PLUMBING

Drain, Waste and Vent Pipe and Fittings System

PRODUCT INSTALLATION GUIDE

iPLEX Pipelines

Contents

iPLEX Pipelines

1.0 Introduction

Iplex Pipelines is a major Australasian manufacturer of plastic pipeline systems, servicing local and export projects throughout New Zealand, Australia, the Pacific area, and other International markets.

Iplex Pipelines was one of the first companies to produce Unplasticized Polyvinyl chloride (PVC-U) pipe and fitting systems in New Zealand, and has pioneered many significant developments of PVC systems for Drain, Waste and Vent (DWV) applications, in Australasia.

PVC-U is the predominant material used in DWV applications in New Zealand. It is durable, lightweight, resistant to a wide variety of chemicals, does not support combustion, is impervious to bacteria or fungal attack and not subject to electrolytic corrosion.

PVC-U is also recyclable and an attractive materials choice for pipe systems requiring Best Environmental Practice PVC Design.

2.0 Product Data

2.1 Iplex DWV Products

Iplex NOVADRAIN and RESTRAIN DWV pipes are manufactured in accordance with the AS/NZS 1260, *PVC-U pipes and fittings for Drain, Waste and Vent applications.*

NOVADRAIN

Iplex NOVADRAIN (product code 100 Series) is a solid wall pipe system manufactured from PVC-U material. NOVADRAIN may be manufactured as either plain solid wall pipe or sandwich construction (SC) solid wall pipe. SC solid wall pipe technology is able to effectively utilise recycled PVC-U as permitted by the AS/NZS 1260 standard.

RESTRAIN™

Iplex RESTRAIN™ (product code Restrain) utilises a patented threaded spigot and socket joint which provides axial end load restraint capability, specifically for trenchless installation during repair or replacement of underground gravity sewer infrastructure.

Joint Systems

Iplex DWV pipes and fittings assemble easily using either solvent cement or rubber seal rings to provide secure, durable joints.

Solvent cement joints are available in size DN32 to DN150.

Rubber ring joints are available in all sizes DN100 to DN600 inclusive.

Iplex Restrain™ threaded spigot and socket pipe joint with axial end load restraint capability.

Applications

- Above ground waste and vent applications
- Domestic house drains
- Urban gravity sewer mains
- Industrial gravity discharge lines
- Trenchless gravity sewer main applications (RESTRAIN)
- Abrasive slurries in quarrying and mining
- Acids, alkalis and aggressive chemicals.*

* *Refer to 'A Guide to Chemical Resistance of Thermoplastic and Elastomeric Materials' - available from IPLEX Pipelines.*

2.2 Standards

Iplex NOVADRAIN and RESTRAIN pipes and associated DWV fittings are manufactured in accordance with AS/NZS 1260. (Standards Mark Licence number SMK20184 and SMK20185).

Iplex NOVADRAIN pipe and fittings systems comply to the "Best Environmental Practice PVC" requirements of AS/NZS 1260.

2.3 Stiffness Classes (SN) and Dimensions - Pipe and Moulded Fittings

Pipes are specified in terms of stiffness classes measured according to AS/NZS 1260.

Pipes are supplied with either rubber ring or solvent weld jointing systems, in classes SN6 and SN10 (DN100) and SN4, SN8 or SN16 (DN150 to DN600).

Class SN4 and Class SN6 are considered to be suitable for plumbing and domestic use, and for general municipal drainage.

Class SN8, Class SN10 and Class SN16 are suitable for general municipal drainage, or where higher pipe stiffness is required.

Pipes may be supplied in effective lengths of 6 metres, 4 metres or 3 metres.* **Total pipe length** = *Effective Length + Insertion Depth.*

Iplex injection moulded plain wall fittings to AS/NZS 1260 are suitable for use in DWV systems using SN classes up to and including SN16 pipe. (Refer to Section 7.2 and Section 7.3 for fitting dimensions.)

(Refer to page 35 and page 36 for DWV pipe dimensions, and effective lengths.)

2.4 Colours and Markings

Iplex DWV pipe and fittings are manufactured in a light pearl grey colour in a semi-gloss finish. All DWV pipes are repeatedly branded in accordance with AS/NZS 1260, which includes the date and place of manufacture.

2.5 Best Environmental Practice (BEP) PVC and the NZGBC Green Star Rating

In 2010 the New Zealand Green Building Council, NZGBC, reviewed its Green Star NZ PVC credit and under a new approach, the use of Iplex PVC pressure and non-pressure pipe, conduit and fittings can assist buildings to qualify for up to three positive credit points towards their green star rating, where pipe and fittings can be shown to comply with the NZGBC credit – MAT-4 PVC (2012).

As a means of demonstrating Best Environmental Practice PVC (BEP PVC), Iplex was subjected to an extensive audit process by independent third-party certifier, ApprovalMark International. Iplex has been issued with BEP PVC Certificate of Verification No. SPROD 40057. (SAI-Global). The Certificate is available at *www.iplex.co.nz/sustainability/*

The NZGBC has recognised environmental advances made by Iplex and others and has based its revision on a series of PVC Expert Reference Panel (ERP) meetings, site visits, discussions with key stakeholders and examination of international studies. This process has shown the lifecycle of PVC - from raw materials and production through use to end-of-life, recycling and disposal - has changed considerably in recent years and there is a clear rationale for favouring PVC products that are manufactured and reclaimed through Best Environmental Practice production and end of life product management processes.

2.6 Material Properties

The properties listed in Table 1 are typical characteristics of PVC-U, at 20°C.

Density	1480kg/m^3
Ultimate tensile strength	52MPa
Compressive strength	66MPa
Shore D hardness	85 ATSM D2240
Hardness (Brinell) at 23degC	12-15
Elongation at yield	5.5%
Poissons ratio	0.38
Coefficient of linear thermal expansion	$\pm$ 7 x 10^{-5} m/m/ ˚C
Vicat softening temperature	Approximately 80˚C
Ring bending modulus (E modulus)	3 minute 3200MPa and long term 1400MPa

Table 1 - Typical properties of PVC-U at 20˚C

Figure 1: Exposed PVC pipe protected from weathering with UV resistant water-based paint, Dunedin City.

2.7 Product Limitations

PVC Drain, Waste & Vent pipes and fittings should not be used:

- With aromatic and chlorinated hydrocarbons, ketones, esters and ethers
- For any pumped pressure applications
- At continuous service temperatures above 60ºC or for intermittent discharges of liquid above 75ºC
- Without adequate support to the pipe both in above ground and below ground applications
- In below ground applications where depth of cover is less than:

- 300mm where pipeline is not subject to vehicular loading
- 450mm where pipeline is subject to vehicular loading not in roadway
- 600mm where pipeline is subject to vehicular loading in sealed roadways -
- 750mm where pipeline is subject to vehicular loading in unsealed roadways -
- 750mm where pipeline is subject to construction equipment loadings

- When exposed to direct sunlight above ground for applications or storage exceeding 24 months without protection. This protection may include pale coloured UV resistant water-based paint systems (Figure 1), non-exposed location or physical shading.

2.8 Product Features

Table 2 Product Features and Benefits

Features	Benefits
Flow capacity	• Extremely smooth pipe bore, precision joints, and lack of internal projections encourage flow capacity over the total life of the system • Flatter grades may be possible using PVC-U systems compared with alternative pipe materials
Flammability	• PVC-U does not support combustion
Non-conductivity	• PVC-U is a non-conductor of electricity, and is therefore not subject to galvanic or electrolytic action
Resistance to tree roots	• Correctly assembled solvent weld joints have deliver excellent resistance to tree root intrusions. Iplex DWV elastomeric seal joints have been designed with high interface pressures which, when coupled with smooth, impervious, PVC socket and spigot surfaces, provide a high resistance to tree root intrusions (verified by research carried out in conjunction with CSIRO)
Low installation cost	• The light weight of Iplex DWV pipes together with longer pipe lengths, flexibility and the use of narrow trench widths minimises installation costs, the major portion of the total in-situ costs
Corrosion resistance	• PVC-U has excellent chemical resistance to hydrogen sulphide, and the acids or chemicals normally expected to be encountered in sewer drain and waste applications
Manhole reduction	• In some cases manholes can be replaced with PVC-U riser and access points. The spacing of manholes can be increased due to reduced incidence of blockage and increased flow rates possible with PVC-U sewers
Leakage significantly reduced	• Ground water infiltration and sewerage exfiltration due to broken and cracked elements and joint openings caused by ground movement are significantly reduced by the precision joints, flexible pipe barrel and sealed access points provided by the PVC-U sewer pipe and fittings system.

2.9 Resistance to Seismic movement (Earthquakes)

The Canterbury area earthquakes of 2010 to 2012 severely tested buried gravity sewer pipes in the Christchurch area. PVC-U gravity sewer pipes and fittings systems with rubber ring joints were generally found to perform well and continue as a preferred solution for many earthquake rebuild works. PVC-U gravity sewer systems have also been adopted for industrial applications in Christchurch. Contact Iplex Pipelines for more information on pipeline seismic performance.

DN 450 Iplex PVC-U sewer rising main, laid near Belfast, Christchurch in 2005, which endured the 2010 and 2011 Caterbury earthquake sequences undamaged,

DN 450 Iplex PVC-U sewer rising main, laid near Te Anau in 2000, which has endured undamaged, all earthquakes in the Te Anau area, 2000 to 2019.

2.10 Chemical Resistance

PVC-U has excellent chemical resistance to the acids and chemicals normally expected to be encountered in drain and waste applications. Generally PVC-U is resistant to most oils, fats, alcohols and aromatic-free petrol, but is unsuitable for use with aromatic and chlorinated hydrocarbons, ketones and esters which can lead to swelling and softening of the material.

More information on Chemical Resistance is available from Iplex Pipelines at *www.iplex.co.nz/contact/*

2.11 Field Testing

Iplex recommend that field testing of PVC-U DWV gravity systems be in accordance with the requirements of

- AS/NZS 2032 - *Installation of PVC Pipelines*
- AS/NZS 2566.2 - *Buried Flexible Pipelines - Installation*
- NZS 4404:2010 - *Land Development and Subdivision Infrastructure.*

Refer also to 'How I Field Test PVC Pipes' visible at *www.iplex.co.nz - "Resources."*

2.12 Pipeline Design

Design and Installation of DWV pipes and fittings must conform to the New Zealand Building Code. Also refer to the current complete edition of AS/NZS 3500: Part 2 – Sanitary Plumbing and Drainage, AS/NZS 2032 – Installation of PVC-U Pipe Systems, AS/NZS 2566 - Buried Flexible Pipelines Part 1 (Structural Design) and Part 2 (Installation) and NZS 4404: 2010 Land Development and Subdivision Infrastructure.

3.0 Jointing Methods

Iplex PVC-U DWV pipes and fittings may be joined using rubber ring joints or solvent cement joints.

3.1 Solvent Cement Joints

Iplex Pipelines Novakey brand solvent cement and cleaner primer are manufactured to AS/NZS 3879 – *Solvent cements and priming fluids for PVC.*

To achieve strong leak free joints, tradespeople should:

1. Select the correct solvent cement and cleaner primer for the application.
2. Select the correct pipe and fitting using the Iplex Pipelines parts list.
3. Follow the recommended jointing steps shown below. Short cuts will result in unsatisfactory joints that are likely to cause system failure.

Refer also to 'How I Solvent Cement Joint PVC Pipes' visible at *www.iplex.co.nz - "Resources."*

How PVC Solvent Cement Works

Iplex PVC solvent cement is a solution of PVC resin in a mixture of solvents, which soften and chemically fuse the surfaces when applied to PVC-U pipe and fittings.

It is not a glue.

Novakey brand cleaner primer and Novakey brand solvent cement must be used together to achieve permanent leak-free joints using the steps below.

Use of Cleaner Primer

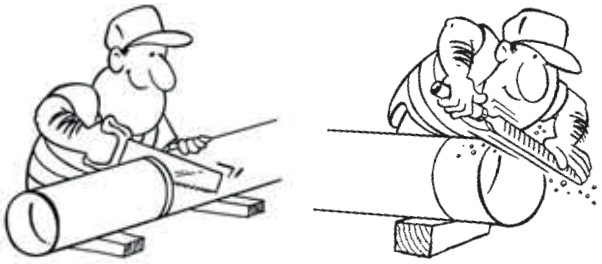
Cleaner primer must be used to prime and clean all jointing surfaces, prior to application of solvent cement - NO EXCEPTIONS. Cleaner primer is essential to the process.

No additive of any kind should be added to the cleaner primer or to the solvent cement. Ensure that the solvent cement is in good condition and runs freely from the brush. If the cement does not run freely or appears 'globular' and 'tacky' discard and use fresh stock of solvent cement. Ensure the cement is within its recommended 'use by' date.

PVC Pipe and Fitting Preparation

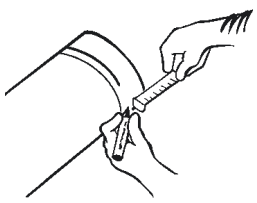
Step 1. Cut Spigot Square and Deburr

Cut pipe square, ensure the pipe spigot and socket are not damaged. Remove any burrs, sharp edges and pipe shavings from the spigot and socket using a file or reaming tool. Correct deburring of the spigot avoids displacement of the cement from the inside of the socket when the spigot is inserted to make the joint. Failure to correctly deburr may prevent full pipe penetration and/or cause the detrimental accumulation of solvent cement at the back of the joint.



Step 2. Apply Witness Mark

Measure the insertion depth of the socket that you are about to join. On the spigot mark a corresponding witness mark with a pencil or felt pen.



Step 3. Test – Dry Fit the Joint

Check the spigot and socket for an interference fit by dry fitting the joint. An interference fit must be reached between approximately 1/3 to 2/3 of the socket depth determined by the witness mark position.

Step 4. Applicator Selection

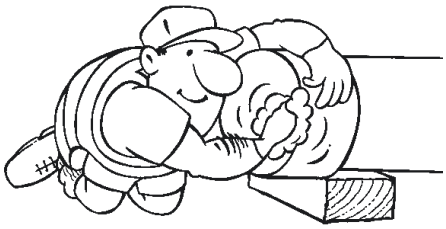
The brush should be large enough *(Table 3)* to apply the solvent cement within 30 seconds, a disposable brush is recommended for use. For pipes larger than 100mm, it may be necessary to decant solvent cement into a larger container to enable a large brush to be used.

Table 3 recommended Brush Sizes	
Pipe Nominal Diameter DN	**Brush Width (mm)**
100	50
125	75
150	80
200	100
225	125
300	150
375 to 600	200

4. Dry fit the joint. An interference fit must be reached before the spigot is fully inserted to the witness mark.
5. **Make sure the spigot and socket are dry.** Any moisture in the joint may lead to joint failure later.

Solvent Cement Welding Procedure

Step 1. Inspect Clean and Prime Surfaces

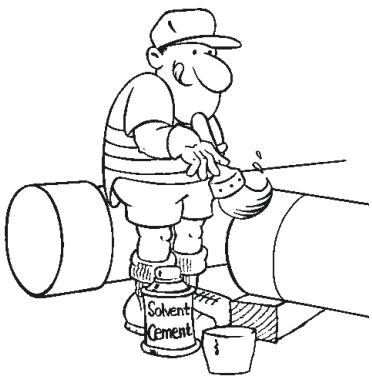


Cleaner primer fluid MUST BE used to clean and prime all surfaces, it is essential to the jointing process. The primer etches the PVC surface, removes the gloss and softens for the solvent cement's effective bond.

Ensure the spigot and socket are clean and dry. Moisture contamination may lead to future joint failure.

Apply cleaner primer to the spigot and socket with a lint-free cloth (natural fibres) dampen the joint with priming fluid. Use the correct personal protective equipment at all times.

Step 2. Apply Witness Mark



Using a suitably sized brush apply a full even coat of solvent cement (down to the witness mark) to the spigot and an even layer to the socket.

Apply a second full even coat to the spigot if required. Excessive solvent cement on the outer OD can easily be wiped away after assembly.

Ensure the entire surface is covered and are "thoroughly wet" with cement before assembly. As solvents evaporate faster from the exposed spigot than from the socket a "dry" patch not lubricated by wet solvent cement, may also prevent full insertion.

Ensure that excess solvent cement does not pond at the back of the socket as pools of solvent may continue to attack the PVC and weaken the pipe.

Excess or unused solvent cement should never be returned to the storage can.

Step 3. Assemble and Hold

While the cement is still wet quickly (within 1 minute), push spigot into socket up to the witness mark. Make the joint in a single movement, push the assembly home firmly. Do not stop as the bond will start to set immediately.

The final 10% of spigot penetration is vital to the interference fit. Hold the joint firmly without movement for at least 30 seconds.

Mechanical force will be required for larger joints, be ready in advance. Pipe pullers, polyester straps or come-alongs may be required, in order to apply a winch or lever hold-force.

Step 4. Excess Solvent Cement

A consistent bead must be visible at the mouth of the joint. Wipe off the excess solvent cement from the outside, and where possible from the inside of the pipe or fitting.

Step 5. Do Not Disturb Joint

Do not move the joint for at least 5 minutes, and handle carefully for at least another hour after jointing.

Step 6. Joint Curing

Do not fill the pipe with water for at least one hour after making the last joint.

Allow the cement to fully cure before attempting any site hydrostatic testing. Joint curing normally takes at least 24 hours @ 16-20°C. Allow up to 48 hours cure time if the temperature is less than 15°C.

3.2 Elastomeric Seal Joints

DWV rubber ring joint pipe is supplied with the seal ring, and is available in sizes 100mm to 600mm.

Subject to the pipe size and factory site of manufacture, Iplex DWV pipe may be fitted with the following elastomeric seal ring options.

