GE Healthcare

Technical Publication

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REVISION 3

GE Healthcare
LOGIQ™ S6 Service Manual

Important Precautions

Language

WARNING

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

AVERTISSEMENT

- CE MANUEL DE MAINTENANCE N'EST DISPONIBLE QU'EN ANGLAIS.
- SI LE 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.
- 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.

WARNUNG

- DIESES KUNDENDIENST-HANDBUCH EXISTIERT NUR IN ENGLISCHER SPRACHE.
- FALLS EIN FREMDER KUNDENDIENST EINE ANDERE SPRACHE BENÖTIGT, IST ES AUFGABE DES KUNDEN, FÜR EINE ENTSPRECHENDE ÜBERSETZUNG ZU SORGEN.
- 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 ELEKTRICKéHOP 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 ŞI 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.

ОСТОРОЖНО!

- 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 FAROR ELLER ANDRA FAROR.

- BU SERVİS KILAVUZU YALNIZCA İNGİLİZCE OLARAK SAĞLANMIŞTIR.
- EĞER MÜŞTERİ TEKNİSYENİ KILAVUZUN İNGİLİZCE DIŞINDAKİ BİR DİLDE OLMASINI İSTERSE, KILAVUZU TERCÜME ETTİRMEK MÜŞTERİNİN SORUMLULUĞUNDADIR.

DİKKAT

- SERVİS KILAVUZUNU OKUYUP ANLAMADAN EKİPMANLARA MÜDAHALE ETMEYİNİZ.
- BU UYARININ GÖZ ARDI EDİLMESİ, ELEKTRİK ÇARPMASI YA DA MEKANİK VEYA DİĞER TÜRDEN KAZALAR SONUCUNDA TEKNİSYENİN, OPERATÖRÜN YA DA HASTANIN YARALANMASINA YOL AÇABİLİR.

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 서비스 지침는 영어로 만 이용할 수 있습니다.
- 고객 서비스 제공가 영어 이외 언어를 요할 경우, 번역 서비스를 제공는 것은 고객 책임입니다.
- 본 서비스 지침를 참조하고 이해하지 않는 한은 해당 장비를 수리하려 시도하지 마십오.
- 이 경우에 유의하지 않으면 전기 쇼크, 기계의 혹은 다른 위험으로부터 서비스 제공 , 운영 혹은 환자에게 위해를 가할 수 있습니다.

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**.

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

LEGAL NOTES

TRADEMARKS

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Revision History

Revision	Date	Reason for change
1	May 17, 2006	Initial Release
2	Nov.1, 2007	BT08 release
3	Nov.6, 2008	BEP4 release

List of Effected Pages

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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™ S6 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™ S6.
3.) **Chapter 3, Installation:** Contains the LOGIQ™ S6 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™ S6 electronics.
6.) **Chapter 6, Service Adjustments:** Contains instructions on how to make any available adjustments to the LOGIQ™ S6.
7.) **Chapter 7, Diagnostics/Trouble Shooting:** Provides procedures for running and diagnostic or related routines for the LOGIQ™ S6.
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™ S6.
10.) **Chapter 10, Periodic Maintenance:** Provides periodic maintenance procedures for the LOGIQ™ S6.

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™ S6 Models Covered by this Manual

Table 1-2 LOGIQ™ S6 Model Designations

Part Number	Description	Reference
5169603	OP CSL TYPE_A CRT JPN L6 (100V/NTSC, CRT)	Initial Release
5170424	OP CSL TYPE_A CRT USA L6 (120V/NTSC, CRT)	Initial Release
5170279	OP CSL TYPE_A CRT EU-ASIA220 L6 (220V/PAL, CRT)	Initial Release
5170451	OP CSL TYPE_A CRT KOREA L6 (220V/NTSC, CRT)	Initial Release
5170310	OP CSL TYPE_A CRT ASIA120 L6 (120V/NTSC, CRT)	Initial Release
5170418	OP CSL TYPE_A CRT CHINA L6 (220V/PAL, CRT)	Initial Release
5170369	OP CSL TYPE_A LCD JPN L6 (100V/NTSC, LCD)	Initial Release
5170380	OP CSL TYPE_A LCD USA L6 (120V/NTSC, LCD)	Initial Release
5170264	OP CSL TYPE_A LCD EU-ASIA220 L6 (220V/PAL, LCD)	Initial Release
5170314	OP CSL TYPE_A LCD KOREA L6 (220V/NTSC, LCD)	Initial Release
5170218	OP CSL TYPE_A LCD ASIA120 L6 (120V/NTSC, LCD)	Initial Release
5170354	OP CSL TYPE_A LCD CHINA L6 (220V/PAL, LCD)	Initial Release
5268701	OP CSL TYPE_B JPN LS6 (100V/NTSC,LCD)	BT08 LCD
5272223	OP CSL TYPE_B USA-ASIA-CALA120 LS6 (120V/NTSC,LCD)	BT08 LCD
5269076	OP CSL TYPE_B EU-ASIA-CALA220 LS6 (220V/PAL,LCD)	BT08 LCD
5263818	OP CSL TYPE_B USA-ASIA-CALA120 TALL LS6 (120V/NTSC,LCD)	BT08 LCD
5264909	OP CSL TYPE_B EU-ASIA-CALA220 TALL LS6 (220V/PAL,LCD)	BT08 LCD
5265707	OP CSL TYPE_B KOREA LS6 (220V/NTSC,LCD)	BT08 LCD
5272246	OP CSL TYPE_B CHINA LS6 (220V/PAL,LCD)	BT08 LCD
5324059	OP CSL TYPE_C JPN LS6 (100V/NTSC,LCD)	BT08 BECOMP4
5324060	OP CSL TYPE_C CHINA LS6 (220V/PAL,LCD)	BT08 BECOMP4
5324061	OP CSL TYPE_C USA-ASIA-CALA120 LS6 (120V/NTSC,LCD)	BT08 BECOMP4
5324062	OP CSL TYPE_C USA-ASIA-CALA120 TALL LS6 (120V/NTSC,LCD)	BT08 BECOMP4
5324063	OP CSL TYPE_C EU-ASIA-CALA220 LS6 (220V/PAL,LCD)	BT08 BECOMP4
5324064	OP CSL TYPE_C EU-ASIA-CALA220 TALL LS6 (220V/PAL,LCD)	BT08 BECOMP4
5324065	OP CSL TYPE_C KOREA LS6 (220V/NTSC,LCD)	BT08 BECOMP4

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

The Operator Manual(s) should be fully read and understood before operating the LOGIQ™ S6 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™ S6 scanners.

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.

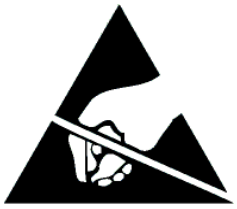
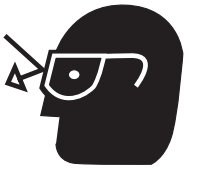
Some others make you aware of specific procedures that should be followed.

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 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
	"CAUTION - Dangerous voltage" (the lightning flash with arrowhead in equilateral triangle) is used to indicate electric shock hazards.	Various	
	"General Warning Sign"	Rear panel and UPS battery	BT08 or later
	"Warning" - Dangerous voltage" (the lightning flash with arrowhead) is used to indicate electric shock hazards.	Rear panel and inside of console	BT08 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).	BT08 or later

Table 1-5 Warnings

Label/Symbol	Purpose/Meaning	Location	Note
	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	BT08 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). "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	BT08 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	BT08 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	BT08 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™ S6 Training 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™ S6 weights 189 kg (CRT) / 169 kg (LCD) or more (416 lbs / 373 lbs or more), depending on installed peripherals, 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

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

NOTE: Background color of the triangle caution marks may be white depending on the system shipment timing.

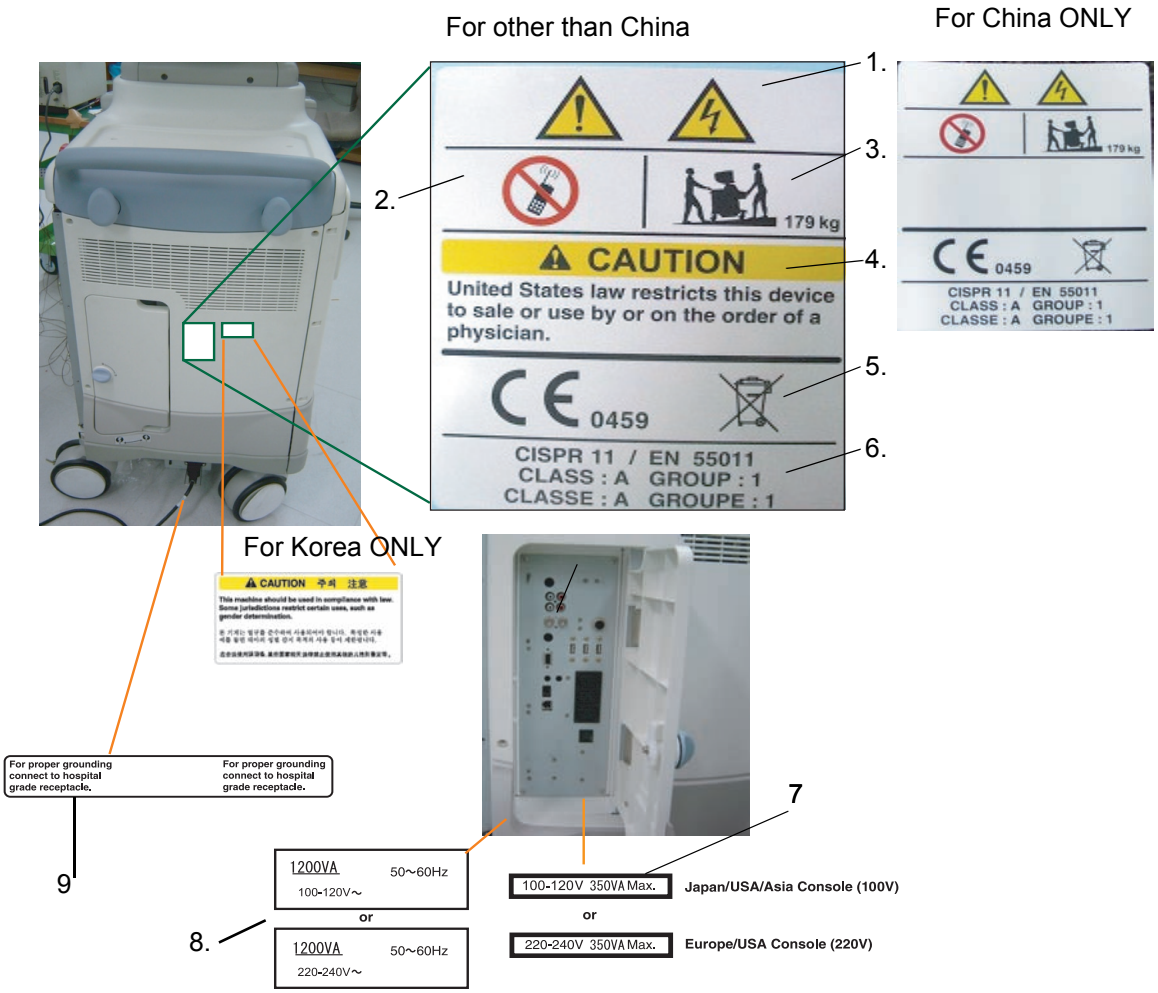


Figure 1-1 OUTSIDE MARKINGS OF LOGIQ™ S6 (Back Side)

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.) Power Indication Label
9.) Caution for Grounding Reliability (For USA, Canada and Japan)

1-3-5 Label Locations (cont'd)

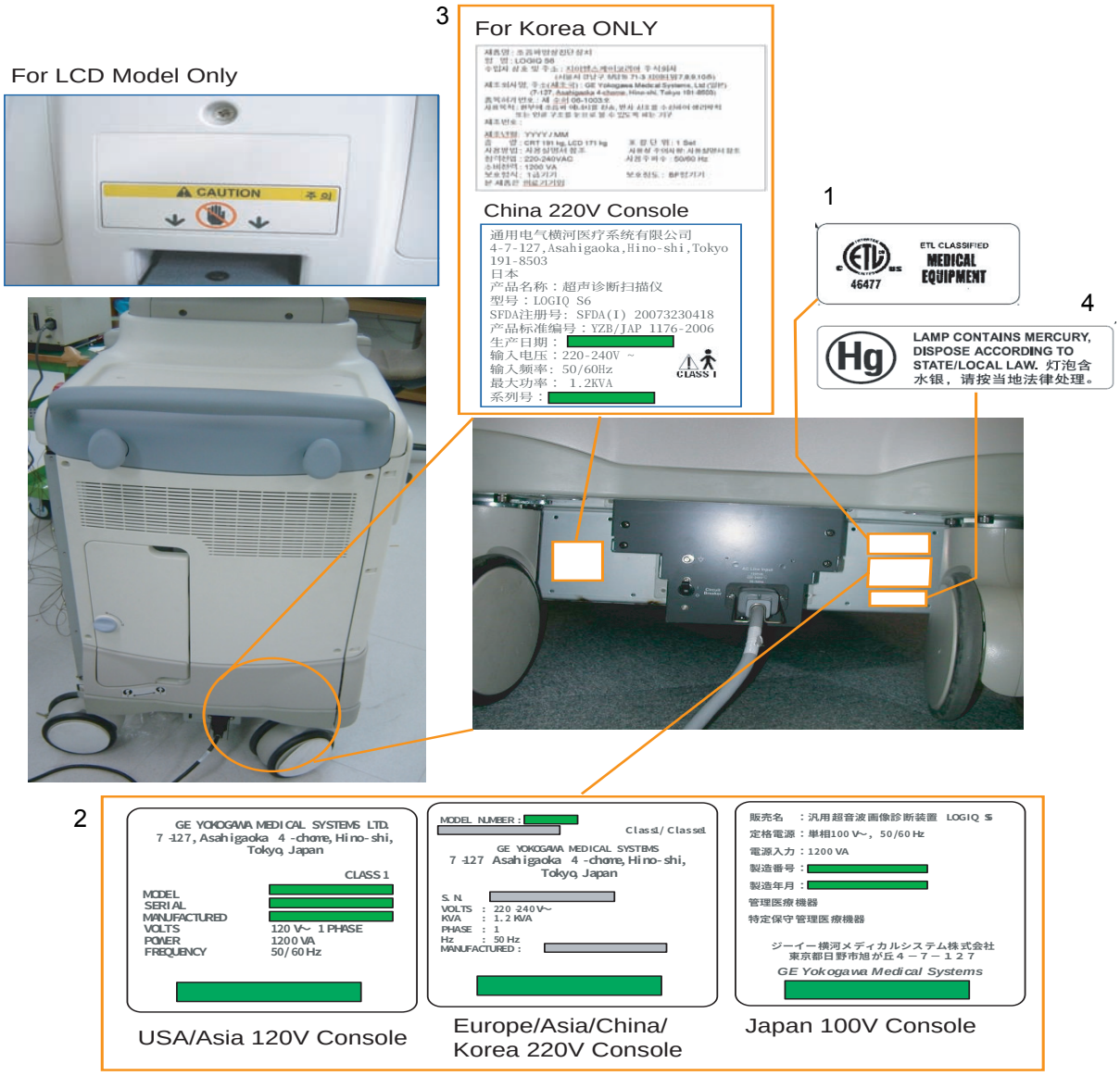


Figure 1-2 OUTSIDE MARKINGS OF LOGIQ™ S6

1.) ETL Label
2.) Identification and Rating Plate
3.) SFDA Label (For China ONLY)
4.) Vermont HG Label

1-3-6 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.***

1-3-7 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™ S6

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.

1-3-8 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.

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™ S6 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.

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™ S6. 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 2-8 Contents in Chapter 2

Section 2-2
General Console Requirements

2-2-1 Console Environmental Requirements

Table 2-9 Environmental Requirements for LOGIQ™ S6 Scanners

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

Table 2-10 Environmental Requirements for an Ultrasound Room

Item	Values
Power Source	Refer to Table 2-11 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 179 kg (395lbs) without Accessories

2-2-1-1 Cooling

The cooling requirement for the LOGIQ™ S6 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 Healthcare 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™ S6 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 2-11 Electrical Specifications for LOGIQ™ S6

PARAMETER	AREA	LIMITS
Voltage Range	100-120V	100-120 VAC ±10% (90-132 VAC)
	220-240V	220-240 VAC ±10% (198-264 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™ S6 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™ S6 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 2-12 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 2-13 Operation and storage Temperatures for 2D Probes

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

Table 2-14 Operation and storage Temperatures for 4D Probes

	Operational	Storage	Transport
Temperature	18 - 30 ^{o}C 64- 86 ^{o}F	-10 - 50 ^{o}C 14 - 122 ^{o}F	-10 - 50 ^{o}C 14 - 122 ^{o}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 2-10*) 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™ S6 has three outlets inside the unit for on board peripherals.

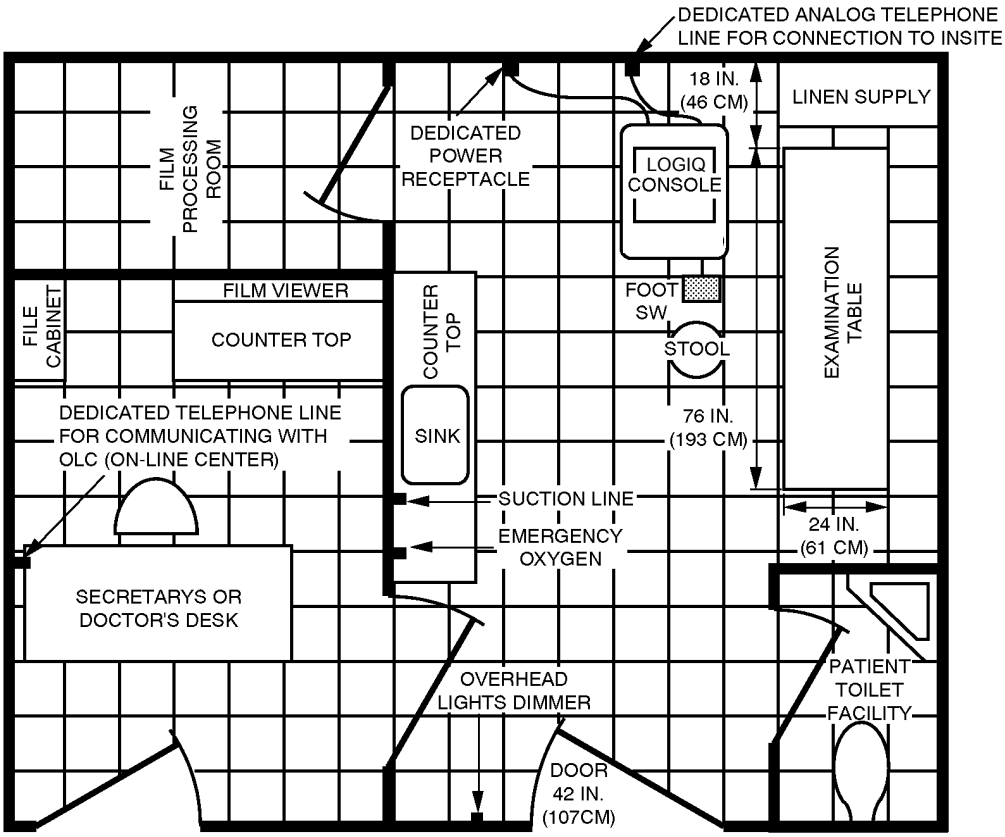
- Power outlets for other medical equipment and gel warmer
- Power outlets for test equipment and modem within 1 m (3.2 ft.) of unit
- Clean and protected space to store transducers (in their cases or on a rack)
- Material to safely clean probes (done with a plastic container, never metal)

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 service manual

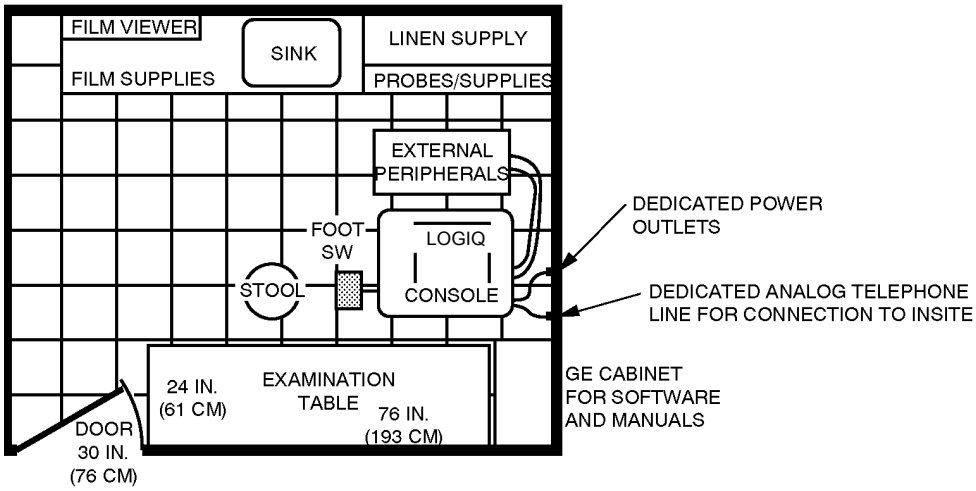
2-3-4 Recommended and Alternate Ultrasound Room Layout

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 2-3 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™ S6 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™ S6.
- 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™ S6 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™ S6 **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 2-4 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 3-15 Contents in Chapter 3

3-1-2 Average Installation Time

Table 3-16 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™ S6 has been designed to be installed and checked out by an experienced service technician in approximately four hours. LOGIQ™ S6 consoles with optional equipment may take slightly longer.

3-1-3 Installation Warnings

1.) Since the LOGIQ™ S6 weighs approximately 179 kg. (395 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 3-17 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.

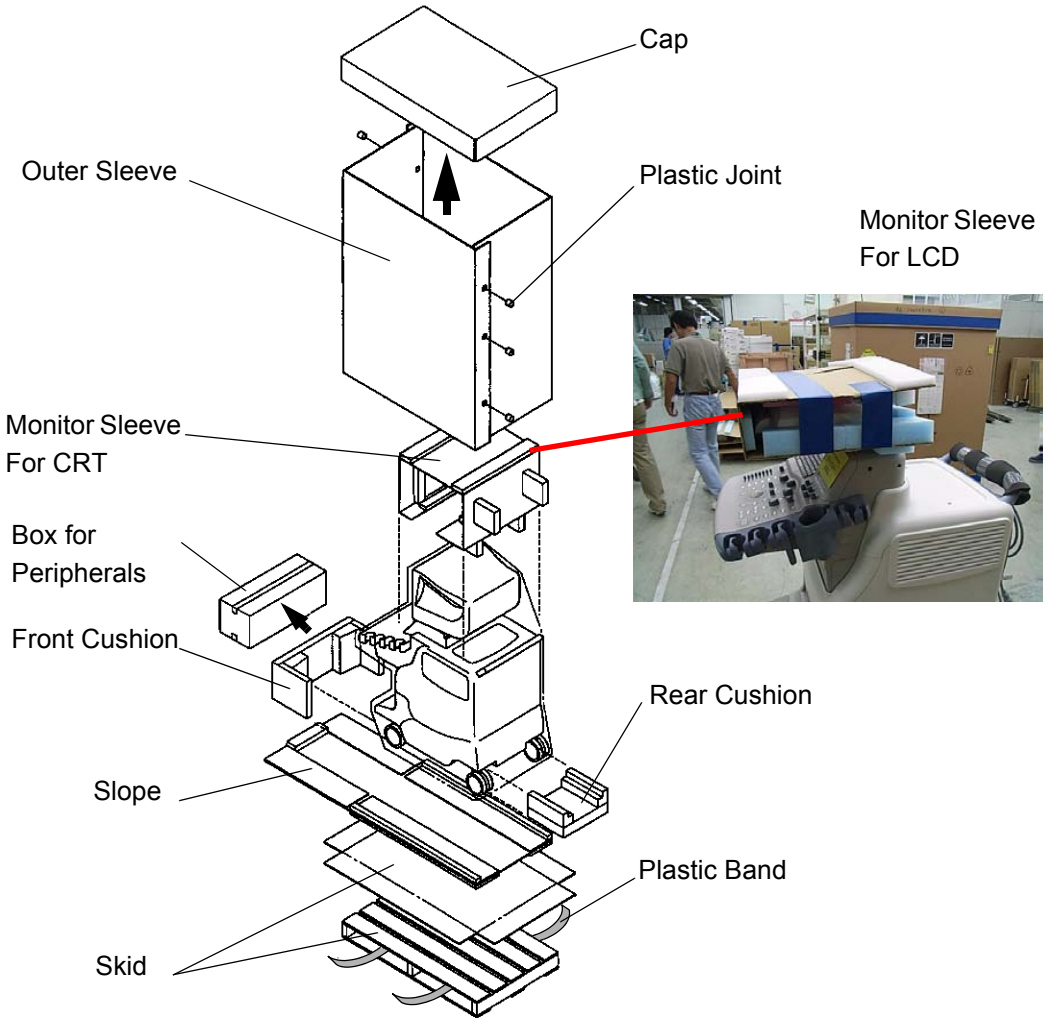


Figure 3-5 Unpacking Procedures

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™ S6 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.

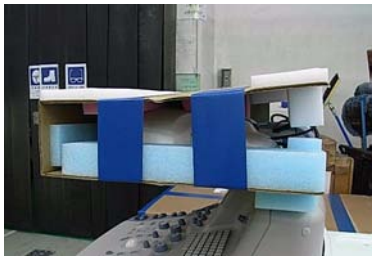
NOTICE For the protection of LCD monitor, re-use the packing sleeve whenever possible, in case of shipment after unpacking.

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

Adhesive Tape (Each side)

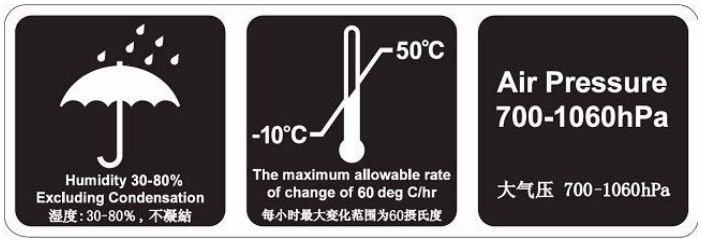
Front view after packed

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, and secure the LCD Sleeve with adhesive tape after placing it to the proper location.

Rear view after packed



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

Figure 3-6 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™ S6 and kept near the unit for quick reference.

CAUTION **ACOUSTIC OUTPUT HAZARD**
Although the ultrasound energy transmitted from the LOGIQ™ S6 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™ S6 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 10 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™ S6 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™ S6 is a compact and mobile machine, two people should move it over rough surfaces or up and down grades.

