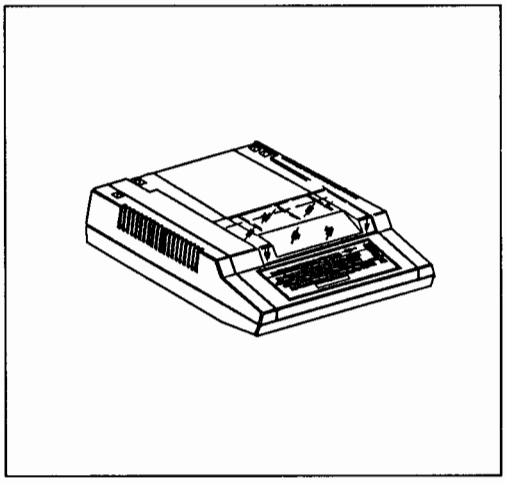
HP 5890 Dual Channel Operation
HP 3396 Series II Integrator



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Safety Information

The HP 3396 Series II Integrator is an IEC (International Electrotechnical Commission) Safety Class 1 instrument. This unit has been designed and tested in accordance with recognized safety standards.

Whenever the safety protection of the HP 3396 Series II Integrator has been compromised, disconnect the unit from all power sources and secure the unit against unintended operation.

WARNING

A WARNING CALLS ATTENTION TO A CONDITION OR POSSIBLE SITUATION THAT COULD CAUSE YOU OR OTHERS INJURY.

CAUTION

A Caution calls attention to a condition or possible situation that could damage or destroy the product or your work.

Important User Information for In Vitro Diagnostic Applications

This is a multipurpose product that may be used for qualitative or quantitative analyses in many applications. If used in conjunction with proven procedures (methodology) by a qualified operator, one of these applications may be In Vitro Diagnostic Procedures.

General instrument performance characteristics and instructions are included in this manual. Specific In Vitro Diagnostic procedures and methodology remain the choice and the responsibility of the user and are not included.

RFI Certification for the Federal Republic of Germany

Manufacturer's Declaration

This is to certify that the equipment **HP 3396 Series II Integrator** is in accordance with the Radio Interference Requirements of Directive FTZ 1046/1984. The German Bundespost was notified that this equipment was put into circulation and the right to check the series for compliance with the requirements was granted.

Herstellerbescheinigung

Hiermit wird bescheinigt, daß das Gerät/System

HP 3396 Series II Integrator

in Übereinstimmung mit den Bestimmungen von Postverfügung 1046/1984 funkentstört ist.

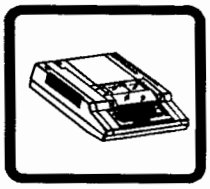
Der Deutschen Bundespost wurde das Inverkehrbringen dieses Gerätes/Systems angezeigt und die Berechtigung zur Überprüfung der Serie auf Einhaltung der Bestimmungen eingeräumt.

Contents

Appendix A: Automating with Barcode Methods

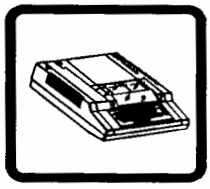
Appendix A shows how you can automate runs without a sequence. The barcode on each vial tells the integrator the method, injection volume, calibration level, and the number of injections to use for the analyses.

Appendix B: Alternate Operating Modes



Appendix B contains information about alternate ways of analyzing the buffered channel of run data using non-INET injectors, disabling an unused injector, and inputting a non-INET signal.

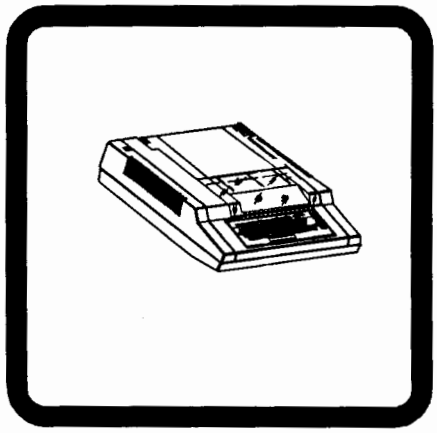
Appendix C: Dual Channel INET System Information



Appendix C contains information about INET I/O commands for the Dual Channel program and the system's signal flow diagrams.

1

Introducing Dual Channel Operation



In this chapter....

About This Manual

This manual contains operating information for HP 5890 Dual Channel Operation using the HP 3396 Series II Integrator. It provides the steps for setting up and running the second channel and demonstrates this using procedures and examples.

Instructions for installing the HP 5890 Dual Channel accessory are included in chapter 5.

Before You Start

Before attempting to run HP 5890 Dual Channel, you should read the Tutorial Manual and be familiar with general HP 3396 Series II Integrator operation.

Other Useful Manuals

Two other manuals that are useful when setting up and running HP 5890 Dual Channel are:

- The HP 3396 Series II Operating manual
- The HP 3396 Series II Using Application Programs manual

The HP 3396 Series II Operating Manual

The Operating Manual contains procedures and facts needed for everyday operation.

Using Application Programs

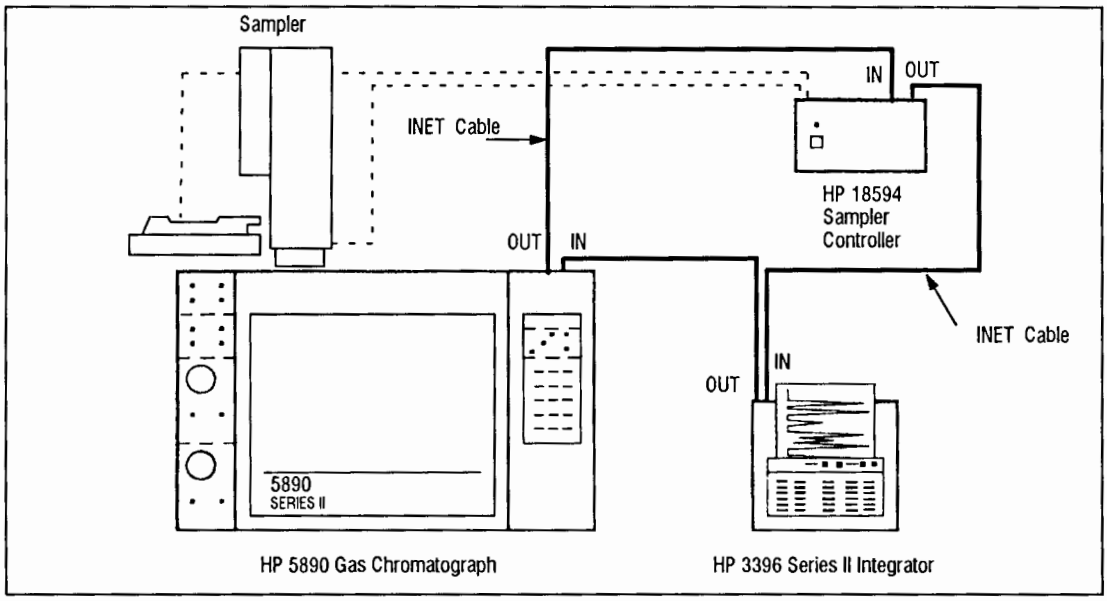
This manual, located in the HP 3396 Series II Operating Manual binder, is an operating manual for the application programs installed in your Series II Integrator.

Using these programs, you can schedule postrun programs, automatically name data files, manage your files, reprocess data files, automate runs, plot peak calibration curves, and plot chromatographic baselines.

These application programs can be used to expand or automate the Dual Channel capabilities.

Dual Channel Hardware

An INET Communications Interface Board in the HP 5890 GC connects the GC, integrator, and automatic samplers into a Dual Channel system.



A typical Dual Channel system consists of the following components:

- An HP 5890A or HP 5890 Series II Gas Chromatograph.
- An HP p/n 19242-60015 INET Buffered Interface Board (HP 5890 Option 552 or Accessory No. 19242B).
- An HP 3396 Series II Integrator with the Dual Channel option (Option 231 or Accessory No. G1208A).
- Single or Dual HP 7673A Automatic Samplers (see note below).

Note: The power supply/controller (HP 18594A/B) for HP 7673A Automatic Samplers with serial numbers below 3032Axxxxx (U.S.) or below 3032Gxxxxx (Europe), requires an EPROM update to the INET controller board for use with the HP 3396 Series II Integrator. The existing EPROM (HP p/n 18594-80210) is replaced by EPROM (HP p/n 18594-80305).

Dual Channel Operation

With Dual Channel operation, the HP 3396 Series II Integrator can process two channels of simultaneously generated run data from an HP 5890 GC.

When you use the Autoscheduler to run the dual channel program:

- Method and sequence control can be assigned to each channel independently.
- You can schedule up to 10 postrun programs for each channel.

The Realtime Channel

One channel of HP 5890 GC run data is processed in real-time. The chromatogram is also plotted in real-time during the run.

The Buffered Channel

While the real-time channel of run data is integrated, another channel of data is buffered (or stored) in the HP 5890 GC. When the real-time run ends, the Dual Channel program transfers the buffered raw data from the HP 5890 GC to the integrator for analysis.

Dual Channel Signal Assignments

The default signal assignments for HP 5890 Dual Channel are:

- HP 5890 GC Signal 1 = integrator real-time channel
- HP 5890 GC Signal 2 = integrator buffered channel

To remind you which HP 5890 GC signal is assigned to the live or buffered channel, the signal assignment for the buffered channel is printed at the top of the buffered channel plot of each dual channel run.

```
BUFFER pk-wd=0.01  Sig 2 BFR RUN#  5   JUN 10, 1990  08:50:37
```

Analyzing the Second Channel of Buffered Data

There are several ways to analyze the second channel of buffered data:

- Running the dual channel program with the Autoscheduler.
- Manually analyzing the data from the system prompt. (No BASIC programs required)
- Assigning the dual channel program to Key [0].
- Running the dual channel program within a BASIC program.

Running the Dual Channel program with the Autoscheduler is the preferred method of analyzing the second channel. This mode of operation supports unique method and sequence files for each channel and completely automates dual channel operation.

The other modes of dual channel operation are described in Appendix B.

Running Dual Channel with the Autoscheduler

When you run Dual Channel with the Autoscheduler, you can have:

- The front and rear towers inject from different sets of bottle numbers.
- Unique time tables and calibrated methods for each channel.
- Unique sample amounts, ISTD amounts, etc. for each channel.
- Unique run parameters (Attenuation, Peak Width, etc) and run data storage for each channel.

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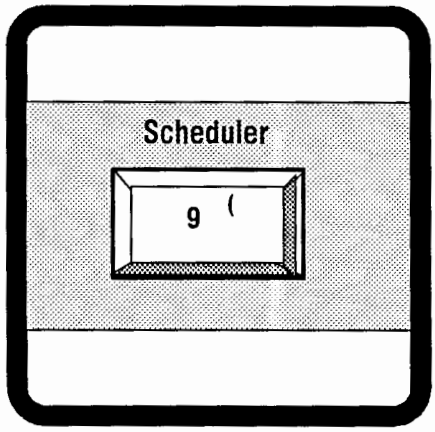
Preparing for Dual Channel Operation



In this chapter....

Running Dual Channel with the Autoscheduler

Scheduling the Dual Channel program with the Autoscheduler is the preferred method of analyzing the second channel. This mode of operation supports unique method and sequence files for each channel and completely automates dual channel operation.

When you run Dual Channel with the Autoscheduler, you can have:

- The front and rear towers inject from different sets of bottles.
- The front and rear towers inject from the same sets of bottles.
- Unique timetables and calibrated methods for each channel.
- Unique sample amounts, ISTD amounts, etc for each channel.
- Unique run parameters (Attenuation, Peak Width, etc) and run data storage for each channel.

Note: You cannot perform simultaneous injections from the same bottle.

The Autoscheduler Dialog

With the Autoscheduler dialog, you prepare Dual Channel operation by:

1. Specifying dual channel operation.
2. Specifying method files for the real-time and buffered channels.
3. Setting the data rate Peak Width for filling the buffer with run data.
4. Specifying sequence files for the real-time and buffered channels.
5. Scheduling `E:AUTO_2CH.BAS` for the buffered channel.
6. Specifying the HP 7673 Injector location for 5890 Det A and Det B.
7. Storing the Autoscheduler file.

Preparing the Method Files

The first step in preparing for dual channel operation is to prepare method files for the real-time and/or buffered channels. You can use one method for both channels or use different methods. If suitable method files already exist, they can be used.

You can prepare:

- A single method to be used by both channels.
- Different methods for each channel. Then, operate the real-time and buffered channels independently using different integration parameters.

When preparing the buffered channel method, there is no need to specify the HP 5890 GC parameters. They are controlled by the realtime method. The non–3396 INET parameters of the buffered channel method are ignored.

Preparing the Sequence Files

The next step is to prepare sequence files that will be used for each channel.

You can prepare:

- A single sequence file to be used by both channels.
- Different sequence files for each channel. Then, operate the real-time and buffered channels independently using different sequence sample information.

If suitable sequence files already exist, they can be used.

Specifying a Method

You can specify a method for the real-time channel in:

- The real-time sequence file if the run is to be automated.
- The Autoscheduler dialog. When you enter a method in the Autoscheduler dialog, it overrides the method (if any) specified in the sequence file.

When you prepare a sequence for the buffered channel, do not specify a method; it will be ignored. A method for the buffered channel can *only* be specified in the Autoscheduler dialog.

When preparing the buffered channel sequence, there is no need to specify the HP 7673 Injector parameters. They are controlled by the real-time sequence. The non-3396 INET parameters of the buffered channel sequence are ignored.

Overriding the Method File Specified in the Sequence

When preparing a sequence for dual channel use, you do not have to specify a method file in the sequence. If you can specify the method in the Autoscheduler dialog it will override the method (if any) specified in the sequence file.

Starting the Autoscheduler Dialog

1. **Press Function Key [9] to start the Autoscheduler dialog.**

   When the integrator is first powered on, the appplication programs are assigned to their respective function keys. The assignment for the Autoscheduler is Function Key [9]. Pressing this key will start the Autoscheduler dialog.

