

INSTALLATION

RUBBER RING JOINT ASSEMBLY

Rhino® PVC-M pipes are supplied with the Iplex Rieber jointing system. The Rieber seal is a locked-in system, no sealing ring displacement will occur during installation. The rings are integrated, part of the pipe socket at the time of manufacture and subsequently must not be removed. The Rieber jointing system eliminates the chance of rings being lost during transport and handling. The Rieber Ring makes joining easy with no need for excessive force, resulting in faster installation rates saving installers time and money.

If the ring is tampered with or damaged in any way then the socket and affected ring must be cut off and scrapped. It is essential to use Iplex Standard or Iplex Plus bactericidal jointing fluid with the Rieber joint.

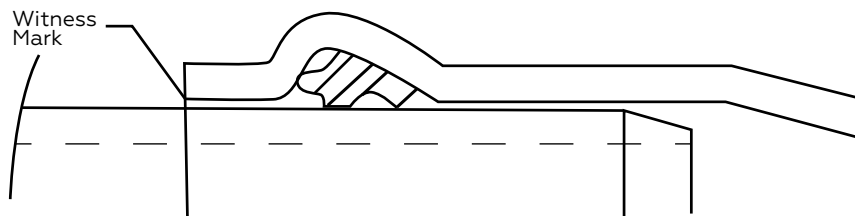


Figure 1.0 Rieber rubber ring joint

01 CUTTING PIPES

Iplex Rhino® PVC-M pipes can be cut to length on site using either a hand saw or powered cutting disc.

02 CHAMFER AND NEW WITNESS MARK

Ensure that the cut end is then chamfered with an appropriate field-lathing tool to the correct length. The chamfer and new witness mark should replicate the manufactured dimensions.

03 CLEAN THE SPIGOT AND SOCKET PRIOR TO JOINTING

Remove all dust and dirt from the pipe spigot and socket paying particular attention to the cleanliness of the fixed ring.

The information contained in this document should serve as a guide only and is subject to change without notice. For more information please contact Iplex Pipelines Australia Pty Ltd.



RHINO® PVC-M PIPELINE DESIGN

INSTALLATION

04 APPLY LUBRICANT

Apply lubricant to the spigot, fully covering the circumference up to the witness mark. Ensure the lubrication is also applied to the pipe chamfer.

05 ASSEMBLY

Insert the leading edge of the spigot into the socket mouth. It is essential that the pipes can be aligned in a straight line before attempting to make the joint. A small, longitudinal force applied to the socket end of the pipe is sufficient to insert the spigot into the adjacent pipe socket. For larger diameter pipes requiring a crowbar for joining, protect the pipe socket with a wooden block.

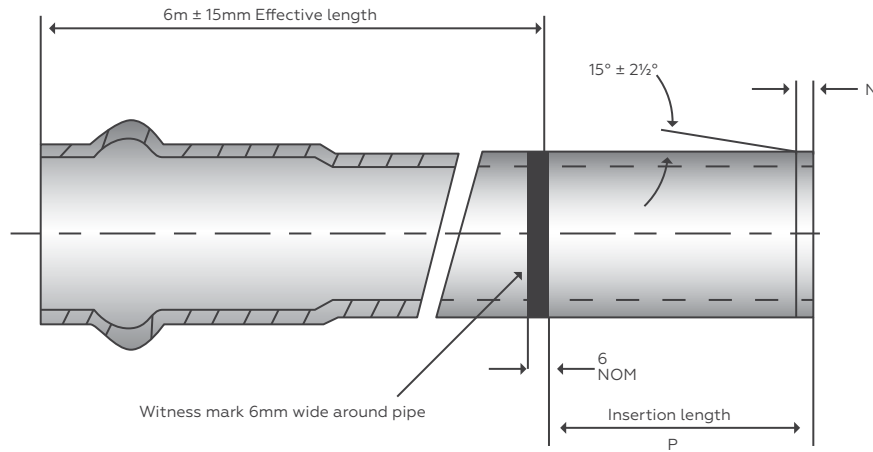
Care must be taken to ensure that the pipe is not under-inserted as this may result in a leaking joint as the pipe contracts as a result of Poisson's and/or thermal effects. Under-insertion is signified by the witness mark not being pushed up to the end of the socket. **Note: When pressurized, Poisson contraction will cause a shortening of the pipes and this might re-expose the witness mark. This is acceptable.**

During installation, it is important to ensure that the PVC pipes spigot is inserted only up to the insertion mark (witness mark, which is drawn on the spigot end of the pipe) into the bell and not beyond. In a properly installed joint, the insertion mark should be flush with the lip of the adjoining bell. Insertion of the spigot beyond the insertion mark may cause the spigot to wedge itself into the neck of the bell, thus preventing hydrostatic pressure from reaching the gasket through the gap between the pipe bell and spigot, and preventing proper functioning of the gasket. Over insertion of the spigot may also result in excessive hoop stress in the mating pipe's socket.

The information contained in this document should serve as a guide only and is subject to change without notice. For more information please contact Iplex Pipelines Australia Pty Ltd.



