



ASHTON SEALS
PART OF THE ASHTON GROUP

BONDED SEALS



www.ashton-group.co.uk
ask@ashton-group.co.uk

WASHER SPECIFICATIONS

The Ashton Bonded Seal is a rectangular section metal washer, with a trapezoidal shaped ring of vulcanised rubber bonded to the inside. Both the washer and the material can be selected to suit a given application. The Bonded Seal offers an ideal sealing solution to a wide range of engineering applications. Mechanical, Hydraulic and Pneumatic sectors all benefit from the high pressure, high temperature characteristics.

METAL
Mild Steel Pressings CS4 BRH5
Mild Steel Turned EN8
Stainless Steel Pressings T316
Stainless Steel Turned T303
Stainless Steel Turned T316
Stainless Steel Turned T304
Brass Turned CZ121
Brass Pressings CZ108
Aluminium Bronze Turned CA104
Aluminium Alloy Turned
High Tensile Steel
Aluminium Alloy Turned HE 30(6086 - T6)
SURFACE FINISH
Zinc Plating
Gold Passivate
Cadmium Plating
Chromic Anodise
Sulphuric Anodise
Clear Passivate
Zinc Nickel Trivalent Passivate

* For the restrictions of the use of these products, see "The Environmental Protection (Controls of Injurious Substances) (Number 2) Regulations 1993."

BURST PRESSURES

All our Bonded Seals are tested by our independent 3rd party, UKAS accredited test lab.

Please contact our sales team with your burst pressures requirements and we will provide a suitable Bonded Seal.

RoHS / REACH

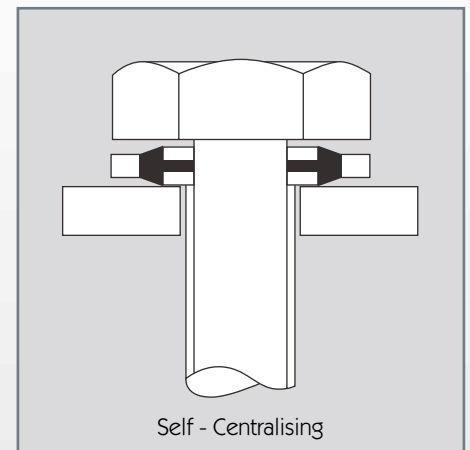
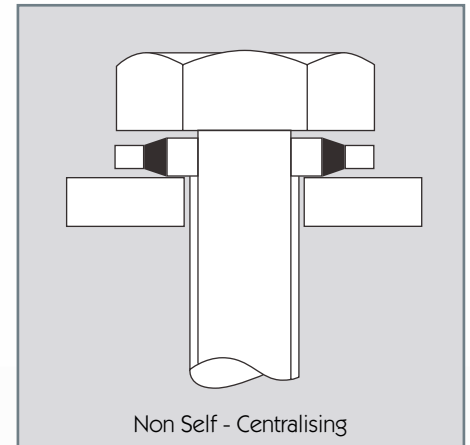
We would like to confirm that we have taken all reasonable steps or precautions to ensure our products meet the RoHS + REACH regulations.

TORQUE LOADING

Satisfactory performance of the seal depends on correct torque loading during assembly. The following table indicates recommended figures. (for double sealing, additional torque is generally required)

TREAD SIZE			TORQUE REQUIRED		DOUBLE SEALING FACTOR
METRIC	BOLT	BSP	Nm	lbf.in	
UP to 8	5/16	-	5.3	47+/-3	1.6
10	3/8	1/8	7.1	63+/-3	
11	7/16		11.8	105+/-5	1.3
12	1/2	1/4	15.8	140+/-5	
14	9/16	-	22.6	200+/-10	
16	5/8	3/8	30.5	270+/-12	
18	3/4		40.7	360+/-15	
20	13/16	1/2	56.5	500+/-25	1.2
22	7/8	5/8	67.8	600+/-30	1.1
24	1.0	3/4	73.4	650+/-30	1.0
27+	1.1/16	-	79.0	700+/-35	

Storage and packaging of these products should conform to the requirements of ISO2230:2002



Rubber Specifications and Compatibility

The characteristics of the compounds used and their compatibility rating against various fluids are summarised in the following table.

