

GE Healthcare

GE 8CH Foot Ankle Coil Service Manual

Service Manual



OPERATING DOCUMENTATION

5443918-1EN
Revision 2.0

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Important Information

LANGUAGE

- ПРЕДУПРЕЖДЕНИЕ (BG)** Това упътване за работа е налично само на английски език.
- Ако доставчикът на услугата на клиента изиска друг език, задължение на клиента е да осигури превод.
 - Не използвайте оборудването, преди да сте се консултирали и разбрали упътването за работа.
 - 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.
- 警告 (ZH-CN)** 本维修手册仅提供英文版本。
- 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。
 - 未详细阅读和完全理解本维修手册之前，不得进行维修。
 - 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。
- 警告 (ZH-HK)** 本服務手冊僅提供英文版本。
- 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。
 - 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。
 - 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、機械性或其他危險。
- 警告 (ZH-TW)** 本維修手冊僅有英文版。
- 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。
 - 請勿試圖維修本設備，除非您已查閱並瞭解本維修手冊。
 - 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。
- UPOZORENJE (HR)** Ovaj servisni priručnik dostupan je na engleskom jeziku.
- Ako davatelj usluge klijenta treba neki drugi jezik, klijent je dužan osigurati prijevod.
 - Ne pokušavajte servisirati opremu ako niste u potpunosti pročitali i razumjeli ovaj servisni priručnik.
 - Zanimarite li ovo upozorenje, može doći do ozljede davatelja usluge, operatera ili pacijenta uslijed strujnog udara, mehaničkih ili drugih rizika.

- VÝSTRAHA (CS)**
- Tento provozní návod existuje pouze v anglickém jazyce.
- V případě, že externí služba zákazníkům potřebuje návod v jiném jazyce, je zajištění překladu do odpovídajícího jazyka úkolem zákazníka.
 - Nesnažte se o údržbu tohoto zařízení, aniž byste si přečetli tento provozní návod a pochopili jeho obsah.
 - 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.
- ADVARSEL (DA)**
- Denne servicemanual findes kun på engelsk.
- Hvis en kundes tekniker har brug for et andet sprog end engelsk, er det kundens ansvar at sørge for oversættelse.
 - Forsøg ikke at servicere udstyret uden at læse og forstå denne servicemanual.
 - Manglende overholdelse af denne advarsel kan medføre skade på grund af elektrisk stød, mekanisk eller anden fare for teknikeren, operatøren eller patienten.
- WAARSCHUWING (NL)**
- Deze onderhoudshandleiding is enkel in het Engels verkrijgbaar.
- Als het onderhoudspersoneel een andere taal vereist, dan is de klant verantwoordelijk voor de vertaling ervan.
 - Probeer de apparatuur niet te onderhouden alvorens deze onderhoudshandleiding werd geraadpleegd en begrepen is.
 - 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.
- WARNING (EN)**
- 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.
- HOIATUS (ET)**
- See teenindusjuhend on saadaval ainult inglise keeles.
- 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.

**VAROITUS
(FI)**

Tämä huolto-ohje on saatavilla vain englanniksi.

- 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.

**ATTENTION
(FR)**

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

- 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.

**WARNUNG
(DE)**

Diese Serviceanleitung 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 diese Anlage zu warten, ohne diese Serviceanleitung gelesen und verstanden zu haben.
- Wird diese Warnung nicht beachtet, so kann es zu Verletzungen des Kundendienst-technikers, des Bedieners oder des Patienten durch Stromschläge, mechanische oder sonstige Gefahren kommen.

**ΠΡΟΕΙΔΟΠΟΙΗΣΗ
(EL)**

Το παρόν εγχειρίδιο σέρβις διατίθεται μόνο στα αγγλικά.

- 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.

**FIGYELMEZTETÉS
(HU)**

Ezen karbantartási kézikönyv kizárólag angol nyelven érhető el.

- Ha a vevő szolgáltatója angoltól eltérő nyelvre tart igényt, akkor a vevő felelőssége a fordítás elkészíttetése.
- 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 fánleg á ensku.

- Ef að þjónustuveitandi viðskiptamanns þarfnast annas tungumáls en ensku, er það skylda viðskiptamanns að skaffa tungumálaþjónustu.
- 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 aprīkojuma apkopi bez apkopes rokasgrāmatas izlasīšanas un saprašanas.
- Šī brīdinājuma neievērošanas rezultātā var rasties elektriskās strāvas trieciena, mehānisku vai citu faktoru izraisītu traumu risks apkopes sniedzējam, operatoram vai pacientam.

**ĮSPĖJIMAS
(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.

**ATENÇÃO
(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.

**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, če 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.

**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.

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Revision History

Rev	Date	Description
1.0	06/29/2012	Initial Release
2.0	09/12/2012	Release for M3

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Table of Contents

Chapter 1 INTRODUCTION.....15

- 1 GE 8CH Foot Ankle Coil Introduction.....15
 - 1.1 Product Identification and Shipping List.....15
 - 1.2 Warranty Statement.....17
 - 1.3 Safety.....18
 - 1.4 Compatibility.....18
 - 1.5 Related Documentation.....18
 - 1.6 Environmental Requirements.....18

Chapter 2 COIL SETUP.....23

- 1 GE 8CH Foot Ankle Coil MCQA Test Setup.....23
- 2 GE 8CH Foot Ankle Coil Shock Sensor Installation.....28

Chapter 3 TROUBLESHOOTING.....31

- 1 GE 8CH Foot Ankle Coil Troubleshooting Tips.....31
 - 1.4.1 Receiving No Signal.....31
 - 1.4.1.1 Problem:.....31
 - 1.4.1.2 Possible Solution:.....32
 - 1.4.2 Image Quality.....32
 - 1.4.2.1 Problem:.....32
 - 1.4.2.2 Possible Solution:.....32
 - 1.4.3 Artifacts.....33
 - 1.4.3.1 Problem 1:.....33
 - 1.4.3.2 Possible Solution for problem1:.....33
 - 1.4.3.3 Problem2:.....33
 - 1.4.3.4 Possible Solution for problem2:.....33
 - 1.4.4 External Cable Wear.....33
 - 1.4.4.1 Problem:.....33
 - 1.4.4.2 Possible Solution:.....33
 - 1.4.5 Mechanical Parts Wear.....35

