

# SIEMENS

## FUJI-Reader

**SP**

## Service Manual

### General Information

© Siemens AG 2003

The reproduction, transmission or use of this document or its contents is not permitted without express written authority. Offenders will be liable for damages. All rights, including rights created by patent grant or registration of a utility model or design, are reserved.

English

Doc. Gen. Date: 01.03

Print No.: SPB7-420.840.51.01.02

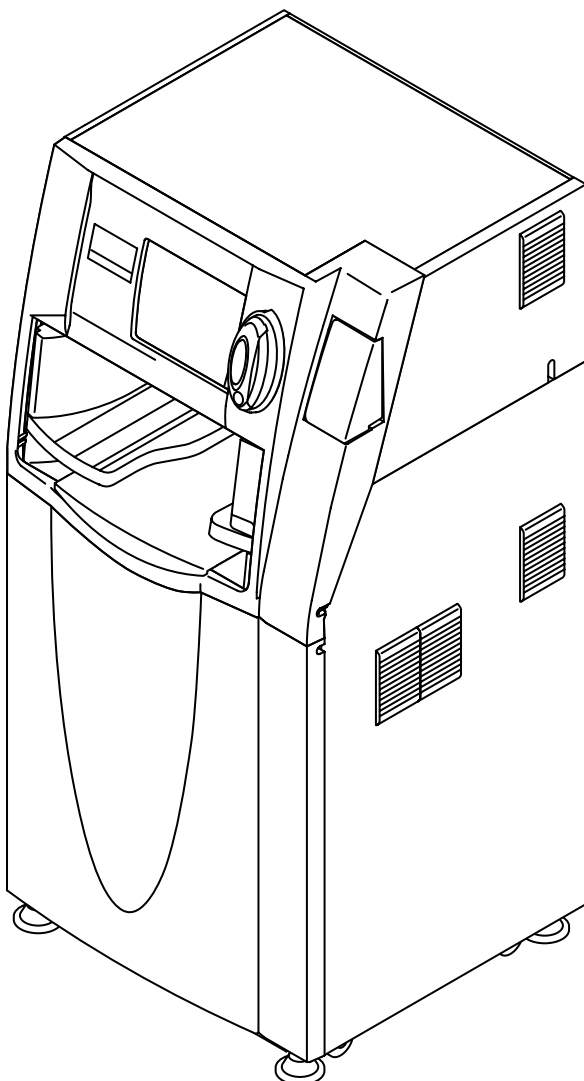
Replaces: n.a.



FUJI COMPUTED RADIOGRAPHY

# CR-IR347 (FCR 5000MA) CR-IR347P (FCR 5000MA plus)

Service Manual



Document No. 009-058-03  
1 st Edition - Oct. 20, 2000  
Revised Edition - Aug. 30, 2002

Fuji Photo Film Co., Ltd.

Printed in Japan

The relationship between mR (milliroentgen), which is the unit of radiation, and  $\mu\text{C}/\text{kg}$  (micro-coulomb/kilogram), which is the SI derived unit of radiation, is as follows.

$$1 \text{ mR} = 0.258 \mu\text{C}/\text{kg}$$

FCR<sup>®</sup> is a registered trademark of Fuji Photo Film Co., Ltd.

<No part of this manual may be reproduced or transmitted.>

Copyright<sup>®</sup> 2000-2002 by Fuji Photo Film Co., Ltd.

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted in any form or by means, electronic, mechanical, photocopying, recording or otherwise, without the prior written permission of Fuji Photo Film Co., Ltd. Miyanodai Technology Development Center.

# 1. Getting Started

## ■ Scope

This Service Manual is applicable to Fuji Computed Radiography CR-IR347 and CR-IR347P. The machine is categorized as Class 1 according to IEC classification.

### ◆ NOTES ◆

- Differences between the CR-IR347 and CR-IR347P are as follows.  
The CR-IR347 may be connected to the ID-T741.  
The CR-IR347P may be connected to the CR-IR348CL and ID-T741.
- Units with serial number #5001 or later are called "CR-IR347P".

## ■ Notation of Unit Symbols

For notation of unit symbols, metric units set forth in the International Systems of Units (SI) are used, as a rule. However, metric units that are allowed in the Measurement Law, not in the SI, are used in some cases.

## ■ Notation of Warnings, Cautions, etc.



### **WARNING**

*Used when death or serious injury may occur if the instruction is not observed.*



### **CAUTION**

*Used when minor or medium levels of physical injury may be incurred if the instruction is not observed.*

*Also used when the machine may suffer serious trouble (such as unrecoverable or difficult-to-recover trouble).*

### ◆ INSTRUCTION ◆

*Used when the machine may suffer damage, or any failure or malfunction may occur, if the instruction is not observed.*

### ◆ NOTE ◆

*Used to indicate the matters that need attention during steps of the procedure.*

### ◇ REFERENCE ◇

*Used to indicate terminology or supplemental explanations.*

 Used to indicate the chapter or section you should refer to.

## ■ Notation in the Manual

In this service manual, the term "CR-IR347" represents the "FCR5000MA".

## ■ Notation of Symbols

- Check/Adjustment indicator: Indicates that it is necessary to check or adjust the installation location when the part or component removed is to be reinstalled.



This indicator is placed in the illustration that depicts the procedures for removing the parts and components.

When you see this indicator, refer to its relevant “■ Check/Adjustment Procedures.”

- Half-punch indicator:



Indicates that it is necessary to align the half-punches when installing the parts or components.

However, it is not indicated for the half-punches for improving ease of assembly or preventing erroneous assembly procedures.

## ■ Servicing Instruments and Tools That Require Inspection/Calibration

The machine should be installed and serviced by use of servicing instruments and tools that have been inspected and calibrated as appropriate.

If the machine were serviced using servicing instruments and tools that have not been inspected and calibrated, proper performance of the machine could not be guaranteed.

Servicing instruments and tools that require inspection/calibration are as listed below.

Inspection/calibration procedures should be performed in accordance with the inspection/calibration manuals described in the ECN Information.

### ● Instruments and tools that require inspection/calibration

Name	Inspection	Calibration	Servicing instrument inspection/calibration manual No.
Dosimeter	–	○	ECO NO. FCR - A014
Steel rule (150mm)	○	–	
Steel rule (300mm)	○	–	
Digital tester	○	○	
Calipers	○ (*)	–	
Push-pull gauge	○	○	

\*: A block gauge for use in inspection requires calibration.

TR7H0002.EPS

## 2. Safety Precautions

Warnings and cautions regarding the procedures should be observed to avoid possible physical hazards and serious accidents that may occur during installation and servicing.

Labels that describe relevant precautions are attached on the machine.

The instructions on such labels should also be observed during procedures.

### 2.1 Working Precautions

#### ■ Power Supply

- Unless otherwise instructed in the Service Manual, be sure to turn OFF the power of the machine and unplug the power plug before servicing. With the power plug still plugged, you may experience electric shock, burn, or secondary damage due to short circuit even when the machine is powered OFF. It should be noted, however, that some servicing procedures, such as voltage measurement, cannot be performed under power-OFF condition. In such cases, use due care to avoid electric shock, burn, or secondary damage due to short circuit, as instructed in this manual.
- To restart or reboot the machine, power it OFF and wait more than five seconds before powering it ON again. If the machine is powered ON within five seconds, it may automatically shut down for protection against overcurrent and overvoltage.

#### ■ Drive Mechanism

- Be sure to turn OFF the power before servicing the gears, cams, belts, and other drive mechanism parts. Otherwise, your body or clothing may be entangled.

However, there may be cases where the procedures cannot be performed under power-OFF condition. In such cases, use due care to avoid entanglement of your hand, foot, hairs, and clothing with any rotating mechanism, as instructed in this manual.

#### ■ Heavy Objects

Exercise due care regarding your working posture to avoid back pain during removal and installation of heavy objects.

#### ■ Safety Devices

Safety devices (such as fuses, circuit breakers, interlock switches, panels, and covers) should always be enabled. Never attempt to make any alteration or modification that may impair their safety features.

## ■ Optical Parts

Observe the following rules when servicing the optical parts. Otherwise, the image quality may be degraded.

- Before removing the protective housings, be sure to turn OFF the high-voltage switch (HV switch). If the machine is powered ON with any of the protective housings removed, the photomultiplier will be damaged.
- Never remove the scanning optics unit covers. If the covers are removed, the image quality may degrade.
- For dust removal procedures, observe the instructions described in the manual.
- Some high-voltage parts, such as the photomultiplier, may not be sufficiently discharged even after power is turned OFF. When servicing such parts, exercise due care to avoid electric shock hazards (not to touch the connector and terminal carelessly).

## ■ Other Working Precautions

- Do not remove or install any part or component while the machine is powered, because of possible electric shock hazards.
- When performing checks or adjustments under the powered condition, exercise due care against electric shock or other hazards.
- Do not touch the parts (such as erasure lamps) that remain at high temperature because you may suffer burns.
- When servicing the scanning optics unit and printed circuit boards, be sure to wear an antistatic wristband to remove static electricity built on the human body. Static electricity may cause damage to the printed circuit boards.
- Secure the machine onto the floor in place by use of its adjustable feet or retainers.
- Keep clean the product labels, safety standards labels, product serial number indications, and so forth attached on the machine, and do not peel them or put another label over them.
- Before powering ON the machine after completion of the servicing procedures, make sure that all the parts, screws, connectors, and so forth that were removed have been reinstalled as appropriate, and that no tool is left in the machine.

## 2.2 Precautions Against Laser Radiation

As indicated by the Certification and Indication Label attached on the rear cover of the machine for overseas use, the machine complies with the U.S. Federal Regulations concerning laser safety. The image reader incorporates a laser with a maximum output of 60 mW (Class 3B, semiconductor laser wavelength of 660 nm, red visible light), but you will not be exposed to any hazard if you perform tasks as instructed in this manual.

### ■ Precautions Against Laser Exposure

Observe the following precautions to avoid laser exposure.

- Procedures that require precautions against laser exposure

When performing the following procedures, observe the instructions exactly as described in this manual to avoid laser exposure. After the procedures are completed, put the removed protective housings and screws back exactly in their original position to prevent leakage of a laser beam out of the machine.

- Removal and reinstallation of the scanning optics unit.
- Replacement and cleaning of subscanning unit parts.

- Preventive maintenance for keeping the machine in compliance

In order to keep the machine in compliance, perform preventive maintenance programs described in “Preventive Maintenance Volume” at intervals specified.

- Things that should not be done to avoid laser exposure

Observe the following precautions to avoid laser exposure.

