



RPC Pipe Systems Pty Ltd

PRODUCT APPRAISAL REPORT No PA 1322 Issue 5

FLOWTITE™ Filament Wound Glass Reinforced Plastics (GRP)
Jacking Pipes for Sewer Applications

ISO 25780:2011 – Plastic piping systems for pressure and non-pressure water supply, irrigation, drainage or sewer - Glass-reinforced thermosetting plastics (GRP) systems based on unsaturated polyester (UP) resin – Pipe with flexible joints intended to be installed using jacking techniques

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Carl Radford, Product Appraisal Manager	WSAA	21 December 2021

Overview of WSAA

The Water Services Association of Australia (WSAA) is the peak industry body representing the urban water industry. Our members provide water and sewerage services to over 20 million customers in Australia and New Zealand and many of Australia's largest industrial and commercial enterprises.

Based around our vision of 'customer driven, enriching life', WSAA facilitates collaboration, knowledge sharing, networking and cooperation within the urban water industry. We are proud of the collegiate attitude of our members which has led to industry-wide approaches to national water issues.

WSAA can demonstrate success in the standardisation of industry performance monitoring and benchmarking, as well as many research outcomes of national significance. The WSAA Executive retains strong links with policy makers and legislative bodies and their influencers, to monitor emerging issues of importance to the urban water industry.

WSAA was formed in 1995 as a non-profit organisation to foster the exchange of information between industry, government and the community, and to promote sustainable water resource management.

The urban water industry is committed to anchoring its services to customers' values, and to enrich communities where water services have broad economic, environmental and social values. In line with this our main activities focus on four areas:

1. influencing national and state policies on the provision of urban water services and sustainable water resource management
2. promoting debate on environmentally sustainable development and management of water resources and the community health requirements of public water supplies
3. improving industry performance and establishing benchmarks and industry leading practices for water service processes; and
4. fostering the exchange of information on education, training, research, water and wastewater management and treatment and other matters of common interest.

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CONTENTS

1 EXECUTIVE SUMMARY	6
1.1 Recommendation	6
2 THE APPLICANT	6
2.1 The Manufacturer and Supplier	6
3 THE PRODUCT	7
3.1 General	7
3.2 Manufacture of FW GRP jacking pipes	7
3.2.1 Reinforcement	8
3.2.2 Resin	8
3.2.3 Aggregate and Fillers	8
3.3 Jointing	8
3.3.1 Type SE Stainless Steel Couplings	8
3.3.2 Type GR Filament Wound Couplings	9
3.3.3 Type SR Stainless Steel Couplings	9
3.3.4 Type FJ Filament Wound Couplings	9
3.4 Allowable Angular Deflection	9
3.5 Fittings	10
4 SCOPE OF THE APPRAISAL	10
5 APPRAISAL CRITERIA	10
5.1 Quality Assurance Requirements	10
5.2 Performance Requirements	10
6 COMPLIANCE WITH APPRAISAL CRITERIA	11
6.1 Compliance with Quality Assurance Requirements	11
6.2 Compliance with Performance Requirements	11
6.2.1 Type tests	11
6.2.2 Temperature and pressure re-rating	11
6.2.3 Resistance to Ultraviolet degradation	11
6.2.4 Coupling materials	11
7 FITTING INSTRUCTIONS, TRAINING AND INSTALLATION	12
8 PRODUCT MARKING	12
9 PACKAGING AND TRANSPORTATION	12
10 PRODUCT WARRANTY	12
11 WATER AGENCY EXPERIENCE WITH THE PRODUCT OR FIELD-TESTING REPORT	12
12 DISCUSSION	13
13 OUTCOMES OF EXPERT PANEL PRODUCT REVIEW	13
14 FUTURE WORKS	13
15 DISCLAIMER	13
15.1 Issue of Report	14
15.2 Limits on Reliance on Information and Recommendations	14
15.2.1 Disclaimer of liability	14
15.2.2 Intellectual Property and other rights	14
15.2.3 Need for independent assessment	14
15.3 No Updating	15
15.4 No Warranty	15
APPENDIX A – PRODUCT LITERATURE	16

APPENDIX B – QUALITY CERTIFICATIONS..... 24
APPENDIX C – SUPPLIER CONTACTS 29

1 EXECUTIVE SUMMARY

RPC Pipe Systems Pty Ltd, located in Lonsdale SA, is the exclusive Australian licensed manufacturer of Flowtite® GRP pipes and fittings for both buried and trenchless applications.

The Flowtite technology is owned by the Amiblu Group, formed in 2017 as a joint venture company incorporating Hobas Europe and Amiantit Europe, both market leaders in the manufacturer of GRP pipes.

This appraisal is for a range of Flowtite Filament Wound Glass Reinforced Plastic (GRP) jacking pipes and associated fittings with flexible non-end-load-bearing elastomeric joints for installation in non-pressure applications using various trenchless techniques including slip lining, micro tunnelling and pipe jacking.

The pipes and fittings are manufactured in conformance with ISO 25780:2011 – *Plastic piping systems for pressure and non-pressure, water supply, irrigation, drainage or sewer - Glass-reinforced thermosetting plastics (GRP) systems based on unsaturated polyester (UP) resin – Pipe with flexible joints intended to be installed using jacking techniques.*

This Issue 5 is a replacement for the previous version of the appraisal which had reached its 5-year expiry date.

The jacking pipes are available in sizes from DN 300 to DN 3000 with a nominal pressure classification of PN1 and stiffness ratings from SN32,000 to SN1,000,000. The pipes can be manufactured to either OD or ID series depending on the requirements of the project.

GRP fittings used with Flowtite GRP jacking pipes are fabricated from sections of straight pipe, cut to length, and joint wrapped externally and internally with additional fibre reinforcement in accordance with ISO 10467 / AS3571.1. GRP fittings are supplied with spigot ends suitable for connection to the jacking pipe using stainless steel or GRP jacking pipe couplings. Transition pieces can also be manufactured to connect the jacking pipe directly to GRP buried pipe without the need for a manhole structure.

RPC Pipe Systems Pty Ltd holds an ISO 9001:2015 Quality Management System Licence.

The Flowtite GRP jacking pipes are covered by ISO Type 5 'S' Mark Product Certification to ISO 25780:2011.

This Appraisal has determined that the Flowtite FW-GRP jacking pipes included in this appraisal report meets the requirements of WSA PS – 206J *Filament Wound Glass Reinforced Plastics (FW-GRP) Pipes for Pressure and Non-Pressure Applications – Water Supply and Sewerage – Installed Using Trenchless Installation Methods* and are therefore considered as 'fit-for-purpose'.

1.1 Recommendation

It is recommended that WSAA members, subject to any specific requirements of the member, accept or authorise the Flowtite GRP jacking pipe and fittings, as detailed in this report, for installation in non-pressure sewerage applications using trenchless techniques, subject to the design, installation and commissioning being in accordance with WSAA Codes and the manufacturer's requirements.

2 THE APPLICANT

The Applicant is RPC Pipe Systems Pty Ltd.

2.1 The Manufacturer and Supplier

RPC Pipe Systems Pty Ltd was established in 2011 to acquire the business and assets of Fibrelogic Pty Ltd. RPC holds the exclusive Australian manufacturing and support licence for Flowtite, the world respected continuous filament wound GRP piping system, technology and brand.

The Flowtite technology is owned by the Amiblu Group, formed in 2017 as a joint venture company incorporating Hobas Europe and Amiantit Europe, both market leaders in the manufacturer of GRP pipes. Flowtite pipe is manufactured worldwide by 22 plants in 16 countries.

RPC's manufacturing facilities, located in Lonsdale, South Australia, utilises two CW 3000 machines for the manufacture of the pipe. The plant also maintains fittings fabrication facilities and a complete working laboratory. The plant has produced in excess of 1,000 km of GRP pipe and 50 km of jacking pipe since its establishment and has supplied mining, power, sewer and water companies throughout Australia.

3 THE PRODUCT

3.1 General

This appraisal is for a range of Flowtite Filament Wound Glass Reinforced Plastic (GRP) jacking pipes and associated fittings with flexible non-end-load-bearing elastomeric joints for installation in non-pressure applications using various trenchless techniques including slip lining, micro tunnelling and pipe jacking.

The jacking pipes are available in sizes from DN 300 to DN 3000 with a pressure classification of PN1 (higher PN ratings can be supplied where required) and stiffness ratings from SN32,000 to SN1,000,000. Note that ISO 25780 nominates that jacking pipes shall have a stiffness of at least SN20,000.