   The integrator prints the following header information:

```
      WELCOME TO THE HP 3396 AUTOSCHEDULER (REV B.00.01)


AT ANY ':' PROMPT:   'Q'[ENTER] QUITS
                     'S'[ENTER] STARTS OVER
IN EDIT MODE     :   'D'[ENTER] TERMINATES EDITING

*************************************************************************
NOTE: Default response to any [Y/N*] : prompt is negative.
      In EDIT MODE pressing only [ENTER] maintains the existing value
      of an option. In CREATE MODE pressing only [ENTER] sets the
      option to the default value, or to a space if no default exists.

*************************************************************************
```

   The header information explains how to enter and exit the Autoscheduler dialog in both the create and edit modes.

```
Edit an existing AutoScheduler file or create a new one [E/C*]:
```

2. **Press [ENTER] or type a C to create a new Autoscheduler file.**

   The default selection is **C**, indicated by the asterisk. It is entered automatically when you press **[ENTER]**.

This is where you specify that the second buffered channel will be used, which requires the dual channel program (AUTO_2CH) to be scheduled as a postrun program in the Autoscheduler file.

```
Will this AutoScheduler file use the buffered channel [Y/N*]: Y
```

3. Enter Y to specify that this Autoscheduler file will be used to operate the buffered channel.

Enter **Y** to for the dialog to prompt for the dual channel operating parameters.

Enter **N** if you do not want to operate the buffered channel. You can still schedule postrun programs for the realtime channel.

```
RENAMING DATA FILES
-------------------
Data file name prefix for realtime channel: [ENTER]
Data file name prefix for buffered channel: [ENTER]
```

4. Press [ENTER] to skip past the file renaming prompt(s).

These prompt(s) are used with the Autoname program. Skip them by pressing **[ENTER]**.

This prompt is where you enter the file name prefix used by the Autoname program to rename result files.

The Autoname program is one of the application programs supplied with all HP 3396 Series II Integrators. Automatic file renaming prevents result files from being overwritten and lets you assign meaningful names to result files for future reference. Use of the Autoname program is described in section 3 of the "Using Application Programs" manual.

Specifying the Method Files

The dialog prompts ask you to specify the method and sequence files.

By specifying unique method files for each channel, the real-time and buffered channels can operate independently, analyzing each channel with different integration parameters.

```
SPECIFYING METHOD AND SEQUENCE FILES
-----------------------------------

Method file for realtime channel: M:METH1.MET
```

1. **Enter the method file to analyze the real-time channel or press [ENTER] to specify no method assignment.**

   The method specified here overrides a method specified in the sequence.

   If you do not supply the .MET file extension, the program does it for you.

   Note: If you press **[ENTER]** at the method prompt, no method is assigned to the real-time channel, and a caution message is printed.

```
CAUTION - NO EXPLICIT METHOD SPECIFIED. THIS MAY RESULT
          IN UNUSABLE SYSTEM BEHAVIOR AT EXECUTION TIME.
```

   You will not be prompted for the buffered channel method; both channels will be analyzed with the currently active method when you press the **Auto Start** key.

```
Method file for buffered channel: M:METH2.MET
```

2. **Enter the method file to analyze the buffered channel or press [ENTER] to assign the realtime method to the buffered channel.**

   The method specified here overrides a method specified in the sequence.

   If you do not supply the .MET file extension, the program does it for you.

   If you are automating the buffered channel with a sequence, *do not* specify the method file when you prepare the sequence file. The buffered channel method can *only* be specified in the Autoscheduler dialog.

   Note: In a dual channel run, the HP 5890 GC and the HP 7673 Automatic Sampler are controlled by the realtime method and sequence. The non-3396 INET parameters of the buffered channel method and sequence are ignored.

Setting the Peak Width for the Buffered Channel

The peak width value you enter here controls the rate that run data is stored in the HP 19242-60015 INET Buffered Interface Board. Do not confuse the buffered channel peak width with the peak width parameter in the method.

- The buffered channel peak width, specified in the Autoscheduler program, controls the rate that detector data fills the buffer during a run.
- The Peak Width parameter specified in the method controls how transferred detector data will be bunched when it is integrated.

```
Enter buffered channel peak width [BFR PK WD 0.01-2.50]:
```

1. **Enter an appropriate Peak Width value for storing the second channel of data in the buffered interface board.**

When the integrator is switched on, a default value of 0.01 minutes is assigned to the buffered channel peak width.

The buffered channel peak width value should be less than or equal to the Peak Width parameter specified in the current active method. Otherwise, the integrator will be forced to interpolate data points during integration.

Use the table below to choose an appropriate peak width value in the buffered channel method.

Peak Width Range	Application
0.01 to 0.05 minutes	High resolution capillary or packed GC columns
0.04 to 0.2	High performance LC, moderate length packed GC columns
0.15 to 0.6	High performance LC, long packed GC columns
0.5 to 2.5	High performance LC, low efficiency GC
2.5	Low pressure (column) LC, some types of amino acid analysis, non chromatographic peak integration

Always check or set the buffered channel peak width before starting a run or sequence.

The buffered peak width value will not change unless:

- You change it.
- You specify another Autoscheduler file that has a different buffered channel Peak Width value.

Specifying the Sequence Files

To automate dual channel runs with sequences, you can specify a unique sequence file for each channel in the Autoscheduler dialog. This allows the real-time and buffered channels to be automated independently using different sample information for each channel.

```
Sequence file for realtime channel: M:SEQ1.SEQ
```

1. **After you have entered the method files and the buffered channel data rate, enter the name of the sequence that will automate the real-time channel, or press [ENTER] to specify no sequence assignment.**

   A method specified in the Autoscheduler dialog overrides a method specified in the sequence file. See "Specifying the Method Files" in this section.

   Note: If you press **[ENTER]** at the sequence prompt, no sequence is assigned to the real-time channel and a caution message is printed.

```
CAUTION - NO EXPLICIT SEQUENCE SPECIFIED. THIS MAY RESULT
          IN UNUSABLE SYSTEM BEHAVIOR AT EXECUTION TIME.
```

   You will not be prompted for the buffered channel sequence; both channels will be analyzed with the currently active sequence when you press the **Auto Start** key.

```
Sequence file for buffered channel: M:SEQ2.SEQ
```

2. **Enter the name of the sequence that will analyze the buffered channel, or press [ENTER] to use the real-time sequence for the buffered channel.**

   When you specify a sequence for the buffered channel, only the sample information table of the sequence is used. The realtime sequence supplies the `ALS INFORMATION` *for both the front and rear injectors.*

   If the buffered channel sequence contains a method file, it is ignored. The buffered channel method can *only* be specified in the Autoscheduler dialog. See "Specifying the Method Files" in this section.

Scheduling the Dual Channel Program

The dual channel program, named E:AUTO_2CH.BAS, must be scheduled as a postrun program for the buffered channel. In this example, no postrun program will be scheduled for the real-time channel.

```
SCHEDULING AUTOCALL PROGRAMS
----------------------------
Schedule postrun AUTOCALL programs for realtime channel  [Y/N*]: N
```

1. **Enter N if you do not wish to schedule a postrun program for the real-time channel.**

```
Schedule postrun AUTOCALL programs for buffered channel  [Y/N*]: Y
```

2. **Enter Y to schedule a postrun program for the buffered channel.**

```
AUTOCALL filespec for buffered channel : E:AUTO_2CH.BAS
```

3. **Enter E:AUTO_2CH.BAS as the postrun program for the buffered channel.**

The Dual Channel program (E:AUTO_2CH.BAS) *must always be the first postrun program scheduled for the buffered channel.*

```
AUTOCALL filespec for buffered channel : [ENTER]
```

4. **Press [ENTER] to end the prompts for the buffered channel.**

These programs execute after both channels have been analyzed. They are not channel specific.

```
Schedule additional postrun AUTOCALL programs [Y/N*]: N
```

5. **Enter N when you have finished scheduling postrun programs.**

You can schedule up to 30 postrun programs:

- 10 realtime
- 10 buffered
- 10 additional

Specifying the HP 7673 Injector Locations

The next set of prompts ask you to specify how the columns are installed in the HP 5890 Gas Chromatograph.

```
Enter 7673 inj connected to 5890 det A [F*/R/N(one)]: F
```

1. **Enter F to indicate that the front injector is connected to Det A.**

Select N(one) when no HP 7673 injector is installed, an HP 7672 Automatic Sampler with an SECM controller, a non-HP sampler, etc. See "More About Dual Channel Operation" in this manual for more information about using non-HP 7673 sampling devices.

```
Enter 7673 inj connected to 5890 det B [F/R*/N(one)]: R
```

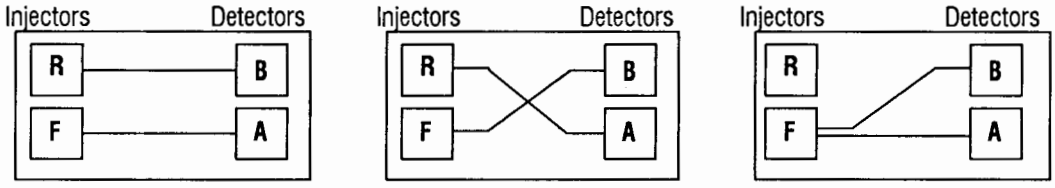
2. **Enter R to indicate that the rear injector is connected to Det B.**

These entries made for the injector location cause the system to override position selections made earlier in the ALS INFORMATION section of the sequence shown below.

```
POSITION (1 = FRONT , 2 = REAR)
 INET CHANNEL 1        1  -->        1 [ENTER]
 INET CHANNEL 2        2  -->        2 [ENTER]
```

As the illustration below shows, the information you provide describes:

- Which injector, front or rear, is connected to the front detector (Det. A).
- Which injector, front or rear, is connected to the rear detector (Det B).



Assuming an HP 7673 Automatic Injector is installed on both the front and rear injectors, the most common configuration is to connect the front injector to Det A and the Rear injector to Det B.

Using Dual Injectors

When you use two injectors with Dual Channel, the real-time sequence, specified in the Autoscheduler file, supplies the ALS INFORMATION (Inj/Bottle, First Bottle, Last Bottle, Etc.) for both the front and rear injectors. The ALS INFORMATION in the buffered channel sequence is ignored.

The sample information table of the buffered channel, however, is active and can be used to supply different sample information (ISTD AMT, MUL FACTOR, etc) for the samples being run on the buffered channel.

Running the Same Set of Vials with Dual Injectors

You can run the same vials on both injectors of a dual injector system to:

- Double sample throughput.
- Run the same samples using a different Sample Information Table.
- Do a comparative analysis using different columns and/or detectors.

When the FIRST BOTTLE and LAST BOTTLE are the same for both injectors, the samples are injected as shown in the figure below.

Run #	Inj #	Front Injector	Rear Injector
1st	1st	vial 1	idle
2nd	2nd	vial 2	vial 1
3rd	3rd	vial 3	vial 2
.	.	.	.
.	.	.	.
.	.	.	.
nth	nth	vial n	vial n–1
last	last	idle	vial n

The report for the first run of the rear injector and the last run of the front injector (see "idle" above) contain invalid data and should be discarded. See the HP 7673 Automatic Sampler Operating Manual (HP p/n 07673-90185) for more information.

Storing the Autoscheduler File

When you are finished setting up dual channel operation and scheduling any associated postrun programs, you are ready to store the Autoscheduler file.

```
Store the current AutoScheduler file ('N' re-edits) [Y/N*] Y
```

1. **Enter Y to store the entries you have made.**

Entering **N** will return you to the RENAMING DATA FILES prompt.

```
Enter AutoScheduler file name [M:AUTOCALL.UA1*]: [ENTER]
```

2. **Press [ENTER] to store the current Autoscheduler file with its default name.**

M:AUTOCALL.UA1 is the default name for the Autoscheduler file.
The Autoscheduler program will only execute postrun programs specifed in the default Autoscheduler file.

```
M:AUTOCALL.UA1 - Exists, OK to overwrite [Y/N*]: Y
```

3. **The program prompts you with this message *only* if an Auto scheduler file with the name you entered in step 2 already exists. Enter Y to overwrite the existing file with the new information.**

```
Create another AutoScheduler file [Y/N*]: [ENTER]
```

4. **Press [ENTER] to select N, and exit the dialog.**

Now you are ready to start the Dual Channel run.

Storing the Autoscheduler File for Use at a Later Date

If you are creating the Autoscheduler file for use at a later date, name it according to its function. For example, name a file H2OSAMP.UA1 that analyzes water samples. When you are ready to use the file for an autoscheduled run or sequence, rename it to M:AUTOCALL.UA1. When the runs are finished, return the file to its original name. This renaming operation is necessary because the Autoscheduler only works with files named M:AUTOCALL.UA1.

Valid Autoscheduler File Extensions

Valid file extensions are `.UA1`, `.UA2`, and `.UA3`. Some examples of valid Autoscheduler file names are `B:AUTOCALL.UA2` and `M:AUTOCALL.UA3`.

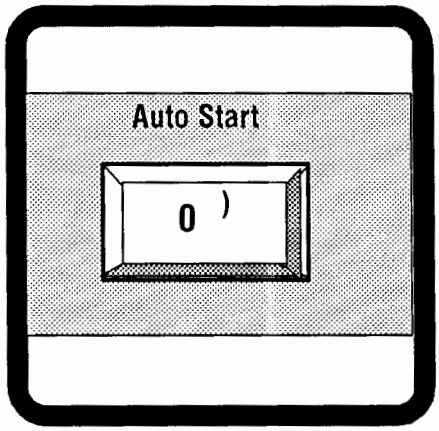
- If you do not supply the .UA1 file extension, the program does it for you.
- If you do not specify a disk drive, M: will automatically be assigned.
- If you do not specify a file name, `M:AUTOCALL.UA1` is automatically assigned as the Autoscheduler file.

