1.0 Scope

The Raychem side entry Tinel-Lock ring is a heat recoverable metal braid terminator, which provides a method of joining a gross cable or harness shield to a customer built connector backshell or other termination device, without prepositioning the ring on the harness (side entry). Additionally, the Raychem side entry Tinel-Lock ring can be easily removed.

This assembly guide defines the general assembly requirements for TE Connectivity's side entry Tinel-Lock ring, which is heat recoverable for braid termination.

2.0 Applicable Documents

TE Customer drawings

- SETR-XXXX – Side Entry Tinel-Lock Ring Series
- CH00-0250-019 – Side Entry Tinel-Lock Ring Series Ordering Information

TE Installation procedures

- ELE-3COP-359 – Tinel-Lock Ring Installation with Resistance Heater
- ELE-3COP-452 – Installation and Torque Tightening of Standard and Type 2 Adaptors
- ELE-3COP-604 – Application of S1125 Adhesive

3.0 Safety Precautions

All personnel performing the procedures outlined in this document should have the following safety protection equipment.

- Provide Eye Protection and other personal protection equipment (PPE) as required.
- Provide High Temperature Safety Equipment as required.
- Material Safety Data Sheets (MSDS) from the manufacturer should be made available. If none are available, contact the manufacturer as required. For Raychem products, MSDS are available on-line at www.te.com.

4.0 Part Description

Raychem Side Entry Tinel-Lock Ring, Heat Recoverable for Braid Termination

The Raychem side entry Tinel-Lock ring is provided in a plastic bag under a specific part number and appears similar to the one shown in Figure 1. The Raychem side entry Tinel-Lock ring used for double braid (BI) layers is marked with red paint to indicate it is the BI model.

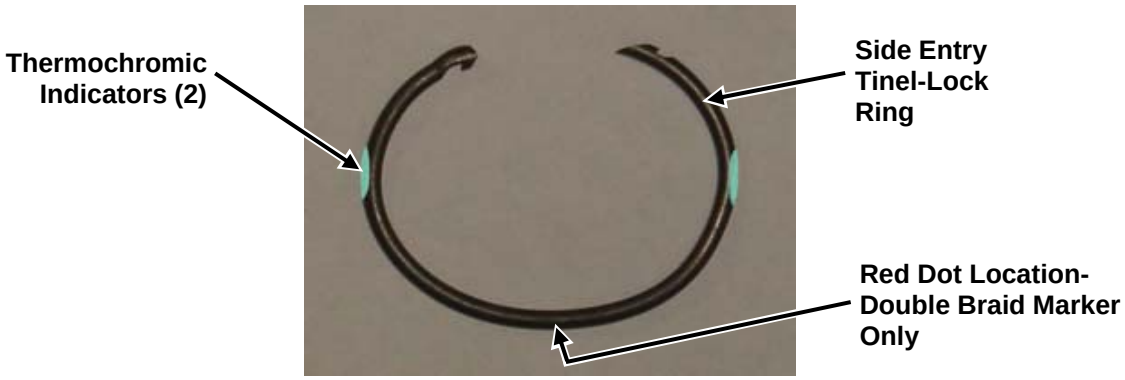

Figure 1. Side Entry Tinel-Lock Ring

5.0 Application Tool Part Numbers/Descriptions

- CV-1981-PID – Heat Gun
- AD-5000-TINEL-ASSY (220/240V) – Tinel-Lock Installation Tool (available all locations)
- RH-3960-1-TINEL-KIT-120V – Tinel-Lock Installation Tool (not available in Europe)
- DMC BT-ST-300D – Torque wrench (or equivalent)
- DMC BT-BS-610T – Torque Strap wrench (or equivalent)
- LOCTITE® 243 – per ELE-3COP-452
- Medium Phillips screwdriver (1) and medium flat-blade screwdriver (1)

6.0 Installation Procedure

The procedures listed in the following topics assume the backshell may be connected to the customer's connector and the selection of the Raychem side entry Tinel-Lock ring may have been chosen after a repair of the cable to terminate the braided shield.

6.1. Cable Preparations

1. If the cable is not already terminated, terminate the wires/cables in cable bundle with the contacts required for the connector in the specific application.

   Refer to manufacturer's instructions.

2. If the connector is not already pinned, pin the connector on cable bundle.

   Refer to manufacturer's instructions.

