Superlit® GRP Coupling Technology

Technical Guide W5.13

For over 50 years Superlit® have successfully serviced the Water and Waste industry, their superior coupling technology has been an integral part of their success.

Applications

- Filament wound pipes
- Centrifugal cast pipes
- Jacking pipes
- Standard seal or "Lock Joint" restraint options

Product Attributes

- Standard seal or full restraint
- EPDM rubber
- One coupler fits both FW & CC pipes
- Flush couplers standard with Jacking Pipe

Approvals/Standards

- ISO10639, ASTM 4161, EN 1796

Quality

- ISO 9001:2008 Quality Management Standard

We are the supply partner of choice for New Zealand's civil construction industry, specialising in water and infrastructure based solutions.

Standard Superlit couplers are a full faced EPDM/GRP coupling providing 100% tightness and high performance, that's easy and fast to install.

Superlit manufacture their couplers to be stronger than the corresponding pipework by moulding GRP around the gasket and eliminating the need for machine made grooves. Because of this design, pressure testing every joint individually is not a requirement of Superlit Pipelines.

Standard Coupler

FIG. 1 Coupler

SUPERLIT GRP pipe couplers are developed for GRP pipes in compliance with international standards, and are being used in transport of irrigation water, potable water, wastewater by gravity or pressure, and hydro power applications.

Specially designed internal surface of EPDM provides tightness under high pressures, guaranteeing safer joining tightness and leak proofing.

SUPERLIT GRP pipes produced by centrifugal casting and continuous filament winding systems have the same external diameters, allowing the same GRP couplings to be used on the pipes produced by both methods.

Product Attributes

- Homogeneous unit, no risk of ring failure on installation
- Eliminates the need for individually pressure testing every joint
- Quality EPDM Rubber
- Quick, simple, reliable installation

TABLE 1

Pipe Dia	**Couplings Width**	**Couplings Diameter - Dc** (mm)					
DN (mm)	**L** (mm)	**PN (1-10)**	**PN 12**	**PN 16**	**PN 20**	**PN 25**	**PN 32**
250	220	305	305	305	307	308	310
300	220	356	356	356	357	359	361
350	220	408	408	408	409	411	413
400	242	460	460	462	464	465	467
450	242	509	509	511	512	514	515
500	242	564	566	567	569	572	575
600	242	668	670	671	674	679	684
700	260	757	758	760	763	769	775
800	260	859	862	864	367	873	880
900	260	963	964	967	971	977	985
1000	260	1067	1068	1071	1075	1081	1089
1100	260	1169	1170	1174	1179	1185	1194
1200	260	1271	1274	1276	1282	1290	1297
1300	260	1375	1378	1381	1387	1394	1403
1400	275	1479	1481	1483	1490	1498	1507
1500	275	1582	1585	1587	1593	1602	1611
1600	275	1686	1689	1691	1697	1705	1715
1700	275	1788	1791	1794	1801	1809	1820
1800	275	1893	1895	1898	1907	1915	1925
1900	275	1995	1997	2002	2010	2018	2029
2000	275	2098	2101	2106	2114	2122	2133
2100	275	2199	2203	2208	2216	2224	2235
2200	275	2302	2307	2312	2320	2328	2338
2300	275	2405	2410	2415	2423	2431	2442
2400	275	2508	2513	2518	2526	2534	2545
2500	330	2605	2609	2613	2619	2627	2635
2600	330	2707	2712	2715	2722	2730	2738
2700	330	2811	2815	2819	2825	2833	2841
2800	330	2914	2919	2922	2929	2937	2945
2900	330	3018	3022	3026	3032	3040	3048
3000	330	3121	3126	3129	3136	3144	3152
3100	330	3230	3235	3238	3245	3253	3261
3200	330	3329	3334	3337	3344	3352	3360
3300	330	3433	3438	3441	3448	3456	3463
3400	330	3536	3541	3544	3551	3559	3567

Note: *All measurements are in mm. External pipe diameters are approximate.*

Coupling Angular Displacement

SUPERLIT GRP couplings can accommodate an angular deflection of 0.5° to 3° depending on pipe diameter and pressure. This angular deflection means that for long radius bends, it may be possible to eliminate, or at least reduces the number of elbows. Pipe should be connected in line and then correction for the desired angular displacement should be made (see figure Angular Joint Deflection).

SUPERLIT couplings are tested in accordance with ASTM D 4161 and EN 1796. The maximum angular displacement, measured as the angle between the centre lines of the pipes to be joined, should not exceed the values given on Table 2.

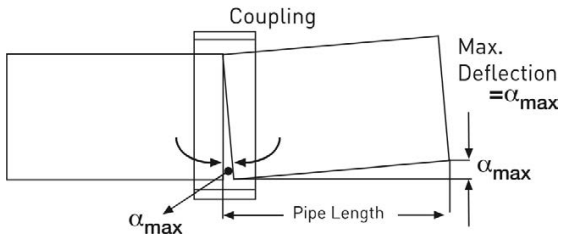

FIG. 2 Angular Joint Deflection

TABLE 2 Angular Deflection in SUPERLIT sleeve connection

DN (mm)	**Angular Deflection (Degree)**
DN ≤ 500	3.0
500 < DN ≤ 90	2.0
900 < DN ≤ 1800	1.0
1800 < DN	0.5

