

FILM ID SYSTEM

Technical Operations Manual

**July 2002
Version 4**

**Please leave in Mammography room
For Technologist's reference**



**Livingston Products Inc.
260 Holbrook Drive
Wheeling, IL 60090**

Film ID System, Technical Operations Manual

Version 4

Models 521 and 525 compatible with SIEMENS mammography equipment

Software Serial Number FL4_B_Vxxxxx

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Section 1 Operating Instructions

1.1 Introduction

The Film ID System photographically exposes (FLASHES) a label onto a mammography film cassette. The label has patient name and ID information, the name of the Institution, the time and date and the X-ray parameter data. The system is completely self-contained and may be operated STAND ALONE. It may also be connected to an X-ray system with a serial communications cable and to an external computer system with additional cabling.

Data is entered in either of three modes. In the STAND ALONE MODE, all information is entered with a keyboard. In the REMOTE MODE, some or all of the label technical data is automatically sent to the Film ID System from the mammography X-ray generator each time an exposure is made. The patient data is editable but generally the technical data is not editable. In DIRECT MODE, the system emulates a serial text printer and FLASHES text label data exactly as it is received from the X-ray system. No editing is allowed in DIRECT mode.

The system is programmable through a setup menu. Once a system is setup and customized, the setup parameters are retained in battery-powered memory when power is turned off.

X-ray labels may be exposed or FLASHED each time the data is entered or they may be stored in the system and FLASHED one after the other in a batch. Up to 10 exposures may be saved in the FLASHER queue prior to FLASHING labels. Although the system may be used with either of the above methods, it is important to FLASH the film cassettes in the proper order.

<p>NOTE: IT IS THE RESPONSIBILITY OF THE OPERATOR TO INSURE THAT THE X-RAY LABEL INFORMATION IS FLASHED ON THE PROPER FILM CASSETTE. IT IS USUALLY EASIER TO ASSURE LABEL INFORMATION CORRECTNESS IF EACH CASSETTE IS FLASHED RIGHT AFTER IT IS EXPOSED.</p>

As X-ray labels are generated and FLASHED onto the X-ray film, the system retains up to 75 history records for printing in internal memory. The print history records may be printed on an optional text printer (if installed) by printing the system HISTORY or if an external computer connection is available with appropriate software they may be downloaded and stored on the external computer system.

1.1.1 Controls

The USER DISPLAY

An LCD for displaying all X-ray data and user interface menus. The contrast of the USER DISPLAY can be adjusted by adjusting the user display viewing angle.

The FILM CASSETTE SLOT

X-ray film cassettes are inserted into this opening prior to FLASHING the X-ray label. Insure that the cassettes are inserted fully to the right and rear of the opening prior to flashing. Note: label will not flash correctly if cassette is not inserted correctly and fully into slot.

The KEYBOARD

An Alphanumeric keyboard for data entry and control.

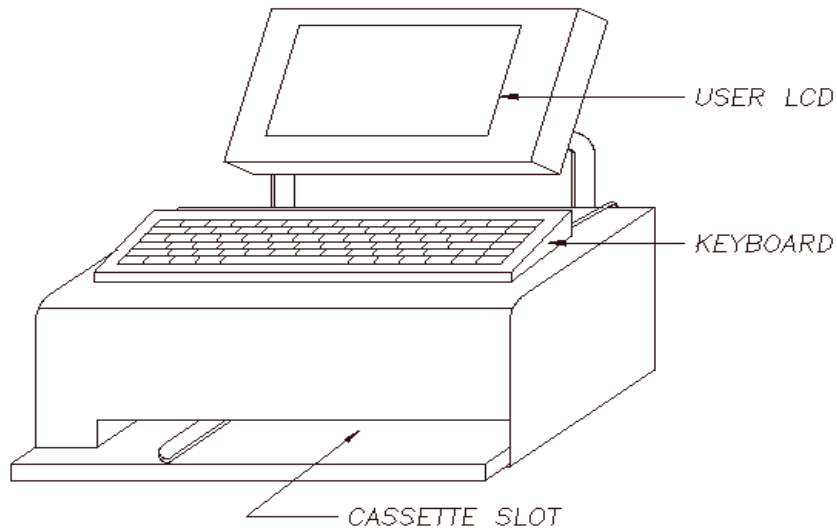
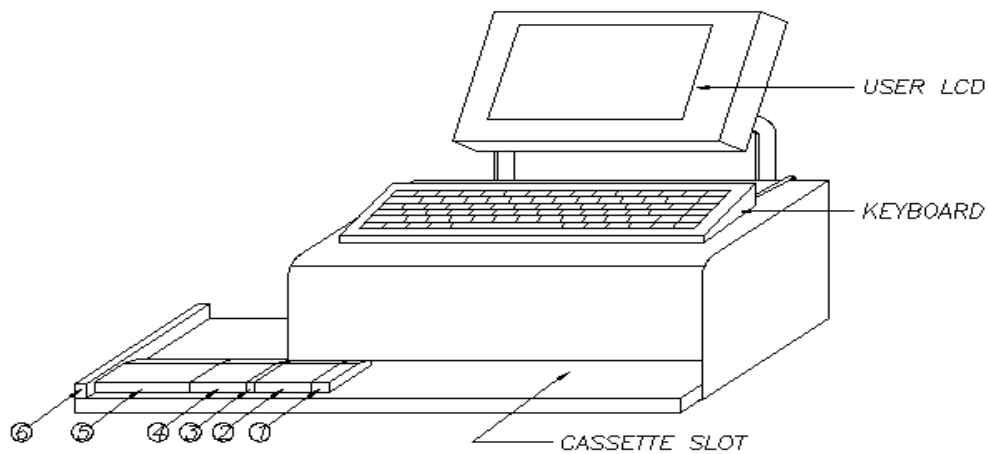


Figure 1 - 1A The Film ID System Model 521 Controls and Displays



CASSETTE GUIDE

- ① 18cm x 24cm, 24cm x 24cm
- ② 20cm x 25cm
- ③ 24cm x 30cm
- ④ 10in x 12in
- ⑤ 28cm x 35cm, 30cm x 35cm, 35cm x 35cm
- ⑥ 18cm x 43cm, 35cm x 43cm

Figure 1 - 1B The Film ID System Model 525 Controls and Displays

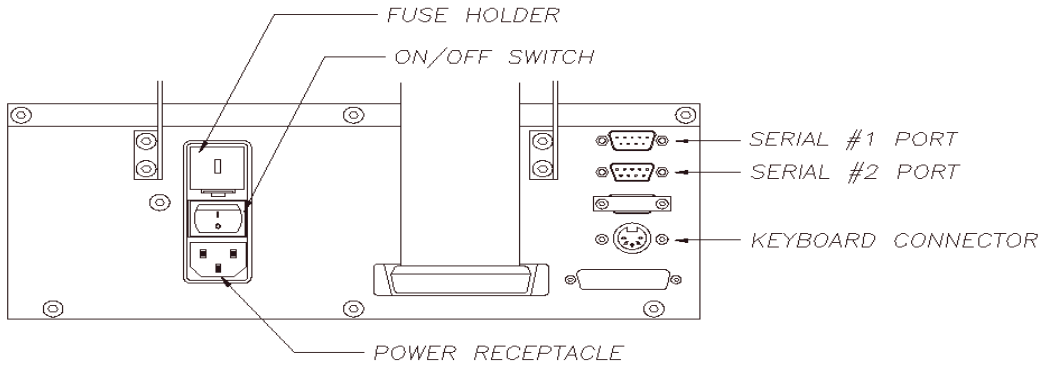


Figure 1 - 2A The Film ID System Rear Panel

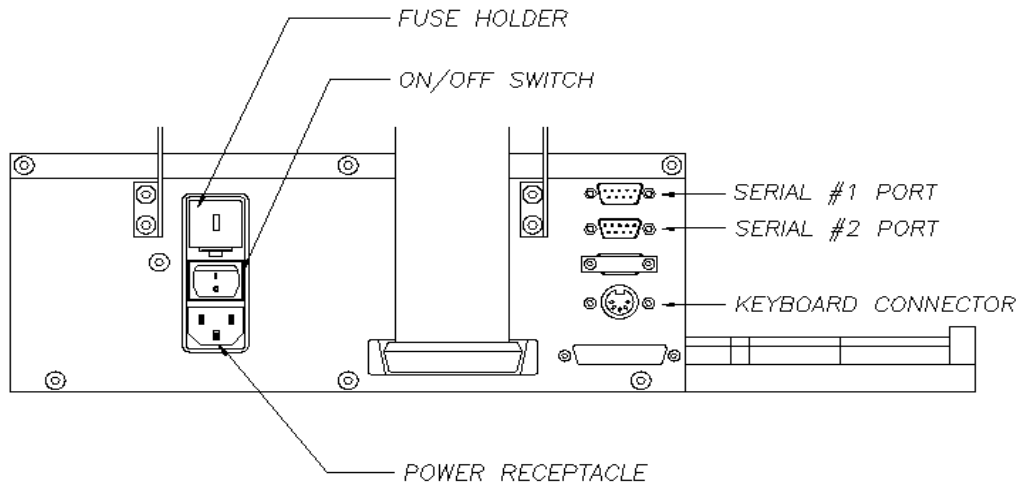


Figure 1 - 2B The Film ID System Rear Panel

1.1.2 The X-ray Label

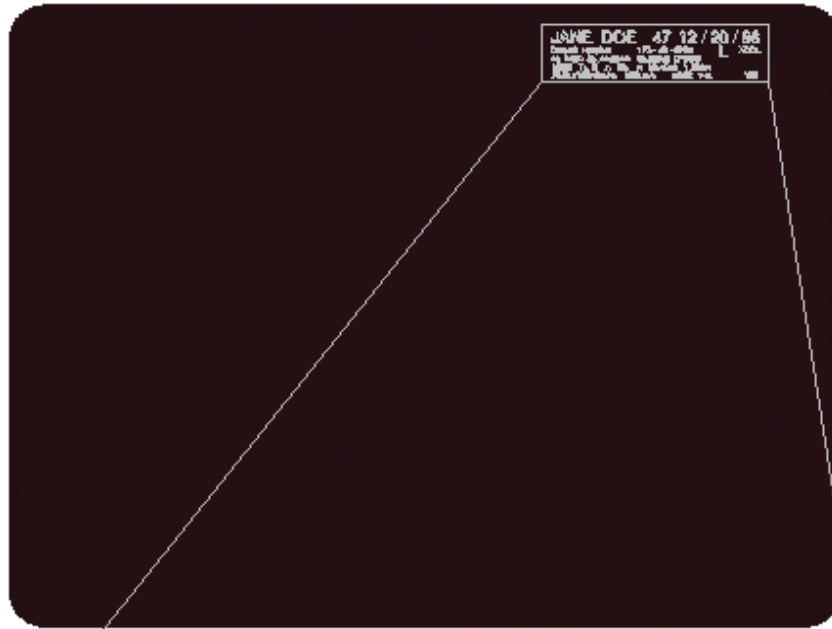
Figure 1- 3 shows the format of the labels produced by the Film ID System. The labels have multiple data fields consisting of the following:

FIELD	DESCRIPTION	LENGTH	DEFAULT UNITS
Institution Name - Address - X-ray Location - MR# (split onto 4 user display lines)	The Name of the Institution, Address and Generator Location Information may also include MR# (split onto 3 flash label lines)	20 - 19 - 20 - 20	
Technologist's Initials		3	
Time	Current Time (24 hour mode)	8	
Date	Current Date	8	
Patient Name	Patient's full name	20	
Patient Age	Patient's age	3	
Patient Date of Birth	Patient's Date of Birth	8	
Patient ID	Patient's ID number	12	
Voltage	X-ray tube accelerating voltage	4	kV
Charge	Integrated beam current	5	mAs
Exposure Time	X-ray tube active time	5	s
Comp	(Breast) Compression Thickness	4	cm
Compression Force	Compression Force	2	N
Anode	Anode Material abbreviation	2	
Angle	Beam Angle	3	
View	X-ray view including laterality (R or L) and magnification (m)	17	
Bucky	Grid used or not	1	
Mode	Operational Exposure Mode	4	
Corr	Density correction factor	3	
Filt	Filter material abbreviation	4	

Table 1 - 1 The X-ray Data Fields

The fields displayed on the X-ray label may change depending on which X-ray model is connected to the unit. If a field is not needed, the X-Ray Label field and corresponding user display field may be hidden.