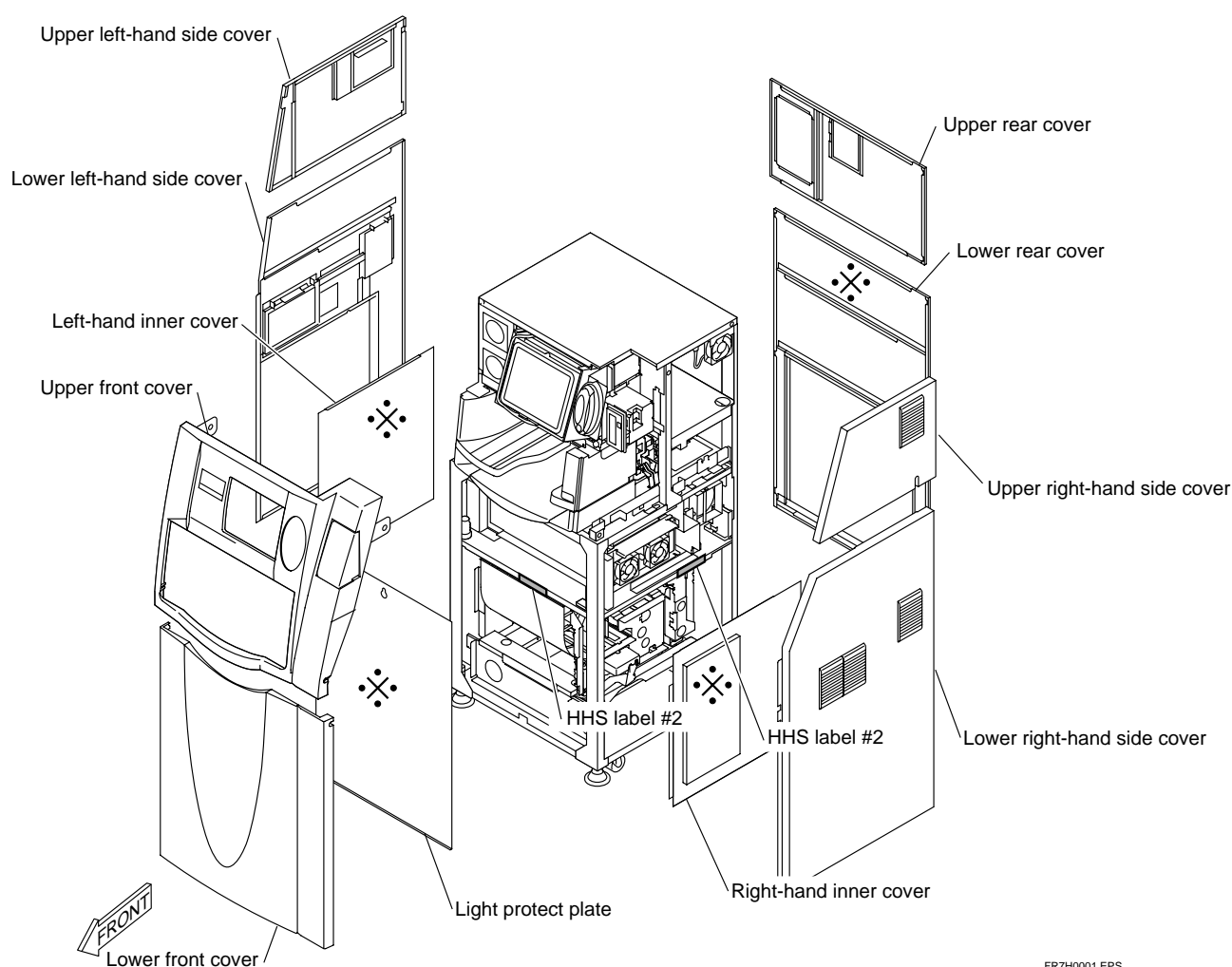
- Never attempt to perform procedures other than instructed in this manual because you may be exposed to laser beam radiation.
- Do not reflect a laser beam by placing a mirror or the like in the laser beam path.
- Do not alter the light path of a laser beam.
- Do not replace optical parts while the laser is energized.
- Do not attempt to make optical axis adjustment in the field. Although the semiconductor laser beam is red visible light, field adjustment of the optical axis cannot be done.

## ■ Protective Housings Against Laser Exposure

Even when the protective housings are removed for servicing, laser beams will never leak out from the machine unless the optical path is intentionally changed. However, if the optical path is changed inadvertently during optics-related procedures, the service engineer or other people around the machine may be possibly exposed to laser radiation. During optics-related procedures, carefully perform the procedures while checking the instructions described in this manual, and after the procedures are completed, restore the protective housings removed back exactly where they were.


### ● Protective Housing of the Machine

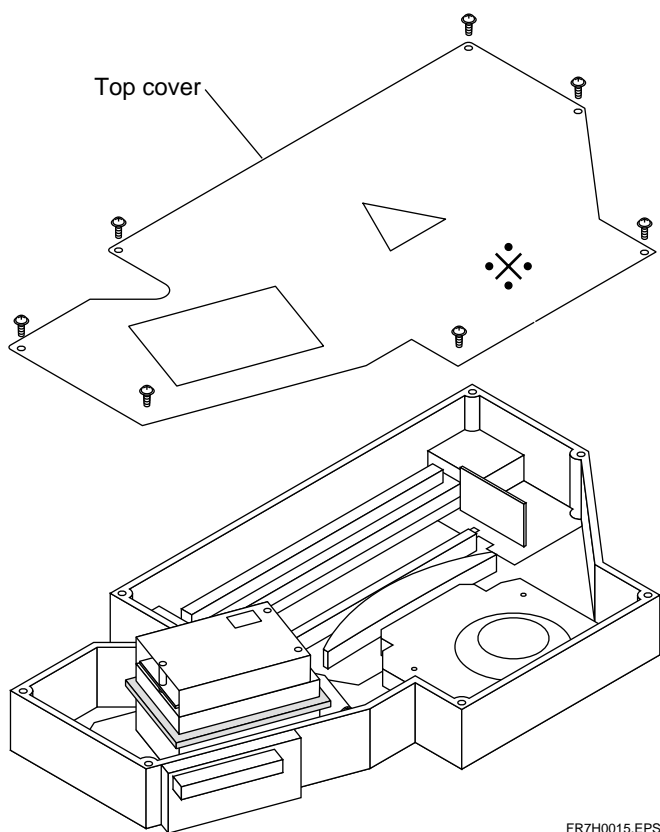
The removable protective housings of the machine are illustrated below. The four covers marked by ✖ in the illustration below are protective housings against laser exposure.



FR7H0001.EPS

## ■ Scanning optics unit protective housing

The removable protective housing for the scanning optics unit is shown below. The protective housing for laser radiation exposure prevention consists of the cover that is marked  in the figure below.



