GE Medical Systems

Technical Publications

Direction 2152927
Revision 0

1.5T Signa® Horizon Pelvic Phased Array Coil

Operating Documentation

Language Policy For Service Documentation (Dir. 2128126)

WARNING

- THIS SERVICE MANUAL IS AVAILABLE IN ENGLISH ONLY.
- IF A CUSTOMER'S SERVICE PROVIDER REQUIRES A LANGUAGE OTHER THAN ENGLISH, IT IS THE CUSTOMER'S RESPONSIBILITY TO PROVIDE TRANSLATION SERVICES.
- DO NOT ATTEMPT TO SERVICE THE EQUIPMENT UNLESS THIS SERVICE MANUAL HAS BEEN CONSULTED AND IS UNDERSTOOD.
- FAILURE TO HEED THIS WARNING MAY RESULT IN INJURY TO THE SERVICE PROVIDER, OPERATOR OR PATIENT FROM ELECTRIC SHOCK, MECHANICAL OR OTHER HAZARDS.

AVERTISSEMENT

- CE MANUEL DE MAINTENANCE N'EST DISPONIBLE QU'EN ANGLAIS.
- SI LE TECHNICIEN DU CLIENT A BESOIN DE CE MANUEL DANS UNE AUTRE LANGUE QUE L'ANGLAIS, C'EST AU CLIENT QU'IL INCOMBE DE LE FAIRE TRADUIRE.
- NE PAS TENTER D'INTERVENTION SUR LES ÉQUIPEMENTS TANT QUE LE MANUEL SERVICE N'A PAS ÉTÉ CONSULTÉ ET COMPRIS.
- LE NON-RESPECT DE CET AVERTISSEMENT PEUT ENTRAINER CHEZ LE TECHNICIEN, L'OPÉRATEUR OU LE PATIENT DES BLESSURES DUES À DES DANGERS ÉLECTRIQUES, MÉCANIQUES OU AUTRES.

Language Policy For Service Documentation (Dir. 2128126) (Continued)

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- DIESES KUNDENDIENST-HANDBUCH EXISTIERT NUR IN ENGLISCHER SPRACHE.
- FALLS EIN FREMDER KUNDENDIENST EINE ANDERE SPRACHE BENÖTIGT, IST ES AUFGABE DES KUNDEN FÜR EINE ENTSPRECHENDE ÜBERSETZUNG ZU SORGEN.
- VERSUCHEN SIE NICHT, DAS GERÄT ZU REPARIEREN, BEVOR DIESES KUNDENDIENST-HANDBUCH NICHT ZU RATE GEZOGEN UND VERSTANDEN WURDE.
- WIRD DIESE WARNUNG NICHT BEACHTET, SO KANN ES ZU VERLETZUNGEN DES KUNDENDIENSTTECHNIKERS, DES BEDIENERS ODER DES PATIENTEN DURCH ELEKTRISCHE SCHLÄGE, MECHANISCHE ODER SONSTIGE GEFAHREN KOMMEN.

AVISO

- ESTE MANUAL DE SERVICIO SÓLO EXISTE EN INGLÉS.
- SI ALGÚN PROVEEDOR DE SERVICIOS AJENO A GEMS SOLICITA UN IDIOMA QUE NO SEA EL INGLÉS, ES RESPONSABILIDAD DEL CLIENTE OFRECER UN SERVICIO DE TRADUCCIÓN.
- NO SE DEBERÁ DAR SERVICIO TÉCNICO AL EQUIPO, SIN HABER CONSULTADO Y COMPRENDIDO ESTE MANUAL DE SERVICIO.
- LA NO OBSERVANCIA DEL PRESENTE AVISO PUEDE DAR LUGAR A QUE EL PROVEEDOR DE SERVICIOS, EL OPERADOR O EL PACIENTE SUFRAN LESIONES PROVOCADAS POR CAUSAS ELÉCTRICAS, MECÁNICAS O DE OTRA NATURALEZA.

Language Policy For Service Documentation (Dir. 2128126) (Continued)

ATENÇÃO

- ESTE MANUAL DE ASSISTÊNCIA TÉCNICA SÓ SE ENCONTRA DISPONÍVEL EM INGLÊS.
- SE QUALQUER OUTRO SERVIÇO DE ASSISTÊNCIA TÉCNICA, QUE NÃO A GEMS, SOLICITAR ESTES MANUAIS NOUTRO IDIOMA, É DA RESPONSABILIDADE DO CLIENTE FORNECER OS SERVIÇOS DE TRADUÇÃO.
- NÃO TENTE REPARAR O EQUIPAMENTO SEM TER CONSULTADO E COMPREENDIDO ESTE MANUAL DE ASSISTÊNCIA TÉCNICA.
- O NÃO CUMPRIMENTO DESTE AVISO PODE POR EM PERIGO A SEGURANÇA DO TÉCNICO, OPERADOR OU PACIENTE DEVIDO A' CHOQUES ELÉTRICOS, MECÂNICOS OU OUTROS.

AVVERTENZA

- IL PRESENTE MANUALE DI MANUTENZIONE È DISPONIBILE SOLTANTO IN INGLESE.
- SE UN ADDETTO ALLA MANUTENZIONE ESTERNO ALLA GEMS RICHIEDE IL MANUALE IN UNA LINGUA DIVERSA, IL CLIENTE È TENUTO A PROVVEDERE DIRETTAMENTE ALLA TRADUZIONE.
- SI PROCEDA ALLA MANUTENZIONE DELL'APPARECCHIATURA SOLO DOPO AVER CONSULTATO IL PRESENTE MANUALE ED AVERNE COMPRESO IL CONTENUTO.
- NON TENERE CONTO DELLA PRESENTE AVVERTENZA POTREBBE FAR COMPIERE OPERAZIONI DA CUI DERIVINO LESIONI ALL'ADDETTO ALLA MANUTENZIONE, ALL'UTILIZZATORE ED AL PAZIENTE PER FOLGORAZIONE ELETTRICA, PER URTI MECCANICI OD ALTRI RISCHI.

Language Policy For Service Documentation (Dir. 2128126) (Continued)

警告

・このサービスマニュアルには英語版しかありません。
・GEMS以外でサービスを担当される業者が英語以外の言語を要求される場合，翻訳作業はその業者の責任で行うものとさせていただきます。
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注意:

- 本维修手册仅有有英文本。
- 非 GEMS 公司的维修员要求非英文本的维修手册时，客户需自行负责翻译。
- 未详细阅读和完全了解本手册之前，不得进行维修。
- 忽略本注意事项会对维修员，操作员或病人造成触电，机械伤害或其他伤害。

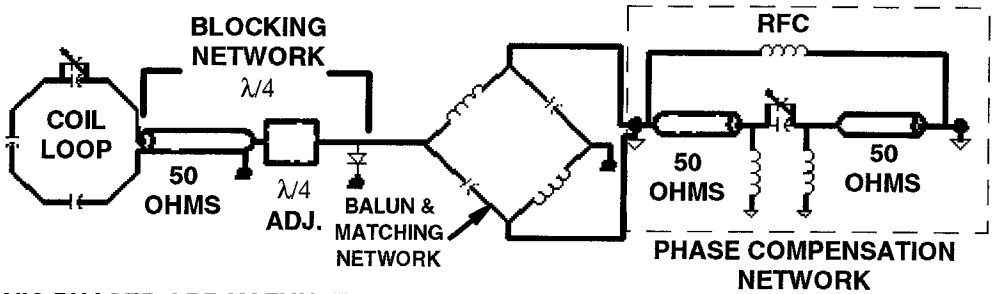
Table of Contents

Table of Contents (continued)

Section 1 - Introduction

1-1 How the Pelvic Phased Array Coil Operates

The Pelvic Phased Array Coil is a four element receive only antenna array which receives the RF signal from the body and sends it to the preamplifier. It is used to image the pelvic region. The small individual antenna loop elements (4 in total) provide excellent SNR while the multicoil concept provides a large field of view (FOV). The overall length of the antenna portion of the array is 20 cm. The PELVIC_TOP utilizes antenna elements 2 and 3. The PELVIC_BOTTOM utilizes antenna elements 1 and 4. The Pelvic Coil is tuned to the MR frequency for proton, 63.86 MHz. (See Illustration 1-1.)



PELVIC PHASED ARRAY FUNCTIONAL BLOCK DIAGRAM
ILLUSTRATION 1-1

1-1 How the Pelvic Phased Array Coil Operates (continued)

The Coil consists of two major assemblies:

- Pelvic - Top Circuit Board (1) 2144808
- Pelvic - Bottom Circuit Board (1) 2144810

The 50 ohm phase shift network ensures a multiple of a half wavelength from the 30 pin connector to the coil input. The isolation balun (bridge balun) acts to isolate the cable system ground from the coil ground and also the balun is chosen such that the loaded coil looks approximately like 50 ohms real at the pre-amp. The coils themselves are made up of an input blocking circuit, the antenna loop inductance and loss and the distributed capacitance. The geometry of the coil is chosen to optimize performance. This geometry dictates the loop inductance and loaded coil losses. The distributed capacitors are chosen to resonate with the loop inductance. The blocking network is a quarter wavelength circuit between the coil and the PIN diode. A quarter wavelength transmission line is said to be open (high impedance) at the input when the output is short-circuited and vice-versa.

1-1 How the Pelvic Phased Array Coil Operates (continued)

The air-wound inductor in the case of bottom two loops and trim capacitors in the case of top two loops are used to adjust for $\lambda/4$ electrical length resulting in high blocking impedance.

Each individual loop element is capacitively loaded with lumped element chip capacitors to reduce patient loading effects.

The transmit blocking network ($\lambda/4$ electrical length between the coil input and the PIN diode) exhibits high impedance at the coil input during transmit by forward biasing the PIN diode. This bias current is supplied from the Multicoil Switch Driver board.

