# PRINT/CHANNEL

*Emulate a 3211-type channel printer*

*Documentation Edition 8*
*Software Version 9902 or later*

**Editors**

Becky Mooring
Michele Nylander
Diane Pedersen
Jennifer Saam
Seroj Terian

**Hardware**

Ken Clark



**Barr Systems, Inc.**
4500 NW 27 Avenue
Gainesville, FL 32606-7031

Phone: 800-BARR-SYS
800-227-7797
352-491-3100

Fax: 352-491-3141

Internet: support@barrsys.com
Web site: www.barrsys.com
FTP site: ftp.barrsys.com



August 5, 1999

# Preface

PRINT/CHANNEL emulates a 3211-type channel printer and allows you to route mainframe print jobs to network printers and share mainframe printers with network users (with the PRINT370 option).

Follow the instructions in this manual to install the PRINT/CHANNEL software.

## Barr Technical Support

Contact Barr Technical Support at 800-BARR-SYS Monday through Friday between 9 a.m. and 8 p.m. Eastern time if you have questions or problems with Barr software or hardware. Technical Support will ask for your software version number and adapter serial number. When you call, please have this information on hand. If you contact Technical Support by fax, e-mail, or the web site support page, please include these numbers in your correspondence.

You can obtain the software version number from the following places:

- Second screen of the Installation menu
- Console portion of the Operation screen at software startup
- Quit screen during software operation

See your *BARR/CHANNEL* or *CHANNEL-IN (BT)* hardware manual for adapter serial number locations.

*Notes:*

# Contents

Chapter

# 1 Introduction

PRINT/CHANNEL allows you to route mainframe print jobs to network printers and share your mainframe printer with the network (with the PRINT370 option).

You can order PRINT/CHANNEL as an option with the BARR/SPOOL base product. With PRINT/CHANNEL and BARR/SPOOL, the Barr PC can emulate up to eight 3211-type channel printers with complete spooling features (see Figure 1-1).

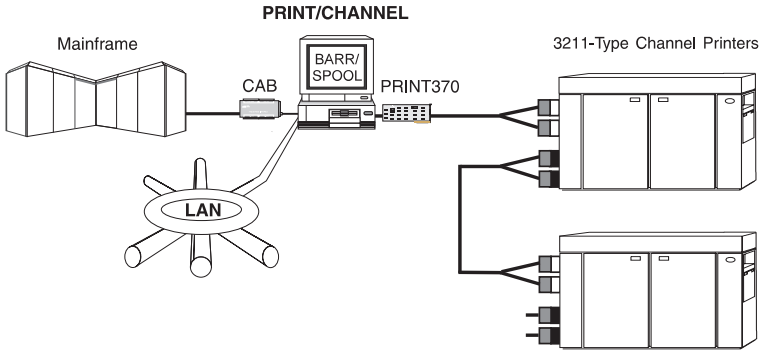



**Figure 1-1.** PRINT/CHANNEL with BARR/SPOOL and PRINT370 allows you to share mainframe printers with the network.

You can direct mainframe print jobs to the spooler or to existing network print queues on a local area network (LAN). If you add the Barr PRINT370 option, you can also share mainframe channel printers with the rest of your network.

Depending on the other Barr product options you install, PRINT/CHANNEL also allows VAX, UNIX, and AS/400 hosts to share the mainframe channel printers (with the PRINT370 option) and network printers as shown in Figure 1-2.

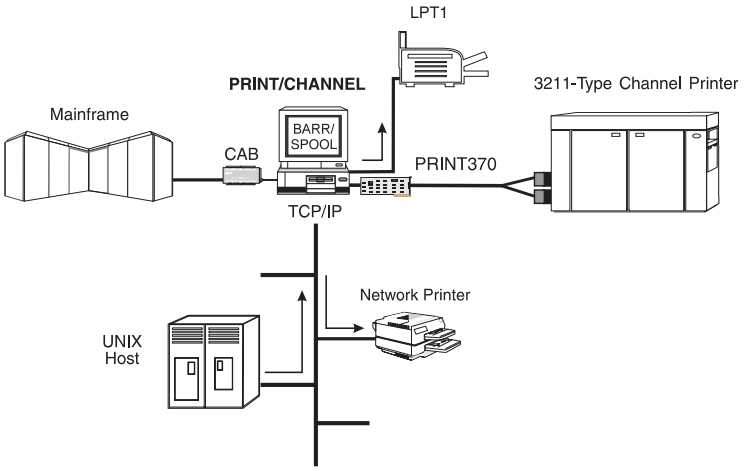



**Figure 1-2.** PRINT/CHANNEL with BARR/SPOOL, PRINT370, and TCP/IP.

## 1.1 Features

PRINT/CHANNEL supports routing mainframe print jobs to your network printers and sharing your mainframe printer with other network users (with the PRINT370 option) via the features described in this section.

### Multiple Printers

PRINT/CHANNEL provides up to eight printer sources you can route to any combination of parallel, serial, channel-attached, and network printers, depending on which Barr software options you include. The printer addresses do not need to be sequential, if the PCI adapter is used.

### Spool Support

PRINT/CHANNEL with the BARR/SPOOL base product allows you to spool print files to a channel printer (with the PRINT370 option) or to network printers. Spooler features include restart, file view, and text search.

### Convenient Channel Attachment

When you connect a PC to the mainframe, you need the ability to isolate the mainframe from the PC environment. The Barr Channel Attach Box (CAB) allows you to disconnect the PC without affecting the mainframe or other channel devices.

The CAB electronically isolates the channel signals from the PC. When you exit the software, the CAB disables the PC connection. LED indicators on the box show the status of the connection so you can tell if the host is operational, the Barr software is enabled, and communication is taking place.

> ***Note:*** Always try to exit the PRINT/CHANNEL software normally before you power off or reset the PC. If you cannot do this, disable or power off the CAB before you power off or reset the PC.

### Job Separation

The PRINT/CHANNEL input data stream is record oriented. The emulated IBM 3211 protocol does not provide an obvious mechanism to separate print jobs. You have to divide jobs in hard copy printouts by using banner pages as the breaks between jobs. PRINT/CHANNEL provides the following mechanisms to break the data stream into discrete print jobs:

- Banner recognition
- Forms Control Buffer (FCB) detection
- Timeout

*Banner Recognition*

The first, and perhaps most useful, job separation mechanism is by banner recognition. To use this feature, you must configure the program to recognize banner pages from the host (see the **`Job separation by banner page recognition`** option in Chapter 2 and a banner page detection example in Appendix A). You can use header, trailer, or both types of banner pages. During configuration, you specify a range of lines and one or two text strings. PRINT/CHANNEL looks for these strings on specified banner page lines at specified columns. After the program finds a banner page, that page becomes either the first (header) or last (trailer) page of the print job.

Ideally, you should configure PRINT/CHANNEL to recognize both headers and trailers. Depending on the layout of your particular banner pages, this might not be possible. If you configure a PRINT/CHANNEL printer to recognize headers only, the software has to cache each page until it determines if the page is a banner page. If you must configure your printer to recognize headers only, try to limit the search region to the top of the page if possible. If you tell the program that the banner-identifying text is somewhere between line 1 and line 60, then for each page of the job that is *not* a banner page (that is, most pages), the program must cache 60 lines before it can determine if the page belongs with the current job. If your pages are dense, this caching might have a noticeable impact on throughput.

*FCB Detection*

In the second mechanism, the program automatically breaks a job when it receives an FCB (primarily to include the FCB with the job that follows it in the data stream).

*Timeout*

The third mechanism is by timeout. By default, if the program receives no data from the host for 30 seconds, it closes the current job. If you use only header banner pages to separate jobs, PRINT/CHANNEL can determine only where a job begins, not where it ends. In this case, the program uses the timeout mechanism to close the job with no following job. (See the **EOF timeout in seconds** option in Chapter 2.)

## Job Parameter Extraction

If you use header banner pages, you can configure PRINT/CHANNEL to extract useful parameters from the header page such as **Jobname**, **Formname**, **FCBname**, **Copies**, **Priority**, and **Class**. You specify the location of these parameters on the banner page relative to the line on which the program finds banner-matching text. You also specify the line on which the program should find each parameter as zero or more lines **BEFORE** or **AFTER** the banner text matching line. Zero lines **BEFORE** (or **AFTER**) refers to the line containing the matching text. See Chapter 2 for more information about parameter information. See Appendix A for a banner page example.

### Optional S/390 Channel-Attached Printer Support

Barr's PRINT370 option can drive System/390 channel-attached printers at their maximum speeds. With this option, you install a PRINT370 adapter that emulates the channel in the PC. You can then attach up to six S/390 channel-attached printers to the adapter with bus and tag cables.

For a list of supported channel printers, see the Barr *PRINT370* manual.

### Other Barr Options

Depending on memory availability, you can add these Barr software options to print to and receive print jobs from these hosts:

| Options | Host |
|---|---|
| BARR/PRINT for LAT | VAX |
| BARR/PRINT for TCP/IP | UNIX |
| PRINT/TWINAX | AS/400 |

## 1.2 Requirements

You need the following hardware and software to run PRINT/CHANNEL:

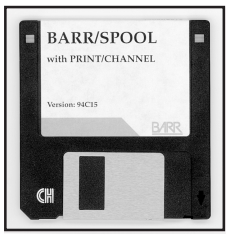
- PC with at least 640 kilobytes (KB) of memory (varies according to the number of PRINT/CHANNEL printer sessions you define and the product/options you include)
- DOS 5.0 or later version
- BARR/SPOOL
- CAB
- CHANNEL-IN adapter

## 1.3 Host Configuration

PRINT/CHANNEL emulates a 3211-type channel printer. You must ask your host programmer to configure the mainframe to recognize and communicate with the PRINT/CHANNEL device.

## 1.4 Package Contents

PRINT/CHANNEL software, which is packaged with BARR/SPOOL, is included on this disk:




BARR/SPOOL software disk
with the PRINT/CHANNEL option

The *BARR/CHANNEL* or *CHANNEL-IN (BT)* hardware manuals list the hardware package contents.

Chapter 2

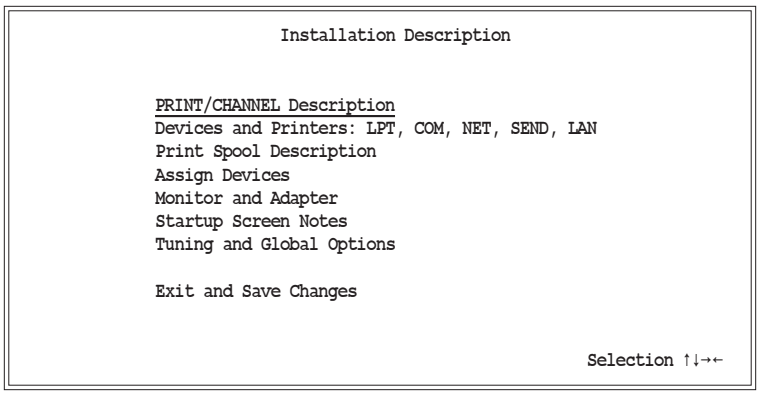
# Configure the PRINT/CHANNEL Software (ISA Adapter)

The Installation chapter in your *BARR/SPOOL* manual describes how to configure software from the Installation Description menu. This chapter discusses additional PRINT/CHANNEL options you need to specify and includes sample BARR/SPOOL and PRINT370 screens.

To run the Barr software, type the Barr software startup command followed by the letter **i** at the DOS prompt. For example, type the following:

```
spool i
```

The Installation Description menu displays.

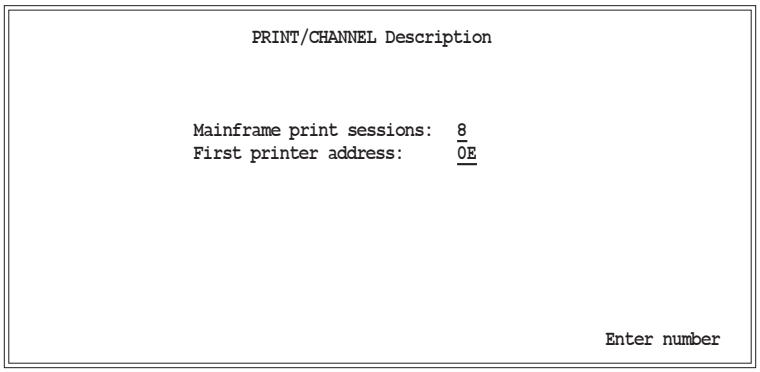



➤ To configure the PRINT/CHANNEL settings, select **PRINT/CHANNEL Description**.

# 2.1 Define Print Sessions and Addresses

You define the number of print sessions and first printer address on the PRINT/CHANNEL Description screen.

## Description Options




**Mainframe print sessions:**

Enter **1** to **8** printers. This is the number of channel printers you want the Barr software to emulate. This manual shows eight printer sessions.

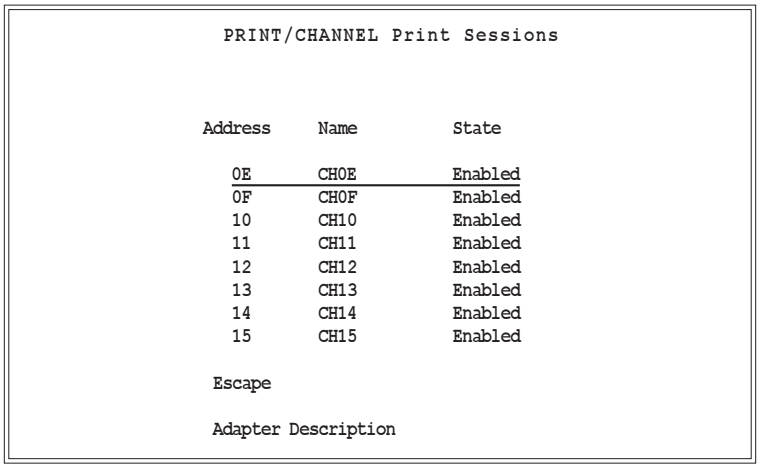
**First printer address:**

Enter the first printer address in hexadecimal. The default is **0 E**. If you define more than one printer, PRINT/CHANNEL numbers the printer addresses sequentially beginning with the first address. For example, if you define three printers and set the first printer address to **0 E**, the printer addresses for the three printers will be **0 E**, **0 F**, and **1 0**.

