GE Healthcare

Technical Publication

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REVISION 14

GE Healthcare
LOGIQ™ 7 Service Manual

Important Precautions

- **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.**

WARNING

- **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.**

- **CE MANUEL DE MAINTENANCE N'EST DISPONIBLE QU'EN ANGLAIS.**
- **SI LE PRESTATAIRE DE SERVICES DU CLIENT A BESOIN DE CE MANUEL DANS UNE AUTRE LANGUE QUE L'ANGLAIS, IL INCOMBE AU CLIENT DE LE FAIRE TRADUIRE.**

AVERTISSEMENT

- **NE PAS TENTER D'INTERVENTION SUR LES éQUIPEMENTS TANT QUE LE MANUEL 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.**

- **DIESES KUNDENDIENST-HANDBUCH EXISTIERT NUR IN ENGLISCHER SPRACHE.**
- **FALLS EIN FREMDER KUNDENDIENST EINE ANDERE SPRACHE BENö TIGT, IST ES AUFGABE DES KUNDEN, FüR EINE ENTSPRECHENDE ÜBERSETZUNG ZU SORGEN.**

WARNUNG

- **WARTEN SIE DIESES GERÄT NUR, WENN SIE DIE ENTSPRECHENDEN ANWEISUNGEN IM KUNDENDIENST-HANDBUCH GELESEN HABEN UND NACHVOLLZIEHEN KÖNNEN.**
- **WIRD DIESE WARNUNG NICHT BEACHTET, SO KANN ES ZU VERLETZUNGEN DES KUNDENDIENSTTECHNIKERS, DES BEDIENERS ODER DES PATIENTEN DURCH ELEKTRISCHE SCHLäGE, MECHANISCHE ODER SONSTIGE GEFAHREN KOMMEN.**

AVISO

- ESTE MANUAL DE SERVICIO SÓLO ESTÁ DISPONIBLE EN INGLÉS.
- SI ALGÚN PROVEEDOR DE SERVICIOS AJENO A GEMS SOLICITA UN IDIOMA QUE NO SEA EL INGLÉS, LA TRADUCCIÓN ES RESPONSABILIDAD DEL CLIENTE.
- 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 USUARIO O EL PACIENTE SUFRAN LESIONES PROVOCADAS POR DESCARGAS ELÉCTRICAS, PROBLEMAS MECÁNICOS O PELIGROS DE OTRA NATURALEZA.

ATENÇÃO

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

AVVERTENZA

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

HOIATUS

- KÄESOLEV 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

- **TÄMÄ HUOLTO-OHJE ON SAATAVILLA VAIN ENGLANNIKSI.**
- **JOS ASIAKKAAN PALVELUNTARJOAJA VAATII MUUTA KUIN ENGLANNINKIELISTä MATERIAALIA, TARVITTAVAN Kä ä NNö KSEN HANKKIMINEN ON ASIAKKAAN VASTUULLA.**
- **ä Lä YRITä KORJATA LAITTEISTOA ENNEN KUIN OLET VARMASTI LUKENUT JA YMMä RTä NYT Tä Mä N HUOLTO-OHJEEN.**
- **MIKä LI Tä Tä VAROITUSTA EI NOUDATETA, SEURAUKSENA VOI OLLA PALVELUNTARJOAJAN, LAITTEISTON Kä YTTä Jä N TAI POTILAAN VAHINGOITTUMINEN Sä HKö ISKUN, MEKAANISEN VIAN TAI MUUN VAARATILANTEEN VUOKSI.**

ΠΡΟΕΙΔΟΠΟΙΗΣΗ

- **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 ΗΛΕΚΤΡΟΠΛΗΞΙΑ, ΜΗΧΑΝΙΚΟΥΣ Ή ΑΛΛΟΥΣ ΚΙΝΔΥΝΟΥΣ.**

FIGYELMEZTETÉS

- **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 ELKEZDENI 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.**

VIÐVÖRUN

- **ÞESSI ÞJÓNUSTUHANDBÓK ER EINGÖNGU FÁANLEG Á ENSKU.**
- **EF ÞJÓNUSTUAÐILI VIÐSKIPTAMANNS ÞARFNAST ANNARS TUNGUMÁLS EN ENSKU, ER ÞAÐ Á ÁBYRGÐ VIÐSKIPTAMANNS AÐ ÚTVEGA ÞÝÐINGU.**
- **REYNIÐ EKKI AÐ ÞJÓNUSTA TÆKIÐ NEMA EFTIR AÐ HAFA SKOÐAÐ OG SKILIÐ ÞESSA ÞJÓNUSTUHANDBÓK.**
- **EF EKKI ER FARIÐ AÐ ÞESSARI VIÐVÖRUN GETUR ÞAÐ VALDIÐ MEIÐSLUM ÞJÓNUSTUVEITANDA, STJÓRNANDA EÐA SJÚKLINGS VEGNA RAFLOSTS, VÉLRÆNNAR EÐA ANNARRAR HÆTTU.**

VÝSTRAHA

- TENTO SERVISNÍ NÁVOD EXISTUJE POUZE V ANGLICKÉM JAZYCE.
- V PŘÍPADĚ, ŽE POSKYTOVATEL SLUŽEB ZÁKAZNÍKŮM POTŘEBUJE NÁVOD V JINÉM JAZYCE, JE ZAJIŠTĚNÍ PŘEKLADU DO ODPOVÍDAJÍCÍHO JAZYKA ÚKOLEM ZÁKAZNÍKA.
- NEPROVÁDĚJTE ÚDRŽBU TOHOTO ZAŘÍZENÍ, ANIŽ BYSTE SI PŘEČETLI TENTO SERVISNÍ NÁVOD A POCHOPILI JEHO OBSAH.
- V PŘÍPADĚ NEDODRŽOVÁNÍ TÉTO VÝSTRAHY MŮŽE DOJÍT ÚRAZU ELEKTRICKÁM PROUDEM PRACOVNÍKA POSKYTOVATELE SLUŽEB, OBSLUŽNÉHO PERSONÁLU NEBO PACIENTŮ VLIVEM ELEKTRICKÉHO PROUDU, RESPEKTIVE VLIVEM K RIZIKU MECHANICKÉHO POŠKOZENÍ NEBO JINÉMU RIZIKU.

ADVARSEL

- 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 ER BLEVET LÆST OG FORSTÅET.
- MANGLENDE OVERHOLDELSE AF DENNE ADVARSEL KAN MEDFØRE SKADE PÅ GRUND AF ELEKTRISK, MEKANISK ELLER ANDEN FARE FOR TEKNIKEREN, OPERATØREN ELLER PATIENTEN.

WAARSCHUWING

- 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.

BRÎDINÂJUMS

- ðÎ APKALPES ROKASGRÂMATA IR PIEEJAMA TIKAI ANGÏU VALODÂ.
- JA KLIENTA APKALPES SNIEDZÇJAM NEPIECIEÐAMA INFORMÂCIJA CITÂ VALODÂ, NEVIS ANGÏU, KLIENTA PIENÂKUMS IR NODROÐINÂT TULKOÐANU.
- NEVEICIET APRÎKOJUMA APKALPI BEZ APKALPES ROKASGRÂMATAS IZLASÎÐANAS UN SAPRAÐANAS.
- ÐÎ BRÎDINÂJUMA NEIEVÇROÐANA VAR RADÎT ELEKTRISKÂS STRÂVAS TRIECIENA, MEHÂNISKU VAI CITU RISKU IZRAISÎTU TRAUMU APKALPES SNIEDZÇJAM, OPERATORAM VAI PACIENTAM.

ÁSPËJIMAS

- **ÐIS EKSPLOATAVIMO VADOVAS YRA IÐLEISTAS TIK ANGLØ KALBA.**
- **JEI KLIENTO PASLAUGØ TEIKËJUI REIKIA VADOVO KITA KALBA – NE ANGLØ, VERTIMU PASIRÛPINTI TURI KLIENTAS.**
- **NEMËGINKITE ATLIKTI ÁRANGOS TECHNINËS PRIEÞIÛROS DARBØ, NEBENT VADOVAUTUMËTËS ÐIUO EKSPLOATAVIMO VADOVU IR JÁ SUPRASTUMËTE**
- **NEPAISANT ÐIO PERSPËJIMO, PASLAUGØ TEIKËJAS, OPERATORIUS AR PACIENTAS GALI BÛTI SUÞEISTAS DËL ELEKTROS SMÛGIO, MECHANINIØ AR KITØ PAVOJØ.**

ADVARSEL

- **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

- **NINIEJSZY PODRĘCZNIK SERWISOWY DOSTĘPNY JEST JEDYNIE W JĘZYKU ANGIELSKIM.**
- **JEśLI FIRMA śWIADCZĄCA KLIENTOWI USłUGI SERWISOWE WYMAGA UDOSTęPNIENIA PODRęCZNIKA W JęZYKU INNYM NIŻ ANGIELSKI, OBOWIĄZEK ZAPEWNIENIA STOSOWNEGO TłUMACZENIA SPOCZYWA NA KLIENCIE.**
- **NIE PRóBOWAć SERWISOWAć NINIEJSZEGO SPRZęTU BEZ UPRZEDNIEGO ZAPOZNANIA SIę Z PODRęCZNIKIEM SERWISOWYM.**
- **NIEZASTOSOWANIE SIę DO TEGO OSTRZEŻENIA MOżE GROZIć OBRAŻENIAMI CIAŁA SERWISANTA, OPERATORA LUB PACJENTA W WYNIKU PORAŻENIA PRĄDEM, URAZU MECHANICZNEGO LUB INNEGO RODZAJU ZAGROŻEń.**

ATENȚIE

- **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 □I 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.**

- Данное руководство по обслуживанию ПРЕДОСТАВЛЯЕТСЯ только на английском Языке.
- Если сервисноМУ ПЕРСОНАЛУ клиента необходимо руководство не на английском ЯЗЫКЕ, клиенту следует самостоЯтельно ОБЕСПЕЧИТЬ перевод.

OCTOPOЖHO!

- ПЕРЕД ОБСЛУЖИВАНИЕМ ОБОРУДОВАНИЯ ОБЯЗАТЕЛЬНО ОБРАТИТЕСЬ К ДАННОМУ РУКОВОДСТВУ И ПОЙМИТЕ ИЗЛОЖЕННЫЕ В НЕМ СВЕДЕНИЯ.
- НЕСОБЛЮДЕНИЕ УКАЗАННЫХ ТРЕБОВАНИЙ МОЖЕТ ПРИВЕСТИ К ТОМУ, ЧТО СПЕЦИАЛИСТ ПО ТЕХОБСЛУЖИВАНИЮ, ОПЕРАТОР ИЛИ ПАЦИЕНТ ПОЛУЧАТ УДАР ЗЛЕКТРИЧЕСКИМ ТОКОМ, МЕХАНИЧЕСКУЮ ТРАВМУ ИЛИ ДРУГОЕ ПОВРЕЖДЕНИЕ.

- TÁTO SERVISNÁ PRÍRUČKA JE K DISPOZíCII LEN V ANGLIČTINE.
- AK ZÁKAZNÍKOV POSKYTOVATEĽ SLUŽIEB VYŽADUJE INÝ JAZYK AKO ANGLIČTINU, POSKYTNUTIE PREKLADATEĽSKÝCH SLUŽIEB JE ZODPOVEDNOSŤOU ZÁKAZNÍKA.

UPOZORNENIE

- NEPOKÚŠAJTE SA VYKONÁVAŤ SERVIS ZARIADENIA SKÔR, AKO SI NEPREČÍTATE SERVISNÚ PRÍRUČKU A NEPOROZUMIETE JEJ.
- ZANEDBANIE TOHTO UPOZORNENIA Môže VYÚSTIŤ DO ZRANENIA POSKYTOVATEĽA SLUŽIEB, OBSLUHUJúCEJ OSOBY ALEBO PACIENTA ELEKTRICKýM PRúDOM, PRÍPADNE DO MECHANICKéHO ALEBO INéHO NEBEZPEčENSTVA.

- 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.

VARNING

- 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 FARORELLER ANDRA FAROR.

- BU SERVS KILAVUZU YALNIZCA NGLZCE OLARAK SAĞLANMITIR.
- EĞER MÜTERTEKNSYENKILAVUZUN NGLZCE DINDAKBR DLDE OLMASINI STERSE, KILAVUZU TERCÜME ETTRMEK MÜTERNN SORUMLULUĞUNDADIR.

DKKAT

- SERVS KILAVUZUNU OKUYUP ANLAMADAN EKPMANLARA MÜDAHALE ETMEYNZ.
- BU UYARININ GÖZ ARDI EDLMES, ELEKTRK ÇARPMASI YA DA MEKANK VEYA DĞER TÜRDEN KAZALAR SONUCUNDA TEKNSYENN, OPERATÖRÜN YA DA HASTANIN YARALANMASINA YOL AÇABLR.

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

警告

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下さい。
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。

本维修手册仅存有英文本。
非 GEMS 公司的维修员要求非英文本的维修手册时，客户需自行负责翻译。

注意:

未详细阅读和完全了解本手册之前，不得进行维修。忽略本注意事项会对维修员，操作员或病人造成触电，机械伤害或其他伤害。

경고

- 본 서비 지침는 영뫼 만 이뭏실 수 있습다 .
- 고맥 서비 제뀽가 영어 이외 언뭘 요핲 경우, 번역 서비를 제쿵는 것은 고맥 책입대 .
- 본 서비 지침를 참했고 이해지 않는 한은 해당 장뭘 수혜폔 시됴지 마십오 .
- 이 경뗴 유홰지 않떧 전기쇼크, 기쳼의 혹은 다른 위헴부터 서비 제뀽 , 운행 혹은 환떼게 위뭘 가할 수 있습다 .

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 GE 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.

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. Other connections between pieces of electrical equipment, calibrations and testing shall be performed by qualified GE Medical Systems personnel. 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.

OMISSIONS & ERRORS

If there are any omissions, errors or suggestions for improving this documentation, please contact the GE Medical Systems Global Documentation Group with specific information listing the system type, manual title, part number, revision number, page number and suggestion details. Mail the information to : Service Documentation,9900 Innovation Drive (RP-2123), Wauwatosa, WI 53226, USA.

GE Medical Systems employees should use the iTrak System to report all documentation errors or omissions.

LEGAL NOTES

PROPRIETARY TO GE MEDICAL SYSTEMS

TRADEMARKS

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Revision History

Revision	Date	Reason for change
0	September 1, 2001	Initial Release
1	November 20, 2001	Revision 1
2	February 22, 2002	Electrical Requirements (sec2), STCW and TXCW theory, Monitor video specification (sec5), TRAP2 Dip SW, QCON Dip SW, LV2 unit released,Trackball cleaning (sec 6), New diagnostics (sec 7), New LFC procedure added (sec8), New part number (sec9)
3	November 11, 2002	Probe precaution (sec1), Optional peripherals (sec3), Dongles (sec5), Trackball cleaning, Jumper and Dip switch setting (sec6), Diagnostics (sec7), PC box replacement, software loading for R2 (sec8), New part number (sec9),
4	April 2, 2003	Monitor and LCD Adjustment, DDBF and Trap settings (sec6), Keyboard FRU replacement (sec8), Renewal Parts (sec9)
5	October 22, 2003	Added: New Printer and probe (Sec. 3), HDD Jumper setting (sec 6), New PC box and DGVIC replacement, MOD setting, Service dongle notice at Ghost, R3 software, DVD, TxCW connection notice (sec 8), New spare parts (Sec. 9)
6	September 17, 2004	BT04
7	March 3, 2005	For L7Pro: Renewal Parts (sec9), Component Replacement (sec8)
8	September 30, 2005	BT06
9	June 26, 2006	BT06-2 released
10	September 22, 2006	Minor correction (sec 8), V65x (Sec1, Sec3, Sec5, Sec8, Sec9)
11	March 5, 2007	BT07 Supported
12	May 28, 2007	Setting Report Printer added (sec 8)
13	Oct.1, 2007	R7.5.x supported, other modifications (all sections)
14	July 16, 2008	BT09 newly released

List of Effected Pages

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Chapter 1
Introduction

Section 1-1
Overview

1-1-1 Purpose of Chapter 1

This Chapter describes important issues related to safety servicing this ultrasound machine. The service provider must read and understand all the information presented here before installing or servicing a unit.

1-1-2 Chapter Contents

Table 1-1 Contents in Chapter 1

1-1-3 Purpose of Service Manual

This manual provides service information on the LOGIQ™ 7 Ultrasound Scanning System. It contains the following chapters:

1.) **Chapter 1, Introduction:** Contains a content summary and warnings.
2.) **Chapter 2, Pre-Installation:** Contains any pre-installation requirements for the LOGIQ™ 7.
3.) **Chapter 3, Installation:** Contains the LOGIQ™ 7 installation procedure with installation checklist.
4.) **Chapter 4, Functional Checks:** Contains functional checks that must be performed as part of the installation, or as required during servicing and periodic maintenance.
5.) **Chapter 5 Theory**: Contains block diagrams and functional explanations of the LOGIQ™ 7 electronics.
6.) **Chapter 6, Service Adjustments:** Contains instructions on how to make any available adjustments to the LOGIQ™ 7.
7.) **Chapter 7, Diagnostics/Trouble Shooting:** Provides procedures for running and diagnostic or related routines for the LOGIQ™ 7.
8.) **Chapter 8, Replacement Procedures:** Provides disassembly procedures and reassembly procedures for all changeable FRU.
9.) **Chapter 9, Renewal Parts:** Contains a complete list of replacement parts for the LOGIQ™ 7.
10.) **Chapter 10, Periodic Maintenance:** Provides periodic maintenance procedures for the LOGIQ™ 7.

1-1-4 Typical Users of the Basic Service Manual

- Service Personnel (installation, maintenance, etc.).
- Hospital's Service Personnel
- Architects (Some parts of Chapter 2 - Pre-Installation)

1-1-5 LOGIQ™ 7 Models Covered by this Manual

Table 1-2 LOGIQ™ 7 Model Designations

Part Number	Description	Reference	Remarks
2287317	LOGIQ™ 7 100V / NTSC Console and Peripherals	BT01	
2304806	LOGIQ™ 7 120V / NTSC Console and Peripherals	BT01	
2304807	LOGIQ™ 7 220V / PAL Console and Peripherals	BT01	
2304808	LOGIQ™ 7 220V / NTSC Console and Peripherals	BT01	
2354857	LOGIQ™ 7 100V / NTSC Console and Peripherals (Style B/Ver2)	BT02	
2354858	LOGIQ™ 7 120V / NTSC Console and Peripherals (Style B/Ver2)	BT02	
2354859	LOGIQ™ 7 220V / PAL Console and Peripherals (Style B/Ver2)	BT02	
2354860	LOGIQ™ 7 220V / NTSC Console and Peripherals (Style B/Ver2)	BT02	
2355589	LOGIQ™ 7 100V / NTSC Console and Peripherals (Style B/Ver2)	BT02	
2389221	LOGIQ™ 7 100V / NTSC Console and Peripherals (Style C/Ver3)	BT03	
2389220	LOGIQ™ 7 120V / NTSC Console and Peripherals (Style C/Ver3)	BT03	
2389219	LOGIQ™ 7 220V / PAL Console and Peripherals (Style C/Ver3)	BT03	
2389218	LOGIQ™ 7 220V / NTSC Console and Peripherals (Style C/Ver3)	BT03	
2389217	LOGIQ™ 7 100V / NTSC Console and Peripherals (Style C/Ver3)	BT03	
5118055	LOGIQ™ 7 100V / NTSC Console and Peripherals (Style D/Ver4)	BT04	
5118056	LOGIQ™ 7 120V / NTSC Console and Peripherals (Style D/Ver4)	BT04	
5118057	LOGIQ™ 7 220V / PAL Console and Peripherals (Style D/Ver4)	BT04	
5118058	LOGIQ™ 7 220V / NTSC Console and Peripherals (Style D/Ver4)	BT04	
5118059	LOGIQ™ 7 100V / NTSC Console and Peripherals (Style D/Ver4)	BT04	
5148047	LOGIQ™ 7 100V / NTSC Console and Peripherals, CRT monitor (Style E)	BT06 CRT	
5148048	LOGIQ™ 7 120V / NTSC Console and Peripherals, CRT monitor (Style E)	BT06 CRT	
5148049	LOGIQ™ 7 220V / PAL Console and Peripherals, CRT monitor (Style E)	BT06 CRT	
5148050	LOGIQ™ 7 220V / NTSC Console and Peripherals, CRT monitor (Style E)	BT06 CRT	
5148052	LOGIQ™ 7 100V / NTSC Console and Peripherals, LCD monitor (Style E)	BT06 LCD	
5148053	LOGIQ™ 7 120V / NTSC Console and Peripherals, LCD monitor (Style E)	BT06 LCD	
5148054	LOGIQ™ 7 220V / PAL Console and Peripherals, LCD monitor (Style E)	BT06 LCD	
5148055	LOGIQ™ 7 220V / NTSC Console and Peripherals, LCD monitor (Style E)	BT06 LCD	
5148057	LOGIQ™ 7PRO 100V / NTSC Console and Peripherals (Style E)	BT06 PRO	

Table 1-2 LOGIQ™ 7 Model Designations

Part Number	Description	Reference	Remarks
5148058	LOGIQ™ 7PRO 120V / NTSC Console and Peripherals (Style E)	BT06 PRO	
5148059	LOGIQ™ 7PRO 220V / PAL Console and Peripherals (Style E)	BT06 PRO	
5148060	LOGIQ™ 7 220V / NTSC Console and Peripherals (Style E)	BT06 PRO	
5176232	LOGIQ™ 7 100V / NTSC Console and Peripherals, CRT monitor	BT06-2 CRT	BT06 New Hardware - requires software R6.2.x or later
5176567	LOGIQ™ 7 120V / NTSC Console and Peripherals, CRT monitor	BT06-2 CRT	
5176948	LOGIQ™ 7 220V / PAL Console and Peripherals, CRT monitor	BT06-2 CRT	
5176508	LOGIQ™ 7 220V / NTSC Console and Peripherals, CRT monitor	BT06-2 CRT	
5176713	LOGIQ™ 7 100V / NTSC Console and Peripherals, LCD monitor	BT06-2 LCD	
5176888	LOGIQ™ 7 120V / NTSC Console and Peripherals, LCD monitor	BT06-2 LCD	
5176300	LOGIQ™ 7 220V / PAL Console and Peripherals, LCD monitor	BT06-2 LCD	
5176380	LOGIQ™ 7 220V / NTSC Console and Peripherals, LCD monitor	BT06-2 LCD	
5176619	LOGIQ™ 7PRO 100V / NTSC Console and Peripherals	BT06-2 PRO	
5176454	LOGIQ™ 7PRO 120V / NTSC Console and Peripherals	BT06-2 PRO	
5176439	LOGIQ™ 7PRO 220V / PAL Console and Peripherals	BT06-2 PRO	
5176774	LOGIQ™ 7 220V / NTSC Console and Peripherals	BT06-2 PRO	
5179605	LOGIQ™ 7PRO 220V / PAL Console and Peripherals, LCD monitor	BT06-2 CONSIP	SOI (BT06-2 PRO with LCD)
5183269	LOGIQ™ 7 100V / NTSC Console and Peripherals, CRT monitor	V65x CRT	
5183237	LOGIQ™ 7 120V / NTSC Console and Peripherals, CRT monitor	V65x CRT	
5183396	LOGIQ™ 7 220V / PAL Console and Peripherals, CRT monitor	V65x CRT	
5183304	LOGIQ™ 7 220V / NTSC Console and Peripherals, CRT monitor	V65x CRT	
5183330	LOGIQ™ 7 100V / NTSC Console and Peripherals, LCD monitor	V65x LCD	
5183410	LOGIQ™ 7 120V / NTSC Console and Peripherals, LCD monitor	V65x LCD	
5183412	LOGIQ™ 7 220V / PAL Console and Peripherals, LCD monitor	V65x LCD	
5183190	LOGIQ™ 7 220V / NTSC Console and Peripherals, LCD monitor	V65x LCD	
5183352	LOGIQ™ 7PRO 100V / NTSC Console and Peripherals	V65x PRO	
5183136	LOGIQ™ 7PRO 120V / NTSC Console and Peripherals	V65x PRO	
5183125	LOGIQ™ 7PRO 220V / PAL Console and Peripherals	V65x PRO	
5183515	LOGIQ™ 7PRO 220V / NTSC Console and Peripherals	V65x PRO	
5191090	LOGIQ™ 7 100V / NTSC Console and Peripherals, CRT monitor (Style H)	BT07 CRT	
5191824	LOGIQ™ 7 120V / NTSC Console and Peripherals, CRT monitor (Style H)	BT07 CRT	
5191341	LOGIQ™ 7 220V / PAL Console and Peripherals, CRT monitor (Style H)	BT07 CRT	
5191701	LOGIQ™ 7 220V / NTSC Console and Peripherals, CRT monitor (Style H)	BT07 CRT	
5191499	LOGIQ™ 7 100V / NTSC Console and Peripherals, LCD monitor (Style H)	BT07 LCD	
5191946	LOGIQ™ 7 120V / NTSC Console and Peripherals, LCD monitor (Style H)	BT07 LCD	

Table 1-2 LOGIQ™ 7 Model Designations

Part Number	Description	Reference	Remarks
5191853	LOGIQ™ 7 220V / PAL Console and Peripherals, LCD monitor (Style H)	BT07 LCD	
5191441	LOGIQ™ 7 220V / NTSC Console and Peripherals, LCD monitor (Style H)	BT07 LCD	
5191006	LOGIQ™ 7 100V / NTSC Console and Peripherals (Style H)	BT07 PRO	
5191258	LOGIQ™ 7 120V / NTSC Console and Peripherals (Style H)	BT07 PRO	
5191436	LOGIQ™ 7 220V / PAL Console and Peripherals (Style H)	BT07 PRO	
5191259	LOGIQ™ 7 220V / NTSC Console and Peripherals (Style H)	BT07 PRO	
5244924	LOGIQ™ 7 100V / NTSC Console and Peripherals, LCD monitor (Style I)	R7.5.x LCD	
5244925	LOGIQ™ 7 120V / NTSC Console and Peripherals, LCD monitor (Style I)	R7.5.x LCD	
5244926	LOGIQ™ 7 220V / PAL Console and Peripherals, LCD monitor (Style I)	R7.5.x LCD	
5244927	LOGIQ™ 7 220V / NTSC Console and Peripherals, LCD monitor (Style I)	R7.5.x LCD	
5309921	LOGIQ™ 7 LCD, 100V, 60Hz, NTSC, Japan	BT09	BEP4 Intro
5309922	LOGIQ™ 7 LCD, 120V, 60Hz, NTSC	BT09	BEP4 Intro
5309923	LOGIQ™ 7 LCD, 220V, 50Hz, PAL	BT09	BEP4 Intro
5309924	LOGIQ™ 7 LCD, 220V, 60Hz, NTSC, Asia	BT09	BEP4 Intro

1-1-6 Purpose of Operator Manual(s)

The Operator Manual(s) should be fully read and understood before operating the LOGIQ™ 7 and also kept near the unit for quick reference.

Section 1-2
Important Conventions

1-2-1 Conventions Used in Book

Model Designations.

This manual covers the LOGIQ™ 7scanners.

Icons.

Pictures, or icons, are used wherever they will reinforce the printed message. The icons, labels and conventions used on the product and in the service information are described in this chapter.

Safety Precaution Messages.

Various levels of safety precaution messages may be found on the equipment and in the service information. The different levels of concern are identified by a flag word that precedes the precautionary message. Known or potential hazards are labeled in one of three ways:

⚠ **DANGER** **DANGER IS USED TO INDICATE THE PRESENCE OF A HAZARD THAT WILL CAUSE SEVERE PERSONAL INJURY OR DEATH IF THE INSTRUCTIONS ARE IGNORED.**

⚠ **WARNING** ***WARNING IS USED TO INDICATE THE PRESENCE OF A HAZARD THAT CAN CAUSE SEVERE PERSONAL INJURY OR PROPERTY DAMAGE IF INSTRUCTIONS ARE IGNORED.***

⚠ **CAUTION** **Caution is used to indicate the presence of a hazard that will or can cause minor personal injury and property damage if instructions are ignored.**

⚠ **NOTICE** *Equipment Damage Possible*
Notice is used when a hazard is present that can cause property damage but has absolutely no personal injury risk.
Example: Disk Drive will crash.

NOTE: Notes are used to provide important information about an item or a procedure. Be sure to read the notes; the information contained in a note can often save you time or effort.

1-2-2 Standard Hazard Icons

Important Information will always be preceded by the exclamation point contained within a triangle, as seen throughout this chapter. In addition to text, several different graphical icons (symbols) may be used to make you aware of specific types of hazards that could possibly cause harm.

Some others make you aware of specific procedures that should be followed.

Table 1-3 Standard Hazard Icons

ELECTRICAL	MECHANICAL	RADIATION
		
LASER	**HEAT**	**PINCH**
		

Some others make you aware of specific procedures that should be followed.

Table 1-4 Standard Icons that indicates that a special procedure is to be used

AVOID STATIC ELECTRICITY	TAG AND LOCK OUT	WEAR EYE PROTECTION
		

1-2-3 Product Icons

The following table describes the purpose and location of safety labels and other important information provided on the equipment.

Table 1-5 Warnings

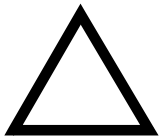
Label/Symbol	Purpose/Meaning	Location	Note
Identification and Rating Plate	Manufacturer's name and address Date of manufacture Model and serial numbers Electrical ratings	Rear of console near power inlet	
Type/Class Label	Used to indicate the degree of safety or protection.		
IP Code (IPX8)	Indicates the degree of protection provided by the enclosure per IEC60 529. IPX8 indicates can be used in operating room environment.	Footswitch	
	Equipment Type BF (man in the box symbol) IEC 60878-02-03 indicates B Type equipment having a floating applied part.	Probe connectors and PCG connector	
	Equipment Type CF (heart in the box symbol) IEC 878-02-05 indicates equipment having a floating applied part having a degree of protection suitable for direct cardiac contact.	ECG connector and Probes marked Type CF	
Device Listing/Certification Labels	Laboratory logo or labels denoting conformance with industry safety standards such as UL or IEC.	Rear of console	
CAUTION - This unit weighs...Special care must be used to avoid..."	This precaution is intended to prevent injury that may result if one person attempt to move the unit considerable distances or on an incline due to the weight of the unit.	On the console where easily seen during transport	
"DANGER - Risk of explosion used in..."	The system is not designed for use with flammable anesthetic gases.	Rear of console	
	"CAUTION" The equilateral triangle is usually used in combination with other symbols to advise or warn the user.	Various	
	ATTENTION - Consult accompanying documents is intended to alert the user to refer to the operator manual or other instructions when complete information cannot be provided on the label.	Various	

Table 1-5 Warnings

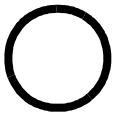
Label/Symbol	Purpose/Meaning	Location	Note
	"General Warning Sign"	Rear panel and UPS battery	BT07 or later
	"Warning" - Dangerous voltage" (the lightning flash with arrowhead) is used to indicate electric shock hazards.	Rear panel and inside of console	BT07 or later
	"Mains OFF" Indicates the power off position of the mains power switch.	Rear of system adjacent to mains switch	
	"Mains ON" indicates the power on position of the mains power switch.	Rear of system adjustment to mains switch	
	"ON" indicates the power on position of the power switch. CAUTION This Power Switch DOES NOT ISOLATE Mains Supply "Standby" indicates the power stand by position of the power switch. CAUTION This Power Switch DOES NOT ISOLATE Mains Supply	Adjacent to On/Standby Switch	
	"Protective Earth" Indicates the protective earth (grounding) terminal.	Various	
	"Equipotentiality" Indicates the terminal to be used for connecting equipotential conductors when interconnecting (grounding) with other equipment.	Rear of console	
	Alternating Current symbol is in accordance with IEC 60878-01-14.	Rear Panel, Rating Plate, Circuit breaker label of console and front panel (if applicable).	BT07 or later
	This symbol indicates that waste electrical and electronic equipment must not be disposed of as unsorted municipal waste and must be collected separately. Please contact an authorized representative of the manufacturer for information concerning the decommissioning of your equipment.	Rear Panel	BT07 or later

Table 1-5 Warnings

Label/Symbol	Purpose/Meaning	Location	Note
	Indicates the presence of hazardous substance(s) above the maximum concentration value. Maximum concentration values for electronic information products, as set by the People's Republic of China Electronic Industry Standard SJ/T11364-2006, include the hazardous substances of lead, mercury, hexavalent chromium, cadmium, polybrominated biphenyl (PBB), and polybrominated diphenyl ether (PBDE). "10" indicates the number of years during which the hazardous substance(s) will not leak or mutate so that the use of this product will not result in any severe environmental pollution, bodily injury, or damage to any assets.	Probe	BT07 or later
	Indicates the presence of hazardous substance(s) above the maximum concentration value. Maximum concentration values for electronic information products, as set by the People's Republic of China Electronic Industry Standard SJ/T11364-2006, include the hazardous substances of lead, mercury, hexavalent chromium, cadmium, polybrominated biphenyl (PBB), and polybrominated diphenyl ether (PBDE). "20" indicates the number of years during which the hazardous substance(s) will not leak or mutate so that the use of this product will not result in any severe environmental pollution, bodily injury, or damage to any assets.	Rear Panel, China Rating Plate	BT07 or later
	Do not use the following devices near this equipment: cellular phone, radio receiver, mobile radio transmitter, radio controlled toy, broadband power lines, etc. Use of these devices near this equipment could cause this equipment to perform outside the published specifications. Keep power to these devices turned off when near this equipment.	Rear Panel	BT07 or later

Section 1-3
Safety Considerations

1-3-1 Introduction

The following safety precautions must be observed during all phases of operation, service and repair of this equipment. Failure to comply with these precautions or with specific warnings elsewhere in this manual, violates safety standards of design, manufacture and intended use of the equipment.

1-3-2 Human Safety

Operating personnel must not remove the system covers.

Servicing should be performed by authorized personnel only.

Only personnel who have participated in a LOGIQ™ 7Training Seminar are authorized to service the equipment.

1-3-3 Mechanical Safety

⚠ **WARNING** ***WHEN THE UNIT IS RAISED FOR A REPAIR OR MOVED ALONG ANY INCLINE, USE EXTREME CAUTION SINCE IT MAY BECAUSE UNSTABLE AND TIP OVER.***

⚠ **WARNING** ***ULTRASOUND PROBES ARE HIGHLY SENSITIVE MEDICAL INSTRUMENTS THAT CAN EASILY BE DAMAGED BY IMPROPER HANDLING. USE CARE WHEN HANDLING AND PROTECT FROM DAMAGE WHEN NOT IN USE. DO NOT USE A DAMAGED OR DEFECTIVE PROBE. FAILURE TO FOLLOW THESE PRECAUTIONS CAN RESULT IN SERIOUS INJURY AND EQUIPMENT DAMAGE.***

⚠ **WARNING** ***NEVER USE A PROBE THAT HAS FALLEN TO THE FLOOR. EVEN IF IT LOOKS OK, IT MAY BE DAMAGED.***

⚠ **CAUTION** **Always lock the Control Console in its parking (locked) position before moving the scanner around.**

⚠ **CAUTION** **Disconnect all probes before moving the scanner around.**

⚠ **CAUTION** **The LOGIQ™ 7 weights 225 kg or more, depending on installed peripherals, (496 lbs, or more) when ready for use. Care must be used when moving it or replacing its parts. Failure to follow the precautions listed below could result in injury, uncontrolled motion and costly damage.**

ALWAYS:

- **Be sure the path way is clear.**
- **Use slow, careful motions.**
- **Use two people when moving on inclines or lifting more than 23 kg (50 lb).**

NOTE: Special Care should be taken when transporting the unit in a vehicle:

- Secure the unit in an upright position.
- Lock the wheels (brake).
- DO NOT use the Control Panel as an anchor point.
- Place the probes in the carrying case.
- Eject any Magnet Optical disk from the MO Drive (if installed).

1-3-4 Electrical Safety

To minimize shock hazard, the equipment chassis must be connected to an electrical ground. The system is equipped with a three-conductor AC power cable. This must be plugged into an approved electrical outlet with safety ground. If an extension cord is used with the system, make sure that the total current rating of the system does not exceed the extension cord rating.

The power outlet used for this equipment should not be shared with other types of equipment.

Both the system power cable and the power connector meet international electrical standards.

1-3-5 Label Locations (For BT07 or later, including R7.5.x)

NOTE: For the symbols shown in the illustration below, refer to previous pages in this chapter.

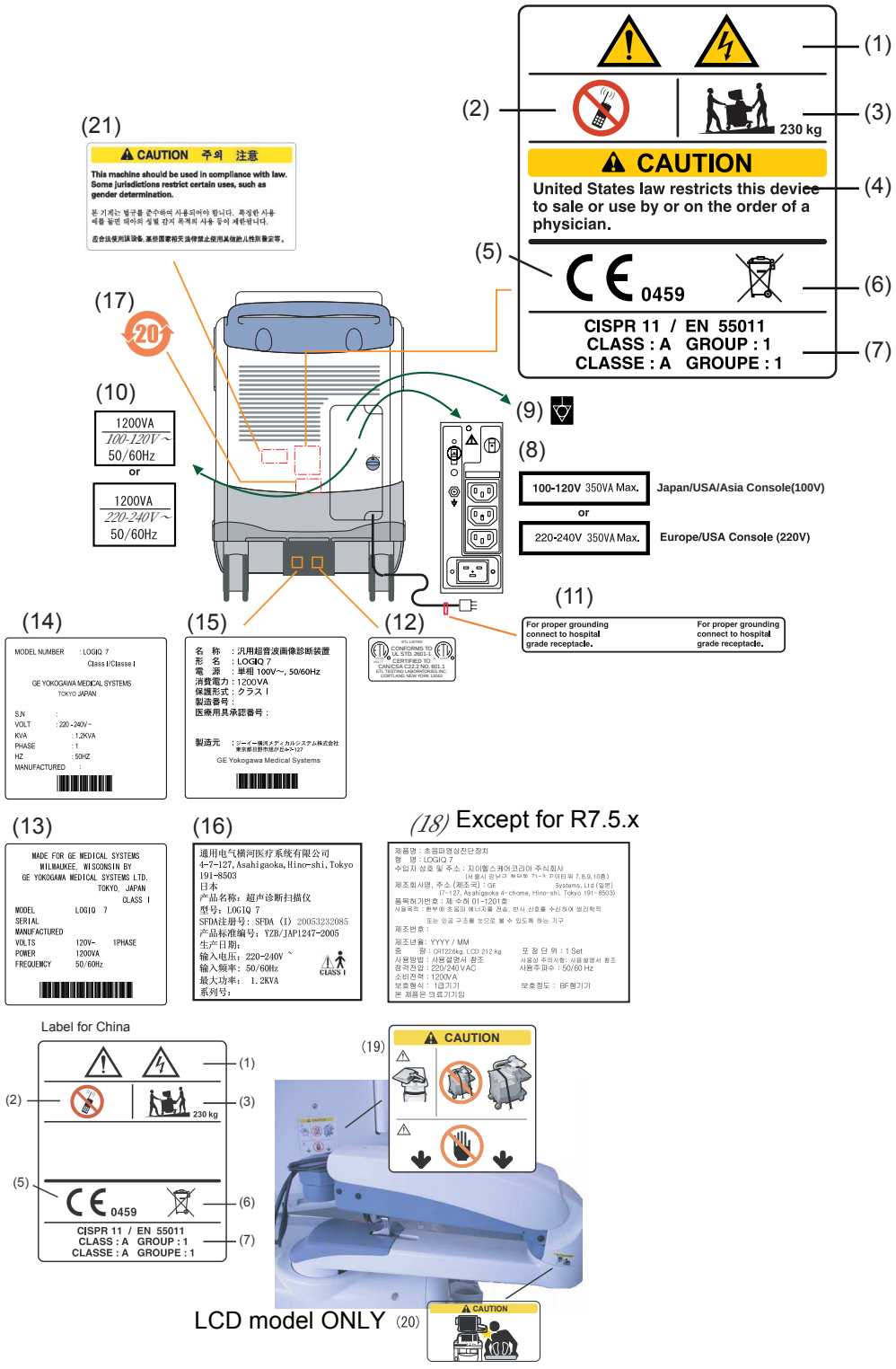


Figure 1-1 OUTSIDE MARKINGS OF LOGIQ™ 7 For BT07 or later, including R7.5.x (Back Side)

1-3-5 Label Locations (For BT07 or later, including R7.5.x) (cont'd)

1.) Possible Shock Hazard
2.) Caution for devices near by the equipment
3.) Caution for Transportation
4.) Prescription Devices (For USA Only)
5.) CE Marking of conformity
6.) WEEE mark
7.) CISPR
8.) Voltage Range
9.) Signal Ground Point Label
10.) Power Indication Label
11.) Caution for Grounding Reliability (For USA, Canada and Japan)
12.) ETL Label
13.) Identification and Rating Plate (USA/Asia 120V console)
14.) Identification and Rating Plate (Europe/Asia/USA 220V console)
15.) Identification and Rating Plate (Jpan 100V console)
16.) Identification and Rating Plate (China)
17.) Label that indicates the presence of hazardous substance(s) above the maximum concentration value.
18.) Identification and Rating Plate (Korean)
19.) Caution label on the monitor
20.) Caution label for the range of motion
21.) This machine should be used in compliance with law. Some jurisdictions restrict certain uses, such as gender determination. - Korea Console

1-3-6 Label Locations (For BT04, BT06, and V65x)

NOTE: For the symbols shown in the illustration below, refer to previous pages in this chapter.

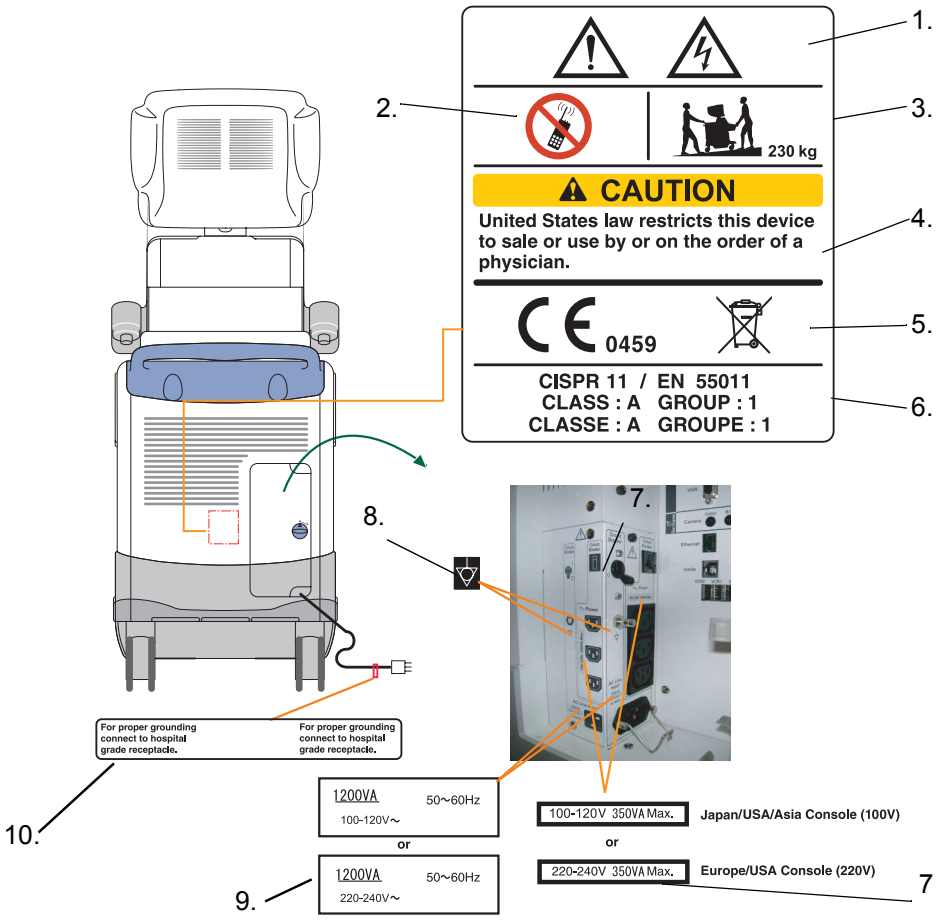


Figure 1-2 OUTSIDE MARKINGS OF LOGIQ™ 7 For BT04 or later (Back Side)

1.) Possible Shock Hazard
2.) Caution for devices near by the equipment
3.) Caution for Transportation
4.) Prescription Devices (For USA Only)
5.) CE Marking of conformity and WEEE mark
6.) CISPR
7.) Voltage Range
8.) Signal Ground Point Label
9.) Power Indication Label
10.) Caution for Grounding Reliability (For USA, Canada and Japan)

1-3-6 Label Locations (For BT04, BT06, and V65x) (cont'd)

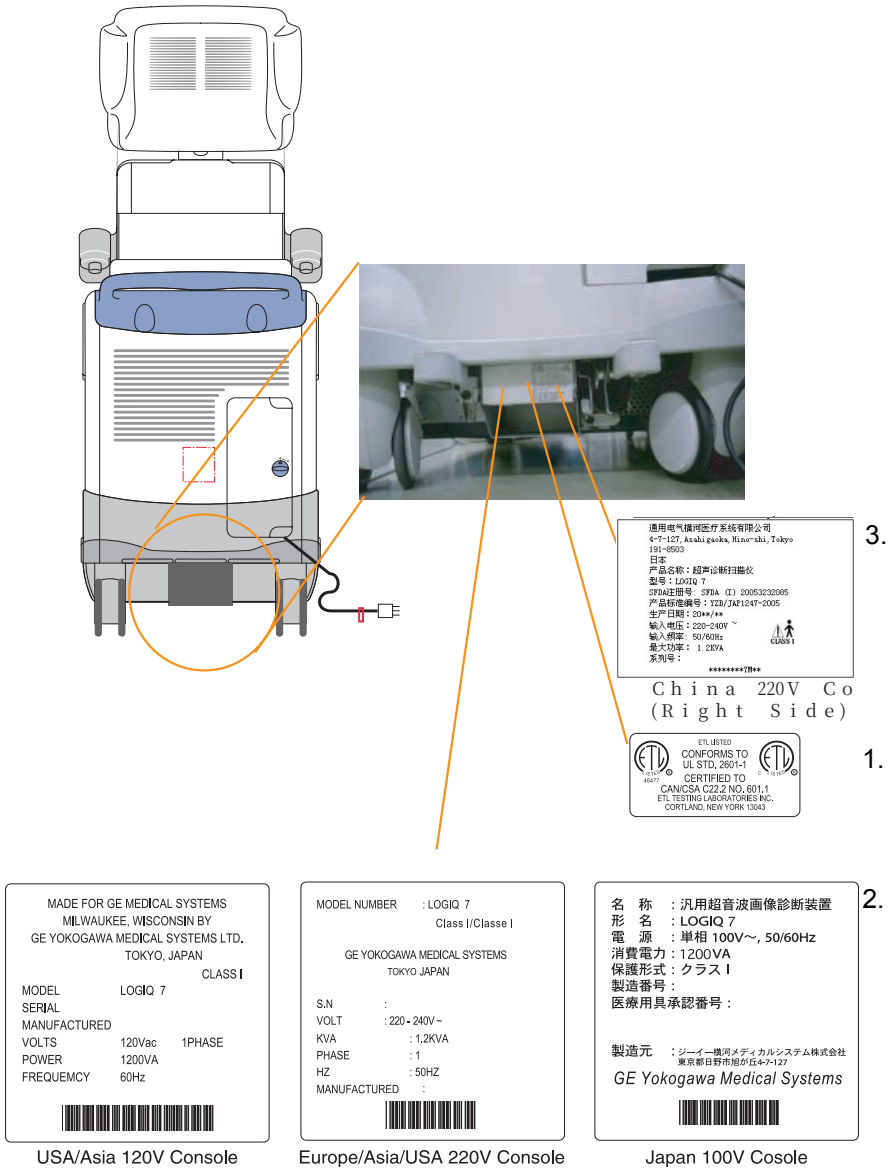


Figure 1-3 OUTSIDE MARKINGS OF LOGIQ™ 7 For BT04 or later

1.) ETL Label
2.) Identification and Rating Plate
3.) SFDA or SDA Label (For China ONLY)

1-3-7 Label Locations (For BT03 or lower)

NOTE: For the symbols shown in the illustration below, refer to previous pages in this chapter.

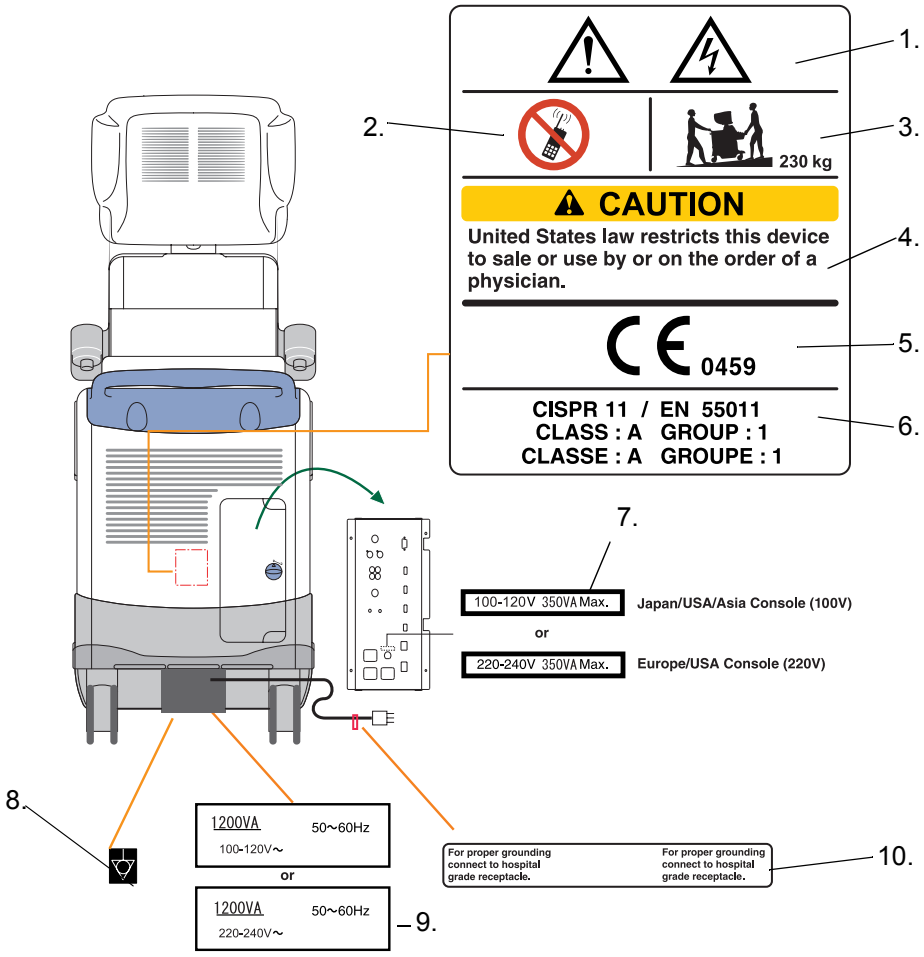


Figure 1-4 OUTSIDE MARKINGS OF LOGIQ™ 7 For BT03 or lower (Back Side)

1.) Possible Shock Hazard
2.) Caution for devices near by the equipment
3.) Caution for Transportation
4.) Prescription Devices (For USA Only)
5.) CE Marking of conformity
6.) CISPR
7.) Voltage Range
8.) Signal Ground Point Label
9.) Power Indication Label
10.) Caution for Grounding Reliability (For USA, Canada and Japan)

1-3-7 Label Locations (For BT03 or lower) (cont'd)

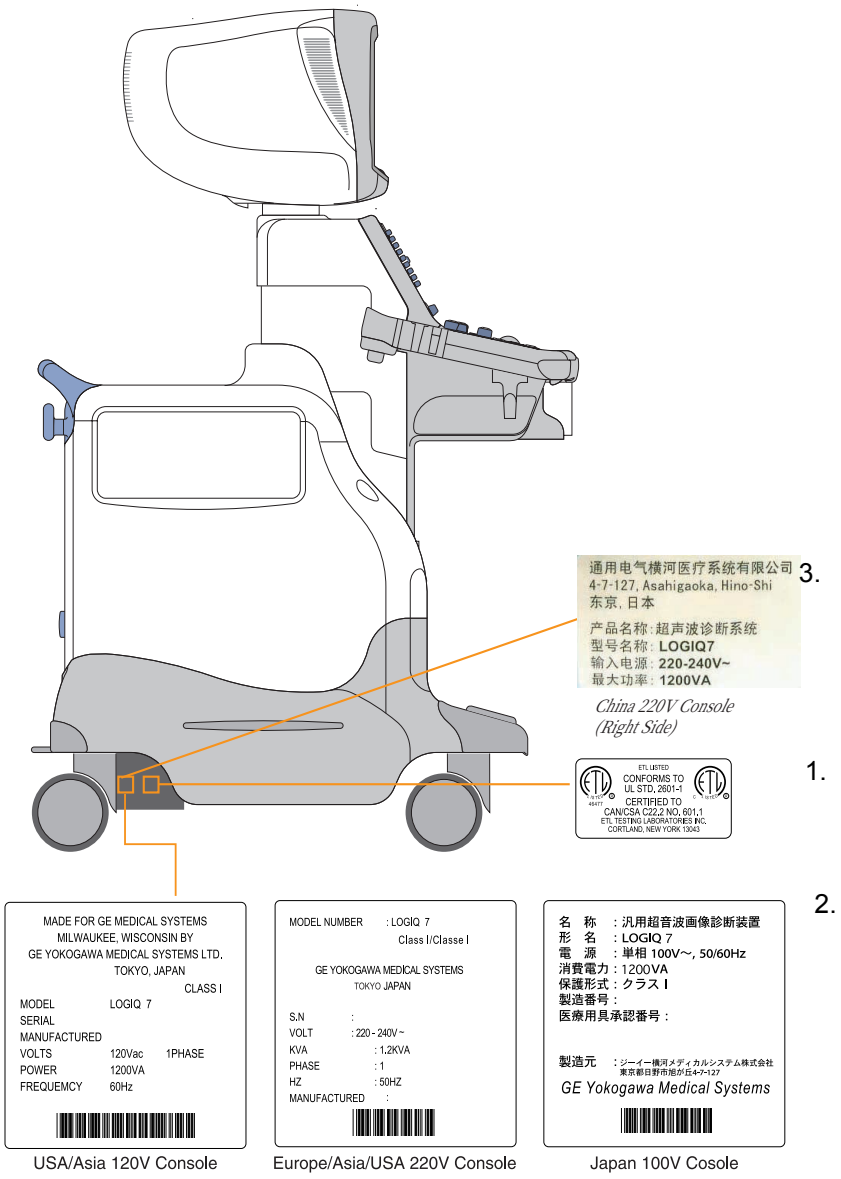


Figure 1-5 OUTSIDE MARKINGS OF LOGIQ™ 7 For BT03 or lower (Left Side)

1.) ETL Label
2.) Identification and Rating Plate
3.) SDA Label (For China ONLY)

1-3-8 Dangerous Procedure Warnings

Warnings, such as the example below, precede potentially dangerous procedures through our this manual. Instructions contained in the warnings must be followed.

DANGER **DANGEROUS VOLTAGES, CAPABLE OF CAUSING DEATH, ARE PRESENT IN THIS EQUIPMENT. USE EXTREME CAUTION WHEN HANDLING, TESTING AND ADJUSTING.**

WARNING ***EXPLOSION WARNING: DO NOT OPERATE THE EQUIPMENT IN AN EXPLOSIVE ATMOSPHERE. OPERATION OF ANY ELECTRICAL EQUIPMENT IN SUCH AN ENVIRONMENT CONSTITUTES A DEFINITE SAFETY HAZARD.***

WARNING ***DO NOT SUBSTITUTE PARTS OR MODIFY EQUIPMENT: BECAUSE OF THE DANGER OF INTERDICTING ADDITIONAL HAZARDS, DO NOT INSTALL SUBSTITUTE PARTS OR PERFORM ANY UNAUTHORIZED MODIFICATION OF THE EQUIPMENT.***

1-3-9 Lockout/Tagout Requirements (For USA Only)

Follow OSHA Lockout/Tagout requirements by ensuring you are in total control of the electrical Mains plug.

NOTICE Energy Control and Power Lockout for LOGIQ™ 7

When servicing parts of the system where there is exposure to voltage greater than 30 Volts:
Unplug the system
Maintain control of the system power plug
There are no test points to verify isolation, you must wait for at least 20 seconds for capacitors to discharge

Beware that the AC Control Box, Front End Processor and Back End Processor may be energized even if the power is turned off when the cord is still plugged into the AC Outlet.

1-3-10 Returning/Shipping Probes and Repair Parts

Equipment being returned must be clean and free of blood and other infectious substances.

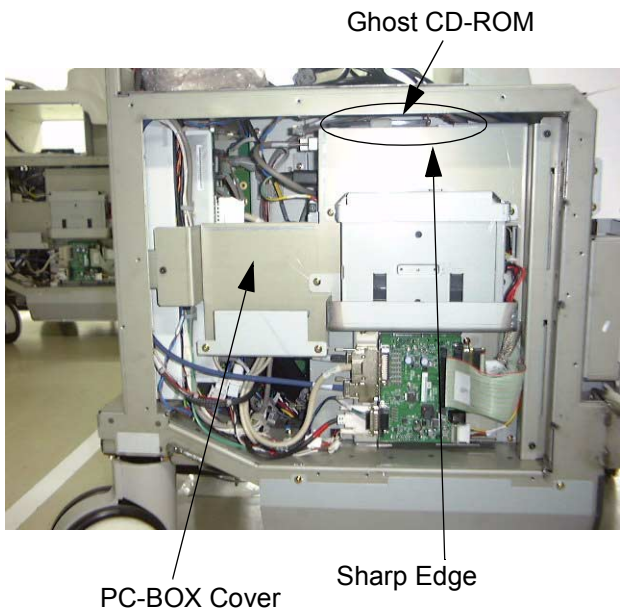
GEMS policy states that body fluids must be properly removed from any part or equipment prior to shipment. GEMS employees, as well as customers, are responsible for ensuring that parts/equipment have been properly decontaminated prior to shipment. Under no circumstance should a part or equipment with visible body fluids be taken or shipped from a clinic or site (for example, body coils or an ultrasound probe).

The purpose of the regulation is to protect employees in the transportation industry, as well as the people who will receive or open this package.

NOTE: The US Department of Transportation (DOT) has ruled that "items that were saturated and/or dripping with human blood that are now caked with dried blood; or which were used or intended for use in patient care" are "regulated medical waste" for transportation purposes and must be transported as a hazardous material.

1-3-11 How to remove the Ghost CD-ROM

The Ghost CD-ROM (Base System Software Load Image CD-ROM) is mounted on the PC-BOX inside the scanner using velcro tapes. The upper side of the PC-BOX cover contains sharp edge causing a FE to have possibility of cutting his hand if he removes the CD-ROM with the PC-BOX cover closed.



NG: WITH PC BOX COVER CLOSED

Do NOT remove the Ghost CD-ROM when the PC-Box cover is closed.

PC-BOX Cover

For BT04 or later

OK: WITH PC BOX COVER OPEN

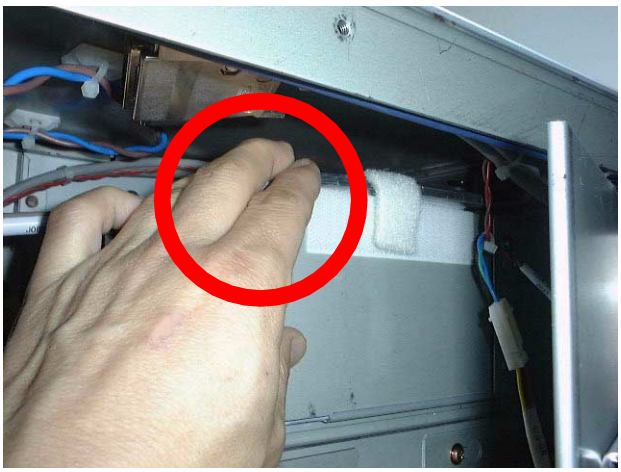


Figure 1-6 How to Remove Ghost CD-ROM

1-3-11 How to remove the Ghost CD-ROM (cont'd)

The sharp edge of the PC Box Cover are chamfered before shipment. However, the Ghost CD-ROM must be removed with the PC-Box cover open according to the following steps.

1.) Disconnect the DVI-D connector, then remove the four mounting bolts (three hex bolts and one phillips screw).

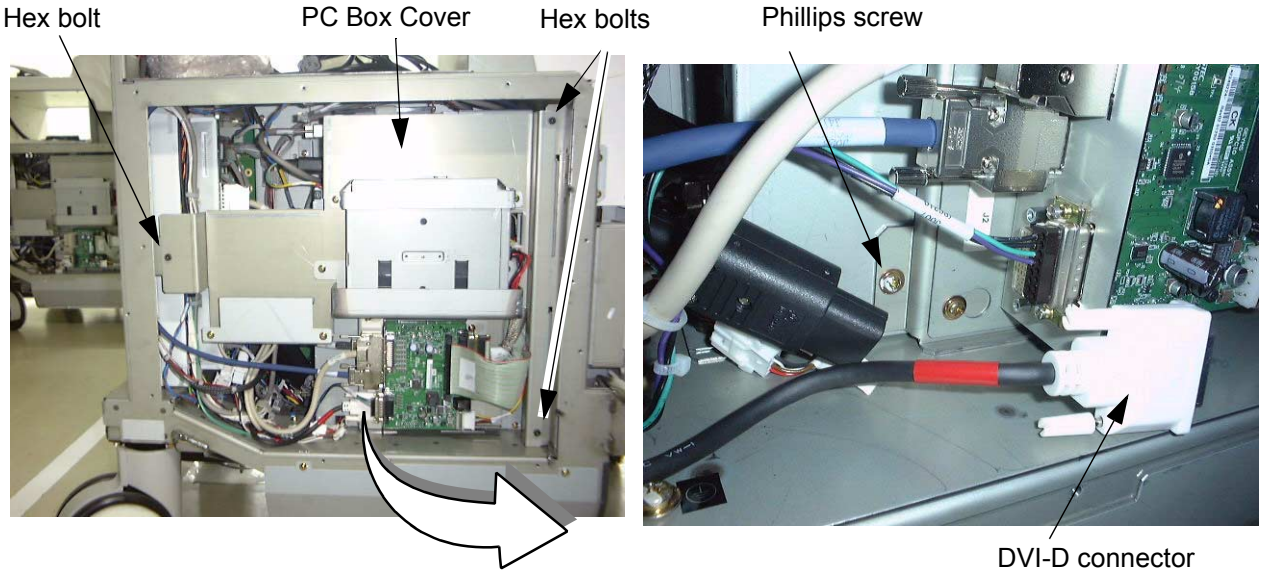


Figure 1-7 Removing Bolts

2.) Open the PC box cover and remove the Ghost CD-ROM from the PC box.

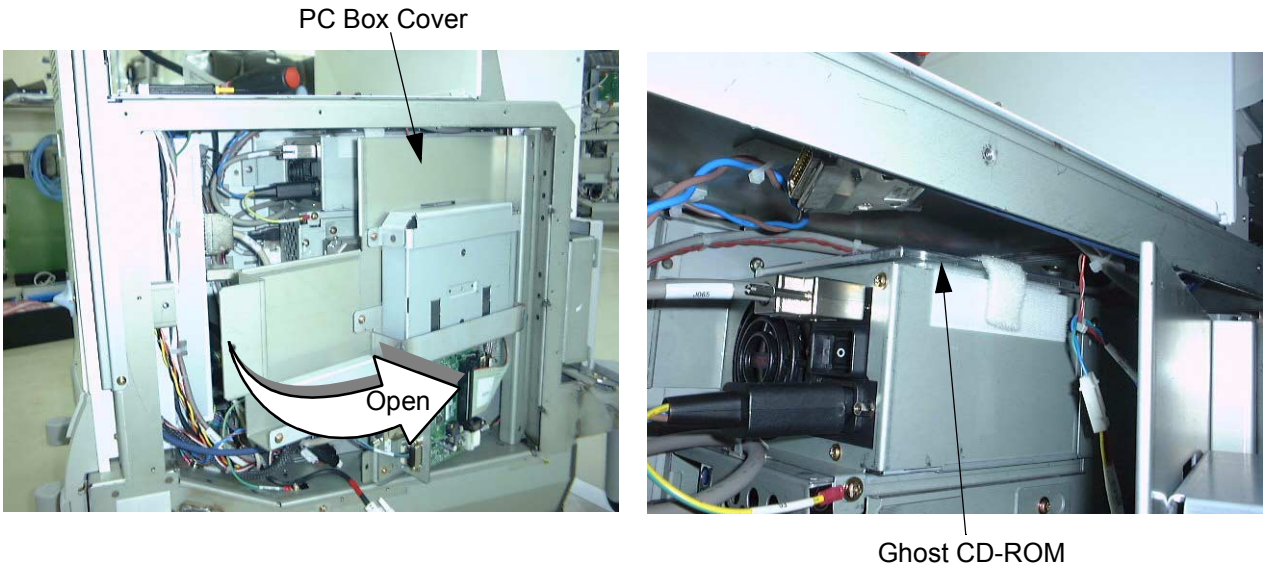


Figure 1-8 Removing Ghost CD-ROM

Section 1-4
EMC, EMI, and ESD

1-4-1 Electromagnetic Compatibility

Electro Magnetic Compatibility describes a level of performance of a device within its electromagnetic environment. This environment consists of the device itself and its surroundings including other equipment, power sources and persons with which the device must interface. Inadequate compatibility results when a susceptible device fails to perform as intended due interface from its environment or when the device produces unacceptable levels of mission to its environment. This interface is often referred to as radio-frequency or electromagnetic interface (RFI/EMI) and can be radiated through space or conducted over interconnecting power of signal cables. In addition to electromagnetic energy, EMC also includes possible effects from electrical fields, magnetic fields, electrostatic discharge and disturbances in the electrical power supply.

1-4-2 Electrostatic Discharge (ESD) Prevention

⚠ **WARNING** ***DO NOT TOUCH ANY BOARDS WITH INTEGRATED CIRCUITS PRIOR TO TAKING THE NECESSARY ESD PRECAUTIONS:***

1. ***Always connect yourself, via an arm-wrist strap, to the dedicated ground point located on the rear of the scanner (to the left of the power connector) or a proper frame ground.***
2. ***Follow general guide lined for handling of electrostatic sensitive equipment.***

1-4-3 CE Compliance

The LOGIQ™ 7 unit conforms to all applicable conducted and radiated emission limits and immunity from electrostatic discharge, radiated and conducted RF fields, magnetic fields and power line transient requirements.

Applicable standards are: 47CFR Part18, IEC60601-1-2, and 806-13.

NOTE: For CE Compliance, it is critical that all covers, screws, shielding, gaskets, mesh, clamps, are in good condition, installed tightly without skew or stress. Proper installation following all comments noted in this service manual is required in order to achieve full EMC performance.

Section 1-5
Customer Assistance

This system is not repairable by the customer. If this equipment does not work as indicated in the Operator Manual, please contact your service support center. If the service engineer needs additional information to repair this equipment, please contact the following address (The necessary information will be provided to the Service Engineer as needed).

1-5-1 System Manufacture

Table 1-6 System Manufacture

GE YOKOGAWA MEDICAL SYSTEMS
4-7-127 Asahigaoka, Hino-shi, Tokyo, 191-8503 JAPAN

1-5-2 Contact Information

For GE Service:

Table 1-7 Phone Numbers for Customer Assistance

Location	Phone Number
USA/ Canada GE Medical Systems Ultrasound Service Engineering 4855 W. Electric Avenue Milwaukee, WI 53219 Customer Answer Center	Tel: 1-800-321-7937 1-800-682-5327 1-262-524-5698 Fax: +1-414-647-4125
Latin America GE Medical Systems Ultrasound Service Engineering 4855 W. Electric Avenue Milwaukee, WI 53219 Customer Answer Center	Tel: 1-262-524-5300 1-262-524-5698 Fax: +1-414-647-4125
Europe GE Ultraschall Deutschland GmbH& Co. KG BeethovenstraBe 239 Postfach 11 05 60, D-42655 Solingen Germany	Tel: +33 0 130 831 300 - CARDIAC +33 0 130 831 300 - GENERAL IMAGING Fax: +49 212 2802 431
Asia (Singapore) GE Ultrasound Asia Service Department - Ultrasound 298 Tiong Bahru Road #15-01/06 Central Plaza Singapore 169730	Tel: +65-6277-3512 Fax: +65 6272-3997
ASIA (Japan)	+65-277-3512

1-5-2 Contact Information (cont'd)

NOTE: If this equipment does not work as indicated in the Operator Manual(s), contact your support center. Have the system ID number available when you call.

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Chapter 2
Pre Installation

Section 2-1
Overview

2-1-1 Purpose of this chapter 2

This chapter provides the information required to plan and prepare for the installation of a LOGIQ™ 7. Included are descriptions of the facility and electrical needs to be met by the purchaser of the unit. A checklist is also provided at the end of this section to help determine whether the proper planning and preparation is accomplished before the actual equipment installation is scheduled.

Table 2-1 Contents in Chapter 2

Section 2-2
General Console Requirements

2-2-1 Console Environmental Requirements

Table 2-2 Environmental Requirements for LOGIQ™ 7 Scanners

	Operational	Storage	Transport
Temperature	10 - 35 °C 50 - 95 °F	-10 - 50 °C 14 - 122°F	-10 - 50 °C 14 - 122 °F
Humidity	30 - 80% non-condensing	30 - 80% non-condensing	30 - 80% non-condensing
Pressure	700 - 1060hPa	700 - 1060hPa	700 - 1060hPa

Table 2-3 Environmental Requirements for an Ultrasound Room

Item	Values
Power Source	Refer to Table 2-4 on page 2-3.
Current Rating	20A (120V, 100V); 7.5A (220-240V) CIRCUIT BREAKER
Radiation Shielding	NONE REQUIRED for ULTRASOUND ENERGY
Temperature	20-26 DEG. C (68-79 DEG F) for PATIENT COMFORT
Humidity	50% to 70% for PATIENT COMFORT
Heat Dissipation	3500 BTU/Hr.
Floor Landing	Approximately 680 - 800 kg/m^2 without Accessories
Floor Condition	Gradient: WITHIN 5 degrees
Weight	Approximately 225 kg (496lbs) without Accessories

2-2-1-1 Cooling

The cooling requirement for the LOGIQ™ 7 is 3500 BTU/hr. This figure does not include cooling needed for lights, people, or other equipment in the room. Each person in the room places an additional 300 BTU/hr. demand on the cooling system.

2-2-1-2 Lighting

Bright light is needed for system installation, updates and repairs. However, operator and patient comfort may be optimized if the room light is subdued and indirect. Therefore a combination lighting system (dim/bright) is recommended. Keep in mind that lighting controls and diameters can be a source of EMI which could degrade image quality. These controls should be selected to minimize possible interface.

2-2-2 Electrical Requirements

2-2-2-1 Electrical Requirements

NOTE: GE Medical Systems requires a dedicated power and ground for the proper operation of its Ultrasound equipment. This dedicated power shall originate at the last distribution panel before the system.

*Sites with a mains power system **with defined Neutral** and Line:*
The dedicated line shall consist of one phase, a neutral (not shared with any other circuit), and a full size ground wire from the distribution panel to the Ultrasound outlet.

*Sites with a mains power system **without a defined Neutral**:*
The dedicated line shall consist of one phase (two lines), not shared with any other circuit, and a full size ground wire from the distribution panel to the Ultrasound outlet.

Please note that image artifacts can occur, if at any time within the facility, the ground from the main facility's incoming power source to the Ultrasound unit is only a conduit.

2-2-2-2 LOGIQ™ 7 Power Requirements

The following power line parameters should be monitored for one week before installation. We recommend that you use an analyzer Dranetz Model 606-3 or Dranetz Model 626:

Table 2-4 Electrical Specifications for LOGIQ™ 7

PARAMETER	AREA	LIMITS
Voltage Range	100V	100 VAC ±10% (90-110 VAC)
	220V	220-240 VAC ±10% (198-264 VAC)
	120V	120 VAC ±10% (108-132 VAC)
Power	All applications	MAX. 1200 VA
Line Frequency	All applications	50/60Hz (±2Hz)
Power Transients	All applications	Less than 25% of nominal peak voltage for less than 1 millisecond for any type of transient, including line frequency, synchronous, asynchronous, or aperiodic transients.
Decaying Oscillation	All applications	Less than 15% of peak voltage for less than 1 millisecond.

2-2-2-3 Inrush Current

Inrush Current is not a factor to consider due to the inrush current limiting properties of the power supplies.

2-2-2-4 Site Circuit Breaker

It is recommended that the branch circuit breaker for the machine be ready accessible.

CAUTION **POWER OUTAGE MAY OCCURE. The LOGIQ™ 7 requires a dedicated single branch circuit. To avoid circuit overload and possible loss of critical care equipment, make sure you DO NOT have any other equipment operating on the same circuit.**

2-2-2-5 Site Power Outlets

A desiccated AC power outlet must be within reach of the unit without extension cords. Other outlets adequate for the external peripherals, medical and test equipment needed to support this unit must also be present within 1 m (3.2 ft.) of the unit. Electrical installation must meet all current local, state, and national electrical codes.

2-2-2-6 Unit Power Plug

If the unit arrives without the power plug, or with the wrong plug, you must contact your GE dealer or the installation engineer must supply what is locally required.

2-2-2-7 Power Stability Requirements

Voltage drop-out
Max 10 ms.

Power Transients
Refer Table

2-2-3 EMI Limitations

Ultrasound machines are susceptible to Electromagnetic Interference (EMI) from radio frequencies, magnetic fields, and transient in the air wiring. They also generate EMI. The LOGIQ™ 7 complies with limits as stated on the EMC label. However there is no guarantee that interface will not occur in a particular installation.

Possible EMI sources should be identified before the unit is installed.

Electrical and electronic equipment may produce EMI unintentionally as the result of defect.

These sources include:

- medical lasers,
- scanners,
- cauterizing guns,
- computers,
- monitors,
- fans,
- gel warmers,
- microwave ovens,
- light dimmers,
- portable phones.

The presence of broadcast station or broadcast van may also cause interference. See for EMI Prevention tips.

Table 2-5 EMI Prevention/abatement

EMI Rule	Details
Be aware of RF sources	Keep the unit at least 5 meters or 15 feet away from other EMI sources. Special shielding may be required to eliminate interference problems caused by high frequency, high powered radio or video broadcast signals.
Ground the unit	Poor grounding is the most likely reason a unit will have noisy images. Check grounding of the power cord and power outlet.
Replace all screws, RF gaskets, covers, cores	After you finish repairing or updating the system, replace all covers and tighten all screws. Any cable with an external connection requires a magnet wrap at each end. Install the shield over the front of card cage. Loose or missing covers or RF gaskets allow radio frequencies to interface with the ultrasound signals.
Replace broken RF gaskets	If more than 20% or a pair of fingers on the RF gaskets are broken, replace the gaskets. Do not turn on the unit until any loose metallic part is removed.
Do not place labels where RF gaskets touch metal	Never place a label where RF gaskets meet the unit. Otherwise, the gap created will permit RF leakage. Or, if a label has been found in such a position, move the label.
Use GE specified harnesses and peripherals	The interconnect cables are grounded and require ferrite beads and other shielding. Also, cable length, material, and routing are all important; do not change from what is specified.
Take care with cellular phones	Cellular phones may transmit a 5 V/m signal; that could cause image artifacts.
Properly dress peripheral cables	Do not allow cables to lie across the top of the card cage or hang out of the peripheral bays. Loop the excess length for peripheral cables inside the peripheral bays. Attach the monitor cables to the frame.

2-2-4 Probes Environmental Requirements

Table 2-6 Operation and storage Temperatures for 2D Probes

	Operational	Storage	Transport
Temperature	10 - 40 °C 50 - 104 °F	-10 - 60 °C 14 - 140°F	-40 - 60 °C -40 - 140 °F
Humidity	30 - 85% non-condensing	30 - 90% non-condensing	30 - 90% non-condensing
Pressure	700 - 1060hPa	700 - 1060hPa	700 - 1060hPa

Table 2-7 Operation and storage Temperatures for 4D Probes

	Operational	Storage	Transport
Temperature	18 - 30 °C 64- 86 °F	-10 - 50 °C 14 - 122 °F	-10 - 50 °C 14 - 122 °F
Humidity	Max. 70% non-condensing	Max. 90% non-condensing	Max. 90% non-condensing
Pressure	700 - 1060hPa	700 - 1060hPa	700 - 1060hPa

Section 2-3
Facility Needs

2-3-1 Purchaser Responsibilities

The work and materials needed to prepare the site is the responsibility of the purchaser. Delay, confusion, and waste of manpower can be avoided by completing pre installation work before delivery. User the Pre Installation checklist to verify that all needed steps have been taken,
Purchaser reasonability includes:

- Procuring the materials required.
- Completing the preparations before delivery of the ultrasound system.
- Paying the costs for any alternations and modifications not specifically provided in the sales contract.

NOTE: All electrical installation that are preliminary to the positioning of the equipment at the site prepared for the equipment must be performed by licensed electrical contractors. Other connections between pieces of electrical equipment, products involved (and the accompanying electrical installations) are highly sophisticated and special engineering competence is required. All electrical work on these product must comply with the requirements of applicable electrical codes. The purchaser of GE equipment must only utilize qualified personnel to perform electrical servicing on the equipment.

The desire to use a non-listed or customer provided product or to place an approved product further from the system than the interface kit allows presents challenges to the installation team. To avoid delays during installation, such variances should be made known to the individuals or group performing the installation at the earliest possible date (preferable prior to purchase).
The ultrasound suite must be clean proof to delivery of the machine. Carpet is not recommended because it collects dust and creates static. Potential sources of EMI (electromagnetic interference) should also be investigated before delivery. Dirt, static, and EMI can negatively impact system.

2-3-2 Required Features

- Dedicated single branch power outlet of adequate amperage (see *Table 2-3*) meeting all local and national codes which is located less than 2.5 m (8 ft.) from the unit's proposed location
- Door opening is at least 76 cm (30 in) wide
- Proposed location for unit is at least 0.3 m (1 ft.) from the wall for cooling
- Power outlet and place for any external peripheral are within 2 m (6.5 ft.) of each other with peripheral within 1 m of the unit to connect cables.

NOTE: The LOGIQ™ 7 has four outlets inside the unit. One is for the monitor and three for on board peripherals.

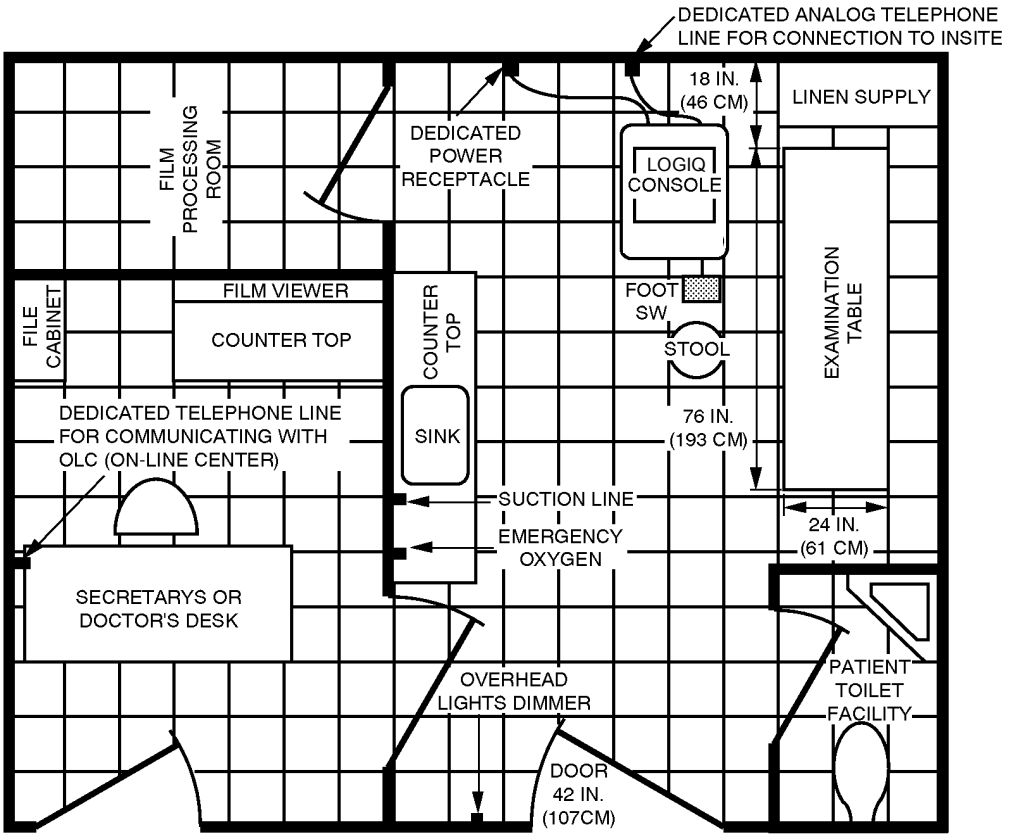
- Power outlets for other medical equipment and gel warmer
- Power outlets for test equipment and modem within 1 m (3.2 ft.) of unit
- Clean and protected space to store transducers (in their cases or on a rack)
- Material to safely clean probes (done with a plastic container, never metal)

2-3-3 Desirable Ultrasound Room Facilities

- Door is at least 92 cm (3 ft.) wide
- Circuit breaker for dedicated power outlet is easily accessible
- Sink with hot and cold water
- Receptacle for bio–hazardous waste, like used probe sheaths
- Emergency oxygen supply
- Storage for linens and equipment
- Nearby waiting room, lavatory, and dressing room
- Dual level lighting (bright and dim)
- Lockable cabinet ordered by GE for its software and proprietary manuals

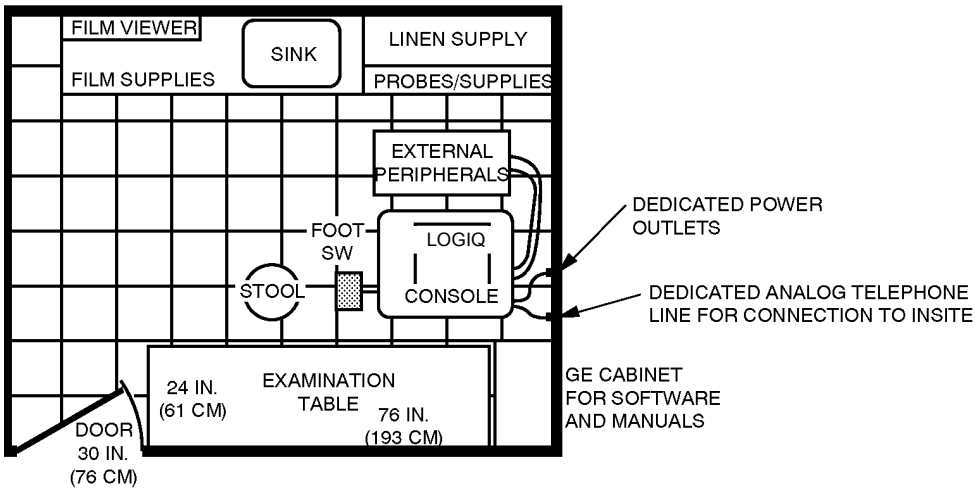
2-3-4 Recommended and Alternate Ultrasound Room Layout

Recommended standard floor plan and a minimal floor plan for ultrasound equipment:



A 14 by 17 foot Recommended Floor Plan

Scale: Each square equals one square foot



An 8 by 10 foot Minimal Floor Plan

Figure 2-1 RECOMMENDED ULTRASOUND ROOM LAYOUT

2-3-5 Networking Pre-installation Requirements

2-3-5-1 Purpose of DICOM Network Function

DICOM services provide the operator with clinically useful features for moving images and patient information over a hospital network. Examples of DICOM services include the transfer of images to workstations for viewing or transferring images to remote printers. As an added benefit, transferring images in this manner frees up the on-board monitor and peripherals, enabling viewing to be done while scanning continues. With DICOM, images can be archived, stored, and retrieved faster, easier, and at a lower cost.

2-3-5-2 DICOM Option Pre-installation Requirements

To configure the LOGIQ™ 7 to work with other network connections, the site's network administrator must provide some necessary information.

Information must include:

- A host name, local port number, AE Title, IP address and Net Mask for the LOGIQ™ 7.
- The IP addresses for the default gateway and other routers at the site for ROUTING INFORMATION.
- The host name, IP address, port and AE Title for each device the site wants connected to the LOGIQ™ 7 for DICOM APPLICATION INFORMATION. A field for the make (manufacturer) and the revision of the device, is also included. This information may be useful for solving errors.

2-3-5-2 DICOM Option Pre-installation Requirements (cont'd)

LOGIQ™ 7 **Host Name** _____ **Local Port** _____ **IP Address** ___.___.___.___

AE Title _____ **Net Mask** ___.___.___.___

ROUTING INFORMATION

	Destination IP Addresses	GATEWAY IP Addresses
		Default ___.___.___.___
ROUTER1	___.___.___.___	___.___.___.___
ROUTER2	___.___.___.___	___.___.___.___
ROUTER3	___.___.___.___	___.___.___.___

DICOM APPLICATION INFORMATION

	NAME	MAKE/REVISION	AE TITLE	IP ADDRESSES	PORT
Store 1				___.___.___.___	
Store 2				___.___.___.___	
Store 3				___.___.___.___	
Store 4				___.___.___.___	
Store 5				___.___.___.___	
Store 6				___.___.___.___	
Worklist				___.___.___.___	
Storage Commit				___.___.___.___	
MPPS				___.___.___.___	

Figure 2-2 Worksheet for DICOM Network Information

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Chapter 3
Installation

Section 3-1
Overview

3-1-1 Purpose of Chapter 3

This chapter contains information needed to install the unit. Included are references to a procedure that describes how to receive and unpack the equipment and how to file a damage or loss claim.
How to prepare the facility and unit of the actual installation, and how to check and test the unit, probes, and external peripherals for electrical safety are included in this procedure. Also included in this section are guidelines for transporting the unit to a new site.

Table 3-1 Contents in Chapter 3

3-1-2 Average Installation Time

Table 3-2 Average Installation Time

Description	Average Installation Time	Comments
Unpacking the scanner	0.5 hour	
Scanner wo/options	0.5 hour	Dependant on the configuration that is required
DICOM Option	0.5 hour	Dependant on the amount of configuration
InSite Option	0.5 hour	

The LOGIQ™ 7 has been designed to be installed and checked out by an experienced service technician in approximately four hours. LOGIQ™ 7 consoles with optional equipment may take slightly longer.

3-1-3 Installation Warnings

1.) Since the LOGIQ™ 7 weighs approximately 225 kg. (496 lb) without options, preferably two people should unpack it. Two people are also preferable for installing any additional bulky items.

2.) There are no operator serviceable components. To prevent shock, do not remove any covers or panels. Should problems or malfunctions occur, unplug the power cord. Only qualified service personnel should carry out servicing and troubleshooting.

3.) After being transported, the unit may be very cold or hot. If this is the case, allow the unit to acclimate before you turn it on. It requires one hour for each 2.5×C increment it's temperature is below 10×C or above 40×C.

CAUTION **Equipment damage possibility. Turning the system on without acclimation after arriving at site may cause the system to be damaged.**

Table 3-3 Time for Settlement

°C	60	55	50	45	40	35	30	25	20	15	10	5	0	-5	-10	-15	-20	-25	-30	-35	-40
°F	140	131	122	113	104	96	86	77	68	59	50	41	32	23	14	5	-4	-13	-22	-31	-40
hrs	8	6	4	2	0	0	0	0	0	0	0	2	4	6	8	10	12	14	16	18	20

3-1-3-1 Brake Pedal Operation

WARNING ***REMEMBER: IF THE FRONT CASTER SWIVEL LOCK IS ENGAGED FOR TRANSPORTATION, PRESSING THE RELEASE PEDAL ONCE EDISENGAGES THE SWICEL LOCK. YOU MUST DEPRESS THE RELEASE PEDAL A SECOND TIME TO ENGAGE THE BRAKE.***

Section 3-2
Receiving and Unpacking the Equipment

When a new system arrives, check that any components are not damaged and are not in short supply. If shipping damage or shortage occurs, contact the address shown in Chapter 1.

Example shown:
LOGIQ 7 system

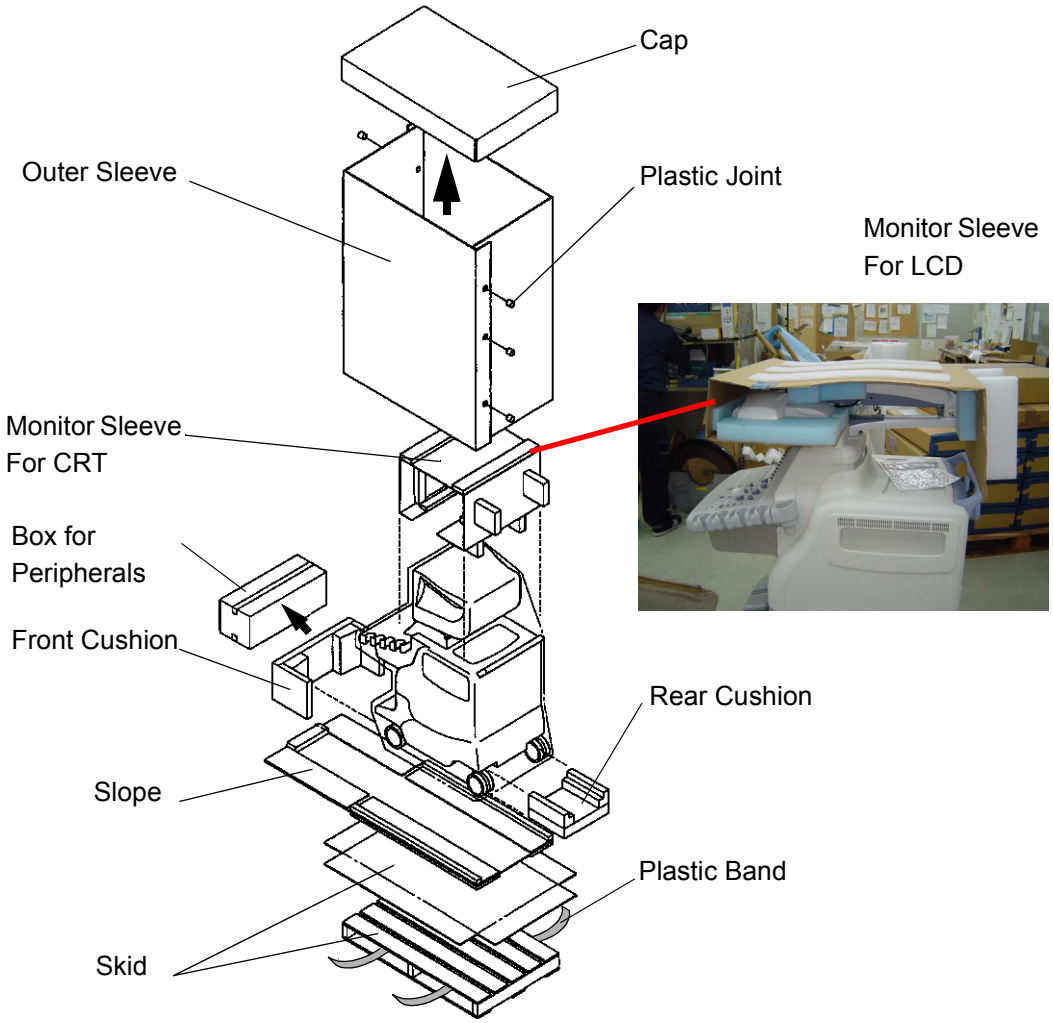


Figure 3-1 Unpacking Procedures

Unpacking Procedures:

1.) Cut the two Metal Bands.
2.) Lift the Cap up and off.
3.) Remove the six (6) Plastic Joints from the Outer Sleeves.
4.) Remove the Outer Sleeves.
5.) Remove the Monitor Sleeve.
6.) Remove the Box for Peripherals.
7.) Remove the Front and Rear Cushions.
8.) Slide out and set up the Slope.
9.) Unlock the brakes by stepping down on the brake pedal in front, then carefully roll the LOGIQ™ 7 rear side first off the Skid.

Section 3-2 Receiving and Unpacking the Equipment (cont'd)

NOTE: Check the shipping container for special instructions. Verify that the container is intact. In some cases a secondary container may be used. If so, ask the carrier for unpacking instructions.

⚠ **NOTICE** For the protection of LCD monitor, re-use the packing sleeve whenever possible, in case of shipment after unpacking.

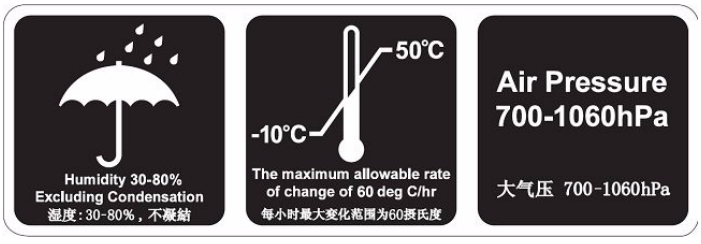
Secure the LCD Sleeve with adhesive tape after placing it to the proper location.

Adhesive Tape (Each side)

Turn over the LCD monitor, and place the sleeve to the location above. Make sure LCD arm is locked.

Pull over the sleeve to the LCD arm.

Make sure the LCD arm hinge is placed inside of the protective pad.



Note: These labels are attached onto the shipping box, defining environment at which consoles are to be transported or stored.

Figure 3-2 Labels on Package

3-2-1 Safety Reminders

DANGER **WHEN USING ANY TEST INSTRUMENT THAT IS CAPABLE OF OPENING THE AC GROUND LINE (I.E., METER'S GROUND SWITCH IS OPEN), DO NOT TOUCH THE UNIT!**

CAUTION **Two people should unpack the unit because of its weight. Two people are required whenever a part weighing 19kg (35 lb.) or more must be lifted.**

CAUTION **If the unit is very cold or hot, do not turn on its power until it has had a chance to acclimate to its operating environment.**

CAUTION **To prevent electrical shock, connect the unit to a properly grounded power outlet. Do not use a three to two prong adapter. This defeats safety grounding.**

CAUTION **Do NOT wear the ESD wrist strap when you work on live circuit and more than 30 V peak is present.**

CAUTION **Do not use a 20 Amp to 15 Amp adapter on the 120 Vac unit's power cord. This unit requires a dedicated 20 A circuit and can have a 15 A plug if the on board peripherals do not cause the unit to draw more than 14.0 amps.**

CAUTION **Do not operate this unit unless all board covers and frame panels are securely in place. System performance and cooling require this.**

CAUTION **OPERATOR MANUAL(S)**
The User Manual(s) should be fully read and understood before operating the LOGIQ™ 7 and kept near the unit for quick reference.

CAUTION **ACOUSTIC OUTPUT HAZARD**
Although the ultrasound energy transmitted from the LOGIQ™ 7 probe is within FDA limits, avoid unnecessary exposure. Ultrasound energy can produce heat and mechanical damage.

CAUTION **Do not lift the unit by the Keyboard. Equipment damage may result.**

CAUTION **The crate with the LOGIQ™ 7 weighs approximately 340 kg. (749.7 lb) Be prepared for a sudden shift of weight as the unit is removed from its base (pallet)**

3-2-2 Moving into Position

CAUTION **Do not lift the unit by the Keyboard.**
Do not tilt the unit more than 5 degrees to avoid tipping it over.
To avoid injury by tipping over. Set the monitor to the lowest position before moving.

CAUTION **Equipment Damage Possibility. Lifting the console by holding covers may damage the covers.**
Do not lift the console by holding any covers.

In general, a single adult can move the LOGIQ™ 7 along an even surface with no steep grades. At least two people should move the machine when large humps, grooves, or grades will be encountered. (It is better to pull from the rear rather than push from the front of the unit). Before moving, store all loose parts in the unit. Wrap transducers in soft cloth or foam to prevent damage.

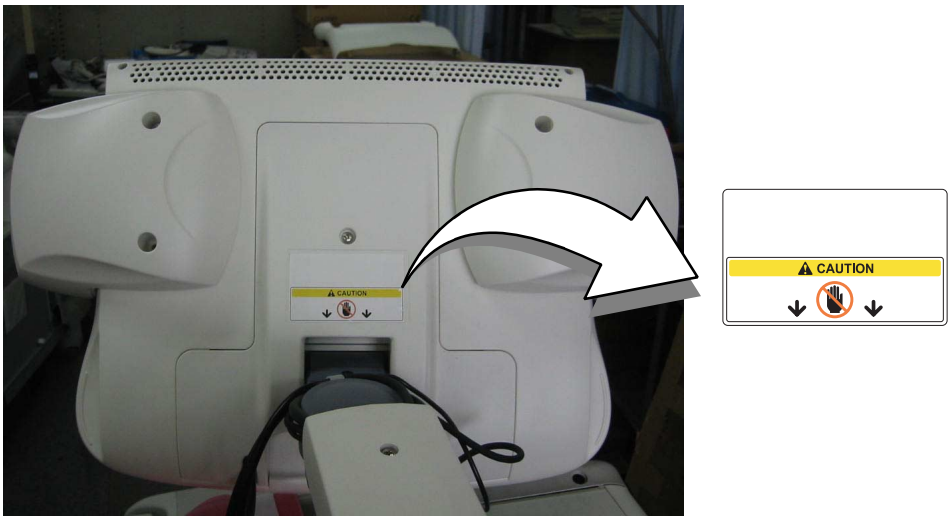
Although LOGIQ™ 7 is a compact and mobile machine, two people should move it over rough surfaces or up and down grades.

