

# EBCO

## Service Connections

### Straps and Ferrules for Mains to Service Pipe Connections

#### Benefits

- Available in a range of self tapping ferrule straps and flat boss straps to suit mains pipe from 32mm.
- Ferrules are available 1/2 to 2" 20mm to 63mm outlets
- Design and selection of materials gives high strength for reliable installation and light weight for easy handling
- Quick and efficient installation onto all common pipe materials in virtually any trench condition, wet or dry
- Prolonged life of the fitting due to the high quality corrosion resistant materials used



The EBCO range of Self Tapping Ferrule Straps, Swivel Ferrules and Flat Boss Straps can be used to connect PE, copper and threaded pipes to almost any type and size of mains pipe material from 32mm in diameter.

- Straps are available up to 315mm in diameter as standard with larger sizes available on request.
- Ferrules can be inserted directly into suitable mains pipe of any size as long as both wall section and wall strength allow.



#### Technical data

Pressures: Working: 16 bar Test: 24 bar  
The pressures stated above apply with water temperatures up to 20°C

Temperature: Up to 40°C  
For further information relating to operating temperatures please contact our customer service department at the telephone number shown below.

#### Sizes:

Mains pipe: From 32mm  
Stems: 1/2" - 2"

#### Outlets:

Push Fit for PE - 20mm (1/2") - 63mm (2")  
Compression for PE - 20mm (1/2") - 63mm (2")  
Compression for Copper - 15mm - 54mm  
Female Threaded for Iron Pipe - 1/2" - 2"

#### Materials:

Metals: Aluminium Bronze (BS1400 AB1)  
(BS EN 1982 Grade CC331G)

Gunmetal (BS1400 LG2)  
(BS EN 1982 Grade CC491K)

DZR Brass (CZ132M BS2874)  
(BS EN 12164 Grade CW602N)

Plastics: Acetal or Polypropylene

Fasteners: Stainless steel (A4 or A2)

Seals: Nitrile or EPDM

#### General application

EBCO straps and ferrules can be used to take service pipe connections from mains of 1" (32mm) to 12" (315mm) using ferrule outlets for PE, Copper and Male Threaded pipe in sizes from 15mm to 63mm.

EBCO straps are simply clamped onto the pipe needing no specialised equipment to fit so can be installed easily in wet and congested trench conditions, offering many benefits over welded systems.

All fittings are WRAS listed with the exception of recent additions which may have been submitted but not yet tested.

#### Range

- Gunmetal Self Tapping Ferrule Straps (page 2)
- Bronze Self Tapping Ferrule Straps (page 2)
- Swivel Ferrules (page 4)
- Flat Boss Straps (page 6)

#### Safety

As with all industrial products it is important to take adequate safety precautions such as the use of adequate protective clothing like gloves, overalls, eye protection and safety footwear during installation, use and maintenance of these products.

#### Technical help

For further technical data, product specifications and general information please contact our Customer Service Department at the telephone number shown below.

## EBCO Bronze Self Tapping Ferrule Straps

EBCO Bronze Self Tapping Ferrule Straps for PE, PVC and AC mains pipe incorporate an integral ferrule with a self contained cutter, eliminating the need for drilling machines. Straps are made from aluminium bronze or gunmetal or a combination of aluminium bronze or gunmetal and plastic making the product durable and corrosion resistant. The strap also uses a specially designed cutter, which tests show greatly reduces the risk of bursting a PVC main or creating a swarf blockage whilst cutting. Aluminium bronze straps have the added benefit of reduced weight.

- **No special equipment or controlled conditions needed**

The fitting has an integral cutter and requires only a spanner and standard ferrule key to install and carry out the drilling operation, dry or underpressure and in wet and congested trench conditions making it a viable alternative to electrofusion

- **Integral cutter**

The integral cutter is designed to greatly reduce the risk of fracturing PVC pipe during the drilling procedure. Its design also reduces the chance of swarf blockage whilst tapping by retaining the polyethylene/PVC slug. The cutter also provides a shut off facility once the tapping has been made

- **Range of Outlets**

The EBCO Self Tapping Ferrule Strap can be supplied with a variety of banjo outlet types to suit Copper, Male Threaded and PE pipe (both Barrier pipe for use in contaminated land sites and conventional PE pipe).



## EBCO Banjo Outlet Types and Assembly Instructions

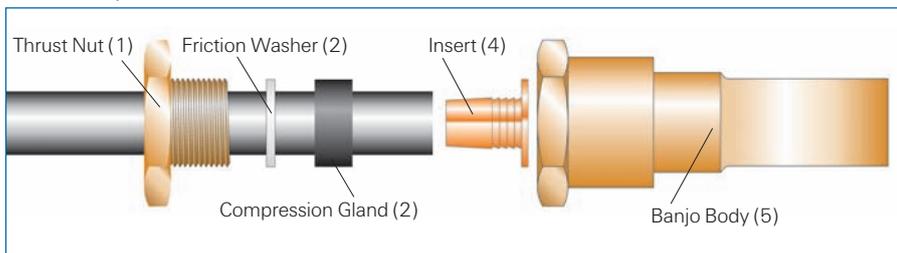
The range of EBCO Self Tapping Ferrule Straps can supply outlet types to suit a wide range of service pipe material and in a range of sizes. For full information please see the information on page 7 of this data sheet

