

## S-1255-04 Flex Epoxy Installation Guide

For Use With  
High Temperature, Heat Shrinkable Harnessing Components

Installation Guide #TSL 974001    Revision: A    Mar 10, 1999
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### 1.0 REQUIRED HEATING EQUIPMENT:

Raychem's high temperature harness systems consist of System 300 (Flouropolymer), System 200 (Viton) and System 30 Viton/Polymer Blend (VPB) products. High temperature tubings and molded parts necessitate heating equipment capable of at least 2000 watts at a temperature greater than the shrink temperature of the material. The following equipment is recommended.

- Raychem Thermogun CV-1983 (set to maximum with System 300)
- Raychem Thermogun™ HG 751A-C or HG 752A (220V) with:
  - For System 300 Assemblies\_
    - TG-136 reflector for products up to 1 3/4" diameter or TG-137 reflectors for molded parts and tubing up to 3" in diameter.
  - For System 30 and System 200 -
    - TG-21 reflector for small tubing (sizes less than 3/4"). TG 23 for up to 1 3/4" or TG-24 for items up to 3" in diameter.

**Note:** *Raychem Thermogun™ CV5000 Model 750B or 752B(220V), MkII can also be used if available from the customer's shop. This item has been discontinued, however, and is not available for purchase.*

- Alternate non-Raychem heat gun/reflector combinations must meet the following requirements for use:
  - 1) Excess of 2000 Watts.
  - 2) Temperature in midpoint of reflector of 260°C to 480°C (500°F to 900°F).

### 2.0 RECOMMENDED TOOLS AND MISCELLANEOUS EQUIPMENT:

- Protective gloves and eye wear
- IPA or Polywater Corp. Type HP solvent wipes
- 320 grit emery cloth
- Meisi Hotweezers
- Scissors
- Wiping Rags or Towels
- Orange wood stick
- Teflon Tape, Permacel #422

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## 3.0 INSTALLATION PROCESS:

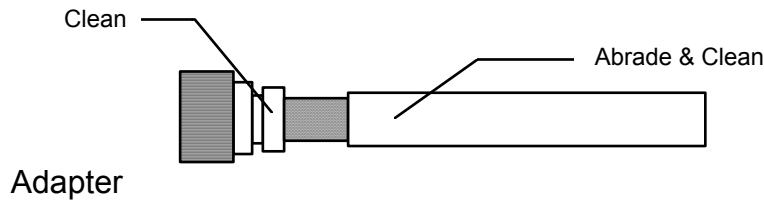
3.1) Abrade the outside of the tubing with the emery cloth, in the area where the molded part and adhesive will be in contact.

3.2) Abrade the inside of the molded part (boot), at both ends, using the emery cloth.

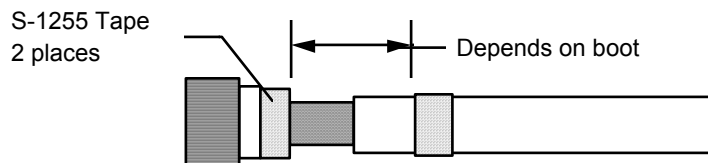
**Note:** Do not abrade the boot if it is pre-coated with adhesive.

3.3) Wipe the abraded regions of the tubing and the boot, and the outside of the adapter, with a solvent wipe (see drawing below):

**Note:** Do not abrade any metal areas of the adapter.



3.4) Place one wrap (entry size 8 or below) or two wraps (#10 entry and above) of the S-1255-04 tape on the knurled region of the adapter and the boot groove as show below. The adhesive will tack to itself.



3.5) Place one wrap (plus a little more for overlap) of the S-1255-04 tape on the tubing as shown in the figure above.

**Note:** Refer to the molded part Specification Control Drawing "P" dimension for correct positioning of the tape.

3.6) Install the reflector on the Thermogun and close the air vents.

3.7) Pre-heat the Thermogun for 2 to 3 minutes.

3.8) While wearing appropriate protective gloves locate the H end of the boot (the end with a lip) over the groove in the adapter and begin shrinking the boot onto the adapter. Continue shrinking towards the cable (J) end of the molded part. When the boot is completely recovered, continue post heating at the adhesive joints until the expansion lines in the boots disappear (System 300) or until some adhesive flow occurs (Viton and VPB harnesses). Stop heating the assembly if the boot appears to swell from the effect of trapped air.

**Note:** During the shrinking process hot epoxy will flow out from under the boot on the cable end. Avoid direct skin contact with the hot adhesive. Remove any excess adhesive on both ends of the molded part by wiping with a lint free shop rag or wooden dowel, such as an orange stick or popsicle stick.

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3.9) For best appearance, after the excess adhesive has been wiped from the end of the boot, tape wrap the end of the boot with Permacel #422 Teflon tape. Begin wrapping on the boot and spiral wrap (50% overlap) down onto the cable jacket 1 inch. Any additional flow of the epoxy while in the oven will now be confined.

**Note:** *S-1255-04 should not be used as a shim when cable build up is desired. This material will melt and flow when heated, preventing it from fulfilling this function.*

### 3.10) Recommended Oven Cure of Epoxy:

Under normal conditions, the heating described above in 3.8 is satisfactory for a partial cure of the adhesive. When cooled to room temperature, the harness can be moved, but should not be stressed at the boot joints.

**Note :** *Rework is most easily accomplished when the epoxy is in this partial-cured condition.*

Full bond strength is obtained by oven curing at the following times and temperatures:

220°C (428°F) for 15 minutes (Components rated at or above 200°C)
150°C (302°F) for 40 minutes (Components rated at or above 150°C)

**Note:** *Loosen the backshell adapters of each connector to allow trapped air an escape path prior to placing the harnesses in the oven for curing. Oven temperature selection should take into consideration **all** harness components, especially wire and connectors.*

## 4.0 Inspection of the Adhesive Joints -

Joints which have been fully cured can be inspected for workmanship by the following procedure.

- 4.1 Visually inspect the edge of the boot for excess epoxy. Remove with an orange stick or lint free rag while the adhesive is still warm.
- 4.2 Inspect for voids between the cable jacket and the boot. There should be no gaps visible. (Uneven cable constructions may need a tubing shim beneath the jacket to help smooth the contour of the bundle.)
- 4.3 Repair - Voids can be reworked by adding more epoxy tape and heating in the nozzle of a Thermogun. Use an orange stick to force the melted epoxy tape into the void. Heat in the nozzle 1-2 minutes until a cure state is reached.

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See MSDS # RAY/3133 or phone **1-(800) 424-9300** for emergency information

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