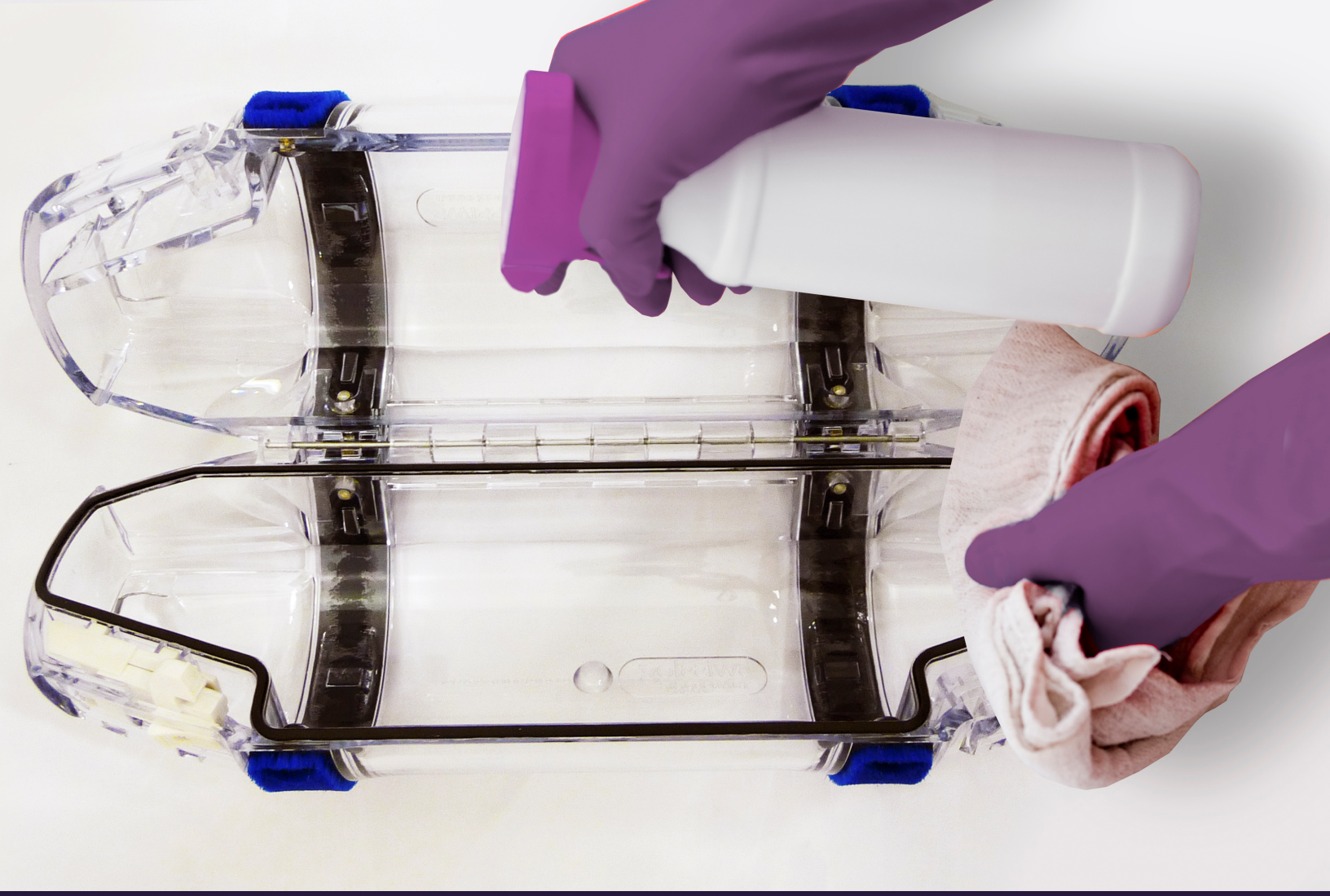

TransLogic Pneumatic Tube System
Cleanout Process

PN 99111361 Rev H | ECN 102661 | 202000605

swisslog healthcare

swisslog healthcare

Contents

CHAPTER 1

General Information

Swisslog Healthcare systems are built for reliable transactions and transport of carriers. The TransLogic Pneumatic Tube System and recommended packaging materials have been designed for controlled and stable delivery, which reduces the possibility of spills or damage to carrier contents. However, accidents can occur. This manual provides information on how to assess and clean up any spills.

