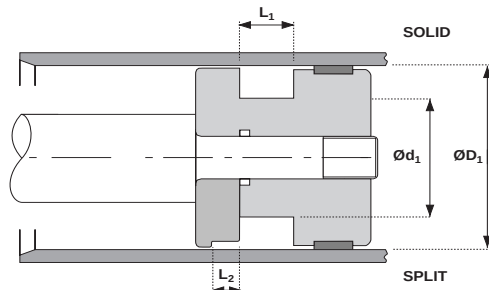
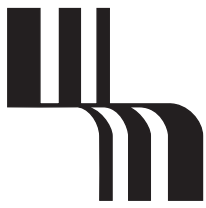
Hallite

inch - single acting



Type	ØD ₁	Ød ₁	NOMINALS SL	L ₁	L ₂	PART No.
26	1.000	0.500	0.250	0.275		28-12
601	1.000	0.500	0.250	0.275		4110201
511	1.000	0.500	0.250	0.275		8806310
18	1.000	0.500	0.375	0.395		0780000
71	1.000	0.625		0.343	0.187	1247610
26	1.000	0.625	0.187	0.207		28-48
511	1.000	0.625	0.187	0.207		8800910
601	1.000	0.625	0.190	0.218		4298300
18	1.000	0.625	0.281	0.300		1247600
611	1.000	0.750	0.125	0.138		4410000
511	1.000	0.750	0.125	0.138		8801110
18	1.000	0.750	0.132	0.145		1424900
25	1.000	0.750	0.156	0.175		4166101
18	1.000	0.750	0.187	0.202		1424900
512	1.000	0.750	0.250	0.275		8820710
26	1.062	0.562	0.250	0.275		28-13
18	1.062	0.562	0.375	0.395		0922200*
18	1.062	0.812	0.121	0.136		1394900*
611	1.062	0.812	0.125	0.138		4521200
511	1.062	0.812	0.125	0.138		8815310
18	1.093	0.750	0.281	0.300		1364200
67	1.125		0.500	0.125		67-1125
66	1.125	0.250	0.375	0.085		0341200
18	1.125	0.500	0.355	0.375		1386900*
26	1.125	0.625	0.250	0.275		28-14
601	1.125	0.625	0.250	0.275		4509101
511	1.125	0.625	0.250	0.275		8806410
18	1.125	0.625	0.375	0.395		0855000
18	1.125	0.687	0.375	0.395		1374700*
26	1.125	0.750	0.187	0.207		28-49
511	1.125	0.750	0.187	0.207		8801210
606	1.125	0.750	0.312	0.344		4565600
512	1.125	0.750	0.312	0.344		8820810
18	1.125	0.875	0.121	0.136		1356800
611	1.125	0.875	0.125	0.138		4416700
511	1.125	0.875	0.125	0.138		8801410
18	1.125	0.875	0.163	0.187		6503400

Type	ØD ₁	Ød ₁	NOMINALS SL	L ₁	L ₂	PART No.
26	1.187	0.687	0.250	0.275		28-15
18	1.187	0.687	0.375	0.395		0412400*
511	1.187	0.937	0.125	0.138		8844810
67	1.250		0.500	0.125		67-1250
66	1.250	0.250	0.375	0.085		0343000
18	1.250	0.625	0.375	0.395		1053200*
71	1.250	0.750		0.437	0.250	0403710
26	1.250	0.750	0.250	0.275		28-16
601	1.250	0.750	0.250	0.275		4102901
511	1.250	0.750	0.250	0.275		8806510
18	1.250	0.750	0.312	0.332		0783000
18	1.250	0.750	0.375	0.395		0403700
512	1.250	0.750	0.375	0.413		8825010
611	1.250	0.875	0.187	0.206		4415700
26	1.250	0.875	0.187	0.207		28-50
511	1.250	0.875	0.187	0.207		8801510
18	1.250	0.875	0.375	0.395		1072500
18	1.250	0.937	0.187	0.203		1362000
18	1.250	1.000	0.121	0.136		0852400
611	1.250	1.000	0.125	0.138		4457300
511	1.250	1.000	0.125	0.138		8801610
659	1.250	1.000	0.171	0.187		4416600
512	1.250	1.000	0.250	0.275		8821210
26	1.312	0.812	0.250	0.275		28-17
18	1.312	0.812	0.375	0.395		0512600
511	1.312	1.000	0.156	0.172		8810110
511	1.312	1.062	0.125	0.138		8801810
67	1.375		0.437	0.094		67-1375
66	1.375	0.250	0.437	0.115		0273300
18	1.375	0.812	0.500	0.520		0413800
71	1.375	0.875		0.437	0.250	0401310
26	1.375	0.875	0.250	0.275		28-18
601	1.375	0.875	0.250	0.275		4507101
511	1.375	0.875	0.250	0.275		8806610
25	1.375	0.875	0.250	0.280		4507101
18	1.375	0.875	0.375	0.395		0401300
26	1.375	1.000	0.187	0.207		28-51



Piston seals

Hallite

inch - single acting



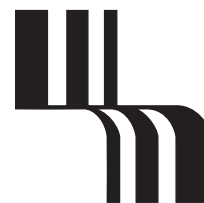
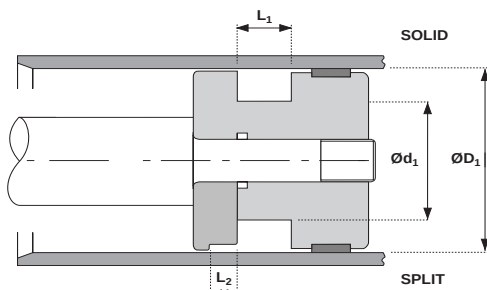
Type	ØD ₁	Ød ₁	NOMINALS SL	L ₁	L ₂	PART No.
511	1.375	1.000	0.187	0.207		8801710
18	1.375	1.000	0.250	0.270		0282600
512	1.375	1.000	0.312	0.344		8821310
511	1.375	1.125	0.125	0.138		8801910
18	1.375	1.125	0.187	0.203		1000200
512	1.375	1.125	0.250	0.275		8854910
26	1.437	0.937	0.250	0.275		28-19
18	1.437	0.937	0.312	0.332		6500700
18	1.437	0.937	0.375	0.395		0415200
512	1.437	1.187	0.187	0.207		8858010
67	1.500		0.500	0.125		67-1500
66	1.500	0.250	0.500	0.115		0217400
66	1.500	0.500	0.500	0.140		0697700
18	1.500	0.750	0.500	0.525		0405100*
18	1.500	0.875	0.375	0.395		0422200
18	1.500	0.985	0.380	0.400		0542200*
71	1.500	1.000		0.437	0.250	0422410
659	1.500	1.000	0.187	0.205		4372400
18	1.500	1.000	0.250	0.270		1441100
26	1.500	1.000	0.250	0.275		28-20
601	1.500	1.000	0.250	0.275		4111101
511	1.500	1.000	0.250	0.275		8806810
18	1.500	1.000	0.375	0.395		0422400
512	1.500	1.000	0.375	0.413		8825210
611	1.500	1.125	0.187	0.206		4455300
26	1.500	1.125	0.187	0.207		28-52
511	1.500	1.125	0.187	0.207		8802010
18	1.500	1.125	0.219	0.238		1362100
606	1.500	1.125	0.250	0.275		4426700
512	1.500	1.125	0.250	0.275		8820610
512	1.500	1.125	0.312	0.344		8821710
511	1.500	1.187	0.156	0.172		8811010
511	1.500	1.250	0.125	0.138		8802210
18	1.500	1.250	0.250	0.270		1372100
606	1.500	1.250	0.250	0.275		4426800
512	1.500	1.250	0.250	0.275		8821810
26	1.562	1.062	0.250	0.275		28-21

Type	ØD ₁	Ød ₁	NOMINALS SL	L ₁	L ₂	PART No.
611	1.562	1.187	0.187	0.206		4536400
511	1.562	1.187	0.187	0.207		8851710
18	1.562	1.250	0.148	0.163		1395200*
511	1.562	1.250	0.156	0.172		8813810
67	1.625		0.500	0.125		67-1625
66	1.625	0.250	0.500	0.115		0384600
66	1.625	0.250	0.564	0.140		2016131
18	1.625	0.750	0.375	0.395		1387000
511	1.625	1.000	0.312	0.344		8806910
18	1.625	1.000	0.437	0.457		0540600*
512	1.625	1.000	0.500	0.550		8825310
26	1.625	1.125	0.250	0.275		28-22
511	1.625	1.125	0.250	0.275		8807010
18	1.625	1.125	0.375	0.395		0287000
512	1.625	1.125	0.375	0.413		8847610
611	1.625	1.250	0.187	0.206		4535600
26	1.625	1.250	0.187	0.207		28-53
511	1.625	1.250	0.187	0.207		8802310
18	1.625	1.250	0.281	0.300		0282400
512	1.625	1.250	0.312	0.344		8821910
18	1.625	1.250	0.500	0.520		0415600*
511	1.625	1.375	0.125	0.138		8802410
512	1.625	1.375	0.250	0.275		8822110
18	1.656	1.281	0.375	0.395		0061400*
26	1.687	1.187	0.250	0.275		28-23
18	1.687	1.187	0.375	0.395		1423700
18	1.687	1.375	0.148	0.163		1394800
511	1.687	1.375	0.156	0.172		8813910
67	1.750		0.500	0.125		67-1750
66	1.750	0.250	0.500	0.115		0596700
66	1.750	0.250	0.500	0.140		0784100*
18	1.750	0.875	0.750	0.790		1013400*
18	1.750	1.000	0.375	0.395		0407700
511	1.750	1.000	0.375	0.413		8819110
18	1.750	1.000	0.656	0.676		1052600
71	1.750	1.125		0.531	0.250	0778210

Piston seals

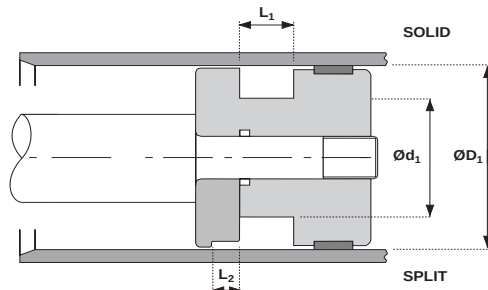
Hallite

inch - single acting



Type	ØD1	Ød1	NOMINALS SL	L1	L2	PART No.
511	1.750	1.125	0.312	0.344		8807110
18	1.750	1.125	0.437	0.457		0778200
26	1.750	1.250	0.250	0.275		28-24
601	1.750	1.250	0.250	0.275		4502701
511	1.750	1.250	0.250	0.275		8807210
18	1.750	1.250	0.281	0.300		1447500
18	1.750	1.250	0.375	0.395		1158100
601	1.750	1.250	0.375	0.413		4107001
512	1.750	1.250	0.375	0.413		8825410
611	1.750	1.375	0.187	0.206		4491500
511	1.750	1.375	0.187	0.207		8802510
18	1.750	1.375	0.281	0.300		0332500
512	1.750	1.375	0.312	0.344		8822210
601	1.750	1.375	0.375	0.413		4353400
512	1.750	1.375	0.375	0.413		8870710
511	1.750	1.500	0.125	0.138		8802610
512	1.750	1.500	0.250	0.275		8822310
18	1.820	1.500	0.160	0.175		1366000*
67	1.875		0.500	0.125		67-1875
66	1.875	0.375	0.500	0.140		0787300
18	1.875	1.250	0.312	0.332		1094600
26	1.875	1.250	0.312	0.344		28-25
511	1.875	1.250	0.312	0.344		8870010
18	1.875	1.250	0.406	0.426		6500200*
18	1.875	1.250	0.437	0.457		0404100
18	1.875	1.375	0.219	0.238		0608700*
511	1.875	1.375	0.250	0.275		8807310
512	1.875	1.375	0.375	0.413		8825610
18	1.875	1.375	0.400	0.420		1426500*
18	1.875	1.500	0.172	0.187		1039800
611	1.875	1.500	0.187	0.206		4466700
511	1.875	1.500	0.187	0.207		8802710
512	1.875	1.500	0.375	0.413		8822510
511	1.875	1.625	0.125	0.138		8802810
512	1.875	1.625	0.250	0.275		8870610
18	1.937	1.437	0.375	0.395		0545000

Type	ØD1	Ød1	NOMINALS SL	L1	L2	PART No.
67	2.000		0.500	0.125		67-2000
66	2.000	0.375	0.500	0.115		0218700
18	2.000	1.000	0.750	0.790		1138600*
511	2.000	1.250	0.375	0.413		8814310
18	2.000	1.250	0.469	0.489		0405500
18	2.000	1.359	0.370	0.390		1419900*
71	2.000	1.375		0.531	0.250	0778410
601	2.000	1.375	0.266	0.312		4236201
18	2.000	1.375	0.312	0.332		1094400
26	2.000	1.375	0.312	0.344		28-26
511	2.000	1.375	0.312	0.344		8807410
18	2.000	1.375	0.375	0.395		0282300
18	2.000	1.375	0.437	0.457		0778400
606	2.000	1.375	0.500	0.550		4364200
512	2.000	1.375	0.500	0.550		8871610
18	2.000	1.375	0.750	0.790		1471300*
18	2.000	1.485	0.340	0.360		1420200*
601	2.000	1.500	0.250	0.275		4111001
511	2.000	1.500	0.250	0.275		8807510
18	2.000	1.500	0.281	0.300		1447800
512	2.000	1.500	0.312	0.344		8821010
18	2.000	1.500	0.375	0.395		0921400
606	2.000	1.500	0.375	0.413		4376000
512	2.000	1.500	0.375	0.413		8825710
18	2.000	1.500	0.469	0.489		0855800*
18	2.000	1.500	0.656	0.676		0420400*
606	2.000	1.625	0.187	0.206		4426900
611	2.000	1.625	0.187	0.206		4469700
511	2.000	1.625	0.187	0.207		8802910
18	2.000	1.625	0.250	0.270		1369900*
18	2.000	1.625	0.276	0.296		0606700
606	2.000	1.625	0.312	0.344		4444300
512	2.000	1.625	0.312	0.344		8858110
606	2.000	1.625	0.375	0.413		4364400
512	2.000	1.625	0.375	0.413		8822710
659	2.000	1.630	0.250	0.281		4563300
511	2.000	1.750	0.125	0.138		8803010
512	2.000	1.750	0.250	0.275		8822810



Piston seals

Hallite

inch - single acting



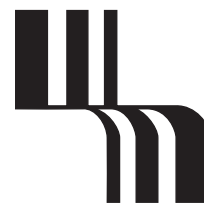
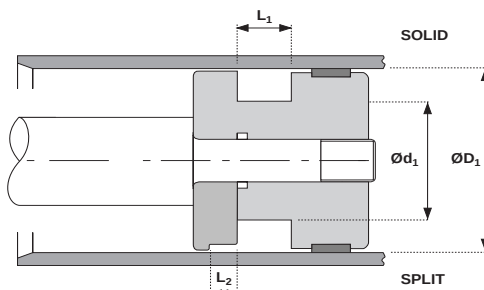
Type	ØD ₁	Ød ₁	NOMINALS SL	L ₁	L ₂	PART No.
66	2.125	0.250	0.625	0.140		0273100
511	2.125	1.375	0.375	0.413		8814410
18	2.125	1.500	0.312	0.332		1441200
26	2.125	1.500	0.312	0.344		28-27
511	2.125	1.500	0.312	0.344		8807610
25	2.125	1.500	0.312	0.360		4124801
18	2.125	1.500	0.437	0.457		0967600
512	2.125	1.500	0.500	0.550		8825810
511	2.125	1.625	0.250	0.275		8807710
25	2.125	1.625	0.250	0.290		4101201
18	2.125	1.750	0.172	0.187		1112900
611	2.125	1.750	0.187	0.206		4490400
511	2.125	1.750	0.187	0.207		8803110
18	2.125	1.750	0.276	0.296		0606900
18	2.125	1.750	0.310	0.330		0376500*
512	2.125	1.750	0.375	0.413		8822910
511	2.125	1.875	0.125	0.138		8803210
18	2.187	1.500	0.437	0.457		0560400
67	2.250		0.500	0.125		67-2250
66	2.250	0.250	0.750	0.170		0860600
18	2.250	1.250	0.625	0.665		1015800*
511	2.250	1.500	0.375	0.413		8814510
18	2.250	1.500	0.469	0.489		0782200
512	2.250	1.500	0.500	0.550		8872710
18	2.250	1.500	0.562	0.582		0689800
512	2.250	1.500	0.625	0.688		8872810
71	2.250	1.625		0.531	0.250	1432610
26	2.250	1.625	0.312	0.344		28-28
511	2.250	1.625	0.312	0.344		8850910
18	2.250	1.625	0.437	0.457		1432600
18	2.250	1.735	0.340	0.360		1422100*
601	2.250	1.750	0.250	0.275		4502601
511	2.250	1.750	0.250	0.275		8807810
18	2.250	1.750	0.312	0.332		1404300
18	2.250	1.750	0.375	0.395		1464700
601	2.250	1.750	0.375	0.413		4140901
606	2.250	1.750	0.375	0.413		4476500

Type	ØD ₁	Ød ₁	NOMINALS SL	L ₁	L ₂	PART No.
512	2.250	1.750	0.375	0.413		8825910
18	2.250	1.750	0.437	0.457		0924000
511	2.250	1.875	0.187	0.207		8803310
606	2.250	1.875	0.375	0.413		4479600
512	2.250	1.875	0.375	0.413		8870810
511	2.250	2.000	0.125	0.138		8803410
512	2.250	2.000	0.250	0.275		8823110
66	2.375	0.500	0.750	0.170		0271900
18	2.375	1.500	0.687	0.727		0403100*
511	2.375	1.625	0.375	0.413		8814710
18	2.375	1.625	0.625	0.665		0463600
71	2.375	1.750		0.531	0.250	0939810
601	2.375	1.750	0.266	0.312		4236301
26	2.375	1.750	0.312	0.344		28-29
511	2.375	1.750	0.312	0.344		8807910
18	2.375	1.750	0.437	0.457		0939800
659	2.375	1.750	0.437	0.481		4528500
512	2.375	1.750	0.500	0.550		8826010
601	2.375	1.750	0.562	0.619		4250901
18	2.375	1.860	0.380	0.400		1423000*
511	2.375	1.875	0.250	0.275		8808010
18	2.375	1.875	0.375	0.395		0917200*
18	2.375	2.000	0.172	0.187		1445400
511	2.375	2.000	0.187	0.207		8803510
601	2.375	2.000	0.250	0.275		4508301
601	2.375	2.000	0.312	0.344		4509201
512	2.375	2.000	0.375	0.413		8823210
18	2.437	1.750	0.437	0.457		0780200
25	2.437	1.937	0.250	0.280		4124501
18	2.437	1.937	0.375	0.395		0560600*
67	2.500		0.500	0.125		67-2500
66	2.500	0.500	0.625	0.140		1446100
511	2.500	1.500	0.500	0.550		8814610
18	2.500	1.500	0.625	0.665		0979000
512	2.500	1.500	0.750	0.825		8820310
606	2.500	1.625	0.500	0.550		4364500
18	2.500	1.687	0.625	0.665		1382600*

Piston seals

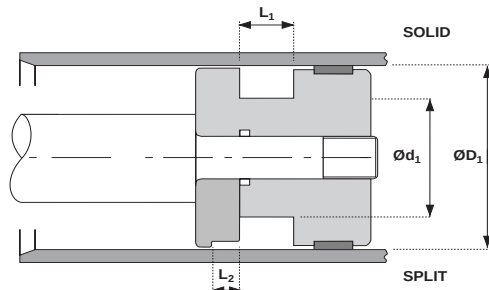
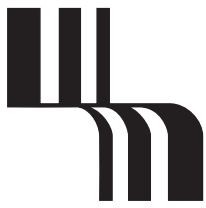
Hallite

inch - single acting



Type	----- $\varnothing D_1$	NOMINALS $\varnothing d_1$	SL	----- L_1	L_2	PART No.
511	2.500	1.750	0.375	0.413		8814810
18	2.500	1.750	0.500	0.520		1162900
512	2.500	1.750	0.500	0.550		8830010
71	2.500	1.875		0.531	0.250	0867210
26	2.500	1.875	0.312	0.344		28-30
511	2.500	1.875	0.312	0.344		8808110
18	2.500	1.875	0.375	0.395		6502200
18	2.500	1.875	0.437	0.457		0867200
606	2.500	1.875	0.500	0.550		4376100
512	2.500	1.875	0.500	0.550		8826110
18	2.500	1.985	0.360	0.380		1422200*
18	2.500	2.000	0.250	0.270		0185900
606	2.500	2.000	0.250	0.275		4516500
511	2.500	2.000	0.250	0.275		8808210
18	2.500	2.000	0.344	0.364		0112600
18	2.500	2.000	0.375	0.395		1431000
601	2.500	2.000	0.375	0.413		4353500
606	2.500	2.000	0.375	0.413		4391900
655	2.500	2.000	0.375	0.413		4588010
512	2.500	2.000	0.375	0.413		8826210
511	2.500	2.125	0.187	0.207		8803710
606	2.500	2.125	0.250	0.275		4427000
601	2.500	2.125	0.250	0.275		4508201
512	2.500	2.125	0.250	0.275		8865510
606	2.500	2.125	0.312	0.344		4444400
606	2.500	2.125	0.375	0.413		4451300
512	2.500	2.125	0.375	0.413		8870910
659	2.500	2.130	0.250	0.281		4563400
511	2.500	2.250	0.125	0.138		8803810
512	2.562	2.187	0.375	0.413		8858210
66	2.625	0.250	0.750	0.170		0271000
18	2.625	1.875	0.625	0.665		0403300*
71	2.625	2.000		0.531	0.250	1371010
18	2.625	2.000	0.312	0.332		1441300
26	2.625	2.000	0.312	0.344		28-31
511	2.625	2.000	0.312	0.344		8808310
25	2.625	2.000	0.312	0.360		4006801

Type	----- $\varnothing D_1$	NOMINALS $\varnothing d_1$	SL	----- L_1	L_2	PART No.
18	2.625	2.000	0.437	0.457		1371000
601	2.625	2.000	0.500	0.550		4225101
512	2.625	2.000	0.500	0.550		8826310
601	2.625	2.000	0.562	0.619		4159801
511	2.625	2.125	0.250	0.275		8808410
601	2.625	2.125	0.375	0.413		4156101
512	2.625	2.125	0.375	0.413		8826410
511	2.625	2.250	0.187	0.207		8803910
512	2.625	2.250	0.312	0.344		8858310
512	2.625	2.250	0.375	0.413		8823410
511	2.625	2.375	0.125	0.138		8815610
67	2.750		0.500	0.125		67-2750
67	2.750		0.500	0.125		67-2750A
66	2.750	0.500	0.750	0.170		0863500
18	2.750	1.750	0.625	0.665		0785800
71	2.750	2.000		0.687	0.250	1369110
511	2.750	2.000	0.375	0.413		8814910
18	2.750	2.000	0.437	0.457		0783200
512	2.750	2.000	0.500	0.550		8830310
18	2.750	2.000	0.562	0.582		1369100
18	2.750	2.000	0.625	0.665		6503700*
512	2.750	2.000	0.625	0.688		8830410
26	2.750	2.125	0.312	0.344		28-32
511	2.750	2.125	0.312	0.344		8808510
18	2.750	2.125	0.375	0.395		0945200
511	2.750	2.250	0.250	0.275		8808610
18	2.750	2.250	0.375	0.395		1431100
601	2.750	2.250	0.375	0.413		4128701
512	2.750	2.250	0.375	0.413		8826510
512	2.750	2.250	0.562	0.619		8864110
511	2.750	2.375	0.187	0.207		8804010
512	2.750	2.375	0.375	0.413		8858410
18	2.755	1.985	0.439	0.459		1419800*
66	2.875	0.500	0.750	0.170		0861500
18	2.875	2.000	0.625	0.665		0416100*
511	2.875	2.125	0.375	0.413		8815110
18	2.875	2.125	0.562	0.582		0779600



Piston seals

Hallite

inch - single acting



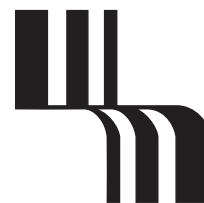
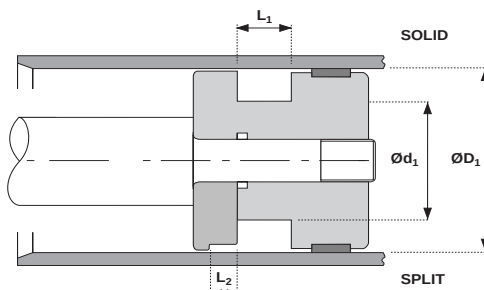
Type	ØD ₁	Ød ₁	NOMINALS SL	L ₁	L ₂	PART No.
26	2.875	2.250	0.312	0.344		28-33
511	2.875	2.250	0.312	0.344		8808710
18	2.875	2.250	0.437	0.457		0424300
512	2.875	2.250	0.500	0.550		8871710
511	2.875	2.375	0.250	0.275		8808810
18	2.875	2.375	0.281	0.300		1447600
511	2.875	2.500	0.187	0.207		8804110
512	2.875	2.500	0.375	0.413		8871010
67	3.000		0.500	0.125		67-3000
66	3.000	0.500	0.625	0.140		1446200
18	3.000	1.812	1.000	1.040		0897600
511	3.000	2.000	0.500	0.550		8815010
18	3.000	2.000	0.625	0.665		0406100*
512	3.000	2.000	0.750	0.825		8853410
71	3.000	2.250		0.687	0.250	1098410
18	3.000	2.250	0.375	0.395		0246000
511	3.000	2.250	0.375	0.413		8869910
606	3.000	2.250	0.455	0.500		4375000
18	3.000	2.250	0.500	0.520		6502400*
512	3.000	2.250	0.500	0.550		8872910
659	3.000	2.250	0.500	0.550		4528400
18	3.000	2.250	0.562	0.582		1098400
512	3.000	2.250	0.625	0.688		8873010
26	3.000	2.375	0.312	0.344		28-34
601	3.000	2.375	0.312	0.344		4107201
511	3.000	2.375	0.312	0.344		8808910
18	3.000	2.375	0.469	0.489		0716600
606	3.000	2.375	0.500	0.550		4364600
512	3.000	2.375	0.500	0.550		8826710
18	3.000	2.484	0.350	0.370		1422300*
606	3.000	2.500	0.250	0.275		4516600
511	3.000	2.500	0.250	0.275		8809010
18	3.000	2.500	0.312	0.332		0641200
512	3.000	2.500	0.312	0.344		8821110
601	3.000	2.500	0.375	0.413		4119501
606	3.000	2.500	0.375	0.413		4364700
655	3.000	2.500	0.375	0.413		4525610
512	3.000	2.500	0.375	0.413		8826810

Type	ØD ₁	Ød ₁	NOMINALS SL	L ₁	L ₂	PART No.
511	3.000	2.625	0.187	0.207		8804210
25	3.000	2.625	0.250	0.280		4134701
512	3.000	2.625	0.312	0.344		8858510
606	3.000	2.625	0.375	0.413		4458400
512	3.000	2.625	0.375	0.413		8823710
659	3.000	2.630	0.250	0.281		4563500◇
511	3.000	2.750	0.125	0.138		8817910
66	3.125	0.500	0.750	0.170		1310600
511	3.125	2.125	0.500	0.550		8853110
71	3.125	2.375		0.687	0.250	1024810
18	3.125	2.375	0.562	0.582		1024800
26	3.125	2.500	0.312	0.344		28-35
601	3.125	2.500	0.312	0.344		4124401
511	3.125	2.500	0.312	0.344		8870110
18	3.125	2.500	0.437	0.457		0541300
512	3.125	2.500	0.500	0.550		8871810
18	3.125	2.500	0.625	0.665		1298400*
511	3.125	2.625	0.250	0.275		8809110
601	3.125	2.625	0.375	0.413		4224701
511	3.125	2.750	0.187	0.207		8804410
512	3.125	2.750	0.375	0.413		8871110
511	3.125	2.875	0.125	0.138		8814210
67	3.250		0.625	0.156		67-3250
66	3.250	0.500	0.750	0.170		0271100
18	3.250	2.250	0.750	0.790		0990200*
71	3.250	2.500		0.687	0.250	0782410
18	3.250	2.500	0.375	0.395		1441400
26	3.250	2.500	0.375	0.413		28-36
511	3.250	2.500	0.375	0.413		8815410
512	3.250	2.500	0.500	0.550		8879210
18	3.250	2.500	0.562	0.582		0782400
18	3.250	2.500	0.625	0.665		6501900
512	3.250	2.500	0.625	0.688		8830510
511	3.250	2.625	0.312	0.344		8851110
18	3.250	2.625	0.500	0.520		1378200*
606	3.250	2.625	0.500	0.550		4376200
18	3.250	2.735	0.340	0.360		1422400*

Piston seals

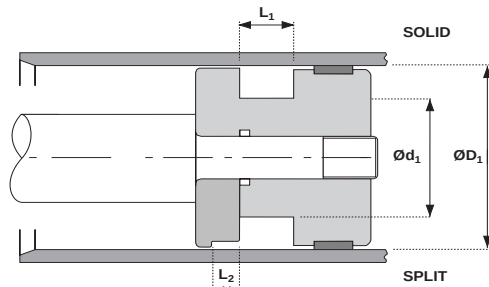
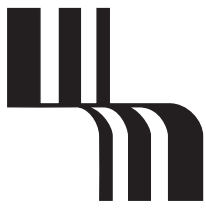
Hallite

inch - single acting



Type	ØD1	Ød1	NOMINALS SL	L1	L2	PART No.
606	3.250	2.750	0.250	0.275		4516700
511	3.250	2.750	0.250	0.275		8809210
18	3.250	2.750	0.281	0.300		1447900
18	3.250	2.750	0.375	0.395		1476100
606	3.250	2.750	0.375	0.413		4474400
512	3.250	2.750	0.375	0.413		8826910
511	3.250	2.875	0.187	0.207		8851010
606	3.250	2.875	0.250	0.275		4427100
512	3.250	2.875	0.250	0.275		8865610
25	3.250	2.875	0.250	0.280		4136401
511	3.250	3.000	0.125	0.138		8804510
26	3.375	2.625	0.375	0.413		28-37
18	3.375	2.625	0.562	0.582		0773800
18	3.375	2.625	0.750	0.790		0777400*
511	3.375	2.750	0.312	0.344		8809310
18	3.375	2.750	0.437	0.457		0942200
512	3.375	2.750	0.500	0.550		8871910
601	3.375	2.750	0.562	0.619		4250701
511	3.375	2.875	0.250	0.275		8809410
511	3.375	3.000	0.187	0.207		8804610
512	3.375	3.000	0.375	0.413		8823910
67	3.500		0.625	0.156		67-3500
66	3.500	0.250	0.750	0.170		1446300
511	3.500	2.500	0.500	0.550		8815510
18	3.500	2.500	0.625	0.665		0541900*
18	3.500	2.500	0.750	0.790		0438800*
71	3.500	2.750		0.687	0.250	0437810
26	3.500	2.750	0.375	0.413		28-38
511	3.500	2.750	0.375	0.413		8815710
18	3.500	2.750	0.500	0.520		6500500*
606	3.500	2.750	0.500	0.550		4444600
512	3.500	2.750	0.500	0.550		8830710
18	3.500	2.750	0.562	0.582		0437800*
606	3.500	2.750	0.625	0.688		4376300
512	3.500	2.750	0.625	0.688		8830810
606	3.500	2.875	0.312	0.344		4571100
511	3.500	2.875	0.312	0.344		8809510

Type	ØD1	Ød1	NOMINALS SL	L1	L2	PART No.
25	3.500	2.875	0.312	0.360		4129701
18	3.500	2.875	0.470	0.490		1422900*
606	3.500	2.875	0.500	0.550		4364800
512	3.500	2.875	0.500	0.550		8872010
606	3.500	3.000	0.250	0.275		4516800
511	3.500	3.000	0.250	0.275		8809610
18	3.500	3.000	0.375	0.395		1431200
606	3.500	3.000	0.375	0.413		4364900
655	3.500	3.000	0.375	0.413		4525710
512	3.500	3.000	0.375	0.413		8827010
512	3.500	3.000	0.562	0.619		8850610
511	3.500	3.125	0.187	0.207		8804710
512	3.500	3.125	0.250	0.275		8867310
606	3.500	3.125	0.275	0.302		4572200
606	3.500	3.125	0.375	0.413		4444500
512	3.500	3.125	0.375	0.413		8871210
659	3.500	3.130	0.250	0.281		4563600
511	3.500	3.250	0.125	0.138		8819610
512	3.562	3.187	0.375	0.413		8858610
66	3.625	0.750	0.750	0.170		1466600
18	3.625	2.750	0.750	0.790		0779800*
26	3.625	2.875	0.375	0.413		28-39
18	3.625	2.875	0.562	0.582		1474500
659	3.625	2.875	0.562	0.618		4528300
511	3.625	3.000	0.312	0.344		8809710
512	3.625	3.000	0.500	0.550		8827110
601	3.625	3.000	0.562	0.618		4160001
512	3.625	3.125	0.375	0.413		8859510
511	3.625	3.250	0.187	0.207		8804810
512	3.625	3.250	0.312	0.344		8858710
512	3.625	3.250	0.375	0.413		8824010
67	3.750		0.500	0.125		67-3750
66	3.750	0.500	0.750	0.170		0863600
18	3.750	2.750	0.500	0.520		0296200
511	3.750	2.750	0.500	0.550		8900010
18	3.750	2.750	0.750	0.790		0967400
71	3.750	3.000		0.687	0.250	0410510



Piston seals

Hallite

inch - single acting



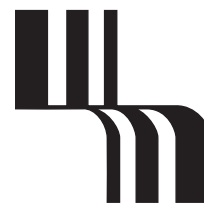
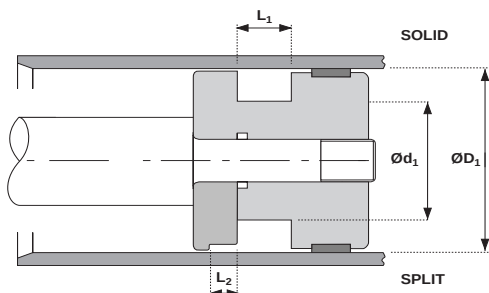
Type	----- ØD ₁	NOMINALS Ød ₁	SL	----- L ₁	----- L ₂	PART No.
18	3.750	3.000	0.375	0.395		0246100
26	3.750	3.000	0.375	0.413		28-40
511	3.750	3.000	0.375	0.413		8815910
18	3.750	3.000	0.500	0.520		6500400*
512	3.750	3.000	0.500	0.550		8831010
18	3.750	3.000	0.562	0.582		0410500
512	3.750	3.000	0.625	0.688		8878710
18	3.750	3.000	0.687	0.727		0545700*
511	3.750	3.125	0.312	0.344		8809910
18	3.750	3.235	0.360	0.380		1420400*
511	3.750	3.250	0.250	0.275		8810010
606	3.750	3.250	0.375	0.413		4444700
512	3.750	3.250	0.375	0.413		8827310
511	3.750	3.375	0.187	0.207		8854210
512	3.750	3.375	0.375	0.413		8858810
511	3.750	3.500	0.125	0.138		8815810
66	3.875	0.500	0.500	0.140		1348200
18	3.875	2.875	0.625	0.665		1424300
18	3.875	3.000	0.781	0.821		0778800*
18	3.875	3.125	0.562	0.582		0295800
18	3.875	3.125	1.000	1.040		1363100
511	3.875	3.250	0.312	0.344		8879610
511	3.875	3.375	0.250	0.275		8850710
18	3.875	3.375	0.437	0.457		0296400
511	3.875	3.500	0.187	0.207		8805010
512	3.875	3.500	0.375	0.413		8824110
67	4.000		0.500	0.125		67-4000A
67	4.000		0.625	0.156		67-4000
66	4.000	0.500	0.750	0.170		0271800
66	4.000	1.109	0.812	0.170		0305510
66	4.000	1.250	1.000	0.170		2108910
511	4.000	2.750	0.625	0.688		8819310
511	4.000	3.000	0.500	0.550		8816010
18	4.000	3.000	0.625	0.665		0854400
512	4.000	3.000	0.750	0.825		8850510
18	4.000	3.000	0.812	0.852		6502100*
18	4.000	3.000	0.875	0.915		0445600*

Type	----- ØD ₁	NOMINALS Ød ₁	SL	----- L ₁	----- L ₂	PART No.
71	4.000	3.250		0.687	0.250	1407710
26	4.000	3.250	0.375	0.413		28-60
25	4.000	3.250	0.375	0.413		4003401
606	4.000	3.250	0.375	0.413		4517400
511	4.000	3.250	0.375	0.413		8816210
18	4.000	3.250	0.500	0.520		6503900*
606	4.000	3.250	0.500	0.550		4444900
512	4.000	3.250	0.500	0.550		8831110
18	4.000	3.250	0.562	0.582		1407700
606	4.000	3.250	0.625	0.688		4376400
512	4.000	3.250	0.625	0.688		8831210
511	4.000	3.375	0.312	0.344		8810210
18	4.000	3.375	0.437	0.457		1256000*
606	4.000	3.375	0.500	0.550		4365000
512	4.000	3.375	0.500	0.550		8872110
606	4.000	3.500	0.250	0.275		4516900
511	4.000	3.500	0.250	0.275		8810310
606	4.000	3.500	0.312	0.344		4427200
512	4.000	3.500	0.312	0.344		8865710
18	4.000	3.500	0.375	0.395		1468200
606	4.000	3.500	0.375	0.413		4365100
512	4.000	3.500	0.375	0.413		8827510
655	4.000	3.500	0.625	0.688		4525810
511	4.000	3.625	0.187	0.207		8805110
512	4.000	3.625	0.312	0.344		8864010
606	4.000	3.625	0.375	0.413		4444800
512	4.000	3.625	0.375	0.413		8824210
659	4.000	3.630	0.250	0.281		4563700
511	4.000	3.750	0.125	0.138		8818710
18	4.062	3.062	0.750	0.790		0559400*
66	4.125	1.000	0.875	0.225		0861611
511	4.125	3.375	0.375	0.413		8857710
18	4.125	3.375	0.562	0.582		0295000
512	4.125	3.375	0.625	0.688		8855910
511	4.125	3.500	0.312	0.344		8810410
18	4.125	3.500	0.375	0.395		0442200*
512	4.125	3.500	0.500	0.550		8827710

Piston seals

Hallite

inch - single acting



18



25



26



66



67



71



511



512



601



606



611



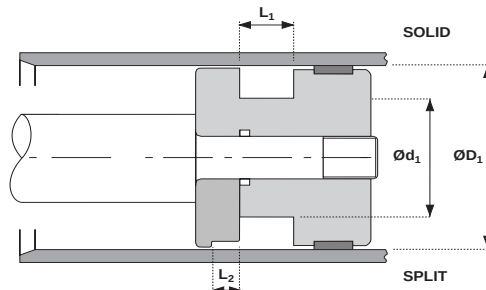
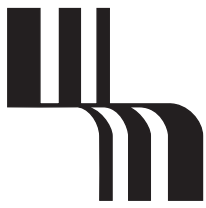
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659

Type	ØD ₁	NOMINALS Ød ₁	SL	L ₁	L ₂	PART No.
511	4.125	3.625	0.250	0.275		8810510
511	4.125	3.750	0.187	0.207		8879410
512	4.125	3.750	0.375	0.413		8855010
511	4.125	3.875	0.125	0.138		8816510
18	4.245	3.505	0.480	0.500		1419600*
66	4.250	0.500	0.750	0.170		0863400
71	4.250	3.500		0.687	0.250	1128810
511	4.250	3.500	0.375	0.413		8816410
512	4.250	3.500	0.500	0.550		8878810
18	4.250	3.500	0.562	0.582		1128800
659	4.250	3.500	0.562	0.618		4528200
512	4.250	3.500	0.625	0.688		8831310
18	4.250	3.500	0.687	0.727		0623900*
511	4.250	3.625	0.312	0.344		8851210
511	4.250	3.750	0.250	0.275		8810610
606	4.250	3.750	0.375	0.413		4445000
512	4.250	3.750	0.375	0.413		8827810
511	4.250	3.875	0.187	0.207		8823510
512	4.250	3.875	0.250	0.275		8820910
511	4.250	4.000	0.125	0.138		8805210
511	4.375	3.375	0.500	0.550		8866910
18	4.375	3.375	0.750	0.790		1354600
511	4.375	3.625	0.375	0.413		8824610
511	4.375	3.750	0.312	0.344		8870210
512	4.375	3.750	0.500	0.550		8872210
511	4.375	3.875	0.250	0.275		8810710
511	4.375	4.000	0.187	0.207		8805310
512	4.375	4.000	0.375	0.413		8824310
67	4.500		0.625	0.156		67-4500
66	4.500	0.500	0.750	0.170		1446500
66	4.500	1.250	1.000	0.225		0690012
511	4.500	3.250	0.625	0.688		8822410
71	4.500	3.500		0.875	0.375	0448810
18	4.500	3.500	0.750	0.790		0448800
512	4.500	3.500	0.750	0.825		8823010
18	4.500	3.500	0.875	0.915		0443400*

Type	ØD ₁	NOMINALS Ød ₁	SL	L ₁	L ₂	PART No.
601	4.500	3.750	0.375	0.413		4119201
511	4.500	3.750	0.375	0.413		8816610
18	4.500	3.750	0.500	0.520		1414800
512	4.500	3.750	0.500	0.550		8831410
606	4.500	3.750	0.625	0.688		4371000
18	4.500	3.750	0.875	0.915		0786000*
511	4.500	3.875	0.312	0.344		8870310
512	4.500	3.875	0.500	0.550		8872310
511	4.500	4.000	0.250	0.275		8810810
18	4.500	4.000	0.375	0.395		1447400
606	4.500	4.000	0.375	0.413		4448100
512	4.500	4.000	0.375	0.413		8827910
601	4.500	4.000	0.511	0.562		4373400
512	4.500	4.000	0.562	0.619		8828010
511	4.500	4.125	0.187	0.207		8805410
512	4.500	4.125	0.250	0.275		8867210
512	4.500	4.125	0.375	0.413		8871310
511	4.500	4.250	0.125	0.138		8819710
512	4.562	4.187	0.375	0.413		8859010
18	4.625	3.625	0.500	0.520		0240800*
18	4.625	3.625	0.750	0.790		0449000
511	4.625	3.875	0.375	0.413		8819210
511	4.625	4.000	0.312	0.344		8810910
512	4.625	4.125	0.375	0.413		8859610
511	4.625	4.250	0.187	0.207		8805510
512	4.625	4.250	0.312	0.344		8859110
512	4.625	4.250	0.375	0.413		8824410
66	4.750	0.500	0.750	0.170		0271300
71	4.750	3.750		0.875	0.375	1007010
18	4.750	3.750	0.750	0.790		1007000
601	4.750	4.000	0.375	0.413		4120501
511	4.750	4.000	0.375	0.413		8816810
512	4.750	4.000	0.500	0.550		8878910
601	4.750	4.000	0.536	0.600		4422500
512	4.750	4.000	0.625	0.688		8831610
18	4.750	4.000	0.687	0.727		0641900*
511	4.750	4.125	0.312	0.344		8811110



Piston seals

Hallite

inch - single acting



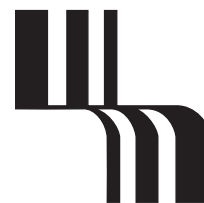
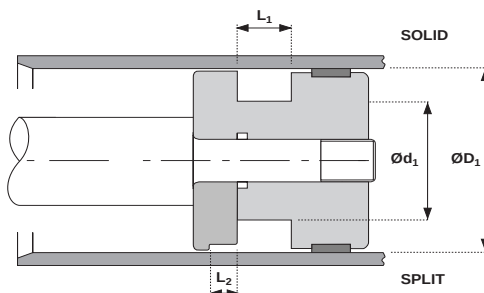
Type	ØD ₁	Ød ₁	NOMINALS SL	L ₁	L ₂	PART No.
511	4.750	4.250	0.250	0.275		8811210
18	4.750	4.250	0.375	0.395		1468100
512	4.750	4.250	0.375	0.413		8828210
512	4.750	4.250	0.562	0.619		8833710
511	4.750	4.375	0.187	0.207		8854310
512	4.750	4.375	0.375	0.413		8859210
606	4.750	4.379	0.275	0.302		4493600
18	4.875	3.875	0.750	0.790		1370200*
18	4.875	4.000	0.656	0.676		1424100
511	4.875	4.125	0.375	0.413		8853210
511	4.875	4.250	0.312	0.344		8811310
511	4.875	4.375	0.250	0.275		8811410
18	4.875	4.375	0.375	0.395		0924200*
511	4.875	4.500	0.187	0.207		8805710
512	4.875	4.500	0.375	0.413		8824510
67	5.000		0.625	0.187		67-5000
66	5.000	0.500	0.750	0.170		0253100
71	5.000	4.000		0.875 0.375		0443010
511	5.000	4.000	0.500	0.550		8816910
18	5.000	4.000	0.625	0.665		6500600*
18	5.000	4.000	0.750	0.790		0443000
512	5.000	4.000	0.750	0.825		8853510
18	5.000	4.125	0.562	0.582		0923000*
25	5.000	4.250	0.375	0.413		4006901
606	5.000	4.250	0.375	0.413		4517500
511	5.000	4.250	0.375	0.413		8817010
606	5.000	4.250	0.500	0.550		4445100
512	5.000	4.250	0.500	0.550		8831810
18	5.000	4.250	0.562	0.582		0783400
606	5.000	4.250	0.625	0.688		4371100
512	5.000	4.250	0.625	0.688		8831910
511	5.000	4.375	0.312	0.344		8811510
18	5.000	4.375	0.375	0.395		0752100*
512	5.000	4.375	0.500	0.550		8828410
512	5.000	4.375	0.625	0.688		8872410
606	5.000	4.500	0.250	0.275		4517000
511	5.000	4.500	0.250	0.275		8811610

