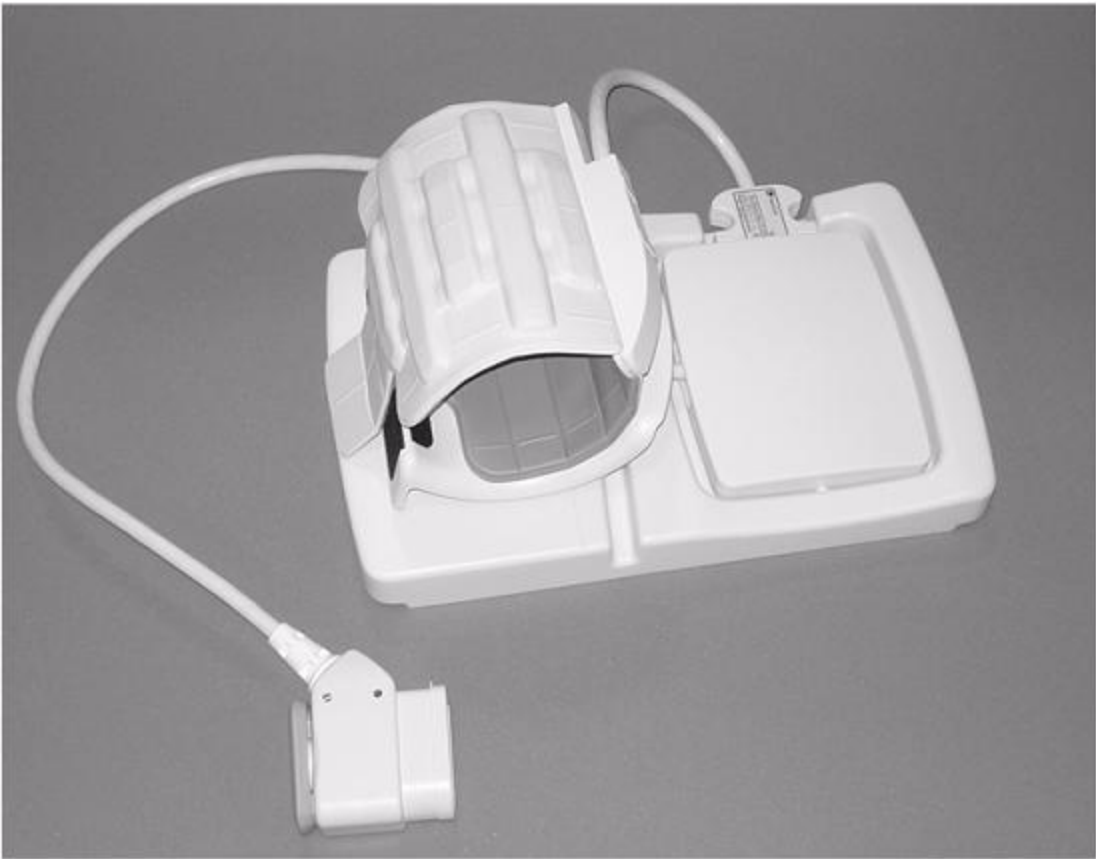


# GE Healthcare

## GEM Flex Coil, 1.5T and 3.0T Service Manual



NC021SCM Rev 7 August 2014

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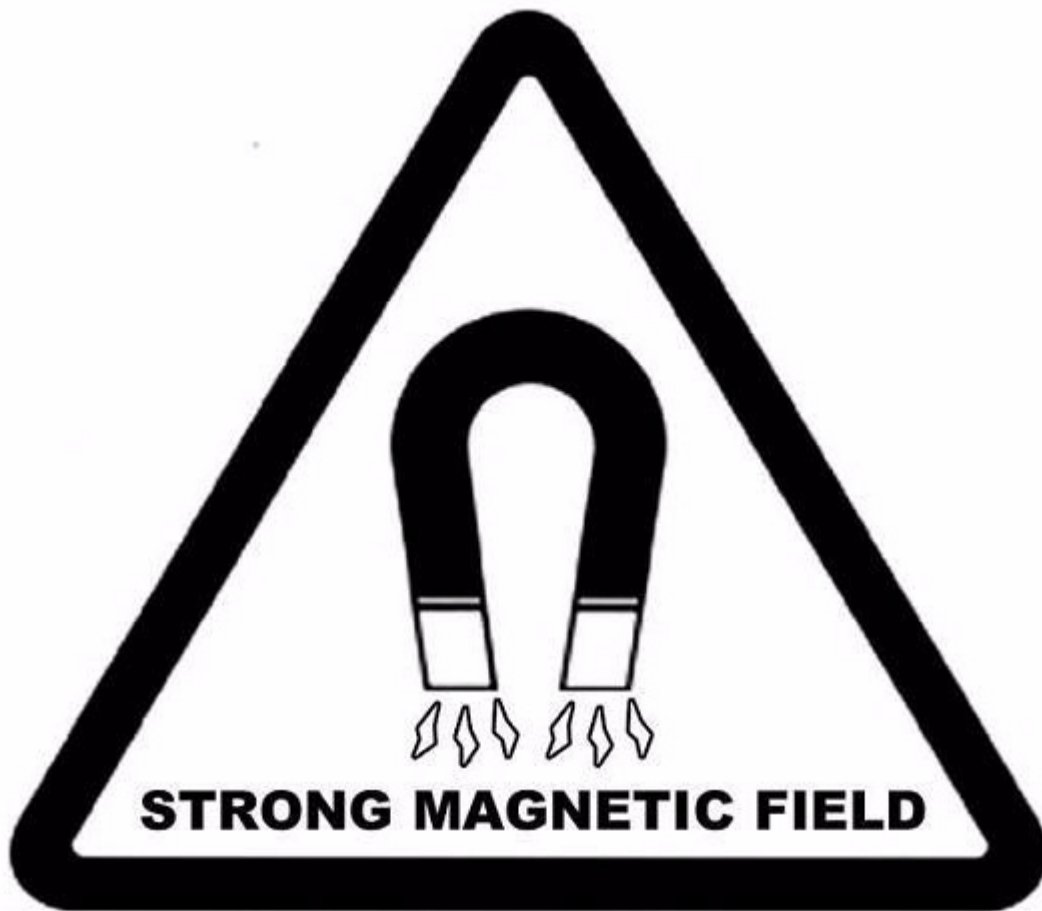
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# Magnetic Field Warning



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**NO PACEMAKERS  
NO METALLIC IMPLANTS**

Persons with pacemakers, neurostimulators or metallic implants must not enter the magnet area. Serious injury may result.



**NO LOOSE METAL OBJECTS**

Iron and steel materials must not be taken into the magnet area. Serious injury or property damage may result.

---

# Important Information

Предупреждение (BG)	<p>Това упътване за работа е налично само на английски език.</p> <ul style="list-style-type: none"><li>• Ако доставчикът на услугата на клиента изиска друг език, задължение на клиента е да осигури превод.</li><li>• Не използвайте оборудването, преди да сте се консултирали и разбрали упътването за работа.</li><li>• Неспазването на това предупреждение може да доведе до нараняване на доставчика на услугата, оператора или пациента в резултат на токов удар, механична или друга опасност.</li></ul>
警告 (ZH-CN)	<p>本维修手册仅提供英文版本。</p> <ul style="list-style-type: none"><li>• 如果客户的维修服务人员需要非英文版本，则客户需自行提供翻译服务。</li><li>• 未详细阅读和完全理解本维修手册之前，不得进行维修。</li><li>• 忽略本警告可能对维修服务人员、操作人员或患者造成电击、机械伤害或其他形式的伤害。</li></ul>
警告 (ZH-HK)	<p>本服務手冊僅提供英文版本。</p> <ul style="list-style-type: none"><li>• 倘若客戶的服務供應商需要英文以外之服務手冊，客戶有責任提供翻譯服務。</li><li>• 除非已參閱本服務手冊及明白其內容，否則切勿嘗試維修設備。</li><li>• 不遵從本警告或會令服務供應商、網絡供應商或病人受到觸電、機械性或其他之危險。</li></ul>
(ZH-TW)	<p>本維修手冊僅有英文版。</p> <ul style="list-style-type: none"><li>• 若客戶的維修廠商需要英文版以外的語言，應由客戶自行提供翻譯服務。</li><li>• 請勿試圖維修本設備，除非您已查閱並瞭解本維修手冊。</li><li>• 若未留意本警告，可能導致維修廠商、操作員或病患因觸電、機械或其他危險而受傷。</li></ul>
UPOZORENJE (HR)	<p>Ovaj servisni priručnik dostupan je na engleskom jeziku.</p> <ul style="list-style-type: none"><li>• Ako davatelj usluge klijenta treba neki drugi jezik, klijent je dužan osigurati prijevod.</li><li>• Ne pokušavajte servisirati opremu ako niste u potpunosti pročitali i razumjeli ovaj servisni priručnik.</li><li>• Zanemarite li ovo upozorenje, može doći do ozljede davatelja usluge, operatera ili pacijenta uslijed strujnog udara, mehaničkih ili drugih rizika.</li></ul>
VÝSTRAHA (CS)	<p>Tento provozní návod existuje pouze v anglickém jazyce.</p> <ul style="list-style-type: none"><li>• V případě, že externí služba zákazníkům potřebuje návod v jiném jazyce, je zajištění překladu do odpovídajícího jazyka úkolem zákazníka.</li><li>• Nesnažte se o údržbu tohoto zařízení, aniž byste si přečetli tento provozní návod a pochopili jeho obsah.</li><li>• V případě nedodržování této výstrahy může dojít k poranění pracovníka prodejního servisu, obslužného personálu nebo pacientů vlivem elektrického proudu, respektive vlivem mechanických či jiných rizik.</li></ul>
ADVARSEL (DA)	<p>Denne servicemanual findes kun på engelsk.</p> <ul style="list-style-type: none"><li>• Hvis en kundes tekniker har brug for et andet sprog end engelsk, er det kundens ansvar at sørge for oversættelse.</li><li>• Forsøg ikke at servicere udstyret uden at læse og forstå denne servicemanual.</li><li>• Manglende overholdelse af denne advarsel kan medføre skade på grund af elektrisk stød, mekanisk eller anden fare for teknikeren, operatøren eller patienten.</li></ul>
WAARSCHUWING (NL)	<p>Deze onderhoudshandleiding is enkel in het Engels verkrijgbaar.</p> <ul style="list-style-type: none"><li>• Als het onderhoudspersoneel een andere taal vereist, dan is de klant verantwoordelijk voor de vertaling ervan.</li><li>• Probeer de apparatuur niet te onderhouden alvorens deze onderhoudshandleiding werd geraadpleegd en begrepen is.</li><li>• Indien deze waarschuwing niet wordt opgevolgd, zou het onderhoudspersoneel, de operator of een patiënt gewond kunnen raken als gevolg van een elektrische schok, mechanische of andere gevaren.</li></ul>