During transmit all PIN diodes are biased on. With the diode turned on, the quarter wavelength blocking network presents a high impedance at the input of the coil. This minimizes currents in the coil loop which eliminates the magnetic field produced by the coil. If a magnetic field were produced by the coil, the transmit field generated by the body coil would be affected and homogeneity would be lost.

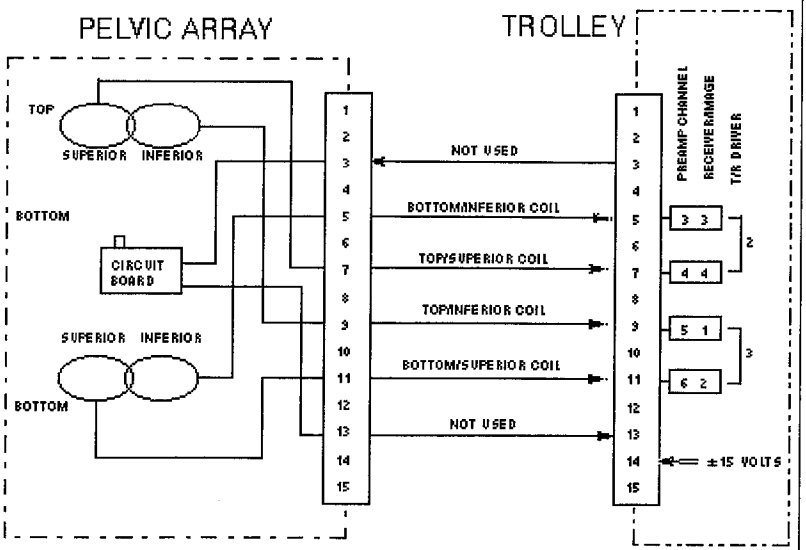
1-1 How the Pelvic Phased Array Coil Operates (continued)

During receive all PIN diodes are biased off. Magnetic coupling from nearby coils is reduced by using the low input impedance of the preamp. The electrical length of the system from the preamp to coil input transforms this low impedance (ie: short circuit) across the diode and the quarter wavelength blocking network once again blocks coil loop currents. This ensures that the individual signals picked up by the four separate preamps are not contaminated. Coupling between adjacent coils is further reduced by overlapping them.

At the factory, the individual loop elements are tuned to provide the proper input impedance. Since the antenna elements are contained on two circuit boards, neither of these boards can be replaced separately (these circuit boards include the Pelvic - Top Circuit Board and Pelvic - Bottom Circuit Board). Only the Phase Shift Circuit Board (2144806) can be removed and replaced separately.

1-1 How the Pelvic Phased Array Coil Operates (continued)

IMAGE NUMBER	PELVIC ARRAY ONLY
1	TOP/INFERIOR COIL
2	BOTTOM/SUPERIOR COIL
3	BOTTOM/INFERIOR COIL
4	TOP/SUPERIOR COIL



INTERCONNECTIONS FOR PELVIC PHASED ARRAY COIL
ILLUSTRATION 1-2

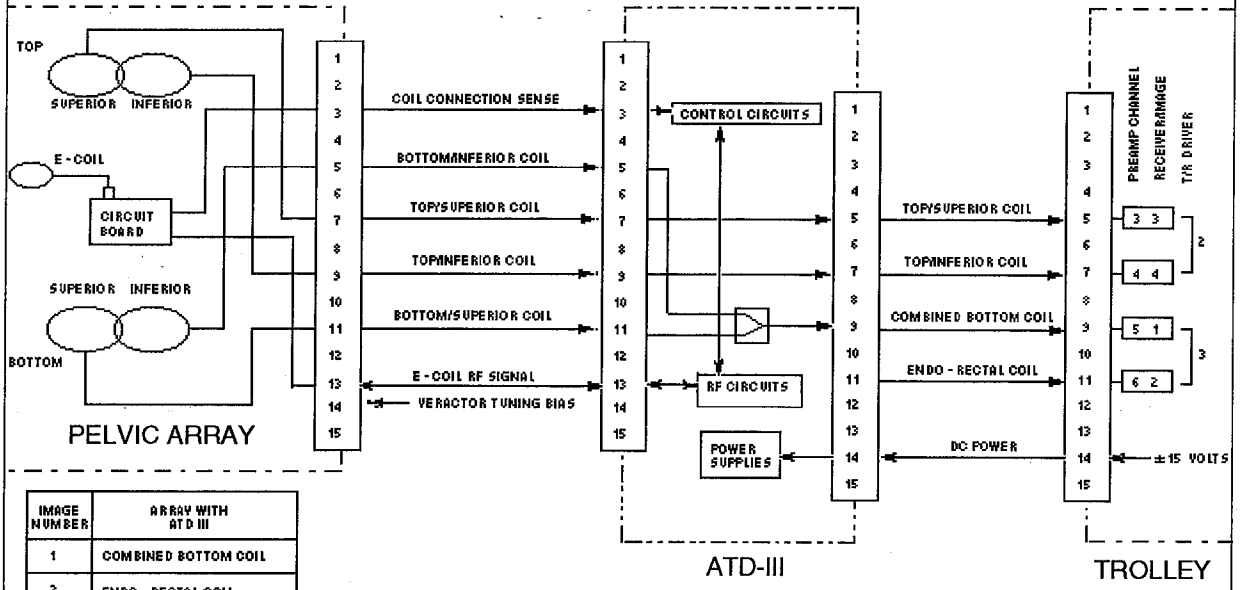


IMAGE NUMBER	ARRAY WITH ATD III
1	COMBINED BOTTOM COIL
2	ENDO - RECTAL COIL
3	TOP/SUPERIOR COIL
4	TOP/INFERIOR COIL

INTERCONNECTIONS FOR PELVIC COIL WITH ATD-III OPTION
ILLUSTRATION 1-3

1-2 Compatibility

The Pelvic Phased Array Coil is compatible with the following hardware configurations:

- Signa® Horizon™ 1.5T System
- Signa® Advantage™ 1.5T System
- Signa® Advantage™ System (1.5T)

1-3 Related Documents

- *Direction 2124201-3, MR Release 5.x Signa® Service Methods*
- *Direction 15400, Signa® Advantage™ 1.5T, 1.0T, 0.5T System*
- *Direction 15300, Signa® Advantage™ System*

1-4 Organization of this Document

This manual is divided into the following sections:

Section 1 - Introduction
Describes how the Pelvic Phased Array Coil operates and coil compatibility.
Section 2 - Setup and Calibration
Describes installation procedures.
Section 3, Functional Checks
Describes the normal power-up sequence.
Section 4, Replacement / Maintenance
Describes field maintenance procedures.
Section 5, Renewal Parts
Lists field replaceable parts.
Data Table
Provides a table to record SNR values for Quality Assurance.
Defective Coil Return Form
Provides a table to report coil failure for repair return.

1-5 Environmental Requirements

Operate and store the Pelvic Phased Array Coil in the Scanner Room.

Dimensions: The coil is:

132 cm x 43 cm x 5 cm (52 in x 17 in x 2 in)

Section 2 - Setup and Calibration

2-1 Checking the Shipping List

Table 2-1 lists the M1087PA Signa Pelvic Phased Array Coil parts. Check that all parts have been shipped.

TABLE 2-1
1.5T PELVIC PHASED ARRAY COIL SHIPPING LIST (M1087PA)

QTY.	ITEM	PART NUMBER
1	1.5T Pelvic Phased Array Coil with Cable	2144100
1	Strap	46-306594P1
1	Positioner and Spherical Phantoms (2)	46-317626G1
1	Service Manual	2152927
1	Operator Manual	2153560-100

2-2 Installing the Pelvic Phased Array Coil

At the Console, use "addcoil" to install the new soft key(s). Refer to "Configuration File" procedure on MR CD-ROM Direction 2124201-3; select Software Utilities, for information on installing soft keys (use Coil configuration default values in Table 2-2.)

2-2 Installing the Pelvic Phased Array Coil (continued)

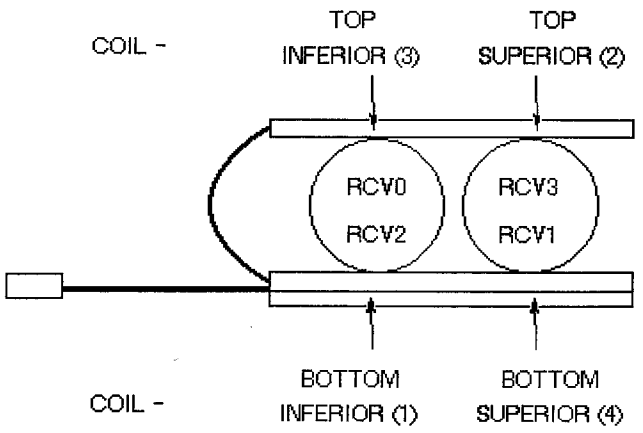
TABLE 2-2
COIL VALUES (1.5T PELVIC PHASED ARRAY COIL)

SYSTEM	COIL NAME	COIL TYPE	EXTREM COIL	CABLE LOSS	COIL LOSS	RECON SCALE FACTOR	XMIT COIL	XMIT ATTN	MULTI-COIL
1.5T	PELVIC	SURF.	NO	1.05	0.313(55cm) 1.72(60cm)	Head Coil Recon Scale Factor x 1.00	QUAD	0	YES

SYS.	MULTICOIL NAME	NUMBER OF RECEIVERS	START RECEIVER	STOP RECEIVER	PORT ENABLE MASK	ERROR ENABLE MASK
1.5T	PELVIC	4	0	3	6	6