Seal Ring Style	Seal Ring Elastomer (complies with AS1646)
(Pipe) Locked-in-place, or retained factory fitted seal *(Figure 3)* coloured black with integral polypropylene reinforcement ring coloured Yellow or Blue *(Joint method refer 3.4.)*	EPDM (Ethylene Propylene Diene Mononer rubber)
(Pipe) 'Z Joint' Seal *(Figure 2). (Joint method refer 3.5.)*	SBR (styrene-butadiene rubber)
(Pipe) 'Z Joint' Seal *(Joint method refer 3.5.)* For specialist industrial applications	NBR (Acrylonitrile butadiene rubber) - specialist industrial applications such as oily wastewater, meat, dairy and fish processing*
(Moulded Fittings) 'Flap' seal *(Figure 2a, 2b)*	SBR (styrene-butadiene rubber)

** Iplex Novadrain PVC pipes and fittings should not be used at continuous service temperatures above 60°C or for intermittent discharges of liquid above 75°C.*

Figure 2 - Z Joint Seal

Figure 2a - Flap seal used in DN 100 moulded fittings (may also be used in some DN 100 pipes)

Figure 2b - Flap seal used in DN 150 moulded fittings

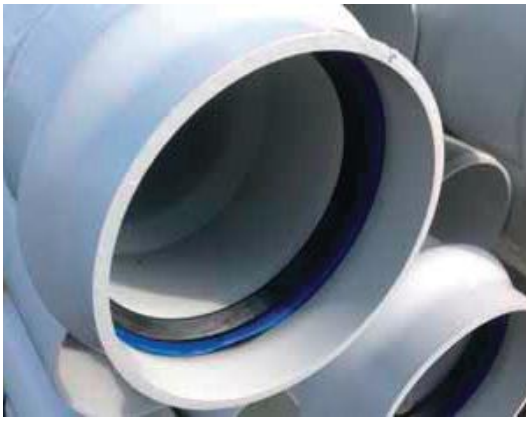


Figure 3 - Locked-in-place factory fitted Seal (colour of reinforcement band may be black, blue or yellow)

3.3 Pipe Cutting and Chamfering

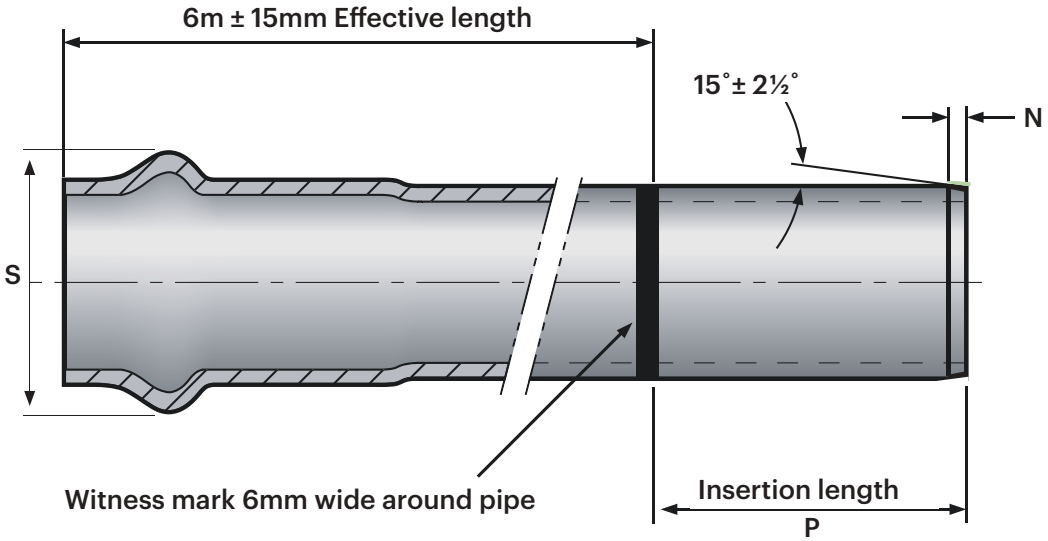
PVC pipes may be easily cut on site using a fine-toothed handsaw *(Figure 4)*, or power driven circular masonry blade *(Figure 5 and 6)*. Apply a 15° chamfer to the cut section, similar to the factory produced chamfer, *(Figure 7)* before attempting to join the pipes. Remove no more than 50% of the pipe wall thickness and ensure the chamfer is even with no sharp edges. The chamfer length must not exceed Dimension 'N' shown in *Table 4*. Make a witness mark using a soft pencil, crayon or felt pen at the required socket insertion length.

Figure 4 - Cutting pipe with hand saw

Figure 5 - Cutting pipe with power-driven masonry blade

Figure 6 - Cutting pipe with power-driven masonry blade

Figure 7 - Chamfering pipe with power-driven masonry blade



Pipe ends to be within ± 2˚ of being normal to main axis of pipe free from chips and rough edges and with sharp edges removed

Nominal Pipe Size (mm)	P (mm)	N (mm)	S (mm)
100	58	7	142
150	143	8	208
175	140	10	247
225	160	12	306
300	160	15	384
375	190	22	499
475	234	28	589
500	280	35	672
600	285	35	741

Table 4 - Witness mark and chamfer length

'S' is the minimum recommended ID of a host pipe containing slip-lined DWV pipes with sockets

Join Lubricant

Iplex Novalube is an economical lubricant for non-pressure applications where a bactericidal feature is not necessary.

Average number of joints per litre of Iplex Novalube (estimate only)

Nominal Pipe Diameter	Approx No. of Joints per litre
100	75
150	55
175	42
225	35
300	30
375	27
475	20
500	15
600	8

Elastomeric Sealed Jointing

- Ensure the inside of all pipes and fittings are completely free of dirt, sand, grease, and water before joint assembly begins.
- All pipe spigots must be assembled so the witness mark on the spigot remains just visible after the joint has been completed. Re-adjust correctly to the witness mark after assembly if necessary. Use a jointing fork to ensure joints assembled previously are not pushed past their witness mark as the next joint is made - *(Figure 8).*

3.4 Joint Method (Factory installed, Locked-in-Place (Retained) Seal Rings)

1. Do not attempt to remove the seal on site. It is fitted at the factory and cannot be dislodged by accident or removed by the installer. Thoroughly wipe out, dry and clean the pipe socket and seal in place. Be sure to remove all dirt behind the seal flap. *(Figure 9 and Figure 10.)*
2. Be sure the pipe spigot is correctly chamfered and has a clearly visible witness mark at the correct insertion depth. *(Figure 11 and Figure 13)*
3. Apply Iplex jointing lubricant to the spigot fully covering the circumference up to the witness mark and including the pipe chamfer. Also apply lubricant to the pipe seal. *(Figure 12)*
4. Be sure the pipe spigot and socket are axially aligned with one another *(Figure 13)*. If joint deflection is required do not deflect until after joint assembly is completed. Apply a crowbar with protective wooden block across the pipe end, and firmly push to insert the pipe spigot into the pipe socket. Push in *(Figure 14)* UNTIL THE WITNESS MARK REMAINS JUST VISIBLE. In this position, clearance is automatically provided to allow for expansion and contraction. DO NOT USE A MOVING EXCAVATOR BUCKET TO ASSIST WITH JOINT ASSEMBLY as this may damage the seal ring, and cause leaking joints.
5. The pipe socket may be restrained with a jointing fork *(Figure 8)* during joint assembly, to prevent backward movement which would close up joints already made.

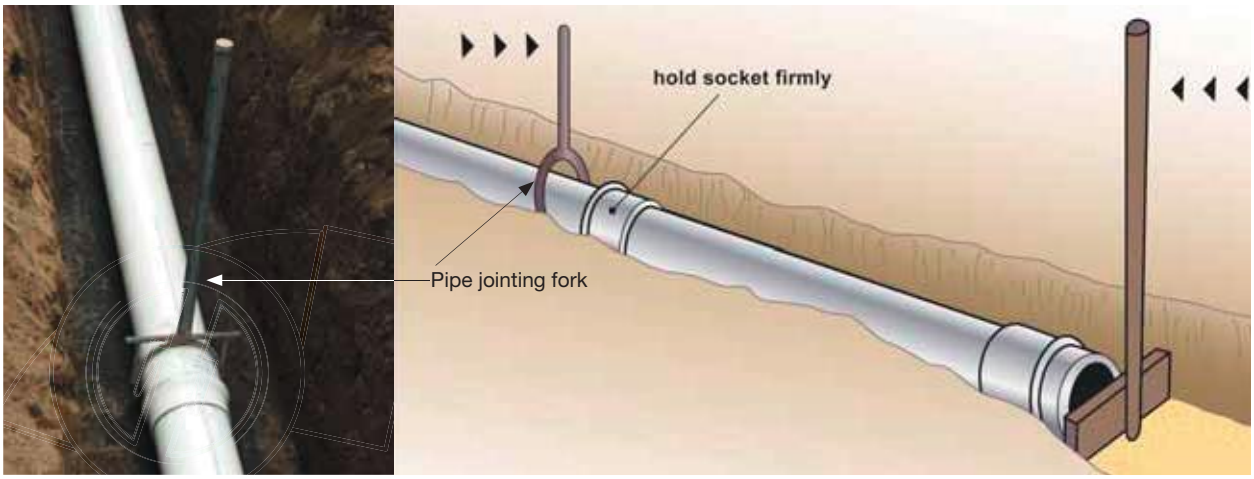


Figure 8 - Positioning of pipe jointing fork

Figure 9 - Thoroughly clean pipe socket and locked in place seal

Figure 10 - Clean pipe seal within the socket

Figure 11 - Check witness mark

Figure 12 - Apply lubricant to seal with a brush

Figure 13 - Insert aligned lubricated spigot into socket

Figure 14 - Push joint home until witness mark remains just visible

3.5 Joint method (Z Joint Seal Rings)

1. Thoroughly wipe out, dry and clean the empty pipe socket *(Figure 15)*.
2. Be sure the pipe spigot is correctly chamfered and has a clearly visible witness mark at the correct insertion depth.
3. Ensure that the Z ring is dry and clean. Be sure there is no lubricant in the empty socket. With the fingers, form a heart shaped fold in the seal to reduce the ring diameter then place it in the ring groove. Install with the flap facing into the socket. Smooth firmly round the seal until it seats positively in the ring groove *(Figure 16)*.
4. Apply Iplex jointing lubricant to the spigot, fully covering the circumference up to the witness mark, including the pipe chamfer and also to the inner flap of the Z ring *(Figure 17)*. Be sure there is no lubricant between the Z ring outer surface and the seal ring housing – to prevent displacement of the Z seal during joint assembly.

1. Be sure the pipe spigot and socket are axially aligned with one another. If joint deflection is required, do not deflect until after joint assembly is completed. Apply a crowbar with protective wooden block across the pipe end, and firmly push to insert the pipe spigot into the pipe socket. Push in (Figure 18) UNTIL THE WITNESS MARK REMAINS JUST VISIBLE. In this position, clearance is automatically provided to allow for expansion and contraction. DO NOT USE A MOVING EXCAVATOR BUCKET TO ASSIST WITH JOINT ASSEMBLY as this may damage the seal ring, and cause leaking joints.
2. The pipe socket may be restrained with a jointing fork *(Figure 8)* during joint assembly, to prevent backward movement which would close up joints already made.

Figure 15 - Thoroughly clean and dry empty pipe socket

Figure 16 - Fold seal ring and insert into pipe socket

Figure 17 - Lubricate seal and pipe spigot

Figure 18 - Push joint home until witness mark remains just visible

4.0 Installation of Sanitary Plumbing (Waste and Vent) Systems

Compliance with The New Zealand Building Code, and with the "Compliance Document for New Zealand Building Code Clause G13 - Foul Water" forms the basis of New Zealand plumbing and drainage regulation.

Acceptable Solution G13/AS3 references AS/NZS 3500.2, Sections 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 15, and 16, as modified by paragraph 2.0.2, as an Acceptable Solution for Plumbing and Drainage in New Zealand. This Iplex Catalogue section covers various features and simplified common applications of Iplex pipe and fittings used in domestic sanitary plumbing. It does not cover detailed pipework installation, or specialised systems.

The information in this Iplex installation guide is not intended as a substitute for the current complete edition of the original New Zealand Building Code Clause G13 -Foul Water, Acceptable Solutions and Verification Methods, or AS/NZS 3500.2 documents, to which reference must always be made by Rusers and practitioners, including DWV system Regulators, designers, materials suppliers and system installers.

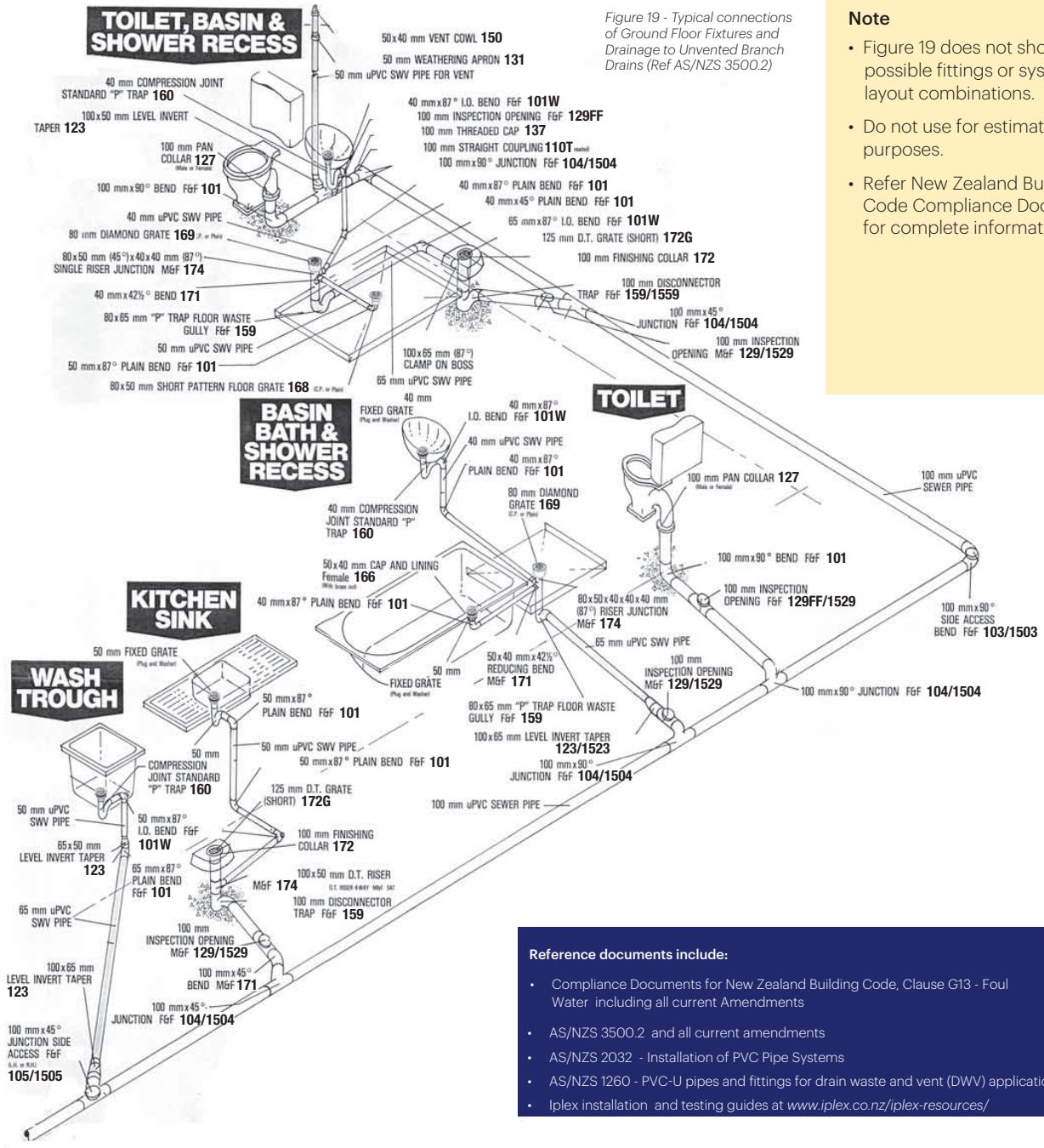


Figure 19 - Typical connections of Ground Floor Fixtures and Drainage to Unvented Branch Drains (Ref AS/NZS 3500.2)

Note

- Figure 19 does not show all possible fittings or system layout combinations.
- Do not use for estimating purposes.
- Refer New Zealand Building Code Compliance Documents for complete information.

Reference documents include:

- Compliance Documents for New Zealand Building Code, Clause G13 - Foul Water including all current Amendments
- AS/NZS 3500.2 and all current amendments
- AS/NZS 2032 - Installation of PVC Pipe Systems
- AS/NZS 1260 - PVC-U pipes and fittings for drain waste and vent (DWV) application
- Iplex installation and testing guides at *www.iplex.co.nz/iplex-resources/*

4.1 Floor Waste Gully (Ref AS/NZS 3500.2)

A Floor Waste Gully (FWG) is an internal collection point for approved waste discharge fixtures, that are located within the same room as the FWG and are a distance of less than 2.5 metres away from the FWG Riser (Measured along the length of the connecting waste pipe).

Iplex Product Code	Item Description
159 Series	Squat floor waste gully with adjustable outlet
125 Series	Floor Flange
128 Series	Safe Waste Tray
174 Series	Boss Junction M & F
104.100.50.40.88	Boss Junction F & F
174.80.50.40.45D	Double Boss Junction M & F

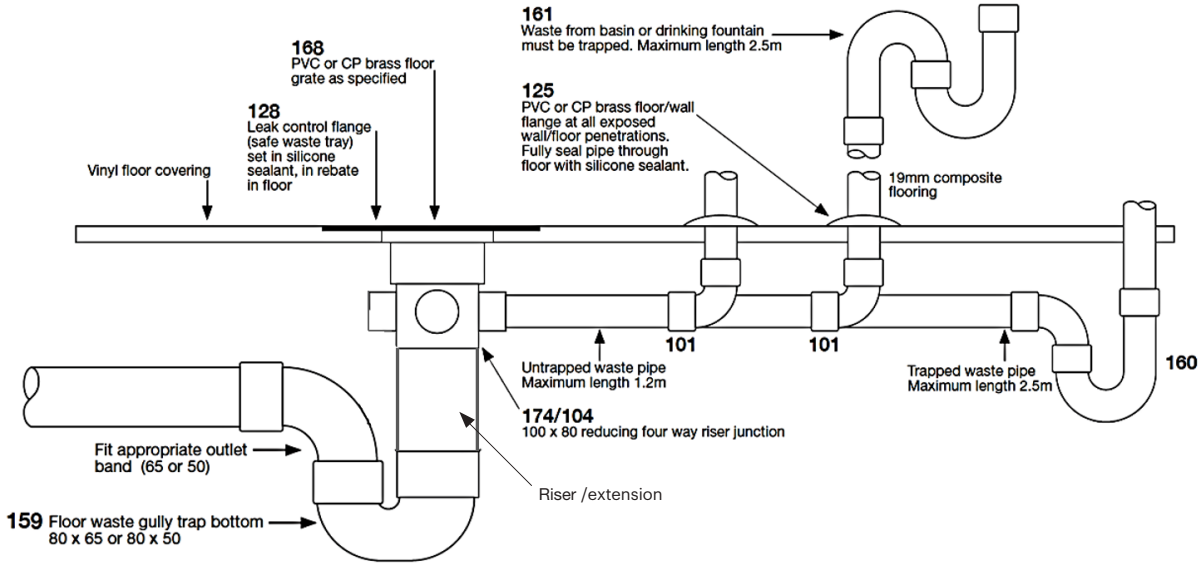


Figure 20 - Typical Floor Waste Gully Design & Installation Requirements

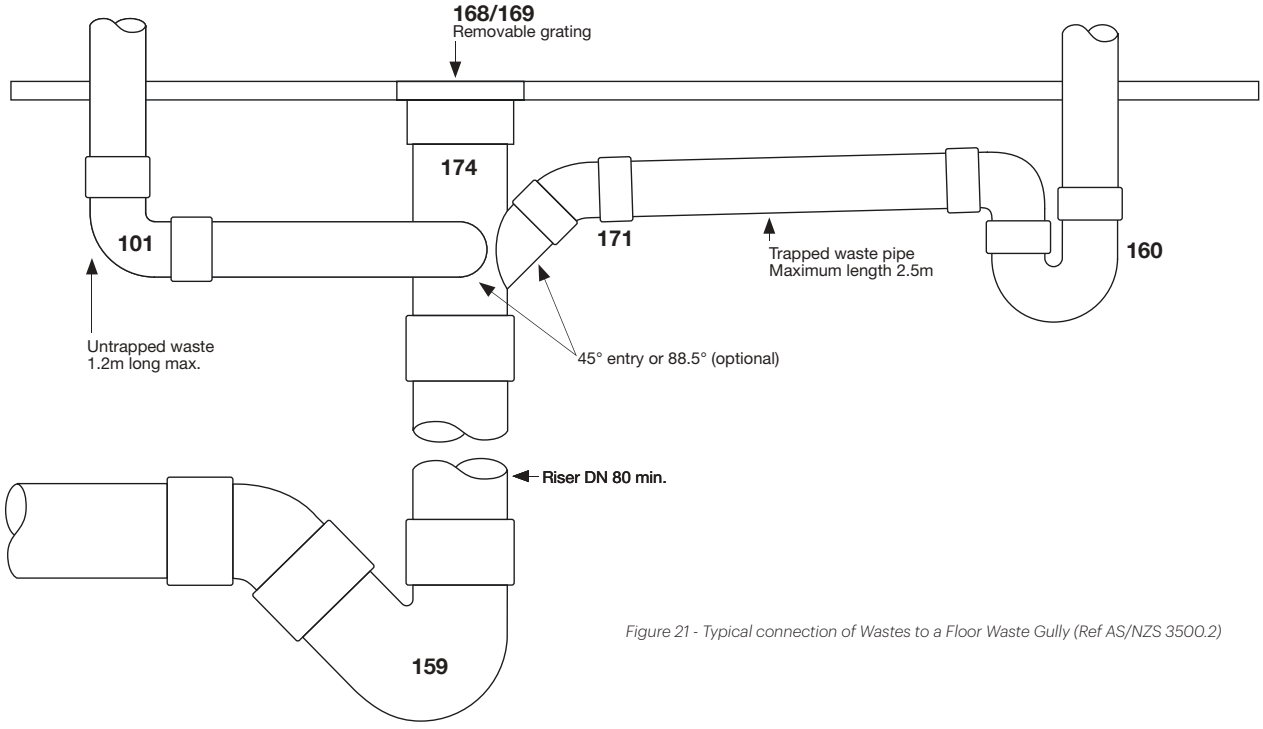


Figure 21 - Typical connection of Wastes to a Floor Waste Gully (Ref AS/NZS 3500.2)

4.2 Overflow Relief Gully (ORG) (Ref AS/NZS 3500.2)

The ORG's prime purpose is to protect each individual household from surcharge or backflow from the public sewer main. Should a backflow occur, the ORG provides a discharge point for the effluent from the public sewer. The ORG must have a pop-out grate to release the backflow.