Chapter 4 FRU AND REPLACE PROCEDURES.....37

- 1 GE 8CH Foot Ankle Coil FRUs.....37
 - 1.1 Field Replaceable Units.....37
 - 1.237
- 2 GE 8CH Foot Ankle Coil Replacements.....38
 - 2.3.1 Cable Replacement.....38
 - 2.3.2 Base Plate Replacement.....40

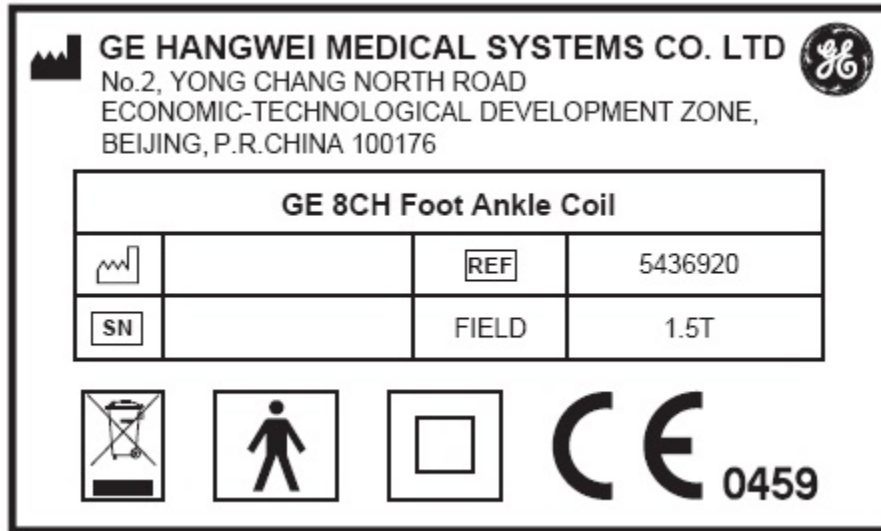
Chapter 1 Introduction

1 GE 8CH Foot Ankle Coil Introduction

1.1 Product Identification and Shipping List

Identify the GE 8CH Foot Ankle Coil by the coil label.

Illustration 1-1: Coil Label



The GE 8CH Foot Ankle Coil (M50002GF) is shown below.

Illustration 1-2: GE 8CH Foot Ankle Coil



This table provides a the list of items shipped with the GE 8CH Foot Ankle Coil.

Table 1-1: Contents

Description	GE Part Number	Quantity
GE 8CH Foot Ankle Coil (Base Plate, Foot Pad, Ankle Pad Knee Pad and operator manual include)	5459510	1
GE 8CH Foot Ankle Coil Service Manual	5443918-1EN	1








NOTE: Coils do not ship with phantoms. Phantoms come in a unified phantom set with the MR system.

1.2 Warranty Statement

Proper performance of this coil is guaranteed only while the coil is being used on the MR system (hardware/software level) specified at the time of purchase. Any modification of this coil may affect compatibility. Prior to modifying the coil, please contact your GE Healthcare representative to discuss coil compatibility issues. Failure to do so may void your warranty.

1.3 Safety

	Warning: Hand crushing
	Warning: Hot surface
	Warning: General sign
	Prohibited: do not loop cable
	Mandatory: refer to instructions

1.4 Compatibility

Refer to Coil Compatibility Matrix.

1.5 Related Documentation

GE 8CH Foot Ankle Coil Operator Manual, Direction 5445498.

1.6 Environmental Requirements

This equipment must be stored under the following conditions:

- Ambient temperature range of -40° to +70°C.
- Relative humidity range of 5% to 95%, noncondensing.
- Atmospheric pressure range of 525 to 1,013 hPa.

Storage Requirements: To store the coil and baseplate, a storage space greater than 38.1cm x 40.6cm x 37.5cm (Width X Length X Height), 15 in. x 16.0 in. x 14.8 in. is required.

Table 1-2: Dimensions (Width x Length x Height)

Coil:	179.5mm x 332.7mm x 314.0mm	7.0 in. x 13.0 in. x 12.2 in.
Baseplate	336mm x 406mm x 335mm	13.1 in. x 15.8 in. x 13.1 in.

Table 1-3: Weight

Coil with Cable:	2.70 kg	5.94 lb
Baseplate:	2.65 kg	5.83 lb

The images below show more detailed dimensions of the GE 8CH Foot Ankle Coil.

