

Orthopantomograph® OP200 & OP200 D Orthoceph® OC200 & OC200 D

Maintenance Manual



INSTRUMENTARIUM

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1 Preventive maintenance for film unit

This unit is designed to provide a reliable performance and many years of customer satisfaction. In order to assure the safe performance of this x-ray equipment, a preventive maintenance program must be established. It is the owner's responsibility to supply or arrange for this service. Consult your Orthopantomograph dealer to arrange the service. Maintenance service for Orthopantomograph® OP200 is recommended every year or 2000 exposures, whichever comes first.



NOTE!

Note for USA: to keep the equipment in compliance with the DHHS Performance Standard the following maintenance schedule shall be observed: up to 40 exposures per week: perform maintenance every 12 months. At 40 - 100 exposures per week, perform maintenance every 6 months.

1.1 MAINTENANCE PROGRAM

This periodic maintenance for Orthopantomograph® OP200 should include:

- 1 Check the steel wires, which carry the weight of the vertical carriage and counterweight. If there is any sign of wearing, the steel wires must be replaced.
- 2 Check that the unit is well fixed to the wall and floor.
- 3 Check that the carriage up/down motor clutch adjustment is correct. Verify stopping at the limit switches.
- 4 Check kV / mA / exposure times according to each procedure.
- 5 Grounding: Check that GND in Filament Control Board is connected to the power line ground. Check that the top of the tube head assembly is grounded (yellow-green wire on the top of the tubehead assembly). Resistance must be less than 0.2 ohm.
- 6 Clean the rotation friction surface from debris. Clean the cassette holder friction surface from debris.
- 7 Run the "Sr 80 ro-" movement test programs in the service programming mode to verify that each movement is correct.
- 8 Make a normal exposure @ 57 kV and 2 mA, with a needle test phantom to verify that the image layer is in the correct position, and that there are no vertical stripes in the image.
- 9 Check that there are no oil leaks in the Tube Head Assembly.
- 10 Verify the collimator microswitch operation in both direction: QA - PAN - (TOMO) -(CEPH). Program selections in the control panel should change accordingly. Check also the child collimation position.
- 11 Verify that the panoramic cassette sensors operate. Make the panoramic exposure in AEC or manual mode without cassette in place. Error message "Ch 1 CAS" should be displayed.

- 12 OC200: Verify that the cephalostat cassette sensors operate. Make the ceph exposure in manual mode without cassette in place. Error message "Ch 2 CAS" should be displayed.
- 13 OP/OC200 Beam collimation test: Check that the panoramic x-ray beam is aligned in the middle of the secondary slot.
- 14 OC200 Cephalometric beam collimation test: Check that the x-ray beam is aligned and that the x-ray beam stays within the film area with the different apertures.
- 15 Verify that the earposts are aligned.
- 16 Ortho Trans: Verify that laser lights illuminate when a tomographic program is selected. Verify that the laser light on indicator is lit at the same time. Verify the laser light beam alignment. Use Ortho Trans tool.
- 17 Ortho Trans: Verify the correct tomographic layer. Select program P11, smallest manual technique factors. Use Ortho Trans tool over the chin rest to set the lasers over the metal ball. Select 3 x 3 mm lateral and 3 x 3 mm cross sectional image layers. Make the exposure. Ball shadow on the 2nd and 5th image should be the sharpest.
- 18 Check several examples of the customers radiographs to verify the correct operation of the unit.
- 19 Check the operation of the control panel and patient positioning panel(s), and check that the cassette holder move smoothly, and stop at the limit switches.
- 20 Check the positioning light adjustments.
- 21 Make the Quality Assurance test film and verify the density setting from "Pr 52 gCO".
- 22 Record the cumulative exposure counter value from "Pr 66 COU".
- 23 Check the cassettes, screens and film.
- 24 Check the customer's darkroom.
- 25 Reset the "PSE" counter in the user program Pr 59 PSE.
- 26 To keep a record of unit's parameters, verify and fill out the OP200 Configuration Form. Keep it for future use.

The above maintenance procedures require the services of a qualified technician. In addition to periodic maintenance any deviation from normal performance should be immediately reported to your dealer.



WARNING!

Only trained and qualified personnel should be permitted access to the internal parts of the equipment.

1.2 PRODUCT LIFE TIME

If the product cannot meet the Manufacturer's specifications, despite of maintenance and repair, it's life time has ended.

1.3 OP200 CONFIGURATION SHEET

The OP200 can be configured in many different ways depending on the site requirements and customer needs. The tables in chapter 3 summarize the important settings that are useful to record in the case of future service calls.

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2 Preventive maintenance for digital unit

This unit is designed to provide a reliable performance and many years of customer satisfaction. In order to assure the safe performance of this X-ray equipment, a preventive maintenance program must be established. It is the owner's responsibility to supply or arrange for this service. Consult your Orthopantomograph dealer to arrange the service. Maintenance service for Orthopantomograph® OP200 D is recommended every year or every 2000 exposures, whichever comes first.