> ***Note:*** Check with your host programmer for a range of available addresses. After you select the first address, PRINT/CHANNEL assigns the rest sequentially and you cannot manually override the range.

## Print Session Options

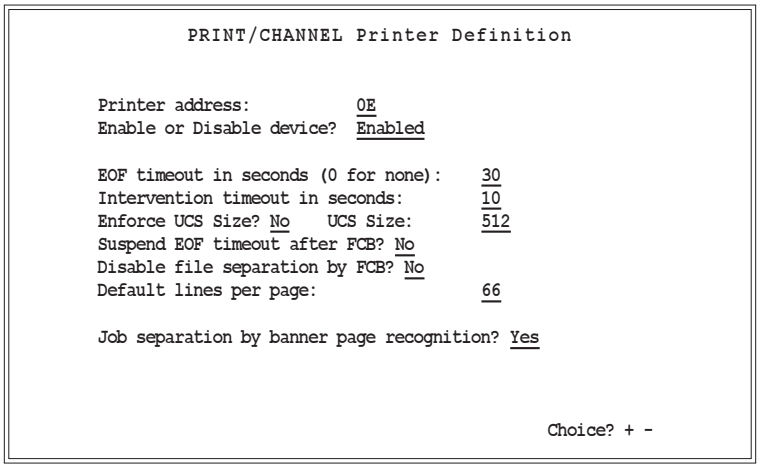
1. Press Enter to display a list of all printers.




2. To define a printer, select it from the list.

## Printer Definition Options

The PRINT/CHANNEL Printer Definition screen displays.



**Printer address:**

The printer address in hexadecimal. Each printer must have a unique address. This address must match the subchannel address at the host. If you installed an ISA adapter, you cannot change this field.

**Enable or Disable device?**

You can enable or disable the device to control its use.

**Enabled** Default. The device is online.

**Disabled** The device is offline.

**EOF timeout in seconds (0 for none):**

If the software receives no print data from the host for the specified length of time, it assumes the current print job is complete. The default is 30 seconds.

**Intervention timeout in seconds:**

This flow control tuning option can help reduce or eliminate unnecessary intervention messages on the host console. PRINT/CHANNEL might need to temporarily stop receiving data from the host. For example, if a PRINT/CHANNEL printer is directly connected to an output device and that device enters an intervention state, the data flow from the host must be suspended. It also might be necessary to stop receiving data while the program searches a large spool retain directory. While the program builds the retain file list, it suspends normal data flow.

When PRINT/CHANNEL detects the need to temporarily suspend data reception, it withholds sending a device end (DE) acknowledgment to the host. This normal action does not cause problems if DE is not withheld for too long.

You can configure the time limit on the host. Typically you would specify from 30 seconds to a few minutes. The PRINT/CHANNEL configuration option, **Intervention timeout in seconds**, tells the program how long to withhold DE from the host. The default value is **10** seconds. Then the program supplies the DE to the host (thereby avoiding a missing DE interrupt) and enters the Not Ready

state. The program rejects the next command from the host with an Intervention Required (not ready) sense. When the reason for suspending data flow is resolved, PRINT/CHANNEL enters the ready state and supplies a DE to the host. Normal data flow resumes.

If you receive **intervention required** messages (on the host console and the BARR/SPOOL Operations screen) and the messages are considered normal for your situation, you might be able to eliminate the messages by increasing the **Intervention timeout in seconds** value. Changing this value is merely cosmetic and will neither increase nor decrease your data throughput. Your mainframe operator might ignore these messages anyway knowing that you are already taking care of the problem.

**Enforce UCS Size?**

Specify whether the received Universal Character Set (UCS) is limited to a specific size.

**No** Default. PRINT/CHANNEL can receive any size UCS from the host.

**Yes** PRINT/CHANNEL can only receive up to the value set for UCS size. The UCS maps EBCDIC characters to print-chain positions. Because the PRINT/CHANNEL emulation does not contain a physical print chain, the program ignores the information contained in this command. Some host configurations detect an error unless the printer device accepts only a specified length UCS. By default, this length is 512 bytes. If your host requires this behavior, you should enable the **Enforce UCS Size** option and enter the actual size of the UCS your host sends.

**UCS Size:**

Specify the UCS size PRINT/CHANNEL can receive. The default is **512**. This option applies only if you set **Enforce UCS Size** to **Yes**.

**Suspend EOF timeout after FCB?**

You can use this option to temporarily suspend EOF timeout processing after PRINT/CHANNEL receives an FCB.

**No** Default. EOF timeout processing is not affected by receiving an FCB.

**Yes** PRINT/CHANNEL temporarily suspends the EOF timeout operation after it receives an FCB from the host. Normal EOF timeout processing resumes when PRINT/CHANNEL detects the end of the current page.

**Disable file separation by FCB?**

Specify whether files are to be separated by FCB.

**No** Default. Files are separated whenever an FCB is received.

**Yes** Files are not separated when an FCB is received.

**Default lines per page:**

Specify the number of lines per page to be used in the absence of an FCB. The default is 66 lines per page. If an FCB is received, the FCB values will determine the lines per page, overriding this setting.

**Job separation by banner page recognition?**

Specify whether to perform print job separation by banner recognition.

**Yes** Default. The program performs print job separation by recognizing host banner pages.

**No** Disable banner page recognition. You can only separate print jobs by timeout or a received FCB.

**Copy** PRINT/CHANNEL copies the banner recognition and spool parameter extraction information from the previous printer definition. This option only applies if you define more than one printer.

If you select **Yes** or **Copy**, the PRINT/CHANNEL Printer Definition screen displays again with banner recognition information.

## Banner Recognition Options

```
              PRINT/CHANNEL Printer Definition

      Printer address:           0E
      Enable or Disable device? Enabled
.....................................................................
                  Banner Recognition Information

      Remove banner pages after processing? No

      Starting line:   0        Number of lines:  1
      Header pages:    0        plus 0 additional page(s)
      Trailer pages:   0        plus 0 additional page(s)

      Text string 1 in column:   0
       ____________________________________________________________

      IGNORE text string

      Text string 2 in column:   0
       ____________________________________________________________

                                          Choice? + -
```

The program searches each page for one or two unique text strings that identify the banner page (see Appendix A for a banner page detection example). If you specify two strings, you must specify whether to find both strings or either string. Each string can be up to 64 characters long. You specify a range of line numbers and the program searches only those lines.

Besides specifying the banner page recognition parameters, you must also specify how many header and trailer banner pages each print job has.

**Remove banner pages after processing?**

Specify whether to remove banner pages from the file after PRINT/CHANNEL extracts routing information and before it routes the file.

**No** Default. Do not remove banner pages.

**Yes** Remove banner pages after PRINT/CHANNEL extracts information from them.

**Starting line:**

Specify the first line the program should search while it looks for banner page text. If you enter **0**, PRINT/CHANNEL disables banner recognition.

**Number of lines:**

Specify how many lines (beginning with **Starting line**) the software should search. The default is **1**.

**Header pages:**

Specify how many header banner pages each print job has. If the program does not encounter header banner pages at the beginning of a print job, PRINT/CHANNEL assumes the job has begun and begins looking for trailer banner pages. Because no header pages were identified, no job parameters are extracted. If you set **Remove banner pages after processing** to **Yes**, no data at the beginning of the job is removed because no header is identified.

**Trailer pages:**

Specify how many trailer banner pages each print job has. If the trailer differs from the header, use text string 2 with the **OR** or **TRAILER** option. PRINT/CHANNEL processes the data stream more efficiently when you specify trailer pages.

**plus 0 additional page(s)**

Number of additional pages following the detected banner page that form the logical header or trailer.

**Text string 1 in column:**

These fields define the first text string used to identify a banner page. Enter the beginning column number for the string and then the text string in the following field. A question mark is treated as a wildcard character and matches any print character in the corresponding position.

**IGNORE|AND|OR|TRAILER text string**

Specify how to use the second text string.

**IGNORE**

If you specify **IGNORE**, PRINT/CHANNEL uses only text string 1.

**AND** If you specify **AND**, PRINT/CHANNEL must find both text string 1 and text string 2 before it recognizes a banner page.

**OR** If you specify **OR**, PRINT/CHANNEL must find either text string 1 or text string 2 before it recognizes a banner page.

**TRAILER**

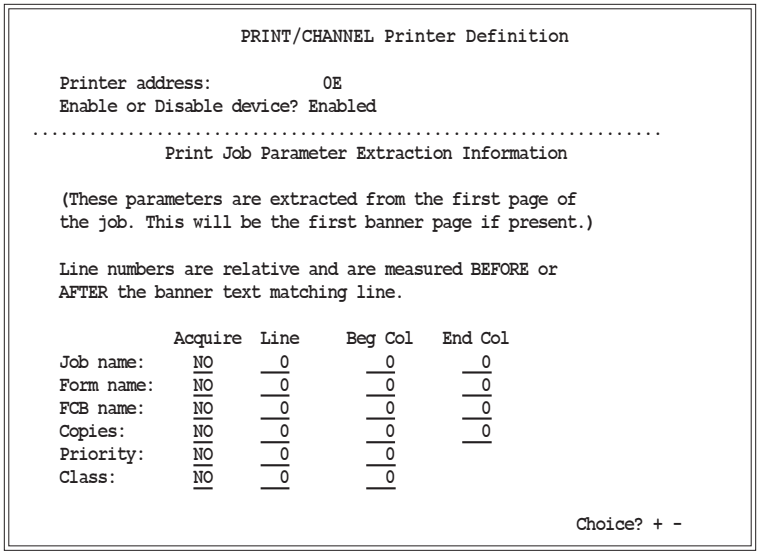
If you specify **TRAILER**, PRINT/CHANNEL uses text string 1 to identify a header banner page and text string 2 to identify a trailer banner page. PRINT/CHANNEL processes the data stream more efficiently when you specify trailer pages.

**Text string 2 in column:**

See the **Text string 1 in column** explanation.

## Banner Extraction Information

When you press Enter, the PRINT/CHANNEL Printer Definition screen displays again with print job parameter extraction information.




This screen tells PRINT/CHANNEL where to find the **Job name**, **Form name**, **FCB name**, **Copies**, **Priority**, and **Class** parameters. PRINT/CHANNEL acquires these parameters from the first header banner page. You specify their location relative to the first line that meets the banner text matching criteria.

The **Acquire** field specifies whether to locate the parameter **BEFORE** or **AFTER** the matching criteria line. The **Line** field specifies how many lines before or after and the **Beg Col** and **End Col** fields specify where the parameter is located in the line. If you set **Acquire** to **No**, PRINT/CHANNEL uses a default value for that parameter.

➤ Press Enter when you finish entering job parameter information.

The PRINT/CHANNEL Description screen displays for you to define the next printer.

## 2.2 Define the Adapter

To define the adapter, start at the PRINT/CHANNEL Print Sessions screen.

```
                PRINT/CHANNEL Print Sessions


Address   Name          State

 0E       CH0E          Enabled
 0E       CH0F          Enabled
 10       CH10          Enabled
 11       CH11          Enabled
 12       CH12          Enabled
 13       CH13          Enabled
 14       CH14          Enabled
 15       CH15          Enabled

Escape

Adapter Description
```

➤ Select **Adapter Description**

The Adapter Description screen displays.

```
                      Adapter Description


Device Address?      280
Interrupt request?   IRQ11
DMA request?         5

Transfer mode?       High Speed Transfer (HST)
Run diagnostics?     No


                                    Choice? + -
```

**Device Address?**

PC address for the CHANNEL adapter. The address you set here must match the device address jumper setting on the adapter card. The default setting on the adapter and in the software is **2 8 0**. Other choices are **2 9 0**, **2 A 0**, or **2 B 0**.

> ***Note:*** Change the default setting only if you verify a conflict with other equipment settings in the PC.

**Interrupt request?**

Hardware line over which the processor and adapter communicate. The IRQ carries signals to get the processor's attention when the adapter is ready to receive or send information. The default IRQ request is **IRQ11**. Other choices are **IRQ10**, **IRQ12**, or **IRQ15**.

> ***Note:*** Change the default setting only if you verify a conflict with other equipment settings in the PC.

**DMA request?**

Channel over which the adapter directly accesses memory. The default setting is **5**. Other choices are **6**, **7**, or **0**.

> ***Note:*** Change the default setting only if you verify a conflict with other equipment settings in the PC.

**Transfer mode?**

Protocol for transferring data on the channel. You can choose from two protocols.

**High Speed Transfer (HST)**

Default. The adapter uses two signal pairs (Service In, Service Out and Data In, Data Out) to communicate with the host during data transfer. HST is also called Double Tag or Four Tag.

**DC Interlock (DCI)**

Direct-coupled interlock. The adapter uses one signal pair (Service In, Service Out) to communicate with the host during data transfer. This method is not recommended because it is slower. DCI is commonly known as Single Tag or Two Tag.

**Run diagnostics?**

You can select whether to run diagnostics.

**No** Default. Do not run diagnostics.

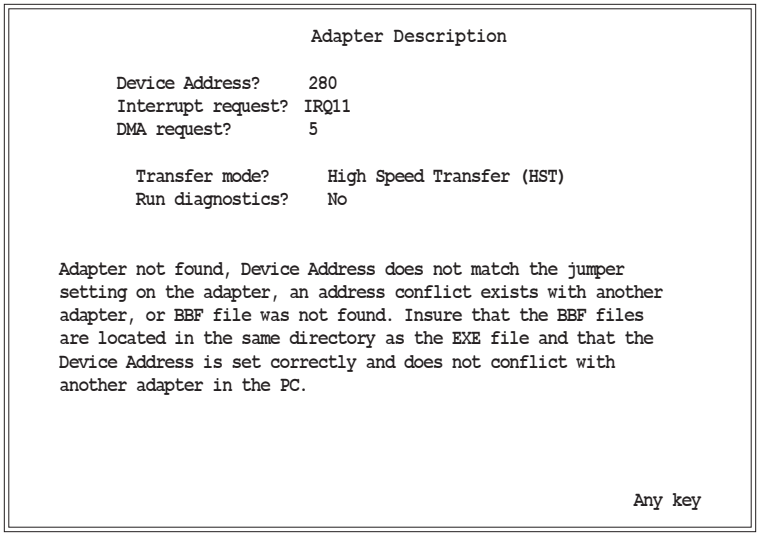
**Yes** Run diagnostics.