### Outlet Types

- Fittings for PE Barrier pipe, 20mm (1/2") to 63mm (2") - EBCO-C
- Fittings for metric and imperial PE pipe, 20mm (1/2") to 63mm (2") - EBCO-B
- Fittings for steel threaded pipe, 1/2" to 2" BSP - Pipe Fittings
- Fittings for copper pipe, 15mm to 54mm - EBCO-S

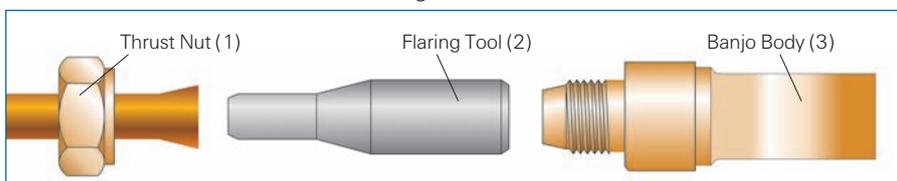
### EBCO-B Outlet

Ensure the pipe is cut square then disassemble the end of the fitting to be connected, slide the thrust nut (1) then the friction washer (2), then the compression gland (3) over the end of the pipe to be connected. Insert the serrated insert (4) into the pipe and securely hammer it fully home with a soft faced mallet. Place the end of the pipe into the banjo's body (5) and screw the thrust nut fully into the body, securely locating the friction washer and sealing rubber inside the body of the fitting. Once the thrust nut has been hand tightened use a spanner and tighten a further 1 1/2 to 2 turns to form a fully sealed connection.



### EBCO Type B Copper Compression Outlet

Disassemble the end of the fitting to be connected, slide the integral compression nut and ring (1) assembly over the pipe end. Using an appropriately sized flaring tool (2) bell out the end of the copper pipe. Re assemble the fitting ensuring that the pipe sits snugly against the cone on the fitting body (3). Tighten the compression nut fully to create an end load resistant and watertight connection.



### EBCO Push Fit Outlet

Remove the red end cap from the blue cone of the EBCO Push Fit connection and remove the liner (1) and insert it fully into the PE pipe.

*(To meet the requirements of the WRAS (Water Regulations Advisory Scheme) it is necessary to use an insert or liner with metric MDPE service pipe to BS 6572:1985, BS 6730 and HPPE to WIS 4-32-13 for below ground use in the UK. The liner is not an integral part of the EBCO Push Fit connection and for polyethylene pipe other than the PE pipe material shown above use of the liner is optional. If a liner is not used the connection will still substantially exceed most international performance requirements.)*

Once the liner is inserted into the pipe push the pipe fully into the PE end, past two points of resistance, until it is fully seated.



### EBCO Threaded Outlet

Ensure the metal pipe is male threaded to the correct BSP size and apply sufficient PTFE tape to the male thread to aid the sealing process. Screw the pipe fully into the banjo outlet using a spanner to create a watertight seal. Test and tighten further if necessary.

## Installation Instructions For Self Tapping Ferrule Straps



### Materials

The materials used in the manufacture of EBCO Straps are WRAS listed. For further technical data, product specifications and general information please contact our Customer Service Department at the telephone number shown on the back of this data sheet

The design of EBCO Straps make them very simple to use. For easy, trouble free installation the steps detailed below should be followed.

After selecting the correctly sized strap for the main, check that the cutter is retracted up into the stem and does not protrude through the bottom of the strap.

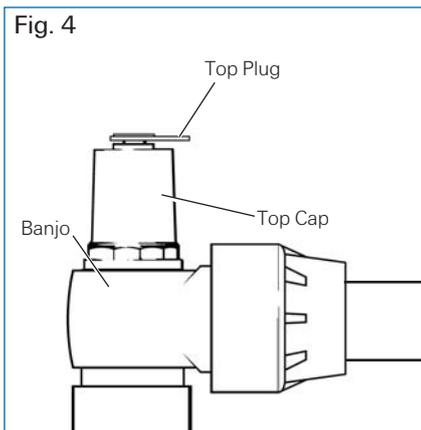
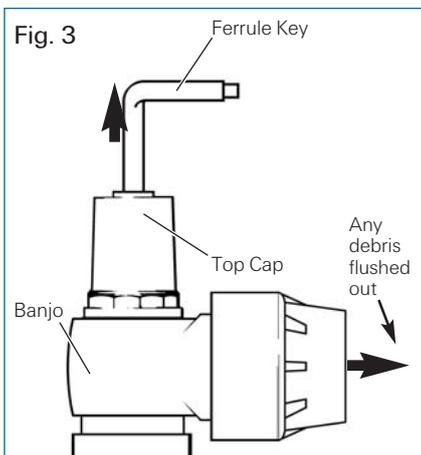
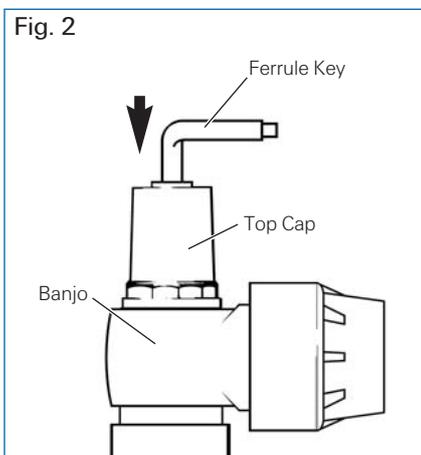
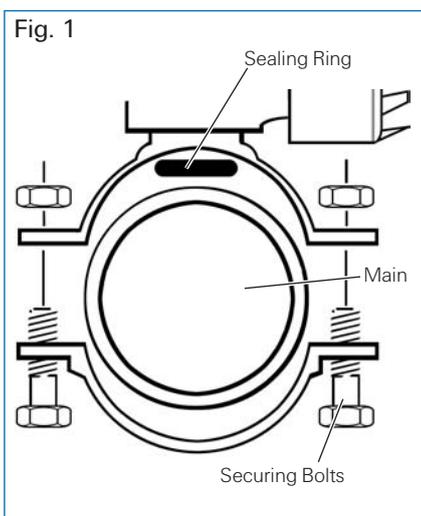
1. Fit the top half of the strap on the main ensuring that the sealing ring is correctly positioned between the main and the underside of the strap boss (see Fig. 1).

