



Section 5

Connections – technical

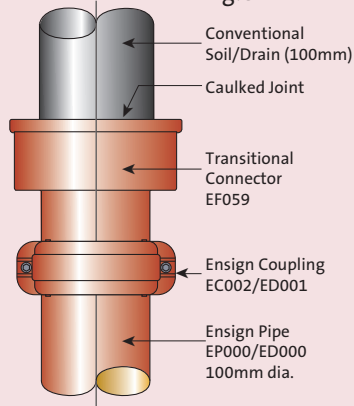
Ensign cast iron drainage 1st choice for hotels and apartments

Ensign has the quality to maintain a peaceful and safe environment:

- silent in operation – occupants/ residents who demand a level of comfort, will not want to be disturbed by the drainage system in action. Cast iron is the quietest material (twice as quiet as any other material without insulation)
- non-combustible – will not drip as molten, burning globules (unlike HDPE), contributing to spread of fire and threat of injury
- quality – quality buildings demand quality specification
- minimal maintenance – keeps maintenance costs to a minimum

Connection to other systems

Fig. 5



WC connection

The Ensign range will accommodate 'push-fit' type, flexible connectors (ie. Multikwiks or similar), or using the transitional connector EF059.

Conventional soil/drain

To connect Ensign into a conventional soil/drain socket, use a traditional caulked joint. If connecting to a conventional soil/drain spigot, use an EF059 connector with a caulked joint and an EC002/ED001 coupling to the pipe. (See Fig. 5).

Hepworth clayware

100 and 150 Supersleve can be connected to Ensign by using an ED076 adaptor and an ED001 coupling. (See Fig. 6).

100 and 150 Hepsleve can be connected to Ensign by using an ED076 adaptor and an ED001 coupling in conjunction with Supersleve/Hepsleve transitional coupling manufactured by Hepworth. (See Fig. 7).

Earthenware/clayware

Ensign can be connected to an earthenware socket using a traditional cement joint.

If connecting to an earthenware spigot use an EF059 and an ED001 coupling with a traditional cement joint at the socket of the EF059. (See Fig. 8).

Ensign system dimensions

Other materials can be connected to Ensign by using an EC002 coupling, if their dimensions conform to the following table:

| Ensign Nom Dia. | Min. OD | Max. OD |
|-----------------|---------|---------|
| 50 | 57 | 60 |
| 70 | 77 | 80 |
| 100 | 109 | 112 |
| 125 | 133 | 137 |
| 150 | 158 | 162 |
| 200 | 208 | 212 |
| 250 | 271.5 | 276.5 |
| 300 | 323.5 | 328.5 |
| 400 | 426 | 431 |
| 500 | 528.6 | 534 |
| 600 | 631 | 637 |

Fig. 6

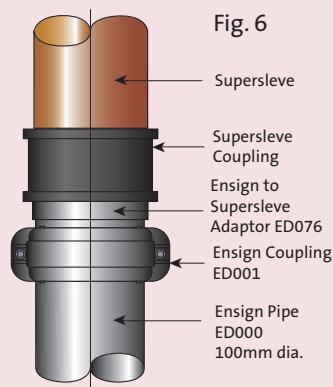


Fig. 7

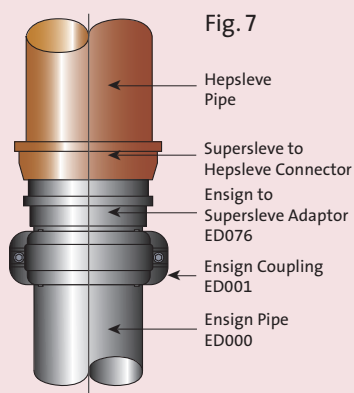
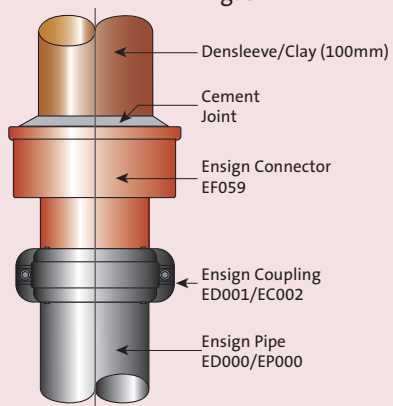


Fig. 8



Connection to other systems

Waste pipes (copper, plastics etc.)

