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ADD

INDEX
INSTRUMENT SERVICE ADVISORY

PRODUCT:
COMMANDER® FPC(TM) (76)

DATE:
03-SEP-1999

PENDING - ISA index number has been reserved for a future ISA.
CANCELLED - ISA index number is cancelled.
INCORPORATED - ISA was incorporated into another document or manual.
OBSOLETE - ISA no longer applies.
COMPLETE - ISA is complete.

END OF DOCUMENT

ABBOTT ADD	INSTRUMENT SERVICE ADVISORY

SUBJECT: **Troubleshooting Guide for FPC (TM) Pipettor Tip Dropping**	ISA#: **76-045A**
ORIGINATOR: **John Buckland**	PRODUCT: **COMMANDER® FPC(TM) (76)**
APPROVED: **Dan Armstrong 03-SEP-1999**	EFFECTIVITY DATE: **03-SEP-1999**

I. Distribution:

Worldwide

II. Purpose:

1. To Correct wrong Part # on Alignmment Gauge drawing in ISA 76-045 from 1-73466-01 to 1-73446-01. The changes in this ISA will have an ** by it.
2. To assist field support personnel with the identifying and resolving causes for FPC Pipettors dropping a pipette tip during an assay run. The release of changes to the

Commander Flexible Pipetting Center (FPC) Troubleshooting section (Section 4C) of the FPC Service Manual. Provide a troubleshooting diagnostic to be used to verify double seal integrity of the pipette tip when properly staked.

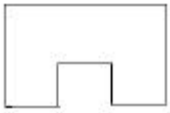
III. Description:

Identification of cause for pipette tips dropping.

Section V: Troubleshooting for Inconsistent or no Double Seal
Section VI: Double Seal Present - What to Check if Pipette Tips are Still Falling Off
Section VII: Recommendations for Customers
Section VIII: Verifications

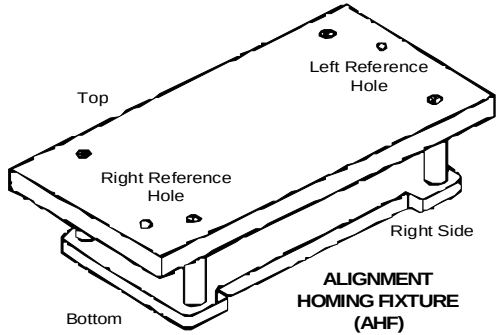
IV. Alignment Tools Needed:

A. Alignment Tool, Part # 1-43841-01 (Tool which fits into tip nozzle position).
B. Alignment Homing Fixture, Part # 1-43729-01
C. Alignment Gauge, Part # 1-73446-01 (U-shaped tool which fits into the notch of Tip Nozzle Assembly).
D. Wedge and Feeler Gauge Set, Part # 1-43627-01



Alignment Gauge

** **Part # 1-73446-01**



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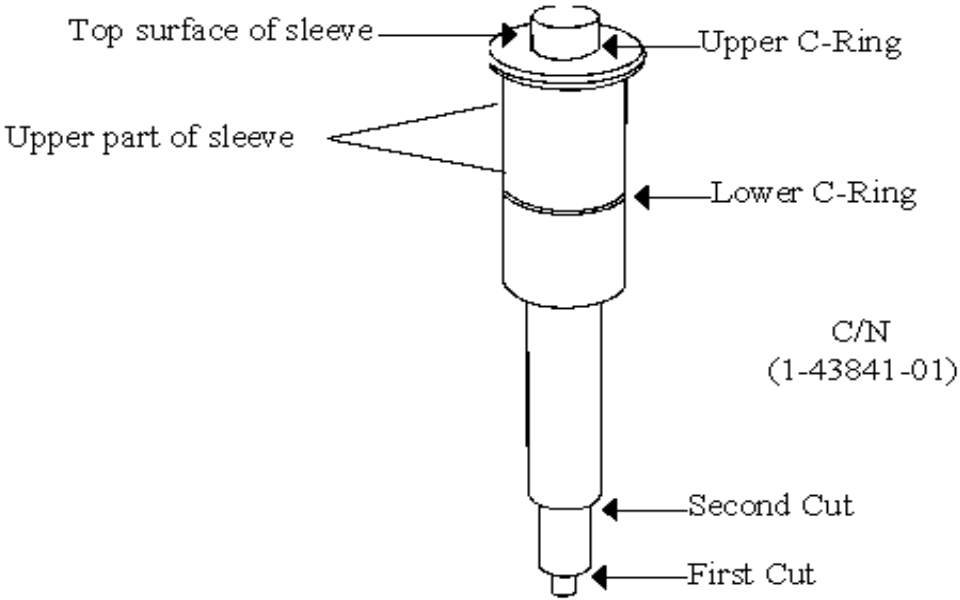


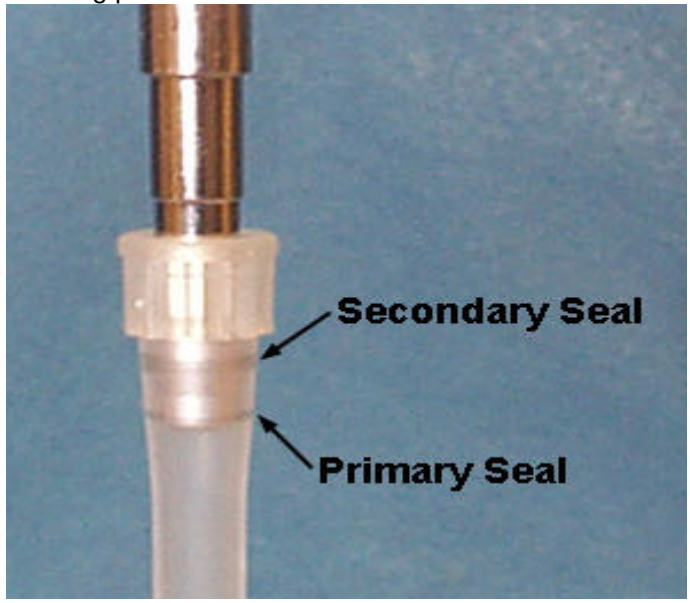
Alignment Tool

Figure A

V. Troubleshooting for Inconsistent or No Double Seal:

A. Double Seal Present?

When the FPC Sample Nozzle stakes the pipette tip, it creates a primary and secondary seal as seen in the following picture.



Picture 1: Seals Between Sample Nozzle and Pipette Tip

To duplicate these seals, manually push a tip onto the Sample Nozzle when the FPC Pipettor is turned off. The secondary seal might be less dark than the primary seal. To check if the FPC Pipettor is creating a double seal in normal operation, perform one of the following:

- Leak Test
- Tip Threshold
- Run an assay
- Disconnect the Tip Jam Sensor and run X,Y Function of Arm.

(**Note: X,Y Function of Arm with Tip Jam Sensor connected will not reproduce what the FPC Pipettor will do during normal operation. It might not produce a secondary seal.**)

If the FPC Pipettor does not consistently create a Double Seal, confirm Tip Rack Flatness (B) and Tip Rack Alignments (C). Otherwise go to Section VI for troubleshooting assistance when the FPC Pipettor consistently creates Double Seals but still is dropping pipette tips.

B. Tip Rack Flatness when Doing Alignments

Confirm Tip Racks are flat by removing them from the FPC Pipettor and placing on a flat surface. Apply small downward force in each of the four corners to see if Tip Rack will rock on flat surface. Replace Tip Rack if necessary. Confirm Tip Racks do not rock when performing same procedure in Tip Rack position on FPC Pipetting Baseplate. If Tip Racks rock on Baseplate and do not rock on external flat surface, file FPC Pipetting Baseplate to make flat.

C. Confirm Tip Rack Alignments

X,Y Tip Rack Alignments:

Remove tips and cardboard from Tip Rack 1 and Tip Rack 2 to perform X,Y Position of Arm Verification with the Tip Jam disconnected (ISA 76-044 Section VI.C). Cycle (**F3**, **Enter**) FPC Pipettor. Pause at each of the four Tip Rack Positions, confirming X and Y alignments. Make adjustments by following Section VI.C of ISA 76-044.

Z-Height Alignment:

Remove tips and cardboard from Tip Racks. Perform X,Y Function of Arm again verifying z-height is equal to 0.80 mm using U-shaped tool (CN 1-73446-01) and feeler gauge. See ISA 76-044 Sections VI.C and VI.F.4 for instructions if needed. Place one pipette tip in Tip Rack 1 Right Position. Ensure no bouncing of Sample Nozzle when picking up new pipette tip from Tip Rack. Reset FPC Pipettor by stopping cycle (**F3, Enter**). Confirm z-height at second of the four Tip Rack positions (Tip Rack 1 Left Position) by placing a new tip in that location and Cycle (**F3**, **Enter**). Reset FPC Pipettor and confirm the other two rack positions by this same procedure.

Confirm Double Seal is present at Tip Rack z-height is equal to 0.80 mm when performing X,Y Function of Arm and Tip Jam Sensor is disconnected. If not consistant double seal or no double seal inspect Sample Nozzle (D).

D. Sample Nozzle Inspection

Inside of the Sample Nozzle are two springs that activate the Tip Jam Sensor and apply a downward force that aid in staking a Pipette Tip. If Tip Rack z-height alignment (C) is equal to 0.80 mm and Double Seal is not consistently present, perform Sample Spring Test below. Also check Cable Tension (E) and z-Pulse Motor Driver (F).

Sample Nozzle Spring Test:

Check z-height of Tip Rack with Alignment Tool (CN 1-43841-01) by following Section 6, page 15 of FPC Service Manual. If z-height is less than 0.60 mm and Sample Nozzle is set at 0.80 mm, replace Sample Nozzle. There should be a 0.20 mm difference between z-height measurement of the Alignment Tool (CN 1-43841-01) and the Sample Nozzle.

E. Check Cable Tension

Verify/adjust cable tension per ISA 76-036. If X and Y alignments have been consistent, only check the z-cable tension. ISA 76-041 provides instructions of cable and pulley replacement if needed. When inspecting cables, if flaking of outer plastic is found, turn FPC Pipettor off and move Sample Nozzle manually in the X, Y, and Z direction. If there is any binding, the FPC Pipettor is a candidate for cable and pulley replacement described in ISA 76-041.

F. Pulse Motor Driver

If during z-height alignments, the z-height measurement changes between alignments or if the height jumps more than expected (see Table 1) when decreasing height (increasing +z), replace z-Pulse Motor Driver with another Pulse Motor Driver. Refer to Section 5 of the FPC

Service Manual for directions.

1 Motor Step in X direction =	0.0534 mm
1 Motor Step in Y direction =	0.1068 mm
1 Motor Step in Z direction =	0.0534 mm

Table 1: Single Step Measurement

G. MPU Board Holding Alignments

If Alignments have changed over the last time the FPC was aligned, confirm MPU Board is holding alignments by realigning and turning FPC Pipettor off for several minutes. Turn FPC Pipettor on and measure difference in alignments. If alignments are not being stored, confirm Ni-Cad Battery in Cardcage is between 3.2 and 4.0 volts DC and replace MPU Board if necessary. If alignments change in the Y direction and the FPC Pipettor has an ABC attached, confirm ABC Support Arm is not pulling down the FPC Left Arm and causing binding in the Y direction.

VI. Double Seal Present - What to Check if Pipette Tips are Still Falling Off:

A. Tip Wipe-Off Alignment

Refer to Section 6 of the FPC Service Manual for directions.

B. Occurs on Diluent Stage of HIV I/II

Confirm X,Y Position of Sample Nozzle with a Pipette Tip over a 60-well tray (ISA 76-044 Section VI.F.2). The Pipette Tip needs to be +20 steps right (1.00 mm) of the center of the well E3 on Platform 1 and well M5 on Platform 4. If FPC Pipettor is dramatically off in center of other wells (P2 and P3), call CSE or ACS for assistance in troubleshooting.

C. Occurs on HCV

Confirm X,Y Position of Sample Nozzle with a Pipette Tip over a 60-well tray (See Section B above) and verify Starting Dispense Height is set to 3.50 mm (ISA 76-044 Section VI.F.3).

VII. Recommendations for Customers:

A. Customer Daily Maintenance

Confirm Customer is performing daily maintenance of cleaning Sample Nozzle with Alcohol (see COMMANDER® Flexible Pipetting Center Operations Manual, Section 9 Service and Maintenance, Cleaning Tip Nozzle). Customers should also have cleaning procedure for Tip Racks and Pipetting Base under Tip Rack Positions.

B. No Splashing onto Sample Nozzle

Confirm Customer is not using bleach solution in Tip Waste Bin that is splashing onto Sample Nozzle during Tip Wipe Off.

VIII. Verifications:

1. Perform Tip Threshold using a 100 ml bottle with DI water only. The FPC should not use 45 tips during the process. If 45 tips are used, verify all tubing connections, change the

water level in the 100 ml bottle, but do not fill into the tapered neck area of the bottle, and repeat the Tip Threshold.

2. Perform leak test.

3. Create the following testing assay protocol on the FPC Computer:

Go to FPC **Main Menu**. Select **Assay Protocol Menu**, **Create**. Fill in the following information.
Note: In the FPC Software, the symbol "**>**" means to hit **Enter** in order to see different options available.
To select an option, hit the **SpaceBar** and then **Enter.**

General Information	
Assay Code:	**aaa**
Assay Name:	**50uL to 60 wells**
TPC Mode:	Off
Destination Type:	**60 well tray**
Destination Lot Flag:	No
Source Return Volume:	**100 ul**
Analyzer Test Number:	**0**
List Number:	**0**
Assay Procedure:	
Extra Sample Volume:	**20** ul
Extra Air Volume:	**0** ul
Print Map:	**No**

Author:	**abbott**
** Note: Select **F6 (NextSec)** to continue.	
Pipetting Section:	# 1
Component Type:	**SPDL**
Component Name:	Spec Dil
Component Label:	Spec Dil
Component Location:	None
Aspirate Height:	0 mm
Destination Volume:	0.0 ul
Destination Loc:	Next Address
No of Replicates:	**60**
Pipetting Sequence:	Neat
New Tip Required:	Force new
Touch-off Direction:	**Horizontal**
Touch-Off Volume:	**3** mm
Dispense Height:	**0.0** mm
Diluent Type:	SPDL
Diluent Name:	Spec Dil
Diluent Volume:	**50** ul
Diluent Source:	100 ul
Dil. Dispense Optioin:	**Post**
Mandatory Flag:	Yes
Error Handling:	Control
Pipetting Direction:	**Horizontal**

Select **F3 (Save)**, then **Enter.**

To run diagnostic protocol:
Go to the FPC **Main Menu**.
If FPC Pipettor is connected to a Sensor Module, you will need to create a Source ID.
Select **Pipetting, Pipetting Setup**.
Enter your initials at tech id prompt and then **Enter**.
Hit **Enter** at Pipetting Type. (It doesn't matter if you run a batch or random since we don't pipette from a sample)**.**
At Selected Assays: Hit the **UpArrow** to see the bottom of the list, Select **aaa** with the **SpaceBar** and hit **Enter**. Hit **Enter** to accept 1 as the number of destinations.
Enter a source id if FPC Pipettor is connected to a Sensor Module.
Hit **F3** to Save.
The next screen will be Component Selection. Hit **F3** to save. Hit **Enter** at confirm.
The next screen will be Destination Confirmation. Enter barcode on side of 60 well tray and hit **Enter**. Hit **F3** to run.

Ensure there is a 60 well tray on Platform 1 and a 100 ml bottle with DI water or saline at D1 position. If you have a diluent dispense error when dispensing DI water and saline, use HIVAB sample diluent. Hit **Enter** to confirm and watch integrity of seals on sample nozzle and pipette tip.

As the FPC Pipettor dispenses diluent, note the position of the pipettor tip in the well. The tip should be located to the right of the center of the well in the X-direction approximately 1.0 mm and centered in the well in the Y-direction.

4. If a diluent or sample component (syringe, tubing, valve assemby, nozzle, etc.) was replaced, Dilution Verification is required.

5. Perform Total Service Call.

END OF DOCUMENT

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SUBJECT: **New FPC (TM) Alignment Procedure**	ISA#: **76-044A**
ORIGINATOR: **John Buckland**	PRODUCT: **COMMANDER® FPC(TM) (76)**
APPROVED: **Dan Armstrong 03-SEP-1999**	EFFECTIVITY DATE: **03-SEP-1999**

I. Distribution:

Worldwide

II. Purpose:

1. To Correct wrong Part # on Alignmment Gauge drawing in ISA 76-044 from 1-73466-01 to 1-73446-01. The changes in this ISA will have an ** by it.

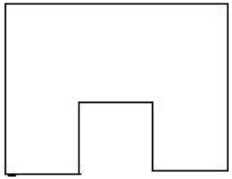
2. To ensure a proper seal between the Tip Nozzle Assembly and the Pipette Tip.
3. To align the Pipette tip to the 60 Tray Well.
4. To release changes to the Commander® Flexible Pipetting Center (FPC) Alignment section (Section 6).
5. This ISA supersedes related procedures in the current FPC Service Manual (Version 104) and all previous related ISAs.

III. Description:

This procedure will align the X, Y and Z positions of the FPC.

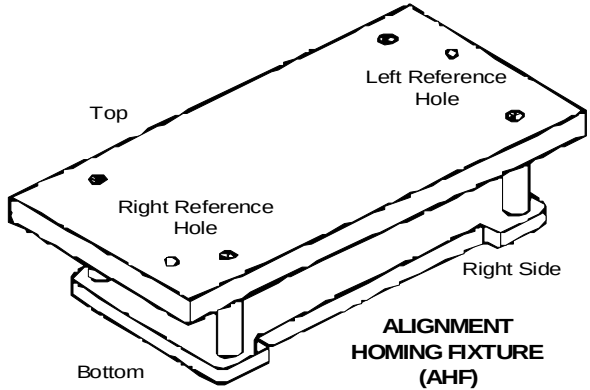
IV. Alignment Tools Needed

A. Alignment Tool, Part # 1-43841-01 (Tool which fits into tip nozzle position).
B. Alignment Homing Fixture, Part # 1-43729-01
C. Alignment Gauge, Part # 1-73446-01 (U-shaped tool which fits into the notch of Tip Nozzle Assembly).
D. Wedge and Feeler Gauge Set, Part # 1-43627-01



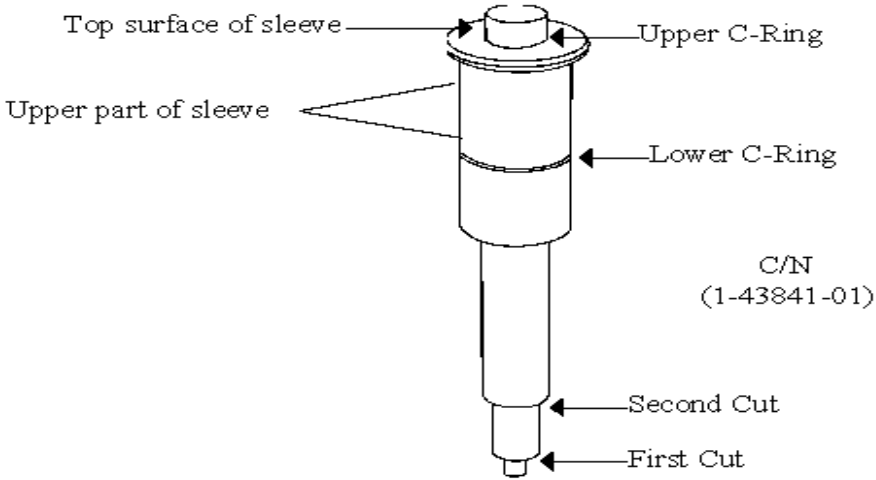
Alignment Gauge

** **Part # 1-73446-01**



ALIGNMENT HOMING FIXTURE (AHF)

Part # 1-43729-01



Alignment Tool
Figure A

V. Helpful Hints

The X, Y and Z alignments are performed under the "Pipettor Homing Sequence" which is located in "Diagnostics" under "Service Mode". There will be eight different positions that will be checked and aligned.

During the alignment process, use the "arrow keys" to highlight the position to be aligned, and the "+" and "-" keys to increment the steps of the X, Y and Z motors to the proper positions.

The alignment values that are saved during the alignment procedures will become the default values in the EEPROM on the MPU board.

There are four software steps when aligning the X, Y and Z-Axis.

A. Using the arrow keys, highlight a position to be aligned.

B. Enter in the number of steps to move the Tip Nozzle by using the "+" and "-" keys.
Note: To determine if the axis needs to be moved, "+" or "-" is sometimes confusing. Think of the pipettor as being in the home position and this will help determine whether to use the "+" or "-" key.

1. X Adjustment: Moving away (to the right) from the home position is a "+" move. Moving towards the home position (to the left) is a "-" move
2. Y Adjustment: Moving away from the home position (towards the front of the FPC) is a "+" move. Moving towards the home position (towards the rear of the FPC) is a "-" move.
3. Z Adjustment: Moving the Z-assembly down is a "+" move and going up is a "-" negative move.

C. Pressing **F3, {Enter}** moves the Tip Nozzle Assembly to the updated position.

Note: The F3 (move) must be done each time the estimated number of steps is entered. If this is not done, the FPC will not recognize the steps when the values are saved.

D. After the alignments are completed press **F4, {Enter}** to save.

E. **Important:** Before exiting the Pipettor Homing Sequence Menu, the center piece of the Alignment Tool must be removed; otherwise, it will hit against the Tip Wipe-Off Assembly possibly causing damage to the Alignment Tool.

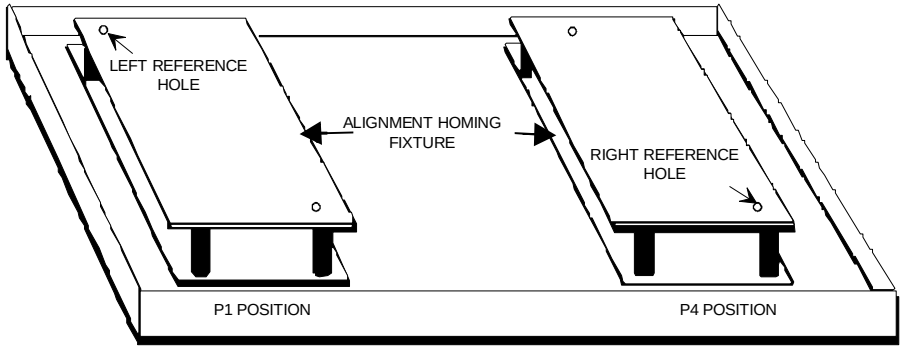
VI. Procedure

A. Preparation

Note: Make sure all four feet of the FPC Pipetting Platform are resting on the FPC base plate before performing alignments.

1. From the main select: (Do not install the Alignment Tool yet)
   a. Diagnostics-(Enter)
   b. Service Mode-(Enter)
   c. Type in the password (lower case):-(Enter)
      letusin (ver. 2.5)
      sezme (ver. 2.0)
   d. Pipettor Homing Sequence-(Enter)

2. Remove the Tray Platforms from the P1 and P4 positions on the FPC.
3. Place the Alignment Homing Fixture in the P1 position as shown in figure B.



Alignment Homing Fixture Positions
Figure B

4. Remove the Tip Nozzle Assembly, remove the tubing from the tube holders and lay the Tip Nozzle Assembly on the top back cover of the FPC. There is no need to disconnect the tubing from the syringe assemblies.

5. Install the Alignment Tool (part # 43841-01) into the Tip Nozzle Position and tighten down the allen screw.

Note: Make sure the Tip Nozzle Assembly is secure while the tool is in place to avoid tangling of the tubing and wires while performing the alignments.

B. Platform Left and Platform Right: X, Y and Z Alignments

1. Platform Left: X, Y and Z Alignment
   a. Using the arrow keys, arrow to the "Platform Left, X-Adjust"
   b. Select **"F3"** (move) then **{Enter}.**
   c. Determine the distance from the Left Reference Hole (figure B) on the Alignment Homing Fixture. Use the "+" and "-" keys to enter the number of steps, along with the arrow keys to select X or Y axis, until the Alignment Tool fits into the Reference Hole with little or no resistance.

      Remember, "F3" (move) and "Enter" must be performed each time the estimated number of steps is entered.

Use the charts below for movement directions and distance measurements.

1 motor Step in X direction = 0.0534mm 1 motor Step in Y direction = 0.1068mm 1 motor Step in Z direction = 0.0534mm

+x = moves to the right - x = moves to the left +y = moves towards the front -y = moves toward the back +z = moves in the down direction -z = moves in the up direction

d. Using the arrow keys, go to Platform Z-Adjust and Refer to figure C below. Adjust the Z-position so the First Cut of the Alignment Tool is 3.00 mm - 3.50 mm from the platform. Use the Wedge Gauge for the measurement.

Helpful Hint: Adjust the height to about 3.4 mm. This will put the alignments closer to the 3.25 range when they are verified later.

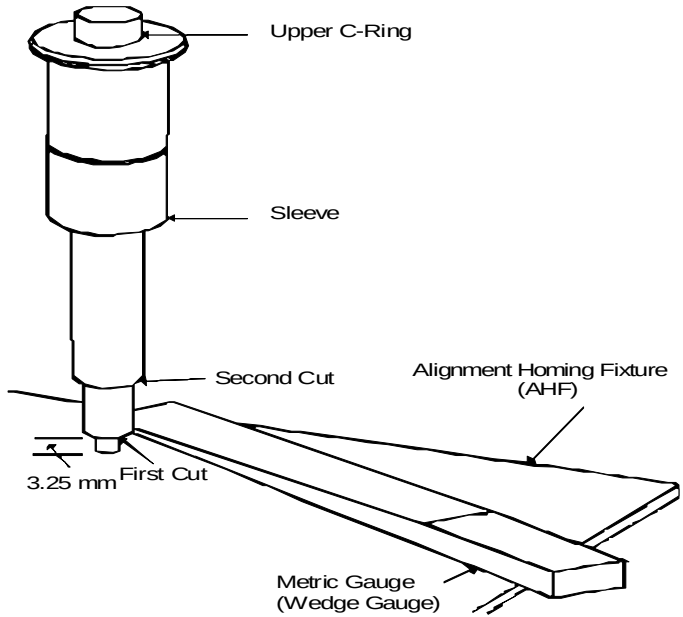


Figure C

2. Platform Right: X, Y and Z Alignments
   a. Place the Alignment Homing Fixture into the P4 position
   b. Perform these alignments the same way as the Platform Left X, Y and Z Alignments in step B.1 above, this time the Right Alignment Reference Hole will be used in the P4 position.

C. Tip Rack-1 and Tip Rack-2: X, Y and Z Alignments

1. Tip Rack Left and Right: X and Y Alignments

Note: The following procedure is used for all four positions: Tip Rack-1 Left, Tip Rack-1 Right, Tip Rack-2 Left, and Tip Rack-2 Right.

a. Remove the tips and **cardboard** from Tip Rack 1 and Tip Rack 2 (Figure D). Do not discard the tips, they can be reinstalled after all the alignments have been completed.
b. Using the arrow keys, arrow to the X-Adjust position for the tip rack position desired.
c. Select **F3** (move) then **Enter.**
d. Use the "+" and "-" keys to enter the number of steps, along with the arrow keys to select X or Y axis, until the Alignment Tool fits into the Tip Rack Hole with little or no resistance.

Remember, "F3" (move) and "Enter" must be performed each time the estimated number of steps is entered.

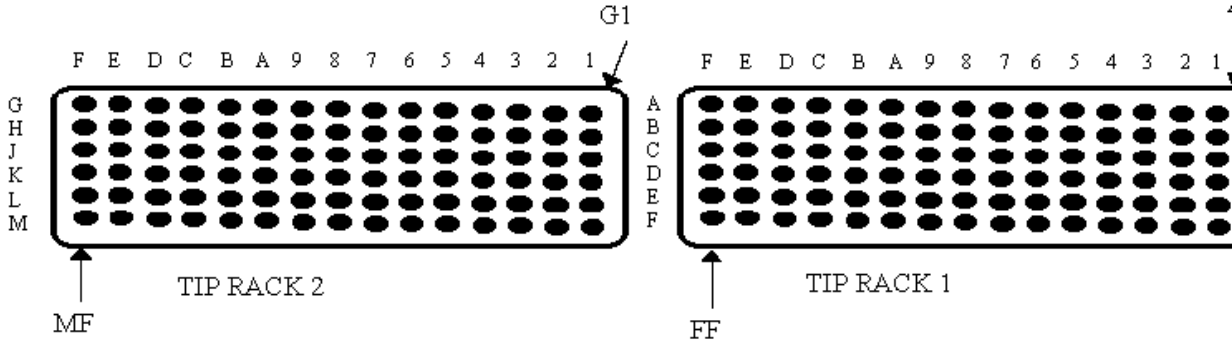


Figure D
Tip Rack 1 and 2

2. Tip Rack-1 and Tip Rack-2: Z-alignments

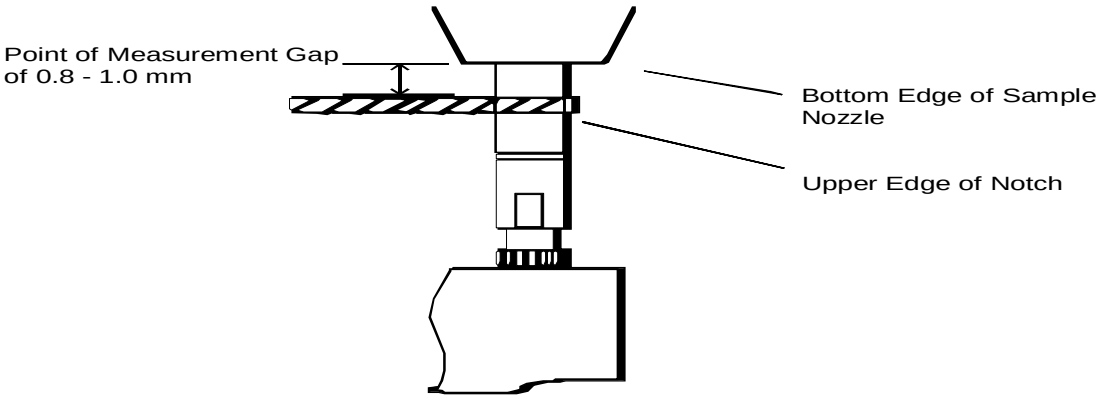
Note: The following procedure is used for all four positions: Tip Rack-1 Left, Tip Rack-1 Right, Tip Rack-2 Left, and Tip Rack-2 Right.

a. If not already done, remove the tips and **cardboard** from Tip Rack 1 and Tip Rack 2 (Figure D). Do not discard the tips, they can be reinstalled after all the alignments have been completed.
b. Using the arrow keys, arrow to the Z-Adjust position for the tip rack position desired.

c. Select **F3** (move) then **{Enter}**.
d. Use the "+" and "-" keys to enter the number of steps to move Up or Down until the Second Cut of the Alignment Tools (figure A), is just touching the Tip Rack.

