

GE Healthcare

Advantage 4D Respiratory Gating Option Installation

OPERATING DOCUMENTATION



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IMPORTANT PRECAUTIONS

LANGUAGE

ПРЕДУПРЕЖДЕНИЕ

(BG)

- ТОВА УПЪТВАНЕ ЗА РАБОТА Е НАЛИЧНО САМО НА АНГЛИЙСКИ ЕЗИК.
- АКО ДОСТАВЧИКЪТ НА УСЛУГАТА НА КЛИЕНТА ИЗИСКА ЕЗИК, РАЗЛИЧЕН ОТ АНГЛИЙСКИ, 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 ПАЦИЕНТ В РЕЗУЛТАТ НА ТОКОВ УДАР ИЛИ МЕХАНИЧНА ИЛИ ДРУГА ОПАСНОСТ.

警告

(ZH-CN)

- 本维修手册仅提供英文版本。
- 如果维修服务提供商需要非英文版本，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人员，操作员或患者造成触电、机械伤害或其他形式的伤害。

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 medmindre denne servicemanual har været konsulteret og er forstået.
- MANGLENDE OVERHOLDELSE AF DENNE ADVARSEL KAN MEDFØRE SKADE PÅ GRUND AF ELEKTRISK, 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 VOORDAT 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.
- 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, OR FROM MECHANICAL OR OTHER HAZARDS.

HOIATUS

(ET)

- KÄESOLEV TEENINDUSJUHEND ON SAADAVAL AINULT INGLISE KEELES.
- KUI KLIENDITEENINDUSE OSUTAJA NÕUAB JUHENDIT INGLISE KEELEST ERINEVAS KEELES, VASTUTAB KLIENT TÖLKETEENUSE OSUTAMISE EEST.
- ÄRGE ÜRITAGE SEADMEID TEENINDADA ENNE EELNEVALT KÄESOLEVA TEENINDUSJUHENDIGA TUTVUMIST JA SELLEST ARU SAAMIST.

VAROITUS

(FI)

- KÄESOLEVA HOIATUSE EIRAMINE VÕIB PÕHJUSTADA TEENUSEOSUTAJA, OPERAATORI VÕI PATSIENDI VIGASTAMIST ELEKTRILÖÖGI, MEHAANILISE VÕI MUU OHU TAGAJÄRJEL.
- 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 DE SERVICE 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'INTERVENIR SUR LES EQUIPEMENTS TANT QUE LE MANUEL SERVICE N'A PAS ETE CONSULTE 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 KUNDENDIENSTTECHNIKERS, DES BEDIENERS ODER DES PATIENTEN DURCH STROMSCHLÄGE, MECHANISCHE ODER SONSTIGE GEFAHREN KOMMEN.

ΠΡΟΕΙΔΟΠΟΙΗΣΗ

(EL)

- ΤΟ ΠΑΡΟΝ ΕΓΧΕΙΡΙΔΙΟ ΣΕΡΒΙΣ ΔΙΑΤΙΘΕΤΑΙ ΣΤΑ ΑΓΓΛΙΚΑ ΜΟΝΟ.
- ΕΑΝ ΤΟ ΑΤΟΜΟ ΠΑΡΟΧΗΣ ΣΕΡΒΙΣ ΕΝΟΣ ΠΕΛΑΤΗ ΑΠΑΙΤΕΙ ΤΟ ΠΑΡΟΝ ΕΓΧΕΙΡΙΔΙΟ ΣΕ ΓΛΩΣΣΑ ΕΚΤΟΣ ΤΩΝ ΑΓΓΛΙΚΩΝ, ΑΠΟΤΕΛΕΙ ΕΥΘΥΝΗ ΤΟΥ ΠΕΛΑΤΗ ΝΑ ΠΑΡΕΧΕΙ ΥΠΗΡΕΣΙΕΣ ΜΕΤΑΦΡΑΣΗΣ.
- ΜΗΝ ΕΠΙΧΕΙΡΗΣΕΤΕ ΤΗΝ ΕΚΤΕΛΕΣΗ ΕΡΓΑΣΙΩΝ ΣΕΡΒΙΣ ΣΤΟΝ ΕΞΟΠΛΙΣΜΟ ΕΚΤΟΣ ΕΑΝ ΕΧΕΤΕ ΣΥΜΒΟΥΛΕΥΤΕΙ ΚΑΙ ΕΧΕΤΕ ΚΑΤΑΝΟΗΣΕΙ ΤΟ ΠΑΡΟΝ ΕΓΧΕΙΡΙΔΙΟ ΣΕΡΒΙΣ.
- ΕΑΝ ΔΕ ΛΑΒΕΤΕ ΥΠΟΨΗ ΤΗΝ ΠΡΟΕΙΔΟΠΟΙΗΣΗ ΑΥΤΗ, ΕΝΔΕΧΕΤΑΙ ΝΑ ΠΡΟΚΛΗΘΕΙ ΤΡΑΥΜΑΤΙΣΜΟΣ ΣΤΟ ΑΤΟΜΟ ΠΑΡΟΧΗΣ ΣΕΡΒΙΣ, ΣΤΟ ΧΕΙΡΙΣΤΗ Ή ΣΤΟΝ ΑΣΘΕΝΗ ΑΠΟ ΗΛΕΚΤΡΟΠΛΗΘΙΑ, ΜΗΧΑΝΙΚΟΥΣ Ή ΑΛΛΟΥΣ ΚΙΝΔΥΝΟΥΣ.

FIGYELMEZTETÉS

(HU)

- EZEN KARBANTARTÁSI KÉZIKÖNYV KIZÁRÓLAG ANGOL NYELVEN ÉRHEŐ EL.
- HA A VEVŐ SZOLGÁLTATÓJA ANGOLTÓL ELTÉRŐ NYELVRE TART IGÉNYT, AKKOR A VEVŐ FELELŐSSÉGE A FORDÍTÁS ELKÉSZÍTTETÉSE.
- NE PRÓBÁLJA ELKEZDENI HASZNÁLNI A BERENDEZÉST, AMÍG A KARBANTARTÁSI KÉZIKÖNYVBEN LEÍRTAKAT NEM ÉRTELMEZTÉK.
- EZEN FIGYELMEZTETÉS FIGYELMEN KÍVÜL HAGYÁSA A SZOLGÁLTATÓ, MŰKÖDTETŐ VAGY A BETEG ÁRAMÚTÉS, MECHANIKAI VAGY EGYÉB VESZÉLYHELYZET MIATTI SÉRÜLÉSÉT EREDMÉNYEZHETI.

ADVÖRUN

(IS)

- ÞESSI ÞJÓNUSTUHANDBÓK ER EINGÖNGU FÁANLEG Á ENSKU.
- EF AÐ ÞJÓNUSTUVEITANDI VIÐSKIPTAMANNS ÞARFNAST ANNAS TUNGUMÁLS EN ENSKU, ER ÞAÐ SKYLDA VIÐSKIPTAMANNS AÐ SKAFFA TUNGUMÁLAPJÓNUSTU.
- REYNIÐ EKKI AÐ AFGREIÐA TÆKIÐ NEMA AÐ ÞESSI ÞJÓNUSTUHANDBÓK HEFUR VERIÐ SKOÐUÐ OG SKILIN.
- BROT Á SINNA ÞESSARI ADVÖRUN GETUR LEITT TIL MEIÐSLA Á ÞJÓNUSTUVEITANDA, STJÓRNANDA EÐA SJÚKLINGS FRÁ RAFLOSTI, VÉLRÆNU EÐA ÖÐRUM ÁHÆTTUM.

AVVERTENZA

(IT)

- IL PRESENTE MANUALE DI MANUTENZIONE E DISPONIBILE SOLTANTO IN INGLESE.
- SE UN ADDETTO ALLA MANUTENZIONE ESTERNO ALLA GEMS RICHIEDE IL MANUALE IN UNA LINGUA DIVERSA, IL CLIENTE E TENUTO A PROVVEDERE DIRETTAMENTE ALLA TRADUZIONE.
- SI PROCEDA ALLA MANUTENZIONE DELL'APPARECCHIATURA SOLO DOPO AVER CONSULTATO IL PRESENTE MANUALE ED AVERNE COMPRESO IL CONTENUTO
- IL NON RISPETTO 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.

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 지침서는 영어로만 이용하실 수 있습니다.
- 고객의 서비스 제공자가 영어 이외의 언어를 요구할 경우, 번역 서비스를 제공하는 것은 고객의 책임입니다.
- 본 서비스 지침서를 참고했고 이해하지 않는 한은 해당 장비를 수리하려고 시도하지 마십시오.
- 이 경고에 유의하지 않으면 전기 쇼크, 기계상의 혹은 다른 위험으로부터 서비스 제공자, 운영자 혹은 환자에게 위해를 가할 수 있습니다.

BRĪDINĀJUMS

(LV)

- ŠĪ APKALPES ROKASGRĀMATA IR PIEEJAMA TIKAI ANGLŪ VALODĀ.
- JA KLIENTA APKALPES SNIEDZĒJAM NEPIECIEŠAMA INFORMĀCIJA CITĀ VALODĀ, NEVIS ANGLŪ, KLIENTA PIENĀKUMS IR NODROŠINĀT TULKOŠANU.
- NEVEICIET APRĪKOJUMA APKALPI BEZ APKALPES ROKASGRĀMATAS IZLASĪŠANAS UN SAPRAŠANAS.
- ŠĪ BRĪDINĀJUMA NEIEVĒROŠANA VAR RADĪT ELEKTRISKĀS STRĀVAS TRIECIENA, MEHĀNISKU VAI CITU RISKU IZRAISĪTU TRAUMU APKALPES SNIEDZĒJAM, OPERATORAM VAI PACIENTAM.

