



**ImageWorks**  
Generations of Imaging

## **Panoura 18S**

Panoramic X-Ray with Ceph Calibration and Alignment

# Summary

**These instructions serve as supplemental assembly guidance of the Panoura. They are not meant to replace the installation manual, but rather serve to complement it.**

**If there are any questions, please do not hesitate to contact us**

**914-592-6100**



**ImageWorks**

Generations of Imaging

# Agenda

1. **Computer set up**
2. **Tube head aging**
3. **Panoramic alignment**
4. **Panoramic sensor calibration**
5. **Ceph alignment**
6. **Ceph sensor calibration**
7. **Secondary collimator alignment**
8. **Ear rod alignment**
9. **Final Test Exposure**

# 1. Computer Set Up

**This procedure assumes PC was either provided by or staged by ImageWorks**

**Start PC. The login credentials for PCs setup at Imageworks will be on a white Index Card taped to the cover of the PC.**

**Verify that the Ethernet (blue) and Serial (Gray) Cables are connect between the PC and the Panoura**

**Turn on the Panoura.**

**The link to Imageworks Remote assistance is:**

**<https://imageworkscorporation.com/remotesupport/>**

# 1. Computer Set Up

Confirm that key programs are running by looking for the following icons in the system tray (usually bottom right of screen you may need to click the ^ symbol by the system clock to see the icons):

1. **Control Manager**

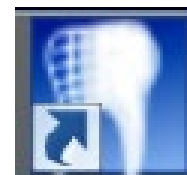


2. **Image Creator**

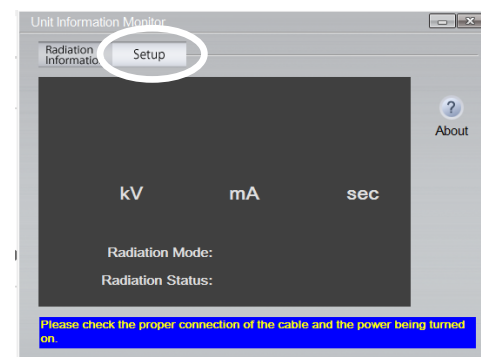


## 2. Tube Head Aging

On the computer in the lower right hand corner of the screen, Double click the Control Manager icon (white tooth on light blue background).

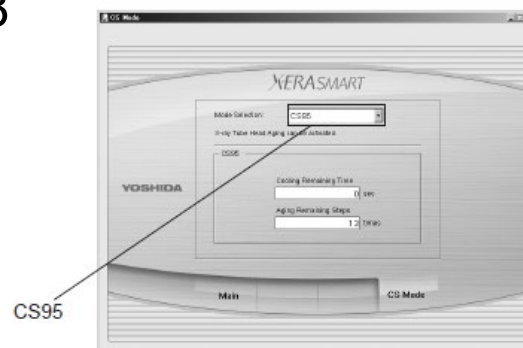


Hold down the shift key and click on the setup button to open the CS service menus.



It will ask for password, which is p18p18

Select CS95 to perform Tube Head Aging Routine



## 2. Tube Head Aging

Follow directions on screen. Settings will be automatic.

To initiate exposure, press hand switch and hold until beeping stops (x-ray cycle will be about 4 seconds).

Screen will show countdown during cool-down period and will say when it's ready for next exposure (about 80 seconds).

Repeat this process 13 times. At the completion of the 13<sup>th</sup> cycle, the screen should show "Pass"

Click on "Main" tab to exit CS mode

### Note:

If exposure switch is pressed before cooling cycle is complete, an FL03 warning is displayed.

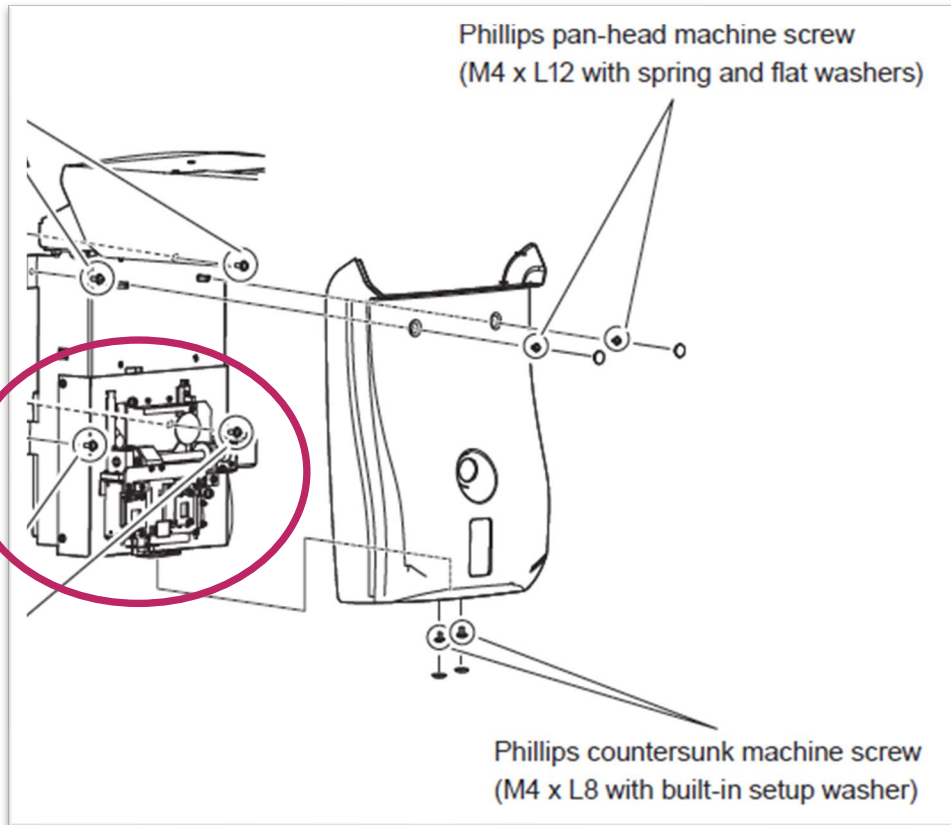
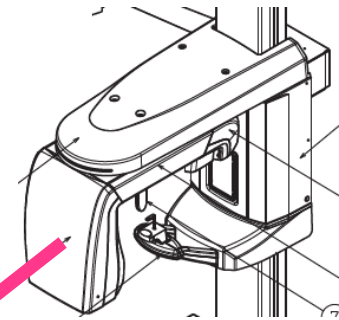
If switch is released before exposure is complete, an ER08 warning is displayed.

These error codes can be cleared by pressing RESET on panel.



# 3. Panoramic Mechanical Alignment

If inside cover on tube head is in place, remove this to reveal collimator assembly



**Collimator  
assembly**



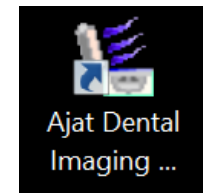
# 3. Panoramic Mechanical Alignment

Confirm Unit is set to Pan Mode

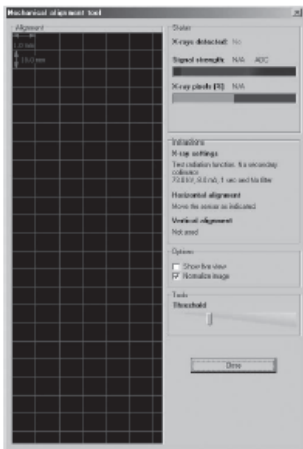
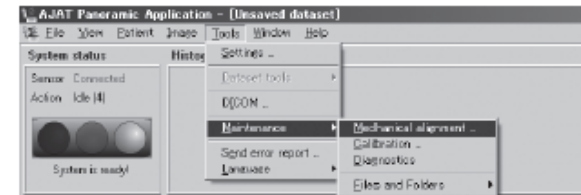
For mechanical alignment and calibration, the FL07 exposure lock must be switched off. Do this by pressing and holding down the MODE and FIX buttons on the indicator panel simultaneously for about 2 seconds.

Make sure the sensor is installed in Pan position

Open Ajat Dental Imaging Software



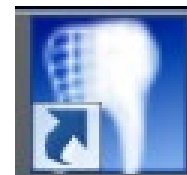
Select Tools → Maintenance → Mechanical Alignment



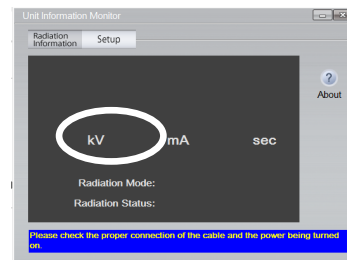
The mechanical alignment tools screen is displayed

### 3. Panoramic Mechanical Alignment

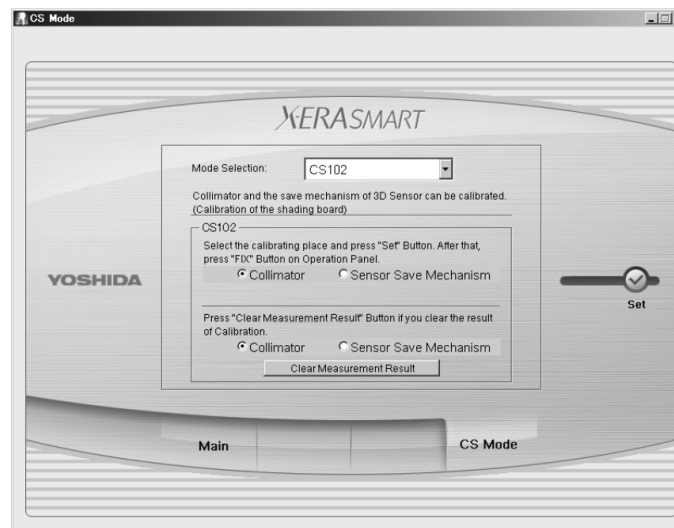
On the computer in the lower right hand corner of the screen, Double click the Control Manager icon (white tooth on light blue background).



