LOGIQ™ P9

Getting started guide.

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| 1	Power	10	Comment	19	Patient
2	Freeze	11	Clear	20	Scan
3	Print Key	12	Pointer	21	End Exam
4	B-mode	13	Trackball	22	Digital Keyboard
5	Mode /Function Controls	14	Measure	23	Digital TGC
6	Depth/ Zoom	15	Trackball function/ edit keys	24	Research/ Clinical Mode
7	Auto Optimize	16	Smart Keys	25	Probe Selection
8	Dual Screen	17	Toggle line	26	5 User define keys-Utility/ Reverse/ B-Flow/ Reset/ MyPage
9	User Defined Hard keys	18	Touch Panel		

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Additional configurable capability

1: 5 physical user defined keys

2: Freeze & P1 *Exchangeable*

5 digital user defined keys
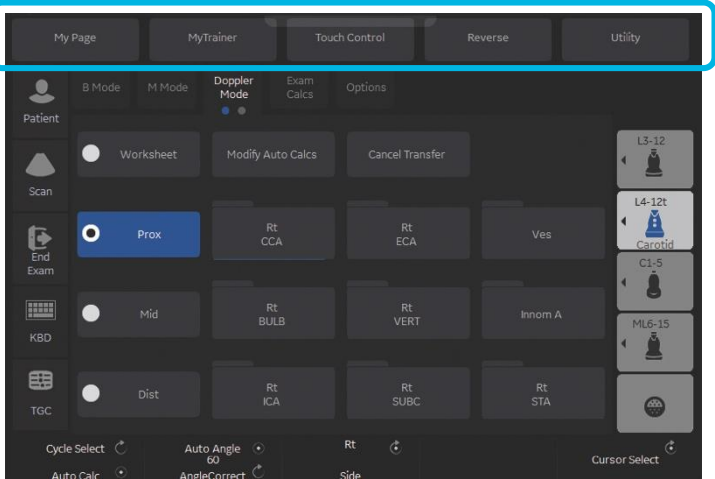
3: Configurable smart keys

Imaging mode	Function
Live B, B-Flow™	Focal Zone Up/Down
	Frequency Up/Down
	Steer
CF, TVI, B-Flow Color, PDI	Box Steer
	Scale (PRF) Up/Down
PWD, CW, TVD	Baseline Up/Down
	Scale (PRF) Up/Down
M/D cursor	Sample volume size

LOGIQ and B-Flow are trademarks of General Electric Company.
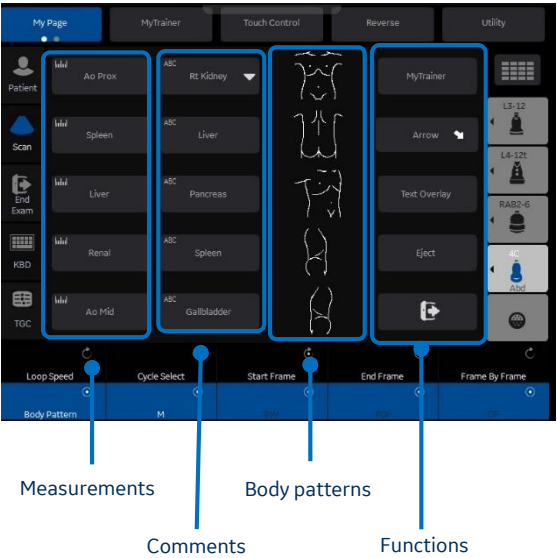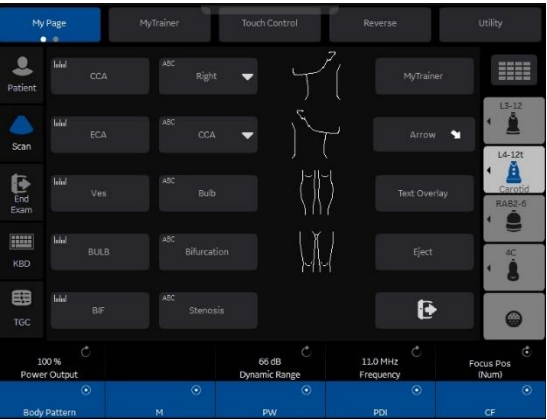
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My Page

