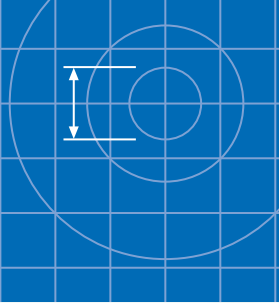


TITAN Concrete Pipes



High performance durable concrete pipes

As market leaders for more than 80 years, Humes Pipeline Systems offers a wide range of innovative and highly durable steel reinforced concrete pipes.

Features

- Durable
- Proven Performance
- Strength
- Easy Installation
- Economical

Applications

- Stormwater Systems
- Sewerage Systems
- Irrigation Systems
- Service Tunnels
- Low Pressure Hydro Conduits
- Pressure Pipes



Titan[®] Pipe

The Humes Titan[®] Pipe is an industry benchmark pipe, made to AS/NZS 4058:2007 under tightly controlled ISO 9002 certified quality management system.

Durability is achieved as a result of low water to cement ratio concrete (less than 0.4 for spun pipe) and high compaction standards.

Titan[®] pipe is available in all existing concrete pipe sizes. All Titan[®] pipe (both RCP and spun production process) is suitable for sewer, stormwater, pressure watermain, pump chambers, columns and pile casing applications. Proven rubber ring jointing systems are available for most pipes.

Pipe Class

Concrete pipes are divided into different classes according to strength of the pipe. New class nominations will be soon introduced, see table below for details. These classes are identified using coloured plastic markers and stencilling.

Class and colour coding of pipes

| Class | Description | Marker colour | Proposed new class |
|-------|-----------------------------|---------------|---------------------------------------|
| LDU* | Unreinforced | No marker | - |
| X | Standard reinforced | Yellow | 2 |
| Y | Extra strength reinforced | Blue | 3 |
| Z | Special strength reinforced | Red | 4 |
| Z+ | Special strength reinforced | Red | Either 6 or 8 or 10 depending on load |

*Light duty unreinforced

Pipes for Aggressive Environments

Humes Titan[®] Pipes have been meeting performance demands in sewer, marine and other aggressive applications for over 80 years.

DuraTitan[™] pipes can be made with extra cover which provides the specifier with insurance against concrete attack by increasing the cover to steel from 10mm up to 35mm typically.

DuraTitan[™] Pipes can be made from supplementary cementitious materials (SCMs) such as Silica Fume and Duracem concrete.

Combined SCMs and extra cover are available for extreme conditions.

To ensure you are getting the most appropriate pipe for your unique conditions, Humes Engineers can model and design a solution that satisfies your specific requirements.

See separate "Concrete Pipe for Aggressive Environments" brochure for more details.

Jacking/Thrusting Pipes

Humes manufactures jacking and thrusting pipes in a variety of diameters and lengths.

Maximum jacking force, total external loads, maximum allowable deflection and aggressive agents all need to be considered when specifying Jacking Pipes.

See separate Humes Jacking/Thrusting brochure for more details.

Humes can offer technical assistance where required.

Titan[®] RCP

The Humes Titan[®] Roller Compacted Pipe (RCP) is manufactured using a different process to that of regular spun pipe. Manufactured under the same stringent standards as other Titan[®] pipes, the RCP is cast vertically using low water/cement ratio concrete and high compaction methods. Compaction is achieved using a well proven computer controlled, counter rotating rollerhead and trowel (the Bi Directional process or Bi Di)

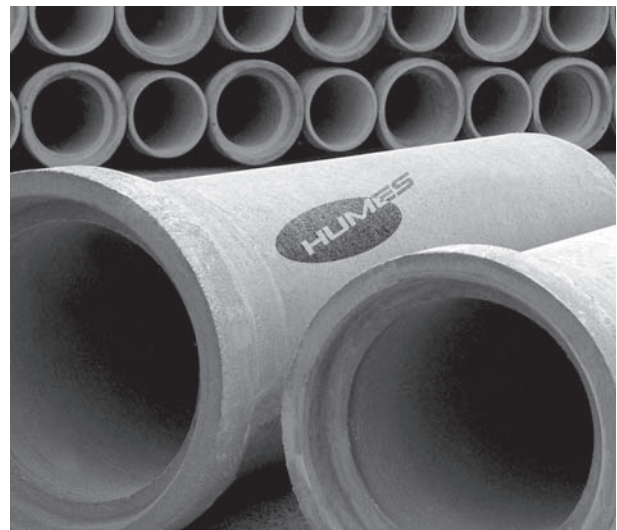
The RCP has the new "D" ring jointing system that provides secure and positive jointing. With superior joint tolerances, easy installation and water tightness is assured.

