NOTES
This document is provided as a consultation manual intended for the device technicians.
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INFORMATIVE NOTE OF THE MANUFACTURER ON THE MEDICAL DEVICES
The medical device referred to in this manual is an X-ray device compliant with Directive 2011/65/EU on the restriction of the use of certain hazardous substances in electrical and electronic equipment.
Any tampering with, modification, updating or other change both of hardware¹ and software² of the device as supplied and installed by the company (and in the conditions specified in the attached documentation) may partially or totally compromise the device expected operation. This may also alter the safety features with consequent hazard increase for patients, operators and surrounding environment.
For this reason, should the user need to modify the device, he/she must request a written authorisation by CEFLA s.c.
Failure to comply with what is specified in this informative note will null and void the device warranty and the civil and/or penal responsibility for any consequent damage and/or accident and/or worsening of the patient, operator or other people health (including the surrounding environment) will be borne by the person who tampered with the device or his/her legal representative.
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1 Target and field application

This manual is an attached document of the “User Manual” and provide informations and instructions regarding the use of the NewTom 5G series Patient Table.

For more details about NewTom 5G series scanner unit, please refer to the “User Manual” document.

“Patient Table User Procedures” and “User Manual” must be read and understood before you start using the NewTom 5G series.

Keep this and other associated manuals for future reference and for new operators or qualified service personnel.
2 Patient Table

2.1 Patient Table Console

CAUTION:
The use of controls, adjustments, or the performance of procedures other than those specified herein may result in hazardous radiation exposure.

2.1.1 Console structure and definitions

The patient table console includes a keypad with 14 buttons, 3 signal LEDs, a monochrome display and an emergency button.
It is possible to instantly interrupt a movement by pressing one of the available buttons (expect when the “Service” level is enabled) or engaging the emergency button

2.1.1.1 Definition of “REST” position

The “REST” position, is intended as the position in which the patient can get in the table. In this position:

- Table is out of the gantry
- Table is transversely (Y axis) centered.
- Pantograph is in the low position (inside a predefined range).
- Back plate of the table is tilted (inside a predefined range).
- Leg rest plate tilted

From the “REST” position is possible:

- raise and lower the pantograph (inside a predefined range) by pressing the corresponding button on the console;
- adjust the back plate (inside a predefined range) by pressing the “+” e “-“ buttons, when from the TABLE page the back plate is enabled.
- adjust the leg rest plate (inside a predefined range) by pressing the “+” e “-“ buttons, when from the TABLE page the back plate is enabled.
- all the other movements are inhibited.

2.1.1.2 Definition of “WORKING” position

The “WORKING” position, is intended as the position in which the table is in a high and horizontal position, the patient lies on the table and is ready to enter in the scanner gantry. In this position:

- Table can be inside or outside of the scanner gantry
- Table is transversely (Y axis) centered
- Pantograph is in the high position (inside a predefined range)
- Back plate of the table is horizontal (inside a predefined range)
- Leg rest plate almost horizontal (inside a predefined range)

From the “WORKING” position is possible:
- slide the table inside or outside the gantry along the X axis, by pressing the corresponding buttons on the console.

- move the table transversely (along the Y axis) in order to move the patient to its left or to its right by pressing the corresponding buttons on the console.

- raise and lower the pantograph (inside a predefined range) by pressing the corresponding buttons on the console. The vertical movement is associated to an automatic longitudinal movement (along the X axis) in order to keep the patient in the same longitudinal position (see paragraph “Synchronized movement pantograph / longitudinal axis”)

- adjust the back plate (inside a predefined range) by pressing the “+” e “-“ buttons, when from the TABLE page the back plate is enabled.

- adjust the leg rest plate (inside a predefined range) by pressing the “+” e “-“ buttons, when from the TABLE page the back plate is enabled.

- all the other movements are inhibited.

2.1.1.3 Synchronized movement pantograph / longitudinal axis

Once the table is in the WORKING position, the vertical movements (raising/lowering the patient position), affect the longitudinal position of the patient (X axis), which is automatically adjusted by the table in order to compensate the previous movement.

