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## Class I

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# STANDARD INSTALLATION PROCEDURES FOR RAYATEN COATED MOULDED PARTS - TRANSITIONS

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## **ELE-3COP-573**

### **TE Connectivity's Rayaten Coated Transition Moulded Parts**

ELECTRONIC APPROVAL, NO SIGNATURES WILL APPEAR.

IF PRINTED THIS DOCUMENT BECOMES UNCONTROLLED

Before starting work please read this document carefully and note the guidance given.

## 1. PURPOSE AND SCOPE

This Code of Practice describes the procedures to be used when installing Rayaten Coated Transition Moulded Parts from TE Connectivity (TE) using the standard method. The instructions stated in this document take preference over IPC/WHMA requirements, as do the drawing and any customer documentation.

It is good working practice that where trained operators have not installed this product for over 6 months, a sample installation should be carried out by the operator to refresh installation practice. Performance of the sample can be checked using the inspection standards described within this document.

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## 2. PERFORMANCE OBJECTIVE

This code of practice is produced to support operators already trained in the installation of heat shrinkable and harnessing products. It identifies the procedures to be used when installing -25 Rayaten coated transition moulded parts with S1125 and S1184 adhesive using a hot air gun. It also details the preparation of the cable jacket and Rayaten coated transition moulded part.

### NOTE:

It is recommended that the moulded part chosen for the application is the largest size possible to fit the harness.

Best results will be obtained if 10% unresolved recovery (grip) for all outlets of the Rayaten Moulded Parts is available. Please check for compliance with this requirement before assembly. Unresolved recovery is defined as the difference between the installed diameter and the fully shrunk (recovered) diameter as given on the appropriate customer drawings, expressed as a percentage of the fully shrunk diameter. For example, a Rayaten Moulded Part fully shrunk with a diameter of 10 mm and an installed diameter of 11 mm has a 10% unresolved recovery.

### 3. MATERIALS AND EQUIPMENT

Appropriate -25 Rayaten Coated Transition Moulded Part.

Raychem S1125 adhesive.

Raychem S1184 adhesive.

P100 grit Emery Cloth or equivalent.

Degreasing Agent isopropyl alcohol or isopropanol (IPA) impregnated tissue wipe.

Heavy duty tissues.

Heat Gun CV1981 or equivalent. Other hot air guns may be used but these must be capable of delivering the temperatures required for installation of the Rayaten Moulded Part. This also includes hot air guns with temperature displays.

Reflector PR-26 or equivalent.

Bend Test Fixture 500Z1270 (TE Connectivity).

Heat Resistant Gloves.

Safety Glasses.

#### 4. HEALTH AND SAFETY

Adhere to local Codes and Regulations relating to Safe Working practices. For the UK, adhere to requirements of the Health and Safety at Work Act 1974 and subsequent amendments.

The installation should be carried out in a well-ventilated area.

Always wear heat resistant safety gloves when handling hot plastics and adhesives.

The use of suitable protective gloves and barrier cream is recommended when using solvents. Avoid prolonged repeated skin contact with solvents and always wash hands after using solvents.

Care should be taken to wear safety glasses when using and handling chemical solvents. If eyes do become contaminated, flush with water and obtain medical assistance immediately.

Always ensure all equipment is calibrated before use.

## 5. PROCEDURE - PREPARATION

To ensure the best possible bond between the moulded part and the cable jacket, degrease the cable jackets in the area where the H, J and K ends will recover onto the cable using Isopropyl alcohol. (Approximately 30 mm).

Abrade the cable jacket thoroughly in the same area with P100 grit emery cloth. The whole surface of the cable jacket should be abraded removing any print on the cable jacket. See Figure 1.

Degrease both the uncoated and coated areas of the moulded part where the H, J and K ends will recover onto the cable using Isopropyl alcohol.

Abrade the internal uncoated section of ends H, J and K of the moulded part taking care to avoid abrading the coated area.

Remove loose particles from the abraded area using a dry tissue. **DO NOT** use a solvent wipe.

Ensure sufficient cable jacket has been abraded to incorporate the strip length requirement.

