TABLE OF CONTENTS

1- DESCRIPTION

This section contains a series of tests that allow determination of the proper *x-y-z*-gradient. Specific symptoms of this type of problem are images that display upside down, left-right reversed, offset scans that move in the opposite directions from those annotated on the images, or some combination of all of these problems. Run this series of tests in the order described to prevent confusing results. Once the correct polarities are established, the Signa system will make properly oriented head and body scans with any imaging data base.

2- SOFTWARE CONFIGURATION CHECK

2-1 Description

The system configuration values for the *Setting on the x-, y-, and z-gradient to obtain 1 gauss/cm* (also known as cfxfull, cfyfull, and cfzfull, respectively) should be either all positive, or all negative, depending on in which direction the magnetic field is ramped-up. If the magnet was ramped with the B_0 field going into the magnet,the cfxfull, cfyfull, and cfzfull values in the configuration file must be positive in order for the geometry to come out right.

2-2 Procedure

1. On the Service Desktop, click on **[Utilities]**, then **[Config File Manager]**, and **[Start]**.

2. On the *Config File Manager* main screen, select **[Gradient Config File]**.

3. Verify that all three gradient values are the same sign (all positive or all negative). (Use the **<Delete>** key to edit text; the **<Backspace>** key does not work.)

4. When finished editing values, click the **[Quit]** button to exit application.

5. Click **[Yes]** in the dialog box question, "*Really Quit?*"

6. Next, a Save dialog box appears for each configuration file that has changed. To save changes click the **[Save]** button. To not save changes click the **[Do Not Save]** button.

3- X/Y/Z GRADIENT POLARITY CHECK

3-1 Description

Reversal of the polarity of a single gradient causes the right/left or top/bottom reversal of the images from two axes, and reversal of the offsets for one axis. Incorrect polarity of all of the gradients causes the images from all planes to be upside down and backward, and causes the system to scan offset images in the opposite direction from those commanded for all axes.

Note

The values mentioned in this procedure are related to the physical x, y, and z gradient amplifiers, respectively. The values for setting x-, y-, and z-gradient to obtain 1 gauss/cm, respectfully, are in the system configuration file.

3-2 Tools Required

- DQA Phantom

WARNING!

POISON HAZARD! THE PHANTOM CONTAINS NICKEL, A SUSPECT CARCINOGEN. DO NOT INGEST. DISPOSE OF AS A HAZARDOUS WASTE ACCORDING TO STATE AND FEDERAL REGULATIONS.