The standard length for Flowtite GRP jacking pipes is 3 m, however shorter lengths can be provided where necessary. The tolerance on length is ± 25 mm.

The pipes can be manufactured to either OD or ID series depending on the requirements of the project. Maximum allowable jacking forces are provided in the literature.

See Appendix A for further details including pipe dimensions and allowable jacking forces.

3.2 Manufacture of FW GRP jacking pipes

RPC can provide GRP jacking pipes to meet the specific needs of many non-pressure applications by varying resin type, resin and glass proportions, orientation and configuration.

The wall of GRP jacking pipes is built with several layers using the Flowtite continuous advancing mandrel process. See Figure 1.

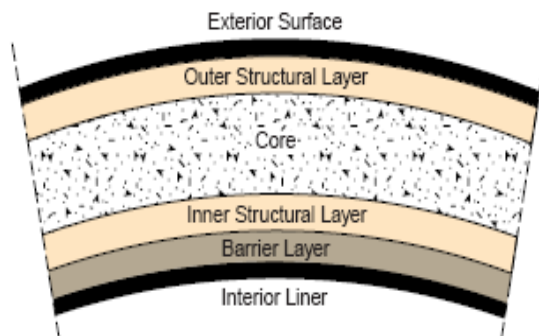


FIGURE 1 FLOWTITE® COMPOSITE MATERIAL

The interior surface layer of the pipe is resin rich and depending on the pipeline application may include glass or polyester veil. The liner is built with resin and chopped glass fibres.

The structural layers are comprised of the inner skin, core and outer skins. The skins contain continuous hoop rovings, resin and chopped glass, while the core contains sand fillers.

The exterior surface layer, or outer layer, is resin rich and depending on the pipeline application may contain glass or polyester veil.

3.2.1 Reinforcement

RPC uses E or ECR-glass to manufacture pipes for water supply and sewerage. ECR-Glass is a requirement for all sewer application whereas E or ECR glass can be used for water applications. RPC has provided technical data sheets for the selected glass reinforcements that are approved by Amiblu for use in Flowtite GRP jacking pipes showing compliance with ISO 2078. Both chopped strand and continuous rovings are used to provide longitudinal and hoop strength.

3.2.2 Resin

RPC manufactures Flowtite GRP jacking pipes using orthophthalic polyester resin EPS 1 supplied by Allnex Industries of Australia to an Amiblu specification. The RPC Purchase Acceptance Standard (PAS) requires that the heat distortion temperature of the cured resin, when tested in accordance with ISO 75-2, should be at least 75°C, which allows a maximum operating temperature of 55°C.

Other resins are available for specialised applications.

3.2.3 Aggregate and Fillers

Sand is used as filler in Flowtite GRP jacking pipes. The RPC Pipe Systems PAS requires that less than 3% of the sand have particles larger than 0.71 mm and no particles be larger than 1 mm. The sand is sourced locally from a deposit in the Adelaide region. The locally sourced sand results in an “almost white” pipe unlike other GRP products common to the Australian water industry.

3.3 Jointing

RPC offers four types of couplings for Flowtite GRP jacking pipes. The standard jacking pipe jointing systems are either Type SE or Type GR.

Plain ended GRP pipes are machined to accommodate the sleeve couplings. For proper sealing of the couplings, a smooth, dimensionally accurate outside spigot surface is needed on each end of the pipe. Flowtite manufacturing equipment chamfers the edge of the pipe to avoid damage to the rubber gaskets, while simultaneously milling the external surface. This equipment rotates the pipe and mills both ends using water-cooled diamond-tipped tools.

Pipes are supplied with the coupling mounted onto one end of the pipe.

3.3.1 Type SE Stainless Steel Couplings

The Type SE joint includes a stainless-steel jacking band with elastomeric seal over the entire width. This coupling is suitable for non-pressure PN1 applications. See Figure 2.



FIGURE 2 TYPE SE STAINLESS STEEL COUPLING

3.3.2 Type GR Filament Wound Couplings

The Type GR joint includes a GRP sleeve. The inner surface of the sleeve fits tightly to the elastomeric wedge seal embedded into a special groove on the pipe spigot. This coupling is suitable for low pressure applications up to PN6. See Figure 3.

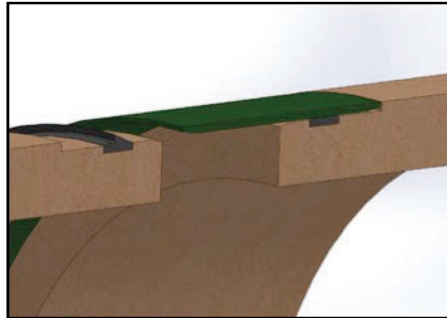


FIGURE 3 TYPE GR FILAMENT WOUND GRP COUPLING

3.3.3 Type SR Stainless Steel Couplings

The Type SR joint includes a stainless-steel sleeve. The inner surface of the sleeve fits tightly to the elastomeric wedge seal embedded into a special groove on the pipe spigot. This coupling is suitable for non-pressure PN1 applications. See Figure 4.

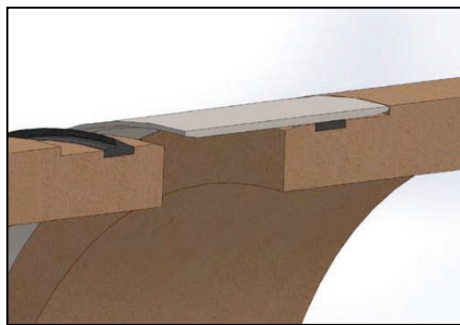


FIGURE 4 TYPE SR STAINLESS STEEL COUPLING

3.3.4 Type FJ Filament Wound Couplings

The Type FJ joint is a pressure coupling for jacking applications. The coupling is the same as used on Flowtite GRP buried pipes and is only used for custom applications. See Figure 5.



FIGURE 5 TYPE FJ FILAMENT WOUND GRP PRESSURE COUPLING

3.4 Allowable Angular Deflection

RPC has confirmed that the maximum allowable angular deflection between adjacent pipes in the installed condition at which the joint is designed to operate, when subjected to either

internal or external pressure, including during pipe jacking operations meet the requirements of ISO 25780 as shown in Table 1.

TABLE 1 MAXIMUM ALLOWABLE INSTALLED DEFLECTION FOR PIPE JOINTS

External Diameter d mm	ISO 25780 Requirements	
	Maximum allowable installed deflection a mm/m	Maximum allowable installed deflection δ degrees
200<d≤500	15	0.8594
500<d≤1000	10	0.5729
1000<d	a=10 x 1000/d	Derive from value a

3.5 Fittings

GRP fittings for use with Flowtite GRP jacking pipes are fabricated from sections of straight pipe, cut to length, and joint wrapped externally and internally with additional fibre reinforcement in accordance with ISO 10467 / AS3571.1. GRP fittings are supplied with spigot ends suitable for connection to the jacking pipe using stainless steel or GRP jacking pipe couplings. Transition pieces can also be manufactured to connect the jacking pipe directly to GRP buried pipe without the need for a manhole structure. Flanges can also be incorporated into the fittings.

The standard range of fittings includes couplings, bends, tees, reducers, end caps, manhole coupling connectors with or without puddle flanges, transition pieces and other specials.

4 SCOPE OF THE APPRAISAL

The scope of this product appraisal applies to Flowtite Filament Wound Glass Reinforced Plastic (GRP) jacking pipes and associated fittings with flexible non-end-load-bearing elastomeric joints for installation in non-pressure applications using various trenchless techniques including slip lining, micro tunnelling and pipe jacking.

5 APPRAISAL CRITERIA

5.1 Quality Assurance Requirements

The WSAA Product Appraisal Technical Advisory Group accepts GRP Filament Wound Jacking Pipes manufactured in compliance with ISO 25780:2011 - *Plastics piping systems for pressure and non-pressure, water supply, irrigation, drainage or sewerage - Glass-reinforced thermosetting plastics (GRP) systems based on unsaturated polyester (UP) resin – Pipes with flexible joints intended to be installed using jacking techniques* and duly certified by means of an ISO Type 5 product certification scheme undertaken by a JAS-ANZ accredited Conformity Assessment Body (CAB) or by an international accreditation system recognised by JAS-ANZ.

The manufacturer is generally expected to have a production management and control system that has been duly accredited in accordance with AS/NZS ISO 9001 as a prerequisite to undergoing a product certification audit.

The ISO Type 5 Product Certification Scheme shall meet the criteria described in WSA TN-08.

