

**3M**

# Low Voltage Heat Shrink Joints

## 91-AH xx-N – Inline Joint Series for Crimp Connectors

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### 1. Product Description

3M™ 91-AH xx-N series Low Voltage Heat Shrink kits are made from cross linked halogen-free polyolefin tubing which is inside coated with hot melt adhesive. As the adhesive melts and the tubing shrinks, a perfect watertight seal is formed.

### 2. Applications

3M™ 91-AH xx-N Series Low Voltage Heat Shrink kits have been developed to be used on 4-core and 5-core non shielded, non-armoured, polymeric insulated energy cables up to 0,6/1 kV according to Cenelec HD603 and IEC 60502-1. The application incorporates electrical insulation and mechanical protection of joints with crimp connectors. They can be used indoor or outdoor in underground and submerged applications.

#### Features

- Quick and easy installation
- Slim design accommodates a wide range of cross sections up to 300 mm<sup>2</sup>
- Designed for 4-core and 5-core cables
- Excellent watertight sealing
- High mechanical protection
- Excellent electrical insulation properties
- Good resistance against UV-radiation, alkaline earths and chemical agents

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Reference: AABDD40203#EU 02

Issue date 05.03.2020  
Supersedes 29.04.2016

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- Halogen-free thick-walled heat shrink material

### 3. Typical Properties

#### 3.1 Testing

3M™ 91-AH xx-N Series has been tested according to Standard EN 50393 Table 3.

| Type of Test according to DIN EN 50393 Table 3 |                  | Results     |
|--|------------------|-------------|
| AC Voltage Withstand Test in air               | 4 kV AC/ 1 min   | passed      |
| Insulation Resistance Test in air              | 1 kV DC          | > 10.000 MΩ |
| Heat Cycle in air                              | 63 cycles: 5h/3h | passed      |
| Heat Cycle in water                            | 63 cycles: 5h/3h | passed      |
| AC Voltage Withstand Test in water             | 4 kV AC/ 1 min   | passed      |
| Insulation Resistance Test in water            | 1 kV DC          | > 10.000 MΩ |

### 4. User Information

#### 4.1 Selection Guide

| Kit Description | Cable Cross Section range<br>N(A)YY / N(A)2YY | Tube dimensions |        |            |        | Approx. Joint Length |
|-----------------|---|-----------------|--------|------------|--------|----------------------|
|                 |   | Inner Tube      |        | Outer Tube |        |                      |
|                 | [mm <sup>2</sup> ]                            | E [mm]          | R [mm] | E [mm]     | R [mm] | [mm]                 |
| 91-AH 20-5 N    | 5 x 1,5 – 5 x 6                               | 12              | 3      | 33         | 8      | 210                  |
| 91-AH 21-5 N    | 5 x 6 – 5 x 16                                | 15              | 4      | 43         | 12     | 370                  |
| 91-AH 21 N      | 4 x 6 – 4 x 25<br>4 x 6 – 4 x 16*             | 15              | 4      | 43         | 12     | 520                  |
| 91-AH 22 N      | 4 x 25 – 4 x 50*                              | 22              | 6      | 55         | 15     | 600                  |
| 91-AH 23 N      | 4 x 25 – 4 x 95                               | 33              | 8      | 65         | 16     | 700                  |
| 91-AH 24 N      | 4 x 35 – 4 x 150<br>4 x 70 – 4 x 150*         | 33              | 8      | 105        | 26     | 750                  |
| 91-AH 25 N      | 4 x 95 – 4 x 300<br>4 x 185 – 4 x 240*        | 43              | 12     | 130        | 36     | 900                  |

\*Application ranges according DIN V 47640    E = Expanded Diameter    R = Recovered Diameter

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## 4.2 Kit Content

- Thick wall, adhesive coated, outer protection tube
- Thick wall, adhesive coated, connector insulation tube
- Detailed installation instruction

## 4.3 Storage

3M™ 91-AH xx-N series Low Voltage Heat Shrink kits have a shelf life of at least 10 years when stored at ambient temperatures with a humidity level < 75 % in the original sealed bag. During storage and prior to application kits should be stored away from heat sources.

## 4.4 Safety Note

For heat shrink applications a heat source is required, which must be handled with care. Avoid skin contact with hot material.

## 5. Additional Information

To request additional product information, see address below.

### ***Important Notice***

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All statements, technical information and recommendations contained in this document are based upon tests or experience that 3M believes are reliable. However, many factors beyond 3M's control can affect the use and performance of a 3M product in a particular application, including the conditions under which the product is used and the time and environmental conditions in which the product is expected to perform. Since these factors are uniquely within the user's knowledge and control, it is essential that the user evaluates the 3M product to determine whether it is fit for a particular purpose and suitable for the user's method or application.

Values presented have been determined by standard test methods and are average values not meant to be used for specification purposes.

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