

The following sections describe issues and situations that can affect operator safety when you are using an ultrasound system.

## Repetitive Strain Injury

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Repetitive ultrasound scanning has been associated with carpal tunnel syndrome (CTS) and related musculoskeletal problems. Some investigators have looked at a large population of sonographers with different types of equipment. An article (see references), with feedback from a smaller geographical area, makes the following recommendations:

Maintain your joints in optimum positions with a balanced posture while scanning.

Allow frequent breaks to give soft tissue a chance to recuperate from awkward positions and repetitive movement.

Avoid gripping the transducer with excessive force.

Note: The S4-2, s4, and s8 transducers are shipped with an ergonomic grip. To order additional ergonomic grips for the S4-2, s4, and s8 transducers, contact your Philips representative. To learn how to install and clean the ergonomic grip, see your ultrasound system user information.

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## Foot Switch Warning

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**WARNING:** Do not use the foot switch in the operating room. IEC 60601-1 specifies that foot-operated control devices used in the operating room must be of watertight construction. The foot switch supplied with the ultrasound system meets only drip-proof construction requirements.

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## Philips Transducers

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Use only transducers that are approved by Philips for use with your Philips ultrasound system. The transducers that are compatible with your ultrasound system are listed in your ultrasound system user information.

The major area of concern is the handling of transducers that have come into contact with infected patients. You should always wear gloves when you handle transducers used in TEE, endocavity, intraoperative, and biopsy procedures that have not been previously disinfected.

For information on cleaning and disinfecting transducers, see [Cleaning, Disinfecting, and Sterilizing Transducers](#).

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## Electrical Warnings

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To learn about electrical warnings associated with the system, see your ultrasound system user information.

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## Explosive Hazards

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To learn about explosive hazards associated with the system, see ultrasound system user information.

## Glutaraldehyde Exposure

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The United States Occupational Safety and Health Administration (OSHA) has issued a regulation covering levels of acceptable glutaraldehyde exposure in the working environment. Philips does not sell glutaraldehyde-based disinfectants with its products. This type of disinfectant is, however, recommended for the disinfection of transducers used in TEE, intraoperative, endocavity, and biopsy procedures.

To reduce the presence of glutaraldehyde fumes in the air, be sure to use a covered or ventilated soaking basin. Such systems are commercially available.

## Infection Control

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There are issues related to infection control for you, as well as for the patient. You should follow the infection control procedures established in your clinic or hospital for both the protection of the staff and the patient.

### ***Removing Blood and Infectious Material from the System***

Use a gauze pad moistened with soap and water to remove blood on the system and the transducer connectors and cables. Then dry the equipment with a soft cloth to prevent corrosion. You can use a 70% solution of isopropyl alcohol on the system and only on certain parts of some transducers. Additional cleaning agents are also available for transducers. For more detailed information, see *Cleaning, Disinfecting, and Sterilizing Transducers*.

To learn more about removing blood and other infectious material from the system, see *Cleaning the System and ECG Equipment and Disinfecting System Surfaces*.

**Caution:** Do not wipe the transducer strain relief/housing joint, strain relief, or cable with isopropyl alcohol. Isopropyl alcohol can damage these parts of the transducer. This damage is not covered by the warranty or your service contract. Also, do not use isopropyl alcohol on TEE transducers (except for their handles).

### ***ECG Cables and Lead Sets***

For cleaning and disinfection information for ECG cables and lead sets, see the instructions provided with the ECG cables and lead sets.

### ***Disposable Drape***

If you believe contamination of the imaging system might occur during an exam, Philips recommends that you take universal precautions and cover the imaging system with a disposable drape. Consult your hospital's rules regarding equipment use in the presence of infectious disease.

**Caution:** Be sure to position the drape so that you do not block the vents on the ultrasound system, the monitors, or the peripherals.

## References

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Pike, Ian et al. "Prevalence of Musculoskeletal Disorders and Related Work and Personal Factors Among Diagnostic Medical Sonographers." *Journal of Diagnostic Medical Sonographers*, Vol. 13, No. 5: 219-227, September 1997.

Necas, Martin. "Musculoskeletal Symptomatology and Repetitive Strain Injuries in Diagnostic Medical Sonographer." *Journal of Diagnostic Medical Sonographers*, 266-227, November/December 1996.