Illustration 1-3: Coil Dimensions

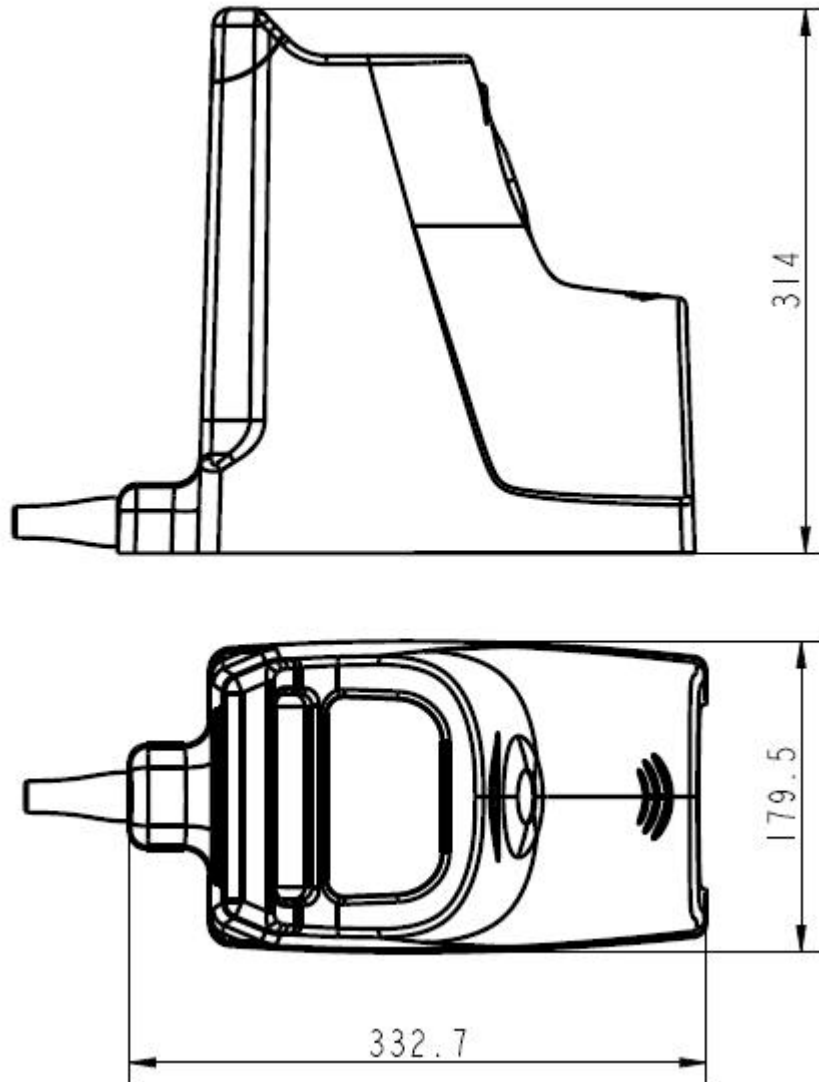


Illustration 1-4: Baseplate Dimensions

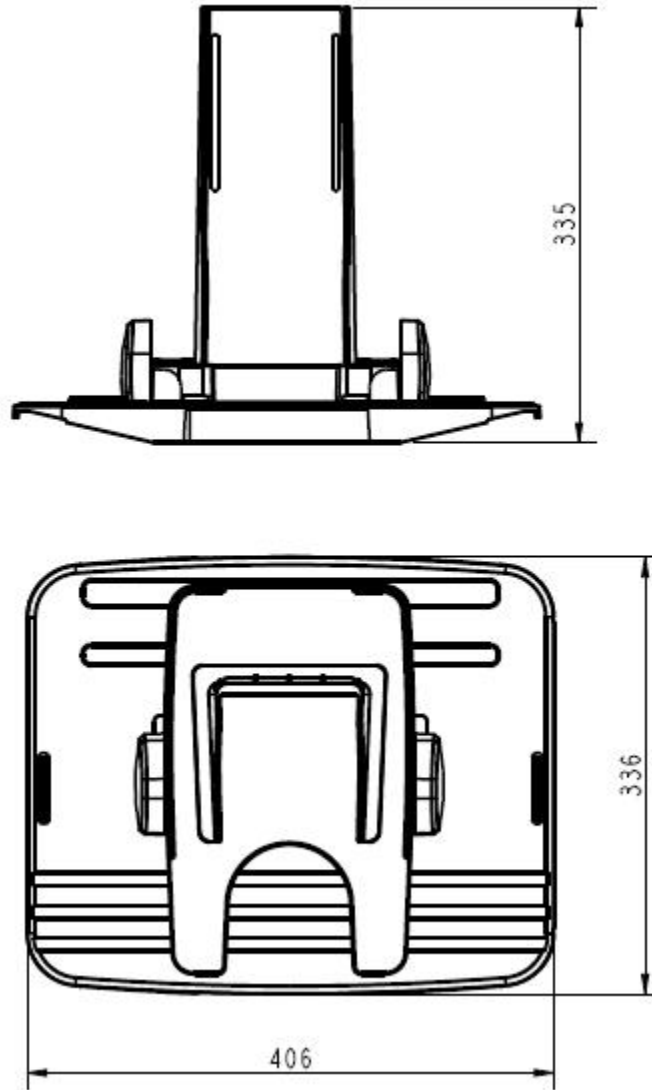
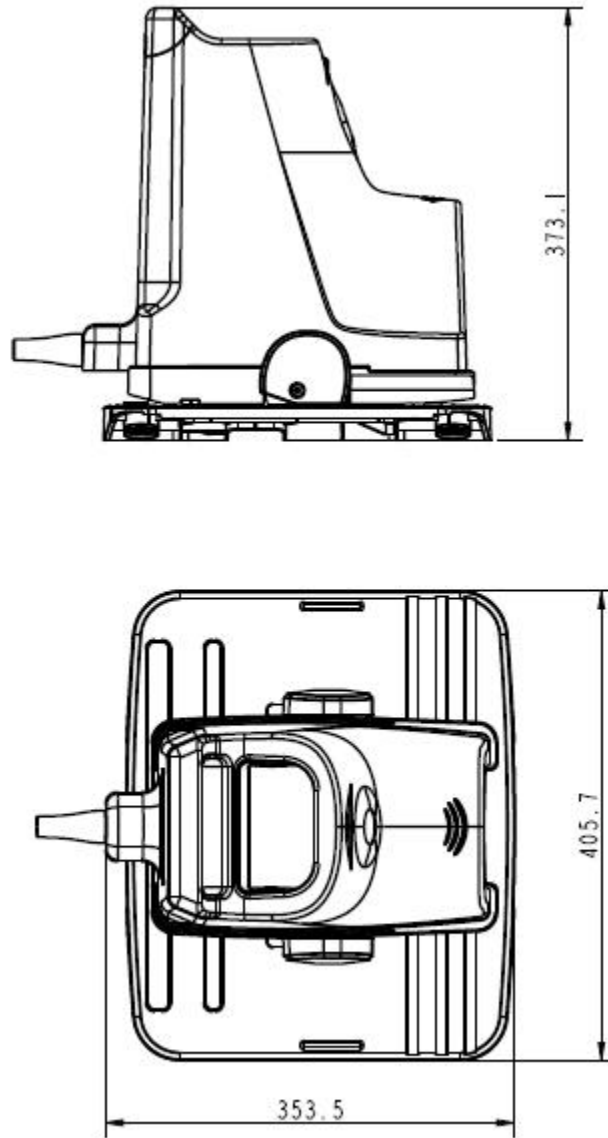


Illustration 1-5: Dimensions



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Chapter 2 Coil Setup

1 GE 8CH Foot Ankle Coil MCQA Test Setup

1.1 Personnel Requirements

Personnel Requirements	Preliminary Reqs	Procedure	Finalization
1	0 min	15 mins	0 min

1.2 Overview

NOTE: Coils do not ship with phantoms. Phantoms come in a unified phantom set with the MR system.