INSTALLATION



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

Figure 1.1 Typical pipe spigot details for rubber ring joint pipes

TABLE 1.0 TYPICAL PIPE SPIGOT DETAILS

DN	SERIES 1		SERIES 2	
	MEAN "P"	MEAN "N"	MEAN "P"	MEAN "N"
100	155	19	152	15
150	166	17	174	18
200	199	21	201	21
225	203	23	209	22
250	220	25	218	23
300	227	27	234	26
375	262	32	280	30
450	309	38	307	32
500	327	42	320	42
575	351	45	-	-

The information contained in this document should serve as a guide only and is subject to change without notice. For more information please contact Iplex Pipelines Australia Pty Ltd.



INSTALLATION

JOINTING SYSTEMS

Iplex Rhino® PVC-M pipes can be used with ductile iron socketed fittings conforming to AS/NZS 2280. It should be noted, the witness marks and chamfers to suit ductile iron products should be used.

Where cut-ins or repairs are needed in an existing PVC-M pressure main, Iplex recommends fittings conforming to WSA 105 and AS/NZS 4998 'Unrestrained mechanical couplings', should be used.

For Iplex's complete range of Crevet® Ductile Iron fittings and mechanical couplings (i.e. AVK Couplings) visit the Iplex website www.iplex.com.au.

JOINTING FLUIDS

Note: it is essential to use Iplex Standard or Iplex Plus bactericidal jointing lubricant with all Iplex Rhino® PVC-M elastomeric seal systems. Other lubricants especially mineral based greases must not be used.

Iplex Plus bactericidal jointing fluid is recommended for potable water supplies as it contains a bactericide designed to limit the growth of bacteria by disinfection at its source. During installation bacteria can enter the system and form a colony in the joint area, which is highly resistant to disinfection, (even to high levels of chlorine) and can cause continuing infection of the line. Being water-soluble, the lubricant is quickly removed from potable water systems when flushing commences.

Iplex lubricant is safe and has no detrimental effect on the elastomers used in gasket materials and because of its friction modifying properties, will lower jointing forces. Keep the container closed when not in use to avoid spillage or contamination by dust or dirt.

As a safety precaution, avoid contact with eyes. If contact does occur, flush with copious amounts of water and if ingested drink copious amounts of water. For a copy of the Safety Data Sheet (SDS) visit the Iplex website www.iplex.com.au.



The information contained in this document should serve as a guide only and is subject to change without notice. For more information please contact Iplex Pipelines Australia Pty Ltd.



INSTALLATION

TRENCHING

Trenches should be excavated in accordance with the plans and engineer’s specifications and should allow adequate space for compaction of the embedment material in the side support zone.

Trenches should be straight and as narrow as practicable at the top of the pipe. The minimum trench widths are specified in Table 1.1

TABLE 1.1 MINIMUM EMBEDMENT ZONE DIMENSIONS – AS/NZS 2566.1

DN	H	B*	k
100	75	350	100
150	75	400	100
200	100	550	150
225	100	550	150
250	100	600	150
300	100	650	150
375	100	850	150
450	100	900	150
500	150	1150	150
575	150	1250	150

Note: it is essential to use Iplex Standard or Iplex Plus bactericidal jointing lubricant with all Iplex Rhino[®] PVC-M elastomeric seal systems. Other lubricants especially mineral based greases must not be used.

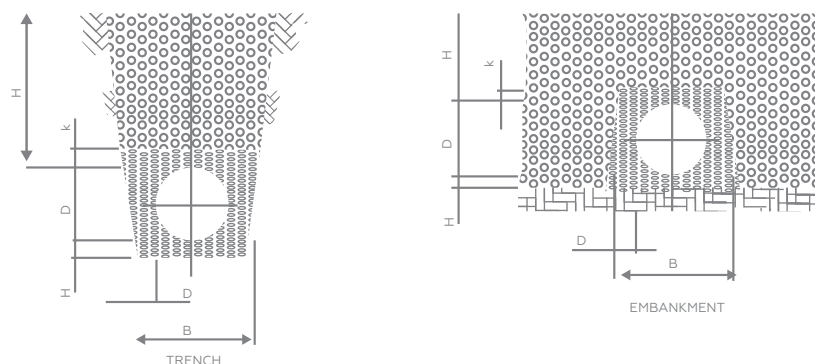


Figure 1.2 Embedment, clearance and cover dimensions

The information contained in this document should serve as a guide only and is subject to change without notice. For more information please contact Iplex Pipelines Australia Pty Ltd.



INSTALLATION

EMBEDMENT AND BACKFILLING

The quality of the embedment material and its compaction, combined with the type and density of the native soil are all relevant to the ultimate performance of modified PVC (PVC-M) pipes once installed.

The trench bottom should be as smooth as possible and to grade. Embedment material, used in the bedding, side support and overlay are generally non-cohesive granular materials. Pipes should not be buried in contact with soil particle sizes large than 5% of the pipe diameter, with 20mm as maximum size.

