User´s Manual

FUSION SPLICER

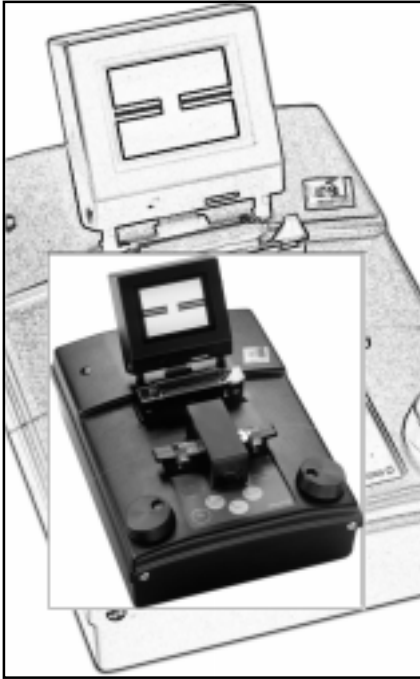## EC 1

63TB011

ERICSSON

Table of Contents

Safety Information

The EC1 Fusion Splicer is part of the Ericsson family of compact fusion splicers designed to meet all the needs associated with repairs and installations of fiber optic cable in trunk, local, data or cable-TV networks. It is distinguished by its simplicity of operation and portability, offering efficient splicing at low-cost.

In line with its user-friendliness, the EC1 comes with six pre-defined splicing programs that handle the most common types of single fiber splicing. In the section on Basic Operation you can read about these programs, as well as follow step-by-step through the use of the splicer. In addition, the EC1 allows you to design your own splicer programs. These are discussed as part of the section on Advanced Functions, along with details about user options.

In spite of EC1's ease of use, though, you should always keep in mind several pieces of safety and maintenance information.

Operational Precautions

● **Do not use** the splicer in locations where there is a risk of **explosion.**
● **Never touch** the electrodes when the splicer is on.
● **Never open** the splicer or the power supply during operation.
● **Never loosen** any screws except those mentioned in this manual, since you may harm important adjustments.

Maintenance Precautions

● Never use hard objects to clean the V-grooves or electrodes. Use the supplied brush, or in the case of the V-grooves, isopropyl alcohol and cotton swabs.
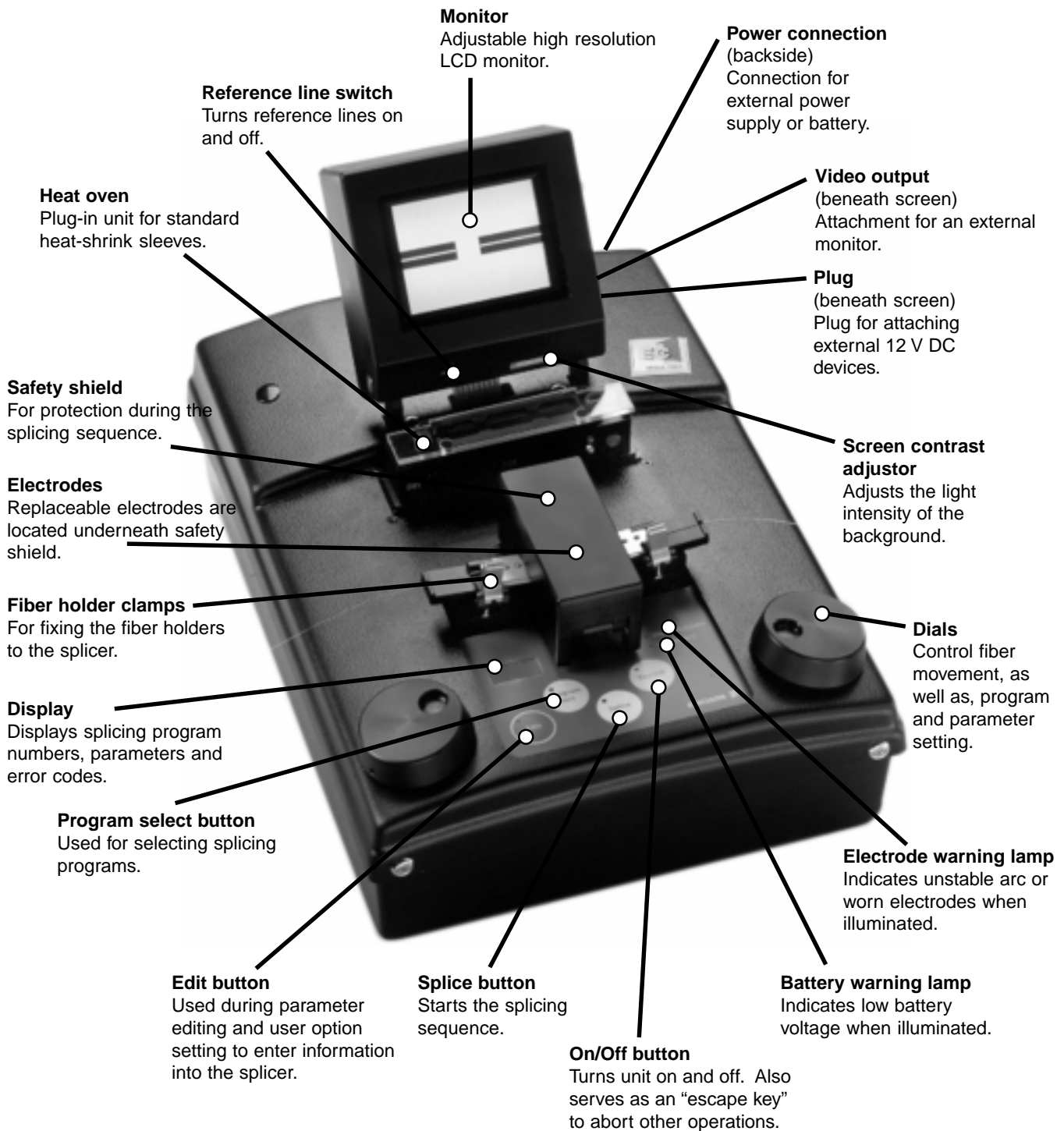● Never use acetone for cleaning any part of the splicer.

Transport and Storage Precautions

● Keep the splicer clean and dry.
● Never leave your splicer in direct sunlight or in places where it might be exposed to excessive heat (such as in vehicles parked in the sun).
● Always transport the splicer in its carrying case to avoid damage to its precision parts.
● Keep the humidity to a minimum where the splicer is stored. The humidity must not exceed 98%.
● Close the safety shield during transport.

Description of EC1

EC1 is delivered with:
- Fiber holders (for single fibers, 125/250 µm)
- Spare pair of electrodes
- Cleaning tools (two brushes and one pair of tweezers)
- User's manual
- Carrying case

Monitor
Adjustable high resolution LCD monitor.

Power connection
(backside)
Connection for external power supply or battery.

Reference line switch
Turns reference lines on and off.

Video output
(beneath screen)
Attachment for an external monitor.

Heat oven
Plug-in unit for standard heat-shrink sleeves.

Plug
(beneath screen)
Plug for attaching external 12 V DC devices.

Safety shield
For protection during the splicing sequence.

