Chapter 2—Positioning the Patient

In order to acquire an image of a particular anatomical region, the patient must be properly positioned on the Oasis MR System patient table using one or more pads, then fitted with the appropriate coil. The patient table is equipped with lasers to guide you in positioning the patient outside the magnetic field. Once you have centered the region to be studied, you can move the patient into the magnetic field, where the imaging will be performed.

General instructions about the Oasis MR System control panels and the proper use of the imaging hardware are provided in this chapter. Patient positioning terms, operation of the patient alert button, and patient table preparation directions are also included.

Gantry and Patient Table Data

The gantry is designed with a wide aperture to create an inviting patient environment without compromising clinical utility. While the large, high-capacity patient table comfortably supports a broad range of body types, the limits listed below should be followed.

- Magnet gap: 17.32 in. (44 cm)
- Weight limit: 500 lbs. (225 kg)
- Patient table width: 32 in. (82 cm)
- Total longitudinal travel: >7 ft.
- Vertical range: 49-88 cm
- Class II laser positioning:
  - +/- 1 mm accuracy
  - Automatic movement to isocenter
Terminology

The following terminology is used throughout this manual to ensure clear and explicit instructions.

**Patient Table**

- References to the **foot of the patient table** indicate the end of the patient table farthest from the magnetic field.
- References to the **head of the patient table** indicate the end of the patient table nearest to the magnetic field.
- References to the **right side or left side of the patient table** indicate the sides as if you were standing at the foot of the patient table looking at the magnet.

**Body Positioning**

- Supine refers to positioning the patient on his or her back, lying face up.
- Prone refers to positioning the patient on his or her stomach, lying face down.
- Right decubitus refers to positioning the patient on his or her right side.
- Left decubitus refers to positioning the patient on his or her left side.

**Patient Safety**

While you are positioning the patient on the patient table, and while the patient is in the magnetic field, you must constantly monitor the patient’s safety. Make sure that the receiver coil cable remains away from the patient and that the patient does not make contact with the gantry while the patient table is moving.

**Warning**

Do not allow persons with pacemakers or other implanted devices to enter the Controlled Access Area (within the 5-gauss field). The strong magnetic field could cause such devices to malfunction and pose a risk of serious injury or death to the person.

**Warning**

Do not introduce ferromagnetic materials (such as tools, scissors, gurneys, cleaning equipment, and similar items) into the magnetic field. The strong magnetic field can cause these materials to act like projectiles, drawing them into the system. Failure to comply could result in death or serious injury.
### Warning

Patients requiring emergency treatment or assistance must be removed from the Controlled Access Area. Their proximity to the magnet could prevent the safe and effective use of electronic and/or metallic emergency medical equipment. Failure to comply could result in death or serious injury.


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**Patient Alert Button**

*Note:*

*If the patient alert button is activated, press the TALK button on the control unit to silence the alarm.*

After positioning the patient on the patient table and fitting him or her with the appropriate coil and pad(s), you should offer use of the patient alert button. When pressed, this device beeps to alert you that the patient needs assistance during a procedure. Always offer this device to patients, especially those who have hearing impairments.
Gantry Control Panel

Two control panels are located on the gantry. Scans can be started, aborted, paused, and restarted from inside the scan room by pressing the appropriate button on either control panel.

The buttons and indicators on the control panels of the gantry are shown in the example and their functions are described in this section. The button lights indicate operation status.
### Gantry Control Panel Indicator

<table>
<thead>
<tr>
<th>Function</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Longitudinal move counter</td>
<td>Indicates the position of longitudinal direction (forward and backward). When the origin (the back end of longitudinal direction) has not been detected right after the control program has been started, it is unlit.</td>
</tr>
<tr>
<td>Lateral move counter</td>
<td>Indicates the position of lateral direction (right and left). When the origin (the center of the lateral direction) has not been detected right after starting the control program, it is unlit.</td>
</tr>
</tbody>
</table>
| Lateral patient table position indicator | ➡: Left
 roma: Center
 ➤: Right |
| Up/down patient table position indicator | ➠: Highest and backmost position.
 ▼: Position other than the highest position. |
| Scan status display | Lit during the scan. |

