NAYLOR
BAND-SEAL
Made in the UK
Excellent Construction Products

Flexible Couplings

Band-Seal Couplings

email: band-seal@naylor.co.uk
web: www.naylor.co.uk

Need a Coupling *FAST?*
One call - Price & Delivery Promise
Tel: 01226 794077

For the repair of and connections into existing pipelines

Introduction

Naylor, a manufacturer of building materials since 1890, has a wealth of experience in manufacturing techniques with a reputation for service, in-depth ranges, quality products and value for money.

Band-Seal is a range of versatile, flexible couplings used for jointing pipes of both similar and different materials and sizes. The couplings are especially suitable for drains, sewers and underground pipelines. The extensive range connects pipes from 24mm to over 2000mm nominal size (DN), to other pipes of the same or different sizes and material.

The Band-Seal range of couplings consists of moulded synthetic elastomeric sleeves and stainless steel clamping bands. Standard Couplings also include a stainless steel shear band. A wide range of Bushes, Tools and End Caps complete the range.

Band-Seal Couplings are manufactured to exacting standards and are used and specified extensively by Water Companies and Local Authorities throughout the UK as well as being distributed worldwide.

Ordering Details

Obtain the sizes and materials of the pipes/junctions to be jointed. It is preferred that precise outside diameters are confirmed for each pipe, preferably by direct measurement on site. Reference to inside diameters and pipe material will not normally be sufficient to identify outside diameters. The pipe table (pages 19-20) provides guidance on the outside diameter of the more common types and sizes of pipes but is not a substitute for pipe measurement on site. For pipes up to DN300, reference can also be made to the lists of typical connections.

All couplings and bushes over 600mm diameter are manufactured to suit specific site requirements therefore measurement of the outside diameters of the pipes to be joined is essential. It is recommended to take into consideration possible restrictions on site as the use of Band-Seal will require access to both sides of the pipe. For this reason it may be advisable to order a slightly larger Band-Seal Coupling for ease of installation.

Order the components using the Coupling Reference and the Bush Reference (where required) from your local stockist. In the event of difficulties, please contact the Naylor Sales Department (England & Wales Tel: 01226 794077, Fax 01226 794062) (Scotland & Ireland Tel: 01592 717900, Fax: 01592 717906), who will be pleased to assist.

Availability

Naylor maintains comprehensive stocks of all types of Band-Seal Couplings and Bushes at Cawthorne, South Yorkshire, for England and Wales and Methil, Fife, for Scotland and Ireland.

The most popular sizes and types of coupling are readily available for Depots, Builders' Merchants or specialist Band-Seal Stockists throughout Britain. Couplings and Bushes, which are specially manufactured to suit specific site requirements, are usually produced and supplied direct from either Cawthorne or Methil within 24 hours.

Delivery

A New and Improved Specials Service

A 'Next Day' delivery service is available including before noon and before 10.30am options using overnight carrier services from our main factory at Cawthorne for England and Wales and from Methil for Scotland and Ireland. For emergency repairs we can also offer a 'Same Day' service throughout the UK.

Standard Couplings

These couplings comply with the requirements of WIS 4-41-01 and are specifically designed for jointing pipes in sewerage, drainage and similar non-pressure applications where resistance to shear loads is required.

- On public sewers where couplings complying with WIS 4-41-01 are specified
- Repair and maintenance of existing pipelines
- Connections between pipes of different materials or sizes (Bushes may be required in these circumstances)
- Making connections by the insertion of new junctions into an existing pipeline
- Reconnection of laterals on renovated sewers
- Introducing rocker or hinge pipes outside manholes or structures
- Jointing short or cut lengths of pipe

Reference	Min OD (mm)	Max OD (mm)	Width (mm)	Box Qty
NSC 115	100	115	120	20
NSC 121	105	121	120	20
NSC 125	110	125	120	20
NSC 137	120	137	120	20
NSC 142	125	142	120	12
NSC 150	130	150	150	12
NSC 165	140	165	150	12
NSC 175	150	175	150	10
NSC 182	160	182	150	10
NSC 200	175	200	150	10
NSC 215	190	215	150	8
NSC 225	200	225	150	6
NSC 250	225	250	150	6
NSC 275	250	275	150	6
NSC 290	265	290	150	5
NSC 310	285	310	190	3
NSC 320	300	320	190	3
NSC 335	305	335	190	3
NSC 345	315	345	190	4
NSC 365	340	365	190	4
NSC 385	355	385	190	4
NSC 412	385	412	190	2
NSC 425	400	425	190	2
NSC 430	405	430	190	2
NSC 445	420	445	190	2
NSC 465	435	465	190	2
NSC 475	445	475	190	2
NSC 495	465	495	190	2
NSC 510	480	510	190	2
NSC 525	495	525	190	2
NSC 540	510	540	190	2
NSC 550	520	550	190	2
NSC 560	530	560	190	2
NSC 580	555	580	190	2
NSC 600	570	600	190	2
NSC 620	590	620	190	2

316 Stainless Steel bands are available on all of the above

Large Standard Couplings

As the items are made to order to suit specific site requirements: please specify dimensions required when ordering.

Note: The size range is an indication of size for pricing purposes only. Couplings are manufactured to meet customer requirements. Please consider that the size you request will be the maximum size that the coupling will be manufactured to. For ease of installation you may require a slightly larger size.