CAUTION **For LCD Model ONLY:**
Always lock the LCD monitor arm before removing the LCD monitor. This prevents the monitor arm from being suddenly and unexpectedly extended when removing the LCD monitor. Failure to heed this warning may result in personal harm, harm to others or death..

Arm Lock (LCD Model ONLY)

3-2-3 LCD Monitor Tilt Caution

CAUTION **Do NOT put your hand here! Your fingers might be pinched when adjusting angle of the LCD monitor.**



For R7.5.x 19inch LCD system

Figure 3-3 LCD Monitor Tilt Caution

3-2-4 LCD Monitor Swing CautionLCD Monitor Tilt Caution

CAUTION **Arm can be swung 180 degree left and right, and stick out from the side frame. Pay attention to the location from the wall in the room for room layout, and notice the attention to customer for Examination Table side.**

CAUTION **LCD will hit the KBD in case of moving over the right/left side.**

3-2-5 LCD Monitor Removal Caution

CAUTION **Always lock the LCD monitor arm before removing the LCD monitor. This prevents the monitor arm from being suddenly and fastly extended when removing the LCD monitor. Failure to heed this warning may result in personal harm, harm to others or death.**

Arm Lock (LCD Model ONLY)

3-2-6 Shipping Delivery Requirements

Do NOT hold the scanner at the LCD monitor or rotaing arm using the belt as shown. Always hold it at the body part of the console.

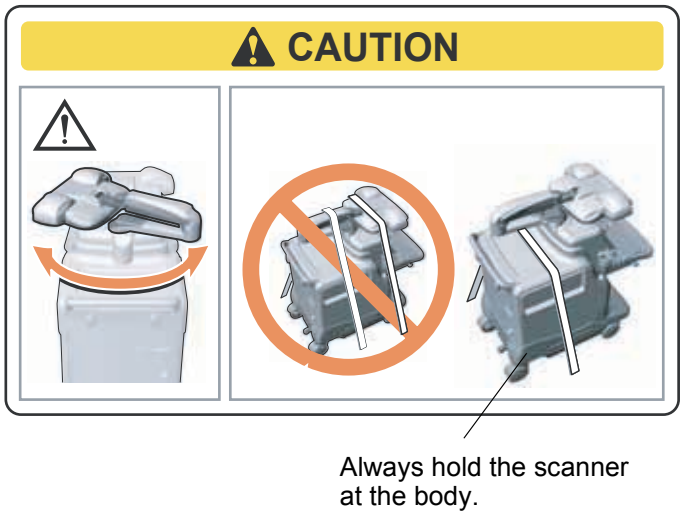


Figure 3-4 Shipping Delivery Requirements

Section 3-3
Preparing for Installation

3-3-1 Verify Customer Order

Compare items received by the customer to that which is listed on the delivery order. Report any items that are missing, back ordered or damaged.

3-3-2 Physical Inspection

3-3-2-1 System Voltage Settings

- Verify that the scanner is set to the correct voltage. The Voltage settings for the LOGIQ™ 7 Scanner is found on the label onto the rear lower of the scanner.

WARNING ***CONNECTING A LOGIQ™ 7 SCANNER TO THE WRONG VOLTAGE LEVEL WILL MOST LIKELY DESTROY THE SCANNER.***

WARNING ***PROTECTIVE EARTH MUST BE TAKEN WHEN CONNECTING AC POWER CABLE (200V) WITHOUT ITS PLUG TO WALL OUTLET.***

3-3-3 EMI Protection

This Unit has been designed to minimize the effects of Electro Magnetic Interference (EMI). Many of the covers, shields, and screws are provided primarily to protect the system from image artifacts caused by this interference. For this reason, it is imperative that all covers and hardware are installed and secured before the unit is put into operation.

Section 3-4
Completing the Installation

3-4-1 Probe (Transducer) Connection

1.) Connect a transducer to the upper transducer receptacle as follows:

⚠ **NOTICE** To make effective use of the memory space:
1. When a scanner has one linear probe, it must be connected to the most left receptacle.
2. When a scanner has several linear probes, they must be connected from the left to the right.

a.) Ensure that the transducer twist lock lever to the horizontal position.

b.) Insert the transducer connector on the receptacle guide pin until it touches the receptacle mating surface.

c.) Twist the transducer twist lock lever to vertical position to lock it in place. Twist the lever to the horizontal position to disconnect the transducer.

NOTE: It is not necessary to turn OFF power to connect or disconnect a transducer.

2.) Connect the main power cable to a hospital grade power receptacle with the proper rated voltage checked during pre installation. Never use a three-to-two prong adapter; this defeats the safety ground.

3-4-2 Optional Peripherals/Peripheral Connection

Depending on the customer order, the peripheral(s) already has been installed onto the scanner before shipment. If it does not, select the proper location to install the peripherals, following the table below.

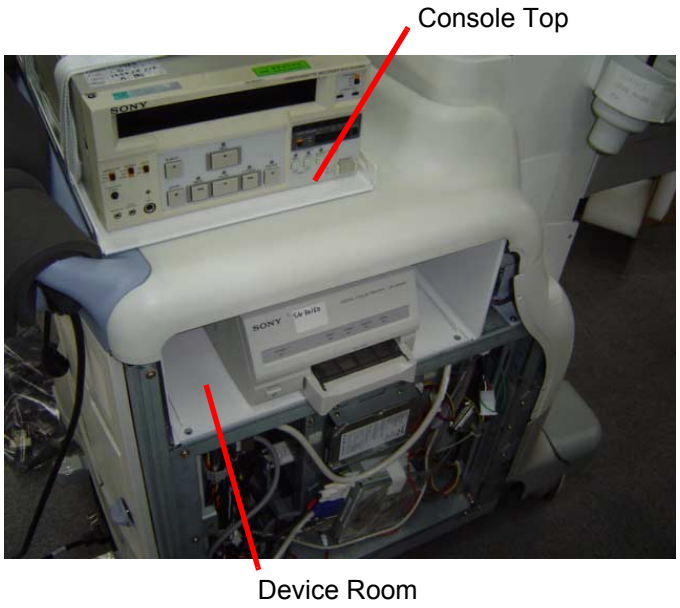


Figure 3-5 Optional Peripherals/Peripheral Connection

Location for peripheral	One peripheral (Color printer ONLY)	One peripheral (VCR or DVD recorder)	Two peripherals
Consle Top	Not used	Not used	VCR or DVD recorder
Device Room	**Used**	**Used**	Color Pinter

3-4-2 Optional Peripherals/Peripheral Connection (cont'd)

Check if the fixing belts are loosen. If it is, tighten the belts again to secure the peripheral(s). If necessary, remove the peripheral from the device room to tighten the belts.

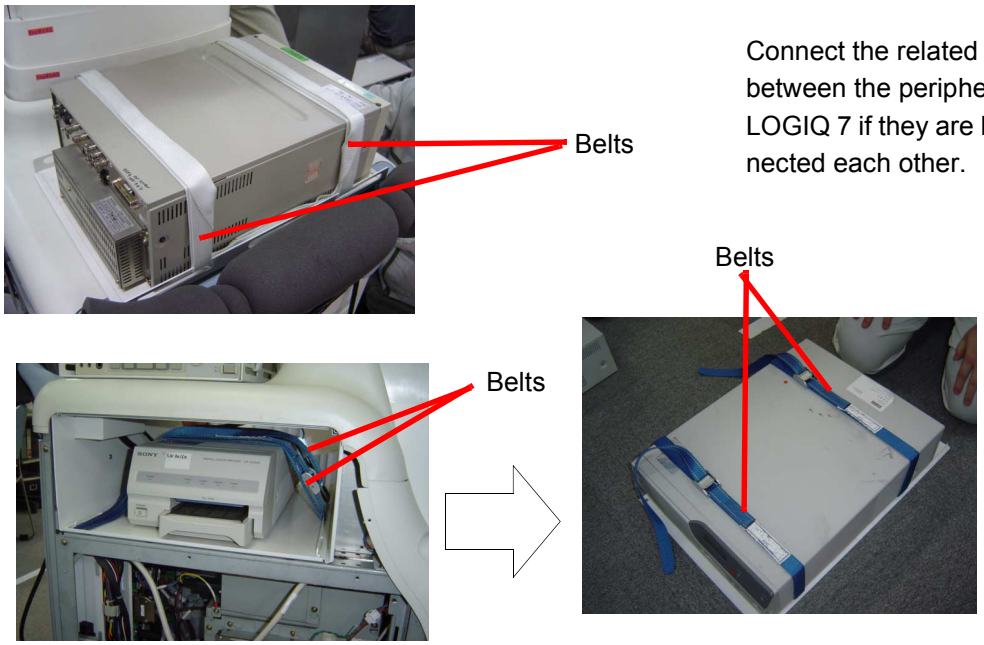


Figure 3-6 How to Hold Peripherals

3-4-2-1 Approved on-board peripherals

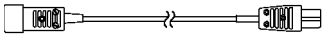
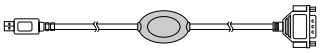
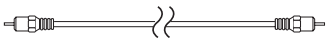
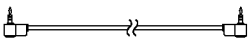
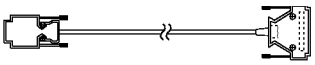
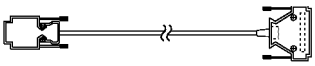
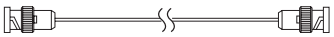
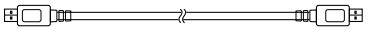
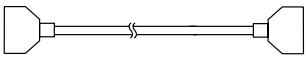
Refer to Section 5-3 Peripheral Compatibility.

3-4-2-1 Approved on-board peripherals (cont'd)

Connecting Cables

CAUTION Equipment damage possibility. Be sure to use the following recommended connecting cables to connect recording devices and a network with LOGIQ™ 7 console.

Table 3-4 List of Connecting Cables

Name	Part No.	Figure	NOTE
Power Supply Cable	P9509EE		Connected to power
USB Serial Bridge Cable	2304621		For converting the signal of RS232C cable to USB cable: connected to VCR1 on the Rear Panel
AV Cable	2119874		Connected to Video-In/Out on the Rear Panel
The followings are the cables for BT04 ore lower system ONLY.			
Mini-Plug Cable	P9509BE		Shutter control signals: connected to B/W Printer
RS232C Cable Cross	2305550		For control signals: connected to Serial Bridge Cable
RS232C Cable Straight	2305549		For control signals: connected to Serial Bridge Cable
BNC Cable	2297053		For control signal: connected to Composite B/W
USB Cable	2324360		Connected to USB port.
SCSI cables (UP-D50 ONLY)	2375479		Connected toSCSI port and SCSI Cable Connector.

3-4-2-2 Reference off-board peripherals and options

None.

3-4-3 Available Probes

See in specification in the LOGIQ™ 7 Reference Manual for Probes and intended use.
See Chapter 9 - Renewal Parts for Part Numbers to be used when ordering new or replacement probes.

Table 3-5 List of Transducers supported (All models)

Probe Name	Material of Headshell	Area of Using	TYPE	Catalog Number	Part Number
3C	PES	ABDOMINAL	CONVEX	H79802P H40412LB	2286353 2286354
5C	PES	ABDOMINAL	CONVEX	H79822P H40412LA	2294515 2294516
8C	PBT	NEONATAL PEDIATRICS	MICRO-CONVEX	H79792P H40412LJ	2348093 2348094
E8C	NORYL PBT	TRANSVAGINAL	MICRO-CONVEX	H79852P H40412LE	2294640 2294641
M7C	PBT	ABDOMINAL	CONVEX	H79832P H40412LC	2294513 2294514
M12L	PBT	SMALL PARTS	LINEAR	H79842P H40412LD	2294510 2294511
7L	NORYL	ABDOMINAL SUPERFICIAL	LINEAR	H79862P H40412LF	2294520 2294521
10L	NORYL	SUPERFICIAL	LINEAR	H79872P H40412LG	2294522 2294523
10S	ABS	PEDIATRIC	SECTOR	H79922P H4901PC	2309478 2298589
3.5C	NORYL	ABDOMINAL	CONVEX	H79812P H4901PE	2303215 2050357
3.5CS	NORYL	ABDOMINAL	CONVEX	H78042P H40412LK	2380854 2051858
3S	NORYL	CARDIOLOGY	SECTOR	H79632P H4701SZ	2348878 2323337
i12L	ABS	INTRAOPERATIVE	LINEAR	H79322P H4012L	2270556 2264883
M3S	PBT	CARDIOLOGY	SECTOR	H79892P H45011SZ	2293726 2378099
6T-OR-TEE	PU: PolyUrethane	TRASOPHAGEAL FOR ADULT CARDIOLOGY	SECTOR	H79932P H45521DX	5131947 KN100068
7S	PBT	CARDIOLOGY	SECTOR	H78082P H40422LB	2355698 2347471
BE9C	PBT	TRANSRECTAL	MICRO-CONVEX	H40412LW	2389381 2389382
T739	NORYL	INTRAOPERATIVE	LINEAR	H76572SR H40212LM	2259245 2259246
4D3C_L	PBT	ABDOMINAL	CONVEX Volume	H44801G	5121652 KTZ195893

Table 3-5 List of Transducers supported (All models)

Probe Name	Material of Headshell	Area of Using	TYPE	Catalog Number	Part Number
4D10L	PBD	SUPERFICIAL	LINEAR Volume	H44801GB	5121651 KTZ156836
4C	PBT	ABDOMINAL	CONVEX	H4904PC	5131944 5123455
12L	Noryl	SUPERFICIAL	LINEAR	H40412LH	2295375 2295377
P2D	ABS	CARDIOLOGY	CWD	H4830JE	TE100024
P6D	---	SUPERFICIAL	CWD	H4830JG	TQ100002

NOTE: PES: Polyethersulfone NORYL: Modified Polyphenylene Oxide PU: Polyurethane PBT: Polybutylene Terephthalate ABS: Acrylonitrile Butadiene Styrene

NOTE: Some probes indicated on the table above have two different part numbers. The upper row shows the part numbers of probes for Japan. The lower row shows the part numbers of probes for regions other than Japan. Probes which have only one part number are not available in Japan.

The following transducers, additional to ones listed in Table 3-6, are supported by V65x and later LOGIQ 7 models.

Table 3-6 List of Transducers supported by V65x and later

Probe Name	Material of Headshell	Area of Using	TYPE	Catalog Number	Part Number
9L	PBT	VASCULAR SMALL PARTS	LINEAR	H40412LT	5131433
4DE7C	PBT	OB Gyn Urology	CONVEX Volume	H44801GA	5121650

The following transducers, additional to ones listed in Table 3-7, are supported by R7.5.x and later LOGIQ 7 models.

Table 3-7 List of Transducers supported by R7.5.x and later

Probe Name	Material of Headshell	Area of Using	TYPE	Catalog Number	Part Number
3CRF	PU: PolyUrethane	ABDOMINAL	MICRO-CONVEX	H40442LP	5214820 5196216

The following transducers, additional to ones listed in Table 3-8, are supported by BT09 and later LOGIQ 7 models.

Table 3-8 List of Transducers supported by BT09 and later

Probe Name	Material of Headshell	Area of Using	TYPE	Catalog Number	Part Number
11L	PBT	SUPERFICIAL	LINEAR	H78842P H40412LY	5251881 5171885

3-4-4 Video Specification

Table 3-9 Video Specifications

CRT		LCD	
Timing Parameter	**800x600 75Hz**	**Timing Parameter**	**1280 x 1024 60Hz**
Horizontal Rate [kHz]	46.88	Horizontal Rate [kHz]	64
Horizontal Period [µs]	21.33	Horizontal Period [µs]	15.625
Pixel Clock [MHz]	49.50	Pixel Clock [MHz]	108
H Blank Width [µs]	5.17	H Blank Width [µs]	3.778 (408dots)
H Sync Width [µs]	1.62	H Sync Width [µs]	1.037 (112dots)
H Front Porch [µs]	0.32	H Sync Front Porch [µs]	0.444 (48dots)
Active Horizontal Period [µs]	16.16	Active Horizontal Period [µs]	11.852 (1280dots)
Vertical Rate [Hz]	75.00	Vertical Rate [Hz]	60.0
Vertical Period [ms]	13.33	Vertical Period [ms]	16.67 (1066lines)
V Sync Width [lines=ms]	25=0.53	V Sync Front Porch [ms]	0.016 (1 line)
V Front Porch [lines=µs]	3=64.00	Equalization Porch	None
Equalization Gate [lines=µs]	1=21.3	Lines: Field/Frame	1066
Lines: Field/Frame	625	Active Lines/Frame	1024
Active Lines/Frame	600		

3-4-5 Software Option Configuration

3-4-5-1 Onsite check and configuration

Select **Utility > Admin > System Admin** and check the option software to be installed.

Section 3-5
Installation Paperwork

NOTE: During and after installation, the documentation (i.e. Users Manual, Installation Manuals...) for the peripheral units must be kept as part of the original system documentation. This will ensure that all relevant safety and user informations are available during the operation and service of the complete system.

3-5-1 Peripherals/Accessories Connector Panel

LOGIQ™ 7 peripherals and accessories can be properly connected using the rear connector panel located behind the rear door, front connector panel located next to the video printer, and Footswitch connector located bottom of the OP panel.

3-5-1-1 Rear Panel Connector

Located on the rear panel are video input and output connectors, audio input and output, camera expose connectors, footswitch connector power connector and control connections for VCR, printer, and service tools.

This section indicates the pin assignment for each connector.

Rear Pannel Connector for BT04 and later models

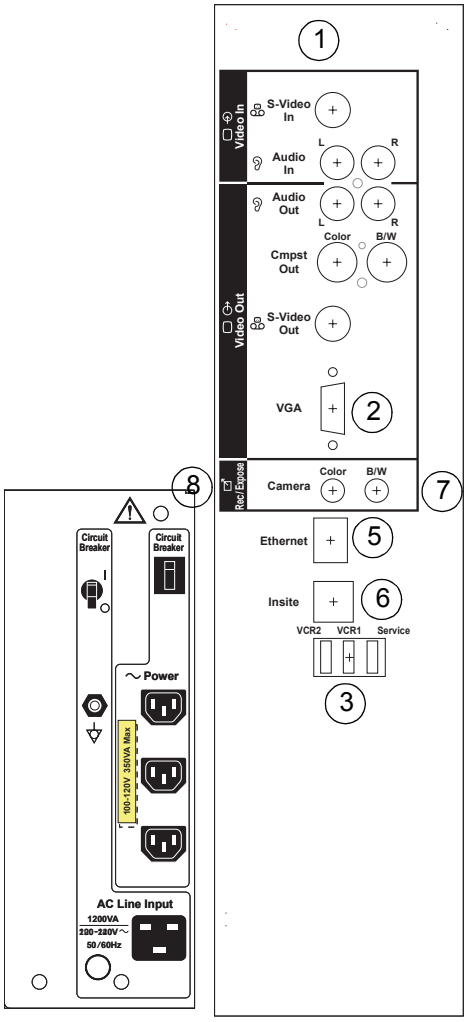


Figure 3-7 Rear Pannel Connector (BT04 or later)

3-5-1-1 Rear Panel Connector (cont'd)

Rear Pannel Connector for BT03 or lower

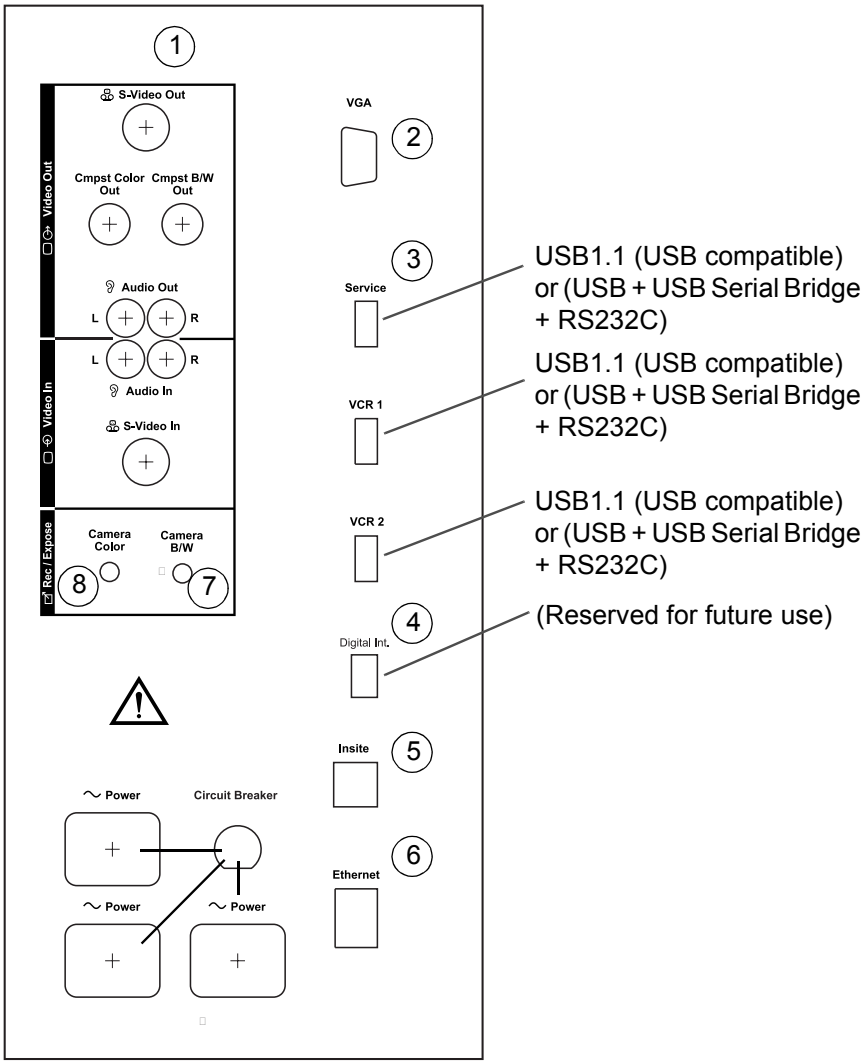
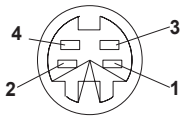


Figure 3-8 Rear Panel Connector (BT03 or lower)

NOTE: Each outer (case) ground line of peripheral/accessory connectors are protectively grounded. Signal ground lines are not isolated, except the Service port (3). All of signal lines (include signal GND) of the Service port are isolated.
The specified peripherals/accessories only can be connected to the USB ports.

3-5-1-1 Rear Panel Connector (cont'd)

(1) Pin Assignment of S-Video Connector

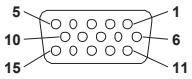


Connector: S-Terminal, 4-pin

Table 3-10 Pin Assignment of S-Video Connector

Pin No	Output/Input Signal	Description
1	SVIDEO OUT/IN YG	Y (Luma) GND
2	SVIDEO OUT/IN CG	C (Chroma) GND
3	SVIDEO OUT/IN Y	Y (Luma) SIGNAL
4	SVIDEO OUT/IN C	C (Chroma) SIGNAL

(2) Pin Assignment of VGA Connector

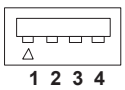


Connector: Shrank D-Sub, 15-pin

Table 3-11 Pin Assignment of VGA Connector

Pin No	Output Signal	Description
1	IO VGA OUT1 R	Red
2	IO VGA OUT1 G	Green
3	IO VGA OUT1 B	Blue
6	IO VGA OUT1 RG	Reg GND
7	IO VGA OUT1 GG	Green GND
8	IO VGA OUT1 BG	Blue GND
13	IO VGA OUT1 HS	H Sync
14	IO VGA OUT1 VS	V Sync
Others	GND	GND

(3) Pin Assignment of Service/VCR 1/VCR 2 Connector, USB1.1



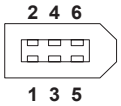
Connector: 4 pin

Table 3-12 Pin Assignment of Service/VCR 1/VCR 2 Connector

Pin No	Output Signal	Description
1	VBUSn	Power Supply
2	Dn	Data (-)
3	Dn	Data (+)
4	GNDn	Power Ground

3-5-1-1 Rear Panel Connector (cont'd)

④ Pin Assignment of Digital Int. Connector

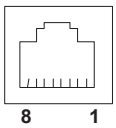


Connector: 6-pin

Table 3-13 Pin Assignment of IEEE-1394 Connector)

Pin No	Output Signal	Description
1	VP	1394 Power Supply
2	VG	1394 Power Ground
3	TPB	1394 Data B (-)
4	TPB	1394 Data B (+)
5	TPA	1394 Data A (-)
6	TPA	1394 Data A (+)

⑤ Pin Assignment of Ethernet

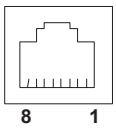


Connector: RJ-45 Modular, 8-pin

Table 3-14 Pin Assignment of Ethernet Connector

Pin No	Output Signal	Description
1	ETHER TD	Ethernet TD+
2	ETHER TD	Ethernet TD-
3	ETHER RD	Ethernet RD+
6	ETHER RD	Ethernet RD-
Others	NC	Non-connection

⑥ Pin Assignment of Insite



Connector: RJ-11 Modular, 6-pin

Table 3-15 Pin Assignment of Insite Connector

Pin No	Output Signal	Description
2	TEL L4	Telephone L4
3	TEL L2	Telephone L2
4	TEL L1	Telephone L1
5	TEL L3	Telephone L3
Others	NC	Non-connection

3-5-1-1 Rear Panel Connector (cont'd)

⑦ Pin Assignment for Camera B/W

Camera B/W

Table 3-16 Pin Assignment of Mini-Jack for Controlling B/W Camera

Pin No	Output Signal
1	PRINT
2	Signal GND

NOTE: Output level of control signals indicated in the above tables are TTL level.

⑧ Pin Assignment of Insite

Camera Color

Table 3-17 Pin Assignment of Mini-Jack for Controlling Color Camera

Pin No	Output Signal
1	SHUTTER
2	Signal GND

3-5-1-2 Front Connector Panel

Located on the front panel are Microphone, LED, and Reset.

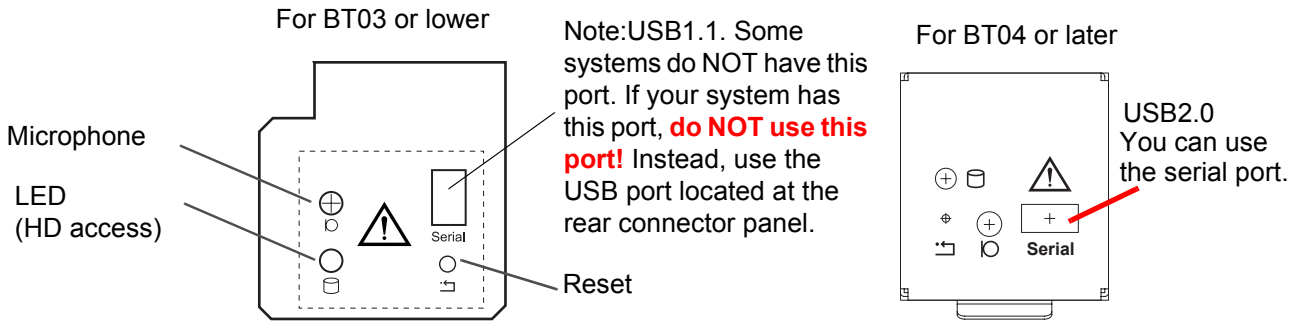


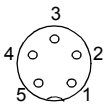
Figure 3-9 Front Connector Panel

3-5-1-3 B/W Printer Connector Panel

Table 3-18 Pin Assignment of Mini-Jack for Controlling B/W Printer

Pin No	Output Signal
1	PRINT
2	Signal GND

3-5-1-4 Footswitch Connector Panel



Round 5 pin connector.

Table 3-19 Pin Assignment of Mini-Jack for Footswitch

Pin No	Output Signal
1	SW1-WH
2	SW2-RD
3	SW3-GN
4	SW1-BK, SW2-BK, SW3-BK
5	Frame GND

NOTE: Output level of control signals indicated in the above tables are TTL level.

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Chapter 4
Functional Checks

Section 4-1
Overview

4-1-1 Purpose for Chapter 4

This chapter provides procedures for quickly checking major functions of the LOGIQ™ 7 console, diagnostics by using the built-in service software, and power supply adjustments.

Table 4-1 Contents in chapter 4

NOTICE Most of the information pertaining to this Functional Checks chapter is found in the LOGIQ™ 7 Quick Guide (Direction Number 2291859-100).
Look for the letters (QG) after a section in the Table of Contents to determine if the information is in this chapter or in the Quick Guide.

4-1-2 Special Equipment Required

- An empty (blank) MO Disk.
- At least one transducer.
  (normally you should check all the transducers used on the system.)

Section 4-2
General Procedure

CAUTION **SYSTEM REQUIRES ALL COVERS**
Operate this unit only when all board covers and frame panels are securely in place. The covers are required for safe operation, good system performance and cooling purposes.

4-2-1 Lockout/Tagout Requirements

Follow OSHA Lockout/Tagout requirements by ensuring you are in total control of the plug.

4-2-2 Power On/Boot Up

NOTE: After turning off the system, wait at least ten seconds before turning it on again. The system may not be able to boot if power is recycled too quickly.

4-2-2-1 Power Up

1.) Connect the Main Power Cable at the rear of the System.

WARNING ***PROTECTIVE EARTH MUST BE TAKEN WHEN CONNECTING AC POWER CABLE (200V) WITHOUT ITS PLUG TO WALL OUTLET.***

2.) Connect the Main Power cable to an appropriate mains power outlet.

3.) Switch ON the Main Circuit Breaker at the rear of the System.

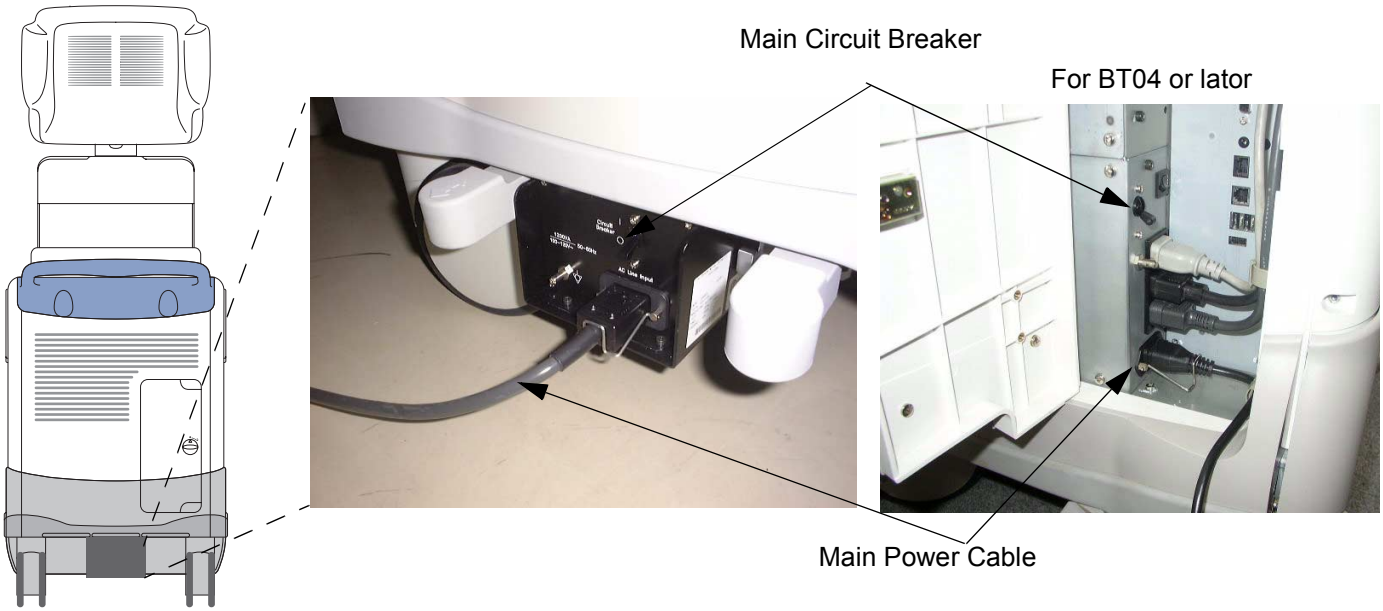


Figure 4-1 Circuit Breaker

When power is applied to the Scanner, and the Rear Circuit breaker is turned ON, Power is distributed to the Fans, Control panel, Monitor, Internal and External I/O's, Cage Boards, Peripherals and the Backend Processor. When the Power ON/OFF key is pressed once, the Backend Processor starts and its software code is distributed to initiate the scanner.

4-2-2-1 Power Up (cont'd)

4.) Press the **ON/OFF** key at the front of the System once.

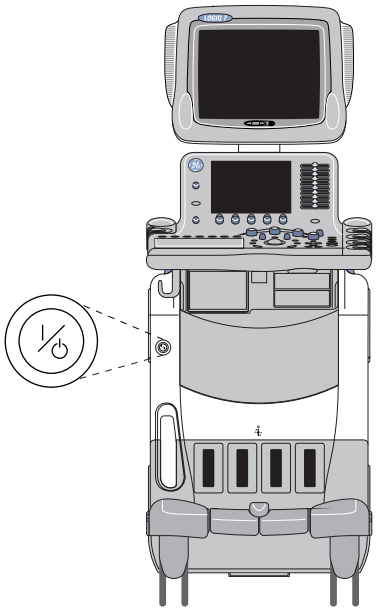


Figure 4-2 Power On/Off Standby Switch Location

4-2-2-2 Power Up Sequence

NOTE: For consoles with BEP4 (BT09), power switch lamp is darker compared to existing BT04-BT07 consoles with BEP3. This is NOT abnormality and system will function normally regardless of the brightness of the power button.

1.) The Start Up Screen will be shown on the Monitor display when the system is turned ON.

Figure 4-3 Start Up Screen

2.) After initialization is complete, all lighted buttons on the Control Panel light and the default B-Mode screen or Patient screen (no probes are connected) is displayed on the monitor display.

4-2-2-3 Entering Maintenance Mode

4-2-2-3-1 R6.2.x or later

1.) Insert the service dongle into any USB port.
2.) Wait for scanner boot-up.
3.) Tap ON/OFF the power switch.
4.) Click on **Exit.**

Figure 4-4 Clicking on Exit

5.) Enter the proper password to enter the maintenance mode.
6.) Click on **OK**.

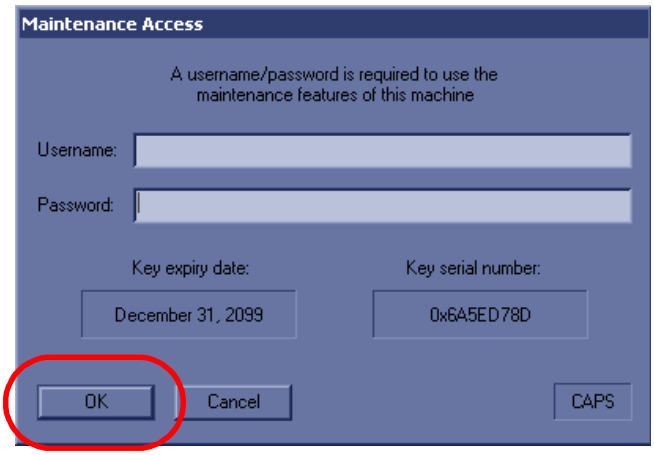


Figure 4-5 Clicking on OK

4-2-2-3 Entering Maintenance Mode (cont'd)

7.) Click on **maintenance**.

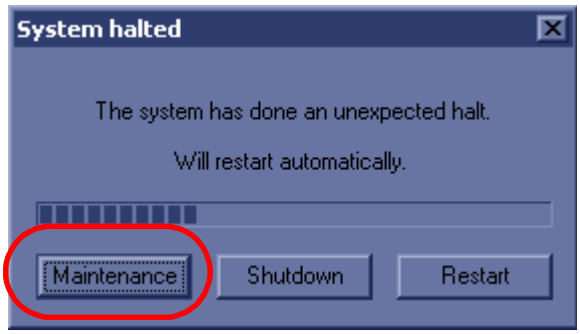


Figure 4-6 Clicking on Maintetance

8.) Click on **Exit to window**.

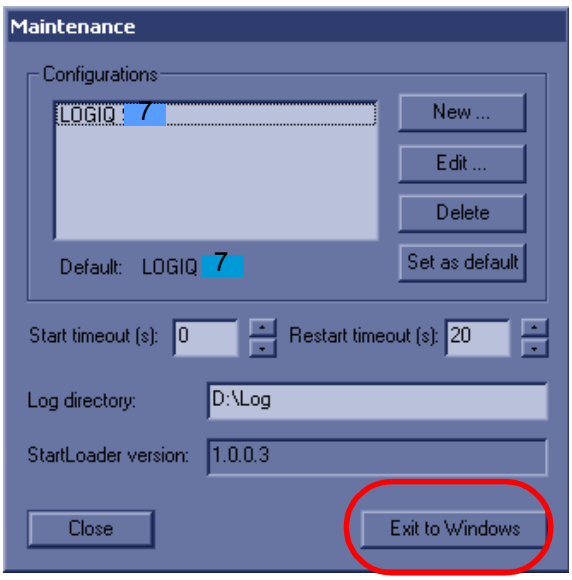


Figure 4-7 Clicking on Exit to Window

4-2-2-3 Entering Maintenance Mode (cont'd)

4-2-2-3-2 R 4.x.x to R6.0.x

1.) The Start Up Screen will be shown on the Monitor display when the system is turned ON.

2.) The "Probing for maintenance access" dialog appears. Enter **Password**, then click on **OK.**

3.) Then Start Loader display will be shown on the Monitor display.Click on **Maintenance.**

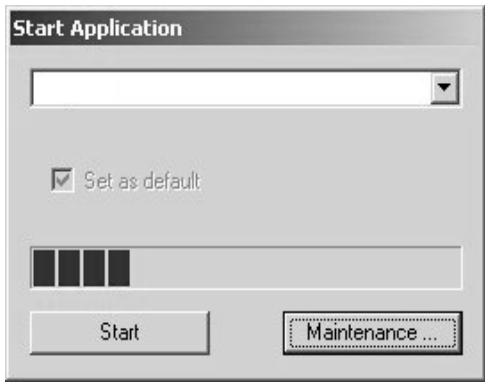


Figure 4-8 Clicking on Mainttenance

4.) Click on **Exit to Windows** in maintenace diaglog window.Then the scanner is booted up automatically.

4-2-2-3-3 R2.x.x to R4.x.x

1.) Insert the service dongle in the Service port located at the rear panel.

2.) The Start Up Screen will be shown on the Monitor display when the system is turned ON.

3.) Then Start Loader display will be shown on the Monitor display. Then the scanner is booted up automatically.

NOTE: To enter the Maintenance Mode, select Maintenance button.

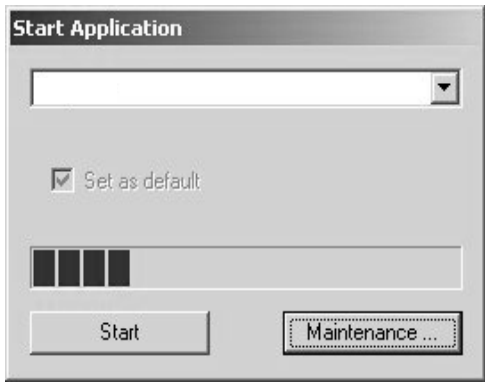


Figure 4-9 Start Application Window

NOTE: Start is selected automatically when it time out.

4-2-3 Power Shutdown

Purpose: This is a description on how to Shutdown the system.

4-2-3-1 Complete Power Down

1.) Press the **ON/OFF** key at the front of the System for about two (2) seconds. Refer to Figure 4-2.
2.) Switch OFF the Main Circuit Breaker at the rear of the system Refer to Figure 4-1.
3.) Disconnect the Main Power Cable if needed. Refer to Figure 4-1.

4-2-4 System Stand-by

LOGIQ 7 is available with Stand-by option. The option is effective in reducing the scanner power up time, when used as portable device.

Users must follow the procedures in order to use the option.

NOTE: Do not use more than 20 Stand-by mode continuously without shutting down the system. The scanner must be powered off daily.

1.) Press the POWER switch once.
2.) Select **Standby**.At this point, both the touch panel and the main monitor will go blank. Keyboard lights also turns dark. Power switch button will be illuminated.

Figure 4-10 Selecting Standby

3.) Wait more than 20seconds.

NOTICE Do not disconnect the power cable immediately.

4.) Plug off the power cord from wall outlet.

NOTICE Do not press the Power button without connecting the power cable.

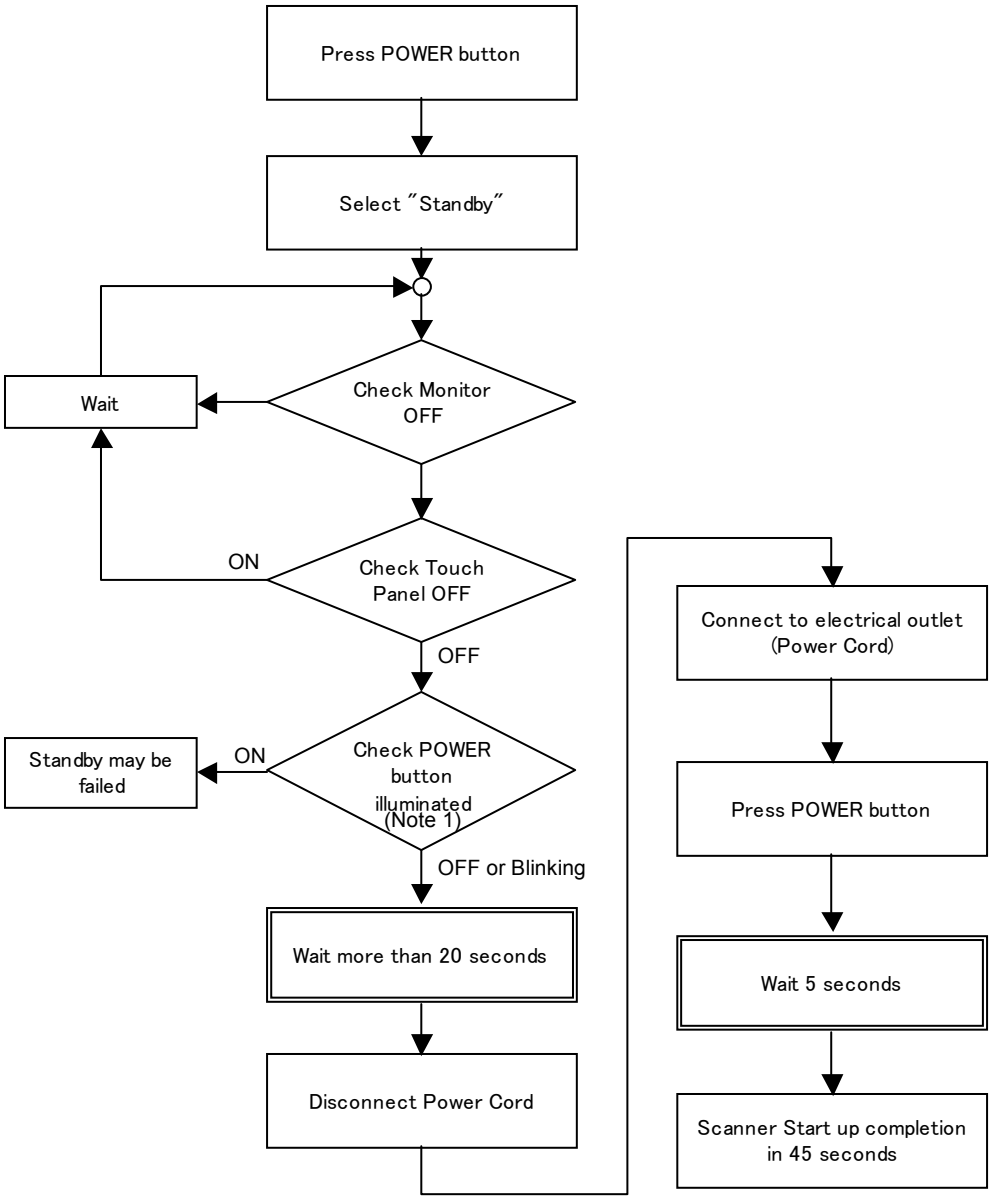
5.) Transport the scanner as required, but re-connect to power outlet within 20 minutes. If not powered system may shut down due to loss of sustained battery power.
6.) Connect the scanner to a wall electrical outlet.

4-2-4 System Stand-by (cont'd)

7.) To power up the scanner, tap POWER button momentary, and wait for power up. It will approximately 45seconds for the scanner to power up.

NOTICE Do not press the Power button long time, as it will cause the system to power down.

Stand-by Sequence



Note1 : BT09 Release with BEP4 Hardware have "Blinking Power Button" capability to indicate the console in Stand-by condition. For BEP3 and earlier, Power button must be "OFF" before disconnecting the power cord.

Figure 4-11 Stand-by Sequence

4-2-5 Using CD-R/MOD/DVD Drive

4-2-5-1 Using CD-R or DVD Drive

NOTICE **Never move the unit with a disk in the CD-R or DVD because the drive actuator will not be locked and the CD-R or DVD could break.**

1.) Push the **EJECT** button, the disk tray will appear.
2.) Put the disk onto the disk tray.
3.) Press the **EJECT** button to insert the disk into the CD-R or DVD device.
4.) There are a number of methods to eject a disk from the CD-R or DVD. Ejection is automatic in some cases. Manual ejection methods, listed in preferred order of use, are:
   a.) Press **EJECT** button on the CD-R or DVD while system is ON.
   b.) Press and hold **EJECT** button while the system is booting.
   c.) Mechanical ejection. Insert the end of a paper clip into the hole while system power is OFF.

NOTICE **Avoid mechanical ejection whenever possible. Mechanical ejection leaves the actuator unlocked and the MOD susceptible to damage if moved. If forced to use this method, reboot the system, then insert and eject a known good disk using one of the other methods.**

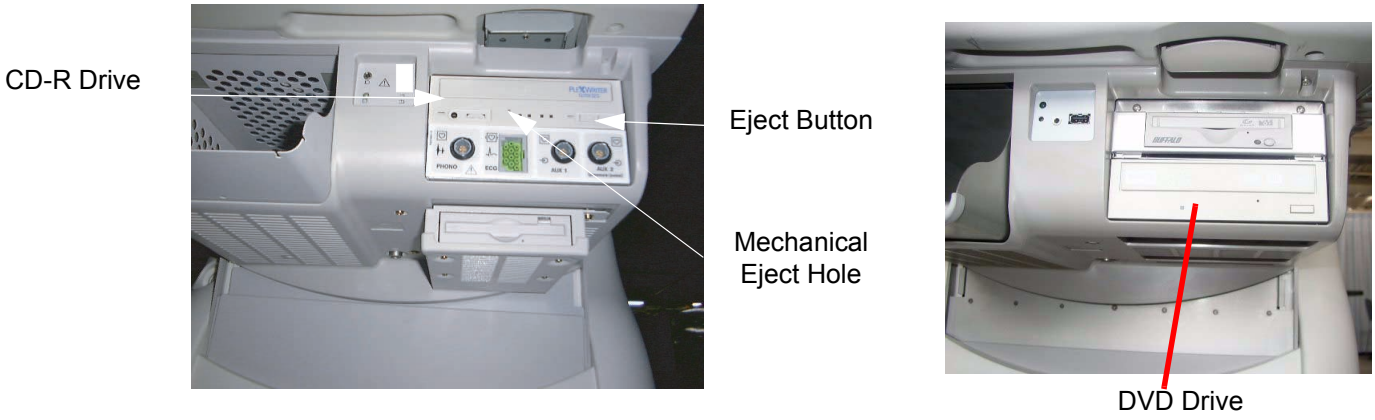


Figure 4-12 CD-R or DVD drive

NOTE: Be careful not to scratch the disk when wiping it off for cleaning.

NOTE: Keeping your CD-R or DVD disc in an original CD-R or DVD case or caddy all the time will prevent it from becoming dirty or damaged.

NOTE: ***Media Requirement:***
Please be aware of the following regarding saving data to DVD-R on R6.0.x.:

Use x8 or x16 speed compatible DVD-R. When it is the upgraded R6.0.x system from R4.x.x. or prior version, some systems have a number "4" or "5" printed on the disc tray of the media drive and others don't. If there is no number printed on the disc tray, use x4 or x16 speed compatible DVD-R.

4-2-5-2 Using MOD Drive

1.) Before installing an MO disk in the MOD, check the MO disk for loose hardware or damaged labels which could jam inside the MO Drive. Also ensure that the slide switch in one corner of the disk is set so that the disk is write enabled (disk hole closed).

2.) Insert the disk into the MOD with the label facing up.

NOTICE **Never move the unit with a disk in the MOD because the drive actuator will not be locked and the MOD could break.**

3.) The are a number of methods to eject a disk from the MOD. Ejection is automatic in some cases. Manual ejection methods, listed in preferred order of use, are:

a.) Press **EJECT** button on the MOD while system is ON.

b.) Press and hold **EJECT** button while the system is booting.

c.) Mechanical eject. Insert the end of a paper clip into the hole while system power is OFF.

NOTICE **Avoid mechanical ejection whenever possible. Mechanical ejection leaves the actuator unlocked and the MOD susceptible to damage if moved. If forced to use this method, reboot the system, then insert and eject a known good disk using one of the other methods.**

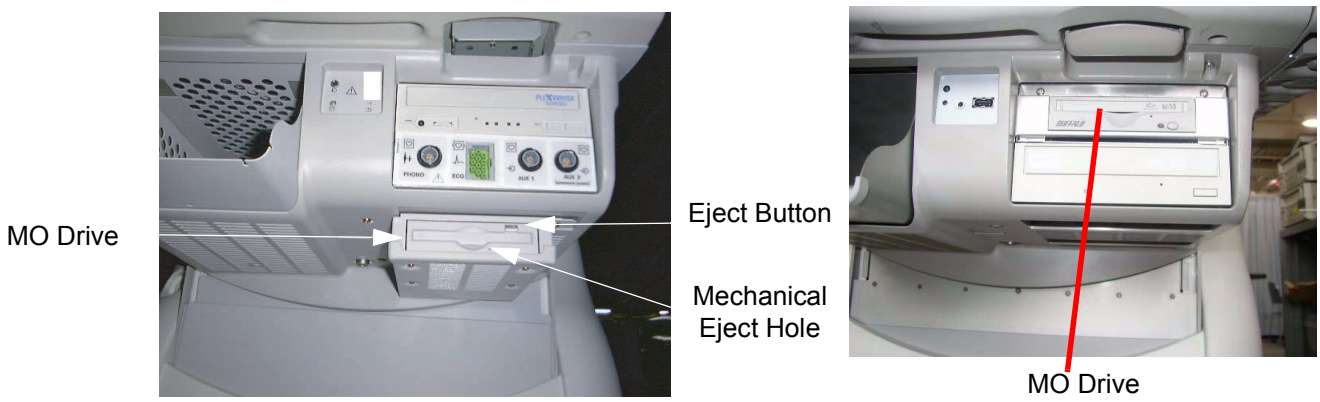


Figure 4-13 MOD drive

4-2-6 Archiving and Loading Presets for BT07 (Including R7.5.x)

NOTE: Always save presets before any software reload. This ensures the presets loaded after the software reload are as up–to–date as possible.

All user presets except changes to Summary, Anatomy, and Biometry pages, can be saved on an CD-R/MO/DVD-R disk for reloading on the system.

NOTICE Presets should NOT be saved on the same CD-R/MO/DVD-R disk as images. The Archive Menu lists the images but does NOT list the presets stored on a CD-R/MO/DVD-R disk.

4-2-6-1 Regional Preset - General (Supported from BT07)

NOTICE Do not attempt to change/use Regional Preset buttons for Upgraded BT07. For Upgrade BT07 always use Factory Default in order to avoid preset conflict. Contact application specialist for details.

This feature has the capability to have factory default preset defined by the following regions; Americas, Europe, Asia, or Japan.

Table 4-2

Presets Unique to Regions	Presets NOT unique to Regions
System Imaging (System>System Imaging page) System Measure (System->System Measure page) Imaging Settings (Imaging page) Comments (Comments page) Body Patterns (Body Patterns page) Application (Application page) 3D/4D (3D/4D page) Measure (Measure page) : Utility/Measure Advanced and Doppler preset	System General (System>General page) Connectivity (Connectivity page) Reports (Report page) Measure (Measure page) : Utility/Measure M&A and OB Table preset

4-2-6-2 Using Regional Preset

Regional Preset is selected during Application Load (Refer to 8-8-13 - Installing R7.x.x Application Software for details).

Current Regional Preset is displayed under **Utility > System > About** .

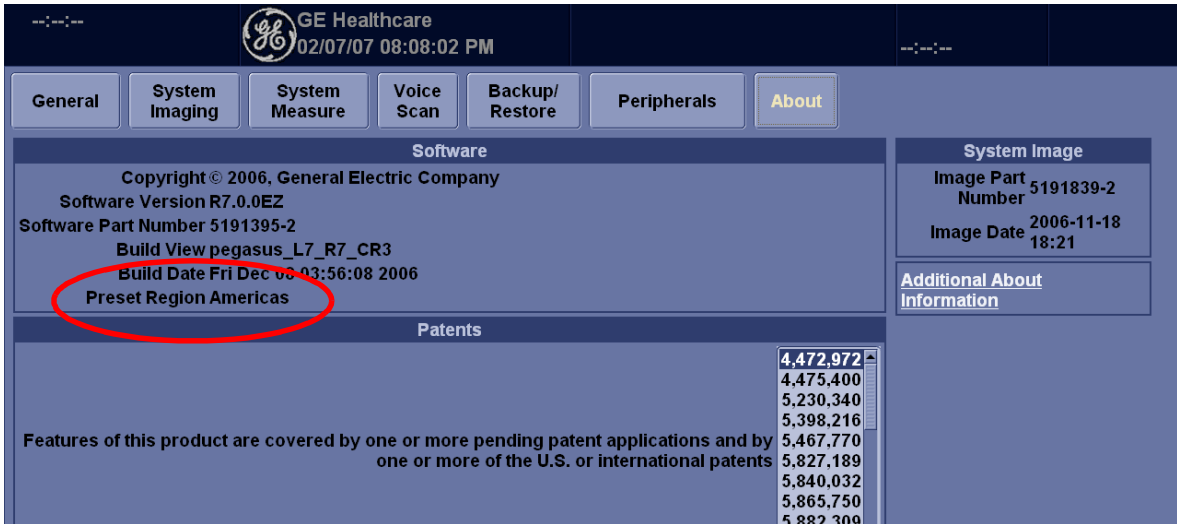


Figure 4-14 Current Regional Preset

NOTICE For Upgraded BT07, this field always shows "None" as Region Preset is feature available for pure BT07 and onward.

Factory Default Regional Preset can be re-loaded from **Utility > Systme > About > Additional About**.

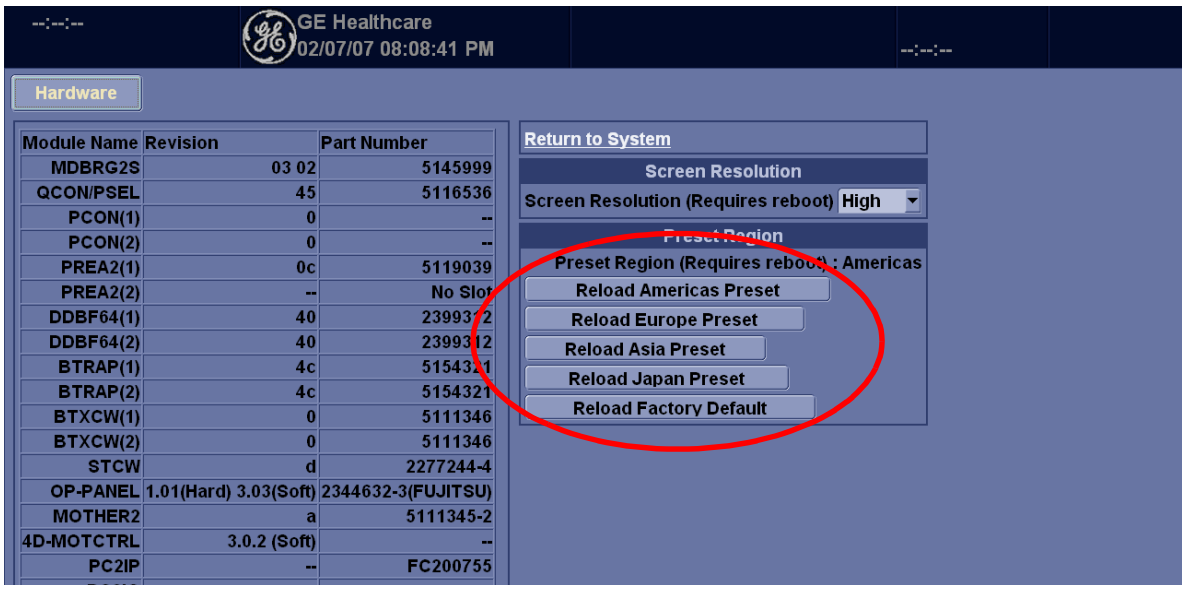


Figure 4-15 Factory Default Regional Preset

4-2-6-3 Cautions Using Regional Preset

- Do not attempt to modify Regional Preset on Upgraded BT07.
- Backup/Restore function should be used between the same region systems. Unexpected setting may result if you restore the preset files to another region setting system.

CAUTION When software is upgraded (from BT07 and on) re-loaded or upgraded (from BT07and on), make sure to select the factory default. Because the preset region information in globalconfig.res file shall not be upgraded, if different region presets are loaded, then it may cause conflict between system setting and region presets.

4-2-6-4 Formatting CD-R/DVD-R Disk

1.) Insert an empty (blank) CD-R/DVD-R disk into the CD-R/DVD-R device.
2.) Access to the **Utility** Menu on the Touch Panel, and select **Connectivity**>**Removable Media**.
3.) Select the removable media from media list.
4.) Type a name for the removable media in Label field.
5.) Select Format button.

Figure 4-16 Selecting Format Button

4-2-6-5 Archiving Presets to an CD-R/DVD-R Disk

1.) Insert an empty (blank) formatted CD-R/DVD-R disk into the CD-R/DVD-R device.

2.) Access to the **Utility** Menu on the Touch Panel, and select **System**>**Backup/Restore**. The Backup screen will be shown on the monitor.

3.) Select the item to back up either from Resource Files.

4.) Select the media to locate the items.

5.) Click on **Backup**. The backup status for each item is displayed on the Result column.

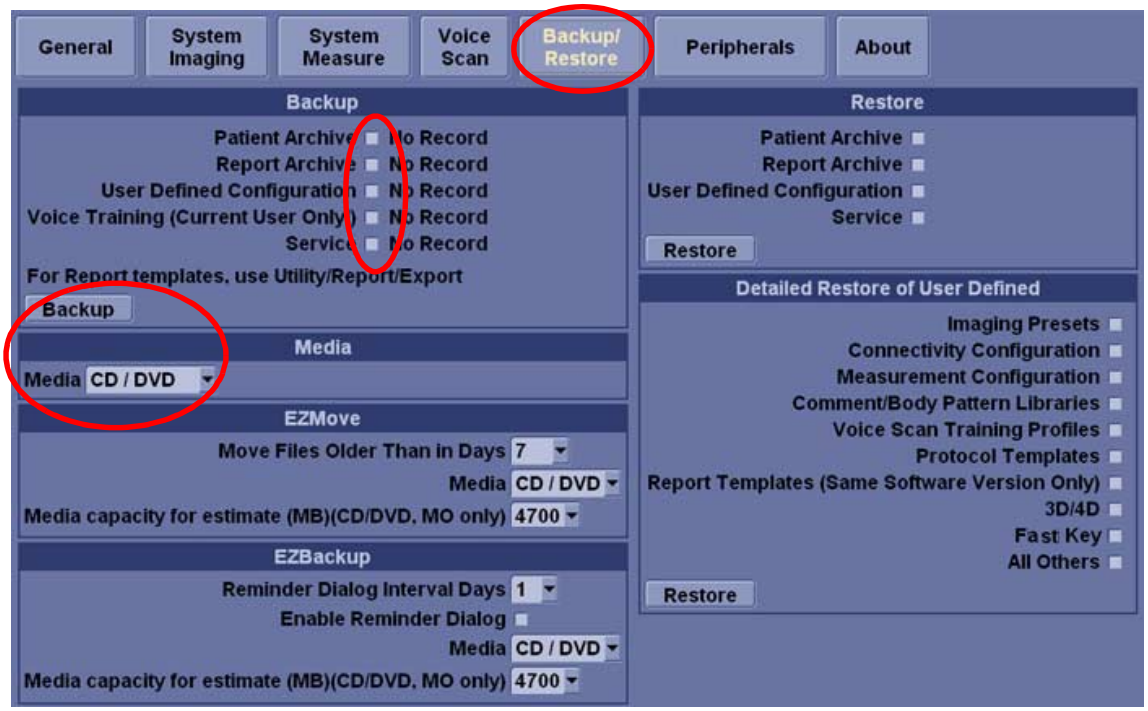


Figure 4-17 Clicking on Backup

6.) Make sure “Finished OK” is displayed on the Result column.

4-2-6-6 Loading Presets from an CD-R/DVD-R disk

1.) Insert the CD-R/DVD-R disk with the archived Presets into the CD-R/DVD-R.

2.) Access to the **Utility** Menu on the Touch Panel, and select **System**>**Backup/Restore**. The Restore sheet will be shown on the monitor.

3.) Select the item to restore either from resource Files.

4.) Click on **Restore**. A message to make sure the restore process is displayed on the monitor. Click **OK**. The restore status for each item is displayed on the Result column.

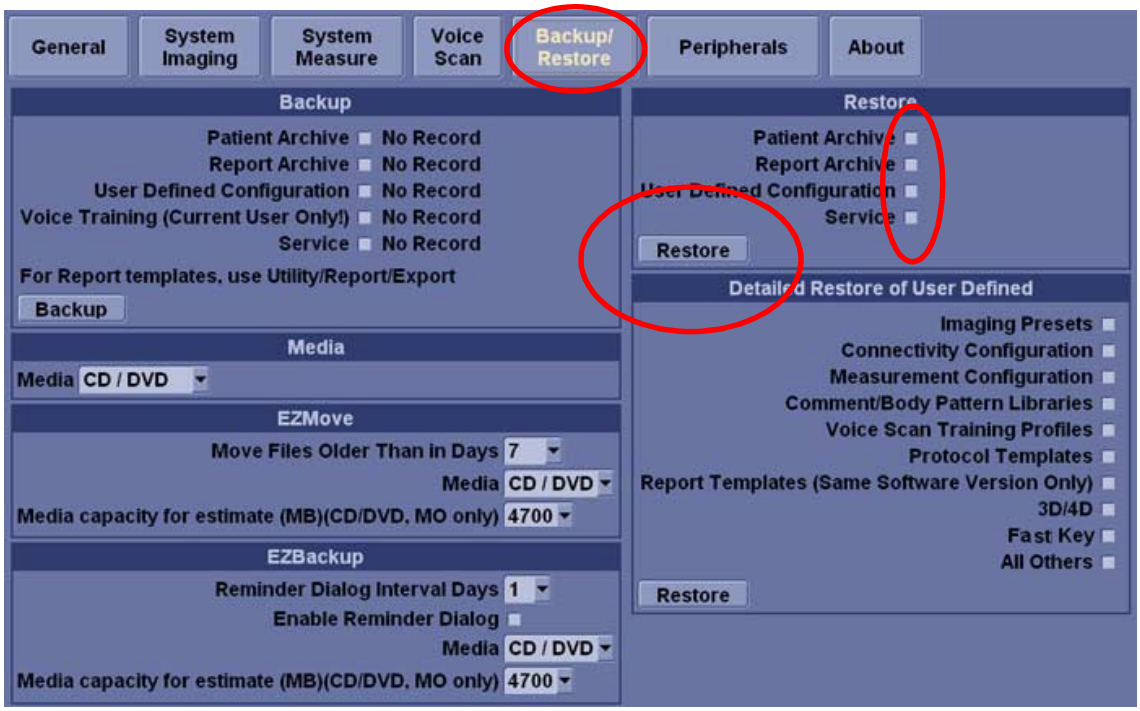


Figure 4-18 Clicking on Restore

5.) Make sure “Finished OK” is displayed on the Result column.

4-2-6-7 Regional Preset - Files

Service Tip: The system shall have each region preset files into:

- Americas : C:/Pegasus/target/resources/Pegasus/ Americas/userdefs/
- Europe: C:/Pegasus/target/resources/Pegasus/Europe/userdefs/
- Asia: C:/Pegasus/target/resources/Pegasus/ Asia/userdefs/
- Japan: C:/Pegasus/target/resources/Pegasus/Japan/userdefs/

When region is selected, Region preset files are copied to:

- C:/Pegasus/target/resources/idunn/userdefs/

4-2-7 Archiving and Loading Presets for BT06/V65x or lower

NOTE: Always save presets before any software reload. This ensures the presets loaded after the software reload are as up–to–date as possible.

All user presets except changes to Summary, Anatomy, and Biometry pages, can be saved on an CD-R/MO/DVD-R disk for reloading on the system.

⚠ **NOTICE** Presets should NOT be saved on the same CD-R/MO/DVD-R disk as images. The Archive Menu lists the images but does NOT list the presets stored on a CD-R/MO/DVD-R disk.

4-2-7-1 Formatting CD-R/MO/DVD-R Disk

1.) Insert an empty (blank) CD-R/MO/DVD-R disk into the CD-R/MO/DVD-R device.

2.) Access to the **Utility** Menu on the Touch Panel, and select **Connectivity**>**Removable Media or Tools**.

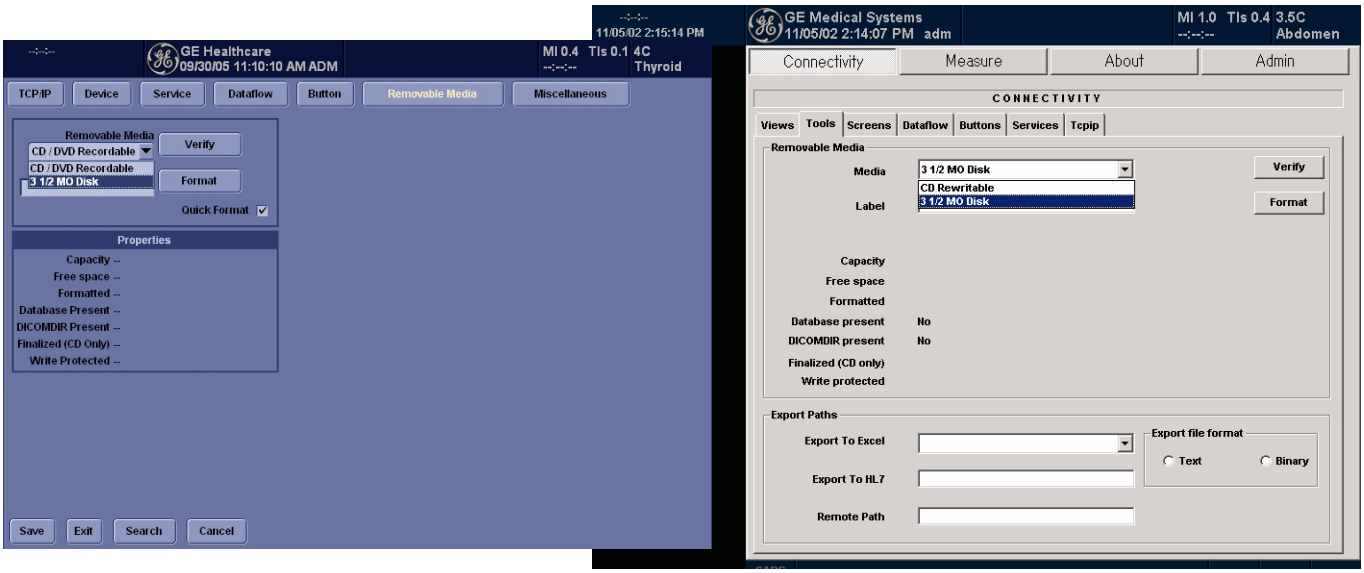


Figure 4-19 Formatting Removable Media1

4-2-6-4 Formatting CD-R/DVD-R Disk (cont'd)

3.) Select the removable media from media list.

4.) Type a name for the removable media in Label field.

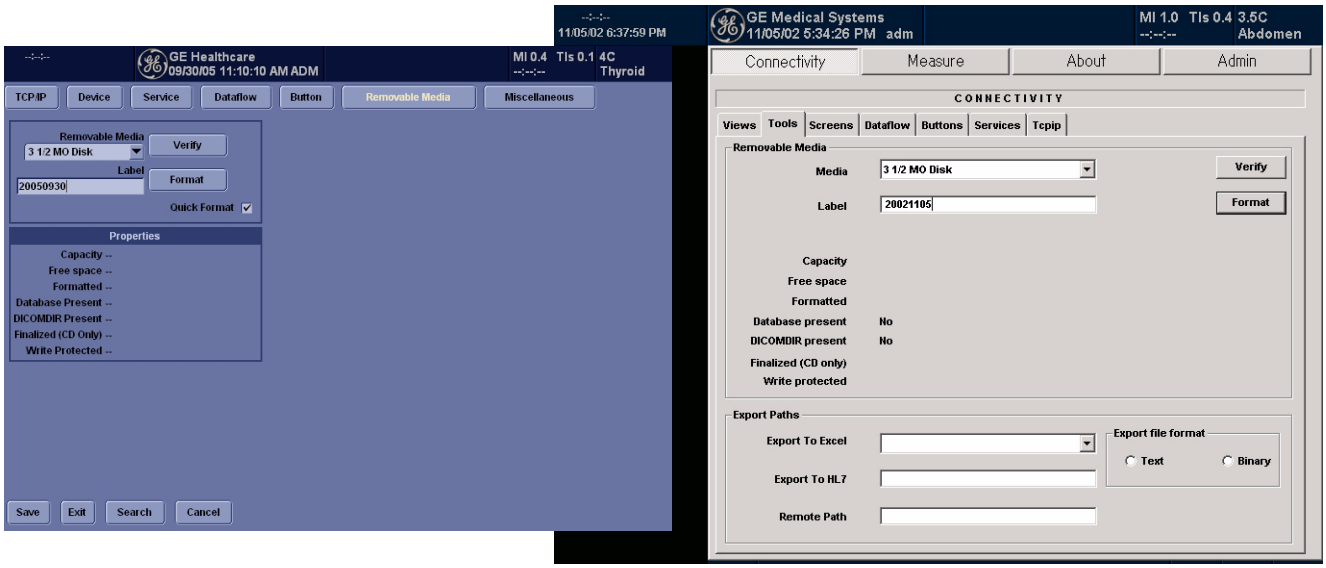


Figure 4-20 Formatting Removable Media2

5.) Select Format button.

4-2-7-2 Archiving Presets to an CD-R/MO/DVD-R Disk

1.) Insert an empty (blank) formatted CD-R/MO/DVD-R disk into the CD-R/MO/DVD-R device.

2.) Access to the **Utility** Menu on the Touch Panel, and select **System**>**Backup/Restore**. The Backup screen will be shown on the monitor.

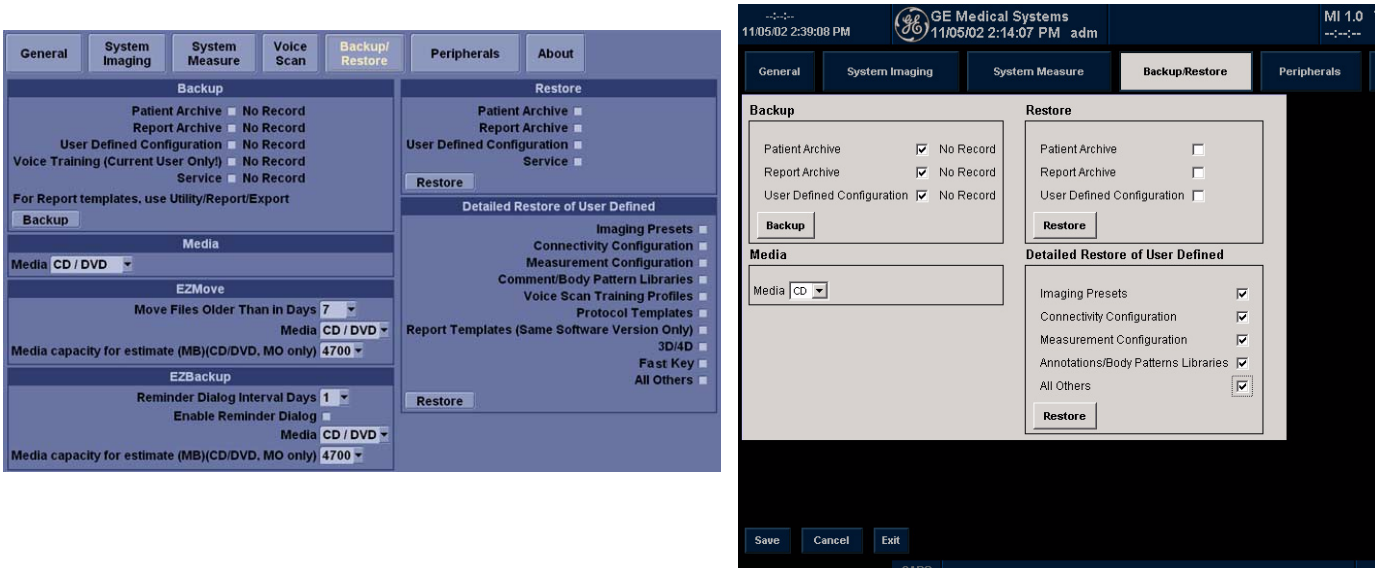


Figure 4-21 Backup Sheet

3.) Select the item to back up either from Resource Files.

4.) Select the media to locate the items.

5.) Click on **Backup**. The backup status for each item is displayed on the Result column.

6.) Make sure “Finished OK” is displayed on the Result column.

4-2-7-3 Loading Presets from an CD-R/MO/DVD-R disk

1.) Insert the CD-R/MO/DVD-R disk with the archived Presets into the CD-R/MO/DVD-R.

2.) Access to the **Utility** Menu on the Touch Panel, and select **System**>**Backup/Restore**. The Restore sheet will be shown on the monitor.

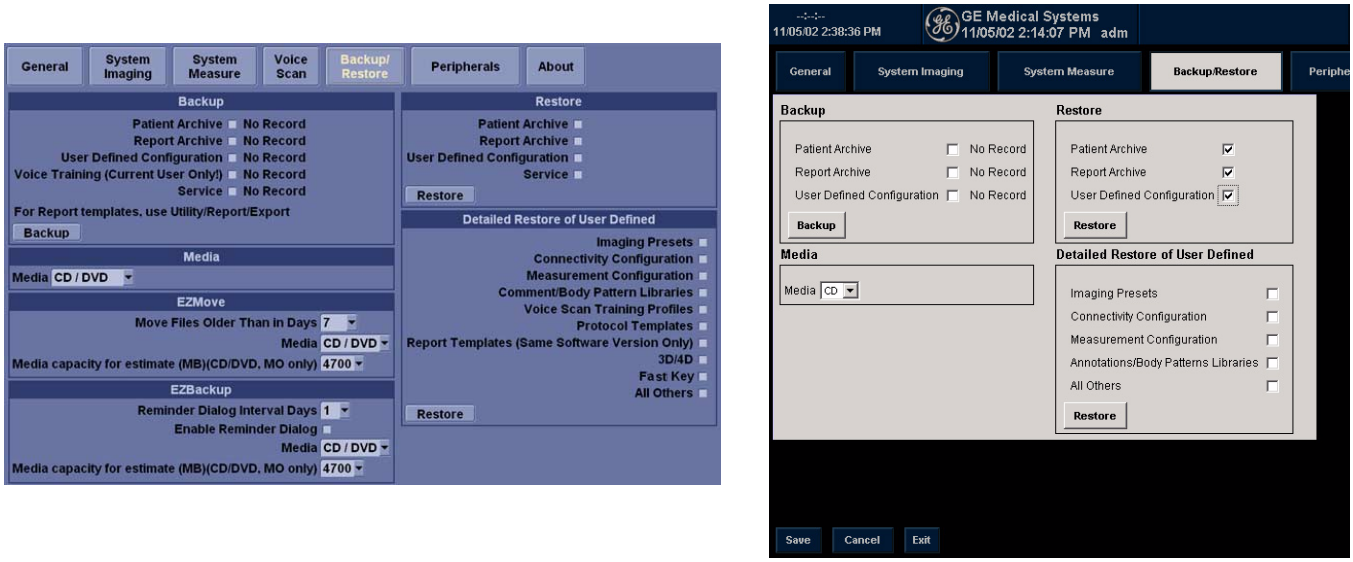


Figure 4-22 Restore Sheet

3.) Select the item to restore either from resource Files.

4.) Click on **Restore**. A message to make sure the restore process is displayed on the monitor. Click **OK**. The restore status for each item is displayed on the Result column.

5.) Make sure “Finished OK” is displayed on the Result column.

Section 4-3
Functional Checks

4-3-1 Basic Controls

For a functional check of the system's features, including the **Control Panel**, **Touch Panel**, **Monitor**, **Keyboard** and **Trackball**, refer to the LOGIQ™ 7 Quick Guide.

4-3-2 Performance Tests

4-3-2-1 Recommended Test Phantoms

GE Healthcare recommends the RMI 430GS phantom, but it is not required. It is the most current phantom recommended to our field service personnel and provides the necessary targets and extended life necessary for consistent system testing.

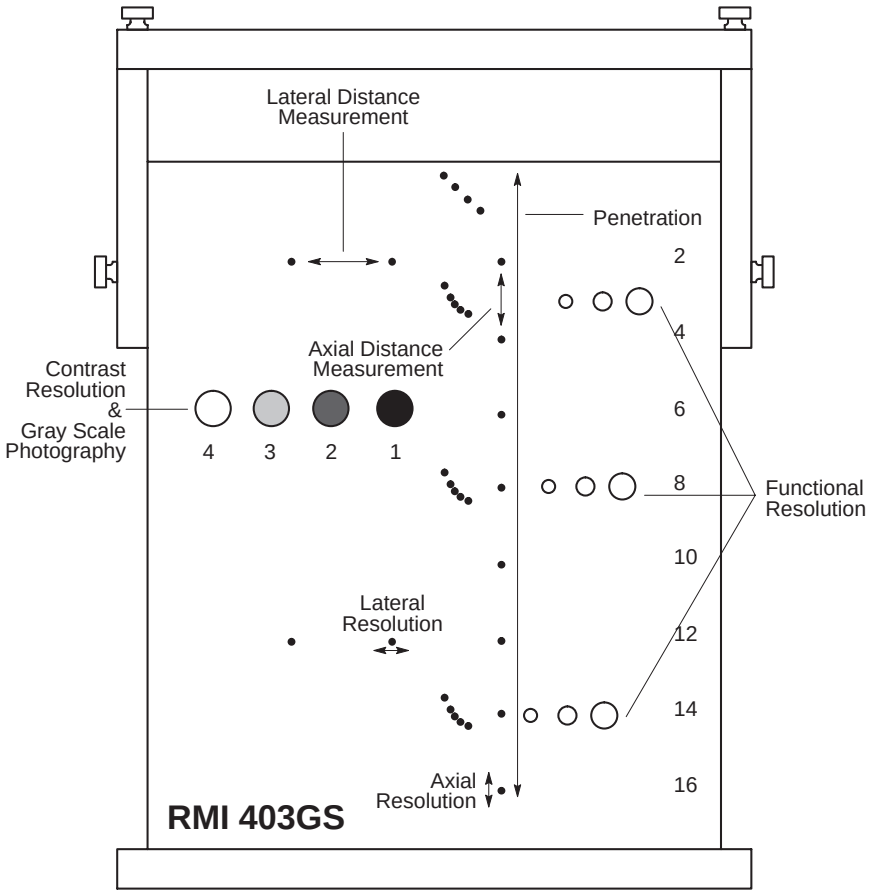


Figure 4-23 Performance Test

4-3-3 Mode Checks

For a functional check of the system's different modes, refer to the LOGIQ™ 7 Quick Guide. The Quick Guide will familiarize you with image optimization for **B-Mode**, **M-Mode**, **Color Flow**, and **Doppler**.

4-3-3-1 System Checks

Table 4-3 System Functional Checks

Step	Item	Description
1	B-Mode	Verify basic B-Mode (2D) operation. Check the basic system controls that affect this mode of operation.
2	CF-Mode	Verify basic CF-Mode (Color Flow Mode) operation. Check the basic system controls that affect this mode of operation.
3	Doppler Modes	Verify basic Doppler operation (PW and CW if available). Check the basic system controls that affect this mode of operation.
4	M-Mode	Verify basic M-Mode operation. Check the basic system controls that affect this mode of operation.
5	Probe Elements	Perform an Element Test on each probe to verify that all probe elements (and system channels) are functional.
6	Monitor	Verify basic Monitor display functions. Refer to Chapter 3 of the User Manual.

4-3-4 Basic Measurements

Basic Measurements for the LOGIQ™ 7 include **Distance and Tissue Depth**, **Circumference/Area (Ellipse and Trace)**, **Volume**, **Time Interval**, **Velocity**, **PI**, **RI**, **S/D Ratio**, **D/S Ratio**, and **A/B Ratio**. Information for all these tests is found in the LOGIQ™ 7 Quick Guide.

4-3-5 ECG Checks

Connect the ECG Harness and check:

Table 4-4 ECG Control

Step	Task	Expected Result(s)
1	Connect the ECG at the Connector on the Front of the system	It will display a curve along the bottom edge of the image sector

4-3-6 Cineloop Check

For activating Cine, creating and storing Cine Loops, and information on the Cine Timeline, refer to the LOGIQ™ 7 Quick Guide.

4-3-7 Backend Processor Checks

- If all the previous tests have been passed successfully, the backend processor is most likely OK.
- See Service Platform.
- If the system seems to be operating erratically, please refer to Chapter 7, Diagnostic/ Troubleshooting.

4-3-8 Probe/Connectors Usage (QG)

The LOGIQ™ 7 Quick Guide, provides information on connecting, activating, deactivating and disconnecting probes.

4-3-9 Peripheral Checks

Check that peripherals work as described below:

Table 4-5 Peripheral checks

Step	Task to do	Expected Result(s)
1.	Press Freeze	Stop image acquisition.
2.	Press (P1) or (P4) on the Control panel	The image displayed on the screen is printed on B&W or Color printer depending on the key assignment configuration.

4-3-9-1 Peripheral/Option Checks

If any peripherals or options are not part of the system configuration, the check can be omitted. Refer to the User Manual for a list of approved peripherals/options.

Table 4-6 GE Approved Peripheral/Hardware Option Functional Checks

Step	Item	Description
1	VCR	Verify record/playback capabilities of the VCR. Clean heads and covers if necessary.
2	B/W Printer	Verify hardcopy output of the B/W video page printer. Clean heads and covers if necessary.
3	Color Printer	Verify hardcopy output of the Color video page printer. Clean heads and covers if necessary.
4	DICOM	Verify that DICOM is functioning properly. Send an image to a DICOM device.
5	InSite/iLinq	Verify that InSite is functioning properly. Ensure two-way remote communications. (Warranty & Contract Customers only)
6	Camera	Verify hardcopy output of the film camera. Clean as necessary.
7	Footswitch	Verify that the footswitch is functioning as programed. Clean as necessary.
8	ECG	Verify basic operation with customer
9	3D Probe	Ask Engineering about Calibration Check for 3-D

4-3-10 Mechanical Functions

4-3-10-1 Keyboard and Display Platform Console Check

Table 4-7 Display platform Maneuverability check

Step	Task to do	Expected Result(s)
1.	Pull release lever under the OP Panel to release the lock.	The height of the Monitor and OP Panel will be maneuverable.

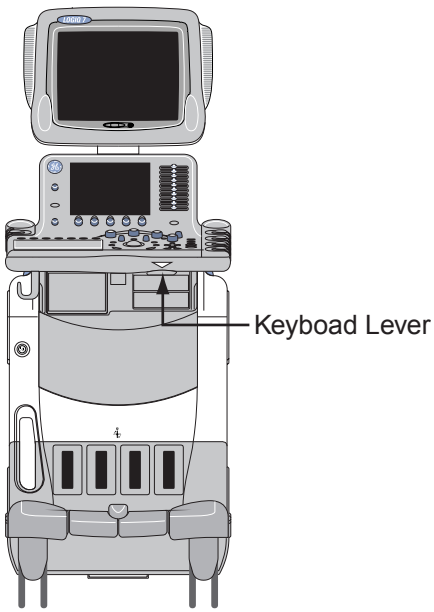
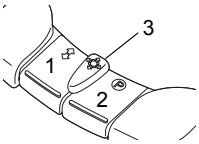
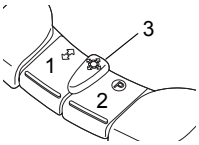
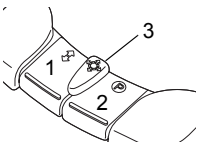
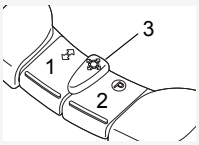


Figure 4-24 Keyboard Lever

4-3-10-2 Brakes and Direction Locks Checks

Check that: brakes and direction locks function as described below. Refer to Figure 4-25 for the locations of brake and swivel.

Table 4-8 Brakes and Direction Lock Check

Step	Task to do	Expected Result(s)
1.	Press on pedal no.2 	To engage the pedal in full lock
2.	Press on pedal no.3 	To release the brake
3.	Press on pedal no.1 	To engage swivel lock
4.	Press on pedal no.3 	To release swivel lock

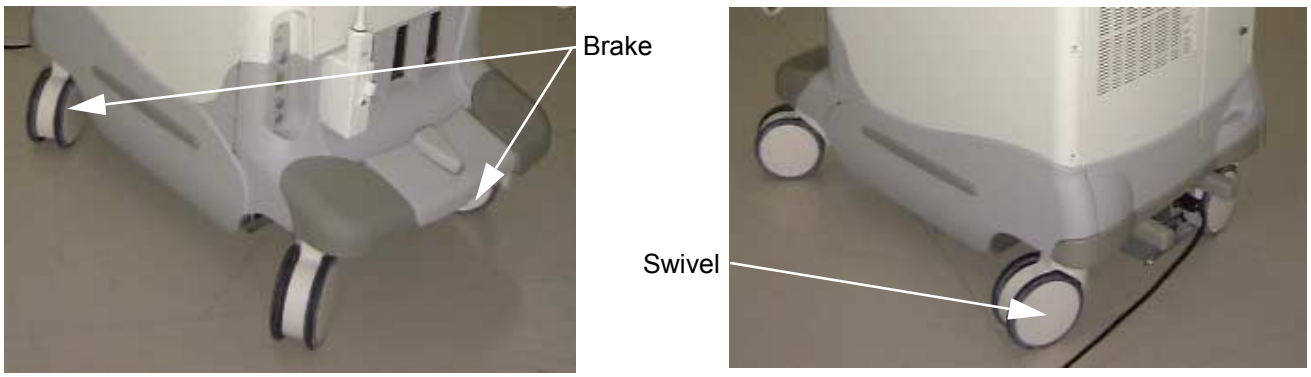


Figure 4-25 Brake and Swivel Location

4-3-10-3 Caster and Caster Link Checks

Check if:

- For Caster:
  - No loose caster with it jacked up.
  - Smooth operation when moving the scanner.
- For Caster Link Assy:
  - Effective brake and direction lock function (See section 4-3-10-2).
  - The pedals can be smoothly returned.
  - The lock pin must be removed.

Section 4-4
Application Turnover Check List

Complete these checks before returning the scanner to customer for use:

4-4-1 Software Configuration Checks

Table 4-9 Software Configuration Checks

Step	Task to do	Expected Result(s)
1.	Check Date and Time setting	Date and Time are correct
2.	Check that Location (Hospital Name and Department) is correct	Location Name is correct
3.	Check Language setting	Language is proper
4.	Check Units setting	Units are proper

Section 4-5
Diagnostics

4-5-1 Service Software Menu

Refer to Section 5-5 - Common Service Platform.

4-5-2 Diagnostics Test Menu

Refer to Section 5-5-5 - Diagnostics.

4-5-3 Utility Menu

Refer to Section 5-5-9 - Utilities.

Section 4-6
Power Supply

4-6-1 Power Supply Test Procedure

There is no need to perform any special tests on the Power Supplies if there does not seem to be a problem that may be related to the Power Supplies.

Refer to Section 6-2 - LV Unit Adjustments (For BT03 or lower) if you appear to have a problem that may be related to the Power Supplies.

4-6-2 Power Supply Adjustment

There are no adjustments on the power supplies. The DC Power is self-regulated. If a voltage is outside the specified range, it means that something is wrong, either with the power supply itself or with a unit connected to that specific power outlet.

Section 4-7
Site Log

Table 4-10 Site Log

DATE	SERVICE PERSON	PROBLEM	COMMENTS

Table 4-10 Site Log

DATE	SERVICE PERSON	PROBLEM	COMMENTS

Chapter 5
Components and Functions (Theory)

Section 5-1
Overview

This chapter explains LOGIQ™ 7's system concepts, component arrangement, and subsystem function. It also describes the Power Distribution System (PDS) and probes.