### Gantry Control Panel Button

<table>
<thead>
<tr>
<th>Function</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emergency patient table stop</td>
<td>Quickly stops operation of the patient table and keeps the state of emergency stop until the RELEASE button is pressed. In the state of emergency stop, all control panel buttons are turned off.</td>
</tr>
<tr>
<td>Emergency patient table release</td>
<td>Releases the patient table from the state of emergency stop.</td>
</tr>
<tr>
<td>Clears the longitudinal move counter</td>
<td>Clears the longitudinal move counter to 0. The CLEAR button does not clear the lateral move counter. If it is pressed during the set mode, the set mode is released.</td>
</tr>
<tr>
<td>Brings the patient table to the up position</td>
<td>When the patient table is not at the highest position, the IN button functions as an ascending button. As soon as the patient table reaches the highest position, the laser localizer is lit.</td>
</tr>
<tr>
<td>Moves the patient table into the magnet bore</td>
<td>When the patient table is at the highest position, the IN button functions as an advance button.</td>
</tr>
<tr>
<td>Forward (slow)</td>
<td>If the IN and OUT buttons are pressed at the same time during a forward move, the patient table moves forward at slow speed.</td>
</tr>
<tr>
<td>Set</td>
<td>Moves the laser-localized area of interest to the isocenter of the magnet.</td>
</tr>
<tr>
<td>Speed fixed</td>
<td>If the IN button is pressed again (released once and pressed again right away), the current speed is maintained.</td>
</tr>
</tbody>
</table>
### Gantry Control

<table>
<thead>
<tr>
<th>Panel Button</th>
<th>Function</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="OUT" /></td>
<td>Out</td>
<td>When the patient table is not at the back end of the longitudinal move, the OUT button functions as a backward button.</td>
</tr>
<tr>
<td><img src="image" alt="OUT" /></td>
<td>Out (slow)</td>
<td>If the OUT and IN buttons are pressed at the same time during a backward move, the patient table moves backward at slow speed.</td>
</tr>
<tr>
<td><img src="image" alt="DOWN" /></td>
<td>Down</td>
<td>When the patient table is at the back end, the OUT button functions as a descending button. As soon as the lowest position is reached, the laser localizer goes out.</td>
</tr>
<tr>
<td><img src="image" alt="SPEED FIXED" /></td>
<td>Speed fixed</td>
<td>If the OUT button is pressed again (released once and pressed again right away), the current speed is maintained.</td>
</tr>
<tr>
<td><img src="image" alt="LEFT" /></td>
<td>Left move</td>
<td>Moves the patient table toward the left.</td>
</tr>
<tr>
<td><img src="image" alt="LEFT" /></td>
<td>Left move (Slow)</td>
<td>If the LEFT and RIGHT buttons are pressed at the same time while moving left, the patient table moves left slowly.</td>
</tr>
<tr>
<td><img src="image" alt="RIGHT" /></td>
<td>Right move</td>
<td>Moves the patient table toward the right.</td>
</tr>
<tr>
<td><img src="image" alt="RIGHT" /></td>
<td>Right move (Slow)</td>
<td>If the RIGHT and LEFT buttons are pressed at the same time while moving right, the patient table moves right slowly.</td>
</tr>
<tr>
<td><img src="image" alt="SET" /></td>
<td>Set mode transit/set move</td>
<td>Moves the patient table to position the area of interest at the center of the magnetic field. The patient table move is carried out while the SET button is kept pressed. During the set mode, the SET button LED blinks and the longitudinal move counter shows the remaining distance. When the patient table move is completed, the laser localizer goes out.</td>
</tr>
<tr>
<td><img src="image" alt="SPEED FIXED" /></td>
<td>Speed fixed</td>
<td>If the SET button is pressed again (released once and pressed again right away), the current speed is maintained.</td>
</tr>
<tr>
<td><img src="image" alt="LASER" /></td>
<td>Laser localizer on/off</td>
<td>While the LASER button is lit, the localizer laser is on. This laser is used for aligning the area of interest.</td>
</tr>
<tr>
<td><img src="image" alt="START" /></td>
<td>Scan start</td>
<td>Starts the scan.</td>
</tr>
<tr>
<td><img src="image" alt="PAUSE" /></td>
<td>Scan suspend/resume</td>
<td>Suspends or resumes the scan.</td>
</tr>
<tr>
<td><img src="image" alt="ABORT" /></td>
<td>Scan stop</td>
<td>Stops the scan.</td>
</tr>
<tr>
<td><img src="image" alt="ILLUMI" /></td>
<td>On/off illumination</td>
<td>Illuminates the gantry.</td>
</tr>
</tbody>
</table>

### Caution

Except in cases of true emergency, do not use the emergency patient table STOP button. Routine use can lead to equipment failure due to excess wear and tear.
### Positioning the Patient

#### Description

The emergency patient table STOP button or the Emergency button on the control unit has been pressed. After checking the patient table to determine that there is no abnormality, press the RELEASE button to release the emergency stop state.