5.2 Performance Requirements

Flowtite GRP jacking pipe has successfully been appraised for compliance with the requirements of ISO 25780:2011 – *Plastic piping systems for pressure and non-pressure*

drainage and sewerage - Glass-reinforced thermosetting plastics (GRP) systems based on unsaturated polyester (UP) resin Pipes with flexible joints intended to be installed using jacking techniques.

The following Product Specification is relevant to this application:

WSA PS – 206J Filament Wound Glass Reinforced Plastics (FW-GRP) Pipes for Pressure and Non-Pressure Applications – Water Supply and Sewerage – Installed Using Trenchless Installation Methods.

A copy of the Product Specification is available at the following link:

<https://www.wsaa.asn.au/shop/product/35716>.

6 COMPLIANCE WITH APPRAISAL CRITERIA

6.1 Compliance with Quality Assurance Requirements

RPC Pipe Systems has submitted the following quality certificates:

- ISO 9001:2015 Certificate of Registration No. AU003458-1 issued to RPC Pipe Systems Pty Ltd by Bureau Veritas.
- ISO 25780:2011 ISO Type 5 'S' Mark Product Certification No. 2790 issued to RPC Pipe Systems Pty Ltd by Bureau Veritas.

Copies of the Quality Assurance and Product Certification licences have been included in Appendix B and are also available from WSAA.

6.2 Compliance with Performance Requirements

6.2.1 Type tests

Type test reports were originally provided for Issue 1 of this Appraisal to demonstrate compliance with the performance requirements of ISO 25780:2011 and are not required to be repeated unless there is a design change to the product. The tests completed included long-term specific creep stiffness, resistance to strain corrosion, resistance to internal pressure, joint performance, longitudinal compressive strength, permissible jacking forces, ultimate longitudinal load, specific initial longitudinal compressive modulus and abrasion resistance. Where required, specific test results are available on a commercial-in-confidence basis from RPC.

6.2.2 Temperature and pressure re-rating

Temperature and pressure re-rating is described in the Flowtite GRP Pipe and Fittings Engineering Design and Installation Guide and nominates 35°C and below as requiring no pressure re-rating. Re-rating is required for temperatures 36°C to 50°C and further re-rating for temperatures 51°C to 70°C.

6.2.3 Resistance to Ultraviolet degradation

Flowtite technical data states that there is no evidence to suggest that ultraviolet degradation is a factor that affects the long-term service life of Flowtite pipes. The exposed outermost surface will be affected by discoloration and in the longer-term glass fibres will be exposed. If desired, the external surface of the Flowtite pipe may be painted with two-part urethane paint compatible with GRP, however it should be recognised that requiring ongoing maintenance will be required.

6.2.4 Coupling materials

The Grade 316 stainless steel couplings are manufactured by RITEC GmbH & Co, Bakum, Germany, the major European supplier of stainless-steel jacking pipe couplings. A material test report has been submitted by RPC to demonstrate compliance.

The elastomeric seals are manufactured by M.D.S. Meyer GmbH from EPDM 60 IRHD complying with EN 681-1. A material test report undertaken by MPA NRW has been submitted to demonstrate compliance.

7 FITTING INSTRUCTIONS, TRAINING AND INSTALLATION

The Flowtite Installation Guide for Buried Pipes, available from RPC, provides information on GRP repair procedures and methods.

The Australasian Society Trenchless Technology has developed Trenchless Guidelines, Standards and Specifications to assist industry users in Australia and New Zealand in utilising these technologies. These documents are not intended to replace any existing relevant manuals or standards. It remains the user's responsibility to ensure that all relevant laws, standards and specifications are adhered to during the course of a Works with use of these trenchless technologies.

These Guidelines, Standards and Technical specifications are available from the Australasian Society Trenchless Technology (ASTT) website at <http://astt.com.au>

8 PRODUCT MARKING

Flowtite pipes are labelled in accordance with ISO 25780: 2011 and includes:

- Number of the standard: ISO 25780
- External diameter
- Stiffness rating, (SN)
- Pressure rating, (PN)
- Permissible jacking load
- The code letter "C" for sewage
- The manufacturers name or identification
- The date of manufacture in text or code

9 PACKAGING AND TRANSPORTATION

Flowtite FRP jacking pipes are transported to pipes in timber cradles and should be stored in their packs until required. Pipes should not be rolled, dropped, thrown or allowed to come into contact with sharp objects that are likely to cause damage. Handling requires the use of soft slings; steel chains should not be used.

The Flowtite Installation Guide for Buried Pipes, available from RPC, has a section titled 'Shipping Handling and Storage' which provides comprehensive information and instructions complete with diagrams referencing Inspecting Pipe, Repairing Pipe, Transporting Pipe, Unloading and Handling Pipe, Site Pipe Storage, Handling Nested Pipes and Storing Gaskets and Lubricant.

10 PRODUCT WARRANTY

The products are covered by the normal commercial and legal requirements of the *Competition and Consumer Act 2010 (Cth)*, which covers manufacture to the relevant standard, and details of RPC's warranty is included in their terms and conditions of sale.

11 WATER AGENCY EXPERIENCE WITH THE PRODUCT OR FIELD-TESTING REPORT

A successful field test report was provided by South East Water for an installation completed in 2014. A copy of the report is available from WSAA. Flowtite FRP jacking pipe has been authorised and utilised by many Australian water agencies.

12 DISCUSSION

The RPC Pipe Systems Lonsdale plant was the 13th in a series of standard 'turn-key' manufacturing plants that have been successfully constructed and commissioned throughout the world. There are now 22 plants constructed around the world. There is reasonable justification for being confident that the Lonsdale plant is capable of producing non-pressure jacking pipes and fittings to meet ISO standards in sizes suitable for the Australian and New Zealand water industries.

As a licensed Australian manufacturer of an international product, RPC Pipe Systems has been able to present considerable information on Flowtite GRP pipe and fittings to demonstrate a mature, widely used, tested and proven product range. The technical data presented, available on the Flowtite web site and included throughout this report is extensive. The rapid responses to all technical and other questions raised, demonstrates a willingness to cooperate and a ready availability of expertise from RPC and Flowtite.

Amiblu provides technical expertise from Flowtite Technology AS located in Sandefjord, Norway and they were responsible for commissioning the Lonsdale plant and providing RPC with technical support and oversight of the Australian Flowtite pipe and fittings production. Flowtite Technology AS will also be responsible for verification testing of the Lonsdale pipe to meet Amiblu and ISO Standard requirements, particularly the long-term hydrostatic pressure tests and resistance to strain corrosion.

The RPC Pipe Systems manufacturing plant for Flowtite pipe has been equipped with a complete QC laboratory and automatic hydrostatic testing machines for all diameter pipes and associated couplings. Every pipe and coupling will be tested during manufacture and all test results logged and recorded. More detailed information is available in the AFIL catalogues available from RPC.

13 OUTCOMES OF EXPERT PANEL PRODUCT REVIEW

No issues are outstanding.

14 FUTURE WORKS

There are no future work items.

15 DISCLAIMER

This Product Appraisal Report (Report) is issued by the Water Services Association of Australia Limited on the understanding that:

This Report applies to the product(s) as submitted. Any changes to the product(s) either minor or major shall void this Report.

To maintain the recommendations of this Report any such changes shall be detailed and notified to the Product Appraisal Manager for consideration and review of the Report and appropriate action. Appraisals and their recommendations will be the subject of continuous review dependent upon the satisfactory performance of products.

WSAA reserves the right to undertake random audits of product manufacture and installation. Where products fail to maintain appraised performance requirements the appraisal and its recommendations may be modified and reissued. Appraisal reports will be reviewed and reissued at regular intervals not exceeding five (5) years.

The following information explains a number of very important limits on your ability to rely on the information in this Report. Please read it carefully and take it into account when considering the contents of this Report.

Any enquiries regarding this report should be directed to the Program Manager, Carl Radford, Phone: 03 8605 7601 email carl.radford@wsaa.asn.au.

15.1 Issue of Report

This Report has been published and/or prepared by the Water Services Association of Australia Limited and nominated Project Manager and peer group of technical specialists (the Publishers).

The Report has been prepared for use within Australia only by technical specialists that have expertise in the function of products such as those appraised in the Report (the Recipients).

By accepting this Report, the Recipient acknowledges and represents to the Publisher(s) and each person involved in the preparation of the Report that the Recipient has understood and accepted the terms of this Disclaimer.

15.2 Limits on Reliance on Information and Recommendations

15.2.1 Disclaimer of liability

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This Report does not contain all information that a person might require for the purposes of assessing any product discussed or appraised within it (Product). The product appraisal criteria used in preparing this Report may not address all relevant aspects of the Product.

