



PLANMECA

Proline XC Pan/Ceph

Calibration Manual

The manufacturer, assembler, and importer are responsible for the safety, reliability and performance of the unit only if:

- Installation, calibration, modification and repairs are carried out by qualified authorized personnel.
- Electrical installations are carried out according to the appropriate requirements such as IEC364.
- Equipment is used according to the operating instructions

Planmecca pursues a policy of continual product development. Although every effort is made to produce up-to-date product documentation this publication should not be regarded as an infallible guide to current specifications. We reserve the right to make changes without prior notice.

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PUBLICATION Revision 8 JO

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General Information

1 DISCLAIMER

This manual contains the information required to setup and calibrate the Planmeca Proline XC Panoramic with Cephalometric X-ray unit for Digital.

WARNING

Protect yourself from radiation when you are checking the beam alignment and calibrating. Since radiation safety requirements vary from state to state, country to country, it is the responsibility of the installer to ensure that the correct precautions are observed.

- 1.1 The display values shown in this guide are only examples and should be interpreted as recommended values unless otherwise specified.

2 REQUIRED TOOLS

2.1. Calibration Tools

- Ball phantom (part number 50971) used for checking the position of the Patient Positioning Mechanism and the Positioning lights. (Figure 1)

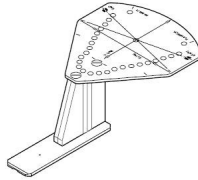


Figure 1

- Frankfort plane alignment tool (part number 50977) used with the ball phantom for checking the position of the Frankfort plane light. (Figure 2)

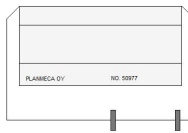


Figure 2

- Beam alignment tool, fluorescent screen, (part number 50972) used for checking the position of the x-ray beam. (Figure 3)

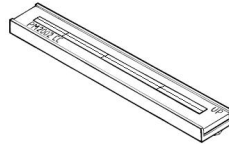


Figure 3

- Sensor alignment tool (part number 10002699) used for checking the beam alignment. (Figure 4)

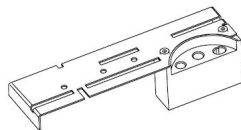


Figure 4

- Panoramic mode calibration block, red calibration block, (part number 665413) used for calibrating the panoramic sensor head. (Figure 5)

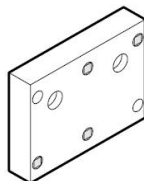


Figure 5

- Cephalostat calibration tool (part number 10002935) used for calibrating the cephalostat. (Figure 6)

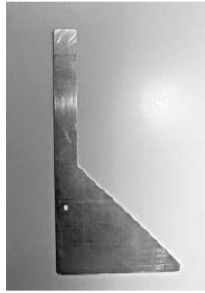


Figure 6

- Left and Right ear posts (part number 651003, 651005) used for aligning the ball and ring on the cephalostat. (Figure 7)



Figure 7

2.2 Hand Tools

- 2 mm allen wrench
- 2.5 mm allen wrench
- 3 mm allen wrench
- 4 mm allen wrench
 - Short
 - Long
- Pliers
- Adjustable wrench
- Torx 30

Panoramic

1 Beam Alignment

Removing the covers

Unscrew the Tube head cover with a 3mm allen (Figure 8) and remove the front cover.



Figure 8

Unhook the two corners of the C-Arm cover and remove the cover. (Figure 9a & 9b)



Figure 9a



Figure 9b

Primary Collimator

Press the **i** button in the lower left-hand corner. (Figure 10)



Figure 10

Press the down arrow and press **Service Settings** (Figure 11)



Figure 11

The password is **1701**. (Figure 12) Press the down arrow four times and press **Primary Collimator**



Figure 12

NOTE: Make sure beam alignment tool is attached to the sensor alignment tool. (Figure 13)



Figure 13

1.1 Collimator 0 (adult)

Now press the exposure button to see where the radiation beam is hitting the screen.

The beam image should appear within the borders of the rectangle markings on the alignment tool. (Figure 14)

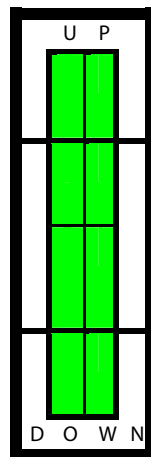


Figure 14

If not too left, right, up, down, or angled see below.

1.1.a High / Low

If the beam is too high or too low then loosen the two screws on the face of the collimator with a 2.5 mm allen. (Figure 15)

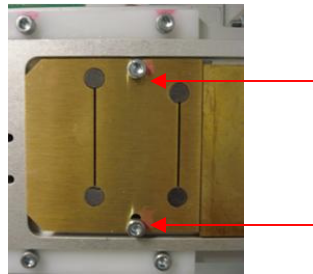


Figure 15

Tighten the bottom screw and take another exposure to check the alignment. If aligned then re-tighten the top screw. If not aligned then loosen bottom screw again, adjust, retighten then take another exposure.

1.1.b Left / Right

If the beam is too left or right, press the left or right button on the touch screen. (Figure 16)

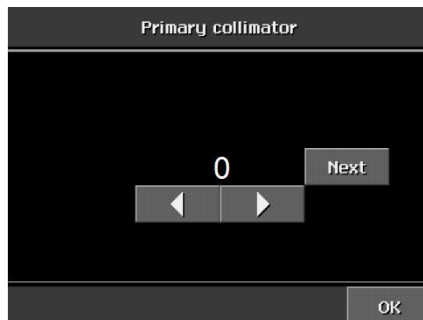
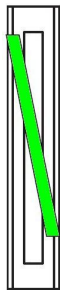


Figure 16

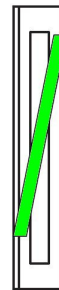
NOTE: Pressing the left button will move the beam to the right and right will move the beam to the left.

