

GENERAL R100 OPERATION - 2016/02/18

1. Start Up (Beginning of the day)

- a. Start up the Server computer first and log in. (Default User Name: JMC / Password: JMC)
- b. Start up the Capture computer and log in. (Default User Name: JMC / Password: JMC)
- c. Start up i-Dixel software on the capture computer. (User Name: 1000 i-Dixel User / Password: 1)



~~Create a new patient or select a patient from the patient list.~~



~~(Click "Patient Registration Window" button for new patient)~~

~~Use the patient edit button to edit patient info after the fact. This allows for mistakes.~~

~~Ensure the staff understands what "i-Dixel Ready for Scanning" looks like.~~

2. General Veraviewepocs 3D R100 information

This section should give a rough overview of the machine and allow the users to become accustomed to the machine itself. (PAN, Small CT, Large CT, Ceph.)

- a. Turn on main switch to power up R100
- b. Emergency Switch – Make sure the emergency switch is not activated when you turn the main power on.



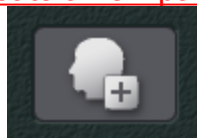
- c. Show the chinrest and that its height is changeable. Demonstrate by pulling up on it, how to quickly tell if it is in standard “highest” position.



- d. Demonstrate the temple stabilizers. Remind the users they should be closed when not in use.
 TIP: Find a staff member and have them place their chin on the chinrest and close the temple stabilizers. Guide their hand and have them tighten them the temple stabilizers themselves to see how comfortable they are. This will prevent them from leaving them too loose.
- e. Make a clear distinction between the touch panel function settings and the lift movement and position functions. This will help simplify all the buttons.
 Lift = movement / position, arm = dose settings and functions.
- f. Explain the ready button.
- Blinking = not-ready
 - Solid = ready to position patient
 - 3 ready buttons and that they are linked.

3. Prepare unit and software for scanning

- a. Create a new patient or select a patient from the patient list.



(Click “Patient Registration Window” button for new patient)

- b. Use the patient edit button to edit patient info after the fact. This allows for mistakes.

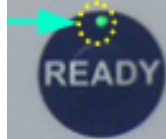
Ensure the staff understands what “i-Dixel Ready for Scanning” looks like.

4. Panoramic Normal

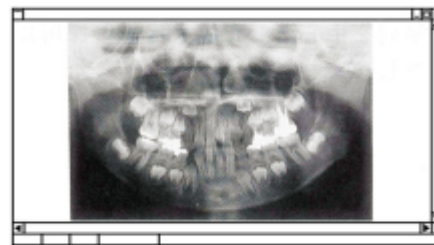
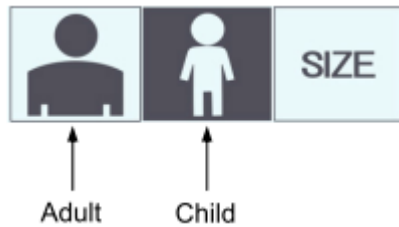
- a. First have the patient remove glasses, necklaces, earrings and anything else that could interfere with the scan.
- b. Press "Pan" button on the control panel of X-ray unit. (On the C-arm)



- c. Press the "Ready" button if the LED is blinking.

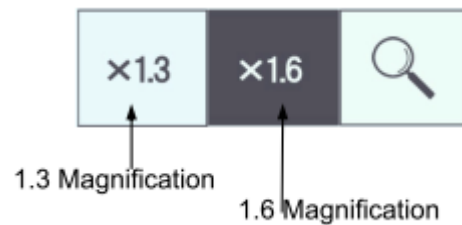


- d. Select size of the patient "Adult" or "Pedo".



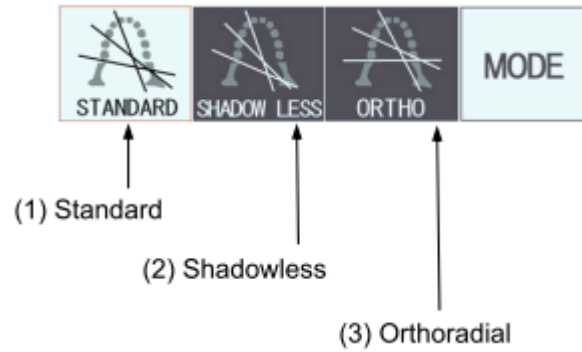
Pedodontic Panorama

- e. Select the magnification "x1.3" or "x1.6" (1.6 will be approx. 20% larger but may cutoff the TMJ).