ĮSPĖJIMAS

(LT)

- ŠIS EKSPLOATAVIMO VADOVAS YRA PRIEINAMAS TIK ANGLŪ KALBA.
- JEI KLIENTO PASLAUGŲ TIEKĒJAS REIKALAUJA VADOVO KITA KALBA – NE ANGLŪ, NUMATYTI VERTIMO PASLAUGAS YRA KLIENTO ATSAKOMYBĖ.
- NEMĖGINKITE ATLIKTI ĮRANGOS TECHNINĖS PRIEŽIŪROS, NEBENT ATSIŽVELGĖTE Į ŠĮ EKSPLOATAVIMO VADOVĄ IR JĮ SUPRATOTE.
- JEI NEATKREIPSITE DĖMESIO Į ŠĮ PERSPĖJIMĄ, GALIMI SUŽALOJIMAI DĖL ELEKTROS ŠOKO,
- MECHANINIŲ AR KITŲ PAVOJŲ PASLAUGŲ TIEKĖJUI, OPERATORIUI AR PACIENTUI.

ADVARSEL

(NO)

- DENNE SERVICEHÅNDBOKEN FINNES BARE PÅ ENGELSK.
- HVIS KUNDENS SERVICELEVERANDØR TRENGER 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 JEDYNIEM W JĘZYKU ANGIELSKIM.
- JEŚLI DOSTAWCA USŁUG KLIENTA WYMAGA JĘZYKA INNEGO NIŻ ANGIELSKI, ZAPEWNIENIE USŁUGI TŁUMACZENIA JEST OBOWIĄZKIEM KLIENTA.
- NIE PRÓBOWAĆ SERWISOWAĆ WYPOSAŻENIA BEZ ZAPOZNANIA SIĘ I ZROZUMIENIA NINIEJSZEGO PODRĘCZNIKA SERWISOWEGO.
- NIEZASTOSOWANIE SIĘ DO TEGO OSTRZEŻENIA MOŻE SPOWODOWAĆ URAZY DOSTAWCY USŁUG, OPERATORA LUB PACJENTA W WYNIKU PORAŻENIA ELEKTRYCZNEGO, ZAGROŻENIA MECHANICZNEGO BĄDŹ INNEGO.

ATENÇÃO

(PT)

- 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 TENDE 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.

ATENȚIE

(RO)

- ACEST MANUAL DE SERVICE ESTE DISPONIBIL NUMAI 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 ОБСЛУЖИВАНИЮ ПРЕДЛАГАЕТСЯ 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 ОБСЛУЖИВАНИЕМ ОБОРУДОВАНИЯ ОБЯЗАТЕЛЬНО ОБРАТИТЕСЬ К ДАННОМУ РУКОВОДСТВУ И ПОЙМИТЕ ИЗЛОЖЕННЫЕ В НЕМ СВЕДЕНИЯ.
- НЕСОБЛЮДЕНИЕ ТРЕБОВАНИЙ ДАННОГО ПРЕДУПРЕЖДЕНИЯ МОЖЕТ ПРИВЕСТИ К ТОМУ, ЧТО СПЕЦИАЛИСТ ПО ОБСЛУЖИВАНИЮ, ОПЕРАТОР ИЛИ ПАЦИЕНТ ПОЛУЧАТ УДАР ЭЛЕКТРИЧЕСКИМ ТОКОМ, МЕХАНИЧЕСКУЮ ТРАВМУ ИЛИ ДРУГОЕ ПОВРЕЖДЕНИЕ.

UPOZORNENIE

(SK)

- TENTO NÁVOD NA OBSLUHU JE K DISPOZÍCII LEN V ANGLIČTINE.
- AK ZÁKAZNÍKOV POSKYTOVATEĽ SLUŽIEB VYŽADUJE INÝ JAZYK AKO ANGLIČTINU, POSKYTNUTIE PREKLADATEĽSKÝCH SLUŽIEB JE ZODPOVEDNOSŤOU ZÁKAZNÍKA.
- NEPOKÚŠAJTE SA O OBSLUHU ZARIADENIA SKÔR, AKO SI NEPREČÍTATE NÁVOD NA OBLUHU A NEPOROZUMIETE MU.
- ZANEDBANIE TOHTO UPOZORNENIA MÔŽE VYÚSTIŤ DO ZRANENIA POSKYTOVATEĽA SLUŽIEB, OBSLUHUJÚCEJ OSOBY ALEBO PACIENTA ELEKTRICKÝM PRÚDOM, DO MECHANICKÉHO ALEBO INÉHO NEBEZPEČENSTVA.

ATENCIÓN

(ES)

- ESTE MANUAL DE SERVICIO SOLO EXISTE EN INGLES.
- SI ALGUN PROVEEDOR DE SERVICIOS AJENO A GEMS SOLICITA UN IDIOMA QUE NO SEA EL INGLES, ES RESPONSABILIDAD DEL CLIENTE OFRECER UN SERVICIO DE TRADUCCION
- NO SE DEBERA DAR SERVICIO TECNICO 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 SERVİS KILAVUZUNUN SADECE İNGİLİZCESİ MEVCUTTUR.
- EĞER MÜŞTERİ TEKNİSYENİ BU KILAVUZU İNGİLİZCE DIŞINDA BİR BAŞKA LİSANDAN TALEP EDERSE, BUNU TERCÜME ETTİRMEK MÜŞTERİYE DÜŞER.
- SERVİS KILAVUZUNU OKUYUP ANLAMADAN EKİPMANLARA MÜDAHALE ETMEYİNİZ.
- BU UYARIYA UYULMAMASI, ELEKTRİK, MEKANİK VEYA DİĞER TEHLİKELERDEN DOLAYI TEKNİSYEN, OPERATÖR VEYA HASTANIN YARALANMASINA YOL AÇABİLİR.

DAMAGE IN TRANSPORTATION

All packages should be closely examined at time of delivery. If damage is apparent write "Damage In Shipment" on ALL copies of the freight or express bill BEFORE delivery is accepted or "signed for" by a General Electric representative or 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.

To file a report:

- Call 1-800-548-3366 and use option 8.
- Fill out a report on <http://egems.med.ge.com/edg/home.jsp>
- Contact your local service coordinator for more information on this process.

CERTIFIED ELECTRICAL CONTRACTOR STATEMENT

All electrical Installations that are preliminary to positioning of the equipment at the site prepared for the equipment shall be performed by licensed electrical contractors. In addition, electrical feeds into the Power Distribution Unit shall be performed by licensed electrical contractors. Other connections between pieces of electrical equipment, calibrations and testing shall be performed by qualified GE Medical personnel. The products involved (and the accompanying electrical installations) are highly sophisticated, and special engineering competence is required. In performing all electrical work on these products, GE will use its own specially trained field engineers. All of GE's electrical work on these products will comply with the requirements of the applicable electrical codes.

The purchaser of GE equipment shall only utilize qualified personnel (i.e., GE's field engineers, personnel of third-party service companies with equivalent training, or licensed electricians) to perform electrical servicing on the equipment.

IMPORTANT...X-RAY PROTECTION

X-ray equipment if not properly used may cause injury. Accordingly, the instructions herein contained should be thoroughly read and understood by everyone who will use the equipment before you attempt to place this equipment in operation. The General Electric Company, Healthcare Group, will be glad to assist and cooperate in placing this equipment in use.

Although this apparatus incorporates a high degree of protection against x-radiation other than the useful beam, no practical design of equipment can provide complete protection. Nor can any practical design compel the operator to take adequate precautions to prevent the possibility of any persons carelessly exposing themselves or others to radiation.

It is important that anyone having anything to do with x-radiation be properly trained and fully acquainted with the recommendations of the National Council on Radiation Protection and Measurements as published in NCRP

Reports available from NCRP Publications, 7910 Woodmont Avenue, Room 1016, Bethesda, Maryland 20814, and of the International Commission on Radiation Protection, and take adequate steps to protect against injury.

The equipment is sold with the understanding that the General Electric Company, Healthcare Group, its agents, and representatives have no responsibility for injury or damage which may result from improper use of the equipment.

Various protective materials and devices are available. It is urged that such materials or devices be used.

IMPORTANT...RADIOACTIVE MATERIAL HANDLING

Only employees formally trained in radioactive materials handling and this equipment are authorized by the GE Healthcare Radiation Safety Officer to use radioactive materials to service this equipment. GE Healthcare Services is required to notify the applicable U.S. state agency PRIOR to any source service event involving pin source handling. See NUC/PET Radioactive material guides for specific instruction or contact your EHS Specialist.

A radiation survey must be performed when a pin source has been removed and replaced. See Radiation Survey Form Instructions or contact your EHS Specialist.
Rev 2 (July 21, 2005)

OMISSIONS & ERRORS

Customers, please contact your GE Sales or Service representatives.
GE personnel, please use the GE Healthcare iTrak Process to report all omissions, errors, and defects in this publication.