Remember, "F3" (move) and {Enter} must be performed each time the estimated number of steps is entered.

e. Move the "Z" Assembly with the Alignment Tool to the "Diluent Bottle 1" position.
f. Remove the Alignment Tool and reinstall the Tip Nozzle Assembly.
g. Disconnect the Tip Jam Sensor and secure the cable so it is not hanging freely.
h. Place a tip, **without the cardboard**, into the Tip Rack 1 Right position A1. Refer to figure D.
i. Using the arrow keys, select Tip Rack 1 Right then select **F3** and **{Enter}.**
j. Place the Alignment Gauge onto the notch that is located on the chrome portion of the Tip Nozzle Assembly, just below the black collar. Refer to Figure E below.



Alignment Gauge

Figure E

k. Using feeler gauges that come with the Wedge and Feeler Gauge Set (part #1-43627-01), stack the feeler gauges to obtain a thickness of **.81 mm**

l. Using the stacked feeler gauges (Do Not Use The Wedge Gauge), check the gap between the Alignment Gauge and the bottom edge of the black collar on the Tip Nozzle Assembly. The feeler gauge should just fit without using force.

Note: The Gap should be between .8 mm and 1.0 mm, but setting the gap to the **.81 mm** is the **ideal gap setting.**

m. Adjust the Z-setting by using the "+" and "-" keys until the proper gap is achieved.

Notes: If during the gap adjustments, the Tip Nozzle bounces up, the FPC is now out of step and must be reset. DO NOT CONTINUE WITH THE ALIGNMENTS, do the following:

1. Go up minus 5 steps and select F3 (move), then {Enter}.
2. Select F4 (Save) and {Enter}
3. Push {Esc} to exit the Pipettor Homing Sequence menu.
4. When prompted, turn the FPC Power Switch Off, wait 5 seconds and turn the FPC back on.
5. Hit {Enter} when power is back up.
6. Reselect Pipettor Homing Sequence menu.
7. Go back to step "2.h." above.

Note: If the gap is not achievable and is greater than 1.0 mm, the cable tension should be checked using the Tension Verification Procedure in the Service Manual.

n. When all four positions have been aligned on the Pipette Tip Racks, continue to the next step.

D. Diluent Bottle-1 and Diluent Bottle-2 alignments.

1. Place a 100 ml bottle into the Diluent-1 position.
   Notes: It must be a **100 ml** bottle.
   The Diluent positions do not require a Z-height adjustment.
2. Using the arrow keys, select the Diluent Bottle-1 X-adjust.
3. Select F3 (move) and {Enter}.
4. Look at the positioning of the Tip Nozzle Assembly while inside the 100 ml bottle. Use the X-adjust and Y-adjust keys accordingly until the Tip Nozzle Assembly is in the Center of the bottle.
5. Place the 100 ml bottle into the Diluent-2 position and repeat steps D.1-D.4.

E. Saving the Changes.

After all the alignments have been accomplished. Perform the following steps to save the alignments.

1. Select **F4** (Save) and **Enter.**
2. Push Esc. to exit the "Pipettor Homing Sequence" menu.
3. When prompted, turn the FPC Power Switch to **Off**, wait 5 seconds and turn the FPC back on.
4. Hit Enter when power is back up.

F. Alignment Verification Procedures

1. Replace the P1 and P4 Platforms.

2. To visually inspect the X and Y tip position in well location E3 for the tray platform P1.

   a. From the Main Menu, highlight **Diagnostics** and press **Enter**.
   b. Move cursor to **Pipettor** and press **Enter**.
   c. Move cursor to **X-Y Function** and press **Enter.**
   d. Select **4 -60-Well Trays.**
   e. Verify all 4 tray platforms are on the pipettor. **Remove all the tips and cardboard from both racks.**
   f. Place one tip in rack # 1 position TA1. **With no cardboard.**
   g. Place a clean 60 well tray on tray platform P1.
   h. **DISCONNECT JAMMING SENSOR CABLE CONNECTOR.**
   i. Confirm placement **Yes** and press **Enter**.
   j. Select the **F3 (Cycle)** key and press **Enter**.
   k. Press the **Pause button** at the moment the tip reaches its lowest point in well location E3 of tray platform P1.
   l. Estimate the distance in millimeters the tip is from the actual center of well. If not centered then use the table that converts steps into millimeters and **record** the approximate number of steps required to center tip in the well.

      Remember: Due to tolerances between the Baseplate Platforms, and Trays, the position of the tip in the well may need to be adjusted.

m. Press the pause button again to allow the pipettor to continue.
n. Press the Pause Button when the pipette tip is over the P2 Platform position.
o. Remove the 60 well tray from tray platform P1.

Note: If any of the alignments are out of tolerance, continue with Sample Dispense Height alignment verification procedures (listed next) before returning to the alignment procedure in the Service Mode. Also, verify all four feet of the FPC Pipetting Platform are resting on the Base Plate of the FPC

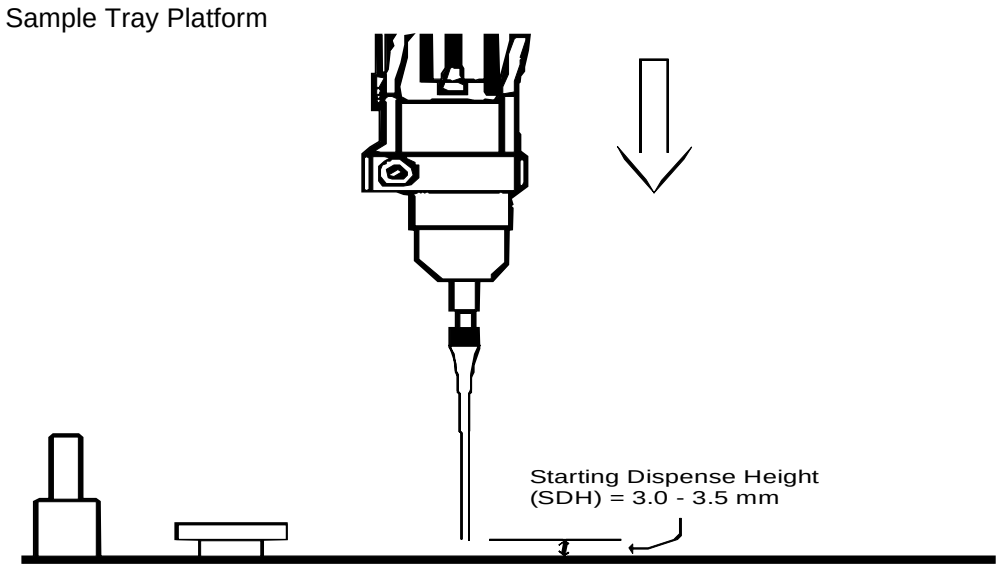
.

p. Do not leave the Cycle Mode, continue to step 3 below.

3. Sample Dispense Height (SDH) Verification

To Check the Sample Dispense Height (SDH) of each tray platform location, pause the pipettor at each assay tray platform location. Measure the tip to platform distance with metric gauge.

a. Press the **Pause button** at the moment the tip reaches its lowest point at the back position of tray platform P1.
b. Measure the tip to platform distance with the metric gauge (Wedge Gauge) and record the measurement. Refer to Figure F. The measurement should be between 3.0 and 3.5 mm..



Starting Dispense Height Measurement
Figure F

c. Press the pause button again to allow the pipettor to continue to the next tray platform location.
d. Check the Starting Dispense Height (SDH) for both the back and front ends of platfroms P2, P3, and P4 and take note of the measurements.

e. Repeat step c until all four platform measurements have been completed.

Note: To check the front positions, remove the left adjacent platform not being measured to prevent the wedge gauge from hitting it causing an improper measurement.

f. Do not leave the cycle mode, continue with Tip Rack Z-Height alignment verifications.

Note: If any of the alignments are out of tolerance, continue with Tip Rack Z-Height alignment verification procedures (listed next) before returning to the alignment procedure in the Service Mode. Also, verify all four feet of the FPC Pipetting Platform are resting on the Base Plate of the FPC.

4. Tip Rack Z-Height Alignment Verification Procedures
   a. Pause the pipettor when the sample nozzle and pipette tip have reached the lowest travel at tip rack position A1**.**
   b. Measure the tip pick up height as shown in Figure E using the Feeler gauge. Record this measurement.

Notes: Do not use the Wedge Gauge. Watch the Tip Nozzle Assembly for bouncing during the Tip Rack Z-Height Alignment Verification Procedure. If Tip Nozzle Assembly bounces, the pipettor has to be reset. This can be done by exiting the Cycle Mode. If the Tip Nozzle Assembly does bounce, return to the Service Mode and

readjust the Z-Height Alignment for that particular Tip Rack position and move the Z in the negative direction.

c. Repeat Steps a and b for tip rack positions FF, G1, MF.
d. All four readings must be within 0.8 mm to 1.0 mm.
Note: A setting of **0.81 mm** is the ideal setting.
e. If any of the tip rack Z-heights are not in the .8 mm to 1.0 mm specification or the Dispense Height Measurement is not within specifications, repeat the tip rack Z-axis alignment procedure in the Service Mode.
f. After all the alignments have been completed reconnect the Jamming Sensor.
g. Exit the Cycle mode.

5. When all the alignment verifications have been completed, perform the following:
a. If X,Y location of tip in the well was not centered in the E3 position of the tray according to step F.2.L of the Alignment Verification Procedures, go to the Service Mode, Homing Pipettor Sequence, and Enter the number of steps that were estimated.
b. Now add, in the **X-adjust, +20 steps for both the Platform Left and Platform Right locations.**

Note: This final adjustment takes into account the tray variations that may occur across 4 tray platforms.

c. Select F4 Save

6. Perform any additional alignments that were observed during the Alignment Verification Procedures.

7. Perform the Alignment Verification Procedures, F.1. above, again to verify the changes made were correct.

   Note: The tip should be positioned in the center of the well in the "Y" direction and offset in the "X" direction by approximately 1mm.

8. Tip Wipe Off Position Alignment Verification Procedure.
   Note: The X, Y, and Z software alignments must be correct **before** performing this procedure.
   a. Go to the **Main Menu**.
   b. Select **Diagnostics**
   c. Select **Pipettor**
   d. Select **Reset**
   e. Press the Pause button at the exact instant the Tip Nozzle Assembly enters the Tip Wipeoff Assembly. The Tip Nozzle should be positioned in the Tip Ejector Slot.
   f. Verify the Tip Nozzle Assembly has equal amounts of space on all sides inside the Tip Ejector Slot.
      Note: The Tip Nozzle Assembly should not touch the Tip Ejector Slot at any time.
   g. If the Tip Nozzle is not positioned properly perform the following two steps:

1. If the Tip Nozzle is to close or to far from the left end of the Tip Ejector Slot, loosen the two left screws on the top of the tip wipeoff assembly, and move until the desired position is obtained.
2. If the Tip Nozzle Assembly is not positioned properly on the front or back side of the Tip Nozzle Assembly, remove the Tip Waste Bin Assembly and locate the Allen Screws at the bottom of the Tip Ejector Mounting Post. Loosen the allen screws and adjust until the desired position is achieved.

G. FPC Operation Verification Procedures.

1. Perform Tip Threshold using a 100 ml bottle with DI water only. The FPC should not use 45 tips during the process. If 45 tips are used, verify all tubing connections, change the water level in the 100 ml bottle, but do not fill into the tapered neck area of the bottle, and repeat the Tip Threshold.
2. Perform leak test.
3. Load 20 samples and run an HIV Assay. As the pipettor dispenses Diluent, push the Pause Button and note the position of the Pipettor Tip in the well. The tip should be located to the right of center in the well in the X-direction by about 1.0 mm and the pipette tip should be centered in the well in the Y-direction.
4. A 1:41 Dilution Verification is not required unless the customer requires it to be done or a diluent or sample component was replaced.
5. Perform Total Service Call.

END OF DOCUMENT

ABBOTT ADD	INSTRUMENT SERVICE ADVISORY

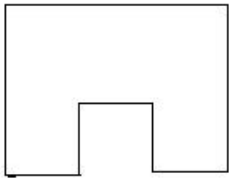
SUBJECT: **New FPC (TM) Alignment Procedure**	ISA#: **76-044**
ORIGINATOR: **Scott R. Hauth**	PRODUCT: **COMMANDER® FPC(TM) (76)**
APPROVED: **Bob Schabel 13/Oct/98**	EFFECTIVITY DATE: **13-OCT-98**

I. Distribution:
Worldwide

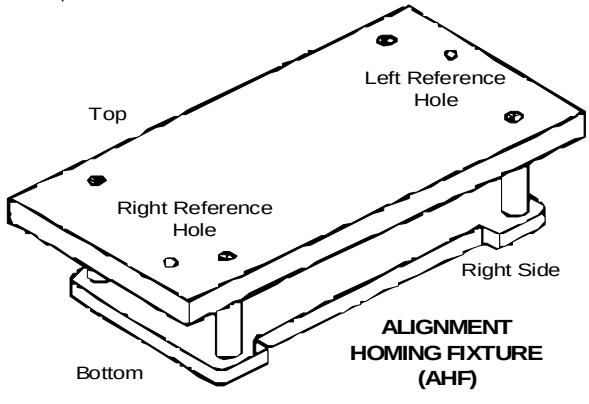
II. Purpose:
1. To ensure a proper seal between the Tip Nozzle Assembly and the Pipette Tip.
2. To align the Pipette tip to the 60 Tray Well.
3. To release changes to the Commander® Flexible Pipetting Center (FPC) Alignment section (Section 6).
4. This ISA supersedes related procedures in the current FPC Service Manual (Version 104) and all previous related ISAs.

III. Description:
This procedure will align the X, Y and Z positions of the FPC.

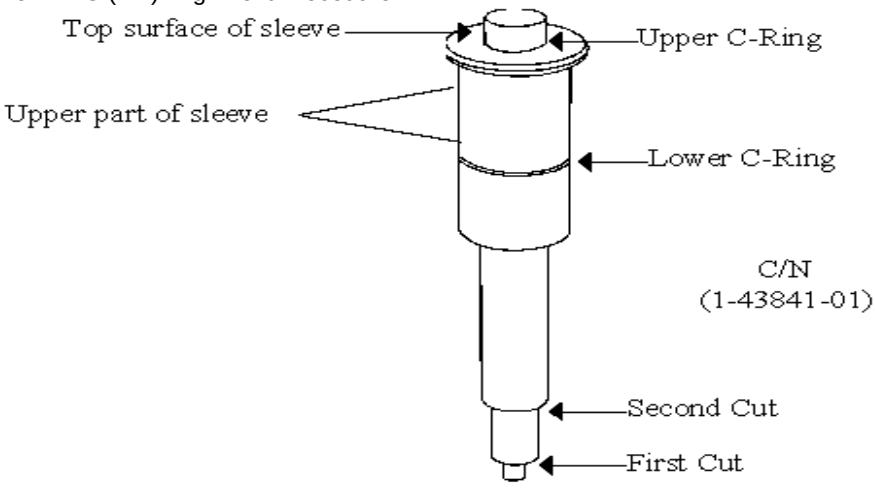
IV. Alignment Tools Needed
A. Alignment Tool, Part # 1-43841-01 (Tool which fits into tip nozzle position).
B. Alignment Homing Fixture, Part # 1-43729-01
C. Alignment Gauge, Part # 1-73446-01 (U-shaped tool which fits into the notch of Tip Nozzle Assembly).
D. Wedge and Feeler Gauge Set, Part # 1-43627-01



Alignment Gauge
Part # 1-73466-01



Part # 1-43729-01



Alignment Tool

Figure A

V. Helpful Hints

The X, Y and Z alignments are performed under the "Pipettor Homing Sequence" which is located in "Diagnostics" under "Service Mode". There will be eight different positions that will be checked and aligned.

During the alignment process, use the "arrow keys" to highlight the position to be aligned, and the "+" and "-" keys to increment the steps of the X, Y and Z motors to the proper positions.

The alignment values that are saved during the alignment procedures will become the default values in the EEPROM on the MPU board.

There are four software steps when aligning the X, Y and Z-Axis.

A. Using the arrow keys, highlight a position to be aligned.

B. Enter in the number of steps to move the Tip Nozzle by using the "+" and "-" keys.
Note: To determine if the axis needs to be moved, "+" or "-" is sometimes confusing. Think of the pipettor as being in the home position and this will help determine whether to use the "+" or "-" key.

1. X Adjustment: Moving away (to the right) from the home position is a "+" move. Moving towards the home position (to the left) is a "-" move
2. Y Adjustment: Moving away from the home position (towards the front of the FPC) is a "+" move. Moving towards the home position (towards the rear of the FPC) is a "-" move.
3. Z Adjustment: Moving the Z-assembly down is a "+" move and going up is a "-" negative move.

C. Pressing **F3, {Enter}** moves the Tip Nozzle Assembly to the updated position.
Note: The F3 (move) must be done each time the estimated number of steps is entered. If this is not done, the FPC will not recognize the steps when the values are saved.

D. After the alignments are completed press **F4, {Enter}** to save.

E. **Important:** Before exiting the Pipettor Homing Sequence Menu, the center piece of the Alignment Tool must be removed; otherwise, it will hit against the Tip Wipe-Off Assembly possibly causing damage to the Alignment Tool.

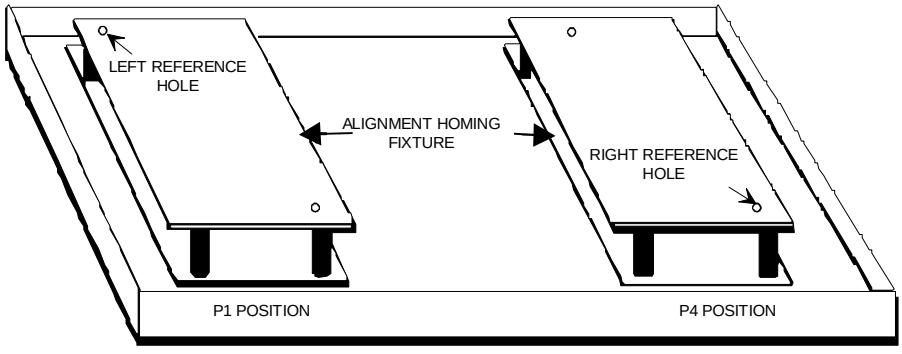
VI. Procedure

A. Preparation

Note: Make sure all four feet of the FPC Pipetting Platform are resting on the FPC base plate before performing alignments.

1. From the main select: (Do not install the Alignment Tool yet)
   a. Diagnostics-(Enter)
   b. Service Mode-(Enter)
   c. Type in the password (lower case):-(Enter)
      letusin (ver. 2.5)
      sezme (ver. 2.0)
   d. Pipettor Homing Sequence-(Enter)

2. Remove the Tray Platforms from the P1 and P4 positions on the FPC.
3. Place the Alignment Homing Fixture in the P1 position as shown in figure B.



Alignment Homing Fixture Positions
Figure B

4. Remove the Tip Nozzle Assembly, remove the tubing from the tube holders and lay the Tip Nozzle Assembly on the top back cover of the FPC. There is no need to disconnect the tubing from the syringe assemblies.

5. Install the Alignment Tool (part # 43841-01) into the Tip Nozzle Position and tighten down the allen screw.

   Note: Make sure the Tip Nozzle Assembly is secure while the tool is in place to avoid tangling of the tubing and wires while performing the alignments.

B. Platform Left and Platform Right: X, Y and Z Alignments

1. Platform Left: X, Y and Z Alignment
   a. Using the arrow keys, arrow to the "Platform Left, X-Adjust"
   b. Select **"F3"** (move) then **{Enter}.**
   c. Determine the distance from the Left Reference Hole (figure B) on the Alignment Homing Fixture. Use the "+" and "-" keys to enter the number of steps, along with the arrow keys to select X or Y axis, until the Alignment Tool fits into the Reference Hole with little or no resistance.

      Remember, "F3" (move) and "Enter" must be performed each time the estimated number of steps is entered.

      Use the charts below for movement directions and distance measurements.

1 motor Step in X direction = 0.0534mm
1 motor Step in Y direction = 0.1068mm
1 motor Step in Z direction = 0.0534mm

+x = moves to the right
- x = moves to the left
+y = moves towards the front
-y = moves toward the back
+z = moves in the down direction
-z = moves in the up direction

d. Using the arrow keys, go to Platform Z-Adjust and Refer to figure C below. Adjust the Z-position so the First Cut of the Alignment Tool is 3.00 mm - 3.50 mm from the platform. Use the Wedge Gauge for the measurement.
Helpful Hint: Adjust the height to about 3.4 mm. This will put the alignments closer to the 3.25 range when they are verified later.

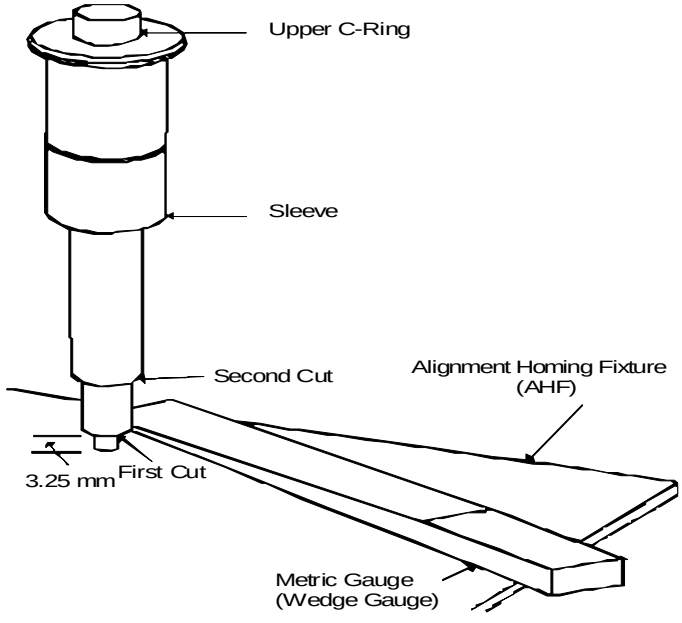


Figure C

2. Platform Right: X, Y and Z Alignments
   a. Place the Alignment Homing Fixture into the P4 position
   b. Perform these alignments the same way as the Platform Left X, Y and Z Alignments in step B.1 above, this time the Right Alignment Reference Hole will be used in the P4 position.

C. Tip Rack-1 and Tip Rack-2: X, Y and Z Alignments

1. Tip Rack Left and Right: X and Y Alignments

Note: The following procedure is used for all four positions: Tip Rack-1 Left, Tip Rack-1 Right, Tip Rack-2 Left, and Tip Rack-2 Right.

a. Remove the tips and **cardboard** from Tip Rack 1 and Tip Rack 2 (Figure D). Do not discard the tips, they can be reinstalled after all the alignments have been completed.
b. Using the arrow keys, arrow to the X-Adjust position for the tip rack position desired.
c. Select **F3** (move) then **Enter.**
d. Use the "+" and "-" keys to enter the number of steps, along with the arrow keys to select X or Y axis, until the Alignment Tool fits into the Tip Rack Hole with little or no resistance.

Remember, "F3" (move) and "Enter" must be performed each time the estimated number of steps is entered.

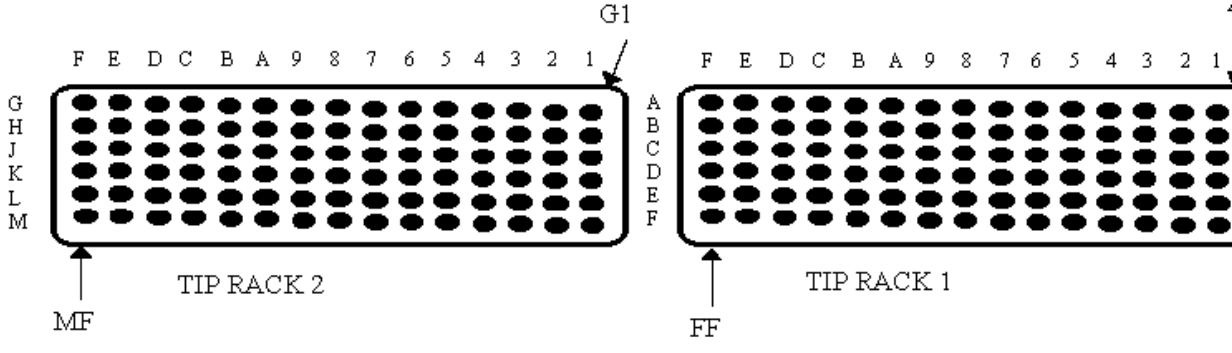


Figure D
Tip Rack 1 and 2

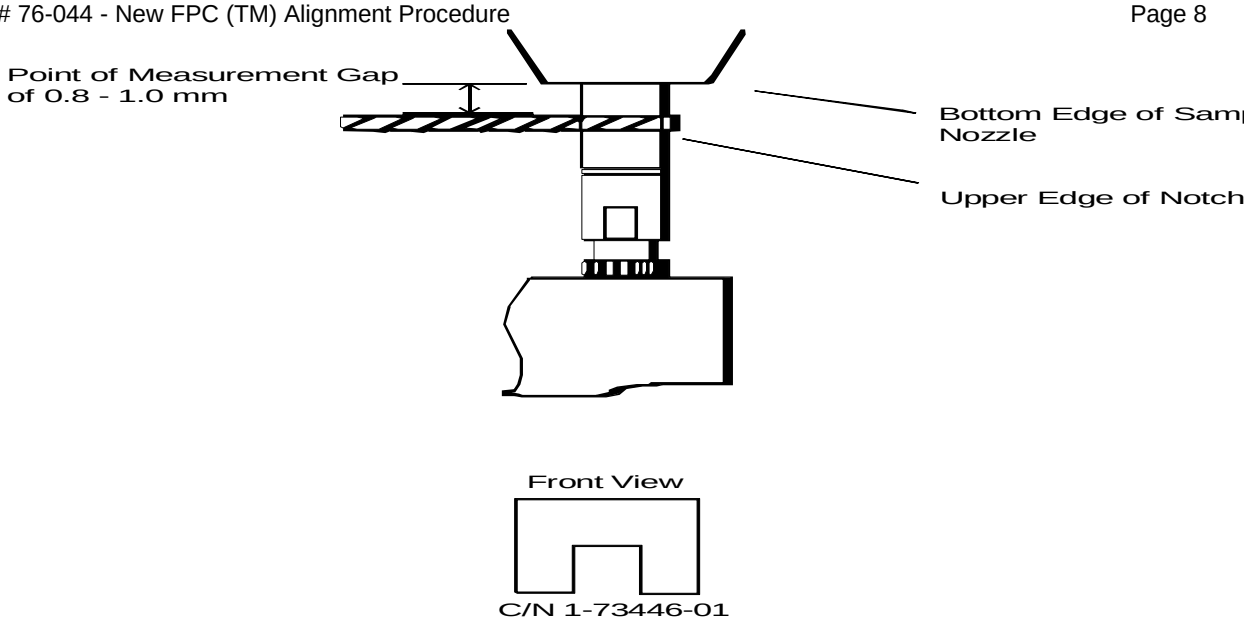
2. Tip Rack-1 and Tip Rack-2: Z-alignments

Note: The following procedure is used for all four positions: Tip Rack-1 Left, Tip Rack-1 Right, Tip Rack-2 Left, and Tip Rack-2 Right.

a. If not already done, remove the tips and **cardboard** from Tip Rack 1 and Tip Rack 2 (Figure D). Do not discard the tips, they can be reinstalled after all the alignments have been completed.
b. Using the arrow keys, arrow to the Z-Adjust position for the tip rack position desired.
c. Select **F3** (move) then **{Enter}**.
d. Use the "+" and "-" keys to enter the number of steps to move Up or Down until the Second Cut of the Alignment Tools (figure A), is just touching the Tip Rack.

Remember, "F3" (move) and {Enter} must be performed each time the estimated number of steps is entered.

e. Move the "Z" Assembly with the Alignment Tool to the "Diluent Bottle 1" position.
f. Remove the Alignment Tool and reinstall the Tip Nozzle Assembly.
g. Disconnect the Tip Jam Sensor and secure the cable so it is not hanging freely.
h. Place a tip, **without the cardboard**, into the Tip Rack 1 Right position A1. Refer to figure D.
i. Using the arrow keys, select Tip Rack 1 Right then select **F3** and **{Enter}.**
j. Place the Alignment Gauge onto the notch that is located on the chrome portion of the Tip Nozzle Assembly, just below the black collar. Refer to Figure E below.



Alignment Gauge

Figure E

k. Using feeler gauges that come with the Wedge and Feeler Gauge Set (part #1-43627-01), stack the feeler gauges to obtain a thickness of **.81 mm**

l. Using the stacked feeler gauges (Do Not Use The Wedge Gauge), check the gap between the Alignment Gauge and the bottom edge of the black collar on the Tip Nozzle Assembly. The feeler gauge should just fit without using force.

Note: The Gap should be between .8 mm and 1.0 mm, but setting the gap to the **.81 mm** is the **ideal gap setting.**

m. Adjust the Z-setting by using the "+" and "-" keys until the proper gap is achieved.

Notes: If during the gap adjustments, the Tip Nozzle bounces up, the FPC is now out of step and must be reset. DO NOT CONTINUE WITH THE ALIGNMENTS, do the following:

1. Go up minus 5 steps and select F3 (move), then {Enter}.
2. Select F4 (Save) and {Enter}
3. Push {Esc} to exit the Pipettor Homing Sequence menu.
4. When prompted, turn the FPC Power Switch Off, wait 5 seconds and turn the FPC back on.
5. Hit {Enter} when power is back up.
6. Reselect Pipettor Homing Sequence menu.
7. Go back to step "2.h." above.

