
**Complete Guide for Upgrading ASX-520
and ASX-520HS Autosamplers with an
EXR-8**

Installing the Extended Rack

The EXR-8 Extended Rack is designed for easy installation. Installation consists of four parts: Upgrading the firmware on the CETAC autosampler, removing the autosampler head from its base, assembling the Extended Rack, and connecting it to the host analytical instrument.

This document contains three guides to help in the installation of the EXR-8:

Guide for Upgrading the Firmware on the ASX-520 and ASX-520HS Autosamplers with an EXR-8

1. Software and Firmware Upgrade
2. Accessing the Board inside the Autosampler
3. Establish Communications
4. Setup of Rabbit Utility
5. Autosampler Programming Configuration
6. Autosampler Normal Configuration
7. Verification of Firmware Upgrade

Guide to Operating a CETAC Autosampler Using HyperTerminal

1. Steps for operating the autosampler with HyperTerminal

Guide to Installing the EXR-8 with a CETAC Autosampler

1. Assemble the Cart.
2. Remove the head assembly from the base of the autosampler.
3. Mount the head assembly (autosampler) onto the Extended Rack.
4. Connect the autosampler to the Host Computer
5. Align the Extended Rack.

**Guide for Upgrading the Firmware
on the ASX-520 and ASX-520HS
Autosamplers with an EXR-8**

This guide describes the necessary steps for upgrading the firmware on the ASX-520 and ASX-520HS autosamplers.

Software and Firmware Upgrade

The software needed to upgrade the firmware on the autosampler and the firmware upgrade file are both included on the CD provided with the EXR-8. The software and firmware can also be downloaded from the CETAC web site. To download the software and the latest firmware, go to <http://www.cetac.com/downloads/download.html> and select Autosampler Firmware Update. You will be presented with a form that asks for basic contact information. Upon completion, you will be e-mailed a web site address, a login ID and a password that will allow you to download any new firmware upgrade that may be available for your autosampler along with the necessary software to perform the upgrade.

Accessing the Board inside the Autosampler

1. Place the autosampler on a flat surface (Figure 1-1) and turn the unit off.



Figure 1-1. Front view of ASX-520 Autosampler.

2. Remove the two Kynar thumbscrews from the Y-axis home block (Figure 1-2).

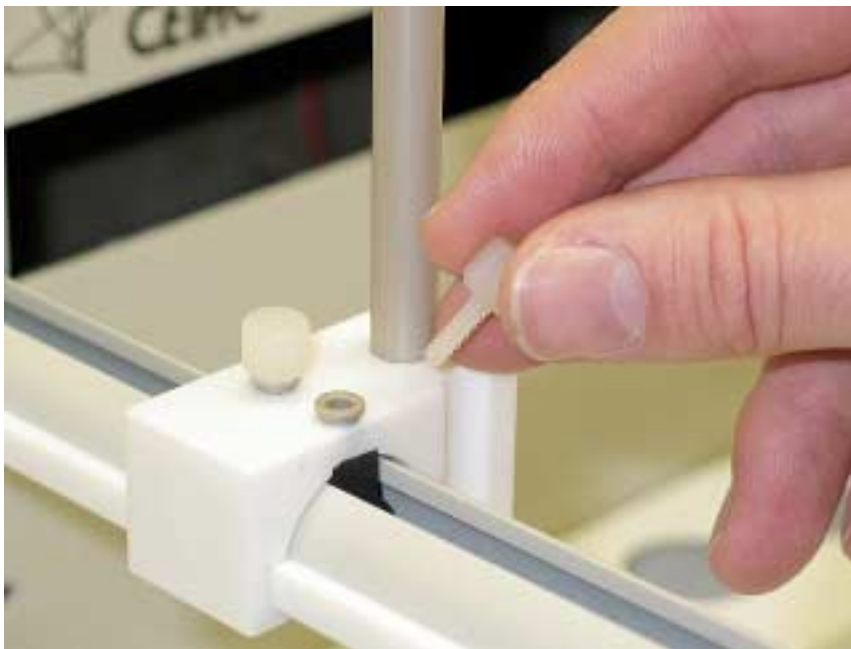


Figure 1-2. View of Y- axis home block with Kynar thumbscrews.