3-3 Procedure

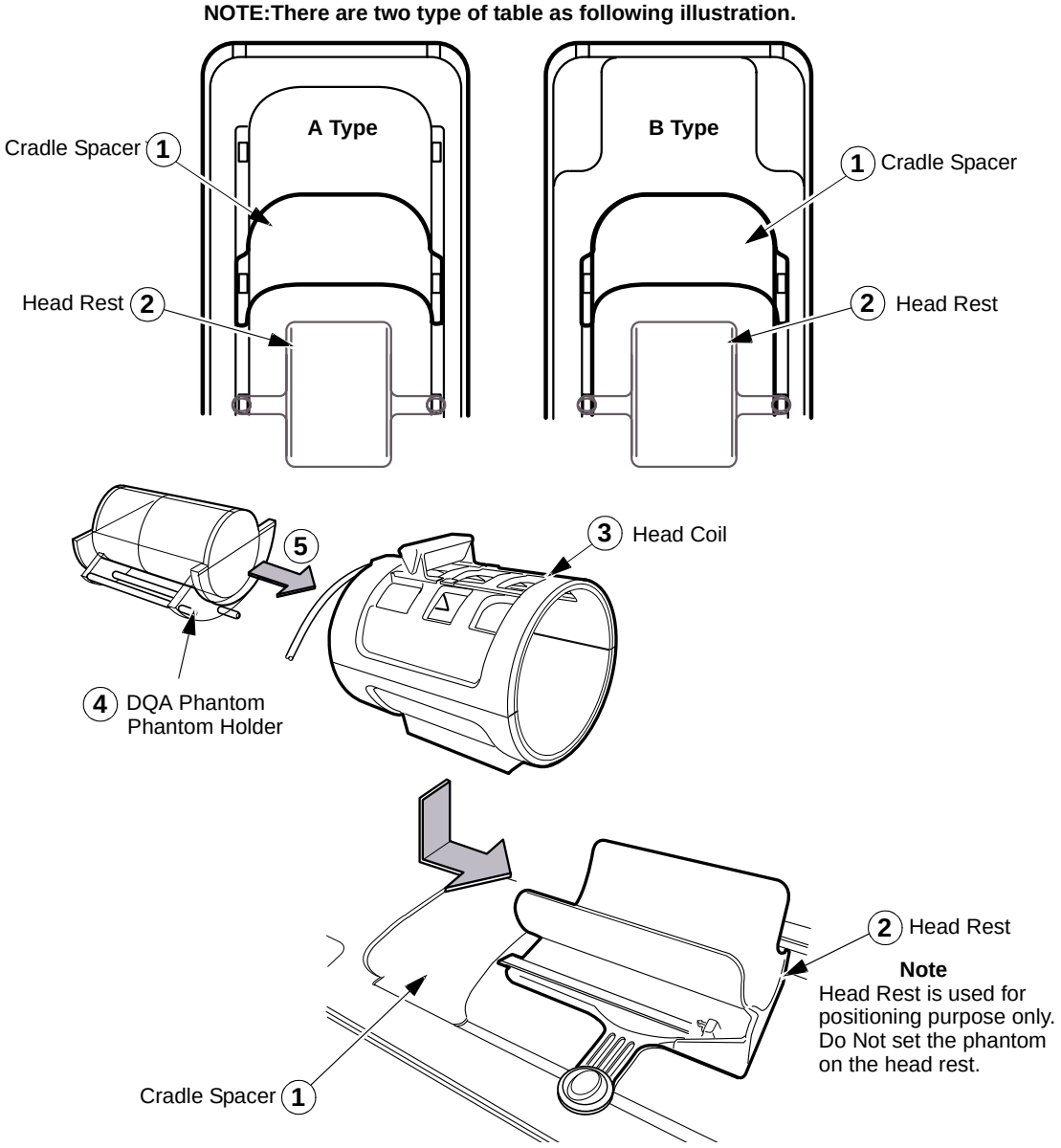
1. At the operator workspace, go to the Scan Desktop.