Locate the bottom half of the strap below the top half and, using the two nuts and bolts provided, bolt the two halves together and tighten evenly. Make sure that the strap sits squarely on the main and then tighten each nut a further two and a half turns, a torque setting of approximately 10 lb/ft (13.6 Nm)

The tapping procedure for the Self Tapping Ferrule Strap is as follows:

3. Remove the plastic top plug and using the ferrule key, screw down the self tapping cutter/plug until it 'bottoms' on the seat (see Fig. 2). Do not over-tighten, a torque of no more than 10 Nm, 7.4 lb/ft is needed.
4. Wind the cutter/plug back to allow a small amount of water to go to waste to flush out any debris (see Fig.3).
5. Wind the cutter/plug back down onto its seat to seal off the connection (do not overtighten).
6. Connect the service pipe to the banjo .
7. Ensure the top cap is tightened down on to the banjo (hand tight plus a 1/2 turn, 15 Nm - 11 lb/ft) then wind the cutter/plug back to seal in the top cap (do not overtighten, a torque of no more than 6 Nm, 4.4 lb/ft is needed).
8. Replace the plastic top plug.

The connection is now made.



## EBCO Swivel Ferrules

The EBCO Swivel Ferrule provides a quick, permanent, leak free service connection, consisting of a stem with an inner plug for valve isolation and a 360° swivel outlet at 90° to the stem. The ferrule outlet provides a direct connection to the service line from 1/2" to 2" nominal bore diameter (20mm to 63mm PE pipe OD) via an integral joint in the ferrule banjo so no adaptor is needed. The ferrule will provide service connections dry or underpressure directly into cast iron, ductile iron and steel mains. Asbestos cement and PVC mains can also be tapped via a EBCO Flat Boss Strap. (See page 6)

## Notes



Ferrules should not be inserted directly into PVC or AC mains. The walls of these pipes are not strong enough to hold the stem. The manufacturers of

ductile iron and steel mains pipe should be consulted for their specific recommendations regarding tapping directly into these pipe materials. Typically it is advised that the nominal diameter of the tapping should not exceed 1/4 of the nominal diameter of the main for direct ferrule insertion without a strap or 1/3 of the nominal diameter when a strap is used. For tapings larger than this a Tapping Tee should be used. (for further information on the UPE range of Tapping Tees please refer to the separate data sheet: *Underpressure Tees* (reference number TUPE007)

- **Quick and simple to install**

Quick, permanent, leak free connection provided by a tried and tested design

- **Extensive range**

A range has been developed which enables the user to make connections to almost any type of mains and service pipe, either underpressure or dry

- **Robust and long lasting**

EBCO ferrules can provide years of service in even the most aggressive soil conditions

- **Reliable and leak free**

Specifically designed to operate at pressures up to 16 bar (240 psi) subject to the ratings of pipe and strap if used

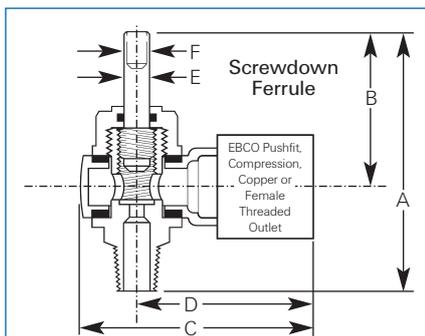
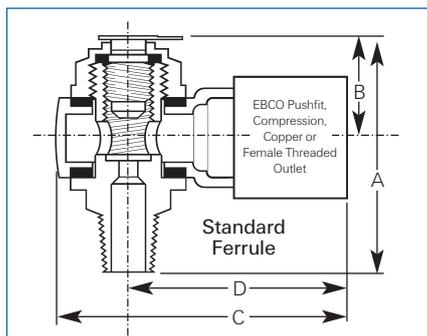