REVISION HISTORY

Date	Rev	Change Description
7/11/03	0	Initial Draft
7/25/03	1	Addition of reference to PET Cardiac Installation Doc
9/19/03	2	Addition of Varian CT-RPM Respiratory Gating I/F Box connection information Addition Ch. 5: System Level Check for ADV 4D CT Acq. General updates
11/14/03	3	M3 Release: Editions from HII Review comments, and logs: Structure, LEMO connector steps removed, Stand-Alone tests solidified, decision to proceed without final Varian Install Guide. Editions from OLC Training meeting, and Varian review: Clarify system type ID, address motion file save process, add diagram(s) for FRU ID. Added example CINE scan setup.
3/8/03	4	SERVICE & SALES Flowcharts for installation sequencing - Figures A & B. Additionally, Chapter 4 ADV 4D Service Tools menu error logs reference.
10/22/04	5	FRU part number refresh for post M4 & Shiraz support. Also, addition of example CUI screen in chapter 4 launch test.
6/17/07	6	Added new drawings for all cardiac configurations and added PET configurations for 5.X DST, DSTE, DRX.
10/17/07	7	Added PET Configuration for systems with Dimension Console and an STC.
03/26/08	8	Simplified the procedure. Updated cable part numbers to current part numbers.

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1- INTRODUCTION

The Advantage 4D Respiratory Gating Option consists of hardware and cables installed in the gantry, the installation of the Varian RPM Respiratory Gating unit and mounting of the Varian Camera.

This document supports the CT and PET Respiratory gated features for all CT and PET Discovery ST systems that do not have the Dimension Console hardware/Software option installed:

- Discovery ST Systems without Dimension Console
- Lightspeed 7.X (VCT) Systems
- Lightspeed 5.X (HP60, LS16, Pro16, LS RT, BrightSpeed systems)
- Lightspeed 2.X, 3.X, 4.X (LS16, Ultra, Plus and QX/I Systems)

Note:

This kit is not compatible with PET Dimension Console running Dual Gating, software version 07MWHL 36.4

1-1 Prerequisites

1. The system must be equipped with the Cardiac gating option:
 - a. PET: P5851JB
 - b. CT: B7840DD, B7840DF, B77001FD
2. If the RPM (Remote Patient Monitoring) camera is to be installed on the table Cradle (Flat Top Table Option) this option must be installed by a GE Field Engineer. Refer to the installation instructions included with that option.
3. (Initial Install) A Varian representative must have installed the Varian RPM system (Separate option) and Camera and have fully tested the RPM computer software functionality.

The following installation sequence must be followed:

1. Cardiac Option must be installed.
2. (Initial Install) Varian RPM system MUST be installed, configured, and tested by a Varian representative.

1-1-1 RPM Mount Configurations

The recommended mounting configuration for the RPM camera is:

- CT systems require the use of the various Flat Table Top options for a cradle mounted Varian Camera. This option is not included with this kit.
- PET systems, with GT tables may use one of the Flat Table Top options or one of the RPM Camera Mount Bracket kits not included with this kit:
 - a. For systems with an HP table: Catalog # E8819HA
 - b. For Systems with a GT table: Catalog # E8819HB

All other mount configurations must be coordinated with the Customer and Varian on a case-by-case basis. These may include wall mounts, ceiling mounts etc... For a successful installation, clarify the mounting configuration before proceeding with this installation.

1-1-2 Orientation References

For clarification of left/right orientation in the following directions refer to the "Spatial Orientation While Servicing the System" Section found in the Service Manuals as follows:

- See Section 1 of the CT 2.x Service Methods publications.
- See the Safety folder in the CT service publications for 3.x systems and higher.
- See the Safety folder in the PET service publications for all DST systems.

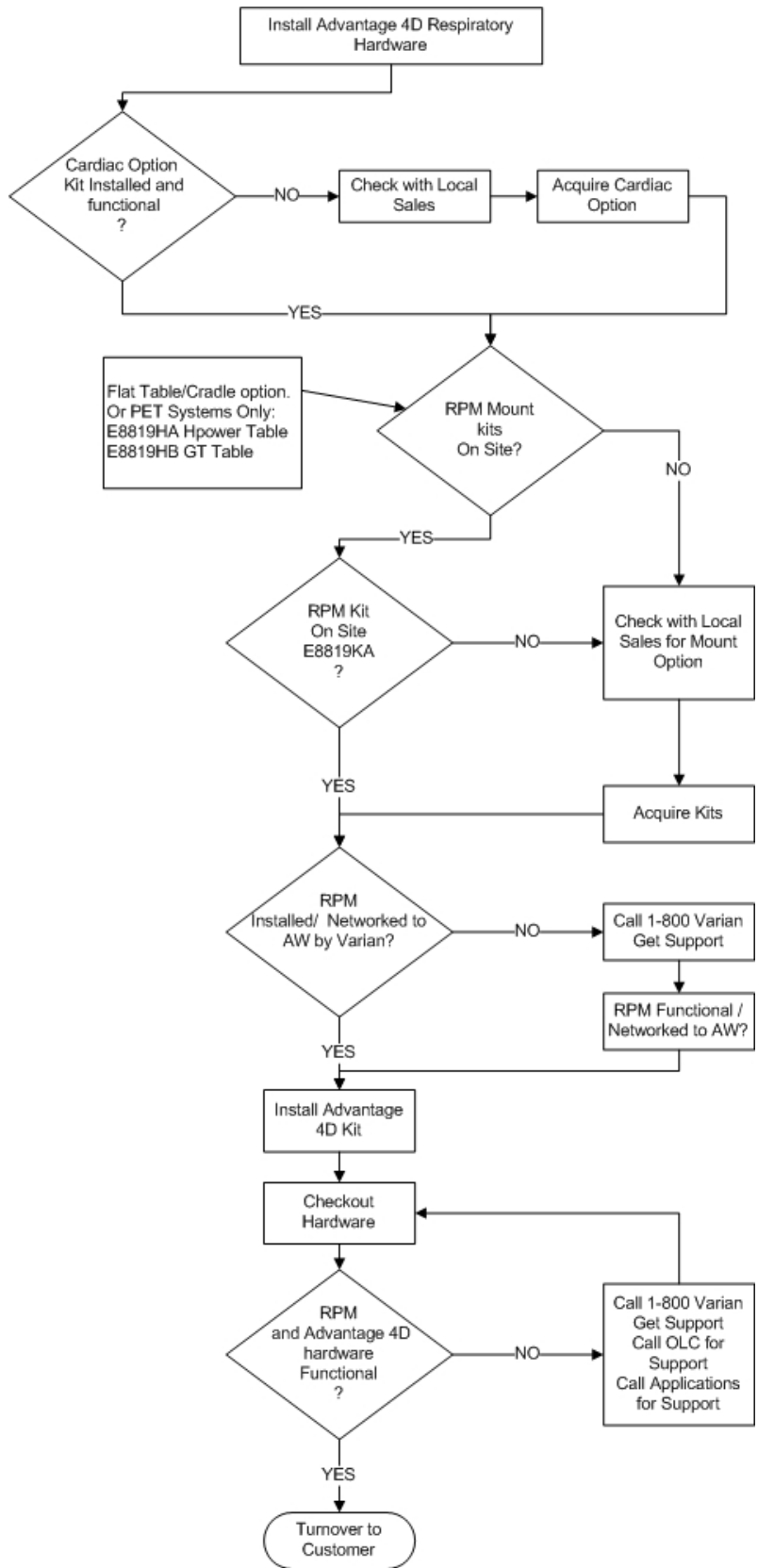


FIGURE 1-1 ADVANTAGE 4D SERVICE INSTALLATION SEQUENCING

1-2 Responsibilities

1-2-1 Responsibility of the GE Field Service

- The network mapping (Getting the IP addresses required) for the RPM System.
- Removal of any covers.
- Connect Respiratory option cables to scanner.
- Finalization Tests.

1-2-2 Responsibility of Varian Service

- Initial installation of the RPM Workstation and associated equipment.
- Install RPM Camera as defined by the site configuration.
- Verify the current software version is loaded on the RPM workstation computer.
- Verify Respiratory gating is functional and set gating OPTIONS for 4D CT.
- Verify The RPM system is physically networked to any other RPM systems or the AW.
- Confirm that the trigger output and "X-ray "On" channels work using Varian supplied manual and functional tests/self test at the Varian Interface (I/F) Box.
- Confirm on RPM Function with X-Ray ON (System Scanning) and when X-Rays are off.
- Export a file to the AW.

2- RPM HARDWARE INSTALLATION

Note:

The function of the Respiratory option is dependent on the Cardiac option. The Cardiac option must be installed in the system before proceeding with the installation of the Respiratory (Pulmonary) option.

Preparing the scanner for Installation of the Respiratory Gating Option

1. If necessary, remove the right side cover from Gantry.
2. To proceed:
 - a. On systems with a TGPU or TGP/MSUB Turn OFF the 3 switches, (Axial Drive, HVDC, 120VAC) at the Service Switch Panel.
 - b. On systems with an STC turn OFF the 3 switches (Axial Drive, HVDC, 120VAC) at the STC Backplane.
3. Follow all Lockout/Tagout as required by your LOTO training.
4. To proceed:
 - a. For PET systems, if necessary, remove the left or right Gantry side base covers.
 - b. For CT systems, if necessary remove the left or right Gantry rear base covers.
5. To proceed:
 - a. To continue with a PET DST Respiratory Gating installation refer to section 3.
 - b. To continue with a CT Respiratory Gating installation refer to section 4.

3- PET SYSTEMS

This section applies to the following DST Systems with CT Gantrys 3.X, 4.X, 5.X, HP60.

3-1 PET DST Without Dimension Console or Software (07MWHL 36.4)

This setup will only allow either the RPM function to work or the Cardiac function to work on the PET system but not both together. (Dimension Dual Gating Not installed).

PARTS LIST PET- P5850JD / CT- B7840DE (2371490)

NUMBER	QTY	DESCRIPTION/NAME
5199717	1.0	cable-gantry to rpm unit
2369603	1.0	Cable, Cardiac/Pulmonary
5199780	1.0	cable-cardiac - pulmonary
2371402	1.0	Pulmonary Adapter
2371403	1.0	Cover Plate- Pulmonary
2380690-100	1.0	Advantage 4D Respiratory Gating Option Installation

1. Attach cables 2371402 (Orange end to Cardiac port-Blue end to Respiratory port), 2369603 and 5199717 according to Figure 3-1 and 3-2.