Example

```
      WELCOME TO THE HP 3396 AUTOSCHEDULER (REV B.00.01)

AT ANY ':' PROMPT:  'Q'[ENTER] QUITS
                    'S'[ENTER] STARTS OVER
IN EDIT MODE    :   'D'[ENTER] TERMINATES EDITING

**********************************************************************
NOTE: Default response to any [Y/N*] : prompt is negative.
      In EDIT MODE pressing only [ENTER] maintains the existing value
      of an option. In CREATE MODE pressing only [ENTER] sets the
      option to the default value, or to a space if no default exists.

**********************************************************************

Edit an existing AutoScheduler file or create a new one [E/C*]: C

Will this AutoScheduler file use the buffered channel [Y/N*]: Y


RENAMING DATA FILES
-------------------
Data file name prefix for realtime channel: [ENTER]
Data file name prefix for buffered channel: [ENTER]


SPECIFYING METHOD AND SEQUENCE FILES
------------------------------------

Method file for realtime channel: M:METH1.MET

Method file for buffered channel: M:METH2.MET

Enter buffered channel peak width [BFR PK WD 0.01-2.50]: [ENTER]

Sequence file for realtime channel: M:SEQ1.SEQ

Sequence file for buffered channel: M:SEQ2.SEQ


SCHEDULING AUTOCALL PROGRAMS
----------------------------
Schedule postrun AUTOCALL programs for realtime channel  [Y/N*]: N

Schedule postrun AUTOCALL programs for buffered channel  [Y/N*]: Y

AUTOCALL filespec for buffered channel : E:AUTO_2CH.BAS

AUTOCALL filespec for buffered channel : [ENTER]

Schedule additional postrun AUTOCALL programs [Y/N*]: N

Enter 7673 inj connected to 5890 det A [F*/R/N(one)]: F

Enter 7673 inj connected to 5890 det B [F/R*/N(one)]: R

Store the current AutoScheduler file ('N' re-edits) [Y/N*] Y

Enter AutoScheduler file name [M:AUTOCALL.UA1*]: [ENTER]

M:AUTOCALL.UA1 - Exists, OK to overwrite [Y/N*]: Y

Create another AutoScheduler file [Y/N*]: [ENTER]
```

3

Starting the Dual Channel Run



In this chapter....

Starting the Dual Channel Run or Sequence

After you have prepared the Autoscheduler file for dual channel operation, as described in section 2, you can start the run or the sequence using Function Key [0] .

If you start a run or sequence by pressing the [START] *button on the integrator, GC, etc., the run will start but the Dual Channel program will not execute.*

After each run, the postrun program(s) specified in the M:AUTOCALL.UA1 Autoscheduler file will execute. In this example, the only scheduled postrun program is E:AUTO_2CH.BAS, the Dual Channel program.

1. **Press Function Key [0] to initiate the Auto Start dialog.**

When you press key [0], labeled **Auto Start**, a program called AUTO_TOP performs a number of pre-run tests that check INET status, program space, etc, to ensure that the postrun programs will execute. As each test is performed, the integrator prints a confirming message.

```
VERIFYING SINGLE/DUAL CHANNEL, BASIC WORKSPACE
INSTALLING/VERIFYING INET PARAMETERS
SEQUENCE FILE -> BUFFERED = M:SEQ2.SEQ // REALTIME = M:SEQ1.SEQ
METHOD FILE -> BUFFERED=M:METH2.MET // REALTIME = M:METH1.MET
SETTING BASIC SPACE, DUAL CHANNEL 7673
AUTOSCHEDULER WORKFILE COMPATIBLE WITH SYSTEM
```

When everything checks okay, you are prompted to start the run or sequence.

```
Start a Run or Sequence or Quit [R*/S/Q]: [ENTER]
```

2. **Press [ENTER] to start the run, or enter S to start a sequence.**

If you need to abort the run at this point, enter **Q** to quit. Then re-edit the method and sequence, or fix whatever needs fixing. When you are ready to start, press the **Auto Start** key.

What Happens During the Run

When you start a Dual Channel run by pressing the **Auto Start** key:

1. Pre-run tests check INET status, program space, etc.
2. If everthing checks out, the integrator prints a start prompt:
   `Start a Run or Sequence or Quit [R*/S/Q]:`
3. When you start the dual channel run, data for the first channel data is processed in real-time (`M:AUTOCALL.UA1` method and sequence).
4. During the run, the second channel of data is also being stored in a buffer named `"Q:"`, located on the HP 5890 INET buffered interface board.
5. When the real-time run ends, data buffering stops and the Auto scheduler program takes postrun control.

The Autoscheduler program:

- Installs the method and sequence files specified by `M:AUTOCALL.UA1` (if any) for the buffered channel.
- Executes the Dual Channel program, called `AUTO_2CH`, which you previously scheduled as a postrun program (in chapter 2).

The Dual Channel program:

- Determines the correct source of sample table indexing: run indexing, 7673 bottle indexing, or BCD input indexing; it also reads the indexed entry from the sample information table.

  If the index cannot find a sample table entry, the default sample information in option 7 is used.
- Performs an `ANALYZE "Q:"` operation that integrates the buffered data of the second channel.
- Performs the calibration calculations (if appropriate).
- Returns control to the Autoscheduler.

  When the dual channel run is finished, the Autoscheduler restores the real-time calibration file, sample table index, and the method and sequence files for the next run.

How Default Buffered Data File Names are Chosen

The first character of the Signal Data, Processed Peak, and Report Files for the second buffered channel is the letter B, which identifies them as being from the buffered channel.

For example:

When the buffered channel method default storage device is M:, the signal file for the buffered channel is named `M:B_SIGNAL.RAW`

Signal files that are stored to M: will be overwritten unless Autoname is used to rename them.

You can find more information about how result files are named in section 4.

Stopping an Autoscheduled Run or Sequence

There are two ways that the run or sequence may be stopped:

- Press **[STOP]**.
- A fatal error is detected by an application program.

Restarting an Autoscheduled Run or Sequence

When an autoscheduled run or sequence is stopped with the **[STOP]** key, simply press Key [0], the **Auto Start** key, to restart the run or sequence.

When an autoscheduled run or sequence is stopped prematurely due to a fatal error, an error message is printed.

1. Follow the instructions given by the message.
2. If the message contains no instructions, look up the possible cause and user action for the error message(s) or press Key [0] to start error recovery.
3. Press Key [0] again to start another run or sequence.

4

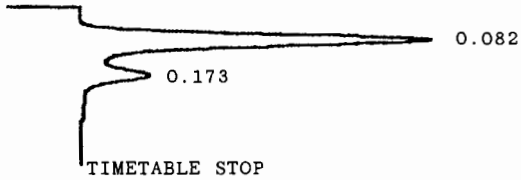
Interpreting the Results

In this chapter....

The Realtime Channel Results

The realtime channel results of a Dual Channel run run are shown below.

```
*  RUN #    1      JUL  28, 1990  13:46:51
START
```

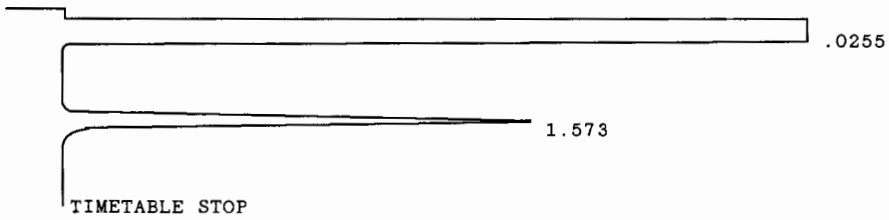



```
Closing signal file M:SIGNAL    .BNC
Storing processed peaks to M:Q1EB7A13.PRO

RUN#     1          JUN  28, 1990  13:46:51

METHOD NAME:  M:METH1.MET

SIGNAL FILE:  M:SIGNAL.BNC
PEAK FILE  :  M:Q1EB7A13.PRO
AREA%
      RT      AREA TYPE  WIDTH      AREA%
    .082    369702   BV   .039   81.85689
    .173     79010   VB   .042   18.14311

TOTAL AREA=448712
MUL FACTOR=1.0000E+00
```

The Buffered Channel Results

The buffered channel results of the same Dual Channel run are shown below.

```
BUFFER pk-wd=0.20  Sig 2 RUN #    1      JUL  28, 1990  13:48:11
START
```




```
Closing Signal File M:B_SIGNAL.BNC
Storing processed peaks to M:B1EB8803.PRO

BUFFERED RUN #   1            JAN  1, 1990  02:48:21

METHOD NAME:  M:METH2.MET

SIGNAL FILE: M:B_SIGNAL.BNC
PEAK FILE  : M:B1EB8803.PRO

      RT      AREA TYPE    CAL#       AMOUNT
    .255    262736   BB      1       899.988
    .755     51142   BH      2R      193.752

TOTAL AREA=313878
MUL FACTOR=1.0000E+00

               ===============      END OF RUN      ===============
```

Naming the Result Files

Result files from the real-time and buffered channels are named differently to make them distinguishable.

Dual Channel Only

The Dual Channel program adds a "B" (for buffered data) to the Signal Data, Processed Peak, and Report Files names of the real-time channel to produce result file names for the buffered channel.

For example:

- If the real-time signal file is named `M:SIGNAL.BNC`, the signal file for the buffered channel is: `M:B_SIGNAL.BNC`
- If the real-time signal file is named `A:Q1A34E12.BNC`, the signal file for the buffered channel is: `A:B1A34E12.BNC`
- If the real-time processed peak file is `A:Q1A34E12.PRO`, the processed peak file for the buffered channel is `A:B1A34E12.PRO`

Dual Channel with Autoname

If you are running a number of samples and want to rename the result files of each run, you must schedule the Autoname program.

- For more than a few runs, you should store the result files on an external disk drive (not the M: disk)
- Processed peak result files stored to M: will have the following format for the real-time and buffered channels respectively:

  M:SIGNAL.BNC -> M:Qnnnnnnn.PRO

  M:B_SIGNAL.BNC -> M:Bnnnnnnn.PRO

When using the Autoname program with Dual Channel, select prefixes to identify the real-time and buffered channels. A valid prefix starts with a letter followed by any combination of letters, numbers, and the underscore character. The prefix may be up to four characters long.

Example:

If you select the following prefixes when scheduling the Autoname program:

```
Data file name prefix for realtime channel:RTST
Data file name prefix for buffered channel:BTST
```

Assuming Run # 1 has just completed, the result files for the real-time channel would have the following format:

```
Signal file M:SIGNAL.BNC renamed M:RTST001.BNC
Processed peak file M:Q1EA749A.PRO renamed M:RTST001.PRO
```

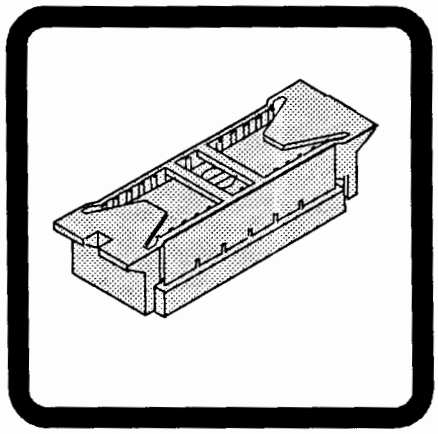
The result files for the buffered channel would have the following format:

```
Signal file M:B_SIGNAL.BNC renamed M:BTST001.BNC
Processed peak file M:B1EA749A.PRO renamed M:BTST001.PRO
```

See the "Using Appplication Programs" manual for more information about how the Autoname program renames the result files.

5

Installing the Dual Channel Accessory



In this chapter....

Pre-Installation Checklist

Before you start, check that the following statements are true:

- ☐ The integrator is turned off and unplugged.
- ☐ No other devices are connected to the integrator.

To perform this installation, you will need the following parts:

- ☐ Anti-static wriststrap
- ☐ Pry tool
- ☐ Dual Channel EPROM
- ☐ Dual Channel Keyboard overlay

These parts are included in the Dual Channel accessory package.

WARNING

HAZZARDOUS VOLTAGES ARE PRESENT IN THE INTEGRATOR WHEN THE INSTRUMENT POWER CORD IS CONNECTED. AVOID A POTENTIALLY DANGEROUS SHOCK BY DISCONNECTING THE POWER CORD BEFORE GOING ON WITH THE INSTALLATION PROCEDURE.

CAUTION

Board components can be damaged by static electricity. Use a properly grounded static control wrist strap when installing the EPROM.

Installation Procedure

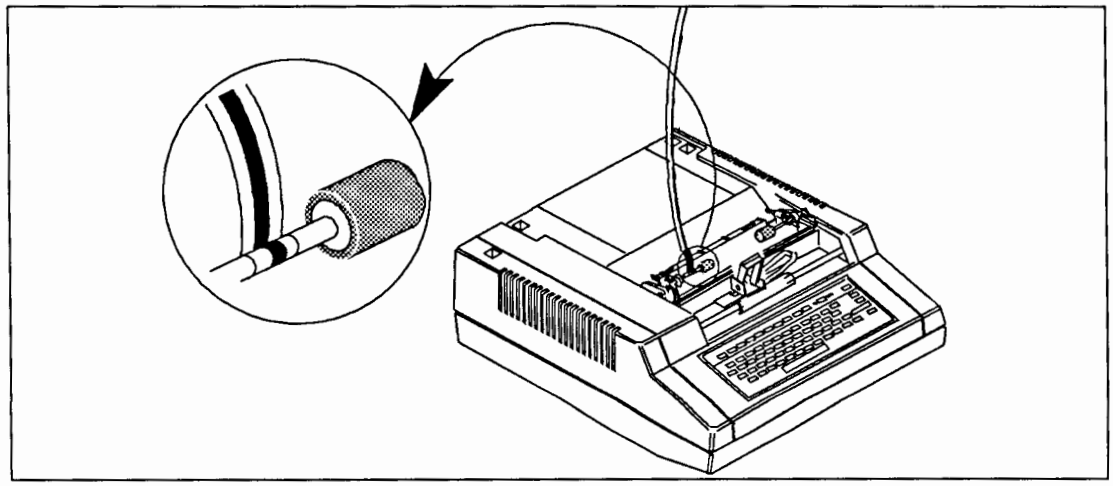
If you have reviewed the pre-installation checklist and read the warning and caution messages, you are ready to proceed with the installation.

