Installation & Operation

P/N 1-960467-01 Edition 2 March 2000



EasyCoder F4 Bar Code Label Printer



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WARNING:

This is a Class A ITE product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

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Declaration of Conformity

We,

Intermec Printer AB Idrottsvägen 10 Box 123 S-431 22 Mölndal Sweden

declare under our sole responsibility1 that the product

EasyCoder F4

to which this declaration relates is in conformity with the following standards

EMC:

EN 50 081-1:1992 EN 55 022:1994 EN 61 000-3-2:1995, class A

> EN 50 082-2:1995 EN 61 000-4-2:1995 EN 61 000-4-3:1996 ENV 50 204:1995 EN 61 000-4-4:1995 EN 61 000-4-6:1996

Electrical Safety: EN 60 950

following the provisions of Directives

89/336/EEC and 73/23/EEC

Mölndal 1999-09-01

Mats Gunnarsson President

¹/. Intermec assumes no responsibility as regards fulfilling the CE Directive if the printer is handled, modified or installed in other manners than those described in Intermec's manuals.

Introduction

The EasyCoder F4 is a sturdy medium-duty direct thermal printer with a printhead resolution of 8 dots/mm (203.2 dpi) and a maximum print width of 104.0 mm (4.095 inches). It offers a large number of useful facilities, such as....

- Flash memory SIMMs for firmware, fonts, bar codes and application programs
- · Built-in memory card adapter
- Built-in USB and RS 232C interfaces
- · Provision for one extra interface board
- · Bar code wand interface for easy setup
- Keyboard and display with backlight for improved user interface.

The EasyCoder F4 supports the unique and flexible Intermec Fingerprint 7.31 programming language, which allows the user to create custom-made application programs and label layouts in a Basic-like environment. It is also designed to work with the printer drivers for various versions of Microsoft Windows or with the Intermec Direct Protocol programming language. The Windows drivers allows you to design labels using standard PC applications, e.g. Microsoft Office.

The EasyCoder F4 supports 15 scalable Unicode TrueType and TrueDoc fonts as standard. Additional fonts can be downloaded into the printer's Flash memory, or be plugged in using a memory card. The Unicode standard allows the use of special characters for various languages including non-Latin fonts, such as Cyrillic, Chinese, Japanese, Korean, Hebrew etc.

Safety Requirements

Intermec assumes no responsibility as regards fulfilling the CE Directive if the printer is handled, modified or installed in any way other than that described in Intermec's manuals.

Caution

- Read this manual carefully before connecting the printer.
- Moving parts are exposed when the side door is open, so ensure that the door is closed before you operate the printer.
- Do not open the front/left-hand cover. Dangerous voltage!
- Do not remove the bottom plate. Dangerous voltage!
- Do not put your fingers inside the print mechanism when the power is on.
- Place the printer on an even surface which can support its weight of approximately 7 kgs (15.5 lbs) plus supplies.
- Do not spray the printer with water. If using a hose to clean the premises in an industrial environment, remove the printer or protect it carefully from spray and moisture.
- Carefully read the warning text on the envelope before using a cleaning card.

Product Labelling

The machine sign is attached to the printer's rear plate and contains information on type, model and serial number as well as mains voltage. It also contains various signs of approval.

Print a Label

Introduction

Obviously, what you really want to do with your EasyCoder F4 is to print a label, ticket or tag. If you are eager to get started, or if you already are familiar with Intermee's range of EasyCoder printers, follow the instructions in this chapter. If you are new to the EasyCoder concept, bypass this chapter for the time being and read the rest of the manual before returning here.

The subject of this chapter is to help you produce a label within minutes from unpacking your printer and to give you an idea of how the Intermec Direct Protocol and the Intermec Fingerprint programming language makes label design an easy task.

In addition to the Intermec Direct Protocol and the Intermec Fingerprint programming language, Intermec also includes printer drivers for various versions of Microsoft Windows. After having selected the Windows Driver option in Intermec Shell, you can use the EasyCoder F4 printer the same way as e.g. a laser printer and produce printouts from any standard program in MS Windows.

Connecting Printer and Host

In the following examples we assume that you use an ASCII terminal or a PC with a terminal program, e.g. Microsoft Terminal and the standard RS 232C interface between the printer and the host.

The printer contains a powerful microprocessor which is controlled by means of the Intermec Fingerprint programming language. The connected PC is only used as a non-intelligent terminal for sending instructions to the printer and to display the responses from the printer on a screen.