The Ensign range offers a number of methods to connect to waste pipes:

'Push-fit' blank end EF077

Suitable for push-fit connection to copper/plastic waste, incorporating two rubber plugs accommodating 32/38mm diameter waste (See Fig. 11). Rubber plugs cut to size on site.

Boss pipes

Ensign now offers the choice of boss pipes using either the compression fit method in 50-150 diameter (*see below*) or the traditional drilled and tapped method at 50mm BSPT available in 100mm diameter (*see page 27*).

PVC to Ensign PFJ

40-56mm PVC can connect directly to 100mm Ensign PFJ system, using a new push-fit gasket which accommodates three inlets.

Remove existing PFJ standard gasket, and replace with EF076 multi-inlet waste connector: Product Code 09167 (See Fig. 12).

Blank ends – push-fit EF071 or drilled/tapped EF071T

A blank end drilled and tapped 50mm BSPT EF071, using a 50mm BSPT male iron adaptor (supplied by waste manufacturer). (See Fig. 13). Or alternatively using blank ends with push-fit rubber grommets (*see page 25*).

PVC above ground systems

100/150mm Ensign to PVC use standard Ensign coupling EC002. Please Note: Remove the continuity nibs on the standard EC002 coupling before connecting to PVC.

50mm Ensign to 40-56mm PVC use new rubber universal connector EF071R (*see page 24*).

PVC below ground systems

100/150mm Ensign to PVC use standard Ensign coupling ED001.

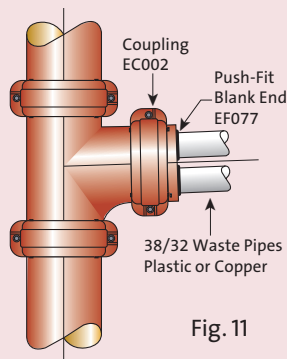


Fig. 11

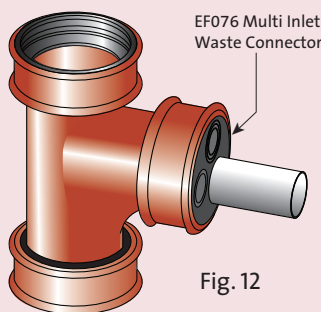


Fig. 12

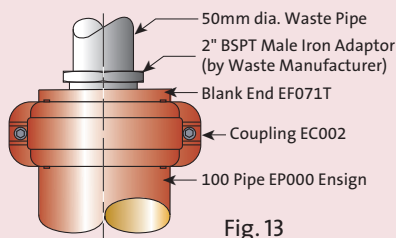
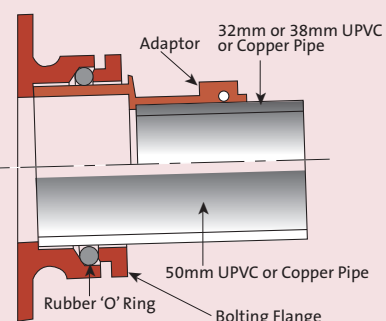
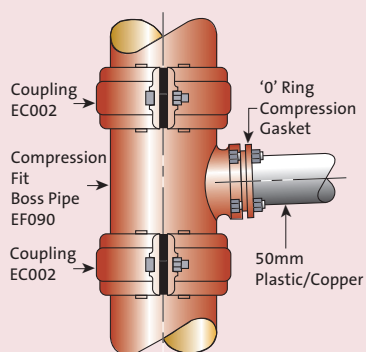


Fig. 13

Boss pipes compression fit



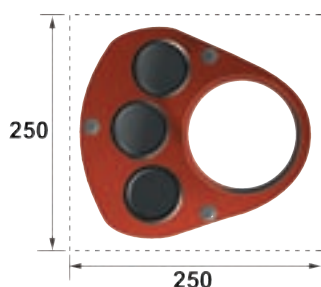
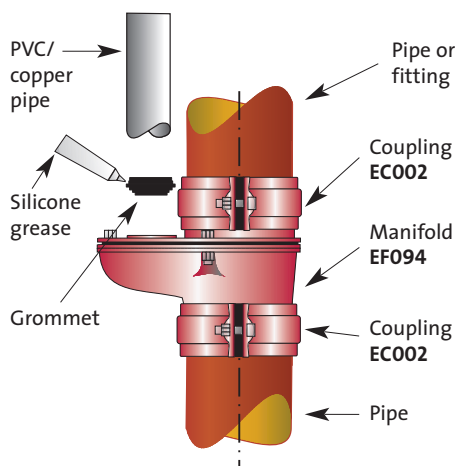
The boss pipes incorporate 'O' ring compression gaskets that will accept 54-56mm O/D pipe, and is supplied assembled with the following for each boss.