Type	ØD ₁	Ød ₁	NOMINALS SL	L ₁	L ₂	PART No.
512	5.000	4.500	0.312	0.344		8821410
18	5.000	4.500	0.375	0.395		0036300
601	5.000	4.500	0.375	0.413		4129801
606	5.000	4.500	0.375	0.413		4365200
512	5.000	4.500	0.375	0.413		8828610
606	5.000	4.500	0.562	0.619		4495900
512	5.000	4.500	0.562	0.619		8828710
511	5.000	4.625	0.187	0.207		8879510
512	5.000	4.625	0.312	0.344		8859310
512	5.000	4.625	0.375	0.413		8855410
511	5.000	4.750	0.125	0.138		8818110
18	5.125	4.125	0.750	0.790		0853400*
511	5.125	4.500	0.312	0.344		8811710
512	5.125	4.500	0.625	0.688		8872510
511	5.125	4.625	0.250	0.275		8811810
511	5.125	4.875	0.125	0.138		8816710
66	5.250	0.500	0.750	0.170		0257700
71	5.250	4.250		0.875 0.375		0892210
511	5.250	4.250	0.500	0.550		8858910
18	5.250	4.250	0.750	0.790		0892200
18	5.250	4.250	0.875	0.915		0573600*
511	5.250	4.500	0.375	0.413		8817310
18	5.250	4.500	0.469	0.489		0447800
606	5.250	4.500	0.500	0.550		4445200
512	5.250	4.500	0.500	0.550		8832010
512	5.250	4.500	0.625	0.688		8832110
511	5.250	4.750	0.250	0.275		8811910
18	5.250	4.750	0.375	0.395		1431400
511	5.250	4.875	0.187	0.207		8823610
512	5.250	4.875	0.250	0.275		8821510
18	5.375	4.375	0.750	0.790		0919000*
18	5.375	4.500	0.687	0.727		1289300
511	5.375	4.750	0.312	0.344		8879710
511	5.375	4.875	0.250	0.275		8856510
67	5.500		0.750	0.187		67-5500
66	5.500	0.500	0.750	0.170		0253000

Piston seals

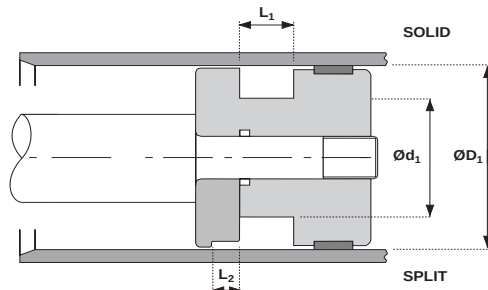
Hallite

inch - single acting



Type	ØD ₁	NOMINALS Ød ₁ SL	L ₁	L ₂	PART No.
511	5.500	4.250 0.625	0.688		8819810
71	5.500	4.500	0.875	0.375	0133210
511	5.500	4.500 0.500	0.550		8817410
18	5.500	4.500 0.750	0.790		0133200
601	5.500	4.750 0.360	0.437		4154701
511	5.500	4.750 0.375	0.413		8817510
18	5.500	4.750 0.625	0.665		1181100*
606	5.500	4.750 0.625	0.688		4371200
512	5.500	4.750 0.625	0.688		8832210
511	5.500	5.000 0.250	0.275		8812010
18	5.500	5.000 0.375	0.395		1456200
512	5.500	5.000 0.375	0.413		8871510
512	5.500	5.000 0.562	0.619		8828810
511	5.625	5.000 0.312	0.344		8812110
66	5.750	0.500 0.750	0.170		0848000
18	5.750	4.750 0.750	0.790		1366900
511	5.750	5.000 0.375	0.413		8817610
601	5.750	5.000 0.482	0.539		4224801
18	5.750	5.000 0.500	0.520		0448000
512	5.750	5.000 0.500	0.550		8879110
512	5.750	5.000 0.625	0.688		8832310
511	5.750	5.250 0.250	0.275		8812210
18	5.875	4.875 0.750	0.790		1450500
511	5.875	5.250 0.312	0.344		8856910
67	6.000	0.750 0.187			67-6000
66	6.000	0.500 0.750	0.170		0316100
511	6.000	4.750 0.625	0.688		8819410
71	6.000	5.000	0.875	0.375	1367010
511	6.000	5.000 0.500	0.550		8817710
659	6.000	5.000 0.731	0.804		4530200
18	6.000	5.000 0.750	0.790		1367000
512	6.000	5.000 0.750	0.825		8832410
18	6.000	5.000 0.875	0.915		6503600*
606	6.000	5.250 0.375	0.413		4517600
511	6.000	5.250 0.375	0.413		8817810
606	6.000	5.250 0.500	0.550		4445300

Type	ØD ₁	NOMINALS Ød ₁ SL	L ₁	L ₂	PART No.
18	6.000	5.250 0.562	0.582		0487700
606	6.000	5.250 0.625	0.688		4371300
512	6.000	5.250 0.625	0.688		8832610
511	6.000	5.375 0.312	0.344		8812310
512	6.000	5.375 0.625	0.688		8872610
606	6.000	5.500 0.250	0.275		4517100
511	6.000	5.500 0.250	0.275		8812410
18	6.000	5.500 0.375	0.395		1604500
606	6.000	5.500 0.375	0.413		4365300
512	6.000	5.500 0.375	0.413		8829110
606	6.000	5.500 0.562	0.619		4393400
512	6.000	5.500 0.562	0.619		8829210
18	6.020	5.263 0.562	0.582		0553100*
18	6.062	5.062 0.875	0.915		1295100*
511	6.125	5.125 0.500	0.550		8851810
511	6.125	5.500 0.312	0.344		8812510
511	6.250	5.250 0.500	0.550		8900110
18	6.250	5.250 0.750	0.790		0083300
601	6.250	5.500 0.375	0.413		4119301
511	6.250	5.500 0.375	0.413		8818010
18	6.250	5.500 0.687	0.727		1194300
511	6.250	5.750 0.250	0.275		8812610
18	6.250	5.750 0.375	0.395		1604900*
606	6.250	5.750 0.562	0.619		4458300
511	6.375	5.375 0.500	0.550		8863610
511	6.375	5.625 0.375	0.413		8814110
511	6.375	5.750 0.312	0.344		8857010
66	6.500	0.500 0.875	0.225		0853500
71	6.500	5.500	0.875	0.375	1164110
18	6.500	5.500 0.750	0.790		1164100
512	6.500	5.500 0.750	0.825		8823310
601	6.500	5.750 0.375	0.413		4135301
511	6.500	5.750 0.375	0.413		8818210
512	6.500	5.750 0.500	0.550		8829010
512	6.500	5.750 0.625	0.688		8832810



Piston seals

Hallite

inch - single acting



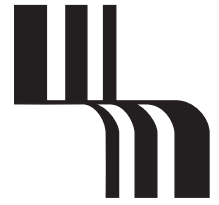
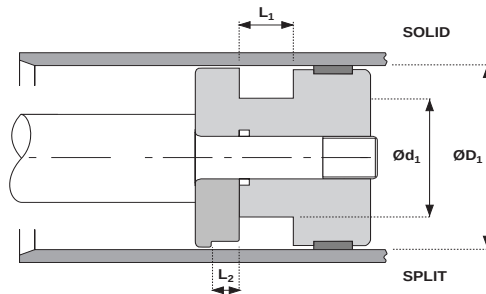
Type	ØD ₁	Ød ₁	NOMINALS SL	L ₁	L ₂	PART No.
511	6.500	6.000	0.250	0.275		8812810
512	6.500	6.000	0.562	0.619		8829310
18	6.625	5.625	1.250	1.312		1604700*
511	6.625	6.000	0.312	0.344		8812910
18	6.750	5.750	0.750	0.790		1286100
511	6.750	6.000	0.375	0.413		8818310
18	6.750	6.000	0.625	0.665		0179000
512	6.750	6.000	0.625	0.688		8833010
511	6.750	6.250	0.250	0.275		8856610
18	6.875	5.875	0.750	0.790		1604400*
511	6.875	6.250	0.312	0.344		8857110
67	7.000		0.750	0.187		67-7000
66	7.000	1.000	0.250	1.070		0411200
18	7.000	5.750	0.937	0.977		1183400*
71	7.000	6.000		0.875	0.375	1188810
511	7.000	6.000	0.500	0.550		8818410
659	7.000	6.000	0.731	0.804		4529700
18	7.000	6.000	0.750	0.790		1188800
512	7.000	6.000	0.750	0.825		8833110
606	7.000	6.250	0.375	0.413		4517700
511	7.000	6.250	0.375	0.413		8818510
606	7.000	6.250	0.500	0.550		4445500
512	7.000	6.250	0.500	0.550		8833210
606	7.000	6.250	0.625	0.688		4371400
512	7.000	6.250	0.625	0.688		8833310
511	7.000	6.375	0.312	0.344		8813010
512	7.000	6.375	0.625	0.688		8829410
606	7.000	6.500	0.250	0.275		4517200
511	7.000	6.500	0.250	0.275		8813110
18	7.000	6.500	0.375	0.395		1431600
606	7.000	6.500	0.375	0.413		4445400
512	7.000	6.500	0.375	0.413		8829510
512	7.000	6.500	0.562	0.619		8829710
18	7.125	6.000	0.750	0.790		0492900*
511	7.125	6.500	0.312	0.344		8876610

Type	ØD ₁	Ød ₁	NOMINALS SL	L ₁	L ₂	PART No.
18	7.250	6.000	1.000	1.040		0424100
511	7.250	6.250	0.500	0.550		8857810
18	7.250	6.250	1.000	1.040		0416700*
511	7.250	6.500	0.375	0.413		8818610
512	7.250	6.500	0.625	0.688		8833410
18	7.250	6.500	0.687	0.727		0489900*
511	7.250	6.750	0.250	0.275		8813210
18	7.250	6.750	0.375	0.395		0673400*
511	7.375	6.750	0.312	0.344		8857210
18	7.500	6.250	1.000	1.040		1255200*
511	7.500	6.500	0.500	0.550		8815210
18	7.500	6.500	0.875	0.915		1270600*
511	7.500	6.750	0.375	0.413		8818810
18	7.500	6.750	0.437	0.457		1433300
512	7.500	6.750	0.625	0.688		8850810
511	7.500	7.000	0.250	0.275		8813310
512	7.500	7.000	0.375	0.413		8822610
512	7.500	7.000	0.562	0.619		8877210
511	7.625	7.000	0.312	0.344		8879310
512	7.625	7.000	0.625	0.688		8859710
18	7.750	6.500	1.000	1.040		1192700
18	7.750	6.750	1.000	1.040		1191200
511	7.750	7.000	0.375	0.413		8877010
512	7.750	7.000	0.500	0.550		8859810
512	7.750	7.000	0.625	0.688		8877610
511	7.750	7.250	0.250	0.275		8856710
511	7.875	7.250	0.312	0.344		8857310
67	8.000		0.750	0.187		67-8000
66	8.000	0.750	1.375	0.225		0411800
511	8.000	6.500	0.625	0.688		8819910
511	8.000	6.750	0.625	0.688		8819510
18	8.000	6.750	1.000	1.040		0426500
601	8.000	7.000	0.500	0.550		4124901
511	8.000	7.000	0.500	0.550		8851310
18	8.000	7.000	0.687	0.727		0224300

Piston seals

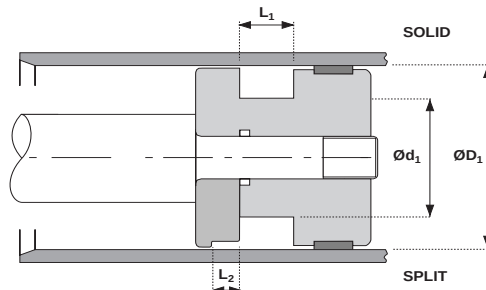
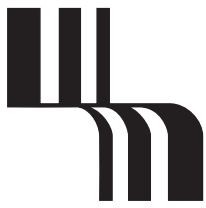
Hallite

inch - single acting



Type	----- $\varnothing D_1$	NOMINALS $\varnothing d_1$	SL	----- L_1	L_2	PART No.
512	8.000	7.000	0.750	0.825		8851910
18	8.000	7.000	0.875	0.915		6501200
511	8.000	7.250	0.375	0.413		8818910
606	8.000	7.250	0.625	0.688		4371500
512	8.000	7.250	0.625	0.688		8833510
18	8.000	7.250	0.687	0.727		0546300*
511	8.000	7.375	0.312	0.344		8876710
512	8.000	7.375	0.625	0.688		8855310
606	8.000	7.500	0.250	0.275		4517300
511	8.000	7.500	0.250	0.275		8813410
512	8.000	7.500	0.375	0.413		8829610
512	8.000	7.500	0.562	0.619		8877310
511	8.125	7.500	0.312	0.344		8813510
18	8.250	7.000	1.000	1.040		1219200
511	8.250	7.250	0.500	0.550		8857910
511	8.250	7.500	0.375	0.413		8877110
18	8.250	7.500	0.562	0.582		0362200*
511	8.375	7.375	0.500	0.550		8863910
511	8.375	7.625	0.375	0.413		8814010
511	8.375	7.750	0.312	0.344		8857410
18	8.500	7.250	1.000	1.040		1286400
511	8.500	7.500	0.500	0.550		8851610
18	8.500	7.500	0.750	0.790		0692500*
512	8.500	7.500	0.750	0.825		8820410
18	8.500	7.500	1.250	1.312		1282500
511	8.500	7.750	0.375	0.413		8853910
512	8.500	7.750	0.625	0.688		8859910
511	8.500	8.000	0.250	0.275		8813610
511	8.625	8.000	0.312	0.344		8876910
18	8.750	7.500	1.000	1.040		0418100
511	8.750	8.000	0.375	0.413		8869210
511	8.750	8.250	0.250	0.275		8856810
511	8.875	8.250	0.312	0.344		8857510
18	9.000	7.500	1.000	1.040		1266600

Type	----- $\varnothing D_1$	NOMINALS $\varnothing d_1$	SL	----- L_1	L_2	PART No.
511	9.000	8.000	0.500	0.550		8819010
18	9.000	8.000	0.750	0.790		1269400
606	9.000	8.000	0.750	0.825		4371600
512	9.000	8.000	0.750	0.825		8855210
511	9.000	8.250	0.375	0.413		8851410
512	9.000	8.250	0.500	0.550		8860010
18	9.000	8.250	0.625	0.665		1269500
512	9.000	8.250	0.625	0.688		8853710
511	9.000	8.500	0.250	0.275		8813710
512	9.000	8.500	0.375	0.413		8829810
512	9.000	8.500	0.562	0.619		8855110
511	9.125	8.125	0.500	0.550		8853810
511	9.125	8.500	0.312	0.344		8857610
18	9.250	8.000	1.000	1.040		0455700
18	9.250	8.000	1.187	1.250		0455600*
18	9.375	8.250	0.875	0.915		1604100*
18	9.500	8.000	1.500	1.562		0430900*
18	9.500	8.250	1.000	1.040		1332200
18	9.750	8.500	1.000	1.040		1332300
18	10.000	8.000	1.375	1.375		0477300*
18	10.000	8.500	0.937	0.977		0450600
18	10.000	8.750	1.000	1.040		0436100
606	10.000	9.000	0.750	0.825		4536200
18	10.000	9.000	0.812	0.852		0451400
606	10.000	9.250	0.375	0.413		4575100
18	10.250	9.000	1.000	1.040		0437500
18	10.500	9.000	1.250	1.312		0509600*
18	10.500	9.250	1.000	1.040		1331900
18	10.750	9.500	1.000	1.040		1320400
18	11.000	9.750	1.000	1.040		0433900
18	11.250	10.000	1.000	1.040		0452200
18	11.500	10.000	1.312	1.375		0046900



Piston seals

Hallite

inch - single acting



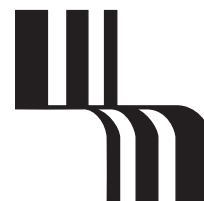
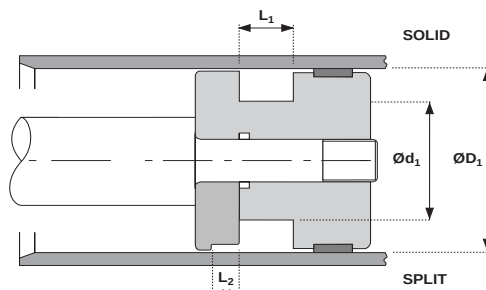
Type	----- ØD ₁	----- Ød ₁	NOMINALS SL	----- L ₁	----- L ₂	PART No.
18	11.500	10.250	1.000	1.040		1331600*
18	11.750	10.500	0.750	0.790		0694800*
18	11.750	10.500	1.000	1.040		1331300
18	12.000	10.625	1.125	1.187		1338300*
18	12.000	10.750	1.000	1.040		1331400
18	12.000	11.000	0.750	0.780		0454000
18	12.250	10.500	1.000	1.040		1224600*
18	12.250	11.000	1.000	1.040		1331000
18	12.500	10.500	1.500	1.562		0155100
18	12.500	11.250	1.000	1.040		0436300
18	12.750	11.250	1.375	1.400		0478300
18	12.750	11.500	1.000	1.040		1331800
18	13.000	11.000	1.500	1.562		1336900
18	13.000	11.750	1.000	1.040		0436500
18	13.000	12.000	1.000	1.040		1050300*
18	13.250	12.000	1.000	1.040		1329100
18	13.250	12.000	1.312	1.375		0438300
18	13.500	12.000	1.125	1.187		1327900
18	13.875	12.375	1.125	1.150		0782900
18	14.000	12.000	1.250	1.312		0453600
18	14.000	12.750	1.000	1.040		2008600
18	14.250	13.000	1.000	1.040		0864800
18	15.000	13.750	1.000	1.040		0787000*
18	15.000	13.937	0.812	0.852		1326600
18	15.250	14.000	1.208	1.270		0174900
18	15.500	13.000	1.500	1.562		0964900*
18	15.500	14.000	1.500	1.562		0475700*
18	15.750	14.000	1.500	1.562		1319300
18	16.000	14.500	1.500	1.562		1345000*
18	16.500	15.000	1.375	1.375		1316200*

Type	----- ØD ₁	----- Ød ₁	NOMINALS SL	----- L ₁	----- L ₂	PART No.
18	16.750	15.750	1.000	1.025		1315700*
18	17.000	15.000	1.500	1.562		1345300*
18	17.500	16.000	1.375	1.375		0093000
18	17.750	16.500	1.000	1.040		1318800*
18	17.750	17.000	0.625	0.665		1345900
18	18.000	16.000	1.500	1.562		2006200
18	18.000	16.500	1.125	1.187		2004400*
18	18.000	16.500	1.250	1.312		2206700*
18	18.500	16.500	1.500	1.562		2001400
18	19.000	17.000	1.250	1.312		1318000
18	19.250	18.000	1.250	1.312		1314500*
18	19.500	18.000	1.500	1.562		2108200*
18	19.534	17.875	1.312	1.337		2004000*
18	20.000	18.000	1.500	1.562		2109000*
18	20.125	19.125	0.750	0.775		2108500*
18	20.750	19.000	1.312	1.375		1342200*
18	21.500	19.500	1.500	1.562		2006100
18	21.500	20.000	1.000	1.040		2003900*
18	21.500	20.000	1.750	1.812		0093600*
18	21.750	20.500	1.250	1.312		0093800
18	23.500	21.500	1.750	1.812		0150500*
18	23.500	22.000	1.125	1.187		0159100
18	24.000	22.000	1.500	1.562		2110600
18	24.000	22.500	1.125	1.187		2001600
18	25.000	23.000	1.500	1.562		0158700
18	25.500	24.000	1.125	1.187		1900200*
18	26.000	24.000	1.500	1.562		0151000
18	27.750	26.000	1.500	1.562		2106800*

Piston seals

Hallite

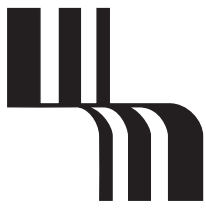
inch - single acting



Type	----- ØD ₁	NOMINALS Ød ₁	SL	----- L ₁	----- L ₂	PART No.
18	28.000	26.000	1.500	1.562		2110500*
18	28.500	27.000	1.125	1.187		0155300*
18	29.000	27.000	1.500	1.562		2003500*
18	31.500	30.000	1.125	1.187		1337900*
18	32.000	30.000	1.500	1.562		2109700*
18	34.000	32.000	1.500	1.562		2110700*

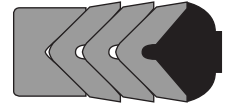
Type	----- ØD ₁	NOMINALS Ød ₁	SL	----- L ₁	----- L ₂	PART No.
18	38.500	37.000	1.125	1.187		1790400*
18	39.500	38.000	1.125	1.187		0159200*
18	40.000	38.000	1.500	1.562		2105500*

* Possible indent item-
minimum quantity may apply.



Vee pack sets

Hallite



07

TECHNICAL DETAILS

METRIC

INCH

OPERATING CONDITIONS

MAXIMUM SPEED 0.5 m/sec
MAXIMUM TEMPERATURE -30°C + 100°C
MAXIMUM PRESSURE 700 bar

1.5 ft/sec
-22°F + 212°F
10,000 p.s.i.

MAXIMUM EXTRUSION GAP

PRESSURE bar
MAXIMUM GAP mm
PRESSURE p.s.i.
MAXIMUM GAP in

Figures show the maximum permissible gap all on one side using minimum rod $\varnothing$ and maximum clearance $\varnothing$.

160	250	400	700
0.4	0.3	0.2	0.1
2400	3750	6000	10,000
0.016	0.012	0.008	0.004

SURFACE ROUGHNESS

DYNAMIC SEALING FACE $\varnothing d_1$
STATIC SEALING FACE $\varnothing D_1$
STATIC HOUSING FACES L_1

μmRa	μmRt	$\mu in CLA$	$\mu in RMS$
0.1 $\leftrightarrow$ 0.4	4 max	4 $\leftrightarrow$ 16	5 $\leftrightarrow$ 18
1.6 max	10 max	63 max	70 max
3.2 max	16 max	125 max	140 max

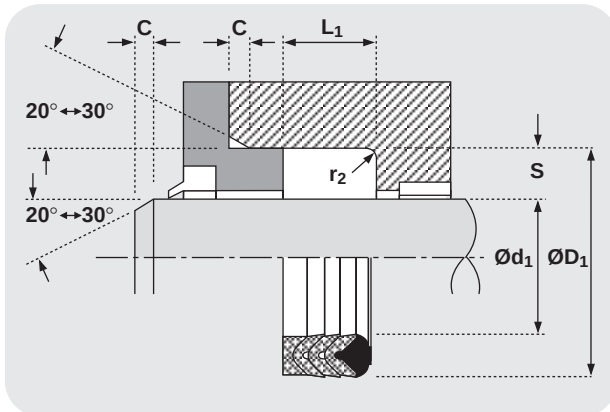
CHAMFERS & RADII

GROOVE SECTION $\leq S$ mm
MIN CHAMFER C mm
MAX FILLET RAD r_2 mm
GROOVE SECTION $\leq S$ in
MIN CHAMFER C in
MAX FILLET RAD r_2 in

7.5	10.0	12.5	15.0
4.0	5.0	6.5	7.5
0.8	0.8	0.8	1.6
0.250	0.312	0.375	0.500
0.125	0.156	0.187	0.250
0.031	0.031	0.031	0.031

TOLERANCES

$\varnothing d_1$	$\varnothing D_1$	L_1 mm	L_1 in
f9	Js11	+0.25 -0	+0.010 -0



FEATURES

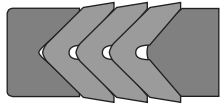
- EFFECTIVE DRI-ROD SEAL UNDER BOTH LOW AND HIGH PRESSURE CONDITIONS
- PRECISION MOULDED VEE RINGS
- PRESSURE ACTIVATED
- NO ADJUSTMENT NECESSARY

DESIGN

The Hallite 07 is a multi lip rod seal, for medium to heavy duty applications, composed of a header ring, vee rings and a female adaptor.

The header ring is the primary seal. It is a bonded construction of a rubberised fabric vee ring and rubber. When installed the section is pre-loaded to seal at low pressure but has the strength and durability of the fabric to operate at higher pressures. Rubberised fabric is also used for the vee rings. These provide secondary sealing as pressure acting on the header ring spreads the vee rings increasing the sealing area. The female adaptor provides the support and protection from extrusion damage. It is manufactured in either polyacetal or hard rubberised fabric. The assembly is a pressure activated packing that does not require any axial pre-load.

The range has a header ring, a female adaptor and 2 vee rings. Other sizes and constructions are available on request.



Vee pack components

Hallite



08

TECHNICAL DETAILS

METRIC

INCH

OPERATING CONDITIONS

MAXIMUM SPEED
MAXIMUM TEMPERATURE
MAXIMUM PRESSURE

0.5 m/sec
-30°C + 100°C
400 bar

1.5 ft/sec
-22°F + 212°F
6000 p.s.i.

MAXIMUM EXTRUSION GAP

PRESSURE bar
PRESSURE p.s.i.
MAXIMUM GAP in

Figures show the maximum permissible gap all on one side, for rod seals using minimum rod $\varnothing$ and maximum clearance $\varnothing$ and for piston seals using the minimum clearance $\varnothing$ and maximum bore $\varnothing$

100	150	240	400
1500	2250	3500	6000
0.018	0.015	0.010	0.007

SURFACE ROUGHNESS

DYNAMIC SEALING FACE - ROD $\varnothing d_1$
STATIC SEALING FACE - ROD $\varnothing D_1$
DYNAMIC SEALING FACE - PISTON $\varnothing d_1$
STATIC SEALING FACE - PISTON $\varnothing D_1$
STATIC HOUSING FACES L_1

μmRa	μmRt	$\mu in CLA$	$\mu in RMS$
0.1 $\leftrightarrow$ 0.4	4 max	4 $\leftrightarrow$ 16	5 $\leftrightarrow$ 18
1.6 max	10 max	63 max	70 max
0.1 $\leftrightarrow$ 0.4	4 max	4 $\leftrightarrow$ 16	5 $\leftrightarrow$ 18
1.6 max	10 max	63 max	70 max
3.2 max	16 max	125 max	140 max

CHAMFERS & RADII

GROOVE SECTION $\leq S$ in
MIN CHAMFER C in
MAX FILLET RAD r_1 in

0.187	0.250	0.312	0.375	0.437	0.500
0.093	0.125	0.156	0.187	0.250	0.250
0.020	0.031	0.031	0.031	0.031	0.031

TOLERANCES

ROD
PISTON

$\varnothing d_1$	$\varnothing D_1$	L_1 in
h10	H10	± 0.1000
H10	h10	± 0.1000

STANDARD STACK HEIGHT (L_1)
INCLUDES M & F ADAPTORS AND INDICATES NUMBER OF VEE'S USED

3/16 CROSS SECTION	1/4 CROSS SECTION	5/16 CROSS SECTION	3/8 CROSS SECTION	7/16 CROSS SECTION	1/2 CROSS SECTION
0.410 1 RING	0.500 1 RING	0.562 1 RING	0.625 1 RING	0.645 1 RING	0.750 1 RING
0.520 2 RING	0.625 2 RING	0.719 2 RING	0.812 2 RING	0.863 2 RING	1.000 2 RING
0.630 3 RING	0.750 3 RING	0.875 3 RING	1.000 3 RING	1.081 3 RING	1.250 3 RING
0.740 4 RING	0.875 4 RING	1.031 4 RING	1.187 4 RING	1.300 4 RING	1.500 4 RING
0.850 5 RING	1.000 5 RING	1.187 5 RING	1.375 5 RING	1.517 5 RING	1.750 5 RING
0.960 6 RING	1.125 6 RING	1.344 6 RING	1.562 6 RING	1.735 6 RING	2.000 6 RING

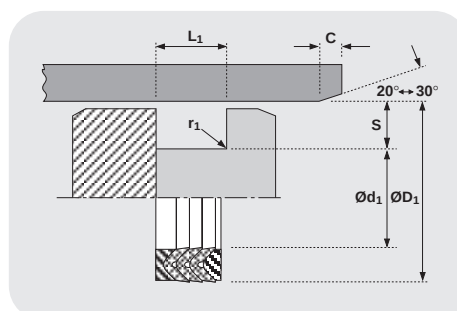
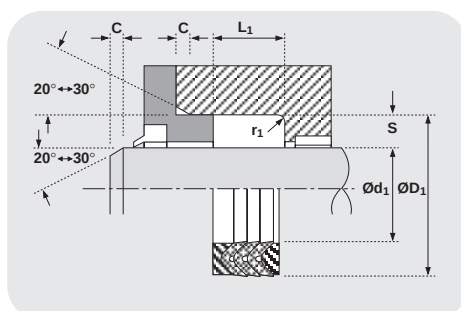
DESIGN

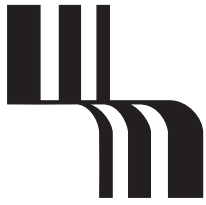
The Hallite 08 vee pack components are manufactured from fabric reinforced high grade synthetic rubber, homogeneous rubber, nylon and polyester. These are normally used in multiples of vee rings with a male and female adaptor.

Vees are "stacked" together and must be lubricated liberally with the operating fluid prior to assembly.

The male adaptor fits into the vee ring on the pressure side and when pre-loaded, exerts a hinging action on the vee, forcing the sealing lips apart and ensuring a low pressure seal. As the pressure increases, so this hinging action increases, improving the effectiveness of the seal even where severe vibration, shock loading and knocking may occur.

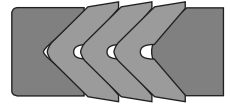
For any sizes not listed or for any special requirements, please consult your local Hallite sales department.





Vee pack sets

Hallite



09

TECHNICAL DETAILS

METRIC

INCH

OPERATING CONDITIONS

MAXIMUM SPEED
MAXIMUM TEMPERATURE
MAXIMUM PRESSURE

0.5 m/sec
-30°C + 100°C
400 bar

1.5 ft/sec
-22°F + 212°F
6000 p.s.i.

MAXIMUM EXTRUSION GAP

Figures show the maximum permissible gap all on one side, for rod seals using minimum rod $\varnothing$ and maximum clearance $\varnothing$ and for piston seals using the minimum clearance $\varnothing$ and maximum bore $\varnothing$

PRESSURE bar
MAXIMUM GAP mm
PRESSURE p.s.i.
MAXIMUM GAP in

100	175	250	400
0.45	0.4	0.3	0.2
1500	2250	3500	6000
0.018	0.015	0.010	0.007

SURFACE ROUGHNESS

DYNAMIC SEALING FACE - ROD $\varnothing d_1$
STATIC SEALING FACE - ROD $\varnothing D_1$
DYNAMIC SEALING FACE - PISTON $\varnothing d_1$
STATIC SEALING FACE - PISTON $\varnothing D_1$
STATIC HOUSING FACES L_1

μmRa	μmRt	$\mu in CLA$	$\mu in RMS$
0.1 $\leftrightarrow$ 0.4	4 max	4 $\leftrightarrow$ 16	5 $\leftrightarrow$ 18
1.6 max	10 max	63 max	70 max
0.1 $\leftrightarrow$ 0.4	4 max	4 $\leftrightarrow$ 16	5 $\leftrightarrow$ 18
1.6 max	10 max	63 max	70 max
3.2 max	16 max	125 max	140 max

CHAMFERS & RADII

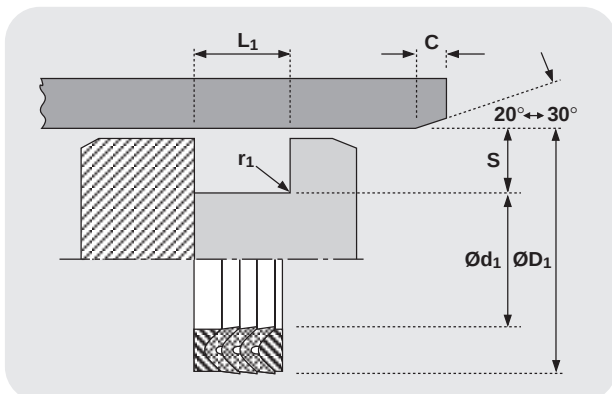
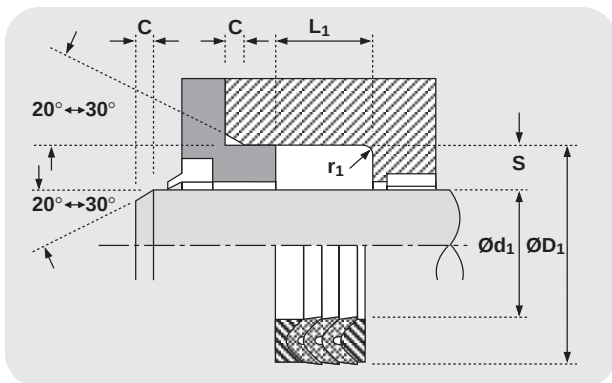
GROOVE SECTION $\leq S$ mm
MIN CHAMFER C mm
MAX FILLET RAD r_1 mm
GROOVE SECTION $\leq S$ in
MIN CHAMFER C in
MAX FILLET RAD r_1 in

5.0	7.5	10.0	12.5	15.0
3.0	5.0	6.5	7.0	7.5
0.5	0.8	0.8	0.8	0.8
0.187	0.250	0.312	0.375	0.500
0.093	0.125	0.156	0.187	0.250
0.020	0.031	0.031	0.031	0.031

TOLERANCES

ROD
PISTON

$\varnothing d_1$	$\varnothing D_1$	L_1 mm	L_1 in
f9	Js11	+0.75 -0.0	+0.030 -0
js11	H9	+0.75 -0.0	+0.030 -0



DESIGN

Hallite 09 vee packings incorporate the Hallite 08 vee ring manufactured from fabric reinforced high grade nitrile rubber, which is normally used in multiples in a set with a male and female adaptor. The parts are "stacked" together and must be lubricated liberally with clean operating fluid prior to assembly.

The packing must be axially pre-loaded by the housing. This preload works through the male adaptor on the pressure side, exerting a hinging action on the vees, forcing the sealing lips apart to ensure a low pressure seal. As the pressure increases, so the hinging action increases, increasing the effectiveness of the seal even where severe vibration, shock loading and knuckling may occur.

The standard Hallite 09 comprises of three vees and two adaptors, available in metric and imperial inch sizes. In addition to the ranges the Hallite 09 is also available for standard American inch housings. Some adaptors are rubber fabric while others are polyacetal resin. Individual vee rings are stocked to supplement the sets, but it should be noted that individual adaptors are only available in special circumstances.

For sizes not listed or for special requirements, please contact your Hallite sales office.



Vee pack sets

Hallite



TECHNICAL DETAILS

METRIC

INCH

OPERATING CONDITIONS

MAXIMUM SPEED 0.5 m/sec
MAXIMUM TEMPERATURE -30°C + 100°C
MAXIMUM PRESSURE 400 bar

1.5 ft/sec
-22°F + 212°F
6,000 p.s.i.

MAXIMUM EXTRUSION GAP

PRESSURE bar
MAXIMUM GAP mm
PRESSURE p.s.i.

Figures show the maximum permissible gap all on one side using minimum rod $\varnothing$ and maximum clearance $\varnothing$.

100	160	250	400
0.45	0.4	0.3	0.2
1500	2400	3750	6000

SURFACE ROUGHNESS

DYNAMIC SEALING FACE $\varnothing d_1$
STATIC SEALING FACE $\varnothing D_1$
STATIC HOUSING FACES L_1

μmRa	μmRt	$\mu in CLA$	$\mu in RMS$
0.1 $\leftrightarrow$ 0.4	4 max	4 $\leftrightarrow$ 16	5 $\leftrightarrow$ 18
1.6 max	10 max	63 max	70 max
3.2 max	16 max	125 max	140 max

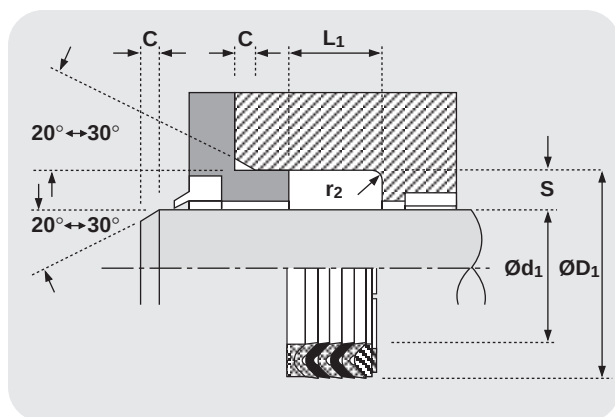
CHAMFERS & RADII

GROOVE SECTION $\leq S$ mm
MIN CHAMFER C mm
MAX FILLET RAD r_2 mm

7.5	10.0	12.5	15.0
4.0	5.0	6.5	7.5
0.4	1.2	1.6	1.6

TOLERANCES

$\varnothing d_1$	$\varnothing D_1$	L_1 mm
f9	H11	+0.2 -0



FEATURES

- PRECISION MOULDED VEE RINGS
- PRESSURE DISTRIBUTION ADAPTORS
- RELIABLE SEALING

DESIGN

The Hallite 11 is a vee pack rod seal for medium duty applications offering excellent performance and long life even under difficult operating conditions such as pressure surges, vibration and some misalignment. The seal consists of a male and female adaptor and 5 vee rings. The male adaptor is usually manufactured from polyacetal but some of the larger sizes use rubberised fabric. It has grooves across one face to ensure equal pressure to the sealing edges of the vee ring.

All sizes have three vee rings manufactured from rubberised fabric because this has strength and durability and permits an oil film to lubricate the other parts of the seal. Two rubber vee rings are supplied between the rubberised fabric vee rings (up to and including 140mm diameter) to aid low pressure sealing.

The female adaptor uses a hard rubberised fabric to support the vee rings and protect them from extrusion damage. At high pressure the lips of the adaptor acts as a secondary seal.

The proportions of the range have been determined to give a satisfactory performance when used with the recommended operating conditions.



Vee pack sets

Hallite



TECHNICAL DETAILS

METRIC

INCH

OPERATING CONDITIONS

MAXIMUM SPEED 0.5 m/sec
MAXIMUM TEMPERATURE -30°C + 100°C
MAXIMUM PRESSURE 400 bar

1.5 ft/sec
-22°F + 212°F
6,000 p.s.i.

MAXIMUM EXTRUSION GAP

PRESSURE bar
MAXIMUM GAP mm
PRESSURE p.s.i.

Figures show the maximum permissible gap all on one side using minimum rod $\varnothing$ and maximum clearance $\varnothing$.

100	160	250	400
0.45	0.4	0.3	0.2
1500	2400	3750	6000

SURFACE ROUGHNESS

DYNAMIC SEALING FACE $\varnothing d_1$
STATIC SEALING FACE $\varnothing D_1$
STATIC HOUSING FACES L_1

μmRa	μmRt	$\mu\text{in CLA}$	μinRMS
0.1 $\leftrightarrow$ 0.4	4 max	4 $\leftrightarrow$ 16	5 $\leftrightarrow$ 18
1.6 max	10 max	63 max	70 max
3.2 max	16 max	125 max	140 max

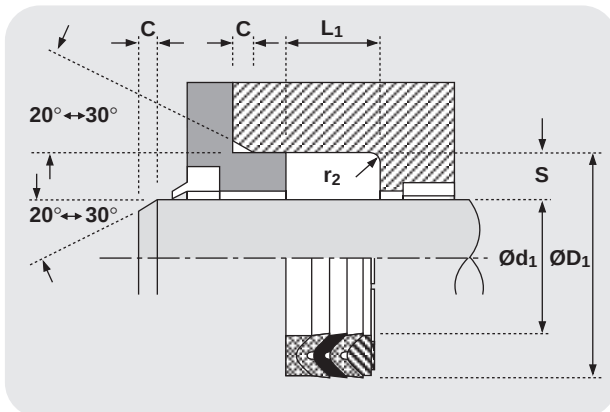
CHAMFERS & RADII

GROOVE SECTION $\leq S$ mm
MIN CHAMFER C mm
MAX FILLET RAD r_2 mm

7.5	10.0
4.0	5.0
0.8	1.2

TOLERANCES

$\varnothing d_1$	$\varnothing D_1$	L_1 mm
f9	H11	+0.2 -0



FEATURES

- PRECISION MOULDED VEE RINGS
- PRESSURE DISTRIBUTION ADAPTORS
- RELIABLE SEALING

DESIGN

The Hallite 12 is a vee pack rod seal for medium duty applications offering excellent performance and long life even under difficult operating conditions such as pressure surges, vibration and some misalignment. The seal consists of a male and female adaptor and 3 vee rings. The male adaptor is usually manufactured from polyacetal but some of the larger sizes use rubberised fabric. It has grooves across one face to ensure equal pressure to the sealing edges of the vee ring.

All the sizes have two vee rings manufactured from rubberised fabric because this has strength and durability and permits an oil film to lubricate the other parts of the seal. A rubber vee ring is supplied between the rubberised fabric vee rings (up to and including 140mm diameter) to aid low pressure sealing.

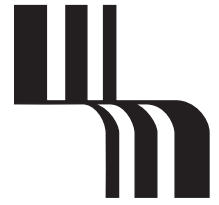
The female adaptor uses a hard rubberised fabric to support the vee rings and protect them from extrusion damage. At high pressures the lips of the adaptor act as a secondary seal.

The proportions of the range have been determined to give a satisfactory performance when used with the recommended operating conditions.



Vee pack sets

Hallite



13

TECHNICAL DETAILS

METRIC

INCH

OPERATING CONDITIONS

MAXIMUM SPEED 0.5 m/sec
MAXIMUM TEMPERATURE -30°C + 100°C
MAXIMUM PRESSURE 700 bar

1.5 ft/sec
-22°F + 212°F
10,000 p.s.i.

MAXIMUM EXTRUSION GAP

PRESSURE bar
MAXIMUM GAP mm
PRESSURE p.s.i.

Figures show the maximum permissible gap all on one side using minimum rod $\varnothing$ and maximum clearance $\varnothing$.

160	250	400	700
0.4	0.3	0.2	0.1
2400	3750	6000	10,000

SURFACE ROUGHNESS

DYNAMIC SEALING FACE $\varnothing d_1$
STATIC SEALING FACE $\varnothing D_1$
STATIC HOUSING FACES L_1

μmRa	μmRt	$\mu inCLA$	$\mu inRMS$
0.1 $\leftrightarrow$ 0.4	4 max	4 $\leftrightarrow$ 16	5 $\leftrightarrow$ 18
1.6 max	10 max	63 max	70 max
3.2 max	16 max	125 max	140 max

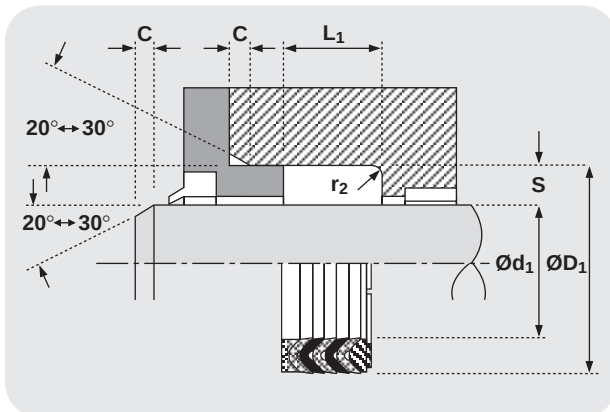
CHAMFERS & RADII

GROOVE SECTION $\leq S$ mm
MIN CHAMFER C mm
MAX FILLET RAD r_2 mm

6.0	7.5	10.0	12.5	15.0	20.0
3.0	4.0	5.0	6.5	7.5	10.0
0.4	0.4	1.2	1.6	1.6	1.6

TOLERANCES

$\varnothing d_1$	$\varnothing D_1$	L_1 mm
f9	H11	+0.2 -0



FEATURES

- PRECISION MOULDED VEE RINGS
- PRESSURE DISTRIBUTION ADAPTORS
- RELIABLE SEALING

DESIGN

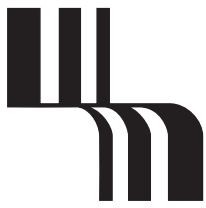
The Hallite 13 is a Vee pack rod seal for heavy duty applications offering excellent performance and long life even under difficult operating conditions such as pressure surges, vibration and some misalignment. The seal assembly consists a male and female adaptor and 5 vee rings.

The male adaptor is usually manufactured from polyacetal but some of the larger sizes use rubberised fabric. It has grooves across one face to ensure equal pressure to the sealing edges of the vee ring.

All sizes have vee rings manufactured from rubberised fabric because this has strength and durability and permits an oil film to lubricate the other parts of the seal. Some sizes are supplied with rubber vee rings between the rubberised fabric vee rings. The number and type of vee rings used are :

	Up to 89 mm $\varnothing$	90 mm $\varnothing$ to 139mm $\varnothing$	Above 139mm $\varnothing$
Rubberised Fabric vee's	3	4	5
Rubber vee's	2	1	

The female adaptor uses a hard rubberised fabric to support the vee rings and protect them from extrusion damage. At high pressures the lips of the adaptor act as a secondary seal.