3. If the backshell is not already connected to the connector, finger-tighten the backshell onto the connector thread, ensuring no wires are trapped.

   Feel the positive alignment and meshing of the anti-rotation teeth by gently twisting the backshell back and forth until the connector is completely mated to backshell.

   The backshell will be tightened to the connector after the required cable tests have been successfully pasted.

4. Select the desired Raychem side entry Tinel-Lock ring, based on the cable entry sizes found in Table 1.

Table 1. Raychem Side Entry Tinel-Lock Ring Selection Guide

AI Ring Size/2	BI Ring Size/2/3	Cable Entry Size/4	Notes/1
SETR-04AI	SETR-04BI	0.250 [6.35]	x
SETR-06AI	SETR-06BI	0.375 [9.53]	x
SETR-08AI	SETR-08BI	0.500 [12.70]	x
SETR-10AI	SETR-10BI	0.625 [15.88]	x
SETR-12AI	SETR-12BI	0.750 [19.05]	
SETR-14AI	SETR-14BI	0.875 [22.23]	
SETR-16AI	SETR-16BI	1.000 [25.40]	
SETR-18AI	SETR-18BI	1.125 [28.58]	

NOTES:
1. Ring sizes marked with an X may require a tool for closing the smaller Raychem side entry Tinel-Lock rings, such as pliers.
2. The AI or BI in Raychem side entry Tinel-Lock ring model number denotes the single (AI) braid layer or double (BI) braid layers or heavier single layers under the Raychem side entry Tinel-Lock ring.
3. The SETR BI model is marked with red paint to indicate it is the BI model (See Figure 1). The SETR AI model is not marked to indicate the AI model. Both models have the Thermochromic Indicator (paint) marking in two places on the Raychem side entry Tinel-Lock ring (SETR).
4. The measurements in [ ] indicate centimeters, all other measurements are in inches.

5. Position the braid on the backshell past the shoulder of the shield termination surface and ensure there is approximately 0.2 inches of full braided weave past the shoulder. See Figure 2.

   Folding and creasing of the braid should be kept to a minimum, since the quality of the termination at high frequencies is directly related to the amount of "windowing" in the braid.

6. Slide the Raychem side entry Tinel-Lock ring onto the cable braid in a position near the backshell. See Figure 2.

7. Press the Raychem side entry Tinel-Lock ring together until it snaps into place, using pliers, if necessary. See Figure 2.

8. Slide the Raychem side entry Tinel-Lock ring onto the middle of the terminating surface of the backshell, by walking the ring onto the terminating surface in a side to side motion, but don't brute force it onto the terminating surface.