This service manual is available in English only.

**Warning  
(EN)**

- 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.

See teenindusjuhend on saadaval ainult inglise keeles

**HOIATUS  
(ET)**

- Kui klienditeeninduse osutaja nõuab juhendit inglise keelest erinevas keeles, vastutab klient tõlketeenuse osutamise eest.
- Ärge üritage seadmeid teenindada enne eelnevalt käesoleva teenindusjuhendiga tutvumist ja sellest aru saamist.
- Käesoleva hoiatuse eiramine võib põhjustada teenuseosutaja, operaatori või patsiendi vigastamist elektrilöögi, mehaanilise või muu ohu tagajärjel.

Tämä huolto-ohje on saatavilla vain englanniksi.

**VAROITUS  
(FI)**

- Jos asiakkaan huoltohenkilöstö vaatii muuta kuin englanninkielistä materiaalia, tarvittavan käännöksen hankkiminen on asiakkaan vastuulla.
- Älä yritä korjata laitteistoa ennen kuin olet varmasti lukenut ja ymmärtänyt tämän huolto-ohjeen.
- Mikäli tätä varoitusta ei noudateta, seurauksena voi olla huoltohenkilöstön, laitteiston käyttäjän tai potilaan vahingoittuminen sähköiskun, mekaanisen vian tai muun vaaratilanteen vuoksi.

Ce manuel d'installation et de maintenance est disponible uniquement en anglais.

**ATTENTION  
(FR)**

- Si le technicien d'un client a besoin de ce manuel dans une langue autre que l'anglais, il incombe au client de le faire traduire.
- Ne pas tenter d'intervenir sur les équipements tant que ce manuel d'installation et de maintenance n'a pas été consulté et compris.
- Le non-respect de cet avertissement peut entraîner chez le technicien, l'opérateur ou le patient des blessures dues à des dangers électriques, mécaniques ou autres.

Diese Serviceanleitung existiert nur in englischer Sprache.

**Warnung  
(DE)**

- Falls ein fremder Kundendienst eine andere Sprache benötigt, ist es Aufgabe des Kunden für eine entsprechende Übersetzung zu sorgen.
- Versuchen Sie nicht diese Anlage zu warten, ohne diese Serviceanleitung gelesen und verstanden zu haben.
- Wird diese Warnung nicht beachtet, so kann es zu Verletzungen des Kundendiensttechnikers, des Bedieners oder des Patienten durch Stromschläge, mechanische oder sonstige Gefahren kommen.

Το παρόν εγχειρίδιο σέρβις διατίθεται μόνο στα αγγλικά.

**ΠΡΟΕΙΔΟΠΟΙΗΣΗ  
(EL)**

- Εάν ο τεχνικός σέρβις ενός πελάτη απαιτεί το παρόν εγχειρίδιο σε γλώσσα εκτός των αγγλικών, αποτελεί ευθύνη του πελάτη να παρέχει τις υπηρεσίες μετάφρασης.
- Μην επιχειρήσετε την εκτέλεση εργασιών σέρβις στον εξοπλισμό αν δεν έχετε συμβουλευτεί και κατανοήσει το παρόν εγχειρίδιο σέρβις.
- Αν δεν προσέξετε την προειδοποίηση αυτή, ενδέχεται να προκληθεί τραυματισμός στον τεχνικό σέρβις, στο χειριστή ή στον ασθενή από ηλεκτροπληξία, μηχανικούς ή άλλους κινδύνους.

Ezen karbantartási kézikönyv kizárólag angol nyelven érhető el.

**FIGYELMEZTETÉS  
(HU)**

- Ha a vevő szolgáltatója angoltól eltérő nyelvre tart igényt, akkor a vevő felelőssége a fordítás elkészítése.
- Ne próbálja elkezdni használni a berendezést, amíg a karbantartási kézikönyvben leírtakat nem értelmezték.
- Ezen figyelmeztetés figyelmen kívül hagyása a szolgáltató, működtető vagy a beteg áramütés, mechanikai vagy egyéb veszélyhelyzet miatti sérülését eredményezheti.

**AÐVÖRUN  
(IS)**

Þessi þjónustuhandbók er aðeins fáanleg á ensku.

- Ef að þjónustuveitandi viðskiptamanns þarfnast annas tungumáls en ensku, er það skylda viðskiptamanns að skaffa tungumálþjónustu.
- Reynið ekki að afgreiða tækið nema að þessi þjónustuhandbók hefur verið skoðuð og skilin.
- Brot á sinna þessari aðvörun getur leitt til meiðsla á þjónustuveitanda, stjórnanda eða sjúklings frá raflosti, vélrænu eða öðrum áhættum.

**Avvertenza  
(IT)**

Il presente manuale di manutenzione è disponibile soltanto in lingua inglese.

- Se un addetto alla manutenzione richiede il manuale in una lingua diversa, il cliente è tenuto a provvedere direttamente alla traduzione.
- Procedere alla manutenzione dell'apparecchiatura solo dopo aver consultato il presente manuale ed averne compreso il contenuto.
- Il mancato rispetto della presente avvertenza potrebbe causare lesioni all'addetto alla manutenzione, all'operatore o ai pazienti provocate da scosse elettriche, urti meccanici o altri rischi.

**警告  
(JA)**

このサービスマニュアルには英語版しかありません。¶

- 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。¶
- このサービスマニュアルを熟読し理解せずに、装置のサービスを行わないでください。¶
- この警告に従わない場合、サービスを担当される方、操作員あるいは患者...さんが、感電や機械的又はその他の危険により負傷する可能性があります。§

**경고  
(KO)**

본 서비스 매뉴얼은 영어로만 이용하실 수 있습니다. ¶

- 고객의 서비스 제공자가 영어 이외의 언어를 요구할 경우, 번역 서비스를 제공하는 것은 고객의 책임입니다. ¶
- 본 서비스 매뉴얼을 참조하여 숙지하지 않은 이상 해당 장비를 수리하려고 시도하지 마십시오. ¶
- 본 경고 사항에 유의하지 않으면 전기 쇼크, 기계적 위험, 또는 기타 위험으로 인해 서비스 제공자, 사용자 또는 환자에게 부상을 입힐 수 있습니다. §

**BRĪDINĀJUMS  
(LV)**

Šī apkopes rokasgrāmata ir pieejama tikai angļu valodā.

- Ja klienta apkopes sniedzējam nepieciešama informācija citā valodā, klienta pienākums ir nodrošināt tulkojumu.
- Neveiciet aprikojuma apkopi bez apkopes rokasgrāmatas izlasīšanas un saprašanas.
- Šī brīdinājuma neievērošanas rezultātā var rasties elektriskās strāvas triecienu, mehānisku vai citu faktoru izraisītu traumu risks apkopes sniedzējam, operatoram vai pacientam.

**ISPĒJIMAS  
(LT)**

Šis eksploataavimo vadovas yra tik anglų kalba.

- Jei kliento paslaugų tiekėjas reikalauja vadovo kita kalba – ne anglų, suteikti vertimo paslaugas privalo klientas.
- Nemėginkite atlikti įrangos techninės priežiūros, jei neperskaitėte ar nesupratote šio eksploataavimo vadovo.
- Jei nepaisysite šio įspėjimo, galimi paslaugų tiekėjo, operatoriaus ar paciento sužalojimai dėl elektros šoko, mechaninių ar kitų pavojų.

**ADVARSEL  
(NO)**

Denne servicehåndboken finnes bare på engelsk.

- Hvis kundens serviceleverandør har bruk for et annet språk, er det kundens ansvar å sørge for oversettelse.
- Ikke forsøk å reparere utstyret uten at denne servicehåndboken er lest og forstått.
- Manglende hensyn til denne advarselen kan føre til at serviceleverandøren, operatøren eller pasienten skades på grunn av elektrisk støt, mekaniske eller andre farer.