## Standard Pattern Swivel Ferrule Dimensions - all dimensions in mm

DN	1/2" (20mm)				3/4" (25mm)				1" (32mm)				1 1/4" (40mm)				1 1/2" (50mm)				2" (63mm)				1 1/2" x 2" (63mm)							
Outlet Type	Push Fit For PE	Compression for PE	Compression for Copper	Female Thread	Push Fit For PE	Compression for PE	Compression for Copper	Female Thread	Push Fit For PE	Compression for PE	Compression for Copper	Female Thread	Push Fit For PE	Compression for PE	Compression for Copper	Female Thread	Push Fit For PE	Compression for PE	Compression for Copper	Female Thread	Push Fit For PE	Compression for PE	Compression for Copper	Female Thread	Push Fit For PE	Compression for PE	Compression for Copper	Female Thread				
A	86	86	86	86	82	82	82	82	94	94	94	94	-	-	107	107	106	106	106	106	120	120	120	120	-	106	-	-				
B	38	38	38	38	38	38	38	38	44	44	44	44	-	-	50	50	50	50	50	50	50	48	48	48	48	48	48	48	-	50	-	-
C	84	74	77	62	100	87	78	66	122	95	92	82	-	-	112	102	195	143	127	118	219	159	142	140	-	138	-	-				
D	61	52	54	40	79	62	55	43	94	67	64	54	-	-	78	68	154	102	86	77	172	112	95	92	-	97	-	-				

## Screwdown Pattern Swivel Ferrule Dimensions - all dimensions in mm

DN	1/2" (20mm)				3/4" (25mm)				1" (32mm)				1 1/4" (40mm)				1 1/2" (50mm)				2" (63mm)				1 1/2" x 2" (63mm)			
Outlet Type	Push Fit For PE	Compression for PE	Compression for Copper	Female Thread	Push Fit For PE	Compression for PE	Compression for Copper	Female Thread	Push Fit For PE	Compression for PE	Compression for Copper	Female Thread	Push Fit For PE	Compression for PE	Compression for Copper	Female Thread	Push Fit For PE	Compression for PE	Compression for Copper	Female Thread	Push Fit For PE	Compression for PE	Compression for Copper	Female Thread	Push Fit For PE	Compression for PE	Compression for Copper	Female Thread
A Open	108	108	108	108	105	105	105	105	116	116	116	116	-	-	150	150	151	151	151	151	168	168	168	168	-	151	-	-
A Closed	92	92	92	92	90	90	90	90	97	97	97	97	-	-	123	123	130	130	130	130	137	137	137	137	-	130	-	-
B Open	58	58	58	58	58	58	58	58	65	65	65	65	-	-	92	92	93	93	93	93	100	100	100	100	-	93	-	-
B Closed	42	42	42	42	42	42	42	42	46	46	46	46	-	-	65	65	72	72	72	72	70	70	70	70	-	72	-	-
C	84	74	77	62	100	87	78	66	122	95	92	82	-	-	112	102	195	143	127	118	219	159	142	140	-	138	-	-
D	61	52	54	40	79	62	55	43	94	67	64	54	-	-	78	68	154	102	86	77	172	112	95	92	-	97	-	-
E	11	11	11	11	11	11	11	11	16	16	16	16	-	-	20	20	22	22	22	22	25	25	25	25	-	25	-	-
F	10	10	10	10	10	10	10	10	13	13	13	13	-	-	17	17	19	19	19	19	19	19	19	19	-	19	-	-



## Swivel Ferrule Technical Specification

### Standard Pattern Swivel Ferrule

#### General

The ferrules shall be designed with an EBCO Push Fit outlet for PE pipe, a compression outlet for PE, a compression outlet for copper or a female threaded outlet.

All ferrules shall be designed as a main stem with a 360° swivel outlet at 90° with control of water flow via a threaded inner plug. The inlet shall be a male taper thread to BS 21 (ISO 7/1).

The ferrule shall be designed for use underground and to handle potable water at temperatures of up to 40°C.

The ferrule shall work at pressures up to 16 bar (240 psi) without leakage.

#### Description of Design

The design of the ferrule will permit service pipe installations via conventional drilling and tapping machines, underpressure or dry, with or without service saddles. The design of the ferrule shall further permit use with conventional drilling machines mounted onto the ferrule/strap assembly to drill the main via the ferrule stem, dry or underpressure.

#### Construction

The ferrule stem, banjo, inner plug and top cap shall be manufactured of gunmetal/bronze to BS 1400 LG2 or acetal thermoplastic polymer in the case of 1/2" to 1" only, (a plastic banjo to be available for 1 1/4" to 2" outlets.) The banjo washers and the 1 1/4" to 2" top cap washer shall be manufactured in EPDM rubber to BS 2494. The 1/2" to 1" top cap washer shall be manufactured in Polypropylene or Nitrile Rubber and shall provide the seal between the outer body and ferrule stem. The ingress of dirt will be prevented by a plastic top plug.