Iplex Product Code	Item Description
172.100	Finishing Collar
151.140	Popout Flat Grate
172G.100	Popout Domed Grate
1559.100	Gully Trap
159.100	Adjustable Gully Trap
120 Series	Bolted Trap Screw
121.100	Bolted Trap Screw (Pipe Spigot)

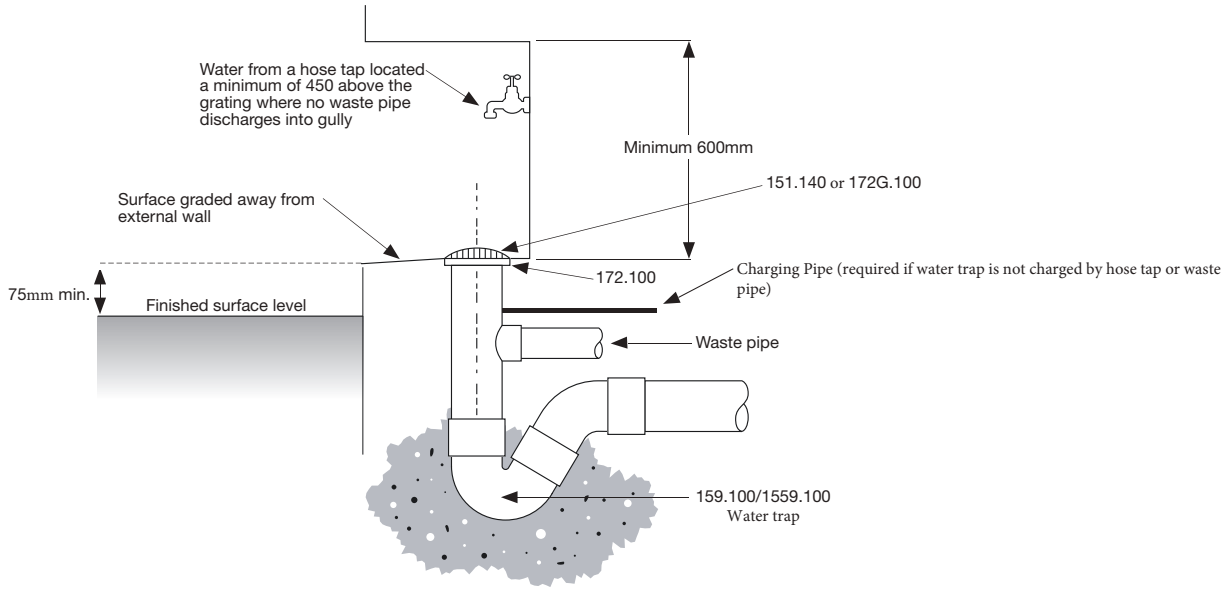


Figure 22 - Typical positioning of Overflow Relief Gully outside a building (Ref AS/NZS 3500.2)

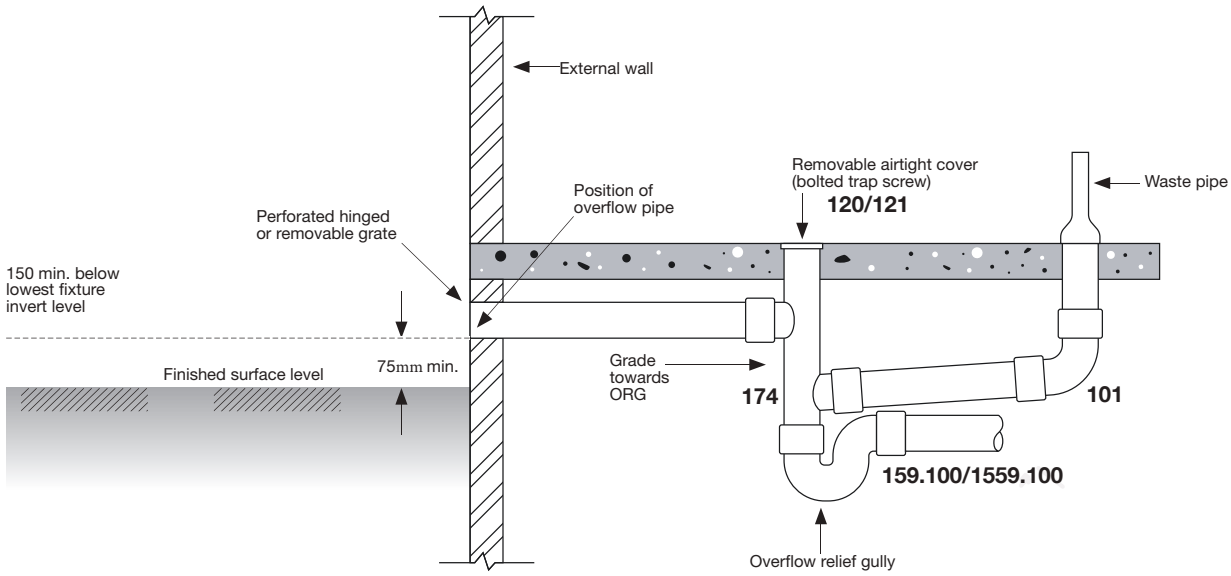
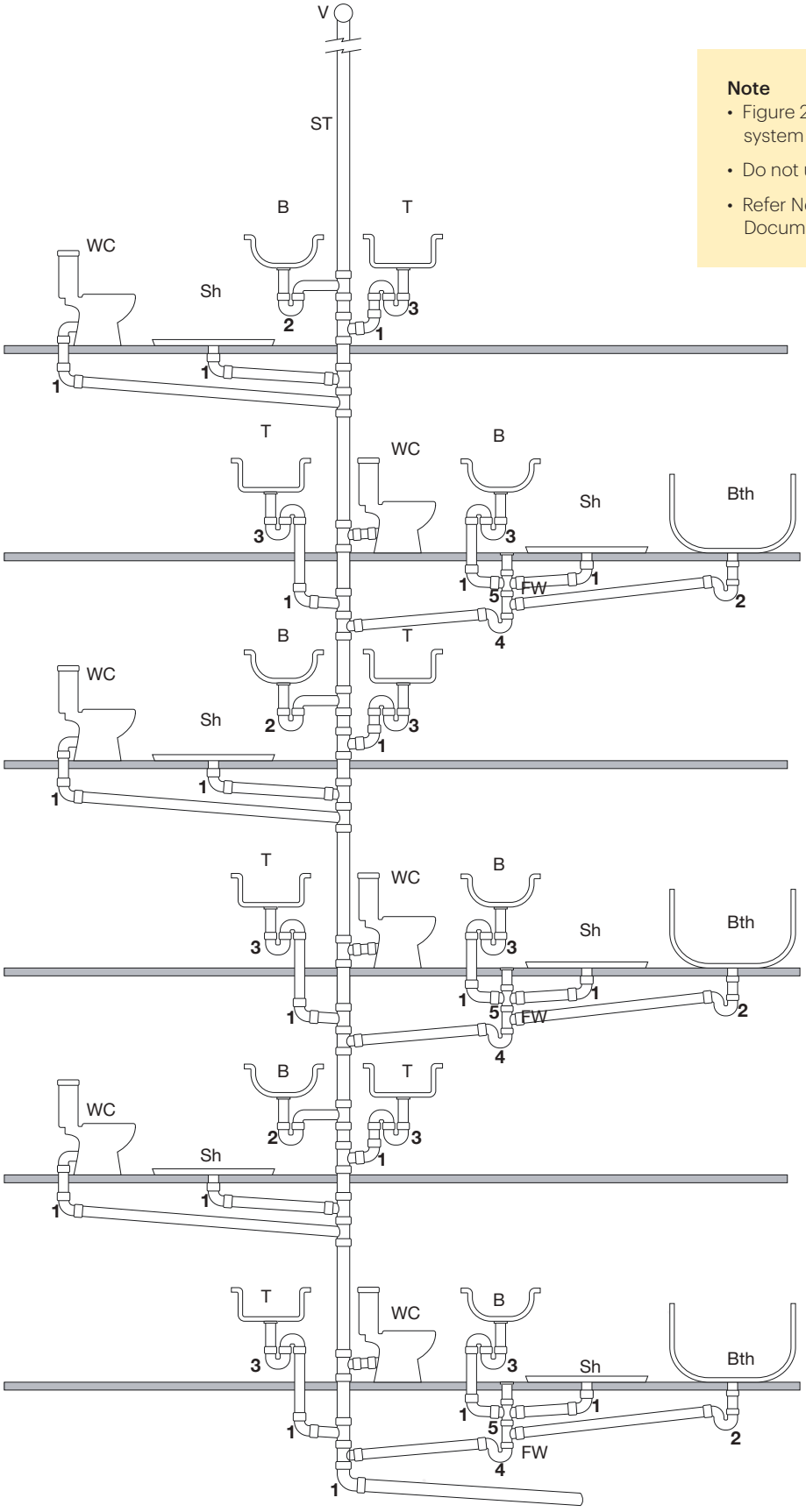


Figure 23 - Typical Overflow Relief Gully inside a Building (Ref AS/NZS 3500.2)

4.3 Simple Stack Layouts for Domestic or Residential Buildings



Note

- Figure 24 does not show all possible fittings or system layout combinations.
- Do not use for estimating purposes
- Refer New Zealand Building Code Compliance Documents for complete information.

Legend

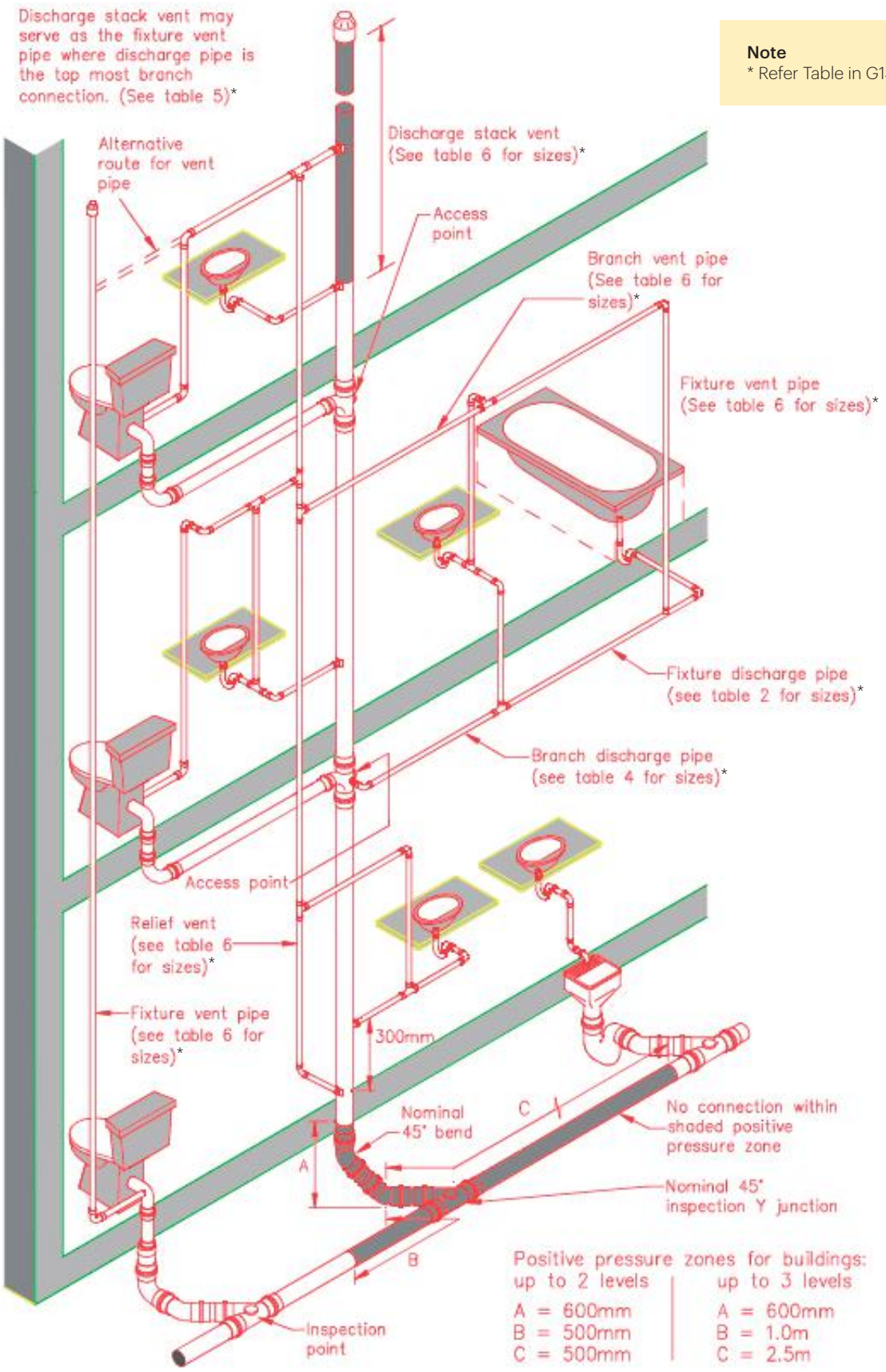
Bth = Bath
B = Basin
Sh = Shower
FW = Floor Waste Gully
T = Trough
WC = Water Closet Pan
V = Vent Cowl
ST = Stack

Iplex Product Codes

1 = 101/171
2 = 160
3 = 161
4 = 159
5 = 174

Figure 24 - Single Stack System for Domestic or Residential Buildings (Refer AS/NZS 3500.2)

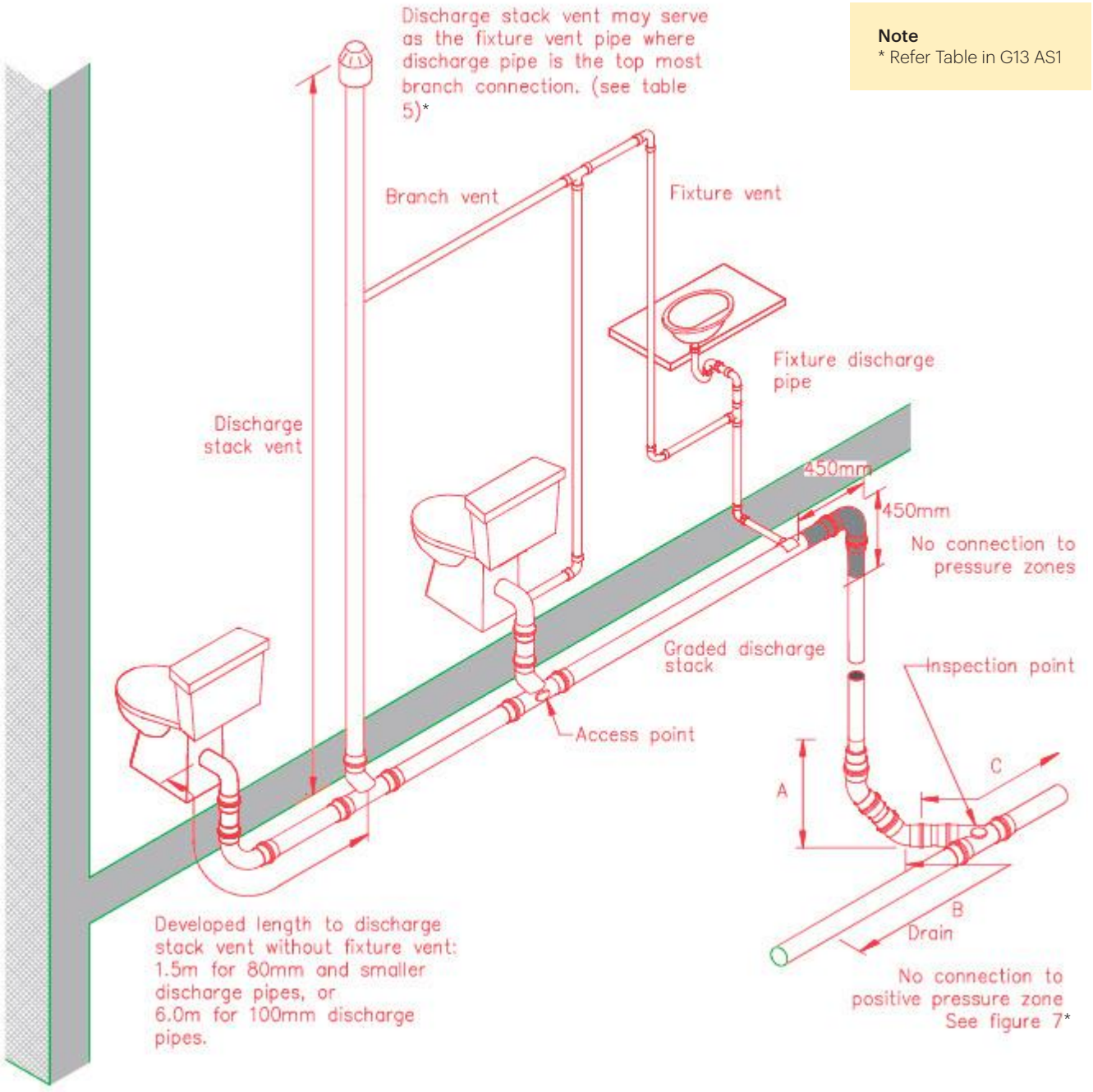
4.4 Vertical Discharge Stack (Refer New Zealand Building Code Compliance Document G13 AS1 Figure 7)



Note
* Refer Table in G13 AS1

Figure 25 - Vertical Discharge Stack (G13 AS1 Figure 7)
(Reproduced with permission from the Ministry of Business, Innovation and Employment)

4.5 Graded Discharge Stack (Refer New Zealand Building Code Compliance Document G13 AS1 Figure 8)



Note
* Refer Table in G13 AS1

Figure 25 - Graded Discharge Stack (G13 AS1 Figure 8)
(Reproduced with permission from the Ministry of Business, Innovation and Employment)

4.6 Gully Traps (Refer New Zealand Building Code Compliance Document G13 AS2)

Iplex Product Code	Item Description
1575.100	Gully Dish
1575.100EXT	Extended Gully Dish
1559.100	Gully Trap