1. 6mm 'O' ring rubber (EPDM)
2. M8 x 30 zinc and clear coated steel screw x 2
3. M8 coated steel nuts x 2

To connect 32mm and 38mm waste pipes fit the appropriate reducing adaptors onto the pipe before inserting through the clamp flange.

The 'compression fit' boss pipes have been introduced to reduce the cost of connecting to waste pipes, eliminating the need for expensive conventional threaded male adaptors, and subsequently reducing the overall installation costs.

Multi-waste manifold connector



The multi-waste manifold simplifies waste plumbing by grouping all associated pipework from various sources such as sinks, basins, bidets, urinals and showers to one internal point above the finished floor level.

The manifold will permit the connection of three 32/38mm copper/plastic waste inlets to any new or existing 100mm diameter Ensign pipe stack and three 50mm copper/plastic waste inlets to 150mm diameter pipe stack.

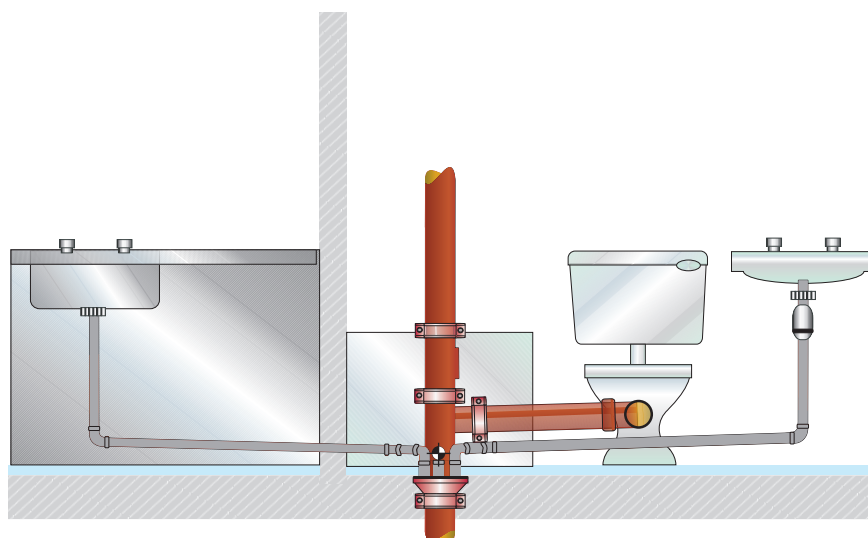
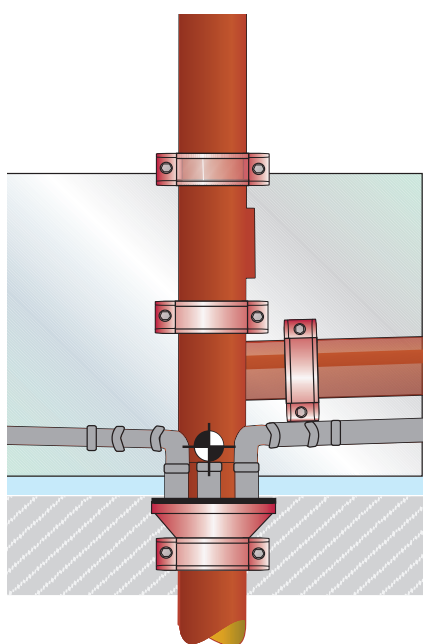
The manifold main body is connected to the stack using standard coupling EC002. On the 100mm manifold to achieve a 32mm waste connection, remove the inner rubber ring, 38mm utilising the outer ring (for waste pipe maximum lengths see BS EN 12056-2).

Pipework connecting discharge appliances to SVP manifold, should be designed not to cause self siphonage.

