

Cable-connector Toolkit



Security Systems

en

Instructions for Use
LBB4418/00

BOSCH

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1 Introduction

1.1 Introduction

The LBB4418/00 Cable-connector Toolkit is intended for creating optical network cables (see figure 1.1) out of LBB4416/00 Network Cable (100 m) and LBB4417/00 Network Connectors.

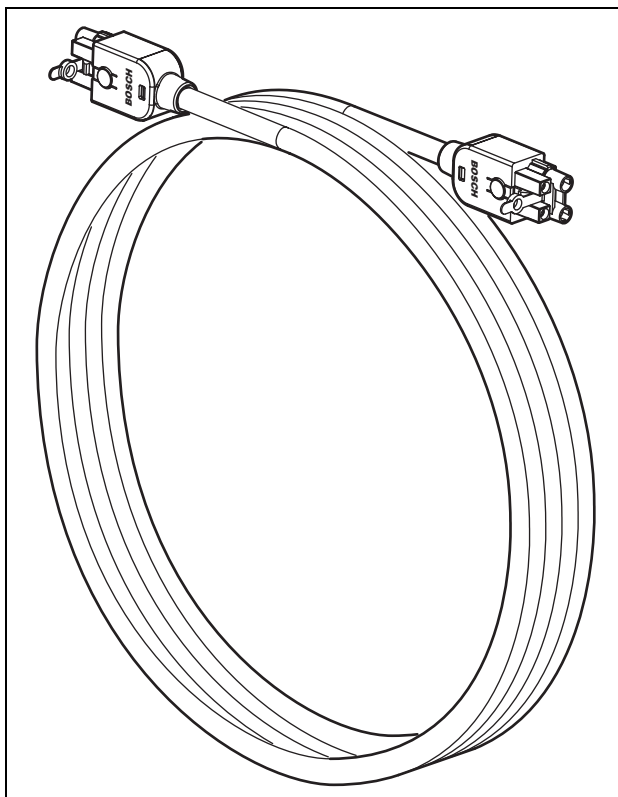


figure 1.1: Optical network cable

1.2 Intended audience

This manual is intended for installers who want to create custom-made extension cables using the cable-connector toolkit (LBB4418/00).

1.3 Hyperlinks

The Instructions for Use are also available as a digital document in the Adobe Portable Document Format (PDF). All references to pages, figures, tables, etc. in this digital document contain hyperlinks to the referenced location.

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2 Overview

2.1 Toolkit contents



figure 2.1: Toolkit contents

table 2.1: Toolkit contents

No.	Description	Number
1	Spare cutting system (with Allen key)	600 004 0
2	Cable cutter	600 015 36
3	Crimping tool	642 509 3 23
4	POF positioning/crimping tool	618 071 69PHI
5	Stripping tool	607 202 69PHI
6	POF cutter/stripping tool	600 003 - 1 39
7	Torx screwdriver	C209 000077

Toolkit supplier:

- Rennsteig Werkzeuge GmbH
Viernau, Thüringen, Germany
Supplier type number: 600 100 PHI



Note

Before using the POF cutter/stripping tool (tool 6), release its blocking screw using the Torx screwdriver (tool 7).



Note

After 1,260 cuts, the POF cutter/stripping tool (tool 6) blocks automatically. In that case, replace the cutting system with the spare cutting system (tool 1) to ensure smooth cuts. Additional spare cutting systems are available as type number LBB4418/50.



Caution

Oil all tools regularly to avoid rusting.

2.2 Connector components

Each optical network connector (LBB4417/00) consists of 10 components (see figure 2.2 and figure 2.3).