Vee pack sets

Hallite



TECHNICAL DETAILS

METRIC

INCH

OPERATING CONDITIONS

MAXIMUM SPEED 0.5 m/sec
MAXIMUM TEMPERATURE -30°C + 100°C
MAXIMUM PRESSURE 700 bar

1.5 ft/sec
-22°F + 212°F
10,000 p.s.i.

MAXIMUM EXTRUSION GAP

Figures show the maximum permissible gap all on one side using minimum rod $\varnothing$ and maximum clearance $\varnothing$.

PRESSURE bar
MAXIMUM GAP mm
PRESSURE p.s.i.

160	250	400	700
0.4	0.3	0.2	0.1
2400	3750	6000	10,000

SURFACE ROUGHNESS

DYNAMIC SEALING FACE $\varnothing d_1$
STATIC SEALING FACE $\varnothing D_1$
STATIC HOUSING FACES L_1

μmRa	μmRt	$\mu inCLA$	$\mu inRMS$
0.1 $\leftrightarrow$ 0.4	4 max	4 $\leftrightarrow$ 16	5 $\leftrightarrow$ 18
1.6 max	10 max	63 max	70 max
3.2 max	16 max	125 max	140 max

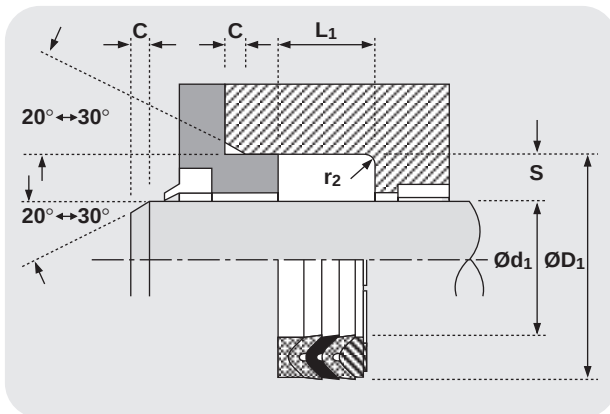
CHAMFERS & RADII

GROOVE SECTION $\leq S$ mm
MIN CHAMFER C mm
MAX FILLET RAD r_2 mm

6.0	7.5	10	12.5	15.0	20.0
3.0	4.0	5.0	6.5	7.5	10.0
0.4	0.4	1.2	1.6	1.6	1.6

TOLERANCES

$\varnothing d_1$	$\varnothing D_1$	L_1 mm
f9	H11	+0.2 -0



FEATURES

- PRECISION MOULDED VEE RINGS
- PRESSURE DISTRIBUTION ADAPTORS
- RELIABLE SEALING

DESIGN

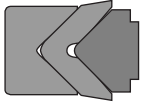
The Hallite 14 is a vee pack rod seal for heavy duty applications offering excellent performance and long life even under difficult operating conditions such as pressure surges, vibration and some misalignment. The seal consists of a male and female adaptor and three vee rings.

The male adaptor is usually manufactured from polyacetal but some of the larger sizes use rubberised fabric. It has grooves across one face to ensure equal pressure to the sealing edges of the vee ring.

All sizes have vee rings manufactured from rubberised fabric because this has strength and durability and permits an oil film to lubricate the other parts of the seal. The smaller sizes are supplied with a rubber vee ring between the rubberised fabric vee rings. The number and type of vee rings used are :

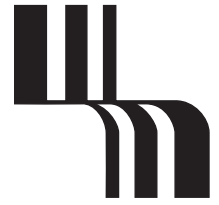
	Up to 139mm $\varnothing$	Above 140mm $\varnothing$
Rubberised fabric vee ring	2	3
Rubber vee ring		1

The female adaptor uses a hard rubberised fabric to support the vee rings and protect them from extrusion damage. At high pressures the lips of the adaptor act as a secondary seal.



Vee pack sets

Hallite



51

TECHNICAL DETAILS

METRIC

INCH

OPERATING CONDITIONS

MAXIMUM SPEED 0.5 m/sec
MAXIMUM TEMPERATURE -30°C + 100°C
MAXIMUM PRESSURE 700 bar

1.5 ft/sec
-22°F + 212°F
10,000 p.s.i.

MAXIMUM EXTRUSION GAP

PRESSURE bar
MAXIMUM GAP mm
PRESSURE p.s.i.

Figures show the maximum permissible gap all on one side using the minimum clearance $\emptyset$ and maximum bore $\emptyset$

160	250	400	700
0.35	0.3	0.2	0.1
2400	3750	6000	10,000

SURFACE ROUGHNESS

DYNAMIC SEALING FACE $\emptyset D_1$
STATIC SEALING FACE $\emptyset d_1$
STATIC HOUSING FACES L_1

μmRa	μmRt	$\mu inCLA$	$\mu inRMS$
0.1 ↔ 0.4	4 max	4 ↔ 16	5 ↔ 18
1.6 max	10 max	63 max	70 max
3.2 max	16 max	125 max	140 max

CHAMFERS & RADII

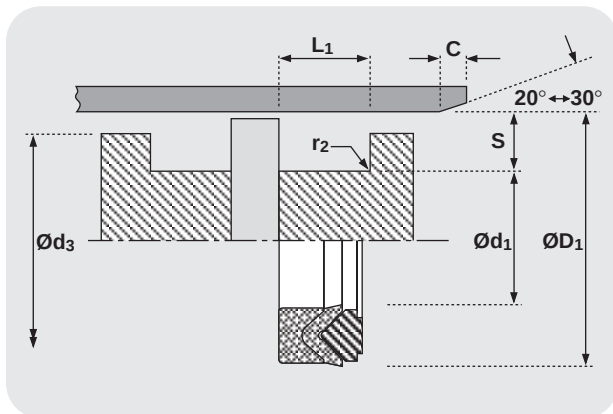
GROOVE SECTION $\leq S$ mm
MIN CHAMFER C mm
MAX FILLET RAD r_2 mm

7.5	10.0	12.5	15.0
4.0	5.0	6.5	7.5
0.8	1.2	1.6	1.6

TOLERANCES

$\emptyset D_1$	$\emptyset d_1$	$\emptyset d_3$	L_1
H9	h11	+0 -0.3	+0.25 -0

mm



DESIGN

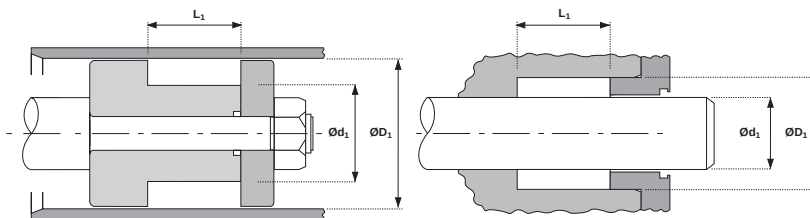
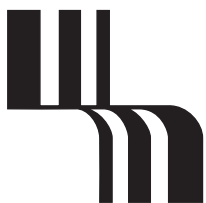
The Hallite 51 is a heavy duty piston seal which, when installed in pairs, provides an excellent double acting piston design. It is particularly suitable for difficult operating conditions such as pressure surging, vibration or some misalignment.

The seal is an assembly of three parts, a male adaptor, a V ring and a female adaptor. Both the V ring and the female adaptor are made from rubberised fabric which has durability and strength, it also retains lubricant at the sliding surfaces so friction and wear are kept to a minimum. The V ring being the primary seal is more flexible than the adaptor which supports it and prevents extrusion damage. At higher pressures the adaptor deforms and becomes a secondary seal.

The polyacetal male adaptor has grooves across the face to ensure pressure is evenly applied to the V ring.

FEATURES

- EFFECTIVE SEAL FOR EXTREME APPLICATIONS
- PRECISION MOULDED VEE PACKS
- HIGH LOAD CAPABILITY
- PRESSURE ACTIVATING GROOVES



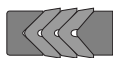
Vee pack sets

Hallite

metric



07



09



11



12



13



14



51

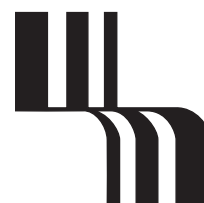
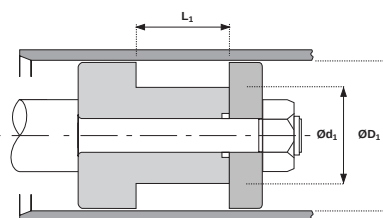
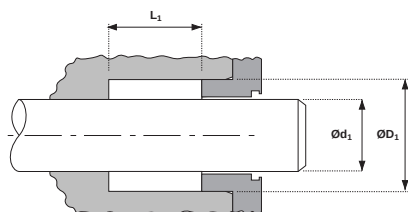
Type	Ød ₁	NOMINALS ØD ₁	L ₁	PART No.
09	12.00	22.00	16.00	0188730*
09	14.00	24.00	16.00	0189030*
09	15.00	25.00	16.00	0189530
09	16.00	26.00	16.00	0190130*
09	18.00	28.00	16.00	0190530
51	20.00	30.00	9.60	4208310
12	20.00	30.00	13.50	4201730
09	20.00	30.00	16.00	0190930
11	20.00	30.00	18.50	4201750
14	20.00	32.00	16.50	4204930
13	20.00	32.00	22.50	4204950
09	22.00	32.00	16.00	0191730
12	25.00	37.00	16.50	4198930
11	25.00	37.00	22.50	4198950
51	25.00	40.00	11.80	4208010
14	25.00	40.00	16.50	4205030
09	25.00	40.00	22.50	0192630
13	25.00	40.00	22.50	4205050
07	25.00	40.00	22.50	6630720
12	28.00	40.00	16.50	4202030
11	28.00	40.00	22.50	4202050
09	28.00	43.00	22.50	0193430
12	30.00	42.00	16.50	4202130
11	30.00	42.00	22.50	4202150
14	30.00	45.00	16.50	4205130
09	30.00	45.00	22.50	0193930
07	30.00	45.00	22.50	0400820
13	30.00	45.00	22.50	4205150
12	32.00	44.00	16.50	4202230
11	32.00	44.00	22.50	4202250
09	32.00	47.00	22.50	0194330
07	32.00	47.00	22.50	6630820
12	35.00	47.00	16.50	4202330

Type	Ød ₁	NOMINALS ØD ₁	L ₁	PART No.
11	35.00	47.00	22.50	4202350
51	35.00	50.00	11.80	4207610
14	35.00	50.00	16.50	4205230
09	35.00	50.00	22.50	0195130
07	35.00	50.00	22.50	0339520
13	35.00	50.00	22.50	4205250
12	36.00	48.00	16.50	4202430
11	36.00	48.00	22.50	4202450
09	36.00	51.00	22.50	0196030
07	36.00	51.00	22.50	2191320
11	40.00	52.00	22.50	4202550
51	40.00	55.00	11.80	4207110
14	40.00	55.00	16.50	4205330
09	40.00	55.00	22.50	0196530
13	40.00	55.00	22.50	4205350
07	40.00	55.00	22.50	6532620
12	42.00	54.00	16.50	4202630
11	42.00	54.00	22.50	4202650
09	42.00	57.00	22.50	0196830
51	45.00	60.00	11.80	4207210
12	45.00	60.00	16.50	4202730
09	45.00	60.00	22.50	0197430
07	45.00	60.00	22.50	0385020
11	45.00	60.00	22.50	4202750
14	45.00	65.00	20.50	4205430
13	45.00	65.00	27.50	4205450
51	48.00	63.00	13.30	4207410
09	48.00	63.00	22.50	0197730
12	50.00	65.00	16.50	4199030
11	50.00	65.00	22.50	4199050
51	50.00	70.00	15.50	4208210
14	50.00	70.00	22.00	4205530
09	50.00	70.00	30.00	1208430
13	50.00	70.00	30.00	4205550
07	50.00	70.00	30.00	6631020

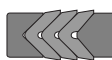
Vee pack sets

Hallite

metric



07



09



11



12



13



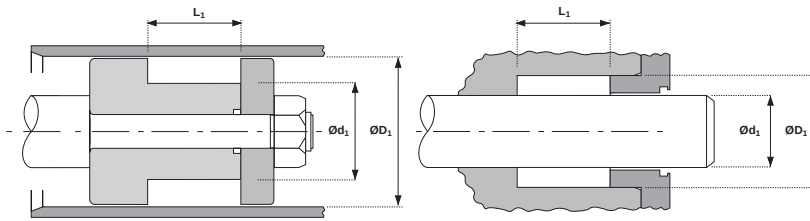
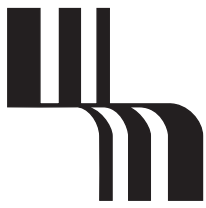
14



51

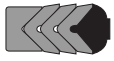
Type	----- Ød ₁	NOMINALS ØD ₁	----- L ₁	PART No.
12	55.00	70.00	16.50	4202930
11	55.00	70.00	22.50	4202950
14	55.00	75.00	22.00	4205630
09	55.00	75.00	30.00	1208230
13	55.00	75.00	30.00	4205650
07	55.00	75.00	30.00	6631120
12	56.00	71.00	16.50	4203030
11	56.00	71.00	22.50	4203050
07	56.00	76.00	30.00	0338220
09	56.00	76.00	32.00	1208630
12	60.00	75.00	16.50	4203130
11	60.00	75.00	22.50	4203150
51	60.00	80.00	15.50	4208110
14	60.00	80.00	27.00	4205730
07	60.00	80.00	30.00	0892520
09	60.00	80.00	32.00	1208930
13	60.00	80.00	37.00	4205750
12	63.00	78.00	16.50	4203230
11	63.00	78.00	22.50	4203250
07	63.00	83.00	30.00	0467120
09	63.00	83.00	32.00	1209130
12	65.00	80.00	16.50	4203330
11	65.00	80.00	22.50	4203350
07	65.00	85.00	30.00	0467720
09	65.00	85.00	30.00	1209230
14	65.00	85.00	30.00	4205830
13	65.00	85.00	40.00	4205850
12	70.00	85.00	16.50	4203430
11	70.00	85.00	22.50	4203450
51	70.00	90.00	21.50	4207710
09	70.00	90.00	30.00	1209330
14	70.00	90.00	30.00	4205930
07	70.00	90.00	30.00	6631220
13	70.00	90.00	40.00	4205950
12	75.00	90.00	16.50	4203530

Type	----- Ød ₁	NOMINALS ØD ₁	----- L ₁	PART No.
11	75.00	90.00	22.50	4203550
07	75.00	95.00	30.00	0446620
09	75.00	95.00	30.00	1209530
14	75.00	95.00	30.00	4206030
13	75.00	95.00	40.00	4206050
12	80.00	95.00	16.50	4203630
11	80.00	95.00	22.50	4203650
51	80.00	100.00	21.50	4207510
09	80.00	100.00	30.00	1209630
14	80.00	100.00	30.00	4206130
07	80.00	100.00	30.00	6631320
13	80.00	100.00	40.00	4206150
09	80.00	105.00	44.00	0984230
12	85.00	100.00	16.50	4203730
11	85.00	100.00	22.50	4203750
09	85.00	105.00	30.00	1209830
07	85.00	105.00	30.00	6631420
12	90.00	105.00	16.50	4203830
11	90.00	105.00	22.50	4203850
51	90.00	110.00	21.50	4207910
09	90.00	110.00	30.00	1210630
14	90.00	110.00	30.00	4206230
07	90.00	110.00	30.00	6631520
13	90.00	110.00	40.00	4206250
12	100.00	115.00	22.00	4203930
11	100.00	115.00	30.00	4203950
09	100.00	120.00	30.00	1210730
14	100.00	120.00	30.00	4199130
07	100.00	120.00	30.00	6631620
13	100.00	120.00	40.00	4199150
51	100.00	125.00	26.10	4207810
09	104.00	130.00	36.00	4121230
09	105.00	125.00	30.00	1203130
12	110.00	125.00	22.00	4204030
11	110.00	125.00	30.00	4204050

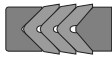


Vee pack sets

Hallite
metric



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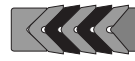
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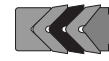
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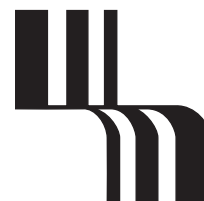
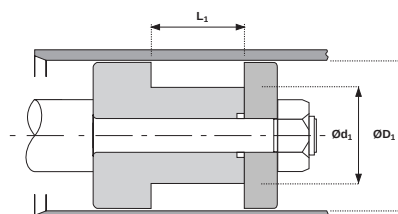
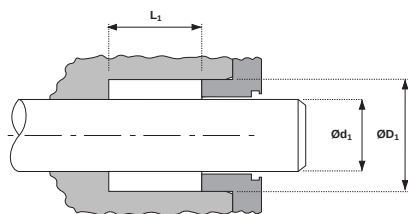
Type	Ød ₁	NOMINALS ØD ₁	L ₁	PART No.
07	110.00	130.00	30.00	0308420
09	110.00	130.00	30.00	1195030
14	110.00	130.00	30.00	4206330
13	110.00	130.00	40.00	4206350
51	115.00	140.00	26.10	4208410
09	115.00	140.00	34.00	1215030
14	115.00	140.00	34.00	4206430
13	115.00	140.00	46.00	4206450
09	120.00	140.00	30.00	4137830
51	120.00	150.00	29.30	4208510
07	125.00	140.00	22.50	1362820
12	125.00	140.00	26.00	4204230
11	125.00	140.00	34.00	4204250
07	125.00	145.00	30.00	2179620
09	125.00	150.00	34.00	1215330
14	125.00	150.00	34.00	4206530
07	125.00	150.00	37.00	1365620
13	125.00	150.00	46.00	4206550
51	130.00	160.00	29.30	4208710
09	135.00	160.00	34.00	1197630
12	140.00	155.00	26.00	4199230
11	140.00	155.00	34.00	4199250
07	140.00	160.00	30.00	1272320
09	140.00	160.00	33.00	0677130
14	140.00	165.00	34.00	4206630
09	140.00	165.00	35.00	1219930
13	140.00	165.00	46.00	4206650
07	150.00	170.00	30.00	0044920
12	150.00	170.00	30.00	2196630
11	150.00	170.00	40.00	2196650
51	150.00	180.00	31.80	4208610
09	150.00	180.00	45.00	1220130
14	150.00	180.00	45.00	4206730
13	150.00	180.00	60.00	4206750

Type	Ød ₁	NOMINALS ØD ₁	L ₁	PART No.
12	160.00	180.00	30.00	2196730
11	160.00	180.00	40.00	2196750
09	160.00	190.00	45.00	1221230
14	160.00	190.00	45.00	4206830
13	160.00	190.00	60.00	4206850
51	170.00	200.00	33.80	4209010
09	170.00	200.00	45.00	1224930
12	180.00	200.00	30.00	2196830
11	180.00	200.00	40.00	2196850
09	180.00	210.00	45.00	1225230
14	180.00	210.00	45.00	4206930
07	180.00	210.00	47.00	0090320
13	180.00	210.00	60.00	4206950
09	190.00	220.00	45.00	1225530
51	195.00	225.00	33.80	6582110
14	195.00	225.00	47.50	6582130
13	195.00	225.00	62.50	6582150
12	200.00	220.00	30.00	2196930
11	200.00	220.00	40.00	2196950
09	200.00	230.00	45.00	1225830
07	200.00	230.00	45.00	1282720
14	200.00	230.00	45.00	4207030
13	200.00	230.00	60.00	4207050
51	220.00	250.00	33.80	6582310
14	220.00	250.00	47.50	6582330
13	220.00	250.00	62.50	6582350
07	230.00	260.00	45.00	1220620
51	245.00	275.00	33.80	6582410
14	245.00	275.00	47.50	6582430
13	245.00	275.00	62.50	6582450
07	255.00	285.00	45.00	0137220
51	270.00	300.00	33.80	6582510
14	270.00	300.00	47.50	6582530

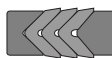
Vee pack sets

Hallite

metric



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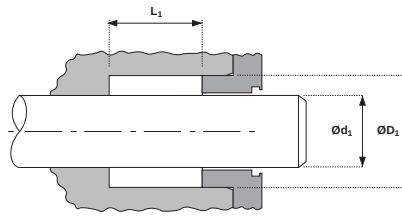
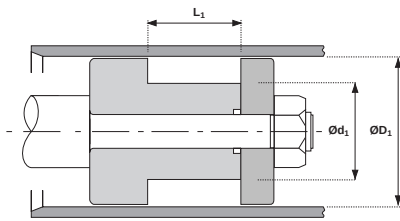
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Type	----- Ød ₁	NOMINALS ØD ₁	----- L ₁	PART No.
13	270.00	300.00	62.50	6582550
07	280.00	310.00	45.00	1342820
51	290.00	320.00	33.80	6582610
14	290.00	320.00	49.00	6582630
13	290.00	320.00	64.00	6582650
14	320.00	360.00	58.00	6582730
13	320.00	360.00	78.00	6582750

Type	----- Ød ₁	NOMINALS ØD ₁	----- L ₁	PART No.
07	330.00	370.00	60.00	2018920
07	380.00	420.00	60.00	2017920
14	380.00	420.00	60.00	6584030
13	380.00	420.00	80.00	6584050

* Denotes possible indent item -
minimum quantity may apply.

Note: Hallite 51 vee packs are for double acting piston
applications only - see Hallite 51 data sheet.



Vee pack sets

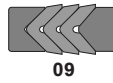
Hallite
inch



07



08



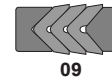
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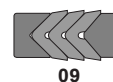
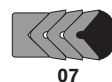
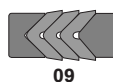
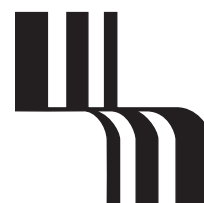
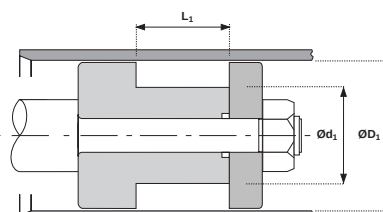
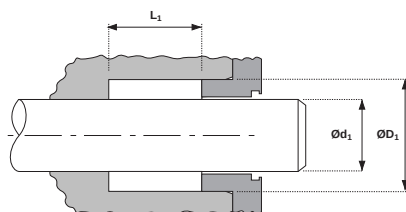
Type	Ød ₁	NOMINALS ØD ₁	L ₁	PART No.
08	0.500	1.000	0.093	0205700
09	0.500	1.000	0.715	6530830
08	0.750	1.187	0.125	0974800
08	0.750	1.250	0.125	0634200
09	0.750	1.250	0.875	1735140
08	0.875	1.375	0.125	0723000
09	0.875	1.375	0.825	4135930
08	1.000	1.375	0.093	1136500
09	1.000	1.375	0.675	4138630
08	1.000	1.500	0.125	0820000
09	1.000	1.500	0.710	0183330
07	1.000	1.500	0.750	0820120
08	1.000	1.625	0.156	V100162
09	1.000	1.625	0.860	VP100162
08	1.125	1.625	0.125	0977300
07	1.125	1.625	0.750	0379320
09	1.125	1.625	0.755	4136030
08	1.125	1.750	0.156	0816900
09	1.125	1.750	1.065	4115330
08	1.250	1.750	0.125	0821300
08	1.250	1.750	0.125	2228600Δ
07	1.250	1.750	0.750	0821420
09	1.250	1.750	0.785	4102530
08	1.250	2.000	0.187	V125200
09	1.250	2.000	0.982	VP125200
08	1.375	1.875	0.125	V137187
09	1.375	1.875	0.750	VP137187
08	1.375	2.000	0.156	V137200
09	1.375	2.000	0.875	VP137200
08	1.500	2.000	0.125	0636500
09	1.500	2.000	0.710	4007630
07	1.500	2.000	0.750	0618620
08	1.500	2.125	0.156	0331600
08	1.500	2.125	0.157	2223700Δ
09	1.500	2.125	1.000	4002130

Type	Ød ₁	NOMINALS ØD ₁	L ₁	PART No.
08	1.500	2.250	0.187	V150225
09	1.500	2.250	1.000	VP150225
07	1.625	2.125	0.750	0206420
08	1.750	2.250	0.125	0821500
07	1.750	2.250	0.750	0889320
09	1.750	2.250	0.825	1461530
08	1.750	2.375	0.156	1435900
09	1.750	2.375	1.000	4135130
08	1.750	2.500	0.187	V175250
09	1.750	2.500	0.972	VP175250
08	1.875	2.500	0.156	0471200
09	1.875	2.500	0.950	4136230
08	2.000	2.500	0.125	0610800
08	2.000	2.500	0.125	0979500Δ
09	2.000	2.500	0.715	4007430
07	2.000	2.500	0.750	0617220
08	2.000	2.625	0.156	0299600
08	2.000	2.625	0.156	0532800Δ
09	2.000	2.625	0.898	6557940
08	2.000	2.750	0.187	0639300
08	2.000	2.750	0.187	0753300Δ
09	2.000	2.750	0.986	6575730
08	2.000	3.000	0.250	V200300
09	2.000	3.000	1.340	VP200300
08	2.125	2.750	0.156	0299400
09	2.125	2.750	0.875	VP212275
08	2.250	2.750	0.125	0610900
09	2.250	2.750	0.705	6555230
07	2.250	2.750	0.750	6630620
08	2.250	2.875	0.156	0889700
08	2.250	2.875	0.156	2244400Δ
09	2.250	2.875	0.937	6530730
08	2.250	3.000	0.187	0636400
08	2.250	3.000	0.187	0984300Δ
09	2.250	3.000	0.960	4008030

Vee pack sets

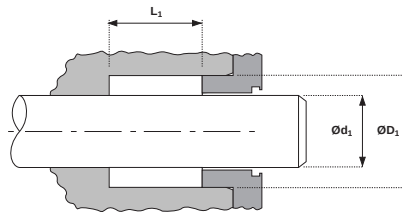
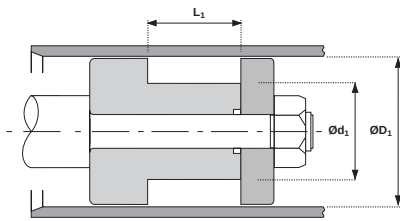
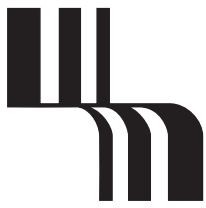
Hallite

inch



Type	Ød ₁	NOMINALS ØD ₁	L ₁	PART No.
08	2.375	3.000	0.156	0753000
07	2.375	3.000	0.937	0207220
09	2.375	3.000	0.990	4129530
09	2.400	3.000	0.875	VP240300+
08	2.500	3.000	0.125	0334400
09	2.500	3.000	0.777	0334330
08	2.500	3.125	0.156	0819100
08	2.500	3.125	0.156	0979600Δ
09	2.500	3.125	0.961	4122230
07	2.500	3.125	1.000	0819220
08	2.500	3.250	0.156	0535600Δ
08	2.500	3.250	0.187	0297500
09	2.500	3.250	1.222	4002530
08	2.750	3.250	0.125	0900700
09	2.750	3.250	0.795	4182430
08	2.750	3.375	0.156	V275337
09	2.750	3.375	0.875	VP275337
07	2.750	3.375	1.000	0819920
08	2.750	3.500	0.156	2241100Δ
08	2.750	3.500	0.187	0638800
09	2.750	3.500	0.978	4008430
08	2.812	3.812	0.250	V281381*
08	3.000	3.500	0.125	0539200
08	3.000	3.500	0.125	2230100Δ
09	3.000	3.500	0.725	4130730
08	3.000	3.625	0.156	0893100
09	3.000	3.625	0.918	4001530
07	3.000	3.625	1.000	0893020
09	3.000	3.625	1.437	362300JVP
08	3.000	3.750	0.187	0636800
09	3.000	3.750	1.125	0636930
08	3.000	4.000	0.250	V300400
09	3.000	4.000	1.250	VP300400
08	3.125	3.875	0.156	1351400
08	3.250	4.000	0.156	0620900Δ

Type	Ød ₁	NOMINALS ØD ₁	L ₁	PART No.
08	3.250	4.000	0.187	0634300
09	3.250	4.000	0.960	4008330
07	3.250	4.000	1.125	0207320
08	3.375	4.000	0.156	0756000
09	3.375	4.000	0.833	4002730
08	3.375	4.125	0.187	0892000
09	3.375	4.125	1.236	4134030
09	3.400	4.000	0.875	VP340400+
08	3.500	4.000	0.125	1461200
09	3.500	4.000	0.825	1461130
08	3.500	4.250	0.187	0818300
08	3.500	4.250	0.187	0990300Δ
09	3.500	4.250	1.086	4115830
07	3.500	4.250	1.125	0818420
08	3.750	4.375	0.156	1364400
09	3.750	4.375	0.900	1365330
09	3.750	4.375	1.312	437375JVP
08	3.750	4.500	0.187	0755900
09	3.750	4.500	1.090	0755731
07	3.750	4.500	1.125	1014420
08	3.875	4.500	0.156	0602600
09	3.875	4.500	0.878	4001930
08	4.000	4.500	0.125	0525000
09	4.000	4.500	0.775	6565930
08	4.000	4.750	0.187	0986100
09	4.000	4.750	0.637	0188230#
09	4.000	4.750	1.000	6573130
07	4.000	4.750	1.125	1356620
08	4.000	5.000	0.250	0563700
09	4.000	5.000	1.440	0563630
09	4.000	5.000	1.750	VP400500
09	4.125	5.125	1.750	VP412512
08	4.250	4.750	0.125	V425475
09	4.250	4.750	0.750	VP425475



Vee pack sets

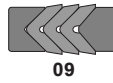
Hallite
inch



07



08



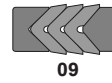
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07



08



09

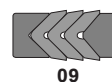
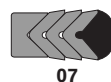
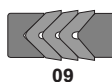
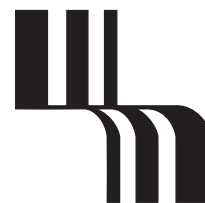
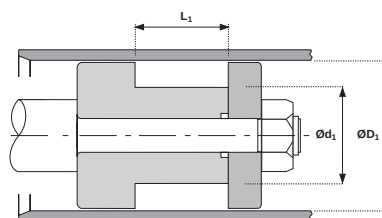
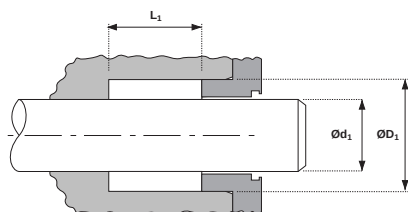
Type	Ød ₁	NOMINALS ØD ₁	L ₁	PART No.
08	4.250	5.000	0.187	0641500
09	4.250	5.000	0.880	500425JVP
09	4.250	5.000	1.090	0299330
09	4.250	5.250	1.750	VP425525
08	4.375	5.000	0.156	V437500
09	4.375	5.000	0.860	VP437500
09	4.375	5.375	1.750	VP437537
09	4.400	5.000	0.875	VP440500+
08	4.500	5.000	0.125	V450500
09	4.500	5.000	0.750	VP450500
08	4.500	5.125	0.156	1354800
08	4.500	5.250	0.187	0355700
09	4.500	5.250	0.562	525450JVP
09	4.500	5.250	0.718	525450JVP1
09	4.500	5.250	0.970	VP450525
07	4.500	5.250	1.125	0354120
08	4.500	5.500	0.250	0563100
09	4.500	5.500	1.440	0563530
09	4.500	5.500	1.750	VP450550
09	4.625	5.625	1.750	VP462562
08	4.750	5.375	0.156	V475537
09	4.750	5.375	0.948	VP475537
09	4.750	5.375	1.250	537475JVP
08	4.750	5.500	0.187	0641700
09	4.750	5.500	1.021	4130030
09	4.750	5.500	1.375	550475JVP
09	4.750	5.750	1.750	VP475575
09	4.875	5.875	1.750	VP487587
08	5.000	5.500	0.125	V500550
09	5.000	5.500	0.750	VP500550
08	5.000	5.750	0.187	V500575
09	5.000	5.750	0.972	VP500575
08	5.000	6.000	0.250	0307600
09	5.000	6.000	1.750	VP500600
09	5.000	6.000	1.765	0307530

Type	Ød ₁	NOMINALS ØD ₁	L ₁	PART No.
09	5.125	6.125	1.750	VP512612
08	5.250	6.000	0.187	0641800
09	5.250	6.000	1.055	0411130
09	5.250	6.250	1.750	VP525625
09	5.375	6.375	1.750	VP537637
09	5.400	6.000	0.875	VP540600+
08	5.500	6.000	0.125	V550600
09	5.500	6.000	0.750	VP550600
08	5.500	6.500	0.250	0048500
09	5.500	6.500	1.172	0048430
09	5.500	6.500	1.750	VP550650
09	5.625	6.625	1.750	VP562662
08	5.750	6.375	0.156	V575637
09	5.750	6.375	0.905	VP575637
09	5.750	6.375	0.948	637575A
09	5.750	6.375	1.250	637575JVP
09	5.750	6.750	1.750	VP575675
09	5.875	6.875	1.750	VP587687
08	6.000	6.500	0.125	1207100
09	6.000	6.500	0.675	1207030
08	6.000	6.750	0.187	V600675
09	6.000	6.750	0.972	VP600675
08	6.000	7.000	0.250	V600700
09	6.000	7.000	1.480	VP600700
09	6.000	7.000	1.750	VP600700A
09	6.000	7.250	2.000	VP600725
09	6.250	7.500	2.000	VP625750
09	6.400	7.000	0.875	VP640700+
08	6.500	7.000	0.125	V650700
09	6.500	7.000	0.750	VP650700
08	6.500	7.250	0.187	0084600
09	6.500	7.250	0.637	0084430#
09	6.500	7.750	2.000	VP650775

Vee pack sets

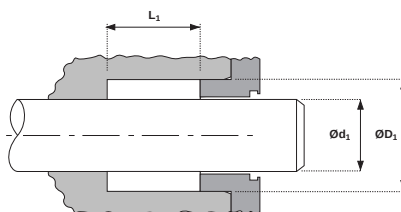
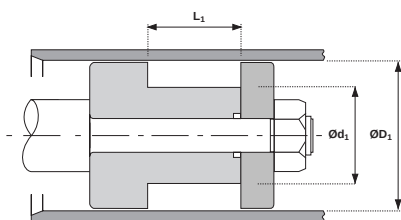
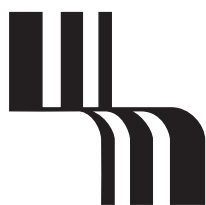
Hallite

inch



Type	Ød ₁	NOMINALS ØD ₁	L ₁	PART No.
08	6.750	7.250	0.125	V675725
09	6.750	7.250	0.750	VP675725
08	6.750	7.375	0.156	V675737
09	6.750	7.375	0.948	VP675737
09	6.750	7.375	1.187	737675JVP
09	6.750	8.000	2.000	VP675800
08	7.000	7.500	0.125	V700750
09	7.000	7.500	0.750	VP700750
09	7.000	8.000	1.500	VP700800
09	7.000	8.250	2.000	VP700825
09	7.250	8.500	2.000	VP725850
08	7.500	8.000	0.125	V750800
09	7.500	8.000	0.750	VP750800
09	7.500	8.125	1.000	VP750812+
09	7.500	8.750	2.000	VP750875
09	7.750	9.000	2.000	VP775900
08	8.000	8.500	0.125	V800850
09	8.000	8.500	0.750	VP800850
09	8.000	9.000	1.500	VP800900
09	8.000	9.250	2.000	VP800925
09	8.250	9.500	2.000	VP825950
09	8.500	9.250	0.637	1198930#
09	8.500	9.750	2.000	VP850975
09	8.750	10.000	2.000	VP8751000
09	9.000	10.000	2.000	VP9001000
09	9.000	10.250	1.410	VP9001025
09	9.250	10.500	2.000	VP9251050
09	9.500	10.750	2.000	VP9501075
09	9.750	11.000	2.000	VP9751100
09	10.000	11.250	2.000	VP10001125

Type	Ød ₁	NOMINALS ØD ₁	L ₁	PART No.
09	10.250	11.500	2.000	VP10251150
09	10.500	11.750	2.000	VP10501175
09	10.750	12.000	2.000	VP10751200
09	11.000	12.250	2.000	VP11001225
09	11.250	12.500	2.000	VP11251250
09	11.500	12.750	2.000	VP11501275
09	11.750	13.000	2.000	VP11751300
09	12.000	13.250	2.000	VP12001325
09	12.250	13.500	2.000	VP12251350
09	12.500	13.750	2.000	VP12501375
09	12.750	14.000	2.000	VP12751400
09	13.000	14.250	2.000	VP13001425
09	13.250	14.500	2.000	VP13251450
09	13.500	14.750	2.000	VP13501475
09	13.750	15.000	2.000	VP13751500
09	14.000	15.250	2.000	VP14001525
09	14.250	15.500	2.000	VP14251550
09	14.500	15.750	2.000	VP14501575
09	14.750	16.000	2.000	VP14751600
09	15.000	16.250	2.000	VP15001625
09	15.250	16.500	2.000	VP15251650
09	15.500	16.750	2.000	VP15501675
09	15.750	17.000	2.000	VP15751700
09	16.000	17.250	2.000	VP16001725
09	16.000	17.500	2.875	VP16001750



Vee pack sets

Hallite

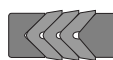
inch



07



08



09



07



08



09

Type	----- Ød ₁	NOMINALS ØD ₁	----- L ₁	PART No.
09	16.500	18.000	2.875	VP16501800
09	17.000	18.500	2.875	VP17001850
09	17.500	19.000	2.875	VP17501900
09	18.000	19.500	2.875	VP18001950
09	18.500	20.000	2.875	VP18502000
09	19.000	20.500	2.875	VP19002050

Type	----- Ød ₁	NOMINALS ØD ₁	----- L ₁	PART No.
09	19.500	21.000	2.875	VP19502100
09	20.000	21.500	2.875	VP20002150

* Denotes possible indent item - minimum quantity may apply.

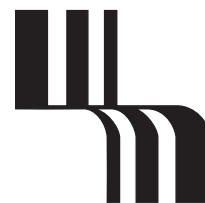
△ Denotes Nitrile vee ring (un-reinforced)

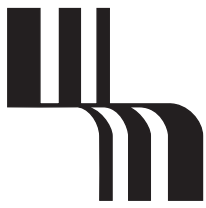
Denotes special set for Terex cylinders

+ Consists of 4 vees, male adaptor and rod wiper

Vee pack sets

Notes





Wipers

Hallite



TECHNICAL DETAILS

METRIC

INCH

OPERATING CONDITIONS

MAXIMUM SPEED
MAXIMUM TEMPERATURE

4.0 m/sec
-30°C + 100°C

12.0 ft/sec
-22°F + 212°F

SURFACE ROUGHNESS

DYNAMIC SEALING FACE $\varnothing d_1$
STATIC SEALING FACE $\varnothing D_1 \varnothing D_2$
STATIC HOUSING FACES L_1

μmRa μmRt
0.1 ↔ 0.4 4 max
2.5 max 16 max
2.5 max 16 max

$\mu inCLA$ $\mu inRMS$
4 ↔ 16 5 ↔ 18
100 max 111 max
100 max 111 max

RADII

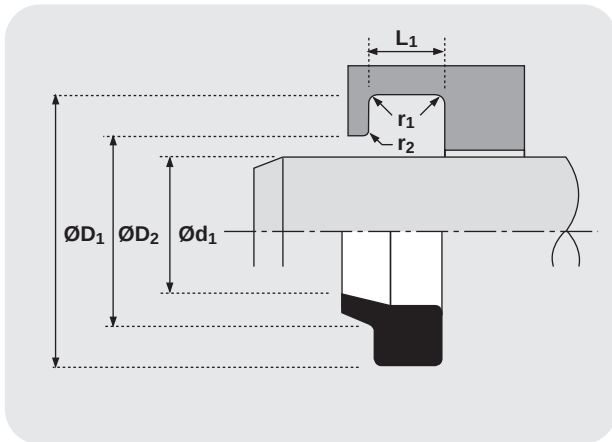
ROD DIAMETER $\varnothing d_1$ mm
MAX FILLET RAD r_1 mm
MAX FILLET RAD r_2 mm

≤ 70 ≤ 170 > 170
0.4 0.4 0.4
0.5 1.2 1.6

TOLERANCES

mm

$\varnothing d_1$ $\varnothing D_1$ $\varnothing D_2$ L_1
f9 H11 H11 +0.1 -0



DESIGN

The Hallite 31 has a lip designed to remove lightly adhered dirt from the rod i.e. mud, dust or moisture.

The wiper is manufactured from a hard nitrile rubber suitable for installing in a grooved housing. Rod diameter $\varnothing d_1$ of 20mm requires a two piece housing.

To prevent dirt passing the outside of the wiper and to reduce the pumping action, the outside diameter is an interference fit with the housing.

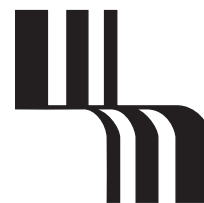
FEATURES

- PRECISION TRIMMED SEAL LIPS
- WIDE SIZE RANGE
- EFFECTIVE SEAL ON HOUSING AS WELL AS ROD
- POLYURETHANE WIPERS FOR THIS STYLE OF HOUSING ARE ALSO AVAILABLE - SEE HALLITE 831



Wipers

Hallite



33

TECHNICAL DETAILS

METRIC

INCH

OPERATING CONDITIONS

MAXIMUM SPEED
MAXIMUM TEMPERATURE

4.0 m/sec
-30°C + 100°C

12.0 ft/sec
-22°F + 212°F

SURFACE ROUGHNESS

DYNAMIC SEALING FACE $\varnothing d_1$
STATIC SEALING FACE $\varnothing D_1 \varnothing D_2$
STATIC HOUSING FACES L_1

μmRa μmRt
0.1 ↔ 0.4 4 max
2.5 max 16 max
2.5 max 16 max

$\mu inCLA$ $\mu inRMS$
4 ↔ 16 5 ↔ 18
100 max 111 max
100 max 111 max

RADII

ROD DIAMETER $\varnothing d_1$ mm
MAX FILLET RAD r_1 mm
MAX FILLET RAD r_2 mm
ROD DIAMETER $\varnothing d_1$ in
MAX FILLET RAD r_1 in
MAX FILLET RAD r_2 in

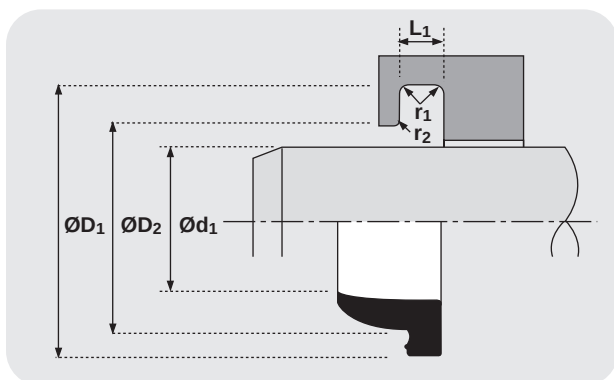
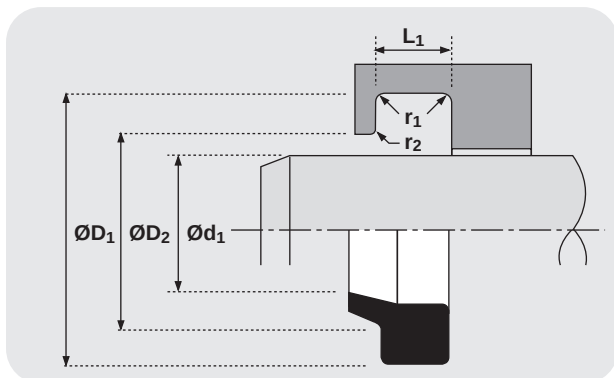
≤ 50	≤ 90	≤ 200	> 200
0.4	0.4	0.4	0.8
0.2	0.4	0.6	0.8

all
0.010
0.020

TOLERANCES

mm
in

$\varnothing d_1$	$\varnothing D_1$	$\varnothing D_2$	L_1
f9	H11	H11	+0.2 -0
f9	+0.020 +0.010	±0.005	+0.020 +0.010



METRIC

INCH

Hallite 33: the metric and inch profiles differ as illustrated above.

DESIGN

The Hallite 33 wiper has a lip designed to remove lightly adhered dirt from the rod i.e. mud, dust or moisture.

The wiper is manufactured from a hard nitrile rubber suitable for installing in a grooved housing. Rod diameters ($\varnothing d_1$) of 20mm and below require a two piece housing .

To prevent dirt passing the outside of the wiper and to reduce the pumping action, the outside diameter is an interference fit with the housing. Certain sizes of the standard Hallite 33 metric range are suitable for ISO 6195 Housing Type A.

It should also be noted that the Hallite 33 inch profile differs from the metric profile, and is also available in Hythane 181 - see Hallite 840.

FEATURES

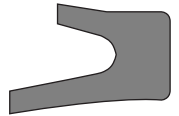
- GENERAL PURPOSE SEAL
- PRECISION TRIMMED SEALING LIP
- WIDE SIZE RANGES
- EFFECTIVE SEAL ON HOUSING AS WELL AS ROD

NB: Part numbers suffixed by “†” indicate housing sizes to meet ISO6195A. Many of the metric sizes are also available as polyester wipers - see Hallite 38.