- The Pushfit joint for PE pipe shall consist of the following:

Grip Ring, 'O' Ring and Nose Cone Liner:

*In order to meet the requirements of the WRAS it is necessary to use a liner or insert with metric MDPE service pipe to BS6572 and BS 6730. The liner is not an integral part of the Pushfit joint and for polyethylene pipe other than MDPE, use of the liner is optional. If a liner is not used the joint will still substantially exceed most international performance requirements.*

- The Female BSP outlet for iron pipe shall consist of the following:  
Female BSP thread parallel to BS 21 (ISO 7/1)
- The Copper Compression outlet shall consist of the following:  
A Thrust nut with integral copper olive and is to conform to BS 864 Part 2 Type B
- The Compression outlet for PE shall consist of the following:  
A Serrated copper insert, a friction washer, a compression gland and a thrust nut

### Screwdown Pattern Swivel Ferrule

#### General

The ferrules shall be designed with an EBCO Push Fit outlet for PE pipe, a compression outlet for PE, a compression outlet for copper or a female threaded outlet.

All ferrules shall be designed as a main stem with a 360° swivel outlet at 90° with control of water flow via a threaded inner plug. The inlet shall be a male taper thread to BS 21 (ISO 7/1).

The ferrule shall be designed for use underground and to handle potable water at temperatures of up to 40°C.

The ferrule shall be capable of working at pressures up to 16 bar (240 psi) without leakage. The ferrule shall be easily 'shut off' by means of a spindle extending from the top cap.

#### Description of Design

The design of the ferrule will permit service pipe installation via conventional drilling and tapping machines dry or underpressure, with or without service saddles. The design of the ferrule shall further permit use with conventional drilling machines mounted onto the ferrule/strap assembly to drill the main via the ferrule stem, dry or underpressure.

#### Construction

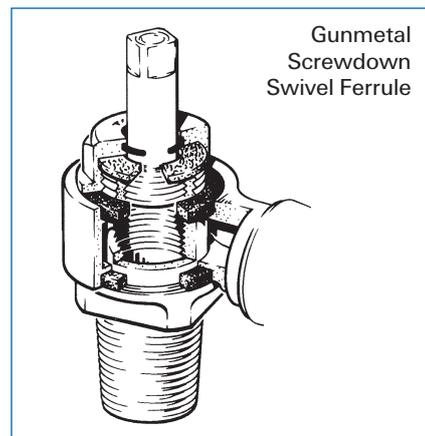
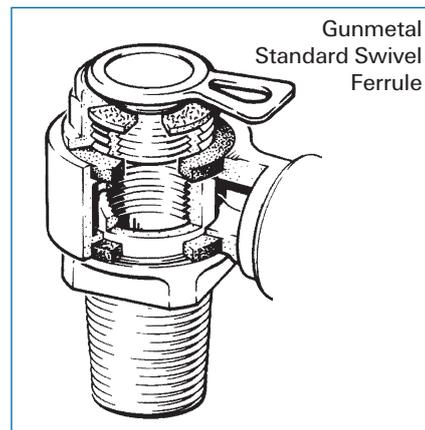
The ferrule stem, banjo, threaded spindle and top cap shall be manufactured of gunmetal/bronze to BS 1400 LG2. The banjo washers and the 1 1/4" to 2" top cap washer shall be manufactured in EPDM rubber to BS 2494. The 1/2" to 1" top cap washer shall be manufactured in Polypropylene or Nitrile Rubber and shall provide the sealing between the outer body and ferrule stem.

- The Pushfit joint for PE pipe shall consist of the following:

Grip Ring, 'O' Ring and Nose Cone Liner:

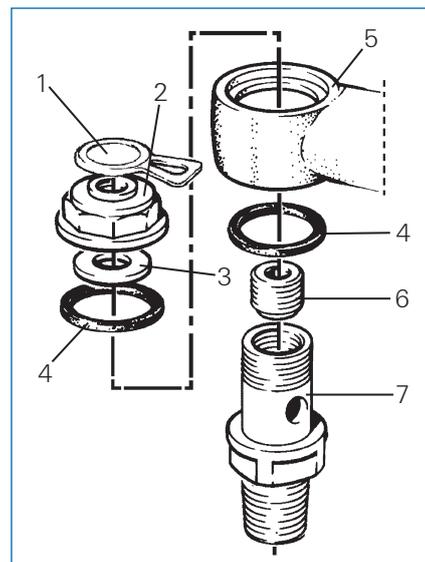
*In order to meet the requirements of the WRAS it is necessary to use a liner or insert with metric MDPE service pipe to BS6572 and BS 6730. The liner is not an integral part of the Pushfit joint and for polyethylene pipe other than MDPE, use of the liner is optional. If a liner is not used the joint will still substantially exceed most international performance requirements.*

- The Female BSP outlet for iron pipe shall consist of the following:  
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A Thrust nut with integral copper olive and is to conform to BS 864 Part 2 Type B.
- The Compression outlet for PE shall consist of the following:  
A Serrated copper insert, a friction washer, a compression gland and a thrust nut.



### Parts List - Swivel Ferrules

Item	Description
1	Top plug
2	Top Cap
3	Top Cap Washer
4	Banjo Washer
5	Banjo
6	Inner plug
6a	Spindle inner plug (Screwdown Ferrule only, not illustrated)
7	Stem



All materials used in the EBCO Swivel Ferrule are WRAS listed and have been selected to give the best possible overall performance.