CAUTION: Swisslog Healthcare will defer to each individual facility's expert when it comes to biohazard transport, handling, and cleanup.

Use the following information as a guideline only, to support and not supersede relevant protocols established by OSHA, CDC, the hospital, federal, state or regulatory organizations, and other governing agencies. If a conflict should arise between this document and any biohazard regulatory agency, defer to that agency's information and regulations and/or contact your internal biohazard team for information and recommendations. By using this manual you agree and acknowledge you, your task force and organization indemnify and hold Swisslog Healthcare harmless of any liability as it relates to the matters contained herein.

Appropriate Solution

The term "appropriate solution" refers to the cleaning agent recommended by the infection control committee of each individual facility. The appropriate solution must not leave a sticky residue when dry.

Swisslog Healthcare makes no claims as to the effectiveness of any particular appropriate solution with regard to its ability to disinfect the system. This determination should be made by each facility's infection control committee based on the nature of a specific spill. The cleaning agent chosen should be tested to ensure that it does not adversely affect system components. A solution of 5.25% sodium hypochlorite (household bleach) diluted 1:10 with water, when used as described herein is not harmful to system components.

System Cleanout Kit

Cleanout accessories are available from Swisslog Healthcare. To order any of the cleanout kit parts, contact Swisslog Healthcare Customer Support at 800-396-9666 or service.healthcare.us@swisslog.com.

TABLE 1. *Translogic Cleanout Kit Part Numbers*

Part	Usage	4” Carrier	6” Carrier
Cleanout Bottle	Tube Cleanout	PN 76129301	PN 76129302
Cleanout Swab Carrier	TCU Cleanout	Q26211601	Q26211602

Cleanout Planning Checklist

Use the following list to determine the extent of the system cleanout.

1. Evaluate type of spill (material).
2. Determine extent of the spill (localized to station, zone, interzone).
3. Evaluate in-system transactions. Identify time-sensitive transactions.
4. Consult your facility spill protocols.
5. Gather the appropriate equipment to clean out the system.

CHAPTER 2

Equipment and System Decontamination

Overview

In the rare event that a specimen leaks, the container, package, carrier, and possibly components of the pneumatic tube system must be cleaned and decontaminated. To determine what procedures or steps need to be taken in the event of a leak, the magnitude of the spill needs to be determined.

Note: The procedures for containing a leak and cleaning the system that are provided here may not contain specific instructions for your facility. Consult the protocol developed by your facility for any modifications to these instructions.

Leaks without Spills

The packaging in which containers are sealed often contains any leakage that may occur; these leakages are often readily visible. If the contamination is confined to the packaging and has not escaped into the carrier or system tubing, it is not necessary to shut down the system.

In this situation, use special handling procedures specified by your facility, contact the appropriate department for carrier and packaging cleaning, request a new specimen from the sending station operator, and complete an incident report, as required.

Leaks with Spills

If a specimen has leaked out of a carrier, the facility management department must take several critical steps to contain spills and facilitate cleanup. Cleanup involves shutting down parts or all of the system for a period of time, which helps to isolate the leak and prevent spreading the leak.

When a leak is detected at a station, call the facility maintenance department immediately to shut down the system and initiate a system cleanup procedure.

Spill Cleaning Process Overview

This guide provides procedures for thoroughly cleaning a leak with a spill, which consists of the following:

1. Shut down the system to prevent the spread of contaminants, either at the System Control Center or at a station that has been configured to perform an Emergency Shutdown. See “Shutting Down the System” on page 4.
2. Contain the entire spill. See “Containing Spills” on page 5.
3. Conduct an initial assessment of the spill. See “Conducting a Cursory Assessment” on page 6.
4. Purge carriers from the system to deliver time-sensitive transactions. See “Purging the System” on page 6.
5. Determine the magnitude of the spill. See “Determining the Magnitude of a Spill” on page 7.
6. Clean the system and tubing. See “Cleaning the System and Tubing” on page 8.
7. Clean all affected stations. See “Cleaning Affected Stations” on page 9.
8. Clean Traffic Control Units. See “Cleaning TCUs” on page 10.
9. Clean Multi-linear Transfer Units. See “Cleaning MTUs” on page 11.
10. Clean all affected carriers and equipment. See “Cleaning Equipment” on page 11.
11. Restart the system and return to normal operations. See “Returning to Normal Operations” on page 12.

Shutting Down the System

A system shut down immediately stops all carrier movement and should be done as soon as possible to contain the spill. A shut down can be initiated at the station or at the system control center.