Intermec provides communication cables for connecting the printer to most PC computers. Also refer to Appendix 3 for wiring diagrams.

Introduction, cont'd.

Setup

By default, the printer is set up for the following communication protocol:

Baudrate: 9600
Character length: 8
Parity: none
Stop bits: 1
Flowcontrol: none
New line: CR/LF

If you want to change any of these values, please refer to chapter 7 "Setup Mode".

Set up the terminal or host computer for the same communication protocol as the printer.

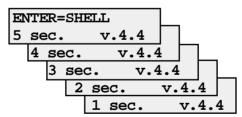
Paper Supply

Load the printer with labels with a width of at least 35 mm (1.4") and a length of at least 40 mm (1.6"), see chapter 5.

If the printout becomes too light or dark, you will need to change the paper type setup, see chapter 7 "Setup Mode".

Startup and Communications Check

Turn on the printer. Provided the printer is not fitted with any custom-made startup program, after initialization the display will show the Intermec Shell countdown menu:



Do not take any action. By default, the display window will show the following message when the countdown is completed, e.g.:

```
Fingerprint 7.31
```

If the display does not show this message, refer to chapter 8 "Intermec Shell Startup Program" and select the "Fingerprint" application.

Introduction, cont'd.

Check that the printer and your terminal/PC have a working communication by typing the following instruction on the host:

BEEP \rightarrow (\rightarrow = carriage return)

The printer should respond by returning Ok to the screen of the host and at the same time emit a short beep. If not, check the communication setup of the printer and the host.

The next two steps are included to demonstrate the printer's ability both to feed out the paper and to pull it back. Type:

FORMFEED 300 ↓

The printer will feed out a short piece of the label. Then order the printer to pull back the label to its original position by typing:

FORMFEED -300 ↓

After loading a new supply of labels, the printer should be allowed to adjust itself. Type:

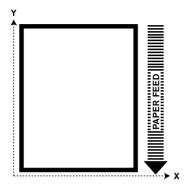
TESTFEED ↓

The printer will feed out at least two labels while adjusting its sensors and paper feed mechanism. You can also perform a testfeed operation by simultaneously pressing the **<Shift>** and **<Feed>** keys on the printer's keyboard.

Tear off the labels by grabbing the outer (right) edge and pulling downwards.

Now you are ready to start programming your first label.

Intermec Fingerprint



The label we will design in Intermec Fingerprint will contain a box, an image, a bar code, and a line of text. Note that the illustrations are not reproductions of the label, but are merely intended to show the principles of label editing.

Printing a Box

Let us start by printing a box 430 dots high and 340 dots wide with a 15 dot line thickness. The box is inserted at position X=10, Y=10:

```
NEW

10 PRPOS 10, 10 4

20 PRBOX 430,340,15 4

200 PRINTFEED 4

300 END 4

RUN 4
```

Note: The printer does not execute the program until you have typed $RUN \downarrow$.

Printing an Image

Now we add the image "GLOBE.1" after changing the print coordinates to X=30,Y=30.

```
30 PRPOS 30,30 ↓
40 PRIMAGE "GLOBE.1" ↓
RUN ↓
```



Printing a Bar Code

To print a bar code, you need to choose a bar code type before you print the bar code. Note there is no blank space in the bartype name.

```
50 PRPOS 75,270 ↓
60 BARTYPE "CODE39" ↓
70 PRBAR "ABC" ↓
RUN ↓
```

Intermec Fingerprint, cont'd.





Printing Human Readables

To get human readable text printed under the bar code, add these lines which enables bar code interpretation and selects a font for it:

```
1 BARFONT ON ↓
2 BARFONT "Swiss 721 BT",6 ↓
RUN ↓
```

Printing a Line of Text

Add text at position X=25,Y=220:

```
80 PRPOS 25,220 ↓
90 FONT "Swiss 721 BT", 6 ↓
100 PRTXT "My FIRST Label" ↓
RUN ↓
```

Listing the Program

To view the whole program, type:

```
LIST ↓
```

The lines will be listed in ascending order on your terminal's screen:

```
1
     BARFONT ON
2
     BARFONT "Swiss 721 BT", 6
10
     PRPOS 10,10
20
     PRBOX 430,340,15
30
     PRPOS 30,30
40
     PRIMAGE "GLOBE.1"
50
     PRPOS 75,270
     BARTYPE "CODE39"
60
70
     PRBAR "ABC"
80
     PRPOS 25,220
90
     FONT "Swiss 721 BT", 6
100
     PRTXT "My FIRST label"
200
     PRINTFEED
300
     END
ok
```

Intermec Fingerprint, cont'd.