2. Click on **[New Pt]** to enable setting of a new landmark.

3. Enter the following:

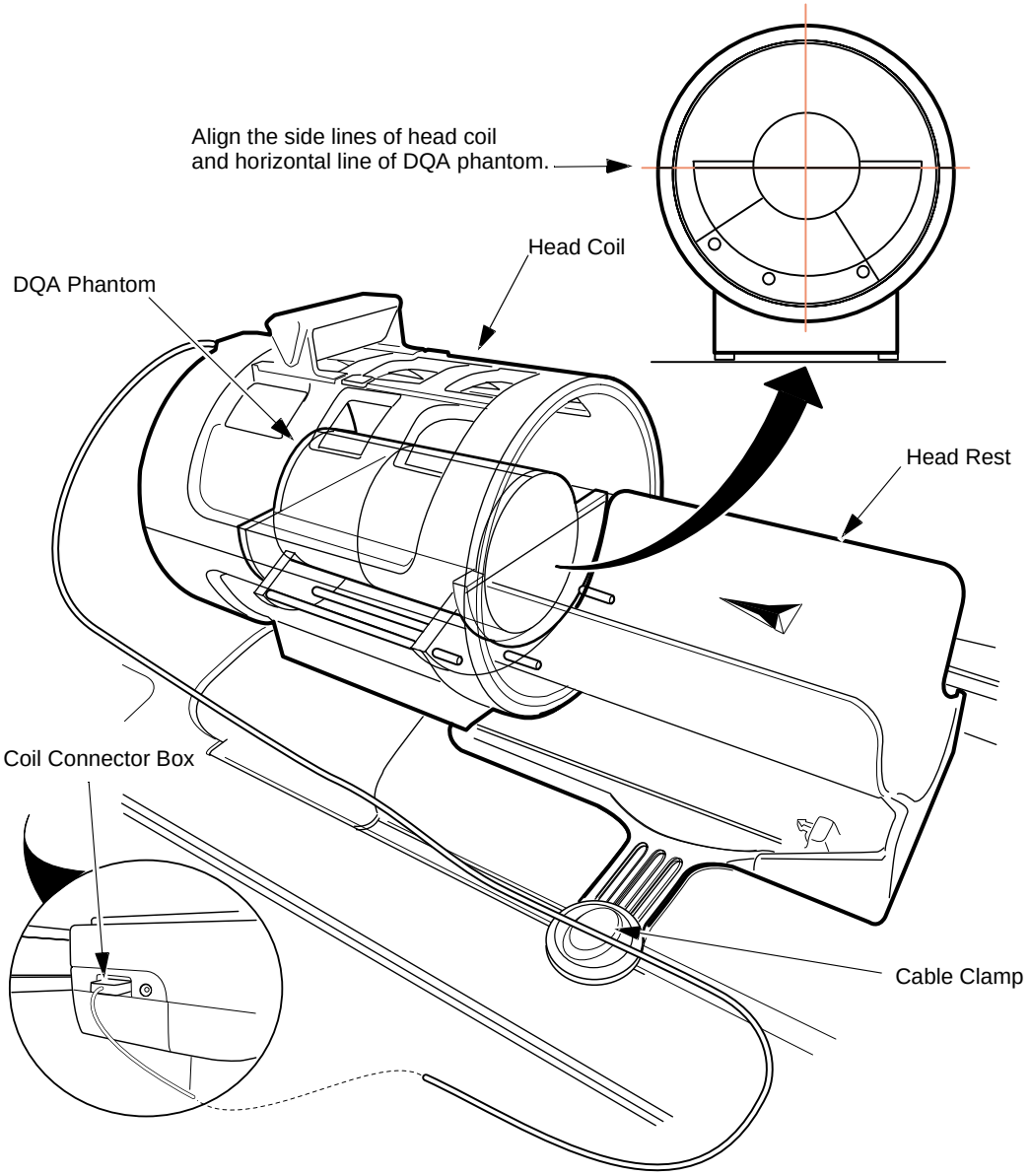
   Id: **geservice <ENTER>**
   Name: **gradient polarity <ENTER>**
   Weight (Lb.): **111 <ENTER>**

4. Set cradle spacer to cradle.
5. Set head rest onto cradle.
6. Set head coil to head rest.
   (Head Rest is used for positioning purpose only. Do Not set the phantom on the head coil.)
7. Set DQA phantom to phantom holder.
8. Insert DQA phantom and phantom holder into head coil.