Key: 5 = Excellent, 4 = Very Good, 3 = Good, 2 = Fair, 1 = Poor

GENERAL CHARACTERISTICS	NITRILE (NBR)	HYDROGENATED NITRILE (HNBR)	FLUOROCARBON (VITON)*	SILICONE (VMQ)	FLUOROSILICON (FVMQ)	ETHYLENE PROPYLENE DIENE monomer (EPDM)	CHLOROPRENE (NEOPRENE)*
Rubber Specifications (Our standard compounds can meet the following specifications, but please contact us with your requirements as we can offer an a vast range of compounds to meet your demands)	ASTM D2000 M2 BG714 A14 B14 EA14 EO14 EO34 EF11 EF21 F17	ASTM D2000 M3 DH 710 A26 B16EO16 EO36	ASTM D2000 M2 HK 810 A1-10 B37 EF31	ASTM D2000 M7 GE 705 A19 B37 EA14 EO16 EO36 F19	ASTM D2000 M2 FK 606 A19 EF31 EO36 F19	ASTM D2000 M2 BA 710 A14 B13 F19	ASTM D2000 M3 BC 710 A14 B14 EO14 EO34
Hardness range IRHD	40-90	40-85	60-90	40-80	40-80	80-90	40-80
Continuous high temperature limit	110°C	150°C	225°C	250°C	175°C	120°C	140°C
Low temperature capability	-30°C	-30°C	-25°C	-75°C	-65°C	-30°C	55°C
SDynamic service/Abrasion resistance	5	5	4	1	1	2	4
Compression set resistance	4	5	4	5	4	5	4
FLUID COMPATIBILITY							
Acid - Inorganic	2	3	5	3	3	3	2 3
Acid - Organic	3	3	3	5	3	3	3
Ageing - Oxygen	2	3	4	5	5	5	4
Ageing - Ozone	1 2	3	4	5	5	5	4
Ageing - Weather	1	3	4	5	5	5	4
Air	2	5	4	5	4	5	3
Alcohols	4	5	2	4	4	4	4
Aldehydes	1 2	2	3	3	1	4	1 2
Alkalis	1 2	2	3	4	3	4	3
Amines	3	3	3	3	3	3	4
Animal oils	5	5	4	3	5	4	3
Esters - Alkyl Phosphate (Skydrol)	1	1	1	3	1 2	1 2	3
Esters - Aryl Phosphate	1 2	2	5	3	4	2	1 2
Esters - Silicate	3	3	5	1	4	2	2
Ethers	1	1	1	1	2	1	1
Gas permeability	3	3 5	4	1	1	3	3
Hydrocarbon fuels - Aliphatic	5	5	5	2	5	1	2
Hydrocarbon fuels - Aromatic	3	5	5	1	4	1	1 2
Hydrocarbons - Halogenated	1 2	1	5	1	4	3	1
Ketones	1	1	1	1	1 2	4	1
Lubricating oils - High aniline	5	5	5	4	4	1	3
Lubricating oils - Low aniline	4	5	5	2	1	1	1 2
Silicone oils	5	5	5	3	5	4	5
Vegetable oils	5	5	5	5	5	4	3
Water/steam	5	5	2	2	2	5	2

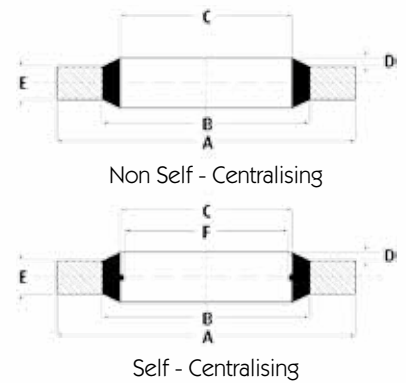
Please note, the information in the table above is to be used as a guide only.