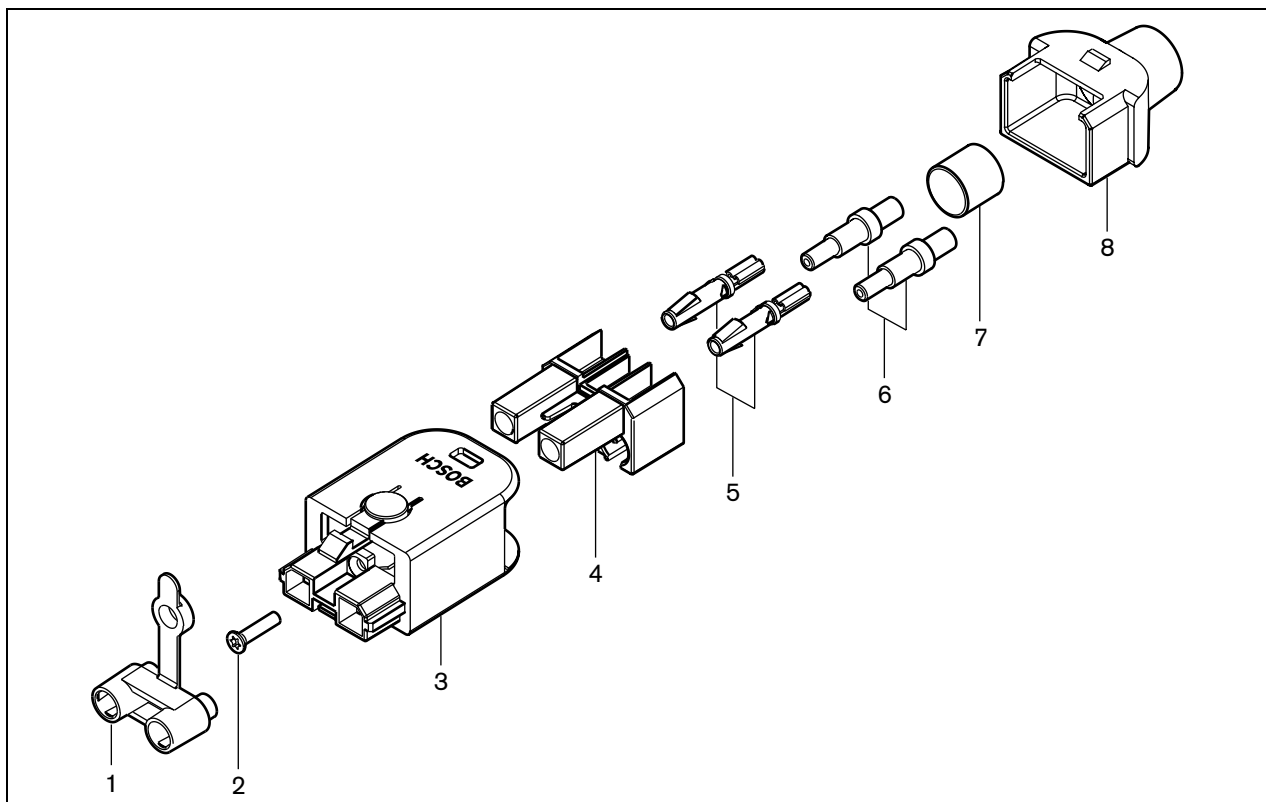


figure 2.2: Connector assembly drawing

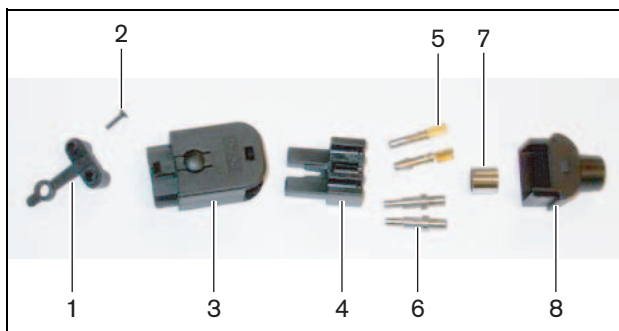


figure 2.3: Connector components

table 2.2: Connector components

No	Description
1	Dust cap
2	Torx screw
3	Front housing
4	Mounting block
5	Socket contacts
6	Ferrules
7	Crimping bush
8	Back housing

3 Cable-connector mounting

3.1 Introduction

This chapter contains a step-by-step description of the cable-connector mounting process. The procedure consists of the following parts:

- Preparation (see section 3.3).
- Crimping the bush (see section 3.4).
- Stripping the copper wires (see section 3.5).
- Mounting the socket contacts (see section 3.6).
- Stripping the optical fibers (see section 3.7).
- Mounting the ferrules (see section 3.8).
- Assembling the connector (see section 3.9)

3.2 Cable types

There are two types of optical network cables:

- Type A cables in which the plastic optical fibers are located next to each other (see figure 3.1, which shows both cable ends).
- Type B cables in which the plastic optical fibers are located opposite to each other (see figure 3.1, both cable ends are identical).

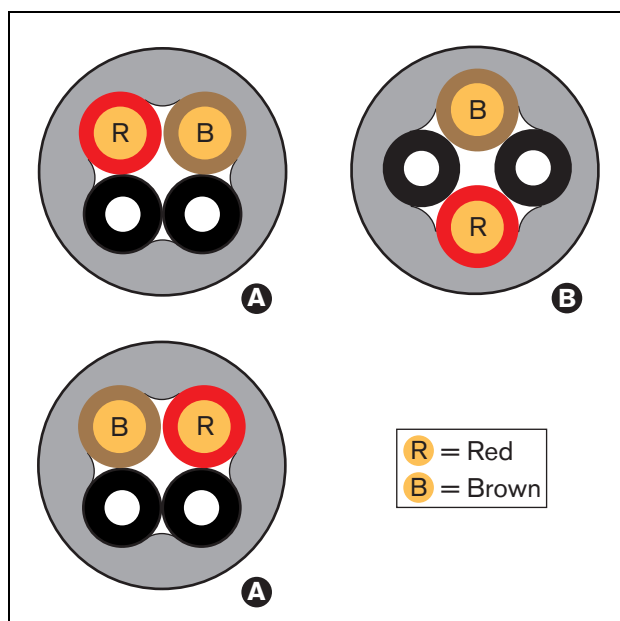


figure 3.1: Cable types

3.3 Preparation

Proceed as follows:

- 1 Cut the optical network cable to the required length using the cable cutter (tool 2).



Note

Due to light loss, the length of an optical network cable must be less than 50 m.

- 2 Determine the cable type (see section 3.2), since some steps in the cable-connector mounting procedure depend on the cable type.
- 3 Disassemble a network connector. A network connector consists of 10 parts (see section 2.2).
- 4 Slide the back housing over the cable (see figure 3.2).



figure 3.2: Back housing on cable

- 5 Using the stripping tool (tool 5), strip the outer sheath of the cable by pushing the cable to the mechanical stop (see figure 3.3).