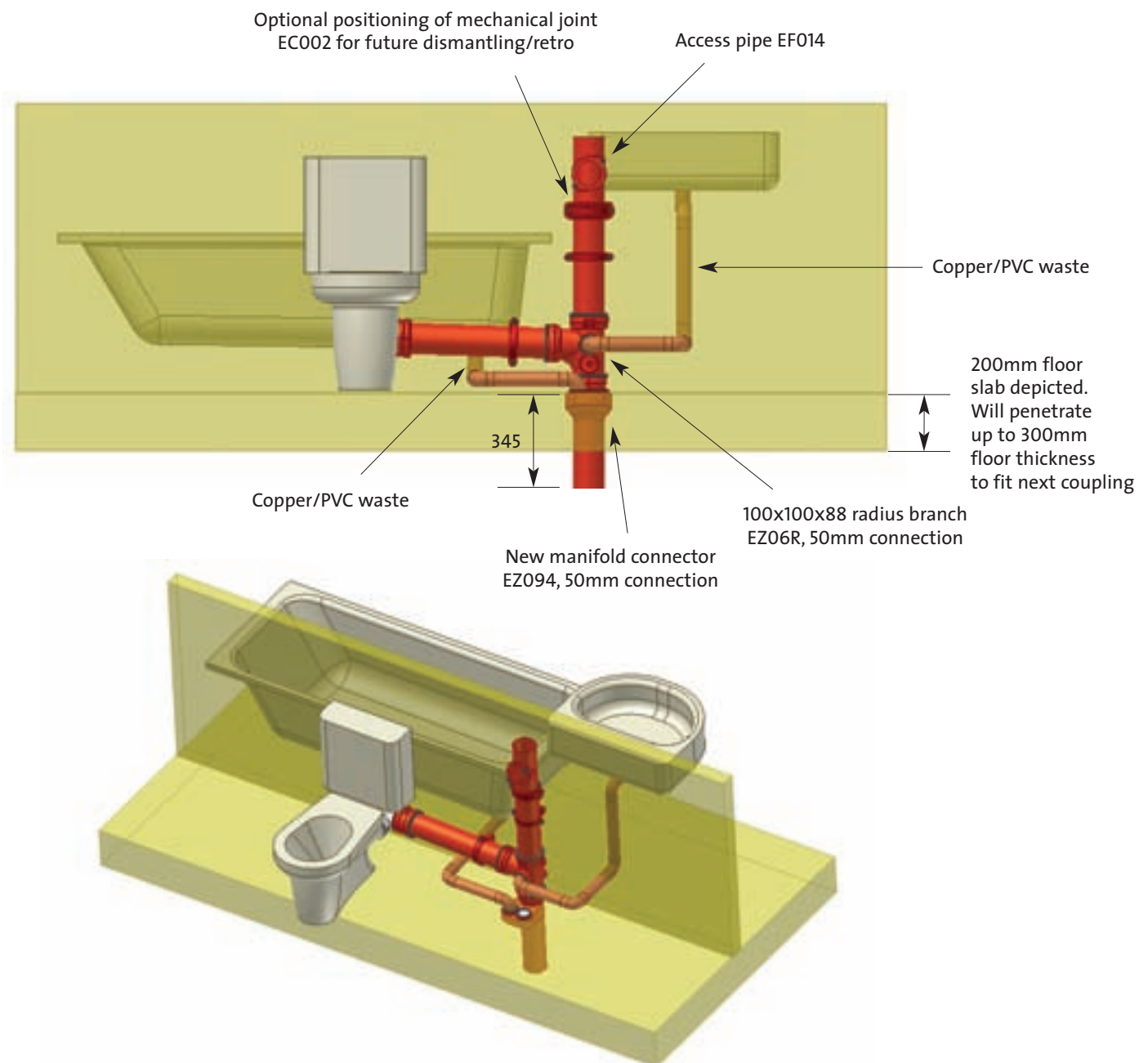
Fixing instructions

1. Remove grommets, pierce the appropriate groove for 32mm or 38mm waste (100mm manifold only) connections and tear out centre disc where required.
2. Apply an appropriate silicone grease (not provided) to the outside of the grommet and re-fit into manifold ensuring that the retaining groove of the grommet is located correctly in the casing.
3. Lubricate pipe ends and insert into grommet with a rotational movement. Pipe ends may be chamfered for ease of insertion.
4. Any grommet not fitted with a waste pipe must also follow instruction 2 above.

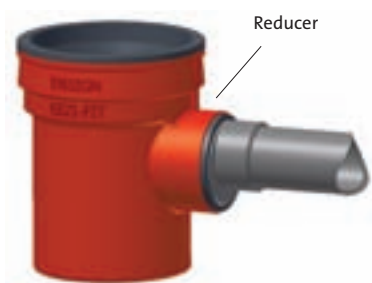
Typical manifold application



EEZI-FIT manifold application



EEZI-FIT boss pipe connections



Boss pipes and manifold are supplied with rubber grommets for connection to 54mm OD copper and 56mm OD UPVC waste.