Changing a Program Line

If you want to change a program line, simply rewrite the line using the same line number. For example, move the text to the right by rewriting line no. 80 with new coordinates:

80 PRPOS 75,220 ↓ RUN ↓

Saving the Program

If you want to save your first attempt, issue the following command.

SAVE "LABEL1" ↓

Your program will be saved in the printer's permanent memory under the name:

LABEL1.PRG

Loading the Program

If you want to use this label later, e.g. after having created more programs, type:

LOAD "LABEL1.PRG" ↓ RUN ↓

A new copy of the label will be printed.

The Intermec Fingerprint offers a lot of more advanced functions that allows you to create sophisticated application programs or to emulate other printer protocols. For more information on the subject of programming, please refer to the documentation of the Intermec Fingerprint programming language.

Intermec Direct Protocol

The Intermec Direct Protocol can be used in many ways. Here, we will illustrate how to build a layout first and then provide input data to variable fields in that layout, assuming that you have entered the Intermec Direct Protocol via Intermec Shell (see chapter 8). The final result will be the same label as created in the example for Intermec Fingerprint.

First, create a layout:

```
LAYOUT INPUT "tmp:LABEL1" -
                                            (start layut recorder)
BF ON _
                                   (enable bar code interpretation)
BF "Swiss 721 BT",6 ↓
                                            (select bar code font)
PP 10,10 ↓
                                      (insertion point for box field)
PX 430,340,15 ↓
                                                   (create a box)
PP 30,30 ↓
                                   (insertion point for image field)
PM "GLOBE.1" ↓
                                                   (select image)
PP 75,270 ↓
                                 (insertion point for bar code field)
BT "CODE39" →
                                            (select bar code type)
PB VAR1$ ↓
                              (variable input data to bar code field)
PP 75,220 ↓
                                      (insertion point for text field)
FT "Swiss 721 BT",6 ↓
                                                 (select text font)
PT VAR2S ↓
                                   (variable input data to text field)
LAYOUT END 4
                                                    (save layout)
```

Then add the variable data and a print instruction:



Installation

Unpacking

Before you install the printer, examine the delivery for possible damage or missing parts:

- Open the box and lift the printer out.
- Check that the printer has not been visibly damaged during transportation. Keep the packing materials in case you need to move or reship the printer.
- The label on the printer's rear plate gives the voltage, the part number and the serial number.
- Check that any options you ordered are included.
- Check that all the accessories are included in the delivery.
 In addition to any separately ordered options, the box should contain:
 - Intermec EasyCoder F4 printer
 - Set of Quick-Load Guides
 - Adapter for 3" paper roll core (only in models fitted with a rotating paper supply spool)
 - Power cord (at least one depending on model)
 - Quality check card
 - Cleaning card
 - Short strip of labels¹
 - User's Guide (multilingual)
 - Installation & Operation manual
- Check that the power cord is appropriate for the local standard. The printer works within 100 – 240 V AC, 50 – 60 Hz.



European type 230V mains plug



US/Canadian type 115V mains plug



GB type 230V mains plug

If the printer has been damaged in any way during transportation, complain to the carrier immediately.

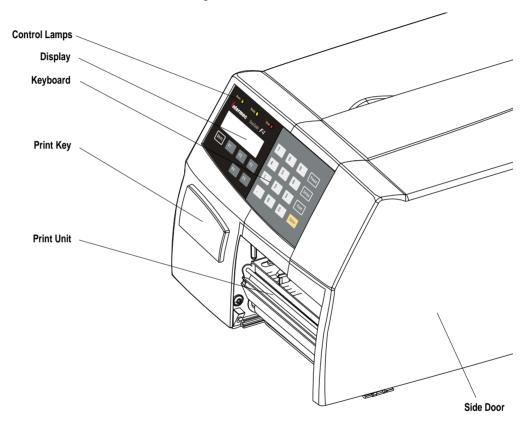
If the delivery is incorrect or any parts are missing, report it immediately to the distributor.

1/. Type and quantity may vary, or labels may be omitted, depending on area of distribution.