Reference	Min OD (mm)	Max OD (mm)	Width (mm)
NSC 601	601	699	190
NSC 700	700	799	190
NSC 800	800	899	190
NSC 900	900	999	190
NSC 1000	1000	1099	190
NSC 1100	1100	1199	190
NSC 1200	1200	1299	190
NSC 1300	1300	1399	190
NSC 1400	1400	1499	190
NSC 1500	1500	1599	190
NSC 1600	1600	1699	190
NSC 1700	1700	1799	190
NSC 1800	1800	1899	190
NSC 1900	1900	1999	190
NSC 2000	2000	3000	190
NSC 3000	3000	4000	190
316 Stainless Steel bands are available on all of the above			

One Call Price and Delivery Promise
01226 794077
e-mail: band-seal@naylor.co.uk
Fax: 01226 794062

Extra Wide Couplings

Naylor Extra Wide Couplings are used predominantly for jointing pipes with a diameter greater than 1000mm but they are available to suit pipes with an outside diameter of 200mm upwards.

Naylor Extra Wide Couplings have a width of 300mm which allows a greater tolerance when cutting larger diameter pipes. The increased width also accommodates the greater movement of the joints associated with the depths at which these large diameter pipes are laid.

Note: The size range is an indication for pricing purposes only. Couplings are manufactured to meet customer requirements.

Reference	Min OD (mm)	Max OD (mm)	Width (mm)
NWC 601	601	699	300
NWC 700	700	799	300
NWC 800	800	899	300
NWC 900	900	999	300
NWC 1000	1000	1099	300
NWC 1100	1100	1199	300
NWC 1200	1200	1299	300
NWC 1300	1300	1399	300
NWC 1400	1400	1499	300
NWC 1500	1500	1599	300
NWC 1600	1600	1699	300
NWC 1700	1700	1799	300
NWC 1800	1800	1899	300
NWC 1900	1900	1999	300
NWC 2000	2000	3000	300
NWC 3000	3000	4000	300
316 Stainless Steel bands are available on all of the above			

For all Wide Coupling advice
call us - 01226 794077

Standard Couplings

NSC 121
- 110mm PVCu
- 100mm Cast Iron (BS416)
- 100mm Stainless Steel
- 100mm Cast Iron (BS437)
- 100mm Ductile Iron
- 100mm Supersleve (See also NSC 137)

NSC 137
- 100mm (4") Salt Glazed Ware
- 100mm Vitrified Clay
- 100mm Densleeve
- 100mm Supersleve
- 100mm Pitch Fibre
- 100mm Asbestos Cement

NSC 165
- 160mm PVCu
- 150mm Cast Iron (smu/ ensign/sml)
- 150mm Stainless Steel
- 160mm Polyethelene

NSC 175
- 160mm PVCu
- 150mm Ductile Iron
- 150mm Cast Iron (BS416)
- 150mm Cast Iron (BS437)
- 150mm Stainless Steel
- 150mm Ultra-Rib
- 150mm Quantum

NSC 200
- 150mm (6") Salt Glazed Ware
- 150mm Vitrified Clay
- 150mm Densleeve
- 150mm Supersleve
- 150mm Concrete
- 150mm Asbestos Cement
- 150mm Pitch Fibre
- 150mm Ultra-rib
- 200mm PVC-u

NSC 250
- 175mm Pitch Fibre
- 200mm Vitrified Clay
- 200mm Asbestos Cement
- 225mm Ultra-Rib
- 225mm Quantum
- 250mm PVCu

NSC 275
- 250mm Ductile Iron
- 250mm Cast Iron

NSC 290
- 225mm (9") Salt Glazed Ware
- 225mm Vitrified Clay
- 225mm Densleeve
- 225mm Supersleve
- 225mm Concrete (OD up to 290)
- 250mm Asbestos Cement
- 250mm Ductile Iron

NSC 345
- 300mm Asbestos Cement
- 300mm Ultra-Rib
- 300mm Quantum
- 300mm Ductile Iron

NSC 385
- 300mm (12") Salt Glazed Ware
- 300mm Vitrified Clay
- 300mm Densleeve
- 300mm Supersleve
- 300mm Concrete (OD up to 385)

NSC 465
- 375mm (15") Salt Glazed Ware
- 375mm Vitrified Clay
- 375mm Concrete (OD up to 400mm 445mm)
- 450mm Asbestos Cement PVCu

NSC 560
- 450mm (18") Salt Glazed Ware
- 450mm Vitrified Clay
- 450mm Concrete (OD up to 560mm)
- 500mm Asbestos Cement

Bushes

Manufactured from synthetic elastomers and available in a variety of sizes and thicknesses to allow the Standard range of couplings to connect pipes which may have a considerable difference in their outside diameters.

They are used where the difference in the outside diameter of the pipes to be jointed exceeds 12mm and an Adaptor Coupling is not available.

Generally used singularly but multiple bush sets may be used.

Available in diameters up to 2000mm and in four thicknesses 8mm, 16mm, 24mm and 32mm.

Note 1: The size range is an indication of size for pricing purposes only. Bushes are manufactured to meet specific customer requirements.