Recipients should seek independent evidence of any matter which is material to their decisions in connection with an assessment of the Product and consult their own advisers for any technical information required. Any decision to use the Product should take into account the reliability of that independent evidence obtained by the Recipient regarding the Product.

Recipients should also independently verify and assess the appropriateness of any recommendation in the Report, especially given that any recommendation will not take into account a Recipient's particular needs or circumstances.

WSAA has not evaluated the extent of the product liability and professional indemnify insurance that the provider of the product maintains. Recipients should ensure that they evaluate the allocation of liability for product defects and any professional advice obtained in relation to the product or its specification including the requirements for product liability and professional indemnity insurance.

15.3 No Updating

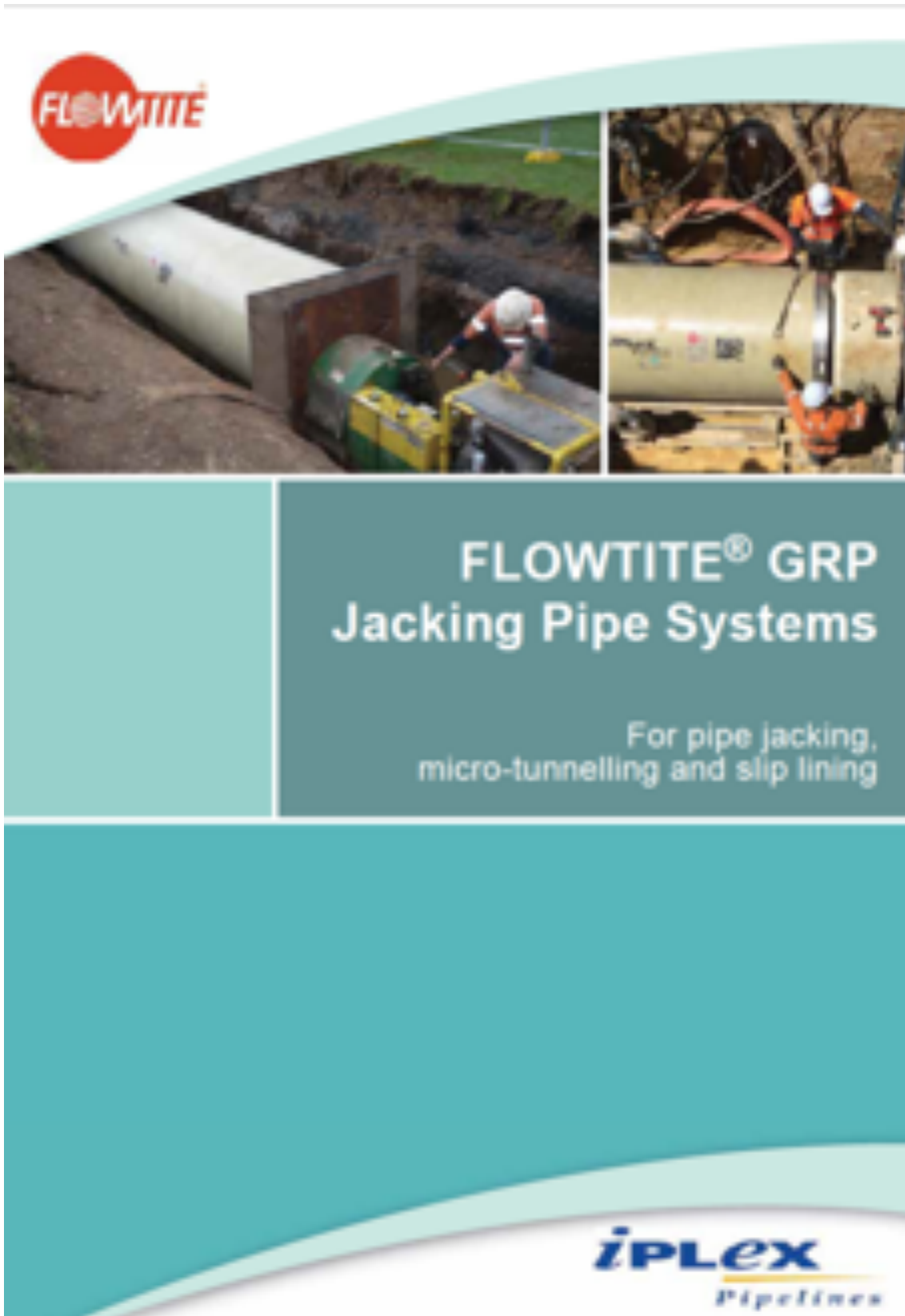
Neither the Publisher(s) nor any person involved in the preparation of this Report [has] [have] any obligation to notify you of any change in the information contained in this Report or of any new information concerning the Publisher(s) or the Product or any other matter.

15.4 No Warranty

The Publisher(s) do[es] not, in any way, warrant that steps have been taken to verify or audit the accuracy or completeness of the information in this Report, or the accuracy, completeness or reasonableness of any recommendation in this Report.

APPENDIX A – PRODUCT LITERATURE

A copy of the following manual is available from Iplex Pipelines Australia Pty Ltd by emailing productsupport@iplexpipelines.com.au



TECHNICAL INFORMATION

FLOWTITE® GRP JACKING PIPES (OD SERIES)



TYPE SE JOINT - NON-PRESSURE

Table with columns for Nominal Diameter (DN), Stiffness Class (32,000, 40,000, 50,000, 64,000, 80,000, 100,000), Outside Diameter (d_{od}), Permissible Jacking Force (F_{perm}), and Mass per Meter (Mass/m).

This table shows jacking pipe dimensions and maximum allowable jacking force F_{perm} (kN) for various stiffness classes with closed connection contact.

ABBREVIATIONS

- DN = Nominal diameter
d_{od} = outside diameter (mm)
d_i = internal diameter (mm)
F_{perm} = permissible jacking force (kN)
SN = nominal stiffness (N/m/m)



The Type SE joint includes a stainless steel jacking band with a vulcanised elastomeric seal over the entire width.

The Type SE joint is applicable for non-pressure PNI applications.

The information contained in this document should serve as a guide only and is subject to change without notice.



TECHNICAL INFORMATION

FLOWTITE® GRP JACKING PIPES (OD SERIES)



TYPE SE JOINT - NON-PRESSURE

Table with columns for Nominal Diameter (DN), Stiffness Class (128,000, 160,000, 200,000, 320,000, 640,000, 1,000,000), Outside Diameter (d_{od}), Permissible Jacking Force (F_{perm}), and Mass per Meter (Mass/m).

This table shows jacking pipe dimensions and maximum allowable jacking force F_{perm} (kN) for various stiffness classes with closed connection contact.

ABBREVIATIONS

- DN = Nominal diameter
d_{od} = outside diameter (mm)
d_i = internal diameter (mm)
F_{perm} = permissible jacking force (kN)
SN = nominal stiffness (N/m/m)



The Type SE joint includes a stainless steel jacking band with a vulcanised elastomeric seal over the entire width.

The Type SE joint is applicable for non-pressure PNI applications.

The information contained in this document should serve as a guide only and is subject to change without notice.



TECHNICAL INFORMATION

FLOWTITE® GRP JACKING PIPES (OD SERIES)



TYPE GR & TYPE SR JOINT - NON-PRESSURE

Table with 7 columns for stiffness classes (SN) and 3 sub-columns for dimensions (d, F_perm, Mass) for each class. Rows list nominal diameters (D_nom) from 650 to 2046 mm.

This table shows jacking pipe dimensions and maximum allowable jacking force F_perm (kN) for various stiffness classes with closed connection contact. The table is based on a compressive strength of 85 MPa and a factor of safety of 3.5 in accordance with ISO 25780 'Plastics piping systems for pressure and non-pressure water supply, irrigation, drainage or sewerage - Glass-reinforced thermosetting plastics (GRP) systems based on unsaturated polyester (UP) resin - Pipes with flexible joints intended to be installed using jacking techniques'.



The Type GR joint includes a GRP sleeve. The inner surface of the sleeve fits tightly to the EPDM wedge gasket seal embedded into a special groove on the pipe spigot.

The Type GR joint is applicable for non-pressure PNI applications.



The Type SR joint includes a stainless steel sleeve. The inner surface of the sleeve fits tightly to the EPDM wedge gasket seal embedded into a special groove on the pipe spigot.

The Type SR joint is applicable for non-pressure PNI applications.

