UNISYN
A division of GE Healthcare

Probe Care & Handling
TEE Probes

Probe Care & Handling
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For more information on probe care and handling procedures, go to:
www.gehealthcare.co.uk/en-GB/products/ProbeCareSolutions

Probe Care & Handling TEE Probes

DOs

GE Healthcare recommends the following practices to keep your TEE probes operating optimally:

- Use a scan head protector during all phases of transportation.
- Store the probe so it hangs freely vertically.
- Store the probe in an environment that is safe and with good air flow.
- Only use water-based lubricants on the TEE probe.
- Rinse the probe thoroughly, especially final rinse.
- Follow the chemical directions for use and soak times.
- Disconnect the probe from the system by grasping the connector and pulling gently.
- Use bite guards during every procedure.

DON'Ts

GE Healthcare cautions against the following actions:

- Do not store the TEE in the shipping case.
- Do not store the TEE in a drawer.
- Do not submerge the handle.
- Do not allow moisture to enter the system connector.
- Do not apply numbing agents directly to the probe.
- Do not over soak the probe in enzymatic or high-level disinfectants.
- Do not allow the system connector or scan head to swing freely during transportation.
- Do not disconnect the probe from the system by tugging on the connector cord.
- Do not allow the scan head to impact other objects.
- Do not drop the system connector.
- Do not apply wipes or sprays that contain alcohol products to the shaft, sleeve or scan head of the TEE probe.

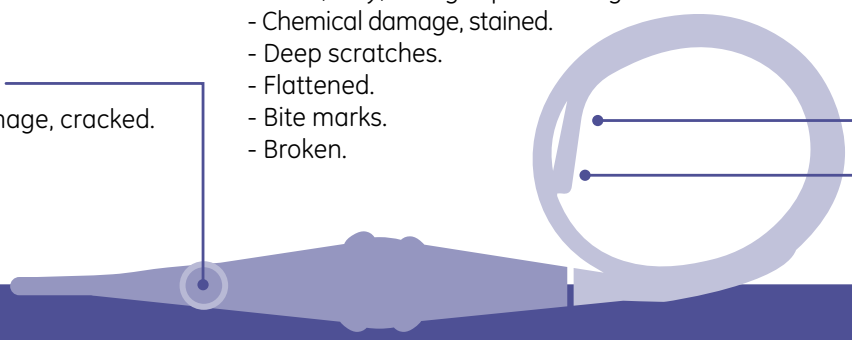
Visual Inspection

Insertion Tube
- Worn, dirty, fading depth markings.
- Chemical damage, stained.
- Deep scratches.
- Flattened.
- Bite marks.
- Broken.

Bend Rubber
- Dirty, worn, cut, torn, holes.
- Beads broken, cracked or marked.
- Chemical damage.

Control Housing
- Dirty, cosmetic damage, cracked.
- Stiff knob rotation.
- Missing pieces.

Head and Lens
- Scratches, dents, and gaps.
- Lens tears, holes or cuts.
- Lens pealing, wearing.
- Lens air pocket or delamination.



Probe Care & Handling Standard Probes

DOs

- Handle all transducers with extreme care.
- Ensure that connected transducers are placed in the probe holder yake when not in use.
- Utilize wall-mounted transducer holders with lens facing up.
- Visually inspect transducers and cables for damage prior to connecting to ultrasound system.
  If a transducer appears to be damaged, discontinue use and notify Unisyn. Possible damage may include, but is not limited to:
  - *Bent or broken probe pins*
  - *Cable cuts or splitting*
  - *Surface cracks*
  - *Exposed wires or shielding*
  - *Fluid leaks*
- Disconnect transducers from ultrasound system prior to cleaning or disinfecting.
- Clean and disinfect all transducers following procedures contained in the system Basic User Manual.
- Ensure you follow the chemical manufacturer recommendations regarding use and handling of the chemical.

DON'Ts

- Do not drop or knock the transducer or transducer lens. Impacting the probe lens face can cause fractures of the crystal elements leading to failure.
- Do not leave transducers in places where they are subjected to being knocked over or dropped.
- Do not drop transducers into holders or disinfectant containers with lens face down.
- Do not let transducer cables dangle loosely from the ultrasound system where they might be caught in the casters while moving.
- Do not immerse transducers deeper than permissible levels. Never immerse the connector or adapter into any liquid.
- Do not apply excessive bending or pulling force to the transducer cable.
- Do not kink, tightly coil, or apply excessive force on the probe. Insulation failure may result.

27% of probes in clinical use are damaged every year due to routine utilization[1,2].

1. Weigang, et al. The methods and effects of transducer degradation on image quality and the clinical efficacy of diagnostic sonography. J Diag Med Sonog. 2004; 20:395-405.
2. Mattias Mårtensson et al. (2009). High incidence of defective ultrasound transducers in use in routine clinical practice. European Journal of Echocardiography. 10 (1), 389–394.