Take care to avoid abrading the plating of the braid.



*Figure 1 Degreased and abraded cable jacket*

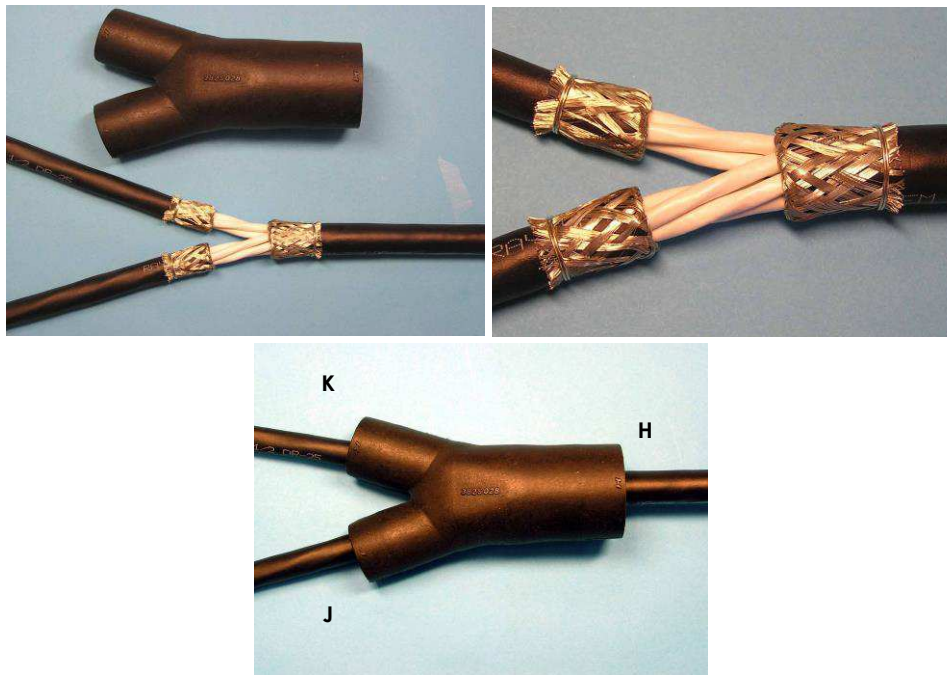
**This part of the cable preparation is very important in ensuring a strong bond to the moulded part.**

## Installation

Strip back cable jacket on ends H, J and K to the appropriate dimensions

Fold back the braid over the cable jacket and secure the end of the braid in three positions using 22 SWG tinned copper wire. See Figure 2.

Degrease the folded back braid at ends H, J and K using Isopropyl alcohol.



*Figure 2 Braid fold back*

In order to verify correct installation, it is important that certain checks are carried out to ensure that there are no high resistance terminations. This can be done by recording the DC resistance of the braid on each of the three branches H, J and K. Upon completion of installation of the Rayaten moulded part, the DC resistance value should not increase by greater than 2.5 milliohms.

### Example

Where initial DC value of branch H = 8 milliohms, J = 17 milliohms and K = 17 milliohms. Initial reading end H to J is  $8 + 17 = 25$  milliohms.

After moulded part installation max reading end H to J should be  $8 + 17 + 2.5 = 27.5$  milliohms.

The measurement of dc resistance gives no statement about the screening performance of the harness, it only tells the quality of the termination.



Apply S1184 adhesive 360° to all braids working the adhesive into the braid for a length of 10 - 20 mm depending upon the size of the moulded part to thickness of approximately 2 mm.

Position Rayaten moulded part centrally and heat uniformly, starting from the centre moving outwards towards each breakout in turn.

Before the legs are fully recovered, apply S1125 adhesive 360° to the uncoated area of the moulded part and all cable jackets.

Continue heating along the moulded part until all ends are fully recovered.

Heat must be applied evenly around the moulded part to recover evenly and prevent scorching.

Ensure the part is fully recovered onto the cable. Look for evidence that adhesive is present and clean off excess adhesive.

Always ensure that the air vent on the rear of the hot air gun is open and that it is dust free.