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.**

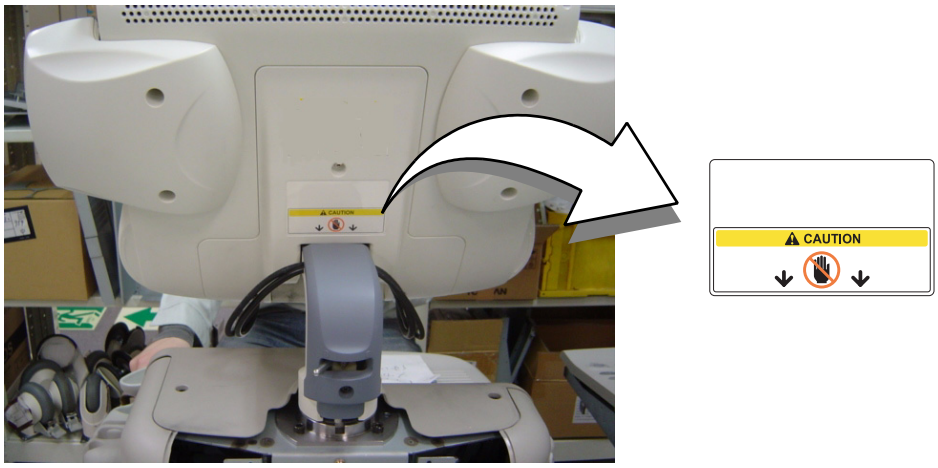


Figure 3-7 LCD Tilt Caution

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™ S6 Scanner is found on the label onto the rear lower of the scanner.

WARNING ***CONNECTING A LOGIQ™ S6 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:

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.

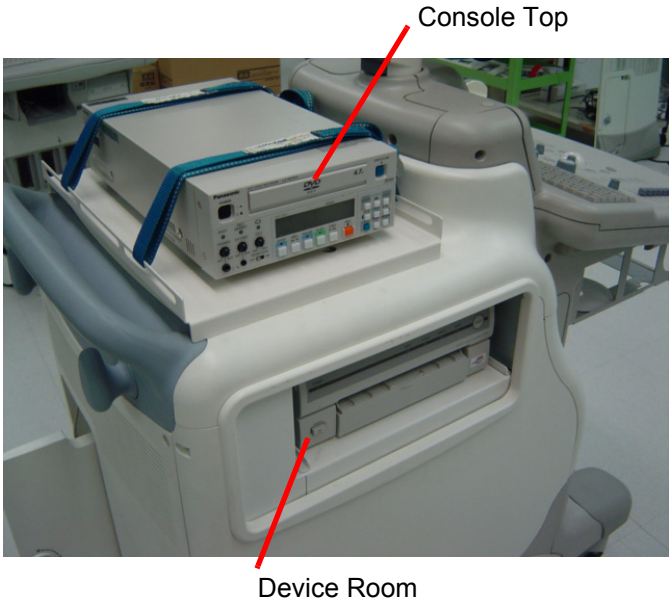


Figure 3-8 Peripherals Locations

Table 3-18

Location for peripheral	Color Printer UP-D55	Color Printer UP-D23	Two peripherals
Console Top	Not used	**Used**	VCR or DVD recorder or UP-D23
Device Room	**Used**	Not used	Color Pinter (UP-D55)

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.

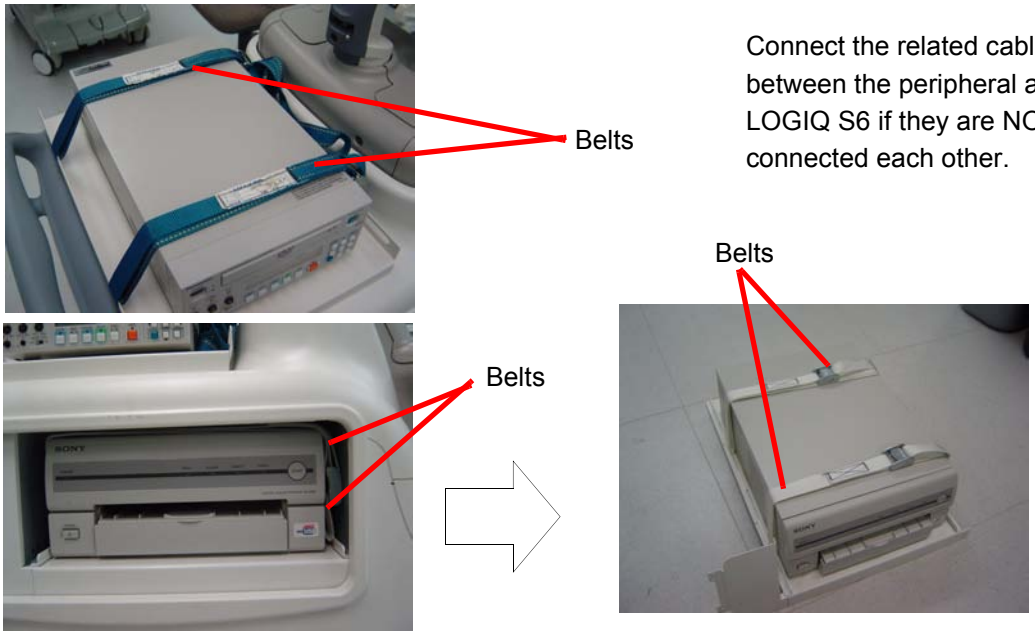


Figure 3-9 Belt Locations

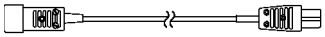
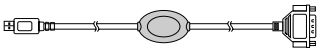
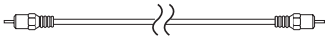
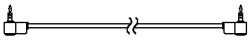
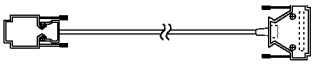
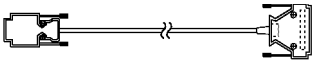
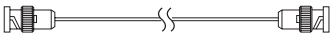
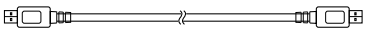
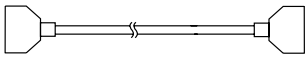
3-4-2-1 Approved on-board peripherals

Refer to Section 5-4 Peripheral Compatibility.

Connecting Cables

CAUTION Possible equipment damage if mis-handled. Be sure to use the following recommended connecting cables to connect recording devices and a network with LOGIQ™ S6 console.

Table 3-19 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™ S6 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 3-20 List of Transducers

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 2296158
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 2295649
6T-OR-TEE	PU: PolyUrethane	TRASOPHAGEAL FOR ADULT CARDIOLOGY	SECTOR	H79932P H45521DX	2294534 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		ABDOMINAL	CONVEX Volume	H44801G	5121652 KTZ195893

Table 3-20 List of Transducers(Continued)

Probe Name	Material of Headshell	Area of Using	TYPE	Catalog Number	Part Number
4D10L		SUPERFICIAL	LINEAR Volume	H44801GB	5121651 KTZ156836
4C		ABDOMINAL	CONVEX	H4904PC	5131944 5123455
12L		SUPERFICIAL	LINEAR	H40412LH	2295375 2295377
P2D		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 3-21, are supported by BT08 and later LOGIQ S6 models.

Table 3-21 List of Transducers supported by BT08 or later

Probe Name	Material of Headshell	Area of Using	TYPE	Catalog Number	Part Number
3CRF	PU: PolyUrethane	ABDOMINAL	MICRO-CONVEX	H78762P H40442LP	5214820 5196216
4DE7C	PBT	OB Gyn Urology	CONVEX Volume	H78242P H44801GA	5121650 KTI195860
9L	PBT	VASCULAR SMALL PARTS	LINEAR	H78572P H40412LT	5177407 5149427
11L	PBT	SUPERFICIAL	LINEAR	H78842P H40412LY	5251881 5171885

3-4-4 Video Specification

Table 3-22 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™ S6 peripherals and accessories can be properly connected using the rearIO Assy 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 VZS..

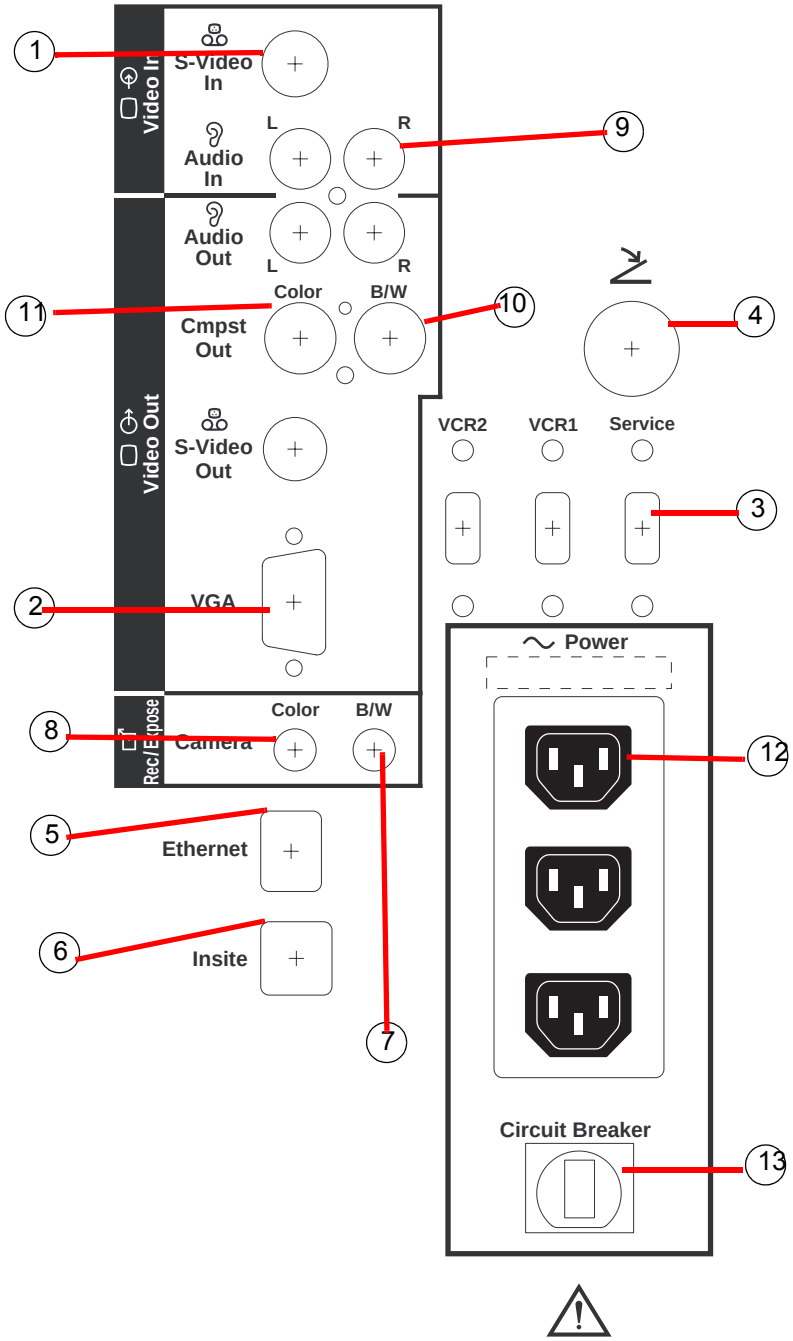
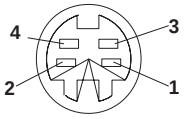


Figure 3-10 Rear Panel Connector

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

1 Pin Assignment of S-Video Connector

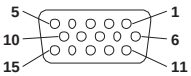


Connector: S-Terminal, 4-pin

Table 3-23 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

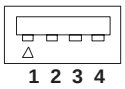


Connector: Shrank D-Sub, 15-pin

Table 3-24 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, USB2.0.



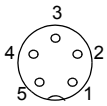
Connector: 4 pin

Table 3-25 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 Foot Switch



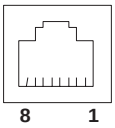
Round 5 pin connector.

Table 3-26 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.

⑤ Pin Assignment of Ethernet

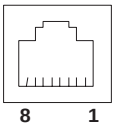


Connector: RJ-45 Modular, 8-pin

Table 3-27 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 3-28 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

Table 3-29 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

Table 3-30 Pin Assignment of Mini-Jack for Controlling Color Camera

Pin No	Output Signal
1	SHUTTER
2	Signal GND

⑨ Pin Assignment of Audio

RCA pin Jack

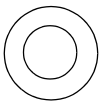


Table 3-31 Pin Assignment of RCA pin Jack

Pin No	Output Signal	Description
1	Audio OUT/IN	Signal
2	Audio OUT/IN	GND

⑩ Pin Assignment of Composite Out, B/W

BNC Connector

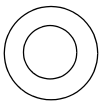
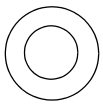


Table 3-32 Pin Assignment of BNC Connector

Pin No	Output Signal	Description
1	Composite Video	B/W
2	Composite Video	GND

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

(11) Pin Assignment of Composite Out, Color



BNC Connector

Table 3-33 Pin Assignment of BNC Connector

Pin No	Output Signal	Description
1	Composite Video	Color
2	Composite Video	GND

(12) Peripheral Power Outlets

Power Outlet Connector

Table 3-34 Power Outlet Connector

Pin No	Output Voltage	Description
-	100 - 120 V / 350 VA max	For U.S.A, Japan, etc...
-	220 - 240 V / 350 VA max	For Europe, etc...

(13) Circuit Breaker

Circuit Breaker

Table 3-35 Circuit Breaker

Pin No	Specifications	Description
-	4 A	For 100 - 120 V
-	2 A	For 220 - 240 V

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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™ S6 console, diagnostics by using the built-in service software, and power supply adjustments.

Table 4-36 Contents in chapter 4

⚠ **NOTICE** Most of the information pertaining to this Functional Checks chapter is found in the LOGIQ™ S6 Quick Guide.
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 Required Equipment

- An empty (blank) MO Disk or DVD-R 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 (Equipotential terminal) at the rear of the System.

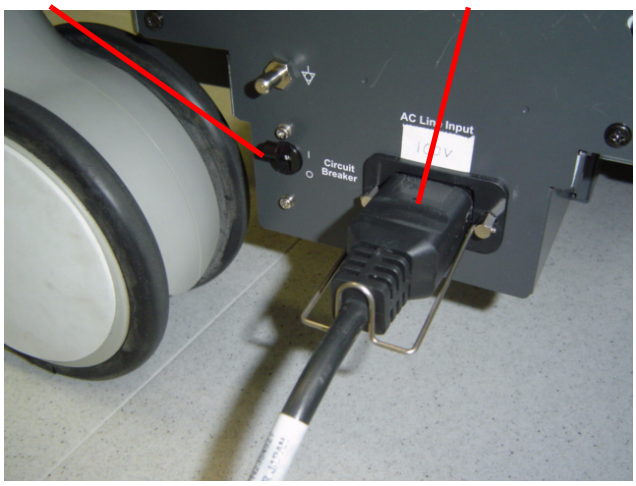


Figure 4-11 Circuit Breaker

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.

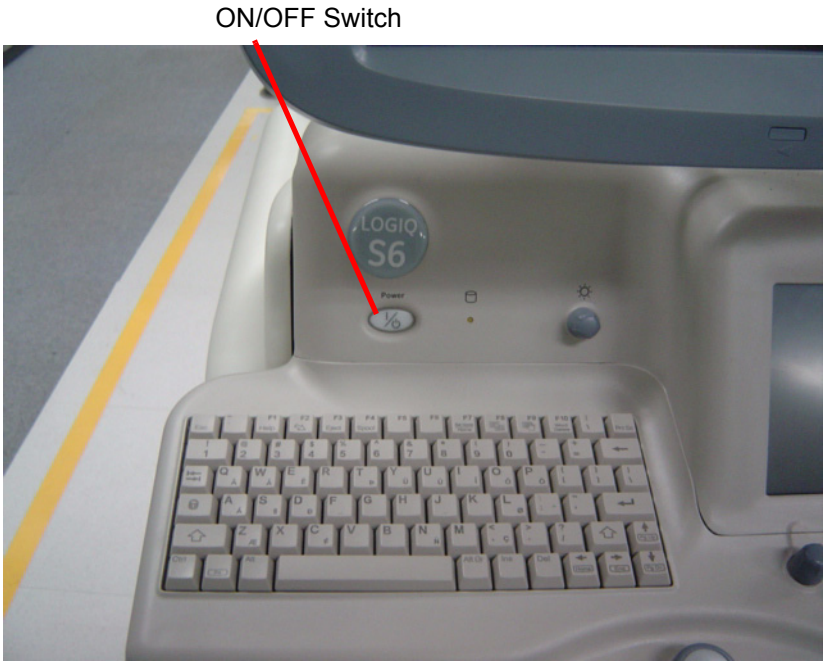


Figure 4-12 Power On/Off Standby Switch Location

5.) 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.

4-2-2-2 Power Up Sequence

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

4-2-2-3 Entering the Maintenance Mode

Purpose: This is a description on how to enter the maintenance mode.

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

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

4.) Click on **Exit.**

Figure 4-13 Exit

5.) Enter the proper password to enter the maintenance mode.

6.) Click on **OK**.

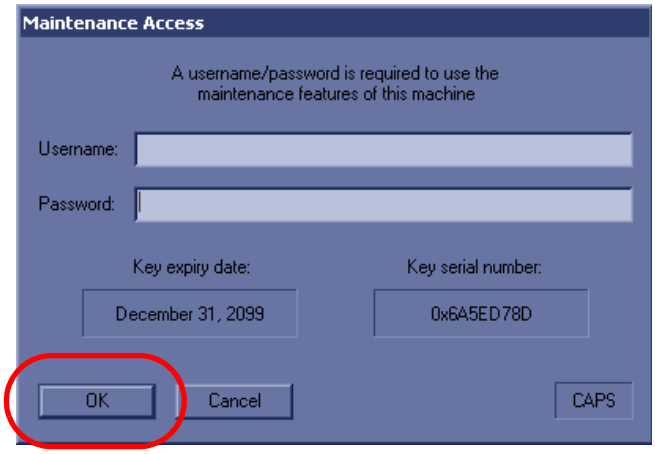


Figure 4-14 OK

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

7.) Click on **maintenance**.

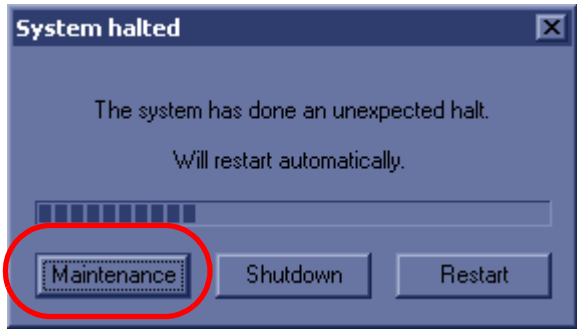


Figure 4-15 Maintenance

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

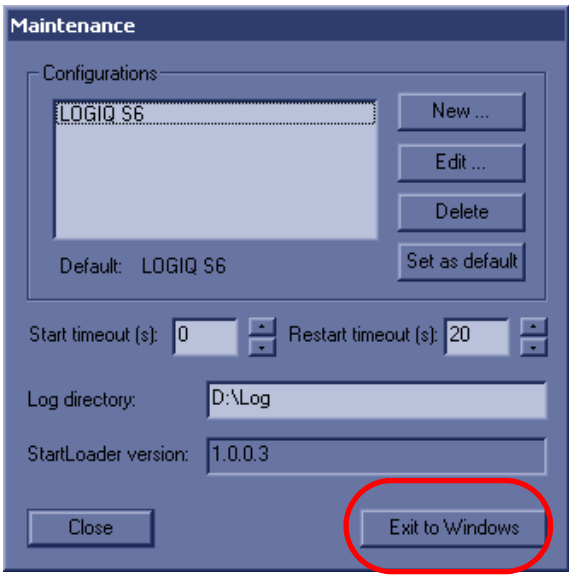


Figure 4-16 Exit to Windows

4-2-3 System Restart/Shutdown

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

4-2-3-1 Complete Power Shutdown

1.) Press the **ON/OFF** key at the front of the System for about two (2) seconds. Refer to Figure 4-12 on page 4-3.
2.) Switch OFF the Main Circuit Breaker at the rear of the system Refer to Figure 4-11 on page 4-2.
3.) Disconnect the Main Power Cable if needed. Refer to Figure 4-11 on page 4-2.

4-2-4 Using MOD/DVD Drive

4-2-4-1 Using DVD Drive

NOTICE **Never move the unit with a disk in the DVD because the drive actuator will not be locked and the 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 DVD device.
4.) There are a number of methods to eject a disk from the DVD. Ejection is automatic in some cases. Manual ejection methods, listed in preferred order of use, are:
   a.) Press **EJECT** button on the 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 4-17 DVD drive

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

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

4-2-4-2 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 4-18 MOD drive

4-2-5 Archiving and Loading Presets for BT08

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.

4-2-5-1 Regional Preset - General (Supported from BT08)

NOTICE Do not attempt to change/use Regional Preset buttons for Upgraded BT08. For Upgrade BT08 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 4-37

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

4-2-5-2 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** .

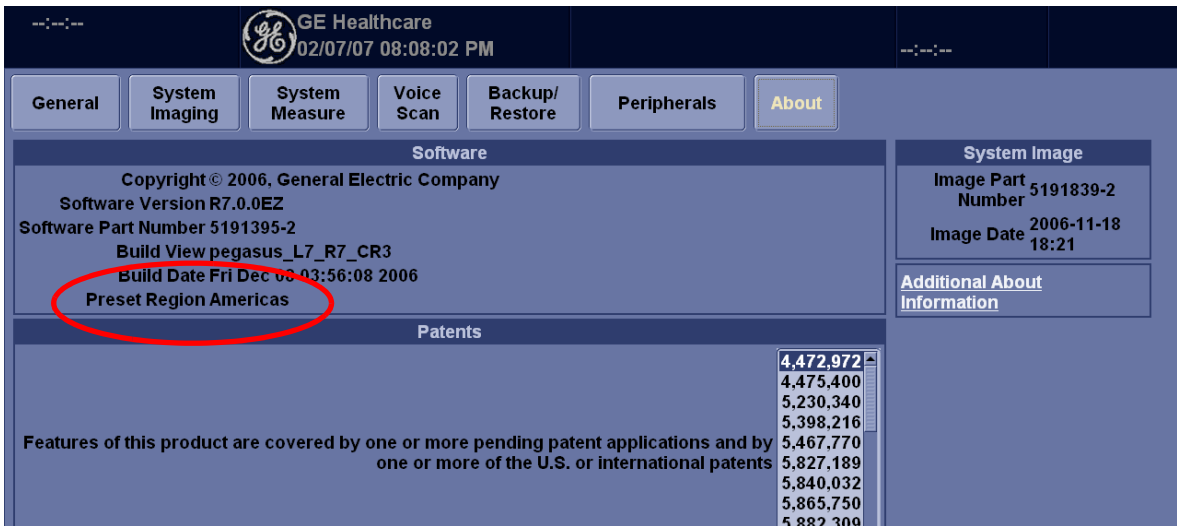


Figure 4-19 Current Regional Preset

NOTICE For Upgraded BT08, this field always shows "None" as Region Preset is feature available for pure BT08 and onward.

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

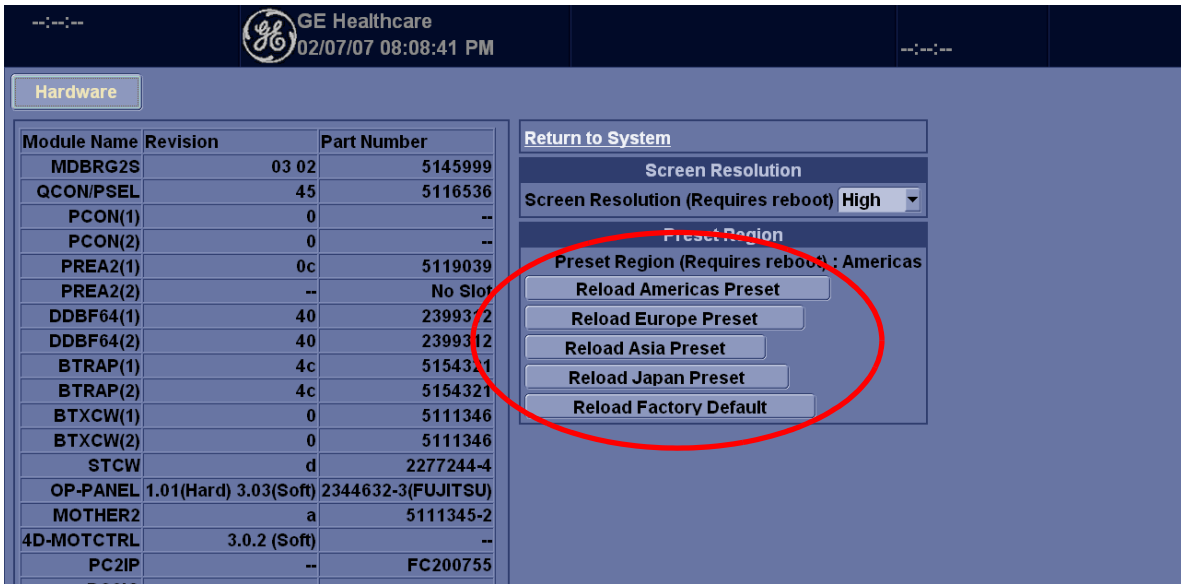


Figure 4-20 Factory Default Regional Preset

4-2-5-3 Cautions Using Regional Preset

- Do not attempt to modify Regional Preset on Upgraded BT08.
- 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 BT08 and on) re-loaded or upgraded (from BT08and 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.

4-2-5-4 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.

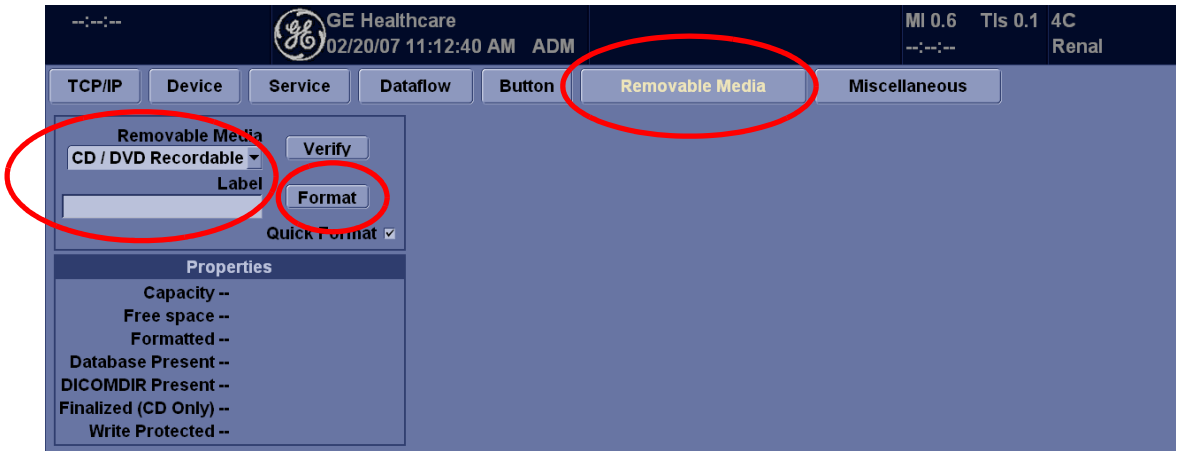


Figure 4-21 Selecting Format Button

4-2-5-5 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.