**OSTRZEŻENIE  
(PL)**

Niniejszy podręcznik serwisowy dostępny jest jedynie w języku angielskim.

- Jeśli serwisant klienta wymaga języka innego niż angielski, zapewnienie usługi tłumaczenia jest obowiązkiem klienta.
- Nie próbować serwisować urządzenia bez zapoznania się z niniejszym podręcznikiem serwisowym i zrozumienia go.
- Niezastosowanie się do tego ostrzeżenia może doprowadzić do obrażeń serwisanta, operatora lub pacjenta w wyniku porażenia prądem elektrycznym, zagrożenia mechanicznego bądź innego.

**AVISO  
(PT-BR)**

Este manual de assistência técnica encontra-se disponível unicamente em inglês.

- Se outro serviço de assistência técnica solicitar a tradução deste manual, caberá ao cliente fornecer os serviços de tradução.
- Não tente reparar o equipamento sem ter consultado e compreendido este manual de assistência técnica.
- A não observância deste aviso pode ocasionar ferimentos no técnico, operador ou paciente decorrentes de choques elétricos, mecânicos ou outros.

**ATENÇÃO  
(PT-PT)**

Este manual de assistência técnica só se encontra disponível em inglês.

- Se qualquer outro serviço de assistência técnica solicitar este manual noutra 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 colocar em perigo a segurança do técnico, do operador ou do paciente devido a choques eléctricos, mecânicos ou outros.

**ATENȚIE  
(RO)**

Acest manual de service este disponibil doar în limba engleză.

- Dacă un furnizor de servicii pentru clienți necesită o altă limbă decât cea engleză, este de datoria clientului să furnizeze o traducere.
- Nu încercați să reparați echipamentul decât ulterior consultării și înțelegerii acestui manual de service.
- Ignorarea acestui avertisment ar putea duce la rănirea depanatorului, operatorului sau pacientului în urma pericolelor de electrocutare, mecanice sau de altă natură.

**ОСТОРОЖНО!  
(RU)**

Данное руководство по техническому обслуживанию представлено только на английском языке.

- Если сервисному персоналу клиента необходимо руководство не на английском, а на каком-то другом языке, клиенту следует самостоятельно обеспечить перевод.
- Перед техническим обслуживанием оборудования обязательно обратитесь к данному руководству и поймите изложенные в нем сведения.
- Несоблюдение требований данного предупреждения может привести к тому, что специалист по техобслуживанию, оператор или пациент получит удар электрическим током, механическую травму или другое повреждение.

**UPOZORENJE  
(SR)**

Ovo servisno uputstvo je dostupno samo na engleskom jeziku.

- Ako klijentov serviser zahteva neki drugi jezik, klijent je dužan da obezbedi prevodilačke usluge.
- Ne pokušavajte da opravite uređaj ako niste pročitali i razumeli ovo servisno uputstvo.
- Zanemarivanje ovog upozorenja može dovesti do povređivanja serviser, rukovaoca ili pacijenta usled strujnog udara ili mehaničkih i drugih opasnosti.

**UPOZORNENIE  
(SK)**

Tento návod na obsluhu je k dispozícii len v angličtine.

- Ak zákazník poskytovateľ služieb vyžaduje iný jazyk ako angličtinu, poskytnutie prekladateľských služieb je zodpovednosťou zákazníka.
- Nepokúšajte sa o obsluhu zariadenia, kým si neprečítate návod na obsluhu a neporozumiete mu.
- Zanedbanie tohto upozornenia môže spôsobiť zranenie poskytovateľa služieb, obsluhujúcej osoby alebo pacienta elektrickým prúdom, mechanické alebo iné ohrozenie.

**ATENCION  
(ES)**

Este manual de servicio sólo existe en inglés.

- Si el encargado de mantenimiento de un cliente necesita un idioma que no sea el inglés, el cliente deberá encargarse de la traducción del manual.
- 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.

**VARNING  
(SV)**

Den här servicehandboken finns bara tillgänglig på engelska.

- Om en kunds servicetekniker har behov av ett annat språk än engelska, ansvarar kunden för att tillhandahålla översättningstjänster.
- Försök inte utföra service på utrustningen om du inte har läst och förstår den här servicehandboken.
- Om du inte tar hänsyn till den här varningen kan det resultera i skador på serviceteknikern, operatören eller patienten till följd av elektriska stötar, mekaniska faror eller andra faror.

**DİKKAT  
(TR)**

Bu servis kılavuzunun sadece ingilizcesi mevcuttur.

- Eğer müşteri teknisyeni bu kılavuzu ingilizce dışında bir başka lisandan talep ederse, bunu tercüme ettirmek müşteriye düşer.
- Servis kılavuzunu okuyup anlamadan ekipmanlara müdahale etmeyiniz.
- Bu uyarıya uyulmaması, elektrik, mekanik veya diğer tehlikelerden dolayı teknisyen, operatör veya hastanın yaralanmasına yol açabilir.

**OPOZORILO  
(SL)**

Ta servisni priročnik je na voljo samo v angleškem jeziku.

- Če ponudnik storitve stranke potrebuje priročnik v drugem jeziku, mora stranka zagotoviti prevod.
  - Ne poskušajte servisirati opreme, ce tega priročnika niste v celoti prebrali in razumeli.
  - Če tega opozorila ne upoštevate, se lahko zaradi električnega udara, mehanskih ali drugih nevarnosti poškoduje ponudnik storitev, operater ali bolnik.
-

# ATTENTION!

Installation of this coil **MUST** be performed by a GE field engineer. Please contact your field engineer to arrange for installation.

Attempts to perform installation of this coil without proper system configuration can result in system errors.

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# Revision History

Rev	Date	Description
1	May 2011	Initial release.
2	November 2011	Updated part numbers for 16ch and compatibility.
3	March 2012	Updated for 3T release.
4	August 2013	Added Use of Symbols and Coil Classification tables. Added a note to Introduction re 32 channel.
5	April 2014	Updated for RoHS.
6	July 2014	Updated to include Pediatric Interface.
7	August 2014	Updated to add compatibility for Mulan

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# Section 1

## Introduction

### Description

The GEM Flex Coil is a unique system made up of high density 16 element antenna arrays that are formable and flexible. Made up of interchangeable parts, the GEM Flex Coil is a receive-only coil designed to provide high resolution, sub millimeter imaging. The versatility of the system enables many clinical applications for 8 and 16 channel systems. The array system is compatible with 2D, 3D, parallel and isotropic imaging, as well as coil signal intensity correction. The 1.5T and 3.0T GEM Flex Coils are compatible with GE 1.5 and 3.0 HD or DV Series MR scanners, respectively.

**NOTE:** The operator manual indicates that scanning 32 channel systems is possible, however GE has disabled this feature in the coil configuration files.

The **antenna arrays** provide coverage for 8 or 16 channel scanning, as well as allow for greater coverage of large anatomy. Each of the arrays features up to 16 elements to provide deep penetration SNR and improved S/I and R/L coverage.

The **interface** is the device into which an array is plugged. It can be used in conjunction with the immobilization device or alone.

The **GEM Flex Pediatric Interface** is installed in and can only be used with the NeoCoil Pediatric Stabilizer.

### Compatibility

The GEM Flex Coil is compatible with 1.5T and 3.0T HD and DV systems as shown in the table below:






System Type	Minimum Software
1.5T Signa HDxt	HD23.0_V01
MR450	DV22.0_V02_ServicePack01
MR450w	DV22.0_V02_ServicePack01
MR450w-GEM	DV22.1_V01
MR750	DV22.0_V02_ServicePack02
MR750w	DV23.0_V01_ServicePack02
MR750w-GEM	DV23.0_V01_ServicePack02
SIGNA Creator, SIGNA Explorer	SV25.0_V01




The system compatibility of the GEM Flex Pediatric Interface is as shown in the table below:

System Type	Minimum Software
MR450w-GEM	DV25.0

## System Components

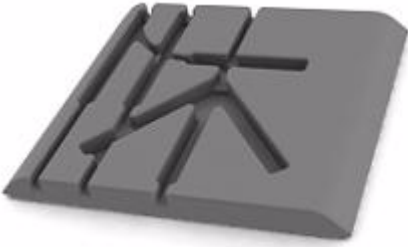

Shipping contents will vary depending on the configuration ordered by the site.

