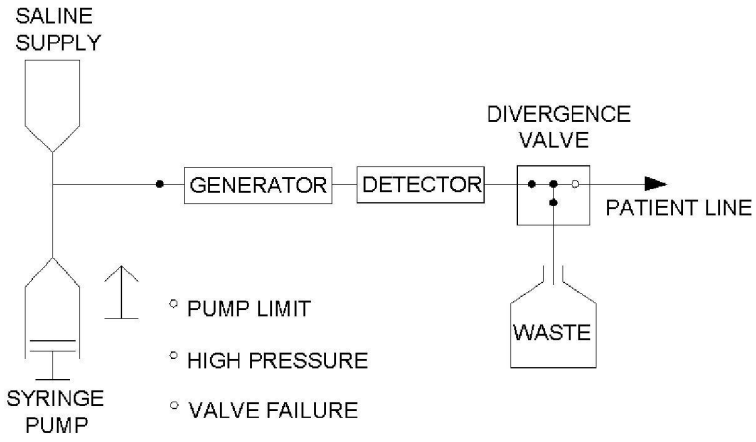
A sample automatic infusion printout is shown in Figure 4.4. Note that the first entry of the report contains status information. A normal infusion is indicated by the statement "INFUSION TERMINATED NORMALLY." If the infusion is unable to start or is interrupted in process, the detected error condition(s) is (are) printed out. Infusion error conditions are described in detail in the Section 6 of this manual.

The next entries in the infusion report are the set-points selected by the operator for the infusion. Elution volume, patient volume, patient dose, and dose-rate threshold set-points are listed in the report. Additionally, the selected flow rate and the selected calibration factor are listed.

The next entry in the infusion report is actual measured infusion data. The actual elution volume, patient volume, and patient dose are listed. Additionally, the activity present at end of infusion is listed. This activity is the activity that would be present in an infusion collection bottle at the end of an infusion. It is this activity value that is used for calibrations since on-going decay of the collected eluate is considered. Note that patient dose is the direct sum of activity leaving the patient port and does not consider on-going decay of the collected eluate. Finally, the activity present between detector and waste valve and the activity present between waste valve and patient are listed along with the corresponding saline volumes. This data is informational only and requires no user action as the infusion system automatically considers the effects of radioactivity stored in the tubing lines.

Finally, the infusion report contains an activity profile listing in one-second intervals. Both the activity measured at the detector and the activity calculated at the patient port are displayed for each one-second interval. This data should be interpreted as the amount of activity passing the detector and patient port in successive one-second time intervals. Note that the transit-time delay between the detector and the patient port can be readily observed in the sample infusion report.

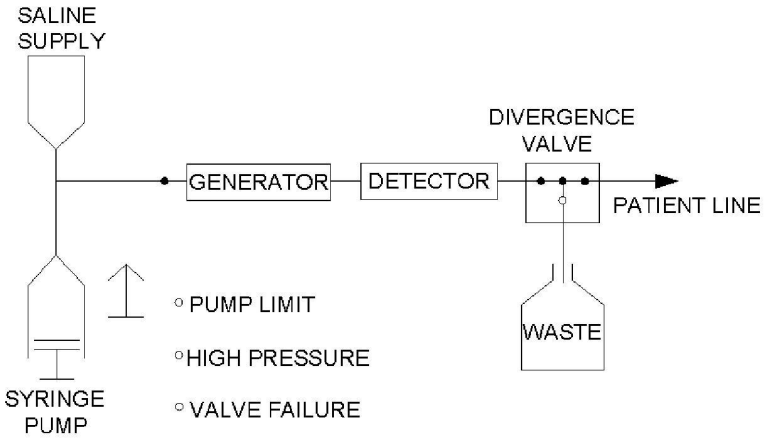
- The infusion operation is started by depressing the inject/start/stop switch.
- The saline pump is started.
- Low-Level activity is directed to the waste bottle.
- The running elution volume (volume through the generator) is displayed on the elution volume display.