Take another exposure and check the alignment. If aligned, push **Next** until you come back to **0**.

1.1.c Angled



Left Angled



Right Angled

If the beam is angled, loosen up the three screws at left, top, and bottom with a 1.5 mm allen. (Figure 17a-c)



Figure 17a

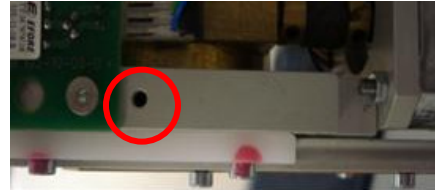


Figure 17b



Figure 17c

Tighten the screws and take another exposure at the beam. Repeat if still angled. If aligned, move onto Collimator 1 by pressing **Next**.

1.2 Collimator 1 (child)

Now press the exposure button to see where the radiation beam is hitting screen. The beam image should appear within the borders of the rectangle markings on the fluorescent screen. The beam should fill, from the bottom up, three quarters of the alignment tool. (Figure 18)

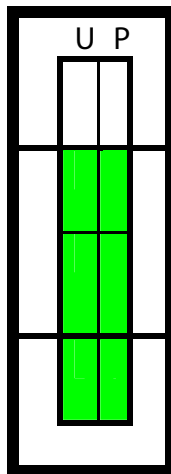


Figure 18

NOTE: The beam in Collimator 1 will not have to be adjusted up or down, if Collimator 0 is aligned first.

1.2.a Left / Right

If the beam is too left or right, press the left or right button on the touch screen. Take another exposure and check the alignment. If aligned, push **Next** until you come back to **1**. Click **OK** and move onto checking your Ball Phantom.

NOTE: If unable to move collimator over enough, loosen the securing screw (Figure 19), rotate the tab slightly and retighten the screw. The collimator should be rechecked, if unaligned then start over at Collimator 0.

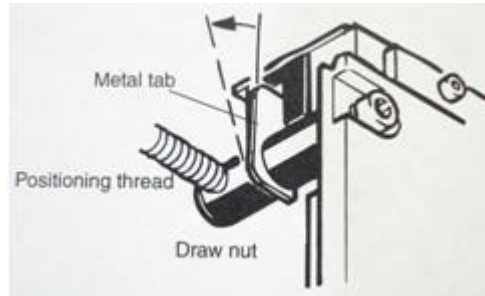


Figure 19

Move onto Beam Check if beam is aligned.

2 Beam Check

NOTE: Make sure that the x-ray machine is connected to the computer

2.1 Connecting to a computer

Plug a CAT-5 into the isolated port on the keyboard processor. (Figure 20 & 20a)

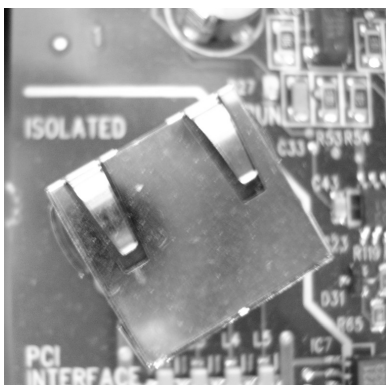


Figure 20a

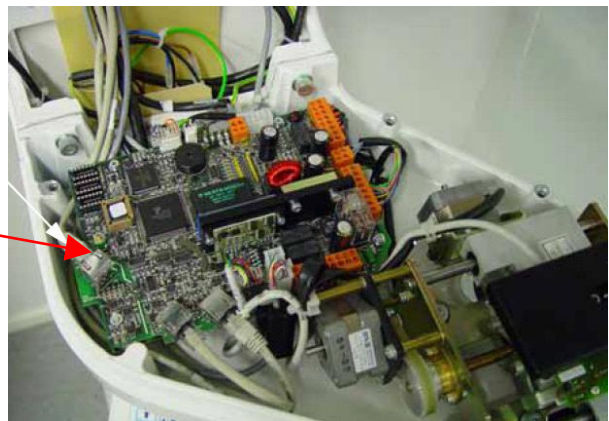


Figure 20

Plug a planet cable into the base of the XC. (Figure 21)



Figure 21

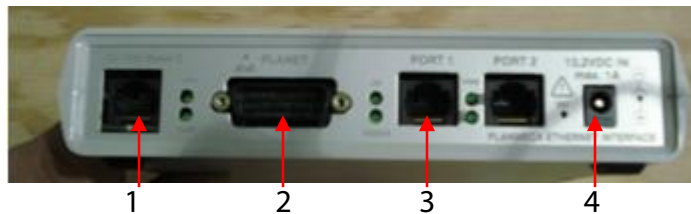
Plug that planet cable into a y-connector, dongle. (Figure 22)



Figure 22

2.1.a Network Interface Box Connections (Figure 23)

1. Crossover Cable (has red end caps)
2. Y-connector, dongle
3. CAT-5 cable (port 1)
4. Power cable



2.1.b Didapi Configuration

Click *Start, All Programs, Planmeca, Didapi Configuration*.

Click on *Ethernet Interface*.

The default ip address is **192.168.0.135**

Click on *Proline* which will open Windows Notepad. Put the below in:

localhost=(ip address):5120/1

Save the file and click refresh. Close Didapi Configuration.

2.2 Setting up Beam Check

Press the **i** icon on the lower hand corner of the touch screen. (Figure 24)



Figure 24

Press **Beam Check**. (Figure 25)



Figure 25

NOTE: If the sensor was calibrated first, remember to remove the red calibration block from the collimator.