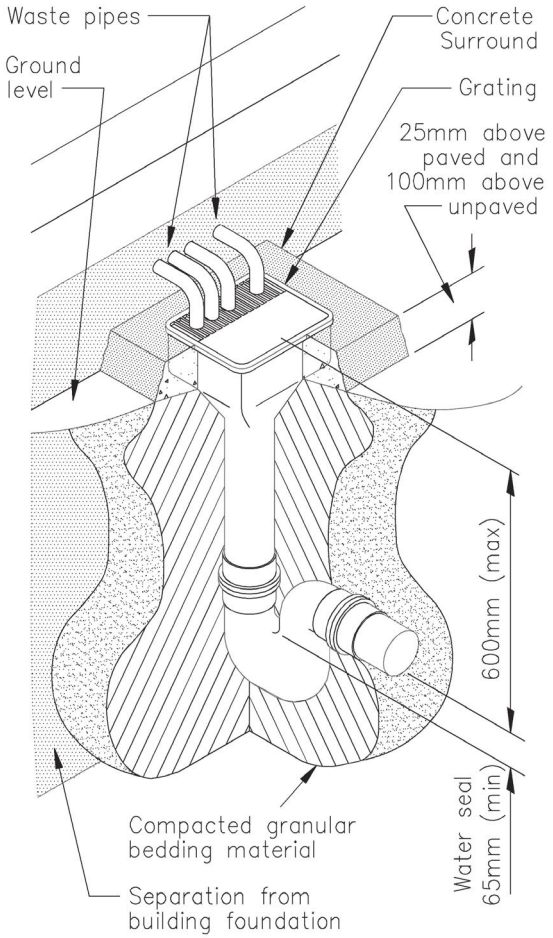


Figure 27 - Typical Gully Trap Layout (Refer G13 AS2 Figure 2)
(Reproduced with permission from the Ministry of Business, Innovation and Employment)

4.7 Waste Traps (G13 AS1)

Iplex Product Code	Item Description
162.40.32DW	Combination S & P Trap (includes adaptor kit) - 40mm x 32mm

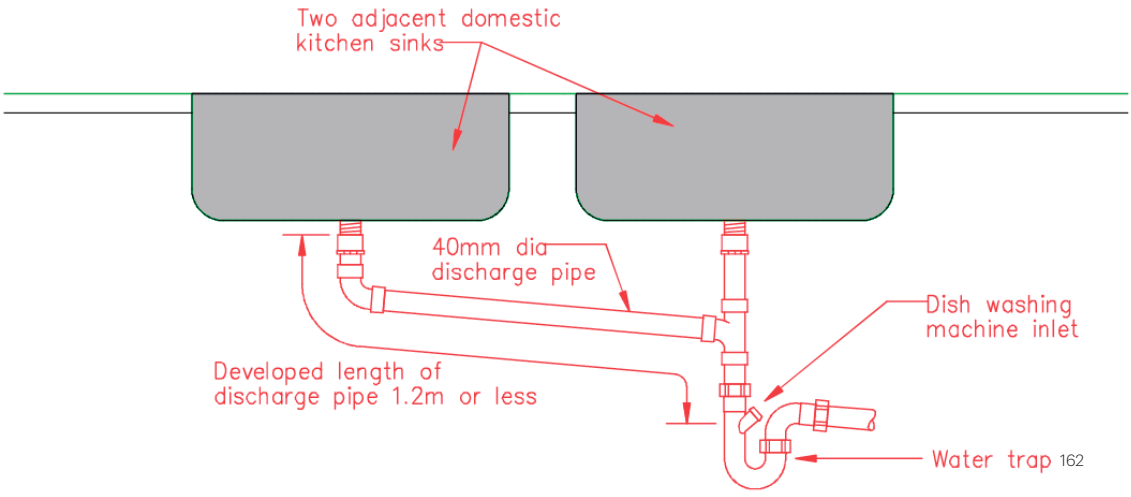


Figure 28 - Typical layout of two adjacent domestic sinks and one dishwasher inlet (Refer G13 AS1 Figure 2)
(Reproduced with permission from the Ministry of Business, Innovation and Employment)

4.8 Reflux Valve

Iplex Product Code	Item Description
1588.100	Reflux valve *(Figure 29)*

Application - to prevent backflow into a DN 100 branch sewer during a main sewer line surcharge. The flap valve can be removed for plumbing maintenance. Remove the inspection cap and pull out the valve using the handle attached to the valve assembly. No twisting is necessary.

Installation - *(Figure 30)* to ensure proper sealing of the fl ap valve, a maximum gradient angle of 3 degrees is recommended for this fitting. This will allow proper functioning of the valve even if backflow is slow or low volume. On branch lateral lines having a steeper gradient than 3 degrees, 1501 / 101 series bends at each end of the refl ux valve will locally reduce the grade.

Figure 29 Reflux valve

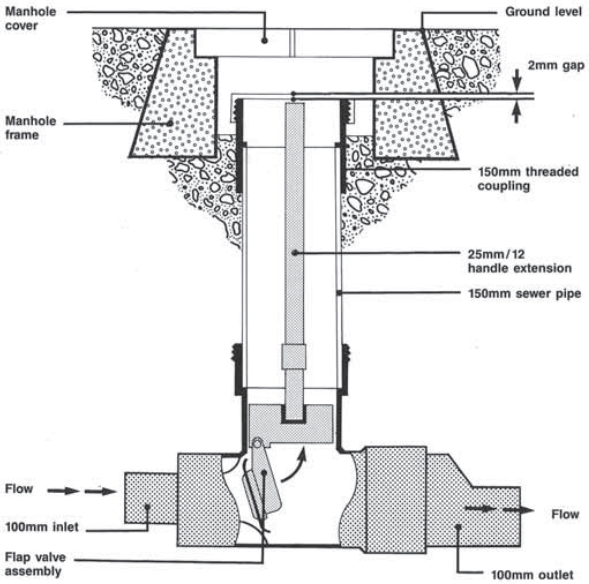


Figure 30 Reflux Valve typical installation (maximum gradient angle = 3º)

4.9 Adjustable Flexible Pan Collar

Iplex Product Code	Item Description
127.100A	Adjustable Flexible Pan Collar *(Figure 31)*

Application - Connection of an "S" style WC pan to the discharge pipe, allowing up to 22mm of horizontal adjustment in any direction, to assist with positioning near walls or off-centre. The full cover skirt hides imperfections in previous tile laying, and can make the connection appear central in any position.

Figure 31 Adjustable Flexible Pan Collar

4.10 Weathering Protection for Vent Pipes Penetrating Roofs

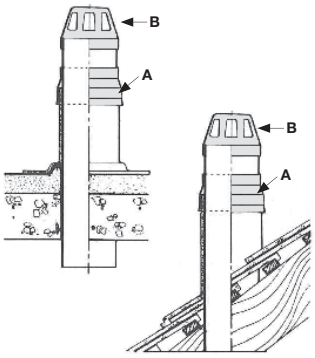
Where vent pipes penetrate either flat or sloping roofs, the vent location and termination must comply with G13 AS1.

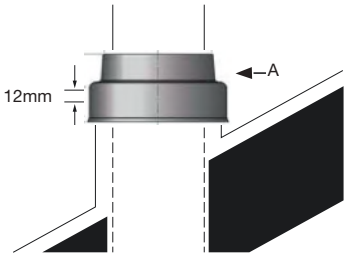
Iplex Product Code	Item Description
131 Series	Weather apron (A)
150 Series	Vent cowl (B)

The weather apron provides weather protection between the vent stack and the roof flashing material.
The vent cowl fits over the top of the vent pipe to prevent birds, vermin and wind blown rubbish entering the vent pipe.

Weatherproof roof flashing sleeves and extensions are fitted and an Iplex 131 weather apron fitted as follows:

1. Clean pipe and inside of 131 weather apron with Iplex priming fluid.
2. Solvent cement in position with Iplex PVC solvent cement , leaving a 12mm (1/2 inch) gap between the top of the roof penetration flashing extension and the internal shoulder of the weathering apron to allow for vertical thermal movement in the vent pipe





4.11 Allowing Thermal movement

PVC-U has a coefficient linear expansion of $\pm 7 \times 10^{-5}$ / °C . This means that 1 metre length of PVC-U will expand (or contract) approximately 0.7mm for each 10°C rise (or fall) in temperature. However due to the short duration of most effluent flows and the slow temperature response of the material, the greatest thermal movements take place due to variation in environmental temperature rather than the effect of hot effluent discharge. Successful accommodation of thermal movement is dependent on the controlled direction and distribution of this movement.

The following information is intended as a general guide only. Reference should be made to the NZBC compliance document G13, AS/NZS 3500.2 and AS/NZS 2032 for complete information.

Unless thermal movement can be accommodated by alternative means, expansion joints should be fitted. Maximum spacing intervals for locating expansion joints are 6 metres for cold and 4 metres for hot pipelines. The maximum length of pipeline between fixed points should be 2 metres for cold pipelines and 1 metre for hot pipelines.

Vertical DWV stacks and discharge pipes should have expansion joints located on each floor where fixtures or branch lines are connected, directly above the highest branch connection. They should also be located at the base of a stack or at the end of a drain connection for a discharge pipe if the length of pipe between fixed points exceeds the distances stated above.

On graded pipelines expansion joints should be placed immediately upstream of the entry to a vertical stack or other graded line, and immediately upstream of each change of direction in the graded lines

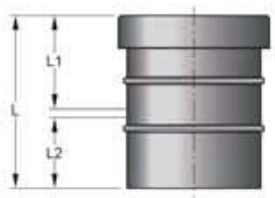
Expansion joints may be omitted in the following locations:

1. At the top floor of a stack where the stack is free to move through a weather proof sleeve through the roof.
2. At the base of an external stack connected to a drainage trap where the stack is free to move through a sleeve fitted in the drain connection.
3. At a junction or bend in a graded pipeline where the thermal movement in the pipeline can be accommodated by deflection of the offset leg without affecting the grade of the pipeline, subject to the length of the pipeline and the offset leg. Supporting of the pipe shall not impede expansion movement in such cases.

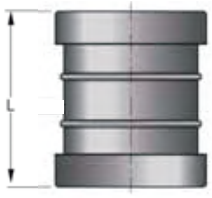
4.12 Expansion Couplings & Repair Couplings

Expansion Couplings 111 & 1511 - Repair Coupling - 1511S

Iplex Product Code	Item Description
111 Series	Expansion coupling
1511 Series - Loose coupler/1511S Series	Slip repair coupling
1511.100*	Combination loose coupling or Slip repair coupling



111 Expansion coupling



1511 loose coupling / 1511S slip repair coupling

A **111 expansion coupling** has a solvent cement socket one end and a factory assembled seal ring adapter at the other end, to allow for thermal expansion and contraction.

A **1511 loose coupling** has a centre register in the bore to centrally position the fitting between the pipe ends inside the joint.

A **1511S slip repair coupling** has a smooth bore without a centre register and with a factory assembled seal ring adaptor fitted to both sockets. It is used to do repairs to damaged pipe work or to connect a branch into an existing installation. To apply this fitting, cut out the necessary portion of the stack or pipe work, chamfer and clean up the exposed end(s), coat the seal rings of the 1511S coupling(s) with Novalube and slide coupling(s) onto the existing pipework. Ensure the coupling is centrally positioned over the connected pipe ends.

The **1511.100 coupler has the special dual purpose feature of being fitted with removable centre register lugs.*

- *With the lugs in place it is a conventional expansion coupler.*
- *These lugs are designed and shaped to be easily removed, by simply tapping out with a screwdriver or similar tool, to easily convert the fitting into a slip / repair configuration.*

4.13 Spacing of Supports for PVC-U DWV pipelines above ground

Iplex Holderbats *(Section 4.14)* and pipe support clips *(Section 4.15)* are designed to fit the external moulded profile of the fitting sockets.

Brackets are designed to perform two functions:

1. To clamp fittings, creating a fixed point
2. As a pipe support, whilst also allowing thermal movement of the pipework. The pipe should be free to move through the bracket to accommodate expansion and contraction. All expansion fittings must be securely anchored with brackets.

Nominal Pipe Size (DN)	Maximum spacing of supports for cold DWV pipelines	
	Graded pipelines	Vertical pipelines
32	0.9	1.8
40, 50	1.0	2.0
65 to 150	1.2	2.5
>150	1.5	3.0

Table 5 Maximum spacing of supports for DWV pipes (refer AS/NZS 2032)

4.14 Holderbats

Iplex Product Code	Item Description
140H Series	Aluminium Holderbat

- Will fit either pipes or fittings,
- Adjustable top clamp with standoff shaped base – *(Figure 32)*.
- Designed to create a fixed point, support pipework assemblies or to allow thermal movement of the pipework. Slight bending adjustment of the strap shape, using the pipe or fitting as a former, may be required to ensure a close fit. The 111 Series expansion coupling should be securely fixed with a holderbat; which engages between the external ribs provided on the coupling body. This prevents the coupling itself moving, whilst holder bats on the adjacent pipe are attached to give support but also to allow free axial thermal movement of the pipe within the fixed coupling.


Figure 32 Aluminium Holderbat

4.15 Pipe support clips

Iplex Product Code	Item Description
140 Series	DWV pipe clips (PVC material)
140H Series	DWV holderbat (aluminium material)
141 Series	DWV standard key clip (PVC material)
142 Series	DWV side hanger key clip (PVC material)
143 Series	DWV standoff key clip (PVC material)

Iplex pipe clips are designed to fit the external moulded profile of the fitting sockets.

Brackets are designed to perform two functions:

1. To clamp fittings, creating a fixed point
2. As a guide-bracket allowing thermal movement of the pipework. The pipe should be free to move through the bracket to accommodate expansion and contraction. All expansion joints must be securely anchored with brackets.

140 DWV Pipe Clip

140H DWV Holderbat (Aluminium)

141 DWV Standard Key Clip

142 DWV Side Hanger Key Clip

143 DWV Stand Off Key Clip

4.16 Strap On Boss

Iplex Product Code	Item Description
119 Series	Strap On Boss

Application - may be used for waste or vent application and has a swept entry to ease flow into the stack.

Installation - Cut round entry hole with a correct size Hole Saw. The boss has two parts which clip together firmly around the stack pipe – *(Figure 33)*. The halves must be solvent welded to the stack to ensure a watertight seal. Ensure the directional arrow aligns with required flow direction during fixing. Iplex pipe clips are designed to fit the external moulded profile of the fitting sockets.

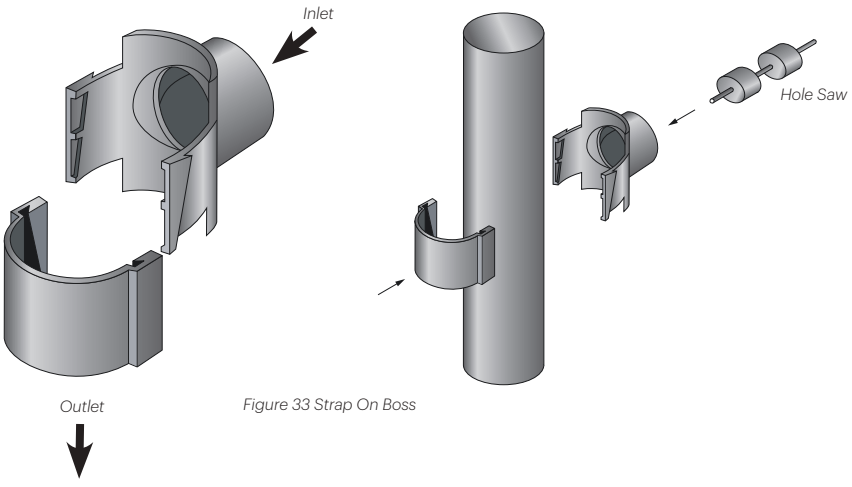


Figure 33 Strap On Boss

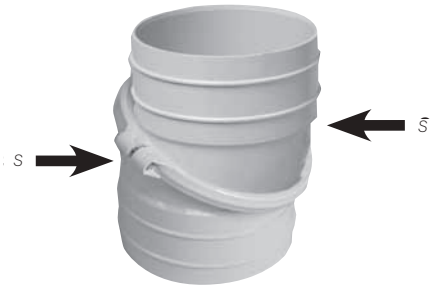
4.17 Adjustable Bend

Iplex Product Code	Item Description
101.150A	Adjustable Bend

Application – Allows installed angles in DN 150 pipes anywhere between 0° and 45°.

Installation – Loosen (do not remove) the two screws (**S**) on the middle collar, rotate / adjust fitting halves to the correct angle, and solvent weld joints into place. Then securely tighten the collar screws to ensure a water tight seal and lock the fitting at the chosen angle. 140H series Holderbats for support may be engaged between the two external ribs on either half of the bend.

45º Configuration



0º Configuration

4.18 Ceramic Socket to PVC Adapter

Iplex Product Code	Item Description
1525.100	Ceramic Socket to PVC Adapter

Application – Allows connection of a ceramic spigot (glazed earthenware or vitreous clay) directly to equivalent sized PVC DWV pipe.

Installation – Apply the larger socket end of the adapter over the ceramic pipe spigot using a ceramic pipe roll ring or approved epoxy mortar. Then join the PVC pipe into the smaller socket end using PVC solvent cement *(Figure 34)*.

Figure 34 Ceramic Socket to PVC Adapter typical installation

5.0 Installation of Drainage Systems

One of the most significant advantages of Iplex PVC-U DWV pipe system is its light weight. This means that the pipe can be easily handled and longer lengths can be installed without sophisticated lifting machinery and with minimum in-trench labour.

Sewer and waste pipelines which rely on gravity for adequate flow require strict adherence to the designed grade along the entire pipeline.

The installer should be familiar with

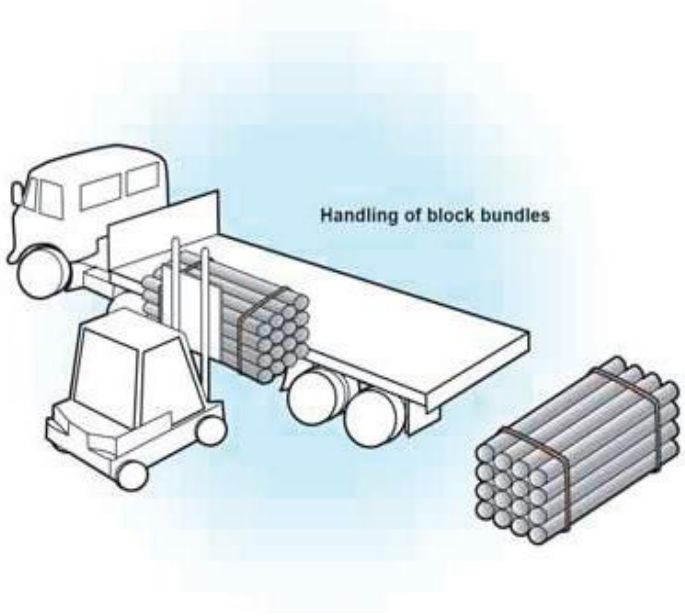
- The New Zealand Building Code Compliance Document G13
- AS/NZS 2032 – Installation of PVC-U Pipe Systems
- AS/NZS 2566.2 – Buried Flexible Pipelines
- NZS 4404: 2010 – Installation Land Development and Subdivision Infrastructure
- AS/NZS 3500.2 – Plumbing and Drainage, Part 2: Sanitary Plumbing and Drainage
- Relevant local authority requirements

5.1 Handling & Storage

While PVC-U pipes are light and easy to handle, careless handling can cause unnecessary damage. Pipes and fittings should not be dropped or thrown onto hard surfaces or allowed to come into contact with sharp objects that could inflict deep scratches. PVC-U pipes should not be allowed to slide across sharp edges.