Description	Part	NeoCoil part #	GE part #
<p><b>16 channel fixed interface for HD 1.5T MRI systems</b></p> 	GEM Flex Interface 16ch Fixed, 1.5T HD-Connector	NC022203	5430000-17
<p><b>16 channel fixed interface for 1.5T DV MRI systems</b></p> 	GEM Flex Interface 16ch Fixed, 1.5T P-Connector	NC022204	5430000-5
<p><b>16 channel fixed interface for HD 3.0T MRI systems</b></p> 	GEM Flex Interface 16ch Fixed, 3.0T HD-Connector	NC032203	5430008-6
<p><b>16 channel fixed interface for 3.0T DV MRI systems</b></p> 	GEM Flex Interface 16ch Fixed, 3T P-Connector	NC032204	5430008-5
<p><b>16 channel fixed interface for 1.5T GE 450w-GEM systems for use with the NeoCoil Pediatric Stabilizer</b></p> 	GEM Flex Pediatric Interface, 16ch, 1.5T P-Connector	NC022210	5430000-25

Description	Part	NeoCoil part #	GE part #
<p><b>16 channel large array for hip</b></p> 	<p>GEM Flex Coil 16-L Array, 1.5T Receive Only</p> <p>GEM Flex Coil 16-L Array, 3T Receive Only</p>	<p>NC030200 for 1.5T</p> <p>NC040200 for 3.0T</p>	<p>5430000-2 or 5430000-22 for 1.5T</p> <p>5430008-2 or 5430008-12 for 3.0T</p>
<p><b>16 channel medium array for knee</b></p> 	<p>GEM Flex Coil 16-M Array, 1.5T Receive Only</p> <p>GEM Flex Coil 16-M Array, 3T Receive Only</p>	<p>NC023200 for 1.5T</p> <p>NC033200 for 3.0T</p>	<p>5430000-3 or 5430000-23 for 1.5T</p> <p>5430008-3 or 5430008-13 for 3.0T</p>
<p><b>16 channel small array for elbow</b></p> 	<p>GEM Flex Coil 16-S Array, 1.5T Receive Only</p> <p>GEM Flex Coil 16-S Array, 3T Receive Only</p>	<p>NC024200 for 1.5T</p> <p>NC034200 for 3.0T</p>	<p>5430000-4 or 5430000-24 for 1.5T</p> <p>5430008-4 or 5430008-14 for 3.0T</p>

## Accessories

Description	Part	NeoCoil part #	GE part #
<p><b>knee stabilization device for flat MRI tables</b></p> 	<p>GEM Flex Knee Stabilization for Flat MRI Tables</p>	<p>NC026406</p>	<p>5430000-7</p>
<p><b>knee stabilization device for curved MRI tables</b></p> 	<p>GEM Flex Knee Stabilization for Curved MRI Tables</p>	<p>NC026407</p>	<p>5430000-8</p>
<p><b>general purpose strap for GEM Flex Coil arrays</b></p> 	<p>GEM Flex General Purpose Strap</p>	<p>NC026403</p>	<p>NA</p>
<p><b>system cable take up pad, used to avoid cable looping</b></p> 	<p>GEM Flex System Cable Take Up Pad (1.5T only)</p>	<p>NC026404</p>	<p>5430000-14</p>

Description	Part	NeoCoil part #	GE part #
<p><b>general purpose stabilization device for curved and flat tables</b></p> 	GEM Flex Stabilization Device for Curved and Flat Tables	NC026402	5430000-13
<p><b>cover for the GEM Flex Interface Module</b></p> 	GEM Flex Interface Cover	NC022504	NA

## Related Documentation

- 1.5T GEM Flex Coil Instruction for Use, NeoCoil Part # NC021IFU
- 3.0T GEM Flex Coil Instruction for Use, NeoCoil Part # NC031IFU
- Instructions for Use Accessory Immobilization Devices, NeoCoil Part # NC074IFU
- Flex Coil Accessory Immobilization Devices Service Manual, NeoCoil Part # NC074SCM

## Damage in Transportation

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 a 14-day period.

To file a report with GE:

- Call 1-800-548-3366 and use option 6.
- Fill out a report at: <http://egems.med.ge.com/edq/home.jsp>
- Contact your local Service Coordinator for more information on this process.

## Product Locator

Each serialized component is supplied with a product locator card (PLC). The number of PLCs for any given site will depend upon the M/Cat that's been ordered. Make sure to submit the complete number of installation cards for each catalog.

The Global Install Base Database (also known as the Product Locator System) tracks shipment, trans-shipment, and field location of the serialized models. There are two methods for submitting Product Locator information.

**Method 1:** For **U.S. ONLY** at this time, the preferred method of submitting information is the FE Site Verification website at: <http://gein2.med.ge.com/gib>.

The FE Site Verification has three components available on the web from the main menu:

- Installation/deinstallation product locator model and serial numbers
- Ability to add/modify the ship to address information
- Ability to obtain a copy of the FE training tutorial for using this web site. A downloadable copy is available at the Product Locator Support Central Page: <http://supportcentral.ge.com/15563>.

Method 2: Once the "Shipping Card" is filled out and submitted when shipped (extra cards are supplied for trans-shipments between storage and distribution points), and the "Installation Card" and extra shipment cards are attached:

- Verify that serial and model number on each rating plate matches the installation card numbers before removing the installation card.
- Process just the installation card and discard any extra shipment cards and labels. (There may be one or more shipment cards and bar code labels with the installation card. These shipment cards are used to trace the transfer of serialized units between various inventory storage and distribution points until the product reaches its final installation destination.)

**NOTE:** There could be as many as six of product locator cards, depending on the configuration ordered by the site. Make sure each applicable card is completed and submitted for proper warranty coverage and so that site history is maintained.

## Environmental Requirements

Store the coil and accessories in an air conditioned scan room or equipment room until the GE field engineer can perform installation.

	Transport/Storage	Operating Conditions
Humidity	0% to 100% Non-condensing	30% to 75% Non-condensing
Temperature	-30° C to 55° C -22° F to 131° F	15° C to 21° C 59° F to 69.8° F
Atmospheric Pressure	50kPA - 106kPA	

## Coil Specifications

Field Strength	Component	Dimensions (W x L x H)	Weight
1.5T	16-L Array	23cm x 71cm x 4cm	1.0kg
	16-M Array	23cm x 57cm x 4cm	0.8kg
	16-S Array	23cm x 44cm x 4cm	0.8kg
	Interface	18cm x 23cm x 4cm	1.2kg
3.0T	16-L Array	32cm x 71cm x 5cm	1.2kg
	16-M Array	23cm x 57cm x 4cm	0.9kg
	16-S Array	23cm x 44cm x 4cm	0.9kg
	Interface	18cm x 23cm x 4cm	1.4kg

## Accessory Specifications





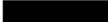




Component	Dimensions (W x L x H)	Weight
Knee Stabilization Device	41cm x 30cm x 15cm	1.2kg
Cable Take Up Pad	30cm x 19cm x 3cm	0.12kg
Stabilization Device for Curved and Flat MRI Tables	43cm x 39cm x 4cm	0.5kg
Interface Cover	24cm x 20cm x 5cm	0.07kg
General Purpose Strap	91.5cm x 4.5cm x 0.5cm	0.08kg





To maintain the highest possible image quality, and to protect patients and clinicians from potential injury or illness, it is important to keep the GEM Flex Coil clean and well maintained.

See NC074SCM for additional accessory specifications.



## Use of Symbols

Coil users should understand the following symbols used for caution and warning explanations:

Symbol	Description
 <b>CAUTION:</b>	Indicates a hazard that may cause a minor injury or equipment damage.
 <b>WARNING:</b>	Indicates a hazard that may cause serious injury.
	Do not cross or loop coil cables.
 	Dispose of RF coil properly.
	Manufacturer.
	Manufactured date.
 	Consult Instructions for Use.

Symbol	Description
	Temperature limitation.
	Humidity limitation.
	Atmospheric pressure limitation.
	CE Mark of Conformity.

## Coil Classification

Symbol	Classification & Ratings
	Class II equipment. Interface and antenna arrays are Class II equipment in accordance with the international safety standard IEC 60601-1.
	Type BF applied. Antenna arrays are Type BF applied parts, complying with the specified requirements of the international safety standard IEC 60601-1.

This equipment is acceptable for Continuous Operation, having ordinary protection against ingress of water (IPX0). All components of this system are considered non-sterile and are not for use in the presence of flammable anesthetics.

## Coil Care



**WARNING:** Electric shock may occur if the coil is attached to the system during cleaning or when it is still wet. Detach antenna cables from the scanner and interface before attempting to clean. Do not touch connectors with bare fingers. Never press sharp objects against connector surface. Do not reattach connector after cleaning until the coil has dried completely.



**CAUTION:** *Do not spray or pour cleaning solution directly onto the antenna array, interface, or stabilization device. Do not submerge any of the parts in the solution. Parts of the equipment contain sensitive electronic components that may be damaged by the solution. Under no circumstances should the GEM Flex Coil be placed into any type of sterilizer. All parts should be cleaned only according to the procedure described below.*

All of the parts of the GEM Flex Coil must be cleaned and stored using the following procedure:

- Wipe with a cloth that has been dampened in a solution of 10% bleach and 90% tap water, or 30% isopropyl alcohol and 70% tap water.
- Should any part of the coil need to be returned for service, wipe it down with a 10% bleach solution (as described above) to minimize risk of exposure to potentially infectious agents.

Store the GEM Flex Coil in an air conditioned scan or equipment room that meets the temperature and humidity parameters listed in under [Environmental Requirements](#) on the previous page.