Remove the Printer Window

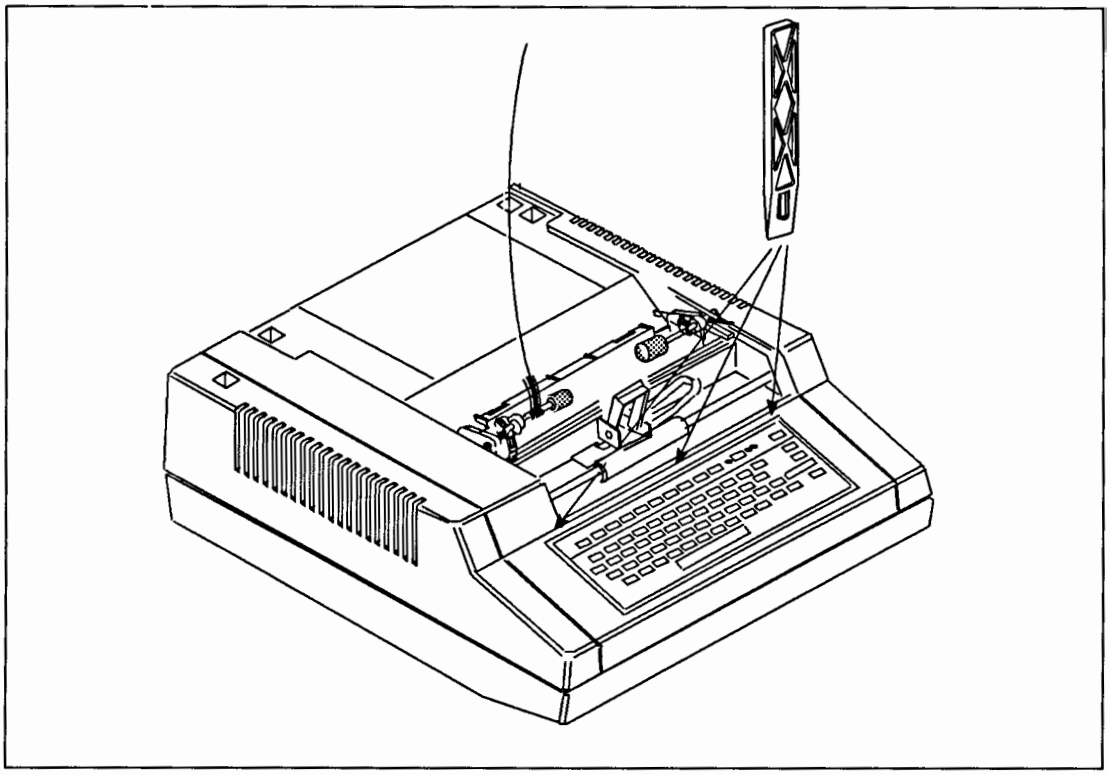
1. **Rotate the window up.**
2. **With the thumb and forefinger, apply slight left-to-right pressure to the left-hand side of the window to release the window from the locking tab, and lift the window up. Notice that the tab on the left-hand side is slotted.**

Apply the Anti-Static Wrist Strap

1. **Unwrap the first two folds of the disposable anti-static wrist strap included in the accessory kit.**
2. **Wrap the exposed adhesive side firmly around your wrist.**
3. **Unroll the wrist strap and peel the liner from the copper foil at the opposite end.**
4. **Wrap the copper foil end of the wrist strap around the metal shaft of the left paper hold-down. See drawing below.**



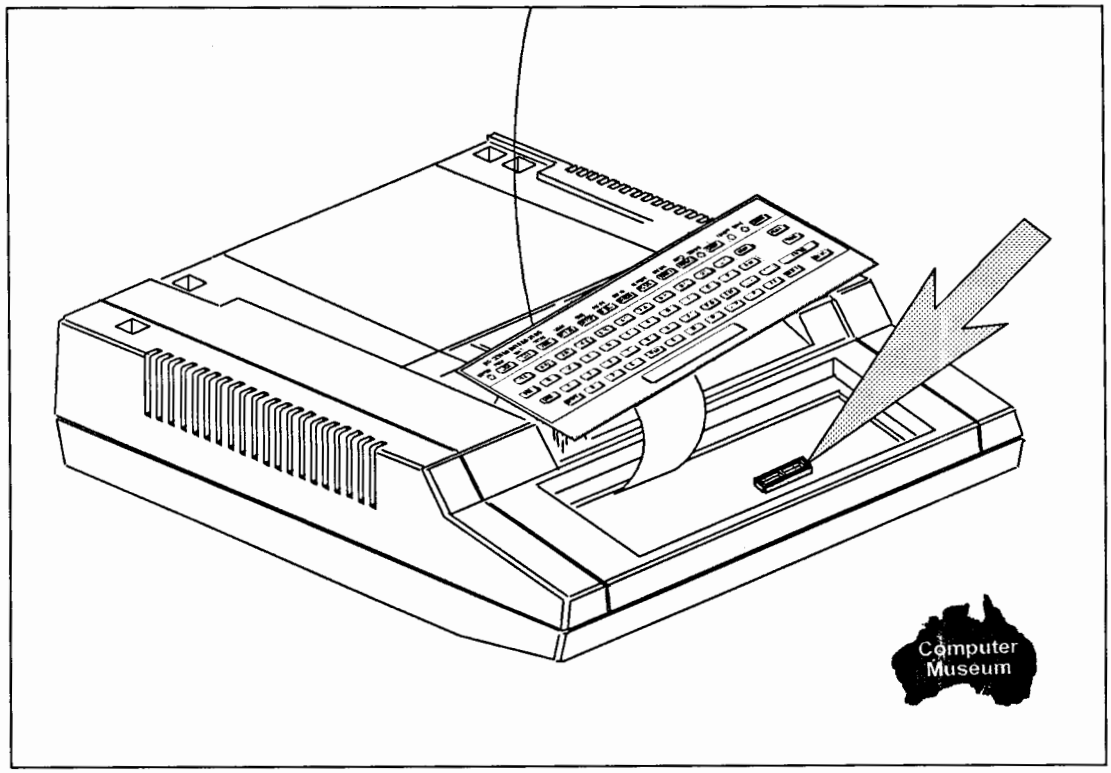
Remove the Keyboard



1. **Using the plastic pry tool, carefully pry open the top of the integrator keyboard.**

2. **Place the keyboard on the print mechanism, being careful not to crimp or damage the ribbon connector.**

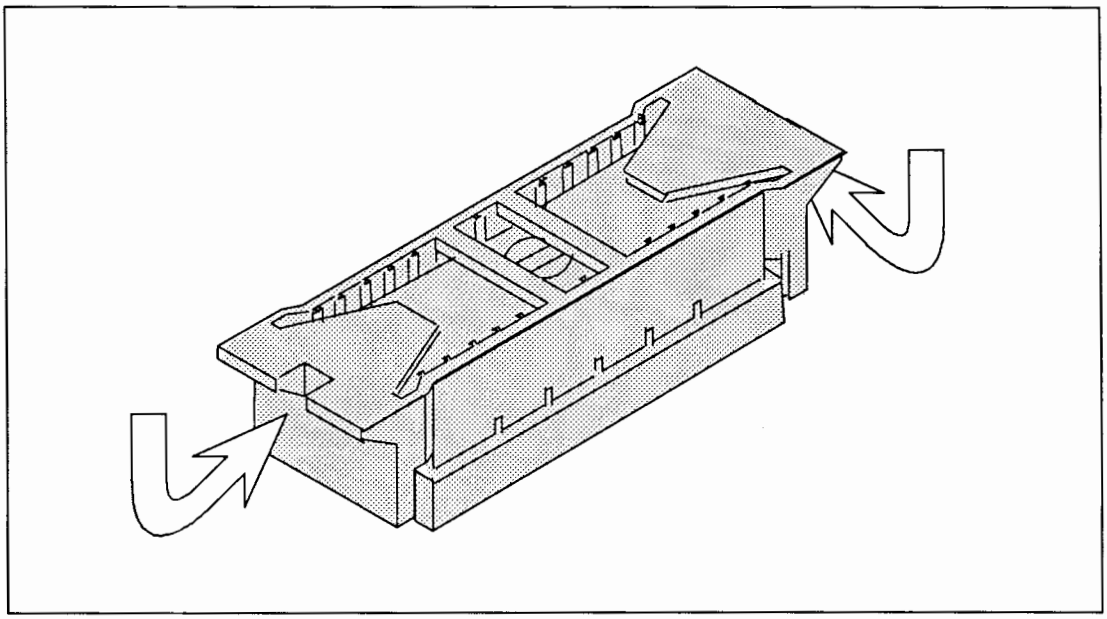
Locate the Original EPROM



1. **Use the drawing above to locate the original EPROM.**

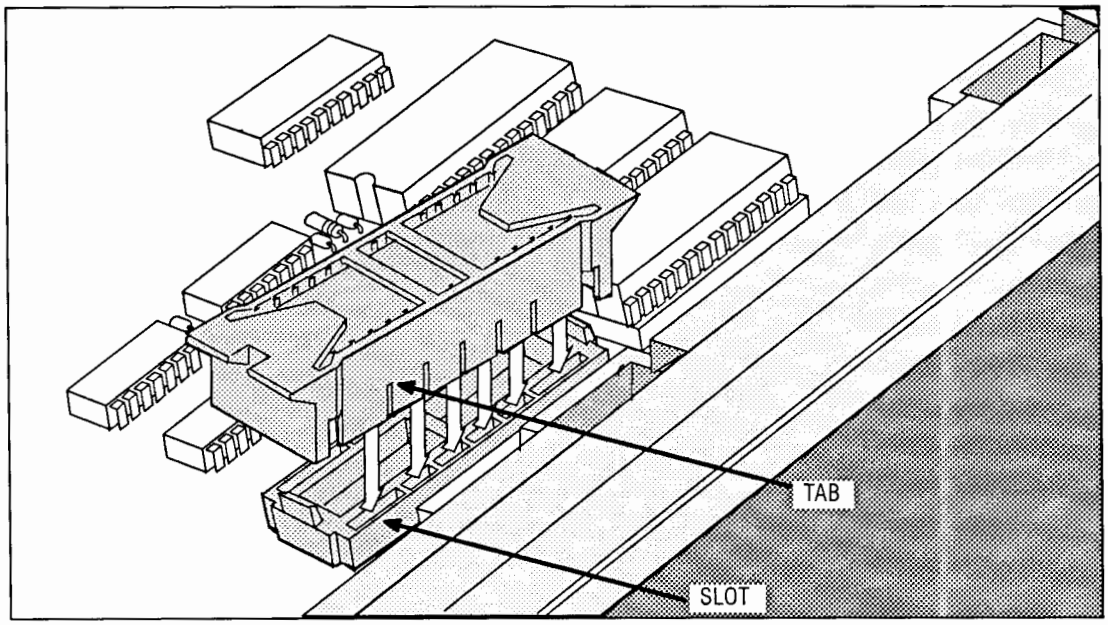
Remove the Original EPROM

When removing the original EPROM, follow the pre-installation checklist and heed the installation warning and caution messages.



1. **Put your right and left forefingers under the right and left EPROM wing tabs.**
2. **Firmly hold the tabs, pulling upward.**
3. **Raise the tips of your forefingers, gently rocking the EPROM by exerting pressure first on one wing tab, then the other.**
4. **Continue to rock the EPROM out of the socket's slots until it is free.**

Insert the New EPROM into the Socket



1. **Place the EPROM over the socket so the narrow tabs align with the narrow slots in the socket. The cutout on the EPROM must face to the left if you are looking at it from the front of the integrator.**

2. **Hold the EPROM at an angle, and gently guide the narrow tabs into the narrow slots.**

3. **Rotate the EPROM downward, letting the wide tabs just meet but not enter the tops of the wide sockets.**

4. **Gently squeeze the middle of the EPROM, and press the wide tabs into the wide slots until the EPROM snaps into place.**

5. **Push firmly in the center of the EPROM to ensure that it is completely inserted.**

Replace the Keyboard

1. **Place the tabs located at the bottom of the integrator keyboard into their alignment slots, and lower the keyboard into position.**
2. **Gently press the top edge of the integrator keyboard until it snaps into place.**

Remove the Anti-static Wrist Strap

1. **Remove the copper foil end of the wrist strap from the integrator.**
2. **Discard the disposable wrist stap.**

Replace the Printer Window

1. **With the keyboard facing you, place the printer window in its original orientation, with the slotted tab on the left.**
2. **Place the right, non-slotted tab over the molded pin.**
3. **Place the slot of the right-hand, slotted tab against the molded pin.**
4. **Gently press the slotted tab into place over the molded pin until it snaps into place.**

Power Up and Verification

After you have installed the EPROM, power up and verify proper integrator and application program operation. If you encounter any problems at this point, refer to the "Installation and Service" manual.

1. **Re-connect the power cable to the integrator and power on the integrator by pressing the LINE power switch on the rear panel of the integrator.**

   The integrator begins its power on self tests. It starts by printing:

```
 !"#$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcde
fghijklmnopqrstuvwxyz{|}~9:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\}^_`abcde
```

```
    Performing self test; unit will

  accept commands when KEYBD led is ON

*
```

   It then pauses while the self test continues for about 30 seconds. If the self test procedure is successful, the integrator prints the revision banner.

```
Model 3396B PLUS BASIC, Rev D.00.05 3/16/90
  Z80/HOST/INET/PP Rev = m/D/m/k w/ GC_01
```

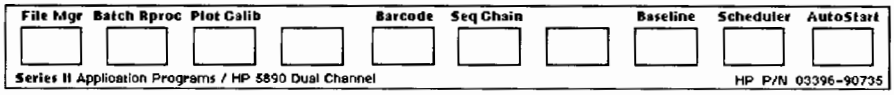
2. **When the asterisk (*) prompt appears, type ASSIGN [ENTER] to list the function key assignments.**

```
*ASSIGN

KEY         FILE NAME
 0         E:AUTO_TOP.BAS
 1         E:FILEMNGR.BAS
 2         E:BATCHREP.BAS
 3         E:PLCALC96.BAS
 4         E:MAX_MDIR.BAS
 5         E:BARMETH .BAS
 6         E:SEQCHAIN.BAS
 8         E:USER_INT.BAS
 9         E:ASDIALE .BAS

*
```

   Congratulations! You have succesfully installed the EPROM and are ready to use the HP 5890 Dual Channel accessory. Refer to the "Using Application Programs" manual located in the operating manual binder for information about the other application programs.