(A) Activity Build Up Cycle

Figure 4.3.a Summary of the AUTOMATIC INFUSION Operation

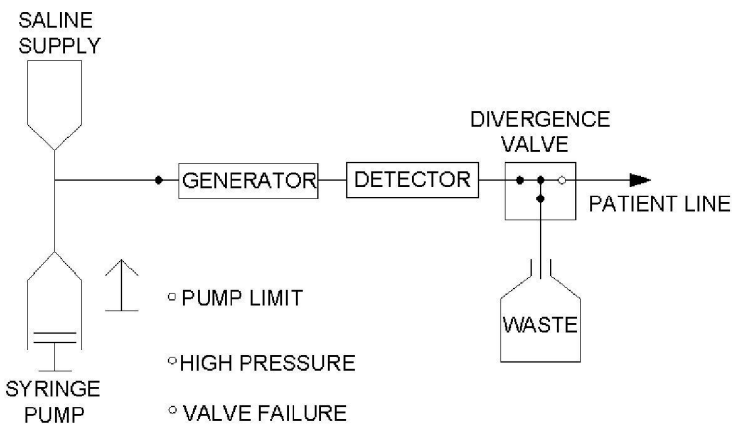
- Activity is directed to the patient line once the measured infusion dose rate exceeds the selected dose rate threshold.
- The running patient volume is dispayed on the patient volume display.
- The running patient dose is displayed on the patient volume display.
- The running elution volume continues to be displayed in the elution volume display.



(B) Patient Infusion Cycle

Figure 4.3.b Summary of the AUTOMATIC INFUSION Operation (continued)

- The saline pump stops when the patient-dose limit is reached. The elution-volume and patient volume limits serve as backup limits.
- The total elution volume, patient volume and patient dose is stored on the displays.
- The generator activity is directed to the waste bottle and patient line is diconnected form the generator.
- The printor begins to print out a report of the infusion.



(C) Infusion Ending Cycle

Figure 4.3.c Summary of the AUTOMATIC INFUSION Operation (continued)

INFUSION TERMINATED NORMALLY

SET-POINT VALUES:

Elution Vol. = 40 ml
Patient Vol. = 30 ml
Patient Dose = 50.0 mCi
Dose Rate Thld. = 1.0 mCi/sec
Flow Rate = 50 ml/min
Cal. Factor = 926

ACTUAL INFUSION DATA:

Elution Vol. = 26 ml
Patient Vol. = 19 ml
Patient Dose = 50.1 mCi

Infused Activity Present
At End Of Infusion = 45.4 mCi

Activity Present Between
Det. and Waste Valve = 0.674 mCi
in Volume of 0.592 ml

Activity Present Between
Waste Valve and Pat. = 3.23 mCi
in Volume of 2.75 ml

4.4 Sample of Infusion Report Printout

ACTIVITY PROFILE

Time sec	Detector mCi/sec	Patient mCi/sec
1	0.000	0.000
2	0.000	0.000
3	0.000	0.000
4	0.000	0.000
5	0.000	0.000
6	0.000	0.000
7	0.003	0.000
8	0.056	0.000
9	0.377	0.000
10	1.149	0.000
11	1.937	0.016
12	3.026	0.422
13	3.558	1.191
14	3.648	1.996
15	3.624	3.023
16	3.652	3.487
17	3.650	3.548
18	3.564	3.528
19	3.385	3.558
20	3.134	3.549
21	2.848	3.457
22	2.556	3.270
23	2.277	3.024
24	2.023	2.743
25	1.797	2.462
26	1.611	2.188
27	1.450	1.946
28	1.314	1.729
29	1.204	1.552
30	1.103	1.398
31	1.020	1.268
32	0.578	0.709

4.4 Sample of Infusion Report Printout (Cont'd.)

5.0 OPERATING PROCEDURE

5.1 General Notes

The sterility of each component must be preserved, be sure to wear protective gloves. Aseptic techniques must be strictly observed in all handling. Do not remove any luer-lock protective caps until instructed to do so. Additionally, do not allow any unprotected luer-lock fittings to make contact with anything other than its mating luer-lock fitting.

As system pressure can approach 100 PSI it is important that luer-lock fittings be connected tightly without stripping or otherwise damaging the fittings. Improper luer-lock connections will result in saline leaks that may be difficult to find and correct.

5.2 Rb-82 Generator and Sterile Components

Compare the Rb-82 Generator sterile disposable tray label's parts list, list 015100, with the actual components in the tray. If not correct, contact BDI Nuclear Medicine Customer Service at 1-800-447-6883.

5.3 Rb-82 Infusion System Preparation

Remove the syringe pump cover by loosening the three mounting thumb screws and carefully lifting the cover off the pump assembly. Activate the Rb-82 Infusion System by depressing the power switch and moving the mode switch to the **Purge Generator to Waste** position.