Note: If the gap is not achievable and is greater than 1.0 mm, the cable tension should be checked using the Tension Verification Procedure in the Service Manual.

n. When all four positions have been aligned on the Pipette Tip Racks, continue to the next step.

D. Diluent Bottle-1 and Diluent Bottle-2 alignments.

1. Place a 100 ml bottle into the Diluent-1 position.
   Notes: It must be a **100 ml** bottle.
   The Diluent positions do not require a Z-height adjustment.
2. Using the arrow keys, select the Diluent Bottle-1 X-adjust.
3. Select F3 (move) and {Enter}.

4. Look at the positioning of the Tip Nozzle Assembly while inside the 100 ml bottle. Use the X-adjust and Y-adjust keys accordingly until the Tip Nozzle Assembly is in the Center of the bottle.
5. Place the 100 ml bottle into the Diluent-2 position and repeat steps D.1-D.4.

E. Saving the Changes.

After all the alignments have been accomplished. Perform the following steps to save the alignments.

1. Select **F4** (Save) and **Enter.**
2. Push Esc. to exit the "Pipettor Homing Sequence" menu.
3. When prompted, turn the FPC Power Switch to **Off**, wait 5 seconds and turn the FPC back on.
4. Hit Enter when power is back up.

F. Alignment Verification Procedures

1. Replace the P1 and P4 Platforms.

2. To visually inspect the X and Y tip position in well location E3 for the tray platform P1.

   a. From the Main Menu, highlight **Diagnostics** and press **Enter**.
   b. Move cursor to **Pipettor** and press **Enter**.
   c. Move cursor to **X-Y Function** and press **Enter.**
   d. Select **4 -60-Well Trays.**
   e. Verify all 4 tray platforms are on the pipettor. **Remove all the tips and cardboard from both racks.**
   f. Place one tip in rack # 1 position TA1. **With no cardboard.**
   g. Place a clean 60 well tray on tray platform P1.
   h. **DISCONNECT JAMMING SENSOR CABLE CONNECTOR.**
   i. Confirm placement **Yes** and press **Enter**.
   j. Select the **F3 (Cycle)** key and press **Enter**.
   k. Press the **Pause button** at the moment the tip reaches its lowest point in well location E3 of tray platform P1.
   l. Estimate the distance in millimeters the tip is from the actual center of well. If not centered then use the table that converts steps into millimeters and **record** the approximate number of steps required to center tip in the well.

      Remember: Due to tolerances between the Baseplate Platforms, and Trays, the position of the tip in the well may need to be adjusted.

   m. Press the pause button again to allow the pipettor to continue.
   n. Press the Pause Button when the pipette tip is over the P2 Platform position.
   o. Remove the 60 well tray from tray platform P1.

      Note: If any of the alignments are out of tolerance, continue with Sample Dispense Height alignment verification procedures (listed next) before returning to the alignment procedure in the Service Mode. Also, verify all four feet of the FPC Pipetting Platform are resting on the Base Plate of the FPC

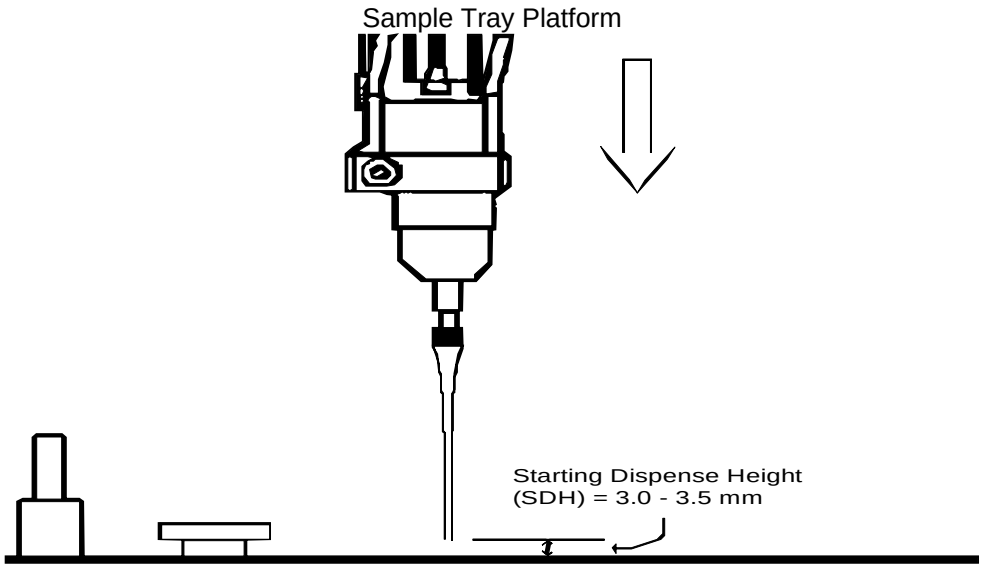
.

   p. Do not leave the Cycle Mode, continue to step 3 below.

3. Sample Dispense Height (SDH) Verification

   To Check the Sample Dispense Height (SDH) of each tray platform location, pause the pipettor at each assay tray platform location. Measure the tip to platform distance with metric gauge.

a. Press the **Pause button** at the moment the tip reaches its lowest point at the back position of tray platform P1.
b. Measure the tip to platform distance with the metric gauge (Wedge Gauge) and record the measurement. Refer to Figure F. The measurement should be between 3.0 and 3.5 mm..



Starting Dispense Height Measurement
Figure F

c. Press the pause button again to allow the pipettor to continue to the next tray platform location.
d. Check the Starting Dispense Height (SDH) for both the back and front ends of platfroms P2,
P3, and P4 and take note of the measurements.
e. Repeat step c until all four platform measurements have been completed.

Note: To check the front positions, remove the left adjacent platform not being measured to prevent
the wedge gauge from hitting it causing an improper measurement.

f. Do not leave the cycle mode, continue with Tip Rack Z-Height alignment verifications.

Note: If any of the alignments are out of tolerance, continue with Tip Rack Z-Height alignment verification procedures (listed next) before returning to the alignment procedure in the Service Mode. Also, verify all four feet of the FPC Pipetting Platform are resting on the Base Plate of the FPC.

4. Tip Rack Z-Height Alignment Verification Procedures
   a. Pause the pipettor when the sample nozzle and pipette tip have reached the lowest travel at tip rack position A1**.**
   b. Measure the tip pick up height as shown in Figure E using the Feeler gauge. Record this measurement.

      Notes: Do not use the Wedge Gauge. Watch the Tip Nozzle Assembly for bouncing during the Tip Rack Z-Height Alignment Verification Procedure. If Tip Nozzle Assembly bounces, the pipettor has to be reset. This can be done by exiting the Cycle Mode. If the Tip Nozzle Assembly does bounce, return to the Service Mode and readjust the Z-Height Alignment for that particular Tip Rack position and move the Z in the negative direction.

   c. Repeat Steps a and b for tip rack positions FF, G1, MF.
   d. All four readings must be within 0.8 mm to 1.0 mm.
      Note: A setting of **0.81 mm** is the ideal setting.
   e. If any of the tip rack Z-heights are not in the .8 mm to 1.0 mm specification or the Dispense Height Measurement is not within specifications, repeat the tip rack Z-axis alignment procedure in the Service Mode.

f. After all the alignments have been completed reconnect the Jamming Sensor.
g. Exit the Cycle mode.

5. When all the alignment verifications have been completed, perform the following:
a. If X,Y location of tip in the well was not centered in the E3 position of the tray according to step F.2.L of the Alignment Verification Procedures, go to the Service Mode, Homing Pipettor Sequence, and enter the number of steps that were estimated.

b. Now add, in the **X-adjust, +20 steps for both the Platform Left and Platform Right locations.**

Note: This final adjustment takes into account the tray variations that may occur across 4 tray platforms.

c. Select F4 Save

6. Perform any additional alignments that were observed during the Alignment Verification Procedures.

7. Perform the Alignment Verification Procedures, F.1. above, again to verify the changes made were correct.

Note: The tip should be positioned in the center of the well in the "Y" direction and offset in the "X" direction by approximately 1mm.

8. Tip Wipe Off Position Alignment Verification Procedure.
Note: The X, Y, and Z software alignments must be correct **before** performing this procedure.
a. Go to the **Main Menu**.
b. Select **Diagnostics**
c. Select **Pipettor**
d. Select **Reset**
e. Press the Pause button at the exact instant the Tip Nozzle Assembly enters the Tip Wipeoff Assembly. The Tip Nozzle should be positioned in the Tip Ejector Slot.
f. Verify the Tip Nozzle Assembly has equal amounts of space on all sides inside the Tip Ejector Slot.
Note: The Tip Nozzle Assembly should not touch the Tip Ejector Slot at any time.
g. If the Tip Nozzle is not positioned properly perform the following two steps:
1. If the Tip Nozzle is to close or to far from the left end of the Tip Ejector Slot, loosen the two left screws on the top of the tip wipeoff assembly, and move until the desired position is obtained.
2. If the Tip Nozzle Assembly is not positioned properly on the front or back side of the Tip Nozzle Assembly, remove the Tip Waste Bin Assembly and locate the Allen Screws at the bottom of the Tip Ejector Mounting Post. Loosen the allen screws and adjust until the desired position is achieved.

G. FPC Operation Verification Procedures.

1. Perform Tip Threshold using a 100 ml bottle with DI water only. The FPC should not use 45 tips during the process. If 45 tips are used, verify all tubing connections, change the water level in the 100 ml bottle, but do not fill into the tapered neck area of the bottle, and repeat the Tip Threshold.
2. Perform leak test.
3. Load 20 samples and run an HIV Assay. As the pipettor dispenses Diluent,

push the Pause Button and note the position of the Pipettor Tip in the well. The tip should be located to the right of center in the well in the X-direction by about 1.0 mm and the pipette tip should be centered in the well in the Y-direction.

4. A 1:41 Dilution Verification is not required unless the customer requires it to be done or a diluent or sample component was replaced.
5. Perform Total Service Call.

End of Document

ABBOTT ADD	INSTRUMENT SERVICE ADVISORY

SUBJECT: **FPC(TM) Assay Update Diskette Version 2.5.2 Release**	ISA#: **76-043**
ORIGINATOR: **Thomas A. Owusu**	PRODUCT: **COMMANDER® FPC(TM) (76)**
APPROVED: **Bob Schabel 03-DEC-98**	EFFECTIVITY DATE: **11-JAN-1999**

I. DISTRIBUTION:

Worldwide

II. PURPOSE:

To inform the field of the release of FPC Assay Update Diskette Version 2.5.2. This version 2.5.2 Assay Update Diskette for U.S and R.O.W will replace the current Abbott supplied assay protocol update diskette version 2.5.1. This ISA provides the necessary information (Assay Disk Downloading) to all FPC trained FSE's/FSR's worldwide, in the event that an FPC computer (CPU) has to be replaced or upgraded in the field.

III. DESCRIPTION:

The FPC Assay Update Diskettes contain the pipetting protocols for Abbott assays. New assay protocols have been added to the list of existing protocols. The protocols in the diskette are Abbott supplied assay protocols, identified by "-a" at the end of the assay name and cannot be edited or deleted by the user. The FPC Assay Update Diskette version 2.5.2 is installable only on FPC V2.5 systems by customers and Abbott representatives.

Special details of changes to the U.S/R.O.W Diskette`:

1. New assay protocols are included in this release. No pipetting parameters in the protocols have been modified that will change pipetting precision/accuracy.
2. When Abbott receives FDA approval for new assays, the US version of FPC Assay Update Diskette version 2.5.2 (LN 6A97-41) will be available for customer ordering. Abbott will communicate activation instructions for other new FPC assay protocols as other new assays receive FDA approval.
3. Previously approved assay protocols provided to customers on Version 2.5.1 diskettes are included. Some of the assay protocols have been deleted.

IV. FPC ASSAY UPDATE DISKETTE KIT PART/LIST NUMBERS:

Kit packets will be distributed to FPC Version 2.5 customers that will include the following:

* One diskette; either a U.S., or a R.O.W., Version 2.5.2
* Installation/Validation Protocol (Commodity No. 69-2298, U.S)
* Installation/Validation Protocol (Commodity No. 69-2299, R.O.W)
* Customer Letter (Commodity No. 69-2462, U.S)
* Customer Letter (Commodity No. 69-2461, R.O.W)

	List Number
FPC Assay Update V2.5.2 Packet (U.S)	6A97-41
FPC Assay Update V2.5.2 Packet (R.O.W)	6A97-40

V. FUNCTIONAL SPECIFICATIONS:

1. Assay Protocols List:

a) The U.S. Assay Update diskette Version 2.5.2 provides the following **ACTIVE** protocols for immediate use by the Customer:

AUSZYME MONO PPC
AUSZYME MONO QT
CORZYME PPC
CORZYME QT
-A-HIVAB-1 PPC
-A-HIVAB-1 QT
-A-HIVAB-1-2 PPC
-A-HIVAB-1-2 QT
CHAGAS AB PPC D0
CHAGAS AB PPC D1
CHAGAS AB QT D0
CHAGAS AB QT D1
1:41 DIL VERIFY
CHLAMYDIA PPC
CHLAMYDIA QT
A-HCV 2.0 PPC D0
A-HCV 2.0 PPC D1
A-HCV 2.0 QT D0
A-HCV 2.0 QT D1
CMV TL Ab PPC D0
CMV TL Ab PPC D1
CMV TL Ab QT D0
CMV TL Ab QT D1
AUSAB EIA PPC
AUSAB QUANT PPC
HBe AG PPC
ANTI-HBe PPC
HTLV I PPC DO
HTLV I QT DO
RBC Antisera
Plasma/RBC
Reverse Typing
Forward Typing
For/Rev in Tubes
MEIA Quant Cal
MEIA Quant Model 1
MEIA Quant Mode2

MEIA Qual Cal
MEIA Qual Mode 1
FPIA Cal
FPIA Mode 2
HTLV-I/II PPC D0
HTLV-I/II QT D0
HIVAG 1 MC PPCD0
HIVAG 1 MC QT D0

b) The R.O.W Assay Update diskette Version 2.5.2 provides the following **ACTIVE** protocols for immediate use by the Customer:

AUSZYME MONO PPC
AUSZYME MONO QT
CORZYME PPC
CORZYME QT
A-HIVAB-1-2 PPC
A-HIVAB-1-2 QT
HIVAG-1 MC PPCD0
HIVAG-1 MC PPCD1
HIVAG-1 MC QT D0
HIVAG-1 MC QT D1
CHLAMYDIA PPC
CHLAMYDIA QT
A-HCV 2.0 PPC D0
A-HCV 2.0 PPC D1
A-HCV 2.0 QT D0
A-HCV 2.0 QT D1
CMV TL Ab PPC D0
CMV TL Ab PPC D1
CMV TL Ab QT D0
CMV TL Ab QT D1
AUSAB EIA PPC
AUSAB QUANT PPC
HBe AG PPC
ANTI-HBe PPC
HIV 1-2 gO PPC
HIV 1-2 gO QT
AUSZ Mc DYN PPC
AUSZ Mc DYN QT
CHAGAS AB PPC D0
CHAGAS AB PPC D1
CHAGAS AB QT D0

CHAGAS AB QT D1
A-HCV 3.0 PPC D0
A-HCV 3.0 PPC D1
A-HCV 3.0 QT D0
A-HCV 3.0 QT D1
HIV 1/2 PLUS PPC
HIV 1/2 PLUS QT
HTLV-I/II PPC D0
HTLV-I/II QT D0
1:41 DIL VERIFY
RBC Antisera
Plasma/RBC
Reverse Typing
Forward Typing
For/Rev in Tubes
MEIA Quant Cal
MEIA Quant Mode 1
MEIA Quant Mode 2
MEIA Qual Cal
MEIA Qual Mode 1
FPIA Cal
FPIA Mode 2
HTLV I PPC D0
HTLV I QT D0

2. System Narrative and Logic Description:

No changes.

3. Reagent Application:

No Changes

4. Hardware Configuration/Interface:

No changes.

5. Interfaces with other systems:

The assay protocols are intended for use with the PPC™, Quantum™ II and IMx® systems. The interface will not be affected by this release.

6. Diagnostics:

No changes.

7. Operator Interface:

No changes.

8. Compatibility Issues:

Both the U.S. and R.O.W. assay update diskettes version 2.5.2 will be compatible with application, database and interface software

versions 2.5 or greater.

9. Hardware Architecture Specifications:

No changes.

10. Software Architecture Specifications:

No changes.

VI. LITERATURE:

Installation/Validation Protocols have been updated for version 2.5.2 and will be supplied in the customers assay upgrade kit.

VII. ASSAY SOFTWARE VERSION 2.5.2 INSTALLATION:

Installation of the FPC Assay Update Software V2.5.2 will be performed by the customer or an Abbott representative (FSR or TSS/TMR) per the procedures described in the Installation/Validation Protocol. Only FPC V2.5 systems can have the FPC Assay Update Diskette V2.5.2 installed.

Note: If the FPC system is at version 2.0, it must be upgraded to version 2.5 for the version 2.5.2 diskette installation.

INSTALLATION PROCEDURE:

1. Turn the FPC system power ON and let it boot up or initialize.
2. Type "fpc" at the FPC login: prompt. The system proceeds to the FPC System Administration menu.
3. Select "1" (Main Menu) from the FPC System Administration menu, followed by "Assay Protocol". The system displays the Assay Protocols directory screen.
4. Follow the Installation/Validation procedure supplied with the diskette.

END OF DOCUMENT

ABBOTT ADD	INSTRUMENT SERVICE ADVISORY

SUBJECT: **FPC (TM) PM/Total Service Call Procedure**	ISA#: **76-042**
ORIGINATOR: **Scott A. Childs**	PRODUCT: **COMMANDER® FPC(TM) (76)**
APPROVED: **Bob Schabel 08/12/98**	EFFECTIVITY DATE: **12-AUG-98**

I. DISTRIBUTION:

Worldwide

II. PURPOSE:

This ISA is to notify the field that the COMMANDER FPC Preventive Maintenance (PM)/Total Call (TC) Procedure (page 4A-3 of the FPC Service Manual) has been revised to address various customer issues.

III. PARTS:

None.

IV. PROCEDURE:

TOTAL SERVICE CALL

___ Visually inspect the instrument for abnormalities/damages such as cracks,dirt..etc.

___ Check and replace all tubing if necessary.

___ Verify that the Sample Syringe is secured against the block section.
Refer to the Installation Guide in the service manual if the syringe is loose.

___ Perform the Instrument Lubrication Procedure.

___ Perform a Leak Test.

___ Perform an XYZ Alignment if necessary.

___ Run an assay setup as follows: Use a minimum of 20 tubes Note: Two of the tubes must be empty (without water), and two of the disposable tips must be removed from the tip rack. Verify that the water is dispensed correctly. Pipetting errors would be generated on the two empty tubes and the system would check and bypass the missing disposable tips during the operation.

___ Perform the ABC Lens Cleaning Procedure if applicable.

Preventive Maintenance Checklist

___ Clean and Decontaminate Instrument.
Check and Replace if Necessary:

Sample Tubing	Diluent Tubing	Diluent Valve	Diluent Filter
ABC Lens	Sample Syringe	Diluent Syringe	

___ Instrument Lubrication:

X-axis Y-Axis Z-axis Pump Assembly

___Origin Sensor Verification:
X-Origin Y-Origin Z-Origin
Diluent Syringe Origin Sample Syringe Origin

___Alignments and Checks:
XYZ Alignments SDH Adjustment Tip Rack Z-Height Adjustment
Tip Wipe-Off Adjustment

___Perform F-Link +5V Check.

___Perform the following diagnostics:
Leak Test, ABC (if applicable), Sensor Module (if applicable), Printer, RS-232 Port, Hand Bar Code Reader

___Perform the Following:
Tip Threshold
Dilution Verification
Run an assay

___Perform Cable Inspection.

___Cable Tension (check adjustment).

END OF DOCUMENT

ABBOTT ADD	INSTRUMENT SERVICE ADVISORY

SUBJECT: **FPC (TM) Recabling and Pulley Replacement**	ISA#: **76-041**
ORIGINATOR: **Scott R Hauth**	PRODUCT: **COMMANDER® FPC(TM) (76)**
APPROVED: **Dan Armstrong 7/14/98**	EFFECTIVITY DATE: **27-JUL-98**

Note: This Procedure is currently too large for the database and a copy can be obtained by contacting the World Wide Transfusion Diagnostics CSE Group in Dallas or ACS in Delkenheim, Germany.

Note: This ISA supersedes the "Recabling and Pulley Replacement Procedure" found in the FPC Reference Manual.

I. DISTRIBUTION:

U.S./International

II. PURPOSE:

To provide updated procedures for the recabling and pulley replacement on the Commander FPC.

III. DESCRIPTION:

The cables on the FPC become stretched over a period of time and require replacement when the tension adjustment screws are at their maximum and the cable is too loose for normal operation. Also, replacement may be necessary if the coating on the cable is coming off and the movements of the pipettor are affected.

Note: If during a PM or Total Service Call it is discovered the cable tension screws are at their maximum and the FPC is operating properly, scheduling a cable and pulley replacement is recommended to prevent extended customer down time.

END OF DOCUMENT

ABBOTT ADD	INSTRUMENT SERVICE ADVISORY

SUBJECT: **Release of New FPC(TM) Service Manual**	ISA#: **76-040**
ORIGINATOR: **Scott Childs**	PRODUCT: **COMMANDER® FPC(TM) (76)**
APPROVED: **Bob Schabel 12/OCT/97**	EFFECTIVITY DATE: **01-NOV-97**

I. PURPOSE:

To inform the Field Service Organization of the release of a new version of the Flexible Pipetting Center (FPC) Service Manual. The manual will be available to order by November 1, 1997.

II. DESCRIPTION OF CHANGES:

The FPC Service manual was updated with changes in the following sections:

Section 1	TOTAL PROCESS CONTROL and Functional Flowchart
Section 2	Correction of grammatical and punctuation errors, change terms/wording to match FPC Operations Manual.
Section 4A	Routine Preventive Maintenance New ABC Lens Cleaning Procedure New Dilution Verification Procedure
Section 4D	Installation Guide UNIX Time and Date Procedures, Corrections
Section 5	Component Replacement New ABC Lens Procedure

III. ADMINISTRATIVE NOTES:

The new FPC Service Manual can be ordered by the following Catalog Number:

1-42834-06 FPC Service Manual

Manuals <u>will not</u> be automatically shipped to all FPC trained FSEs/FSRs worldwide.
<u>It will be up to the individual countries to forecast and order manuals through Worldwide Service Logistics Planning, Main Business Operations, in Dallas.</u>

END OF DOCUMENT

ABBOTT ADD	INSTRUMENT SERVICE ADVISORY

SUBJECT: **FPC (TM) ASSAY UPDATE DISKETTE VERSION 2.5.1**	ISA#: **76-039**
ORIGINATOR: **Thomas A. Owusu**	PRODUCT: **COMMANDER® FPC(TM) (76)**
APPROVED: **Bob Schabel**	EFFECTIVITY DATE: **18-AUG-97**

I. DISTRIBUTION:

Worldwide

II. PURPOSE:

To inform the field of the release of FPC Assay Update Diskette Version 2.5.1. The version 2.5.1 Assay Update Diskettes for U.S and R.O.W will replace the current Abbott supplied assay protocol update diskettes. This ISA provides the necessary information (Assay Disk Downloading) to all FPC trained FSE's/FSR's worldwide, in the event that an FPC computer (CPU) has to be replaced or upgraded in the field.

III. DESCRIPTION:

The FPC Assay Update Diskettes contain the pipetting protocols for Abbott assays. New assay protocols have been added to the list of existing protocols. The assay pipetting protocols are intended for PPC™, Quantum™, IMx®, and blood typing instrument applications. The protocols in the diskettes are Abbott supplied assay protocols, identified by "-a" at the end of the assay name and cannot be edited or deleted by the user. The primary change in the version 2.5.1 diskette is the HTLV-I/HTLV-II EIA assay which has become active with corrected conjugate dating, and HIVAG -1 MC which has also become an active assay.

The version 2.5.1 FPC Update Diskette is installable on a customer's existing FPC V2.5 system or as part of a newly installed FPC V2.5 system.

Special details of changes to the U.S/R.O.W Diskettes:

- New assay protocols are included in this release. No pipetting parameters in the protocols has been modified that will change pipetting precision/accuracy.
- Previously approved assay protocols provided to customers on Version 2.5 diskettes will again be provided

IV. FPC ASSAY UPDATE DISKETTE KIT PART NUMBERS:

Kit packets will be distributed to **COMMANDER**® Flexible Pipetting Center Version 2.5 customers that will include the following:

- One diskette; either a U.S., or a R.O.W., Version 2.5.1.
- Installation/Validation Protocol (Commodity No. 66-9641/R6, U.S).
- Installation/Validation Protocol (Commodity No. 66-9611/R5, R.O.W).
- Customer Letter (Commodity No. 66-9819/R1, U.S)
- Customer Letter (Commodity No. 66-9818/R1, R.O.W)

	Part/List Number
FPC Assay Update Packet (U.S)	6A97-39
FPC Assay Update Packet (R.O.W)	6A97-38
FPC Assay Update Diskette V 2.5.1 (U.S)	43783-105
FPC Assay Update Diskette V2.5.1 (R.O.W)	43784-105

V. FUNCTIONAL SPECIFICATIONS:

1. Assay Protocols List:

a) The U.S. Assay Update diskette Version 2.5.1 provides the following **ACTIVE** protocols for immediate use by the Customer:

AUSZYME MONO PPC
AUSZYME MONO QT
CORZYME PPC
CORZYME QT
-A-HIVAB-1 PPC
-A-HIVAB-1 QT
-A-HIVAB-1-2 PPC
-A-HIVAB-1-2 QT
CHAGAS AB PPC D0
CHAGAS AB PPC D1
CHAGAS AB QT D0
CHAGAS AB QT D1
1:41 DIL VERIFY
CHLAMYDIA PPC
CHLAMYDIA QT
A-HCV 2.0 PPC D0

A-HCV 2.0 PPC D1
A-HCV 2.0 QT D0
A-HCV 2.0 QT D1
CMV TL Ab PPC D0
CMV TL Ab PPC D1
CMV TL Ab QT D0
CMV TL Ab QT D1
AUSAB EIA PPC
AUSAB QUANT PPC
HBe AG PPC
ANTI-HBe PPC
CEA 1-STEP PPC
CEA 1-STEP QT
AFP PPC D0
AFP PPC D1
AFP QT D0
AFP QT D1
RBC Antisera
Plasma/RBC
Reverse Typing
Forward Typing
For/Rev in Tubes
MEIA Quant Cal
MEIA Quant Model
MEIA Quant Mode2
MEIA Qual Cal
MEIA Qual Mode 1
FPIA Cal
FPIA Mode 2

HTLV-I/II PPC D0
HTLV-I/II QT D0
HIVAG 1 MC PPCD0
HIVAG 1 MC QT D0

b) The R.O.W Assay Update diskette Version 2.5.1 provides the following **ACTIVE** protocols for immediate use by the Customer:

AUSZYME MONO PPC
AUSZYME MONO QT
CORZYME PPC
CORZYME QT
A-HIVAB-1-2 PPC
A-HIVAB-1-2 QT
HIVAG-1 MC PPCD0
HIVAG-1 MC PPCD1
HIVAG-1 MC QT D0
HIVAG-1 MC QT D1
CHLAMYDIA PPC
CHLAMYDIA QT
A-HCV 2.0 PPC D0
A-HCV 2.0 PPC D1
A-HCV 2.0 QT D0
A-HCV 2.0 QT D1
CMV TL Ab PPC D0
CMV TL Ab PPC D1
CMV TL Ab QT D0
CMV TL Ab QT D1
AUSAB EIA PPC

AUSAB QUANT PPC
HBe AG PPC
ANTI-HBe PPC
CEA 1-STEP PPC
CEA 1-STEP QT
AFP PPC D0
AFP PPC D1
AFP QT D0
AFP QT D1
CHAGAS AB PPC D0
CHAGAS AB PPC D1
CHAGAS AB QT D0
CHAGAS AB QT D1
A-HCV 3.0 PPC D0
A-HCV 3.0 PPC D1
A-HCV 3.0 QT D0
A-HCV 3.0 QT D1
HIV 1/2 PLUS PPC
HIV 1/2 PLUS QT
HTLV-I/II PPC D0
HTLV-I/II QT D0
1:41 DIL VERIFY
RBC Antisera
Plasma/RBC
Reverse Typing
Forward Typing
For/Rev in Tubes
MEIA Quant Cal
MEIA Quant Model

MEIA Quant Mode2
MEIA Qual Cal
MEIA Qual Mode 1
FPIA Cal
FPIA Mode 2
HTLV 1 PPC D0
HTLV 1 QT D0

2. System Narrative and Logic Description:
No changes.

3. Reagent Application:
No Changes

4. Hardware Configuration/Interface:
No changes.

5. Interfaces with other systems:
The assay protocols are intended for use with the PPC™, Quantum™, and IMx® systems. The interface will not be affected by this release.

6. Diagnostics:
No changes.

7. Operator Interface:
No changes.

8. Compatibility Issues:
Both the U.S. and R.O.W. assay update diskettes version 2.5.1 will be compatible to application, database, and interface software versions 2.5 or greater.

9. Hardware Architecture Specifications:
No changes.

10. Software Architecture Specifications:
No changes.

VI. Literature:
Installation/Validation Protocols have been updated for version 2.5.1 and will be supplied in the customers assay upgrade kit.

VII. ASSAY SOFTWARE VERSION 2.5.1 INSTALLATION:

Installation of the FPC Assay Update Software V2.5.1 will be installed by the customer or an Abbott representative (FSR or TSS/TMR) per the procedures described in the Installation/Validation Protocol. Only FPC V2.5 systems qualify for the installation of the FPC Assay Update Diskette V2.5.1. If the system is at version 2.0, it must be upgraded to version 2.5 to qualify for the version 2.5.1 diskette installation.

