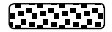


## Bearings

### TECHNICAL DETAILS

METRIC

INCH



#### OPERATING CONDITIONS

TEMPERATURE RANGE		-40° C + 120° C		-40° F + 250° F	
LIMITING PV VALUES LUBRICATED*		Speed m/sec	Pressure MN/m <sup>2</sup>	Speed ft/sec	Pressure p.s.i.
		0.1	10.0	0.3	1500
		1.0	6.0	3.0	900
		5.0	0.8	16.0	120

#### TYPICAL PHYSICAL PROPERTIES

SPECIFIC GRAVITY	1.27	1.27
COMPRESSION STRESS AT FAILURE (Temp 23° C)	450 MN/m <sup>2</sup>	(Temp 73° F) 65,000 p.s.i.
COMPRESSION STRESS AT YIELD* (Temp 23° C)	115 MN/m <sup>2</sup>	(Temp 73° F) 16,500 p.s.i.
COMPRESSION STRESS AT YIELD* (Temp 80° C)	58 MN/m <sup>2</sup>	(Temp 176° F) 8,500 p.s.i.
COEFFICIENT OF THERMAL CONDUCTIVITY	0.27 W/mK	0.16 Btu/ft ° F
COEFFICIENT OF THERMAL EXPANSION	Length 9 X 10 <sup>-5</sup> per ° C	Thickness 13 X 10 <sup>-5</sup> per ° C
		Length 5 X 10 <sup>-5</sup> per ° F
		Thickness 7.3 X 10 <sup>-5</sup> per ° F
COEFFICIENT OF DYNAMIC FRICTION on steel surface (0.2 μm Ra) / (8 μin CLA)	Dry 0.50	Lubricated 0.06

#### SURFACE ROUGHNESS

DYNAMIC SEALING FACE Ød <sub>1</sub>	μm Ra 0.4	μm Rt 4 max	μin CLA 16	μin RMS 18
STATIC SEALING FACE ØD <sub>1</sub> L <sub>1</sub>	3.2 max	16 max	125 max	140 max

#### BEARING STRIP TOLERANCES

L <sub>1</sub>	S	L <sub>1</sub>	S
-0.1 to -0.6	-0.02 to -0.1	-0.005 to -0.015	-0.001 to -0.004

#### WIDTH OF BEARING SPLIT - W

Ød <sub>1</sub> / ØD <sub>1</sub>	W	Ød <sub>1</sub> / ØD <sub>1</sub>	W
Up to 50	3.00 - 1.50	Up to 2in	0.12 - 0.06
Up to 120	5.00 - 3.50	Up to 5in	0.19 - 0.14
Up to 250	9.00 - 7.25	Up to 10in	0.35 - 0.29
Up to 550	17.00 - 15.00	Up to 22in	0.67 - 0.59

#### HOUSING DETAILS & TOLERANCES

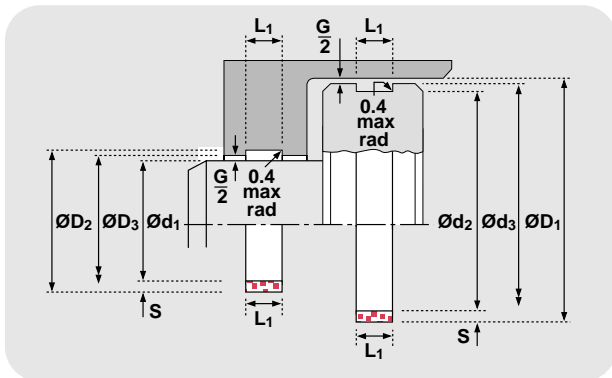
G min controls the minimum metal to metal clearance between the gland and rod or bore and piston. ROD

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. PISTON

Ød <sub>1</sub>	f9	Ød <sub>1</sub>	f9
ØD <sub>2</sub> = Ød <sub>1</sub> + 2S	up to : Ø80 H10 above : Ø80 H9	ØD <sub>2</sub> = Ød <sub>1</sub> + 2S	up to : Ø3in H10 above : Ø3in H9
ØD <sub>3</sub> = Ød <sub>1</sub> + G	G min / max + 0.2 -0 mm	ØD <sub>3</sub> = Ød <sub>1</sub> + G	G min / max + 0.008 -0 in

ØD <sub>1</sub>	H11	ØD <sub>1</sub>	H11
Ød <sub>2</sub> = ØD <sub>1</sub> - 2S	f9	Ød <sub>2</sub> = ØD <sub>1</sub> - 2S	f9
Ød <sub>3</sub> = ØD <sub>1</sub> - G	G min / max + 0.2 -0 mm	Ød <sub>3</sub> = ØD <sub>1</sub> - G	G min / max + 0.008 -0 in



\* 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.