Hold down the shift key and click on the setup button to open the CS service menus. Enter password p18p18

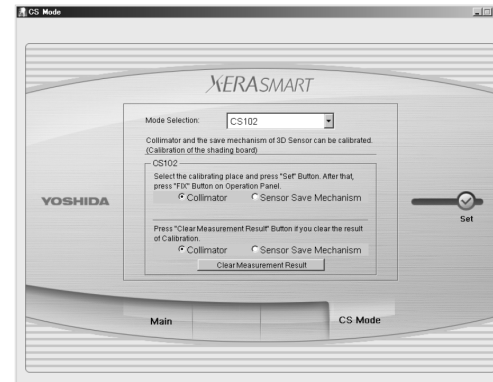


Select CS102 to calibrate the collimator's motor motion.



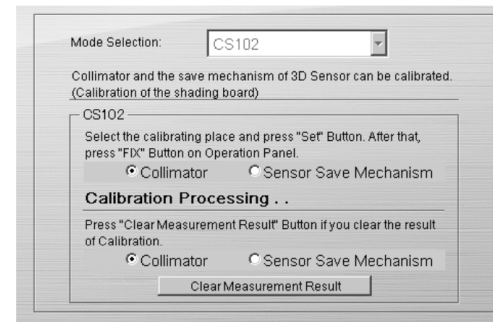
# 3. Panoramic Mechanical Alignment

Mouse click the Set then press the FIX button on the Panoura's Console

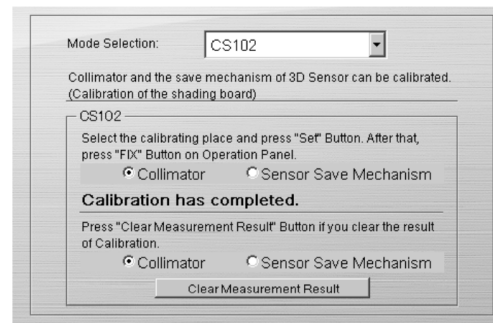


The motor will run the collimator back and forth several times.

This will typically take 1-2 minutes to complete



When the status message displays "Calibration has completed" the motor calibration is complete.

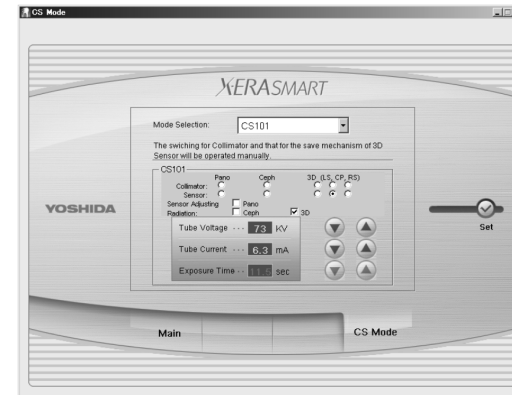


# 3. Panoramic Mechanical Alignment

Select CS101 to set Manual switching of exposure Mode.

Select the circle next to “Collimator” and under “Pan”.

Click on and check the Sensor Adjusting Pano box. Verify the kV=73, mA=6.3 and sec is blank.



Click the "Set" button. Press RESET switch of control panel. Verify that the mechanical collimator motor resets to the PAN position.

In this mode:

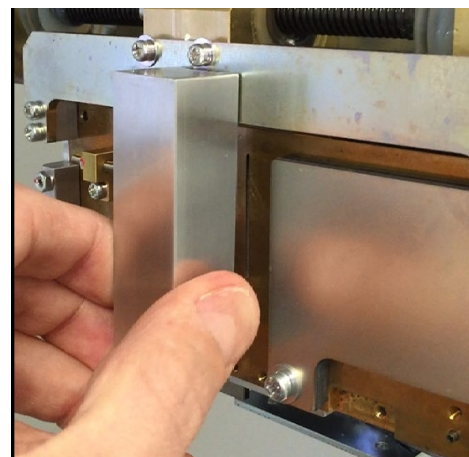
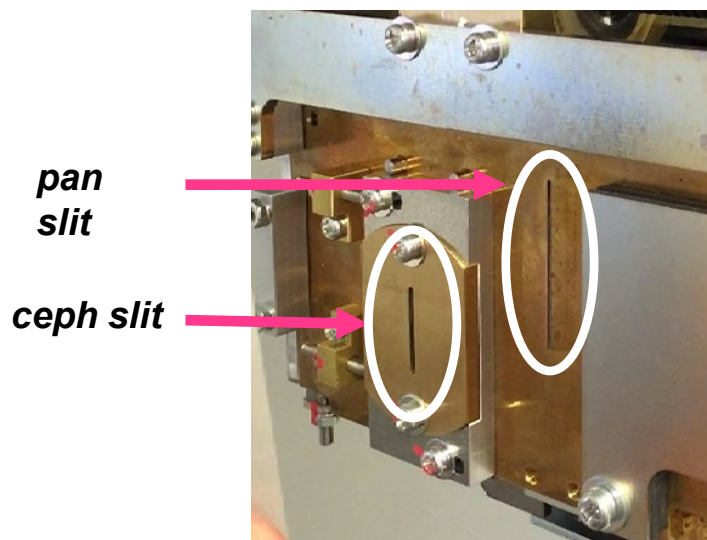
- The collimator will ‘reset’ to the home position then move to the ‘pan’ position whenever RESET is pressed.
- The x-ray will fire when the exposure thumb switch is pressed.
- The HEAD will not rotate during exposure.

### 3. Panoramic Mechanical Alignment

Place 20 mm aluminum block over the pan collimator slit.

The magnetized block does not require any tape.

If using tape to secure with an unmagnetized block, ensure the tape does NOT with the leadscrew/motor/opto-gate.



### 3. Panoramic Mechanical Alignment

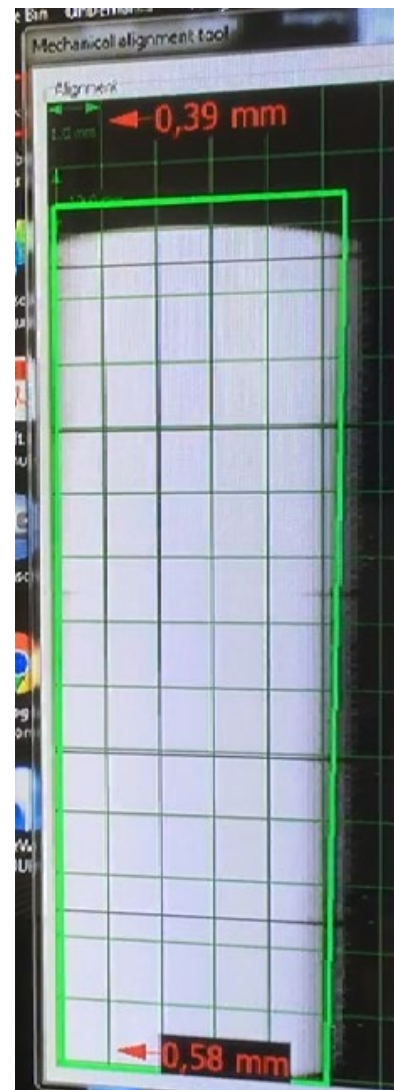
Press hand switch to initiate x-ray. Release after you hear 2-3 x-ray tones/beeps. The white column will appear on the screen with arrows above and below showing how far each end is out of alignment.

Number on top and bottom represent distance each side is out of alignment. If number is less than 0,20 mm, it will be in green, which is within the tolerance for alignment. The objective is to adjust collimator position such that both top and bottom are green (< 0,20 mm).

If either number is red (greater than 0,20), then the collimator must be adjusted.