1. Type fpc at the FPC login: prompt. The system proceeds to the FPC System Administration menu.
2. Select 1 (Main Menu) from the FPC System Administration menu, followed by Assay Protocol. The system displays the Assay Protocols directory screen.
3. Follow the Installation/Validation procedure supplied with the diskette.

END OF DOCUMENT

ABBOTT ADD	INSTRUMENT SERVICE ADVISORY

SUBJECT: **Host Communication Problem**	ISA#: **76-038**
ORIGINATOR: **Ruben Cortez**	PRODUCT: **COMMANDER® FPC(TM) (76)**
APPROVED: **Bob Schabel 29/MAY/96**	EFFECTIVITY DATE: **29-MAY-96**

I. PURPOSE:

To inform the field of the following problem when communicating with a host computer and using the "Pass-Thru" parameter.

When using the FPC™ instrument version 2.5 Host diskette for communication to a Host/LIS system, please note the use for RS-232 Port Configuration, Communication parameter. When the communication parameter is set at "Pass-Thru", the FPC instrument, per the Commander® Flexible Pipetting Center Operations Manual, should collect batch data from analyzers and immediately transmit the data to the host. Some customers have noted that when set at the "Pass-Thru" setting, the transmission of data from the batch may be incomplete. This occurrence is due to the timing of data received by PPC™, Quantum II™, or Quantumatic™ instruments, being "unlocked" by the FPC instrument, then sent to the Host/LIS system. This has no effect on data integrity. The effect is on complete data transmission of batches to the Host/LIS system.

II. CURRENT WORK AROUND:

To help resolve this issue, changing the RS-232 port configuration, the communication parameter to store will "store" the batch data from analyzers linked to the FPC system. The batch data can then be reviewed and transmitted to the host under Files Mode. This will transmit results in ASTM format.

III. LONG TERM SOFTWARE FIX:

Version 2.5.1 PPC, Quantum II, and Quantumatic Interface diskettes will address the current problem.

There is no effect on the application or database software after these diskettes have been installed. All retrofit kits from stock will have the new Version 2.5.1 diskettes.

END OF DOCUMENT

ABBOTT ADD	INSTRUMENT SERVICE ADVISORY

SUBJECT: **Digiboard(TM) Communication Problems**	ISA#: **76-037**
ORIGINATOR: **Ruben Dario Cortez**	PRODUCT: **COMMANDER® FPC(TM) (76)**
APPROVED: **Bob Schabel 22-MAR-96**	EFFECTIVITY DATE: **22-MAR-96**

I. PURPOSE:

To inform the field service organizations of the introduction of a new Digiboard™ (C/N 1-81608-01) that will now be a field replaceable unit (FRU). The new Digiboard will be added to the depot kits and be available through service parts. The new design will address intermittent system communication problems.

II. DESCRIPTION OF CHANGES:

The current Digiboards in the field are labeled 8iVI and have the appropriate software drivers loaded on the 2.0/2.5 pre-install disk. The new Digiboards are labeled 8eVE and will be installed on all new computer platforms. To identify the new board refer to Figure 1. The driver software for the new 8eVE Digiboard is available in the Service disk kit (C/N 1-73575-01).

A secondary cause of the intermittent communication problems has been identified as the digi cable connector. To identify the correct cable to use, refer to Section 5, step 7, for more information.

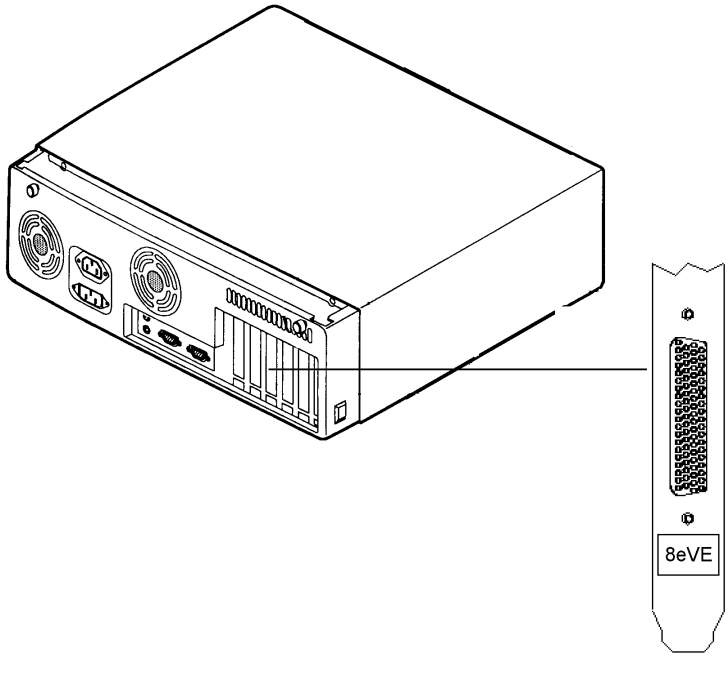


Figure 1

III. TOOLS:

Star-Head Screwdriver (#1 bit and #2 bit)
Antistatic Wrist Strap
Digiboard Driver Disk 1-81608-01 (8eVE)

IV. REMOVING THE SYSTEM COVER:

1. Turn off all peripheral devices connected to the system.
2. Turn the system AC power off by depressing the power on/off push-button switch on the front panel, and unplug the AC power cord from the back of the chassis.
3. Label (if needed) and disconnect all peripheral cables attached to the I/O panel on the back of the system.
4. The system cover is secured to the chassis with two spring-loaded, captive, retaining screws at the rear of the system (Figure 2) and a security lock at the front of the system (Figure 2).

> **NOTE:**
> Ensure that the security lock is in the unlocked position (Figure 2). If not, unlock it and loosen the cover retaining screws.

5. Facing the back of the system, slide the cover forward, about two inches, until the tabs inside the cover clear the slots in the chassis.
6. Using both hands, lift the cover (Figure 2) straight up from the chassis and set it aside.

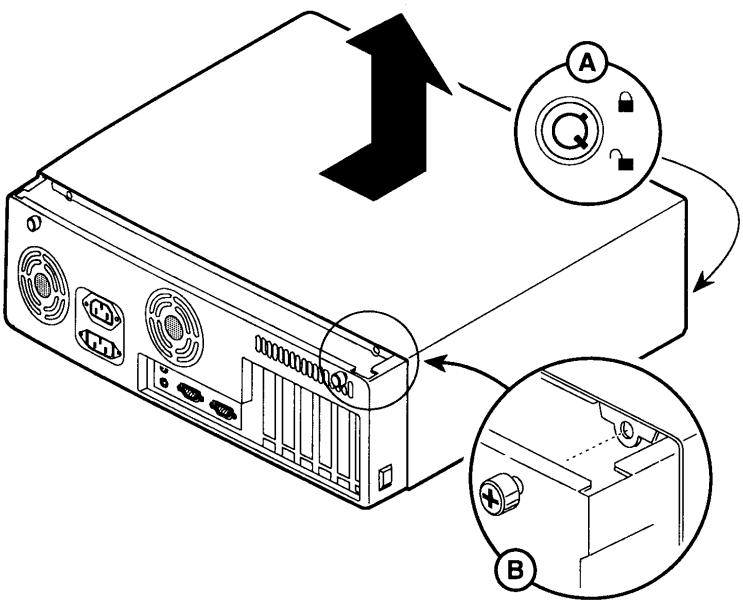


Figure 2

V. REMOVING THE DIGIBOARD:

1. Disconnect the Digiboard cable attached to the Digiboard you are removing.
2. Remove and save the Digiboard retaining bracket screw (Figure 3).
3. Hold the board at each end, and carefully rock it back and forth until the edge connectors pull free. Make sure that you do not scrape the board against other components.
4. Remove the board from the expansion slot and place it in a antistatic mat or wrapper.

> **NOTE:**
> Before installing the Digiboard, verify the switch setting located by the edge connector end of the Digiboard Board. All four switches must be set down. (Toward the numbers on the switches.)

5. The replacement Digiboard (8eVE) card will be return/install in slot #1 (the top slot).
6. Ensure the Digiboard is properly aligned with the slot and press firmly on the top of the card.

> **NOTE:**
> Before installing the card slot retention screw, connect the Digiboard Cable and secure the connecting screws tightly.

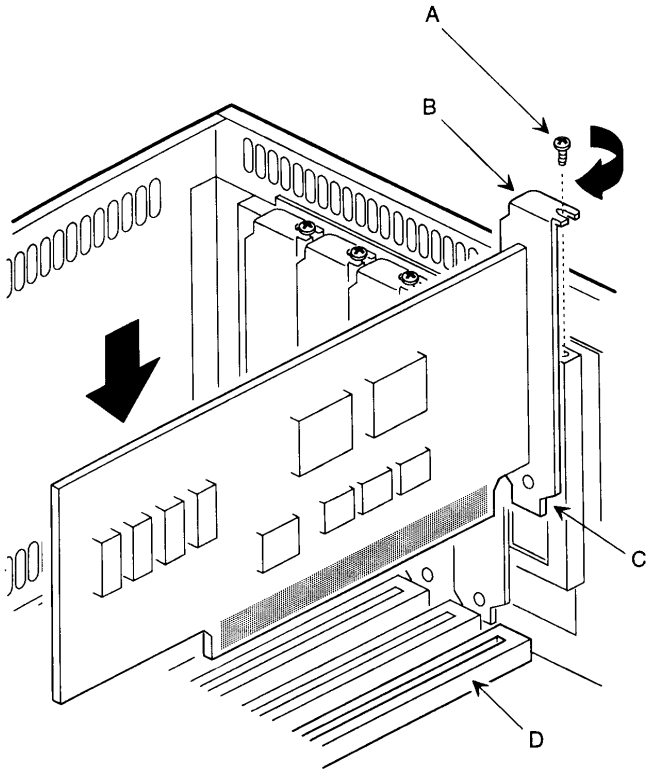
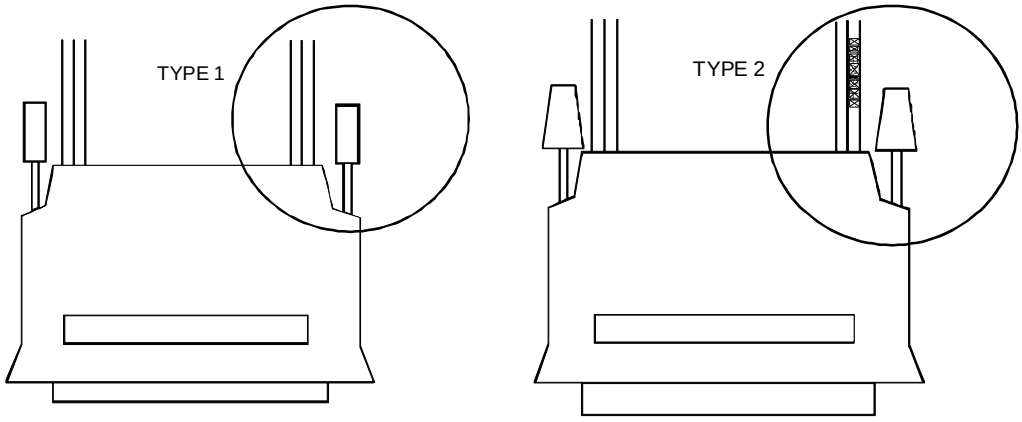


Figure 3

7. The Digiboard can cause communication problems if the connecting screws of the Digi cable are improperly secured. There is one type of Digiboard cable which may not connect properly with the Digiboard (see Figure 2).



The Type 1 Cable, with better clearance, must be used to prevent any communication problems.

8. Install the retention card slot screw to hold the card in place (see Figure 3).

VI. REPLACING THE SYSTEM COVER:

1. Before replacing the system cover, make sure no tools or loose parts have been left inside the system chassis.
2. Make sure all add-in boards are firmly seated in their respective slots, peripheral devices are firmly attached to the chassis, and that all interior cables are properly connected.
3. Position the cover above and about two inches from the rear of the chassis, then lower the cover down until the top of it touches the chassis. Slide the cover toward the rear of the system so that the tabs on each side of the cover firmly engage in the slots in the chassis frame (Figure 4).
4. Tighten the two system cover retaining screws (Figure 4) and, for security, using the system key, place the security lock in the locked position to prevent unauthorized removal of the cover from the chassis (Figure 4).
5. Reconnect all cables to the system.

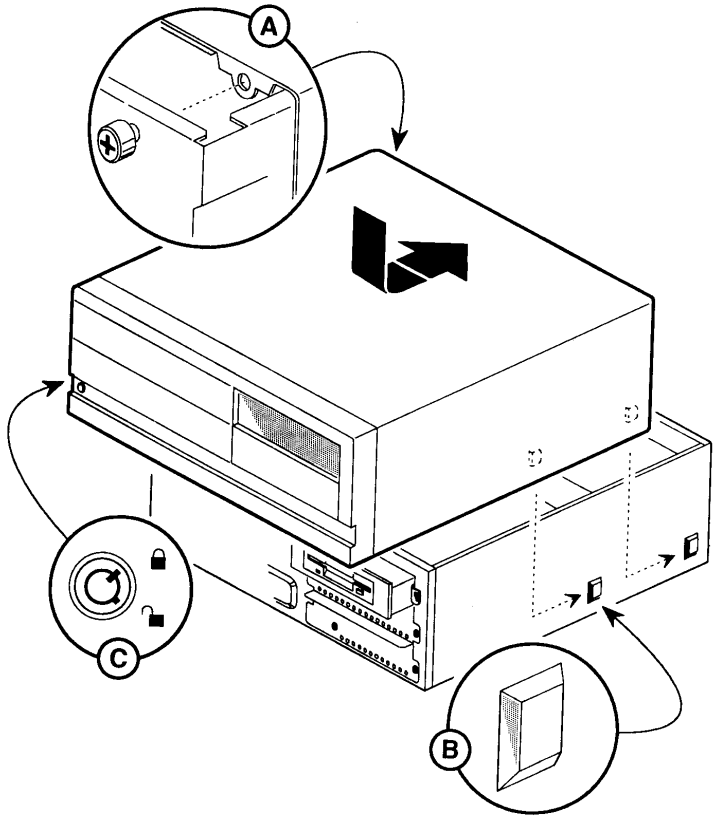
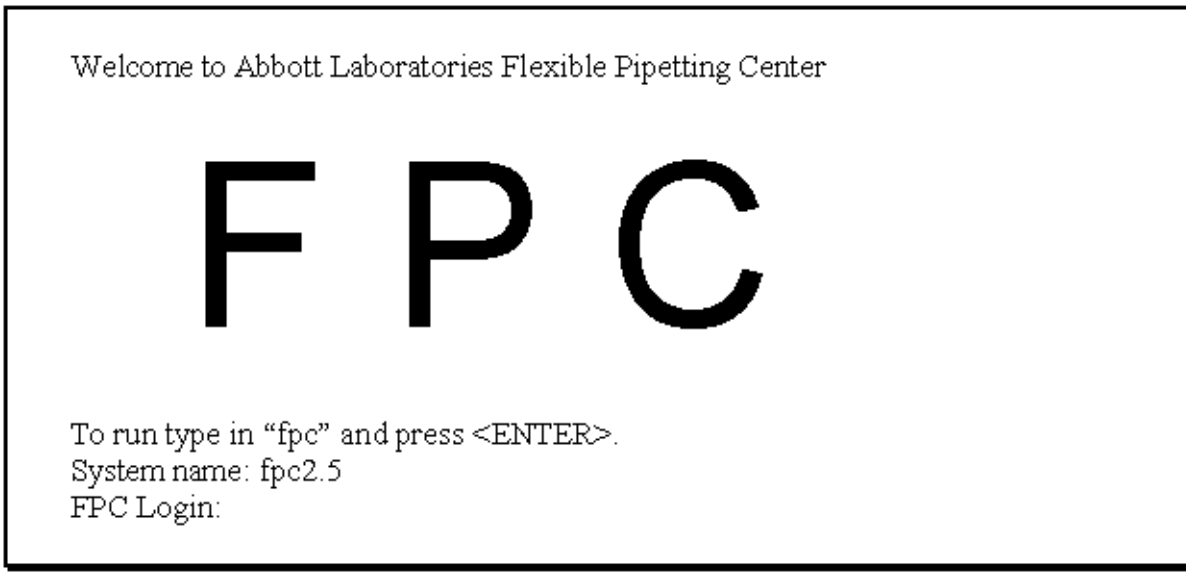
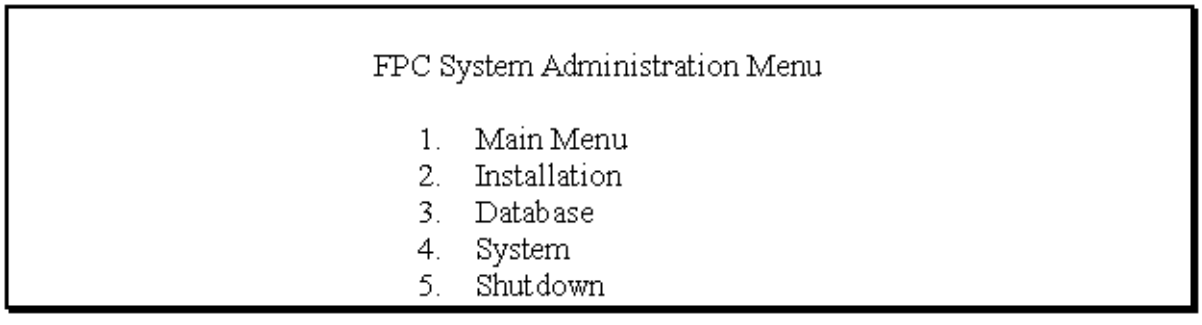


Figure 4

1. When the systems reboots on power up, the FPC(TM) logon screen appears.
2. Type in f p c (in lower case) and press <ENTER> key.

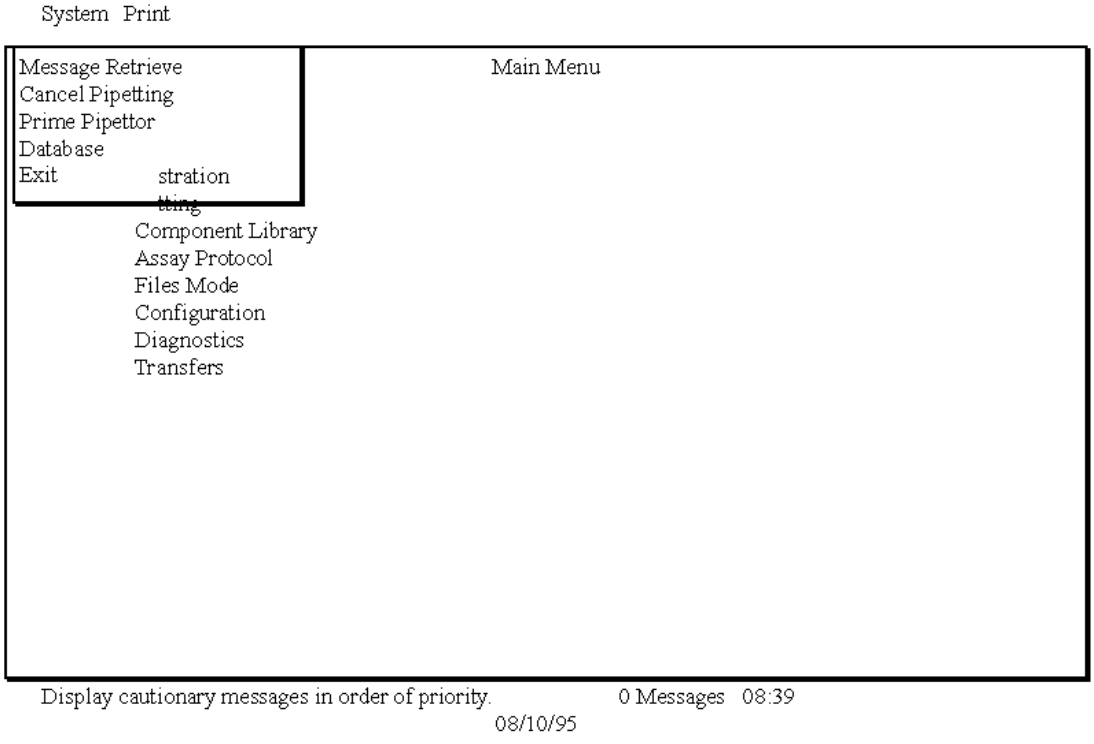


3. From System Administration Menu, select <1>, Main Menu and press <ENTER> key.



VII. INSTALLING DIGIBOARD DRIVER SOFTWARE:

1. From the Main Menu, select <F1> System and press <ENTER>.



2. From the Administration Menu, select <2> Installation.

```
FPC System Administration Menu

1. Main Menu
2. Installation
3. Database
4. System
5. Shutdown

Please Select one of the Above: 2
```

3. Password, type sezme (in lower case only) and press <ENTER>.
4. From the Installation Menu, select <1> and press <ENTER>.

```
FPC Installation Menu

1. Load Software

2. Exit

Please Select One of The Above: 1
```

Use Driver Disk 1-81608-01 (8eVE) in the service kit.

5. Insert the first diskette into Drive a:
   Confirm Placement [YES/NO]:
6. Select <Y> key for yes, and press <ENTER>.
7. Digiboard 8e Version 2.5 will be installed.
   Confirm [YES/NO]:
8. Select <Y> key and press <ENTER>.
9. Follow the instructions display:
   You must perform a shutdown from the FPC Administration Menu
   before using the Newly Configured FPC 2.5 System...
   Press <ENTER> now to indicate you have seen this message.
10. Press <ENTER>.
11. Digiboard 8e Version 2.5 Software Installation complete.
    Please hit <ENTER> to return to the FPC Installation Menu:
12. From the FPC Installation Menu, select <2> and press <ENTER> key.

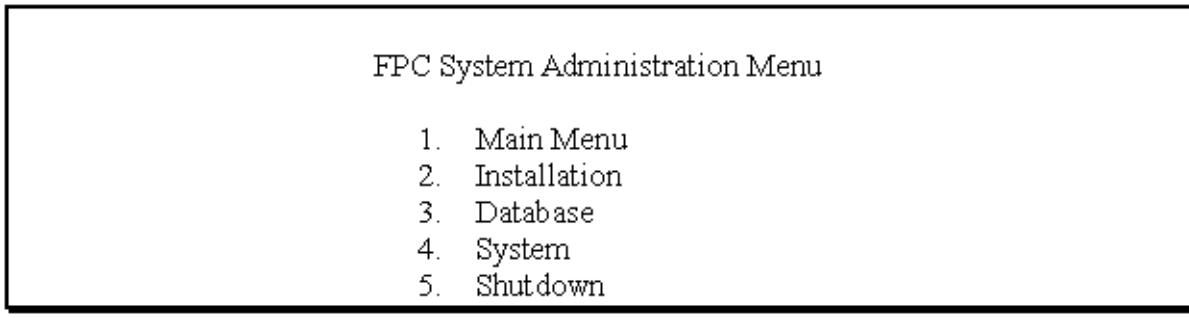
```
FPC Installation Menu

1. Load Software

2. Exit

Please Select One of The Above: 1
```

13. From the System Administration Menu, select <5> Shutdown and press <ENTER>.



14. Complete Shutdown procedures and return to Main Menu.

END OF DOCUMENT

ABBOTT ADD	INSTRUMENT SERVICE ADVISORY

SUBJECT: **Cable Tension Check/Adjustment Procedures**	ISA#: **76-036**
ORIGINATOR: **Ruben Cortez/Tim Kitzmiller**	PRODUCT: **COMMANDER® FPC (76)**
APPROVED: **Dan Armstrong for John Buckland 5/31/95**	EFFECTIVITY DATE: **31-MAY-95**

I. DISTRIBUTION:
U.S./International

II. PURPOSE
To inform the Field of the following procedure, which is to be performed when it is suspected that the FPC Y or Z-cable tension has fallen to unacceptably low levels. **NOTE: Not for use on X Cable**. This procedure should be performed when the FPC is experiencing mechanical movement problems, and as part of the normal preventive maintenance (PM) procedures.

III. TOOLS REQUIRED
- Phillips (Star Head) screwdriver
- 7mm open end wrench or small adjustable wrench
- 3mm Allen wrench
- FPC cable tension gauge 1-73516-01

IV. SERVICE KIT IMPACT
U.S.: One (1) Tension gauge will automatically be shipped to each FPC-trained FSR when tools are available.

INTERNATIONAL: Each countrys planner will be responsible for forecasting/ordering the quantity of FPC Tension Gauges required via regular parts channel.

V. DISASSEMBLY
1. Turn power off.
2. Remove pause switch mounting panel by removing two screws. (Refer to Figure 1.)
3. Remove left external cover by removing four screws.
4. Remove right end cover by removing two screws.
5. Remove right external cover by removing four screws.

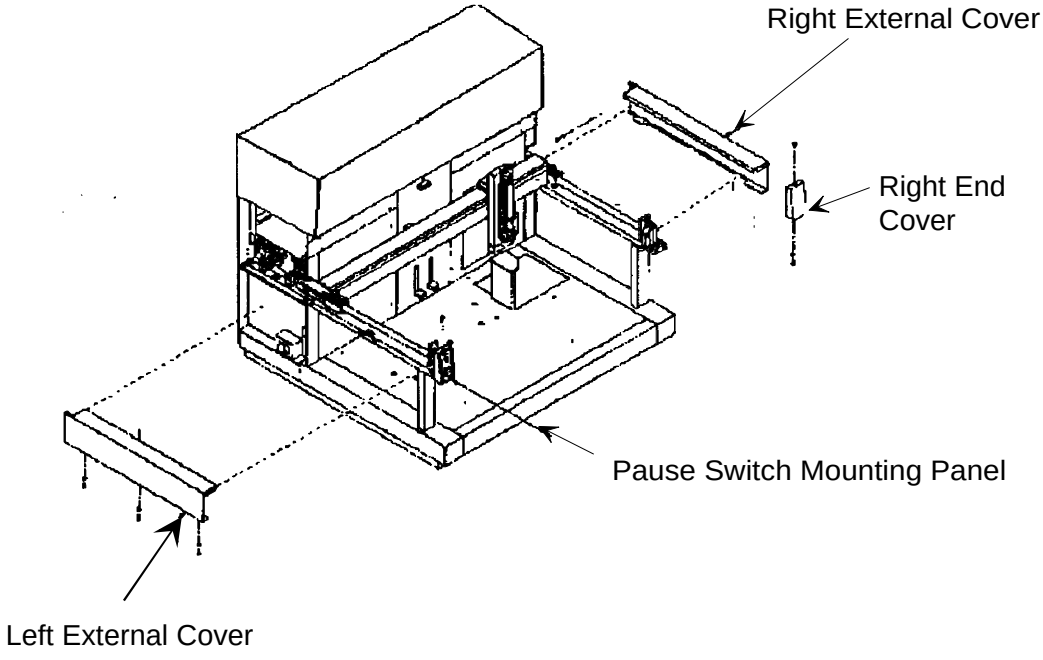


Figure 1. Right External Cover

6. Loosen two screws on Y-axis cable clamp, at least three full turns, to release Y cable from left idle pulley assembly. (Refer to Figure 2.)

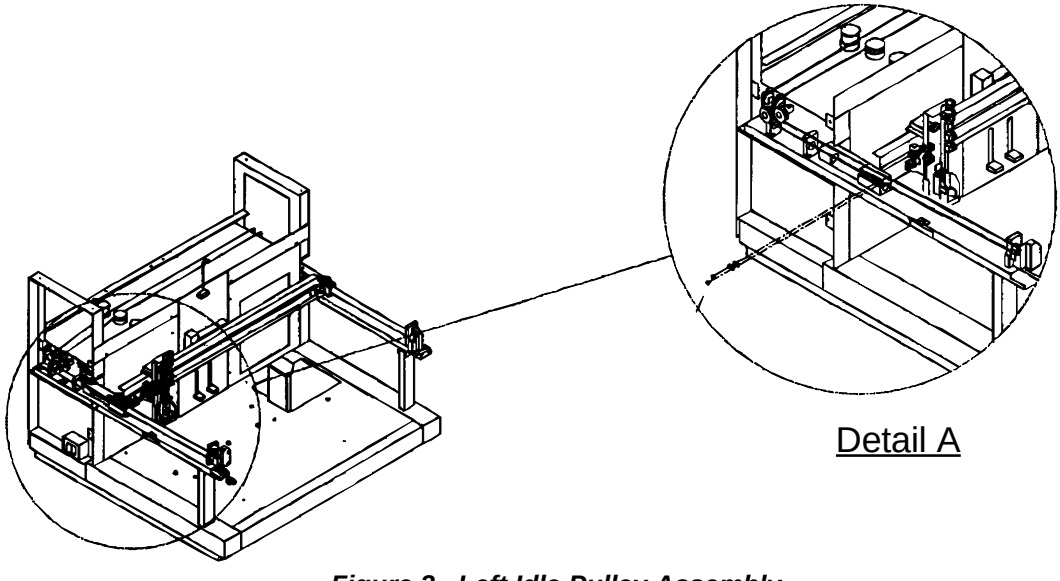
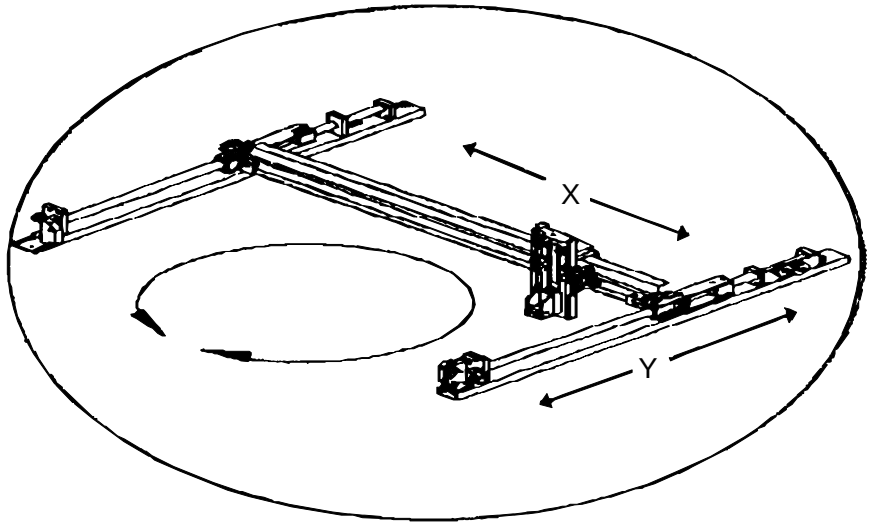


Figure 2. Left Idle Pulley Assembly

Prepare FPC cable for tension measurement:

7. While holding the Z-axis assembly, move it and the X-axis assembly in both the X and Y directions as if plotting a circle. (Refer to Figure 3.) Rotate the assemblies three times both clockwise and counter clockwise. Try to avoid hitting the mechanical stops.