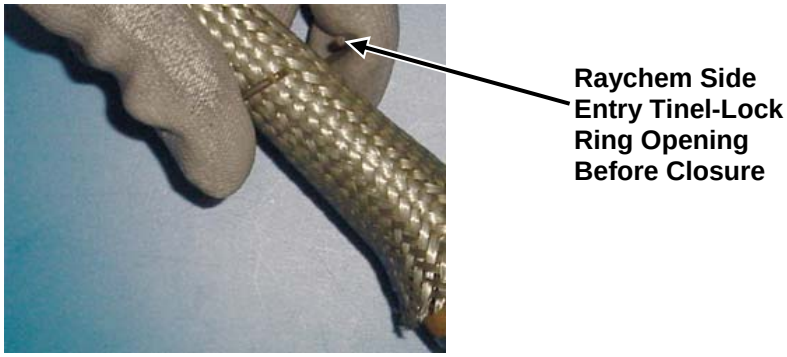

Figure 2. Pressing the Ring together on the Cable Braid

9. Go to the next procedure to use a resistance heater to shrink the Raychem side entry Tinel-Lock ring onto the cable.

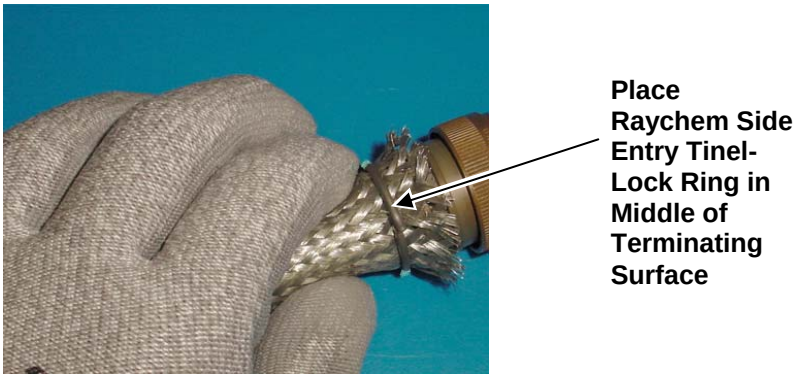

Figure 3. Raychem Side Entry Tinel-Lock Ring Latched in Place

6.2. Raychem Side Entry Tinel-Lock Ring Resistance Heating

- If using the AD-5000-TINEL-ASSY (220/240V) Tool, refer to ELE-3COP-359 and skip the following steps.
- If using the RH-3960-1-TINEL-KIT 120V Tool, use the following steps as a guide.

1. Place both electrodes on the either side of the Raychem side entry Tinel-Lock ring, near the joint, griping it between the electrodes, and ensuring that at least one spot of thermochromic paint on the ring is visible.

   - Avoid touching the thermochromic paint and backshell with the electrodes. See Figure 4a.

NOTE:	If you do not grip the Raychem side entry Tinel-Lock ring near the joint as shown in Figure 4, there is a risk of touching the thermochromic indicator paint, which could give a false color change reading.

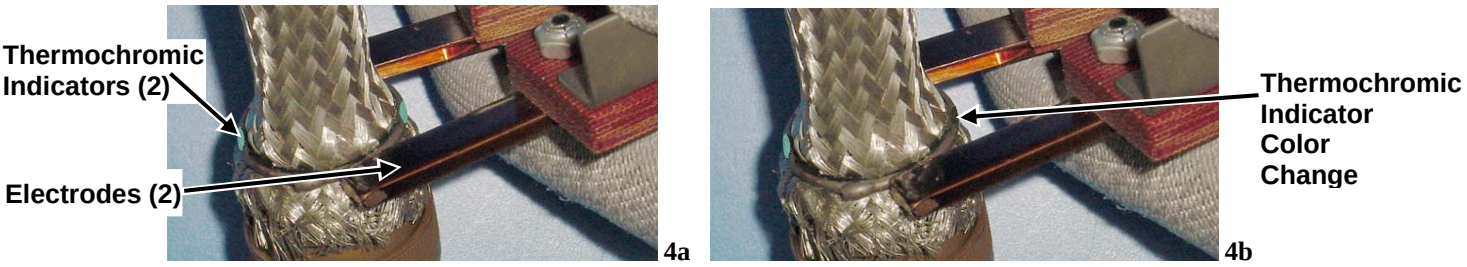

Figure 4. Heating the Ring and Thermochromic Indicator Color Change

NOTE:	When both Raychem side entry Tinel-Lock ring thermochromic indicators change color (darken), the ring has shrunk to the backshell's termination surface. Do not overheat the ring. See Figure 4b.

2. Press the foot-pedal to start the heating process and observe the Thermochromic Indicator for a color change.

   Refer to ELE-3COP-359 and manufacturer's instructions and safety concerns including wearing safety gloves for heat protection. See Figure 4a.

3. Observe the thermochromic paint closely and when it changes color (darkens), ease the pressure on the foot-pedal to deactivate the electrodes. See Figure 4b.

   Helpful Hint: *When the 1st thermochromic indicator changes color, move the electrodes to other side of the joint to affect the other thermochromic indicator. When both thermochromic indicators have changed color, release the foot pedal to avoid over heating.*

4. Repeat Steps, 1-3 and turn the electrodes approximately 30º to heat the other side of the SETR joint and observe the second thermochromic indicator for the color change.

5. Trim excess braided shield, evenly around the ring, between Raychem side entry Tinel-Lock ring and shoulder, using small scissors or a small cutter. See Figure 5.

Figure 5. Trimming the Excess Braid

6.3. Completing the Installation

1. Gently disconnect the backshell from the connector, leaving space between the backshell and connector to apply thread sealant in the next step.
2. Apply LOCITITE® 243 to the first 2 or 3 threads of the connector.
3. Gently screw the backshell onto the connector thread, ensuring no wires are trapped.

   Feel for the positive alignment and meshing of the anti rotation teeth by gently twisting the backshell back and forth until the connector is completely mated to backshell.
4. Tighten the backshell onto the connector using the required torque values as specified in ELE-3COP-452.