Press **Panoramic** which will bring you to the **Beam Check Panoramic** screen. (Figure 26)



Figure 26

2.3 Beam Check on the computer

NOTE: Make sure the sensor is in the sensor holder.

Click on *Start, All Programs, Planmeca, Beam Check* then click *Proline Pan*

Press **Ready** on the touch screen then press the exposure button. (Figure 27)

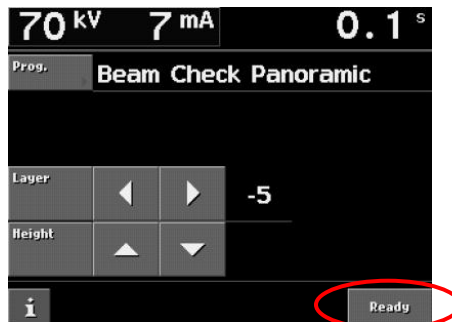


Figure 27

Image should be the same top and bottom, left and right. (Figure 28)

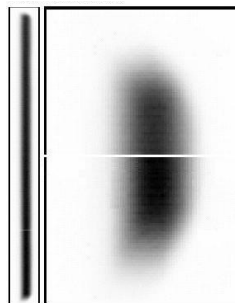
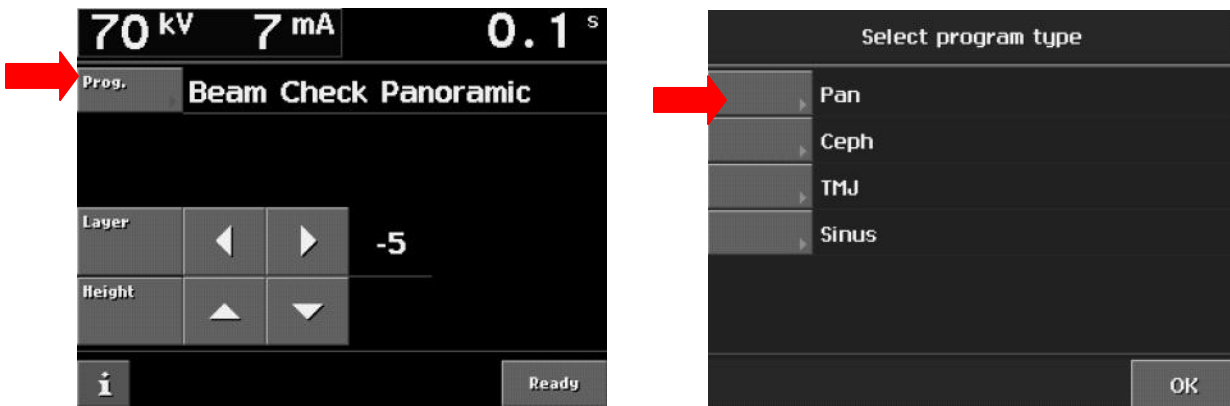


Figure 28

Follow Section 1.1.a-c on pgs. 12-13 if not aligned properly.

3 Calibrating

Press the **Beam Check Panoramic** button on the top of the touch screen and select **Pan**.



3.1 Setting up the computer

Close Beam Check and open Dimax3 Tool

3.1.a Dimax3 Tool

Click on *Start, All Programs, Planmeca, Dimax3 Tool*

Click on **Settings** and select *Type* and click on **Proline**. (Figure 29)



Figure 29

Click on **Calibrate** and select **Pan**. (Figure 30)

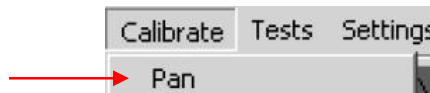


Figure 30

Follow the instructions on the computer screen.

3.1.b Turning Radiation Off/On

3.1.b.i OFF

Press the smile in the middle right of the touch screen. (Figure 31)



Figure 31

Press all the arrows at the bottom of the touch screen, turning each from white to red. (Figure 32)

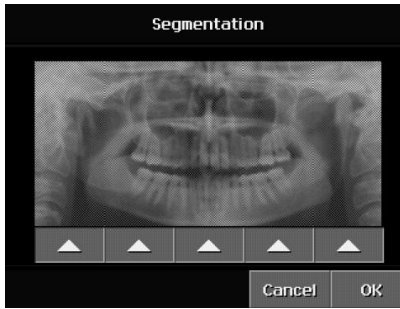


Figure 32

3.1.b.ii ON

Press the smile in the middle right of the right of the touch screen. (See Figure 32) Then Press all the arrows at the bottom of the touch screen, turning each from red to white.

NOTE: Make sure the red calibration block is placed onto the collimator before calibrating. (Figure 33)

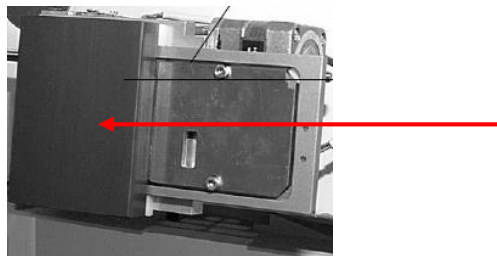


Figure 33

3.1.c kV/mA settings for Panoramic

NOTE: These settings are for a Dimax3 v2 sensor.

BINNING	kV	mA
4x4	60	4
3x3	66	4
2x2	70	6

3.1.d Changing Binnings

Click **Settings** and select **Binning** then the appropriate binning. (Figure 34)



Figure 34

Press the **Ready** icon after turning the radiation off or on. Take an exposure.

NOTE: Make sure when checking all binnings the correct kV/mA are being used.