Detail B

Figure 3. Rotate The Assemblies

8. Move the Z-axis head assembly to the home position (the left, rear corner of FPC with nozzle raised).
9. Lower and raise the nozzle assembly three times. Return to fully raised position.

VI. TENSION VERIFICATION

Measure Z-cable tension:

1. Place tension gauge shoulder screw in the Z MIN position on the gauge.
2. Identify right side Z-cable. (Refer to Figure 4.)

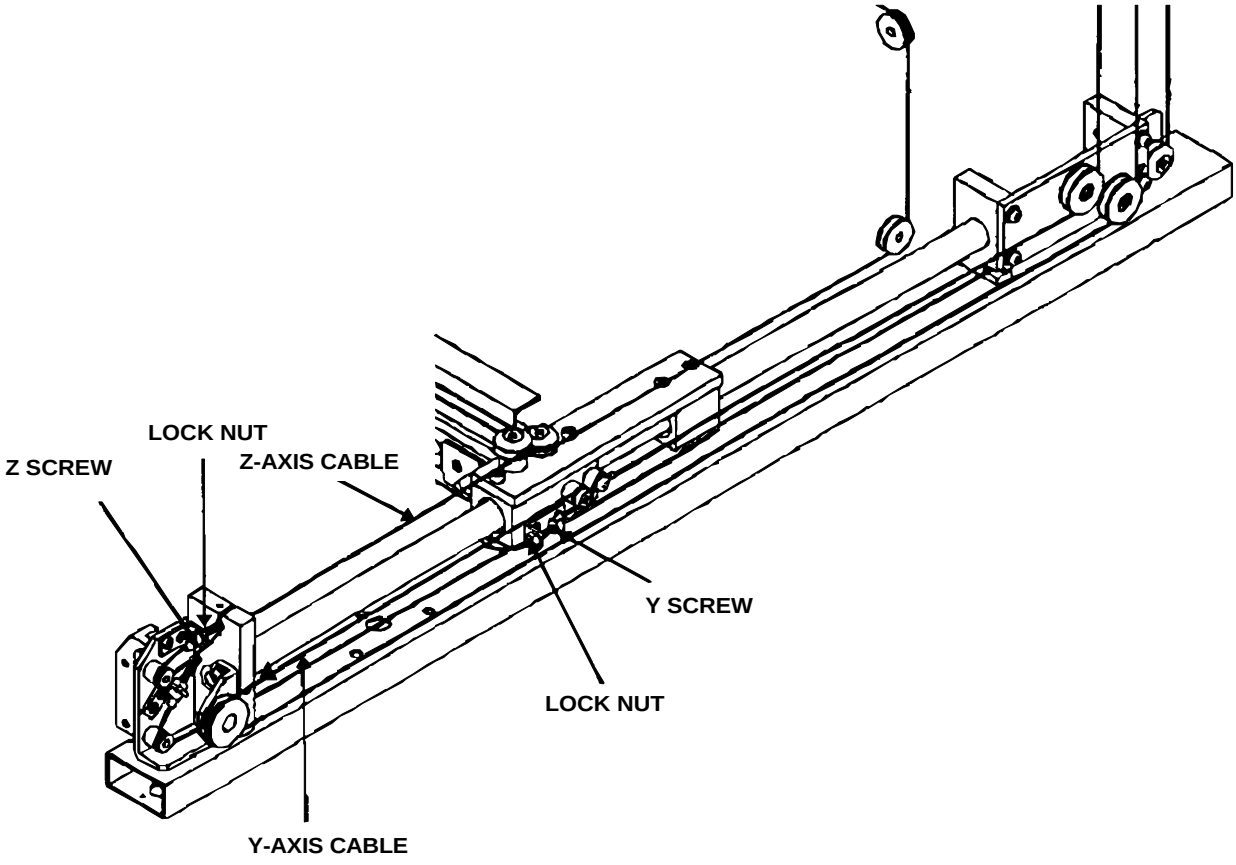


Figure 4. Z and Y Axis Cables

3. Place tension gauge on right side Z-cable. (Refer to Figure 5).

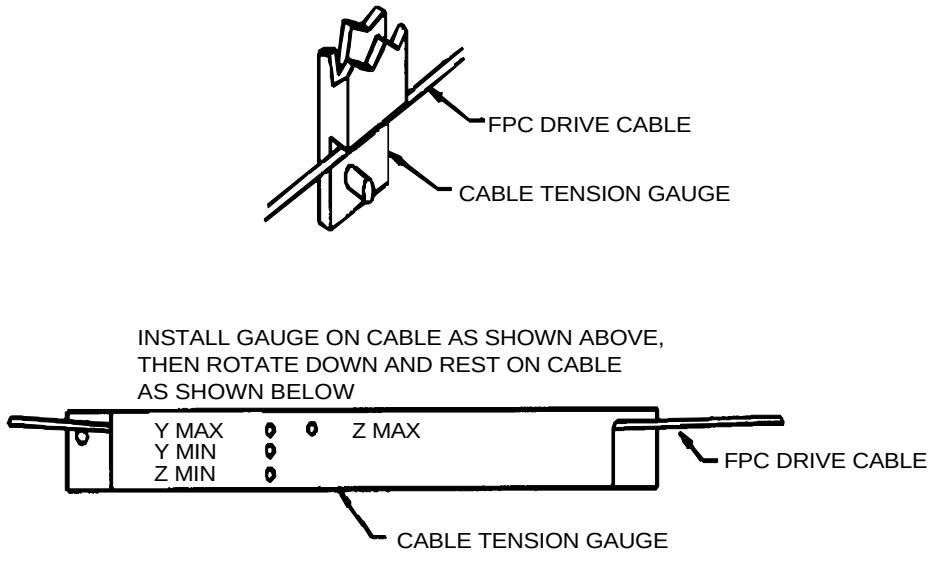


Figure 5. Tension Gauge

NOTE

If the cable tension is well above the minimum specification, the tension gauge will not balance on the cable. If this happens, the Z-cable tension does not need to be adjusted.

4. If the Z-cable touches the tension gauge (refer to Figure 6), the cable tension is at, or below, the minimum specification. Adjust the cable tension as described in Section VII, Retension. If the Z cable is not touching the tension gauge, tension is above the minimum specification. No adjustment is required.

Measure Y-cable tension:

1. Place tension gauge shoulder screw in the Y MIN position on the gauge.
2. Identify right side Y-cable. (Refer to Figure 4.)
3. Place tension gauge on right side Y-cable. (Refer to Figure 5.)

NOTE

If the cable tension is well above the minimum specification, the tension gauge will not balance on the cable. If this happens, the Y-cable tension does not need to be adjusted.

4. If the Y-cable touches the tension gauge (refer to Figure 6), the cable tension is at, or below, the minimum specification. Adjust the cable tension as described in Section VII, Retension. If the Y cable is not touching the tension gauge, tension is above the minimum specification. No adjustment is required.

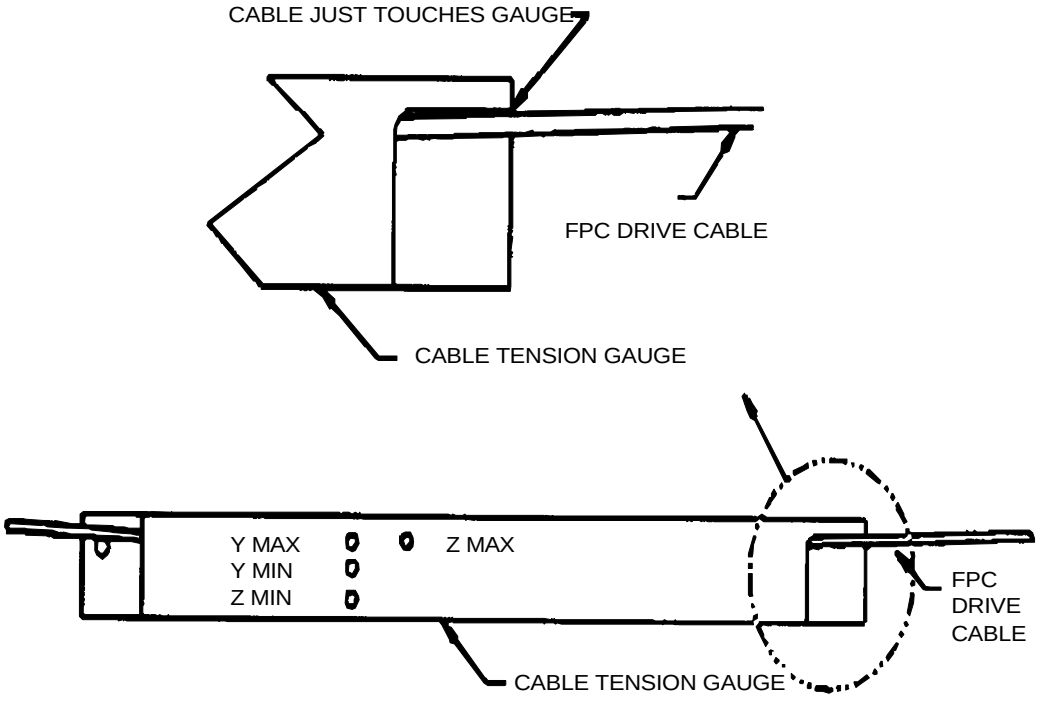


Figure 6. Adjust Cable Tension

VII. RETENSION

Z-cable tension:

1. Place tension gauge shoulder screw in the Z MAX position on the gauge.
2. Place tension gauge on right side Z-cable. (Refer to Figures 4 and 5.)
3. Loosen Z-cable adjusting screw lock nut using a 7mm wrench.
4. Tighten Z-cable tension adjusting screw using a 3mm allen wrench until the gauge just lifts off the cable. (Refer to Figure 6.) No further adjustment is required.

NOTE

If there is not enough adjustment in the tension adjusting screw to lift the tension gauge off the cable, maximum cable tension is not obtained. This condition is normal.

5. Tighten Z-cable adjusting screw lock nut.

Y-cable tension:

1. Place tension gauge shoulder screw in the Y MAX position on the gauge.
2. Place tension gauge on right side Y-cable. (Refer to Figures 4 and 5.)
3. Loosen Y-cable adjusting screw lock nut.
4. Tighten Y-cable tension adjusting screw until the gauge just lifts off the cable. (Refer to Figure 6.) No further adjustment is required.

NOTE

If there is not enough adjustment in the tension adjusting screw to lift the tension gauge off the cable, maximum cable tension is not obtained. This condition is normal.

5. Tighten Y-cable adjusting screw lock nut.

VIII. REASSEMBLE THE FPC

1. Pull the X-axis assembly fully forward (towards the operator) and against the stops.
2. While holding the X-axis assembly against the front stops, tighten two screws holding the Y-axis cable clamp (Figure 2, Detail A) to lock cable to left side pulley assembly.
3. Reverse steps 2 through 5 under Section 5, Disassembly, to install the sheet metal covers.

IX. CHECKOUT

1. Perform the FPC alignment procedure per ISA 76-020B.
2. Perform Total Call.

END OF DOCUMENT

ABBOTT ADD	INSTRUMENT SERVICE ADVISORY

SUBJECT: **Release of New FPC(TM) Service Manual**	ISA#: **76-035A**
ORIGINATOR: **Tim Kitzmiller/Ruben Cortez**	PRODUCT: **COMMANDER® FPC(TM) (76)**
APPROVED: **Bob Schabel 26/FEB/96**	EFFECTIVITY DATE: **26-FEB-96**

I. PURPOSE:

To inform the field that a new version Flexible Pipetting Center™ (FPC) Service Manual (Product Code 76) has been released, and will be available to order by 23-FEB-96.

II. DESCRIPTION OF CHANGES:

The FPC Service Manual was updated to reflect changes due to the Version 2.5 software upgrade. These changes include a new section called TOTAL PROCESS CONTROL™ and the following updated sections:

Section 4A	Routine Preventative Maintenance. Cable Tension Procedure
Section 5	Component Replacement. Pulse Motor Driver Replacement Procedure
Section 6	Alignment and Calibrations. Tip Height Alignment (gauge) Procedure

III. ADMINISTRATIVE NOTES:

The new FPC Service Manual can be ordered by the following Catalog Part number:

1-42834-05 FPC Service Manual

Manuals <u>will not</u> be automatically shipped to all FPC trained FSE's/FSR's worldwide.
<u>It will be up to the individual countries to forecast and order manuals through Worldwide Service Logistics Planning, Mail Business Operations, in Dallas</u>.

END OF DOCUMENT

ABBOTT ADD	INSTRUMENT SERVICE ADVISORY

SUBJECT: **Pulse Motor Driver Assembly**	ISA#: **76-034**
ORIGINATOR: **Ruben Dario Cortez**	PRODUCT: **COMMANDER® FPC (76)**
APPROVED: **John Buckland 21-JUN-95**	EFFECTIVITY DATE: **21-JUN-95**

I. DISTRIBUTION:

U.S./International

II. PURPOSE:

Release of the Catalog Number for a single Pulse Motor Driver Assembly for the FPC Pipettor (C/N 1-73436-01). This part will be added to the remote depots.

III. DESCRIPTION:

The Pulse Motor Driver unit contains the following motor driver assemblies as shown in Figure 1:

- X-Axis Motor Driver Assembly
- Z-Axis Motor Driver Assembly
- Sample Syringe Motor Driver Assembly
- Diluent Syringe Motor Driver Assembly
- Y-Axis Motor Driver Assembly

NOTE
ALL THE DRIVER ASSEMBLIES ARE THE SAME EXCEPT FOR THE Y-AXIS MOTOR DRIVER ASSEMBLY WHICH HAS A DIFFERENT SWITCH SETTING.

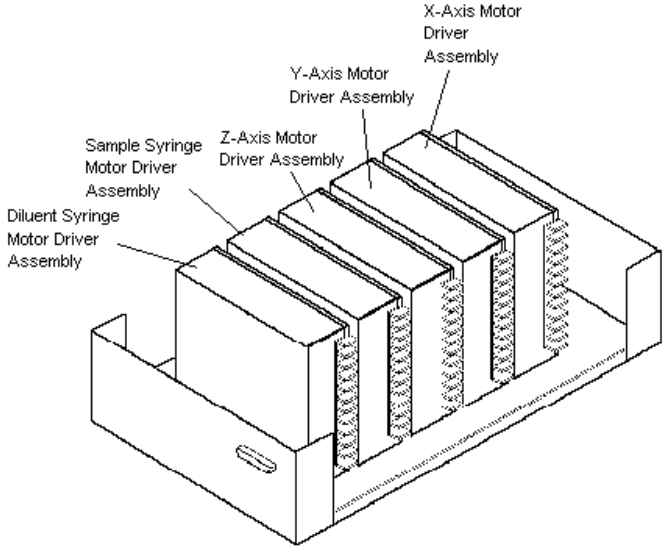


Figure 1. Pulse Motor Driver Unit

IV. PROCEDURE:

1. Disconnect the AC power cord from the power outlet.
2. Remove the Rear Cover by removing 6 (or 7) screws.

NOTE:
PIPETTORS WITH SERIAL NUMBER 76FP11040 AND BELOW WILL HAVE 6 SCREWS ON THE

REAR COVER.

NOTE:
PIPETTORS WITH SERIAL NUMBER 76FP11041 AND ABOVE WILL HAVE 7 SCREWS ON THE REAR COVER.

3. Remove the upper cover by removing 4 screws from the top of the cover as shown in Figure 2.

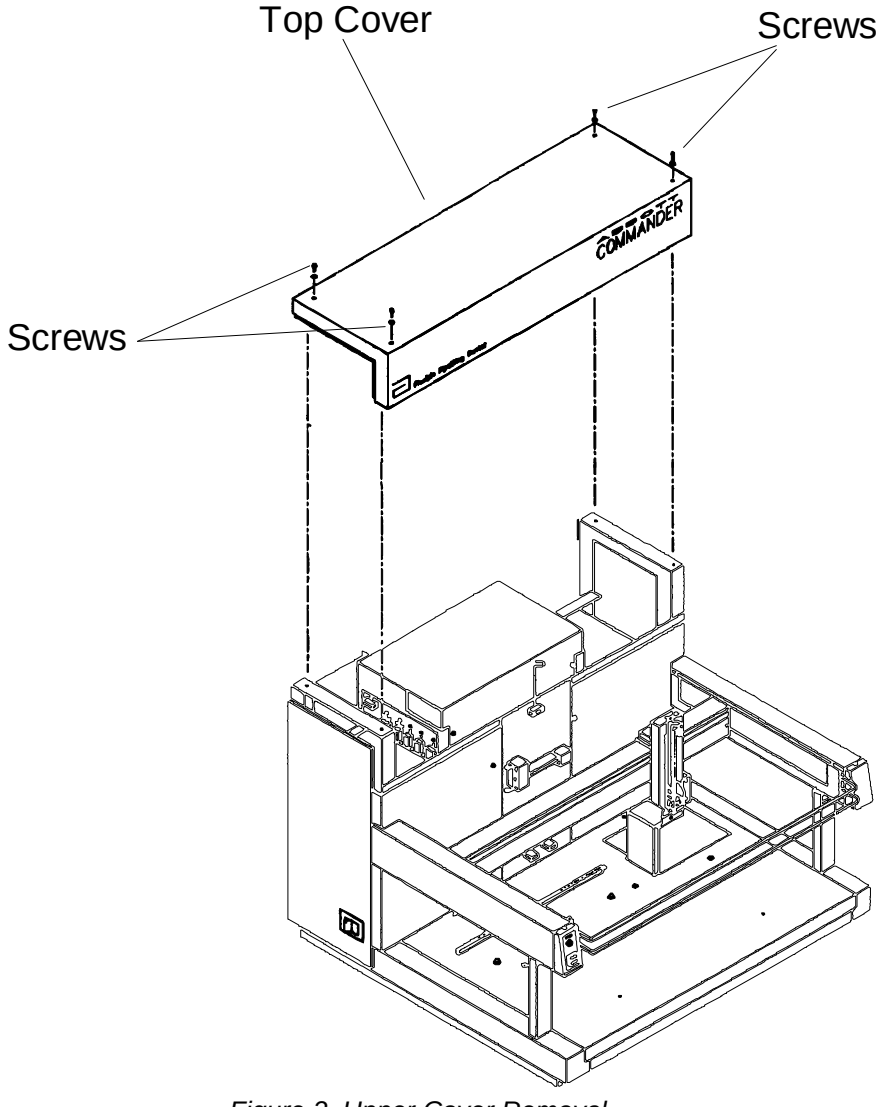


Figure 2. Upper Cover Removal

4. Remove the Pulse Motor Driver Unit Cover by removing 6 screws as shown below in Figure 3.
5. Disconnect the Pulse Motor Driver Fan Connector (not shown).
6. Disconnect Connectors "P1" through "P6".
7. Disconnect Connector "P7", using a #1 Phillips screwdriver.
8. Remove the Pulse Motor Driver Unit from the FPC frame by removing 8 screws as shown below.

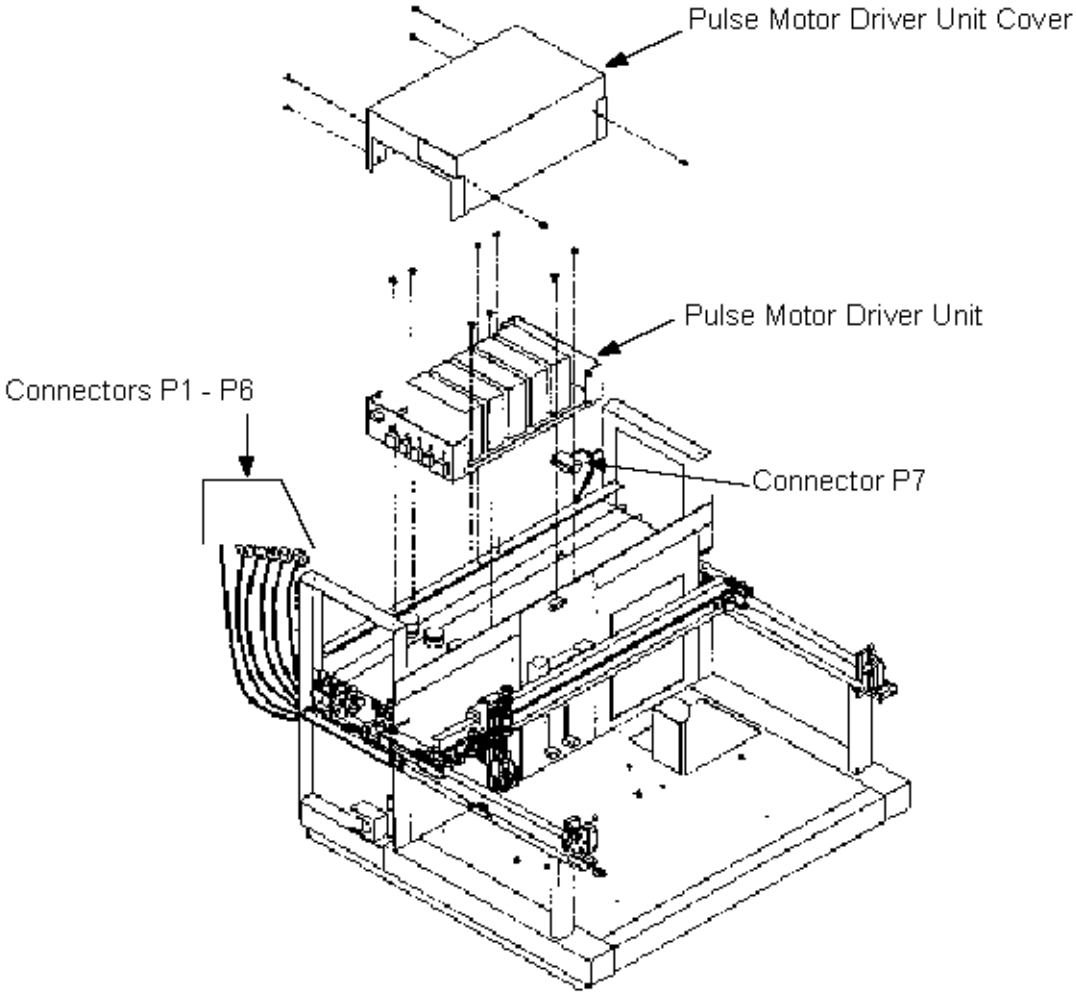


Figure 3. Pulse Motor Driver Unit Removal

Removing The Single Pulse Driver Assembly

1. Disconnect the wires connected to the pulse driver assembly to be replaced. See Figure 4.

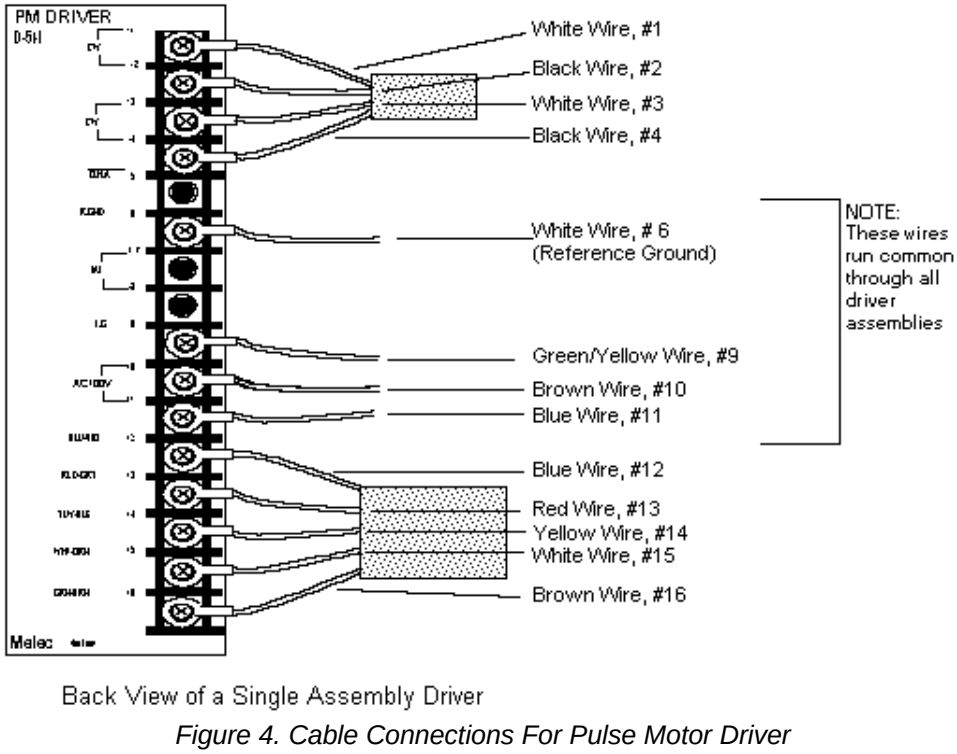


Figure 4. Cable Connections For Pulse Motor Driver

2. Remove 3 screws securing the individual motor driver assembly to the base plate of the Pulse Motor Driver unit as shown in Figure 5.

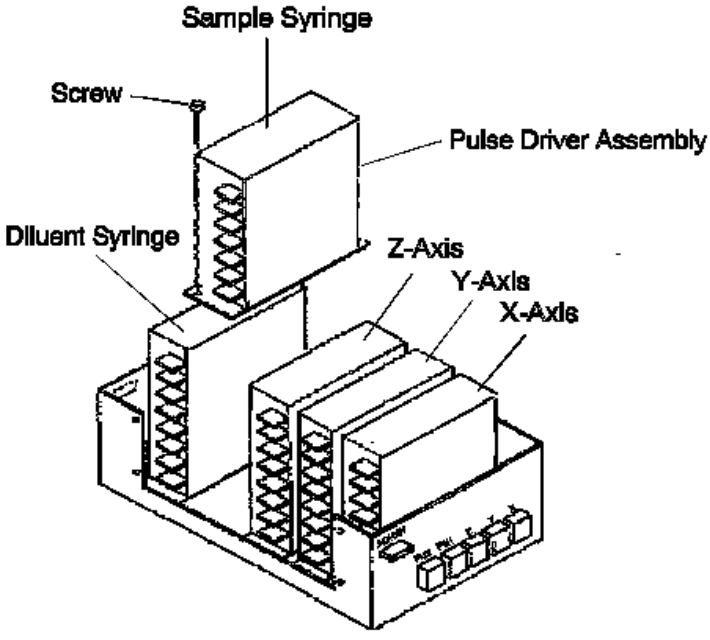
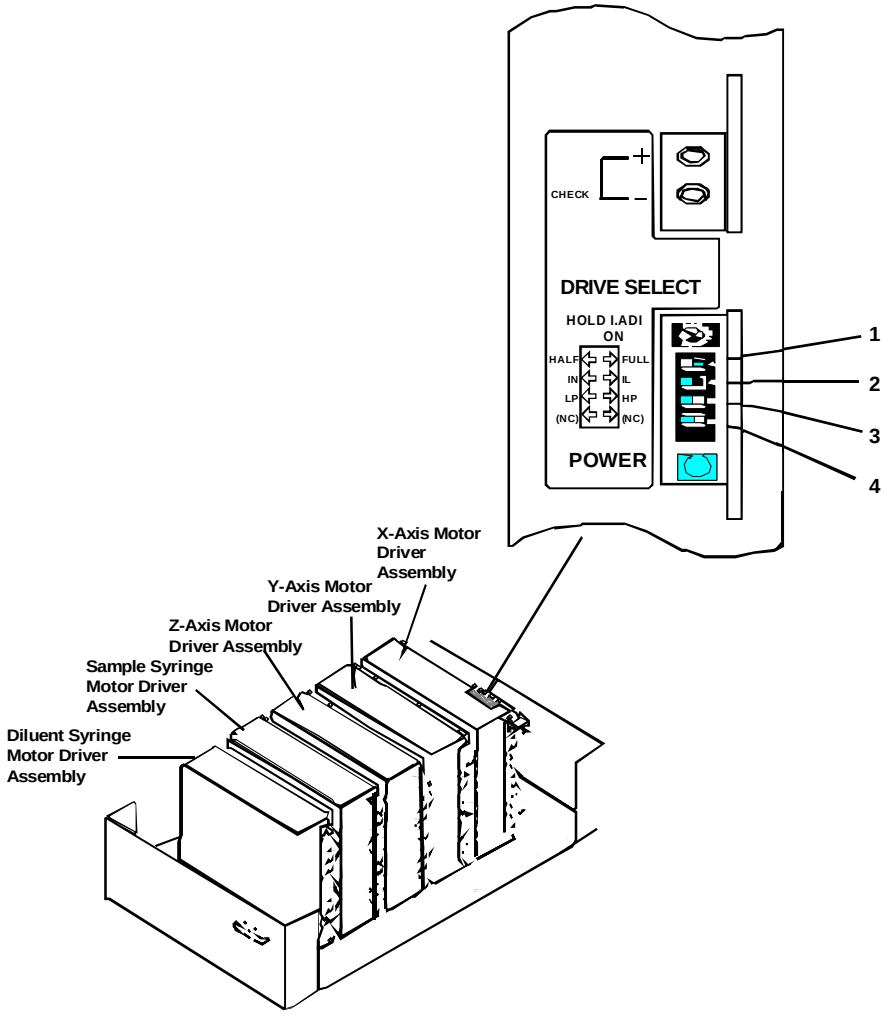


Figure 5. Pulse Driver Assembly Removal

3. Set the drive select switch of the motor driver to the positions shown in Figure 6.



[DRIVE SELECT] Switch Settings

UNIT	AXIS	1 HALF ⟺ FULL	2 IH ⟺ IL	3 LP ⟺ HP
X-Axis Motor Driver Assembly	X	HALF	IL	HP
Y-Axis Motor Driver Assembly	Y	HALF	IH	HP
Z-Axis Motor Driver Assembly	Z	HALF	IL	HP
Sample Syringe Motor Driver Assembly	PM1	HALF	IL	HP
Diluent Syringe Motor Driver Assembly	PM2	HALF	IL	HP

Figure 6. Dip Switch Settings

NOTE:
All switch settings are the same for all 5 driver assemblies EXCEPT for switch #3 (1H ⟺ 1L) on the Y-Axis Motor Driver. It is set to 1H instead of 1L.