Bowing and Pipe Distortion

- Pipes may distort under high applied loads due to lack of support or incorrect stacking. This can be aggravated in hot weather conditions.
- Pipes or fittings to be stored outdoors for more than 12 months must be protected by, for example, hessien or white shade cloth to allow free ventilation and avoid heat build-up.
- Pipes heated on one side by direct sunlight may tend to bow. This process is reversible and the bow may be eliminated by rotating the pipes, to expose the other side to the direct sunlight

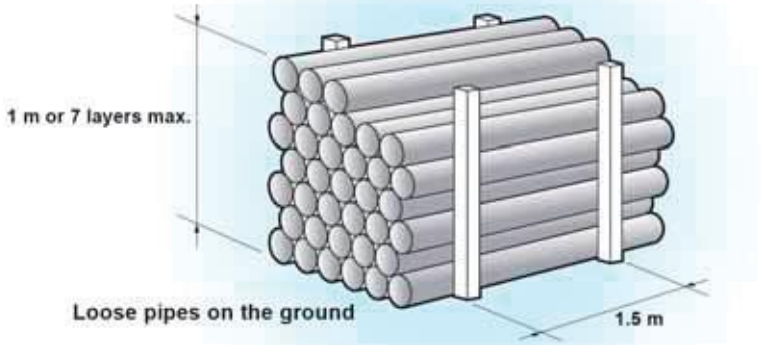


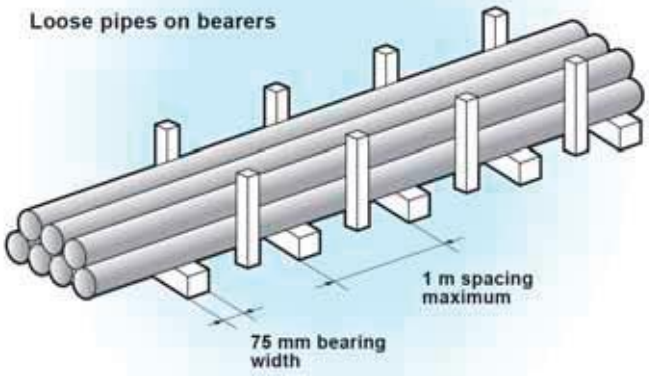
Pipe Handling and Storage

- Temporary work site storage where racks are not provided, can be in stacks on the ground, providing this surface is level and free from loose stones or other sharp projections.
- Socketed pipes should be stacked in layers with sockets placed at alternative ends of the rack, and protruding, to avoid uneven stacks and distortion. The sockets should not be load bearing. Another acceptable approach is to have alternate layers pipes facing in the same direction.
- If mechanical handling equipment such as forklifts or cranes are to be used on bundles, adequate spreader and lifting bars should be provided. Wire slings must be kept clear of the pipes.

Handling and Storage continued

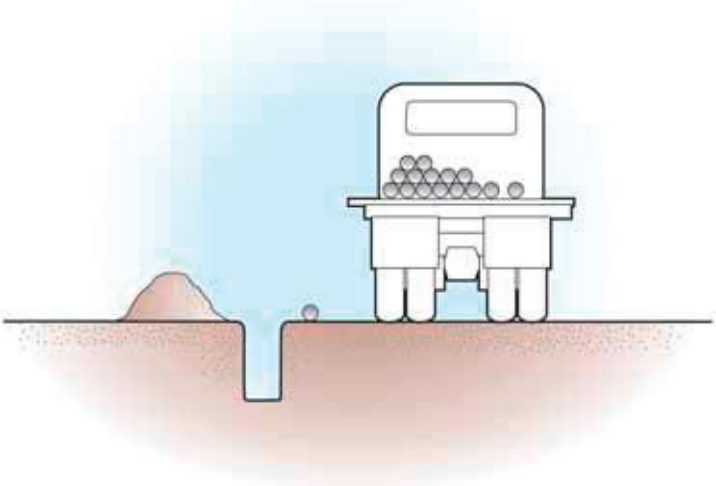
Racks for long term storage are recommended and should preferably provide continuous support, but if this is not possible then supports of at least 75mm bearing widths at 1m centres (max) should be placed beneath the pipes. Side restraints should be placed at centres not exceeding 1.5m and stacks should not exceed 1m in height.





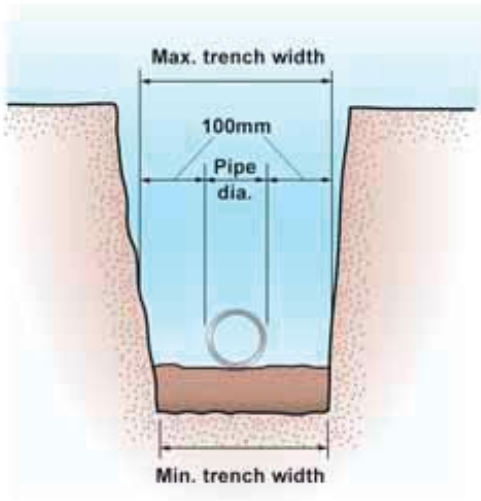
When unloading alongside dug trenches, it is recommended that pipes be placed on the opposite side of the trench from excavated material.

Rubber rings, lubricant, solvent cement and priming fluid should be stored under cover until pipelaying commences.



5.2 Trenching

Excavate trenches in accordance with plans and specifications and with reference to AS/NZS 2032. They should be as narrow as practicable at the level of the top of the pipe and, in a straight trench, have a bed width not less than 200mm wider than the pipe diameter, to provide working space for placement and side compaction of bedding material. Installers should comply with New Zealand OSH Trench Shield regulations and rules for working in or near trench excavations.



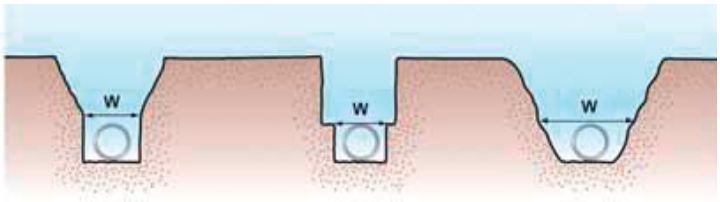
Stable conditions

Stable conditions are those where, after excavation, the trench walls remain solid and do not show any signs of collapse or cave-in. Under such conditions the recommended trench widths are shown in the following table:

Pipe diameter (DN)	Normal trench width
100	400
150-175	600
225-30	750
375	900

Unstable conditions

Unstable conditions are those where, during or after excavation, the trench walls tend to collapse or subside. Under these conditions, in open or unrestricted areas, the top of the trench can be widened until stability is reached. A smaller trench should then be dug in the bottom of the excavation to contain the pipe as shown. In areas where space is limited, e.g. in streets, it may be necessary to support trench walls by timber or other suitable shoring.



Trench minimum depth of cover over pipe

Loading Condition	Min. Cover Depth
• Where no subject to vehicular loading:	300mm
• Where subject to vehicular loading: Under driveways In sealed roadways: In unsealed roadways:	 450mm 600mm 750mm

Table 6 Recommended minimum clear cover above pipe crown (refer ASNZS 2566.2 or ASNZS 2032)

5.3 Laying and Compaction

Preparing the Trench

The trench bottom should be as level as possible, so that the barrel of the pipe is fully supported. The trench bottom should have sandy or loamy soil, free from rocks and stones to ensure continuous support for the pipe.

Wet Conditions

In wet ground, sloppy working conditions can be alleviated by first placing a layer of hard granular material, or by dewatering the area in and around the trench. If patches of ground are so wet that there is a risk of subsidence and possible damage to sections of the pipeline, these areas should be consolidated by the addition of suitable fill material.

Trench Installation

The trench should be excavated deeply enough to allow for the specified grade, the required depth of bedding, and the minimum cover over the pipe. AS/NZS 2032 - "Installation of PVC-U Pipe Systems", suggests the following typical installation in a trench, which Iplex recommends.

AS/NZS 2566.2 suggests suitable materials for bedding and overlay in the trench.

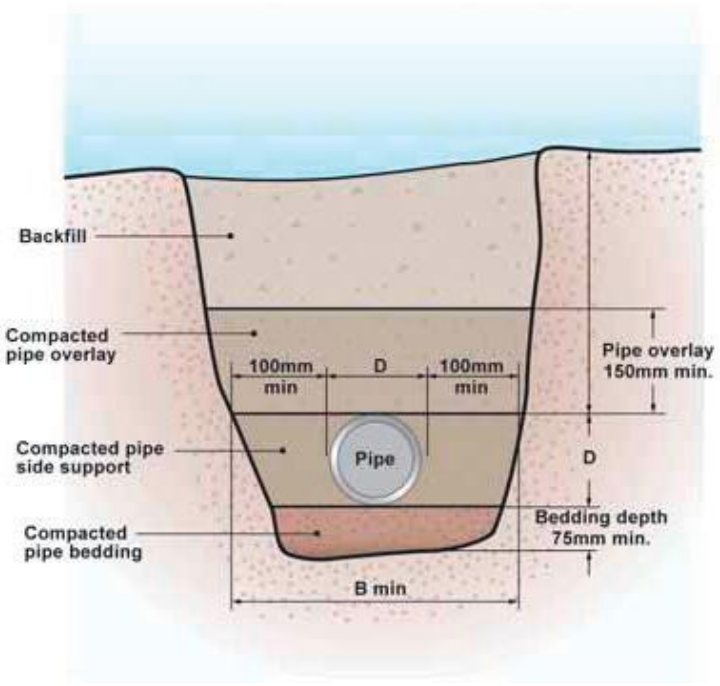


Figure 35 Typical trench installation

5.4 Completing Site Work

When the pipe is positioned in the trench, backfilling can commence. Two distinct phases are involved with pipelines:

a. backfilling prior to testing the pipeline

b. backfilling after testing the pipeline

Backfilling should follow pipe installation as closely as possible to protect the pipe from external damage, and to avoid shifting the pipe out of line and grade.

5.5 Initial Backfilling

The first step in providing firm continuous support for the pipeline is to tamp soil solidly under the entire barrel of the pipe, care being taken not to disturb the grade. The embedment material should be free from stones, rock or clay. If the native, excavated soil is not suitable, then imported materials should be used for the embedment zone. The initial backfill should be placed by hand-shovel in layers not exceeding 100mm deep. Each layer should be well tamped round and under the pipeline using the long tamper illustrated. In this way air pockets are eliminated from beneath the pipe.

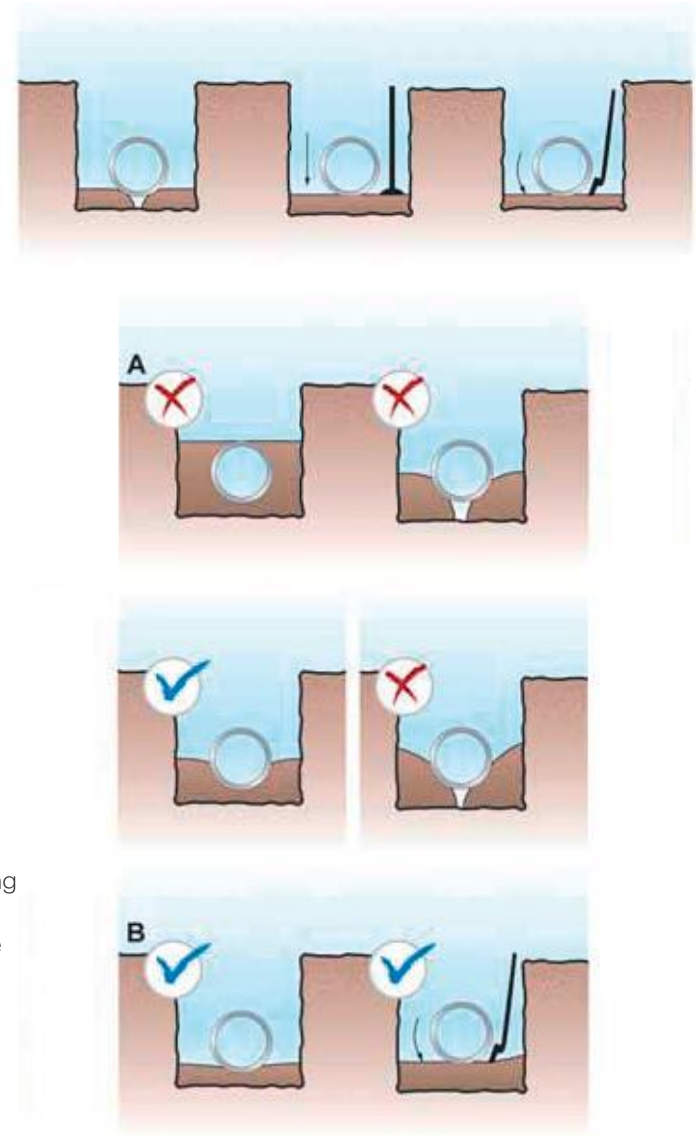
The layers should be shovelled in and tamped, the process being repeated until the pipe is firmly bedded. The flat tamper illustrated is used to consolidate this fill to heights of 300mm above the top of the pipe for diameters up to 300mm.

The illustrations A and B below show the wrong and right ways of tamping the initial backfill.

Case A, too much soil is present and the tamping bar cannot compact it properly leaving a void underneath the pipe.

Case B, shows the correct fill of a 100mm layer of soil which can be compacted to form a firm bed for the pipe.

Pipe joints should be temporarily left exposed when placing the initial backfill, to enable pressure tests to be carried out.After testing the line, backfilling and final filling may be completed.



6.0 Field Testing of Pipelines

The purpose of testing a non-pressure pipeline is to ensure that the line has been correctly laid to line and grade, will flow satisfactorily and is sealed at each joint and fitting.

The recommended Test Methods for PVC DWV and gravity sewer pipelines are to be found in NZS 4404: 2010 Appendix C and AS/NZS 2032.

In the case of a sewer pipeline system, three distinct areas require testing.

1. The sewer rising mains
2. The gravity pipeline sections
3. The gravity reticulation sections

6.1 Preparing for the Test

During the installation careful checking and adequate supervision will ensure that sewer lines are laid to line and grade. If an installation specification exists it should be followed. Otherwise the pipeline section to be tested should be backfilled leaving all couplings and fittings exposed for inspection during testing. In solvent weld PVC-U jointed non-pressure pipelines, at least 24 hours should have elapsed since the last joint was made before testing commences.

6.2 Test Procedures

All new sewers and sanitary drainage and other non-pressure installations shall be tested using either hydrostatic test, low pressure air test or vacuum testing. The tests shall also be applied to any section of existing pipeline or drain that has been repaired or replaced. All openings in the pipeline below the top of the section under test shall be sealed.

6.3 Hydrostatic Test (water test) *(Refer AS/ NZS 3500.2 Section 15)*

Fill the sanitary drainage test section, or sanitary plumbing test section, with water -

(a) for sanitary drainage, to a height of not less than 1 m above the pipeline soffit level at the highest point of the test section

(b) for sanitary plumbing, to the spill level of the highest fixture, or to the flood level of the lowest sanitary fixture, whichever is higher, and

(c) in either case, not exceeding 3m at the lowest point of the test section.

Maintain the pressure without leakage for at least 15 minutes. Locate the source of any leaks and repair any defects. Then retest the pipeline.

For a guide to the amount of water required to fill the pipe test section, refer to Table 7. The amount of fill water required in practice may vary from the tabulated figures owing to variations in pressure and temperature.

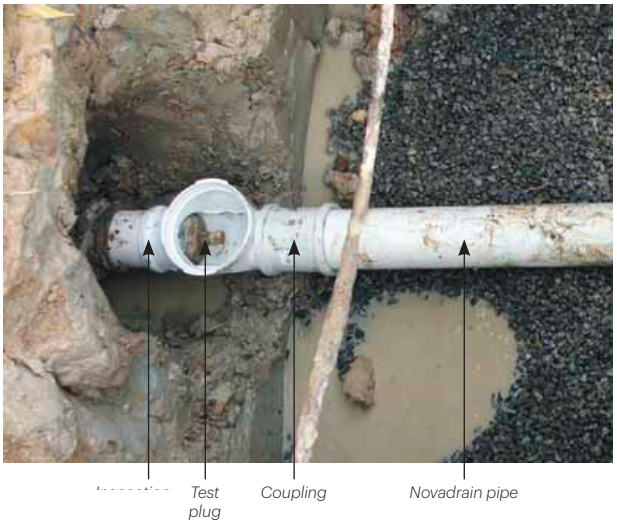


Figure 36 Typical positioning of hydrostatic test plug

Nominal dia. (mm)	Vol in m3/km or l/m
100 SN6	8.5
150 SN4	18
225 SN4	43.9
300 SN4	69.6
375 SN4	112.2
475 SN4	177
500 SN4	215
600 SN4	274

Table 7 Test section water volume

6.4 Vacuum Air Testing *(Refer AS/ NZS 3500.2)*

Cap and seal all inlets, outlets and access points. Apply an initial test vacuum of approximately 15 KPa, to the test section. Shut off the vacuum pump, and supply valve. Allow the air pressure to stabilize for at least 3 minutes whilst checking for leaks. When the vacuum has stabilized, commence the test to allow the vacuum to drop to 10 KPa, then begin recording the time and drop in vacuum over the minimum test time duration in Table 8. The length of drain under test is considered to pass if the test vacuum loss is ≤3 KPa for the relevant time interval specified in Table 8.

6.5 Low Pressure Air Testing *(Refer AS/ NZS 3500.2)*

Cap and seal all inlets, outlets and access points. Air must be introduced slowly, since rapid pressurization may affect testing accuracy. Apply an initial test pressure of approximately 15 KPa, to the test section. Shut off the air pump and supply valve. Allow the air pressure to stabilize for at least 3 minutes whilst checking for leaks. After the pressure has stabilized, commence the test to allow the pressure to drop to 10 KPa, then begin recording the time and drop in pressure over the minimum test time duration in Table 8. The length of drain under test is considered to pass if the test pressure loss is ≤3 KPa for the relevant time interval specified in Table 8.

6.6 Pressure and Vacuum Air Testing Acceptance Times for 3kPa Pressure Change

Pipe Size DN (mm)	Test length, metres					
	50	100	150	200	250	300
	Minimum test duration, minutes					
<100	1.5	1.5	1.5	1.5	1.6	1.6
100	2	2	2	2	3	3
150	3	3	3	5	6	6
225	4	5	8	10	13	15
300	6	9	14	18	23	29
375	7	14	22	29	36	43

Table 8 Pressure and Vacuum Air Testing Acceptance Times for 3kPa Pressure Change

NOTES:

1. *Timing of the test duration shall commence after the 3 minutes initial period.*
2. *Test duration times for other combinations of pipe size and test length may be interpolated.*
3. *Refer to AS/NZS 3500.2, AS/NZS 2566 Part 2, or NZS 4404:2010 for more information.*

6.7 Closed Circuit Television (CCTV) Inspection

CCTV acceptance inspection of sanitary drains shall be conducted in accordance with the requirements of WSAAØ5. In addition, the operator shall investigate, describe, identify and report on the defects or features in accordance with the criteria in this Clause. Inspection shall be conducted under no-flow conditions, that is the sanitary plumbing system is not being used so that the flow (water) level can be measured and reported.

NOTE: *It is recommended that the sanitary drain be cleaned prior to inspection.*

Pressure and vacuum air testing acceptance times for 3kPa pressure change:

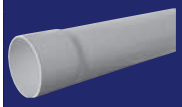
6.8 Completing Final Backfill

After testing of the pipeline, selected material should be hand shovelled over each exposed joint and tamped to give 300mm minimum cover. Final backfilling to ground level can be completed by hand or machine, using the soil originally excavated from the trench. Care should be taken to exclude large rocks and stones from the final backfill.