FR7H0015.EPS

*BLANK PAGE*

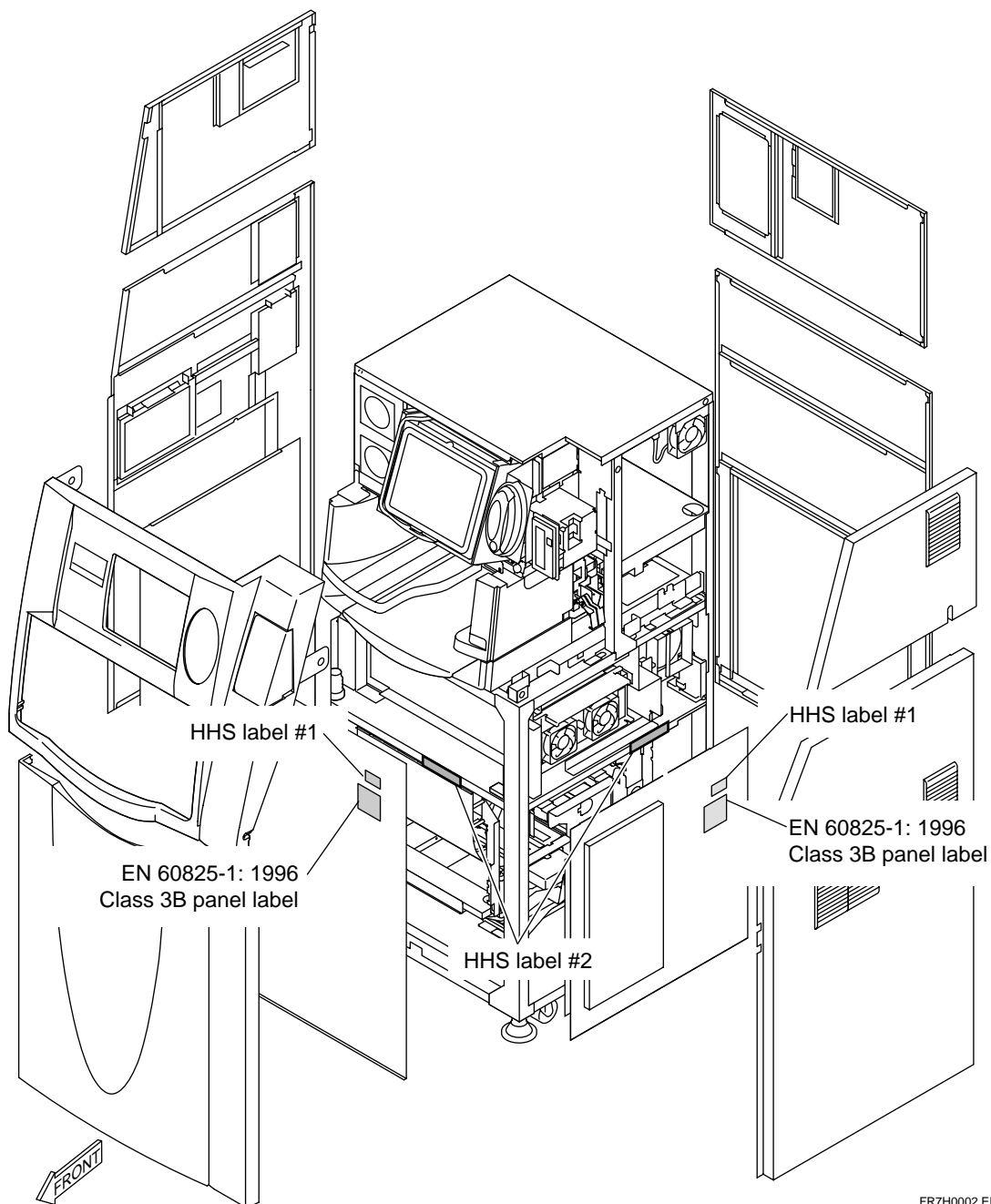
## 2.3 Safety Labels and Other Labels

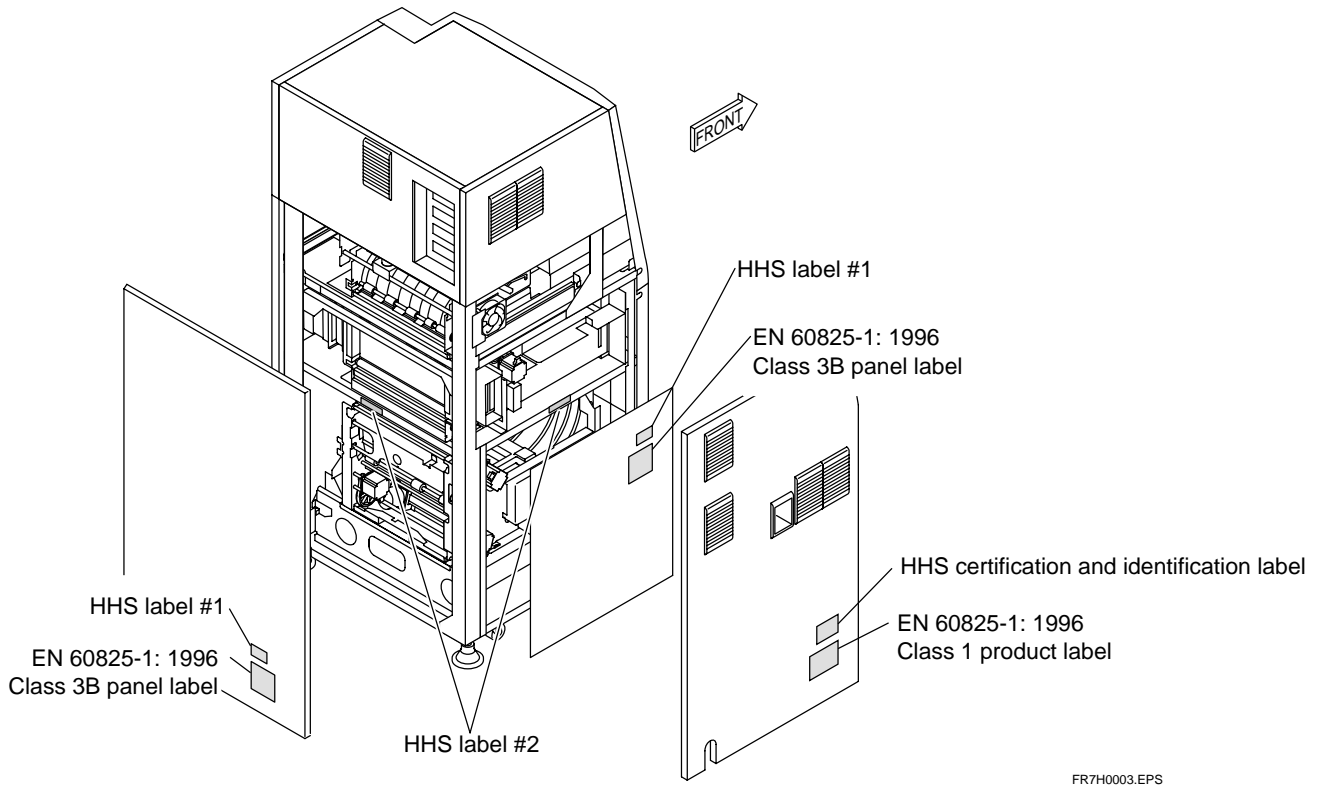
### 2.3.1 Laser Precaution Labels

#### ■ Precaution Label Attachment Locations

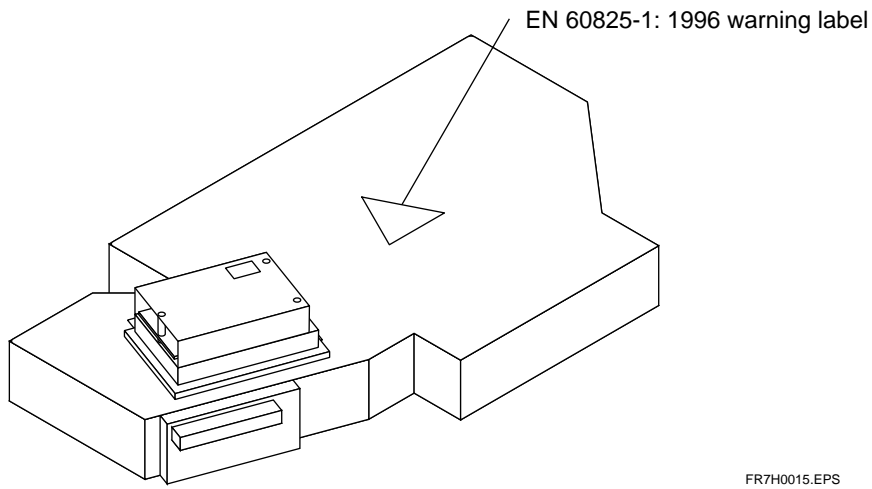
Below are illustrated the protective housings and attachment locations of laser precaution labels, as specified in Part 1-J, Federal Regulations Code "Title 21" issued by the FDA of the U.S.

#### ● Machine





● Scanning Optics Unit



■ List of Precaution Labels

● HHS Certification and Identification Label

CR-IR347



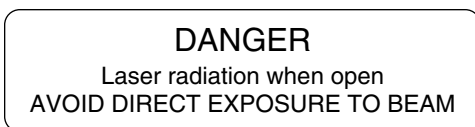
FR7H0004.EPS

CR-IR347P



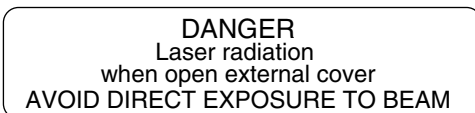
FR7H0021.EPS

● HHS Label #1



FR7H0005.EPS

● HHS Label #2



FR7H0006.EPS

● EN 60825-1: 1996 Class 1 Product Label



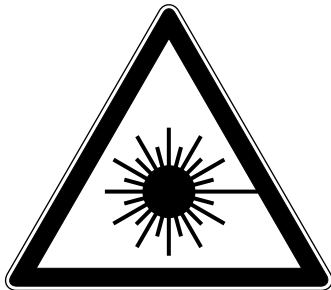
FR7H0007.EPS

● EN 60825-1: 1996 Class 3B Panel Label



FR7H0008.EPS

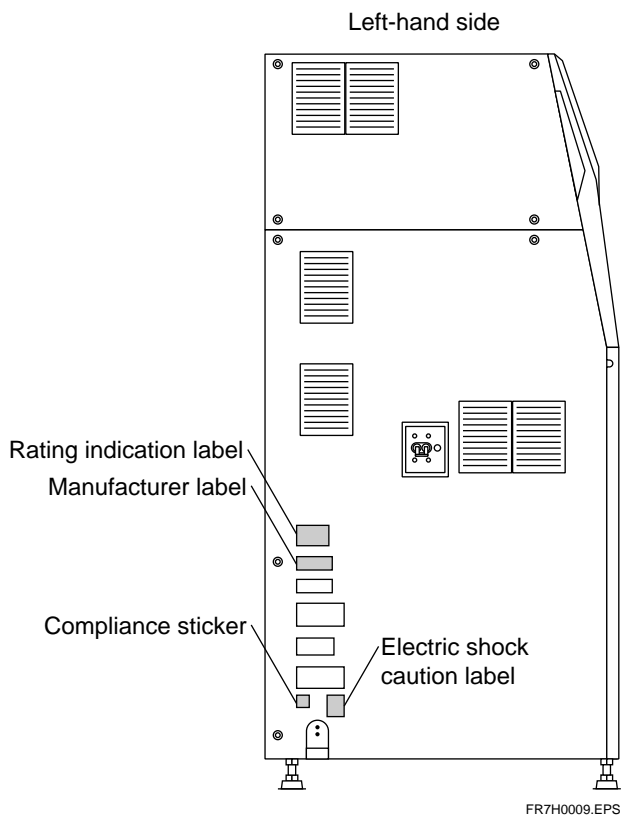
● EN 60825-1: 1996 Warning Label



FR7H0016.EPS

## 2.3.2 Other Labels

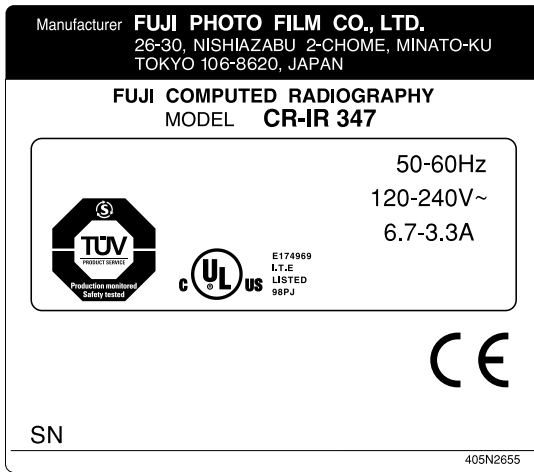
### ■ Label Attachment Locations



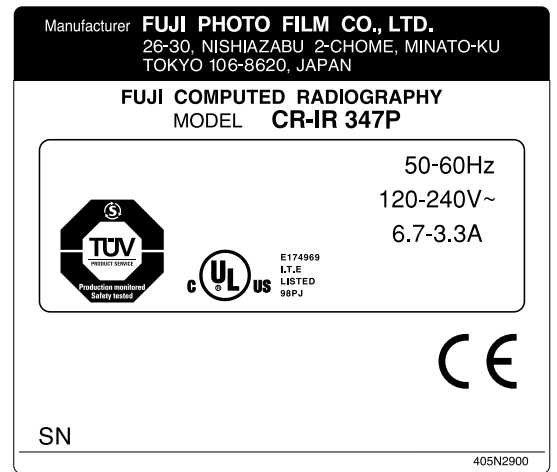
■ List of Other Labels

● Ratings Indication Label

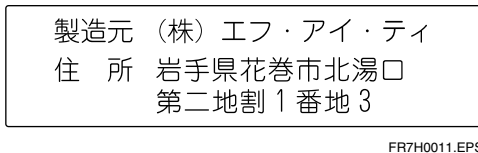
CR-IR347



CR-IR347P



● Manufacturer Label



● Compliance sticker



● Electric shock caution label

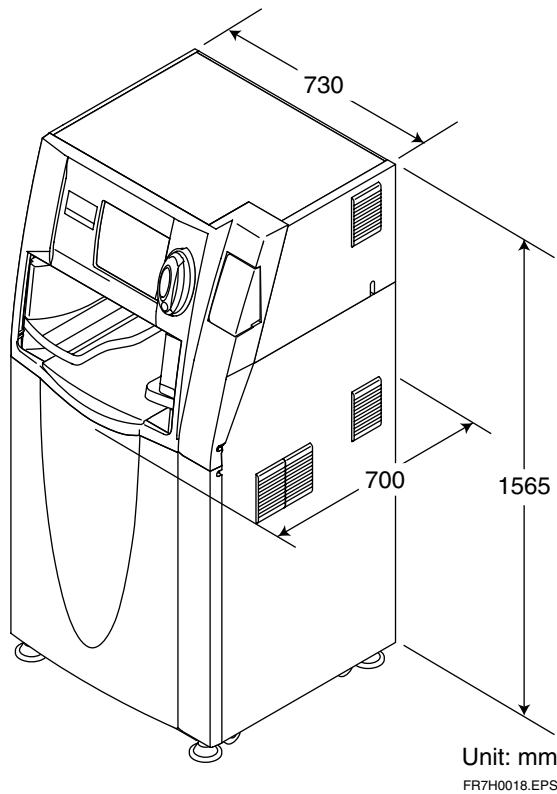


## 3. Specifications of the Machine

### 3.1 Dimensions, Weight, and Center of Gravity

#### ■ Dimensions

W730xD700xH1565 (mm)



Unit: mm  
FR7H0018.EPS

#### ■ Weight

280 kg approx.