Wipers

Hallite



TECHNICAL DETAILS

METRIC

INCH

OPERATING CONDITIONS

MAXIMUM SPEED
MAXIMUM TEMPERATURE

1.0 m/sec
-30°C + 90°C

3.0 ft/sec
-22°F + 194°F

SURFACE ROUGHNESS

DYNAMIC SEALING FACE $\varnothing d_1$
STATIC SEALING FACE $\varnothing D_1, \varnothing D_2$
STATIC HOUSING FACES L_1

μmRa μmRt
0.1 $\leftrightarrow$ 0.4 4 max
1.6 max 10 max
3.2 max 16 max

$\mu inCLA$ $\mu inRMS$
4 $\leftrightarrow$ 16 5 $\leftrightarrow$ 18
63 max 70 max
125 max 140 max

RADII

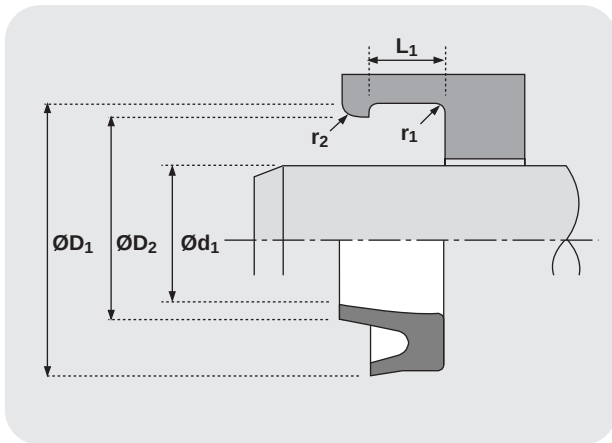
MAX FILLET RAD r_1 in
MAX FILLET RAD r_2 in

0.015
0.062

TOLERANCES

in

$\varnothing d_1$ $\varnothing D_1$ $\varnothing D_2$ L_1
f9 +0.005 +0 +0.005 +0 +0.010 +0



DESIGN

The Hallite 35 nylon rod scraper is designed to provide reliable dirt exclusion for heavy duty applications. The tough wiping lip will scrape away baked on mud and residue from grain crop harvesting, yet remains flexible enough to stay in contact with the rod even under severe side loads.

The sealing lip on the outside diameter prevents the ingress of contamination and helps retain the scraper in its snap-fit housing.

FEATURES

- ROBUST DESIGN
- SIMPLE SNAP-IN INSTALLATION
- RESISTANCE TO ABRASION



36

TECHNICAL DETAILS

METRIC

INCH

OPERATING CONDITIONS

MAXIMUM SPEED
MAXIMUM TEMPERATURE

1.0 m/sec
-30°C + 100°C

3.0 ft/sec
-22°F + 212°F

SURFACE ROUGHNESS

DYNAMIC SEALING FACE $\varnothing d_1$
STATIC SEALING FACE $\varnothing D_1 \varnothing D_2$
STATIC HOUSING FACES L_1

μmRa μmRt
0.1 ↔ 0.4 4 max
1.6 max 10 max
2.5 max 16 max

μinCLA μinRMS
4 ↔ 16 5 ↔ 8
63 max 70 max
100 max 111 max

RADII

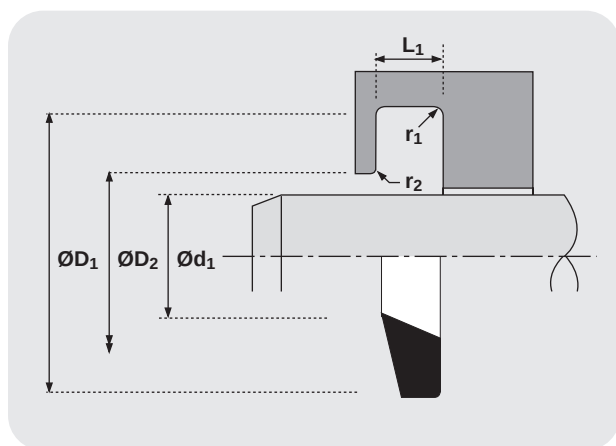
MAX FILLET RAD r_1 in
MAX FILLET RAD r_2 in

0.020
0.030

TOLERANCES

$\varnothing d_1$	$\varnothing D_1$	$\varnothing D_2$	L_1
f9	+0.010 -0	+0.010 -0	±0.010

in



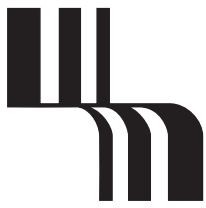
DESIGN

The Hallite 36 light duty nitrile rod wiper is designed for the effective removal of dust, moisture and very lightly adhered contaminants.

The material is renowned for its flexibility and good resistance to abrasion, and its extremely compact size range requires only a simple groove for easy installation.

FEATURES

- COMPACT
- EASY INSTALLATION
- EXTREMELY FLEXIBLE



Wipers

Hallite



TECHNICAL DETAILS

METRIC

INCH

OPERATING CONDITIONS

MAXIMUM SPEED
MAXIMUM TEMPERATURE

1.0 m/sec
-30°C + 100°C

3.0 ft/sec
-22°F + 212°F

SURFACE ROUGHNESS

DYNAMIC SEALING FACE $\varnothing d_1$
STATIC SEALING FACE $\varnothing D_1$
STATIC HOUSING FACES L_1

μmRa μmRt
0.1 $\leftrightarrow$ 0.4 4 max
3.2 max 16 max
3.2 max 16 max

$\mu inCLA$ $\mu inRMS$
4 $\leftrightarrow$ 16 5 $\leftrightarrow$ 18
125 max 140 max
125 max 140 max

CHAMFERS & RADII

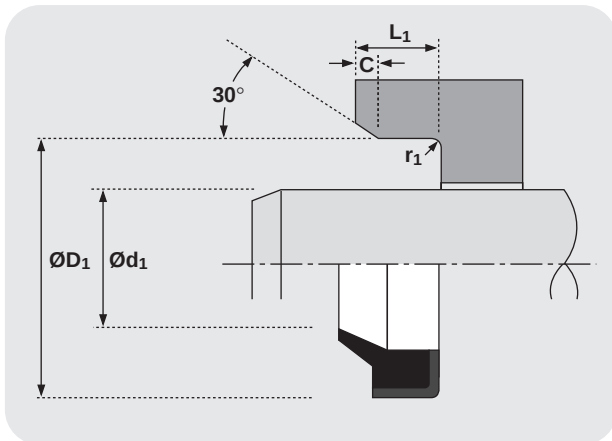
MIN CHAMFER C mm
MAX FILLET RAD r_1 mm

1.0
0.8

TOLERANCES

mm

$\varnothing d_1$ $\varnothing D_1$ L_1
f9 H8 +0.5 -0



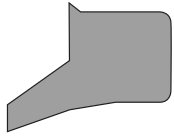
DESIGN

The Hallite 37 medium duty wiper is suitable for applications where an open grooved housing requires a self-retaining wiper. The design gives a positive retention without metal to metal contact and the corrosion problems associated with this.

Nitrile rubber is bonded to a corrosion protected metal ring to clean dirt from the rod and to seal the outside diameter.

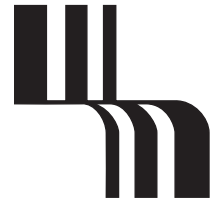
FEATURES

- FLEXIBLE WIPING LIP
- GOOD RESISTANCE TO ABRASION
- EASY PRESS-FIT INSTALLATION
- SIMPLE TO MACHINE HOUSING



Wipers

Hallite



38

TECHNICAL DETAILS

METRIC

INCH

OPERATING CONDITIONS

MAXIMUM SPEED
MAXIMUM TEMPERATURE

4.0 m/sec
-40°C + 120°C

12.0 ft/sec
-40°F + 250°F

SURFACE ROUGHNESS

DYNAMIC SEALING FACE $\varnothing d_1$
STATIC SEALING FACE $\varnothing D_1, \varnothing D_2$
STATIC HOUSING FACES L_1

μmRa μmRt
0.1 ↔ 0.4 4 max
1.6 max 10 max
3.2 max 16 max

$\mu inCLA$ $\mu inRMS$
4 ↔ 16 5 ↔ 18
100 max 70 max
125 max 140 max

RADII

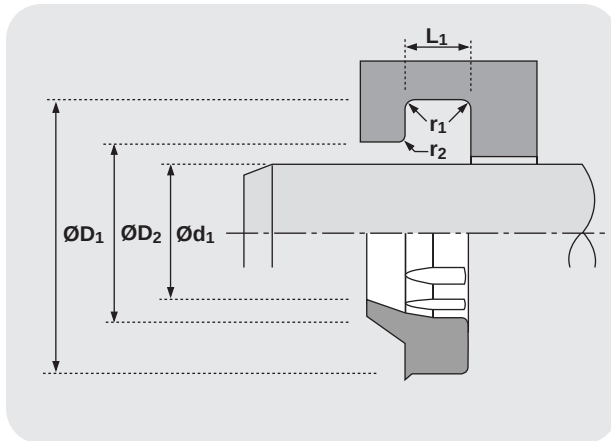
ROD DIAMETER $\varnothing d_1$ mm
MAX FILLET RAD r_1 mm
MAX FILLET RAD r_2 mm

≤ 50	≤ 90	≤ 200	> 200
0.4	0.4	0.4	0.8
0.2	0.4	0.6	0.8

TOLERANCES

mm

$\varnothing d_1$	$\varnothing D_1$	$\varnothing D_2$	L_1
f9	H11	H11	+0.5 -0



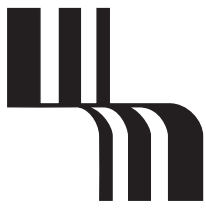
DESIGN

The Hallite 38 wiper has been designed so that the proportions of the wiping lip ensure it maintains contact with the rod surface to remove heavily deposited mud, ice etc. The outside diameter contacts the housing and has a sealing lip to prevent moisture entering the groove. A polyester based material is used to provide a tough abrasion resistant wiper for the difficult conditions usually found in mining or earth moving applications. All the range can be used with a split housing, however, the majority can be installed in a blind housing with care.

FEATURES

- OUTSIDE LIP FOR EFFECTIVE HOUSING SEAL
- PRESSURE RELIEF RIBS
- EFFECTIVE SCRAPING LIP
- PRECISION TRIMMED WIPING LIP

NB: Part numbers suffixed by “+” indicate housing sizes to meet ISO 6195A.



Wipers

Hallite



TECHNICAL DETAILS

METRIC

INCH

OPERATING CONDITIONS

MAXIMUM SPEED
MAXIMUM TEMPERATURE

1.0 m/sec
-30°C + 100°C

3.0 ft/sec
-22°F + 212°F

SURFACE ROUGHNESS

DYNAMIC SEALING FACE $\varnothing d_1$
STATIC SEALING FACE $\varnothing D_1 \varnothing D_2$
STATIC HOUSING FACES L_1

μmRa μmRt
0.1 ↔ 0.4 4 max
1.6 max 10 max
2.5 max 16 max

$\mu inCLA$ $\mu inRMS$
4 ↔ 16 5 ↔ 18
63 max 70 max
100 max 111 max

RADII

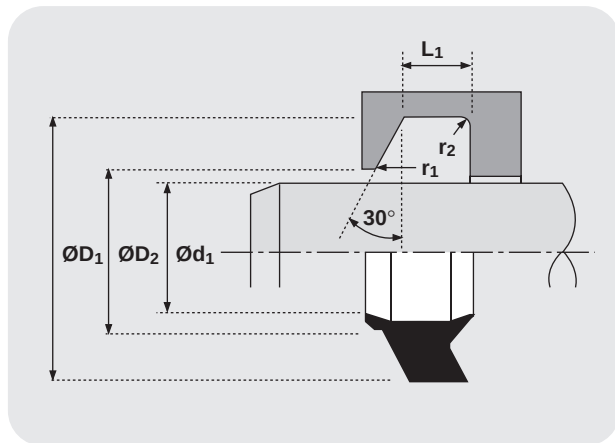
MAX FILLET RAD r_1 in
MAX FILLET RAD r_2 in

0.010
0.020

TOLERANCES

in

$\varnothing d_1$ $\varnothing D_1$ $\varnothing D_2$ L_1
f9 +0.005 -0 +0.010 -0 +0.005 -0

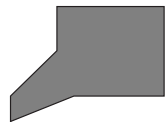


DESIGN

The Hallite 41 light to medium duty nitrile rod wiper prevents contaminants like dust, moisture and dirt from entering the gland. Its twin lip design helps retain small amounts of fluid that may by-pass the rod seal, ensuring a dry sealing system.

FEATURES

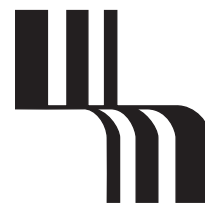
- FLEXIBLE FOR EASY INSTALLATION
- INTERCHANGEABLE WITH COMMON W, K AND NK RANGES
- ALSO AVAILABLE IN HYTHANE 181 - SEE HALLITE 841



420

Wipers

Hallite



TECHNICAL DETAILS

METRIC

INCH

OPERATING CONDITIONS

MAXIMUM SPEED
MAXIMUM TEMPERATURE

1.0 m/sec
-40°C + 110°C

3.0 ft/sec
-40°F + 230°F

SURFACE ROUGHNESS

DYNAMIC SEALING FACE $\varnothing d_1$
STATIC SEALING FACE $\varnothing D_1$ $\varnothing D_2$
STATIC HOUSING FACES L_1

μmRa μmRt
0.1 ↔ 0.4 4 max
1.6 max 10 max
3.2 max 16 max

μinCLA μinRMS
4 ↔ 16 5 ↔ 18
63 max 70 max
125 max 140 max

RADII

MAX FILLET RAD r_1 in
MAX FILLET RAD r_2 in

0.010
0.020

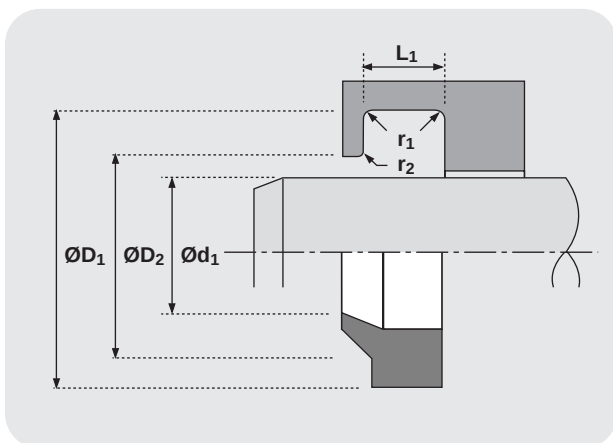
TOLERANCES

$\varnothing d_1$ $\varnothing D_1$ $\varnothing D_2$ L_1
f9 ±0.003 ±0.005 +0.004 -0

DESIGN

Designed for medium to heavy duty applications, the Hallite 420 snap-in urethane rod wipers offer excellent resistance to abrasion, toughness, high tensile strength and impact resistance to withstand shock, yet they retain the flexibility to remain effective throughout their entire life even where some side movement of the rod is evident.

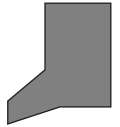
With the ability to wipe ice, dried mud and other heavily deposited contaminants from the rod, and to be interchangeable with common wipers in the spare parts market ensures the versatility of this wiper.





Wipers

Hallite



421

TECHNICAL DETAILS

METRIC

INCH

OPERATING CONDITIONS

MAXIMUM SPEED
MAXIMUM TEMPERATURE

1.0 m/sec
-40°C + 110°C

3.0 ft/sec
-40°F + 230°F

SURFACE ROUGHNESS

DYNAMIC SEALING FACE $\varnothing d_1$
STATIC SEALING FACE $\varnothing D_1$ $\varnothing D_2$
STATIC HOUSING FACES L_1

μmRa μmRt
0.1 $\leftrightarrow$ 0.4 4 max
1.6 max 10 max
3.2 max 16 max

μinCLA μinRMS
4 $\leftrightarrow$ 16 5 $\leftrightarrow$ 18
63 max 70 max
125 max 140 max

RADII

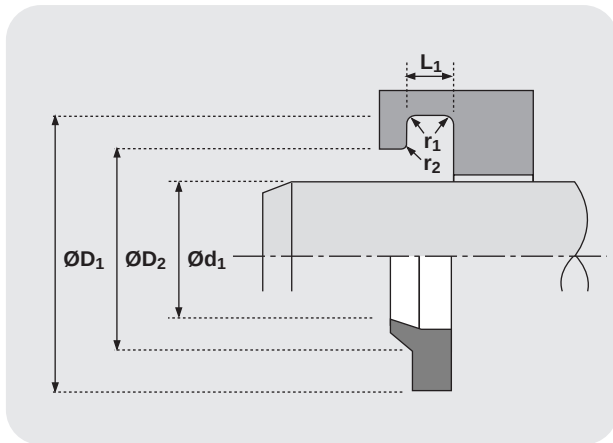
MAX FILLET RAD r_1 in
MAX FILLET RAD r_2 in

0.010
0.020

TOLERANCES

in

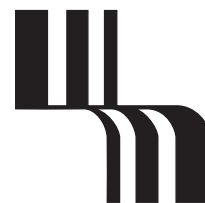
$\varnothing d_1$ $\varnothing D_1$ $\varnothing D_2$ L_1
f9 +0.004 -0 +0.005 -0 +0.003 -0



DESIGN

Designed for medium duty applications, the Hallite 421 snap-in urethane rod wipers offer excellent resistance to abrasion, toughness, high tensile strength and are impact resistant to withstand shock, yet they retain the flexibility to remain effective throughout their entire life, even where some side movement of the rod is evident.

Capable of removing mud and other contaminants from the rod, and to interchange with AN6231 & MS28776 corresponding wipers, the Hallite 421 is extremely compact, versatile and cost effective.



Wipers

Hallite

424

TECHNICAL DETAILS

METRIC

INCH

OPERATING CONDITIONS

MAXIMUM SPEED
MAXIMUM TEMPERATURE

1.0 m/sec
-30°C + 90°C

3.0 ft/sec
-22°F + 194°F

SURFACE ROUGHNESS

DYNAMIC SEALING FACE $\varnothing d_1$
STATIC SEALING FACE $\varnothing D_1$
STATIC HOUSING FACES L_1

μmRa μmRt
0.1 ↔ 0.4 4 max
1.6 max 10 max
3.2 max 16 max

μinCLA μinRMS
4 ↔ 16 5 ↔ 18
63 max 70 max
125 max 140 max

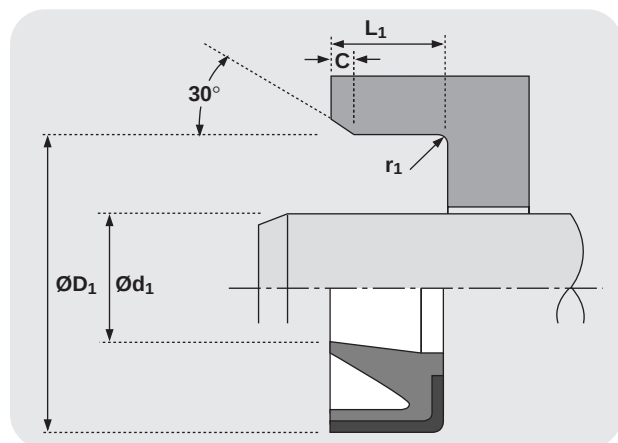
CHAMFERS & RADII

MIN CHAMFER C in
MAX FILLET RAD r_1 in

0.040
0.016

TOLERANCES

$\varnothing d_1$ $\varnothing D_1$ L_1
f9 H8 +0.02 -0



DESIGN

The Hallite 424 press fit wiper is designed for medium to heavy duty applications.

The moulded polyurethane lip is capable of removing ice, mud and dirt, yet sensitive enough to exclude dust and moisture.

FEATURES

- SUITABLE FOR HEAVY DUTY SERVICE
- LONG LIFE
- EXCELLENT RESISTANCE TO ABRASION
- SIMPLE HOUSING MACHINING



Wipers

Hallite



425

TECHNICAL DETAILS

METRIC

INCH

OPERATING CONDITIONS

MAXIMUM SPEED
MAXIMUM TEMPERATURE

1.0 m/sec
-30°C + 100°C

3.0 ft/sec
-22°F + 212°F

SURFACE ROUGHNESS

DYNAMIC SEALING FACE $\varnothing d_1$
STATIC SEALING FACE $\varnothing D_1$ $\varnothing D_2$
STATIC HOUSING FACES L_1

μmRa μmRt
0.1 $\leftrightarrow$ 0.4 4 max
2.5 max 16 max
2.5 max 16 max

$\mu inCLA$ $\mu inRMS$
4 $\leftrightarrow$ 16 5 $\leftrightarrow$ 18
100 max 111 max
100 max 111 max

RADII

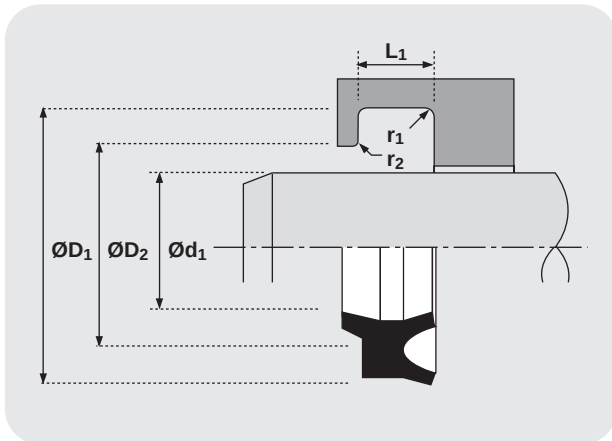
MAX FILLET RAD r_1 in
MAX FILLET RAD r_2 in

0.010
0.020

TOLERANCES

$\varnothing d_1 \leq 0.937$ in
 $\varnothing d_1 < 3.000$ in
 $\varnothing d_1 \geq 3.000$ in

$\varnothing d_1$	$\varnothing D_1$	$\varnothing D_2$	L_1
+0 -0.001	+0.002 -0	+0.002 -0	+0.005 -0
+0 -0.001	+0.003 -0	+0.003 -0	+0.005 -0
+0 -0.002	+0.003 -0	+0.003 -0	+0.005 -0



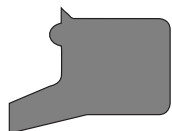
DESIGN

The Hallite 425 H style wiper offers superior wiping and low pressure sealing in one component. When used in conjunction with single lip rod seals, the combination provides effective cylinder sealing.

The Hallite 425 is manufactured in nitrile rubber and is also available in fluoroelastomer material.

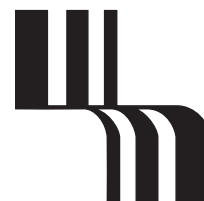
FEATURES

- VARIETY OF MATERIALS AVAILABLE
- TWIN LIP DESIGN ENSURES DRIER SEALING SYSTEM
- FLEXIBILITY



Wipers

Hallite



520

TECHNICAL DETAILS

METRIC

INCH

OPERATING CONDITIONS

MAXIMUM SPEED
MAXIMUM TEMPERATURE

4.0 m/sec
-40°C + 110°C

12.0 ft/sec
-40°F + 230°F

SURFACE ROUGHNESS

DYNAMIC SEALING FACE $\varnothing d_1$
STATIC SEALING FACE $\varnothing D_1$ $\varnothing D_2$
STATIC HOUSING FACES L_1

μmRa μmRt
0.1 ↔ 0.4 4 max
1.6 max 10 max
3.2 max 16 max

$\mu inCLA$ $\mu inRMS$
4 ↔ 16 5 ↔ 18
63 max 70 max
125 max 140 max

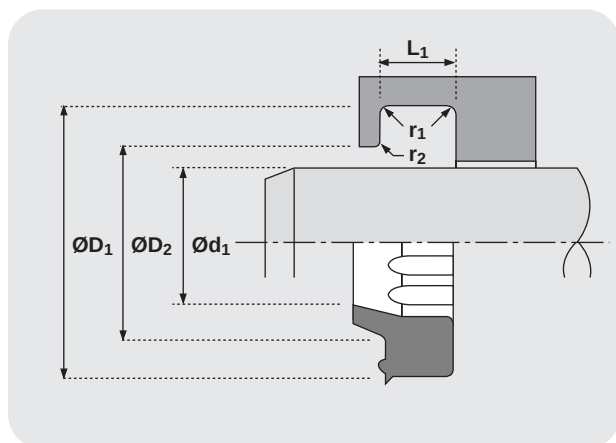
RADII

MAX FILLET RAD r_1 in
MAX FILLET RAD r_2 in

0.016
0.016

TOLERANCES

$\varnothing d_1$ $\varnothing D_1$ $\varnothing D_2$ L_1
f9 ±0.003 ±0.005 +0.004 -0



DESIGN

The Hallite 520 snap-in rod wiper has been designed to fit "Universal" style housings. The proportions of the wiping lip ensure that contact is maintained with the surface of the rod to remove heavily deposited mud, ice, etc. The outside diameter contacts the housing diameter and has a sealing lip to prevent moisture entering the groove. The moulded ribs on the internal diameter provides extra stability to the seal and help prevent pressure trapping.

The Hallite 520 is available in polyurethane or a polyester based compound and can be used with a split housing, however the majority can be installed in a blind housing with care.

FEATURES

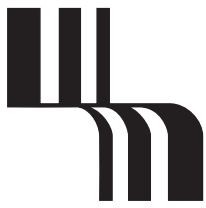
- PRECISION TRIMMED SEALING LIP
- 'CRUSH LIP' AND 'FACE BEAD' PROVIDE EFFECTIVE SEAL ON HOUSING
- LOW WEAR LONG LIFE
- COST EFFECTIVE
- PRESSURE RELIEF RIBS
- POLYESTER MATERIAL FOR HEAVY DUTY APPLICATIONS

MATERIAL OPTION

The part numbers shown are for polyurethane. If you require this product in polyester, please add a 'P' after the part number when ordering.

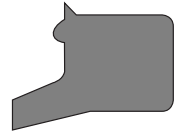
For example:

8880910 = polyurethane
8880910P = polyester.



Wipers

Hallite



138

TECHNICAL DETAILS

METRIC

INCH

OPERATING CONDITIONS

MAXIMUM SPEED
MAXIMUM TEMPERATURE

4.0 m/sec
-30°C + 100°C

12.0 ft/sec
-22°F + 212°F

SURFACE ROUGHNESS

DYNAMIC SEALING FACE $\varnothing d_1$
STATIC SEALING FACE $\varnothing D_1$ $\varnothing D_2$
STATIC HOUSING FACES L_1

μmRa μmRt
0.1 ↔ 0.4 4 max
1.6 max 10 max
3.2 max 16 max

$\mu inCLA$ $\mu inRMS$
4 ↔ 16 5 ↔ 18
63 max 70 max
125 max 140 max

RADII

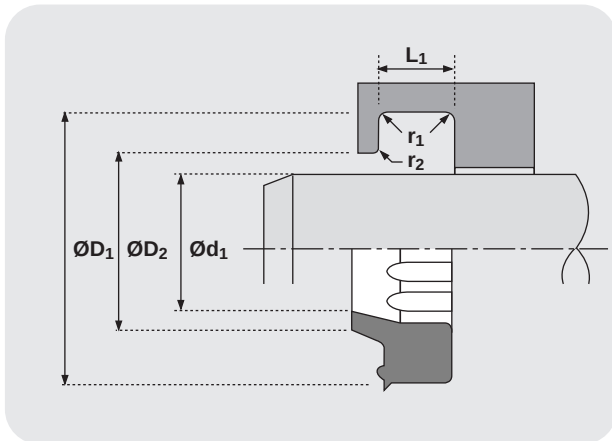
ROD DIAMETER $\varnothing d_1$ mm
MAX FILLET RAD r_1 mm
MAX FILLET RAD r_2 mm

≤ 90 > 90
0.2 0.4
0.4 0.4

TOLERANCES

mm

$\varnothing d_1$ $\varnothing D_1$ $\varnothing D_2$ L_1
f9 H11 H11 +0.2 -0



DESIGN

The Hallite 831 wiper is designed to snap into a standard housing and provide reliable medium duty dirt exclusion. The proportions of the precision trimmed wiping lip ensure that it remains in contact with the rod surface to remove all deposits of mud and other forms of contamination except for those found in heavy duty industrial applications.

The outside diameter of the seal incorporates a 'crush lip' to provide interference fit with the housing and a 'face bead' to ensure that the crush lip is not trapped in the corner of the housing. The inside diameter of the seal is provided with ribs to prevent the possibility of blow-out due to pressure trapping of the main rod seal.

The Hallite 831 is precision moulded in polyurethane for maximum wear resistance and is interchangeable with many common European wiper styles.

FEATURES

- PRECISION TRIMMED SEALING LIP
- 'CRUSH LIP' AND 'FACE BEAD' PROVIDE EFFECTIVE SEAL ON HOUSING
- LOW WEAR LONG LIFE
- COST EFFECTIVE
- PRESSURE RELIEF RIBS



4
3
8

Wipers

Hallite



TECHNICAL DETAILS

METRIC

INCH

OPERATING CONDITIONS

MAXIMUM SPEED
MAXIMUM TEMPERATURE

4.0 m/sec
-45°C + 110°C

12.0 ft/sec
-50°F + 230°F

SURFACE ROUGHNESS

DYNAMIC SEALING FACE $\varnothing d_1$
STATIC SEALING FACE $\varnothing D_1$ $\varnothing D_2$
STATIC HOUSING FACES L_1

μmRa μmRt
0.1 ↔ 0.4 4 max
1.6 max 10 max
3.2 max 16 max

μinCLA μinRMS
4 ↔ 16 5 ↔ 18
63 max 70 max
125 max 140 max

RADII

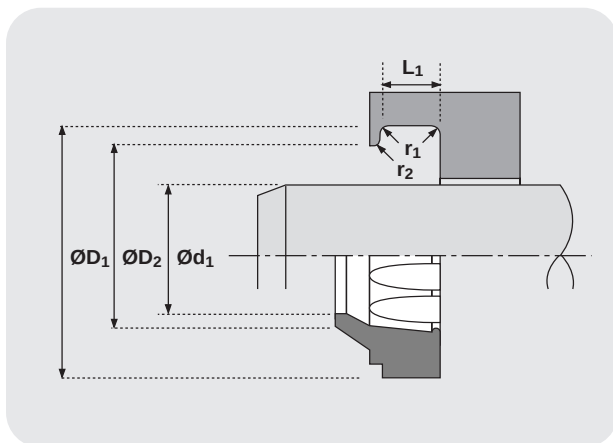
MAX FILLET RAD r_1 mm
MAX FILLET RAD r_2 mm

0.4
0.2

TOLERANCES

mm

$\varnothing d_1$ $\varnothing D_1$ $\varnothing D_2$ L_1
f9 H11 H11 +0.2 -0



DESIGN

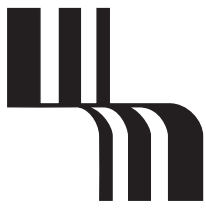
The Hallite 834 wiper is designed to snap into a standard housing and provide reliable medium duty dirt exclusion. The proportions of the wiping lip ensure that it remains in contact with the rod surface to remove all deposits of mud and other forms of contamination except for those found in the heavy duty environment such as steel works and cement factories.

The inside diameter of the seal is provided with ribs to prevent the possibility of blow out due to pressure trapping of the main rod seal.

The Hallite 834 is precision moulded in Hythane 181 for maximum wear resistance.

FEATURES

- SNUG FIT PROVIDES EFFECTIVE SEALING
- LOW WEAR - LONG LIFE
- EASY INSTALLATION
- PRESSURE RELIEF RIBS
- PRECISION TRIMMED WIPING LIP



Wipers

Hallite



TECHNICAL DETAILS

METRIC

INCH

OPERATING CONDITIONS

MAXIMUM SPEED
MAXIMUM TEMPERATURE

4.0 m/sec
-45°C + 110°C

12.0 ft/sec
-50°F + 230°F

SURFACE ROUGHNESS

DYNAMIC SEALING FACE $\varnothing d_1$
STATIC SEALING FACE $\varnothing D_1$ $\varnothing D_2$
STATIC HOUSING FACES L_1

μmRa μmRt
0.1 $\leftrightarrow$ 0.4 4 max
1.6 max 10 max
3.2 max 16 max

$\mu inCLA$ $\mu inRMS$
4 $\leftrightarrow$ 16 5 $\leftrightarrow$ 18
63 max 70 max
125 max 140 max

RADII

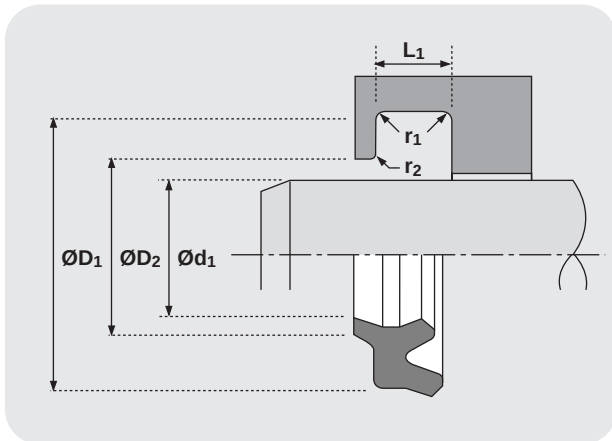
ROD DIAMETER $\varnothing d_1$ mm
MAX FILLET RAD r_1 mm
MAX FILLET RAD r_2 mm

≤ 90 > 90
0.2 0.4
0.4 0.4

TOLERANCES

mm

$\varnothing d_1$ $\varnothing D_1$ $\varnothing D_2$ L_1
f9 H11 H11 +0.2 -0



DESIGN

The Hallite 839 wiper is precision moulded in Hallite's high performance polyurethane - Hythane 181 for maximum wear resistance, and is designed to exclude dirt and moisture from entering the cylinder and to collect traces of fluid passing the rod seal.

Opposite the wiper lip are two sealing lips accurately produced and proportioned to collect fluid passing the rod seal. To obtain stability and improve the seal the outside diameter is in interference with the housing.

The standard range is designed to satisfy the requirements of ISO 6195 type C housing.

FEATURES

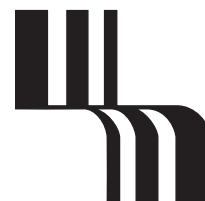
- TWIN LIP ENSURES DRIER SEALING SYSTEM.
- HARD WEARING MATERIAL FOR LONG LIFE
- ISO HOUSING RANGE

NB: Part numbers suffixed by “‡” indicate housing sizes to meet ISO 6195C.

840

Wipers

Hallite



TECHNICAL DETAILS

METRIC

INCH

OPERATING CONDITIONS

MAXIMUM SPEED
MAXIMUM TEMPERATURE

4.0 m/sec
-45°C + 110°C

12.0 ft/sec
-50°F + 230°F

SURFACE ROUGHNESS

DYNAMIC SEALING FACE $\varnothing d_1$
STATIC SEALING FACE $\varnothing D_1$ $\varnothing D_2$
STATIC HOUSING FACES L_1

μmRa μmRt
0.1 ↔ 0.4 4 max
1.6 max 16 max
3.2 max 16 max

$\mu inCLA$ $\mu inRMS$
4 ↔ 16 5 ↔ 18
63 max 70 max
125 max 140 max

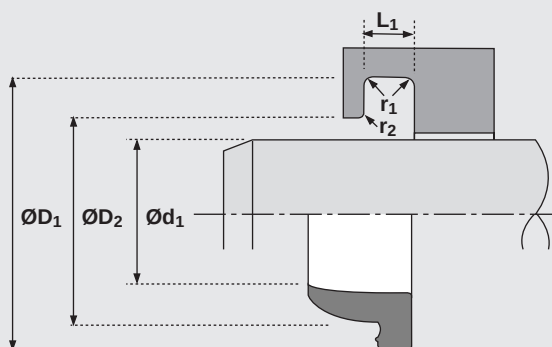
CHAMFERS & RADII

MAX FILLET RAD r_1 in
MAX FILLET RAD r_2 in

0.010
0.020

TOLERANCES

$\varnothing d_1$ $\varnothing D_1$ $\varnothing D_2$ L_1
f9 +0.020 +0.010 ±0.005 +0.020 +0.010



DESIGN

The Hallite 840 medium to heavy duty rod wiper is designed to remove heavy deposits of mud, ice and similar contaminants from the rod.

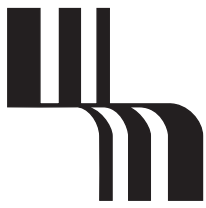
The proportions of the knife trimmed wiping lip ensure it remains in contact with the rod at all times, even where severe side loads exist. The main body features a rib to prevent moisture and other contaminants from passing over the outside diameter.

This product is manufactured from Hallite's high performance polyurethane - Hythane 181- to provide a flexible responsive wiper with excellent resistance to abrasion.

FEATURES

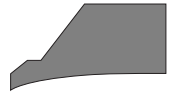
- PRECISION TRIMMED WIPING LIP
- BUILT-IN RIB TO EFFECTIVELY SEAL THE HOUSING.
- EXTREMELY FLEXIBLE
- EASY INSTALLATION.

Also see Hallite 33 inch rod wipers.



Wipers

Hallite



418

TECHNICAL DETAILS

METRIC

INCH

OPERATING CONDITIONS

MAXIMUM SPEED
MAXIMUM TEMPERATURE

4.0 m/sec
-45°C + 110°C

12.0 ft/sec
-50°F + 230°F

SURFACE ROUGHNESS

DYNAMIC SEALING FACE $\varnothing d_1$
STATIC SEALING FACE $\varnothing D_1$
STATIC HOUSING FACES L_1

μmRa μmRt
0.1 $\leftrightarrow$ 0.4 4 max
1.6 max 16 max
3.2 max 16 max

$\mu inCLA$ $\mu inRMS$
4 $\leftrightarrow$ 16 5 $\leftrightarrow$ 18
63 max 70 max
125 max 140 max

RADII

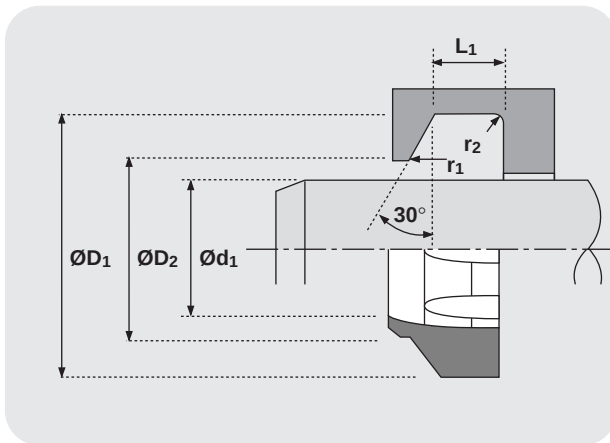
MAX FILLET RAD r_1 in
MAX FILLET RAD r_2 in

0.010
0.020

TOLERANCES

in

$\varnothing d_1$ $\varnothing D_1$ $\varnothing D_2$ L_1
f9 +0.005 -0 +0.010 -0 +0.005 +0.



DESIGN

The Hallite 841 is a medium duty wiper and incorporates a knife trimmed wiping lip to prevent contaminants like dust, dirt and moisture from entering the gland.

Manufactured in Hallite's high performance polyurethane - Hythane 181- this wiper provides superior performance to traditional products like Hallite 41, W, K, NK and RWK wipers.

The main body features internal ribs designed to keep the wiper stable, ensuring lip contact with the rod at all times, and to allow fluid by-pass if the rod seal weeps.

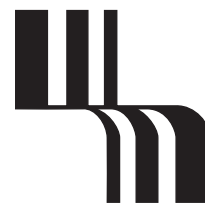
FEATURES

- PRECISION TRIMMED WIPING LIP
- EXTREMELY FLEXIBLE
- EASY INSTALLATION
- EXCELLENT RESISTANCE TO ABRASION
- INTERCHANGEABLE WITH OTHER COMMON STYLES



Wipers

Hallite



842

TECHNICAL DETAILS

METRIC

INCH

OPERATING CONDITIONS

MAXIMUM SPEED
MAXIMUM TEMPERATURE

4.0 m/sec
-45°C + 110°C

12.0 ft/sec
-50°F + 230°F

SURFACE ROUGHNESS

DYNAMIC SEALING FACE $\varnothing d_1$
STATIC SEALING FACE $\varnothing D_1 \varnothing D_2$
STATIC HOUSING FACES L_1

μmRa μmRt
0.1 ↔ 0.4 4 max
1.6 max 10 max
3.2 max 16 max

$\mu inCLA$ $\mu inRMS$
4 ↔ 16 5 ↔ 18
63 max 70 max
125 max 140 max

RADII

ROD DIAMETER $\varnothing d_1$
MAX FILLET RAD r_1 mm
MAX FILLET RAD r_2 mm
ROD DIAMETER $\varnothing d_1$
MAX FILLET RAD r_1 in
MAX FILLET RAD r_2 in

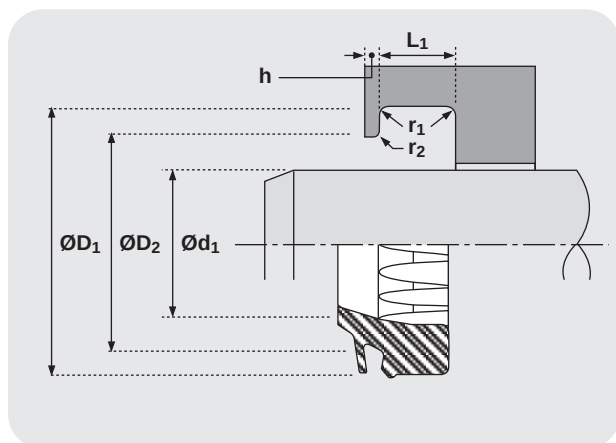
≤ 50	≤ 90	≤ 200	> 200
0.4	0.4	0.4	0.8
0.2	0.4	0.6	0.8

≤ 2.000	≤ 3.500	≤ 7.875	> 7.875
0.016	0.016	0.016	0.032
0.008	0.016	0.024	0.032

TOLERANCES

mm
in

$\varnothing d_1$	$\varnothing D_1$	$\varnothing D_2$	L_1	h
f9	H11	H11	+0.2 -0	+0.10 +0
f9	H11	H11	+0.008 -0	+0.004 +0



DESIGN

The Hallite 842 rod wiper is designed to prevent the ingress of foreign particles and moisture into the cylinder. The profile has been specially developed for harsh environments, in particular the longwall mining industry.

The special feature is the flap on the wiping lip which covers the gland housing, preventing the water/slurry trap so common with conventional wipers and thus ingress of contamination around the outside of the wiper. The internal ribs on the inside diameter prevent the possibility of pressure trapping between the gland seal and the wiper and ensure correct support and guidance of the wiping lip, even in cases of high eccentricity as can occur between the outer stage gland and the inner cylinder of a roof support leg.

The Hallite 842 is manufactured in Hallite's high performance polyurethane, Hythane 181. The material has excellent compression set characteristics, excellent wear and abrasive resistance, proven compatibility with HFA (95/5) fluids, as used in longwall mining equipment, and with mineral oil.



Wipers

Hallite



648

TECHNICAL DETAILS

METRIC

INCH

OPERATING CONDITIONS

MAXIMUM SPEED
MAXIMUM TEMPERATURE

4.0 m/sec
-45°C + 110°C

12.0 ft/sec
-50°F + 230°F

SURFACE ROUGHNESS

DYNAMIC SEALING FACE $\varnothing d_1$
STATIC SEALING FACE $\varnothing D_1$ $\varnothing D_2$
STATIC HOUSING FACES L_1

μmRa μmRt
0.1 $\leftrightarrow$ 0.4 4 max
1.6 max 10 max
3.2 max 16 max

$\mu inCLA$ $\mu inRMS$
4 $\leftrightarrow$ 16 5 $\leftrightarrow$ 18
63 max 70 max
125 max 140 max

RADII

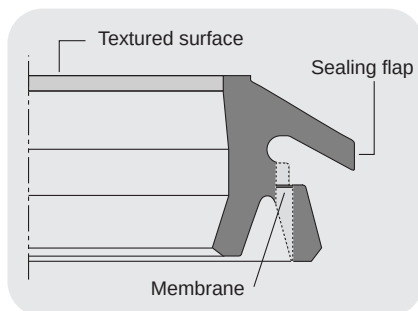
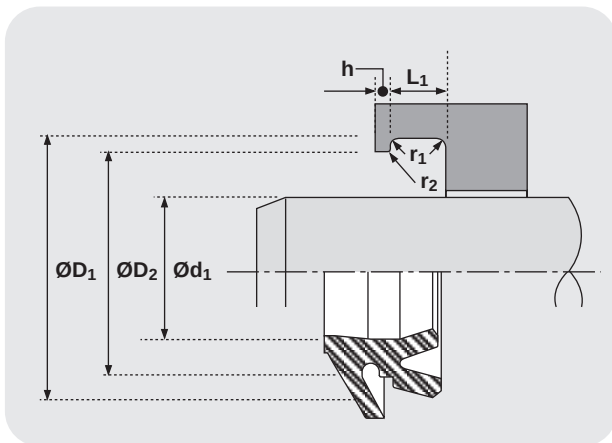
ROD DIAMETER $\varnothing d_1$ mm
MAX FILLET RAD r_1 mm
MAX FILLET RAD r_2 mm

≤ 90 > 90
0.4 0.4
0.2 0.4

TOLERANCES

mm

$\varnothing d_1$ $\varnothing D_1$ $\varnothing D_2$ L_1 h
f9 H11 H11 +0.2 -0 +0.1 -0



DESIGN

The Hallite 846 wiper is designed to exclude dirt and moisture from entering the cylinder and to collect traces of fluid passing the rod seal.

