

ASHTON BONDED SEALS

PRODUCT

The Ashton Bonded Seal consists of a metal washer of rectangular section, which has bonded to it's inside diameter a vulcanised, trapezoidal shaped ring of rubber. Both the washer material and the rubber compound can be selected to suit a given application. (Fig.1)

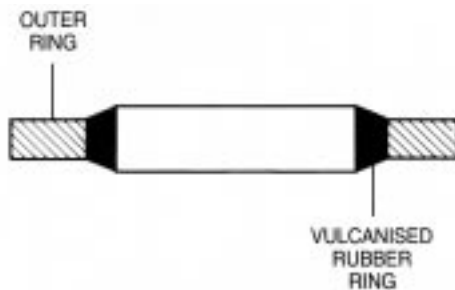


Fig.1

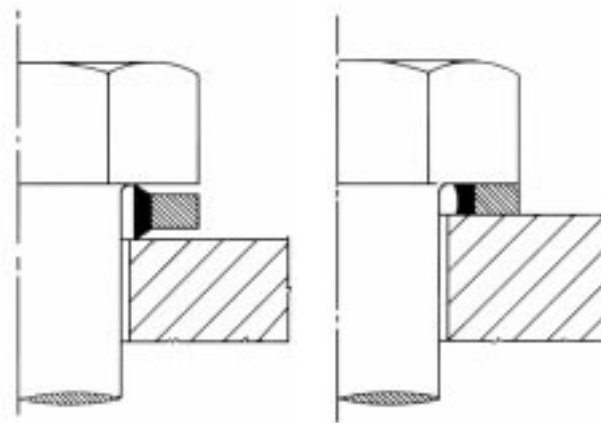


Fig.2

FUNCTION

To provide superior sealing under pressure. The washer resists the bursting forces and limits the rubber deformation. (Fig.2)

MATERIAL

WASHER

Mild steel	BS 1449-Hardness 165 Vickers (Min) 35 Ton f/sq inch minimum
Zinc plating	DEF. STAN. 03-20
Gold passivated	DEF. STAN. 130
Stainless steel	T316 - Non Magnetic - (STAMPED WASHERS) T303 - Non Magnetic - (TURNED WASHERS)
Brass	BS249

RUBBER

Nitrile	85±5 SHORE HARDNESS
Hydrogenated Nitrile	80±3 SHORE HARDNESS
Fluorocarbon	75±5 SHORE HARDNESS
EPDM	85±5 SHORE HARDNESS

BURST PRESSURES

Minimum burst pressures have been calculated using 35 Ton/sq. in UTS steel, tested and passed to AGS 1186.

DIMENSIONS

All sizes and tolerances are to AGS 1186.

SPECIALS

Please check with the factory for the availability of sizes not listed.
We are able to undertake specials.
Our design service is available for prototype and production quantities.

P
A
G
E

BACK TO

PLEASE SEE FOLLOWING PAGES FOR FURTHER DETAILS *CATALOGUE*

NITRILE

COMPOUND REF. 915N

HARDNESS RANGE: 85 ± 5 IRHD

Thomas A. Ashton Ltd material reference 915N is based on an Acrylonitrile Butadiene Copolymer material and is resistant to all mineral oils, water and watery liquids, hot air and numerous chemicals.

915N is a general purpose material and is used in a variety of applications.

PHYSICAL PROPERTIES	ASTM D2000 7BG915
Hardness IRHD	86
Tensile Strength	154 kg/cm ²
Elongation at Break %	250

AIR AGED 70 HOURS AT 100°C	A14
Hardness Change (Points)	+2
Tensile Strength Change (%)	-3
Elongation Change %	-12

COMPRESSION SET 25% COMP	B14
22 Hours at 100°C	13.93

AGED IN ASTM No.1 OIL 70 HRS AT 100°C	E014
Hardness Change (Points)	+2
Tensile Change %	+8
Elongation Change %	-10
Volume Change %	-4.78

AGED IN ASTM No.3 OIL 70 HRS AT 100°C	E034
Hardness Change (Points)	-5
Tensile Change %	-1.2
Elongation Change %	-8
Volume Change %	+5.7

AGED IN ASTM FUEL A 70 HRS AT ROOM TEMP.	EF11
Hardness Change (Points)	-1
Tensile Change %	-2.6
Elongation Change %	-4
Volume Change %	+1.6

AGED IN ASTM FUEL B 70 HRS AT ROOM TEMP.	EF21
Hardness Change (Points)	-18
Tensile Change %	-14.3
Elongation Change %	-4
Volume Change %	+15.6

AGED IN WATER 70 HRS AT 100°C	EA14
Hardness Change (Points)	+1
Volume Change %	+2.4

Note this material complies with specification ASTM D2000 7BG915 A14, B14, E014, E034, EF11, EF21, EA14, F16.