Image will come out as showing a grey box with a black stripe in the center. (Figure 35)

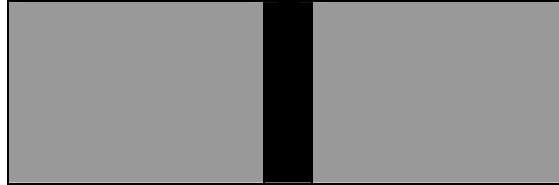


Figure 35

NOTE: There is no need to close and re-open Dimax3 Tool to check all binnings.

4 Ball Phantom

4.1 Setting up Touch Screen

Place the ball phantom in the Patient Positioning Mechanism. (Figure 36)

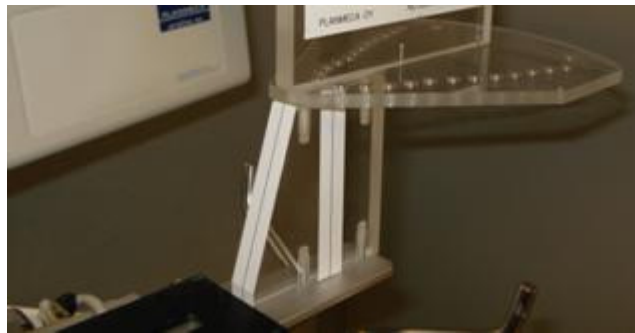


Figure 36

Alignment lasers

Hold the layer right button for 1 second. (Figure 37)



Figure 37

Adjust the layer so that it is at zero with the layer arrow fields. (Figure 38)

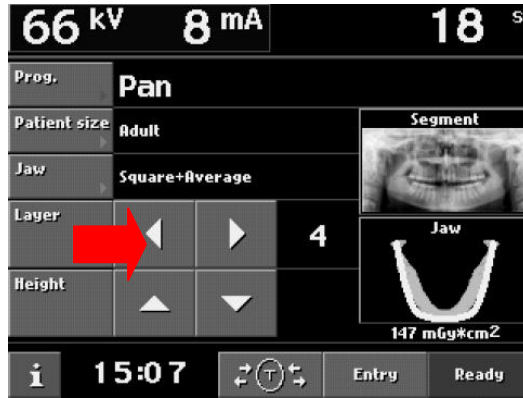


Figure 38

Look at where the lasers are lining up on the ball phantom. This is the starting reference point. (Figure 39)

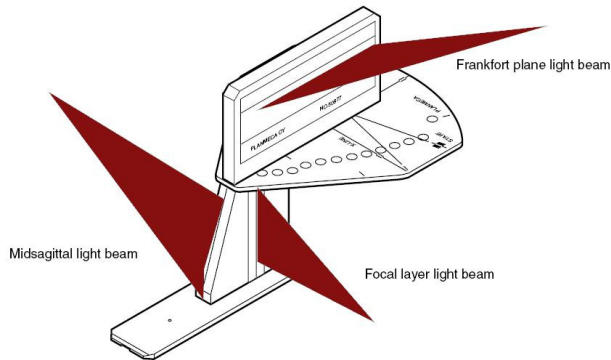


Figure 39

Setting the kV/mA

Press the kV/mA at the top left of the screen on the touch screen. (Figure 40)



Figure 40

Select the 60kV / 4mA then click **OK**. (Figure 41)

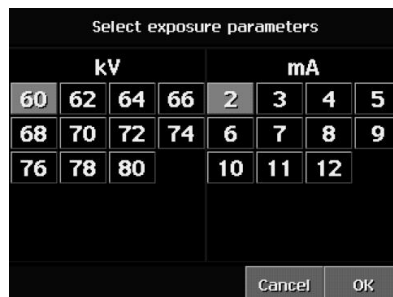


Figure 41

4.2 Romexis

Click on **Start**, **All Programs**, **Planmeca**, **Romexis**. (Figure 42)



Figure 42

Click on **Find** and then double click the **Test** patient. (Figure 43)



Figure 43

Click on **Imaging** on the left. (Figure 44)



Figure 44

Click on **Pan** at the top. (Figure 45)



Figure 45

Press **Ready** on the touch screen and take an exposure.

Click **Done** on the computer screen to evaluate the image for alignment. (Figure 46)



Figure 46

4.2.a Calibrating and measuring image

Click on the **CAL** icon, and calibrate the Center Ball from top to bottom. (Figure 47)

NOTE: To create a line, left click to start the line and right click to complete the measurement.



Figure 47

Enter the number 7 when asked to input a distance. (Figure 48)

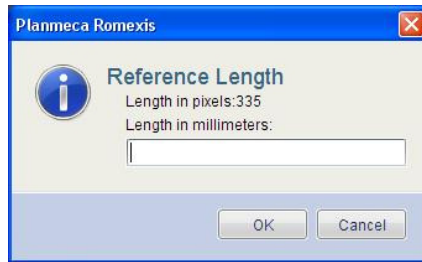


Figure 48

4.3 Checking image

There will be an image of 23 balls on the films; one Center Ball and 11 balls to the left and right.



NOTE: Make sure Center Ball is round before moving onto the 10th ball distances.

4.3.a Center Ball

NOTE: Center ball will be above the midsagittal bar of the ball phantom. (Figure 49)



Figure 49

Click the icon below CAL and measure the top to bottom and left to right. (Figure 50)



Figure 50

The ball should be 7mm top to bottom and left to right. (Figure 51)

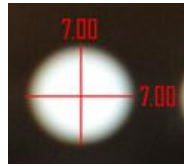


Figure 51

4.3.a.i Too thin

If the ball is too thin then move the layer to the right. (Figure 52)



Figure 52

Take another exposure and check ball size again. If the right size, check 10th ball.