Configurable on each My Page

- GE innovative personalization feature
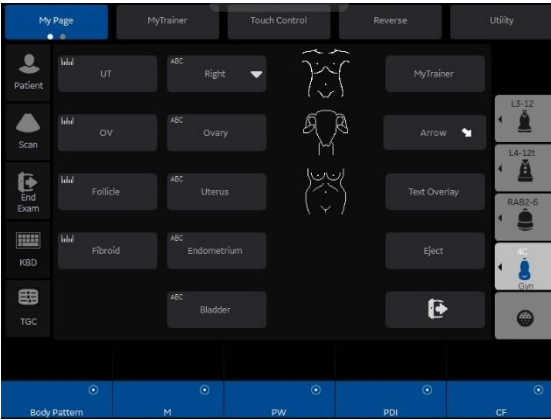- Preset depended (Abd/Carotid/…has My Page)
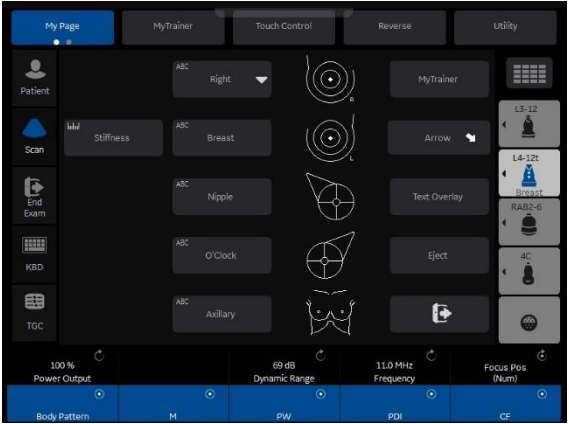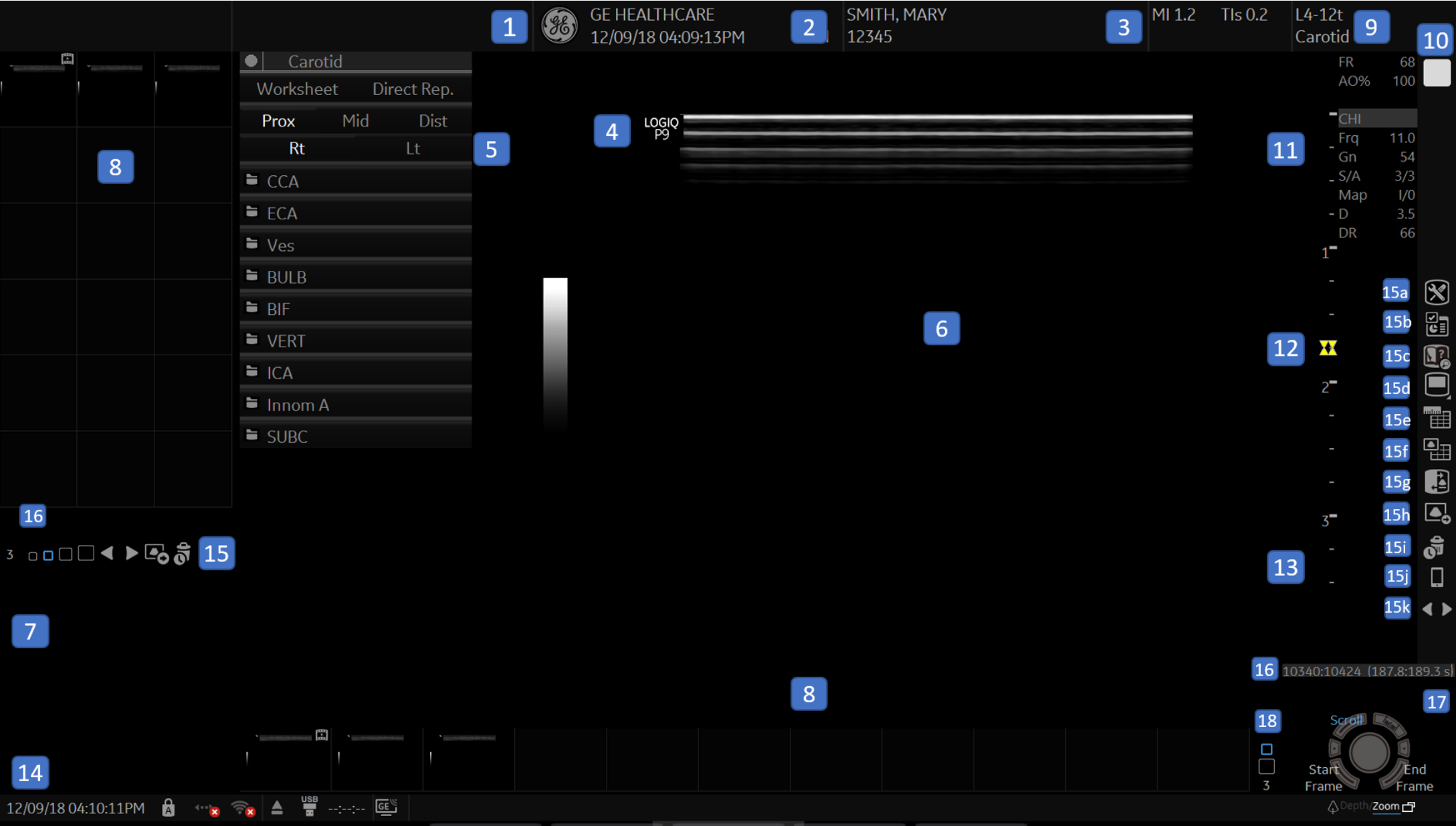- Each use case (preset) has My Page

Abd

Carotid

OB

Breast

- Measurements
- Comments
- Body patterns
- Functions

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GE HEALTHCARE
12/09/18 04:09:13PM

SMITH, MARY
12345

MI 1.2   TIs 0.2

L4-12t
Carotid

Carotid

Worksheet   Direct Rep.

Prox   Mid   Dist

Rt   Lt

CCA

ECA

Ves

BULB

BIF

VERT

ICA

Innom A

SUBC

FR   68
AO%   100

CHI
Frq   11.0
Gn   54
S/A   3/3
Map   I/0
D   3.5
DR   66

10340:10424 (187.8:189.3 s)

Start
Frame

End
Frame

Scroll

Depth Zoom

12/09/18 04:10:11PM   USB

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LOGIQ™ P9 Guide

1	Institution/ Hospital Name, Date, Time, Operator identification
2	Patient Name/ Patient identification
3	Power Output readout
4	Probe orientation mark
5	Worksheet/ Direct Report
6	Image
7	Image Preview
8	Image Clipboard- Side/ Bottom
9	Probe Identifier. Exam model

10	Scan Indicator
11	Imaging Parameters by Mode
12	Focal zone indicator
13	Depth scale
14	Current date and time, Caps Lock, network connection indicator, DVR/ USB status, System message display, Insite controls, battery status
15	Image Management icons
15a	Utility Menu
15b	Report writer
15c	MyTrainer

15d	Image display area
15e	Worksheet
15f	Active images screen
15g	Compare Assistant
15h	Save As
15i	Delete Last image
15j	LOGIQ Apps Connection
15k	Previous image, next image. Hold CTRL and arrow to start slide show
16	Cine gauge

| **17** | Trackball functionality status |
| **18** | Number of images in exam and thumbnail size |

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Connecting a Probe

1. Hold the probe vertical with cable pointing upward
2. Check locking connector handle is to the left. Connect probe and slide locking connector handle to right. Image of probe will appear on TP after connected.