Shutting Down the System from the Station

If a spill occurs, immediately stop sending carriers from the station where the contamination was first noticed.

Station operators can use the emergency shutdown feature on the station to shut down the system when a leaking carrier is received.

- The Nexus™ Station Emergency Shutdown option is in the Settings menu.
- The Nexus Control Panel Emergency Shutdown option is in the Features menu.

This option must be enabled by a system administrator. Contact the facility maintenance department for information on shutting down the system in an emergency.

Shutting Down the System at the System Control Center

To shut down the system at the System Control Center:

- Click Urgent Off on the toolbar. 

This action turns the entire system off immediately without completing transactions that are in process and clears all transaction information from the queue to prevent delivery if the system is turned back on prior to a purge. After an emergency shutdown, the equipment icons in the System Control Center will turn red and an **X** will be displayed over each one.

Consult the System Control Center Help for more information.

Critical Information

Include the following information when reporting a spill to the facility maintenance department:

- the receiving station's number
- the sending station's number (if known)
- the type and amount of spillage (for example, specimen type)
- the time the contaminated carrier arrived or the spill was first noticed
- the number of contaminated carriers that have arrived

Containing Spills

After stopping the system, handle any spills that are hazardous or require immediate cleanup promptly so that exposure is limited. This is done at the receiving station where the spill occurred.

WARNING: Put on protective equipment before handling a leaking carrier. Check with your facility's decontamination policy before handling carriers and their contents.

Note: The following information does not supersede the protocol developed by your facility or any regulatory requirements.

To contain a spill:

1. Wear gloves or protective equipment to handle the carriers, as required by your facility.
2. Remove the contents of the carrier.
3. Match the specimen to the accompanying paperwork.
4. Discard the specimen in an appropriate disposal container.
5. Check the packaging for spillage outside of the bag.

   If this has occurred, the liner needs to be disinfected. See "Cleaning Equipment" on page 11. If the packaging cannot be cleaned, discard it in an appropriate disposal container.
6. Remove gloves or protective equipment and wash hands.
7. Take measures to get the system back into operation as quickly as possible:
   a. Request a new specimen from the station that sent the contaminated carrier.
   b. Contact the appropriate department for carrier and package cleaning.
   c. Complete an incident report, as required by your facility's protocol.

Conducting a Cursory Assessment

After an emergency shutdown, all carriers are stopped in place. An initial review is necessary to safely purge transactions out of the system and get them delivered to their destinations.

This initial review will provide the basic information to determine how to safely purge the system without causing the spread of contaminated material. In this review you can determine which zones were not impacted and plan on the delivery of unaffected carriers.

To complete a cursory impact assessment:

1. Review the transactions list report to see the origin station and determine which route the carrier took.
2. Assess the impact of the spill to the system. Determine if the contaminated material requires any special handling. Evaluate the state of the system and the affected station.
3. Evaluate the current transactions that are still in the system and identify any carriers that are high-priority for delivery.

Purging the System

Purge the entire system to clear the "Emergency Stop" status of the system and remove all transactions that are in the system.

Based on the cursory assessment of the spill, assign contaminated stations as the recovery stations in those zones with contaminated routes to avoid spreading the contaminating material to other routes.

Note: A purge may be run on the entire system, a specific zone, or a selected route.

CAUTION: A purge should only be performed after a preliminary evaluation of the magnitude of the spill to ensure the purge does not cause further contamination.

To clear the carriers (standard zone):

1. At the System Control Center, go to Operation > Purge > Zone.
2. On the Select Zone window, select the zone to purge and click Open.
3. On the Zone Purge tab, select a Purge Recovery station where carriers will be sent.
4. Select either All Equipment or individually check IZs (Interzones), Storage (Storage Pipes), and/or Stations.
5. Click Purge.
6. Follow facility protocols for managing carriers that have been purged from the system.
7. Repeat as necessary for each zone.

For additional details and information on bypass zones, shuttle zones, and full system purge options, see the System Control Center Help.

Determining the Magnitude of a Spill

Usually the packaging, liners, and closed containers contain spills. However when a carrier leaks, it is necessary to determine the extent of the spill and determine the affected system areas to prevent further spreading of the contaminants.

Note: If the system has not been shut down, do so immediately. See "Shutting Down the System" on page 4. Ensure you have purged time-sensitive transactions from the system prior to full log review and in-depth evaluation.