Raise the lid of the hinged valve shield cover to expose the inside of the valve shield assembly. Visually make sure there are no used disposables present in the system. If any of the used disposables are present they must be disposed of to prevent possible confusion with the new set-up. Close the valve cover.

Move the syringe pump to its upper end of the travel position by continuously depressing the purge switch while the system is in the **Purge Generator to Waste** mode. The pump will automatically stop when it reaches the upper end of the travel position. The LED pump limit light will come on.

5.4 Installation of the Syringe Pump Components

5.4.1 Pump Syringe Installation (Pump Syringe Package #1)

Loosen the 4 thumb screws; upper and lower on the pump syringe carriage. Install the 140 mL pump syringe with its luer-lock fitting facing

upward into its carriage in the pump assembly. Be sure to rotate the syringe so that the graduations face toward the operator. Tighten the upper and lower thumbscrews to secure both the syringe body and plunger into the carriage. Do not remove the protective cap on this syringe until directed to do so.

5.4.2 Pressure Sensor Syringe Installation (Inlet Assembly Package #2)

Install the 10 cc pressure sensor syringe by placing it with the luer-lock fitting facing upward into the carriage in the pump assembly. This is done by tilting the syringe into place with the plunger contacting the bottom of the carriage followed by pushing the top of the syringe back until it's locked in place. Be sure to rotate the syringe so the graduations face toward the operator. Do not remove the protective cap on the syringe until directed to do so.

5.4.3 Pump Cover Installation

Re-install the pump cover by carefully sliding it over the top of the pump assembly with the pump syringe and pressure sensor syringe protruding through the pump cover. Be sure the protective caps on the syringes protect the syringe luer-lock fittings from contacting the pump cover. Verify that the pump cover is fully seated on the pump assembly.

5.5 Generator Inlet Assembly Package

Remove the tubing assembly from its package and connect the check valve to the pump syringe. Tighten the luer-lock fittings but be careful not to damage the pump syringe connection.

5.5.1 Pressure Sensor Line Installation

Connect the shortest line of the inlet tubing assembly to the 10 mL sensor syringe. Tighten the syringe to the luer-lock connection, but be careful not to damage.

5.5.2 Generator Inlet Line Installation

Open the Valve shield. Take the longest line of the generator inlet tubing assembly and insert it down through the tubing shield so that it appears in the generator shield. Remove the generator shield lead lid and retrieve the free end of the generator inlet line. Approximately three to six inches of this line will now be in the generator shield with the luer-lock fitting and the cap on. Place the saline supply hook assembly back onto the pump assembly.

5.5.3 Generator Inlet Line Sterilizing Filter Installation

Take the filter from the generator inlet assembly package and connect the female luer-lock fitting of the Generator Inlet Sterilizing Filter to the male luer-lock fitting on the free end of the generator inlet line that is now located in the generator shield. Make sure that the luer-lock fitting on the other end of this filter remains in place until directed to do otherwise.

5.6 Generator Outlet Assembly (Package #3)

5.6.1 Divergence Valve Installation

If it is not already open, raise the lid on the valve shield assembly located on the top of the Rb-82 Infusion System Cart and remove the valve retainer. Note: The lid cannot be raised if the Rb-82 Infusion System is unpowered or if the system detects activity within this shield. Take the divergence valve, (the white valve with the three arrows and the off sign) and orient it with the handle facing down toward the bottom of the Rb-82 Infusion System Cart. Note: The shortest line of this connection will be facing towards the left end of the infusion system cart as you are looking at it. Finally, without changing the orientation of the valve, rotate the valve handle so that the valve can be dropped into its actuation carriage, to prevent it from being moved, with the "valve" arm fitting into the groove of the actuation carriage.

5.6.2 Generator Outlet Line Installation

Take the line with the red cap end and feed it through the hole in the valve shield assembly. Verify that the end of this line has entered the generator shield. There should now be two lines in the generator shield; the generator inlet line with its associated filter and the generator outlet line. Secure the end of the generator outlet line (located in the valve shield assembly) by inserting into the tubing slot near the detector and route the line past the detector; secure with detector cover.

5.6.3 Generator Waste Line Installation

Take the line from the outlet tubing assembly with the clear end and feed it down the opening of the valve shield assembly. There should now be three sets of tubing in the generator shield.

5.6.4 Generator Waste Line To Waste Shield

Take the line in the generator shield with the clear cap and feed it through the hole inside the generator into the waste shield. Tape the tubing in the generator shield so that the generator will not crimp the tubing.