Soil clods must be excluded from the pipe embedment zone and under no circumstances should temporary supports such as bricks or timber be left under or in contact with pipes. If the excavated material is not granular or friable, or does not comply with the project specification, then suitable embedment must be imported.

Jointing or "clearance holes" should be excavated in the bedding for pipe sockets to ensure the pipes are evenly supported along their full length. In the absence of any specification and especially if the pipe classes are PN6 or PN9, it is important that only non-cohesive or granular embedment be used. Careful attention to the placement of embedment material to the specified relative compaction with an absence of voids is important.

Mechanical joints, especially flanged joints, should be left exposed if possible until the line is tested. Pipes should not be left uncovered. The possibility of pipe flotation in the event of rain and water in the trench, will occur unless it is backfilled to a height of at least one and a half diameters above the pipe. The method of placing the remainder of the trench backfill will depend on whether the pipeline is located in an area with no traffic loading or under a roadway. In a roadway it is normal practice to continue backfilling and compacting with good quality embedment material up to pavement level. Heavy compaction of backfill should not commence without at least 300mm of material covering the pipeline.

EXPANSION AND CONTRACTION

Distortion can occur when laying pipes in direct sunlight. When one side of the pipe is heated more than the other it may develop a slightly bent shape, which may make jointing difficult. Common practice is to rotate pipes or place pipes in the shade to offset any uneven temperatures within the pipe.

Plastic pipe will contract as it cools, after laying in hot weather. A 6 metre length of Rhino[®] PVC-M will expand or contract approximately 5mm for each 10°C rise or fall in temperature.

The following precautions should be taken to ensure that the joints do not pull apart:

1. Laying is best done in the cooler parts of the day
2. Rubber ring systems will allow for thermal movement of the pipeline after having been laid. In both cases, backfill each length, at least partially, as laying proceeds.

The information contained in this document should serve as a guide only and is subject to change without notice. For more information please contact Iplex Pipelines Australia Pty Ltd.



INSTALLATION

INSTALLING ON A CURVED ALIGNMENT

Iplex Rhino® PVC-M pipes are flexible enough to be easily curved evenly along their length. Pipes should always be joined directly in line before the alignment of the pipes is altered.

TABLE 1.2 MINIMUM PIPELINE RADII

RHINO® PVC-M PIPE CLASS	RADIUS OF CURVED PIPE*
All	300 x Nominal pipe diameter

***Note: Some authorities may not allow PVC-M pipes to be curved or may not allow curved PVC-M pipes to be drilled or tapped. As an alternative tapped DI connectors can be used.**

CONCRETE ENCASUREMENT

Complete encasement of Rhino® shall be avoided if possible. Encasement shall be limited to 180°, unless flexible joints are provided at each concrete face entered. Where a pipe is completely concrete encased, it shall be fully wrapped prior to encasement with a compressible material such as geotextile or polyethylene foam to a nominal thickness of 6mm.

Where concrete encasement is required, Rhino® PVC-M pipes shall be set to line and level on either bags of natural fibre filled with sand and cement mix or on concrete blocks or saddles cast to the outside diameter of the barrel and located near the socket. Precautions should be taken to prevent movement, flotation or deformation of the pipe while pouring concrete.

For further information refer to AS/NZS 2032 “Installation of PVC Pipe Systems”.

TAPPED SERVICE CONNECTIONS

Rhino® PVC-M pipes can be tapped using approved tapping bands and hole cutters. Fine toothed ‘shell cutters’ or hole saws are to be used whilst spade-bit type cutters are unsuitable.

Crevet® Taptite DI and Milnes® Gunmetal bands are recommended for use with Rhino® PVC-M pipe. Tapping saddles must comply with AS/NZS 4793 “Mechanical Tapping Bands for Waterworks Purposes”.

The information contained in this document should serve as a guide only and is subject to change without notice. For more information please contact Iplex Pipelines Australia Pty Ltd.



INSTALLATION

ABOVE GROUND SUSPENDED PIPELINES

Iplex Rhino® PVC-M pressure pipes can be used above ground provided they are protected from long-term exposure to ultra violet radiation. In direct sunlight acrylic paint may be a suitable barrier. As a general rule pipes should be rubber ring jointed and a minimum class PN12 should be specified.

Full circle supports should surround the pipes and “padded” with compressible material such as 3mm thick insertion rubber, protecting the exterior surface of the pipe from abrasion. Special provision for thrust support of fittings is also required.

Table 1.3 indicates the maximum support spacing for pipes filled with water where aesthetic considerations require long-term deflections to be limited by the span distance divided by 500.

TABLE 1.3 SPAN BETWEEN SUPPORTS (FOR DEFLECTIONS LESS THAN L/500)

PIPE DESIGNATION	SPAN (m)
DN100 PN12 or higher	2
DN150 PN12 or higher	2
DN200 to DN450 PN12 or higher	3



The information contained in this document should serve as a guide only and is subject to change without notice. For more information please contact Iplex Pipelines Australia Pty Ltd.