Note 2: For bushes over 1000mm diameter please contact our Sales Department.

8

Bush Ref.	OD between (mm)
BC 0801	170-199
BC 0802	200-299
BC 0803	300-399
BC 0804	400-499
BC 0805	500-599
BC 0806	600-699
BC 0807	700-799
BC 0808	800-899
BC 0809	900-999
BC 0810	1000-1099
BC 0811	1100-1199
BC 0812	1200-1299

24

Bush Ref.	OD between (mm)
BC 2402	250-299
BC 2403	300-399
BC 2404	400-499
BC 2405	500-599
BC 2406	600-699
BC 2407	700-799
BC 2408	800-899
BC 2409	900-999

16

Bush Ref.	OD between (mm)
BC 1601	190-199
BC 1602	200-299
BC 1603	300-399
BC 1604	400-499
BC 1605	500-599
BC 1606	600-699
BC 1607	700-799
BC 1608	800-899
BC 1609	900-999

32

Bush Ref.	OD between (mm)
BC 3204	400-499
BC 3205	500-599
BC 3206	600-699
BC 3207	700-799
BC 3208	800-899
BC 3209	900-999

Chemical Couplings

The range of Hathernware chemically resistant Band-Seal couplings offers the chemical and process industries the advantage of a modern, mechanical, flexible jointing system for any plain end pipe system, including Naylor's Hathernware ''Thermachem'' range of thermal shock and chemically resistant pipes.

Elastomeric Sleeve - Manufactured in EPDM or NITRILE conforming to BS EN681-1.

Shear Clamping Bands - Manufactured in corrosion Grade 1.4301 (304) resistant austenitic stainless steel to BS EN10088-2. Where external contamination demands a higher quality stainless, this can be supplied to order.

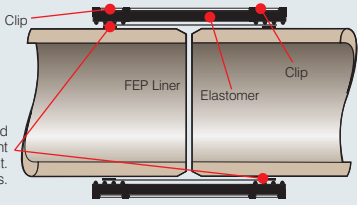
Fluoropolymer Liner - A one piece seamless FEP element located within the elastomeric sleeve. Expanded PTFE secondary seals ensure a leak tight joint between FEP and the pipe. For the best results and to ensure a close fit between the liner and pipe, the FEP liner is heat shrunk on site. The liner and seal are chemically inert and resistant to virtually all chemicals.

Standard Couplings - Used for jointing pipes of the same outside diameter

Adaptor Couplings - Available where pipes of different diameter require connecting.

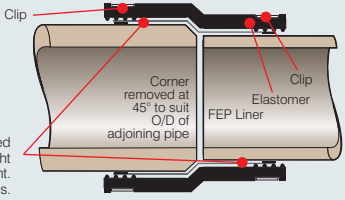
Standard Chemical Coupling

1mm thick PTFE self adhesive backed tape positioned on pipes with slight overlap at joint.
See heat shrink installation instructions.



Adaptor Chemical Coupling

1mm thick PTFE self adhesive backed tape positioned on pipes with slight overlap at joint.
See heat shrink installation instructions.



Pipe Bore (mm)	Gap Between Pipe Ends (mm)
100 & 150	5
225 & 300	10
380 & 450	15
600 & above	20

Torque Setting
For all couplings
12Nm

Ensure the correct size coupling is used to suit pipe or fitting size. Consult the Naylor Hathernware Technical Department on 01226 794074 for advice.

Pipes and Fittings

- All ends in the area of the coupling to be clean and free from grit or dirt.
- All cutting to be a single clean cut by a suitable disc cutter ensuring cut end has all burrs or snags ground off flat.
- All ends, whether site cut or not, to have sharp edges or corners removed and chamfered on the outer edge a minimum of 5mm x 45°. This is most important to avoid damage to the chemical resistant FEP liner.

Procedure

For couplings/adaptors with site fitted heat shrink sleeves:

- Place FEP sleeve and coupling onto 1st pipe.
- Align second pipe leaving appropriate gap. See table attached.
- Slide sleeve into position centrally over joint and mark sleeve ends onto pipe.
- Slide sleeve back onto 1st pipe.
- Place PTFE tape around pipe so self adhesive backing adheres to the pipe in such a position that the outer edge of the tape aligns with marks for outer edge of FEP sleeve. At the top of the pipe overlap the tape 5mm.
- Reposition sleeve over joint covering sealing tape.
- Apply hot air to shrink sleeve onto pipe face and PTFE tapes. (The hot air gun should be kept in motion at all times to avoid scorching the FEP liner). Work all around FEP liner to ensure whole area is tight down onto pipe face and PTFE tape either side of pipe gap.
- Position coupling/adaptor centrally over sleeve.
- Tighten all clamps equally working from the centre outwards in equal stages using 4" lever ratchet and socket or socket style screwdriver to specified torque.

For couplings fitted with pre-shrunk FEP liners incorporating expanded PTFE secondary seals.

- Slide coupling over 1st pipe taking care not to dislodge the PTFE seal.
- Align second pipe leaving a 5mm gap.
- Position coupling centrally across joint.
- Tighten all clamps equally working from the centre outwards in equal stages using 4" lever ratchet and socket or socket style screwdriver to specified torque.