Screen contrast adjustor
Adjusts the light intensity of the background.

Electrodes
Replaceable electrodes are located underneath safety shield.

Fiber holder clamps
For fixing the fiber holders to the splicer.

Dials
Control fiber movement, as well as, program and parameter setting.

Display
Displays splicing program numbers, parameters and error codes.

Program select button
Used for selecting splicing programs.

Electrode warning lamp
Indicates unstable arc or worn electrodes when illuminated.

Edit button
Used during parameter editing and user option setting to enter information into the splicer.

Splice button
Starts the splicing sequence.

Battery warning lamp
Indicates low battery voltage when illuminated.

On/Off button
Turns unit on and off. Also serves as an "escape key" to abort other operations.

BASIC OPERATION

This chapter outlines step-by-step everything you need to know to make clean, low-loss splices using the EC1. Since every splicer is slightly different, it is recommended that you read through this chapter before you set to work, regardless of your previous level of experience. Once you are familiar with the splicer's basic operation, you can learn how to personalize EC1's capabilities to suit your particular needs by looking in the chapter entitled "Advanced Functions."
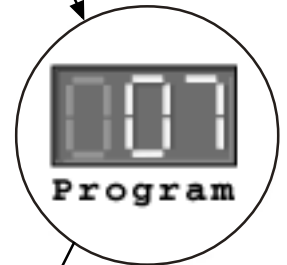
1. Set-up   **Page 6**
Particularly the first time, it is advisable to follow through step-by-step how to get the EC1 from its carrying case and into use.
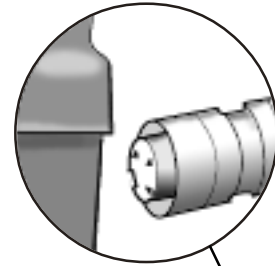
2. Program selection   **Page 7**
The right splice requires the right splicing program.

**3. Fiber preparation**   **Page 8**
Possibly the most important element of good splicing is correct preparation of the fibers. Carefully follow the guidelines listed on these pages concerning stripping lengths, end face quality and cleanliness.
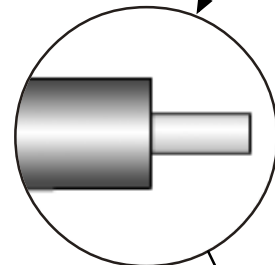
4. Splicing   **Page 10**
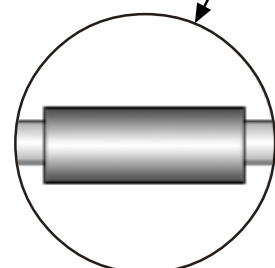As the EC1 is an entirely manual splicer it is necessary to carefully position the fibers before splicing and afterwards to check for bulges and waists.
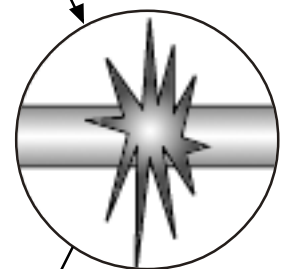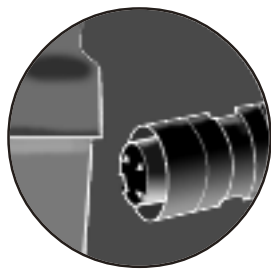
5. Splice protection   **Page 13**
Assuming all goes well, one can wrap up the splicing process by protecting the splice with a heat-shrink sleeve.

Set-up

The following steps show you how to set up the EC1 when you arrive at a new work site. Please take note of the safety tips and specifications to ensure that you are making use of the EC1 in a safe and efficient manner.

1. Out of the box...
...and onto a level working space. Lift the EC1 out of its metal carrying case by firmly placing your hands on both sides of the machine and lifting upwards.

2. Power connection
The EC1 can either be connected to the external power supply or to a battery. Check to ensure that the power supply is rated at 100-240 V, 50-60 Hz. In the case of the battery, it is important that the battery is charged before use. The battery is NOT charged on delivery.

3. Lift monitor
Lift the monitor to an angle appropriate to easy viewing. The monitor will snap into place at the desired angle.

4. Turn on
To turn on the EC4 you press the button marked **On/Off** located on the top of the splicer until "EC1" appears in the red display. Once powered up, the motor working positions will be calibrated.
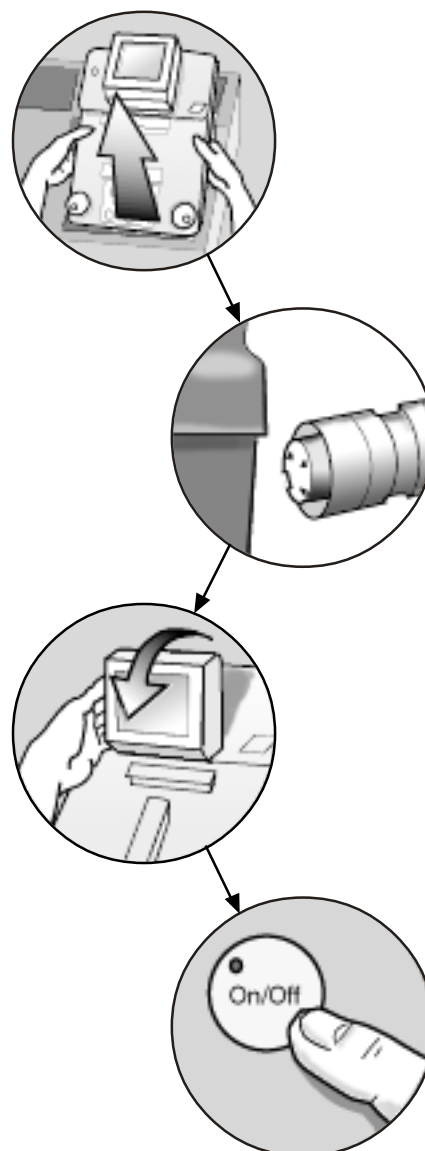
Note:
Before pressing the power button, remove any fibers possibly left in the splicer from previous usage.

Program Selection

The EC1 comes with 6 pre-defined splicing programs that are intended to deal with the most common types of splicing. The following explains the content of these programs in brief, and how you go about selecting a splicing program. More information about splicing programs and details as to how you can specify your own splicing programs is covered in the chapter entitled "Advanced Functions."