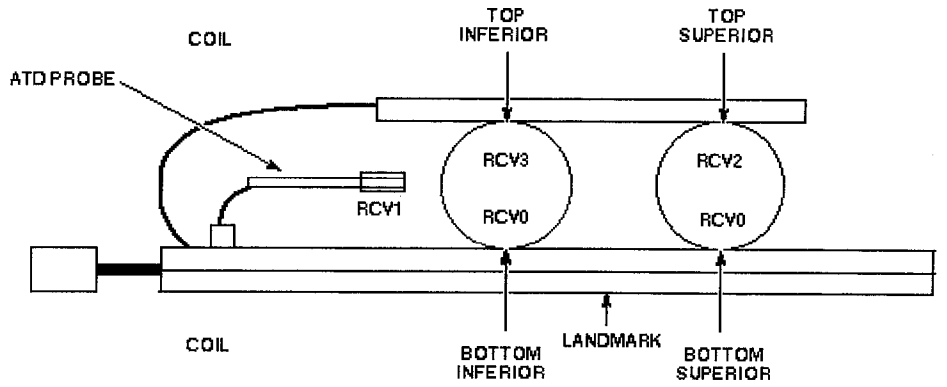
SYS.	NAME	NUMBER OF FAST RECEIVERS	START FAST RECEIVER	STOP FAST RECEIVER	XMIT ATTENUATION
1.5T	PELVIC	0	0	0	0

2-2 Installing the Pelvic Phased Array Coil (continued)



PELVIC PHASED ARRAY COIL TO TPS RECEIVER CORRESPONDENCE
ILLUSTRATION 2-1

2-2 Installing the Pelvic Phased Array Coil (continued)



PELVIC PHASED ARRAY COIL WITH ATD-III TO TPS RECEIVER CORRESPONDENCE
ILLUSTRATION 2-2

2-3 Installing the ATD-III Assembly Option

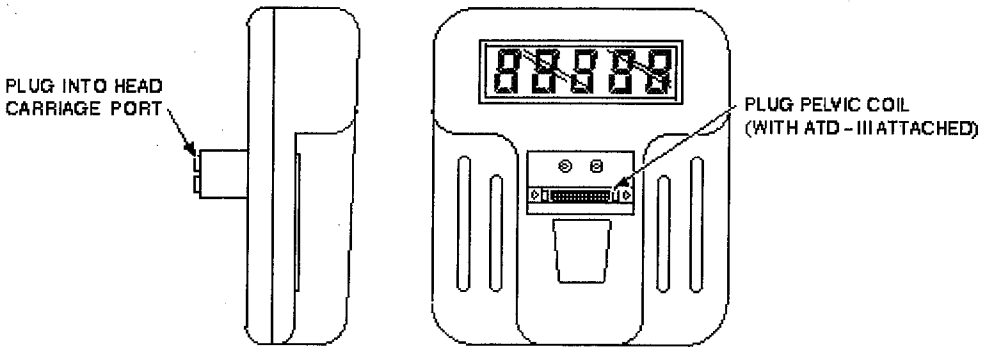
1. Install the ATD-III Probe Interface Board, 46-328131P1, into the Pelvic Coil. Refer to Section 4-4, REPLACING THE ATD - III PROBE INTERFACE CIRCUIT BOARD.

2. Attach the ATD-III Assembly to the Head Carriage Port. See Illustration 2-3.

3. Attach the Pelvic Coil to the front connector of the ATD-III Assembly. (Ensure Endorectal Probe is attached.)

4. Verify the "TUNE" message is visible, followed by a check mark within ten seconds.

2-3 Installing the ATD-III Assembly Option (continued)



ATD-III ASSEMBLY (OPTIONAL)
ILLUSTRATION 2-3

2-4 Functional Checks

1. Perform a Body coil scan SNR verification. Refer to Section 3-1, BODY COIL SNR VERIFICATION.

2. Perform a Pelvic Phased Array Coil SNR Verification. Refer to Section 3-2, PELVIC PHASED ARRAY COIL SNR VERIFICATION.

2-5 Periodic Quality Assurance Check

On a periodic basis, such as during planned maintenance, perform the quality assurance checks outlined below to ensure that the coil is operating properly:

1. Check the external cable for cracks or breaks once a week. Refer to Section 4-5, CHECKING THE CABLES.

2. Perform a coil SNR verification. Refer to Section 3-2, PELVIC PHASED ARRAY COIL SNR VERIFICATION.

3. Record the date and value calculated in Section 3-3, SNR IMAGE ANALYSIS in column 2 under "SNR Data QA Check" of the Data Table as is instructed.

4. As is instructed in the Data Table, divide the SNR value obtained in the periodic QA check by the original SNR value and record in column 3 of the Data Table.

5. If this ratio is not greater than 85%, then there may be a problem in the coil system. Contact your local GE Service Representative.

Section 3 - Functional Checks

3-1 Body Coil SNR Verification

Note

An alternate proprietary procedure is available for GE use and to customers with a valid Advanced Service Package Limited License. Refer to "TLT PROCEDURE" located on *CD-ROM Direction 2124201-1 or -2, MR Release 5.x Signa Service Methods,*
navigate to Troubleshooting:System or CD-ROM Direction 2124202, Release 4.x/3.x MR Signa Service Methods.

Phantom Required (shipped with each corresponding Pelvic Phased Array Coil)

- Pelvic Coil Positioner with Phantoms (Pelvic Phantom/Positioner), 46-317626G1

3-1 Body Coil SNR Verification (continued)

Setup Procedure

Caution

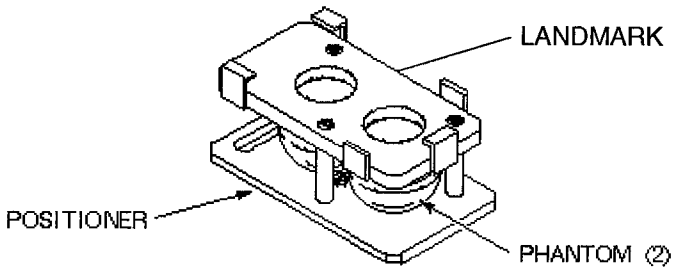
The Quad Head Coil must be completely removed from the cradle before performing any body scans. Failure to do this may result in damage to the Head Coil T/R Network.

1. Remove Quad Head Coil (if present) from cradle.

2. Select **[NEW STUDY] (4.x)** or **[New Exam] (5.x)** to allow a new Landmark to be set.

3-1 Body Coil SNR Verification (continued)

3. Position the Pelvic Phantom/Positioner with phantoms in the center of the cradle. Landmark the center of the positioner with phantoms and advance to isocenter using the **[ADVANCE TO SCAN]** button. See Illustration 3-1.



PELVIC PHANTOM/POSITIONER LANDMARK SETUP
ILLUSTRATION 3-1

3-1 Body Coil SNR Verification (continued)

4. Setup Scan Prescription as shown in Table 3-1 (4.x) or Table 3-2 (5.x).

TABLE 3-1
BODY COIL SNR - SCAN PROTOCOL (4.x)

Id:	**geservice**	Rep Time (TR):	**[300 msec]**
Name:	**body snr**		
Patient Weight:	**300**	Field of View:	**[48 cm]**
Patient Entry:	**[Head First]**	Scan Thickness:	**[3 mm]**
Patient Position:	**[Supine]**	Scan Location:	(S/I) **0**
Coil Type:	**[Body Coil]**		
Axial/Sag. Landmark:	**[Sternal Notch]**		
Image Mode:	**[Single Scan]**	FOV Center:	(R/L): R0 (A/P) A0
Scan Plane:	**[Sagittal]**	Acq. Matrix:	**[256 x 256]**
Pulse Sequence:	**[Multiple Echo]**	Imaging Time:	**[1 NEX 1:58]**
Imaging Options:	**[None]**	Frequency Direction:	**[R/L]**
or enter PSD Filename			
Number of Echoes:	**[1]**	Contrast:	**[No]**
Echo Time (TE):	**[30 msec]**	Table Delta:	0

3-1 Body Coil SNR Verification (continued)

TABLE 3-2
BODY COIL SNR - SCAN PROTOCOL (5.x)

Id:	**geservice**	Rep Time (TR):	**[300 msec]**
Name:	**body snr**	Auto CF:	**[Peak]**
Patient Weight:	**300**	Field of View:	**[48 cm]**
Patient Entry:	**[Head First]**	Scan Thickness:	**[3 mm]**
Patient Position:	**[Supine]**	Interscan Spacing:	**[Other] 0**
Axial/Sag. Landmark:	**[Sternal Notch]**	Start Loc (I/S):	**0** End Loc (I/S): **0**
Coil Type:	**[Body Coil]**	No. of Scan Location:	**1**
Scan Plane:	**[Sagittal]**	FOV Center (L/R):	0 (A/P) 0
Image Mode:	**[2D]**	Acq. Matrix (freq.):	**[256]**
Pulse Sequence:	**[Spin Echo]**	Acq. Matrix (phase)	**[256]**
Imaging Options:	**[None]**	Frequency Direction:	**[A/P]**
or enter PSD Filename		Imaging Time:	**[1 NEX 1:58]**
Number of Echoes:	**[1]**	Contrast:	**[No]**
Echo Time (TE):	**[30 msec]**	Table Delta:	0 mm

3-1 Body Coil SNR Verification (continued)

5. Select **[Auto Prescan]** to properly calibrate the RF power level for the 90 degree and 180 degree pulses.

6. Select **[Scan]**. Observe the resulting images. Ensure that there are no artifacts of any sort in the resulting image. Record the Exam number and Series number for SNR Calculations.

7. Select **[Scan]** again. This second image will be used for determination of Body Coil mode SNR.

8. Select **[Cancel]**. Refer to Section 3-3 for SNR image analysis.

3-2 Pelvic Phased Array Coil SNR Verification

Note

An alternate proprietary procedure is available for GE use and to customers with a valid Advanced Service Package Limited License. Refer to "TLT PROCEDURE" located on *CD-ROM Direction 2124201-1 or -2, MR Release 5.x Signa Service Methods, navigate to Troubleshooting:System or CD-ROM Direction 2124202, Release 4.x/3.x MR Signa Service Methods.*

Phantom Required

- Pelvic Coil Positioner with Phantoms (Pelvic Phantom/Positioner), 46-317626G1

3-2 Pelvic Phased Array Coil SNR Verification (continued)

Setup Procedure

1. Select **[NEW STUDY] (4.x)** or **[New Exam] (5.x)** to allow a new Landmark to be set.

Caution

The Quad Head Coil must be completely removed from the cradle before performing any body scans. Failure to do this may result in damage to the Head Coil T/R Network.