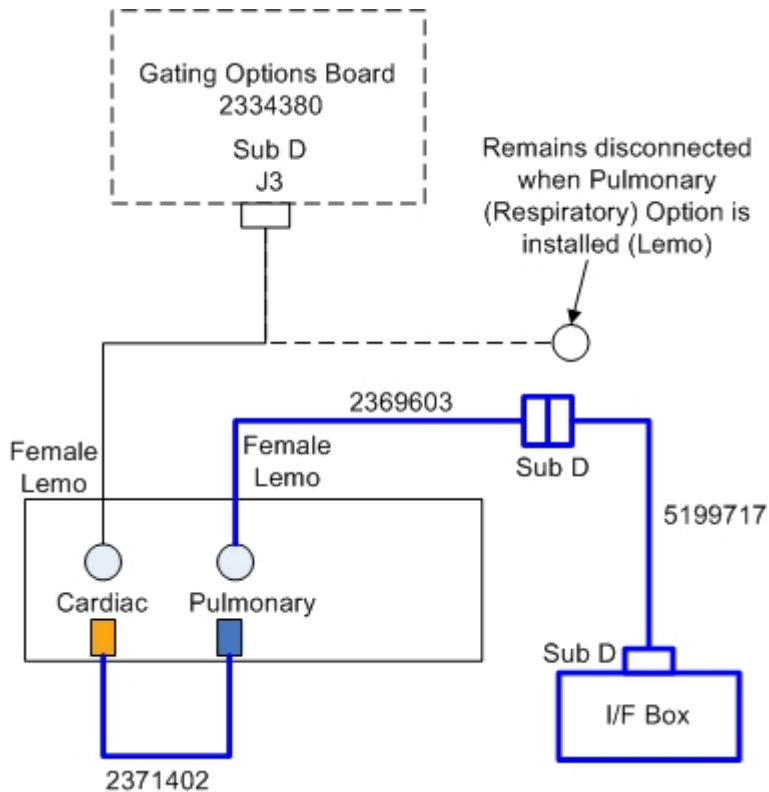


FIGURE 3-1: SINGLE GATING RPM CABLE CONNECTIONS

Note:

Cable 5199780 and Cover Plate 2371403 are not used in this configuration.

- 2. Refer to Figure 3-2 for cable 5199717 routing detail. Route this cable from the Gantry to the Sub-D J4 of the Varian CT-RPM Respiratory Gating I/F Box.

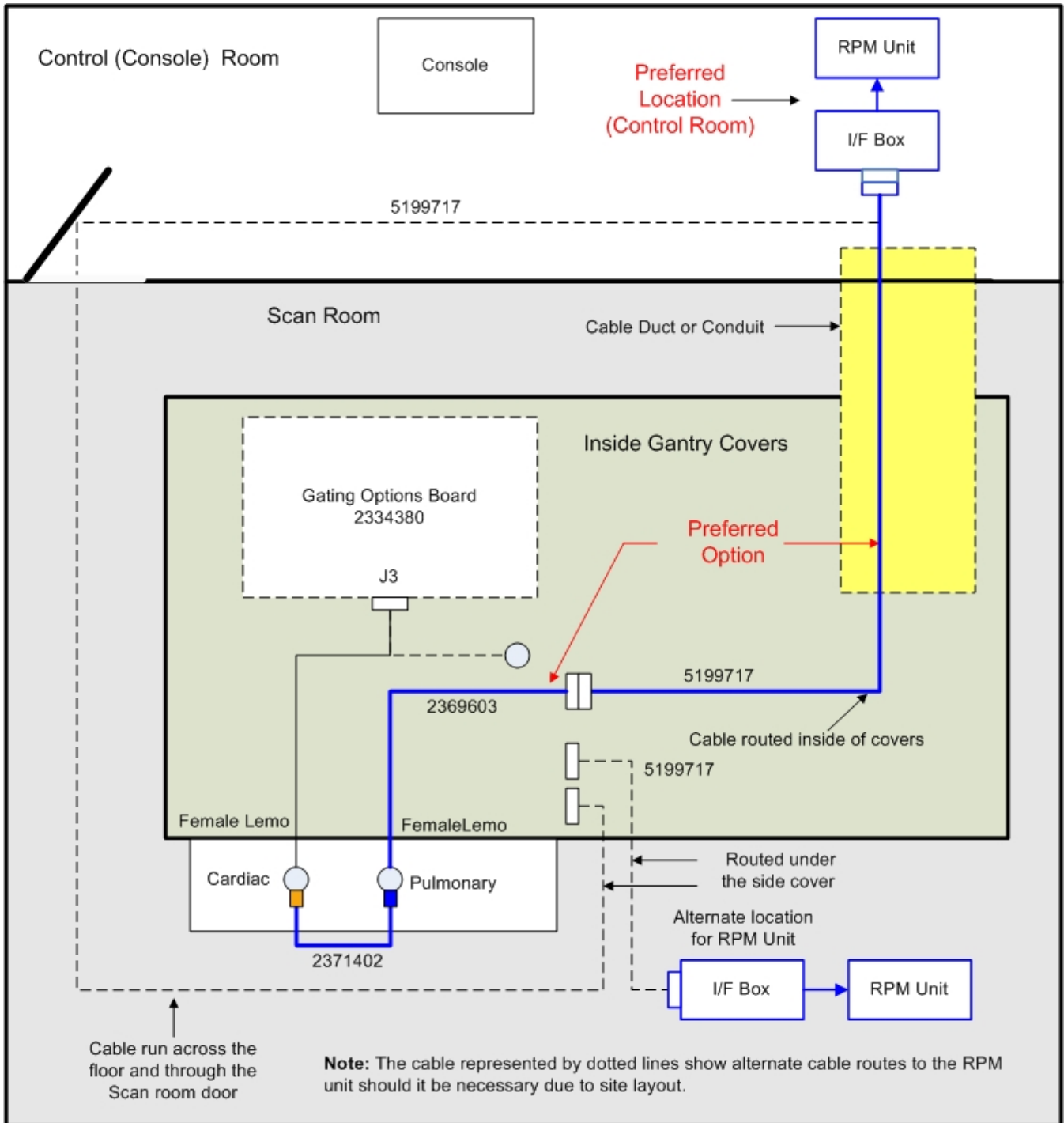


FIGURE 3-2: RPM CABLE ROUTE DETAIL

- 3. Continue with RPM Installation with Section 5.

3-2 PET DST Without Dimension Console or Software (07MWHL 36.4) (Alternate Installation)

This configuration may be necessary if the Cardiac Gating option was installed in the past, but had not installed the Advantage (4D) option until now. Cable changes over the years may have resulted in a compatibility problem with older Advantage (4D) cable collectors. For this reason this alternate configuration has been included. (If necessary refer to appendix B Cable /Hardware Matrix).

1. If necessary, remove any cable connected to J1 of the Gating Options board and discard.
2. Attach cables 5199780 and 5199717 according to Figure 3-3 and 3-4.

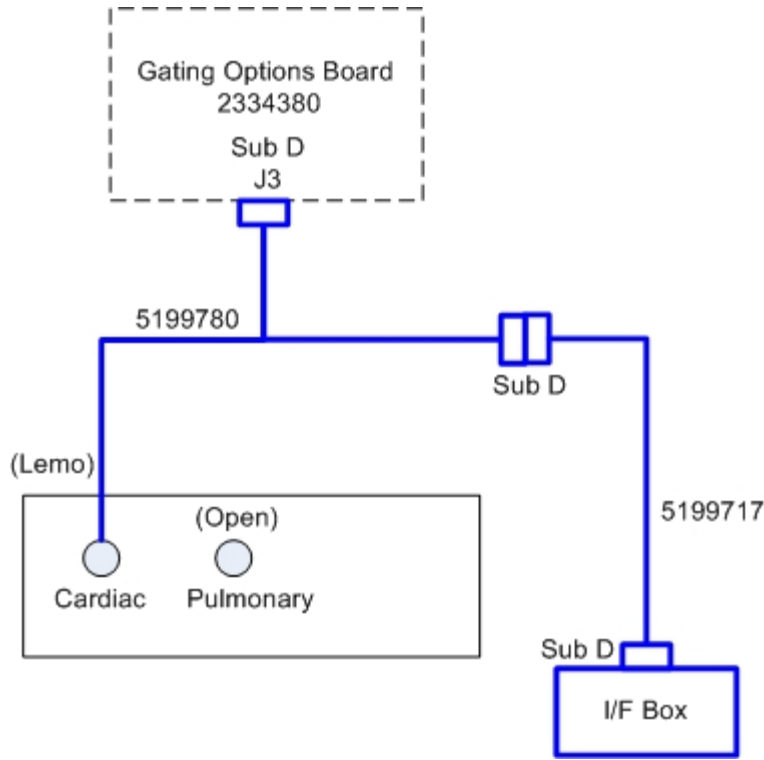


FIGURE 3-3: SINGLE GATING RPM CABLE CONNECTIONS

3. Refer to Figure 3-4 for cable 5199717 routing detail. Route this cable from the Gantry to Sub-D J4 of the Varian CT-RPM Respiratory Gating I/F Box.

Note:

Cover Plate 2371403 is not used in this configuration.