Raising the table the patient will slightly slide away from the gantry, while lowering the table the patient will slightly slide toward the gantry.

In case the longitudinal movement along the X axis is inhibit, due to the limit switch activation, the vertical movement will also be disabled (in that case is necessary to manually move the table along the X axis in order to deactivate the limit switch).
### 2.1.1.4 Console overview

<table>
<thead>
<tr>
<th>Button</th>
<th>Function</th>
<th>Warning</th>
</tr>
</thead>
<tbody>
<tr>
<td>UP/DOWN</td>
<td>Raise and lower the table</td>
<td>The vertical position of the table can be adjusted only during the REST or WORKING position. The maximum and minimum positions are predefined.</td>
</tr>
<tr>
<td>FORWARD/BACK</td>
<td>Longitudinal movement toward the direction of the button arrow (e.g. manually sliding the patient inside or outside the gantry)</td>
<td>The longitudinal position of the table can be adjusted only during the WORKING position.</td>
</tr>
<tr>
<td>LEFT/RIGHT</td>
<td>Transversal movement toward the direction of the button arrow (e.g. centering the top laser on the patient nose)</td>
<td>The Transversal position of the table can be adjusted only during the WORKING position.</td>
</tr>
<tr>
<td>P1</td>
<td>Run the process to slide the patient inside the gantry</td>
<td>Available only when the “P1” symbol appears on the display.</td>
</tr>
</tbody>
</table>

NewTom 5G – Patient Table User Procedures
2.1.1.5 Display overview

Display shows different pages that allow to select different functions of the table and to visualize the status information. It is possible to scroll among different page, select functions and perform movement using the keypad buttons.

Navigation buttons can refer to different actions depending on the current page. Pressing a button not associated to any command will force the display to show the prohibition sign on the top right corner.
In the bottom part of each page the corresponding actions of the F1, MODE and F2 button are shown. After the device has been turned on, the LOGO page will appear for a few seconds followed by the main page (HOME page).

2.1.1.6 HOME Page

This page shows the current status of the table and the available functions. If the “P1” icon is visible, it is possible to proceed to move the table to the working position. If the “P2” icon is visible, it is possible to proceed to move the table to the rest position (or reset, if required).

After turning on the table requires a daily reset. It is not possible to perform any movements until the reset procedure has been carried out. In the HOME page the “triangle warning” icon that appear next to the “crossed patient” icon, reminds the user that the reset procedure must be performed with the table empty (no patient sitting or lying). To run the procedure press the P2 button.

The reset procedure is finished when the following page appears.

The icons referring to the F1, MODE and F2 buttons links to the correspond POS, TABLE and INFO pages.

Pressing the emergency button, located under the console keypad, will force the display to show the corresponding icon on the right side. This will disappear a few seconds after the button has been released.

The POS page shows the current position for the “X” axis (longitudinal to the bed), “Y” axis (transversal), “Z” axis (vertical) in millimeters, for the leg rest plate, the back plate and the pantograph (in integer units).
Pressing the MODE button will bring back to the **HOME** page.

The **TABLE** page offer the possibility to move the back plate and the leg rest plate separately or simultaneously.

The F1 and F2 button select/deselect back plate and leg rest plate, the central icon shows the current selection.

By pressing the “+” and “-” button the selected part/s will move. The excursion of the movement can be limited by the table current position (rest/working) or by the safety systems.

Pressing the MODE button will bring back to the **HOME** page.

The **INFO** page shows in the bottom right corner the table serial number and the console firmware version.

Pressing the MODE button will bring back to the **HOME** page.
2.1.1.7 LOCK Page

When the table is remotely controlled the “locked console” icon could appear on the display. In such condition all the console buttons are disabled.

LOCK page

In case of fault condition an **ERROR** page will appear on the display, showing the error code and a brief description. This page will stay on until the MODE button will be pressed.

ERROR page

2.1.2 Movement sequences

2.1.2.1 Daily reset

Required after the device has been turned on. Must be performed **without the patient**. In the HOME page the “triangle warning” icon, the “crossed patient” icon, and the “P2” icon will appear when the reset procedure is required.