## Bearings

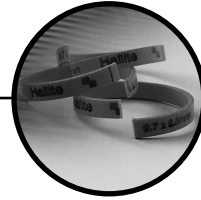
# 506



Hallite 506 bearing strip is available in three forms:

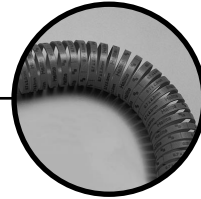
### CUT RINGS

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.

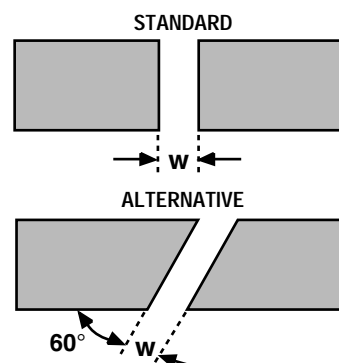
### FEATURES

- 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 angle



## Bearings

# 506

### metric - section range

S	L <sub>1</sub>
1.50	5.6
2.00	9.7
2.00	10.0
2.00	15.0
2.00	20.0
2.00	25.0
2.50	5.6 ‡
2.50	6.3
2.50	7.0
2.50	8.0
2.50	9.7 ‡

S	L <sub>1</sub>
2.50	13.0
2.50	15.0 ‡
2.52	19.5
2.50	20.0
2.50	25.0 ‡
2.52	30.0
3.00	9.7
3.00	12.8
3.00	20.0
3.02	15.0
3.20	9.7

S	L <sub>1</sub>
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 <sub>1</sub>
0.062	0.375
0.125	0.375
0.125	0.500
0.125	0.625
0.125	0.750
0.125	1.000
0.125	1.500

\*\* Denotes non standard product.  
Within the size range, items suffixed ‡ indicate cross sections to ISO 10766.

### metric - spiral lengths

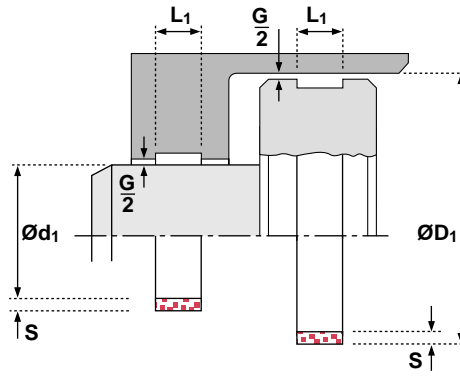
Ø RANGE		S	L <sub>1</sub>	G MAX	G MIN*	PART No.
Ød <sub>1</sub>	ØD <sub>1</sub>					
25 - 41	45 - 90	2.0	10.0		0.7	8501310
35 - 70	74 - 160	2.0	10.0		0.7	8502610
70 - 155	159 - 310	2.0	10.0		0.7	8502252
35 - 50	54 - 110	2.0	15.0		0.7	8503357
50 - 100	104 - 210	2.0	15.0		0.7	8503175
90 - 180	184 - 370	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

**AS REQUIRED BY THE SEAL EXTRUSION GAP**  
For applications not using a seal  
G MAX can be 1.6mm.

# Bearings

# 506

## metric - spiral lengths



Ø RANGE		S	L <sub>1</sub>	G MAX	G MIN*	PART No.
Ød <sub>1</sub>	ØD <sub>1</sub>					
50 - 60	66 - 120	3.0	12.8	<b>AS REQUIRED BY THE SEAL EXTRUSION GAP</b> 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.

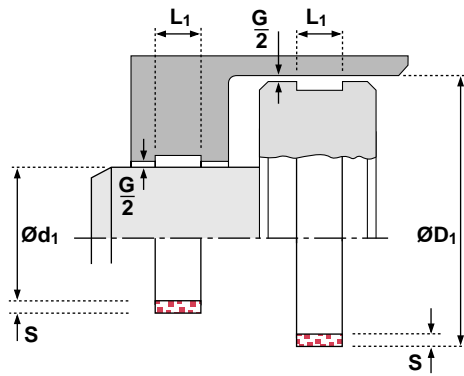
## inch - spiral lengths

Ø RANGE		S	L <sub>1</sub>	G MAX	G MIN*	PART No.
Ød <sub>1</sub>	ØD <sub>1</sub>					
1.000 - 1.375	2.625 - 3.500	0.125	0.375	<b>AS REQUIRED BY THE SEAL EXTRUSION GAP</b> 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

# 506

metric - flat coils



ID	Ø RANGE	OD	S	L <sub>1</sub>	G MAX	G MIN*	PART No.
140		210	2.0	15.0	<b>AS REQUIRED BY THE SEAL EXTRUSION GAP</b> 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	9.7		0.7	8581410
140		240	3.0	12.8		0.7	8581010
140		240	3.0	20.0		0.7	8581510
<b>inch - flat coils</b>							
5.500		9.750	0.125	0.375		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.

\* This value can be reduced if required by the seal's maximum extrusion gap - see housing design page 16.

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.