Table 5-1 Contents in Chapter 5

Section 5-2
Hardware Compatibility Matrix

5-2-1 Hardware Compatibility BT09 or later

5-2-1-1 Monitor

FRU compatibility BT09 ~		R8.0.x	R8.0.x	R8.0.x	R8.0.x	***Latest Software***
FRU Part#	**Description**	**SW Upgraded BT09 (w BT02/BT03 console)**	**SW Upgraded BT09 from BT04/BT06/BT07**	**19 inch LCD Upgraded BT09 from 17 inch LCD**	**R8.0.X (BEP4)**	**comment**
2283334-5	P9534WA CRT MONITOR ASSY	Y	Y*	N	N	Fixed AKB Issue….Monitor Firm Ver.4.2 or higher * Y if CRT console
5117797-2	?CABLE DUCT ASSY	N	Y*	N	N	* Y if CRT console
2297882	P9534WL SPEAKER & BRACKET ASSY	N	N	N	N	Non-compatible for BT03 or lower system
2386616	P9534ZT SPEAKER & BRACKET	Y	Y*	N	N	Only for BT03 or higer and upgraded BT03 system * Y if CRT console
2297050	P9534WK USER SW ASSY OF MONITOR	Y	Y*	N	N	User Switch assy for CRT
2304171	?MON-CABLE-ASSY	Y	Y*	N	N	* Y if CRT console
5169935-2	17inch LCD monitor assy	N	Y+	N	N	Improved Parameter : Contains Front/Rear Covers and Swtichs (exclude Speaker) Y+ if LCD monitor
5137744	SWITCH MIC_ASSY LCD_MONITOR	N	Y+	N	N	Y+ if LCD monitor
5132576	SPEAKER LCD L7	N	Y+	N	N	Y+ if LCD monitor
5132572	PANEL FRONT LCD L7	N	Y+	N	N	Y+ if LCD monitor
5132573	PANEL REAR LCD L7	N	Y+	N	N	Y+ if LCD monitor
5132574	COVER VESA LCD L7	N	Y+	N	N	Y+ if LCD monitor
5125391	LCD D-SUB CABLE ASSY CSL L7	N	N	N	N	Y+ if LCD monitor / Long BEP-LCD cable (replaced by 5198733)
5198733	FRU_Parts.LCD_TOP_BOTTOM_DSUB _CABLE_ASSY	N	Y+	N	N	Y+ if LCD monitor / Two piece BEP-LCD cbl This part replaces 5125391
5189828	DVI_CABLE_TOP_LCD_L7	N	Y+	Y+	N	Y+ if LCD monitor / Two piece BEP-LCD cbl
5137743	MIC_SPK CBL CSL_LCD L7	N	Y+	N	N	Y+ if LCD monitor
5132394	AC CABLE LCD ASSY LOGIQ7	N	Y+	N	N	Y+ if LCD monitor
5139307-2	LCD CABLE DUCT ASSY CSL L7	N	N	N	N	Y+ if LCD monitor (replaced by 5139307-3)
5139307-3	FRU_Parts_LCD_CABLE_DUCT_ASSY	N	Y+	N	N	Y+ if LCD monitor This part replaces 5139307-2
5309932	FRU_Parts_LCD_CABLE_DUCT_ASSY NO RGB CABLE	N	N	N	Y	Only for R8.0.0 or later system
5132571-2	LCD ARM LCD L7	N	Y+	N	N	Y+ if LCD monitor. OK to use if updated using part 5264730
5132571-3	LCD ARM LCD L7	N	Y+	N	N	Y+ if LCD monitor. OK to use if updated using part 5264730
5132571-4	LCD ARM LCD L7	N	Y+	N	N	Y+ if LCD monitor. Improved rotational force.
5136256	ARM COVER LCD L7	N	Y+	N	N	Y+ if LCD monitor
5136257	ARM JOINT COVER LCD L7	N	Y+	N	N	Y+ if LCD monitor
5137688	Monitor Screws LCD L7	N	Y+	N	N	Y+ if LCD monitor
5212808	19Inch LCD Monitor for LOGIQ	N	N	Y	Y	Only 19 inch LCD
5199460	L9 19 In. LCD Speaker Assembly	N	N	Y	Y	Only 19 inch LCD
5248133	COVER VESA ASSY L7	N	N	Y	Y	Only 19 inch LCD
5240769	19 LCD LATCH-N-LOK CABLE	N	N	Y	Y	Only 19 inch LCD
5245143	19inch LCD ARM WITH CABLE ASSY	N	N	Y	Y	Only 19 inch LCD
5245143-2	19INCH LCD ARM WITH CABLE ASSY LCD L	N	N	Y	Y	Only 19 inch LCD. Improved rotational force. Old part can be updated using part 5264730
5224943	19 LCD DVI HDMI CABLE	N	N	Y	Y	Only 19 inch LCD
5224944	19 LCD MIC SPK CABLE ASSY	N	N	Y	Y	Only 19 inch LCD
5224942	19 LCD POWER CABLE	N	N	Y	Y	Only 19 inch LCD
5248134	19inch AC DC ASSY L7	N	N	Y	Y	Only 19 inch LCD
5224941	19 LCD 48V UNIT CABLE	N	N	Y	Y	Only 19 inch LCD
5240848	DVI-HDMI ADAPTOR	N	N	Y	N	Only 19 inch LCD Upgraded from 17 inch LCD

Figure 5-26 Monitor - FRU Compatibility

5-2-1-2 Recording Devices

FRU compatibility BT09 ~

FRU Part#	Description	R8.0.x SW Upgraded BT09 (w BT02/BT03 console)	R8.0.x SW Upgraded BT09 from BT04/BT06/BT07	R8.0.x 19 inch LCD Upgraded BT09 from 17 inch LCD	R8.0.x R8.0.X (BEP4)	*Latest Software* comment
2388429-5	DVD5 Unit	Y	Y	Y	Y	
2388429-6	DVD Unit 6	Y	Y	Y	Y	
FA200801	PAT. I/O	Y	Y	Y	Y	
2324098	P9534XE FRONT-IF-ASSY	N	N	N	N	
5111715-2	LOGIQ7 FRONT CONN2 ASSY	N	Y	Y	Y	Backward compatible among BT04 system
2355070	P9534ZH 1.3GMOD OPTION	Y	N	N	N	1.3G SCSI
5113449	MOD DRIVE LOGIQ7	N	Y	N	N	1.3G IDE
2302393	P9534XD FRONT CONTROL ASSY	Y	N	N	N	
5111714	LOGIQ7 REAR CONN2 ASSY	N	Y	N	N	For Console BT04 / BT06
5174604	LOGIQ7 REAR CONN3 ASSY	N	N	Y	Y	For Console BT06-2 and later
5314714	SVP REAN4 PANEL	N	N	N	Y	For BEP4 units (including BEP upgraded to BEP4)
5314713	SVP REAN4 USB CBL	N	N	N	Y	For BEP4 units (including BEP upgraded to BEP4)

Figure 5-27 Recording Devices- FRU Compatibility

5-2-1-3 OP Panel and Keyboard

FRU compatibility BT09 ～		R8.0.x	R8.0.x	R8.0.x	R8.0.x	***Latest Software***
FRU Part#	**Description**	**SW Upgraded BT09 (w BT02/BT03 console)**	**SW Upgraded BT09 from BT04/BT06/BT07**	**19 inch LCD Upgraded BT09 from 17 inch LCD**	**R8.0.X (BEP4)**	**comment**
2267259-2	P9534XA KEYBOARD ASSY	Y	N	N	N	
2299453	P9536AG OP PANEL A/N KEYBOARD ASSY	Depends	N	N	N	Replaceable only on KBD 2267259 and 2267259-2
2306274	P9536AR OP PANEL KEY ACCESSORY SET	Depends	N	N	N	Replaceable only on KBD 2267259 and 2267259-2
2299448	P9536AB OP PANEL ENCODER ASSY	Depends	N	N	N	Replaceable only on KBD 2267259 and 2267259-2
2306270	P9536AP OP PANEL CONTROL	Depends	N	N	N	Replaceable only on KBD 2267259 and 2267259-2
2299447	P9536AA OP PANEL LCD UNIT	Depends	N	N	N	Replaceable only on KBD 2267259 and 2267259-2
2306273	P9536AQ OP PANEL KEY SWITCH	Depends	N	N	N	Replaceable only on KBD 2267259 and 2267259-2
2299452	P9536AF OP PANEL TGC ASSY	Depends	N	N	N	Replaceable only on KBD 2267259 and 2267259-2
2299451	P9536AE OP PANEL TRACKBALL ASSY	Depends	N	N	N	Replaceable on any KBD
2344632-2	P9534XK KEYBOARD ASSY	Y	N	N	N	
2369818	P9536BG A/N KBD ASSY	Depends	Y	Y	Y	Replaceable only on KBD 2344632, 2344632-2,5138507, 5138507-2
2369816	P9536BR KEY ACCESSORY	Depends	Y	Y	Y	Replaceable only on KBD 2344632, 2344632-2,5138507, 5138507-2 Contains A/N Key Tops Clear Caps Labels for clear caps Knobs for rotally encoders TGS Slid Caps
2369816-2	P9536BR KEY ACCESSORY	Depends	Y	Y	Y	Replaceable only on KBD 2344632, 2344632-2,5138507, 5138507-2 Contains A/N Key Tops Clear Caps Labels for clear caps incl.4D Knobs for rotally encoders incl.4D TGS Slid Caps
2369826	P9536BB ROTARY ENCODER ASSY	Depends	Y	Y	Y	Replaceable only on KBD 2344632, 2344632-2,5138507, 5138507-2
2369817	P9536BP I/F BOARD ASSY	Depends	Y	Y	Y	Replaceable only on KBD 2344632, 2344632-2,5138507, 5138507-2
2369825	P9536BA LCD UNIT	N	N	N	N	Replaceable only on KBD 2344632, 2344632-2,5138507, 5138507-2
2369815	P9536BQ SW BOARD ASSY	v	Y	Y	Y	Replaceable only on KBD 2344632, 2344632-2,5138507, 5138507-2
2369822	P9536BF TGC ASSY	Depends	Y	Y	Y	Replaceable only on KBD 2344632, 2344632-2,5138507, 5138507-2
2369823	P9536BE TRACKBALL ASSY	Depends	Y	Y	Y	Replaceable on any KBD
2344632-3	P9534XK KEYBOARD ASSY	Y	Y	N	N	2369825(TouchPanel) cannot be assembled on 2344632-3.
5138507-3	SVC KEYBOARD LOGIQ7	Y	Y	Y	Y	Cost reduction from previous KBD
2301857	P9536SD LAMP ASSY	Y	N	N	N	
5117796	LAMP STAY ASSY OPA L7	N	Y	Y	Y	
2301853-4	P9536RB TASK LAMP ASSY	Y	Y	Y	Y	
2357676	P9536RK LIGHT BULB	Y	Y	Y	Y	Light Bulb only (lower level of 2301853-4)
5117485	?FCON Cable Assy	N	Y	Y	Y	
5117795	?FOOT SW Bracket ASSY	N	Y	Y	Y	

Figure 5-28 OP Panel and Keyboard- FRU Compatibility

5-2-1-4 Front End

FRU compatibility BT09 ~		R8.0.x	R8.0.x	R8.0.x	R8.0.x	*Latest Software*
FRU Part#	**Description**	SW Upgraded BT09 (w BT02/BT03 console)	SW Upgraded BT09 from BT04/BT06/BT07	19 inch LCD Upgraded BT09 from 17 inch LCD	R8.0.X (BEP4)	**comment**
2357804-2	**P9536CA DDBF SVC**	N	N	N	N	32ch
2399312	**P9535CL DDBF64 ASSY**	Y	Y	Y	N	64ch
5182379	**DDBF128 ASSY CSL L7**	N	N	N	Y	128ch/use with EBUS4
2315492	**P9538JD NEST BD JIG**	Y	Y	Y	Y	
2264606-2	**P9535AU MDBRG ASSY**	N	N	N	N	
2264606-3	**P9535AU MDBRG ASSY**	N	N	N	N	Noise reduction on BT04
2264606-4	**P9535AU MDBRG ASSY**	Y	Y+	N	N	+Y if upgraded from BT04~BT06 but not BT06-2
2264606-5	**P9535AU MDBRG ASSY**	Y	Y+	N	N	+Y see comment above 6T Issue solved from -4 or lower version
5145999	**MDBRG2S ASSY CSL L7**	N	Y*	Y	Y	MDBRG2S only on BT06-2 console (MDBRG2S = MDBRG+SINANO2, Insert to SINANO2 slot) *Y if upgraded from BT06-2
5145999-2	**MDBRG2S ASSY CSL L7**	N	Y*	Y	Y	Improvement for Memory Test false fail. Previous parts can still be used as FRU
2271702-2	**P9535BA EBUS ASSY**	N	N	N	N	
2399317	**P9535FA EBUS2 ASSY**	Y	N	N	N	Only for Upgraded BT04 from BT01/02/03
5111348	**EBUS3T ASSY CSL LOGIQ7**	N	Y	Y	N	Upper
5112465	**EBUS3B ASSY CSL LOGIQ7**	N	Y	Y	N	Bottom
5182215	**EBUS4T ASSY CSL L7**	N	N	N	Y	
5182757	**EBUS4B ASSY CSL L7**	N	N	N	Y	
2273295	**P9535BC MDCON ASSY**	N	N	N	N	No need in BT04system
2264608-3	**P9535AY MOTHER ASSY**	N	N	N	N	
5111345-2	**MOTHER2 ASSY CSL LOGIQ7**	N	Y	Y	Y	
2264596-2	**P9535AE PREA ASSY**	N	N	N	N	32ch
5119039	**PREA2F ASSY CSL LOGIQ7**	N	Y	Y	Y	64ch
2393853	**PREA2H ASSY CSL LOGIQ7**	Y	N	N	N	Only for Upgraded BT04 from BT01/02/03
2264604-2	**P9535AS PROMP ASSY**	N	N	N	N	No need in BT04/BT06system
2304617-5	**P9538HW QCON ASSY**	Y	Y	Y	Y	Noise reduction on BT04
2264602-3	**P9535AQ SINANO ASSY**	N	N	N	N	
2374744	**P9535BQ SINANO2 ASSY**	Y	Y	N	N	
2277244-4	**P9535AG STCW ASSY**	Y	Y	Y	Y	
2268026	**P9535BY TERMINATOR ASSY**	Y	Y	Y	Y	
2323353-4	**P9535BJ TRAP2 ASSY**	N	N	N	N	32ch
5118342-3	**BTRAPHV ASSY**	N	Y	N	N	64ch. Countermeasured against HVL current control with full heigh HVPS.
5154321	**BTRAPP5AHV Assy**	Y	N	Y	Y	P5A 64ch.
2323450-4	**P9535GA TRAPCW ASSY**	N	N	N	N	TRAP + TXCW
5111346	**LOGIQ7 BTXCW ASSY**	Y	Y	Y	Y	BTXCW only (piggy board)
5244917	**MOTHER2A ASSY CSL LOGIQ7**	N	N	N	N	
2305111-3	**?TX CABLE ASSY**	Y	Y	Y	Y	

Figure 5-29 Front End- FRU Compatibility

5-2-1-5 Backend

FRU compatibility BT09 ~		R8.0.x	R8.0.x	R8.0.x	R8.0.x	*Latest Software*
FRU Part#	**Description**	**SW Upgraded BT09 (w BT02/BT03 console)**	**SW Upgraded BT09 from BT04/BT06/BT07**	**19 inch LCD Upgraded BT09 from 17 inch LCD**	**R8.0.X (BEP4)**	**comment**
5119906-2	**BCOMPSW3 SVC CSL L7 (w/o Video Card)**	Y	Y	N	N	**No Video card mounted. Need to reuse Video Card when BECOMP3 replace to this new one.** Pentium 4 (BEP3) PCMother +CPU+PC2IPB+ATX +Ethernet+HDD+Chasis +Memory+ MiscParts
5119906-3	**BCOMPSW3 SVC CSL L7 (w/o Video Card / PC2IP)**	Y	Y	Y	N	**No Video card/PC2IP/FALCON mounted. Need to reuse Video Card / PC2IP/FALCON when BECOMP3 replace to this new one.** Pentium 4 (BEP3) PCMother +CPU+ATX +Ethernet+HDD+Chasis +Memory+ MiscParts +BaseImageCD
5119906-4	**BCOMPSW3 SVC CSL L7 (w/o Video Card / PC2IP)**	Y	Y	Y	N	**No Video card/PC2IP/FALCON mounted. Need to reuse Video Card / PC2IP/FALCON when BECOMP3 replace to this new one.** Pentium 4 (BEP3) PCMother +CPU+ATX +Ethernet+HDD+Chasis +Memory+ MiscParts +BaseImageCD
5308149	SVP-BECOMP4-L7	N	N	N	Y	**No Video card/PC2IP/FALCON mounted. Need to reuse Video Card / PC2IP/FALCON when BECOMP4 replace to this new one. Core2 DUO** (BEP4) PCMother +CPU+ATX +Ethernet+HDD+Chasis +Memory+ MiscParts
5316350	SVP BECOMP4 PARTS	N	N	N	Y	**Misc. parts for BEP4. Parts include SATA signal/power cable for HDD, DVI-VGA connector, BEP4 internal USB cables and BEP4 Label**
2304809-2	**P9536RH BATTERY PACK**	Y	Y	Y	Y	
5118511	**Extended MEMORY3 LOGIQ7**	Y	Y	Y	N	Never be used on BEP2/BEP4
5306528	**DDR2 MEMORY4 1GB**	N	N	N	Y	
5118510	**HD LOGIQ7**	Y	Y	Y	N	80GB PATA
5306526	**SATA HDD 160GB**	N	N	N	Y	160GB SATA type. To be used with BEP4
5179643	**HDD For Consip L7 Console**	N	N	N	N	160GB PATA type
FC200656	**PC2IP II B**	Y	Y*	N	N	Only supported by BECOMPSW3 *Y if BT04/BT06 / N if BT06-2/V65x/BT07~
FC200755	**PC2IP 3**	N	N	Y	Y	PC2IP3 need R620 application
2362887	**P9536TK AGP BOARD ASSY**	Y	Y+	N	N	G550 Video Card AGP Type for CRT console '+Y if CRT console
5111298	**DUAL DVI AGP**	N	Y$	Y	N	SONO64 Video Card AGP Type : Only for LCD System 'Y$ if LCD console
5121039	**PCI VGA**	N	Y$	Y	N	G450 Video Card PCI Type : Only for LCD System
5306525	**PCI Express Graphic board**	N	N	N	Y	Matrox P690 Video Card for PCI-E slot
5142743	**BECOMP3 Rear Fan Assy**	Y	Y	Y	Y	Common for BEP3/BEP4
TBD	**SCSI Card**	Y	N	N	N	Mounted only on Upgraded BT04/BT06 system in BECOMP3 for MOD Connection
5147460	**FALCON Capture Board**	N	Y%	Y	Y	VideoCapture Board directly from REAN3 on BT06-2 console Y% if upgraded from BT06-2/V65x~ (with REAN3)
5169391	**?YC Cable (S-Video)**	N	Y%	Y	Y	Cable that connects VideoCapture Board between REAN3 on BT06-2 console Y% if upgraded from BT06-2/V65x~ (with REAN3)
2384944	**P9536CE DGPCIO/VIC_SVC**	N	N	N	N	Only suppoted by BEP2. Even if BEP2 mounted, if PCVIC is mounted, order PC2IO/VIC for BT01 console.
5133526	**DGPCIO VIC 2-A ASSY**	Y	Y	Y	N	Updated for LCD
2389075	**?PCI CABLE**	Y	Y	Y	Y	
5301220-2	PCI-DGVIC2 Assembly	N	N	N	Y	
5257226	BulkHead for L7 and LS6	N	N	N	Y	
5257231	Cable13 for BulkHead	N	N	N	Y	
5257233	Cable25 for BulkHead	N	N	N	Y	

Figure 5-30 Backend - FRU Compatibility

5-2-1-6 Power Units

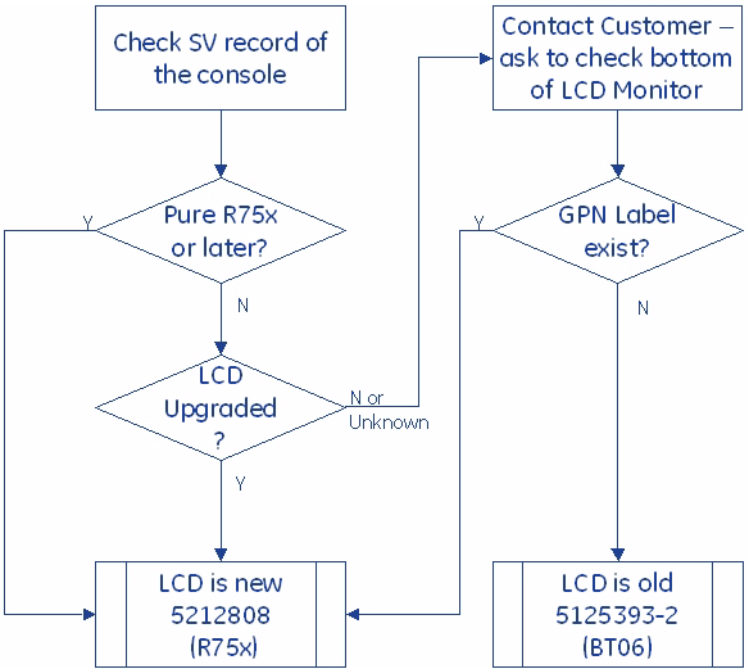
FRU compatibility BT09 ~		R8.0.x	R8.0.x	R8.0.x	R8.0.x	***Latest Software***
FRU Part#	**Description**	**SW Upgraded BT09 (w BT02/BT03 console)**	**SW Upgraded BT09 from BT04/BT06/BT07**	**19 inch LCD Upgraded BT09 from 17 inch LCD**	**R8.0.X (BEP4)**	**comment**
2304538-4	**P9534WP AC POWER BOX 200V**	Y	N	N	N	Include AC BOX, AC Code, and extention cable
2384371	**P9534XL AC POWER BOX ASSY JPN**	Y	N	N	N	Include AC BOX, AC Code, and extention cable (Only for Japan)
2384370	**P9534XP AC POWER BOX ASSY 100V**	Y	N	N	N	Include AC BOX, AC Code, and extention cable (not for Japan)
2304624	**P9538JC CONSOLE FAN SSY**	N	N	N	N	
5117493	**CONSOLE FAN ASSY 2 CSL L7**	N	Y	Y	Y	
5122614	**CONSOLE FAN ASSY-A UPG L7**	Y	N	N	N	Only for Upgraded BT04 from BT01/02/03
2372387	**P9534XH L7HV-SVC**	Y	Y	Y	Y	
2334197	**P9534WU LV-2 SERVICE UNIT**	Y	N	N	N	Compatible with 2283531 (LV)
2292209	**P9534WF SSR PANEL**	Y	N	N	N	
2315585	**P9534WR FUSE FOR SSR PANEL**	Y	N	N	N	
2283530	**P9534WB MAIN TRANS**	Y	N	N	N	
2373331-2	**MAIN TRANS2 ASSY CSL L7**	Y	Y	Y	Y	
5117721	**LV-04 UNIT MAIN PS L7**	N	Y	Y	Y	
5118824-2	**LV-04 UNIT with Cables**	N	Y	Y	Y	Noise Improvement
5117723	**NF INLET ASSY MAIN PS L7**	N	Y	Y	Y	
5117724	**AC IN OUT 100V MAIN PS L7**	N	Y	Y	Y	
5117725	**AC IN OUT 200V MAIN PS L7**	N	Y	Y	Y	
5118052	**AC IN200 OUT100 ASSY MAIN PS L7**	N	Y	Y	Y	Only for Korea System
5117726	**SSR PCB ASSY MAIN PS L7**	N	Y	Y	Y	
5117727	**FUSE HOLDER MAIN PS L7**	N	Y	Y	Y	
5117728-3	**CONN ASSY MAIN PS L7**	N	Y	Y	Y	
5119119	**SSR-HLV CABLE**	N	Y	Y	Y	
5119120	**SSR-AC PANEL CABLE**	N	Y	Y	Y	
5119121	**VOLTAGE SEL CABLE**	N	Y	Y	Y	
2301858-3	**? PW SW ASSY**	N	Y	Y	Y	
5117493	**CONSOLE FAN ASSY2**	N	Y	Y	Y	
5117491	**FAN CABLE BRAKET ASSY**	N	Y	Y	Y	

Figure 5-31 Power Units- FRU Compatibility

5-2-2 Hardware Identification Tip

5-2-2-1 LCD Monitor Differences

The flowchart below describes how to differentiate LCD monitor type.



GPN Identification Mark
(Bottom of LCD monitor)

Figure 5-32 LCD monitor- How to Differentiate

5-2-2-1 LCD Monitor Differences (cont'd)

LCD Variation Tips:

- Bezel Shape
  - Curvy for 17 inch
  - Straight for 19 inch
- GE Logo
  - Silver for 17 inch
  - Silver on black background for 19 inch

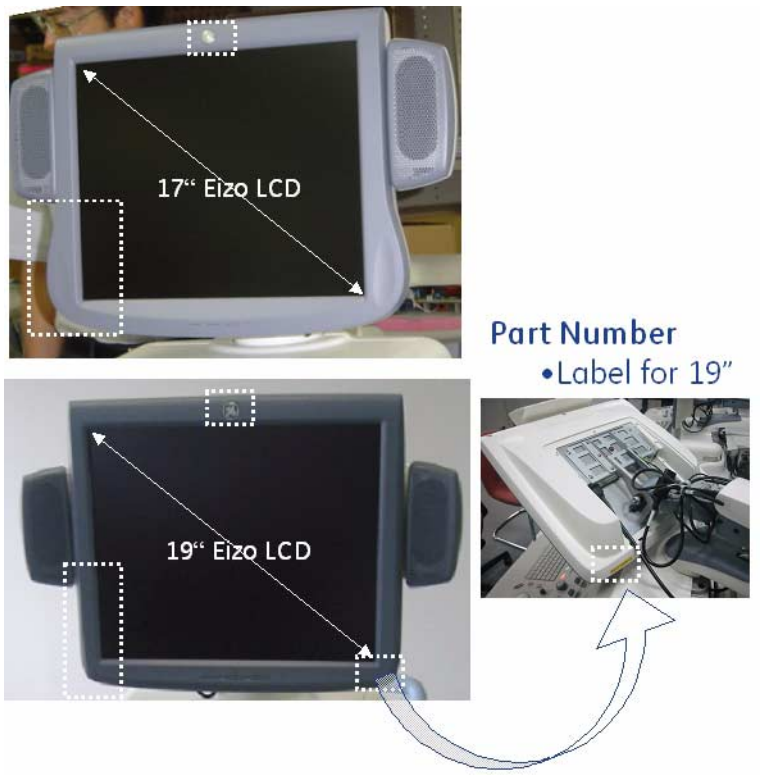


Figure 5-33 LCD Variation Tips

5-2-2-2 BT09_SV_BEP4 Configuration Variationos

Config	Software	Console	Note
BT09 Original (BEP4)	R8.x.x	BT04/BT06/BT07/BT09 base	·Utility Menu shows Ghost Part Number ·REAR Panel have GPN printed : 5304518 : REAR CONN4 ASSY L7
Upgraded to BT09 (BEP3)	R8.x.x	BT04/BT06/BT07 base	·Utility Menu shows Ghost Part Number ·NO Rear Panel markings
MD-3000 USB	N/A	N/A	·Label "RS232C Not Available" on back

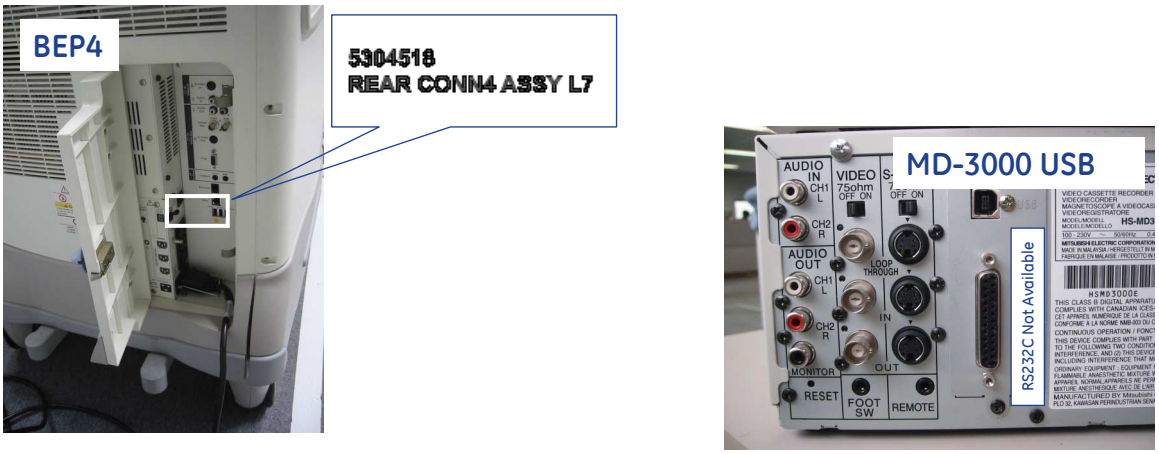
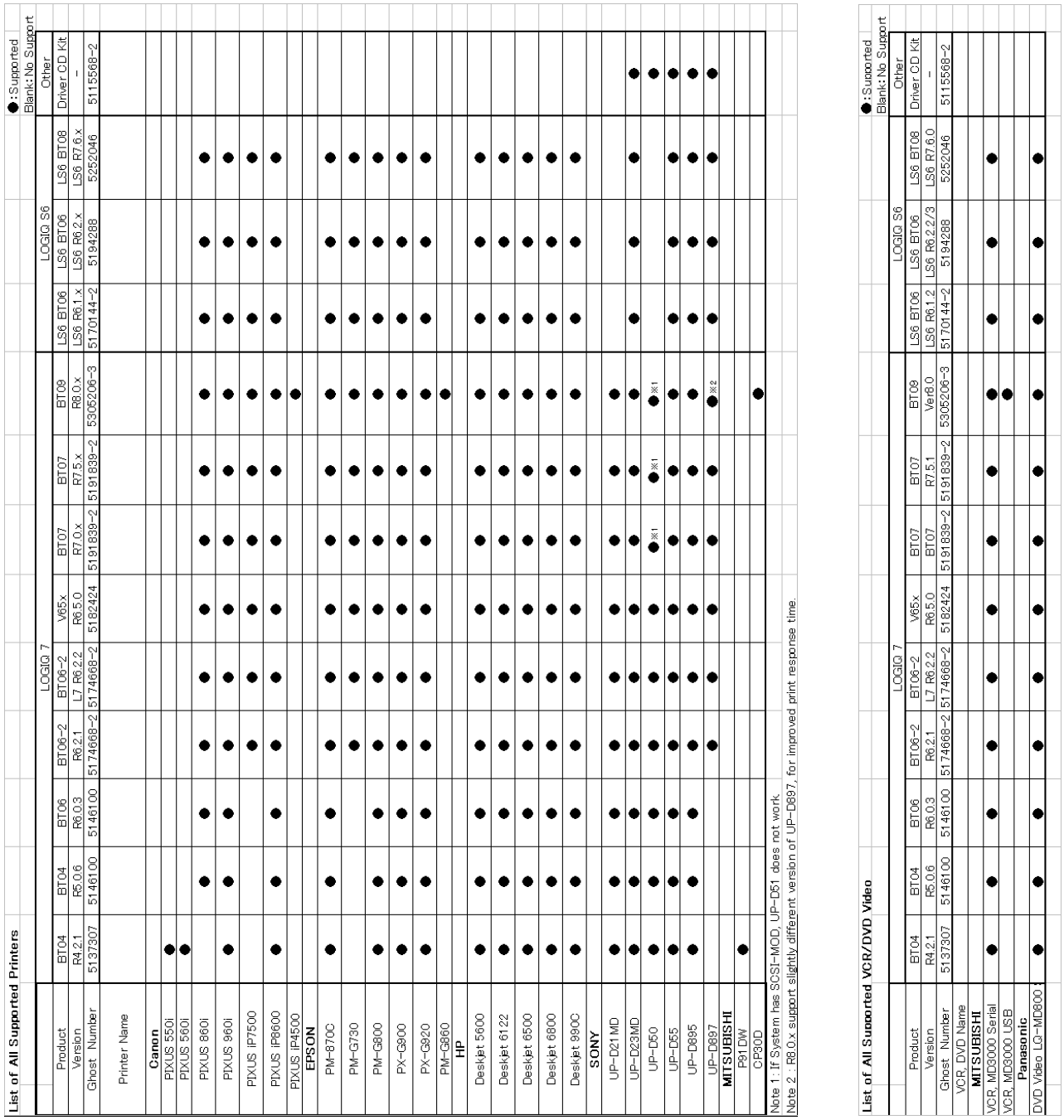


Figure 5-34 BT09 Configuration Variations

Section 5-3
Peripheral Compatibility

NOTE: For SONY D21MD (or D23MD) color printer ONLY:
The D21MD (or D23MD) printer contains the L-sized ribbon cassette and paper as a standard. However, the S-sized paper is recommended for LOGIQ 7 system. If the S-sized paper is used with the L-sized ribbon cassette, "Incorrect paper size setting" error occurs with no print. So, when using the S-sized paper, change the ribbon cassette to the S-sized.



List of All Supported Printers

●: Supported
Blank: No Support

	LOGIQ 7								LOGIQ S6				Other
Product	BT04	BT04	BT06	BT06-2	BT06-2	V85x	BT07	BT07	BT09	LS6 BT06	LS6 BT06	LS6 BT08	Driver CD Kit
Version	R4.2.1	R5.0.6	R6.0.3	R6.2.1	L7 R6.2.2	R6.5.0	R7.0.x	R7.5.x	R8.0.x	LS6 R6.1.x	LS6 R6.2.x	LS6 R7.6.x	–
Ghost Number	5137307	5146100	5146100	5174668-2	5174668-2	5182424	5191839-2	5191839-2	5305206-3	5170144-2	5194288	5252046	5115568-2
Printer Name													
Canon													
PIXUS 550i	●												
PIXUS 560i	●												
PIXUS 860i		●	●	●	●	●	●	●	●	●	●	●	
PIXUS 960i	●	●	●	●	●	●	●	●	●	●	●	●	
PIXUS iP7500				●	●	●	●	●	●	●	●	●	
PIXUS iP8600	●	●	●	●	●	●	●	●	●	●	●	●	
PIXUS iP4500									●				
EPSON													
PM-870C	●	●	●	●	●	●	●	●	●	●	●	●	
PM-G730				●	●	●	●	●	●	●	●	●	
PM-G800	●	●	●	●	●	●	●	●	●	●	●	●	
PX-G900	●	●	●	●	●	●	●	●	●	●	●	●	
PX-G920	●	●	●	●	●	●	●	●	●	●	●	●	
PM-G860									●				
HP													
Deskjet 5600	●	●	●	●	●	●	●	●	●	●	●	●	
Deskjet 6122	●	●	●	●	●	●	●	●	●	●	●	●	
Deskjet 6500	●	●	●	●	●	●	●	●	●	●	●	●	
Deskjet 6800	●	●	●	●	●	●	●	●	●	●	●	●	
Deskjet 990C	●	●	●	●	●	●	●	●	●	●	●	●	
SONY													
UP-D21MD	●	●	●	●	●	●	●	●	●				
UP-D23MD	●	●	●	●	●	●	●	●	●				●
UP-D50	●	●	●	●	●	●	● ※1	● ※1	● ※1	●	●		●
UP-D55	●	●	●	●	●	●	●	●	●	●	●	●	●
UP-D895	●	●	●	●	●	●	●	●	●	●	●	●	●
UP-D897				●	●	●	●		● ※2	●	●	●	●
MITSUBISHI													
P91DW	●												
CP30D									●				

Note 1 : If System has SCSI-MOD, UP-D51 does not work.
Note 2 : R8.0.x support slightly different version of UP-D897, for improved print response time.

List of All Supported VCR/DVD Video

●: Supported
Blank: No Support

	LOGIQ 7								LOGIQ S6				Other
Product	BT04	BT04	BT06	BT06-2	BT06-2	V85x	BT07	BT07	BT09	LS6 BT06	LS6 BT06	LS6 BT08	Driver CD Kit
Version	R4.2.1	R5.0.6	R6.0.3	R6.2.1	L7 R6.2.2	R6.5.0	BT07	R7.5.1	Ver8.0	LS6 R6.1.2	LS6 R6.2.2/3	LS6 R7.6.0	–
Ghost Number	5137307	5146100	5146100	5174668-2	5174668-2	5182424	5191839-2	5191839-2	5305206-3	5170144-2	5194288	5252046	5115568-2
VCR, DVD Name													
MITSUBISHI													
VCR, MD3000 Serial	●	●	●	●	●	●	●	●	●	●	●	●	
VCR, MD3000 USB									●				
Panasonic													
DVD Video LG-MD600	●	●	●	●	●	●	●	●	●	●	●	●	

Figure 5-35 Peripheral Compatibility

Section 5-4
Block Diagrams and Theory

5-4-1 Block Diagram (R7.5.x or later, 19 inch LCD model)

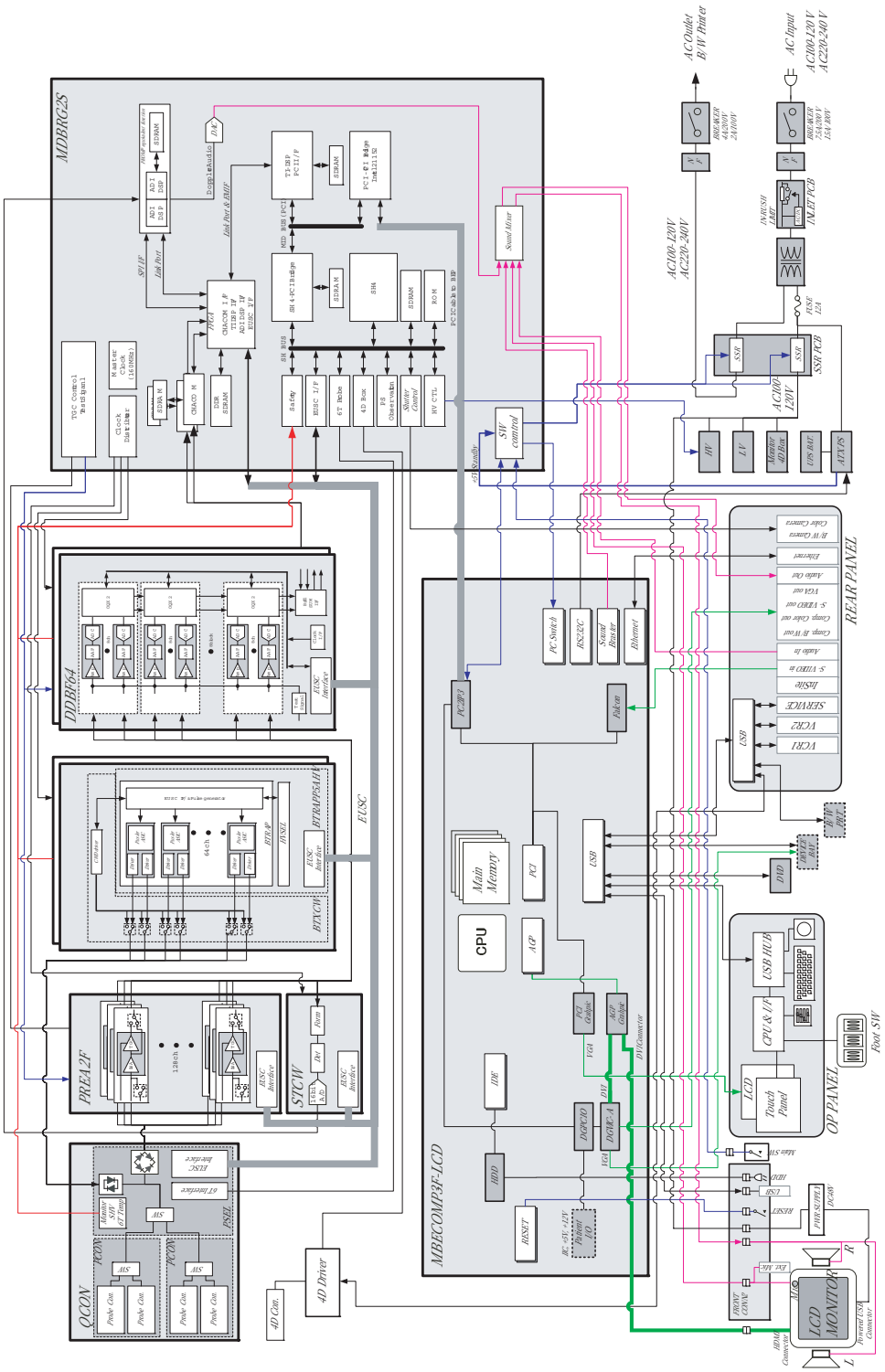


Figure 5-36 System Block Diagram (R7.5.x or later)

5-4-2 General Information

- LOGIQ™ 7 is a phased and linear array ultrasound imaging scanner. It has provisions for analog input sources like ECG and phono. A dedicated Doppler probe may also be connected and used.
- The system can be used for:
  - 2D Black and White imaging
  - 2D Color Flow
  - M-Mode Black and White imaging
  - Color M-Mode
  - Doppler
  - a number of combinations of the above
- LOGIQ™ 7 is a digital beam forming system that can handle up to 192 element linear probes through multiplexing.
- Signal flow from the Probe Connector Panel to the Front End, to the Mid Processors and Back End Processor and finally to the monitor and peripherals.
- System configuration is stored on a hard disk and all necessary software is loaded from the hard disk on power up.

5-4-3 CPU/Back End Processor (For BEP4 for BT09 or later)

5-4-3-1 BEP4 Signal Connections

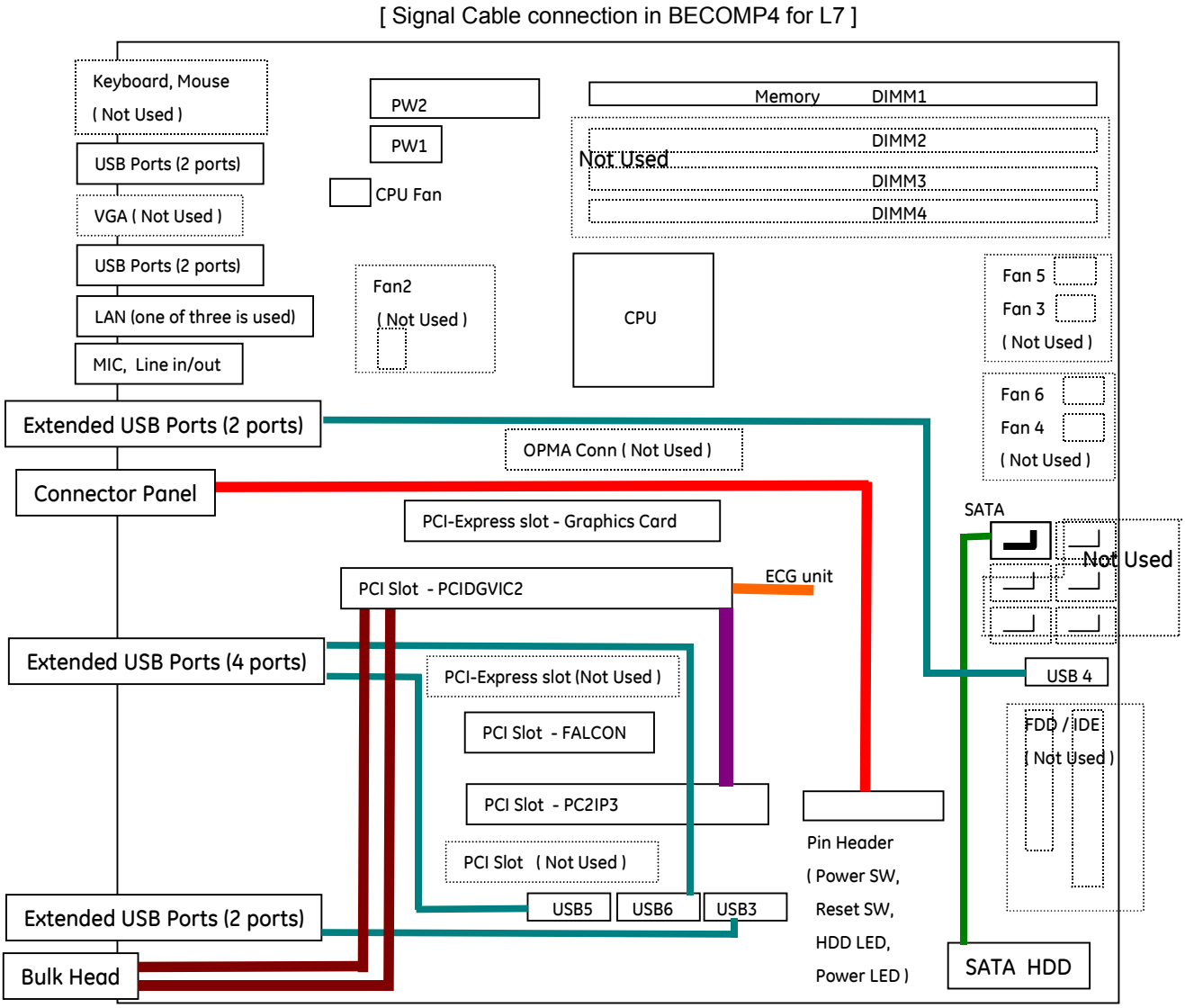


Figure 5-37 BEP4 Signal Cable Connection

5-4-3-2 BEP4 Devices/Connectors

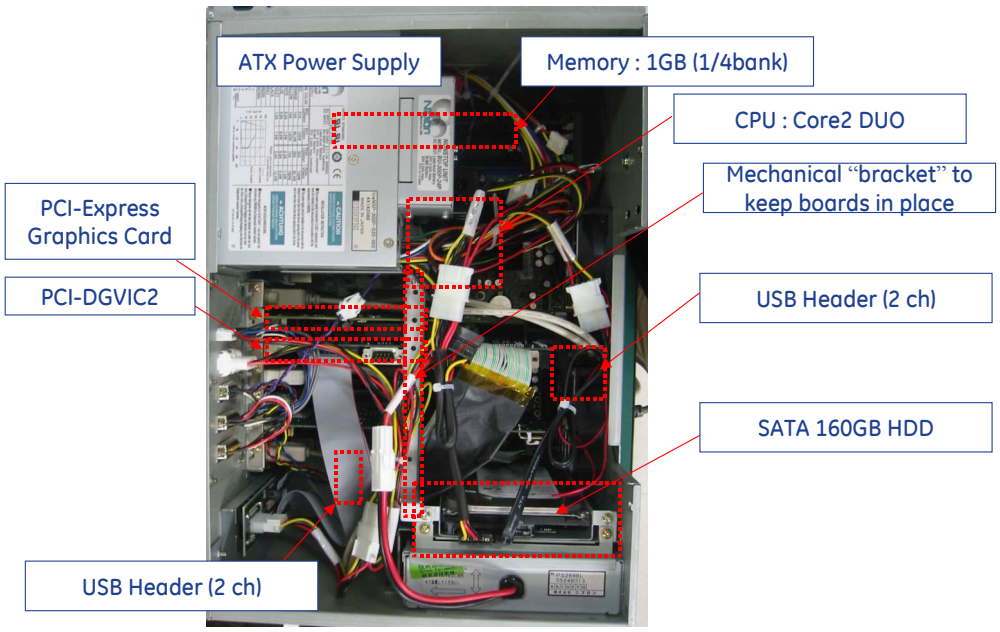
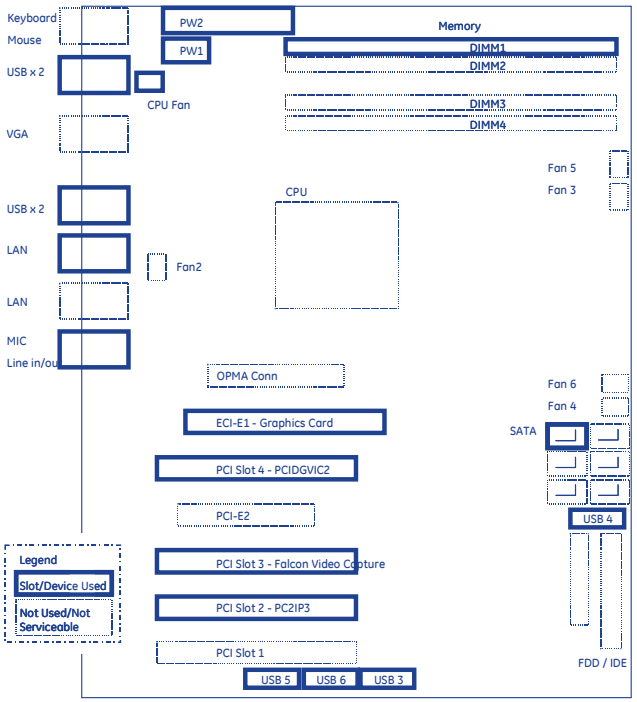


Figure 5-38 BEP4 Physical Configuration



BEP4 Motherboard
- Internal Connector Locations

Device/Connector	Description
PW1	4 pin CPU Power Conn
PW2	Connects to ATX Power
CPU Fan	Connects to CPU Fan
Memory	1GB DDR2 at DIMM1 slot
SATA	Connects to 160GB HDD
USB3	USB Ext. (2Ch, Bottom)
USB4	USB Ext. (2Ch, Top)
USB5/6	USB Ext. (4Ch)
PCI-E1	P690 Graphics Board
PCI-Slot 4	PCI-DGVIC2
PCI-Slot 3	Falcon Video Capture
PCI-Slot 2	PC2IP3 Comm Board

Figure 5-39 BEP4 Components

5-4-3-3 BEP4 Power Connections

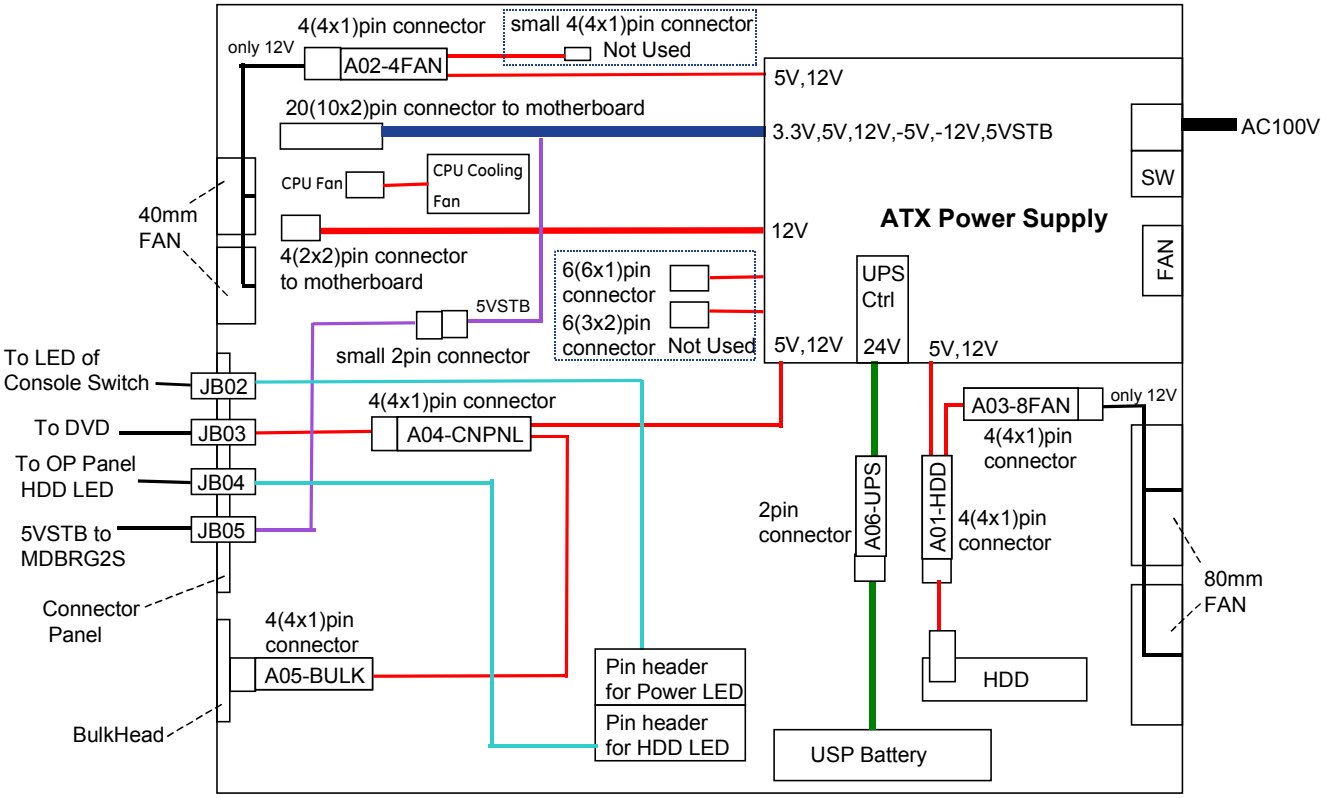


Figure 5-40 BEP4 AC line and DC line connection Connections

5-4-3-4 BEP4 BIOS Default Values

TAB	Top Menu	Sub Menu1	Sub Menu2	Sub Menu3	GEYMS Custom Setting Ver.7008
Main	System Time				-
	System Date				-
	Legacy Diskette A:				Disabled
	STAT Port 1	Type			Auto
		Multi-Sector Transfers			16Sector (gray out)
		LBA Mode Control			Enable (gray out)
		32 Bit I/O			
		Transfer Mode			FPIO4/DMA2 (gray out)
		Ultra DMA Mode			Mode5 (gray out)
	STAT Port 2				-
	STAT Port 3				-
	STAT Port 4				-
	STAT Port 5				-
	STAT Port 6				-
	Ext. Primary Master				-
	Ext. Primary Slave				-
	Memory Cache	Cache System BIOS area			Write Protect
		Cache Video BIOS area			Write Protect
		Cache Base 0-512k			Write Back
		Cache Base 512k-640k			Write Back
		Cache Extended Memory Area			Write Back
		Cache A000 - AFFF			Disabled
		Cache B000 - BFFF			Disabled
		Cache C800 - CBFF			Disabled
		Cache CC00 - CFFF			Disabled
		Cache D000 - D3FF			Disabled
		Cache D400 - D7FF			Disabled
		Cache D800 - DBFF			Disabled
		Cache DC00 - DFFF			Disabled
		Cache E000 - E3FF			Write Protect
		Cache E400 - E7FF			Write Protect
		Cache E800 - EBFF			Write Protect
		Cache EC00 - EFFF			Write Protect
	Boot Features	Floppy check			Disabled
		Halt on Errors			ALL Errors
		Keyboard Error Report			Enabled
		Summary screen			Disabled
		Boot-time Diagnostic Screen			Disabled
		QuickBoot Mode			Enabled
		Extended Memory Testing			Just zero it

TAB	Top Menu	Sub Menu1	Sub Menu2	Sub Menu3	GEYMS Custom Setting Ver.7008
Advanced	Advanced Chipset Control	Integrated Device Control Sub-Menu	LAN Control Sub-Menu	LAN1	Enabled
				LAN1 Option ROM Scan	Disabled
				LAN2	Disabled
				LAN2 Option ROM Scan	
			USB Dev #29		Fun #0,1,2,3,7
			USB Dev #26		Fun #0,1,7
		PCI Express Sub-Menu	PCI-E1 Sub-Menu	PCI Express Graphics Port	Auto
			PCI-E2 Sub-Menu	PCI -E Port 1	Auto
		WatchDog Mode			Disable
		Memory Raclaiming			Enabled
		Default Primary Video Adapter			Auto
		IGD -Device 2:			Auto
		IDG - Device 2, Function 1:			Auto
		DVMT 4.0 Mode:			Auto
		Azalia Audio			Auto
		Enable Multimedia Timer			No
		Serial ATA			Enabled
		Native Mode Operation			Auto
		SATA RAID Enable			Disabled
		SATA AHCI Enable			Disabled
	Advanced Processor Options	Core Multi-Processing			Enabled
		Machine Checking			Enabled
		Compatible FPU Code			Disabled
		Thermal Management 2			Enabled
		Set Max Ext CPUID = 3			Disabled
		C1 Enhanced Mode			Disabled
		PECI Interface			Enabled
		No Execute Mode Mem Protection			Enabled
		Processor Power Management			GV1/GV3 Only
	I/O Device Configuration	Floppy disk controller			Enable
		Serial Port A:			Enable
		Base I/O address:			3F8
		Interrupt:			IRQ 4
		Serial Port B:			Enable
		Mode:			Normal
		Base I/O address:			2F8
		Interrupt:			IRQ 3

TAB	Top Menu	Sub Menu1	Sub Menu2	Sub Menu3	GEYMS Custom Setting Ver.7008
Advanced (Cont'd)	DMI Event Logging	View DMI event log			-
		Event Logging			Enabled
		Mark DMI events as read			-
		Clear all DMI event logs			No
	Reset Configuration Data				No
	Large Disk Access Mode				Dos
	Legacy USB Support				Enabled
	Hardware Monitor	(Fan Rotation number and CPU temperature, etc., appears on the screen.)			-
		Voltage Monitoring			-
		FAN Fail LED Indicator			Disabled
		Auto Fan Control			Enabled
	Console Redirection	Com Port Address			Disabled
		Baud Rate			19.2K
		Console Type			PC ANSI
		Flow Control			CTS/RTS
		Console Donnection			Direct
		Continue C.R. after POST			Off
Security	Set Supervisor Password				Set
	Set User Password				Clear
	Diskette access:				Supervisor
	Fixed disk boot sector:				Normal
	Password on boot:				Disable
Power	(Blank)				S1
	Resume On Time				Off
	Resume Time				0:00:00
	Chassis Intrusion Detect				No
	Power On By PCI				Disabled
	After Power Failur				Stay Off
Boot	Boot priority order				-
	1				USB CDROM
	2				IDE CD
	3				SATA 1
	4				-
	5				-
	6				-
	7				-
	8				-

TAB	Top Menu	Sub Menu1	Sub Menu2	Sub Menu3	GEYMS Custom Setting Ver.7008
Exit	Exit Saving Changes				-
	Exit Discarding Changes				-
	Load Setup Defaults				-
	Discard Changes				-
	Save Changes				-

5-4-4 CPU/Back End Processor (For BT06-2 or later)

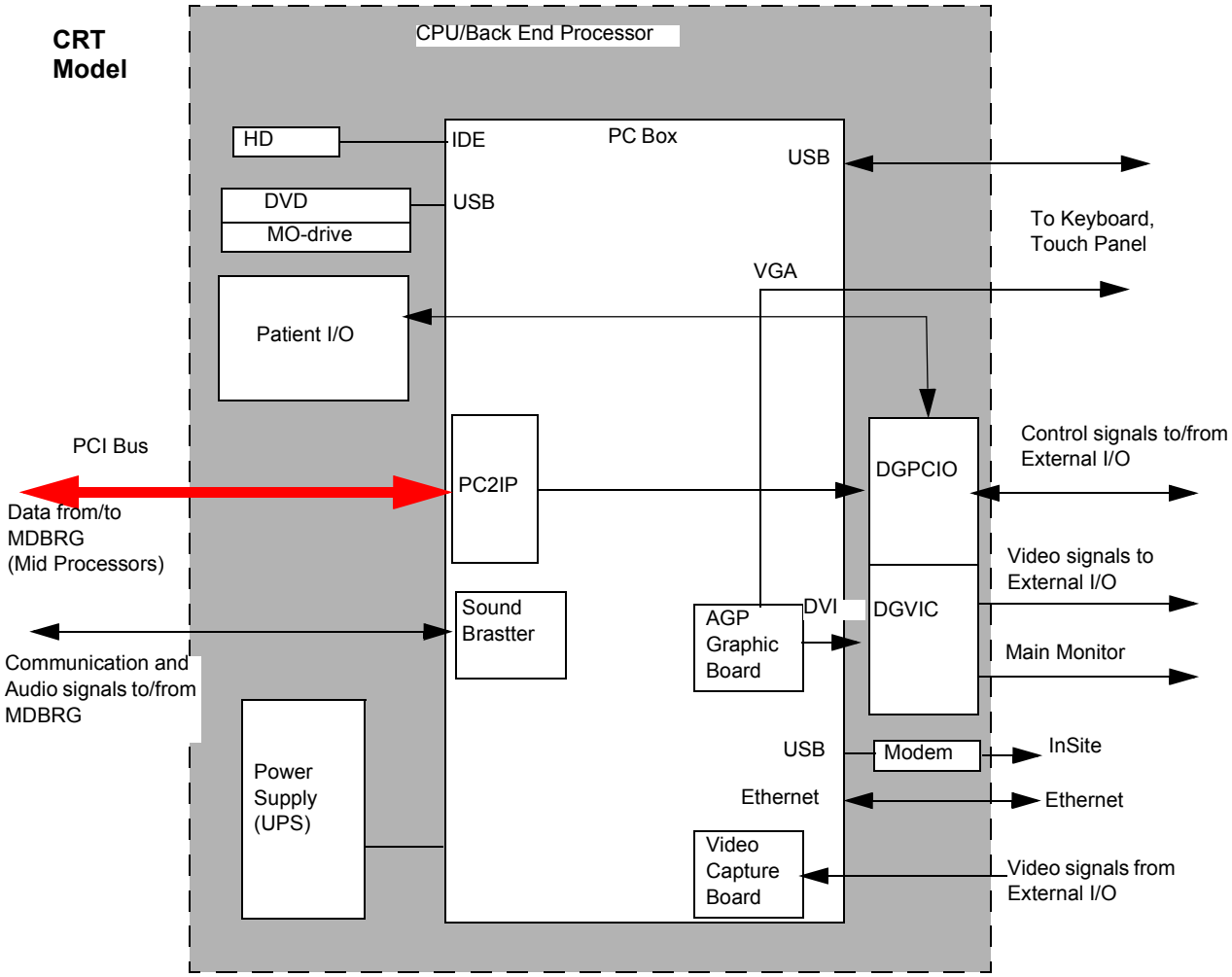


Figure 5-41 CPU/Backend Processor (BT06-2 or later, CRT)

5-4-4 CPU/Back End Processor (For BT06-2 or later) (cont'd)

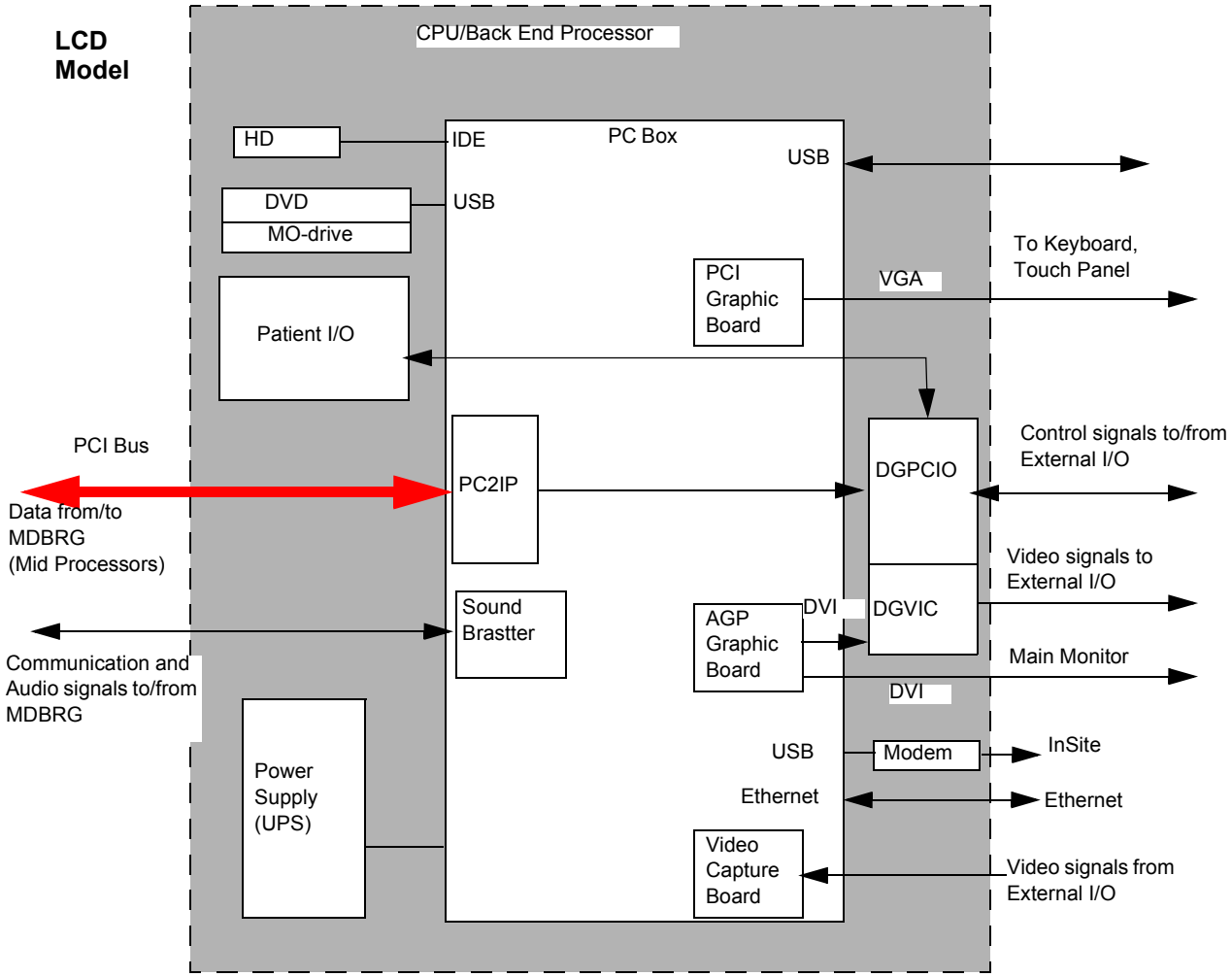


Figure 5-42 CPU/Backend Processor (BT06-2 or later, LCD)

The Back End Processor grabs the data from the Image Port, stores it in a memory, performs scan conversion to pixel domain and drives the system RGB monitor.

Storing Devices:

- Hard Disk Drive (HD Drive) (In the PC box)
- DVD Drive (Available from front of scanner).
- Optional Magneto Optical Drive (MO Drive) (Available from front of scanner).

5-4-5 Patient I/O (Option)

The optional Patient I/O is mounted at the front of the scanner with its connector panel.

Available inputs:

- PCG
- ECG
- AUX1
- AUX2

5-4-6 Top Console

The Top Console includes a Stand By/On switch, a keyboard, different controls for manipulating the picture quality, controls for use in Measure & Analyze (M&A), and loudspeakers for stereo sound output (used during Doppler scanning, inside the CRT monitor cover).

5-4-7 External I/O (Rear Panel)

The External I/O is the interface between the scanner and all external items, located at the rear side of the scanner.

Examples: InSite, TCP/IP network, Printer, etc.

5-4-8 Peripherals

A VCR, a Black & White Video Printer and a Color Printer may be installed onboard the scanner. These devices are connected to the External I/O (Rear Panel).

5-4-9 Interconnect Cabling (BT09 or later)

19 in LCD Model

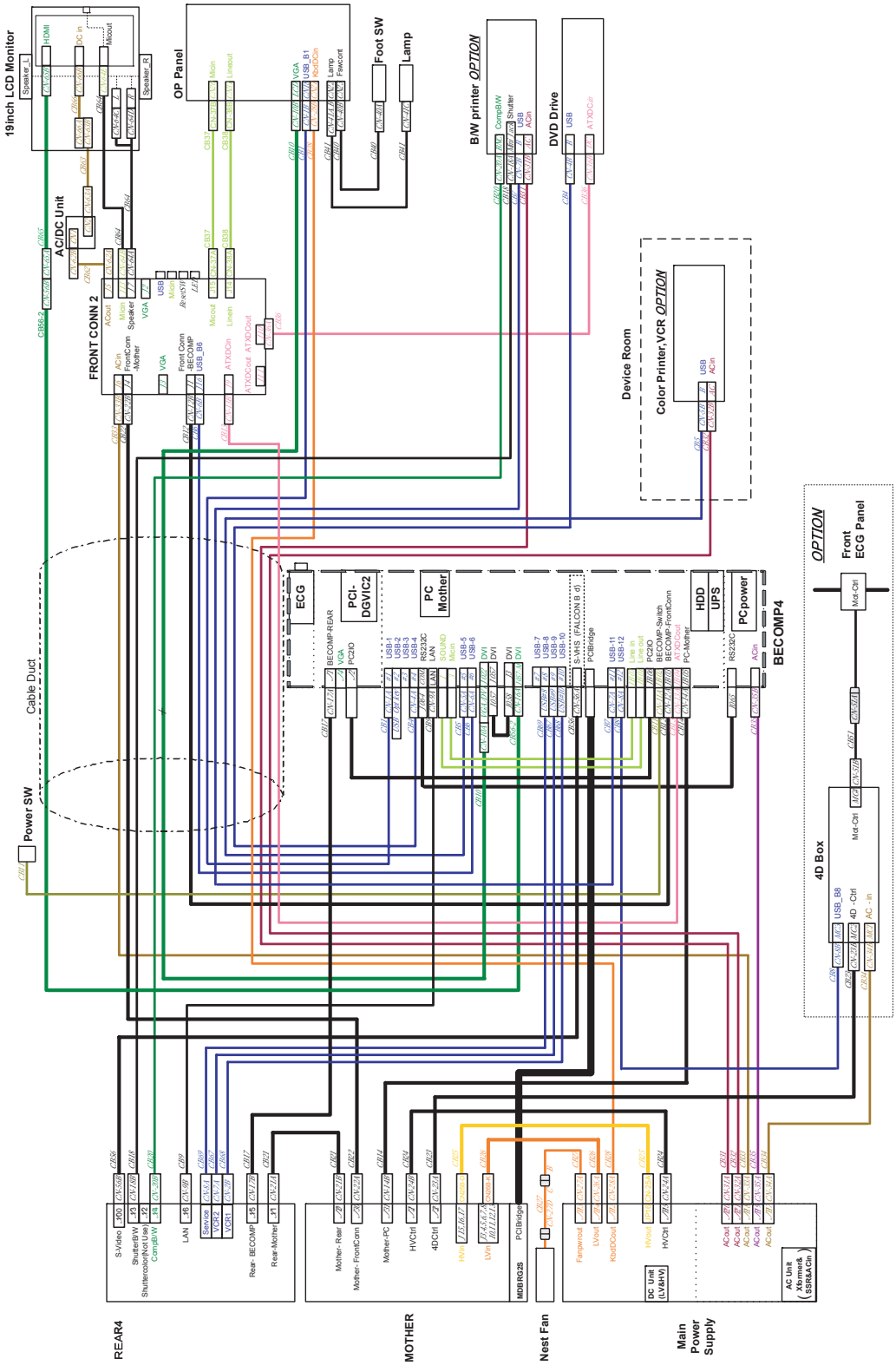


Figure 5-43 Interconnect cable connection (BT09 or later)

5-4-9 Interconnect Cabling (BT09 or later) (cont'd)

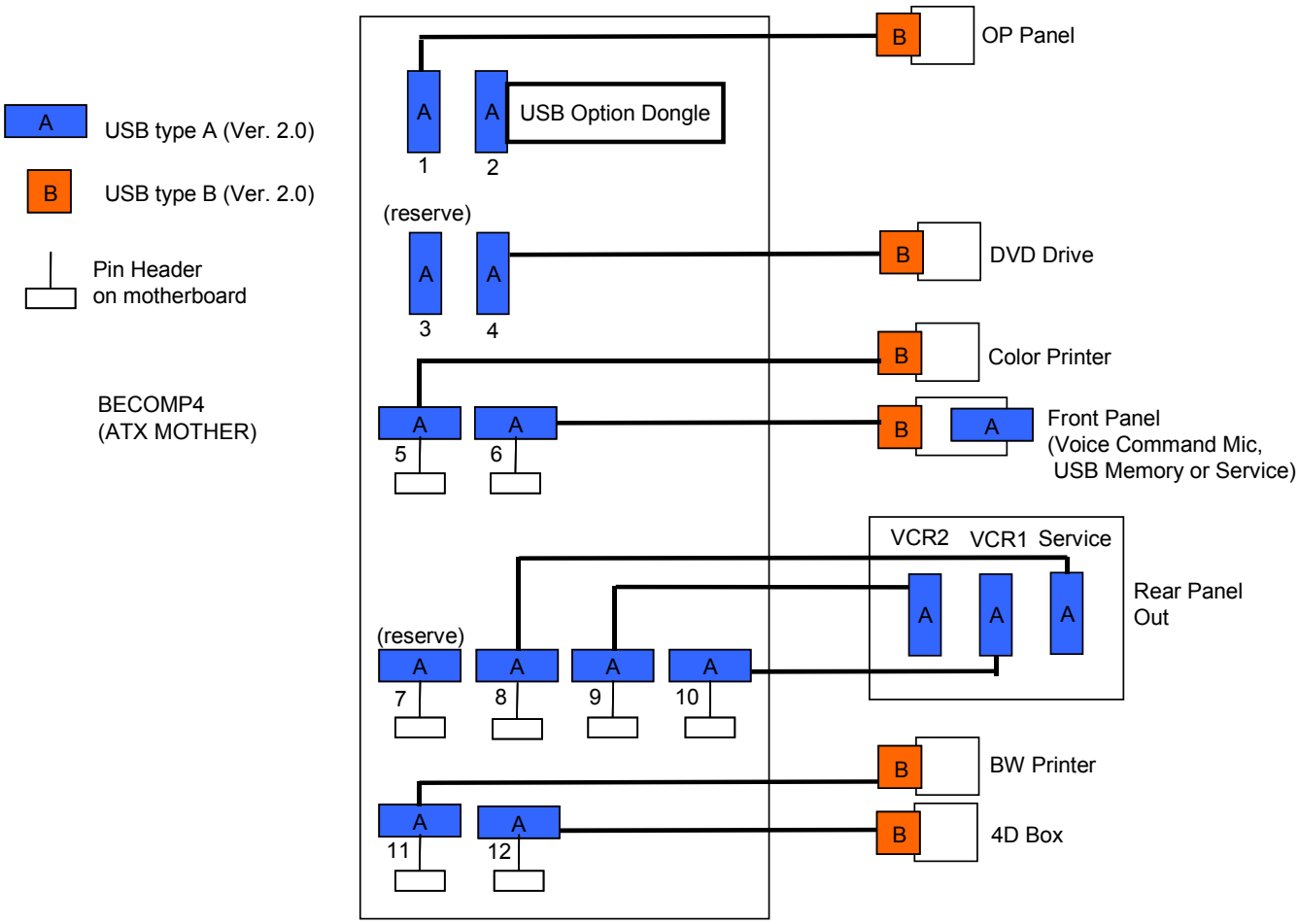


Figure 5-44 USB Connection (BT09 or later)

5-4-10 Difference points between BT07 (or later) and BT06 (or earlier) Systems for R7.5.x 17" to 19" LCD Monitor Upgrade

For BT06 or earlier system, the DVI cable is connected directly to the monitor from the BECOMP3 via the DVI-HDMI adapter.

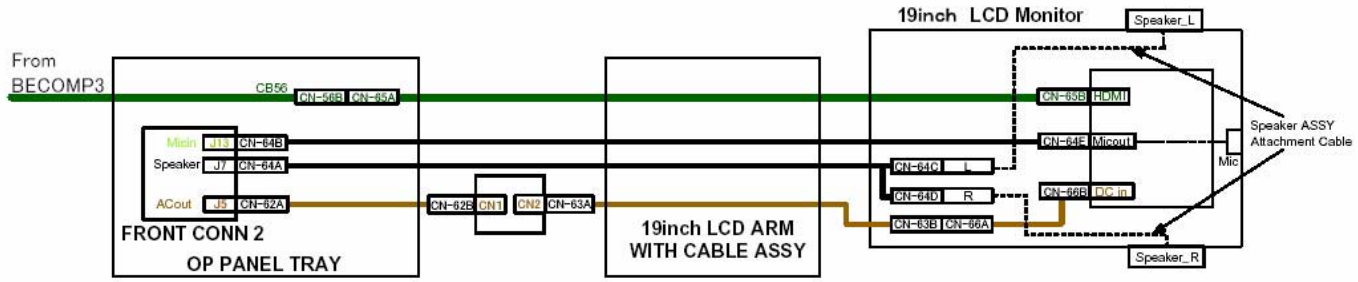


Figure 5-45 R7.5.x 17" to 19" LCD Monitor Upgrade (For BT07 or later)

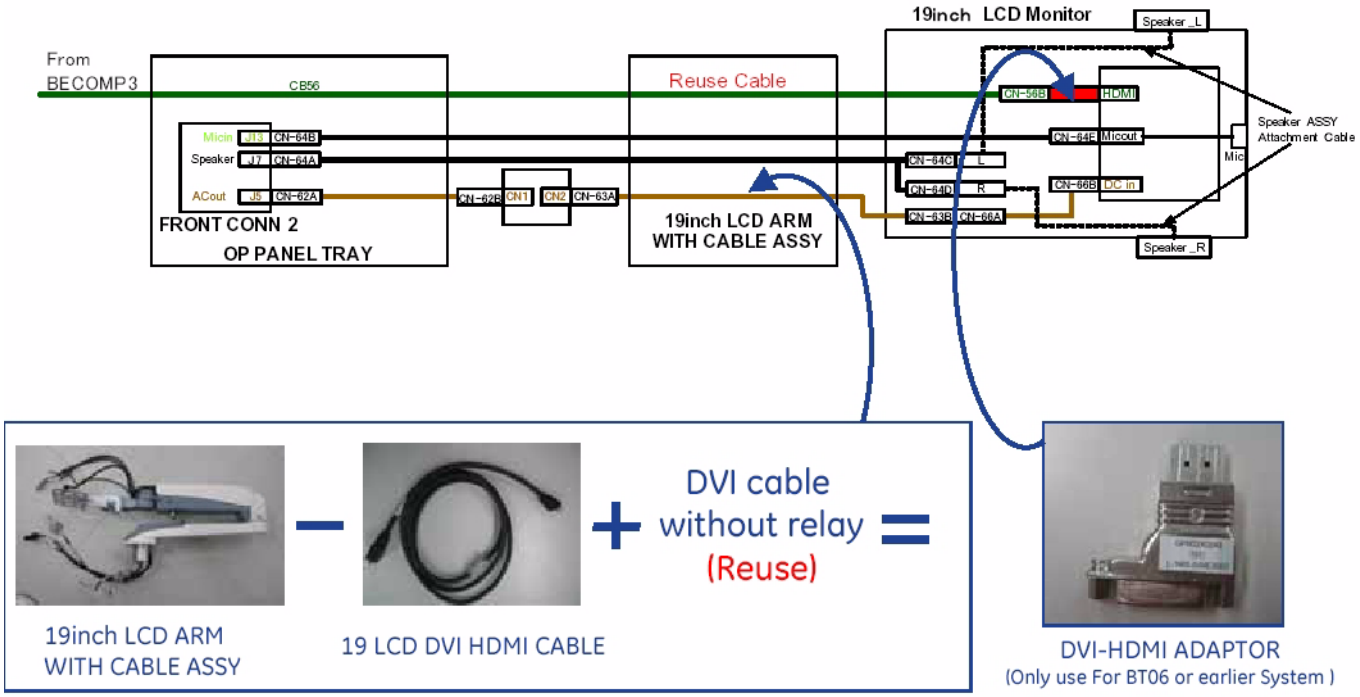


Figure 5-46 R7.5.x 17" to 19" LCD Monitor Upgrade (For BT06 or earlier)

Section 5-5
Common Service Platform

5-5-1 Introduction

The Service Platform contains a set of software modules that are common to all PC backend ultrasound and cardiology systems. This web-enabled technology provides linkage to e-Services, e-Commerce, and the iCenter, making GE's scanners more e-enabled than ever. The Common Service Platform will increase service productivity and reduce training and service costs.

5-5-2 Global Service User Interface (GSUI)

GSUI is the pattern for the user interface. This interface standard will be followed by all modalities to achieve a common look-and-feel for service software across all GEMS products.

5-5-2-1 Internationalization

The user interfaces provided by the service platform are designed for GE personnel and as such are in English only. At this time there is no multi-lingual capability built into the Common Service Interface.

5-5-2-2 Service Login

5-5-2-2-1 For BT04 or later

1.) Touch **Utility > Service.** It will take about ten (10) seconds for activating.
2.) Make sure that **CAPS** is OFF (should be released or dimmed) for password entry performed later.
3.) The Service Login window for Service Platform will be shown on the monitor display.

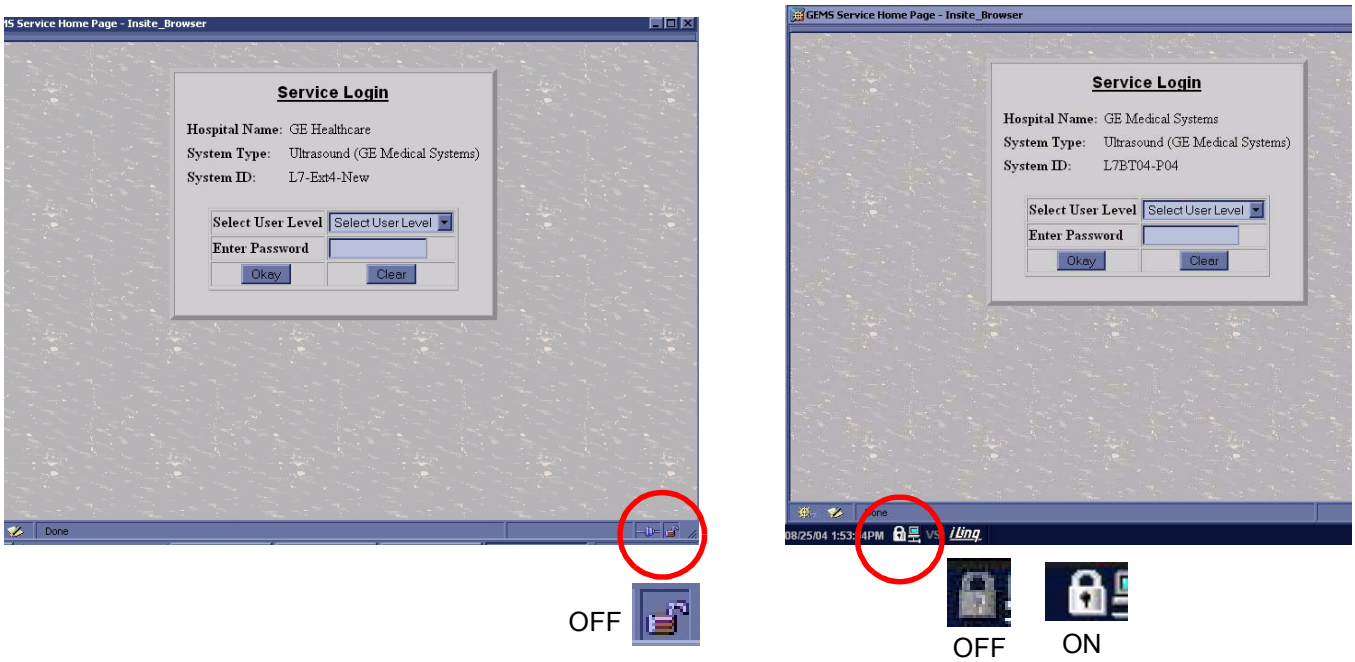


Figure 5-47 Service Login

CAUTION **If the Login window for Service Platform is not displayed on the monitor, the installation of the Service Platform has failed. Reload the application software or Base System Software (OS) + application software. Contact a Technical Support for details.**

5-5-2-2 Service Login (cont'd)

4.) Select **GE Service** at the "Select User Level" field.

5.) Enter the password for the Service Platform.

6.) Click on **Okay**.

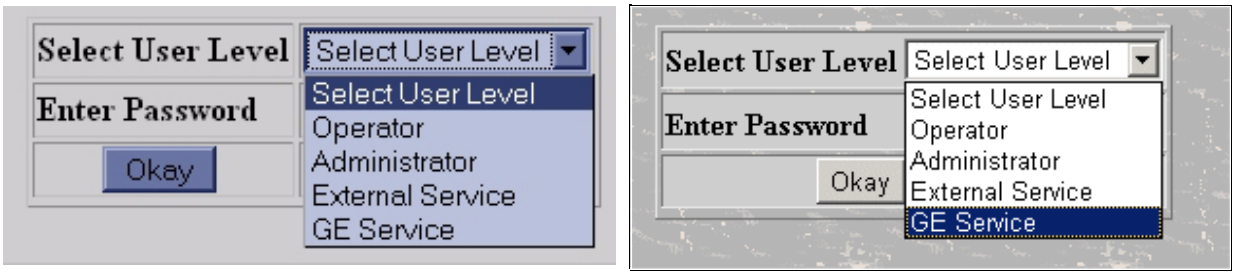


Figure 5-48 User Level

5-5-2-2-2 For BT03 or lower:

Click on the button with the wrench icon  in the status bar at the bottom of the scanner console. This button links the user or the Field Engineer (FE) to the service login screen.

5-5-2-3 Access / Security

The service interface has different access and security user levels. Users are only granted access to the tools they are authorized to use.

Table 5-2 User Level

User Level	Access Authorization
Operator	These service tools are normally used in-house and are protected with a special scanner configuration that is not allowed to leave the facility.
Administrator	Use the OnLine Center access method provided by *iLinq*.
External Service	Required for a external Service other than GE FE.
GE Service	Requires a network connection and knowledge of a password.*

*NOTE: *For a GE Field Engineer, the password changes at specific intervals.*

Except for *iLinq*, all access to the service interface is via the Network port. A modem on the scanner is specifically intended for *iLinq* use.

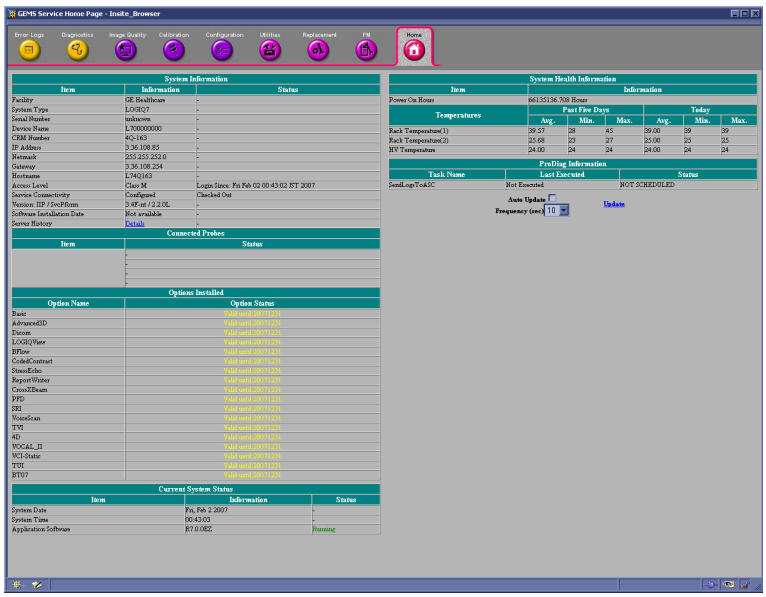
Every access request, whether successful or not, will be logged into a service access log that is viewable to authorized users.

5-5-3 Service Home Page

When the Common Service Desktop is started, the Service Home Page appears. The Home Page contains the software revision along with the hardware inventory and the results of the latest System Health Information. The navigation bar at the top of the screen allows the user to select from several tools and applications.

*NOTE: When using the Common Service Desktop do **NOT** iconify any of the Common Service Desktop windows. If you iconify them they end up in the lower left-hand corner of the screen behind the Service Desktop Manager window and cannot be restored. Resize the windows with the mouse and move them as needed to make room for other windows.*

For BT07 or later



For BT06 or lower

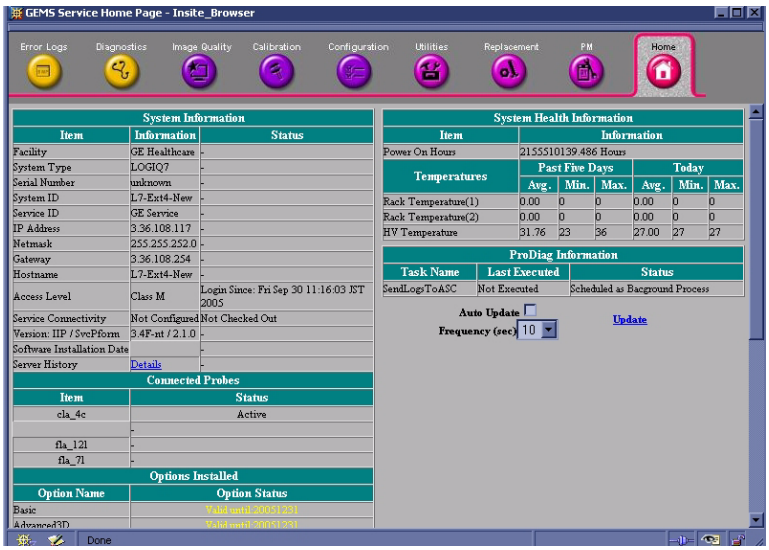


Figure 5-49 Service Home Page

5-5-4 Error Logs Page

From the Error Logs page the Log Viewer displays five categories with pull-down sub-menus. The Service Interface has a log viewing tool driven by the following high-level requirements.

- Simple filtering of the scanner log(s) with filtering capabilities being a function of login access permissions.
- Logs are viewable by all service modes.
- Allow for multiple instances of the log viewer.
- Color-coded log entries for severity levels:
    * Severity 1 - Color coded Green
    * Severity 2 - Color coded Yellow
    * Severity 3 - Color coded Red
- Support the transfer of logs to local and/or remote destinations

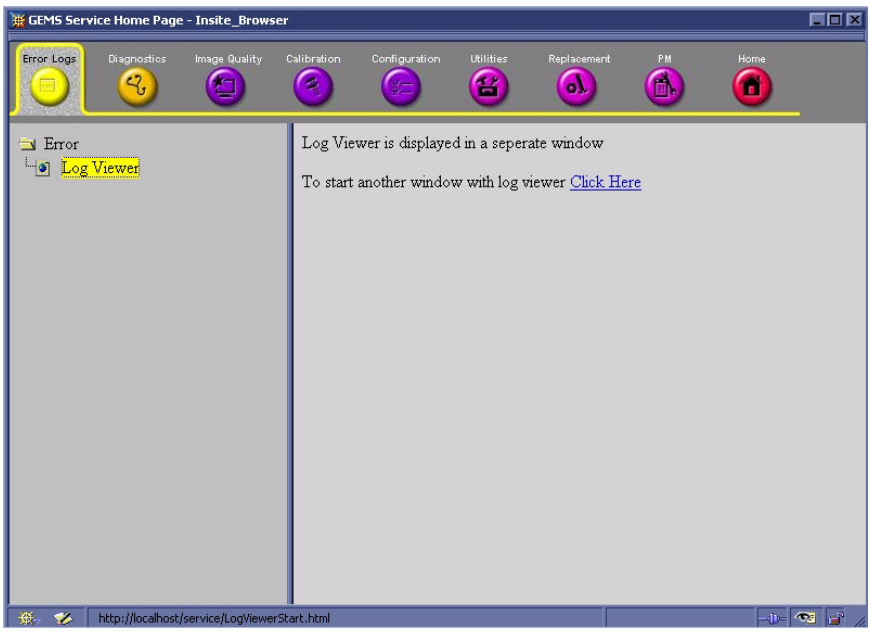


Figure 5-50 Log Page

5-5-4-1 Logs

The six sub-menus of the Logs category are System, Power, Temperature, Probe, Board, and DICOM.

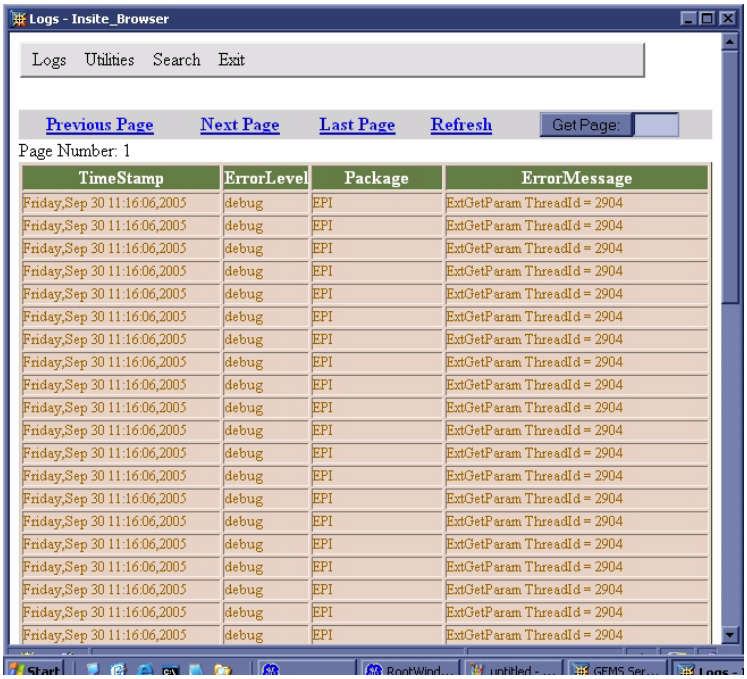


Figure 5-51 Log Sub-Menus (System)

Logs	Descriptions
System	Software bug information for software engineering to debug the software.
Power	Not used for LOGIQ 7.
Infomatics	Exam informations. Whenever the New patient or End Current Patient is pressed, they are reported as a log.

Logs	Descriptions	
Temperature	Error (!!)	The error occurred in the temperature with "!!" mark. In the time when the error occurred, the message "Temp is above safe limit. Check air-filter! Shutdown in #seconds." appears in the status bar and the system is automatically shut down. The temperature which the error occurs: • 75 degrees or higher for Rack Temperature (1) • 65 degrees or higher for Rack Temperature (2) • 65 degrees or higher for HV Temperature
	Warning (@@)	The warning occurred in the temperature with "@@" mark. In the time when the warning occurred, the message "This system is overheated! Check air-filter!" appears in the status bar. The temperature which the warning occurs: • 70 degrees or higher for Rack Temperature (1) • 60 degrees or higher for Rack Temperature (2) • 60 degrees or higher for HV Temperature
	Info (^^)	The information occurred in the temperature with "^^" mark to call attention. In the time when the information occurred, the message "Approaching the overheat limit! Check air-filter!" appears in the status bar. The temperature which the information occurs: • 65 degrees or higher for Rack Temperature (1) • 50 degrees or higher for Rack Temperature (2) • 50 degrees or higher for HV Temperature
	Others	Temperature information
Probe	Displays the probe name and connector #.	
Board	Displays the Part #, Board #, and Dip switch revision.	
DICOM	Whenever DICOM data are sent, logs are reported. An error log is reported in an error status and an information log is reported in a normal status. (The log is command or status information specified by DICOM statement.)	

5-5-4-1-1 Log Viewing

The Service Platform has a log viewing tool driven by the following high-level requirements.

- Simple filtering of the scanner log(s) with filtering capabilities being a function of login access permissions.
- Logs are viewable by all service modes.
- Allow for multiple instances of the log viewer.
- Color-coded log entries for severity levels:
  - Severity 1 - Color coded Green
  - Severity 2 - Color coded Blue
  - Severity 3 - Color coded Red
- Support the transfer of logs to local and/or remote destinations

5-5-4-1-2 Informatics

Informatics is the ability to collect and upload usage information logged on the scanner. The Service Platform is used to report the logged data via the log viewing feature.

5-5-4-2 Utilities

The two sub-menu of the Utilities category are Plot Log and Plot Page.

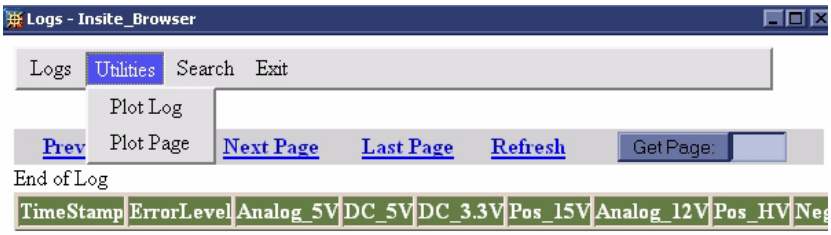


Figure 5-52 Utilities Category

5-5-4-3 Search

On the **Text Search** sub-menu of the Search category, users enter case-sensitive text they wish to filter.

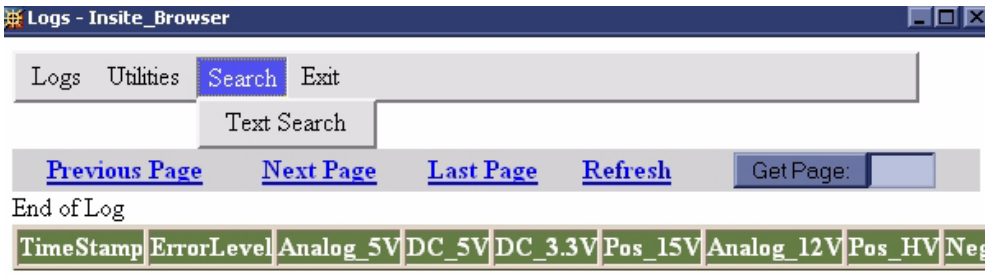
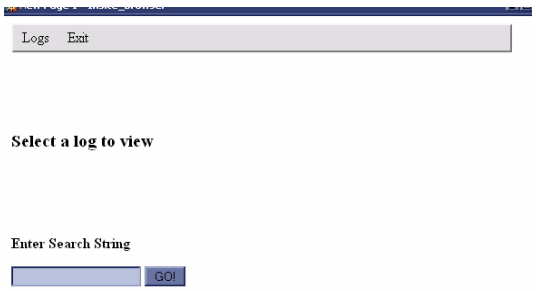


Figure 5-53 Search Category

5-5-4-4 Filter

Click on he sub-menu, **System Logs**, to enter Filter menu. Filtering is used to extract select data from the Error Logs. There are four different error levels and 11 packages that can be filtered.



BT04/BT06/BT06-2 or later

Figure 5-54 Filter Category

5-5-4-5 Exit

The sub-menu, **Exit Log Viewer**, returns the user to the Common Service Desktop home page.

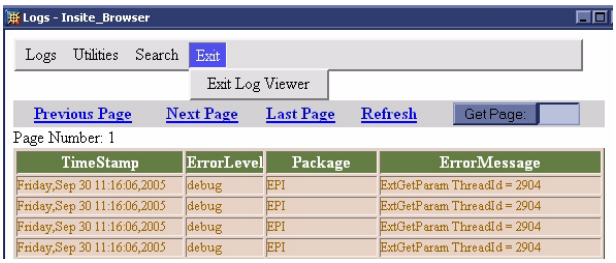


Figure 5-55 Exit Category

5-5-5 Diagnostics

The Diagnostic page includes various diagnostic tests for troubleshooting.

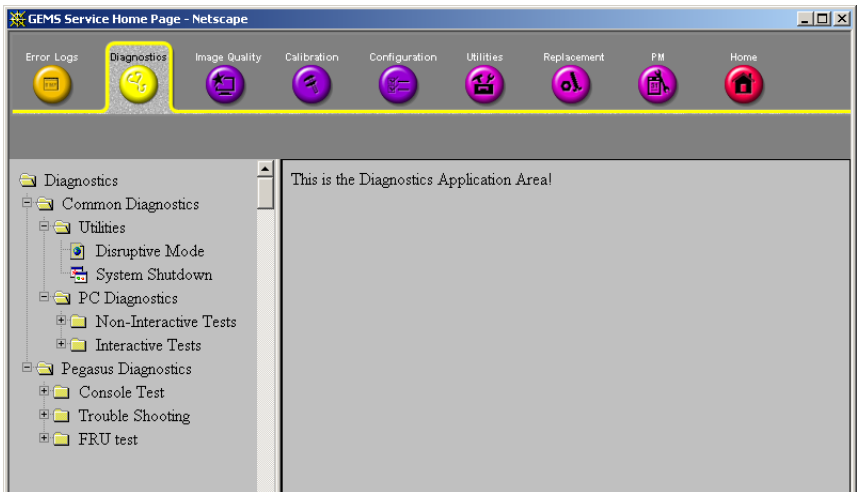


Figure 5-56 Diagnostic Page

5-5-5-1 Diagnostic Reports

Diagnostic tests return a report to the Service Platform. The platform retains the report and allows for future viewing of the diagnostic logs.

5-5-5-2 Proactive Diagnostics

A system of self-monitoring is largely supported with the integration of *iLinq*. The scheduler, executive, user interfaces, and some of the proactive diagnostic functions are provided by *iLinq*. Other tasks will need to be provided by the product team.

5-5-6 Image Quality

Field is not yet populated.

The Image Quality page contains tools for troubleshooting image quality issues.

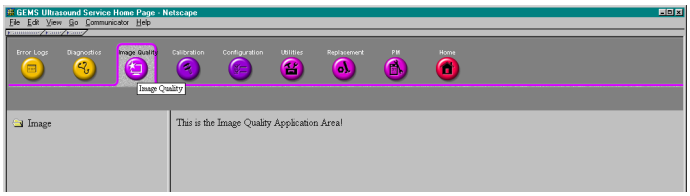


Figure 5-57 Image Quality Page

5-5-7 Calibration

Field is not yet populated.

The Calibration page is used to calibrate the system.

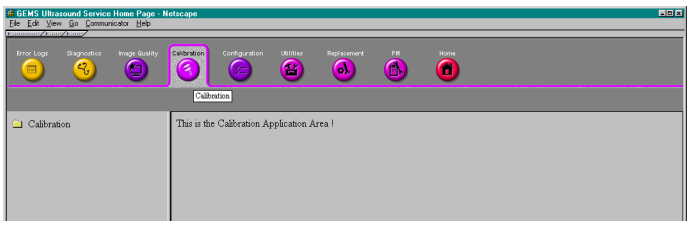


Figure 5-58 Calibration Page

5-5-8 Configuration

Field is not yet populated.

The Configuration page is used to setup various configuration files on the system.

The Service Platform is used as the access and authorization control for remote access to the configuration subsystem.

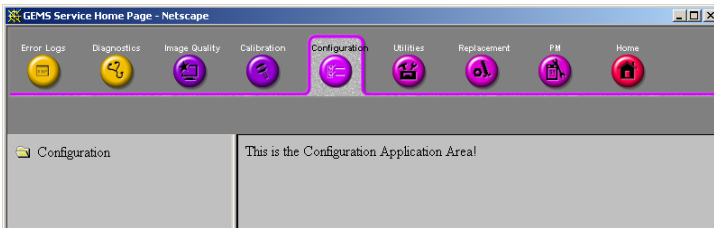


Figure 5-59 Configuration Page

5-5-9 Utilities

The Utilities page contains several miscellaneous tools. These includes access to the problem/solution database at the Online center.

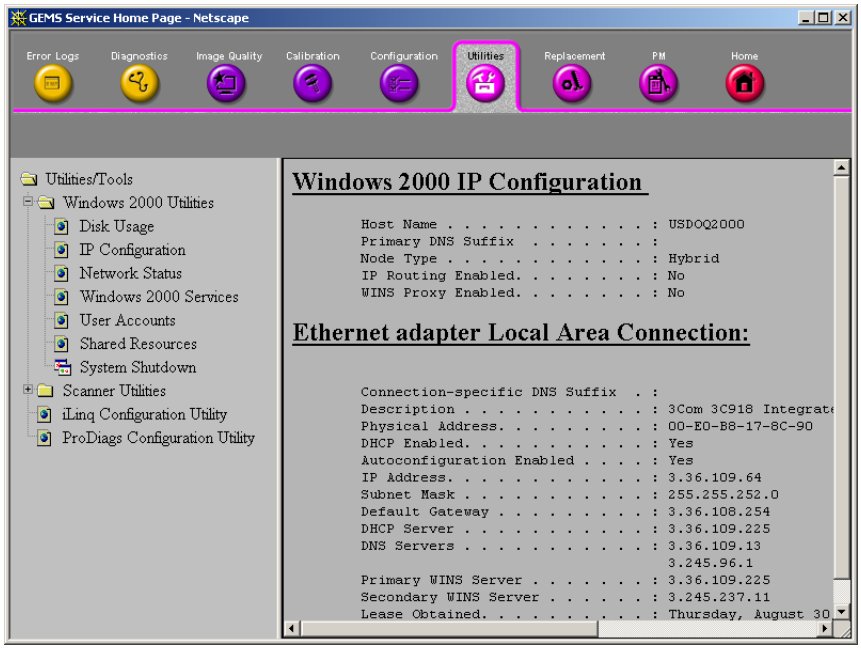


Figure 5-60 Utilities Page

5-5-10 Replacement

Field is not yet populated.

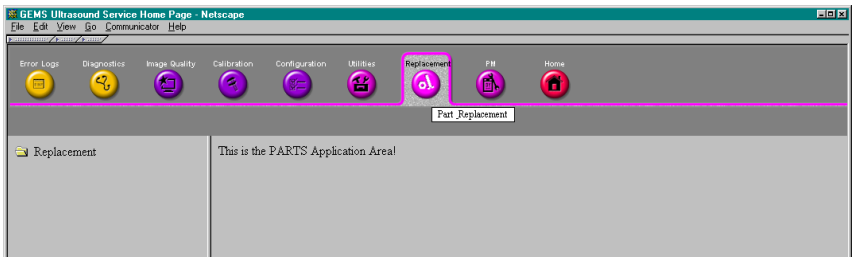


Figure 5-61 Part Replacement Page

5-5-11 PM

Field is not yet populated.

Run the Planned/Preventive/Proactive Maintenance tools during such PM visits as running error logs and deleting old test files.