5.6.5 Waste Bottle Preparation and Sterilizing Filter Installation

From the outlet assembly package take the short line with the filter on the end and connect it to the waste line inside the waste bottle shield. Once this connection has been made, take the waste bottle and connect the waste line to the top of the bottle *make sure you remove the cover from the needle under the bottle cap cover.* Verify that the waste bottle connections are correct. Carefully lower the waste bottle into the waste shield and route the extra waste line tubing to prevent any kinking or obstruction in the tubing. Place the lid on top of the waste shield.

The waste bottle should be emptied every morning prior to system use or at the end of system usage.

5.7 Patient Line Installation

Remove a patient line from its protective wrapping. Connect the female side of the luer-lock fitting, to the line on top of the infusion cart system which comes out the left side of the valve. This patient line contains its own sterilizing filter. This is the only part of the system that you must change as a new patient is being imaged. Make sure that the valve retainer is now over the valve and close the lid.

5.8 Saline Supply Installation

5.8.1 Installation of the Saline Supply

Take the remaining free tubing of the generator inlet line, which was the first kit you hooked up, pinch off valve and then carefully insert the spike into your bottle or bag of preservative-free, normal saline. Make sure the spike is fully inserted. Hang the saline supply on the saline supply hook located on top of the pump assembly.

5.9 Rb-82 Generator Installation

5.9.1 Installation Preparation

Look inside the generator shield, and verify that there are two lines available for connection:

- Generator inlet line and its attached filter with a male luer lock fitting.
- Generator outlet line with a female luer-lock fitting

Make sure the waste line that passes through the generator shield chamber is against the wall of the generator shield so that it does not interfere with the generator installation.

5.9.2 Rb-82 Generator Installation

Remove the generator from its shipping container, and unclip the outlet and inlet tubing, carefully lower it into the generator shield. Make sure that the generator does not interfere with the waste line that passes through the generator shield. Connect the inlet line on the generator (marked "inlet," and has a female luer-lock fitting on it) to the remaining fitting on the generator sterilizing filter and has a male luer-lock fitting on it. Connect the outlet line of the generator (marked outlet and has a male luer-lock fitting on it) to the remaining line in the generator shield which has a red cap on it. Carefully lower the generator shield lid **making sure that none of the lines are restricted.**

5.10 Purge Operation

5.10.1 Syringe Filling

Position the syringe pump to its limit if not already there, by continuously depressing the PURGE switch (in the PURGE GENERATOR TO WASTE mode) until the pump automatically stops. Open the saline supply pinch valve and depress the REFILL switch once. The syringe pump should begin drawing in saline and a stream of air bubbles should appear in the saline supply bottle. The refill operation can be stopped at any time by depressing the REFILL switch a second time. Otherwise, the pump will continue refilling until it reaches its refill limit and automatically stops. Unless problems are encountered, allow the pump to refill until it automatically stops on its refill limit.

5.10.2 Waste Line Purging

With the MODE switch in the PURGE GENERATOR TO WASTE position continually depress the PURGE switch to pump saline through the generator and into the waste bottle. A volume of 50 mL of saline should be sufficient to guarantee purging the waste lines of air. Note: The purge volume can be checked by observing the markings on the pump syringe. Lift the waste bottle shield cover and look for any signs of leakage. Correct any leaking connections before continuing to use the Rb-82 infusion system.

Note: It is recommended that leak testing be carried out by wipe test and radiation detection survey.

5.10.3 Pressure Sensor Line

Pinch off the saline bag valve, disconnect the pressure sensor line from the pressure sensor syringe and place it in a beaker. Depress the purge switch until liquid flows into the beaker. Reconnect the pressure sensor line to the pressure sensor syringe. Now unpinch the saline valve.

5.10.4 Patient Line Purging

Place the MODE switch in the PURGE GENERATOR TO PATIENT position. Connect the patient line to a shielded 50 mL vial and insert a venting needle. Continuously depress the PURGE switch until all the air has been expelled from the patient line into the vial. A volume of 20 mL should be sufficient to purge the patient line. The purge volume can be determined by observing the pump syringe markings.

Lift the generator shield cover and look for any signs of leakage. Correct any leaking connections before continuing to use the Rb-82 Infusion System.

Note: It is recommended that leak testing be carried out by wipe test and radiation detection survey.