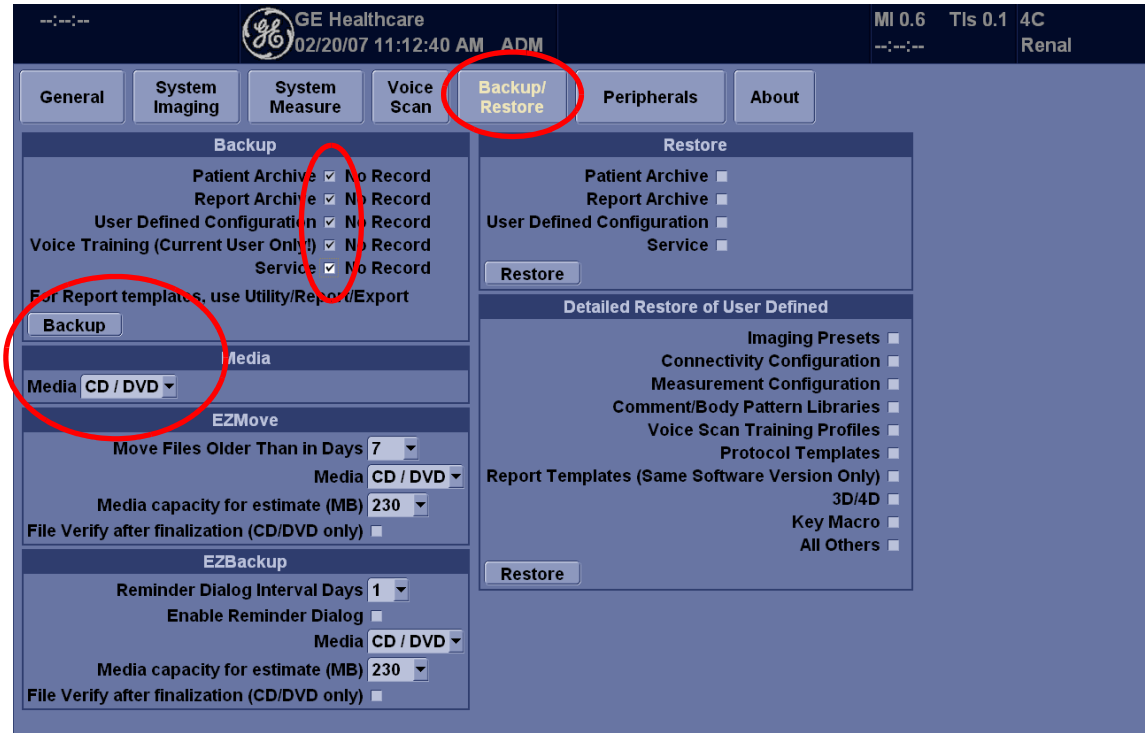


Figure 4-22 Clicking on Backup

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

4-2-5-6 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.

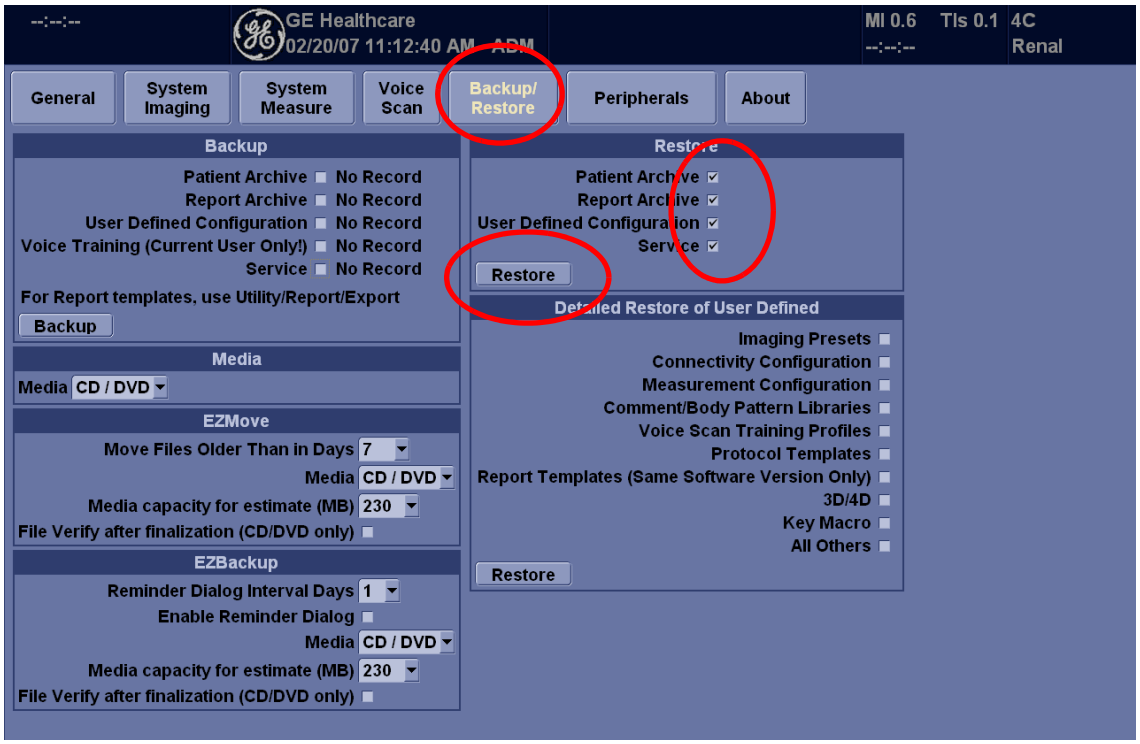


Figure 4-23 Clicking on Restore

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

4-2-5-7 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/

4-2-6 Archiving and Loading Presets for R6.x.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 MO/DVD-R disk for reloading on the system.

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

4-2-6-1 Formatting MO/DVD-R Disk

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

2.) Access to the **Utility** Menu on the Touch Panel, and select **Connectivity**>**Tools**. The Tools screen will be shown on the monitor.

Figure 4-24 Formatting Removable Media1

3.) Select the removable media from media list.

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

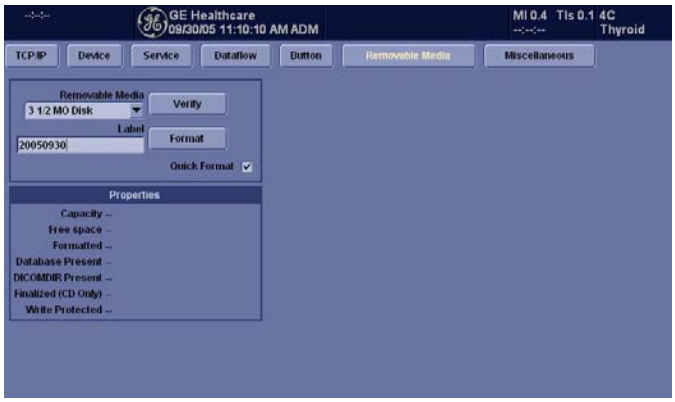


Figure 4-25 Formatting Removable Media2

5.) Select Format button.

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

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

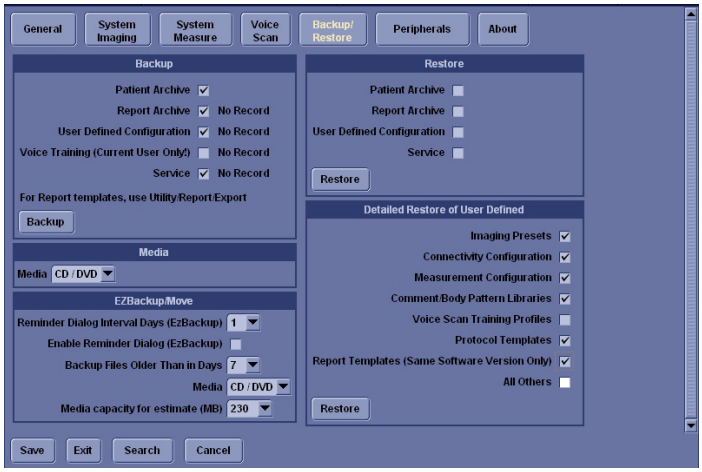


Figure 4-26 Backup Sheet

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.

4-2-6-3 Loading Presets from an MO/DVD-R disk

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

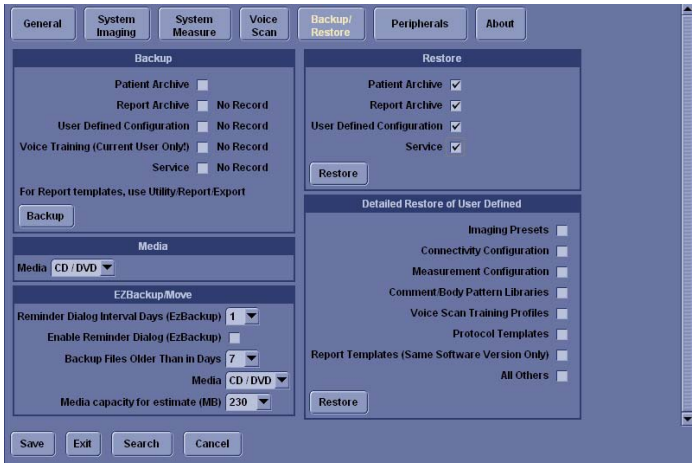


Figure 4-27 Restore Sheet

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™ S6 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.

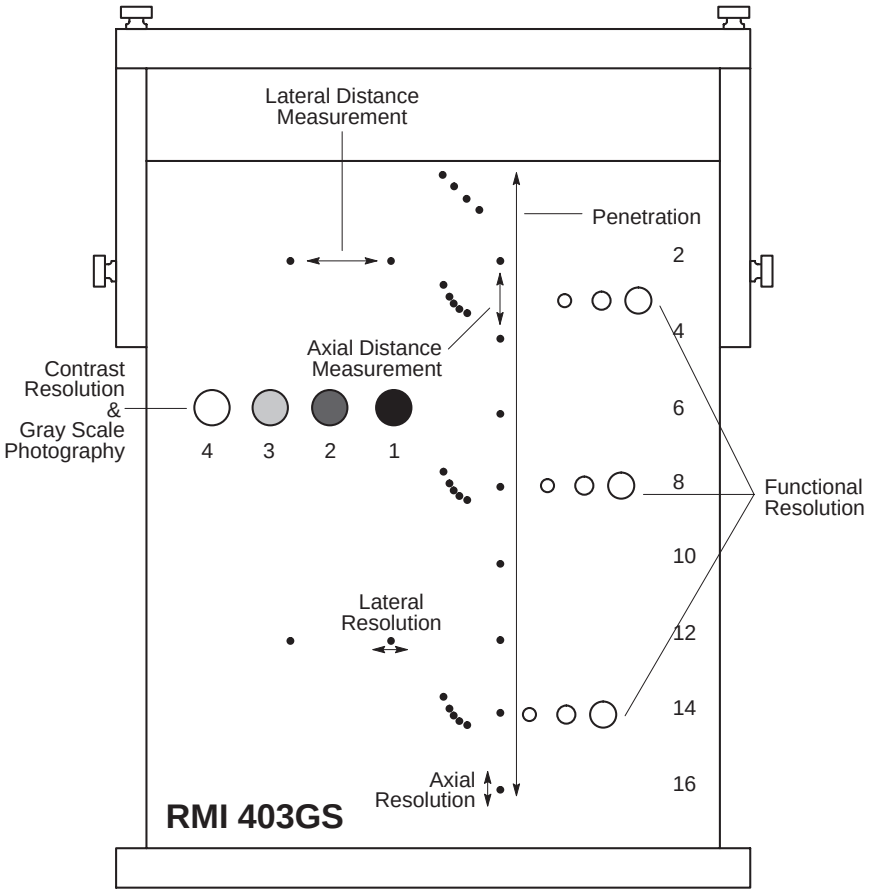


Figure 4-28 Performance Test

4-3-3 Mode Checks (QG)

For a functional check of the system's different modes, refer to the LOGIQ™ S6 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 4-38 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.*

4-3-4 Basic Measurements (QG)

Basic Measurements for the LOGIQ™ S6 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™ S6 Quick Guide.

4-3-5 ECG Checks

Connect the ECG Harness and check:

Table 4-39 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 (QG)

For activating Cine, creating and storing Cine Loops, and information on the Cine Timeline, refer to the LOGIQ™ S6 Quick Guide.

4-3-7 Backend Processor Checks

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

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

The LOGIQ™ S6 Quick Guide, provides information on connecting, activating, deactivating and disconnecting probes.

4-3-9 Peripheral Checks

Check that peripherals work as described below:

Table 4-40 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 4-41 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 Image Management (QG)

This section in the LOGIQ™ S6 Quick Guide talks about several topics:

- Clipboard
- Printing Images
- Browsing and Managing an Exam's Stored Image
- Connectivity, Dataflow Concept and Creation
- Starting an Exam
- Configuring Connectivity
- TCP/IP
- Services (Destination)
- Buttons
- Views
- Verifying and Printing a Device

4-3-11 Mechanical Functions

4-3-11-1 Brakes and Direction Locks Checks

Check that: brakes and direction (swivel) locks function as described below. Refer to Figure 4-29 for the locations of brake and swivel.

Table 4-42 Brakes and Direction (swivel) Lock Check

Step	Task to do	Expected Result(s)
1.	Press on pedal no.1 	To engage the pedal in full lock (Brake Lock and Swivel Lock)
2.	Press on pedal no.2 	To release the brake and swivel lock.
3.	Shift pedal no.3 to the left. 	To release swivel lock

Table 4-42 Brakes and Direction (swivel) Lock Check

Step	Task to do	Expected Result(s)
4	Shift pedal no.3 to the right. 	To engage swivel lock

4-3-11-1 Brakes and Direction Locks Checks (cont'd)

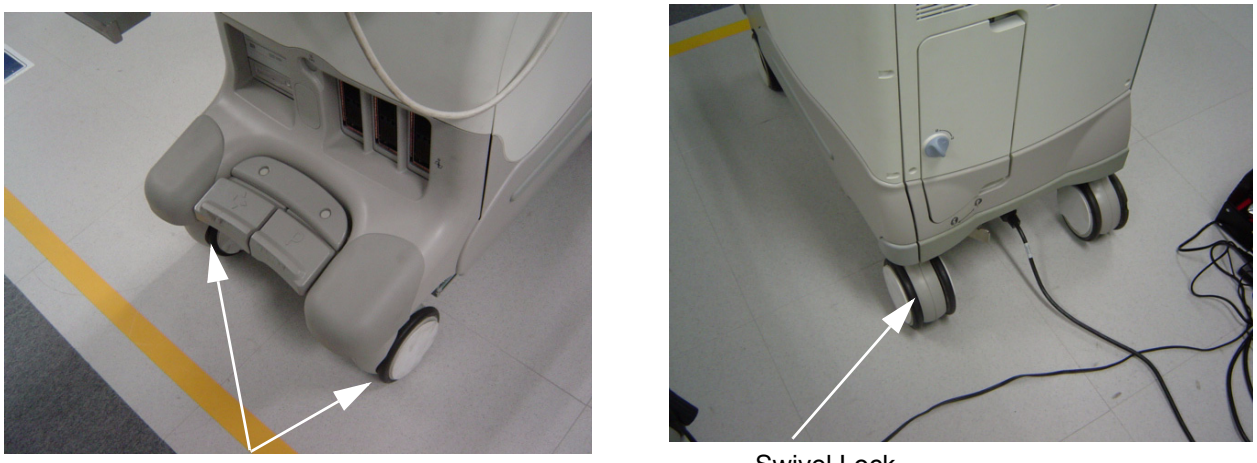


Figure 4-29 Brake and Swivel Location

4-3-11-2 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 4-3-11-1).
  - 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 4-43 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 Utility Menu

Refer to Section 5-5 - Common Service Platform.

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.

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 4-44 Site Log

DATE	SERVICE PERSON	PROBLEM	COMMENTS

Table 4-44 Site Log

DATE	SERVICE PERSON	PROBLEM	COMMENTS

Chapter 5
Components and Functions (Theory)

Section 5-1
Overview

This chapter explains LOGIQ™ S6's system concepts, component arrangement, and subsystem function. It also describes the Power Distribution System (PDS) and probes.

Table 5-45 Contents in Chapter 5

Section 5-2
Hardware Compatibility Matrix

5-2-1 Hardware Comaptibility BT06 or later

5-2-1-1 Plastic Mechanics

FRU compatibility BT06/BT08		R6.1.2	R6.1.2	R6.2.2	R6.2.2	R6.2.3	R6.2.3	R7.6.x R7.7.x	R7.6.x R7.7.x	R7.6.x R7.7.x	R7.6.x	R7.7.x w/ BEP4	R7.7.x w/ BEP4	R7.7.x w/ BEP4	***Latest Software***
FRU Part#	**Description**	BT06 (Original)	BT06 (Original) + LCD	BT06 (Original)	BT06 (Original) + LCD	R6.2.x	R6.2.x + LCD	LCD Upgraded BT08	SW Upgraded BT08 (CRT)	SW Upgraded BT08 (LCD)	BT08 with BEP3	BEP3 to BEP4 Replaced (CRT)	BEP3 to BEP4 Replaced (LCD)	BT08 with BEP4	**comment**
5170162	REAR HANDLE URETHANE HI-GE GRAY#3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
5171964	CONSOLE TOP COVER ABS	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	w/o tapping screw
5170246	REAR COVER ASSY L6	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
5168993	REAR DOOR COVER ASSY L6	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
2303896	P9538SE SIDE FRINGE	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
2301527	CONSOLE SIDE CAP ABS	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
2301529	KBD Bottom Cover	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	w/o bottom curtain, same composition as L5
5168868	OP FRONT BUMPER L6	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
5175882	OP PROBE HOLDER L6	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
5168957	FRONT COVER ASSY L6	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
5170181	FRONT BASE COVER ASSY L6	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
5169002	SIDE COVER R ASSY L6	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
5168881	SIDE COVER L ASSY L6	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
5170142	OP SIDE R COVER ABS	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
2301532	OP SIDE L COVER ABS	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
2371537	OP REAR COVER2 ABS GE GRAY	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
5147526	CWD BRACKET L6	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
2283028	P9538RX ECG CABLE HOOK	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
2301531	OP SIDE DUMMY COVER ABS	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
2328024	BLOCK GEL WARMER POWER CAP	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
2374267	Front Bottom Curtain Short	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	For Std height console
5162514	Front Bottom Curtain Long	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	For Tall height console
5168986	GEL HOLDER L6	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
5162515	OP REAR COVER TALL L6	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
5147525-2	PROBE HOLDER BRACKET L6	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	

Figure 5-30 Plastic Mechanics

5-2-1-2 Monitor

FRU compatibility BT06/BT08

FRU Part#	Description	R6.1.2 BT06 (Original)	R6.1.2 BT06 (Original) + LCD	R6.2.2 BT06 (Original)	R6.2.2 BT06 (Original) + LCD	R6.2.3 R6.2.x	R6.2.3 R6.2.x + LCD	R7.6.x R7.7.x LCD Upgraded BT08	R7.6.x R7.7.x SW Upgraded BT08 (CRT)	R7.6.x R7.7.x SW Upgraded BT08 (LCD)	R7.6.x BT08	R7.7.x w/ BEP4 BEP3 to BEP4 Replaced (CRT)	R7.7.x w/ BEP4 BEP3 to BEP4 Replaced (LCD)	R7.7.x w/ BEP4 BT08 with BEP4	Latest Software comment
CRT															
2283334-5	CRT MONITOR ASSY	Y	N	Y	N	Y	N	N	Y	N	N	Y	N	N	
2303930	MON-REAR-WSP-ASSY	Y	N	Y	N	Y	N	N	Y	N	N	Y	N	N	
5264592	FRU MON-REAR-WSP-ASSY FOR CHINA	Y	N	Y	N	Y	N	N	Y	N	N	Y	N	N	CRT CHINA only
5271314	FRU MON-REAR-WSP-ASSY FOR KOREA	Y	N	Y	N	Y	N	N	Y	N	N	Y	N	N	CRT KOREA only
2303932	MON-CAP-ASSY	Y	N	Y	N	Y	N	N	Y	N	N	Y	N	N	
2303929-3	MON-FRONT-ASSY	Y	N	Y	N	Y	N	N	Y	N	N	Y	N	N	
2386616	SPEAKER & BRACKET ASSY	Y	N	Y	N	Y	N	N	Y	N	N	Y	N	N	
2297050	USER SW ASSY OF MONITOR	Y	N	Y	N	Y	N	N	Y	N	N	Y	N	N	
2304171	MON-CABLE-ASSY	Y	N	Y	N	Y	N	N	Y	N	N	Y	N	N	
5147551	NECH-PIPE	Y	N	Y	N	Y	N	N	Y	N	N	Y	N	N	
2284225	NECK ASSY	Y	N	Y	N	Y	N	N	Y	N	N	Y	N	N	
2279675	Grill, Left	Y	N	Y	N	Y	N	N	Y	N	N	Y	N	N	
2279676	Grill, Right	Y	N	Y	N	Y	N	N	Y	N	N	Y	N	N	
5155394	CRT CONNECT CABLE ASSY CSL L6	Y	N	Y	N	Y	N	N	Y	N	N	Y	N	N	
LCD															
5169935	17 inch LCD MONITOR ASSY	N	Y	N	Y	N	Y	N	N	Y	N	N	Y+	N	Y+, Original 17" LCD (BT06)
5261237	17 inch LCD monitor LOGIQ S6	N	N	N	N	N	N	Y	N	N	Y	N	Y*	Y	Y*, 17" IPS-PRO Type LCD (BT08)
5132572	PANEL FRONT LCD	N	Y	N	Y	N	Y	N	N	Y	N	N	Y+	N	Y+, For Original 17" LCD (BT06)
5132573	PANEL REAR LCD	N	Y	N	Y	N	Y	N	N	Y	N	N	Y+	N	Y+, For Original 17" LCD(BT06)
5263302	PANEL FRONT2 FOR 17LCD LS6	N	N	N	N	N	N	Y	N	N	Y	N	Y*	Y	Y*, For 17" IPS-PRO Type LCD (BT08)
5265336	PANEL REAR2 FOR 17 LCD LS6	N	N	N	N	N	N	Y	N	N	Y	N	Y*	Y	Y*, For 17" IPS-PRO Type LCD (BT08)
5170026	COVER VESA LCD	N	Y	N	Y	N	Y	Y	N	Y	Y	N	Y	Y	
5267243	FRU VESA COVER LS6 17INCH FOR KOREA	N	Y	N	Y	N	Y	Y	N	Y	Y	N	Y	Y	For KOREA
5137744	SWITCH MIC_ASSY LCD_MONITOR	N	Y	N	Y	N	Y	Y	N	Y	Y	N	Y	Y	
5132576	SPEAKER SET (L&R) LCD	N	Y	N	Y	N	Y	Y	N	Y	Y	N	Y	Y	
5137688	Monitor Screws LCD	N	Y	N	Y	N	Y	N	N	Y	N	N	Y+	N	Y+, Use for original 17" LCD (BT06)
5159752	LCD AC CABLE CSL L6	N	Y	N	Y	N	Y	Y	N	Y	Y	N	Y	Y	
5159751	LCD DVI CABLE TOP CSL L6	N	Y	N	Y	N	Y	Y	N	Y	Y	N	Y	Y	
5159753	LCD SPK MIC CABLE CSL L6	N	Y	N	Y	N	Y	Y	N	Y	Y	N	Y	Y	
5160392	ARM Assy	N	Y	N	Y	N	Y	N	N	Y	N	N	Y+	N	Y+, Use for original 17" LCD (BT06)
5257403	LCD ARM 2 GA510	N	N	N	N	N	N	Y	N	N	Y	N	Y*	Y	Y*, Use for 17" IPS-PRO Type LCD
5170282	ARM Cover	N	Y	N	Y	N	Y	Y	N	Y	Y	N	Y	Y	
5160391	Neck Pipe for LCD	N	Y	N	Y	N	Y	Y	N	Y	Y	N	Y	Y	
5170278	Arm Lock Assy	N	Y	N	Y	N	Y	Y	N	Y	Y	N	Y	Y	

Figure 5-31 Monitor

5-2-1-3 Keyboard

FRU compatibility
BT06/BT08

FRU Part#	Description	R6.1.2 BT06 (Original)	R6.1.2 BT06 (Original) + LCD	R6.2.2 BT06 (Original)	R6.2.2 BT06 (Original) + LCD	R6.2.3 R6.2.x	R6.2.3 R6.2.x + LCD	R7.6.x R7.7.x LCD Upgraded BT08	R7.6.x R7.7.x SW Upgraded BT08 (CRT)	R7.6.x R7.7.x SW Upgraded BT08 (LCD)	R7.6.x BT08	R7.7.x w/ BEP4 BEP3 to BEP4 Replaced (CRT)	R7.7.x w/ BEP4 BEP3 to BEP4 Replaced (LCD)	R7.7.x w/ BEP4 BT08 with BEP4	Latest Software comment
5170515	KBD for CRT S6	Y	N	Y	N	Y	N	N	N	N	N	Y	N	N	
5170515-2	KEY BOARD ASSY FRU CRT L6	Y	N	Y	N	Y	N	N	Y	N	N	Y	N	N	Improved Freeze Key response
5170397	KBD for LCD S6 LCD	N	Y	N	Y	N	Y	Y	N	Y	Y	N	Y	N	Improved Freeze Key response
5170397-2	KEY BOARD ASSY FRU LCD L6	N	Y	N	Y	N	Y	Y	N	Y	Y	N	Y	Y	
2317341	OP Panel Encoder Assy	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
5123003	OP PANEL TGC ASSY	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
2356244	TGC KNOB SET	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
2317343-2	OP PANEL A/N KEY BOARD ASSY	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
5181098	GREEK AN KEYTOP OPTION LS6	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
5181031	RUSSIAN AN KEYTOP OPTION LS6	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
5193888	SWEDISH AN KEYTOP OPTION LS6	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
5193889	NORWEGIAN DANISH AN KEYTOP OPTION LS6	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
2317344	OP PANEL TRACKBALL ASSY	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
2317346-3	OP PANEL LCD ASSY	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
5122999	LCD ENCODER ASSY	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
2364143	P KEY LABEL	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
5122997	FREEZE KEY	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
5122993	KB MAIN BOARD	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
2390710	KEY CAP SET	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
5170215	CAP Qty 6	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	

