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## ELE-3COP-559

### Title – Installation of /225 Coated Straight and 90° Moulded Parts using a Hot Air Gun.

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

#### 1 Purpose and Scope

This COP describes the procedure to be used when installing -25 moulded parts with /225 adhesive using a hot air gun. The instructions 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.

#### 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 procedure to be used when installing both straight and 90° -25 moulded parts with /225 adhesive using a hot air gun. It also details the preparation of the cable jacket and adaptor substrates.

##### Note

Best results will be obtained if 10% unresolved recovery (grip) for all outlets of the 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 SCD expressed as a percentage of the fully shrunk diameter. For example a moulded part fully shrunk with a diameter of 10mm and an installed diameter of 11mm has a 10% unresolved recovery.

#### 3 Materials and Equipment:

Appropriate -25 Moulded parts with a pre-coated /225 adhesive. (All parts that have pre-coated /225 adhesive are suffixed with /225. e.g. 202K153-25/225-0).

Appropriate moulded part adaptor.

100 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 moulded part. This also includes hot air guns with temperature displays. Reflector PR 51 or equivalent. Bend Test Fixture 500Z1270 (TE)

Heat Resistant Gloves.

Safety Glasses. Clock

timer.

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### 4 Health and Safety

Adhere to local Codes and Regulations relating to Safe Working practices. For the U.K. 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 adaptor, degrease the adaptor end where the H end of the moulded part will recover onto the adaptor with isopropyl alcohol or isopropanol (IPA) impregnated tissue wipe. As adaptors are normally plated NEVER abrade the adaptor.

To ensure the best possible bond between the moulded part and the cable jacket:- Degrease the cable jacket in the area where the J end will recover onto the cable using Isopropyl alcohol. (Approximately 30mm).

Abrade the cable jacket thoroughly in the same area with 100 grit emery cloth. The whole surface of the cable jacket should be abraded removing any print on the cable jacket.

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.



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

### Installation

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 stabilize at the required temperature and setting for two minutes before commencing calibration and installation.

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Setting of the gun should be carried out on a regular basis using the following temperatures. Frequency will depend on usage. It is recommended that the heat gun is set daily using a Calibrated thermocouple 25 mm from the end of the reflector within the temperature range stated opposite. Please refer to the Manufacturers guide for Hot Air Gun Calibration and maintenance.

The moulded parts recommended recovery temperature ranges using a CV1981 Heat gun and PR51 reflector are shown in Table 1.

Moulded Part Number	Heat gun temperature setting
202W232	200°C to 225°C
202K\222K121	200°C to 225°C
202K\222K132	200°C to 225°C
202K\222K142	230°C to 255°C
202K153\222K152	230°C to 255°C
202K\222K163	255°C to 285°C
202K\222K174	255°C to 285°C

Table 1

Where connector / adaptor preheating is judged to be necessary for large and high heat sink terminations, care must be taken to ensure the connector insulation and primary wire insulation are not damaged: Ensure heat is directed to the metal area of the adaptor and all other areas are avoided. TE cannot be held responsible for damage caused during the preheating of connectors.

To ensure good adhesive flow to the cable end, do not install the boot on a vertical plane with the cable end pointing upwards, see figure A.

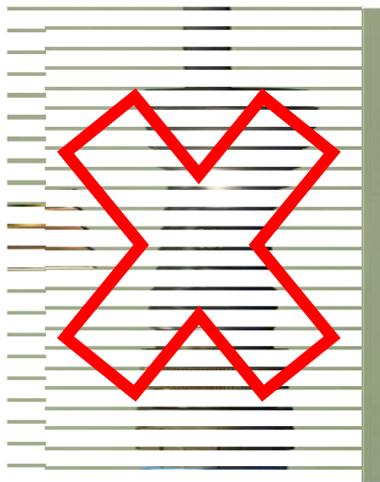


Figure A

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Position the Moulded Part so that the lipped H end will recover into the groove on the adaptor. When recovering, the heat must be applied evenly around the moulded part at the H / adaptor end to enable the part to recover evenly and prevent scorching. See Figure 1.



Figure 1



Figure 2

Ensure the part is fully recovered onto the adaptor. This should take approximately 30 seconds for mid-range parts. See Figure 2

Continue heating the moulded part at the H / adaptor end to ensure the adhesive flows and achieves maximum bonding performance. Look for evidence that adhesive is present. Take care not to scorch the moulded part. See Figure 3



Figure 3



Figure 4

Continue heating along the moulded part recovering the J end onto the cable. See Figure 4.

Heat must be applied evenly around the moulded part at the J end to enable the part to recover evenly and prevent scorching. Continue heating the moulded part at the J end to ensure the adhesive flows. Look for evidence that adhesive is present, excess adhesive should be removed with the folded edge of the 100 Grit emery cloth. See Figure 5

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Figure 5

Ensure heat is not aimed into the inside of the moulded part as this may cause pre curing of the adhesive. The moulded part must be post heated at the cable J end and adaptor H end, to obtain maximum bonding performance as follows:

Moulded part sizes up to and including 153 for 45 seconds.

Moulded part sizes 163 by an additional 30 seconds at each end.

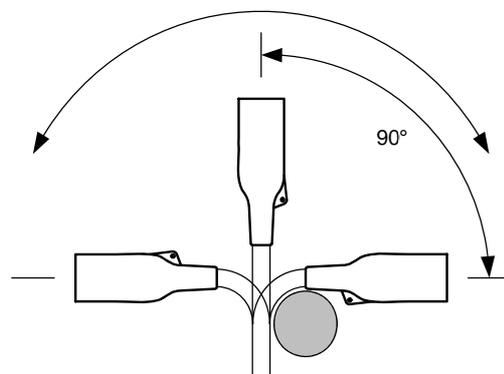
Moulded part sizes 174 by an additional 45 seconds at each end.

Post heating MUST be carried out to make sure that the adhesive has been fully activated.

**Allow to stand for 2 hrs before any aggressive handling**

### 6 Inspection Requirements

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



When inspecting /225 moulded parts it is acceptable to see a slight opening on the extreme edge of the cable end of the moulded part to a maximum depth of 1mm.

An opening at the cable end of the moulded part is not a criteria for the quality of the bonding area. If this is observed repeat the flex another two times to ensure the opening does not extend.

The Moulded Part must be free from fingerprints and scorch marks.

For 90° moulded parts ensure moulded part is formed to 90° unless otherwise stated.

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## 7 Visual Standards



ACCEPTABLE  
360° flow of adhesive



ACCEPTABLE  
Evidence of flow



ACCEPTABLE  
360° flow of adhesive



ACCEPTABLE  
Evidence of flow



NOT ACCEPTABLE  
No evidence of adhesive flow

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NOT ACCEPTABLE  
Scorch marks



NOT ACCEPTABLE  
Necking



NOT ACCEPTABLE  
Under Recovered

Although illustrations in this COP show straight moulded parts the above instructions are also applicable for 45° and 90° moulded parts.

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5	CR06-DM-071	10/01/07	John Cronin	Ken Wallington
6	CR09-DM-018	09/02/09	Paul Newman	Neil Dorricott
7	Visual Identity	07/06/11	Paul Newman	Neil Dorricott
8	Visual Identity	21/01/15	Andy Poole	Helen Smith

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