One special feature of the wiper design are the thin membranes which burst when excessive fluid pressure is trapped between the wiper and the rod seal and prevent the wiper being forced out of its housing. After release of this pressure, the membranes close to protect against contamination from the outside. This feature removes the requirement for an expensive vent hole in the gland.

A second feature is the sealing flap on the wiping lip that completely seals the metal housing groove, preventing the ingress of dirt and moisture around the outside diameter of the wiper.

Precision moulded in Hallite's high performance polyurethane, Hythane 181, for maximum wear resistance and temperature range, the wiper is designed to remove lightly adhered dirt, dust and moisture from the rod.

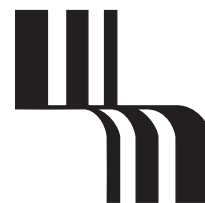
FEATURES

- TWIN LIP - NO LEAKAGE
- TRAPPED PRESSURE
AUTOMATICALLY RELEASED
THROUGH BURSTING MEMBRANES
- NO PUSH OUT OF THE WIPER
THROUGH BUILD UP OF PRESSURE
- NO GLAND VENT HOLE NECESSARY
- SEALING FLAP PROTECTS AGAINST
INGRESS OF DIRT AND MOISTURE
AROUND THE OUTSIDE DIAMETER



Wipers

Hallite



860

TECHNICAL DETAILS

METRIC

INCH

OPERATING CONDITIONS

MAXIMUM SPEED
MAXIMUM TEMPERATURE

1.0 m/sec
-40°C +100°C

3.0 ft/sec
-40°F +212°F

SURFACE ROUGHNESS

DYNAMIC SEALING FACE $\varnothing d_1$
STATIC SEALING FACE $\varnothing D_1$
STATIC HOUSING FACES L_1

μmRa μmRt
0.1 ↔ 0.4 4 max
1.6 max 10 max
3.2 max 16 max

μinCLA μinRMS
4 ↔ 16 5 ↔ 18
63 max 70 max
125 max 140 max

CHAMFERS & RADII

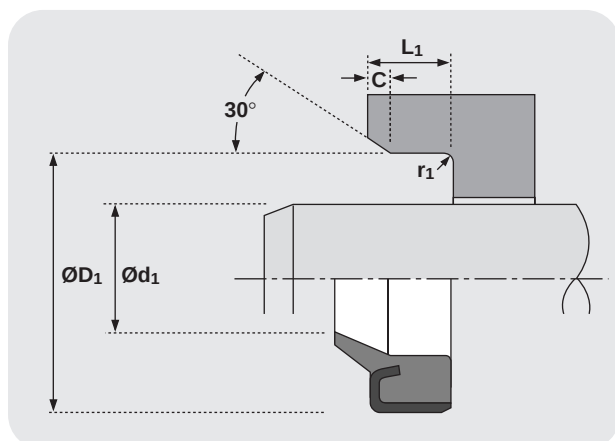
ROD DIAMETER $\varnothing d_1$ mm
MIN CHAMFER C mm
MAX FILLET RAD r_1 mm
ROD DIAMETER $\varnothing d_1$ in
MIN CHAMFER C in
MAX FILLET RAD r_1 in

≤ 19 > 19
0.5 1.0
0.4 0.4
 < 0.75 ≥ 0.75
0.020 0.040
0.016 0.016

TOLERANCES

$\varnothing d_1$ $\varnothing D_1$ L_1 mm
f9 H8 +0.5 -0

L_1 in
+0.020 -0



DESIGN

The Hallite 860 is a metal cased wiper, designed to press-fit into open groove housings. Hallite's 860 wiper comprises a precisely trimmed polyurethane wiping element which is securely bonded to a metal case treated with a rust inhibitor. Capable of operating in dirty conditions, the proportions of the polyurethane wiping lip allow it to follow the side movement of the rod and to clear away heavily deposited dirt.

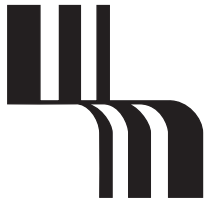
Suitable for light, medium and heavy duty applications, the wiper has been designed to provide ease of installation and offers excellent durability in service. The Hallite 860 offers a range of sizes suitable for ISO 6195 type B housings and a range for standard Asian housings.

FEATURES

- EASE OF ASSEMBLY
- LONG LIFE
- PRECISION TRIMMED WIPING LIP
- METAL CASE TREATED WITH A RUST INHIBITOR
- WIDE RANGE OF APPLICATION USES
- RANGE INCLUDES ISO & STANDARD ASIAN HOUSINGS.

NB: Part numbers suffixed by “†” are designed for Asian housings.

Part numbers suffixed by “‡” indicate housing sizes to meet ISO 6195 type B.



Wipers

Hallite



862

TECHNICAL DETAILS

METRIC

INCH

OPERATING CONDITIONS

MAXIMUM SPEED
MAXIMUM TEMPERATURE

1.0 m/sec
-40°C +100°C

3.0 ft/sec
-40°F +212°F

SURFACE ROUGHNESS

DYNAMIC SEALING FACE $\varnothing d_1$
STATIC SEALING FACE $\varnothing D_1$
STATIC HOUSING FACES L_1

μmRa μmRt
0.1 $\leftrightarrow$ 0.4 4 max
1.6 max 10 max
3.2 max 16 max

$\mu inCLA$ $\mu inRMS$
4 $\leftrightarrow$ 16 5 $\leftrightarrow$ 18
63 max 70 max
125 max 140 max

CHAMFERS & RADII

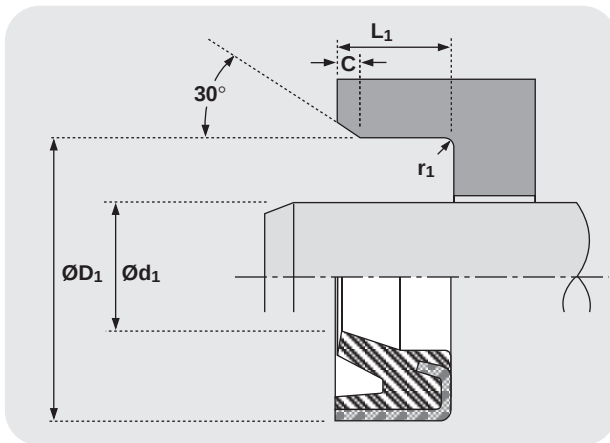
MIN CHAMFER C in
MAX FILLET RAD r_1 in

0.040
0.016

TOLERANCES

in

$\varnothing d_1$ $\varnothing D_1$ L_1
f9 H8 +0.020 -0



DESIGN

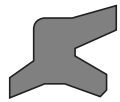
The Hallite 862 is a metal cased wiper, designed to press-fit into open groove housings. Hallite's 862 comprises a precisely trimmed polyurethane wiping element which is securely bonded to a metal case treated with a rust inhibitor. Capable of operating in dirty conditions, the proportions of the polyurethane wiping lip allow it to follow the side movement of the rod and to clear away heavily deposited dirt.

Suitable for light, medium and heavy duty applications, the wiper has been designed to provide ease of installation and offers excellent durability in service.

The Hallite 862 offers a range of sizes suitable for standard American inch housings.

FEATURES

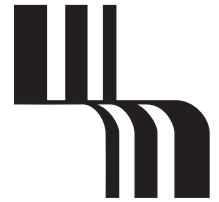
- EASE OF ASSEMBLY
- LONG LIFE
- PRECISION TRIMMED WIPING LIP
- METAL CASE TREATED WITH A RUST INHIBITOR
- WIDE RANGE OF APPLICATION USES



904

Wipers

Hallite



TECHNICAL DETAILS

METRIC

INCH

OPERATING CONDITIONS

MAXIMUM SPEED
MAXIMUM TEMPERATURE

4.0 m/sec
-30°C + 100°C

12.0 ft/sec
-22°F + 212°F

SURFACE ROUGHNESS

DYNAMIC SEALING FACE $\varnothing d_1$
STATIC SEALING FACE $\varnothing D_1$ $\varnothing D_2$
STATIC HOUSING FACES L_1

μmRa μmRt
0.1 ↔ 0.4 4 max
1.6 max 10 max
3.2 max 16 max

μinCLA μinRMS
4 ↔ 16 5 ↔ 18
63 max 70 max
125 max 140 max

RADII

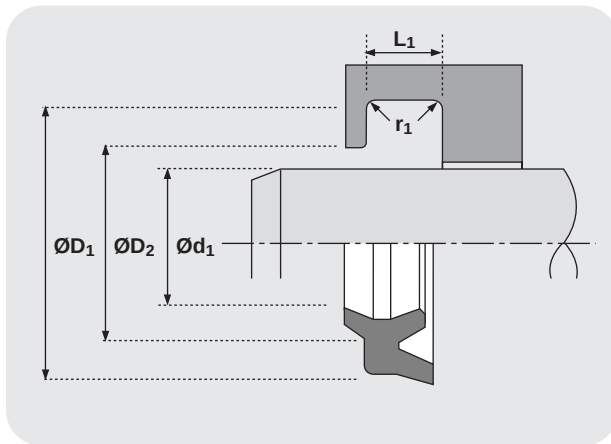
MAX FILLET RAD r_1 mm

0.3

TOLERANCES

mm

$\varnothing d_1$ $\varnothing D_1$ $\varnothing D_2$ L_1
f8 H10 ±0.10 +0.3 -0



DESIGN

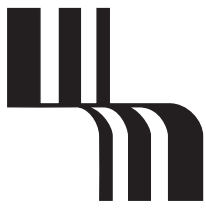
The Hallite 904 double lip rod wiper is designed to scrape dirt and moisture from the rod and to collect any traces of fluid passing the rod seal.

The polyurethane material provides a very good scraping action and has excellent resistance to abrasion. This product fits popular Asian housings and is suitable for light to medium duty use typically found in the materials handling industry.

FEATURES

- PRECISION TRIMMED WIPING LIP
- EXTREMELY FLEXIBLE
- EASY INSTALLATION
- EXCELLENT RESISTANCE TO ABRASION
- INTERCHANGEABLE WITH POPULAR STYLES

Also see Hallite 839.



Wipers

Hallite



905

TECHNICAL DETAILS

METRIC

INCH

OPERATING CONDITIONS

MAXIMUM SPEED
MAXIMUM TEMPERATURE

1.0 m/sec
-30°C +100°C

3.0 ft/sec
-22°F +212°F

SURFACE ROUGHNESS

DYNAMIC SEALING FACE $\varnothing d_1$
STATIC SEALING FACE $\varnothing D_1$
STATIC HOUSING FACES L_1

μmRa μmRt
0.1 $\leftrightarrow$ 0.4 4 max
1.6 max 10 max
3.2 max 16 max

$\mu inCLA$ $\mu inRMS$
4 $\leftrightarrow$ 16 5 $\leftrightarrow$ 18
63 max 70 max
125 max 140 max

CHAMFERS & RADII

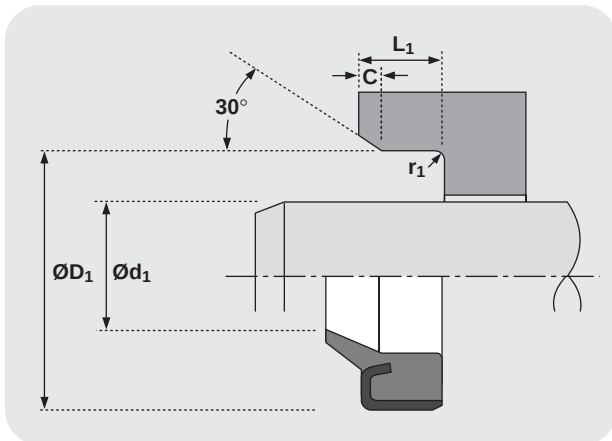
MIN CHAMFER C mm
MAX FILLET RAD r_1 mm

1.0
0.3

TOLERANCES

mm

$\varnothing d_1$ $\varnothing D_1$ L_1
f8 H10 +0.5 -0



DESIGN

The Hallite 905 is a metal cased wiper, designed to press-fit into a simple counter-bore.

Suitable for medium and heavy duty applications, typically found in Asian earthmoving equipment, the polyurethane wiping lip has a very good resistance to abrasion and provides excellent scraping of ice, baked on mud and other heavy contaminants.

FEATURES

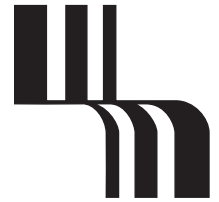
- SIMPLE HOUSING MACHINING
- ROBUST DESIGN
- RANGE SUITS STANDARD ASIAN HOUSINGS

Also see Hallite 860.



Wipers

Hallite



913

TECHNICAL DETAILS

METRIC

INCH

OPERATING CONDITIONS

MAXIMUM SPEED
MAXIMUM TEMPERATURE

4.0 m/sec
-30°C + 100°C

12.0 ft/sec
-22°F + 212°F

SURFACE ROUGHNESS

DYNAMIC SEALING FACE $\varnothing d_1$
STATIC SEALING FACE $\varnothing D_1$
STATIC HOUSING FACES L_1

μmRa μmRt
0.1 ↔ 0.4 4 max
1.6 max 10 max
3.2 max 16 max

$\mu inCLA$ $\mu inRMS$
4 ↔ 16 5 ↔ 18
63 max 70 max
125 max 140 max

RADII

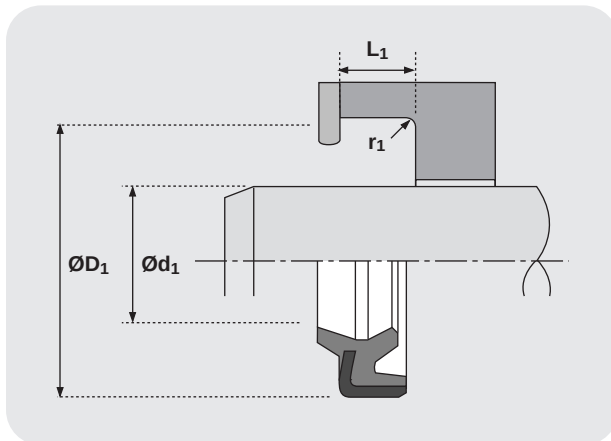
MAX FILLET RAD r_1 mm

0.3

TOLERANCES

mm

$\varnothing d_1$ $\varnothing D_1$ $\varnothing D_2$
f8 H10 ±0.10



DESIGN

The Hallite 913 metal cased double lip wiper is designed to press fit into a simple counter-bore.

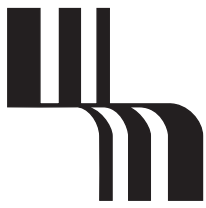
Suitable for medium duty applications, the polyurethane wiping lip prevents the ingress of contaminants and has very good resistance to abrasion. The internal second lip ensures a dry sealing system by collecting traces of fluid that may by-pass the rod seal.

FEATURES

- TOUGH POLYURETHANE MATERIAL
- EASY INSTALLATION
- EXCELLENT RESISTANCE TO ABRASION
- DOUBLE LIP DESIGNED FOR DRY SEALING SYSTEM

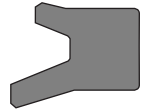
NOTE

Many sizes are interchangeable with Hallite 860 and 905.



Wipers

Hallite



915

TECHNICAL DETAILS

METRIC

INCH

OPERATING CONDITIONS

MAXIMUM SPEED
MAXIMUM TEMPERATURE

1.0 m/sec
-30°C + 90°C

3.0 ft/sec
-22°F + 194°F

SURFACE ROUGHNESS

DYNAMIC SEALING FACE $\varnothing d_1$
STATIC SEALING FACE $\varnothing D_1$ $\varnothing D_2$
STATIC HOUSING FACES L_1

μmRa μmRt
0.1 $\leftrightarrow$ 0.4 4 max
1.6 max 10 max
3.2 max 16 max

μinCLA μinRMS
4 $\leftrightarrow$ 16 5 $\leftrightarrow$ 18
63 max 70 max
125 max 140 max

RADII

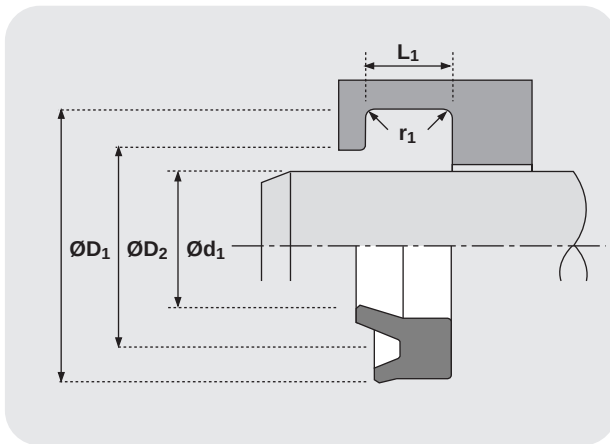
MAX FILLET RAD r_1 mm

0.3

TOLERANCES

mm

$\varnothing d_1$ $\varnothing D_1$ $\varnothing D_2$ L_1
f8 H10 ± 0.1 +0.3 -0



DESIGN

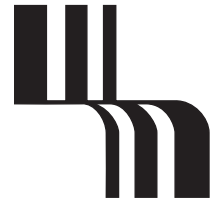
The Hallite 915 medium to heavy duty polyurethane rod wiper prevents ice, baked on mud and other contaminants from entering the gland.

The proportions of the wiping lip ensure it remains in constant contact with the rod, even with considerable side load.

The tough material has very good resistance to abrasion yet remains flexible enough for easy installation.

FEATURES

- PRECISION TRIMMED WIPING LIP
- TOUGH POLYURETHANE MATERIAL
- EASY INSTALLATION
- EXCELLENT RESISTANCE TO ABRASION.



TECHNICAL DETAILS

METRIC

INCH

OPERATING CONDITIONS

MAXIMUM SPEED
MAXIMUM TEMPERATURE

1.0 m/sec
-30°C +100°C

3.0 ft/sec
-22°F +212°F

SURFACE ROUGHNESS

DYNAMIC SEALING FACE $\varnothing d_1$
STATIC SEALING FACE $\varnothing D_1$
STATIC HOUSING FACES L_1

μmRa μmRt
0.1 ↔ 0.4 4 max
1.6 max 10 max
3.2 max 16 max

μinCLA μinRMS
4 ↔ 16 5 ↔ 18
63 max 70 max
125 max 140 max

CHAMFERS & RADII

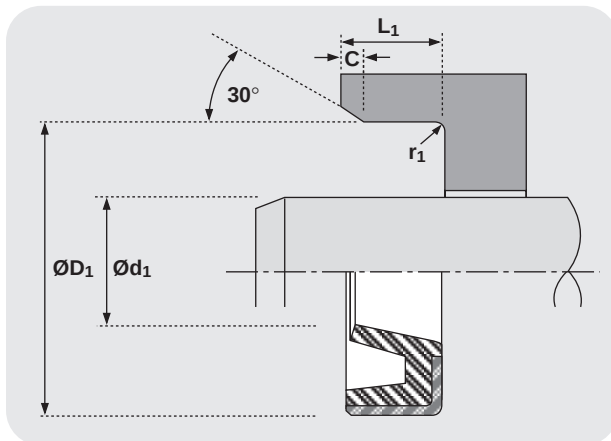
MIN CHAMFER C mm
MAX FILLET RAD r_1 mm

1.0
0.3

TOLERANCES

mm

$\varnothing d_1$ $\varnothing D_1$
f8 H10



DESIGN

The Hallite 919 metal cased rod wiper is designed to press fit into a simple counter-bore.

Suitable for medium to heavy duty applications, the polyurethane wiping lip prevents ingress of contaminants and has very good abrasion resistance.

The wiper is also suitable for the retention of grease when fitted to pivot pins.

Also see hallite 921

FEATURES

- TOUGH POLYURETHANE MATERIAL
- EASY INSTALLATION
- COMPACT HOUSINGS
- VERY GOOD RESISTANCE TO ABRASION
- EXCELLENT DURABILITY IN SERVICE



Wipers

Hallite



921

TECHNICAL DETAILS

METRIC

INCH

OPERATING CONDITIONS

MAXIMUM SPEED

1.0 m/sec

3.0 ft/sec

MAXIMUM TEMPERATURE

-30°C +100°C

-22°F +212°F

SURFACE ROUGHNESS

DYNAMIC SEALING FACE $\varnothing d_1$

μmRa

μmRt

$\mu inCLA$

$\mu inRMS$

STATIC SEALING FACE $\varnothing D_1$

0.1 $\leftrightarrow$ 0.4

4 max

4 $\leftrightarrow$ 16

5 $\leftrightarrow$ 18

STATIC HOUSING FACES L_1

1.6 max

10 max

63 max

70 max

STATIC HOUSING FACES L_1

3.2 max

16 max

125 max

140 max

CHAMFERS & RADII

MIN CHAMFER C mm

1.0

MAX. RADIUS r_1 mm

0.3

TOLERANCES

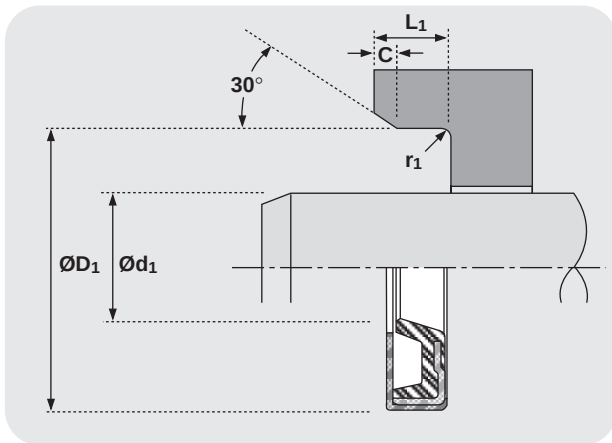
$\varnothing d_1$

$\varnothing D_1$

mm

h9

H8



DESIGN

The Hallite 921 metal cased wiper is designed to press fit into a simple counter-bore

Suitable for medium duty applications, the polyurethane wiping lip prevents ingress of contaminants and has good resistance to abrasion.

The wiper is also suitable for the retention of grease when fitted to pivot pins.

Also see Hallite 919

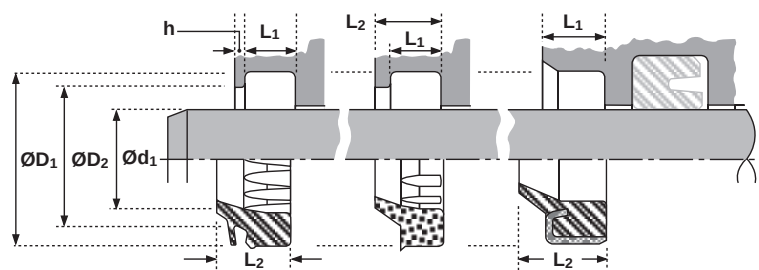
FEATURES

- TOUGH POLYURETHANE MATERIAL
- ENCLOSED METAL CASE
- EASY INSTALLATION
- COMPACT HOUSINGS
- VERY GOOD RESISTANCE TO ABRASION
- EXCELLENT DURABILITY IN SERVICE

Wipers

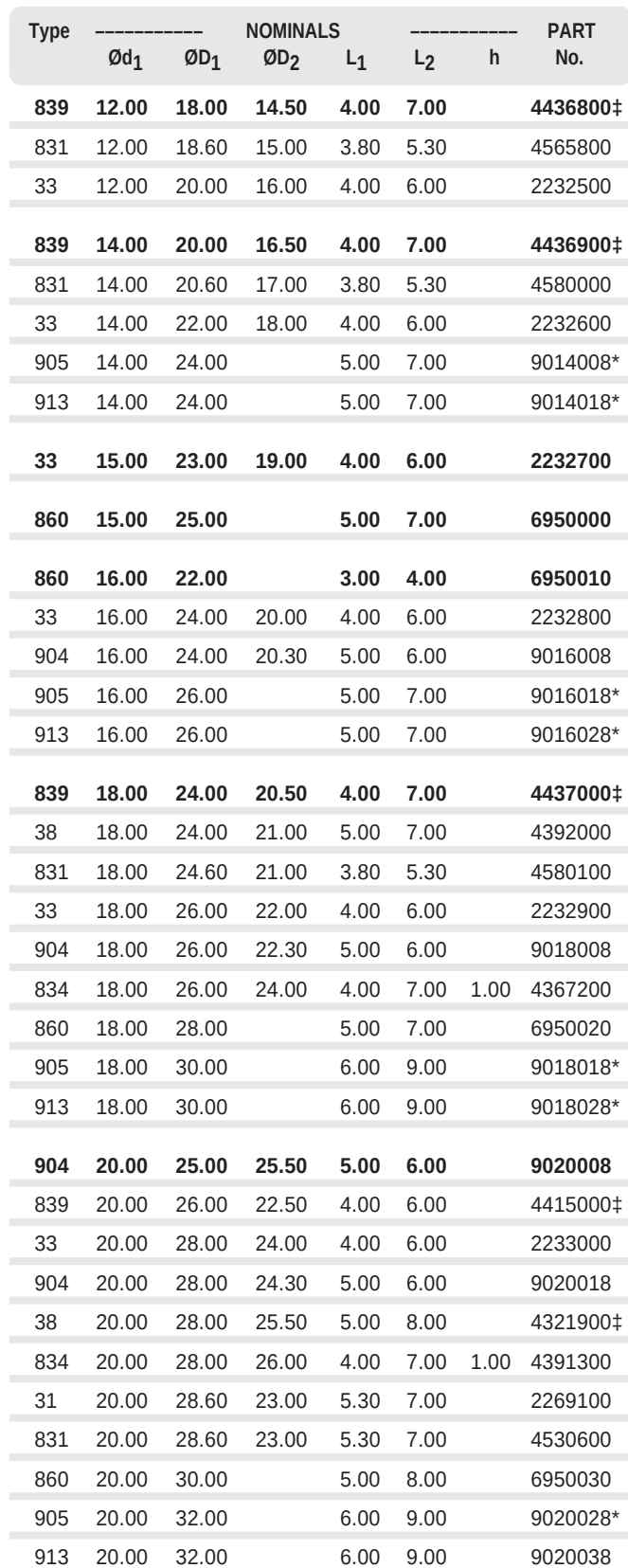
Notes





Hallite

metric

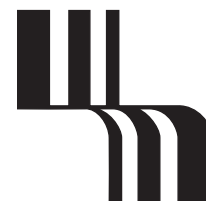
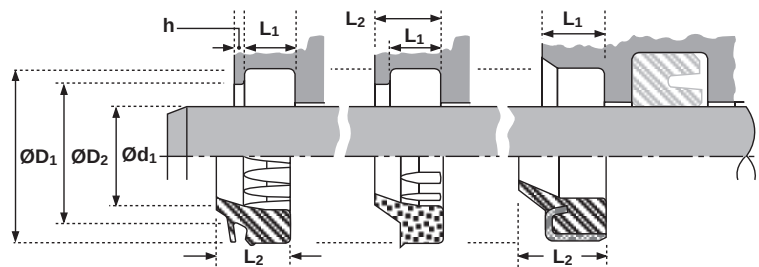


Type			NOMINALS				PART No.
	Ød ₁	ØD ₁	ØD ₂	L ₁	L ₂	h	
839	22.00	28.00	24.50	4.00	7.00		4437100±
33	22.00	30.00	26.00	4.00	6.00		2233100
904	22.00	30.00	26.30	5.00	6.00		9022008
38	22.00	30.00	27.50	5.00	8.00		4322000±
834	22.00	30.00	28.00	4.00	7.00	1.00	4370600
31	22.00	30.60	25.00	5.30	7.00		2269200
831	22.00	30.60	25.00	5.30	7.00		4530700
913	22.00	34.00		6.00	9.00		9022038
904	22.40	30.40	26.70	5.00	6.00		9022018
33	25.00	33.00	29.00	4.00	6.00		2233200
904	25.00	33.00	29.30	5.00	6.00		9025008
38	25.00	33.00	30.50	5.00	8.00		6617700±
834	25.00	33.00	31.00	4.00	7.00	1.00	4343900
846	25.00	33.00	31.00	4.00	8.70	1.00	4556600
831	25.00	33.60	28.00	5.30	7.00		4530800
860	25.00	35.00		5.00	8.00		6950040
37	25.00	35.00		7.00	10.00		6588300
860	25.00	37.00		6.00	9.00		6950050±
834	26.00	34.00	32.00	4.00	7.00	1.00	4514400
846	26.00	34.00	32.00	4.00	8.70	1.00	4588700
839	28.00	36.00	31.00	5.00	8.00		4437200±
33	28.00	36.00	32.00	4.00	6.00		2233300
904	28.00	36.00	32.30	5.00	6.00		9028008
38	28.00	36.00	33.50	5.00	8.00		6617800±
834	28.00	36.00	34.00	4.00	7.00	1.00	4373500
846	28.00	36.00	34.00	4.00	8.70	1.00	4556700
831	28.00	36.60	31.00	5.30	7.00		4565900
860	28.00	38.00		5.00	8.00		6950060
37	28.00	38.00		7.00	10.00		6588400
905	28.00	40.00		6.00	9.00		9028018*
839	30.00	38.00	33.00	5.00	8.00		4519200
904	30.00	38.00	34.00	6.00	6.50		9030008
38	30.00	38.00	35.50	5.00	8.00		4419200
834	30.00	38.00	36.00	4.00	7.00	1.00	4378800
846	30.00	38.00	36.00	4.00	8.70	1.00	4584500
831	30.00	38.60	33.00	5.30	7.00		4530900

Wiper seals

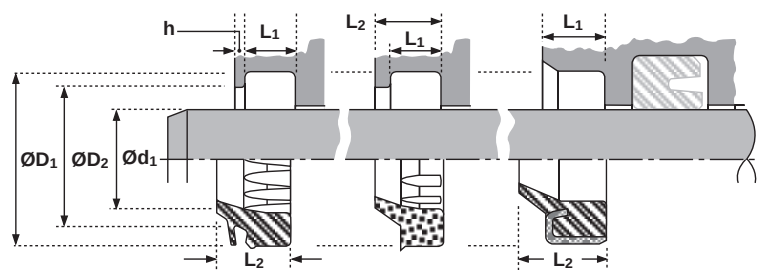
Hallite

metric



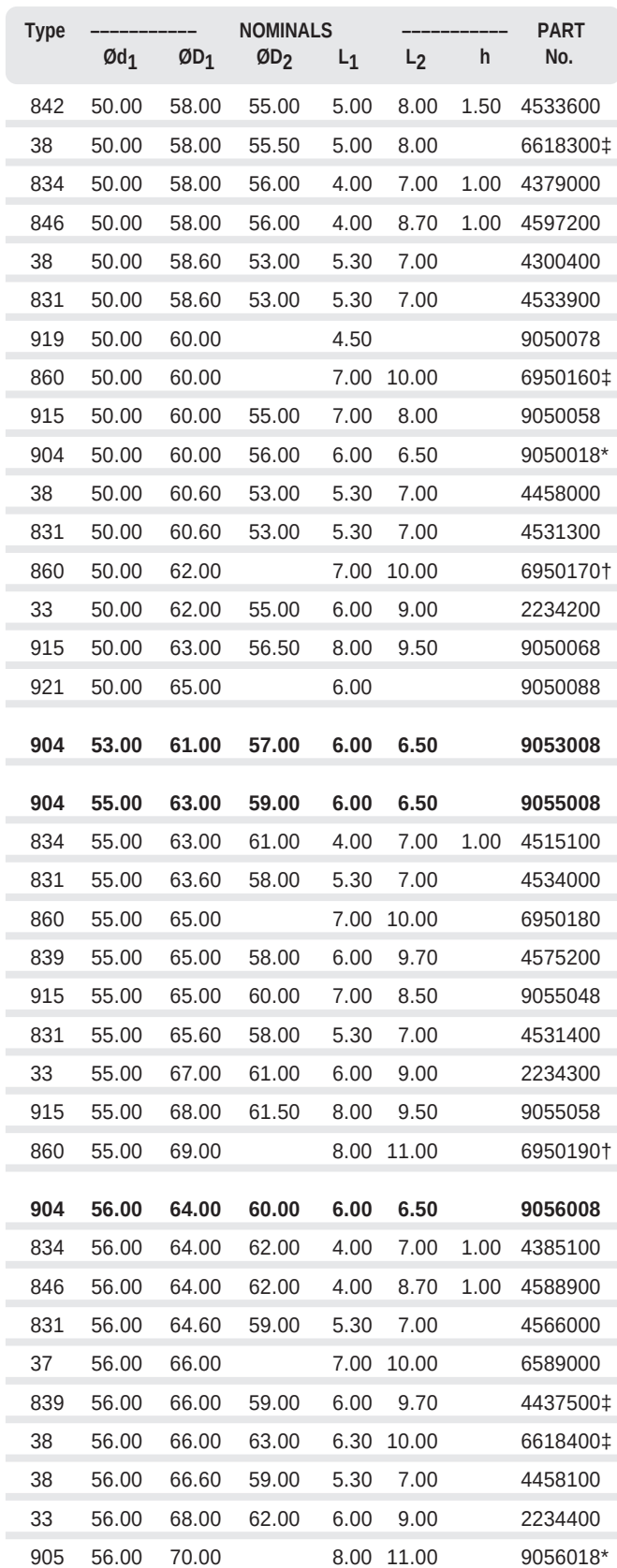
Type	Ød ₁	ØD ₁	NOMINALS ØD ₂	L ₁	L ₂	h	PART No.
860	30.00	40.00		5.00	8.00		6950070
38	30.00	41.20	37.00	7.50	10.00		4528900
860	30.00	42.00		6.00	9.00		6950080†
33	30.00	42.00	36.00	6.00	9.00		2233400
905	30.00	45.00		7.00	10.00		9030038*
904	31.50	39.50	35.50	6.00	6.50		9031008*
905	31.50	44.00		7.00	10.00		9031018*
839	32.00	40.00	35.00	5.00	8.00		4594000‡
904	32.00	40.00	36.00	6.00	6.50		9032008*
38	32.00	40.00	37.50	5.00	8.00		6617900‡
834	32.00	40.00	38.00	4.00	7.00	1.00	4373600
846	32.00	40.00	38.00	4.00	8.70	1.00	4568900
831	32.00	40.60	35.00	5.30	7.00		4534500
860	32.00	42.00		5.00	8.00		6950090
37	32.00	42.00		7.00	10.00		6588500
905	32.00	44.00		7.00	10.00		9032018*
33	32.00	44.00	38.00	6.00	9.00		2233500
905	32.00	55.00		8.00	11.00		9032028*
904	35.00	43.00	39.00	6.00	6.50		9035008
834	35.00	43.00	41.00	4.00	7.00	1.00	4398400
831	35.00	43.60	38.00	5.30	7.00		4531000
860	35.00	45.00		7.00	10.00		6950100
842	35.00	45.00	42.00	6.30	10.00	1.50	4515300
860	35.00	47.00		7.00	10.00		6950110†
33	35.00	47.00	41.00	6.00	9.00		2233600
904	35.50	43.50	39.50	6.00	6.50		9035018
839	36.00	44.00	39.00	5.00	8.00		4437300‡
904	36.00	44.00	40.00	6.00	6.50		9036008*
38	36.00	44.00	41.50	5.00	8.00		6618000‡
834	36.00	44.00	42.00	4.00	7.00	1.00	4370700
846	36.00	44.00	42.00	4.00	8.70	1.00	4588800
831	36.00	44.60	39.00	5.30	7.00		4580200
37	36.00	46.00		7.00	10.00		6588600
33	36.00	48.00	42.00	6.00	9.00		2233700
834	37.00	45.00	43.00	4.00	7.00	1.00	4514500

Type	Ød ₁	ØD ₁	NOMINALS ØD ₂	L ₁	L ₂	h	PART No.
842	38.00	46.00	43.00	5.30	8.00	1.50	4568700
834	38.00	46.00	44.00	4.00	7.00	1.00	4515400
860	38.00	48.00		7.00	10.00		6950470
839	40.00	48.00	43.00	5.00	8.00		4591600‡
904	40.00	48.00	44.00	6.00	6.50		9040008
842	40.00	48.00	45.00	5.00	8.00	1.50	4536500
38	40.00	48.00	45.50	5.00	8.00		6618100‡
834	40.00	48.00	46.00	4.00	7.00	1.00	4378900
846	40.00	48.00	46.00	4.00	8.70	1.00	4549200
831	40.00	48.60	43.00	5.30	7.00		4531100
919	40.00	50.00		4.00			9040058
860	40.00	50.00		7.00	10.00		6950120‡
904	40.00	50.00	46.00	6.00	6.50		9040018*
860	40.00	52.00		7.00	10.00		6950130†
33	40.00	52.00	46.00	6.00	9.00		2233800
38	41.30	49.30	46.80	5.00	8.00		4599900
31	42.00	50.60	45.00	5.30	7.00		2270000
33	42.00	54.00	48.00	6.00	9.00		2233900
839	45.00	53.00	48.00	5.00	8.00		4437400‡
904	45.00	53.00	49.00	6.00	6.50		9045008
38	45.00	53.00	50.50	5.00	8.00		6618200‡
834	45.00	53.00	51.00	4.00	7.00	1.00	4370800
846	45.00	53.00	51.00	4.00	8.70	1.00	4589900
831	45.00	53.60	48.00	5.30	7.00		4533800
919	45.00	55.00		4.00			9045068
860	45.00	55.00		7.00	10.00		6950140‡
915	45.00	55.00	50.00	7.00	8.00		9045058
904	45.00	55.00	51.00	6.00	6.50		9045018*
831	45.00	55.60	48.00	5.30	7.00		4531200
860	45.00	57.00		7.00	10.00		6950150†
33	45.00	57.00	51.00	6.00	9.00		2234000
834	46.00	54.00	52.00	4.00	7.00	1.00	4515200
834	48.00	56.00	54.00	4.00	7.00	1.00	4432700
839	50.00	58.00	53.00	5.00	8.00		4584400‡
904	50.00	58.00	54.00	6.00	6.50		9050008



Hallite

metric

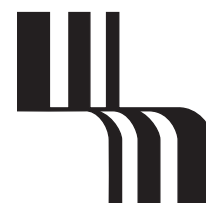
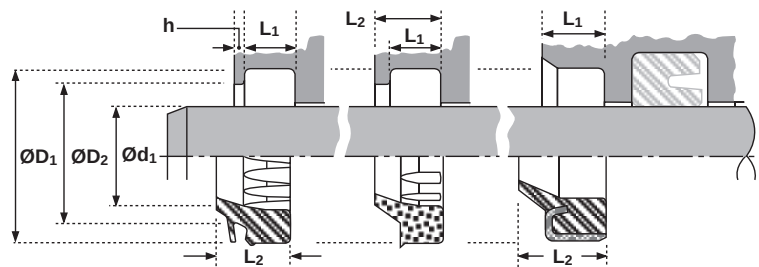


Type			NOMINALS					PART No.
	Ød ₁	ØD ₁	ØD ₂	L ₁	L ₂	h		
904	60.00	68.00	64.00	6.00	6.50		9060008	
834	60.00	68.00	66.00	4.00	7.00	1.00	4385200	
846	60.00	68.00	66.00	4.00	8.70	1.00	4596600	
831	60.00	68.60	63.00	5.30	7.00		4534100	
860	60.00	70.00		7.00	10.00		6950200	
38	60.00	70.00	66.00	5.30	7.00		4386200	
842	60.00	70.00	67.00	6.30	10.00	1.50	4557800	
38	60.00	70.00	67.00	6.30	10.00		4270200	
38	60.00	70.60	63.00	5.30	7.00		4456400	
831	60.00	70.60	63.00	5.30	7.00		4531500	
33	60.00	72.00	66.00	6.00	9.00		2234500	
915	60.00	73.00	66.50	8.00	9.50		9060048	
860	60.00	74.00		8.00	11.00		6950210†	
904	63.00	71.00	67.00	6.00	6.50		9063008	
834	63.00	71.00	69.00	4.00	7.00	1.00	4385300	
37	63.00	73.00		7.00	10.00		6589100	
842	63.00	73.00	70.00	6.30	10.00	1.50	4536600	
38	63.00	73.00	70.00	6.30	10.00		6618500‡	
38	63.00	73.60	66.00	5.30	7.00		4283600	
33	63.00	75.00	69.00	6.00	9.00		2234600	
905	63.00	77.00		8.00	11.00		9063018	
904	65.00	73.00	69.00	6.00	6.50		9065008	
834	65.00	73.00	71.00	4.00	7.00	1.00	4394200	
846	65.00	73.00	71.00	4.00	8.70	1.00	4597500	
860	65.00	75.00		7.00	10.00		6950220	
839	65.00	75.00	68.00	6.00	9.70		4575300	
38	65.00	75.00	72.00	6.30	10.00		4343800	
31	65.00	75.60	68.00	5.30	7.00		2270700	
33	65.00	77.00	71.00	6.00	9.00		2234700	
915	65.00	78.00	71.50	8.00	9.50		9065048	
860	65.00	79.00		8.00	11.00		6950230†	
904	67.00	75.00	71.00	6.00	6.50		9067008*	
834	70.00	78.00	76.00	4.00	7.00	1.00	4373700	
846	70.00	78.00	76.00	4.00	8.70	1.00	4556800	
831	70.00	78.60	73.00	5.30	7.00		4534200	
860	70.00	80.00		7.00	10.00		6950240‡	

Wiper seals

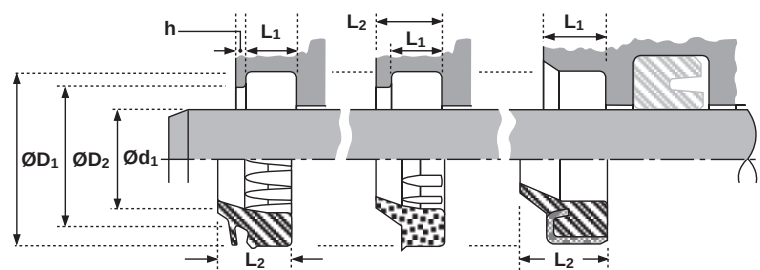
Hallite

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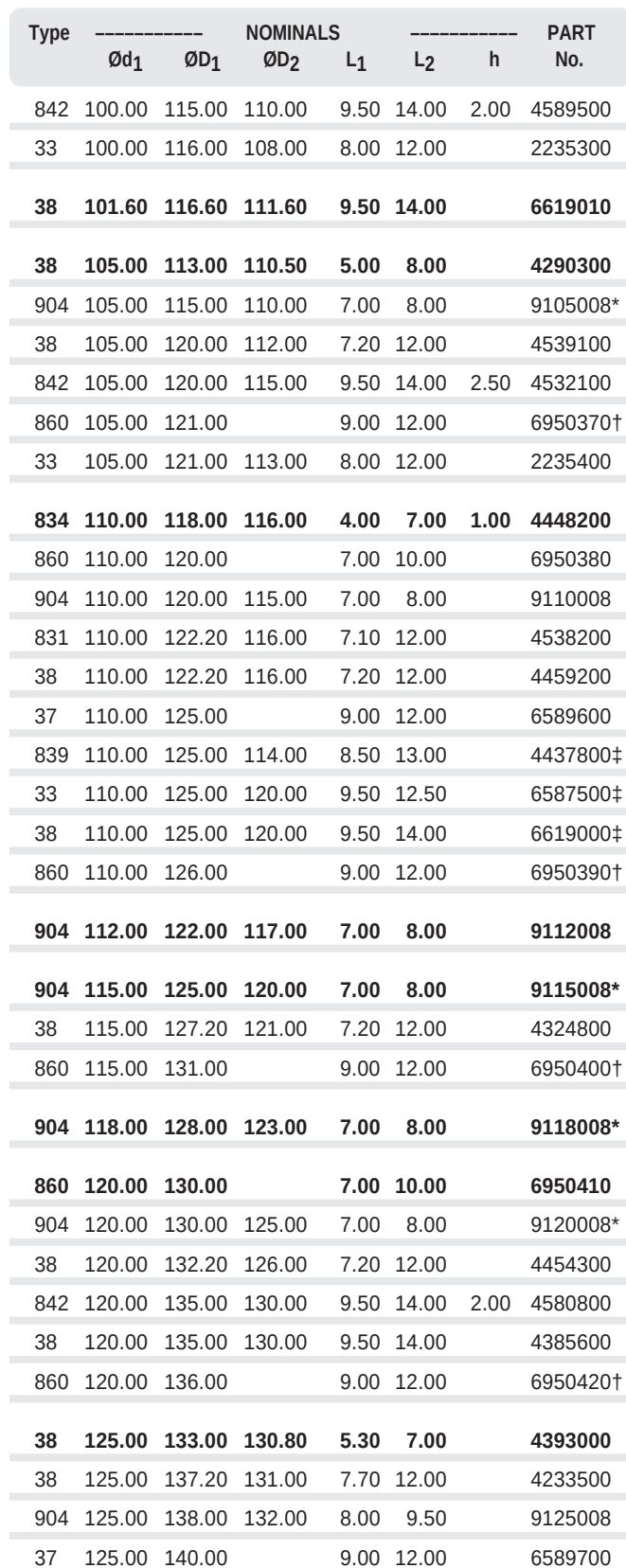
Type	----- Ød ₁	----- ØD ₁	NOMINALS ØD ₂	L ₁	L ₂	h	PART No.
839	70.00	80.00	73.00	6.00	9.70		4437600†
904	70.00	80.00	75.00	7.00	8.00		9070008
38	70.00	80.00	77.00	6.30	10.00		6618600†
38	70.00	80.60	73.00	5.30	7.00		4454000
831	70.00	80.60	73.00	5.30	7.00		4531600
33	70.00	82.00	76.00	6.00	9.00		2234800
38	70.00	82.20	76.00	7.20	12.00		4243900
842	70.00	82.60	78.40	8.00	12.00	2.00	4480800
915	70.00	83.00	76.50	8.00	9.50		9070048
860	70.00	84.00		8.00	11.00		6950250†
904	71.00	81.00	76.00	7.00	6.00		9071008*
846	75.00	83.00	81.00	4.00	8.70	1.00	4597600
38	75.00	83.60	78.00	5.30	7.00		4539500
860	75.00	85.00		7.00	10.00		6950260
904	75.00	85.00	80.00	7.00	8.00		9075008
38	75.00	85.00	82.00	6.30	10.00		4532500
38	75.00	87.20	81.00	7.20	12.00		4384400
915	75.00	88.00	81.50	8.00	9.50		9075048
860	75.00	89.00		8.00	11.00		6950270†
834	80.00	88.00	86.00	4.00	7.00	1.00	4398500
846	80.00	88.00	86.00	4.00	8.70	1.00	4590000
831	80.00	88.60	83.00	5.30	7.00		4534300
860	80.00	90.00		7.00	10.00		6950280†
904	80.00	90.00	86.00	7.00	8.00		9080008
38	80.00	90.00	87.00	6.30	10.00		6618700†
38	80.00	91.00	85.00	7.50	11.00		4493200
31	80.00	92.20	86.00	7.10	12.00		2271000
831	80.00	92.20	86.00	7.10	12.00		4531700
38	80.00	92.20	86.00	7.20	12.00		4242800
915	80.00	93.00	86.50	8.00	9.50		9080048
860	80.00	94.00		8.00	11.00		6950290†
38	82.60	92.20	85.70	5.30	7.10		4415500
38	85.00	93.60	88.00	5.30	7.00		4292100
831	85.00	93.60	88.00	5.30	7.00		4534400
860	85.00	95.00		7.00	10.00		6950300
904	85.00	95.00	90.00	7.00	8.00		9085008