The patient table control program has restarted and the system is in the state of emergency patient table stop. After checking the patient table to determine that there is no abnormality, press the RELEASE button to release the emergency stop state.

The patient table control program has restarted and the blinking button is on. Press the blinking button to turn it off.

When the patient table control program has restarted, this indicator remains unlit until the origin (the back end of the patient table) is detected. When the origin has not been detected, the patient table can only move backward.

Move the patient table backward until the system can detect the origin for longitudinal direction.

When the patient table control program has restarted, this indicator remains unlit until the origin (the center of lateral direction) is detected. When the origin has not been detected, the patient table can only move to the center.

Move the patient table to the center until the system can detect the origin for lateral direction.

<table>
<thead>
<tr>
<th>Special State</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>All buttons off</td>
<td>The emergency patient table STOP button or the Emergency button on the control unit has been pressed. After checking the patient table to determine that there is no abnormality, press the RELEASE button to release the emergency stop state.</td>
</tr>
<tr>
<td>All buttons blinking</td>
<td>The patient table control program has restarted and the system is in the state of emergency patient table stop. After checking the patient table to determine that there is no abnormality, press the RELEASE button to release the emergency stop state.</td>
</tr>
<tr>
<td>Button blinking</td>
<td>The patient table control program has restarted and the blinking button is on. Press the blinking button to turn it off.</td>
</tr>
<tr>
<td>Longitudinal move position indicator off</td>
<td>When the patient table control program has restarted, this indicator remains unlit until the origin (the back end of the patient table) is detected. When the origin has not been detected, the patient table can only move backward.</td>
</tr>
<tr>
<td>IN button off (in the state other than operation limit)</td>
<td>Move the patient table backward until the system can detect the origin for longitudinal direction.</td>
</tr>
<tr>
<td>Lateral move position indicator off</td>
<td>When the patient table control program has restarted, this indicator remains unlit until the origin (the center of lateral direction) is detected. When the origin has not been detected, the patient table can only move to the center.</td>
</tr>
<tr>
<td>LEFT/RIGHT button off (in the state other than operation limit)</td>
<td>Move the patient table to the center until the system can detect the origin for lateral direction.</td>
</tr>
</tbody>
</table>

**Note:**
The control program restarts automatically when the system cannot recover after detecting any abnormality.
Preparing the Patient Table

Preparing the patient table involves selecting and placing the table pads and the radio frequency (RF) coil. Using the appropriate pads and coils is essential to acquire optimal images. Follow these steps when preparing the patient table:

1. Press and hold the OUT button to move the patient table completely out of the magnetic field, then lower the patient table to a position where the patient can easily sit on it. The blue light on the OUT button will turn off when the table is fully out of the magnetic field.

2. Select the appropriate table pads and RF receiver coil and position them on the patient table. The total height added by the pads is important for the correct coronal alignment of the patient. If you use too many pads, the patient will be too high; if you do not use enough pads, the patient will be too low. Examples of the pads available are shown in the photograph.

Your choice of pads will be affected by three factors:

- Anatomical region to be imaged
- Size of the patient
- Coil you plan to use

3. Position the coil on the patient table in the area between the red arrows and the head of the table. Do not position a coil toward the foot of the table.

Refer to Chapter 3, “Selecting and Positioning RF Coils,” for information on the recommended RF coil and table pads for specific examinations.
Positioning the Patient for an Examination in the Magnet

Patient positioning involves using a variety of table and patient positioning pads, placing the RF coil on or around the patient in a variety of ways, and properly centering the anatomical region to be imaged. Although each patient and examination are different, the basic patient positioning procedures remain the same.

