

Performance Checklist of FDR MS-2500/2000

The purpose of this checklist is to document the steps performed and record the measurement values and set values based on the descriptions in the Service Manual when the FDR MS-2500/2000 is to be installed. Therefore, this document is not intended to replace the installation checklist located in the FDR MS-2500/2000 Service Manual but to be followed concurrently.

Make system connection and image outputs not only at the time of installation but also after the servicing, so as to deliver a machine proved to work normally to the customer.

Installation Information

Machine serial number: _____	Software Ver.: _____
Site name: _____	Installed by: _____
Site number: _____	Signature: _____
Room number: _____	Date completed: _____

Checklist

1. Installation Preparations

☐ OK ☐ NG

 {IN:1.2_Installation Preparations}

2. Checking the Items Supplied

☐ OK ☐ NG

 {IN:3.1_Checking the Items Supplied}

Machine main body ☐ Accessories ☐

3. Removing the Packing Material of the C Arm (1)

 {IN:4.2_Removing the Packing Material of the C Arm (1)}

- | | |
|-------------------------------------------------|---------------------------------------------------------|
| - Removing 356N105502 | <input type="checkbox"/> OK <input type="checkbox"/> NG |
| - Removing 356N105503 | <input type="checkbox"/> OK <input type="checkbox"/> NG |
| - Removing the C arm transit bracket | <input type="checkbox"/> OK <input type="checkbox"/> NG |
| - Removing the compression unit transit bracket | <input type="checkbox"/> OK <input type="checkbox"/> NG |
| - Removing shock absorber | <input type="checkbox"/> OK <input type="checkbox"/> NG |

4. Installing the Mammographic Stand

 {IN:4.3_Installing the Mammographic Stand}

- | | |
|-----------------------------------------|---------------------------------------------------------|
| - Checking position for clamping | <input type="checkbox"/> OK <input type="checkbox"/> NG |
| - Check the tilt | <input type="checkbox"/> OK <input type="checkbox"/> NG |
| - Checking clamping of the anchor bolts | <input type="checkbox"/> OK <input type="checkbox"/> NG |

5. Installing the Controller Unit

{IN:5.1.1_Installing the Controller Unit}

- Checking clamping of the anchor bolts

☐ OK ☐ NG

6. From Installing the Transformer Unit

{IN:5.1.2_From Installing the Transformer Unit}

- Checking clamping of the anchor bolts
- Checking the changeover of the transformer tap

☐ OK ☐ NG

☐ OK ☐ NG

7. From Installing the Generator Unit to Wiring

{IN:5.1.3_Installing the Generator Unit}

- Mounting and fixing the generator on the transformer unit

☐ OK ☐ NG

8. Installing the Operation Desk

{IN:5.2_Installing the Operation Desk}

- Checking clamping of the anchor bolts
- Installing the optional X-ray protective board
- Installing the optional hand switch holder
- Installing the optional monitor arm
- Installing the equipment rack (separately available accessory)
- Installing the anchor plate (separately available accessory)

☐ OK ☐ NG

☐ Yes ☐ No

☐ Yes ☐ No

☐ Yes ☐ No

☐ Yes ☐ No

☐ Yes ☐ No

9. Installing the AWS

{AWS Service Manual}

- Checking on the AWS performance checklist

☐ OK ☐ NG

10. Connecting the Power Supply Cable

{IN:7.1_Connecting the Power Supply Cable}

- Connecting the power supply cable of the controller unit
Single-phase two-wire ☐
- Connecting the power supply cable of the transformer unit
- Connecting the power supply cable of the generator unit
- Connecting the HV cable of the generator unit
- Connecting the power supply cable of the mammographic stand
- Power supply voltage: V (specified value: 200/208/220/230/240 V~±10% (single-phase, AC))

☐ OK ☐ NG

☐ OK ☐ NG

☐ OK ☐ NG

☐ OK ☐ NG

☐ OK ☐ NG

11. Connecting the Cables to the Controller Unit

{IN:8.2_Connecting the Cables to the Controller Unit}

- Connecting MIF2, MIF4, MP12, CN1 and network cables

☐ OK ☐ NG

12. Connecting the Cables to the Generator

{IN:8.3_Connecting the Cable to the Generator Unit}

- Connecting the LV cable to the generator LV cable terminal block
- Connecting the control signal D-sub cable to the generator's D-sub