1.6 Magnification Image

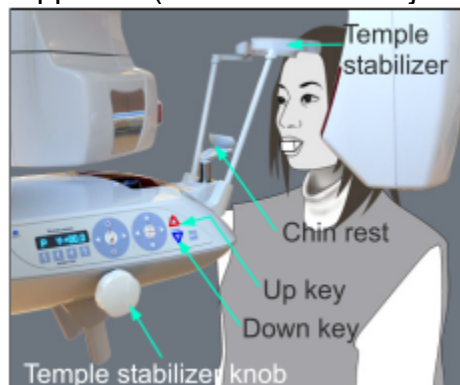
- f. Select the mode "Standard", "Shadow Less" or "Ortho" depending on your need. (Refer to page 41 in Operation Manual)



- g. Place the chin rest in its holder. The highest position is standard position for Pano dental arch.
 ***TIP:** Middle position can be used for avoiding the shoulder contact with C-arm on a short neck patient. Please note that the top of chin in the image may be cut off.



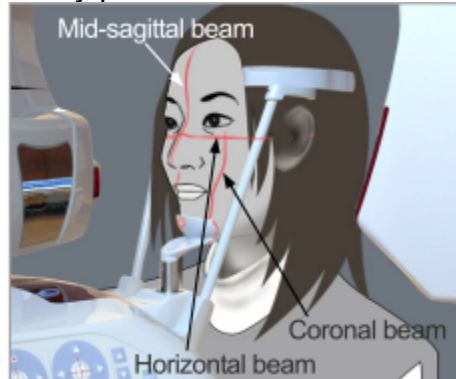
- h. Open the temple stabilizers and ask the patient to step in the unit.
 i. Adjust the height accordingly to the patient and close the temple supports. (Double check no jewelry is on the patient).



TIP: Position with the chinrest slightly higher than the patient's

chin and have them tilt their head up comfortably to position their chin. Gently lower the machine into the correct position from here.

- j. Line up the 3 laser guiding beams on the patient.
- k. Mid sagittal should be directly down the middle of the patients face. Have the patient focus on this light and let them help to keep themselves centered.
- l. Frankfort laser should be aligned from the tragus to the orbital.
- m. Tight temple stabilizer
- n. Lastly position the coronal laser to the distal of the upper left canine.



- o. Tell the patient to close their eyes, put their tongue to the roof of their mouth and swallow once.
 - p. You are now ready to expose, hold down the emission button until the music stops.
 - q. **If you are taking CT scan using a panorama scout, skip steps q, r and s and go to procedure “6 CT - Using Panorama Scout (only for 40x40 or 40x80)”.**
 - r. Release the emission button and wait for the c-arm to stop rotating.
 - s. Open the temple stabilizers and ask the patient to step back from the machine.
 - t. Close the temple stabilizers all the way and press the ready button to return the machine to the ready position.:-
 - u.
5. **~~Panoramic Maxillary Sinus (I think this can be later)~~**
- a. ~~Start by following steps a and b of the panoramic normal procedure.~~
 - b. ~~Next press the Region key and then select Maxillary sinus.~~
 - c. ~~Then select between Posterior Maxillary Sinus and Anterior Maxillary Sinus.~~
 - d. ~~Adjust the chin rest to the middle or lowest position for maxillary sinus depending on the patient's height.~~
 - e. ~~Follow steps h through s of the normal panoramic procedure.~~
6. **~~Panoramic TMJ Quadruple (I think this can be later)~~**

- a. ~~Start by following steps a and b of the panoramic normal procedure.~~
- b. ~~Next press the Region key and then select TMJ (close will appear in the display).~~
- c. ~~Press the size key and then select Adult or Child.~~
- d. ~~Next remove the chin rest and insert the lip-nose rest for TMJ.~~
- e. ~~Then open the temple stabilizers and position the patient by putting their upper lip to the lip-nose rest.~~
- f. ~~Position the patient the same way as you did with the Normal Pano positioning.~~
- g. ~~The mid-sagittal and Frankfort laser are set exactly the same as Pano however the coronal laser will now be positioned on the middle of the patients ear orifice perpendicular to the horizontal beam.~~
- h. ~~Have the patient close their mouth and now you are ready to expose. (Two beep will be come out)~~
- i. ~~Once the exposure has finished tell the patient to remain still and hit the ready button to move the c-arm to the ready position.~~
- j. ~~Next "Open" will display in the arm display, have the patient open their mouth and begin the second exposure.~~
- k. ~~Once the unit is finished open the temple stabilizers and ask the patient to move back from the machine.~~
- l. ~~Close the temple stabilizers all the way and press the ready button to return the machine to the ready position.~~
- m. ~~Press "Yes" to start reconstructing the image.~~

7. Direct CT scan – Dental Full Arch (I think Panoramic Scout first. Two direction second. We recommend to use scout to get good result.)