Front View

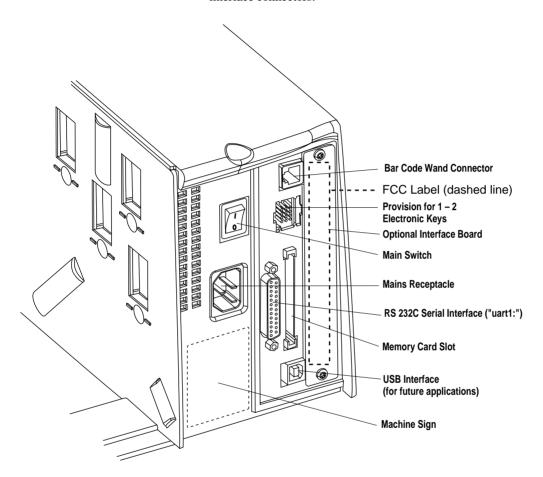
On the front of the printer are the display window, the control lamps and the keyboard. These features allow the operator to control and set up the printer manually, in addition to the remote control facilities offered by the Intermec Fingerprint firmware and the Intermec Shell startup program.

The printed labels, tickets, or tags are fed out through the front of the print unit



Rear View

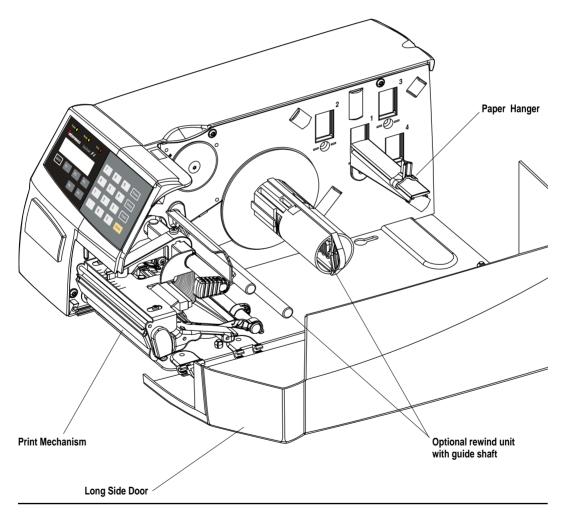
The rear plate contains the main switch, the power inlet, and various interface connectors:



Media Compartment

The media compartment is either covered by a long side door that completely encloses the print mechanism and media compartment, or a short side door that only covers the print mechanism and gives easy access to the paper supply (see chapter 9 "Options"). Being held by a magnetic lock, the door can be opened 180° so as to provide full access to the media compartment in connection with paper load, ribbon load, and cleaning.

The paper supply can be from a hanger, or from an external supply behind the printer. There is also an optional rotating paper supply spool, see chapter 9 "Options".

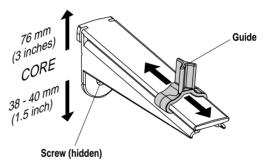


Media Compartment, cont'd.

Being of a modular design for maximum flexibility, the EasyCoder F4 can use a paper supply hanger fitted in three different positions inside the media compartment, depending on the type of side door (long or short) and whether the printer is fitted with a rewind unit for the backing paper (liner) or not. Alternatively, an external paper supply (e.g. a box of fan-folded tickets) behind the printer can be used. A rotating paper supply spool is also available as an option (see chapter 9 "Options").

Paper Supply Hanger

The paper supply hanger fits both 38-40 mm (1.5") and 76 mm (3") cores since it can be moved vertically in the slot in centre section. The lowermost position is intended for small cores and the uppermost one for large cores only. The hanger is locked by a screw and has a moveable guide to fit various paper widths.



To remove the hanger, remove the screw, twist the hanger a quarter of a turn and pull it out.

To fit the hanger into a slot in the centre section (see next page), rotate it a quarter of a turn and twist back so the lips engage the cut-outs in the sides of the slot. Move it up (3" core) or down (1.5" core) as far as it goes and secure it with the screw.

Warning:

Make sure to fit the hanger according to the size of the paper roll core. When the hanger is fitted in its upper position, the screw will interfere with any small (38 mm/1.5") core causing paper misalignment.

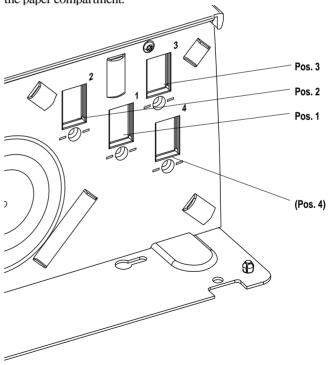
Media Compartment, cont'd.