4.3.a.ii Too Fat

If the ball is too fat then move the layer to the left. (Figure 53)

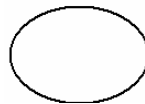


Figure 53

Take another exposure and check ball size again. If the right size, check 10th ball.

4.3.b 10th Ball

Measure from the left end of the Center Ball to the 10th Ball on the right then measure from the right end of the Center Ball to the 10th Ball. (Figure 54)

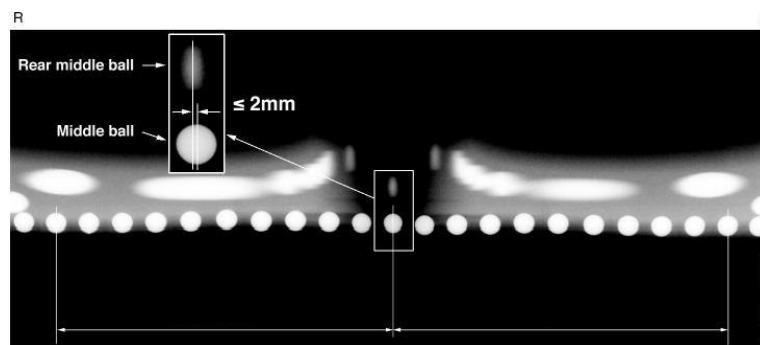


Figure 54

4.3.b.i Too Left

If the distance from the Center Ball to the left is more than the right, then move the table away from the column. (Figure 55).

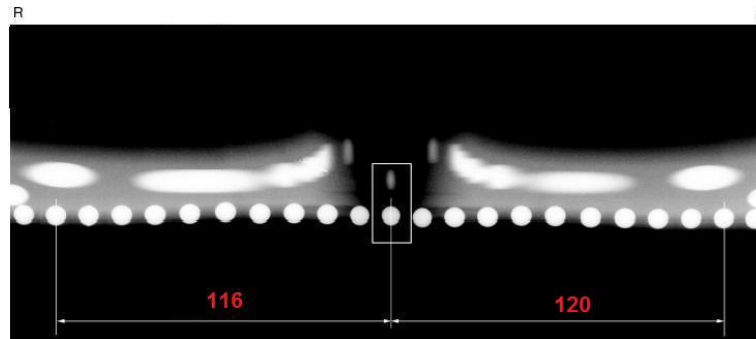


Figure 55

4.3.b.ii Too Right

If the distance from the Center Ball to the right is more than the left, then move the table toward the column. (Figure 56)

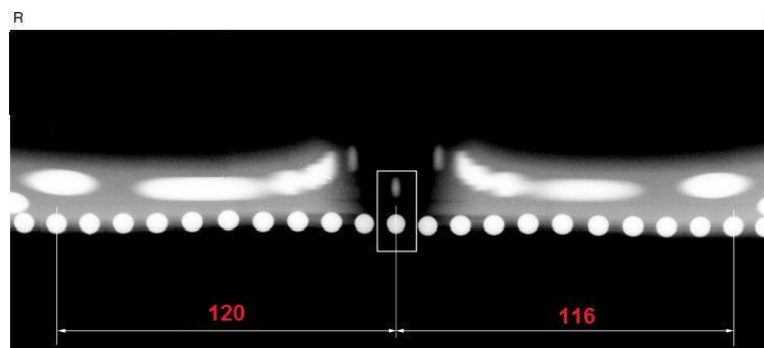


Figure 56

4.3.b.iii Moving the Table

Unscrew the four screws on the table with a 4mm allen. (Figure 57)

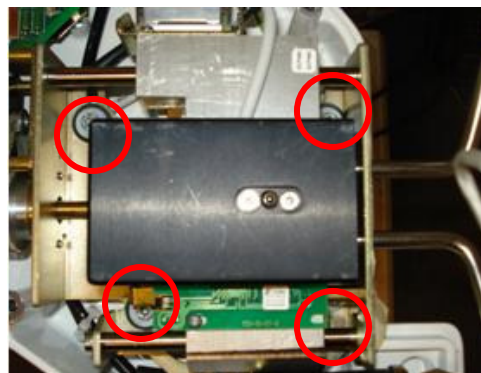


Figure 57

Take another exposure and check Ball Phantom alignment.

4.3.c Shadow Ball

NOTE: The oval above the Center Ball. (Figure 58)

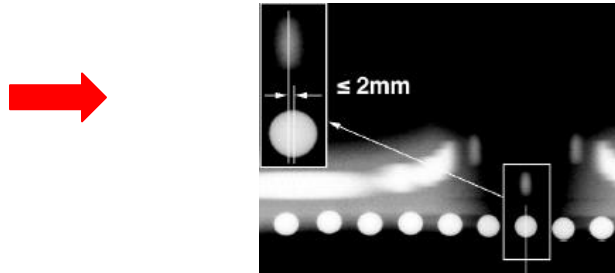


Figure 58

4.3.c.i Too Left/ Too Right

If the shadow ball is too left or right, press the left or right button on the touch screen. (Figure 59)

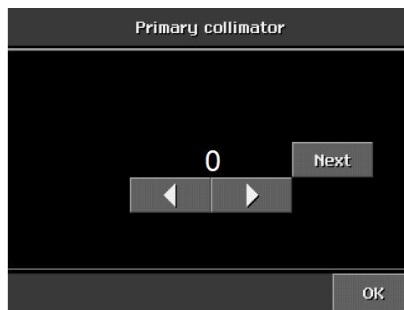


Figure 59

NOTE: Pressing the left button will move the beam to the right and right will move the beam to the left.