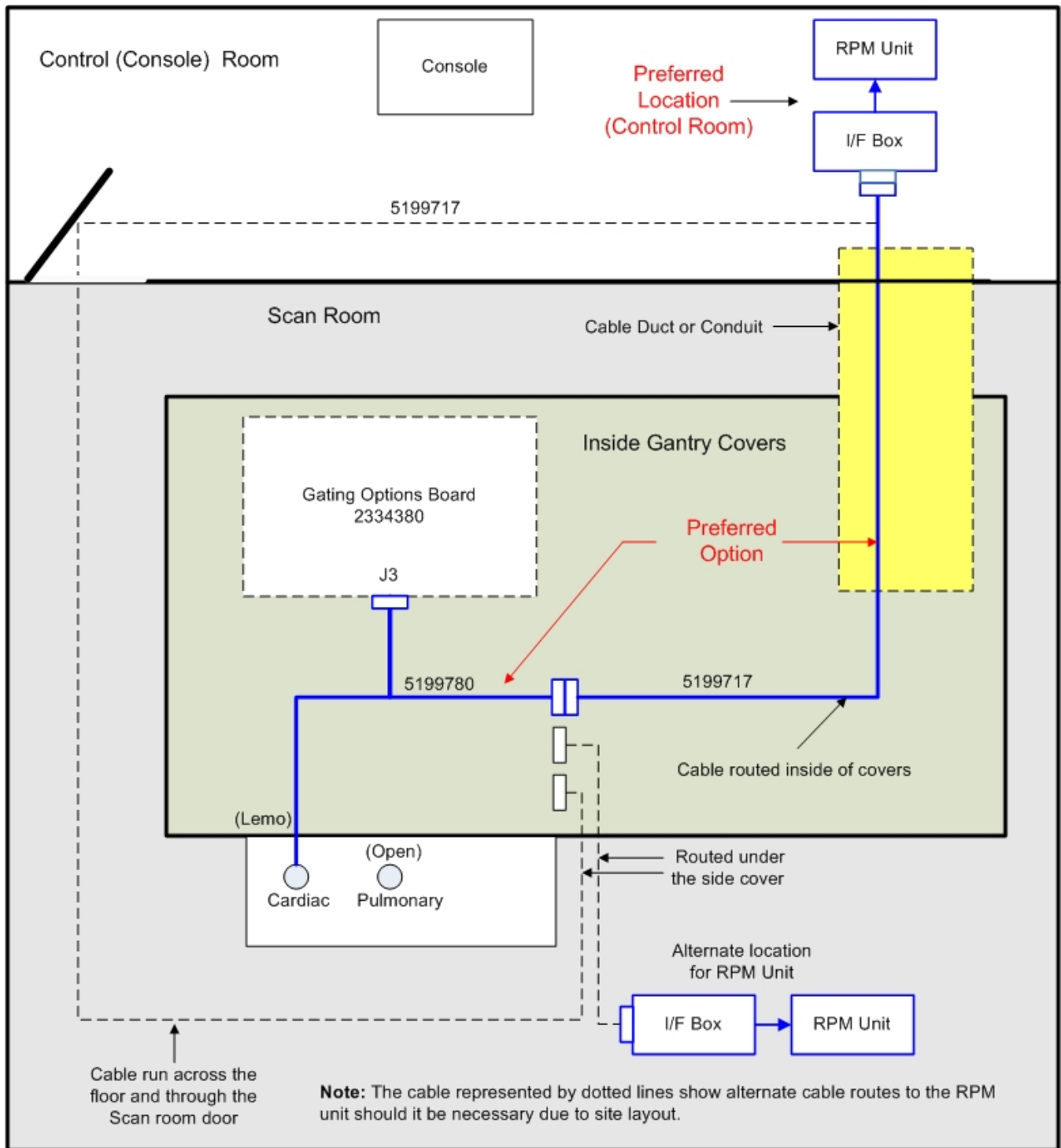


FIGURE 3-4: RPM CABLE ROUTE DETAIL

4. Continue with RPM Installation with Section 5.

4- CT SYSTEMS

PARTS LIST- CT (2371491)

NUMBER	QTY	DESCRIPTION/NAME
5199717	1.0	CABLE-GANTRY TO RPM
2386813	1.0	CABLE SMARTBREATH ADAPTER
2380690-100	1.0	ADVANTAGE 4D- RESPIRATORY GATING

To Proceed:

- If the system is a VCT, 5.X (HP60) or RT and has a TGPU refer to section 4-1
- If the system is a 2.X, 3.X or 4.X and has an STC refer to section 4-2

4-1 CT Lightspeed VCT, HP60, 5.X, LS16, Pro16, Brightspeed, RT

This section applies to CT Systems with 5.X, LS16 Pro16, HP60, RT, Brightspeed and 7.X Gantrys.

1. Attach cables 2386813 and 5199717 according to Figure 4-1 and 4-3.

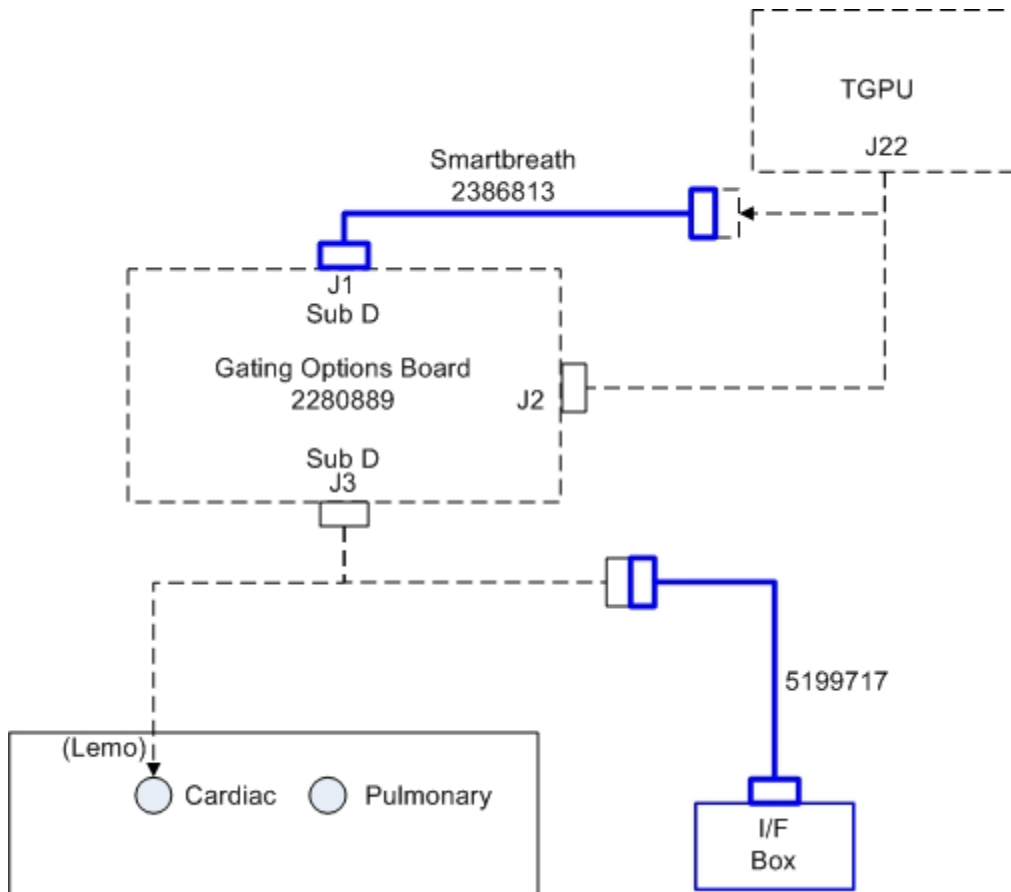


FIGURE 4-1: CONNECTIONS FOR CT SYSTEMS WITH A TGPU

2. Refer to Figure 4-3 for cable 5199717 routing detail.
3. Route this cable from the Gantry to Sub-D J4 of the Varian CT-RPM Respiratory Gating I/F Box.

4-2 CT Lightspeed LS16, Pro16, Ultra, Plus, QX/i

This section applies to CT 2.X, 3.X, 4.X LS16, Pro16, Ultra, Plus, QX/I Systems.

1. Attach cable 5199717 according to Figure 4-2 and 4-3.

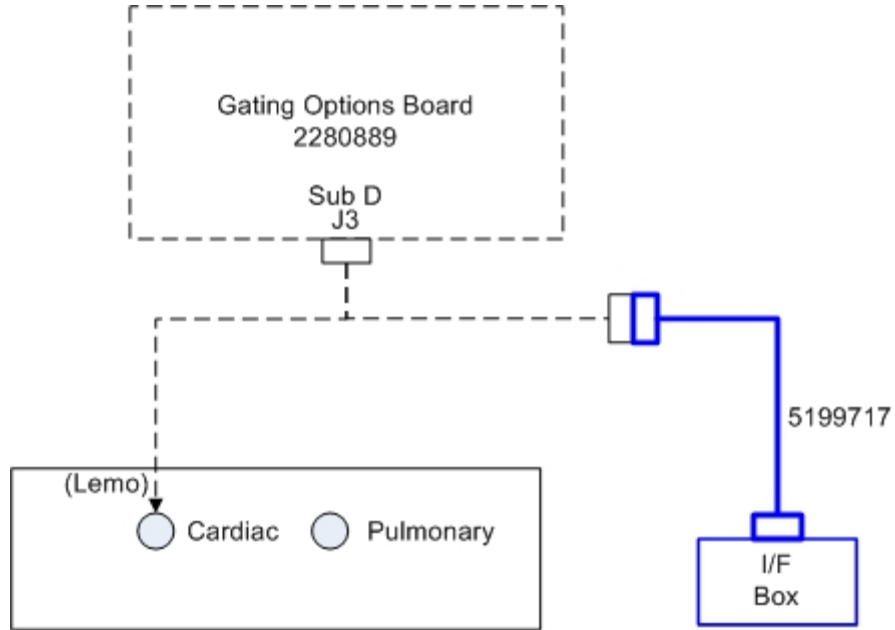


FIGURE 4-2: CONNECTIONS FOR CT SYSTEMS WITH AN STC

2. Refer to Figure 4-3 for cable 5199717 routing detail.
3. Route this cable to Sub-D J4 of the Varian CT-RPM Respiratory Gating I/F Box.