☐ OK ☐ NG

☐ OK ☐ NG

13. Connecting the Cables to the Mammographic Stand

{IN:8.4_Connecting the Cables to the Mammographic Stand}

- Connecting the control pad cable
- Connecting the foot switch cables
- Connecting the network cable
- Connecting the generator maintenance cable
- Connecting the door switch cable

☐ OK ☐ NG

☐ OK ☐ NG

☐ OK ☐ NG

☐ OK ☐ NG

☐ NA ☐ OK ☐ NG

14. Booting Up in Service Mode

☐ OK ☐ NG

{IN:9.1_Booting Up in Service Mode}

15. Changing the C Arm Height (Uppermost Position)

{IN:9.2_Changing the C Arm Height (Uppermost Position)}

- Changing the C arm height

☐ Yes ☐ No

Uppermost position: _____mm (value after adjustment)

16. Removing the Packing Material of the C Arm (2)

{IN:9.3_Removing the Packing Material of the C Arm (2)}

- Removing the cushioning materials and the bracket that retain the grid ☐ OK ☐ NG

17. Unpacking and Temporarily Installing the FPD

{IN:10.1_Unpacking and Temporarily Installing the FPD}

- Checking the FPD is unpacked
- Checking the FPD is temporarily installed

☐ OK ☐ NG

☐ OK ☐ NG

18. Installing the FPD

{IN:10.2_Installing the FPD}

- Removing the carbon cover
- Removing the inner cover and the cable retaining bracket
- Mounting the FPD
- Connecting cable connectors/ attaching cable retaining brackets
- Putting on the inner cover
- Attaching the grid guide

☐ OK ☐ NG

☐ OK ☐ NG

☐ OK ☐ NG

☐ OK ☐ NG

☐ OK ☐ NG

☐ OK ☐ NG

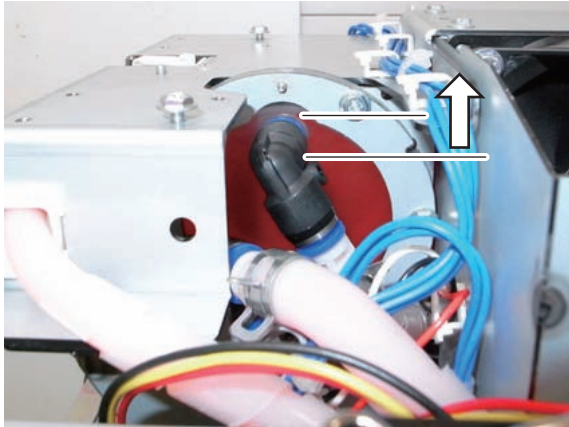
19. Installing the Temperature Adjustment Unit

{IN:10.3_Installing the Temperature Adjustment Unit}

- Liquid level (coolant)

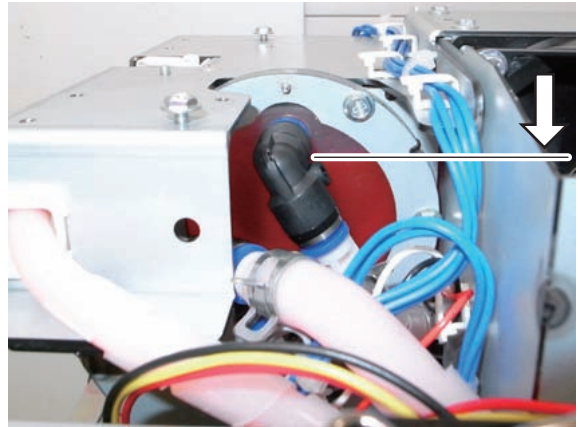
☐ OK ☐ NG

GOOD



The liquid level of the coolant is between the two lines shown above.

NO GOOD



The liquid level of the coolant is lower than the line shown above.

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20. Putting on the Compression Unit Covers and Carbon Cover

{IN:10.3.1_Putting on the C Arm Lower Covers, Compression Unit Covers and Armrests (1)}

- Putting on the compression unit covers
- Putting on the carbon cover

☐ OK ☐ NG

☐ OK ☐ NG

21. Connecting LAN Cable

{IN:11.1_Checking LAN Cable Connection}

- Connecting LAN cable by using HUB

☐ OK ☐ NG








22. Checking the Operation of the Temperature Adjustment Unit

{IN:11.2._Checking the Operation of the Temperature Adjustment Unit}

- Booting up in service mode and checking the operation of the temperature adjustment unit (Check that the coolant is circulating properly.)