4. Replace the motor driver assembly by reattaching it to the base plate with 3 screws.
5. Rewire the motor driver according to the wiring diagram shown in Figure 4.
6. Replace the Pulse Motor Driver Unit into the FPC frame with 8 screws.
7. Install Connector P7 using a #1 Phillips screwdriver.
8. Install Connectors P1 - P6.
9. Replace the Pulse Motor Driver Cover using 6 (or 7) screws.
10. Reconnect the Pulse Motor Driver Fan Connector.
11. Replace the Upper and Rear Covers.
12. Plug the FPC AC power cord into the power outlet.

System Checkout

1. Turn the FPC Pipettor power on.
2. Perform the XYZ alignments.
3. Perform the Total Call procedure.

END OF DOCUMENT

ABBOTT ADD	INSTRUMENT SERVICE ADVISORY

SUBJECT: **Fuse Set for FPC AC Power Supply Assembly**	ISA#: **76-033**
ORIGINATOR: **Thomas A. Owusu**	PRODUCT: **COMMANDER® FPC (76)**
APPROVED: **John Buckland 2-8-95**	EFFECTIVITY DATE: **25-JAN-95**

I. DISTRIBUTION:

Worldwide.

II. PURPOSE:

To inform the Field Service Organization of a new release of a Fuse set for the FPC AC Power Supply Assembly (100/120Vac configuration).

III. DESCRIPTION:

The contract manufacturer of FPC instrument (Aloka), has changed to an updated version of power entry configuration (COROM) which requires a different style of 5.0A fuse. As a result, a 5.0A fuse, Part number 313005, has been included in the Fuse set kit for the FPC AC power supply assembly.

The Fuse set has an Abbott Part number 42660-102, and Catalog number 1-42660-02. It replaces the Fuse set that has Part number 42660-101, and Catalog number 1-42660-01. The set consists of the following items:

Part No.	Description	Quantity
217500	0.5A (for +/-12VDC F-Link Power Supply)	5
217001	1.0A (for +5VDC F-Link Power Supply)	5
217002	2.0A (for Low voltage Power Supply unit)	5
217004	4.0A (for Low voltage Power Supply unit)	5
217005	5.0A (for Pulse Motor Driver Unit)	5
3136.25	6.25A (Main Fuse)	5
313005	5.0A (New Power Supply)	5
FEK031-1661	Fuse Cap	2

END OF DOCUMENT

ABBOTT ADD	INSTRUMENT SERVICE ADVISORY

SUBJECT: **Replacement Lubricant**	ISA#: **76-029**
ORIGINATOR: **Ruben Dario Cortez**	PRODUCT: **COMMANDER® FPC (76)**
APPROVED: John Buckland 1/6/95	EFFECTIVITY DATE: **06-JAN-95**

I. DISTRIBUTION:

International and USA

II. PURPOSE:

To inform the field of a change in instrument lubrication. The following pipettor assemblies will use Superlube Grease P/N 14233-010:

- X-axis assembly
- Y-axis assembly
- Z-axis assembly

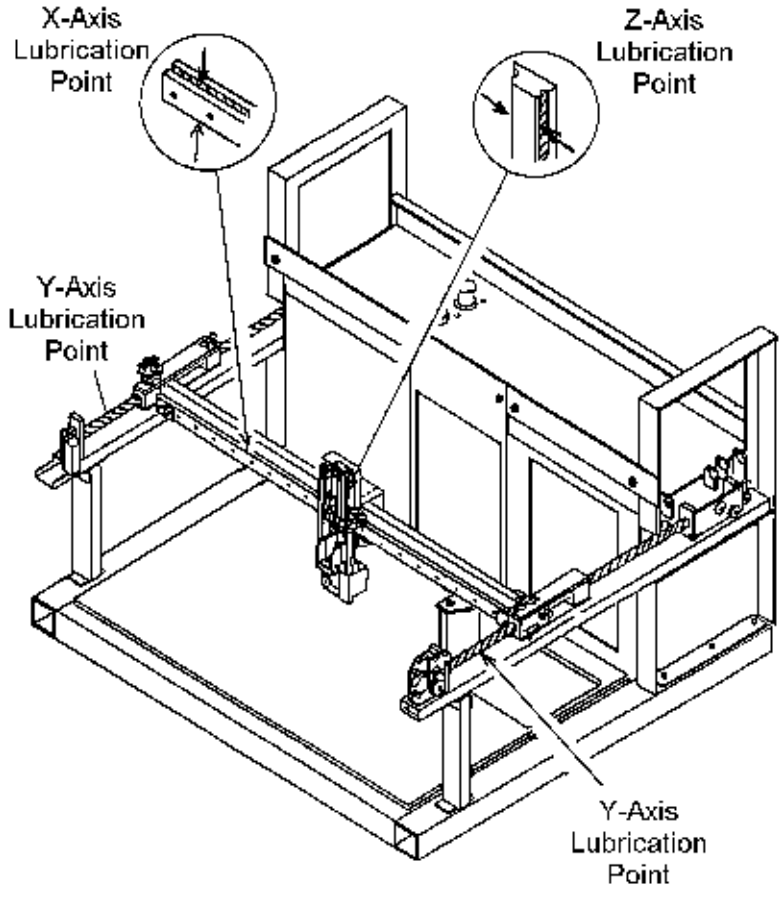
The pump assembly will continue to use Aloka grease C/N 1-42727-01.

III. PARTS:

Superlube Grease P/N 14233-010

IV. PROCEDURE:

X-AXIS LUBRICATION



XYZ Lubrication Points
Fig 1

X-AXIS LUBRICATION

1. Turn off power to the pipettor.
2. Remove the right arm end cover by removing the two mounting screws.
3. Remove the right internal cover by removing the four mounting screws and lowering the cover then taking it out.

NOTE: BE EXTREMELY CAREFUL SO THAT YOU DO NOT CATCH A METAL CABLE WHILE REMOVING COVER.

4. Remove the right arm external cover by removing the two remaining mounting screws. Slide the cover forward then lift up while twisting the bottom to the right.
5. Remove the X-Axis assembly top cover by removing the two mounting screws. To remove the cover place Z-Axis assembly all the way to one side and carefully slide the cover out the opposite direction.

NOTE: BE EXTREMELY CAREFUL SO THAT YOU DO NOT CATCH A METAL CABLE WHILE REMOVING COVER.

6. Remove the X-Axis assembly front cover by removing the two mounting screws. To remove the cover place Z-Axis assembly all the way to one side and carefully slide the cover out the opposite direction.

NOTE: BE EXTREMELY CAREFUL SO THAT YOU DO NOT CATCH A METAL CABLE WHILE REMOVING COVER.

CLEAN EXISTING GREASE FROM X-AXIS GUIDE BAR USING A SOFT LINT FREE CLOTH AND ALCOHOL AS NEEDED (KIMWIPE® / ISOPROPYL ALCOHOL).

7. With a brush put a little bit of grease **(Superlube P/N 14233-010)** in the slot on both sides of the X-Axis guide bars shown in Fig 1.
8. Work in the grease by moving the Z-Axis assembly left and right.
9. Return all of the covers to their proper locations by doing the opposite of the above steps (1-6) in the reverse order.

Y-AXIS LUBRICATION

1. Turn off power to the pipettor.
2. Remove the Right Arm End cover by removing the two mounting screws.
3. Remove the right arm internal cover by removing the four mounting screws and lowering the cover then taking it out .

NOTE: BE EXTREMELY CAREFUL SO THAT YOU DO NOT CATCH A METAL CABLE WHILE REMOVING COVER.

4. Remove the right arm external cover by the removing the two remaining mounting screws. Slide the cover forward then taking it out.

NOTE: BE EXTREMELY CAREFUL SO THAT YOU DO NOT CATCH A METAL CABLE WHILE REMOVING COVER.

5. Remove the left arm end cover by removing the two mounting screws.
6. Remove the Left Arm Internal Cover by removing the four mounting screws and lowering the cover then taking it out.

NOTE: BE EXTREMELY CAREFUL SO THAT YOU DO NOT CATCH A METAL CABLE WHILE REMOVING COVER**.**

7. Remove the Left Arm External Cover by removing the two remaining Mounting Screws. Slide the cover forward then lift up while twisting the bottom to the right.

NOTE: BE EXTREMELY CAREFUL SO THAT YOU DO NOT CATCH A METAL CABLE WHILE REMOVING COVER.

CLEAN EXISTING GREASE FROM BOTH Y- AXIS GUIDE RODS USING A SOFT LINT FREE CLOTH AND ALCOHOL AS NEEDED (KIMWIPE / ISOPROPYL ALCOHOL)

8. Using a brush, put a little bit of grease **(SUPERLUBE GREASE 14233-010)** on the right side Y-Axis Guide Rod as shown in Fig 1. Repeat this for the left side Y-Axis Guide Rod. Work the grease in by moving the X-Axis Assembly front and back a few times.
9. Put all the covers back in their proper locations by doing the opposite of steps 1-7 in reverse order.

Z-AXIS LUBRICATION

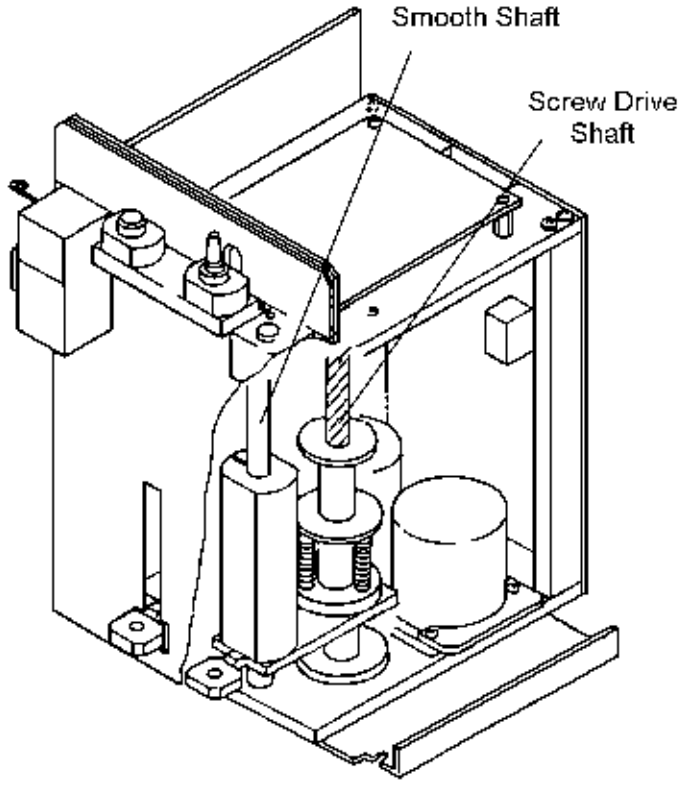
1. Turn off power to the Pipettor.
2. Remove the Z-Axis assembly Top Cover by removing the top screw and loosening the three side screws (one in front, left side, and right side).

CLEAN EXISTING GREASE FROM BOTH Y- AXIS GUIDE RODS USING A SOFT LINT FREE CLOTH AND ALCOHOL AS NEEDED (KIMWIPE® / ISOPROPYL ALCOHOL)

3. Apply a thin coat of grease (**SUPERLUBE GREASE P/N 14233-010**) in the slot on both sides of the Z-Axis guide bars shown in Fig 1.
4. Work in the grease by moving the Nozzle Assembly up and down.

5. Put the covers back in their proper location by doing the opposite of steps 1-2 in reverse order.

PUMP ASSEMBLY LUBRICATION



Pump Assembly Lubrication Points
Fig 2

1. Remove the Pump Assembly as described in Section 4, Component Replacement, of the FPC SERVICE MANUAL.
2. Remove the two side panels.
3. Using a brush put a little bit of (**Aloka Grease C/N 1-42727-01**) on both smooth shafts and screw drive shafts. Work the grease in by turning the motor to move the syringe drive up and down (See Fig 2).

END OF DOCUMENT

ABBOTT ADD	INSTRUMENT SERVICE ADVISORY

SUBJECT: **NEW COMPUTER FOR THE COMMANDER® FPC**	ISA#: **76-028**
ORIGINATOR: **THOMAS A. OWUSU**	PRODUCT: **COMMANDER® FPC (76)**
APPROVED: **John Buckland 6-07-94**	EFFECTIVITY DATE: **07-JUN-94**

PURPOSE:

The purpose of this ISA is to inform the field of a **new computer** system for the Commander Flexible Pipetting Center (FPC). This new computer system is for Japan ONLY (ISA will not be distributed to U.S.A.).

DESCRIPTION:

The Hewlett-Packard Vectra 486™ /25U Computer System for the Commander FPC will be replaced with the INTEL 486 Computer System (FPC CPU, JAPAN). This computer system which has Abbott Part Number 42943-101 and List Number 6A97-08 is compatible with all the existing instrumentation. It has a 486 SX-25 MHZ, 127 MByte Hard Drive and a 3.5" Floppy Disk Drive, 8 MByte RAM. The system comes with a Keytronic Eurotech Keyboard, and a PS/2 Keyboard adaptor.

All software including Digiboard Software (42906-101) and all hardware are to be installed and tested by the vendor using ETP LN 6A97-01 prior to shipment to Abbott Laboratories. The package for shipment will include the following:

1 Each 110V US Powercord.
1 Each 14150-185 UNIX® Operating System, Japanese SRI Version 2.2J
1 Each 14127-027 Digiboard
1 Each 43794-101 Abbott Pre-Installed Version 2.0

INSTALLATION:

Computer system installation and computer (CPU) replacement can be performed as described on pages 3D-20 through 3D-24 and 4-36 through 4-37 of the Field Service Manual (8/92) respectively.

END OF DOCUMENT

ABBOTT ADD	INSTRUMENT SERVICE ADVISORY

SUBJECT: **FPC ASSAY UPDATE DISKETTE**	ISA#: **76-023**
ORIGINATOR: **Tim Kitzmiller**	PRODUCT: **COMMANDER® FPC (76)**
APPROVED: **John Buckland 2-15-95**	EFFECTIVITY DATE: **15-FEB-95**

INTRODUCTION:
The U.S. and R.O.W. version 2.02 Assay Update Diskettes will replace the current Abbott supplied assay protocol diskettes. This ISA is to provide the necessary Functional Specifications and Assay Disk Loading to all FPC trained FSE's/FSR's Worldwide, in the event that a Computer (CPU) has to be replaced in the field. (See Installation Procedure in Section 5.0 of this ISA, starting on page 6 of 7)

1.0 DESCRIPTION

The assay pipetting protocols are intended for PPC, Quantum™, and Quantumatic™, IMx®, and blood typing applications. The protocols in the diskettes are Abbott supplied assay protocols, identified by "-a" at the end of the assay name and cannot be edited or deleted by the user. The primary change in the Version 2.02 diskette is the addition of the necessary protocols to allow processing HTLV-I as a predispense assay.

2.0 DISTRIBUTION

A Kit package will be distributed to **COMMANDER®** Flexible Pipetting Center version 2 customers worldwide that will include the following:

- One diskette; either a U.S., or a R.O.W., Version 2.02.
- FPC Commander® Flexible Pipetting Center Technical Update.
- Installation/Validation Protocols

3.0 ASSAY UPDATE DISK KIT PART NUMBERS

3.1 Kit Part Numbers

U.S. Version 2.02 Diskette	6A97-20
R.O.W. Version 2.02 Kit	6A97-21

4.0 FUNCTIONAL SPECIFICATIONS

4.1 Functional Specifications

4.1.1 Operator Interface/Error Handling

1. The U.S. Assay Update diskette, Version 2.02 provides the following **ACTIVE** protocols for Immediate Use by the Customer:

Current US Assay diskette (Version 2.0) assays available for Immediate Use By Customer (ACTIVE)	New diskette (Version 2.02) provides for Immediate Use by Customer ACTIVE)
NAME	**NAME**
AUSZYME MONO PPC	AUSZYME MONO PPC
AUSZYME MONO QT	AUSZYME MONO QT
AUSZYME MONO QNB	AUSZYME MONO QNB
CORZYME PPC	CORZYME PPC
CORZYME QT	CORZYME QT
CORZYME QNB	CORZYME QNB
-A-HIVAB-1 PPC	-A-HIVAB-1 PPC
-A-HIVAB-1 QT	-A-HIVAB-1 QT
-A-HIVAB-1 QNB	-A-HIVAB-1 QNB
-A-HIVAB-1-2 PPC	-A-HIVAB-1-2 PPC
-A-HIVAB-1-2 QT	-A-HIVAB-1-2 QT
-A-HIVAB-1-2 QNB	-A-HIVAB-1-2 QNB
-HTLV-I PPC D0	CHLAMYDIA PPC
-HTLV-I QT D0	CHLAMYDIA QT
-HTLV-1 QNB D0	CHLAMYDIA QNB
CHLAMYDIA PPC	A-HCV 2.0 PPC D0
CHLAMYDIA QT	A-HCV 2.0 PPC D1
CHLAMYDIA QNB	A-HCV 2.0 QT D0
A-HCV 2.0 PPC D0	A-HCV 2.0 QNB D0
A-HCV 2.0 PPC D1	A-HCV 2.0 QT D1
A-HCV 2.0 QT D0	A-HCV 2.0 QNB D1
A-HCV 2.0 QNB D0	CMV TL Ab PPC D0
A-HCV 2.0 QT D1	CMV TL Ab PPC D1
A-HCV 2.0 QNB D1	CMV TL Ab QT D0
CMV TL Ab PPC D0	CMV TL Ab QNB D0
CMV TL Ab PPC D1	CMV TL Ab QT D1
CMV TL Ab QT D0	CMV TL Ab QNB D1
CMV TL Ab QNB D0	AUSAB EIA PPC
CMV TL Ab QT D1	AUSAB QUANT PPC
CMV TL Ab QNB D1	HBe AG PPC

AUSAB EIA PPC	ANTI-HBe PPC
AUSAB QUANT PPC	CEA 1-STEP PPC
HBe AG PPC	CEA 1-STEP QT
ANTI-HBe PPC	CEA 1-STEP QNB
CEA 1-STEP PPC	AFP PPC D0
CEA 1-STEP QT	AFP PPC D1
CEA 1-STEP QNB	AFP QT D0
AFP PPC D0	AFP QNB D0
AFP PPC D1	AFP QT D1
AFP QT D0	AFP QNB D1
AFP QNB D0	RBC Antisera
AFP QT D1	Plasma/RBC
AFP QNB D1	Reverse Typing
RBC Antisera	Forward Typing
Plasma/RBC	For/Rev in Tubes
Reverse Typing	MEIA Quant Cal
Forward Typing	MEIA Quant Model
For/Rev in Tubes	MEIA Quant Mode2
MEIA Quant Cal	MEIA Qual Cal
MEIA Quant Mode1	MEIA Qual Mode 1
MEIA Quant Mode2	FPIA Cal
MEIA Qual Cal	FPIA Mode 2
MEIA Qual Mode 1	HTLV I PPC D0
FPIA Cal	HTLV I QT D0
FPIA Mode 2	HTLV I QNB D0

2. The R.O.W. Assay Update diskette, Version 2.02 provides the following ACTIVE protocols for Immediate Use by the Customer:

Current ROW assay diskette (Version 2.0) available for Immediate Use By Customer (ACTIVE)	New Diskette (Version 2.02) provides for Immediate Use by Customer (ACTIVE)
NAME	**NAME**
AUSZYME MONO PPC	AUSZYME MONO PPC
AUSZYME MONO QT	AUSZYME MONO QT

AUSZYME MONO QNB	AUSZYME MONO QNB
CORZYME PPC	CORZYME PPC
CORZYME QT	CORZYME QT
CORZYME QNB	CORZYME QNB
-A-HIVAB-1-2 PPC	-A-HIVAB-1-2 PPC
-A-HIVAB-1-2 QT	-A-HIVAB-1-2 QT
-A-HIVAB-1-2 QNB	-A-HIVAB-1-2 QNB
r-HIV-1 PPC D0	r-HIV-1 PPC D0
r-HIV-1 QT D0	r-HIV-1 QT D0
r-HIV-1 QNB D0	r-HIV-1 QNB D0
r-HIV-1/2 PPC D0	r-HIV-1/2 PPCD0
r-HIV-1/2 QT D0	r-HIV-1/2 QT D0
r-HIV-1/2 QNB D0	r-HIV-1/2 QNB D0
HIVAG MC PPC D0	HIVAG 1 PPC D0
HIVAG MC QT D0	HIVAG 1 QT D0
HIVAG MC QNB D0	HIVAG 1 QNB D0
	Multiscreen PPC
-HTLV-I PPC D0	CHLAMYDIA PPC
-HTLV-I QT D0	CHLAMYDIA QT
-HTLV-I QNB D0	CHLAMYDIA QNB
CHLAMYDIA PPC	A-HCV 2.0 PPC D0
CHLAMYDIA QT	A-HCV 2.0 PPC D1
CHLAMYDIA QNB	A-HCV 2.0 QT D0
A-HCV 2.0 PPC D0	A-HCV 2.0 QNB D0
A-HCV 2.0 PPC D1	A-HCV 2.0 QT D1
A-HCV 2.0 QT D0	A-HCV 2.0 QNB D1
A-HCV 2.0 QNB D0	CMV TL Ab PPC D0
A-HCV 2.0 QT D1	CMV TL Ab PPC D1
A-HCV 2.0 QNB D1	CMV TL Ab QT D0
CMV TL Ab PPC D0	CMV TL Ab QNB D0
CMV TL Ab PPC D1	CMV TL Ab QT D1
CMV TL Ab QT D0	CMV TL Ab QNB D1
CMV TL Ab QNB D0	AUSAB EIA PPC
CMV TL Ab QT D1	AUSAB QUANT PPC

~~CMV TL Ab QT D1~~	~~AUSAB QUANT PPC~~
CMV TL Ab QNB D1	HBe AG PPC
AUSAB EIA PPC	ANTI-HBe PPC
AUSAB QUANT PPC	CEA 1-STEP PPC
HBe AG PPC	CEA 1-STEP QT
ANTI-HBe PPC	CEA 1-STEP QNB
CEA 1-STEP PPC	AFP PPC D0
CEA 1-STEP QT	AFP PPC D1
CEA 1-STEP QNB	AFP QT D0
AFP PPC D0	AFP QNB D0
AFP PPC D1	AFP QT D1
AFP QT D0	AFP QNB D1
AFP QNB D0	RBC Antisera
AFP QT D1	Plasma/RBC
AFP QNB D1	Reverse Typing
RBC Antisera	Forward Typing
Plasma/RBC	For/Rev in Tubes
Reverse Typing	MEIA Quant Cal
Forward Typing	MEIA Quant Mode1
For/Rev in Tubes	MEIA Quant Mode2
MEIA Quant Cal	MEIA Qual Cal
MEIA Quant Mode 1	MEIA Qual Mode 1
MEIA Quant Mode2	FPIA Cal
MEIA Qual Cal	FPIA Mode 2
MEIA Qual Mode 1	HTLV I PPC D0
FPIA Cal	HTLV I QT D0
FPIA Mode 2	HTLV 1 QNB D0

3. Special details of changes to the U.S./ROW Diskettes:

   a. Many new assay protocols will be included in this release. No pipetting parameters in the protocols will be modified that will change pipetting precision/accuracy.
   b. All previously approved assay protocols provided to customers on Version 2.0 diskettes will again be provided with the following exceptions listed below:

   - The three (3) currently approved and ACTIVE (Post) diluent dispense assays for the HTLV-I, identified above as -HTLV-I PPC DO, -HTLV-I QT DO, AND -HTLV-I QNB DO, will not be offered and replaced with Pre-dispense HTLV assays (HTLV I PPC D0, HTLV I QT D0, HTLV I QNB D0) within the "ACTIVE" assay menu.

4.1.2 System Narrative and Logic Description

No change.

4.1.3 Reagent Application

No Changes

4.1.4 Hardware Configuration/Interface

No changes.

4.1.5 Interfaces with other systems

The assay protocols are intended for use with the PPC, Quantum™, Quantumatic™, and IMx® systems. The interface will not be affected by this release.

4.1.6 Diagnostics

No changes.

4.2.0 Operator Interface

No changes.

4.3.0 Compatibility Issues

Both the U.S. and R.O.W. assay update diskettes Version 2.02 will be compatible to application, database, and interface software versions 2.0/2.01.

4.4.0 Hardware Architecture Specifications

No changes.

4.5.0 Software Architecture Specifications

No changes.

4.6.0 Literature

An Installation/Validation Protocol, and Technical Bulletin have been updated for V 2.02 and will be supplied in the customers assay upgrade kit.

5.0 ASSAY SOFTWARE VERSION 2.02 INSTALLATION:

1. Type fpc at the FPC login: prompt. The system proceeds to the FPC System Administration menu.
2. Select 1. Main Menu from the FPC System Administration menu, followed by Assay Protocol. The system displays the Assay Protocols directory screen.
3. Follow the Assay Update Diskette Version 2.02 Install Validation supplied with the diskette.

END OF DOCUMENT

ABBOTT ADD	INSTRUMENT SERVICE ADVISORY

SUBJECT: **Uninterruptible Power Supply (UPS)**	ISA#: **76-022**
ORIGINATOR: **Ruben Dario Cortez**	PRODUCT: **COMMANDER® FPC (76)**
APPROVED: **John Buckland 5-24-94**	EFFECTIVITY DATE: **24-MAY-94**

PURPOSE:
This ISA is to inform the Field Service Organizations of a Uninterruptible Power Supply (UPS) as an option for customer experiencing power related problems with COMMANDER® Flexible Pipetting Center (FPC) system.

ADMINISTRATIVE NOTES:
Customers can order this option through order entry (RZZ).

PART NUMBER:
U.S. UPS LN 6A97-02

MODEL: ONEAC® 900A (110 volts 60HZ) LN 6A97-02

FEATURES:

AC line conditioner: Removes negative and positive spikes for incoming AC Voltage.

Battery Backup: 2-15 minutes (2 FPCs, 2 ABCs, 1 Computer)

Replaceable Batteries: Four 12 volt batteries.

Recharge Time: Four hours to 90% capacity.

Indicators: Overload indication

Load power and battery voltage meters

Low battery indication

Replace battery indication

6 Outlets: 1 outlet, pipettor,
1 outlet, ABC,
2 outlets, computer
(1 for CPU, 1 for monitor)

CAUTION:
DO NOT EXCEED UPS MAXIMUM OUTPUT POWER RATING

PHYSICAL DIMENSIONS:
Height 12" (31 cm)

Width 8.3" (21 cm)

Depth 15.3" (39 cm)

Weight 69 lbs (32Kg)

AC Input:
Voltage 120 VAC, 60HZ.

Transfer Time (typical/max) <2.0/2.5 milliseconds including decision time.

AC Output:
Voltage 120 Vac

Rating 900 VA, 600w

THERMAL DISSIPATION: 184/202 BTU/HR
(on utility/on battery)

END OF DOCUMENT

ABBOTT ADD	INSTRUMENT SERVICE ADVISORY

SUBJECT: **Alignment Procedures with New "Z" Type Alignment Gauge**	ISA#: **76-020B**
ORIGINATOR: **Ruben Dario Cortez**	PRODUCT: **COMMANDER® FPC (76)**
APPROVED: **John Buckland 21-JUN-95**	EFFECTIVITY DATE: **21-JUN-95**

I. PURPOSE:

To release changes to the Commander® Flexible Pipetting Center (FPC) Alignment section (Section 5) affected by the new Tip Height Alignment Gauge.

This ISA supersedes related procedures in the current FPC Service Manual (Version 103) and all previous related ISAs.

II. DESCRIPTION:

The Tip Height Alignment Gauge is used to perform the Tip Rack Z-height verification, measurement, and adjustment.

The new Tip Height Alignment Gauge (C/N 1-73446-01) will be added to the FPC Field Service Kit.

XYZ Software Positions

Alignment Overview

The X and Y-Axis alignment procedures are identical for all eight positions called out on the pipettor Homing Sequence Menu. The alignment procedures are for the Platforms (left and right), Tip Racks 1 and 2 (left and right), and Diluent Bottle 1 and 2.

Incremental stepper motor adjustments and a three digit number is provided by the + (positive) and - (negative) key to move the pipettor tip right or left, forward or backward, or vertically (for Z-Axis alignment).

The alignment values that are saved during the alignment procedures will become the default values in EEPROM on the MPU board.

There are four steps for aligning all three X, Y and Z-Axis.

1. Highlighting the selected column value
2. Entering + or - values (keys) to move the pipettor right or left or vertically for centering
3. Pressing F3 (MOVES the pipettor tip)
4. Pressing **Enter**

   INSTALL THE ALIGNMENT HOMING FIXTURE (AHF) PLATFORM IN POSITION P1 ON THE PIPETTOR PLATFORM (refer to Figure 5-3).

5. Remove the Pipette Nozzle Assembly and replace it with the sleeve portion of the Alignment Tool, Figure 5-4.

DO NOT INSTALL THE ALIGNMENT PIN AT THIS TIME

Insert the sleeve portion of the tool (Figure 5-4) into the nozzle holder assembly, then tighten down the Hex screw.

Make sure that you secure the nozzle assembly while the tool is in place to avoid tangling of the tubing and wires while performing the alignments.