Predefined Programs (Numbers 1-6)

| Program Number	Fiber Types
1	General single mode fiber and pigtails
2	General single mode fiber
3	Concentric single mode fiber
4	Multimode fiber 50 µm core
5	Multimode fiber 62.5 µm core
6	Dispersion shifted fiber

How to select a program

1. Press the button marked **Program Selection** to put the splicer into program selection mode.

2. Turn either of the dials to select the desired program number. The program numbers are shown in the red display.

3. Press the **Program Select** button once again in order to confirm your selection, thereby returning the splicer to splicing mode. If after this point you change your mind as to the program you desire, you must go back to Step 1.
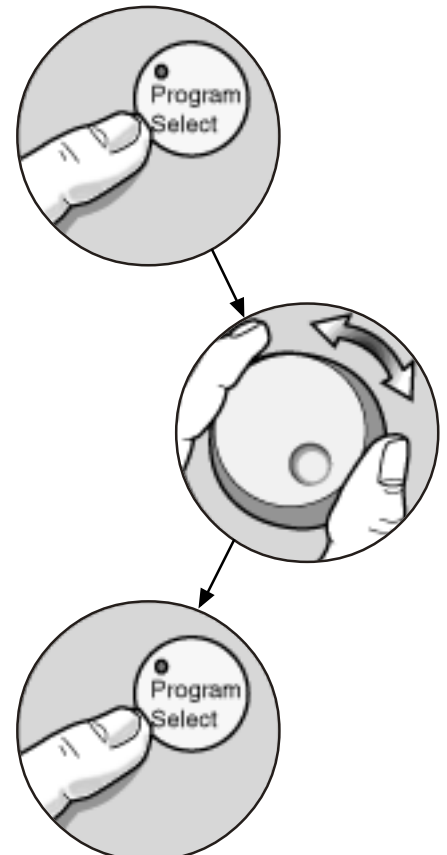
Fiber Preparation
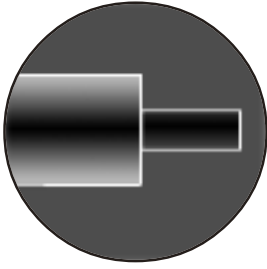
Fiber preparation is possibly the most critical operation in splicing, so it is particularly important to carefully observe the information regarding this procedure. The following leads you through step-by-step, but it is also important to keep in mind several general ingredients to low-loss splices:

- Minimal core eccentricity
- Perpendicular cleave surfaces
- **Cleanliness** every step of the way

1. Heat-shrink sleeve
It is an easy, but ultimately very frustrating, step to forget, so be sure to place a heat-shrinkable protection sleeve on one of the fibers before stripping.

2. Fiber holders
Put the fibers into the correct type of fiber holders (see section on cleave lengths, p.9) so that 25-35 mm of fiber sticks out. Note also that, in order to set the holders into the splicer, you must observe their left and right handedness.

3. Stripping
Strip the protruding lengths of fiber with an appropriate stripping tool. If using an electrical device, be sure to look over its instructions before stripping.

4. Cleaning
Clean the bare fibers with a tissue or a pair of cotton swabs soaked in alcohol. It is important that from this point on you are very careful with the fibers to ensure that they do not become dirty again (such as by laying them down on a dusty working surface, or even waving them around in the air). Also check at this point that the V-grooves are clean, and if not, wipe them down with the provided brush or a cotton swab dipped in alcohol.

5. Cleaving
Cleave the fibers with a high quality cleaving tool, so that the end faces are free of tangs and chips (see ex., p. 11) and at an angle no greater than 1-2%. In addition, double-check that you are achieving the correct cleave lengths for your type of fiber.

Cleave lengths

Primary Coating

3

10
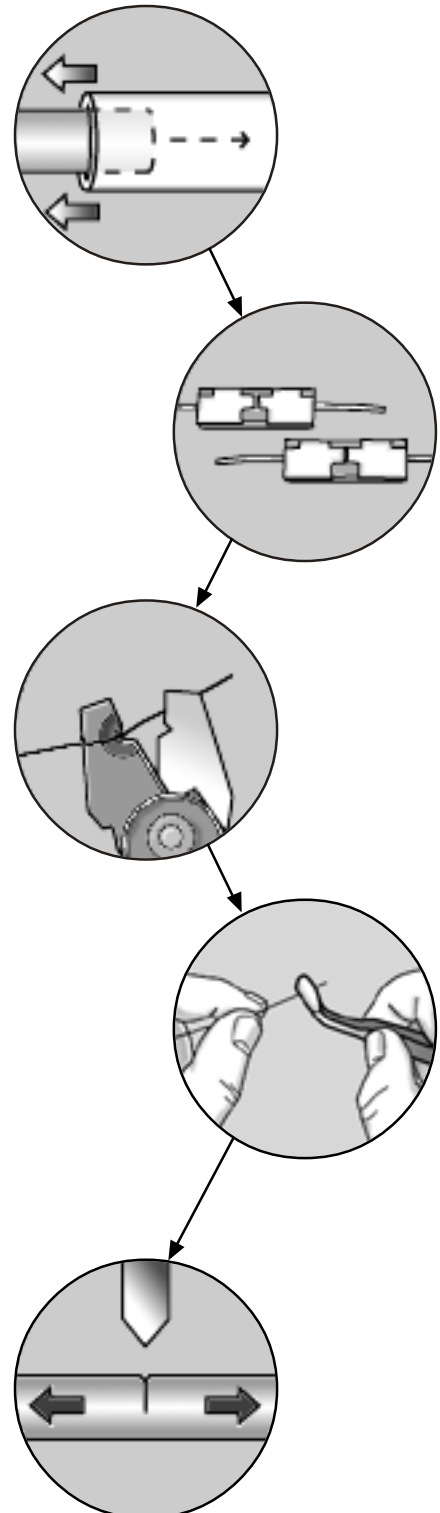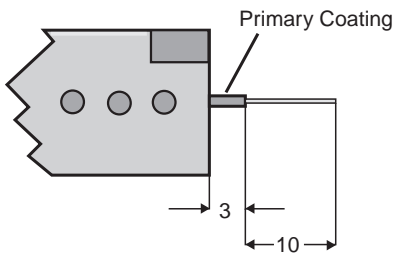
When splicing fibers with only **primary coating**, use the fiber holders marked 125/250 µm, and strip and cleave such that approximately 13 mm of fiber extends from the holder (3 mm coated, 10 mm uncoated).


Stop

Secondary Coating

9   13
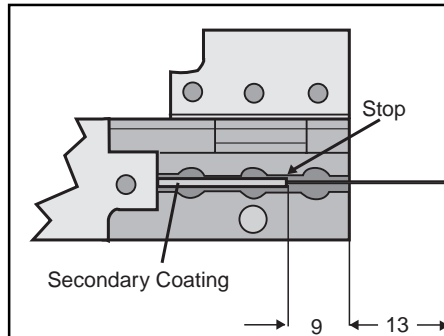
When splicing fibers with **tight secondary coating**, use the fiber holders marked 125/900 µm, and strip and cleave such that there is approximately 22 mm of fiber exposed. As with single fibers 13 mm of fiber should extend beyond the edge of the holder (the other 9 mm of bare fiber lying within the fiber holder).