1.3 Preliminary Requirements

1.3.1 Tools and Test Equipment

Item	Qty	Effectivity	Part#	Manufacturer
Small Cylindrical Unified Phantom	1	-	5342680	-
Cubical Unified Phantom	1	-	5342681	-

1.3.2 Replacement Parts

Item	Qty	Effectivity	Part#	Manufacturer
See GE 8CH Foot Ankle Coil FRUs	-	-	-	-


1.3.3 Safety



WARNING

ALL RF COIL-RELATED TESTS MUST BE RUN ON A SYSTEM THAT IS WELL CALIBRATED AND PASSES ALL SYSTEM TESTS. THE SYSTEM SHOULD HAVE PASSED INSTALL IN SPEC (IIS), ESPECIALLY WHITE PIXEL, CORRELATED NOISE, AND MULTI-COIL-RECEIVE (MCR) TOOL.

1.3.4 Required Conditions

Condition	Reference	Effectivity
The following coil configuration name must be installed to run this tool: 8CH Foot Ankle . Illustration 2-1: Coil DB Explorer 	-	-

1.4 Procedure

1. Place the Foot Ankle Coil baseplate on the table as shown below.

Illustration 2-2: Foot Ankle Coil Baseplate on Table



2. Place the Small Cylindrical Unified Phantom horizontally on the baseplate, place the Cubical Unified Phantom vertically, and fix the phantom to the baseplate using the Velcro as shown below.

Illustration 2-3: Cylindrical Unified Phantom on Baseplate



3. Cover the baseplate with the coil as shown below.

Illustration 2-4: Coil Over Baseplate



4. Connect the Foot Ankle Coil to Port A of the system LPCA, and landmark the coil at the crossmark on the coil handle.
 - a. Advance to scan.
 - b. Perform the MCQA Test.

Illustration 2-5: Crossmark on Coil Handle



5. After the test is completed, carefully remove the Cubical Phantom out of the baseplate, then the Cylindrical Phantom to avoid damage to either phantom.

1.5 Finalization

No finalization steps.

2 GE 8CH Foot Ankle Coil Shock Sensor Installation

2.1 Personnel Requirements

Personnel Requirements	Preliminary Reqs	Procedure	Finalization
1	Not Applicable	5 mins	5 mins

2.2 Preliminary Requirements

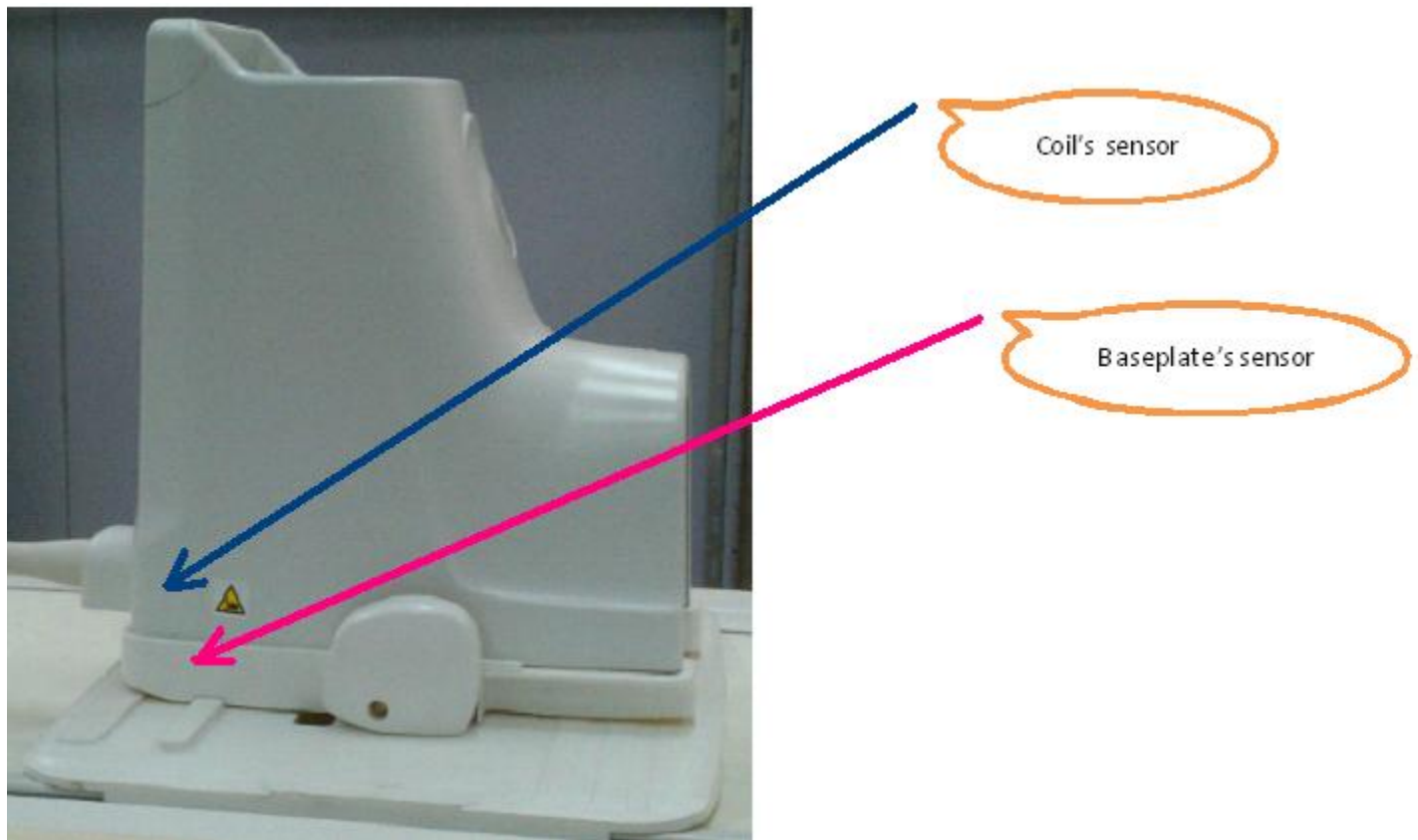
2.2.1 Tools and Test Equipment

Item	Qty	Effectivity	Part#	Manufacturer
Shock Sensor Sticker	1 box of 50	-	5337009(100G)	ShockWatch
Isopropyl Alcohol	1	-	46-183000P164	-