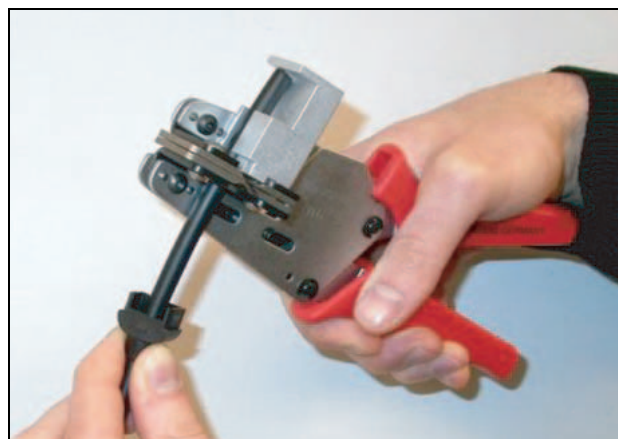


figure 3.3: Stripping the cable

3.4 Crimping bush

Proceed as follows:

- 6 Slide the crimping bush over the cable and position it at the end of the outer sheath.



Note

In the next step, the circular shape of the cable cross-section at the end of the outer sheath is transformed into a hexagonal shape using the crimping tool (tool 3) and the crimping bush. Before crimping the bush, ensure that both plastic optical fibers will be positioned parallel to a flat side of the hexagonal cross-section (see figure 3.4)

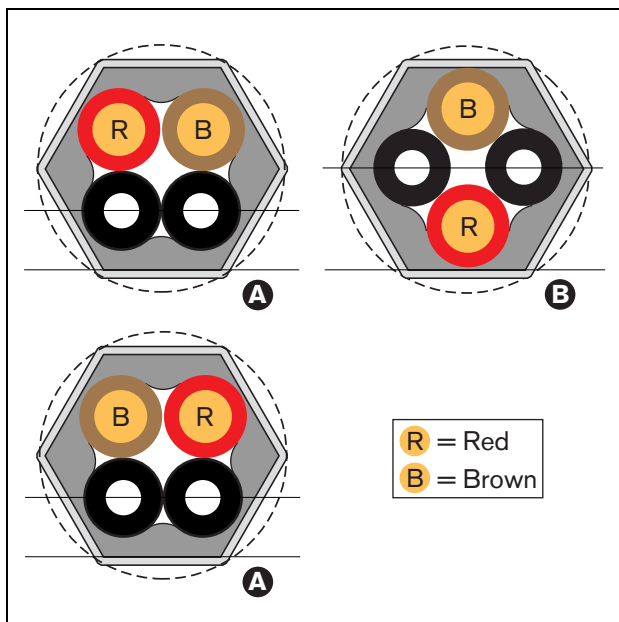


figure 3.4: Cross-section transformation

- 7 Crimp the bush on the outer sheath using the crimping tool (tool 3, see figure 3.5). The crimping bush will prevent the cable from rotating in the connector.



figure 3.5: Crimping the bush

3.5 Stripping copper wires

Proceed as follows:

- 8 Cut the copper wires at the required length using the cable cutter (tool 2) and the stripping tool (tool 5). To this end, position the crimping bush in position I and cut the copper wires at position II (see figure 3.6).

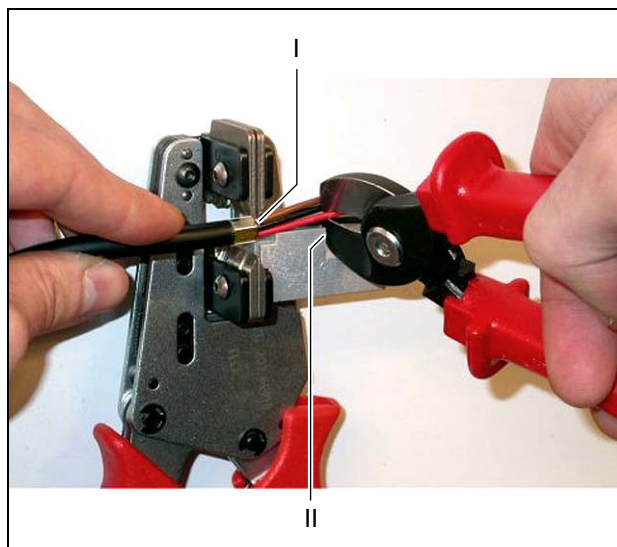


figure 3.6: Cutting a copper wire

- 9 Strip the red and brown insulations from the copper wires by pushing them to the mechanical stop of the stripping tool (tool 5, see figure 3.7).

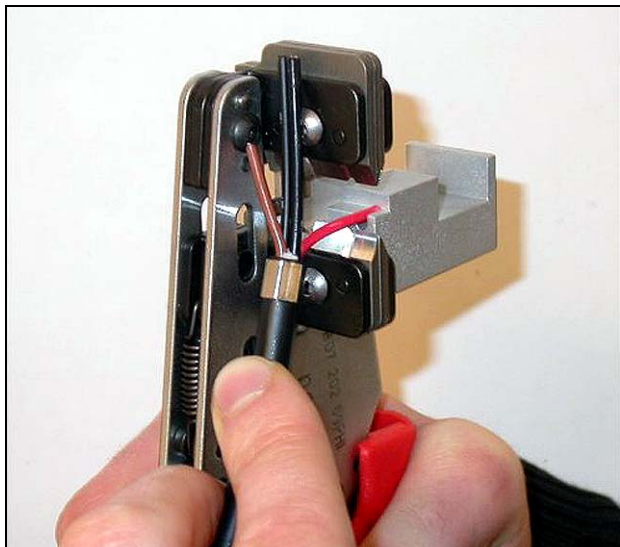


figure 3.7: Stripping a copper wire

3.6 Mounting socket contacts

Proceed as follows:

- 10 Put a socket contact in the crimping tool (tool 3, see figure 3.8). The upper part of the crimping tool contains a ridge for positioning the socket contact in the tool (see figure 3.9).

