



CLOCK SPRING®

INSTALLATION GUIDE

Pipe Support

08/01/05

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See back page for full contact information.

2.0 CLOCK SPRING® Pipe Support

2.1 Record the following general data (optional):

Date of repair: _____
Support Identification Number (Optional): _____
Filler (MA 441) lot number: _____
Filler expiry date: _____
Filler activator lot number: _____
Filler activator expiry date: _____
Adhesive lot number: _____
Adhesive expiry date: _____
Adhesive activator lot number: _____
Adhesive activator expiry date: _____
Ambient temperature: _____

2.2 Record the following pipeline data:

Location: _____
Pipe diameter: _____
Wall thickness: _____
Pipe grade: _____
Pipe type: (ERW, DSAW, EFW, Seamless, Etc.) _____
Product: _____
Operating pressure: _____
Installation pressure: _____
Pipe temperature: _____
Coating type: _____

3.0 INSTALLATION PROCEDURE FOR Clock Spring® PS

This procedure will provide guidance in the application of the Clock Spring® Pipe Support system. Each installation will present unique challenges and this procedure may have to be modified to meet local conditions.

The Clock Spring® Pipe Support is derived from the technology developed for Clock Spring® pipeline repair system.

Pipe Supports typically consist of two concentric wraps of the Clock Spring® composite shell. The shell is in the form of a split sleeve, with a circumference slightly smaller (0.063-inches (1.5 mm)) than the pipe being protected. Each shell will fit around the pipe leaving a slight longitudinal gap. Each layer of the Pipe Support will be applied such that the longitudinal seams are staggered from the longitudinal seams of the preceding layer.

3.1 Pipe preparation

The area to be protected must be cleaned. The pipe surface will be cleaned, removing all scale, loose debris, products of corrosion and residual pipe coating. The surface should contain a slight anchor pattern as specified in the NACE #3 Surface Finish standard. Sand blasting the pipe surface is recommended. (See Clock Spring® Installation Manual for more detail. Wire brushing alone is not an acceptable surface preparation. If wire brushing is used to clean the pipe surface an anchor pattern should be applied using an appropriate sanding disk.)

3.2 The pipe will be carefully inspected for dents, gouges, scrapes and corrosion. Any damaged areas will be evaluated using appropriate NDE techniques.

3.3 Filler material is a Methacrylate adhesive consisting of a paste and an activator. The filler and activator will be mixed according to the pipe temperature. Refer to the chart on the Filler tube for the proper mix ratio. Table 2 is provided here for reference only. If the information in this table is at variance with the mix ratio charts on the Filler tube, that ratio will take precedent. (See Table 2 – Activator Quantity for Filler). Mix the filler and activator for 3 minutes until the mixture is uniform in color and completely mixed. (See Clock Spring® Installation Manual for more detail.)

3.4 Apply filler material to all voids under the repair.

3.5 Adhesive

The adhesive is a Methacrylate consisting of two parts: adhesive and activator. The mix ratio will depend on the application temperature. Refer to the chart on the Adhesive container for the proper mix ratio. Table 1 is provided here for reference only. If the information in this table is at variance with the mix ratio charts on the Adhesive container, that ratio will take precedent. (See Table 1 – Activator Quantity for Adhesive). The mix ratio, ambient air temperature and pipe temperature will all affect the working time available before the adhesive cures.

3.6 Determine the correct mix ratio. Mix adhesive and activator according to standard Clock Spring procedures. (See Clock Spring® Installation Manual for more detail.)

3.7 Liberally apply the mixed adhesive to the filler material and pipe surface to be protected.

3.8 Apply the first concentric sleeve over the filler and adhesive.

3.9 Apply filler material to the longitudinal seam of the first wrap and adhesive to the surface of the first wrap.

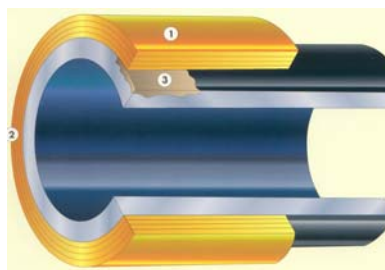
3.10 Applying adhesive between each layer, apply subsequent layers of composite sleeves with the longitudinal seam positioned away from the longitudinal seams on the underlying layer.

- 3.11 Continue the installation process until the entire support is complete and all layers are in place.
- 3.12 Using the band clamps supplied, tighten the repair onto the pipe. The band clamps are spaced evenly along the repair and tightened from the center out to each end. Clean excess adhesive and filler material.
- 3.13 When the adhesive has fully cured, remove the clamps and coat the support area with a protective coating.

Installation Photographs



Mixing filler, applying adhesive to pipe, applying adhesive to first composite wrap, snapping on second composite wrap, tightening with band clamps, pipe supports at a valve station, pipe support at a hanger location, pipe support.



Simply the smartest pipeline repair decision you can make!



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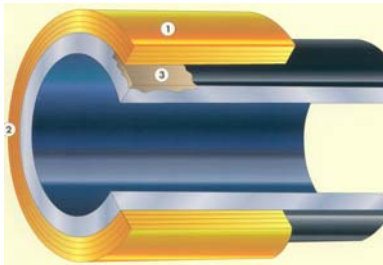
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