Additionally, one should avoid pressing the end of the secondary coating against the stop (located along the groove running the length of the fiber holder: see picture) since this may cause bad alignment. Ideally the distance between the stop and the end of the coating is 0.5 mm.
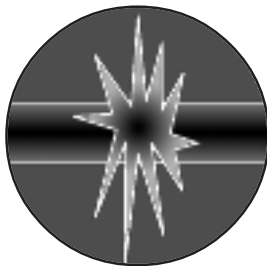
Measuring gauge
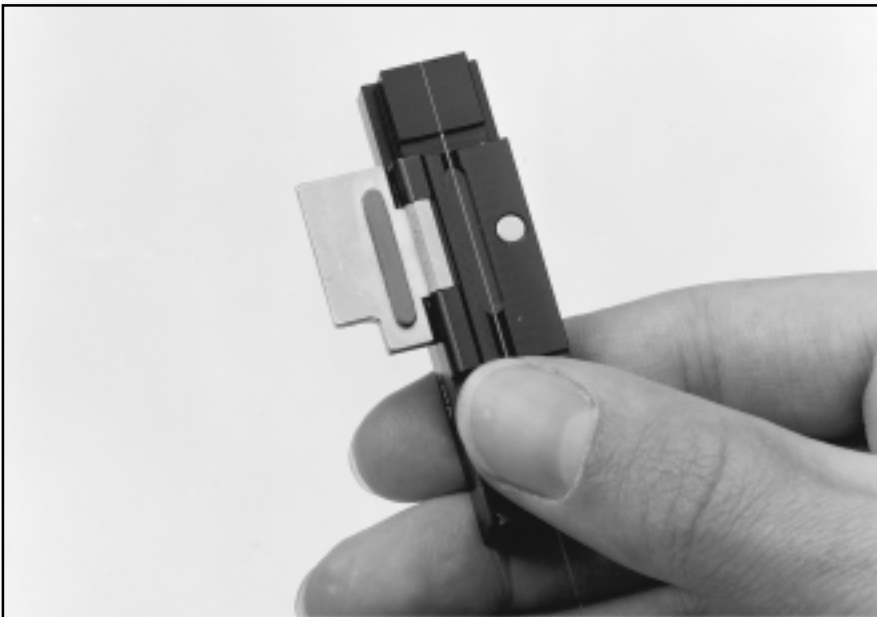
To check the stripping length it is convenient to use a measuring gauge. Proceed as follows:

1. Place the fiber in the fiber holder.
2. Place the holder on the measuring gauge.
3. Position the fiber so that it extends to the edge of the gauge, thus achieving the correct length.

Splicing

As the EC1 is a manual splicer, splicing quality partially depends on the skill of the person who runs it. There is no question that the longer you use the EC1, the more your ability to perfectly line up the fibers will improve. Regardless of your proficiency at splicing, however, there are several points you must always observe:

- The EC1 only allows you to align fibers based on their cladding, so it is essential to use fibers with good core concentricity.
- Ensure that the fibers do not suffer from fiber curl, since curled fibers will not lie flat in the V-grooves.
- And once again, **cleanliness**. At this stage it is particularly critical to take note of the V-grooves, for if they are dirty the fibers will not line up properly.
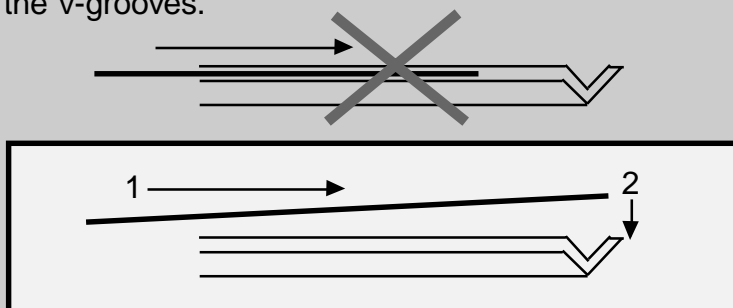
1. Place the fibers

Open the safety shield and place the fiber holders onto the racks on top of the splicer so that the fibers lie along the V-grooves without colliding or overlapping.
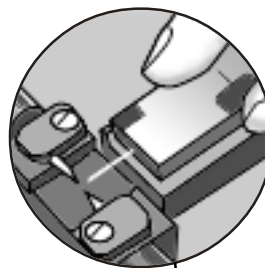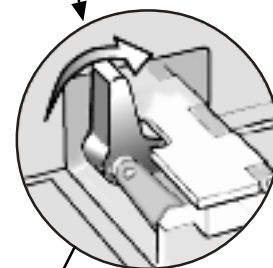
> **Note:**
> Since you should not slide the fibers along the V-grooves, the ideal procedure is to position the fibers over the V-grooves, keeping the fiber holders at an angle, and then to tilt the fiber holders down into place, letting the fibers fall into the V-grooves.

2. Clamp fiber holders

Lock the fibers into place by pushing up the clamps so that they snap down onto the fiber holders. Once the fiber holders are secure, you can reclose the safety shield.
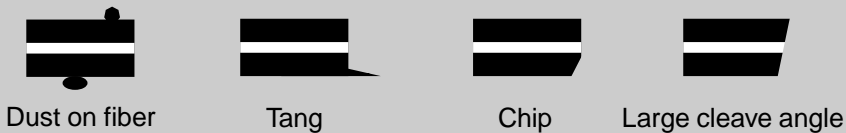
3. Align the fibers

Once you have reclosed the safety shield, you should be able to see the fibers in the screen. It is now time to inspect the fibers once again for dust and to review the cleave (see "Note" below). To align the fibers, you use the dials located on either side of the EC1--each dial moves its corresponding fiber. As an aid, you can turn on the reference lines with the switch located just below the screen. You want to get the fibers as close as possible without collision or overlap.

Note:

If you can see any dust on the fibers, or if the cleave is excessively angled or includes tangs or chips, you should remove the fibers from the machine and re-strip and re-cleave. It is also recommended to clean the V-grooves. It sounds tedious, but the fact is that these defects will prevent the EC1 from giving a low-loss, high-strength splice.

| Dust on fiber | Tang | Chip | Large cleave angle |

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4. Press "Splice"

When you are satisfied with the fibers' alignment you can push the button **Splice**. It is never a waste of time, though, to first glance again at the displayed program number to reassure yourself that the desired splice program will be run.

Note:

It may happen that the arc fails to start, possibly because the electrodes are worn-out or dirty. When this occurs, the display shows error code 02. By pressing **Splice** again, it is possible to make a new attempt to start the arc. However, after three failed attempts, the display will change to error code 03, and it means that the electrodes must be cleaned or changed. (See these instructions in "Maintenance," p. 21).

It is also possible that the electrodes do start, but that they make a sizzling sound. In this case, the electrodes are dirty, and you should run the electrode cleaning program, Program 100. (Follow "Program Selection" instructions, p. 7).

Splicing
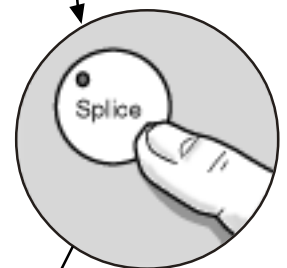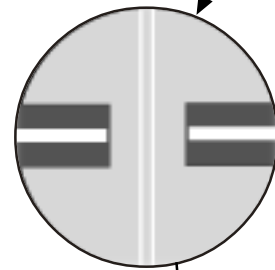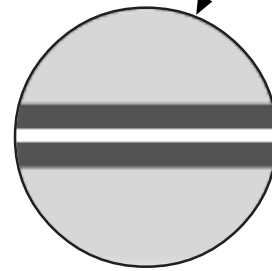
5. Check the splice

After the splice program is complete, it is advisable to make a visual inspection of the splice on the screen. If all went well, the outer diameter will be smooth and straight, and the white line along the center of the fiber will be continuous. (Keep in mind, though, that this line does not represent the core of the fiber, but rather just the focus point of the light being shown through the fiber, so you do not learn anything about core alignment by looking at this image). If there are any anomalies (see examples below), then it will probably be necessary to start all over again with fiber preparation.