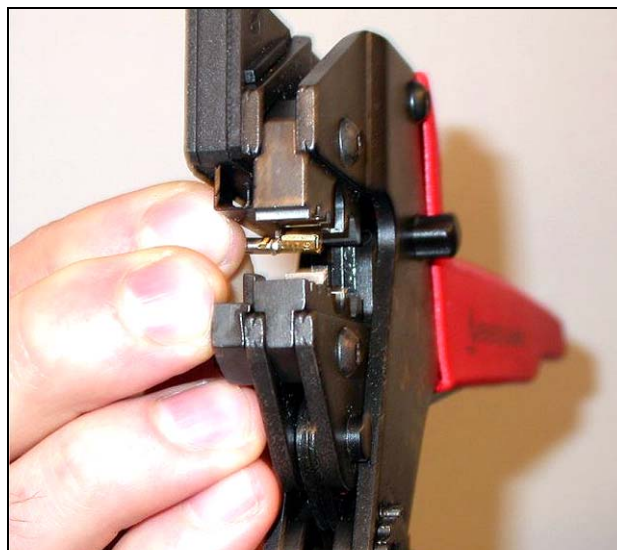


figure 3.8: Crimping a socket contact (1)

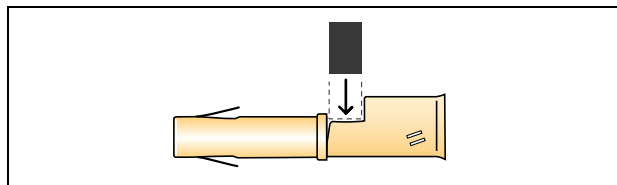


figure 3.9: Positioning a socket contact

- 11 Slide one of the stripped, copper wires into the contact area of the socket contact and close the crimping tool to crimp the socket contact onto the copper wire (see figure 3.10).

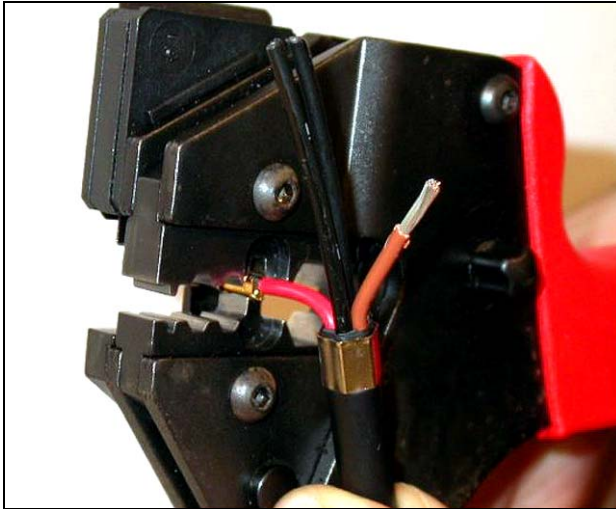


figure 3.10: Crimping a socket contact (2)

- 12 Repeat steps 10 and 11 for the other stripped, copper wire. See figure 3.11 for the result of this part of the cable-connector mounting procedure.

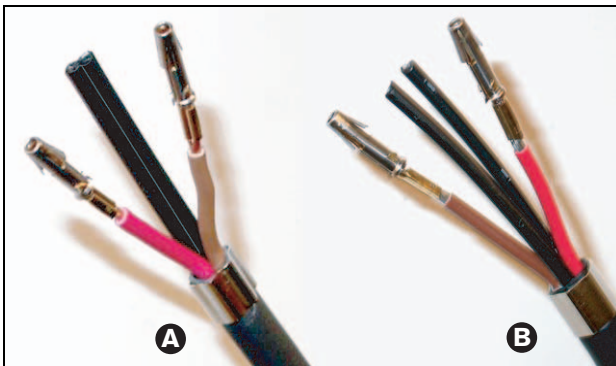


figure 3.11: Mounted socket contacts

3.7 Stripping fibers

Proceed as follows:

- 13 Slide the plastic optical fibers into the POF cutter/stripping tool (tool 6). The fiber that is going to be cut-off must be put in the small guiding hole, whereas the other fiber must be put in the large guiding hole (see figure 3.12). The crimping bush must rest against the stop (see figure 3.13).



figure 3.12: Cutting a fiber (1)

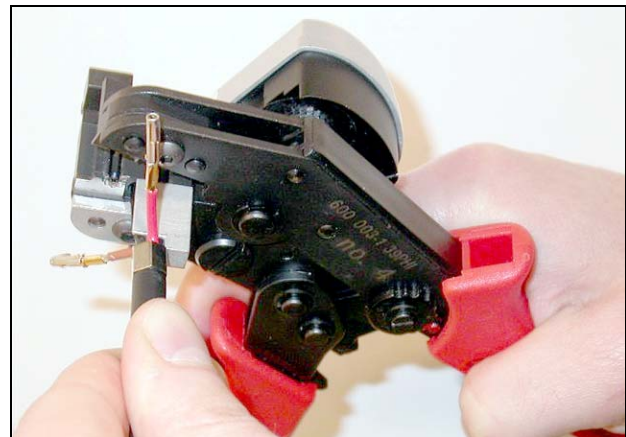


figure 3.13: Cutting a fiber (2)

- 14 Close the tool to fix the cable and pull the 'trigger' to cut the fiber (see figure 3.14).



figure 3.14: Cutting a fiber (3)

- 15 Repeat steps 13 and 14 for the other plastic optical fiber in the cable. Both fibers now have the required length.
- 16 Slide one of the fibers into the front part of the POF cutter/stripping tool (tool 6, see figure 3.15).

