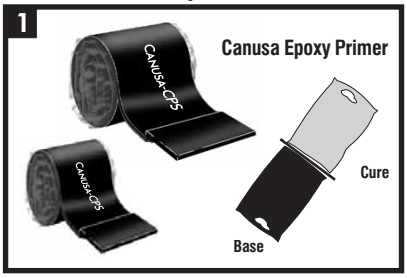
CANUSA-CPS
A SHAWCOR COMPANY

Installation Guide

TBK Multi-Layer Directional Drilling Kit for Pipelines

Product Description

1



Canusa's Directional Drilling Kits - TBK systems are composed of two sleeves and epoxy kit(s). The epoxy kit(s) includes: application accessories, latex gloves and pre-measured quantities of Canusa Epoxy Primer.

Storage & Safety Guidelines

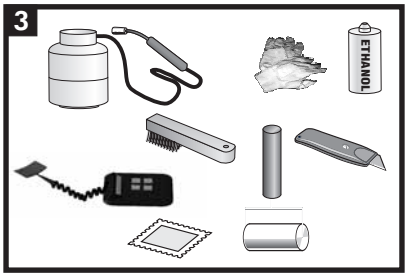
2

To ensure maximum performance, store Canusa products in a dry, ventilated area. Keep products sealed in original cartons and avoid exposure to direct sunlight, rain, snow, dust or other adverse environmental elements. Avoid prolonged storage at temperatures above 35°C *(95°F)* or below -20°C *(-4°F)*. Product installation should be done in accordance with local health and safety regulations.

These installation instructions are intended as a guide for standard products. Consult your Canusa representative for specific projects or unique applications.

Equipment List

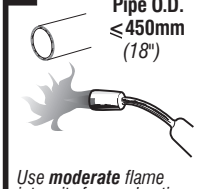
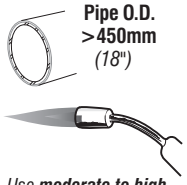
3



Canusa torch, propane tank, hose & regulator
Temperature measuring device, roller, knife
Appropriate surface abrasion device, solvent
Standard safety equipment (gloves, goggles, hard hat, etc.)
Wet film thickness gauge

Flame Intensity & Torch Size

4

Pipe O.D. ≤450mm (18")	Pipe O.D. >450mm (18")
	
*Use **moderate** flame intensity for pre-heating and shrinking.*	*Use **moderate to high** flame intensity for pre-heating and shrinking.*
Minimum Torch Size: **150,000 BTU/hr.**	Minimum Torch Size: **300,000 BTU/hr.**

Surface Preparation

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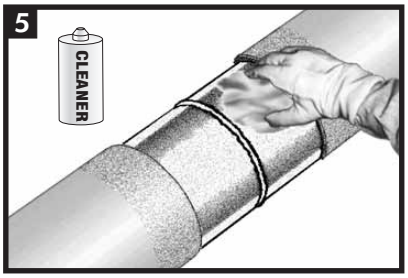

Clean exposed steel and adjacent pipe coating with a solvent cleaner to remove the presence of oil, grease, and other contaminants. Ensure that the mainline coating edges are bevelled to 30°.

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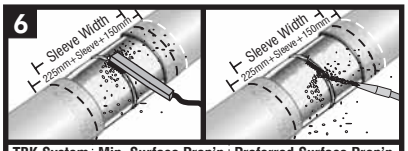

TBK System	Min. Surface Prep'n	Preferred Surface Prep'n
TBK-O	St2, SP2	Sa2, SP6
TBK-N	St2, SP2	Sa2, SP6
TBK-C50	St3, SP3	Sa2½, SP10
TBK-65	Sa2½, SP10	Sa2½, SP10
TBK-80	Sa2½, SP10	Sa2½, SP10

Ensure the pipe is dry before abrading. Using the chart above, abrade the pipe to the required cleanliness. Lightly abrade the line coating adjacent to the weld area to a distance 225mm (9") beyond the sleeve width on the front-end and 150mm (6") beyond the sleeve width on the back-end. Wipe clean or air blast the steel and pipe coating to remove foreign contaminants.

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For 2-layer applications, skip to box 9. For 3-layer applications, continue with box 8.

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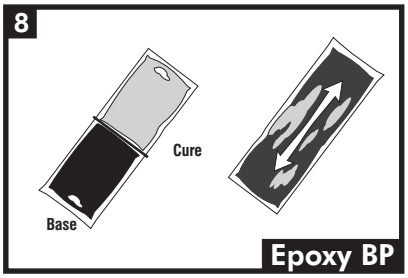
Epoxy Primer

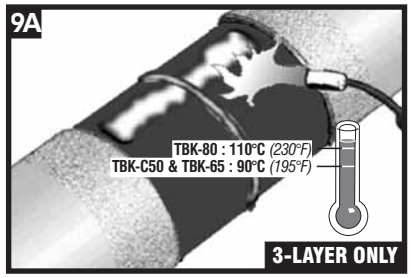
8



Follow the Preparation, Mixing and Application instructions provided with the supplied Canusa Epoxy Pack. For bulk quantities: mix the primer cure with the primer base (4 parts base to 1 part cure **by volume**). Stir for a minimum of 30 seconds to assure uniform mixture.