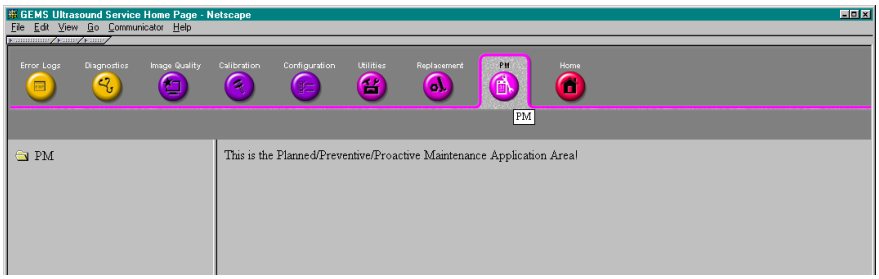


Figure 5-62 Planned Maintenance Page

5-5-12 Remote Software/Option Installation and Updates

The Common Service Platform provides for remote software downloads including A11 downloads to the scanner. Any file transferred to the scanner will be in the form of an installation package. The actual content of the installation package is dependent on each product. The Service Platform downloads the software module into an appropriate directory and executes the product-specific installer executive.

Software installation is simple and automated with a Graphic User Interface (GUI), where applicable.

- Supports software upload via remote transmission
- Supports software upload via Service Platform
- Supports partial upgrades
- Supports de-installs of the latest partial upgrade
- Supports remote activation/installation of software options
- Options can be activated permanently
- Options can be activated for a timed period
- Options can be limited to a number of uses
- Options that expire must give notice to the user that the option has expired

5-5-12-1 Remote System Shutdown and Restart

The Service Platform provides the ability to restart the system as per standard shutdown/startup procedures. Remote shutdown will only be provided if a software-controlled shutdown exists on the scanner. Scanner system restart is always accessible from the OLC.

5-5-12-2 File and/or Image Transfer

The Service Platform supports file transfers and archived image transfers to the OnLine Center. The Service Platform provides interfaces of the displayed images for transfer to the OLC.

5-5-13 InSite II Configuration

5-5-13-1 InSite II Setting (Supported from BT07)

Select **Service Platform > Configuration > Questra Agent Configuraion.** Then enter the followings:

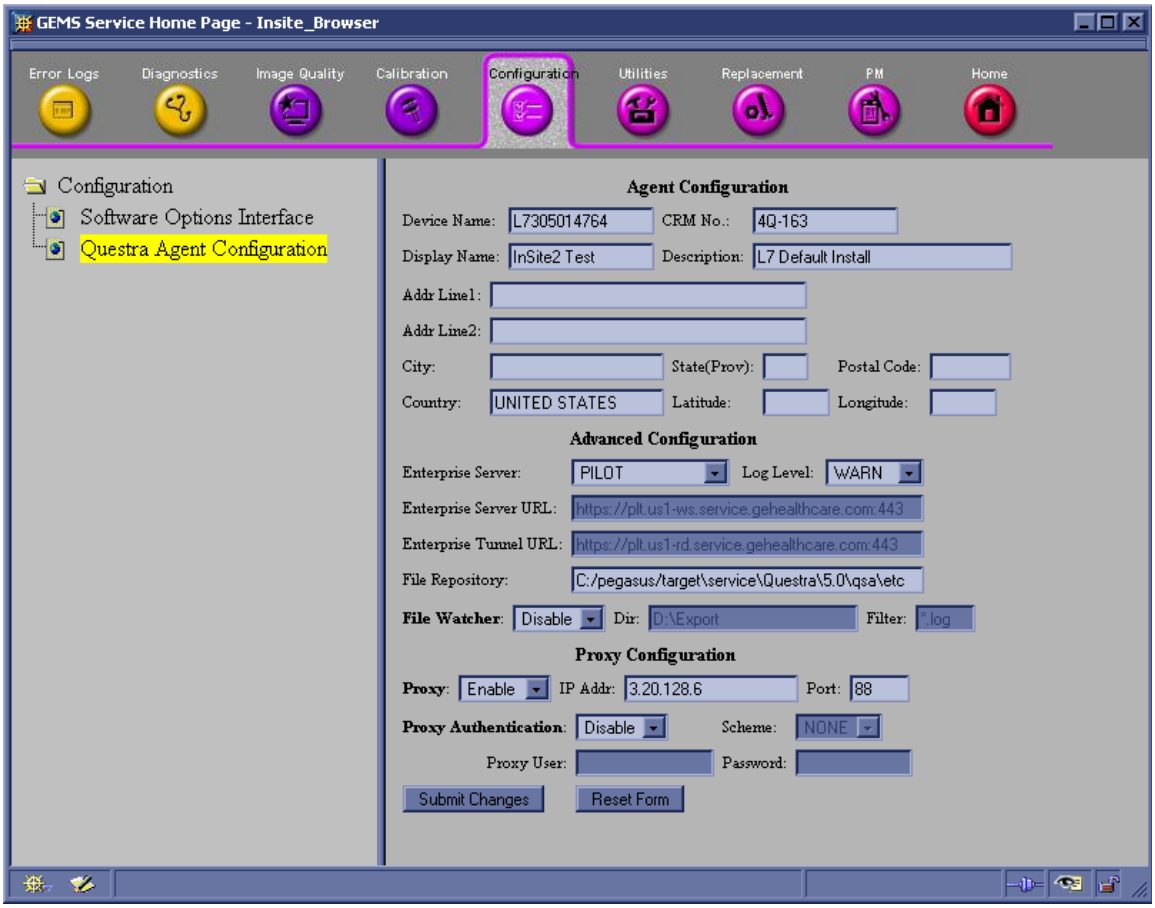


Figure 5-63

Table 5-3 InSite II Entry

Item	Descriptions	Modifiable?
Device Name	Should be set to Dongle ID.	DO NOT MODIFY.
CRM No.	FE/OLC Field to enter device identifier.	Modifiable
Display Name	FE/OLC Field to enter descriptive name.	Modifiable
Address/Proxy	Contact OLC for contents.	Modifiable

NOTE: Refer to Section 8-14 - InSite II Installation for details.

Section 5-6
Password

The following windows request entry of Password. This allows you to be entered into Utility function or Service function with different access and security use levels.

5-6-1 For Operator Login Window

When you login the LOGIQ7 application with a different user level, this window is open.
You can modify the user level and password without restraint using one of the Utility function (**Utility > Admin > Users**).

Figure 5-64 Operator Login window

5-6-2 For Service Login Window

When you access the Common Service Desktop, this window is open.
The user level and password are preset. They can NOT be modified.

Table 5-4 Password to enter common service desktop

User Level	Password
Operator	uls
Administrator	uls
External Service	gogems
GE Service	The password must change at specific intervals. (every six month)

5-6-2 For Service Login Window (cont'd)

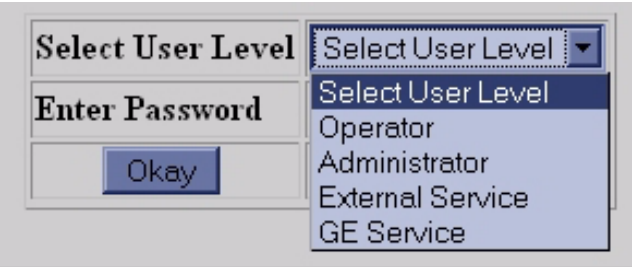


Figure 5-65 Service Login window

5-6-3 For Maintenance Access Window

When you login Windows desktop for maintenance access, this window is open. The user name and password are preset. They can NOT be modified..

Table 5-5 Password to enter windows desktop

Username	Password
No entry	**Access is protected with the Service Dongle and a password.** The password must change at specific intervals. (every six month)

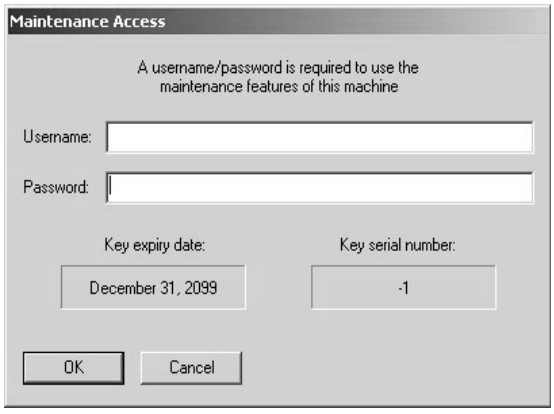


Figure 5-66 Windows desktop Login Window

Section 5-7
Air Flow Control

5-7-1 Air Flow Distribution

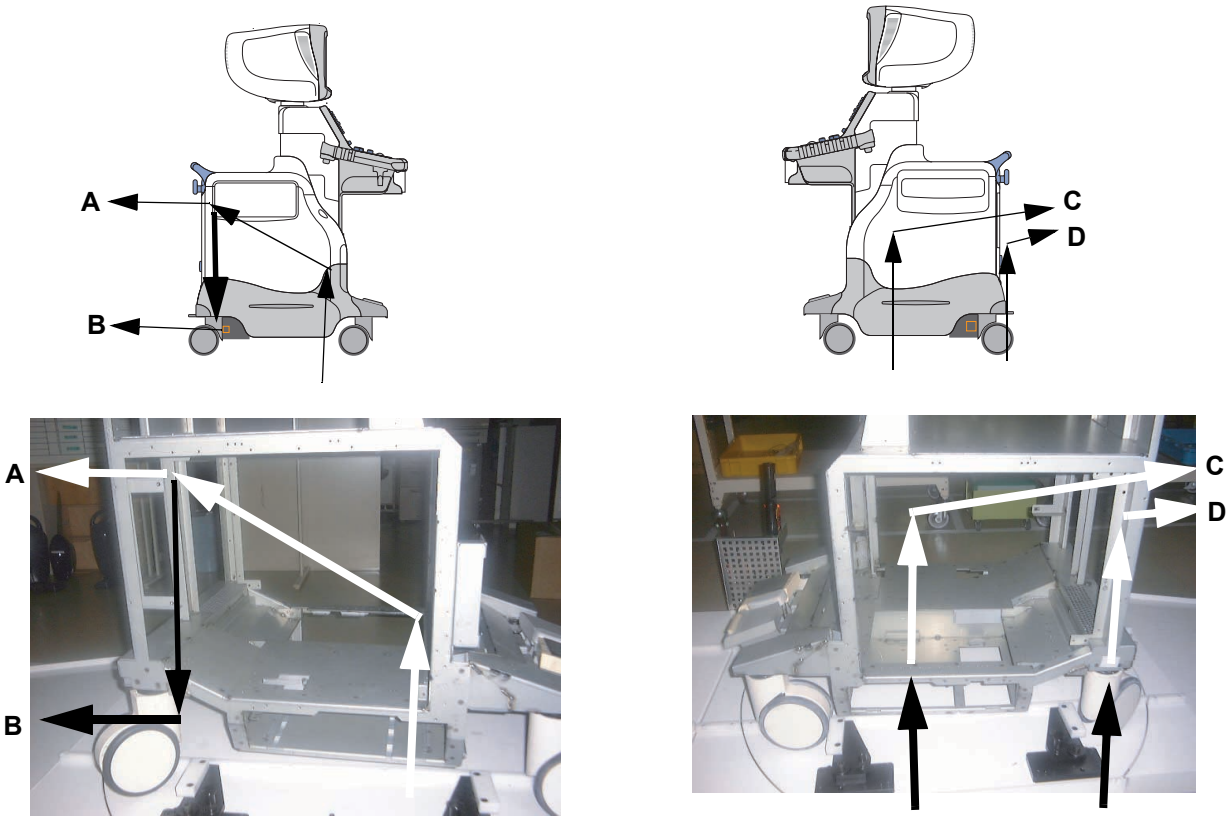


Figure 5-67 Air Flow Inside the Scanner

The four air flow pathes allow the scanner to be cooled down as shown in the figure above.

- Path A (Front lower left > Filter > PC Box > Rear upper left) for PC Box cooling.
- Path B (Front lower left > Filter > LV unit > Rear lower left) for LV unit cooling.
- Path C (Bottom right > Filter > NEST Assy > Rear upper right) for NEST Assy cooling.
- Path D (Rear bottom right > Filter > HV unit > Rear upper right) for HV unit cooling.

5-7-2 Filters

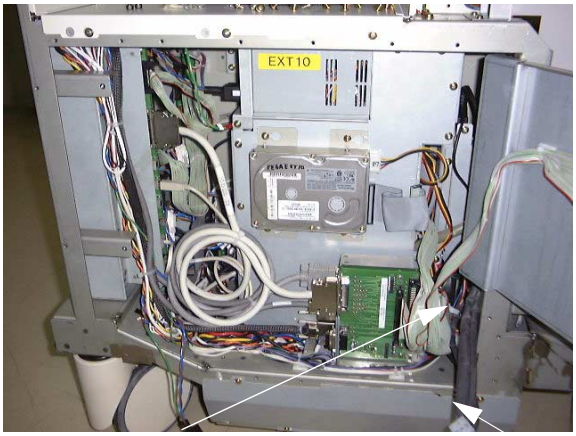
The scanner contains the three filters located at:

- Front lower left for air flow of the LV unit and PC box.
- Bottom right for air flow of the NEST Assy.
- Rear bottom right for air flow of the HV unit.

5-7-3 Fans

Example: For BT03 or lower

Fan for HV unit



Fan for PC Box

Fans for LV unit

Fans for NEST Assy

Figure 5-68 Fans

The scanner contains the eight fans at the following positions for producing an air flow.

- Two fans: Inside the LV unit for air flow path A and B
- One fan: On the PC Box for air flow path A
- Four fans: At the bottom of the NEST Assy for air flow path C
- One fan: On the HV unit for air flow path D

Section 5-8
Monitor Video Specification

5-8-1 Input

Standard	Format	Signal	Sync	DDC	Termination
SVGA	800 x 600 / 75 Hz	RGB: 0 - 700 mV	H: TTL V: TTL	VESA DDC2 signals	75 ohms

5-8-2 Outputs

5-8-2-1 SVGA

Standard	Format	Signal	Sync	DDC	Termination
SVGA	800 x 600 / 75 Hz	RGB: 0 - 700 mV	H: TTL V: TTL	VESA DDC2 signals	75 ohms

5-8-2-2 TV Format

Type	Standards	Termination
SVHS	NTSC EIA and PAL BDGHI	75 ohms
Composite Video	NTSC EIA and PAL BDGHI	75 ohms
RGB	NTSC EIA and PAL BDGHI	75 ohms
B&W	NTSC EIA and PAL BDGHI	75 ohms

5-8-2-3 PAL BDGHI

General	SVHS-luma	SVHS-croma	Composite	RGB	B&W
Line/field: 625/50 FH: 15625 Hz FV: 50 Hz Bandwidth: 6MHz (luma)	Signal: 100 IRE 100% amplitude Sync: 43 IRE	Burst amplitude: +/- 21.5 IRE, 10 cycles Fsc: 4.43361875 MHz 100% saturation	Summed luma and croma	Signal: 0-700 mV Comp sync/H sync/ V sync: 0.3 - 4 Vpp	SVHS luma

5-8-2-4 NTSC EIA

General	SVHS-luma	SVHS-croma	Composite	RGB	B&W
Line/field: 525/60 FH: 15734 Hz FV: 59.94 Hz Bandwidth: Min. 4.2MHz (luma)	Signal: 92.5 IRE (from black level) 100% amplitude Blanking setup: 7.5 IRE Sync: 40 IRE	Burst amplitude: +/- 20 IRE, 9 cycles Fsc: 3.579545 MHz 100% saturation	Summed luma and croma	Signal: 0-700 mV Comp sync/H sync/ V sync: 0.3 - 4 Vpp	SVHS luma

5-8-3 SVHS and Composite Video

5-8-3-1 Basic DC Parameters

Parameters	NTSC	PAL
White relative to blank	714 +/- 7 mV	700 +/- 7 mV
Black relative to blank	54 +/- 7 mV	0
Sync relative to blank	-286 +/- 7 mV	-300 +/- 7 mV
Burst amplitude (nominal, p-p)	286 +/- 7 mV	300 +/- 7 mV

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Chapter 6
Service Adjustments

Section 6-1
Overview

6-1-1 Purpose of this chapter 6

This section describes how to test and adjust the scanner. These tests are optional. You may use them to check the system for errors.

Table 6-1 Contents in chapter

Section 6-2
LV Unit Adjustments (For BT03 or lower)

This system contains three power supply modules; LV unit. **The LV unit for BT04 or later can not be adjusted.**

6-2-1 Access to Adjustments

1.) Remove the LV unit:

a.) Remove the left side cover.

b.) Remove the LV unit cover.

c.) Remove the bracket, then pull out the LV unit Assy with the cables connected.

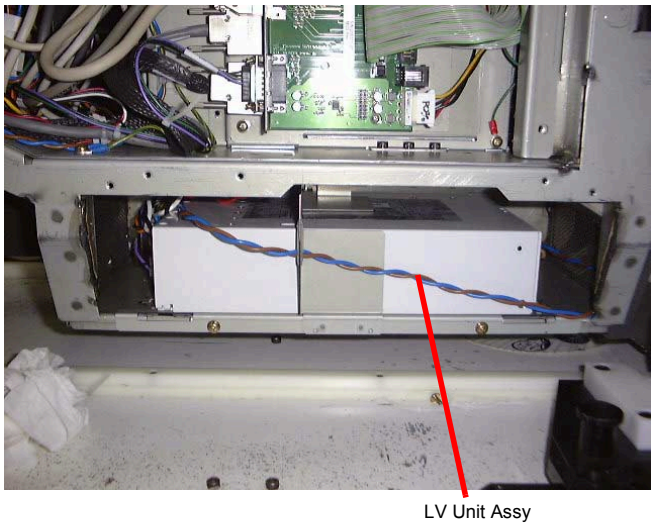


Figure 6-1 LV Unit Assy

6-2-2 Adjustments Procedures

1.) Using the following VRs, DC output can be adjusted.

Table 6-2 DC Output Specification for LV Unit

VR	Specifications
VR1	3.4V +/- 34mV
VR2	5V +/- 50mV
VR3	6V +/- 60mV
VR4	-6 V +/- 60mV
VR5	12V +/- 120mV
VR6	-12V +/- 120mV

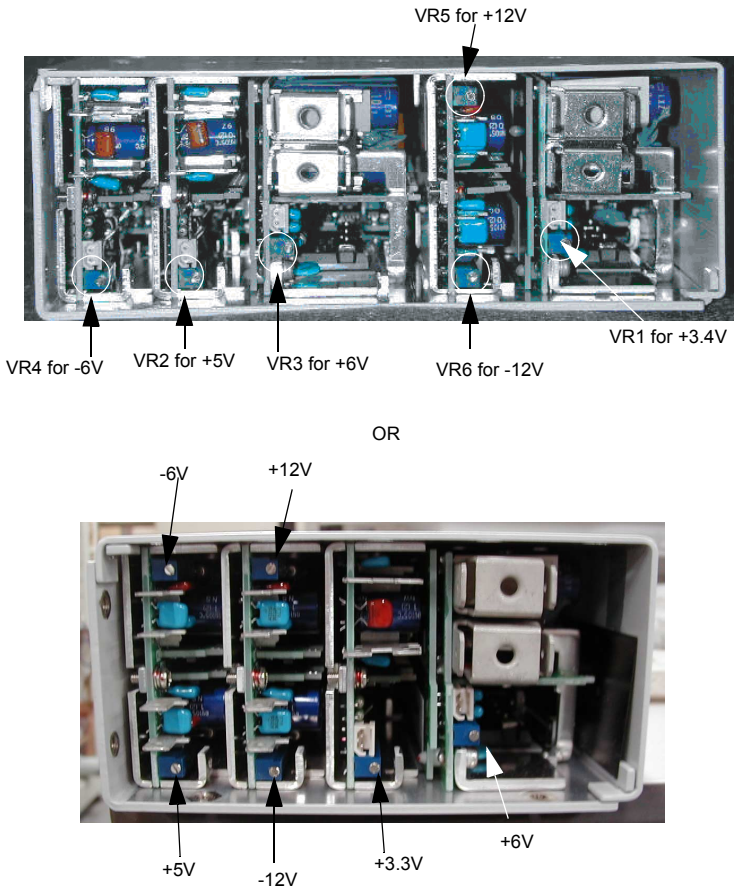


Figure 6-2 VRs for Adjusting DC Output

Section 6-3
Caster Brake/Swivel Function Adjustments

6-3-1 Brake Function Adjustment

The LOGIQ 7 contains front and rear brake lock adjusters. They are separately adjusted using the similar method.

Figure 6-3 Locations of Brake Lock Adjusters

6-3-1 Brake Function Adjustment (cont'd)

1.) Locate the adjuster nut on the caster linkage joint.

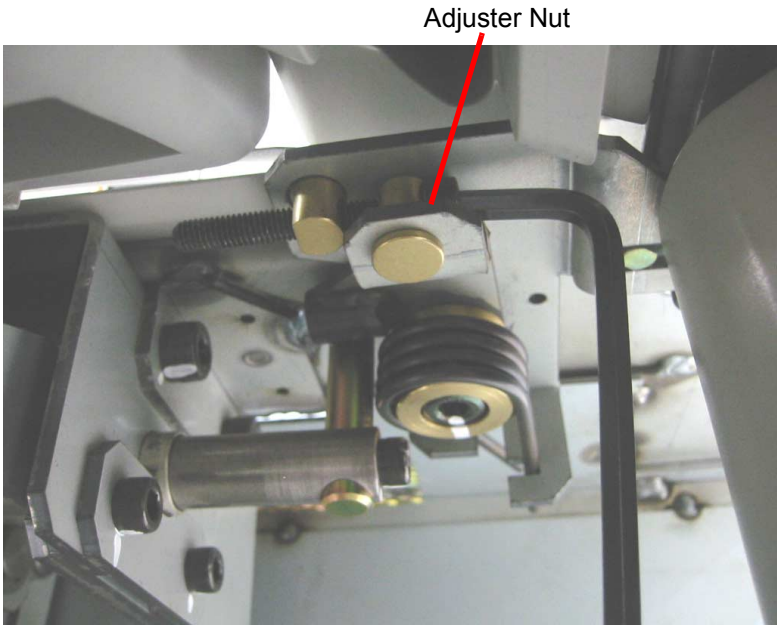


Figure 6-4 Adjuster Nut Location

2.) Rotate the adjuster until the caster lock lever comes center as shown.

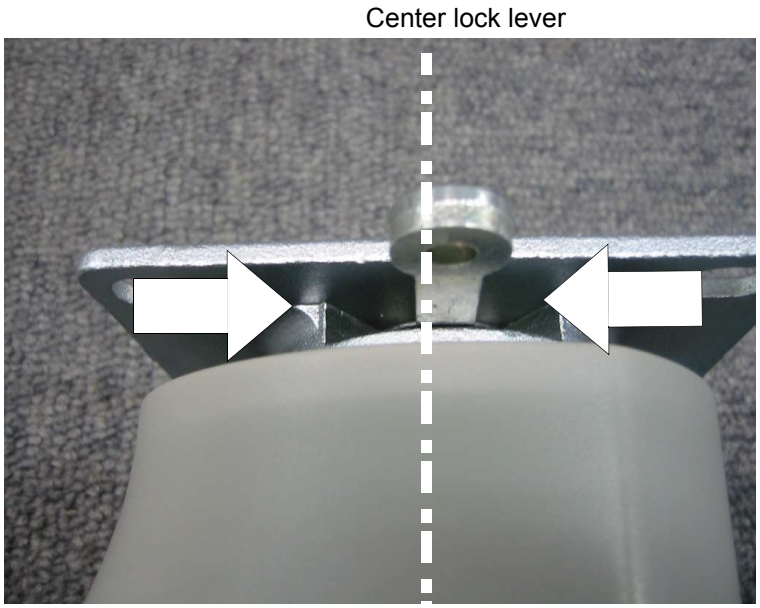
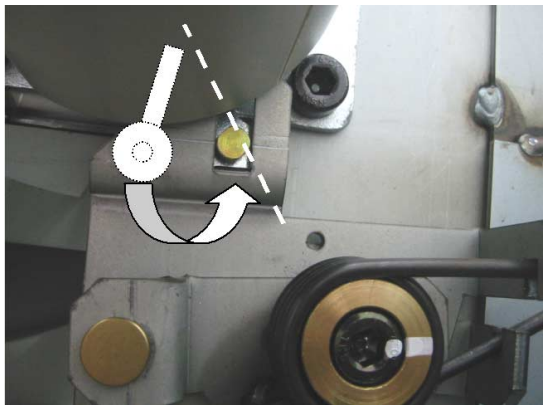


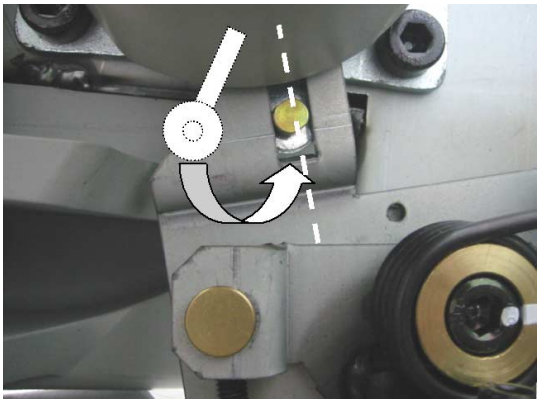
Figure 6-5 Rotating Adjuster

6-3-1 Brake Function Adjustment (cont'd)

3.) After completion of adjustment, press on the brake and check its function and location of the boss, connected to the caster lock arm.



Example: GOOD
Boss of the front caster in place, and brake properly adjusted.



Example: NO GOOD
Boss of the front caster NOT in place, and brake NOT properly adjusted.

Figure 6-6 Brake Function Check

6-3-1 Brake Function Adjustment (cont'd)

4.) Adjuster of the rear caster is also located on the caster linkage joint as shown.

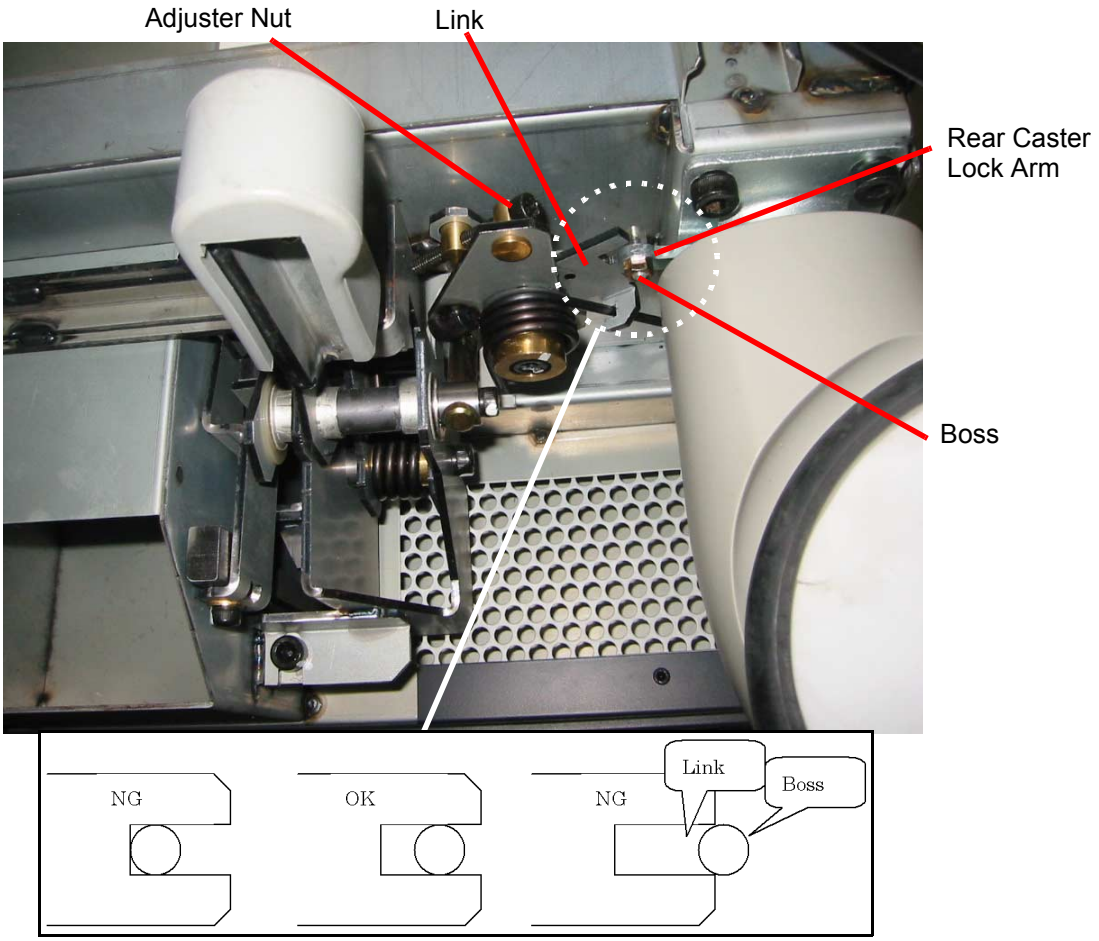


Figure 6-7 Rear Caster Adjuster Location

5.) Turn the adjuster so that the caster lock lever is in the ceter position, as same as the front caster, and the link is securely in place.

6-3-2 Swivel Function Adjustment

The LOGIQ 7 contains one swivel lock adjuster. It can be adjusted using the similar method as brake function adjustment described above.

Figure 6-8 Locations of Swivel Lock Adjuster

Section 6-4
Reloading the Probe Data

This procedure will be used for troubleshooting when a image sensitivity is NOT recovered. For details, refer to Section 7, Troubleshooting.

This rewrites the probe data (probe delay data for beam forming) saved on the flash memories of DDBF and TRAP boards.

1.) Insert the Service Dongle into the USB port, located at the rear panel of the scanner.

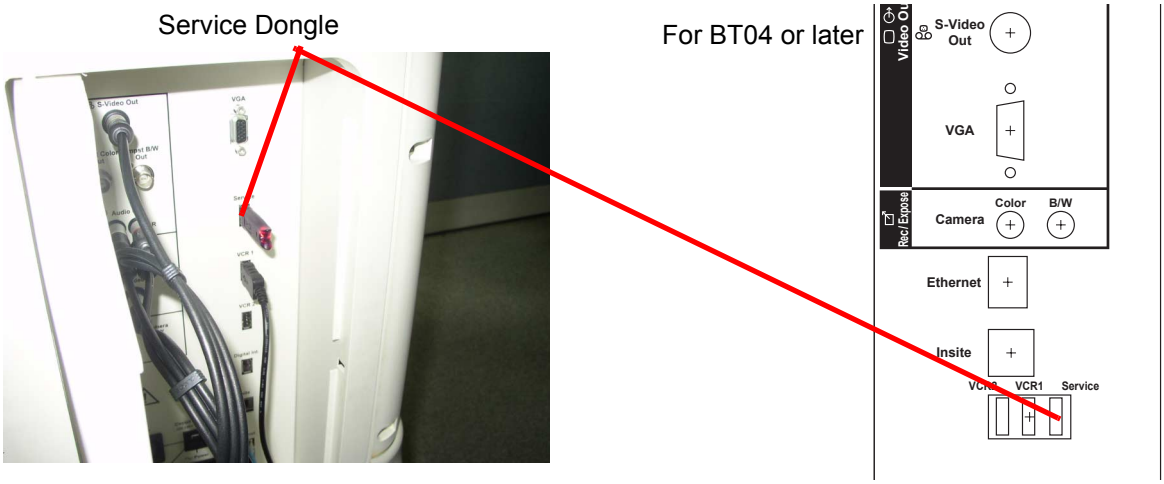


Figure 6-9 Inserting the Service Dongle

2.) Power ON the scanner.

3.) Refer to 4-2-2-3 Entering Maintenance Mode to enter the windows desktop.

4.) Windows Desktop screen is displayed.

5.) Erase the file, “D:\Pegasus\target\resources\Pegasus\ProbeInfo.res.”

6.) Erase the above file completely from Recycle bin, then restart the scanner.

Section 6-5
Monitor and LCD Adjustments

6-5-1 CRT Monitor Contrast and Brightness Adjustment

Before calibrate the Monitor, check your PCVIC or DGVIC Part Number on the Utility Screen. The typical setting value changes with its Part Number.
(To enter this screen, select **Utility > System > About > Additional About Information.)**

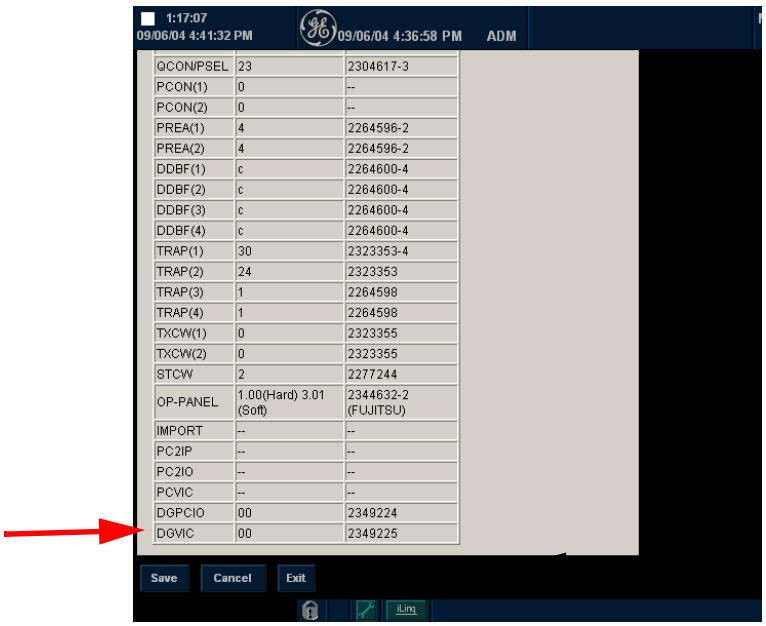


Figure 6-10 PCVIC/DGVIC Part Number Check

To adjust the contrast and brightness:

1.) Select Calibration from the Test Pattern Utility Touch Panel. The test pattern consists of a small box inside a larger box.

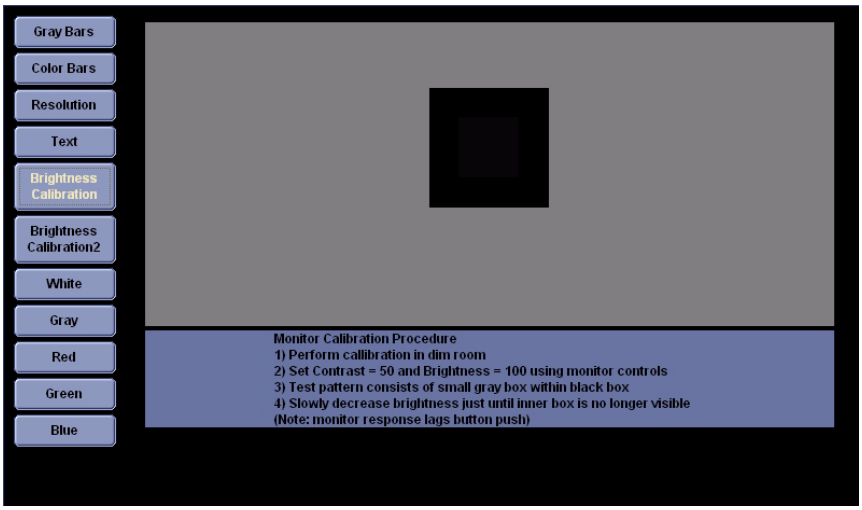


Figure 6-11 Calibration

6-5-1 CRT Monitor Contrast and Brightness Adjustment (cont'd)

2.) Press the Toggle button (1) for contrast and brightness. Confirm that the contrast (or brightness) indicator is displayed on the monitor. If the brightness is displayed, press the toggle button again.

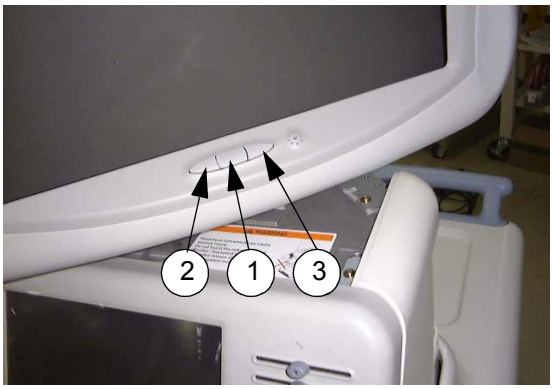


Figure 6-12 Monitor Adjustment buttons

3.) Set the Contrast according to the table below.

4.) Set the Brightness at 100. Then slowly decrease the Brightness until the inner box is no longer visible. Please note that the monitor response to this adjustment logs behind the button push.

Table 6-3 Contrast Recommended Setting

Room Condition	Monitor Adjustment		
	Contrast for PCVIC other than 2349225	Contrast for PCVIC 2349225	Contrast for DGVIC 2349225-2 or later
Dark room for Radiology/ Cardiology	50	45	50
Dim room for Radiology/ Cardiology	60	55	60
Bright room for OB	70	65	70
Dark room for Cardiology	60	55	60

Record the final brightness and contrast settings and leave this information withe the system. Generally speaking, do not change the controls once they have been set, the display becomes the reference for the hard copy device(s).

NOTE: After readjusting the monitor's Contrast and Brightness, readjust all preset and peripheral settings.

6-5-2 19 inch LCD Monitor Brightness Adjustment

To adjust the brightness:

1.) Press the Toggle button (2) or (3) **Once** for brightness adjustment.

Figure 6-13 19 inch LCD Monitor Adjustment buttons

a.) Verify that Brightness is **80**.
If it is not, increase brightness to press the adjustment button (3).
If it is not, decrease brightness to press the adjustment button (2).

b.) Press the button (1) Once. The brightness display disappears.

NOTE: 19 inch LCD is ONLY a brightness adjustment.

6-5-3 17 inch LCD Monitor Contrast and Brightness Adjustment

To adjust the contrast and brightness:

1.) Press the Toggle button (1) **Once** for brightness adjustment.

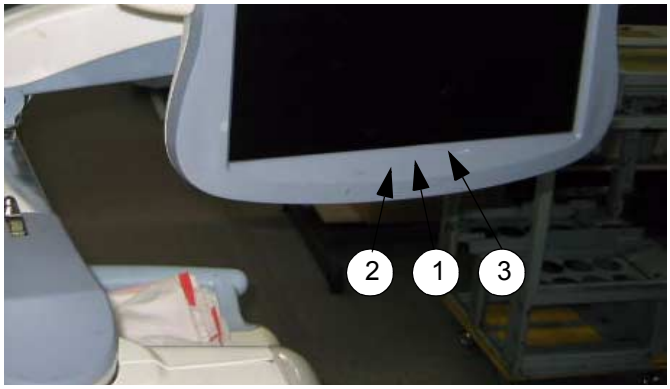


Figure 6-14 17 inch LCD Monitor Adjustment buttons

a.) Verify that Brightness is **55**.
If it is not, increase brightness to press the adjustment button (3).

b.) Press the button (1) again for confirmation.

2.) Press the Toggle button (1) **Twice** for contrast adjustment.

a.) Verify that Contrast is **90**.
If it is not, increase contrast to press the adjustment button (3).

b.) Press the button (1) again for confirmation.

3.) Press and hold the button (1) for 30 second or more for temperature and gamma adjustment. The advance menu appears.

a.) Press the button (3) Once. The second item changes in pink.

b.) Press the button (1) Twice to select the temperature menu.

c.) Verify that Temperature is **15000**.
If it is not, increase or decrease temperature to press the adjustment button (3) or (2).

d.) Press the button (1) again for confirmation.

e.) Press the button (3) Once. The second item changes in pink.

f.) Press the button (1) Once to select the gamma menu.

g.) Verify that Gamma is **2.6**.
If it is not, increase or decrease gamma to press the adjustment button (3) or (2).

h.) Press the button (1) again for confirmation.

i.) Press the button (3) repeatedly to turn the Return in pink.

j.) Press the button (1) Once to return to the advance menu.

k.) Press the button (3) repeatedly to turn the Exit in pink.

l.) Press the button (1) Once to exit from adjustment menu.

4.) Record the final brightness, contrast, temperature, and gamma settings and leave this information with the system. Generally speaking, do not change the controls once they have been set, the display becomes the reference for the hard copy device(s).

NOTE: After readjusting the monitor's Contrast and Brightness, readjust all preset and peripheral settings.

6-5-4 LCD Monitor Resolution

Should one encounter “small screen” on the LCD monitor, screen resolution must be adjusted in order to view full size.

1.) From the touch panel, select **Utility > System > About.**
2.) Click **Additional About Info.**
3.) Select **High Resolution.**

6-5-5 LCD Touch Panel Adjustment

There are two types of the touch panel LCD in LOGIQ 7 (manufactured by Gaudi or Technart). Depending on the LCD type on the system, adjustment procedure is slightly different. Some models of LOGIQ 7 have the LCD with the cover plate. Open the key board and remove those plate to identify the content:

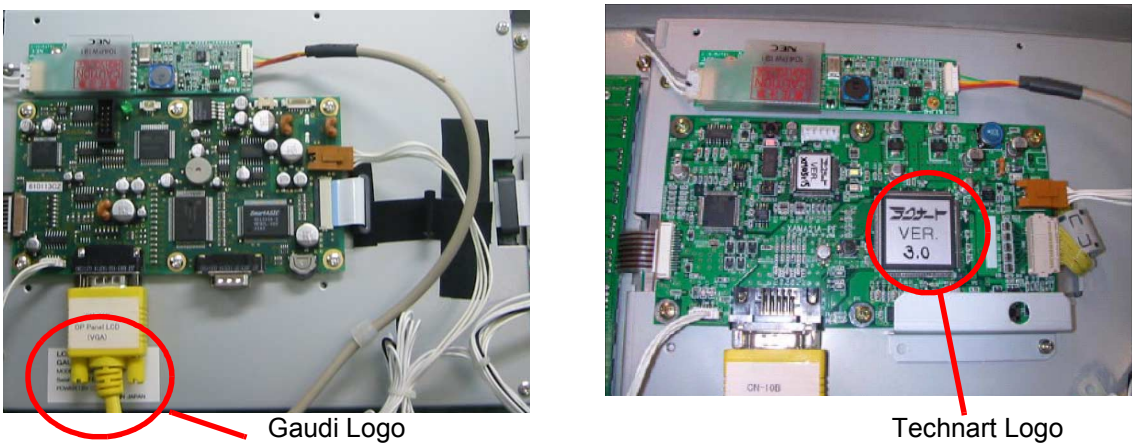


Figure 6-15 LOGO Location

This adjustment must be performed when always replacing:

- PC Box Assy
- Keyboard Assy
- Cable between LCD unit and PC Box

6-5-5-1 For Gaudi LCD

1.) Refer to 4-2-2-3 Entering Maintenance Mode to enter the windows desktop.

2.) The following screen should appear when exiting to Windows.

Figure 6-16 Start-up Screen

3.) Check the followings:

- Proper balance of the LCD display as shown in Figure 6-17
- No Jitter (Phenomenon that a character does not move sideways)

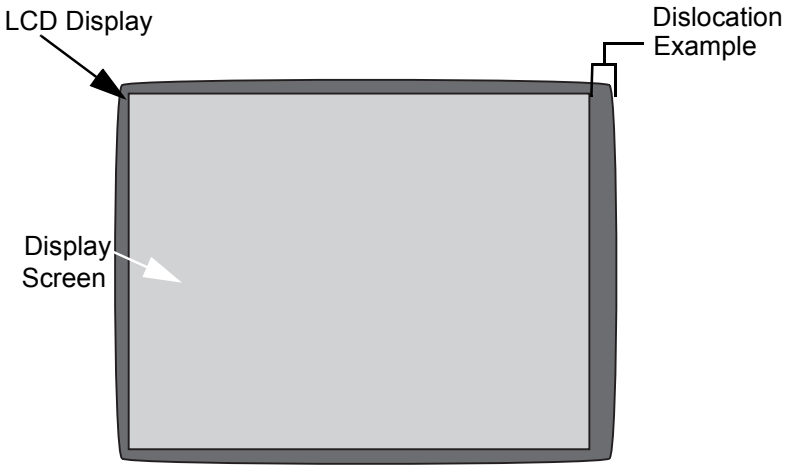


Figure 6-17 Example of LCD Bad balance

NOTE: If the location of the LCD screen is appropriately set in center, do not proceed this adjustment procedures.

4.) Open the OP Panel, and hold the OP Panel using maintenance service rod. Refer to Replacement Procedure in chapter 8 for the procedures.

⚠ **NOTICE** Only when the windows desktop appears in the 17 inch CRT monitor or 17 inch LCD monitor, you can use Auto Adjust function. Also 640 x 480 dots pictures must be displayed on the LCD monitor to function Auto Adjust correctly.

6-5-5-1 For Gaudi LCD (cont'd)

5.) Find out the notch to access OSD Switch located at backside of the LCD as shown in Figure 6-18. Press the switch inside of the notch.

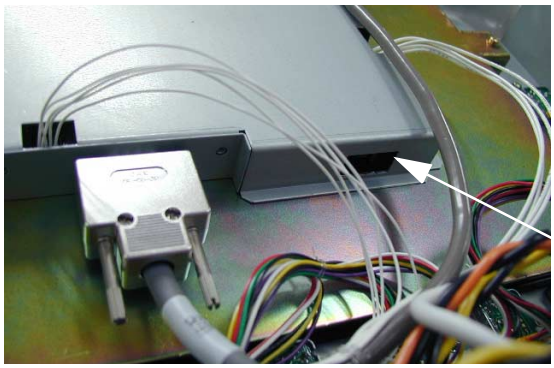


Figure 6-18 Switch Location

NOTE: Be careful not to cut fingers with notch.

6.) OSD menu is shown on the LCD display.

7.) Remove the maintenance rod, and re-install the OP Panel temporarily to use the LCD touch panel. Refer to Replacement Procedure in chapter 8 for the procedures.

8.) Using **SELECT** button, select **AUTO ADJUST**. The letters will be blue when it is selected.

⚠ **NOTICE** Never select AUTO CONTRAST in this menu. Selecting AUTO CONTRAST might occur in an improper contrast.

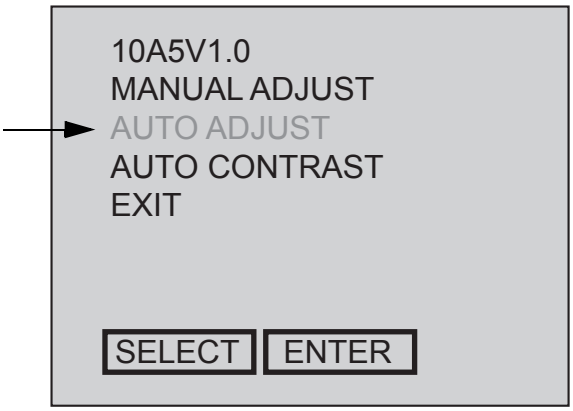


Figure 6-19 OSD Softmenu 1

9.) Make sure that the **AUTO ADJUST** is selected, then touch **ENTER**.

10.)LCD display Auto Adjustment procedures will be started automatically.

6-5-5-1 For Gaudi LCD (cont'd)

11.) After finishing the Auto Adjustment procedures, the following menu is displayed on the LCD.

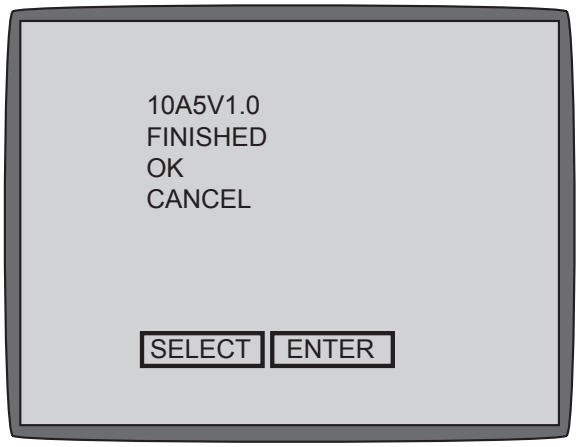


Figure 6-20 OSD Softment 2

12.) Make sure that the LCD position is fixed and shown at the center location.

13.) If it is fixed appropriately, select **OK** then touch **ENTER** to go on to the next step.
If the display is not adjusted yet, select **CANCEL** then touch **ENTER** to repeat the adjustment procedures form step 6.

14.) The first screen is shown on the display. Touch **SELECT** three times to select **EXIT**. Refer to Figure 6-19.

15.) Touch **ENTER** button. OSD menu will be finished, and go back to regular display.

6-5-5-2 For Technart

6-5-5-2-1 Auto Adjustment

1.) Refer to 4-2-2-3 Entering Maintenance Mode to enter the windows desktop.

2.) The following screen should appear when exiting to Windows.

Figure 6-21 Start-up Screen

3.) Press the **AUTO** button **once** on the LCD touch panel board.

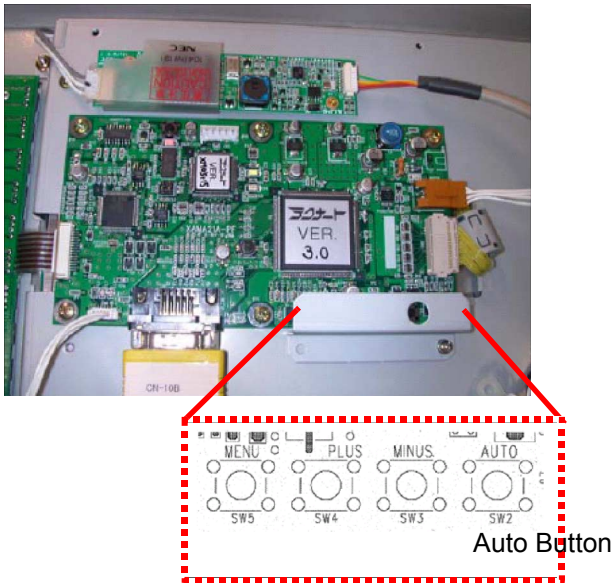


Figure 6-22 Auto Button

6-5-5-2 For Technart (cont'd)

4.) "AutoAdjust OK" message will appear. If it does not appear. press **AUTO** button again.

Figure 6-23 AutoAdjust OK message

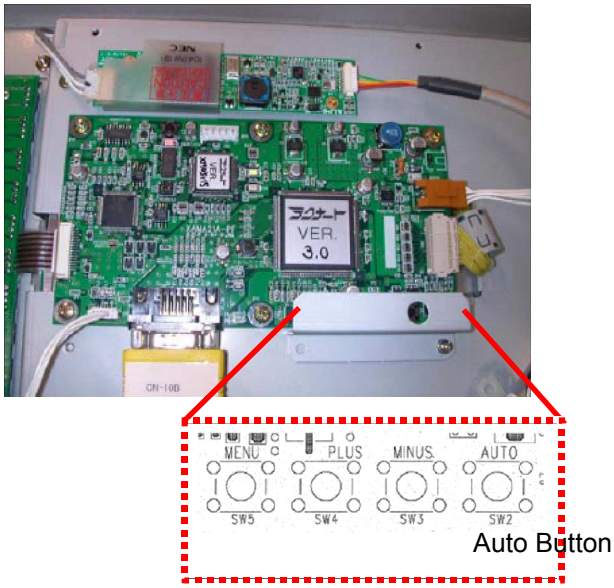


Figure 6-24 Auto Button

6-5-5-2 For Technart (cont'd)

5.) Display the LCD monitor menu and visually check if auto adjustment succeeds.

Example: Blurring

Blurring at the right side of the character

Example: No blurring

Figure 6-25 Blurring/No Blurring

- If no character blurring exits, auto adjustment succeeds. Go to 6-5-5-2-3 Completing adjustment.
- If character blurring exits, auto adjustment fails. Perform 6-5-5-2-2 Manual Deblurring (For Technart ONLY).

6-5-5-2-2 Manual Deblurring (For Technart ONLY)

Perform manual deblurring only when auto adjustment fails.

1.) Refer to 4-2-2-3 Entering Maintenance Mode to enter the windows desktop.

2.) Select **Program > Accessories > Paint** to run the paint software.

Figure 6-26 Paint Software

3.) Phase Check:

a.) Drag and drop the paint screen on the touch panel screen.

Figure 6-27 Moving Paint Screen

b.) Click on square symbol at the top right corner of the paint screen to maximize the screen.

6-5-5-2 For Technart (cont'd)

c.) Click on the line icon and select the thinest line.

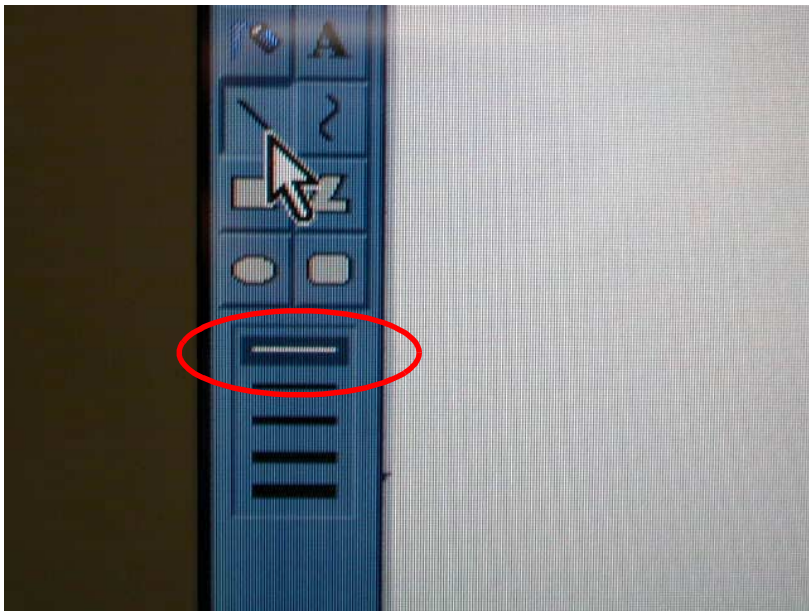


Figure 6-28 Line

d.) Draw a vertical line at the right side of the screen below and check if it has no deblurring.

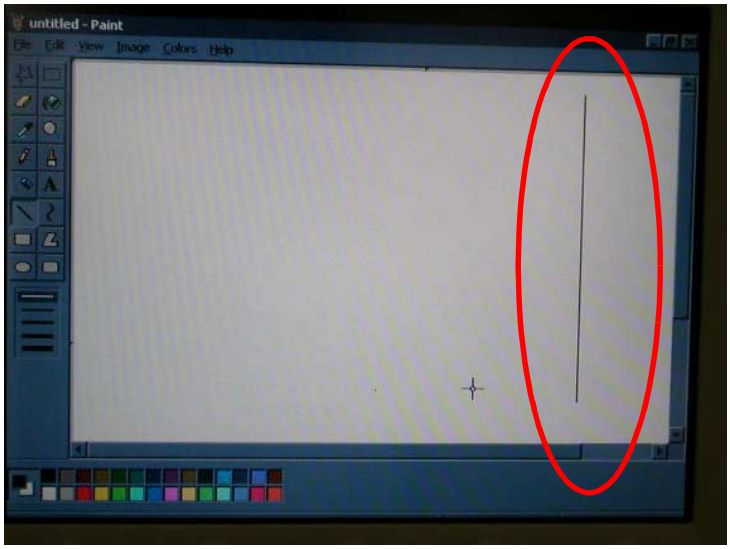


Figure 6-29 Drawing Line

- If deblurring exists, go to next step.
- If no deblurring exists, go to step 4- HTotal Check

6-5-5-2 For Technart (cont'd)

e.) Display the LCD monitor menu and press the MENU button once. The following menu appears.

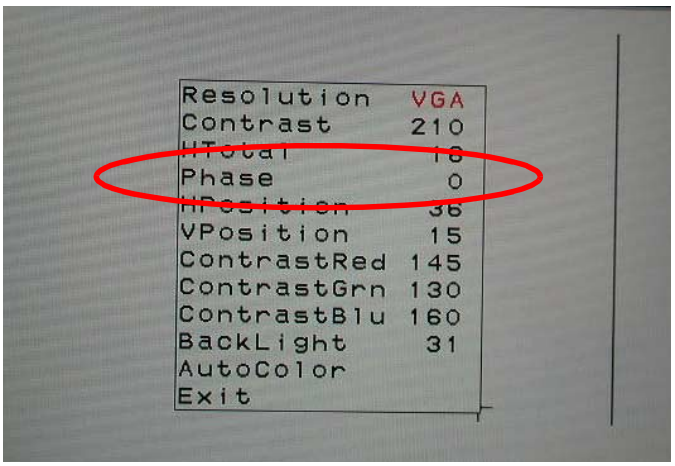


Figure 6-30 Menu Screen

f.) Repeat to press the MENU button until the "Phase" blinks.

g.) Repeat to press the PLUS button to find the value with no character blurring. For example, this value is X.

NOTICE You can select the number from 0-62. Values with deblurring cause are continuous seven or eight values. So, tips for searching the best value is to avoid such a group. This depends on video card or VGA cable of your scanner.

h.) Set the value (**X + 14**) to Phase.

i.) Press the AUTO button once to save the setting.

j.) Repeat to press the MENU button until the "Exit" blinks

k.) Press the AUTO button once to exit from the menu.

6-5-5-2 For Technart (cont'd)

4.) Htotal Check:

a.) Display the LCD monitor menu and press the MENU button once. The following menu appears.

b.) Check HTotal value:

- If it is 16, go to step5 - Hposition/VPosition check
- If it is NOT 16, go to next step.

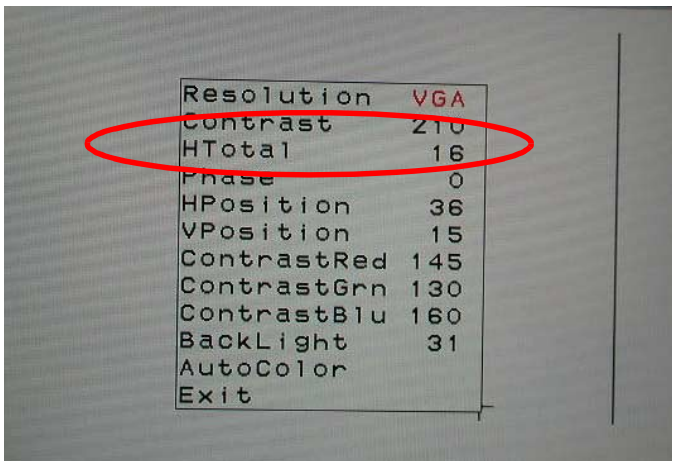


Figure 6-31 H Total

c.) Repeat to press the MENU button until the "HTotal" blinks.

d.) Repeat to press the PLUS or MINUS button to set **16**.

e.) Press the AUTO button once to save the setting.

f.) Repeat to press the MENU button until the "Exit" blinks

g.) Press the AUTO button once to exit from the menu.

5.) Hposition/VPosition Check:

a.) Close the paint software and display windows desktop.

Figure 6-32 Start-up Screen

6-5-5-2 For Technart (cont'd)

b.) Check the upper, lower, left, and right edge of the screen. They should be centered evenly in the monitor.

- If they are vertically out of alignment, adjust VPosition.
- If they are horizontally out of alignment, adjust HPosition.

c.) Display the LCD monitor menu and press the MENU button once. The following menu appears.

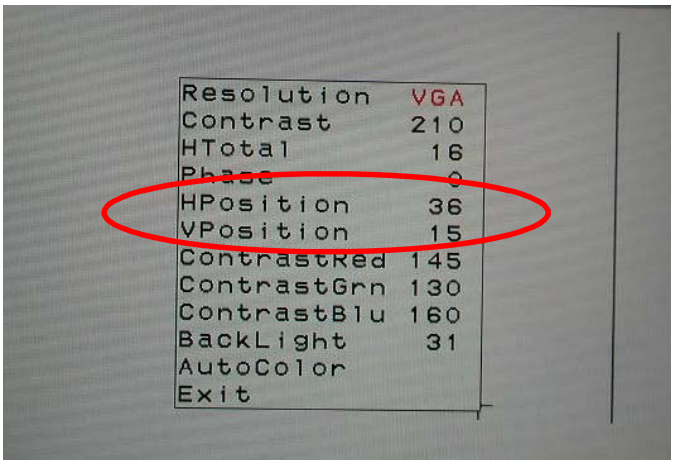


Figure 6-33 H Position or V Position

d.) Repeat to press the MENU button until the "HPosition" or "VPosition" blinks.

e.) Repeat to press the PLUS or MINUS button until the screen should be centered evenly in the monitor.

f.) Press the AUTO button once to save the setting.

g.) Repeat to press the MENU button until the "Exit" blinks

h.) Press the AUTO button once to exit from the menu.

6.) Go to 6-5-5-2-3 Completing adjustment.

6-5-5-2-3 Completing adjustment

1.) Display the LCD monitor menu and press the left button (MENU). The following menu appears.

2.) Verify that:

- Contrast: 210
- ContrastRed: 145
- ContrastGrn: 130
- ContrastBlu: 160

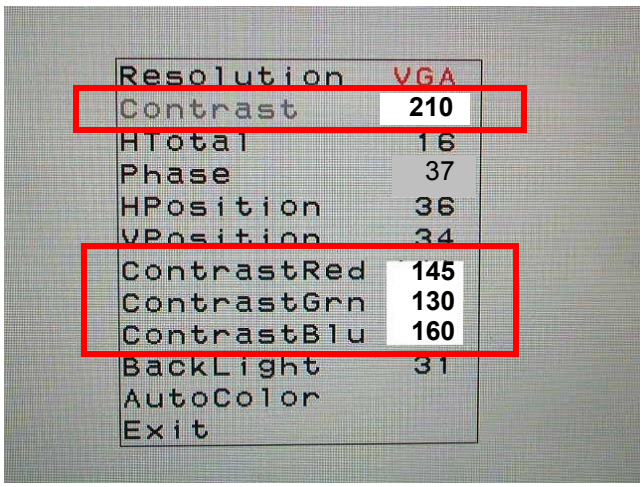


Figure 6-34 Contrast

3.) Verify that:

- The display does not move up, down, or sideways.
- All menu are shown in the LCD display.
- Turning the brightness knob clockwise fades in and turning it counterclockwise fades out.

Section 6-6
BW Printer Setting / Adjustment

6-6-1 Parameters for UP-D897

1.) When system started, Go to **Utility > System >Peripherals**, then hit **Printers** button in the Setup group.

2.) Click **SONY UP-D897** in the Printer List, then right click and select "**Properties**".

3.) Select "**General**" tab, then hit "**Printing Preferences ...**"

4.) Select "**Layout**" tab, then ...

- Set "**1920x1280**" into "Paper"
- Check **off** into "Enlarge to Paper"
- Set "**Bilinear**" into "Interpolation Method"
- Set "**Landscape**" into "Orientation"

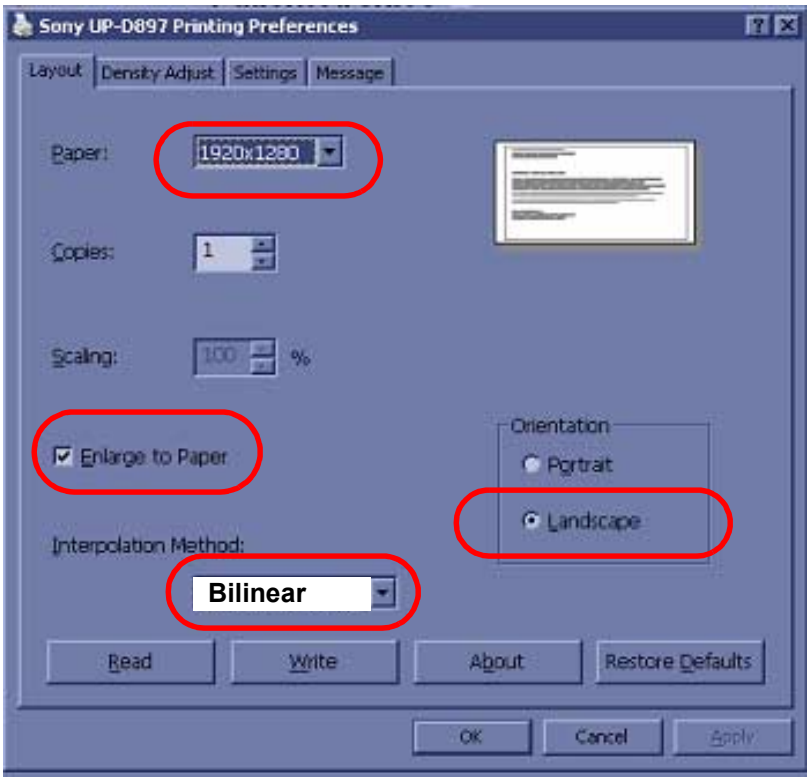


Figure 6-35 Printing Preferences

6-6-1 Parameters for UP-D897 (cont'd)

5.) Select "**Density Adjust**" tab, then ...

- Set "**TONE1**" into "GAMMA"
- Set **7** into "Sharpness"

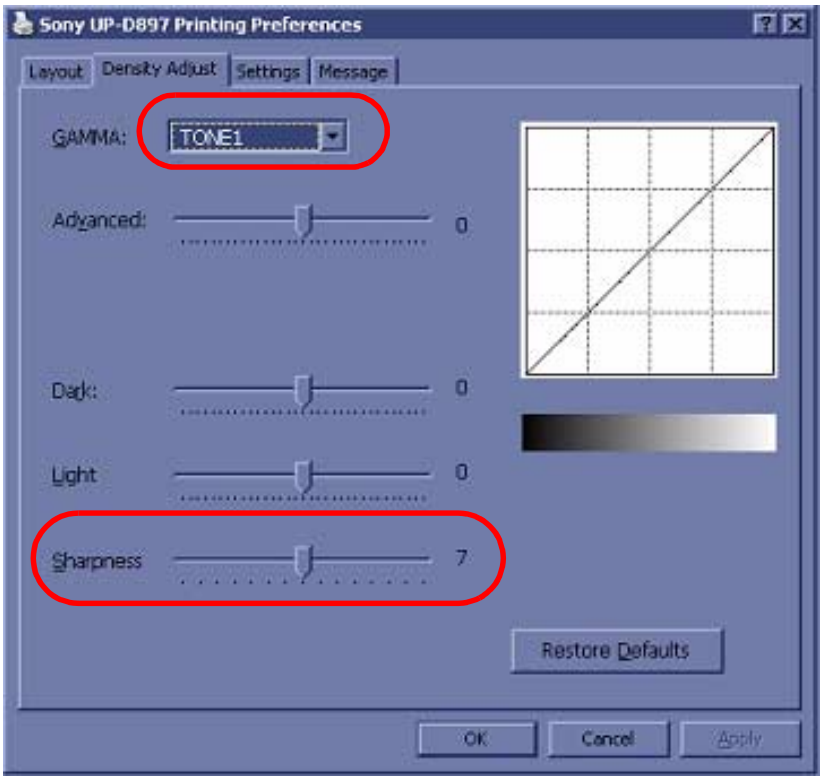


Figure 6-36 Printing Preferences

6-6-2 Parameters for UP-D895

1.) When system started, Go to **Utility > System >Peripherals**, then hit **Printers** button in the Setup group.

2.) Click **SONY UP-D895** in the Printer List, then right click and select "**Properties**".

3.) Select "**General**" tab, then hit "**Printing Preferences ...**"

4.) Set "**Landscape**" into "Orientation", then click on **Advanced..**.

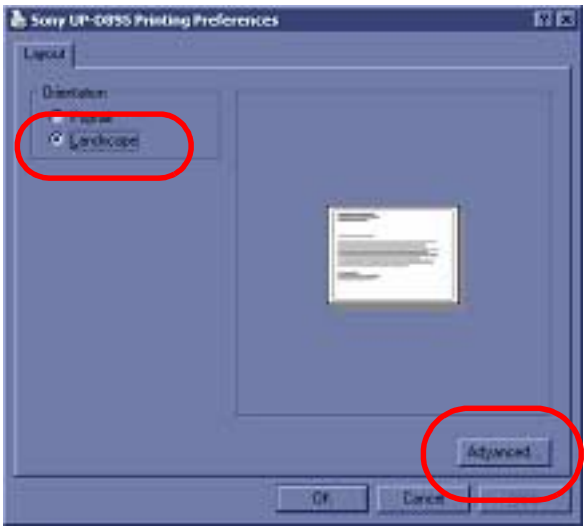


Figure 6-37 Landscape

5.) Set "**1920x1280**" into "Paper"

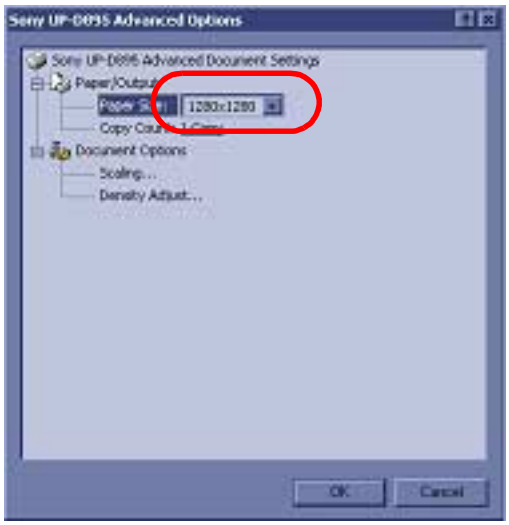


Figure 6-38 Paper

6-6-2 Parameters for UP-D895 (cont'd)

6.) Click on **Scaling...**, then check **off** into "Enlarge to Paper" and set "**Bilinear**" into "Interpolation Method".

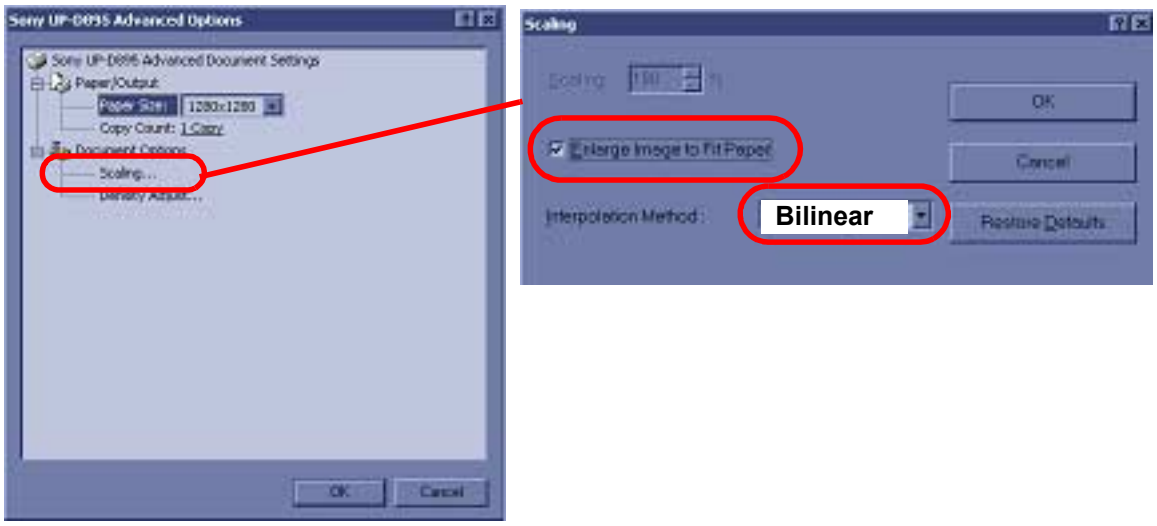


Figure 6-39 Scaling

7.) Click on **Density Adjust...**, set "**TONE1**" into "GAMMA" and set **7** into "Sharpness".

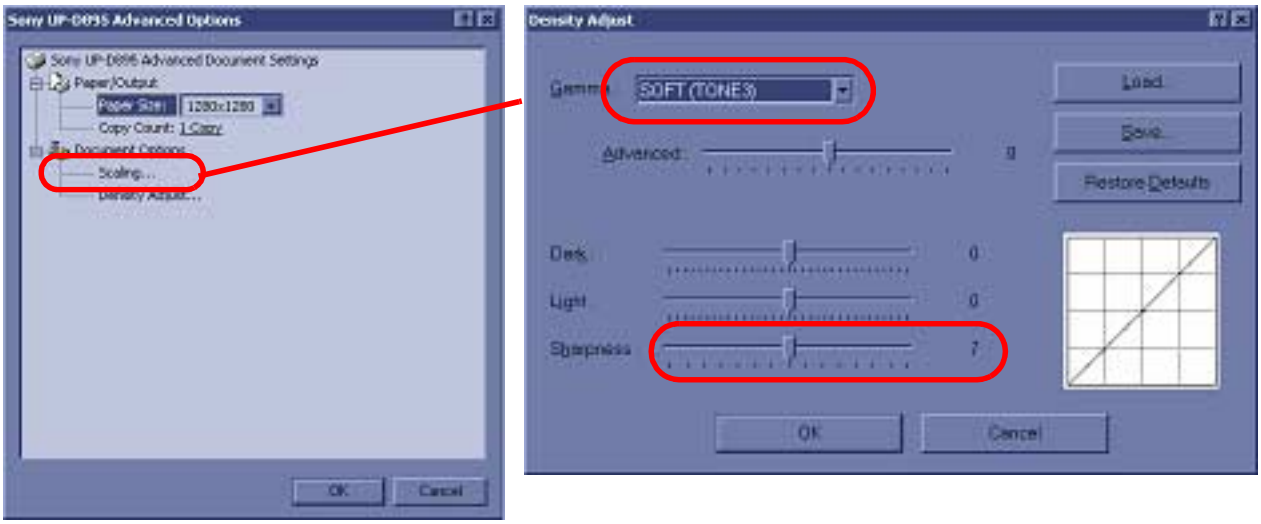


Figure 6-40 Density Adjust

6-6-3 Service Tips - Print Quality

When printer is set to "Nearest Neighbor" interepolation method, comments and body pattern may become hard to read. Re-adjust interpolation method to "Bi-Linear" to avoid this situation.

6-6-4 Service Tips - Print Speed

NOTICE

Problem:
Compared to the UP-D895, it takes a few seconds longer for the UP-D897 to receive data from L7 system. All that time, an user cannot operate the L7 system and must wait until the UP-D897 finished receiving data from the L7.

Cause:
This is due to driver software difference between UP-D895 and UP-D897. It seems the UP-D897 driver software has been modified from the UP-D895.

Solution:
The following actions must be required:

- UP-D897 printer: Change from UP-D897 to UP-D895 on “COMD” menu using the printer jog dial. This solution allows the UP-D897 to be configured to use the UP-D895 interface and driver. When the “COMD” is selected to “CO:895”, the response time becomes the same as the UP-D895. Perform this section.
- LOGIQ7: Change from UP-D897 to UD-D895 using **Connectivity > Service > BW Printer** to use UP-D895 driver software.

1.) Make sure that the UP-D897 is switched ON. (The back light of the LCD light is in green.) If not, press the ON/OFF switch.

2.) Confirm that “READY” is displayed on the LCD, then press the jog dial.

The UP-D897 enters the menu mode. When you perform a menu operation for the first time after you purchase the unit , the top item of the “BEEP” menu will be displayed. If you already have performed a menu operation, the items that you set last is displayed.

6-6-4 Service Tips - Print Speed (cont'd)

3.) Turn the jog dial up or down until "**COMD**" is displayed on the LCD.

4.) Press the jog dial. "**CO:897**" is displayed.

The UP-D897 enters the mode in which you can select the driver setting. "CO:897", which is the driver setting for D897, is displayed on the LCD. You need to change to "CO:895" which is the driver setting for the D895.

5.) Turn the jog dial up or down until "CO:895" is displayed on the LCD.

6.) Press the jog dial. The LCD display changes to "COMD". The UP-D897 completes to be set to the UP-D895 mode.

Notice:
With setting the UP-D897 COMD to UP-D895, the following items cannot be selected or operated from the jog dial.

Item No.	Items	Descriptions
1	GAMMA	TONE4(VERY SOFT) cannot be selected.
2	GAMMA	Cannot be selected from jog dial. It can change only from Properties of UP-D895 menu. Corresponding type of GAMMA between UP-D895 and UP-D897 is as follows: UP-D897 -> UP-D895 TONE1 -> SOFT (TONE3) TONE2 -> NORMAL (TONE2) TONE3 -> HARD (TONE1) TONE4 (VERY SOFT) -> Not Supported
3	QTY	Cannot be selected from jog dial. It can change only from Properties of UP-D895 menu.
4	RSIZE	Cannot be selected from jog dial. It can change only from Properties of UP-D895 menu.
5	SHARP	Cannot be selected from jog dial. It can change only from Properties of UP-D895 menu.

Section 6-7
Cleaning the Trackball

1.) Power OFF the scanner.
2.) Place your fingers onto the notches of the trackball retainer ring.
3.) Rotate the retainer ring counterclockwise until it can be removed from the keyboard.

Figure 6-41 Rotating the Retainer Ring

4.) Lift off the inner retainer and trackball from the keyboard.

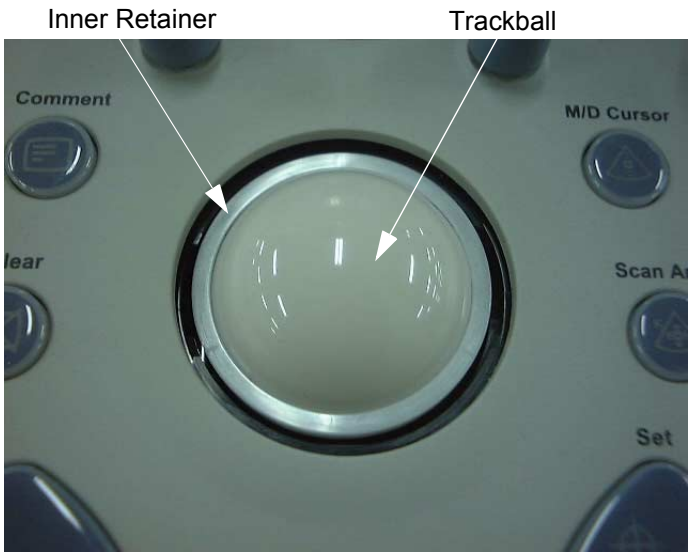


Figure 6-42 Removing Inner Retainer and Trackball

Section 6-7 Cleaning the Trackball (cont'd)

5.) Wipe off any oil or dust from the trackball using a cleaner or dry cloth.

6.) Wipe off any oil or dust from the trackball housing, rollers, and small ball, using a cleaner or cotton bud.

NOTICE When cleaning the trackball housing, make sure not to spill or spray any liquid into the trackball housing (Keyboard or system).
Avoid organic solvents that may damage the mechanical parts of the trackball assembly.
Do not apply much force to the small ball.

Figure 6-43 Cleaning TrackBall and Housing

Section 6-7 Cleaning the Trackball (cont'd)

7.) Wipe off any oil or dust from the two rollers using a cleaner or cotton bud.

NOTICE When cleaning the roller, make sure not to spill or spray any liquid into the trackball housing (Keyboard or system). Use either ethanol, isopropyl alcohol or VCR head cleaner to clean the trackball assembly. Avoid other solvents that may damage the mechanical parts of the trackball assembly.

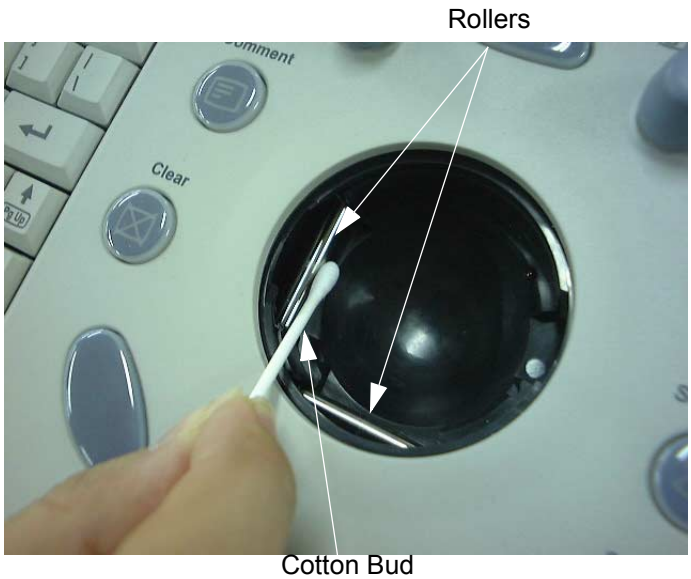


Figure 6-44 Cleaning Rollers

Section 6-7 Cleaning the Trackball (cont'd)

8.) Insert the trackball into the housing.

9.) Place the trackball and inner retainer into the housing with its stopper facing down.Lift off the inner retainer and trackball from the keyboard.

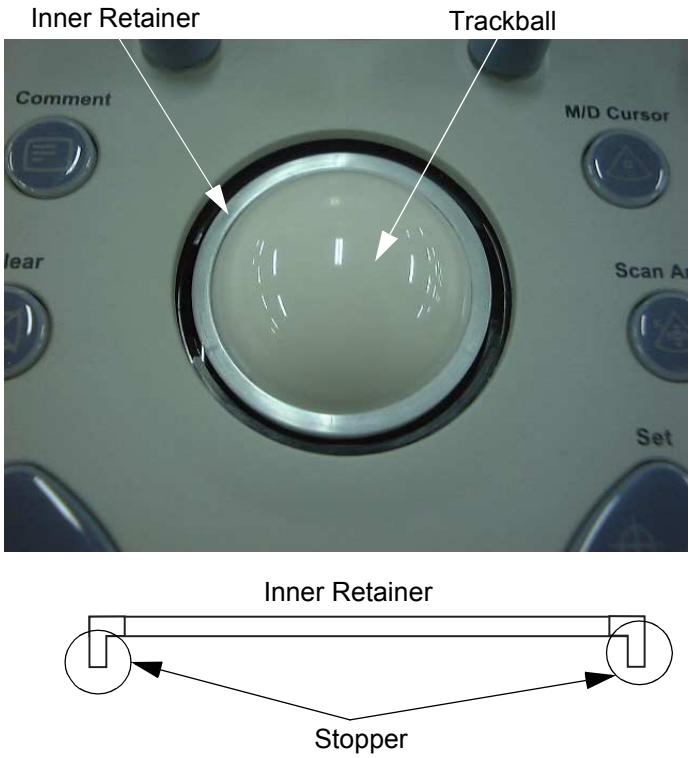


Figure 6-45 Removing Inner Retainer and Trackball

10.) Install the trackball retainer ring onto the inner retainer, then rotate it clockwise until its notches are set in the horizontal position.

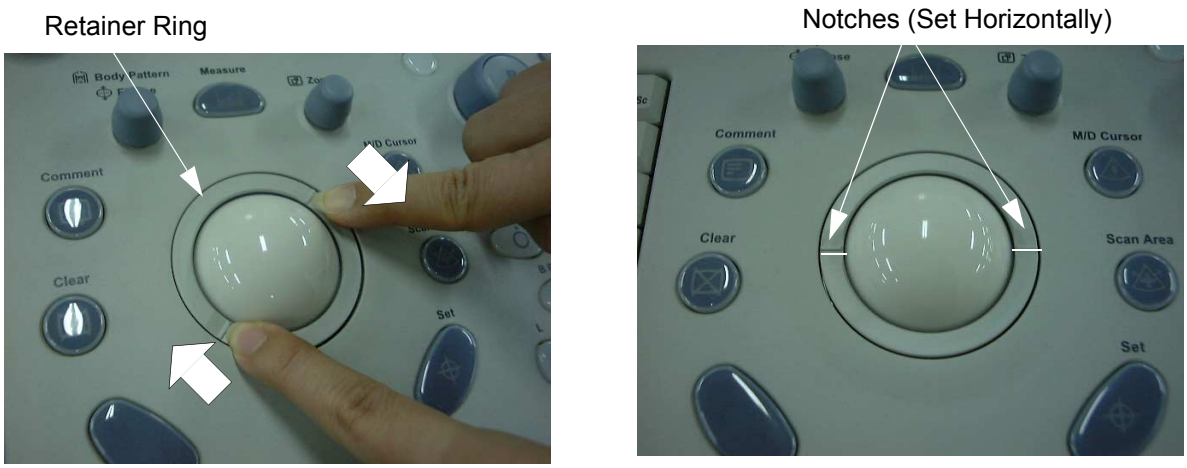


Figure 6-46 Rotating the Retainer Ring

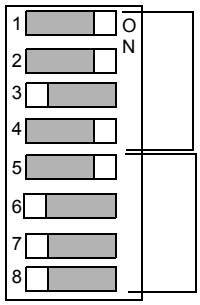
Section 6-8
Jumper and Dip Switch Setting

6-8-1 Dip Switch Setting

Normally the dip switches shall not be adjusted. In case of special needs, such as scanner upgrade, refer to each instructions/documentations for proper setting.

The dip switch must be set properly according to the table below. The value in the table (Dip Switch setting) represents the bit location as shown.

Example: "E4 (h)" is set as shown.



4 (lower 4 bits)

E (Upper 4 bits)

Figure 6-47 Dip Switch Setting

Bit Setting for DIP Switch 1 to 4 (lower 4 bits)

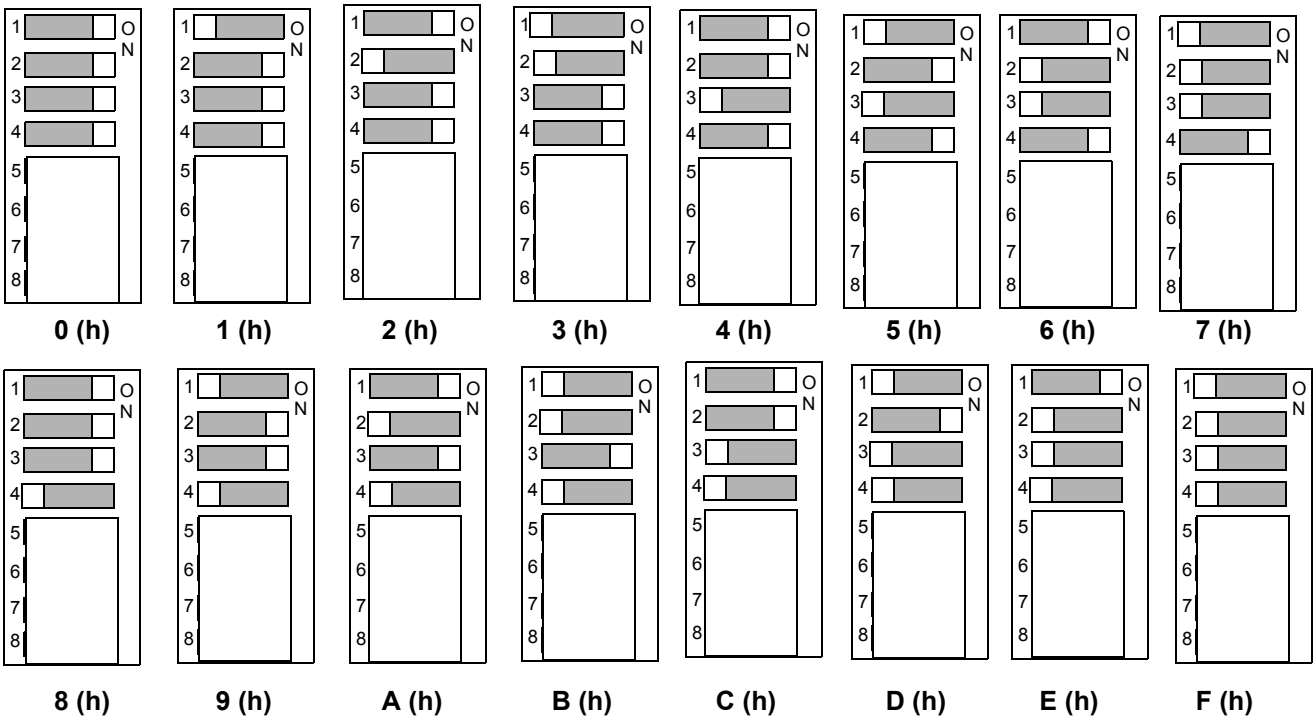


Figure 6-48 Bit Setting (1 to 4)

6-8-1 Dip Switch Setting (cont'd)

Bit Setting for DIP Switch 5 to 8 (Upper 4 bits)

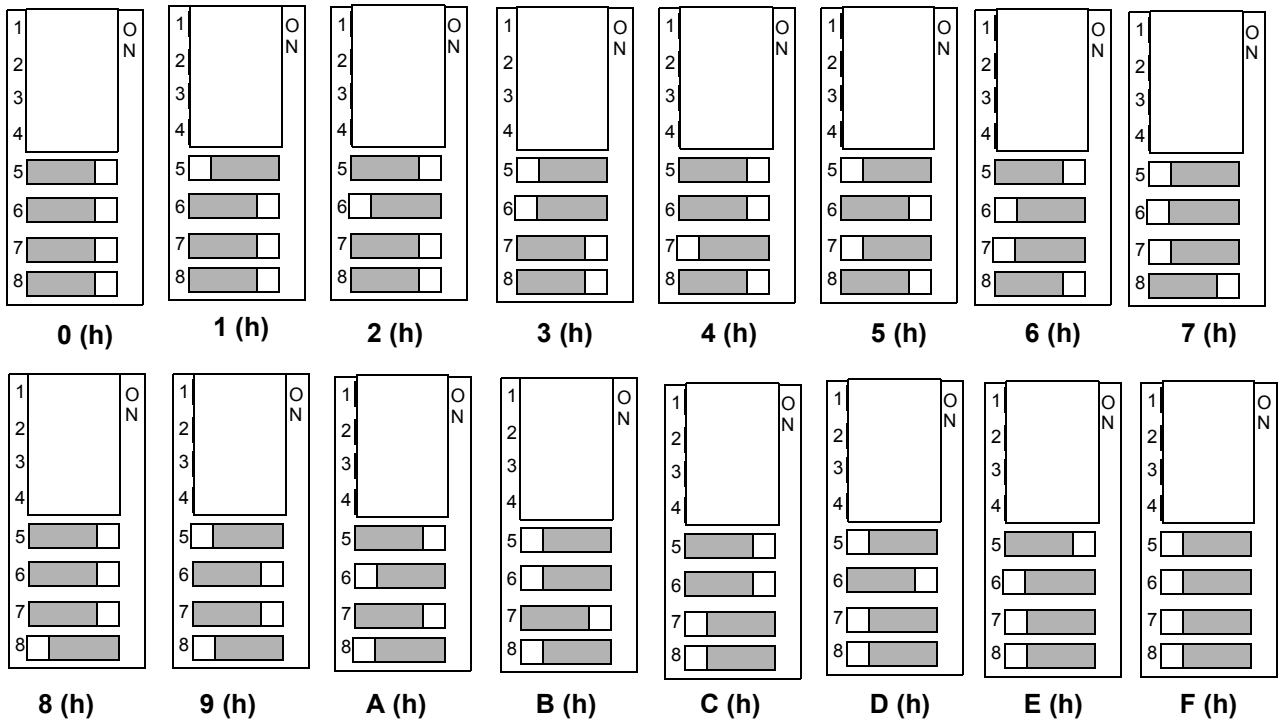


Figure 6-49 Bit Settings (5 to 8)

6-8-2 Jumper Setting

6-8-2-1 HDD

Always set the jumper between MASTER pins.

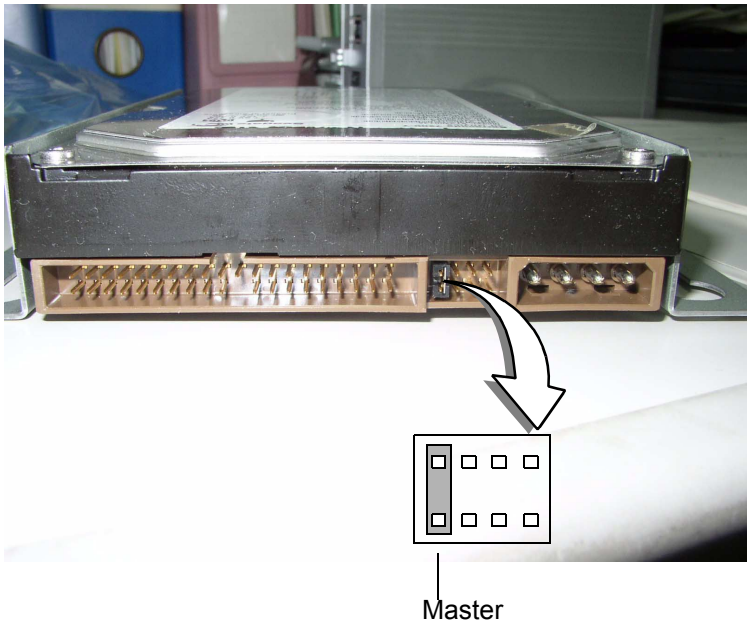


Figure 6-50 HDD Jumper

6-8-3 Printer Dip Switch Setting

6-8-3-1 Mitsubishi MD-3000 VCR Dip Switch Setting

This section describes Mitsubishi MD-3000 VCR communication setting. Field Service Engineer (FSE) is not allowed to modify dip switch setting. Following setting is documented for purpose of troubleshooting by FSE.

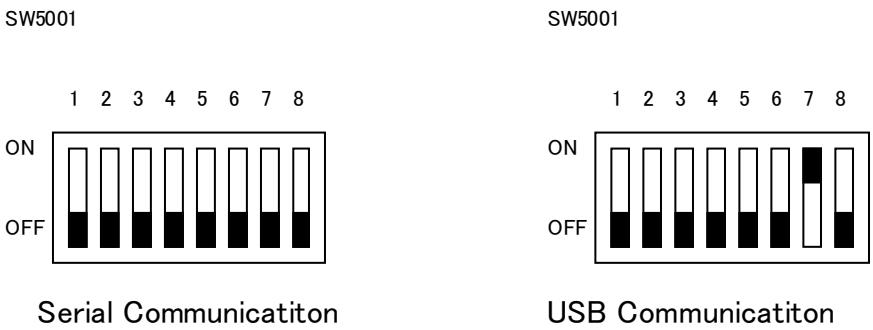


Figure 6-51 MD-3000 Dip Switch

6-8-3-2 Accessing Dip Switch Module for inspection

1.) Remove the two screws of RS232C board plate.

Figure 6-52 Opening Board Plate

2.) Remove the RS232C board from the VCR to access the dip switch.

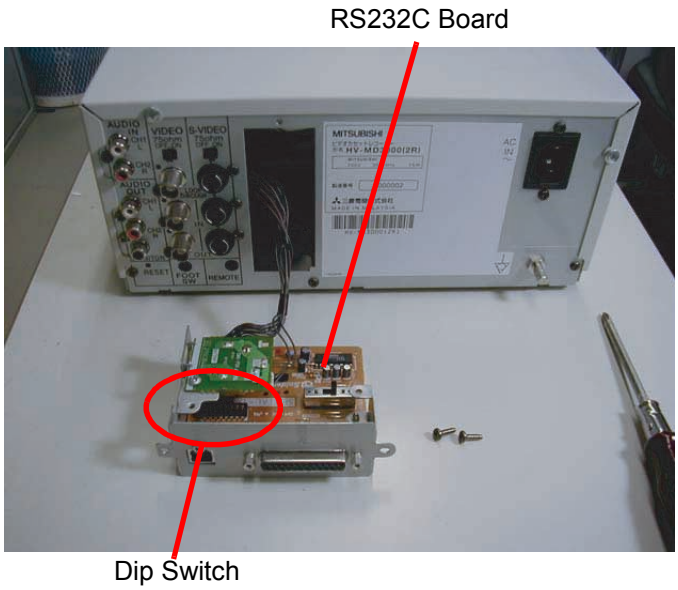


Figure 6-53 Removing Board

6-8-3-3 CP30D Dip Switch Setting

NOTICE Do NOT change the DIP SW setting!!

This section describes CP30D Dip Switch setting. Field Service Engineer (FSE) is not allowed to modify dip switch setting. Following setting is documented for purpose of troubleshooting by FSE.

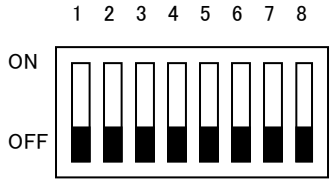


Figure 6-54 CP30D Dip Switch (All OFF)

Chapter 7
Diagnostics/Troubleshooting

Section 7-1
Overview

7-1-1 Purpose of Chapter 7

This section describes how to setup and run the tools and software that help maintain image quality and system operation. Very basic host, system and board level diagnostics are run whenever power is applied. Some Service Tools may be run at the application level. However most software tests are required.

Table 7-1 Contents in Chapter 7

7-1-2 Diagnostic Procedure Summary

Although Diagnostics can be run in any order, the *Bottom-up Confidence-Building Order* outlined in this section:

- Provides a framework from which overall diagnostic testability can be discussed.
- Provides a top-level model that describes the confidence-building aspect of the diagnostics.
- Provides a logical step-by-step approach to system check-out and fault isolation.

There are two levels of diagnostic: board-level and system level.

- Board-level diagnostics are intended to test functionality of a single circuit board.
- System-level diagnostics are intended to test functionary on more than one circuit board.

Unused system components (board or signals) for each diagnostic test are drawn in gray (ghosted).

NOTE: In this document, the Host includes all hardware upstream of the PCI cable. The diagnostics in this chapter do NOT test anything upstream of the PCI cable. Therefore, any upstream hardware or software must be functional before running these diagnostics.

Chapter 8
Replacement Procedures

Section 8-1
Overview

8-1-1 Purpose of Chapter 8

This chapter describes replacement procedures for the following modules and subsystems.

Table 8-1 Contents in Chapter 8

8-1-2 Returning/Shipping Probes and Repair Parts

Equipment being returned must be clean and free of blood and other infectious substances.