   Refer to ELE-3COP-452 for installation and torque values to tighten the backshell onto the connector.
5. If a molded boot is required, refer to the correct procedure to install the molded boot.

   Refer to ELE-3COP-604 if sealant is required; apply it between the molded boot and the cable bundle.
6. Continue with any harness assembly tests as applicable to verify the installation.
7. If no other cable tests are required, this ends the Raychem side entry Tinel-Lock ring assembly procedures.

7.0 SETR Removal

WARNING

Wear safety glasses to prevent possible injury due to foreign object debris (FOD), by placing a piece of glass tape or a double layer of masking tape over the SETR joint prior to twisting the joint. This will hold any FOD that might fly off when opening the Raychem side entry Tinel-Lock ring joint by a twisting motion.

1. Place short strip of glass tape or a double layer of masking tape over the Raychem side entry Tinel-Lock ring joint prior to twisting the joint
2. Grip the Raychem side entry Tinel-Lock ring connection joint tightly with medium size cutters. See Figure 6a.

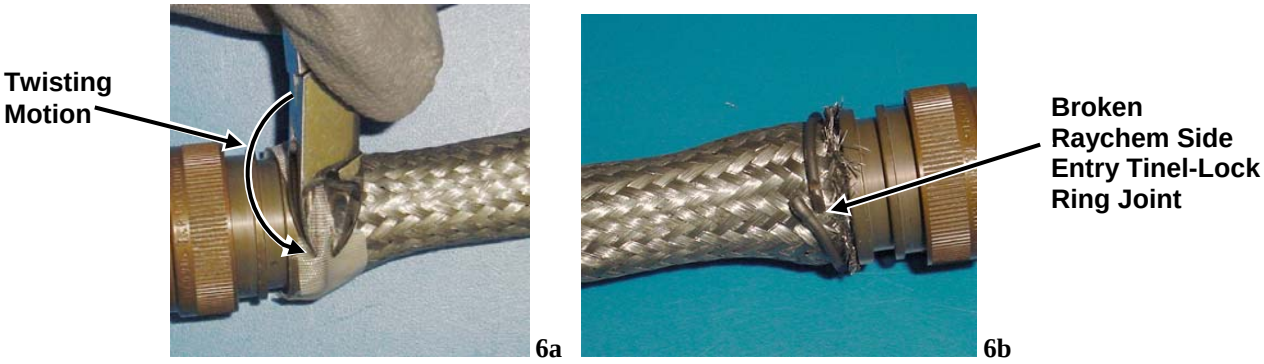

Figure 6. Raychem Side Entry Tinel-Lock Ring Broken

3. Use a twisting motion to turn the grip on the Raychem side entry Tinel-Lock ring joint until the Raychem side entry Tinel-Lock ring joint is broken open. See Figures 6a and 6b.

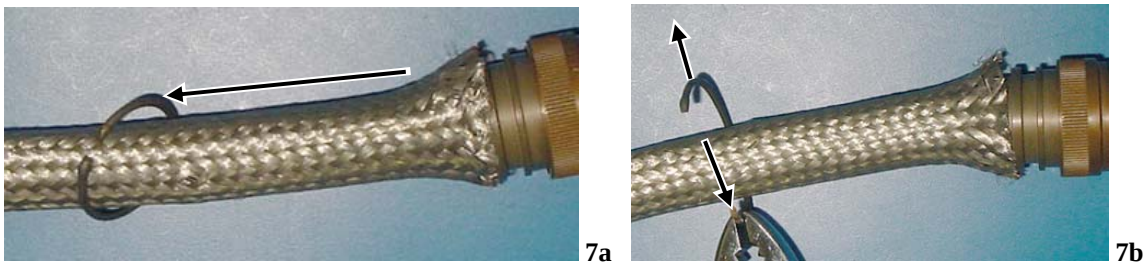

Figure 7. Raychem Side Entry Tinel-Lock Ring Removal

4. Slide the Raychem side entry Tinel-Lock ring away from the backshell to further increase the separation between the two Raychem side entry Tinel-Lock ring ends. See Figure 7a.
5. Pull the two ends of the Raychem side entry Tinel-Lock ring apart, using medium size pliers if necessary, and remove the Raychem side entry Tinel-Lock ring from the cable. See Figure 7b.
6. If no cable assembly tests are required, this ends the Raychem side entry Tinel-Lock ring removal procedure.