Bad splices

Mis-alignment

Waist

Bulge

Ball ends
(Possibly arc current too high)

Bubble
(Possibly fiber contamination)

Incomplete fusion
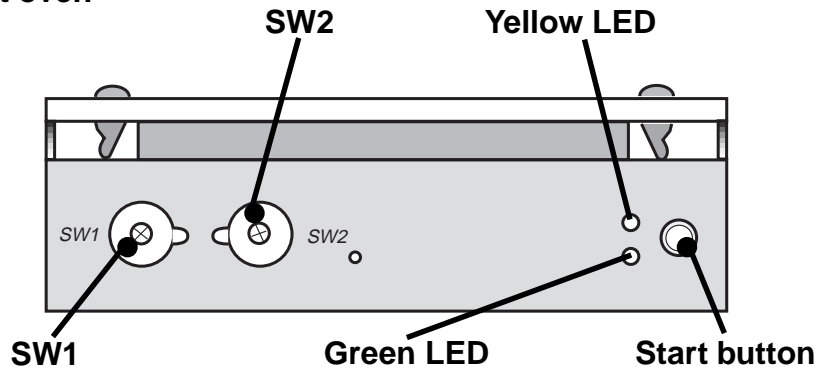
Prefusion

The EC1 splicer is equipped with automatic prefusion which is executed directly before the splicing sequence. It is possible to set the program parameters so that the splicing program stops right after prefusion. In this way you can examine the fibers again before continuing with the splice. For more details, you should look in the section entitled "Setting User Options."

Splice Protection
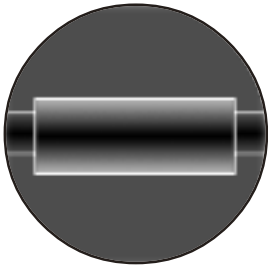
To protect the splice against mechanical stress and water damage, you can apply a heat-shrinkable sleeve. The EC1 conveniently comes with a built-in heat oven that melts the sleeve around the splice. The following explains, in brief, how you use the heat oven, but for more detailed information, including maintenance instructions, you must look in the heat oven's own manual.

Description of heat oven

SW1	Temperature dial. See table below for values. Set to 2 on delivery.
SW2	Operating time dial. See table below for values. Set to 2 on delivery.
Green LED	
Yellow LED	Indicates heat oven is connected to a power source and ready for use.
Start button	Indicates heat oven is running.

Pushing the start button initiates the heat shrinking operation.

SW1/2 settings

SW1			SW2	
Dial setting	Temp. (°C)		Dial setting	Time (sec)
0	95		0	45
1	100		1	60
2*	105		2*	75
3	110		3	90
4	115		4	105
5	120		5	120
6	125		6	135
7	130		7	150
8	135		8	165
9	140		9	180

* Setting on delivery   * Setting on delivery

Suggested settings

SW1	SW2	Fiber type	Shrink tube type
5	2-3	Single	Raychem SMOUV-1120-01
5	2-3	Single	Sumitomo FPS-1

Using the heat oven

1. Set temperature and operating time
Using the dials SW1 and SW2 you can set the temperature and operating to the desired settings. On the previous page you can find all of the details concerning these parameters, as well as suggested settings.

2. Place the fiber
Place the spliced fiber surrounded by its protection sleeve into the heat oven. You should try to keep the fiber gently stretched until you have once again closed the the lid.

Note:
Do not let sharp objects come into contact with the heat element since they might damage its specially treated surface, thus raising the risk that shrink sleeves will stick.

3. Press start button
Pressing the start button on the right side of the heat oven begins the heat shrinking operation. At this point the yellow LED goes on, and emits a steady light while the oven heats up to the operating temperature. Once this temperature is reached, the yellow LED starts flashing and continues to do so until the heat shrinking operation is complete.
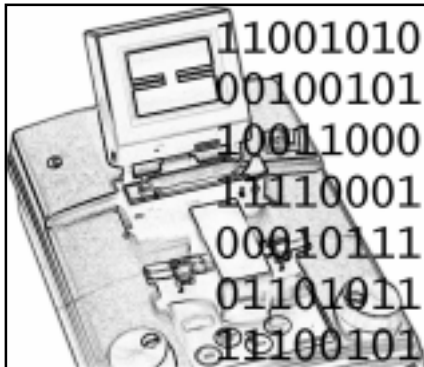
4. Removing fiber
During the cooling period that follows the heat shrinking operation, the green LED comes on and flashes. Only when the green LED changes to a steady light and you hear a beep has the temperature dropped sufficiently (to 80 °C) that you can open the lid and remove the fiber.
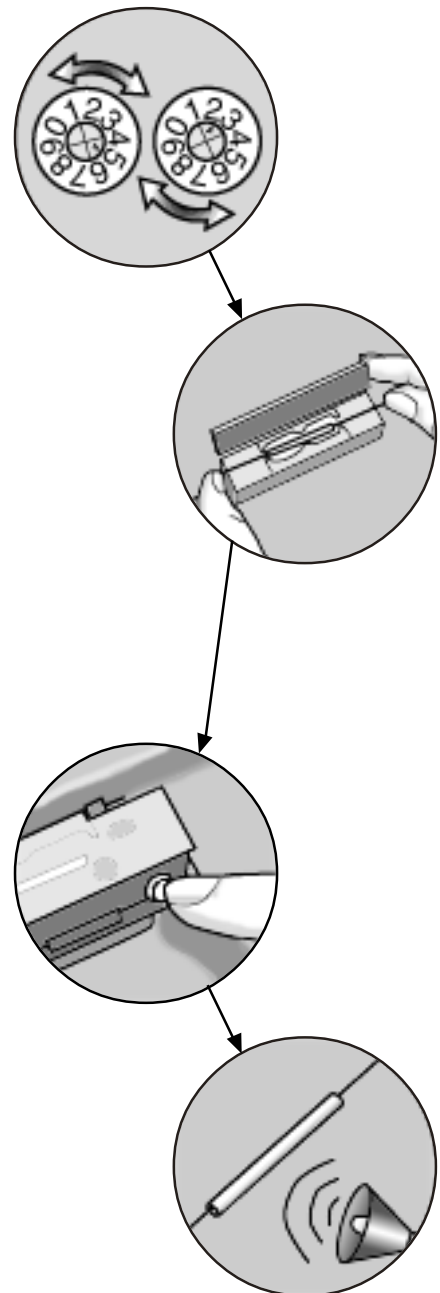
ADVANCED FUNCTIONS
Splicing Programs

The EC1 has the capacity to store 17 different programs to meet your various splicing needs. The first six of these programs, Programs 1-6, are pre-defined and cannot be changed, and are intended to address the most common splicing requirements. Programs 11-20, on the other hand, are editable and offer you the possibility to define programs to suit your particular needs. The following few pages treat the splicing programs in greater depth and explain how you go about defining your own programs. Program 100 is the electrode cleaning program, and is discussed in more detail on page 16.