NOTE: THE FILM ID SYSTEM IS A LABEL PRINTING DEVICE AND CANNOT PERFORM UNIT CONVERSIONS OR DOSE COMPUTATIONS FROM X-RAY PARAMETERS THAT ARE INPUT TO IT. A FEW SPECIAL FIELDS MAY HAVE A CHARACTER SUBSTITUTED FOR READABILITY (E.G. '1' AND '0' ARE CHANGED TO 'Y' AND 'N').



JANE DOE **102 06/25/01**
Livingston Products 123-45-6789 RCC
860 Chaddick #A 01011899
13:01 Tin B L Mo Mo 131mm 0N
26kV 5.6mAs 0.03s

Figure 1-3 The X - Ray Label Format

1.2 Operational Modes

The Film ID System has three modes of operation. The modes may be used interchangeably and if a mode may be customized and is customized it will be saved even when power is turned off. Direct mode is used primarily as a diagnostic for X-ray data transfer from the X-ray machine and is not customizable. Stand alone mode is also used for service testing and as a backup mode in case the data transfer from the X-ray generator is unavailable for some reason.

1.2.1 DIRECT MODE

In the DIRECT MODE data received from the X-ray system are printed directly on the X-ray Label area. The Film ID System emulates a serial text printer. Up to five lines of text data with up to 40 characters per line may be received and FLASHED on the label.

NOTE: NO EDITS ARE ALLOWED IN THE DIRECT MODE. INPUT DATA IS FLASHED ONTO THE FILM WITHOUT CHANGES.
--

The X-ray Label in DIRECT MODE must be FLASHED after it is received. It may not be saved in the X-ray exposure queue. Thus, when operating in DIRECT MODE, labels are input and FLASHED in the order they are received, one after the other. The X-ray labels are stored in the label HISTORY with the other labels created using either of the other two modes.

1.2.2 STAND ALONE MODE

In the STAND ALONE MODE all data is entered using the Film ID System keyboard. The institution name, address, generator location, date, time and technologist's initials are entered in the Setup System Parameters menu and are saved when the system is powered down. It is only necessary to enter these parameters once during system setup.

The Patient Name, Patient Age and Patient ID are saved from one exposure to another. It is not necessary to enter these fields for each exposure. When a new patient name is required, it can be entered with the keyboard, it can be selected from a list of patients (See section 1.3.3) or it can be downloaded by optional connectivity software in response to either keyboard or barcode id entry. With connectivity query operation the name is pushed into the list when it is needed and does not appear prior to its first use. After its first use it will remain in the list until deleted or twenty-five more patients are added, pushing it out of the list.

The rest of the X-ray data is entered for each X-ray exposure using the keyboard. The data for up to 10 exposures can be saved in the exposure queue memory, prior to FLASHING any labels. The keyboard Page Up and Page Down keys are used to scroll through and select the proper label data prior to FLASHING the label. Once a label has been FLASHED, the X-ray data is removed from the exposure queue and placed in the print history queue (if the history function is enabled).

1.2.3 REMOTE MODE

When an X-ray system is connected to the Film ID System all data fields including the X-ray data, Patient data, and Institution data can be received by the Film ID System for each X-ray exposure. If your X-ray generator does not provide the data for a needed data field (such as Institution Name, Patient Name, etc.) the system can also operate in a mixed mode where that field has the data provided by the technologist using the keyboard, from fixed data stored in memory, or even data supplied by other external sources through connectivity software.

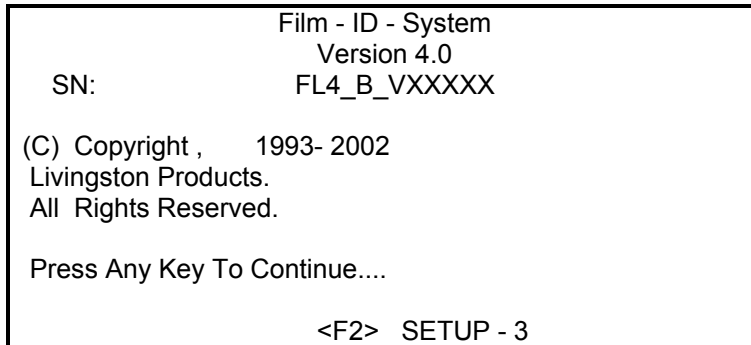
Which fields are used, and if used, whether they are filled by the X-ray system or entered from the keyboard, can be customized for your needs. Of course the X-ray system you are using

must be capable of sending the output data for the Film ID System to receive it in the REMOTE MODE. To find out about sending data using your generator please consult its documentation.

1.3 System Operation

1.3.1 Turning on Power

The main power switch is located on the rear of the chassis as shown in Figure 1 - 2. After turning on power, the system performs a self test and initializes its internal memory. If a problem is detected during initialization, an error message will be written on the USER display. If this occurs, turn power off and on again and see if the message is written again. Call your customer service representative if the problem persists, otherwise you will get a user display as shown in following figure.



Press any key to enter the system Edit Menu.

1.3.2 The Edit Menu

The system Edit Menu is shown in Figure 1 - 4 and is reached via “create a clear page” (F2, <2>, Y) or changing the mode to Stand-alone. The Edit menu is used to enter patient and X-ray data. Since your system can be customized, your Edit Menu may not display all the fields shown in Figure 1 - 4.

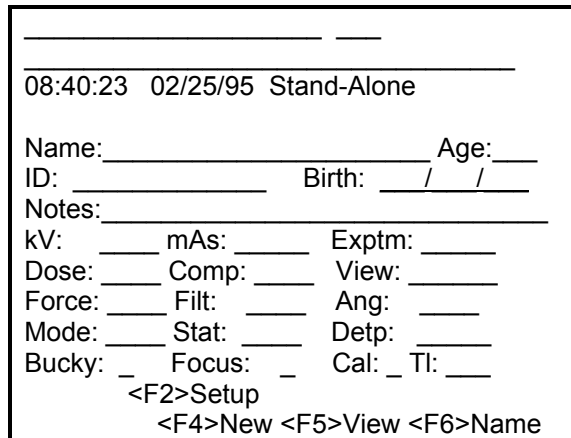


Figure 1 - 4 The Edit Menu (In “Stand-Alone” Mode)

Figure 1 - 4 shows the default field names. The following table shows the approved label changes for Siemens.

Default Field Name	Manufacturers Field Name
Filter	Anode
Status	Filter
Mode	Corr

Table 1-3 The Default Field Name and Manufacturer Field Name

The Edit Menu shows the operating mode on the right of the second line as shown in Figure 1 - 4. In the example in Figure 1 - 4, the operating mode is the Stand Alone mode. In this mode, all of the edit fields are entered with the keyboard.

To move the cursor from one data field to another, use the 'UP' or 'DOWN' Arrow, 'TAB' 'SHIFT' + 'TAB' (moves backwards through the fields) or 'ENTER'. Data is entered with the keyboard alphanumeric keys and with the editing keys as shown in Table 1 – 4, later in this manual.

The bottom two lines of the Edit Menu show which special keys are available. For example: If there are other records in the X-ray exposure queue then <PgUp> and <PgDn> indicators are shown. If there is data the <ESC> indicator is shown. If there are no exposures in the History or the print history option has been disabled, <F3> is not shown.

1.3.2.1 The Edit Menu in STAND ALONE MODE

In the STAND ALONE MODE, it is possible to edit all the input data fields displayed except the Institution Name and Address. They are entered in the Setup System Parameters menu.

1.3.2.2 The Edit Menu in REMOTE MODE

In the REMOTE MODE, data is received from the X-Ray generator. Some or all of the data will be available for editing. If a data field can be edited it will be displayed with a colon (:). If it is not available for editing, it will be displayed with an equal sign (=). Thus if the voltage is received from the X-ray generator it will be shown as:

kV = 25.0

and it will not be available for editing. In general the data received from the generator are not editable. The cursor will skip data fields that are not available for editing.

If the Date of Birth field is enabled for editing, the age field will be automatically computed if it is ENABLED for display on the label but DISABLED as a user edit field.

NOTE: A DATA FIELD CAN BE MADE AVAILABLE FOR EDITING EVEN THOUGH IT IS RECEIVED FROM THE X-RAY GENERATOR BY CUSTOMIZING THE PROTOCOL CONTROL TABLE FOR YOUR MODEL.

1.3.2.3 The Edit Menu Key Functions

Key Name	Indicator	Operation
Insert		Insert a character at the cursor position
Delete		Delete a character at the cursor position

Home		Jump to the Technologist's Initials field
End		Jump to the last data field
Arrow Left		Move the cursor left in the data field
Arrow Right		Move the cursor right in the data field
Arrow Up		Show the previous item from the field list
Arrow Down		Show the next item from the field list
Backspace		Delete the previous character and move the cursor to the left
TAB		Move the cursor to the next field
SHIFT TAB		Move the cursor to the previous field
ENTER		Move the cursor to the next field
ESC	<ESC>	Clear the Patient and X-ray data (Shown only if there is data to clear)
Page Up	<PgUp>	Display the previous X-ray label in the exposure queue (shown only if there is a previous page)
Page Down	<PgDn>	Display the next X-ray label in the exposure queue (shown only if there is a next page)
F2	<F2>	General Setup Menu
F3	<F3>	Print the Exposure History (Shown only if there is history to print)
F4	<F4>	Clear Patient / Restore Patient (pressed twice)
F5	<F5>	Display the List of Views
F6	<F6>	Get New Patient Name, ID, DOB (, MR#)
F7	<F7>	Select Patient

Table 1 - 4 The System Edit Menu Keyboard Key Functions

1.3.3 Selecting a New Patient

Patient Name, Patient ID and Patient Date of Birth may be entered manually with the keyboard for each new patient or they may be selected from a list.

NOTE: ONLY PATIENTS ENTERED ON THE PATIENT LIST MAY BE "RECALLED" AT A LATER TIME UNLESS THEY HAVE BEEN PUSHED OFF THE LIST OR OTHERWISE DELETED.

The list may be filled manually, by external automation, or a 'query' to some external database or other list may be used to obtain the appropriate demographics. In any case the demographics are recorded in the list and can be accessed until new demographics push them out at some future time, or they are manually deleted.

A barcode wand may be used to select from the list by using either a barcode Patient ID or barcode MR examination ID on patient 'traveler' paperwork. This method reduces the number of keystrokes to zero and may be used with connectivity hardware and software to link the Film ID System to an external computer system to make the demographics entry process automatic and virtually error free. Even if the list is entered manually (see Section 1.3.4 below for manual entry instructions) the barcode wand will give the fastest access to a given demographic.

If the daily schedule has been recorded in the list, in sequence, and the cursor is on the Patient Name (or Patient ID or Patient Birth Date) field the up and down arrow keys allow you to move up and down the list without entering the New Patient menu. Generally only a keystroke or two will pull up the correct patient data in this mode.

If the schedule is altered for some reason using the patient ID / MR examination ID would be simpler and faster. This is the 'keystroke equivalent' of the barcode wand entry and will find the demographic anywhere in the list with only a few keystrokes. Simply press the 'F6' function key to enter the New Patient menu. The cursor will be on the 'MR' field and you can key either

the patient ID, or MR examination ID, and then press the [ENTER] key. If the number is in the list you will be returned to the normal edit screen with the Name, patient ID and Birth Date ready for use. If the demographics are not in the list you will be prompted to enter them (with connectivity a short time interval and a 'NOT FOUND' message will display before this prompt). Section 1.3.4 below summarizes the entry procedure for the data.