Modality Worklist

1. Select Patient icon on Touch Panel. (19)
2. Select Data Transfer then select Worklist from the Task column.
3. Select Query to refresh the worklist (unless Worklist Auto Query has been selected under Miscellaneous)
4. Highlight the desired patient from the names in the top window using the pointer and double click set (Right trackball key) (15) to transfer
5. Confirm you have the correct patient selected, select scan category (ABD,OB, Etc.) from the tabs.
6. Exit the patient entry page by pressing Scan or select desired probe on the touch panel.

Selecting Probe and Model/Preset

1. Push the desired probe icon (25) to change from one probe to another at any time.
2. Select type of exam you would like to perform. For ex. Abd, Renal, etc.

Activating Modes

1. B-Mode (4) is always active. To adjust the overall B-Mode brightness turn the B-mode button. Push down on B-Mode button to exit all modes.
2. To activate other modes make sure that the toggle line is active (green) (17) highlighting modes. Push the appropriate button to activate the mode (5). Adjust the gain by rotating the same button. Change available modes for each preset in Utility> Application on Touch panel, > Settings > User Configurable Mode Rotary
3. When using a cardiac probe and model, pushing the PDI/TVI button will activate TVI
4. To activate B-Flow, select the B-Flow (26) button on Touch panel. To adjust brightness for B-Flow, turn the B-Mode button.

Trackball Keys (15, 16)

Trackball key functions change depending on which mode is activated. The trackball icon on the lower right (or left depending on image size) of the monitor displays functions as modes change. Use this icon for guidance on functionality.
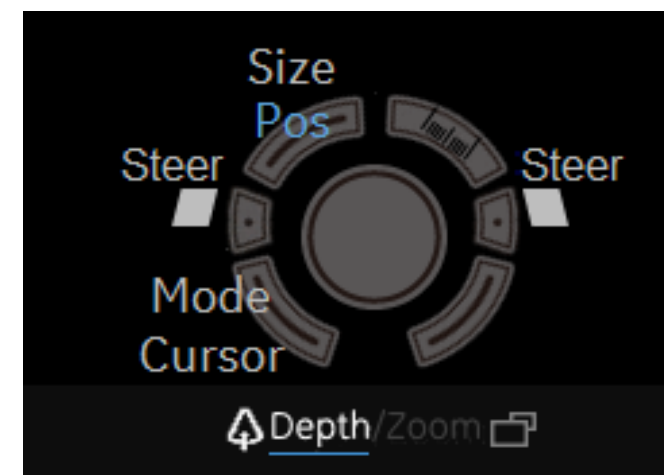
To configure the smart keys (ex. Frq) press Utility>System on Touch Panel, then select Use Configurable Key to choose the User Defined Trackball Smart Keys
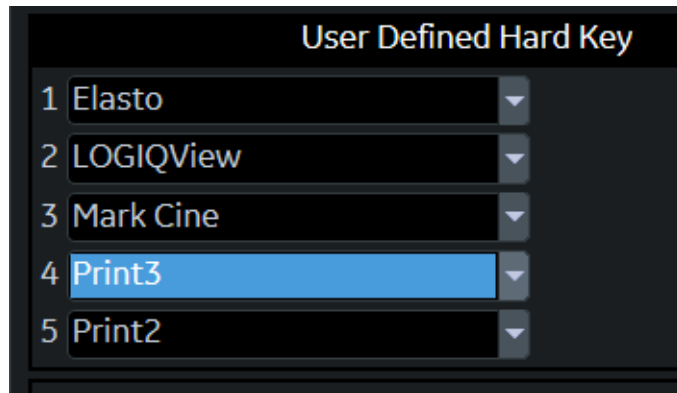
Select CHI on touch panel to enter Harmonics or switch to fundamental imaging

Print Keys Programmable

1. Press P1 (3) to store images to hard drive
2. Other Print options can be assigned to the User defined hard keys (9)
3. Mark Cine then P1 to store a cine clip. This can be assigned to a User defined hard key (9)

*Note: Print destinations can be programmed by a GE representative upon install of the system.*

Measurements (Generic)

1. Press "Measure" key (14), a caliper will appear on the screen
2. Use the trackball to move the caliper to the appropriate location, press "Set" either the left or right trackball key (15), a second caliper will appear.
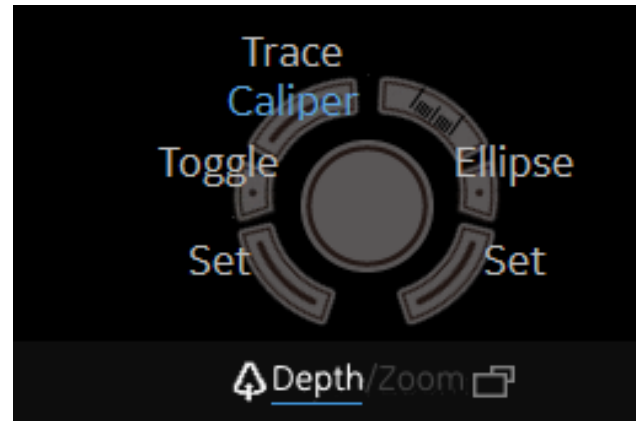

3. Place the second caliper in the appropriate location and press the "Set" right or left trackball key.
4. Measurement window appears on the the screen and will display the distance between the two points. Move trackball to display additional set of calipers. Additional measurements options available on upper trackball key.
5. To remove measurement, select clear (11) button while the measure key is backlit green.