Installing the Keyboard Overlay

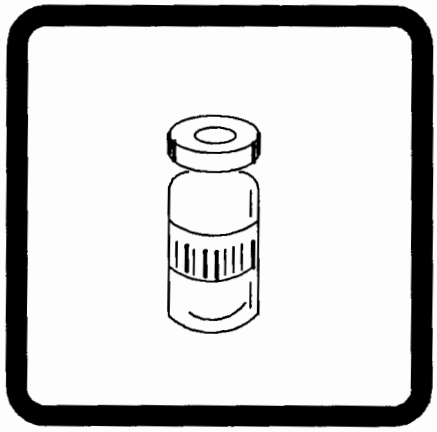
The keyboard overlay conveniently identifies which key you must press to start a certain application program.



1. **Position the holes in the keyboard overlay over the numeric keys. The label "File Mgr." should be above the key labelled "1".**

2. **Install the keyboard overlay over the numbered keys.**

Appendix A



In this chapter.....

Automating with Barcoded Methods

The Barcode Method program operates with the real-time channel only, using a single injector and a single method. It is intended for users who must have positive verification of the sample and the analyitical conditions.

Up to 100 vials can be analyzed automatically with any existing methods. When a BASIC program is assigned to Key [0] or BASIC programs are specified in the Autoscheduler file named M:AUTOCALL.UA1, they will execute at the end of each run as postrun programs.

To prepare an automated analysis, apply the labels to the sample vials, and place the vials into the sample tray.

When started, the Barcode Method program prompts you to assign a method name to a barcode character. Suppose you enter `W` for the barcode method character and `TESTMETH.MET` as the assigned method name. When you run the samples, all vials with `W` as the first character will be analyzed with `TESTMETH.MET`.

Consider a vial with the barcode label `W201TEST` where:

`W`	Identifies `TESTMETH.MET` for this vial.
`2`	Specifies HP 7673 injector volume set to stop 2.
`0`	Identifies the sample as unknown, not a calibration sample.
`1`	Specifies one injection from this vial.
`TEST`	File Renaming Suffix.

Barcode characters two, three, and four determine the injection volume, calibration level, and number of injections. Because they must be coded and printed beforehand for the samples being analyzed, an on-demand barcode printer is highly recommended. Barcode characters five, six, seven, and eight have no effect on the analysis.

Barcode Manuals

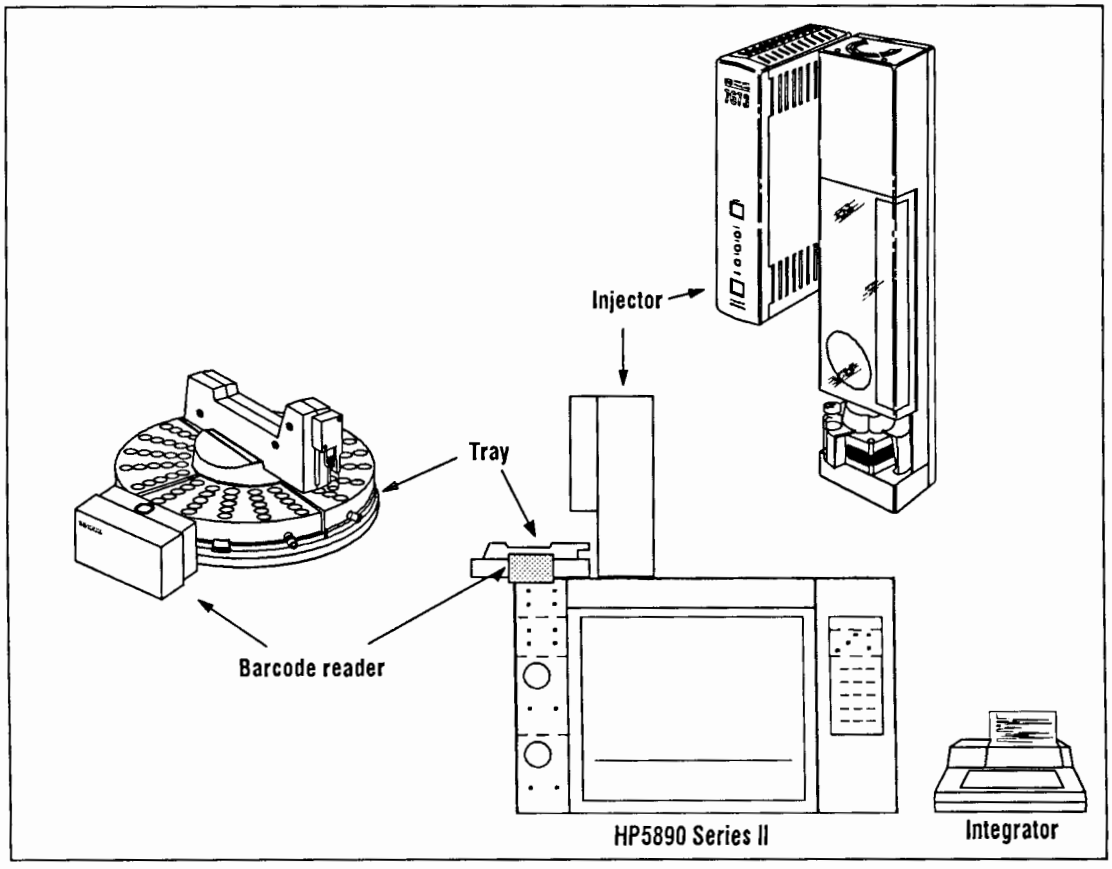
Bar Code Reader Operating Manual	HP p/n 18587-90100
Bar Code Reader Installation and Service	HP p/n 18587-90120

Hardware Requirements

To run the Barcode Method program, you must have:

- HP 5890A or Series II Gas Chromatograph
- HP 3396 Series II Integrator
- One HP 7673 Automatic Sampler with tray
- HP 18587 Barcode Reader.

The Barcode Method program does not support dual injector control.



Hardware Required to Run the Barcode Method Program.

Coding the Barcode Labels

The barcode label on each vial has eight characters. The first four characters are coded to determine how the sample in the vial will be analyzed. The other four barcode characters are not coded and have no effect on the analysis.

The barcode characters are coded in the following format:

Method Character

The method character is a letter from A to Z that tells the Barcode program which method to use when analyzing a sample vial. You assign the method character to a method file in the Barcode program dialog. In the figure above, a **C** was used to code a method that will perform first-level recalibrations.

You can only assign a method character to an existing method file.

Injection Volume

The second barcode character determines the injection volume. This digit (one to five) corresponds to the 7673 Automatic Sampler volume setting (Stop 1 to Stop 5).

Calibration Level

The third character, when nonzero and non-blank, causes the sample to perform a recalibration. The number corresponds to the level you wish to recalibrate. A zero indicates that this is not a calibration sample.

Calibration Character	Calibration Level
9	9
8	8
.	.
.	.
0	none
A	–1
B	–2
.	.
.	.
I	–9

Number of Injections

The fourth character sets the number of injections from this vial.

INJ / BOTTLE Character	INJ / BOTTLE
0	invalid
1	1
2	2
.	.
.	.
A	10
B	11
.	.
.	.
F	15

Note: More than three injections per vial can cause partial vacuum resulting in poor injection reproducability.

File Renaming Suffix

The file renaming suffix is used for automatic file renaming. These four barcode characters can be any valid partial 3396 filename. A valid suffix is up to four characters from the set (A–Z), (zero–nine), and (_). The suffix can be used to differentiate two vials that use the same method. Trailing blanks will be ignored.

Even if you do not store result file data (Signal File, Processed Peak, or Report Files), you should supply a file renaming suffix.

If multiple vials have the same barcode label, Autoname cannot rename files for the remaining vials. This situation may result in lost data.

Preparing the Sample Vials

Before starting the Barcode program, you must prepare the sample vials:

- Each vial must have a properly coded barcode label.
- Each method called for by a vial on its barcode label must already exist and contain calibration information.
- The barcoded vials must be loaded into the sample tray. They can be loaded in any order, but the tray must be loaded with samples contiguously from location one.

Supplying the Sample Information for the Method

The integrator analyzes sample vials using sample information obtained from the Default Sample Information supplied by the option 7 dialog.

Before running the Barcode program, you *must* save the appropriate option 7 values for each method associated with a character on a barcode label. When the Barcode program loads a method, it sets the option 7 values that are used by the integrator to generate reports.

To store the option 7 values in the method:

1. **Prepare or edit the method file as required to perform the sample analysis.**

2. **Prepare or edit the calibration (calibrated methods only).**

3. **Edit the parameters in the option 7 dialog.**

```
*  OP # 7 [ENTER]

DEFAULT SAMPLE INFORMATION
USE SAMPLE INFORMATION IN MANUAL RUN [Y/N*]: N

ISTD AMT [5.4321E+00]: 7.89 [ENTER]
SAMPLE AMT [5.4321E+00]: 7.89 [ENTER]
MUL FACTOR [5.4321E+00]: 7.89 [ENTER]
RECALIBRATION [Y/N*]: N
NAME:
REPORT MEMO:
```

Enter **N** for the "USE SAMPLE TABLE ..." and "RECALIBRATION [Y/N]" prompts.

Do not make "NAME" or "REPORT MEMO" entries.

4. **Save the method.**

Repeat this process to create all of the methods needed for the Barcode automated analysis.

Preparing the Sequence

Barcode requires a sequence to supply the injector parameters. They are not supplied by the barcode. The injector control parameters are listed below.

- Injections per Bottle (ignored by Barcode, see note)
- First Bottle (ignored by Barcode)
- Last Bottle (ignored by Barcode)
- Number of sample washes
- Number of pumps
- Viscosity
- Volume (ignored by Barcode)
- Number of solvent A washes
- Number of solvent B washes
- Priority sample (1 = YES)
- Capillary on-column.

1. **Prepare a sequence with the desired injector control parameters (listed above) before starting the Barcode program.**

   The injector control parameter settings of the currently active sequence will be used to analyze all of the barcoded samples. See the "HP 3396 Series II Operating Manual" for information about injector control parameters.

   Note: Injections per bottle must be greater than zero for an active injector.

Dual Injector Systems

To run the Barcode program with a dual injector system, you must disable the unused injector. See Appendix B for the instuctions to disable an unused injector.

Running the Barcode Program

Two barcode labels are used in this example:

C111CAL1	C is used to code a method that will perform first-level recalibrations. The HP 7673 sample volume will be set to one. Level 1 of the calibration will be updated with the results of this sample. The automatic sampler will make one injection from this vial.
W101TEST	W has been chosen to indicate that these are water samples. The HP 7673 sample volume will be set to one. No recalibration will be performed. The automatic sampler will make one injection from this vial.

When switched on, the default key assignment for the Barcode Method program is function key [5], labeled **Barcode**.

Unless you've changed the key assignment, pressing this key will start the Barcode Method dialog.

1. **Press function key [5] to start the Barcode Method program.**

```
WELCOME TO THE HP 3396 BARCODE METHOD PROGRAM (Rev.B.00.07)

At Any Prompt : [CTRL] [Q] [ENTER] Quits
              : [CTRL] [S] [ENTER] Starts Over
```

At any dialog input prompt, you can quit the program entirely by pressing [CTRL] Q. You can perform a "warm" restart of the program by pressing [CTRL] S.

```
Enter sequence file for barcode analysis: BARSEQ [ENTER]
```

2a. Enter the name of the sequence file you have prepared for the automated anaysis.

The sequence file supplies the injector control parameters (which are not supplied by the barcode).

```
Method characters already defined on AUG 10, 1990

Do you want to redefine? [Y*/N]: [ENTER]
```

2b. Dialog inputs are stored in a worklist file named M:BRCD_WKL.UA1**. If the barcode worklist file already exists, the integrator prompts you to redfine it before running samples.**

Enter Y or press [ENTER] to redefine the barcode worklist file with new user entries.

Enter N to start the analysis of samples with the current barcode worklist file.

Assigning Barcode Characters to the Method Files

The following steps assumes that no Barcode worklist exists. You will create a barcode worklist file named `M:BRCD_WKL.UA1` by assigning a unique barcode character (A–Z) to each method being used to analyze a sequence of samples.

```
Enter Barcode method character [A - Z]: C
```

3. **Enter the first character of the labels being used for the calibration samples.**

   The barcode method character will be assigned to a method in the next step. All vials with this first character will be run with the same method.

```
Enter assocated method name: A:WATCAL.MET
```

4. **Enter** WATCAL.MET **as the method you want assigned to the barcode method character** C**. If you do not specify a disk, the Barcode program assumes the RAM disk (M:).**

   You can assign, or pair, as many barcode characters and method names as you need to analyze different sample types.

```
Enter Barcode method character [A - Z]: W
```

5. **Repeat step 3 for the next set of barcoded vials.**

```
Enter assigned method name: A:POLWAT.MET
```

6. **Repeat step 4 to assign** POLWAT.MET **with the barcode method character** W**. If you do not specify a disk, the Barcode program assumes the RAM disk (M:).**

   Continue to enter barcode method-character/method-name pairs for each method required to analyze your batch of samples.

   - All vials with **C** as the *first* barcode character will be analyzed using the A:WATCAL.MET method.
   - All vials with **W** as the *first* barcode character will be analyzed using the A:POLWAT.MET method.

Running the Samples

When you have entered all of the barcoded methods, press **[ENTER]** at the barcode method character prompt to end the dialog and start the analyses.

```
Enter barcode method character [A - Z]: [ENTER]
```

1. The HP 7673 Automatic Sampler picks up vial one and delivers it to the barcode reader.
2. The Barcode program reads and decodes the vial's barcode characters one through four (in this case = `C111`).
3. The method to be loaded is identified by barcode character one (`C`), the barcode method indicator. The injection volume, identified by barcode character two, is set to stop one.
4. The automatic sampler injects the sample.
5. When the run is finished, if there are result files they are renamed by the Autoname program to the first eight barcode characters.

   ```
   Signal file A:Q1EABB90.BNC renamed A:C111CAL1.BNC
   ```

   For bottles with more than one injection per bottle, the "number of injections" character is replaced by the current injection number.
6. If barcode character three is nonzero, the sample is identified as a calibration and the specified level of the calibration table is updated. A zero indicates a sample containing unknown amounts.
7. Barcode character four identifies the number of injections (1). If it is more than one, steps four through six repeat until all the injections have been made.
8. The Barcode program saves the calibration table in the method.
9. The entire process repeats with the next vial, and continues until the sampler encounters an empty tray location.