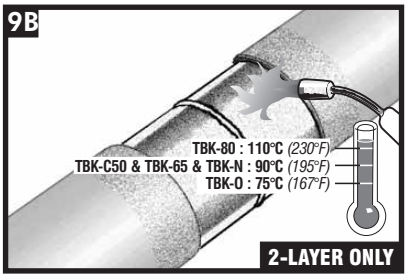
Epoxy Curing (if required) & Pre-Heat

9A



Pre-heat the epoxy and abraded coating to the required temperature with the appropriate propane torch. This will substantially cure the epoxy and ensure proper flow and bonding of the sleeve adhesive. Ensure that the epoxy primer is dry to the touch prior to sleeve installation. If a film develops on the mainline coating because of preheat, use a surface abrasion tool to remove it.

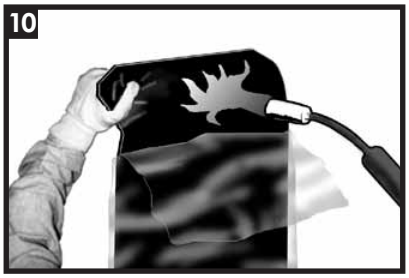
9B



Pre-heat the cutback area and abraded coating to the required temperature with the appropriate propane torch. Ensure the correct temperature has been reached using a temperature measuring device. If a film develops on the mainline coating because of preheat, use a surface abrasion tool to remove it.

Primary Sleeve Installation

10



Using the wider sleeve, partially remove the release liner and gently heat the underlap approximately 150 mm (6") from the edge.

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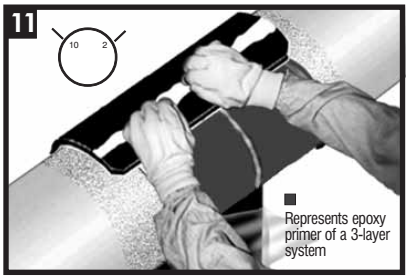
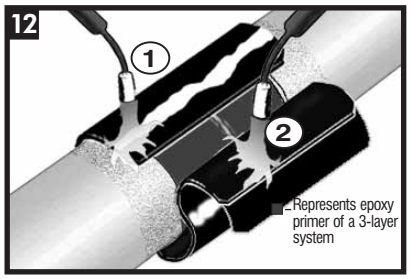


Centre the sleeve over the joint so that the sleeve overlaps between the 10 and 2 o'clock positions. Press the underlap firmly into place. Remove the remaining release liner.

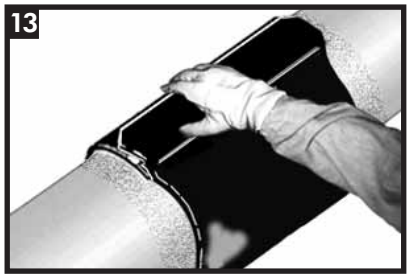
TBK

12



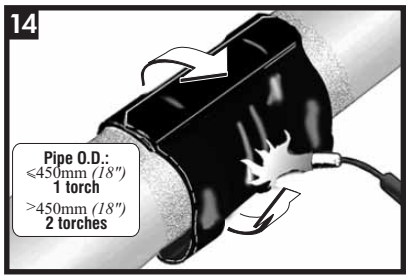
Wrap the sleeve loosely around the pipe, ensuring the appropriate overlap. Gently heat the backing of the underlap (1) and the adhesive side of the overlap (2). For TBK-80, heat the adhesive side of the closure until it becomes shiny.

13



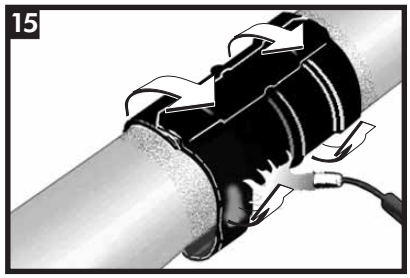
Press the closure firmly into place. Gently heat the closure and pat it down with a gloved hand. Repeating this procedure, move from one side to the other. Smooth any wrinkles by gently working them outward from the centre of the closure with a roller.

14



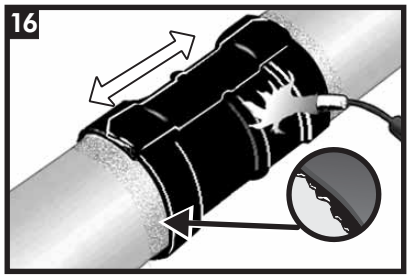
Using the appropriate sized torch, begin at the centre of the sleeve and heat circumferentially around the pipe. Use broad strokes. If utilizing two torches, operators should work on opposite sides of pipe.