#### ■ Center of Gravity

Height: 720 mm

From the right-hand side: 365 mm

From the rear: 385 mm

## 3.2 Machine Moving and Fixing Means

### ■ Moving Means

- Caster x 4 (omnidirectional, no brake attached)

### ■ Fixing Means

- Adjustable foot x 4

## 3.3 Environmental Requirements

### ■ Atmospheric Requirements

	Operation	Non-operation	During transit
<b>Temperature</b>	15–30 °C	0–45 °C	-10–50 °C
<b>Relative humidity</b>	40–80 %	10–90 %	10–90 %
		(Without condensation)	
<b>Atmospheric pressure</b>	700–1,030 hPa	500–1,030 hPa	

The above environmental requirements during non-operation and during transit do not apply to IPs (Imaging Plates). TR7H0001.EPS

### ■ Floor (Installation Area) Vibration Requirements

10 to 55 Hz in frequency and 0.0075 mm or less in amplitude.

### ■ Floor Levelness

10 mm/m (1/100 of inclination) or less for both front and rear and both right and left

### ■ Floor Flatness

10 mm or less

### ■ Variable Magnetic Field

0.3 gauss p-p or less

## 3.4 Electrical Specifications

### ■ Frequency

50Hz/60Hz, single-phase, common specification

### ■ Line Voltage

120-240 VAC  $\pm$ 10%

### ■ Power Capacity

0.8 kVA

### ■ Power Cord

100 V: 3.5 m.

200 V: 15 m.

### ■ Rated Amperage

120-240 VAC, 50/60Hz: 6.7A-3.3A

### ■ Overload Protection

100 V/200 V: 15 A.

### ■ Power Consumption

0.8 kVA.

### ■ Grounding (Overseas)

Use a separate cable kit specifically designed for local use, and securely insert the power plug into an indoor polarized receptacle.

## 3.5 Other Specifications

### ■ Maximum Heat Generation

800 wh.

### ■ Noise

Standby: 55 dB or less.

Operation: 60 dB or less

Single-shot noise: 70 dB or less

### ■ Warm-up Time

Approx. 4 minutes.

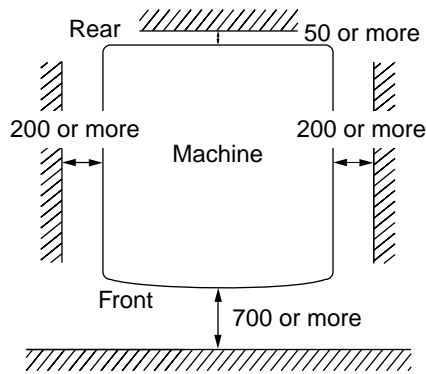
## 3.6 Installation and Servicing Spaces

### ■ Installation space requirements

The space required for installation varies depending on whether the machine is anchored.

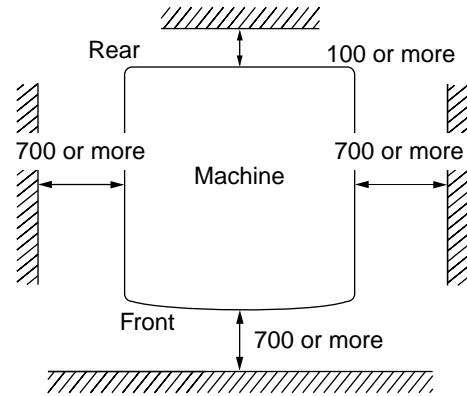
- When the machine is not anchored

Height: 1800 or more



- When the machine is anchored

Height: 1800 or more



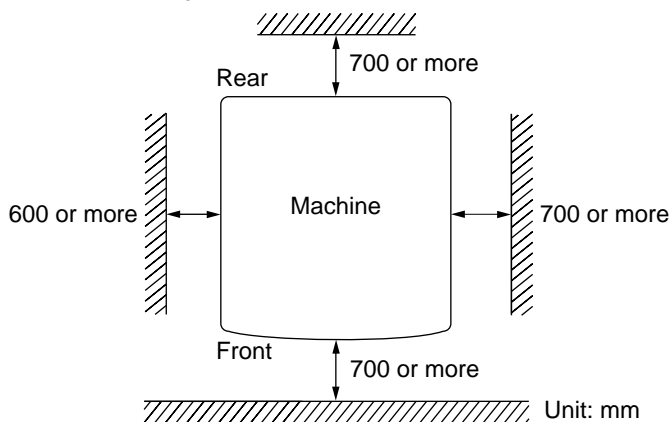
Unit: mm

FR7H0019.EPS

### ■ Servicing space requirements

Furnish the following space for servicing purposes.

Height: 1900 or more



Unit: mm

FR7H0020.EPS

## 3.7 Preliminary Work

Before starting the grounding procedures, make sure that the place where the machine is to be installed meets the criteria set forth in “SSS Installation Site Requirements.”

Before the machine is transferred, preinstallation procedures should be completed for necessary electrical utility, water supply/drain piping, waste solution disposal, and air-conditioning system installation work.

### ■ Electrical Work (Overseas)

For more detail, local rules and regulations should be complied with.

#### ● For 200V power supply

An independent branch circuit assigned specifically for the machine should be provided via a 15A circuit breaker.

A predetermined ground wiring should be implemented for the ground polarity of the receptacle.

#### ● For 100V power supply

A predetermined ground wiring should be implemented for the ground polarity of the receptacle.

### ■ Installation site conditions

Avoid the following installation sites:

- Places where the temperature changes drastically
- Places near heat sources such as heaters
- Places where water leakage or equipment submersion may occur
- Places where any corrosive gas may be generated
- Dusty places
- Places where the machine is subject to constant or excessive vibration/shock
- Places exposed to direct sunlight

*BLANK PAGE*

## 4. Notation of Board Names in Manual

Information about modifications to the boards installed in the machine is summarized here. Unless spelled out or enumerated in the manual, board names shall be replaced as follows.

Change to boards installed	Summary of change
MTH08C → MTH08D	<ul style="list-style-type: none"> <li>● Features of the MTH08D board</li> <li>• DIP switch (S1) was added.</li> <li>• The fuse was changed to a replaceable glass tube type.</li> <li>• The subject to be protected by the fuse was changed.</li> </ul>
MMA90A → DIM08A MMB90A → DIM08A	<ul style="list-style-type: none"> <li>● Features of the DIM08A board</li> <li>• Memory module for the MTH08D board.</li> <li>• The procedure for its removal/reinstallation was changed to horizontal detachment.</li> <li>• Shipped as installed in the machine.</li> </ul>
CPU90F → LAN90B	<ul style="list-style-type: none"> <li>● Features of the LAN90B board</li> <li>• To install the LAN90B board, it is necessary that the bracket located on the rear side of the controller be version D or later.</li> </ul>

TR7H0003.EPS

*BLANK PAGE*

# CR-IR347 Service Manual – Contents

## Machine Description (MD)

<b>1. Machine Overview .....</b>	<b>MD-2</b>
<b>1.1 Features .....</b>	<b>MD-2</b>
<b>1.2 System Configuration .....</b>	<b>MD-4</b>
<b>1.3 External Machine Components and Their Names .....</b>	<b>MD-10</b>
<b>1.4 Internal Machine Components .....</b>	<b>MD-12</b>
<b>1.4.1 Unit arrangement .....</b>	<b>MD-12</b>
<b>1.4.2 Roller arrangement and conveyance path .....</b>	<b>MD-13</b>
<b>1.4.3 I/O arrangement diagram and function descriptions .....</b>	<b>MD-14</b>
<b>1.4.4 PC board arrangement diagram .....</b>	<b>MD-18</b>
<b>1.5 System Block Diagram .....</b>	<b>MD-20</b>
<b>1.6 Power Supply Related Fuse Block Diagram .....</b>	<b>MD-22</b>
<b>2. Software .....</b>	<b>MD-26</b>
<b>2.1 Software Terms and Definitions .....</b>	<b>MD-26</b>
<b>2.2 Image Data Flow (1) .....</b>	<b>MD-28</b>
<b>2.3 Image Data Flow (2) .....</b>	<b>MD-30</b>
<b>2.4 Startup Control Descriptions .....</b>	<b>MD-34</b>
<b>3. Electrical .....</b>	<b>MD-36</b>
<b>3.1 Power supply unit (JPS-6) .....</b>	<b>MD-36</b>
<b>3.2 Erasure Unit .....</b>	<b>MD-38</b>
<b>3.3 Information on Board LEDs .....</b>	<b>MD-40</b>
<b>4. Scanner .....</b>	<b>MD-44</b>
<b>4.1 Scanner Components .....</b>	<b>MD-45</b>
<b>4.2 Scanner Operation Descriptions .....</b>	<b>MD-46</b>
<b>5. Mechanical .....</b>	<b>MD-48</b>
<b>5.1 Cassette Set Unit .....</b>	<b>MD-50</b>
<b>5.2 IP removal unit .....</b>	<b>MD-51</b>
<b>5.3 Erasure Conveyor .....</b>	<b>MD-51.2</b>
<b>5.4 Side-Positioning Conveyor .....</b>	<b>MD-51.3</b>
<b>5.5 Subscanning Unit .....</b>	<b>MD-51.5</b>