2. Remove Quad Head Coil (if present) from cradle.

3-2 Pelvic Phased Array Coil SNR Verification (continued)

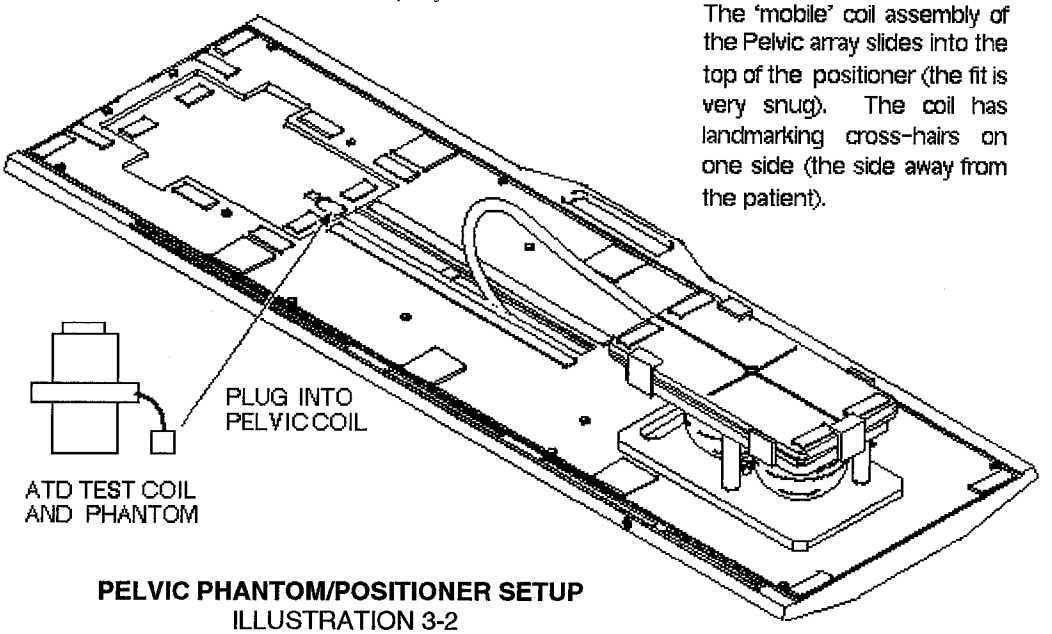
3. Place Pelvic Phased Array Coil to be tested onto table. Connect the ATD-III Test Coil and Phantom, if desired, to the Pelvic Phased Array Coil at the ATD-III connection on the coil.

4. Connect Pelvic Phased Array Coil connector to its mating connector in the Carriage Assembly. Connect the ATD-III Assembly to the Carriage Assembly first, if the ATD-III Test Coil and Phantom are to be used. Then connect the Pelvic Coil to the ATD-III Assembly. Ensure the check mark appears.

5. Place the phantom/positioner down on the Pelvic Coil. Ensure the two pegs on the bottom of the positioner mate with two positioning holes on the top cover of the Pelvic Coil Array. See Illustration 3-2.

3-2 Pelvic Phased Array Coil SNR Verification (continued)

The 'mobile' coil assembly of the Pelvic array slides into the top of the positioner (the fit is very snug). The coil has landmarking cross-hairs on one side (the side away from the patient).

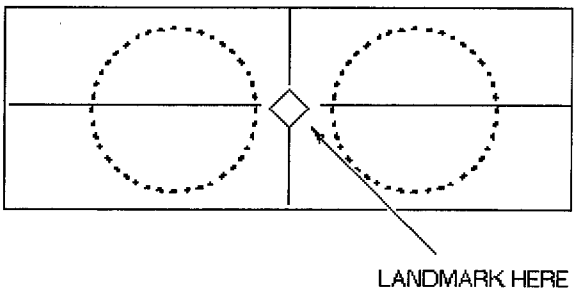


PELVIC PHANTOM/POSITIONER SETUP
ILLUSTRATION 3-2

3-2 Pelvic Phased Array Coil SNR Verification (continued)

6. Position the Pelvic Phased Array Coil and Positioner with phantoms in the center of the cradle. Landmark for Pelvic MID and advance the positioner with phantoms to isocenter using the **[ADVANCE TO SCAN]** button. See Illustration 3-3.

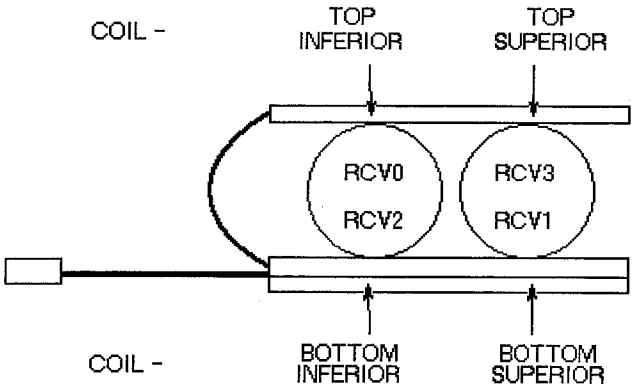
(VIEW FROM TOP OF PELVIC POSITIONER)



Note: Testing the Pelvic Coil requires one scan. Landmark using the cross-hairs on the Pelvic array (they will be apparent once you place the coil in the positioner).

PELVIC PHANTOM/POSITIONER LANDMARK SETUP (PELVIC TOP)
ILLUSTRATION 3-3

3-2 Pelvic Phased Array Coil SNR Verification (continued)



PELVIC PHASED ARRAY COIL TO TPS RECEIVER CORRESPONENCE
ILLUSTRATION 3-4

3-2 Pelvic Phased Array Coil SNR Verification (continued)

7. Setup Scan Prescription as shown in Table 3-3 (4.x) or Table 3-4 (5.x).

TABLE 3-3
PELVIC PHASED ARRAY COIL SNR - SCAN PROTOCOL (4.x)

Id:	**geservice**	Rep Time (TR):	**[300 msec]**
Name:	**pelvic snr**		
Patient Weight:	**300**	Field of View:	**[48 cm]**
Patient Entry:	**[Head First]**	Scan Thickness:	**[3 mm]**
Patient Position:	**[Supine]**	Scan Location:	(S/I) **0**
Coil Type:	**[Other Coils] [PELVIC]**		
Axial/Sag. Landmark:	**[Sternal Notch]**		
Image Mode:	**[Single Scan]**	FOV Center:	(R/L): R0 (A/P) A0
Scan Plane:	**[Sagittal]**	Acq. Matrix:	**[256 x 256]**
Pulse Sequence:	**[Multiple Echo]**	Imaging Time:	**[1 NEX 1:58]**
Imaging Options:	**[None]**	Frequency Direction:	**[R/L]**
or enter PSD Filename			
Number of Echoes:	**[1]**	Contrast:	**[No]**
Echo Time (TE):	**[30 msec]**	Table Delta:	0

3-2 Pelvic Phased Array Coil SNR Verification (continued)

TABLE 3-4
PELVIC PHASED ARRAY COIL SNR - SCAN PROTOCOL (5.x)

Id:	**geservice**	Rep Time (TR):	**[300 msec]**
Name:	**pelvic snr**	Auto CF:	**[Peak]**
Patient Weight:	**300**	Field of View:	**[48 cm]**
Patient Entry:	**[Head First]**	Scan Thickness:	**[5 mm]**
Patient Position:	**[Supine]**	Interscan Spacing:	**[Other] 0**
Axial/Sag. Landmark:	**[Sternal Notch]**	Start Loc (I/S):	**0** End Loc (I/S): **0**
Coil Type:	**[Other Coils] [Pelvic]**	No. of Scan Location:	**1**
Scan Plane:	**[Sagittal]**	FOV Center (L/R):	0 (A/P) 0
Image Mode:	**[2D]**	Acq. Matrix (freq.):	**[256]**
Pulse Sequence:	**[Spin Echo]**	Acq. Matrix (phase)	**[256]**
Imaging Options:	**[None]**	Frequency Direction:	**[R/L]**
or enter PSD Filename		Imaging Time:	**[1 NEX 1:58]**
Number of Echoes:	**[1]**	Contrast:	**[No]**
Echo Time (TE):	**[30 msec]**	Table Delta:	0 mm

3-2 Pelvic Phased Array Coil SNR Verification (continued)

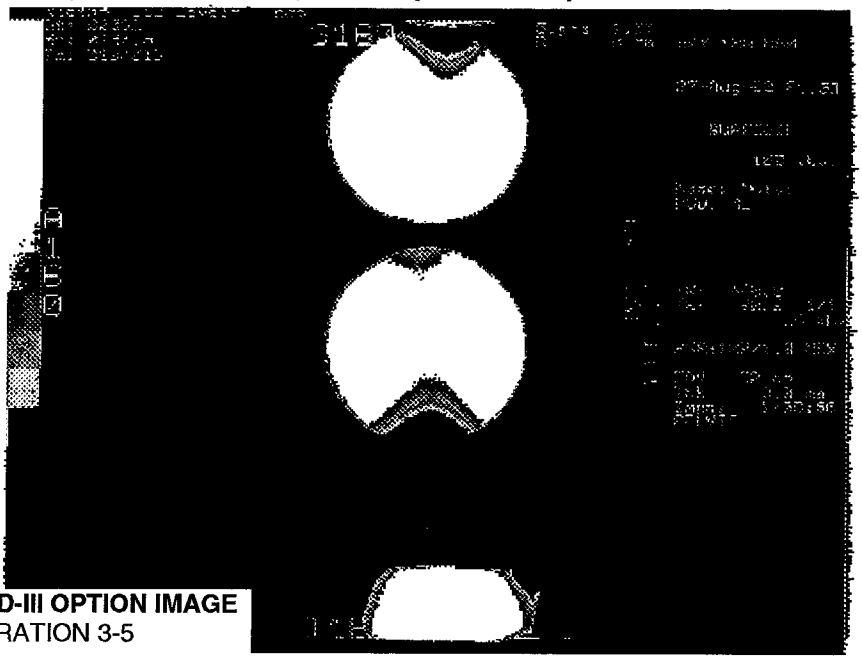
8. Select **[Auto Prescan]** to properly calibrate the RF power level for the 90 degree and 180 degree pulses.