If you choose **Yes** to run diagnostics, the Channel Diagnostics screen displays. See Chapter 4 for more information about running diagnostics.

If you press Enter from the Adapter Description screen after you install the adapter, the following message displays:

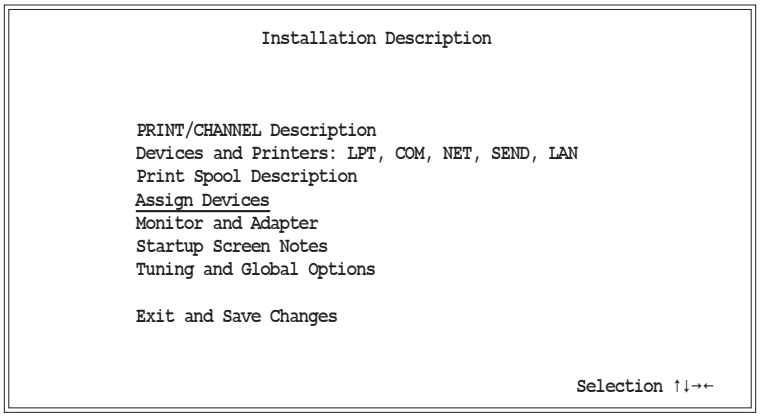
```
                    Adapter Description



      Device Address?     280
      Interrupt request?  IRQ11
      DMA request?        5

      Transfer mode?      High Speed Transfer (HST)
      Run diagnostics?    No

   BARR/CHANNEL adapter found at device address 280.

   Adapter using IRQ11. IRQ test passed.

   Adapter using DMA level 5. DMA transfer test passed.



                                                    Any key
```

If you did not install an adapter, the following message displays:




## 2.3 Assign Devices

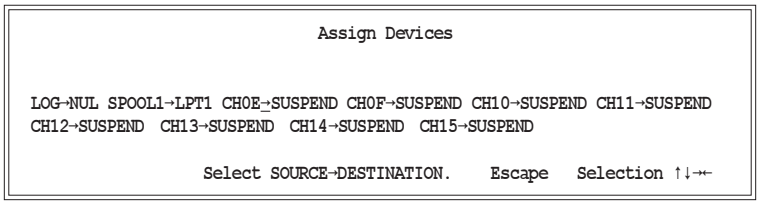
After you define the adapter, you need to direct the PRINT/CHANNEL output to destination devices. Start at the Installation Description menu.




1. Select **Assign Devices**.

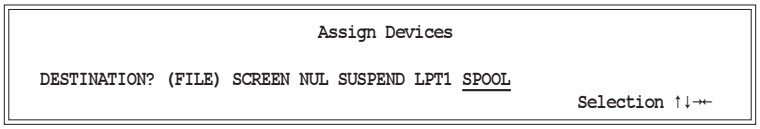
This example assumes you have already set up your print spool description. To enable a spool printer, choose **Print Spool Description** from the Installation Description menu. For more information, see the *BARR/SPOOL* manual.

The PRINT/CHANNEL sessions you specified in the PRINT/CHANNEL Description appear on the Assign Devices screen as source devices.

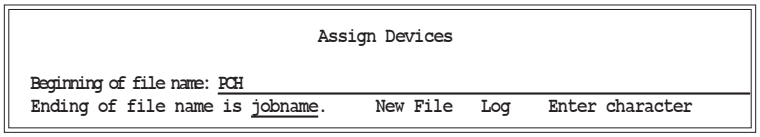



2. Select **CH0E**.

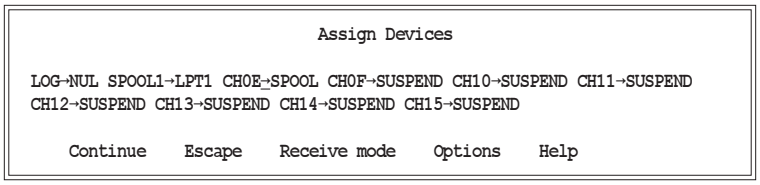
BARR/SPOOL allows you to spool print files received via PRINT/CHANNEL. The following steps show you how to assign the source device **CH0E** to the destination device **SPOOL**.




3. Select **SPOOL** as the destination.




4. Enter the beginning of the file name for the print file in the spool directory (PCH in the example) and press Enter.

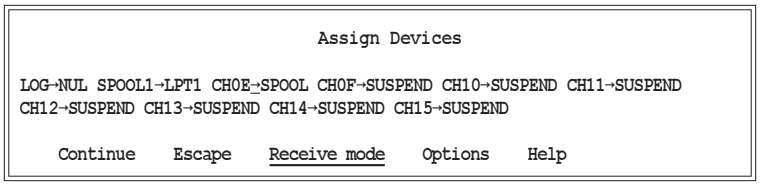



5. Notice **CH0E** now has a destination of **SPOOL**.

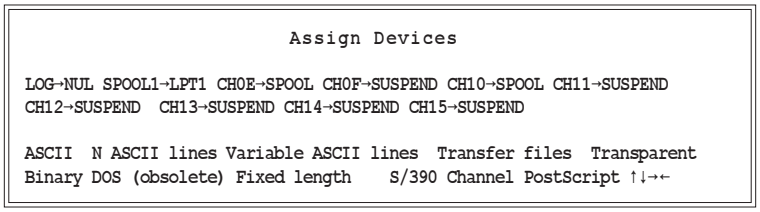
Your *BARR/SPOOL* manual contains more information about spooling.

## Receive Mode

Receive mode controls how the software handles files received on the PC. To reach the receive mode choices, start at the Assign Devices screen.




➤ Select **Receive mode**.




The following receive modes apply to data received with PRINT/CHANNEL:

**ASCII**

Default. ASCII is the format used on the PC and is required for files printed on an ASCII printer. If the original file is in EBCDIC format, PRINT/CHANNEL converts it to ASCII format with the ASCII carriage control codes carriage return (CR), line feed (LF), and form feed (FF). The EBCDIC format is used by host computers. See the ASCII and EBCDIC Standards appendix in your *BARR/SPOOL* manual.

**N ASCII lines**

You can use this receive mode to receive files with fixed-length records longer than 80 characters. (Each fixed-length record has the same length.) Some host systems can transfer only 80-character records. **N ASCII lines** allows you to work around this limitation. For records that are not an even multiple of 80 characters, or have a length greater than 720 characters, **Variable ASCII lines** might be a better choice.

To use **N ASCII lines**, you must write a host program to divide each dataset record into groups of 80-character lines. You must divide each record into the same number of lines (from 1 to 9) so that all records have the same length. After the PC receives the 80-character lines, the software rebuilds each record by combining the specified number of lines. The software converts EBCDIC data from the host to ASCII format with carriage return and line feed (CR LF) to indicate the end of each record, but no form feeds (FF) to indicate page boundaries.

When you select **N ASCII lines**, PRINT/CHANNEL prompts you to specify the number of 80-character lines to combine into one record. Choices are **1** to **9**, where **9** allows a maximum record length of 720 characters.

**Variable ASCII lines**

When you receive variable-length or fixed-length records shorter or longer than 80 characters, this receive mode might be useful. Variable-length records have different lengths. Some host systems can transfer only 80-character records. If you need to transfer records with a different length, the **Variable ASCII lines** selection allows you to work around this limitation. If records are an even multiple of 80 characters (for example, 160 or 240), **N ASCII lines** might be a better choice.

With the **Variable ASCII lines** selection, the software receives 80-character records from the host and rebuilds them to their original lengths. The software converts EBCDIC data from the host to ASCII format with carriage return and line feed (CR LF) to indicate the end of each record, but no form feeds (FF) to indicate page boundaries.

To use this feature, write a host program to divide all records into 80-character lines. The last portion of the record can have less than 80 characters if the record length is not an even multiple of 80. The host program must insert an EBCDIC vertical bar (|) or hexadecimal 4F at the end of each record.

For example, you would divide a 120-character record into two parts: an 80-character line and a 40-character line that ends in a vertical bar. After the PC receives the data, the

software rebuilds each record by combining lines until it encounters a vertical bar. The software discards the vertical bar and any blanks added to pad the last portion of the record to 80 bytes.

**Transparent**

Transparent receive mode allows you to use the SCS Enabler option on the Xerox 3700 printer and the EBCDIC Parallel Meta/GHO Enabler-IB option on the Xerox 4235 printer.

**Binary**

Binary receive mode does not alter bytes in the data stream. Use this receive mode if you want the PRINT/CHANNEL data stream to remain unmodified.

**Fixed length**

Use this option for special applications, usually situations that require the received data to contain fixed-length records. (Fixed-length records have the same length.) Applications for the **Fixed length** option include receiving data to magnetic tape and receiving data to be processed by a PC program.

For the SEND1 to SEND2, LAN1 to LAN4, and SPOOL1 to SPOOL8 source devices, **Fixed length** is the only supported receive mode. You would only choose it for these devices when you write to magnetic tape.

When you select **Fixed length**, additional options display on the bottom of the screen. See the Assign Devices chapter in your *BARR/SPOOL* manual for more information.

**S/390 Channel**

PRINT/CHANNEL converts data to the Barr S/390 Channel format, which you must use with the PRINT370 option. When you receive data you want to send to a channel printer, you must set the receive mode to **S/390 Channel** and set **Carriage control** to **normal**. PRINT/CHANNEL passes data in the FCB record to the destination with no alterations.

**PostScript**

**PostScript** receive mode converts EBCDIC files to PostScript for printing to PostScript printers. You must use the form overlay files PORTRAIT, LAND, and 2UP provided in the directory C:\BARR\REF\PSOVL\ with **PostScript** receive mode. The overlay files set the printer to the desired mode and define macros used by PostScript.

This mode encloses data converted to PostScript format in parentheses. It converts carriage control such as CR, LF, and FF to macro calls controlled by the overlay file. It places carriage control between data lines.

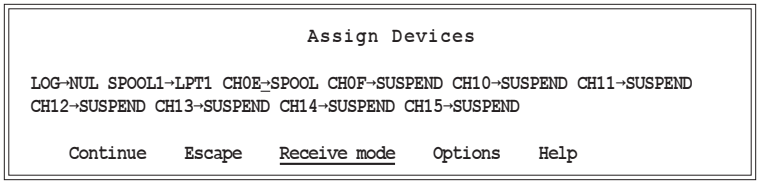
You can use **PostScript** receive mode only with source devices that support receive modes (such as **LANn**) and with destination devices that support form overlays (including **LPTn**, **COMn**, and **NETn**).

The overlay files contain some options you can change by editing the overlay file. After you edit with a program editor, place the overlay files in the forms overlay directory defined on the Tuning and Global Options, Printer Control screen. To activate the overlay, include the name of the overlay file in the file header.

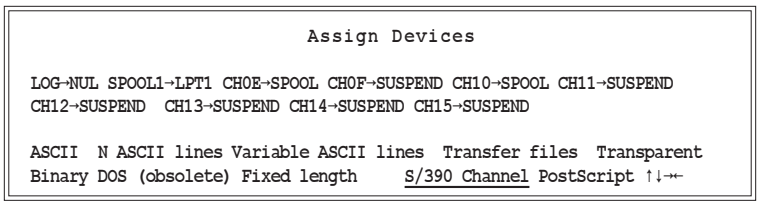
> ***Note:*** With **PostScript** receive mode, you cannot process files received from destinations other than a host. If you want to print files from other sources in PostScript format, the files must already be in PostScript format before you receive them to the PC.

## Receive Mode Example

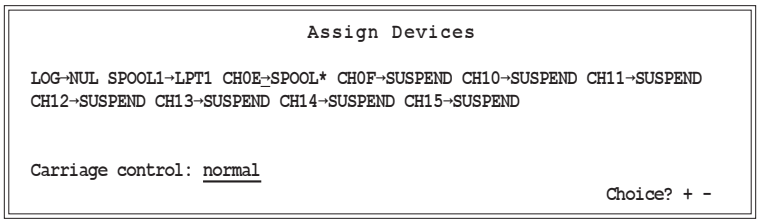
The following example shows you how to assign **S/390 Channel** receive mode to the data received on printer session **CH0E**.



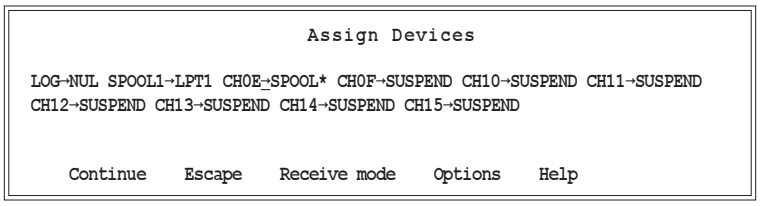

1. Select **Receivemode**.




2. Select **S/390 Channel**.




3. Select **normal** for carriage control.

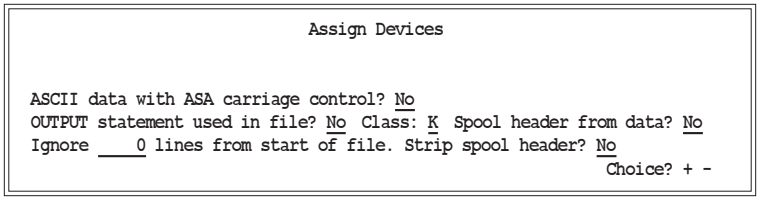



The screen displays an asterisk next to the destination device when you select a receive mode other than ASCII.

## Options

Several options control how to display form information as file attributes on the Print Spool screen.

➤ From the Assign Devices screen, select **Options** to display the options described below.