6.	***This chapter is intentionally blank*** .....	MD-51.9
7.	***This chapter is intentionally blank*** .....	MD-51.11
8.	<b>Mechanical Control Flowcharts</b> .....	<b>MD-52</b>
8.1	<b>Viewing the Control Flowcharts</b> .....	<b>MD-52</b>
8.2	<b>Normal Operation Flowcharts</b> .....	<b>MD-54</b>
8.2.1	Cassette insertion .....	MD-56
8.2.2	IP feed .....	MD-62
8.2.3	IP length measurement .....	MD-70
8.2.4	IP Identification .....	MD-74
8.2.5	Cleaning guide grip .....	MD-78
8.2.6	Side-Positioning Conveyance .....	MD-80
8.2.7	Cleaning Guide Grip Release .....	MD-84
8.2.8	Side-positioning .....	MD-88
8.2.9	CSL/IDT information confirmation .....	MD-92
8.2.10	Preparations for reading .....	MD-94
8.2.11	Reading .....	MD-96
8.2.12	CSL/IDT information confirmation 2 .....	MD-104
8.2.13	After-reading conveyance .....	MD-106
8.2.14	Before-erasure conveyance .....	MD-108
8.2.15	Erase conveyance .....	MD-112
8.2.16	After-erasure conveyance .....	MD-114
8.2.17	IP loading .....	MD-118
8.2.18	Erase confirmation .....	MD-124
8.2.19	Cassette ejection .....	MD-126
8.3	<b>Secondary Erasure Flowcharts</b> .....	<b>MD-128</b>
8.3.1	Backward loading .....	MD-130

<b>8.4</b>	<b>Step Operation Flowcharts</b>	<b>MD-132</b>
8.4.1	Feed/load step operation	MD-132
8.4.2	Side-positioning step operation	MD-142
<b>8.5</b>	<b>Initialization Flowcharts</b>	<b>MD-146</b>
8.5.1	Side-positioning grip home positioning	MD-148
8.5.2	Side-positioning unit home positioning	MD-152
8.5.3	Mirror ascent	MD-156
8.5.4	Initialization subscanning grip confirmation	MD-158
8.5.5	Cleaning guide HP positioning	MD-162
8.5.6	IP search	MD-166
8.5.7	Suction cup HP positioning	MD-176
8.5.8	Feed/load conveyance IP processing	MD-180
8.5.9	Cassette hold release confirmation	MD-184
8.5.10	Before-reading standby IP processing	MD-188
8.5.11	Subscanning grip HP positioning	MD-194
8.5.12	Empty cassette ejection	MD-204
8.5.13	Mirror descent	MD-206
8.5.14	Initialization cassette hold release	MD-208
<b>8.6</b>	<b>Abnormality Process Flowcharts</b>	<b>MD-210</b>
8.6.1	Abnormality process (cassette ejection 1)	MD-210
8.6.2	Abnormality process (cassette ejection 2)	MD-212
8.6.3	Abnormality process (cassette not detected)	MD-216
8.6.4	Abnormality process (recovered IP loading)	MD-217
8.6.5	Abnormality process (high dose)	MD-218
8.6.6	Abnormality process (IP generation/type mismatch detection)	MD-219
8.6.7	Abnormality process (lamp failure)	MD-220
8.6.8	Abnormality process (IDT line failure)	MD-221
8.6.9	Abnormality process (ID information not registered)	MD-222
8.6.10	Abnormality process (BCR retry)	MD-223

*BLANK PAGE*

# Troubleshooting (MT)

- 1. Overview of Troubleshooting ..... MT1-1
  - 1.1 Flow of Troubleshooting ..... MT1-1
  - 1.2 How to Understand Error Log..... MT1-3
- 2. Error Codes List ..... MT2-1
- 3. Format of Detail Information ..... MT3-1
  - 3.1 Supplementary Explanation of Detail Information ..... MT3-17
  - 3.2 Format of Abort Code ..... MT3-18
- 4. Error Code Analysis Flow (Mechanism)..... MT4-1
  - 03A2, 13A1, 13A2, 23A1, 23A2 ..... MT4-1
  - 13A4, 13A5 ..... MT4-2
  - 13A6, 13A7 ..... MT4-3
  - 13A8, 23A8 ..... MT4-4
  - 13A9, 23A9 ..... MT4-5
  - 13AA, 23AA ..... MT4-6
  - 13AD ..... MT4-7
  - 03B1, 23B1 ..... MT4-8
  - 03B2, 23B2 ..... MT4-9
  - 03B3 ..... MT4-10
  - 03B4, 03B5, 03B6 ..... MT4-11
  - 03B7 ..... MT4-12
  - 03BC, 23BA, 23BB, 23BC ..... MT4-13
  - 03BF, 23BD, 23BE, 23BF ..... MT4-14
  - 03C1 ..... MT4-15
  - 03C0, 03C2 ..... MT4-16
  - 03C6, 03C8, 03CA, 23C6 ..... MT4-17
  - 03C7, 03C9, 03CB, 23C7 ..... MT4-18
  - 03CC ..... MT4-19
  - 03CD ..... MT4-20
  - 03D3 ..... MT4-22
  - 03D5 ..... MT4-23
  - 13E1, 13E2, 13E4, 13E5, 13E9, 23E1, 23E2, 23E4, 23E5, 23E9 ..... MT4-25
  - 13E3, 23E3 ..... MT4-26
  - 03E8, 23E6, 23E7, 23E8 ..... MT4-27
  - 03EE, 03EF, 23EA, 23EB, 23EC, 23ED ..... MT4-28
  - 23F1, 23F2..... MT4-29
  - 13F3, 23F3..... MT4-30

<b>5. Error Code Analysis Flow (Scanner)</b> .....	<b>MT5-1</b>
0532, 2542, 2570 .....	MT5-1
0534, 1533, 2543, 2544, 2571, 2572, 2573, 2574 .....	MT5-2
0536, 2535, 2545, 2546 .....	MT5-3
0537, 2547, 2575 .....	MT5-4
0538, 2530, 2548, 2576 .....	MT5-5
0563, 2560, 2561, 2564 .....	MT5-6
<b>6. Error Code Analysis Flow (Electrical)</b> .....	<b>MT6-1</b>
<b>7. Checkout Flowcharts</b> .....	<b>MT7-1</b>
7.1 Checking the SK1 .....	MT7-2
7.2 Checking the SK2 .....	MT7-4
7.3 Checking the SK3 .....	MT7-6
7.4 Checking the Ground Connections .....	MT7-8
7.5 Checking the SL1 .....	MT7-10
7.6 Checking the SL2 .....	MT7-12
7.7 Checking the SL4 .....	MT7-14
7.8 Checking the SL5 .....	MT7-16
7.9 Checking the SM1 .....	MT7-18
7.10 Checking the SN1 .....	MT7-20
7.11 Checking the SN2 .....	MT7-22
7.12 Checking the SN3 .....	MT7-24
7.13 Checking the SN4 .....	MT7-26
7.14 Checking the SZ1 (SED08D) .....	MT7-28
7.15 Checking the SZ2 .....	MT7-30
7.16 Checking the SZ3 .....	MT7-32
7.17 Checking the SZ4 .....	MT7-34
7.18 Checking the ML1 .....	MT7-36
7.19 Checking the ML2 .....	MT7-38
7.20 Checking the MM1 .....	MT7-40
7.21 Checking the MN1 .....	MT7-42
7.22 Checking the MN2 .....	MT7-44
7.23 Checking the MN3 .....	MT7-46
7.24 Checking the MN4 .....	MT7-48
7.25 Checking the MZ1 .....	MT7-50
7.26 Checking the MZ2 .....	MT7-52
7.27 Checking the MZ3 .....	MT7-54

7.28	Checking the MZ4 .....	MT7-56
7.29	Checking the PL1 .....	MT7-58
7.30	Checking the SVL1 .....	MT7-60
7.31	Checking the SOLK1 .....	MT7-62
7.32	Checking the BCRK1 .....	MT7-64
7.33	Checking the BCRN1 .....	MT7-66
7.34	Checking the Erasure Lamps (LAMP1-LAMP5) .....	MT7-68
7.35	Checking the Polygon (POL) .....	MT7-70
7.36	Checking the Laser (LDD) .....	MT7-72
7.37	Checking the Start Point Detector (SYN) .....	MT7-74
7.38	Checking the Photomultiplier (PMT08D) .....	MT7-76
7.39	Checking the Photomultiplier (PMR08C) .....	MT7-78
7.40	Checking the Voltages .....	MT7-80
7.41	Checking the Boards .....	MT7-82
7.42	Checking the HDD .....	MT7-84
7.43	Checking the Monitor .....	MT7-86
8.	Circuit Diagram .....	MT8-1
9.	Priority Checks to Be Conducted upon Trouble Occurrence .....	MT9-1
10.	Making Analyses of Image Abnormalities .....	MT10-1
10.1	Making Analyses in Accordance with Error Codes .....	MT10-1
10.2	Making Analyses in the Virtual Image Generation Mode .....	MT10-1
	[1] Vertical streaks .....	MT10-2
	[2] Horizontal streaks .....	MT10-3
	[3] Other image abnormalities .....	MT10-4
10.3	Reference Data - Typical Image Abnormalities .....	MT10-5

*BLANK PAGE*

## Checks, Replacement and Adjustment of Parts (MC)

1. Check/Adjustment Procedures for Each Unit .....	MC-2
2. Table of Contents .....	MC-4
3. Removing and Installing the Covers .....	MC-8
4. Removing and Installing the Cassette Set Unit .....	MC-10
4.1 Cassette Set Unit .....	MC-10
4.2 Shutter .....	MC-12
4.3 Cassette Ejection Sensor (SK1) .....	MC-14
4.4 Barcode Reader (BCRK1) .....	MC-16
4.5 Pulling Out the Tray .....	MC-20
4.6 Cassette Hold Solenoid (SOLK1) .....	MC-26
4.7 Cassette Hold Sensor (SK3) .....	MC-32
4.8 Claw Guide Assembly .....	MC-34
4.9 Cassette IN Sensor (SK2) .....	MC-40
4.10 Rubber Roller .....	MC-50
4.11 Guide Plate .....	MC-52
4.12 Guide Stoppers .....	MC-64
4.13 Movable Guides .....	MC-66
5. Removing and Installing the IP Removal Unit .....	MC-74
5.1 IP Removal Unit .....	MC-74
5.2 IP Leak Valve (SVL1) .....	MC-78
5.3 Suction Cup HP Sensor (SL1) .....	MC-80
5.4 Timing Belt (for IP Conveyance) .....	MC-86
5.5 Guide Plate A .....	MC-90
5.6 Rubber Rollers C and D .....	MC-92
5.7 Rubber Roller (Large) .....	MC-94
5.8 Guide Plate D .....	MC-96
5.9 Guide Plates B and C .....	MC-98
5.10 Supports (for IP Removal Arm) .....	MC-100
5.11 Suction Cups .....	MC-104
5.12 IP Suction Pump (PL1) .....	MC-108
5.13 Inch/Metric Sensor (SL4) .....	MC-110
5.14 Suction Sensor (SL5) .....	MC-112
5.15 Receiver Rollers .....	MC-114
5.16 Guide Plates E, F, and G .....	MC-118
5.17 Suction Cup Driving Motor (ML1) .....	MC-120