ABBREVIATIONS

- DN = Nominal diameter
d_out = outside diameter (mm)
d_i = internal diameter (mm)
F_perm = permissible jacking force (kN)
SN = nominal stiffness (N/m/m)

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



TECHNICAL INFORMATION

FLOWTITE® GRP JACKING PIPES (OD SERIES)



TYPE GR & TYPE SR JOINT - NON-PRESSURE

Table with 7 columns for stiffness classes (SN) and 3 sub-columns for dimensions (d, F_perm, Mass) for each class. Rows list nominal diameters (D_nom) from 401 to 1280 mm.

This table shows jacking pipe dimensions and maximum allowable jacking force F_perm (kN) for various stiffness classes with closed connection contact. The table is based on a compressive strength of 85 MPa and a factor of safety of 3.5 in accordance with ISO 25780 'Plastics piping systems for pressure and non-pressure water supply, irrigation, drainage or sewerage - Glass-reinforced thermosetting plastics (GRP) systems based on unsaturated polyester (UP) resin - Pipes with flexible joints intended to be installed using jacking techniques'.



The Type GR joint includes a GRP sleeve. The inner surface of the sleeve fits tightly to the EPDM wedge gasket seal embedded into a special groove on the pipe spigot.

The Type GR joint is applicable for non-pressure PNI applications.



The Type SR joint includes a stainless steel sleeve. The inner surface of the sleeve fits tightly to the EPDM wedge gasket seal embedded into a special groove on the pipe spigot.

The Type SR joint is applicable for non-pressure PNI applications.

ABBREVIATIONS

- DN = Nominal diameter
d_out = outside diameter (mm)
d_i = internal diameter (mm)
F_perm = permissible jacking force (kN)
SN = nominal stiffness (N/m/m)

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TECHNICAL INFORMATION

FLOWTITE® GRP JACKING PIPES (OD SERIES)



TYPE FJ JOINT - PRESSURE

Table with columns for SN, D_nom, and stiffness classes (32,000 to 100,000) with sub-columns for d_out, F_perm, and Mass/length.

This table shows jacking pipe dimensions and maximum allowable jacking force F_perm (kN) for various stiffness classes with closed connection contact...



The Type FJ joint is comprised of a pressure coupling and is applicable for pressure applications. Please contact Iplex Pipelines for use with this joint.

ABBREVIATIONS

- DN = Nominal diameter
F_perm = permissible jacking force (kN)
d_out = outside diameter (mm)
SN = nominal stiffness (N/m/m)
d_i = internal diameter (mm)

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



TECHNICAL INFORMATION

FLOWTITE® GRP JACKING PIPES (OD SERIES)



TYPE FJ JOINT - PRESSURE

Table with columns for SN, D_nom, and stiffness classes (128,000 to 1,000,000) with sub-columns for d_out, F_perm, and Mass/length.

This table shows jacking pipe dimensions and maximum allowable jacking force F_perm (kN) for various stiffness classes with closed connection contact...



The Type FJ joint is comprised of a pressure coupling and is applicable for pressure applications. Please contact Iplex Pipelines for use with this joint.

ABBREVIATIONS

- DN = Nominal diameter
F_perm = permissible jacking force (kN)
d_out = outside diameter (mm)
SN = nominal stiffness (N/m/m)
d_i = internal diameter (mm)

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



TECHNICAL INFORMATION

FLOWTITE® GRP JACKING PIPES (ID SERIES)



TYPE SE JOINT - NON-PRESSURE

SN	32,000			40,000			50,000			64,000			80,000			100,000				
	Pipe DN	D _{oe} (mm)	d _i (mm)	F _{perm} (kN)	Mass(kg/m)	F _{perm} (kN)	Mass(kg/m)	F _{perm} (kN)	Mass(kg/m)	F _{perm} (kN)	Mass(kg/m)	F _{perm} (kN)	Mass(kg/m)	F _{perm} (kN)	Mass(kg/m)	F _{perm} (kN)	Mass(kg/m)			
DN300	330	-	-	-	-	-	-	-	-	-	-	-	-	-	-	365	227	37		
DN375	409	-	-	-	-	-	-	-	-	-	-	-	-	-	-	450	418	57		
DN450	487	-	-	-	-	-	-	525	440	63	529	511	69	532	581	75	536	658	81	
DN500	536	-	-	-	-	577	505	71	580	577	77	584	663	84	588	749	91	592	843	99
DN525	564	602	502	72	605	534	78	608	633	84	612	768	92	616	843	100	621	946	108	
DN600	641	684	655	95	688	748	101	692	830	109	696	973	119	701	1,096	129	705	1,229	140	
DN675	718	767	889	136	770	1,006	126	775	1,154	137	780	1,290	149	785	1,443	162	790	1,618	175	
DN750	794	848	1,152	142	852	1,297	154	857	1,454	167	862	1,576	182	868	1,764	198	874	1,969	214	
DN800	887	947	1,444	177	952	1,624	192	957	1,820	208	963	2,058	227	969	2,293	247	976	2,550	268	
DN1000	985	1052	1,875	219	1057	2,098	237	1063	2,340	257	1070	2,633	280	1078	2,934	304	1084	3,241	330	
DN1100	1084	1157	2,356	265	1163	2,636	287	1169	2,930	311	1177	3,286	339	1185	3,638	368	1193	4,023	399	
DN1200	1181	1261	2,900	314	1267	3,221	340	1274	3,570	369	1282	3,993	403	1291	4,412	437	1300	4,870	474	
DN1300	1280	1366	3,500	369	1373	3,877	400	1381	4,288	433	1390	4,786	473	1399	5,279	513	1408	5,817	557	
DN1400	1378	1471	4,248	428	1479	4,586	463	1487	5,063	502	1496	5,640	548	1506	6,092	594	-	-	-	
DN1500	1477	1577	4,733	491	1585	5,235	532	1593	5,783	576	1604	6,446	630	-	-	-	-	-	-	
DN1600	1574	1680	5,474	558	1689	6,043	604	1698	6,667	654	-	-	-	-	-	-	-	-	-	
DN1700	1674	1787	6,293	631	1796	6,940	683	1806	7,644	740	-	-	-	-	-	-	-	-	-	
DN1800	1771	1899	7,142	706	1900	7,866	764	-	-	-	-	-	-	-	-	-	-	-	-	
DN1900	1870	1996	8,063	787	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
DN2000	1969	2102	9,039	873	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	

This table shows jacking pipe dimensions and maximum allowable jacking force F_{perm} (kN) for various stiffness classes with closed connection contact. The table is based on a compressive strength of 85 MPa and a factor of safety of 3.5 in accordance with ISO 25780 "Plastics piping systems for pressure and non-pressure water supply, irrigation, drainage or sewerage – Glass-reinforced thermosetting plastics (GRP) systems based on unsaturated polyester (UP) resin – Pipes with flexible joints intended to be installed using jacking techniques".



The Type SE joint includes a stainless steel jacking band with a vulcanised elastomeric seal over the entire width. The standard seal is EPDM, however SBR or NBR seals are available on special request.

The Type SE joint is applicable for non-pressure PNI applications.

ABBREVIATIONS

- DN = Nominal diameter
- d_{oe} = outside diameter (mm)
- d_i = internal diameter (mm)
- F_{perm} = permissible jacking force (kN)
- SN = nominal stiffness (N/m/m)

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.



TECHNICAL INFORMATION

FLOWTITE® GRP JACKING PIPES (ID SERIES)



TYPE SE JOINT - NON-PRESSURE

SN	128,000			160,000			200,000			320,000			640,000			1,000,000			
	Pipe DN	D _{oe} (mm)	d _i (mm)	F _{perm} (kN)	Mass(kg/m)	F _{perm} (kN)	Mass(kg/m)	F _{perm} (kN)	Mass(kg/m)	F _{perm} (kN)	Mass(kg/m)	F _{perm} (kN)	Mass(kg/m)	F _{perm} (kN)	Mass(kg/m)	F _{perm} (kN)	Mass(kg/m)		
DN300	330	366	289	41	369	315	44	372	337	48	380	469	58	394	683	75	406	860	90
DN375	409	454	483	63	457	548	68	461	619	74	471	793	88	489	1,123	116	503	1,399	138
DN450	487	540	751	89	545	844	96	549	945	105	561	1,193	125	582	1,664	164	599	2,057	196
DN500	536	597	937	106	602	1,071	117	607	1,195	128	620	1,498	152	643	2,075	200	661	2,504	239
DN525	564	626	1,072	119	631	1,196	129	636	1,333	140	649	1,667	167	674	2,349	219	693	2,776	263
DN600	641	711	1,391	153	717	1,552	166	723	1,729	181	738	2,160	216	766	2,981	283	-	-	-
DN675	718	797	1,815	192	803	2,018	209	810	2,340	227	827	2,785	271	-	-	-	-	-	-
DN750	794	881	2,218	235	888	2,466	235	896	2,738	277	914	3,401	331	-	-	-	-	-	-
DN800	887	984	2,862	293	992	3,172	318	1001	3,512	346	1021	4,342	415	-	-	-	-	-	-
DN1000	985	1093	3,627	361	1102	4,010	392	1111	4,431	426	-	-	-	-	-	-	-	-	-
DN1100	1084	1203	4,495	437	1212	4,916	475	-	-	-	-	-	-	-	-	-	-	-	-
DN1200	1181	1310	5,426	519	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

This table shows jacking pipe dimensions and maximum allowable jacking force F_{perm} (kN) for various stiffness classes with closed connection contact. The table is based on a compressive strength of 85 MPa and a factor of safety of 3.5 in accordance with ISO 25780 "Plastics piping systems for pressure and non-pressure water supply, irrigation, drainage or sewerage – Glass-reinforced thermosetting plastics (GRP) systems based on unsaturated polyester (UP) resin – Pipes with flexible joints intended to be installed using jacking techniques".