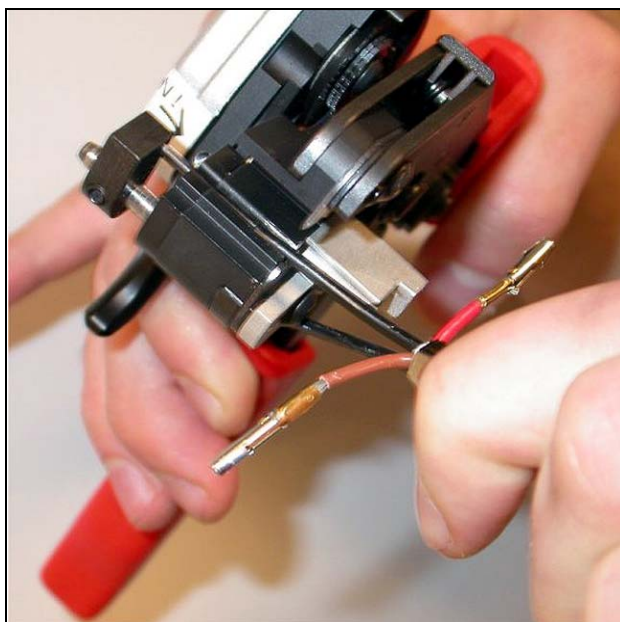


figure 3.15: Stripping a fiber

- 17 Close the tool and pull the fiber out to strip the sheath from it.



Note

Do not forget to remove the piece of sheath from the tool.

- 18 Repeat steps 16 and 17 for the other fiber in the cable. See figure 3.16 for the result of this part of the cable-connector mounting procedure.

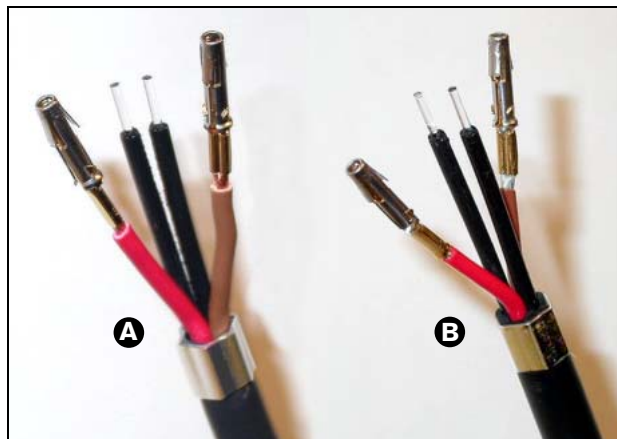


figure 3.16: Stripped optical fibers

3.8 Mounting the ferrules

Proceed as follows:

- 19 Insert a ferrule into the spring-loaded stop of the POF positioning/crimping tool (tool 4, see figure 3.17).



figure 3.17: Inserting a ferrule

- 20 Lock the ferrule with the small lever (see figure 3.18).



figure 3.18: Locking a ferrule

- 21 Insert a plastic optical fiber into the ferrule in the spring-loaded stop of the POF positioning tool (see figure 3.19).

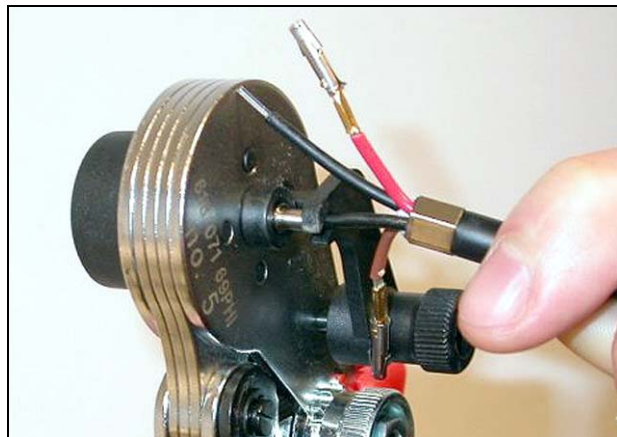


figure 3.19: Crimping ferrules (1)

- 22 Close the tool and open it again to crimp the ferrule on the core of the fiber.

- 23 Repeat steps 19 to 22 for the other fiber in the cable. The ferrules only have been crimped on the core of the optical plastic fiber. Next, the ferrules are going to be crimped on the sheaths of the fibers.

- 24 Put both ferrules in the crimping tool (tool 3, see figure 3.20).

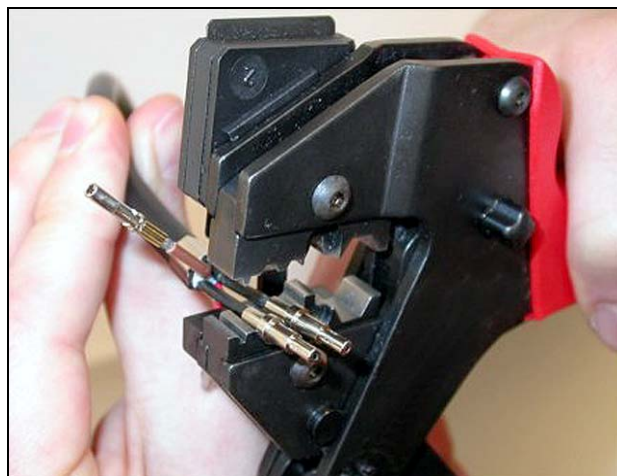


figure 3.20: Crimping ferrules (2)

- 25 Crimp the ferrules on the sheath using the crimping tool (tool 3, see figure 3.21). See figure 3.22 for the result of this part of the cable-connector mounting procedure.