5.10.5 Volumetric Flow Rate Verification

This is performed with the installation of a new generator.
Set the controls on the Display/Control Panel as follows:

• Mode Switch	=	Automatic Infusion
• Elution Volume Limit	=	99 mL
• Patient Volume Limit	=	50 mL

• Patient Dose Limit	=	99 mCi
• Dose Rate Threshold	=	1.0 mCi/sec.
• Flow Rate	=	50 mL/min.

Check for a 50 mL/min. flow rate using a stop watch.

5.11 Patient Administration

PATIENT ADMINISTRATION MAY BE PERFORMED ONLY AFTER SUCCESSFUL COMPLETION OF DAILY CALIBRATION, SR-82/85 BREAKTHROUGH PROCEDURES, AND FIRST WASH (ELUTION) DISPOSAL USING SAME SETTINGS AS SEEN ON SR-82/85 BREAKTHROUGH SHEET PAGE.

IN THE EVENT OF A POWER-FAILURE OR THE SYSTEM IS INADVERTENTLY SHUT DOWN, CALIBRATION SHOULD BE RECONFIRMED.

5.11.1 Replace the patient administration set for each new patient.

5.11.2 Purge all air out of the patient administration set and verify that all air is purged from the system. Refer to Installation Instructions, section 5.10.4.

5.11.3 Set the controls on the Display/Control panel as prescribed by the administering physician.

5.11.4 Verify that the syringe pump has been filled with saline. The syringe pump volume must at least equal the selected elution volume-set point plus 20 mL. This volume will cover the 15 mL nominal dead volume in the syringe.

5.11.5 Verify that the system printer is on and that approximately 1 inch of paper extends out of the printer. If the RS-232C port is being used for infusion data acquisition, the system printer can be turned off. Infusion report data is transmitted out the RS-232C port whether the system printer is powered or not.

5.11.6 Attach the Rb-82 infusion system patient line to the patients intravenous line.

5.11.7 Make sure that at least 10 minutes has elapsed following any purge or infusion operation. Start the infusion by depressing the INJECT START/STOP switch.

NOTE: The infusion can be terminated at any time by depressing the INJECT START/STOP switch a second time.

The running elution volume, patient volume, patient dose and dose rate will be registered on the control/display panel. Once the infusion operation is completed the INJECT START/STOP switch will stop glowing red and the infusion report data will be printed on the system printer and echoed out the RS-232C port.

5.11.8 Unless manually interrupted, the infusion will terminate when the number of mCi preset on the PATIENT DOSE LIMIT switch has been reached. As a safety precaution, the infusion will also terminate if the preset ELUTION VOLUME LIMIT or PATIENT VOLUME LIMIT are reached.

NOTE: THE SR-82/RB-82 GENERATOR ELUATE IS RADIOACTIVE AND SHOULD BE HANDLED WITH PROPER RADIATION SAFETY PRECAUTIONS.

NOTE: WAIT AT LEAST 10 MINUTES AFTER ANY PURGE OR INFUSION OPERATION BEFORE LIFTING THE GENERATOR SHIELD COVER, WASTE BOTTLE SHIELD COVER OR THE HINGED VALVE-SHIELD COVER. THIS WILL ALLOW ANY RB-82 ELUATE TO DECAY TO A SAFE LEVEL.

NOTE: THE HINGED VALVE-SHIELD COVER AUTOMATICALLY LOCKS IN THE CLOSED POSITION DURING ANY PURGE OR INFUSION OPERATION. THE COVER REMAINS LOCKED UNTIL THE DETECTED RADIOACTIVITY DECAYS TO A SAFE LEVEL. NO PURGE OR INFUSION OPERATION CAN BE STARTED UNLESS THE COVER IS CLOSED. ADDITIONALLY, THE COVER CANNOT BE RAISED UNLESS THE RB-82 INFUSION SYSTEM IS POWERED.

NOTE: ALWAYS WEAR GLOVES BEFORE TOUCHING ANY OF THE TUBING, SYRINGE PUMP, VALVE OR COLLECTION BOTTLE SYSTEM COMPONENTS.