Paper Supply Positions

There are four sets of threaded holes and slots in the printer's centre section for the paper supply hanger (or spool) so as to allow the largest possible roll size, given the limitations of the rewind unit and/or the full enclosure provided by the long side door. The positions are indicated by numbers engraved in the centre section.

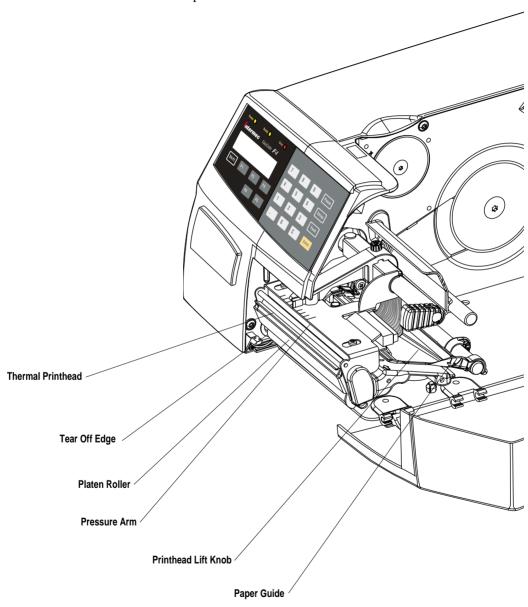
- Position 1 is used when the paper compartment is fully enclosed by a long side door, regardless of the existence of a rewinder Maximum roll size is 152 mm (6").
- Position 2 is used in connection with a short side door that only encloses the print unit, but without any rewinder. Maximum roll size is 213 mm (8.38").
- Position 3 is used in connection with a short side door <u>and</u> an optional rewind unit. Maximum roll size is 203 mm (8").
- Position 4 is reserved for future development.

The printer can also use an external paper supply located behind the paper compartment.



Print Mechanism

The print mechanism features a high-performance 8 dots/mm (\approx 200 dpi) thermal printhead with quick-mount fittings to facilitate replacement.



Connections

Power

- 1 Place the printer on a level surface, near a mains electrical outlet and with easy access for loading paper and for removing printout.
- 2 Check that the printer is switched off.
- 3 Connect the power cable to the mains receptacle on the rear plate and to the electrical outlet.

Computer

The Easycoder F4 is fitted with one DB25 female connector for the RS 232 serial interface port and one class B connector for the USB port (see Appendix 3).

• RS 232 Serial Interface

Use the serial interface with Direct Protocol or Intermec Fingerprint programming because you can receive error messages from your printer. Before you can use the serial interface, you may need to set up the communication parameters, such as baudrate, parity etc. as described in chapter 6 "Setting Up the Printer".

• USB Interface

The USB interface is intended for future applications.

• Optional Interface Board

Refer to Appendix 3 and the separate documentation delivered with the boards for connection and setup instructions.

Switch off both the PC and the printer before connecting them together.

Controls and Indicators

The EasyCoder F4 has several ways of communicating directly with its operator; three control lamps, a display window, a membrane-switch keyboard with 22 programmable keys, a big programmable "Print" button on the printer's front, and a beeper.



Control Lamps

The control lamps are coloured LEDs (Light Emitting Diodes) and are used for the following purposes:

- *Power* (green) indicates when the power is on.
- Ready (green) indicates when the printer is ready for use.
- Error (red) indicates when some kind of error has occurred. If using a serial communication, an error message may be returned to the host computer.

Display

The display window contains an LCD (Liquid Crystal Display) with background illumination and 2 lines of text, each with 16 characters. It guides the operator through the setup and informs him or her of possible errors during printing.

The Intermec Fingerprint programming language and the Intermec Direct Protocol allows custom-made messages to be composed and displayed according to the requirements of the application.

Keyboard

The keyboard is of membrane switch type and has 22 keys. The keyboard is supplemented by a large "Print" button on the printer's front. Some keys have hardcoded functions in the startup and setup modes.

In application programs created by means of the Intermec Fingerprint programming language, the keys can be assigned to various functions according to requirements. As one key is assigned as shift key, up to 44 different key combinations are possible. An audible signal, which can be turned off if so desired, acknowledges that a key has been pressed.

Controls and Indicators, cont'd.

Beeper

The beeper notifies the operator when an error has occurred and acknowledges that a key has been pressed. The Intermec Fingerprint programming language allows the key acknowledge signal to be turned off. The frequency and duration of the signal can be specified at will. Thus, it is possible create different signals for different conditions or even to make the printer play simple melodies!