## EBCO Flat Boss Straps

EBCO flat boss straps are designed for making service connections into PVC, asbestos cement, cast iron, ductile iron and steel mains. A ferrule can then be inserted into the main via the strap boss using drilling and tapping equipment whilst the main is pressurised or dry. The EBCO flat boss strap range provides maximum thread engagement



into the boss of the strap and tapings from 1/2" to 2" can be made into most flat boss straps. Alternatively the strap can be pre-drilled and tapped and fitted with a ferrule prior to delivery for use on asbestos cement and PVC mains. The wall of the pipe is then simply drilled using under pressure drilling equipment.

EBCO solid flat boss straps can also be used as blanking straps for sealing existing holes in mains after removal of a ferrule. EBCO flat boss straps are made from corrosion resistant materials to give years of trouble free service.

*Note: flat boss straps can be supplied with a 3/8" hole through the boss to help the drilling and tapping process.*

- **Quick and simple to install**

Quick, permanent, leak free connection provided by a tried and tested design

- **Extensive range**

A range has been developed which enables the user to make connections to almost any type of mains pipe, either underpressure or dry

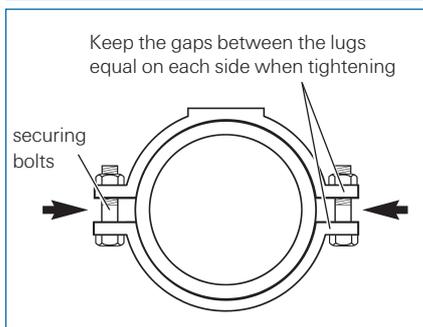
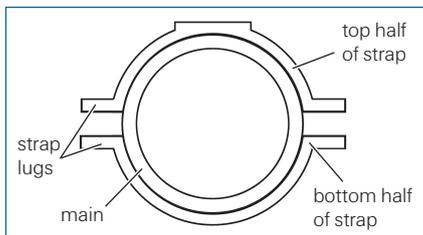
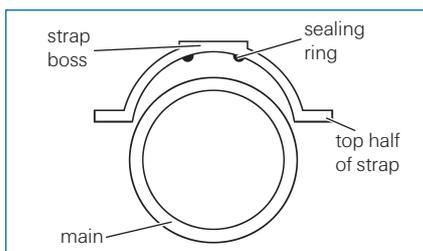
- **Robust and long lasting**

Straps made from gunmetal are immune to corrosion and so give years of trouble free service

- **Reliable and leak free**

Provides maximum thread engagement for leak free connections suitable for a working pressure up to 16 bar (240 psi).

## Flat Boss Strap Assembly Instructions



For easy trouble free installation the steps detailed below should be followed:

1. Select the correct size and type of strap for the main.
2. Place the sealing ring in the groove in the underside of the strap boss (many straps are supplied with the sealing ring pre-bonded into position making assembly even easier) and position the upper half of the strap on the main ensuring that the sealing ring remains snug in the groove.
3. Locate the bottom of the strap under the main below the top half of the strap.
4. Using the two nuts and bolts provided bolt the two halves together ensuring the bolts point upwards. Finger tighten the bolts evenly, keeping the gaps between the lugs equal on each side.
5. Check that the strap sits squarely on the main then hand tighten each nut. Tighten each nut a further two and a half turns or to a torque setting of approximately 10 lb/ft (13.6Nm).

The strap is now secured to the main.

## Notes

- EBCO recommend the use of a strap on ductile iron pipes below 12" (300mm) in diameter as the wall thickness is generally less than that of cast iron pipes and insufficient to tap directly without risking the threads stripping.
- Always ensure that the correct type and size of strap is used for the main.
- Always use a strap on asbestos cement, PVC and PE mains.
- Always have the strap pre-drilled by EBCO if the service valve size is known. This will make the tapping of the connection easier on site.
- Always take care when fitting the strap and ensure that the 'O' ring or sealing ring is correctly in place under the boss of the strap.
- Never over tighten the bolts on the strap. This can cause damage to the lugs or leaks to occur due to distortions in the pipe.
- Never attempt to cut the same size thread into existing, pre-drilled and tapped straps. Cutting the new thread will damage the old one.

## Flat Boss Strap Technical Specification

### General

The flat boss strap shall be of single band design, shaped to the pipe diameter to which it is to be fitted.

All straps shall be in two parts, top and bottom, bolted at both sides.

All straps shall be fitted with a rubber sealing gasket.

All straps shall be available undrilled,

pre-drilled with a 3/8" hole or drilled and tapped for tapered internal pipe threads in accordance with ISO 7/1 and BS 21.

Straps shall be capable of withstanding a working pressure up to 16 bar (240 psi) without leaking.

### Description of Design

The design of the strap shall be suitable for use with PVC, AC, Steel, DI and CI mains.

The design shall be suitable for use with conventional drilling and tapping machines that mount onto the strap assembly.

The design shall be suitable for use with standard pattern 360° swivel ferrules.

### Construction

The Straps will be manufactured from Gunmetal Bronze to BS1400 grade LG2 (BS EN 1982 grade CC491K)

## Range Information

The following tables are intended to act as a general guideline only. For further, more detailed information on the EBCO range of straps and ferrules, please contact the EBCO Customer Service Department at the telephone number shown below.