5.18	Timing Belt (for Suction Cup Drive) .....	MC-122
5.19	Shaft (for Suction Cup Drive) .....	MC-124
5.20	IP Removal Unit Upper Assembly .....	MC-128
5.21	Rubber Roller A .....	MC-130
5.22	IP Transport Motor (ML2) .....	MC-132
5.23	Shaft (for IP Conveyance) .....	MC-134
5.24	Rubber Roller B .....	MC-136
6.	Removing and Installing the Erasure Conveyor .....	MC-138
6.1	Erasure Lamp Assembly .....	MC-138
6.2	Erasure Conveyor .....	MC-140
6.3	Cleaning Roller Assembly .....	MC-144
6.4	Cleaning Rollers .....	MC-146
6.5	Erasure Lamps (LAMP1-LAMP5) .....	MC-148
6.6	Erasure Thermostatic Switch (TSW2) .....	MC-150
6.7	Erasure Thermostatic Switch (TSW1) .....	MC-152
6.8	Erasure Cooling Fan (FANM1) .....	MC-154
6.9	Sockets .....	MC-156
6.10	Timing Belts .....	MC-160
6.11	Lamp House Assembly .....	MC-164
6.12	Filter .....	MC-166
6.13	Reflection Plate .....	MC-168
6.14	IP Transport Motor (MM1) .....	MC-170
6.15	Rubber Rollers (Upper) .....	MC-172
6.16	Light Protect Plates .....	MC-174
6.17	Rubber Rollers (Lower) .....	MC-176
6.18	Guide Plates .....	MC-178
7.	Pulling Out and Pushing In the Scanner Unit .....	MC-182

<b>8.</b>	<b>Removing and Installing the Side-Positioning Conveyor .....</b>	<b>MC-188</b>
8.1	Side-Positioning Conveyor .....	MC-188
8.2	Grip Release Motor (MN2) .....	MC-192
8.3	Barcode Reader (BCRN1).....	MC-194
8.4	Side-Positioning Mechanism HP Sensor (SN1) .....	MC-196
8.5	Grip Release HP Sensor (SN2) .....	MC-198
8.6	Cleaning Guide Drive Motor (MN4).....	MC-200
8.7	BCR08A Board .....	MC-202
8.8	Side-Positioning IP Sensor (SN3).....	MC-204
8.9	Cleaning Guide HP Sensor (SN4) .....	MC-206
8.10	Cleaning Guide Assembly .....	MC-208
8.11	Shaft (for Cleaning Guide Assembly) .....	MC-214
8.12	Guide Plate C .....	MC-218
8.13	Timing Belt (for IP Conveyance).....	MC-220
8.14	Guide Plate G .....	MC-222
8.15	Rubber Rollers (Rear) .....	MC-226
8.16	Wires (Left Side).....	MC-230
8.17	Wires (Right Side) .....	MC-234
8.18	Timing Belt (for Side-Positioning Mechanism) .....	MC-240
8.19	Shaft (for Grip Release).....	MC-246
<b>9.</b>	<b>Removing and Installing the Scanning Optics Unit .....</b>	<b>MC-250</b>
9.1	Adjusting the Format .....	MC-250
9.2	Shading and Sensitivity Corrections .....	MC-254
9.3	Checking for Image Problems .....	MC-258
9.4	Removing and Installing the Scanning Optics Unit.....	MC-262
9.5	LD Assembly .....	MC-266
9.6	Polygon Assembly .....	MC-270
9.7	SYN08A Board.....	MC-274

<b>10.</b>	<b>Removing and Installing the Subscanning Unit</b> .....	<b>MC-278</b>
10.1	Driving-Side Grip Release HP Sensor (SZ2).....	MC-278
10.2	Mirror HP Sensor (SZ4) .....	MC-280
10.3	Rubber Belt and SUS Belt .....	MC-282
10.4	Kapton® Belt .....	MC-284
10.5	Flywheel .....	MC-286
10.6	Subscanning Motor MZ1 (FFM) .....	MC-288
10.7	PMT08D Board .....	MC-292
10.8	PMR08C Board .....	MC-296
10.9	Light-Collecting Guide Assembly (for Front Surface).....	MC-300
10.10	Light-Collecting Guide Assembly (for Back Surface) .....	MC-308
10.11	Light-Collecting Mirror and IP Leading-Edge Sensor (SZ1/SED08D) .....	MC-320
10.12	Glass Guide .....	MC-326
10.13	Lower Rubber Rollers.....	MC-332
10.14	Mirror Driving Motor (MZ4).....	MC-336
10.15	Driving-Shaft Grip Motor (MZ2) .....	MC-338
10.16	Driven-Shaft Grip Motor (MZ3).....	MC-342
10.17	Driven-Side Grip Release HP Sensor (SZ3).....	MC-346
10.18	Subscanning Unit Controller Assembly .....	MC-348
10.19	SCN08D/SCR08D Board .....	MC-354
10.20	PHV08D Board.....	MC-358
<b>11.</b>	<b>Removing and Installing the Hard Disk Drive (HDD)</b> .....	<b>MC-360</b>
11.1	Setting HDD .....	MC-361
11.2	Hard Disk Drive (HDD) .....	MC-362
<b>12.</b>	<b>Removing and Installing the Floppy Disk Drive (FDD)</b> .....	<b>MC-372</b>
12.1	Setting FDD .....	MC-372
12.2	Floppy Disk Drive (FDD).....	MC-372

<b>13.</b>	<b>Removing and Installing the Power Supply Unit (JPS-6)</b> .....	<b>MC-374</b>
13.1	Power Supply Unit (JPS-6) .....	MC-374
13.2	Power Supply Unit Fuses .....	MC-378
<b>14.</b>	<b>Removing and Installing the Monitor</b> .....	<b>MC-382</b>
14.1	CRT (Monitor) .....	MC-382
14.2	Fuse Between Power Supply Unit and CRT .....	MC-388
<b>15.</b>	<b>Removing and Installing the PC Boards</b> .....	<b>MC-390</b>
15.1	MTH08C Board .....	MC-402
15.2	MTH08D Board .....	MC-404
15.3	CPU90E Board .....	MC-406
15.4	IMG07B Board .....	MC-410
15.5	BSP08A Board .....	MC-411
15.6	IMG08M Board .....	MC-413
15.7	CPU90F Board (Optional) .....	MC-414
15.8	LAN90B Board (Optional) .....	MC-416
15.9	HCP08A Board (Optional) .....	MC-417
15.10	IMG08H Board (Optional) .....	MC-418
15.11	SNS08C and DRV08A Boards .....	MC-420
15.12	VOL08A Board .....	MC-427
15.13	LED08A Board .....	MC-428
15.14	LED08B Board .....	MC-428
15.15	BCR08A Board .....	MC-429
15.16	SYN08A, PMT08D, PMR08C, SCN08D/SCR08D, and PHV08D boards .....	MC-429

*BLANK PAGE*

# Maintenance Utility (MU)

- 1. Summary of Service Utility ..... MU-2
  - (1) Maintenance Utility ..... MU-2
  - (2) Configuration Setting ..... MU-2
  - (3) Image Processing Parameter Adjustment ..... MU-2
- 2. Mode Transitions ..... MU-4
  - (1) Initialization process mode ..... MU-5
  - (2) Routine process mode ..... MU-5
  - (3) Abnormality process mode ..... MU-5
  - (4) User utility mode (U-Utility) ..... MU-5
  - (5) Maintenance utility mode (M-Utility) ..... MU-5
  - (6) End process mode ..... MU-5
- 3. U-Utility (User Utility) ..... MU-6
  - (1) Functions of U-Utility ..... MU-6
  - (2) U-Utility tree ..... MU-6
  - (3) U-Utility operation ..... MU-7
  - (4) U-Utility commands ..... MU-8
- 4. M-Utility (Maintenance Utility) ..... MU-10
  - (1) Functions of M-Utility ..... MU-10
  - (2) M-Utility tree ..... MU-10
  - (3) M-Utility operation ..... MU-16
  - (4) Common Operating Procedures for M-Utility ..... MU-19
  - (5) M-Utility commands ..... MU-24
- [1] ERROR LOG UTILITY ..... MU-24
  - [1-1] LIST ..... MU-24
    - [1-1-1] ALL ..... MU-24
    - [1-1-2] SUMMARY ..... MU-25
  - [1-2] CLEAR ..... MU-26
  - [1-3] SAVE TO FD ..... MU-27
    - [1-3-1] ERROR LOG ..... MU-27
    - [1-3-2] TRACE DATA ..... MU-28
    - [1-3-3] IOT DATA ..... MU-29

- [1-4] SAVE TO HD ..... MU-30
  - [1-4-1] ERROR LOG ..... MU-30
- [2] CONFIGURATION SETTING ..... MU-32
  - [2-1] SYSTEM (IRSET.CFG) ..... MU-32
  - [2-2] PRINT (FILMFMT.CFG) ..... MU-45.4
  - [2-3] REMOTE SWITCH (RMT\_SW.CFG) ..... MU-55
  - [2-4] EQUIPMENT (EQUIP) ..... MU-56
  - [2-5] LOCAL INTERFACE (INTERFACE) ..... MU-58
  - [2-6] NETWORK HOST INTERFACE (DEVICE) ..... MU-58
  - [2-7] HOSTS ADDRESS (HOSTS) ..... MU-60
  - [2-8] DISTRIBUTION (CODEDSTB) ..... MU-62
  - [2-9] ROUTING (ROUTE) ..... MU-63
  - [2-10] NETMASKS (NETMASKS) ..... MU-64
  - [2-11] DICOM (Base on DICOM) ..... MU-65
- [3] TEST MODE ..... MU-66
  - [3-1] ROUTINE ..... MU-66
  - [3-2] AUTO MODE ..... MU-66
    - [3-2-1] READING & ERASURE ..... MU-66
    - [3-2-2] PRIMARY ERASURE ..... MU-67
    - [3-2-3] SECONDARY ERASURE ..... MU-68
- [4] ELECTRICAL UTILITY ..... MU-70
  - [4-1] ERASURE LAMP TEST ..... MU-70
  - [4-2] IMAGE MEMORY TEST ..... MU-70
  - [4-3] DSP TEST ..... MU-71
  - [4-4] LAN ..... MU-72
    - [4-4-1] ETHERNET MAC ADDRESS ..... MU-72
    - [4-4-2] PING ..... MU-72
    - [4-4-3] CPU90F DMA ..... MU-73
  - [4-5] HDD ..... MU-74
    - [4-5-1] WRITE-READ VERIFY ..... MU-74
  - [4-6] FDD ..... MU-75
    - [4-6-1] WRITE-READ VERIFY ..... MU-75