Starting Up

Startup Files

At startup, the behaviour of the printer is decided by the possible existence of a startup file (autoexec.bat) somewhere in the printer's memory, i.e. a program that automatically starts running when the printer is turned on. There are two cases:

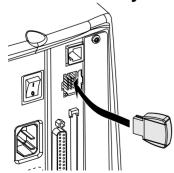
- A The printer is only fitted with the Intermec Shell file-managing program, which allows the operator to choose between a variety of applications and functions.
- **B** In addition to Intermec Shell, the printer is also fitted with a custom-made application program that is design to perform a specific task, e.g. to print tickets, baggage tags, or product labels for a certain company: Such a program may be initiated by a startup file (autoexec.bat) stored in the printer's permanent memory or in a memory card.

There can be one startup file stored in each of three different parts of the printer's memory. If there are startup files stored in more than one place, they will be used with the following priority:

- 1. An autoexec.bat file stored in any approved type of memory card, provided it was inserted in the printer before power up.
- An autoexec.bat file stored in the user's part of the printer's permanent memory (device "c:").
- 3. The pup.bat file (Intermec Shell) in the systems part of the printer's permanent memory (device "rom:").

This implies that if you insert a memory card with startup file before you turn on the printer, the startup file of the memory card will be used instead of Intermec Shell.

Electronic Keys



Some applications may require one or two electronic keys to be inserted in the slot in the guide plate.

Remove the plastic cover and insert the key so the flat side faces the centre of the slot. It does not matter if the key is fitted in the right or left position.

In case of two electronic keys, the flat sides should face each other.

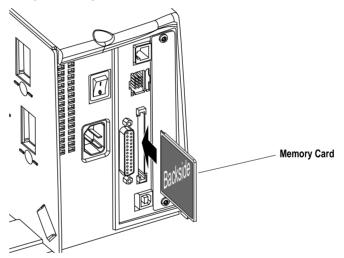
Important!

Always turn off the power before inserting or removing an electronic key.

Memory Card

If you want to use a memory card, you must insert it into the slot in the printer's rear plate before you turn on the power. The memory card can be an SRAM card complying with the JEIDA-4 standard or Flash Memory card from Intermec. Maximum size in both cases is 64 Mbit (8 MB). There are three types of Flash Memory Cards:

- A Font Card provides additional fonts as long as it remains inserted in the printer.
- A Font Install Card permanently installs additional fonts in the printer which can be used even after the card has been removed.
- A Firmware Card automatically replaces the printer's firmware, e.g. with an updated version.



Important!

Always turn off the power before inserting or removing a memory card!

Power On

Do not start the printer before you have made the necessary connections, inserted any memory card you want to use, and checked that the printhead is lowered.

Turn on the power by means of the main switch on the rear plate. The "Power" LED control lamp on the front panel lights up when the power is on. Wait for a few moments, while the printer loads the program and runs some self-diagnostic tests. Then some kind of message will appear in the display window, depending on startup file.

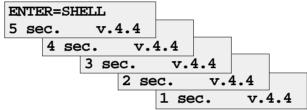
Display Messages at Startup

When the power is turned on, the printer is initialized. The progress of the initialization is indicated by an increasing number of dots on the lower line in the display:

```
Initializing :::
```

The type of startup file running in the printer is indicated by the message shown in the display window **directly** after initialization.

A. Intermec Shell Startup Program (standard printers)



Refer to chapter 8 for further information on Intermec Shell. The digits in the lower right corner of the display indicate the version of Intermec Shell.

B. Custom-made Application Program (non-standard printers)

Any other display message than those illustrated above indicates that the printer is running some custom-made, non-standard application program or that some error has occurred.

Paper Load

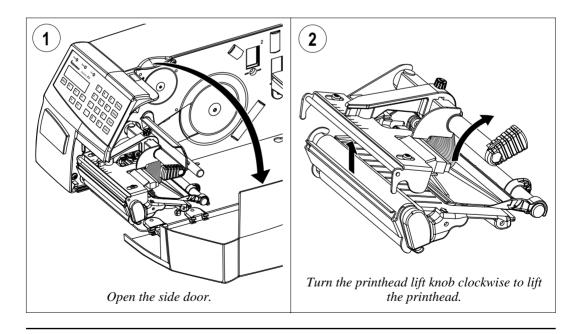
Tear-Off

The EasyCoder F4 can print on labels, tickets, tags, and paper strip in various forms. This chapter describes the case when the paper strip is to be torn off manually against the printer's tear-off edge.