EPDM

COMPOUND REF. 0398

HARDNESS RANGE: 85 ± IRHD

Ashton's EPDM is a Polymerised Ethylene Propylene and Diene Monomers EPDM with an Ethylene Propylene ratio of 60:40 cross linked with peroxides for optimum compression set and ageing characteristics.

PHYSICAL PROPERTIES	80-90
Hardness IRHD	12 Min
Tensile Strength MPa	200
Elongation at Break %	1.16 +/- 0.02

AIR AGED 168 HOURS	100°C	125°C	150°C
Tensile Strength	-10% Max	-10% Max	-25% Max
Elongation at Break	-10% Max	-20% Max	-50% Max
Hardness Change	+2 Max	+3 Max	+4 Max
Compression Set	20% Max	25% Max	30% Max
Low temp Flexibility at -50°C - Flexible			

FLUOROCARBON

Ozone Resistance 50 PPM at 20% Strain - No cracks.

COMPOUND REF. 052

HARDNESS RANGE: 75 ± 5 IRHD

Thomas A. Ashton Ltd material reference 052 is based on a Fluorocarbon elastomer with an operating temperature of +250°C to -25°C and is resistant to mineral oils, petrols, a wide range of solvents and many chemicals in this regard being superior to other oil resistant materials such as nitrile (NBR) rubber.

PHYSICAL PROPERTIES	
Hardness IRHD	75-80
Tensile Strength MPa	13 Min
Elongation at Break	200%
Specific Gravity	1.83 +/- 0.02
Compression Set 70 Hrs at 150°C	20% Max

AIR AGED 168 HRS AT 200°C	
Hardness Change	+5% Max
Tensile Change	-10% Max
Elongation Change	-25% Max

FLUID RESISTANCE - VOLUME SWELL		
ASTM Oil No.1	7 Days at 150°C	+2%
ASTM Oil No.3	7 Days at 150°C	+2.5%
ASTM Fuel A	3 Days at 23°C	+0.1%
ASTM Fuel B	7 Days at 23°C	+2.5%
ASTM Fuel C	3 Days at 23°C	+4.5%
ASTM Fuel D	3 Days at 23°C	+4.8%

ZETPOL - HYDROGENATED NITRILE

COMPOUND REF. HNBR

HARDNESS RANGE: 80 IRHD-36% ACRYLONITRILE

Ashton's Zetpol material is a Hydrogenated Nitrile compound with an operating temperature of +150°C and -40°C.

Zetpol has **higher** tensile strength and wear resistance than NBR, five times **higher** sour gasoline and ozone resistance. The material is very **good** in oil-wells, with resistance to heat, hydrogen sulphide, **corrosion** inhibitor, oil, steam and blister.

PHYSICAL PROPERTIES	
Hardness (Shore A)	80
Specific Gravity	1.22
Tensile Strength	22.4 MPA
Elongation at Break	2.10%
Crescent Tear	16.5

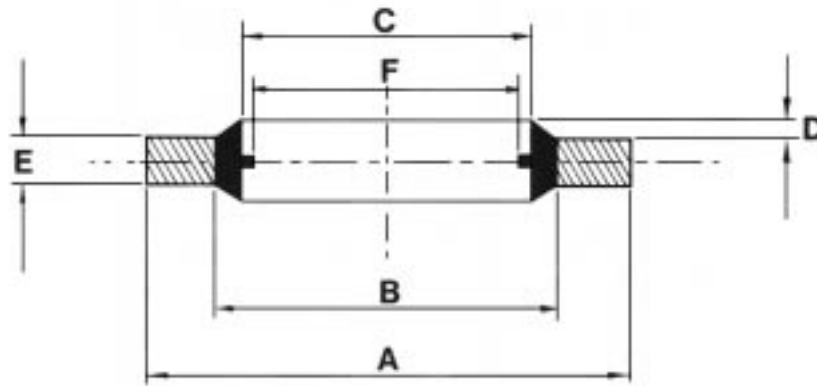
AGED IN AIR 168 HRS AT 150°C	ASTM1	ASTM3
Change in Hardness	+5	-1
Change in Tensile	-14.8%	-14.5%
Change in Elongation	-36.5%	-22.25%