- [5] SCANNER UTILITY ..... MU-76**
  - [5-1] INITIALIZE ..... MU-76**
  - [5-2] POLYGON ..... MU-76**
    - [5-2-1] OFF ..... MU-76**
    - [5-2-2] ON ..... MU-76**
  - [5-3] LASER ..... MU-77**
    - [5-3-1] OFF ..... MU-77**
    - [5-3-2] ON ..... MU-77**
  - [5-4] HV ..... MU-78**
    - [5-4-1] OFF ..... MU-78**
    - [5-4-2] ON ..... MU-78**
  - [5-5] HV DATA ..... MU-79**
    - [5-5-1] FRONT ..... MU-79**
    - [5-5-2] BACK ..... MU-80**
  - [5-6] FORMAT ..... MU-81**
    - [5-6-1] DEFAULT ..... MU-81**
    - [5-6-2] FREQ ADJUST ..... MU-82**
    - [5-6-3] PIXEL ADJUST ..... MU-83**
  - [5-7] SHADING/SENSITIVITY ..... MU-84**
    - [5-7-1] REC MODE ..... MU-84**
    - [5-7-2] CALCULATION ..... MU-85**
      - [5-7-2-1] ST ..... MU-85**
      - [5-7-2-2] HR ..... MU-89**
      - [5-7-2-3] HR (FOR MANUFACTURING) ..... MU-92**
    - [5-7-3] SHADING/POLYGON CORRECTION ..... MU-93**
    - [5-7-4] SENSITIVITY DATA ..... MU-94**
    - [5-7-5] HV DATA/ [5-7-6] PMT DATA ..... MU-94**
  - [5-8] DATA MANAGEMENT ..... MU-95**
    - [5-8-1] SAVE SHADING AND POLYGON DATA ..... MU-95**
    - [5-8-2] SAVE SENSITIVITY DATA ..... MU-95**
    - [5-8-3] SAVE FORMAT DATA ..... MU-96**
    - [5-8-4] DISPLAY DATA ..... MU-97**
    - [5-8-5] LOAD FROM FD ..... MU-98**
    - [5-8-6] SAVE TO FD ..... MU-99**

- [5-9] DIAGNOSTIC ..... MU-100
- [5-10] VIRTUAL IMAGE ..... MU-101
  - [5-10-1] LIGHT ..... MU-101
  - [5-10-2] LOG AMP ..... MU-102
  - [5-10-3] SCN08 INPUT ..... MU-102
  - [5-10-4] ROUTINE ..... MU-102
- [5-11] BOTH SIDES ADDITIONAL ..... MU-103
  - [5-11-1] FRONT ONLY ..... MU-103
  - [5-11-2] BACK ONLY ..... MU-103
  - [5-11-3] ROUTINE ..... MU-103
- [6] MECHANICAL UTILITY ..... MU-104
  - [6-1] INITIALIZE ..... MU-104
  - [6-2] MOTOR ..... MU-105
    - [6-2-1] NUMBER ..... MU-105
    - [6-2-2] PARAMETER ..... MU-105
    - [6-2-3] DRIVE ..... MU-108
    - [6-2-4] STOP ..... MU-108
  - [6-3] ACTUATOR ..... MU-109
    - [6-3-1] NUMBER ..... MU-109
    - [6-3-2] DRIVE ..... MU-110
    - [6-3-3] STOP ..... MU-111
  - [6-4] SENSOR ..... MU-112
    - [6-4-1] NUMBER ..... MU-112
    - [6-4-2] MONITOR ..... MU-112
    - [6-4-3] MONITOR ALL ..... MU-113
  - [6-5] UNIT ..... MU-114
    - [6-5-1] IP FEED/LOAD UNIT ..... MU-114
      - [6-5-1-1] ARM HOME POSITION ..... MU-114
      - [6-5-1-2] FEED/LOAD ..... MU-114
    - [6-5-2] UP/DOWN UNIT ..... MU-115
    - [6-5-3] SIDE-POSITIONING GRIP ..... MU-116
      - [6-5-3-1] HOME POSITION ..... MU-116

	[6-5-3-2] GRIP .....	MU-116
	[6-5-3-3] RELEASE .....	MU-117
	[6-5-4] SIDE-POSITIONING UNIT .....	MU-117
	[6-5-4-1] HOME POSITION .....	MU-117
	[6-5-4-2] ACTUATION .....	MU-118
	[6-5-5] AFTER-READING GRIP .....	MU-118
	[6-5-6] DRIVING GRIP .....	MU-119
	[6-5-6-1] GRIP .....	MU-119
	[6-5-6-2] RELEASE .....	MU-120
	[6-5-6-3] D/A DATA .....	MU-120
	[6-5-7] DRIVEN GRIP .....	MU-122
	[6-5-7-1] GRIP .....	MU-122
	[6-5-7-2] RELEASE .....	MU-123
	[6-5-7-3] D/A DATA .....	MU-123
	[6-5-8] MIRROR UP/DOWN .....	MU-124
	[6-5-8-1] UP .....	MU-124
	[6-5-8-2] DOWN.....	MU-124
	[6-5-9] CLEANING GUIDE .....	MU-125
	[6-5-9-1] HOME POSITION .....	MU-125
	[6-5-9-2] GRIP .....	MU-125
	[6-5-9-3] RELEASE .....	MU-125
[7]	FILE UTILITY .....	MU-126
	[7-1] FORMAT FD .....	MU-126
	[7-2] FORMAT IMAGE PARTITION .....	MU-126
	[7-3] BACKUP .....	MU-127
	[7-3-1] SCANNER DATA .....	MU-127
	[7-3-2] CONFIGURATION DATA .....	MU-128
	[7-3-3] NETWORK DATA .....	MU-129
	[7-3-4] IMAGE PROCESSING DATA .....	MU-130
	[7-3-5] CSL MENU DATA .....	MU-131
	[7-3-6] EDR PROCESSING DATA .....	MU-132
	[7-4] RESTORE .....	MU-133
	[7-4-1] SCANNER DATA .....	MU-133
	[7-4-2] CONFIGURATION DATA .....	MU-134

[7-4-3] NETWORK DATA .....	MU-135
[7-4-4] IMAGE PROCESSING DATA .....	MU-136
[7-4-5] CSL MENU DATA .....	MU-137
[7-4-6] EDR PROCESSING DATA .....	MU-138
[7-5] EDR DATA .....	MU-139
[7-5-1] PARAMETER ONLY (SAVE TO FD) .....	MU-139
[7-5-2] FULL (SAVE TO FD) .....	MU-140
[7-5-3] PARAMETER ONLY (SAVE TO HD) .....	MU-141
[7-5-4] FULL (SAVE TO HD) .....	MU-141
[7-5-5] DELETE EDR BACKUP ON HD .....	MU-141
[7-6] PREVIOUS SYSTEM SOFTWARE .....	MU-141
[7-7] EXECUTION .....	MU-142
[8] BACKUP MEMORY .....	MU-143
[9] HV ON/OFF .....	MU-144
[10] MENU SETTING .....	MU-146
[11] SYSTEM UTILITY .....	MU-147
<b>Appendix 1. Software Installation Procedures .....</b>	<b>MU_A1-1</b>
<b>Appendix 1.1 Installing the Software (Application) .....</b>	<b>MU_A1-2</b>
<b>Appendix 1.2 Formatting Hard Disk .....</b>	<b>MU_A1-7</b>
<b>Appendix 1.3 Installing “Menu Default FD for USA” Setup File (Only for                     USA in USA/CSL Type) .....</b>	<b>MU_A1-11</b>
<b>Appendix 2. List of Software Files .....</b>	<b>MU_A2-1</b>
<b>Appendix 2.1 SYSTEM .....</b>	<b>MU_A2-1</b>
<b>Appendix 2.2 LOG .....</b>	<b>MU_A2-9</b>

## Service Parts List (SP)

How to Use the Service Parts List .....	SP-2
INDEX 01A COVER 1 .....	SP-6
INDEX 01B COVER 2 .....	SP-8
INDEX 01C COVER 3 .....	SP-10
INDEX 01D COVER 4 .....	SP-12
INDEX 01E COVER 5 .....	SP-14
INDEX 02A FRAME & POWER SUPPLY 1 .....	SP-16
INDEX 02B FRAME & POWER SUPPLY 2 .....	SP-18
INDEX 03A CASSETTE SET UNIT 1 .....	SP-20
INDEX 03B CASSETTE SET UNIT 2 .....	SP-22
INDEX 03C CASSETTE SET UNIT 3 .....	SP-24
INDEX 03D CASSETTE SET UNIT 4 .....	SP-26
INDEX 04A IP REMOVAL UNIT 1 .....	SP-28
INDEX 04B IP REMOVAL UNIT 2 .....	SP-30
INDEX 04C IP REMOVAL UNIT 3 .....	SP-32
INDEX 04D IP REMOVAL UNIT 4 .....	SP-34
INDEX 04E IP REMOVAL UNIT 5 .....	SP-36
INDEX 04F IP REMOVAL UNIT 6 .....	SP-38
INDEX 05A ERASURE CONVEYOR 1 .....	SP-40
INDEX 05B ERASURE CONVEYOR 2 .....	SP-42
INDEX 05C ERASURE CONVEYOR 3 .....	SP-44
INDEX 06 LAMP UNIT .....	SP-46
INDEX 07A SIDE-POSITIONING CONVEYOR 1 .....	SP-48
INDEX 07B SIDE-POSITIONING CONVEYOR 2 .....	SP-50
INDEX 07C SIDE-POSITIONING CONVEYOR 3 .....	SP-52
INDEX 07D SIDE-POSITIONING CONVEYOR 4 .....	SP-54
INDEX 07E SIDE-POSITIONING CONVEYOR 5 .....	SP-56
INDEX 07F SIDE-POSITIONING CONVEYOR 6 .....	SP-58