GEMS policy states that body fluids must be properly removed from any part or equipment prior to shipment. GEMS employees, as well as customers, are responsible for ensuring that parts/equipment have been properly decontaminated prior to shipment. Under no circumstance should a part or equipment with visible body fluids be taken or shipped from a clinic or site (for example, body coils or an ultrasound probe).

The purpose of the regulation is to protect employees in the transportation industry, as well as the people who will receive or open this package.

NOTE: The US Department of Transportation (DOT) has ruled that "items that were saturated and/or dripping with human blood that are now caked with dried blood; or which were used or intended for use in patient care" are "regulated medical waste" for transportation purposes and must be transported as a hazardous material.

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Section 8-2
Software Loading Procedures for BT09 (R8.x.x or later)

⚠ **CAUTION** **This software can be installed for the system with software version R8.x.x.**

8-2-1 General

This describes software loading procedures for BT09 System with BEP4 only. For the consoles upgraded BT09 systems (contains BEP3 inside), follow procedure in Section 8-7 Software Loading Procedures (R7.5.x or later).

Also, do not attempt to apply this procedure if you are upgrading older BTs to BT09/R8.x.x.

⚠ **CAUTION** **ILoading R8.x.x application software procedures requires basically C drives to be ghosted. In this case, patient image data, preset parameters, and customer data will be kept. However , in case full ghost will be required, you MUST back up before starting this procedure as follows. For customer data safe, we recommend you to back up even for the C ghost only.**

NOTE: Be sure no images are in the clipboard or opened exams before loading base image software.

NOTE: Before loading base image software, if you are troubleshooting loss of image or patient data, review troubleshooting to collect information for future analysis.

8-2-2 Parts Required

- LOGIQ 7 R8.x.x Application CD
- LOGIQ7 Ghost DVD for BECOMP4: 5305206-x

8-2-3 Time Required

Approximately 1 hour

8-2-4 Software Loading Work-flow and Check-list

This check sheet is prepared to assist a FE during software loading.

Customer Name		Customer Contact	
Console #		Unit ID	
		Unit Type	

	Section	Item	Check Parameter	Result
	5-2-2-2 BT09_SV_BEP4 Configuration Variationos	Check current system version before ghost/application loading	Should be R8.x.x or later	Ver.
	8-2-6-1 - Disabling USB Devices	Check if all USB printers are OFF. Check if SCSI UP-D50 is ON.	Should be OFF.	☐ OK ☐ N/A
	8-2-6-2 - Save Customer Data / Setting	Save Customer Setting	User and Password	☐ OK ☐ N/A
		Save Customer Setting	Connectivity Parameter	☐ OK ☐ N/A
		Save Customer Setting	Option Key String	☐ OK ☐ N/A
		Regional Preset		☐ OK ☐ N/A
	8-2-7 - Install Base System	Install Base System	Select fullghost or C ghost	☐ Full ☐ C only
	8-2-8 - Modify System/Windows Settings	UPS Setting	Run UPSSETUP.reg	☐ OK ☐ NG
		Drive Letter setting	CD/DVD to be Drive ‘G’	☐ OK ☐ NG
		Hardware Divice		☐ OK ☐ NG
		LAN Parameter		☐ OK ☐ NG
		TCP/IP Setting	Verify	☐ OK ☐ NG
		Date/Time Setting	Verify	☐ OK ☐ NG
	8-2-9 - Installing R8.x.x Application Software	Application CD correctly recognized	App loading	☐ OK ☐ NG

	Section	Item	Check Parameter	Result
	8-2-10 - System Settings	Software Version	expected version R8.x.x	ver.
		Check Local Data Flow	Local Archive – Int.HDD	☐ OK ☐ NG
		Computer Name and connectivity	Set parameters	☐ OK ☐ NG
		Software Options	Check	☐ OK ☐ NG
		Set VCR parameters	Set parameters	☐ OK ☐ N/A
		Set Language	Set Language options	☐ OK ☐ N/A
		Printer Registration	Set printer	☐ OK ☐ N/A
		Report Template	Set user template	☐ OK ☐ N/A
		Regional Preset	Set Regional Preset.	☐ OK ☐ N/A
		Analog Peripheral	Set analog peripheral parameters.	☐ OK ☐ N/A
		UP-D897	Set UP-D897 parameter.	☐ OK ☐ N/A
	8-2-11 - Functional Check	Service Platform	Be able to enter SV platform	☐ OK ☐ NG
		Probe Recognition	No artifacts or no problem’	☐ OK ☐ NG

8-2-5 Software Loading Steering Guide

This section and the following pages should provide detailed guide of the system and application installation procedures.

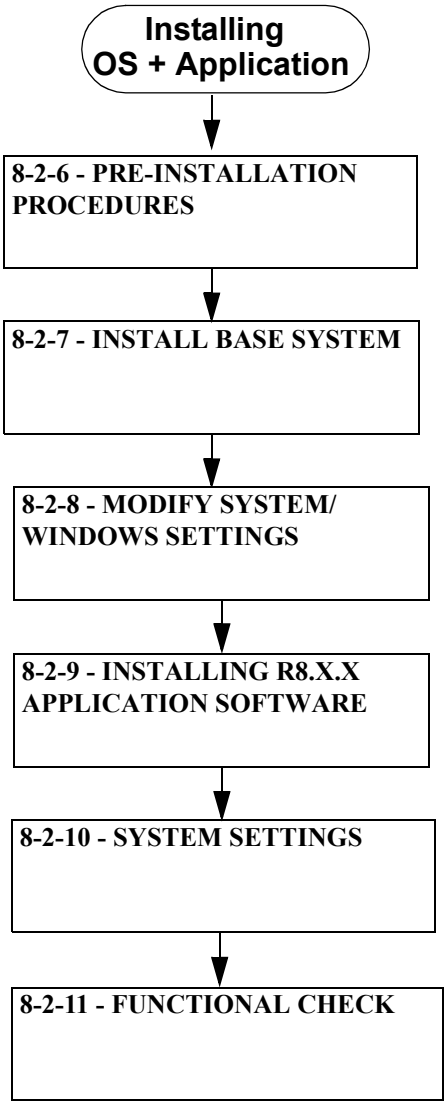


Figure 8-55 BT07 Software Loading Procedures

8-2-5-1 Processes prior to R8.x.x Installation

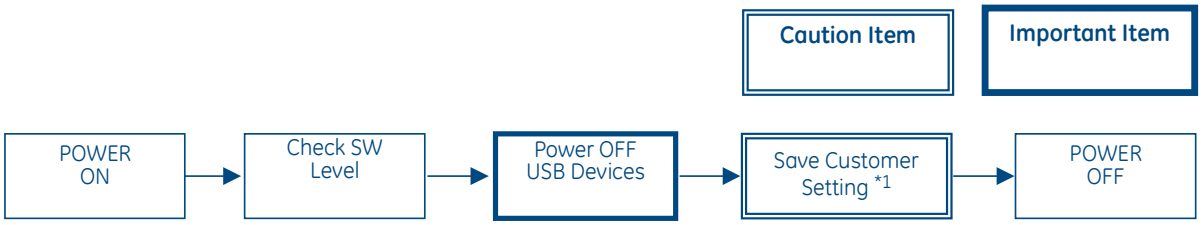


Figure 8-56 Pre-installation Procedures

NOTICE ***1:** Loading R8.x.x application software procedures requires, at minimum, C: Drives to be ghosted (as opposed to full ghost). In such case, patient image data, preset parameters, and customer data will be maintained. Nonetheless, for safe-keeping customer data, it is recommended to back up all data prior to R8.x.x installation.
In case of Full Ghost, customer data/setting must be saved for restoration after the process.

8-2-5-2 Processes to install R8.x.x

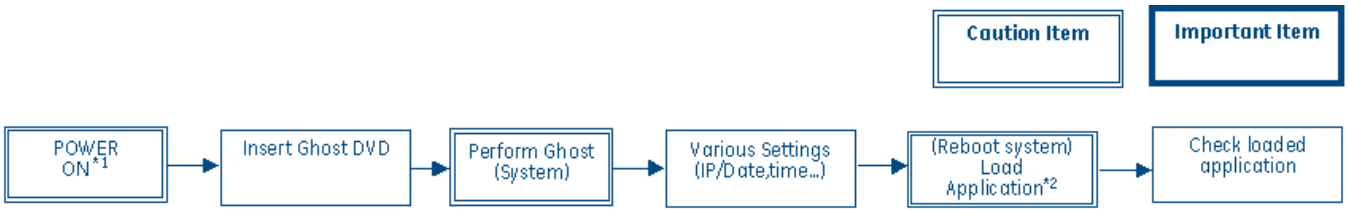


Figure 8-57 Software Loading Procedures

NOTICE ***1:** Do not power ON the peripherals when installing base system image. Disconnecting LAN is also recommended procedure to ensure stable process.

***2:** Press the **N** key at start of process should FE wish to abort installation process.
Pop-up window may appear to notify process in progress - FE does not have to click **OK** as it disappears automatically.
Do NOT operate mouse or keyboard during process. It may cause abnormal system shutdown during installation.
The system will shut down and restart automatically during process of application loading.

8-2-5-3 After installation of R8.x.x

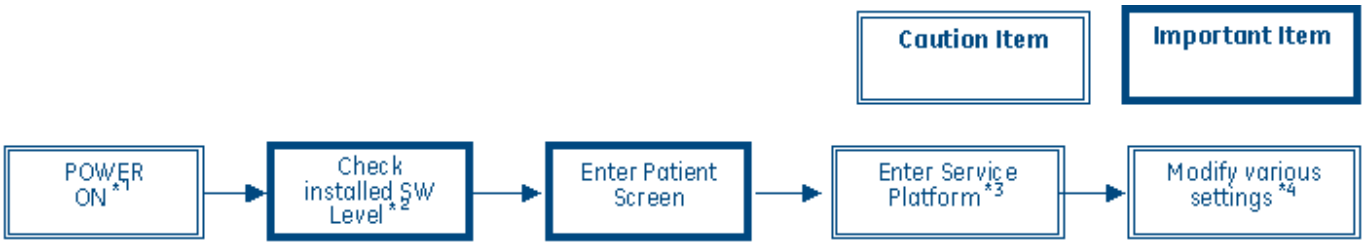


Figure 8-58 Post Installation Procedures

NOTICE ***1:** Verify that Probes are not connected to the scanner. Other peripheral devices such as printers should be turned ON at this time.

***2:** If Operator logon window appears, select "adm"(administrator) and enter the password that is configured already (default value is no password ? just press "enter" key).

***3:** If FE cannot see login window for Service Platform, then installation of the platform have failed. FE must double check the installation setting, and repeat ghost/appli load procedure.

For entering password, make sure CAPS (lock) is OFF.

***4:** Each computer name is unique. Check the scanner serial number printed on the label located at the rear lower side of the scanner. For example, if 123456YM1 is printed, then enter **L7-123456YM1**. Regional Preset, Analog Peripheral, and UP-D897 setting must be required.

Make sure to press "Save Setting" before exiting scanner setup window, or otherwise operator cannot enter the new patient screen.

8-2-6 Pre-installation Procedures

CAUTION **Loading R8.x.x application software procedures requires basically C drives to be ghosted. In this case, patient image data, preset parameters, and customer data will be kept. However , in case full ghost will be required, you MUST back up before starting this procedure as follows. For customer data safe, we recommend you to back up even for the C ghost only.**

The following section describes activities necessary before system and application installation.

8-2-6-1 Disabling USB Devices

1.) Turn OFF all USB peripherals connected to the scanner.

8-2-6-2 Save Customer Data / Setting

Save the following user data.

- Patient image data (Refer to operation manual.)

Please confirm the user if the user has the Media (CD/DVD-R) that is not finalized on the system. You should finalize the Media before R8.x.x Upgrade.

Because once the system is upgraded to R8.x.x, The system never recognizes the no-finalized media (CD/DVD-R).

8-2-6-3 Operator Login Password

The Operator Login Password will be deleted even if the BECOMP is not replaced. So, write down the password if necessary.

Figure 8-59 Login Password

Parameters	Descriptions
Operator Login Password	

Table 8-2 Login Password

8-2-6-4 Saving Connectivity

Before starting upgrading, write down the **Connectivity Setting** for back-up.

1.) Touch **Utility > Connectivity** on the touch panel and click the **TCP/IP** tab.

2.) Write down the following parameters:

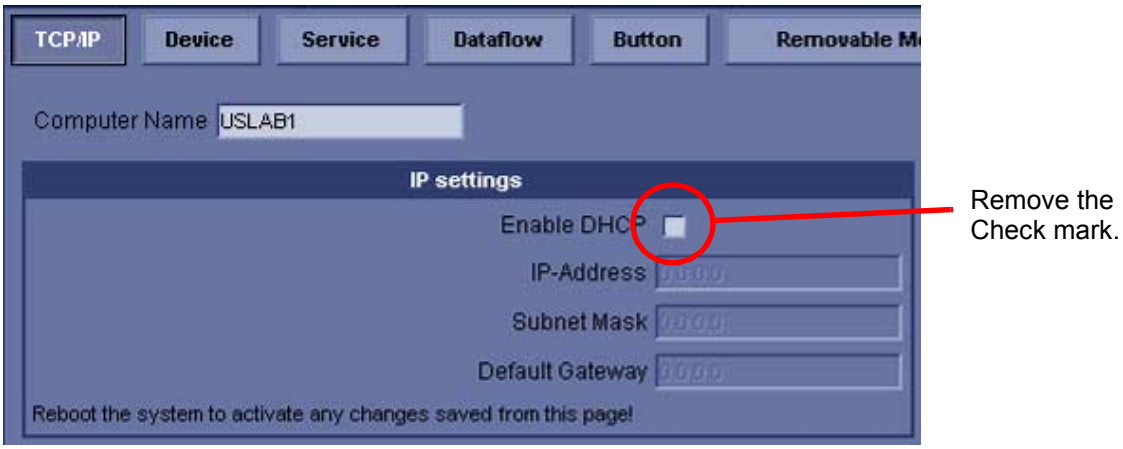


Figure 8-60 TCP/IP

Parameters	Descriptions (Entry for Stand-Alone System)
Computer Name	
Enable DHCP	This parameter **must NOT** be selected.
IP-Address	**(192.168.1.2)**
Subnet Mask	**(255.255.255.0)**
Default Gateway	**(192.168.1.1)**
Note : For a stand-alone system, preset values of IP adress, subnet mask, and default gateway, shown above, must entered.	

Table 8-3 TCP/IP

8-2-6-5 Software Option

1.) Touch **Utility > Admin.**

2.) Click on **System Admin** tab and write down **HW Number** and **Installed Option Keys..**

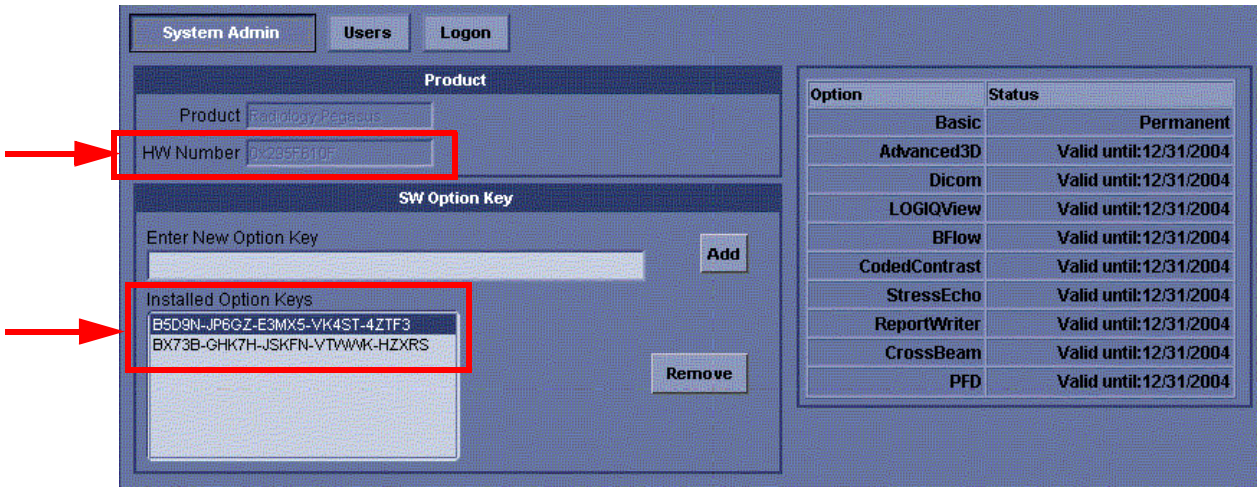


Figure 8-61 System Admin

Items	Descriptions
HW Number	
Installed Option Key	

Table 8-4 System Admin

8-2-6-6 Regional Preset

1.) Go to **Utility > System > About**.

2.) Write down the current Preset Region.

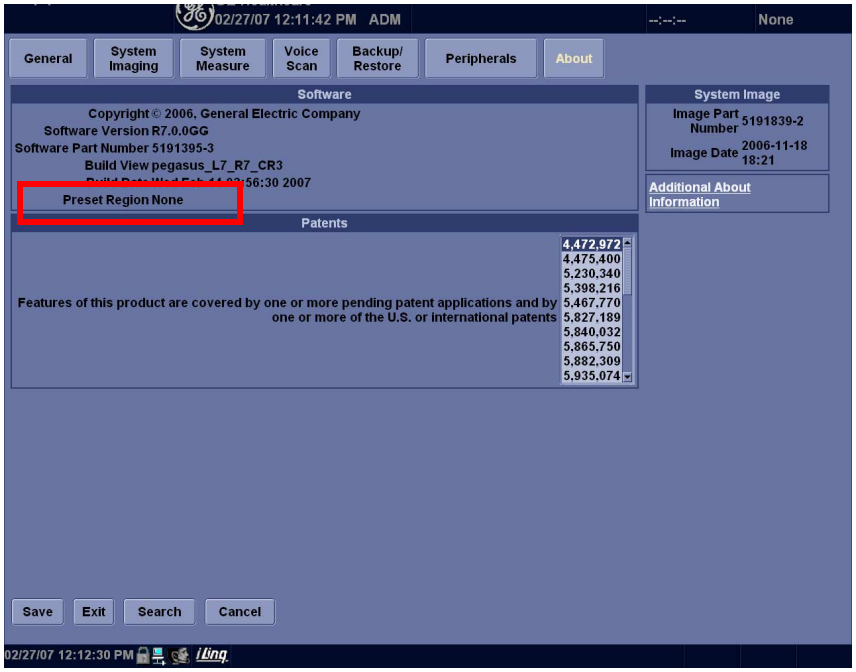


Figure 8-62 Preset Region

8-2-6-7 Printer Registration

1.) Select **Utility > Connectivity > Button**.
2.) Write down the printer names which are registered to Print1 through Print4.
3.) Click on **>>** to add Printflow View.

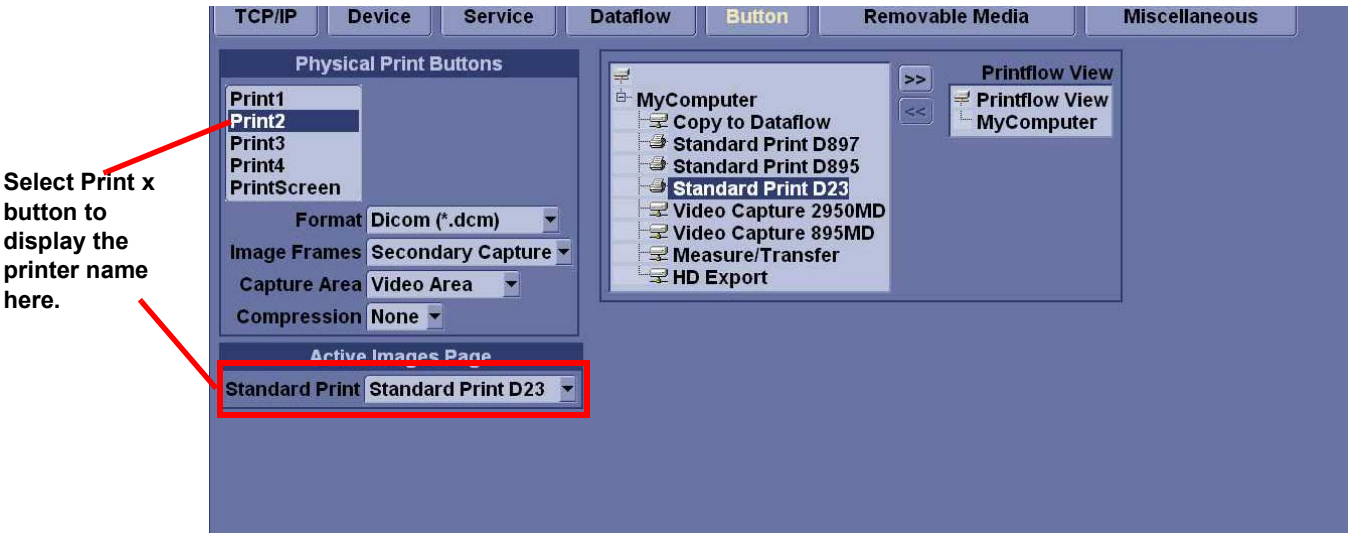


Figure 8-63 Printer Registration

Button	Active Image Printer
Print1	
Print2	
Print3	
Print4	

Table 8-5 Printer Registration

8-2-7 Install Base System

NOTICE Before starting to install base system, all printer must be disconnected from the system.

1.) Power OFF the scanner, wait more than 5 seconds, then power ON the scanner.
2.) Open the DVD drive and set the Ghost DVD.
DVD drive reads Ghost DVD automatically and go to next step.
3.) After loading software, when the following screen appears, press the **Enter** key.

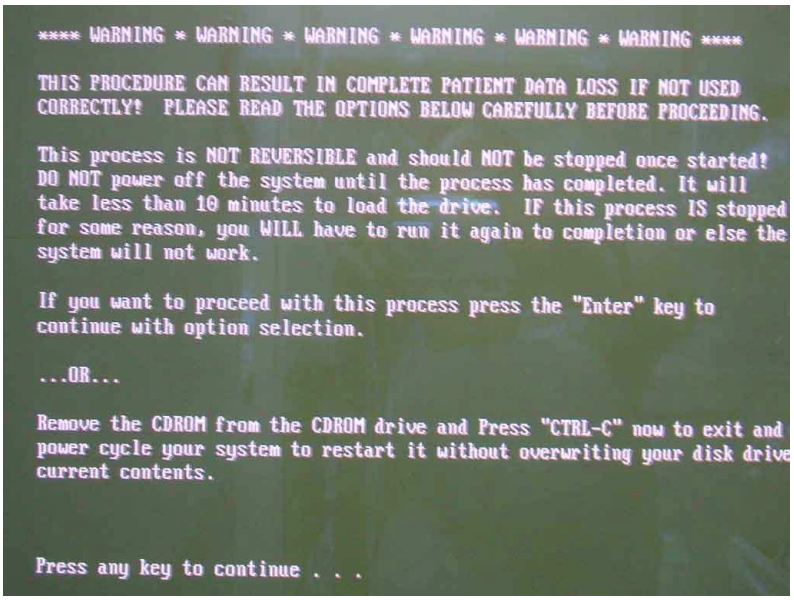


Figure 8-64 Enter

8-2-7 Install Base System (cont'd)

4.) The following screen appears. Press **B** then **Enter** to initialize the **C** drive

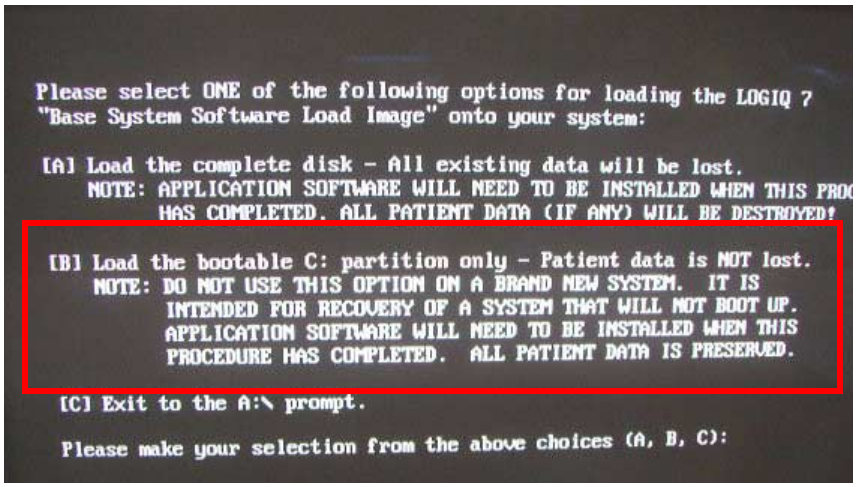


Figure 8-65 Select B

CAUTION **If you select [A], all the archive would be lost.**

5.) Check if the message appears as reloading C: partition only, then press **Enter** key.
If the message appears as reloading the entire disk, press **CTRL-ALT-DEL** to reboot the sysytem and retry from procedures described in previous page.

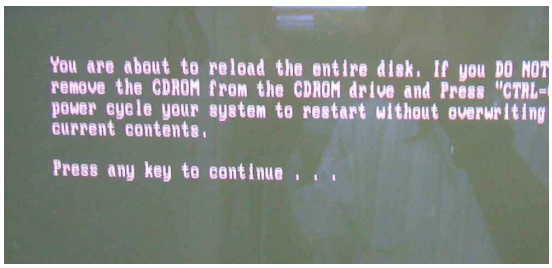


Figure 8-66 Enter

8-2-7 Install Base System (cont'd)

6.) If the following screen appears, verify that **OK** buttton is selected, then press **Enter** key. (If it is not selected, select **OK** button using the arrow keys then press **Enter** key.)

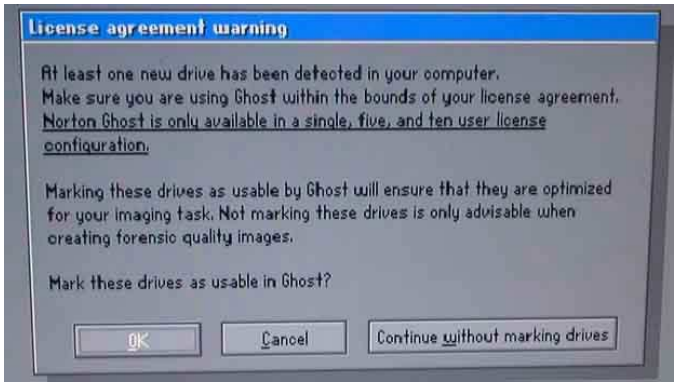


Figure 8-67 OK

7.) Approx. fifteen minutes later, the following screen appears. Eject the **Base System Software Load Image DVD** from the drive.

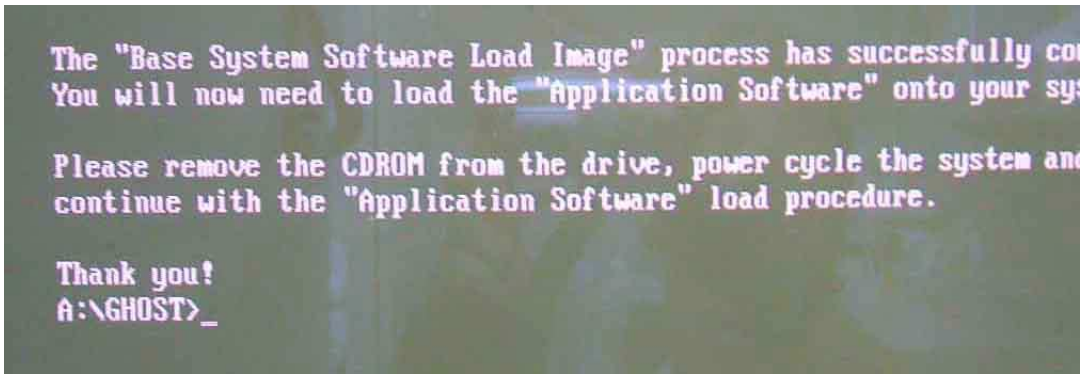


Figure 8-68 Ejecting DVD

⚠ **NOTICE** The Base System Software Load Image DVD must be stored onto the PC box cover.

8.) To restart the system, press **Ctrl + Alt + DEL** key at the same time.

8-2-8 Modify System/Windows Settings

After Base System is successfully installed, various parameters must be properly set before proceeding to Application load. The below outlines necessary system/windows setting.

Table 8-6 System/Windows Settings

Item	Method	Proper Value
UPS Setting	Automatic Setting	(n/a – just load)
(Restart System)		
Avance AC97 Audio	Load from c:\windows\system32\drivers	(n/a – just load)
(Restart System)		
Drive Letter	Automatic Setting but check desktop icon if not.	DVD Drive = G
HW Device	My Computer _Properties	Various
LAN	Desktop _My Network Places _Properties _Local Area Connection	Double Click to activate
TCP/IP Setting	Desktop _My Network Places _Properties _Local Area Connection _Internet Protocol (TCP/IP) _Properties _Advanced _Options _TCP/IP Filter	Values in 'Permit Only'
Date/Time	Start _Settings _Control Panel _Date and Time	Proper Time Zone Accurate Date / Time

8-2-8-1 UPS Setting

UPS automatically setup by Ghost. You do not need to setup it manually. You can see the message below on the desktop.

Figure 8-69 UPS Setting

Please choose **OK**.

8-2-8-2 Drive Letter Setting

If you CANNOT see this dialog at the first boot up, this dialog appears at 2nd boot up.

Figure 8-70 OK

Please choose **OK.**

You should check the Drive Letter manually by Windows Explorer for double check.

- DVD Drive should be assigned to G:

CAUTION **Drive F: (Swap) Letter is removed on R7.0.0EZ. (This is correct.)**

If Drive letter is wrong, please double-click **Remap Drive Letter** icon on the desktop.

8-2-8-3 Hardware Device Check:

1.) On the windows desktop, left-click on **My Computer**, then right-click on **Properties.**

Figure 8-71 Properties

2.) The System Properties window appears. Select **Hardware > Divice Manager...**

3.) Verify that X or ! is not displayed.

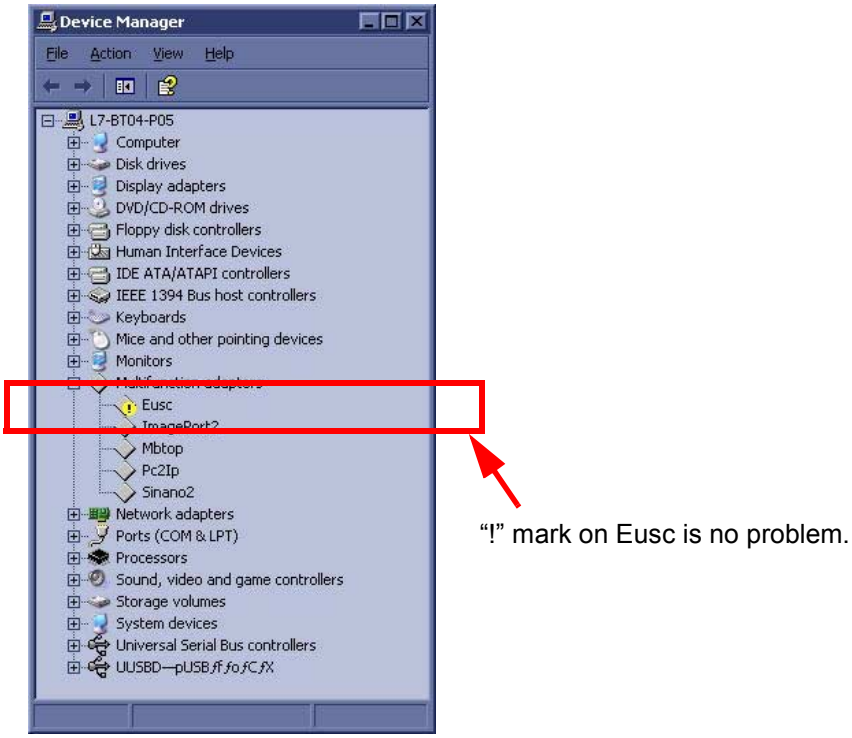


Figure 8-72 Divice Manager

⚠ **NOTICE** The **Eusc** (Mlultifunction adapters > Eusc) might contain "**!**" mark, but it is no problem. Skip any of device driver installation procedures described below.

8-2-8-3 Hardware Device Check: (cont'd)

4.) If **X** or **!** is displayed:

- Left-click on the device with **x** mark, then rigtht-click on **Enable.**
- Left-click on the device with **!** mark, then rigtht-click on **Properties** to perform the device driver reconfiguration. When some files are required, designate the file in the directories of **C:\WINDOWS\SYSTEM32** or **C:\WINDOWS\SYSTEM32\DRIVERS**. If they are not found, search them using a windows search function.

5.) Close the window.

8-2-8-4 LAN Parameter Setting

1.) On the desktop, left-click on **My Network Places**, then right-click on **Properties...**

2.) Verify that two network icons appears. (If “Local Area Connection” icon does not appear, the hardware failure might occur.)

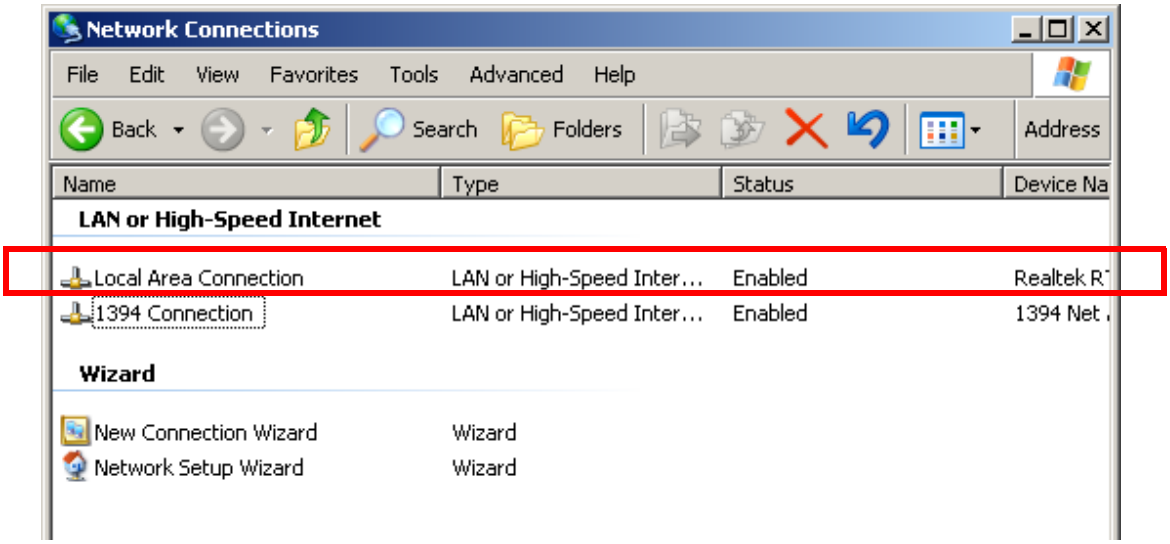


Figure 8-73 Properties

3.) Using the right trackball button, double-click on **Local Area Connection.**

4.) When the following window appears, it will be automatically closed later.

Figure 8-74 Local Area Connection

5.) When the following window appears, right-click on **Cancel.**

Figure 8-75 Cancel

6.) Close all windows.

8-2-8-5 TCP/IP Filter Setup

1.) On the desktop, left-click on **My Network Places**, then right-click on **Properties...**

2.) Double-click **Local Area Connection** or **Local Area Connection #2** (if you do NOT find "Local Area Connection").

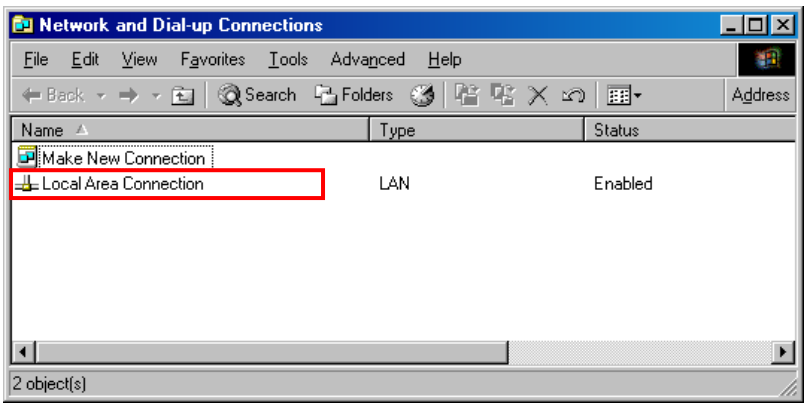


Figure 8-76 Local Area Connection

3.) Select **Internet Protocol (TCP/IP)** , then click **Properties** button.

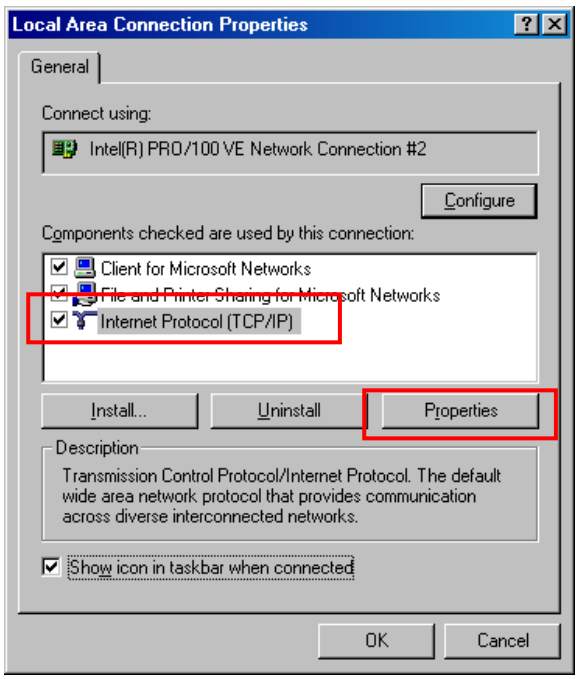


Figure 8-77 Internet Protocol (TCP/IP)

8-2-8-5 TCP/IP Filter Setup (cont'd)

4.) Click **Advanced...** button.

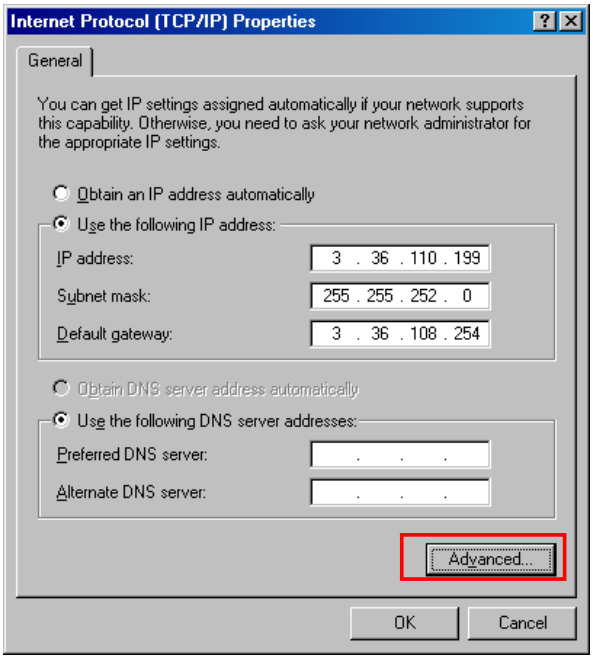


Figure 8-78 Advanced

5.) Click **Options** tab.

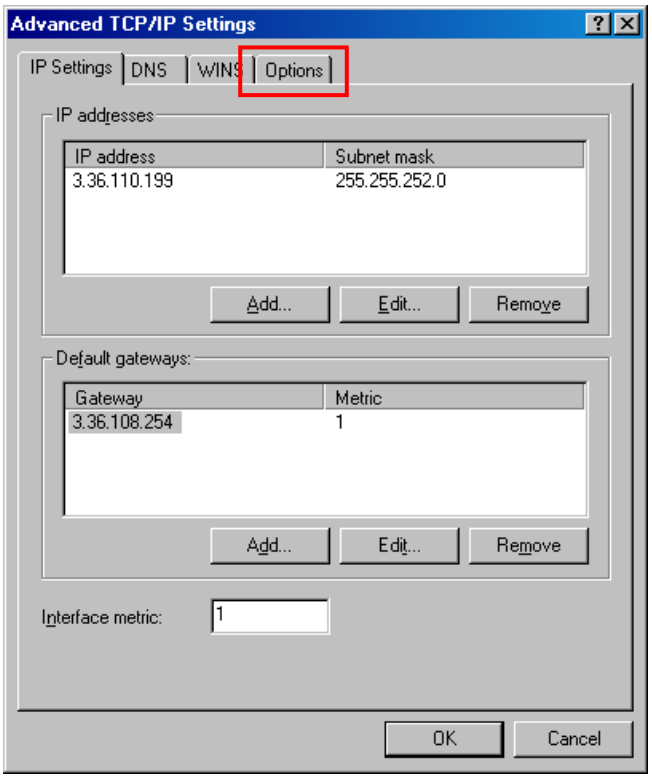


Figure 8-79 Options

8-2-8-5 TCP/IP Filter Setup (cont'd)

6.) Select **TCP/IP Filtering**, then click **Properties** button.

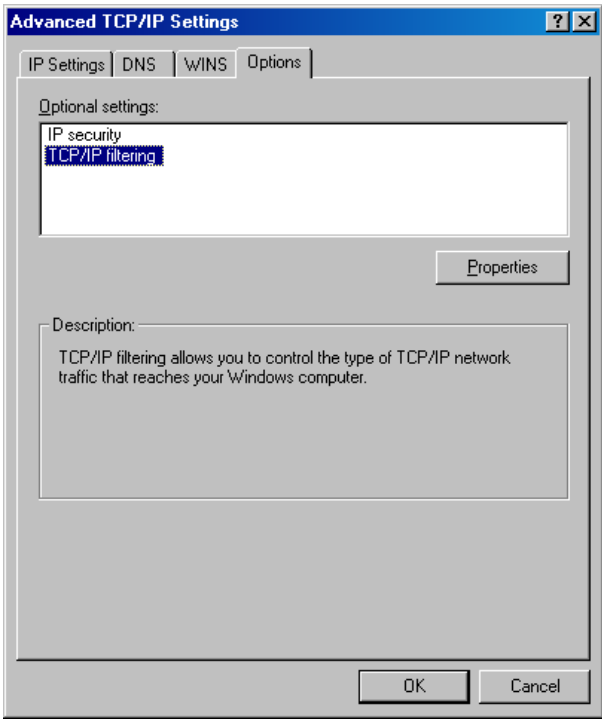
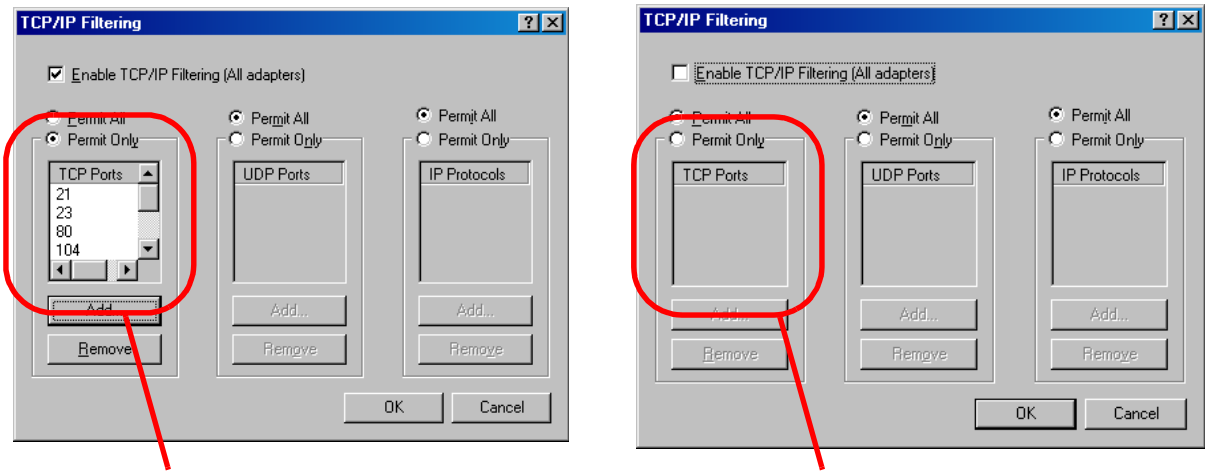


Figure 8-80 TCP/IP Filtering

8-2-8-5 TCP/IP Filter Setup (cont'd)

7.) If your system has no TCP port numbers as follows, perform these procedure to add the TCP port numbers. If the TCP port already have been set, skip these procedures. (This depends on the network card installed in the PC box.)



The TCP port numbers, **21, 23, 80, 104, 512, 3003, 5800, 5801, 5900, and 5901**, have been set.

No TCP port number is set. They must be set.

Figure 8-81 TCP port number

* At first check mark **Enable TCP/IP Filtering (All adapters)**.
* Check mark **Permit Only** in TCP ports box
* Click **Add...** button.
* Enter **21** (port number) as the TCP Port ,then click **OK** button to apply it.
* Repeat these procedures to register **21, 23, 80, 104, 512, 3003, 5800, 5801, 5900, and 5901** for TCP ports.

⚠ **NOTICE** UDP Ports and IP Protocols must be kept default settings.

8-2-8-5 TCP/IP Filter Setup (cont'd)

8.) Verify that the proper TCP port numbers are entered in TCP Ports box, then click **OK** buttons for all opened window to complete the **TCP/IP Filter Setup**.

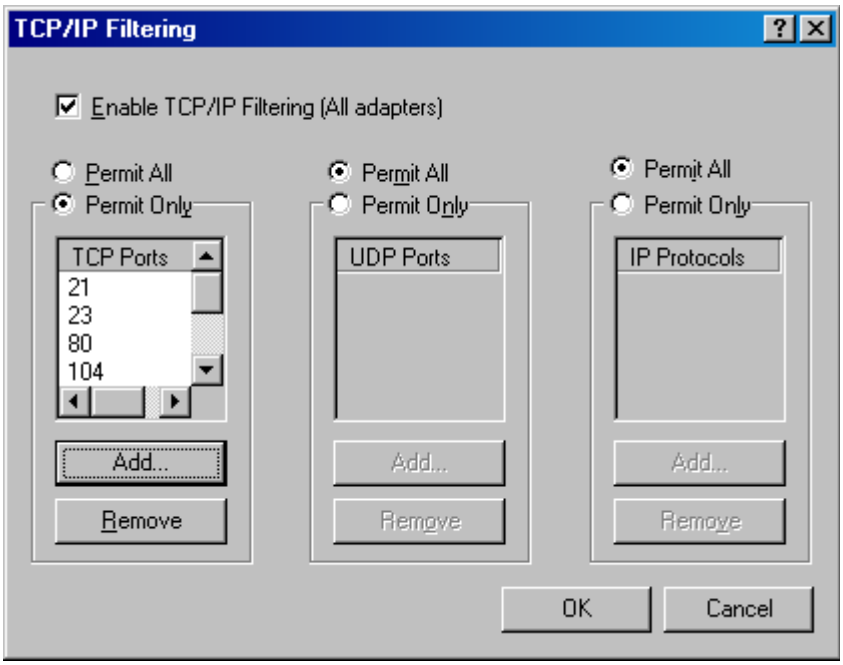


Figure 8-82 TCP/IP Filter Setup

9.) The following dialog box appears. Click **No** to proceed the other settings. (After completion of all system checks, the system is shut down.)

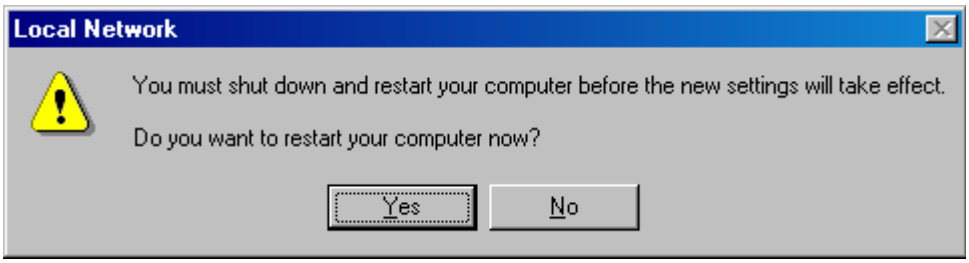


Figure 8-83 No

⚠ **NOTICE** In case the last dialog box to restart the computer does NOT appear, check the TCP/IP Filter setup again.
Connectivity check will be performed in 8-2-10 System Settings.

8-2-8-6 Date and Time Setting

1.) Select **Start > Settings > Control Panel > Date and Time.**l

2.) Click on **Time Zone** tab.

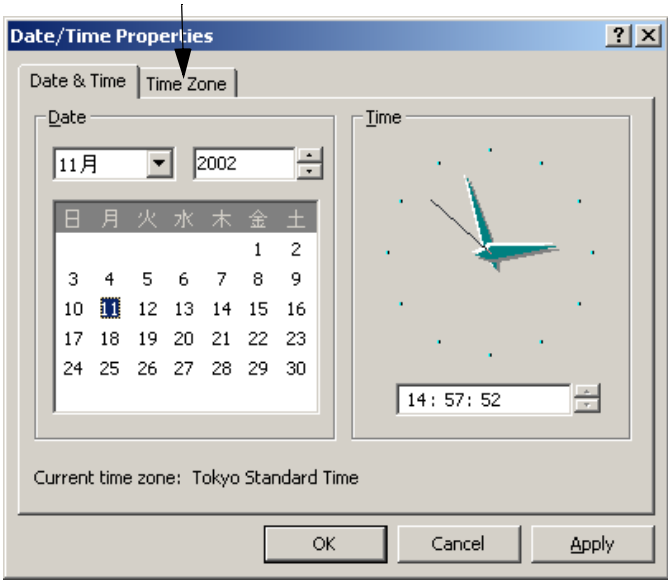


Figure 8-84 Date and Time

3.) Select the appropriate time zone. Then click on **Apply.**

4.) Then click on Date & Time tab.

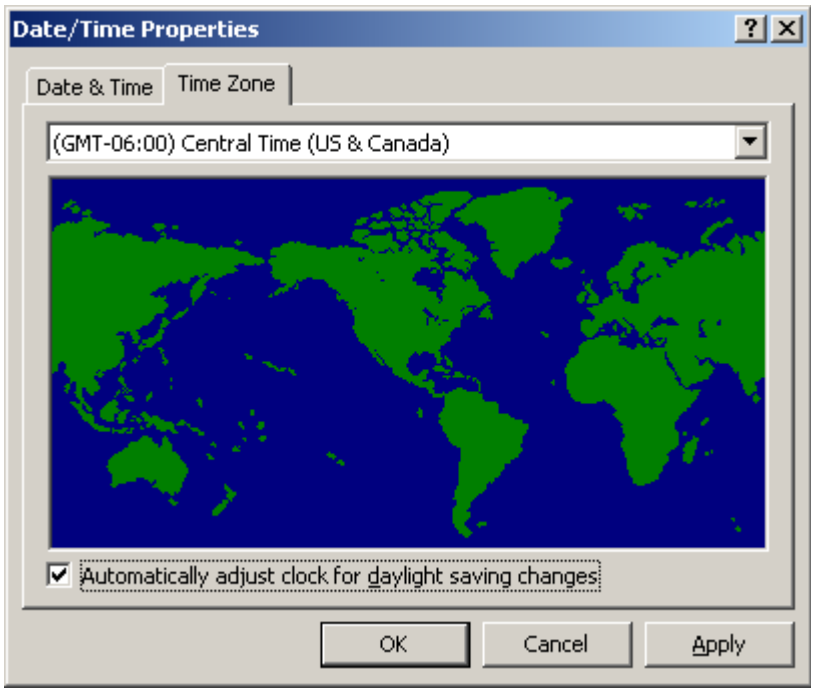


Figure 8-85 Time Zone

8-2-8-6 Date and Time Setting (cont'd)

5.) Set the current date and time.

6.) Click on **Apply.**

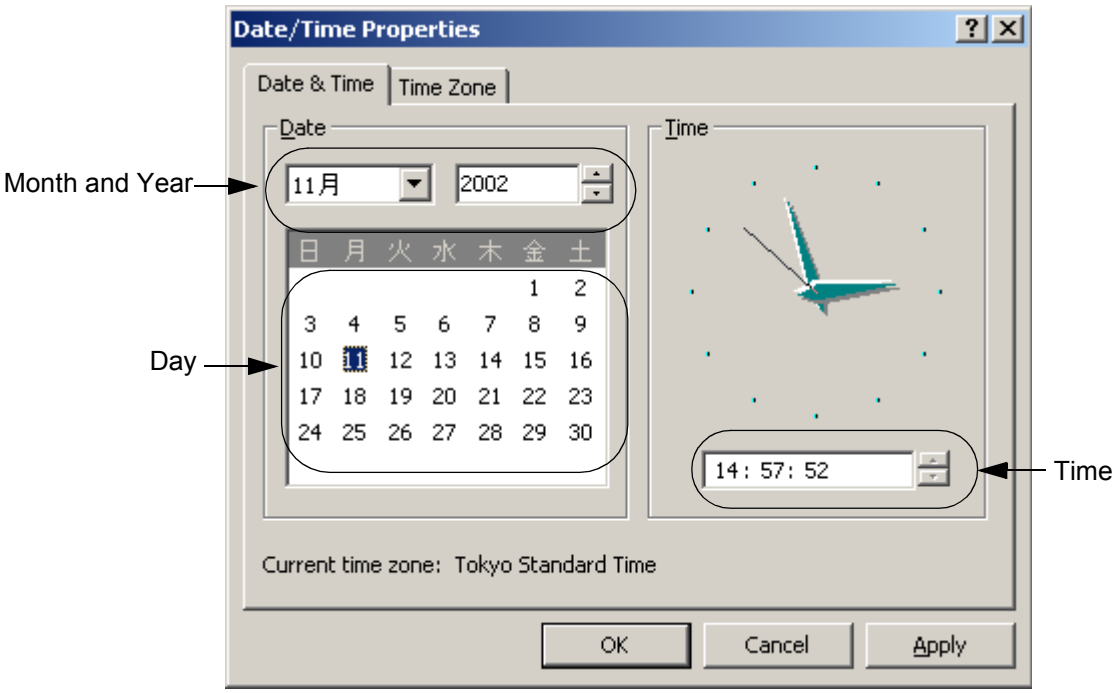


Figure 8-86 Date & Time

7.) Click on **OK** to close the Date and Time window.

8.) Select **Start > Shutdown > OK** to power OFF the scanner.

8-2-9 Installing R8.x.x Application Software

NOTICE You must install BT09 Base image before Application Software installation. If not, Application shows the error message, “Service platform is out of date. You must reghost the C drive and reinstall the software.”

NOTICE If you are attempting to install only application software, you MUST first check current Regional Preset Value. Press **Utility > System > About** (Details in 4-2-6 - Archiving and Loading Presets for BT07 (Including R7.5.x)).

8-2-9-1 Installing R8.x.x Application Software

1.) Power ON the scanner. The windows desktop appears.

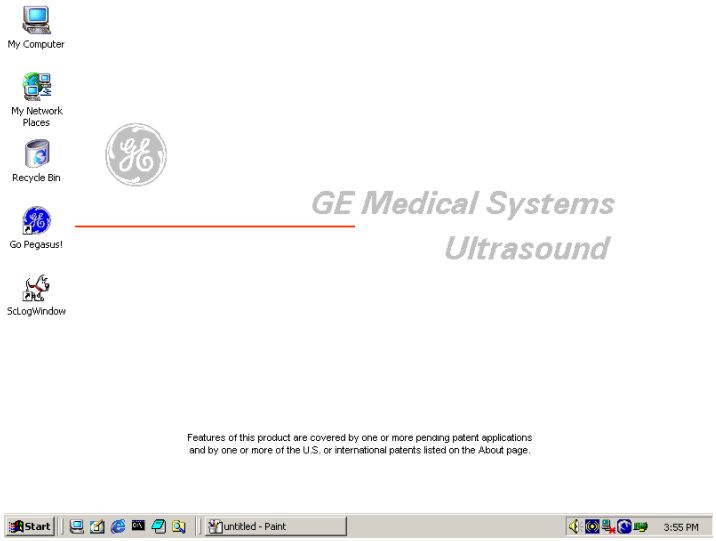


Figure 8-87 Desktop

NOTICE At this time, the DVD writing software screen appears, but you can ignore the screen.

2.) Insert the Application Software CD-ROM into the DVD drive.

NOTICE Wait approx. 20 seconds until the disk can be read.

8-2-9-1 Installing R8.x.x Application Software (cont'd)

3.) Double-click on **LoadSoftware.bat.**

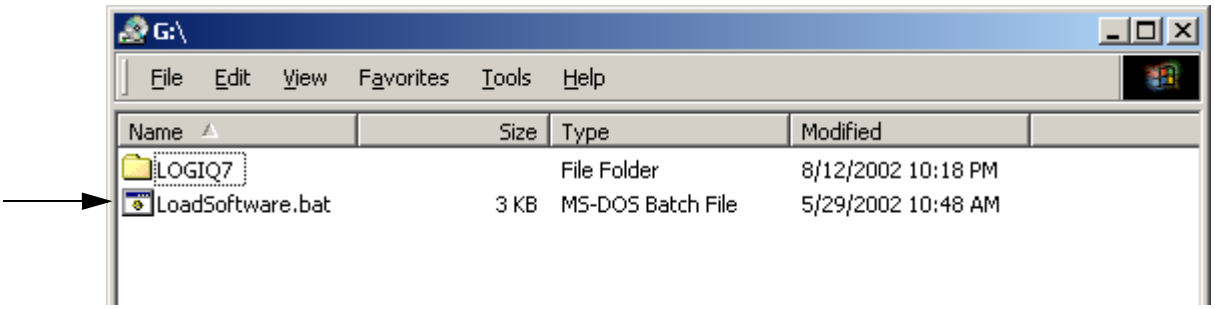


Figure 8-88 LoadSoftware.bat

4.) The Installation program will start, and the command prompt screen will be shown on the monitor as shown.

5.) Select TYPE A - BT09 with BEP4 does not have PRO version available.

⚠ **NOTICE** 1.If wrong application software installed, the system will not work properly.
2.You will ask confirmation twice as below. If you select wrong system (A or B) , please select "N" at the confirmation.

8-2-9-1 Installing R8.x.x Application Software (cont'd)

6.) Type **Y** key.

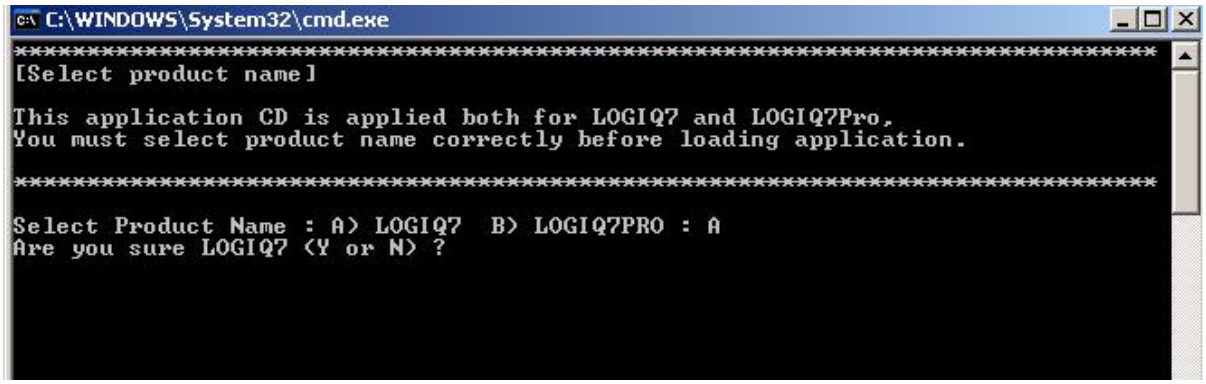


Figure 8-89 Y

NOTE: Press the N key to cancel this procedures and to power OFF the system.

NOTE: When the Information Window appears asking you to select OK, do nothing. This window will disappear automatically.

7.) The installation procedures will start automatically. It will take 10 minutes.

NOTICE **Do not operate with using mouse or keyboard during installation procedures!!! The system shall be restarted automatically during installation.**

8.) After the installation procedures are completed, the system will power OFF automatically.

8-2-10 System Settings

After application is successfully installed, various LOGIQ™ 7 system parameters must be properly set.

Table 8-7 System Settings

Item	Method	Proper Value
Software Version	Utility _System _About	 s/w version : R8.x.x Image Part No. : 5305206-3
Regional Preset	Utility _System _About _Additional About Information	For the system other than “NONE” selected as Regional Preset, resetting MUST be required.
Computer Name	Utility _Connectivity _TCP/IP _Computer Name _Enable DHCP _IP Address _Subnet Mask _Default Gateway	 Same as Serial Number OFF restore customer setting restore customer setting restore customer setting
Patient Database Check	Utility _Connectivity _DataFlow _Default Data Flow Press Patient (Keyboard or Touch Panel)	 Local Archive – Int. HD (n/a – Automatic)
LCD Monitor Setting	Press ‘Toggle Button’ for few seconds	(various)
Software Option	Utility _Admin _System Admin _HW Number	 Same as Option Dongle ID
VCR	Utility _Peripherals _Video Setting _VCR	 PAL/NTSC-depends on region (set accordingly)
Language pre-work (For Japanese Only)	Utility _Regional Option _Language (tab) _Install Files to East Asian Language (Reboot)	 ON / Apply

Table 8-7 System Settings

Item	Method	Proper Value
Language (For Japanese Only)	Utility _System _General _Language _Regional Option _Regional Option (tab) _Standard and formats _Location _Language (tab) _Details _Settings (tab) _Installed Service _Default Input Language _Advanced (tab) _Language	 JPN Japanese Japan Japanese Keyboard Japanese Japanese
Language (For Russian/ Greek Only)	Utility _System _General _Language _Regional Option _Regional Option (tab) _Standard and formats _Location _Language (tab) _Details _Settings (tab) _Installed Service _Default Input Language _Advanced (tab) _Language	 RUS/GRK Russian/Greek Russia/Greece Rus/Grk Keyboard Russian/Greek Russian/Greek

8-2-10-1 Peripheral Device Connection/Setup

1.) Connect all of the peripheral devices to the scanner.
2.) Power ON all of the peripheral devices.
3.) Verify that the system boots up with no error. (It will take a few minutes.)
4.) Set up customer data saved at 8-2-6 Pre-installation Procedures.

8-2-10-2 Confirmation of the software version

1.) Touch the **Utility** button on the Touch Panel.

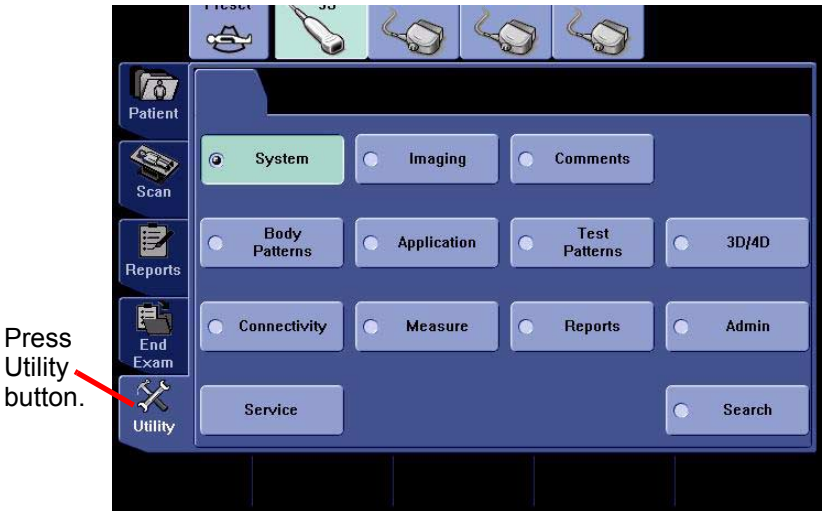


Figure 8-90 Utility

*NOTE: The Operator Login window appears. Select **adm** (Administrator) for the Operator field. Adm (Administrator) will be shown in the Operator field as default. Enter the password which is configured already (or the password might not be necessary). Then click on **Log on**.*

Figure 8-91 Log on

8-2-10-2 Confirmation of the software version (cont'd)

2.) Touch the **System** button on the Touch Panel.

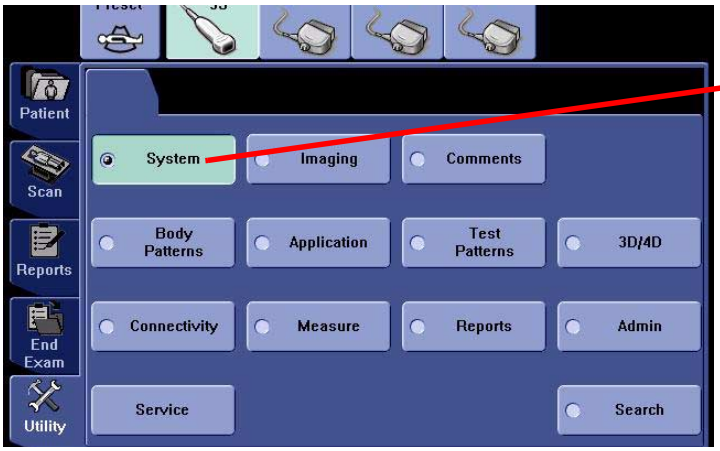


Figure 8-92 System

3.) Click on **About** tab. The software version will be shown on the monitor as shown. Confirm the following:

- Software Version (**R8.x.x**)
- Preset Resion (**Americas, Europe, Asia, Japan, or None)**
- Image Part Number (described on the Base System Software Image DVD)

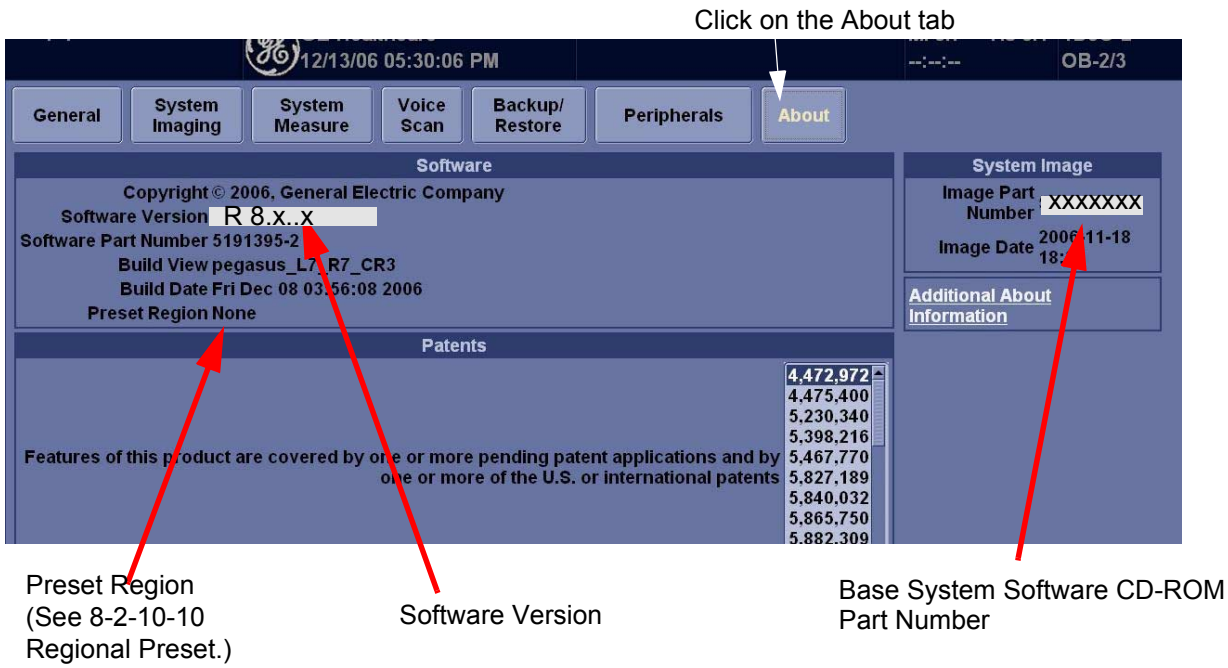


Figure 8-93 About Tab

8-2-10-3 Computer Name and Connection Settings

1.) Touch **Utility > Connectivity.**

2.) Click on **TCP/IP.**

3.) Type **Computer Name.**

NOTICE The computer name is unique. Check the scanner serial Number printed on the label located at the rear lower side of the scanner. When 123456YM1 (for example) is printed, **L7-123456YM1** must be entered as a computer name.

4.) Verify that **Enable DHCP** has no check mark. If checked, remove the mark.

5.) Check if **Computer name, IP Address, Subnet Mask, and Default Gateway** are proper ones which you wrote down in section 8-2-6-4, Saving Connectivity.

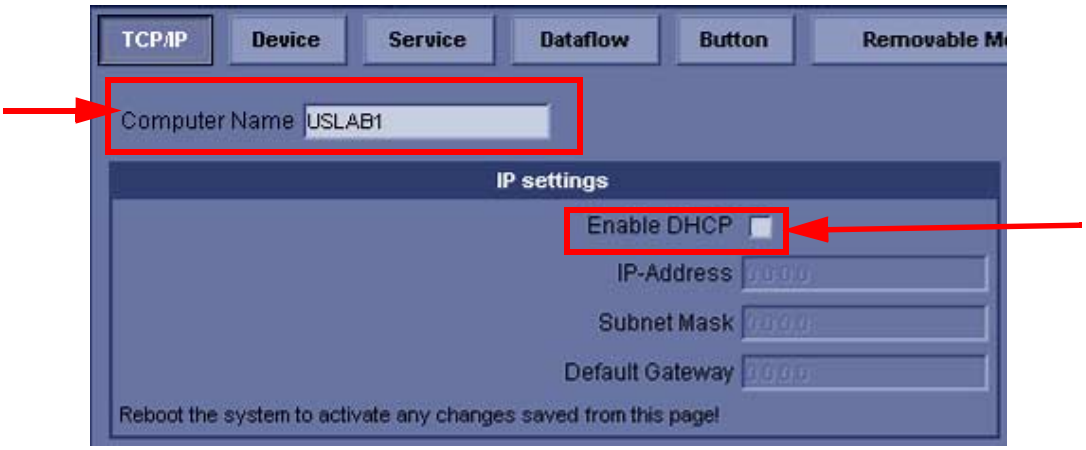


Figure 8-94 TCP/IP

NOTICE If the “Save settings” is NOT performed, you can NOT enter the new patient screen!!

6.) Click on **OK** for confirmation dialog box.

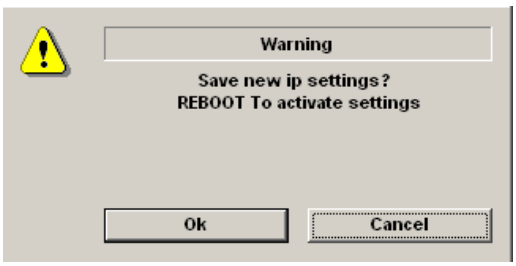


Figure 8-95 OK

8-2-10-3 Computer Name and Connection Settings (cont'd)

7.) Touch **Scan** on the Touch Panel to return to the scan screen.

8.) Shut down the scanner.

9.) Power ON the scanner, then press **Patient** key and verify that the following screen appears.

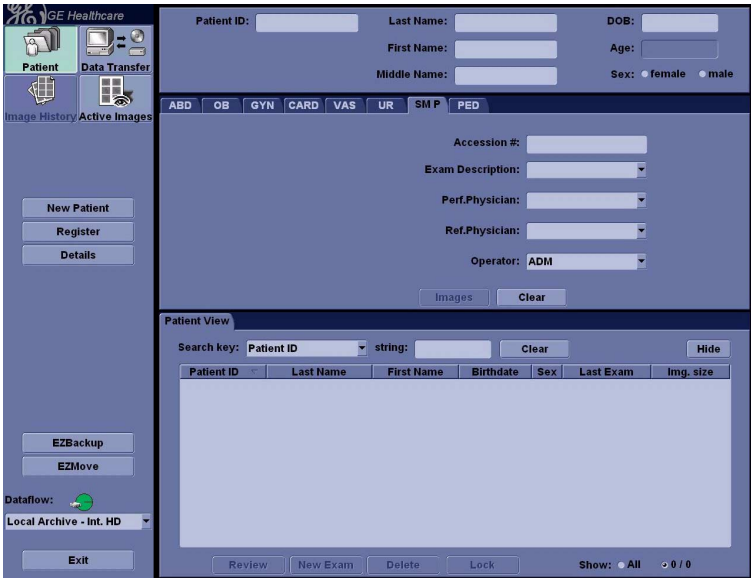


Figure 8-96 Patient

8-2-10-4 Check LCD Monitor Hardware Setting

For 19 inch Monitor

To adjust the brightness:

1.) Press the Toggle button (2) or (3) **Once** for brightness adjustment.

Figure 8-97 19 inch LCD Monitor Adjustment buttons

a.) Verify that Brightness is **80 (Dark Room) or 100 (Bright Room)**.
If it is not, increase brightness to press the adjustment button (3).
If it is not, decrease brightness to press the adjustment button (2).

b.) Press the button (1) Once. The brightness display disappears.

NOTE: 19 inch LCD is ONLY a brightness adjustment.

8-2-10-5 Software Option Check

1.) Touch **Utility > Admin.**

2.) Click on **System Admin** tab and verify that **HW Number** is the same as the Option Dongle ID**.**

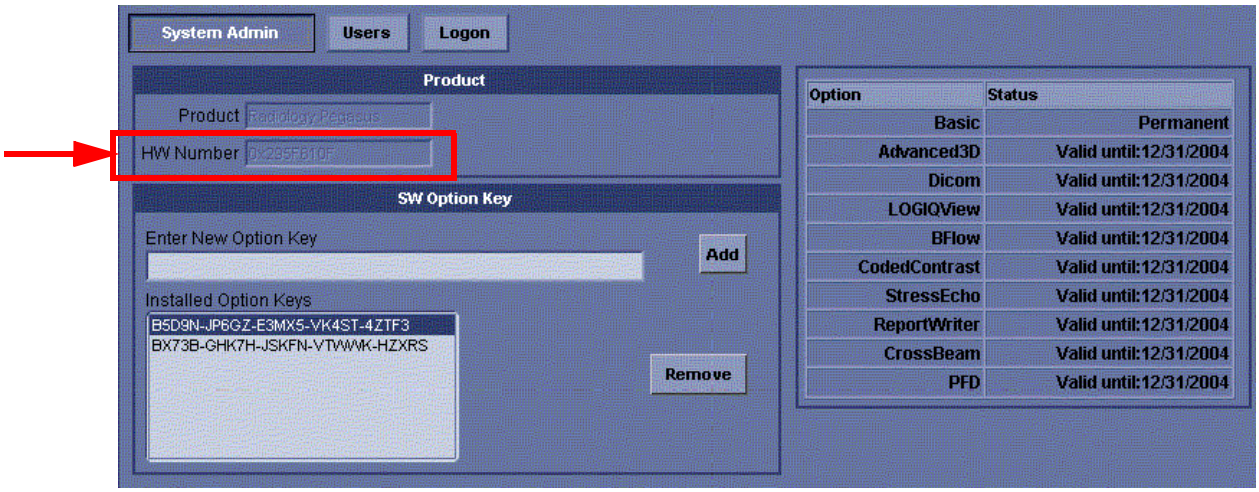


Figure 8-98 HW Number

8-2-10-6 VCR Parameters Setting (for the VCR-equipped system ONLY)

1.) Touch **Utility > System.**
2.) Click on **Peripherals** tab.
3.) Set the proper parameters:
- PAL or NTSC
- VCR type

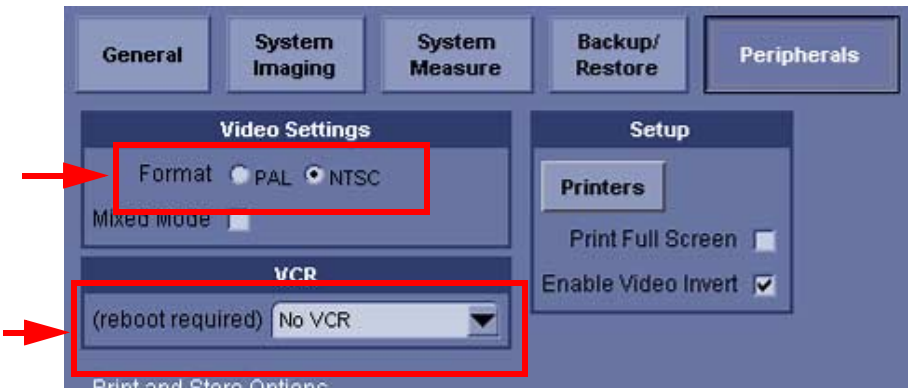


Figure 8-99 Peripherals

4.) Shut down the scanner, then restart the scanner.
5.) Verify that the VCR can be properly operated with no error (remote, play...) .

8-2-10-7 Regional Setup (For the system with language other than English ONLY)

For Japanese Languages

You can set up the keyboard for Japanese. If you select Japanese, the following items display or enter by Japanese.

- Patient name
- Exam comment in Patient screen and Worksheet
- Report/Direct Report free text, Insert Text
- Annotation, Annotation Library
- Error/Warning message
- DICOM/Worklist, Query/Retrieve, Image Storage, Printer, MPPS

8-2-10-7 Regional Setup (For the system with language other than English ONLY) (cont'd)

1.) Select **Utility> System> General>Regional Option Menu**,
2.) Click on **Languages** tab.
3.) Check **Install files for East Asian languages.**
4.) Click on **Apply.**
5.) The system requires the re-boot automatically, shut down the system.

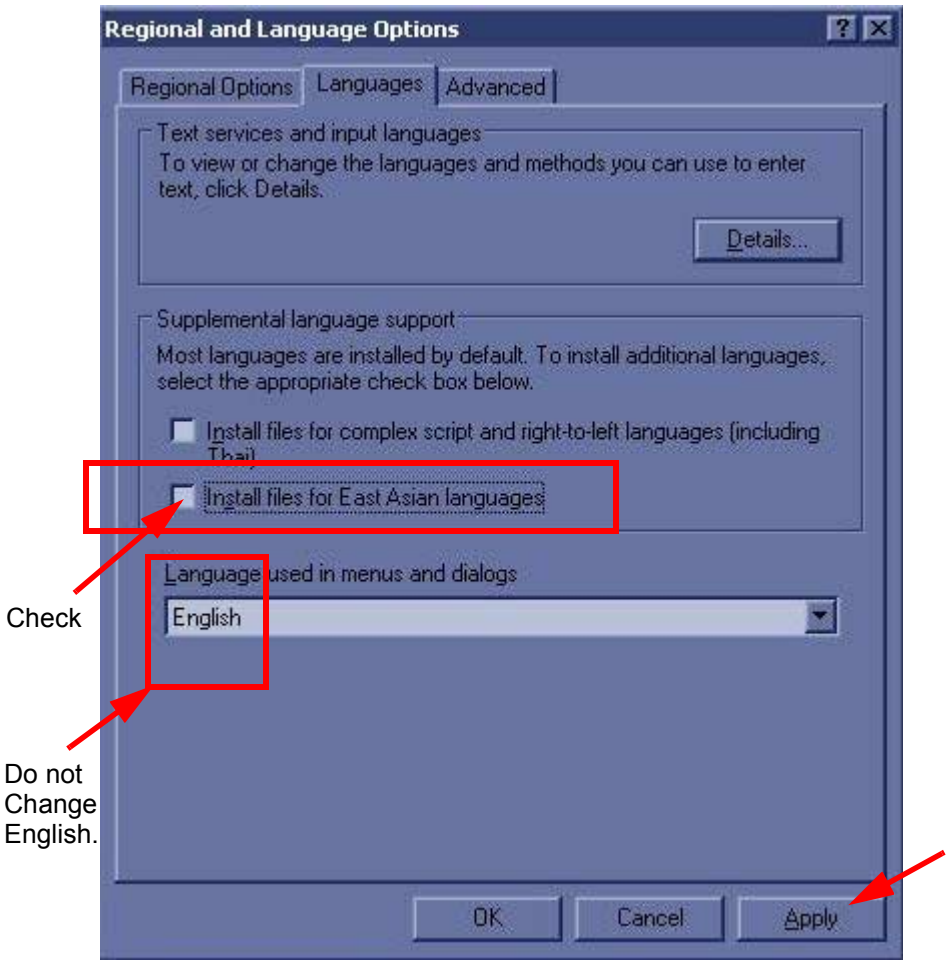


Figure 8-100 Regional Option

⚠ **NOTICE** You do not need to change "Language used in menus and dialogs" option. It **should be** English.

8-2-10-7 Regional Setup (For the system with language other than English ONLY) (cont'd)

6.) In **Utility> System> General**, set the Language as JPN. Save this setting, but do not reboot the system yet.

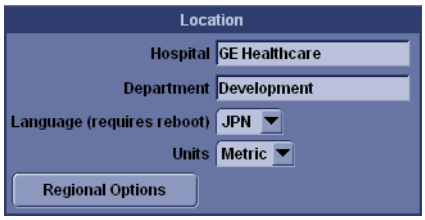


Figure 8-101 General

7.) Press **Regional Options**, under Standards and Formats select **Japanese**, under Location select **Japan**. Press **Apply**.

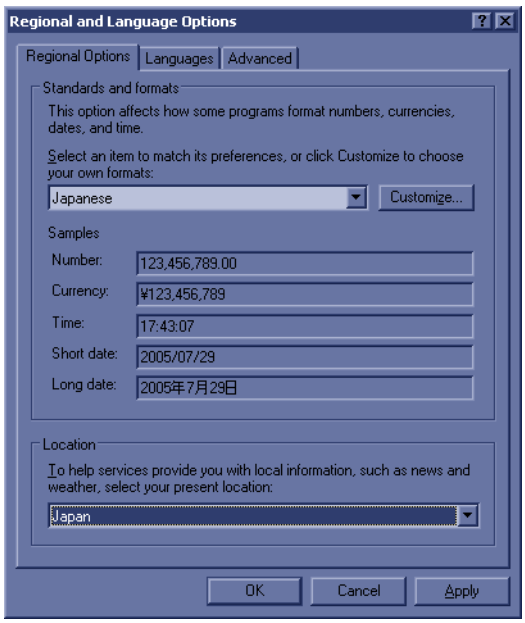


Figure 8-102 Regional Options

8-2-10-7 Regional Setup (For the system with language other than English ONLY) (cont'd)

8.) Select the **Language tab**, press **Details**, under Installed Services select the **Japanese keyboard**, under Default input language select **Japanese**, press **Apply**, Press **OK**.

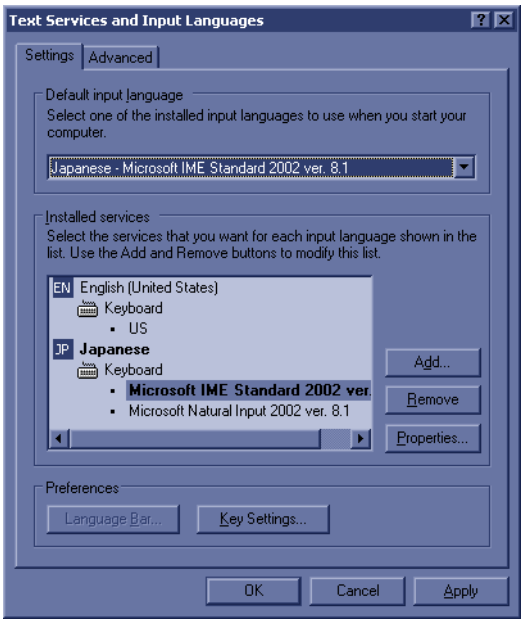


Figure 8-103 Language tab

9.) Select the **Advanced tab**, then select **Japanese** in the Language for non-Unicode programs pull-down menu. Press **Apply**. Answer **Yes** to use files already loaded on the hard disk, then answer **No** to not reboot the system yet, press **OK**. Press **Save** and Exit the Utility screen.

10.) Reboot the system.

⚠ **NOTICE** To have the settings take effect, you MUST turn off the system and turn it back on.

11.) In **Utility--> System--> General**, press **Regional Options**. Select **Language Tab** and press **Details**. **Remove English** under Installed Services and press **Apply** and **OK**.

12.) Select **Utility--> System--> About-->Additional Info menu**.

8-2-10-7 Regional Setup (For the system with language other than English ONLY) (cont'd)

13.) Select **Automatic Setup for Japanese Language** button. Then IME configuration shall be automatically done.
This configuration shall setup the keyboard assignment (remove 半角かな , etc) in IME.

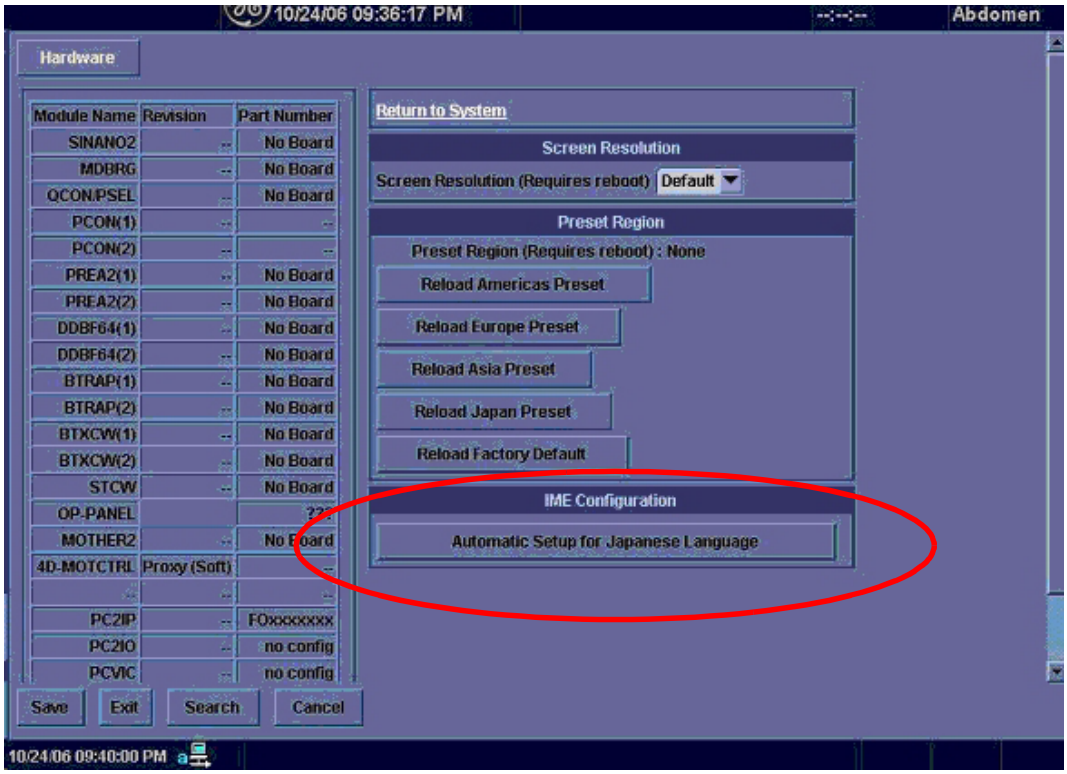


Figure 8-104 Automatic Setup for Japanese Language

14.) Reboot the system.

15.) To type Japanese, press Alt+ (right side of the Escape key) to start IME (Input Method Editor). You can use the following short cut keys.

- F6 key: Hiragana
- F7 key: Katakana
- F9 key: alphameric two-byte character
- F10 key: alphameric one-byte character

NOTICE When pressing **F6** Key, the following message is displayed at the status bar.
"Select the key which the macro is assigned to."
You can ignore this message.

8-2-10-7 Regional Setup (For the system with language other than English ONLY) (cont'd)

For Russian or Greek Languages

1.) In **Utility--> System--> General**, set the Language as Russian or Greek. Save this setting, but do not reboot the system yet.

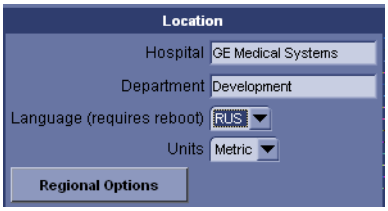


Figure 8-105 General

2.) Press **Regional Options**, under Standards and Formats select **Russian or Greek**, under Location select **Russia or Greece**. Press **Apply**.

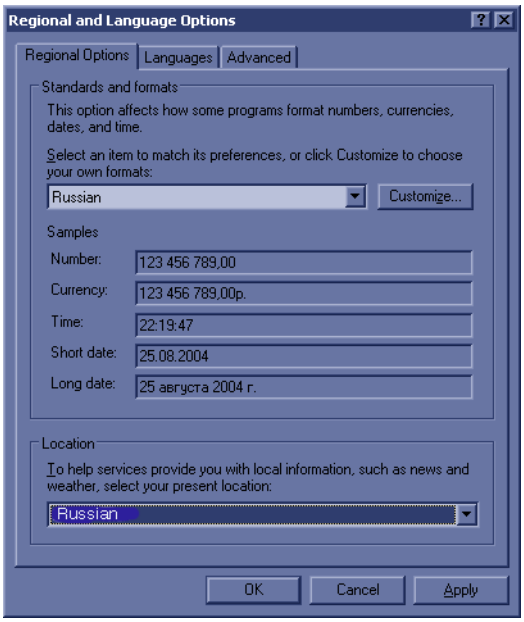


Figure 8-106 Regional Options

3.) Select the **Language tab**, press **Details**, under Installed Services select the **Russian or Greek keyboard**, under Default input language select **Russian - Russian or Greek - Greek**, press **Apply**, Press **OK**.

8-2-10-7 Regional Setup (For the system with language other than English ONLY) (cont'd)

4.) Select the **Advanced tab**, then select **Russian or Greek** in the Language for non-Unicode programs pull-down menu. Press **Apply**. Answer **Yes** to use files already loaded on the hard disk, then answer **No** to not reboot the system yet, press **OK**. Press **Save** and Exit the Utility screen.

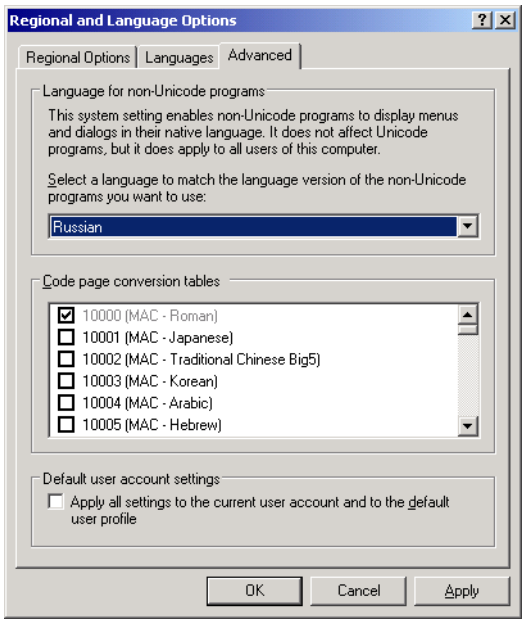


Figure 8-107 Advanced tab

5.) Reboot the system. When your system restarts, the system appears in the selected language.

6.) To switch between the English and Russian (or Greek) keyboard, press **Alt**+**Shift** to change the keyboard to the Russian or Greek keyboard.

7.) Apply the changes by pressing **Apply**. Press **OK** *TWICE*.

NOTICE To have the settings take effect, you MUST turn off the system and turn it back on.

8-2-10-7 Regional Setup (For the system with language other than English ONLY) (cont'd)

For non-Russian / Greek Languages

1.) Press **Regional Options**, select the **Language tab**, press **Details**, and comfirm default input Languarge to **English** (United States) International.

NOTICE If the system is used at U.S., press Regional Options > Language tab, press details, change default input Languarge to "**US**".

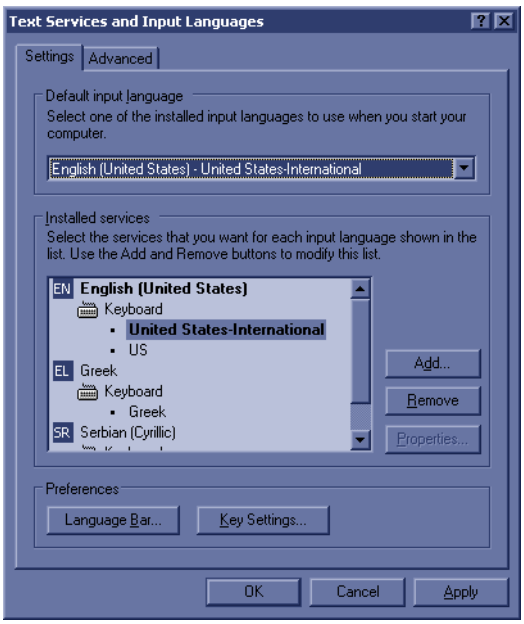


Figure 8-108 Text Services and Input Languages

8-2-10-7 Regional Setup (For the system with language other than English ONLY) (cont'd)

2.) Select the **Advanced tab**, then select the language in the Language for non-Unicode programs pull-down menu. Press **Apply**. Answer **Yes** to use files already loaded on the hard disk, then answer **No** to not reboot the system yet, press **OK**. Press **Save** and Exit the Utility screen.

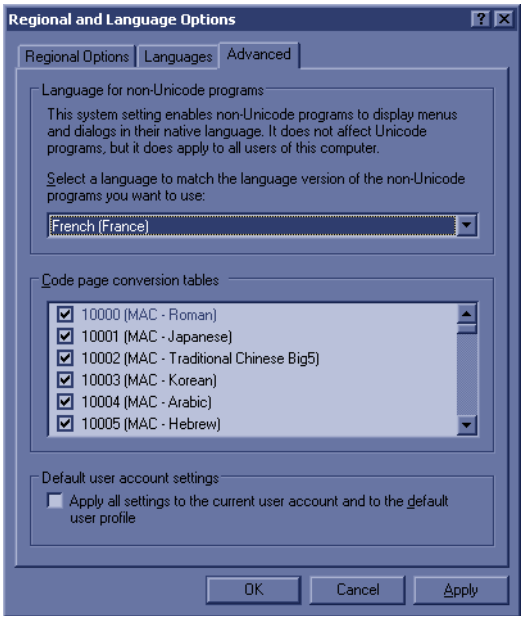


Figure 8-109 Advanced tab

3.) Reboot the system. When your system restarts, the system appears in the selected language.

4.) To type foreign characters, press **Alt+Shift** to change the keyboard to the international keyboard, then press and hold down the **Alt GR+appropriate keyboard key**.

8-2-10-8 Printer Registration

1.) Verify that the power switches of the printer and scanner are turned ON.

2.) Select **Utility > Connectivity > Button**.

3.) Select the Printer1 button and select the user defined printer which has been recorded in 8-2-6-7 Printer Registration.

4.) Click on **>>** to add Printflow View.

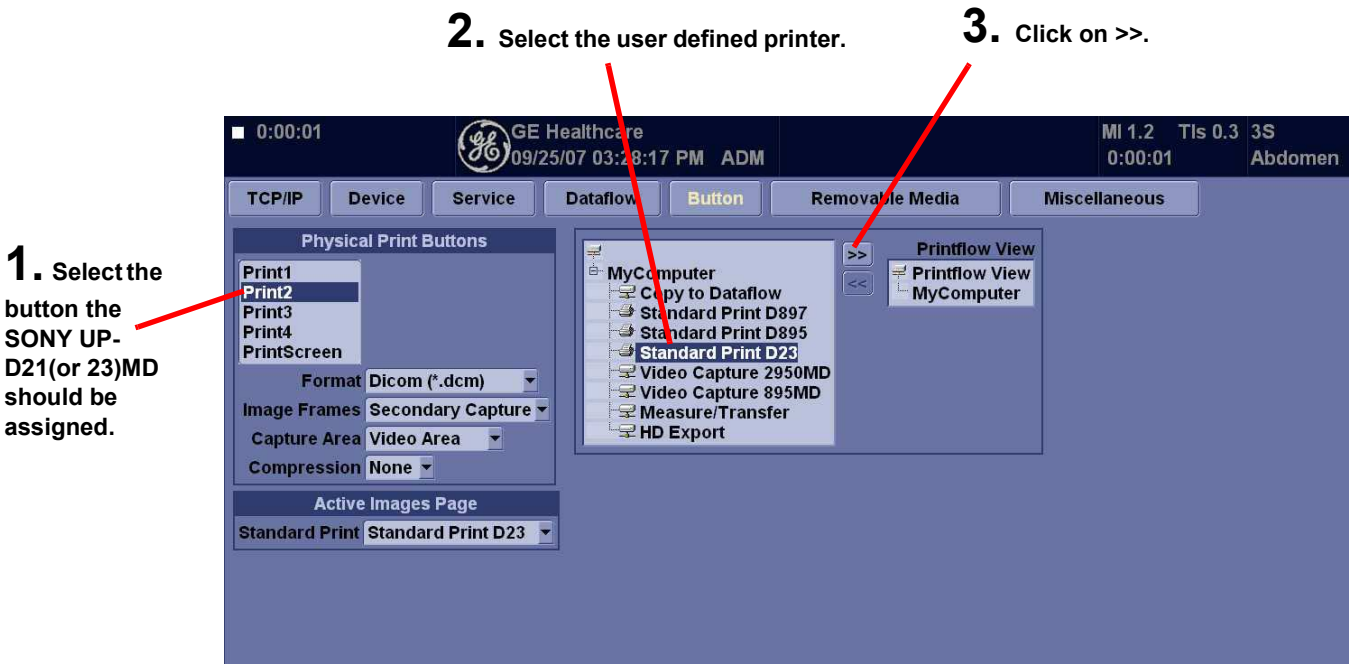


Figure 8-110 Printer Registration

8-2-10-8 Printer Registration (cont'd)

5.) Verify that the user defined printer is added in Printflow View.(Example shown: UP-D21(or 23)MD)

6.) For UP-D50 ONLY:
When performing 4 divided frame print in the active image screen, select **D50** for Active Image Printer.