If required, Patient Name may be selected directly. Press the 'F6' function key to enter the New Patient Menu as shown in Figure 1 - 5. Press other keys, as described in Table 1-5, to scroll up and down the list until patient is found and 'highlighted' by positioning the 'arrow' to point to the name. Press 'F7' to select the name and return to the normal edit screen.

NOTE: METHODS USING SELECTION BASED ON EITHER ID NUMBER MAY BE MORE RELIABLE IN PRACTICE - E.G. IF THE CORRECT DEMOGRAPHIC IS ASSUMED TO BE A 'SMITH' AN INCORRECT ID ENTRY GENERALLY WILL NOT PRODUCE A 'SMITH' DEMOGRAPHIC BUT EITHER NO MATCH OR A 'JONES' THAT IS MORE OBVIOUSLY INCORRECT.

NOTE: MR (EXAM ID) IS ENTERED AND DISPLAYED IN THE NEW PATIENT ENTRY SCREEN BUT IS NOT DISPLAYED ON THE USER EDIT SCREEN. ONLY PATIENT ID IS DISPLAYED.

```

-NEW- New Patient

MR: _____
Name: _____
Birth: __/__/__
ID: _____

      Martin, K.    234-65-3334
=>Jones, Mary    111-11-1111
      Smith, Martha 555-55-5555

<ESC>Exit <F7>Select <INS> <DEL>
    
```

Figure 1 - 5 New Patient Menu

NOTE: THE 'MR' OR 'EXAM ID' IS RECORDED ON THE PATIENT FILM LABEL. ONLY IF THE FOURTH ADDRESS LABEL LINE IS SET TO THE VALUE '*MR'. (SEE FIELD KEYS APPENDIX FOR EXAMPLE)

Key Name	Indicator	Operation
ENTER	(none)	Confirm Patient (Confirm = On), Jump to next field
TAB	(none)	Jump to next field
UP ARROW	(none)	Move arrow pointer up list
DOWN ARROW	(none)	Move arrow pointer down list
Pg Up	(none)	Move arrow pointer up a list page
Pg Dn	(none)	Move arrow pointer down a list page
F8 < repeated >	(none)	Change List View Mode(Name, Pid, Dob, Mr#)

DEL		Delete patient selected by arrow pointer from list
INS	<INS>	Insert patient at location selected by arrow pointer.
ESC	<ESC>	Exit back to user edit screen without selection.
F7	<F7>	Select patient pointed to by arrow pointer from list, exit

Table 1 - 5 NEW Patient Menu Key Functions

Again, the technologist should verify all information prior to label exposure.

1.3.4 Entering Patient Names and ID's Into the List

Patients are entered into the list from the New Patient Menu shown in Figure 1 - 6. Press 'F6' to enter the New Patient Menu.

-NEW- New Patient

MR: _____

Name: _____

Birth: __/__/__

ID: _____

Martin, K. 234-65-3334

=>Jones, Mary 111-11-1111

Smith, Martha 555-55-5555

<ESC>Exit <F7>Select <INS>

Figure 1 - 6 Edit Patient Names and IDs Menu

Now enter appropriate data into each field then press the [TAB] key to advance to the next field. When the last field is filled press the 'ENTER' key to enter the data onto the list. If 'Confirm Patients' is enabled with connectivity the data will be confirmed / entered into external database or tables at this point.

Twenty-five Patient demographics may be stored in the Patient List. When twenty-five demographics have been added the next demographic will force the first demographic entered off of the list.

To insert a name in the list, move the arrow cursor with the 'Arrow Up' or 'Arrow Down' keys to the location just after where you wish the new name to be inserted. Enter the name and other data and finally press the Insert key to insert the name into the list.

To delete a name from the list, move the arrow cursor to the name to be deleted and press the Delete key.

Key Name	Indicator	Operation
Enter	(none)	Jump to the next edit field.If exiting the ID field then enter the patient into the list.
Tab	(none)	Jump to the next edit field.
Insert	<Ins>	Insert the new name and ID at the location the arrow indicates and push the old entry there down the list.
Delete		Delete the name and ID pointed to by the arrow
Arrow Up	(none)	Move the arrow cursor up one name (Shown only if there is a pervious name)

Arrow Down	(none)	Move the arrow down one name (Shown only if there is a next name)
ESC	<ESC>	Exit the List of Patients Menu

Table 1 - 6 List of Patients Menu

1.3.5 Selecting the View (Mammographic application only)

There are several ways to select view if it does not come in as part of the X-ray generator data. Each method has advantages in certain situations and experience will guide the technologist in the selection of which method is required for a given examination.

First, there is the Default Group Method. Three default groups are used to automate selection of the common screening views and angles. The default groups have 4, 4, and 8 views respectively. The first view group, 1, is used as the Default Group. For example, the technician programs LCC, LMLO, RCC, and RMLO (see Section 2 for detailed setup instructions) as the group 1 defaults. Unless overridden by pressing the [HOME] button then the group number (1,2,3), these will always be the default view set. When the technician proceeds to flash the patient, the first X-ray data will automatically have the view set to LCC, the second X-ray will then be LMLO and so forth until all four default views are used.

Common exceptions to the first default group of views are handled by the second and third default view groups. Once these groups have been selected and used (or exited) the first group will be the default set for the next patient. In other words the second and third default groups are only active when specifically selected by the technologist after a new patient is selected and before the first exposure data is received from the generator.

Infrequent exceptions to the normal procedures are handled by using one of two methods (described below) to select the view. Once any of the defaults view modes is overridden, it remains 'OFF', until a new patient name is selected for use.

Another way to select a view is the Number Key Method. The ten most commonly used views are programmed as 'number key assignments'. A menu label above the keyboard, as depicted in Figure 1-7 below shows these assignments. The views can be selected manually when the cursor is in the view field by pressing the "number" key ('1' to '0') which corresponds to the desired view.

1	2	3	4	5	6	7	8	9	0
RCC	LCC	RMLO	LMLO	RML	LML	RLM	LLM	RXCCL	LXCCL

Figure 1 - 7 Keyboard Menu Label

NOTE: THE CURSOR MUST BE IN THE VIEW FIELD FOR THE NUMERIC KEY SELECT TO WORK

Step by step procedure:

1. You should be in normal/edit display screen.
2. You must have the patient and technical data in front of you, i.e. kV, mAs, etc. (an exposure has already been made by the generator)
3. Tab down to "view" field, if necessary.
4. Press number of desired view.
5. Final data validation check and flash onto film.

The third and final method of selecting the view is the List Method. You would only use

this selection method if you were taking an unusual view, e.g. RSIO or in case you need a magnified version of a view.

Step by step procedure:

1. Press [F5] to display list of views. See Figure 1 - 8 below.

```

-VIEW-

>RCC      LCC      RMLO     LMLO
RML       LML       RLM      LLM
RXCCCL   LXCCCL   RLMO     LLMO
RAT       LAT       RCV      LCV
RTAN      LTAN      RFB      LFB
RLL       LRL       RRM      LRM
RID       LID       RSIO     LSIO

<1>RCC<2>LCC<3>RMLO<4>LMLO<5>RML
<6>LML<7>RLM<8>LLM<9>RXCCCL<0>LXC
<M>Mag   <ESC>Exit

```

Figure 1 - 8 List of Views Menu

2. To select (or remove) magnification, press 'M'
3. Using the arrow keys, place arrow to the left of the desired view.
4. Press ENTER to select the view and to advance to the next entry field.
5. If you know that the view you want is a neighbor of the last used view and the cursor is on view, you may also select from the list just by using 'Arrow Up' or 'Arrow Down' keys to display it (this allows you to scroll up and down the list and select without pressing [F5] to display the whole list).

1.3.6 Clearing Data

The Patient Name or X-ray data may be cleared from a page by selecting the ESC key while in the Edit Menu. The USER display will show the CLEAR menu shown in Figure 1 - 9.

```

-CLEAR-

Clear Page < Y/N > N

```

Figure 1 - 9 CLEAR Menu

You may clear the patient X-ray data by selecting keys 'Y' (or '2' then 'Y' for multiple page operation) as shown in Figure 1 - 9.

1.3.7 Flashing X-ray Labels

Once the patient name, ID and X-ray data has been entered for an exposure you are

ready to flash the X-ray label.

1.3.7.1 Flashing in STAND ALONE or REMOTE MODES

Insure that all data are correct prior to Flashing the label. This is the last possible time for corrections to be made.

NOTE: If <PgUp> <PgDn> indicators appear at bottom of display, use the 'Pg Up' or 'Pg Down' keys to select the correct page for exposure. Delete unneeded pages as soon as they are no longer useful for the current patient.

Insert the Film Cassette into the CASSETTE SLOT as shown in Figure 1 - 10A or 1 - 10B. Insure that the Film Cassette is oriented as shown in the Figure. If Auto-Flash is enabled the Label exposure will happen automatically at this point otherwise press the SPACEBAR (or 'Q','P','Z','M' to override default setting for label position) when prompted to Flash the Label. The USER Display will indicate when the exposure is completed and will instruct you to remove the Film Cassette.

WARNING: IF THE FILM CASSETTE IS LEFT IN THE SLOT FOR LONG PERIODS OF TIME, SOME FOGGING MAY OCCUR DEPENDING ON ROOM LIGHTING CONDITIONS.

NOTE: YOU MUST ENTER ALL PATIENT AND X-RAY DATA PRIOR TO INSERTING THE FILM CASSETTE. A SECOND LABELING EXPOSURE OF THE FILM IN THE CASSETTE WILL NOT PRODUCE A READABLE LABEL.

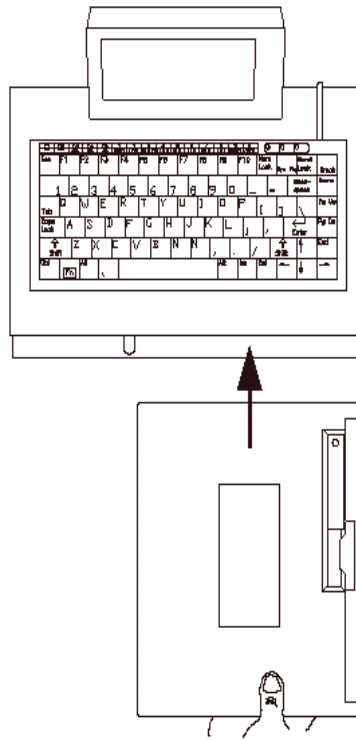


Figure 1 - 10A Inserting the Film Cassette in Model 521

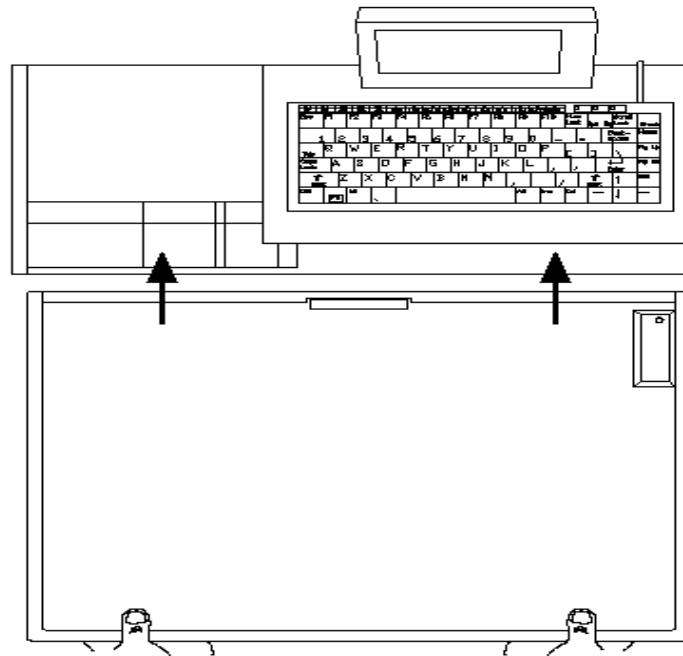
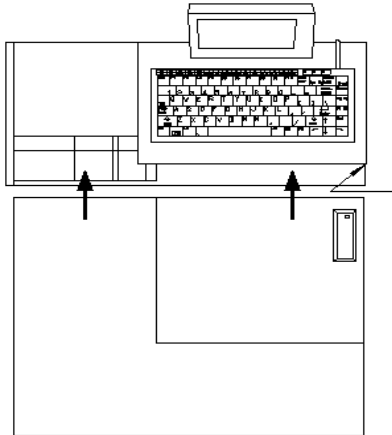


Figure 1 - 10B Inserting the Film Cassette in Model 525

CAUTION

Since Film ID System Model 525 accepts various different sizes of cassettes, careful insertion and removal is requested to prevent possible cassette jams.