* Viton® is a registered trademark of DuPont Dow Elastomers

* Neoprene® is a registered trademark of DuPont Dow Elastomers

Imperial Bonded Seals

ASHTON REF.	ALT REF.	REF.		A +0.13 -0.00	B +0.10 -0.10	C +0.10 -0.10	D	E +0.15 -0.15	F +0.20 -0.20
		BSP	BOLT						
001	PP45-1	-	6BA	6.35	4.09	3.05	0.20/ 0.45	1.22	-
002	PP45-2	-	4BA	7.26	5.26	4.12			-
003	PP45-3	-	2BA	8.38	6.35	5.21			-
004	PP45-4	-	1/4	13.21	8.00	6.86			4.70
005	PP45-5	-	1/4	13.34	9.53	6.99			4.70
006	PP45-6	-	5/16	13.34	9.53	8.31			6.10
007	PP45-7	-	5/16	14.22	10.04	8.64	0.25/ 0.51	2.03	6.10
020	PP45-A	1/8	3/8	15.88	11.84	10.37			8.56
008	PP45-8	-	0.4	18.36	12.45	11.26			8.56
009	PP45-9	-	7/16	19.05	13.08	11.69			8.80
021	PP45-B	1/4	1/2	20.57	15.21	13.74			11.45
010	PP45-10	-	9/16	22.23	16.39	14.86			11.58
022	PP45-BB	-	0.6	22.23	17.30	15.83			12.10
011	PP45-11	-	5/8	25.40	18.75	16.51			12.90
023	PP45-C	3/8	-	23.80	18.75	17.28			14.96
012	PP45-12	-	11/16	25.40	19.69	18.16		2.50	14.50
024	PP45-CC	-	3/4	26.92	21.21	19.69			15.80
025	PP45-D	1/2	13/16	28.58	23.01	21.54		2.50	18.64
025A		1/2	13/16	28.58	23.01	21.54			18.64
026	PP45-E	5/8	7/8	31.75	24.97	23.49		2.50	20.60
013	PP45-13	-	15/16	33.27	26.04	24.26			20.20
027	PP45-F	3/4	1.0	34.93	28.53	27.05		2.50	24.13
027A		3/4	1.0	34.93	28.53	27.05			24.13
028	PP45-FF	-	1.1/16	38.61	30.61	27.82			22.90
014	PP45-14	-	1.1/8	36.58	30.86	29.33			23.90
029	PP45-G	7/8	1.3/16	38.10	32.29	30.81			27.89
015	PP45-15	-	1.1/4	41.40	35.69	32.64	0.25/ 0.51	3.25	27.10
030	PP45-H	1.0	1.5/16	42.80	36.88	33.89		2.50	30.30
030A		1.0	1.5/16	42.80	36.88	33.89		3.25	30.30
016	PP45-16	-	1.3/8	44.45	38.99	35.94			29.50
017	PP45-17	-	1.1/2	47.75	42.04	38.96		2.50	32.70
032	PP45-J	1.1/4	1.5/8	52.38	45.93	42.93	0.25/ 0.51	3.25	38.96
032A		1.1/4	1.5/8	52.38	45.93	42.93			38.96
018	PP45-18	-	1.3/4	57.15	48.39	45.34		2.50	44.86
033	PP45-K	1.1/2	1.7/8	58.60	51.39	48.44		3.25	44.86
033A		1.1/2	1.7/8	58.60	51.39	48.44			43.60
019	PP45-19	-	2.0	63.50	54.74	51.69			50.80
034	PP45-L	1.3/4	2.1/8	69.85	58.30	54.89		2.50	56.67
035		-	2.1/4	70.36	61.09	58.04			56.67
036	PP45-M	2.0	-	73.03	63.63	60.58			55.40
036A		2.0	-	73.03	63.63	60.58			55.40
037	PP45-MM	-	2.1/2	77.72	67.44	64.39	0.25/ 0.51	3.25	65.80
038	PP45-N	2.1/4	-	79.50	69.98	66.68			65.80
039	PP45-P	2.1/2	-	90.17	79.38	76.08			72.20
079		3.0	-	101.47	92.84	89.09			85.00



All dimensions in mm
Note: There is a permitted moulding flashline on the inner diameter C in accordance with AGS 1186

Self-Centralising Bonded Seals

An improvement to the original concept is the self-centralising bonded seal that offers additional benefits.