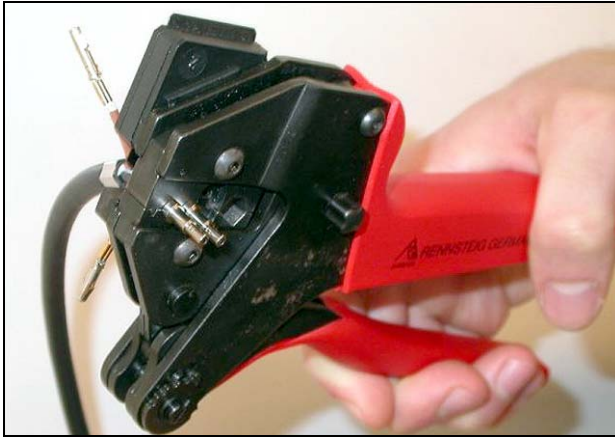


figure 3.21: Crimping ferrules (3)

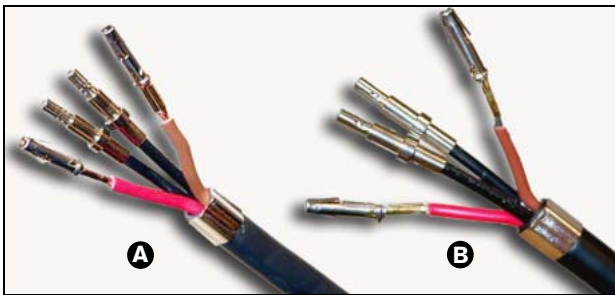


figure 3.22: Ferrules on fibers

3.9 Assembling the connector

Before starting to assemble the connector, position the copper wires and the plastic optical fibers for mounting. The copper wires will be mounted in the upper part of the connector, whereas the fibers will be mounted in the lower part of the connector (see figure 3.23).



Note

When replacing a connector, always first check the wiring in the connector at the other end.

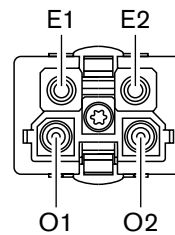


figure 3.23: Front view of connector

table 3.1: Optical network connector details

Pin	Signal	Wire
E1	+48V(DC)	Copper
E2	GND	Copper
O1	Data	Optical fiber
O2	Data	Optical fiber

Also, observe the wiring diagram (see figure 3.24). For the practical implications of this diagram, see figure 3.25 and figure 3.26).