2.3 Procedure

1. Place the sensor per [Illustration 2-6](#)

Illustration 2-6: GE 8CH Foot Ankle Coil shock sensor placement



2. Check if the shock sensor has been triggered (center tube turns red – see right side of [Illustration 2-7](#))
 - a. If the shock sensor has NOT been triggered (center tube is white – see left side of [Illustration 2-7](#)), continue to Finalization.
 - b. If the shock sensor has been triggered (center tube is red – see left side of [Illustration 2-7](#)) or contaminated in any way, continue to [Step 3](#).

NOTE: A shock sensor may be triggered and the tube is not completely red. Any red or pink color in the center tube is considered triggered. See [Illustration 2-8](#) for an example.

Illustration 2-7: Shock Sensor



Illustration 2-8: Triggered Shock Sensor



3. Remove the triggered shock sensor from the coil and dispose of it using local procedures.
4. Verbally educate the customer on safe use of coils and implications to warranty on mishandling of coils.
5. Re-qualify the coil by running the Multi-Coil Quality Assurance Tool test.
 - a. If the coil passes the MCQA test, apply a new shock sensor sticker (follow [Step 1](#)) and continue to Finalization.
 - b. If the coil fails the MCQA test, continue to [Step 6](#)

6. Replace the coil following replacement procedures. Charge the customer for repair/ replacement of the damaged coil per local procedures. Verbally educate the customer on safe use of coils and implications to warranty on mishandling of coils.

NOTE: REMOVE THE SHOCK SENSOR BEFORE RETURNING THE DAMAGED COIL!

2.4 Finalization

1. Make sure that you have completed Section 2.3 for the coil at the customer site. Return the coil for use to the customer.
2. Re-use the original packaging of the coil shock sensors for transportation. Order a new box of shock sensor stickers through SSP purchasing if you are running low. Order a couple weeks ahead of your next PM to allow for delivery.

Chapter 3 Troubleshooting

1 GE 8CH Foot Ankle Coil Troubleshooting Tips

1.1 Personnel Requirements

Personnel Requirements	Preliminary Reqs	Procedure	Finalization
1	0 min	60 mins	0 min

1.2 Overview


The following tips can be used to troubleshoot common problems with the GE 8CH Foot Ankle Coil, catalog M50002GF.

1.3 Preliminary Requirements

1.3.1 Tools and Test Equipment

Item	Qty	Effectivity	Part#	Manufacturer
Digital Volt Meter	1	-	-	-

1.3.2 Required Conditions

Condition	Reference	Effectivity
<p>The following coil configuration name must be installed to run this tool: 8CH Foot Ankle</p> <p>Illustration 3-1: Coil DB Explorer</p> 	-	-

1.4 Procedure

1.4.1 Receiving No Signal

1.4.1.1 Problem:

You are unable to pre-scan or are scanning and yet receiving no signal.

1.4.1.2 Possible Solution:

- Verify that you have made the appropriate system coil selection. Refer to the Operators Manual for additional information.
- Verify the green light above Port A is illuminated. This indicates the coil is properly plugged into the system.
- Verify that the landmark is correct and that the cradle has not unlatched.
- Verify that the scan locations and any FOV offsets are correct.
- Perform a continuity check on the external cable (below). The continuity check must be performed by a GE authorized Service Engineer.
- Verify that the coil is properly positioned.
- If you still cannot get a signal, try to scan (transmit and receive) with the body coil. For this test, be sure to remove the imaging coil from the magnet bore before you scan with the body coil. If you still receive no signal, the problem probably lies with your MR system. If the scan completes successfully, there is probably a problem with the Invivo coil. Contact GE for further assistance. If you are unable to scan with the substitute coil, there may be a system problem related to this particular coil type.

1.4.2 Image Quality

1.4.2.1 Problem:

Image quality is not what you expect.

1.4.2.2 Possible Solution:

- Review the selected protocol. If you are performing the Periodic Quality Assurance, be sure your protocol is identical to the protocol provided in your Systems Recommended Protocols. If you are performing diagnostic images, you may need to increase NEX or FOV.
- Perform a continuity check on the external cable (below). The continuity check must be performed by a GE authorized Service Engineer.
- Verify that there are no loops in the cables.
- Verify that there are no metal or ferromagnetic objects close to the coil, patient or magnet (i.e., safety pin, hair pin).
- Verify that the coil is properly positioned.
- Verify that your center frequency is within the frequency adjustment range for your system.
- Verify that the R1, R2 and TG values from the pre-scan are within normally expected ranges.
- Cleaning the electrical contacts that connect the upper and lower halves with Isopropyl Alcohol and a cotton swab has been demonstrated to improve the coil's SNR on occasion. If you have not done so already, perform a MCQA (Multi Coil Quality Assurance) Test. If the values you

obtain do not fall within normal operating parameters, investigate this further by performing a phantom scan with the body coil. For this test, be sure to remove the imaging coil from the magnet bore before you scan with the body coil. If you still have the same problems, there is probably an MR system problem. If the body coil scan is satisfactory, acquire a scan using both another coil of the same type plugged into the same system port (port A). If the image quality is visibly improved, there may be a problem with the coil. Contact GE for further assistance. If the image quality still suffers, there may be a system problem related to imaging with this type of coil.