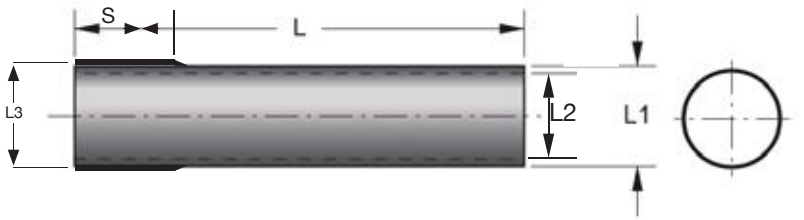
7.0 Product Range

7.1 DWV System Pipes

Solvent Cement Joint - Novadrain



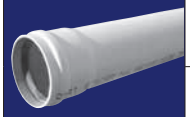
Product Code	Typical dimensions					
	Nominal size (mm) DN	Stiffness class	Effective Length (m) L	Minimum mean OD. (mm) L1	Mean internal diameter (mm) L2	Socket OD (mm) L3
100.32.6SOE	32	-	6	36	32.5	40.1
100.40.SOE	40	-	6	43	38.9	47
100.50.SOE	50	-	6	56	51.4	60.2
100.65.SOE	65	-	6	69	63.5	74.3
100.80.PE	80	-	4	82	76.7	-
100.80.SOE	80	-	6	82	76.7	88.3
100.100.6SOE	100	SN6	6	110	103.8	125
100.150	150	SN4	6	160	152.1	183



S = Socket Length
(complies with AS/NZS 1260)

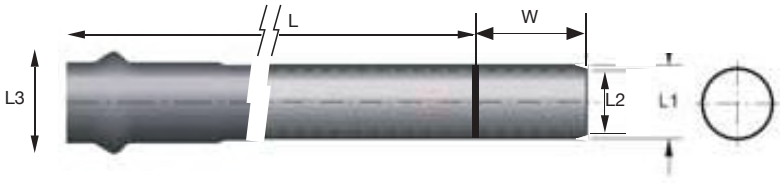
Note: In accordance with Iplex policy of continuous product development, the configuration, range, design or external shape of Iplex pipes and fittings in this Product Installation Guide may be subject to change without notice

Ring Rubber Joint - Novadrain



Product Code	Typical dimensions						
	Nominal size (mm) DN	Stiffness class	Effective Length (m) L	Minimum mean OD. (mm) L1	Mean internal diameter (mm) L2	Socket OD (mm) L3	Witness mark length W
100.100.RRJ	100	SN6 SN10 SN16	6 6 6	110.2	103.8 103 101.6	142	58*
Z100.150	150	SN4 SN8 SN16	4, 6 4, 6 3, 4, 6	160.3	152.1 150.5 147.9	208	143*
Z100.175	175	SN4 SN8 SN16	6 6 6	200.3	190.4 187.9 184.9	247	140*
Z100.225	225	SN4 SN8 SN16	6 6 3, 4, 6	250.4	237.9 235.1 231.3	310	160*
Z100.300	300	SN4 SN8 SN16	6 6 6	315.4	299.7 296.8 290.8	384	160*
Z100.375	375	SN4 SN8 SN16	6 6 6	400.5	380.7 375.9 370.1	499	190*
Z100.475	475	SN4 SN8 SN16	6 6 6	500.5	475.9 468.8 460.7	589	234*
Z100.600	600	SN8	6	630.5	591.1	741	285*

**Minimum dimension - may differ subject to seal ring design*



Restrained Rubber Ring Joint - Restrain™

Product Code	Typical dimensions					
	Nominal size (mm) DN	Stiffness class	Length (m) L	Minimum mean OD. (mm) L1	Mean internal diameter (mm) L2	Seal Ring Socket OD (mm) L3
RESTRAIN 100	100	SN16	1, 2, 3	110.2	101.6	114.5
RESTRAIN 150	150	SN16	1, 2, 3	160.3	147.9	166.5
RESTRAIN 225	225	SN16	1, 2, 3	250.4	231.3	259.94
RESTRAIN 300	300	SN16	1, 2, 3	315.4	290.8	327.7

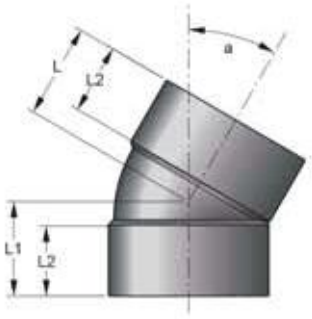
Refer to "Restrain Design & Installation Guide" at www.iplex.co.nz

Note: In accordance with Iplex policy of continuous product development, the configuration, range, design or external shape of Iplex pipes and fittings in this Product Installation Guide may be subject to change without notice

7.2 DWV System - Fittings - Solvent Cement Joint

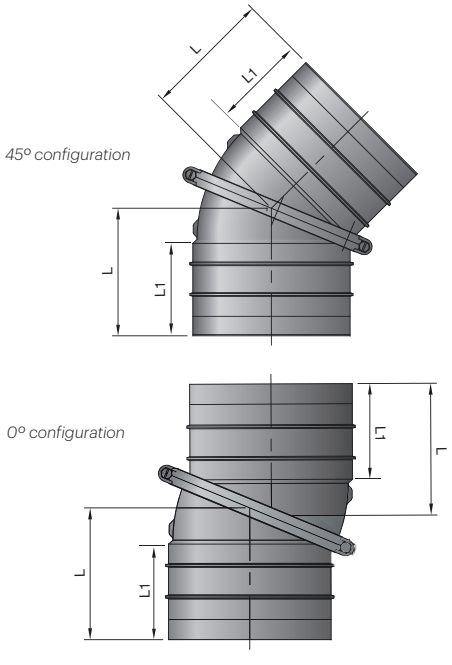
101 Plain Bend F&F

Product Code	Typical dimensions				
	Nominal size (mm) DN	Angle (deg) a	Dim. (mm) L	Dim. (mm) L1	Dim. (mm) L2
101.32.15	32	15	29	29	25
101.32.45	32	45	35	35	26
101.32.88	32	88	48	48	25
101.40.15	40	15	48	48	27
101.40.45	40	45	37	37	27
101.40.60	40	60	48	48	30
101.40.88	40	88	58	58	27
101.50.15	50	15	35	35	30
101.50.45	50	45	43	43	30
101.50.88	50	88	69	69	30
101.65.15	65	15	44	44	39
101.65.45	65	45	54	54	39
101.65.88	65	88	98	98	40
101.80.15	80	15	78	78	59
101.80.45	80	45	63	63	45
101.80.88	80	88	118	118	47
101.100.5	100	5	59	59	51
101.100.15	100	15	59	59	51
101.100.30	100	30	69	69	51
101.100.45	100	45	76	76	51
101.100.60	100	60	87	107	53
101.100.88	100	88	13	131	51
101.150.15	150	15	96	111	77
101.150.45	150	45	116	137	77
101.150.88	150	88	222	256	78



101.150 Adjustable Bend (0° - 45°)

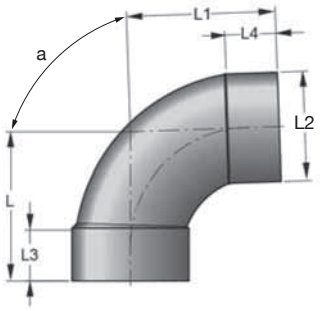
Product Code	Typical dimensions			
	Nominal size (mm) DN	Angle (deg) a	Dim. (mm) L	Dim. (mm) L1
101.150A	150	0-45	116	77



171 Plain Bend M&F

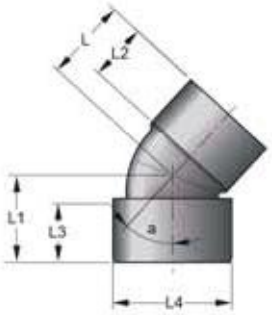
Product Code	Typical dimensions						
	Nominal size (mm) DN	Angle (deg) a	Dim. (mm) L	Dim. (mm) L1	Dim. (mm) L2	Dim. (mm) L3	Dim. (mm) L4
171.40.42	40	42	38	39	43	27	27
171.40.88	40	88	61	65	43	27	30
171.50.42	50	42	48	48	56	32	32
171.50.88	50	88	74	74	56	34	34
171.65.45*	65	45	67	69	69	44	44
171.80.42	80	42	78	79	82	51	51
171.80.88	80	88	100	105	93	47	45
171.100.5	100	5	59	70	110	51	70
171.100.11	100	11	75	60	110	75	51
171.100.15	100	15	62	77	110	51	77
171.100.22	100	22	88	65	110	70	47
171.100.30	100	30	87	71	110	53	51
171.100.43	100	42	75	92	110	51	69
171.100.60	100	60	107	87	110	53	52
171.100.88	100	88	151	151	110	52	52
171.150.42	100	42	116	137	160	77	78
171.150.88	100	88	261	222	160	78	79

* 45 Degree Angle



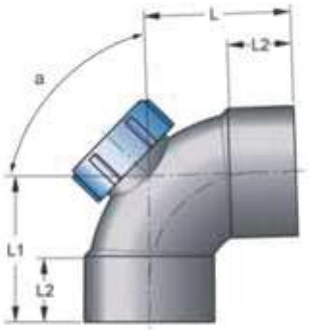
171 Reducing Bend M&F

Product Code	Typical dimensions						
	Nominal size (mm) DN	Angle (deg) a	Dim. (mm) L	Dim. (mm) L1	Dim. (mm) L2	Dim. (mm) L3	Dim. (mm) L4
171.50.40.42	50x40	42	39	41	27	27	56



101W Inspection Bend

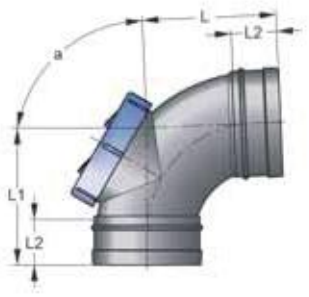
Product Code	Typical dimensions				
	Nominal size (mm) DN	Angle (deg) a	Dim. (mm) L	Dim. (mm) L1	Dim. (mm) L2
101.40.45W	40	45	43	43	29
101.40.88W	40	88	58	58	27
101.50.45W	50	45	49	49	32
101.50.88W	50	88	69	69	30
101.65.88W	65	88	98	98	40
101.80.88W	80	88	118	118	47
101.100.45W	100	45	81	81	51
101.100.88W	100	88	141	141	51



102 Rear Access Bend F&F

Product Code	Typical dimensions				
	Nominal size (mm) DN	Angle (deg) a	Dim. (mm) L	Dim. (mm) L1	Dim. (mm) L2
102.100.88	100	88	149	153	51

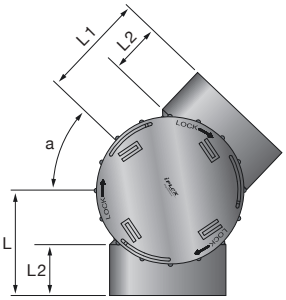
**Nominal 100mm access opening*



103 Side Access Bend F&F

Product Code	Typical dimensions				
	Nominal size (mm) DN	Angle (deg) a	Dim. (mm) L	Dim. (mm) L1	Dim. (mm) L2
103.100.45	100	45	142	142	56
103.100.88	100	88	170	175	52

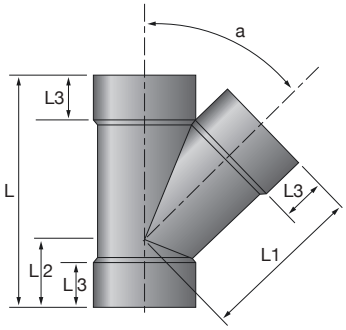
**Nominal 150mm access opening*



104 Plain Junction F&F

Product Code	Typical dimensions					
	Nominal size (mm) DN	Angle (deg) a	Dim. (mm) L	Dim. (mm) L1	Dim. (mm) L2	Dim. (mm) L3
104.32.45	32	45	115	72	50	25
104.32.88	32	88	96	56	56	25
104.40.45	40	45	132	84	48	29
104.40.88	40	88	105	57	-	27
104.50.45	50	45	143	101	42	30
104.50.88	50	88	133	70	72	32
104.65.45	65	45	204	143	63	40
104.65.88	65	88	172	100	-	40
104.80.45	80	45	218	152	66	47
104.80.88	80	88	202	118	-	47
104.100.45**	100	45	268	188	80	51
104.100.88***	100	88	239	130	136	51
104.150.45*	150	45	413	276	137	77
104.100.88	150	88	405	222	256	79

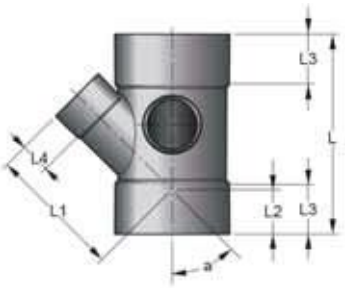
**Threaded Branch*
***Threaded Inlet Mainway*
****Threaded Inlet Mainway and Branch*



104 Plain Junction F&F Reducing

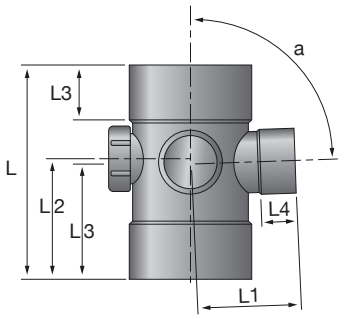
Product Code	Typical dimensions						
	Nominal size (mm) DN	Angle (deg) a	Dim. (mm) L	Dim. (mm) L1	Dim. (mm) L2	Dim. (mm) L3	Dim. (mm) L4
104.80.50.45	80 x 50	45	194	143	55	45	34
104.100.50.45	100 x 50	45	203	136	51	45	30
104.100.65.45	100 x 65	45	203	154	51	45	39
104.100.50.88	100 x 50	88	166	97	50	50	30
104.100.80.45	100 x 80	45	233	176	63	51	45
104.150.100.45*	150 x 100	45	373	226	97	77	51
104.150.100.88	150 x 100	88	320	169	175	79	53

**Threaded Branch*



104W Inspection Opening Junction F&F

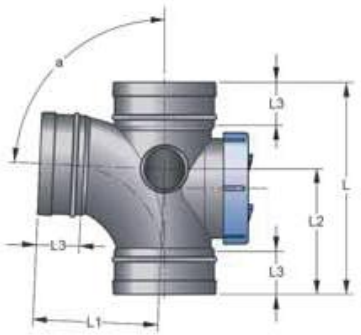
Product Code	Typical dimensions						
	Nominal size (mm) DN	Angle (deg) a	Dim. (mm) L	Dim. (mm) L1	Dim. (mm) L2	Dim. (mm) L3	Dim. (mm) L4
104.40.88W	40	88	119	64	64	28	28
104.50.88W	50	88	133	70	72	32	32
104.65.88W	65	88	172	100	100	40	40
104.80.88W	80	88	202	118	118	47	47
104.100.88W	100	88	250	146	146	53	53



105 Rear Access Junction F&F

Product Code	Typical dimensions					
	Nominal size (mm) DN	Angle (deg) a	Dim. (mm) L	Dim. (mm) L1	Dim. (mm) L2	Dim. (mm) L3
105.100.88*	100	88	251	147	148	51

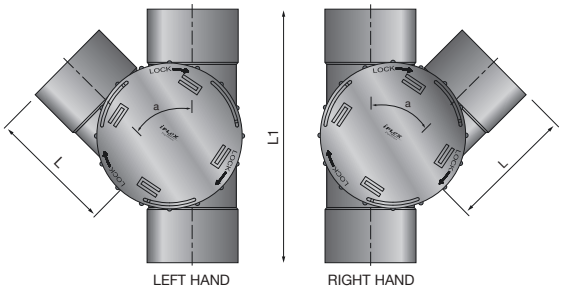
**Nominal 100mm access opening*



105 Side Access Junction

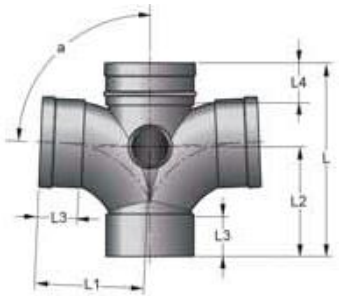
Product Code	Typical dimensions			
	Nominal size (mm) DN	Angle (deg) a	Dim. (mm) L	Dim. (mm) L1
105.100.45LH*	100	45	147	294
105.100.45RH*	100	45	147	294

**Nominal 150mm access opening*



106 Plain Double Junction F&F

Product Code	Typical dimensions						
	Nominal size (mm) DN	Angle (deg) a	Dim. (mm) L	Dim. (mm) L1	Dim. (mm) L2	Dim. (mm) L3	Dim. (mm) L4
106.100.88	100	88	259	146	147	53	53



110 Plain Coupling

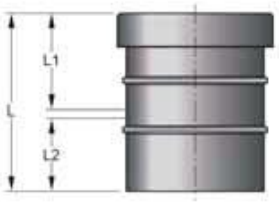
Product Code	Typical dimensions		
	Nominal size (mm) DN	Dim. (mm) L	Dim. (mm) L1
110.32	32	54	26
110.40	40	57	28
110.50	50	63	30
110.65	65	84	40
110.80	80	90	44
110.100	100	110	50
110.150	150	159	77

110T Access Coupling with Threaded End

Product Code	Typical dimensions		
	Nominal size (mm) DN	Dim. (mm) L	Dim. (mm) L1
110.100T	100	103	50
110.150T	150	159	77

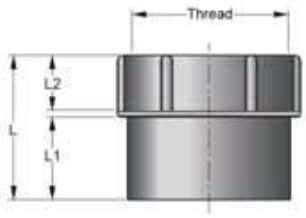
111 Expansion Coupling F&F

Product Code	Typical dimensions			
	Nominal size (mm)	Dim. (mm) L	Dim. (mm) L1	Dim. (mm) L2
111.40	40	81	47	29
111.50	50	84	47	32
111.65	65	98	53	40
111.80	80	122	65	51
111.100	100	127	69	51
111.150	150	181	98	77



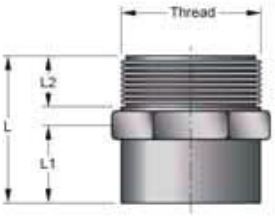
112 Female Iron Coupling (Female BSP Thread to PVC Socket)

Product Code	Typical dimensions				
	Nominal size (mm) DN	Thread BSP inches	Dim. (mm) L	Dim. (mm) L1	Dim. (mm) L2
112.32	32	1 - ¼"	50	26	22
112.40	40	1 - ½"	53	29	21
112.50	50	2"	56	32	20
112.65	65	2 - ½"	105	69	32



113 Male Iron Coupling (Male BSP Thread to PVC Socket)

Product Code	Typical dimensions				
	Nominal size (mm) DN	Thread BSP inches	Dim. (mm) L	Dim. (mm) L1	Dim. (mm) L2
113.32	32	1 - ¼"	47	24	19
113.40	40	1 - ½"	48	27	19
113.50	50	2"	52	31	20
113.100	100	4"	111	55	56



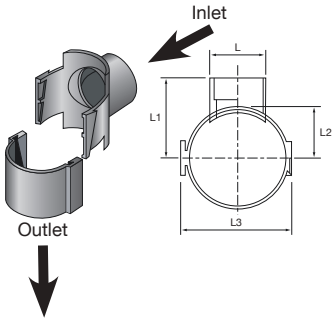
114 Copper to PVC Adapter (includes Seal Ring)

Product Code	Typical dimensions			
	Nominal size (mm)	Dim. (mm) L	Dim. (mm) L1	Dim. (mm) L2
114.32	32 x 32	71	45	25
114.40	40 x 40	81	47	29
114.50	50 x 50	84	47	32
114.80	80 x 80	122	65	51
114.100	100 x 100	127	69	51

Note: *Extra copper to PVC adapter seal rings available, 9145.80, 9145.100 and 9145.150.*
Compatible with NZS or BS copper tube

119 Strap on Boss F

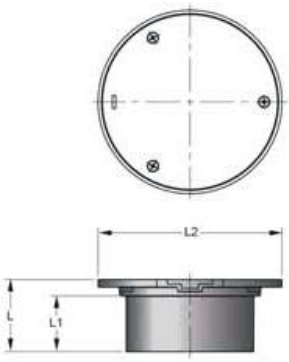
Product Code	Typical dimensions					
	Nominal size (mm) DN	Entry Angle (deg)	Dim. (mm) L	Dim. (mm) L1	Dim. (mm) L2	Dim. (mm) L3
119.100.50	100 x 50	88	63	90	58	129



120/121 Bolted Trap Screw

Product Code	Typical dimensions			
	Nominal size (mm)	Dim. (mm) L	Dim. (mm) L1	Dim. (mm) L2
120.80*	80	58	45	126
120.100*	100	66	51	168
121.100**	100	66	51	168