Figure 5-32 Keyboard

5-2-1-4 NEST boards

FRU compatibility BT06/BT08

FRU Part#	Description	R6.1.2	R6.1.2	R6.2.2	R6.2.2	R6.2.3	R6.2.3	R7.6.x R7.7.x	R7.6.x R7.7.x	R7.6.x R7.7.x	R7.6.x	R7.7.x w/ BEP4	R7.7.x w/ BEP4	R7.7.x w/ BEP4	Latest Software
		BT06 (Original)	BT06 (Original) + LCD	BT06 (Original)	BT06 (Original) + LCD	R6.2.x	R6.2.x + LCD	LCD Upgraded BT08	SW Upgraded BT08 (CRT)	SW Upgraded BT08 (LCD)	BT08	BEP3 to BEP4 Replaced (CRT)	BEP3 to BEP4 Replaced (LCD)	BT08 with BEP4	comment
5111348	EBUS 3T ASSY	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y+	N	Must used with DDBF64 Y+ , EBUS3T/B only BT06.
5112465	EBUS 3B ASSY	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y+	N	Y+ , see comment above
5182215	EBUS4T ASSY CSL L7	N	N	N	N	N	N	N	N	N	Y	N	Y*	Y	Must used with DDBF128 Y* , EBUS4 only BT08.
5182757	EBUS4B ASSY CSL L7	N	N	N	N	N	N	N	N	N	Y	N	Y*	Y	Y* , see comment above
5119039	PREA2F ASSY	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
2277244-4	STCW ASSY	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	OK to use if in stock
2277244-5	STCW ASSY	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
5154321	BTRAPP5AHV Assy	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
5111346	BTxCW ASSY	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
2399312	DDBF64 ASSY	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y+	N	Must used with EBUS3 Y+ , DDBF64 only BT06.
5182379	DDBF128 ASSY CSL L7	N	N	N	N	N	N	N	N	N	Y	N	Y*	Y	Must used with EBUS4 Y*, DDBF128 only BT08.
5182379-2	DDBF128 ASSY CSL L7	N	N	N	N	N	N	N	N	N	Y	N	Y*	Y	Y* , see comment above
5145999	MDBRG2S Assy	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	OK to use if in stock
5145999-3	MDBRG2S Assy	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
5170473	TRICON Assy (w/o sheet metal attachment)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
5138460	BACKPLANE ASSY CSL L6	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
2305111-3	TX CABLE ASSY CSL L7	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
2315492	NEST Board JIG Assy	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	

Figure 5-33 NEST boards

5-2-1-5 Software and BECOMP

FRU compatibility BT06/BT08

FRU Part#	Description	R6.1.2	R6.1.2	R6.2.2	R6.2.2	R6.2.3	R6.2.3	R7.6.x R7.7.x	R7.6.x R7.7.x	R7.6.x R7.7.x	R7.6.x	R7.7.x w/ BEP4	R7.7.x w/ BEP4	R7.7.x w/ BEP4	Latest Software
		BT06 (Original)	BT06 (Original) + LCD	BT06 (Original)	BT06 (Original) + LCD	R6.2.x	R6.2.x + LCD	LCD Upgraded BT08	SW Upgraded BT08 (CRT)	SW Upgraded BT08 (LCD)	BT08	BEP3 to BEP4 Replaced (CRT)	BEP3 to BEP4 Replaced (LCD)	BT08 with BEP4	comment
5193189	SVP-MBECOMP3-NP	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	N	N	
5308151	SVP-BECOMP4-LS6	N	N	N	N	N	N	N	N	N	N	N	Y	Y	w/o CRT Connection Label
5308151-2	SVP-BECOMP4-LS6	N	N	N	N	N	N	N	N	N	N	Y	Y	Y	Includes CRT Connection Label
2304809-2	Battery Pack LOGIQ7	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
5133526	DGPCIO VIC 2-A ASSY	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	N	N	N	
5301220-2	PCI-DGVIC2 Assembly	N	N	N	N	N	N	N	N	N	Y	Y	Y	Y	
5257226	BulkHead for L7 and LS6	N	N	N	N	N	N	N	N	N	Y	Y	Y	Y	Parts for PCIDGVIC2
5257231	Cable13 for BulkHead	N	N	N	N	N	N	N	N	N	Y	Y	Y	Y	Parts for PCIDGVIC2
5257233	Cable25 for BulkHead	N	N	N	N	N	N	N	N	N	Y	Y	Y	Y	Parts for PCIDGVIC2
5118511	Extended MEMORY3 LOGIQ7	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	N	N	MEMORY3 only BECOMP3 (512M)
5306528	DDR2 MEMORY4 1GB	N	N	N	N	N	N	N	N	N	N	Y	Y	Y	DDR2 MEMORY4 for BECOMP4 (1G)
5118510	HD LOGIQ7	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	N	N	80GByte (PATA) for BECOMP3 only
5306526	SATA HDD 160GB	N	N	N	N	N	N	N	N	N	N	Y	Y	Y	160G Byte (SATA) for BECOMP4 only
FC200656	PC2IP 2B	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	N	N	N	
FC200755	PC2IP3	N	N	N	N	N	N	N	N	N	Y	Y	Y	Y	OK to use if in stock
FD200033	PC2IP3	N	N	N	N	N	N	N	N	N	Y	Y	Y	Y	Fully compatible with above
5147460	Capture Board	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
2362887	P9536TK AGP BOARD ASSY	Y	N	Y	N	Y	N	N	Y	N	Y	N	N	N	Graphic card for BECOMP3
5306525	PCI Express Graphic board	N	N	N	N	N	N	N	N	N	N	Y	Y	Y	Graphic card for BECOMP4
FA200801	PAT. I/O	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
5150568	DVD drive 5	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
5150568-2	DVD drive 6	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
5150568-3	DVD drive 7	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
5113449	MO Drive LOGIQ7	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	N	1.3G PATA
5169668	MO Panel CSL LS6	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
5122012	HDD Extension Cable LOGIQ7	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	N	N	Used with 80GByte HDD only
2389075	P9536HZ PCI CABLE	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
5149429	EMC Parts L7	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	N	N	N	
2384469	P9536TM EXTENDED USB PORT	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
5142743	BECOMP3 REAR FAN CSL L7	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
5111298	DUAL DVI AGP	N	N	N	N	N	N	N	N	N	N	N	N	N	Obsolete. Should not be used (quality)
5111298-2	DUAL DVI AGP	N	Y	N	Y	N	Y	Y	N	Y	N	N	N	N	Graphic card for BECOMP3
5121039	PCI VGA	N	Y	N	Y	N	Y	Y	N	Y	N	N	N	N	Graphic card for BECOMP3
2305014	P9536SH PC BOX FAN ASSY	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
5257241	BECOMP3 LS6 LABEL	N	N	N	N	N	N	N	N	N	Y	N	N	N	Connection label for BT08 BECOMP3 only
5316350	SVP-BECOMP4 Accessory	N	N	N	N	N	N	N	N	N	N	N	Y	Y	w/o CRT Connection Label
5316350-2	SVP-BECOMP4 Accessory	N	N	N	N	N	N	N	N	N	N	Y	Y	Y	Includes CRT Connection Label
SW / GHOST															
5170144-2	LOGIQ S6 Ghost CD for BEP-NP, R6.1.0	N	N	N	N	N	N	N	N	N	N	N	N	N	Obsolete (Must be R6.2.3 by FMi72272)
5176956	LOGIQ S6 R6.1.2 Application Software CD	N	N	N	N	N	N	N	N	N	N	N	N	N	Obsolete (Must be R6.2.3 by FMi72272)
5194288	LOGIQ S6 Ghost CD for BEP-NP R6.2.2	N	N	N	N	N	N	N	N	N	N	N	N	N	Obsolete (Must be R6.2.3 by FMi72272)
5195312	LOGIQ S6 R6.2.2 Application Software CD	N	N	N	N	N	N	N	N	N	N	N	N	N	Obsolete (Must be R6.2.3 by FMi72272)
5272921	LOGIQS6 Kit for FMI72272 (Late Request Plan	Y	Y	Y	Y	N	N	N	N	N	N	N	N	N	FMi72272 equivalent with R6.2.3 software
5220776	LOGIQ S6 Ghost CD for BEP-NP R6.2.3	N	N	N	N	Y	Y	N	N	N	N	N	N	N	
5220774-2	LOGIQ S6 R6.2.3 Application Software CD	N	N	N	N	Y	Y	N	N	N	N	N	N	N	
5252046	LOGIQ S6 Ghost DVD for BEP-NP, R7.6.0	N	N	N	N	N	N	Y	Y	Y	Y	N	N	N	
5269591-3	LOGIQ S6 R7.6.0 Application Software CD	N	N	N	N	N	N	Y	Y	Y	Y	N	N	N	
5316351	LOGIQ S6 R7.6.1 Application Software CD	N	N	N	N	N	N	Y	Y	Y	Y	N	N	N	For 'Stripe Noise' reduction
5305207	LOGIQ S6 Ghost DVD for BECOMP4	N	N	N	N	N	N	N	N	N	N	Y	Y	Y	BECOMP3
5324919	LOGIQ S6 Ghost CD for BEP-NP, R7.7.0	N	N	N	N	N	N	Y	Y	Y	Y	N	N	N	For BECOMP3 only. Do not use for BECOMP4
5315082-2	LOGIQ S6 R7.7.0 Application Software CD	N	N	N	N	N	N	Y	Y	Y	Y	Y	Y	Y	Common sw between BECOMOP3 & 4

Figure 5-34 Software and BECOMP

5-2-1-6 Rear I/O

FRU compatibility BT06/BT08		R6.1.2	R6.1.2	R6.2.2	R6.2.2	R6.2.3	R6.2.3	R7.6.x R7.7.x	R7.6.x R7.7.x	R7.6.x R7.7.x	R7.6.x	R7.7.x w/ BEP4	R7.7.x w/ BEP4	R7.7.x w/ BEP4	***Latest Software***
FRU Part#	**Description**	**BT06 (Original)**	**BT06 (Original) + LCD**	**BT06 (Original)**	**BT06 (Original) + LCD**	**R6.2.x**	**R6.2.x + LCD**	**LCD Upgraded BT08**	**SW Upgraded BT08 (CRT)**	**SW Upgraded BT08 (LCD)**	**BT08**	**BEP3 to BEP4 Replaced (CRT)**	**BEP3 to BEP4 Replaced (LCD)**	**BT08 with BEP4**	**comment**
5170173	REAR PANEL 100V ASSY	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
5170230	REAR PANEL 220V ASSY	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
5149653	REARIO CONN ASSY L6	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
5147515	REAR CONNECTOR CASE L6	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
5152284-2	REAR PANEL CABLE ASSY CSL L6	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
5165834	FOOT SW CONNECTOR CSL L6	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
5152282	OUTLET CABLE ASSY CSL L6	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
U0026EK	BREAKER 4A (100V,120V)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	CIRCUIT BRAKER 100V
U0047EK	BREAKER 2A (200V)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	CIRCUIT BRAKER 200V
5168873	MAB CONN ASSY-L6	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	

Figure 5-35 Rear I/O

5-2-1-7 Power Supply

FRU compatibility BT06/BT08

FRU Part#	Description	R6.1.2 BT06 (Original)	R6.1.2 BT06 (Original) + LCD	R6.2.2 BT06 (Original)	R6.2.2 BT06 (Original) + LCD	R6.2.3 R6.2.x	R6.2.3 R6.2.x + LCD	R7.6.x R7.7.x LCD Upgraded BT08	R7.6.x R7.7.x SW Upgraded BT08 (CRT)	R7.6.x R7.7.x SW Upgraded BT08 (LCD)	R7.6.x BT08	R7.7.x w/ BEP4 BEP3 to BEP4 Replaced (CRT)	R7.7.x w/ BEP4 BEP3 to BEP4 Replaced (LCD)	R7.7.x w/ BEP4 BT08 with BEP4	Latest Software comment
5168931	LV ASSY LS6	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	LV Unit（5167089）+ LV+Cable(5159702)
5159702	LV CONNECT CABLE CSL L6	N	N	N	N	N	N	N	N	N	N	N	N	N	Obsolete - use FRU 5168931
5168761-2	HV ASSY LS6	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	HV Unit (w/ sheet metal)
5118606	SSR PCB ASSY MAIN PS L7	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
2373331-2	MAIN TRANS2 ASSY CSL L7	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
5168756	BOTTOM_FAN_ASSY-L6	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
5169662	AC IN 100V ASSY L6	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
5169695	AC IN 220V ASSY L6	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
5168999	AC_CONN_ASSY	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
5168928	POWER_PLATE1_ASSY_L6	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	LHV-BP CABLE ASSY (5152277) + Plate
5168815	POWER_PLATE2_ASSY_L6	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	AC PANEL CABLE ASSY (5152268)+ Plate
5152274	HV-TRICON CABLE CSL L6	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
2315585	FUSE	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
5118613	FUSE HOLDER	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
5118614	FUSE HOLDER CAP	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
5152285	SSR CABLE ASSY CSL L6	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
5159703	FAN CONNECT CABLE CSL L6	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	

Figure 5-36 Power Supply

5-2-1-8 Other Mechanics

FRU compatibility BT06/BT08

FRU Part#	Description	R6.1.2	R6.1.2	R6.2.2	R6.2.2	R6.2.3	R6.2.3	R7.6.x R7.7.x	R7.6.x R7.7.x	R7.6.x R7.7.x	R7.7.x w/ BEP4	R7.7.x w/ BEP4	R7.7.x w/ BEP4	Latest Software	comment
		BT06 (Original)	BT06 (Original) + LCD	BT06 (Original)	BT06 (Original) + LCD	R6.2.x	R6.2.x + LCD	LCD Upgraded BT08	SW Upgraded BT08 (CRT)	SW Upgraded BT08 (LCD)	BT08	BEP3 to BEP4 Replaced (CRT)	BEP3 to BEP4 Replaced (LCD)	BT08 with BEP4	
5147508	SIDE AIR FILTER	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
5147506	BOTTOM AIR FILTER	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
5176611	SIDE AIR FILTER TRAY	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
5147505	BOTTOM AIR FILTER TRAY	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
2379693-2	FREE CASTER	N	N	N	N	N	N	N	N	N	N	N	N	N	Obsolete. Do NOT use these parts
2307301	FREE CASTER	N	N	N	N	N	N	N	N	N	N	N	N	N	Obsolete. Do NOT use these parts
5233772	FREE CASTER	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Improved rubber compound
2379694-2	SWIVEL LOCK CASTER	N	N	N	N	N	N	N	N	N	N	N	N	N	Obsolete. Do NOT use these parts
2307311	SWIVEL LOCK CASTER	N	N	N	N	N	N	N	N	N	N	N	N	N	Obsolete. Do NOT use these parts
5233773	SWIVEL LOCK CASTER	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Improved rubber compound
2379695	TOTAL LOCK CASTER	N	N	N	N	N	N	N	N	N	N	N	N	N	Obsolete. Do NOT use these parts
2307312	TOTAL LOCK CASTER	N	N	N	N	N	N	N	N	N	N	N	N	N	Obsolete. Do NOT use these parts
5233774	TOTAL LOCK CASTER	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Improved rubber compound
2381035	CASTER FRU ASSY	N	N	N	N	N	N	N	N	N	N	N	N	N	Obsolete. Do NOT use these parts
2381035-2	CASTER FRU ASSY2	N	N	N	N	N	N	N	N	N	N	N	N	N	Obsolete. Do NOT use these parts
2381035-3	CASTER FRU ASSY3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Improved rubber compound
5172590	FRONT PEDAL ASSY	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
5172617	REAR PEDAL ASSY	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
5167902	PEDAL COVER CENTER	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Pedal Cover Center
5172857	PEDAL COVER R ASSY	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
5172962	PEDAL COVER L ASSY	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	

Figure 5-37 Other Mechanics

5-2-1-9 Cables

FRU compatibility BT06/BT08

FRU Part#	Description	R6.1.2 BT06 (Original)	R6.1.2 BT06 (Original) + LCD	R6.2.2 BT06 (Original)	R6.2.2 BT06 (Original) + LCD	R6.2.3 R6.2.x	R6.2.3 R6.2.x + LCD	R7.6.x R7.7.x LCD Upgraded BT08	R7.6.x R7.7.x SW Upgraded BT08 (CRT)	R7.6.x R7.7.x SW Upgraded BT08 (LCD)	R7.6.x BT08	R7.7.x w/ BEP4 BEP3 to BEP4 Replaced (CRT)	R7.7.x w/ BEP4 BEP3 to BEP4 Replaced (LCD)	R7.7.x w/ BEP4 BT08 with BEP4	Latest Software comment
5152269	ATX POWER CABLE CSL L6	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N
5152270	BP-PC CABLE CSL L6	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N
5152271	BP-REARIO CABLE CSL L6	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
5152272-2	BW CABLE ASSY CSL L6	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
5152276	KB AC OUT CABLE CSL L6	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
5152278	MAB CABLE ASSY CSL L6	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
5152279	MAB-OP CABLE ASSY CSL L6	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
5152280	OP PANEL CABLE ASSY CSL L6	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
5168059	S-VIDEO CABLE CSL L6	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
5168576	REARIO-PC CABLE CSL L6	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
5168194	LAN CABLE CSL L6	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
5152286	USB LAMP CABLE CSL L6	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
5155276	MAIN MONITOR CABLE ASSY CSL L6	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
5159750	LCD DVI CABLE BOTTOM CSL L6	N	Y	N	Y	N	Y	Y	N	Y	Y	N	Y	Y	
5165932	CRT VGA CABLE CSL L6	Y	N	Y	N	Y	N	N	Y	N	N	Y	N	N	

Figure 5-38 Cables

5-2-1-10 Option FRU

FRU compatibility BT06/BT08

FRU Part#	Description	R6.1.2 BT06 (Original)	R6.1.2 BT06 (Original) + LCD	R6.2.2 BT06 (Original)	R6.2.2 BT06 (Original) + LCD	R6.2.3 R6.2.x	R6.2.3 R6.2.x + LCD	R7.6.x R7.7.x LCD Upgraded BT08	R7.6.x R7.7.x SW Upgraded BT08 (CRT)	R7.6.x R7.7.x SW Upgraded BT08 (LCD)	R7.6.x R7.7.x BT08	R7.7.x w/ BEP4 BEP3 to BEP4 Replaced (CRT)	R7.7.x w/ BEP4 BEP3 to BEP4 Replaced (LCD)	R7.7.x w/ BEP4 BT08 with BEP4	Latest Software comment
5171887	Task Lamp	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
5177332	Printer Tray	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
2354851	Printer Tray Protector	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
5172019	Belt Set	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	(2 Belts with buckle)
5167984	TOP DEVICE TRAY	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
5138724	4D-MOTHER2 CABLE	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
5138723	4DBOX CABLE ASSY	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
5147891	4D AC Cable	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
2372904	4D MOTOR CONTROLLER BOX	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
5171790	MOTOR CONTROL CABLE with BRKT L6	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
5115162	WIRELESS RECEIVER EK100G2-A	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
5123379	Battery Eliminator LOGIQ7	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
5121042	Accessories for Parts Setting	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
5122602	AC Adapter for Wireless Receiver	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
5121762	AC Cable for Wireless Kit LOGIQ7	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
5121749	USB Extension Cable LOGIQ7	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
2383768	CABLE-AUDIO OUTPUT FROM RCVR	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
5116453	WIRELESS TRANSMITTER WITH CHARGING CONTACTS SENNHEISER SK300G2-A	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
5116454	Rechargeable Battery Pack for Wireless Transmitter. Sennheiser BA2015G2	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
5123383	AC Adapter for Battery Recharger LOGIQ7	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
2383779	MICROPHONE-OVER THE EAR STYLE	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
5116446	BATTERY RECHARGER STATION FOR WIRELESS TRANSMITTER -- SENNHEISER L2015G2	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
2392844	INTERNATIONAL POWER CONNECTOR KIT	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
5121037-2	Wireless Receiver for JPN LOGIQ7	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
5123378	Battery Eliminator for JPN LOGIQ7	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
5121036-2	Wireless Transmitter for JPN LOGIQ7	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
5123380	Battery for Wireless Transmitter JPN LOGIQ7	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
5123382	Battery Charger for JPN LOGIQ7	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	

Figure 5-39 Option FRU

5-2-2 Hardware Identification Tip

5-2-2-1 How to Identify LS6 BT08 with BEP4 Units

The flowchart below describes how to identify BT08 with BEP4 unit.

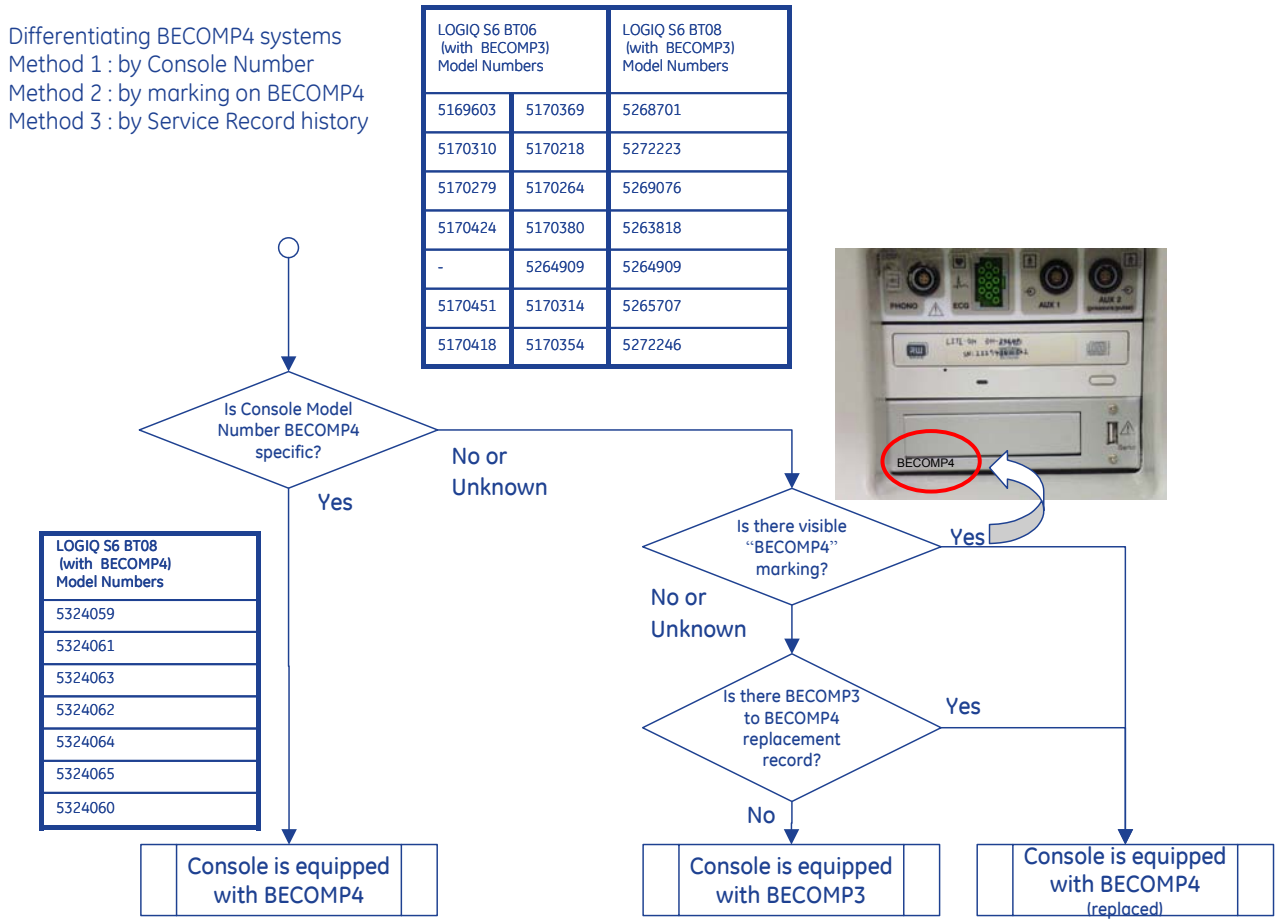


Figure 5-40 How to Identify BT08 with BEP4

5-2-2-2 LCD Monitor Differences

The flowchart below describes how to differentiate LCD monitor type.

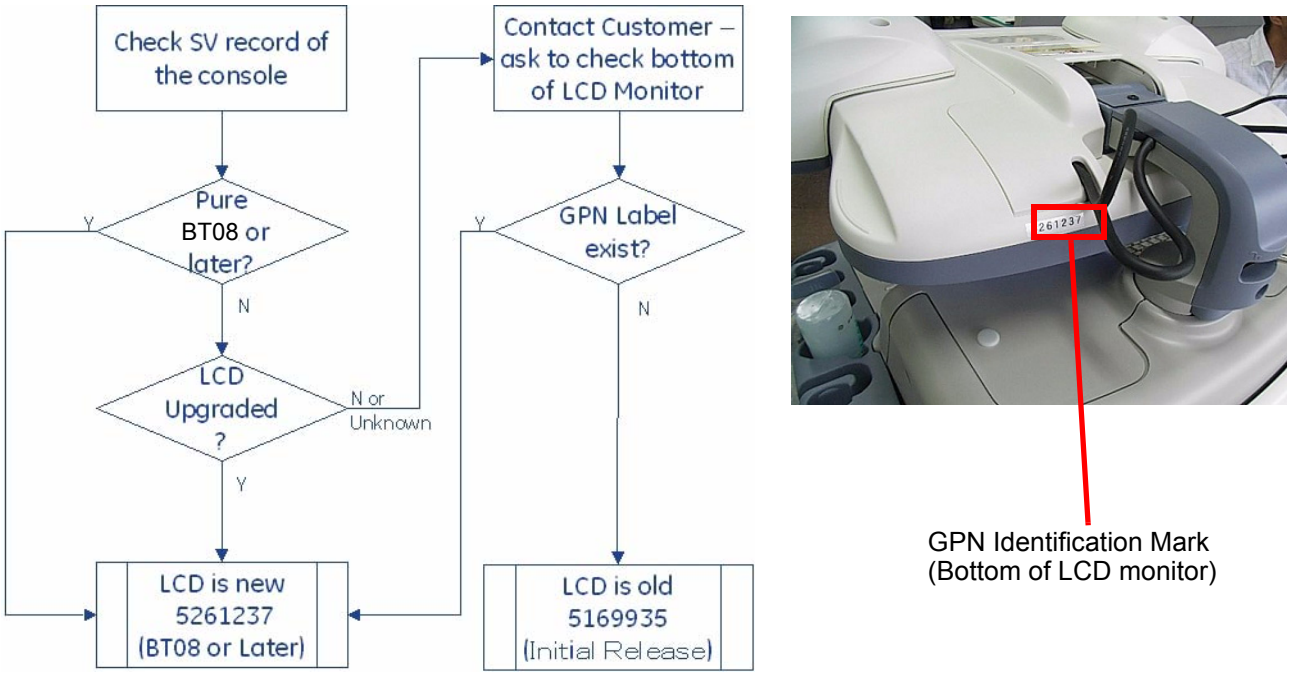


Figure 5-41 LCD monitor- How to Differentiate

5-2-2-3 How to identify MD-3000USB

The label “RS232C Not Available” is attached on the back side of the printer.