7.) For UP-D21 or UP-D23:
When upgrading to BT07, updated printer driver may be loaded and assigned. Before assigning Print Button to Printer, check 'DEVICE' Tab for multiple UP-D21/23 Printer, and check for active printer.

8.) Right-click on **Save.**

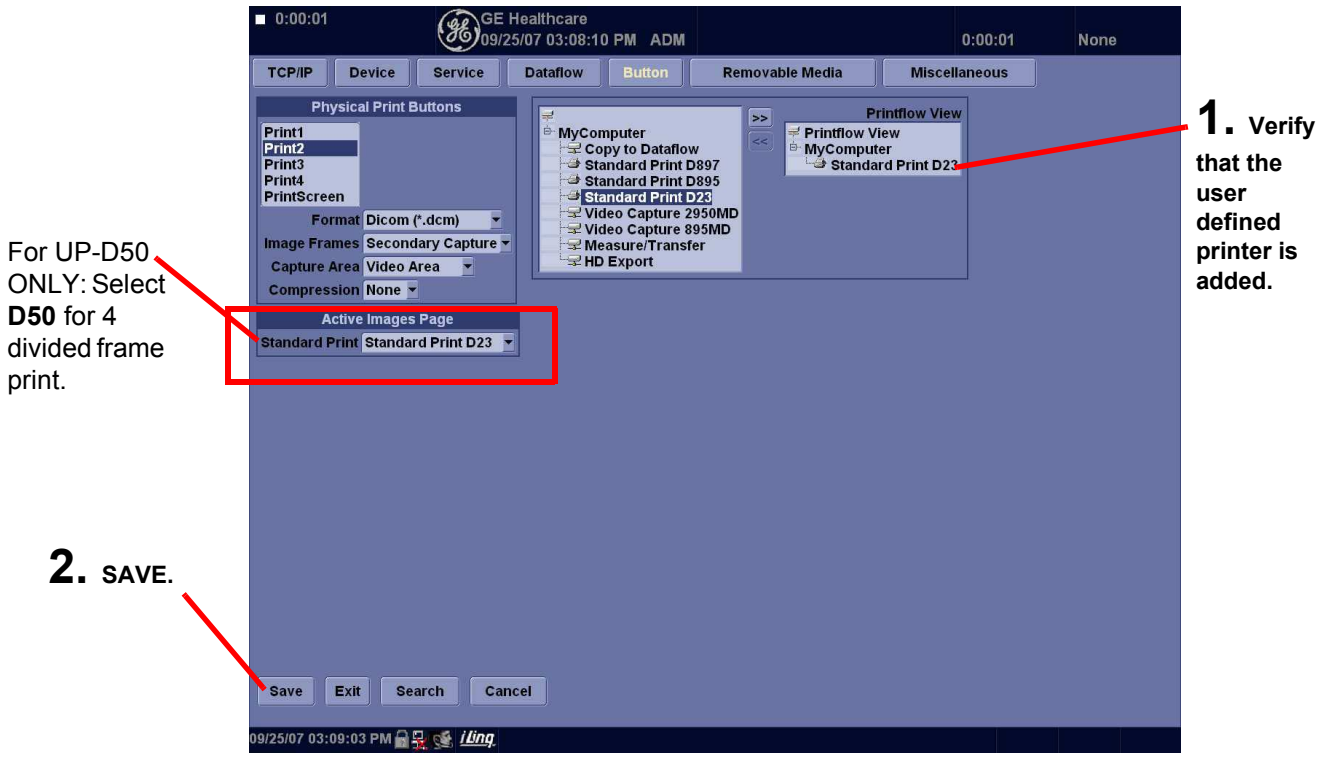


Figure 8-111 Save

8-2-10-9 Report Template (only for BT04 system)

Please setup the user template as it is.

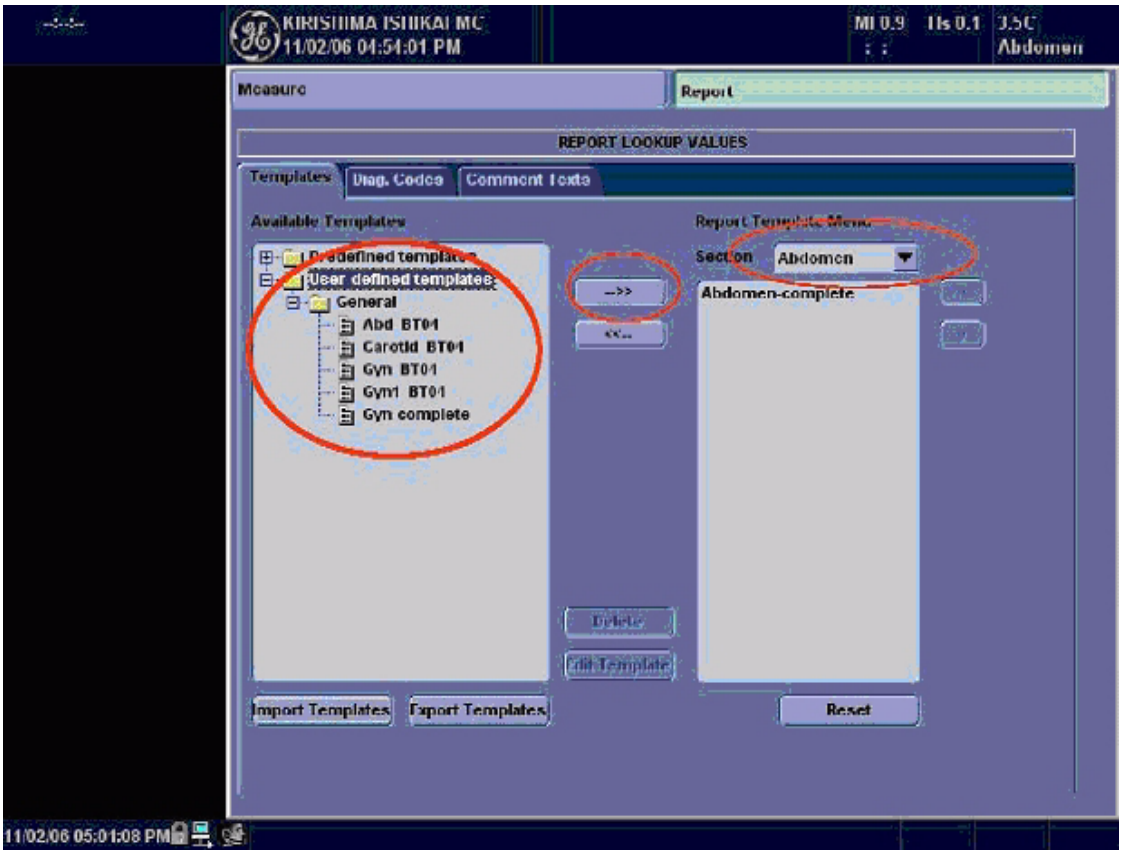


Figure 8-112 Report Template

8-2-10-10 Regional Preset

NOTICE For the system other than "NONE" selected as Regional Preset, resetting MUST be required.

9.) Touch **Utility > System**.

10.) Click **About** tab.

11.) Click **Additional About Information**.

12.) Check the region name of **Preset Region (Rquires reboot):**
If it is None, skip this section.

Figure 8-113 Preset Region

13.) Click **Reload Factory Default** button.

14.) Click **OK** on confirmation dialog box.

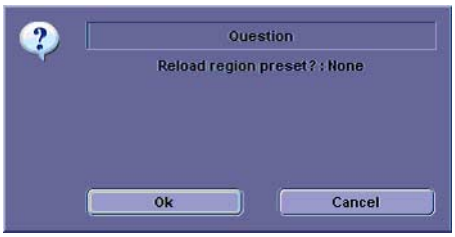


Figure 8-114 Reload Factory Default

This changes Preset Region (Requires reboot) to **None**.

8-2-10-10 Regional Preset (cont'd)

15.) Click the button **Reload **** Preset** corresponding you noted.

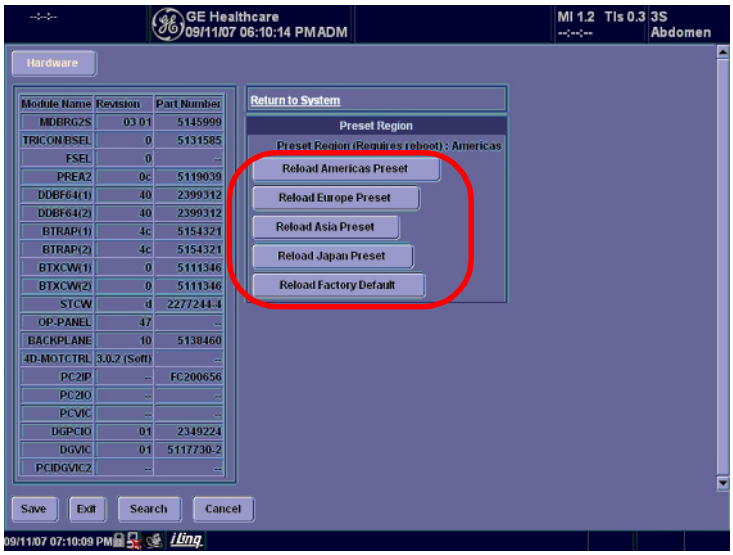


Figure 8-115 Reload buttons

16.) Click **OK** on confirmation dialog box.

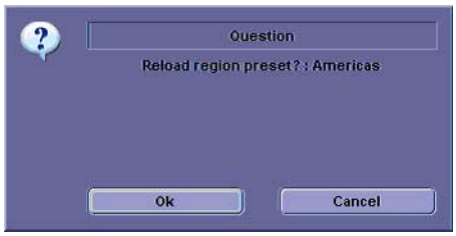


Figure 8-116 OK

8-2-10-10 Regional Preset (cont'd)

17.) Check **Preset Region (Requires reboot)**: is right region you selected.

Figure 8-117 Preset Region

8-2-10-11 Analog Peripheral

After you update software version to R8.x.x, you may need to adjust peripheral settings.

8-2-10-12 UP-D897 Parameter

1.) When system started, Go to **Utility > System >Peripherals**, then hit **Printers** button in the Setup group.

2.) Click **SONY UP-D897** in the Printer List, then right click and select "**Properties**".

3.) Select "**General**" tab, then hit "**Printing Preferences ...**"

4.) Select "**Layout**" tab, then ...

- Set "**1920x1280**" into "Paper"
- Check **off** into "Enlarge to Paper"
- Set "**Bilinear**" into "Interpolation Method"
- Set "**Landscape**" into "Orientation"

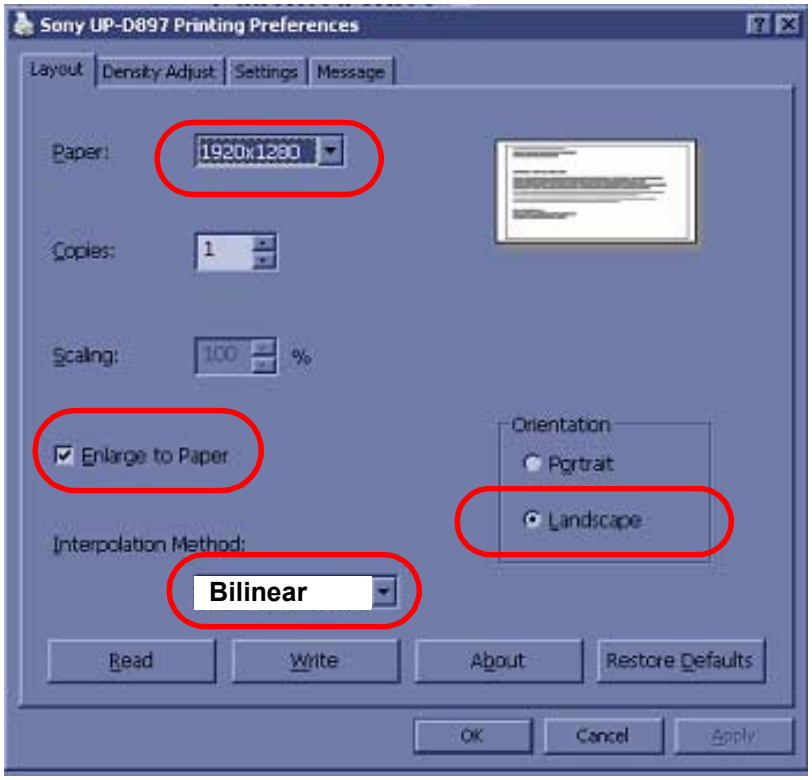


Figure 8-118 Printing Preferences

8-2-10-12 UP-D897 Parameter (cont'd)

5.) Select "**Density Adjust**" tab, then ...

- Set "**TONE1**" into "GAMMA"
- Set **7** into "Sharpness"

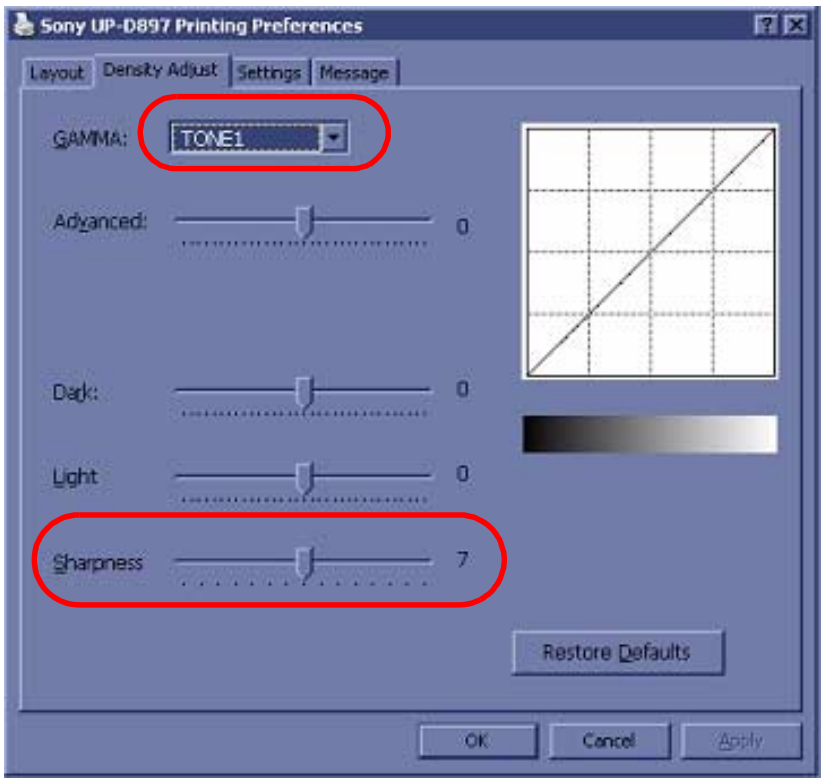


Figure 8-119 Printing Preferences

8-2-10-13 Setting Report Printer

1.) Press **UTILITY > SYSTEM** in Touch Panel.

2.) Click **PERIPHERAL > Printers.**

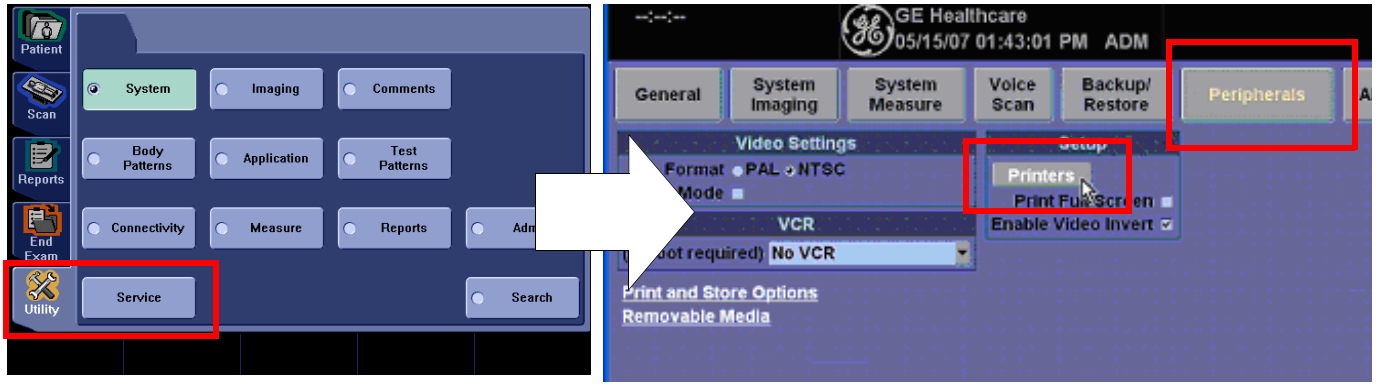


Figure 8-120 Printer Setup

3.) Find Printer to be used for REPORT, right-click and select **Set as Default Printer**.

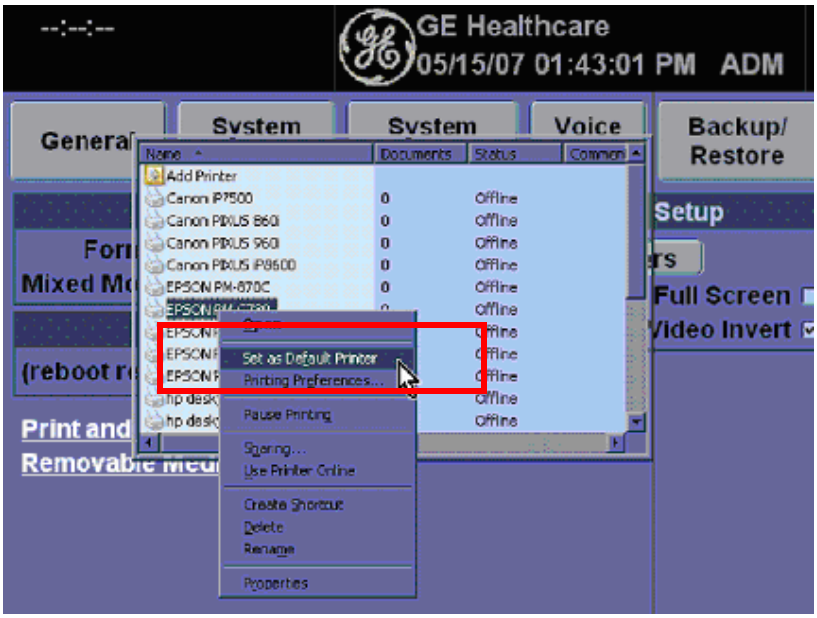


Figure 8-121 Setting Default Printer

8-2-11 Functional Check

8-2-11-1 Service Platform

1.) Click on **Utility > Service.** It will take about ten (10) seconds for activating.

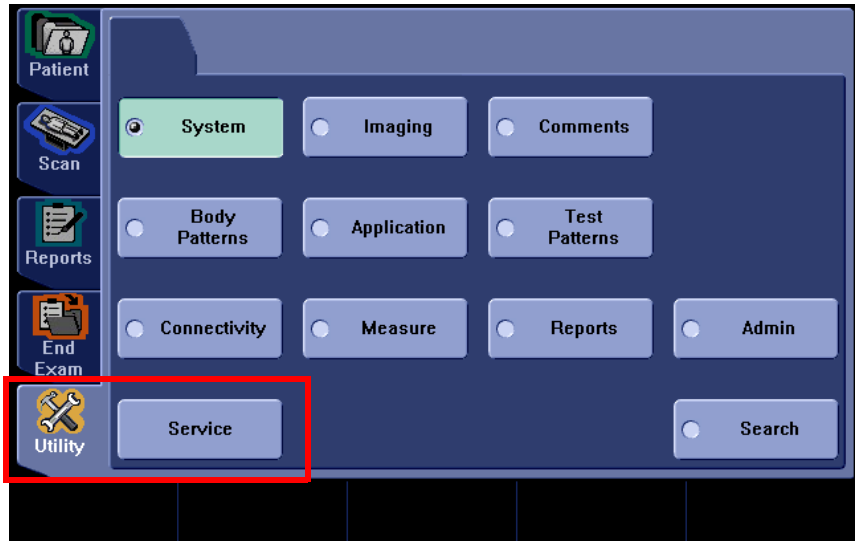


Figure 8-122 Service

8-2-11-1 Service Platform (cont'd)

2.) Make sure that **CAPS** is OFF (should be dimmed) for password entry performed later.

3.) The Service Login window for Service Platform will be shown on the monitor display.

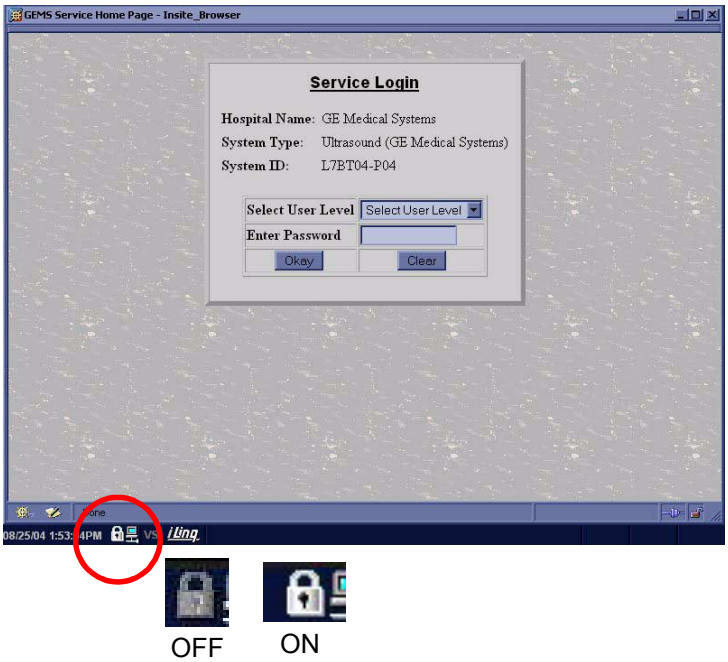


Figure 8-123 Service Login

⚠ **CAUTION** **If the Login window for Service Platform is not displayed on the monitor, the installation of the Service Platform has failed. Reload the application software or Base System Software (OS) + application software. Contact a Technical Support for details.**

4.) Select **GE Service** at the "Select User Level" field.

5.) Enter the password for the Service Platform.

6.) Click on **Okay**.

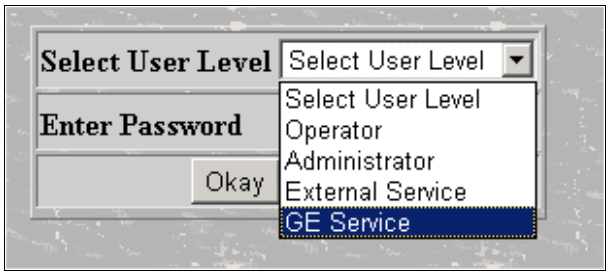


Figure 8-124 User Level

8-2-11-1 Service Platform (cont'd)

7.) Verify that the following screen (Service Platform) is displayed on the monitor.

8.) Verify that Service Platform Version is **2.2.0Q**.

9.) Click on **x** located at the upper right corner of the service platform screen to close the Service Platform and return to the scan panel.

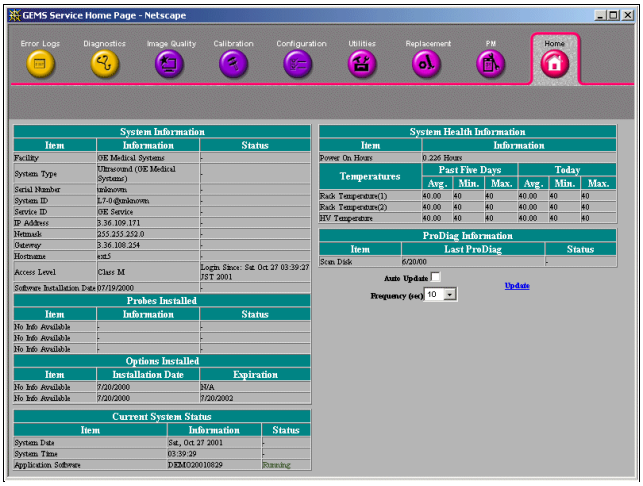


Figure 8-125 Service Platform

NOTICE When the service platform is NOT displayed, check if **CAPS** lock is selected. The **CAPS** should not be selected.

8-2-11-2 Functional Checks for Probe Recognition

1.) Touch **Scan** button on the Touch Panel to return to the scan screen.

2.) Connect each probe to ensure that they are recognized.

3.) Check every probe in the following modes and ensure that no artifacts or no problems are found in:

- B-mode
- Color FLow
- Pulsed Doppler
- M-mode
- CW (option)

4.) Install the removed parts in the reverse order of removal.

8-2-11-3 Calibration and adjustment

No calibration or adjustments are needed after this part replacement.

8-2-11-4 Functional Checks

Perform the following functional tests to confirm the system is operational before returning the system to the customer. If all are successful, include the following debrief script:

Table 8-8 Functional Tests

See Section	Functional Test	Debrief Script
4-2-2-1	Power Up	LOGIQ 7 Proprietary Service Manual, Direction 2286865, Rev 14, Section 8-2. Equipment passed all required tests and is ready for use.
4-2-2-2	Power Up Sequence	

Chapter 9
Renewal Parts

Section 9-1
Overview

9-1-1 Purpose of Chapter 9

This chapter gives you an overview of Renewal Parts for LOGIQ™ 7.

Table 9-1 Contents in Chapter 9

Section 9-2
List of Abbreviations

- Assy - Assembly
- Ctrl - Control
- FRU 1 - Replacement part available in part hub
- FRU 2 - Replacement part available from the manufacturer (lead time involved)
- Int - Internal
- I/O - Input/Output
- KB - Keyboard
- LCD - Liquid Crystal Display
- MON - Monitor
- PAT. - Patient
- PC - Personal Computer (Back End Processor)

Section 9-3
Renewal Parts List For BT09

This section describes the BT09 system FRU.

9-3-1 BT09, 19inch LCD: Equipment Models Covered in this Chapter (LOGIQ 7)

Table 9-2 Material List

Part Name	Part Number	Quantity						Description
OPERATOR CONSOLE ASSY	5309921	1						100V, NTSC
OPERATOR CONSOLE ASSY	5309922		1			1		120V, NTSC
OPERATOR CONSOLE ASSY	5309923			1			1	220V, PAL
OPERATOR CONSOLE ASSY	5309924				1			220V, NTSC
LOGIQ7 R8.0.0 Application Software CD	5311031-3	1	1	1	1	1	1	
LOGIQ7 Ghost DVD for BECOMP4	5305206-3	1	1	1	1	1	1	
LOGIQ7 BT09 eDoc CD	5307396-200	1	1	1	1	1	1	
LOGIQLEAN MIDDLE	2369384	1						
MSDS FOR KAO ACOUSTIC GEL	2384010	1						
GEL AQUASONIC GEL	U0403BD		1	1	1	1	1	
PARKER AQUASONIC100	2384142		1	1	1	1	1	
CD-R Media 700MB	5118386	1	1	1	1	1	1	
DVD-R 4.7GB 8 x Speed media	5160800-2	1	1	1	1	1	1	
KEY LABEL2	2360321	1	1	1	1	1	1	
LOGIQ 7 WEEE instruction	5143413	1	1	1	1	1	1	
WARRANTY CARD	P9889AH	1						
L7 Tempu-Bunsho for R6.5.X	5182547	1						
AIUM Safety Pamphlet	5118349		1					
AIUM Safety Pamphlet License	5123992		1					
AC CORD 100V JPN	2371416	1						
AC CORD 100V USA	2371417		1			1		
AC CORD 200V EU	2371418			1	1			
AC CORD 200V CHIN	2371415-2						1	
P9538UA POWER CABLE TAG	2304574	1	1					
SFDA LABEL L7	5149899						1	
CAUTION TEL LABEL L7	2290996-3	1	1	1	1	1		
CAUTION TEL LABEL CHINA L7	2290996-4						1	
P9524QE ETL.ETL-C LABEL	2135339		1	1		1	1	
SONIC AuthorScript Data SDK Software License	5178485	1	1	1	1	1	1	
CrossBeam Option	2394377	1	1	1	1	1	1	
SRI Option	5119471	1	1	1	1	1	1	
Caution sheet for Power cables - US	5180867	1						
CHINA RoHS EFUP 20 LABEL	5196197						1	
LOGIQ 7 Ceritification of Quality Inspection for China	5229809						1	
L7 L7P LS6 Addendum for Guidance and manufacturer's declaration	5197395	1	1	1	1	1	1	
VERMONT HG LABEL	5241494	3	3	3	3	3	3	
LOGIQ7 V750 STYLE_J LCD JPN (5304556)								
LOGIQ7 V750 STYLE_J LCD USA (5304556-2)								
LOGIQ7 V750 STYLE_J LCD EU (5304556-3)								
LOGIQ7 V750 STYLE_J LCD KOREA (5304556-4)								
LOGIQ7 V750 STYLE_J LCD ASIA120(5304556-5)								
LOGIQ7 V750 STYLE_J LCD ASIA220(5304556-6)								

9-3-2 BT09 Parts

The following parts are new for BT09 but other parts are common with BT06. For Common Parts not listed here, refer to Section 9-4 - Renewal Parts List For R7.5.x.

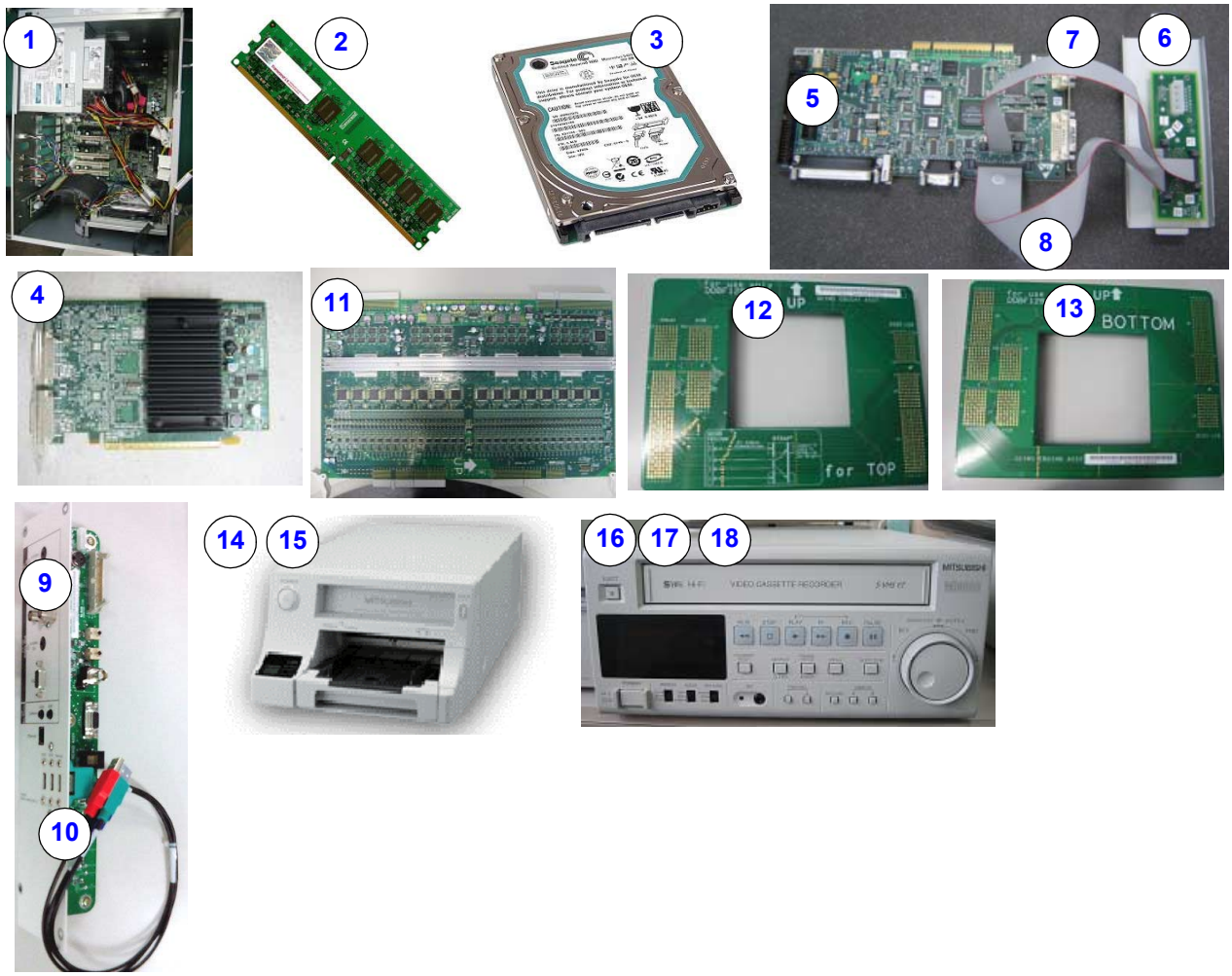


Figure 9-1 BT09 Parts

Table 9-3 BT09 Parts

Item	Part Name	Part Number	Description	Qty	FRU
1	SVP-BECOMP4-L7	5308149	Device cards and UPS batteries not included	1	1
2	DDR2 MEMORY4 1GB	5306528	DDR-2 667 (1GBx1)	1	1
3	SATA HDD 160GB	5306526	Serial ATA interface (both Signal and Power connectors are SATA)	1	1
4	PCI Express Graphic board	5306525	Matrox P690 PCI-Express Slot	1	1
-	SVP BECOMP4 PARTS	5316350	Small parts collection for BEP4	1	1
5	PCI-DGVIC2 Assembly	5301220-2	Video/Signal Interface	1	1
6	BulkHead for L7 and LS6	5257226	3 connectors in sheet metal	1	1

Table 9-3 BT09 Parts

Item	Part Name	Part Number	Description	Qty	FRU
7	Cable13 for BulkHead	5257231	Internal 26pin flat cable -between PCI-DGVIC2/ Bulkhead	1	1
8	Cable25 for BulkHead	5257233	Internal 50pin flat cable -between PCI-DGVIC2/ Bulkhead	1	1
9	SVP REAN4 PANEL	5314714	Metal plate with PCB board	1	1
10	SVP REAN4 USB CBL	5314713	USB Cables with metal plate	1	1
-	FRU Part LCD CABLE DUCT ASSY L7. No RGB Cable	5309932	Main duct cable. This part same as previous duct cable FRU 5117797 but without Analog RGB signal BNC cables	1	1
11	DDBF128 ASSY CSL L7	5182379-2		1	1
12	EBUS4T ASSY CSL L7	5182215		1	1
13	EBUS4B ASSY CSL L7	5182757		1	1
14	Mitsubishi CP30DW COLOR PRINTER	5310492	For market globally	1	1
15	Mitsubishi CP30D COLOR PRINTER for Japan	5310491	For use in Japan only	1	1
16	VCR MD-3000 JPN NTSC USB Control	5212446	For use in Japan only	1	1
17	VCR MD-3000 EURO PAL USB Control	5199397	For use in EU (or other areas with PAL system)	1	1
18	VCR MD-3000 USA NTSC USB Control	5213259	For use in USA Only (or other areas with NTSC 120V In/Out)	1	1
-	R8.0.0 Application Software CD	5311031-3	R800 common software for both upgraded BT09 and pure BT09	1	1
-	Ghost DVD for BEP4	5305206-3	Base image (Ghost) for pure BT09 (BEP4 system) only	1	1
-	Ghost DVD for BEP3	5191839-3	Base image (Ghost) for upgraded BT09 (BEP3 system)	1	1

Section 9-4
Renewal Parts List For R7.5.x

This section describes the R7.5.x system FRU.

9-4-1 R7.5.x, 19inch LCD: Equipment Models Covered in this Chapter (LOGIQ 7)

Table 9-4 Material List

Part Name	Part Number	Quantity												Description
OPERATOR CONSOLE ASSY	5244924	1												100V, NTSC
OPERATOR CONSOLE ASSY	5244925		1			1								120V, NTSC
OPERATOR CONSOLE ASSY	5244926			1			1							220V, PAL
OPERATOR CONSOLE ASSY	5244927				1									220V, NTSC
LOGIQ7 Application Software CD R7.5.1	5252012-4	1	1	1	1	1	1							
LOGIQ7 Ghost3 CD for BEP3, R7.0.0	5191839-2	1	1	1	1	1	1							
L7/L7 PRO R7.5.0 eDoc CD	5257469-200	1	1	1	1	1	1							
LOGIQLEAN MIDDLE	2369384	1												
MSDS FOR KAO ACOUSTIC GEL	2384010	1												
GEL AQUASONIC GEL	U0403BD		1	1	1	1	1							
PARKER AQUASONIC100	2384142		1	1	1	1	1							
CD-R Media 700MB	5118386	1	1	1	1	1	1							
DVD-R 4.7GB 8 x Speed media	5160800-2	1	1	1	1	1	1							
KEY LABEL2	2360321	1	1	1	1	1	1							
LOGIQ 7 WEEE instruction	5143413	1	1	1	1	1	1							
WARRANTY CARD	P9889AH	1												
L7 Tempu-Bunsho for R6.5.X	5182547	1												
AIUM Safety Pamphlet	5118349		1											
AIUM Safety Pamphlet License	5123992		1											
AC CORD 100V JPN	2371416	1												
AC CORD 100V USA	2371417		1			1								
AC CORD 200V EU	2371418			1	1									
AC CORD 200V CHIN	2371415-2						1							
P9538UA POWER CABLE TAG	2304574	1	1											
SFDA LABEL L7	5149899						1							
CAUTION TEL LABEL L7	2290996-3	1	1	1	1	1								
CAUTION TEL LABEL CHINA L7	2290996-4						1							
P9524QE ETL.ETL-C LABEL	2135339		1	1		1	1							
SONIC AuthorScript Data SDK Software License	5178485	1	1	1	1	1	1							
CrossBeam Option	2394377	1	1	1	1	1	1							
SRI Option	5119471	1	1	1	1	1	1							
Caution sheet for Power cables - US	5180867	1												
CHINA RoHS EFUP 20 LABEL	5196197						1							
LOGIQ 7 Ceritification of Quality Inspection for China	5229809						1							
L7 L7P LS6 Addendum for Guidance and manufacturer's declaration	5197395	1	1	1	1	1	1							
VERMONT HG LABEL	5241494	3	3	3	3	3	3							
LOGIQ7 V750 STYLE_I LCD JPN (5244919)														
LOGIQ7 V750 STYLE_I LCD USA (5244919-2)														
LOGIQ7 V750 STYLE_I LCD EU (5244919-3)														
LOGIQ7 V750 STYLE_I LCD KOREA (5244919-4)														
LOGIQ7 V750 STYLE_I LCD ASIA120(5244919-5)														
LOGIQ7 V750 STYLE_I LCD ASIA220(5244919-6)														

9-4-2 R7.5.x Parts

The following parts are new for R7.5.x but other parts are common with BT06. For Common Parts not listed here, refer to Section 9-5 - Renewal Parts List For BT07.

Figure 9-1 R7.5.x Parts

Table 9-5 V75x Parts

Item	Part Name	Part Number	Description	Qty	FRU
-	LOGIQ7 R7.5.0 Application Software CD	5252012-3	Application software in CD. This part never went to circulation.	-	-
1	LOGIQ7 R7.5.1 Application Software CD	5252012-4	Application software in CD	1	1
2	19Inch LCD Monitor for LOGIQ	5212808	19inch LCD Monitor/ Front & Rear Panel	1	1
3	L9 19 In. LCD Speaker Assembly	5199460	L/R Speakers and Bracket	1	1
4	COVER VESA ASSY L7	5248133	LCD Rear cover & Label	1	1
5	19 LCD LATCH-N-LOK CABLE	5240769	3pin to Powered USB conversion	1	1

Table 9-5 V75x Parts

Item	Part Name	Part Number	Description	Qty	FRU
6	DVI-HDMI ADAPTOR	5240848	DVI to HDMI conversion (For Upgraded Version only)	1	1
-	19inch LCD ARM WITH CABLE ASSY	5245143	Obsolete. Use FRU 5264730 to upgrade this part to -2 if stock remains.	-	-
7	19inch LCD ARM WITH CABLE ASSY	5245143-2	LCD arm with Cables assy. Improved rotational limiter plate. For Korea console, Arm Joint (12(b)) must be re-used.	1	1
8	19 LCD DVI HDMI CABLE	5224943	Display Cable	1	1
9	19 LCD MIC SPK CABLE ASSY	5224944	Mic/Spk Cable	1	1
10	19 LCD POWER CABLE	5224942	48V Power Cable	1	1
11	ARM COVER LCD L7	5136256	Arm plastic cover / top	1	1
12	ARM JOINT COVER LCD L7	5136257	Arm plastic cover / joint. Common part between 17” and 19” LCD Monitor arm.	1	1
12 (b)	FRU ARM JOINT COVER LCD L7 FOR KOREA	5271234	Physically the same as 5136257, but caution label in Korean Lanugage.	1	1
13	19inch AC DC ASSY L7	5248134	48V Power Supply (Denotes ‘Returnable’)	1	1
14	19 LCD 48V UNIT CABLE	5224941	FCON2->48V Power Supply	1	1

Section 9-5
Renewal Parts List For BT07

This section describes the BT07 system FRU.

9-5-1 BT07, CRT: Equipment Models Covered in this Chapter (LOGIQ 7)

Table 9-6 Material List

Part Name	Part Number	Quantity						Description
OPERATOR CONSOLE ASSY	5191090	1						100V, NTSC
OPERATOR CONSOLE ASSY	5191824		1			1		120V, NTSC
OPERATOR CONSOLE ASSY	5191341			1			1	220V, PAL
OPERATOR CONSOLE ASSY	5191701				1			220V, NTSC
LOGIQ7 Application Software CD R7.0.0	5191939-4	1	1	1	1	1	1	
LOGIQ7 Ghost3 CD for BEP3, R7.0.0	5191839-2	1	1	1	1	1	1	
L7/L7 PRO R7.0.0 eDoc CD	5181486-200	1	1	1	1	1	1	
LOGIQLEAN MIDDLE	2369384	1						
MSDS FOR KAO ACOUSTIC GEL	2384010	1						
GEL AQUASONIC GEL	U0403BD		1	1	1	1	1	
PARKER AQUASONIC100	2384142		1	1	1	1	1	
CD-R Media 700MB	5118386	1	1	1	1	1	1	
DVD-R 4.7GB 8 x Speed media	5160800-2	1	1	1	1	1	1	
KEY LABEL2	2360321	1	1	1	1	1	1	
LOGIQ 7 WEEE instruction	5143413	1	1	1	1	1	1	
WARRANTY CARD	P9889AH	1						
HIGHLIGHT DOC	5141402	1						
SAFETY PAMPHLET	5118349		1					
SAFETY PAMPHLET License	5123992		1					
SFDA LABEL L7	5149899						1	
AC CORD 100V JPN	2371416	1						
AC CORD 100V USA	2371417		1			1		
AC CORD 200V EU	2371418			1	1			
AC CORD 200V CHIN	2371415-2						1	
LOGIQ7 VER7 STYLE_H CRT JPN (5192526)								
LOGIQ7 VER7 STYLE_H CRT USA (5192526-2)								
LOGIQ7 VER7 STYLE_H CRT EU (5192526-3)								
LOGIQ7 VER7 STYLE_H CRT KOREA (5192526-4)								
LOGIQ7 VER7 STYLE_H CRT ASIA120 (5192526-5)								
LOGIQ7 VER7 STYLE_H CRT ASIA220 (5192526-6)								

9-5-2 BT07, LCD: Equipment Models Covered in this Chapter (LOGIQ 7)

Table 9-7 Material List

Part Name	Part Number	Quantity						Description
OPERATOR CONSOLE ASSY	5191499	1						100V, NTSC
OPERATOR CONSOLE ASSY	5191946		1			1		120V, NTSC
OPERATOR CONSOLE ASSY	5191853			1			1	220V, PAL
OPERATOR CONSOLE ASSY	5191441				1			220V, NTSC
LOGIQ7 Application Software CD R7.0.0	5191939-4	1	1	1	1	1	1	
LOGIQ7 Ghost3 CD for BEP3, R7.0.0	5191839-2	1	1	1	1	1	1	
L7/L7 PRO R7.0.0 eDoc CD	5181486-200	1	1	1	1	1	1	
LOGIQLEAN MIDDLE	2369384	1						
MSDS FOR KAO ACOUSTIC GEL	2384010	1						
GEL AQUASONIC GEL	U0403BD		1	1	1	1	1	
PARKER AQUASONIC100	2384142		1	1	1	1	1	
CD-R Media 700MB	5118386	1	1	1	1	1	1	
DVD-R 4.7GB 8 x Speed media	5160800-2	1	1	1	1	1	1	
KEY LABEL2	2360321	1	1	1	1	1	1	
LOGIQ 7 WEEE instruction	5143413	1	1	1	1	1	1	
WARRANTY CARD	P9889AH	1						
HIGHLIGHT DOC	5141402	1						
SAFETY PAMPHLET	5118349		1					
SAFETY PAMPHLET License	5123992		1					
SFDA LABEL L7	5149899					1		
AC CORD 100V JPN	2371416	1						
AC CORD 100V USA	2371417		1			1		
AC CORD 200V EU	2371418			1	1			
AC CORD 200V CHIN	2371415-2					1		
LOGIQ7 VER7 STYLE_H LCD JPN (5193147)								
LOGIQ7 VER7 STYLE_H LCD USA (5193147-2)								
LOGIQ7 VER7 STYLE_H LCD EU (5193147-3)								
LOGIQ7 VER7 STYLE_H LCD KOREA (5193147-4)								
LOGIQ7 VER7 STYLE_H LCD ASIA120 (5193147-5)								
LOGIQ7 VER7 STYLE_H LCD ASIA220 (5193147-6)								

9-5-3 BT07 PRO: Equipment Models Covered in this Chapter (LOGIQ 7 PRO)

Table 9-8 Material List

Part Name	Part Number	Quantity												Description
OPERATOR CONSOLE ASSY	5191006	1												100V, NTSC
OPERATOR CONSOLE ASSY	5191258		1			1								120V, NTSC
OPERATOR CONSOLE ASSY	5191436			1			1							220V, PAL
OPERATOR CONSOLE ASSY	5191259				1									220V, NTSC
LOGIQ7 Application Software CD R7.0.0	5191939-4	1	1	1	1	1	1							
LOGIQ7 Ghost3 CD for BEP3, R7.0.0	5191839-2	1	1	1	1	1	1							
L7/L7 PRO R7.0.0 eDoc CD	5181486-200	1	1	1	1	1	1							
LOGIQLEAN MIDDLE	2369384	1												
MSDS FOR KAO ACOUSTIC GEL	2384010	1												
GEL AQUASONIC GEL	U0403BD		1	1	1	1	1							
PARKER AQUASONIC100	2384142		1	1	1	1	1							
CD-R Media 700MB	5118386	1	1	1	1	1	1							
DVD-R 4.7GB 8 x Speed media	5160800-2	1	1	1	1	1	1							
KEY LABEL2	2360321	1	1	1	1	1	1							
LOGIQ 7 WEEE instruction	5143413	1	1	1	1	1	1							
WARRANTY CARD	P9889AH	1												
HIGHLIGHT DOC	5141402	1												
SAFETY PAMPHLET	5118349		1											
SAFETY PAMPHLET License	5123992		1											
SFDA LABEL L7PRO	5149900						1							
AC CORD 100V JPN	2371416	1												
AC CORD 100V USA	2371417		1			1								
AC CORD 200V EU	2371418			1	1									
AC CORD 200V CHIN	2371415-2						1							
LOGIQ7PRO VER7 STYLE_H JPN (5193151)														
LOGIQ7PRO VER7 STYLE_H USA (5193151-2)														
LOGIQ7PRO VER7 STYLE_H EU (5193151-3)														
LOGIQ7PRO VER7 STYLE_H KOREA (5193151-4)														
LOGIQ7PRO VER7 STYLE_H ASIA120 (5193151-5)														
LOGIQ7PRO VER7 STYLE_H ASIA220 (5193151-6)														

9-5-4 BT07 Parts

The following parts are new for BT07, but other parts are common with BT06. For Common Parts not listed here, refer to Section 9-6 - Renewal Parts List For V65x.

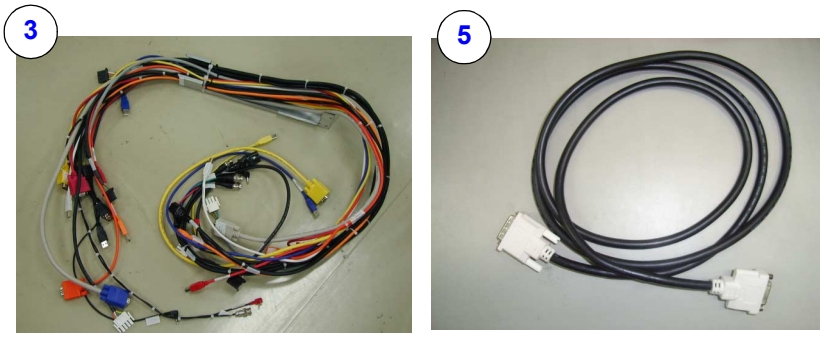


Figure 9-2 BT07 Parts

Table 9-9 V65x Parts

Item	Part Name	Part Number	Description	Qty	FRU
1	LOGIQ7 Base System Software Load Image for R7.0.0	5191839-2	Ghost image in DVD	1	1
2	LOGIQ7 Application Software R7.0.0	5191939-4	Application software in CD	1	1
3	FRU_Parts_LCD_CABLE_DUCT_ASSY	5139307-3	LCDPart / Compatible to BT04	1	1
4	FRU_Parts.LCD_TOP_BOTTOM_DSUB _CABLE_ASSY	5198733	LCDPart / Compatible to BT04 ; replaces 5125391	1	1
5	DVI_CABLE_TOP_LCD_L7	5189828	LCDPart / Compatible to BT04	1	1

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Section 9-6
Renewal Parts List For V65x

This section describes the V65x system FRU.

9-6-1 V65x, CRT: Equipment Models Covered in this Chapter (LOGIQ 7)

Table 9-10 Material List

Part Name	Part Number	Quantity												Description
OPERATOR CONSOLE ASSY	5183269	1												100V, NTSC
OPERATOR CONSOLE ASSY	5183237		1			1								120V, NTSC
OPERATOR CONSOLE ASSY	5183396			1			1							220V, PAL
OPERATOR CONSOLE ASSY	5183304				1									220V, NTSC
LOGIQ7 Application Software CD R6.5.0	5181894	1	1	1	1	1	1							
LOGIQ7 Ghost3 CD for BEP3, R6.5.0	5182424	1	1	1	1	1	1							
L7/L7 PRO R6.5.x eDoc CD	5183312-200	1	1	1	1	1	1							
LOGIQLEAN MIDDLE	2369384	1												
MSDS FOR KAO ACOUSTIC GEL	2384010	1												
GEL AQUASONIC GEL	U0403BD		1	1	1	1	1							
PARKER AQUASONIC100	2384142		1	1	1	1	1							
CD-R Media 700MB	5118386	1	1	1	1	1	1							
DVD-R 4.7GB 8 x Speed media	5160800-2	1	1	1	1	1	1							
KEY LABEL2	2360321	1	1	1	1	1	1							
LOGIQ 7 WEEE instruction	5143413	1	1	1	1	1	1							
WARRANTY CARD	P9889AH	1												
HIGHLIGHT DOC	5141402	1												
SAFETY PAMPHLET	5118349		1											
SAFETY PAMPHLET License	5123992		1											
SFDA LABEL L7	5149899						1							
AC CORD 100V JPN	2371416	1												
AC CORD 100V USA	2371417		1			1								
AC CORD 200V EU	2371418			1	1									
AC CORD 200V CHIN	2371415-2						1							
LOGIQ7 VER6.5 STYLE_G CRT JPN (5183206)														
LOGIQ7 VER6.5 STYLE_G CRT USA (5183206-2)														
LOGIQ7 VER6.5 STYLE_G CRT EU (5183206-3)														
LOGIQ7 VER6.5 STYLE_G CRT KOREA (5183206-4)														
LOGIQ7 VER6.5 STYLE_G CRT ASIA120 (5183206-5)														
LOGIQ7 VER6.5 STYLE_G CRT ASIA220 (5183206-6)														

9-6-2 V65x, LCD: Equipment Models Covered in this Chapter (LOGIQ 7)

Table 9-11 Material List

Part Name	Part Number	Quantity												Description
OPERATOR CONSOLE ASSY	5183330	1												100V, NTSC
OPERATOR CONSOLE ASSY	5183410		1			1								120V, NTSC
OPERATOR CONSOLE ASSY	5183412			1			1							220V, PAL
OPERATOR CONSOLE ASSY	5183190				1									220V, NTSC
LOGIQ7 Application Software CD R6.5.0	5181894	1	1	1	1	1	1							
LOGIQ7 Ghost3 CD for BEP3, R6.5.0	5182424	1	1	1	1	1	1							
L7/L7 PRO R6.5.x eDoc CD	5183312-200	1	1	1	1	1	1							
LOGIQLEAN MIDDLE	2369384	1												
MSDS FOR KAO ACOUSTIC GEL	2384010	1												
GEL AQUASONIC GEL	U0403BD		1	1	1	1	1							
PARKER AQUASONIC100	2384142		1	1	1	1	1							
CD-R Media 700MB	5118386	1	1	1	1	1	1							
DVD-R 4.7GB 8 x Speed media	5160800-2	1	1	1	1	1	1							
KEY LABEL2	2360321	1	1	1	1	1	1							
LOGIQ 7 WEEE instruction	5143413	1	1	1	1	1	1							
WARRANTY CARD	P9889AH	1												
HIGHLIGHT DOC	5141402	1												
SAFETY PAMPHLET	5118349		1											
SAFETY PAMPHLET License	5123992		1											
SFDA LABEL L7	5149899						1							
AC CORD 100V JPN	2371416	1												
AC CORD 100V USA	2371417		1			1								
AC CORD 200V EU	2371418			1	1									
AC CORD 200V CHIN	2371415-2						1							
LOGIQ7 VER6.5 STYLE_G LCD JPN (5183291)														
LOGIQ7 VER6.5 STYLE_G LCD USA (5183291-2)														
LOGIQ7 VER6.5 STYLE_G LCD EU (5183291-3)														
LOGIQ7 VER6.5 STYLE_G LCD KOREA (5183291-4)														
LOGIQ7 VER6.5 STYLE_G LCD ASIA120 (5183291-5)														
LOGIQ7 VER6.5 STYLE_G LCD ASIA220 (5183291-6)														

9-6-3 V65x PRO: Equipment Models Covered in this Chapter (LOGIQ 7 PRO)

Table 9-12 Material List

Part Name	Part Number	Quantity											Description
OPERATOR CONSOLE ASSY	5183352	1											100V, NTSC
OPERATOR CONSOLE ASSY	5183136		1			1							120V, NTSC
OPERATOR CONSOLE ASSY	5183125			1			1						220V, PAL
OPERATOR CONSOLE ASSY	5183515				1								220V, NTSC
LOGIQ7 Application Software CD R6.5.0	5181894	1	1	1	1	1	1						
LOGIQ7 Ghost3 CD for BEP3, R6.5.0	5182424	1	1	1	1	1	1						
L7/L7 PRO R6.5.x eDoc CD	5183312-200	1	1	1	1	1	1						
LOGIQLEAN MIDDLE	2369384	1											
MSDS FOR KAO ACOUSTIC GEL	2384010	1											
GEL AQUASONIC GEL	U0403BD		1	1	1	1	1						
PARKER AQUASONIC100	2384142		1	1	1	1	1						
CD-R Media 700MB	5118386	1	1	1	1	1	1						
DVD-R 4.7GB 8 x Speed media	5160800-2	1	1	1	1	1	1						
KEY LABEL2	2360321	1	1	1	1	1	1						
LOGIQ 7 WEEE instruction	5143413	1	1	1	1	1	1						
WARRANTY CARD	P9889AH	1											
HIGHLIGHT DOC	5141402	1											
SAFETY PAMPHLET	5118349		1										
SAFETY PAMPHLET License	5123992		1										
SFDA LABEL L7PRO	5149900						1						
AC CORD 100V JPN	2371416	1											
AC CORD 100V USA	2371417		1			1							
AC CORD 200V EU	2371418			1	1								
AC CORD 200V CHIN	2371415-2						1						
LOGIQ7PRO VER6.5 STYLE_G JPN (5183556)													
LOGIQ7PRO VER6.5 STYLE_G USA (5183556-2)													
LOGIQ7PRO VER6.5 STYLE_G EU (5183556-3)													
LOGIQ7PRO VER6.5 STYLE_G KOREA (5183556-4)													
LOGIQ7PRO VER6.5 STYLE_G ASIA120 (5183556-5)													
LOGIQ7PRO VER6.5 STYLE_G ASIA220 (5183556-6)													

9-6-4 V65x Parts

The following parts are new for V65x, but other parts are common with BT06. For Common Parts not listed here, refer to Section 9-9 - Renewal Parts List For BT04 and BT06.

Table 9-13 V65x Parts

Item	Part Name	Part Number	Description	Qty	FRU
1	PRINTER BRACKET	T.B.D.	Short type, BW printer bay bracket	1	2

NOTE: For BECOMP3 replacement, the following parts must be reused:

- Extended Memory
- PC2IP3
- UPS
- DGVIC
- Video Card
  - G550 for CRT
  - G450 for LCD
  - SONO64 for LCD
- Video Capture Board

Section 9-7
Renewal Parts List For BT06-2 or later

This section describes the BT06-2 or later system FRU.

9-7-1 BT06-2, CRT: Equipment Models Covered in this Chapter (LOGIQ 7)

Table 9-14 Material List

Part Name	Part Number	Quantity												Description
OPERATOR CONSOLE ASSY	5176232	1												100V, NTSC
OPERATOR CONSOLE ASSY	5176567		1			1								120V, NTSC
OPERATOR CONSOLE ASSY	5176948			1			1							220V, PAL
OPERATOR CONSOLE ASSY	5176508				1									220V, NTSC
LOGIQ7 Application Software CD R6.2.0	5174576 (Obsolete)	0	0	0	0	0	0							
LOGIQ7 Application Software CD R6.2.2	5195941	1	1	1	1	1	1							
LOGIQ7 Ghost3 CD for BEP3, R6.2.0	5174668-2	1	1	1	1	1	1							
L7 BT06-2 eDoc CD	5177295-200	1	1	1	1	1	1							
LOGIQLEAN MIDDLE	2369384	1												
MSDS FOR KAO ACOUSTIC GEL	2384010	1												
GEL AQUASONIC GEL	U0403BD		1	1	1	1	1							
PARKER AQUASONIC100	2384142		1	1	1	1	1							
CD-R Media 700MB	5118386	1	1	1	1	1	1							
DVD-R 4.7GB 8 x Speed media	5160800-2	1	1	1	1	1	1							
KEY LABEL2	2360321	1	1	1	1	1	1							
LOGIQ 7 WEEE instruction	5143413	1	1	1	1	1	1							
WARRANTY CARD	P9889AH	1												
HIGHLIGHT DOC	5141402	1												
SAFETY PAMPHLET	5118349		1											
SAFETY PAMPHLET License	5123992		1											
SFDA LABEL L7	5149899						1							
AC CORD 100V JPN	2371416	1												
AC CORD 100V USA	2371417		1			1								
AC CORD 200V EU	2371418			1	1									
AC CORD 200V CHIN	2371415-2						1							
LOGIQ7 VER6 STYLE_F CRT JPN (5148046)														
LOGIQ7 VER6 STYLE_F CRT USA (5148046-2)														
LOGIQ7 VER6 STYLE_F CRT EU (5148046-3)														
LOGIQ7 VER6 STYLE_F CRT KOREA (5148046-4)														
LOGIQ7 VER6 STYLE_F CRT ASIA120 (5148046-5)														
LOGIQ7 VER6 STYLE_F CRT ASIA220 (5148046-6)														

9-7-2 BT06-2, LCD: Equipment Models Covered in this Chapter (LOGIQ 7)

Table 9-15 Material List

Part Name	Part Number	Quantity												Description
OPERATOR CONSOLE ASSY	5176713	1												100V, NTSC
OPERATOR CONSOLE ASSY	5176888		1			1								120V, NTSC
OPERATOR CONSOLE ASSY	5176300			1			1							220V, PAL
OPERATOR CONSOLE ASSY	5176380				1									220V, NTSC
LOGIQ7 Application Software CD R6.2.0	5174576 (Obsolete)	0	0	0	0	0	0							
LOGIQ7 Application Software CD R6.2.2	5195941	1	1	1	1	1	1							
LOGIQ7 Ghost3 CD for BEP3, R6.2.0	5174668-2	1	1	1	1	1	1							
L7 BT06-2 eDoc CD	5177295-200	1	1	1	1	1	1							
LOGIQLEAN MIDDLE	2369384	1												
MSDS FOR KAO ACOUSTIC GEL	2384010	1												
GEL AQUASONIC GEL	U0403BD		1	1	1	1	1							
PARKER AQUASONIC100	2384142		1	1	1	1	1							
CD-R Media 700MB	5118386	1	1	1	1	1	1							
DVD-R 4.7GB 8 x Speed media	5160800-2	1	1	1	1	1	1							
KEY LABEL2	2360321	1	1	1	1	1	1							
LOGIQ 7 WEEE instruction	5143413	1	1	1	1	1	1							
WARRANTY CARD	P9889AH	1												
HIGHLIGHT DOC	5141402	1												
SAFETY PAMPHLET	5118349		1											
SAFETY PAMPHLET License	5123992		1											
SFDA LABEL L7	5149899						1							
AC CORD 100V JPN	2371416	1												
AC CORD 100V USA	2371417		1			1								
AC CORD 200V EU	2371418			1	1									
AC CORD 200V CHIN	2371415-2						1							
LOGIQ7 VER6 STYLE_F LCD JPN (5148051)														
LOGIQ7 VER6 STYLE_F LCD USA (5148051-2)														
LOGIQ7 VER6 STYLE_F LCD EU (5148051-3)														
LOGIQ7 VER6 STYLE_F LCD KOREA (5148051-4)														
LOGIQ7 VER6 STYLE_F LCD ASIA120 (5148051-5)														
LOGIQ7 VER6 STYLE_F LCD ASIA220 (5148051-6)														

9-7-3 BT06-2 PRO: Equipment Models Covered in this Chapter (LOGIQ 7 PRO)

Table 9-16 Material List

Part Name	Part Number	Quantity											Description
OPERATOR CONSOLE ASSY	5176619	1											100V, NTSC
OPERATOR CONSOLE ASSY	5176454		1			1							120V, NTSC
OPERATOR CONSOLE ASSY	5176439			1			1						220V, PAL
OPERATOR CONSOLE ASSY	5176774				1								220V, NTSC
LOGIQ7 Application Software CD R6.2.0	5174576 (Obsolete)	0	0	0	0	0	0						
LOGIQ7 Application Software CD R6.2.2	5195941	1	1	1	1	1	1						
LOGIQ7 Ghost3 CD for BEP3, R6.2.0	5174668-2	1	1	1	1	1	1						
L7 BT06-2 eDoc CD	5177295-200	1	1	1	1	1	1						
LOGIQLEAN MIDDLE	2369384	1											
MSDS FOR KAO ACOUSTIC GEL	2384010	1											
GEL AQUASONIC GEL	U0403BD		1	1	1	1	1						
PARKER AQUASONIC100	2384142		1	1	1	1	1						
CD-R Media 700MB	5118386	1	1	1	1	1	1						
DVD-R 4.7GB 8 x Speed media	5160800-2	1	1	1	1	1	1						
KEY LABEL2	2360321	1	1	1	1	1	1						
LOGIQ 7 WEEE instruction	5143413	1	1	1	1	1	1						
WARRANTY CARD	P9889AH	1											
HIGHLIGHT DOC	5141402	1											
SAFETY PAMPHLET	5118349		1										
SAFETY PAMPHLET License	5123992		1										
SFDA LABEL L7PRO	5149900						1						
AC CORD 100V JPN	2371416	1											
AC CORD 100V USA	2371417		1			1							
AC CORD 200V EU	2371418			1	1								
AC CORD 200V CHIN	2371415-2						1						
LOGIQ7PRO VER6 STYLE_F JPN (5148056)													
LOGIQ7PRO VER6 STYLE_F USA (5148056-2)													
LOGIQ7PRO VER6 STYLE_F EU (5148056-3)													
LOGIQ7PRO VER6 STYLE_F KOREA (5148056-4)													
LOGIQ7PRO VER6 STYLE_F ASIA120 (5148056-5)													
LOGIQ7PRO VER6 STYLE_F ASIA220 (5148056-6)													

9-7-4 BT06-2 Parts

The following parts are new for BT06-2, but other parts are common with BT06. Parts not listed here are common with BT06. For BT06-2 Parts, refer to Section 9-9 - Renewal Parts List For BT04 and BT06.

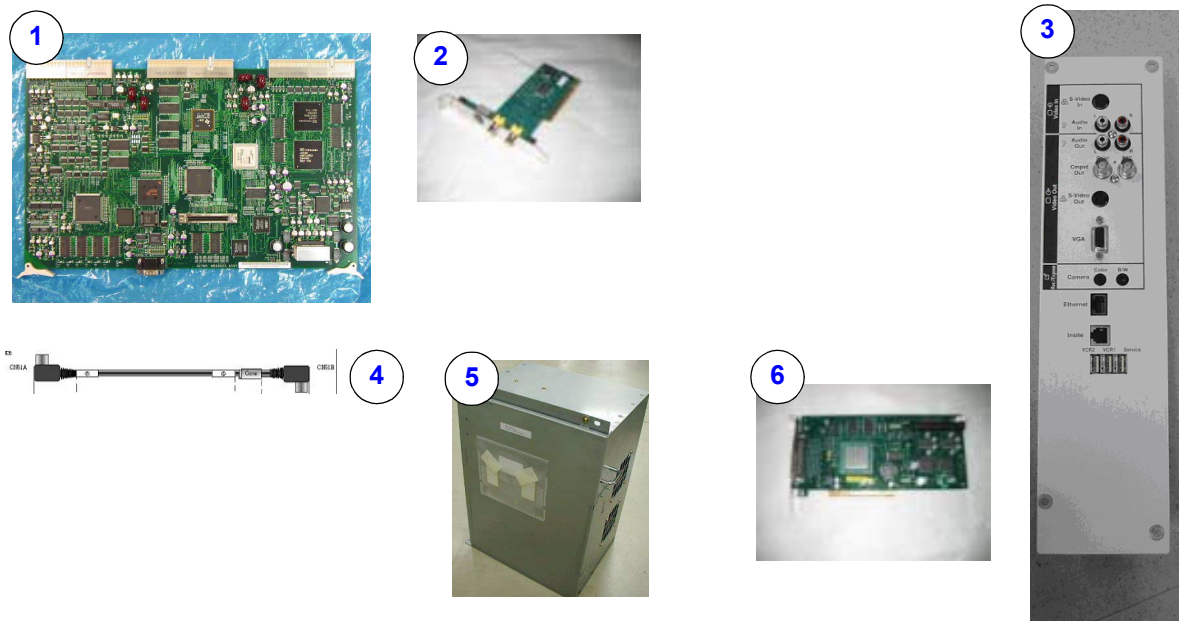

Figure 9-3 BT06-2 Parts

Table 9-17 Monitor

Item	Part Name	Part Number	Description	Qty	FRU
1	MDBRG2S	5145999		1	1
2	Capture Board	5147460		1	1
3	Rear Panel	5174604		1	1
4	YC Cable (S-Video)	5169391		1	1
5	BECOMP3	5119906-3 or 5119906-4	Refer to 9-9-13 - HDD and Battery.	1	1
-	PC2IP3	FC200755	Obsolete. Acceptable to use the part if remained in stock.	-	-
6	PC2IP3	FD200033	New PC2IP3. Fully compatible to FC200755.	1	1
7	4D Motor Controller		Option	1	1

NOTE: Software R6.2.x and later is required to support the hardware listed above.

NOTE: For BECOMP3 replacement, the following parts must be reused:

- Extended Memory
- PC2IP3
- UPS
- DGVIC

9-7-4 BT06-2 Parts (cont'd)

- Video Card
  - G550 for CRT
  - G450 for LCD
  - SONO64 for LCD
- Video Capture Board

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Section 9-8
Renewal Parts List For BT06-2 CONSIP (SOI)

This section describes the BT06-2 CONSIP (SOI) system FRU.

The BT06-2 CONSIP (SOI) is delivered to the special ordered customer as simply configured:

- LOGIQ 7PRO (BT06-2, 220V/PAL) with LCD monitor
- Special size of HDD inside the PC box

9-8-1 BT06-2 CONSIP: Equipment Models Covered in this Chapter (LOGIQ 7)

Table 9-18 Material List

Part Name	Part Number	Quantity	Description
OPERATOR CONSOLE ASSY	5179605	1	220V, PAL, PRO with LCD
LOGIQ7 Application Software CD R6.3.0 for Italy	5177651	1	
LOGIQ7 Ghost3 CD for BEP3, R6.2.0	5174668-2	1	
GEL AQUASONIC GEL	U0403BD	1	
PARKER AQUASONIC100	2384142	1	
CD-R Media 700MB	5118386	1	
DVD-R 4.7GB 8 x Speed media	5160800-2	1	
KEY LABEL2	2360321	1	
LOGIQ 7 WEEE instruction	5143413	1	
AC CORD 200V EU	2371418		
MSDS for PAKER AQUASONIC 100	2384142	1	
LOGIQ7 VER6 STYLE_F LCD Italy (5179274)			

9-8-2 BT06-2 CONSIP Parts

The following parts are unique to BT06-2 CONSIP, but other parts are common with BT06-2. Parts not listed here are common with BT06-2. For BT06-2 CONSIP Parts, refer to Section 9-7 - Renewal Parts List For BT06-2 or later and Section 9-9 - Renewal Parts List For BT04 and BT06.

Figure 9-4 BT06-2 CONSIP Parts

Table 9-19 Monitor

Item	Part Name	Part Number	Description	Qty	FRU
1	HDD for L7 CONSIP	5179643	HDD 160GB only for CONSIP Console	1	1
2	BECOMPSW3SVC	5119906-4	This BECOMP part contains 80GB HDD. FE must either reuse HDD, or order 160GB HDD (5179643) for use with this part.	1	1

NOTE: Software R6.3.x application with base image is required to support this CONSIP Console.

NOTE: For BECOMP3 replacement, the following parts must be reused:

- Extended Memory
- PC2IP3
- UPS
- DGVIC
- Video Card
  - G550 for CRT
  - G450 for LCD
  - SONO64 for LCD
- Video Capture Board
- HDD

Section 9-9
Renewal Parts List For BT04 and BT06

This section describes the BT04 and BT06 system FRU.

9-9-1 BT06, CRT: Equipment Models Covered in this Chapter (LOGIQ 7)

Table 9-20 Material List

Part Name	Part Number	Quantity												Description
OPERATOR CONSOLE ASSY	5148047	1												100V, NTSC
OPERATOR CONSOLE ASSY	5148048		1			1								120V, NTSC
OPERATOR CONSOLE ASSY	5148049			1			1							220V, PAL
OPERATOR CONSOLE ASSY	5148050				1									220V, NTSC
LOGIQ7 Application Software CD R5.0.0	5146099	1	1	1	1	1	1							
LOGIQ7 Ghost3 CD for BEP3, R5.0.0	5146100	1	1	1	1	1	1							
L7 BT06 eDoc CD	5120980-200	1	1	1	1	1	1							
LOGIQLEAN MIDDLE	2369384	1												
MSDS FOR KAO ACOUSTIC GEL	2384010	1												
GEL AQUASONIC GEL	U0403BD		1	1	1	1	1							
PARKER AQUASONIC100	2384142		1	1	1	1	1							
CD-R Media 700MB	5118386	1	1	1	1	1	1							
DVD-R Media 4.7GB	5118392	1	1	1	1	1	1							
KEY LABEL2	2360321	1	1	1	1	1	1							
LOGIQ 7 WEEE instruction	5143413	1	1	1	1	1	1							
WARRANTY CARD	P9889AH	1												
HIGHLIGHT DOC	5141402	1												
SAFETY PAMPHLET	5118349		1											
SAFETY PAMPHLET License	5123992		1											
SFDA LABEL L7	5149899						1							
LOGIQ7 VER5 STYLE_E CRT JPN (5148046)														
LOGIQ7 VER5 STYLE_E CRT USA (5148046-2)														
LOGIQ7 VER5 STYLE_E CRT EU (5148046-3)														
LOGIQ7 VER5 STYLE_E CRT KOREA (5148046-4)														
LOGIQ7 VER5 STYLE_E CRT ASIA120 (5148046-5)														
LOGIQ7 VER5 STYLE_E CRT ASIA220 (5148046-6)														

9-9-2 BT06, LCD: Equipment Models Covered in this Chapter (LOGIQ 7)

Table 9-21 Material List

Part Name	Part Number	Quantity												Description
OPERATOR CONSOLE ASSY	5148052	1												100V, NTSC
OPERATOR CONSOLE ASSY	5148053		1			1								120V, NTSC
OPERATOR CONSOLE ASSY	5148054			1			1							220V, PAL
OPERATOR CONSOLE ASSY	5148055				1									220V, NTSC
LOGIQ7 Application Software CD R5.0.0	5146099	1	1	1	1	1	1							
LOGIQ7 Ghost3 CD for BEP3, R5.0.0	5146100	1	1	1	1	1	1							
L7 BT06 eDoc CD	5120980-200	1	1	1	1	1	1							
LOGIQLEAN MIDDLE	2369384	1												
MSDS FOR KAO ACOUSTIC GEL	2384010	1												
GEL AQUASONIC GEL	U0403BD		1	1	1	1	1							
PARKER AQUASONIC100	2384142		1	1	1	1	1							
CD-R Media 700MB	5118386	1	1	1	1	1	1							
DVD-R Media 4.7GB	5118392	1	1	1	1	1	1							
KEY LABEL2	2360321	1	1	1	1	1	1							
LOGIQ 7 WEEE instruction	5143413	1	1	1	1	1	1							
WARRANTY CARD	P9889AH	1												
HIGHLIGHT DOC	5141402	1												
SAFETY PAMPHLET	5118349		1											
SAFETY PAMPHLET License	5123992		1											
SFDA LABEL L7	5149899						1							
LOGIQ7 VER5 STYLE_E LCD JPN (5148051)														
LOGIQ7 VER5 STYLE_E LCD USA (5148051-2)														
LOGIQ7 VER5 STYLE_E LCD EU (5148051-3)														
LOGIQ7 VER5 STYLE_E LCD KOREA (5148051-4)														
LOGIQ7 VER5 STYLE_E LCD ASIA120 (5148051-5)														
LOGIQ7 VER5 STYLE_E LCD ASIA220 (5148051-6)														

9-9-3 BT06: Equipment Models Covered in this Chapter (LOGIQ 7 PRO)

Table 9-22 Material List

Part Name	Part Number	Quantity											Description
OPERATOR CONSOLE ASSY	5148057	1											100V, NTSC
OPERATOR CONSOLE ASSY	5148058		1			1							120V, NTSC
OPERATOR CONSOLE ASSY	5148059			1			1						220V, PAL
OPERATOR CONSOLE ASSY	5148060				1								220V, NTSC
LOGIQ7 Application Software CD R5.0.0	5146099	1	1	1	1	1	1						
LOGIQ7 Ghost3 CD for BEP3, R5.0.0	5146100	1	1	1	1	1	1						
L7 BT06 eDoc CD	5120980-200	1	1	1	1	1	1						
LOGIQLEAN MIDDLE	2369384	1											
MSDS FOR KAO ACOUSTIC GEL	2384010	1											
GEL AQUASONIC GEL	U0403BD		1	1	1	1	1						
PARKER AQUASONIC100	2384142		1	1	1	1	1						
CD-R Media 700MB	5118386	1	1	1	1	1	1						
DVD-R Media 4.7GB	5118392	1	1	1	1	1	1						
KEY LABEL2	2360321	1	1	1	1	1	1						
LOGIQ 7 WEEE instruction	5143413	1	1	1	1	1	1						
WARRANTY CARD	P9889AH	1											
HIGHLIGHT DOC	5141402	1											
SAFETY PAMPHLET	5118349		1										
SAFETY PAMPHLET License	5123992		1										
SFDA LABEL L7PRO	5149900						1						
LOGIQ7PRO VER5 STYLE_E JPN (5148056)													
LOGIQ7PRO VER5 STYLE_E USA (5148056-2)													
LOGIQ7PRO VER5 STYLE_E EU (5148056-3)													
LOGIQ7PRO VER5 STYLE_E KOREA (5148056-4)													
LOGIQ7PRO VER5 STYLE_E ASIA120 (5148056-5)													
LOGIQ7PRO VER5 STYLE_E ASIA220 (5148056-6)													

9-9-4 BT04: Equipment Models Covered in this Chapter (LOGIQ 7)

Table 9-23 Material List

Part Name	Part Number	Quantity												Description
OPERATOR CONSOLE ASSY	5118054	1												100V, NTSC
OPERATOR CONSOLE ASSY	5118056		1			1								120V, NTSC
OPERATOR CONSOLE ASSY	5118057			1			1							220V, PAL
OPERATOR CONSOLE ASSY	5118058				1									220V, NTSC
OPERATOR CONSOLE ASSY	5118059							1						STYLE D
TASK LAMP	2301853-4	1	1	1	1	1	1	1						
LOGIQLEAN MIDDLE	2369384	1						1						
GEL	2384010	1						1						
GEL	U0403BD		1	1	1	1	1							
PARKER AQUASONIC100	2384142		1	1	1	1	1							
KEY LABEL2	2360321	1	1	1	1	1	1							
WARRANTY CARD	P9889AH	1						1						
HIGHLIGHT DOC	5141402	1						1						
SAFETY PAMPHLET	5118349		1											
SDA LABEL	2341927						1							
APPLICATION CD	5118352	1	1	1	1	1	1	1						
GHOST CD	5118353-3	1	1	1	1	1	1	1						
DVD-R MEDIA 4.7GB	5118392	1	1	1	1	1	1	1						
CD-R MEDIA 700MB	5118386	1	1	1	1	1	1	1						

JAPAN (5118054)	
USA (5118054-2)	
EUROPE (5118054-3)	
KOREA (5118054-4)	
ASIA 120V(5118054-5)	
ASIA 220V(5118054-6)	JAPAN STYLE D (5118054-7)

9-9-5 BT04: Equipment Models Covered in this Chapter (LOGIQ 7 PRO)

Table 9-24 Material List

Part Name	Part Number	Quantity											Description
OPERATOR CONSOLE ASSY	5132215	1											100V, NTSC
OPERATOR CONSOLE ASSY	5132216		1			1							120V, NTSC
OPERATOR CONSOLE ASSY	5132217			1			1						220V, PAL
OPERATOR CONSOLE ASSY	5132218				1								220V, NTSC
LOGIQLEAN MIDDLE	2369384	1											
GEL	2384010	1											
GEL	U0403BD		1	1	1	1	1						
PARKER AQUASONIC100	2384142		1	1	1	1	1						
KEY LABEL2	2360321	1	1	1	1	1	1						
WARRANTY CARD	P9889AH	1											
HIGHLIGHT DOC	5141402	1											
SAFETY PAMPHLET	5118349		1										
SDA LABEL	2341927						1						
APPLICATION CD	5132139	1	1	1	1	1	1						R4.2.0 Pro
GHOST CD	5118353-3	1	1	1	1	1	1						
DVD-R MEDIA 4.7GB	5118392	1	1	1	1	1	1						
CD-R MEDIA 700MB	5118386	1	1	1	1	1	1						
JAPAN (5132194)													
USA (5132194-2)													
EUROPE (5132194-3)													
KOREA (5132194-4)													
ASIA 120V(5132194-5)													
ASIA 220V(5132194-6)													

9-9-6 Monitor

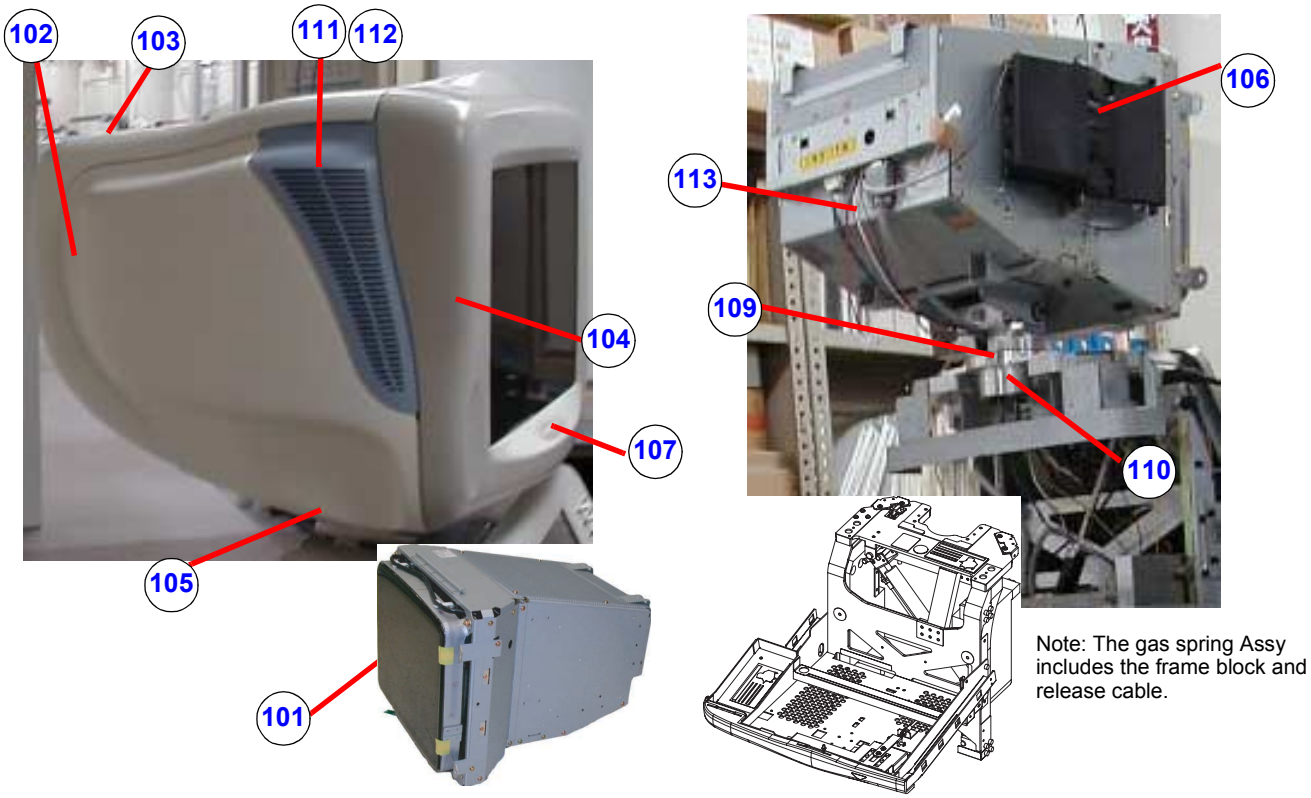


Figure 9-5 Monitor

Table 9-25 Monitor

Item	Part Name	Part Number	Description	Qty	FRU
101	CRT MONITOR ASSY	2283334-5	Monitor, not inclucing the following parts (102 ~ 113)	1	1
102	MON-REAR-WSP-ASSY	2303930	Rear cover of monitor use for globally except for China and Korea.	1	2
102 (b)	FRU MON-REAR-WSP-ASSY FOR CHINA	5264592	Physically the same as 2303930, but with Chinese caution Label.	1	2
102 (c)	FRU MON-REAR-WSP-ASSY FOR KOREA	5271314	Physically the same as 2303930, but with Korean caution Label.	1	2
103	MON-CAP-ASSY	2303932	cap to cover screws	1	2
104	MON-FRONT-ASSY	2303929-3	front cover of monitor	1	2
105	NECK ASSY	2347387		1	2
106	SPEAKER & BRACKET ASSY	23866616		2	2
107	USER SW ASSY OF MONITOR	2297050	microphone and switch	1	2
109	NECH-BASE-ASSY	2303933	mechanical	1	2

Table 9-25 Monitor

Item	Part Name	Part Number	Description	Qty	FRU
110	GAS-SPRING-ASSY	5117495	Gas spring including release cable and mechanical. Not used for LCD monitor system.	1	2
111	Grill, Left	2279675		1	2
112	Grill, Right	2279676		1	2
113	MON-Cable-Assy	2304171	cable	1	2

9-9-7 Casters and Pedals

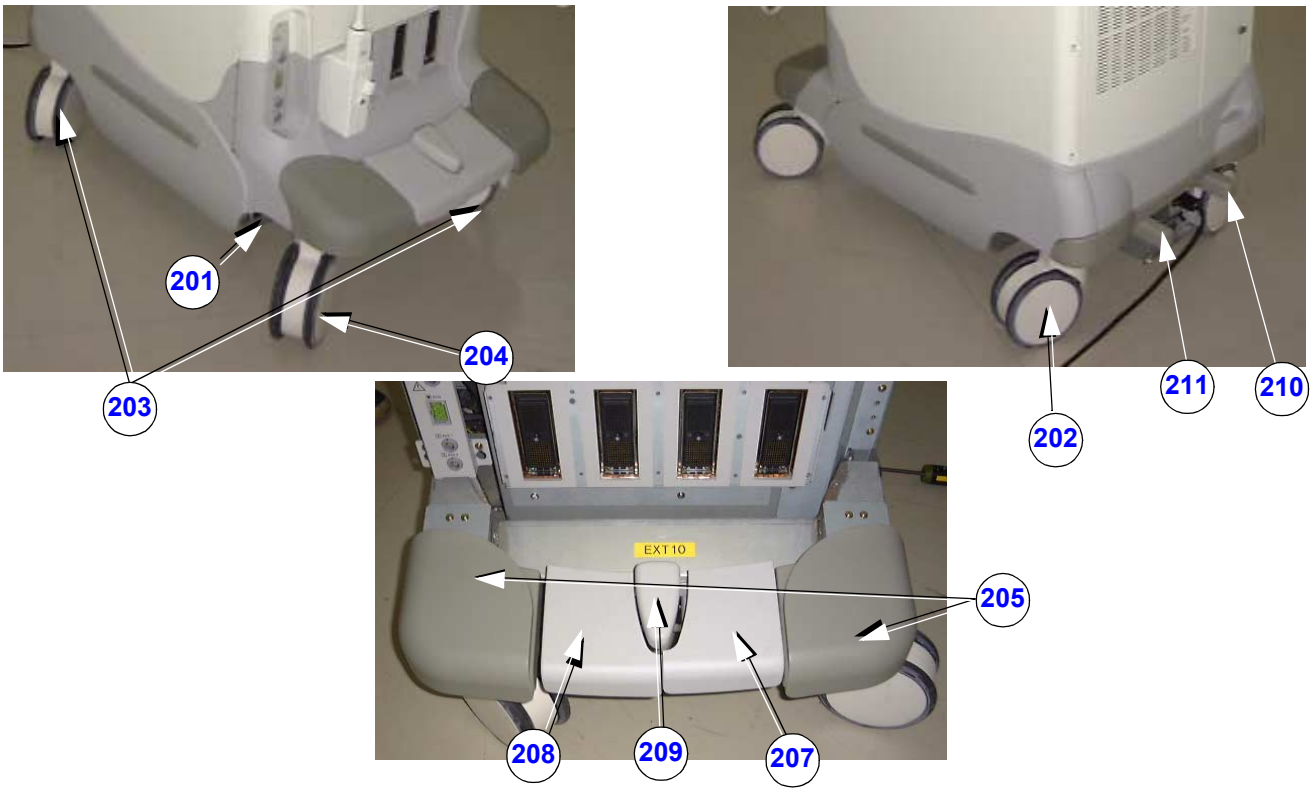


Figure 9-6 Casters and Pedals

Table 9-26 Casters and Pedals

Item	Part Name	Part Number	Description	Qty	FRU
201	CASTER LINK ASSY	2304800	entire brake mechanism	1	2
-	CASTER SWIVEL	2379694-2	Obsolete. Do not use these parts.	-	-
202	CASTER SWIVEL	5233773	swivel, rear right. Improved rubber type (anti-stain).	1	2
-	CASTER LOCK	2379695	Obsolete. Do not use these parts.	-	-
203	CASTER LOCK	5233774	lock, front right and rear left. Improved rubber type (anti-stain).	2	2
-	CASTER FREE	2379693-2	Obsolete. Do not use these parts.	-	-
204	CASTER FREE	5233772	free, front left. Improved rubber type (anti-stain).	1	2
205	FRONT-BUMPER-ASSY	2315419	front bumper, left and right	1	2
207	PEDAL-R	2291870	rubber pedal for brake caster lock	1	2
208	PEDAL-L	2291869	rubber pedal for brake caster lock	1	2
209	PEDAL CENTER	2291871	rubber pedal for brake caster lock	1	2
210	PEDAL-REAR-REL	2304908	rear pedal	1	2

Table 9-26 Casters and Pedals

Item	Part Name	Part Number	Description	Qty	FRU
211	PEDAL-REAR-SWL	2304909	rear pedal	1	2
-	CASTER SET	2381035	Obsolete. Do not use these parts.	-	-
-	CASTER SET	2381035-2	Obsolete. Do not use these parts.	-	-
-	CASTER SET	2381035-3	This part contains one free caster, one swivel lock caster, and two total lock caster with bolts. Improved rubber type (anti-stain).	1	2

9-9-8 Plastic Covers

Figure 9-7 OP Panel and Keys

9-9-8 Plastic Covers (cont'd)

Table 9-27 OP Panel and Keys

Item	Part Name	Part Numbers	Description	Qty	FRU
251	KB COVER LEFT	2282547	upper left cover of keyboard (under monitor)	1	2
252	KB COVER RIGHT	2282548	upper right cover of keyboard (under monitor)	1	2
253	COVER-TOP	2315418	top cover	1	2
254	KB COVER BOTTOM	2282546	plastic cover under keyboard	1	2
255	UP/DOWN-KNOB-ASSY	2304820	handle for keyboard up/down, wire	1	2
256	ECG CABLE HOOK	2283028	hook under keyboard	1	2
257	FRONT COVER TOP	2304765-2	upper cover around probe connector	1	2
258	FRONT COVER UNDER	2304766-2	lower cover around probe connector	1	2
259	SIDE COVER L ASSY	2304769	plastic cover, including bracket	1	2
260	SIDE COVER R ASSY	2304770	plastic cover, including bracket	1	2
261	SIDE-POCKET	2291872	cover of peripheral room with pocket	1	2
262	SIDE-FRINGE	2303896	cover of peripheral room without pocket	1	2
-	REAR COVER ASSY	2304767-2	Obsolete. This plastic cover is acceptable to use if stock remains	-	-
263	REAR COVER ASSY	5150568-3	Plastic cover. Physically the same as ?2, but caution marks are of updated color scheme. Exclamation and lightning are in yellow background.	1	2
263 (b)	FRU REAR COVER ASSY L7 FOR KOREA	5261040	Plastic cover. Physically the same as 5150568-3, but with Korean Caution.	1	2
-	REAR COVER ASSY L7 FOR CHINA	5191392	Part for China RoHS compliance. Do NOT use it for other countries.	1	2
264	REAR DOOR ASSY	2304768	door for peripherals connector, including latch	1	2
265	HANDLE	2309857	rear handle	1	2
266	REAR CONN ASSY	5111714	rear connector for peripherals	1	2
267	KB BUMPER	2283014	Operation panel bumper	1	2
268	KB BLIND REAR Assy	2304780	Lower cover at Neck portion	1	2
270	KB Rear Assy	2304776		1	2
271	BK Cover Top	2282549		1	2

9-9-9 Recording Devices

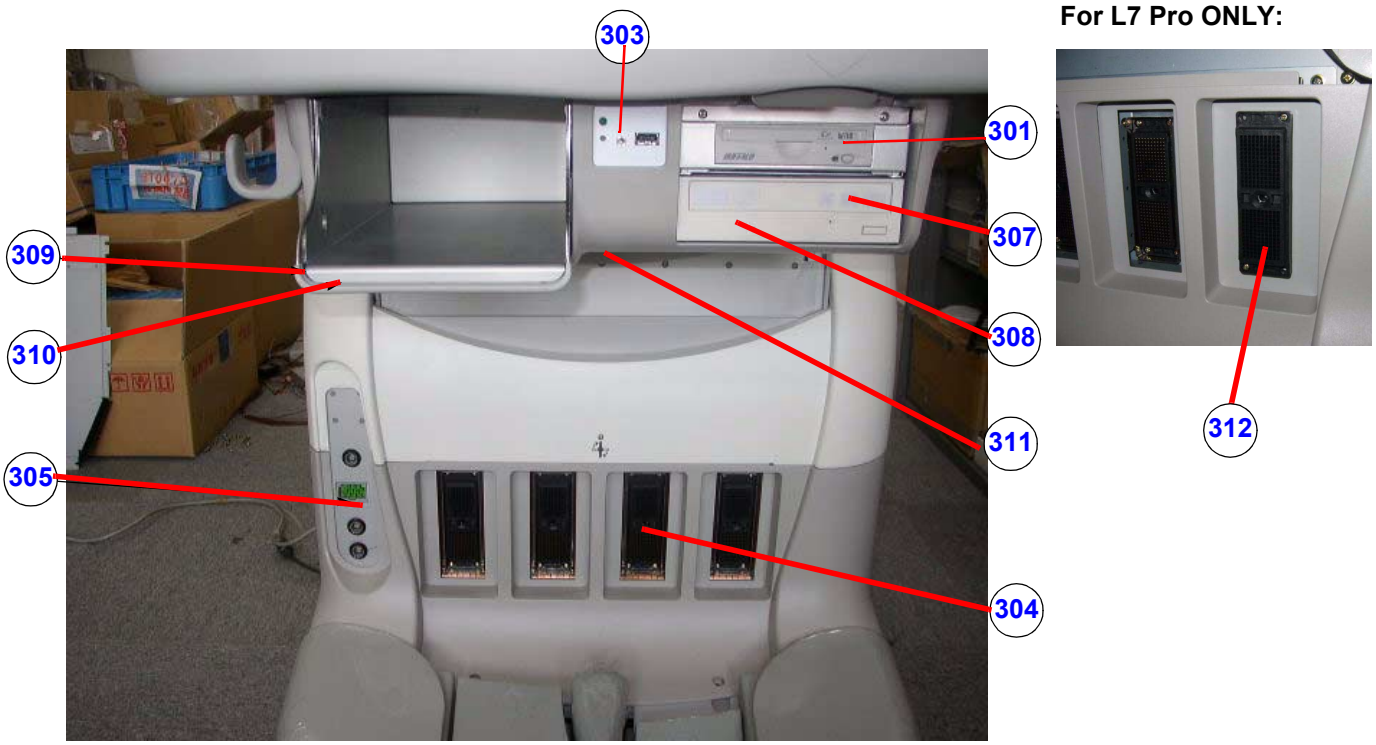


Figure 9-8 Recording Devices

Table 9-28 Recording Devices

Item	Part Name	Part Number	Description	Qty	FRU
301	MOD	5113449	Not supported for the models after V65x.	1	1
303	FCON2 ASSY	5111715-2	front connector for peripherals (FCON)	1	1
304	QCON ASSY	2304617-5	PCON+PSEL+bracket	1	2
305	PAT. I/O	FA200801	for ecg	1	1
-	DVD unit	2388429-5	Obsolete. Acceptable to use the part if remained in stock.	-	-
307	DVD unit 6	2388429-6		1	1
308	Front Device bay Assy	5115606	Without DVD unit	1	2
309	B/W printer bracket	5115690		1	2
310	B/W printer bumper	2301001		1	2
311	Foot SW bracket Assy	5117795		1	2
312	DUMMY CONN ASSY CSL L7PRO	5132196	For L7Pro ONLY: Including Dummy connector and four screws	1	2

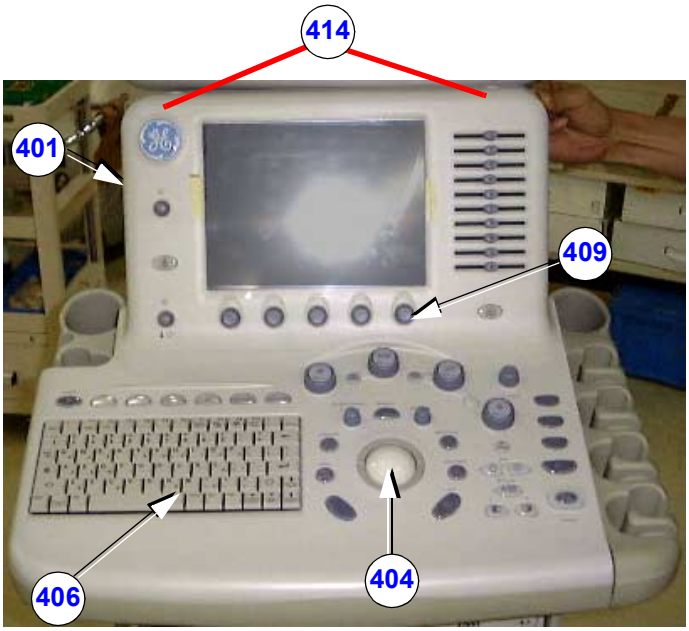
9-9-10 Probe Holder

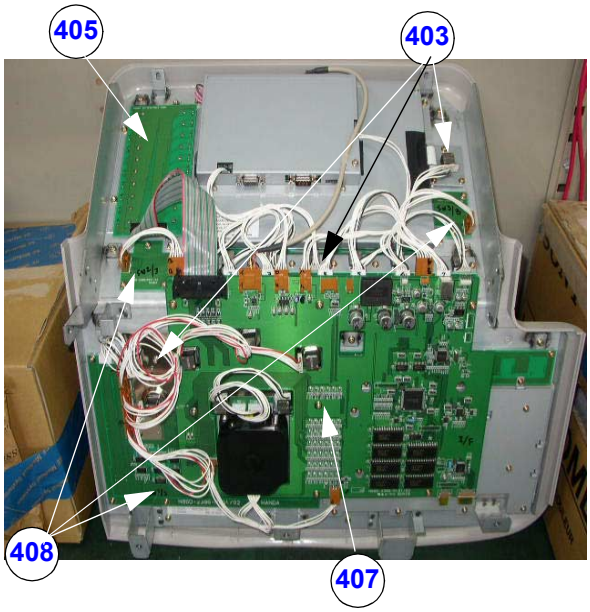
Figure 9-9 Probe Holder

Table 9-29 Probe Holder

Item	Part Name	Part Number	Description	Qty	FRU
350	PROBE HOLDER R ASSY	2296738	rubber holder with bracket	1	2
351	PROBE HOLDER L1 ASSY	2296736	rubber holder with bracket	1	2
352	TV HOLDER ASSY	2296740	rubber holder for TV	1	2
353	GEL HOLDER R ASSY	2296741	includes bottom	1	2

9-9-11 OP Panel and Keys





For L7 ONLY:

Note: The task lamp is wrapped by heat-shrinkable tape around its lamp portion. Do NOT remove it !!!