The Type SE joint includes a stainless steel jacking band with a vulcanised elastomeric seal over the entire width. The standard seal is EPDM, however SBR or NBR seals are available on special request.

The Type SE joint is applicable for non-pressure PNI applications.

ABBREVIATIONS

- DN = Nominal diameter
- d_{oe} = outside diameter (mm)
- d_i = internal diameter (mm)
- F_{perm} = permissible jacking force (kN)
- SN = nominal stiffness (N/m/m)

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TECHNICAL INFORMATION

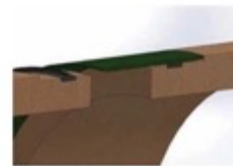
FLOWTITE® GRP JACKING PIPES (ID SERIES)



TYPE GR & TYPE SR JOINT - NON-PRESSURE

SN	32,000			40,000			50,000			64,000			80,000			100,000			
	Pipe DN	D _{ext} (mm)	F _{perm} (kN)	M _{ext} (kg/m)	d _{int} (mm)	F _{perm} (kN)	M _{ext} (kg/m)	d _{int} (mm)	F _{perm} (kN)	M _{ext} (kg/m)	d _{int} (mm)	F _{perm} (kN)	M _{ext} (kg/m)	d _{int} (mm)	F _{perm} (kN)	M _{ext} (kg/m)	d _{int} (mm)	F _{perm} (kN)	M _{ext} (kg/m)
DN600	641	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DN675	718	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DN750	794	-	-	-	-	-	-	857	1,067	167	-	-	-	780	939	149	-	-	-
DN900	887	947	980	177	952	1,157	192	957	1,351	208	963	1,585	227	968	1,817	247	976	2,070	268
DN1000	985	1052	1,158	219	1057	1,378	237	1063	1,817	257	1070	2,107	280	1076	2,394	304	1084	2,708	330
DN1200	1084	1157	1,304	265	1163	1,871	287	1169	2,261	311	1177	2,612	339	1185	2,961	368	1193	3,341	399
DN1300	1181	1261	2,178	314	1267	2,498	340	1274	2,840	369	1282	3,258	403	1291	3,673	437	1300	4,129	474
DN1500	1380	1566	2,501	369	1573	2,875	400	1581	3,278	433	1590	3,769	473	1599	4,256	513	1608	4,787	557
DN1400	1578	1471	3,071	428	1479	3,503	463	1487	3,974	502	1496	4,544	548	1506	4,991	594	-	-	-
DN1500	1477	1577	3,578	491	1585	4,075	532	1593	4,616	576	1604	5,271	630	-	-	-	-	-	-
DN1600	1574	1680	3,845	556	1689	4,408	604	1698	5,021	654	-	-	-	-	-	-	-	-	-
DN1700	1674	1787	4,559	631	1796	5,197	683	1806	5,892	740	-	-	-	-	-	-	-	-	-
DN1800	1771	1891	5,008	706	1900	5,721	764	-	-	-	-	-	-	-	-	-	-	-	-
DN1900	1870	1996	5,807	787	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DN2000	1969	2102	6,413	873	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

This table shows jacking pipe dimensions and maximum allowable jacking force F_{perm} (kN) for various stiffness classes with closed connection contact. The table is based on a compressive strength of 85 MPa and a factor of safety of 3.5 in accordance with ISO 25780 "Plastics piping systems for pressure and non-pressure water supply, irrigation, drainage or sewerage – Glass-reinforced thermosetting plastics (GRP) systems based on unsaturated polyester (UP) resin – Pipes with flexible joints intended to be installed using jacking techniques".



The **Type GR** joint includes a GRP sleeve. The inner surface of the sleeve fits tightly to the EPDM wedge gasket seal embedded into a special groove on the pipe spigot.

The Type GR joint is applicable for non-pressure PNI applications.

ABBREVIATIONS

- DN = Nominal diameter
- d_{ext} = outside diameter (mm)
- d_{int} = internal diameter (mm)
- F_{perm} = permissible jacking force (kN)
- SN = nominal stiffness (N/m/m)



The **Type SR** joint includes a stainless steel sleeve. The inner surface of the sleeve fits tightly to the EPDM wedge gasket seal embedded into a special groove on the pipe spigot.

The Type SR joint is applicable for non-pressure PNI applications.

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.



TECHNICAL INFORMATION

FLOWTITE® GRP JACKING PIPES (ID SERIES)



TYPE GR & TYPE SR JOINT - NON-PRESSURE

SN	128,000			160,000			200,000			320,000			640,000			1,000,000			
	Pipe DN	D _{ext} (mm)	F _{perm} (kN)	M _{ext} (kg/m)	d _{int} (mm)	F _{perm} (kN)	M _{ext} (kg/m)	d _{int} (mm)	F _{perm} (kN)	M _{ext} (kg/m)	d _{int} (mm)	F _{perm} (kN)	M _{ext} (kg/m)	d _{int} (mm)	F _{perm} (kN)	M _{ext} (kg/m)	d _{int} (mm)	F _{perm} (kN)	M _{ext} (kg/m)
DN1375	409	-	-	-	-	-	-	-	-	-	471	445	88	489	970	116	503	1,341	118
DN450	487	-	-	-	-	-	-	549	772	305	581	1,018	125	582	1,481	164	599	1,888	196
DN500	538	-	-	-	602	880	87	607	1,003	128	620	1,302	152	643	1,871	200	661	2,346	239
DN525	564	626	874	119	631	997	129	636	1,132	140	649	1,461	167	674	2,048	219	693	2,610	253
DN600	641	718	1,221	155	717	1,581	165	723	1,904	181	738	1,828	216	756	2,636	283	-	-	-
DN675	718	797	1,456	192	803	1,856	209	810	1,875	227	827	2,410	271	-	-	-	-	-	-
DN750	794	881	1,890	235	888	2,359	255	896	2,404	277	914	3,040	331	-	-	-	-	-	-
DN900	887	984	2,578	293	992	2,885	318	1009	3,620	348	1021	3,839	413	-	-	-	-	-	-
DN1000	985	1093	3,089	361	1102	3,382	392	1111	3,796	426	-	-	-	-	-	-	-	-	-
DN1200	1084	1203	3,803	437	1212	4,362	475	-	-	-	-	-	-	-	-	-	-	-	-
DN1300	1181	1300	4,675	519	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

This table shows jacking pipe dimensions and maximum allowable jacking force F_{perm} (kN) for various stiffness classes with closed connection contact. The table is based on a compressive strength of 85 MPa and a factor of safety of 3.5 in accordance with ISO 25780 "Plastics piping systems for pressure and non-pressure water supply, irrigation, drainage or sewerage – Glass-reinforced thermosetting plastics (GRP) systems based on unsaturated polyester (UP) resin – Pipes with flexible joints intended to be installed using jacking techniques".



The **Type GR** joint includes a GRP sleeve. The inner surface of the sleeve fits tightly to the EPDM wedge gasket seal embedded into a special groove on the pipe spigot.

The Type GR joint is applicable for non-pressure PNI applications.

ABBREVIATIONS

- DN = Nominal diameter
- d_{ext} = outside diameter (mm)
- d_{int} = internal diameter (mm)
- F_{perm} = permissible jacking force (kN)
- SN = nominal stiffness (N/m/m)



The **Type SR** joint includes a stainless steel sleeve. The inner surface of the sleeve fits tightly to the EPDM wedge gasket seal embedded into a special groove on the pipe spigot.