To connect to 38/32mm waste simply use a reducer as shown (supplied by waste manufacturers).

EEZI-FIT boss branches connections



1. Simply determine which boss connection is to be used. If possible drill hole before installation.
2. Using a 51mm hole saw – cut a hole at the bottom of the boss centrally using the dimple provided. Ensure casting is held firm before drilling.
3. De-burr cut ends and make good with appropriate Ensign touch-up paint.
4. Fit rubber grommet (Product Code 208205) in bags of 10 supplied separately.
5. Apply small amount of lubricant to grommet.
6. Insert waste pipe – and push-home until fully located.

Tools Required:

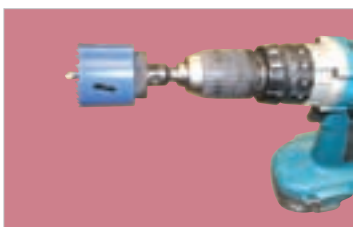
- A 51mm hole saw – Product Code 208206
- Arbour – Product Code 09181
- 1/4" pilot drill – Product Code 09182

Touch-up Paint: red epoxy

- Red base – Product Code 04443
- Hardener – Product Code 04444

EEZI-FIT boss branch

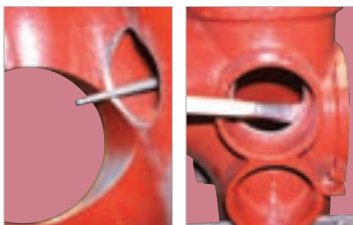
Boss cutting instructions



- Step 1.** Firstly decide on which boss or bosses are to be used. If possible cut these out before installation of the branch. Fit the drill, arbour and hold cutter (51mm) as shown.



- Step 2.** Set the drill on fast speed, and drill a pilot hole locating the drill in the dimple provided. When this drill breaks through, set the drill to a slow speed and continue to cut the hole with the hole saw. Ensure that the drill is cutting square to the boss and only apply moderate even pressure on the drill. When the drill breaks through, the waste metal will remain in the hole saw.



- Step 3.** Use a file to remove any sharp burrs around the cut edge, and touch up with a two part epoxy repair kit or similar to bring back the protection to the original specification.



- Step 4.** Fit the rubber grommet into the boss, apply lubricant (Code 199037) to the inside of the grommet and to the outside of the waste pipe, rotate the waste pipe and push firmly until full located.

Typical labour saving devices



Cricket pipe carrier

To assist on site with transporting larger diameter pipes and fittings there is the Cricket pipe carrier:

- Transport 20ft (6.1m) pipe lengths up to 1,000lb (450kg)
- Comes with ratchet hold-down strap and 16" tubed tyres
- Weighs only 80lb (36.0kg)
- Quick handle disconnect for compact storage

Easy use:

Step 1. Use ratchet hold-down strap to secure Cricket to pipe.

Step 2. Use handle to flip Cricket and pipe.

Step 3. Reposition handle. Great for carrying flanges, fittings and valves.



Scorp 220 cutter

- The ultimate and fast solution for cutting of cast iron 50mm up to 200mm
- Easy, secure and effortless cutting during use on construction sites
- Wide range of applications and dimensions
- No rework necessary
- Suitable for clamping joints
- Reduction of tool costs



Hand-held cordless impact driver

Saint-Gobain Pipelines has conducted a number of field trials on handheld cordless drills, with experienced installers of cast iron drainage systems. The purpose was to identify tools which reduce the time taken to install cast iron mechanical couplings, but are also practical and easy to use in site conditions where space can be limited.

Field trials – research findings

- Using a cordless drill reduced the time taken to assemble a ductile iron coupling by up to 50%
- Plumbing installers found saving in time significantly increased on larger diameter couplings which incorporate four fixing bolts (150-300mm)
- Experienced plumbing installers who trialled the hand-held drills reported significant savings in time, and improved productivity on site

A number of cordless drills were trialled on many sites. The best all round performer being:

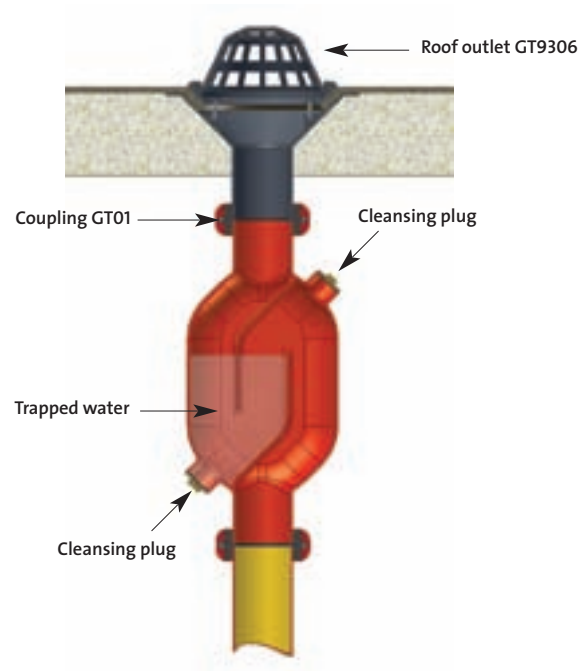
Cordless impact wrench Bosch GD14.4v (shown)

- High torque and high impact force ensure optimum performance
- New battery technology extends the service life of the batteries by 50%
- ½ hour charger (standard equipment) enables fastest recharging
- High level of comfort
- Compact and ergonomic shape
- Very good power/weight ratio ensures fatigue-free working
- Gear housing made of metal for maximum precision and long service life
- Safe working without recoil
- Three-fold adjustable light ensures optimum visibility, even in dark areas

NOTE: These devices are not manufactured by Saint-Gobain pipelines but are available via reputable dealers.

Typical applications – stench trap

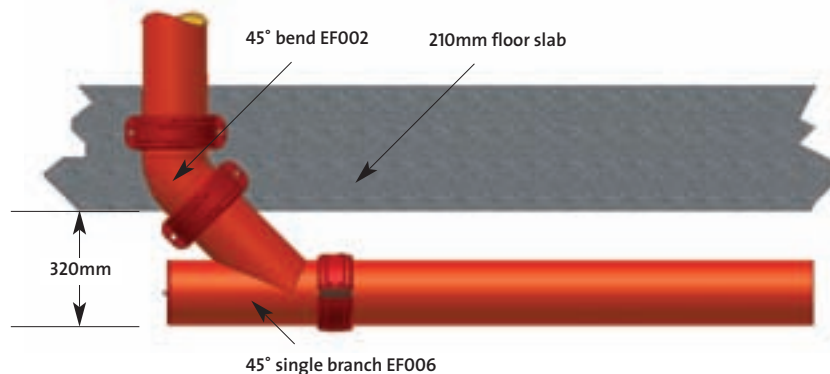
- Installed in a 100mm or 150mm diameter rainwater system.
- Prevents odours emanating on to balconies and flat roofs.



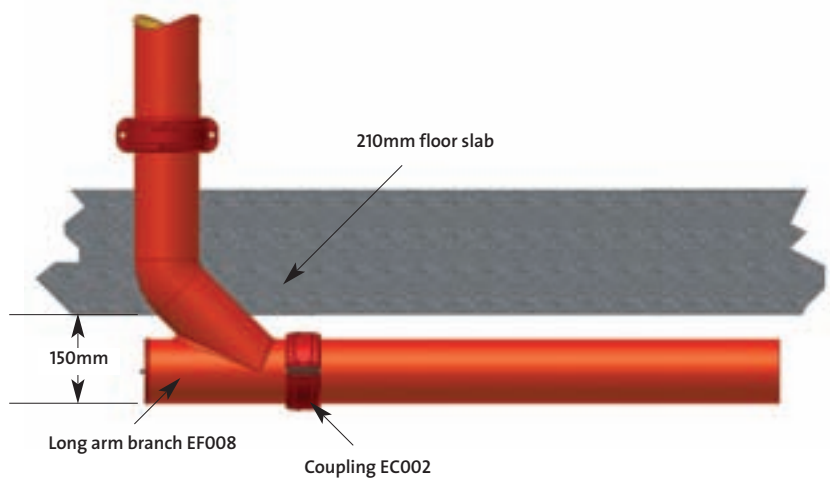
Typical applications – long arm branch

The Ensign long arm branch fitting EF008 is ideal to use if space under the floor slab is limited as shown in the diagrams. The space required by the long arm branch is virtually half that, when using a single branch and bend at 45 degrees.