Figure 9-10 OP Panel and Keys

9-9-11 OP Panel and Keys (cont'd)

Table 9-30 OP Panel and Keys

Item	Part Name	Part Number	Description	Qty	FRU
401	KEYBOARD ASSY	5138507-2	whole keyboard, this includes next 7 items (Items 403 ~ 409) (Obsolete, Replaced by 5138507-3)	1	1
401	SVC KEYBOARD L7	5138507-3	whole keyboard, this includes next 7 items (Items 403 ~ 409)	1	1
403	ROTARY ENCODER ASSY	2369826	OBSOLETE Three rotary encoders with cables. Three groups of encoders with cables and metal stay. In total, there are 14 encoders in this FRU.	1	1
403	ROTARY ENCODER ASSY	2369826-2	Three rotary encoders with cables. Three groups of encoders with cables and metal stay. In total, there are 14 encoders in this FRU. This version contains two types of LCD brightness adjustment knob and instruction.	1	1
404	TRACKBALL ASSY	2369823	trackball, two cables w/o bracket	1	1
405	TGC ASSY	2369822	TGC PCB Assy, bracket, cable w/o TGC knobs	1	1
406	A/N KBD ASSY	2369818	board of a/n key switch	1	1
407	I/F BOARD ASSY	2369817	I/F PCB ASSY, Mic cable, USB cable	1	1
408	SW BOARD ASSY	2369815	Three SW PCB Assy, rubber sheets, two cables	1	1
409	KEY ACCESSORY SET	2369816	A/N keytops, all encoder knobs, all clear key caps, labels (For knob repair, order 2363861 repair kit.)	1	2
410	TASK LAMP ASSY	2301853-4	L7 Pro does not support the task lamp.	1	1
411	LAMP STAY ASSY	5117796	Stay and cable (inside L7)	1	2
412	TASK LAMP KNOB	2304620	knob	1	2
413	LIGHT BULB	2357676	BULB ONLY	1	1
414	CAP	2239428	CAP for Hole	1	2
-	KEY LABEL	2360321	Label for clear key top	1	2
-	AN KEY TOP NORWEGIAN	5125104	Option	1	2
-	AN KEY TOP SWEDISH	5125100	Option	1	2
-	AN KEY TOP GREEK	2375160	Option	1	2
-	AN KEY TOP RUSSIAN	2375159	Option	1	2

9-9-12 Circuit Board Assemblies

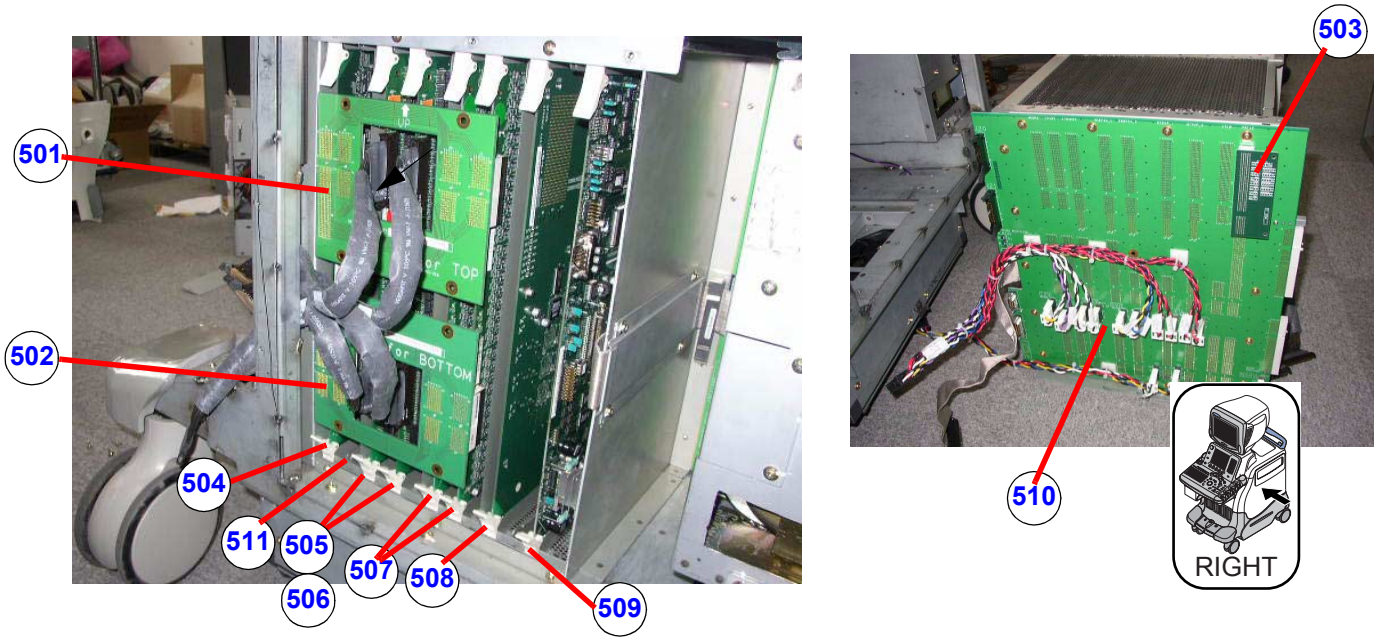


Figure 9-11 Circuit Board Assemblies

Table 9-31 OP Panel and Keys

Item	Part Name	Part Number	Description	Qty	FRU
501	EBUS 3T ASSY	5111348	Upper EBUS for BT04, BT06	1	1
502	EBUS 3B ASSY	5112465	Lower EBUS for BT04, BT06	1	1
502	EBUS2 ASSY	2399317	Both Upper and Lower boards, for Upgrade BT04, Upgrade BT06,	2	1
503	TERMINATOR ASSY	2268026	board	1	2
504	PREA2F ASSY	5119039	board in nest, slot 1 for BT04, BT06.	1	1
504	PREA2H ASSY	2393853	for Upgrade BT04, Upgrade BT06.	1	1
505	BTRAPHV Assy	5118342-3	board in nest, slot 3 - 4 for BT04	1	1
505	BTRAPP5AHV Assy	5154321	board in nest, slot 3 - 4 for BT06	1	1
506	BTxCW ASSY	5111346	Installed on the BTRAP (Option)	1	1
507	DDBF64 ASSY	2399312	board in nest, slot 5 - 6	1	1
508	SINANO ASSY	2374744	board in nest, slot 7	1	1
509	MDBRG ASSY	2264606-5	board in nest, slot 9 "-5 or later" must be used for 6T probe.	1	1
510	MOTHER2 ASSY CSL L7	5111345-2	board	1	1
-	STCW ASSY	2277244-4	board in nest, slot 2 (option). Obsolete, but acceptable to use if in stock.	-	-

Table 9-31 OP Panel and Keys

Item	Part Name	Part Number	Description	Qty	FRU
511	STCW ASSY	2277244-5	Compatible with -4. Minor change due to delay line EOL and resistor change.	1	1
-	NEST Board JIG Assy	2315492	Tools to remove a board in the NEST Assy	1	2

9-9-13 HDD and Battery

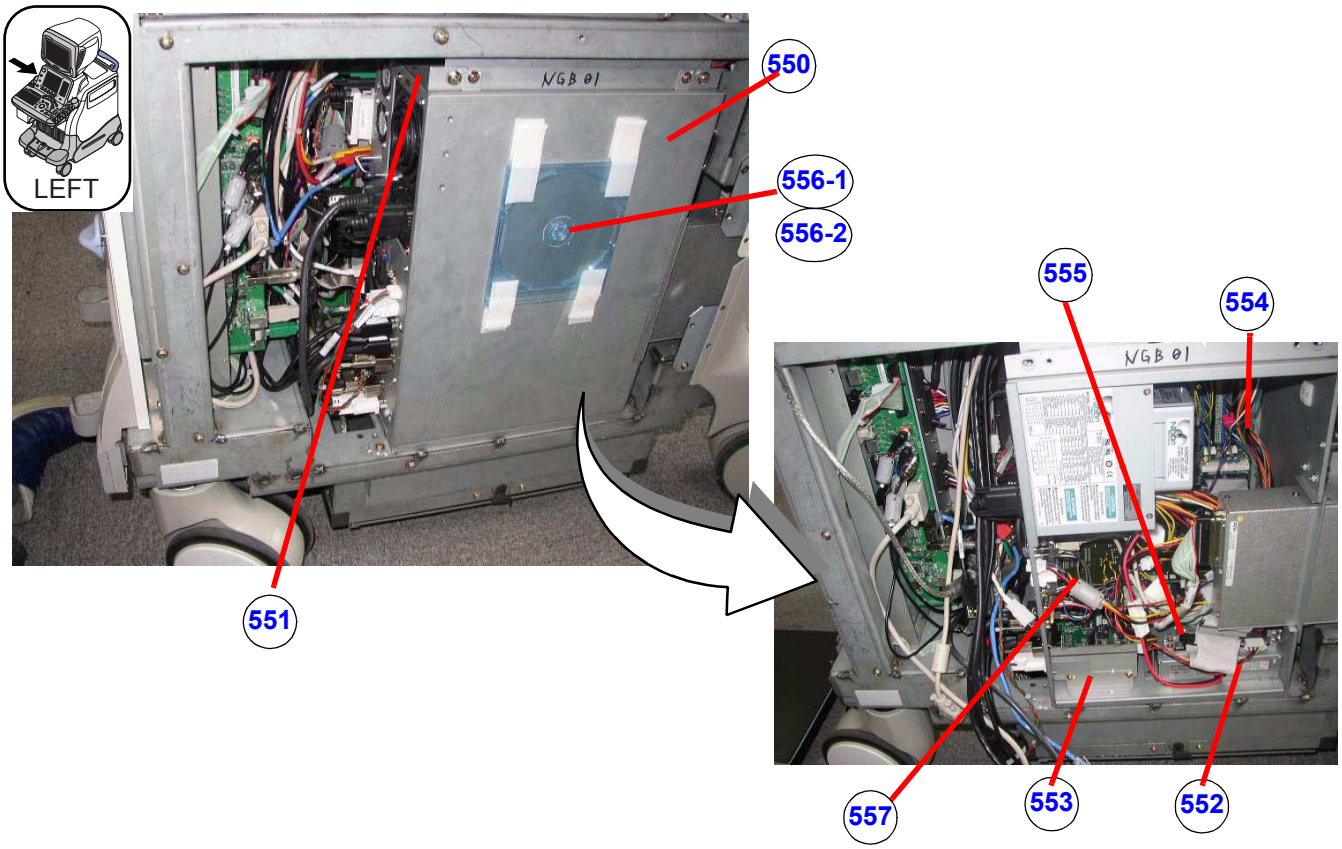


Figure 9-12 HDD and Battery

Table 9-32 HDD and Battery

Item	Part Name	Part Number	Description	Qty	FRU
550	BECOMPSW3 SVC CSL L7	5119906-3	Obsolete, Replaced by 5119906-4. Do NOT use this parts!	1	1
550	BECOMPSW3 SVC	5119906-4	See Reuse Parts List below.	1	1
-	CPU Battery	-	Included on the CPU Board. Type: CR2032, Lifetime: Approx. 10 years	1	N
551	USB MODEM	5120503	USB modem (Option)	1	1
552	UPS BATTERY PACK	2304809-2	battery of ATX power supply	1	1
553	DGPCIO/VIC2-SVC	5133526		1	1
554	EXTENDED MEMORY3 L7	5118511	Option.	-	2
555	HD L7	5118510	80GB, Installed in the PC box.	1	1

Table 9-32 HDD and Battery

Item	Part Name	Part Number	Description	Qty	FRU
556-1	BASE SYSTEM SOFTWARE	-	Ghost CD. Contact your Online center. Part Number depends on application version.	1	1
556-2	APPLICATION SOFTWARE	-	Ghost CD. Contact your Online center.	1	1
557	PC2IP2B	FC200656	Only support BECOMP3	1	1
-	G550 Video ard AGP	2362887	For CRT Monitor System	1	1
-	BECOMP3 Rear Fan	5142743		1	1

Reuse Parts List

When replacing the BECOMP SW3 SVC CSL L7, the following parts must be reused.

- Extended Memory
- PC2IP
- UPS
- DGVIC
- Video Card
  - G550 for CRT
  - G450 for LCD
  - SONO64 for LCD

9-9-14 Power Units

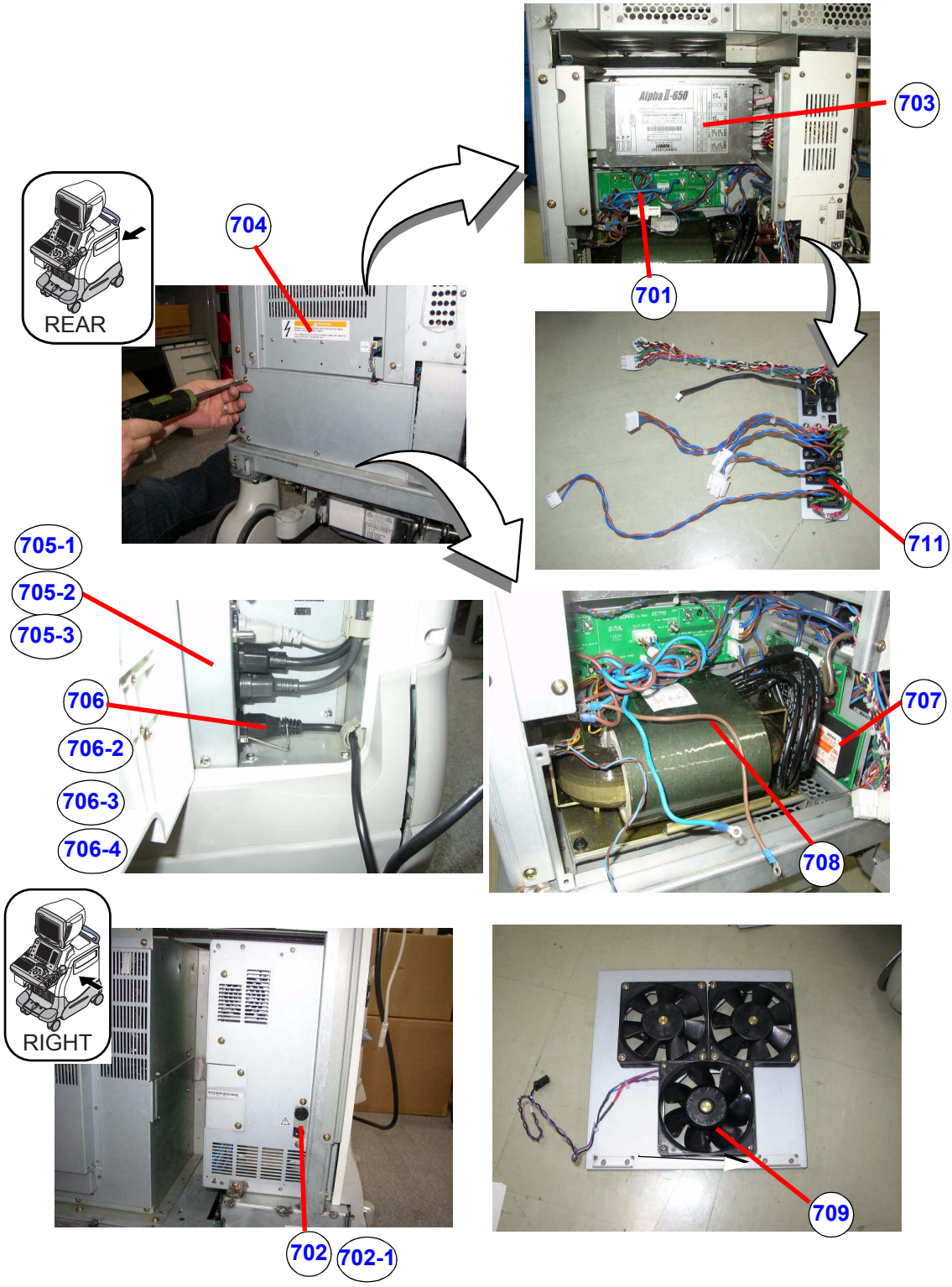


Figure 9-13 Power Units

9-9-14 Power Units (cont'd)

Table 9-33 Power Units

Item	Part Name	Part Number	Description	Qty	FRU
701	SSR ASSY	5117726	SSR + CONNECTOR PCB	1	1
702	FUSE HOLDER ASSY	5117727	Without fuse	1	1
702-1	FUSE	2315585	F1, 200V, T12V	1	1
-	LV -04 UNIT	5118824	Obsolete. Cannot use this part any longer, and the parts in stock have been purged.	-	-
703	LV UNIT ASSY MAIN PS L7	5118824-2	low voltage regulator + Cable	1	1
704	HV UNIT	2372387	high voltage regulator (Half height), including materials used when changing Full height HV unit to the Half height.	1	1
706	AC CORD 100V US	2371417	power cable of 100V, with clamp	1	1
706-2	AC CORD 100V JPN	2371416	For JAPAN, power cable of 100V, with clamp	1	1
706-3	AC CORD 200V EU	2371418	power cable of 200V, with clamp	1	1
706-4	AC CORD 200V China CCC	2371415-2	applied to Chaina CCC specifications	1	1
708	MAIN Transformer	2373331-2	power transformer	1	1
707	NF INLET Assy	5117723	Noise Filter + Inlet PCB	1	1
705-1	AC IN-OUT 100V	5117724		1	1
705-2	AC IN-OUT 200V	5117725		1	1
705-3	AC IN-200V OUT-100V	5118052	For Korea	1	1
711	Connector Assy	5117728		1	1
709	CONSOLE FAN ASSY2	5117493	3 fans for BT04, BT06	1	1
709	CONSOLE FAN ASSY A	5122614	For upgrade BT04, upgrade BT06	1	1
-	AIR FILTER A	5112530	UNDER NEST	1	2
-	AIR FILTER B	5112531	UNDER PC BOX	1	2
-	AIR FILTER C	5115806	UNDER RATING PLATE	1	2
-	SSR-HLV CABLE	5119119	CB107	1	1
-	SSR-AC PANEL CABLE	5119120	CB109	1	1
-	VOLTAGE SEL CABLE	5119121	CB108	1	1
-	FAN CABLE BRAKET ASSY	5117491		1	1
-	AC Cord UK & Ireland	5151455		1	2
-	AC Cord Denmark	5151457		1	2

Table 9-33 Power Units

Item	Part Name	Part Number	Description	Qty	FRU
-	AC Cord India & Africa	5151450		1	2
-	AC Cord Australian	5151453		1	1
-	AC Cord Argentina	5151454		1	1
-	AC Cord Israel	5151451		1	1
-	AC Cord Swiss	5151448		1	1

9-9-15 Options, Peripherals and Cables

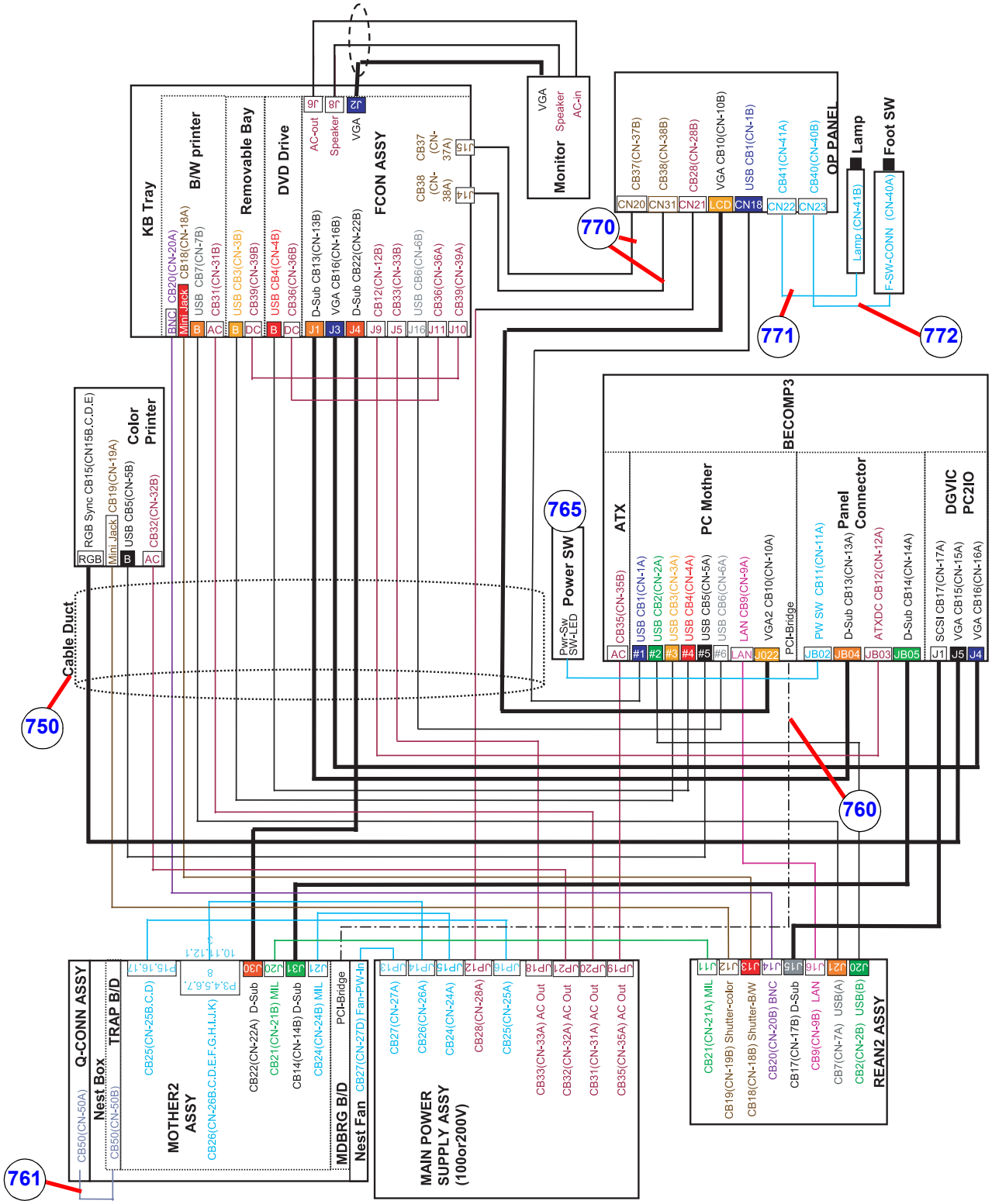


Figure 9-14 Options, Peripherals and Cables 1

9-9-15 Options, Peripherals and Cables (cont'd)

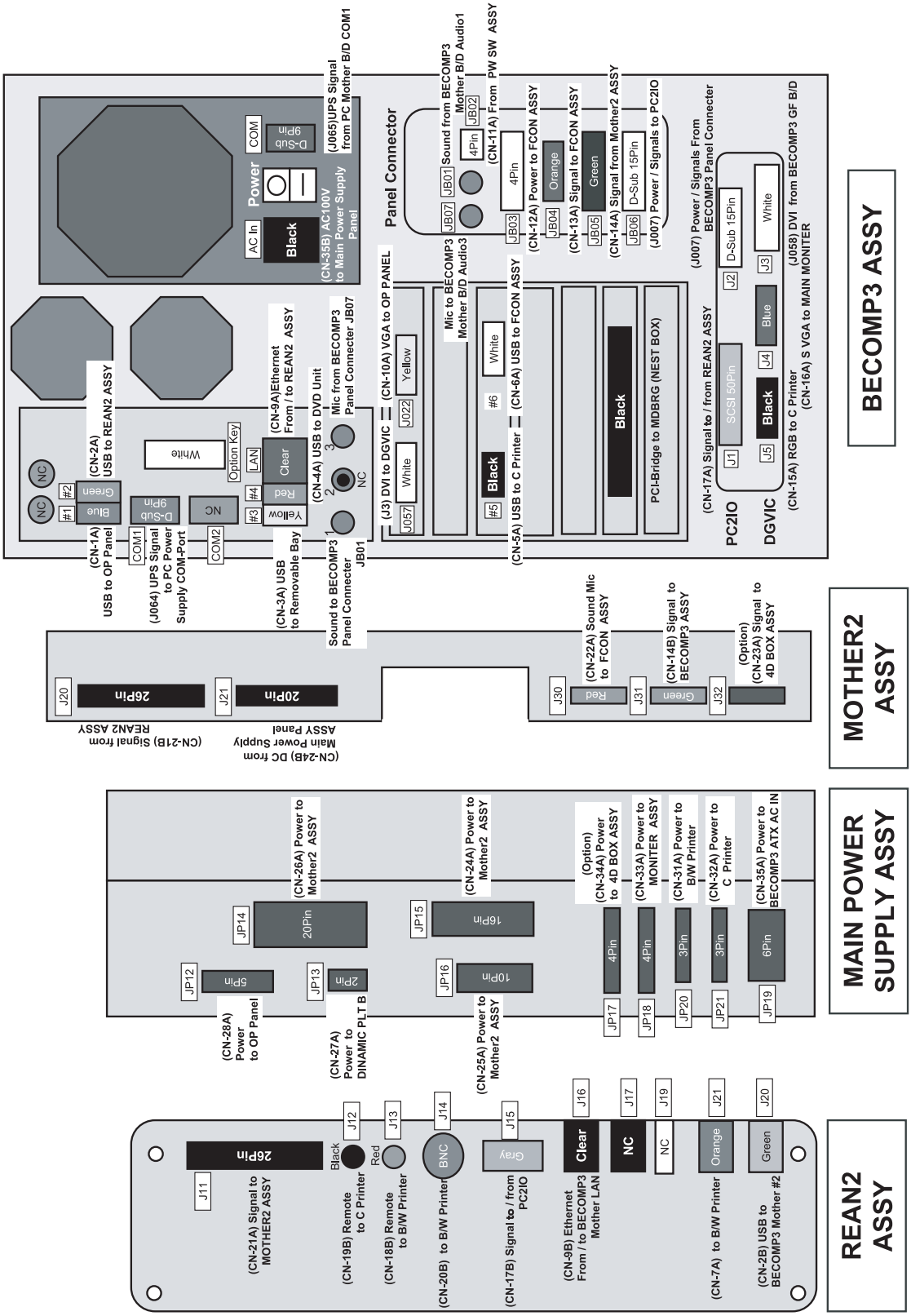


Figure 9-15 Options, Peripherals and Cables 2

9-9-15 Options, Peripherals and Cables (cont'd)

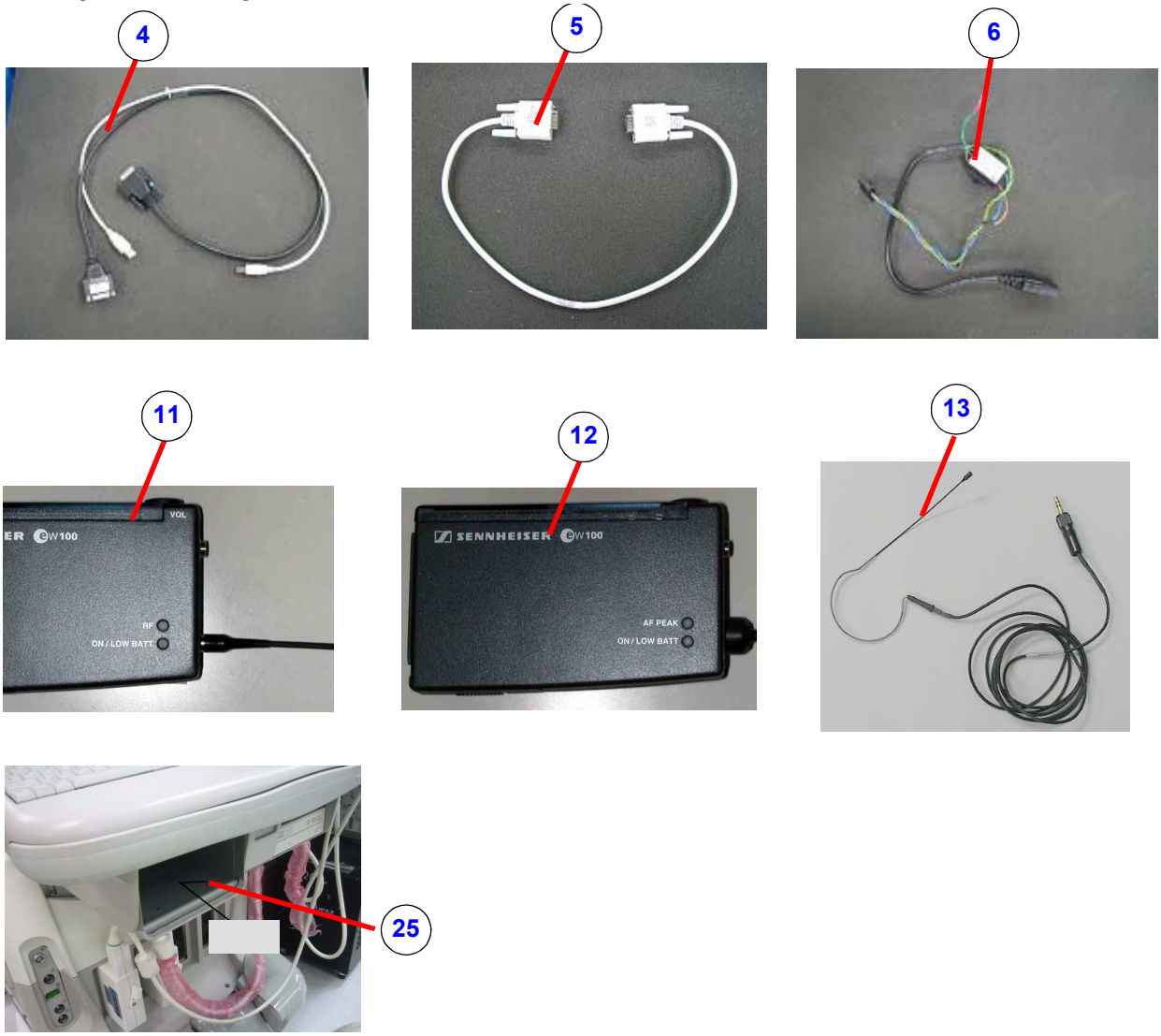


Figure 9-16 Options, Peripherals and Cables 3

Table 9-34 Options, Peripherals and Cables

Item	Part Name	Part Number	Description	Qty	FRU
-	CABLE DUCT ASSY	5117797	Obsolete. Cannot use this part any longer, and the parts in stock have been purged.	-	-
750	CABLE DUCT ASSY CSL L7	5117797-2	Including: USB LAN CABLE ASSY (CB1.CB2.CB3.CB4.CB6.CB9) DSUB CABLE ASSY (CB10.CB13.CB16.CB17.CB22) DEVIDE CABLE ASSY (CB5.CB15.CB19.CB32) BW CABLE ASSY (CB7.CB18.CB20.CB31) AC CABLE ASSY (CB12.CB28.CB33.CB35) Felite core added for noise reduction	1	2

Table 9-34 Options, Peripherals and Cables

Item	Part Name	Part Number	Description	Qty	FRU
760	PCI CABLE	2389075	MDBRG <-> PC2IP2	1	2
761	TX CABLE ASSY	2305111-3	QCON <-> TRAP	1	2
765	PW SW ASSY	2301858-3	Power Switch, SW Bracket CB011 (PC2IP BECOMP <-> MDBRG)	1	2
770	FCON Cable Assy	5117485	CB36 (FCON <-> DVD) CB39 (FCON <-> Removable Bay) CB37 (FCON <-> OP Panel) CB38 (FCON <-> OP Panel)	1	2
771	LAMP STAY ASSY	5117796	Lamp Stay Bracket CB41 (OP Panel <-> Lamp Stay)	1	2
772	FOOT SW Bracket ASSY	5117795	FOOT SWITCH BRACKET CB40 (OP Panel <-> Foot SW Connector)	1	2
-	FOOT SWITCH	FB200952	Foot Switch (Option)	1	2
-	PCG OPTION	2326844	phono microphone (Option)	1	2
-	USB SERIALBRIDGE CBL	2304621	Ext. Peripheral <-> L7	1	2
-	RS232C CABLE ASSY STRAIGHT	2305549	Ext. Peripheral <-> L7	1	2
-	RS232C CABLE ASSY CROSS	2305550-2	Ext. Peripheral <-> L7	1	2
-	ECG CBL SHORT	2304616	Ext. Patient <-> L7	1	2
-	ECG CBL LONG	2304615	Ext. Patient <-> L7	1	2
-	US CABLE FOR PERIPHERAL DEVICE	2324360	Ext. Peripheral <-> L7	1	2
-	Keyboard Knob Repair kit	2363861		1	2
-	Strap with Buckle	5115855		1	2
-	Foot for Printer	2318441		1	2
-	USB Conversion Adapter	5129258	B Type to A Type in Device room	1	2
-	PAT, I/O	FA200801		1	2
-	MON-CABLE-ASSY	2304171		1	2
4	4D-Mother2 Cable CSL L7	5138724	For 4D Option	1	1
5	4D Box cable Assy CSL L7	5138723	For 4D Option	1	1
6	4D AC cable CSL L7	5147891	For 4D Option	1	1
-	Cable Bracket For 4D ECG	5145578	For 4D Option	1	1
-	Cable Bracket For 4D non-ECG	5145579	For 4D Option	1	1
-	4D Motor Controller	2372904	For 4D Option	1	1
-	Cable, Bracket to Probe	2384183	For 4D Option	1	1
11	Wireless Receiver	5115162	For Voice Scan Option	1	1

Table 9-34 Options, Peripherals and Cables

Item	Part Name	Part Number	Description	Qty	FRU
12	Wireless Transmitter	5116453	For Voice Scan Option	1	1
13	MIcrophone	2383779	For Voice Scan Option, Over-the-ear style	1	1
-	Rechargable Battery Pack for Transmitter	5116454	For Voice Scan Option	1	1
-	Battery recharger station	5116446	For Voice Scan Option	1	1
22	LOGIQ7 Ghost CD for BEP3, R6.5.0	5182424	Ghost (Base Image) CD for R65x	1	1
23	LOGIQ7 R6.5.0 Application Software CD Release	5181894	Initial Release (M3). Related Ghost CD is 5182424.	1	1
24	LOGIQ7 R6.5.1 Application Software CD	5181894-2	Apr . 07 Release (M4) - compatible to 5181894 Related Ghost CD is 5182424.	1	1
25	BW PRINTER SHORT BOX FRU L7	5194980	For consoles V65x and afterward, Printer Box is “Short” type. Consoles with “Standard” type printer box, if not equipped with BW printer, can be converted to “Short” type using this FRU.	1	1
-	LQ-MD800P	5120592	DVD Recorder, 120V AC (PAL/NTSC compatible)	1	1
-	LQ-MD800E	5120593	DVD Recorder, 220V AC (PAL/NTSC compatible)	1	1

9-9-16 Probes

9-9-16-1 Probes (For the country other than Japan)

Table 9-35 Probes (For the country other than Japan)

Item	Part Name	Part Number	Description	Qty	FRU
801	3C PROBE (EXP)	2286354			1
802	3.5C PROBE (EXP)	2296158			1
803	5C PROBE (EXP)	2294516			1
804	M7CMIH PROBE (EXP)	2294514			1
805	E8C PROBE (EXP)	2294641			1
806	7L PROBE (EXP)	2294521			1
807	10L PROBE (EXP)	2294523			1
808	M12LMIH PROBE (EXP)	2294511			1
809	3S PROBE (EXP)	2323337			1
810	10S PROBE (EXP)	2298589			1
811	I12L PROBE (EXP)	2264883			1
812	P2D PROBE (EXP)	TE100024	PPA adapter is separately required.		1
813	P6D PROBE (EXP)	TQ100002	PPA adapter is separately required.		1
814	8C PROBE (EXP)	2348094			1
815	3.5CS PROBE (EXP)	2051858			1
816	6T TEE PROBE (EXP)	KN100068			1
817	M3S PROBE (EXP)	2295649			1
818	7S PROBE (EXP)	2347471			1
819	BE9C PROBE (EXP)	2389382			1
820	PPA adapter	2331934-2			1
821	T739 PROBE (EXP)	2259246			1
822	4D10L (EXP)	KTZ156836	4D OPTION required.		1
823	4D3C_L (EXP)	KTZ195893	4D OPTION required.		1
824	12L PROBE (EXP)	2295377			1
825	4C PROBE (EXP)	5123455			1

9-9-16-2 Probes for Japan

Table 9-36 Probes for Japan

Item	Part Name	Part Number	Description	Qty	FRU
851	3C PROBE (JPN)	2286353			1
852	3.5C PROBE (JPN)	2348877			1
853	5C PROBE (JPN)	2294515			1
854	M7CMIH PROBE (JPN)	2294513			1
855	E8C PROBE (JPN)	2294640			1
856	7L PROBE (JPN)	2294520			1
857	10L PROBE (JPN)	2294522			1
858	M12LMIH PROBE (JPN)	2294510			1
859	3S PROBE (JPN)	2348878			1
860	10S PROBE (JPN)	2309478			1
861	I12L PROBE (JPN)	2270556			1
862	8C PROBE	2348093			1
863	3.5CS PROBE	2380854			1
864	6T TEE PROBE	2294534			1
865	M3S PROBE	2293726			1
866	7S PROBE (JPN)	2355698			1
867	BE9C PROBE (JPN)	2389381			1
868	T739 PROBE (JPN)	2259245			1
869	PPA ADAPTER	2331934-2			1
870	4D10L (JPN)	5121651	4D OPTION required.		1
871	4D3C_L (JPN)	5121652	4D OPTION required.		1
872	12L PROBE (JPN)	2295375			1
873	4C PROBE (JPN)	5131944			1

9-9-17 LCD Option

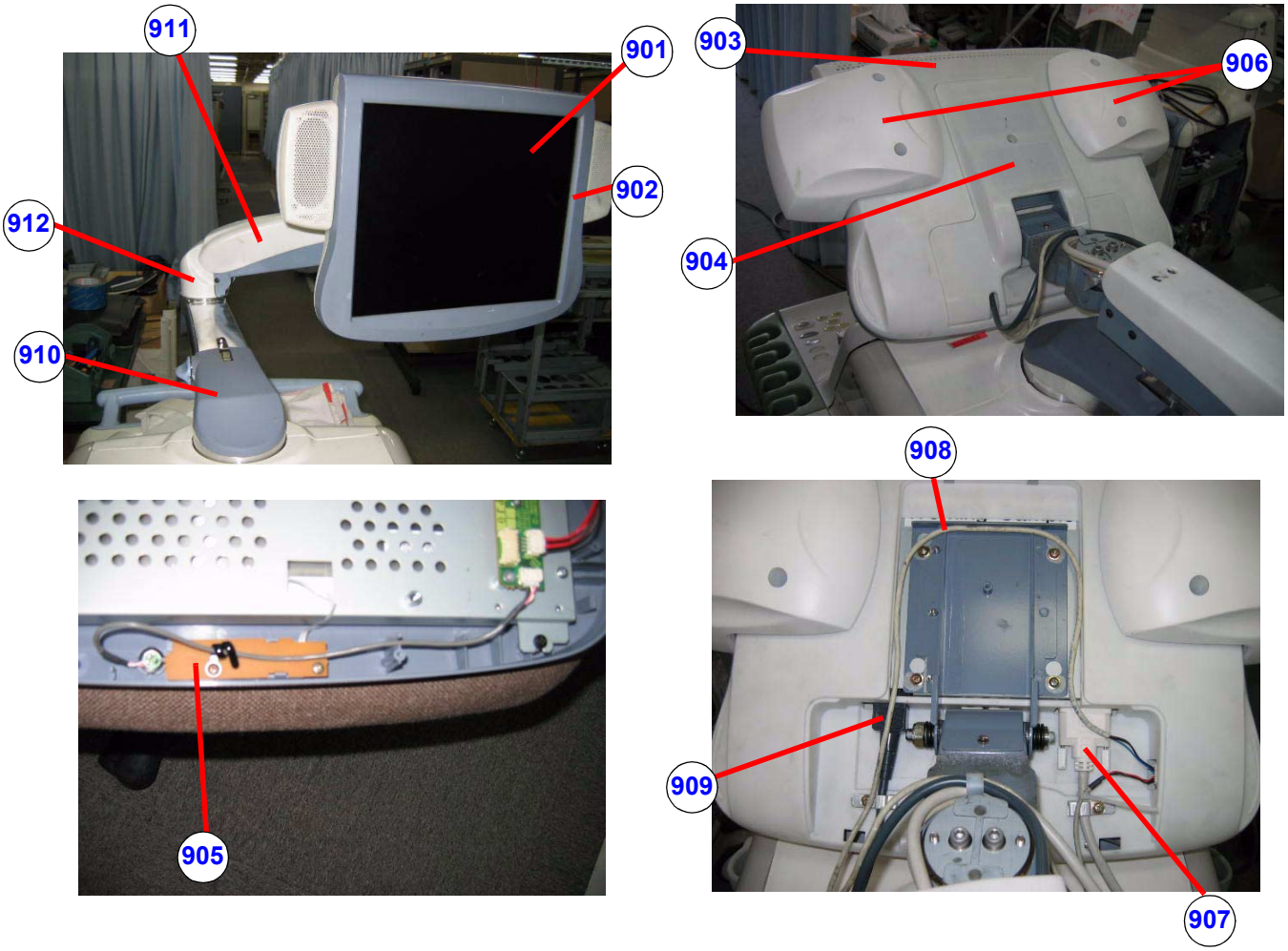


Figure 9-17 LCD Option

9-9-17 LCD Option (cont'd)

Table 9-37 LCD Option

Item	Part Name	Part Number	Description	Qty	FRU
901	17 inch LCD MONITOR ASSY	5169935-2	Monitor, not inclucing the following parts (102, 103, and 105)	1	1
902	PANEL FRONT LCD L7	5132572		1	2
903	PANEL REAR LCD L7	5132573		1	2
904	COVER VESA LCD L7	5132574	Rear VESA cover of 17" LCD monitor use for globally except for Korea.	1	2
904 (b)	FRU VESA COVER L7 17INCH FOR KOREA	5265097	Physically the same as 5132574, but with Korean caution Label.	1	2
905	SWITCH MIC_ASSY LCD_MONITOR	5137744	Set of SWITCH and MIC	1	1
906	SPEAKER SET (L&R) LCD L7	5132576	Including left and right speakers	1	1
907	LCD D-SUB CABLE ASSY CSL L7	5125391	DVI Cable from BECOMP3 to LCD	1	1
908	MIC_SPK CBL CSL_LCD L7	5137743	MIC and SPEAKER Cable from Front Conn2 to LCD	1	1
909	AC CABLE LCD ASSY LOGIQ7	5132394	AC Ccable from FrontConn2 to LCD	1	1
-	LCD ARM LCD L7	5132571	Arm assy includes covers (911 and 912). Obsolete, Replaced by 5132571-2. Do NOT use this parts!	-	-
-	LCD ARM LCD L7	5132571-2	Arm assy includes covers (911 and 912). Obsolete. Use FRU 5264730 to upgrade this part to -4 if stock remains.	-	-
-	LCD ARM LCD L7	5132571-3	Arm assy includes covers (911 and 912). Obsolete. Use FRU 5264730 to upgrade this part to -4 if stock remains.	-	-
910	LCD ARM LCD L7	5132571-4	Arm assy includes covers (911 and 912). Improved rotational limiter plate. For Korea console, Arm Joint (912(b)) must be re-used.	1	2
911	ARM COVER LCD L7	5136256		1	2
912	ARM JOINT COVER LCD L7	5136257	Arm plastic cover / joint. Common part between 17" and 19" LCD Monitor arm.	1	2
912 (b)	FRU ARM JOINT COVER LCD L7 FOR KOREA	5271234	Physically the same as 5136257, but caution label in Korean Lanugage.	1	2
-	Monitor Screws LCD L7	5137688	Special screw set used on LCD monitor	1	2
-	DUAL DVI AGP	5111298	Video card for LCD monitor in BECOMP3. Obsolete, Replaced by 5111298-2. Do NOT use this parts!	1	1
-	DUAL DVI AGP	5111298-2	Video card for LCD monitor in BECOMP3	1	1
-	PCI VGA	5121039	Video card for Touch panel in BECOMP3	1	1

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Section 9-10
Renewal Parts List for BT03 or lower

This section describes the BT03 or lower system FRU.

9-10-1 Equipment Models Covered in this Chapter

Table 9-38 Material List

Part Name	Part Number	Quantity										Description
OPERATOR CONSOLE ASSY	2287317	1										100V, NTSC
OPERATOR CONSOLE ASSY	2304806		1			1						120V, NTSC
OPERATOR CONSOLE ASSY	2304807			1			1					220V, PAL
OPERATOR CONSOLE ASSY	2304808				1							220V, NTSC
OPERATION MANUAL	2286866-140	1										
OPERATION MANUAL	2286866-100		1	1	1							
ADV. REFERENCE MANUAL	2291860-140	1										
ADV. REFERENCE MANUAL	2291860-100		1	1	1							
SERVICE MANUAL	2286865		1	1	1							
QUICK GUIDE	2291859-140	1										
QUICK GUIDE	2291859-100			1	1							
WARRANTY CARD	P9889AH	1										
TASK LAMP	2301853-4	1	1	1	1							
Gel	U0403BD	1	1	1	1	1	1					
JAPAN (H76002, 2286864)												
USA (H44002LA, 2286864-2)												
EUROPE (H44002LB, 2286864-3)												
KOREA (H44002LC, 2286864-4)												
ASIA (H44002LD, 2286864-5)												
ASIA (H44002LE, 2286864-6)												

9-10-1 Equipment Models Covered in this Chapter (cont'd)

Table 9-39 Material List (For Style B/Ver.2)

Part Name	Part Number	Quantity											Description
OPERATOR CONSOLE ASSY	2354857	1											100V, NTSC
OPERATOR CONSOLE ASSY	2354858		1			1							120V, NTSC
OPERATOR CONSOLE ASSY	2354859			1			1						220V, PAL
OPERATOR CONSOLE ASSY	2354860				1								220V, NTSC
OPERATOR CONSOLE ASSY	2355589							1					100V, NTSC
OPERATION MANUAL	2286866-140	1						1					
OPERATION MANUAL	2286866-100			1	1	1	1						
ADV. REFERENCE MANUAL	2291860-140	1						1					
ADV. REFERENCE MANUAL	2291860-100			1	1	1	1						
SERVICE MANUAL	2286865			1	1	1	1						
QUICK GUIDE	2291859-140	1						1					
QUICK GUIDE	2291859-100			1	1	1	1						
WARRANTY CARD	P9889AH	1						1					
TASK LAMP	2301853-4	1	1	1	1								
Gel	U0403BD	1	1	1	1	1	1						
B-Flow	2297481	1						1					
Application Software CD (R2.1.0) or	2362291	1	1	1	1	1	1	1					
Application Software CD (R2.1.1) or	2372267	1	1	1	1	1	1	1					
Application Software CD (R2.1.3)	2384238	1	1	1	1	1	1	1					

JAPAN (2354838)
USA (2354838-2)
EUROPE (2354838-3)
KOREA (2354838-4)
ASIA100 (2354838-5)
ASIA220 (2354838-6)
JAPAN-A (2354838-7)

9-10-1 Equipment Models Covered in this Chapter (cont'd)

Table 9-40 Material List (For Style C/Ver.3)

Part Name	Part Number	Quantity											Description
OPERATOR CONSOLE ASSY	2389221	1											100V, NTSC
OPERATOR CONSOLE ASSY	2389220		1			1							120V, NTSC
OPERATOR CONSOLE ASSY	2389219			1			1						220V, PAL
OPERATOR CONSOLE ASSY	2389218				1								220V, NTSC
OPERATOR CONSOLE ASSY	2389217							1					100V, NTSC
OPERATION MANUAL	2286866-140	1						1					
OPERATION MANUAL	2286866-100			1	1	1	1						
ADV. REFERENCE MANUAL	2291860-140	1						1					
ADV. REFERENCE MANUAL	2291860-100			1	1	1	1						
SERVICE MANUAL	2286865		1	1	1	1	1						
QUICK GUIDE	2291859-140	1						1					
QUICK GUIDE	2291859-100			1	1	1	1						
WARRANTY CARD	P9889AH	1						1					
RELEASE NOTE	2382150-140	1						1					
RELEASE NOTE	2382150-100			1	1	1	1						
QUICK CARD	2318541-140	1						1					
QUICK CARD	2318541-100			1	1	1	1						
L7 HILIGHT DOCUMENT	2363423-140	1						1					
Application Software CD (R3.0.2) or	2396166	1	1	1	1	1	1	1					
Application Software CD (R3.0.4) or	2400261	1	1	1	1	1	1	1					
Application Software CD (R3.0.6) or	2403327	1	1	1	1	1	1	1					
Application Software CD (R3.0.8)	5112719	1	1	1	1	1	1	1					
JAPAN (2389216)													
USA (2389216-2)													
EUROPE (2389216-3)													
KOREA (2389216-4)													
ASIA100 (2389216-5)													
ASIA220 (2389216-6)													
JAPAN-A (2389216-7)													

9-10-2 Monitor

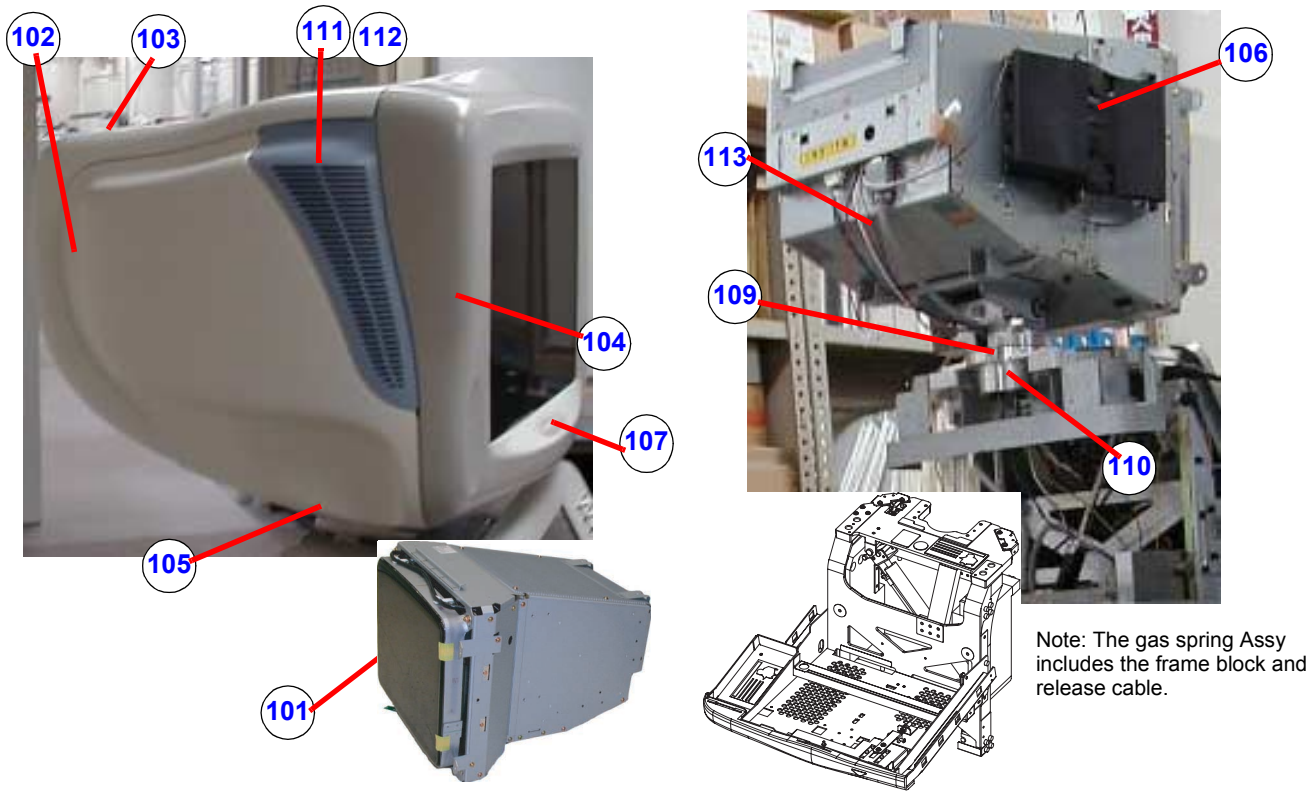


Figure 9-18 Monitor

Table 9-41 Monitor

Item	Part Name	Part Number	Description	Qty	FRU
101	CRT MONITOR ASSY	2283334-5	Monitor, not inclucing the following parts (102 ~ 113)	1	1
102	MON-REAR-WSP-ASSY	2303930	Rear cover of monitor use for globally except for China and Korea.	1	2
102 (b)	FRU MON-REAR-WSP-ASSY FOR CHINA	5264592	Physically the same as 2303930, but with Chinese caution Label.	1	2
102 (c)	FRU MON-REAR-WSP-ASSY FOR KOREA	5271314	Physically the same as 2303930, but with Korean caution Label.	1	2
103	MON-CAP-ASSY	2303932	cap to cover screws	1	2
104	MON-FRONT-ASSY	2303929-3	front cover of monitor	1	2
105	NECK ASSY	2347387		1	2
106	SPEAKER & BRACKET ASSY	2386616 or 2297882	2386616 for R3.xx or later software 2297882 for R2.xx or lower software	2	2
107	USER SW ASSY OF MONITOR	2297050	microphone and switch	1	2
109	NECH-BASE-ASSY	2303933	mechanical	1	2
110	GAS-SPRING-ASSY	2304787	gas spring including release cable and mechanical	1	2

Table 9-41 Monitor

Item	Part Name	Part Number	Description	Qty	FRU
111	Grill, Left	2279675		1	2
112	Grill, Right	2279676		1	2
113	MON-Cable-Assy	2304171	cable	1	2

9-10-3 Casters and Pedals

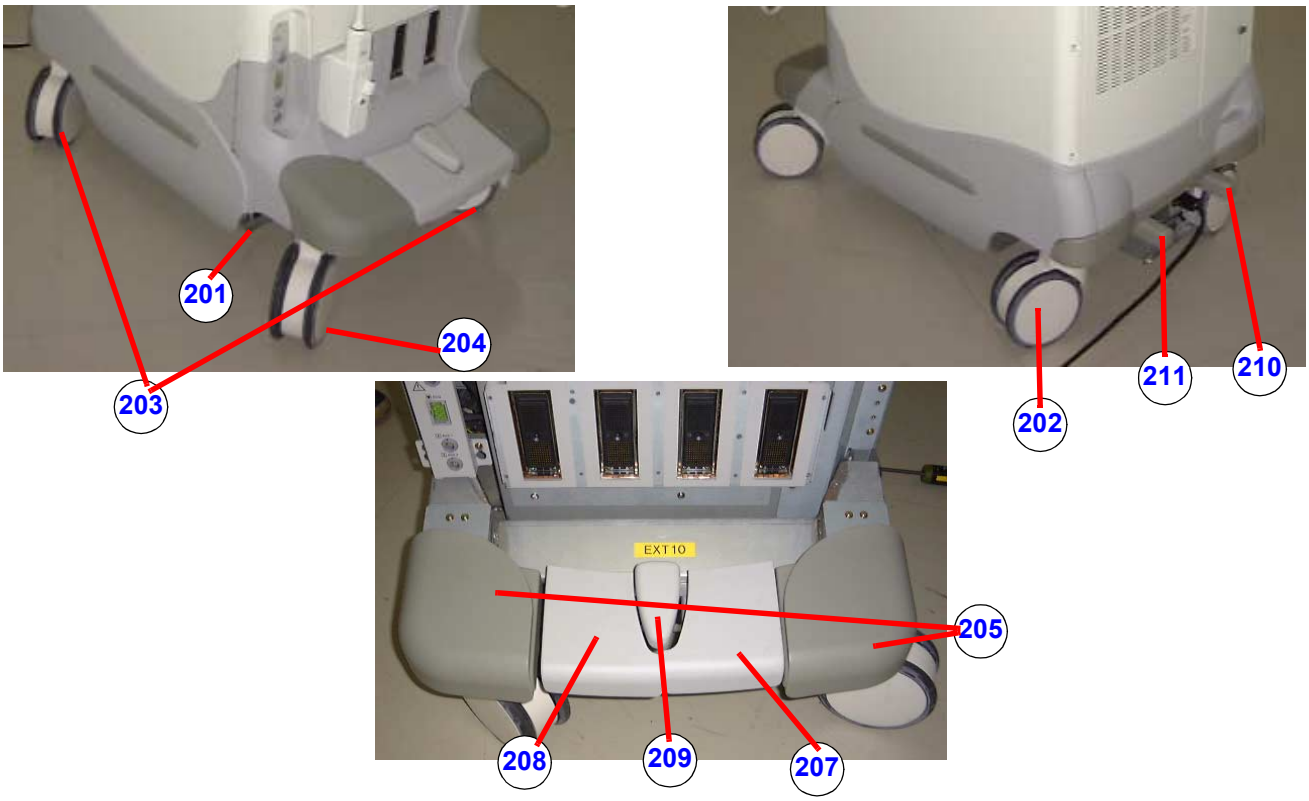


Figure 9-19 Casters and Pedals

Table 9-42 Casters and Pedals

Item	Part Name	Part Number	Description	Qty	FRU
201	CASTER LINK ASSY	2304800	entire brake mechanism	1	2
-	CASTER SWIVEL	2379694-2 or 2307311	Obsolete. Do not use these parts.	-	-
202	CASTER SWIVEL	5233773	swivel, rear right. Improved rubber type (anti-stain).	1	2
-	CASTER LOCK	2379695 or 2307312	Obsolete. Do not use these parts.	-	-
203	CASTER LOCK	5233774	lock, front right and rear left. Improved rubber type (anti-stain).	2	2
-	CASTER FREE	2379693-2 or 2307301	Obsolete. Do not use these parts.	-	-
204	CASTER FREE	5233772	free, front left. Improved rubber type (anti-stain).	1	2
205	FRONT-BUMPER-ASSY	2315419	front bumper, left and right	1	2
207	PEDAL-R	2291870	rubber pedal for brake caster lock	1	2
208	PEDAL-L	2291869	rubber pedal for brake caster lock	1	2
209	PEDAL CENTER	2291871	rubber pedal for brake caster lock	1	2

Table 9-42 Casters and Pedals

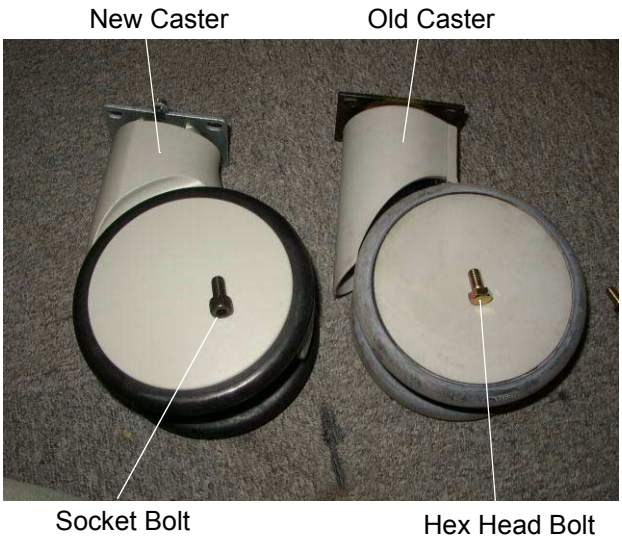
Item	Part Name	Part Number	Description	Qty	FRU
210	PEDAL-REAR-REL	2304908	rear pedal	1	2
211	PEDAL-REAR-SWL	2304909	rear pedal	1	2
-	CASTER SET	2381035	Obsolete. Do not use these parts.	-	-
-	CASTER SET	2381035-2	Obsolete. Do not use these parts.	-	-
-	CASTER SET	2381035-3	See Note. Improved rubber type (anti-stain).	1	2

9-10-3 Casters and Pedals (cont'd)

NOTE: The new type of the Caster already has been released. The differences between old and new types of the caster are the shape and attaching hardware as shown.

- If you replace a caster from the old type to the new one:
  Order **Caster FRU Assy (2381035-x; FRU2)**. This contains 4 casters (One Free Caster, One Swivel Lock Caster, and Two Total Lock Caster) and 16 attaching bolts. This mean that you must replace ALL of the four casters as an assembly when replacing a caster.

- If you replace a caster for the system with a new type of the caster installed:
  Order **Caster (5233772/Free, 5233773/Swivel Lock, or 5233774/Total Lock; FRU2).** This is only one caster (with no bolt).



9-10-4 Plastic Covers

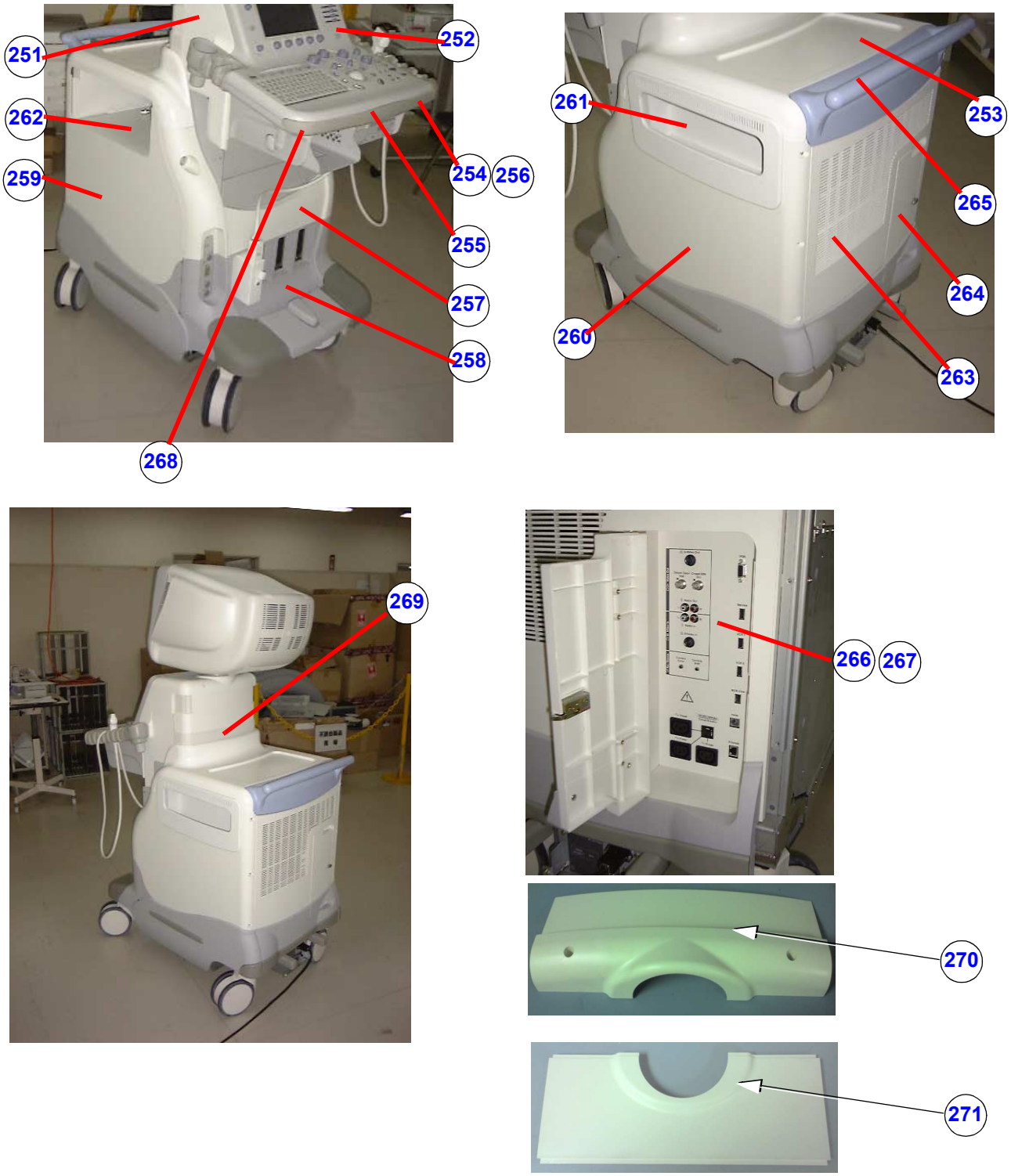


Figure 9-20 OP Panel and Keys

9-10-4 Plastic Covers (cont'd)

Table 9-43 OP Panel and Keys

Item	Part Name	Part Numbers	Description	Qty	FRU
251	KB COVER LEFT	2282547	upper left cover of keyboard (under monitor)	1	2
252	KB COVER RIGHT	2282548	upper right cover of keyboard (under monitor)	1	2
253	COVER-TOP	2315418	top cover	1	2
254	KB COVER BOTTOM	2282546	plastic cover under keyboard	1	2
255	UP/DOWN-KNOB-ASSY	2304820	handle for keyboard up/down, wire	1	2
256	ECG CABLE HOOK	2283028	hook under keyboard	1	2
257	FRONT COVER TOP	2304765-2	upper cover around probe connector	1	2
258	FRONT COVER UNDER	2304766-2	lower cover around probe connector	1	2
259	SIDE COVER L ASSY	2304769	plastic cover, including bracket	1	2
260	SIDE COVER R ASSY	2304770	plastic cover, including bracket	1	2
261	SIDE-POCKET	2291872	cover of peripheral room with pocket	1	2
262	SIDE-FRINGE	2303896	cover of peripheral room without pocket	1	2
263	REAR COVER ASSY	2304767-2	plastic cover	1	2
264	REAR DOOR ASSY	2304768	door for peripherals connector, including latch	1	2
265	HANDLE	2309857	rear handle	1	2
266	REAR CONN ASSY	2304618	rear connector for peripherals	1	2
267	REAR CONN 220V ASSY	2304622	rear connector for peripherals	1	2
268	KB BUMPER	2283014	Operation panel bumper	1	2
269	KB BLIND REAR Assy	2304780	Lower cover at Neck portion	1	2
270	KB Rear Assy	2304776		1	2
271	BK Cover Top	2282549		1	2

9-10-5 Recording Devices

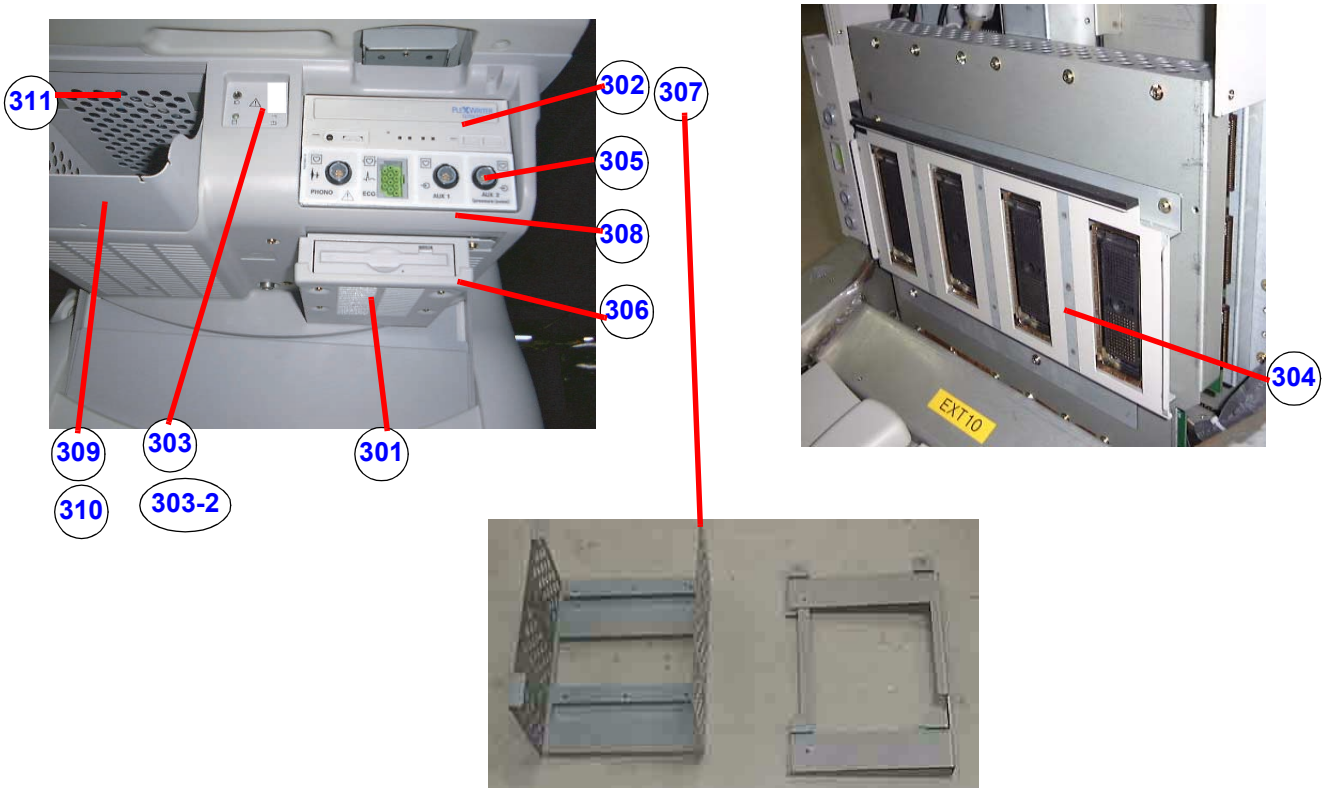


Figure 9-21 Recording Devices

Table 9-44 Recording Devices

Item	Part Name	Part Number	Description	Qty	FRU
301	MOD Option Kit	2355070 or 2307450	Either 2355070 (1.3GB drive) or 2307450 (230MB drive) are available.	1	1
302	CD-RW-SVC	2375462 (or 2304918)	cd-r/w drive 2375462 includes CD-RW, Ghost CD, and manual.	1	1
303	FRONT-IF-ASSY	2324098	front connector for peripherals	1	1
303-2	FRONT CONTROL ASSY	2302393	front connector for peripherals	1	2
304	QCON ASSY	2304617-5	PCON+PSEL+bracket	1	2
305	PAT. I/O	FA200801	for ecg	1	1
306	MOD Fixture Kit	2308066		1	2
-	DVD unit	2388429-5	Obsolete. Acceptable to use the part if remained in stock.	-	-

Table 9-44 Recording Devices

Item	Part Name	Part Number	Description	Qty	FRU
307	DVD unit 6	2388429-6	For R3.xx or later software ONLY If the system is upgraded from CD-RW to DVD, order DVD installation kit (2389332).	1	1
308	5 inch bay Assy	2389204	For installation of the DVD unit ONLY	1	2
309	B/W PRINTER TRAY ASSY	2324611	Including Printer Tray, Inner box, and bumper	1	2
310	B/W PRINTER TRAY	2283002		1	2
311	B/W PRINTER BUMPER	2301001		1	2

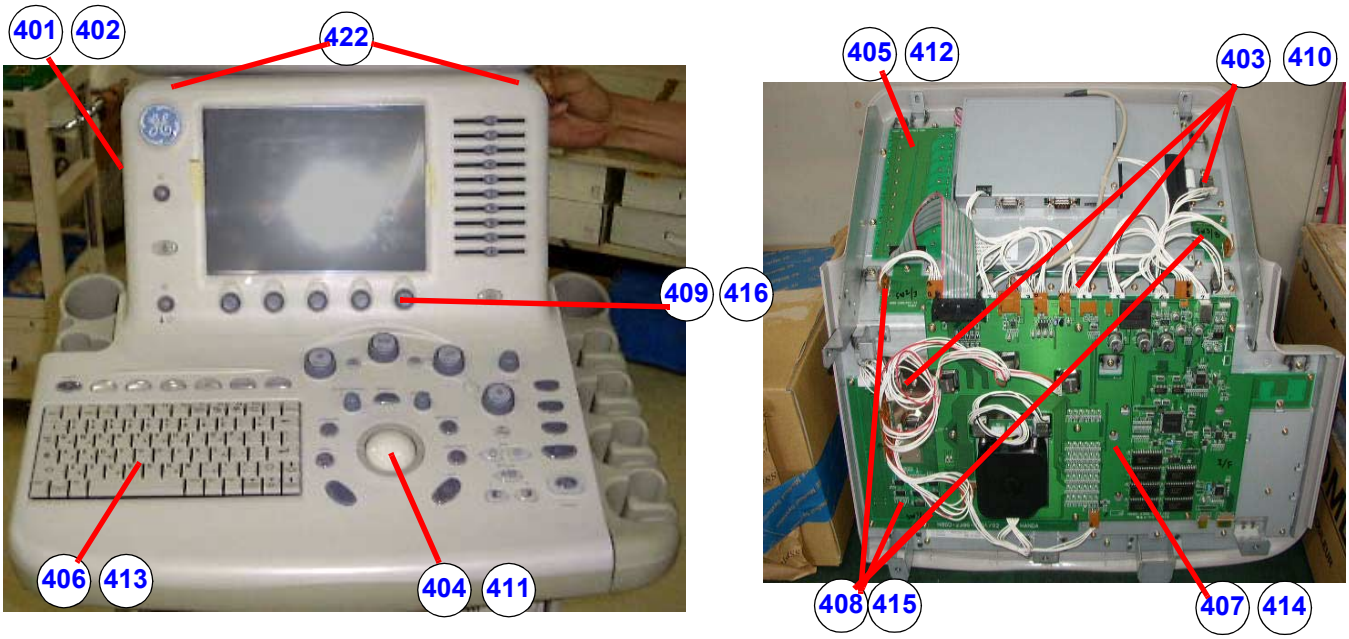
9-10-6 Probe Holder

Figure 9-22 Probe Holder

Table 9-45 Probe Holder

Item	Part Name	Part Number	Description	Qty	FRU
350	PROBE HOLDER R ASSY	2296738	rubber holder with bracket	1	2
351	PROBE HOLDER L1 ASSY	2296736	rubber holder with bracket	1	2
352	TV HOLDER ASSY	2296740	rubber holder for TV	1	2
353	GEL HOLDER R ASSY	2296741	includes bottom	1	2

9-10-7 OP Panel and Keys



Note: The task lamp is wrapped by heat-shrinkable tape around its lamp portion. Do NOT remove it !!!

Figure 9-23 OP Panel and Keys

9-10-7 OP Panel and Keys (cont'd)

Table 9-46 OP Panel and Keys

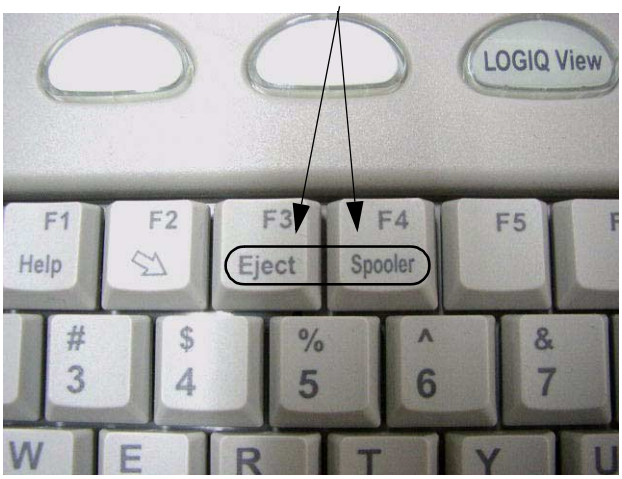
Item	Part Name	Part Number	Description	Qty	FRU
401	KEYBOARD ASSY	5138507-2	whole keyboard, (Obsolete, Replaced by 5138507-3)	1	1
401	SVC KEYBOARD L7	5138507-3	whole keyboard, this includes sub-items marked (a), below	1	1
402	KEYBOARD ASSY	2267259-2	whole keyboard, this includes sub-items marked (b) below (Parts no longer supplied. Replaced by 5138507-3)	1	1
403	ROTARY ENCODER ASSY	2369826	OBSOLETE (a) Three rotary encoders with cables. Three groups of encoders with cables and metal stay. In total, there are 14 encoders in this FRU.	1	1
403	ROTARY ENCODER ASSY	2369826-2	(a) Three rotary encoders with cables. Three groups of encoders with cables and metal stay. In total, there are 14 encoders in this FRU. This version contains two types of LCD brightness adjustment knob and instruction.	1	1
404	TRACKBALL ASSY	2369823	(a) trackball, two cables w/o bracket	1	1
405	TGC ASSY	2369822	(a) TGC PCB Assy, bracket, cable w/o TGC knobs	1	1
406	A/N KBD ASSY	2369818	(a) board of a/n key switch	1	1
407	I/F BOARD ASSY	2369817	(a) I/F PCB ASSY, Mic cable, USB cable	1	1
408	SW BOARD ASSY	2369815	(a) Three SW PCB Assy, rubber sheets, two cables	1	1
409	KEY ACCESSORY SET	2369816-2	(a) A/N keytops, all encoder knobs, all clear key caps, labels (For knob repair, order 2363861 repair kit.)	1	2
410	ROTARY ENCODER ASSY	2299448	(b) Three rotary encoders with cables. Three groups of encoders with cable. In total, there are 14 encoders in this FRU. (FRU for 2267259-2 keyboard)	1	1
411	TRACKBALL ASSY	2299451	(b) trackball, two cables w/o bracket (FRU for 2267259-2 keyboard)	1	1
412	TGC ASSY	2299452	(b) TGC PCB Assy, bracket, cable w/o TGC knobs (FRU for 2267259-2 keyboard)	1	1
413	A/N KBD ASSY	2299453	(b) board of a/n key switch (FRU for 2267259-2 keyboard)	1	1
414	I/F BOARD ASSY	2306270	(b) I/F PCB ASSY, Mic cable, USB cable (FRU for 2267259-2 keyboard) This part no longer available. Order new SVC Keyboard 5138507-3 for repair.	1	1
415	SW BOARD ASSY	2306273	(b) Three SW PCB Assy, rubber sheets, two cables (FRU for 2267259-2 keyboard)	1	1
416	KEY ACCESSORY SET	2306274	(b) A/N keytops, all encoder knobs, all clear key caps, labels (For knob repair, order 2363861 repair kit.) (FRU for 2267259-2 keyboard)	1	1
-	CLEAR KEYCAP & LABEL	2398354-2	Clear Cap and Label set	1	2

Table 9-46 OP Panel and Keys

Item	Part Name	Part Number	Description	Qty	FRU
418	TASK LAMP ASSY	2301853-4	task light	1	1
419	LAMP ASSY	2301857	Lampstay and cable (inside the L7)	1	2
420	TASK LAMP KNOB	2304620	knob	1	2
421	LIGHT BULB	2357676	BULB ONLY	1	2
422	CAP	2239428	CAP FOR SCREW HOLE	1	2
-	AN KEY RUSSIA	2375159	Only for KBD 5138507-3	1	2
-	AN KEY GREEK	2371160	Only for KBD 5138507-3	1	2

Note: How to differentiate the keyboards, 2267259-2 and 2344632-xx:

The keyboard 2344632-xx “F3” and “F4” contain “Eject” and “Spooler”.



Keyboard 2344632-xx

Keyboard 2267259-2

9-10-8 Circuit Board Assemblies

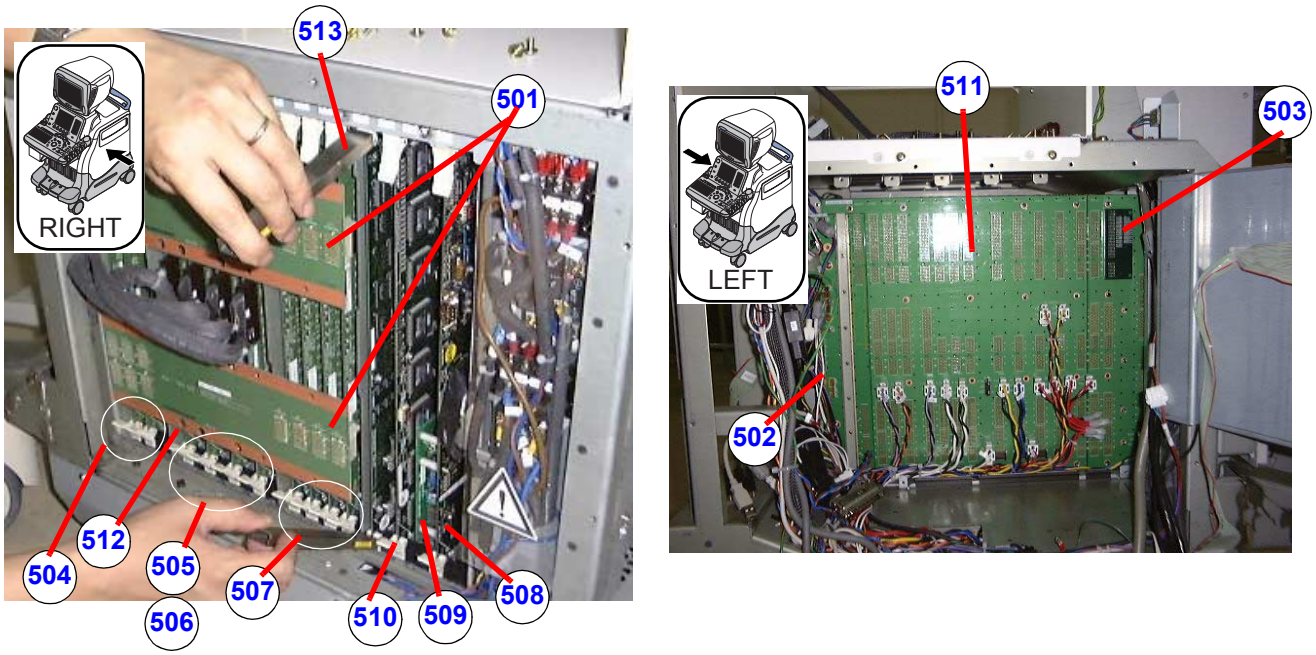


Figure 9-24 Circuit Board Assemblies

Table 9-47 OP Panel and Keys

Item	Part Name	Part Number	Description	Qty	FRU
501	EBUS ASSY	2271702-2	"-2 or later" board must be used for STCW Option.	2	1
502	MDCON ASSY	2273295	board in nest	1	1
503	TERMINATOR ASSY	2268026	board	1	2
504	PREA ASSY	2264596-2	board in nest, slot 1 - 2	1	1
505	TRAP2 Assy	2323353-4	New TRAP board in nest slot 4- 7. When 2264598 TRAP is discontinued, order this TRAP2 Assy. However, for the board inserted into Slot 5 only, the TRAP2 Assy MUST be installed. If it is not, the STCW option can not be installed later.	1	1
506	TRAPCW ASSY	2323450-4	board in nest, slot 4 - 7	1	1
507	DDBF ASSY	2357804	board in nest, slot 8 - 11 Including DDBF Assy 2264600-4 and "-3" conversion kit (ROM + "-3" label + instructions)	1	1
508	SINANO ASSY	2264602-3	board in nest, slot 12	1	1
509	PROMP ASSY	2264604-2	board in nest, slot 13 "-2 or later" must be used for STCW option.	1	1
510	MDBRG ASSY	2264606-5	board in nest, slot 15 "-5 or later" must be used for 6T probe.	1	1
511	MOTHER ASSY	2264608-3	board	1	1

Table 9-47 OP Panel and Keys

Item	Part Name	Part Number	Description	Qty	FRU
-	STCW ASSY	2277244-4	board in nest, slot 2 (option). Obsolete, but acceptable to use if in stock.	-	-
512	STCW ASSY	2277244-5	Compatible with -4. Minor change due to delay line EOL and resistor change.	1	1
513	NEST Board JIG Assy	2315492	Tools to remove a board in the NEST Assy	1	2

9-10-9 HDD and Battery

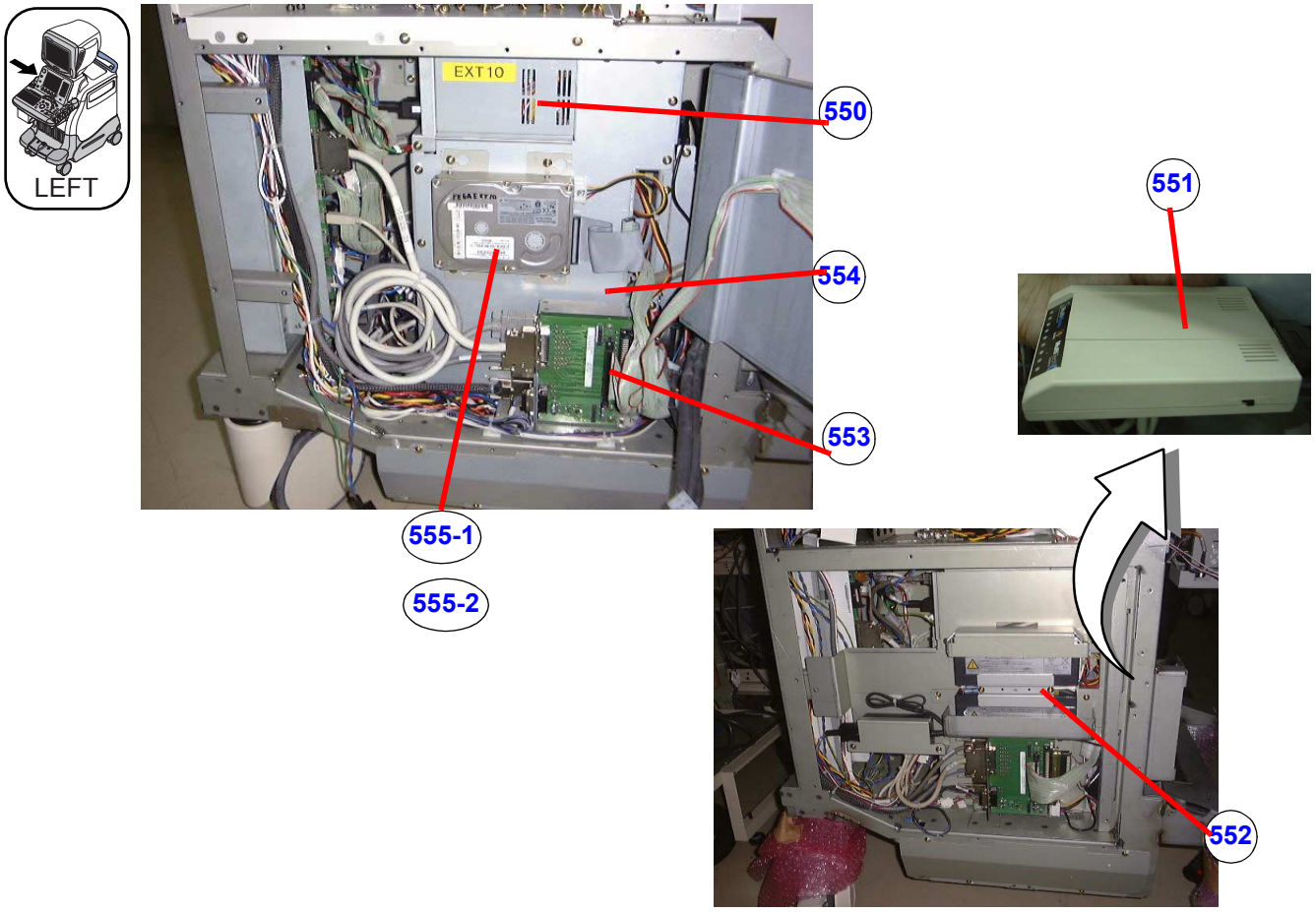


Figure 9-25 HDD and Battery

Table 9-48 HDD and Battery

Item	Part Name	Part Number	Description	Qty	FRU
550	BECOMPSW2-SVC	2384945-3	PC Box. Refer to the table below for proper selection.	1	1
-	BECOMP3 SV Kit for Replacing BEP1/ BEP2	5136903	Refer to the table below for contents.	1	1
-	CPU Battery	-	Included on the CPU Board. Type: CR2032, Lifetime: Approx. 10 years	1	N
551	GLOBAL MODEM KIT	2245794	global modem (Option)	1	1
552	UPS BATTERY PACK	2304809-2	battery of ATX power supply	1	1
553	DGPCIO/VIC2-SVC	2384944	Refer to the table below for proper selection.	1	1
554	EXTENDED MEMORY2	2373707	Included in the PC box. For R3.xx (OPTION) or later software	-	2
555-1	HDD	2304904	20GB FOR BT01	1	2

Table 9-48 HDD and Battery

Item	Part Name	Part Number	Description	Qty	FRU
555-2	HDD	2304904-3	40GB FOR BT02/BT03	1	2
-	G550 VIDEO CARD AGP	2362887		1	2
-	BASE SYSTEM SOFTWARE	-	Ghost for BEP2. Contact OLC for proper P/N for your system.	1	2
-	BASE SYSTEM SOFTWARE	-	Ghost for BEP1. Contact OLC for proper P/N for your system.	1	2
-	APPLICATION SOFTWARE	-	Contact OLC for proper P/N for your system.	1	2

BECOMPSW2-SVC (2384945), including:

	Part Name	P/N	QTY	For current DGPCIO/VIC (2352289) or PC2IO/VIC (2301854-2)	For new DGPCIO/VIC2 (2372503)
1	BECOMPSW2 Assy (PC Box 2351328-2 + Ghost CD)	2351329-4 or later	1	Used	Used
2	SV PCVIC Bracket - U	2379774	1	Used	Not used
3	SV PCVIC Bracket - L	2379773	1	Used	Not used
4	Screw	N9408HR	8	Used	4 screws Used
5	DGVIC connector label	2354667	1	Used	Not used
6	Velcro tape	U0032BA	30 cm	Used	Not used
7	Heat shrinkable tube	2357134	40 cm	Used	Not used
8	Tie-wrap	U0212AC	2	Used	Not used

DGPCIO/VIC2-SVC (2384944), including:

	Part Name	P/N	QTY	For current PC Box (2351328 or 2299702-xx)	For new PC Box (2351328-2)
1	DGPCIO/VIC2 Assy	2372503	1	Used	Used
2	SV DGVIC bracket	2379772	1	Used	Not used
3	Screw	N9408HR	8	Used	4 screws Used
4	DGVIC connector label	2354667	1	Used	Not used
5	Velcro tape	U0032BA	30 cm	Not used	Used

9-10-9 HDD and Battery (cont'd)

	DGPCIO/VIC2 (2372503)	DGPCIO/VIC (2352289)	PC2IO/VIC (2301854-2)
BECOMPSW2 (2351329-4 or later)	OK	OK	OK
BECOMPSW2 (2351329-3 or lower)	OK	OK	OK
BECOMPSW (2316354-3)	**NG**	**NG**	OK

BEP3 SV kit (5136903), including:		
Part Number	**Descriptions**	**QTY**
5114061	**BECOMP3 ASSY LOGIQ7**	**1**
5120441	**BECOMP3 UP KIT CABLE ASSY L7**	**1**
5112352	**L7 CSL EMC SHILD PL-B**	**1**
5112353	**L7 UPG BECOMP3 BASE**	**1**
5112354	**L7 UPG BECOMP3 UPR BRKT**	**1**
N9510ZX	**CAP SCREW**	**3**
N9408HR	**SCREW (for spare)**	**6**
5122012	**HDD Extension Cable1**	**1**
5134920	**GHOST CD W2K FOR BEP3**	**1**
5136802	**installation instruction (This manual)**	**1**
2367977	**DGVIC TRAY2**	**1**
N9306ZX	**SCREW, HEX SOCKET 3MM, 6MM CAP SCREW**	**2**
U0082AG	**SPACER MALE/FEMALE 3MM 10 STUD**	**2**
N9306HR	**SCREW, TP 3X6**	**2**
U0055AG	**SPACER**	**2**
U0032BA	**MAGIC TAPE (HOOK) (FOR MODEM)**	**1 set**
U0033BA	**MAGIC TAPE (LOOP) (FOR MODEM)**	**1 set**

NOTICE For BEP3 SV Kit ONLY:
This kit may need additional parts depending on the L7 system:
5168551 (R2.5.1 application CD if the system SW level is R2.4.1 or lower) or R3.0.12 (Use FMI72265 if system SW version is still R3.0.8 or lower level on BT03), FMI 72258 DVD Replacement (If CDRW is mounted on the system), if replacing a BEP1.