It is available in all sizes.

When ordering Self-Centralising Bonded Seals change the first digit of Ashton reference to an 8 e.g. 8923

- Please note washer thickness may vary from those stated.
- Specification sheets available on request.

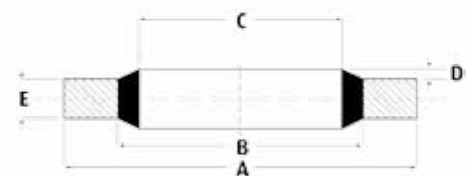
Please note that all "A reference Bonded Seals" equates to a thicker washer. Available on request.

Key features of Self-Centralising:

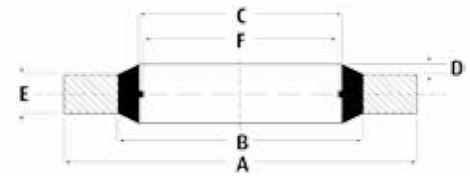
1. Elimination of seal offset
2. Elimination of leaks
3. Ease of installation
4. Reduce assembly time
5. Captive assembly

German Metric Bonded Seals

ASHTON REF.	ALT REF.	A +0.13 -0.00	B +0.10 -0.10	C +0.10 -0.10	D	E +0.15 -0.15	F +0.20 -0.20
201	PPM3.5	7.20	5.20	4.10	0.30	1.00	-
202	PPM4	7.00	5.40	4.50			3.40
203	PPM5	9.00	6.80	5.70			4.50
204	PPM5	10.00	7.40	5.70			4.50
205	PPM5.5	9.20	7.20	6.20			4.70
206	PPM6	10.00	8.00	6.70			4.70
207	PPM6	11.00	8.20	6.70			4.70
210	PPM6.7	10.20	8.60	7.30			5.77
212	PPM8	13.00	10.00	8.70			6.40
213	PPM8	14.00	10.40	8.70			6.40
215	PPM8.5	13.30	10.50	9.30			6.90
216	PPM10	15.88	12.00	10.35	0.40	2.00	8.56
217	PPM10	16.00	12.40	10.70		1.50	8.05
218	PPM10	18.00	12.40	10.70			8.05
219	PPM11	16.30	12.70	11.40			9.80
221	PPM11	19.10	13.50	11.80			9.80
222	PPM12	18.00	14.30	12.70			9.73
223	PPM12	20.00	14.40	12.70			9.73
225	PPM13	22.00	15.40	13.70			10.80
226	PPM13.5	18.70	15.70	14.00			11.30
227	PPM14	22.00	16.40	14.70			11.38
229	PPM16	24.00	18.40	16.70			13.41
230	PPM17	24.00	19.20	17.40			13.08
231	PPM17.5	24.70	20.10	18.00			13.60
232	PPM18	26.00	20.40	18.70			14.76
233	PPM20	28.00	22.50	20.70			16.76
234	PPM21	28.70	23.30	21.50	0.40	2.50	17.80
236	PPM22	30.00	24.40	22.70		2.00	18.74
237	PPM22	30.00	24.40	22.70		3.00	-
238	PPM24	32.00	26.40	24.70		2.00	20.11
239	PPM26	35.00	28.40	26.70			22.30
240	PPM27	36.00	29.00	27.20			23.30
242	PPM30	39.00	33.00	31.00			25.70
243	PPM33	42.00	35.80	33.70			28.70
244	PPM33	46.00	36.40	34.30			28.70
245	PPM36	46.00	38.80	36.70			31.10
246	PPM39	51.00	41.90	40.00		2.50	34.10
247	PPM42	53.00	44.40	42.70		3.00	36.50
248	PPM48	59.00	50.80	48.70			41.90
250	PPM52	64.50	56.40	53.30			46.00
254	PPM88	101.35	92.10	89.09		3.25	-



Non Self - Centralising



Self - Centralising

Key features of Self-Centralising:

1. Elimination of seal offset
2. Elimination of leaks
3. Ease of installation
4. Reduce assembly time
5. Captive assembly

All dimensions in mm

Note: There is a permitted moulding flashline on the inner diameter C in accordance with AGS 1186

When ordering Self-Centralising Bonded Seals change the first digit of Ashton reference to an 6 e.g. 612

- Please note washer thickness may vary from those stated.
- Specification sheets available on request.