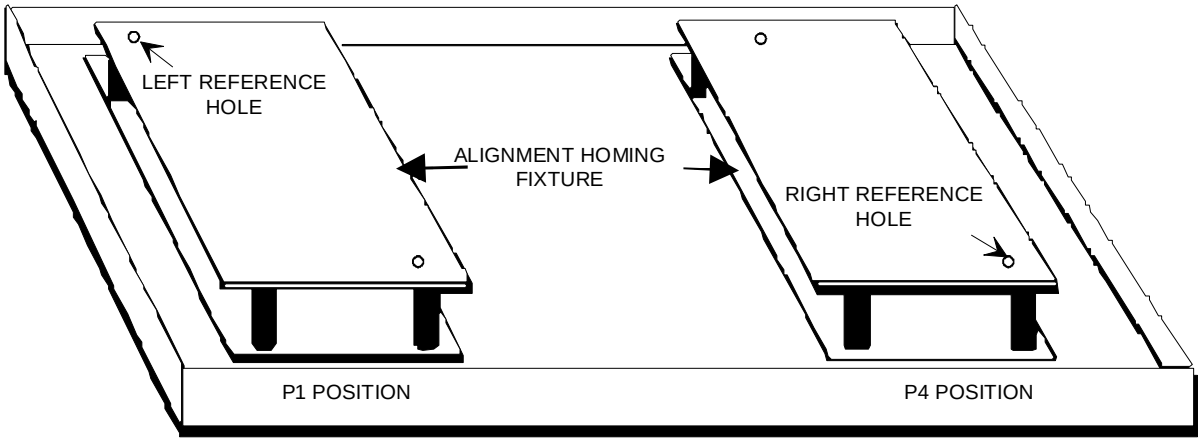
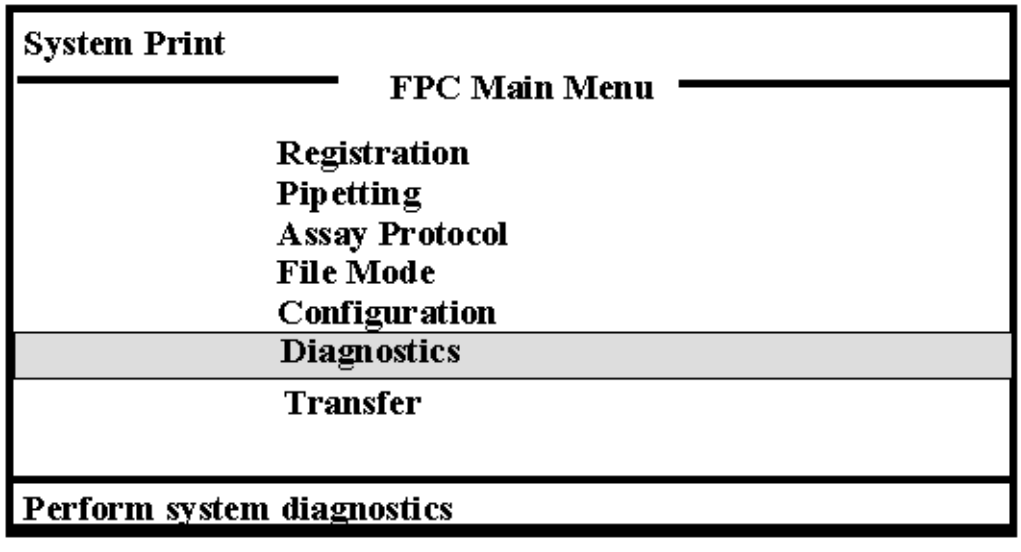
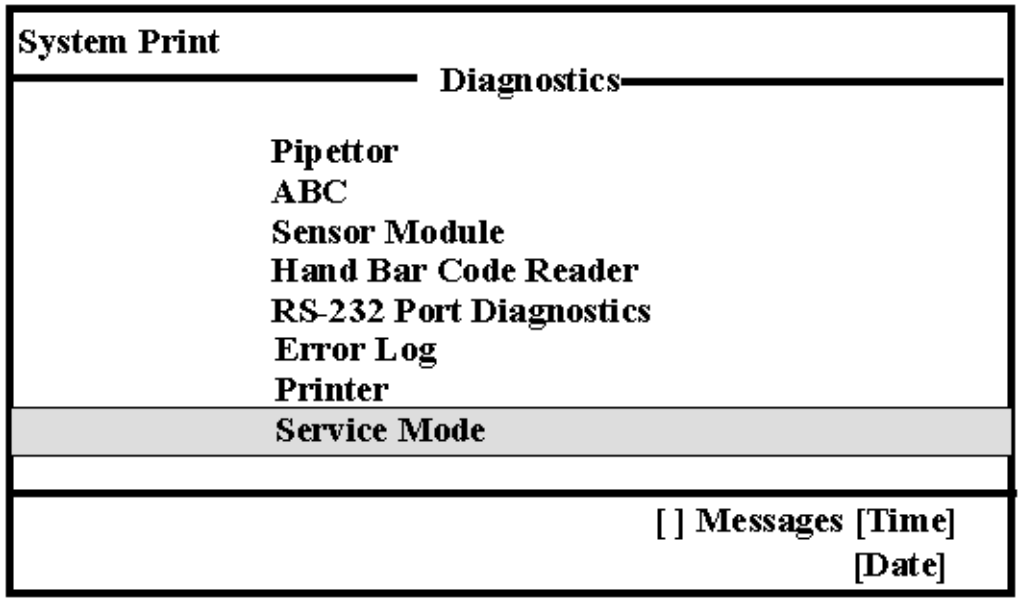


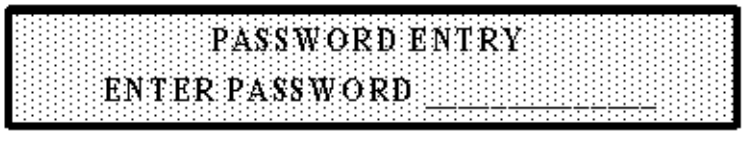
Figure 5-3. Alignment Homing Fixture Positions



1. Select Diagnostics from the Main Menu and press **Enter.**
   The following screen will be displayed.



2. Select **Service Mode** from the Diagnostics Menu and press **Enter.**
   The following screen will be displayed:

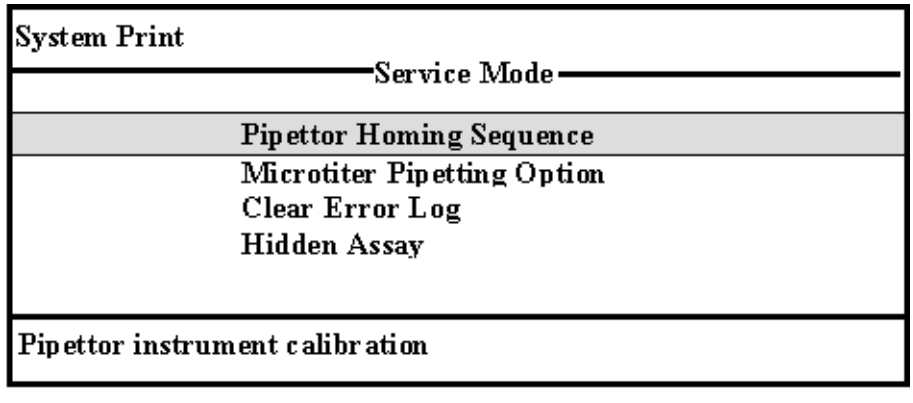


Note:
For Abbott Service Personnel only.

3. Enter the password **(sezme).**

Note:
All of the letters in the password are lowercase.

4. Press Enter.
   The following screen will be displayed:



Pipettor Homing Sequence is highlighted.

5. Press Enter to start the homing sequence. The first movement will be a tip eject. After this has occurred and all movement has stopped, the alignment pin should be installed in the

alignment tool sleeve.

The following screen will be displayed:

System Print Move Save

Pipettor Homing Sequence

	X Adjust	Y Adjust	Z Adjust
Platform Left:	+000	+000	+000
Platform Right:	+000	+000	+000
Tip Rack 1 Left:	+000	+000	+000
Tip Rack 1 Right:	+000	+000	+000
Tip Rack 2 Left:	+000	+000	+000
Tip Rack 2 Right:	+000	+000	+000
Diluent Bottle 1:	+000	+000	+000
Diluent Bottle 2:	+000	+000	+000

Use arrow keys to move to parameter to adjust. Use (+/-) key to adjust value. Select [Move] to move tip.

Each of the motor step movements are as follows:

1 motor Step in X direction = 0.0534mm
1 motor Step in Y direction = 0.1068mm
1 motor Step in Z direction = 0.0534mm

+x = moves to the right
- x = moves to the left
+y = moves towards the front
-y = moves toward the back
+z = moves in the down direction
-z = moves in the up direction

The alignment for platform left and platform right, requires using the Alignment Homing Fixture (AHF), Figure 5-5, in two locations on the platform.

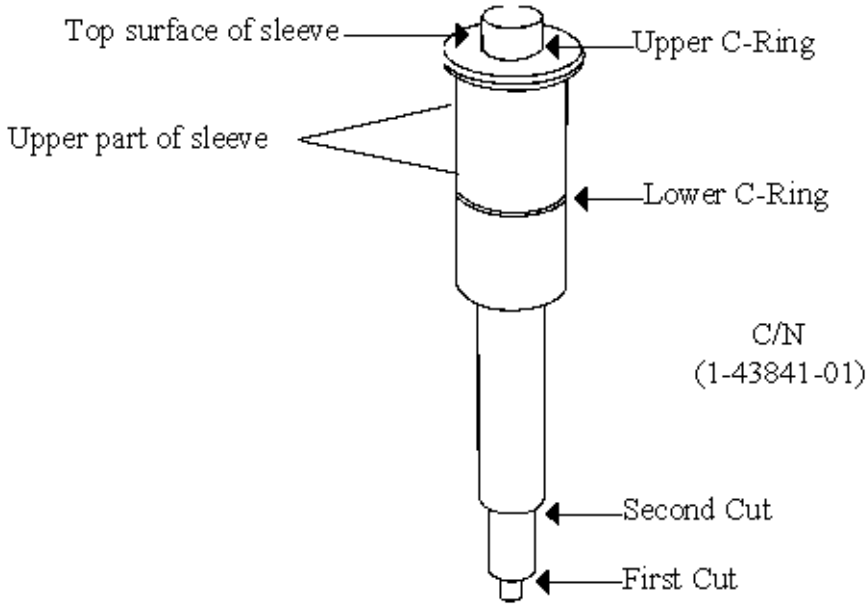


Figure 5-4. Alignment Tool

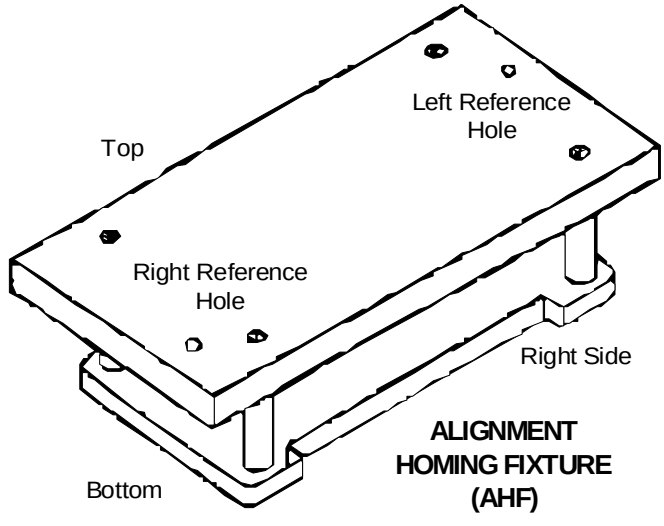


Figure 5-5. Alignment Homing Fixture

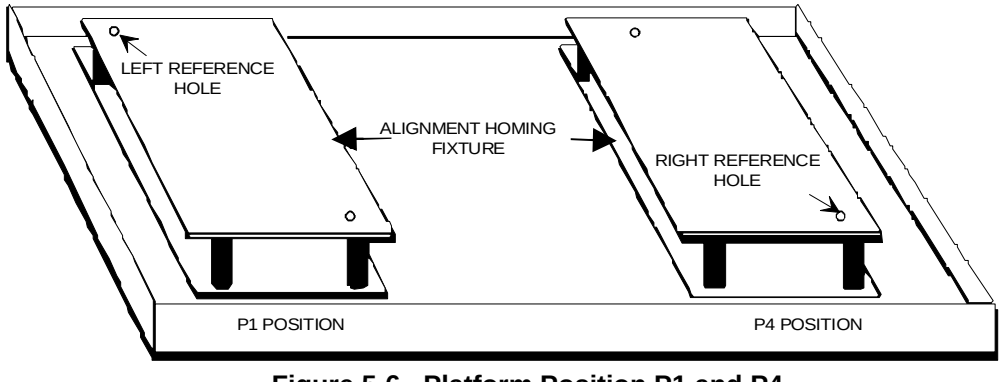


Figure 5-6. Platform Position P1 and P4

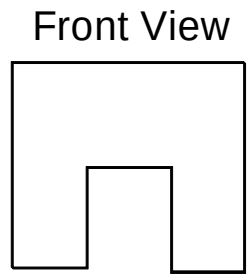


Figure 5-7. Alignment Gauge

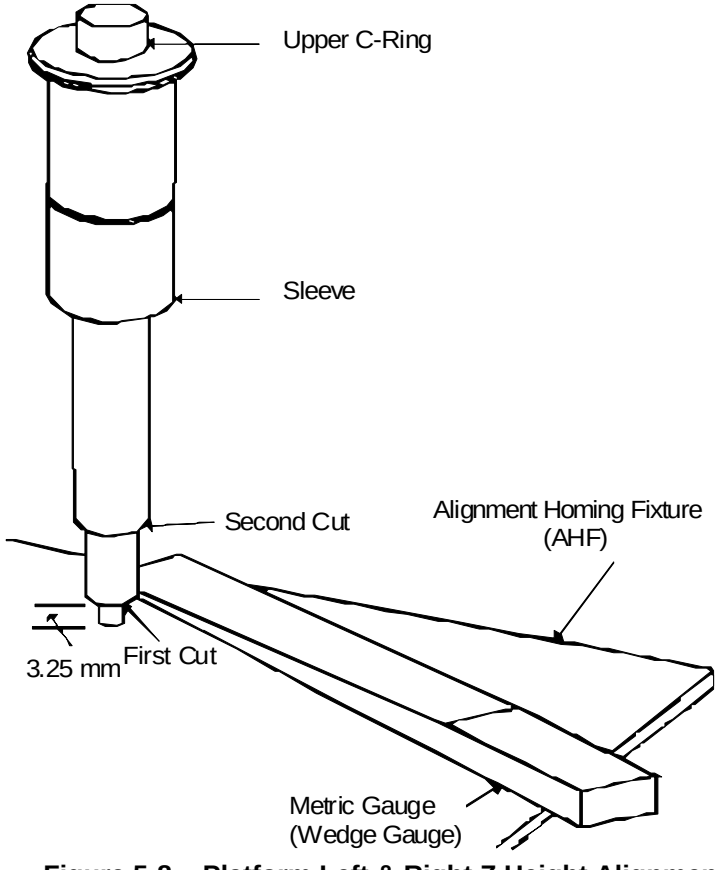


Figure 5-8 Platform Left & Right Z Height Alignment

PLATFORM LEFT: X AXIS ALIGNMENT PROCEDURES

1. Cursor to **X Adjust** Platform Left: **+000**.
2. Press **F3 (MOVE)** and **Enter.**
3. Pipettor Alignment Tool will move over the Left Reference Hole on the Alignment Homing Fixture. (AHF) See Figure 5-5 and 5-6.
4. Center the Alignment Tool Tip position directly over the Left Reference hole using the +/- keys, F3 (MOVE) and Enter.
5. Repeat step 4 until the Alignment Tool Tip is centered directly over the Left Reference Hole in the X direction.
6. When the Alignment Tool Tip is centered over the Left Reference Hole in the X direction, X Alignment at this position is complete.

Note:

+X = moves the tool tip to the right
- X = moves the tool tip to the left
+Y = moves the tool tip towards front
-Y = moves the tool tip towards back

PLATFORM LEFT: Y AXIS ALIGNMENT PROCEDURE

1. Cursor to **Y Adjust +000**.
2. Repeat above procedures for Y-Axis alignment.
3. When the Alignment Tool Tip is centered over the Left Reference Hole in the Y direction and the Tip slides into the hole, Y Alignment at this position is complete.

   At this point, if both X and Y alignments are accurate, the Alignment Tool will slide into the Left Reference Hole.
4. If the Tip does not slide into the Left Reference Hole, repeat the X and Y-Axis Alignment Procedures.

PLATFORM LEFT: Z AXIS ALIGNMENT PROCEDURE

Note:

The Z height alignments for both the left and right reference holes will average both values for each location. The average value is what will be saved in EEPROM.

Note:

+Z = moves the tool tip down
-Z = moves the tool tip up

1. Cursor to **Z Adjust** Platform Left: **+000**.
2. Press **F3 (MOVE)** and **Enter**.
3. Pipettor Alignment Tool will move over the Left Reference Hole on the Alignment Homing Fixture. See Figure 5-5 and 5-6.

   Make sure that the upper C-ring (Figure 5-4) is flush against the top surface of the sleeve.
4. Using the +/- keys, F3 (MOVE) and Enter, adjust the Z-height to **3.25mm**. The Z-height is the distance from platform to the first cut of the Alignment Tool. See Figure 5-8. To obtain the measurement, place the Metric Gauge (Wedge Gauge) on the surface of platform and slide the Wedge Gauge under the first cut of the Alignment Tool until the Tool and Wedge just make contact. Do not push the Wedge Gauge in excess which would cause Tool to slide up into the sleeve.

NOTE:

Use the FPC Metric Gauge (Wedge Gauge) (Part # 1-43627-01) to measure the height from the Alignment Homing Fixture (AHF) to the first cut of the Alignment Tool. Figure 5-8.

5. When a Z-height of 3.25mm is achieved, the alignment is complete.

6. Make sure that the Alignment Tool is clear of the Left Reference Hole, then move the Alignment Homing Fixture to the P4 position on the FPC platform.

PLATFORM RIGHT: X AXIS ALIGNMENT PROCEDURE

1. Cursor to **X Adjust** Platform Right: **+000**.

2. Press **F3 (MOVE)** and **Enter.**

3. Pipettor Alignment Tool will move over the Right Reference Hole on the Alignment Homing Fixture. (AHF) See Figure 5-5 and 5-6.

4. Center the Alignment Tool Tip position directly over the Right Reference hole using the +/- keys, F3 (MOVE) and Enter.

5. Repeat step 4 until the Alignment Tool Tip is centered directly over the Right Reference Hole in the X direction.

6. When the Alignment Tool Tip is centered over the Right Reference Hole in the X direction, X Alignment at this position is complete.

PLATFORM RIGHT: Y AXIS ALIGNMENT PROCEDURE

1. Cursor to **Y Adjust** +**000**.

2. Repeat above procedures for **Y-Axis** alignment.

3. When the Alignment Tool Tip is centered over the Right Reference Hole in the Y direction and the Tip slides into the hole, Y Alignment at this position is complete.

   At this point, if both the X and Y Alignments are accurate, the Alignment Tool will slide into the Right Reference Hole.

4. If the Tip does not slide into the Right Reference Hole, repeat the X and Y-Axis Alignment Procedures.

PLATFORM RIGHT: Z AXIS ALIGNMENT PROCEDURE

1. Cursor to **Z Adjust** Platform Right**: +000**.

2. Press **F3 (MOVE)** and **Enter**.

3. Pipettor Alignment Tool will move over the Right Reference Hole on the Alignment Homing Fixture. See Figure 5-5 and 5-6.

   Make sure that the upper C-ring (Figure 5-4) is flush against the top surface of the sleeve.

4. Using the +/- keys, F3 (MOVE) and Enter, adjust the Z-height to **3.25 mm**. The Z-height is the distance from platform to the first cut of the Alignment Tool. See Figure 5-8. To obtain the measurement, place the Metric Gauge (Wedge Gauge) on the surface of platform and

slide the Wedge Gauge under the first cut of the Alignment Tool until the Tool and Wedge just make contact. Do not push the Wedge Gauge in excess which would cause Tool to slide up into the sleeve.

5. When a Z-height of 3.25mm is achieved, the alignment is complete.

TIP RACK 1 LEFT: X-AXIS ALIGNMENT PROCEDURE

> **Note:**
> **Remove cardboard from tip racks.**

1. Remove all tips and cardboard from Tip Racks.
2. Cursor to **X Adjust** Tip Rack 1 Left:**+000.**
3. Press **F3 (Move)** and **Enter**.
4. Pipettor moves to Tip Rack 1 Left location FF. See Figure 5-9 below.

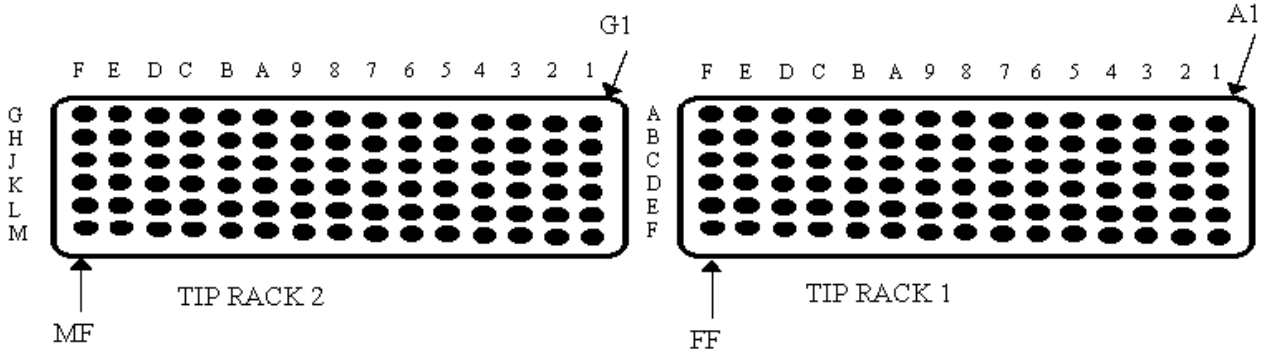


Figure 5-9. Tip Pack 1 and 2

5. Adjust pipettor Alignment Tool using +/- keys, press F3 and Enter, until the second cut in the tool is centered directly over Tip Rack 1 Left Location FF.

   When the Alignment Tool is centered over Location FF in the X direction, X Alignment at this position is complete.

TIP RACK 1 LEFT: Y-AXIS ALIGNMENT PROCEDURE

1. Cursor to **Y Adjust +000.**
2. Repeat previous procedure for Y-Axis alignment.
3. When the Alignment Tool is centered and second cut slides into the hole, Y-Axis Alignment at this point is complete.

   At this point, if both the X and Y Alignments are accurate, the Alignment Tool will slide into the Left Tip Rack 1 position.

TIP RACK 1 RIGHT: X-AXIS ALIGNMENT PROCEDURE

1. Cursor to X Adjust Tip Rack 1 Right: **+000.**
2. Press **F3 (MOVE)** and **Enter**.

3. Pipettor goes to Right Rack 1 location A1. See Figure 5-9.

4. Adjust Alignment Tool position using +/- keys, F3 and Enter until the second cut in the tool is centered directly over Right Rack 1 Location A1.

5. When alignment tool is centered over Location A1 in the X direction, X Alignment at this point is complete.

TIP RACK 1 RIGHT: Y-AXIS ALIGNMENT PROCEDURE

1. Cursor to **Y Adjust +000**

2. Repeat above procedure for Y-Axis alignment procedure.

3. When the Alignment Tool is centered and second cut slides into the hole, the Y-Axis Alignment at this position is complete.

   At this point, if both X and Y Alignments are accurate, the Alignment Tool will slide into the Right Tip Rack 1 position.

TIP RACK 2 LEFT: X- AXIS ALIGNMENT PROCEDURE

1. Cursor to **Y Adjust** Tip Rack 2 Left:**+000.**

2. Remove all tips and cardboard.

3. Press **F3 (MOVE)** and **Enter.**

4. Pipettor goes to Tip Rack 2 left location MF. See Figure 5-9.

5. Adjust Alignment Tool position using the +/- keys, F3 and Enter until the tool is centered directly over Tip Rack 2 Left Location MF.

6. When alignment tool is centered, over Location MF in the X direction, X Alignment at this point is complete.

TIP RACK 2 LEFT: Y-AXIS ALIGNMENT PROCEDURE

1. Cursor to **Y Adjust +000**.

2. Repeat above procedure for Y-Axis alignment.

3. When the Alignment Tool is centered and the second cut slides into the hole, Y-Axis Alignment at this point is complete.

   At this point, if both X and Y Alignments are accurate, the Alignment Tool will slide into the Tip Rack 2 position.

TIP RACK 2 RIGHT: X-AXIS ALIGNMENT PROCEDURE

1. Cursor to **X Adjust** Tip Rack 2 Right:**+000.**

2. Press **F3 (MOVE)** and **Enter**.

3. Pipettor moves to Tip Rack 2 location G1. See Figure 5-9.

4. Adjust pipettor nozzle position using +/- keys, F3 and Enter until the tool is centered directly over Tip Rack 2 Location G1.

5. When Alignment Tool is centered over Location G1 in the X direction, X Alignment is complete.

TIP RACK 2 RIGHT: Y-AXIS ALIGNMENT PROCEDURE

1. Cursor to **Y Adjust +000.**
2. Repeat above procedure for Y-Axis alignment procedure.
3. When Alignment Tool is centered and the second cut slides into the hole, the Y-Axis Alignment at this point is complete.

   At this point, if both the X and Y Alignments are accurate, the Alignment Tool will slide into the Tip Rack 2 position.

> **Note:**
> **The Z height alignments for both rack #1 and rack #2 will average both values for each rack location. The average value is what will be saved in EEPROM**

TIP RACK 1 LEFT: Z-AXIS ALIGNMENT PROCEDURE

> **Note:**
> **Remove Cardboard from tip racks.**

1. Remove all cardboard and tips.
2. Cursor to **Z Adjust +000**.
3. Press **F3 (MOVE)** and **Enter**.
4. Using a metric feeler gauge (Wedge Gauge), measure for 0.8 mm gap between the bottom edge of the alignment tool (second cut) and the top of the Tip Rack. See Figure 5-10.

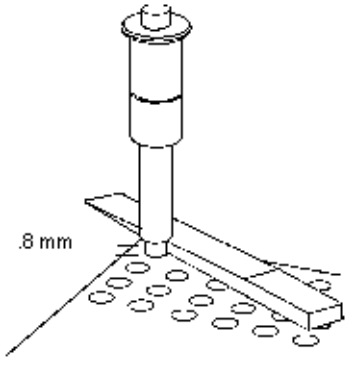


Figure 5-10. Z Height Adjustment in Tip Rack

5. Adjust gap measurement using +/- keys, F3 and Enter.
6. When a 0.8 mm gap is achieved, the alignment is complete.

TIP RACK 1 RIGHT: Z-AXIS ALIGNMENT PROCEDURE

1. Cursor to Z Adjust Tip Rack 1 Right: **+000**.
2. Press **F3 (MOVE)** and **Enter**.
3. Alignment Tool moves to Tip Rack 1 position A1. See Figure 5-11.
4. Using a metric feeler gauge (Wedge Gauge), measure for a 0.8 mm gap between the bottom edge of the Alignment Tool and the top of the Tip Rack.

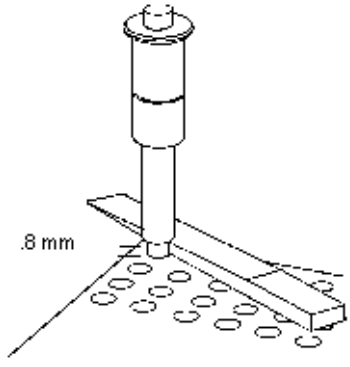


Figure 5-11. Z Height Adjustment in Tip Rack

5. Adjust gap measurement using the +/- keys, F3 and Enter.
6. When a 0.8 mm gap is achieved, the alignment is complete.

TIP RACK 2 LEFT: Z-AXIS ALIGNMENT PROCEDURE

1. Cursor to **Z Adjust** Tip Rack 2 Left:**+000.**
2. Press F3 (MOVE) and **Enter**.
3. Alignment Tool moves to Tip Rack 2 position MF. See Figure 5-10.
4. Using a metric feeler gauge (Wedge Gauge), measure for a 0.8 mm gap between the bottom edge of the Alignment Tool and the top of the Tip Rack.
5. Adjust gap measurement using the +/- keys, F3 and Enter.
6. When a 0.8 mm gap is achieved, the alignment is complete.

TIP RACK 2 RIGHT: Z-AXIS ALIGNMENT PROCEDURE

1. Cursor to **Z Adjust** Tip Rack 2 Right:**+000**.
2. Press **F3 (MOVE)** and **Enter**.
3. Alignment Tool moves to Tip Rack 2 position G1. See Figure 5-11.
4. Using a metric feeler gauge, measure for a 0.8 mm gap between the bottom edge of the Alignment Tool and the top of the Tip Rack.
5. Adjust using the +/- keys, F3 and Enter.
6. When a 0.8 mm gap is achieved, the alignment is complete

TIP RACK (Z-HEIGHT ALIGNMENT VERIFICATION PROCEDURES)

To verify the Tip Rack Z-Height settings are within the acceptance criteria, refer to the z-height verification procedure starting on page 21, steps 1-16.

DILUENT BOTTLE 1: X & Y-AXIS ALIGNMENT PROCEDURE

> Diluent Bottle Alignment does not require Z height alignment.

1. Cursor to **X Adjust** Diluent Bottle 1: **+000**.
2. Press **F3 (MOVE)** and **Enter.**
3. Alignment Tool moves to Diluent Bottle Rack position D1. Refer to Figure 5-12.