Figure 5-42 MD-3000 USB

Section 5-3
Block Diagrams and Theory

5-3-1 Block Diagram LOGIQ S6 (For forward production of BT08 or later)

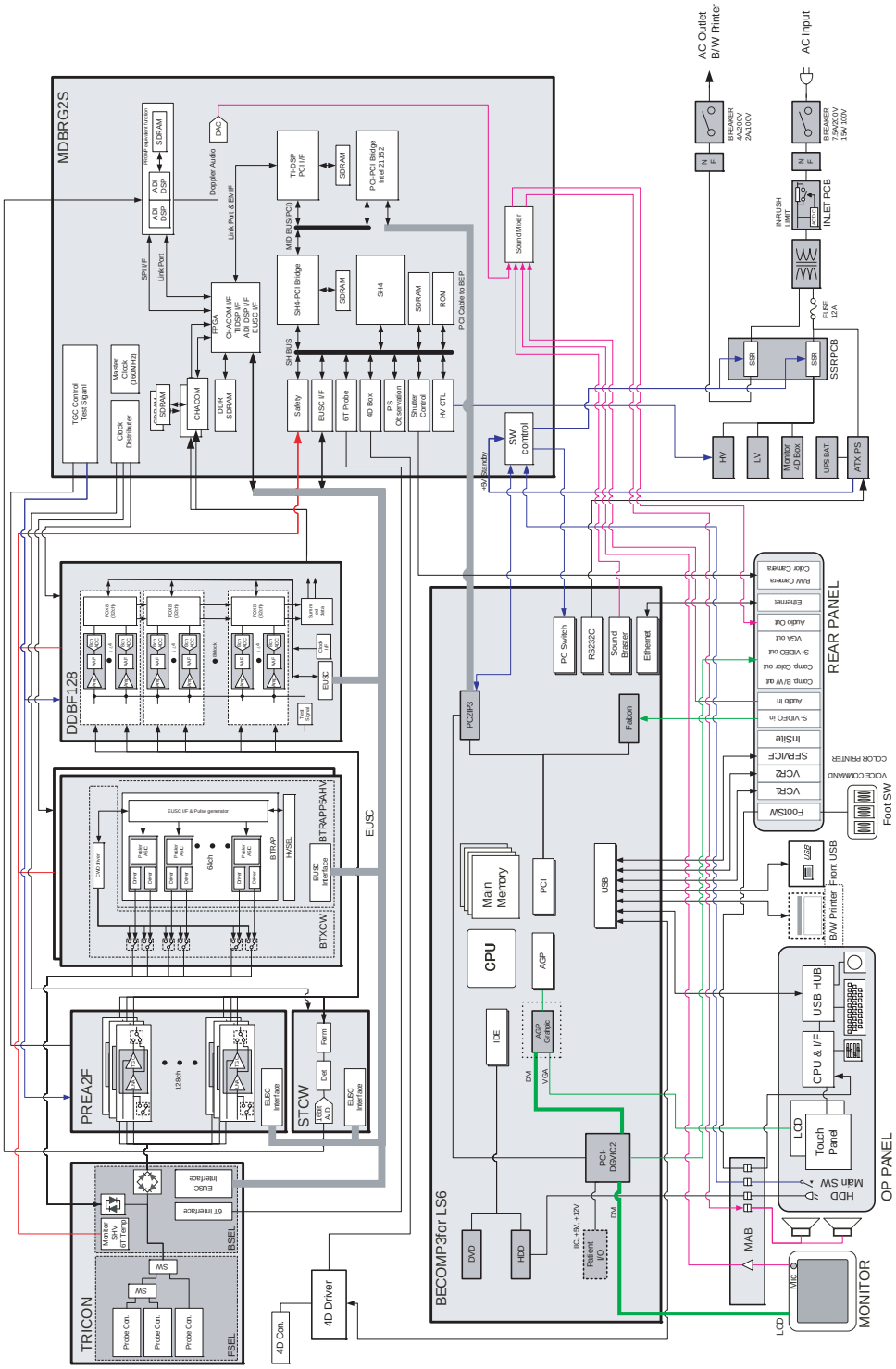


Figure 5-43 Block Diagram LOGIQ S6 (For forward production of BT08 or later)

5-3-2 Block Diagram LOGIQ S6 (For original HW config systems, including initial release, and upgraded BT08 systems)

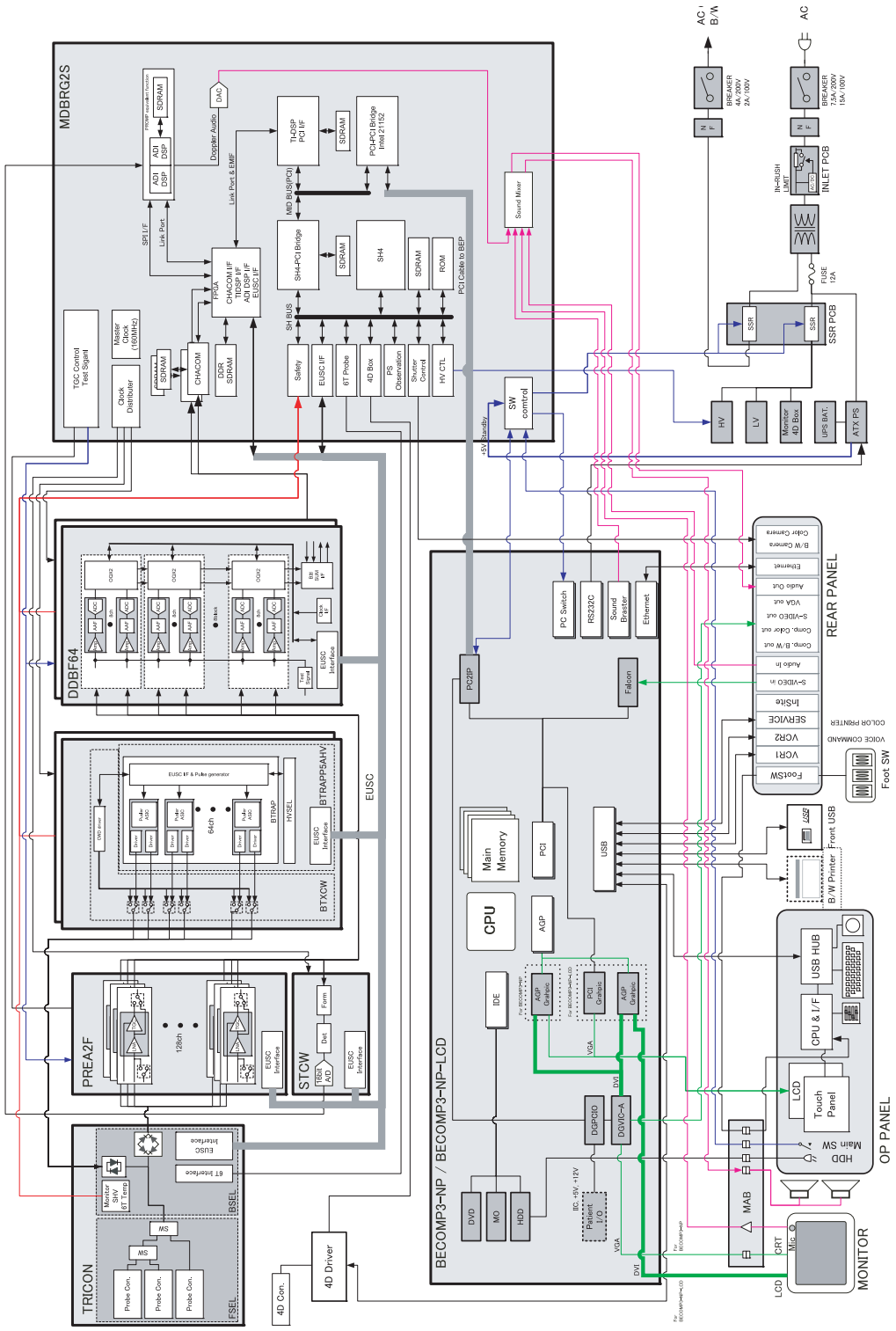


Figure 5-44 Block Diagram LOGIQ S6 (For original HW config systems, including initial release, and upgraded BT08 systems)

5-3-3 General Information

- LOGIQ™ S6 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™ S6 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.

5-3-4 Patient I/O (Option)

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

Available inputs:

- ECG

5-3-5 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).

5-3-6 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.

5-3-7 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).

5-3-8 Interconnect Cabling (For forward production of BT08 or later with BEP4)

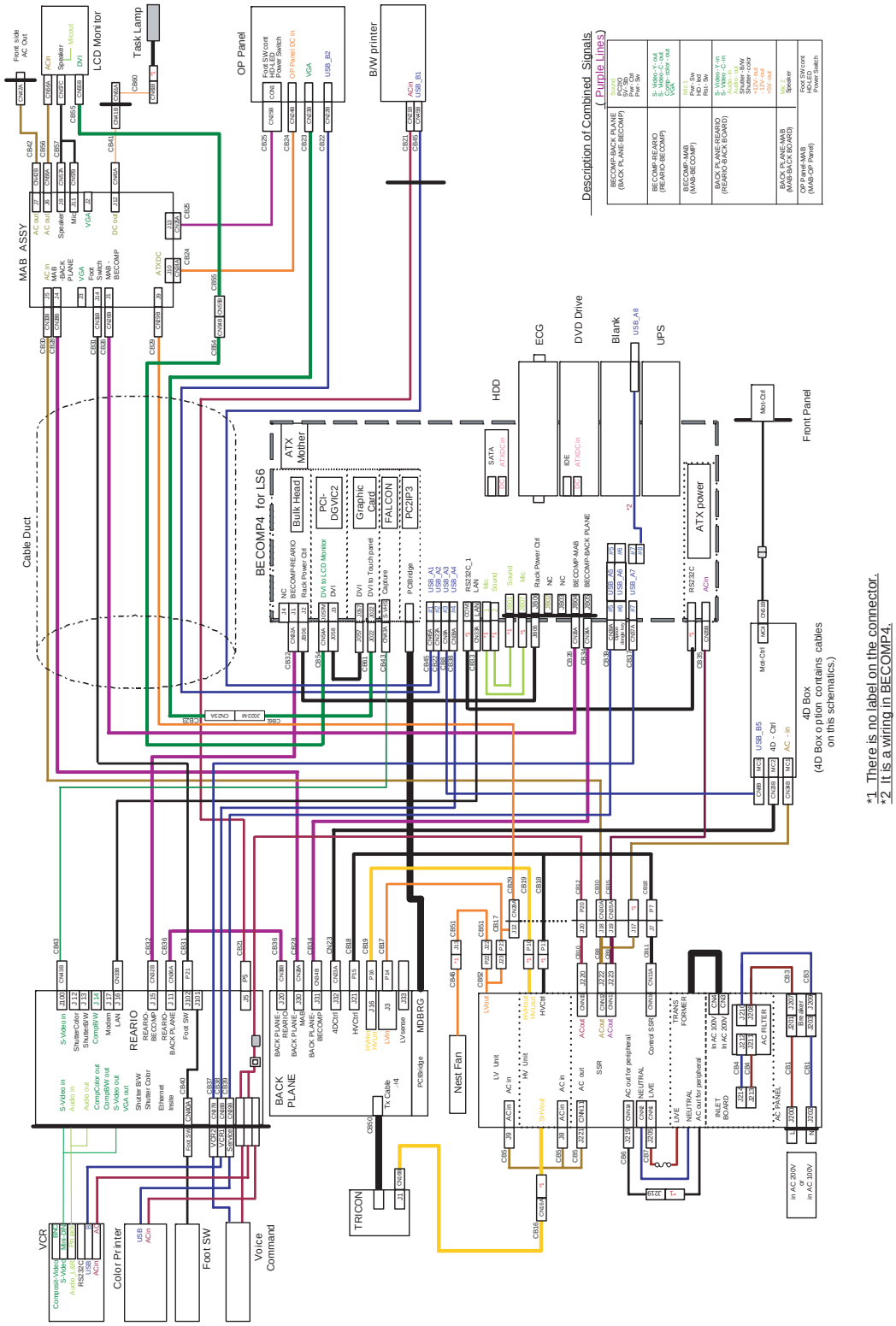


Figure 5-45 Interconnect Cabling (For forward production of BT08 or later with BEP4)

5-3-9 Interconnect Cabling (For forward production of BT08 or later)

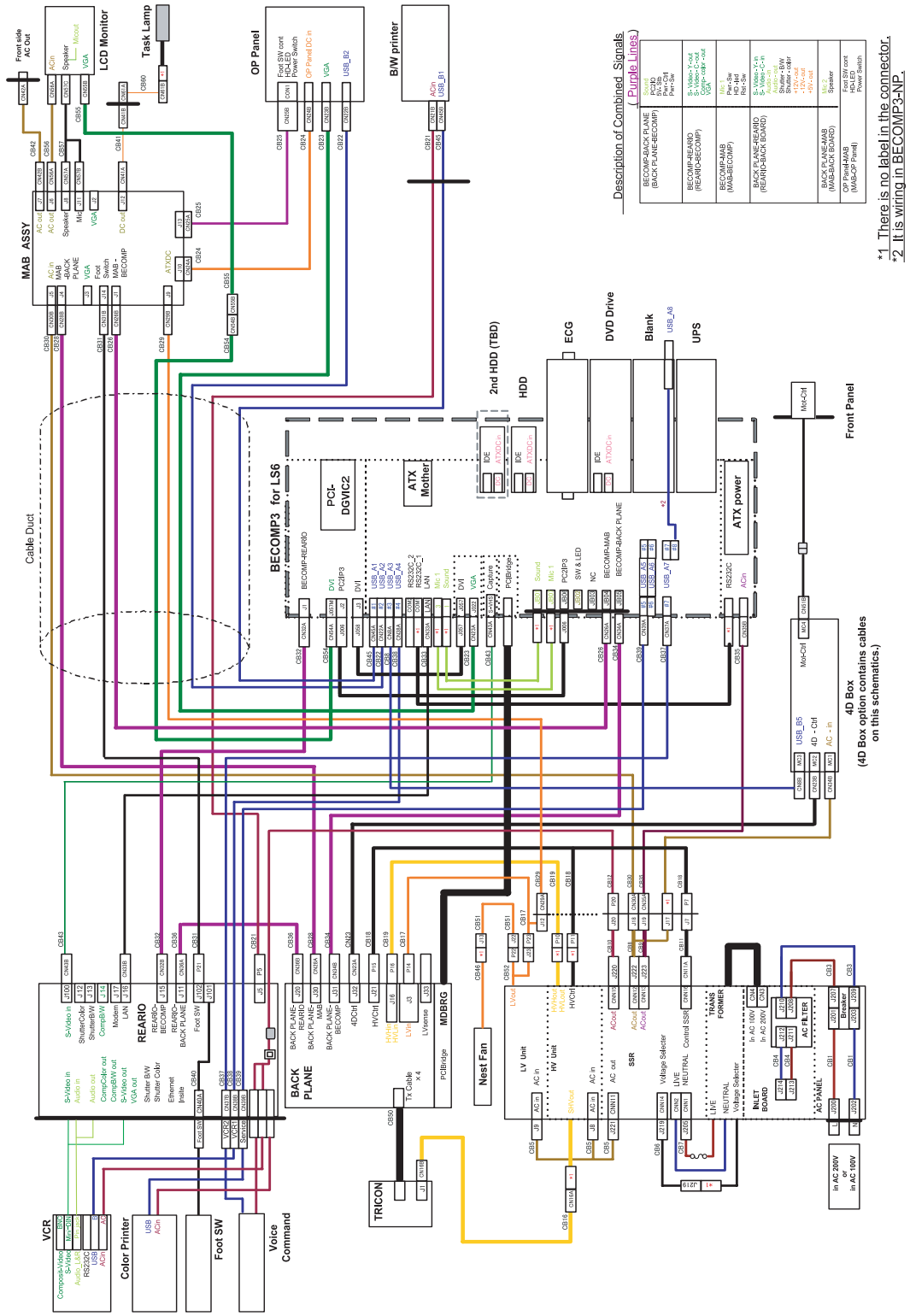


Figure 5-46 Interconnect Cabling (For forward production of BT08 or later)

5-3-10 Interconnect Cabling

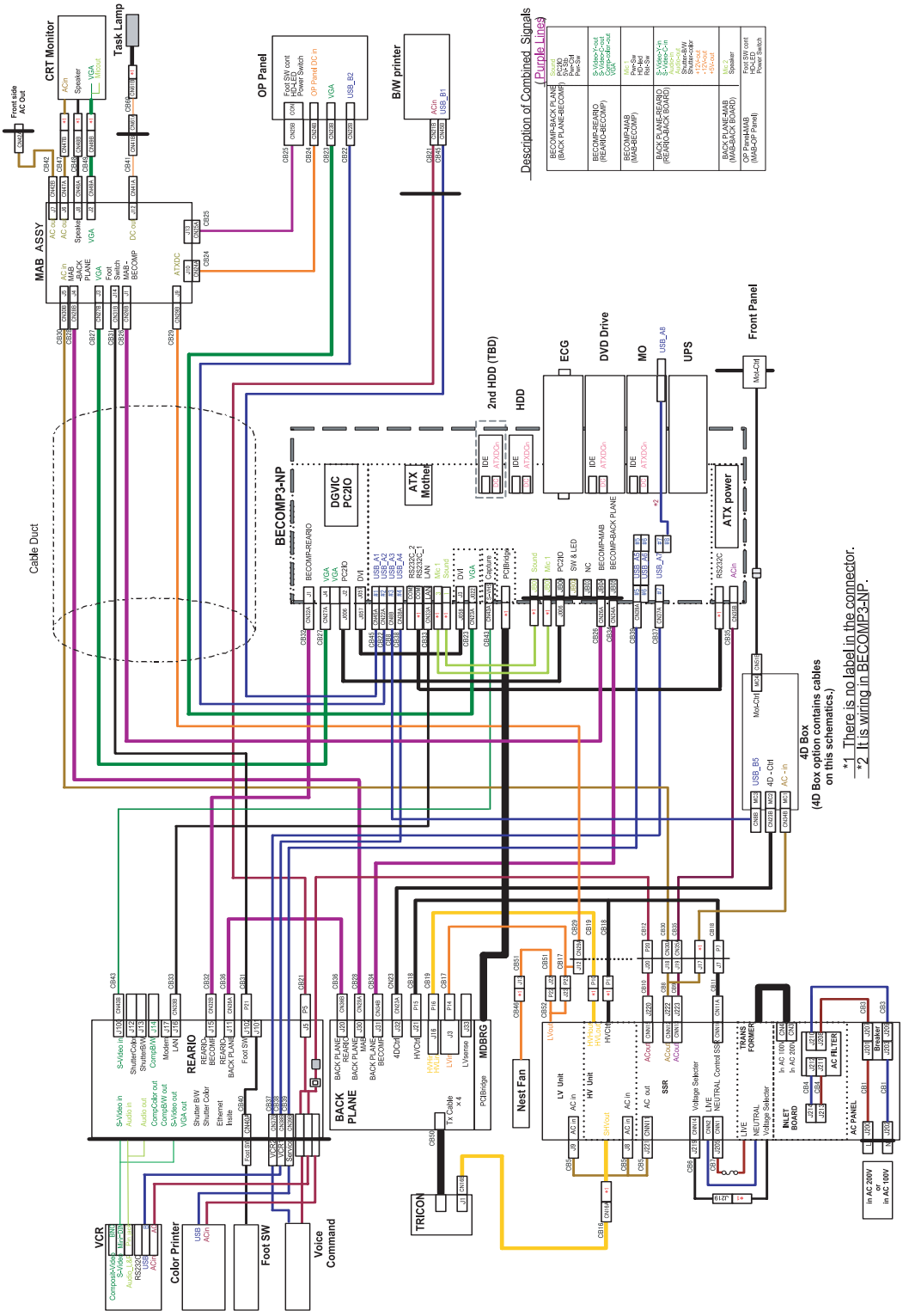


Figure 5-47 Internal Cable Connection CRT type for backward production before BT08 (For original HW config systems, including initial release, and upgraded BT08 systems)

5-3-10 Interconnect Cabling (cont'd)

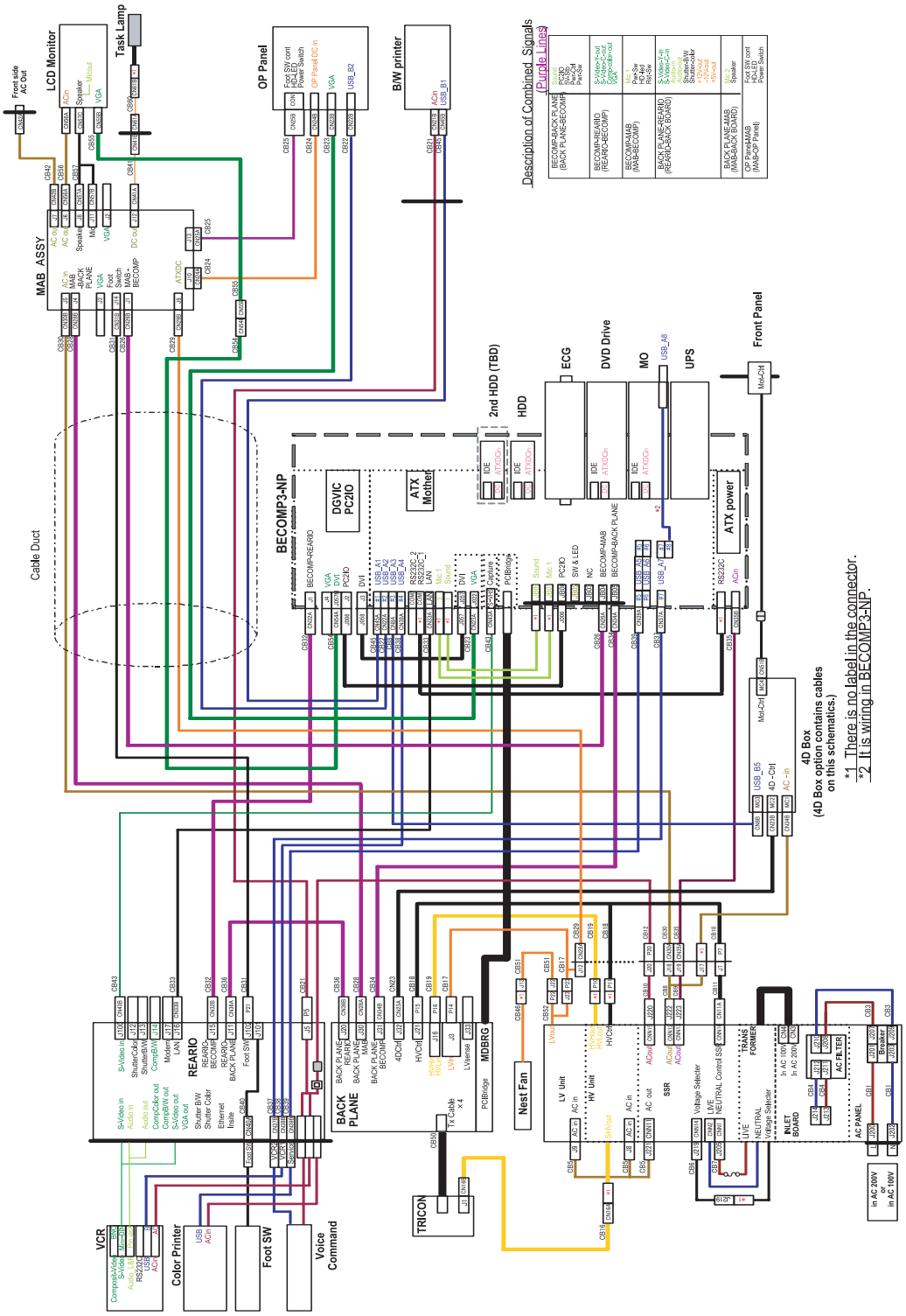


Figure 5-48 Internal Cable Connection LCD type for backward production before BT08 (For original HW config systems, including initial release, and upgraded BT08 systems)

5-3-10 Interconnect Cabling (cont'd)

