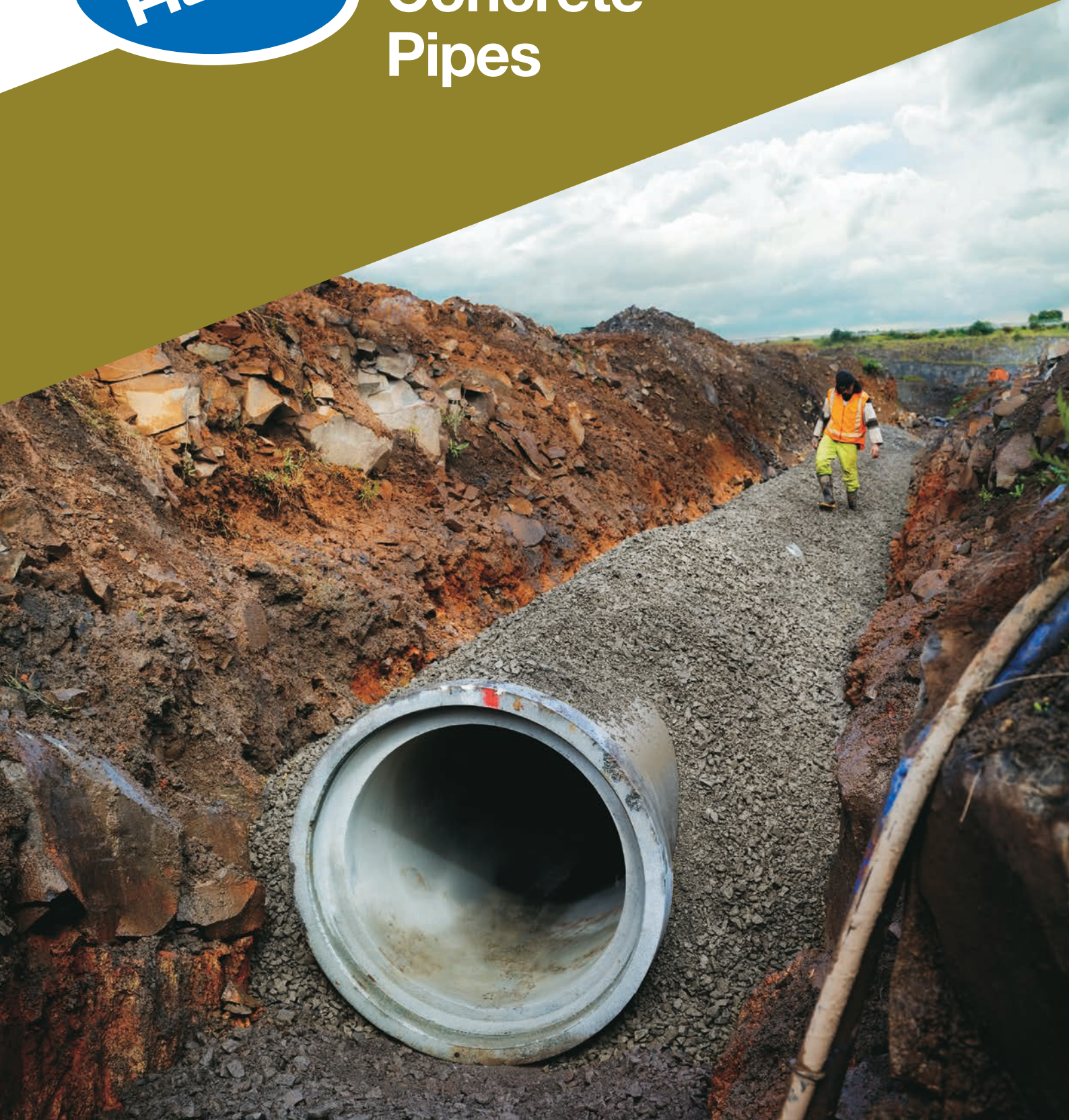




Concrete Pipes



High performance
durable concrete pipes

Introduction

Humes are the leading manufacturer of concrete pipes in New Zealand. Humes concrete pipes are manufactured to AS/NZS 4058:2007 standard and range from DN 225 to DN 3000. Humes technical team are able to provide technical assistance with designs for all concrete pipe applications. Detailed pipe design information is available from Humes at www.humes.co.nz and further information is available from the Concrete Pipe Association of Australasia at www.cpaa.asn.au/.