9. Select **[Scan]**. Observe the resulting image of the spheres. See Illustration 3-5 (normal image). Ensure that there are no artifacts of any sort in the sphere image. Record the Exam number and Series number for SNR Calculations.

10. Select **[Scan]** again. This second image of the sphere will be used for determination of Pelvic Phased Array mode SNR.

11. Select **[Cancel]**. Refer to Section 3-3 for SNR image analysis.

3-2 Pelvic Phased Array Coil SNR Verification (continued)



PELVIC COIL WITH ATD-III OPTION IMAGE
ILLUSTRATION 3-5

3-3 SNR Image Analysis

3-3-1 SNR Image Analysis (Release 4.x) (See Section 3-3-2 For Release 5.x)

Description

The CLIPS macro will ask for the first image in the series to analyze. The macro assumes you have done two back-to-back scans, and will take the designated image and the next image in the series (i.e. if you give it image 3, it will take 3 and 4). It will also ask you to designate three points on the border of the phantom image to use in positioning the analysis ROI. If your image is too big, too small, or the three points were selected too close together, the macro will inform you.

3-3-1 SNR Image Analysis (Release 4.x) (continued)

Procedure

1. Touch **[UTILITIES]**, then **[Clips]**.

```
                    CLIPS
          -------------------------
              1 Run CLIPS
              2 Save files
              3 Restore files
              4 Remove files
              5 Exit

Enter the number of your selection: .....1 [ENTER]
```

3-3-1 SNR Image Analysis (Release 4.x) (continued)

```
                  1 = Operator console
                  2 = Remote1
                  3 = Remote2
                  4 = Exit

Which image processor would you like to use (1 2 or 3) ? ...1 [ENTER]

          IP selected is at the operator console.

Do you wish to boot the Image Processor? (Y or N) .....Y [ENTER] You do not
                                                       have to reboot the IP
                                                       each time you enter.

Welcome to the Command Line Image Processing System (CLIPS)

CLIPS > .....LIST(STUDY); [ENTER]
```

3-3-1 SNR Image Analysis (Release 4.x) (continued)

```
                              STUDY LIST
================================================================================
   STUDY #          PATIENT NAME          PATIENT I.D.          DATE
--------------------------------------------------------------------------------
     00001             BDY_SNR            GESERVICE          9-JULY-89
     00002             HD_SNR             GESERVICE          9-JULY-89
--------------------------------------------------------------------------------

CURRENT DEFAULTS --- PATIENT ID =                          /  /

                      N - NEXT PAGE
                      P - PREVIOUS PAGE
                      S - SELECT STUDY
                      C - CANCEL

choice ?.....................................................S [ENTER]
ENTER STUDY NUMBER --........................................1 [ENTER] Enter
                                                             appropriate number.
```

3-3-1 SNR Image Analysis (Release 4.x) (continued)

```
CLIPS > ..................................................LIST(SERIES); [ENTER]

                              SERIES LIST
================================================================================
 SERIES #          # OF IMAGES              SERIES TYPE       PULSE TYPE
--------------------------------------------------------------------------------
     001   002          AXIAL ME
     002   002          SAG   ME
--------------------------------------------------------------------------------
CURRENT DEFAULTS --- PATIENT ID = SNR            0000S/00S/001
                           N - NEXT PAGE
                           P - PREVIOUS PAGE
                           S - SELECT SERIES
                           C - CANCEL

choice ? ....................................................S [ENTER]
ENTER SERIES NUMBER --.......................................1 [ENTER] Enter
                                                             appropriate number.
```

3-3-1 SNR Image Analysis (Release 4.x) (continued)

CLIPS > .....**DIS; [ENTER]** or you could LIST (IMAGE); to select the image you want.

CLIPS > .....**EXECUTE(SNR); [ENTER]** or just **EXE(SNR); [ENTER]**.

```
THIS MACRO CALCULATES THE SNR USING THE GE HEAD OR BODY PHANTOM.
ENTER THE NUMBER OF THE FIRST IMAGE OF THE TWO-IMAGE SET AND !
   EXAMPLE INPUT> 1!
   Please start entering data.  Type an ! to end input mode.
   CLIPS INPUT> .....1! [ENTER]
```

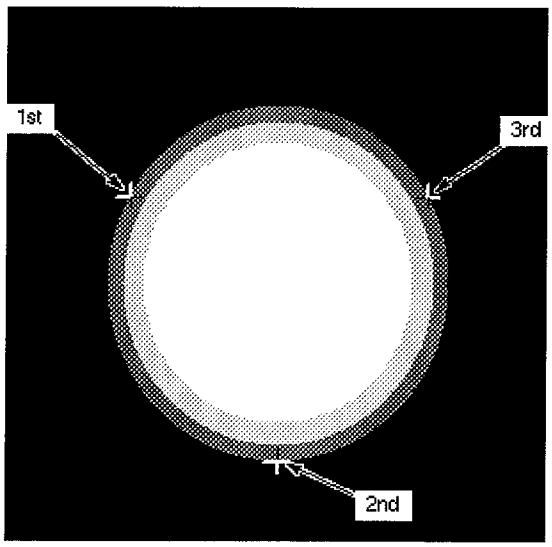
3-3-1 SNR Image Analysis (Release 4.x) (continued)

```
CORRECT POSITIONING OF THE SNR ANALYSIS
ROI DEPENDS ON FINDING THE CENTER OF
THE PHANTOM.  YOU WILL BE PROMPTED TO
IDENTIFY THREE POINTS AT THE EDGE OF
THE PHANTOM.  CARE SHOULD BE TAKEN TO
PICK THREE POINTS AS FAR AWAY FROM EACH
OTHER AS POSSIBLE (I.E. 2, 6, AND
10 O'CLOCK) AND AVOID FLAT SPOTS AND
IRREGULARITIES ON THE EDGE.
```

See Illustration 3-6.

Note

The order of cursor placement must be 10, 6, then 2 o'clock positions. Using a different order may give an error.



SNR CURSOR POSITIONS
ILLUSTRATION 3-6

3-3-1 SNR Image Analysis (Release 4.x) (continued)

```
POSITION CURSOR AT FIRST POINT AND ENTER !
```

Place cursor at 10:00 position on edge of image.

```
   Please start entering data.  Type an ! to end input mode.
   CLIPS INPUT> .....................................! [ENTER]

POSITION CURSOR AT SECOND POINT AND ENTER !
```

Place cursor at 6:00 position.

```
   Please start entering data.  Type an ! to end input mode.
   CLIPS INPUT> .....................................! [ENTER]

POSITION CURSOR AT THIRD POINT AND ENTER !
```

Place cursor at 2:00 position.

```
   Please start entering data.  Type an ! to end input mode.
   CLIPS INPUT> .....................................! [ENTER]
```

3-3-1 SNR Image Analysis (Release 4.x) (continued)

```
PHANTOM POINTS AND RADIUS OK.  BEGIN ANALYSIS.
```

The program will then perform the analysis and display the final values on the image monitor. Record Signal, Noise and Signal to Noise in Data Table.

```
DO YOU WANT TO SAVE THIS DATA?
ENTER A  1! FOR YES, A  0! FOR NO.
Please start entering data.  Type an ! to end input mode.
CLIPS INPUT>..................................... 0! [ENTER]

DATA NOT SAVED
CLIPS >  .....................................LIST(SERIES); [ENTER]
```

Select the next series and repeat the above analysis for each image pair. Type BYE; when completed to exit CLIPS.

3-3-1 SNR Image Analysis (Release 4.x) (continued)

2. When all analyses are complete, reset Auto Center Frequency mode by touching **[SCAN MODES]**, **[Default Auto CF]**, then **[EXECUTE]**.

Note

You do not have to reset the Auto Center Frequency mode if you are proceeding on to more image quality scans.

3. Record the date and value calculated in the appropriate column under "SNR Data QA Check" of the Data Table (following Section 5, RENEWAL PARTS) as is instructed.

3-3-2 SNR Image Analysis (Release 5.x)

Description

The SNR tool retrieves two operator selected images. Signal value is computed as the mean pixel value in a ROI covering 80% of the image. The image is analyzed to determine the center of the image for positioning the ROI. A difference image is created by subtracting the second image from the first and the same ROI is used to calculate noise from the subtracted image. The signal value, noise value, and signal to noise ratio are reported. There is an option to save the difference image with the results annotated.

3-3-2 SNR Image Analysis (Release 5.x) (continued)

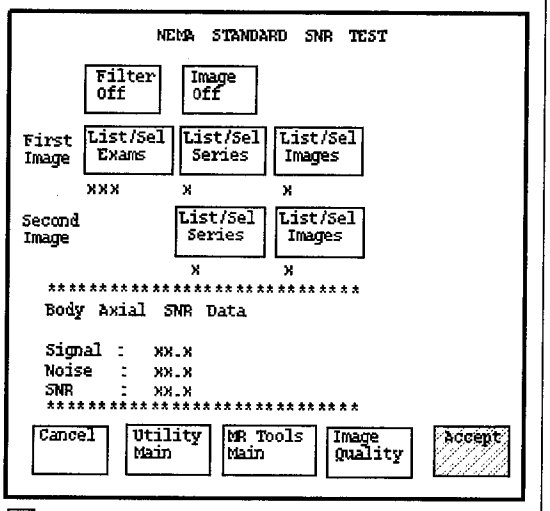
Procedure

1. Touch **[UTILITIES]**, **[MR Tools]**, **[Image Quality]**, then **[SNR Test]**. The SNR Test screen is displayed; see Illustration 3-7.