Additional Protection

In ground where contaminants may degrade stainless steel or the elastomer, the following additional procedure shall apply.

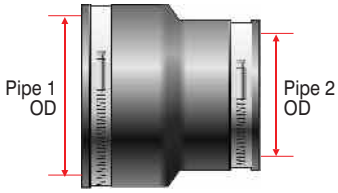
- Two layers of Denso tape or similar shall be wound around the coupling to completely encase same and adjacent pipe area to avoid salts penetration to the coupling.
- In more severe conditions the coupling and adjacent pipe area shall be encased in a heat shrunk polyethylene sleeve or tape with hot melt glue adhesive backing as manufactured by Raychem.

These protective materials shall be installed in accordance with their manufacturers instructions and shall entirely encase the coupling and 50mm minimum of adjacent pipe.

It is advantageous to place a small block of resilient material over the worm drives and threaded clip ends to avoid these projections from penetrating the protective layer.

Adaptor Couplings

Provide an inexpensive method of directly jointing pipes of differing outside diameters, without the need to use bushes. The most common application is for connecting PVC-u pipes to a variety of other pipe materials including vitrified clay. These couplings are also suitable for connecting other types of pipes including cast iron and metal pipes (up to a maximum outside diameter of 420mm).



Universal Adaptors

Reference	Pipe 1 OD (mm)		Pipe 2 OD (mm)	Width (mm)
NAC 1212	121/137	to	110/121	100
NAC 1804	180/200	to	160/180	150
NAC 2601	260/285	to	180/205	150

Drainage Adaptors

Reference	Pipe 1 OD (mm)		Pipe 2 OD (mm)	Width (mm)
NAC 1000	97/102	to	86/91	70
NAC 1001	100/115	to	40/50	102
NAC 1002	100/115	to	50/64	102
NAC 1003	100/115	to	75/90	95
NAC 1101	110/122	to	80/95	120
NAC 1004	115/122	to	61/68	90
NAC 1102	110/125	to	100/115	120
NAC 1211	121/136	to	80/95	120
NAC 1213	121/136	to	100/115	90
NAC 1221	122/137	to	75/90	100
NAC 1302	130/145	to	110/125	120
NAC 1371	137/152	to	100/115	120
NAC 1442	144/160	to	110/122	120
NAC 1443	144/160	to	121/136	120
NAC 1531	153/168	to	100/115	150
NAC 1553	155/170	to	130/145	120
NAC 1552	155/176	to	110/125	120
NAC 1661	166/181	to	100/115	150
NAC 1662	166/181	to	110/125	150
NAC 1704	170/192	to	110/122	120
NAC 1705	170/192	to	121/136	120
NAC 1706	170/192	to	144/160	120
NAC 1831	183/198	to	100/115	155
NAC 1801	180/198	to	122/137	150
NAC 1800	180/200	to	130/145	150
NAC 1802	180/200	to	110/121	150
NAC 1803	180/200	to	155/170	150
NAC 1901	190/206	to	100/115	150
NAC 1903	190/206	to	138/153	150
NAC 1852	185/212	to	100/115	150

316 Stainless Steel bands are available on all of the above

Drainage Adaptors

Reference	Pipe 1 OD (mm)		Pipe 2 OD (mm)	Width (mm)
NAC 1904	190/215	to	150/165	150
NAC 1851	185/216	to	160/180	150
NAC 2001	200/225	to	160/175	150
NAC 2102	210/235	to	110/122	150
NAC 2103	210/235	to	121/136	150
NAC 2104	210/235	to	144/160	150
NAC 2105	210/235	to	170/192	150
NAC 2106	210/235	to	190/215	150
NAC 2404	240/265	to	144/160	150
NAC 2405	240/265	to	170/192	155
NAC 2406	240/265	to	190/215	150
NAC 2407	240/265	to	210/235	155
NAC 2502	250/275	to	200/225	165
NAC 2602	260/285	to	240/265	150
NAC 2658	265/290	to	144/160	150
NAC 2659	265/290	to	210/235	150
NAC 3011	301/316	to	259/274	165
NAC 2954	295/320	to	144/160	165
NAC 2955	295/320	to	170/192	150
NAC 2957	295/320	to	210/235	150
NAC 2958	295/320	to	240/265	150
NAC 2959	295/320	to	265/290	150
NAC 3101	310/335	to	180/205	160
NAC 3350	335/360	to	295/320	165
NAC 3358	335/360	to	240/265	165
NAC 3359	335/360	to	265/290	165
NAC 3604	360/376	to	323/337	165
NAC 3603	360/385	to	300/325	165
NAC 3601	360/385	to	240/265	165
NAC 3602	360/385	to	265/290	165
NAC 3958	395/420	to	240/265	165
NAC 3959	395/420	to	265/290	165
316 Stainless Steel bands are available on all of the above				

For Structured Wall Plastic Pipes

Reference	Pipe 1 OD (mm)		Pipe 2 OD (mm)	Width (mm)
NACUR 150	160/170	to	170/192	100
NACUR 225	240/250	to	260/285	145
NACUR 300	325/335	to	360/385	165
316 Stainless Steel bands are available on all of the above				