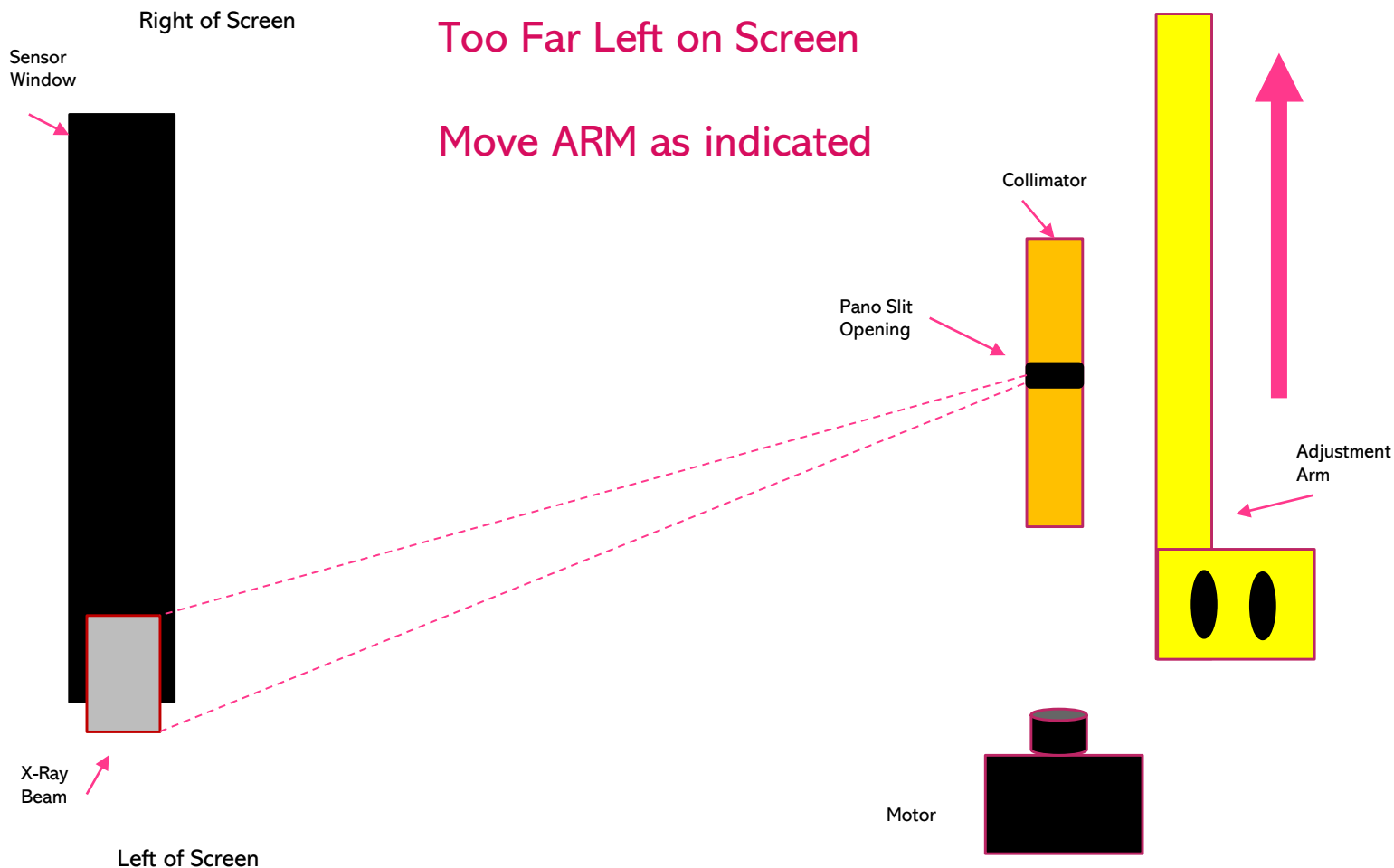
Note: these distances do NOT correlate with how far collimator is out of alignment

See following pages for the direction to move the Alignment Arm.



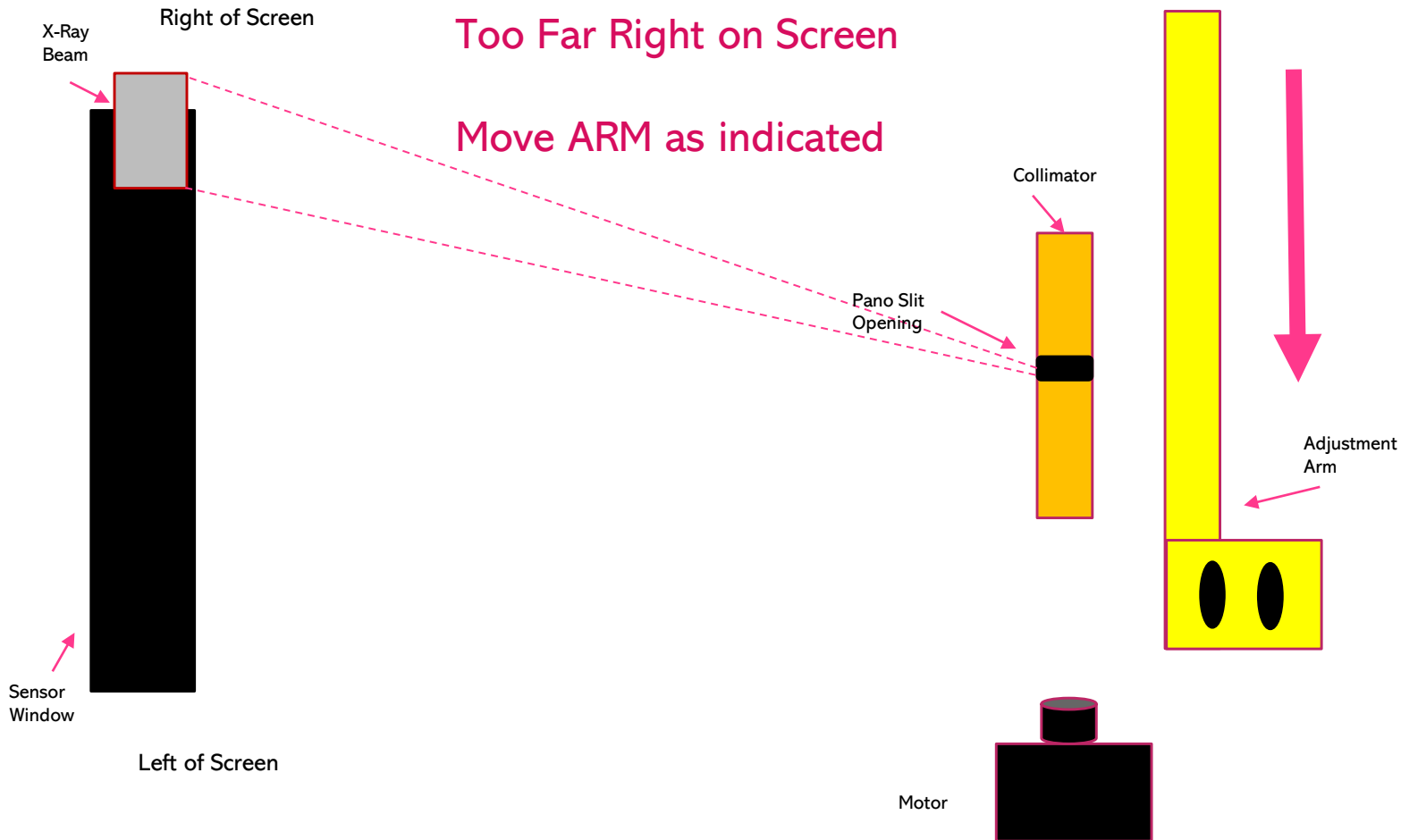
# 3. Panoramic Mechanical Alignment

Top View (not to scale)