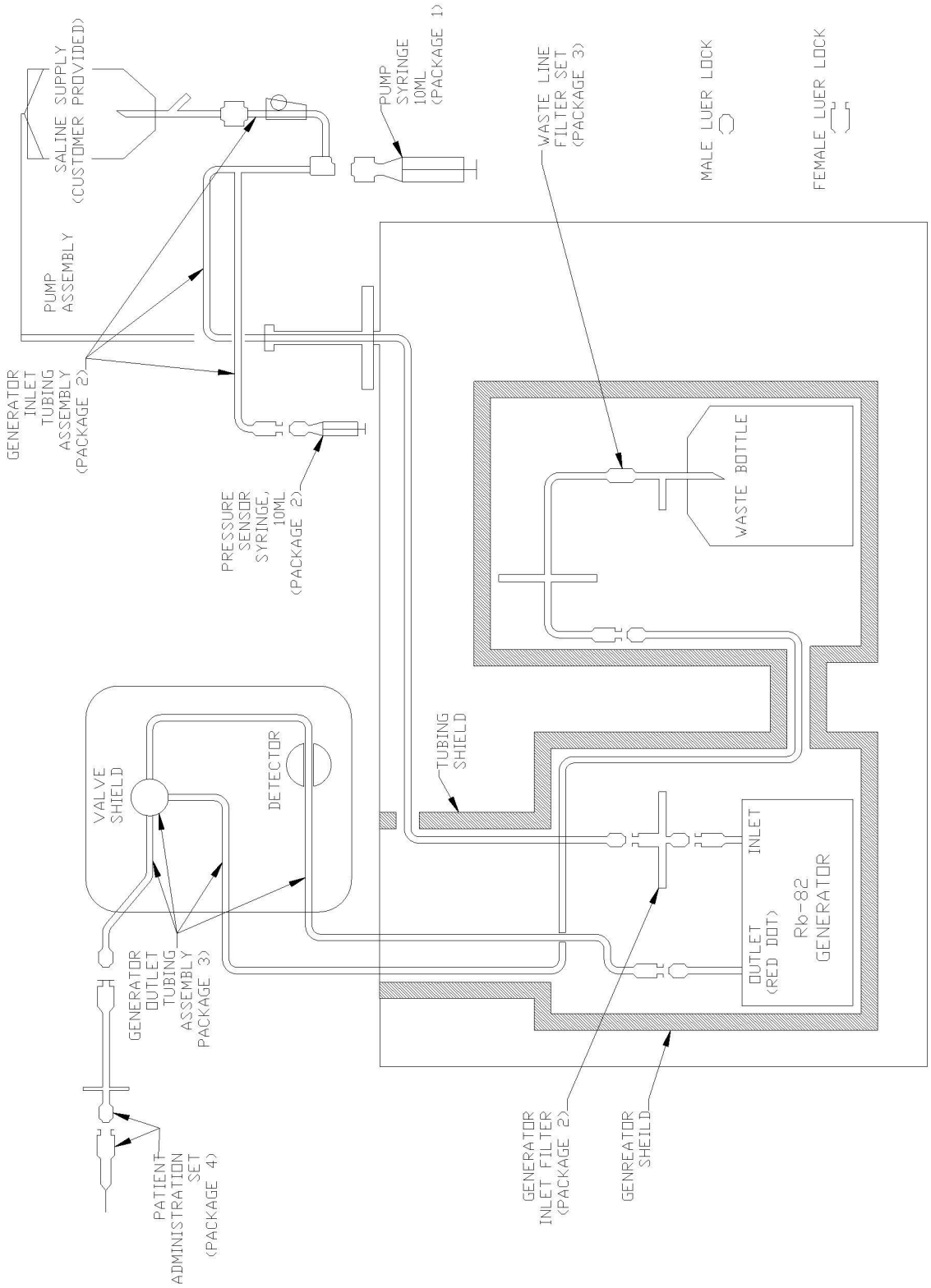


Figure 5.1 Tubing Diagram

CardioGen-82 Generator
Sr-82/85 Breakthrough Worksheet

Date _____

Infusion System Control Panel Settings

Mode Switch:	Automatic Infusion
Elution Volume:	99 mL
Patient Volume:	50 mL
Patient Dose:	99 mCi
Dose Rate:	1 mCi/sec.
Flow Rate:	50 mL/min.

Figure 5.1 Tubing Diagram

Dose Calibrator Setting

504 (Capintec only) or
Co-60 setting then divide reading obtained by 0.548

---

1. Elute 50 mL of eluate into 50 mL vial using Infusion System Control Panel Settings as above. Note exact time at end of elution (EOE).

   Time when elution ended _____.

2. Set dose calibrator as above. Setting used: _____.

3. Measure Rb-82 activity in dose calibrator. Note exact time (minutes/seconds) when measurement is made.

   Rb-82 activity _____(mCi).
   Time of measurement _____.