When a spill occurs, determine what route the contaminated carrier took. Once that route has been established, determine if any other carriers crossed the route of the contaminated carrier. In Figure 1 the contaminated carrier traveled from Station 1 to Station 3. The route took the carrier through TU 1a, TU 1, TU 2, TU 2a, and TU 3. Therefore any carrier that traveled through any of these transfer units may have spread the contaminant, therefore those carrier routes must also be decontaminated.

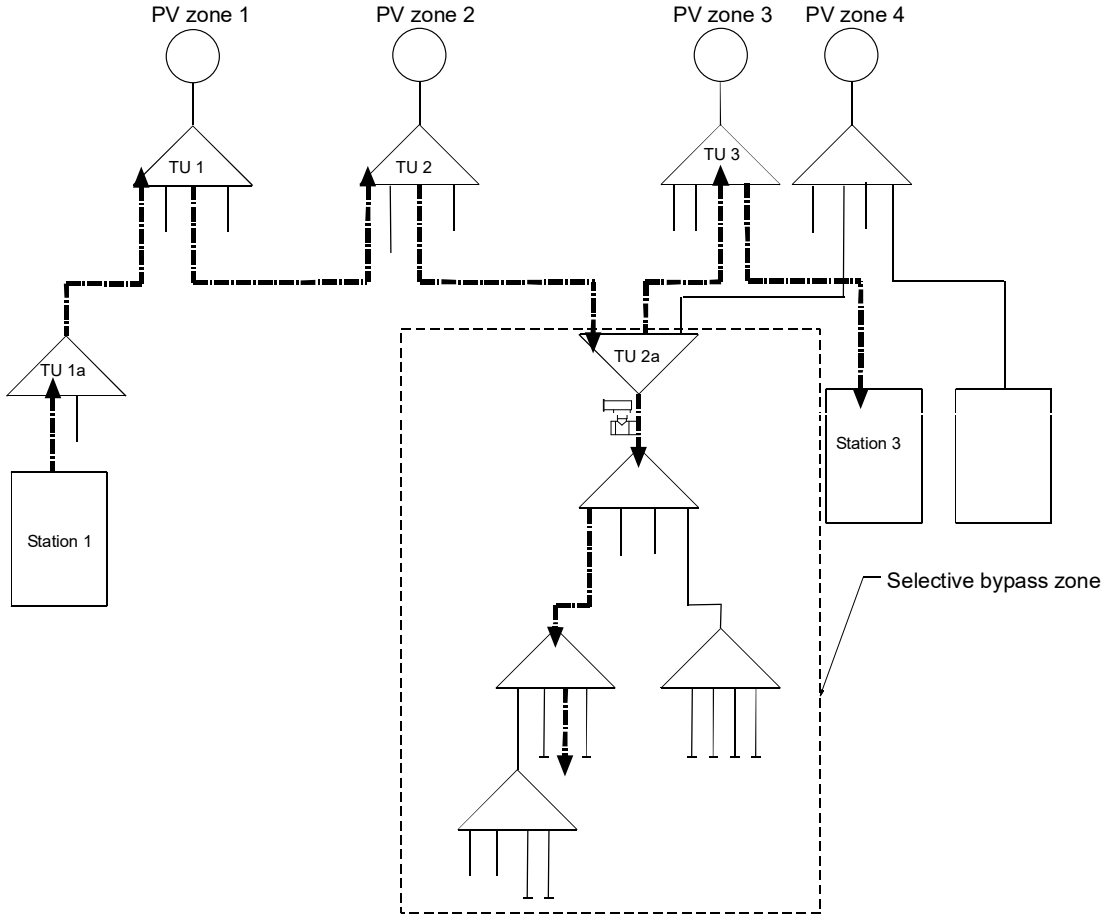

FIGURE 1. *Spill magnitude diagram*

To determine the magnitude of a spill:

1. Review the system transaction log to determine the extent of contamination.
2. At the System Control Center, print a riser diagram and open the System Traffic Display.
3. Use the riser diagram to determine the route that the carrier traveled from the source station to the destination station.
4. Use the System Traffic Display to determine if any transactions that used any part of the contaminated route were in process or were completed after the spill was detected.
5. If any of these transactions used the same or any part of the contaminated route, determine their source and destination stations.
6. Determine the extent of the cleanup that is needed.