Humes now has a built in facility that gives us the ability to hydrostatically check every pipe as part of our stringent quality assurance system.

RCP pipe is only available in the North Island.

Advantages of the RCP product are:

- Durable
- Trouble free jointing
- Improved beam strength
- Superior bore finish
- Improved hydraulic performance
- Excellent compaction





Titan[®] Spun Concrete Rubber Ring Jointed Pipes (RRJ)

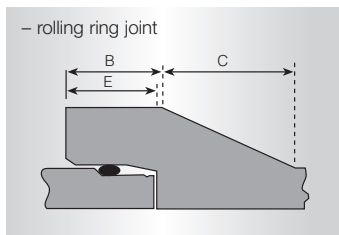
Mass and dimension table for Humes spun concrete pipes

| Nominal diameter | Joint type | Dimensions | | | | | Class X | | | Class Y | | | Class Z | | |
|------------------|------------|------------|-----|-----|-----|------|---------|-----|-----------|---------|-----|-----------|---------|-----|-----------|
| | | A | B | C | E | F | D | T | Mass (kg) | D | T | Mass (kg) | D | T | Mass (kg) |
| Titan 300* | 2 | 464 | 76 | 95 | 87 | 2415 | 305 | 32 | 225 | 305 | 32 | 225 | 305 | 32 | 225 |
| Titan 375* | 2 | 540 | 95 | 95 | 87 | 1805 | 381 | 32 | 213 | 381 | 32 | 213 | 375 | 35 | 230 |
| Titan 375* | 2 | 540 | 95 | 95 | 87 | 2415 | 381 | 32 | 278 | 381 | 32 | 278 | 375 | 35 | 300 |
| Titan 450* | 2 | 641 | 114 | 114 | 105 | 2410 | 457 | 38 | 395 | 457 | 38 | 395 | 451 | 41 | 420 |
| Titan 525* | 2 | 730 | 133 | 133 | 105 | 2410 | 533 | 41 | 513 | 533 | 41 | 513 | 520 | 48 | 583 |
| Titan 600* | 2 | 819 | 133 | 133 | 120 | 2400 | 610 | 44 | 625 | 600 | 49 | 673 | 586 | 56 | 763 |
| Titan 600* | 2 | 845 | 143 | 152 | 130 | 2415 | 610 | 51 | 735 | 610 | 51 | 735 | 600 | 56 | 793 |
| Titan 675 | 1 | 908 | 133 | 133 | 89 | 2425 | 686 | 48 | 755 | 680 | 51 | 795 | 662 | 60 | 910 |
| Titan 750 | 1 | 997 | 143 | 152 | 107 | 2425 | 762 | 51 | 895 | 756 | 54 | 943 | 730 | 67 | 1125 |
| Titan 750 | 2 | 997 | 143 | 152 | 120 | 2440 | 762 | 51 | 895 | 756 | 54 | 943 | 730 | 67 | 1125 |
| Titan 825 | 1 | 1063 | 146 | 143 | 121 | 2440 | 838 | 54 | 1045 | 832 | 57 | 1095 | 806 | 70 | 1298 |
| Titan 900 | 1 | 1197 | 171 | 149 | 137 | 2435 | 914 | 64 | 1363 | 914 | 64 | 1363 | 896 | 73 | 1520 |
| Titan 900 | 2 | 1197 | 171 | 149 | 143 | 2440 | 914 | 64 | 1363 | 914 | 64 | 1363 | 896 | 73 | 1520 |
| Titan 975 | 1 | 1302 | 171 | 149 | 152 | 2440 | 991 | 70 | 1620 | 991 | 70 | 1620 | 973 | 79 | 1790 |
| Titan 1050 | 1 | 1391 | 171 | 149 | 152 | 2445 | 1067 | 76 | 1875 | 1067 | 76 | 1875 | 1047 | 86 | 2078 |
| Titan 1200 | 1 | 1543 | 171 | 149 | 151 | 2435 | 1219 | 76 | 2125 | 1219 | 76 | 2125 | 1187 | 92 | 2495 |
| Titan 1200 | 2 | 1543 | 171 | 149 | 157 | 2440 | 1219 | 76 | 2125 | 1219 | 76 | 2125 | 1187 | 92 | 2495 |
| Titan 1350 | 1 | 1695 | 171 | 149 | 157 | 2430 | 1372 | 76 | 2370 | 1360 | 82 | 2525 | 1332 | 96 | 2900 |
| Titan 1600 | 1 | 1988 | 179 | 203 | 175 | 2440 | 1589 | 82 | 3100 | 1577 | 88 | 3300 | 1537 | 108 | 3875 |
| Titan 1800 | 1 | 2254 | 194 | 292 | 170 | 2430 | 1804 | 101 | 4375 | 1804 | 101 | 4375 | 1767 | 120 | 5025 |
| Titan 1800 | 2 | 2274 | 194 | 292 | 170 | 2430 | 1804 | 101 | 4375 | 1804 | 101 | 4375 | 1767 | 120 | 5025 |