6. When timeline is displayed on the screen select measure and select appropriate waveform for velocity measurement.
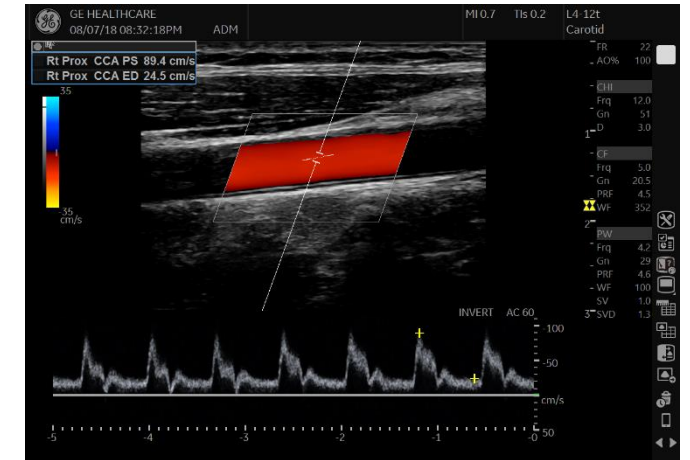
7. Pre-programmed measurements for each mode can be found on the Touch panel when the measure key is active. These can be programmed per type of exam by your GE representative.

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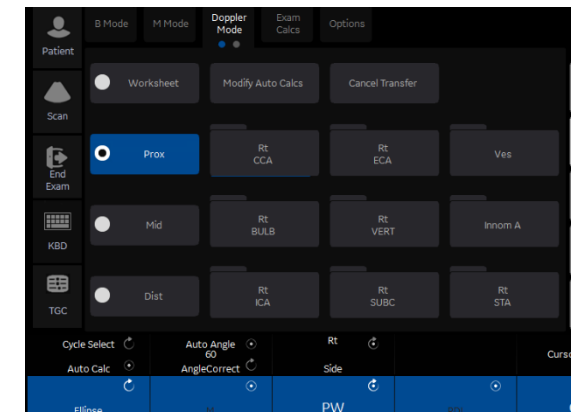
Annotations

1. Using Keyboard to Annotate:

- To add text to an image, type on Digital A/N keyboard (22) or use the pullout A/N keyboard. The text can be moved to another part of the image with the trackball if green and active
- Push the right trackball key to set the comment. Color will change from green to yellow/ white (depending on user preference) after comment is set.
- To Edit or move set text, select right trackball key. Text will turn green and can be moved to desired location.

2. Using Touch panel to annotate

- Select Comment (10) button
- Touch panel will display annotations. Select comment as needed.
- Annotations are laid out on Touch panel. Single comments will not replace each other. If there is a ▼ beside a comment it means it is a small list. Each press of this comment will replace the previous For ex. Select Right then this changes to left on the touch panel. Select left and it will replace right. These will replace each other since they are the same small list. The small list comment does not have to be green to be overwritten
- To customize comments go to Utility, Comments on Touch Panel. Under Libraries, select the desired Library to edit comments. Up to 4 columns and 4 rows of comments are available. Small list will replace up to 3 words
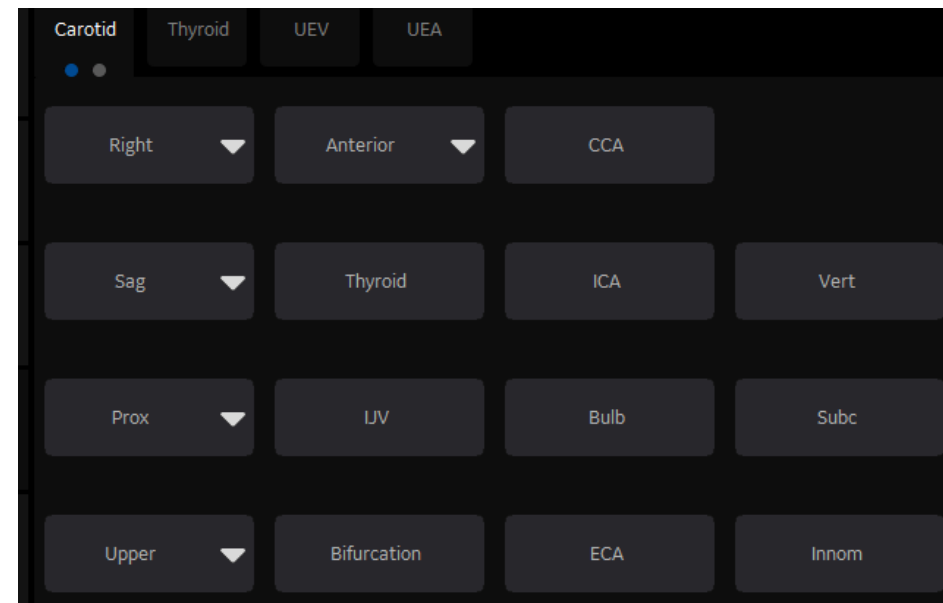
To select the comment cursor "home" position move the cursor to the desired position. Simultaneously push Shift+F7 on the A/N Keyboard and the right or left trackball key.