HOME page with daily reset required and daily reset running

By pressing the P2 button, the sequence will start performing all the necessary movements in order to bring the table to the REST position. During the entire procedure the **HOME** page will show the running icon (hourglass).

Once the procedure has successfully completed the table will be in the REST position and the “P1” icon will appear.

In case the procedure stops and the daily rest icons appears again, press the “P2” until the procedure completes successfully.

It is possible to interrupt the procedure by pressing any button. At that point repeat the procedure in order to carry it out.
2.1.2.2 Complete reset

Some times the table, in addition to the daily reset, will require a complete reset. The procedure is transparent to the user.

After pressing the P2 button, the table will automatically run the daily or the complete reset. In case the procedure is interrupted due to a fault or a button pressure, it can be restarted by pressing the “P2” button.

The complete reset will take longer than the daily reset, but as for the daily reset, will terminate in the REST position.

2.1.2.3 Patient accommodation

This is the sequence that starting from the REST position brings the table to the WORKING position (ready to slide the patient in the gantry).

This procedure can be performed each time the HOME page shows the “P1” icon.

By pressing the P1 button, the sequence will start performing all the necessary movements in order to bring the table to the WORKING position. In case the sequence is stopped due to a button selection, the HOME page will show the available sequences.

Depending on the current position will be possible to complete the sequence by pressing the P1 button, or perform the reset procedure by pressing the P2 button.

2.1.2.4 Patient exit

This sequence starts from the WORKING position (or from intermediate position previously selected) and brings the table to the REST position in order to allow the patient to leave the table.

This procedure can be performed each time the HOME page shows the “P2” icon.
Once the P2 button has been pressed, the sequence will start performing all the necessary movements in order to bring the table to the REST position. In case the sequence is stopped due to a button selection, the HOME page will show the available sequences.

Depending on the current position will be possible to complete the sequence by pressing the P2 button, or perform the reset procedure by pressing the P1 button.

Manual movements can be performed only when the table is in the REST or WORKING position.

2.1.2.5 Anti-collision safety

In the WORKING position the anti-collision control is activated. All the movements that can cause the table to collide with the scanner are inhibit.

2.1.2.6 Console position compared to the patient

Depending the side the console is mounted (right or left of the patient) some icon will be consequently modified.
3 Patient Table with stretcher

3.1 Patient Table console

**CAUTION:**
The use of controls, adjustments, or the performance of procedures other than those specified herein may result in hazardous radiation exposure.

### 3.1.1 General overview and definitions

The table console is composed from a 14 buttons (12 active buttons, lateral arrows not used), 3 signal LEDs, a monochrome display and an emergency button located on the bottom.

It is possible to instantly interrupt a movement by pressing one of the available buttons and/or engaging the emergency button.

Every assisted movement demands the activation of the stretcher block (by the handle near to the patient table console); if the stretcher is unlocked in order to allow its manual movement, any motorized movement is inhibited: in such case a warning signal appears on the display to inform the operator to exercise extreme caution when handling manual stretcher.

#### 3.1.1.1 Definition of “FACILITATED UPHILL position”

“FACILITATED UPHILL position”, refer to a position in which the patient can easy accommodate on the table. This position is characterized by:

- Stretcher completely out of the gantry (with active limit switch)
- Transversely in a centered position
- Pantograph in low position

In this position it is allowed to run the "exam preparation position" sequence (P1) (refer to Par. Errore. L'origine riferimento non è stata trovata.) and UP / DOWN - LEFT / RIGHT movements to further adjustment of the position in special cases.
3.1.1.2 Definition of “EXAM PREPARATION position”

“EXAM PREPARATION position”, refer to the position in which the patient is ready to be centered inside the gantry before the exam.

It is characterized by:

- Stretcher completely out of the gantry (with active limit switch)
- Transversely in a centered position
- Pantograph in a suitable position for the stretcher introduction into the gantry
- Pantograph longitudinally in the determined position (x-axis)

On the position the following adjustment are available:

- Move the table transversally (from right to left) using the related buttons on the console; the width of the movement depends from the stretcher position, and include a safety controlled by the anticollision system.
- Move the table vertically (up and down) inside a predefined range using the related buttons on the console. The width of the movement depends from the stretcher position, and include a safety controlled by the anticollision system.