2. Enter image exam, series, and image numbers. If exam, series, or image numbers are not known, select **[List Exams]**, **[List Series]**, or **[List Images]** to display list to choose from.

Note

Image number selection must be back lit (highlighted) to be able to enter information. Use Switch key on keyboard to transfer control from left to right side of Touch Screen.



Note: Accept changes to continue only after an analysis has been performed.

SNR TEST SCREEN
ILLUSTRATION 3-7

3-3-2 SNR Image Analysis (Release 5.x) (continued)

3. If high pass filtering is desired to be performed on data, touch **[Filter Off]** which will highlight and change to **[Filter On]**.

4. If the difference image annotated with data is to be created, touch **[Image Off]** which will highlight and change to **[Image On]**.

5. Touch **[Accept]** to begin analysis. The final values are displayed on the touch screen, see Illustration 3-7 (see previous screen).

6. Touch **[Continue]** then select the next exam and repeat the above analysis for each image pair.

7. Record the date and value calculated in the appropriate column under "SNR Data QA Check" of the Data Table (following Section 5, RENEWAL PARTS) as is instructed.

3-4 Checking the PIN Diodes with Digital Multimeter (DMM)

Note

There is one PIN diode for each antenna element. This procedure will indicate if the PIN diode is defective in the coil antenna under test.

1. Select the DIODE TEST function on the Digital Multimeter (DMM).

2. Connect the NEGATIVE lead of the DMM to the external cable connector row A. Connect the POSITIVE lead to the external cable connector row B. Refer to Table 3-5.

3. A reading of 0.400 to 0.900 should be observed on the DMM.

4. If a reading below 0.400 is observed in either direction, either the output cable is shorted or the PIN diode has failed.

5. If a reading above 0.900 is observed in step 2, the PIN diode is defective.

3-4 Checking the PIN Diodes with Digital Multimeter (DMM) (continued)

6. Connect the NEGATIVE lead of the DMM to the external cable connector row B. Connect the POSITIVE lead to the external cable connector row A. Refer to Table 3-5.

7. A reading of INFINITY should be observed on the DMM.

8. If a reading of INFINITY is observed in both directions, either the output cable is open or the PIN diode is open.

9. If any of the above conditions fails, replace the coil assembly. **The PIN diodes are not FRU's.**

3-4 Checking the PIN Diodes with Digital Multimeter (DMM) (continued)

TABLE 3-5
DIODE TEST CONNECTIONS

CONNECTION COIL NUMBER	POSITIVE LEAD CONNECTION FOR STEP 2	POSITIVE LEAD CONNECTION FOR STEP 6	NEGATIVE LEAD FOR STEP 2	NEGATIVE LEAD FOR STEP 6
1	B5	A5	A5	B5
2	B7	A7	A7	B7
3	B9	A9	A9	B9
4	B11	A11	A11	B11

3-5 Checking the External Cable

1. Select the DIODE TEST function on the Digital Multimeter (DMM).

2. Connect the NEGATIVE lead of the DMM to the external cable connector row A. Connect the POSITIVE lead to the external cable connector row B. Refer to Table 3-5.

3. Flex the external cable, especially near the connectors and the strain relief, and observe that a reading of 0.400 to 0.900 should remain on the DMM, with no instability or fluctuations.

4. Connect the NEGATIVE lead of the DMM to the external cable connector row B. Connect the POSITIVE lead to the external cable connector row A. Refer to Table 3-5.

5. Flex the external cable, especially near the connectors and the strain relief, and observe that a reading of INFINITY should remain on the DMM, with no instability or fluctuations.

6. If the cable fails any of the above tests, refer to Section 4-2, REPLACING THE EXTERNAL CABLE AND INTERFACE CIRCUIT BOARDS.

Section 4 - Replacement / Maintenance

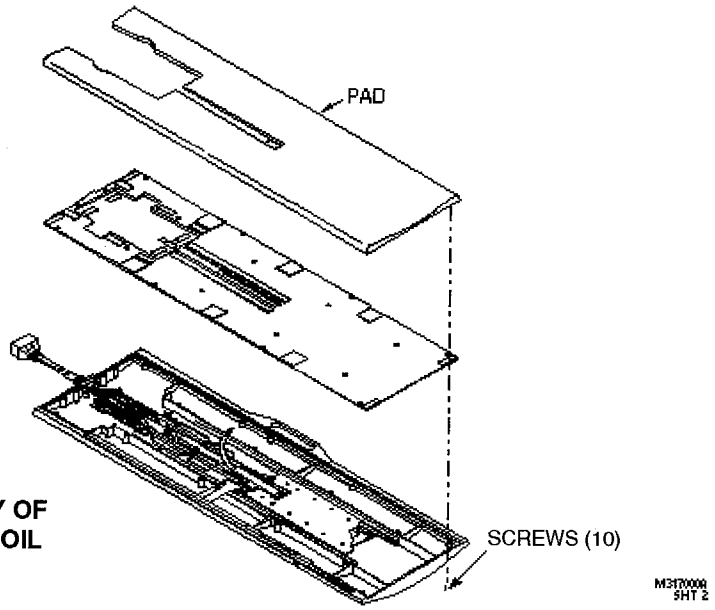
4-1 Disassembly / Assembly of Pelvic Phased Array Coil

Note

All antenna loop elements are tuned at the factory to provide the proper input impedance. Since antenna elements 1 and 2 are connected to elements 3 and 4, the top and bottom Pelvic Array circuit boards are field replaceable as a unit. These circuits must remain together as a matched set.

1. Remove pad from top side of Pelvic Coil assembly. See Illustration 4-1.
2. Remove the ten screws holding the top and bottom housing together.
3. Separate the two housings from each other.
4. To reassemble, put the two housings together and lightly tighten the ten screws.
5. Attach pad to top side of Pelvic Coil assembly.

4-1 Disassembly / Assembly of Pelvic Phased Array Coil (continued)



DISASSEMBLY/ASSEMBLY OF PELVIC PHASED ARRAY COIL
ILLUSTRATION 4-1

4-2 Replacing the External Cable and Phase Shift Circuit Board

1. Disassemble the top and bottom housings. Refer to Section 4-1.

2. Remove the two screws holding the external cable in place.

3. Disconnect the six SMB connectors on the external cable from the Phase Shift Board (four connectors) and Probe Interface Board (two connectors). See Illustration 4-2.

4. Remove the bad external cable.

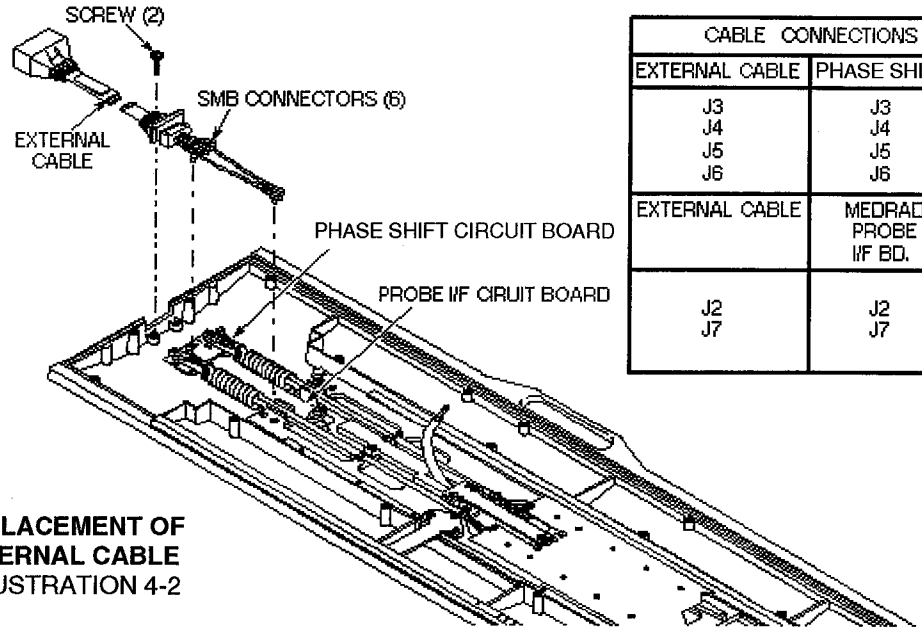
5. Install the new external cable in place. See Illustration 4-2.

6. Install the screws in place.

7. Reconnect the six SMB connectors to the Phase Shift Board and Probe Interface Board in the proper order.

8. Assemble the top and bottom housings together. Refer to Section 4-1.

4-2 Replacing the External Cable and Phase Shift Circuit Board (continued)



CABLE CONNECTIONS	
EXTERNAL CABLE	PHASE SHIFT BD.
J3 J4 J5 J6	J3 J4 J5 J6
EXTERNAL CABLE	MEDRAD PROBE I/F BD.
J2 J7	J2 J7

REPLACEMENT OF EXTERNAL CABLE
ILLUSTRATION 4-2

4-3 Replacing the Top and Bottom Pelvic Array Circuit Boards

Note

Cable lengths are tuned. Therefore, internal cable replacement must involve the correct replacement cable of appropriate length.