Figure 1-3. Z-drive removed from arm assembly.

3. Remove the whole Z-drive assembly from the arm by pulling the whole Z-drive assembly forward and off the autosampler arm (Figure 1-3).



Figure 1-4. View of rinse station.

4. Once the Z-drive assembly is removed, remove the rinse station (Figure 1-4). Turn the rinse station $\frac{1}{4}$ turn counter-clockwise while pulling up. Also, the tubing located at the bottom of the rinse station will have to be removed or moved aside (Figure 1-5).



Figure 1-5. View of rinse station removed from the front cover.

5. The autosampler tray should then be removed. Lift up the tray and pull out (Figure 1-6).



Figure 1-6. Removing the tray.



Figure 1-7. Front view of ASX-520 Autosampler showing front cover screws.

6. Next, the front cover needs to be removed. Remove the four corner screws (Figure 1-7).
7. The front cover can be removed by lifting it slightly and pulling forward (Figure 1-8).



Figure 1-8. View of ASX-520 Autosampler with the front cover being removed.



Figure 1-9. View of inner shield inside the ASX-520 Autosampler.

8. The five screws that hold the inner shield will have to be removed. Move the Y-axis assembly all the way to the left (Figure 1-9).
9. The inner shield can be removed by lifting it up while pulling forward (Figure 1-10).



Figure 1-10. Removal of inner shield.

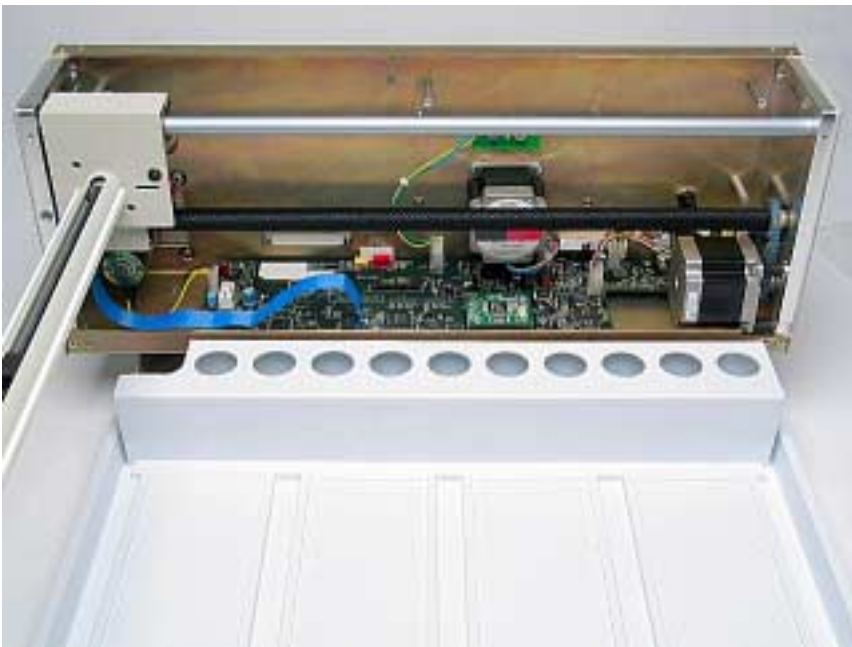


Figure 1-11. View of ASX-520 with inner shield removed.

Establish Communications

1. Put the Z-drive assembly back on the arm and screw in the Y-axis home block.
2. Reconnect the power cord and the serial cable and turn the autosampler on.
3. Start HyperTerminal. (For instructions on using HyperTerminal, refer to the *Guide to Operating a CETAC Autosampler using HyperTerminal*).
4. In HyperTerminal type *VERSS*. The system will respond with the current firmware version and it should be noted.
5. In HyperTerminal type *HOME*. This is to verify that the system is communicating.



Figure 1-12. Rabbit Field Utility Application

Setup of Rabbit Utility

1. Run the Rabbit Field Utility application, RFU.exe. (Figure 1-12).
2. Select the menu Setup, and then Communications.
3. On the Communications Options window (Figure 1-13), in the Comm Port field, select the COM port on the computer that is connected to the autosampler. Press the OK button.