PM1000 Metric Range

ASHTON REF.	SIZE	A +0.20 -0.20	B +0.20 -0.20	C +0.20 -0.20	D +0.20 -0.20	E +0.20 -0.20	F +0.10 -0.10	H +0.20 -0.20
3099	M6	10.0	8.0	7.4	6.0	1.0	0.40	4.70
3138	M8	14.0	11.0	10.0	8.0			6.40
3076	M10	17.0	13.0	12.0	10.0	1.5	0.50	8.56
3077	M12	19.0	16.0	15.0	12.0			9.73
3063	M14	22.0	18.0	17.0	14.0			11.38
3078	M16	24.0	20.0	19.0	16.0	2.0		13.41
3064	M18	27.0	22.0	21.0	18.0			14.76
3079	M20	30.0	25.0	24.0	20.0			16.76
3098	M22	32.0	27.0	26.0	22.0			18.74
3080	M24	36.0	29.0	28.0	24.0			20.11
3065	M26	35.0	30.5	30.0	30.80			22.30

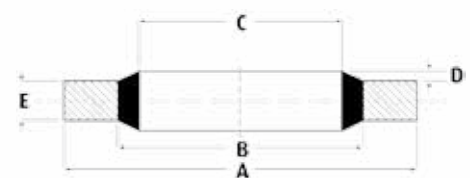


When ordering Self-Centralising Bonded Seals change the first digit of Ashton reference to an 4 e.g. 4076

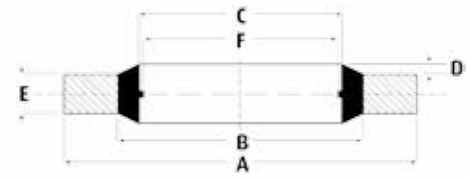
Note: There is a permitted moulding flashline on the inner diameter C in accordance with AGS 1186 All dimensions in mm

French Metric Bonded Seals

ASHTON REF.	ALT REF.	A +0.13 -0.00	B +0.10 -0.10	C +0.10 -0.10	D	E +0.15 -0.15	F +0.20 -0.20
301	PPFM3	7.50	5.00	3.60	0.30	1.00	-
302	PPFM4	9.00	6.00	4.60			3.40
303	PPFM5	10.00	7.00	5.60			4.50
304	PPFM6	11.00	8.00	6.60			4.70
306	PPFM6	11.40	8.40	7.00			4.70
307	PPFM8	13.00	10.00	8.60			6.40
310	PPFM10	17.00	12.10	10.70		1.50	8.56
312	PPFM11	18.10	13.20	11.80			9.80
313	PPFM12	19.00	14.10	12.70			9.73
315	PPFM13	20.10	15.20	13.80	0.40		10.80
316	PPFM14	21.00	16.10	14.70	0.30		11.38
317	PPFM16	23.00	18.10	16.70			11.41
318	PPFM17	23.70	18.80	17.40	0.40		13.08
320	PPFM18	27.00	20.40	18.70	0.30	2.00	14.76
321	PPFM20	29.00	22.40	20.70			16.76
322	PPFM20	28.60	23.00	21.50	0.40	2.50	-
323	PPFM21	30.00	23.40	21.70		2.00	17.80
324	PPFM22	31.00	24.40	22.70			18.74
325	PPFM23	32.00	25.40	23.70			19.30
326	PPFM24	33.00	26.40	24.70			20.11
327	PPFM26	35.30	28.70	27.00			22.30
328	PPFM27	36.00	29.40	27.70			23.30
329	PPFM28	36.00	30.30	28.60			24.80
331	PPFM30	39.00	32.40	30.70			25.70
332	PPFM33	42.00	35.40	33.70			28.70
333	PPFM36	48.00	39.60	37.00		2.50	31.10
334	PPFM39	51.00	42.60	40.00			34.10
335	PPFM42	54.00	45.60	43.00			36.50
336	PPFM45	57.00	48.60	46.00			39.50
337	PPFM48	60.00	51.60	49.00			41.90