The Type SR joint is applicable for non-pressure PNI applications.

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.



TECHNICAL INFORMATION

FLOWTITE® GRP JACKING PIPES (ID SERIES)



TYPE FJ JOINT - PRESSURE APPLICATIONS

SN		32,000			40,000			50,000			64,000			80,000			100,000		
Pipe DN	D _{nom} (mm)	d _{int} (mm)	F _{perm} (kN)	Mass(kg/m)	d _{int} (mm)	F _{perm} (kN)	Mass(kg/m)	d _{int} (mm)	F _{perm} (kN)	Mass(kg/m)	d _{int} (mm)	F _{perm} (kN)	Mass(kg/m)	d _{int} (mm)	F _{perm} (kN)	Mass(kg/m)	d _{int} (mm)	F _{perm} (kN)	Mass(kg/m)
DN600	641	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DN675	718	-	-	-	-	-	-	-	-	-	780	489	149	785	637	162	790	799	175
DN750	794	-	-	-	-	-	-	857	571	167	862	755	182	868	937	198	874	1137	214
DN900	887	947	322	177	952	496	192	957	685	208	963	915	227	969	1,143	247	976	1,391	268
DN1000	985	1052	624	219	1057	840	237	1063	1,075	257	1070	1,360	280	1076	1,642	304	1084	1,950	330
DN1200	1084	1157	982	265	1163	1,247	287	1169	1,533	311	1177	1,879	339	1185	2,191	368	1193	2,506	399
DN1500	1381	1461	1,293	314	1267	1,606	340	1274	1,946	369	1282	2,358	405	1291	2,766	437	1300	3,212	474
DN1800	1680	1766	1,754	369	1575	2,123	400	1581	2,524	433	1590	3,009	473	1599	3,491	513	1608	4,016	557
DN2100	1985	2078	2,265	428	1879	2,693	463	1887	3,159	502	1896	3,724	548	1906	4,283	594	-	-	-
DN2400	2294	2393	2,837	491	2185	3,330	532	2193	3,742	576	2204	4,391	630	-	-	-	-	-	-
DN2700	2608	2713	3,379	558	2493	3,879	604	2501	4,489	654	-	-	-	-	-	-	-	-	-
DN3000	2928	3038	3,998	631	2806	4,633	683	2816	5,324	740	-	-	-	-	-	-	-	-	-
DN3600	3544	3664	4,711	706	3324	5,423	764	-	-	-	-	-	-	-	-	-	-	-	-
DN4200	4167	4297	5,493	787	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DN4800	4800	4940	6,365	873	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

This table shows jacking pipe dimensions and maximum allowable jacking force F_{perm} (kN) for various stiffness classes with closed connection contact. The table is based on a compressive strength of 85 MPa and a factor of safety of 3.5 in accordance with ISO 25780 "Plastics piping systems for pressure and non-pressure water supply, irrigation, drainage or sewerage – Glass-reinforced thermosetting plastics (GRP) systems based on unsaturated polyester (UP) resin – Pipes with flexible joints intended to be installed using jacking techniques".



The **Type FJ** joint is comprised of a pressure coupling and is applicable for pressure applications. Please contact Iplex Pipelines for use with this joint.

ABBREVIATIONS

- DN = Nominal diameter
- d_{out} = outside diameter (mm)
- d_i = internal diameter (mm)
- F_{perm} = permissible jacking force (kN)
- SN = nominal stiffness (N/m/m)

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



TECHNICAL INFORMATION

FLOWTITE® GRP JACKING PIPES (ID SERIES)



TYPE FJ JOINT - PRESSURE APPLICATIONS

SN		128,000			160,000			200,000			320,000			640,000			1,000,000		
Pipe DN	D _{nom} (mm)	d _{int} (mm)	F _{perm} (kN)	Mass(kg/m)	d _{int} (mm)	F _{perm} (kN)	Mass(kg/m)	d _{int} (mm)	F _{perm} (kN)	Mass(kg/m)	d _{int} (mm)	F _{perm} (kN)	Mass(kg/m)	d _{int} (mm)	F _{perm} (kN)	Mass(kg/m)	d _{int} (mm)	F _{perm} (kN)	Mass(kg/m)
DN300	330	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DN375	409	-	-	-	-	-	-	-	-	-	471	286	88	489	396	116	503	836	158
DN450	487	-	-	-	-	-	-	549	348	105	561	583	125	582	1,050	164	599	1,404	196
DN500	538	-	-	-	602	413	117	607	531	128	620	820	152	643	1,370	200	681	1,830	239
DN525	564	626	387	119	631	506	129	636	636	140	649	954	167	674	1,561	219	693	2,068	263
DN600	641	711	664	153	717	879	166	723	989	181	738	1,404	216	766	2,195	283	-	-	-
DN675	718	797	997	192	803	1,192	209	810	1,407	227	827	1,932	271	-	-	-	-	-	-
DN750	794	885	1,177	235	888	1,416	255	896	1,679	277	914	2,319	331	-	-	-	-	-	-
DN900	887	984	1,693	293	992	1,994	318	1001	2,323	346	1021	3,127	413	-	-	-	-	-	-
DN1000	985	1093	2,325	361	1102	2,697	392	1111	3,106	426	-	-	-	-	-	-	-	-	-
DN1500	1384	1503	3,961	437	1212	3,413	475	-	-	-	-	-	-	-	-	-	-	-	-
DN1200	1381	1510	3,755	519	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

This table shows jacking pipe dimensions and maximum allowable jacking force F_{perm} (kN) for various stiffness classes with closed connection contact. The table is based on a compressive strength of 85 MPa and a factor of safety of 3.5 in accordance with ISO 25780 "Plastics piping systems for pressure and non-pressure water supply, irrigation, drainage or sewerage – Glass-reinforced thermosetting plastics (GRP) systems based on unsaturated polyester (UP) resin – Pipes with flexible joints intended to be installed using jacking techniques".



The **Type FJ** joint is comprised of a pressure coupling and is applicable for pressure applications. Please contact Iplex Pipelines for use with this joint.

ABBREVIATIONS

- DN = Nominal diameter
- d_{out} = outside diameter (mm)
- d_i = internal diameter (mm)
- F_{perm} = permissible jacking force (kN)
- SN = nominal stiffness (N/m/m)

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



TECHNICAL INFORMATION

**FLOWTITE® GRP
JACKING PIPES****HANDLING AND STORAGE****TRANSPORT AND HANDLING**

FLOWTITE® GRP Jacking Pipes should be stored in their packs until required. Pipes should not be rolled, dropped, thrown or allowed to come into contact with sharp objects that are likely to cause damage, especially to the pipe ends.

Jacking pipes come complete with factory fitted couplings. Pipe jointing lubricant is supplied.

Handling GRP jacking pipes requires the use of soft slings. Steel chains should not be used to lift or handle the pipes.

PACKAGING

FLOWTITE® GRP Jacking Pipes are pre-packed on timbers in the following configurations.

OD RANGE (mm)	CONFIGURATION ACROSS X HEIGHT	QUANTITY PER SEMI- TRAILER IN 2M LENGTHS (m)	QUANTITY PER SEMI- TRAILER IN 3M LENGTHS (m)
350 - 450	5 x 5	250	300
455 - 585	4 x 4	160	192
590 - 800	3 x 3	90	108
805 - 1225	2 x 2	40	48
>1225	1	10	12



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.