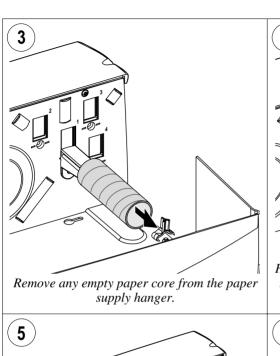
Use the <**Feed**> key (see figure #10) when loading the same type of paper as before. When switching to a new type of media or when the printer does not feed out the paper properly, simultaneously press the <**Shift**> and <**Feed**> keys.

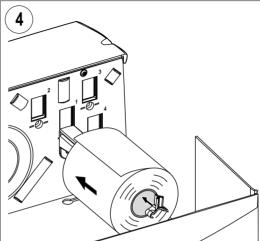
Tear-off can be used for:

- Non-adhesive continuous paper strip
- Self-adhesive continuous paper strip
- Self-adhesive labels on backing paper
- Tickets with gaps, with or without perforations
- · Tickets with marks, with or without perforations

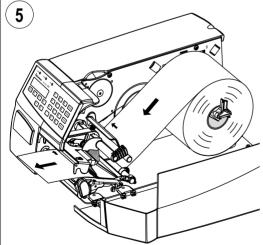


Tear-Off, cont'd.

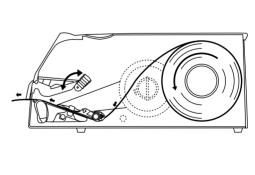




Hook a new roll of labels, tickets, tags, or strip on the paper supply hanger and adjust the guide so the paper roll comes in flush with the wall.

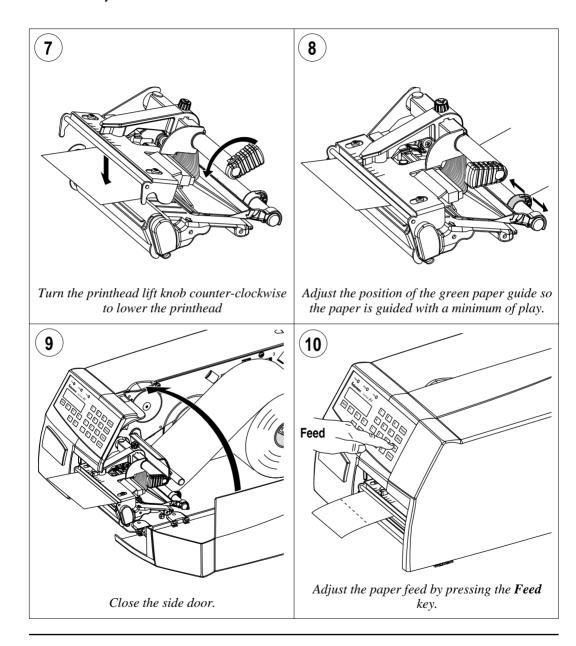


Thread the paper through the print mechanism and push it inwards as far as it will go.

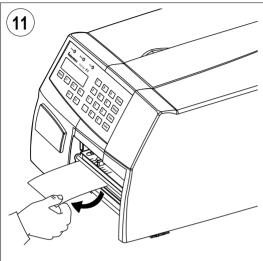


 $This\ diagram\ shows\ the\ path\ of\ the\ paper\ web.$

Tear-Off, cont'd.



Tear-Off, cont'd.



To tear off the paper, grab the outer edge and pull downwards.

Tear-Off with Quick-Load

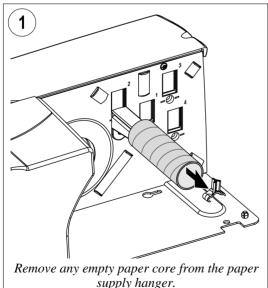
In addition the paper load procedure for tear-off operation described earlier in this chapter, the EasyCoder F4 can optionally be fitted with a set of Quick-Load paper guides that makes paper load much easier and quicker, especially in connection with a short side door. See chapter 9 "Options" for installation instructions.

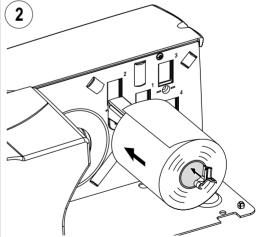
Quick-Load is usually not used in connection with a long side door and cannot be combined with peel-off operation.