Concrete pipes are manufactured and installed in accordance with AS/NZS 4058:2007. When designed and installed in accordance with AS/NZS 3725:2007 a service life in excess of over 100 years can be expected. If you are looking for a durable and reliable pipeline system, concrete pipes have stood the test of time and are a proven long term product of choice for infrastructure solutions.

Humes uses three different pipe making technologies which provides flexibility around pipe types and classes ensuring that pipe design and availability delivers the product required for each project on time and to the desired specification. Pipes are made in Auckland, Hamilton, Hastings and Christchurch.

Humes VT and RCP pipe making methods use low water cement ratio concrete with minimal waste and little or no water discharge in the manufacturing process providing a clean environmental manufacturing footprint.

Concrete pipes are predominately made with a rubber ring jointed spigot and collar arrangement with either a rolling or lamell skid (sliding) ring. Skid ring, flush and jacking joint configurations are also available.

Humes pipes are traditionally used in the following applications

- Stormwater
- Sewerage
- Irrigation
- Rural culvert pipe
- Service tunnels
- Low pressure hydro conduits
- Pressure pipes

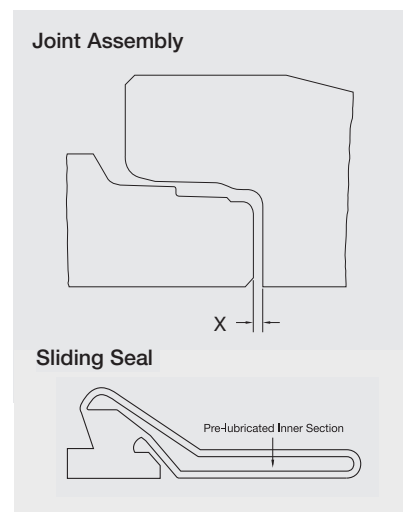
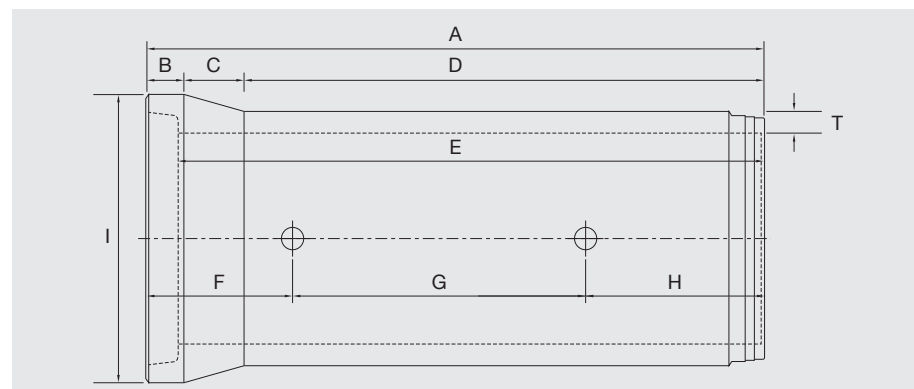


Humes VT (Vibration Technology) Pipe

Humes VT Titan® Pipe is made to the AS/NZS 4058:2007 standard but also complies with many recognised international standards. Most parts of the British and European standards BSEN 1916:2002 and BS 5911-1:2002 were developed around VT technology. VT pipes are made through a vertical casting process. Each pipe is produced from a dry mix concrete which is placed in the mould and the inner core is vibrated to ensure solid compaction of the concrete. The pipe is removed from the core and taken directly to the curing area by crane, where the outer mould is stripped from the pipe. This means there is minimum movement of the pipe in the initial curing phase of the casting process. As a result of the manufacturing process VT Pipes have a thicker wall providing increased cover to steel.

As part of the VT technology Humes have formed a relationship with Forsheda, one of the foremost producers of rubber rings for jointing of concrete pipes. Humes VT pipes have a Combination Joint that is at the leading edge of concrete pipe jointing technology. The Combination Joint provides the opportunity to use the revolutionary Lamell Ring (Sliding Seal). This sliding Lamell ring provides for easy and consistent application of the ring seal to the pipe. The ring itself has a sealed pre-lubricated inner section that ensures that the ring seals evenly and securely every time without the requirement to apply lubricants on site.