Always allow the hot air gun to stabilise at the required temperature and setting for two minutes before commencing calibration and installation.

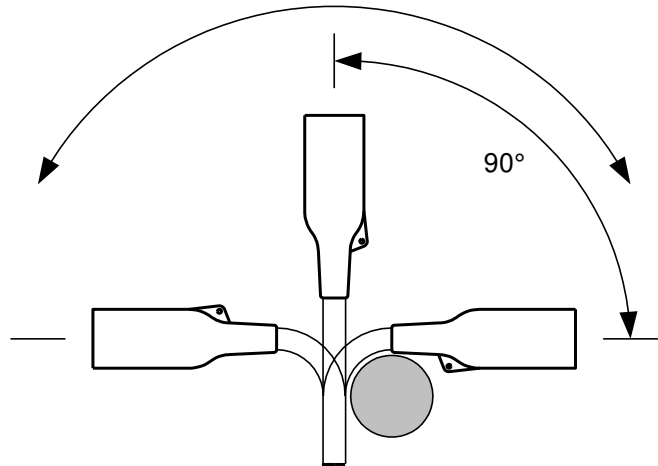
Hot air gun validation shall be carried out on a regular basis, frequency will depend on usage. Please refer to the Manufacturers guide for hot air gun calibration and maintenance and ELE-3COP-711 for hot air gun validation.

For Rayaten moulded part with Raychem S1184 and S1125 adhesives set the hot air gun to 230°C to 250°C.

**Allow to stand for 24 hrs before any aggressive handling**

## 6. INSPECTION REQUIREMENTS

The termination should be rotated so it is subjected to a flex test of 90° in each of four planes around a mandrel with a diameter equal to 6 times the cable diameter.



There should be no separation between the Rayaten Moulded Part and the cable jacket at the adhesive bond line.

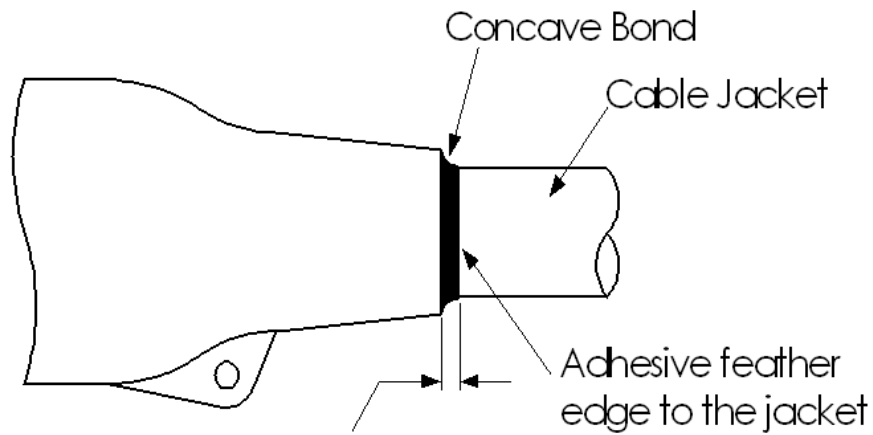
There should be no separation between the Rayaten Moulded Part and the adaptor.

The Rayaten Moulded Part must be free from fingerprints, excess adhesive and scorch marks.

There should be no cross contamination of the S1125 and S1184 adhesives.

Record DC resistance measurements.

## 7. VISUAL STANDARDS



This dimension approximately equivalent to the boot or tubing wall thickness



Acceptable



Insufficient adhesive



Excess adhesive

## 8. REVISION HISTORY

| Author    | Approved     | Date      | Rev | Comments   |
|-----------|--------------|-----------|-----|--|
| P. Newman | N. Dorricott | 16FEB2010 | 1   | Initial  |
| P. Newman | N. Dorricott | 07JUN2011 | 2   | Visual identity  |
| P. VU     | H. Smith     | 23MAR2018 | 3   | Plated Rayaten replaced by Coated Rayaten moulded parts<br>RTS-1364475.1 |

*Table 1 Revision history*

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