### Gunmetal and Acetal Swivel Ferrules - Screwdown and Standard Types

Inlet Size	Outlet Size				
	BSP Female Thread	Type B Copper	EBCO Push Fit For PE	EBCO-B for PE MDPE	EBCO-C for PE Barrier Pipe
1/2"	1/2"	15mm	20mm	20mm/1/2"	20mm
1/2"	3/4"	22mm	25mm	25mm/3/4"	25mm
3/4"	1/2"	15mm	20mm	20mm/1/2"	20mm
3/4"	3/4"	22mm	25mm	25mm/3/4"	25mm
1"	1"	28mm	32mm	32mm/1"	32mm
1 1/4"	1 1/4"	35mm	-	-	-
1 1/2"	1 1/2"	42mm	50mm	50mm/1 1/2"	50mm
1 1/2"	-	-	-	63mm/2"	-
2"	2"	54mm	63mm	63mm/2"	63mm



● EBCO Push Fit banjos are available in a combination of plastic and gunmetal whilst all other outlet types are available only in gunmetal

● All EBCO ferrules are available as both standard and screwdown configurations

### Gunmetal Self Tapping Ferrule Straps

Size of strap	Type of Pipe			Stem Size		
	PE	PVC	AC	20mm (1/2")	25mm (3/4")	32mm (1")
32mm - 33.7mm	✓	✓	-	✓	✓	-
48.1mm-50.4mm	✓	✓	-	✓	✓	-
60.2mm - 64.2mm	✓	✓	-	✓	✓	-
73mm - 76mm	✓	✓	-	✓	✓	✓
88mm - 92mm	✓	✓	-	✓	✓	✓
96mm - 101mm	-	-	✓	✓	✓	-
110mm - 118mm	✓	✓	-	✓	✓	✓
122mm - 130mm	✓	-	✓	✓	✓	✓
138mm - 146mm	✓	✓	-	✓	✓	✓
155mm - 163mm	✓	✓	✓	✓	✓	✓
165mm - 173mm	-	✓	-	✓	✓	✓
177mm - 185mm	✓	-	✓	✓	✓	✓
195mm - 203mm	✓	✓	-	✓	✓	✓
217mm - 225mm	✓	✓	-	✓	✓	✓
238mm - 246mm	-	-	✓	✓	✓	-
252mm - 260mm	-	-	-	✓	✓	✓
268mm - 276mm	-	✓	✓	✓	✓	✓
276mm - 284mm	✓	-	-	✓	✓	✓
294mm - 302mm	-	-	✓	✓	✓	-
315mm - 316mm	✓	-	-	✓	✓	✓
322mm - 330mm	-	✓	-	✓	✓	✓



● When tapping AC or Plastic Pipes, the wall thickness of the pipe must be considered. Reference should be made to the EBCO Customer Service Team in the following instances:

**AC pipes:** If the wall thickness is likely to exceed 18mm at the point of tapping. This may occur on pipes over 6"/150mm diameter.

**Plastic pipes:** If the wall thickness is likely to exceed 19mm at the point of tapping. This may occur on some SDR ratings of plastic pipes over 180mm in diameter.

- EBCO Push fit banjos are available in a combination of plastic and gunmetal whilst all other outlet types are available only in gunmetal.
- Cutters are not available for use in 1" stems for AC pipe.
- All available straps can be supplied with banjo outlets of EBCO Push Fit for PE, EBCO-B Compression for PE, EBCO-C Compression for PE Barrier pipe, EBCO-S Compression for copper or Female Threaded for iron pipe.

### Gunmetal Flat Boss Straps

Size of strap	Type of Pipe						Size of Tapping					
	CI	DI	PE	PVC	Steel	AC	No tapping	1/2"	3/4"	1"	1 1/2"	2"
32mm - 33.7mm	-	-	✓	✓	✓	-	✓	✓	✓	-	-	-
48.1mm-50.4mm	-	-	✓	✓	✓	-	✓	✓	✓	-	-	-
60.2mm - 64.2mm	-	-	✓	✓	✓	-	✓	✓	✓	-	-	-
73mm - 76mm	-	-	✓	✓	-	-	✓	✓	✓	✓	-	-
88mm - 92mm	-	-	✓	✓	✓	-	✓	✓	✓	✓	✓	-
96mm - 101mm	-	✓	-	-	-	✓	✓	✓	✓	✓	✓	-
110mm - 118mm	-	✓	✓	✓	✓	-	✓	✓	✓	✓	✓	✓
122mm - 130mm	-	✓	✓	-	-	✓	✓	✓	✓	✓	✓	✓
138mm - 146mm	-	✓	✓	✓	✓	-	✓	✓	✓	✓	✓	✓
155mm - 183mm	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
165mm - 173mm	-	✓	✓	✓	-	✓	✓	✓	✓	✓	✓	✓
177mm - 185mm	-	-	✓	✓	-	✓	✓	✓	✓	✓	✓	✓
195mm - 203mm	-	-	✓	✓	-	-	✓	✓	✓	✓	✓	✓
217mm - 225mm	-	✓	✓	✓	✓	-	✓	✓	✓	✓	✓	✓
229mm - 237mm	-	-	-	-	-	✓	✓	✓	✓	✓	✓	✓
238mm - 246mm	-	-	-	-	✓	✓	✓	✓	✓	✓	✓	✓
250mm - 252mm	-	-	✓	-	✓	✓	✓	✓	✓	✓	✓	✓
252mm - 260mm	-	-	✓	✓	-	-	✓	✓	✓	✓	✓	✓
259mm - 267mm	-	-	-	-	-	✓	✓	✓	✓	✓	✓	✓
268mm - 276mm	-	✓	-	✓	-	-	✓	✓	✓	✓	✓	✓
322mm - 330mm	-	-	✓	✓	✓	-	✓	✓	✓	✓	✓	✓