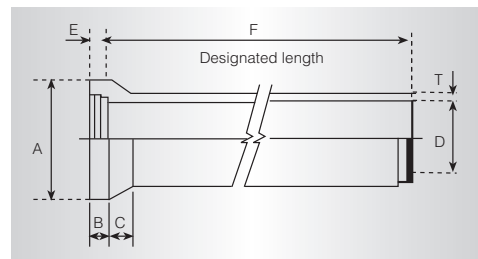
*Generally only available in the South Island.

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

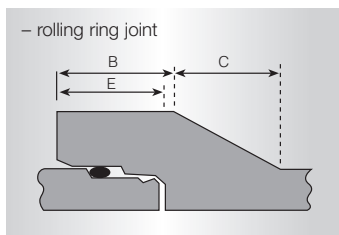
Series 1 joint



Titan rubber ring jointed pipes



Series 2 joint



Note: These rolling rings are designed to roll along the joint surfaces during jointing to form a seal once it is in its final position.

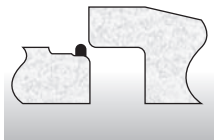
Titan[®] Roller Compacted Pipe (RCP)

generally only available in the North Island

Dimensions

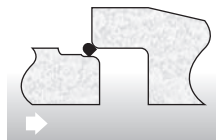
| Nominal diameter | Dimensions (Class X, Y, Z) (mm) | | | | | | | | | | | Mass (kg) |
|------------------|---------------------------------|----|------|-----|-----|----|----|----|-------|-------|-------|-----------|
| | D | T | L | H | S | O | P | SW | E | SE' | SE | |
| 225 | 225 | 35 | 2000 | 95 |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