   If the affected transaction can be pinpointed on the transaction log, and there have been no subsequent transactions involving the same route, a partial cleanup can be performed. If the transaction cannot be isolated on the log, the entire system must be disinfected.

Cleaning the System and Tubing

The procedure to clean the system and tubing involves sending a cleanout carrier from station to station until all affected segments of the system have been cleaned. As the carrier travels through the tubing, the cleanout bottle dispenses the appropriate solution, while the rubbing bands on the carrier act as swabs.

CAUTION: Swisslog Healthcare will defer to each individual facility's expert when it comes to biohazard transport, handling, and cleanup.

Use the following information as a guideline only, to support and not supersede relevant protocols established by OSHA, CDC, the hospital, federal, state or regulatory organizations, and other governing agencies. If a conflict should arise between this document and any biohazard regulatory agency, defer to that agency's information and regulations and/or contact your internal biohazard team for information and recommendations.

Prepare Cleanout Carriers

To perform the cleanout procedure, you will need a cleanout bottle and a modified standard carrier. For the cleanout bottle part numbers, see "Translogic Cleanout Kit Part Numbers" on page 2. For instructions on modifying a carrier for clean up, see "Modifying a Standard Carrier" on page 13.

To prepare the cleanout carrier:

1. Fill the cleanout bottle with the appropriate solution to within 1/4-inch of the holes in the top of the bottle. For information on mixing the appropriate solution, see "Appropriate Solution" on page 1.
2. Place the lid on the bottle and place the bottle in a cleanout carrier, making sure to keep the bottle upright.
3. Close and latch the carrier.

Cleaning Affected Routes

Use the following instructions to clean the routes identified in the planning stages.

To clean the affected routes:

1. Holding the carrier in a vertical position, insert the carrier in the dispatcher of the station where the spill occurred.
2. At the System Control Center, use remote diagnostics to manually dispatch the carrier and route it through the affected path using the align air path function.

   For detailed instructions on using remote diagnostics and manually moving a carrier, see the System Control Center Help.
3. Repeat until the tubing has been decontaminated, refilling the cleanout bottle when there is less than an inch of appropriate solution left.
4. Periodically clean and dry the rubbing bands with a dry cloth to enhance their ability to swab out the tubing.

   Note: Tubing does not usually need to be dried. A small amount of appropriate solution remaining in the line will not affect the system's operation. If the tubing becomes overly wet, it can be dried by running the blower in the affected area.
5. Disinfect the carrier and cleanout bottle after the spill has been cleaned up. Use approved methods. See "Cleaning Equipment" on page 11.

Cleaning Affected Stations

Disinfect the send station and the receive station(s) on the affected route.

Note: Do not clean affected stations until the system tubing has been cleaned.

To clean affected stations:

- Clean and disinfect the affected stations following facility guidelines. For Nexus Stations, follow the cleaning instructions in the *Nexus Station Technical Operations and Maintenance Guide*.

  If the carpet or padding in a station becomes contaminated to an extent that it needs to be replaced, contact Swisslog Healthcare Customer Care to order replacement parts.

Cleaning TCUs

Traffic Control Units (TCUs) must be cleaned independently of the station and system. Be sure to clean affected tubing before performing this procedure. Use the TCU cleanout kit carriers for this procedure (see “Translogic Cleanout Kit Part Numbers” on page 2).

To clean affected TCUs:

1. Using local diagnostics, move the gripper, entrance gate, and exit gate to the fully open position.
2. Press the stop button on the TCU control box.
3. Remove power from the TCU.
4. If unit is a radial TCU above an MTU, turn off power to the MTU and cover the MTU ports. Ensure the MTU stop button is pressed and that the MTU is appropriately off-line and disabled.
5. Remove the section of system tubing immediately before the entrance to the traffic control unit. If unit is an In-Line TCU, also remove the section of system tubing immediately before the exit of the TCU. This tubing should be attached with bolted couplings for easy removal.
6. Thread a rope or suitable pulling strap from the entrance of the TCU through the TCU until it comes out on the exit side of the In-line TCU or the access hatch of the Radial TCU.
7. Soak a cleanout swab carrier in an appropriate solution.