**ASCII data with ASA carriage control?**

Specify whether to receive ASCII files with ASA carriage control and write them to S/390 printers. You must also enable the spool header by directing the file to the print spool and setting **Receive mode** to **ASCII**. If you set **(FILE)** as the destination, you must set **Write spool header to file** to **Yes** (see the Assign Devices chapter in your *BARR/SPOOL* manual).

**No** Default. Do not support ASA carriage control.

**Yes** Receive files with ASA carriage control and convert ASA to machine carriage control.

**OUTPUT statement used in file?**

You can use the Barr OUTPUT statement to provide information typically used for printing a file such as job name, form name, file name, copies, priority, and class. You insert the information in the file before you receive the file to the PC. PRINT/CHANNEL extracts it from the file, stores it in the spool header, and displays it on the Print Spool screen.

The OUTPUT statement is useful when other methods for obtaining print instructions are not available. (Do not confuse the Barr OUTPUT statement with the JCL output statement, which has a different purpose.) If the data source is a host computer, you can use options such as the JES2 $HASP190 message or SETUPHDR (PDIR) record to obtain this information. The OUTPUT statement is not valid for the **SENDn** or **LANn** devices.

> ***Note:*** To use this feature, you must change the program that produces the data so it adds the OUTPUT statement to the data file.

**No** Default. The OUTPUT statement is not used.

**Yes** The information from the OUTPUT statement is extracted from the file and stored in the spool header. Remember to include the OUTPUT statement in the file before the file is received to the PC.

- When you enable the OUTPUT statement, all lines up to and including the OUTPUT statement are deleted from the file. To prevent data loss, put the OUTPUT statement at the beginning of the file, before any data.

> ***Note:*** If the file does not include the OUTPUT statement, all data from the file is deleted and a warning message displays on the console.

- In the OUTPUT statement, the word **OUTPUT** must begin in column 1, column 7 must be blank, and the keyword for the first option must begin in column 8. The statement must fit on one line in the file. It cannot wrap to the next line. If the file's maximum line length is limited to 80 characters, you might not be able to specify all options. Use these keywords to set options in the OUTPUT statement and substitute the option value for n: FILENAME=n JOBNAME=n FORMNAME=n FCBNAME=n COPIES=n PRIORITY=n CLASS=n (You cannot abbreviate the keywords.)
- Specify only the options you need. You can list the options in any order. For example:

```
OUTPUT FORMNAME=taxes FILENAME=taxdata
```

- If you specify **FILENAME=**, its value will be used as the **Ending of file name**
- You can use the **Ending of file name is from file** feature to obtain the file name from file text and use the OUTPUT statement to supply other options. For example, you can use **Ending of file name is from file** to extract the file name from the banner page and use the OUTPUT statement to assign a form name.
- If you specify an invalid file name, the software assigns the file name ERROR and displays an error message on the console.

When you include **FORMNAME=** in the OUTPUT statement, you also must use the Barr Edit Forms feature or the form name will be discarded. PRINT/CHANNEL searches for a user-defined form that matches the form name in the OUTPUT statement. If it does not find a user-defined form, the software displays this message:

```
OUTPUT statement received but form nnnnnnnn
not found.
```

The form name in the spool header is set to blank, but any other OUTPUT statement fields are applied.

- You can use the **Ignore n lines from start of file** option with the OUTPUT statement.

**Class:**

Use this option to assign a new default output class to files received on the given source device. The selected **Class** value appears as an attribute for the file on the Print Spool screen. You can set **Class** differently for each source device. Defaults are **K** to **R**, which correspond to printers **1** to **8**.

**Spool header from data?**

This option controls whether the formname or jobname for the spool header is extracted from a text line within a file when you receive the file.

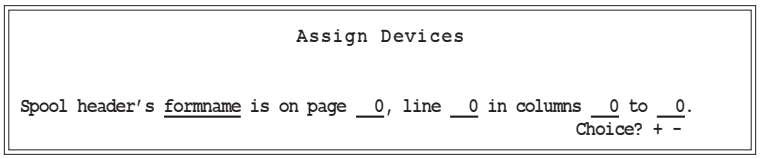
**No** Default. PRINT/CHANNEL does not extract the spool header information from the file.

**Yes** You can extract the formname or jobname from a specified location in the file and place it in the spool header. You can choose **formname** or **jobname** and enter the **page**, **line**, and **column** numbers where the name appears in the file.

PRINT/CHANNEL places a spool header in all files input through this source device. In the header, the software takes formname or jobname from the data, sets class from the **Class** option, and leaves all other fields at default values.

**Spool header from data** is a valid option when you select either the **ASCII** or **S/390 Channel** receive mode.

If you select **Yes**, the software displays the following screen:




In exceptional cases, you might not be able to obtain a formname or jobname by any of the usual options. In these cases you can use **Spool header from data** with **Class** to assign a one-character formname. To do this, set **Class** to a unique value, set **Spool header from data** to **Yes**, and then set **page** number to zero.

PRINT/CHANNEL uses the one-character **Class** value as the formname and displays it on the Print Spool screen as the formname for the file. You can then use the formname as criteria for determining when to print the files or you can create a forms overlay file of the same name to load printer control data. Several other header options are available, so use this special feature only as a last resort.

**Ignore n lines from start of file.**

This option specifies the number of lines (**n**) to delete from the start of a file when the spool receives the file. A common application is to delete the first two records of a punch file because they contain a blank card and a file separator card. The maximum value is **32767** lines.

**Strip spool header?**

When you write files to disk, you can remove spool headers from the files. This option only displays when the destination is **SPOOL** or **(FILE)**. If you strip the spool header when the destination is **SPOOL**, the file has no header information and is assigned a class of **Z**. The most useful application is to set the option to **Yes** for **SPOOL1→(FILE)** so the print spool uses the header information to route the file via a spool printer (**SPOOL1**), but does not preserve the header in the final destination on disk.

**No** Default. Do not strip the spool header.

**Yes** Remove the spool header from the file.

*Notes:*

Chapter 3

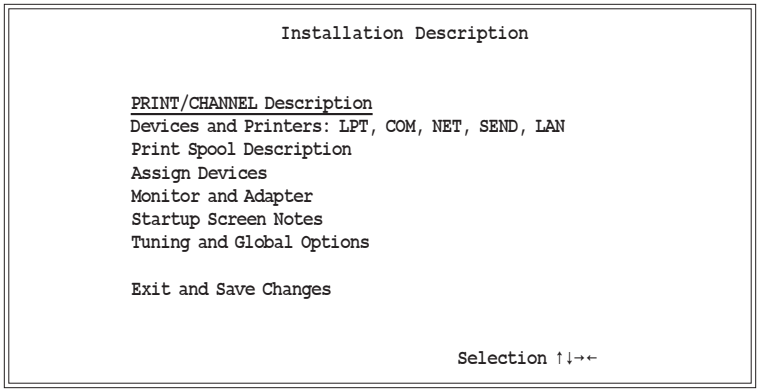
# Configure the PRINT/CHANNEL Software (PCI Adapter)

The Installation chapter in your *BARR/SPOOL* manual describes how to configure software from the Installation Description menu. This chapter discusses additional PRINT/CHANNEL options you need to specify and includes sample BARR/SPOOL and PRINT370 screens.

To run the Barr software, type the Barr software startup command followed by the letter **i** at the DOS prompt. For example, type the following:

```
spool i
```

The Installation Description menu displays.




➤ To configure the PRINT/CHANNEL settings, select **PRINT/CHANNEL Description**

# 3.1 Define Print Sessions and Addresses

You define the number of print sessions and first printer address on the PRINT/CHANNEL Description screen.

## Description Option

```
                    PRINT/CHANNEL Description


          Mainframe print sessions:  8




                                              Enter number
```

**Mainframe print sessions:**

Enter **1** to **8** printers. This is the number of channel printers you want the Barr software to emulate. This manual shows eight printer sessions.

## Print Session Options

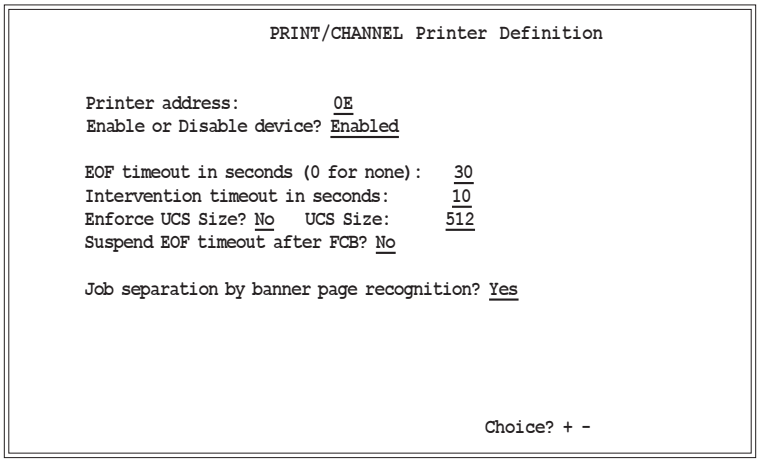
1. Press Enter to display a list of all printers.

```
                  PRINT/CHANNEL Print Sessions


        Address    Name        State

          0E      CH0E        Enabled
          0F      CH0F        Enabled
          10      CH10        Enabled
          11      CH11        Enabled
          12      CH12        Enabled
          13      CH13        Enabled
          14      CH14        Enabled
          15      CH15        Enabled

        Escape

        Adapter Description
```

2. To define a printer, select it from the list.

## Printer Definition Options

The PRINT/CHANNEL Printer Definition screen displays.




**Printer address:**

The printer address in hexadecimal. Each printer must have a unique address. This address must match the subchannel address at the host. You can enter an address in the range from **0 0** to **F F**.

**Enable or Disable device?**

You can enable or disable the device to control its use.

**Enabled**

Default. The device is online.

**Disabled**

The device is offline.

**EOF timeout in seconds (0 for none):**

If the software receives no print data from the host for the specified length of time, it assumes the current print job is complete. The default is 30 seconds.

**Intervention timeout in seconds:**

This flow control tuning option can help reduce or eliminate unnecessary intervention messages on the host console. PRINT/CHANNEL might need to temporarily stop receiving data from the host. For example, if a PRINT/CHANNEL printer is directly connected to an output device and that device enters an intervention state, the data flow from the host must be suspended. It also might be necessary to stop receiving data while the program searches a large spool retain directory. While the program builds the retain file list, it suspends normal data flow.

When PRINT/CHANNEL detects the need to temporarily suspend data reception, it withholds sending a device end (DE) acknowledgment to the host. This normal action does not cause problems if DE is not withheld for too long.

You can configure the time limit on the host. Typically you would specify from 30 seconds to a few minutes. The PRINT/CHANNEL configuration option, **Intervention timeout in seconds**, tells the program how long to withhold DE from the host. The default value is **10** seconds. Then the program supplies the DE to the host (thereby avoiding a missing DE interrupt) and enters the Not Ready state. The program rejects the next command from the host with an Intervention Required (not ready) sense. When the reason for suspending data flow is resolved, PRINT/CHANNEL enters the ready state and supplies a DE to the host. Normal data flow resumes.

If you receive **intervention required** messages (on the host console and the BARR/SPOOL Operations screen) and the messages are considered normal for your situation, you might be able to eliminate the messages by increasing the **Intervention timeout in seconds** value. Changing this value is merely cosmetic and will neither increase nor decrease your data throughput. Your mainframe operator might ignore these messages anyway knowing that you are already taking care of the problem.

**Enforce UCS Size?**

Specify whether the received Universal Character Set (UCS) is limited to a specific size.

**No** Default. PRINT/CHANNEL can receive any size UCS from the host.

**Yes** PRINT/CHANNEL can only receive up to the value set for UCS size. The UCS maps EBCDIC characters to print-chain positions. Because the PRINT/CHANNEL emulation does not contain a physical print chain, the program ignores the information contained in this command. Some host configurations detect an error unless the printer device accepts only a specified length UCS. By default, this length is 512 bytes. If your host requires this behavior, you should enable the **Enforce UCS Size** option and enter the actual size of the UCS your host sends.

**UCS Size:**

Specify the UCS size PRINT/CHANNEL can receive. The default is **512**. This option applies only if you set **Enforce UCS Size** to **Yes**.

**Suspend EOF timeout after FCB?**

You can use this option to temporarily suspend EOF timeout processing after PRINT/CHANNEL receives an FCB.

**No** Default. EOF timeout processing is not affected by receiving an FCB.

**Yes** PRINT/CHANNEL temporarily suspends the EOF timeout operation after it receives an FCB from the host. Normal EOF timeout processing resumes when PRINT/CHANNEL detects the end of the current page.

**Job separation by banner page recognition?**

Specify whether to perform print job separation by banner recognition.

**Yes** Default. The program performs print job separation by recognizing banner pages.

**No** Disable banner page recognition. You can only separate print jobs by timeout or a received FCB.

**Copy** PRINT/CHANNEL copies the banner recognition and spool parameter extraction information from the previous printer definition. This option only applies if you define more than one printer.

If you select **Yes** or **Copy**, the PRINT/CHANNEL Printer Definition screen displays again with banner recognition information.

## Banner Recognition Options

```
                    PRINT/CHANNEL Printer Definition

     Printer address:          0E
    Enable or Disable device? Enabled
.....................................................................
                    Banner Recognition Information

    Remove banner pages after processing? No

    Starting line:  0       Number of lines:  1
    Header pages:   0       plus 0 additional page(s)
    Trailer pages:  0       plus 0 additional page(s)

    Text string 1 in column:   0

    ________________________________________________________________

    IGNORE text string

    Text string 2 in column:   0

    ________________________________________________________________

                                          Choice? + -
```

The program searches each page for one or two unique text strings that identify the banner page (see Appendix A for a banner page detection example). If you specify two strings, you must specify whether to find both strings or either string. Each string can be up to 64 characters long. You specify a range of line numbers and the program searches only those lines.

Besides specifying the banner page recognition parameters, you must also specify how many header and trailer banner pages each print job has.

**Remove banner pages after processing?**

Specify whether to remove banner pages from the file after PRINT/CHANNEL extracts routing information and before it routes the file.