Splicing program structure

EC1's splicing programs are structured according to five basic phases, which themselves break down into several parameters. The following table outlines this structure.

Phase	What happens	Parameters	#
Prefuse	The fibers are pulled so that a specified gap lies between the ends and then cleaned.	Prefuse time Prefuse current Prefuse gap	1 2 3
Overlap	The fibers are slid inward and the arc is lit. While the fibers melt, pressure continues to push them together.	Overlap time Overlap current Overlap distance	4 5 6
Main fusion	The fibers are kept stationary while the arc is lit.	Main fuse time Main fuse current	7 8
Pull	During this optional phase, the fibers are pulled slightly apart while the arc is still lit.	Pull time Pull current Pull distance	9 10 11
Relax	During this optional phase, the arc remains lit and the fibers stationary.	Relax time Relax current	12 13

Programs 1-6

Though it is not possible to change the parameter values in Programs 1-6, it is possible to read them by following the adjacent instructions. To understand the values, refer to the table about splicing parameters on the next page.

1. Press **Program Select** and turn the dials to choose a program. The program numbers appear in the red display.

2. Press **Edit** and turn the dials to choose a parameter number.

3. Press **Edit** again to read the value of the selected parameter in the red display.

4. Press **Edit** to select a new parameter number or **On/Off** to return to splicing mode.

Splicing parameters

As you saw in the table describing the splicing programs' structure (previous page), each program is composed of thirteen parameters. The adjacent table outlines the range of values each parameter can have. It is these values that you read in the case of Programs 1-6 and can modify when personalizing Programs 11-20 to fit your specific needs.

Parameter No.	Parameter	Range of possible values
1	Prefuse time	0.1 - 20.0 sec.
2	Prefuse current	10.0 - 20.0 mA
3	Prefuse gap	10 - 100 μm
4	Overlap time	0.1 - max 13.3 sec.*
5	Overlap current	10.0 - 20.0 mA
6	Overlap distance	1 - 100 μm
7	Main fuse time	0.1 - 20.0 sec.
8	Main fuse current	10.0 - 20.0 mA
9	Pull time	0.0 - max 13.3 sec.*¤
10	Pull current	10.0 - 20.0 mA
11	Pull distance	1 - 100 μm
12	Relax time	0.0 - 20.0 sec.¤
13	Relax current	10.0 - 20.0 mA

* The maximum settable values for overlap and pull time depend on the settings of the overlap and pull distances. This is due to a fixed minimum motor speed, whereby short distances give short times while long distances give longer times. The maximum values shown in the table for overlap and pull time are valid when overlap and pull distances are set to 100 μm.

¤ Selecting a value of 0.0 sec. in the case of pulling and relaxation implies that you do not want to include these operations in your splicing program. To design a splicing program that involves pulling and/or relaxation, you must set the relax and/or pull time to a value greater than 0.0.

Program 100 (Electrode cleaning program and Splice counter)

Built into the electrode cleaning program is both a read-only counter that shows the total number of splices that have been done on the machine as well as a resettable counter that is used to indicate how many splices have been done since the last time the electrodes were changed.

Parameter Number	Parameter	Range of values
1	Current splicer counter	000-999 (possible to reset)
2	Total splice counter (in 1000's of splices)*	000-999 (read-only)
3	Total splice counter	000-999 (read-only)

* For example, if parameter 2 reads "004" and parameter 3 reads "279," then a total of 4,279 splices have been done on the machine.

Resetting the splice counter

You should **reset the current splice counter to "000" every time you change the electrodes**. To do so you follow the steps for editing splicing programs on the next page, entering "100" in Step 2, "001" in Step 4, and "000" in Step 6. Be sure to go through all the steps and press **Enter** after you have reset the counter, otherwise the information will not be saved.

Note:
The splice counter does **NOT** reset itself automatically when you change the electrodes. You must do it yourself.

Editing Splicing Programs

Here is how you can change parameters' values in Programs 11-20 to design your own splicing programs. On delivery, Programs 11-16 are copies of Programs 1-6, so you can use them as a start point.
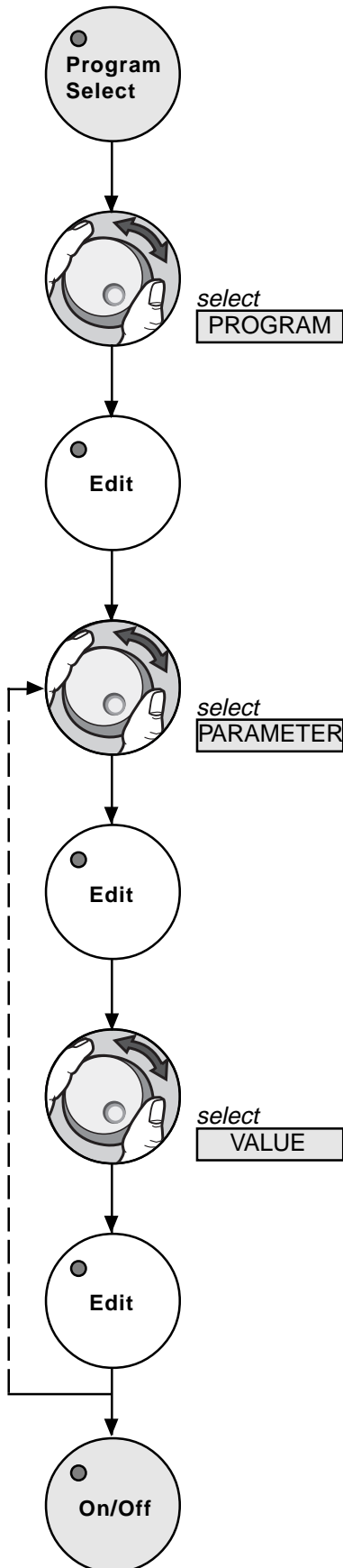
1. Press the **Program Selection** button.

Program Select

2. Turn one of the dials to select the program (11-20) you want to personalize.

select PROGRAM

3. Press the **Edit** button to enter editing mode, signalled by the illumination of the LED on the **Edit** button.

Edit

Note:
If a security code is set (see page 18), the display will start to flash, and you can not proceed until you enter the code by turning one of the dials to the correct number and pressing **Edit** again.

4. Select a parameter to change by turning one of the dials until its value appears in the display. As an aide, refer to the "Splicing parameters" table on page 16.

select PARAMETER

5. Press the **Edit** button to register your choice of parameter. In response the LED on the **Edit** button will start flashing, and the current value of the parameter will appear in the display.

Edit

6. Change the parameter value by turning one of the dials.

select VALUE

7. Press the **Edit** button to store the new value. At this point, if you have more parameters to change you should follow the dashed arrow back up to Step 4. If you are done with your modifications to the program, you can go onto Step 8 and leave editing mode.

Edit

8. When you are entirely done modifying the program, return to splicing mode by pressing the **On/Off** button.

On/Off

Editing Splicing Programs
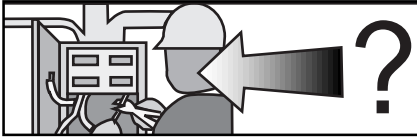
User Options

The EC1 also includes a set of user options that allow you to further personalize the splicer to your particular working situation. These options are described below, and the method for setting them is outlined on the next page.