Type	----- Ød ₁	----- ØD ₁	NOMINALS ØD ₂	L ₁	L ₂	h	PART No.
831	85.00	97.20	91.00	7.10	12.00		4531800
842	85.00	97.60	93.40	8.00	12.00	2.00	4521800
915	85.00	98.00	91.50	8.00	9.50		9085048
38	85.00	98.00	92.00	7.50	11.50		4332800
860	85.00	99.00		8.00	11.00		6950310†
38	88.00	100.20	94.00	7.20	12.00		4269400
834	90.00	98.00	96.00	4.00	7.00	1.00	4398600
846	90.00	98.00	96.00	4.00	8.70	1.00	4557700
860	90.00	100.00		7.00	10.00		6950320†
839	90.00	100.00	93.00	6.00	9.70		4437700†
904	90.00	100.00	95.00	7.00	8.00		9090008
38	90.00	100.00	97.00	6.30	10.00		6618800†
831	90.00	102.20	96.00	7.10	12.00		4531900
38	90.00	102.20	96.00	7.20	12.00		4324500
842	90.00	102.60	98.40	8.00	12.00	2.00	4512500
915	90.00	103.00	96.50	8.00	9.50		9090048
860	90.00	104.00		8.00	11.00		6950330†
919	90.00	105.00		6.00			9090058
921	90.00	105.00		6.00			9090068
33	90.00	106.00	98.00	8.00	12.00		2235200
904	95.00	105.00	100.00	7.00	8.00		9095008
38	95.00	107.20	101.00	7.20	12.00		6667600
915	95.00	108.00	101.50	8.00	9.50		9095048
860	95.00	109.00		8.00	11.00		6950340†
842	95.00	110.00	105.00	9.50	14.00	2.80	4536900
834	100.00	108.00	106.00	4.00	7.00	1.00	4394300
860	100.00	110.00		7.00	10.00		6950350
904	100.00	110.00	105.00	7.00	8.00		9100008
38	100.00	110.60	104.00	5.30	7.00		4300200
831	100.00	112.20	106.00	7.10	12.00		4532000
38	100.00	112.20	106.00	7.20	12.00		4324600
915	100.00	113.00	106.50	8.00	9.50		9100048
860	100.00	114.00		8.00	11.00		6950360†
842	100.00	114.00	109.90	8.00	12.00	1.50	4536000
37	100.00	115.00		9.00	12.00		6589500
38	100.00	115.00	110.00	9.50	14.00		6618900†



Hallite

metric

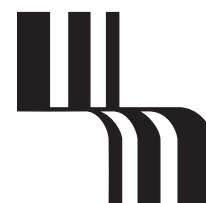
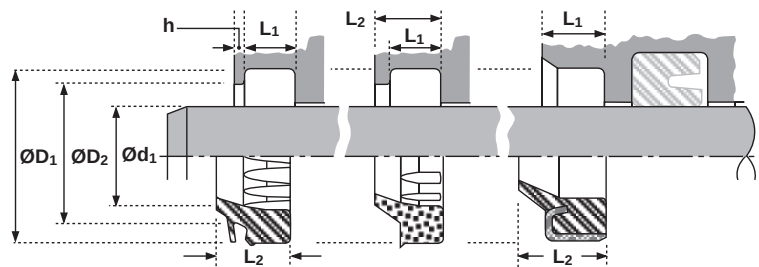


Type			NOMINALS					PART No.
	Ød ₁	ØD ₁	ØD ₂	L ₁	L ₂	h		
31	125.00	140.00	132.60	10.10	16.00		2145400	
38	125.00	140.00	135.00	9.50	14.00		6619100±	
905	125.00	141.00		9.00	12.00		9125018	
38	128.00	143.00	138.00	9.50	14.00		4581800	
38	130.00	142.20	136.00	7.20	12.00		4304300	
904	130.00	143.00	138.00	8.00	9.50		9130008*	
842	130.00	145.00	140.00	9.50	14.00	2.25	4491700	
860	130.00	146.00		9.00	12.00		6950430±	
38	132.00	144.20	138.00	7.20	12.00		4269500	
904	132.00	145.00	139.00	8.00	9.50		9132008*	
905	132.00	148.00		9.00	12.00		9132018*	
831	135.00	147.20	141.00	7.10	12.00		4538100	
38	135.00	150.00	145.00	9.50	14.00		4278700	
905	135.00	155.00		10.00	14.00		9135008*	
904	136.00	149.00	143.00	8.00	9.50		9136008*	
834	140.00	152.00	149.00	5.50	10.00	1.00	4456100	
38	140.00	152.20	146.00	7.70	12.00		4324900	
904	140.00	153.00	147.00	8.00	9.50		9140008	
37	140.00	155.00		9.00	12.00		6589800	
839	140.00	155.00	144.00	8.50	13.00		4437900±	
915	140.00	155.00	147.50	8.00	9.50		9140048*	
31	140.00	155.00	147.60	10.10	16.00		2145500	
842	140.00	155.00	150.00	9.50	14.00	2.00	4555900	
38	140.00	155.00	150.00	9.50	14.00		6619200±	
33	140.00	156.00	148.00	8.00	12.00		1222800	
860	140.00	160.00		10.00	14.00		6950440±	
904	145.00	158.00	152.00	8.00	9.50		9145008	
842	145.00	160.00	155.00	9.50	14.00	2.25	4570200	
38	145.00	160.00	155.00	9.50	14.00		4560600	
905	145.00	165.00		10.00	14.00		9145018*	
913	145.00	165.00		10.00	14.00		9145028*	
38	150.00	162.20	156.00	7.70	12.00		4278900	
904	150.00	163.00	157.00	8.00	9.50		9150008*	
38	150.00	165.00	157.60	10.20	16.00		4342500	

Wiper seals

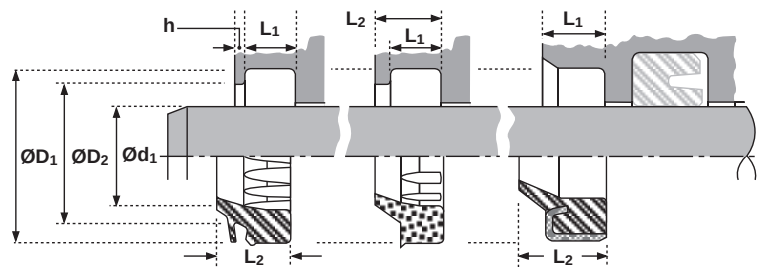
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metric



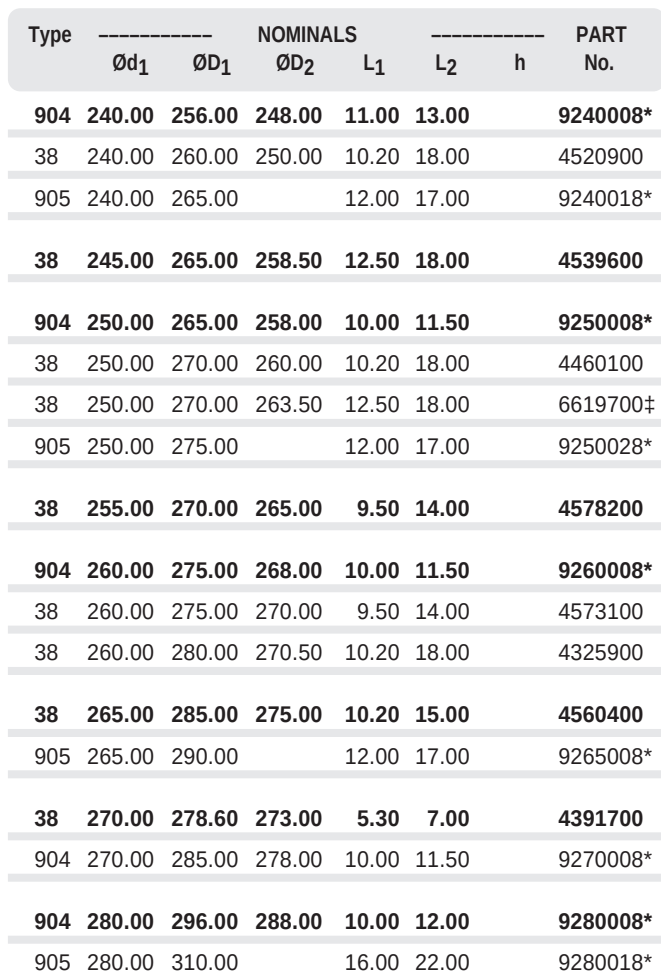
Type	----- Ød ₁	----- ØD ₁	NOMINALS ØD ₂	L ₁	L ₂	h	PART No.
38	150.00	165.00	158.60	7.20	12.00		6668500
33	150.00	166.00	158.00	8.00	12.00		1222900
38	150.00	166.00	161.00	8.00	12.00		4336700
860	150.00	170.00		10.00	14.00		6950450†
38	155.00	163.00	160.50	5.00	8.00		4290200
38	155.00	167.20	161.00	7.70	12.00		4288200
904	155.00	168.00	162.00	8.00	9.50		9155008*
842	155.00	170.00	165.00	9.50	12.00	2.25	4535200
913	155.00	175.00		10.00	14.00		9155018*
38	155.00	175.00	165.00	10.20	18.00		4226400
38	160.00	172.20	166.00	7.70	12.00		4405700
904	160.00	173.00	167.00	8.00	9.50		9160008
37	160.00	175.00		9.00	12.00		6589900
38	160.00	175.00	167.00	10.20	16.00		4454100
38	160.00	175.00	170.00	9.50	14.00		6619300‡
33	160.00	176.00	168.00	8.00	12.00		1223000
860	160.00	180.00		10.00	14.00		6950460†
904	165.00	178.00	172.00	8.00	9.50		9165008*
38	165.00	180.00	175.00	9.50	14.00		4537000
905	165.00	185.00		10.00	14.00		9165018*
38	170.00	182.20	176.00	7.70	12.00		4233600
904	170.00	183.00	176.00	8.00	9.50		9170008*
904	170.00	185.00	178.00	12.00	14.00		9170018*
905	170.00	190.00		10.00	14.00		9170028*
904	175.00	188.00	182.00	8.00	9.50		9175008*
842	175.00	190.00	185.00	9.50	14.00	2.25	4552100
905	175.00	195.00		10.00	14.00		9175018*
38	177.00	192.00	187.00	9.50	14.00		4287900
904	180.00	193.00	187.00	8.00	9.50		9180008*
37	180.00	195.00		9.00	12.00		6590000
38	180.00	195.00	190.00	9.50	14.00		6619400‡
842	180.00	195.00	190.00	9.50	14.00	2.25	4491300
839	180.00	196.00	184.00	9.50	14.00		4595600
33	180.00	200.00	190.00	10.00	15.00		1226300
38	180.00	200.00	190.00	10.20	18.00		4460900

Type	----- Ød ₁	----- ØD ₁	NOMINALS ØD ₂	L ₁	L ₂	h	PART No.
905	180.00	205.00		12.00	17.00		9180018*
904	190.00	203.00	197.00	8.00	9.50		9190008*
33	190.00	210.00	200.00	10.00	15.00		1226400
905	190.00	215.00		12.00	17.00		9190018*
38	195.00	210.00	202.50	10.20	16.00		4325100
38	200.00	208.60	203.00	5.30	7.00		4391600
904	200.00	213.00	207.00	8.00	9.50		9200008*
38	200.00	215.00	210.00	9.50	14.00		6619500‡
33	200.00	220.00	210.00	10.00	15.00		1226500
38	200.00	220.00	210.00	10.20	18.00		4387100
905	200.00	225.00		12.00	17.00		9200018*
38	205.00	220.00	215.00	9.50	14.00		4560500
904	210.00	223.00	217.00	8.00	9.50		9210008*
38	210.00	225.00	220.00	9.50	14.00		4598000
38	210.00	226.00	221.00	8.00	12.00		4336600
38	210.00	230.00	220.00	10.20	18.00		4325300
905	210.00	235.00		12.00	17.00		9210018*
38	212.00	232.00	225.50	12.50	18.00		4293900
904	220.00	233.00	227.00	8.00	9.50		9220008*
38	220.00	235.00	227.60	10.20	16.00		4325400
38	220.00	240.00	233.50	12.50	18.00		6619600‡
905	220.00	245.00		12.00	17.00		9220018*
904	224.00	237.00	231.00	8.00	9.50		9224008*
905	224.00	249.00		12.00	17.00		9224018*
38	225.00	240.00	235.00	9.50	14.00		4287800
38	225.00	245.00	235.00	10.20	18.00		4325500
905	225.00	250.00		12.00	17.00		9225008*
38	230.00	238.60	233.00	5.30	7.00		4514000
904	230.00	243.00	237.00	8.00	9.50		9230008*
38	230.00	246.00	240.70	7.50	12.00		4290700
905	230.00	255.00		12.00	17.00		9230018*
38	235.00	255.00	245.00	10.20	18.00		4325700



Hallite

metric



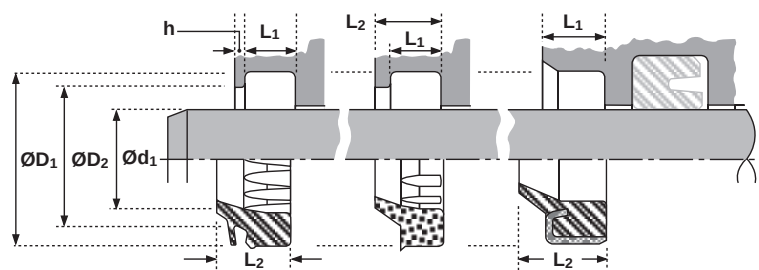
Type			NOMINALS				PART No.
	Ød ₁	ØD ₁	ØD ₂	L ₁	L ₂	h	
38	285.00	305.00	298.50	12.50	18.00		4537100
38	288.00	308.00	301.50	10.20	18.00		4265300
38	290.00	310.00	303.50	12.50	18.00		4467300
38	295.00	315.00	308.50	12.50	18.00		4598100
904	300.00	315.00	308.00	10.00	11.50		9300008*
38	300.00	316.00	310.70	7.50	12.00		4290800
38	300.00	320.00	313.50	12.50	18.00		4525300
905	300.00	330.00		16.00	22.00		9300018*
38	305.00	325.00	318.50	12.50	18.00		4473200
38	320.00	340.00	330.00	10.20	18.00		4454200
38	330.00	346.00	340.70	7.50	12.00		4587300
38	355.00	375.00	365.00	10.20	18.00		4578300
904	355.00	375.00	365.00	11.00	14.00		9355008*
904	400.00	425.00	413.00	12.00	16.00		9400008*

V17

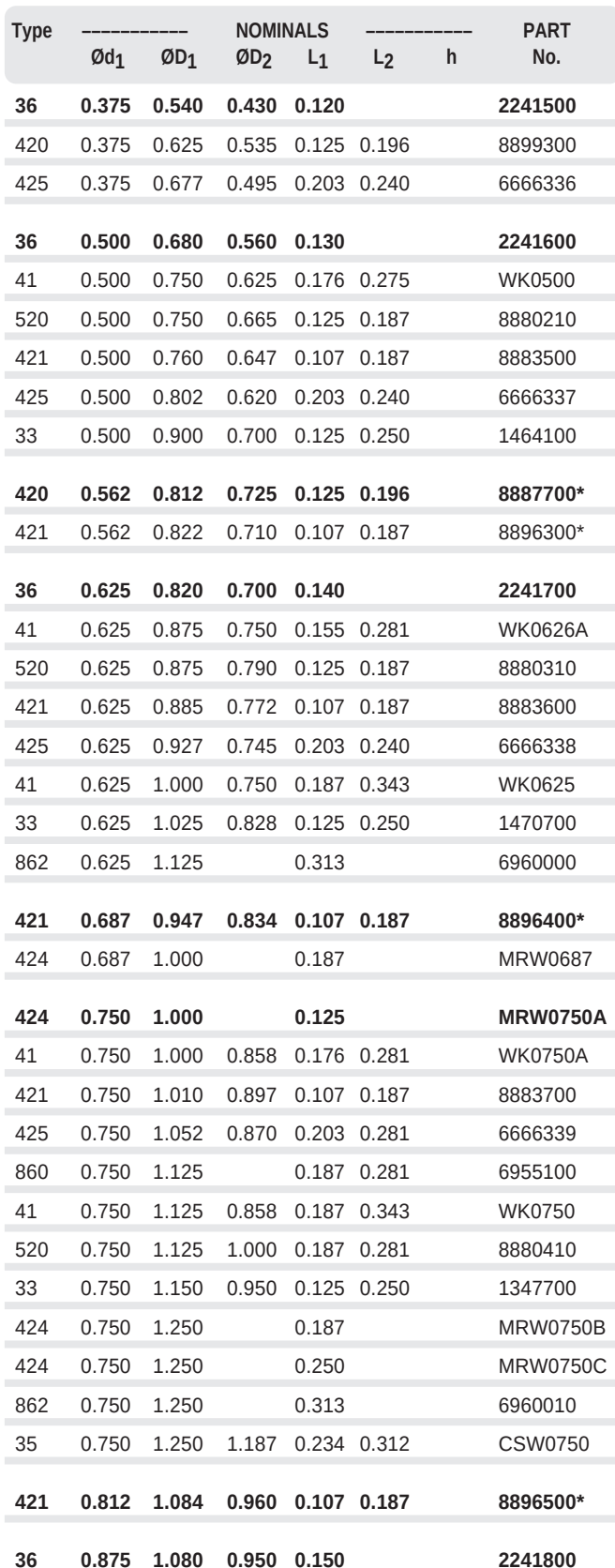
Wiper seals

Notes





Hallite

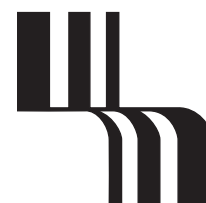
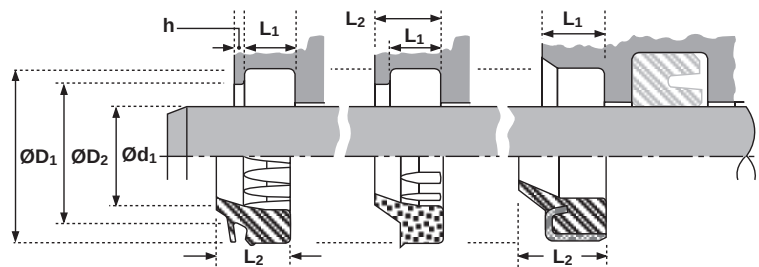


Type			NOMINALS				PART No.
	Ød ₁	ØD ₁	ØD ₂	L ₁	L ₂	h	
41	0.875	1.125	0.983	0.176	0.281		WK0875A
421	0.875	1.147	1.023	0.107	0.187		8883800
425	0.875	1.240	1.010	0.218	0.281		6666340
41	0.875	1.250	0.983	0.187	0.343		WK0875
420	0.875	1.250	1.125	0.187	0.281		8880500
520	0.875	1.250	1.125	0.187	0.281		8880510
33	0.875	1.275	1.075	0.125	0.250		1056700
424	0.875	1.375		0.312			MRW0875
35	0.875	1.375	1.312	0.234	0.312		CSW087
421	0.937	1.209	1.085	0.107	0.187		8896600*
36	1.000	1.240	1.080	0.160			2241900
424	1.000	1.250		0.125			MRW1000A
41	1.000	1.250	1.108	0.176	0.281		WK1000A
421	1.000	1.272	1.148	0.107	0.187		8883900
425	1.000	1.365	1.135	0.218	0.281		6666341
424	1.000	1.375		0.187			MRW1000B
860	1.000	1.375		0.187	0.281		6955120
41	1.000	1.375	1.108	0.187	0.343		WK1000
520	1.000	1.375	1.250	0.187	0.281		8880610
33	1.000	1.400	1.200	0.125	0.250		1456300*
840	1.000	1.400	1.200	0.125	0.250		4405800
862	1.000	1.500		0.313			6960020
35	1.000	1.500	1.437	0.234	0.312		CSW100
36	1.125	1.360	1.210	0.160			2219300
421	1.125	1.397	1.273	0.107	0.187		8884000
425	1.125	1.490	1.260	0.218	0.281		6666342
841	1.125	1.500	1.233	0.187	0.343		4404600
520	1.125	1.500	1.375	0.187	0.281		8880710
33	1.125	1.625	1.425	0.125	0.375		1476700
862	1.125	1.625		0.313			6960030
35	1.125	1.625	1.562	0.234	0.312		CSW112
421	1.187	1.459	1.335	0.107	0.187		8896700*
420	1.187	1.562	1.435	0.187	0.281		8880800
520	1.187	1.562	1.437	0.187	0.281		8880810
36	1.250	1.490	1.330	0.170			2218900
424	1.250	1.500		0.125			MRW1250A

Wiper seals

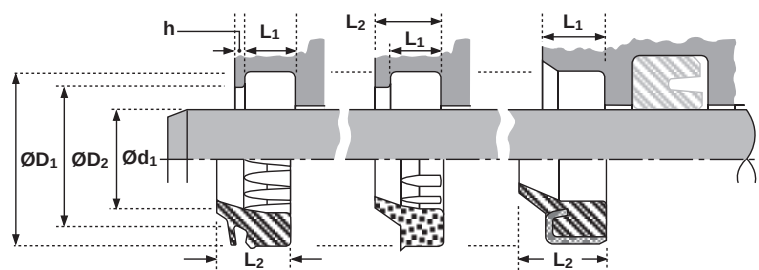
Hallite

inch

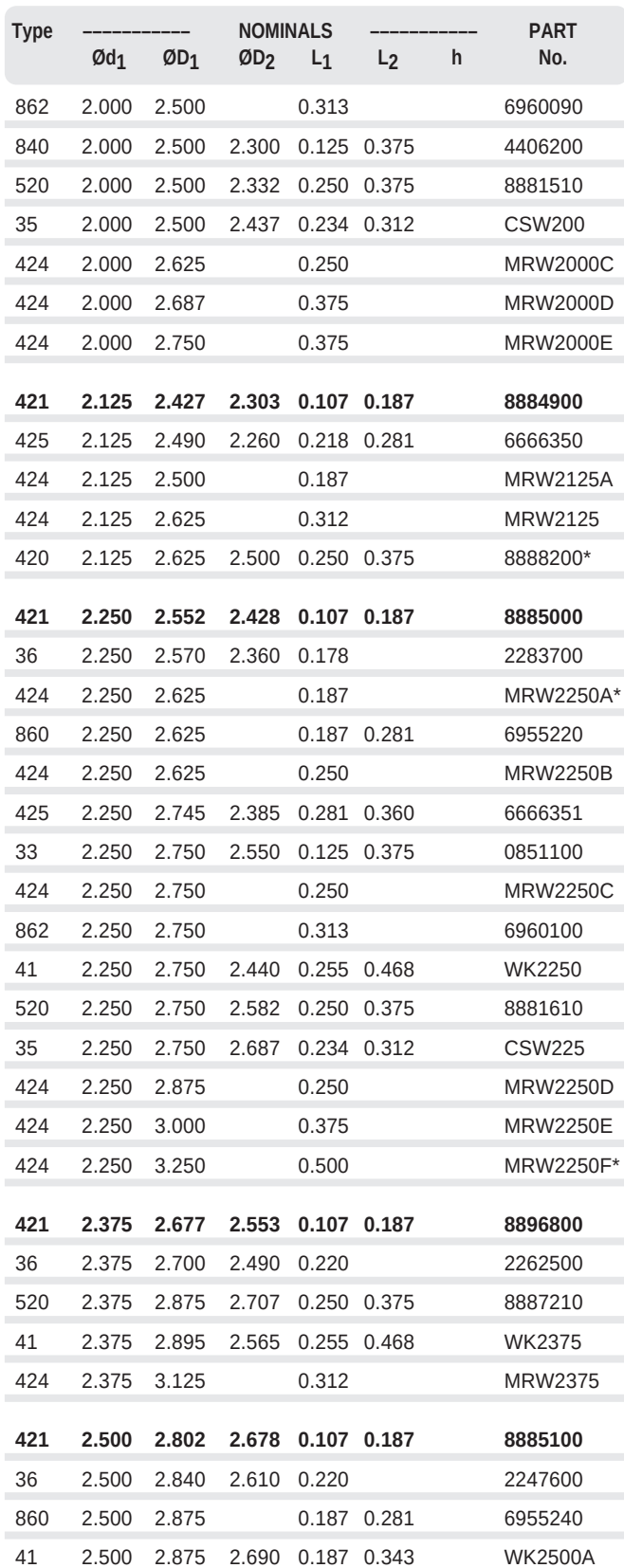


Type	Ød1	ØD1	NOMINALS ØD2	L1	L2	h	PART No.
41	1.250	1.500	1.358	0.176	0.281		WK1250A
421	1.250	1.522	1.398	0.107	0.187		8884100
425	1.250	1.615	1.385	0.218	0.281		6666343
860	1.250	1.625		0.187	0.281		6955140
841	1.250	1.625	1.358	0.187	0.343		4431300
520	1.250	1.625	1.500	0.187	0.281		8880910
424	1.250	1.687		0.187			MRW1250B
33	1.250	1.750	1.550	0.125	0.375		1453100*
862	1.250	1.750		0.313			6960040
840	1.250	1.750	1.550	0.125	0.375		4405900
35	1.250	1.750	1.687	0.234	0.312		CSW125
424	1.250	1.875		0.250			MRW1250C
421	1.312	1.614	1.480	0.107	0.187		8884200
420	1.312	1.687	1.562	0.187	0.281		8881000
36	1.375	1.620	1.460	0.170			2247400
421	1.375	1.677	1.542	0.107	0.187		8884300
425	1.375	1.740	1.510	0.218	0.281		6666344
841	1.375	1.750	1.483	0.187	0.343		4553100
41	1.375	1.750	1.483	0.187	0.343		WK1375
520	1.375	1.750	1.625	0.187	0.281		8881110
33	1.375	1.875	1.675	0.125	0.375		1471800
862	1.375	1.875		0.313			6960050
35	1.375	1.875	1.812	0.234	0.312		CSW137
841	1.500	1.750	1.608	0.176	0.281		4574100
36	1.500	1.770	1.590	0.180			2218600
421	1.500	1.802	1.668	0.107	0.187		8884400
425	1.500	1.865	1.635	0.218	0.281		6666345
424	1.500	1.875		0.187			MRW1500A
860	1.500	1.875		0.187	0.281		6955160
424	1.500	1.875		0.250			MRW1500B
841	1.500	1.875	1.608	0.187	0.343		4399100
520	1.500	1.875	1.750	0.187	0.281		8881210
33	1.500	2.000	1.800	0.125	0.375		0696900*
424	1.500	2.000		0.250			MRW1500C
862	1.500	2.000		0.313			6960060
840	1.500	2.000	1.800	0.125	0.375		4406000
35	1.500	2.000	1.937	0.234	0.312		CSW150

Type	Ød1	ØD1	NOMINALS ØD2	L1	L2	h	PART No.
421	1.625	1.927	1.793	0.107	0.187		8884500
425	1.625	1.990	1.760	0.218	0.281		6666346
41	1.625	2.000	1.733	0.187	0.343		WK1625
520	1.625	2.000	1.875	0.187	0.281		8881310
33	1.625	2.125	1.925	0.125	0.375		0269600
862	1.625	2.125		0.313			6960070
35	1.625	2.125	2.062	0.234	0.312		CSW162
36	1.750	2.030	1.850	0.190			0849400
421	1.750	2.052	1.918	0.107	0.187		8884600
425	1.750	2.115	1.885	0.218	0.281		6666347
424	1.750	2.125		0.187			MRW1750A
860	1.750	2.125		0.187	0.281		6955180
841	1.750	2.125	1.858	0.187	0.343		4399200
842	1.750	2.125	1.995	0.220	0.362	0.079	4543300
520	1.750	2.125	2.000	0.187	0.281		8881410
33	1.750	2.250	2.050	0.125	0.375		0266400*
862	1.750	2.250		0.313			6960080
840	1.750	2.250	2.050	0.125	0.375		4406100
35	1.750	2.250	2.187	0.234	0.312		CSW175
424	1.750	2.437		0.375			MRW1750B
424	1.750	2.500		0.375			MRW1750C
421	1.875	2.177	2.043	0.107	0.187		8884700
425	1.875	2.240	2.010	0.218	0.281		6666348
41	1.875	2.250	1.983	0.187	0.343		WK1875
420	1.875	2.250	2.125	0.187	0.281		8887300
33	1.875	2.375	2.175	0.125	0.375		0230700
424	1.875	2.375		0.312			MRW1875
41	2.000	2.250	2.108	0.176	0.281		WK2000A
36	2.000	2.300	2.100	0.200			2219400
421	2.000	2.302	2.178	0.107	0.187		8884800
425	2.000	2.365	2.135	0.218	0.281		6666349
424	2.000	2.375		0.187			MRW2000A
860	2.000	2.375		0.187	0.281		6955200
841	2.000	2.375	2.108	0.187	0.343		4431400
842	2.000	2.375	2.245	0.220	0.362	0.079	4543200
33	2.000	2.500	2.300	0.125	0.375		0228100*
424	2.000	2.500		0.250			MRW2000B



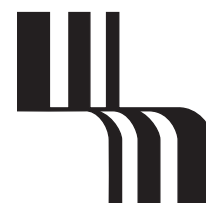
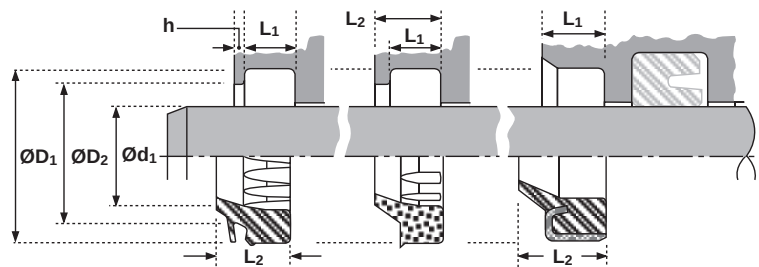
Hallite

10/99

Wiper seals

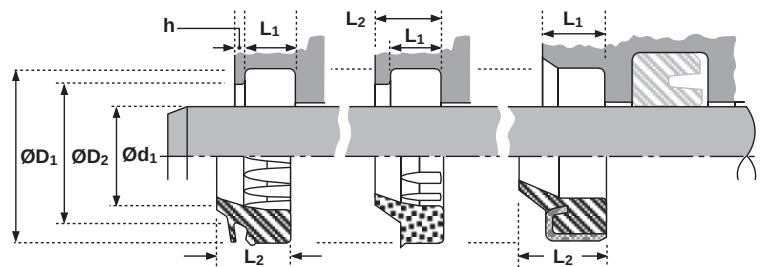
Hallite

inch

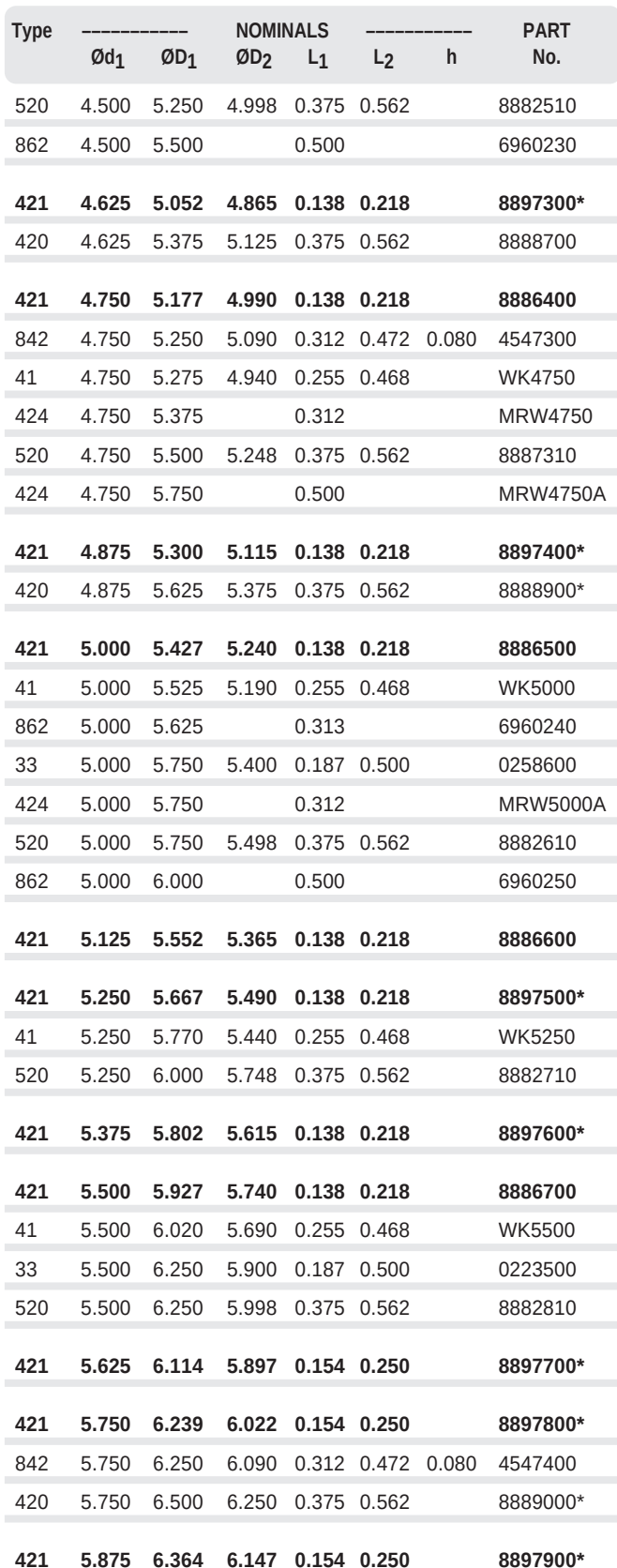


Type	Ød1	ØD1	NOMINALS ØD2	L1	L2	h	PART No.
35	3.000	3.500	3.437	0.234	0.312		CSW300
41	3.000	3.525	3.190	0.255	0.468		WK3000
424	3.000	3.750		0.375			MRW3000A
424	3.000	4.000		0.500			MRW3000B
421	3.125	3.489	3.334	0.122	0.203		8897000*
842	3.125	3.500	3.370	0.220	0.362	0.079	4543100
420	3.125	3.625	3.457	0.250	0.375		8888400*
41	3.125	3.645	3.315	0.255	0.468		WK3125
421	3.250	3.614	3.459	0.122	0.203		8885500
36	3.250	3.625	3.390	0.223			2283800
425	3.250	3.745	3.385	0.281	0.360		6666355
862	3.250	3.750		0.313			6960140
41	3.250	3.750	3.440	0.255	0.468		WK3250
520	3.250	3.750	3.582	0.250	0.375		8882010
35	3.250	3.750	3.687	0.234	0.312		CSW325
862	3.250	3.875		0.313			6960150
33	3.250	4.000	3.650	0.187	0.500		1472500
424	3.250	4.000		0.250			MRW3250B
424	3.250	4.250		0.500			MRW3250C
421	3.375	3.729	3.584	0.122	0.203		8885600
842	3.375	3.750	3.620	0.220	0.362	0.079	4554700
420	3.375	3.875	3.707	0.250	0.375		8887600*
33	3.375	4.125	3.775	0.187	0.500		1474200*
421	3.500	3.864	3.709	0.122	0.203		8885700
36	3.500	3.920	3.640	0.270			2247500
425	3.500	3.995	3.635	0.281	0.360		6666356
862	3.500	4.000		0.313			6960160
520	3.500	4.000	3.832	0.250	0.375		8882110
35	3.500	4.000	3.937	0.234	0.312		CSW3500
41	3.500	4.025	3.690	0.255	0.468		WK3500
862	3.500	4.125		0.313			6960170
33	3.500	4.250	3.900	0.187	0.500		1445000
424	3.500	4.250		0.312			MRW3500B
424	3.500	4.500		0.500			MRW3500C
421	3.625	3.989	3.834	0.122	0.203		8885800
842	3.625	4.000	3.870	0.220	0.362	0.079	4543000

Type	Ød1	ØD1	NOMINALS ØD2	L1	L2	h	PART No.
420	3.625	4.125	3.957	0.250	0.375		8888500*
421	3.750	4.114	3.959	0.122	0.203		8885900
425	3.750	4.245	3.885	0.281	0.360		6666357
424	3.750	4.250		0.312			MRW3750A
41	3.750	4.250	3.940	0.255	0.468		WK3750
420	3.750	4.250	4.082	0.250	0.375		8882200
520	3.750	4.250	4.082	0.250	0.375		8882210
862	3.750	4.375		0.313			6960180
424	3.750	4.500		0.312			MRW3750B
424	3.750	4.750		0.500			MRW3750C
421	3.875	4.239	4.087	0.122	0.203		8886000
842	3.875	4.250	4.120	0.220	0.362	0.079	4523600
520	3.875	4.375	4.207	0.250	0.375		8888810
421	4.000	4.427	4.240	0.138	0.218		8886100
425	4.000	4.495	4.135	0.281	0.360		6666358
520	4.000	4.500	4.332	0.250	0.375		8882310
35	4.000	4.500	4.437	0.234	0.312		CSW400
41	4.000	4.525	4.190	0.255	0.468		WK4000
862	4.000	4.625		0.313			6960190
33	4.000	4.750	4.400	0.187	0.500		1453300
862	4.000	4.750		0.313			6960200
862	4.000	5.000		0.500			6960210
421	4.125	4.552	4.365	0.138	0.218		8897100*
420	4.125	4.625	4.457	0.250	0.375		8888600*
421	4.250	4.677	4.490	0.138	0.218		8886200
520	4.250	4.750	4.582	0.250	0.375		8882410
41	4.250	4.775	4.440	0.255	0.468		WK4250
424	4.250	4.875		0.312			MRW4250
421	4.375	4.802	4.615	0.138	0.218		8897200*
420	4.375	4.875	4.707	0.250	0.375		8887900*
421	4.500	4.927	4.740	0.138	0.218		8886300
41	4.500	5.025	4.690	0.255	0.468		WK4500
862	4.500	5.125		0.313			6960220
33	4.500	5.250	4.900	0.187	0.500		1613600
424	4.500	5.250		0.312			MRW4500A



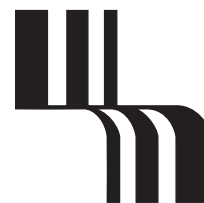
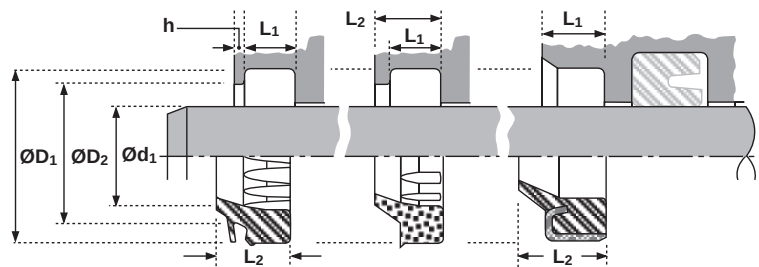
Hallite

V/13

Wiper seals

Hallite

inch



Type	NOMINALS		NOMINALS		NOMINALS		PART No.
	Ød ₁	ØD ₁	ØD ₂	L ₁	L ₂	h	
421	9.000	9.489	9.272	0.154	0.250		8898700*
420	9.000	9.750	9.500	0.375	0.562		8889500*
421	9.500	9.989	9.772	0.154	0.250		8898800*
421	10.000	10.489	10.272	0.154	0.250		8898900*
420	10.000	11.000	10.659	0.500	0.750		8889600*
421	10.500	10.989	10.772	0.154	0.250		8899000*

Type	NOMINALS		NOMINALS		NOMINALS		PART No.
	Ød ₁	ØD ₁	ØD ₂	L ₁	L ₂	h	
421	11.000	11.489	11.272	0.154	0.250		8899100*
420	11.000	12.000	11.659	0.500	0.750		8889700*
421	11.500	11.989	11.772	0.169	0.250		8899200*
420	12.000	13.000	12.659	0.500	0.750		8889800*

* Denotes possible indent item -
Minimum quantity may apply.



Bearings

Hallite

TECHNICAL DETAILS

METRIC

INCH

OPERATING CONDITIONS

MAXIMUM SPEED 5.0 m/sec
MAXIMUM TEMPERATURE -40°C + 110°C

15.0 ft/sec
-40°F + 230°F

TYPICAL PHYSICAL PROPERTIES

SPECIFIC GRAVITY 1.41
COEFFICIENT OF THERMAL EXPANSION 1.1×10^{-4} per °C
COMPRESSION STRESS 23°C 20MN/m²
to give 1% deflection

1.41
 1.9×10^{-4} per °K
73°F 2900 p.s.i.

SURFACE ROUGHNESS

DYNAMIC SEALING FACE ØD₁ 0.1 ↔ 0.4 4 max
STATIC SEALING FACE Ød₁ L₁ 3.2 max 16 max

µinCLA µinRMS
4 ↔ 16 5 ↔ 18
125 max 140 max

CHAMFERS & RADII

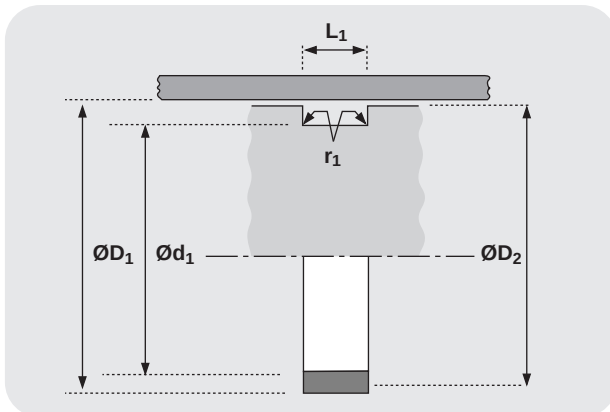
GROOVE SECTION ≤ S mm 2.5 3.2 3.8
MAX FILLET RAD r₁ mm 0.4 0.4 0.8

GROOVE SECTION ≤ S in 0.100 0.125 0.150
MAX FILLET RAD r₁ in 0.016 0.016 0.032

TOLERANCES

mm
in

ØD ₁	Ød ₁	ØD ₂	L ₁
H11	f9	see note below	+0.2 +0
H11	f9	see note below	+0.008 +0



DESIGN

Manufactured in polyacetal resin, the Hallite 63 bearing ring is extremely versatile, offering very low friction and excellent resistance to abrasion and wear.

They can be used in conjunction with almost any Hallite piston seal.

FEATURES

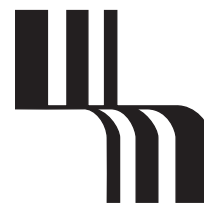
- STEEL PISTON
- COMPACT
- EASE OF ASSEMBLY
- IMPROVED ALIGNMENT
- LONGER SEAL LIFE
- INEXPENSIVE

PISTON DIAMETER D₂

Where a seal is used, this dimension is critical and must be within specified extrusion gap relative to the seal. Where a seal is not used:

$$\text{ØD}_2 (\text{min}) = \text{ØD}_1 - 1.00\text{mm} (0.040")$$

Note : Due to the nature of the material, these rings should not be used primarily as a bearing where severe knuckling and / or excessive side loading may occur. Under these conditions the use of a heavier duty and wider bearing, such as the Hallite 506, is recommended.