Take another exposure and check the alignment. If aligned, push **Next** until you come back to **0**.

4.4 Patient Positioning Lights Alignment

After aligning the Ball Phantom, turn the Patient Positioning Lights on again by holding the layer right button for 1 second. (Figure 60)

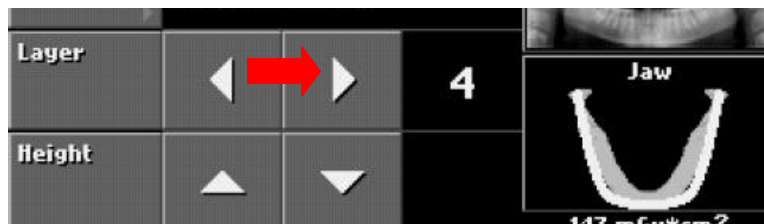


Figure 60

NOTE: Make sure layer is at zero when aligning positional lights. If layer is not at zero need to zero-out layer before aligning beams.

Press the **i** icon in the lower left hand corner. (Figure 61)



Figure 61

Press **Service Settings**. (Figure 62)



Figure 62

Press **Patient positioning adjustment** (Figure 63)



Figure 53

The screen will say **Please Wait** then show the number 0. Press **Back** until at start up screen. (Figure 64)



Figure 64

Place the Ball Phantom into the Patient positioning mechanism with the Frankfort plane alignment tool on top of the Ball Phantom. (Figure 65)



Figure 65

4.4.a Midsagittal Light Beam

If the midsagittal light is not lined up with the center line on the Ball phantom, then finger adjust the mirror until it lines up. (Figure 66)



Figure 66

4.4.b Frankfort Light Beam

If the Frankfort light is not straight on the Frankfort plane tool, then adjust the barrel of the laser. (Figure 67)



Figure 67

4.4.c Focal Layer Light Beam

If the focal layer light is not straight on the Ball Phantom, then finger adjust the mirror until it lines up. (Figure 68)



Figure 68

Cephalometric

Entering Cephalometric Mode

Press **Pan** on the touch screen and select Ceph. (Figure 69)



Figure 69

1 Beam Alignment

Primary Collimator

Press the **i** button in the lower left-hand corner. (Figure 70)

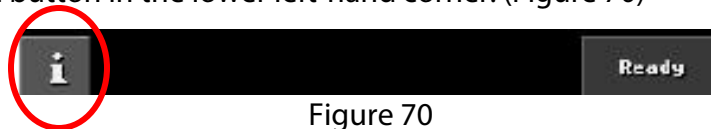


Figure 70

Press the down arrow and press **Service Settings** (Figure 71)



Figure 71

Press the down arrow four times and press **Primary Collimator**

Press **Next** until **C** appears on the touch screen. (Figure 72)

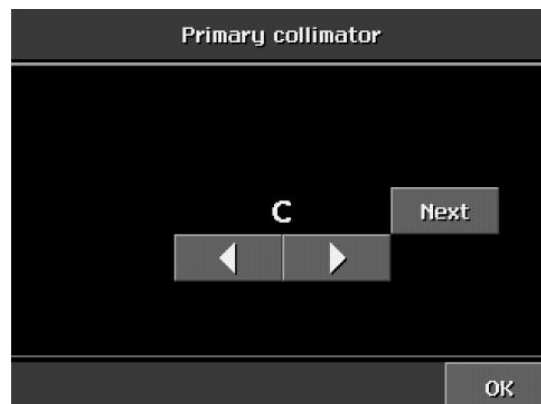


Figure 72

NOTE: Collimator C is a manually adjusted alignment with 4mm and 6mm allens.

Attach the sensor alignment tool to the sensor holder with the fluorescent screen attached to it. One Up to Down and the other Up to the right and Down to the left. (Figure 73)



Figure 73

1.1 Collimator C

There are two screws on the back left hand side of the Cephalometric arm. (Figure 74)



Figure 74

The beam should look like:



1.1.a Too Left

If the beam is too left then unscrew right of screw with a 6mm and tighten the left screw with a 4mm. (See Figure 74)

Take another exposure. If aligned then move onto Collimator d.

1.1.b Too Right

If the beam is too right then unscrew the left screw with a 4mm and tighten the right screw with a 6mm. (See Figure 74)

Take another exposure. If aligned then move onto Collimator d.

1.1.c High / Low

Loosen the two screws on the right collimator with a 2.5mm allen. (Figure 75)

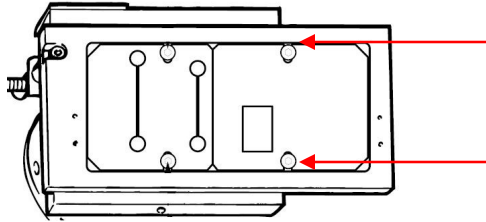


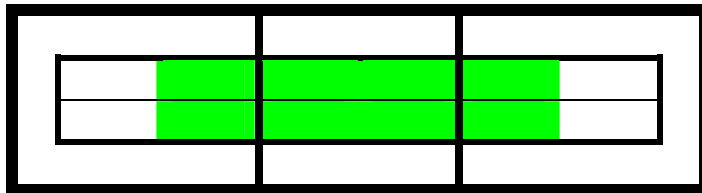
Figure 75

Use your fingers to adjust the collimator up or down, depending on what is needed. Tighten the bottom screw and take another exposure. If aligned then tighten up the top screw

Click **Next** to move onto Collimator D

1.2 Collimator D

Press the exposure switch to see where beam is hitting. Beam should be:



1.2.a Left

If the beam is too left, then press the right button on the touch screen. (Figure 76)

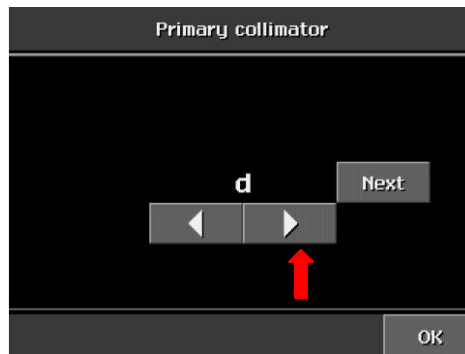


Figure 76

Take another exposure and check the beam. If aligned, press next until you get back to **d** and re-check to make sure unit held adjustments.