- Always align the cassette parallel to the base and place the cassette to the farthest position at the right end of slot.
- Plastic guide on left side is spring-loaded and performs as a secondary guide but it is not recommended as a primary guide.



- ◇USE THIS WALL AS PRIMARY GUIDE FOR CASSETTE.
- ◇CASSETTE SHOULD PUSH TO THIS RIGHT SIDE WALL DURING INSERTING AND REMOVING FROM FILM ID SYSTEM.
- ◇PLEASE INSERT AND REMOVE SLOWLY.

- Please check, with empty cassette, to see that the cassette door closes after removing it from unit.
- In case of cassette jamming, do not try to pull out cassette. This can cause permanent damage to cassette and the Film ID System.

1.3.7.2 Flashing in DIRECT MODE

When data has been received in DIRECT MODE, the data is displayed as shown in Figure 1 - 11. It is not possible to edit the label data in DIRECT MODE. The label will be FLASHED on the film exactly as it is received from the X-ray system. For most manufacturers the direct mode is not recommended because the label format from the X-ray generator will cause X-ray data to be “pushed out” of the direct label.

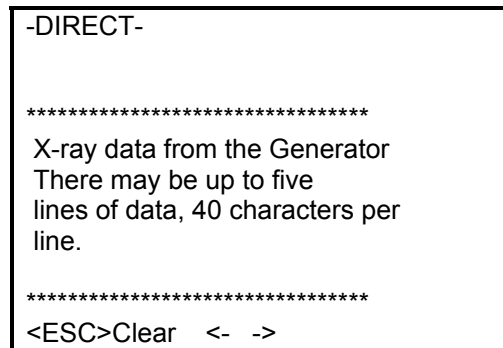


Figure 1 - 11 The DIRECT MODE label display

To FLASH the label in the DIRECT MODE, insert the Film Cassette into the

CASSETTE SLOT as shown in Figure 1 - 10. If needed press spacebar to initiate exposure. Remove cassette when prompted.

1.3.8 Printing History

Label data may be printed using an optional TSP700 printer. This compact thermal printer is connected using the supplied cable to the Serial-2 port on the Film ID System. Its power module is connected to the DIN style connector on back panel and then plugged into the wall socket. If available, thermal paper stock is temporarily loaded into the printer. Prior to turning the power switch on press the 'FEED' button on the front of the unit and hold it down while switching the power switch on. The resulting print shows the current settings on the printer and should be compared to those in Appendix I at the end of the manual. Printer may be powered down and label stock inserted, followed by power up. The Film ID System port settings are 'Factory Defaults' and unless connectivity has been used no change to the port settings is needed (see section 2.3.1 for details of the Factory Default Settings). The software enable key is entered via the Patient Name field on the Film ID System (the key is generally about an eight digit number, not a name). A cassette is then inserted (no film is required) in place of pressing the enter key. A label will print if the correct key value has been entered.

Once the setup has been done a label will print each time a cassette is inserted. The label should be inspected PRIOR TO FLASHING THE CASSETTE. If the label is not useable for some reason remove and then re-insert the cassette to print another label. When a satisfactory label has been printed the cassette is flashed normally. NOTE: Auto-Flash cannot be used when the printer is in place. The value for Auto-Flash in 'Communications and Flasher' will be '2' if the serial printer is enabled or '0' if it is disabled. Changing between these values may be used to temporarily enable or disable the printer.

Section 2 Detailed Setup

The Film ID System is intended to be setup by an installation Technician. Under normal operating situations, it is not necessary to modify the system setup parameters. If however you choose to modify the parameters, insure that you have fully read this manual and that you understand the meaning of each parameter or you may render the system non-operational.

NOTE: DO NOT ATTEMPT TO CHANGE THE SETUP PARAMETERS UNLESS YOU FULLY UNDERSTAND THEIR USE AND MEANING!

The parameters that can be commonly customized are outlined in Table 2 - 1 and do not require a password to adjust. Others are password protected and are generally either not customized or are customized one time during installation by a qualified technician.

Parameter	Setup Menu	Key Sequence
No password is required in the following sequences to gain entry:		
Institution Name	General Setup	F2 -> 1
Institution Address	General Setup	F2 -> 1
Default Technologist Initials	General Setup	F2 -> 1
Time and Date	General Setup	F2 -> 1
Flasher Exposure Time	General Setup	F2 -> 1
Create Clear Page	General Setup	F2 -> 2
Editing the Patient Names	Edit Patient Names	F6
Service or 'one shot' password must be used in the following sequences:		
Label Position / Auto-Flash / Printer	Comm. And Flasher	F2 -> PWD -> 1
Printer Port Parameters	Comm. And Flasher	F2 -> PWD -> 1
Baud rate setting	Comm. And Flasher	F2 -> PWD -> 1
Selecting the Input Mode	Select Protocol	F2 -> PWD -> 2
Self Test (cannot be customized)	Self Test	F2 -> PWD -> 3
Set Patient Confirmation On/Off	Set Confirmation	F2 -> PWD -> 5
Enable / Disable Daylight Savings	Daylight Savings	F2 -> PWD -> 6
Show system statistics	System statistics	F2 -> PWD -> 8
Setup Node Number	Set Node	F2 -> PWD -> 9
Modify Page Count	Set Pages	F2 -> PWD -> A
Enable Demographics Download (requires purchased key value)	Service Parameters	F2 -> PWD ->P -> (key value)
Enable Notes Display in Edit Screen	Service Parameters	F2 -> PWD ->K
Disable Notes Display in Edit Screen	Service Parameters	F2 -> PWD ->k

Table 2 - 1 The Setup Parameters

2.1 The System Setup Menu

The System setup menu is entered by selecting the 'F2' function key on the top row of the keyboard. When 'F2' is selected, the System Setup Menu is displayed on the USER display as shown in Figure 2 - 1.

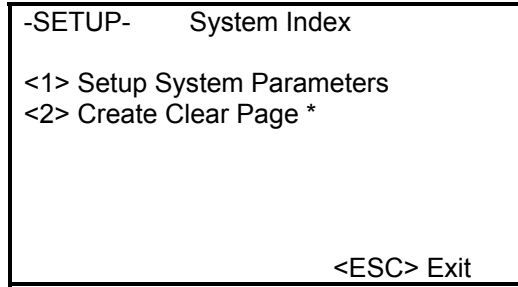


Figure 2 - 1 System Setup Menu

*will display only if conditions are such that a clear page can be created.

2.1.1 Starting the General Setup

From the System Setup Menu Shown in Figure 2 - 1, select key '1' to enter the General Setup Menu. The USER Display will show the General Setup Menu as shown in Figure 2 - 2.

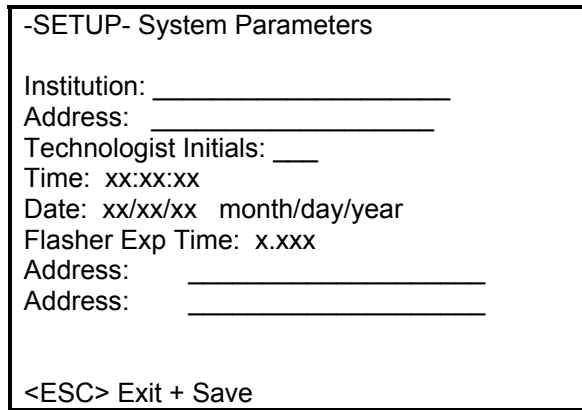


Figure 2 - 2 The General Setup Menu

Move from one setup field to another with the 'ENTER', the 'TAB' or the 'SHIFT TAB' keys. 'ENTER' and 'TAB' move the cursor to the next field. 'SHIFT TAB' moves the cursor to the previous field. Edit the setup data fields with the keyboard or display a selection from a table of values for the field with the 'Arrow UP' or 'Arrow DOWN' keys. The operation of the Edit keys is shown in Table 2 - 2.

Key Name	Operation
Home	Jump to the Institution Name Field
Arrow Left	Move the cursor left in the data field
Arrow Right	Move the cursor right in the data field
Tab	Move cursor to next data field
Shift + Tab	Move cursor back one data field
Enter	Move cursor to next data field
Backspace	Move the cursor to the left
other text keys	Enter text character and move cursor right

Table 2 - 2 General Setup Menu Edit Keys

2.2.1 Institution Name

The Institution Name may be up to 20 characters long. Enter the name as you wish it to appear on the X-ray label. The Institution Name entered on the General Setup Menu is the default Institution Name for your system. It will be saved and re-appear each time the system is turned off and on. It is the name that will appear on each STAND ALONE Menu Screen unless the fields are edited by the user. The default Institution Name will also appear on the X-ray label in the REMOTE MODE if the Institution Name is not input from the X-ray System.

2.2.2 Institution Address and Examination ID Film Recording Control

The Institution Address may be up to 19 characters long. Two additional address lines appear at the bottom of the screen. The data from these two lines will be the bottom line on the X-ray label. They have been split into two parts for entry but will appear as a single line of 40 characters on the film. If multiple x-ray generators are operated at a given site some room or model coding should be used to differentiate films from each generator. The last address line on the bottom of the user display, corresponding to the right half of the bottom display line on the film label, is also the control for enabling or disabling Examination ID data to be recorded onto the film label. If the line is set to '*MR_____ ' available examination ID data will be exposed along with the other data on the film label.

NOTE: THE MR ID IS NOT VISIBLE IN THE NORMAL EDIT SCREEN AND CANNOT BE VERIFIED BY THE TECHNOLOGIST AT THE TIME THE FILM IS EXPOSED. THIS SHOULD ONLY BE PLACED ON FILM IF IT HAS BEEN LOADED USING AUTOMATION OR OTHER MEANS THAT ASSURE DATA QUALITY. THE VALUE THE MR ID TAKES IS ALWAYS LINKED TO A GIVEN PATIENT NAME AND PATIENT ID IN THE NEW PATIENT LIST. IF THE PATIENT NAME, PATIENT ID, BIRTHDATE AND MR ID ARE ENTERED INTO THE LIST BY RELIABLE MEANS VERIFICATION OF THE PATIENT NAME AND ID WILL BE SUFFICIENT TO ALSO VALIDATE THE MR ID EVEN WITHOUT DIRECT EXAMINATION OF THE FIELD CONTENTS.

2.2.3 Technologist's Initials and Default Group View Selection

The technologist's initials may be up to three characters long. Up to three default view groups are used to automate selection of the common screening views and angles for each technologist. The default groups have 4, 4, and 8 views respectively. The first view group, 1, is used as the Normal Default Group.

Step by step procedure:

1. Edit initials if correct initials are not currently displayed
2. Press [F5]
3. Press [ENTER] or 1 or 2 or 3 (Enter is the same as 1)
4. Using a number key or [TAB] key and UP and DOWN ARROW keys followed by an [ENTER] key, select the desired view
5. If you do not wish to use default angles, press [ENTER]. Otherwise, enter the angle to use then press [ENTER].
6. Repeat this steps 4 and 5 three more times for a group of four default views or seven more times for a group of eight default views.
7. If another default group is to be entered repeat starting at step 2 above.
8. When all defaults are correctly entered press [F7] to save.
9. Repeat starting at step 1 above for next Technologist or tab to next field.

