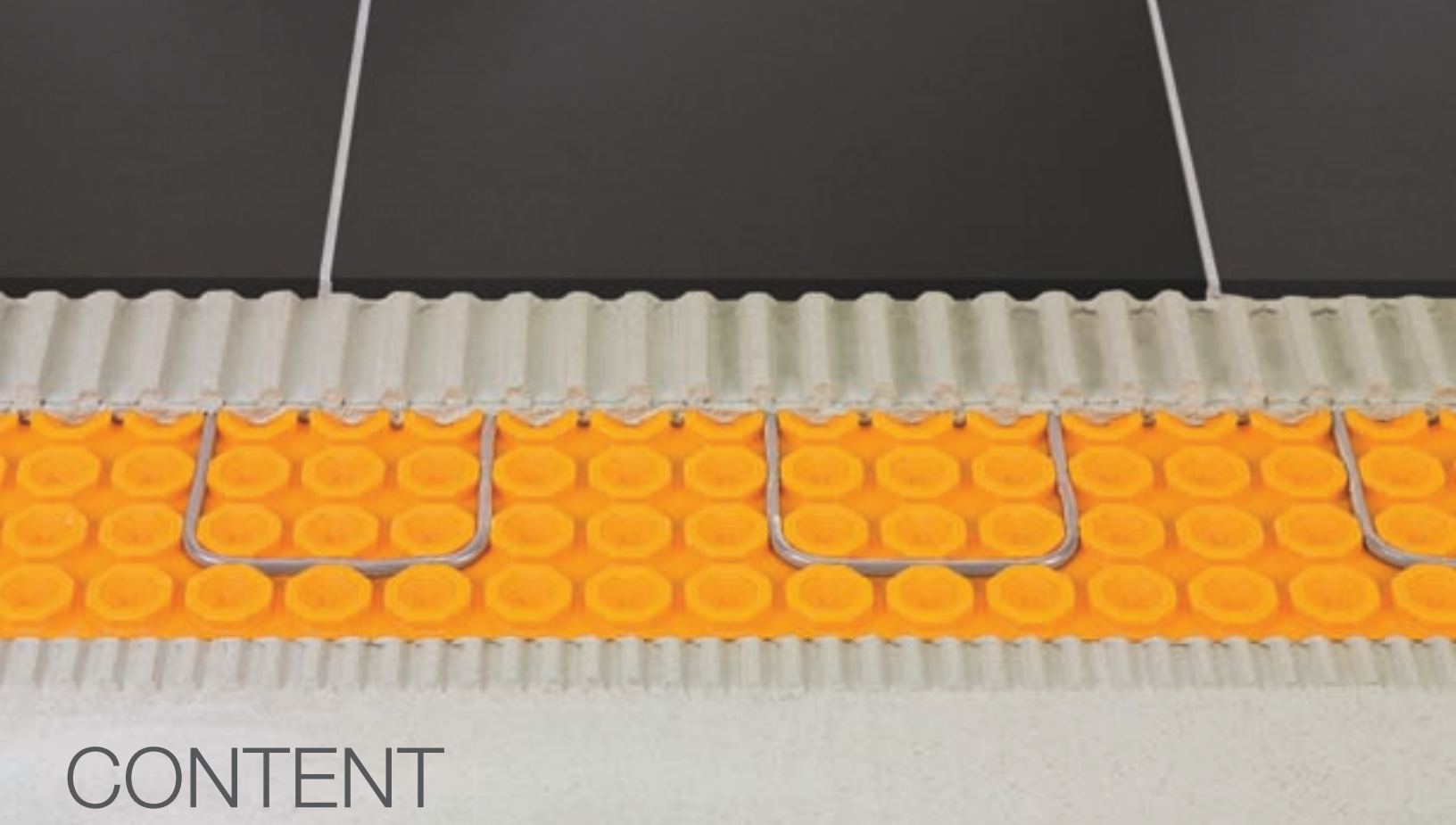




Schluter®-DITRA-HEAT

Repair procedure for the DHE HK Heating Cable
DHEHKRK

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CONTENT

- 3 List of tools required and contents of the repair kit
- 4 Freeing the cable at the location of the break
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- 8 Appendix
 - 8 A-1: Repair technician data tables
(Indicate the specifications of the cable as well as the size (AWG) required to strip the sheathing of the conductor)
 - 9 A-2: Size (AWG) tables of the heating conductor according to DH model



Heating cables must be repaired by a qualified person in accordance with this handbook and with the National Electric Code (USA) or Canadian Electric Code Part I (CAN) as applicable. All electrical connections must be made by a qualified electrician, according to the electrical and building codes effective in your region.