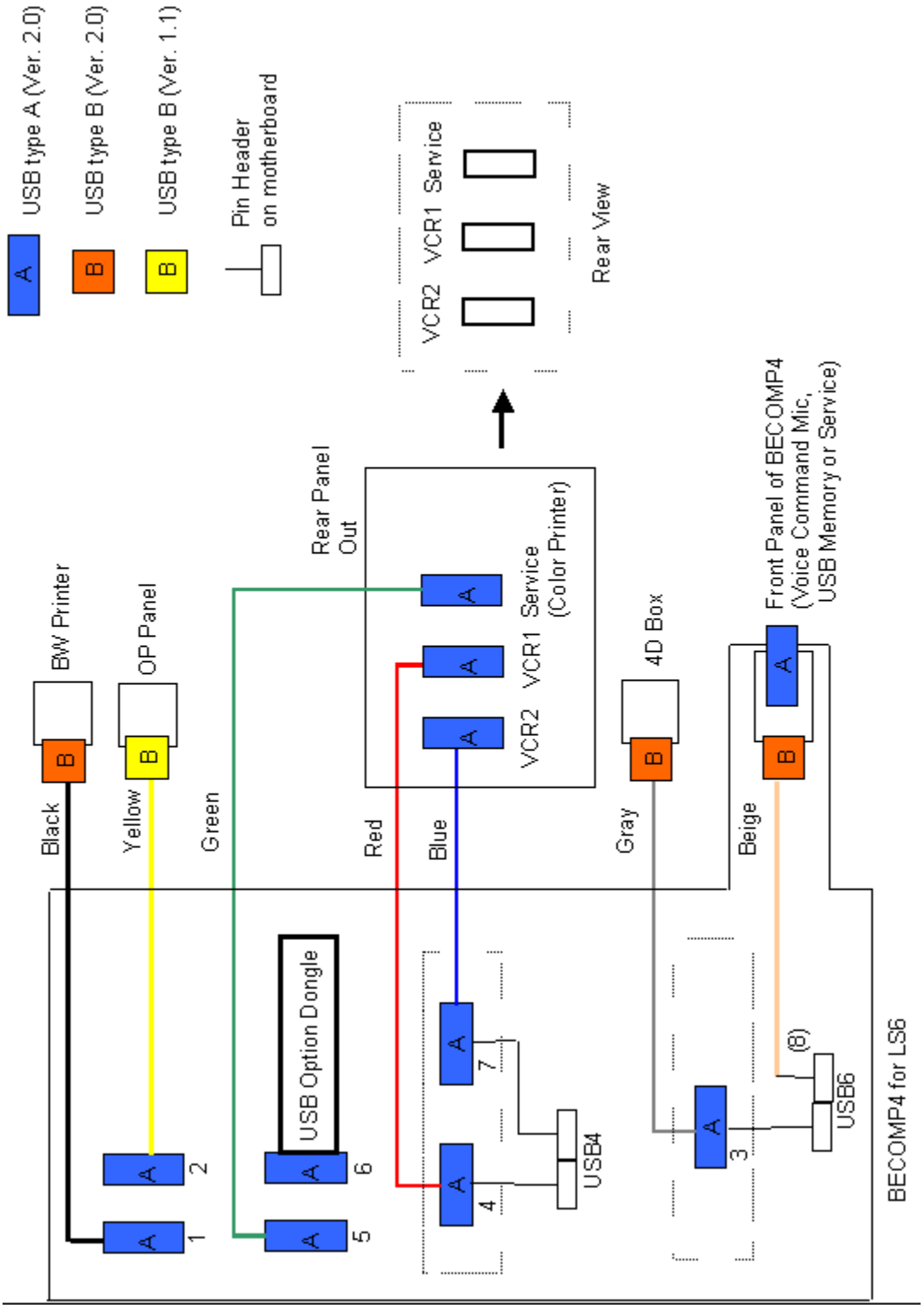


Figure 5-49 USB Connection (For LS6 BECOMP4)

5-3-10 Interconnect Cabling (cont'd)

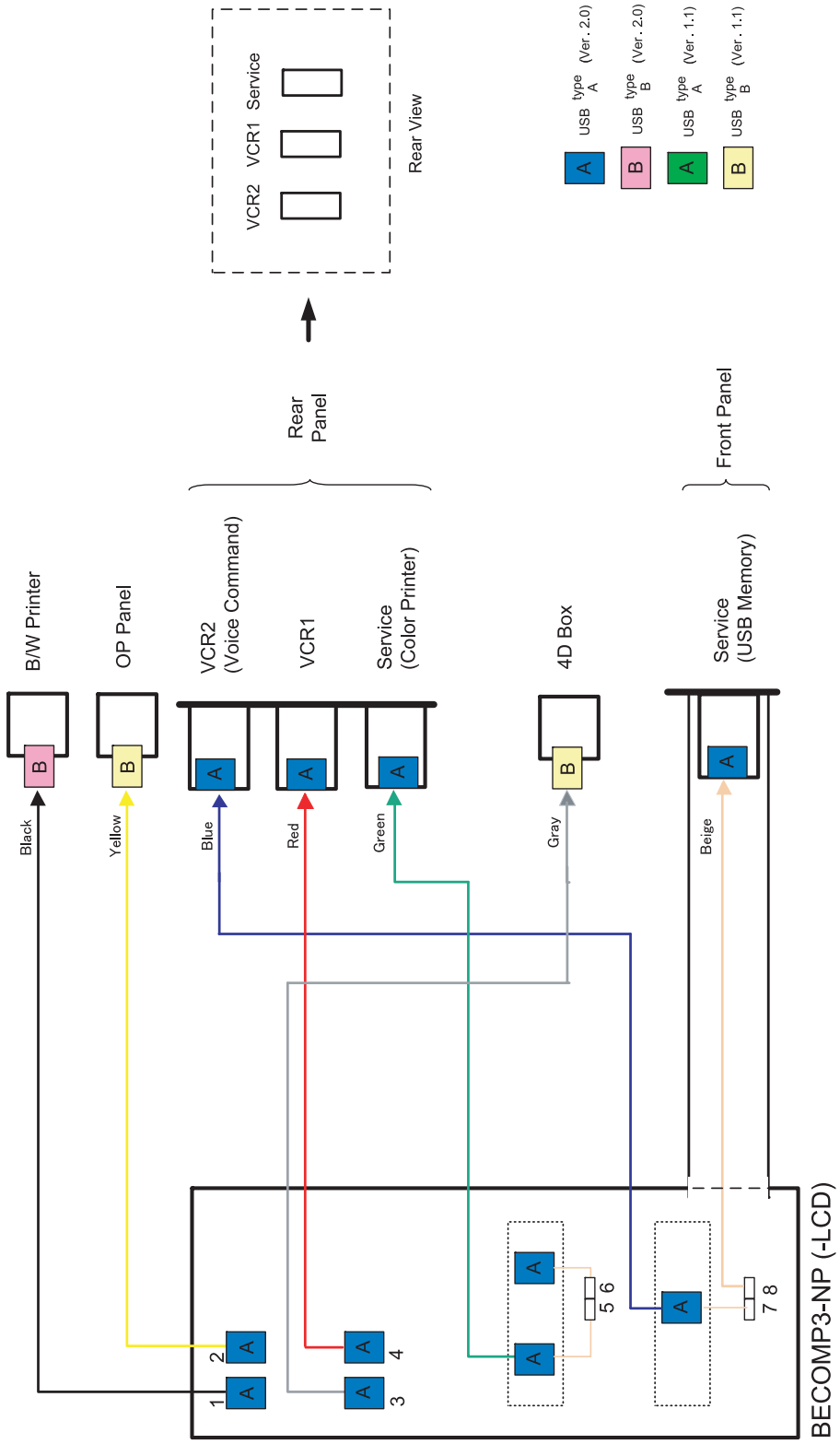


Figure 5-50 USB Connection (For CRT/LCD)

Section 5-4
Peripheral Compatibility

List of All Supported Printers

●:Supported
Blank:No Support

	LOGIQ 7									LOGIQ S6						Other
Product	BT04	BT04	BT06	BT06-2	BT06-2	V65x	BT07	BT07	BT09	LS6 BT06	LS6 BT06	LS6 BT06	LS6 BT08	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 R6.2.2	LS6 R6.2.3	LS6 R7.6.x	LS6 R7.7.0		–
Ghost Number	5137307	5146100	5146100	5174668-2	5174668-2	5182424	5191839-2	5191839-2	5305206-3	5170144-2	5194288	5220776	5252046	5324919	5305207	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-D50 does not work.
Note 2 : R8.0.x support slightly different version of UP-D897, for improved print response time.

Figure 5-51 List of all supported printers

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 *iLinq* Interactive Platform Features

Many of the services of the Common Service Platform come from its integration with *iLinq*. The following sections contain a brief introduction of *iLinq's* features. Detailed information can be found in the LOGIQ™ S6 User Manual. (Direction 2286866-100.)

5-5-2-1 Web Server/Browser

The Service platform and other Service software use the *iLinq* web server and browser.

5-5-2-2 Connectivity

This feature provides basic connectivity between the scanner and the OnLine Center (OLC).

5-5-2-3 Configuration

This feature provides the interfaces to configure various *iLinq* parameters.

5-5-2-4 Contact GE

Allows a one-button touch for the user to contact the OnLine Center and describe problems with their scanner in an easy and convenient way.

5-5-2-5 Interactive Application

The main application is displayed in the form of HTML pages whenever the browser starts. This is the entry point for any user to start any *iLinq* application.

5-5-3 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.

5-5-3-1 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.

5-5-3-2 Service Login

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.

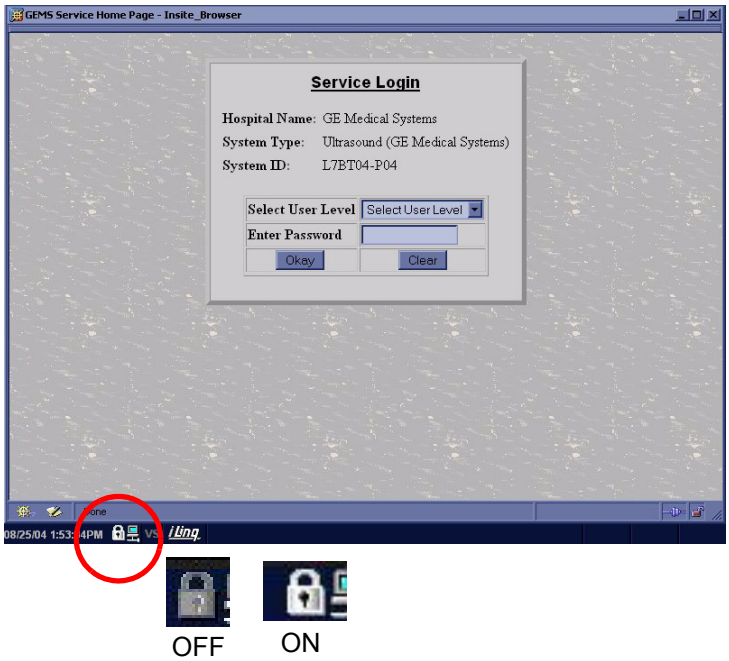


Figure 5-52 Service Login Screen

⚠ 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.**

5-5-3-2 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**.

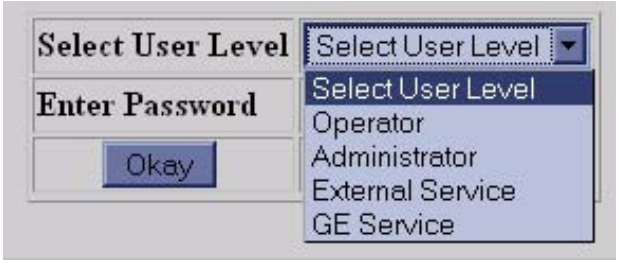


Figure 5-53 Select User Level

5-5-3-3 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 5-46 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.

5-5-4 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.*

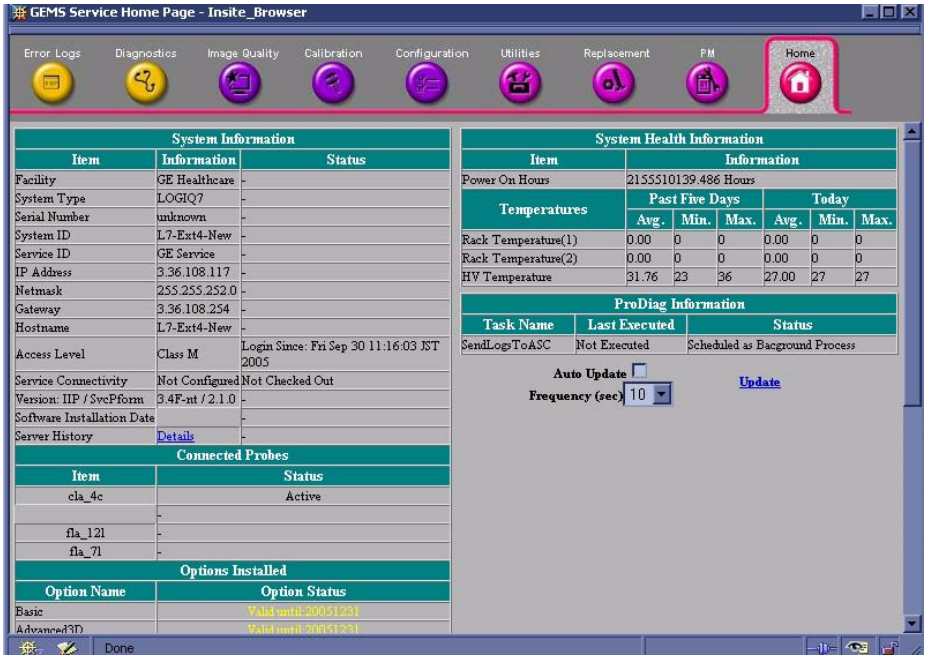


Figure 5-54 Service Home Page

5-5-5 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

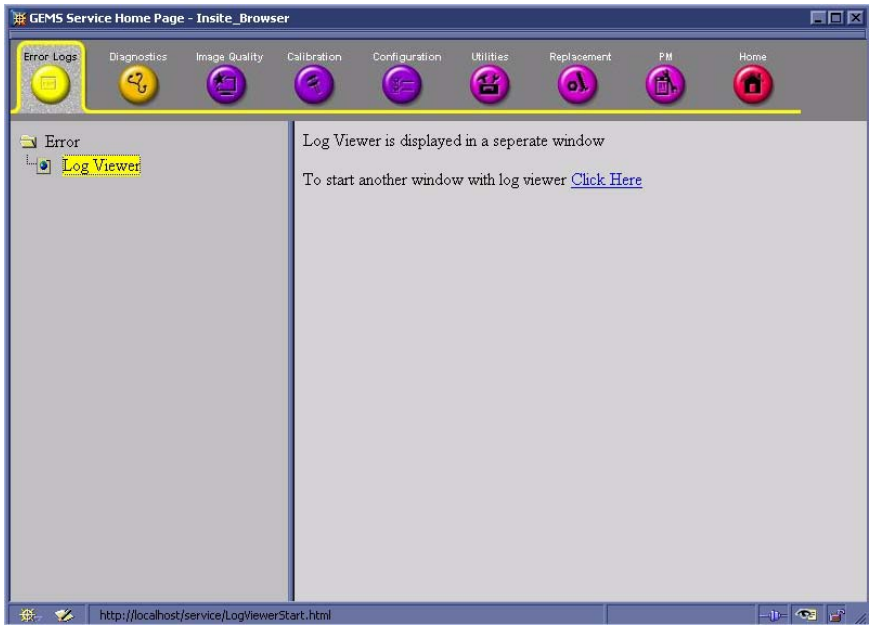


Figure 5-55 Error Log Page

5-5-5-1 Logs

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

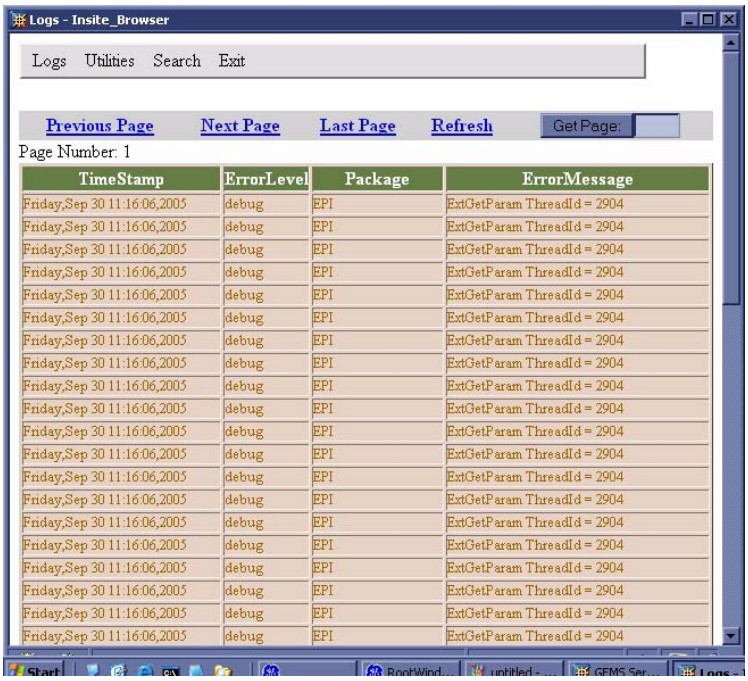


Figure 5-56 Error Log Sub-Menus (System)

Table 5-47 Error Log Descriptions

Logs	Descriptions
System	Software bug information for software engineering to debug the software.
Power	Not used for LOGIQ S6.
Infomatics	Exam informations. Whenever the New patient or End Current Patient is pressed, they are reported as a log.

Table 5-47 Error Log Descriptions

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.)	

5-5-5-1-1 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

5-5-5-1-2 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.

5-5-5-2 Utilities

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

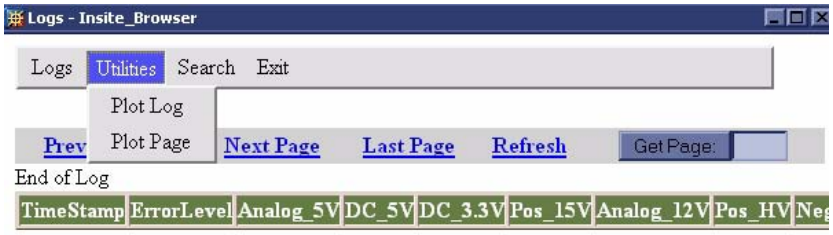


Figure 5-57 Utilities Category

5-5-5-3 Search

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

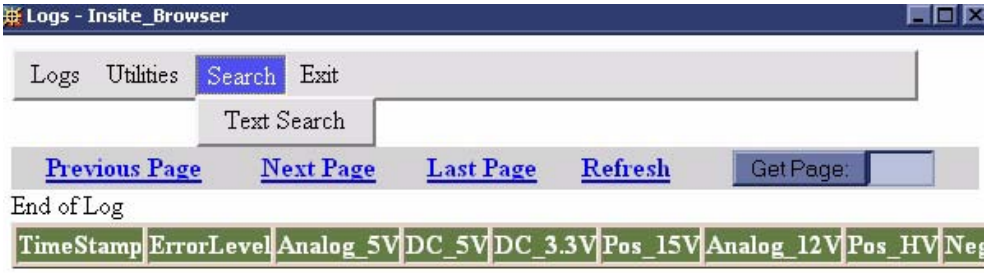


Figure 5-58 Search Category

5-5-5-4 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.

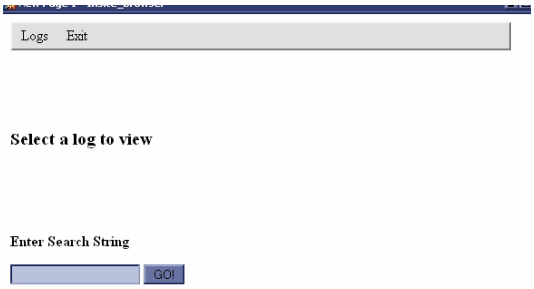


Figure 5-59 Filter Category

5-5-5-5 Exit

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

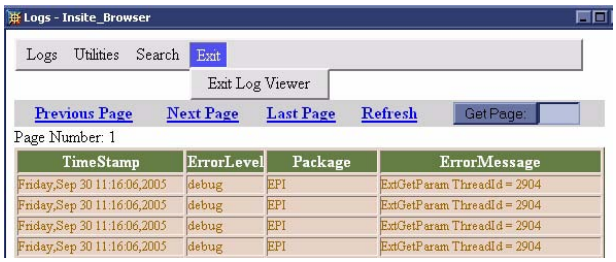


Figure 5-60 Exit Category

5-5-6 Diagnostics

The Diagnostic page includes various diagnostic tests for troubleshooting.

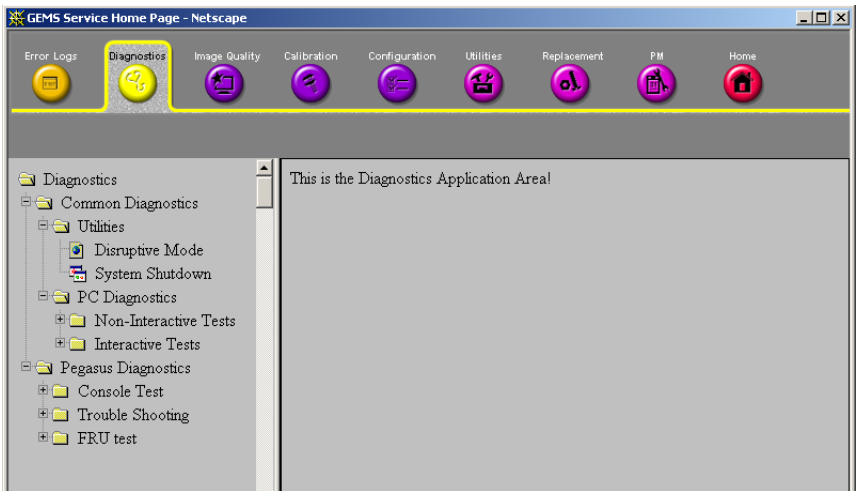


Figure 5-61 Diagnostic Page

5-5-6-1 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.

5-5-6-2 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.

5-5-7 Image Quality

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

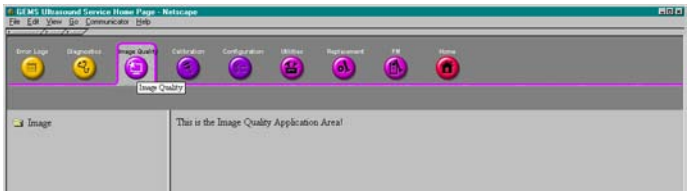


Figure 5-62 Image Quality Page

5-5-8 Calibration

The Calibration page is used to calibrate the system.

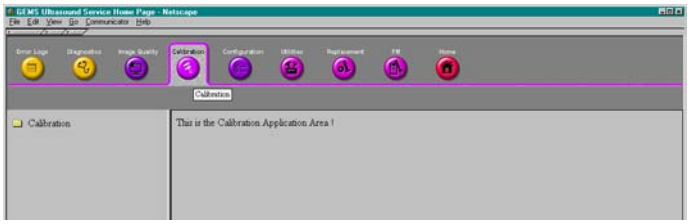


Figure 5-63 Calibration Page

5-5-9 Configuration

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.

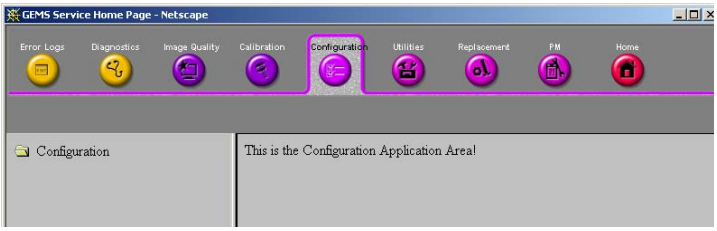


Figure 5-64 Configuration Page

5-5-10 Utilities

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

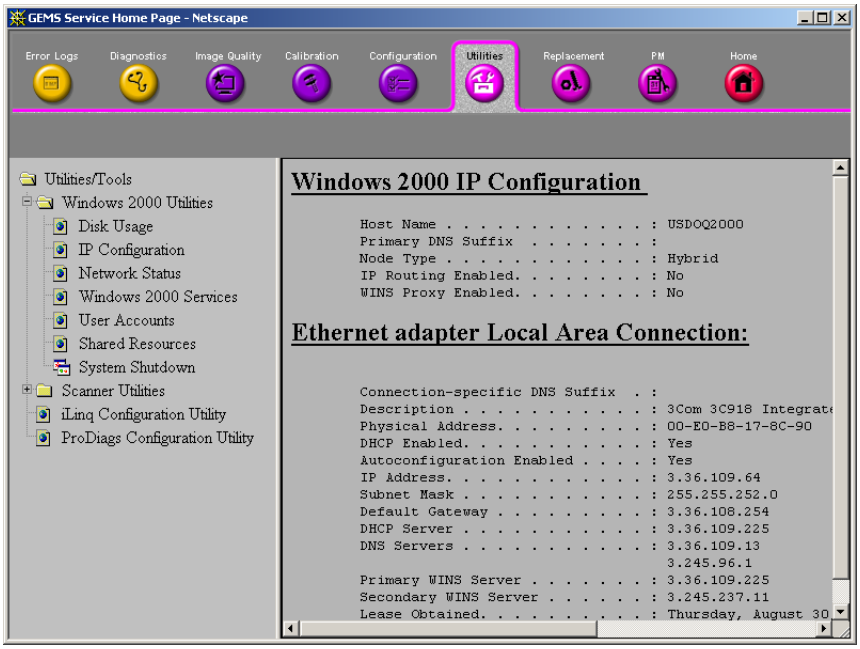


Figure 5-65 Utilities Page

5-5-11 Replacement

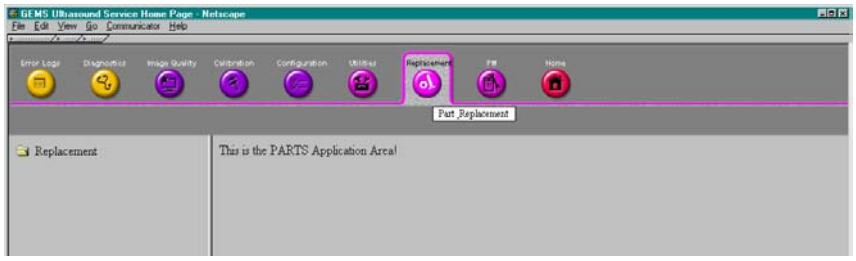


Figure 5-66 Part Replacement Page

5-5-12 PM

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

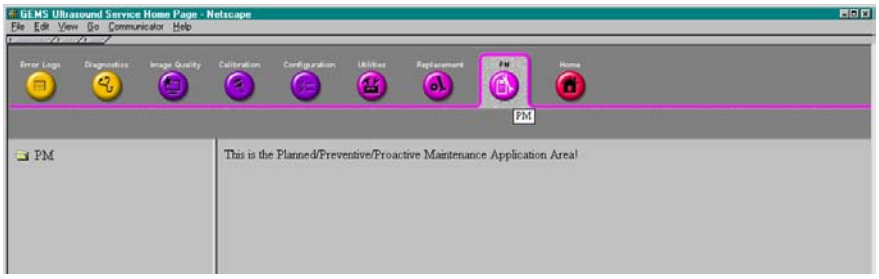


Figure 5-67 Planned Maintenance Page

5-5-13 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

5-5-13-1 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.

5-5-13-2 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.