The VT production methodology means that many pipes can be made from one mould each day. This allows Humes to produce pipes in sufficient quantity to meet the needs of most projects, providing the opportunity for contractors to increase productivity by laying more pipes per day. VT pipes are made in Auckland and are available in Load Class 2 and 4 in sizes DN 675 to DN 2500.



Dimensions											Safe Handling		Recommended Joint Gap	
Nominal diameter	A	B	C	D	E	F	G	H	I	T	Lifting Anchor**	Mass (kg)	X (min)	X (max)
675	2632	160	252	2220	2500	617	1250	765	980	85	2.5	1400	4	8
750	2632	160	254	2218	2500	621	1250	761	1060	87	2.5	1600	4	8
825	2632	160	259	2213	2500	609	1250	774	1140	88	2.5	1750	4	8
900	2632	160	252	2220	2500	622	1250	760	1215	90	2.5	1925	5	10
1050	2640	170	280	2190	2500	625	1250	765	1400	100	2.5	2500	6	12
1200	2640	170	289	2181	2500	633	1250	757	1575	110	2.5	3125	6	12
1350	2640	170	261	2209	2500	640	1250	750	1720	115	2.5	3575	6	12
1500	2640	170	224	2246	2500	651	1250	739	1860	120	2.5	4050	6	12
1800	2645	170	299	2176	2500	636	1250	759	2230	135	5.0	5550	6	15
1950	2645	170	308	2167	2500	637	1250	758	2395	140	5.0	6225	6	15
2100	2645	170	299	2176	2500	644	1250	751	2560	150	5.0	7125	6	15
2400	2645	175	280	2190	2500	651	1250	744	2900	175	10.0	9375	6	15

Notes

1. All masses based on Class 2 Rubber Ring Jointed pipes and nominal concrete density of 2500 kg/m³
 2. X = Recommended joint gap range after laying
 3. All dimensions in mm
- * Humes offer class 4 in lieu of class 3
- ** Refer to safe handling guide for further details on lifting anchors

Humes Spun Pipe

Humes have been manufacturing spun pipe in New Zealand for over 90 years. Spun pipes are manufactured to AS/NZS 4058 standard. Spun pipes are cast horizontally and normally stay in their moulds for the first 24 hours for the initial curing, which includes steaming. The spun process enables manufacturing of thin wall pipe with a smooth finish and achieves excellent crushing strength and durability characteristics.

The spun pipe making process provides the highest degree of flexibility in the pipe making process. It is economical to make small quantities of pipe or specials where pipes require increased cover specifications or strength. The spun pipe making process enables Humes to provide:

- Pipe up to Load Class 8
- A sacrificial cover option of up to 25mm
- A Duracem concrete option for corrosive or marine environments requirements
- Banded or in wall jacking pipe options for most pipe sizes above DN 1050
- Design options for most additional structural

Spun pipes are produced in Christchurch from DN 300 to DN 2300 and are available in Load Class 2 and 4.

Titan® Spun Concrete Rubber Ring Jointed Pipe (RRJ)

Nominal diameter	Dimensions					Class 2			Class 3			Class 4			Recommended Joint Gap	
	A	B	C	E	F	D	T	Mass (kg)	D	T	Mass (kg)	D	T	Mass (kg)	X (min)	X (max)
Titan 300	464	76	95	87	2415	305	32	225	305	32	225	305	32	225	3	6
Titan 375	540	95	95	87	2415	381	32	278	381	32	278	375	35	300	3	6
Titan 450	641	114	114	105	2410	457	38	395	457	38	395	451	41	420	3	6
Titan 525	730	133	133	105	2410	533	41	513	533	41	513	520	48	583	3	6
Titan 600	819	133	133	120	2400	610	44	625	600	49	673	586	56	763	4	8
Titan 675	908	133	133	89	2425	686	48	755	680	51	795	662	60	910	4	8
Titan 750	997	143	152	120	2440	762	51	895	756	54	943	730	67	1125	4	8
Titan 825	1063	146	143	121	2440	838	54	1045	832	57	1095	806	70	1298	5	10
Titan 900	1197	171	149	143	2440	914	64	1363	914	64	1363	896	73	1520	5	10
Titan 1050	1391	171	149	152	2445	1067	76	1875	1067	76	1875	1047	86	2078	5	10
Titan 1200	1543	171	149	151	2435	1219	76	2125	1219	76	2125	1187	92	2495	5	10
Titan 1350	1695	171	149	157	2430	1372	76	2370	1360	82	2525	1332	96	2900	6	12
Titan 1600	1988	179	203	175	2440	1589	82	3100	1577	88	3300	1537	108	3875	6	12
Titan 1800	2274	194	292	170	2430	1804	101	4375	1804	101	4375	1767	120	5025	6	12
Titan 2100*	2553	191	165	144	2440	2110	126	5900	2082	140	6475	2082	140	6475	6	15