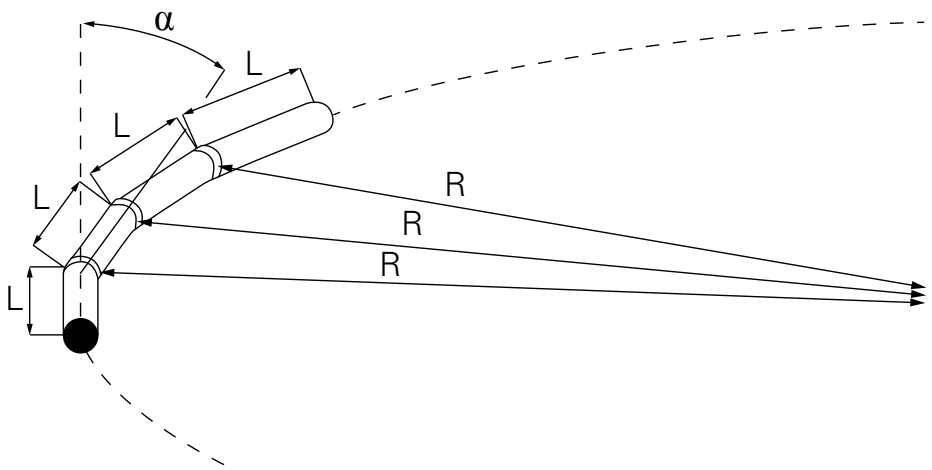

FIG. 3 Angular deflection of couplings and curve radius calculation

TABLE 3

Pipe Length L (m)		**3**	**4**	**6**	**8**	**10**	**12**
DN (mm)	**Deflection angle**	**R** (m)	**R** (m)	**R** (m)	**R** (m)	**R** (m)	**R** (m)
300 - 500	3°	57,30	76,40	114,60	152,81	191,01	229,21
600 - 900	2°	85,95	114,60	171,90	229,19	286,49	343,79
1000 - 1800	1°	171,89	229,19	343,78	458,37	572,97	687,56
1900 - 3400	0,5°	343,78	458,37	687,55	916,74	1145,92	1375,10

Note: *Curve radius (R) can be calculated by the equation (L/2)/R=Sin (α/2)for different angular deflection values at different pipe lengths.*

Lock Joint

Used with Superlit Bi-axial Pipe, the lock joint system is a GRP sleeve with a permanently fitted full width EPDM gasket & locking key.

TABLE 4

Nominal Dia	Biaxial Pipe	Locked Joint Coupling		Laminated Biaxial Pipe		Coupling Gasket (EPDM)			Locking Key (Delrin)	
	Outside Dia	Inside Dia	Width	Outside Dia	Width	Width	Length	Gasket Type	Width x Height	Lengtih
	ODp	IDc	Wc	ODlam	Wlam	Wg	Lg		a x b	Lky
300	324.0	335.5	400	334.0	121.0	211	1040	Type-2	20 x 12	1080
350	376.4	387.5	400	386.0	121.0	211	1200	Type-2	20 x 12	1240
400	427.3	440.0	400	438.0	121.0	211	1360	Type-2	20 x 12	1400
450	475.8	488.0	400	486.0	121.0	211	1515	Type-2	20 x 12	1550
500	530.3	543.0	400	541.0	121.0	211	1685	Type-2	20 x 12	1730
600	633.0	645.0	400	643.0	121.0	211	2010	Type-2	20 x 12	2050
700	718.5	731.0	400	729.0	121.0	211	2275	Type-2	20 x 12	2320
800	820.5	833.0	400	831.0	121.0	211	1595	Type-2	20 x 12	2640
900	924.0	936.5	400	934.0	121.0	211	2920	Type-3	20 x 12	2960
1000	1026.5	1038.5	400	1036.0	121.0	211	3230	Type-3	20 x 12	3280
1100	1125.5	1137.5	400	1135.0	121.0	211	3555	Type-3	20 x 12	3590
1200	1229.0	1241.5	400	1239.0	121.0	211	3875	Type-3	20 x 12	3920
1300	1331.5	1343.5	400	1341.0	121.0	211	4190	Type-3	20 x 12	4240
1400	1433.5	1445.5	400	1443.0	121.0	211	4515	Type-3	20 x 12	4560

Note: *The SUPERLIT biaxial pipe and locked joint system is a FW Coupling (FWC) consisting of a GRP sleeve with a permanently fitted, full width EPDM gasket and delrin locking key. The pipe is designed as a biaxial according to the project requirements.*
All values derive from calcultaions and may therefore slightly vary from the finished product due to manufacturing tolerances.
The manufacturer SUPERLIT has rights to change the technical data without notice.

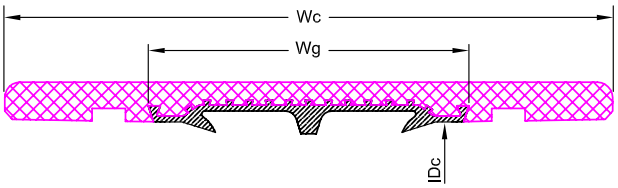

FIG. 4 Lock Joint Coupling

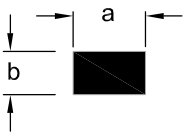

FIG. 6 Locking Key

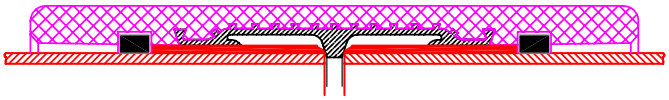

FIG. 5 Lock Joint Connection Detail

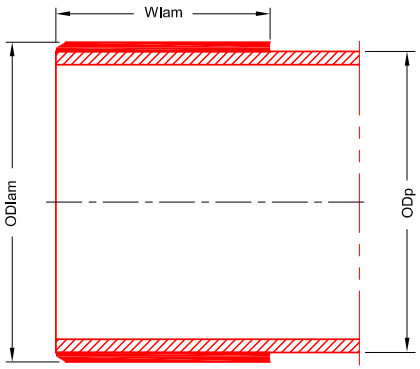

FIG. 7 Biaxial Pipe