9-10-10 Power Units

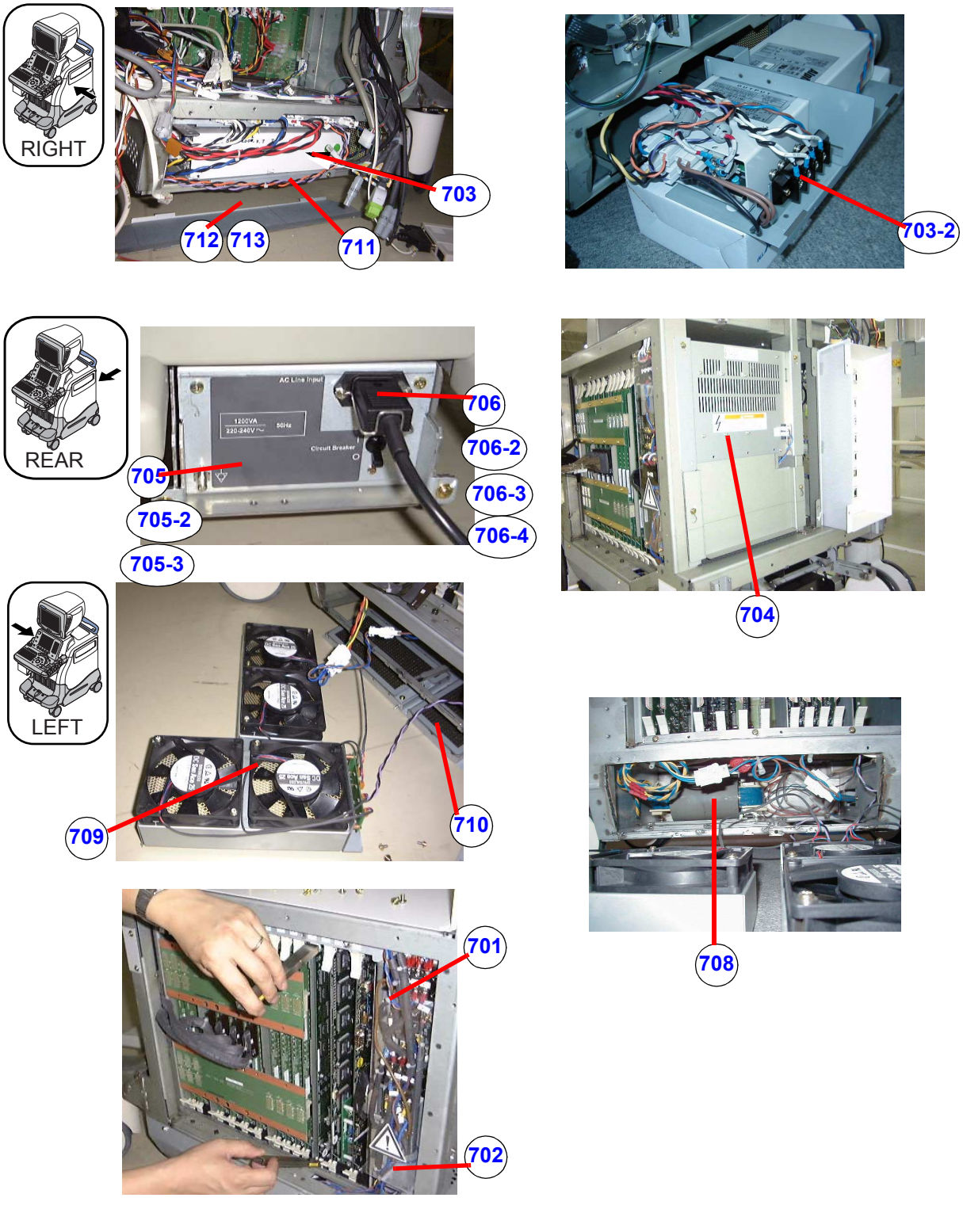


Figure 9-26 Power Units

9-10-10 Power Units (cont'd)

Table 9-49 Power Units

Item	Part Name	Part Number	Description	Qty	FRU
701	SSR PANEL	2292209	including 2 SSRs and fuse	1	1
702	FUSE	2315585	F1, 200V, T12A	1	1
703	LV UNIT	2283531	low voltage regulator	1	1
703-2	LV2 UNIT	2334197	low voltage regulator	1	1
704	HV UNIT	2372387	high voltage regulator (Half height), including materials used when changing Full height HV unit to the Half height.	1	1
705	AC POWER BOX	2384370	inlet unit for 100V, Including cable	1	1
705-2	AC POWER BOX JPN	2384371	For JAPAN, inlet unit for 100V, Including cable	1	1
705-3	AC POWER BOX 200V	2304538-4	Inlet unit for 200V	1	1
706	AC CORD 100V US	2371417	power cable of 100V, with clamp	1	1
706-2	AC CORD 100V JPN	2371416	For JAPAN, power cable of 100V, with clamp	1	1
706-3	AC CORD 200V EU	2371418	power cable of 200V, with clamp	1	1
706-4	AC CORD 200V CHINA with Clamp	2379693-2	For China ONLY	1	1
708	MAIN TRANS	2373331-2	power trans	1	1
709	CONSOLE FAN ASSY	2304624	4 fans	1	1
710	BOTTOM AIR FILTER	2304172	air filter for console	1	2
711	LV FILTER	2291083	air filter for LV unit	1	2
712	MF SIDER COVER R	2284345	side cover of power supply	1	2
713	MF SIDE COVER L	2284346	side cover of power supply	1	2
-	AC Cord UK & Ireland	5151455		1	2
-	AC Cord Denmark	5151457		1	2
-	AC Cord India & Africa	5151450		1	2
-	AC Cord Australian	5151453		1	1
-	AC Cord Argentina	5151454		1	1
-	AC Cord Israel	5151451		1	1
-	AC Cord Swiss	5151448		1	1

9-10-11 Options, Peripherals and Cables

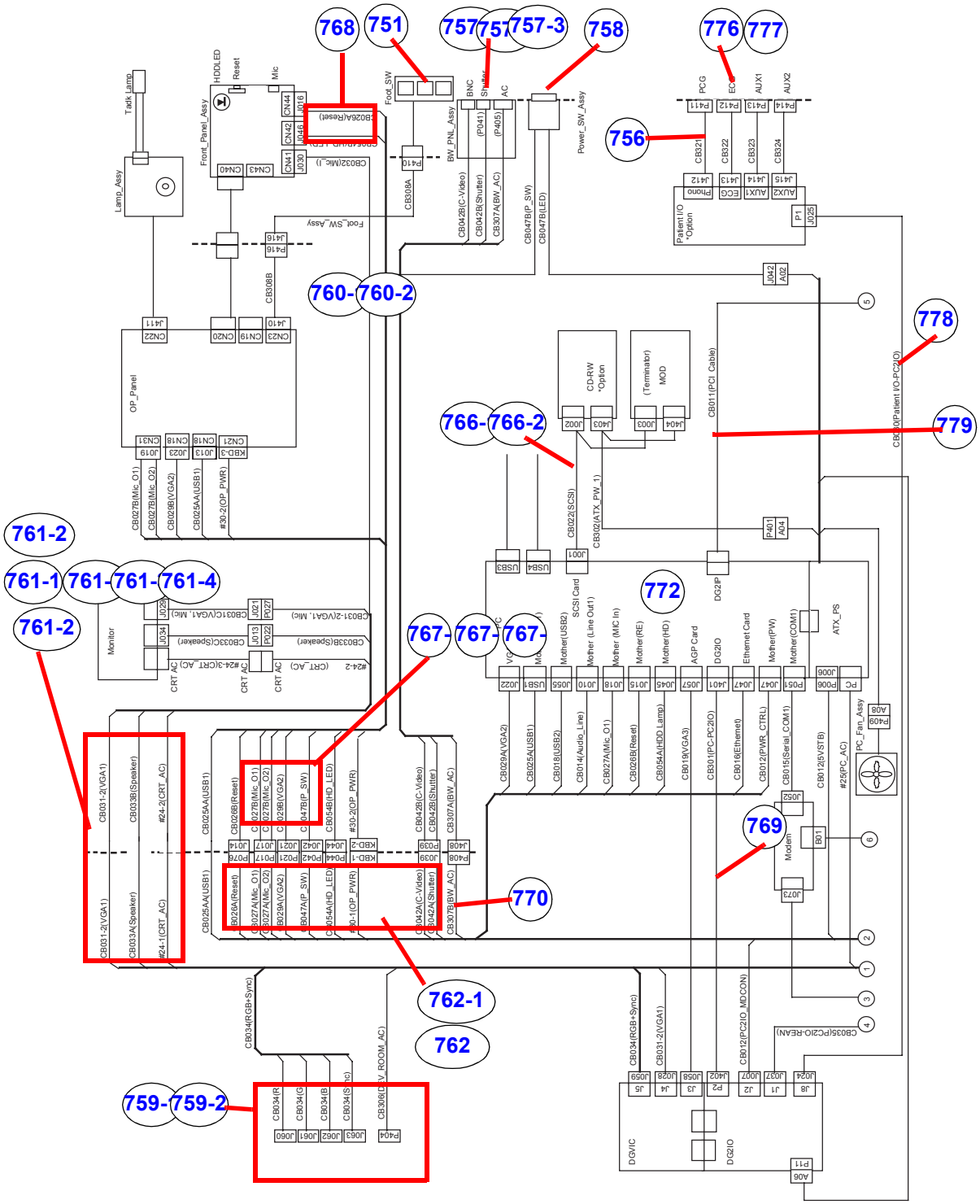


Figure 9-27 Options, Peripherals and Cables 1

9-10-11 Options, Peripherals and Cables (cont'd)

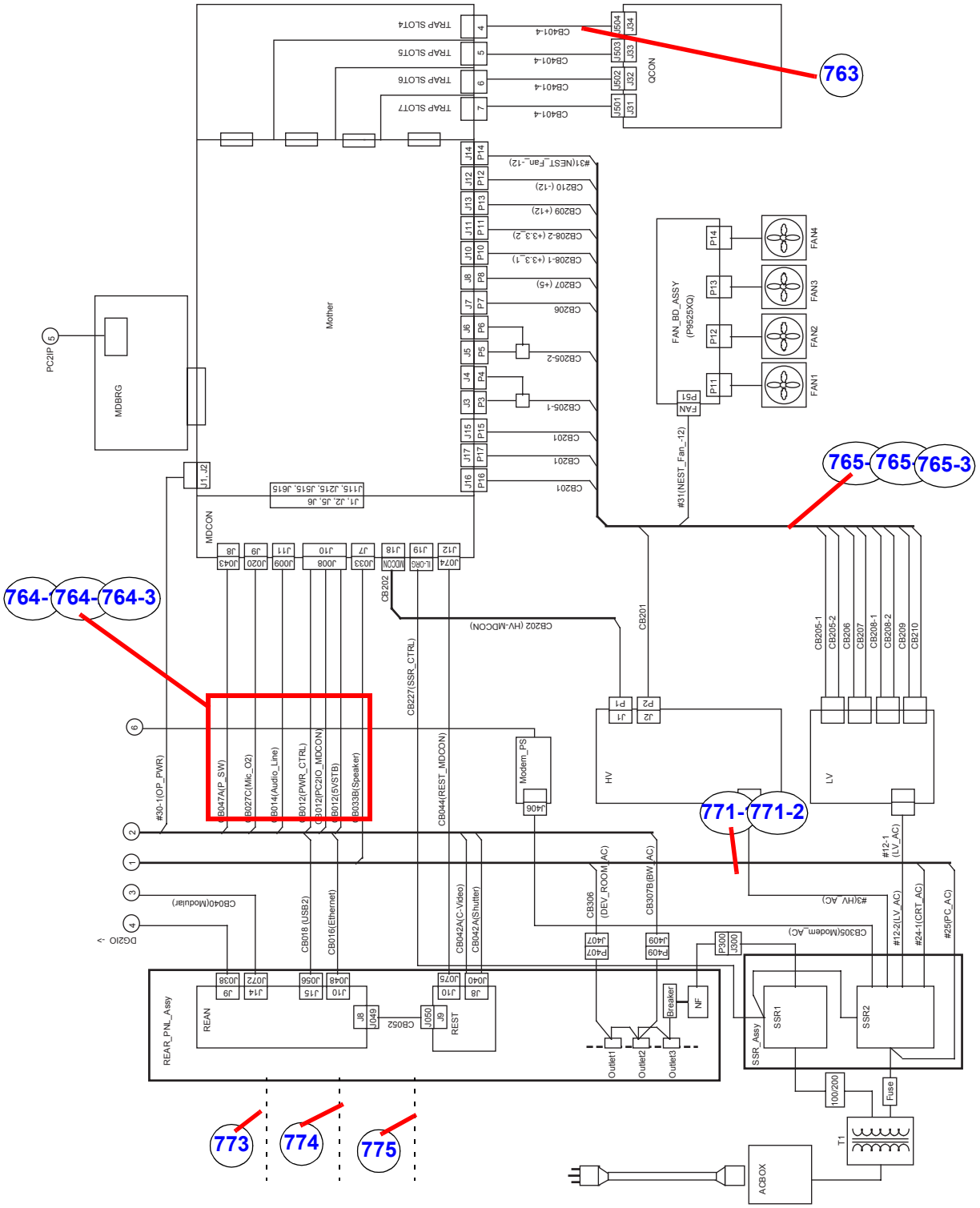


Figure 9-28 Options, Peripherals and Cables 2

9-10-11 Options, Peripherals and Cables (cont'd)

Table 9-50 Options, Peripherals and Cables

Item	Part Name	Part Number	Description	Qty	FRU
757-1	BW PNL ASSY	2383135	Front panel of BW Printer for OC 238xxxx(Ver3) BW Printer Conn Plate (USB/BNC/AC) AC CB307B (P405 BW PNL <-> Connector P408) 200mm, GND500mm BNC/Shutter CB042B (P041 BW PNL <-> Rear PNL P039) 300mm	1	2
757-2	BW PNL ASSY	2354668	Front panel of BW Printer for OC 235xxxx/238xxxx (Ver2/Ver3) BW Printer Conn Plate (USB/BNC/AC) AC CB307B (P405 BW PNL <-> Connector P408) 200mm, GND400mm BNC/Shutter CB042B (P041 BW PNL <-> Rear PNL P039) 300mm USB CB042BB(USB BW PNL <-> BECOMP USB) 2000mm	1	2
757-3	BW PNL ASSY	2301856	Front panel of BW Printer for OC 22xxxxx/230xxxx (Ver1) BW Printer Conn Plate (BNC/AC) AC CB307B (P405 BW PNL <-> Connector P408) 200mm, GND400mm BNC/Shutter CB042B (P041 BW PNL <-> Rear PNL P039) 300mm	1	2
758	PW SW ASSY	2301858-3	Power Switch SW Bracket SW&Cable CB47B (SW <-> MDCON P042) 290mm	1	2
759-1	DEV ROOM ASSY	2354669-2	AC & shutter panel in device room for OC 235xxxx/ 238xxxx (Ver2/Ver3) Panel (AC/USB/MiniJack) AC CB306 (P404 DEVroom<-> Rear PNL J407) 900mm, GND900mm MiniPlug CB042C (P418 DEVroom <-> Rear PNL J417) 200mm USB CB042CC (USB DEVroom <-> BECOMP USB#5) 1000mm	1	2
759-2	DEV ROOM ASSY	2301859	AC & shutter panel in device room for OC 22xxxxx/ 230xxxx (Ver1) Panel (AC/USB/MiniJack) AC CB306 (P404 DEVroom<-> Rear PNL J407) 900mm, GND900mm MiniPlug CB042C (P418 DEVroom <-> Rear PNL J417) 200mm	1	2
760-1	FSW CONN ASSY	2383136	Connector on front panel for foot switch for 238xxxx(Ver3) Panel CB308A (FSW Conn <-> CB308B P416) 140mm	1	2
760-2	FSW CONN ASSY	2301860	Connector on front panel for foot switch Panel CB308A (FSW Conn <-> CB308B P416) 140mm CB308B (J416 CB308A <-> OP Pannel J410) 600mm	1	2

Table 9-50 Options, Peripherals and Cables

Item	Part Name	Part Number	Description	Qty	FRU
761-1	MONITOR VGA CABLE ASSY	2333352-4	for OC 235xxxx/238xxxx (Ver2/Ver3), including cable, tie-wrap, and screws. CB031A (J4 DGVIC <-> Int-housing lock under monitor CN2) 1820mm CB031B (CN41 Front Pannel <-> Int-housing lock under monitor CN3) 600mm	1	2
761-2	MONITOR VGA CABLE2 ASSY	2383137	for OC 238xxxx (Ver3) Speaker CB033A (J7 MDCON <-> Int-housing Lock under monitor P032) 2250mm Video CB034 (J5 DGVIC <-> Color Printer DEVroom R/G/B/Sync) 2500mm GND CB311 (GND Monitor <-> MainFrame GND) 770mm AC CB244-1 (SSR2 <-> Monitor AC) 1850mm BW AC CB307A (J409 Rear AC <-> BW AC Conn CB307B P408(BW PNL ASSY)) 1250mm	1	2
761-3	MONITOR VGA CABLE2 ASSY	2359765	for OC 235xxxx/238xxxx (Ver2/Ver3) Speaker CB033A (J7 MDCON <-> Int-housing Lock under monitor P032) 2260mm Video CB034 (J5 DGVIC <-> Color Printer DEVroom R/G/B/Sync) 2500mm GND CB311 (GND Monitor <-> MainFrame GND) 770mm AC CB244-1 (SSR2 <-> Monitor AC) 1850mm	1	2
761-4	MONITOR VGA CABLE ASSY	2298144	2333352 + 2333877 for OC 22xxxxx/230xxxx (Ver1) CB031 2333352-3 Speaker CB033 (J7 MDCON <-> Int-housing Lock under monitor P032) 2360mm Video CB034 (J5 DGVIC <-> Color Printer DEVroom R/G/B/Sync) 2500mm GND CB311 (GND Monitor <-> MainFrame GND) 800mm AC CB244-1 (SSR2 <-> Monitor AC) 1850mm	1	2
762-1	OP2 CABLE ASSY	2383139	for OC 238xxxx (Ver3) HDD Lamp CB26A (P076 BECOMP <-> Int-housing lock under KBD J014) 1470mm CB027A (J018 MiniJack BECOMP <-> Int-housing lock under KBD J017) 1730mm CB027C (J020 MDCON <-> Int-housing lock under KBD J017) 1930mm VGA for LCD CB029A (J022 BECOMP D-Sub <-> Int-housing lock under KBD D-Sub P021) 1570mm Video CB042A (J040 RearPNL <-> Int-housing lock under KBD P039) 1970mm Shutter CB042A (J040 RearPNL <-> Int-housing lock under KBD J417) 650mm USB CB025B (USB#1 BECOMP <-> Int-housing lock in KB support J011) 1810mm USB CB042BB (USB#3 BECOMP <-> BW-PNL J420) 1850mm	1	2

Table 9-50 Options, Peripherals and Cables

Item	Part Name	Part Number	Description	Qty	FRU
761-2	OP2 CABLE ASSY	2359766	for OC 235xxxx/238xxxx (Ver2/Ver3) HDD Lamp CB26A (P076 BECOMP <-> Int-housing lock under KBD J014) 1500mm CB027A (J018 MiniJack BECOMP <-> Int-housing lock under KBD J017) 1750mm CB027C (J020 MDCON <-> Int-housing lock under KBD J017) 2000mm VGA for LCD CB029A (J022 BECOMP D-Sub <-> Int-housing lock under KBD P021) 1570mm Video CB042A (J040 RearPNL <-> Int-housing lock under KBD P039) 2100mm Shutter CB042A (J040 RearPNL <-> Int-housing lock under KBD J417) 1600mm	1	2
762	OP CABLE ASSY	2298145	for OC 22xxxxx/230xxxx (Ver1) USB CB025A (USB BECOMP <-> Int-housing lock under KBD J011) 1700mm HDD Lamp CB26A (P076 BECOMP <-> Int-housing lock under KBD J014) 1500mm CB027A (J018 MiniJack BECOMP <-> Int-housing lock under KBD J017) 1700mm CB027C (J020 MDCON <-> Int-housing lock under KBD J017) 2000mm VGA for LCD CB029A (J022 BECOMP D-Sub <-> Int-housing lock under KBD P021) 1850mm Video CB042A (J040 RearPNL <-> Int-housing lock under KBD P039) 2100mm Shutter CB042A (J040 RearPNL <-> Int-housing lock under KBD J417) 1600mm	1	2
763	TX CABLE ASSY	2305111-3	QCON <-> TRAP	1	2
764-1	PC CABLE2 ASSY	2383140	for OC 238xxxx (Ver3) CB012 (J10 MDCON <-> Int-housing lock in BECOMP J006) 480mm CB012 (J10 MDCON <-> PC2IO D-Sub J2) 620mm CB014 (J11 MDCON <-> BECOMP Audio mini Jack1) 270mm CB016 (Ethernet BECOMP <-> REAN J10) 480mm USB CB018 (USB#2 BECOMP <-> REAN USB Hub) 700mm SCSI CB035 (J1 PC2IO <-> REAN J9) 340mm Modem CB040(J14 REAN <-> Modem Line) 320mm CB044 (J12 MDCON <-> REST J10) 270mm w/ Ferrite Core CB047A (J8 MDCON <-> Int-housing lock J042) 1100mm/100mm	1	2

Table 9-50 Options, Peripherals and Cables

Item	Part Name	Part Number	Description	Qty	FRU
764-2	PC CABLE2 ASSY	2358656	for OC 235xxxx/238xxxx (Ver2/Ver3) CB012 (J10 MDCON <-> Int-housing lock in BECOMP J006) 575mm CB012 (J10 MDCON <-> PC2IO D-Sub J2) 600mm CB014 (J11 MDCON <-> BECOMP Audio mini Jack1) 540mm CB015 (RS232 BECOMP <-> Modem RS232) 1000mm CB016 (Ethernet BECOMP <-> REAN J10) 400mm USB CB018 (USB#2 BECOMP <-> REAN USB Hub) 1000mm DVI-D CB019A (VGA BECOMP <-> DGVIC J3) 450mm UPS CB020 (RS232 BECOMP <-> UPS RS232) 500mm SCSI CB035 (J1 PC2IO <-> REAN J9) 520mm Modem CB040(J14 REAN <-> Modem Line) 950mm CB044 (J12 MDCON <-> REST J10) 270mm CB047A (J8 MDCON <-> Int-housing lock J042) 1100mm/100mm	1	2
764-3	PC CABLE ASSY	2298147	for OC 22xxxxx/230xxxx (Ver1) CB012 (J10 MDCON <-> Int-housing lock in BECOMP J006) 575mm CB012 (J10 MDCON <-> PC2IO D-Sub J2) 710mm CB014 (J11 MDCON <-> BECOMP Audio mini Jack1) 640mm CB015 (RS232 BECOMP <-> Modem RS232) 1000mm CB016 (Ethernet BECOMP <-> REAN J10) 340mm USB CB018 (USB#2 BECOMP <-> REAN USB Hub) 820mm DVI-D CB019A (VGA BECOMP <-> DGVIC J3) 410mm UPS CB020 (RS232 BECOMP <-> UPS RS232) 500mm SCSI CB035 (J1 PC2IO <-> REAN J9) 570mm Modem CB040(J14 REAN <-> Modem Line) 890mm CB044 (J12 MDCON <-> REST J10) 270mm CB047A (J8 MDCON <-> Int-housing lock J042) 1100mm/100mm	1	2

Table 9-50 Options, Peripherals and Cables

Item	Part Name	Part Number	Description	Qty	FRU
765-1	POWER CABLE ASSY	2383142	for OC 238xxxx (Ver3) CB201 (P2 HV <-> Mother P15, P16, P17) 850mm/690mm/630mm CB202 (P1 HV <-> MDCON J18) w/Ferrite Core 480mm CB205-1 (+6V/0V LV <-> Mother P3, P4) w/Ferrite Core 850mm/850mm CB205-2 (+6V/0V LV <-> Mother P5, P6) w/Ferrite Core 810mm/810mm CB206 (-6V/0V LV <-> Mother P7) 700mm CB207 (+5V/0V LV <-> Mother P8) 700mm CB208-1A (+3.3V/0V LV <-> Mother P10) 680mm CB208-2A (+3.3V/0V LV <-> Mother P11) 680mm CB209 (+12V/0V LV <-> Mother P13) 700mm CB210 (-12V/0V LV <-> Mother P12) 700mm CB230-1 (Int-housing lock in KBD <-> Mother P1, P2) 520mm/540mm CB231 (Cooling FAN <-> Mother P14) 800mm	1	2
765-2	POWER CABLE ASSY	2359541	for OC 235xxxx/238xxxx (Ver2/Ver3) CB201 (P2 HV <-> Mother P15, P16, P17) 950mm/790mm/720mm CB202 (P1 HV <-> MDCON J18) 750mm CB205-1 (+6V/0V LV <-> Mother P3, P4) 810mm/810mm CB205-2 (+6V/0V LV <-> Mother P5, P6) 810mm/810mm CB206 (-6V/0V LV <-> Mother P7) 700mm CB207 (+5V/0V LV <-> Mother P8) 700mm CB208-1A (+3.3V/0V LV <-> Mother P10) 680mm CB208-2A (+3.3V/0V LV <-> Mother P11) 680mm CB209 (+12V/0V LV <-> Mother P13) 700mm CB210 (-12V/0V LV <-> Mother P12) 700mm CB230-1 (KBD1 Int-housing lock in KBD <-> Mother P1, P2) 1920mm/1920mm CB231 (Cooling FAN <-> Mother P14) 850mm	1	2

Table 9-50 Options, Peripherals and Cables

Item	Part Name	Part Number	Description	Qty	FRU
765-3	POWER CABLE ASSY	2298148	for OC 22xxxxx/230xxxx (Ver1) CB201 (P2 HV <-> Mother P15, P16, P17) 950mm/790mm/720mm - non core CB202 (P1 HV <-> MDCON J18) 750mm CB205-1 (+6V/0V LV <-> Mother P3, P4) 810mm/810mm CB205-2 (+6V/0V LV <-> Mother P5, P6) 810mm/810mm CB206 (-6V/0V LV <-> Mother P7) 700mm CB207 (+5V/0V LV <-> Mother P8) 700mm CB208-1 (+3.3V/0V LV <-> Mother P10) 680mm Contact CB208-2 (+3.3V/0V LV <-> Mother P11) 680mm Contact CB209 (+12V/0V LV <-> Mother P13) 700mm CB210 (-12V/0V LV <-> Mother P12) 700mm CB230-1 (Int-housing lock in KBD <-> Mother P1, P2) 1920mm/1920mm CB231 (Cooling FAN <-> Mother P14) 850mm	1	2
766-1	BAY CABLE3	2361023-2	CB302A (P401 ATX PS <-> 5 inch Bay J403/J404) 800mm/220mm	1	2
766-2	BAY2 CABLE	2401408	CB022A (P001 BECOMP <-> MOD J002) 1500mm	1	2
767-1	OP2 CABLE2 ASSY	2383141	for OC 238xxxx (Ver3) CB027B (CN31 OP PNL <-> Int-housing lock under KBD P017) 1090mm CB029B (CN18 LCD <-> Int-housing lock under KBD D-Sub P021) 950mm CB230-2 (CN21 OP PNL <-> Int-housing lock under KBD Power Cable KBD1) 1000mm USB CB025A (CN18 OP PNL <-> Int-housing lock in KB support Assy P011) CB026B (P014 Int-housing lock in KB support assy <-> Int-housing lock under KB TRAY P016+P046) CB308B (CN23 OP PNL <-> Int-housing lock under KB TRAY P416) 690mm GND CB312 (T210 OP PNL <-> Main Frame T211) 700mm CB309B (CN22 OP PNL <-> Int-housing lock KB TRAY P407B) 690mm	1	2
767-2	OP2 CABLE2 ASSY	2359767	for OC 235xxxx/238xxxx (Ver2/Ver3) CB027B (CN31 OP PNL <-> Int-housing lock under KBD P017) 1130mm CB029B (CN18 LCD <-> Int-housing lock under KBD P021) 900mm CB230-2 (CN21 OP PNL <-> Int-housing lock under KBD Power Cable KBD1) 1000mm GND CB312 (T210 OP PNL <-> Main Frame T211) 700mm	1	2

Table 9-50 Options, Peripherals and Cables

Item	Part Name	Part Number	Description	Qty	FRU
767-3	OP CABLE2 ASSY	2302191	for OC 22xxxxx/230xxxx (Ver1) USB CB025B (CN18 OP PNL <-> Int-housing lock under KBD P011) 1000mm CB027B (CN31 OP PNL <-> Int-housing lock under KBD P017) 1000mm CB029B (CN18 LCD <-> Int-housing lock under KBD P021) 900mm CB230-2 (CN21 OP PNL <-> Int-housing lock under KBD Power Cable KBD1) 1000mm GND CB312 (T210 OP PNL <-> Main Frame T211) 700mm	1	2
768	OP CABLE3 ASSY	2304610-2	CB026C (P016+P046 Int-housing lock under KB TRAY <-> Front PNL CN44) 130mm CB026C (P016+P046 Int-housing lock under KB TRAY <-> Front PNL CN42) 130mm CB031B (Int-housing lock under Monitor P030 <-> Front PNL CN41) 620mm	1	2
769	PC2IO/IPCABLE ASSY	2304611	for OC 22xxxxx/230xxxx (Ver1) CB301 (PC2IO <-> PC2IP) 400mm	1	2
770	SYS AC CABLE ASSY	2304612	CB307A (J408 Int-housing lock under KBD <-> Rear J409) 1200mm	1	2
771-1	PWR AC CABLE ASSY	2383138	for OC 238xxxx (Ver3) CB203 (TB3 SSR <-> HV AC in) 1050mm CB212 (TB3 SSR <-> LV AC in) 1700mm CB225 (TB2 SSR <-> ATX AC in) 970mm	1	2
771-2	PWR AC CABLE ASSY	2304613	for OC 22xxxxx/230xxxx/235xxxx/238xxxx (Ver1/ Ver2/Ver3) CB203 (TB3 SSR <-> HV AC in) 1050mm CB212 (TB3 SSR <-> LV AC in) 1700mm CB225 (TB2 SSR <-> ATX AC in) 970mm CB305 (TB3 SSR <-> Modem AC in) 1150mm	1	2
772	PC BOX INTERNALCABLE ASSY	2304797	for OC 235xxxx/238xxxx (Ver2/Ver3) CB101 (J005 BECOMP Mother P-Seq-Jumper <-> Int-housing lock in PC P006) 500mm CB102 (J105/J045 BECOMP Mother (Reset/HDD) <-> Int-housing lock as PC BOX J076) 500mm	1	2
-	USB CABLE	2358659-2	CB025AA (USB1 BECOMP <-> OP PNL CN18) 2600mm	1	2
-	USB DEV CABLE FOR PERIPHERAL DEVICE	2388600-2	DVD unit - PC Box CB100 (USB4 BECOMP <-> DVD Drive 5 inch bay USB) 1250mm	1	2
778	ECG INT CABLE ASSY	2360884-2	CB030A (Patient I/O <-> DGVIC J8) 850mm	1	2
779	PCI CABLE	2389075	CB011 (PC2IP BECOMP <-> MDBRG)	1	2
751	FOOT SWITCH	FB200952	Foot Switch (Option)	1	2
756	PCG OPTION	2326844	phono microphone (Option)	1	2
773	USB SERIALBRIDGE CBL	2304621	Ext. Peripheral <-> L7	1	2
774	RS232C CABLE ASSY STRAIGHT	2305549	Ext. Peripheral <-> L7	1	2

Table 9-50 Options, Peripherals and Cables

Item	Part Name	Part Number	Description	Qty	FRU
775	RS232C CABLE ASSY CROSS	2305550-2	Ext. Peripheral <-> L7	1	2
776	ECG CBL SHORT	2304616	Ext. Patient <-> L7	1	2
777	ECG CBL LONG	2304615	Ext. Patient <-> L7	1	2
-	US CABLE FOR PERIPHERAL DEVICE	2324360	Ext. Peripheral <-> L7	1	2
-	Keyboard Knob Repair kit	2363861		1	2
-	Strap with Buckle	5115855		1	2
-	Foot for peripheral	2318441		1	2
-	MON-CABLE-ASSY	2304171		1	2
-	Loopback Connector	2116343	Loopback Connector for Diagnostics (46-330081P3)	1	2

9-10-12 Probes

9-10-12-1 Probes for Country other than JAPAN

Table 9-51 Probes for Country other than JAPAN

Item	Part Name	Part Number	Description	Qty	FRU
801	3C PROBE (EXP)	2286354			1
802	3.5C PROBE (EXP)	2050357			1
803	5C PROBE (EXP)	2294516			1
804	M7CMIH PROBE (EXP)	2294514			1
805	E8C PROBE (EXP)	2294641			1
806	7L PROBE (EXP)	2294521			1
807	10L PROBE (EXP)	2294523			1
808	M12LMIH PROBE (EXP)	2294511			1
809	3S PROBE (EXP)	2323337			1
810	10S PROBE (EXP)	2298589			1
811	I12L PROBE (EXP)	2264883			1
812	P2D PROBE (EXP)	TE100024	PPA adapter is separately required.		1
813	P6D PROBE (EXP)	TQ100002	PPA adapter is separately required.		1
814	8C PROBE (EXP)	2348094			1
815	3.5CS PROBE (EXP)	2051858			1
816	6T TEE PROBE (EXP)	KN100092			1
817	M3S PROBE (EXP)	2378099			1
818	PPA ADAPTER	2331934-2			1

9-10-12-2 Probes for Japan

Table 9-52 Probes for Japan

Item	Part Name	Part Number	Description	Qty	FRU
851	3C PROBE (JPN)	2286353			1
852	3.5C PROBE (JPN)	2348877			1
853	5C PROBE (JPN)	2294515			1
854	M7CMIH PROBE (JPN)	2294513			1
855	E8C PROBE (JPN)	2294640			1
856	7L PROBE (JPN)	2294520			1
857	10L PROBE (JPN)	2294522			1
858	M12LMIH PROBE (JPN)	2294510			1
859	3S PROBE (JPN)	2348878			1
860	10S PROBE (JPN)	2309478			1
861	I12L PROBE (JPN)	2270556			1
862	8C PROBE	2348093			1
863	3.5CS PROBE	2380854			1
864	6T TEE PROBE	5131947			1
865	M3S PROBE	2293726			1
866	PPA ADAPTER	2331934-2			1

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Chapter 10
Periodic Maintenance

Section 10-1
Overview

10-1-1 Purpose of Chapter 10

This chapter describes Periodic Maintenance (PM) on the scanner and its peripherals. These PM procedures are intended to maintain the quality of the ultrasound systems performance. Read this chapter completely and familiarize yourself with the procedures before starting a PM.

CONTENTS IN CHAPTER 10

Table 10-1 Contents in Chapter 10

CAUTION **Practice good ESD prevention. Wear an anti–static strap when handling electronic parts and even when disconnecting/connecting cables.**

DANGER **THERE ARE SEVERAL PLACES ON THE BACKPLANE, THE AC DISTRIBUTION, AND DC DISTRIBUTION THAT ARE DANGEROUS. BE SURE TO DISCONNECT THE SYSTEM POWER PLUG AND OPEN THE MAIN CIRCUIT BREAKER BEFORE YOU REMOVE ANY PARTS. BE CAUTIOUS WHENEVER POWER IS STILL ON AND COVERS ARE REMOVED.**

CAUTION **Do not pull out or insert circuit boards while power is ON.**

CAUTION **Do not operate this unit unless all board covers and frame panels are securely in place. System performance and cooling require this.**

CAUTION

Section 10-2
Why do Periodic Maintenance

10-2-1 Keeping Records

It is good business practice that ultrasound facilities maintain records of periodic and corrective maintenance. The Ultrasound Periodic Maintenance Inspection Certificate provides the customer with documentation that the ultrasound scanner is maintained on a periodic basis.

A copy of the Ultrasound Periodic Maintenance Inspection Certificate should be kept in the same room or near the scanner.

10-2-2 Quality Assurance

In order to gain accreditation from organizations such as the American College of Radiology (USA), it is the customer's responsibility to have a quality assurance program in place for each scanner. The program must be directed by a medical physicists, the supervising radiologist/physician or appropriate designee.

Routine quality control testing must occur regularly. The same tests are performed during each period so that changes can be monitored over time and effective corrective action can be taken.

Testing results, corrective action and the effects of corrective action must be documented and maintained on the site.

Your GE service representative can help you with establishing, performing and maintaining records for a quality assurance program.

Section 10-3
Periodic Maintenance Schedule

10-3-1 How often should PMs be performed?

The Periodic Maintenance Schedule specifies how often your LOGIQ™ 7 should be serviced and what items need attention. It is important you have your LOGIQ™ 7 serviced as scheduled in order to retain its high level of safety, dependability and performance.

Your GE Service Representative knows your LOGIQ™ 7 best and can provide competent, efficient service. Please contact us for further information and to schedule GE Medical Systems Ultrasound to perform this service for you.

The services and intervals shown in the maintenance schedule assumes that you use your LOGIQ™ 7 for an average patient load (10-12 per day) and not used as a primary "mobile unit".

10-3-1 How often should PMs be performed? (cont'd)

Table 10-2 Periodic Maintenance Schedule

Service at Indicated Time	Daily	Weekly	Monthly	Per Facilities QA Program	Notes
Clean Probes	•*				* or before each use
Clean Probe Holders	•				
Clean Air Filter		•			more frequently depending on your environment
Inspect AC Mains Cable			•		Mobile Unit Check Weekly
Inspect Cables and Connectors			•		
Clean Console			•		
Clean Monitor and Touch Panel			•		
Inspect Wheels, Casters, brakes and Swivel Locks			•		Mobile Unit Check Daily
Check Control Panel Movement			•		Mobile Unit Check Daily
Console Leakage Current Checks				•	also after corrective maintenance or as required by your facilities QA program
Peripheral Leakage Current Checks				•	also after corrective maintenance or as required by your facilities QA program
Surface Probe Leakage Current Checks				•	also after corrective maintenance or as required by your facilities QA program
Endocavity Probe Leakage Current Checks					also after corrective maintenance or as required by your facilities QA program
Transesphongeal Probe Leakage Current Checks					also after corrective maintenance or as required by your facilities QA program
Surgical Probe Leakage Current Checks					also after corrective maintenance or as required by your facilities QA program
Measurement Accuracy Checks				•	also after corrective maintenance or as required by your facilities QA program
Probe/Phantom Checks				•	also after corrective maintenance or as required by your facilities QA program

Section 10-4
Tools Required

10-4-1 Standard GE Tool Kit

The following is a description of the “Standard” GE tool kit in the USA. Not all tools are required for PMs.

Table 10-3 Overview of GE-1 Tool Kit Contents

Tool ID	Description	Tool ID	Description
9-45358	Pliers Retaining Ring	9-XL9971MM	Xcelite-hex Blade 1.27mm
9-4078	Scribe	9-XL9972MM	Xcelite-hex Blade 1.5mm
9-44572	Wrench Open End 3/8 - 7/16	9-XL9973MM	Xcelite-hex Blade 2 mm
9-44579	Wrench Open End 1/2 - 9/16	9-XL9974MM	Xcelite-hex Blade 2.5mm
9-44579	Wrench Open End 1/2 - 9/16	9-XL9975MM	Xcelite-hex Blade 3mm
9-45385	Pliers, Arc Joint 7 inch	9-XL9976MM	Xcelite-hex Blade 4mm
9-45378	Pliers, Slip Joint	9-XL9977MM	Xcelite-hex Blade 5mm
9-4518	Pliers, Long Nose, Miniature	9-XL991CM	Handle
9-4518	Pliers, Long Nose, Miniature	C2356E	Screw starter - Kedman Quick Wedge
9-44776	Ignition Wrench Set, 10 pc.	BLBO	Box - 18 Compartment
9-44601	Wrench, Adj., 4 inch	DWL4283T	Box - 5 Compartment
9-4151	Screwdriver, Blade, Stubby	9-41322	Pickup Tool, Claw type
9-41421	Screwdriver, Blade, Pocket clip	9-6757	6 pc Needle File Set
9-41594	Screwdriver, Blade 1/8 in. x 4 in.	9-9487	Utility Knife
9-41581	Screwdriver, Blade 3/16 in. x 4 in.	9-45341	Pliers Vice Grip 10 inch
9-39451	20' Steel Tape, locking Spring load	9-3001	Xacto Pen Knife
9-GH807	Ratchet, Offset, Slotted	9-HT62002	Solder Aid, Fork and Hook
68-412	Ratchet, Offset, Phillips	9-4099	Mirror, Round, Telescoping
9-GH130	Tapered Reamer	9-GH3001	Steel Rule Decimal 6 inch
9-41584	Screwdriver, slotted 1/4 in.X 6 in.	9-GH300ME	Steel Rule Metric 6 inch
9-4118	Screwdriver, Phillips #2, Stubby	9-XL9920	Xcelite-hex Blade.050 inch
9-41293	Screwdriver, Phillips #0	9-XL9921	Xcelite-hex Blade 1/16 inch
9-41294	Screwdriver, Phillips #1	9-XL9922	Xcelite-hex Blade 5/16 inch
9-41295	Screwdriver, Phillips #2	9-XL9923	Xcelite-hex Blade 3/32 inch
9-46677	Hex Keys, 20 pc., Metric	9-XL9924	Xcelite-hex Blade 1/8 inch
9-34701	1/4 in. Standard.Socket set (19 pc)	9-XL9925	Xcelite-hex Blade 5/32 inch
9-43499	1/2 inch Socket 1/4 inch drive	9-XL9926	Xcelite-hex Blade 3/16 inch
9-4355	Flex Spinner	9-XL99764	Xcelite-hex Blade 7/64
9-43523	Breaker	9-XL99964	Xcelite-hex Blade 9/64
9-43531	6 inch Ext.	9-XLM60	Mini-screwdriver kit

Table 10-3 Overview of GE-1 Tool Kit Contents (Continued)

Tool ID	Description	Tool ID	Description
9-65283	Case 8.5 in. x 4.5 in. x 2 in. Deep	9-45072	Pliers 6 inch Diagonal
9-46696	Hex Keys	9-XL100X	Wire Stripper/Cutter 5 inch - 100X
9-39829	Torpedo Level, Magnetic	9-XL87CG	Pliers - very fine needle nose-87CG
9-38461	Hammer, Ball Peen, 4 oz	9-WEWDT-07	Weller-Soldering-Replacement Tip(1)
9-4280	Universal Joint 1/4 inch	9-WS175-E	Wiss - Surgical Scissors
9-WEW60P3	Weller - Soldering Iron, 3 wire	KH174	Hemostat 5 inch Straight
9-WECT5B6	Weller - Soldering Iron Tip	KH175	Hemostat 5 inch curved
9-WEWDP12	Weller - Desoldering Pump	9-Z9480121	Alignment tool (red)
93383	Flashlight Mini-Mag Lite (AAA Bat.)		
9-GH408	Tweezers		
21576	Brush - Bristle		
9-4516	Pliers 4 1/4 inch Diagonal		

Table 10-4 Overview of GE-2 Tool Kit Contents

GE-2 Sears Kit (#99034)			
Tool ID	**Description**	**Tool ID**	**Description**
9-45381	Pliers, Arc Joint 9 1/2 inch	9-44067	Socket 1 1/16 in. for 1/2 in. drive
9-45092	Pliers, Linesman 8 1/2 inch	9-42679	Socket 10MM Hex for 1/2 in. drive (2273333)
9-42882	Punch, Pin 3/32 inch	9-44262	Extension 10 inch for 1/2 in. drive (2273405)
9-42884	Punch, Pin 5/32 inch	9-4258	3/8 inch to 1/2 inch Adapter
9-42886	Punch, Pin 1/4 inch	9-34374	3/8 inch Metric Socket Set - 12 PT
9-42973	Cold Chisel 1/2 inch	9-44311	16mm Socket 12 pt.
9-GH77	Center Punch Automatic	9-33485	Metal Socket Tray
9-GH890	File Handle, Adj.	9-33484	Metal Socket Tray
9-31276	File, Round, Bastard 8 inch	9-33484	Metal Socket Tray
9-31277	File, Half Round, Bastard 8 inch	9-52068	Tap and Drill Set
9-31263	File, Flat Mill 8 inch	9-52722	#6 Tap
21045C	Close Quarter Saw	9-52723	#8 Tap
9-44604	Wrench, Adj 10 inch		High Speed Drill Set
9-41587	Screwdriver 5/16 inch x 8 inch		#36 Drill
9-41586	Screwdriver, Stubby 5/16 inch		#29 Drill
9-GH19512	Countersink 1/2 inch	9-44046	3/8 inch Socket Set
9-44741	12 PC Combination Wrench Set		

10-4-2 Special Tools, Supplies and Equipment

10-4-2-1 Specific Requirements for Periodic Maintenance

See Chapter 7

Table 10-5 Overview of Requirements for Periodic Maintenance

Tool	Part Number	Comments
Digital Volt Meter (DVM)		
Electric Safety Analyzer DALE 600	46-285652G1	For 120V Unit
Electric Safety Analyzer DALE 600E	46-328406G2	For 220V Units
Leakage Current Ultrasound Kit	2113015	For 120V and 220V Units
Anti Static Kit	46–194427P231 46–194427P279 46–194427P369 46–194427P373 46–194427P370	Kit includes anti–static mat, wrist strap and cables for 200 to 240 V system 3M #2204 Large adjustable wrist strap 3M #2214 Small adjustable wrist strap 3M #3051 conductive ground cord
Anti Static Vacuum Cleaner	46–194427P278 46–194427P279	120V 230V
Air Filter		air intake
Safety Analyzer	46–285652G1	DALE 600 KIT (or equivalent) for electrical tests
SVHS VCR Cassette	E7010GG E7010GF	60 minute 120 minute
SVHS VCR Head Cleaner		See VCR user manual for requirements
3.5” MOD MEDIA	E8381AA E8381AB	blank 128 M disk (for 230MB MO drive) blank 230 M disk (for 230MB MO drive) blank 640 M disk (for 1.3GB MO drive) blank 1.3 GB disk (for 1.3GB MO drive)
3.5” MOD Media Cleaner	2117811	cleans the diskettes
3.5” MOD Head Cleaner Kit	2148392	cleans the drive heads
QIQ Phantom	E8370RB	RMI Grayscale Target Model 403GS
CD-R Media cleaner		cleans the diskettes
B/W Printer Cleaning Sheet		See printer user manual for requirements
Color Printer Cleaning Sheet		See printer user manual for requirements
Disposable Gloves		

Section 10-5
System Periodic Maintenance

10-5-1 Preliminary Checks

The preliminary checks take about 15 minutes to perform. Refer to the system user documentation whenever necessary.

Table 10-6 System Preliminary Checks

Step	Item	Description
1	Ask & Listen	Ask the customer if they have any problems or questions about the equipment.
2	Paperwork	Fill in the top of the Periodic Maintenance (PM) Inspection Certificate. Note all probes and system options.
3	Power up	Turn the system power on and verify that all fans and peripherals turn on. Watch the displays during power up to verify that no warning or error messages are displayed.
4	Probes	Verify that the system properly recognizes all probes.
5	Displays	Verify proper display on the monitor and touch panel.
6	Presets	Backup all customer presets on an CD-R.

10-5-2 Functional Checks (See Also Chapter 4)

The functional checks take about 60 minutes to perform. Refer to the system user documentation whenever necessary.

10-5-2-1 System Checks

Table 10-7 System Functional Checks

÷	Step	Description
	B-Mode	Verify basic B-Mode (2D) operation. Check the basic system controls that affect this mode of operation.
	CF-Mode	Verify basic CF-Mode (Color Flow Mode) operation. Check the basic system controls that affect this mode of operation.
	Doppler Modes	Verify basic Doppler operation (PW and CW if available). Check the basic system controls that affect this mode of operation.
	M-Mode	Verify basic M-Mode operation. Check the basic system controls that affect this mode of operation.
	*Applicable Software Options	Verify the basic operation of all optional modes such as Multi-Image, 3D, Contrast, Harmonics, Cine, Stress Echo,... etc. Check the basic system controls that affect each options operation.
	Probe Elements	Perform an Element Test on each probe to verify that all probe elements (and system channels) are functional.
	System Diagnostic	Perform the Automatic Tests to verify that all boards function according to specifications.
	Control Panel Test	Perform the Control Panel Test Procedure to verify that all keyboard controls are OK. This is performed by the internal PC (backend processor) which does a normal keyboard run through.
	Monitor	Verify basic Monitor display functions. Refer to Chapter 3 of the User Manual.
	Touch Panel	Verify basic Touch Panel display functions. Refer to Chapter 3 of the User Manual.
	Measurements	Scan a gray scale phantom and use the measurement controls to verify distance and area calculation accuracy. Refer to the User Manual, Chapter 18, for measurement accuracy specifications.

*NOTE: * Some software may be considered standard depending upon system model configuration.*

10-5-2-2 Peripheral/Option Checks

If any peripherals or options are not part of the system configuration, the check can be omitted. Refer to the User Manual for a list of approved peripherals/options.

Table 10-8 GE Approved Peripheral/Hardware Option Functional Checks

Step	Item	Description
1	VCR	Verify record/playback capabilities of the VCR. Clean heads and covers if necessary.
2	B/W Printer	Verify hardcopy output of the B/W video page printer. Clean heads and covers if necessary.
3	Color Printer	Verify hardcopy output of the Color video page printer. Clean heads and covers if necessary.
4	DICOM	Verify that DICOM is functioning properly. Send an image to a DICOM device.
5	InSite/iLinq	Verify that InSite is functioning properly. Ensure two-way remote communications. (Warranty & Contract Customers only)
6	Camera	Verify hardcopy output of the film camera. Clean as necessary.
7	Footswitch	Verify that the footswitch is functioning as programed. Clean as necessary.
8	ECG	Verify basic operation with customer
9	3D Probe	

10-5-3 Input Power

10-5-3-1 Mains Cable Inspection

Table 10-9 Mains Cable Inspection

Step	Item	Description
1	Unplug Cord	Disconnect the mains cable from the wall and system.
2	Inspect	Inspect it and its connectors for damage of any kinds.
3	Verify	Verify that the LINE, NEUTRAL and GROUND wires are properly attached to the terminals, and that no strands may cause a short circuit.
4	Verify	Inlet connector retainer is functional.

10-5-4 Cleaning

10-5-4-1 General Cleaning

Table 10-10 General Cleaning

Step	Item	Description
1	Console	Use a fluid detergent in warm water on a soft, damp cloth to carefully wipe the entire system. Be careful not to get the cloth too wet so that moisture does not enter the console.
2	Probe Holder	Clean probe holders. (they may need to be soaked to remove excess gel).
3	Monitor and Touch Panel	

10-5-4-2 Air Filter Cleaning

\

Table 10-11 Air Filter Cleaning - frequency varies with your environment

Step	Item	Description
1	Remove Filter Cover	Refer to Chapter 8 for air filter location and removal instructions
2	Clean Filter	The filters can be cleaned in sprinkling water, or they can be dusted with a vacuum cleaner. If the filter is metal wash and/or vacuum. If the filter is fiber or plastic vacuum or replace
3	Install Filter	Install the clean filter.

NOTE: For your convenience or of the air filter is too dirty, replacement filters are available. Refer to Chapter 9 for the air filter replacement part number.

10-5-5 Physical Inspection

Table 10-12 Physical Checks

Step	Item	Description
1	Labeling	Verify that all system labeling is present and in readable condition. .
2	Scratches & Dents	Inspect the console for dents, scratches or cracks.
3	Control Panel	Inspect keyboard and control panel. Note any damaged or missing items.
4	Control Panel Movement	Verify ease of control panel (Operator I/O Panel) movement in all acceptable directions. Ensure that it latches in position as required.
5	Wheels & Brakes	Check all wheels and casters for wear and verify operation of foot brake, to stop the unit from moving, and release mechanism. Check all wheel locks and wheel swivel locks for proper operation.
6	Cables & Connectors	Check all internal cable harnesses and connectors for wear and secure connector seating. Pay special attention to footswitch assembly and probe strain or bend reliefs.
7	Shielding & Covers	Check to ensure that all EMI shielding, internal covers, air flow panels and screws are in place. Missing covers and hardware could cause EMI/RFI problems while scanning.
8	External I/O	Check all connectors for damage and verify that the labeling is good.
9	Op Panel Lights	Check for proper operation of all operator panel and TCG lights.
10	Monitor Light	Check for proper operation of any monitor lights and/or
11	External Microphone	Check for proper operation of any external microphones by recording an audio test.

10-5-6 Optional Diagnostic Checks

To complete the PM checks, access the diagnostic software as described in Chapters 5 or 7. View the error logs and run desired diagnostics.

10-5-6-1 View the Logs

1.) Review the system error log for any problems.

2.) Check the temperature log to see if there are any trends that could cause problems in the future.

10-5-7 Probe Maintenance

10-5-7-1 Probe Related Checks

Table 10-13 Probe Related Checks

Step	Item	Description
1	Probe Holder	Clean probe holders. (they may need to be soaked to remove excess gel).
2	Probes	Thoroughly check the system probe connectors and remove dust from inside the connector sockets if necessary. Visually check for bent, damaged or missing pins

10-5-7-2 Basic Probe Care

The system user manuals and various probe handling cards provide a complete description of probe care, maintenance, cleaning and disinfection. Ensure that you are completely familiar with the proper care of GE probes.

Ultrasound probes can be easily damaged by improper handling. See the User Manual and probe care cards for more details. Failure to follow these precautions can result in serious injury and equipment damage. Failure to properly handle or maintain a probe may also void its warranty.

Any evidence of wear indicates the probe cannot be used.

Do a visual check of the probe pins and system sockets before plugging in a probe.

TEE and Interoperative probes often have special considerations and individual probe user manuals. For TEE and Interoperative probes also refer to their separate user manuals.

10-5-7-3 Basic Probe Cleaning

Refer to the User's Manual for details on probe cleaning.

NOTE: To help protect yourself from blood borne diseases, wear approved disposable gloves. These are made of nitrile derived from vegetable starch to prevent allergic latex reactions.

NOTE: Failure to follow the prescribed cleaning or disinfection procedures will void the probe's warranty. DO NOT soak or wipe the lens with any product not listed in the User Manual. Doing so could result in irreparable damage to the probe. Follow care instructions that came with the probe.

NOTE: Disinfect a defective probe before you return it. Be sure to tag the probe as being disinfected.

Section 10-6
Using a Phantom

See the Basic User Manual "*Customer Maintenance*" for information on using a phantom and quality assurance tests.

Section 10-7
Electrical Safety Tests

10-7-1 Safety Test Overview

The electrical safety tests in this section are based on and conform to NFPA 99 (For USA) and IEC 60601-1 Medical Equipment Safety Standards. They are intended for the electrical safety evaluation of cord-connected, electrically operated, patient care equipment. If additional information is needed, refer to the NFPA 99 (For USA) and IEC 60601-1 documents.

WARNING ***THE USER MUST ENSURE THAT THE SAFETY INSPECTIONS ARE PERFORMED AT LEAST EVERY 12 MONTHS ACCORDING TO THE REQUIREMENTS OF THE PATIENT SAFETY STANDARD IEC-EN 60601-1. ONLY TRAINED PERSONS ARE ALLOWED TO PERFORM THE SAFETY INSPECTIONS MENTIONED ABOVE.***

CAUTION **To avoid electrical shock, the unit under test must not be connected to other electrical equipment. Remove all interconnecting cables and wires. The unit under test must not be contacted by users or patients while performing these tests.**

CAUTION **Possible risk of infection. Do not handle soiled or contaminated probes and other components that have been in patient contact. Follow appropriate cleaning and disinfecting procedures before handling the equipment.**

Test the system, peripherals and probes for leakage current. Excessive leakage current can cause injury or death in sensitive patients. High leakage current can also indicate degradation of insulation and a potential for electrical failure. Do not use probes or equipment having excessive leakage current.

To minimize the risk that a probe may shock someone the customer should:

- Not use a probe that is cracked or damaged in any way
- Check probe leakage current:
    * once a year on surface probes
    * twice a year on endocavitary probes
    * whenever probe damage is suspected

10-7-2 GEMS Leakage Current Limits

The following limits are summarized for NFPA 99 (For USA) and IEC 60601-1 Medical Equipment Safety Standards. These limits are GEMS standards and in some cases are lower than the above standards listed.

Table 10-14 Chassis Leakage Current Limits—Accessible Metal Surfaces

Country	Normal Condition	Open Ground	Reverse Polarity	Open Neutral
USA	N/A	0.3 mA	0.3 mA	N/A
Other	0.1 mA	0.5 mA	0.5 mA	0.5 mA

Table 10-15 Type BF Applied Part Leakage Current Limits - Non-Conductive (Floating) Surface and Cavity Probes

Country	Normal Condition	Open Ground	Reverse Polarity	Open Neutral	*Mains Applied
USA	0.05 mA	0.05 mA	0.05 mA	0.05 mA	N/A
Other	0.1 mA	0.5 mA	0.5 mA	0.5 mA	5.0 mA

Table 10-16 Type CF Applied Part Leakage Current Limits - Surgical Probes and ECG Connections

Country	Normal Condition	Open Ground	Reverse Polarity	Open Neutral	*Mains Applied
USA	0.01 mA	0.05mA	0.05 mA	N/A	0.025 mA
Other	0.01 mA	0.05 mA	0.05 mA	0.05 mA	0.05 mA

*NOTE: *Mains Applied refers to the sink leakage test where mains (supply) voltage is applied to the part to determine the amount of current that will pass (or sink) to ground if a patient contacted mains voltage.*

The following tests are performed at the factory and should be performed at the site. These tests are: grounding continuity, chassis leakage current, probe leakage current, and ECG leakage current. All measurements are made with an electrical safety analyzer Model 600/600E built by Dale Technology Corporation or equivalent device.

10-7-3 Outlet Test - Wiring Arrangement - USA & Canada

Test all outlets in the area for proper grounding and wiring arrangement by plugging in the neon outlet tester and noting the combination of lights that are illuminated. Any problems found should be reported to the hospital immediately and the receptacle should not be used.

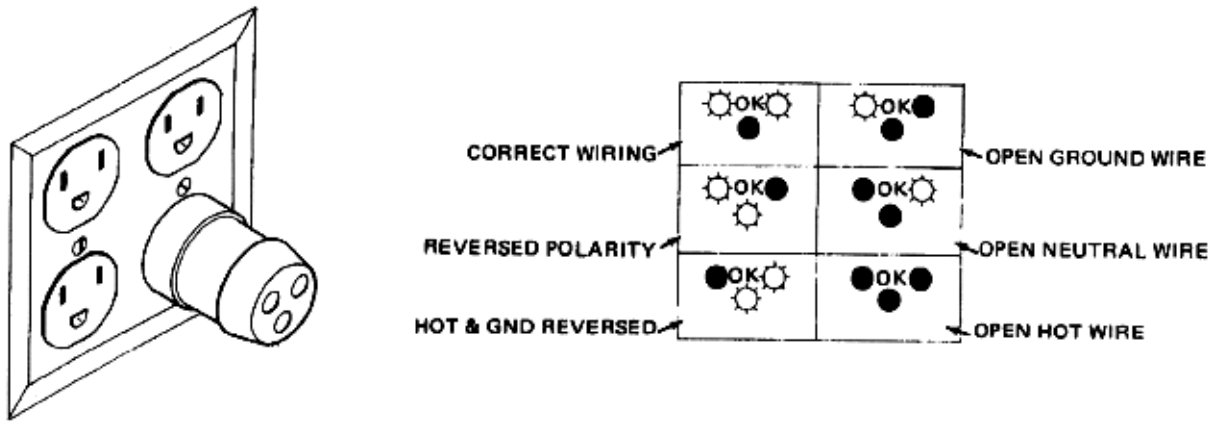


Figure 10-1 Typical Alternate Outlet Tester

The Dale 600 has self-contained lamps designed for testing the outlet wiring arrangement. Plug the Dale 600 into each outlet to be tested comparing the lamp status.

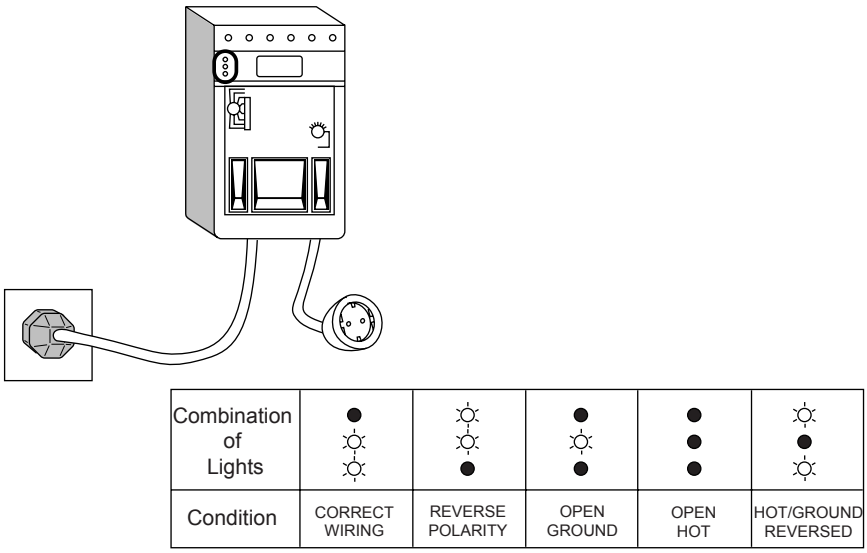


Figure 10-2 Dale 600 Outlet Test

NOTE: No outlet tester can detect the condition where the Neutral (grounded supply) conductor and the Grounding (protective earth) conductor are reversed. If later tests indicate high leakage currents, this should be suspected as a possible cause and the outlet wiring should be visually inspected.

10-7-4 Grounding Continuity

CAUTION **Electric Shock Hazard. The patient must not be contacted to the equipment during this test**

Measure the resistance from the third pin of the attachment plug to the exposed metal parts of the case. The ground wire resistance should be less than **0.2** ohms. Reference the procedure in the IEC 601-1.1.

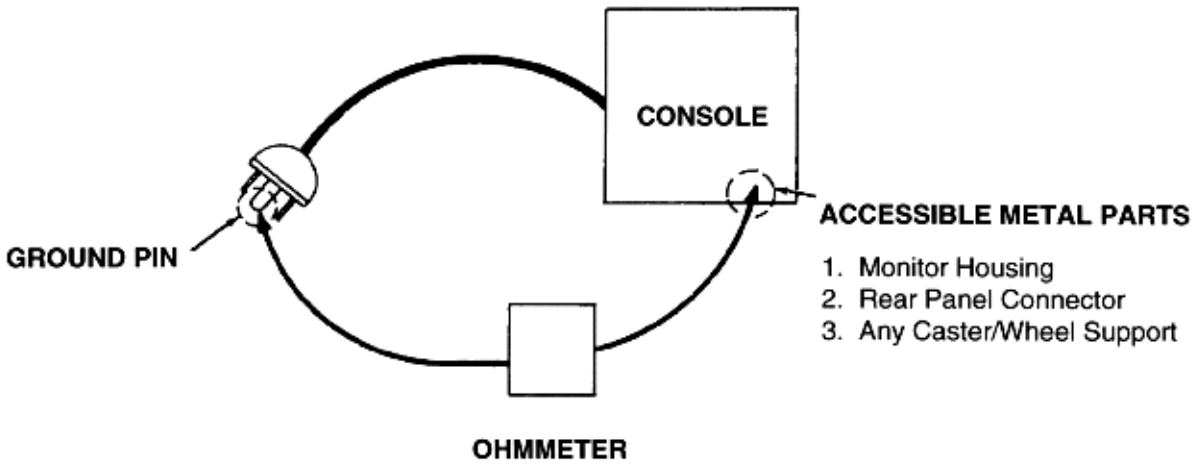


Figure 10-3 Ground Continuity Test

10-7-4-1 Meter Procedure

Follow these steps to test the ground wire resistance.

1.) Turn the LOGIQ™ 7 unit OFF.
2.) Plug the unit into the meter, and the meter into the tested AC wall outlet.
3.) Plug the black chassis cable into the meter's “CHASSIS” connector and attach the black chassis cable clamp to an exposed metal part of the LOGIQ™ 7 unit.
4.) Set the meter's “FUNCTION” switch to the RESISTANCE position.
5.) Set the meter's “POLARITY” switch to the OFF (center) position.
6.) Measure and record the ground wire resistance.

10-7-4-2 Dale 600 - Ground Continuity

The Dale 600 measures line cord resistance from the third pin of the attachment plug to the meter's Chassis Cable clamp. Test the grounding continuity of the system to all exposed metal parts in accordance with the IEC 601-1.1 procedure as above. Refer to the Dale 600 Instruction Manual for meter self tests and operation. Record measured resistance of the grounding continuity. The ground wire resistance should be less than 0.2 (Use any safety analyzer.)

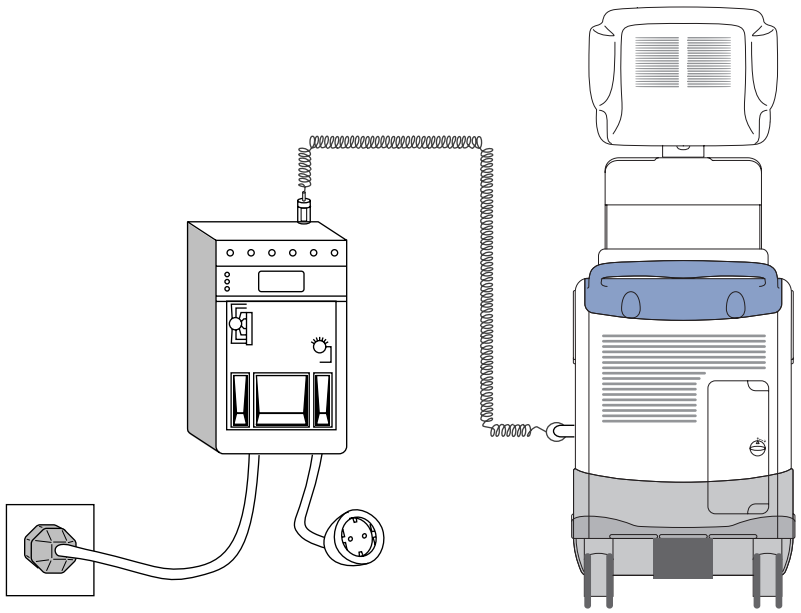


Figure 10-4 Dale 600 Ground Continuity Test

10-7-5 Chassis Leakage Current Test

10-7-5-1 Definition

This test measures the current that would flow in a grounded person who touched accessible metal parts of the bedside station if the ground wire should break. The test verifies the isolation of the power line from the chassis. The meter is connected from accessible metal parts of the case to ground. Measurements should be made with the unit On and Off, with the power line polarity Normal and Reversed. Record the highest reading.

CAUTION **Electric Shock Hazard. When the meter's ground switch is OPEN, don't touch the unit!**

CAUTION **Equipment damage possibility. Never switch the Polarity and the status of Neutral when the unit is powered ON. Be sure to turn the unit power OFF before switching them using the POLARITY switch and/or the NEUTRAL switch. Otherwise, the unit may be damaged.**

10-7-5-2 Generic Procedure

The test verifies the isolation of the power line from the chassis. The testing meter is connected from accessible metal parts of the case to ground. Measurements should be made with the unit ON and OFF, with the power line polarity Normal and Reversed. Record the highest reading of current.

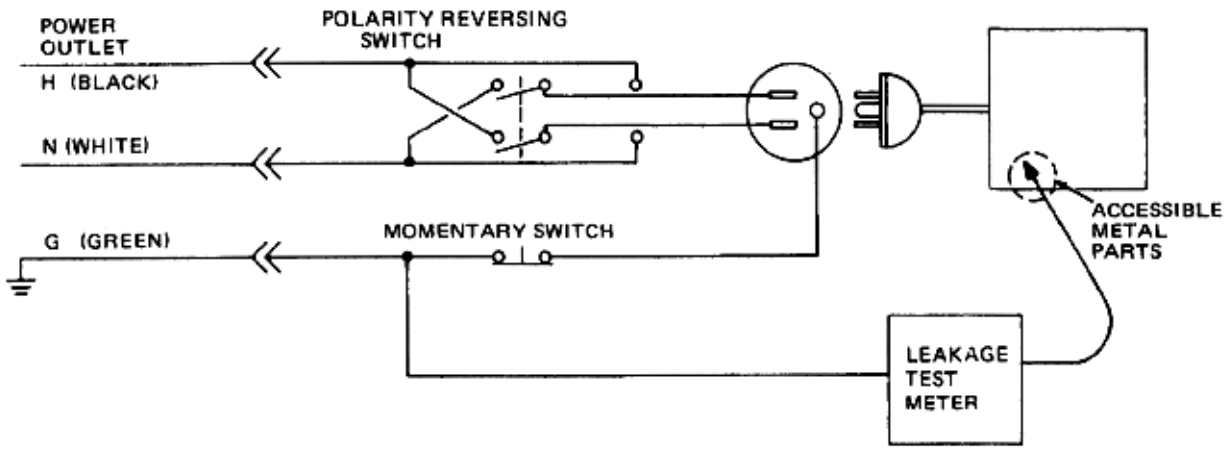


Figure 10-5 Set Up for Chassis Source Leakage Current, IEC 601-1 Clause 19 - Continuos Leakage Currents and Patient, Auxiliary Currents

When using the Microguard or a similar test instrument, its power plug may be inserted into the wall outlet and the equipment under test is plugged into the receptacle on the panel of the meter. This places the meter in the grounding conductor and the current flowing from the case to ground will be indicated in any of the current ranges. The maximum allowable limit for chassis source leakage is shown in Table 10-14.

10-7-5-3 Dale 600 Meter Procedure

When measuring system chassis currents with the Dale 600, always use the CHASSIS selection of the external/chassis function switch. This requires the ground clip lead and changing the meters switches in accordance with the IEC 601-1.1. Refer to the Dale 600 Instruction Manual for meter self-test and operation. Record the highest leakage current measured.

Follow these steps to test the unit for leakage current.

1.) Turn the LOGIQ™ 7 unit OFF.

2.) Plug the unit into the meter, and the meter into the tested AC wall outlet

3.) Plug the black chassis cable into the meter's “CHASSIS” connector and attach the black chassis cable clamp to an exposed metal part of the LOGIQ™ 7.

4.) Set the tester's “FUNCTION” switch to CHASSIS position.

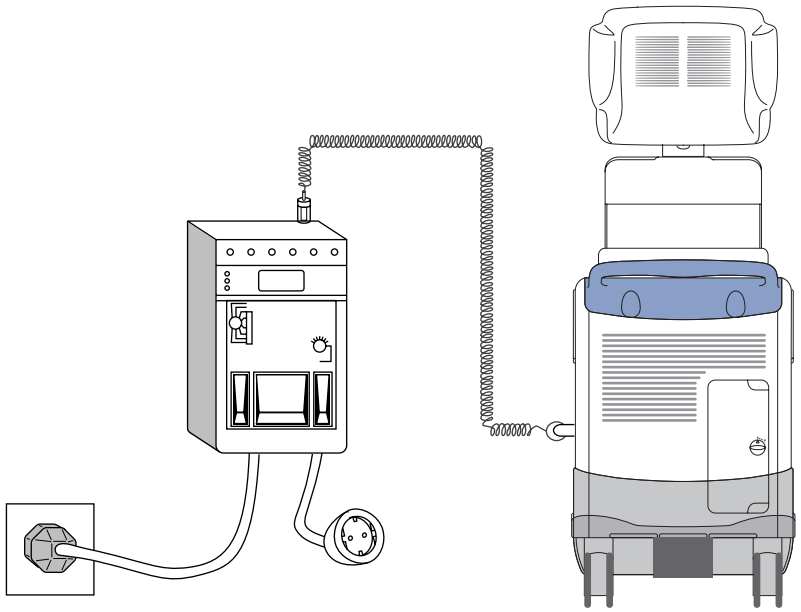


Figure 10-6 Ground and Chassis Leakage Current Test

5.) Follow the test conditions described for respective test points shown in Table 10-17.

Table 10-17 Chassis Leakage Current Test Condition

TEST	CONDITION
1	Mounting screw for probe receptacle
2	Wheel support
3	Mounting screw for CRT housing
4	Mounting screw for peripheral plugged into unit
5	Mounting screw for other peripheral powered by unit

6.) Keep a record of the results with other hard copies of PM data kept on site.

10-7-5-4 Data Sheet for Chassis Source Leakage Current

The test passes when all readings measure less than the value shown in Table 10-14. Record all data on the PM Inspection Certificate.

Table 10-18 Typical Data Sheet for Chassis Source Leakage Current

Unit Power	Tester Polarity Switch	Tester Neutral or Ground Switch	Test 1 Probe Connector	Test 2 Wheel	Test 3 CRT	Optional Test 4	Optional Test 5
Enter Name of tested peripheral here:							
ON	NORM	OPEN					
ON	NORM	CLOSED					
ON	REV	OPEN					
ON	REV	CLOSED					
OFF	NORM	OPEN					
OFF	NORM	CLOSED					
OFF	REV	OPEN					
OFF	REV	CLOSED					

10-7-6 Isolated Patient Lead (Source) Leakage–Lead to Ground

10-7-6-1 Definition

This test measures the current which would flow to ground from any of the isolated ECG leads. The meter simulates a patient who is connected to the monitoring equipment and is grounded by touching some other grounded surface. Measurements should be made with the ground open and closed, with power line polarity normal and reversed, and with the ultrasound console Off and On. For each combination the operating controls, such as the lead switch, should be operated to find the worst case condition.

⚠ **CAUTION** **Equipment damage possibility. Never switch the Polarity when the unit is powered ON. Be sure to turn the unit power OFF before switching the polarity using the POLARITY switch. Otherwise, the unit may be damaged.**

10-7-6-2 Generic Procedure

Measurements should be made with the ground open and closed, with power line polarity normal and reversed, and with the unit Off and On. For each combination, the operating controls such as the lead switch should be operated to find the worst case condition.

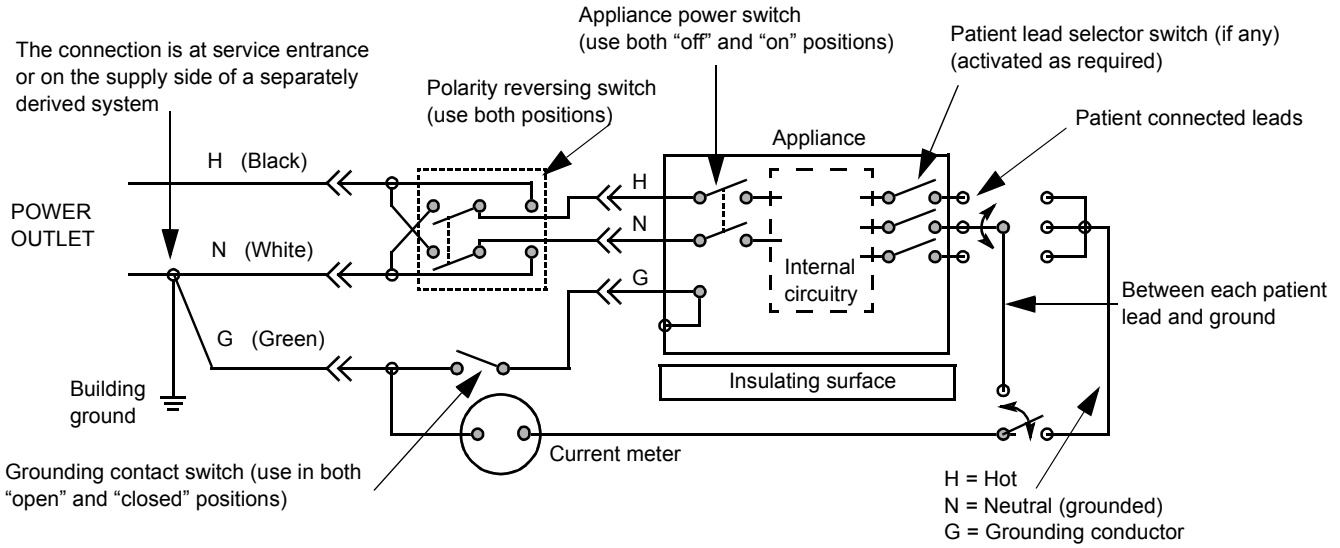


Figure 10-7 Test Circuit for Measuring Non-Isolated Patient Leads

10-7-6-3 Dale 600 Meter Procedure

The Dale 600 provides five snap type ECG buttons for testing patient leads. Snap on all patient leads to the meter and assure that the ground clip is connected to the system's ground terminal. Select the meter's LEAD-GND function. Select and test each ECG lead positions (except "ALL") of the LEAD selector, testing each to the power condition combinations found in "PATIENT LEAD LEAKAGE" table in the "PM CHECKLIST". Record the highest leakage current measured for each Power selection.

⚠ **CAUTION** **Line voltage is applied to the ECG leads during this test. To avoid possible electric shock hazard, the system being tested must not be touched by patients, users or anyone while the ISO TEST switch is depressed. When the meter's ground switch is OPEN, don't touch the unit!**

Follow these steps to test the ECG module for leakage current.

1.) Turn the LOGIQ™ 7 unit OFF.
2.) Plug the unit into the meter, and the meter into the tested AC wall outlet.
3.) Plug the black chassis cable into the meter's "CHASSIS" connector and attach the black chassis cable clamp to an exposed metal part of the LOGIQ™ 7 unit.
4.) Connect the patient leads to the corresponding snaps located at the upper front of the Dale 600/ 600E. Lead nomenclature for this test is not important.

10-7-6-3 Dale 600 Meter Procedure (cont'd)

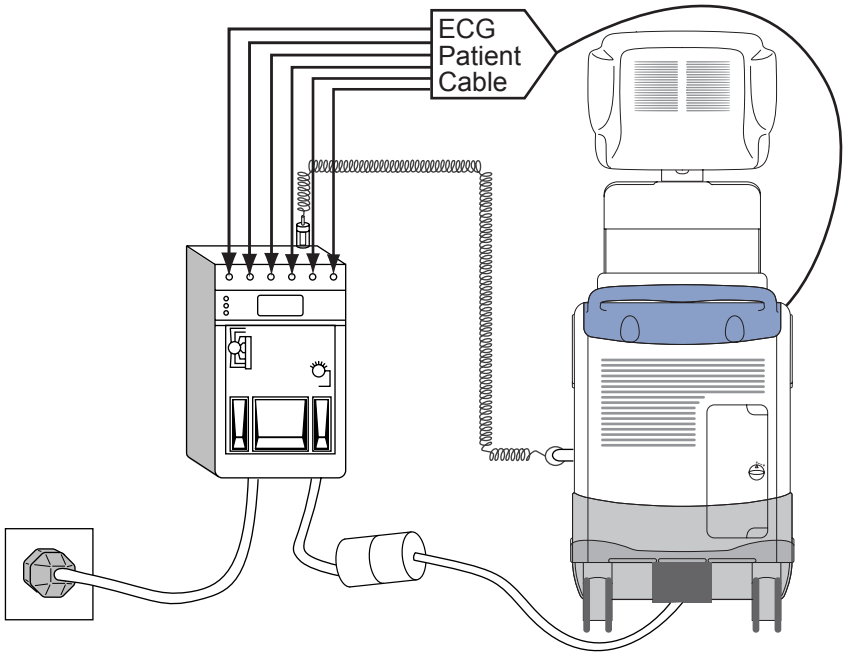


Figure 10-1 ECG Leakage Current Test

5.) Set the meter's "FUNCTION" switch to LEAD TO GROUND position to measure the patient lead to ground leakage current.

6.) Select and test each ECG lead positions (except ALL) of the LEAD selector, testing each to the power condition combinations.

Table 10-19 Testing Power Conditions

ECG Power	Meter's Polarity Switch	Meter's Neutral Switch
ON	NORM	CLOSED
ON	NORM	OPEN
ON	REVERSE	CLOSED
ON	REVERSE	OPEN
OFF	NORM	CLOSED
OFF	NORM	OPEN
OFF	REVERSE	CLOSED
OFF	REVERSE	OPEN

10-7-6-3 Dale 600 Meter Procedure (cont'd)

7.) Record the patient lead to ground leakage current measured on the data sheet.

8.) Set the meter's "FUNCTION" switch to LEAD TO LEAD position to measure the lead to lead leakage current.

9.) Select and test each ECG lead positions (except ALL) of the LEAD selector, testing each to the power condition combinations.

10.) Record the lead to lead leakage current measured on the data sheet.

11.) Set the meter's "FUNCTION" switch to LEAD ISO position to measure the patient lead isolation current.

12.) Select and test each ECG lead positions (except ALL) of the LEAD selector, testing each to the power condition combinations.

13.) Depress the rocker switch to ISO TEST and read the isolation current. To apply the voltage to the lead safely, the voltage is only applied when the rocker switch is depressed to ISO TEST.

14.) Record the patient lead isolation current measured on the data sheet.

10-7-7 Isolated Patient Lead (Source) Leakage–Lead to Lead

Reference the procedure in the IEC 60601-1. When using the Dale 600, switch the meter's function selector to the LEAD-LEAD position. Select and test each of the five ECG lead positions (except ALL) on the LEAD selector, testing each to the power condition combinations found in the table. Record the highest leakage current measured.

10-7-7-1 Dale 600 Patient Lead Tests

NEUTRAL POLARITY

1.) Closed Normal

2.) Open Normal

3.) Closed Reversed

4.) Open Reversed

10-7-8 Isolated Patient Lead (Sink) Leakage-Isolation Test

Reference the procedure in the IEC 60601-1. When using the Dale 600, switch the meter's function selector to the LEAD-ISO. Select the ALL position on the lead selector. Depress the rocker switch to ISO TEST to test lead isolation.

⚠ **CAUTION** **Line voltage is applied to the ECG leads during this test. To avoid possible electric shock hazard, the system being tested must not be touched by patients, users or anyone while the ISO TEST switch is depressed.**

NOTE: It is not necessary to test each lead individually or power condition combinations as required in previous tests.

10-7-8-1 Data Sheet for ECG Leakage Current

The test passes when all readings measure less than the value shown in the table below. Record all data on the PM Inspection Certificate.

Table 10-20 Maximum Allowance Limit for ECG Leakage Current

	AC Power Source	Maximum Allowance Limit	
		GROUND OPEN	GROUND CLOSED
Patient Lead to Ground Leakage Current Test and Patient Lead to Lead Leakage Current Test	115V	10uA	10uA
	220/240V	500uA	10uA

Table 10-21 Maximum Allowance Limit for ECG Leakage Current

	AC Power Source	Maximum Allowance Limit
Patient Lead Isolation Current Test	115V	20uA
	220/240V	5mA

Table 10-22 Typical Data Sheet for ECG Leakage Current

ECG Power	Tester Polarity Switch	Tester Ground Switch	Tester Lead Selector				
			RL	RA	LA	LL	C
ON	NORM	CLOSED					
ON	REVERSE	CLOSED					
ON	NORM	OPEN					
ON	REVERSE	OPEN					
OFF	NORM	CLOSED					
OFF	REVERSE	CLOSED					
OFF	NORM	OPEN					
OFF	REVERSE	OPEN					

10-7-9 Probe Leakage Current Test

10-7-9-1 Definition

This test measures the current that would flow to ground from any of the probes through a patient who is being scanned and becomes grounded by touching some other grounded surface.

NOTE: Some leakage current is expected on each probe, depending on its design. Small variations in probe leakage currents are normal from probe to probe. Other variations will result from differences in line voltage and test lead placement.
It is abnormal if no leakage current is measured. If no leakage current is detected, check the configuration of the test equipment.

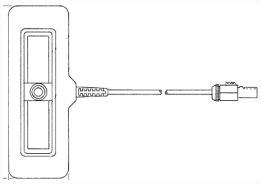
10-7-9-2 Test Equipment

Table 10-23 Test Equipment kits (Chapter 10 LOGIQ™ 7 Proprietary Service Manual)

Kit	Description	Contents
46-285652G1	Dale 601 - ULTRASOUND SAFETY ANALYZER FIELD KIT - for 120V unit	• ELECTRICAL SAFETY ANALYZER, DALE, MODEL 601 for 120V unit • Vendor MODEL 600/100 8FT CHASSIS GROUND CABLE • Vendor MODEL 600/102 6FT SALINE BATH GROUND CABLE • Vendor MODEL 600/202 ULTRASOUND PROBE ADAPTER • Vendor MODEL 600/600 SOFT CARRYING CASE • Vendor MODEL 600/900 OPERATORS MANUAL • Vendor MODEL 600/901 LMINATED OPERATORS GUIDE
46-328406G2	Dale 601E - ULTRASOUND SAFETY ANALYZER FIELD KIT - for 220V unit	• ELECTRICAL SAFETY ANALYZER, DALE, MODEL 601E for 220V unit • Vendor MODEL 600/100 8FT CHASSIS GROUND CABLE • Vendor MODEL 600/101 16FT CHASSIS GROUND CABLE • Vendor MODEL 600/103 8FT CHASSIS GROUND PROBE • Vendor MODEL 600/200 8FT EXTERNAL LEAKAGE GROUND CABLE • #20 WIRE W/MINIGATOR CLIPS, 2 Ft • CARRYING CASE and foam padding • Vendor MODEL 600/900 OPERATORS MANUAL
2113015	ULTRASOUND PROBE LEAKAGE ADAPTER KIT	• LOGIQ FAMILY PROBE ADAPTER • Vendor MODEL 600/202 ULTRASOUND PROBE ADAPTER • Vendor MODEL 600/203 RADIUS/SONOCHROME PROBE LEAKAGE CURRENT ADAPTER

10-7-9-2 Test Equipment (cont'd)

Table 10-24 Test Equipment and Accessory Description

Dale Part number	Accessory Name	Picture	Description
Vendor MODEL 600/100 46-285647P2	CHASSIS CABLE	 Black coil cord with extended length and black grips.	Used on DALE601/601E to measure earth resistance and enclosure leakage current. Also used as reference lead for external measurement.
Vendor MODEL 600/102 46-285647P4	CHASSIS GROUND PROBE	 Black coil cord with needle probe for testing receptacles and for tight spaces.	Also referred to as "Saline Probe" or "Saline Bath Ground Cable". Measures earth resistance and enclosure leakage current. Also used for grounding saline baths for isolation testing of probes. Used on DALE601/601E. This probe may be substituted for the 600/100 Chassis Cable, and used as a probe instead of a clamp.
Vendor MODEL 600/200 46-285647P6	ISO/EXTERNAL LEAKAGE CABLE	 Black coiled cord with red grips.	Standard auxiliary cable for external measurements of leakage current and voltage gradient between two surfaces. Used on DALE601/601E to measure: • Point-to-Point Leakage Current • Probe and Transducer Isolation Current May only be connected to the female connector of the Analyzer, labeled EXTERNAL
Vendor MODEL 600/202 2107545-2	ULTRASOUND LOGIQ FAMILY ADAPTER		Use during M.A.P. or Isolation test (see 10-7-9-5 - Meter Procedure Using Probe Adapter to Measure Probe Isolation (Sink) Current)

10-7-9-3 Generic Procedure for Leakage Current

Measurements should be made with the ground open and closed, with power line mains polarity normal and reversed, and with the unit Off and On. For each combination, the probe must be active to find the worst case condition.

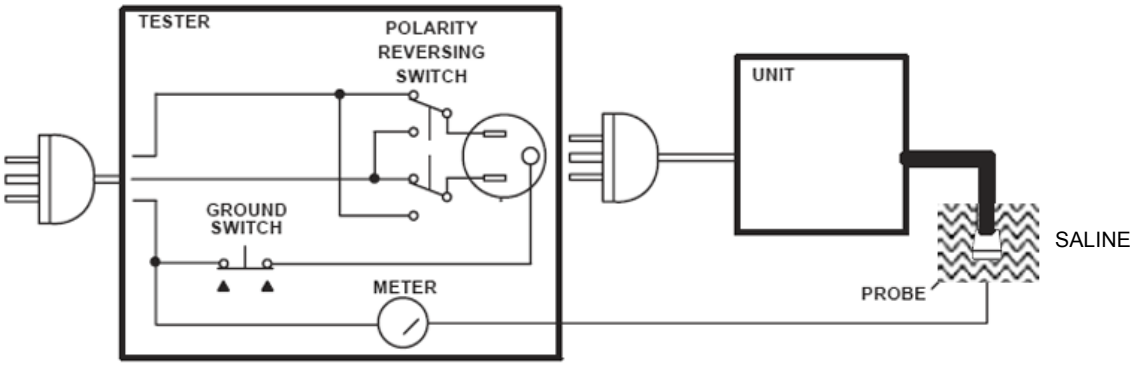


Figure 10-8 Set Up for Probe Leakage Current

10-7-9-4 Meter Procedure Using Dale Meter to Measure Leakage Current

The ultrasound probe's imaging area is immersed in a solution along with a grounding probe from the test meter to complete the current path. The solution is a mixture of water and salt. The salt adds free ions to the water, making it conductive. Use a mixture of 1 quart of water with one or more grams of table salt, mixed thoroughly.

Follow these steps to test each probe for leakage current:

1.) Turn OFF the LOGIQ™ 7 unit.
2.) Plug the unit's mains power cord into the test meter, and plug the test meter into the tested AC wall outlet.
3.) Plug the Chassis Ground Probe (saline probe) into the test meter's "CHASSIS" connector.
4.) Set the test meter's "FUNCTION" switch to "CHASSIS" (Dale 600) or "ENCLOSURE LEAKAGE" (Dale 601).
5.) Connect the probe to be tested to the LOGIQ™ 7 unit.
6.) Put the saline probe and the probe's probe face (imaging area of the probe) into the saline bath.

⚠ **CAUTION** **To avoid probe damage and possible electric shock, do not immerse probes into any liquid beyond the level indicated in the probe users manual. Do not touch the probe, conductive liquid or any part of the unit under test while the LIFT GROUND switch is depressed.**

7.) Power ON the LOGIQ™ 7 unit.
8.) After the LOGIQ™ 7 unit has completed the boot process, select the probe to be tested so it is the active probe.
9.) Depress the LIFT GROUND rocker switch and record the highest current reading.
10.) Follow the test conditions described in Table 10-25 for every probe.

The test passes when all readings measure less than the values shown in Table 10-15 and Table 10-16.

10-7-9-4 Meter Procedure Using Dale Meter to Measure Leakage Current (cont'd)

11.)Keep a record of the results with other hard copies of Planned Maintenance data.

CAUTION **Equipment damage possibility. Never switch the Polarity or the status of the Neutral when the Ultrasound unit is powered on.**

Power off the Ultrasound unit, allow the stored energy to bleed down, and turn the circuit breaker off BEFORE switching the POLARITY switch and/or the NEUTRAL switch on the leakage meter to avoid possible power supply damage.

Table 10-25 Typical Data Sheet For Probe Source Leakage Current

Probe Tested:				
Unit Power	**Tester Power Polarity Switch**	**Tester NEUTRAL Switch**	**Tester GROUND Switch**	**Measurement**
Start with System Powered OFF				
OFF	NORMAL	OPEN	CLOSED	
OFF	NORMAL	OPEN	OPEN	
OFF	NORMAL	CLOSED	CLOSED	
OFF	NORMAL	CLOSED	OPEN	
Open Neutral first, then attempt Power ON				
ON	NORMAL	OPEN	CLOSED	
ON	NORMAL	OPEN	OPEN	
Close Neutral. Power System ON, and wait until Probe under test is active, before continuing				
ON	NORMAL	CLOSED	CLOSED	
ON	NORMAL	CLOSED	OPEN	
Power System OFF using the Shutdown pop-up. Turn OFF System Circuit Breaker at rear of System or unplug from Meter outlet. Switch Tester Power Polarity switch to Reversed, then turn System Breaker ON or plug power cord into Meter outlet.				
OFF	REVERSED	OPEN	CLOSED	
OFF	REVERSED	OPEN	OPEN	
OFF	REVERSED	CLOSED	CLOSED	
OFF	REVERSED	CLOSED	OPEN	
Open Neutral first, then attempt Power ON				
ON	REVERSED	OPEN	CLOSED	
ON	REVERSED	OPEN	OPEN	
Close Neutral. Power System ON, and wait until Probe under test is active, before continuing				
ON	REVERSED	CLOSED	CLOSED	
ON	REVERSED	CLOSED	OPEN	

10-7-9-5 Meter Procedure Using Probe Adapter to Measure Probe Isolation (Sink) Current

The Dale 600/600E provides a method for testing probes independently from the system. The meter utilizes a probe adapter to apply a test potential commonly to all connector pins.

The ultrasound probe's imaging area is immersed in a solution along with a grounding probe from the test meter to complete the current path. The solution is a mixture of water and salt. The salt adds free ions to the water, making it conductive. Use a mixture of 1 quart of water with one or more grams of table salt, mixed thoroughly.

Follow these steps to test each probe for leakage current.

1.) Plug the test meter into the tested AC wall outlet.
2.) Plug the Chassis Ground Probe (saline probe in diagram) into the test meter's "CHASSIS" connector.
3.) Connect the probe to be tested to the LOGIQ Family Probe Adapter.
4.) Plug the LOGIQ Family Probe Adapter into the test meter's connector marked "EXTERNAL".

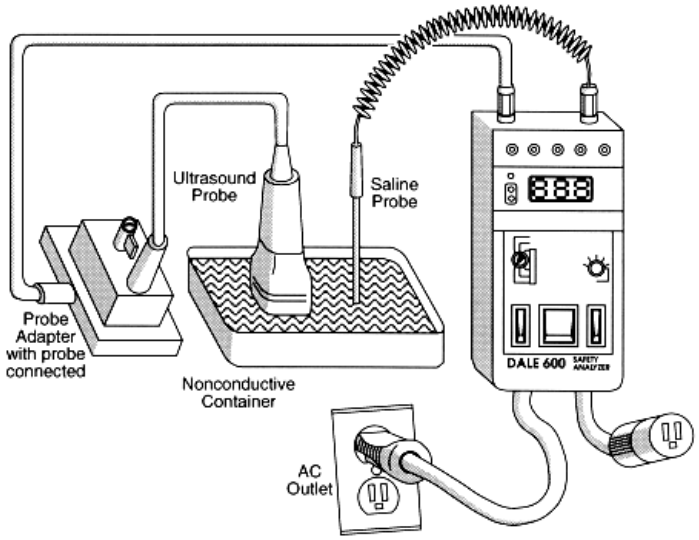


Figure 10-9 Probe Isolation (Sink) Current Test

5.) Set the meter's "FUNCTION" switch to EXTERNAL position.
6.) Put the Chassis Ground Probe and the probe's probe face (imaging area of the probe) into the saline bath.

⚠ **CAUTION** **To avoid probe damage and possible electric shock, do not immerse probes into any liquid beyond the level indicated in the probe users manual. Do not touch the probe, conductive liquid or any part of the unit under test while the ISO Test/MAP switch is depressed.**

7.) Depress the ISO TEST (Dale 600) or Mains on Applied Parts (MAP) (DALE 601) ROCKER SWITCH and record the highest current reading.

10-7-9-5 Meter Procedure Using Probe Adapter to Measure Probe Isolation (Sink) Current (cont'd)

8.) Test every probe and record in Table 10-26 the test results for every probe.
The test passes when all readings measure less than the values in Table 10-30.

9.) Keep a record of the results with other hard copies of Planned Maintenance data.

Table 10-26 Probes Tested for Isolation (Sink) Current

Probe Tested	ISO/Mains Applied

GE Healthcare Leakage Current Limits for LOGIQ™ 7

The following limits are summarized for NFPA 99 (For USA) and IEC 60601-1 Medical Equipment Safety Standards. Measurement limits per IEC 60601-1 Medical Equipment Safety Standards, Table IV.

Table 10-27 Chassis Leakage Current Limits—Accessible Metal Surfaces

Country	Normal Condition	Open Ground	Reverse Polarity	Open Neutral
USA	0.1 mA	0.3 mA*	0.1 mA	0.3 mA
Other	0.1 mA	0.5 mA	0.1 mA	0.5 mA

Table 10-28 Type BF Applied Part Leakage Current Limits - Non-Conductive (Floating) Surface and Cavity Probes

All Countries	Normal Condition	Open Ground	Reverse Polarity	Open Neutral
AC	0.1 mA	0.5 mA	0.1 mA	0.5 mA
DC**	0.01 mA	0.05 mA	0.01 mA	0.05 mA

Table 10-29 Type CF Applied Part Leakage Current Limits - Surgical Probes and ECG Connections

Country	Normal Condition	Open Ground	Reverse Polarity	Open Neutral
USA	0.01 mA	0.05mA	0.01 mA	0.05 mA
Other	0.01 mA	0.05 mA	0.01mA	0.05 mA

Table 10-30 ISO (on Dale 600) and Mains Applied (on Dale 601) Limits***

Probe Type	Measurement
BF	5 mA
CF	0.05 mA

*NOTE: *Measurement limits per IEC 60601-1 Medical Equipment Safety Standards, Table 19.5DV.1*

***Most meters (like Dale 600/601) only measure AC (rms).*

****ISO (on Dale 600) and Mains Applied (on Dale 601) refer to the sink leakage test where mains (supply) voltage is applied to the part to determine the amount of current that will pass (or sink) to ground if a patient contacted mains voltage.*

Section 10-1
When There's Too Much Leakage Current...

CHASSIS FAILS

Check the ground on the power cord and plug for continuity. Ensure the ground is not broken, frayed, or intermittent. Replace any defective part.

Tighten all grounds. Ensure star washers are under all ground studs.

Inspect wiring for bad crimps, poor connections, or damage.

Test the wall outlet; verify it is grounded and is free of other wiring abnormalities. Notify the user or owner to correct any deviations. As a work around, check the other outlets to see if they could be used instead.

NOTE: No outlet tester can detect the condition where the white neutral wire and the green grounding wire are reversed. If later tests indicate high leakage currents, this should be suspected as a possible cause and the outlet wiring should be visually inspected.

PROBE FAILS

Test the probe in another connector to isolate if the fault lies with the probe or the scanner.

NOTE: Each probe will have some amount of leakage, dependent on its design. Small variations in probe leakage currents are normal from probe to probe. Other variations will result from differences in line voltage and test lead placement. The maximum allowable leakage current for body surface contact probe differs from inter-cavity probe. Be sure to enter the correct probe type in the appropriate space on the check list.

If excessive leakage current is slot dependent, inspect the system connector for bent pins, poor connections, and ground continuity.

If the problem remains with the probe, replace the probe.

PERIPHERAL FAILS

Tighten all grounds. Ensure star washers are under all ground studs.

Inspect wiring for bad crimps, poor connections, or damage.

STILL FAILS

If all else fails, begin isolation by removing the probes, external peripherals, then the on board ones, one at a time while monitoring the leakage current measurement.

NEW UNIT

If the leakage current measurement tests fail on a new unit and if situation can not be corrected, submit a Safety Failure Report to document the system problem. Remove unit from operation.

ECG FAILS

Inspect cables for damage or poor connections

PM INSPECTION CERTIFICATE

Customer Name:		System ID:	Dispatch Number / Date Performed:	Warranty/Contract/HBS
System Type		Model Number:	Serial Number:	Manufacture Date:
Probe 1:	Frequency:	Scan Format*:	Model Number:	Serial Number:
Probe 2:	Frequency:	Scan Format*:	Model Number:	Serial Number:
Probe 3:	Frequency:	Scan Format*:	Model Number:	Serial Number:
Probe 4:	Frequency:	Scan Format*:	Model Number:	Serial Number:
Probe 5:	Frequency:	Scan Format*:	Model Number:	Serial Number:
Probe 6:	Frequency:	Scan Format*:	Model Number:	Serial Number:
Probe 7:	Frequency:	Scan Format*:	Model Number:	Serial Number:
Probe 8:	Frequency:	Scan Format*:	Model Number:	Serial Number:
Probe 9:	Frequency:	Scan Format*:	Model Number:	Serial Number:

* Scan Format: Phased Array, Linear Array, Curved Array, Mechanical Array or Other

FUNCTIONAL CHECKS

Functional Check (if applicable)	OK? or N/A
B-Mode Function	
Doppler Modes Function	
CF-Mode Function	
M-Mode Function	
Applicable Software Options	
Applicable Hardware Options	
Control Panel	
Monitor	
Touch Panel	
Measurement Accuracy	
GE Approved Peripherals	

PHYSICAL INSPECTION AND CLEANING

Physical Inspection and Cleaning (if applicable)	Inspect	Clean
Console		
Monitor		
Touch Panel		
Air Filter		
Probe Holders		
External I/O		
Wheels, Brakes & Swivel Locks		
Cables and Connectors		
GE Approved Peripherals (VCR, CD-R, MOD, Printers)		

COMMENTS:

ELECTRICAL SAFETY

Electrical Test Performed	Max Value Allowed	Value Measured	OK?	Comments
Outlet (correct ground &wiring config.)				
System Ground Continuity				
Chassis Source Leakage Current - Probe				
Chassis Source Leakage Current - Wheel				
Chassis Source Leakage Current - CRT				
Patient Lead Source Leakage (Lead to Ground)				
Patient Lead Source Leakage (Lead to Lead)				
Patient Lead Source Leakage (Isolation)				
Peripheral 1 Leakage Current				
Peripheral 1Ground Continuity				
Peripheral 2 Leakage Current				
Peripheral 2Ground Continuity				
Peripheral 3 Leakage Current				
Peripheral 3Ground Continuity				

PROBES

Probe Number (from previous page)	Max Value Allowed	Max Value Measured	OK?	Comments
Probe 1:				
Probe 2:				
Probe 3:				
Probe 4:				
Probe 5:				
Probe 6:				
Probe 7:				
Probe 8:				
Probe 9:				

Final Check. All system covers are in place. System scans with all probes as expected.

Accepted by: _____

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