Joining using a D ring



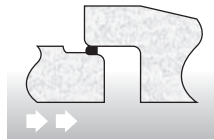
Step 1

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



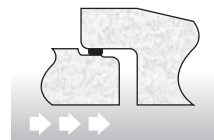
Step 2

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



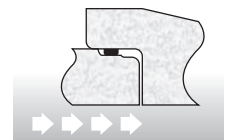
Step 3

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

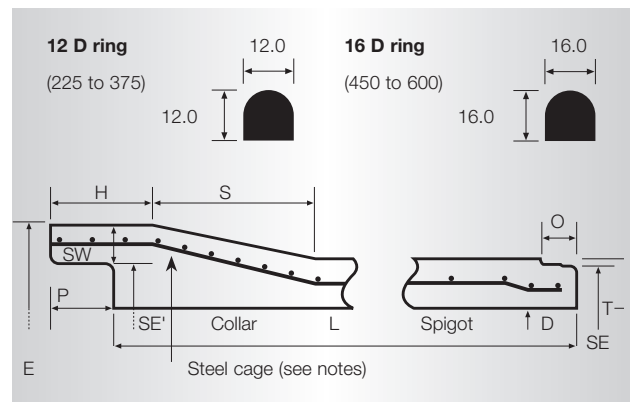
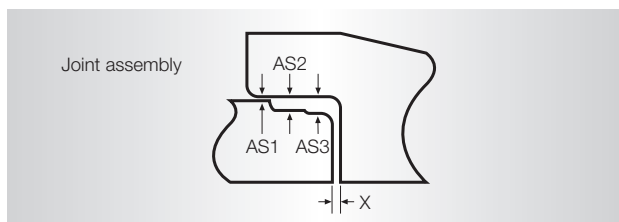
The joint is fully home at a ring rotation of approximately 270°. Between 180° and 270° the joint is stable.

Notes: D rings are ribbed to improve joint stability and to eliminate skidding. Ring hardness of shore 40 degrees minimises jointing forces. The joint design does not rely on the ring to maintain joint compression at all times.

Joint assembly

| Diameter | AS1 | AS2 | AS3 | X(min) | X(max) |
|----------|-----|------|-------|--------|--------|
| 225 | 1.2 | 7.29 | 8.79 | 4 | 8 |
| 300 | 1.2 | 7.29 | 8.79 | 4 | 8 |
| 375 | 1.2 | 7.29 | 8.79 | 4 | 8 |
| 450 | 1.6 | 9.51 | 11.01 | 5 | 10 |
| 525 | 1.6 | 9.51 | 11.01 | 5 | 10 |
| 600 | 1.6 | 9.51 | 11.01 | 5 | 10 |

X = Nominal laying joint gap



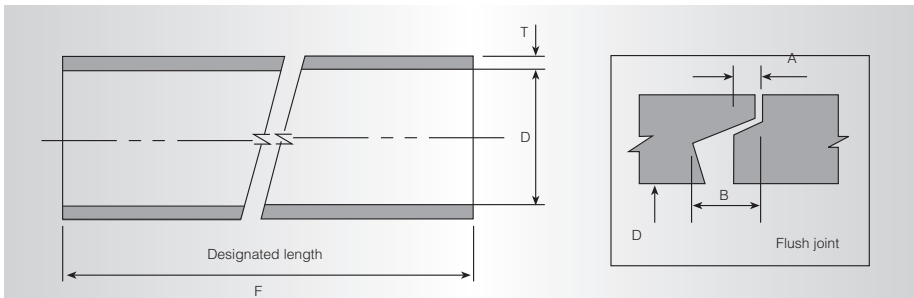
Notes: Mass calculation based on a nominal density of 2500 kg/m³. Rubber ring shore hardness 40 degrees. Steel cage is continuous into the collar. No spacers are used for placement (machine controlled).



Titan[®] Flush Jointed Pipes

Flush Joint (FJ)

