

**INSTALLATION PROCEDURE FOR
REFRIGERATOR SENSOR SUBSTITUTION
using THERMOSHRINKING SPLICES
and THERMOSHRINKING TUBE**

Components in the kit bag:

Splice: Cwt-9002 – 3 pieces

Shrinking tube 95 mm: ATUM 9/3-X – 1 piece

Service Probe

Summary

1. Application equipment
2. Cables and wires preparation
3. Splice installation sequence
4. Control
5. Repair (if is necessary)
6. Tube application
7. Control
8. Probe restoring

Guide For Visual Inspection-

a) - Under-heated Installation

- Contour of solder-ring is visible in joint area.
- Contour of wires, in joint area, is obscured by solder.

Unacceptable



b) - Acceptable Installation

- Joint area is clearly visible through the sleeve.
- Solder-ring has lost all appearance of ring shape.
- Contour of wires is visible through the solder.
- Fillet is clearly visible along the wire interface.
- Inserts have melted along the wires.

Acceptable



c) - Over-Heated Installation

- Joint area is not visible because of severe darkening.
- Solder fillet is not visible along the wire interface.
- Wire insulation is damaged outside the sleeve.

Unacceptable



4.3 Control of the Assembly:

- The Solder-splice device must not be cut, split or pierced.
- No copper strands must poke through the sleeve.
- The sleeve and the wire jackets must not show evidence of mechanical damage or over-heating, such as melting zones, burning, spikes, etc.
- A slight browning of the sleeve is not considered as a defect and is not sign of performance degradation.

5 - Repair (if necessary)

5.1 - Repair of the Under-heated Assembly:

- Heat the assembly again in order to complete the melting and flowing of the soldering.

5.2 - Repair of an Over-heated Assembly:

Remove the Solder-splice device as indicated below:

- Cut the sleeve with a sharp cutter blade. Take care not to damage the wires.
- Heat the device with a hot air gun, to soften it and remove it with a pair of pliers.
- Install a new device by following the operations described in paragraph 3.

6 - Thermoshrinking tube application

Slide the tube in order to cover the total joint length taking care to cover the single wire insulation

Pre-heat the hot air gun equipped with the appropriate reflector, until the operating temperature is achieved.

Center the reflector at the middle of the tube.

Heat the component device moving slightly from one side to the other until the sleeve is totally shrunk and the sealing material melted out from the shrunk tube.

Stop heating when the tube well fitted the complete area.

Allow the assembly to cool down before handling.

7 - Control

Control of the Positioning:

- The wires must not visible out of the shrunk tube.
- The sealing melt must be present al over the tube edges.

8 – Probe restoring

Restore the probe head position in the appliance adapting the new cable length to the present enviroment constrains.

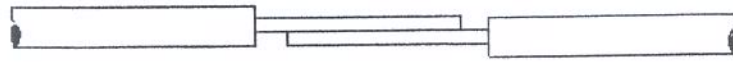


Fig. 1

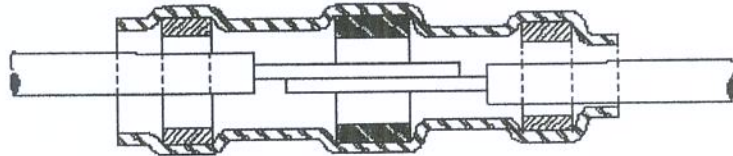


Fig. 2

3.2 - Heating

Pre-heat the hot air gun equipped with the appropriate reflector, until the operating temperature is achieved.

Center the reflector at the solder-ring location.

Heat the Splice-Sleeve device until the sleeve is totally shrunk, the solder-ring has melted and flowed through the strands.

Stop heating when a solder fillet can be seen between the conductors.

ATTENTION: *The deformation of the solder-ring is not enough to consider that the soldering has been done efficiently.*

Finish by shrinking totally both ends of the sleeve, to complete the melting of the sealing rings.

Allow the assembly to cool down before handling.

4 - Control

4.1 - Control of the positioning:

- The conductors must not pass over the wire jackets.
- The solder joint must have a minimum length of 3.5 mm.
- The Solder-splice device must cover the entire stripped area.

4.2 Control of the Heat:

- The solder-ring must be totally melted and flowed along the conductors to create a solder fillet.
- A solder fillet must be visible between conductors. Visible remains of solder indicate that the joint has been under-heated.
- A lack of solder indicates that the joint has been over-heated (the solder may have disappeared in the strands by capillary effect).
- The sleeve must be completely shrunk.

1 - Application Equipment

Hot air gun to use must be able to give a $330\pm 20^{\circ}\text{C}$ air temperature and equipped with a reflector.

2 - Wire Preparation

Cut the failed probe at the base of the sensor head.

Remove 35 mm. of the external sheath.

Pre-strip the wires at L of 15 mm of the foamed cable.

With an ohmmeter check the electrical continuity of each single wire between the ends of the foamed cable.

Pre-strip the wires at L of 15 mm of the spare probe.

Remove the pre-stripped insulation just before installation, in order to avoid damage or conductor oxidation:

Control: The wire strands must not be damage or oxidized.

The wire jacket must be cut properly.

Slide the Shrinking-tube onto one cable

3 - Installation Sequence

3.1 - Wire preparation and positioning

Slide the Splice-Sleeve device onto one wire

Align the wires that are to be spliced with an overlap of 10 to 12mm.

For a small gauge wires, (up to 1mm^2), and when a mechanical attachment is required, secure the 2 wire ends, by twisting them together. Align carefully the strands in order to avoid any poke through of the sleeve (see Fig. 1 and Fig. 2).

In other cases, align wires in such a manner that all strands are parallel.

Then, slide the sleeve over the splice area and center the solder-ring of the sleeve at the center of the splice length.