# 3. Panoramic Mechanical Alignment

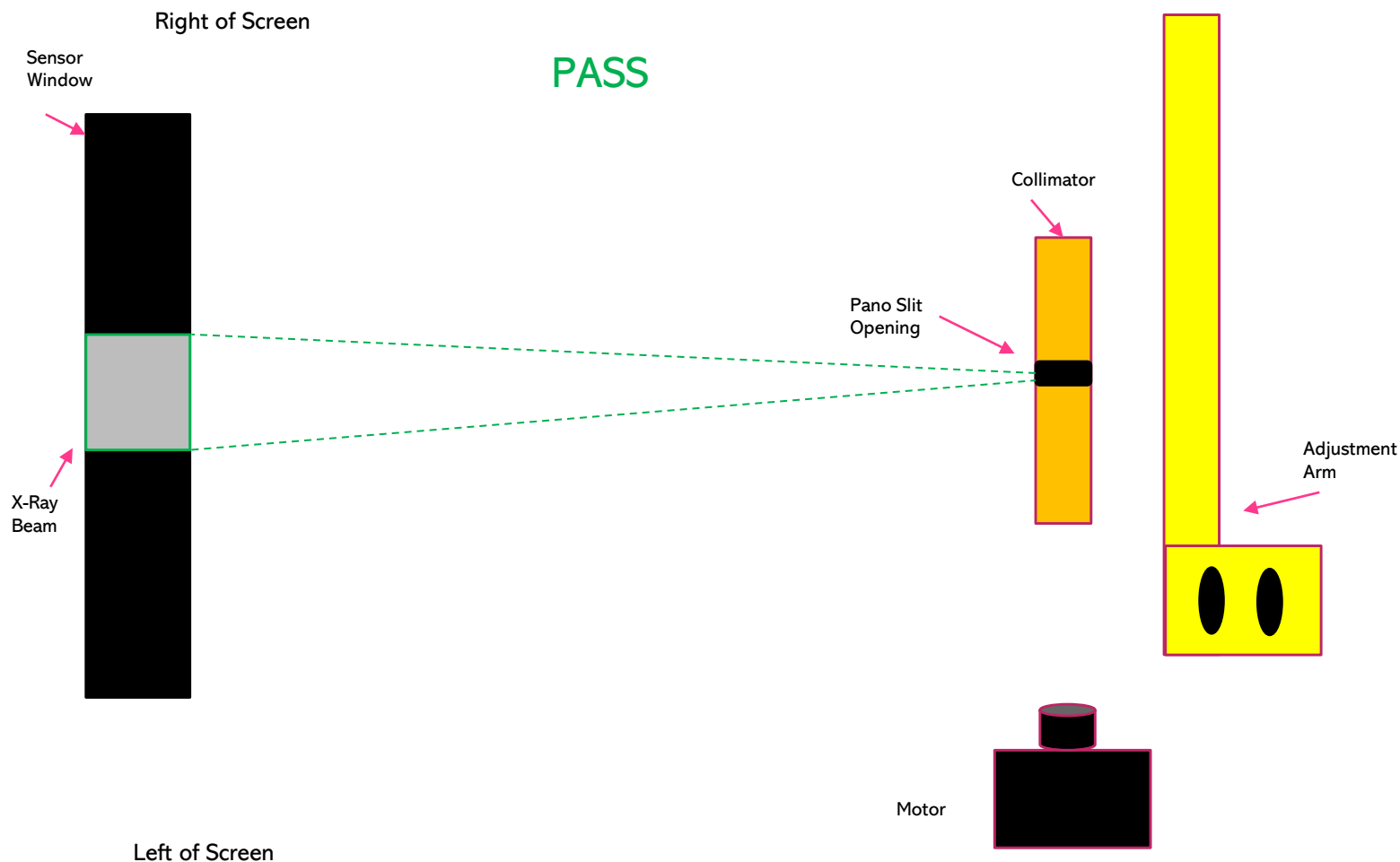
Top View (not to scale)





# 3. Panoramic Mechanical Alignment

Top View (not to scale)



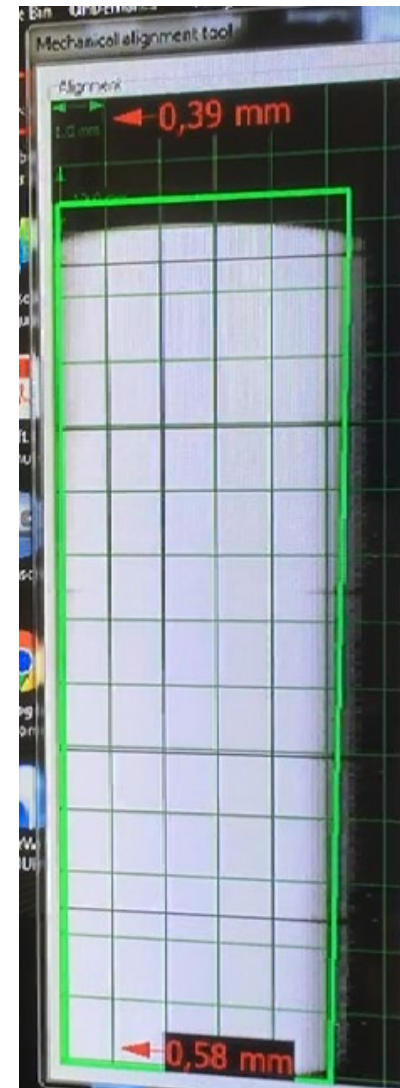
### 3. Panoramic Mechanical Alignment

The direction of the arrow represents the side to which the beam has moved too far when facing the sensor. Therefore, the beam must be moved in the opposite direction when facing the sensor.

In the example shown, the red arrows pointing to the left means that the beam is too far to the left (when facing the sensor), and must be moved to the right. Therefore, in this situation, the collimator slit must be moved to the left when facing the collimator. This can be done by turning the push screw clockwise

**Tip:** The mechanical alignment process is most efficient if each adjustment of the collimator is done with deliberation and care. Small adjustments to collimator can have large impact on alignment, so it's best to start with very small adjustments so that larger misalignments don't result.

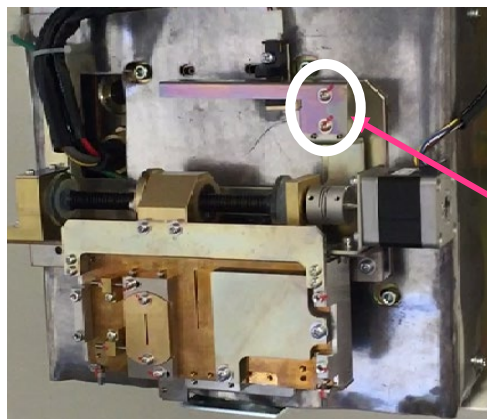
**AFTER EVERY ADJUSTMENT. RESET THE COLLIMATOR MOTOR AND VISUALLY CONFIRM THE MOTOR RESETS.**



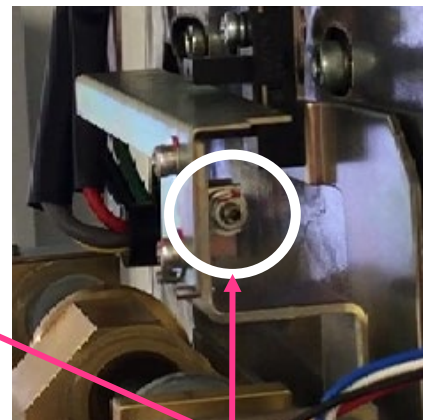
### 3. Panoramic Mechanical Alignment

To adjust collimator left or right, loosen the two adjusting screws (these simply hold the assembly in place).

Use pushing screw to move the assembly (note lock nut on pusher screw).



Adjusting  
Screws



Pushing  
Screw

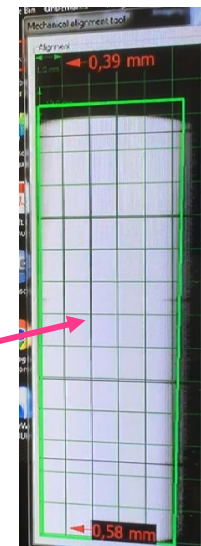
**Note: The pushing screw only pushes, but does not pull. So turning the push screw clockwise by one turn, will move the collimator approximately 1 mm to the left (when facing the collimator). However, to move in the opposite direction, turning the screw counterclockwise one turn will create space, and the collimator needs to be physically “tapped” to move it.**

**Note: vertical or rotational adjustments may be required. Please refer to manual**

### 3. Panoramic Mechanical Alignment

Tip: Loosening Adjusting screws too much will make the assembly too loose to make adjustments

Tip: For each scan, handswitch can be released when white area appears on alignment screen (as shown in picture) instead of doing entire exposure. This may help avoid delays caused by tubehead overheating, which require longer cooling periods between test exposures. This approach will create an Er08 code with beeps, but these can be cleared by pressing RESET.



**AFTER EVERY ADJUSTMENT.  
RESET THE COLLIMATOR MOTOR  
AND VISUALLY CONFIRM THE  
MOTOR RESETS.**

Note: after each adjustment, confirm that surface of bracket is approximately level



# 3. Panoramic Mechanical Alignment

After adjusting the position of the collimator, while in CS102 press RESET to cycle the motor above the collimator.

Initiate scan.

If arrows are red.

**Repeat collimator position adjustment steps**

If arrows are green.

Tighten adjusting screws, and RESET the motor and shot the alignment x-ray and confirm that arrows remain green after tightening. If all is green, then click Close on the Mechanical Alignment screen.

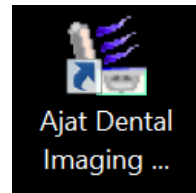
Close Control Manager

# 4. Panoramic Sensor Calibration

Confirm Control Manager is closed

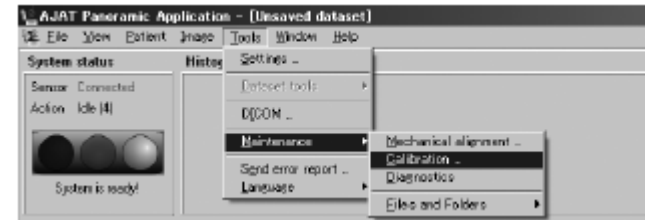
Confirm that all adapters (e.g. chin rest block) are removed from irradiation path of the x-ray

Open Ajat Dental Imaging Software



Note: unit needs to be powered on for about 5 min to perform calibration

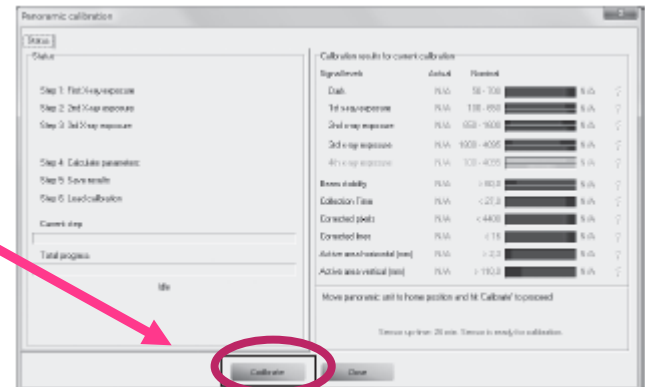
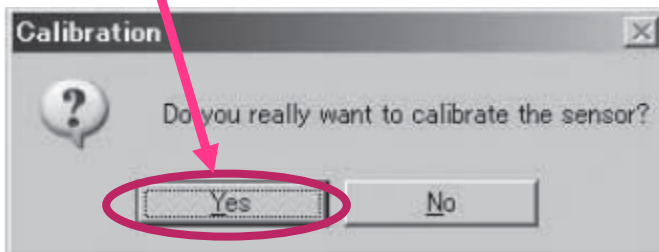
Select Tools → Maintenance → Calibration



Calibration screen is displayed.