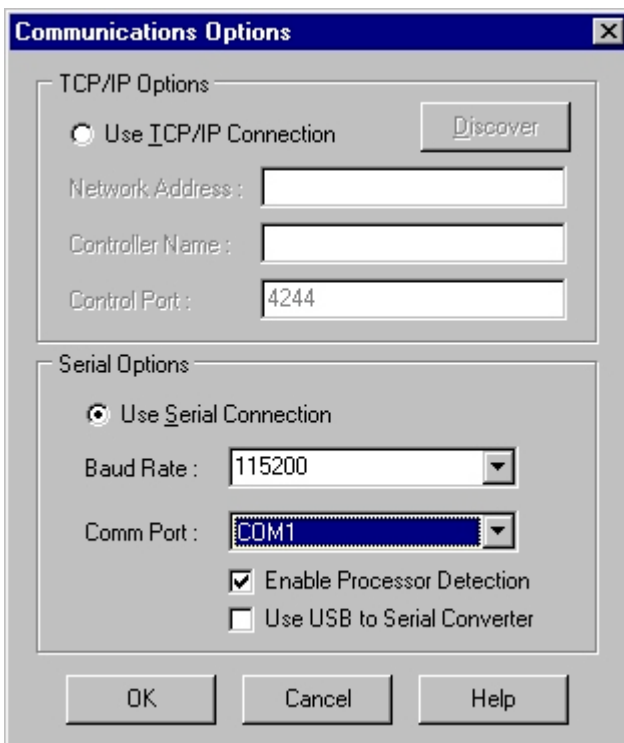


Figure 1-13. Communications Options Window.

4. Select the menu Setup, and then File Locations.

5. On the Choose File Locations window (Figure 1-14), fill in the fields with Cold Loader as coldload.bin and Pilot BIOS as pilot.bin. Press the OK button

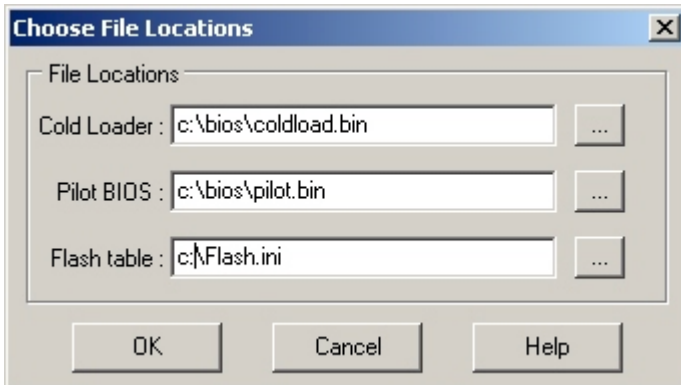


Figure 1-14. Choose File Locations Window.