To reinforce positioning and ease the transition into 3D, choose the large field scans first. This will help emphasize the laser meanings.

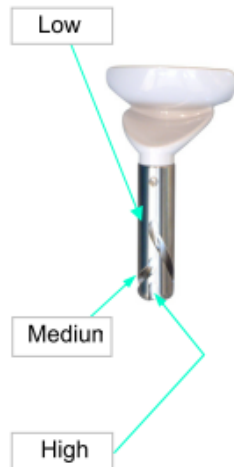
- a. Start by pressing the "CT" button to put the unit in CT mode.
- b. Select region dental arch, maxillary sinus, or TMJ then select manual positioning.
- c. Next select FOV 100x80 or 80x80.
- d. Set KV and mA. Recommended settings are 90kV and 5 to 8mA.
- e. Make sure the temple stabilizers are closed and hit the ready button.
- f. Place the chin rest in its holder on highest or middle position. The highest position is standard position.

NOTE:

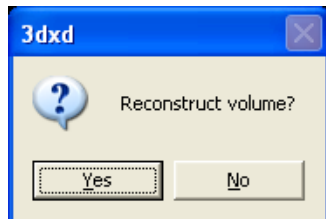
For a large patient, the maximally sinus area may be cut off on high position. Higher area can be included on Middle position. Please note top of the chin may be cut off on middle position. Check with the doctor to determine acceptability.

For CT, it is recommended to use the chin rest with bite stick unless the patient is edentulous then use normal chin rest.





- g. Open the temple stabilizers and ask the patient to step in the unit.
- h. Adjust the height accordingly to the patient and close the temple supports. (Double check no jewelry is on the patient).
- i. Mid sagittal laser should be directly down the middle of the patients face.
- j. Occlusal plane of the patient is parallel with horizontal laser.
- k. Coronal laser to the distal of the upper left canine.
- l. Hold down the emission button until the music stops.
- m. Release the emission button and wait for the c-arm to stop rotating.
- n. Open the head stabilizers and ask the patient to step back from the machine.
- o. Close the temple stabilizers all the way and press the ready button to return the machine to the ready position.
- p. Press the "Pan" button on the C-arm.
- q. Press "Ready" button to return X-ray unit back to the starting position.
- r. Press "Yes" to start reconstructing the image on the capture PC.



TIP: Explain the lasers and take the opportunity to demonstrate the difference with the axial laser. Explain it is now the center of the FOV and **NOT** the Frankfurt beam. Challenge them to press up and down and lead them into understanding why it doesn't move. Can they guess how to scan the sinus?

8. CT - Using Panorama Scout (only for 40x40 or 40x80)

- a. Take a panorama scan following the procedure in section 3
Panoramic Normal or open a panorama image taken before.
- b. Put the patient back in the X-ray unit to re-position for panoramic scan if the patient has exited the machine or we are using a previous

panorama image.

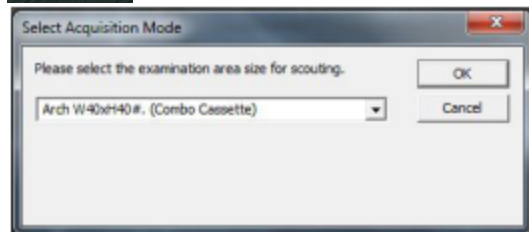
- c. Make sure the chinrest is in the same position as when the original Pan was taken.

Note: If you are taking the CT scan directly after the OPG, disregard steps b and c.

