Chapter 3—Selecting and Positioning RF Coils

Hitachi Medical Systems America, Inc. (HMSA) offers a wide selection of radio frequency (RF) coils for use with the Oasis MR System. This chapter provides an illustrated procedure for the correct use of each available coil.

**Caution**
Only coils distributed by HMSA are compatible for use with the Oasis MR System. Do not attempt to use another manufacturer’s coils, as this may result in damage to your system.

**Warning**
Make sure that all coils placed on the patient table are plugged into a table connector. Disconnected coils can cause patient injury or be damaged by RF energy. Remove coils from the patient table that are not being used for the scan protocol.

**Caution**
Avoid loops in the cable. Place any excess cable between the patient table and pads. Prevent the cable from touching the patient or any part of the magnet bore.
Caution
Because the receiver coil is sensitive to mechanical shock, great care must be taken when handling it. Do not drop it or hit it against anything.

Caution
Since the receiver coil is not waterproof, care must be exercised in order to not expose it to water or any other liquid.

Caution
Since the receiver coil is not explosion-proof, do not use it in an inflammable atmosphere.

Caution
Since the receiver coil is not appropriate for sterilization, do not sterilize it.

Caution
Stress should not be added to the receiver coil. Do not carry the coil by the cable.

Warning
Use only accessories (such as coil and cables) that are specified as genuine system parts. Unapproved accessories can damage the system and create electrical or thermal hazards.


**Warning**

Before beginning scan operation, remove any unnecessary parts such as coils, cables, lead wires, etc. from the gantry and tabletop. Failure to comply may create electrical or thermal hazards.

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**Warning**

Never use any coils, cables and lead wire if the insulation material is worn out and metallic parts are exposed. Failure to comply can lead to an electric shock hazard.

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**Caution**

Make sure that the cable and lead wire are connected and wired as instructed in the operation manual. Do not route the cable or lead wire in the form of a loop. Do not let them touch the patient directly.

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**Caution**

Do not place anything near the receiver coils except equipment approved for use with the Oasis system.

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**Caution**

Use receiver coils in the shielded room.

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**Caution**

Never use any apparatus which generates radio waves, such as cellular phone, transceivers, wireless radios, radio-controlled toys etc. near to the receiver coil.
Caution

1. Keep patient away from cable.
2. Care should be taken so as not to form a loop.

Caution

Do not lay down the coil to the receiver cable exit side.
The receiver cable might be damaged.

The following is a list of all of the coils manufactured or distributed by HMSA for the Oasis MR System. Your facility may not have all of the coils described here, as some are optional and must be purchased separately.

- 5-Channel Head Coil
- 8-Channel Cervical Spine Coil
- 8-Channel CTL Coil
- 6-Channel Rapid Body Coil
- 2-Channel Flexible Body Coil–Large
- 2-Channel Flexible Body Coil–Extra Large
- 6-Channel Extremity Coil
- 6-Channel Shoulder Coil
- 1-Channel Solenoid Coil
- Transmit/Receive Body Coil
- 8-Channel Neurovascular Coil (optional)
- 8-Channel Breast Coil (optional)
- 3-Channel Wrist Coil (optional)
- 8-Channel Lower Leg Coil (optional)
Special Care Requirements

Prior to placing the RF coils in service, use a ten-percent bleach solution (as described in the section, “Cleaning Coils and Pads”) to clean the coils, eliminating the risk of patient exposure to potentially infectious materials.

Using Pads

Various pads are available for use with the Oasis MR System. In addition to providing a degree of comfort for the patient, the pads help to support and position the patient and the coil so that you can acquire the best alignment in the coronal plane (that is, the height of the patient above the table surface). Combinations of pads can be used, depending upon the region of interest, the coil you plan to use, and the size of the patient. The detailed positioning instructions in this chapter suggest the appropriate pads to use under most circumstances.

For patient comfort, use the knee cushion with virtually all scans when the patient is supine (except for hip imaging). When a patient is prone, HMSA recommends that you place a pillow under the ankles.

Do not use too many pads, as this might raise the patient too high in the static field.

Cleaning Coils and Pads

If equipment is contaminated with blood or other potentially infectious material, the equipment must be decontaminated according to Occupational Safety and Health Administration (OSHA) regulations. Protect equipment from contamination whenever possible by using careful work practices. Such work practices should include:

- Avoid touching the equipment unnecessarily during care delivery, especially with contaminated hands or gloves.
- Position equipment to avoid contact with anticipated spatter.
- Avoid laying contaminated items on unprotected equipment surfaces.
- Use barriers on equipment surfaces that you expect to touch with contaminated hands or when contact with spatter cannot be avoided.

The following solutions are recommended for cleaning the coil and pad surfaces:

- Ten-percent bleach solution (some discoloration may occur).
- 1 ounce commercial dishwashing liquid mixed with 1 gallon of water.
- Warm water.
Apply the cleaning solution to a soft cotton cloth and clean the surface.

Thoroughly wipe or rinse the solution off the pad after cleaning. Avoid excessive moisture. Immersing the pads in water is not recommended. If such action is necessary, allow the pads to dry thoroughly before using them again. Do not allow moisture to migrate from a pad to one of the coils.

The coil housings are designed to minimize moisture and fluid entry. To avoid possible coil damage during or following cleaning, do not soak the coil or apply excess water to the connector areas, patient pads, or VELCRO® straps.

For more information on protecting yourself and others from the risk of bloodborne pathogens, visit the OSHA Bloodborne Pathogens and Needlestick Prevention website at www.osha.gov/SLTC/bloodbornepathogens/index.html. This site contains the OSHA Bloodborne Pathogens Standard, letter of interpretation, and compliance directive. For more information on using cleaners and disinfectants on medical equipment, visit the Food and Drug Administration (FDA) website at www.fda.gov/cdrh/safety/103107-cleaners.html.

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**Storing Coils and Pads**

Store the coils in a protected area. Do not stack objects on the coils or pads. Always store coils fully assembled to keep out dirt and to prevent damage to connectors. If coils are hung, allow the cable to hang down without becoming entangled in another coil. If coils are stored on shelves, wind the cable around the coil and place the connector inside the coil.

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**Note:**

Store the flexible body coils standing on end with the cable tucked inside. Store the solenoid coil hanging from a hook or peg, or standing upright. Do not stack objects on the coils or pads.

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**Caution**

Always wrap the cable around the coil in the same direction. Be careful not to bend cables back and forth. Such action can result in metal fatigue, which may impair the electrical signal or even break the cable.