WWW.IPLEX.COM.AU • EMAIL INFO@IPLEXPIPELINES.COM.AU
PLUMBING, ELECTRICAL AND IRRIGATION 1300 0 IPLEX (1300 0 47559) • CIVIL 13 10 86



APPENDIX B – QUALITY CERTIFICATIONS

Copies of the following Quality Certification Certificates are available from WSAA

TABLE B1 RPC PIPE SYSTEMS PTY LTD – MANAGEMENT SYSTEMS

11 Christie Road Lonsdale SA	
Quality Systems Standard	ISO 9001:2015
Certification Licence No.	AU003458-1
Certifying Agency	Bureau Veritas
First Date of Certification	5 December 1995
Current Date of Certification	21 June 2019
Expiry Date of Certification	15 March 2022

TABLE B2 RPC PIPE SYSTEMS PTY LTD – PRODUCT CERTIFICATION

11 Christie Road Lonsdale SA	
Product Standard/Spec.	ISO 25780:2011
Certificate No.	2790
Issuing Certification Body	Bureau Veritas
Current Date of Certification	24 March 2020
Expiry Date of Certification	23 March 2025



Certification

Awarded to

RPC GROUP

RPC TECHNOLOGIES PTY LTD & RPC PIPE SYSTEMS PTY LTD

& P.T. RPC INDONESIA

HEAD OFFICE: 24 POWERS ROAD, SEVENS HILLS, NSW, 2147 AUSTRALIA

Bureau Veritas certify that the Management System of the above organisation has been audited and found to be in accordance with the requirements of the management system standards indicated below

STANDARD

ISO 9001:2015

SCOPE OF SUPPLY

**MANUFACTURE, MARKETING, DESIGN, ENGINEERING AND PROJECT MANAGEMENT OF GLASS REINFORCED PLASTIC AND COMPOSITE PIPES AND PRODUCTS INCLUDING SPECIALTY FABRICATION WORKSHOP AT SEVEN HILLS
EXCLUSION FOR ADELAIDE PIPE SYSTEMS: DESIGN, ENGINEERING AND PROJECT MANAGEMENT**

Original Approval Date: **5 December 1995**

Subject to the continued satisfactory operation of the organisation's Management System,

this certificate is valid until: **15 March 2022**

To check the validity of this certificate please call tel. **1800 855 190**

Further clarification regarding the scope of this certificate and the applicability of the Management System requirements may be obtained by consulting the organisation.

Certificate Number: **AU003458-1**

A handwritten signature in black ink, appearing to read "Andrew Mortimore".

Date: **21 June 2019**

Andrew Mortimore
Vice President – I&F Pacific Region

Managing office: Bureau Veritas Pty Ltd, 3435 Williamstown Road, Port Melbourne, Victoria, 3207

Issuing office: Bureau Veritas Pty Ltd, 3435 Williamstown Road, Port Melbourne, Victoria, 3207



BUREAU VERITAS
Certification



'S' Mark Licence

Awarded to

RPC PIPE SYSTEMS PTY LTD

11 CHRISTIE ROAD LONSDALE, SA 5160 AUSTRALIA

Bureau Veritas grants the above organization the right to use the Product Certification 'S' Mark as shown below only in respect of the products described and detailed in the Schedule to this Licence and manufactured in accordance with the requirements of the Standard indicated below under an approved Quality Management System. The Licence is granted subject to the 'Bureau Veritas Conditions of Service' and the 'Rules governing the use of Product Certification Licences'.

STANDARD

ISO 25780:2011

Plastics piping systems for pressure and non-pressure water supply, irrigation, drainage or sewerage - Glass-reinforced thermosetting plastics (GRP) systems based on unsaturated polyester (UP) resin
- Pipes with flexible joints intended to be installed using jacking techniques

Licence No: 2790

Date Granted: 24 March 2020

Expiry Date: 23 March 2025

Signed on behalf of Bureau Veritas

Sam Guindi
Product Certification Manager



**BUREAU
VERITAS**

This Licence and its associated Schedule remain the property of Bureau Veritas and must be returned if certification is terminated. The constant compliance with the certification requirements is confirmed by regular surveillance measures from Bureau Veritas. In the case of serious non-compliance the certification will be withdrawn and deleted from the Register.

To check the validity of this certificate please contact: **Bureau Veritas Australia Pty Ltd**
Issuing office: Bureau Veritas Pty Ltd, 3/435 Williamstown Road, Port Melbourne, Victoria, 3207



SCHEDULE TO PRODUCT CERTIFICATION LICENCE NO: 2790

LICENCE DETAILS

Scheme: 'S' Mark Product Certification
Licensee: RPC PIPE SYSTEMS PTY LTD
Address: 11 Christie Road Lonsdale, Sa 5160 Australia



CONFORMANCE REQUIREMENTS

Standard: ISO 25780:2011 Plastics piping systems for pressure and non-pressure water supply, irrigation, drainage or sewerage - Glass-reinforced thermosetting plastics (GRP) systems based on unsaturated polyester (UP) resin
 - Pipes with flexible joints intended to be installed using jacking techniques

Quality System: Product Certification Quality System Requirements (QSR) ISO Type 5

CERTIFIED MODEL OR TYPE

Model ID	Brand Name	Product Description
DN300	RPC Flowtite	GRP Jacking Pipe and Fittings, PN1 to PN6, SN20,000 to SN1,000,000
DN375	RPC Flowtite	GRP Jacking Pipe and Fittings, PN1 to PN6, SN20,000 to SN1,000,000
DN400	RPC Flowtite	GRP Jacking Pipe and Fittings, PN1 to PN6, SN20,000 to SN1,000,000
DN450	RPC Flowtite	GRP Jacking Pipe and Fittings, PN1 to PN6, SN20,000 to SN1,000,000
DN500	RPC Flowtite	GRP Jacking Pipe and Fittings, PN1 to PN6, SN20,000 to SN1,000,000
DN525	RPC Flowtite	GRP Jacking Pipe and Fittings, PN1 to PN6, SN20,000 to SN1,000,000
DN600	RPC Flowtite	GRP Jacking Pipe and Fittings, PN1 to PN6, SN20,000 to SN640,000
DN675	RPC Flowtite	GRP Jacking Pipe and Fittings, PN1 to PN6, SN20,000 to SN320,000
DN700	RPC Flowtite	GRP Jacking Pipe and Fittings, PN1 to PN6, SN20,000 to SN320,000
DN750	RPC Flowtite	GRP Jacking Pipe and Fittings, PN1 to PN6, SN20,000 to SN320,000
DN900	RPC Flowtite	GRP Jacking Pipe and Fittings, PN1 to PN6, SN20,000 to SN320,000
DN1000	RPC Flowtite	GRP Jacking Pipe and Fittings, PN1 to PN6, SN20,000 to SN200,000





**BUREAU
VERITAS**

DN1100	RPC Flowtite	GRP Jacking Pipe and Fittings, PN1 to PN6, SN20,000 to SN160,000
DN1200	RPC Flowtite	GRP Jacking Pipe and Fittings, PN1 to PN6, SN20,000 to SN128,000
DN1300	RPC Flowtite	GRP Jacking Pipe and Fittings, PN1 to PN6, SN20,000 to SN100,000
DN1400	RPC Flowtite	GRP Jacking Pipe and Fittings, PN1 to PN6, SN20,000 to SN80,000
DN1500	RPC Flowtite	GRP Jacking Pipe and Fittings, PN1 to PN6, SN20,000 to SN64,000
DN1600	RPC Flowtite	GRP Jacking Pipe and Fittings, PN1 to PN6, SN20,000 to SN50,000
DN1700	RPC Flowtite	GRP Jacking Pipe and Fittings, PN1 to PN6, SN20,000 to SN50,000
DN1800	RPC Flowtite	GRP Jacking Pipe and Fittings, PN1 to PN6, SN20,000 to SN40,000
DN1900	RPC Flowtite	GRP Jacking Pipe and Fittings, PN1 to PN6, SN20,000 to SN32,000
DN2000	RPC Flowtite	GRP Jacking Pipe and Fittings, PN1 to PN6, SN20,000 to SN32,000
DN2100	RPC Flowtite	GRP Jacking Pipe and Fittings, PN1 to PN6, SN20,000 to SN32,000
DN2200	RPC Flowtite	GRP Jacking Pipe and Fittings, PN1 to PN6, SN20,000 to SN32,000
DN2300	RPC Flowtite	GRP Jacking Pipe and Fittings, PN1 to PN6, SN20,000 to SN32,000
DN2400	RPC Flowtite	GRP Jacking Pipe and Fittings, PN1 to PN6, SN20,000 to SN32,000
DN2500	RPC Flowtite	GRP Jacking Pipe and Fittings, PN1 to PN6, SN20,000 to SN32,000
DN2600	RPC Flowtite	GRP Jacking Pipe and Fittings, PN1 to PN6, SN20,000 to SN32,000
DN2700	RPC Flowtite	GRP Jacking Pipe and Fittings, PN1 to PN6, SN20,000 to SN32,000
DN2800	RPC Flowtite	GRP Jacking Pipe and Fittings, PN1 to PN6, SN20,000 to SN32,000
DN2900	RPC Flowtite	GRP Jacking Pipe and Fittings, PN1 to PN6, SN20,000 to SN32,000
DN3000	RPC Flowtite	GRP Jacking Pipe and Fittings, PN1 to PN6, SN20,000 to SN32,000

Revision Date: 24 March 2020



APPENDIX C – SUPPLIER CONTACTS

RPC PIPE SYSTEMS PTY LTD

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Phone: 08 8329 1111

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