Autosampler Programming Configuration

1. Turn off the autosampler.
2. On the board move the jumper from J3 to J5 (Figure 1-15).

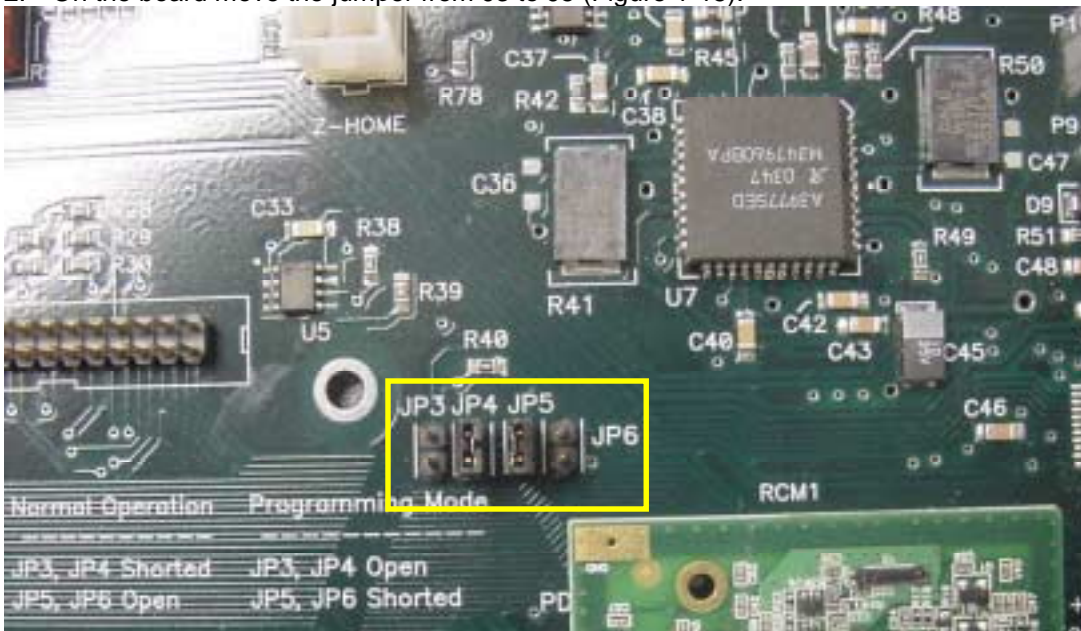


Figure 1-15. Jumpers on board.

3. Turn the autosampler back on.

Upgrading the Firmware

1. In the Rabbit Field Utility, select the menu File, and then Load Flash Image.
2. On the Choose Flash Image window (Figure 1-16), select the firmware file.

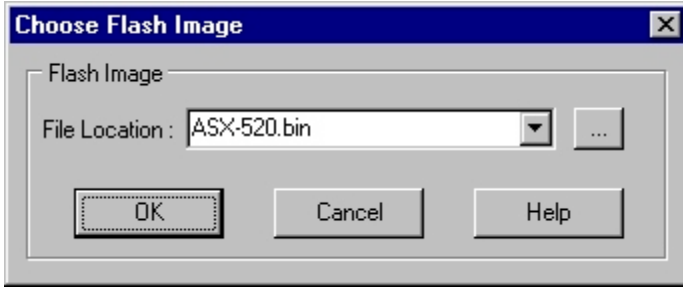


Figure 1-16. Choose Flash Image Window.

3. Select the OK button. A progress bar will appear.
4. When it is complete, the Rabbit Field Utility can be closed.

Autosampler Normal Configuration

1. Turn off the autosampler.
2. On the board move the jumper from J5 back to J3 (Figure 1-15).
3. Turn the autosampler back on. The autosampler should go to the home position.

Verification of Firmware Upgrade

1. Start HyperTerminal. (For instructions on using HyperTerminal, refer to the *Guide to Operating a CETAC Autosampler using HyperTerminal*).
2. In HyperTerminal type `VERSS`. The system should respond with the new firmware version.
3. In HyperTerminal type `SETTYPE=nnn` where nnn is the configuration number.

Configuration Number	Configuration Type
23	CETAC Standard
24	CETAC Standard, High Speed
25	PE
26	PE High Speed

**Guide to Operating a CETAC
Autosampler Using HyperTerminal**

All CETAC autosamplers can be controlled using a serial communications protocol. This guide explains how to operate any one of the CETAC autosamplers using the Windows HyperTerminal program.

Steps for operating the autosampler with HyperTerminal

1. Using a serial cable, connect the CETAC autosampler with the computer. Plug each end of the serial cable into the COM 1 port of the autosampler and the computer, respectively.
2. Turn on the computer (must have Windows operating system) and select the Accessories folder. Select the HyperTerminal folder and then the HyperTerminal program.
3. A window will appear as in Figure 1-1. Enter **COM 1** in the name box. Press the OK button.
4. In the Connect To window (Figure 1-2), in the field Connect using, select COM1. Press the

