

SPR[®]EX

STRUCTURAL, LIGHT WEIGHT, CLOSE FIT LINER
FOR GRAVITY PIPELINES FROM
DN 150 - 1050 mm (6 - 42 inch)



EXPANDA[®]

SPR[®]EX technology, incorporating
EXPANDA[®] spirally wound system
by RIB LOC[®]



SEKISUI RIB LOC AUSTRALIA'S TECHNOLOGIES AND SERVICES

SEKISUI Rib Loc Australia Pty Ltd (SRLA) is the internationally recognised inventor of RIB LOC® spirally wound technologies. Owned since 2008 by SEKISUI Chemical Co., Ltd., one of Japan's largest global plastics developers and manufacturers, SRLA develops, manufactures and supports the delivery of its spiral pipe renewal technologies through its worldwide network of distributors and installation partners.

Vision – Innovation for the Earth

SRLA's vision is to provide well-being and peace of mind to all current and future generations by contributing to the sustainability of the Earth and society by using the power of innovation that is in our people's DNA to continue opening new frontiers in social infrastructure.

Mission

With customer satisfaction as a priority, our mission is to supply, educate and support stakeholders in the use of our innovative, high-quality pipe renewal technologies for the benefit of the environment and society.



SRLA's innovative, patented and world renowned RIB LOC® spirally wound technologies are used the world over for the time and cost efficient means they offer for rehabilitating damaged pipes with minimum impact on the environment.

The spirally wound technologies for gravity pipelines are based on the principle of winding a continuous plastic strip into a liner directly within the deteriorated pipe. The plastic strip is spirally wound via a patented winding machine positioned in the base of an

existing maintenance hole or access chamber. The edges of the strip interlock as it is spirally wound to form a continuous watertight liner inside the host pipe.

For the spirally wound rehabilitation of gravity pipes SRLA offers six systems:

	SPR®EX Expanda®	SPR®RO Rotaloc®	SPR®TF	SPR®ST Ribsteel®	SPR®PE Ribline®	SPR®
Diameter	150 - 1050 mm 6 - 42 inch	800 - 1800 mm 32 - 72 inch	1050 - 1650 mm 42 - 66 inch	450 - 2500 mm 18 - 100 inch	900 - 3000 mm 36 - 120 inch	800 - 5500 mm 32 - 220 inch
Material *	PVC	PVC	PVC	PVC	HDPE	PVC
Shape	Circular	Circular	Circular	Circular	Circular	Circular, non-circular, custom shape
Installation	Close fit	Close fit	Close fit	Fixed diameter	Fixed diameter	Fixed diameter

* Steel reinforcement used in selected profiles



STRUCTURAL, LIGHT WEIGHT, CLOSE FIT LINER FOR GRAVITY PIPELINES

SPR®EX technology, incorporating EXPANDA® spirally wound system by RIB LOC®, is a unique process for restoring the efficiency, reliability and structural integrity of aging sewers, storm drains and culverts.

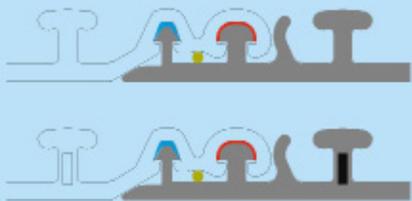
SPR®EX / Expanda® liners can structurally rehabilitate brick, concrete, glass reinforced plastic or corrugated metal sewer and stormwater pipelines with diameters from 150 - 1050 mm (6 - 42 inch).

The plastic profile that forms the liner is provided in a range of sizes and thicknesses. The appropriate profile is selected to provide a liner with sufficient stiffness to meet the design requirements for the project.

Project experience

SPR®EX / Expanda® has been used to rehabilitate sewers and stormwater lines around the world. It has proven capable of providing a structural liner for severely deteriorated pipelines, and has been installed under difficult site conditions with minimal community disruption.

PVC Profile and Sealant Materials



LUBRICATING SEALANT
CUTTING WIRE
ADHESIVE
STEEL

Cross-section of a typical profile, showing the mechanism that locks together successive wraps of profile

A smooth winding and expanding process

The pipeline is first cleared of debris and obstructions, cleaned and inspected. Locations of lateral connections or branch lines are logged. The SPR®EX / Expanda® winding machine is lowered to the base of the access chamber through a standard opening. The PVC profile is fed into the machine from an above ground spool. The SPR®EX / Expanda® profile is wound in at a diameter smaller than the host pipe. The liner is held together at the smaller diameter by the secondary lock.

Winding is stopped when the wound pipe reaches the upstream access chamber. The end of SPR®EX / Expanda® liner is then torsionally restrained. Expansion of the liner commences by pulling the cutting wire, severing the secondary lock.

As the wire is progressively removed, more profile is wound into the line. The lubricating sealant in the primary lock allows adjacent profile wraps to slide relative to each other. In response to the additional profile, the liner expands in diameter to fit tightly against the inside wall of the deteriorated pipe. The process continues until the liner has been

expanded for the full length of the deteriorated pipeline between access chambers. Then the lining is complete.

The ends of the liner at both access chambers are sealed and rendered to make them smooth with the host pipe. Lateral connections can be immediately reinstated by robotic cutting. The connection between the main pipe and the lateral can then be sealed.