Note:

Cable 2386813 and the Cover Plate 2371403 are not used in this configuration.

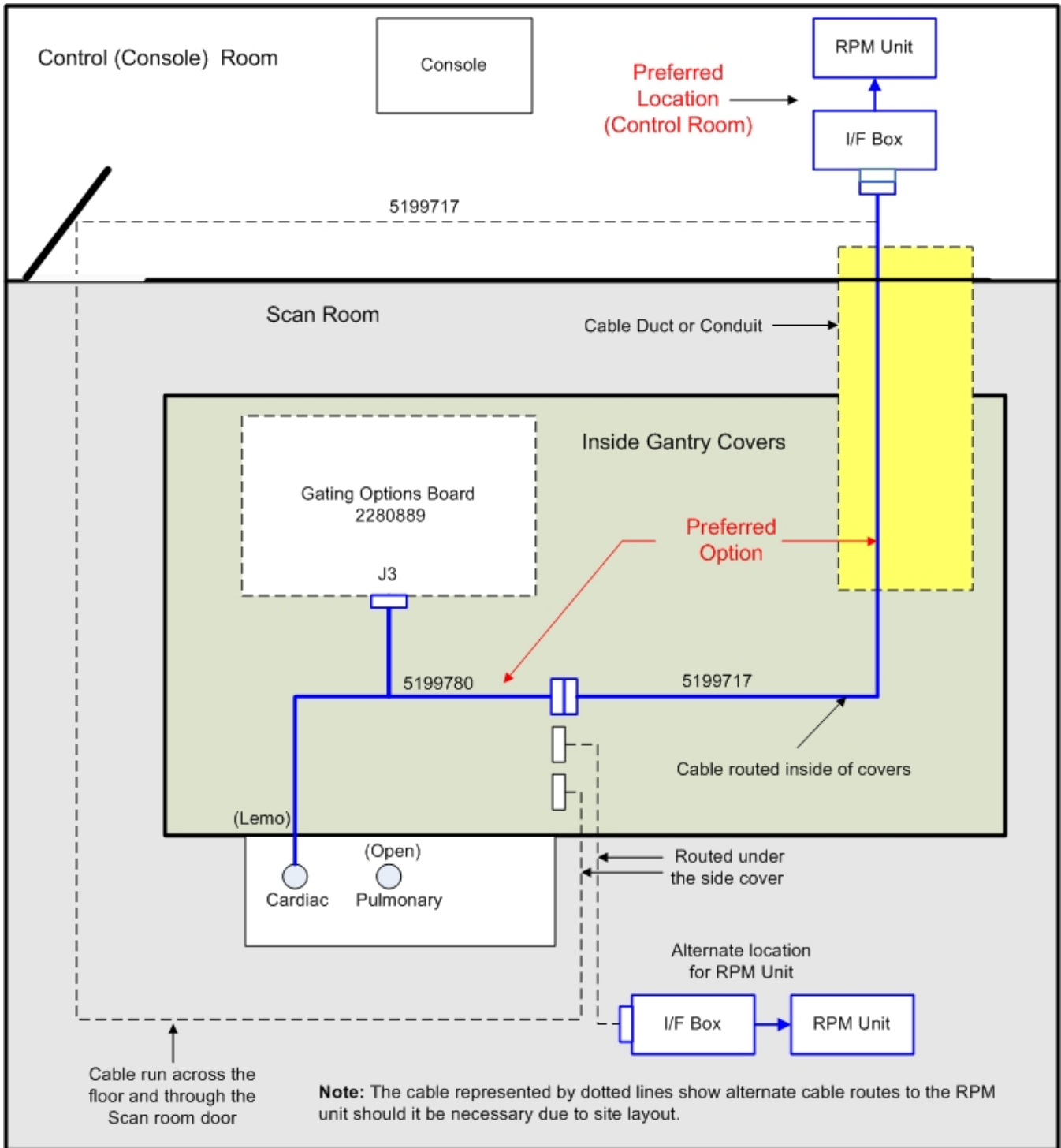


FIGURE 4-3: RPM CABLE ROUTE DETAIL

4. Route the Gantry to RPM Console Cable (5199717) from the Gantry to the RPM Console and attach the cable to Sub-D J4 of the Varian CT-RPM Respiratory Gating I/F Box.
5. Continue with RPM Installation with Section 5.

5- FINALIZATION

- Refer to the Varian supplied manuals for the installation and use of the Varian RPM unit and camera.
- Refer to the attached appendices for general references that may help in the final setup and testing of the unit.

5-1 Restore Power to the Gantry

1. Remove any Lockout/tagout devices.
2. To proceed:
 - c. On systems with a TGPU or TGP/MSUB, at the Service Switch Panel. Ensure the 3 switches, (Axial Drive, HVDC, 120VAC) are set to ON.
 - d. On systems with an STC, at the STC Backplane ensure the 3 switches (Axial Drive, HVDC, 120VAC) are set to ON.
3. If necessary, boot the system up to Applications Level.
4. At the Gating Options Board (GOB), verify that the yellow "Pwr" Indicator is ON.

5-2 Respiratory Gating Hardware Function Check

This section uses the RPM system to generate a simulated Respiratory Trigger, which will allow for a Functional Test of the Advantage (4D) Option.

5-2-1 Basic Varian RPM Hardware Check:

1. Make sure the Varian camera support equipment is connected, powered up and Varian RPM Computer is powered up with Microsoft Windows running. (RPM software does not need to be running).
2. Turn Varian camera power ON.
3. Turn on the Varian I/F Box.
4. Remove, or DO NOT connect the gating cable 5199717 to the Varian I/F Box. (Make sure this is disconnected from the CT or PET system).
5. On the Varian I/F Box verify the following:
 - a. The green Power indicator is ON.
 - b. The red "X-Ray ON" indicator is ON.
 - c. The "Test" indicator is OFF.
 - d. The Trigger Indicator is OFF.

If one or more of these conditions are not met the problem is with the Varian RPM equipment. Troubleshoot the issue or contact Varian to resolve the problem.

5-2-2 Setup the Breathing Phantom and Varian Camera

Note:

An alternate Breathing Phantom setup is defined in Appendix B Section B-1, which will accomplish the same result without physically mounting the camera

1. Mount the camera so it is facing through the patient opening of the gantry. Refer to Figure 5-1:
 - a. Attach it to the Flat Table Top cradle (If present)
 - b. Use one of the optional Camera mounts at the rear of table, (End that is furthest away from the gantry).
 - c. Mount as defined by the customer, (Wall rack, boom etc...).

Note:

Ambient light can disrupt the camera tracking. Reduce the lighting to correct this.



FIGURE 5-1: TYPICAL CAMERA MOUNTED ON FLAT TABLE TOP

2. Verify camera power is ON and the RPM cable and equipment is connected and Varian RPM computer is powered up with Microsoft Windows running.
3. Tape the Marker block to the plastic tab on the Breathing Phantom. (Refer to Figure 5-2)
4. The Marker Block should be taped so the 6 “Dots” will face the Varian Camera at the other end of the table and the rotation of the wheel is free to move the plastic tab and Marker Block up and down during its rotation. (The camera must “See” these 6 dots moving up and down).
5. If not already installed, install two “D Cell” batteries in the Breathing Phantom.
6. Refer to figure 5-3. Place the RPM Breathing Phantom on the table near the table head holder end of the gantry.
7. Turn the unit it on. The Marker Block will slowly move up and down.

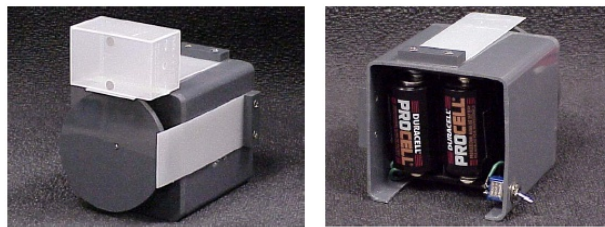


FIGURE 5-2 BREATHING PHANTOM AND MARKER BLOCK SETUP

8. Refer to Figure 5-3 and 5-4. Adjust camera head and Breathing Phantom so the dots from the marker block appear in the camera’s LCD display window.
9. Verify that the dots appear in the center of the Camera LCD and do not move outside of the LCD FOV. Adjust the Breathing Phantom or camera if required.

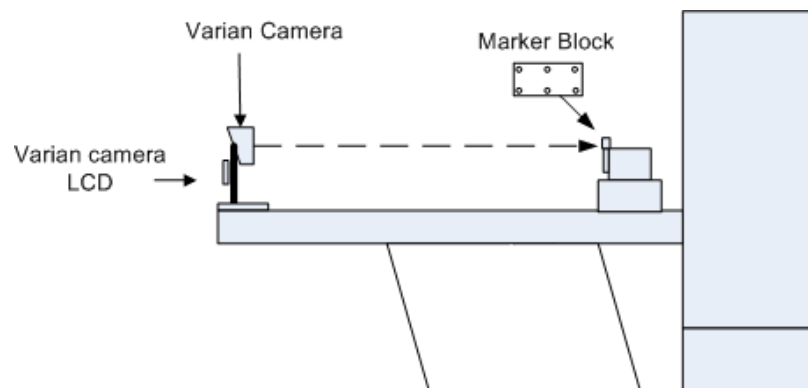


FIGURE 5-3: CAMERA AND PHANTOM SETUP

Note:

The camera is very sensitive. The marker block should face the camera and not tilted at an angle that exceeds 25 degrees, with relationship to the camera face. Minor adjustments should be made to ensure the 6 dots clearly show up in the Varian Camera LCD display window.