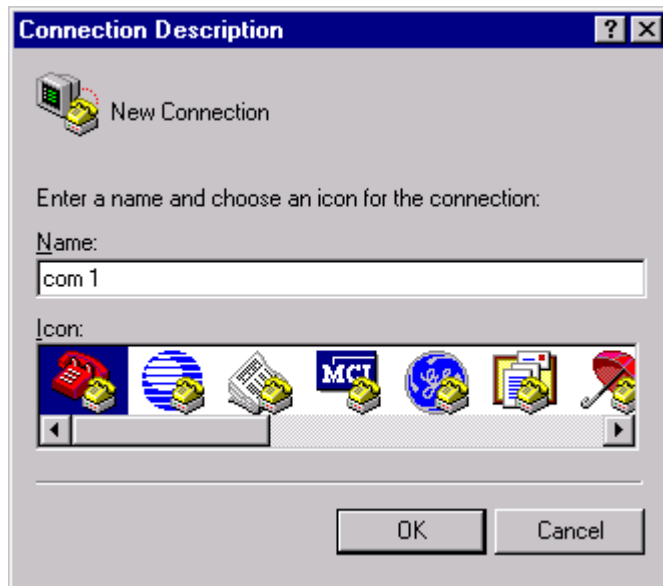


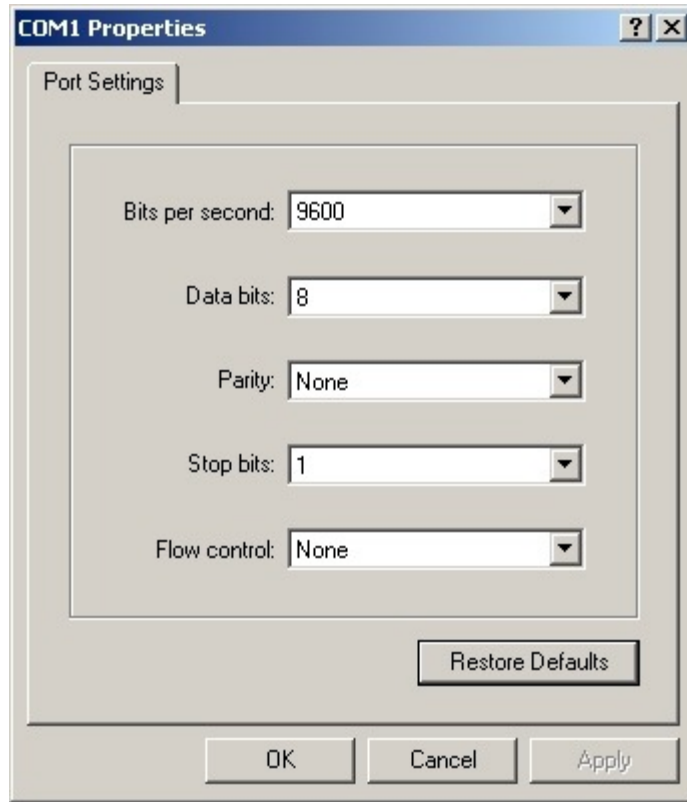
Figure 1-1

OK button.



Figure 1-2

5. The COM1 Properties window will appear (Figure 1-3). Set the fields as follows: Bits per second to 9600 and Flow control to None. Then press the OK button.