Univesal Adaptors

Salt Glazed Ware (4")	100mm	NAC 1212	110mm	PVC-u
Vitrified Clay	100mm		100mm	Cast Iron (soil & drain)
Supersleve	100mm		100mm	Cast Iron (smu/ensign/sml)
Pitch Fibre	100mm		100mm	Ductile Iron
Asbestos Cement	100mm		100mm	Stainless Steel
			100mm	Supersleve

Salt Glazed Ware (6")	150mm	NAC 1804	160mm	PVC-u
Vitrified Clay	150mm		150mm	Cast Iron (soil & drain)
Supersleve	150mm		150mm	Cast Iron (smu/ensign/sml)
Pitch Fibre	150mm		150mm	Ductile Iron
Asbestos Cement	150mm		150mm	Stainless Steel
Concrete	150mm		150mm	Supersleve
Ultra-Rib	180mm		150mm	Ultra-Rib
PVCu	200mm			

Salt Glazed Ware (9")	225mm	NAC 2601	150mm	Vitrified Clay
Vitrified Clay	225mm		150mm	Supersleve
Ductile Iron	250mm		150mm	Pitch Fibre
Grey Iron	250mm		150mm	Asbestos Cement
MDPE	280mm		150mm	Concrete
			180mm	MDPE
			180mm	Ultra-Rib
			200mm	PVCu
			200mm	MDPE

Drainage Adaptors

PVCu	110mm	NAC 1101	82mm	(3") PVCu
Cast Iron (soil & Drain)	100mm		75mm	Cast Iron (soil & drain)
Cast Iron (smu/ensign/sml)	100mm		75mm	Cast Iron (smu/ensign)
Ductile Iron	100mm		70mm	Cast Iron (smu/ensign/sml)
Supersleve	100mm			

PVCu	110mm	NAC 1004		
Cast Iron (soil)	100mm		50mm	(2") Cast Iron (soil & drain)
Cast Iron (smu/ensign/smu)	100mm		50mm	Cast Iron (smu/ensign/smu)
Stainless Steel	110mm			

PVCu	110mm	NAC 1102	75mm	Ductile Iron
Supersleve	100mm		100mm	Cast Iron (soil)
Cast Iron (soil & drain)	100mm		100mm	Cast Iron (smu/ensign/sml)
Cast Iron (smu/ensign/sml)	100mm		100mm	Stainless Steel
Ductile Iron	100mm		110mm	PVCu
Stainless Steel	100mm			
Asbestos Cement	100mm			

Supersleve	100mm	NAC 1211	82mm	(3") PVCu
Vitrified Clay	100mm		75mm	Cast Iron (soil & drain)
Asbestos Cement	100mm		75mm	Cast Iron (smu/ensign)
Cast Iron (smu/ensign/sml)	125mm		70mm	Cast Iron (smu/ensign/sml)

Supersleve	100mm	NAC 1213	100mm	Cast Iron (soil)
Vitrified Clay	100mm		100mm	Cast Iron (smu/ensign/sml)
Asbestos Cement	100mm		100mm	Stainless Steel
Cast Iron (smu/ensign/sml)	125mm		110mm	PVCu

Typical Connections (continued)

PVCu	160mm	NAC 1442	110mm (3") PVCu 100mm Cast Iron (soil & drain) 100mm Cast Iron (smu/ensign/sml) 100mm Ductile Iron 100mm Stainless Steel 100mm Supersleve
Cast Iron (smu/ensign/sml)	150mm		
Stainless Steel	150mm		

Vitrified Clay (Salt Glazed Ware)	150mm	NAC 1704	110mm PVCu 100mm Cast Iron (soil & drain) 100mm Cast Iron (smu/ensign/sml) 100mm Ductile Iron 100mm Stainless Steel 100mm Supersleve
Supersleve	150mm		
Ultra-Rib	150mm		
Ductile Iron	150mm		
Cast Iron (drain)	150mm		
Asbestos Cement	150mm		
Pitch Fibre	150mm		
Twin Walled Plastic	150mm		

Vitrified Clay (Salt Glazed Ware)	150mm	NAC 1705	100mm Supersleve 100mm Vitrified Clay 100mm Asbestos Cement 125mm Cast Iron (smu/ensign/sml)
Supersleve	150mm		
Ultra-Rib	150mm		
Ductile Iron	150mm		
Cast Iron (drain)	150mm		
Asbestos Cement	150mm		
Pitch Fibre	150mm		
Twin Walled Plastic	150mm		

Vitrified Clay (Salt Glazed Ware)	150mm	NAC 1706	160mm PVCu 150mm Cast Iron (smu/ensign/sml) 150mm Stainless Steel
Supersleve	150mm		
Ultra-Rib	150mm		
Ductile Iron	150mm		
Cast Iron (drain)	150mm		
Asbestos Cement	150mm		
Pitch Fibre	150mm		
Twin Walled Plastic	160mm		

Pipe Couplings

Used in drainage systems to connect pipes where resistance to shear loads is not required.