Note: *At anytime to remove entire text, measurements and arrows, hold down the clear button (16). Word delete (F10) located on keyboard can be used to remove the last text.*

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Split screen/Dual View

1. Press "L" on the Dual screen keys (8) to display the image on the left side of the screen.
2. Press the "R" on the dual screen keys to display the image on the right side of the screen.
3. To toggle between two images, press "L" or "R" dual screen keys, or use trackball and set in the desired image.
4. Press the "L" and "R" simultaneously to display the same image as live simultaneous side by side images.
5. When using Color mode, simultaneous side by side will display color ROI on one side and B-Mode on the other.
6. Press and hold "L" or "R" down to activate a quad screen. Use the "L" to toggle between the upper and lower images on the left. Use the "R" to toggle between the upper and lower images on the right.
7. To return to single image, push down on the B-Mode (4) button.

Biopsy Guide

1. Under B-Mode tab on the second page of the Touch panel, select biopsy kit. The system will display the corresponding type of bracket and appropriate number of the guides for the active probe
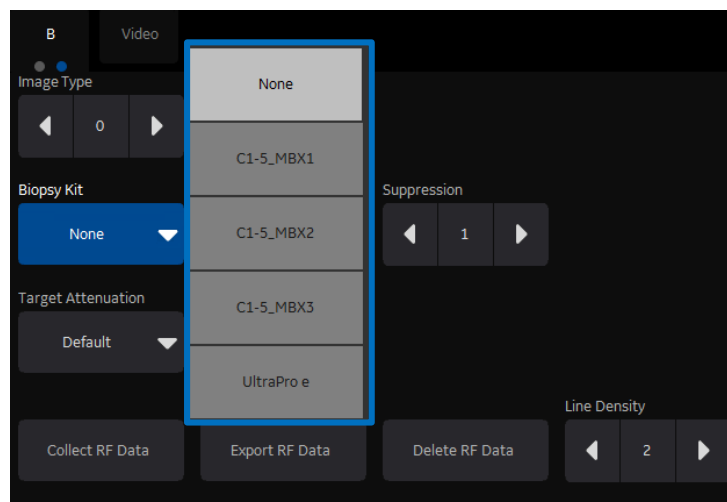
2. Select desired guide. Biopsy lines will show up on the screen. The guide name will display on the bottom of the monitor. Be sure to match the number chosen on the screen with the number on the guide.
3. To turn the biopsy guide off, select the "none" from the drop down list.
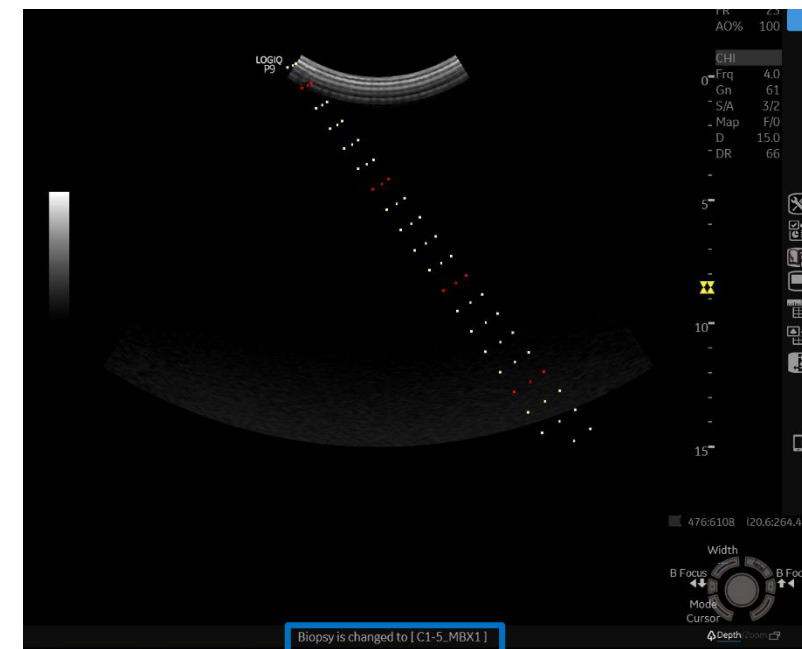
Note:

The E8C-RS, E8CS-RS, IC9-RS and BE9CS-RS have two biopsy guides available, the disposable and a reusable guides. The reusable guide bracket is made of stainless steel. The disposable guide is white plastic. Please refer to the instructions found in the biopsy guide kit for cleaning and handling the guides.

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B-Mode Optimization

| Most commonly used parameters	Description
Digital TGC (23)	Use finger to swipe in direction of desired TGC curve. For finer adjustments use Near TGC/Far TGC / Overall control knob below Digital TGC. You can store the TGC curve by holding down one of the Top 3 TGC curves on the right of the touch panel. The bottom one always remains straight and can't be overwritten
Auto Tissue Optimization (7)	Optimizes contrast resolution by changing the gray scale to match the image data. Continuously updates whilst scanning
CHI Harmonics	Utilizes Coded Harmonic Imaging to receive and display harmonic (double) frequencies. Coded Harmonics increases contrast and reduces low frequency high amplitude noise. Multiple frequencies area available to help increase penetration.
Frequency	Range is dependent on probe and model. Use higher frequency for smaller patients, lower frequency for larger patients. Use lower frequency for deeper structures, higher frequency for more superficial structures improving detail resolution.
Dynamic Range	Controls how echo intensities are converted to shades of gray, increasing the adjustable range of contrast. Increase dynamic range for more shades of gray, decrease for more contrast.
Gray Maps	Varies the appearance of the shades of gray from black to white. Choose the gray map prior to making other parameter changes. There is interdependency between the gray maps, gain and dynamic range. A and B are softer Maps, increasing in contrast as you move down the list
CrossXBeam™ CrossXBeam # CrossXBeam Type	CrossXBeam, or compound imaging, combines three or more frames from different steering angles into a single frame. May help reduce speckle and noise in the image. Enhances tissue interfaces and border detection. CrossXBeam # allows the user to adjust the number of steering angles. **Low** fastest frame rate, 3 steering angles, **Medium** fast frame rate, 5 steering angles, **High** slower frame rate, 7 steering angles, **Max** slowest frame rate, 9 steering angles CrossXBeam Type: **Mean** averages all returning values (normal scanning mode), **Hybrid** combines a mix of both average and maximum values (center line + Max), **Max** displays only the maximum returning values (Max only).