1 - Security code
The EC1 is equipped with an optional three-digit security code which allows you to protect your settings and splicing programs from being changed without your knowledge. The code functions as follows: when the red display is flashing, the security code must be given using one of the dials and then entered with the **Edit** button. If the incorrect security code is given, then the requested operation is aborted.

2 - Prefuse control
If the prefuse control is on, the program will halt after prefusion. This allows you to check the fibers before main fusion. If you then want to continue the spicing operation, press the **Splice** button. If you want to abort the splice, press the **On/Off** button.

3 - Changed parameter indication
This option is to assist you while you edit splicing programs by telling you whether a selected parameter has already been changed. If the parameter has been changed, its default value will be displayed along with two beeps followed by its current value.

4 - Low battery warning level
This allows you to specify the voltage level at which you want the splicer to warn you that the battery is getting low.

5 - Stand-by time
When the EC1 is powered from a battery it goes into stand-by mode (low power mode) after a certain time in order to save the battery charge. This option allows you to specify this length of time before the splicer goes into stand-by mode. To reactivate from stand-by mode, you just press the **On/Off** button.
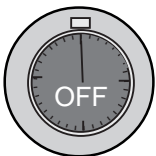
6 - Shut-off time
This is where you specify how long you want the splicer to sit in stand-by mode before it shuts off automatically.

7 - Reset splicing programs
If this function is turned on, all editable splicing programs will revert to their default values.

Setting User Options

User options ranges

When you want to set the user options, refer to the adjacent table and follow step-by-step below.

Note:
Be sure to remove any fibers possibly left in the splicer before getting started.

Option Number	Option	Range of values	Default Settings
1	Security code	0 - 999	0
2	Prefuse control	0/1 (Off/On)	0
3	Changed parameter indication	0/1 (Off/On)	0
4	Battery warning level	10.5 - 12.5 V	11.3
5	Stand-by time	0.1 - 99.9 min.	1.0
6	Shut-off time	0.1 - 99.9 min.	10.0
7	Reset splicing programs	Performed when set to 0	-

On/Off **Edit**
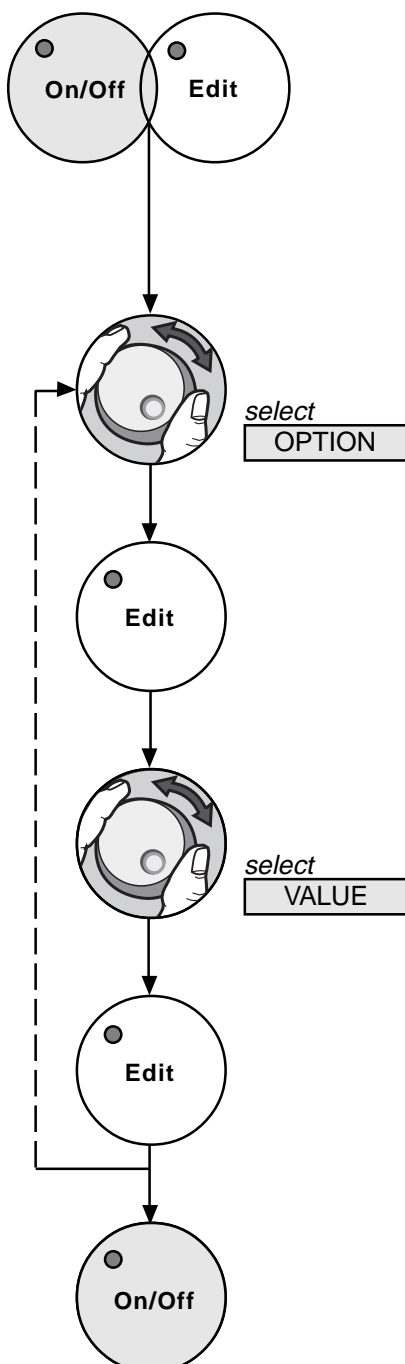
1. Press the **On/Off** and **Edit** buttons simultaneously until the red display shows "001." At this point you are in set-up mode.

Note:
If a security code is set (see page 18), the red display will start to flash, and you can not proceed until you enter the code by turning one of the dials to the correct number and pressing **Edit** again.

select
OPTION

2. Turn one of the dials to select the option (1-7) you want to set.

Edit

3. Press the **Edit** button to enter your choice and have displayed the current setting for the selected option.

select
VALUE

4. Turn one of the dials until the new desired value for the option appears in the red display.

Edit

5. Press the **Edit** button to store the selected value. Then, if you have no more options to set, proceed on to Step 6. However, if you want to change other options, start once again from Step 2 and choose a new option number.

On/Off

6. To exit from set-up mode and end your session setting user options, press the **On/Off** button.

Maintenance
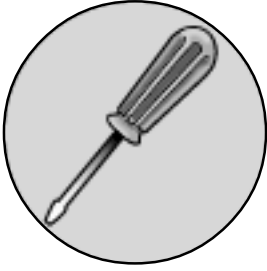
To keep the EC1 splicer in tiptop shape, there are three areas of general maintenance you should regularly attend to.

- Cleanliness
- Battery
- Electrodes

The splicer is equipped with error messages (see p. 24) that will remind you about some of these tasks, but ideally you will make maintenance a habitual part of your use of the EC1.

Cleanliness

It may be tiresome to be reminded once again how important cleanliness is; nevertheless, this is also the easiest, and most recurrent, task associated with maintenance of the EC1. The following is a summary of the most dirt sensitive parts of the machine.
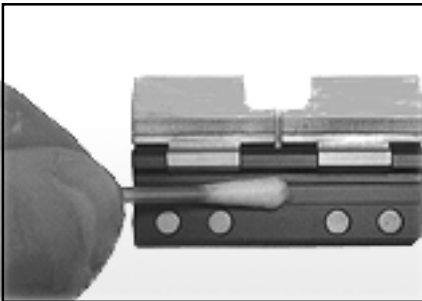
Both the **fiber holders** and the **fiber holder fixtures** should be regularly cleaned with the glass fiber brush or a cotton swab dipped in alcohol. You should also keep your eyes open for any damage to the fiber holders, particularly around the grooves.
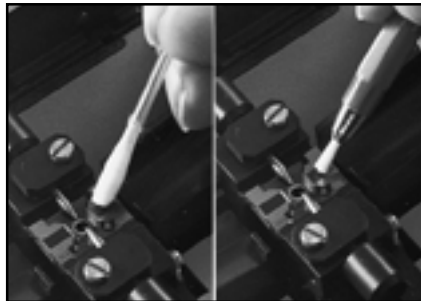
If the **V-grooves** are dirty, then it will be impossible to line up the fibers properly, so if you see a visible fiber offset on the screen, it is probably due to dirty V-grooves. You can clean the V-grooves with the glass fiber brush or a cotton swab soaked in alcohol. You should **NOT** clean them with compressed air nor with petroleum products.


You should remove the **electrodes** and clean them with the fiber glass brush only when error codes 02 or 03 are shown. Do **NOT** clean the electrodes with a cotton swab dipped in alcohol. For instructions as to how you remove and reinsert the electrodes see the section on electrode maintenance on p. 21. Once you have them remounted, you should run the electrode cleaning program (Program 100, see below) 2-3 times.