NOTE!

For USA: to keep the equipment in compliance with the DHHS Performance Standard the following maintenance schedule shall be observed: up to 40 exposures per week: perform maintenance every 12 months. At 40 - 100 exposures per week, perform maintenance every 6 months.

2.1 MAINTENANCE PROGRAM

This periodic maintenance for Orthopantomograph® OP200 D should include:

- 1 Check the steel wires, which carry the weight of the vertical carriage and counterweight. If there is any sign of wearing, the steel wires must be replaced.
- 2 Check that the unit is well fixed to the wall and floor
- 3 Check that the carriage up/down motor clutch adjustment is correct. Verify stopping at the limit switches.
- 4 Check kV / mA / exposure times according to each procedure.
- 5 Grounding: Check that GND in Filament Control Board is connected to the power line ground. Check that the top of the tube head assembly is grounded (yellow-green wire on the top of the tubehead assembly). Resistance must be less than 0.2 ohm.
- 6 Clean the rotation friction surface from debris.
- 7 Run the "Sr 80 CrL" movement test programs in the service programming mode to verify that each movement is correct.
- 8 Make a normal exposure @ 57kV and 2mA, with a needle test phantom to verify that the image layer is in the correct position, and that there are no vertical stripes in the image.
- 9 Check that there are no oil leaks in the Tube Head Assembly.
- 10 Verify the collimator microswitch operation in directions: QA - Child - PAN - CEPH. Program selections in the control panel should change accordingly. Check also that the switch in the cephalostat head changes the LAT and PA mode, when rotating the ear holders.
- 11 OP/OC200 Beam collimation test: Check that the panoramic x-ray beam is aligned and that it is in the middle of the display test screen with EPS image.

- 12 OC200 Cephalometric beam collimation test: Check that the x-ray beam is aligned and that the x-ray beam stays within the fluorescent tool markings. Check the secondary collimator alignment.
- 13 Verify that the earposts are aligned.
- 14 Check the drive belt in the Cephalostat
- 15 Check several examples of the customers radiographs to verify the correct operation of the unit.
- 16 Check the operation of the control panel and patient positioning panel(s).
- 17 Check the positioning light adjustments. In Cephalostat also the FH positioning light.
- 18 Make the Quality Assurance test and record the AEC and Gain settings from "Sr 90 PIN, FrE AEC" and the density setting from "Pr 52 gCO".
- 19 Record the cumulative exposure counter value from "Pr 66 COU".
- 20 Reset the "PSE" counter in the user program Pr 59 PSE.
- 21 To keep a record of unit's parameters, verify and fill out the OP200 Configuration Form. Keep it for future use.

The above maintenance procedures require the services of a qualified technician. In addition to periodic maintenance any deviation from normal performance should be immediately reported to your dealer.



WARNING!

Only trained and qualified personnel should be permitted access to the internal parts of the equipment.

2.2 PRODUCT LIFE TIME

If the product cannot meet the Manufacturer's specifications, despite of maintenance and/or repair, its life time has ended.

2.3 OP200 D CONFIGURATION SHEET

The OP200 D can be configured in many different ways depending on the site requirements and customer needs. The tables in chapter 3 summarize the important settings that are useful to record in the case of future service calls.

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3 OP200 & OP200 D configuration sheet

OP200 CONFIGURATION FORM (SOFTWARE R1.5 AND UP)

1 General Information

Customer:				
Address:				
Postal Code and City:				
Model:	<input type="checkbox"/> OP200	<input type="checkbox"/> OC200	<input type="checkbox"/> CR	<input type="checkbox"/>
Unit serial number:				
OP200 Software version:				
Panoramic Patient Positioning from:	<input type="checkbox"/> Left side		<input type="checkbox"/> Right side	
Ceph Patient Positioning from:	<input type="checkbox"/> Left side		<input type="checkbox"/> Right side	
Line voltage and line voltage fuses:	<input type="checkbox"/> 230 VAC	<input type="checkbox"/> 110 VAC	<input type="checkbox"/> 10 AT	<input type="checkbox"/> 15 AT
Exposure counter value:				
Service message (Pr 59 PSE):	<input type="checkbox"/> OFF	<input type="checkbox"/> ON	<input type="checkbox"/> RESetted	
Last error message (Pr 62 Err):	kV	mA	s	

2 Settings for the operation and patient positioning

Return rotating unit after exposure (Pr 54 Arn):	<input type="checkbox"/> on	<input type="checkbox"/> OFF
Cassette holder autolifting (FILM) (Pr 55 HUP):	<input type="checkbox"/> on	<input type="checkbox"/> OFF
Cassette holder vertical limit (FILM) (Pr 56 HLI):	<input type="checkbox"/> on	<input type="checkbox"/> OFF
Remote Control Exposure Only (Sr 89 rEO):	<input type="checkbox"/> on	<input type="checkbox"/> OFF
Free Exposures Limit (Sr 71 PAY):	<input type="checkbox"/> OFF	<input type="checkbox"/> Limit:

Cassette holder autolift side (FILM) (Pr 57 Hon):	- L -	- r -	L = r
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3 Settings affecting to the imaging




Panoramic screen & film types:	
Ceph screen & film types:	

PR 52 gCO: General density	
All imaging programs	Density value (default)

PR 52 PCO: CONTRAST & DENSITY (film units)			
Imaging Program	Description of Imaging Program	Constant Contrast value kV display (default)	Density offset value Time display (default 0)
P1	Panoramic		
P2	Panoramic		
P3	Panoramic		
P4	Panoramic		
P5	Panoramic		
P6	TMJ		
P7	TMJ		
P8	TMJ		
P9	TMJ		
P10	Sinus Maxillary		
P11	Cephalometric		
P12	Cephalometric		
P13	Ortho Trans mandible		
P14	Ortho Trans maxilla		

PR 52 PCO: CONTRAST & DENSITY (digital units)			
Imaging Program	Description of Imaging Program	Constant Contrast value kV display (default)	Density offset value Time display (default 0)
P1	Panoramic		
P2	Panoramic		
P3	Panoramic		
P4	Panoramic		
P5	Panoramic		
P6	Lateral TMJ		
P7	TMJ PA		
P8	Maxillary Sinus		
P9	Ceph lateral		
P10	Ceph PA/AP		

PR 58 CON: Spine Compensation				
	OFF	LO	HI	ASC
P1				
P2				
P3				
P4				
P5				

Power up control panel display (Pr 51 PUS) is:	Mark the Imaging Program: P_____
	Mark A , M or T : _____ 
	If A , mark the density setting: 
	If M , mark the patient size icon or technique factors: 

Lateral cassette adjustment value (film units) (Sr 72 LCA):	
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4 Film processing

Film processor type:			
Temperature:	_____°C	Processing time:	
Dark room safelight type:			

Keep this form for future use!	
Date:	
Signed:	

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4 Preventive maintenance reminder display

The equipment has a special feature that displays a message "CH 8 PSE" on the exposure time display after every 2000 exposures. This code is displayed for a few seconds when the power is switched on. This code indicates that the owner should carry the preventive maintenance for the equipment. However, it is owner's responsibility to decide whether service will be done. This code has no effects to the operation of equipment.

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5 Installation checklist for digital dental x-ray



NOTE!

Pay extra attention to the ones on gray background as they have an impact on the image quality!!

5.1 OP200 D

#	Item to check	Value/Status before the adjustment	Value/Status after the adjustment
1	Unit leveled and securely bolted to floor and wall		
2	Vertical movements smoothness & limits (dual speed)		
3	Rotation and linear movement accuracy (Sr 80)		
4	Panoramic beam adjustment: tilt, height and horizontal on EPS image		
5	Image layer with ball-pin phantom image (Sinus rest and S17)		
6	Midsagittal light		
7	Frankfort light		
8	Layer light		
9	AEC frequency 144 kHz (PAN term. software ver. _____)		
10	Default dose settings, Pr 52 gCO		
11	Existence of User Manual and all accessories and disposables (Chapter Patient positioning accessories in the user manual)		

#	Item to check	Value/Status before the adjustment	Value/Status after the adjustment
12	Application training given properly to the user		

5.2 OC200 D

All the checks of an OP200D on the previous page and the following:

#	Item to check	Value/Status before the adjustment	Value/Status after the adjustment
1	Cephalostat arm and head leveled in all directions		
2	Cephalostat collimator adjustment (beam passes the pan CCD). Adjust ONLY the ceph slot plate, NOT primary collimator assembly!		
3	Beam at the ceph CCD camera: tilt, height and horizontal. (Adjust only the height and tilt with ceph slot plate at the primary collimator and rotate the code disk for horizontal position!)		
4	Secondary collimator adjustment, centered at the ceph CCD. (EPS image of ceph to verify correct cutting of the beam)		
5	Beam alignment board LEDs, only middle LED lit during scan (sensitivity adjustment may need to be checked)		
6	Ear rod alignment (both ear pins overimposed)		
7	FH laser light adjustment, check also with covers on!		
8	Nasion frequency, (far end & close positions)		

5.3 CLINIVIEW

#	Item to check	Value/Status before the adjustment	Value/Status after the adjustment
1	PC specifications fulfill the minimum requirements; Processor, RAM 256 Mb, HDD 20 Gb, display adapter memory 16 Mb		
2	Cliniview installation; version _____, database locations, network paths, gain files installed for each CCD camera		
3	PC settings; screen resolution minimum 1024 x 768 , power saving off for server, network cards and hard disks		
4	Cliniview settings; default image settings and gamma for each modality		
5	Create user group and give user rights in networking environment		
6	Database scheduled backup is working (cvmsde.dat file)		

Name of technician:		Unit serial #	
Installation date:		Pan CCD sensor serial #	
Number of exposures taken:		Ceph CCD sensor serial #	

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