   For information on mixing the appropriate solution, see “Appropriate Solution” on page 1.
8. Attach the end of the rope to the cleanout carrier.
9. Attach a second rope or strap to the other end of the cleanout carrier.
10. Using the ropes, pull the soaked cleanout carrier back and forth the through the TCU. It may be necessary to rewet the carrier several times to ensure adequate cleaning.
11. If the unit is a belted TCU, perform the following additional procedure:
    a. Remove and rewet the carrier and insert it in the TCU so that it rests fully on the belt.
    b. Restore power to the TCU.
    c. Using diagnostics, command the belt to run. This should clean any spill residue from the belt. It may be necessary to rotate the carrier periodically to prevent it from drying out.
    d. Once the belt has been adequately cleaned, stop the belt using local diagnostics and remove the cleanout carrier and pull line.
12. Reinstall the tubing that was removed.
13. Remove, clean, and reinstall each of the carrier sensor boards.
14. Ensure the gates remain open and start the manifold if necessary. This will cause air to flow through the TCU and begin drying the interior of the unit. Allow the blower to run for approximately 20 minutes or until the interior is sufficiently dry.
15. Return the unit to service.

Cleaning MTUs

Multi-linear transfer units (MTUs) must be cleaned independently of the system. If the contamination spread into a MTU port that is attached to an Exit TCU, you must also perform the procedure for decontaminating the TCU (see “Cleaning TCUs” on page 10).

To clean a MTU:

1. Using local diagnostics, move the carriage to the service port (the open port at the far end of the MTU).
2. Press the stop button on the MTU controller to take it out of service.
3. Remove power from the MTU.
4. Remove the slide plate motor assembly and remove the slide plate.
5. Using a rag or towel soaked in an appropriate solution, thoroughly wipe the slide plate, slide plate track, and carriage tube until the spilled substance is cleaned.

   For information on mixing the appropriate solution, see “Appropriate Solution” on page 1.
6. Using a clean towel, wipe all cleaned surfaces dry.
7. Remove and clean the carrier sensor boards.
8. Reassemble the slide plate and motor to the carriage.
9. Return the unit to service.

Cleaning Equipment

Contaminated carriers and carrier packaging do not need to be cleaned before the system can be returned to normal operations. However, they must be cleaned before being put back into use. Take precautions to avoid placing contaminated equipment in the system.

Carriers

Carriers may be cleaned by station operators or a separate department, such as the facility maintenance department. Consult your facility’s protocol.

To disinfect carriers:

- Soak carriers in a germicide, such as a 1:10 solution of 5.25% hypochlorite (household bleach) or another mycobactericidal germicide for at least ten minutes. Rinse and allow to air dry.

  OR

- Sterilize carriers in ethylene oxide. When gas sterilizing carriers, open the carrier so that the gas sterilizes both the inside and outside surfaces of the carrier. After gas sterilization is complete, aerate for 12 hours at 120^{o} F, changing the air once per minute.

CAUTION: Do not use alcohol, acetone, or other solvents to clean the carrier, as these may damage the plastic. Do not use an autoclave to disinfect carriers, as this may damage the plastic.

Foam Liners

If you do not dispose of the contaminated foam liners, disinfect and sterilize them using one of the following methods.

To disinfect and sterilize foam liners:

— Soak foam liners in an appropriate solution, as described on page 1, for at least ten minutes. Rinse and allow to air dry.

OR

— Sterilize foam liners in ethylene oxide. When gas sterilizing foam liners, open the liner so that the gas sterilizes both the inside and outside surfaces of the liner. After gas sterilization is complete, aerate for 12 hours at 120° F, changing the air once per minute.

OR

— Sterilize foam liners in an autoclave at 270° F for five minutes, then dry at 270° F for one minute.

Zip N' Fold™ Pouches

If you do not dispose of the contaminated Zip N' Fold pouches, disinfect and sterilize the pouches (packaging) using one of the following methods.

To disinfect and sterilize Zip N' Fold pouches:

— Soak packaging in an appropriate solution, as described in page 1, for at least ten minutes. Rinse and allow to air dry.

OR

— Sterilize packaging in ethylene oxide. When gas sterilizing packaging, open the package so that the gas sterilizes both the inside and outside surfaces of the package. After gas sterilization is complete, aerate for 12 hours at 120° F, changing the air once per minute.

CAUTION: Do not use an autoclave to disinfect Zip N' Fold pouches, as this may damage the plastic.

Returning to Normal Operations

When the system has been cleaned to the specifications of your facility, it can be brought back on line.

To return the system to normal operations:

■ At the System Control Center, click System On. 

APPENDIX A

Modifying a Standard Carrier

Required for System Cleanout

A standard carrier can be modified to assure it performs the cleaning process thoroughly. A carrier is modified by drilling holes in the sides to permit the appropriate solution to secrete into the tubing. Once a carrier is modified for cleaning, it can be used for all subsequent tubing decontamination procedures.