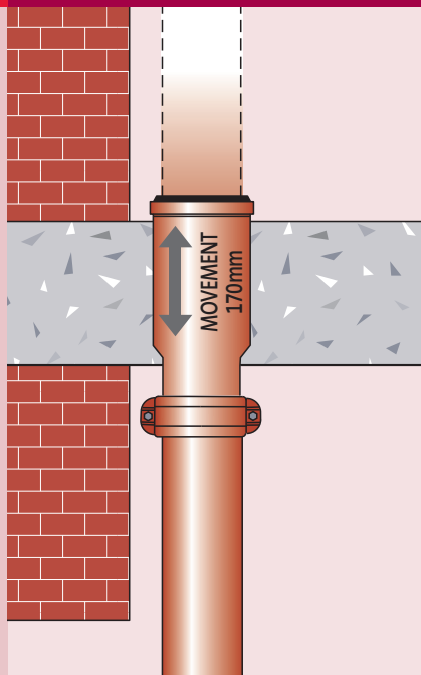
Standard method 100mm diameter



Method using long arm branch



Typical



applications – movement connector

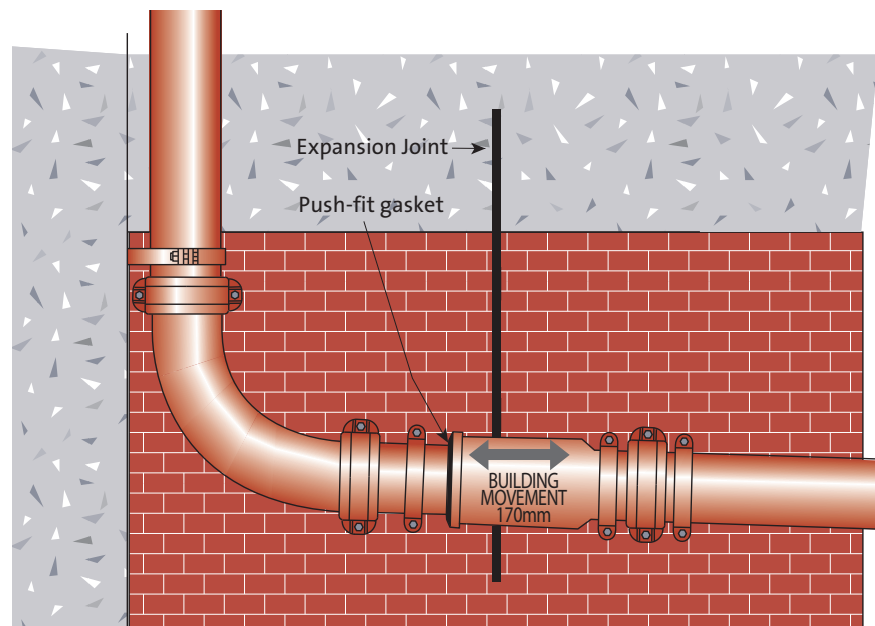
This allows for pipe movement without buckling during limited building settlement or pipework settlement.

Pipe movements of approximately 170mm are allowed for within the EF058.

The gasket within the connector must be lubricated with silicone grease (or similar).

Available in 100mm and 150mm diameter.

Note: When used horizontally on rainwater installations, it is recommended that an access pipe be positioned adjacent to allow rodding access, should any build-up of silt occur in the movement area.