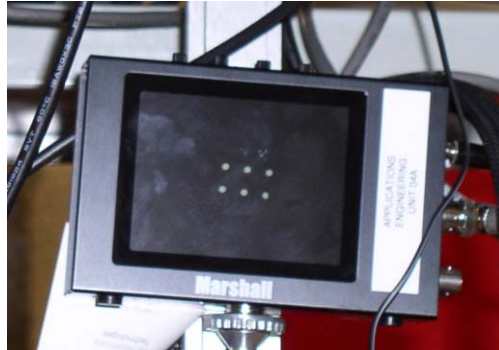


FIGURE 5-4: CAMERA DOTS IN LCD FOV

10. Turn off the Breathing Phantom. (It will be turned on again later).

5-2-3 Respiratory Gating Signal Function Check

1. Connect the RPM to Gantry Cable (5199717) to the Varian I/F box Sub-D-J4. Verify that the “X-Ray On” indicator on the Varian I/F box is OFF.
2. Launch the application (RPM Respiratory Gating System) on the RPM Computer (Windows XP or Windows 2000).
3. Enter Username: (This varies site to site. Consult with site personnel).
4. Username: “**VARIAN**” (ALL CAPITAL LETTERS) (Default)
5. Enter the password for Windows. (This varies site to site. Consult with site personnel).
6. Password: “**VARIAN**” (ALL CAPITAL LETTERS) (Default)
7. Select the RPM Gating System Icon to launch the program. The RPM Respiratory System Gating Main Window will appear.
8. The Daily calibration check window will open. Select: **Yes**
9. The Breathing Phantom (Marker Block) and its 6 dots will appear in the center of the display.

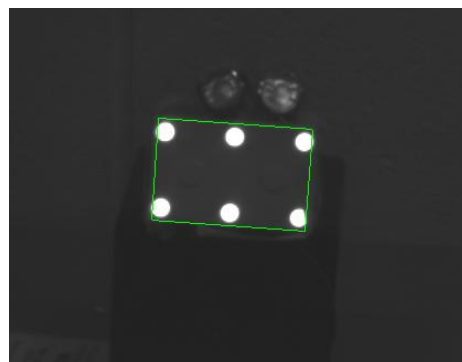


Figure 5-5 Marker Block in Center of Display ON Varian PC

10. On the RPM Gating Calibration Wizard window, select: **Continue**.

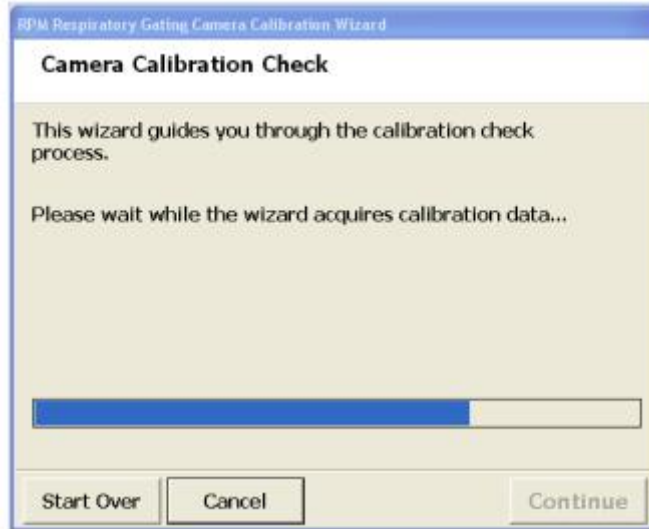


FIGURE 5-6: PROGRESS BAR

11. To proceed:
 - a. If the Tracking Camera does not required calibration continue at step 12.
 - b. If the Tracking camera requires calibration, a message will appear:
 - i. Start Calibration Now? Select: **Yes**
 - ii. The Single Step camera Calibration wizard window will appear. Enter the amount of distance you raised/lowered the phantom to place it at ISO. (Approximate height in centimeters).
 - iii. Select: **start** to calibrate the camera.
 - iv. Select: **Finish**
12. On the Patient List Window select: **New Patient** (Refer to Figure 5-7)
 - d. Enter: **[GE Service 1]** Patient ID
 - e. Enter: **[GE]** Last name
 - f. Enter: **[GE Service]** First Name
 - g. Enter: **[Check]** Middle Name
 - h. Select: **OK**
13. From the Patient List Window scroll to the patient ID just created: **[GEService1]**

Note: ID must be unique. Name field information may be defined as desired. The values shown are suggested defaults.

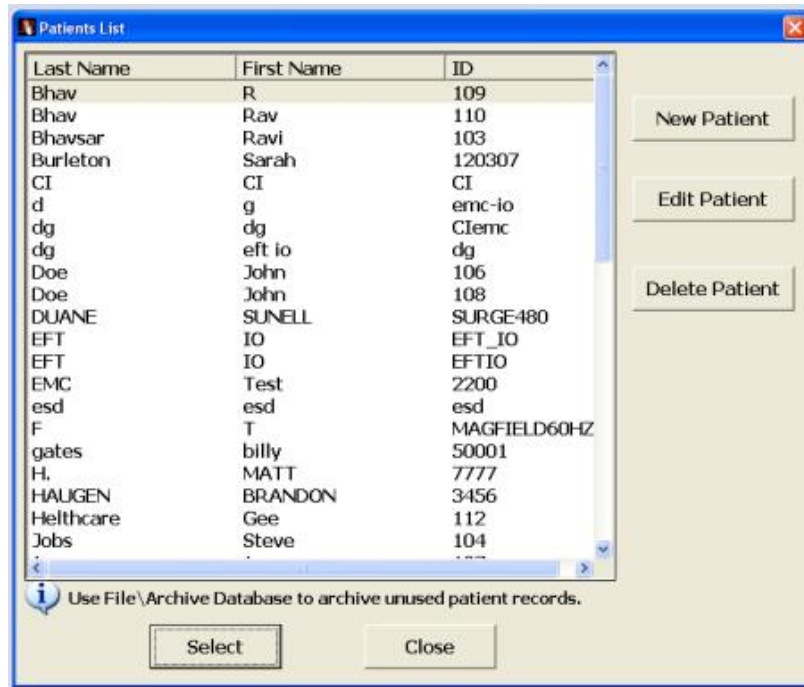


FIGURE 5-7: PATIENT LIST WINDOW

14. Select: **Select** button.
15. A “New Treatment Field Window” will appear:
 - i. Select an existing treatment field from the list. [**Breast Medial**] (Default)
 - j. Select: **OK**
 - k. A Reference Session Window will appear:
 - i. **Select: Yes** (Create Reference Session). The Main RPM Window will now appear.
16. Select: **Auto Scale** On the main window. (If not checked)
17. Select: **Session Options**
18. Verify Options setting on Gating Tab:
 - a. Select: **Session Options** and verify “Normal Breathing Predictive Filter Threshold parameter is set to **20**
19. Verify Audio settings on the Audio Tab:
 - a. Under “Automatic Audio Instructions Window:
 - i. Set “Automatic Audio instructions” to **Enable**
 - ii. Set Inhale and Exhale Periods to: **(Automatically) tied to sensed intervals**. (No change to Inhale and Exhale periods. They remain at a value of 0.0)
20. Select: **OK** to accept the values.
21. Turn on the Breathing Phantom. (Start the Marker Block (Dots) moving up and down in the camera FOV).
22. From the Navigation bar, select: **Record** (The display will start mapping the motion)
23. The Enable gating Button becomes active. Select: **Enable Gating** Button from the navigation bar to start simulated triggers.
24. Verify that the Green “Trigger” Indicator on Varian I/F Box flashes slowly.
25. At the Gating Options board, verify that the Green “Resp” indicator on the Gating Options board is flashing slowly.
26. Select: **Stop**
27. Select: **Cancel** (Do not save session data)
28. Select: **File**
29. Select: **Exit**
30. Select: **NO** (Do not save motion data)
31. Turn off the Breathing Phantom.
32. Proceed to section 5-2-4- X-Ray-On Signal Functional Check