**No** Default. Do not remove banner pages.

**Yes** Remove banner pages after PRINT/CHANNEL extracts information from them.

**Starting line:**

Specify the first line the program should search while it looks for banner page text. If you enter **0**, PRINT/CHANNEL disables banner recognition.

**Number of lines:**

Specify how many lines (beginning with **Starting line**) the software should search. The default is **1**.

**Header pages:**

Specify how many header banner pages each print job has. If the program does not encounter header banner pages at the beginning of a print job, PRINT/CHANNEL assumes the job has begun and begins looking for trailer banner pages. Because no header pages were identified, no job parameters are extracted. If you set **Remove banner pages after processing** to **Yes**, no data at the beginning of the job is removed because no header is identified.

**Trailer pages:**

Specify how many trailer banner pages each print job has. If the trailer differs from the header, use text string 2 with the **0R** or **TRAILER** option. PRINT/CHANNEL processes the data stream more efficiently when you specify trailer pages.

**plus 0 additional page(s)**

Number of additional pages following the detected banner page that form the logical header or trailer.

**Text string 1 in column:**

These fields define the first text string used to identify a banner page. Enter the beginning column number for the string and then the text string in the following field. A question mark is treated as a wildcard character and matches any print character in the corresponding position.

**IGNORE|AND|OR|TRAILER text string**

Specify how to use the second text string.

**IGNORE**

If you specify **IGNORE**, PRINT/CHANNEL uses only text string 1.

**AND** If you specify **AND**, PRINT/CHANNEL must find both text string 1 and text string 2 before it recognizes a banner page.

**OR** If you specify **OR**, PRINT/CHANNEL must find either text string 1 or text string 2 before it recognizes a banner page.

**TRAILER**

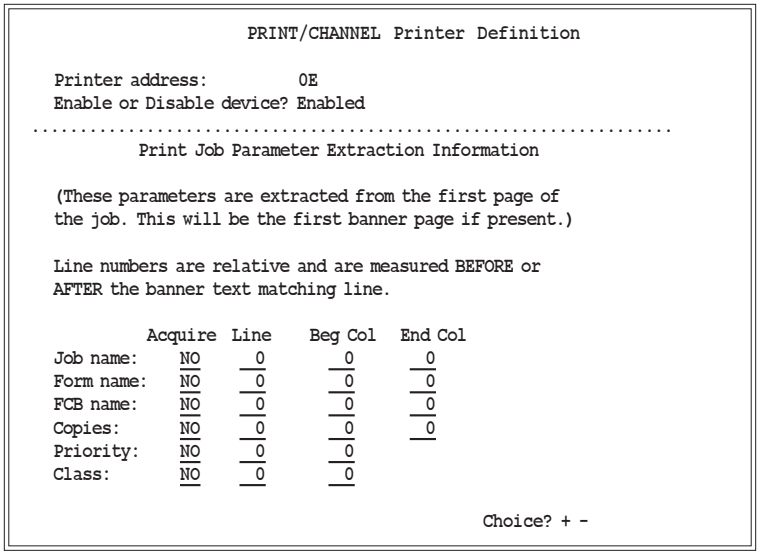
If you specify **TRAILER**, PRINT/CHANNEL uses text string 1 to identify a header banner page and text string 2 to identify a trailer banner page. PRINT/CHANNEL processes the data stream more efficiently when you specify trailer pages.

**Text string 2 in column:**

See the **Text string 1 in column** explanation.

## Banner Extraction Information

When you press Enter, the PRINT/CHANNEL Printer Definition screen displays again with print job parameter extraction information.




This screen tells PRINT/CHANNEL where to find the **Job name**, **Form name**, **FCB name**, **Copies**, **Priority**, and **Class** parameters. PRINT/CHANNEL acquires these parameters from the first header banner page. You specify their location relative to the first line that meets the banner text matching criteria.

The **Acquire** field specifies whether to locate the parameter **BEFORE** or **AFTER** the matching criteria line. The **Line** field specifies how many lines before or after and the **Beg Col** and **End Col** fields specify where the parameter is located in the line. If you set **Acquire** to **No**, PRINT/CHANNEL uses a default value for that parameter.

➤ Press Enter when you finish entering job parameter information.

The PRINT/CHANNEL Description screen displays for you to define the next printer.

## 3.2 Define the Adapter

To define the adapter, start at the PRINT/CHANNEL Print Sessions screen.

```
                PRINT/CHANNEL Print Sessions


Address   Name        State

   0E      CH0E        Enabled
   0F      CH0F        Enabled
   10      CH10        Enabled
   11      CH11        Enabled
   12      CH12        Enabled
   13      CH13        Enabled
   14      CH14        Enabled
   15      CH15        Enabled

Escape

Adapter Description
```

➤ Select **Adapter Description**

The Adapter Description screen displays.

```
                  Adapter Description


Device Address?     280
Interrupt request? IRQ11
DMA request?        5

Transfer mode?      High Speed Transfer (HST)
Run diagnostics?    No


                                        Choice? + -
```

**Device Address?**

PC address for the CHANNEL adapter. You cannot access this field because the PCI BIOS automatically assigns this value.

**Interrupt request?**

Hardware line over which the processor and adapter communicate. You cannot access this field because the PCI BIOS automatically assigns this value.

**DMA request?**

Channel over which the adapter directly accesses memory. This field does not apply for a CHANNEL-IN (BT) adapter.

**Transfer mode?**

Protocol for transferring data on the channel. You can choose from four protocols.

**High Speed Transfer (HST)**

Default. The adapter uses two signal pairs (Service In, Service Out and Data In, Data Out) to communicate with the host during data transfer. HST is also called Double Tag or Four Tag.

**3.0 MByte Data Streaming**

The adapter communicates with the host via 3.0 MB data streaming.

**4.5 MByte Data Streaming**

The adapter communicates with the host via 4.5 MB data streaming.

**DC Interlock (DCI)**

Direct-coupled interlock. The adapter uses one signal pair (Service In, Service Out) to communicate with the host during data transfer. This method is not recommended because it is slower. DCI is commonly known as Single Tag or Two Tag.

**Run diagnostics?**

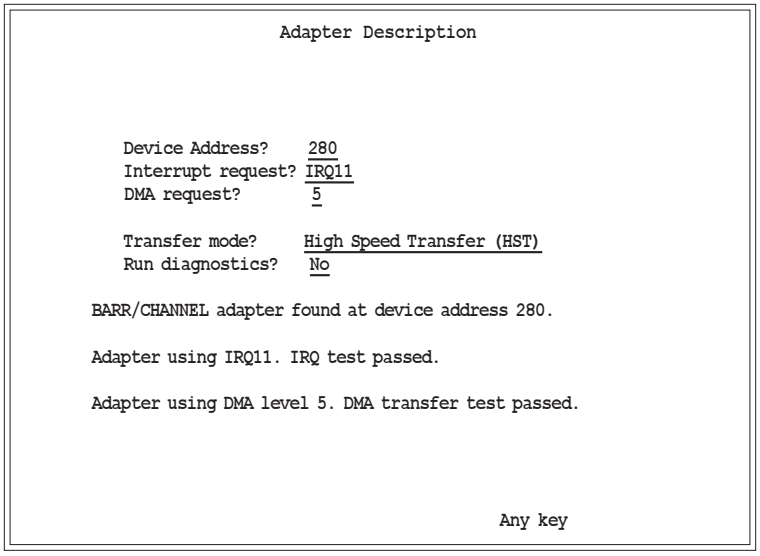
You can select whether to run diagnostics.

**No** Default. Do not run diagnostics.

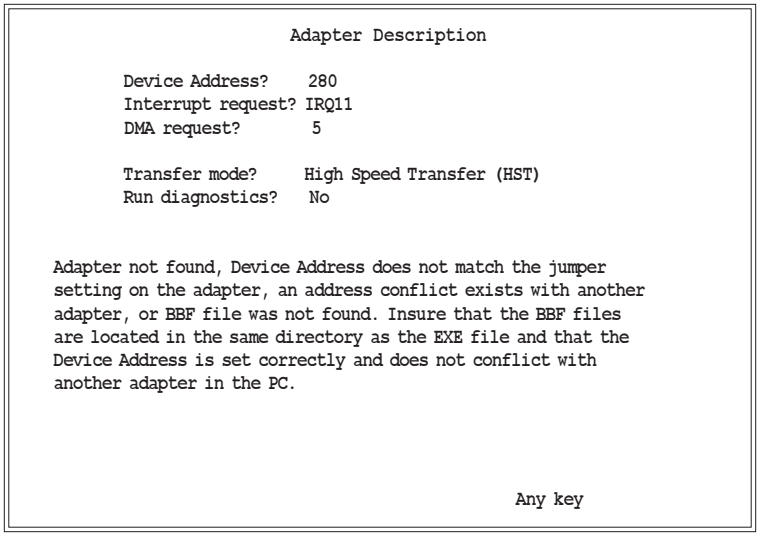
**Yes** Run diagnostics.

If you choose **Yes** to run diagnostics, the Channel Diagnostics screen displays. See Chapter 4 for more information about running diagnostics.

If you press Enter from the Adapter Description screen after you install the adapter, the following message displays:



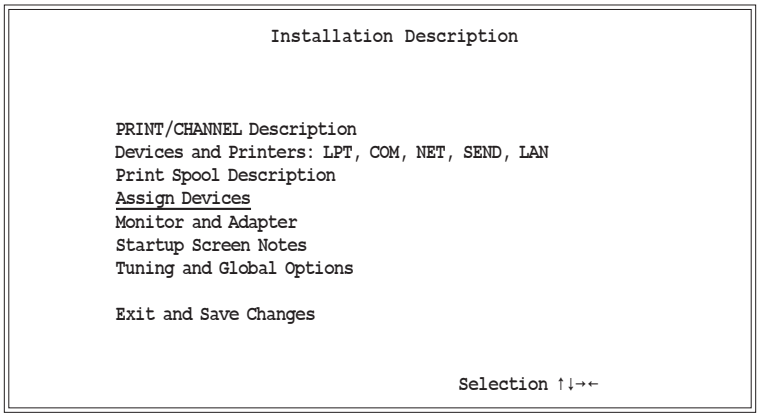

If you did not install an adapter, the following message displays:




> ***Note:*** The BBF notes do not apply to the CHANNEL-IN (BT) adapter.

## 3.3 Assign Devices

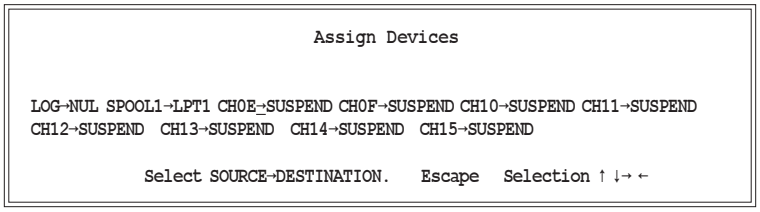
After you define the adapter, you need to direct the PRINT/CHANNEL output to destination devices. Start at the Installation Description menu.



1. Select **Assign Devices**.

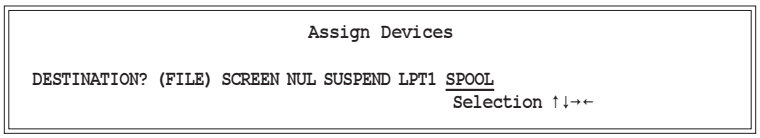
This example assumes you have already set up your print spool description. To enable a spool printer, choose **Print Spool Description** from the Installation Description menu. For more information, see the *BARR/SPOOL* manual.

The PRINT/CHANNEL sessions you specified in the PRINT/CHANNEL Description appear on the Assign Devices screen as source devices.

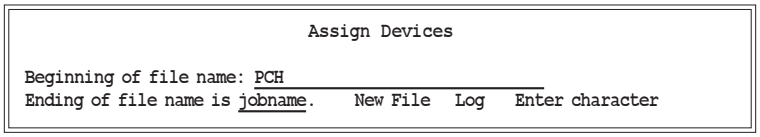



2. Select **CH0E**.

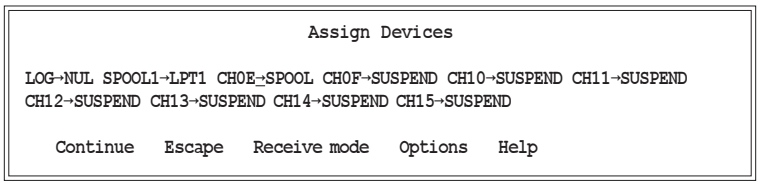
BARR/SPOOL allows you to spool print files received via PRINT/CHANNEL. The following steps show you how to assign the source device **CH0E** to the destination device **SPOOL**.




3. Select **SPOOL** as the destination.




4. Enter the beginning of the file name for the print file in the spool directory (PCH in the example) and press Enter.

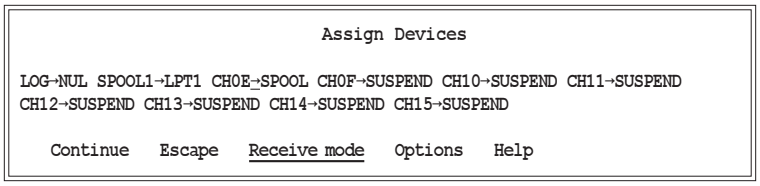



5. Notice **CH0E** now has a destination of **SPOOL**.

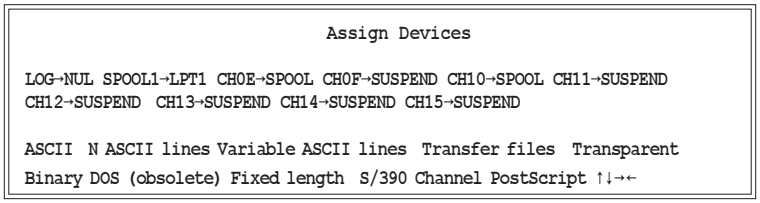
Your *BARR/SPOOL* manual contains more information about spooling.

## Receive Mode

Receive mode controls how the software handles files received on the PC. To reach the receive mode choices, start at the Assign Devices screen.




➤ Select **Receive mode**.