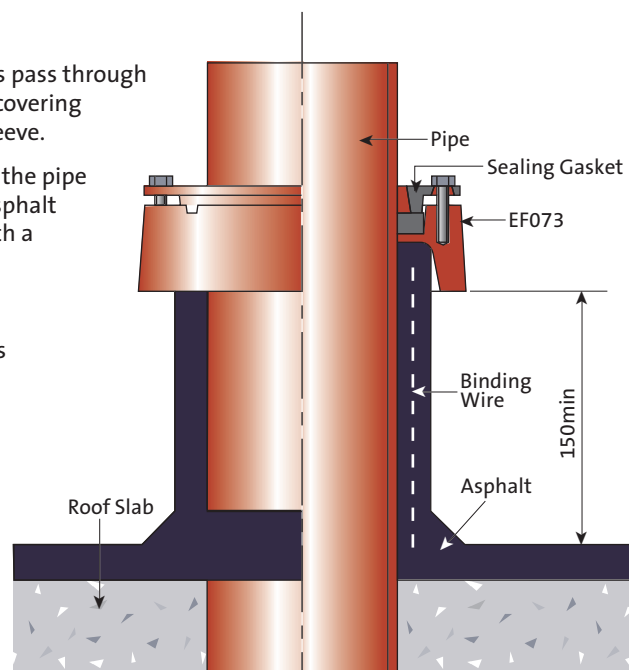


Typical

applications – asphalt roof adaptor

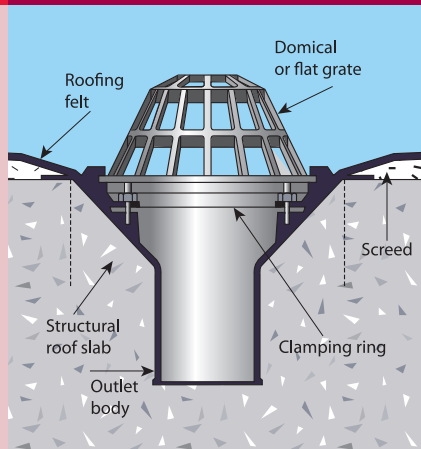
For use where soil pipes pass through a roof with an asphalt covering without the use of a sleeve.

1. Slide the EF073 over the pipe onto the upraised asphalt (support asphalt with a binding wire mesh).
2. Tap gently to seat.
3. Tighten the stainless steel screws.



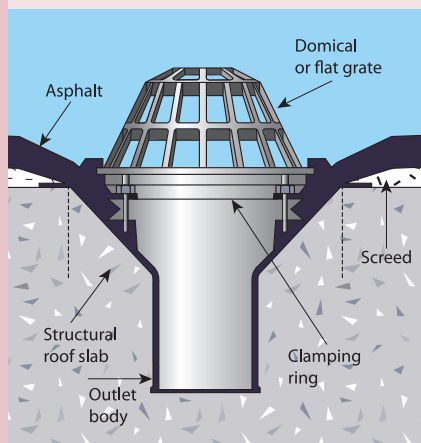
Roof outlets typical installation

For use with roofing felt



1. The body of the outlet is to be set in the aperture formed in the structural roof slab. The upper flange of the outlet resting on and flush with the structural roof surface.
2. The screed is to be brought down to the outer rim of the flange of the outlet.
3. The first of the three layers of roofing felt is star cut and dressed into the throat of the outlet body. Care should be taken to dress round the two fixing studs. The next two layers of felt are star cut in the same way as the first layer, but care should be taken to avoid cutting in the same points as the other two layers. Upon completion of this operation, ensure that the bore is clear of felt etc. Cut this away, being sure to prevent the offcuts falling down the RW stack if connected. It is advisable to plug the outlet with newspaper in order to prevent this happening.
4. Place the clamping ring in position so that the studs protrude through the holes provided. Tighten the nuts progressively and equally on the studs drawing down the clamping ring, until securely squeezing the felt against the body of the outlet.
5. Fix grating into position.

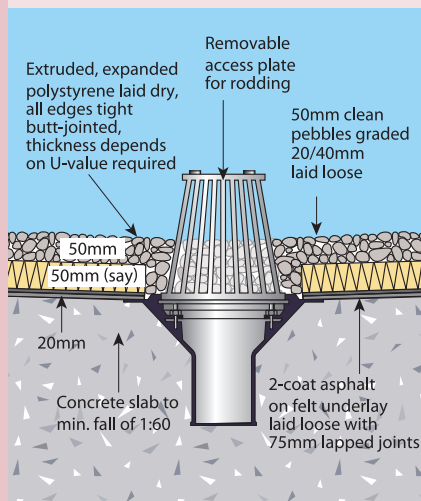
For use with asphalt



1. The body of the outlet is to be set in the aperture formed in the structural roof slab. The upper flange of the outlet resting on and flush with the structural roof surface.
2. The screed is to be brought down to the outer rim of the flange of the outlet.
3. The asphalt is trowelled down into the throat of the outlet leaving the fixing studs clear. Smooth off to give an even finish to receive the clamping ring. It is advisable to plug the outlet with newspaper in order to prevent surplus asphalt entering the RW stack.
4. Place the clamping ring in position so that the studs protrude through the holes provided. Tighten the nuts progressively and equally on the studs drawing down the clamping ring onto the asphalt.
5. Fix grating into position.

GT9307 grating for 'inside-out' roof

The grating is designed specifically to suit the 'inside-out' roof arrangement and it incorporates the following features:



- The vertical bars of the grating are positioned to allow maximum flow rate without allowing the graded pebbles to enter the stack. This grating is made of cast iron and provides the stability and strength needed in variable weather conditions.
- Access to the stack for rodding or testing purposes is gained by the removal of the access plate on the top of the grating without disturbing the pebbles. The added height of the grating allows for roof design variations. This grating can be used with Roof Outlets GT9306.