The vertical adjustment combines both the pantograph and the longitudinal movement (see Par. 2.1.3).

The patient can be place inside the gantry by manually sliding the stretcher in it.
### 3.1.2 Console buttons indications

<table>
<thead>
<tr>
<th>Button</th>
<th>Function</th>
<th>Warning</th>
</tr>
</thead>
<tbody>
<tr>
<td>UP/DOWN</td>
<td>Raise and lower the table</td>
<td>These movements are not allowed in case of “facilitated uphill position”. The minimum / maximum excursions of the movements are limited to defaults values by active collision controls.</td>
</tr>
<tr>
<td>FORWARD/BACK</td>
<td>Not available</td>
<td>Not available. Physically, the stretcher can be moved only in manual mode</td>
</tr>
<tr>
<td>LEFT/RIGHT</td>
<td>Transversal movement</td>
<td>Transversal table movement is not allowed in case of “facilitated uphill position”. The minimum / maximum excursions of the movements are limited to defaults values by active collision controls.</td>
</tr>
<tr>
<td>P1</td>
<td>Start sequence</td>
<td>Operation allowed when the display show a window with P1 symbol (ie if the stretcher is completely out of the gantry with active limit switch).</td>
</tr>
<tr>
<td></td>
<td>&quot;Exam Preparation Position&quot;</td>
<td></td>
</tr>
<tr>
<td>P2</td>
<td>Start sequence</td>
<td>Operation allowed when the display show a window with P2 symbol (ie if the stretcher is completely out of the gantry with active limit switch).</td>
</tr>
<tr>
<td></td>
<td>“Facilitated Uphill Position”</td>
<td></td>
</tr>
</tbody>
</table>
The function depends on the current page displayed on the screen.

The button is active only if the communication 5G / PC is active.

The function depends on the icon displayed on the screen in correspondence of the relevant key.

A green LED is on when the connection between 5G and PC is active.

A yellow LED is on when an x-ray emission is active.

A red LED is on when an anomaly occurs. The operator attention is required.

### 3.1.3 Console structure

Different pages can be shown on the display of the console in order to select functions or visualize status information.

It is possible to navigate through different pages using the button located on the console.

On each page on the bottom area of the display the actions corresponding to the \( F1 / MODE / F2 \) buttons are visualized.
3.1.4 Displayed pages

3.1.4.1 INFO page

After the device has been switched on, the INFO page will appear for a few seconds. This page include the logo, the serial number and the console firmware version. After a few seconds the HOME page (see next picture) will automatically show up.

3.1.4.2 HOME page

This page always shows the current status of the table and the procedures that at the moment can be run.

- If the “P1” icon appears on the display it is possible run the procedure to prepare the table for an exam;
- If the “P1” icon appears on the display it is possible run the procedure to reset the table.

P1 and P2 will be available only if the stretcher is lock and all the way outside the gantry (activating the corresponding limit switch) (see next picture).

If the emergency button has been pressed the corresponding icon will appear on the display (_alarm_icon). This icon will disappear after a few seconds the button has been released.

In case the stretcher is unlock the following picture will appear. In this case it is possible to manually slide the stretcher in or outside the gantry. Since the adjustment is manually run by the operator is suggested to always perform if carefully.

All the motorized movements are inhibited.

In case the stretcher is locked in a different position from the one that allows to run the P1 and P2 procedure (limit switch not activated), one of the following images will appear depending on the level of stretcher insertion in the gantry.

- HOME page with stretcher lock but not all the way out from the gantry
In this case the only available movements are UP/DOWN and LEFT/RIGHT (using the corresponding buttons on the console panel, see Par. Errore. L’origine riferimento non è stata trovata.)

In all the aforementioned pages the icons corresponding to the $F1/F2$ buttons refer to the $POS$ and $INFO$ pages.