This procedure may be repeated for a list of up to 20 technologists. The entry of a 21st technologist will cause the loss of the first technologist's defaults and initials. If fewer than 20

technologists regularly use the system a technologist may have several sets of defaults with differing view/angle information by using upper/lower case initials. For example, ABc, abc, Abc and aBc are treated as four separate technologists that could each have different default sets.

2.2.4 Setting the Time and Date

The time and date entered in the General Setup Menu are used to set the system clock. The clock is battery powered and continues to run when power is turned off. When you enter the time, set the time a few seconds ahead in order to allow for the time needed to finish entering other setup parameters. The clock is set when the 'ESC' key is depressed after setting all of the General Setup Parameters. If neither a time nor date is entered, the clock is NOT set when selecting the 'ESC' key. The time is entered in the 24 hour format without using the colon (:). The date is entered in US or International format and forward slash (/) separator characters must be entered. When the cursor is on the month/day/year or day/month/year field either 'D','M' or the Up and Down Arrow keys may be used to select US (M) or International (D) date operation mode.

2.2.5 Setting the Flasher Exposure Time

The Flasher exposure time is entered in seconds. If the labels are appearing too dark, lengthen the exposure time. If they appear too light shorten the time. The default exposure time setting (factory setting) is typically 0.380 seconds.

2.2.6 Setup Patient Names

Refer to Section 1.33 for a discussion of editing the list of patient names.

2.3 Entering the Setup - Service Parameters

- 1) Use service password or if necessary call 1-800-822-2156 to get a password.
- 2) Press 'F2' then enter the one-shot password.
- 3) The menu shown in Figure 2 - 3 will appear on the USER Display.

```
-SETUP- SERVICE PARAMETERS

<1> Communications and Flasher
<2> Select Protocol
<3> Self-test
<4> Serial Disable Delay
<5> Confirm Patients
<6> Daylight Savings
<7> Defaults Fields *
<8> Show Statistics
<9> Setup Node
<a> Number pages

<ESC> EXIT
```

Figure 2 - 3 Service Parameters Menu
* indicates currently inactive operational menu

2.3.1 Displaying Communication and Flasher Parameters

Press '1' to display communication and flasher parameters.

2.3.1.0 Auto-Flash and Serial Printer Enables

Normally contains '0' so flash mode is defaulted to traditional 'press spacebar to flash' operational mode. Press '1' to enable the Auto-Flash feature. The number '2' may be used, once the printer key value has been entered, to enable or disable the Serial Printer.

2.3.1.1 Setting Label Position on Film

See Template 1 (at the end of the manual) and select the default format from the four label formats. If Auto-Flash is enabled only the selected default position will be used for label exposures. Note that these four formats are the ONLY possible formats given the window position on the cassette. This default value should be the one you will use most of the time, it can be changed 'on the fly' just prior to label exposure by using the appropriate 'QPZM' key instead of the spacebar to start the exposure.

The horizontal offset is fixed but the vertical location of the label on the X-ray film can be adjusted by setting the vertical offset. The vertical offset is 1/8 of a character height and so values between 0 and 7 are the only allowed settings.

NOTE: FACTORY SETTINGS ARE ON A LABEL ON THE CHASSIS UNDERSIDE.

2.3.1.2 Setting the Serial Port Parameters

Your serial ports should be configured as shown in one of the three figures below. The fields marked with asterisk (*) characters should be ignored and left unchanged because they are not related to serial port parameters or settings and the values shown are software default settings that may have been changed on your system.

Default Factory Settings - no Connectivity: Uses a single cable connected from the port marked Serial - 1 on back of Film ID System to the X-Ray generator. Not connected to External Computer. 'Notes' line on user display is not visible. Also used for Serial Printer operation.

```
-SETUP- Service Parameters
Auto-Flash (1=on): 0*
Vertical Offset: 0*
Reverse: Y*
Inverted: N*
Background: N*
Port: On Rate P E/O # Stop
  A: Y 9600 N O 8 1
  B: Y 9600 N O 8 1
Printer ON: N, Port 1
X ray Port: 0, Control Port: 1
Keyboard: G84-4100PAU U.S.A.*
<ESC>Exit & Save
```

Figure 2 - 4A Default Factory Port Settings (* indicates field not related to port settings)

RS232 Connectivity Level 1 or 2 Settings: Uses one cable connected from the port marked Serial - 1 on back of Film ID System to the X-Ray generator. A second cable with gray module box, appearing similar to the cable connected to the generator, is connected from the Serial - 2 port on the Film ID System to a nearby PC or other RS232 port. 'Notes' line on user display is visible.

```

-SETUP- Service Parameters

Auto-Flash (1=on): 0*
Vertical Offset: 0*
Reverse: Y*
Inverted: N*
Background: N*
Port: On Rate P E/O # Stop
  A: Y 9600 N O 8 1
  B: Y 9600 N O 8 1
Printer ON: Y, Port 1
X ray Port: 0, Control Port: 1
Keyboard: G84-4100PAU U.S.A.*
<ESC>Exit & Save

```

Figure 2 - 4B RS232 Connectivity Serial Port Settings
* indicates field not related to port settings

RS485 Connectivity Level 1 or 2: Two one foot length cables connect both Serial - 1 and Serial -2 ports to RS485 Connection Module input ports. Connection Module has a telephone or computer Ethernet style connection from Output 1 and the normal generator cable, that used to plug into Serial - 1, now plugs into Output 2. The port labeled Output 3 on the connection module is not normally used. 'Notes' line on user display is visible.

```

-SETUP- Service Parameters

Auto-Flash (1=on): 0*
Vertical Offset: 0*
Reverse: Y*
Inverted: N*
Background: N*
Port: On Rate P E/O # Stop
  A: Y 9600 N O 8 1
  B: Y 9600 N O 8 1
Printer ON: Y, Port 0
X ray Port: 1, Control Port: 0
Keyboard: G84-4100PAU U.S.A.*
<ESC>Exit & Save

```

Figure 2 - 4C RS485 Connectivity Port Settings
* indicates field not related to port settings

Note: When 'Printer ON' is set to 'Y' the I.S. Interface must read and then delete print history (exposure history) data records or the exposure history buffer will fill and the error message "Print History Full..." will appear. Contact your I.S. Interface Vendor, if this occurs. If necessary change 'Printer ON' value from 'Y'

to 'N', or ignore error message until computer connection is reestablished and data are downloaded to external computer.

2.3.2 Selecting the Protocol Mode

Press '2' Select Protocol to get the following screen.

```
-SETUP- Select Protocol
<1> Stand Alone
<2> Direct Mode
<3> M 3
<4> M 300
<5> M 3000
<6> M C3
<7> M 3000 NOVA
```

Figure 2- 5 Select Protocol Menu

Data is input from an X-ray system in one of two modes.

In the DIRECT MODE, the labels are printed directly as they are received. In the REMOTE MODE, the serial input data is analyzed by the system and data fields are extracted from the text labels or data packets.

Advantages of the REMOTE MODE over the DIRECT MODE are:

- The X-ray label is printed in a standardized format.
- Additional information not available on most X-ray systems, such as Patient Name and ID, can be added to the X-ray label either manually or from an external computer system using optional connectivity hardware and software.
- The system can add a view icon to the label making it easy for a radiologist to quickly identify the view.

In order for the system to extract the X-ray data from an input record in the REMOTE MODE, it needs to be able to identify the individual data fields. There are many possible ways that data may be identified and extracted from input records. In general the input record is either a formatted label that was intended for printing or a data packet (or packets) for computer information interchange. We refer to these as "PRINTER EMULATOR" and "PACKET" modes of operation.

In the PRINTER EMULATOR method, the individual data fields are identified by up to four tests, consisting of an offset address, a field search length, a field header and a field footer. The four tests identify sequences of data either prior to the data field or following the data field or both. For example: The voltage is typically followed by the units kV. Thus, kV may be considered as a footer to the voltage field (following field identifier) to identify the field. The dose is often identified by the word 'dose:', followed by the dose value and then followed by the dose units: mGy. The dose would be identified by both a header (dose:) and a footer (mGy).

In the PRINTER EMULATOR method if the parameters used to identify a field are too restrictive any variation in the record will cause data loss because one or more of the identification tests will fail. For example, an extra space in the record might make it too long and

cause rejection of that field. Conversely, if parameters are not well enough specified, extra non-data characters will be included with the desired data.

Each Label Field may be input (or not) from the generator, displayed and flashed (or not), and be manually editable (or not) so basically seven parameters are needed per field for each field used for a given generator model to setup the Film ID System for that generator model and up to six model generators may be supported. The input method is also set for either the PRINTER EMULATOR or the PACKET method. The list of these values, and a few others like 'Model Name', for each generator model is known as the protocol table for that model. The system software is loaded and a second configuration load is then done to set the values in each of the protocol table fields.

2.3.2.1 STAND ALONE MODE

Select '1' to choose the STAND ALONE mode. STAND ALONE mode is useful if you wish to expose an X-ray label by entering all the data fields with the keyboard. In the past this mode has been used temporarily with new generator models until software configurations are finalized and the Remote Mode can be used. It is also used for generator models that have no connection capability for which all data must be entered manually (typically these have been older generator models or radiographic models).

2.3.2.2 DIRECT MODE

Select DIRECT MODE to input data directly from an X-ray System. In DIRECT MODE no edit functions are available, so only generator data is available.

2.3.2.3 REMOTE MODE

In REMOTE MODE, data from an X-ray generator is received, parsed, and the pieces (fields) are arranged into the standard label format along with any default and keyboard entry data to form the flash data record. Press the number corresponding to your X-ray generator model to select it.

2.3.3 Running the System Self Test

In most cases the self-test that is run by just powering the system down and up is sufficient.

SETUP TROUBLESHOOTING INSTRUCTIONS--ENTERING SERVICE MENU

- Enter field service password or call service to obtain password
- Press 'F2' to enter -SETUP- System Index
- Type in password to get to Service Parameters menu

FILM ID SYSTEM SELF TEST INSTRUCTIONS

- Press '9' 'Setup Node'.
- Write down node number if it is not zero and set it to zero. Then press ENTER.
- Press 'ESC' key until you return to normal edit screen.
- Power down Film ID System and disconnect all cables from serial ports.
- Remove small test cable from plastic bag on underside of Film ID System Chassis.
- Connect Serial - 1 and Serial -2 ports using small test cable.
- Power up the Film ID System.
- Press F2 then enter the Field Service key.
- Press '3' to select Self Test.

The system will perform a self-test that is the same as the small self-test performed each time it is powered up. If there are any errors, notify the factory.

After this small test completes press the space bar to test the serial ports and verify switch operation. Slide a cassette in to verify the cassette switch. Verify the “open” and “closed” status at bottom of display.

The byte counter should increment steadily and there should be NO errors on the Error counter or Timeout errors. Timeout errors may indicate a bad test cable or no test cable. Byte values transmitted on each serial channel are received on the other serial channel and the received value is then shown on the display. The display will show the multilingual and graphic character set. This function also tests the display.

Release/Remove Cassette.

If there are serial data errors:

- Inspect the serial cable.
- Make sure node number is set to zero.
- Notify the factory of any errors.

Exit -SELF TEST- by pressing <ESC> or turning OFF system power.

Turn power off and on and once again. Inspect the display to insure there are no errors and return the node number to its original value, if it was not zero.

WARNING:	NODE NUMBERS GREATER THAN ZERO INDICATE RS485 OPERATION AND MUST BE RESTORED TO THEIR ORIGINAL VALUE BEFORE RECONNECTION OF THE FILM ID SYSTEM TO THE NETWORK FOR THE RS485 NETWORK TO REMAIN IN OPERATION
-----------------	---

Power down the Film ID System and return the system to its original cable configuration.