1. Disassemble the top and bottom housings. Refer to Section 4-1.

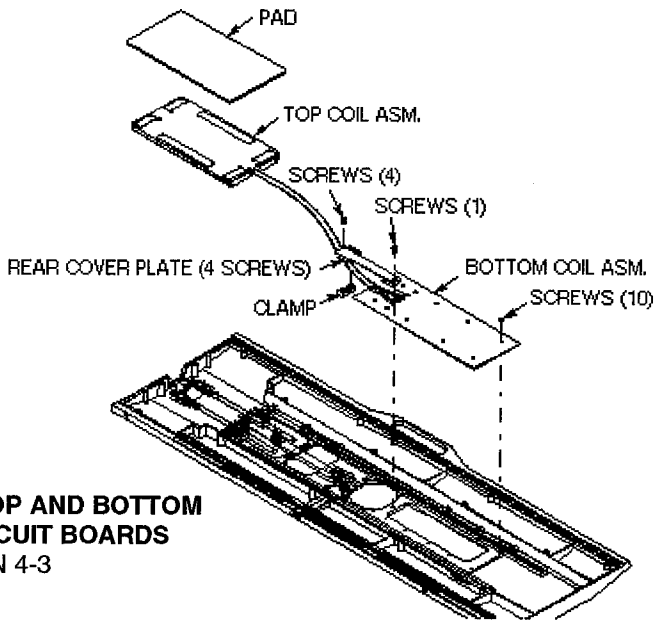
2. Remove the rear cover plate and the clamp holding the internal cable in place. See Illustration 4-3.

3. Disconnect the four coil cord cables from the Bottom Coil Assembly.

4. Remove the ten screws from Bottom Coil Assembly.

5. Remove the Top and Bottom Coil Assembly.

4-3 Replacing the Top and Bottom Pelvic Array Circuit Boards (continued)



REPLACEMENT OF TOP AND BOTTOM PELVIC ARRAY CIRCUIT BOARDS
ILLUSTRATION 4-3

4-3 Replacing the Top and Bottom Pelvic Array Circuit Boards (continued)

6. Install the new Top and Bottom Coil Assembly. See Illustration 4-3.

7. Connect the four coil cord cables from the Bottom Coil Assembly.

8. Install the ten screws to Bottom Coil Assembly.

9. Assemble the top and bottom housings together. Refer to Section 4-1.

4-4 Replacing the ATD-III Probe Interface Circuit Board

Note

Replacement Pelvic Phased Array Coils contain the Dummy Probe Interface Board. It is necessary to remove the Probe Interface Board from your defective Pelvic Phased Array Coil and install it in the replacement Pelvic Phased Array Coil. The Dummy Probe Interface Board can be disposed of or saved.

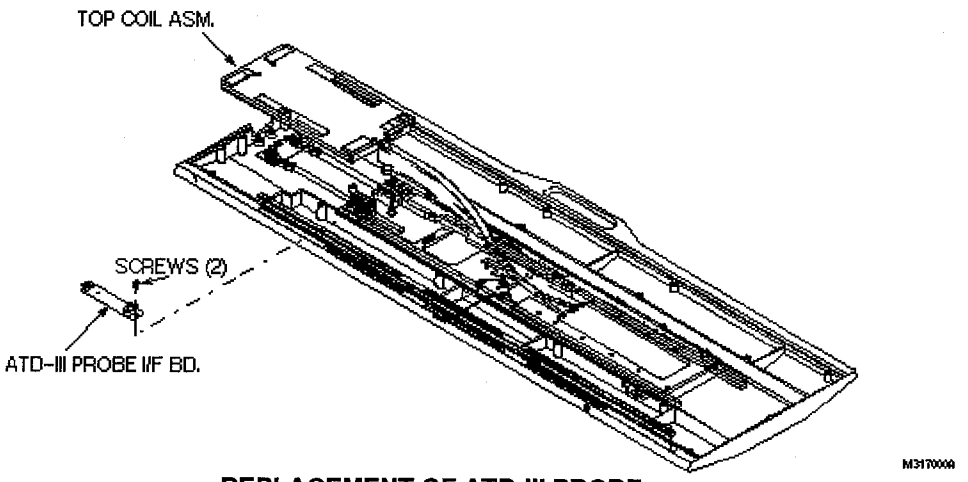
1. Disassemble the top and bottom housings. Refer to Section 4-1.

2. Disconnect the two SMB connectors from the Dummy Probe Interface Board or ATD-III Probe Interface Board (46-328131P1). See Illustration 4-4.

3. Remove the two screws holding the Dummy Probe Interface Board or ATD-III Probe Interface Board in place.

4. Remove the Dummy Probe Interface Board or bad ATD-III Probe Interface Board.

4-4 Replacing the ATD-III Probe Interface Circuit Board (continued)



REPLACEMENT OF ATD-III PROBE INTERFACE CIRCUIT BOARD
ILLUSTRATION 4-4

4-4 Replacing the ATD-III Probe Interface Circuit Board (continued)

5. Install the new ATD-III Probe Interface Board in place. See Illustration 4-4.

6. Install the screws on the ATD-III Probe Interface Board.

7. Reconnect the two SMB connectors to the ATD-III Probe Interface Board.

8. Assemble the top and bottom housings together. Refer to Section 4-1.

4-5 Replacing the Protection PIN Diodes

Caution

As coil tuning and decoupling tuning may be affected by PIN diode replacement, field replacement of the PIN diodes shall not be performed.

4-6 Replacing the Mechanical Hardware

1. Disassemble the top and bottom housings, if necessary. Refer to Section 4-1.

2. Disconnect and remove the bad part. Refer to Section 5, Renewal Parts, for part numbers.

3. Install the new part in place.

4. Assemble the top and bottom housings together. Refer to Section 4-1.

4-7 Checking the Cables

Check the external cable for cracks or breaks once each week. Replace the external cable if any damage or wear is found. Refer to Section 4-2, REPLACING THE EXTERNAL CABLE AND INTERFACE CIRCUIT BOARD, for external cable replacement procedure.

4-8 Cleaning the Coil

Caution

Avoid damaging sensitive electronic parts. Do not spray or pour dishwashing solution directly onto the Pelvic Phased Array Coil, or external cable. Do not use alcohol to clean the Pelvic Phased Array Coil. Never submerge the Pelvic Phased Array Coil in any liquid.

Clean the Pelvic Phased Array Coil and external cable with a mild dishwashing liquid and water solution. Wet a soft cloth with the solution and proceed to clean.

Before returning the coil for servicing, thoroughly clean the coil, cable, and connectors with a 10% bleach solution.

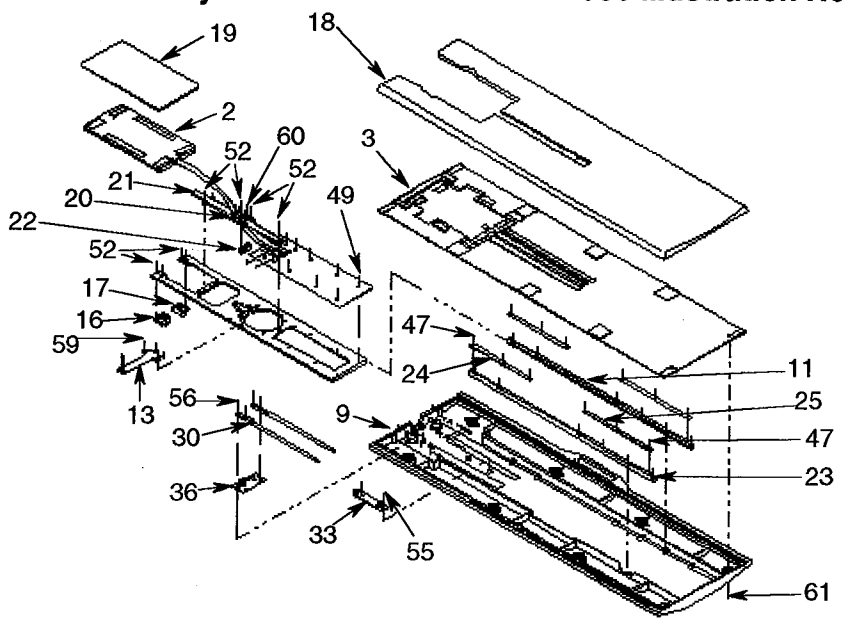
Section 5 - Renewal Parts

WARNING

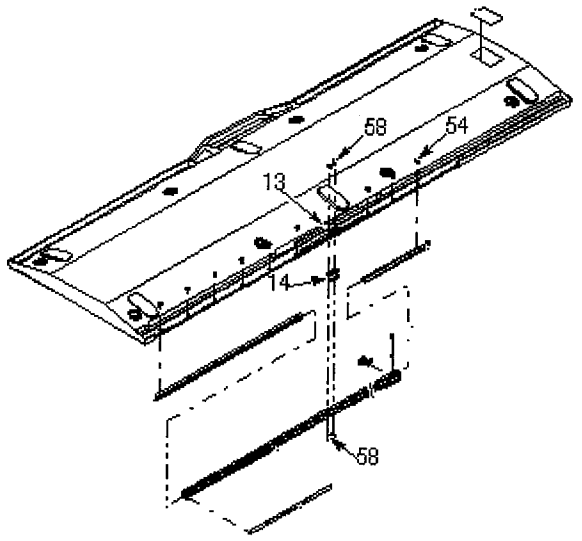
BIO HAZARD! EQUIPMENT BEING RETURNED FROM USE IN A CLINICAL SETTING MUST BE CLEAN AND FREE OF BLOOD AND OTHER INFECTIOUS SUBSTANCES. THE DEPARTMENT OF TRANSPORTATION (DOT) HAS RULED THAT ITEMS THAT WERE SATURATED AND/OR DRIPPING WITH HUMAN BLOOD THAT ARE NOW CAKED WITH DRIED BLOOD; OR WHICH WERE USED OR INTENDED FOR USE IN PATIENT CARE ARE REGULATED MEDICAL WASTE FOR TRANSPORTATION PURPOSES AND MUST BE TRANSPORTED AS A HAZARDOUS MATERIAL. UNDER NO CIRCUMSTANCES SHOULD A PART OR EQUIPMENT WITH VISIBLE BODY FLUIDS BE TAKEN OR SHIPPED FROM A CLINIC OR SITE (FOR EXAMPLE, SURFACE COILS).