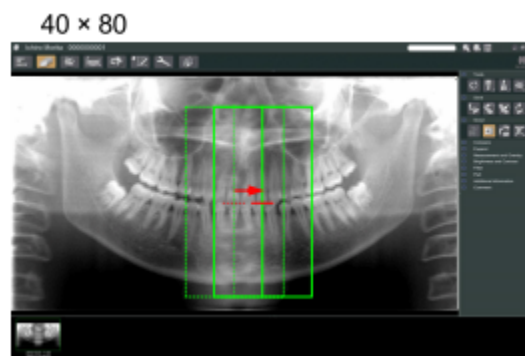
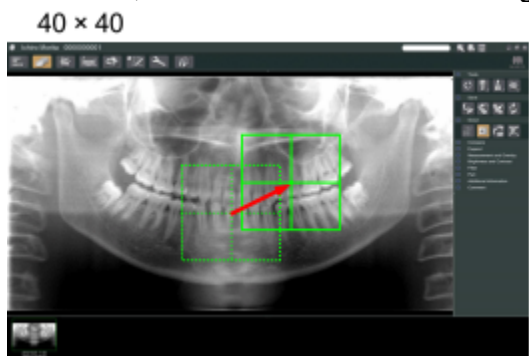
- d. Click the "Set CT Scout Position" in Scout section.



- e. To change the F.O.V click the "Set CT Area" button and select FOV size from the dropdown list.



- f. Position the CT window (green) for the region of interest. If the window turns red, it is outside of the scanning area.

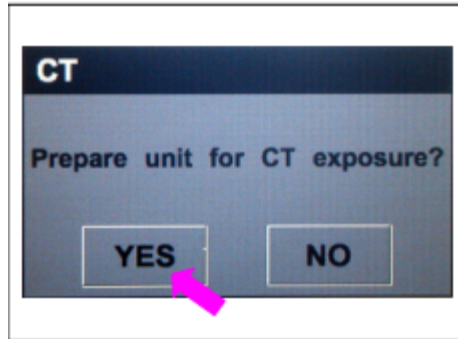


TIP: Focus on what you need. If this is endodontic treatment, the crown may not be of interest. If it contains amalgam that can be eliminated from the scan, this will reduce artifacts.

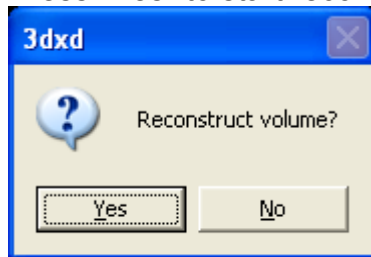
- g. Press the send to device button to send the selected position to the unit.



- h. Press "Yes" on the control panel of X-ray unit. (On the C-arm)



- i. Set KV and mA. Recommended settings are 90kV and 5 to 8mA.
j. Hold down the emission button until the music stops.
k. Release the emission button and wait for the c-arm to stop rotating.
l. Open the head stabilizers and ask the patient to step back from the machine.
m. Close the temple stabilizers all the way and press the ready button to return the machine to the ready position.
n. Press the "Pan" button on the C-arm.
o. Press "Ready" button to return X-ray unit back to the starting position.
p. Press "Yes" to start reconstructing the image on the capture PC.



9. CT - Using 2 Directional Scout (for any FOVs)

- a. Select "Tooth" or "TMJ" button from "REGION"
b. Select "2D Scout" button from "MODE"
c. Press the "Ready" button if it is blinking.
d. Position the patient in the X-ray unit.
e. Line up the mid-sagittal, axial, and canine beam on the patient.
f. Close the head stabilizer.
g. Line up the vertical beam to the center of region of your interest.
h. Hold down the emission button until the music stops.
i. To change the F.O.V click the "Set CT Area" button.

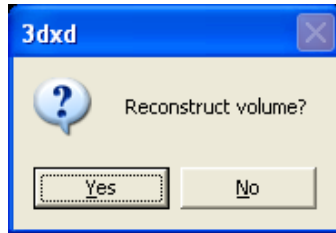


- j. Click the "Send CT Scout Position" button to send position to the

machine. The area is out of range if the bracket turns red.



- k. Press "SET POS" on the control panel of X-ray unit.
- l. Set kV and mA. Recommended settings are 90kV and 5 to 8mA.
- m. Hold down the emission button until the music stops.
- n. Release the emission button and wait for the c-arm to stop rotating.
- o. Open the head stabilizers and remove the patient from the machine.
- p. Press "Ready" button to return X-ray unit back to the start position.
- q. Press "Yes" to start reconstructing the image.