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B-Mode Optimization (continued)

Most commonly used parameters	Description
Speckle Reduction (SRI)	An adaptive algorithm to help reduce the unwanted effects of speckle in the image. Image speckle usually appears as a grainy texture in otherwise uniform areas of tissue. Each model has specific SRI settings. SRI may be used on any probe or in any clinical application. This can be changed as post processing
Rejection	Selects a level below which echoes caused by noise will not be amplified. The higher the rejection the more low-level echoes are eliminated. Useful in Vascular imaging
Virtual Convex	Changes linear probe images from rectangular shape to convex shape and adds 20% more viewing area. *Note: When in Color Mode you can select "Virtual Convex" on Touch panel to display the color in a wider field of view.*
Frame Average	A temporal filter that averages image frames together, using more pixels to make up one image. Presents a smoother, softer image the higher the value
Line Density	Helps to optimize line density or resolution. Decrease line density for faster frame rates. Increase line density for better resolution
Edge Enhance	Brings out subtle tissue differences and boundaries by enhancing gray scale differences corresponding to edges of structures. Useful for cleaning out B-mode image (M-Mode timeline) to enhance vessel wall or organs.
Suppression	Suppresses the overall noise in the image. Usually set to 0 or 1.
PRF	In Cardiac only, frame rate decreases and noise artifacts are filtered
B-Mode Raw Data (post processing)	On a frozen or recalled image you can adjust the following parameters; Gain, TGC, Auto Optimize, Dynamic Range, Gray Maps, SRI, Rejection, Zoom, Image reverse, Image rotation, as well as Comments, Body Patterns and Measurements.
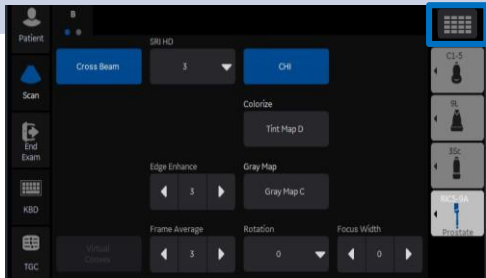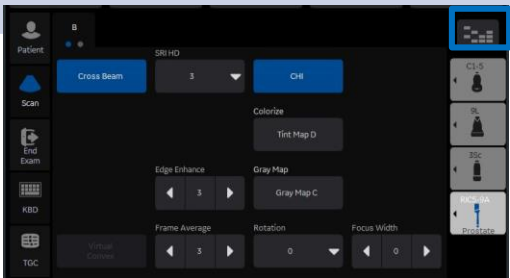
To display ALL touch panel parameters select quick button on top right corner

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B-Mode Optimization (continued)

IF	THEN	IF	THEN
Image is too soft	1. Decrease SRI-HD 2. Activate Auto Optimize 3. Decrease Frame Average 4. Change Gray Map	Image is not uniform	1. Adjust Digital TGC 2. Change Frequency 3. Adjust Focal Zones and focal width
Image is too grainy	1. Increase SRI-HD 2. Increase Frame Average 3. Decrease Line Density 4. Change Gray Map	Image whites are too bright	1. Decrease overall gain 2. Decrease SRI-HD 3. Adjust gray map 4. Increase Dynamic Range
Image is too dark	1. Increase overall gain 2. Adjust Digital TGC 3. Decrease frequency 4. Change Gray Map	Technically difficult patient	1. Select appropriate Model, if abdominal exam select ABD2 2. Lower frequency 3. Turn off Harmonics (CHI)
Image is too noisy	1. Decrease overall gain 2. Adjust Digital TGC 3. Activate Harmonics (CHI) 4. Activate ATO	Frame rates are too slow	1. Decrease Line Density 2. Change CrossXBeam # 3. Decrease Sector Width 4. Use shallower depth

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Color Doppler Optimization

Most commonly used parameters	Description
Velocity Scale (PRF)	Range of velocities that are assigned a color. Adjust the pulse repetition frequency (PRF) for an enhanced representation of the magnitude of the flow pattern. Increase for higher flow velocity, decrease for lower flow velocity.
Angle Steer	Provides a Doppler angle suitable for linear probe orientation. You can steer the ROI of the Color Flow linear image left or right to get more information without moving the probe.
Frequency	Changes the color parameters to enhance flow in different depths. Use lower color frequency for deeper vessels. Increase color frequency for superficial vessels. Range is dependent on probe and model .
Wall Filter	Filters out low velocity signals and affects low flow sensitivity versus motion artifact. Assists in reducing motion artifacts from motion outside the vessel wall.
Focus Position	Adjust focal zone within the color ROI for the best vessel filling, position focal zone in the middle or lower half of the ROI.
Frame Average	Temporal smoothing filter helps to create a smooth and persistent flow profile.
Line Density	Helps optimize color flow frame rate for sensitivity and spatial resolution. Higher line density will reduce color on vessel walls. Lower line density will increase frame rate.
Color Threshold	Percentage of gray scale level where color Doppler is overwritten. Decrease where vessels are large and easily identified, Increase where multiple small vessels need to be visualized.
Flash Suppression	Algorithm to help control motion artifacts.

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Color Doppler Optimization (continued)

The table below discusses adjustments that can be made to help in some scanning situations.
Not all listed adjustments may be necessary to achieve the desired result.