15



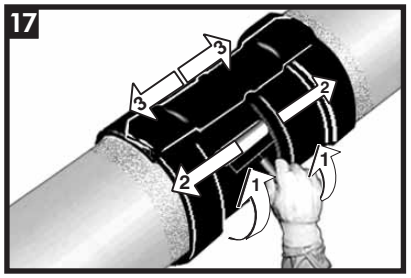
Continue heating from the centre toward one end of the sleeve until recovery is complete. In a similar manner, heat and shrink the remaining side.

16



Shrinking has been completed when the adhesive begins to ooze at the sleeve edges all around the circumference. Finish shrinking the sleeve with long horizontal strokes over the entire surface to ensure a uniform bond.

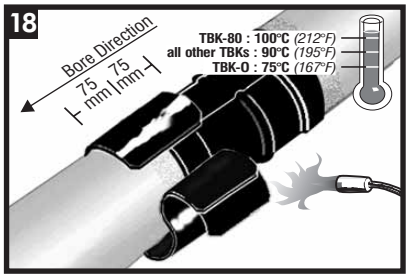
17



While the sleeve is still hot and soft, use a hand roller to gently roll the sleeve surface and push any trapped air up and out of the sleeve, as shown above. Continue the procedure by also firmly rolling the closure with long horizontal strokes from the weld outwards.

Sacrificial Sleeve Installation

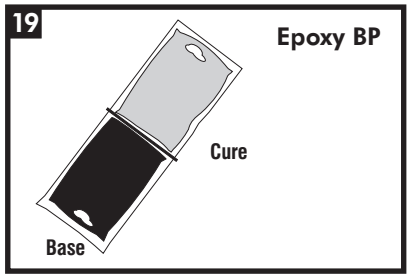
18



Ensure that the front 100mm (4") of the first sleeve and 100mm (4") onto the coating is at the required temperature. Completely remove any release liners from the 150mm (6") sacrificial sleeve. Wrap the 150mm (6") sacrificial sleeve so that half of the sleeve overlaps the first sleeve and half of the sleeve extends onto the coating. Position the closure on the opposite side of the pipe relative to the first sleeve closure. Recover the sleeve as in steps 10 through 17.

Epoxy Primer

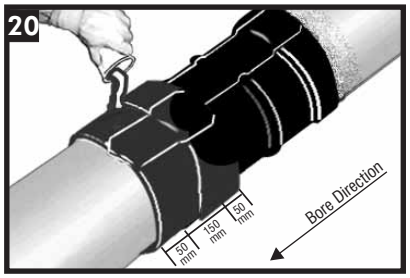
19



Follow the Preparation, Mixing and Application instructions provided with the supplied Canusa Epoxy Pack. For bulk quantities: mix the primer cure with the primer base (4 parts base to 1 part cure **by volume**). Stir for a minimum of 30 seconds to assure uniform mixture.

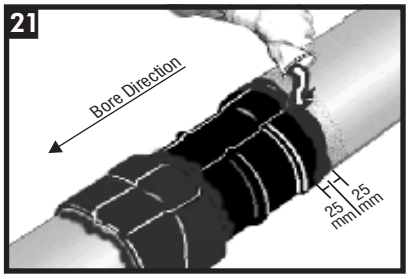
Epoxy (Topcoat) Application

20



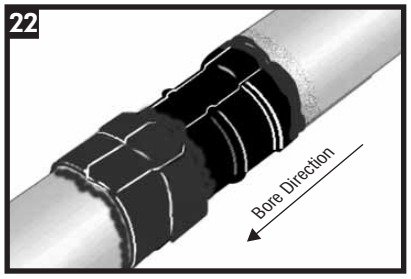
When the sleeve is between 15 - 40°C, apply epoxy over the sacrificial sleeve to form a wear cone; covering 50mm (2") onto the pipe coating, the entire sacrificial sleeve and 50mm (2") onto the first sleeve.
Epoxy applied should thoroughly cover the edge of the sleeves.

21



Apply epoxy to trailing edge of first sleeve; 25mm (1") onto sleeve, 25mm (1") onto adjacent coating. **Epoxy applied should thoroughly cover the edge of the sleeves.** It is best to allow the epoxy to cure at ambient temperature. If necessary, use a low flame to cure epoxy. **Cover the entire sleeve with any left-over epoxy.**

22



Visually inspect the installed system to ensure that:

- Sleeve is in full contact with the steel joint.
- Adhesive flows beyond all sleeves edges.
- No cracks or holes in sleeve backing.
- Complete epoxy coverage for the areas mentioned in step 20 & 21.

The sleeve system must be left to completely cool and epoxy fully cured before pipe is pulled through.

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