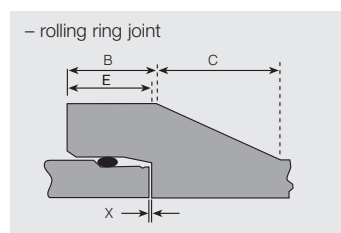
Notes

1. All dimensions in mm

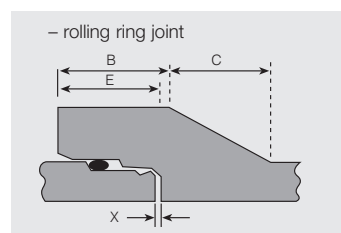
* Titan 2100 Skid ring joint – requires lubrication

Key: Joint type 1 = Series 1 Joint type 2 = Series 2

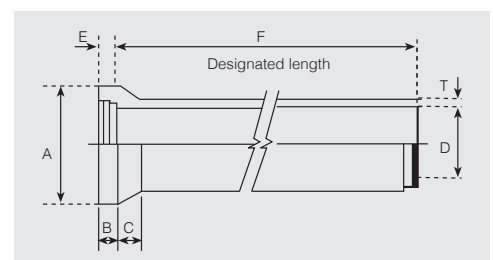
Series 1 joint



Series 2 joint



Titan rubber ring jointed pipes



Notes

- These rolling rings are designed to roll along the joint surfaces during jointing to form a seal once it is in its final position
- X = Recommended joint gap range after laying

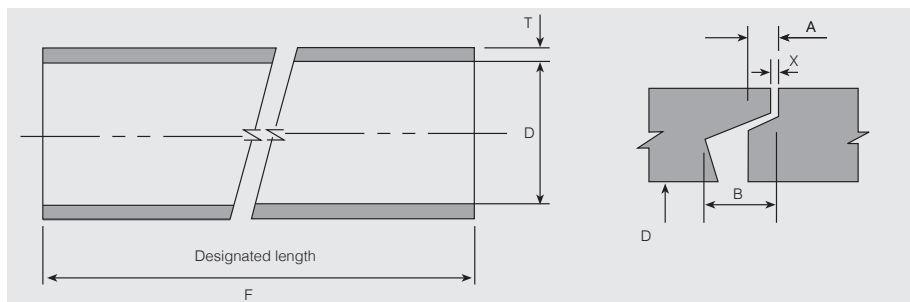
Humes Spun Pipe

Titan® Flush Jointed Pipe (FJ)

Nominal diameter	Dimensions			Class 2			Class 3			Class 4			Recommended Joint Gap	
	A	B	C	D	T	Mass (kg)	D	T	Mass (kg)	D	T	Mass (kg)	X (min)	X (max)
Titan 600	14	31	2420	610	44	553	600	49	610	586	56	690	3	6
Titan 750	16	34	2435	762	51	795	756	54	838	730	67	1023	3	8
Titan 900	16	36	2435	914	57	1063	900	64	1183	883	73	1338	3	8
Titan 1050	21	39	2440	1067	64	1385	1054	70	1508	1026	84	1788	4	12
Titan 1200	24	44	2435	1219	70	1730	1207	76	1868	1179	90	2188	4	12
Titan 1350	24	44	2440	1372	76	2100	1358	83	2300	1332	96	2625	4	12
Titan 1500	24	44	2445	1524	76	2325	1504	86	2625	1468	104	3150	4	12
Titan 1650	25	45	2435	1676	83	2800	1656	93	3125	1620	111	3700	4	12
Titan 1800	27	48	2435	1828	89	3275	1808	99	3625	1772	117	4250	5	15
Titan 2050	32	59	2415	2032	102	4175	2016	110	4500	1956	140	5625	5	15
Titan 2300	43	76	2415	2312	127	5950	2286	140	6525	2286	140	6525	5	15