1.2.b Right

If the beam is too right, then press the left button on the touch screen. (Figure 77)

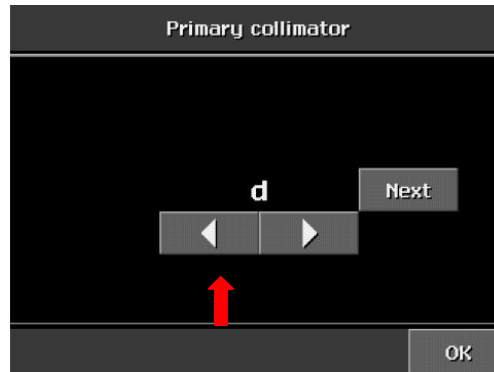


Figure 77

Take another exposure and check the beam. If aligned, press **Next** until you get back to **d** and re-check to make sure unit held adjustments.

2 Ceph Head Leveling

Put the left and right ear posts into their respective holders. (Figure 78)

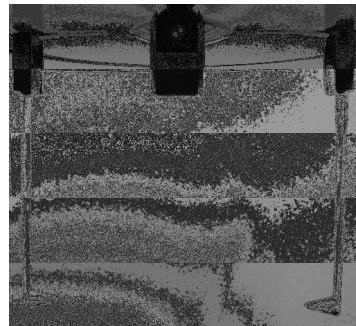


Figure 78

2.1 Computer Setup

Click on Start then Run. (Figure 79)

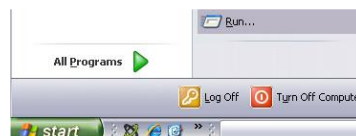


Figure 79

Type in **pmsample** then click **OK**. (Figure 80)



Figure 80

Uncheck **Use calibration**. (Figure 81)



Figure 81

Click on **Cephalo**. (Figure 82)



Figure 82

Set the kV / mA to 62 kV and 6 mA

Press **Ready** on the touch screen. (Figure 83)

1



Figure 83

Ball should be within ring. (Figure 84)

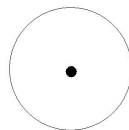


Figure 84

If the ball is outside the ring then remove the cover with a 2.5mm allen.
(Figure 85)

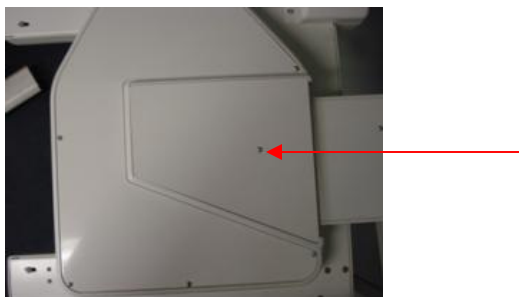


Figure 85

NOTE: Will need a wrench and pliers to adjust left or right. (Figure 86)



Figure 86

2.2 Left / Right

2.2.a Left

To move the ball left, tighten the rod towards the column. (Figure 87)

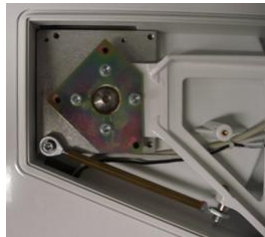


Figure 87

After adjusting, do a new beam check and calibration.

2.2.b Right

To move the ball right, loosen the rod away from the column. (See Figure 87) After adjusting, do a new beam check and calibration.

2.3 Up / Down

2.3.a Up

To raise the ball up, loosen up the two screws on the left and tighten the screw at the triangle end. (See Figure 87) After adjusting, do a new beam check and calibration.

2.3.b Down

To lower the ball, loosen the screw at the triangle end and tighten the two screws on the left square side. (See Figure 87) After adjusting, do a new beam check and calibration.

3 Beaver Tail (Secondary Collimator)

Attach the beaver tail to the unit by first removing the cover by unscrewing the 4mm screw with an allen. (Figure 88)



Figure 88

Unscrew the two screws attached to the top of the beaver tail with a 4mm allen and attach that to the closest side to the tube head, or across from the sensor holder. (Figure 89a & 89b)



Figure 89a



Figure 89b

Move the fluorescent screen so that it is going from left and right to up and down, respectively.



*NOTE: The touch screen should still be in **Primary Collimator** showing the **d** collimator and the sensor alignment tool should still be on the sensor holder.*

Press the exposure switch to see where the beaver tail is collimating the beam. It should fill both the top and bottom within the box on both fluorescent screens. (Figure 90)

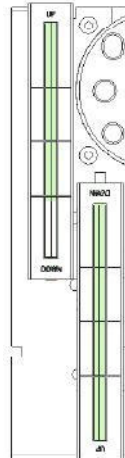


Figure 90

3.1 Left / Right

If the beam is too left or right, loosen the two screws closest to the tubehead with a 4mm and slide left or right depending on what is needed. (Figure 91)



Figure 91

Take another exposure and check alignment, if still off adjust again. If aligned then re-tighten the screws and take a final exposure to make sure nothing has shifted.