Click Calibrate

Click Yes



# 4. Panoramic Sensor Calibration

The calibration includes a series of 3 x-ray scans.

The display details the parameters needed for each exposure. Set the console panel on the side of the unit to reflect these parameters.

**Note:** for calibration process, parameters can NOT be set in software, and must be set from the column console



**Note:** when 20 mm Al is displayed, then the aluminum block must be attached over the panoramic slit. When “No Filter” is displayed, then remove the block

To change the parameters on console:

- Confirm you are in Pan mode (this is default).
- Press “Select” button until kV is flashing. Press up or down to set. Press “Fix” to set.
- Repeat for mA
- Repeat for sec
- Press “Reset” to prep unit for next scan
- Press and hold trigger switch for complete scan

## 4. Panoramic Sensor Calibration

Repeat above steps for each scan updating parameters requested for each exposures

When the calibration is finished, press Ok



Close Ajat software and remove the aluminum block.

**Panoramic Mode Calibration Complete**



# 5. Ceph Mechanical Alignment

Make sure that secondary collimator(6), nose support(2) and both ear rods(1) are removed.

Move sensor(3) to ceph position(4) and turn white knob to lock position.

Confirm the sensor fan is running and remove the Aluminum Cal block from the collimator..

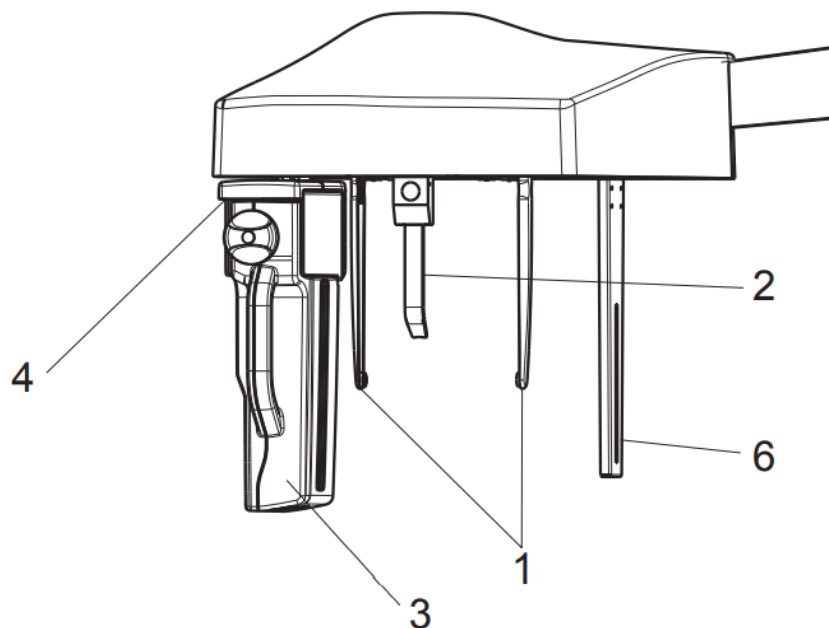
On the control pad on the side of the machine, press mode until the it says CEPH LA.

Press Reset twice

Open the Control Manager on the pc and set Service Mode.

For mechanical alignment, the FL07 exposure lock must be switched off.

Note: If unit has not been turned off since the pano alignment, then FL07 likely is already switched off. However, if the unit has been powered off since then, FL07 may need to disabled again. Do this by pressing and holding down the MODE and FIX buttons on the indicator panel simultaneously for about 2 seconds.



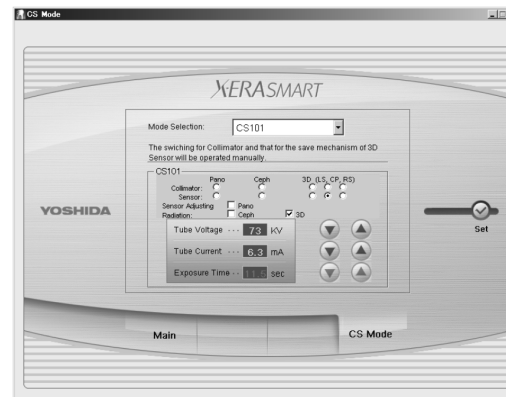
# 5. Ceph Mechanical Alignment

Select CS101 to set Manual switching of exposure Mode.

Select "Ceph" circle across from the "Collimator".

Click on and check the Sensor Adjusting Ceph box.  
Verify kV=73.mA=6.3,sec is blank.

Click the "Set" button. Press RESET switch of control panel. Verify that the mechanical collimator motor resets to the CEPH position.

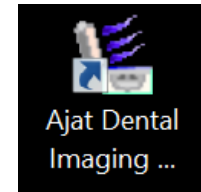


In this mode:

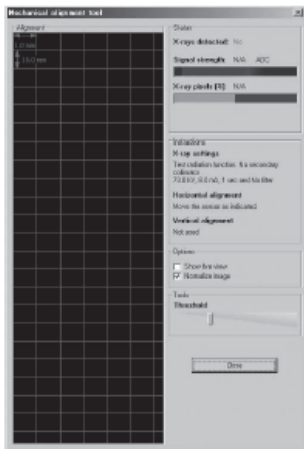
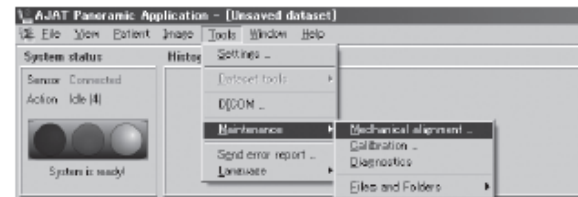
- The collimator will 'reset' to the home position then move to the 'pan' position whenever RESET is pressed.
- The x-ray will fire when the exposure thumb switch is pressed.
- The HEAD will not rotate during exposure.

# 5. Ceph Mechanical Alignment

Open Ajat Dental Imaging Software



Select Tools → Maintenance → Mechanical Alignment



The mechanical alignment tools screen is displayed

# 5. Ceph Mechanical Alignment

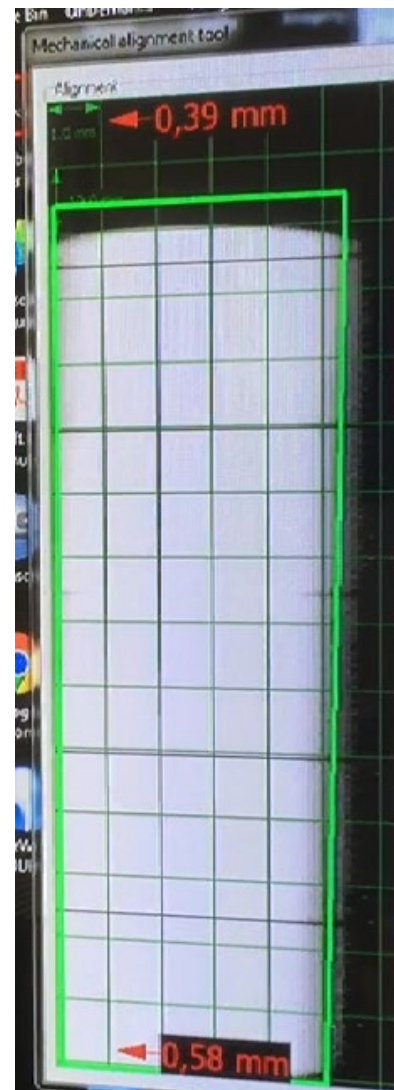
Press handswitch to initiate x-ray. Release switch after 2-3 X-Ray beeps/tones.

White column will appear on the screen with arrows above and below showing how far each end is out of alignment.

Tip: handswitch can be released when white area appears on alignment screen (as shown in picture) instead of doing entire exposure. This may help avoid delays caused by tubehead overheating, which require longer cooling periods between test exposures. This approach will create an Er08 code with beeps, but these can be cleared by pressing RESET.

Number on top and bottom represent distance each side is out of alignment. If number is less than 0,20 mm, it will be in green, which is within the tolerance for alignment. The objective is to adjust collimator position such that both top and bottom are green (< 0,20 mm).

If either number is red (greater than 0,20), then the collimator must be adjusted.