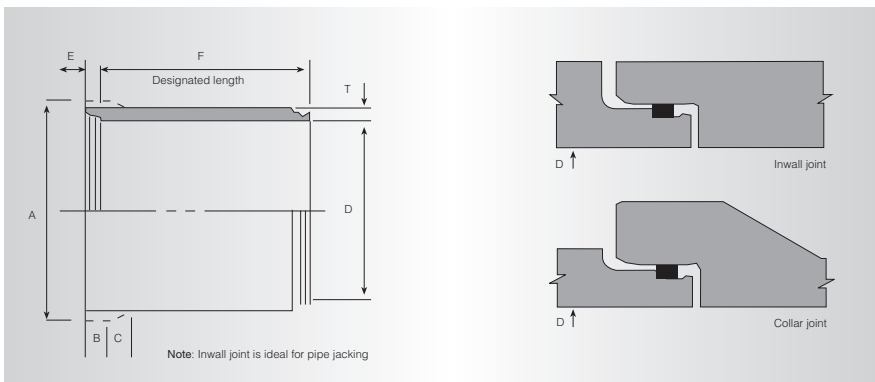
| Nominal diameter | Dimensions | | | Class X | | | Class Y | | | Class Z | | |
|------------------|------------|----|------|---------|-----|-----------|---------|-----|-----------|---------|-----|-----------|
| | A | B | C | D | T | Mass (kg) | D | T | Mass (kg) | D | T | Mass (kg) |
| Titan 600 | 14 | 31 | 2420 | 610 | 44 | 553 | 600 | 49 | 610 | 586 | 56 | 690 |
| Titan 750 | 16 | 34 | 2435 | 762 | 51 | 795 | 756 | 54 | 838 | 730 | 67 | 1023 |
| Titan 900 | 16 | 36 | 2435 | 914 | 57 | 1063 | 900 | 64 | 1183 | 883 | 73 | 1338 |
| Titan 1050 | 21 | 39 | 2440 | 1067 | 64 | 1385 | 1054 | 70 | 1508 | 1026 | 84 | 1788 |
| Titan 1200 | 24 | 44 | 2435 | 1219 | 70 | 1730 | 1207 | 76 | 1868 | 1179 | 90 | 2188 |
| Titan 1350 | 24 | 44 | 2440 | 1372 | 76 | 2100 | 1358 | 83 | 2300 | 1332 | 96 | 2625 |
| Titan 1500 | 24 | 44 | 2445 | 1524 | 76 | 2325 | 1504 | 86 | 2625 | 1468 | 104 | 3150 |
| Titan 1650 | 25 | 45 | 2435 | 1676 | 83 | 2800 | 1656 | 93 | 3125 | 1620 | 111 | 3700 |
| Titan 1800 | 27 | 48 | 2435 | 1828 | 89 | 3275 | 1808 | 99 | 3625 | 1772 | 117 | 4250 |
| Titan 1950 | 32 | 59 | 2415 | 2032 | 102 | 4175 | 2016 | 110 | 4500 | 1956 | 140 | 5625 |
| Titan 2300 | 43 | 76 | 2415 | 2312 | 127 | 5950 | 2286 | 140 | 6525 | 2286 | 140 | 6525 |



Note: You can seal a flush joint using either external bands or mortar.

Titan[®] Skid Ring Jointed Pipes (SRJ)

| Nominal diameter | Dimensions | | | | | Class X | | | Class Y | | | Class Z | | | Joint type |
|------------------|------------|-----|-----|-----|------|---------|-----|-----------|---------|-----|-----------|---------|-----|-----------|--------------|
| | A | B | C | E | F | D | T | Mass (kg) | D | T | Mass (kg) | D | T | Mass (kg) | |
| Titan 1950 | - | - | - | 144 | 2440 | 1981 | 140 | 5700 | 1981 | 140 | 5700 | 1981 | 140 | 5700 | in wall |
| Titan 2100 | 2553 | 191 | 165 | 144 | 2440 | 2110 | 126 | 5900 | 2082 | 140 | 6475 | 2082 | 140 | 6475 | collar joint |
| Titan 2550 | - | - | - | 144 | 2430 | 2552 | 165 | 8600 | 2552 | 165 | 8600 | 2552 | 165 | 8600 | in wall |
| Titan 3060 | - | - | - | 183 | 2390 | 3060 | 175 | 10625 | - | - | - | - | - | - | in wall |



Note: These rubber rings are designed to stay in place allowing the socket to skid over the ring, compressing it to seal the joint.



The Swiftlift™ pipelaying 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 Laying Guide.

Dimensions

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

Concrete density

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



Masses

All masses are based on theoretical internal diameters and are based on full pipe lengths. Concrete densities vary at different manufacturing plants due to the aggregate source. Therefore where exact weights are critical it would pay to check with your factory.

Special pipes

Humes manufacture custom made pipes for almost any application. If you require design assistance, a qualified Humes Engineer can assist you.

Pipe dimensions

Dimensions can vary depending upon variations in pipe moulds at different manufacturing plants. Check with your nearest Humes Sales Centre for pipes most common in your area.

Manufacturing standard

All pipes specified are manufactured to the New Zealand Standard AS/NZS 4058:2007 and AS/NZS 3725:2007.

Joint lubrication

Joints 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 free from the CPAA site www.concpipe.asn.au or it can be obtained in CD ROM format from your local Humes representative.

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 2006. Printed 06/06.