TECHNICAL DETAILS

METRIC

INCH

OPERATING CONDITIONS

MAXIMUM SPEED 5.0 m/sec
 MAXIMUM TEMPERATURE -50°C + 200°C

15.0 ft/sec
 -58°F + 390°F

TYPICAL PHYSICAL PROPERTIES

SPECIFIC GRAVITY 3.1
 COMPRESSION STRESS AT YIELD 23°C 20 MN/m²
 COMPRESSION STRESS AT YIELD 80°C 9 MN/m²
 COEFFICIENT OF THERMAL CONDUCTIVITY 2.5 W/mK
 COEFFICIENT OF THERMAL EXPANSION

3.1
 73°F 2900 p.s.i.
 176°F 1300 p.s.i.
 1.4Btu/hft°F

LENGTH & THICKNESS
 6.5×10^{-5} per °C

COEFFICIENT OF DYNAMIC FRICTION
 Dry 0.25 Lubricated 0.05

BEARING STRIP TOLERANCES

L_1 S
 -0.1 -0.5 +0.03 -0.05

SURFACE ROUGHNESS

DYNAMIC SEALING FACE $\varnothing d_1$ $\varnothing D_1$ 0.4 4 max
 STATIC HOUSING FACES $\varnothing D_1$ L_1 $\varnothing D_2$ 3.2 max 16 max

μinCLA μinRMS
 16 18
 125 max 140 max

HOUSING DETAILS & TOLERANCES

G min controls the minimum metal to metal clearance between the gland and rod or bore and piston.

G max controls the maximum extrusion gap seen by a seal associated with the bearing.

Typically, G min should be 0.7mm / 0.028" 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 0.1mm / 0.004"
 For applications not using a seal G max - see overleaf.

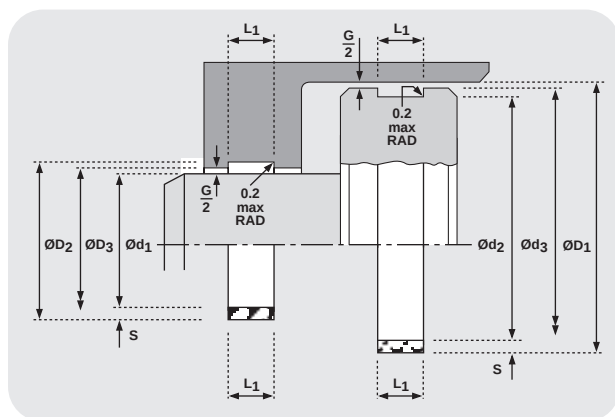
ROD

$\varnothing d_1$ f9
 $\varnothing D_2 = \varnothing d_1 + 2S$ up to: $\varnothing 80$ H10
 above: $\varnothing 80$ H9

$\varnothing D_3 = \varnothing d_1 + G$ G min / max
 L_1 -0 +0.2

PISTON

$\varnothing D_1$ H11
 $\varnothing d_2 = \varnothing D_1 - 2S$ f9
 $\varnothing d_3 = \varnothing D_1 + G$ G min / max
 L_1 -0 +0.2



FEATURES

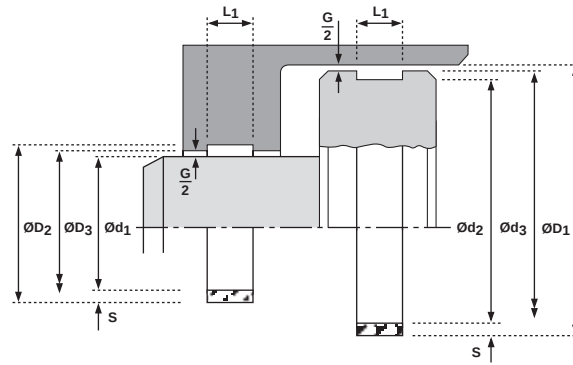
- LOW FRICTION
- INFINITE LENGTH RANGE
- EASY INSTALLATION
- EXTREMELY FLEXIBLE

DESIGN

Hallite 87 bearing strip has the ability to support side loads and eliminate 'stick slip' between moving parts. The accurately dimensioned rectangular cross section is produced from a special combination of PTFE and Bronze materials. It has excellent heat resistance and strength to resist creep, making it suitable for bearings with reciprocating, oscillating or rotary movement, whether lubricated or not. Our standard range of cross section sizes are proportioned to be wrapped around a wide range of rod or piston diameters. Installation of the bearing is an easy task. Calculate and measure length L_2 (see overleaf), cut the strip with a sharp blade and fit to the groove. If required we will be pleased to supply bearings to your sizes. Independent testing has established the typical properties which make the Hallite 87 worthwhile considering for many applications other than hydraulic or pneumatic cylinders. When using the compressive stress at yield in your calculation it is suggested a 4:1 factor of safety is applied.

The material is compatible with hydraulic mineral oil, lubricating oil, water based and synthetic fire resistant fluids and lubricating grease. Although the material is rated at 200°C, the recommended maximum temperature for bearing applications is 60°C.

Please send us details of your application for advice on this or any other problem where the Hallite 87 may solve your bearing problem.



Bearings

Hallite

87

metric

Ø RANGE		L ₁	S	G MAX	G MIN	W	PART NUMBER
Ød ₁	ØD ₁						
8 - 20	10 - 25	2.5	1.55	AS REQUIRED BY THE SEAL EXTRUSION GAP (see note below)	0.6	1.5 - 1.0	6663000
8 - 20	10 - 25	4.0	1.55		0.6	1.5 - 1.0	6663100
20 - 75	25 - 80	5.6	2.50		0.7	1.5 - 1.0	6663200
35 - 300	40 - 320	9.7	2.50		0.7	3.5 - 1.5	6658800
35 - 300	40 - 320	10.0	2.00		0.7	6.0 - 2.0	6663300
120 - 900	125 - 900	15.0	2.50		0.8	6.0 - 2.0	6658900
120 - 900	125 - 900	15.0	2.00		0.8	8.0 - 4.0	6663400
200 - 900	200 - 900	20.0	2.00		0.8	8.0 - 4.0	6663500
200 - 900	200 - 900	20.0	2.50		1.0	8.0 - 4.5	6663600
300 - 900	300 - 900	25.0	2.50		1.0	8.0 - 6.0	6663700

For applications not using a seal G Max can be :

S	G Max
1.55	1.0
2.00	1.1
2.50	1.6

Cutting strip to length

Calculate the developed length of the strip, L₂ (the developed length is the circumferential length of the centre line of the strip when installed).

For piston mounting :

THE DEVELOPED LENGTH = $\pi \times (\text{CYLINDER BORE DIAMETER} - \text{STRIP SECTION}) - \text{REQUIRED SPLIT}$

i.e. $L_2 = \pi \times (\text{ØD}_1 - S) \cdot W$

For gland mounting :

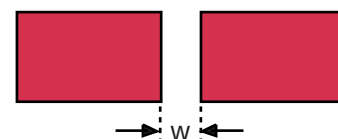
THE DEVELOPED LENGTH = $\pi \times (\text{ROD DIAMETER} + \text{STRIP SECTION}) - \text{REQUIRED SPLIT}$

i.e. $L_2 = \pi \times (\text{Ød}_1 + S) \cdot W$

Cut to length, (L₂), using a sharp knife.

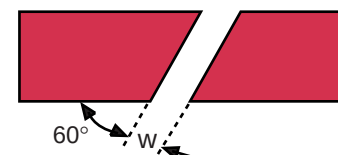
Bearing strip cutting angle

Hallite Standard



W

Alternative



60°

W



506

TECHNICAL DETAILS

METRIC

INCH

OPERATING CONDITIONS

TEMPERATURE RANGE
LIMITING PV VALUES LUBRICATED*

-40°C + 120°C

Speed m/sec	Pressure N/m ²
0.1	10.0
1.0	6.0
5.0	0.8

-40°F + 250°F

Speed ft/sec	Pressure p.s.i.
0.3	1500
3.0	900
16.0	120

TYPICAL PHYSICAL PROPERTIES

SPECIFIC GRAVITY
COMPRESSION STRESS AT FAILURE
COMPRESSION STRESS AT YIELD*
COMPRESSION STRESS AT YIELD*
COEFFICIENT OF THERMAL CONDUCTIVITY
COEFFICIENT OF THERMAL EXPANSION
COEFFICIENT OF DYNAMIC FRICTION
on steel surface (0.2 µm Ra) / (8 µin CLA)

	1.27
(Temp 23°C)	450 MN/m ²
(Temp 23°C)	115 MN/m ²
(Temp 80°C)	58 MN/m ²
	0.27 W/mK
Length 9 X 10 ⁻⁵ per °C	Thickness 13 X 10 ⁻⁵ per °C
Dry	Lubricated
0.50	0.06

	1.27
(Temp 73°F)	65,000 p.s.i.
(Temp 73°F)	16,500 p.s.i.
(Temp 176°F)	8,500 p.s.i.
	0.16 Btu/hft °F
Length 5 X 10 ⁻⁵ per °F	Thickness 7.3 X 10 ⁻⁵ per °F
Dry	Lubricated
0.50	0.06

SURFACE ROUGHNESS

DYNAMIC SEALING FACE Ød₁
STATIC SEALING FACE ØD₁ L₁

µm Ra	µm Rt
0.4	4 max
3.2 max	16 max

µm CLA	µm RMS
16	18
125 max	140 max

BEARING STRIP TOLERANCES

L ₁	S
-0.1 to -0.6	-0.02 to -0.1

L ₁	S
-0.005 to -0.015	-0.001 to -0.004

WIDTH OF BEARING SPLIT - W

Ød ₁ / ØD ₁	W
Up to 50	3.00 - 1.50
Up to 120	5.00 - 3.50
Up to 250	9.00 - 7.25
Up to 550	17.00 - 15.00

Ød ₁ / ØD ₁	W
Up to 2"	0.12 - 0.06
Up to 5"	0.19 - 0.14
Up to 10"	0.35 - 0.29
Up to 22"	0.67 - 0.59

HOUSING DETAILS & TOLERANCES

G min controls the minimum metal to metal clearance between the gland and rod or bore and piston.
G max controls the maximum extrusion gap seen by a seal associated with the bearing.

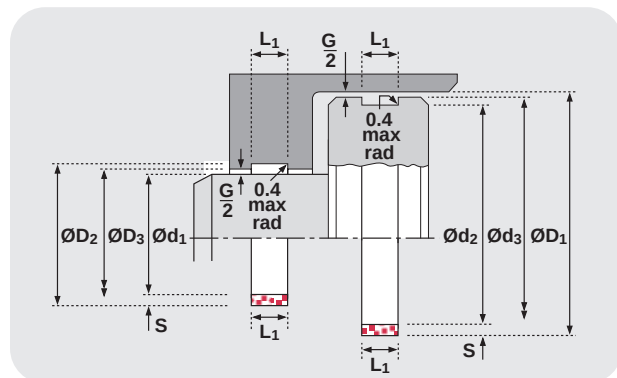
Typically, G min should be 0.7mm / 0.028" but can be reduced when required by the extrusion gap for the seal and the build up of tolerances. The absolute minimum metal to metal clearance recommended is 0.1mm / 0.004". For applications not using a seal G max can be 0.6 x S

Ød ₁	f9
ØD ₂ = Ød ₁ + 2S	up to : Ø80 H10 above : Ø80 H9
ØD ₃ = Ød ₁ + G	G min / max + 0.2 -0 mm
L ₁	

Ød ₁	f9
ØD ₂ = Ød ₁ + 2S	up to : Ø3" H10 above : Ø3" H9
ØD ₃ = Ød ₁ + G	G min / max + 0.008 -0 mm
L ₁	

ØD ₁	H11
Ød ₂ = ØD ₁ - 2S	f9
Ød ₃ = ØD ₁ + G	G min / max + 0.2 -0 mm
L ₁	

ØD ₁	H11
Ød ₂ = ØD ₁ - 2S	f9
Ød ₃ = ØD ₁ + G	G min / max + 0.008 -0 mm
L ₁	



* 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.

DESIGN

Hallite 506 bearing strip is available in three forms: cut rings, spiral lengths and flat coils. Hallite 506 provides an extremely effective, hard wearing and easy to use bearing material.

Manufactured to very tight tolerances and providing bearing solutions for reciprocating, oscillating and slow rotary movement applications, Hallite 506 bearing strip is used in many of today's most arduous hydraulic applications around the world.

Commonly fitted in reciprocating cylinders as rod and piston bearings, Hallite 506 is capable of withstanding extreme side-loads preventing metal to metal contact. The material's design incorporates micro indentations on the bearing strip's surface to trap fluid and provide built-in lubrication to the bearing.

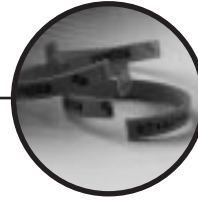
The 506 bearing strip is manufactured by a patented process, using a woven fabric reinforced polyester resin material and is proven to be compatible with a wide range of fluids, including mineral oils, water based fluids and phosphate esters, to produce a rectangular section strip which is available in a wide range of inch and metric sizes including cross sections specified in ISO 10766.



Hallite 506 bearing strip is available in three forms:

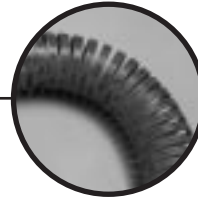
CUT RINGS

Ready made bearings, cut to size and to customer specifications, and ready for installation, Hallite 506 bearings have become an industry standard favoured by designers and specifiers alike. Generally produced for the medium to high volume user.



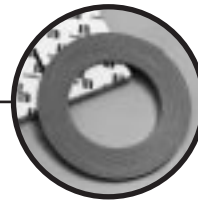
SPIRAL LENGTHS

Available in a wide range of preformed diameters, spirals are supplied in continuous lengths to suit a range of inside and outside diameters. Ideal for lower volume users requiring various diameters.



FLAT COILS

Packaged in a dispenser for ease of storage and handling, flat coils are supplied in 10 metre lengths suitable for a wide range of diameters and are ideal for those using or supplying one off bearings for small volume requirements.



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.

All standard bearing strip is printed with a size reference and includes 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 rod or piston application and provide inside ($\varnothing d$) or outside ($\varnothing D$) diameters, groove width (L_1) and section (S) dimensions and where spiral lengths are ordered also specify length required. For flat coils please specify groove width (L_1) and section (S) dimensions.

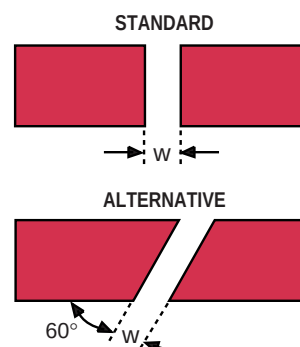
FEATURES

- HIGH LOAD CAPABILITY
- INFINITE LENGTH RANGE
- VIRTUALLY ZERO SWELL
 - SELF LUBRICATING
 - LOW FRICTION
 - CUT TO LENGTH
- VERY LARGE RANGE OF SIZES

Cutting bearing strip to size

1. Select the groove width (L_1) 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, place it in the piston groove and mark the point of overlap. Determine the correct width of bearing split (W) for the $\varnothing d$ or $\varnothing D$ 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 secateurs or other similar cutting tool. It is recommended that the standard cutting angle is used for the majority of applications.

Bearing split cutting



Bearings

Hallite 506

metric - section range

S	L ₁
1.50	5.6
2.00	9.7
2.00	10.0
2.00	15.0
2.50	5.6 ‡
2.50	9.7 ‡
2.50	13.0
2.50	15.0 ‡
2.52	19.5
2.50	20.0

S	L ₁	
2.50	25.0	‡
2.52	30.0	
2.77	15.0	**
2.77	20.0	**
2.77	25.0	**
3.00	9.7	
3.00	12.8	
3.00	20.0	
3.02	15.0	

S	L ₁
3.20	9.7
3.20	19.7
3.50	25.0
4.00	6.1
4.00	9.7
4.00	20.0
4.00	25.0 ‡
4.00	30.0
4.00	40.1

inch - section range

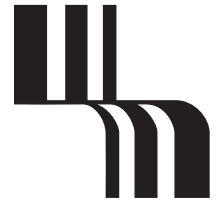
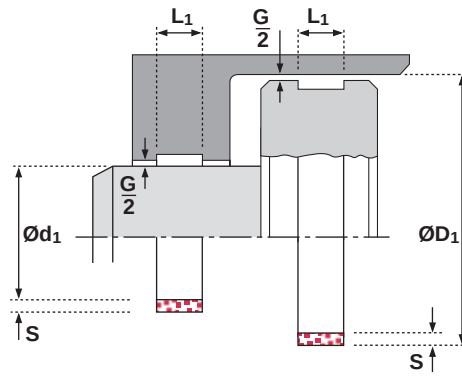
S	L ₁
0.062	0.375
0.125	0.375
0.125	0.500
0.125	0.625
0.125	0.750
0.125	1.000

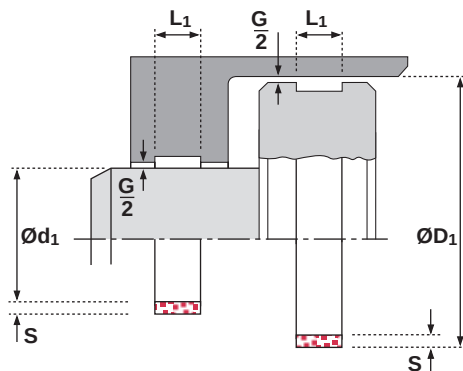
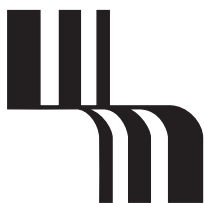
** Denotes non standard product.

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

metric - spiral lengths

Ø RANGE		S	L ₁	G MAX	G MIN	PART No.
Ød ₁	ØD ₁					
25 - 41	45 - 90	2.0	10.0	AS REQUIRED BY THE SEAL EXTRUSION GAP For applications not using a seal G MAX can be 1.6mm.	0.7	8501310
35 - 70	74 - 160	2.0	10.0		0.7	8502610
70 - 155	159 - 310	2.0	10.0		0.7	8502252
35 - 50	54 - 110	2.0	15.0		0.7	8503357
50 - 100	104 - 210	2.0	15.0		0.7	8503175
90 - 180	184 - 370	2.0	15.0		0.7	8503358
25 - 30	35 - 70	2.5	5.6		0.7	8502000‡
25 - 50	55 - 110	2.5	5.6		0.7	8502020‡
50 - 100	105 - 210	2.5	5.6		0.7	8502040‡
25 - 40	45 - 90	2.5	9.7		0.7	8502100‡
35 - 70	75 - 150	2.5	9.7		0.7	8502120‡
70 - 150	155 - 310	2.5	9.7		0.7	8502140‡
40 - 50	55 - 110	2.5	13.0		0.7	8502200
50 - 100	105 - 210	2.5	13.0		0.7	8502220
90 - 180	185 - 370	2.5	13.0		0.8	8502230
40 - 50	55 - 110	2.5	15.0		0.7	8502300‡
50 - 100	105 - 210	2.5	15.0		0.7	8502330‡
90 - 180	185 - 370	2.5	15.0		0.8	8502350‡
50 - 80	85 - 170	2.5	20.0		0.7	8502400
75 - 150	155 - 310	2.5	20.0		0.8	8502410
125 - 250	255 - 510	2.5	20.0		0.8	8502430
60 - 80	85 - 170	2.5	25.0		0.7	8502500‡
70 - 150	155 - 310	2.5	25.0		0.8	8502520‡
125 - 250	255 - 510	2.5	25.0		0.8	8502530‡
40 - 50	56 - 100	3.0	9.7		0.8	8503369
50 - 100	106 - 210	3.0	9.7		0.8	8503370
100 - 150	156 - 310	3.0	9.7		0.8	8503371





Bearings

Hallite 506

metric - spiral lengths

Ø RANGE		S	L ₁	G MAX	G MIN	PART No.
Ød ₁	ØD ₁					
50 - 60	66 - 120	3.0	12.8	AS REQUIRED BY THE SEAL EXTRUSION GAP For applications not using a seal G MAX can be 1.6mm.	0.7	8503037
60 - 104	110 - 220	3.0	12.8		0.8	8503038
90 - 149	155 - 300	3.0	12.8		0.8	8503039
55 - 80	86 - 170	3.0	20.0		0.8	8503124
80 - 150	156 - 310	3.0	20.0		0.8	8502635
140 - 250	256 - 510	3.0	20.0		0.8	8503189
50 - 75	81 - 160	3.02	15.0		0.7	8502734
60 - 80	68 - 170	4.0	6.1		0.8	8503359
80 - 150	158 - 310	4.0	6.1		0.8	8503360
150 - 250	258 - 510	4.0	6.1		0.8	8503361
60 - 80	88 - 170	4.0	9.7		0.8	8503362
80 - 150	158 - 310	4.0	9.7		0.8	8503363
150 - 250	258 - 510	4.0	9.7		0.8	8503364
60 - 80	88 - 170	4.0	20.0		0.8	8503365
80 - 150	158 - 310	4.0	20.0		0.8	8503366
150 - 250	258 - 510	4.0	20.0		0.8	8503191‡
120 - 150	158 - 310	4.0	25.0		0.8	8503367‡
150 - 250	258 - 510	4.0	25.0		0.8	8503192
120 - 150	158 - 310	4.0	30.0		0.8	8503368
150 - 250	258 - 510	4.0	30.0		0.8	8503193
170 - 200	208 - 410	4.0	40.0		0.8	8503179
200 - 300	308 - 610	4.0	40.0		0.8	8503180

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

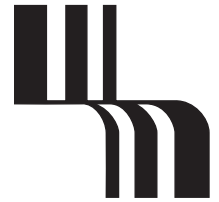
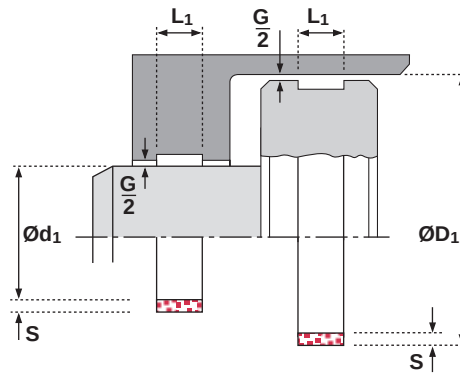
inch - spiral lengths

Ø RANGE		S	L ₁	G MAX	G MIN	PART No.
Ød ₁	ØD ₁					
1.000 - 1.375	2.625 - 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
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	0.375		0.031	8502183
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

Bearings

Hallite 506

metric - flat coils



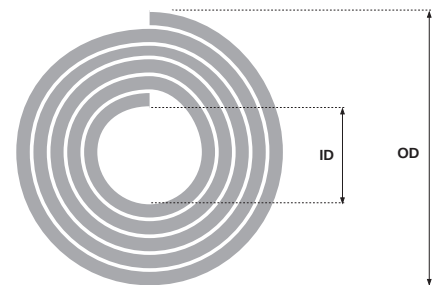
ID	Ø RANGE	OD	S	L ₁	G MAX	G MIN	PART No.
140	210		2.0	15.0	AS REQUIRED BY THE SEAL EXTRUSION GAP For applications not using a seal G MAX can be 1.6mm / 0.080in.	0.7	8581210
140	230		2.5	5.6		0.7	8580010‡
140	230		2.5	9.7		0.7	8580110‡
140	230		2.5	13.0		0.7	8581110
140	230		2.5	15.0		0.7	8580210‡
140	230		2.5	20.0		0.8	8580310
140	230		2.5	25.0		0.8	8580410‡
140	240		3.0	12.8		0.7	8581010

inch - flat coils

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 1.6mm / 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

Within the size range, items suffixed ‡ indicate cross sections to ISO 10766.
ID and OD are indicated as approximate values for guidance only.

If necessary coil diameters can be re-sized by curing on a suitable mandrel in an oven for 1 hr at 120°C 250°F and allowing to cool on the mandrel.





Bearings

Hallite

TECHNICAL DETAILS

METRIC

INCH

OPERATING CONDITIONS

MAXIMUM SPEED
TEMPERATURE RANGE

5.0 m/sec
-40°C + 120°C

15.0 ft/sec
-40°F + 250°F

SURFACE ROUGHNESS

ROD DYNAMIC SEALING FACE ϕd_1
STATIC SEALING FACE ϕD_2 L_1
PISTON DYNAMIC SEALING FACE ϕD_1
STATIC SEALING FACE ϕd_2 L_1

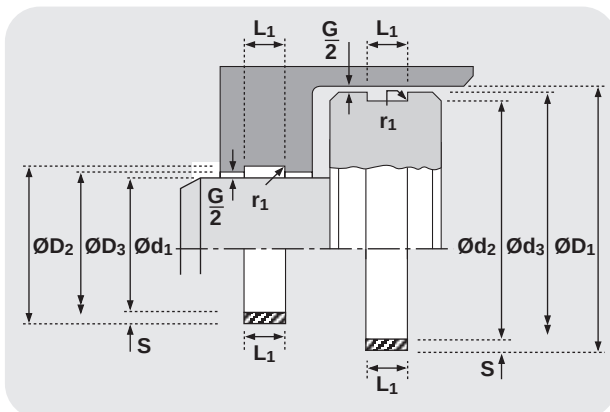
μmRa μmRt
0.4 4 max
3.2 max 16 max
0.4 4 max
3.2 max 16 max

$\mu mCLA$ $\mu mRMS$
16 18
125 max 140 max
16 18
125 max 140 max

HOUSING DETAILS & TOLERANCES

L_1 in
 r_1 in
ROD ϕd_1 in
 ϕD_2 in
 ϕD_3 in
PISTON ϕD_1 in
 ϕd_2 in
 ϕd_3 in
 $\frac{1}{8}$ nominal cross sections - in
 $\frac{3}{32}$ nominal cross sections - in

+0.015 +0.010
0.016 max
f9
 $\phi d_1 + 2S$ +0.004 -0.000
 $\phi d_1 + G$
H11
 $\phi D_1 - 2S$ +0.000 -0.004
 $\phi D_1 - G$
S = 0.126 G max 0.080 G min 0.031
S = 0.093 G max 0.060 G min 0.031



DESIGN

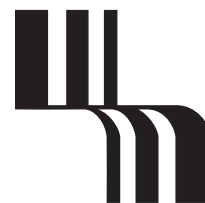
Hallite 533 glass filled nylon wear rings are designed for reciprocating piston and rod bearing applications.

The material is heat stabilised 33% glass reinforced nylon 66, which offers excellent bearing properties. The material is compatible with hydraulic and lubricating oils. The material is not recommended for use in water based fluids (H.F.A) or where significant water is present, due to the swell of the nylon. For these applications the use of Hallite 506 or Hallite 63 bearings are recommended.

NOTE : Metric sizes are also available upon request. For further information about these and any other sizes that you are looking for, please contact your local Hallite sales office.

FEATURES

- MOULDED TO SIZE
- EASY INSTALLATION
- ROBUST
- LONG LIFE
- ECONOMICAL



TECHNICAL DETAILS

METRIC

INCH

OPERATING CONDITIONS

MAXIMUM SPEED
TEMPERATURE RANGE

5.0 m/sec
-40°C + 120°C

15.0 ft/sec
-40°F + 250°F

SURFACE ROUGHNESS

ROD DYNAMIC SEALING FACE $\varnothing d_1$
STATIC SEALING FACE $\varnothing d_2$ L_1
PISTON DYNAMIC SEALING FACE $\varnothing D_1$
STATIC SEALING FACE $\varnothing d_2$ L_1

 μmRa μmRt μmCLA μmRMS

0.4

4 max

16

18

3.2 max

16 max

125 max

140 max

0.4

4 max

16

18

3.2 max

16 max

125 max

140 max

HOUSING DETAILS & TOLERANCES

L_1 mm
 r_1 mm
PISTON $\varnothing D_1$ mm
 $\varnothing d_2$ mm
 $\varnothing d_3$ mm

+0.10 -0.00

0.30 max

H9

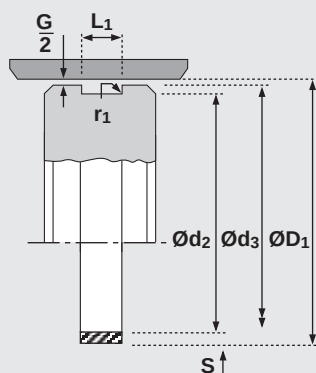
 $\varnothing D_1$ max -2S

+0.00 -0.05

 $\varnothing D_1$ - G

G min 0.80

G max 1.6



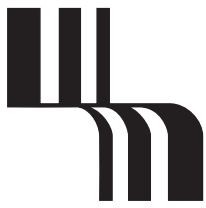
DESIGN

Hallite 910 is a phenolic bearing ring moulded to size and scarf cut. The material is incredibly tough; it provides excellent support for pistons and rods, tolerates contamination and will even operate without lubrication.

Commonly fitted in reciprocating cylinders as piston bearings, Hallite 910 is capable of withstanding extreme side-loads, preventing metal-to-metal contact

FEATURES

- INCREDIBLY TOUGH
- MACHINED TO SIZE
- EXCELLENT WEAR RESISTANCE
- CARRIES LUBRICATION
- CONTAMINATION TOLERANT



Bearings

Hallite



920

TECHNICAL DETAILS

METRIC

INCH

OPERATING CONDITIONS

MAXIMUM SPEED
MAXIMUM TEMPERATURE

5.0 m/sec
-50°C + 200°C

15.0 ft/sec
-58°F + 390°F

TYPICAL PHYSICAL PROPERTIES

SPECIFIC GRAVITY
COMPRESSION STRESS AT YIELD
COMPRESSION STRESS AT YIELD
COEFFICIENT OF THERMAL CONDUCTIVITY
COEFFICIENT OF THERMAL EXPANSION

3.1
23°C 20 MN/m²
80°C 9 MN/m²
2.5 W/mK

3.1
73°F 2900 p.s.i.
176°F 1300 p.s.i.
1.4Btu/hft°F

COEFFICIENT OF DYNAMIC FRICTION

Dry 0.25
Lubricated 0.05

BEARING TOLERANCES

L₁ -0.1 -0.5
S +0.03 -0.05

SURFACE ROUGHNESS

DYNAMIC SEALING FACE Ød₁ ØD₁
STATIC HOUSING FACES ØD₁ L₁ ØD₂

µmRa µmRt
0.4 4 max
3.2 max 16 max

µinCLA µinRMS
16 18
125 max 140 max

HOUSING DETAILS

G min controls the minimum metal to metal clearance between the gland and rod or bore and piston.

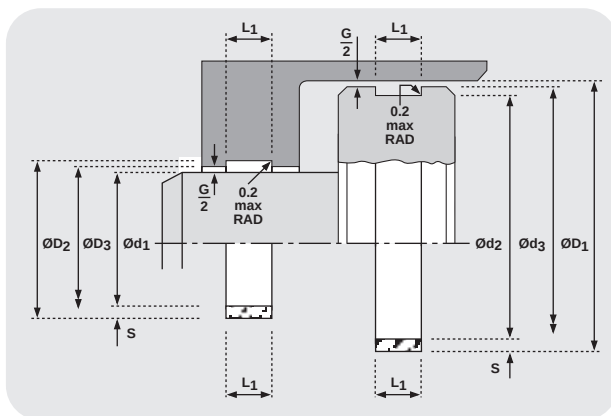
G max controls the maximum extrusion gap seen by a seal associated with the bearing.

Typically, G min should be 0.7mm / 0.028" 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 0.1mm / 0.004" For applications not using a seal G max - see Hallite 87

ROD

Ød₁ f9
ØD₂=Ød₁+2S +0.05 -0
ØD₃=Ød₁+G G min / max
L₁ -0 +0.1
ØD₁ H9
ØD₂=ØD₁-2S +0 -0.05
ØD₃=ØD₁+G G min / max
L₁ -0 +0.1

PISTON



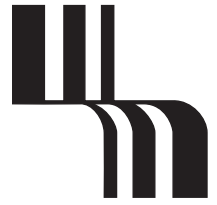
FEATURES

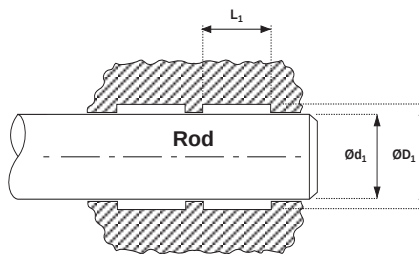
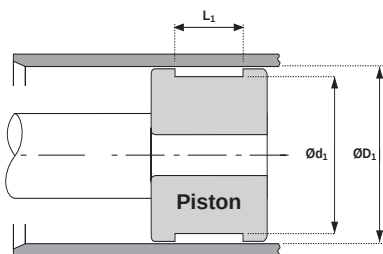
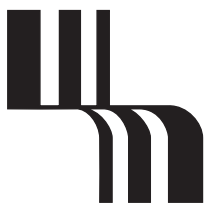
- LOW FRICTION
- FLEXIBLE FOR EASY INSTALLATION
- INFINITE LENGTH RANGE

DESIGN

Hallite 920 bearing strip has the ability to support side loads and eliminate 'stick slip' between moving parts. The accurately dimensioned rectangular cross section is produced from a special combination of PTFE and Bronze materials. It has excellent heat resistance and strength to resist creep, making it suitable for bearings with reciprocating, oscillating or rotary movement, whether lubricated or not. Our standard range of cross section sizes are proportioned to be wrapped around a wide range of rod or piston diameters. Installation of the bearing is an easy task. Calculate and measure length L₂ (see Hallite 87), cut the strip with a sharp blade and fit to the groove. If required we will be pleased to supply bearings to your sizes. Independent testing has established the typical properties which make the Hallite 920 worthwhile considering for many applications other than hydraulic or pneumatic cylinders. When using the compressive stress at yield in your calculation it is suggested a 4:1 factor of safety is applied.

The material is compatible with hydraulic mineral oil, lubricating oil, water based and synthetic fire resistant fluids and lubricating grease. Although the material is rated at 200°C, the recommended maximum temperature for bearing applications is 60°C.





Bearings

Hallite
metric



910



910

Type	----- ØD ₁	NOMINALS Ød ₁	----- L ₁	PART No.
910	95.00	89.00	15.00	9095005
910	100.00	94.00	15.00	9100025
910	100.00	94.00	25.00	9100015
910	110.00	104.00	15.00	9110025
910	110.00	104.00	25.00	9110015
910	120.00	114.00	15.00	9120025
910	120.00	114.00	25.00	9120005
910	125.00	119.00	15.00	9125005
910	130.00	123.00	15.00	9130025
910	130.00	123.00	30.00	9130005

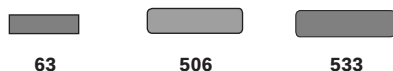
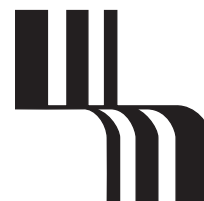
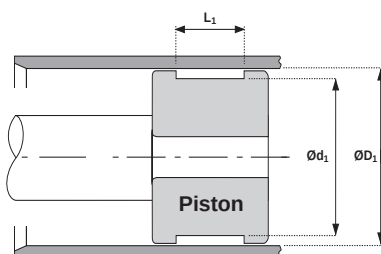
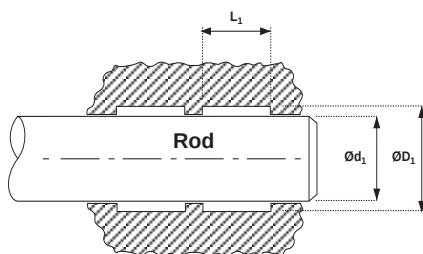
Type	----- ØD ₁	NOMINALS Ød ₁	----- L ₁	PART No.
910	135.00	129.00	25.00	9135095
910	140.00	133.00	20.00	9140025
910	140.00	133.00	35.00	9140005
910	150.00	143.00	20.00	9150015
910	150.00	143.00	35.00	9150005
910	160.00	153.00	20.00	9160015
910	160.00	153.00	40.00	9160005
910	180.00	172.00	45.00	9180005

* Denotes possible indent item -
Minimum quantity may apply.

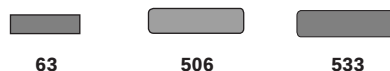
Bearings

Hallite

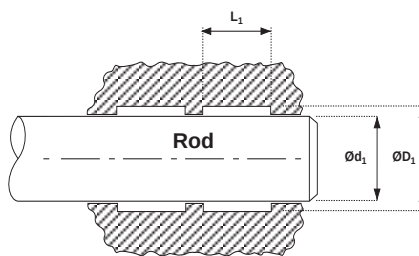
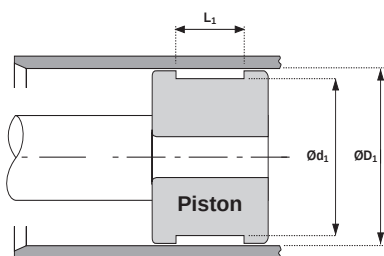
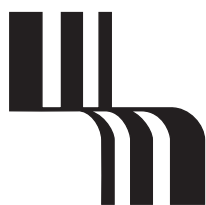
inch



Type	ØD ₁	NOMINALS Ød ₁	L ₁	PART No.
533	1.250	1.000	1.000	F30220
533	1.500	1.250	0.250	F30005
533	1.500	1.250	0.375	F30006
533	1.500	1.250	0.500	F30305
533	1.500	1.312	0.187	F30004
533	1.500	1.312	0.375	F30352
63	1.500	1.321	0.250	4533400
533	1.750	1.500	0.190	F30234
533	1.750	1.500	0.375	F30201
506	1.750	1.500	0.500	8502838
533	1.750	1.500	0.500	F30013
533	1.875	1.625	0.190	F30179
533	1.875	1.625	0.375	F30235
533	1.875	1.625	0.500	F30306
533	2.000	1.750	0.187	F40001
533	2.000	1.750	0.250	F30018
533	2.000	1.750	0.312	F30020
533	2.000	1.750	0.375	F30022
506	2.000	1.750	0.500	8502387
533	2.000	1.750	0.500	F30024
533	2.000	1.750	0.750	F30025
533	2.000	1.812	0.375	F30325
63	2.000	1.821	0.250	4259900
533	2.125	1.875	0.375	F20026
533	2.250	2.000	0.187	F40029
533	2.250	2.000	0.250	F30196
533	2.250	2.000	0.312	F30032
533	2.250	2.000	0.375	F30033
506	2.250	2.000	0.500	8502538
533	2.250	2.000	0.500	F30035
533	2.250	2.000	0.625	F30036
533	2.250	2.000	0.750	F30037
63	2.250	2.071	0.258	4286800
506	2.375	2.125	0.500	8502248
533	2.375	2.125	0.500	F30038
533	2.500	2.250	0.187	F30040



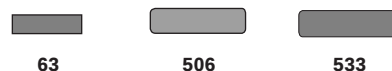
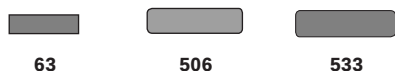
Type	ØD ₁	NOMINALS Ød ₁	L ₁	PART No.
533	2.500	2.250	0.250	F30041
533	2.500	2.250	0.312	F30043
533	2.500	2.250	0.375	F30044
506	2.500	2.250	0.500	8502738
533	2.500	2.250	0.500	F30045
533	2.500	2.250	0.625	F30047
533	2.500	2.250	0.750	F30048
533	2.500	2.250	1.000	F30286
506	2.500	2.303	0.220	8502921
533	2.500	2.312	0.375	F30326
63	2.500	2.321	0.250	4272500
533	2.625	2.375	0.375	F20179
506	2.625	2.375	0.500	8502390
533	2.625	2.375	0.625	F30285
533	2.750	2.500	0.250	F30209
533	2.750	2.500	0.375	F30051
506	2.750	2.500	0.500	8502388
533	2.750	2.500	0.500	F30052
533	2.750	2.500	0.625	F30054
533	2.750	2.500	0.750	F30055
533	2.750	2.500	1.000	F30056
63	2.750	2.524	0.258	4287000
533	3.000	2.750	0.250	F30061
533	3.000	2.750	0.312	F30062
506	3.000	2.750	0.375	8502923
533	3.000	2.750	0.375	F30063
506	3.000	2.750	0.500	8502249
533	3.000	2.750	0.500	F30064
506	3.000	2.750	0.625	8502689
533	3.000	2.750	0.625	F30191
533	3.000	2.750	0.750	F30066
533	3.000	2.750	1.000	F30067
63	3.000	2.774	0.250	4193200
506	3.000	2.803	0.220	8502801
533	3.000	2.812	0.375	F30327
506	3.125	2.875	1.000	8502885
533	3.250	3.000	0.250	F30207
533	3.250	3.000	0.312	F30259



Bearings

Hallite

inch



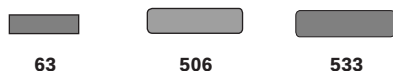
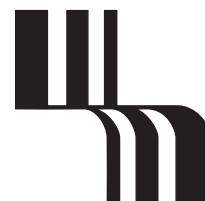
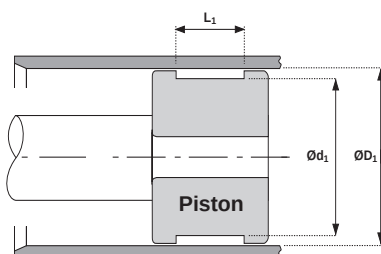
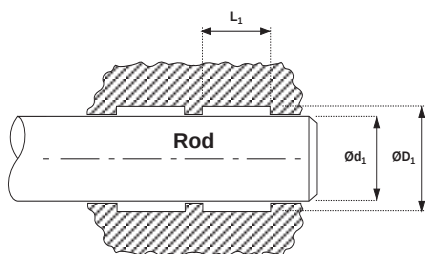
Type	ØD ₁	NOMINALS Ød ₁	L ₁	PART No.
533	3.250	3.000	0.375	F30069
506	3.250	3.000	0.500	8502391
533	3.250	3.000	0.500	F30070
533	3.250	3.000	0.625	F30287
533	3.250	3.000	0.750	F30072
533	3.250	3.000	1.000	F30074
63	3.250	3.024	0.250	4287200
506	3.250	3.053	0.220	8502802
533	3.250	3.062	0.375	F30353
506	3.437	3.187	0.625	8502135
533	3.500	3.250	0.250	F30079
533	3.500	3.250	0.312	F30255
533	3.500	3.250	0.375	F30080
506	3.500	3.250	0.500	8502389
533	3.500	3.250	0.500	F30083
533	3.500	3.250	0.625	F30085
533	3.500	3.250	0.750	F30087
533	3.500	3.250	1.000	F30275
63	3.500	3.274	0.250	4193400
506	3.500	3.303	0.220	8502803
533	3.500	3.312	0.375	F30328
533	3.625	3.375	0.500	F30090
533	3.625	3.375	1.000	F30091
533	3.750	3.500	0.250	F40027
533	3.750	3.500	0.312	F30260
533	3.750	3.500	0.375	F30092
506	3.750	3.500	0.500	8502250
533	3.750	3.500	0.500	F30093
533	3.750	3.500	0.625	F30094
533	3.750	3.500	0.750	F30095
63	3.750	3.524	0.258	4700000
506	3.750	3.553	0.220	8502804
533	4.000	3.750	0.250	F30100
533	4.000	3.750	0.312	F30256
506	4.000	3.750	0.375	8502915
533	4.000	3.750	0.375	F30101
506	4.000	3.750	0.500	8502392
533	4.000	3.750	0.500	F30102

Type	ØD ₁	NOMINALS Ød ₁	L ₁	PART No.
506	4.000	3.750	0.625	8502101
533	4.000	3.750	0.625	F30104
506	4.000	3.750	0.750	8502308
533	4.000	3.750	0.750	F30105
506	4.000	3.750	1.000	8502730
533	4.000	3.750	1.000	F30219
63	4.000	3.774	0.250	4177600
506	4.000	3.803	0.220	8502805
533	4.250	4.000	0.312	F30261
533	4.250	4.000	0.375	F30107
506	4.250	4.000	0.500	8502393
533	4.250	4.000	0.500	F30108
506	4.250	4.000	0.625	8502134
533	4.250	4.000	0.625	F30109
533	4.250	4.000	0.750	F30110
533	4.250	4.000	1.000	F30112
63	4.250	4.024	0.250	4318600
506	4.250	4.053	0.220	8502806
63	4.500	4.232	0.250	4264200
533	4.500	4.250	0.312	F30262
533	4.500	4.250	0.375	F30114
533	4.500	4.250	0.500	F30115
533	4.500	4.250	0.625	F30118
533	4.500	4.250	0.750	F30120
506	4.500	4.250	1.000	8502184
533	4.500	4.250	1.000	F30278
506	4.500	4.303	0.220	8502807
63	4.750	4.463	0.385	4700300
533	4.750	4.500	0.375	F30194
533	4.750	4.500	0.500	F30121
533	4.750	4.500	0.750	F30123
533	4.750	4.500	1.000	F30124
506	4.750	4.553	0.220	8502808
63	5.000	4.713	0.375	4267200
506	5.000	4.750	0.375	8502817
533	5.000	4.750	0.375	F30126
533	5.000	4.750	0.500	F30127
533	5.000	4.750	0.625	F30128

Bearings

Hallite

inch

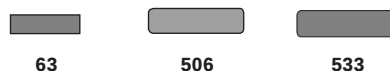


63

506

533

Type	----- ØD ₁	NOMINALS Ød ₁	----- L ₁	PART No.
533	5.000	4.750	0.750	F30129
533	5.000	4.750	1.000	F30169
506	5.000	4.803	0.220	8502809
533	5.250	5.000	0.500	F30131
533	5.250	5.000	0.625	F30132
533	5.250	5.000	0.750	F30133
533	5.250	5.000	1.000	F30269
506	5.375	5.125	0.750	8502194
63	5.500	5.213	0.375	4260200
533	5.500	5.250	0.375	F30135
533	5.500	5.250	0.500	F30136
533	5.500	5.250	0.625	F30138
506	5.500	5.250	0.750	8502104
533	5.500	5.250	0.750	F30140
533	5.500	5.250	1.000	F30141
506	5.750	5.500	0.750	8502853
533	5.750	5.500	0.750	F30143
506	5.750	5.500	1.000	8502857
533	5.750	5.500	1.000	F30144
63	6.000	5.713	0.375	4267400
506	6.000	5.750	0.375	8502816
533	6.000	5.750	0.500	F30145
533	6.000	5.750	0.625	F30147
533	6.000	5.750	0.750	F30208
533	6.000	5.750	1.000	F30149
533	6.250	6.000	0.500	F30279
533	6.250	6.000	0.625	F30151
533	6.250	6.000	0.750	F30152
533	6.250	6.000	1.000	F30153
533	6.500	6.250	0.500	F30154
533	6.500	6.250	0.750	F30199
533	6.500	6.250	1.000	F30157
506	6.750	6.500	0.500	8502489
533	6.750	6.500	1.000	F30276
506	7.000	6.750	0.375	8502527



63

506

533

Type	----- ØD ₁	NOMINALS Ød ₁	----- L ₁	PART No.
533	7.000	6.750	0.500	F30158
506	7.000	6.750	0.625	8502647
533	7.000	6.750	0.625	F30159
533	7.000	6.750	0.750	F30277
533	7.000	6.750	1.000	F30160
533	7.250	7.000	0.500	F30281
533	7.250	7.000	0.750	F30284
533	7.250	7.000	1.000	F30289
533	7.500	7.250	0.500	F30162
533	7.500	7.250	0.750	F30165
533	7.500	7.250	1.000	F30166
533	7.750	7.500	0.500	F20160
533	7.750	7.500	1.000	F30247
533	8.000	7.750	1.000	F30231
533	8.250	8.000	1.000	F30248
533	8.500	8.250	0.500	F30168
533	8.500	8.250	1.000	F30246
533	8.750	8.500	1.000	F30249
533	9.000	8.750	1.000	F30230
533	9.250	9.000	1.000	F30253
533	9.500	9.250	1.000	F30254
533	9.750	9.500	1.000	F30250
533	10.000	9.750	1.000	F30221
533	10.250	10.000	1.000	F30258
533	10.500	10.250	1.000	F30257
533	11.000	10.750	1.000	F30222
533	11.250	11.000	1.000	F30251
533	11.500	11.250	1.000	F30252
533	12.000	11.750	1.000	F30223
533	13.000	12.750	1.000	F30224



O rings

Hallite

●
rings
O

O RINGS

PROFILE



O RING KITS

01

Nitrile rubber (70 & 90 durometer Shore A) & Viton O-Rings. Full imperial range to BS1806:1962; and American Standards AS568, AN6227 and AN6230. Comprehensive metric range to British Standard BS 4518; Japanese Standard JIS B2401 and German Standard DIN3770.