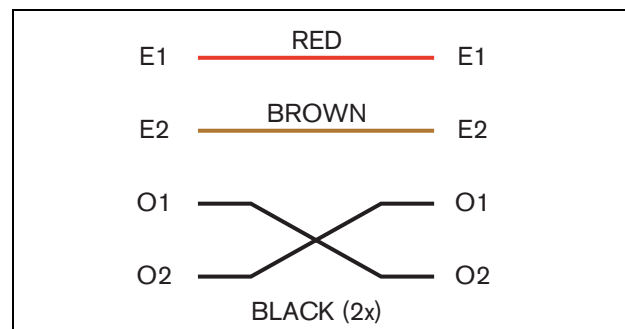


figure 3.24: Wiring diagram

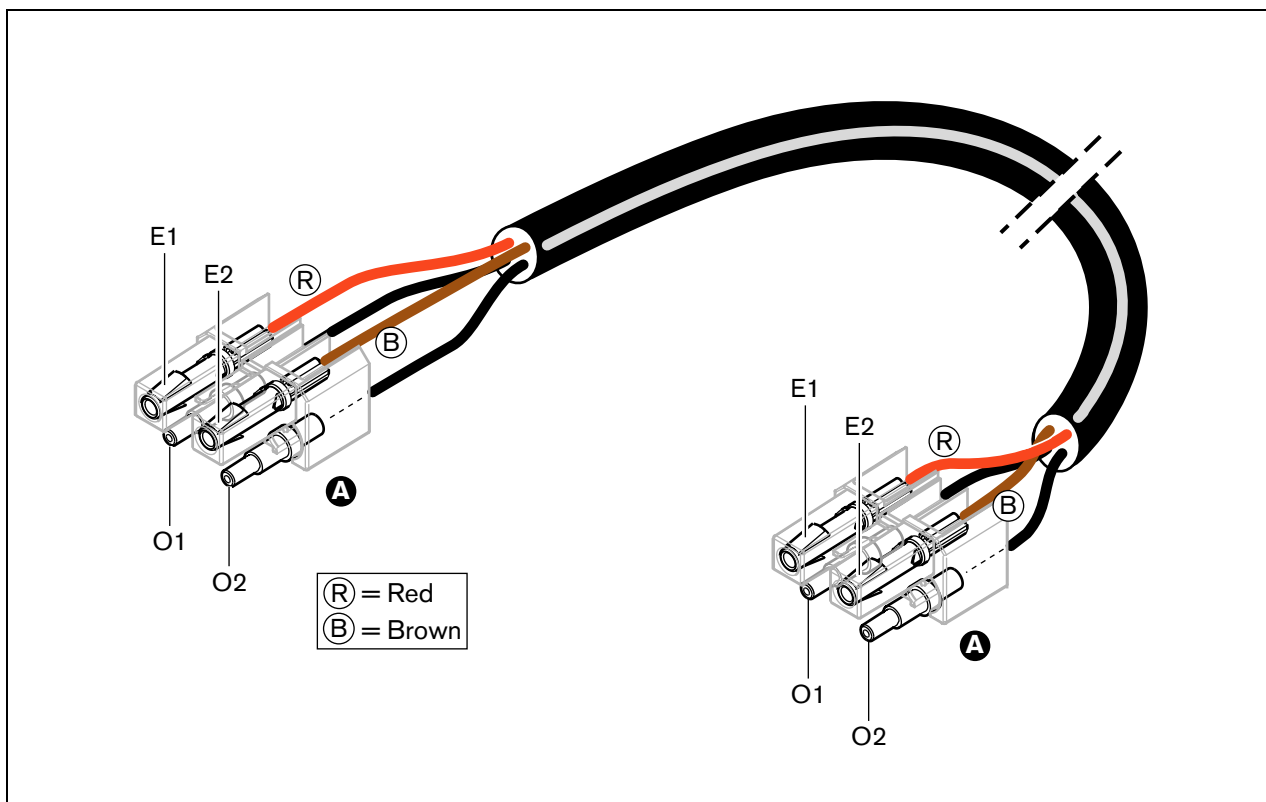


figure 3.25: Wiring diagram applied to type A optical network cables

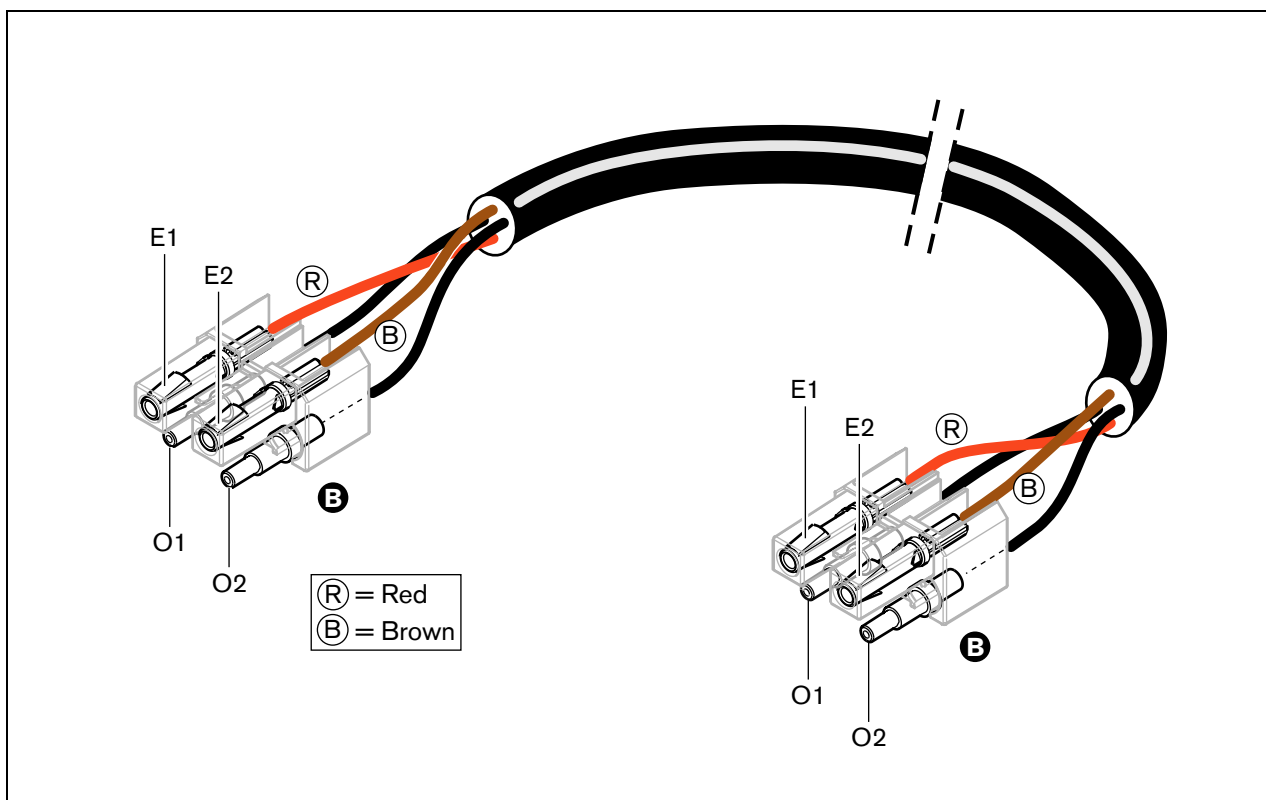


figure 3.26: Wiring diagram applied to type B optical network cables

Where applicable, the way in which the connectors must be assembled on both sides of the cables is shown in the figures. Proceed as follows:

- 26 Check if the copper wires and the plastic optical fibres have been positioned in the correct way (see figure 3.27).