# Section 2

## Installation

### Set-up Procedure

#### Personnel Requirements

Required Persons	Preliminary Reqs	Procedure
1	See Table Below	1 hour

#### Preliminary Requirements

##### Tools and Test Equipment

Item	Quantity	Field Strength	Phantom	GE Part #
16-S Array	1	1.5T & 3.0T	Small Cylindrical Unified Phantom	5342680
16-M Array	1	1.5T	Large Cylindrical Unified Phantom	5342679
		3.0T	Large Cylindrical Unified Phantom, SiOil	5342679-2
16-L Array	2	1.5T	TL Unified Phantom	5343347
		3.0T	TL Unified Phantom, SiOil	5343347-2
GEM Flex Pediatric Interface	1	1.5T	TL Unified Phantom	5343347

#### Coil and Phantom Setup

**NOTE:** Record the serial number of the coil(s) being used.

**NOTE:** The coil system cable must be directed towards the magnet.



**CAUTION:** All RF coil related tests must be run on a well-calibrated system that has passed all system tests, particularly white pixel and correlated noise.

## Coil Configuration Procedure on HD & DV Scanner

Make sure that the latest software is loaded on the system prior to installing the GEM Flex Coil(s). Reference [Compatibility](#) table for minimum software requirements. Refer to GE Service procedure "Installing Software Updates" for how to load a Service Pack.

**NOTE:** Each array must be configured separately.

1. Start a new exam.
2. Plug the interface and array into the system connector.
3. Check the Coil Configuration Manager (HD Scanner) or the Coil Database Explorer (DV Scanner) to ensure the following configurations are installed.

Antenna	Coil Mode	Description
<b>GEM Flex Coil 16-S Array</b>	GEM Flex Small	16 channels
<b>GEM Flex Coil 16-M Array</b>	GEM Flex Medium	16 channels
<b>GEM Flex Coil 16-L Array</b>	GEM Flex LG Full	16 channels
<b>GEM Flex Coil 16-L Array</b>	GEM Flex LG Ctr	Medial 10 channels

**NOTE:** On the 450w-GEM Scanners, the following Coil Modes are available with the GEM Flex Pediatric Interface:

Antenna	Coil Mode	Description
GEM Flex Coil 16-L Array	Head Only	Head Only
GEM Flex Coil 16-M Array	Spine Only	Spine Only
GEM Flex Coil 16-M Array	Up Spine 32cm	Upper Spine 32cm
GEM Flex Coil 16-M Array	Bot Spine 32cm	Bottom Spine 32cm
GEM Flex Coil 16-M Array	Up Spine 24cm	Upper Spine 24cm
GEM Flex Coil 16-M Array	Bot Spine 24cm	Bottom Spine 24cm
GEM Flex Coil 16-M Array	Low Spine 24cm	Lower spine 24cm
GEM Flex Coil 16-L Array	Head and Up Spine 32cm	Head and Upper Spine 32cm
GEM Flex Coil 16-M Array		

4. Proceed with MCQA test procedure.

# Multi-Coil Quality Assurance (MCQA) Test Procedure

## Coil and Phantom Setup

**NOTE:** Record the serial number of the coil(s) being used.

**NOTE:** The coil system cable must be directed towards the magnet.

**NOTE:** Each array must be tested separately.



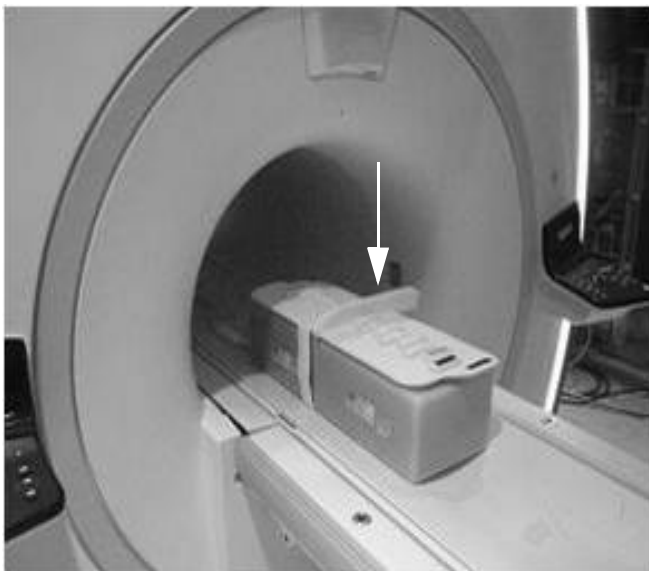
**CAUTION:** All RF coil related tests must be run on a well-calibrated system that has passed all system tests, particularly white pixel and correlated noise.

1. Remove any other surface coils or pads from the table.
2. Place the appropriate phantom on the table in the R/L and S/I directions. When using two brick phantoms, ensure that the phantoms are aligned with and touching each other.
3. Lay the 16-L array lengthwise on top of the phantoms, with the spine of the array (cable exit) on top of the intersection of the phantoms. If testing a 3.0T 16-L array, secure the array to the phantom using a strap. See Figure 2-1.

Position the 16-S and 16-M arrays so that the spine of the array (cable exit) is resting on the table. See Figure 2-1.

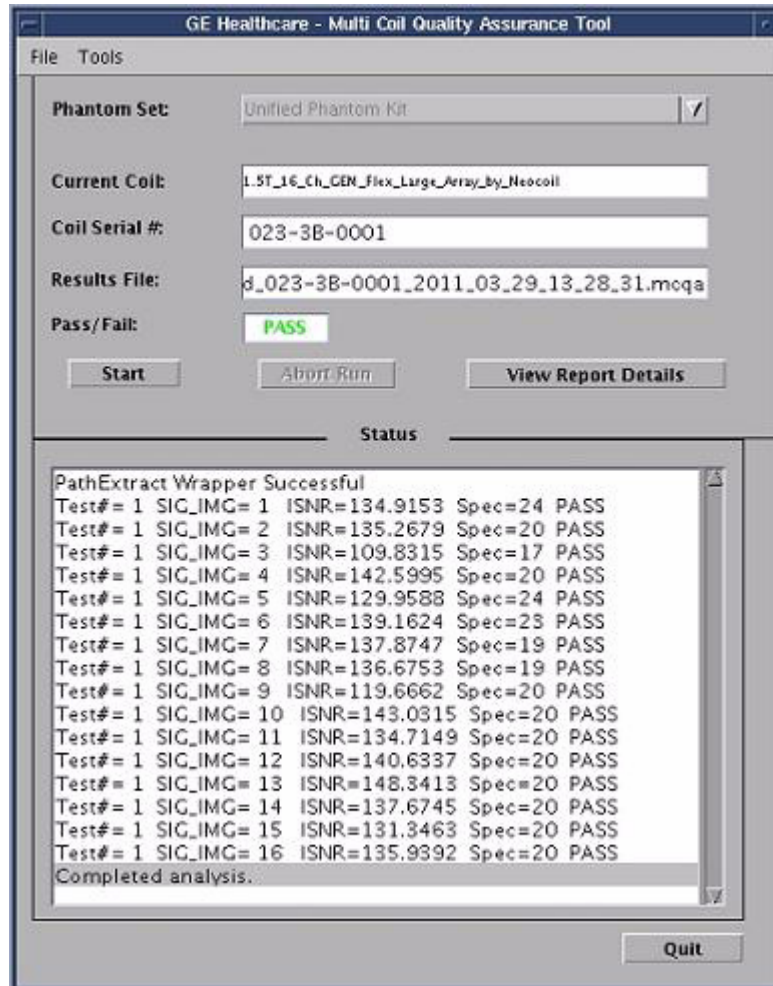
4. Plug the connector from the antenna into the interface, ensuring that the connection is secure.
  - A green LED light on the interface will illuminate when the array is connected.
5. Route the system cable down the center of the table, taking care to avoid looping the cable.
6. Landmark on the center of the array. See arrow in Figure 2-1.

**Figure 2-1** Landmarking the 16-L array (3.0T array shown) on the left and the 16-S or 16-M array on the right



7. From the MR service desktop window, Image quality tab, select Multi-Coil QA Tool.
8. Confirm that the serial number in the MCQA tool matches the equipment being tested.
9. Check for PASS/FAIL in the last column in the Status section.

**Figure 2-2** Sample user interface for MCQA



**IMPORTANT!:** The sample screen above is for reference only. Values shown in the sample above may not match the values seen at the customer site.

When the test is completed the results display the integrated Signal-to-Noise Ratio (SNR) as a function of the receive channel number. The PASS/FAIL status will show PASS when all coil elements are functioning properly. If the MCQA indicates any problems go to the [Troubleshooting](#) section.

## QA for the GEM Flex Pediatric Interface

The GEM Flex Pediatric Interface is installed within the NeoCoil Pediatric Stabilizer.

**IMPORTANT!:** Leave the Pediatric Interface in the Pediatric Stabilizer to perform QA testing.

1. Remove any other surface coils or pads from the table.
2. Place the NeoCoil Pediatric Stabilizer on the table oriented in a head-first position.
3. Place your hand in the gap, with your fingers under the cover, and gently pry cover loose. See Figure 2-3.