IF	THEN
Color does not fill the vessel	Increase color gain until color noise is seen in the surrounding tissue, then decrease the gain just until the color fills the vessel. If color does not fill the vessel decrease velocity scale (PRF), increase threshold, decrease Wall Filter. Decrease Color frequency for penetration when needed.
Color displays mixed directions	Forward flow and reverse flow should be separated by a black transitional line. If there is no line between red and blue, increase the Velocity Scale (PRF) to reduce the aliasing
Color is seen in right and/or left side of vessel, but the middle is blank	The color ROI box is perpendicular to vessel flow. If using a linear probe, change the ROI box angle using the touch panel knob selection "Angle Steer". Note: if vessel is angled in the image, try a straight ROI box. Heel/ Toe the probe for better angle
Color is outside the vessel wall	Decrease color gain until color is within the vessel walls. Increase velocity scale (PRF) just until color is within vessel walls. Increase Wall Filter. Decrease color threshold.
Color is in superficial vessels, but not in deeper vessels	Decrease color frequency, increase color gain until flashes are seen in the surrounding tissue, then decrease gain just until color fills the deep vessels.
Frame rate is too slow	Decrease Color ROI box size, slightly taller then wider preferable. Decrease color Line Density.

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Image Management

Print keys are programmed upon install by your GE representative to send to printers, PACS or Network storage devices and the system Internal Hard Drive.

When you want to print/store an image, the P1 is most commonly used for the primary destination and internal hard drive:	1. Push P1 to print/store an image. The images will be visible in a thumbnail view at the bottom or left side of the image screen. 2. To store a Cine loop, push P1 during live scanning (do not push freeze first) or select Mark Cine (user defined hard key) to initiate cine then P1 to end. The Cine loop stored will be a pre-determined length of time specified during system set-up in utility. 3. When the exam is complete, select "Patient" on the left column of the touch panel. Select "New Patient" on touch panel screen or monitor. A list of patients and their exams currently stored on the system appears on the screen in the patient entry page. This is the easiest way to "End Exam"
To send to a PACS or Printer that is not the "Default" destination:	1. From the Patient entry page, highlight the patient name and set to open the studies. If there is more than one exam, highlight the exams needed. 2. Select "Send To" from the bottom right corner of the page. 3. Select the destination form the "To" drop down menu and then select OK.
Once an exam has been closed, if there is a need to add additional images to the exam, these steps will reopen a closed exam:	1. From the patient entry page, select the patient from the list on the bottom of the screen and double click the set key 2. Highlight the exam you want to reopen. Push the "Freeze" button 3. The prior images will be visible in the thumbnail views, add images and repeat the "End Exam" process by using the "Patient" button on touch panel

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Image Management (continued)

The system hard drive capacity and free space is available on the patient entry page. Move the trackball pointer over the pie icon in the lower left column. A message with the total capacity and the available free space will appear briefly. The color of the pie will change as the hard drive fills.

| To review a closed exam from the internal hard drive:	1. From the patient entry page, double click the patient name from the list on the bottom of the screen.
	2. Highlight the desired exam from the list, or if just one its already highlighted.
	3. Push the "Freeze" key. The images will appear in the thumbnail display at the bottom or left side of screen.
	4. Select any image from the side or bottom thumbnails to bring into full screen view and use the ◀ ▶ to scroll through images.
	5. Select the "Active Images" icon from the right of the monitor to view the exam in a multi-image format.
To start a patient who has a previous exam on the hard drive:	1. From the patient entry page, begin typing in the patient ID.
	2. Once the ID has been entered the text will turn red, indicating there is a patient with this ID.
	3. Highlight the patient ID from the list at the bottom of the page and select New Exam from the options on the touch panel.
	4. Press "Freeze" to begin the exam.
To delete patients from the internal hard drive: *Note: Patients or exams do not automatically delete from the internal hard drive.*	1. In the patient entry page, select the operator drop down menu, choose ADM. Not everyone will have ADM access
	2. In the list of patient names, highlight the patient name to be deleted. If multiple patients use the SHIFT or CTRL functions to highlight necessary patients
	3. Select "Delete" in the menu at the bottom of the list. A message box will appear to confirm the action, select OK.

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Image Management (continued)

To save images to CD/DVD or USB drive in PC format (Jpeg):

1. Insert a CD –R or DVD – R into the CD/DVD burner, or insert a USB stick into the USB port.
2. Highlight the patient from the list of names on the hard drive. Select "Active Images" from the upper left corner of the screen.
3. Select the individual images you want to save or alternatively select "Select All" from the touch panel.
4. Select "Save As" images from the touch panel or left side of screen.
5. A window box will appear. From the drop down "Save in Archive" menu select either "For Transfer to CD/DVD" or USB.
6. Allocate a 'Folder Name' to the selected saved images.
7. From the drop down "Save As Type" menu, select JPEG AND WMV. This will save still images as JPEG and Cine loops as WMV files.
8. Select "Save". The image is saved to a temporary directory. If using a USB drive, skip to step 10 to eject; there is no "finalize" procedure
9. Once all the desired images are saved/converted, select "Save As" images again, the select Transfer to CD/DVD to transfer the images to the media.
10. Push the "F3" (Eject) button on the A/N keyboard. A new message box will appear; if ejecting a CD/DVD the message will have a choice to "finalize". The disc must be finalized for the images to be opened on a computer.