6. The HyperTerminal window will then open (Figure 1-4).

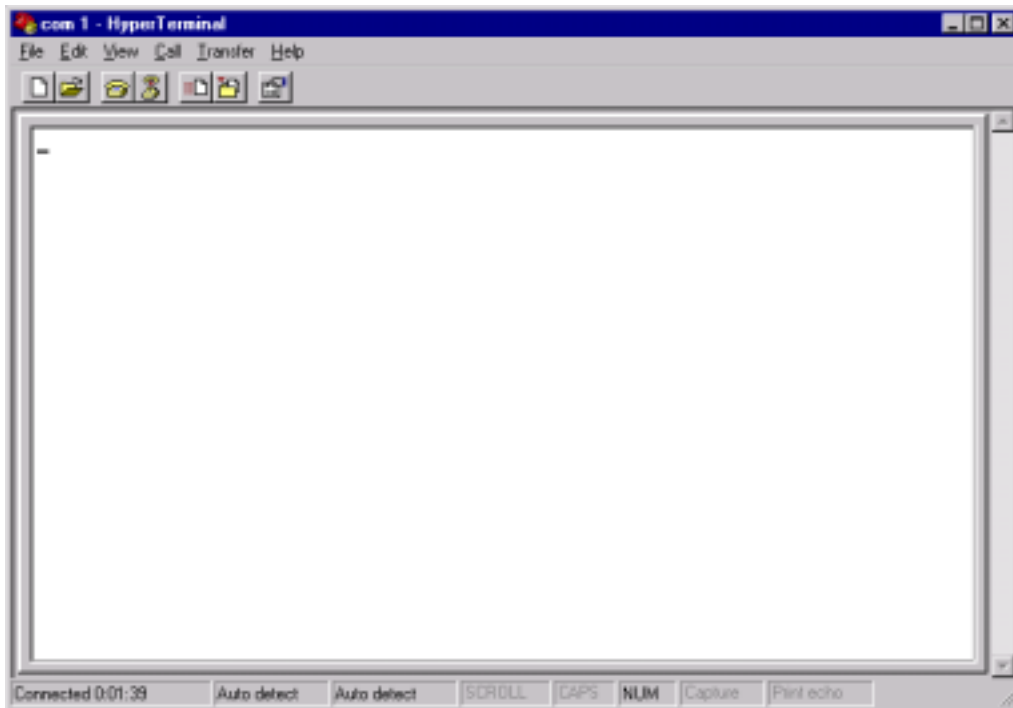


Figure 1-4

7. Select File. Then select Properties.
8. When Properties window appears (Figure 1-5), select the Settings tab.
9. Press the ASCII Setup... button. A window for ASCII Setup will appear (Figure 1-6). You will need to check Echo typed characters locally and Append line feeds to incoming line ends as shown in Figure 1-6. Press the OK button.