Notes

1. All dimensions in mm
2. 2300 only available in in the South Island



Notes

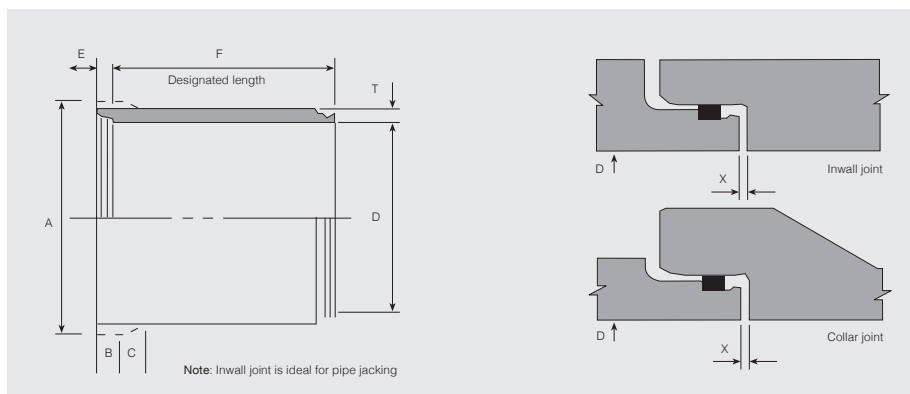
1. You can seal a flush joint using either external bands or mortar
2. X = Recommended joint gap range after laying

Titan® Skid Ring Jointed Pipe (SRJ)

Nominal diameter	Dimensions					Class 2			Class 3			Class 4			Joint type	Recommended Joint Gap	
	A	B	C	E	F	D	T	Mass (kg)	D	T	Mass (kg)	D	T	Mass (kg)		X (min)	X (max)
Titan 1950	—	—	—	144	2440	1981	140	5700	1981	140	5700	1981	140	5700	in wall	6	15
Titan 2100	2553	191	165	144	2440	2110	126	5900	2082	140	6475	2082	140	6475	collar joint	6	15
Titan 3060	—	—	—	183	2390	3060	175	10625	—	—	—	—	—	—	in wall	6	15

Notes

1. All dimensions in mm
2. Lubricant must be used with skid type rubber rings



Notes

1. These rubber rings are designed to stay in place allowing the socket to skid over the ring, compressing it to seal the joint
2. X = Recommended joint gap range after laying

Titan® Roller Compacted Pipe (RCP)

Humes Titan® Roller Compacted Pipe (RCP) is manufactured to AS/NZS 4058:2007 standard. RCP is cast vertically using low water/cement ratio concrete and effective compaction methods. Compaction is achieved using a well proven computer controlled, counter rotating rollerhead and trowel (the Bi Directional process or BiDi).

The BiDi process ensures consistent and accurate formation of collars and spigots which assures water tightness. The RCP pipe uses a “D” ring jointing system developed by Humes that provides secure and positive jointing. To ensure this is the case, a portion of every batch of the RCP pipe barrels is hydrostatically checked as part of the stringent quality assurance system.

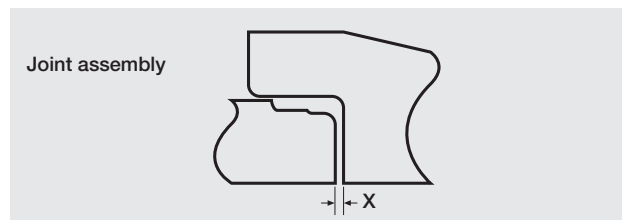
Like the VT production process the RCP manufacturing methodology means that substantial pipe numbers of the same diameter can be made each day. Humes has been supplying RCP pipe for over 15 years and they are now the most commonly used pipes from DN 225 to DN 600 and are available in Load Class 2 and 4. RCP pipes are not suitable for Marine Environment applications. RCP pipes are made in Hamilton and are used throughout New Zealand.