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 LOGIQ6 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 5-68 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 5-48 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)

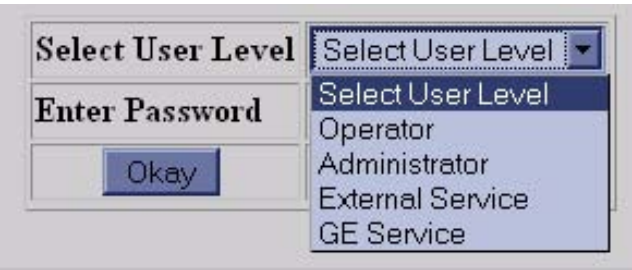


Figure 5-69 Service Login window

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 5-49 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)

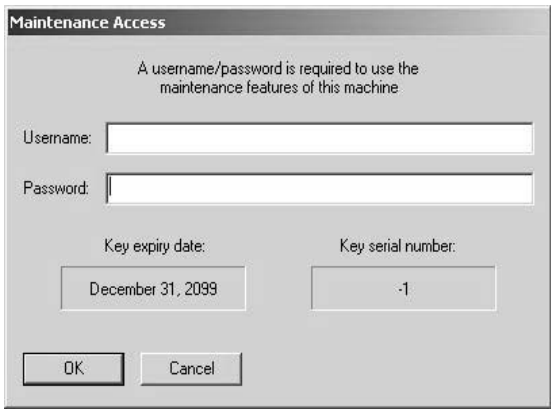


Figure 5-70 Windows desktop Login Window

Section 5-7
Air Flow Control

5-7-1 Air Flow Distribution

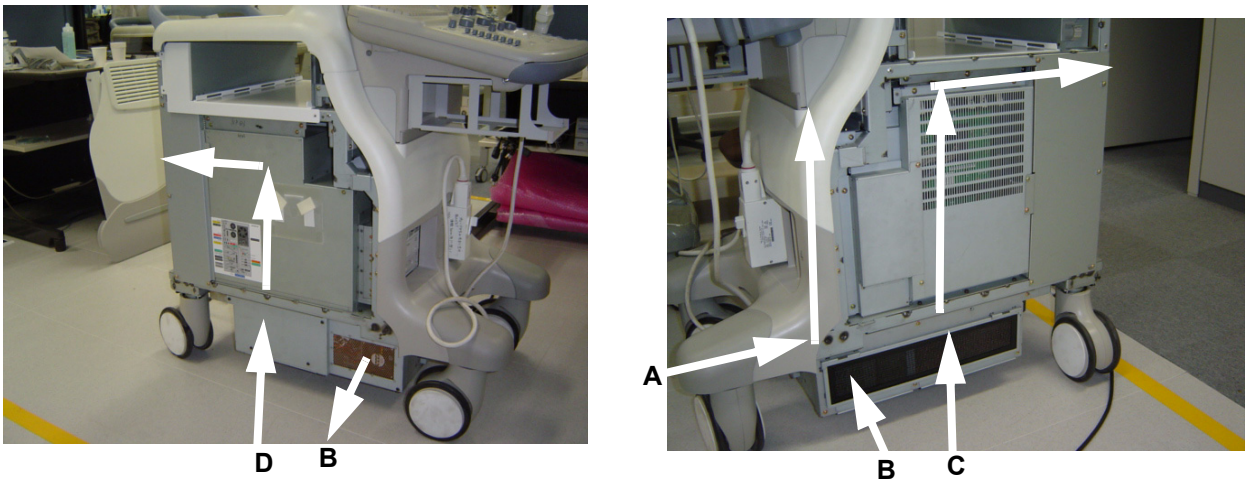


Figure 5-71 Air Flow Inside the Scanner

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

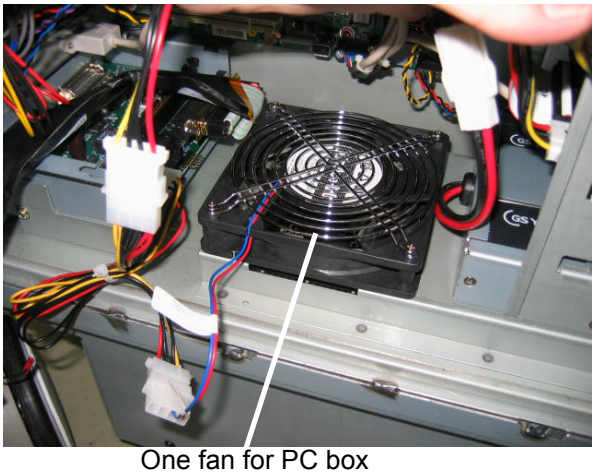
- Path A (Front lower > TRICON > Front Upper) for TRICON cooling.
- Path B (Bottom right > Filter > LV/HV unit > Bottom left) for LV and HV unit cooling.
- Path C (Bottom right > Filter > NEST Assy > Duct > Rear upper) for NEST Assy cooling.
- Path D (Bottom left > PC Box > Rear Upper) for PC Box cooling.

5-7-2 Filters

The scanner contains the two filters located at:

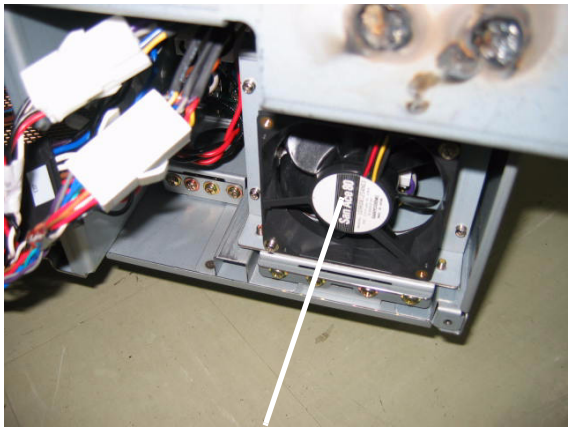
- Bottom right for air flow of the NEST Assy, LV unit, and HV unit.
- Bottom left for air flow of the PC Box.

5-7-3 Fans

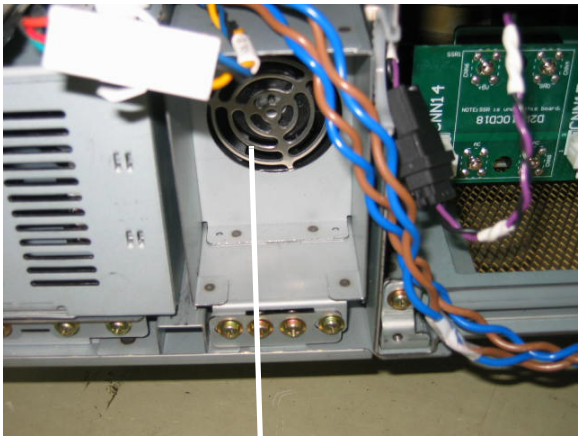


One fan for PC box

Three fans for Nest Assy



One fan for HV unit



One fan for LV unit

Figure 5-72 Fans

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

- Three fans: At the bottom of the NEST Assy for air flow path C
- One fan (PC box-inlet): On the bottom of the PC Box for air flow path D
- Two fan (PC box-outlet): On the upper of the PC Box for air flow path D
- One fan: In the ATX PS of the PC Box for air flow path D
- One fan: On the LV unit for air flow path B
- One fan: On the HV unit for air flow path B

Section 5-8
Monitor Video Specification

5-8-1 Input

5-8-1-1 CRT

Table 5-50 CRT Specifidations

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

5-8-1-2 LCD

Table 5-51 LCD Specifications

Standard	Format	Signal	Sync	DDC	Termination
SXGA	1280 x 1024 / 60 Hz	DVI-D	-	-	-

5-8-2 Outputs

5-8-2-1 SVGA

Table 5-52 SVGA Specifidations

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

Table 5-53 TV Fomat Specifidations

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

Table 5-54 PAL BDGH Specifidations

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

Table 5-55 NTSC EIA Specifidations

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

Table 5-56 Basic DC Parameters

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.

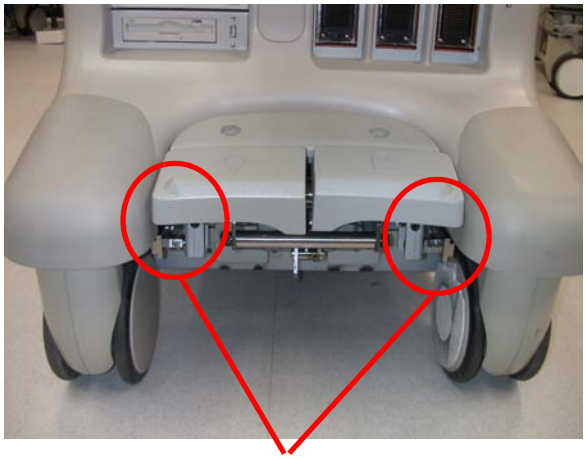
Table 6-57 Contents in chapter

Section 6-2
Caster Brake/Swivel Function Adjustments

6-2-1 Brake Function Adjustment

The LOGIQ S6 contains front Brake/Swivel lock adjusters.

NOTICE The rear swivel lock function can NOT be adjusted.



Front Brake/Swivel Lock Adjuster

Figure 6-73 Locations of Brake/Swivel Lock Adjusters

6-2-1-1 Preparation

1.) Remove the followings to access the brake/swivel lock adjusters.
- Crescent cover (two rubber caps and screws)
- Crescent Cover Bracket (two screws)

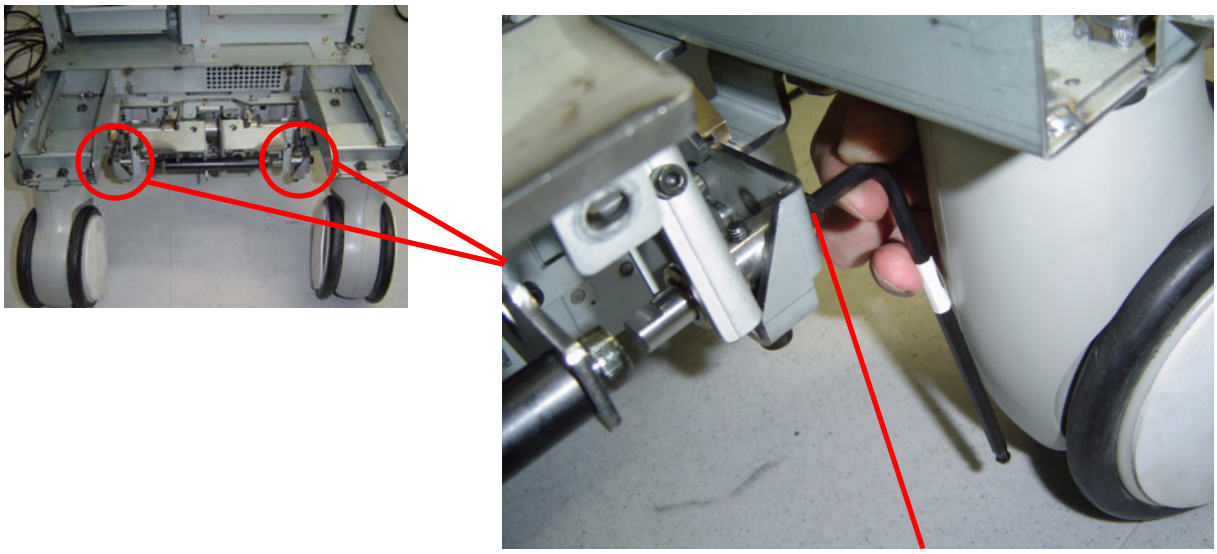
Figure 6-74 Crescent Cover and Crescent Cover Brasket

- Front lower cover (four screws)
- Pedal covers (screws)

Figure 6-75 Front Lower Cover and Pedal Covers

6-2-1-2 The Pedal does NOT lock even if the pedal is depressed

1.) Loosen the left and right adjuster lock bolts.



Adjuster Lock Bolt (each)

Figure 6-76 The Left and Right Adjuster Lock Bolts

6-2-1-2 The Pedal does NOT lock even if the pedal is depressed (cont'd)

2.) Rotate the right adjusting bolts **two turns** as shown. Perform this procedure at the left adjusting bolt.

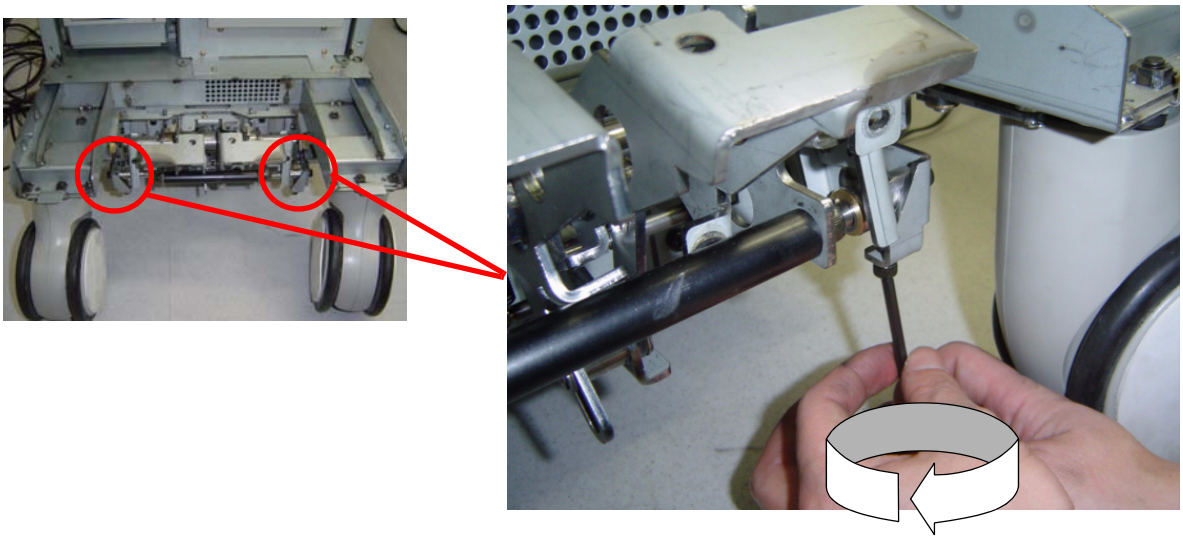


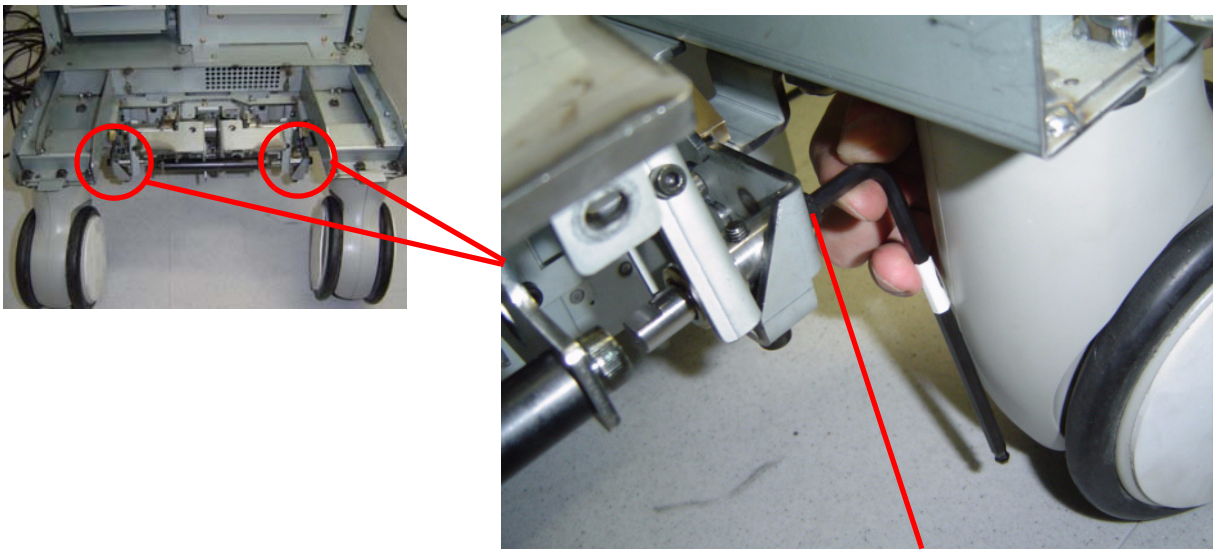
Figure 6-77 Rotating the bolts two turns

3.) Tighten the left and right adjusting lock bolts.

4.) Verify that lock is applied when the brake pedal is depressed. If it is not, repeat steps 1 to 3.

6-2-1-3 Caster lock/swivel does NOT lock even if the pedal is locked in position

1.) Loosen the left and right adjuster lock bolts.



Adjuster Lock Bolt (each)

Figure 6-78 The left and right adjuster lock bolts

6-2-1-3 Caster lock/swivel does NOT lock even if the pedal is locked in position (cont'd)

2.) Rotate the right adjusting bolts **two turns** as shown. Perform this procedure at the left adjusting bolt.

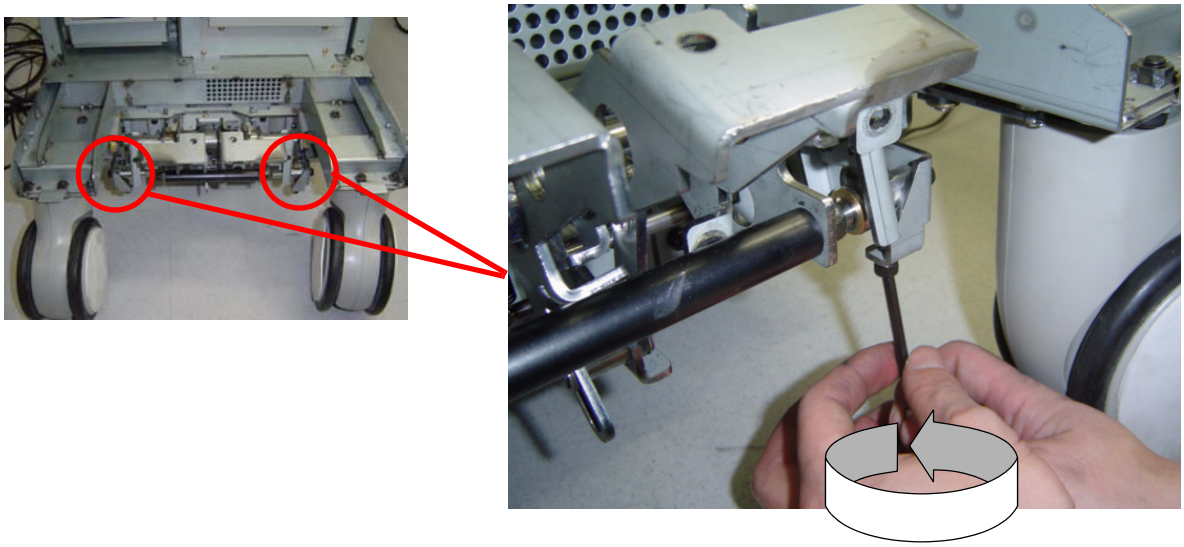


Figure 6-79 Rotate the bolts two turns

3.) Tighten the left and right adjusting lock bolts.

4.) Verify that lock and brake is applied when the brake pedal is depressed. If it is not, repeat steps 1 to 3.

Section 6-3
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 64 (DDBF128) and BTRAP boards.

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

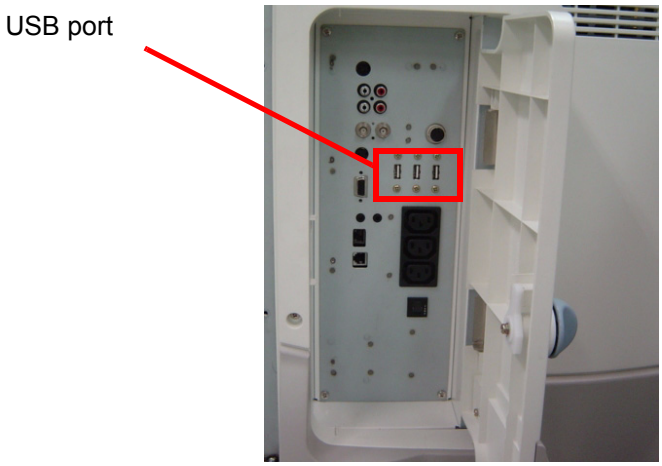


Figure 6-80 Inserting the Service Dongle

2.) Power ON the scanner. Verify that the scanner boots up with no error.
3.) Tap ON/OFF the power switch.
4.) Click on **Exit.**

Figure 6-81 System-Exit Screen

Section 6-3 Reloading the Probe Data (cont'd)

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

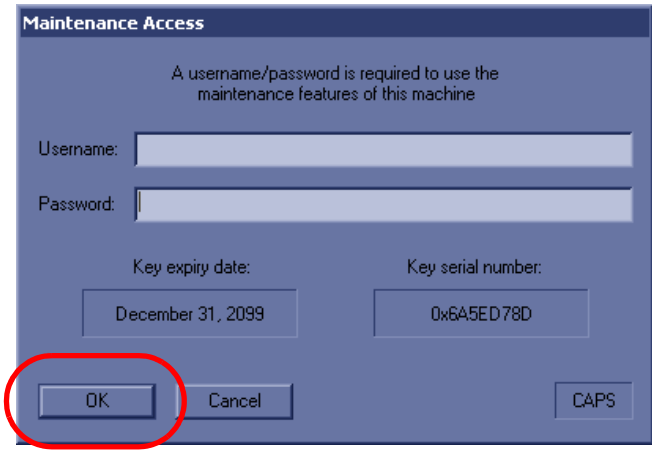


Figure 6-82 Password Entry

7.) Click on **maintenance**.

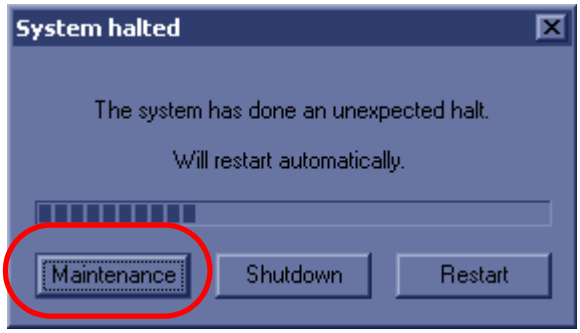


Figure 6-83 Maintenance

Section 6-3 Reloading the Probe Data (cont'd)

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

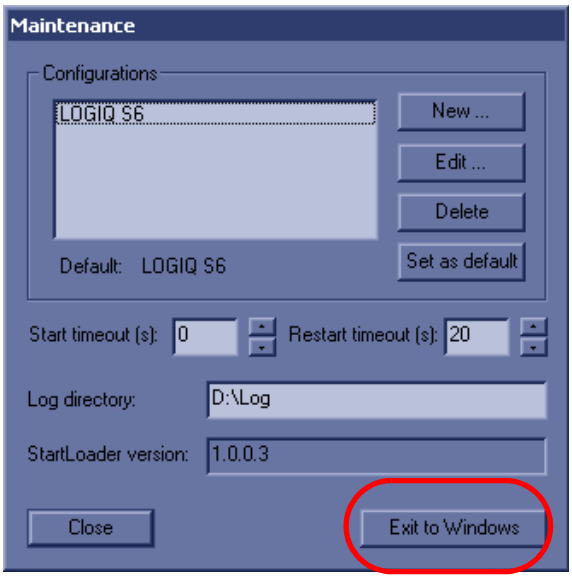


Figure 6-84 Exit to Window

9.) The Windows Desktop screen is displayed.

Figure 6-85 Windws Desktop

10.) Erase the file, "D:\Pegasus\target\resources\Pegasus\ProbeInfo.res."

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

Section 6-4
Monitor and LCD Adjustments

6-4-1 CRT Monitor Contrast and Brightness Adjustment

Before calibrating the Monitor, check your 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.)**

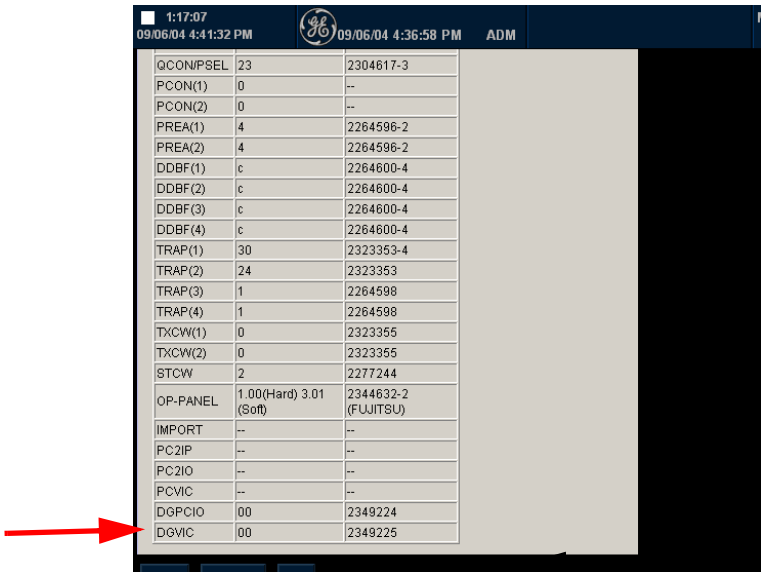


Figure 6-86 DGVIC Part Number Check

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.

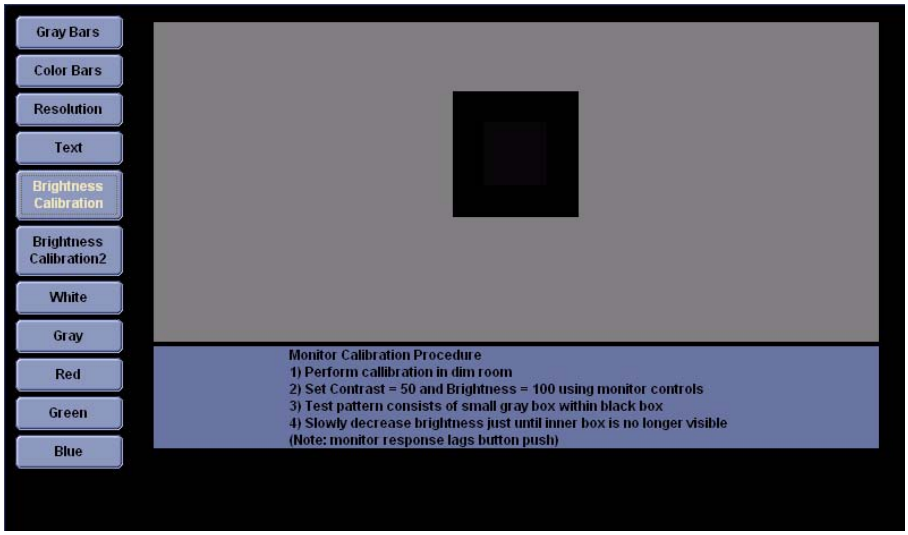


Figure 6-87 Calibration Form

6-4-1 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.