2.3.4 Serial Disable Delay

Press ‘4’ Serial Disable Delay to get the following screen

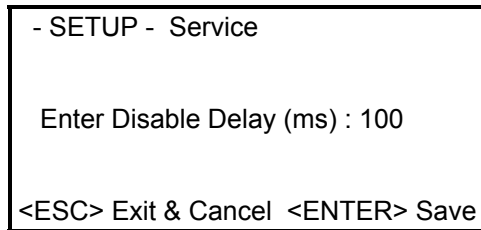


Figure 2-6 Setup serial disable delay

WARNING: DO NOT ATTEMPT TO ADJUST SERIAL DISABLE DELAY. NO FIELD ADJUSTMENT IS REQUIRED.

2.3.5 Confirm Patients

Using this option is another way to schedule patients. If you set "Confirm Patients" to <YES>, you are able to access patient's information (Name, ID and DOB) from a database located on an external PC/Computer using second serial channel on Film ID system. This option is normally used with HIS/RIS interfacing in place and operational.

Press '5' then 'Y' to "Confirm patients" and get the following screen. The value '3000' may be set to some other value if connectivity has previously enabled. Livingston Products Connectivity uses '9500' typically. Press 'Enter' or 'ESC' to save and exit.

```
- SETUP - Service
Confirm Patients < Y,N > N?
Re -Send :3000
```

Figure 2-7 Confirm Patients

2.3.6 Daylight Savings

By setting parameters of Daylight Savings the time twice each year is automatically handled by the operating software.

Press '6' Daylight Savings to get the following screen.

```
-SETUP- Daylight Savings
Daylight Savings<Y,N>N?
```

Figure 2-8 Daylight Savings Control

Press 'Y' to enable daylight savings (U.S. Standard/Daylight only) or any other key to leave daylight savings disabled. When daylight savings is already enabled the 'Daylight Savings <Y,N>N?' will be 'Daylight Savings <Y,N>Y?'

2.3.7 Default fields

Manual changes on default fields has been disabled.

2.3.8 Show Statistics

This screen shows the statistical history of the system. It is used mainly by factory service and programming personnel during qualification testing.

Press '8' Show Statistics to get the following screen.

- SETUP - System Statistics	
Resets :	000000021
Watchdogs:	000000000
Labels Flashed:	000000001
Records Inputs:	000000002
Records Ignored:	000000000
Records rejected:	000000003
Records cleared:	000000000
Self tests:	000000000
Setup parms:	000000017
Setup Service:	000000015
Protocol set:	000000005

Figure : 2-9 See System Statistics

2.3.9 System Nodes

System Node setup is the control for networking application. Node number of '00' is used for non-networked RS232 type connections to external computers. Node numbers of '01' through '08' are used in RS485 networks, each Film ID System being assigned a unique node number. Node number '09' is recognized by Livingston Products Film ID Communications software (IDCom) as the node number for an RS485 replacement unit. IDCom installs the unit and changes the node number to the appropriate ('01' to '08') value for the unit being replaced.

Press '9' Setup Node in the Service Parameters Setup to get the following screen on your display.

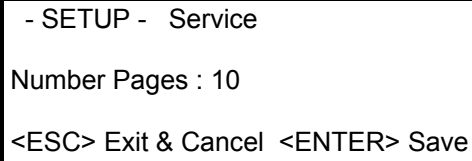
- SETUP - Service	
Enter Node : 00	
<ESC> Exit & Cancel <ENTER> Save	

Figure: 2-10 Setup System node

Once the node number is entered, press <ENTER> to get back to the Service Parameters screen.

2.3.10 Multiple Pages

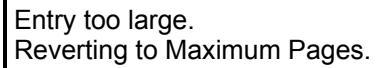
This setup is for setting multiple pages on your system. Press 'a' to get Multiple Pages setup on Service Parameters screen.



- SETUP - Service
Number Pages : 10
<ESC> Exit & Cancel <ENTER> Save

Figure : 2-11 Set Multiple Pages

The number of pages must be set to 10 or less, otherwise you will get the following screen.



Entry too large.
Reverting to Maximum Pages.

Figure : 2-12 Set Multiple Pages Error

Appendix A Unpacking the System

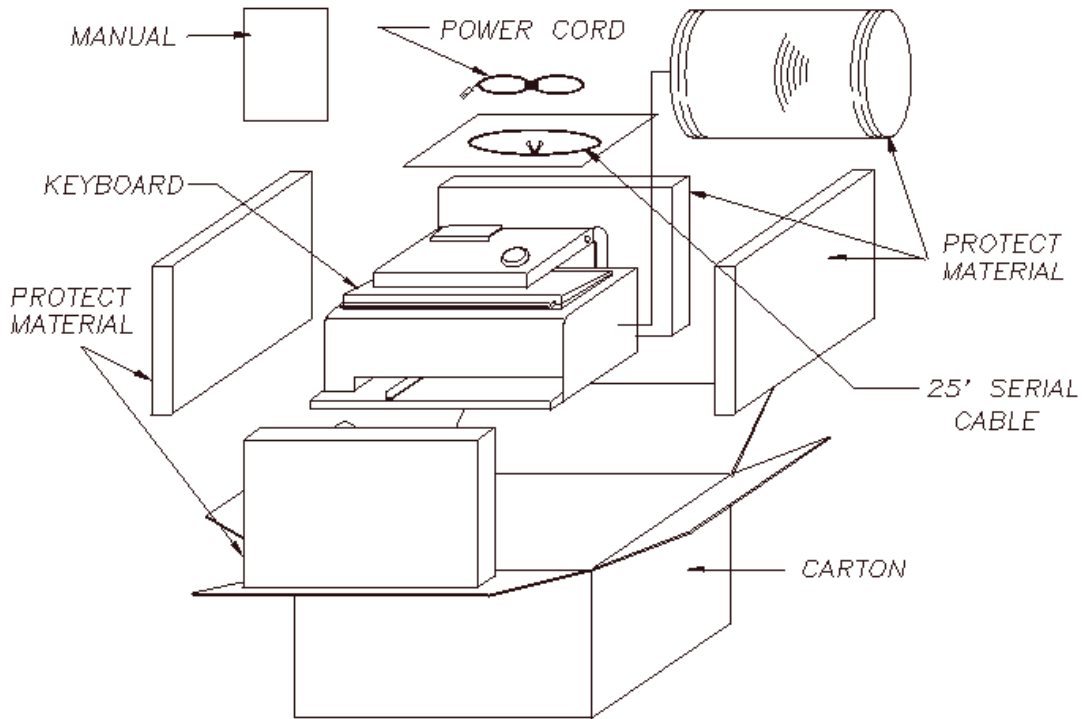


Figure A - 1A Unpacking the System Model 521

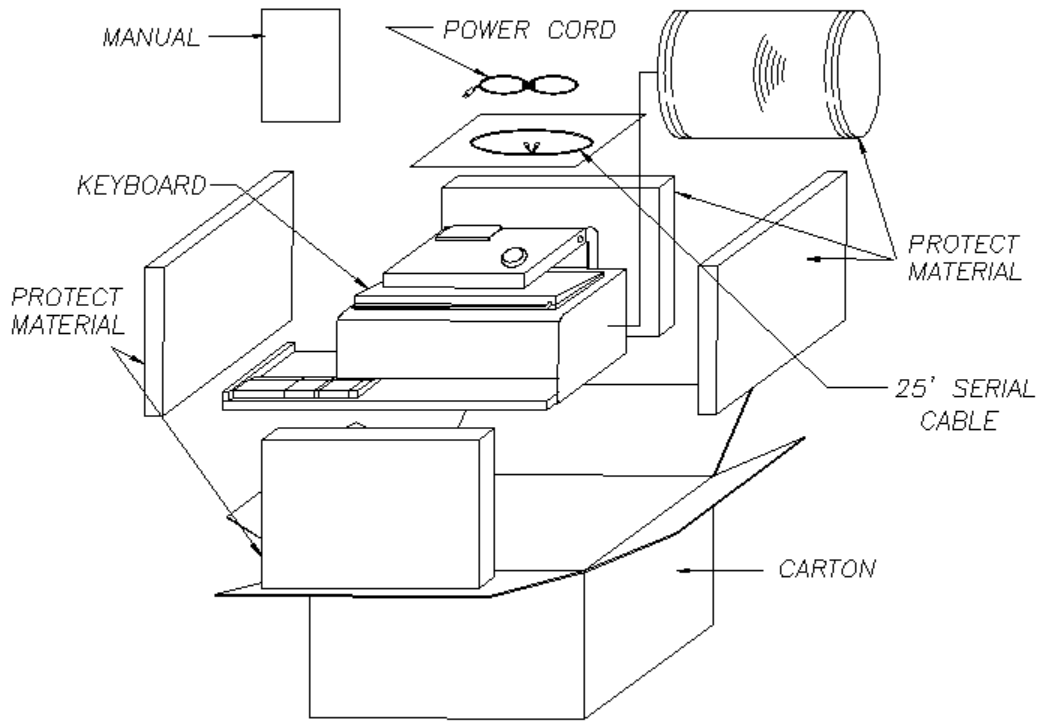


Figure A - 1B Unpacking the System Model 525

Appendix B Function Keys and Key Definitions

Key	Description	Use
F1	(not used)	
F2	System Index	System Edit Menu
F3	(not used)	
F4	Clear/Restore Patient	System Edit Menu
F5	List of Views, Mammographic	System Edit Menu
F6	List of Patients	System Edit Menu
F7	Select Patients From List Save Technologist Default Views List	New Patient Menu General Setup Menu
F8	Display Last Exposure (Flash) Data Change Patient, ID, DOB, MR	System Edit Menu New Patient
Key Definitions		
ESC	Exit Menu Clear Patient or Data	All Menus System Edit Mode
Arrow Up	Move Cursor to Previous Field	All Editing/Setup Menus
Arrow Down	Move Cursor to Next Field	All Editing/Setup Menus
Arrow Left	Move Cursor Left in Field	All Editing/Setup Menus
Arrow Right	Move Cursor Right in Field	All Editing/Setup Menus
TAB	Move Cursor to Next Field	All Editing/Setup Menus
SHIFT TAB	Move Cursor to Previous Field	All Editing/Setup Menus
ENTER	Move Cursor to Next Field Enter Data	All Editing/Setup Menus NEW Menu
Backspace	Move cursor left and delete character	All Editing/Setup Menus
Insert	Insert a Character Insert a Patient Name	System Edit Menu Edit Patient List
Delete	Delete a Character Delete a Patient Name	System Edit Menu Edit Patient List
Home	Move Cursor to First Field	All Editing/Setup Menus
End	Move Cursor to Last Field	All Editing/Setup Menus
Pg Up	Display Previous Label	System Edit Menu
Pg Dn	Display Next Label	System Edit Menu

Key Definitions

Use only approved cables for connection of the serial ports. Film-ID System ports may be damaged and rendered inoperable if improper cabling is connected even for short periods of time.