Various table pads and positioning pads and sponges are available for use with the Oasis MR System. In addition to providing some degree of comfort for the patient, the pads help to support and position both the patient and the coil. Pads can be used in a variety of combinations, depending upon the region of interest, the coil you plan to use, and the size of the patient. The detailed positioning instructions in Chapter 3, “Selecting and Positioning RF Coils,” will suggest the appropriate pads to use under many circumstances.

For patient comfort, use the knee cushion with virtually all scans when the patient is supine (except 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.

**Caution**

Secure long hair before moving the patient onto the patient table. The patient’s hair could become caught in the patient table mechanism. Failure to comply could cause patient injury.

1. Press and hold the OUT button to lower the patient table to a height where the patient can easily sit on the patient table.
2. Ask the patient to sit on the side of the patient table and then lie down.
3. After fitting the patient with a coil, press and hold the IN button until the patient table reaches the upper limit and the IN light turns off.

**Warning**

Make sure that all coils placed on the patient table are plugged into a table connector. Disconnected coils could cause patient injury or be damaged if exposed to RF energy. Remove any coils not being used for the selected scan protocols.

1. Position the anatomical region in the center of the selected RF coil. Add positioning pads and sponges as needed.
**Caution**

Some coils consist of two parts that lock together. Be sure that the patient’s hair, skin, clothing, and/or other foreign material does not get caught between the two coil parts.

5. Press the LASER button to turn on the lasers.

**Warning**

Instruct the patient to close his or her eyes when the lasers are on. Do not stare into the beam, as eye injury may result.

6. Press and hold the IN button to center the transaxial alignment line of the laser with the patient’s anatomical region that is to be imaged.

7. Connect the receiver coil cable to the patient table connector. Two table connectors are available on the patient table—one at the head and one at the foot. When making multiple connections, avoid crossing the coil cables. If possible, keep the cables fully extended and running parallel to each other.

**Caution**

Avoid loops in the cable. Place any excess cable between the patient table and the pads. Prevent the cable from touching the patient or any part of the magnet bore.
Positioning the Patient

Note:
If the longitudinal move counter display is not 0, move the patient out of the magnetic field and check the coil placement on the patient table.

Note:
Do not allow a coil to touch the upper magnet.

8. Press and hold the SET button on the gantry control panel until the patient table advances the patient to the magnet’s isocenter (the center of the magnetic field) and stops. The imaging region centered under the lasers is now in the center of the magnetic field. The longitudinal move counter display on the gantry will be 0.

Caution
When moving the patient into the magnetic field, do not allow the receiver coil cable to loop, wind around the patient’s body, or catch on the patient table.

Positioning the Patient Using the Patient Table Extension

1. Move the patient table to the up position. Place the patient table extension on the patient table at the head end of the magnet.

2. Insert the patient table extension and lock it into place using the white locks.
3. Lift the table release latch located at the foot end of the patient table. Using the table release bar, pull the table out as far as it will go.

Note:
The IN, OUT, Right, and Left buttons on the gantry control panel are off and the RELEASE button is green.

4. Press the RELEASE button on the gantry control panel. The IN, OUT, Right, and Left buttons will be activated.

5. Press the OUT button to lower the patient table. Ask the patient to sit on the side of the table and lie down.

6. After fitting the patient with a coil, press and hold the IN button until the patient table reaches the upper limit and the IN button light turns off.

7. Position the anatomical region in the center of the selected RF coil. Add positioning pads and sponges as needed.

8. Lift the table release latch and firmly push the table toward the magnet in order to lock the table into position. Do not press the release bar when pushing the table in.

Note:
In order to use all of the table space between the red arrows and the table extension for positioning, this process must be followed for each patient.

9. Turn on the lasers and position the anatomy of interest where the lasers intersect.

10. Connect the coil cable to the patient table connector.

11. Press and hold the SET button on the gantry control panel until the patient table advances the patient to the magnet’s isocenter and stops. The imaging region centered under the lasers is now in the center of the magnetic field. The longitudinal move counter display on the gantry will be 0.


Completing the Exam

1. Once the exam is complete, press and hold the OUT button to move the patient table out of the gantry until it stops.

2. Lift the table release latch located at the foot end of the patient table. Using the table release bar, pull the table out as far as it will go.

3. Press the RELEASE button on the gantry control panel to activate the IN, OUT, Right, and Left buttons. Press the OUT button to lower the patient table so that the patient can get off.
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