Note: Barcode characters two, three, and four must be coded (printed) beforehand for the specific samples being analyzed. They determine the injection volume, calibration level, and number of injections respectively. You cannot assign values to these barcode characters in the program dialog. See "Obtaining Barcode Labels" at the end of this section.

The Barcode Worklist File

Your dialog inputs are stored in a barcode worklist file named - M:BRCD_WKL.UA1.

- You can store a worklist file by renaming it. Choose a name that will make the file easy to identify in the future.
- To restore the file for use, simply rename it to M:BRCD_WKL.UA1.

Restarting an Interrupted Analysis

An analysis in a Barcoded series of runs can be interrupted by an error condition or by pressing the **[BREAK]** key.

To restart the program:

1. **Press function Key [5].**

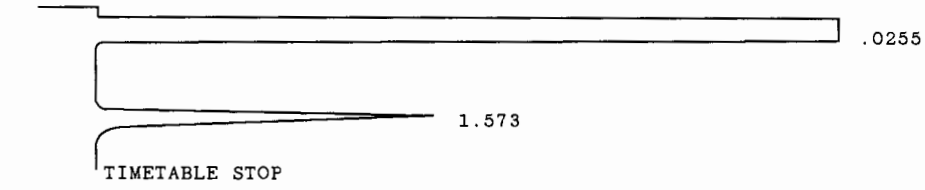
   The program restarts by printing the Header message followed by a prompt that lets you choose how to continue.

```
WELCOME TO THE HP 3396 BARCODE METHOD PROGRAM (Rev.B.00.07)

At Any Prompt : [CTRL] [Q] [ENTER] Quits
              : [CTRL] [S] [ENTER] Starts Over


Continue from [BREAK] or Start Over [C*/S]:
```

2. **Choose if you want to continue or restart Barcode analysis.**

   - Enter **C** to continue sample analysis from the next vial.
   - Enter **S** to restart the dialog from the "Enter sequence file .." prompt (if no barcode worklist file exists).

```
==============================
         BEGIN ANALYSIS
         SAMPLE `C111CAL1'
==============================

Loading Method    A: WATCAL.MET

 Waiting for System Readiness
RUN #   1     JAN  1, 1990  02:44:10
 START
```

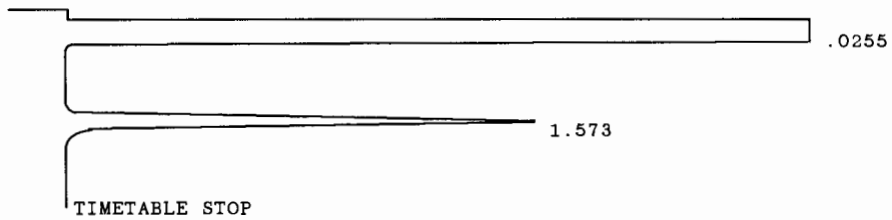



```
 Closing Signal File A:Q1EB8752.BNC
 Storing processed peaks to A:Q1EB8752.PRO

 RUN #   1           JAN  1, 1990  02:44:10

 SAMPLE NAME: WATERCAL1          SAMPLE#   1

 SIGNAL FILE: A:Q1EB8752.BNC
 PEAK FILE  : A:Q1EB8752.PRO
 ESTD%-AREA

      RT      AREA TYPE    CAL#       AMOUNT
    .255    262736   BB      1       900.122
    .755     26243   BH      2R       99.997

 TOTAL AREA=288979
 MUL FACTOR=1.0000E+00



 Barcode ID = "C111CAL1"
```

```
ESTD
REF % RTW:    5.000    NON-REF % RTW:    5.000

LEVEL: 1               RECALIBRATIONS: 2

CAL#      RT      LV        AMT         AMT/AREA
  1      .255       1     9.0012E+02    3.4256E-03
  2R     .755       1     0.9999E+02    3.8110E-03

CAL#       NAME
  1    WATER
  2    M-CHLORIDE

CALIBRATION OPTIONS
RF of uncalibrated peaks .... 0.0000E+00
Calibration fit ............. P
Disable post-run RT update .. NO
SAMPLE AMOUNT ............... 0.0000E+00
MUL FACTOR .................. 1.0000E+00


Signal file A:Q1EB8752.BNC renamed A:C111CAL1.BNC
Processed peak file A:Q1EB8752.PRO renamed A:C111CAL1.PRO
```

Note: Result files are renamed to the vial's first eight barcode characters.

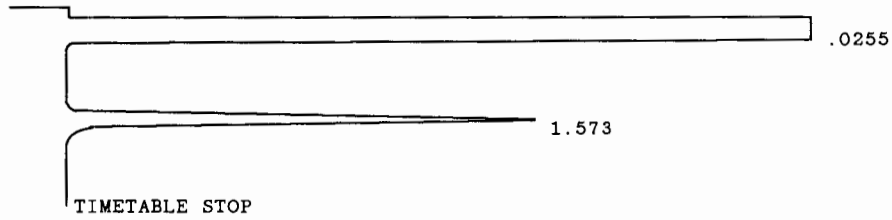
```
==============================
         BEGIN ANALYSIS
         SAMPLE `W101TEST´
==============================

Loading Method     A: POLWAT.MET

 Waiting for System Readiness
 RUN #   2      JAN  1, 1990  02:48:21
 START
```




```
  Closing Signal File A:Q1EB8803.BNC
  Storing processed peaks to M:Q1EB8803.PRO

  RUN #   3             JAN  1, 1990  02:48:21

  SAMPLE NAME: BOTTLE TWO           SAMPLE#   2

  SIGNAL FILE: M:Q1EB8803.BNC
  PEAK FILE  : M:Q1EB8803.PRO
        RT      AREA TYPE    CAL#       AMOUNT
      .255    262736   BB      1        899.988
      .755     51142   BH      2R       193.752

  TOTAL AREA=313878
  MUL FACTOR=1.0000E+00

  Barcode ID = "W101TEST"
  Signal file A:Q1EB8803.BNC renamed A:W101TEST.BNC
  Processed peak file A:Q1EB8803.PRO renamed A:W101TEST.PRO
```

Note: Result files are renamed to the vial's first eight barcode characters.

```
==============================
         BEGIN ANALYSIS
         SAMPLE `W101CONT'
==============================

Loading Method    A: POLWAT.MET

 Waiting for System Readiness
 RUN #   3     JAN  1, 1990  03:08:23
 START
```




```
 Closing Signal File A:Q1EB8855.BNC
 Storing processed peaks to M:Q1EB8855.PRO


 RUN #   3            JAN  1, 1990  03:08:23

 SAMPLE NAME: BOTTLE THREE          SAMPLE#   3

 SIGNAL FILE: M:Q1EB8855.BNC
 PEAK FILE  : M:Q1EB8855.PRO

      RT      AREA TYPE    CAL#       AMOUNT
    .255    262745   BB      1        899.997
    .755     51232   BH      2R       193.811

 TOTAL AREA=313977
 MUL FACTOR=1.0000E+00

 Barcode ID = "W101CONT"
 Signal file A:Q1EB8855.BNC renamed A:W101CONT.BNC
 Processed peak file A:Q1EB8855.PRO renamed A:W101CONT.PRO
```

Note: Result files are renamed to the vial's first eight barcode characters.

Obtaining Barcode Labels

You can obtain barcode labels from Hewlett-Packard, another vendor, or you can print them onsite.

Barcode Label Vendors

A number of vendors can supply custom made barcode labels. Hewlett-Packard has found that Computype, Inc is a suitable supplier of custom barcoded labels.

Computype, Inc
2285 West County Road "C"
St. Paul, MN 55113-2567
(612) 633-0633

Barcode Label Printers

To use this program most effectively, you should produce your own barcode labels. Onsite barcode printers are available from several manufacturers.

One such company is:

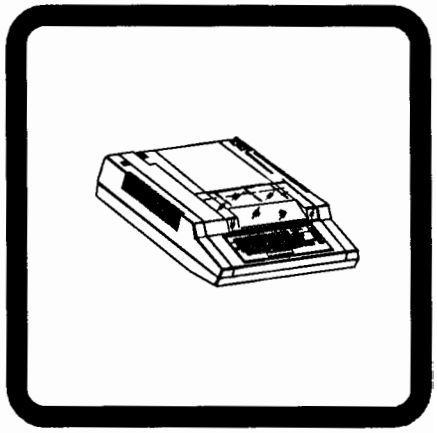
Monarch Marking Systems, Inc.
1 Kohnle Drive
P.O. Box 608
Dayton, Ohio 45401
(800)-263-4650

Note: Hewlett-Packard does not recommend any particular manuufacturer of barcode label printers.

CAUTION

Barcode labels have certain environmental considerations with regard to temperature, solvent resistance, etc. See the Bar Code Reader Installation and Service Manual (HP p/n 18587-90120) for more information.

Appendix B



In this chapter....

Analyzing the Second Channel of Buffered Data

Although running the dual channel program with the Autoscheduler is the preferred method of analyzing the second channel, there are several other ways of analyzing the second channel of buffered data.

- Manually analyzing the data from the system prompt.
- Assigning the dual channel program to Key [0].
- Running the dual channel program from a BASIC program.

Manually Analyzing the Data

There are two ways that you can manually analyze the buffered channel:

- You can analyze the buffered second channel data manually by entering the system command string below. The analysis will be based on the currently active method.

```
* ANALYZE Q:
```

- You can assign AUTO_2CH to an unused function key. The buffered data is analyzed when you press the assigned key (key 7 in the example below).

```
* ASSIGN 7, E:AUTO_2CH.BAS
```

Assigning the Dual Channel Program to Key [0]

Another means of automating dual channel is to assign the dual channel program to Key [0], as an AUTOCALL postrun program. AUTO_2CH will execute at the end of each run, analyzing the second channel of buffered data automatically. The advantage of this technique is that you do not have to prepare an Autoscheduler workfile. The major disadvantage of this technique is that only one method and sequence can be used for both channels.

The command string to assign the dual channel program to Key [0] is:

```
* ASSIGN 0, E:AUTO_2CH.BAS
```

Using the ANalyze Command in a Basic Program

You can place an AN "Q:" command in a BASIC program and then assign the BASIC program to Key [0].

The BASIC Program

```
10          ! myprog
20
30          ANALYZE "Q:"
40
50          END
```

```
>SAVE M:MYPROG.BAS
```

Assigning the BASIC Program to Key 0.

```
*  ASSIGN 0, M:MYPROG.BAS
```

After the analysis, the BASIC program executes as a postrun AUTOCALL program. It performs the AN Q:BFR.RAW command, analyzing the buffered second channel data using the real-time channel method parameters.

Using Non-INET Injectors

INET sampler control refers to the HP 7673 automatic sampler and the HP 7670, 7671, and HP 7672 family of automatic samplers using the HP 19405A INET sampler controller.

Non-INET sampler control refers to the use of a sampling valve, triggered sampler, etc to introduce samples. You may have to edit or prepare the sequence for INET/non-INET control and run/bottle indexing.

```
ALS INFORMATION
INET SAMPLER CONTROL [Y*/N]:

SAMPLE INFORMATION TABLE
BOTTLE OR RUN SAMPLE INDEXED [R/B*]:
```

Using Run Indexed Sequences

Typically, most calibrated sequences should be prepared using bottle number indexing (to access the sample table). There are, however, some instances where run number indexing of the sample table may be desired.

For example:

- A gas samping valve (unless a stream selection valve is used)
- A non-INET triggered sampling device
- An HP 19395A Headspace Analyzer

If you choose run indexing, the sequence table is indexed with the run number but the integrator still prints the Bottle ID number in the upper right corner of the report. The ID number may be supplied by either the INET sampler or 3396 BCD bottle connector.

Using Bottle Indexed Sequences

Non–INET samplers can also use bottle indexing. The integrator reads the Bottle ID from the cable connected to its BCD connector. The Bottle ID number is printed in the upper right corner of the report.

Using a Gas Sampling Valve

If you are using a gas sampling valve to introduce samples, edit or prepare the sequence for non-INET control and run number indexing.

```
ALS INFORMATION
INET SAMPLER CONTROL [Y*/N]: N [ENTER]

SAMPLE INFORMATION TABLE
BOTTLE OR RUN SAMPLE INDEXED [R/B*]: R [ENTER]
```

Each analysis in a sequence starts automatically when the GC is ready.

Note: A gas sampling valve requires a Remote/Start cable connecting the GC and the integrator. You must also program a timed event to swich the valve at the start of the run. If the sample is supplied by a stream selection valve, the BCD stream ID cable may be connected to the integrator's bottle number connector to provide sample table indexing. To accomplish this, the sequence should specify bottle number indexing.

Using a Triggered Automatic Sampler

A triggered sampler supplies a start signal to the 3396 remote start cable "start" input upon injection. Each run in the sequence starts at injection via the sampler start signal. When using a triggered sampler, edit or prepare the sequence for non-INET control and run indexing.

```
ALS INFORMATION
INET SAMPLER CONTROL [Y*/N]: N [ENTER]

SAMPLE INFORMATION TABLE
BOTTLE OR RUN SAMPLE INDEXED [R/B*]: R [ENTER]
```

Note: A triggered sampler requires a Remote/Start cable connecting the GC and the integrator. If the triggered sampler is supplied with a BCD Bottle ID cable, it can be connected to the integrator's Bottle number connector to provide sample table indexing. To accomplish this, the sequence should specify bottle number indexing. The remote start cable ready signal should be used to initiate susequent injection cycles within a sequence.

Resetting the Run Counter

When using run number indexing, set the run number counter to the initial number in the sequence sample table before you start each sequence.

* SET RUNNUM n [ENTER]	where n corresponds to the initial sample table entry

Disabling an Unused Injector of a Dual Injector System

In some Dual Channel applications you may wish to use only one injector of a two injector system.