1.4.3 Artifacts

1.4.3.1 Problem 1:

There is a black line or signal void on the image.

1.4.3.2 Possible Solution for problem1:

Verify that there is no metal present in the area being scanned in or on the patient.

1.4.3.3 Problem2:

Some or all of the images appear shaded or exhibit uneven signal or banding.

1.4.3.4 Possible Solution for problem2:

Confirm that no metallic objects are located nearby, outside the FOV. This is especially important on images utilizing Fat Saturation. If Fat Saturation is being used, verify that the Center Frequency fine adjustment has been optimized.

1.4.4 External Cable Wear

1.4.4.1 Problem:

The system cannot recognize the coil or scan with the coil attached.

1.4.4.2 Possible Solution:

Perform the cable continuity check. As follows:

- RF Signal Channels Check:** The center pins of the System Connector receive coaxial connectors are extremely fragile. Do not attempt to make any measurements at these center pins.

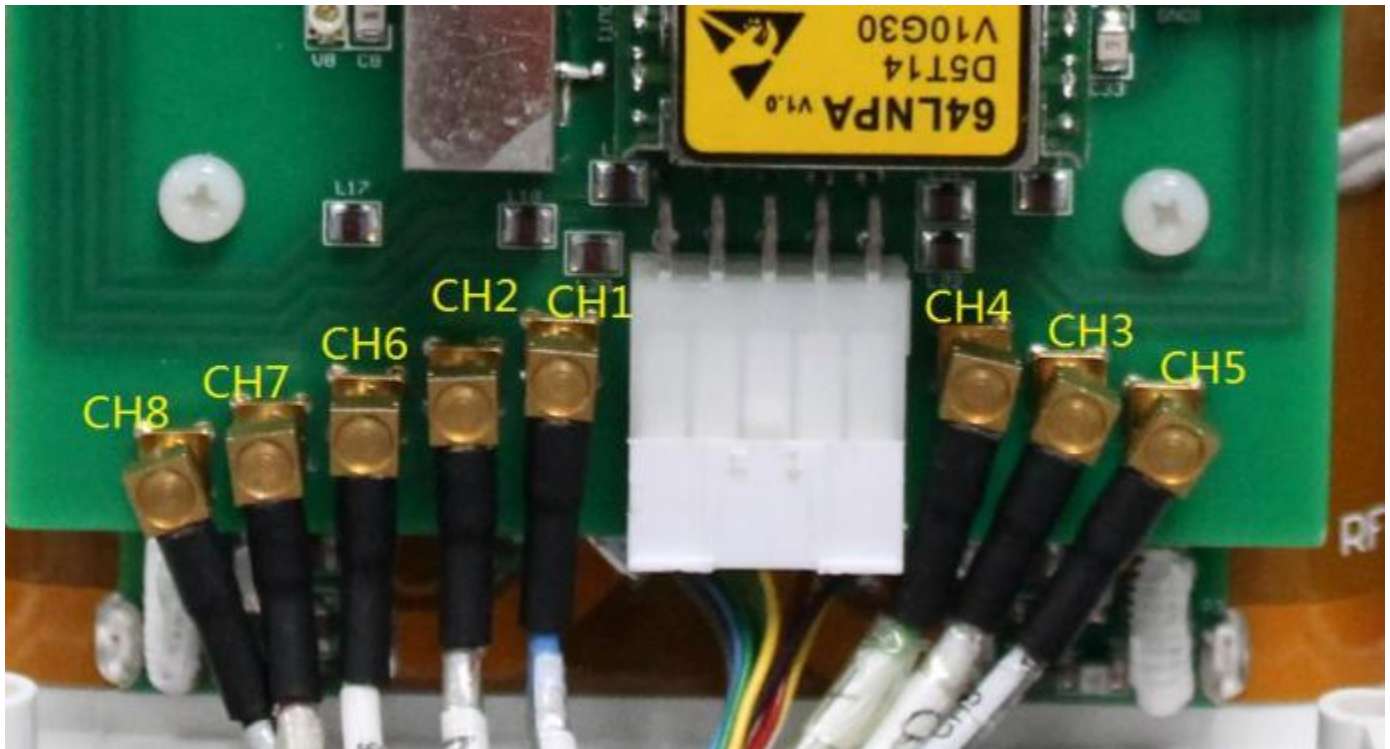
NOTE: With the coil cable disconnected, use a multimeter to assure an open circuit condition exists between the designated pin and GND for each signal channel shown in Table 3–1.

Table 3-1: Coil Cable Connector Short Circuit and Open Circuit Check

Signal Channel	Coil Cable Connector Pin (Illustration 3–1)	System Connector (Illustration 3–2)
RF 1	CH1	C1
RF 2	CH2	C2

RF 3	CH3	C3
RF 4	CH4	C4
RF 5	CH5	D1
RF 6	CH6	D2
RF 7	CH7	D3
RF 8	CH8	D4
GND		K1-K8, M6, MC Shield

Illustration 3-2: Coil Cable Connector



If one or more of the readings indicate a short, replace the cable. If all of the above readings indicate an open circuit condition, proceed to the PIN Diode Control Channels Check.