Nominal diameter	Dimensions (Class 2, 3*, 4)											Mass (kg)	Recommended Joint Gap	
	D	T	L	H	S	O	P	SW	E	SE'	SE		X (min)	X (max)
225	225	35	2000	95	176	55	78	42	376.4	292.2	274.8	161	4	8
300	300	35	2500	95	181	55	78	43	453.4	367.4	349.8	253	4	8
375	375	35	2500	95	198	55	78	47	536.4	442.4	424.8	313	4	8
450	450	40	2500	115	219	60	92	52	631.3	527.3	505.3	433	5	10
525	525	45	2500	130	236	60	95	56	724.1	612.1	590.1	568	5	10
600	600	50	2500	140	253	60	99	60	816.9	696.9	674.8	726	5	10

Notes

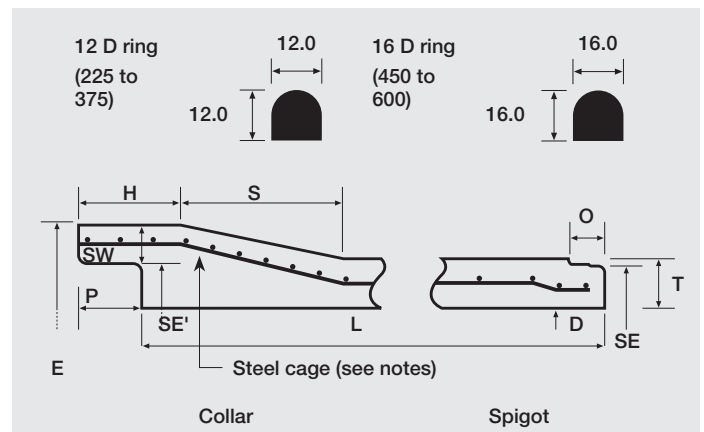
1. D rings are ribbed to improve joint stability and to eliminate skidding.
 2. All dimensions in mm
- * Humes offer class 4 in lieu of class 3

Joint Assembly

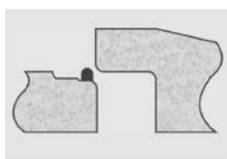


Notes

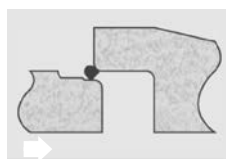
1. Mass calculation based on a nominal density of 2500 kg/m³. Rubber ring shore hardness 40 degrees. Steel cage is continuous into the collar. No spacers are used for placement (machine controlled).
2. X = Recommended joint gap range after laying



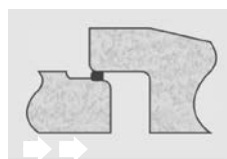
Jointing using a D ring



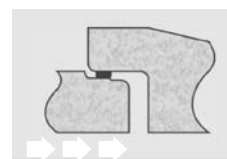
Step 1
Place D ring on first step of spigot as shown. (Do not lubricate.)



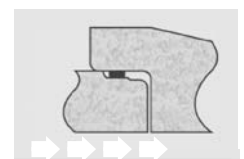
Step 2
Move spigot with ring towards collar. Push the pipe until it locks uniformly between the collar lead in and the spigot.



Step 3
As the spigot is being pushed into the collar the D ring will rotate between the two surfaces.



Step 4
Continue the jointing movement. As the ring rotates past 180° a positive jointing action results.



Step 5
The joint is fully home at a ring rotation of approximately 270°. Between 180° and 270° the joint is stable.

Specialty Pipe Options and Information

Jacking/Thrusting Pipes

Humes manufactures jacking and thrusting pipes in a range of diameters and lengths. When designing Jacking Pipe, maximum jacking force, total external loads, maximum allowable deflection and aggressive environments all need to be considered. Humes Technical team is able to provide assistance in designing jacking pipes.

Features

- Installation without disruption to existing surface-facilities or activities
- Capable of withstanding typical installation forces
- Strong and durable
- Proven performance

Benefits

- Low impact on existing services
- Adaptable to various ground conditions
- Cost effective compared to deep traditional methods
- Reduction of health and safety risk when installing in unstable soil conditions

Applications

- Stormwater drainage
- Sewerage systems
- Under roads, railways, waterways or developed areas.

Pipes for Aggressive Environments

Humes Titan® Pipes have been meeting performance demands in sewer, marine and other aggressive applications for over 90 years. In many cases standard pipes will provide the design life required for most environments. If you have any questions regarding the design specifications for Humes pipes our Technical team is available to assist you with design and pipe performance information. There are also a number of additional manufacturing options that can be used to improve the design life of pipes in extreme environments.