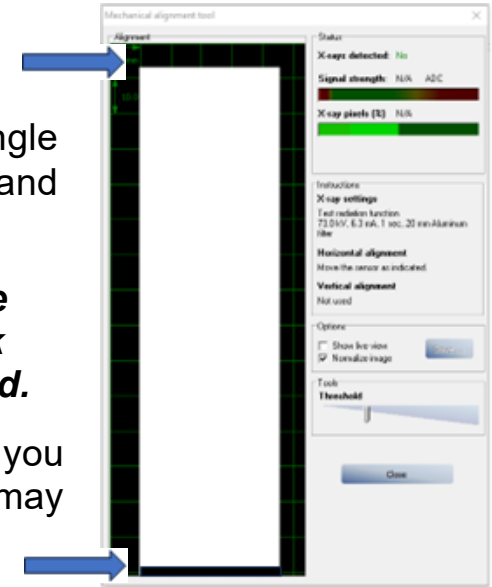
# 5. Ceph Mechanical Alignment

## Confirm vertical ceph alignment

The white exposure field rectangle should fall inside the broader black rectangle in the alignment screen. Therefore, you should see some black area above and below the white rectangle.

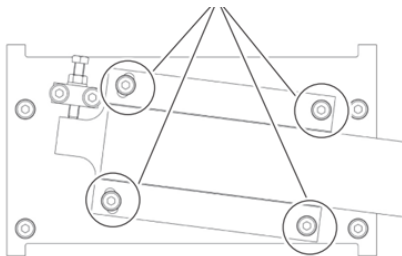
**Please note that you do not need to see equal black areas (i.e. the white rectangle does NOT need to be centered vertically) - seeing some black area (even if very thin) is ok and NO vertical alignment would be needed.**

If you do not see the top edge or the bottom edge of the white rectangle (i.e. you do NOT see any black area either above or below the white rectangle), you may need to make a slight vertical adjustment to the ceph arm

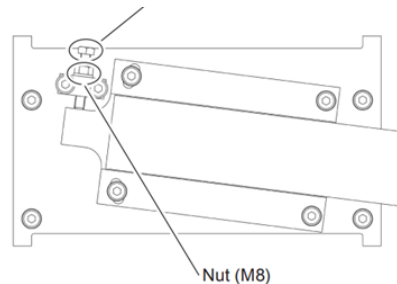


To adjust the vertical alignment, focus on where the ceph arm attaches to the column

Loosen but do NOT remove the 4 Allen (M8x35mm) bolts as shown



Loosen the locking nut (M8). With an open/box wrench rotate the bolt to adjust height of the ceph sensor.



Tighten bolt will move white rectangle DOWN

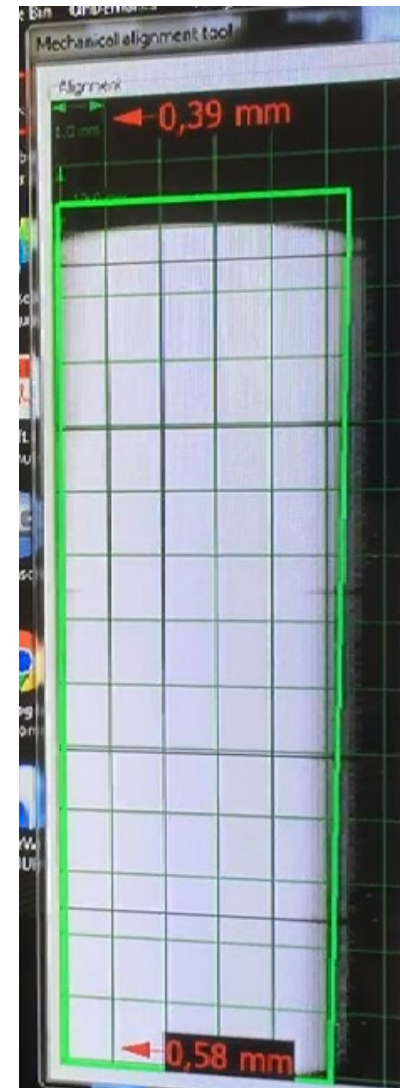
Loosen bolt will move white rectangle UP.

# 5. Ceph Mechanical Alignment

The direction of the arrow represents the side to which the beam has moved too far when facing the sensor. Therefore, the beam must be moved in the opposite direction when facing the sensor.

In the example shown, the red arrows pointing to the left means that the beam is too far to the left (when facing the sensor), and must be moved to the right. Therefore, in this situation, the collimator slit must be moved to the left when facing the collimator.

**Tip:** The mechanical alignment process is most efficient if each adjustment of the collimator is done with deliberation and care. Small adjustments to collimator can have large impact on alignment, so it's best to start with very small adjustments so that larger misalignments don't result.

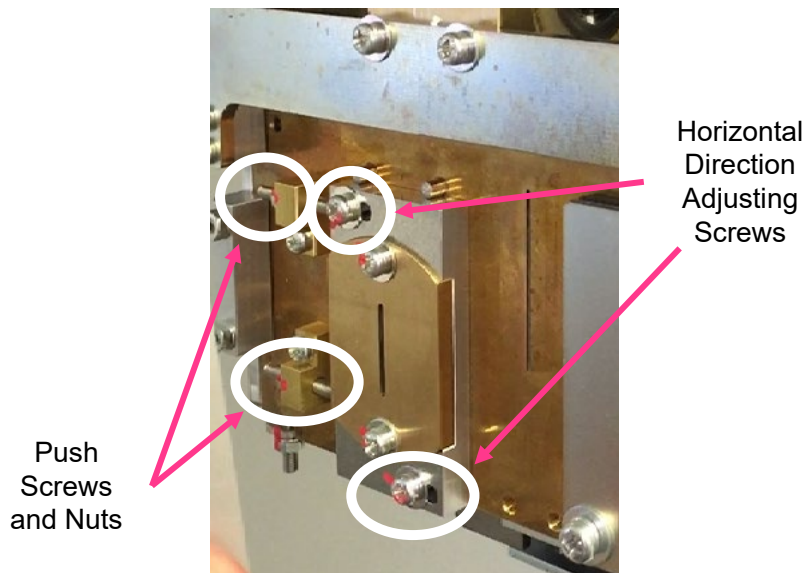


## 5. Ceph Mechanical Alignment

To adjust collimator left or right, loosen the two Horizontal Direction Adjusting screws slightly (these simply hold the assembly in place).

**Note:** loosening Horiz Dir Adj screws too much will make the assembly too loose to make adjustments

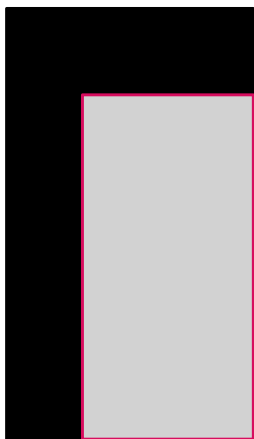
Loosen the nut on the Push Screws, and then rotate both push screws to adjust the position.



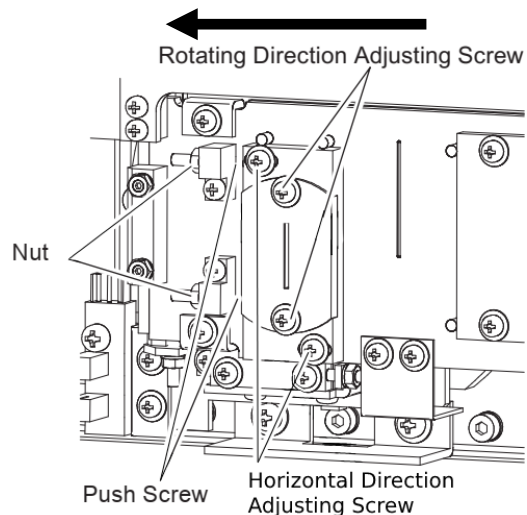
**Note:** *The push screw only pushes, but does not pull. So turning the push screw clockwise by one turn, will move the collimator approximately 1 mm to the right (when facing the collimator). However, to move in the opposite direction, turning the screw counterclockwise one turn will create space, and the collimator needs to be physically “tapped” to move it.*

**Note:** *vertical or rotational adjustments may be required. Please refer to manual*

# 5. Ceph Mechanical Alignment

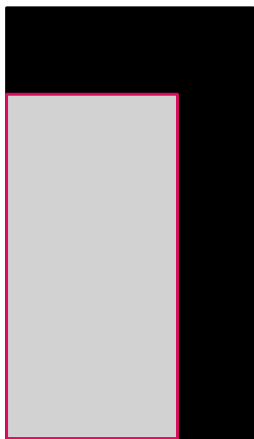


Move Collimator Left

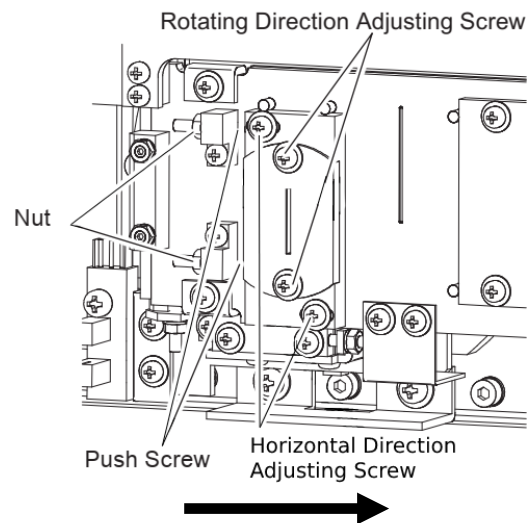


Ceph Collimator

PC Screen



Move Collimator Right





# 5. Ceph Mechanical Alignment

After adjusting the position of the collimator, press RESET to reset the collimator motor. Visually confirm the collimator motor resets home and back to Ceph position.