**Figure 2-3** Cover on Pediatric Stabilizer



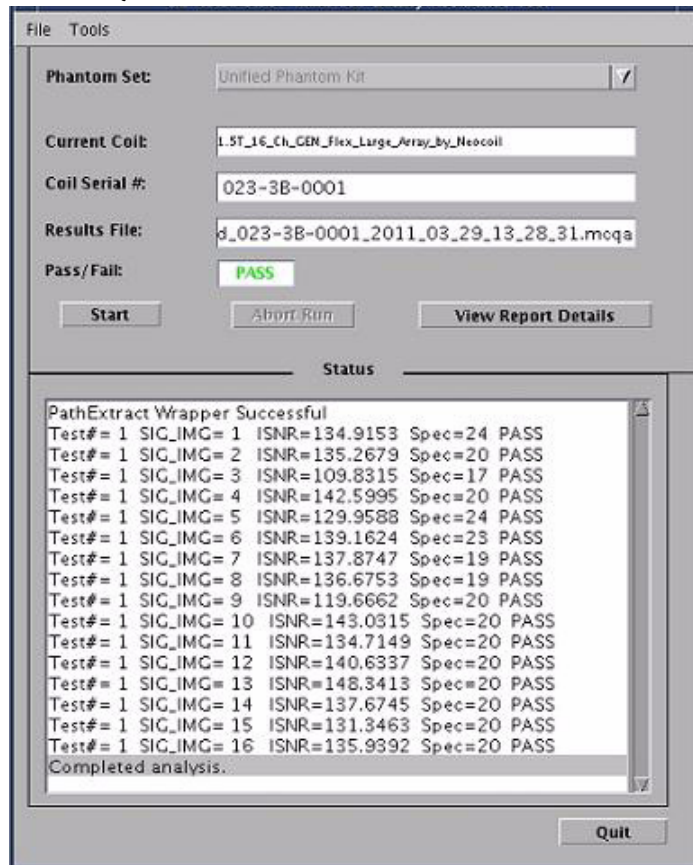
4. Look through the window in the base of the Stabilizer and make note of the serial number that is applied to the Pediatric Interface.
5. Replace the cover back on to the base of the Stabilizer.
6. Lay the 16-M array on the flat section of the Stabilizer.
7. Plug the connector from the antenna into the interface, ensuring that the connection is secure.
  - A green LED light on the interface will illuminate when the array is connected.
8. Route the system cable down the center of the table, taking care to avoid looping the cable, and plug into the connector at the foot end of the table.
9. Advance the table to the bore and landmark on the center of the array.
10. Place the appropriate phantom on top of the 16-M array so that it is centered on the array. See Figure 2-4.

Figure 2-4 QA Setup for Pediatric Interface.



11. From the MR service desktop window, Image quality tab, select Multi-Coil QA Tool.
12. Enter the serial number for the GEM Flex Pediatric Interface in the MCQA tool.
13. Check for PASS/FAIL in the last column in the Status section. See Figure 2-5.

Figure 2-5 Sample user interface for MCQA



When the test is completed the results display the integrated Signal-to-Noise Ratio (SNR) as a function of the receive channel number. The PASS/FAIL status will show PASS when all coil elements are functioning properly.

**IMPORTANT!:** The sample screen above is for reference only. Values shown in the sample above may not match the values seen at your site.

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# Section 3

## Replacements

### FRUs and Replacements

#### 1.5T GEM Flex Coil Field Replaceable Units

Description	NeoCoil part #	GE part #	Replacement Time
GEM Flex 16ch System Cable, 1.5T HD-Connector	NC022006	5430000-21	45 min.
GEM Flex 16ch System Cable, 1.5T P-Connector	NC022007	5430000-15	45 min.
GEM Flex Coil 16-M Array, 1.5T Receive Only	NC023000	5430000-3 or 5430000-23	15 min.
GEM Flex Coil 16-S Array, 1.5T Receive Only	NC024000	5430000-4 or 5430000-24	15 min.
GEM Flex Coil 16-L Array, 1.5T Receive Only	NC030000	5430000-2 or 5430000-22	15 min.
GEM Flex Interface 16ch Fixed, 1.5T HD-Connector	NC022003	5430000-17	30 min.
GEM Flex Interface 16ch Fixed, 1.5T P-Connector	NC022004	5430000-5	30 min.
GEM Flex Pediatric Interface 16ch Fixed, 1.5T P-Connector	NC022210	5430000-25	15 min.
GEM Flex Knee Stabilization for Flat MRI Tables	NC026000	5430000-7	15 min.
GEM Flex Knee Stabilization for Curved MRI Tables	NC026001	5430000-8	15 min.

#### 3.0T GEM Flex Coil Field Replaceable Units

Description	NeoCoil part #	GE part #	Replacement Time
GEM Flex 16ch System Cable, 3.0T HD-Connector	NC032006	TBD	45 min.
GEM Flex 16ch System Cable, 3.0T P-Connector	NC032007	5430008-15	45 min.
GEM Flex Coil 16-M Array, 3.0T	NC033000	5430008-3 or 5430008-13	15 min.

Description	NeoCoil part #	GE part #	Replacement Time
GEM Flex Coil 16-S Array, 3.0T	NC034000	5430008-4 or 5430008-14	15 min.
GEM Flex Coil 16-L Array, 3.0T	NC040000	5430008-2 or 5430008-12	15 min.
GEM Flex Interface 16ch Fixed, 3.0T HD-Connector	NC032003	5430008-6	30 min.
GEM Flex Interface 16ch Fixed, 3.0T P-Connector	NC032004	5430008-5	30 min.
GEM Flex Knee Stabilization for Flat MRI Tables	NC026000	5430000-7	15 min.
GEM Flex Knee Stabilization for Curved MRI Tables	NC026001	5430000-8	15 min.

## Consumable Components

Pads, straps, and covers are designed as customer consumable components. They are not intended to be covered by any GE service contract. If pads, and straps are replaced they should be billed to the customer.

Description	NeoCoil part #	GE part #	Replacement Time
GEM Flex 16-M Coil Covering Replacement Kit	NC023001	5430000-11	1 hour
GEM Flex 16-S Coil Covering Replacement Kit	NC024001	5430000-12	1 hour
GEM Flex 16-L Coil Covering Replacement Kit	NC030001	5430000-10	1 hour
GEM Flex General Purpose Strap and Interface Cover Kit	NC026006	5430000-9	15 min.
GEM Flex Stabilization Device for Curved and Flat Tables	NC026002	5430000-13	15 min.
GEM Flex System Cable Take Up Pad (1.5T Only)	NC026004	5430000-14	15 min.

# Cable Replacement



**CAUTION:** Wear an ESD strap to avoid damage to the array due to electrostatic discharge.

## Personnel Requirements

Required Persons	Preliminary Reqs	Procedure
1	See Table Below	45 min

## Preliminary Requirements

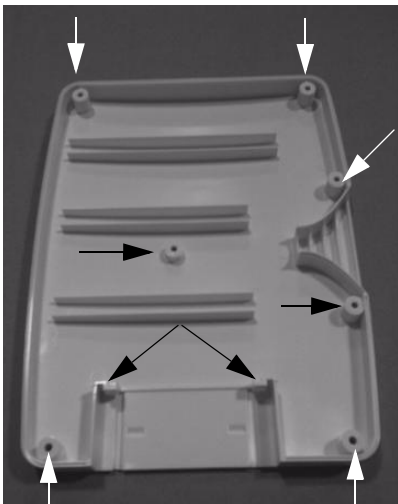
### Tools and Test Equipment

Item	Qty.	Part #
Flathead Screwdriver	1	NA
ESD KIT w/MONITOR (WRIST STRAP, 10FT) or equivalent	1	2220483

If cable fails the continuity check (refer to [page-33](#) in the troubleshooting section) or if bent or damaged pins are identified then the system cable should be replaced. To do so, execute the following steps:

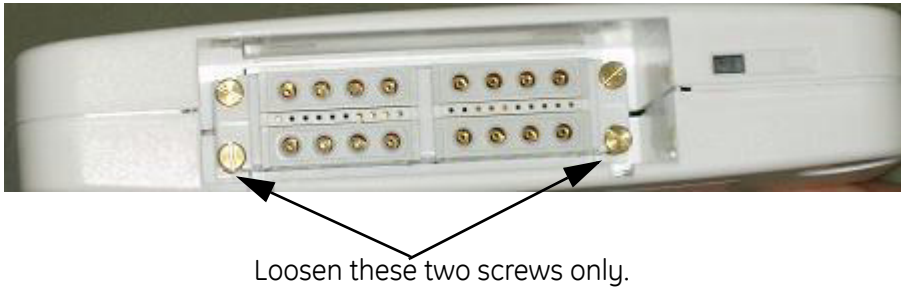
1. Remove the anti-tamper labels.
2. Remove the screws on the cover of the interface, by puncturing the white dot over the screwhead.

**Figure 3-1** Interface cover screw locations



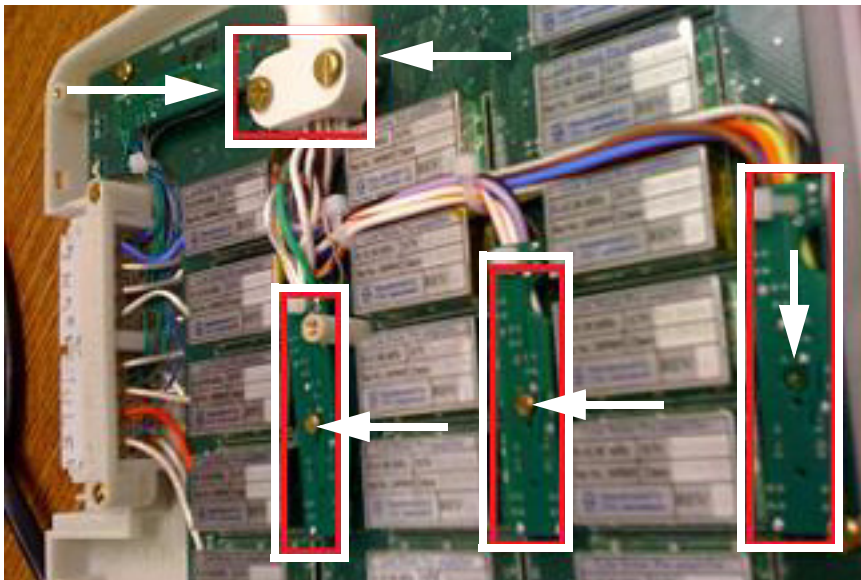
3. Loosen the two screws on the bottom of the receptacle bracket shown in Figure 3-2

**Figure 3-2** Screw locations on receptacle bracket.



4. Remove screws from old cable and system cable connector (SCC) boards.

**Figure 3-3** Screw locations on cable clamp and SCC boards



5. Attach new cable by carefully routing the wires between the modules and screwing the SCC boards (outlined in Figure 3-3) in place.