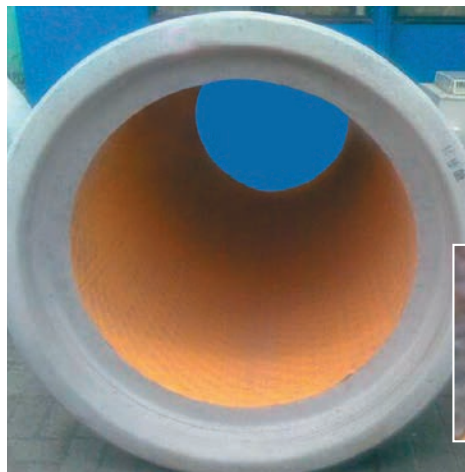
PE Lined Pipe

Use of PE liners in concrete pipes is now a common and economical method of providing an inert lining option as an alternative to a complete PE pipe for aggressive sewer applications. Humes uses VT production process uses a high quality PE liner that provides the most robust lining material option available as well as being the easiest of the lining options to weld. Note that PE lining is not available for spun concrete pipe.

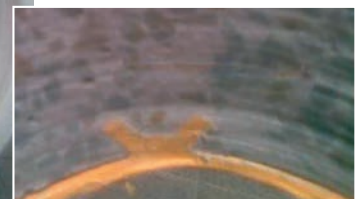
Sacrificial Cover Pipe

Humes can make VT pipes and spun pipes with extra cover from standard or Duracem concrete. This means that in addition to the standard cover of 10mm required by AS/NZS

4058:2007 pipes can be manufactured with a cover of up to 35mm. This extra cover provides additional design life. Humes Technical team is available to discuss, design and model a solution that satisfies your specific requirements.



Humes concrete pipe lined with Agru PE liner



Patented Agru anchor system embedded in concrete

Concrete Additives for Aggressive Environments

DuraTitan™ Pipes can be made from supplementary cementitious materials (SCMs) such as Microsilica and Duracem concretes. Combined SCMs and extra cover are available for extreme conditions. It is also possible to utilise a range of additional concrete additives that will provide further protection and design life for special and aggressive environments. Humes Technical team is available to discuss, design and model a solution that satisfies your specific requirements.

Titan Concrete Pipe

The Swiftlift™ Pipe Laying System

The Swiftlift™ pipelaying system has been designed to reduce the costs in transporting and laying concrete pipes. Swiftlift™ foot anchors are cast into Humes pipes during the manufacturing process so that a “Universal Laying Chain Set” developed by Reid’s Engineering, can lift, position and/or lay the pipe with the assistance of a crane or digger. For further information on lifting, refer to the Humes pipe handling guide.

Dimensions

All dimensions specified are expressed in mm (millimetres) unless stated otherwise.

Concrete Density

A density of 2500kg/m³ has been used in all calculations.

Pipe Dimensions

For each nominal diameter size the actual internal diameter of Spun Pipe varies with Load Class whereas nominal and actual diameters are always the same for VT pipe for all Load Classes. Check with your nearest Humes Sales Centre for pipes most common in your area.

Laying Standard

Concrete pipes laid in accordance with AS/NZS 3725:2007 will deliver a service life of 100 years. Any deviation to AS/NZS 3725:2007 may compromise the service life of the concrete pipes.

Joint Lubrication

Joints should be lubricated with a non-petroleum based lubricant such as Easy Slip, when using skid rings. No lubrication is required for Lamell or Rolling (“O” or “D”) rubber rings. Only Skid rings should be lubricated with a non-petroleum based lubricant such as Easy Slip.

Concrete Pipe Selector

To assist in selecting the correct pipe for your application, the Concrete Pipe Association of Australasia (CPAA) has developed software that makes pipe selection a breeze. The software can be downloaded for free from the CPAA website <https://www.cpaa.asn.au/> or it can be obtained in CD ROM format from your local Humes representative.



For further technical details or advice freephone
0800 502 112 or visit www.humes.co.nz

Buyers and users of the products described in this brochure must make their own assessment of the suitability and appropriateness of the products for their particular use and the conditions in which they will be used. All queries regarding product suitability, purpose or installation should be directed to the nearest Humes Sales Centre for service and assistance. Fletcher Concrete and Infrastructure Limited 2010. Printed 03/10.