Non Self - Centralising



Self - Centralising

Key features of Self-Centralising:

1. Elimination of seal offset
2. Elimination of leaks
3. Ease of installation
4. Reduce assembly time
5. Captive assembly

All dimensions in mm

Note: There is a permitted moulding flashline on the inner diameter C in accordance with AGS 1186

When ordering Self-Centralising bonded seals change the first digit of Ashton reference to an 7 e.g. 712

- Please note washer thickness may vary from those stated.
- Specification sheets available on request.

CETOPS (Recommended in ISO 1179-1973)

Note: There is a permitted moulding flashline on the inner diameter C in accordance with AGS 1186

All dimensions in mm

ASHTON REF.	THREAD SIZE BSPF	A +0.00 -0.20	B +0.20 -0.00	C +0.20 -0.00	D +0.25 -0.00	E +0.15 -0.15
519	1/16	12.70	9.90	8.30	0.25	1.25
510	1/8	14.70	12.00	10.40		
511	1/4	18.70	15.75	13.85		
512	3/8	22.70	19.25	17.35		
513	1/2	26.70	23.55	21.65		
514	3/4	32.50	29.20	27.30		2.00
515	1.0	39.50	36.10	34.20		
516	1.1/4	49.50	44.70	42.80		
517	1.1/2	55.50	50.60	48.70		
518	2.0	68.50	62.40	60.50		



Metric & Imperial Bonded Seals Kits

BONDED SEAL KIT CONTENTS - **METRIC**

STANDARD = 03-TA-SD0001062

SIZE REFERENCE	DESCRIPTION	QUANTITY
617	M10 BONDED SEAL, MILD STEEL & NITRILE	20
622	M12 BONDED SEAL, MILD STEEL & NITRILE	15
627	M14 BONDED SEAL, MILD STEEL & NITRILE	15
629	M16 BONDED SEAL, MILD STEEL & NITRILE	15
632	M18 BONDED SEAL, MILD STEEL & NITRILE	15
633	M20 BONDED SEAL, MILD STEEL & NITRILE	10
636	M22 BONDED SEAL, MILD STEEL & NITRILE	10
638	M24 BONDED SEAL, MILD STEEL & NITRILE	5

BONDED SEAL KIT CONTENTS - **IMPERIAL**

STANDARD = 03-TA-SD0001063

SIZE REFERENCE	DESCRIPTION	QUANTITY
820	1/8" BSP BONDED SEAL, MILD STEEL & NITRILE	20
821	1/4" BSP BONDED SEAL, MILD STEEL & NITRILE	15
823	3/8" BSP BONDED SEAL, MILD STEEL & NITRILE	15
825	1/2" BSP BONDED SEAL, MILD STEEL & NITRILE	15
826	5/8" BSP BONDED SEAL, MILD STEEL & NITRILE	10
827	3/4" BSP BONDED SEAL, MILD STEEL & NITRILE	10
830	1" BSP BONDED SEAL, MILD STEEL & NITRILE	5