4. Decay correct Rb-82 measurement to time when elution ended (EOE).

   (Note: If time between end of elution and measurement is allowed to be 150 seconds (2.5 minutes), multiply dose calibrator reading by a factor of 4).

   Decay correction factor_____.
   Rb-82 activity at EOE (mCi) _____.

5. Using same vial, let sample stand for 60 minutes to allow for complete decay of Rb-82.

6. Measure sample in dose calibrator.

7. Calculate amount of Sr-82 in sample using the following equation:

$$\text{Sr-82} = \frac{\text{dose calibrator reading (µCi)}}{\text{divisor (from sheet supplied with Generator)}}$$

Example:

$$\text{Sr-82} = \frac{0.5}{2.3} = .216$$

Sr-82 = .216 µCi

8. Determine Sr-82 Breakthrough by dividing µCi of Sr-82 by the mCi of Rb-82 at EOE

Example:

$$\frac{.216 \text{ µCi Sr-82}}{50 \text{ mCi Rb-82}} = .004 \text{ µCi Sr-82/mCi Rb-82}$$

Allowable Limit = .02 µCi Sr-82/mCi Rb-82

9. Determine Sr-85 Breakthrough by multiplying the result obtained in step 8 by the Sr-85/Sr-82 ratio from the data sheet supplied with the generator.

Example:

.004 x 1.48 = .00592

Allowable Limit = 0.2 µCi Sr-85/mCi Rb-82

Rb-82 INFUSION SYSTEM-CALIBRATION DATA SHEET

Infusion System Control Panel Settings

Mode Switch:	Automatic infusion
Elution Volume:	99 mL
Patient Volume:	50 mL
Patient Dose:	60 mCi
Dose Rate:	1 mCi/sec.
Flow Rate:	50 mL/min.

1. Date of Calibration or Calibration Verification: _____

2. Initial Generator Sr-82 Potency on calibration date: _____mCi

3. Generator Sr-82 Potency on present date: _____mCi

4. Present Calibration Factor: _____

5. Measured Rb-82 Activity from dose calibrator (corrected for decay): _____mCi

6. Printed Rb-82 Activity Present at the end of infusion: _____mCi

7. Ratio of Measured Rb-82 Activity and Printed Rb-82:

   Measured Rb-82 Activity
   Printed Rb-82 Activity = Ratio

8. Is the difference between Measured Rb-82 Activity and Printed Rb-82 .95 - 1.1?
   _____ (If no, unit requires recalibration).

9. Calculated New Calibration Factor (if needed): _____

   New Initial Measured Rb-82 Activity at End of Infusion
   _____

   Cal. Factor = Cal. Factor _____ x _____
   Printed Rb-82 Activity Present at End of Infusion _____

10. Is new Calibration factor within 5% of old Calibration factor?

    _____ (If no, repeat calibration).

Site Name_____ **Rb-82 Infusion System Calibration Log Sheet**

INFUSION SYSTEM SETTINGS			GENERATOR DATA
1. Patient Dose		mCi	1. Generator Lot Number
2. Flow Rate	50	ml/min	2. Initial Gen. Potency
3. Patient Dose Threshold	1.0	mCi/sec	3. Date

Decay Factor Table		
Measured Time		Factor
0 Min	0 Sec	1
1 Min	15 Sec	2
2 Min	30 Sec	4
3 Min	45 Sec	8
5 Min	0 Sec	16

CALIBRATION SHOULD ALWAYS BE DONE AT THE DESIRED PATIENT DOSE SETTINGS. THE FIRST ELUTION OF THE DAY MUST BE DISCARDED AND NOT USED FOR CALIBRATION. REFER TO SECTION 5.2 OF THE OPERATION MANUAL FOR INSTRUCTIONS.

A	B	C *	D	E	F	G	H **		I	J	K
Calibration Infusion (Date & Time)	Dose Reading From Dose Calibrator (mCi)	Corrected Dose (B/1) or (B/0.548) (mCi)	Dose Decay Time (min:sec)	Dose, Decay Corrected (C x Decay Factor) (mCi)	Printed Activity End of Infusion (mCi)	Ratio E to F (E/F)	Calib. ±5%? G = .95 to 1.05	Calib. ±10%? G = .90 to 1.10	Calib. Factor (from Rb-82 Printer)	New Calib. Factor	Operator Initials
Example: 9/28/85 8:00 AM	12.2	12.2	2:30	48.8	57.7	.853	No	No	1000	853	EGS
Example: 9/28/85 8:12 AM	13.8	13.8	2:30	55.2	55.7	.991	Yes	Yes	853	N/A	EGS

* Use the dose calibrator reading directly if an RB-82 calibration setting is used or divide the reading by 0.548 if a Co-60 Calibration setting is used.