Initiate scan.

If arrows are red, repeat collimator position adjustment steps

If arrows are green, tighten adjusting screws and locking nuts, RESET and rescan.

Confirm that arrows remain green after tightening. If all is green, then click Close.

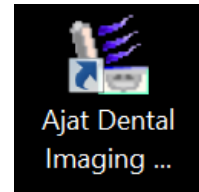
Close Control Manager

# 6. Ceph Sensor Calibration

Close Control Manager. Confirm Control Manager is closed

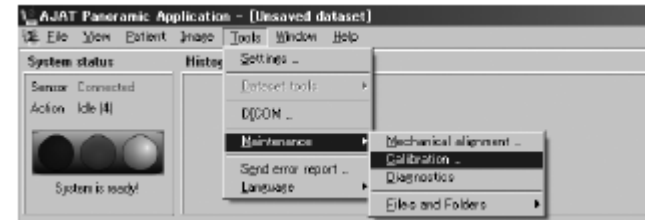
Confirm that all adapters (e.g. chin rest block, ear rods, secondary collimator, nose positioner, etc.) are removed from irradiation path of the x-ray

Open Ajat Dental Imaging Software



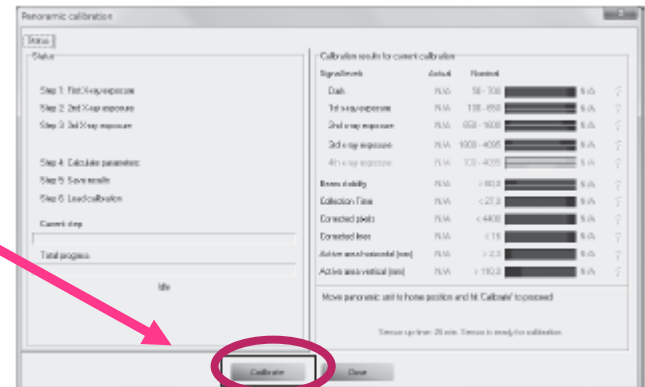
Note: unit needs to be powered on for about 5 min to perform calibration

Select Tools → Maintenance → Calibration

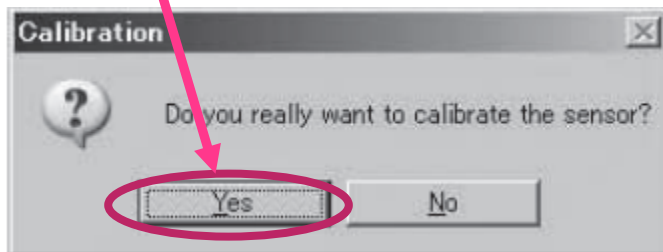


Calibration screen is displayed.

Click Calibrate



Click Yes

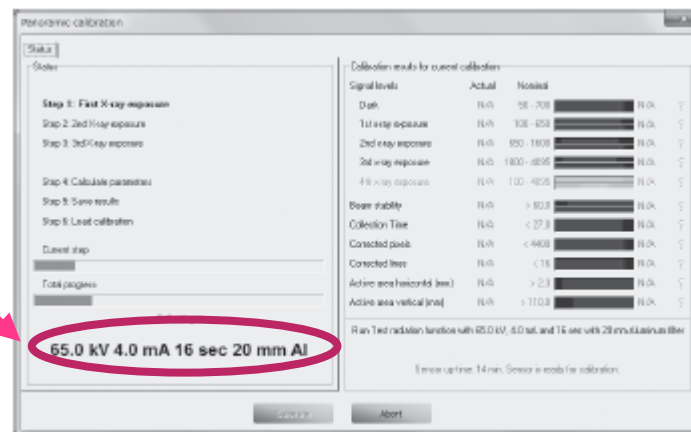


# 6. Ceph Sensor Calibration

The calibration includes a series of 4 x-ray scans.

The display details the parameters needed for each exposure. Set the console panel on the side of the unit to reflect these parameters.

**Note:** for calibration process, parameters can NOT be set in software, and must be set from the column console



**Note:** when 20 mm Al is displayed, then the aluminum block must be attached over the panoramic slit. When “No Filter” is displayed, then remove the block

To change the parameters on console:

- Confirm you are in Ceph mode.
- Press “Select” button until kV is flashing. Press up or down to set. Press “Fix” to set.
- Repeat for mA
- Repeat for sec
- Press “Reset” to prep unit for next scan
- Press and hold trigger switch for complete scan

## 6. Ceph Sensor Calibration

Repeat above steps for each scan updating parameters requested for each exposures

When the calibration is finished, press Ok

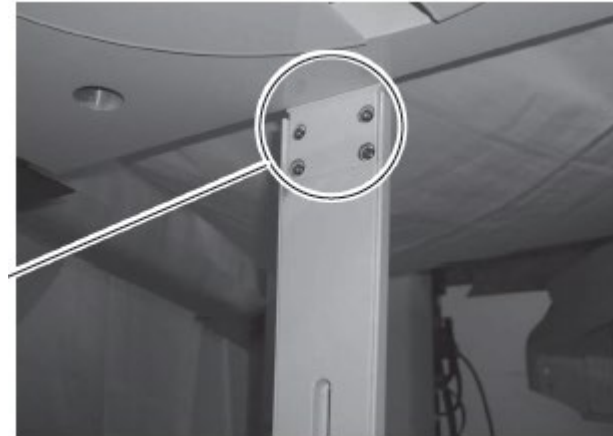


Close Ajat software

# 7. Secondary Collimator Alignment

Attach secondary collimator.

Let the collimator bar hang with gravity and tighten hex standoffs with a 5.5 mm hex driver or needle nose plier if available. NOTE just tighten do not torque down.

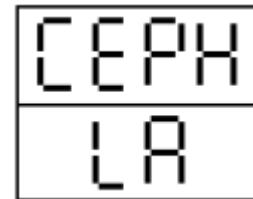


# 7. Secondary Collimator Alignment

Make sure sensor is in ceph position

Press MODE button on the panel

Switch the display to CEPH and LA.

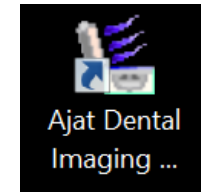


Press RESET

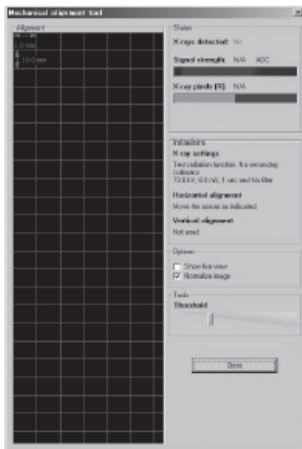
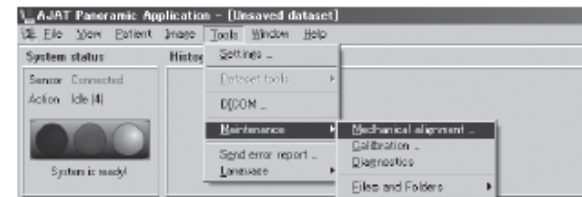
# 7. Secondary Collimator Alignment

Make sure FL07 exposure lock is off by pressing and holding down the MODE and FIX buttons on the indicator panel simultaneously for about 2-3 seconds.

Open Ajat Dental Imaging Software



Select Tools → Maintenance → Mechanical Alignment



The mechanical alignment tools screen is displayed

# 7. Secondary Collimator Alignment

Watch the screen during the exposure to see white column in alignment screen.

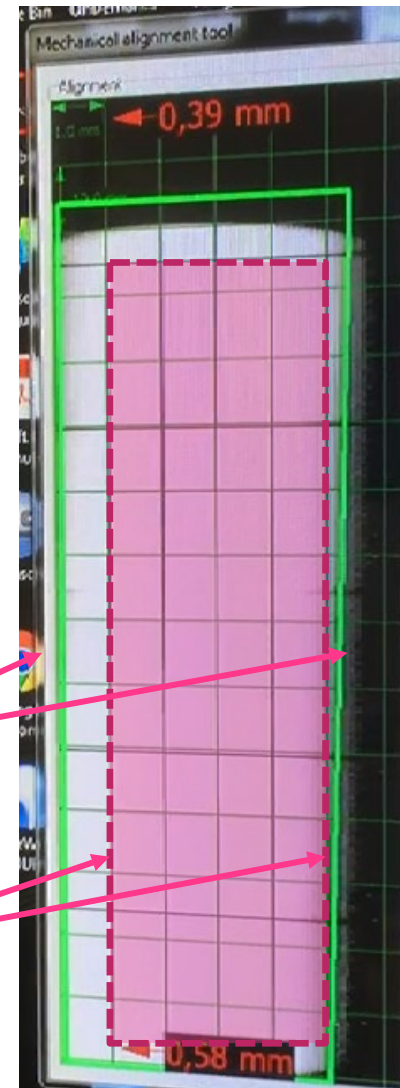
Press handswitch to initiate x-ray.