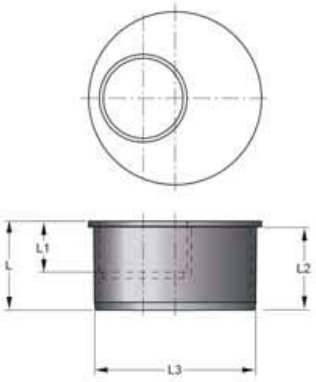
*Socket
**Spigot into DWV Pipe Bore



198/122 Pipe Reducer M

Product Code	Typical dimensions				
	Nominal size (mm) DN	Dim. (mm) L	Dim. (mm) 1	Dim. (mm) L2	Dim. (mm) L3
198.100.40*	100 x 40	55	32	50	103
122.100.50*	100 x 50	57	32	53	103

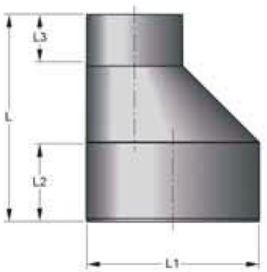
*Socket into Pipe Bore



123 Level Invert Taper

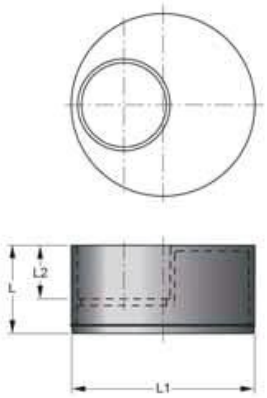
Product Code	Typical dimensions				
	Nominal size (mm) DN	Dim. (mm) L	Dim. (mm) L1	Dim. (mm) L2	Dim. (mm) L3
123.40.32	40 x 32	64	43	25	25
123.50.40	50 x 40	68	56	29	28
123.65.40	65 x 40	97	69	39	29
123.65.50	65 x 50	79	69	38	31
123.80.50	80 x 50	138	82	50	38
123.80.65	80 x 65	125	82	50	44
123.100.50	100 x 50	132	110	49	31
123.100.65	100 x 65	127	110	49	39
123.100.80	100 x 80	181	119	49	50
123.150.100	150 x 100	209	160	97	51
123.150.100S*	150 x 100	209	160	97	51

*Socketed both ends



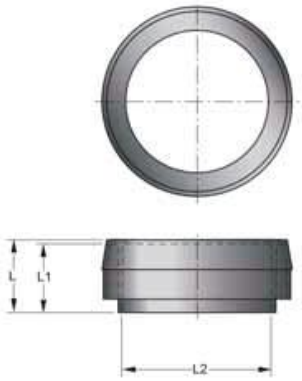
124 Socket Reducer

Product Code	Typical dimensions			
	Nominal size (mm)	Dim. (mm) L	Dim. (mm) L1	Dim. (mm) L2
124.40.32	40 x 32	29	43	27
124.50.40	50 x 40	30	56	28
124.65.40	65 x 40	40	69	31
124.65.50	65 x 50	40	69	32
124.80.50	80 x 50	45	82	30
124.80.65	80 x 65	45	82	39
124.100.40	100 x 40	53	110	29
124.100.50	100 x 50	53	110	32
124.100.65	100 x 65	51	110	39
124.100.80	100 x 80	53	110	47
124.150.100	150 x 100	79	160	53



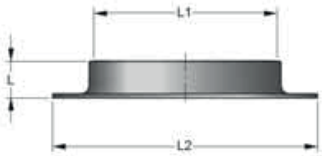
124 AC - Ceramic Socket to PVC Spigot Adapter

Product Code	Typical dimensions			
	Nominal size (mm)	Dim. (mm) L	Dim. (mm) L1	Dim. (mm) L2
124.AC.100	100	54	51	110
124.AC.150	150	82	77	160



125 Floor Flange

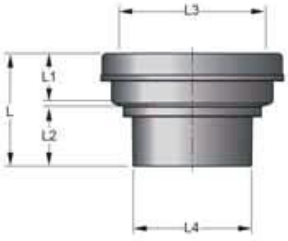
Product Code	Typical dimensions			
	Nominal size (mm) DN	Dim. (mm) L	Dim. (mm) L1	Dim. (mm) L2
125.65	65	22	69	115
125.80	80	22	82	134
125.100	100	22	110	159



127 Male Pan Collar

(Unsuitable for use with 'P' Pans)

Product Code	Typical dimensions					
	Nominal size (mm) DN	Dim. (mm) L	Dim. (mm) L1	Dim. (mm) L2	Dim. (mm) L3	Dim. (mm) L4
127.100**	100	97	127	103	127	103
127.100A*	100	108	127	103	127	103
127.100R***	100	Rubber seal for pan collar				

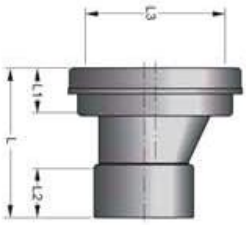


**Offset*
***Concentric*
****Rubber seal ring only*

127 Female Pan Collar

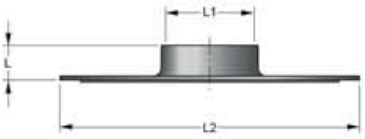
Product Code	Typical dimensions				
	Nominal size (mm)	Dim. (mm) L	Dim. (mm) L1	Dim. (mm) L2	Dim. (mm) L3
127.80*	80	136	41	44	127

**Offset outlet*



128 Safe Waste Tray

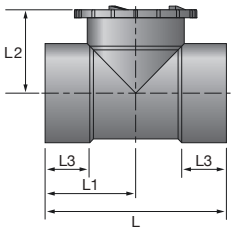
Product Code	Typical dimensions			
	Nominal size (mm) DN	Dim. (mm) L	Dim. (mm) L1	Dim. (mm) L2
128.100	100	22	110	190



129 Inspection Pipe F&F

Product Code	Typical dimensions				
	Nominal size (mm) DN	Dim. (mm) L	Dim. (mm) L1	Dim. (mm) L2	Dim. (mm) L3
129.80	80	106	93	51	216
129.100FF*	100	284	142	70	54
129.150FF*	150	187	165	77	77

**Nominal 150mm access opening*

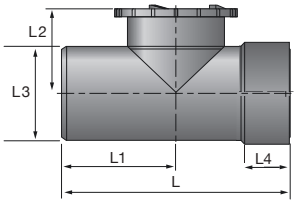


129 Inspection Pipe M&F

Product Code	Typical dimensions					
	Nominal size (mm) DN	Dim. (mm) L	Dim. (mm) L1	Dim. (mm) L2	Dim. (mm) L3	Dim. (mm) L4
129.100*	100	299	157	71	110	54
129.100S**	100	299	157	71	110	54
129.150*	150	364	192	165	160	77

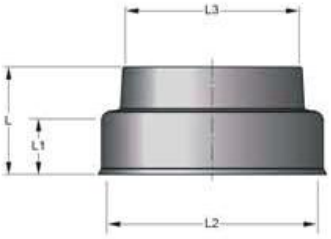
***Small access cap and threaded on one main way socket*

**Nominal 150mm access opening*



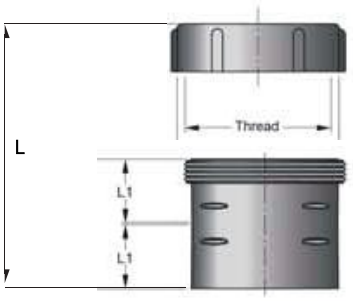
131 Weathering Apron

Product Code	Typical dimensions				
	Nominal size (mm) DN	Dim. (mm) L	Dim. (mm) L1	Dim. (mm) L2	Dim. (mm) L3
131.50	50	70	38	69	56
131.65	65	66	47	86	69
131.80	80	70	38	102	83
131.100	100	68	38	133	110



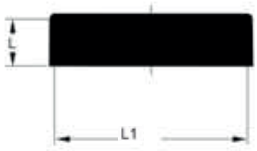
136 Access Cap & Base

Product Code	Typical dimensions		
	Nominal size (mm)	Dim. (mm) L	Dim. (mm) L1
136.40	40	55	28
136.50	50	62	31
136.80	80	97	44
136.100	100	115	50
136.150	150	161	77



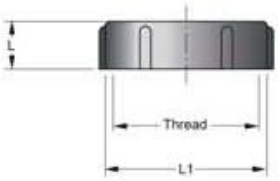
136.100PP Dust Cap

Product Code	Typical dimensions		
	Nominal size (mm)	Dim. (mm) L	Dim. (mm) L1
136.100PP	100	28	110



136C Threaded Access Cap

Product Code	Typical dimensions		
	Nominal size (mm)	Dim. (mm) L	Dim. (mm) L1
136C.100	100	29	125
136C.150	150	30	175
136L.150*	150	15	200



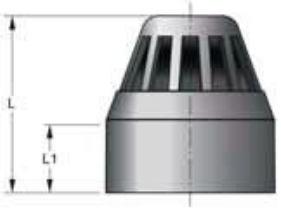
* Nominal 150mm non-threaded access lid only, for 129 inspection pipe and 105 access junction

137 Push On Cap

Product Code	Typical dimensions			
	Nominal size (mm) DN	Dim. (mm) L	Dim. (mm) L1	Dim. (mm) L2
137.40	40	25	28	43
137.50	50	25	27	56
137.65	65	25	28	69
137.80	80	25	28	82
137.100	100	27	30	110
137.150	150	35	38	160

150 Vent Cowl

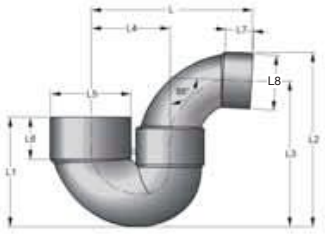
Product Code	Typical dimensions		
	Nominal size (mm) DN	Dim. (mm) L	Dim. (mm) L1
150.40	40	50	22
150.50.40	50x40	65	25
150.65	65	88	45
150.80	80	72	25
150.100	100	85	25
150.150	150	100	25



159 Adjustable Floor Waste Gully P Trap

Product Code	Typical dimensions									
	Nominal size (mm) DN	Dim. (mm) L	Dim. (mm) L1	Dim. (mm) L2	Dim. (mm) L3	Dim. (mm) L4	Dim. (mm) L5	Dim. (mm) L6	Dim. (mm) L7	Dim. (mm) L8
159.80.50P	80 x 50	178	121	193	161	88	82	45	31	56
159.80.65P	80 x 65	185	121	206	167	88	82	45	39	69
159.80.80P*	80 x 80	267	156	237	190	88	82	47	51	82
159.100.50**	100 x 50	190	125	200	170	110	118	54	32	60
159.100.65**	100 x 65	190	125	207	175	110	118	54	40	74

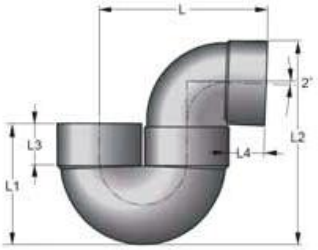
**Plain floor waste gully (fixed)*
***Use only in conjunction with Iplex Boss Junctions*



159 Adjustable Disconnector Trap F&F

Product Code	Typical dimensions					
	Nominal size (mm) DN	Dim. (mm) L	Dim. (mm) L1	Dim. (mm) L2	Dim. (mm) L3	Dim. (mm) L4
159.100*	100	232	166	281	56	51

**Use only in conjunction with Iplex Boss Junctions*



172 Finishing Collar

Product Code	Typical dimensions				
	Nominal size (mm)	Dim. (mm) L	Dim. (mm) L1	Dim. (mm) L2	Dim. (mm) L3
172.100	100	70	50	17	143

151 Pop Out Grate (Flat)

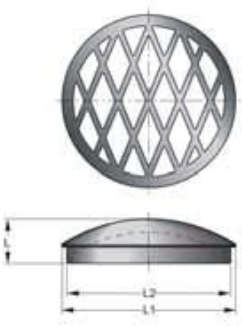
Product Code	Typical dimensions		
	Nominal size (mm)	Dim. (mm) L	Dim. (mm) L1
151.140	140	17	141

**Use with 172.100 Finishing Collar*

172 Pop Out Grate (Domed)

Product Code	Typical dimensions			
	Nominal size (mm)	Dim. (mm) L	Dim. (mm) L1	Dim. (mm) L2
172G.100	125	39	150	142

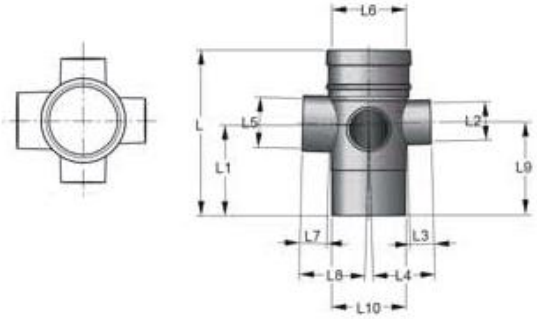
**Use with 172.100 Finishing Collar*



*174 Boss Junction M&F**

Product Code	Typical dimensions												
	Nominal size (mm) DN	Angle (deg) a	Dim. (mm) L	Dim. (mm) L1	Dim. (mm) L2	Dim. (mm) L3	Dim. (mm) L4	Dim. (mm) L5	Dim. (mm) L6	Dim. (mm) L7	Dim. (mm) L8	Dim. (mm) L9	Dim. (mm) L10
174.80.5444.88	80	88	188	102	43	27	69	56	82	30	74	96	82
M&F Configuration – Branch details: 1 of 50 x 88°, 1 of 40 x 88° 2 of 40 x 90°													
174.100.50.40.88	100	88	176	92	43	28	83	56	110	31	83	92	110
M&F Configuration – Branch details: 1 of 50 x 88°, 1 of 40 x 88° 2 of 50 x 90°													
174.100.5444.88	100	88	176	92	43	28	83	56	110	31	86	92	110
M&F Configuration – Branch details: 1 of 50 x 88°, 1 of 40 x 88° 2 of 40 x 90°													
174.80.50.40.88	80	88	163	92	43	30	70	56	93	30	70	84	82
M&F Configuration – Branch details: 2 of 50 x 88°, 1 of 40 x 90° 1 of 50 x 90°													
104.100.50.40.88**	100	88	175	92	43	30	83	56	110	31	83	92	110
F&F Configuration – Branch details: 2 of 50 x 88°, 1 of 40 x 90° 1 of 50 x 90°													

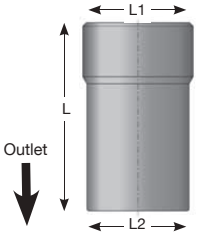
**Use only in conjunction with Iplex Squat Floor Waste Gulley and Adjustable Gulley Trap*
***F&F configuration*



178 Slab Repair Coupling

Product Code	Typical dimensions			
	Nominal size (mm) DN	Dim. (mm) L	Dim. (mm) L1	Dim. (mm) L2
178.100	100	186	110	102

Outlet end fits inside DWV pipe bore to allow repair of DWV vertical riser through concrete floor slab



183 Vermin Stopper (Flap Valve)

Product Code	Typical dimensions		
	Nominal size (mm) DN	Dim. (mm) L	Dim. (mm) L1
183.50	50	68	30

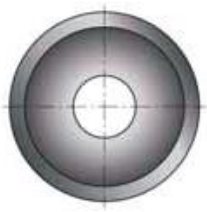
DWV System - Smart Products

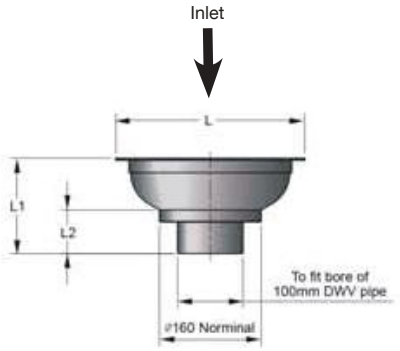
*(Refer **www.iplex.co.nz/contact/** for Smart Products installation guidelines)*

D101SPAN - Smart Pan

Product Code	Typical dimensions			
	Nominal size (mm)	Dim. (mm) L	Dim. (mm) L1	Dim. (mm) L2
D101SPAN	160	297	150	69

Moulded from ABS
Use with D101SSEAL Smart Seal





D101SSEAL - Smart Seal

Product Code
D101SSEAL

Used on inlet side of D101SPAN Smart Pan

D101SWASTE - Smart Waste

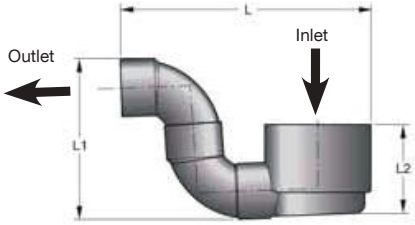
Product Code	Typical dimensions			
	Dim. (mm) L	Dim. (mm) L1	Dim. (mm) L2	Dim. (mm) L3
D101SWASTE*	350	295	165	154

Moulded plastic floor waste with compressed fibrous cement lid.
**Includes lid.*

D101STRAP - Smart Trap

Product Code	Typical dimensions			
	Nominal size (mm)	Dim. (mm) L	Dim. (mm) L1	Dim. (mm) L2
D101STRAP.50	100 x 50	274	176	97

Used in conjunction with Smart Pan, Smart Tile or Smart Waste



D101STILE - Smart Tile

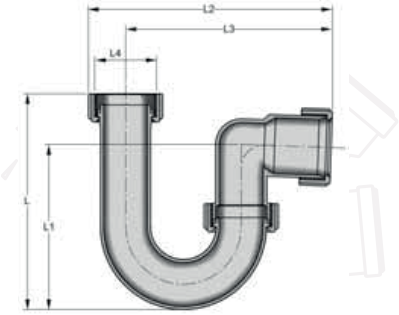
Product Code	Typical dimensions			
	Nominal size (mm)	Dim. (mm) L	Dim. (mm) L1	Dim. (mm) L2
D101STILE.2*	100	131	45	45

**Stainless Steel*

DWV System - Polypropylene Traps

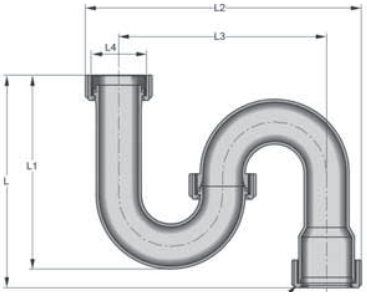
160 Plain P Trap

Product Code	Typical dimensions					
	Nominal size (mm) DN	Dim. (mm) L	Dim. (mm) L1	Dim. (mm) L2	Dim. (mm) L3	Dim. (mm) L4
160.40.32P	40 x 32	168	129	190	90	1 - ½"



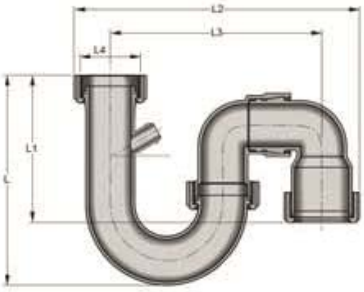
161 Plain S Trap

Product Code	Typical dimensions					
	Nominal size (mm) DN	Dim. (mm) L	Dim. (mm) L1	Dim. (mm) L2	Dim. (mm) L3	Dim. (mm) L4
161.40.32S	40 x 32	185	168	239	180	1 - ½"



162 DW Combination S&P Trap with dishwasher connection

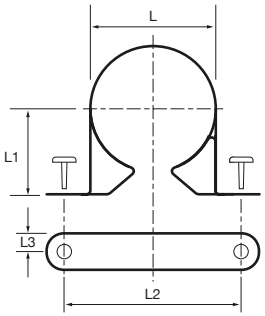
Product Code	Typical dimensions					
	Nominal size (mm) DN	Dim. (mm) L	Dim. (mm) L1	Dim. (mm) L2	Dim. (mm) L3	Dim. (mm) L4
161.40.32.DW	40 x 32	197	147	228	169	1 - ¼"



DWV System - Pipe Clips

140 Pipe Clip

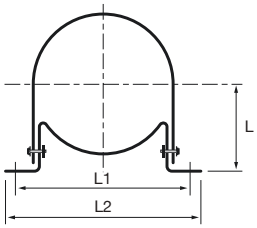
Product Code	Typical dimensions				
	Nominal size (mm) DN	Dim. (mm) L	Dim. (mm) L1	Dim. (mm) L2	Dim. (mm) L3
140.32	32	40	31	54	8
140.40	40	46	35	60	8
140.50	50	60	45	71	19
140.65	65	75	65	120	29
140.90*	90	94	50	124	22



This PVC clip is used to secure PVC DWV pipe with two suitable round headed screws.
**For use with DN90 Stormwater Pipe only*

140H Holderbat (Aluminium)*

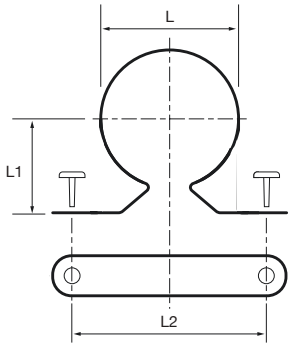
Product Code	Typical dimensions			
	Nominal size (mm) DN	Dim. (mm) L	Dim. (mm) L1	Dim. (mm) L2
140H.80	80	76	123	143
140H.100	100	90	150	170
140H.150	150	116	204	224



Designed to be screwed to the fixing surface. Support both DWV pipe and fittings by adjusting the bolts.