Applications include:

- Repair of an existing drain by insertion of a new length of pipe
- Adaptor between pipes of different materials or manufacturers
- Jointing short lengths of pipe

Reference	Min OD (mm)	Max OD (mm)	Width (mm)	Box Qty
NPC 115	100	115	100	20
NPC 125	110	125	100	20
NPC 135	120	135	120	20
NPC 150	135	150	150	20
NPC 165	150	165	150	10
NPC 175	160	175	120	10
NPC 185	170	185	120	10
NPC 195	180	195	120	10
NPC 215	200	215	150	8
NPC 225	210	225	150	6
NPC 250	235	250	150	6
NPC 275	260	275	150	6

Typical Connections

Pipe Couplings

NPC 115

110mm	PVCu
100mm	Cast Iron (soil)
100mm	Cast Iron (smu/ensign)
100mm	Stainless Steel
100mm	Corrugated Plastic
100mm	ABS

NPC 125

100mm	Supersleve
100mm	Cast Iron (drain)
100mm	Ductile Iron
100mm	Grey Iron
100mm	Asbestos Cement
100mm	Pitch Fibre
100mm	Twin-wall Plastic

NPC 135

100mm	Supersleve
100mm	(4") Salt Glazed Ware
100mm	Vitrified Clay
100mm	Densleeve
100mm	Pitch Fibre
100mm	Asbestos Cement

NPC 165

160mm	PVCu
150mm	Cast Iron (smu/sml/ensign)
150mm	Stainless Steel
160mm	Polypropylene

NPC 175

150mm	Ultra-Rib
150mm	Quantum
150mm	Ductile Iron
150mm	Grey Iron
150mm	Twinwall Plastic
150mm	Corrugated Plastic

NPC 185

150mm	Supersleve
150mm	Pitch Fibre
150mm	Asbestos Cement
150mm	Twinwall Plastic
150mm	Corrugated Plastic

NPC 195

150mm	Supersleve
150mm	(6") Salt Glazed Ware
150mm	Vitrified Clay
150mm	Asbestos Cement
150mm	Pitch Fibre
150mm	Densleeve

Plumbing Range

Used for connecting smaller diameter pipes. The couplings are designed for connecting pipes with a similar outside diameter.

Couplings

Reference	Min OD (mm)	Max OD (mm)	Width (mm)
NPC 32	24	32	70
NPC 40	32	40	70
NPC 50	40	50	70
NPC 65	50	65	90
NPC 85	70	85	100
NPC 95	80	95	100

Typical Connections

Pipe Couplings for Plumbing Applications

NPC 35
- 35mm Copper
- 32mm Polypropylene

NPC 43
- 42mm Copper
- 40mm Polypropylene

NPC 56
- 50mm Polypropylene/HDPE
- 54mm Copper

NPC 68
- 50mm Cast Iron (smu/ensign/sml)
- 50mm Cast Iron BS416/BS437
- 67mm Copper
- 68mm Plastic Rainwater Pipe

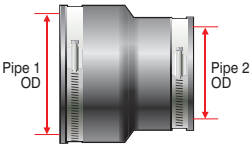
NPC 76
- 75mm PVCu

NPC 85
- 75mm Cast Iron (smu/ensign)
- 76mm Copper
- 70mm Cast Iron (sml)

NPC 92
- 75mm Cast Iron BS416/BS437

NPC 100
- 93mm Copper

Used for connecting smaller diameter pipes. The couplings are designed for connecting pipes with differing outside diameters.



Adaptors

Reference	Pipe 1 OD (mm)	Pipe 2 OD (mm)	Width (mm)
NAC 0301	32-40	24-32	65
NAC 0401	40-50	32-40	65
NAC 0501	50-65	35-42	60
NAC 0601	59-64	70-75	70
NAC 0751	75-90	40-50	100
NAC 0752	75-90	50-64	70

Adaptor Couplings for Plumbing Applications

Copper 35mm
Polypropylene 40mm
NAC 0431
40mm Polypropylene

Polypropylene 40mm
ABS 40mm
NAC 0562
54mm Copper
50mm ABS
50mm Polypropylene

Polypropylene 40mm
ABS 40mm
NAC 0682
50mm Cast Iron BS416/BS437
67mm Copper
50mm Cast Iron (smu/ensign/smu)
50mm Aluminium

Copper 54mm
Polypropylene 50mm
ABS 50mm
NAC 0923
82mm PVCu
75mm Cast Iron (BS416/BS437)
75mm Cast Iron (smu/ensign)
75mm Stainless Steel

Cast Iron (BS416/BS437) 50mm
Cast Iron (smu/ensign/smu) 50mm
Aluminium 50mm
Copper 50mm
NAC 0924
82mm PVCu
75mm Cast Iron (BS416/BS437)
75mm Cast Iron (smu/ensign)
75mm Stainless Steel

Note: The couplings also fit the imperial equivalent

End Caps

A reusable and flexible, easy to fit cap for permanent or temporary applications such as air testing waste or soil systems, capping or preventing dirt ingress.

End Caps

Reference	Min-Max OD (mm)	Pipe DN
NEC 45	45-55	38
NEC 56	56-66	50
NEC 80	80-90	75
NEC 105	105-115	100
NEC 155	155-165	150
NEC 205	205-215	200

New End Cap Range

Reference	Min-Max OD (mm)
NEC 43	38-43
NEC 56	48-56
NEC 68	60-68
NEC 76	67-76
NEC 85	76-85
NEC 92	82-92

How to select a coupling

Obtain the precise outside diameters of the pipes to be jointed. Guidance figures for a variety of material diameters are provided in the table on the following pages (NB these are not intended to be a substitute for site measurements). Check the range list to see which coupling reference has a range of sizes which the outside diameters of the pipes fall within. If this is not successful, Bushes are available in a variety of sizes and thicknesses to allow the standard range of couplings to connect pipes which may have a considerable difference in their outside diameters. Adaptor Couplings allow differing outside diameters to be connected without the need to use Bushes.