- Straps are supplied thin pattern as standard. Thick pattern alternatives are available to order.
- Flat boss straps over 300mm can be made to order
- Flat boss straps can be supplied with a 3/8" hole through the boss to help in the drilling and tapping process.
- The size of the strap boss may restrict the size of the maximum allowed tapping. See the table to the left for further details.



## Standard Outside Pipe Diameter Guide Chart

Nominal Bore	Metric Plastic Metric PVC MOPVC PE Hep30	Imperial Cast Iron and A C (turned end) BS 1211 (up to & including 27" NB) BS 78, BS 486			Steel							UPVC		ABS	Ductile Iron	GRP	Metric AC (turned end) BS 486		
		Class AB Only	Class CD Only	Non Standard	ISO/4200			BS1387	BS3600 & BS3801 (pipe ends to BS534)	API 5L & BS1600 (up to & including 36"NB)	BS3505	BS3506	BS5391	BS4772 DIN28601 DIN28602 DIN28603 DIN28605 EN545	BS5480	Class 15	Class 20	Class 25	
					Series 1	Series 2	Series 3												
25mm 1"	25				33.7	32.0	30.0	35.0	33.7	33.6	33.4	33.6	33.6	33.6					
32mm 1.25"	32				42.4	40.0	44.5		42.4	42.3	42.2	42.3	42.3	42.3					
40mm 1.5"	40	55.9	55.9	57.0	48.3	57.0	54.0		48.3	48.3	48.3	48.3	48.3	48.3	56.0 DIN28601				
50mm 2"	50	69.1	69.1	2.20	60.3	63.5			60.3	60.3	60.3	60.3	60.3	60.3	66.0 DIN28605				69.0
63mm	63																		
65mm 2.5"	65	82.3	82.3	82.5	76.1	70.0	73.0		76.1	76.1	76.1	75.2	75.2		82.0 DIN28605				
75mm	75																		
80mm 3"	80	95.5	95.5	3.25	88.9		82.5		88.9	88.9	88.9	88.9	88.9	88.9	98.0				96.0
90mm 3.5"	90				101.6	101.6				101.6	101.6								
100mm 4"	100	121.9	121.9		114.3	127.0	108.0		114.3	114.3	114.3	114.3	114.3	114.3	118.0				122.0
110mm	110																		
125mm 5"	125	149.4	149.9	5.90	139.7	133.0	141.3	152.4	139.7	139.7	141.3	140.2	140.2		144.0 DIN28601/3				
140mm	140																		
150mm 6"	150	177.3	177.3	6.98	168.3		159.0	177.8	165.1	168.3	168.3	168.3	168.3	168.3	170.0		177.0		177.0
160mm	160																		
175mm 7"	175	204.7	204.7	8.06			193.7			193.7			193.7						
180mm	180																		
200mm 8"	200	232.2	232.2	9.14	219.1					219.1	219.1	219.1	219.1	219.1	222.0	222.0	232.0	232.0	240.0
225mm 9"	225	259.1	259.1	10.20			244.5			244.5			244.5				259.0	259.0	268.0
250mm 10"	250	286.0	286.0	11.26	273.0					273.0	273.1	273.0	273.0		274.0	272.0	286.0	286.0	295.0
280mm	280																		
300mm 12"	300	333.8	345.4	13.14	323.9					323.9	323.9	323.9	323.9		326.0	324.0	334.0	345.0	356.0
315mm	315																		
350mm 14"	350	386.6	399.3	15.22	355.6					355.6	355.6	355.6	355.6		378.0	376.0	392.0	405.0	419.0
355mm	355																		
375mm 15"	375	413.0	426.2	16.26															
400mm 16"	400	439.0	453.1	17.30	406.4					406.4	406.4	406.4	406.4		429.0	427.0	448.0	463.0	478.0
450mm 18"	450	492.3	506.9	19.38	457.0					457.0	457.0	457.0	457.0		480.0 (BS only)	478.0	498.0	515.0	532.0
500mm 20"	500	545.1	560.3	21.46	508.0					508.0	508.0	508.0	508.0		532.0	530.0	568.0	586.0	605.0
525mm 21"	525	571.5	587.2	22.50															
550mm 22"	550	597.9	613.7	23.54			559.0			559.0	559.0		559.0						

The above table represents a general guideline relating to some of the pipe types and sizes available. A wall chart is available showing the above information including sizes up to 2 meters. For a copy and for more detailed information please contact the EBCO Customer Service Department on the number shown below.

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*These fittings are designed for the conveyance of cold potable water. Save with the express written approval of EBCO, no warranty is given that the fittings are suitable for any other purpose.*