For example:

- Splitting samples to two different detector types
- Splitting samples to two different columns

For these configurations, you must perform the following steps to disable the unused injector. *If you fail to do this, incorrect barcodes and sample Id information will be printed on the reports.*

1. **Edit the ALS INFORMATION of the sequence for the inactive injector and set Inj/Btl to 0.**

2. **Check and, if necessary, edit the ALS INFORMATION of the sequence to associate the front injector with INET CHANNEL 1 and associate the rear injector with INET CHANNEL 2.**

```
POSITION (1 = FRONT , 2 = REAR)
 INET CHANNEL 1       1  -->        1 [ENTER]
 INET CHANNEL 2       1  -->        2 [ENTER]
```

These position assignments set the HP 7673 front injector to output data on channel 0 (CH 0) and the HP 7673 rear injector to output data on channel 1 (CH 1).

CH0 and CH1 are potential INET data paths for Bottle ID and barcode information for the front and rear injectors. Your goal is to disable these data paths for the unused injector.

3. Type [I] [N] and press [ENTER] to get a listing of the INET Configuration Table.

```
                    INET CONFIGURATION

ENTRY   MODEL     ADDR    DATA PATH          STATUS
-----   ------    ----    ----------         ------
  1     3396B       0     B0 CONS CH 0       ACTIVE
  2     7673A       9     B0 PROD CH 0       ACTIVE
  3     7673A       9     B0 PROD CH 1       ACTIVE

  4     3396B       0     C1 CONS CH 0       ACTIVE
  5     5890A      10     C1 PROD CH 0       ACTIVE
  6     5890A      10     C1 PROD CH 1       IDLE

  7     3396B       0     K0 PROD CH 0       ACTIVE
  8     7673A       9     K0 CONS CH 0       ACTIVE
  9     5890A      10     K0 CONS CH 0       ACTIVE

 10     3396B       0     S0 CONS CH 0       ACTIVE
 11     7673A       9     S0 PROD CH 0       ACTIVE  <- Front
 12     7673A       9     S0 PROD CH 1       IDLE    <- Rear
```

In this listing, entry 11 is the front injector Bottle ID data path, and entry 12 is the rear injector Bottle ID data path.

4. Edit the INET configuration table to deactivate the data path of the unused injector.

If the data path of the unused injector is already IDLE, leave it unchanged and go to step 5.

The Bottle ID data path for the front injector is 7673 S0 Producer for CH 0 and the Bottle ID for the rear injector is 7673 S0 Producer for CH 1.

To disable the front injector Bottle ID data path:

```
EXIT, CHANGE, OR HELP [E*/C/H]: C

CHANGE ENTRY NUMBER: -11 [ENTER]


CHANGE ENTRY NUMBER: [ENTER]
```

To disable the rear injector Bottle ID data path:

```
EXIT, CHANGE, OR HELP [E*/C/H]: C
CHANGE ENTRY NUMBER: -12 [ENTER]


CHANGE ENTRY NUMBER: [ENTER]
```

5. **If your system has a barcode reader installed, edit the INET configuration table to deactivate the barcode reader R0 Producer data path for the unused injector.**

   If the data path is already IDLE, leave it unchanged and go to step 6.

   The barcode reader data path for the front injector is 7673 R0 Producer for CH 0 and the rear injector is 7673 R0 Producer for CH 1.

6. **To use the other injector, you must set its data path to ACTIVE.**

   Only one injector bottle Id data path (S0 Producer) can be ACTIVE at a time. If you change an injector data path to IDLE to disable it, both injector data paths will be IDLE and disabled.

Example:

The data path for the front injector (entry 11) was changed from ACTIVE to IDLE to deactivate the front injector. However, this set both the front and rear injectors to IDLE.

To remedy this, you must activate the data path of the injector you intend to use. In this example, the rear injector data path (entry 12) must be enabled. You also must enable the S0 consumer (3396B) to complete the data path.

```
* IN  [ENTER]

                    INET CONFIGURATION
ENTRY   MODEL       ADDR    DATA PATH          STATUS
-----   ------      ----    -----------        ------
  1     3396B         0     B0 CONS CH 0       ACTIVE
  2     7673A         9     B0 PROD CH 0       ACTIVE
  3     7673A         9     B0 PROD CH 1       IDLE

  4     3396B         0     C1 CONS CH 0       ACTIVE
  5     5890A        10     C1 PROD CH 0       ACTIVE
  6     5890A        10     C1 PROD CH 1       IDLE

  7     3396B         0     K0 PROD CH 0       ACTIVE
  8     7673A         9     K0 CONS CH 0       ACTIVE
  9     5890A        10     K0 CONS CH 0       ACTIVE

 10     3396B         0     S0 CONS CH 0       IDLE
 11     7673A         9     S0 PROD CH 0       IDLE
 12     7673A         9     S0 PROD CH 1       IDLE



EXIT, CHANGE, OR HELP [E*/C/H]: C

CHANGE ENTRY NUMBER:  12 [ENTER]

CHANGE ENTRY NUMBER:  10 [ENTER]

CHANGE ENTRY NUMBER: [ENTER]
```

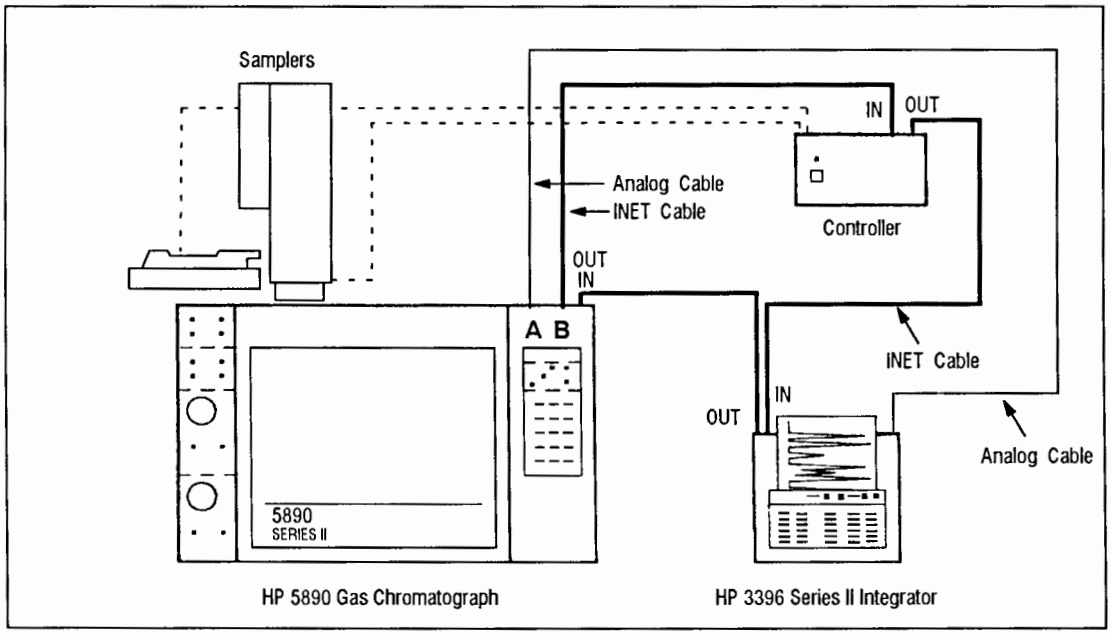
7. **After you edit the INET configuration, list the INET Configuration Table to confirm your changes.**

```
*IN

                    INET CONFIGURATION
ENTRY   MODEL      ADDR    DATA PATH          STATUS
-----   ------     ----    ----------         ------
  1     3396B       0     BO CONS CH 0       ACTIVE
  2     7673A       9     BO PROD CH 0       ACTIVE
  3     7673A       9     BO PROD CH 1       ACTIVE

  4     3396B       0     C1 CONS CH 0       IDLE
  5     5890A      10     C1 PROD CH 0       IDLE
  6     5890A      10     C1 PROD CH 1       IDLE

  7     3396B       0     KO PROD CH 0       ACTIVE
  8     7673A       9     KO CONS CH 0       ACTIVE
  9     5890A      10     KO CONS CH 0       ACTIVE

 10     3396B       0     SO CONS CH 0       ACTIVE
 11     7673A       9     SO PROD CH 0       IDLE
 12     7673A       9     SO PROD CH 1       ACTIVE


 EXIT, CHANGE, OR HELP [E*/C/H]: [ENTER]
```

Verify that the S0 and R0 producer objects for the selected injctor are active.

Inputting a Non-INET Signal

When inputting a non-INET detector signal, you can analyze one channel directly as an analog signal by connecting the detector's analog output to the integrator's realtime analog input, bypassing the INET loop.



In this configuration:

- The analog output of the Det A is connected to the integrator's realtime channel analog input. Det A may be a non-INET detector or a non-HP detector that cannot be connected to the integrator via INET.
- The INET output of Det B is connected to the integrator's INET input. This detector may be any 5890 detector with an INET output (TCD, ECD, FID).
- HP 5890 Signal 1 and Signal 2 are both set to Det B to guarantee that the correct 5890 signal is buffered. (See Buffered Signal Assignment, pg. C-4).

1. **Connect the hardware as shown on page B-11.**

2. **Set HP 5890 GC Signal 1 and Signal 2 to the INET detector you are using (Det A or Det B).**

3. **Type [I] [N] and press [ENTER] to get a listing of the INET configuration table.**

INET CONFIGURATION

ENTRY	MODEL	ADDR	DATA PATH	STATUS
1	3396B	0	B0 CONS CH 0	ACTIVE
2	7673A	9	B0 PROD CH 0	ACTIVE
3	7673A	9	B0 PROD CH 1	ACTIVE
4	3396B	0	C1 CONS CH 0	ACTIVE
5	5890A	10	C1 PROD CH 0	ACTIVE
6	5890A	10	C1 PROD CH 1	IDLE
7	3396B	0	K0 PROD CH 0	ACTIVE
8	7673A	9	K0 CONS CH 0	ACTIVE
9	5890A	10	K0 CONS CH 0	ACTIVE
10	3396B	0	S0 CONS CH 0	ACTIVE
11	7673A	9	S0 PROD CH 0	ACTIVE
12	7673A	9	S0 PROD CH 1	ACTIVE

The INET configuration table above shows a dual channel system with an HP 3396 integrator, two 7673 injecors and an HP 5890 with two INET detectors.

4. **Edit the INET Configuration Table to deactivate the active C1 producer. This disables the INET output of the 5890 Detector.**

```
EXIT, CHANGE, OR HELP [E*/C/H]: C
CHANGE ENTRY NUMBER: -5 [ENTER]


CHANGE ENTRY NUMBER: [ENTER]
```

5. **Check the INET configuration table to ensure that you have edited it properly.**

INET CONFIGURATION

ENTRY	MODEL	ADDR	DATA PATH	STATUS
1	3396B	0	B0 CONS CH 0	ACTIVE
2	7673A	9	B0 PROD CH 0	ACTIVE
3	7673A	9	B0 PROD CH 1	ACTIVE
4	3396B	0	C1 CONS CH 0	IDLE
5	5890A	10	C1 PROD CH 0	IDLE
6	5890A	10	C1 PROD CH 1	IDLE
7	3396B	0	K0 PROD CH 0	ACTIVE
8	7673A	9	K0 CONS CH 0	ACTIVE
9	5890A	10	K0 CONS CH 0	ACTIVE
10	3396B	0	S0 CONS CH 0	ACTIVE
11	7673A	9	S0 PROD CH 0	ACTIVE
12	7673A	9	S0 PROD CH 1	ACTIVE

The INET configuration table above now shows that the C1 producers have been deactivated. Both CH 0 and CH 1 are IDLE.

6. **Press Key [9] to run the Autoscheduler for setting up your dual channel analysis. See chapter 2 for the steps for setting up a dual channel analysis.**

1. **Press Function Key [0] to initiate the Auto Start dialog.**

   When you press key [0], labeled **Auto Start**, a program called AUTO_TOP performs a number of pre-run tests that check INET status, program space, etc to ensure that the postrun programs will execute.

```
RUNNING E:AUTO_TOP.BAS (Rev A.00.03)
VERIFYING SINGLE/DUAL CHANNEL, BASIC WORKSPACE
INSTALLING/VERIFYING INET PARAMETERS
SETTING BASIC SPACE, DUAL CHANNEL 7673
Enter 7673 injector used with analog signal [F*/R]:
```

2. **Select the injector that will be used with the analog signal.**

   The AUTO_TOP program prints the "analog signal" prompt when it detects that there is no active C1 path. That is, a real-time data path does not exist in the INET configuration.

   The last pre-run test that AUTO_TOP performs checks the AUTOCALL workfile.

```
AUTOCALL WORKFILE COMPATIBLE WITH SYSTEM
```

   When everything checks okay, you are prompted to start the run or sequence.

```
Start a run or sequence or Quit [R*/S/Q]: [ENTER]
```

3. **Press [ENTER] to start the run.**

   Note: When inputting an analog signal, the same peaks on the real-time channel will appear 32 times larger than those on the buffered channel. However, the signal-to-noise ratio remains the same.

Re-enabling the HP 5890 Detector (INET) Output

To reactivate the detector's INET output:

1. **Type [I] [N] and press [ENTER] to get a listing of the INET configuration table.**

   After the INET configuration is listed (see previous page), the HP 3396 prompts:

   ```
   EXIT, CHANGE, OR HELP [E*/C/H]: C [ENTER]
   ```

2. **Enter one of the C1 producer ENTRY numbers.**

   ```
   CHANGE ENTRY NUMBER:  5 [ENTER]
   ```

3. **Enter the C1 consumer ENTRY number.**

   ```
   CHANGE ENTRY NUMBER:  4 [ENTER]
   ```

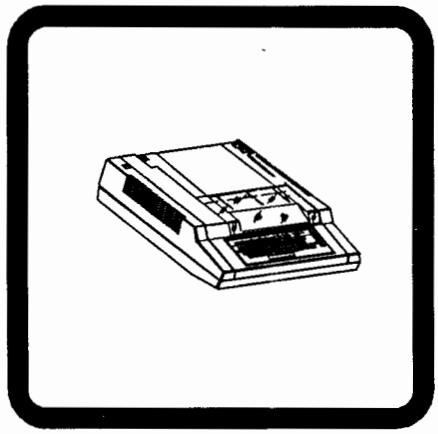
4. **Exit the INET table dialog by pressing [ENTER].**

   ```
   CHANGE ENTRY NUMBER: [ENTER]
   ```

5. **Type [I] [N] and press [ENTER] to ensure that you have edited the INET configuration table properly.**

```
* IN [ENTER]

                    INET CONFIGURATION
ENTRY   MODEL       ADDR    DATA PATH          STATUS
-----   ------      ----    -----------        ------
  1     3396B         0     BO CONS CH 0       ACTIVE
  2     7673A         9     BO PROD CH 0       ACTIVE
  3     7673A         9     BO PROD CH 1       ACTIVE

  4     3396B         0     C1 CONS CH 0       ACTIVE
  5     5890A        10     C1 PROD CH 0       ACTIVE
  6     5890A        10     C1 PROD CH 1       IDLE

  7     3396B         0     KO PROD CH 0       ACTIVE
  8     7673A         9     KO CONS CH 0       ACTIVE
  9     5890A        10     KO CONS CH 0       ACTIVE

 10     3396B         0     SO CONS CH 0       ACTIVE
 11     7673A         9     SO PROD CH 0       ACTIVE
 12     7673A         9     SO PROD CH 1       ACTIVE
```

Appendix C



In this chapter....