REPAIR PROCEDURE

DITRA-HEAT-E-HK Heating Cable

1. TOOLS REQUIRED

- ▲ Heat gun for shrink tubes
- ▲ Hot glue gun and hot glue
- ▲ Wire stripper 10 AWG to 20 AWG
- ▲ Wire stripper 20 AWG to 30 AWG
- ▲ Wire cutter
- ▲ Hammer and chisel
- ▲ Safety glasses
- ▲ Utility knife
- ▲ Piece of cloth
- ▲ Ohmmeter or multimeter
- ▲ Megohmmeter (range set to 1000 volts)
- ▲ Measuring tape or ruler
- ▲ Felt pen or marker

KIT CONTENTS

Item	Description	
A	Heat shrink solder sleeve (small)	
B	Heat shrink solder sleeve (big) (D>d) ¹ (only available in repair kit 320012)	
C	Copper foil with adhesive back	
D	Heat shrink with sealant Ø ¼"	
E	Heat shrink with sealant Ø ½" (only available in repair kit 320012)	
F	Insulated wire (heating wire) ²	
G	Braided cable ²	

¹ The diameter of D is bigger than the diameter of d

² Recommended wire stripper size to strip exterior sleeve is 10 AWG; 20 AWG for the insulated wire (heating cable)

WARNINGS

- ▲ Heating cable repairs must be conducted by a qualified technician in accordance with this heating cable repair procedure, the National Electric Code (USA) or Canadian Electric Code Part I (CAN) as applicable and the Schluter®-DITRA-HEAT Installation Handbook. All electrical connections must be made by a qualified electrician, according to the electrical and building codes effective in your region.
- ▲ Do not use this repair kit to splice different heating cables together. The kit is only intended for making repairs within a cable.
- ▲ The heating cable cannot be shortened or altered to fit.
- ▲ Very important: **Never CUT the heating cable.** This could change the cable resistance and could lead to a fire.
- ▲ **WARRANTY DISCLAIMER:** Damage to the DITRA-HEAT-E-HK heating cables voids the Schluter®-DITRA-HEAT 10-Year Limited Warranty and warranty coverage is not reinstated upon repair of the heating cable. SCHLUTER SYSTEMS FURTHER DISCLAIMS ANY AND ALL WARRANTIES EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE AND ANY AND ALL LIABILITY ARISING FROM THE ELECTRICIAN SERVICES.

REPAIR PROCEDURE

Before starting the repair procedure, ensure the circuit is turned OFF!

Note: The repair cannot alter the resistance greater than 3% of the nominal resistance of the heating cable.

Repair procedure for the DHE HK heating cable

2. FREE THE CABLE WHERE THE BREAK IS LOCATED

Wear safety glasses.

Cover the tile with a piece of cloth and break it with a hammer. Remove the broken pieces of tile to locate the break in the heating cable.

Note: At this stage, determine the cause of the cable failure.

- ▲ Using a chisel, free the heating cable from the mortar. Remove the mortar around the cable and within the perimeter of the tile that was broken. Clean this perimeter well.
- ▲ Take note of the heating cable product number (see silver identification label in junction box) and using the table provided in Appendix A-2, find the gauge of the conductor (red heating wire) and fill this information in the data table provided in Appendix A-1.



3. TYPES OF REPAIRS COVERED IN THIS GUIDE

- ▲ Repairing the heating portion of the heating cable (gray cable): **see section 3.1**



Note: The heat shrink tubing, insulated wire, cable and copper foil provided is longer than required in order to accommodate non-standard repairs. These items must therefore be cut to the desired length of the repair.

3.1: REPAIRING THE HEATING PORTION (GRAY CABLE)



A) Preparing the heating cable

Cut and remove the faulty section of the cable to obtain two intact segments.

- ▲ Free the cable to a length at least 9 1/2 in. (241 mm) longer than the length removed (LR) on one side, and 3 1/2 in. (89 mm) on the other side. (See fig. 3.1)

For example: if the length removed (LR) = 2 in. (51mm), the cable must be uncovered $LR + 9\ 1/2 = 11\ 1/2$ in. (292 mm) on one side and 3 1/2 in. (89 mm) on the other.

Make a cavity in the floor to house the repaired joint. Make sure that the joint does not exceed the membrane height so as not to interfere with the installation of replacement tiles.