☐ OK ☐ NG

23. Installing the Optional Products

-  {IN:Appendix 3._Installing the Optional Monitor Arm}
-  {IN:Appendix 4._Installing the Optional X-Ray Protective Board}
-  {IN:Appendix 5._Installing the Optional Hand Switch Holder}
-  {IN:Appendix 6._Attaching 1.8-Fold Magnification Exposure Stand Kit S}
-  {IN:Appendix 7._Installing the Optional Mobile Kit}
-  {IN:Appendix 8._Attaching the Optional Decoration Label}
-  {IN:Appendix 9._Checking and Adjusting at the Time of Optional Flex Compression Plate Installation}

- Installing optional monitor arm ☐ OK ☐ NG
- Installing optional X-ray protective board ☐ OK ☐ NG
- Installing optional hand switch holder ☐ OK ☐ NG
- Attaching 1.8-fold magnification exposure stand kit S ☐ OK ☐ NG
- Installing the optional mobile kit ☐ OK ☐ NG
- Attaching the optional decoration label ☐ OK ☐ NG
- Checking and adjusting at the time of optional Flex compression plate installation ☐ OK ☐ NG

24. Installing RU/MU Software

{IN:13._Software Installation}

- Installing the PC-TOOL
- Installing RU/MU software
- Installing the machine-specific data
- AEC file exchange
- AEC file merging for the AWS
- Exchanging AEC files in the controller unit
- RU IP address: _____
- MU IP address: _____
- FTP server IP address: _____
- RU identification code (FPD serial no.): _____
- Tube serial no.: _____
- Software version: _____

25. Grid Check

{IN:14._Grid Check}

- Checking grid position (1) ☐ OK ☐ NG
- Putting on the carbon cover ☐ OK ☐ NG
- Checking grid position (2) ☐ OK ☐ NG

26. C Arm Movement Check

{IN:15._C Arm Movement Check}

- Checking the elevation of the C arm ☐ OK ☐ NG
- Checking the rotation of the C arm ☐ OK ☐ NG
- Checking the emergency stop switches ☐ OK ☐ NG

27. Compression Unit Check

{IN:16._Compression Unit Check}

- | | |
|-----------------------------------------------------|---------------------------------------------------------|
| - Operation check of the compression plate | <input type="checkbox"/> OK <input type="checkbox"/> NG |
| - Checking decompression | <input type="checkbox"/> OK <input type="checkbox"/> NG |
| - Checking optimum compression pressure function | <input type="checkbox"/> OK <input type="checkbox"/> NG |
| - Checking automatic decompression function | <input type="checkbox"/> OK <input type="checkbox"/> NG |
| - Checking compression pressure indication accuracy | <input type="checkbox"/> OK <input type="checkbox"/> NG |
| - Checking compression thickness indication | <input type="checkbox"/> OK <input type="checkbox"/> NG |
| - Checking compression thickness | <input type="checkbox"/> OK <input type="checkbox"/> NG |
| - Checking continuity of compression | <input type="checkbox"/> OK <input type="checkbox"/> NG |
| - Checking maximum compression force | <input type="checkbox"/> OK <input type="checkbox"/> NG |

28. Checking Irradiation Field

{IN:17._Checking Irradiation Field}

- | | |
|-----------------------------------|---------------------------------------------------------|
| - Checking collimator lamp | <input type="checkbox"/> OK <input type="checkbox"/> NG |
| - Checking irradiation field size | <input type="checkbox"/> OK <input type="checkbox"/> NG |

29. mA Calibration

{IN:18._mA Calibration}

- | | |
|-------------------------------|---------------------------------------------------------|
| - Carrying out mA calibration | <input type="checkbox"/> OK <input type="checkbox"/> NG |
|-------------------------------|---------------------------------------------------------|

30. Waveform Measurement of Generator's Tube Voltage and Tube Current

{IN:19._Waveform Measurement of Generator's Tube Voltage and Tube Current}

- | | |
|----------------------------------------------------------------------|---------------------------------------------------------|
| - Performing the waveforms generator's tube voltage and tube current | <input type="checkbox"/> OK <input type="checkbox"/> NG |
|----------------------------------------------------------------------|---------------------------------------------------------|

31. Checking the Exposure Recognition Function

{IN:20._Checking the Exposure Recognition Function}

- | | |
|----------------------------------------------|---------------------------------------------------------|
| - Checking the exposure recognition function | <input type="checkbox"/> OK <input type="checkbox"/> NG |
|----------------------------------------------|---------------------------------------------------------|

32. Checking the Variation in X-Ray Output



{IN:21._Checking the Variation in X-Ray Output}

- Check the coefficient of variation

(Specified value: Coefficient of variation (CV) should be within 0.05.)