5-2-4 X-Ray-On Signal Functional Test

1. With the CT or PET system software (Applications) up and running, verify that the yellow "Pwr" LED is on at the Gating Options Board in the scanner.
2. Make sure that cable 5199717 is connected to the Varian I/F Box (9-pin Sub-D-J4).
3. Make sure the other end of cable 5199717 is connected to the Respiratory Gating port at the scanner.
4. Enter Patient ID: **[Service1]**
5. Enter Patient Name: **RPM Check**
 - a. Select: **(GE)** (Anatomical Selector) prescribe/select a Scout Scan **[PTCT_ET_2D]** or equivalent to initiate a scan ("X-Ray on").
 - b. Establish Landmark (For Pet systems use CT Base Position)
 - c. Place the Headholder on the cradle
 - d. Place a phantom on the Headholder.
 - e. Press: **Alignment Light button** (Turn On the laser Alignment Lights)
 - f. Move the phantom into the Laser alignment lights. (Actual alignment light location on the phantom is not critical).
 - g. Press: **Landmark button** (Enable Landmark).
 - h. Press: **Alignment Light button** (Turn OFF the laser Alignment Lights)
 - i. At the Scanner Display, enter a scan Length for Scout and Acquisition.
 - i. Start: **S0.00** End: **I900.00**
 - j. Verify "Gating Off" Button is **OFF**. (This is a scan setup parameter on scanner display and is not used with the Respiratory hardware Function Check).
6. Verify at the Varian I/F box that the green Power indicator is ON).
7. At the scanner Display select: **Confirm**
8. Select: **Move to scan**.
9. **WHILE LOOKING AT THE VARIAN I/F BOX "X-Ray On" indicator, PRESS: Start Scan**
10. Verify red "X-Ray-On" indicator came on for the duration of the scan.
11. Select: **End Exam**
12. To proceed:
 - a. If the "X-Ray-On" light did NOT light up during scan. Troubleshoot the problem.
 - b. If the "X-Ray-On" Light was seen proceed to step 13.
13. At the Gantry, move the cradle out to a neutral position.
14. Remove the Phantom.
15. Remove the Headholder
16. Turn the Breathing Phantom OFF.
17. Turn the Varian I/F box OFF.
18. Turn the Camera OFF
19. Shut down the RPM Software
20. Select: **File**
21. Select **Exit**
22. Shutdown Windows
23. Select: **Start**
24. Select: **Shutdown**
25. Turn the monitor **OFF**
26. Turn off RPM Computer power.
27. (If necessary) disconnect any cables.
28. This completes the Respiratory Gating Hardware Function Test.
29. Restore any system covers removed.

Note:

Further testing of the applications associated with the Advantage (4D) Respiratory Option may proceed at this time by qualified Applications personnel.

APPENDIX A - ADVANTAGE 4D GENERAL REFERENCE

Note:

The GE Healthcare Field Engineer should not install or configure the RPM Acquisition Software the first time it is installed. This is the responsibility of the Varian Representative. This section is for "General reference only". Refer to the Varian Installation Manual for details and exact procedures for the operation of this unit. To proceed with the Varian RPM system checkout a Varian representative must complete the RPM unit and camera installation in accordance with the Varian installation manuals supplied by Varian.

The RPM acquisition software procedures can be found in the VARIAN Respiratory Gating System Version 1.7 (and forward) Installation Reference Guide. This document should accompany the RPM system. If you cannot find this manual contact Varian Support. (See Contacts).

Contacts

If you have failures or concerns with the outcomes from previous instructions that you cannot resolve with normal analysis and troubleshooting refer to the Operators manual and the VARIAN Respiratory Gating System Version 1.7 (and forward) Installation Reference Guide, or call Varian Support:

- Varian: 1-888-VARIAN5

APPENDIX B - ALTERNATE BREATHING PHANTOM AND VARIAN CAMERA SETUP

B-1 Alternate Breathing Phantom and Varian Camera Setup

If the Flat table Top Mount or other Mount kits are not available, this setup can be used to complete the functional test of the respiratory gating hardware.

1. Setup the Varian Camera so it can be pointed directly at the Breathing Phantom and Marker Block (with dots).

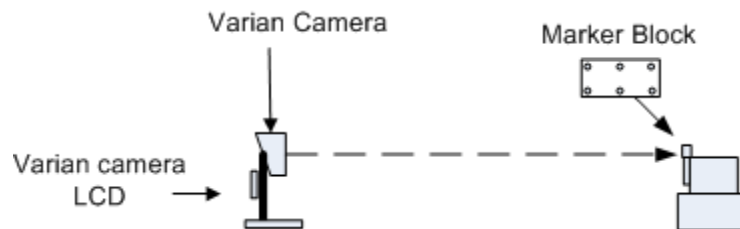


Figure B-1: Alternate Camera/Breathing Phantom setup

2. Verify camera power is ON and the RPM cable and equipment is connected and Varian RPM Computer is powered up with Microsoft Windows running.
3. Tape the Marker block to the plastic tab on the Breathing Phantom. (Refer to figure B-1). The Marker Block should be taped so the 6 "Dots" can be setup to face the Varian Camera and the rotation of the wheel on the Phantom is free to turn, which will move the plastic tab and Marker Block during its rotation. (The camera must "See" these 6 dots moving up and down).
4. If necessary, install two "D" Cell batteries into the Breathing Phantom.

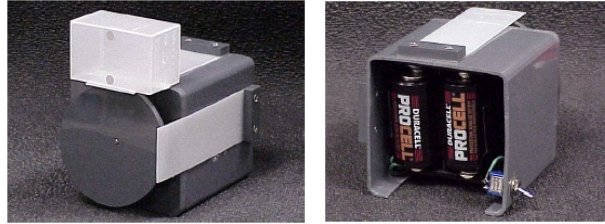


FIGURE B-2 BREATHING PHANTOM AND MARKER BLOCK SETUP

5. Place the Breathing Phantom and Marker Block (Dots) directly in front of the Varian camera approximately 5 feet (1.5m) and adjust its position to align the Marker Block (dots) so they appear in the center of the Camera LCD Field Of View (FOV). (Refer to figure B-3).
6. Turn the unit it on. It will move the Marker Block with the dots up and down.
7. Verify that the dots appear in the center of the Camera LCD and do not move outside of the LCD FOV. Adjust the Breathing Phantom or camera if required.

Note:

The camera is very sensitive. The marker block should face the camera and not tilted at an angle that exceeds 25 degrees, with relationship to the camera face. Minor adjustments should be made to ensure the 6 dots clearly show up in the Varian Camera LCD display window.

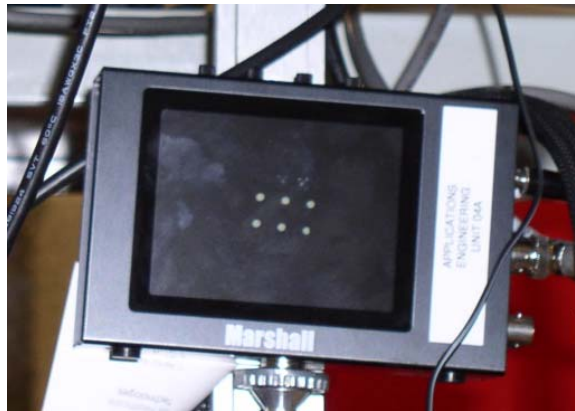


FIGURE B-3: CAMERA DOTS IN LCD FOV

8. Turn off the Breathing Phantom. (It will be turned on again later).
9. Return to Section 5-2-3 Respiratory Gating Signal Function Check.

B-2 Troubleshooting:

1. If using cable 2371402 make sure the Orange end is plugged into the Cardiac port and the Blue end is plugged into the Respiratory port. If connected in reverse you will not get Respiratory triggers.
2. To proceed:
 - a. If Section 5-2-1 fails the problem is with the Varian RPM hardware. Troubleshoot the Varian Hardware only. Troubleshoot the Varian hardware problem or contact Varian.
 - b. If Section 5-2-2 fails the problem is with the Varian RPM hardware OR Software. Troubleshoot the Varian Hardware or Software or contact Varian
 - c. If Section 5-2-3 fails the problem is with the GE hardware (cabling or GOB board) or software on the scanner. Refer to the Functional Block Diagrams & Schematic manual for detailed troubleshooting information.

APPENDIX C - CABLE /HARDWARE MATRIX

C-1 PET DST

There have been several changes in the cables within the option kit over time. This matrix is intended to provide historical information, which may be of use for those systems that installed these option kits at a later time and hardware compatibility is in question. The older versions of these cables are functionally equivalent to the current version.

Gating Options Boards Compatibility:

- The PET GOB (Gating Options Board) part number is 2334380. This board must be used on PET DST systems. The CT GOB (2280889) is not a functional equivalent for the PET Gating Options Board and PET gating applications. If the PET DST system has a CT GOB and associated cables, escalate the issue and consult with Field Leadership/PET Systems Engineering to obtain the necessary replacement upgrade parts.

Earlier cable versions:

- Did not have grounded shields, which meant they were more susceptible to electrical noise. This resulted in a few sites (CT only) experiencing occasional intermittent loss of triggers. Newer versions are designed to be less susceptible to electrical noise interference.
- Were not verified RoHS. (Materials Compliance standard). Newer versions of the cables were introduced to meet these requirements.

If the system is already configured with the older cables, there is no need to replace them. They will function as designed.

PET DST Gating System Cables

Item	Current Cable Version	Older versions	General difference
1	5124497	2345866	Functionally equal, RoHS vs Non RoHS, Shield grounded/ungrounded
2	5199332	2286931	Functionally equal, RoHS vs Non RoHS Shield grounded/ungrounded
3	5199717	2369602	Functionally equal, RoHS vs Non RoHS Shield grounded/ungrounded
4	5198566	2252472	Functionally equal, RoHS vs Non RoHS Shield grounded/ungrounded
5	5212250	5174616	Functionally equal, RoHS vs Non RoHS Shield grounded/ungrounded

C-2 CT Lightspeed

CT Lightspeed Gating System Cables

Item	Current Cable Version	Older versions	General difference
1	5124497	2345866	Functionally equal, RoHS vs Non RoHS, Shield grounded/ungrounded
2	5199332	2371401	Functionally equal, RoHS vs Non RoHS Shield grounded/ungrounded
3	5199717	2369602	Functionally equal, RoHS vs Non RoHS Shield grounded/ungrounded
4	5198566	2252472	Functionally equal, RoHS vs Non RoHS Shield grounded/ungrounded
5	5212250	5174616	Functionally equal, RoHS vs Non RoHS Shield grounded/ungrounded

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