During exposure, check to see that the green rectangle does not significantly come inside the center 4 squares of the grid on the mechanical alignment screen (denoted by dotted rectangle in picture)

If sides of white column fall inside the center 4 squares, then secondary collimator must be adjusted

For exposure cycle, check that left and right sides of green rectangle...

...remain outside of center 4 squares of grid





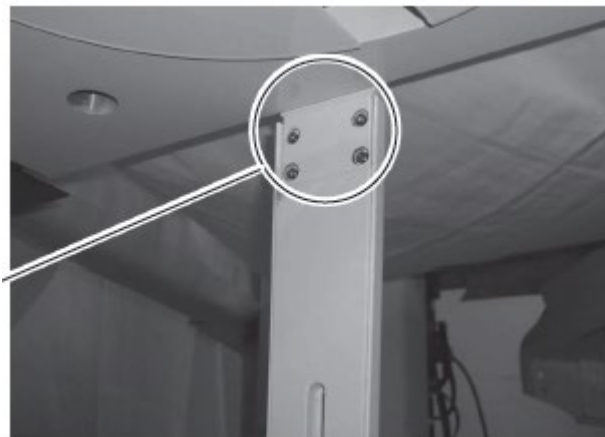
# 7. Secondary Collimator Alignment

Adjust secondary collimator by loosening the 4 screws.

When facing the secondary collimator, it needs to be moved in the direction that the green rectangle needs to be shifted to satisfy the alignment test above (i.e. to stay outside of the center 4 grid squares).

Initiate exposure and check alignment again.

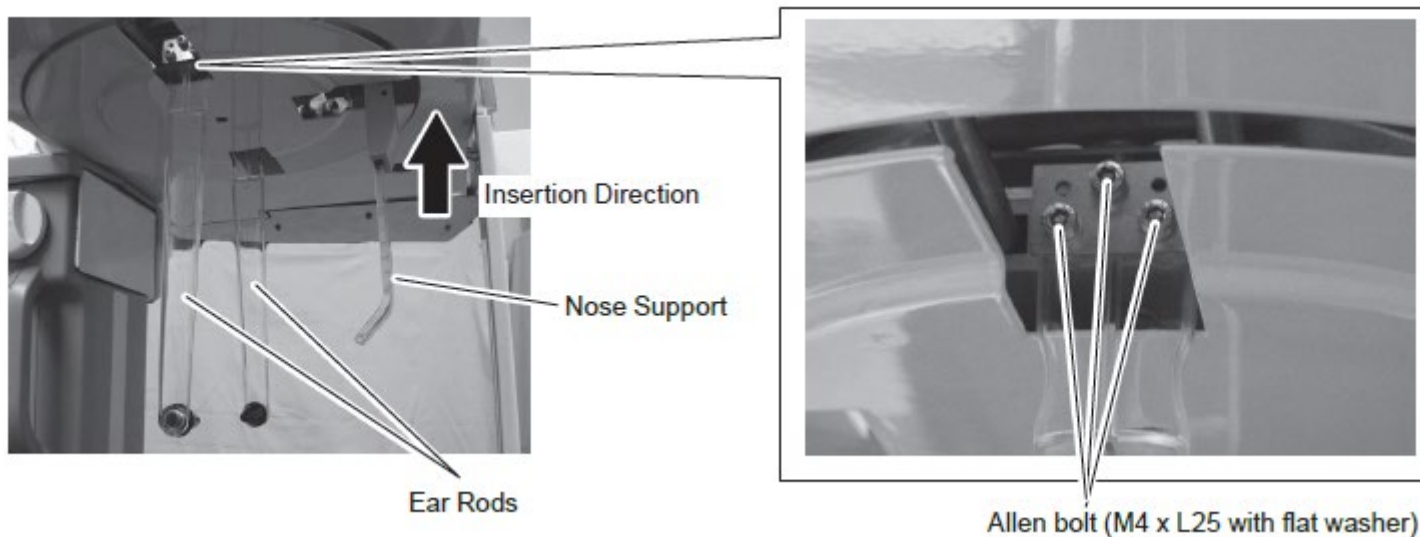
Repeat until green rectangle is outside the center 4 squares.



## 8. Ear rod Alignment

Exit Service mode by pressing and holding MODE and SELECT for 2 seconds.

Attach the ear rods and nose support



**Tip:** when installing ear rods, before tightening bolts, first allow gravity to get them to hang plum (vertical), and then tighten.

## 8. Ear rod Alignment

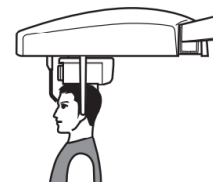
Set positions of the ear rods and nose support to Ceph LA positions

Open ear rods to maximum width

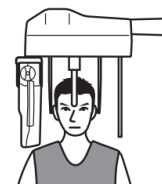
Press MODE on the control panel

Select Ceph LA mode.

Press RESET.



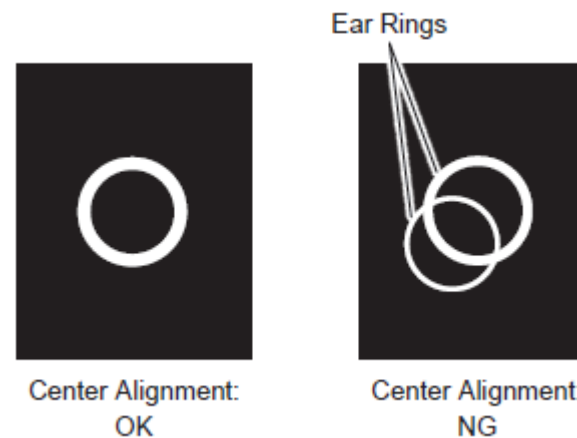
LA



Open Image Creator and take an exposure and inspect the alignment of the ear rod circles in the image

**Note:** the side with the larger ear ring is the side farthest from the sensor

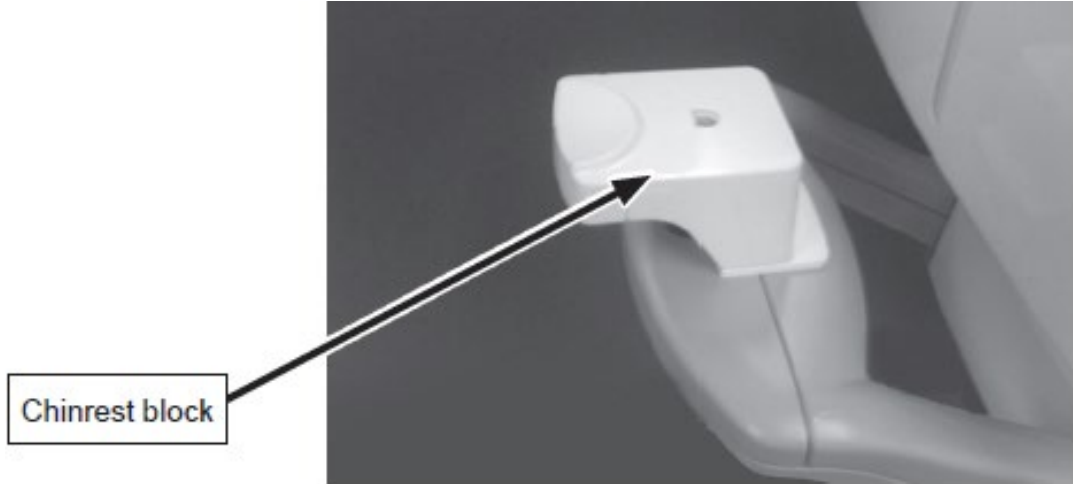
Adjust ear rods until circles are closely aligned.



**Tip:** after first exposure, the handswitch for each following exposure can be released as soon as ear rings are revealed in the image. This can help avoid cool down wait times.

# 9. Final Test Exposure

Remove chinrest block



Mount installation phantom



## 9. Final Test Exposure

Run exposure and evaluate image



Note:

Because the test scan does not have patient anatomy, it is possible that lines or artifacts may be seen in other parts of the test image. This will not affect quality of actual dental images taken.

Seven ball bearings should be checked to see that:

1. Each ball appears circular
2. Distance between balls is symmetrical to left and right of center ball

**IMPORTANT:** before replacing the covers verify the Aluminum Cal block was removed.

# Summary

**These instructions serve as supplemental assembly guidance of the Panoura. They are not meant to replace the installation manual, but rather serve to complement it.**

**If there are any questions, please do not hesitate to contact us**

**914-592-6100**



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