



Pipe Reinforcement & Repair System

Clock Spring's original product was the subject of an extensive research and development program conducted in North America from 1987-1999. This decade long effort resulted in Clock Spring being the pioneer for the approval of composite repairs across the industry. The approval identified Clock Spring as a "repair which permanently restores the serviceability of the pipe."

The Clock Spring repair sleeve is a three-part system designed to structurally reinforce and permanently repair external anomalies. The system is composed of a unidirectional e-glass composite coil, a high modulus filler material, and a methyl methacrylate adhesive with a high lap shear strength. Together, these three components create the industry's most trusted repair system. No other system in the world has gone through a testing program as rigorous as the research and field validation program conducted by GRI.

The Clock Spring repair sleeve has been certified by DNV GL in accordance with the ASME PCC-2 and ISO 24817 standards.

CONFIGURATION

Each Clock Spring coil is eight (8) layers, regardless of the defect specifications and pipe specifications. For every defect up to 80 percent wall loss the Clock Spring will provide a repair with a safety factor of the repair and the defect combined providing a higher failure pressure than the original pristine pipe.

THE SYSTEM INCLUDES FEATURES SUCH AS

- 50-year DOT accepted repair system for high pressure transmission pipelines
- ASME PCC-2 and ISO 24817 compliant
- Repair sleeve will restore the pipeline to full strength on up to 80 percent wall loss as well as assorted mechanical damage and mill defects.
- Available in 4" through 56" diameter kits, each kit will include a coil, filler, adhesive and tools
- Can be applied on bends and girth welds
- Removes the need for pressure reduction or pipeline shutdown during installation
- Meets standards of internationally recognized repair codes
- Used in all environments, in over 75 countries
- Marine Adhesive allows for underwater repair application
- High Temperature system available
- Clock Spring repair sleeves are installed quickly and efficiently by certified installers.
- Simple marking band system makes repairs visible to in-line inspections tools

CLOCK SPRING BENEFITS:

- Quick, Simple, Easy Installation
- Minimize All Field Errors
- Maximize Operational Efficiency
- Enhance Short-Term and Long-Term Safety



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SLEEVE SPECIFICATIONS	Use	Clock Spring is a pipeline reinforcement system and repair sleeve for high-pressure transmission pipelines		
	Standard Configuration	A continuous coil of pre-tensioned e-glass fiberglass for reinforcement		
	Nominal Thickness	Each layer	0.065"/1.6mm	
		Complete, Eight-layer system	0.500"/13mm	
	Material (Resin)	Service Temperature Range	Polyester (Standard)	Vinyl Ester (High Temp)
			-51 C to 70 C (-60 F to 158 F)	-51 C to 120 C (-60 F to 248 F)
		Application Temperature Range	-40 C to 48 C (-40 F to 120 F)	-40 C to 82 C (-40 F to 180 F)
Fiberglass and Polyester (Standard)/Vinyl Ester Resin (High Temp)				
Width	305 mm (12 inches) 1'			
ADHESIVE SPECS	Lap Shear Strength	>1200 PSI		
	Shelf Life	12 Months from Date of Manufacture		
FILLER SPECS	Compressive Strength	>12,500 PSI		
	Shelf Life	12 Months from Date of Manufacture		
ACTIVATOR SPECS	Shelf Life	12 Months from Date of Manufacture [Refrigeration at 38°F-52°F / 3°C -11°C Will Extend Material Shelf Life an Additional Three (3) Months]		

Clock Spring is a licensed trademark of NCF Industries, Inc.

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