05

Nitrile rubber (70 durometer) X seal. Large imperial range to BS1806:1962.

DESCRIPTION

CONTENTS

PART No.

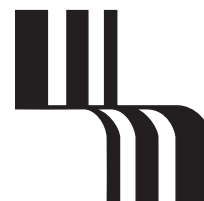
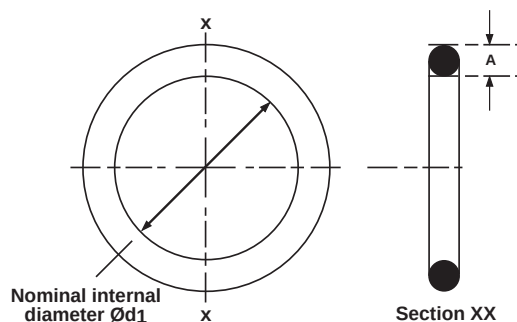
O RING KITS

Imperial assortment of 1/16", 3/32", 1/8 and 3/16" section 70 durometer Shore A Nitrile.	Total of 382 O rings.	01-000/1
Imperial assortment of Boss Gasket O-Rings for tube fittings in 90 durometer Shore A Nitrile.	Total of 211 O rings.	01-000/1B
Imperial assortment of 1/16", 3/32", 1/8" and 3/16" section 90 durometer Shore A Nitrile.	Total of 382 O rings.	01-000/1N
Imperial assortment of 1/16", 3/32", 1/8" and 3/16" section 75 durometer Shore A Viton.	Total of 382 O rings.	01-000/1V
Imperial assortment of 1/16" section 70 durometer Shore A Nitrile.	Total of 276 O rings.	01-0002N7
Imperial assortment of 3/32" section 70 durometer Shore A Nitrile	Total of 218 O rings.	01-0003N7
Metric assortment of 1, 2, 3, 4, and 5mm section 70 durometer Shore A Nitrile. (German Std.)	Total of 401 O rings.	03-000/1
Metric assortment of 1.9, 2.4, 3.1, and 3.5mm section 70 durometer Shore A Nitrile. (Japanese Std.)	Total of 444 O rings.	04-000/1
QUAD SEAL KIT		
Imperial assortment of 1/16", 3/32", 1/8" and 3/16" section 70 durometer Shore A Nitrile.	Total of 343 Quad seals.	05-000/1
BACK UP RING KIT		
Imperial assortment of 1/16", 3/32", 1/8" and 3/16" section 90 durometer Shore A Nitrile.	Total of 364 Back up rings.	02-000/1

O rings

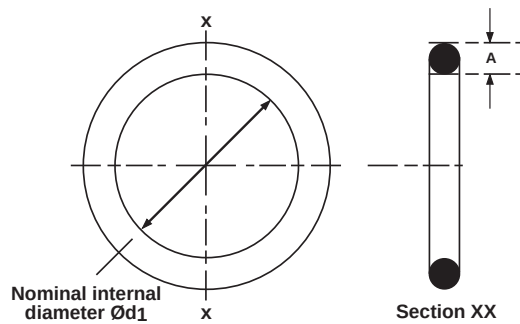
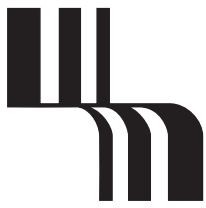
Hallite

metric



Japanese standard O rings

Nominal Ød ₁	Cross section A	Part No.	Nominal Ød ₁	Cross section A	Part No.	Nominal Ød ₁	Cross section A	Part No.	Nominal Ød ₁	Cross section A	Part No.
3	x 1.9	P003	42	x 3.5	P042	100	x 5.7	P100	185	x 8.1	P185
4	x 1.9	P004	44	x 3.5	P044	102	x 5.7	P102	190	x 5.7	G190
5	x 1.9	P005	45	x 3.1	G045	105	x 3.1	G105	190	x 8.4	P190
6	x 1.9	P006	45	x 3.5	P045	105	x 5.7	P105	195	x 5.7	G195
7	x 1.9	P007	46	x 3.5	P046	110	x 3.1	G110	195	x 8.4	P195
8	x 1.9	P008	48	x 3.5	P048	110	x 5.7	P110	200	x 5.7	G200
9	x 1.9	P009	48	x 5.7	P048A	112	x 5.7	P112	200	x 8.4	P200
10	x 1.9	P010	49	x 3.5	P049	115	x 3.1	G115	205	x 8.4	P205
10	x 2.4	P010A	50	x 3.1	G050	115	x 5.7	P115	209	x 8.1	P209
11	x 2.4	P011	50	x 3.5	P050	120	x 3.1	G120	210	x 5.7	G210
12	x 2.4	P012	50	x 5.7	P050A	120	x 5.7	P120	210	x 8.4	P210
14	x 2.4	P014	52	x 5.7	P052	125	x 3.1	G125	215	x 8.4	P215
15	x 2.4	P015	53	x 5.7	P053	125	x 5.7	P125	220	x 5.7	G220
16	x 2.4	P016	55	x 3.1	G055	130	x 3.1	G130	220	x 8.4	P220
18	x 2.4	P018	55	x 5.7	P055	130	x 5.7	P130	225	x 8.1	P225
20	x 2.4	P020	56	x 5.7	P056	132	x 5.7	P132	230	x 5.7	G230
21	x 2.4	P021	58	x 5.7	P058	135	x 3.1	G135	230	x 8.4	P230
22	x 2.4	P022	60	x 3.1	G060	135	x 5.7	P135	235	x 8.4	P235
22	x 3.5	P022A	60	x 5.7	P060	140	x 3.1	G140	240	x 5.7	G240
24	x 3.5	P024	62	x 5.7	P062	140	x 5.7	P140	240	x 8.4	P240
25	x 3.1	G025	63	x 5.7	P063	145	x 3.1	G145	245	x 8.4	P245
25	x 3.5	P025	65	x 3.1	G065	145	x 5.7	P145	250	x 5.7	G250
26	x 3.5	P026	65	x 5.7	P065	150	x 5.7	G150	250	x 8.4	P250
28	x 3.5	P028	67	x 5.7	P067	150	x 5.7	P150	255	x 8.4	P255
29	x 3.5	P029	70	x 3.1	G070	150	x 8.4	P150A	260	x 5.7	G260
30	x 3.1	G030	70	x 5.7	P070	155	x 5.7	G155	260	x 8.4	P260
30	x 3.5	P030	71	x 5.7	P071	155	x 8.4	P155	265	x 8.4	P265
31	x 3.5	P031	75	x 3.1	G075	160	x 5.7	G160	270	x 5.7	G270
32	x 3.5	P032	75	x 5.7	P075	160	x 8.4	P160	270	x 8.4	P270
34	x 3.5	P034	80	x 3.1	G080	165	x 5.7	G165	275	x 8.4	P275
35	x 3.1	G035	80	x 5.7	P080	165	x 8.4	P165	280	x 5.7	G280
35	x 3.5	P035	85	x 3.1	G085	170	x 5.7	G170	280	x 8.4	P280
36	x 3.5	P036	85	x 5.7	P085	170	x 8.4	P170	285	x 8.4	P285
38	x 3.5	P038	90	x 3.1	G090	175	x 5.7	G175	290	x 5.7	G290
39	x 3.5	P039	90	x 5.7	P090	175	x 8.4	P175	290	x 8.4	P290
40	x 3.1	G040	95	x 3.1	G095	180	x 5.7	G180	295	x 8.4	P295
40	x 3.5	P040	95	x 5.7	P095	180	x 8.4	P180	300	x 5.7	G300
41	x 3.5	P041	100	x 3.1	G100	185	x 5.7	G185	300	x 8.4	P300



O rings

Hallite
inch

O ring cord - Nitrile 70 durometer Shore A

metric

inch

Actual Section	PART No.	Actual Section	PART No.	Actual Section	Nominal Section	PART No.
1.5 mm	03-0000015	5.0 mm	03-0000050	0.070"	1/16"	01-0000070
2.0 mm	03-0000020	5.7 mm	03-0000057	0.103"	3/32"	01-0000103
2.4 mm	03-0000024	6.0 mm	03-0000060	0.139"	1/8"	01-0000139
2.5 mm	03-0000025	7.0 mm	03-0000070	0.210"	3/16"	01-0000210
3.0 mm	03-0000030	8.0 mm	03-0000080	0.250"		01-0000250
3.5 mm	03-0000035	8.4 mm	03-0000084	0.275"	1/4"	01-0000275
4.0 mm	03-0000040	10.0 mm	03-0000100	0.312"		01-0000312
				0.375"		01-0000375
				0.500"		01-0000500

inch

British Standard BS 1806:1962 & American Standard AS568

Cross section A						Cross section A						Cross section A					
Ød ₁	1/16"	3/32"	1/8"	3/16"	1/4"	Ød ₁	1/16"	3/32"	1/8"	3/16"	1/4"	Ød ₁	1/16"	3/32"	1/8"	3/16"	1/4"
0.031	001*					1.000	022	120	214	318		2.312		141			
0.047	002**					1.062	023	121	215	319		2.375	036	142	229	332	
0.062	003	102				1.125	024	122	216	320		2.437		143			
0.078	004					1.187	025	123	217	321		2.500	037	144	230	333	
0.093	005	103				1.250	026	124	218	322		2.562		145			
0.125	006	104				1.312	027	125	219	323		2.625	038	146	231	334	
0.156	007	105				1.375	028	126	220	324		2.687		147			
0.187	008	106	201			1.437		127	221			2.750	039	148	232	335	
0.218	009	107				1.500	029	128	222	325		2.812		149			
0.250	010	108	202			1.562		129				2.875	040	150	233	336	
0.312	011	109	203			1.625	030	130	223	326		3.000	041	151	234	337	
0.375	012	110	204			1.687		131				3.125			235	338	
0.437	013	111	205	309		1.750	031	132	224	326		3.250	042	152	236	339	
0.500	014	112	206	310		1.812		133				3.375			237	340	
0.562	015	113	207	311		1.875	032	134	225	328		3.500	043	153	238	341	
0.625	016	114	208	312		1.937		135				3.625			239	342	
0.687	017	115	209	313		2.000	033	136	226	329		3.750	044	154	240	343	
0.750	018	116	210	314		2.062		137				3.875			241	344	
0.812	019	117	211	315		2.125	034	138	227	330		4.000	045	155	242	345	
0.875	020	118	212	316		2.187		139				4.125			243	346	
0.937	021	119	213	317		2.250	035	140	228	331		4.250	046	156	244	347	

*1/32" section

**3/64" section

10/99

Transeals Pty Ltd

Web <http://www.transeals.com.au>
Email seals@transeals.com.au

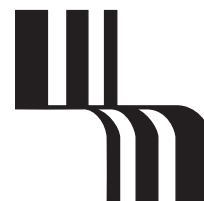
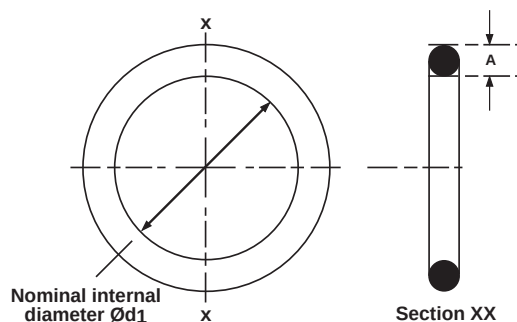
Phone 61 (8) 9451 6011
Fax 61 (8) 9458 5766

7/3

O rings

Hallite

inch

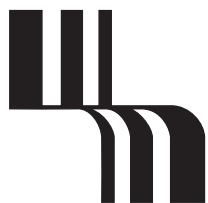


British Standard BS 1806:1962 & American Standard AS568

Ød ₁	Cross section A				
	1/16"	3/32"	1/8"	3/16"	1/4"
4.375			245	348	
4.500	047	157	246	349	425
4.625			247	350	426
4.750	048	158	248	351	427
4.875			249	352	428
5.000	049	159	250	353	429
5.125			251	354	430
5.250	050	160	252	355	431
5.375			253	356	432
5.500		161	254	357	433
5.625			255	358	434
5.750		162	256	359	435
5.875			257	360	436
6.000		163	258	361	437
6.250		164	259	362	438
6.500		165	260	363	439
6.750		166	261	364	440
7.000		167	262	365	441
7.250		168	263	366	442
7.500		169	264	367	443

Ød ₁	Cross section A				
	1/16"	3/32"	1/8"	3/16"	1/4"
7.750		170	265	368	444
8.000		171	266	369	445
8.250		172	267	370	445A
8.500		173	268	371	446
8.750		174	269	372	446A
9.000		175	270	373	447
9.250		176	271	374	447A
9.500		177	272	375	448
9.750		178	273	376	448A
10.000			274	377	449
10.250					449A
10.500			275	378	450
10.750					450A
11.000			276	379	451
11.250					451A
11.500			277	380	452
11.750					452A
12.000			278	381	453
12.500					454
13.000			279	382	455

Ød ₁	Cross section A				
	1/16"	3/32"	1/8"	3/16"	1/4"
13.500					456
14.000			280	383	457
14.500					458
15.000			281	384	459
15.500					460
16.000			282	385	461
16.500					462
17.000			283	386	463
17.500					464
18.000			284	387	465
18.500					466
19.000				388	467
19.500					468
20.000				389	469
21.000				390	470
22.000				391	471
23.000				392	472
24.000				393	473
25.000				394	474
26.000				395	475



Rotary pressure seal

Hallite



TECHNICAL DETAILS

METRIC

INCH

OPERATING CONDITIONS

MAXIMUM SPEED 1.0 m/sec
 MAXIMUM TEMPERATURE -45°C + 110°C
 MAXIMUM PRESSURE 350 bar

3.0 ft/sec
 -50°F + 230°F
 5000 p.s.i.

SURFACE ROUGHNESS

DYNAMIC SEALING FACE $\varnothing d_1$ 0.1 $\leftrightarrow$ 0.4 μmRa 4 max μmRt
 STATIC SEALING FACE $\varnothing D_1$ 1.6 max 10 max
 STATIC HOUSING FACES L_1 3.2 max 16 max

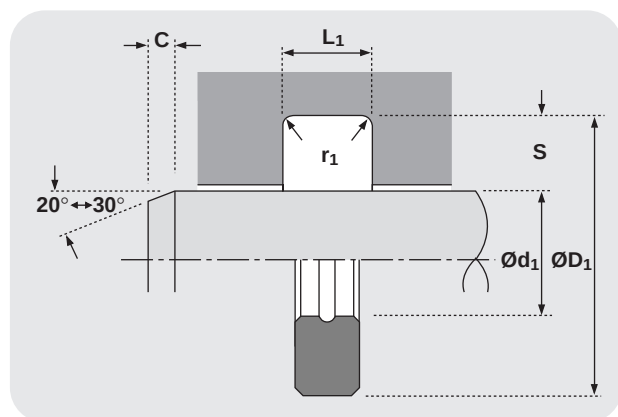
μinCLA μinRMS
 4 $\leftrightarrow$ 16 5 $\leftrightarrow$ 18
 63 max 70 max
 125 max 140 max

CHAMFERS & RADII

GROOVE SECTION $\leq S$ mm 5.2
 MIN CHAMFER C mm 2.4
 MAX FILLET RAD r_1 mm 0.4

TOLERANCES

$\varnothing d_1$ f8 $\varnothing D_1$ H10 L_1 mm +0.3 -0.0



DESIGN

The Hallite 80 rotary pressure seal is a seal designed specifically for use in hydraulic swivel joints.

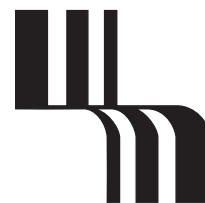
The Hallite 80 is manufactured in Hallite's high specification polyurethane, Hythane 181, to provide ease of installation and excellent sealing characteristics.

Please call your local Hallite sales office for further details.

metric

$\varnothing d_1$	TOL f8	$\varnothing D_1$	TOL H10	L_1 +0.3 -0.0	PART No.
80.00	-0.036 -0.076	90.00	+0.14 -0.00	5.00	4563000
90.00	-0.036 -0.090	100.00	+0.14 -0.00	5.00	4563100

$\varnothing d_1$	TOL f8	$\varnothing D_1$	TOL H10	L_1 +0.3 -0.0	PART No.
100.00	-0.036 -0.090	110.00	+0.14 -0.00	5.00	4563200
125.00	-0.043 -0.106	135.40	+0.16 -0.00	5.00	4578800



BACK UP RINGS

PROFILE

O RING KITS

**90**

Endless PTFE back-up ring.

Large inch and metric range for Japanese, Swedish, and British standard O rings.

**117**

Endless composite nylon back-up ring for use with metric rod and piston seals.

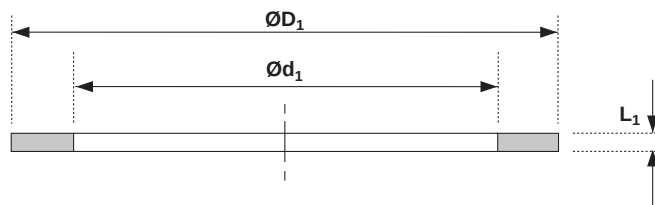
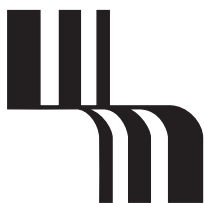
**480**

Nitrile rubber (90 durometer) contoured back up ring. Full imperial range to suit British and American Standard O rings.

metric

Type	----- Ød ₁	NOMINALS ØD ₁	----- L ₁	PART No.
90	25.00	30.00	1.25	G025BU
117	25.00	33.00	2.00	70-025033
117	25.00	35.00	2.00	70-025035
117	28.00	35.50	3.00	70-0280355
90	30.00	35.00	1.25	G030BU
117	30.00	40.00	3.00	70-030040
90	35.00	40.00	1.25	G035BU
117	35.00	45.00	3.00	70-035045
90	40.00	45.00	1.25	G040BU
117	40.00	50.00	3.00	70-040050
90	45.00	50.00	1.25	G045BU
117	45.00	55.00	3.00	70-045055
117	45.00	60.00	3.00	70-045060
117	48.00	63.00	3.00	70-048063
90	50.00	55.00	1.25	G050BU
90	50.00	60.00	1.80	P050ABU
117	50.00	60.00	3.00	70-050060
117	50.00	65.00	3.00	70-050065
117	50.00	70.00	3.00	70-050070
90	55.00	60.00	1.25	G055BU
90	55.00	65.00	1.80	P055BU
117	55.00	65.00	3.00	70-055065
117	55.00	70.00	3.00	70-055070
117	55.00	75.00	3.00	70-055075
90	60.00	65.00	1.25	G060BU
90	60.00	70.00	1.80	P060BU
117	60.00	70.00	3.00	70-060070

Type	----- Ød ₁	NOMINALS ØD ₁	----- L ₁	PART No.
117	60.00	75.00	3.00	70-060075
117	60.00	80.00	3.00	70-060080
90	65.00	70.00	1.25	G065BU
90	65.00	75.00	1.80	P065BU
117	65.00	75.00	3.00	70-065075
117	65.00	78.00	3.00	70-065078
117	65.00	80.00	3.00	70-065080
117	65.00	85.00	3.00	70-065085
90	70.00	75.00	1.25	G070BU
90	70.00	80.00	1.80	P070BU
117	70.00	80.00	3.00	70-070080
117	70.00	83.00	3.00	70-070083
117	70.00	85.00	3.00	70-070085
117	70.00	90.00	3.00	70-070090
90	75.00	80.00	1.25	G075BU
90	75.00	85.00	1.80	P075BU
117	75.00	85.00	3.00	70-075085
117	75.00	90.00	3.00	70-075090
117	75.00	95.00	3.00	70-075095
90	80.00	85.00	1.25	G080BU
90	80.00	90.00	1.80	P080BU
117	80.00	90.00	3.00	70-080090
117	80.00	93.00	3.00	70-080093
117	80.00	95.00	3.00	70-080095
117	80.00	100.00	3.00	70-080100
90	85.00	90.00	1.25	G085BU
90	85.00	95.00	1.80	P085BU
117	85.00	100.00	3.00	70-085100
117	85.00	105.00	3.00	70-085105



Back-up rings

Hallite

metric

90

117

90

117

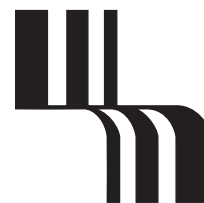
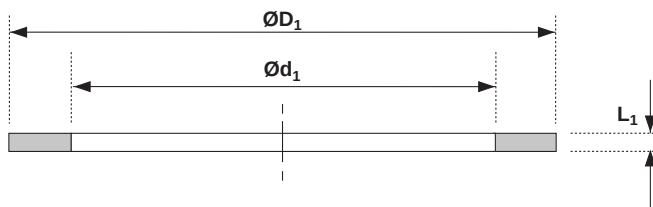
Type	----- Ød ₁	NOMINALS ØD ₁	----- L ₁	PART No.
90	90.00	95.00	1.25	G090BU
90	90.00	100.00	1.80	P090BU
117	90.00	105.00	3.00	70-090105
117	90.00	110.00	3.00	70-090110
90	95.00	100.00	1.25	G095BU
90	95.00	105.00	1.80	P095BU
117	95.00	110.00	3.00	70-095110
117	95.00	115.00	3.00	70-95115
90	100.00	105.00	1.25	G100BU
90	100.00	110.00	1.80	P100BU
117	100.00	115.00	3.00	70-100115
117	100.00	120.00	3.00	70-100120
90	105.00	110.00	1.25	G105BU
90	105.00	115.00	1.80	P105BU
117	105.00	120.00	3.00	70-105120
117	105.00	125.00	3.00	70-105125
90	110.00	115.00	1.25	G110BU
90	110.00	120.00	1.80	P110BU
117	110.00	125.00	3.00	70-110125
117	110.00	130.00	3.00	70-110130
117	112.00	125.00	3.00	70-112125
90	115.00	120.00	1.25	G115BU
90	115.00	125.00	1.80	P115BU
117	115.00	130.00	3.00	70-115130
90	120.00	125.00	1.25	G120BU
90	120.00	130.00	1.80	P120BU
117	120.00	140.00	3.00	70-120140
90	125.00	130.00	1.25	G125BU
90	125.00	135.00	1.80	P125BU
117	125.00	140.00	3.00	70-125140
90	130.00	135.00	1.25	G130BU
90	130.00	140.00	1.80	P130BU
117	130.00	150.00	3.00	70-130150
90	135.00	140.00	1.25	G135BU
90	135.00	145.00	1.80	P135BU
90	140.00	145.00	1.25	G140BU
90	140.00	150.00	1.80	P140BU

Type	----- Ød ₁	NOMINALS ØD ₁	----- L ₁	PART No.
117	140.00	160.00	3.00	70-140160
90	145.00	150.00	1.25	G145BU
90	150.00	160.00	1.80	G150BU
90	155.00	165.00	1.80	G155BU
90	160.00	170.00	1.80	G160BU
90	160.00	175.00	2.75	P160BU
117	160.00	180.00	4.00	70-160180
90	165.00	175.00	1.80	G165BU
90	170.00	180.00	1.80	G170BU
90	175.00	185.00	1.80	G175BU
90	180.00	190.00	1.80	G180BU
117	180.00	200.00	4.00	70-180200
90	185.00	195.00	1.80	G185BU
90	190.00	200.00	1.80	G190BU
117	190.00	210.00	4.00	70-190210
90	195.00	205.00	1.80	G195BU
90	200.00	210.00	1.80	G200BU
90	205.00	215.00	1.80	G205BU
90	210.00	220.00	1.80	G210BU
117	210.00	230.00	4.00	70-210230
90	220.00	230.00	1.80	G220BU
117	220.00	240.00	4.00	70-220240
90	230.00	240.00	1.80	G230BU
117	230.00	250.00	4.00	70-230250
90	240.00	250.00	1.80	G240BU
117	240.00	260.00	4.00	70-240260
90	250.00	260.00	1.80	G250BU
117	250.00	270.00	4.00	70-250270
90	260.00	270.00	1.80	G260BU

Back-up rings

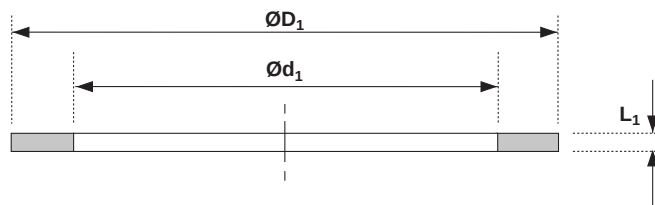
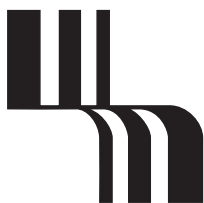
Hallite

inch



Type	----- $\varnothing d_1$	NOMINALS $\varnothing D_1$	----- L_1	PART No.
90	0.094	0.219	0.049	02-005T
90	0.125	0.250	0.049	02-006T
90	0.156	0.281	0.049	02-007T
90	0.187	0.312	0.049	02-008T
90	0.218	0.343	0.049	02-009T
90	0.250	0.375	0.049	02-010T
90	0.312	0.437	0.049	02-011T
90	0.375	0.500	0.049	02-012T
90	0.375	0.562	0.049	02-110T
90	0.375	0.625	0.049	02-204T
90	0.437	0.562	0.049	02-013T
90	0.437	0.625	0.049	02-111T
90	0.500	0.625	0.049	02-014T
90	0.500	0.687	0.049	02-112T
90	0.562	0.687	0.049	02-015T
90	0.562	0.750	0.049	02-113T
90	0.625	0.750	0.049	02-016T
90	0.625	0.812	0.049	02-114T
90	0.687	0.812	0.049	02-017T
90	0.687	0.875	0.049	02-115T
90	0.750	0.875	0.049	02-018T
90	0.750	0.937	0.049	02-116T
90	0.750	1.000	0.049	02-210T
90	0.812	0.937	0.049	02-019T
90	0.812	1.000	0.049	02-117T
90	0.812	1.062	0.049	02-211T
90	0.875	0.937	0.049	02-020T
90	0.875	1.062	0.049	02-118T
90	0.875	1.125	0.049	02-212T
90	0.937	1.125	0.049	02-119T
90	0.937	1.187	0.049	02-213T
90	1.000	1.187	0.049	02-120T
90	1.000	1.250	0.049	02-214T

Type	----- $\varnothing d_1$	NOMINALS $\varnothing D_1$	----- L_1	PART No.
90	1.062	1.250	0.049	02-121T
90	1.062	1.312	0.049	02-215T
90	1.125	1.312	0.049	02-122T
90	1.125	1.375	0.049	02-216T
90	1.187	1.375	0.049	02-123T
90	1.187	1.437	0.049	02-217T
90	1.250	1.437	0.049	02-124T
90	1.250	1.500	0.049	02-218T
90	1.312	1.500	0.049	02-125T
90	1.312	1.562	0.049	02-219T
90	1.375	1.562	0.049	02-126T
90	1.375	1.625	0.049	02-220T
90	1.437	1.625	0.049	02-127T
90	1.437	1.687	0.049	02-221T
90	1.500	1.687	0.049	02-128T
90	1.500	1.750	0.049	02-222T
90	1.500	1.875	0.070	02-325T
90	1.625	1.875	0.049	02-223T
90	1.625	2.000	0.070	02-326T
90	1.750	2.000	0.049	02-224T
90	1.750	2.125	0.070	02-327T
90	1.875	2.125	0.049	02-225T
90	1.875	2.250	0.070	02-328T
90	2.000	2.250	0.049	02-226T
90	2.000	2.375	0.070	02-329T
90	2.125	2.375	0.049	02-227T
90	2.125	2.500	0.070	02-330T
90	2.250	2.500	0.049	02-228T
90	2.250	2.6225	0.070	02-331T
90	2.375	2.625	0.049	02-229T
90	2.375	2.750	0.070	02-332T
90	2.500	2.750	0.049	02-230T
90	2.625	2.875	0.049	02-231T
90	2.625	3.000	0.070	02-334T



Back-up rings

Hallite
inch



90



117

Type	----- Ød ₁	NOMINALS ØD ₁	----- L ₁	PART No.
90	2.750	3.000	0.049	02-232T
90	2.875	3.125	0.049	02-233T
90	2.875	3.250	0.070	02-336T
90	3.000	3.250	0.049	02-234T
90	3.125	3.375	0.049	02-235T
90	3.125	3.500	0.070	02-338T
90	3.250	3.500	0.049	02-236T
90	3.375	3.625	0.049	02-237T
90	3.500	3.750	0.049	02-238T
90	3.625	3.875	0.049	02-239T
90	3.625	4.000	0.070	02-342T
90	3.750	4.000	0.049	02-240T
90	4.000	4.250	0.049	02-242T
90	4.125	4.500	0.070	02-346T
90	4.250	4.500	0.049	02-244T
90	4.500	4.750	0.049	02-246T



90



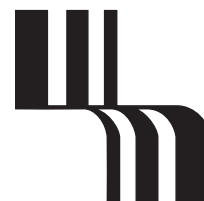
117

Type	----- Ød ₁	NOMINALS ØD ₁	----- L ₁	PART No.
90	4.500	5.000	0.105	02-425T
90	4.625	5.000	0.070	02-350T
90	4.750	5.000	0.049	02-248T
90	4.750	5.250	0.105	02-427T
90	5.000	5.500	0.105	02-429T
90	5.250	5.500	0.049	02-252T
90	5.250	5.750	0.105	02-431T
90	5.500	6.000	0.105	02-433T
90	5.750	6.000	0.049	02-256T
90	5.750	6.250	0.105	02-435T
90	6.000	6.500	0.105	02-437T
90	6.500	7.000	0.105	02-439T
90	6.750	7.000	0.049	02-261T
90	7.000	7.500	0.105	02-441T
90	7.500	8.000	0.105	02-443T
90	7.750	8.000	0.049	02-265T



Bonded washers

Hallite



TECHNICAL DETAILS

METRIC

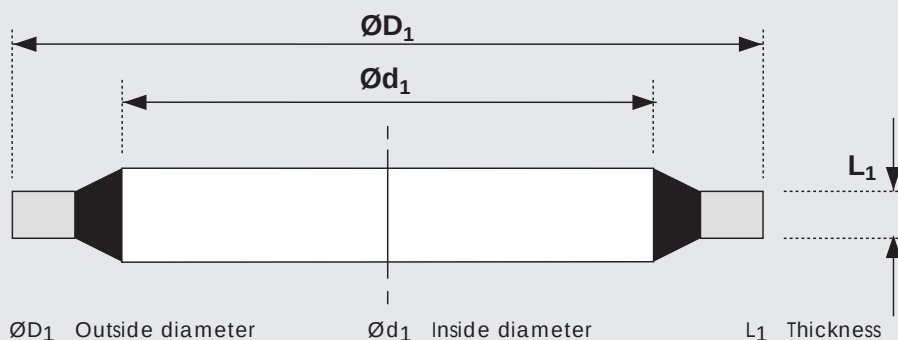
INCH

OPERATING CONDITIONS

MAXIMUM TEMPERATURE

-45°C + 110°C

-50°F + 230°F



DESIGN

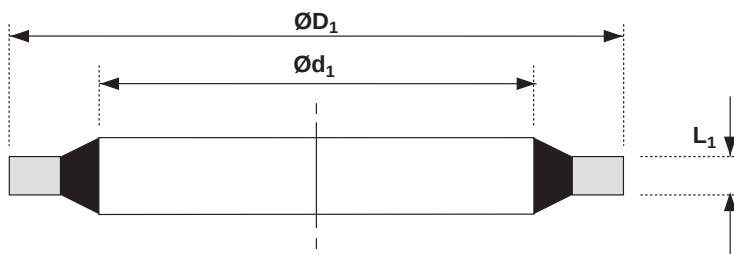
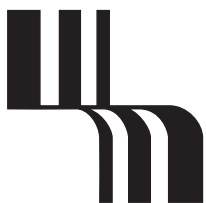
Hallite 130 offers a large range of bonded washers in metric and inch sizes to BS5750 : 1987 part 2; ISO9002 and EN29002: 1987. Also available in a variety of different metals and rubber compounds. Please contact your local Hallite Sales office for further details.

metric

TYPE	----- Ød ₁	NOMINALS ØD ₁	L ₁	----- THREAD SIZE	PART NUMBER
130	5.70	9.00	1.00	M5	40-203*
130	6.20	9.20	1.00	M5.5	40-205
130	6.70	10.00	1.00	M6	40-206
130	6.70	11.00	1.00	M6	40-207
130	8.70	13.00	1.00	M8	40-212
130	8.70	14.00	1.00	M8	40-213
130	10.70	16.00	1.50	M10	40-217
130	10.70	18.00	1.50	M10	40-218
130	11.80	19.10	1.50	M11	40-221*
130	12.70	18.00	1.50	M12	40-222
130	12.70	20.00	1.50	M12	40-223
130	13.70	22.00	1.50	M13	40-225*
130	14.70	22.00	1.50	M14	40-227
130	16.70	24.00	1.50	M16	40-229
130	17.40	24.00	1.50	M17	40-230*
130	18.00	26.00	1.50	M17.5	40-231*

TYPE	----- Ød ₁	NOMINALS ØD ₁	L ₁	----- THREAD SIZE	PART NUMBER
130	18.70	26.00	1.50	M18	40-232
130	20.70	28.00	1.50	M20	40-233
130	21.50	28.70	2.50	M21	40-234*
130	22.70	30.00	2.00	M22	40-236
130	24.70	32.00	2.00	M24	40-238
130	26.70	35.00	2.00	M26	40-239
130	27.20	36.00	2.00	M27	40-240
130	33.70	42.00	2.00	M33	40-243
130	34.30	43.00	2.00	M33	40-244
130	42.70	53.00	3.00	M42	40-247
130	48.70	59.00	3.00	M48	40-248

* Denotes possible indent item -
minimum quantity may apply



Bonded washers

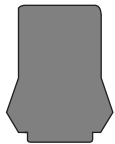
Hallite 130

inch

Type	Ød ₁	ØD ₁	L ₁	Thread Size			PART No.
				BSP	BSPF	BOLT	
130	0.120	0.250	0.051			6BA	40-001
130	0.162	0.286	0.051			4BA	40-002
130	0.205	0.330	0.051			2BA	40-003
130	0.270	0.520	0.051			1/4	40-004
130	0.275	0.525	0.051			1/4	40-005
130	0.326	0.500	0.049		1/16		40-519*
130	0.327	0.525	0.051			5/16	40-006
130	0.340	0.560	0.051			5/16	40-007
130	0.408	0.625	0.083		1/8	3/8	40-020
130	0.409	0.579	0.049		1/8	3/8	40-510*
130	0.443	0.723	0.083			0.400	40-008
130	0.460	0.750	0.083			7/16	40-009
130	0.541	0.810	0.083		1/4	1/2	40-021
130	0.545	0.736	0.049		1/4	1/2	40-511
130	0.585	0.875	0.083			9/16	40-010
130	0.623	0.875	0.083			0.600	40-022
130	0.650	1.000	0.083			5/8	40-011
130	0.680	0.937	0.083		3/8		40-023
130	0.683	0.894	0.049		3/8		40-512
130	0.715	1.000	0.097			11/16	40-012
130	0.775	1.060	0.097			3/4	40-024
130	0.848	1.125	0.097		1/2	13/16	40-025
130	0.852	1.051	0.049		1/2	13/16	40-513
130	0.925	1.250	0.097		5/8	7/8	40-026
130	0.955	1.310	0.097			15/16	40-013
130	1.065	1.375	0.097		3/4	1	40-027

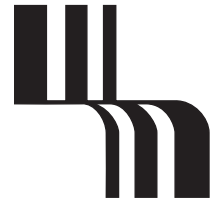
Type	Ød ₁	ØD ₁	L ₁	Thread Size			PART No.
				BSP	BSPF	BOLT	
130	1.075	1.280	0.049			3/4	1 40-514
130	1.095	1.520	0.097			1 1/16	40-028*
130	1.155	1.440	0.097			1 1/8	40-014
130	1.213	1.500	0.097		7/8	1 3/16	40-029
130	1.285	1.630	0.133			1 1/4	40-015
130	1.334	1.685	0.133		1	1 5/16	40-030
130	1.346	1.555	0.079			1 5/16	40-515
130	1.415	1.750	0.133			1 3/8	40-016
130	1.534	1.880	0.133			1 1/2	40-017
130	1.685	1.949	0.079		1 1/4		40-516
130	1.690	2.062	0.133		1 1/4	1 5/8	40-032
130	1.785	2.250	0.133			1 3/4	40-018
130	1.907	2.307	0.133		1 1/2	1 7/8	40-033
130	1.917	2.187	0.079		1 1/2	1 7/8	40-517
130	2.035	2.500	0.133			2	40-019
130	2.161	2.750	0.133		1 3/4	2 1/8	40-034
130	2.285	2.770	0.133			2 1/4	40-035
130	2.382	2.670	0.079			2	40-518
130	2.385	2.875	0.133		2		40-036
130	2.535	3.060	0.133			2 1/2	40-037
130	2.625	3.130	0.133		2 1/4		40-038
130	2.995	3.550	0.133		2 1/2		40-039
130	3.483	4.000	0.133		3		40-079

* Denotes possible indent item -
minimum quantity may apply



Flange seals

Hallite



657

TECHNICAL DETAILS

METRIC

INCH

OPERATING CONDITIONS

SPEED
MAXIMUM TEMPERATURE
MAXIMUM PRESSURE

Static
-45°C + 110°C
600 bar

Static
-50°F + 230°F
8500 p.s.i.

SURFACE ROUGHNESS

SEALING FACES
MATING FACE

µmRa µmRt
0.8 6.3
3 20 ↔ 30

µinCLA µinRMS
32 35
120 120

RADII

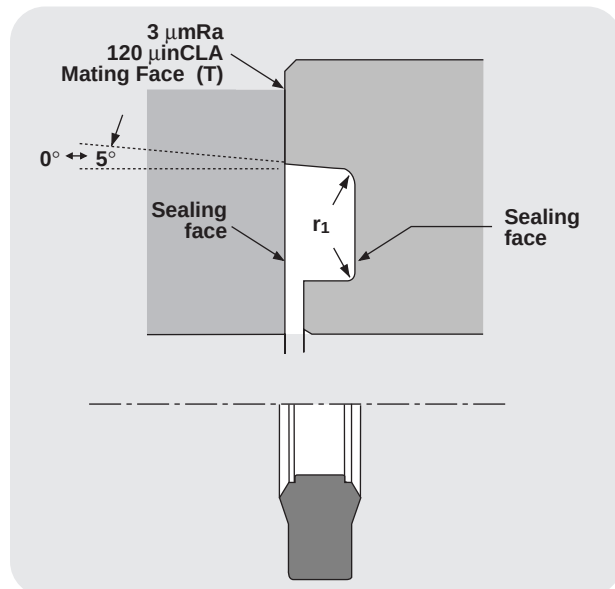
MAX FILLET RAD r_1 mm
MAX FILLET RAD r_1 in

0.80
0.03

TOLERANCES

mm
in

ØD ₁	S	L ₁	L ₂
±0.100	±0.025	±0.050	+0 -0.25
+0.005 -0	±0.015	+0.005 -0	+0 -0.010



DESIGN

The Hallite 657 has been designed especially to fit SAE J518 flanges. High pressure and pumping are common problems which prevent reliable sealing in applications where O rings are fitted. Hallite's 657 over comes these.

Manufactured as standard in Hallite's high quality Hythane 181, the material provides excellent extrusion resistance and is able to perform at both low and high temperatures. The seal's profile is designed to ensure that pumping is prevented and to provide reliable sealing of the flange.

In addition to the high specification material, the Hallite 657 is also manufactured in an industrial standard polyurethane.

Please ensure that the correct part number is specified for the material option that is required. See left for details.

MATERIAL OPTIONS

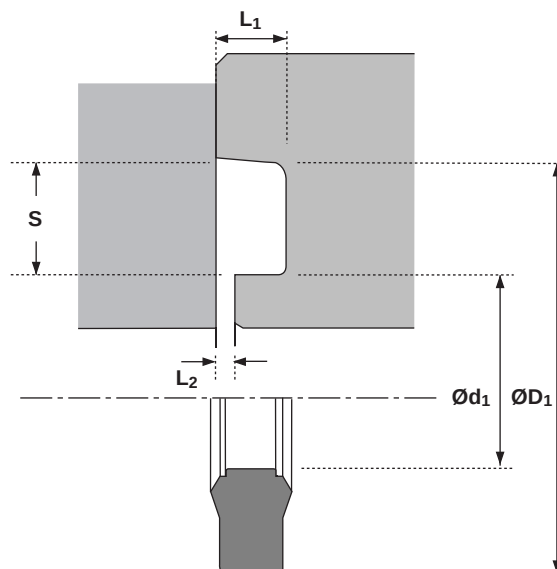
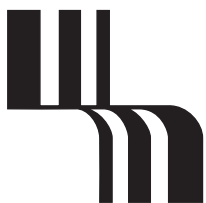
Material	Last two digits of part number
Hythane	- - - - 00
93 IRHD Polyester Polyurethane (AU)	- - - - 01

NB. Temperature rating for 93 IRHD Polyester Polyurethane (AU) changes to:
-30°C +100°C -22°F +212°F

N.B. Also listed, two **non-SAE** seal sizes for metric flanges.

FEATURES

- HIGH SPECIFICATION MATERIAL
- INDUSTRIAL GRADE MATERIAL OPTION
- SAE FLANGE SIZES



Flange seals

Hallite

657

metric

ØD ₁	TOL	Ød ₁	S	TOL	L ₁	TOL	L ₂	TOL	PART No.
33.5	+0.100 -0.100	26.3	3.6	+0.025 -0.025	2.200	+0.050 -0.050	0.25	+0.000 -0.250	44328__
45.0	+0.100 -0.100	36.2	4.4	+0.025 -0.025	3.300	+0.050 -0.050	0.25	+0.000 -0.250	44912__

inch - SAE J518

NOMINAL (SAE J518)	ØD ₁	TOL	Ød ₁	S	TOL	L ₁	TOL	L ₂	TOL	PART No.
1/2	1.000	+0.005 -0.000	0.670	0.165	+0.010 -0.010	0.110	+0.005 -0.000	0.010	+0.000 -0.010	44909__
3/4	1.250	+0.005 -0.000	0.920	0.165	+0.010 -0.010	0.110	+0.005 -0.000	0.010	+0.000 -0.010	44910__
1	1.560	+0.005 -0.000	1.230	0.165	+0.010 -0.010	0.110	+0.005 -0.000	0.010	+0.000 -0.010	44911__
1 1/4	1.750	+0.005 -0.000	1.420	0.165	+0.010 -0.010	0.110	+0.005 -0.000	0.010	+0.000 -0.010	44220__
1 1/2	2.125	+0.010 -0.000	1.785	0.165	+0.010 -0.010	0.110	+0.005 -0.000	0.010	+0.000 -0.010	44221__
2	2.500	+0.010 -0.000	2.160	0.165	+0.010 -0.010	0.110	+0.005 -0.000	0.010	+0.000 -0.010	44222__

Notes