Use the <Feed> key (see figure #5) when loading the same type of paper as before. When switching to a new type of media or when the printer does not feed out the paper properly, simultaneously press the <Shift> and <Feed> keys.

Important!

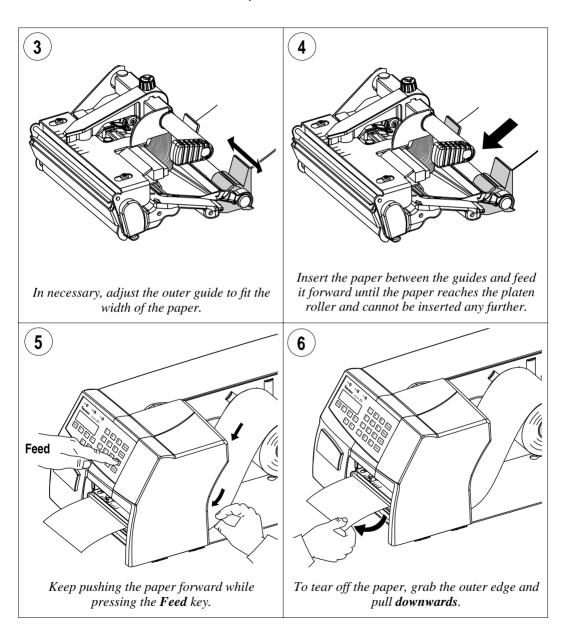
Full automatic loading without the operator having to press any key requires a special set of Intermec Fingerprint instructions in the application program.





Hook a new roll of labels, tickets, tags, or strip on the paper supply hanger and adjust the guide so the paper roll comes in flush with the wall.

Tear-Off with Quick-Load, cont'd.



Peel-Off

The EasyCoder F4 can print on labels, tickets, tags, and paper strip in various forms. This chapter describes the case when self-adhesive labels are separated from a backing paper (liner) immediately after printing after which the backing paper is rewound internally in the printer.

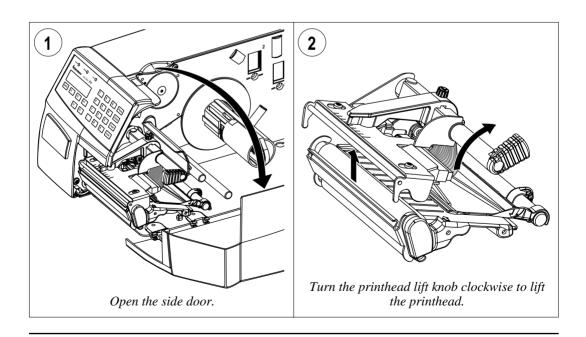
Peel-off operation cannot be performed when quick-load guides are fitted.

Use the <**Feed**> key (see figure #13) when loading the same type of paper as before. When switching to a new type of media or when the printer does not feed out the paper properly, simultaneously press the <**Shift**> and <**Feed**> keys.

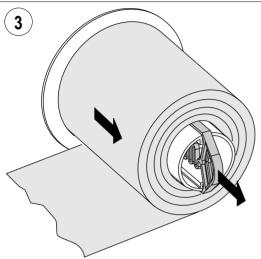
Peel-off can only be used for:

• Self-adhesive labels on backing paper

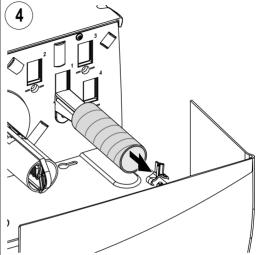
An optional label-taken sensor can hold the printing of next label in a batch until the present label has been removed, see chapter 9 "Options".



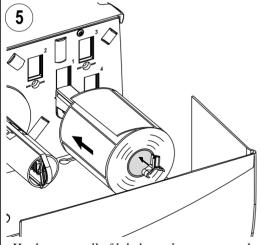
Peel-Off, cont'd.



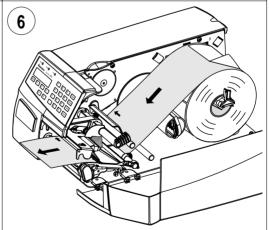
Pull out the handle to collapse the rewinder, then remove the backing paper.



Remove any empty paper core from the paper supply hanger.



Hook a new roll of labels on the paper supply hanger and adjust the guide so the label roll comes in flush with the wall.



Remove labels from the first 50 cm (20") of the web. Thread the backing paper through the print mechanism and push it inwards as far as it will go.