** Calibration should be performed to ±5% (Ratio=0.95 to 1.05). Daily calibration checks should be within ±10% (Ratio=0.9 to 1.1). See Section 5.2 of the operation manual.

Figure 5.2 Rb-82 Infusion System Calibration Log Sheet

Site Name_____

CARDIOGEN® Rb-82 Generator
Sr-82 Breakthrough Log Sheet

INFUSION SYSTEM SETTINGS			GENERATOR DATA
1. Patient Dose	99	mCi	1. Generator Lot Number
2. Elution Volume		99 ml	2. Initial Gen. Potency
3. Patient Volume		50 ml	3. Date
4. Flow Rate		50 ml	
5. Patient Dose Threshold	1.0	mCi/sec	

Decay Factor Table		
Measured Time		Factor
0 Min	0 Sec	1
1 Min	15 Sec	2
2 Min	30 Sec	4
3 Min	45 Sec	8

THE FIRST ELUTION OF THE DAY MUST BE DISCARDED AND NOT USED FOR BREAKTHOUGH MEASUREMENT. REFER TO SECTION 5.3 OF THE OPERATION MANUAL FOR INSTRUCTIONS.

A	B	C*	D	E	F	G*	H	I	J	K	L
Breakthrough Infusion (Date & Time)	Rb-82 Reading From Dose Calibrator (mCi)	Corrected Rb-82 (B/1) or (B/0.548) (mCi)	Rb-82 Decay Time (min:sec)	Rb-82, Decay Corrected (C x Decay Factor) (mCi)	Break-through Reading from Dose Calibrator (μ Ci)	Break-through Corrected F/1 or F/0.548 (μ Ci)	Break-through Divisor From Gen. Data	Sr-82 Break-through G/H (μ Ci)	Ratio Sr-82 to Rb-82 I/E (μ Ci/mCi)	Ratio Sr-82 to Rb-82 <0.02 μ Ci/mCi?	Operator Initials
Example: 9/28/85 9:00 AM	12.1	12.1	2:30	48.4	0.8	0.8	6.43	0.124	0.0026	Yes	WLC

* Use the dose calibrator reading directly if an RB-82 calibration setting is used or divide the reading by 0.548 if a Co-60 Calibration setting is used.

Figure 5.3 CARDIOGEN®-82 GENERATOR SR-82 Breakthrough Log Sheet

6. TROUBLESHOOTING GUIDE

The table below describes possible purge and infusion error conditions that are displayed on the Control/Display panel. These errors are also listed in the infusion report printout. Suggested corrective action is provided in the table for each error condition.

This device has been tested for protection against electro-magnetic interference according to IEC 60601-1-2. However, the proximity of other devices that give off electro-magnetic radiation, such as X-ray machines, can interfere with the operation of this system.

TROUBLESHOOTING TABLE

Error Condition	Suggested Action
Automatic Infusion Errors (listed in infusion report printout)	
"Elution Vol. Setpt. = 0"	Select non-zero infusion set-points
"Patient Vol. Setpt. = 0"	Select non-zero infusion set-points
"Patient Dose Setpt. = 0"	Select non-zero infusion set-points
"Valve Shield Open"	Close the valve shield
"Pump At Limit Position"	Refill syringe pump
"High Pressure Error"	Look for possible tubing constriction
"Valve Error"	Notify Bracco Diagnostics Inc.
Automatic Infusion and Purge Errors (displayed on Control/Display panel)	
PUMP LIMIT	Refill the syringe pump, if necessary. Note that this display is also active if the pump is on the refill limit.
HIGH PRESSURE	Look for possible tubing constriction
VALVE ERROR	Notify Bracco Diagnostics Inc.
Valve Shield Open (not displayed)	Close the valve shield for all purge and infusion operations

SYSTEM DIARY

Date:_____
Problem:_____
_____
_____
_____
Action Taken: _____
_____
_____

Date:_____
Problem:_____
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Action Taken: _____
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Date:_____
Problem:_____
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Action Taken: _____
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Date:_____
Problem:_____
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