1. Employees shall follow proper decontamination procedures for clean up of bloodborne pathogens. Refer to Section 4-8, CLEANING THE COIL. It is the responsibility of the GEMS employee to insure the part/equipment has been properly decontaminated prior to shipment.

1.5T Pelvic Phased Array Coil **See Illustration Next Page**

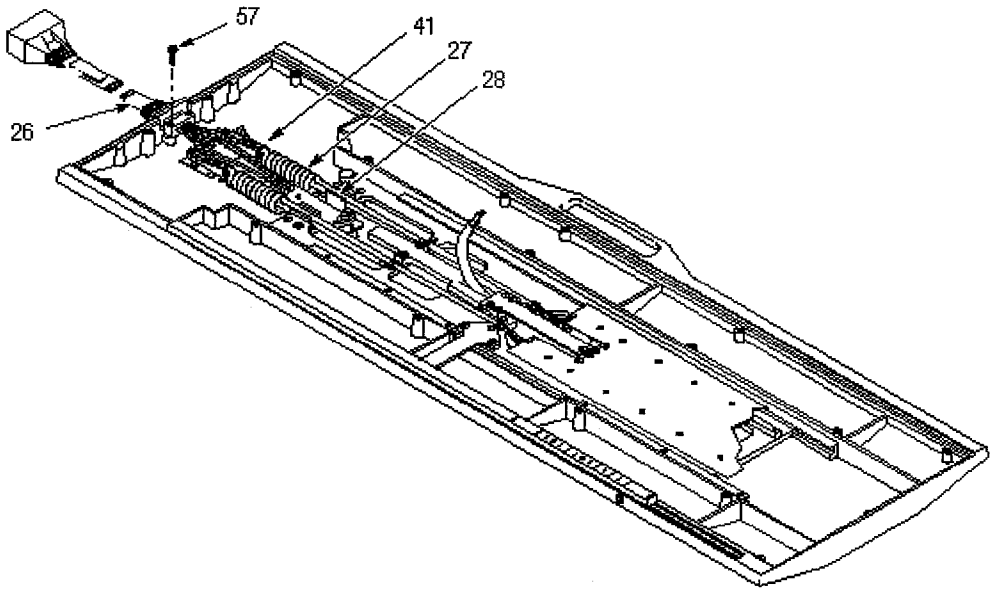


1.5T Pelvic Phased Array Coil (continued) **See Illustration Next Page**



1.5T Pelvic Phased Array Coil (continued)

See Parts List Next Page



1.5T Pelvic Phased Array Coil (From Ill. on Previous Pages)

Item	Part Number	FRU	Name	Qty.	Description (Remarks)
	2144100	1	PELVIC COIL		1.5T SIGNA PELVIC ARRAY COIL
2	2144101	1	BOX	1	PELVIC ENCLOSURE ASM
13	46-307992P1	2	ARM	1	SLIDE PLATE ACTUATOR, DELRIN
14	46-307993P1	2	SPACER OLD	1	.79"H X 1"W, 1/4" DELRIN, 6-32 HOLES
18	46-317449P1	2	COMFORT PAD	1	GREY NYLON FABRIC W/VELCRO HOOKS
19	46-317450P1	2	ENCL PAD	1	GREY NYLON FABRIC W/VELCRO HOOKS
26	46-307821G1	1	CABLE ASM	1	CABLE
27	46-317152P1	2	CABLE ASSEM	1	COILED CABLE, 2-COAX; 16-26, 15-25
28	46-317152P2	2	CABLE ASSEM	1	COILED CABLE, 2-COAX; 14-24, 13-23
31	46-317714P1	2	LABEL	1	"RAISE TABLE SIDE RAILS DURING EXAM"
33	46-288830G1	2	CIRCUIT BD	1	DUMMY INTERFACE BOARD FOR PROBE

1.5T Pelvic Phased Array Coil (Continued from previous page)

Item	Part Number	FRU	Name	Qty.	Description (Remarks)
36	2144806	1	CIRCUIT BOARD	1	1.5T PHASE ADJUST
41	46-208758P8	2	TY-RAP OLD	6	5.50" X .140" SELF-LOCKING CABLE TIE
47	46-230007P5	2	SCREW OLD	12	6-32 X 3/8" BIND HEAD SLOT, DELRIN
48	46-208921P22	2	SCREW OLD	12	6-32 X 5/8", BRASS
49	46-230008P9	2	SCREW OLD	10	4-40 X 5/8" LG FLAT HD, DELRIN
51	46-230008P1	2	SCREW OLD	4	10-32 X 1/2", DELRIN
52	46-230008P11	2	SCREW OLD	7	10-32 X 5/8" LG FLAT-HD, DELRIN
54	46-208921P5	2	SCREW OLD	9	6-32 X 3/8", BRASS
55	46-208921P4	2	SCREW OLD	2	6-32 X 1/4", BRASS
56	46-208921P6	2	SCREW OLD	4	6-32 X 1/2", BRASS
57	46-208921P10	2	SCREW OLD	2	10-32 X 7/8", BRASS
58	46-208913P26	2	SCREW OLD	4	6-32 X 3/8" LG, SLOT FLAT-HEAD BRASS
59	46-208913P12	2	SCREW OLD	3	10-32 X 1/2", SLOT FLAT-HEAD, BRASS
60	46-208913P9	2	SCREW OLD	2	10-32 X 3/4" LG, SLOT FLAT-HD, BRASS
61	46-220184P41	2	SCREW OLD	10	10-32 X 1/2" SLOT ROUND HEAD, BRASS
	46-328534G1	2	1.5T ATD-III	1	1.5T ATD-III AND PROBE I/F BD.

Data Table

Use the space provided below to record the calculated signal to noise ratio (SNR) data obtained from Section 3, Functional Checks. After recording the SNR data obtained during the initial coil installation, record subsequent SNR data in column 2 below and the date they were obtained in column number 1 as a periodic QA check. If the ratio of any of the coils found is not greater than 85%, then there is a problem in the coil or the MR system.

Original SNR data obtained at initial coil installation:

Body Coil SNR Value: _____

Pelvic Phased Array Coil SNR Value: _____

Date: _____

Data Table (continued)

SNR Data QA (Quality Assurance) Check:

1	2	3	
Date:	**SNR**	**Are new Values Divided by Original Values > 85%?**	
_____	_____	_____	Y/N
_____	_____	_____	Y/N
_____	_____	_____	Y/N
_____	_____	_____	Y/N
_____	_____	_____	Y/N
_____	_____	_____	Y/N
_____	_____	_____	Y/N
_____	_____	_____	Y/N
_____	_____	_____	Y/N
_____	_____	_____	Y/N
_____	_____	_____	Y/N

Make additional copies of this document as is needed.

Defective Coil Return Form

Note

To allow for proper assessment of defective returned coils, this form must be completely filled out and accompany all returned coils. Include films or prints of any image quality related complaints with a description of scan protocol used.

Date_____
Site Name_____
Site Address_____
Service Engineer_____
Coil Serial Number_____
Date Coil Installed_____
Description of Coil Problem_____
_____
_____
_____
_____
_____

Defective Coil Return Form (continued)

ELECTRICAL CHECKS

PIN Diode Test

Diode Drop Forward Bias _____
Diode Drop Reverse Bias _____

Defective Coil Return Form (continued)

Note

An alternate proprietary procedure is available for GE use and to customers with a valid Advanced Service Package Limited License. Refer to "TLT PROCEDURE" located on *CD-ROM Direction 2124201-1 or -2, MR Release 5.x Signa Service Methods, navigate to Troubleshooting:System or CD-ROM Direction 2124202, Release 4.x/3.x MR Signa Service Methods.* Use Table DR-1 and DR-2 to record the TLT results of the defective coil.

TABLE DR-1
TLT DATA FOR DEFECTIVE SURFACE COIL

SITE: _____ **NAME:** _____ **DATE:** _____
TLT FILE NUMBER: _____
SNR: NOISE _____
SNR MEAN _____
SNR SIGNAL _____
SNR AREA _____
TR MAP: 89-91 _____%
85-95 _____%
65-115 _____%
FLIP MEAN _____

Defective Coil Return Form (continued)

TABLE DR-2
TLT DATA FOR DEFECTIVE PHASED ARRAY COIL

SITE: _____ **NAME:** _____ **DATE:** _____

TLT FILE NUMBER: _____

SNR:	NOISE (0)	_____
	NOISE (1)	_____
	NOISE (2)	_____
	NOISE (3)	_____
	NOISE (C)	_____
	SNR MEAN (0)	_____
	SNR MEAN (1)	_____
	SNR MEAN (2)	_____
	SNR MEAN (3)	_____
	SNR MEAN (C)	_____
TR MAP:	89-91 (C)	_____ %
(Combined	85-95 (C)	_____ %
Results)	65-115 (C)	_____ %
	FLIP MEAN (C)	_____
	FLIP SDV (C)	_____
	RCV MEAN (C)	_____
	RCV SDV (C)	_____

Damage in Transportation Statement

All packages should be closely examined at time of delivery. If damage is apparent, have notation **"damage in shipment"** written on **all** copies of the freight or express bill **before** delivery is accepted or "signed for" by a General Electric representative or a hospital receiving agent. Whether noted or concealed, damage **MUST** be reported to the carrier **immediately** upon discovery, or in any event, within **14** days after receipt, and the contents and containers held for inspection by the carrier. A transportation company will not pay a claim for damage if an inspection is not requested within this **14** day period.

Call Traffic and Transportation, Milwaukee, WI (414) 785-5052/8*323-5052 **immediately** after damage is found. At this time be ready to supply name of carrier, delivery date, consignee name, freight or express bill number, item damaged and extent of damage.

Complete instructions regarding claim procedure are found in Section "S" of the Policy & Procedure Bulletins.

3/12/92

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