**INDEX 08A SUBSCANNING UNIT 1 ..... SP-60**

**INDEX 08B SUBSCANNING UNIT 2 ..... SP-62**

**INDEX 08C SUBSCANNING UNIT 3 ..... SP-64**

**INDEX 08D SUBSCANNING UNIT 4 ..... SP-66**

**INDEX 08E SUBSCANNING UNIT 5 ..... SP-68**

**INDEX 08F SUBSCANNING UNIT 6 ..... SP-70**

**INDEX 08G SUBSCANNING UNIT 7 ..... SP-72**

**INDEX 08H SUBSCANNING UNIT 8 ..... SP-74**

**INDEX 09 SCANNING OPTICS UNIT ..... SP-76**

**INDEX 10A CONTROLLER 1 ..... SP-78**

**INDEX 10B CONTROLLER 2 ..... SP- 80**

**INDEX 11 OPTION ..... SP-81.3**

**INDEX 12 CABLE ..... SP-82**

**INDEX 13 CONNECTION DIAGRAM ..... SP-86**

**INDEX 14 PARTS NOS. SEARCH TABLE ..... SP-94**

**INDEX 15 TABLE OF SCREWS/WASHERS INDICATION SYMBOLS ..... SP-102**

**INDEX 16 LIST OF QUICK WEARING PARTS ..... SP-103**

## Preventive Maintenance (PM)

<b>1. Preventive Maintenance Program .....</b>	<b>PM-2</b>
<b>1.1 Preventive Maintenance Program List .....</b>	<b>PM-2</b>
<b>1.2 Preventive Maintenance Flow .....</b>	<b>PM-4</b>
<b>1.3 Checking the Intervals .....</b>	<b>PM-8</b>
<b>1.4 Precautions for Preventive Maintenance .....</b>	<b>PM-9</b>
<b>2. Checks Before Maintenance .....</b>	<b>PM-10</b>
<b>2.1 Checking the Error Log .....</b>	<b>PM-10</b>
<b>2.2 Checking for Image Problems .....</b>	<b>PM-12</b>
<b>3. Cleaning the FD Drive and Magnetic Card Reader .....</b>	<b>PM-16</b>
<b>4. Removing the Covers .....</b>	<b>PM-18</b>
<b>5. Turning OFF the High-Voltage Switch .....</b>	<b>PM-20</b>
<b>6. Cleaning/Replacing the Air Filters .....</b>	<b>PM-22</b>
<b>7. Cassette Set Unit and IP Removal Unit .....</b>	<b>PM-24</b>
<b>7.1 Removing the Cassette Set Unit .....</b>	<b>PM-24</b>
<b>7.2 IP Removal Unit (Cleaning the Suction Cups) .....</b>	<b>PM-28</b>
<b>7.3 IP Removal Unit (Cleaning/Replacing the Rubber Rollers Located Under     the IP Removal Arm and Shock Absorber-Attached Guide Plates) .....</b>	<b>PM-30</b>
<b>7.4 IP Removal Unit (Cleaning/Replacing the Shock Absorber-Attached     Guide Plates Located Under the IP Removal Unit) .....</b>	<b>PM-33</b>
<b>7.5 IP Removal Unit (Cleaning/Replacing the Shock Absorber-Attached     Guide Plates in the Conveyance Path of the IP Removal Unit) .....</b>	<b>PM-34</b>
<b>7.6 IP Removal Unit (Cleaning the Rubber Rollers) .....</b>	<b>PM-38</b>
<b>7.7 Cassette Set Unit (Cleaning the Rubber Roller) .....</b>	<b>PM-39</b>
<b>7.8 Installing the Cassette Set Unit .....</b>	<b>PM-40</b>
<b>8. Erasure Conveyor .....</b>	<b>PM-44</b>
<b>8.1 Removing the Erasure Conveyor .....</b>	<b>PM-44</b>
<b>8.2 Erasure Conveyor (Cleaning/Replacing the Erasure Lamps) .....</b>	<b>PM-46</b>
<b>8.3 Erasure Conveyor (Cleaning/Replacing the Cleaning Rollers) .....</b>	<b>PM-48</b>
<b>8.4 Erasure Conveyor (Cleaning/Replacing the Shock Absorber-Attached     Reflection Plate) .....</b>	<b>PM-50</b>
<b>8.5 Erasure Conveyor (Cleaning/Replacing the Shock Absorber-Attached     Filter) .....</b>	<b>PM-52</b>

- 8.6 Erasure Conveyor (Cleaning/Replacing the Shock Absorber-Attached Guide Plates) ..... PM-54
- 8.7 Erasure Conveyor (Cleaning the Rubber Rollers) ..... PM-55
- 8.8 Erasure Conveyor (Installing the Lamp House Assembly/Shock Absorber-Attached Reflection Plate) ..... PM-56
- 8.9 Erasure Conveyor (Installing the Cleaning Rollers) ..... PM-57
- 8.10 Installing the Erasure Conveyor ..... PM-58
- 9. Subscanning Unit and Side-Positioning Conveyor ..... PM-60
  - 9.1 Subscanning Unit (Cleaning the SUS Belt/Rubber Belt/Kapton® Belt) ..... PM-60
  - 9.2 Pulling Out the Scanner Unit ..... PM-62
  - 9.3 Removing the Side-Positioning Conveyor ..... PM-66
  - 9.4 Side-Positioning Conveyor (Cleaning/Replacing the Shock Absorber-Attached Guide Plates) ..... PM-68
  - 9.5 Side-Positioning Conveyor (Cleaning the Rubber Rollers) ..... PM-73
  - 9.6 Subscanning Unit (Removing the Light-Collecting Guide Assemblies) ..... PM-76
  - 9.7 Subscanning Unit (Cleaning the Light-Collecting Guide Assemblies) ..... PM-80
  - 9.8 Subscanning Unit (Removing the Scanning Optics Unit) ..... PM-82
  - 9.9 Subscanning Unit (Cleaning the Light-Collecting Mirror) ..... PM-84
  - 9.10 Subscanning Unit (Cleaning the Rubber Rollers) ..... PM-87
  - 9.11 Subscanning Unit (Cleaning the Shock Absorber-Attached Center Guide Plate/Shock Absorber-Attached Guide Plate) ..... PM-88
  - 9.12 Subscanning Unit (Cleaning the Glass Guide) ..... PM-89
  - 9.13 Subscanning Unit (Replacing the Shock Absorber-Attached Center Guide Plate/Shock Absorber-Attached Guide Plate) ..... PM-90
  - 9.14 Subscanning Unit (Installing the Scanning Optics Unit) ..... PM-96
  - 9.15 Subscanning Unit (Installing the Light-Collecting Guide Assemblies) ..... PM-98
  - 9.16 Installing the Side-Positioning Conveyor ..... PM-109
  - 9.17 Pushing In the Scanner Unit ..... PM-110
- 10. Turning ON the High-Voltage Switch ..... PM-112
- 11. Installing and Cleaning the Covers ..... PM-112
- 12. Checking the Date and Time ..... PM-113
- 13. Deleting the Error Log ..... PM-114
- 14. Checking the Image ..... PM-115

# Installation (IN)

1.	Work Flow .....	IN-2
2.	Preparation for Installation .....	IN-4
2.1	Precautions for Installation .....	IN-5
2.2	Unpacking and Unloading .....	IN-6
2.3	Transfer .....	IN-7
2.4	Temporary Placement .....	IN-7
2.5	Checking the Items Supplied .....	IN-8
3.	Removing the Covers .....	IN-12
4.	Unclamping .....	IN-16
4.1	Front Shelf Cover (Front) .....	IN-16
4.2	Pulling Out the Tray .....	IN-17
4.3	Cassette Set Unit/IP Removal Unit (Front/Right-Hand Side/Left-Hand Side) .....	IN-19
4.4	Pushing In the Tray .....	IN-20
4.5	Subscanning Unit (Left-Hand Side) .....	IN-20
4.6	Subscanning Unit (Rear) .....	IN-21
4.7	Subscanning Unit (Right-Hand Side) .....	IN-22
4.8	Pulling Out the Scanner Unit .....	IN-24
4.9	Subscanning Unit (Front) .....	IN-28
4.10	Subscanning Unit (Inside) .....	IN-29
4.11	Side-Positioning Conveyor (Rear) .....	IN-30
5.	Installing the Separate Packaged Items .....	IN-31
5.1	Light-Collecting Guide Assembly (for the Front) .....	IN-32
5.2	Light-Collecting Guide Assembly (for the Back) .....	IN-35
5.3	Pushing In the Scanner Unit .....	IN-41
5.4	Erasure Lamp Assembly .....	IN-42
5.5	Memory Boards (Only for Machine with Shipment Control Number of 5079 or Earlier) .....	IN-44
6.	Removing the Board Retaining Plate .....	IN-46
7.	Setting the Boards .....	IN-47
8.	Installing the Boards .....	IN-50
9.	Installing the Board Retaining Plate .....	IN-52
10.	Connecting the Interface Cables .....	IN-53

11.	Turning OFF the High-Voltage Switch .....	IN-54
12.	Connecting the Power Cable .....	IN-55
13.	Checking the Resistance Values .....	IN-56
14.	Powering ON .....	IN-58
15.	Checking the Fan Operation .....	IN-61
16.	Measuring and Adjusting the Voltage .....	IN-62
17.	Clearing the Backup Memory .....	IN-63
18.	Setting the Date and Time .....	IN-64
19.	Turning ON the High-Voltage Switch .....	IN-65
20.	Installing the Covers .....	IN-66
21.	Setting the Configuration .....	IN-70
22.	Checking for Image Problems .....	IN-76
23.	Checking and Deleting the Error Log during Setup .....	IN-80
23.1	Checking the Error Log .....	IN-80
23.2	Deleting the Error Log .....	IN-81
24.	Powering OFF .....	IN-82
25.	Cleaning the Covers .....	IN-82
26.	Attaching the Labels .....	IN-83
27.	Final Placement .....	IN-84
27.1	Securing the Machine with the Adjustable Feet .....	IN-85
27.2	Securing the Machine with the Clamps .....	IN-86

<b>Appendix 1. Connecting the Peripheral Devices (for Network Connection)</b> .....	<b>IN_A1-1</b>
<b>Appendix 1.1 Checking the Connectable Peripheral Devices</b> .....	<b>IN_A1-1</b>
<b>Appendix 1.2 Basic Pattern of System Configuration</b> .....	<b>IN_A1-4</b>
<b>Appendix 1.2.1 Pattern Where IDT-IV Is Connected to CPU90E</b> .....	<b>IN_A1-5</b>
<b>Appendix 1.2.2 Pattern Where IDT-IV Is Connected to CPU90F</b> .....	<b>IN_A1-6</b>
<b>Appendix 1.3 IDT Type and CSL Type</b> .....	<b>IN_A1-10</b>
<b>Appendix 1.4 List of Setup Items Related to Network and Setup Examples</b> .....	<b>IN_A1-11</b>
<b>Appendix 2. ***</b> .....	<b>IN_A2-***</b>
<b>Appendix 2.1 ***</b> .....	<b>IN_A2-***</b>
<b>Appendix 2.2 ***</b> .....	<b>IN_A2-***</b>
<b>Appendix 3. Menu Editor Setup</b> .....	<b>IN_A3-1</b>
<b>Appendix 4. Procedures for Connecting with CR Console (CR-IR348CL)</b> .....	<b>IN_A4-1</b>

*BLANK PAGE*