TABLE INDICATING TYPICAL OUTSIDE PIPE DIAMETERS

PIPE MATERIAL	Internal Sizes (DN) 40	50	75	100	125	150	175	180	200	225	250	300	375
	Nominal Outside Diameter (mm)												
Vitrified Clay				131		188	220		245	278		374	465
Salt Glazed Clay												380	
Supersleve (thin walled clay)				122		178				263		357	
Concrete						200				286		375	457
										305		425	464
										292		386	485
												410	520
													506
Asbestos L				125		182	208		232	260	288		
M												339	423
H												346	429
PVC-U				110		160			200		250	315	
Ultra-Rib						170		200		250		335	
Quantum						160				250		330	
Rigidrain						177				264		351	
ABS	43	56		110		160	200		225		280	315	
Polyethylene				111	126	161		181	201	226	251	317	
Polypropylene/ PE twin walled				119	150	180			235	260		360	
Corrugated PVC-u lightweight				110		170				250			
Polypropylene	41	54											
	43												
muPVC	54												
Ductile Iron BS4772			98	118		170			223	258	274	326	403
Cast Iron (SMU/Ensign)		60	85	112	137	162			212		279	329	
Cast Iron BS437 (Drain)		65	92	119		173				256			
Cast Iron BS416 (Soil)		63	89	114	140	165			210				
Cast Iron (Spun) BS1211 B													
C, D													
Copper		54	76	108									
Grey Iron				118		170			222		274	326	
Stainless Steel				110		160							
Pitch Fibre			75	125		181			238				
Aluminium		53	76	102									

(For guidance only)

Internal Sizes (DN) Nominal Outside Dia. (mm)					Imperial Sizes								PIPE MATERIAL
400	450	500	525	600	3	5	8	9	10	12	15	18	
484	522	607		730	98	156	238	268	295	356	445	533	Vitrified Clay
506	544	635		755									Salt Glazed Clay
													Supersleve (thin walled clay)
	580		675	770									Concrete
	540		690	785									
	552												
	570												
	590												
		547											Asbestos L
437	484	551											M
440	490	559											H
406	457	508											PVC-U
													Ultra-Rib
													Quantum
													Rigidrain
					89	140	219		273	323			ABS
402	452	503											Polyethylene
455	490	590		690									Polypropylene/ PE twin walled
													Corrugated PVC-u lightweight
													Polypropylene
													muPVC
429	480	532		635		148							Ductile Iron BS4772
													Cast Iron (SMU/Ensign)
					92								Cast Iron BS437 (Drain)
					89								Cast Iron BS416 (Soil)
										334	413	492	Cast Iron (Spun) BS1211 B
										345	426	507	C, D
					79.9								Copper
429	480	532		635									Grey Iron
													Stainless Steel
													Pitch Fibre
													Aluminium

Specification Couplings

British Standard (BS En295)

Band-Seal Couplings and Bushes up to 1000mm diameter comply with the requirements of BS EN295-4 "Vitrified clay pipes and fittings and pipe joints for drainage and sewers - Requirements for special fittings, adaptors and compatible accessories"

CERTIFIED TO BRITISH STANDARD
BS EN295: Lic. Km20173

WIS 4-41-01

Assessed under the British Standard Certification Scheme, Standard Couplings and Bushes from 100mm to 600mm internal diameter, comply with the requirements of Water Industry Specification WIS 4-41-01 'Specification for flexible couplings for gravity sewerage and drainage pipes'. Licence Number 33388.

CERTIFIED TO BRITISH STANDARD
Lic. Km33388
WIS 4-41-01

Danish Standard

VA Approval Number:
VA2.23/19354

VA2.23/19354

German Standard

MPA Approval Number
220000307-01

Naylor Drainage Ltd
DIN EN 295-4

Approved Quality System BS EN ISO 9001 (BS5750)

Band-Seal Couplings are manufactured under an Approved Quality System which complies with BS EN ISO 9001 (BS5750) and certified by Registered Firm of Assessed Capability Certificate No FM1420.

NAYLOR DRAINAGE LTD
BSI
REGISTERED FIRM
Certificate No. FM1420
QAS 2489 2/258

Other international approvals exist - please contact our sales office for details.

Specification Materials

Elastomers

CERTIFIED TO BRITISH STANDARD

The elastomeric components of the couplings and bushes are made of one or two types of synthetic rubber, either Ethylene Propylene Diene Monomer (EPDM) or Styrene Butadiene Rubber (SBR). These elastomers offer excellent resistance to normal drainage and sewerage effluents as well as providing excellent long term performance and hence are commonly used to joint pipes. For situations where effluents contain hydrocarbons, fats, greases etc then components are available made in nitrile rubber.

Both EPDM and SBR conform to the requirements of BS EN 681-1:1996 "Specifications for elastomeric joint rings for pipework and pipelines - drainage" as well as to ISO 4633:1986.