Dual Channel INET_CONTROL Commands

With the dual channel INET control commands, you can interrogate and control the HP 5890 Buffered INET board.

Command	Function	Response
! Bnnn	Define bunch size on input to main buffer, where "n" = ascii decimal digit	"A" if OK; "N" if rejected
!I	Initialize buffer for store or read by integrator. Set buffer read and write pointers to the start of the buffer.	
!F	Begin/resume buffer filling	"A" if OK; "N" if rejected
!H	Halt/susspend buffer filling	"A" if OK; "N" if rejected
!Sn	Define signal source for buffer to be SIGn (n = 1,2). Overrides default choice. **See Note.**	"A" if OK; "N" if rejected
!R	Read a signal block; returns compressed signal block (< or = 118 bytes)	"A{binary block}" sent in Hex Ascii. "N" = rejected.
!O	Returns buffer status	"A CCCCCC B ppp s PPP S" where: CCCCCC = #pts in bfr, B = C1 path blk'd status = 0/1, ppp = pkwd of data in buffer s = buffer data source = 1 or 2, PPP = pkwd of next buffer, S = next buffer data source, N = rejected
!V	Returns model#, and dual channel firmware version.	"A 19242.00.03" "N" = rejected

!Cn	"Clear" Inet C1 production	"A" if OK; "N" if rejected wher: n = 0/1 to enable (if C1Px+)/disable C1 data

Note: !Sn is overwritten by the default buffer selection scheme.

Buffer Signal Assignment

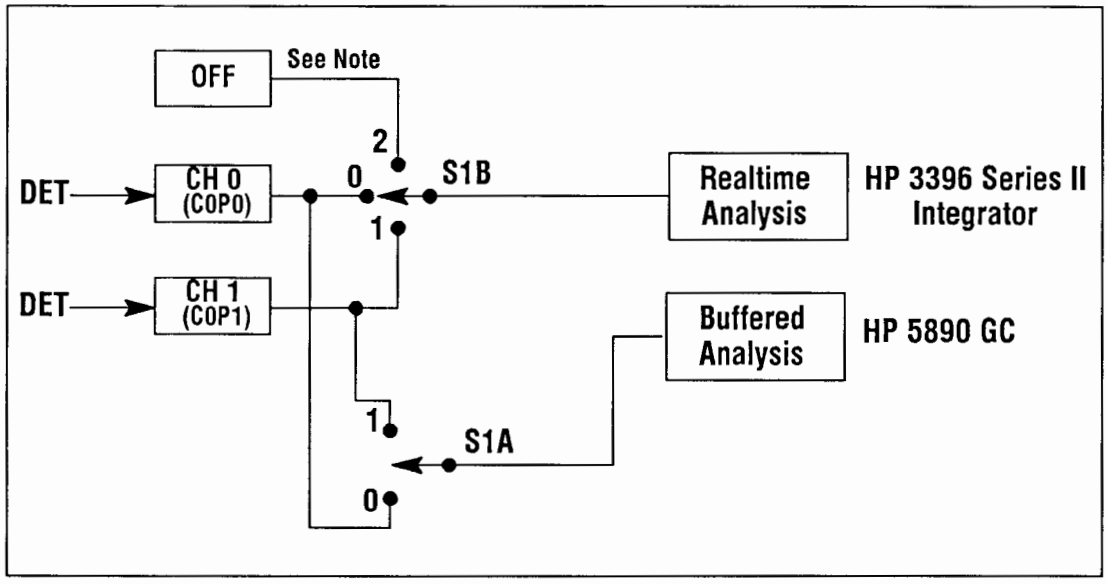
The buffered analysis signal source selection (S1A) is updated either by:

- The default assignment scheme.
- The !Sn INET_CONTROL command (see pg. C-2) .

Default Assignment Scheme

The HP 19242 software selects the buffer signal source in the following way:

- If S1B is 2 (OFF), then S1A is 0 (CH0 -> Buffer).
- If S1B is 1 (CH1 -> Realtime), then S1A is 0 (CH0 -> Buffer).
- If S1B is 0 (CH0 -> Realtime), then S1A is 1 (CH1 -> Buffer).



S1B can be operator defined using the 3396 INET_CONFIGURATION dialog. S1B is completely backed up.

The default buffer selection will be invoked by any of the operations listed below:

- A method is loaded.
- After a power fail recovery.
- After a loop break recovery.
- After an INET_CONFIGURATION command.

Each of these operations overrides the !Sn buffer signal selection.

Note: When S1B is set to OFF, the 3396 realtime signal source is the A/D converter.

Setting HP 3396 / HP 5890 Data Paths

The diagram on pages C-7 and C-8 represents a dual channel system consisting of the following components:

HP 18587 Barcode Reader

HP 7673 Automatic Sampler

HP 5890 Gas Chromatograph (with INET buffered interface)

HP 3396 Series II Integrator

This diagram illustrates how the data paths of a Dual Channel system can be controlled by various user inputs.

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```
* LIST: SEQ  8  @

7673A SAMPLER:
 LOOP ADDRESS:  8

 FRONT INJECTOR
 REAR INJECTOR
 PRIORITY SAMPLE (1=YES)
 CAPILLARY ON-COLUMN          0

 POSITION (1=FRONT, 2=REAR)
  INET CHANNEL 1              1 ---> S3A
  INET CHANNEL 2              2 ---> S3B
  AUXILIARY CHANNEL           2
```

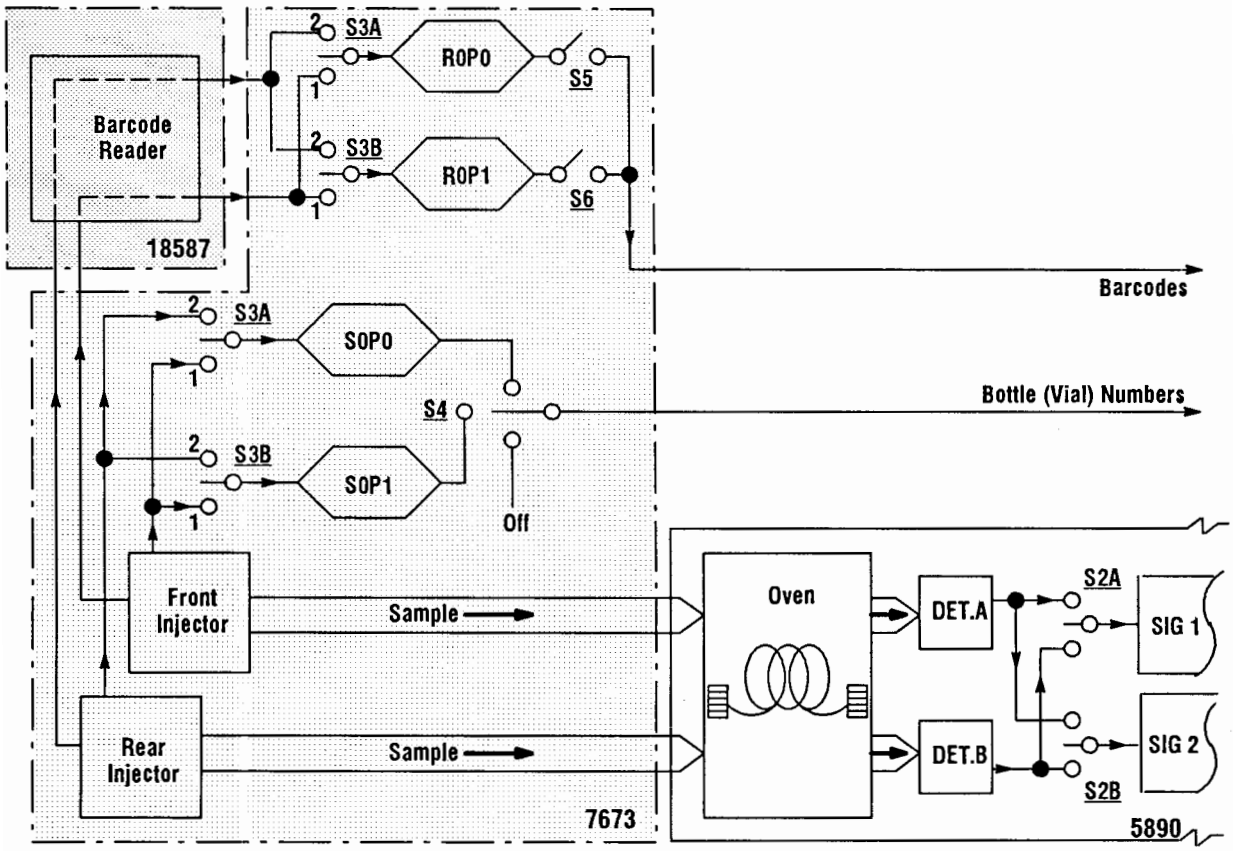
```
* LIST: METH  9  @

HP 5890A GAS CHROMATOGRAPH
  LOOP ADDRESS: 9

 OVEN TEMP =  85    SETPT =  50  (OFF)
 COOL

 SIGNAL 1 = A ---------------------> S2A
  INET FULL RANGE DATA ON
  RANGE = 0
  ZERO  = 0.0
  ATTN  = 0

 SIGNAL 2 = B ---------------------> S2B
  INET FULL RANGE DATA ON
  ZERO  = 0.0
  ATTN  = 0
```



```
*  OP # 6
REMOTE DEVICE ACCESS

DEVICE ADDRESS: 9
COMMAND STRING: !S1
A

DEVICE ADDRESS: 9
COMMAND STRING: !S2
A
```

→ S1A

See "default buffer signal assignment" on page C-4.

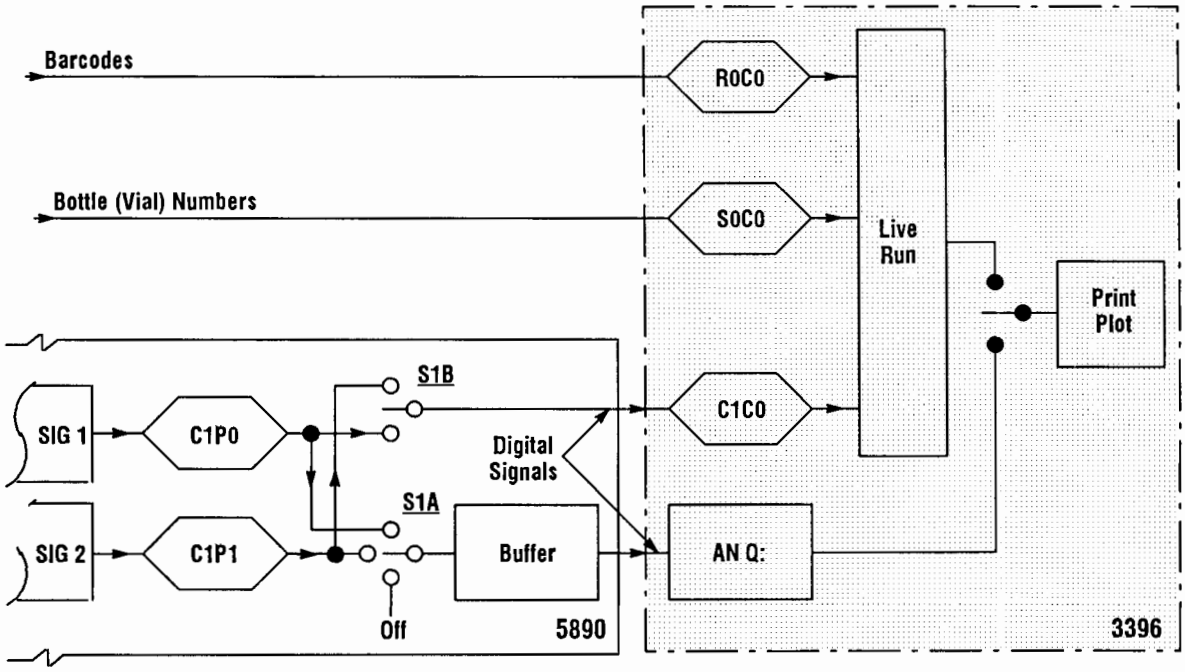
```
*IN
                INET CONFIGURATION
ENTRY   MODEL    ADDR    DATA PATH        STATUS
-----   ------   ----    ------------     ------
  1     3396B      0     C1 CONS CH 0     ACTIVE
  2     5890A      9     C1 PROD CH 0     ACTIVE
  3     5890A      9     C1 PROD CH 1     IDLE

  4     3396B      0     K0 PROD CH 0     ACTIVE
  5     7673A      8     K0 CONS CH 0     ACTIVE
  6     5890A      9     K0 CONS CH 0     ACTIVE

  7     3396B      0     R0 CONS CH 0     ACTIVE
  8     7673A      8     R0 PROD CH 0     ACTIVE
  9     7673A      8     R0 PROD CH 1     ACTIVE

 10     3396B      0     S0 CONS CH 0     ACTIVE
 11     7673A      8     S0 PROD CH 0     ACTIVE
 12     7673A      8     S0 PROD CH 1     IDLE
```

→ S1B → S5 → S6 → S4



A

B

C

D

E

F

G

H

I

K

L

M

N

O

P

R

S

T

W

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