Bodok Seals

The BODOK SEAL Specifications

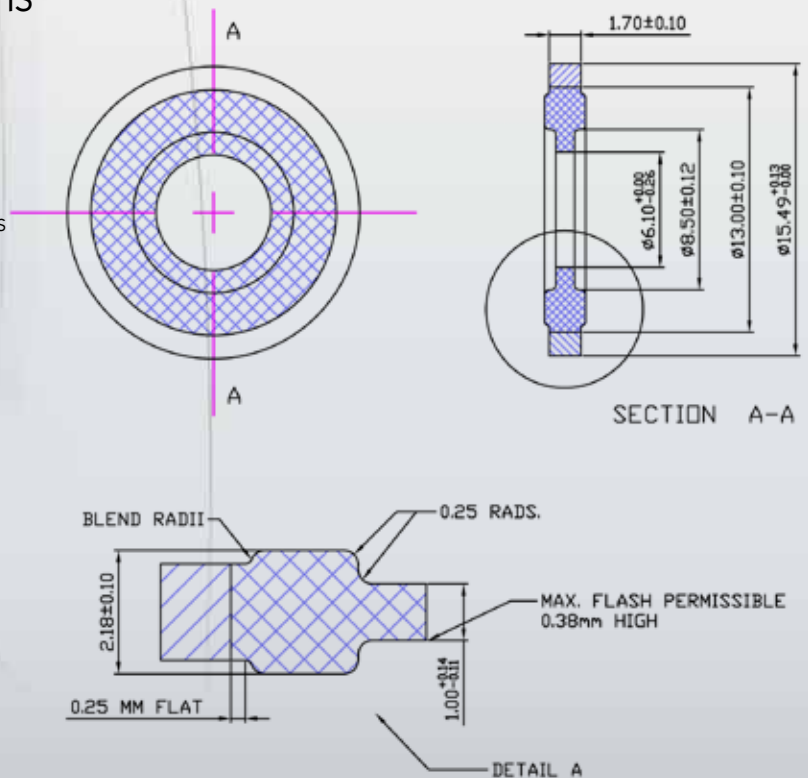
NITRILE, NEOPRENE*, VITON*, HNBR Bodok Seals are available in a range of hardness and colour specifications.

The modern day Bodok Seal is a specialised washer that has the crucial role of ensuring an air tight seal between the regulator of an anaesthetic machine and a gas cylinder.

The Bodok Seal is used extensively in areas where Anaesthetic Gases are dispensed, such as, Hospitals, Dentists, Veterinary Surgeries and Medical Practices.

* Viton® is a registered trademark of DuPont Dow Elastomers

* Neoprene® is a registered trademark of DuPont Dow Elastomers



A comprehensive range of products available from The Ashton Seals

SEALS DIVISION

- O-Rings
- O-Ring Cord
- FEP Encapsulated
- Bonded Seals
- JM Clipper Seals
- VR Rotary Seals
- JM Clipper Seals
- Oil Seals
- Self Retaining Lockwashes (Equivalent to Selon Seals)
- Rubber Covered Lockwashes (Equivalent to Seloc Seals)
- X-Rings
- Back-up Rings
- V-Rings
- Circlips
- Extruded Profiles
- Moulded Parts

LUBRICATION DIVISION

- Grease Guns
- Grease Nipples
- Grease Nipple Kits
- Connectors
- Nylon & Rubber Hoses
- Oil Cans
- Bucket Pumps

ANTI VIBRATION

- Rubber Dampers
- Metallic Dampers
- Levelling Machine Mounts
- Non Levelling Machine Mounts

KITS

- Standard Kits
- Automotive Air Conditioning Kits
- Plumbers Kits
- Splicing Kits
- Bonded Seals Kits
- Grease Nipple Kits
- Bespoke Kits

GASKET DIVISION

- Compressed Synthetic Fibre (CSF)
- Commercial Rubber
- Neoprene®*
- Nitrile
- EPDM
- Butyl
- Silicone
- Viton®*
- Rubber Matting
- Insertion / Diaphragm Rubber
- Felt
- Nylon
- Gasket Paper / Cellulose Fibre
- Cork
- PTFE Extruded and Moulded Rod and Tube
- PTFE Sheetting: Virgin, Expanded or Filled
- PTFE Envelopes

* Neoprene® is a registered trademark of DuPont Dow Elastomers

* Viton® is a registered trademark of DuPont Dow Elastomers

THE ASHTON GROUP:

ASHTON SEALS:

Seals
Bonded Seals
Gaskets
Anti-Vibration
Lubrication

ASHTONS (SHEFFIELD):

Pockets & Wallets
Blister Packs
Ring Binders
Presenters
Promotional
Counter Top Display Packaging
Health & Safety

ASHTON CORPORATE CLOTHING:

Corporate Clothing
Workwear
Sportswear
Knitwear
Casual Wear
Outdoor
Kidswear
Accessories



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