Program 100 (Electrode Cleaning Program)

You should make running Program 100 part of your daily routine with the EC1. In addition to running it at the beginning of each work day, you should stop and initiate Program 100 after every 15-20 splices. It is also the best corrective measure if the electrodes make a sizzling sound while the arc is lit.

Battery
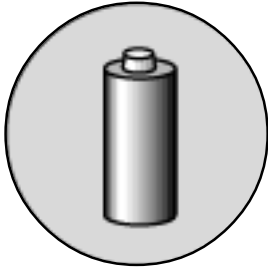
The battery is uncharged on delivery, so before you can use it, you must count on 16-20 hours charging time. Additionally, when you connect the battery to the charger, you should ensure that the charger's current limitation setting is 0.45 A. Later, when recharging the battery after use, you should also keep in mind several other points.

● Only recharge the battery after it is completely run down. This means that even when the LED "Low Battery" comes on, you should continue using the splicer and should not recharge until the splicer runs out of power altogether.

● Even when not using the battery regularly, you should recharge it once a month to maintain its full capacity.

● Charge an uncharged battery for 16-20 hours, and no longer since a longer charging can shorten the battery's lifetime.

Replacing the electrodes

When the error code 04 is displayed, 1000 splices have been executed on the splicer. This is a signal to you that you may want to change the electrodes. You certainly want to replace them every 2000 splices. To get rid of the error message you must reset the splicer counter (see p. 16), and if you are replacing the electrodes you should be resetting the counter anyway.

To change the electrodes (or remove them for cleaning), you must first loosen the the fixing screws, and then the electrodes should lift right out. Once you have mounted the new electrodes, you should run the electrode cleaning program (Program 100) 2-3 times. And once again: **Do not forget to reset the splicer counter whenever you replace the electrodes.**

Accessories and Ordering

To place an order you should have the ordering number ready and direct yourself to an authorized Ericsson representative. To find the representative in your home country look on the list at the end of the manual.

EC1

Ordering number:

EC1	63ST003

The EC1 kit includes the splicer, fiber holders, a spare electrode set, cleaning tools (two glass fiber brushes and a pair of tweezers), and a user's manual. Everything is conveniently packaged in a metal carrying case.

Battery and external power supply are **NOT** included.

Battery

Ordering number:

Battery	42ST029
Battery charger, Europe	10000278
Battery charger, USA	10000276
Battery charger, UK	10000277

One of your options for powering the EC1 is to use an external battery. The battery holds a charge equivalent to approximately 100 splices.

Power supply

Ordering number:

Power supply/Battery charger	42ST072
Power cord, Europe	10000159
Power cord, USA	10000160
Power cord, UK	10000161

It is also possible to power the EC1 with an external power supply which gives an input of 100-240 V, 50-60 Hz.

Car battery cable

Ordering number:

Car battery cable	42ST052

For lengthy operation with no access to a power outlet, a 12 V car battery can also be used as a power source.

Heat oven

Ordering number:

Heat oven	57ST001

The heat oven is used for crimping protection sleeves. Heat shrinkable sleeves for both ribbon and single fiber can be used with the oven. Additionally the heat oven can be conveniently set into the top of the of the EC1 splicer.

Measuring gauge

Ordering number:

Measuring gauge   42SM006

The measuring gauge provides a convenient way to achieve correct cleaving and stripping lengths when using strippers and cleavers others than those recommended by Ericsson.

Fiber stripping tool

Ordering number:

Fiber stripping tool   10000640

Ericsson offers a high quality stripping tool intended for single fibers.

Fiber cleaver EFC-P24

Ordering number:

Fiber cleaver   10000707

The EFC-P24 fiber cleaver offers low angle cleaves, as well as built-in stripping length measurement.

Fiber holders

Ordering number:

125/250 μm, left	42SM049
125/250 μm, right	42SM050
125/900 μm, left	42SM052
125/900 μm, right	42SM051

Two different types of fiber holders are available for the EC1 splicer. The 125/250 μm holders are intended for regular single fiber. The 125/900 μm holders are necessary when splicing fiber with tight secondary coating.

Electrode

Ordering number:

Electrode   53SM006

It is necessary to periodically replace the electrodes, and Ericsson offers them for sale. Be sure to buy a pair.

Notes: _____

_____

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Appendix A - Error Codes

When an error occurs or the EC1 wants to give you maintenance information, you will hear a beep and see an "E" followed by a two-digit code in the red display.

Error code	Error	Corrective measure
01	Safety shield open when trying to splice	Close safety shield
02	Electrodes found to be bad based on the most recent splicing operation	Try **Splice** again. If this fails, clean and/or change the electrodes
03	Three splice attempts in a row failed	Clean and/or change electrodes
04	Electrodes used for more than 1000 splices	Reset splicer counter, and, if necessary replace electrodes
05	Fibers positioned so that requested movement is impossible	Prepare fibers again
06	Low battery voltage	Recharging will soon be necessary
07	Empty battery	Recharge or change batteries
08	Incorrect security code given	Abort operation or try again
09	Bad operation/ Handling error	Contact your authorized Ericsson service partner
11	Incorrect operation in RAM	Contact your authorized Ericsson service partner
12	Incorrect operation in EPROM	Contact your authorized Ericsson service partner
13	Unable to write to EPROM	Contact your authorized Ericsson service partner
15	Pressure sensor failure	Contact your authorized Ericsson service partner
21	Step-motor drivers initiated with out-of-limit values	Contact your authorized Ericsson service partner
22	PWM signals initiated with out-of-limit values	Contact your authorized Ericsson service partner
23	Attempt to display "undisplayable" values	Contact your authorized Ericsson service partner
24	EPROM address out of range	Contact your authorized Ericsson service partner

Appendix B - Technical Data

Fibers	Single fiber 125/250 µm Single fiber 125/900 µm Single mode, multimode and dispersion-shifted fiber
Splice losses	Typical value, using identical single mode fibers: 0.04 dB
Fiber alignment method	Fixed V-grooves for radial alignment High precision stepper motors for axial alignment
Power supply	100 - 240 V, 50 - 60 Hz 12 V DC with special adaptor
Battery	Splicer only: >100 splices per charge with heat oven: >70 splices per charge Recharging time: 16 - 20 hours
Operating environment	-5 to +40 ᵒC, 0 - 98% RH (non-condensing)
Storage environment	-15 to +70 ᵒC, 0 - 98% RH (non-condensing)
Monitor	3.2" high resolution, adjustable and tiltable LCD monitor
Video output	1 V p-p positive, 75 Ω/CCIR
Power output	12 V DC, max 1.3 A to an external device
Size	240 x 340 x 152 mm (W x D x H) (approx. 9.5 x 13.4 x 6 in.)
Weight	3.9 kg (approx. 8.6 lbs.)
Carrying case	Rugged cabin-sized case with extra space for all necessary accessories
Carrying case size	497 x 198 x 395 mm (W x D x H, in an upright position) (approx. 19.6 x 7.8 x 15.6 in.)

Index

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