Stainless Steel

Couplings are available in two grades of austenitic stainless steel to suit either normal ground conditions or conditions when additional corrosion resistance is required such as coastal environments with high levels of chlorides in the soil or groundwater.

For normal conditions Naylor's couplings incorporate components manufactured from grade 1.4301 (304) austenitic stainless steel to BS EN 10088-2:1995. This grade meets the requirements of both BS EN 295-4 and WIS 4-41-01 in that it contains a minimum of 17% chromium and 8% nickel.

For conditions requiring higher levels of corrosion resistance then components manufactured from grade 1-4401 (316) austenitic stainless steel to BS EN 10088-2:1995 are available to special order. This grade contains 2% molybdenum and is especially suited to marine environments.

Durability - when used within the conditions and recommendations detailed in this brochure, for normal underground drainage, the couplings are expected to have a life expectancy equivalent to that of the pipeline.

External Protection - external protection is seldom required except where couplings are used in poorly drained coarse sand/gravel or in made up contaminated ground such as colliery spoil and in all cases where the ground or groundwater contains chlorides at levels exceeding 1000ppm. In these situations application of a suitable protective wrapping tape such as "Densotape" will give adequate protection. Alternatively components made from grade 1.4401 (316) stainless steel may be used.

Hydrostatic Pressure - when correctly installed Naylor's range of couplings and bushes will withstand the following hydrostatic test pressures:

Standard and Extra Wide Couplings and Bushes up to 620mm diameter	0.6 bar
Large and Extra Wide Couplings and Bushes up to 1000mm diameter	0.6 bar
Large and Extra Wide Couplings and Bushes over 1000mm diameter	0.6 bar
Adaptor Couplings	0.6 bar
Pipe Couplings	0.6 bar
Plumbing Couplings	0.6 bar

Site Testing - when correctly installed, all Band-Seal Couplings will withstand the air and water pressure tests specified in BS EN1610:1998 "Construction and testing of drains and sewers"; Water Services Association "Sewers for Adoption"; "Civil engineering specification for the Water Industry" and Building Regulations "Approved Document H".

Clamping Bands - two types of worm drive end clamps are used depending upon the coupling size and type. All clamps have perforated bands which are self cleaning should the band become coated in mud or sand.

Heavy duty "Hi-Torque" worm drive clamps are used on all Standard, Large and Extra Wide Couplings over 200mm diameter. For smaller diameter Standard Couplings and Adaptor, Pipe and Plumbing Couplings medium duty worm drive clamps are used.

Recommended Tightening Torque

Standard Couplings up to 300mm diameter (NSC290)	6 Nm
Standard, Large and Extra Wide Couplings over 300mm diameter	13 Nm
Adaptor Couplings	6 Nm
Pipe Couplings	6 Nm
Plumbing Couplings	6 Nm

INSERTION of JUNCTION or REPLACEMENT pipe into existing pipeline

1 Cut section from sewer using pipe cutter or disc saw. The section should be about 20 mm longer than the junction or replacement pipe.

2 Remove cut section and slide BAND-SEAL couplings onto each end of the existing pipe line. No lubricant required.

3 Position new junction/new pipe into the pipeline. Place a pencil mark half the BAND-SEAL width from each joint.

4 Using the pencil marks, centre a BAND-SEAL over one joint at a time and tighten clamp bands. The clamp bands should be tightened first and then the shear band.

5 After BAND-SEAL assembly carefully tamp bedding under the exposed pipe line.

NOTE: When jointing certain types of concrete pipes, particularly ones which have been vertically cast, it may be necessary to apply a neat cement grout to small areas on the exterior of the pipe barrel to obtain sufficient smoothness to ensure an airtight seal. It may also be necessary to smooth out the barrel mould joint line on the barrel of some concrete and iron pipes.

CONNECTION between PIPES USING BUSHES

As an example, the illustrations detail the connection between DN300 vitrified clay and DN300 ribbed plastic pipes. A bush is used to take up the differences in outside pipe diameter.

1 Install bushes onto the square cut end of the plastic pipe.

2 Place BAND-SEAL on the clay pipe and butt pipes together. Slide BAND-SEAL over bushes until edge of bush is level with edge of BAND-SEAL. No lubricant required.

3 Tighten clamp bands first, then the shear band. After BAND-SEAL assembly, carefully tamp bedding under and around pipes.

NOTE: When jointing certain types of concrete pipes, particularly ones which have been vertically cast, it may be necessary to apply a neat cement grout to small areas on the exterior of the pipe barrel to obtain sufficient smoothness to ensure an airtight seal. It may also be necessary to smooth out the barrel mould joint line on the barrel of some concrete and iron pipes.

Installation Tools

Description	Reference	Code
8mm Nut Driver	T0001	76167
8mm Ratchet Spanner	T0002	76168

Using Installation Tools

For pipelines up to and including 290mm OD, a Naylor 8mm nut driver (reference T0001) can be used to tighten clamping bands and shear bands (where present) firmly by hand (equates to recommended torque of 6-8 Nm).

For pipelines exceeding 290mm, a Naylor 8 mm Ratchet Spanner (reference T0002), can be used to tighten clamping bands and shear bands firmly by hand (equates to recommended torque of 12-14 Nm).

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