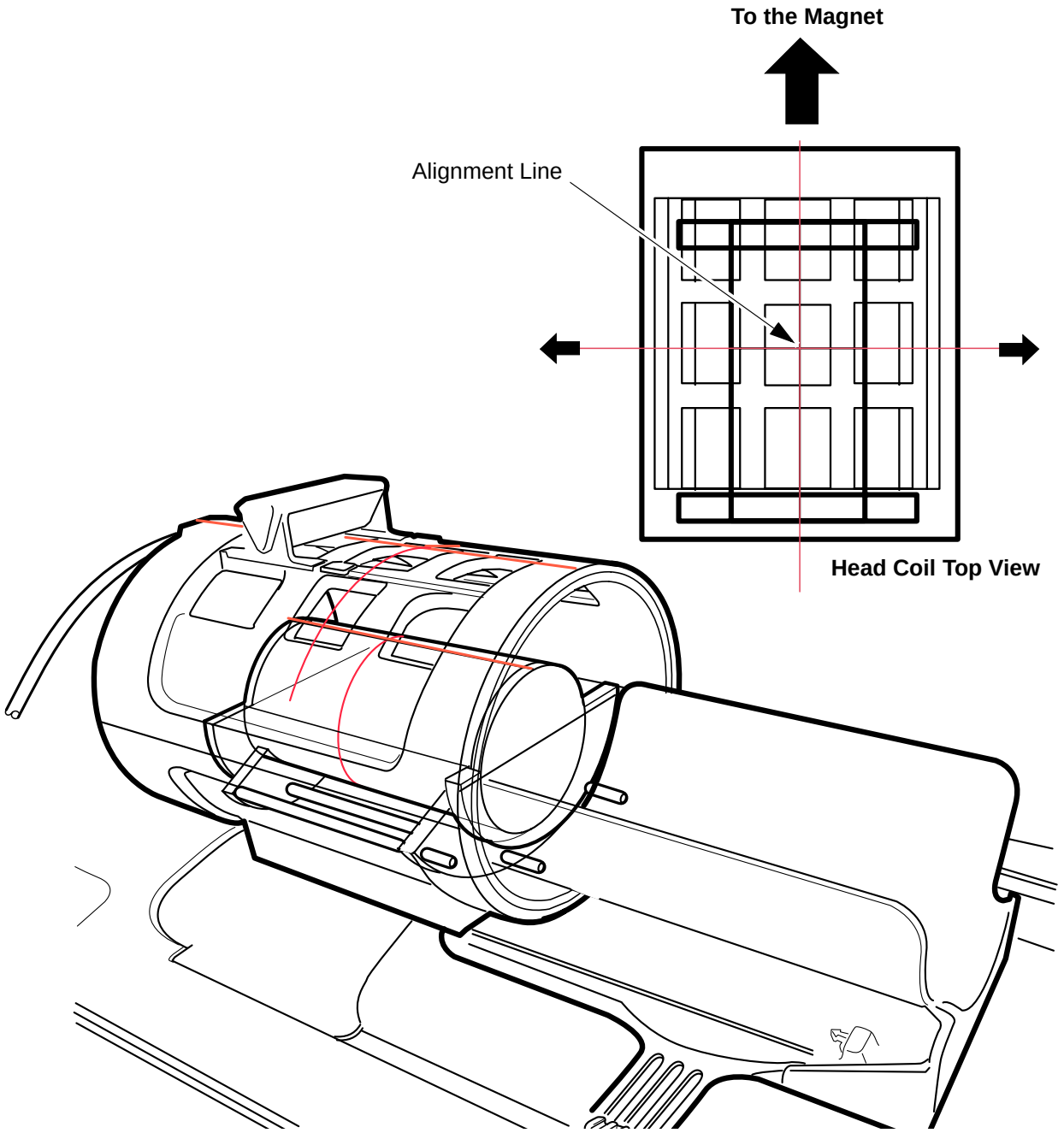
HEAD COIL POSITIONING
ILLUSTRATION 3-1

9. Align the side lines of head coil and horizontal line of DQA phantom.
10. Connect the coil connector box to table connector port.
11. Attach the coil cable to cable clamp of head rest.



HEAD COIL POSITIONING
ILLUSTRATION 3-2

12. Advance the cradle to the position where the A-light beam hits the center of coil.
13. Align the head coil and DQA phantom center position to laser center.
14. Landmark in the sagital and axial planes.
15. Move the cradle to the scan center.



HEAD COIL POSITIONING
ILLUSTRATION 3-2

*The following three steps are **proprietary** and only available for GE use, and to sites with a valid Advanced Service Package Limited License. The non-proprietary procedure is listed after these steps.*

16. Set Patient Protocols to Service.

    In the Protocol field, Type **o.14.1** (o=Other, 14=Geomrtry Verification, 1= Coronal) and **<Enter>**.