3.2 High / Low

If the beam is too high or low, loosen the three screws on the back of the beaver tail that are at the top closest the sensor holder. (Figure 92)



Figure 92

NOTE: If unable to move beaver tail up or down after loosen these screws, take a 2.5mm allen and loosen slightly the two screws on the beaver tail that are towards the front of the machine. (Figure 93)

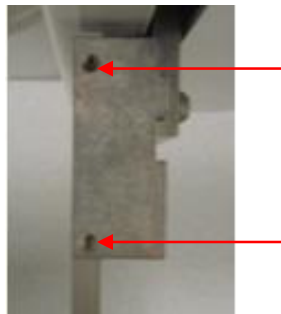
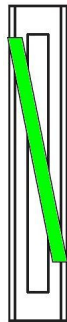


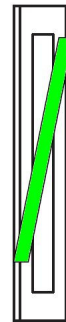
Figure 93

Re-tighten the middle screw to hold the adjusted position and take another exposure, if still off adjust again. If aligned then re-tighten the other two screws and the two side screws, if they were un-tightened. Take another to check that nothing has shifted.

3.3 Angled



Left Angled



Right Angled

If the beam is angled, loosen the two side screws that are facing the sensor holder with a 4mm allen. (See Figure 93)

3.3.a Left

Un-tighten the bottom side screw with a 2.5mm allen and tighten the top screw in. (Figure 94)



Figure 94

Take an exposure, adjust as needed.

3.3.b Right

Un-tighten the top side screw with a 2.5mm allen and tighten the bottom screw in. (See Figure 94)

Take an exposure, adjust as needed.

4 Beam Check

NOTE: Remember to put the sensor into the sensor holder before continuing.

NOTE: Make sure that the x-ray machine is connected to computer

4.1 Setting up beam check

Press the **i** icon on the lower hand corner of the touch screen. (Figure 95)



Figure 94

Press **Beam Check**. (Figure 96)



Figure 96

NOTE: If the sensor was calibrated first, remove the red calibration block from the collimator.

Press **Cephalometric** which will bring you to the **Beam Check Cephalometric** screen. (Figure 97)



Figure 97

Select **Proline Ceph** on the computer in Beam Check.

Image should be the same top and bottom, left and right. (Figure 98)

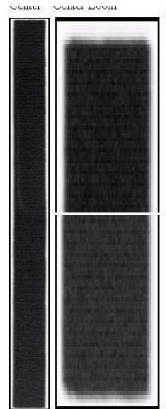


Figure 98

Follow Section 1.1.a-c on pg. 11 if the beam is not aligned properly

5 Calibrating

Press **Beam Check Cephalometric** then choose Ceph. (Figure 99)

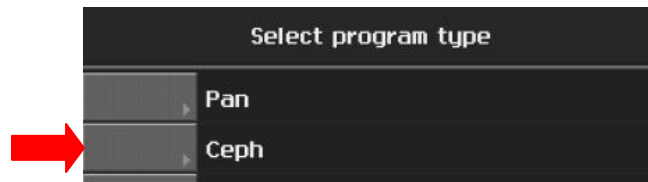


Figure 99

Press **Collimator** until it shows the number 6. (Figure 100)



Figure 100

5.1 kV / mA

NOTE: These settings are for a Dimax3 v2 sensor.

Binnings	kV	mA
4x4	60	4
3x3	60	6

Place the Cephalostat calibrating tool (hatchet) into the patient's right ear post holder with the point going towards the back or column. (Figure 101)



Figure 101

NOTE: Change binnings by clicking Settings and select Binnings then the appropriate binning in Dimax3tool. (Figure 102)

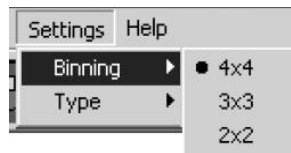


Figure 102

5.2 Computer

Click on Start, All Programs, Planmeca then Dimax3 Tool.



5.3 Dimax3 Tool

Click on Start then click on type then select Proline. (Figure 103)



Figure 103

Click on **Calibrate** then select **Ceph** (Figure 104)

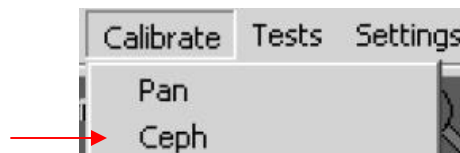


Figure 104

Click **Ready** on the touch screen and take an exposure

NOTE: image will come out as being a grey hatchet with black around it. (Figure 105)

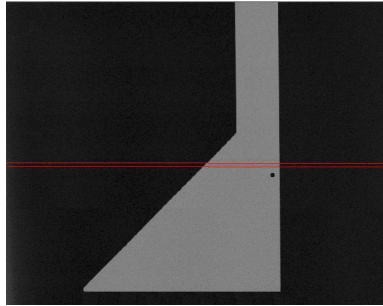


Figure 105

Press the **L** key on the keyboard of the computer to give calibration lines. This gives the point where the images are combined in the computer.

Click the magnify glass (+) to zoom in on the lines to check combination.

NOTE: There is a +/- 2 clicks left or right on the keyboard to get aligned left to right.

5.3.a Not together

If the image comes out separated check to make sure that the hatchet is placed in the holder correctly.

5.3.a.i Raising up

If hatchet is placed correctly, then raise the beaver tail up.

If the beam is too high or low, loosen the three screws on the back of the beaver tail that are at the top closest the sensor holder. (Figure 106)



Figure 106



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