141 DWV Standard Key Clip

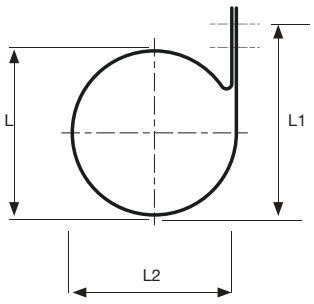
Product Code	Typical dimensions			
	Nominal size (mm) DN	Dim. (mm) L	Dim. (mm) L1	Dim. (mm) L2
141.32	32	40	45	46
141.40	40	48	51	70
141.50	50	60	55	70
141.80	80	89	70	105
141.100	100	115	88	120



This PVC clip is used to secure PVC DWV pipe, raised above or away from the fixing surface with two suitable round headed screws.

141 DWV Side Hanger Key Clip

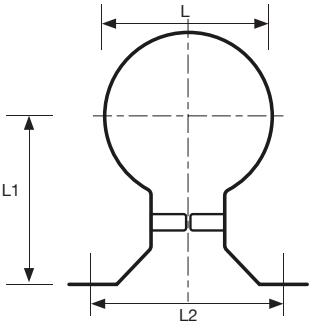
Product Code	Typical dimensions			
	Nominal size (mm) DN	Dim. (mm) L	Dim. (mm) L1	Dim. (mm) L2
142.32	32	42	55	43
142.40	40	49	62	50
142.50	50	60	75	60
142.80	80	88	100	90
142.100	100	115	155	115



This PVC clip is used to secure PVC DWV pipe on grade, hanging below the clip fixing points attached to a wall or vertical structure.

143 DWV Stand-off Key Clip

Product Code	Typical dimensions			
	Nominal size (mm) DN	Dim. (mm) L	Dim. (mm) L1	Dim. (mm) L2
143.32	32	41	59	69
143.40	40	48	65	71
143.50	50	61	70	60
143.80	80	90	105	115
143.100	100	117	120	132
143.150	150	165	125	155

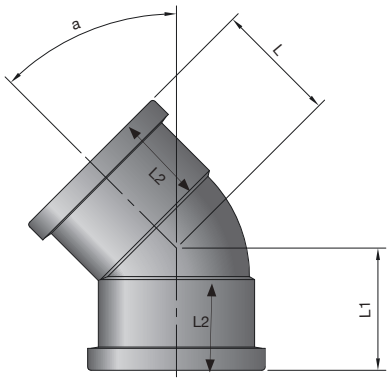


This PVC clip is used to secure PVC DWV pipe, where extra standoff from the fixing surface is required.

7.3 DWV System - Fittings – Rubber Ring Joint

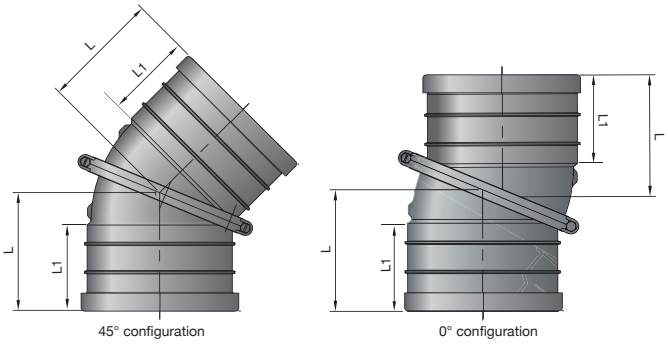
1501 Plain Bend F&F

Product Code	Typical dimensions				
	Nominal size (mm)	Angle (deg) a	Dim. (mm) L	Dim. (mm) L1	Dim. (mm) L2
1501.100.45	100	45	92	92	67
1501.100.60	100	60	104	120	69
1501.100.88	100	88	160	160	68
1501.150.45	150	45	140	140	95
1501.150.88	159	88	245	245	100



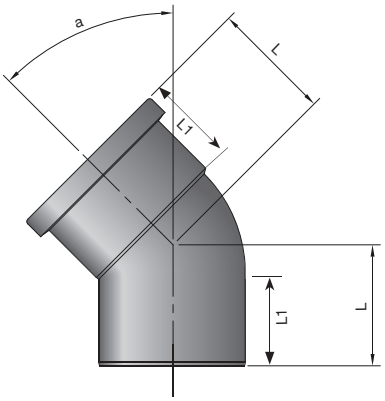
1501A Adjustable Bend F&F (0° - 45°)

Product Code	Typical dimensions			
	Nominal size (mm)	Angle (deg) a	Dim. (mm) L	Dim. (mm) L1
1501.150A	150	0 - 45	137	97



1571 Plain Bend M&F

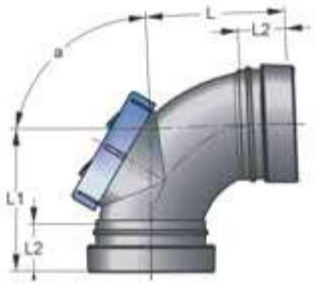
Product Code	Typical dimensions			
	Nominal size (mm)	Dim. (mm) a	Dim. (mm) L	Dim. (mm) L1
1571.100.5	100	5	80	70
1571.100.11	100	11	80	70
1571.100.15	100	15	85	70
1571.100.22	100	22	90	65
1571.100.30	100	30	95	75
1571.150.15	150	15	120	100



1502 Ramp Bend

Product Code	Typical dimensions				
	Nominal size (mm) DN	Angle (deg) a	Dim. (mm) L	Dim. (mm) L1	Dim. (mm) L2
1502.100.88 *	100	88	149	153	51

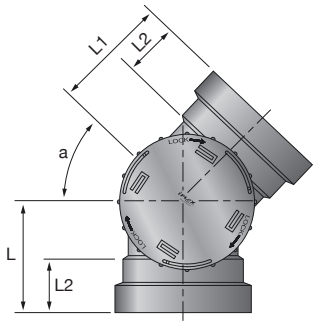
** Nominal 100mm access opening*



1503 Side Access Bend

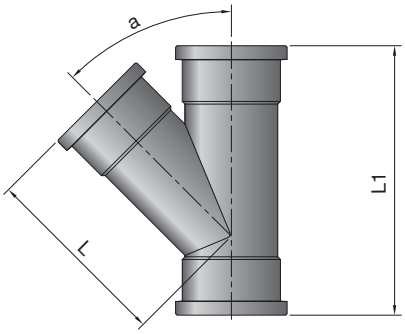
Product Code	Typical dimensions				
	Nominal size (mm) DN	Angle (deg) a	Dim. (mm) L	Dim. (mm) L1	Dim. (mm) L2
1503.100.45 *	100	45	155	155	66
1503.100.88 *	100	88	183	188	65

** Nominal 150mm access opening*



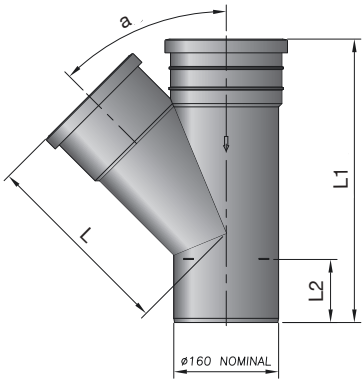
1504 Plain Junction F&F

Product Code	Typical dimensions			
	Nominal size (mm)	Angle (deg) a	Dim. (mm) L	Dim. (mm) L1
1504.100.45	100	45	229	324
1504.100.88	100	88	140	270
1504.150.45	150	45	297	437



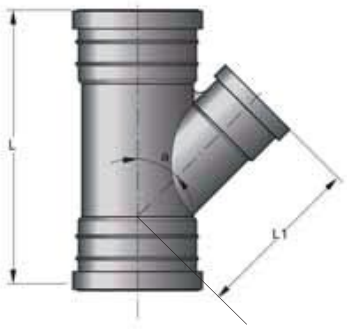
1574 Plain Junction M&F

Product Code	Typical dimensions				
	Nominal size (mm) DN	Angle (deg) a	Dim. (mm) L	Dim. (mm) L1	Dim. (mm) L2
1574.150.45	100	45	297	434	96
1574.150.88	100	88	235	434	96



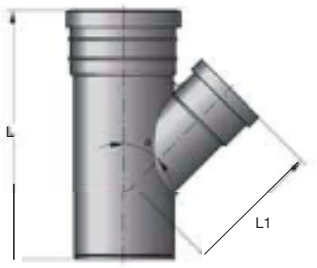
1504 Reducing Junction F&F

Product Code	Typical dimensions			
	Nominal size (mm)	Angle (deg) a	Dim. (mm) L	Dim. (mm) L1
1504.150.100.45	150 x 100	45	444	221



1574 Reducing Junction M&F

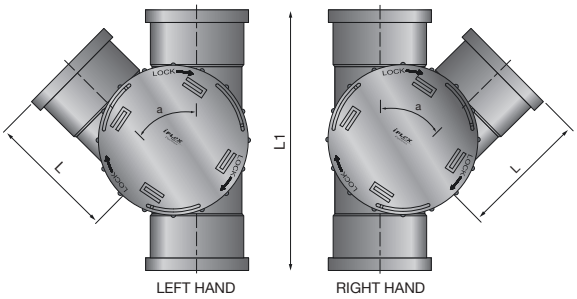
Product Code	Typical dimensions			
	Nominal size (mm)	Angle (deg) a	Dim. (mm) L	Dim. (mm) L1
1574.150.100.45	150 x 100	45	434	265
1574.150.100.88	150 x 100	88	340	190



1505 Access Junction

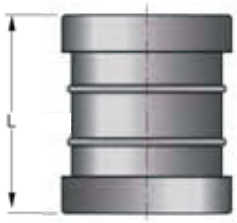
Product Code	Typical dimensions			
	Nominal size (mm)	Angle (deg) a	Dim. (mm) L	Dim. (mm) L1
1505.100.45LH*	100	45	160	320
1505.100.45RH*	100	45	160	320

** Nominal 150mm access opening*



1511S Slip Coupling F&F

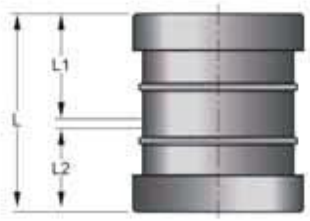
Product Code	Typical dimensions	
	Nominal size (mm) DN	Dim. (mm) L
1511S.80	80	136
1511S.150	150	202



1511 Coupling F&F

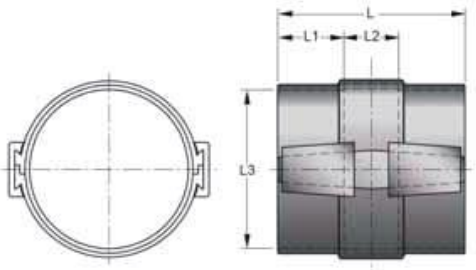
Product Code	Typical dimensions			
	Nominal size (mm) DN	Dim. (mm) L	Dim. (mm) L1	Dim. (mm) L2
1511.100*	100	134	66	66
1511.150**	150	200	110	90

**Combination loose/slip coupling with removable centering stop.*
***Loose coupling with fixed centering stop.*



1511R Repair Coupling

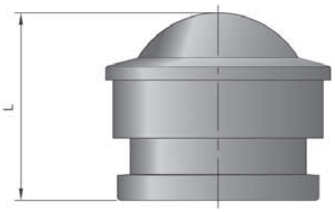
Product Code	Typical dimensions				
	Nominal size (mm) DN	Dim. (mm) L	Dim. (mm) L1	Dim. (mm) L2	Dim. (mm) L3
1511R.100	100	130	46	38	110



1516 Fresh Air Inlet

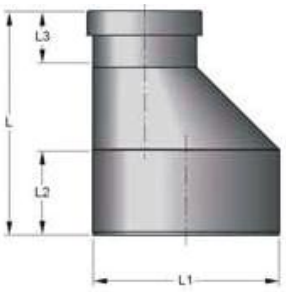
Product Code	Typical dimensions	
	Nominal size (mm) DN	Dim. (mm) L
1516.100	100	124

Used in conjunction with the 1514.100.88 septic tank junction



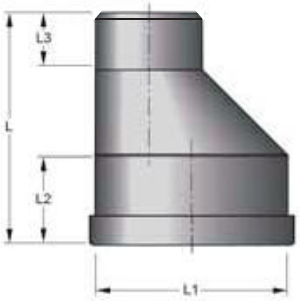
1523 Level Invert Taper

Product Code	Typical dimensions				
	Nominal size (mm) DN	Dim. (mm) L	Dim. (mm) L1	Dim. (mm) L2	Dim. (mm) L3
1523.150.100	150 x 100	209	160	97	51



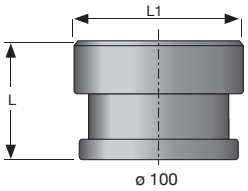
1527 Reverse Level Invert Taper

Product Code	Typical dimensions				
	Nominal size (mm) DN	Dim. (mm) L	Dim. (mm) L1	Dim. (mm) L2	Dim. (mm) L3
1527.100.150	100 x 150	203	160	77	70



1524 PVC to Ceramic Adapter

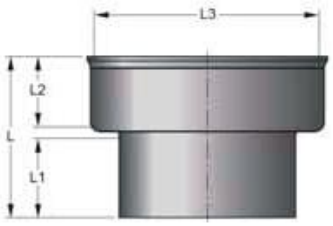
Product Code	Typical dimensions		
	Nominal size (mm)	Dim. (mm) L	Dim. (mm) L1
1524.100	100	92	140



Adapts a PVC spigot to an earthware or vitreous clay pipe socket using a ceramic pipe 'roll ring', or 2-pot epoxy mortar

1525 Ceramic Socket to PVC Adapter

Product Code	Typical dimensions				
	Nominal size (mm) DN	Dim. (mm) L	Dim. (mm) L1	Dim. (mm) L2	Dim. (mm) L3
1525.100	100	111	51	57	160
1525.150	150	156	77	68	218

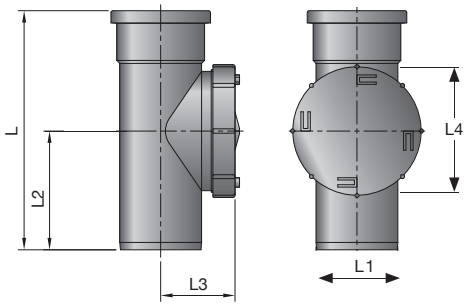


Adapts a PVC Spigot to an earthenware or vitreous clay spigot by using a ceramic pipe 'roll ring', or 2-pot epoxy mortar

1529 Inspection Pipe M&F

Product Code	Typical dimensions					
	Nominal size (mm)	Dim. (mm) L	Dim. (mm) L1	Dim. (mm) L2	Dim. (mm) L3	Dim. (mm) L4
1529.100*	100	312	110	157	71	164
1529.150*	150	380	160	190	165	190

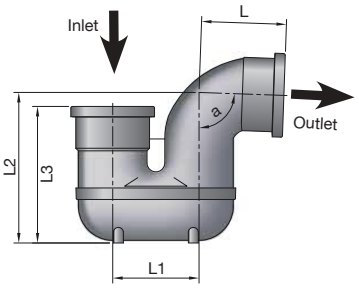
** Nominal 150mm access opening.*



1559 Gully Trap

Product Code	Typical dimensions					
	Nominal size (mm) DN	Angle (deg) a	Dim. (mm) L	Dim. (mm) L1	Dim. (mm) L2	Dim. (mm) L3
1559.100	100	88	136	138	241	219

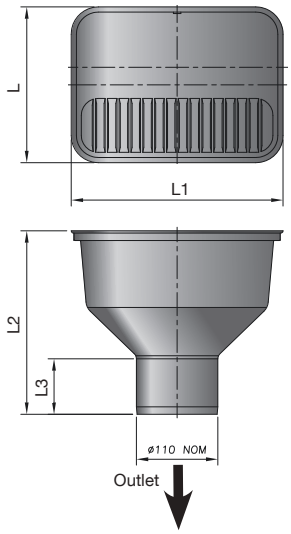
Used in conjunction with the 1575.100 gully dish



1575 Gully Dish

Product Code	Typical dimensions				
	Nominal size (mm) DN	Dim. (mm) L	Dim. (mm) L1	Dim. (mm) L2	Dim. (mm) L3
1575.100	100	211	287	248	75
1575L.100*	100	-	-	-	-

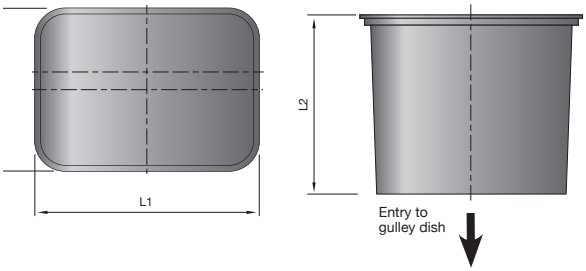
Used in conjunction with the 1559.100 Gully Trap
**Lid only*



1575R Gully Dish Riser

Product Code	Typical dimensions		
	Dim. (mm) L	ID (mm) L1	Dim. (mm) L2
1575.100R*	211	287	100
1575.200R*	211	287	200
1575.300R*	211	287	300

**Used to extend the height of 1575.100. Insert 1575R directly into the top of the 1575.100 to extend its height. Reinsert lid into top of 1575R.*



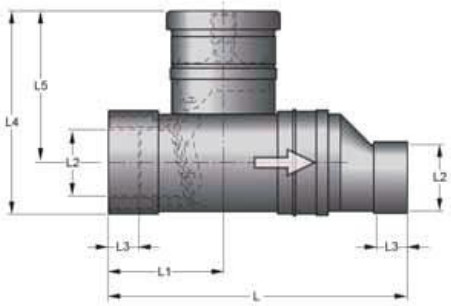
1588 Reflux Valve

Product Code	Typical dimensions						
	Nominal size (mm)	Dim. (mm) L	Dim. (mm) L1	Dim. (mm) L2	Dim. (mm) L3	Dim. (mm) L4	Dim. (mm) L5
1588.100*	100	490	190	110	50	340	50
1588.100FLAP#	100						

Arrow on drawing shows direction of flow. Refer page 21 for installation instructions.

* *Includes flap valve assembly*

** *Flap valve assembly only*



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***Note:** In accordance with Iplex policy of continuous product development, the configuration, range, dimensions, design or external shape of Iplex fittings in this Product Installation Guide may be subject to change without notice*

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