3.1.4.3 $POS$ page

In the $POS$ page the following information appear:

- longitudinal position of the stretcher [in mm]
- trasversal position of the stretcher [in mm]
- vertical position of the stretcher [in mm]
- position of the stretcher potentiometer [in mm]
- longitudinal position of the pantograph [in mm]
- vertical position of the pantograph [in internal unit]

By pressing the $MODE$ button (corresponding to the icon located at the bottom of the display) is possible to return to the $HOME$ page.

3.1.4.4 $ERROR$ page

In case an error appear the $ERROR$ page will show up reporting the error code and a brief description. To close the error page press the $MODE$ button.
3.1.5 Movement sequences

3.1.5.1 Exam preparation position sequence (P1)

Allow to position the table before the execution of an exam (table ready for patient positioning).
It is possible to perform this procedure if the the HOME page appear with the P1 icon (see next picture).

![HOME P1-P2 Page]

To run the process is necessary to move the stretcher all the way out of the gantry and lock it.

Once the P1 button, has been pressed the table will move to the EXAM PREPARATION position. Pressing any button during this procedure will result in stopping the process and showing the HOME page. Once stopped is possible to restart the procedure by pressing the P1 button again.

3.1.5.2 Facilitated uphill position sequence (P2)

Allow to position the table before in order to facilitate the patient accomodation (table out of the gantry and at the lowest height).

To run the process is necessary to move the stretcher all the way out of the gantry and lock it.
It is possible to perform this procedure if the the HOME page appear with the P2 icon (see next picture).

![HOME P1-P2 Page]

Once the P2 button, has been pressed the table will move to the RESET position. Pressing any button during this procedure will result in stopping the process and showing the HOME page. Once stopped is possible to restart the procedure by pressing the P2 button again.
3.1.6 Safety controls

3.1.6.1 Collision safety

During the table movements is activated collision monitoring: all movements which could cause contact with the structure of the gantry are inhibited, taking into account the absolute position of the stretcher. In exceptional cases, but it is not recommended, it is possible to disable the collision safety system, only by manual mode from the console and under the strict supervision of the operator.

To do this:

1) After inserting the stretcher inside the gantry (will appear the HOME page with stretcher inserted), press the button

![SELF LIMITED icon](image)

The “SELF LIMITED” icon will appear

2) To disable the collision safety system, press the button

![NO LIMITED icon](image)

The “NO LIMITED” icon will appear to indicate the absence of movements limitations

**NOTE:**
When the collision safety system is disable (“NO LIMITED” mode activated), some software protocols (i.e. eFOV scan) are not available: these protocols are availables only in “SELF LIMITED” mode.

To re-enable the collision safety system, simply extract the stretcher from the gantry

**CAUTION:**
Be careful during the stretcher movements inside the gantry if the collision safety system is disabled, as this could cause accidental collisions

**NOTE:**
It could not disable the collision safety system by remote commands and for remote movement by NNT software
3.1.6.2 Crushing safety

In case during the movement the AntiPinch limit switches are activated the vertical movement (down) of the pantograph is inhibit.

The following picture will appear

![Anti Pinch page](image)

The only available movement will be the vertical one of the pantograph (UP) (see Par. *Errore. L’origine riferimento non è stata trovata.*).

The page will be refreshed (and all the movements available) once the limit switches are not activated any more.

3.1.7 Troubleshooting

Next table includes error codes that could appear on the console display and possible solutions.

<table>
<thead>
<tr>
<th>Error code</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Code 5</td>
<td>Wait 1 minute and retry the desired command.</td>
</tr>
<tr>
<td></td>
<td>In case the error still occur please contract service.</td>
</tr>
<tr>
<td>Code 9</td>
<td>Wait 2 minutes without performing any action.</td>
</tr>
<tr>
<td></td>
<td>In case the error still occur please contract service.</td>
</tr>
</tbody>
</table>
3.1.8 Flowchart of available commands
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NEWTOM™ 5G is manufactured by:

CEFLA s.c.
Phone: +39 045 8202727
Fax +39 045 8203040
e-mail: info@newtom.it

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