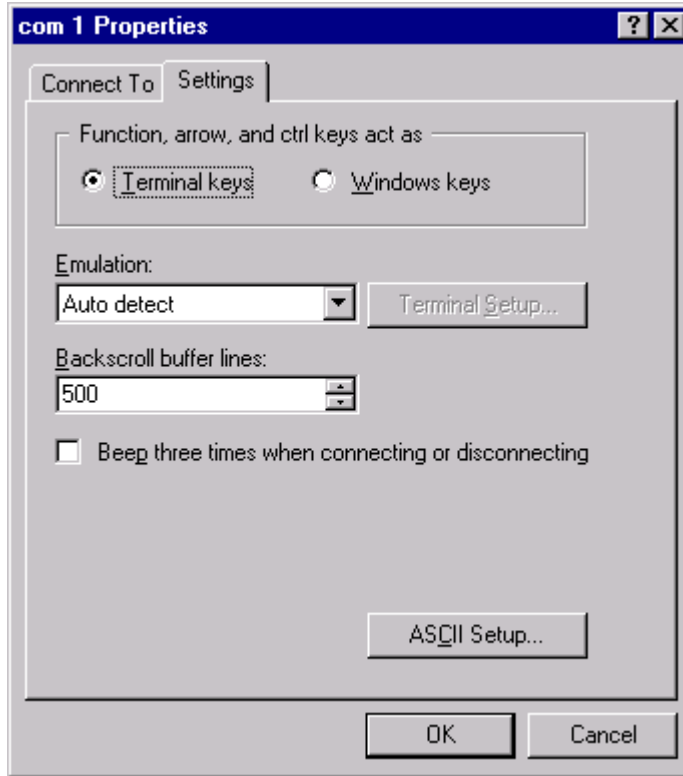


Figure 1-5

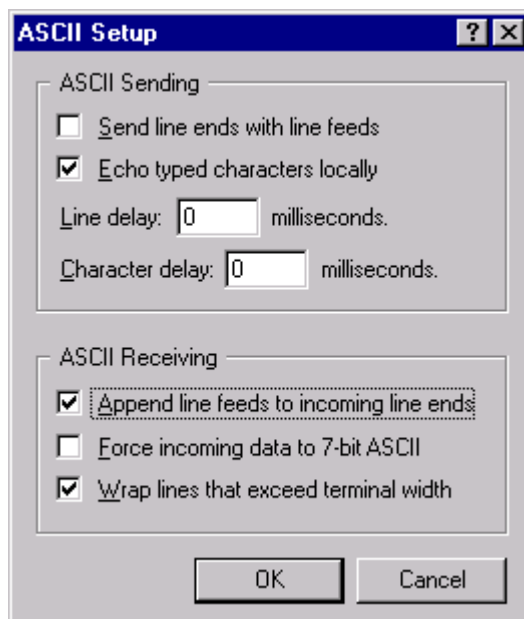


Figure 1-6

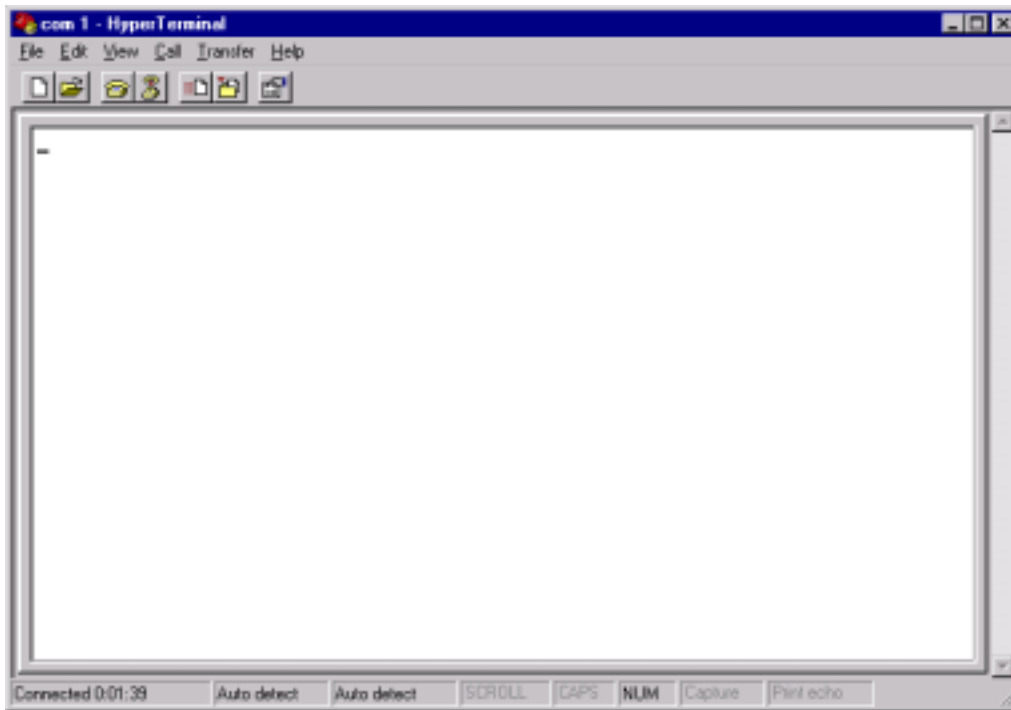


Figure 1-7

10. Turn on the autosampler and the HyperTerminal window (Figure 1-7) should display an **OK**.
11. The following commands will produce various responses of the autosampler.
 - a) **Ver** (returns firmware version)
 - b) **Home** (returns all axis to home position, same as power up)
 - c) **Tray=n** (defines tray size and **n**= #of positions)
 - d) **Tube=3-4-150** (tube=row-colimn-down as defined by tray command)
 - e) **Pmp on** (pump on if unit has a pump)
 - f) **Pmp off** (pump off if unit has a pump)
 - g) **Rinse** (moves sipper to the rinse position, extends and retracts the sipper 3 times and starts rinse pump. Stays in down position with pump running. **up,pmp off** stops the pump)
 - h) **Down=n** (moves the z-axis down by the parameter(**n**) in mm.(do not run down command if sipper is not all the way up on up position or damage may occur to sipper or z-axis)
 - i) **Up** (moves z-axis to upper most postion.)

With the commands listed in Step 11 it can be determined if the CETAC autosampler is communicating and functioning properly. If more assistance is needed, please contact customer service.