Probe Cleaning Procedures

Cleaning is defined as the removal of all visible soil or contaminants from the transducer.

All transducers must be cleaned after every use – this is an essential step before disinfection or sterilization is attempted.

1. After every exam, ensure the acoustic coupling gel is completely wiped off the transducer. Transducers should not be left soaking in gel.
2. Remove any transducer cover, biopsy guides or protective devices from the transducer.
3. Disconnect transducers from ultrasound system prior to cleaning or disinfecting.
4. Use a moistened soft cloth or wipe to remove any remaining contaminants that remain on the transducer or cable.

Do not re-use cloths or wipes. Soap, detergents or enzymatic cleaners should be used in accordance with the manufacturer's instructions. GE is not responsible for damage incurred during the cleaning process for products which no material compatibility evaluation has been conducted.

5. If rinsing is required, use caution not to expose the system connector to moisture or liquids.
6. Use a lint-free soft and clean dry cloth or wipe to thoroughly dry the transducer and cable.

Notes: *Cleaning products should be as close to neutral pH as possible. Any gel, cleaning or disinfectant products containing surfactants, methanol, ethanol, benzyl or methyl alcohol, bleach, methyl or ethyl paraben, polyethylene glycol, mineral oil, lubricant oil, oil based lotions, acetone, ammonia, anhydrous ammonia, iodine, iodine compounds, acids with pH5 or greater may damage or discolor your transducer.* ***The use of any type of brush is not recommended as bristles may damage lens materials.***

Cleaning and disinfection of transducers should be done before use and between patient exams. Always refer to the disinfectant manufacturers guidelines or your system user manual for information about approved disinfectants.

Daily & Long Term Storage

Follow these guidelines to protect your transducer:

DOs

- Always store transducers in the transducer holders on the side of your system or on a securely mounted wall rack when you are not using them.
- Make sure the transducer holders are clean before storing transducers.
- When storing transducers, use the cable-management clips to secure the transducer cable.
- For TEE transducers, be sure the distal tip is straight and protected before storing the transducer.

DON'Ts

- Avoid storing transducers in areas of temperature extremes or in direct sunlight.
- Never store a TEE transducer in the carrying case, except to transport it.

Probe Visual Inspection

General Inspection of an ultrasound probe

It's best to have a systematic and consistent approach to properly identify any damage or performance issues. The majority of probes have four common components:

1 System connector

Inspect the system connector before connecting the probe to the console. Ensure that there are no bent pins or contact damage, such as impacts or cracks, which may suggest internal damage may also have occurred. Look for the following common damage:

- Scratched, chipped.
- Dents.
- Something loose inside (rattles).
- Missing screws.
- Locking knob broken or missing.
- Connector pins bent, missing, or broken.
- Strain relief separating, peeling, missing, stained, or scuffed.

2 Probe cable

Inspect the cable for kinks, cuts, extreme twists, and tears in both strain reliefs. Assess any discoloration and any changes in the feel of the material and/or degradation. Look for the following common damage:

- Dirty, stained.
- Cuts.
- Worn.
- Pulled away from strain relief.
- Twisted.
- Stiff.

3 Probe body/ head /handle

Inspect the probe body for signs of sharp impacts, dents, cracks, or faulty repairs. Evaluate any significant discoloration due to chemical degradation. Look for the following common damage:

- Dirty, scratched, gel stains.
- Dented by lens.
- Cracked in corner of lens.
- Gaps in seal.
- Strain relief separating, peeling, missing, stained, or scuffed.

4 Transducer /lens

Inspect the transducer area for impacts. Is the covering intact or are there signs of chemical degradation? Look for the following common damage:

- Tears, holes, cuts, or scratches.
- Peeling, wearing, bumps, air pockets, or delamination.

Common Probe Damage

Convex, Linear, Sector, Endocavity PROBES

Common probe damage	Unisyn repair capability
Lens damage, wear, holes, swelling, delamination	Lens replacement
Strain relief damage, separation	Strain replacement
Nosepiece and probe separation and cracks	Cosmetic repairs
Cable cuts	Cable patches, possible cable replacement
Connector housing electrical damage	Major and minor electrical repairs, pin module replacement
Weak or dead elements, dropouts in an image	Coax retermination, coax cable replacement, array replacement

Specialty 3D/4D Volume PROBES

Common probe damage	Unisyn repair capability
Lens cap damage	Lens cap replacement
Fluid and oil leaks	Lens cap replacement, oil reservoir repair and replacement
Inoperative steering	Motor repair
Cable cuts	Cable patches, possible cable replacement
Connector housing electrical damage	Minor electrical repairs, pin module replacement
Weak or dead elements, dropouts in an image	Array ball replacement, oil reservoir repair and replacement

Transducers are a weak link in the ultrasound imaging chain since they are easy to drop, their cables may be easily kinked and stressed, and the active elements are relatively fragile.