The following receive modes apply to data received with PRINT/CHANNEL:

**ASCII**

Default. ASCII is the format used on the PC and is required for files printed on an ASCII printer. If the original file is in EBCDIC format, PRINT/CHANNEL converts it to ASCII format with the ASCII carriage control codes carriage return (CR), line feed (LF), and form feed (FF). The EBCDIC format is used by host computers. See the ASCII and EBCDIC Standards appendix in your *BARR/SPOOL* manual.

**N ASCII lines**

You can use this receive mode to receive files with fixed-length records longer than 80 characters. (Each fixed-length record has the same length.) Some host systems can transfer only 80-character records. **N ASCII lines** allows you to work around this limitation. For records that are

not an even multiple of 80 characters, or have a length greater than 720 characters, **Variable ASCII lines** might be a better choice.

To use **N ASCII lines**, you must write a host program to divide each dataset record into groups of 80-character lines. You must divide each record into the same number of lines (from 1 to 9) so that all records have the same length. After the PC receives the 80-character lines, the software rebuilds each record by combining the specified number of lines. The software converts EBCDIC data from the host to ASCII format with carriage return and line feed (CR LF) to indicate the end of each record, but no form feeds (FF) to indicate page boundaries.

When you select **N ASCII lines**, PRINT/CHANNEL prompts you to specify the number of 80-character lines to combine into one record. Choices are **1** to **9**, where **9** allows a maximum record length of 720 characters.

**Variable ASCII lines**

When you receive variable-length or fixed-length records shorter or longer than 80 characters, this receive mode might be useful. Variable-length records have different lengths. Some host systems can transfer only 80-character records. If you need to transfer records with a different length, the **Variable ASCII lines** selection allows you to work around this limitation. If records are an even multiple of 80 characters (for example, 160 or 240), **N ASCII lines** might be a better choice.

With the **Variable ASCII lines** selection, the software receives 80-character records from the host and rebuilds them to their original lengths. The software converts EBCDIC data from the host to ASCII format with carriage return and line feed (CR LF) to indicate the end of each record, but no form feeds (FF) to indicate page boundaries.

To use this feature, write a host program to divide all records into 80-character lines. The last portion of the record can have less than 80 characters if the record length is not an even multiple of 80. The host program must insert an EBCDIC vertical bar (|) or hexadecimal 4F at the end of each record.

For example, you would divide a 120-character record into two parts: an 80-character line and a 40-character line that ends in a vertical bar. After the PC receives the data, the software rebuilds each record by combining lines until it encounters a vertical bar. The software discards the vertical bar and any blanks added to pad the last portion of the record to 80 bytes.

**Transparent**

Transparent receive mode allows you to use the SCS Enabler option on the Xerox 3700 printer and the EBCDIC Parallel Meta/GHO Enabler-IB option on the Xerox 4235 printer.

**Binary**

Binary receive mode does not alter bytes in the data stream. Use this receive mode if you want the PRINT/CHANNEL data stream to remain unmodified.

**Fixed length**

Use this option for special applications, usually situations that require the received data to contain fixed-length records. (Fixed-length records have the same length.) Applications for the **Fixed length** option include receiving data to magnetic tape and receiving data to be processed by a PC program.

For the SEND1 to SEND2, LAN1 to LAN4, and SPOOL1 to SPOOL8 source devices, **Fixed length** is the only supported receive mode. You would only choose it for these devices when you write to magnetic tape.

When you select **Fixed length**, additional options display on the bottom of the screen. See the Assign Devices chapter in your *BARR/SPOOL* manual for more information.

**S/390 Channel**

PRINT/CHANNEL converts data to the Barr S/390 Channel format, which you must use with the PRINT370 option. When you receive data you want to send to a channel printer, you must set the receive mode to **S/390 Channel** and set **Carriage control** to **normal**.

**PostScript**

**PostScript** receive mode converts EBCDIC files to PostScript for printing to PostScript printers. You must use the form overlay files PORTRAIT, LAND, and 2UP provided in the directory C:\BARR\REF\PSOVL\ with **PostScript** receive mode. The overlay files set the printer to the desired mode and define macros used by PostScript.

This mode encloses data converted to PostScript format in parentheses. It converts carriage control such as CR, LF, and FF to macro calls controlled by the overlay file. It places carriage control between data lines.

You can use **PostScript** receive mode only with source devices that support receive modes (such as **LANn**) and with destination devices that support form overlays (including **LPTn**, **COMn**, and **NETn**).

The overlay files contain some options you can change by editing the overlay file. After you edit with a program editor, place the overlay files in the forms overlay directory defined on the Tuning and Global Options, Printer Control screen. To activate the overlay, include the name of the overlay file in the file header.

> ***Note:*** With **PostScript** receive mode, you cannot process files received from destinations other than a host. If you want to print files from other sources in PostScript format, the files must already be in PostScript format before you receive them to the PC.

## Receive Mode Example

The following example shows you how to assign **S/390 Channel** receive mode to the data received on printer session **CH0E**.

```
                              Assign Devices

LOG→NUL SPOOL1→LPT1 CH0E→SPOOL CH0F→SUSPEND CH10→SUSPEND CH11→SUSPEND
CH12→SUSPEND CH13→SUSPEND CH14→SUSPEND CH15→SUSPEND

   Continue    Escape    Receive mode    Options    Help
```

1. Select **Receive mode**.

```
                              Assign Devices

LOG→NUL SPOOL1→LPT1 CH0E→SPOOL CH0F→SUSPEND CH10→SPOOL CH11→SUSPEND
CH12→SUSPEND  CH13→SUSPEND CH14→SUSPEND CH15→SUSPEND

ASCII  N ASCII lines Variable ASCII lines  Transfer files  Transparent
Binary DOS (obsolete) Fixed length  S/390 Channel PostScript ↑↓→←
```

2. Select **S/390 Channel**.

```
                              Assign Devices

LOG→NUL SPOOL1→LPT1 CH0E→SPOOL* CH0F→SUSPEND CH10→SUSPEND CH11→SUSPEND
CH12→SUSPEND CH13→SUSPEND CH14→SUSPEND CH15→SUSPEND


Carriage control: normal
                                                  Choice? + -
```

3. Select **normal** for carriage control.

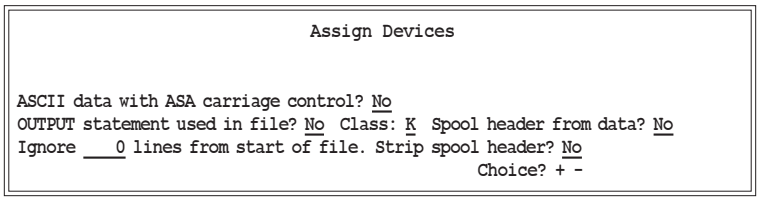
```
                              Assign Devices

LOG→NUL SPOOL1→LPT1 CH0E→SPOOL* CH0F→SUSPEND CH10→SUSPEND CH11→SUSPEND
CH12→SUSPEND CH13→SUSPEND CH14→SUSPEND CH15→SUSPEND


   Continue    Escape    Receive mode    Options    Help
```

The screen displays an asterisk next to the destination device when you select a receive mode other than ASCII.

## Options

Several options control how to display form information as file attributes on the Print Spool screen.

➤ From the Assign Devices screen, select **Options** to display the options described below.




**ASCII data with ASA carriage control?**

Specify whether to receive ASCII files with ASA carriage control and write them to S/370 printers. You must also enable the spool header by directing the file to the print spool and setting **Receive mode** to **ASCII**. If you set **(FILE)** as the destination, you must set **Write spool header to file** to **Yes** (see the Assign Devices chapter in your *BARR/SPOOL* manual).

**No** Default. Do not support ASA carriage control.

**Yes** Receive files with ASA carriage control and convert ASA to machine carriage control.

**OUTPUT statement used in file?**

You can use the Barr OUTPUT statement to provide information typically used for printing a file such as job name, form name, file name, copies, priority, and class. You insert the information in the file before you receive the file to the PC. PRINT/CHANNEL extracts it from the file, stores it in the spool header, and displays it on the Print Spool screen.

The OUTPUT statement is useful when other methods for obtaining print instructions are not available. (Do not confuse the Barr OUTPUT statement with the JCL output statement, which has a different purpose.) If the data source is a host computer, you can use options such as the

JES2 $HASP190 message or SETUPHDR (PDIR) record to obtain this information. The OUTPUT statement is not valid for the **SENDn** or **LANn** devices.

> ***Note:*** To use this feature, you must change the program that produces the data so it adds the OUTPUT statement to the data file.

**No** Default. The OUTPUT statement is not used.

**Yes** The information from the OUTPUT statement is extracted from the file and stored in the spool header. Remember to include the OUTPUT statement in the file before the file is received to the PC.

- When you enable the OUTPUT statement, all lines up to and including the OUTPUT statement are deleted from the file. To prevent data loss, put the OUTPUT statement at the beginning of the file, before any data.

> ***Note:*** If the file does not include the OUTPUT statement, all data from the file is deleted and a warning message displays on the console.

- In the OUTPUT statement, the word **OUTPUT** must begin in column 1, column 7 must be blank, and the keyword for the first option must begin in column 8. The statement must fit on one line in the file. It cannot wrap to the next line. If the file's maximum line length is limited to 80 characters, you might not be able to specify all options. Use these keywords to set options in the OUTPUT statement and substitute the option value for n: FILENAME=n JOBNAME=n FORMNAME=n FCBNAME=n COPIES=n PRIORITY=n CLASS=n (You cannot abbreviate the keywords.)
- Specify only the options you need. You can list the options in any order. For example:

```
OUTPUT FORMNAME=taxes FILENAME=taxdata
```

- If you specify **FILENAME=**, its value will be used as the **Ending of file name**.

- You can use the **Ending of file name is from file** feature to obtain the file name from file text and use the OUTPUT statement to supply other options. For example, you can use **Ending of file name is from file** to extract the file name from the banner page and use the OUTPUT statement to assign a form name.
- If you specify an invalid file name, the software assigns the file name ERROR and displays an error message on the console.

When you include **FORMNAME=** in the OUTPUT statement, you also must use the Barr Edit Forms feature or the form name will be discarded. PRINT/CHANNEL searches for a user-defined form that matches the form name in the OUTPUT statement. If it does not find a user-defined form, the software displays this message:

**OUTPUT statement received but form nnnnnnnn not found.**

The form name in the spool header is set to blank, but any other OUTPUT statement fields are applied.

- You can use the **Ignore n lines from start of file** option with the OUTPUT statement.

**Class:**

Use this option to assign a new default output class to files received on the given source device. The selected **Class** value appears as an attribute for the file on the Print Spool screen. You can set **Class** differently for each source device. Defaults are **K** to **R**, which correspond to printers **1** to **8**.

**Spool header from data?**

This option controls whether the formname or jobname for the spool header is extracted from a text line within a file when you receive the file.

**No** Default. PRINT/CHANNEL does not extract the spool header information from the file.

**Yes** You can extract the formname or jobname from a specified location in the file and place it in the spool header. You can choose **formname** or **jobname** and enter the **page**, **line**, and **column** numbers where the name appears in the file.

PRINT/CHANNEL places a spool header in all files input through this source device. In the header, the software takes formname or jobname from the data, sets class from the **Class** option, and leaves all other fields at default values.

**Spool header from data** is a valid option when you select either the **ASCII** or **S/390 Channel** receive mode.

If you select **Yes**, the software displays the following screen:

```
                              Assign Devices


Spool header's formname is on page __0, line __0 in columns __0 to __0.
                                                    Choice? + -
```

In exceptional cases, you might not be able to obtain a formname or jobname by any of the usual options. In these cases you can use **Spool header from data** with **Class** to assign a one-character formname. To do this, set **Class** to a unique value, set **Spool header from data** to **Yes**, and then set **page** number to zero.

PRINT/CHANNEL uses the one-character **Class** value as the formname and displays it on the Print Spool screen as the formname for the file. You can then use the formname as criteria for determining when to print the files or you can create a forms overlay file of the same name to load printer control data. Several other header options are available, so use this special feature only as a last resort.

**Ignore n lines from start of file.**

This option specifies the number of lines (**n**) to delete from the start of a file when the spool receives the file. A common application is to delete the first two records of a punch file because they contain a blank card and a file separator card. The maximum value is **32767** lines.

**Strip spool header?**

When you write files to disk, you can remove spool headers from the files. This option only displays when the destination is **SPOOL** or **(FILE)**. If you strip the spool header when the destination is **SPOOL**, the file has no header information and is assigned a class of **Z**. The most useful application is to set the option to **Yes** for **SPOOL1→(FILE)** so the print spool uses the header information to route the file via a spool printer (**SPOOL1**), but does not preserve the header in the final destination on disk.

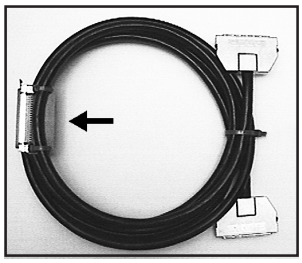
**No** Default. Do not strip the spool header.

**Yes** Remove the spool header from the file.

Chapter 4

# Run Diagnostics

You can use the PRINT/CHANNEL self test to verify you correctly installed the adapter and CAB and that they function properly. You must use the adapter test plug and the CAB test plugs for the self test.



The adapter test plug comes strapped to the cable connecting the CHANNEL adapter and CAB.


The Diagnostic Tools Bag contains the CAB terminator plugs, loopback test plugs, and instructions for installing the plugs on the CAB.

You must run the self test in two phases:

- Phase 1 tests the adapter and cable.
- Phase 2 tests the CAB.

> ***Note:*** Always perform Phase 1 before Phase 2. If you have a problem with the adapter in Phase 1, you can avoid disconnecting the CAB from the channel for Phase 2.

## 4.1 Phase 1: Adapter Installation and Settings

Phase 1 of the self test locates the adapter and sends a series of 256 character strings in a rotating pattern. The adapter test plug returns the data through the receive side of the adapter. Then the self test verifies that the returned data matches the sent data.