AGED IN ANTI-FREEZE		
(ETHYLENE GLYCOL 70 HRS AT 115°C)		
Change in Tensile		-4.6%
Change in Elongation		-3.8%
Compression Set 70 Hrs at 150°C		23.2%
Volume Swell 168 Hrs at 150°C	ASTM1	ASTM3
	2.86%	24.2%
Volume Swell in Ethylene Glycol 70 Hrs at 115°C		0.96%

P
A
G
E

BACK TO

CATALOGUE

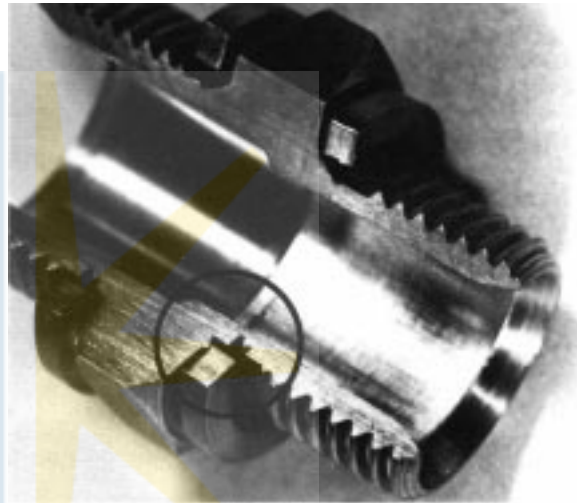


SELF CENTRALISED BONDED SEALS

- ELIMINATION OF SEAL OFFSET
- ELIMINATION OF LEAKS
- EASE OF INSTALLATION
- REDUCED ASSEMBLY TIME
- CAPTIVE ASSEMBLY

The centralising feature is a thin membrane, the inner diameter of which equals the core diameter of the locating thread. The membrane offers little assembly resistance and ensures that the seal locates centrally in the thread undercut.

Designed for use in applications where thread undercut is present.



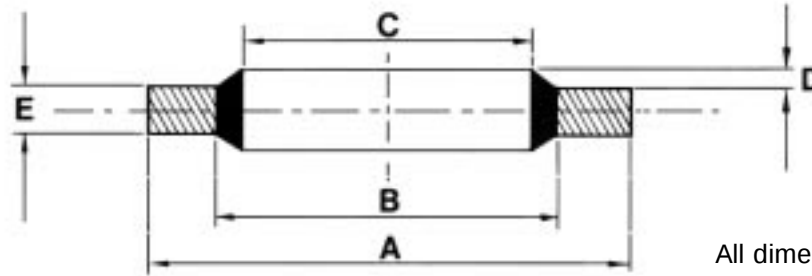
Size Ref.	Thread Size		A +0.13 -0.00	B ±0.10	C +0.10 -0.00	D	E	F +0.00 -0.20	Minimum Burst Pressure Bar
	BSP	Bolt							
820	1/8	3/8	15.88	11.84	10.37	0.35 0.51		8.56	1500
821	1/4	1/2	20.57	15.21	13.74		2.03	11.45	1550
823	3/8	-	23.80	18.75	17.28		2.18	14.96	1260
825	1/2	13/16	28.58	23.01	21.54			18.64	1150
826	5/8	7/8	31.75	24.97	23.49		2.34	20.60	1250
827	3/4	1	34.93	28.53	27.05		2.60	24.13	1060
829	7/8	1 3/16	38.10	32.29	30.81			27.89	900
830	1	1 5/16	42.80	36.88	33.89			30.30	790
832	1 1/4	1 5/8	52.38	45.93	42.93		3.25	38.96	690
833	1 1/2	1 7/8	58.60	51.39	48.44		3.51	44.86	690
836	2	-	73.03	63.63	60.58			56.67	700

All dimensions in mm.