APPENDIX C

Port - 0	
Labeled	Serial - 1
Standard	RS-232
Full Duplex	RS485
Connector	9 pin mini D, Male
Enable RX 485	pin - 1 (Ground for RS485)
Transmit (232) Out	pin - 2
Receive (232) In	pin - 3
Transmit (485) (+)	pin - 4
Ground	pin - 5
+12V(+15V Max)	pin - 6
Transmit (485) (-)	pin - 7
Receive (485) (-)	pin - 8
Receive(485) (+)	pin - 9
Data Rates:	300, 600, 1200, 2400, 4800, 9600
Parity	Odd, Even or None
Data bits	7, 8
Stop Bits	1, 2

APPENDIX D

Port - 1	
Labeled	Serial - 2
Standard	RS232
Connector	9 pin mini-'D', Female
Receive (in)	pin - 2
Transmit (out)	pin - 3
Ground	pin - 5
Data Rates:	300, 600, 1200, 2400, 4800, 9600
Parity	Odd, Even or None
Data bits	7, 8
Stop Bits	1, 2

Appendix E Label Position on Film

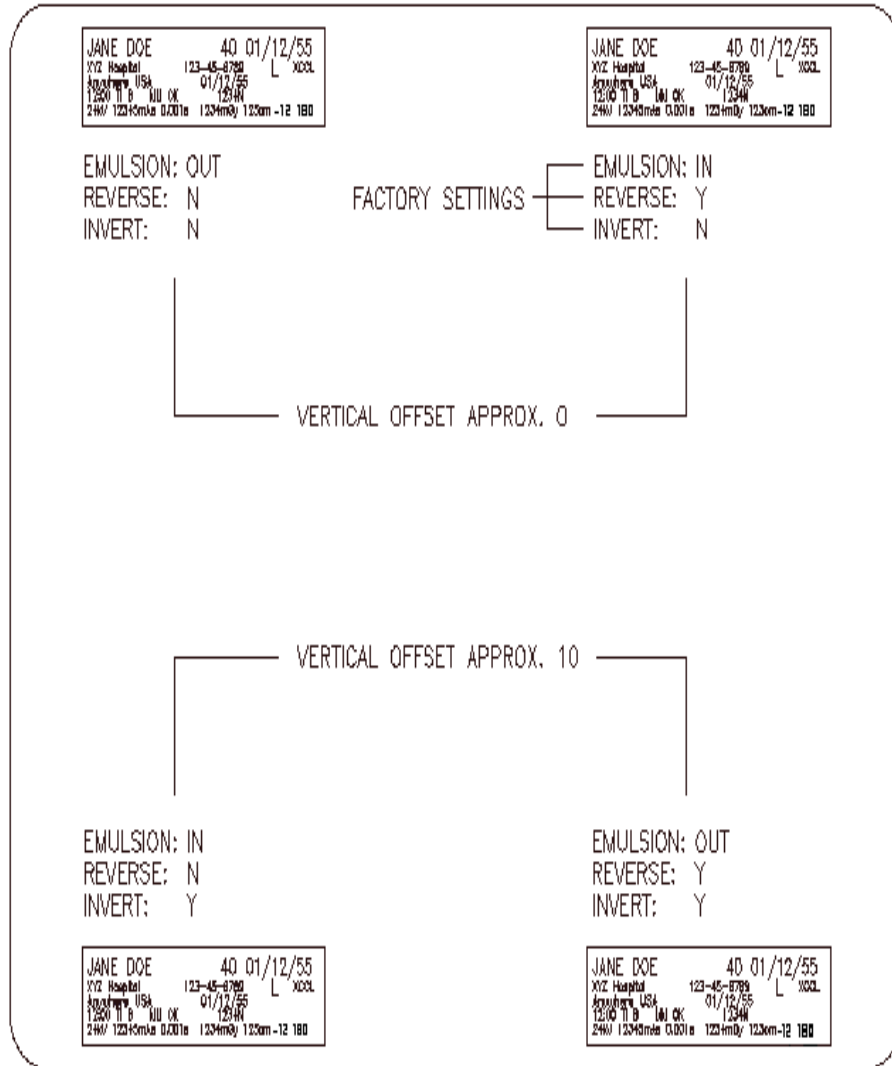


Figure A - 2 Setting Label Position on Film

APPENDIX F FILM ID SYSTEM SPECIFICATIONS

- **ELECTRICAL SPECIFICATIONS**

SUPPLY VOLTAGE: 85-240 VAC
FREQUENCY: 50/60 Hz
POWER: 120 W
INSTALLATION CATEGORY: II
POLLUTION DEGREE: 2

- **FUSE SPECIFICATION**

5 x 20 mm, 250V, 1A, TYPE FSF (quick acting)

- **OPERATING ENVIRONMENT**

TEMPERATURE: 5°C-40°C (41°F-104°F)
HUMIDITY: 10-80% (NO CONDENSATION)
ALTITUDE: up to 2,000 m (6,562 ft)

- **PHYSICAL DIMENSIONS**

MODEL 521

SIZE: 12.5 x 9 x 11 inches (318 x 226 x 279 mm)
WEIGHT: 13 pounds (5.9 kg)

MODEL 525

SIZE: 18.75 x 10 x 11 inches (476 x 254 x 279 mm)
WEIGHT: 15.5 pounds (7.1 kg)

APPENDIX G GENERAL MAINTENANCE GUIDES

- The FILM ID SYSTEM is designed for **INDOOR** use only.
- If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired and VOID the WARRANTY.
- There are no user serviceable parts in field except fuses that should be the same rating and type of fuse designated in FUSE SPECIFICATION section. If system needs upgrade or repair, please contact your vendor.
- Do not open the case, which could impair the optic system.
- Do not insert an object other than film cassette into cassette slot. Doing so may damage the cassette window mechanism and/or cassette sensing mechanism.
- Keep unit free from dust or debris.
- Disconnect the power cord while not in use for long time periods.
- Clean the outside of unit with a slightly damp cloth. (Use water or water-based glass cleaning fluid only, organic solvents may attack paint.)

APPENDIX H GENERIC FIELD LIST AND FILL VALUES FOR KEY IMAGES

Patient Name	1
Patient ID String	2
Patient Age	3
Patient Birth Date	01/01/01
Technologist Initials	4
Exposure time of day	01:55
Exposure date	04/07/02
Generator accelerator voltage	5
Voltage units	*
Generator beam current, time integrated	6
Integrated current units	*
Generator x-ray production time	7
X-ray production time units	*
Radiation Dose	8
Units of Radiation Dose	*
Irradiated tissue thickness	9
Units of irradiated tissue thickness	*
Compression force	A
Units of compression force	*
Generator operational mode	B
X-ray beam filter material	C
View	D
C-arm angle	E
Units of measure for C-arm angle	*
Calibration Status	F
Bucky or Non-Bucky	G
Focal spot size	H
Generator status	I
AEC detector location	J
Magnification	K
Radiological thickness	L
Units of radiological thickness	*
Film/Screen combination	M
Image Distance	N
Units for Image Distance	*
AEC detector id	O
C-arm tilt angle	P
Units for C-arm tilt angle	*
Generator electron beam current	Q
Units of measure for beam current	*
Target (or Target/Filter)	R
Density Correction Factor	S
Technologist comment/note field	T
Institution Name (S.A. = Stand Alone)	e or a (S.A.)
Address 1 (S.A. = Stand Alone)	f or b (S.A.)
Address 2	c
Address 3 or Exam ID (MR#)	d or U

Units fields are fixed for each model and appear immediately to the right of the scalar value field. Magnifications expressed as 'power' or 'percents' is inferred from the numeric value e.g. 1.5 (power) = 150 (%).

APPENDIX H EXPOSED LABEL KEYS FOR STAND ALONE MODE

```

-SETUP- System Parameters
Institution: eeeeeeeeeeeeeeeeeee
Address:      ffffffffffffffffffff
Technologist initials: 444
Time: 01:55:00
Date: 04/07/02 month/day/year
Flasher exp time 0.200
Address:      ccccccccccccccccccc
Address:      dddddddddddddddddddd
<ESC>Exit & Save

```

Figure A - 3 Field key fills in System Parameters Setup User Display

```

aaaaaaaaaaaaaaaaaaaaa 444
bbbbbbbbbbbbbbbbbbbbb
01:55 04/07/02 Stand Alone
Name:11111111111111111111 Age:333
ID: 222222222222 Birth:01/01/01
kV: 5555 mAs:66666 Exptm: 77777
Dose: 8888 Comp:9999 View: DDDDD
Force:AAAA Anod: RR Ang: EEEE^
Corr: SSSS Filt:CCCC Detp: JJJJJ
Bucky: G Focus: H Cal: FT1:PPP
<F2>Setup
<ESC>Clear<F4>New<F5>View<F6>Name

```

Figure A - 4 Field key fills in Stand Alone User Display Screen

```

11111111111111111111333 04/07/02
aaaaaaaaaaaaaaaaaaaaa22222222222 DDDDD
bbbbbbbbbbbbbbbbbbbbb 01/01/01 JJJJJ
01:55 444 GFH RR CCCC 9999mm AAAAkg
5555kV66666mAs77777ms 8888mRSSSS PPPEEEE
cccccccccccccccccccddddddddddddddddd

```

Figure A - 5 Exposed Label resulting from data in Fig. A - 3 and A - 4

NOTE: EACH FIELD IS FILLED IN EITHER SYSTEM SETUP OR USER EDIT SCREENS WITH THE FILL VALUE INDICATED IN THE GENERIC FIELD LIST WITH THE ONLY OTHER DATA SOURCE BEING THE PRESET VALUES FOR UNITS (kV, mAs, etc.) FOR THE GIVEN MODEL GENERATOR. THE FIELD CORRESPONDING TO 'PPP' ABOVE IS FOUND IN THE GENERIC FIELD LIST AS 'C-ARM TILT ANGLE'. IN STAND ALONE MODE MANY EXTRA FIELDS WILL BE SHOWN SO THAT THE TECHNOLOGIST WILL BE ABLE TO USE THOSE NEEDED. THE OTHERS SHOULD NOT BE FILLED. IN THE REMOTE MODE OF OPERATION FIELDS THAT ARE NEVER USED ARE DISABLED.

```

-SETUP- System Parameters
Institution: eeeeeeeeeeeeeeeeeee
Address:      ffffffffffffffffffff
Technologist initials: 444
Time: 01:56:07
Date: 04/07/02 month/day/year
Flasher exp time 0.200
Address:      ccccccccccccccccccc
Address:      *MR_____
<ESC>Exit & Save
    
```

Figure A - 6 System Parameter Setup to record MR ID on Film Label

```

-NEW- New Patient
MR: UUUUUUUUUUUUUUUUUUUUUUUUU
Name: 111111111111111111111111
Birth: 01/01/1901
ID: 222222222222222222222222
<ESC>Exit<F7>Select<INS><DEL>
    
```

Figure A - 7 Patient Demographic Fill including MR ID

```

1111111111111111111111111333 04/07/02
eeeeeeeeeeeeeeeeeeee222222222222 DDDDD
ffffffffffffffffffff 01/01/1901 JJJJ
01:57 444 GFH RR CCCC 9999mm AAAAk
5555kV6666mAs7777ms 8888mRSSSS PPPEEEE
ccccccccccccccccccccUUUUUUUUUUUUUUUUUUUU
    
```

Figure A - 8 Exposed Stand Alone Label including MR ID

NOTE: THE PROCEEDING DRAWINGS HAVE BEEN GENERATED BY FILM ID SYSTEM SOFTWARE AND AS A RESULT ARE VERY ACCURATE. IN THE FOLLOWING KEYS THE DATA ARE DERIVED FROM SAMPLE INPUT DATA FOR THE MODELS PRESENTED. THE DATA WERE 'RECORDED' AND 'REPLAYED' BY TEST SOFTWARE AND MAY NOT EMULATE NEWLY RELEASED SOFTWARE VERSIONS FOR THE GENERATOR MODELS INDICATED. THE DATA IN FIGURES A-6 AND A-7 ARE USED FOR THE FIXED DATA IN THE SUCCEEDING PAGES. PSEUDO-KEY PRESSES FOR VIEW AND ANGLE ARE INDICATED AS 'VIEW()' AND 'ANGLE()', THE KEY VALUE BEING INSERTED IN THE BRACKETS. THE AUTOMATION FILE AND TEST DATA FILES THAT WERE USED TO GENERATE THESE KEYS ARE AVAILABLE AS THE SOFTWARE LOADER CD VIA THE SNM UTILITY, MACROCOMMANDS, 'SIEMENS KEY BMP' BUTTON.