Follow these steps to run Phase 1:

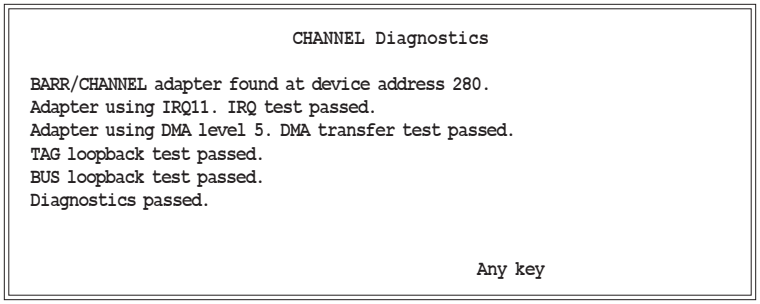
1. Connect the adapter cable to the adapter. Then attach the test plug to the other end of the cable.
2. From the PRINT/CHANNEL Print Sessions screen, select **Adapter Description**.
3. From the Adapter Description screen, set **Run diagnostics** to **Yes**.

The following screen displays:

```
                        CHANNEL Diagnostics


A test of the CHANNEL adapter, Channel Attach Box, and Channel Attach Box
cable will now be performed. This test will attempt to verify
that the adapter is correctly installed and that the Interrupt and
DMA request levels are functioning properly.

The test can be run with the Channel Attach Box connected to the channel or
with test plugs installed.

If a loopback test of the Channel Attach Box is desired, install the test
plugs at this time. If a loopback test of the adapter and
Channel Attach Box cable is desired, disconnect the cable from the Channel
Attach Box and connect that end to the proper test plug.

Press any character to begin the tests.

                                                Any key
```

Follow the instructions on the screen for each test phase.

A screen similar to the following displays if the test runs successfully:




> ***Note:*** The **Adapter using DMA level** message does not apply to the CHANNEL-IN (BT) adapter.

A failure during this phase might indicate a problem with the CHANNEL adapter installation. The self test error message might direct you to the problem. You can also check the following:

- Is the adapter installed correctly? Make sure the adapter is firmly in the slot.
- Is the adapter making a clean connection? Try cleaning the adapter's gold-plated fingers with a pencil eraser.
- ISA only: Is there an IRQ conflict with another adapter? If so, follow the instructions in the *BARR/CHANNEL* manual to reset the IRQ.
- ISA only: Is the device address specified in the software the same as the jumper settings on the adapter or is there a conflict with another adapter in the machine? Follow the instructions in the *BARR/CHANNEL* manual to change the device address in the software.
- ISA only: Are the BBF files (CHANIN.BBF and CHANDIAG.BBF) located in the same directory as the Barr EXE file?

## 4.2 Phase 2: CAB Installation and Connections

In this phase, the self test verifies connections from the adapter to the CAB through the bus and tag lines. It sends a series of 256 character strings in a rotating pattern. The bus and tag test plugs receive transmitted signals back to the test program. The self test verifies that the returned data matches the sent data.

Follow these steps to run Phase 2:

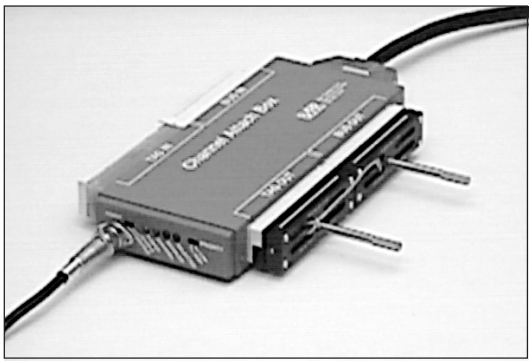
1. If the CAB is online with the mainframe, remove it from service. You usually need to isolate the mainframe channel by turning off a channel switch or varying each channel device offline, but these procedures vary.

   > ***Note:*** Phase 2 proceeds only if the self test determines that the CAB is isolated from the channel.

2. Physically disconnect the bus and tag cables from the CAB. Then attach the terminator plugs and loopback test plugs as follows:

   a. Insert the Bus Terminator and Tag Terminator plugs in the Bus Out and Tag Out plug receptacles.

   b. Insert the Bus Loopback and Tag Loopback plugs in the Bus In and Tag In plug receptacles.



CAB with terminator and loopback test plugs installed.

3. Verify that the adapter is connected to the CAB. If you previously connected the adapter test plug to the adapter cable, you need to remove the adapter test plug and re-attach the cable to the CAB.
4. From the PRINT/CHANNEL Print Sessions screen, choose **Adapter Description**. From the Adapter Description screen, set **Run diagnostics** to **Yes**.

If you encounter an error during this phase, contact Barr Technical Support.

*Notes:*

Chapter 5

# Start PRINT/CHANNEL

After you install and configure PRINT/CHANNEL, you can start the software from the DOS prompt or from the Installation Description screen. After you start the software, the Communication Scope menu displays. See Appendix B for information about scope characters.

> ***Note:*** Always try to exit the PRINT/CHANNEL software normally before you power off or reset the PC. If you cannot do this, disable or power off the CAB before you power off or reset the PC.

## 5.1 Start from the DOS Prompt

Start from the DOS prompt if you want to use the existing configuration.

Type the following command at the DOS prompt:

```
spool
```

## 5.2 Start from the Installation Description Menu

Start from the Installation Description menu if you want to change the software configuration before you start the software.

1. Type the following command at the DOS prompt:

   ```
   spooli
   ```

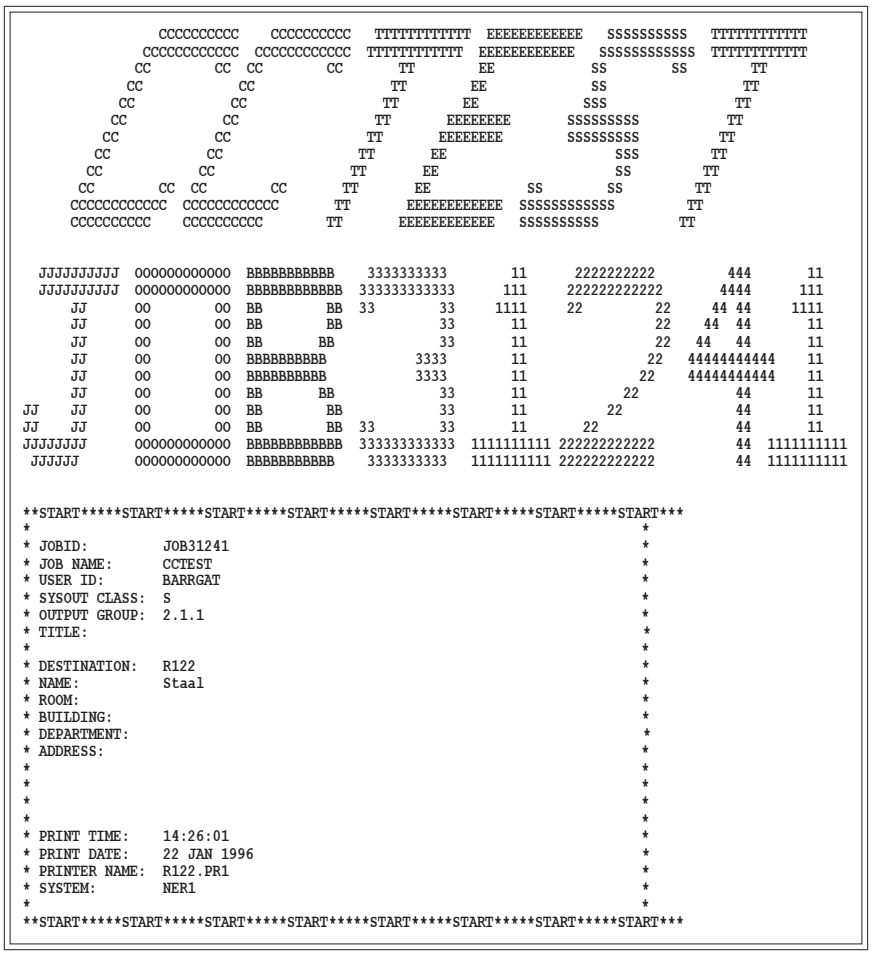
2. When you finish configuring the software, select **`Exit and Save Changes`** from the Installation Description menu and save your settings.
3. Select **`Begin communication at Operation screen`** on the Exit Options screen to start the software.

*Notes:*

Appendix

# A Banner Page Detection Example

On some host computers, JES2 generates job separators (also called Job Start Banner and Job End Banner) for every job printed. In this example, the host computer was configured to generate one Job Start Banner and one Job End Banner for each job, as shown in Figures A-1 and A-2.



```
             CCCCCCCCCC    CCCCCCCCCC   TTTTTTTTTTT  EEEEEEEEEEE   SSSSSSSSS   TTTTTTTTTTT
           CCCCCCCCCCCC  CCCCCCCCCCCC  TTTTTTTTTTT  EEEEEEEEEEE   SSSSSSSSSSS  TTTTTTTTTTT
          CC         CC  CC         CC      TT       EE           SS         SS       TT
         CC           CC  CC                TT       EE           SS                  TT
        CC             CC  CC              TT       EE            SSS                TT
       CC              CC   CC             TT       EEEEEEEE       SSSSSSSS          TT
      CC               CC    CC            TT       EEEEEEEE       SSSSSSSS          TT
     CC                CC     CC           TT       EE                  SSS         TT
    CC                 CC      CC          TT       EE                   SS         TT
   CC         CC  CC         CC            TT       EE           SS      SS         TT
  CCCCCCCCCCCC  CCCCCCCCCCCC              TT       EEEEEEEEEEE  SSSSSSSSSSS        TT
  CCCCCCCCCC    CCCCCCCCCC              TT       EEEEEEEEEEE   SSSSSSSSS          TT


  JJJJJJJJJJ  0000000000  BBBBBBBBBB    3333333333       11     2222222222        444       11
  JJJJJJJJJJ  0000000000  BBBBBBBBBBB  333333333333     111    222222222222      4444      111
      JJ      00        00 BB        BB 33        33    1111    22        22     44 44     1111
      JJ      00        00 BB        BB           33      11              22    44  44       11
      JJ      00        00 BB       BB            33      11              22   44   44       11
      JJ      00        00 BBBBBBBBBB           3333      11             22   444444444444   11
      JJ      00        00 BBBBBBBBBB           3333      11            22    444444444444   11
      JJ      00        00 BB       BB            33      11          22             44       11
JJ    JJ      00        00 BB        BB           33      11        22               44       11
JJ    JJ      00        00 BB        BB 33        33      11      22                 44       11
JJJJJJJJ      0000000000  BBBBBBBBBBB  333333333333  1111111111 222222222222        44  1111111111
 JJJJJJ       0000000000  BBBBBBBBBB    3333333333   1111111111 222222222222        44  1111111111


**START*****START*****START*****START*****START*****START*****START*****START***
*                                                                               *
* JOBID:          JOB31241                                                      *
* JOB NAME:       CCTEST                                                        *
* USER ID:        BARRGAT                                                       *
* SYSOUT CLASS:   S                                                             *
* OUTPUT GROUP:   2.1.1                                                         *
* TITLE:                                                                        *
*                                                                               *
* DESTINATION:    R122                                                          *
* NAME:           Staal                                                         *
* ROOM:                                                                         *
* BUILDING:                                                                     *
* DEPARTMENT:                                                                   *
* ADDRESS:                                                                      *
*                                                                               *
*                                                                               *
*                                                                               *
*                                                                               *
* PRINT TIME:     14:26:01                                                      *
* PRINT DATE:     22 JAN 1996                                                   *
* PRINTER NAME:   R122.PR1                                                      *
* SYSTEM:         NER1                                                          *
*                                                                               *
**START*****START*****START*****START*****START*****START*****START*****START***
```

**Figure A-1.** Sample Job Start banner.

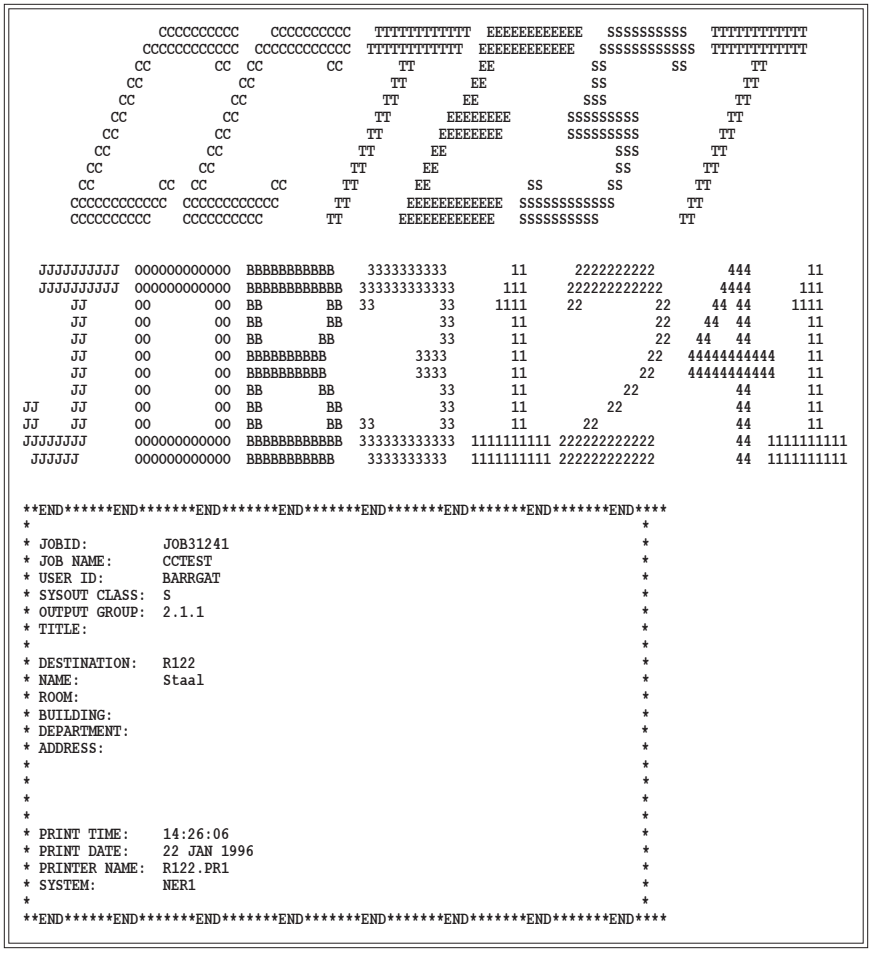



**Figure A-2.** Sample Job End banner.

The following portion of the sample banner page includes possible search data strings.

```
   1             18        25
   |              |         |
31-**START*****START*****START****
   *
   * JOBID:          JOB31241
34-* JOB NAME:       CCTEST
   * USER ID:        BARRGAT
36-* SYSOUT CLASS:   S
  * OUTPUTGROUP:2.1.1
   * TITLE:
```

The **START** string is a good search choice because it probably does not occur anywhere else in the data. It always shows up in column 1 of line 31 on this sample banner page. Similarly, the **END** string always appears on the sample Job End Banner.