☐ OK ☐ NG

Exposure count	Target/Filter	
	Mo/Mo	W/Rh
n=1	mR	mR
n=2	mR	mR
n=3	mR	mR
n=4	mR	mR
n=5	mR	mR
n=6	mR	mR
n=7	mR	mR
n=8	mR	mR
n=9	mR	mR
n=10	mR	mR
Average value (X)	mR	mR
Standard deviation (s)		
Coefficient of variation (CV)		

33. Checking the AEC

 {IN:22_Checking the AEC}

 {IN:23_Confirmation of Dose per Exposure Mode}

- Checking the AEC accuracy

(Specified value: Deviations for all measurements (n=10) should be within ± 0.05 .)

☐ OK ☐ NG

Measurement count	Measurement value	Deviation	Determination
n=1	mR		
n=2	mR		
n=3	mR		
n=4	mR		
n=5	mR		
n=6	mR		
n=7	mR		
n=8	mR		
n=9	mR		
n=10	mR		
Average value (X)	mR	-	-

- Confirmation of dose per exposure mode

Dose Level "L-mode" (specified value: 20 to 70 mAs for Mo tube/
20 to 75 mAs for W tube)

☐ OK ☐ NG

Dose Level "N-mode" (specified value: 25 to 85 mAs for Mo tube/
35 to 115 mAs for W tube)

☐ OK ☐ NG

Dose Level "H-mode" (specified value: 30 to 100 mAs for Mo tube/
50 to 170 mAs for W tube)

☐ OK ☐ NG

34. FPD Calibration

 {IN:24._FPD Calibration}

- Daily calibration

☐ OK ☐ NG

- Offset correction data

☐ OK ☐ NG

- Shading correction data

☐ OK ☐ NG

- Xray uniformity data

☐ OK ☐ NG

- Shading LUT data

☐ OK ☐ NG

- Adjusting System Sensitivity

☐ OK ☐ NG

- Creating Trail Data

☐ OK ☐ NG

35. Image Check

{IN:25._Image Check}

- X-ray exposure information

X-ray dose: _____mR

S value: _____

Voltage: _____kV

Tube current: _____mA

Time: _____msec

Distance: _____mm

- Irregularities (specified value: no irregularities) ☐ OK ☐ NG
- Vertical streaks/horizontal streaks (specified value: no streaks) ☐ OK ☐ NG
- White/black blank at edges of image (specified value: no blank) ☐ OK ☐ NG
- Uncorrected dot defect/line defect
(specified value: no defect) ☐ OK ☐ NG

36. Back Up

{IN:26._Back Up}

- Backing up RU/MU data ☐ OK ☐ NG

37. Covering

{IN:27._Covering}

- Putting on generator unit cover ☐ OK ☐ NG
- Putting on mammographic stand covers ☐ OK ☐ NG

38. Appearance Check

{IN:28.1_Visual Inspection and Cleaning of the Machine}

- Checking any damage to the machine ☐ OK ☐ NG

39. Protective Grounding Test

☐ OK ☐ NG

40. Measurement of Leakage Current and Patient Leakage Current

☐ OK ☐ NG

41. Summary test

☐ OK ☐ NG

42. Keep Output Films as the Record of Performance Check

☐ OK ☐ NG

43. Test Equipment Used for the Check

Test equipment: _____	Model: _____	S/N: _____
Test equipment: _____	Model: _____	S/N: _____
Test equipment: _____	Model: _____	S/N: _____
Test equipment: _____	Model: _____	S/N: _____
Test equipment: _____	Model: _____	S/N: _____
Test equipment: _____	Model: _____	S/N: _____

44. Measurement of Installation Environment *On Customer Request Only

{IN:29.2_Measurement of Installation Environment}

- Temperature and humidity ☐ OK ☐ NG