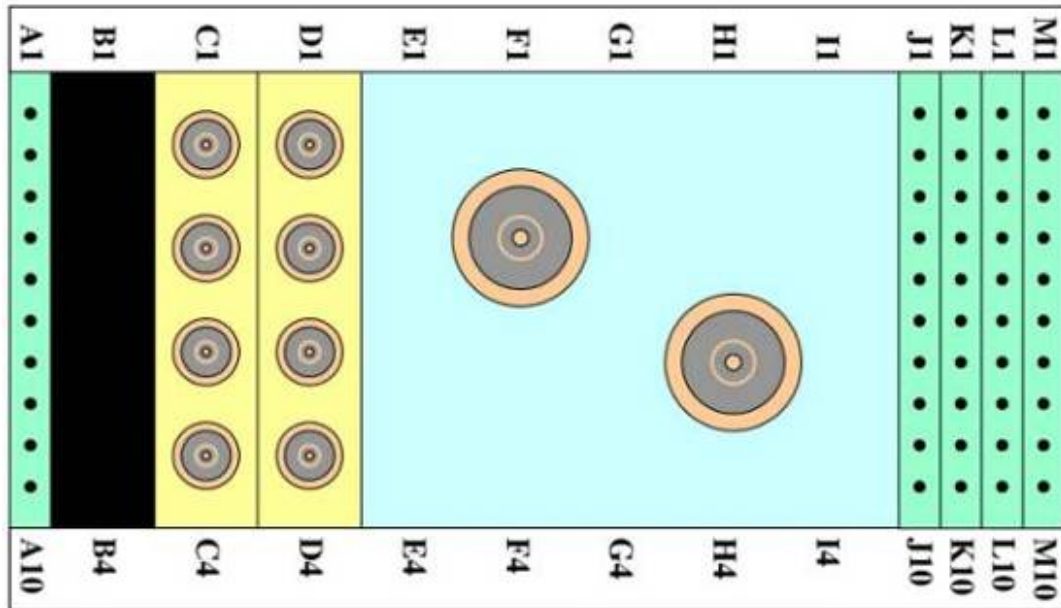
2. **MC bias line (DC line) Check:** With the coil cable disconnected, use a multimeter to determine continuity between the designated pins for each signal channel below. Also verify that the control pins are not shorted to GND.

Table 3-2: Coil Cable Connector Continuity Check

Signal Channel	Coil Cable Connector (Illustration 1)	System Connector (Illustration 2)
MC bias 1	YEL	J1
MC bias 2	GRN	J2
MC bias 3	PURPLE	J3
MC bias 4	BRN	J4

MC bias 5	YEL/WHT	J5
MC bias 6	GRY	J6
MC bias 7	GRN/WHT	J7
MC bias 8	BLU	J8
GND		K1-K8, M6, MC Shield

Illustration 3-3: System Connector



1.4.5 Mechanical Parts Wear

Inspect the coil for visible signs of wear. If the coil housings cannot seat with each other or if the latch mechanism cannot work properly, contact Service.

1.5 Finalization

No finalization steps.

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Chapter 4 FRU and Replace procedures

1 GE 8CH Foot Ankle Coil FRUs

The following tables list the Field Replaceable Units (FRUs) and other replaceable parts for the GE 8CH Foot Ankle Coil.

1.1 Field Replaceable Units

Table 4-1: Field Replaceable Units

Description	GE Part Number
GE 8ch Foot Ankle Coil Assembly	5436920
GE 8ch Foot Ankle Coil Cable	5436148
GE 8ch Foot Ankle Coil Base Plate	5458752
Small Cylindrical Unified Phantom	5342680
Cubical Unified Phantom	5342681
Strap for GE 8CH Foot Ankle Coil	5439452
Ankle Pad for GE 8CH Foot Ankle coil	5448720
Foot Pad for GE 8CH Foot Ankle Coil	5448720-2
Knee Pad for GE 8CH Foot Ankle Coil	5448720-3

1.2

2 GE 8CH Foot Ankle Coil Replacements

2.1 Personnel Requirements

Personnel Requirements	Preliminary Reqs	Procedure	Finalization
1	0 min	30 mins	0 min

2.2 Preliminary Requirements

2.2.1 Replacement Parts

Item	Qty	Effectivity	Part#	Manufacturer
Refer to GE 8CH Foot Ankle Coil Field Replaceable Units		-	-	-

2.2.2 Safety



NOTICE

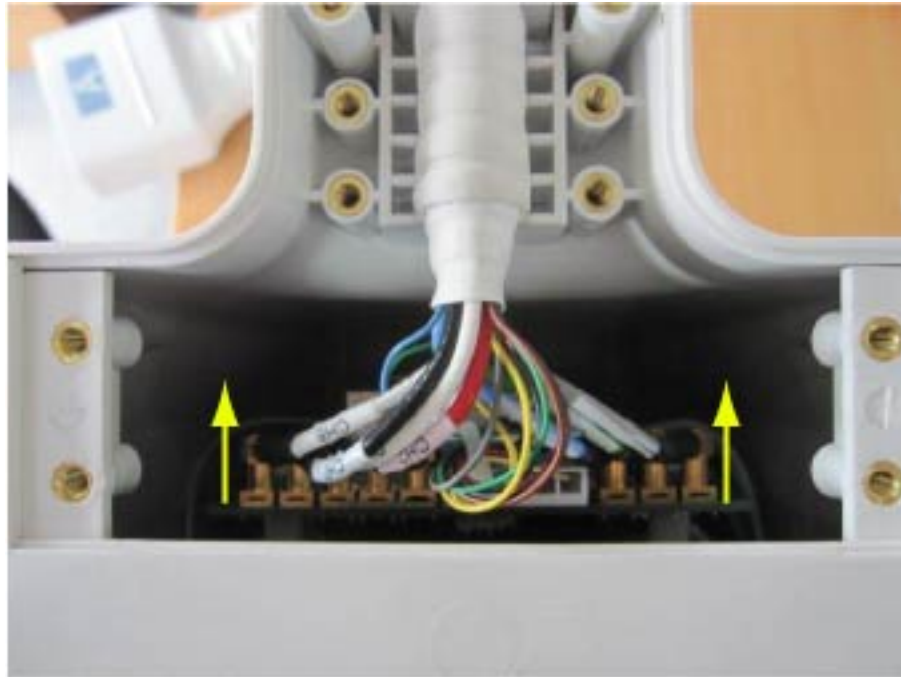
This procedure must be performed by an authorized GE Service Engineer only.

2.3 Procedure

2.3.1 Cable Replacement

1. Proceed as follows for the Cable Replacement procedure:
 - a. Remove the six Coil Connector mounting screws as detailed below.

Illustration 4-1: Removing Screws on Coil Connector



- b. Disconnect the cable by grasping the coil connector housing, and pulling the cable away from the coil connector in a downward direction.