BACK TO

CATALOGUE

NOTE: THERE IS A PERMITTED MOULDING FLASH LINE ON THE INNER DIAMETER "C" IN ACCORDANCE WITH AGS 1186.



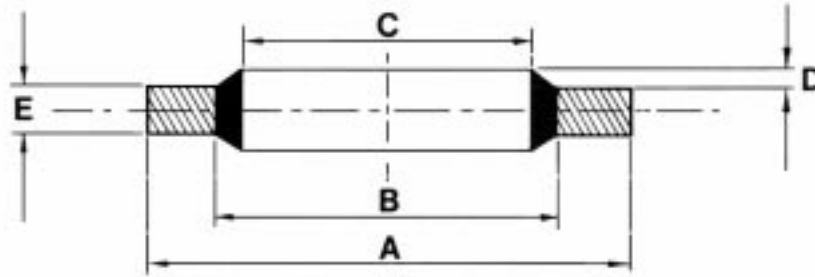
All dimensions in mm

IMPERIAL BONDED SEALS								
Size Ref.	Thread Size		A	B	C	D	E	Minimum Burst Pressure Bar
	BSP	Bolt	+0.13 -0.00	±0.13	±0.13			
001		6BA	6.35	4.09	3.05			2150
002		4BA	7.26	5.26	4.12			1570
003		2BA	8.38	6.35	5.21			1375
004		1/4	13.21	8.00	6.86	0.2/0.38	1.22/1.37	2450
005		1/4	13.34	9.53	6.99			1700
006		5/16	13.34	9.53	8.31			1700
007		5/16	14.22	10.04	8.64			1750
020	1/8	3/8	15.88	11.84	10.37			1500
008		0.4	18.36	12.45	11.26			1950
009		7/16	19.05	13.08	11.69			1900
021	1/4	1/2	20.57	15.21	13.74		2.03/2.18	1550
010		9/16	22.23	16.39	14.86			1575
022		0.6	22.23	17.30	15.83			1310
011		5/8	25.40	18.75	16.51			1550
023	3/8		23.80	18.75	17.28			1260
012		11/16	25.40	19.69	18.16			1320
024		3/4	26.92	21.21	19.69			1260
025	1/2	13/16	28.58	23.01	21.54			1150
026	5/8	7/8	31.75	24.97	23.49			1250
013		15/16	33.27	26.04	24.26	0.25/0.51	2.34/2.60	1275
027	3/4	1	34.93	28.53	27.05			1060
028		1 1/16	38.61	30.61	27.82			1250
014		1 1/8	36.58	30.86	29.33			900
029	7/8	1 3/16	38.10	32.29	30.81			900
015		1 1/4	41.40	35.69	32.64			810
030	1	1 5/16	42.80	36.88	33.89			790
031	1	1 5/16	42.80	36.88	33.89			810
016		1 3/8	44.45	38.99	35.94			700
017		1 1/2	44.75	42.04	38.96			700
032	1 1/4	1 5/8	52.38	45.93	42.93			690
018		1 3/4	57.15	48.39	45.34			875
033	1 1/2	1 7/8	58.60	51.39	48.44		3.25/3.51	690
019		2.0	63.50	54.74	51.69			780
034	1 3/4	2 1/8	69.85	58.30	54.89			950
035		2 1/4	70.36	61.09	58.04			760
036	2		73.03	63.63	60.58			700
037		2 1/2	77.72	67.44	64.39			770
038	2 1/4		79.50	69.98	66.68			690
039	2 1/2		90.17	79.38	76.08			700
079	3		101.60	93.27	88.47			530