**Guide to Installing the EXR-8 with a
CETAC Autosampler**

Assembling the Cart

The Cart should be assembled using the instructions provided with the Cart. The Cart should have two holes on the top layer (Figure 1).



Figure 1. Cart from above.

Removing the head assembly from the base of the autosampler

1. Unplug the autosampler.
2. Remove all sample vials and the tray.



Figure 2. Autosampler on its side

3. Place the autosampler on its side (Figure 2).
4. Remove the contents from Bag A and locate the hex wrench (Figures 3 and 4).



Figure 3. Contents of Bag A.



Figure 4. Hex wrench.

5. Using the hex wrench, remove the four screws connecting the head assembly to the base (Figure 2).
6. Remove the head assembly from the base.

Mounting the head assembly (autosampler) onto the Extended Rack

1. Place Extended Rack onto the Cart such that the center holes of the Extended Rack are aligned with those on the Cart.
2. Place the standards rack on the rail plate (Figure 5).



Figure 5. Standards rack placed onto the Extended Rack.

3. While holding the standards rack, place the head assembly on the standards rack (Figure 6).



Figure 6. Head assembly placed onto the standards rack.

4. Using the contents of Bag A (Figure 3), place the washers on the screws.
5. Attach the left side of the head assembly to the Extended Rack using the hex wrench as shown in Figures 7 and 8.



Figure 7. Attaching the head assembly (first screw).



Figure 8. Attaching the head assembly (second screw).

6. Attach the right side of the head assembly to the Extended Rack as shown in Figure 9.



Figure 9. Attaching the right side of the head assembly.

7. Leave the head assembly slightly loose for alignment.

Mounting the chain assembly

8. Locate the chain assembly kit (Figure 10), Bag B and the power supply provided with the CETAC autosampler.



Figure 10. Chain assembly kit.

9. Take the power supply for the CETAC autosampler and insert it into the chain assembly (Figure 11).



Figure 11. Inserting the power cord into the chain assembly.

10. Attach the chain bracket to the top of the head assembly using the 10-32 screw found in Bag B (Figure 12).



Figure 12. Attaching the chain assembly to the head assembly.

11. Attach the other end of the chain assembly to the right side of the Extended Rack (Figure 13) using the three screws in Bag B.



Figure 13. Attaching the chain assembly to the Extended Rack.

Connecting the head assembly to the Extended Rack

1. From the top of the chain assembly, locate the serial cable labeled 1 and connect to the COM 1 on the head assembly.
2. From the top of the chain assembly, locate the serial cable labeled 2 and connect to the COM 2 on the head assembly.
3. Plug the power cable into the head assembly.
4. From the top of the chain assembly, locate the pump tubing and connect to the rinse pump on the head assembly.
5. Replace the rinse output channel of the rinse pump with larger ID pump tubing which is supplied in the EXR-8 completion kit.
6. Cut pump tubes to length allowing for flexibility (Figure 14).
7. From the end of the chain assembly, locate the serial cable labeled 2 and plug into the right side of the Extended Rack.
8. Plug the power supply into the Extended Rack.



Figure 14. Connecting the pump tubing.

Connecting the Autosampler to the Host Computer

1. From the end of the chain assembly, locate the serial cable labeled 1 and connect it to COM 1 of the Host Computer.
2. Turn the autosampler on.
3. Install the Test Software on the Host Computer.
4. Run AScript.exe.
5. Select Tools | Hardware Setup.
6. Select EXR-8 and exit the software.

Aligning the Extended Rack

1. Run AScript.exe.
2. Select File | Open.
3. Select EXR-8 Alignment file.
4. Select Tools | Define Racks.
5. Select EXR-8 and then 60positions.txt.
6. Place racks on tray.
7. Select Cycle Indefinitely.
8. Press the Start button.
9. Verify that the probe hits center tube on all four corners.
10. If it does not, move the head assembly until the probe hits center tube on all four corners. Once it does, tighten the screws on the head assembly.
11. Press the Stop button.
12. Select File | Open, and the file EXR-8 Full Alignment.
13. Press the Start Button.
14. Verify that all the racks are aligned. If not, repeat step 10.
15. Press the Stop button.