MINIMAL LOSS OF DIAMETER IMPROVED FLOW

Flow advantages

- Installed to fit tightly against the existing pipe wall – minimum loss of cross sectional area.
- Flow efficient, smooth bore with circular cross section.
- Usually greater hydraulic capacity than the host pipe.
- No ripples or wrinkles even when host pipe joints are offset.
- Winds smoothly around large radius pipeline bends.

A strong flexible liner

- Can be designed as a structural liner, a range of PVC profiles are available to meet design requirements.
- Lines even the worst pipes – including those with missing inverts, obverts or other structural defects.
- Structurally efficient circular cross section – even when the host pipe is misaligned.

- Constant wall thickness even when negotiating voids in the host pipe.
- No heating, stress cracking, shrinkage or stretching.
- Machine installed, liner installation does not depend on the standard of workmanship in difficult conditions.

Fast installation with minimum community disruption

- Rapid set up.
- Uses existing access chambers, no need to excavate launch pits.
- No on-site pipe storage required.
- Small support vehicles – less disruption of traffic.
- Safe work sites.
- Can operate with some flow in the existing pipe.
- Installation possible from difficult to reach access chambers – support vehicles and equipment.



Quality control during the profile extrusion process



Production tested in accordance with global standards

Proven pipe material

- Made from similar grade of PVC as new sewer and drainage pipe.
- Cell Classification of 13354 in accordance with ASTM D1784.
- Profile sealing materials are tested to confirm suitability in high ambient temperature sewer environments.
- Consistent material properties – the pipe strength does not rely on curing in uncertain conditions.

Plastic and steel profiles

The plastic profile that forms the liner is provided in a range of sizes, with or without steel reinforcement.

The appropriate profile, and steel section if needed, is selected to provide a liner with sufficient stiffness to meet the design requirements for the project.

Design

Numerous industry specifications provide design methods applicable to SPR®EX / Expanda®, including:

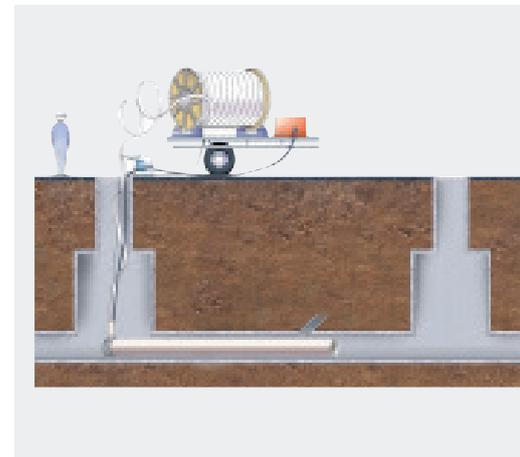
- ASTM F1741 "Standard Practice for Installation of Machine Spiral Wound Poly (Vinyl Chloride) (PVC) Liner Pipe for Rehabilitation of Existing Sewers and Conduits".
- Australian Water Authority Specifications, usually based on Australian Standard AS/NZS 2566.1 "Buried Flexible Pipelines, Part 1: Structural Design".

The benefits of SPR®EX / Expanda® at a glance

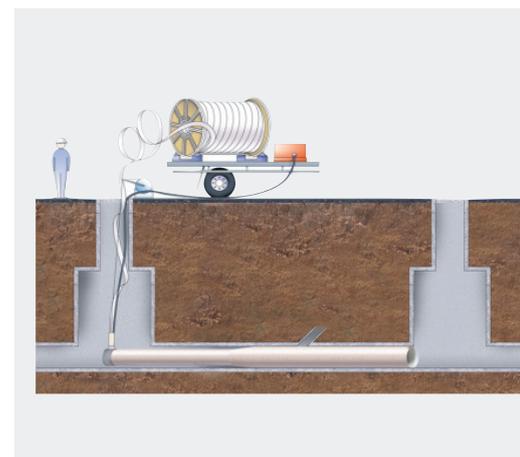
- Structural liner, strong and light weight.
- Close fit with the host pipe.
- Diameters from 150 - 1050 mm (6 - 42 inch).
- Manufactured from pipe grade PVC.
- Suitable for gravity flow sanitary sewer and stormwater pipelines.
- WRc Approved® (PT/465/0720).

Section Properties of Typical SPR®EX / Expanda® Profiles

PROFILE	HEIGHT	TYPICAL PIPE DIAMETER	
56 - 7EX	7	150 - 200	mm
56 - 7EX	0.28	6 - 8	inch
85 - 7EX	7	200 - 300	mm
85 - 7EX	0.28	8 - 12	inch
85 - 8EX	8	200 - 300	mm
85 - 8EX	0.32	10 - 12	inch
126 - 15EX	15	375 - 600	mm
126 - 15EX	0.6	15 - 24	inch
126 - 20EX	20	450 - 750	mm
126 - 20EX	0.8	24 - 30	inch
126 - 30EX	30	600 - 1050	mm
126 - 30EX	1.2	30 - 42	inch
85 - 7EXS	7.2	225 - 250	mm
85 - 7EXS	0.28	9 - 10	inch
85 - 9EXS	9.6	250 - 300	mm
85 - 9EXS	0.38	10 - 12	inch
126 - 12EXS	11.3	350 - 375	mm
126 - 12EXS	0.44	14 - 15	inch
126 - 14EXS	14.5	450 - 500	mm
126 - 14EXS	0.57	18 - 20	inch



The wind in process



The expansion process

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