Illustration 4-2: Disconnecting Cable from Coil Connector

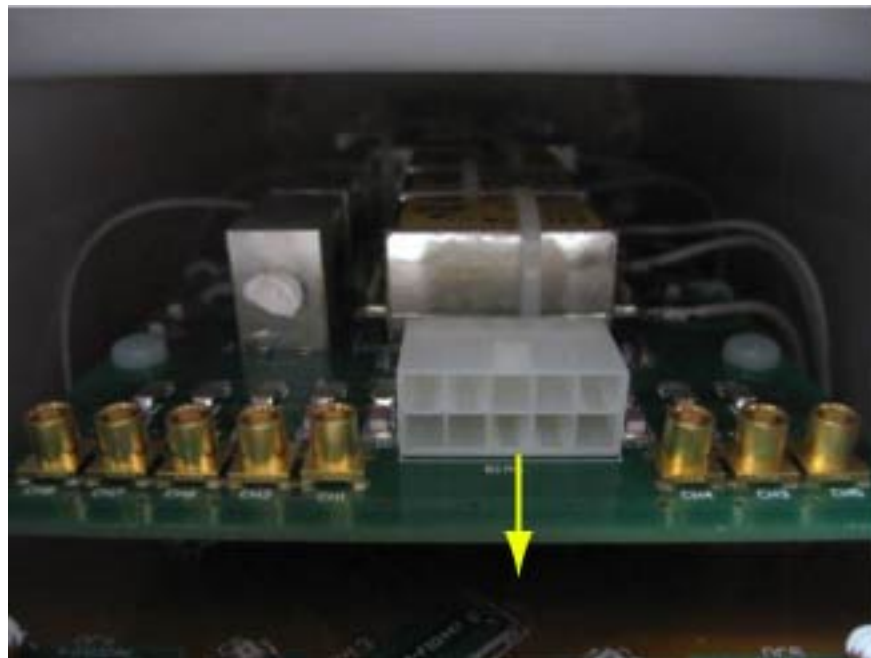
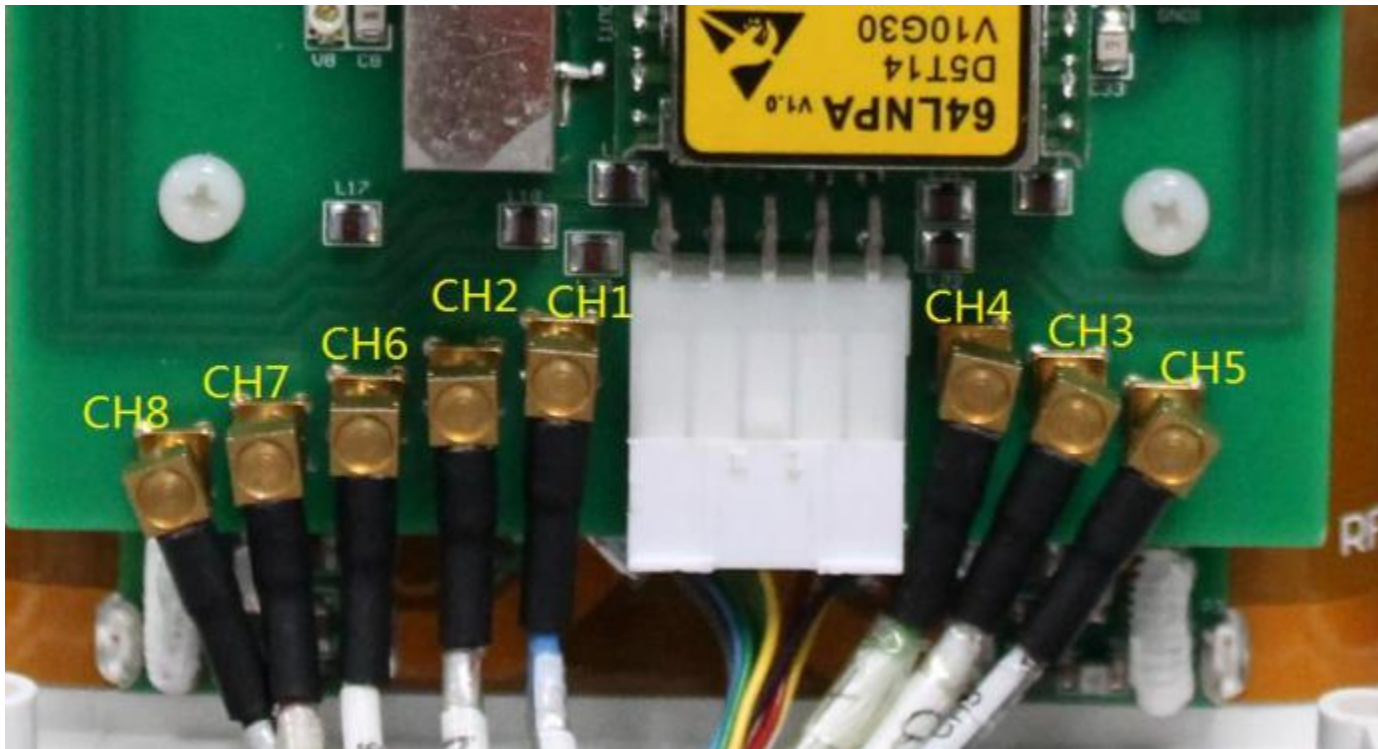


Illustration 4-3: Coil Cable Connector



- c. Perform MCQA after replacement

2.3.2 Base Plate Replacement

Do the following steps to check the new base plate.

1. Exercise the latches on the baseplate by moving the blue latch handle back and forth. (The foot support and coil is capable of a 15 degree plantar flexion.)
 - Latches must move smoothly and lock positively into place.
 - Latches must not loosen or open during the course of an examination
2. Move the coil from side to side on the baseplate, making sure the coil moves smoothly.
 - a. Swivel the coil on the baseplate. The coil must move smoothly within a 10 to 15 degree rotation.
 - b. Lock the coil into position on the baseplate. The coil must remain in place while locked down, and resume smooth movement when unlocked.

2.4 Finalization

No finalization steps.

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