17. Click on **[Accept]** to load the protocol.

***Non-proprietary** procedure:*
At the Operator Workspace, prepare the system for a “Geometry Verification, Coronal” scan using the scan protocol (**o.14.1**) shown in the "Service Protocols" procedure located on the service methods CD-ROM.

18. Click on **[Save Series]**.

19. Click on **[Scan]** (system auto pre-scans first).

20. On the scan desktop, click on **[Autoview]**. When the image displays, verify that the *CS* appears in the upper right-hand corner (see Illustration 3-3).

Note

Top/bottom reversal is caused by improper *z*-gradient polarity (wires crossed between output of Gradient Amplifier and input of Gradient Coil). Left/right reversal is caused by improper *y*-gradient polarity.

21. At the Operator Workspace, click on **[New Series]**.

*The following two steps are **proprietary** and only available for GE use, and to sites with a valid Advanced Service Package Limited License. The non-proprietary procedure is listed after these steps.*

22. In the Protocol field, Type **o.14.1** (o=Other, 14=Geomrtry Verification, 1= Coronal) and **<Enter>**.

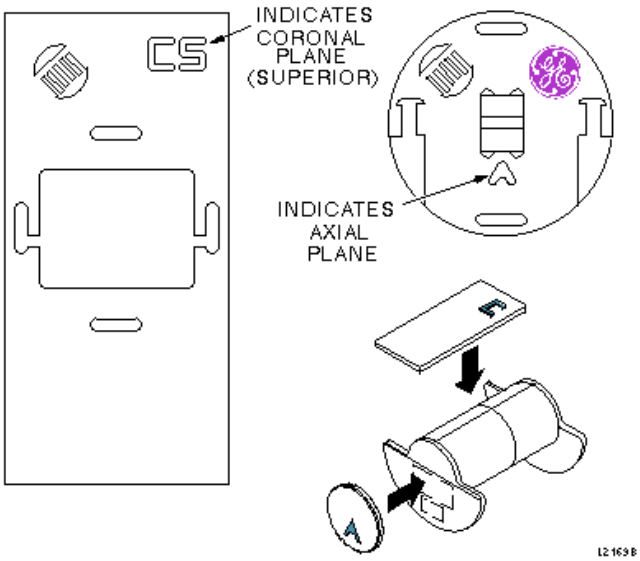
23. Click on **[Accept]** to load the protocol.

***Non-proprietary** procedure:*
At the Operator Workspace, prepare the system for a “Geometry Verification, Axial” scan using the scan protocol (**o.14.2**) shown in the "Service Protocols" procedure located on the service methods CD-ROM.

24. Click on **[Save Series]**.

25. In the RX MANAGER window, click on **[Prepare to Scan]**.

26. Click on **[Scan]** (system auto prescans first).



DQA-III PHANTOM GEOMETRY
ILLUSTRATION 3-3

27. When the image displays, verify that the *A* appears in the lower-middle of the image. The image should have the GE logo in the upper right-hand corner (see Illustration 3-3).

Note

Left/right reversal is caused by incorrect polarity of the *x* gradient. Top/bottom reversal is caused by improper *y*-gradient polarity.

28. In the RX MANAGER window, click on **[End Exam]** to exit.

REVISION HISTORY

REV	DATE	AUTHOR	PRIMARY REASONS FOR CHANGE
A	Oct 16, 2000	Y. Masumo	Modify from HFO
0	Jan 26, 2001	Y. Masumo	Initial Release
1	May 15, 2001	Y. Masumo	Phantom Setting was updated.
2	Oct 18, 2001	Y. Masumo	Page 5: Added the purpose of Head Rest.
3	Jun 17, 2002	Y. Masumo	Page 7: Corrected Protocol Number.