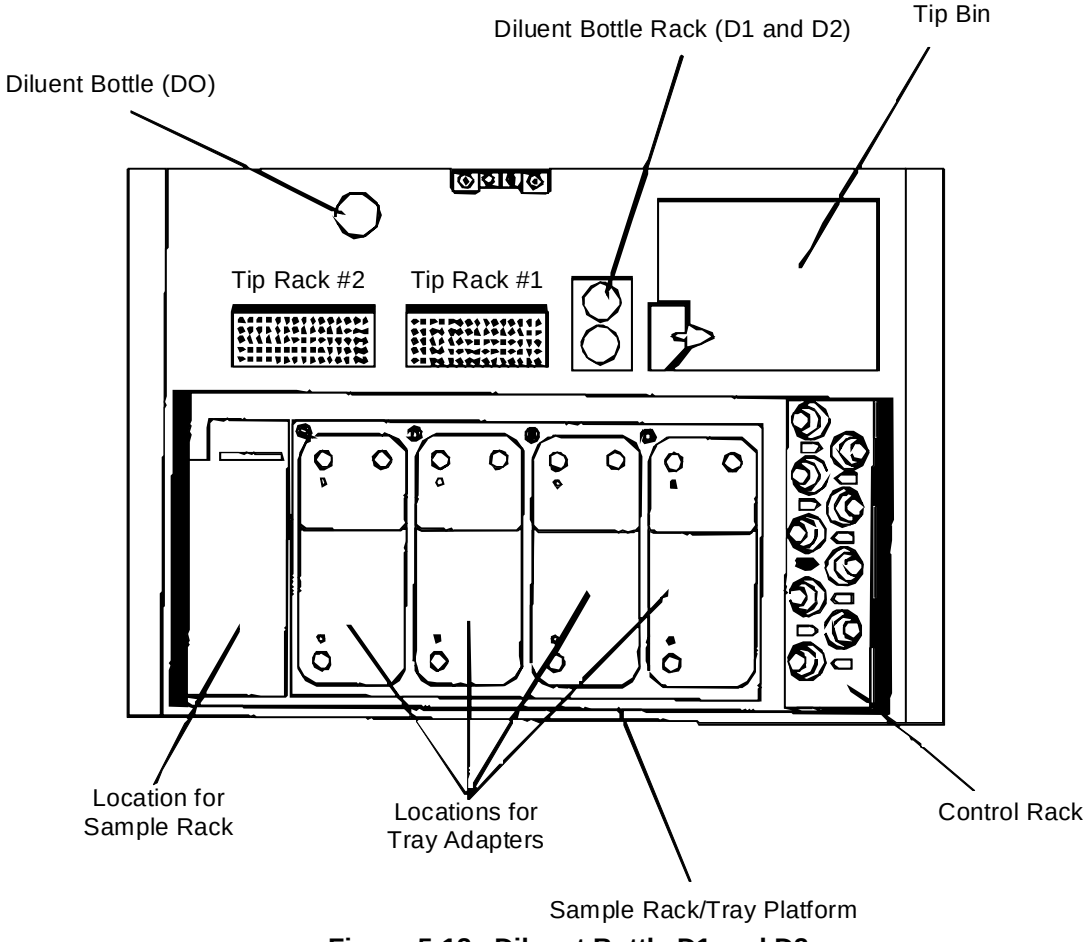


Figure 5-12. Diluent Bottle D1 and D2

4. Adjust centering of the alignment tool using the +/- keys, F3 and Enter.
5. When the alignment tool is centered, the alignment is complete.

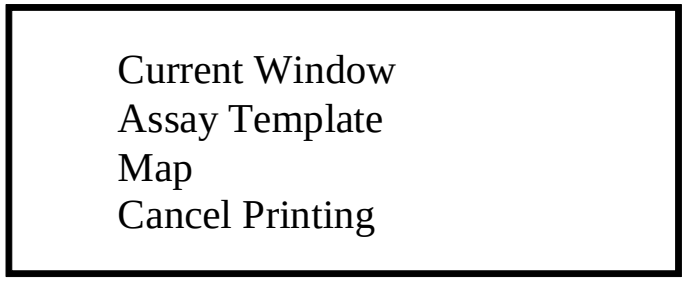
DILUENT BOTTLE 2: X & Y-AXIS ALIGNMENT PROCEDURE

1. Cursor to **X Adjust** Diluent Bottle 2: **+000**.
2. Press **F3 (MOVE)** and **Enter.**
3. Alignment tool moves to Diluent Bottle Rack position D2. Refer to Figure 5-12.

4. Adjust centering of the alignment tool using the +/- keys, F3 and Enter.
5. When the Alignment Tool is centered, the alignment is complete.

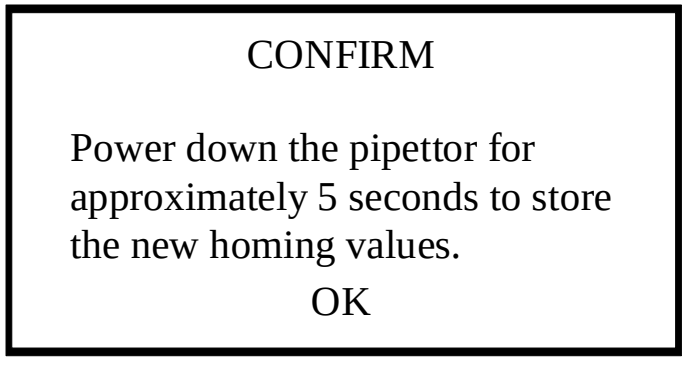
PRINT AND SAVE

1. Press **Print (F2)** and **Enter** for hard copy of screen values.
2. The following screen appears:



Select Current Window

3. Remove Alignment Tool and re-install Nozzle Assembly.
4. Press **Save (F4)** to save values and press **Enter.**
5. Press <ESC> ESCAPE key to exit.
6. The following screen will be displayed:

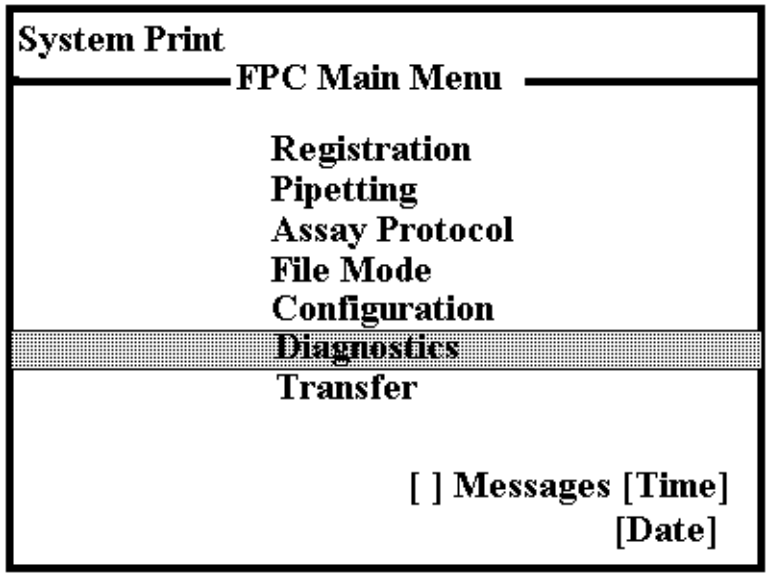


7. Power Down the pipettor.
8. Power up (after 5 seconds) the pipettor. Press **Enter.**
9. The new values are now stored in EEPROM on the MPU of the pipettor.
10. Press <ESC> key twice to exit to the Main Menu.
11. Now check Starting Dispense Height (page 17 of 21) and **Z-height verification procedure (page 21 of 25).**

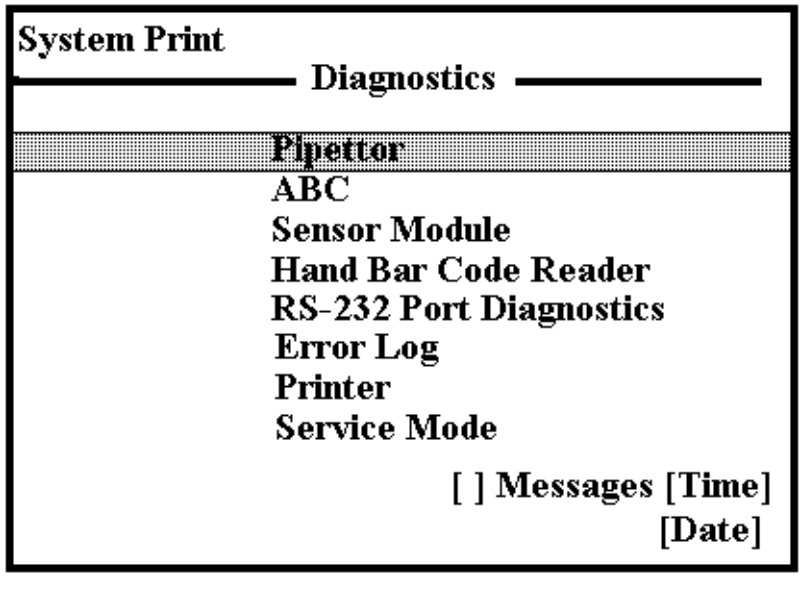
STARTING DISPENSE HEIGHT (SDH)

To Check the SDH of each tray platform location, pause the pipettor at each assay tray platform location. Measure the tip to platform distance with metric gauge.

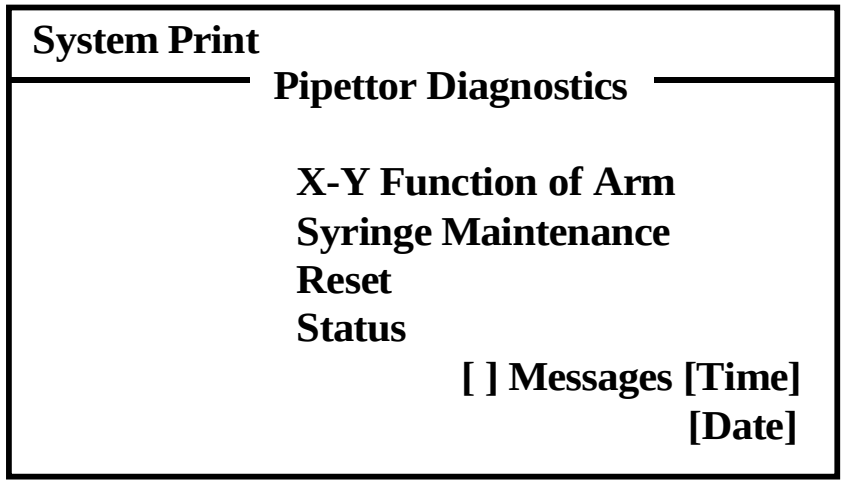
1. From the Main Menu move cursor, highlight **Diagnostics** and press **Enter**.



2. Move cursor to **Pipettor** and press **Enter**.



3. Move cursor to X-Y Function and press Enter.

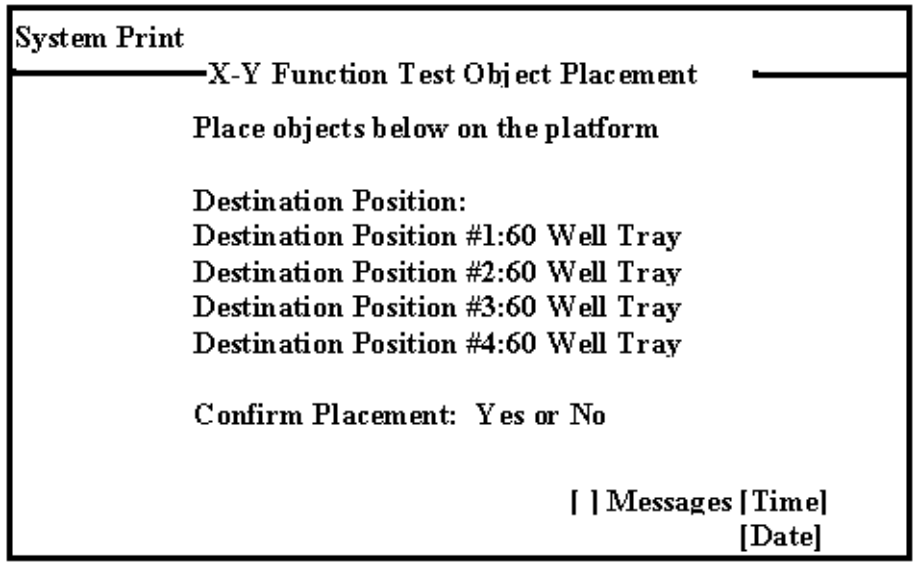


4. Select 4 60-Well Trays.

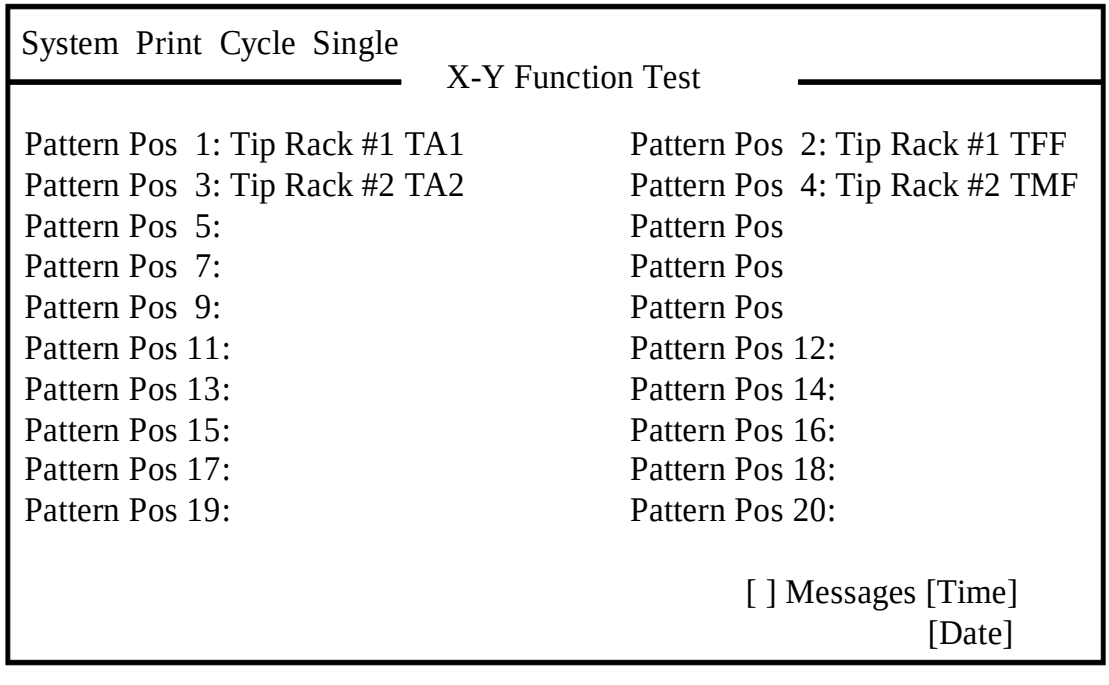
Pre-Defined Pattern

4-60-Well Trays
4 Microtiters
3 FPIA Carousels
3 MEIA Carousels

5. Place 4 tray platforms on the pipettor. Remove all the tips and cardboard from both racks.
6. Place one tip in rack # 1 position TA1.



7. **DISCONNECT JAMMING SENSOR CABLE CONNECTOR.**
8. Confirm placement **Yes** and press **Enter**.



9. Select the **F3 (Cycle)** key and press **Enter**.

> **Note:**
>
> **The pipettor will pick up the tip and position itself over the center of each tray platform. The tip will proceed down until it is at Starting Dispense Height "SDH" which is the Z position farthest down.**

10. Press the Pause button at the moment it reaches the "SDH" position.

11. Measure the tip to platform distance with the metric gauge (Wedge Gauge) and record the measurement. Refer to Figure 5-13.

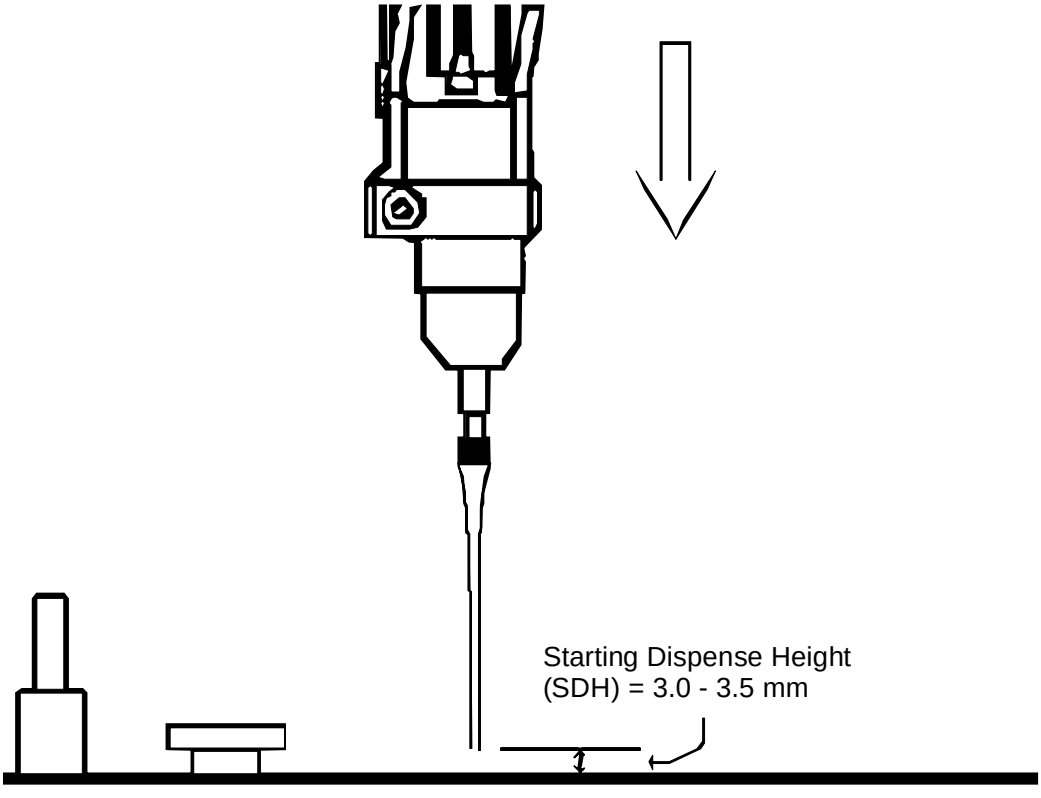


Figure 5-13. Starting Dispense Height Measurement

12. Press the pause button again to unpause the pipettor and allow the pipettor to continue to the next tray platform location.

13. Repeat steps 10 - 12 until all four measurements are obtained.

14. All four readings must be within 3.0 to 3.5 mm.

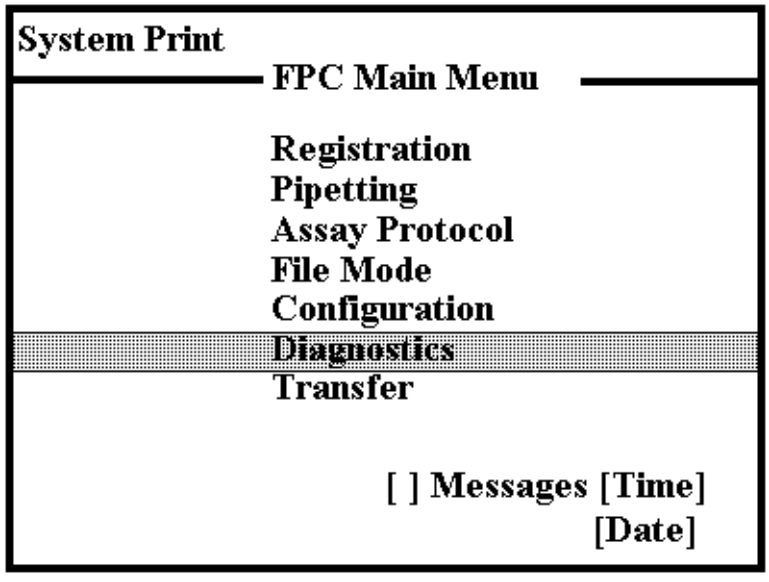
15. Repeat Platform Left & Right Z Height Alignments until all four readings are within 3.0 to 3.5 mm.

16. Reconnect the Jamming Sensor.

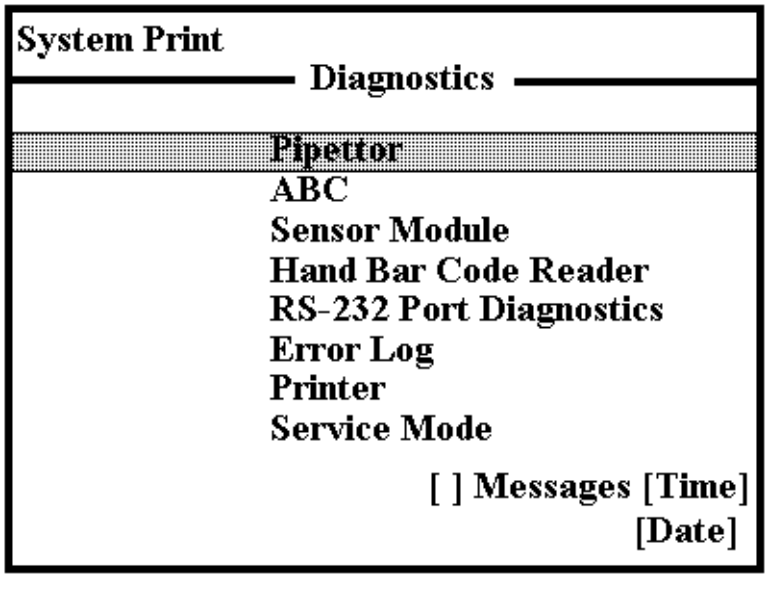
TIP RACK (Z-HEIGHT ALIGNMENT VERIFICATION PROCEDURES)

> Note:
>
> The Tip Rack Z Height Alignment will require Alignment Tool C/N 1-73446-01. See Figure 14.

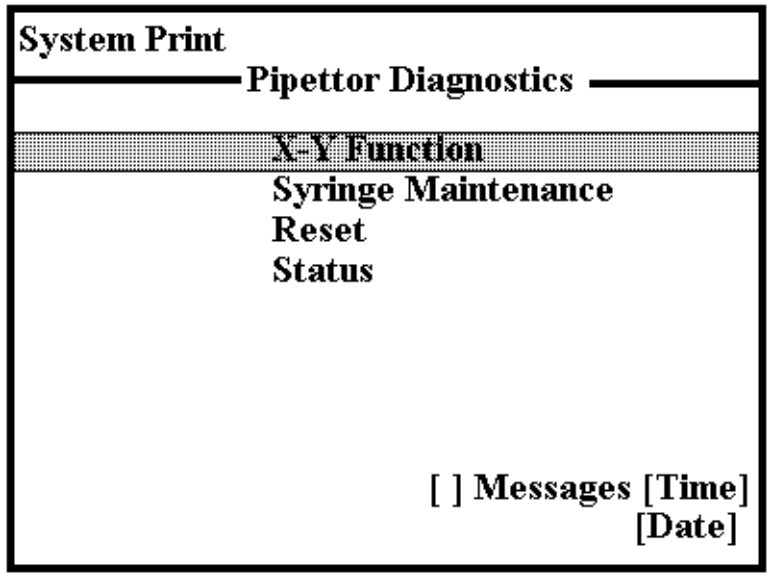
1. From the Main Menu move cursor, highlight Diagnostics and press enter.



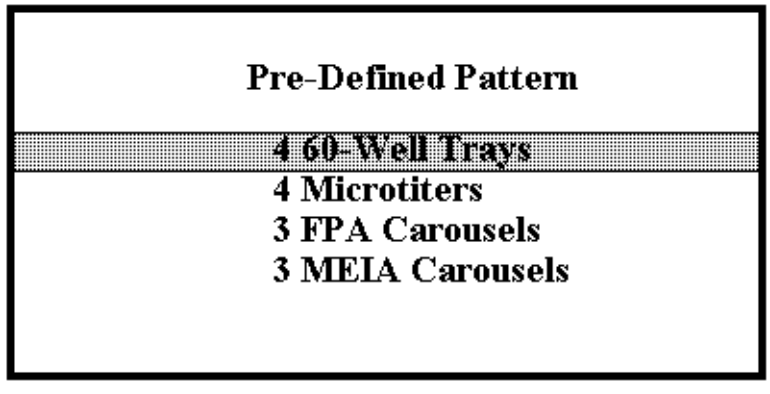
2. Move cursor to **Pipettor** and press **Enter.**



3. Move cursor to X-Y Function and press **Enter**.

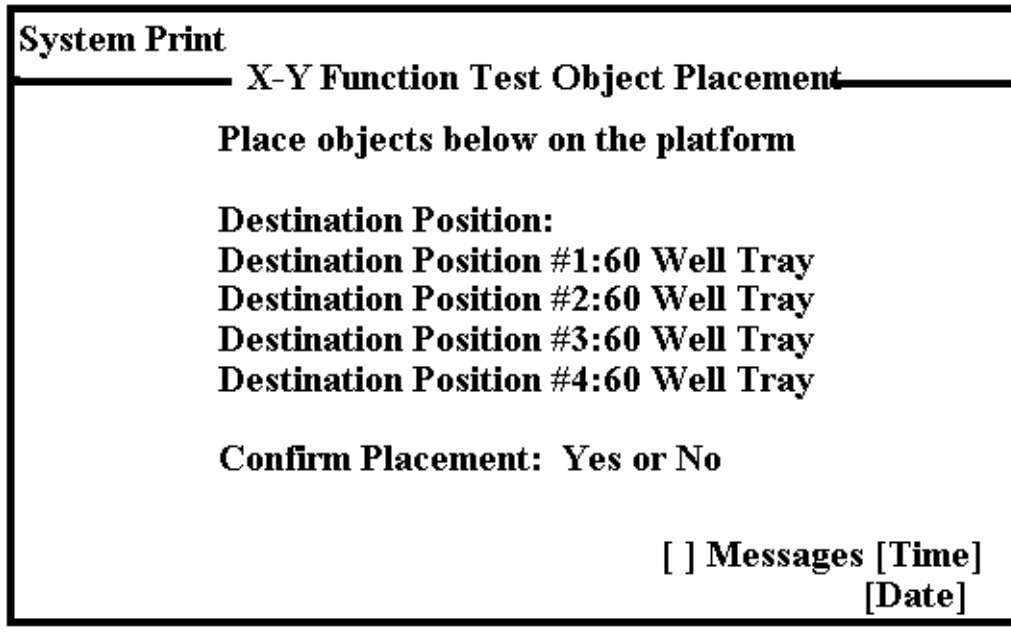


4. Select 4 60-Well Trays.



5. Place 4 tray platforms on the pipettor. Remove all the tips and cardboard from both racks.

6. Place one tip in rack #1 position TA1.



7. **DISCONNECT JAMMING SENSOR CABLE CONNECTOR**

8. Confirm placement **Yes** and press **Enter**.

System Print Cycle Single

X-Y Function Test

Pattern Pos 1: Tip Rack #1 TA1	Pattern Pos 2: Tip Rack #1 TFF
Pattern Pos 3: Tip Rack #2 G1	Pattern Pos 4: Tip Rack #2 TMF
Pattern Pos 5:	Pattern Pos
Pattern Pos 7:	Pattern Pos
Pattern Pos 9:	Pattern Pos
Pattern Pos 11:	Pattern Pos 12:
Pattern Pos 13:	Pattern Pos 14:
Pattern Pos 15:	Pattern Pos 16:
Pattern Pos 17:	Pattern Pos 18:
Pattern Pos 19:	Pattern Pos 20:

[ ] Messages [Time]
[Date]

9. Select the **F3 (Cycle)** key and press **Enter**.

10. Pause the pipettor when the sample nozzle and pipette tip have reached the lowest travel at tip rack position A1**.**

11. Measure the tip pick up height as shown in Figure 5-14 using the metric gauge (wedge gauge). Record this measurement.

12. Repeat Steps 10 - 11. For tip rack positions FF, G1, MF.

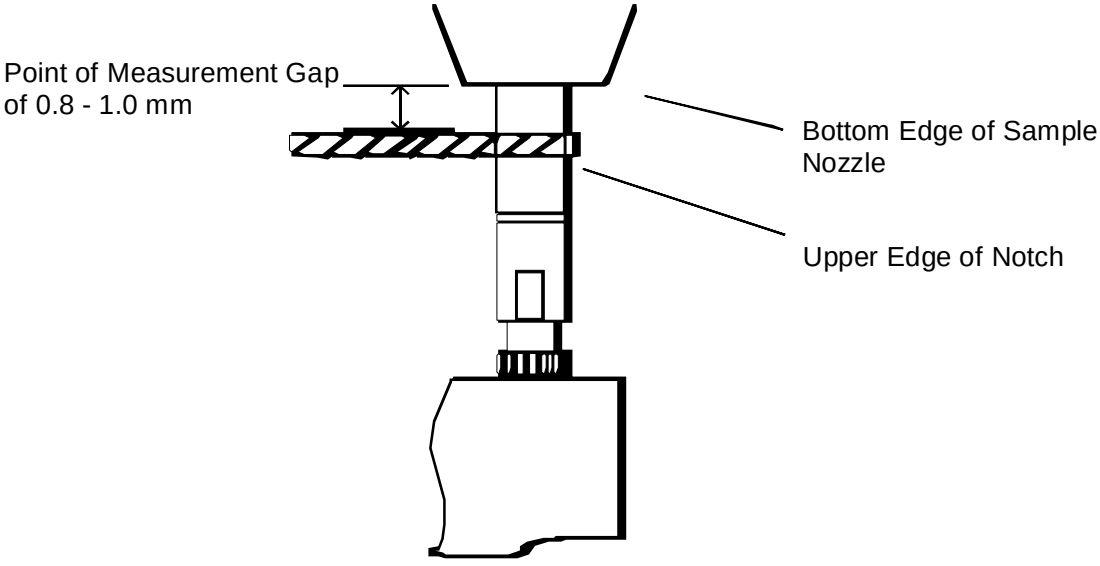
13. All four readings must be within 0.8 mm to 1.0 mm.

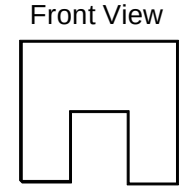
14. If any of the tip rack Z-heights are not in the .8 mm to 1.0 mm specification, repeat the tip rack Z-axis alignment procedure.

15. Install the alignment gauge onto the shaft notch as shown in Figure 5-14.

    Set the Z-height alignment to .8 mm using the sample nozzle Tip Height Alignment Gauge and a pipette tip. The Tip Racks one and two Z-height must be repeated. Refer to Figure 5-14, if necessary when setting the .8 mm gap using the sample nozzle Tip Height Alignment Gauge and pipette tip method.

16. Reconnect the Jamming Sensor.





C/N 1-73446-01

Figure 5-14. Tip Rack Z Reference

END OF DOCUMENT