**IMPORTANT!** If a pin on any of the SCC boards is bent, return the cable for replacement.

6. Re-attach the cable clamp of the system cable.
7. Replace the cover.
8. Tighten the screws that secure the receptacle bracket, otherwise connection problems are likely to occur.
9. Apply new anti-tamper labels.
10. Run MCQA procedure as described in Installation section.

**NOTE:** Do not write on or mark up the cable being returned.

# Replacing Foam Pocket on Array



**CAUTION:** *There is a high risk of possibility for damage to the feed boards or cable. Replacing the whole array is recommended.*



**CAUTION:** *Wear an ESD strap to avoid damage to the array due to electrostatic discharge.*



**CAUTION:** *Hands must be clean prior to service to avoid contamination of the sensitive components.*

## Personnel Requirements

Required Persons	Preliminary Reqs	Procedure
1	See Table Below	1 hour

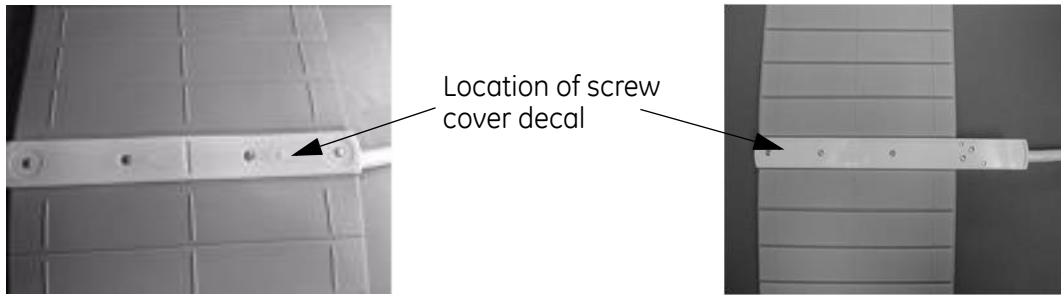
## Preliminary Requirements

### Tools and Test Equipment

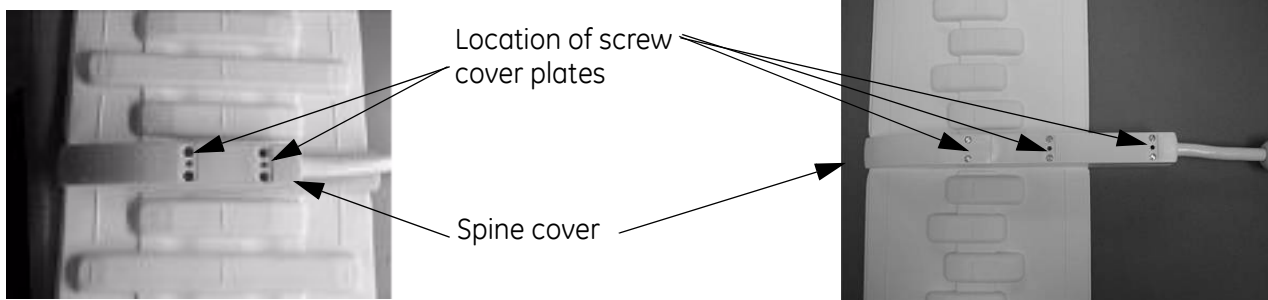
Item	Qty.	Part #
Flathead screwdriver	1	NA
Tweezers (optional)	1	NA
Wire cutters	1	NA
ESD Kit w/monitor (Wrist Strap, 10ft) or equivalent	1	2220483
Alcohol swab	1	46-183039P1
Foam pocket kit	1	See FRU table

1. Remove and discard the screw cover decal from the bottom of the spine.
2. Remove and discard the two screw cover plates from the top of the spine. On the 3.0T 16-L array, remove the velcro patch and underlying label from the top of the spine.
3. Remove the screws from the spine - four on top and four on bottom for the 16-S, 16-M, and 1.5T 16-L arrays; and six on top and seven on the bottom for the 3.0T 16-L array - puncturing the white dots on top of the screwheads. Figure 3-4 and Figure 3-5.

**Figure 3-4** Top spine cover on 16-S, 16-M and 1.5T 16-L array (left) and 3.0T 16-L array (right)



**Figure 3-5** Bottom spine cover on 16-S, 16-M and 1.5T 16-L array (left) and 3.0T 16-L array (right)



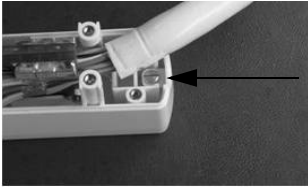
4. Remove spine cover from top of array. Figure 3-5
5. Remove the two screws in the cable clamp and take off cover. Figure 3-6

**Figure 3-6** Screws in cable clamp



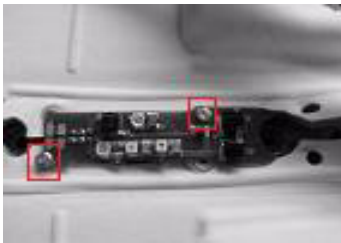
6. Remove the middle spine piece, being careful of the wires. On the 3.0T 16-L array, remove the screw below the cable clamp prior to removed the middle spine piece. Figure 3-7

**Figure 3-7** 3.0T 16-L Screw Below Cable Clamp



7. On the 16-L array only, remove cable ties from the foam pocket leaving the ties wrapped around the wires.
8. Remove the two exposed feed boards on the 16-S and 16-M arrays, or the one feed board on the 1.5T 16-L coil, by unscrewing the feed board(s) (Figure 3-8) and carefully lifting the feed board(s) from the antenna array. The feed board on the 3.0T 16-L does not require removal.

**Figure 3-8** Screw locations on 16-L feed board



9. Unscrew the screw(s)/washer(s) holding the lower spine piece to the antenna array.
10. Remove the lower spine piece. Figure 3-9

**Figure 3-9** Lower spine piece removed



11. Remove foam pocket by gently inserting your hand into the pocket, slowly lifting the covers away from the array.
12. Holding down the array with one hand inside the pocket, use your other hand to gently remove the pocket off of the array. Figure 3-10

**Figure 3-10** Hand position while removing pocket

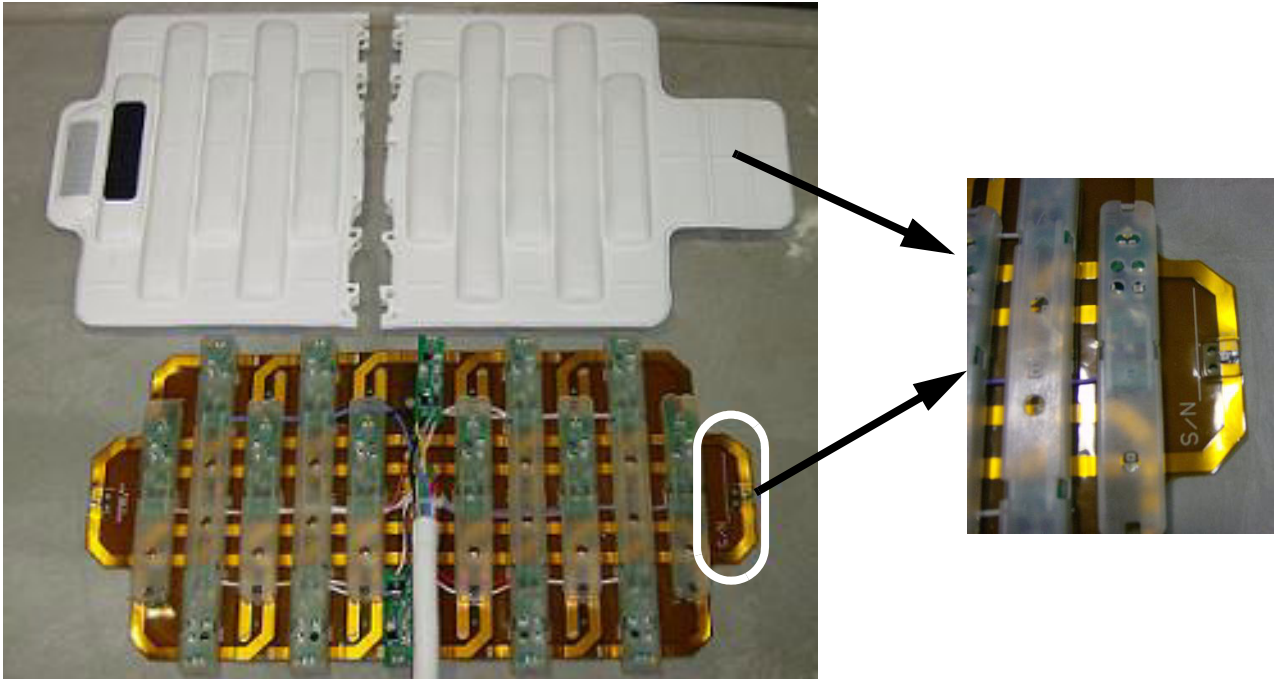


13. Replace left and right foam pockets.

**NOTE:** On the 16-S and 16-M arrays, the end of the array that shows the S/N goes into the pocket with the white flap, per Figure 3-11.