The job name and class also print on the banner page so you can extract this information. The job name is three lines below and class is five lines below the **START** string. Both fields begin in column 18. The job name can extend as far as column 25.

Figures A-3 and Figure A-4 show you how you would enter this information on the PRINT/CHANNEL Printer Definition screen.

```
              PRINT/CHANNEL Printer Definition


     Printer Address:        0E
     Enable or Disable device? Enabled

     ..........................................................
                Banner Recognition Information

     Remove banner pages after processing?  No
     Starting line:    31     Number of lines:   1
     Header pages:      1     plus 0 additional page(s)
     Trailer pages:     1     plus 0 additional page(s)

     Text string 1 in column:   1
     **START**

     TRAILER    text string

     Text string 2 in column:   1
     **END**
                                          Enter character
```

**Figure A-3.** Banner Recognition Information screen.

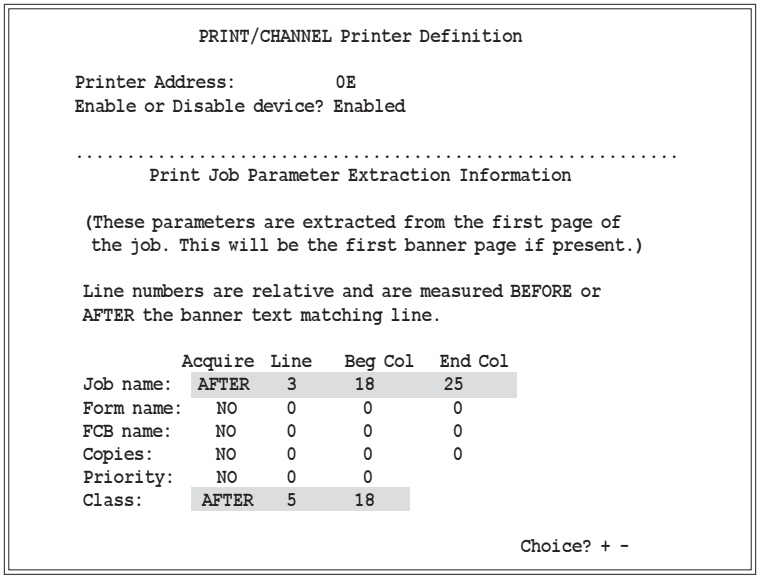



**Figure A-4.** Print Job Parameter Extraction Information screen.

Appendix B

# Communication Scope and Console Messages

Communication Scope characters appear on the top line of your PRINT/CHANNEL Operation screen to tell you the mainframe is communicating with your Barr PC. The characters in Table B-1 might appear, where **NN** is the channel address.

### Table B-1. Communication Scope Characters

| Character | Color | Meaning |
|---|---|---|
| rNN | yellow | Device ready. |
| iNN | red | Intervention state. Indicates you have a flow-control problem because you are low on buffers or trying to write to a suspended device. |
| hNN | yellow | Header page recognized. |
| tNN | yellow | Trailer page recognized. |
| eNN | yellow | End of print job. |
| p | white | Channel 1 Skip received. |
| d | white | Total of 256 lines received without Channel 1 Skip. |

The **rNN** message should display first to indicate the device is ready to receive print jobs.

The following messages display in the console portion (the blue area) of the Operation screen to help you diagnose problems.

**Ready**
: The device is ready at software startup or the device has left the intervention state.

**Time out forced EOJ**
: Your job ended because the device timed out.

**BARR/CHANNEL Driver is incompatible with BBF file. Driver firmware version level:4**

Your software version does not match the BBF file in your Barr software directory.

**BARR/CHANNEL incompatible with BBF file.**

You are trying to use a BBF file from another Barr software option. You need new software or a new BBF file. Call Barr Technical Support.

**BARR/CHANNEL unable to open BBF file.**

You either do not have a BBF file or it is not in the directory with the Barr software's EXE file.

**BARR/CHANNEL error encountered while loading BBF file.**

The Barr software was unable to initialize the adapter because of a problem with the adapter or with your particular PC.

**BARR/CHANNEL initialization error. Code:**

Your software would not initialize. Call Barr Technical Support with the code number.

# Warranty

## Software License Agreement: Single-User

Barr Systems, Inc. (“Barr Systems”) grants and Licensee accepts the terms and conditions of this agreement which provide a non-transferable and non-exclusive license to use the software program (“Licensed Software”) enclosed herewith on one single-user workstation, so long as Licensee complies with the terms of this agreement. Licensee’s rights hereunder are those of a licensed user only and the Licensed Software shall at all times remain the property of Barr Systems.

Licensee agrees to pay for licenses for additional user copies of the Licensed Software if Licensee intends to, or does, use it on more than one single-user workstation at a time.

## Acceptance

Licensee understands that the use of the Licensed Software, or the use of any of the computer hardware (the “Product Hardware”) purchased from Barr Systems, constitutes acceptance of the terms and conditions of this Software License Agreement and this Limited Warranty with respect to the Product Hardware and the Licensed Software.

## Maintenance and Limited Warranty

The Licensed Software and the Product Hardware are under warranty for a period of one year following the date the Licensed Software and the Product Hardware were mailed or otherwise made available to Licensee. Support for the Licensed Software Product Hardware beyond the initial one-year warranty period may be obtained by Licensee through the purchase of an annual Licensed Software and Product Hardware Maintenance Agreement from Barr Systems.

Barr Systems warrants that the Licensed Software and the Product Hardware will perform substantially in accordance with the published specification statement, documentation, and authorized advertising. Provided Barr Systems is notified of significant errors during the warranty period, Barr Systems shall, at its option:

(1) Provide telephone support (phone 800-BARR-SYS or 352-491-3100) to correct significant and demonstrable Licensed Software program or documentation errors within a reasonable period of time, or

(2) Repair or replace the Product Hardware within a reasonable period of time if it should prove defective, or

(3) Provide or authorize a refund of the purchase price of the Licensed Software or the Product Hardware.

## Transfer or Reproduction

The Licensee shall not sell, assign, sublicense, copy, or otherwise reproduce in whole or in part, or transfer any copies of the Licensed Software to another person, subsidiary, parent company, or other company without the express written permission of Barr Systems. Barr Systems has the legal right to trace serial numbers and to take legal action if these conditions are violated.

## Limited Warranty

**THE LICENSED SOFTWARE AND THE PRODUCT HARDWARE ARE PROVIDED "AS IS." ALL WARRANTIES AND REPRESENTATIONS OF ANY KIND WITH REGARD TO THE LICENSED SOFTWARE AND THE PRODUCT HARDWARE ARE HEREBY DISCLAIMED, INCLUDING IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, EXCEPT THAT BARR SYSTEMS WARRANTS THAT THE LICENSED SOFTWARE AND THE PRODUCT HARDWARE, WHEN DELIVERED, WILL OPERATE SUBSTANTIALLY AS DESCRIBED IN THE USER**

**DOCUMENTATION OR GUIDE. UNDER NO CIRCUMSTANCES WILL BARR SYSTEMS BE LIABLE FOR ANY CONSEQUENTIAL, INCIDENTAL, SPECIAL OR EXEMPLARY DAMAGES, EVEN IF APPRISED OF THE LIKELIHOOD OF SUCH DAMAGES OCCURRING. LICENSEE'S SOLE AND EXCLUSIVE REMEDY FOR THE BREACH OF ANY PROVISIONS OF THIS AGREEMENT OR FOR BREACH OF WARRANTY SHALL BE LIMITED TO THE REPAIR OR REPLACEMENT OF THE LICENSED SOFTWARE OR THE PRODUCT HARDWARE BY BARR SYSTEMS, OR THE REFUND OF THE PURCHASE PRICE. THE CHOICE OF REMEDIES SHALL BE MADE AT THE OPTION OF BARR SYSTEMS.**

Licensee and Barr Systems agree that the Licensed Software and the Product Hardware are not intended for use by Licensee as "consumer goods" under state or federal law.

This warranty gives you specific legal rights, and you may also have other rights, which vary from state to state. Some states do not allow limitations on how long an implied warranty lasts or exclusion or limitation of incidental or consequential damages; therefore, the limitations set forth in this agreement may not apply to you.

## Copyright

The Licensed Software is the sole and exclusive property of Barr Systems, which is licensed and distributed by Barr Systems pursuant to a nonexclusive software license agreement; it is an unpublished work, with all rights reserved, and contains confidential information and trade secrets proprietary to Barr Systems. Disassembly or decompilation is prohibited; patents pending.

Licensee acknowledges and agrees that the Licensed Software is copyrighted and that Licensee is not authorized to reproduce any copies of the Licensed Software, nor allow others to reproduce any copies except in accordance with instructions in this manual.

Licensee further agrees that Licensee does not have, and shall not gain, any exclusive copyright rights with regard to the Licensed Software.

## Miscellaneous

These definitions shall govern the use of terms in this agreement: “Barr Systems, Inc.,” a Florida corporation, whose address is 4500 NW 27 Avenue, Gainesville, Florida 32606-7031, is the author and owner of the Licensed Software; “Single-user workstation” is defined to include any device from which the enclosed Licensed Software may be used or accessed; “Multiple user” is defined as more than one single-user workstation. Where networks of terminals are used, each such terminal shall be counted as a separate single-user workstation and must be licensed individually; “Licensed Software” is the computer program licensed to Licensee, regardless of the form in which Licensee may subsequently use it, and regardless of any modification which Licensee may make to it. The Licensed Software is distributed in machine-readable form only and no source code is provided; “License” means this agreement and the rights and obligations which it creates under the United States Copyright law and the laws of the several states and territories of the United States; “Licensee” refers to the end user (individual or company); “Product Hardware” refers to any computer hardware manufactured, sold, or distributed by Barr Systems.

This is the entire agreement between Barr Systems and Licensee and it cannot and shall not be modified by purchase orders, advertising, or other representations by anyone.

All notices or other communications given under this agreement shall be in writing, sent to the address presented above as the principal place of business of Barr Systems, or such other addresses as Barr Systems may designate in writing.

Both parties acknowledge that they have read all the terms of this agreement, understand it and are authorized to enter into it and agree to be bound by its terms and that it is the complete and exclusive statement of the agreement between the parties, which supersedes all proposals, oral or written.

If any provision, or portion thereof, of this agreement shall be deemed invalid and/or inoperative, under any applicable statute or rule of law, it is to that extent to be deemed omitted and shall have no effect on any other provisions of the agreement.

This agreement shall be construed and enforced in accordance with the laws of the State of Florida and is deemed entered into at Alachua County, Florida, by both parties.

*Notes:*

# Glossary

**adapter**
Add-on equipment you can plug into a PC to allow the PC to connect to another device.

**BBF**
Files used to control data flow in and out of the channel or to perform diagnostics. These files are loaded into programmable chips on the adapter.

**buffer**
An area of computer memory used to perform input or output operations. The software reads data into a buffer or writes data from a buffer.

**bus and tag cables**
Cables used to connect devices to mainframe channels. The bus cable transmits data and the tag cable controls information on the bus.

**CAB**
Channel Attach Box. Allows you to electronically isolate the PC from the mainframe channel and other devices on the channel.

**channel attached**
Direct way to attach printers to S/390 mainframes.

**communications protocol**
A specification of data and control message formats and their meanings. Both the sender and receiver in a communication link must follow this specification.

**data streaming**
The uninterrupted transfer of information over an interface to achieve high data transfer rates.

**diagnostics**
A program to detect and isolate errors in programs and faults in equipment.

**DMA**
Direct Memory Access.

**EOJ**
End Of Job.

**FCB**
Forms Control Buffer. A record sent from a host to a remote to specify vertical forms control.

**host computer**
A computer that controls the communications network, stores databases, and has a large computing and memory capacity. Other computers can connect to the host to share its resources.

**IRQ**
Interrupt Request. A request for processing on a particular priority level.

**LED**
Light-Emitting Diode.

**mainframe**
A large central computer that offers a full set of computing services. The term originated when the central processor, memory, and input/output channels were located in one central housing called the mainframe. Synonymous with host computer.

**network**
An arrangement of nodes and connecting branches for information interchange.

**parity**
A bit appended to a group of binary digits to ensure that the sum of bits is either even or odd. Parity serves as an error-detection scheme for data communications.

**print queue**
A list of items waiting to print.

**print spooling**
A way to manage printing files on one or more printers.

**protocol**
See communications protocol.

**PVC**
Permanent Virtual Circuit.

**spooling**
Simultaneous Peripheral Operations Online. Spooling allows several independent flows of data to proceed concurrently. For example, files can be sent from disk to the host computer while other files are printed. See print spooling.

**terminator plug**
A part that ends the cable path on a computer system. The terminating plug is attached to the last device in a series.

**UCS**
Universal Character Set. A printer feature that permits you to use various character arrays.

**UNIX**
An operating system for work-stations developed by Bell Laboratories that features multiprogramming in a multiuser environment. It was originally developed for minicomputers but can now be used on mainframes and microcomputers.

**V AC**
Volts Alternating Current.

**VAX**
A super-minicomputer made by Digital Equipment Corporation.

# Index

## H



## I



## J



## L



## M



## N



## O



## P



## R



## S

## T



## U



## V

*Notes:*