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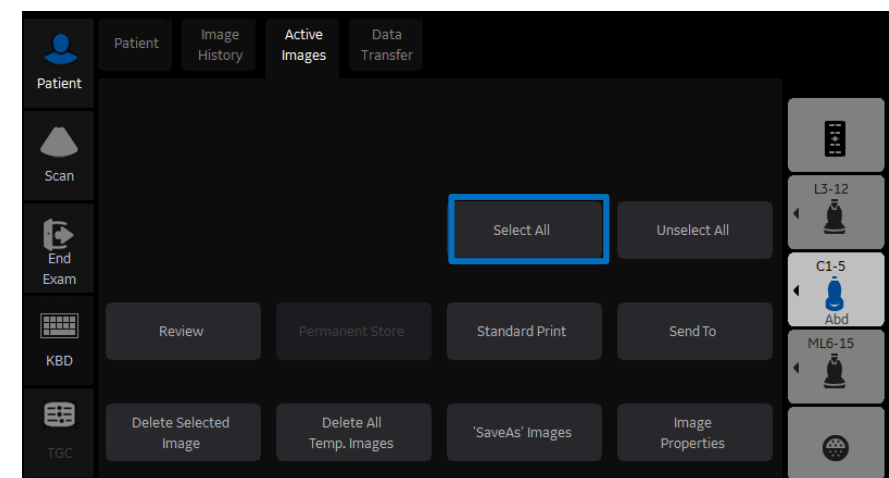
Preset Backup/ Restore

Note: It is recommended to do this with the assistance of a GE Service or GE Applications representative	
To Back-up presets: Insert CD –R or DVD –R into the disk drive or USB into the USB port	1. Select Utility > System > from the touch panel. 2. Use the trackball pointer to select "Backup/Restore" tab on the monitor. 3. Select check box "User Defined Configuration" under the Backup column on the left. 4. Select CD/DVD or USB from the drop down menu under "Media". 5. Select "Backup" to save presets to CD/DVD or USB 6. Press "F3" (Eject) to eject and finalize the CD/DVD or USB preset disk. 7. Label and Store the CD/DVD or USB in a secure location, in case a service call results in the need to restore presets.
To Restore presets: Insert the "preset CD/DVD or USB" into the disk drive or USB port	1. Select Utility > System from the touch panel. 2. Use the trackball pointer to select "Backup/Restore" tab on the monitor. 3. Select CD/DVD or USB from the drop down menu under "Media". 4. Select "User Defined Configuration" from the RESTORE field in the upper right column, which restores ALL the imaging parameters including your DICOM**/Connectivity settings. **Note: If you have multiple systems ensure your preset disk is specific to the system you are restoring to.** 5. Alternatively, under "Detailed Restore of User Defined", select the desired fields you wish to restore on the system i.e. Imaging Presets. 6. Select "Restore". The system will automatically shut down and re-boot to restore the presets.

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Adding New User Initials

Select Utility>Admin>Users

- Select "Add" and enter user details

ENSURE that you DO NOT include the following characters in a user's ID: slash (/), dash (-), asterisk (*), question mark (?), an underscore (_), ampersand (&), lower case letters or blank spaces. DO NOT set up users with the same initials or ID. The system will overwrite the first user ID if a second is created with the same initials

- Display ID, type in the short form ID (typically initials) of the user for display on the title bar when storing images. This is limited to 5 characters.
- Enter password using the defined policies.

Note: If a password is created the user will be required to enter the password when logging on.

- The system administrator can specify whether the users account is Active, Blocked or requires a password change. If needed, select the check box "user must change password" The user will be prompted to change their password on the next logon.
- Select the Group Membership for the new user. Multiple groups can be selected if needed. The user will need Operator access rights to appear on the drop down list of operators.

Note: The system Admin can remove a user from the list. Select the user Id from the list and select "Remove". The user and password will become inactive. If the user and password need to be removed permanently, select the user and password and select "Remove." A pop-up dialog will appear to confirm the complete removal of the user account.

When the user selects their Id from the list in the "operator" field in the patient entry page, the logon window will pop up.
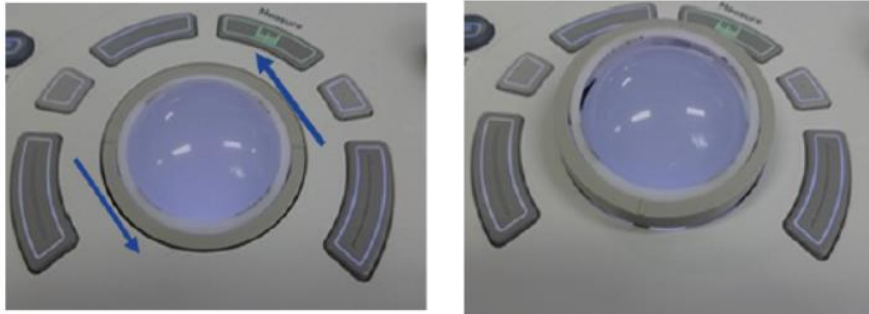
Enter Operator Id then the password and select "Ok"
*Note: the user can change their password at anytime
The user will have access according to the rights in their assigned group.

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Portability

Articulating Monitor Arm

Rotating and Up/Down OPIO

Rear Handle (opt.)

OPIO tray (opt.)

A/N Keyboard (opt.)

Paper Tray (opt.)

4 Active probe ports

Side Tray- pair

Brake on each wheel. Left rear wheel has swivel lock also

Hold down button to move keyboard

Up/Down

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Cleaning the Trackball

1. Power off the system
2. Turn the retainer counter clockwise until it can be removed
3. Separate the trackball and the retainer. Wipe off any oil or dust from the trackball, retainer and the trackball housing using a cleaner or cotton swab
4. Assemble the trackball and retainer, then put it into the housing and rotate it clockwise until its notches are set in position

Cleaning Filters

1. Power off the system

2. Pull the front cover with hand and pull out the front air filter

3. Pull out the bottom air filter

4. Dust the filter with a vacuum cleaner and/ or wash it with mild soapy solution. If washed rinse and dry the filter before re-installation
5. Put back the air filters and the front cover

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