With the 16-L array, insert the longer end of the array into the longer foam pocket.

**Figure 3-11** Pocket/Array alignment with call-out of S/N end of array



14. Align lower spine piece ensuring bosses and posts are inserted into their respective holes in the array and the foam. Figure 3-12

**Figure 3-12** Alignment of bosses and posts in lower spine



15. Install the screw(s)/washer(s) that holds the lower spine piece to the array. Figure 3-13

**Figure 3-13** Replacing the lower spine to the array



16. Replace middle spine piece around cable and wires aligning on top of feed board(s). On the 3,0T 16-L array, install the one screw below the cable clamp area.

17. Align and insert the bosses (16-S and 16-M arrays only) into the holes in the top of the foam. Figure 3-14

**Figure 3-14** Inserting bosses on top of foam pocket



18. On the 16-S, 16-M and 1.5T 16-L arrays, align and fully seat feed board(s) gently so as not to bend the delicate pins. Figure 3-15 left picture.

**IMPORTANT!:** If a pin on the feed board is bent return the entire array for replacement.

19. Install the feed board(s) with screws (two each). Figure 3-15 right picture.

**Figure 3-15** Installing the feed boards



Pins on feed board

20. On the 16-L only, replace the cable ties from where they were removed.

21. Place the middle spine piece in position ensuring posts are inserted into the holes in the foam; the bosses are aligned with the holes in the array and lower spine piece. Figure 3-16

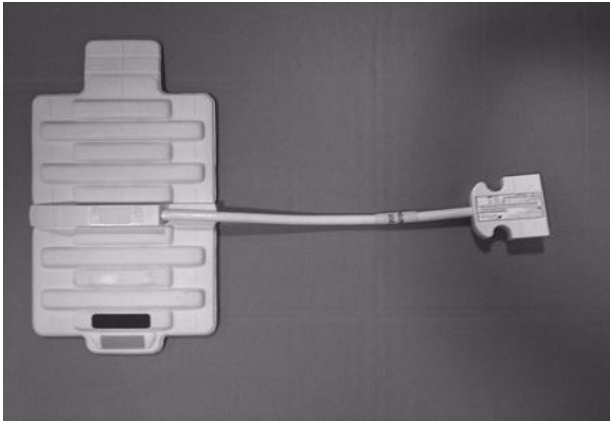
**IMPORTANT:** Avoid crushing the wires.

**Figure 3-16** Middle spine piece



22. Install the cable clamp using the two screws, making sure the coil clamp is in proper alignment. Be sure rating plate on the cable is up when the array is up. Figure 3-17

**Figure 3-17** Cable clamp alignment, shown with spine piece already attached.



23. Gently squeeze the two spine pieces together while replacing the three screws that hold the lower spine piece to the middle spine piece on the 16-S, 16-M, and 1.5T 16-L arrays, Figure 3-18; or the seven screws on the 3.0T 16-L array.

**Figure 3-18** Middle spine piece



24. Install the upper spine piece using four screws on top and one on the lower spine piece on the 16-S, 16-M, or 1.5T 16-L arrays; or the six screws on top and one on the lower spine piece for the 3.0T 16-L array.

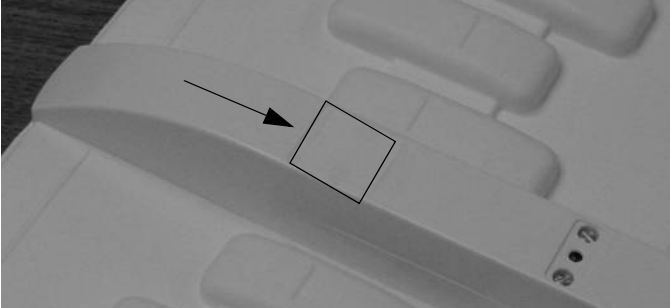
25. Clean off residual adhesive from the lower and upper spine parts.

26. Apply the new screw cover decal (bottom) and the two new screw cover plates (top).

**NOTE:** Remove adhesive cover strip on screw cover plates prior to installation.

27. For the 3.0T 16-L array only, place the white label over the two exposed screws, within the recessed area, on the top spine piece. Then place the hook patch in the recessed area over the label. Figure 3-19

**Figure 3-19** White label (outlined for better visibility) on 3.0T 16-L array



28. Run MCQA test.

# Antenna or Interface Replacement

## Personnel Requirements

Required Persons	Preliminary Reqs	Procedure
1	See Table Below	15 min

## Preliminary Requirements

### Tools and Test Equipment

Item	Qty.	Part #
NA	NA	NA

Perform MCQA Procedure as described in the Installation section.

# Section 4

## Troubleshooting

### General Notes

When encountering a problem with the GEM Flex Coil try these general troubleshooting tips before conducting further investigation.

- The green system light on the interface is illuminated when the antenna array is plugged into it and the interface is plugged into the system.
- All connections have been re-seated.
- There are no bent pins on any of the connectors.

When troubleshooting the Pediatric System:

- First remove both antennae from the Pediatric Stabilizer and follow the procedures in this section.
- Evaluate the 1.5T GEM Flex Interface 16ch Fixed, P-Connector by following the procedure in this section.
- Finally, after eliminating the antenna(e) and GEM Flex Interface as the problem source, perform MCQA on the GEM Flex Pediatric Interface 16ch Fixed, 1.5T P-Connector.

### Failed MCQA

When the MCQA analysis has reported a failure, the fault could be coming from either the antenna array, the interface *or* the system connector. To determine which is at fault, **run MCQA again with a different antenna** but with the same interface.

If the problem is resolved using a new antenna array, return the bad antenna array and order a new one.

If the problem remains, check the continuity of the interface cable with a multimeter using the applicable table and diagram, shown on the following pages. If the cable is causing the fault order a new one. You may need to disconnect each SCS board in order to access the soldered end of each wire within the interface. Follow steps for [“Cable Replacement” on page 23](#) in order to remove the cable for testing as well as replacing it afterwards.

If the problem still persists, and you have effectively ruled out the antenna and cable, return the interface for a replacement.

## HD 16 Channel Cable

Inside of PA Module	System Connector	Diagram	
<b>DC WIRES</b>	<b>PIN</b>		
BLACK	M-9		
BROWN	M-10		
BLUE	A-5		
GRAY	A-3		
CLEAR/BLACK	M-8		
CLEAR/RED	M-7		
BLACK	M-6		
WHITE	M-3		
<b>RF WIRES</b>	<b>PIN</b>		
WHITE/YELLOW	H-3		
CLEAR	D-4		
WHITE/BLACK	H-4		
GREEN	C-3		
WHITE	D-3		
WHITE/RED	H-1		
GRAY	D-2		
WHITE/ ORANGE	H-2		
BROWN	C-1		
BLACK	D-1		
VIOLET	G-3		
ORANGE	G-1		
RED	C-2		
YELLOW	G-2		
WHITE/BROWN	G-4		
BLUE	C-4		

## DV 16 Channel Cable

Inside of Interface	System Connector	Diagram
<b>DC WIRES</b>		
BLACK	1	
BROWN	2	
BLUE	9	
GRAY	7	
CLEAR/BLACK	5	
CLEAR/RED	6	
BLACK	19	
WHITE	18	
<b>RF WIRES</b>		
WHITE/YELLOW	R15	
CLEAR	R8	
WHITE/BLACK	R16	
WHITE	R7	
GREEN	R3	
WHITE/RED	R13	
GRAY	R6	
WHITE/ ORANGE	R14	
BROWN	R1	
BLACK	R5	
VIOLET	R11	
ORANGE	R9	
RED	R2	
YELLOW	R10	
WHITE/BROWN	R12	
BLUE	R4	

## Bias Fault Message

If the message log contains a bias fault message, visually inspect the system cable and antenna for a bent pin.

If there is a bent pin in the system cable, return it for a new one. If, however, the bent pin is on the antenna cable return the antenna.

If there is no visibly bent pin, re-run the scan with a different GEM Flex Coil. If the bias fault is not seen with the second coil, return the coil that produced the error. If the bias fault happens again with the second GEM Flex Coil, return the system cable. *Do not write on or mark up the cable being returned.*

## Coil Not Recognized

If the scanner does not recognize the coil after installation, reseal the connections and try the scan again. If this does not resolve the problem, visually inspect the system cable and antenna for a bent pin. Ensure that the scanner is at a compatible software level.

## Artifacts

If there are artifacts when using the antenna-array, run MCQA and be certain that there is at least a three inch space between the coil and the bore wall.