- ▲ Cut the heat shrink tube $\varnothing\ 1/4$ in. (item D) to a length at least 5 in. (127 mm) longer than the length removed (LR). For example, if you removed a section of 2 in. (51 mm) from the floor heating cable, you will need a heat shrink tube at least 7 in. (178 mm) (See fig. 3.2)



Fig. 3.1

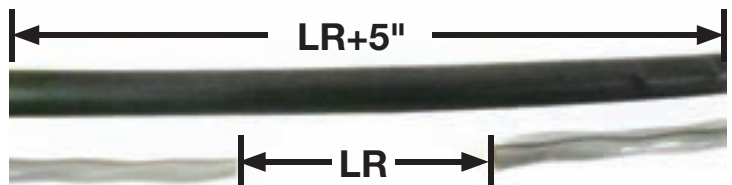


Fig. 3.2

Repair procedure for the DHE HK heating cable

- ▲ Slide the heat shrink over the longest segment of intact cable. (See fig. 3.3)

B) Preparing heating cable ends

- ▲ Strip the gray sheath (outer jacket) of the heating cable 1 1/2 in. (38 mm), using a 10 AWG wire stripper, exposing the ground braid. (See fig. 3.4 and 3.5)



Caution: do not damage the copper braid during this step.

- ▲ Push back the ground braid over the gray sheath of the heating cable to expose the heating wire. (See fig. 3.5 and 3.6)
- ▲ **Using a wire stripper***, strip the heating wire 1/4 in. (6 mm) in order to expose the heating element. (See fig. 3.6)

- ▲ In order to assure that there are no additional breaks in the heating cable you must perform an insulation resistance test using a megohmmeter (range set to 1000 volts) between the ground braid and each conductor on both sides of the exposed cable. A successful test will give you a measurement equal to or greater than 1 Gigaohms (1 Gigaohms = 1 G ohms = 1000 Mega ohms = 1000 M ohms)

*** Refer to appendix A-2 at the end of this document to determine the AWG required based on the model of heating cable to repair.**

C) Replacing missing section of heating cable

Situation 1:

- ▲ If the length removed (LR) of the cable is less than 6 inches (152 mm), use the heating wire (item F) from the kit. (See fig. 3.1 and 3.7)

Situation 2:

- ▲ If the length removed (LR) of the cable is more than 6 inches (152 mm), use the braided cable (item G) from the kit (See fig. 3.1 and 3.8)

In both cases, prepare the ends as described in the previous section (B).

D) Measuring, cutting and stripping the insulated wire (item F) or the braided cable (item G)

- ▲ Measure and cut the insulated wire (item F) or the braided cable (item G) in such a way that the ends are long enough to be in contact with the ends of the insulated wires previously stripped in step B. (See fig. 3.9)
- ▲ Using a **wire stripper***, strip the ends of wire (F) or cable (item G) 1/4 in. (6 mm). (See fig. 3.9)

*** Refer to appendix A-2 at the end of this document to determine the AWG required based on the model of heating cable to repair.**



Fig. 3.3

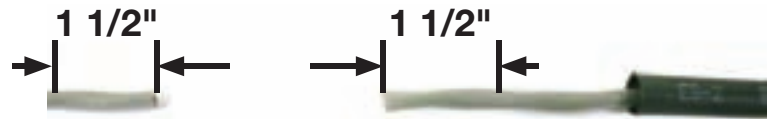


Fig. 3.4



Fig. 3.5



Fig. 3.6



Fig. 3.7



Fig. 3.8

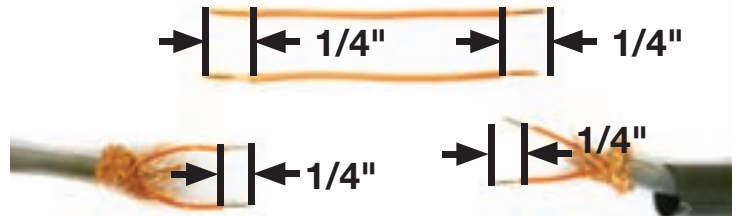


Fig. 3.9

Repair procedure for the DHE HK heating cable

E) Connections (steps to perform for all the joints in the repair process)

Note: Before sliding on the small heat shrink tube, try as much as possible to align the 2 conductors so they are perfectly parallel.