- r. Repeat the procedure to demonstrate approximate positioning for TMJ.

10. Panoramic Maxillary Sinus

- f. Start by following steps a and b of the panoramic normal procedure.
- g. Next press the Region key and then select Maxillary sinus.
- h. Then select between Posterior Maxillary Sinus and Anterior Maxillary Sinus.
- i. Adjust the chin rest to the middle or lowest position for maxillary sinus depending on the patient's height.
- j. Follow steps h through s of the normal panoramic procedure.

11. Panoramic TMJ Quadruple

- n. Start by following steps a and b of the panoramic normal procedure.
- o. Next press the Region key and then select TMJ (close will appear in the display).
- p. Press the size key and then select Adult or Child.
- q. Next remove the chin rest and insert the lip-nose rest for TMJ.
- r. Then open the temple stabilizers and position the patient by putting their upper lip to the lip-nose rest.
- s. Position the patient the same way as you did with the Normal Pano positioning.
- t. The mid-sagittal and Frankfurt laser are set exactly the same as Pano however the coronal laser will now be positioned on the middle of the patients ear orifice perpendicular to the horizontal beam.
- u. Have the patient close their mouth and now you are ready to expose. (Two short exposures will be taken with accompanying beeps)
- v. Once the exposure has finished tell the patient to remain still and hit the ready button to move the c-arm to the ready position.

- w. Next "Open" will display in the arm display, have the patient open their mouth and begin the second exposure.
- x. Once the unit is finished open the temple stabilizers and ask the patient to move back from the machine.
- y. Close the temple stabilizers all the way and press the ready button to return the machine to the ready position.
- z. Press "Yes" to start reconstructing the image.

12. Additional settings and modes of operation

- a. For CT, explain the DR (dose reduction mode). Explain a bit about the kV and mA settings for staff that do not know. Details are not important. General knowledge.
- b. Explain the No X-ray setting and how to position difficult patients. How to use this as a test run.
- c. Explain partial panorama mode or "bitewing" mode.
- d. Explain ortho vs shadowless modes for panorama.
- e. Explain auto vs manual settings for panorama.
- f. Demonstrate the double-ready mode. How is it used and also what happens if you are accidentally in this mode when trying to position a patient.

13. CEPHALOMETRIC IMAGING

- a. Start by pressing the "Ceph" button to put the unit in cephalo mode.
- b. Make sure the temple stabilizers are closed and hit the ready button.
- c. The C-Arm will then turn to position itself for cephalo scan.
- d. The LED on the ready button should now be solid green.
- e. Have the patient remove glasses, necklaces, earrings and anything else that could interfere with the scan.
- f. Next press the mode key and then select either lateral or posterior.
- g. Select Density Comp and turn on.
- h. Next use the up or down keys on the Ceph arm to match the craniostat with the patients height.
- i. Grip the base of the ear rod plates to rotate the craniostat into the lateral position.
- j. With both hands grip the ear rod plates and open them up all the way.
- k. Swing the nasion ruler up for ease of positioning.
- l. Now bring the patient into the Ceph position directly under the craniostat.
- m. Move the Ceph arm up or down to align the ear rods with the outer ear

- orifice and then release the key.
- n. Gently close the ear rods until the buds go into the patients ears.
 - o. Press the Frankfurt plane button to turn the laser on and adjust from tragus to orbital.
 - p. Now swing the nasion ruler down adjust the length and place it against the nasion.
 - q. After confirming the patient positioning press the start position key to move the cephalo detector and secondary slit into position.
 - r. You are now ready to expose, hold down the emission button until the music stops.
 - s. Release the emission button and wait for the cephalo detector and secondary slit to stop moving.
 - t. Gently open the ear rods and back the nasion ruler out then ask the patient to step out of the machine.
 - u. "Transferring image" will appear on the computer display and the image will appear after approx. 30 seconds.

14. Shut Down (End of Day)

- a. Turn off the main power switch on the X-ray unit.
- b. Close i-Dixel software.
- c. Shut down Capture PC.
- d. Shut down Server PC.

15. Most Frequent Error Codes

- a. C1, C3, C4 and C6 – Communication Error – Verify that computers were turned on in the correct order and that i-Dixel is open.
- b. Error 42 – Close temple stabilizers before pushing Ready button.
- c. Emergency Switch – Make sure the emergency switch is not activated when you turn the main power on.