APPENDIX H EXPOSED LABEL KEYS FOR MAMMOMAT M3

```

eeeeeeeeeeeeeeeeeeee 444
fffffffffffffffffffff
01:58 04/07/02 M 3

Name:11111111111111111111 Age 101
ID: 222222222222 Birth:01011901
Notes:TTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTT
kV= 22 mAs= 32.9 Exptm= .23
Comp= 34 View: RCC
Force= 111 Ang: 0___°
Corr= -3.0
Bucky= B Focus= L
<F2>Setup
<ESC>Clear<F4>New<F5>View<F6>Name

```

Figure A - 9 User Display with M3 Data Record 9, View (1), Angle(0)

```

11111111111111111111111101 04/07/02
eeeeeeeeeeeeeeeeeeee222222222222 RCC
fffffffffffffffffffff 01/01/1901
01:58 444 B L 34mm 111N
22kV 32.9mAs .23s -3.0
ccccccccccccccccccccUUUUUUUUUUUUUUUUUUUU

```

Figure A - 10 Exposed Label from Figure A - 9 User Display

```

eeeeeeeeeeeeeeeeeeee 444
fffffffffffffffffffff
01:58 04/07/02 M 3

Name:11111111111111111111 Age 101
ID: 222222222222 Birth:01011901
Notes:TTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTT
kV= 29 mAs= 17.4 Exptm= .14
Comp= 40 View: LCC
Force= 191 Ang: 0___°
Corr= +2.5
Bucky= B Focus= L
<F2>Setup
<ESC>Clear<F4>New<F5>View<F6>Name

```

Figure A - 11 User Display with M3 Data 10, View(2), Angle (0)

```

11111111111111111111111101 04/07/02
eeeeeeeeeeeeeeeeeeee222222222222 LCC
fffffffffffffffffffff 01/01/1901
01:59 444 B L 40mm 191N
29kV 17.4mAs .14s +2.5
ccccccccccccccccccccUUUUUUUUUUUUUUUUUUUU

```

Figure A - 12 Exposed Label from Figure A - 11 User Display

APPENDIX H EXPOSED LABEL KEYS FOR MAMMOMAT M300

```

eeeeeeeeeeeeeeeeeeee 444
fffffffffffffffffffff
01:59 04/07/02 M 300

Name:11111111111111111111 Age 101
ID: 222222222222 Birth:01011901
Notes:TTTTTTTTTTTTTTTTTTTTTTTTTTTTTTT
kV= 25 mA= 5.2 Exptm= .04
Comp= 43 View: RCC
Force= 44 Ang: 0___°
Corr= +0.0 Focus= L
<F2>Setup
<ESC>Clear<F4>New<F5>View<F6>Name

```

Figure A - 13 User Display with M300 Data , View(1), Angle (0)

```

1111111111111111111101 04/07/02
eeeeeeeeeeeeeeeeeeee222222222222 RCC
fffffffffffffffffffff 01/01/1901
03:00 444 L 43mm 44N
25kV 5.2mA .04s +0.0
ccccccccccccccccccccUUUUUUUUUUUUUUUUUUUU

```

Figure A - 14 Exposed Label from Figure A - 13 User Display

```

eeeeeeeeeeeeeeeeeeee 444
fffffffffffffffffffff
03:00 04/07/02 M 300

Name:11111111111111111111 Age 101
ID: 222222222222 Birth:01011901
Notes:TTTTTTTTTTTTTTTTTTTTTTTTTTTTTTT
kV= 25 mA= 5.2 Exptm= .04
Comp= 42 View: LCC
Force= 85 Ang: 0___°
Corr= +0.0 Focus= L
<F2>Setup
<ESC>Clear<F4>New<F5>View<F6>Name

```

Figure A - 15 User Display with M300 Data, View(2), Angle (0)

```

1111111111111111111101 04/07/02
eeeeeeeeeeeeeeeeeeee222222222222 LCC
fffffffffffffffffffff 01/01/1901
03:00 444 L 42mm 85N
25kV 5.2mA .04s +0.0
ccccccccccccccccccccUUUUUUUUUUUUUUUUUUUU

```

Figure A - 16 Exposed Label from Figure A - 15 User Display

APPENDIX H EXPOSED LABEL KEYS FOR MAMMOMAT M3000

```
eeeeeeeeeeeeeeeeeeee 444
fffffffffffffffffffff
03:01 04/07/02 M 3000

Name:111111111111111111 Age 101
ID: 222222222222 Birth:01011901
Notes:TTTTTTTTTTTTTTTTTTTTTTTTTTTTTTT
kV= 26 mA=5.6 Exptm= 0.03
Comp=131 View: RCC
Force= 0 Anod= Mo Ang= 0 *
Corr= Filt= Mo
Bucky= B Focus= L
<F2>Setup
<ESC>Clear<F4>New<F5>View<F6>Name
```

Figure A - 17 User Display with M3000 Data, View(1)

```
1111111111111111111101 04/07/02
eeeeeeeeeeeeeeeeeeee222222222222 RCC
fffffffffffffffffffff 01/01/1901
03:01 444 B L Mo Mo 131mm 0N
26kV 5.6mA 0.03s
ccccccccccccccccccccUUUUUUUUUUUUUUUUUUUU
```

Figure A - 18 Exposed Label from Figure A - 17 User Display

```
eeeeeeeeeeeeeeeeeeee 444
fffffffffffffffffffff
03:02 04/07/02 M 3000

Name:111111111111111111 Age 101
ID: 222222222222 Birth:01011901
Notes:TTTTTTTTTTTTTTTTTTTTTTTTTTTTTTT
kV= 26 mA=4.4 Exptm= 0.13
Comp=132 View: LCC
Force= 0 Anod= W Ang= +2 *
Corr= +0.5 Filt= Rh
Bucky= Focus= S
<F2>Setup
<ESC>Clear<F4>New<F5>View<F6>Name
```

Figure A - 19 User Display with M3000 Data, View(2)

```
1111111111111111111101 04/07/02
eeeeeeeeeeeeeeeeeeee222222222222 LCC
fffffffffffffffffffff 01/01/1901
03:02 444 S W Rh 132mm 0N
26kV 4.4mA 0.13s +0.5 +2
ccccccccccccccccccccUUUUUUUUUUUUUUUUUUUU
```

Figure A - 20 Exposed Label from Figure A - 19 User Display

APPENDIX H EXPOSED LABEL KEYS FOR MAMMOMAT C3

```

eeeeeeeeeeeeeeeeeeee 444
fffffffffffffffffffff
03:03 04/07/02 M C3

Name:11111111111111111111 Age 101
ID: 222222222222 Birth:01011901
Notes:TTTTTTTTTTTTTTTTTTTTTTTTTTTTTT
kV= 27 mAs= 109 Exptm= .79
Comp= 00 View: RCC
Force= 00 Ang: 0___°
Corr= +0.0
Bucky= B Focus= S
<F2>Setup
<ESC>Clear<F4>New<F5>View<F6>Name

```

Figure A - 21 User Display with MC3 Data, View(1), Angle(0)

```

1111111111111111111101 04/07/02
eeeeeeeeeeeeeeeeeeee222222222222 RCC
fffffffffffffffffffff 01/01/1901
03:03 444 B S 00mm 00N
27kV 109mAs .79s +0.0
ccccccccccccccccccccUUUUUUUUUUUUUUUUUUUU

```

Figure A - 22 Exposed Label from Figure A - 21 User Display

```

eeeeeeeeeeeeeeeeeeee 444
fffffffffffffffffffff
03:04 04/07/02 M C3

Name:11111111111111111111 Age 101
ID: 222222222222 Birth:01011901
Notes:TTTTTTTTTTTTTTTTTTTTTTTTTTTTTT
kV= 25 mAs= 100 Exptm= .67
Comp= 00 View: LCC
Force= 00 Ang: 0___°
Corr= ___
Bucky= N Focus= L
<F2>Setup
<ESC>Clear<F4>New<F5>View<F6>Name

```

Figure A - 23 User Display with MC3 Data, View(2), Angle(0)

```

1111111111111111111101 04/07/02
eeeeeeeeeeeeeeeeeeee222222222222 LCC
fffffffffffffffffffff 01/01/1901
03:04 444 N L 00mm 00N
25kV 100mAs .67s
ccccccccccccccccccccUUUUUUUUUUUUUUUUUUUU

```

Figure A - 24 Exposed Label from Figure A - 23 User Display

APPENDIX H EXPOSED LABEL KEYS FOR MAMMOMAT 3000 NOVA

```

eeeeeeeeeeeeeeeeeeee 444
fffffffffffffffffffff
03:04 04/07/02 M 3000 NOVA

Name:11111111111111111111 Age 101
ID: 222222222222 Birth:01011901
Notes:TTTTTTTTTTTTTTTTTTTTTTTTTTTTTTT
kV= 25 mA=19.7 Exptm= 0.28
Comp= 70 View: RCC
Force= 84 Anod= Mo Ang= 0 *
Corr= -10 Filt= Rh
Bucky= B Focus= L
<F2>Setup
<ESC>Clear<F4>New<F5>View<F6>Name

```

Figure A - 25 User Display with M3000 NOVA Data, View(1)

```

1111111111111111111101 04/07/02
eeeeeeeeeeeeeeeeeeee222222222222 RCC
fffffffffffffffffffff 01/01/1901
03:05 444 B L Mo Rh 70mm 84N
25kV 19.7mA 0.28s -10
ccccccccccccccccccccUUUUUUUUUUUUUUUUUUUU

```

Figure A - 26 Exposed Label from Figure A - 25 User Display

```

eeeeeeeeeeeeeeeeeeee 444
fffffffffffffffffffff
03:05 04/07/02 M 3000 NOVA

Name:11111111111111111111 Age 101
ID: 222222222222 Birth:01011901
Notes:TTTTTTTTTTTTTTTTTTTTTTTTTTTTTTT
kV= 26 mA=21.4 Exptm= 0.30
Comp= 71 View: LCC
Force= 80 Anod= Mo Ang= -11 *
Corr= 0 Filt= Mo
Bucky= B Focus= L
<F2>Setup
<ESC>Clear<F4>New<F5>View<F6>Name

```

Figure A - 27 User Display with M3000 NOVA Data, View(2)

```

1111111111111111111101 04/07/02
eeeeeeeeeeeeeeeeeeee222222222222 LCC
fffffffffffffffffffff 01/01/1901
03:05 444 B L Mo Mo 71mm 80N
26kV 21.4mA 0.30s 0 -11
ccccccccccccccccccccUUUUUUUUUUUUUUUUUUUU

```

Figure A - 28 Exposed Label from Figure A - 27 User Display

APPENDIX I PRINTER SETUP INFORMATION

*** TSP700 Ver 1.0 -bl.0

Interface: RS-232C

DIP Switch 1

Sw 123456--

On *****

Off

1,2= Baud Rate : 9,600 bps

3 = Data Bits : 8 bits

4,5= Parity : None(Odd)

6 = Handshake: DTR

DIP Switch 1

Sw 12345678

On *****

Off

1 Emulation : Star Line

5 INIT Reset : Enable

6 BUSY : All

7 ASB : Disable

Memory Switch

	FEDCBA9876543210	HEX.
<0>	0000000000000000	0000
<1>	0000000000000000	0000
<2>	0000000000000000	0000
<3>	0000000000000000	0000
<4>	0000000000000000	0000

<0> 4 -----

Character Mode : Standard

<1> 8 -----

Black Mark Detect : Invalid

<1> 4 -----

Zero Style: Normal Zero

<1> 3-0 -----

Inter. Char : USA

<3> F-8-----

Page : Normal

<3> 4 -----

ANK Pitch : 12 dot

<3> 1 -----

CR : Ignore

<3> 0 -----

Feed Pitch : 4mm

<4> 0-2 -----

Printable Area :72mm

Note: Black Mark Detect may be valid (labels inserted) or invalid (paper, or labels not aligned).