Note: A special swabbing carrier is used to clean the Xpress System. See “Cleaning TCUs” on page 10 and “Cleaning MTUs” on page 11.

Important: Use a standard carrier, not an ECO-SEAL™ carrier, to clean the system. The construction of standard carriers allows the cleaning fluid to be distributed into the tubing for proper cleaning.

To modify a 4-inch standard carrier:

1. Mark a line around a 4-inch carrier half way between the carrier wear bands.
2. Using a tape measure, mark hole locations 2 inches and 3 inches from the hinge above and below the line marked in Step 1. See Figure 2.
3. Drill a hole at the four marked locations with a 1-inch hole saw.
4. Deburr the holes.

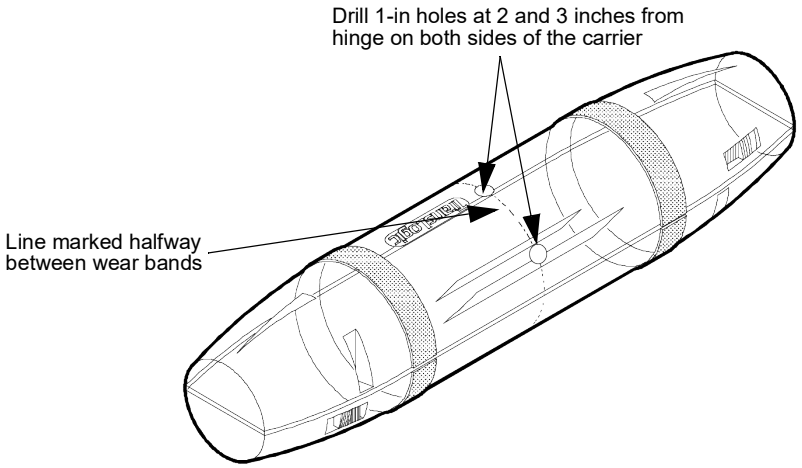

FIGURE 2. *Modified 4-in carrier for cleaning*

To modify a 6” standard carrier:

1. Mark a line around a 6-inch carrier half way between the carrier wear bands.
2. Using a tape measure, mark hole locations 2 1/2 inches, 4 inches, 5 1/2 inches, and 7 inches from the hinge above and below the line marked in Step 1.
3. Drill a hole at the eight marked locations with a 1-inch hole saw. See Figure 3.
4. Deburr the holes.

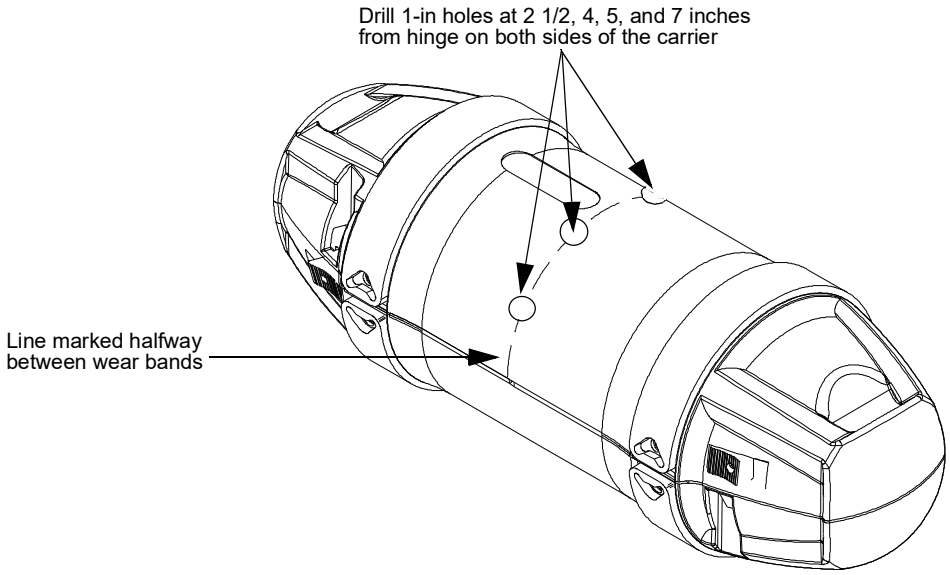

FIGURE 3. *Modified 6-in carrier for cleaning*