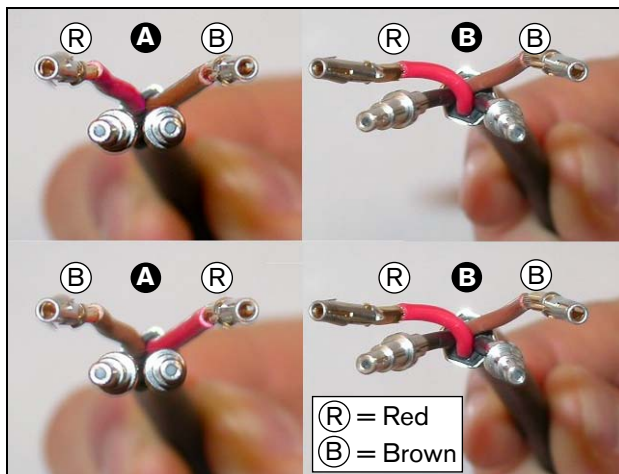


figure 3.27: Positioning the copper wires and fibers

- 27 Put the ferrules in the mounting block (see figure 3.28)

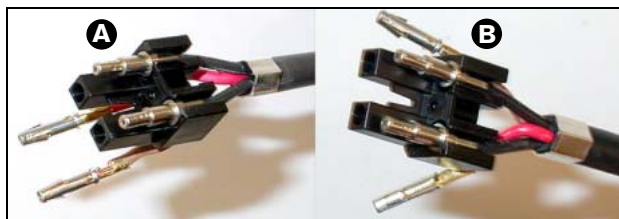


figure 3.28: Mounting block and back housing

- 28 Put the socket contacts in the mounting block (see figure 3.29). In one of the connectors attached to a type A cable, the red and brown copper wires must cross to meet the wiring diagram (see figure 3.24).

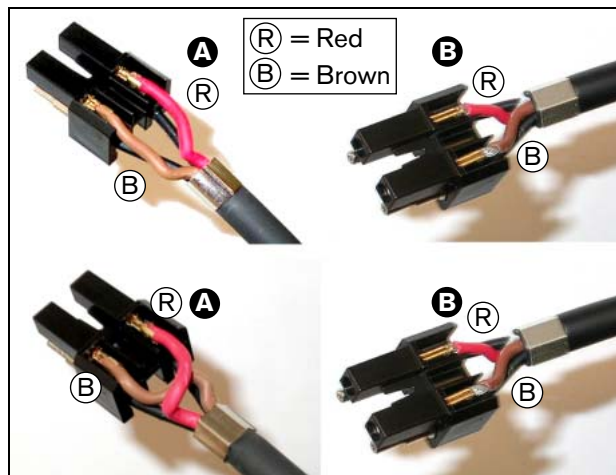


figure 3.29: Mounting block and back housing

- 29 Put the mounting block in the back housing (see figure 3.30)

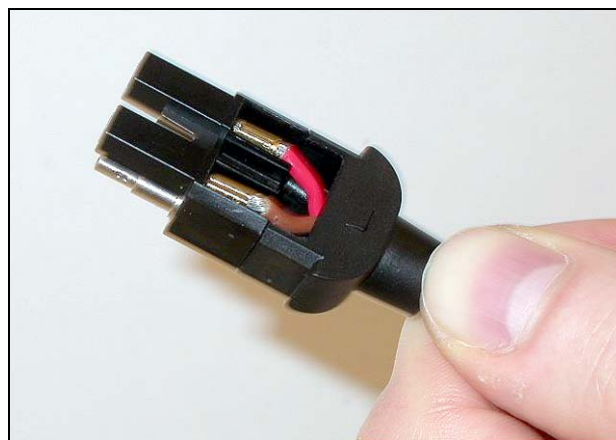


figure 3.30: Mounting block/back housing assembly

30 Click the front housing on the mounting block/back housing assembly (see figure 3.31).

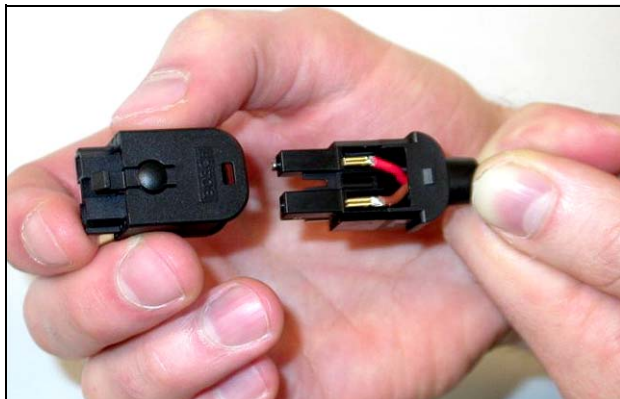


figure 3.31: Mounting the front housing

31 Insert the Torx screw into the front housing (see figure 3.32).

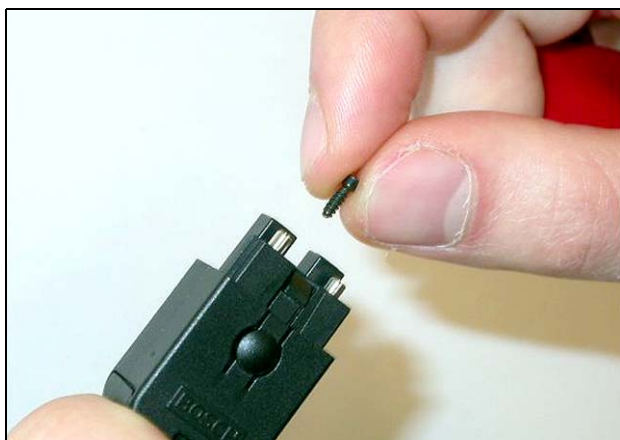


figure 3.32: Inserting the Torx screw

32 Tighten the Torx screw using the Torx screwdriver (tool 7, see figure 3.33)



figure 3.33: Tightening the Torx screw

33 Put the dust cap on the connector to protect the plastic optical fibers (see figure 3.34).



figure 3.34: Dust cap on connector

For more information visit
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