- ▲ Slide a small heat shrink tube with integrated solder ring (item A) on one of the conductors and then insert the replacement conductor. (See fig. 3.9 and 3.10) Place the conductors on each side of the heat shrink tube in such a way that the bare portions overlap within the integrated solder ring. (See fig. 3.10)
- ▲ Using a heat gun, adequately heat the small shrink tube with integrated solder ring. The solder ring will melt and bond the two conductors together and the heat shrink will shrink completely. (See fig. 3.11)

We strongly suggest protecting the black heat shrink (Item D) with a damp cloth during the soldering process. (See fig. 3.11)



Fig. 3.10



Fig. 3.11 : Push the heat shrink tubing further back and cover with damp cloth before soldering tubes.

F) Re-establishing the continuity of the ground braid

- ▲ Pull the copper braided ground wire, covering the conductors on each end of the heating cable, towards the center. (See fig. 3.12)
- ▲ Align the end of the copper foil (Item C) with the gray sheath on both ends and cut. (See fig. 3.13)
- ▲ Remove the protective film from the copper foil. Slide the copper foil, sticky side up, under the repaired joint (See fig. 3.14) and seal. (See fig. 3.15)
- ▲ The copper foil must have good contact with the ground braid at both ends and must not touch the gray sheath. (See fig. 3.14 and 3.15)



Fig. 3.12



Fig. 3.13

Before continuing, verify the repair with the following tests

Note: Undo the thermostat connections to the heating cable in the junction box, in order to verify the repair.

- ▲ Perform a resistance test, using an ohmmeter or multimeter, between the two conductors. A successful test will give you the nominal resistance of the cable as found on label.

Note: The repair cannot alter the resistance greater than 3% of the nominal resistance of the heating cable.

- ▲ Perform an insulation resistance test using a megohmmeter (range set to 1000 volts) between the ground braid and each conductor. A successful test will give you a measurement equal to or greater than 1 Gigaohms (1 Gigaohms = 1 G ohms = 1000 Mega ohms = 1000 M ohms).



Fig. 3.14



Fig. 3.15

Repair procedure for the DHE HK heating cable

G) Placing the heat shrink (Item D)

- ▲ Using a felt pen or marker, mark a distance of 1 in. (25.4 mm) on the gray sheath from the beginning of the repaired joint. (See fig. 3.16)
- ▲ Slide the black heat shrink (Item D) to the marked point in order to properly seal the repaired joint. (See fig. 3.17)
- ▲ Using a heat gun, heat the heat shrink until it completely seals the gray sheath on each side of the heating cable. (See fig. 3.18)
- ▲ Repeat the resistance test and the insulation resistance test as outlined at step F.
- ▲ Once the repair is complete and the tests pass, embed the repaired joint in the cavity using hot glue.



Fig. 3.16



Fig. 3.17



Fig. 3.18

Appendix A-1: repair technician tables

SUMMARY OF WIRE SIZES (AWG)

Supplied with the repair kit

Item F



Item G



Cable being repaired

Power lead (black)



Use caution not to damage the braid

(Contact supplier for Power lead repair kit 320012)

Heating wire (gray)

Varies depending on product. See appendix A-2



Use caution not to damage the braid

DATA TABLE (AWG)

Repair	Model number	AWG (appendix A-2)
A		
B		
C		
D		
E		

Appendix A-2

MODEL/MODÈLE (120 V)	CONDUCTOR INSULATION (AWG)*/GAINE DU CONDUCTEUR (AWG)*
DHEHK12011	27
DHEHK12016	27
DHEHK12021	25
DHEHK12027	26
DHEHK12032	24
DHEHK12038	26
DHEHK12043	25
DHEHK12051	23
DHEHK12064	26
DHEHK12073	25
DHEHK12083	24
DHEHK12092	23
DHEHK120102	22
DHEHK120113	21
DHEHK120134	20
MODEL/MODÈLE (240 V)	CONDUCTOR INSULATION (AWG)*/GAINE DU CONDUCTEUR (AWG)*
DHEHK24011	28
DHEHK24016	26
DHEHK24021	27
DHEHK24027	25
DHEHK24032	27
DHEHK24038	27
DHEHK24043	25
DHEHK24053	26
DHEHK24064	24
DHEHK24075	26
DHEHK24085	25
DHEHK240103	23
DHEHK240129	26
DHEHK240145	25
DHEHK240167	24
DHEHK240183	23
DHEHK240204	22
DHEHK240225	21
DHEHK240269	20

* RECOMMENDED WIRE STRIPPER SIZE TO REMOVE CONDUCTOR JACKET/
 TAILLE RECOMMANDÉE DE L'OUTIL POUR DÉNUDER LE CONDUCTEUR
 NOTE: REFER TO APPENDIX A-1 FOR SUMMARY OF WIRE SIZE (AWG)