P
A
G
E

BACK TO

CATALOGUE



GERMAN METRIC BONDED SEALS

Thread Ref.	Size Ref.	A +0.13 -0.00	B ±0.10	C +0.10	D +0.25 -0.00	E	Minimum Burst Pressure Bar
M5	203	9.00	6.80	5.70	0.30	0.90 1.10	1400
M5.5	205	9.2	7.20	6.20			1220
M6	206	10.00	8.00	6.70			1130
M6	207	11.00	8.20	6.70			1510
M8	212	13.00	10.00	8.70			1330
M8	213	14.00	10.40	8.70			1550
M10	217	16.00	12.40	10.70	0.40	1.40 1.60	1350
M10	218	18.00	12.40	10.70			1880
M11	221	19.10	13.50	11.80			1770
M12	222	18.00	14.40	12.70			1250
M12	223	20.00	14.00	12.70			1680
M13	225	22.00	15.40	13.70			1810
M14	227	22.00	16.40	14.70			1510
M16	229	24.00	18.40	16.70			1400
M17	230	24.00	19.20	17.40			1150
M17.5	231	24.70	20.10	18.00			1070
M18	232	26.00	20.40	18.70			1275
M20	233	28.00	22.50	20.70			1150
M21	234	28.70	23.30	21.50		2.35/2.65	1080
M22	236	30.00	24.40	22.70		1.90/2.10	1100
M24	238	32.00	26.40	24.70		1.90 2.10	1050
M26	239	35.00	28.40	26.70			1050
M27	240	36.00	29.00	27.20			1130
M33	243	42.00	35.80	33.70		2.85 3.15	900
M33	244	43.00	36.40	34.30			880
M42	247	53.00	44.00	42.70			940
M48	248	59.00	50.80	48.70			800

P
A
G
E

All dimensions in mm.

NOTE: THERE IS A PERMITTED MOULDING FLASH LINE ON THE INNER DIAMETER "C" IN ACCORDANCE WITH AGS 1186.

BACK TO

CATALOGUE

FRENCH METRIC BONDED SEALS							
Thread Ref.	Size Ref.	A +0.13 -0.00	B ±0.10	C +0.10	D +0.25 -0.00	E	Minimum Burst Pressure Bar
M4	302	9	6.00	4.60	0.30	0.90 1.10	2000
M5	303	10	7.00	5.60			1780
M6	304	11	8.00	6.60			1680
M6	306	11.4	8.40	7.00			1540
M8	307	13	10.00	8.60			1330
M10	310	17	12.10	10.70	0.40	1.40 1.60	1730
M12	313	19	14.10	12.70			1530
M13	315	20.10	15.20	13.80			1440
M14	316	21	16.10	14.70			1370
M16	317	23	18.10	16.70			1240
M18	320	27	20.40	18.70	0.40	1.90 2.10	1450
M20	321	29	22.40	20.70			1340
M21	323	30	23.40	21.70			1290
M22	324	31	24.40	22.70			1240
M24	326	33	26.40	24.70			1160
M26	327	35.30	28.70	27.00	0.40	2.40 2.60	870
M27	328	36	29.40	27.70			1060
M28	329	36	30.30	28.60			730
M30	331	39	32.40	30.70			970
M33	332	42	35.40	33.70			900
M36	333	48	39.60	37.00	0.40	2.40 2.60	1010
M39	334	51	42.60	40.00			950
M42	335	54	45.60	43.00			890
M45	336	57	48.60	46.00			860
M48	337	60	51.60	49.00			790

BONDED SEALS TO SUIT PIPE CONNECTIONS AND COUPLINGS							
Thread Dia. B.S.P.F. Thread (IMPERIAL)	BONDED SEAL						Minimum Burst Pressure Bar
	Size Ref.	A -0.2	B +0.2	C +0.2	D +0.25 -0.00	E ±0.15	
1/16	519	12.7	9.9	8.3	0.25	1.25	1100
1/8	510	14.7	12	10.4			930
1/4	511	18.7	15.75	13.85			793
3/8	512	22.7	19.25	17.35			775
1/2	513	26.7	23.55	21.65			586
3/4	514	32.5	29.2	27.3	0.25	2	500
1	515	39.5	36.1	34.2			414
1 1/4	516	49.5	44.7	42.8			500
1 1/2	517	55.5	50.6	48.7			434
2	518	68.5	62.4	60.5			448

As recommend in ISO 1179 - 1973
(Formerly a C.E.T.O.P. recommendation)

All dimensions in mm.

NOTE: THERE IS A PERMITTED MOULDING FLASH LINE ON THE INNER DIAMETER "C" IN ACCORDANCE WITH AGS 1186.

BACK TO

CATALOGUE