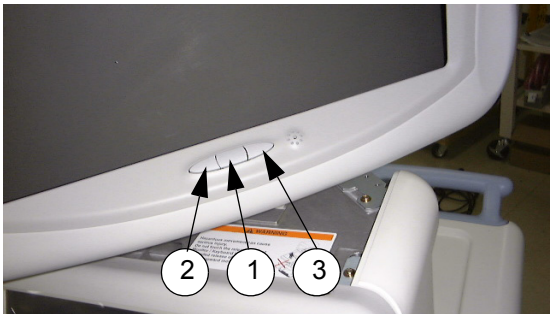


Figure 6-88 Monitor Adjustment buttons

3.) Press the Adjustment button (+, 2) to increase contrast (or brightness).
Press the Adjustment button (-, 3) to decrease contrast (or brightness).
The amount of contrast (or brightness) is shown on a slide bar on the screen. Refer the following table for the setting.

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

5.) 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 6-58 Contrast Recommended Setting

Room Condition	Monitor Adjustment
	Contrast for DGVIC 2349225-2 or later
Dark room for Radiology/ Cardiology	50
Dim room for Radiology/ Cardiology	60
Bright room for OB	70
Dark room for Cardiology	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.

6-4-2 17 inch IPS-Pro type LCD Monitor (5261237) Brightness Adjustment (BT08 or later and LS6 17 inch IPS-Pro type LCD Upgrade systems)

6-4-2-1 Adjusting Parameters

There are 4 parameters to control the brightness of the IPS-Pro type LCD monitor. This section describes the property and adjustment for each parameter.t.

Figure 6-89 17 inch IPS-Pro Type LCD Monitor Adjustment buttons

6-4-2-1-1 Brightness

Range: 0 <-> 100

Property: Darker <-> Brighter.

Factory default: 80

Adjustment: Change the value by directly pressing the button (2) and (3), and press the button (1) to exit.

6-4-2-1-2 Contrast

Range: 0 <-> 100

Property: Less Contrast <-> More Contrast.

Factory default: 100

Adjustment: Change the value in Advanced Menu according to the procedure below.

Go into the Contrast Menu

1.) Press and hold the button (1) for 15 seconds, and Advanced Menu appears.
2.) Press the button (3) once to select the **Color** menu ([RGB] icon).
3.) Press the button (1) to go into **Color** menu. The upper left end icon is highlighted in the menu.
4.) Press the button (1) to go into the **Brightness and Contrast** menu.
5.) Press the button (1) to select **Contrast** menu

6-4-2-1 Adjusting Parameters (cont'd)

Adjust the Contrast value

6.) Adjust the Contrast value by pressing button (2) and (3).

Exit the Contrast Menu

7.) Press the button (1) to go back to the **Color** menu.
8.) Press the button (3) 5 times to select **Return** at the lower left end.
9.) Press the button (1) to go back to the **Advanced Menu**.
10.) Press the button (3) 4 times to select **Exit** at the lower left.
11.) Press the button (1) to exit.

6-4-2-1-3 Color Temperature

Range: 9000K / 11000K / 13000K / 15000K

Property: Reddish <-> Bluish.

Factory default: 11000K

Adjustment: Change the value in Advanced Menu according to the procedure below.

Go into the Color Temperature Menu

1.) Press and hold the button (1) for 15 seconds, and the Advanced Menu appears.
2.) Press the button (3) once to select the **Color** menu ([RGB] icon).
3.) Press the button (1) to go into the **Color** menu. The upper left end icon is highlighted in the menu.
4.) Press the button (3) once to select **Temperature** menu ([K] icon).
5.) Press the button (1) to go into the **Temperature** menu.

Color Temperature value adjustment

6.) Adjust the Color Temperature value by pressing the button (2) and (3).

Exit the Color Temperature Menu

7.) Press the button (1) to go back to the **Color** menu.
8.) Press the button (3) 4 times to select **Return** at the lower left end.
9.) Press the button (1) to go back to the **Advanced Menu**.
10.) Press the button (3) 4 times to select **Exit** at the lower left end.
11.) Press the button (1) to exit.

6-4-2-1 Adjusting Parameters (cont'd)

6-4-2-1-4 Gamma

Range: 2.0/2.1/2.2 /2.3/ 2.4 /2.5/ 2.6

Property: Controls the level of transition from black to white from "Rapid" to "Gradual" as the value increases.

Factory Default: 2.2

Adjustment: Change the value in Advanced Menu according to the procedure below.

Go into the Gamma Menu

1.) Press and hold the button (1) for 15 seconds, and the Advanced Menu appears.
2.) Press the button (3) once to select the **Color** menu ([RGB] icon).
3.) Press the button (1) to go into the **Color** menu. The upper left icon is highlighted in the menu.
4.) Press the button (3) twice to select **Gamma** menu ([g] icon).
5.) Press the button (1) to go into the **Gamma** menu

Gamma value adjustment

6.) Adjust the Gamma value by pressing button (2) and (3).

Exit the Gamma Menu

7.) Press the button (1) to go back to the **Color** menu.
8.) Press the button (3) 3 times to select **Return** at the lower left end.
9.) Press the button (1) to go back to the **Advanced Menu**.
10.) Press the button (3) 4 times to select **Exit** at the lower left end.
11.) Press the button (1) to exit.

6-4-2-2 Reloading Factory Default Values

This section describes how to reload the factory default values of the LCD parameters.

Reload the factory default according to the procedure below.

1.) Press and hold the button (1) for 15 seconds, and the Advanced Menu appears.
2.) Press the button (3) twice to select the **Others** menu ([etc] icon).
3.) Press the button (1) to go into the **Others** menu. The left end icon is highlighted in the menu.
4.) Press the button (3) twice to select the **Reset** menu.
5.) Press the button (1) to go into the **Reset** menu.
6.) Press the button (3) once. The Reset becomes black and Warning appears.
7.) Press the button (1). All parameters are reset to the default values and go back to the **Others** menu.
8.) Press the button (3) to select the **Return** at the right end.
9.) Press the button (1) to go back to **Advanced Menu**.
10.) Press the button (3) 3 times to select **Exit** at the lower left.
11.) Press the button (1) to exit.

6-4-3 LCD Monitor (5169935) Contrast and Brightness Adjustment

To adjust the contrast and brightness:

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

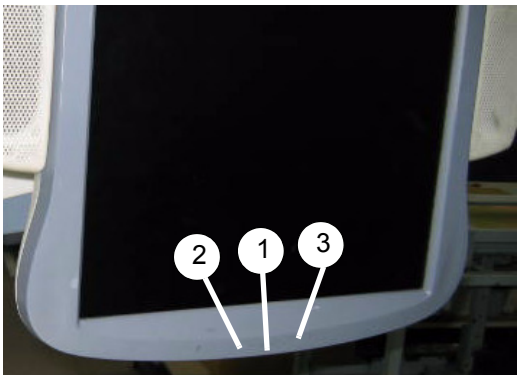


Figure 6-90 Adjustment Buttons

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.

13.) 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.

14.) 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.

15.) 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.

6-4-4 LCD Touch Panel Adjustment

This adjustment must be performed when always replacing:

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

1.) Check the followings:

- Proper balance of the LCD display as shown in Figure 6-91
- No Jitter (Phenomenon that a character does not move sideways)

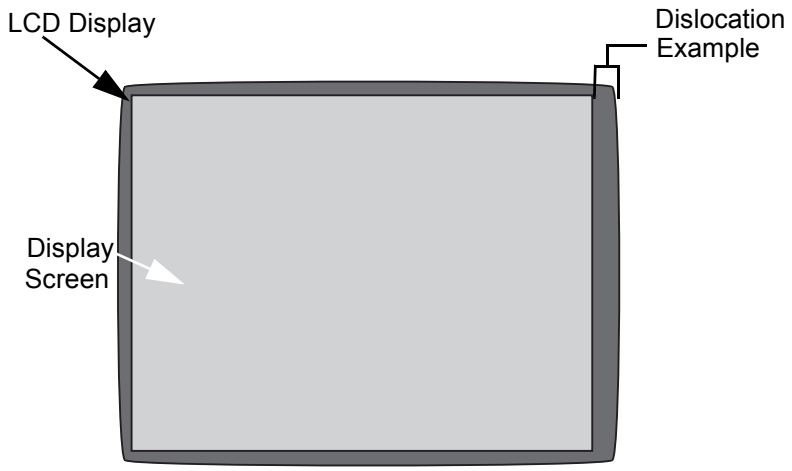


Figure 6-91 Example of LCD Bad balance

NOTICE Only when the start-up screen appears in the 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. The LCD touch panel screen is not practically 640 x 480 format. So the LCD is NOT correctly adjusted if it screen is used for geometry. So use the service dongle to display the start-up screen as refference image for adjusting the LCD.

CAUTION **Do not wear the ESD wrist strap when you remove a part of power supply unit. Turn OFF power and unplug the power cord before removing a part of power supply unit. However be sure to turn off power and wear the strap before you remove a circuit boards.**

6-4-4 LCD Touch Panel Adjustment (cont'd)

1.) Remove the OP side R Cover to access.
2.) Access to the OSD Menu display button located at backside of the LCD.

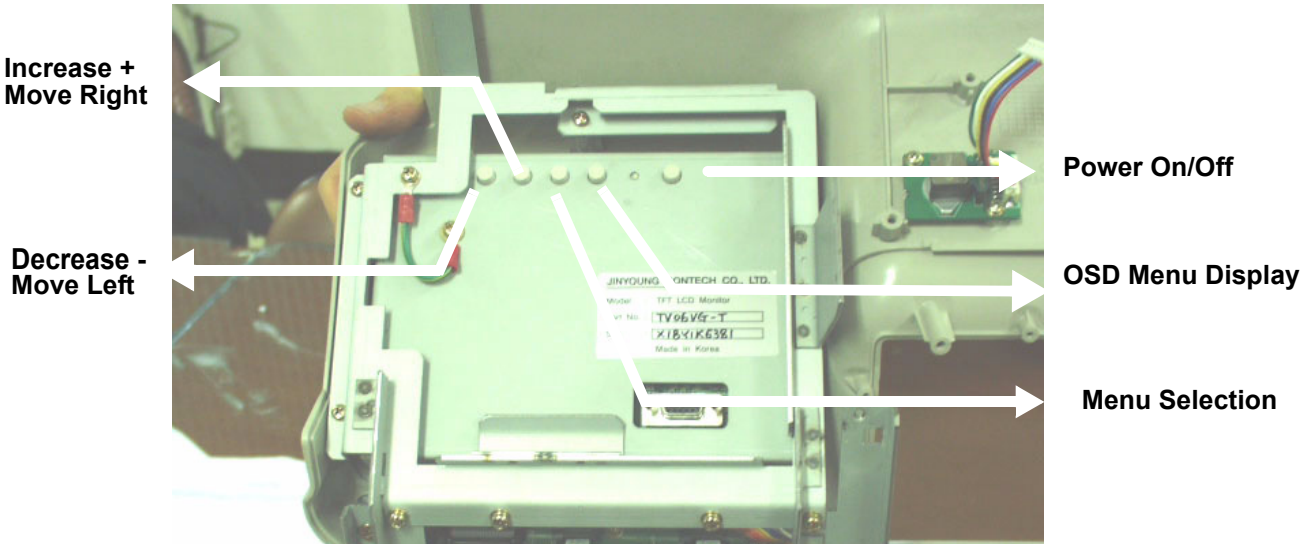


Figure 6-92 Accessing to OSD Menu

6-4-4 LCD Touch Panel Adjustment (cont'd)

3.) OSD Menu is shown on the LCD screen.

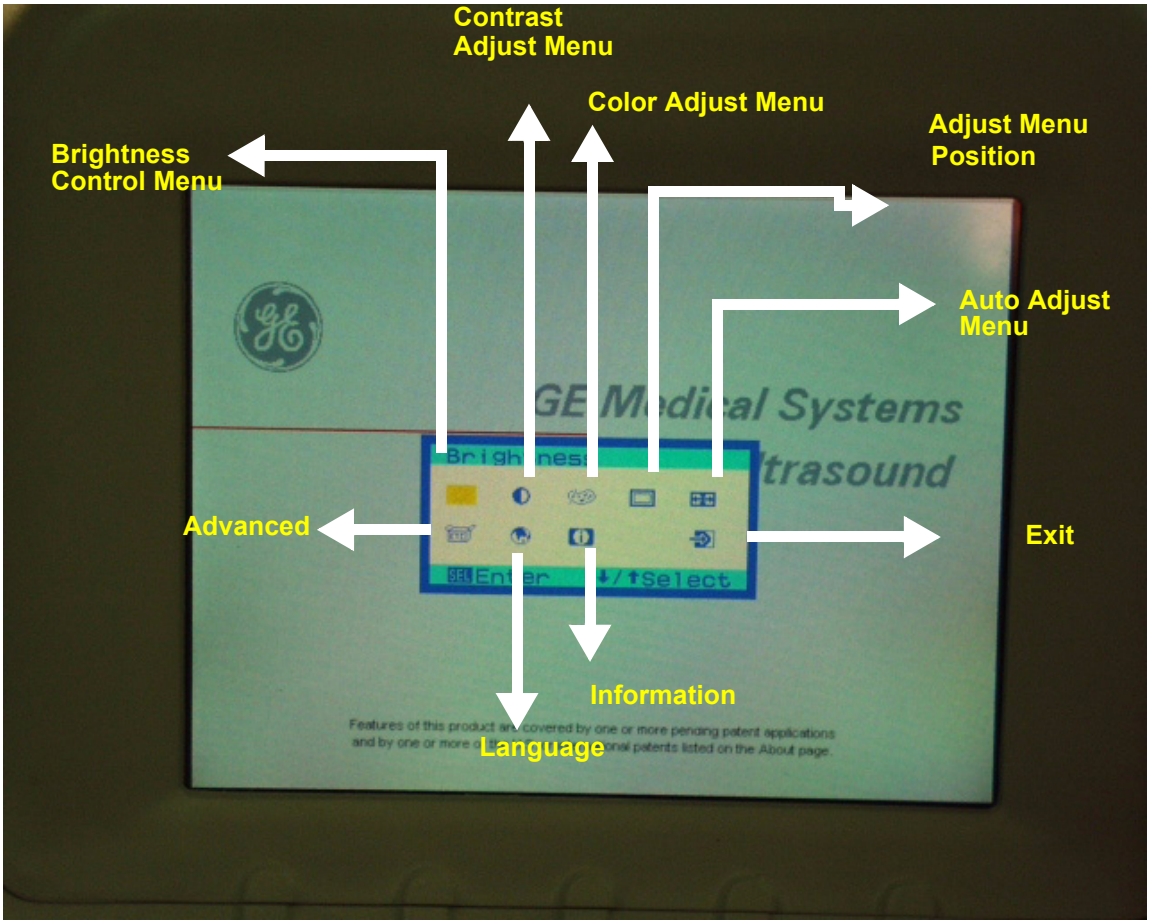


Figure 6-93 OSD Menu

6-4-4 LCD Touch Panel Adjustment (cont'd)

4.) Move the cursor to execute Auto Adjust.

5.) Make sure that the Geometry is selected, then the Menu Selection Button.

Figure 6-94 Menu Seliction Button

6.) LCD display Auto Adjustment procedures will be started automatically.The following screen appears.

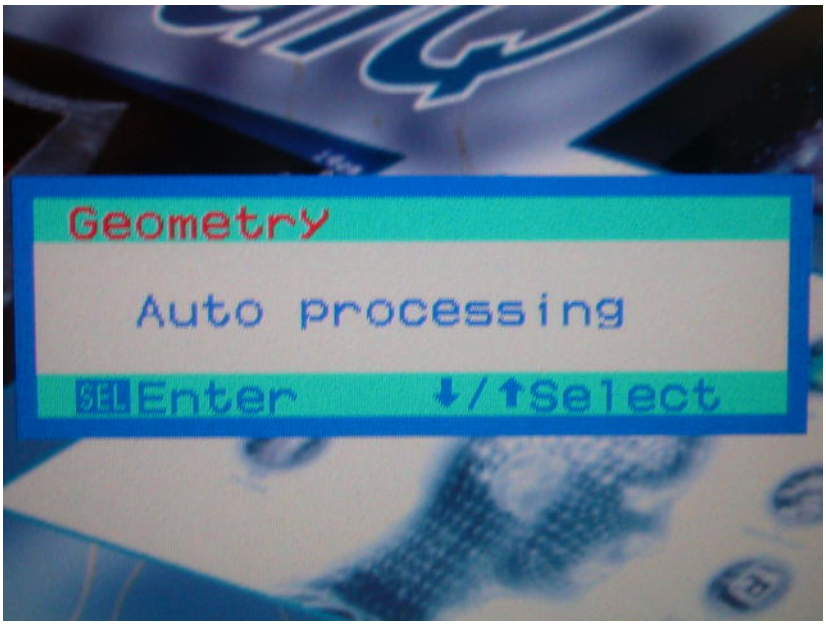


Figure 6-95 Auto Processing Screen

6-4-4 LCD Touch Panel Adjustment (cont'd)

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

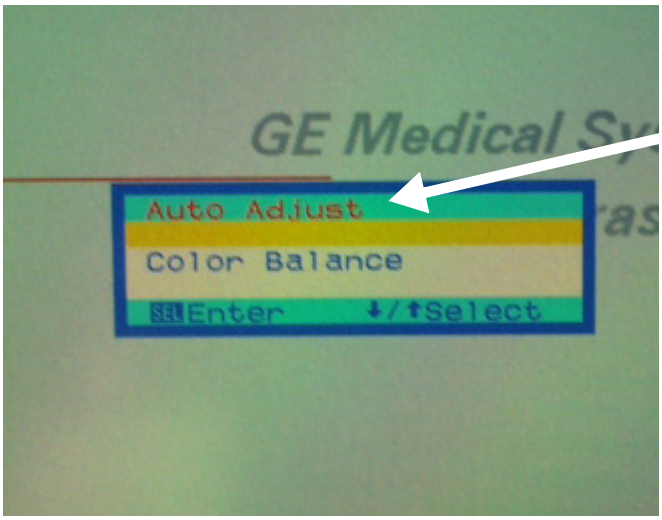


Figure 6-96

8.) Make sure that the LCD displacement is fixed and shown at the center location.

9.) If it is fixed appropriately, go on to the next step.
If the display is not adjusted yet, go back and repeat the adjustment procedures form step 4.

10.) Press the OSD menu display button to seve the setting.

Section 6-5
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.

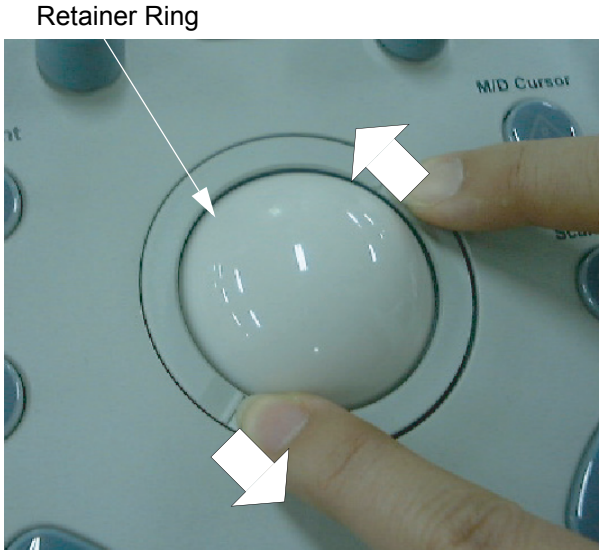


Figure 6-97 Rotating the Retainer Ring

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

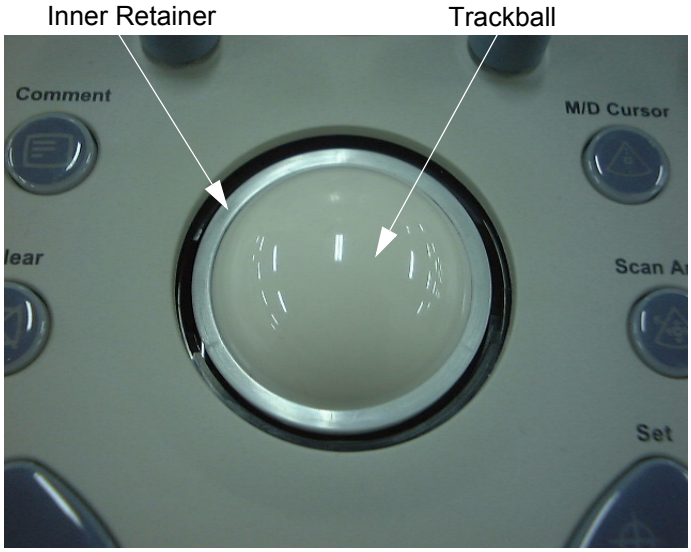


Figure 6-98 Removing Inner Retainer and Trackball

Section 6-5 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.

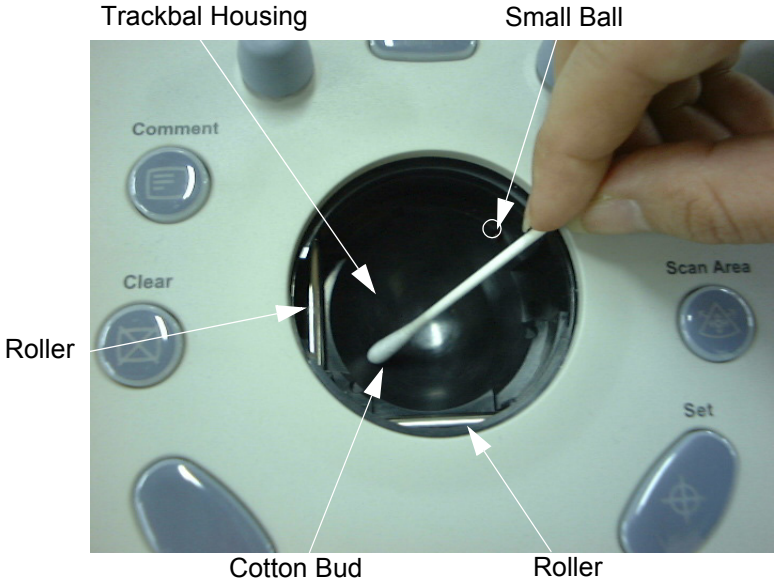


Figure 6-99 Cleaning TrackBall and Housing

Section 6-5 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.

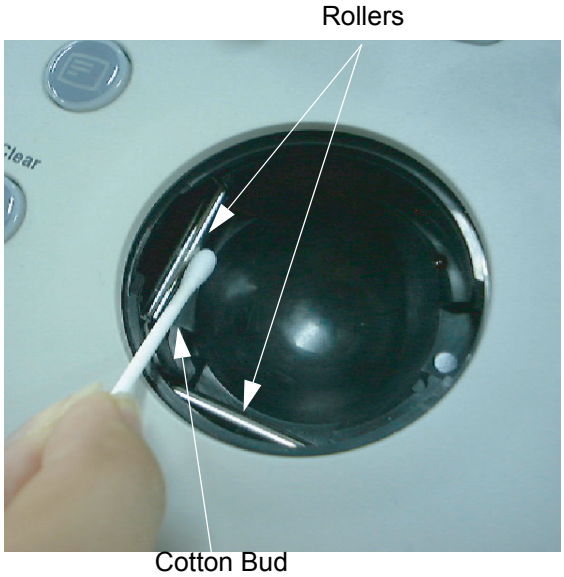


Figure 6-100 Cleaning Rollers

Section 6-5 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.

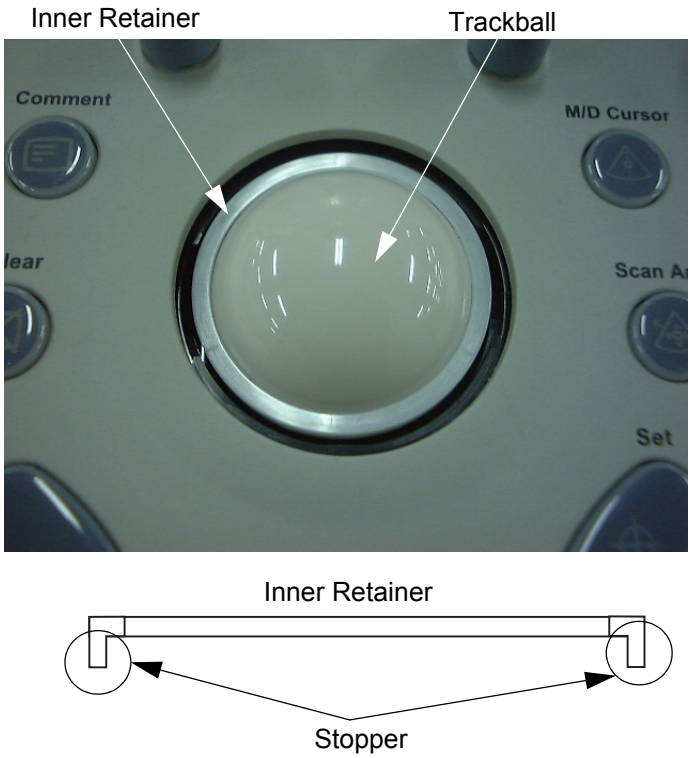


Figure 6-101 Removing Inner Retainer and Trackball

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

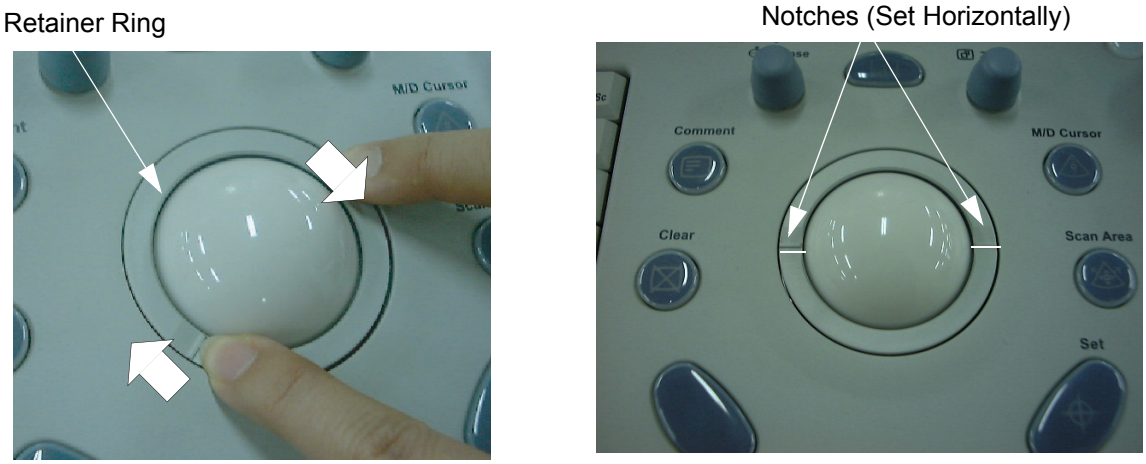


Figure 6-102 Rotating the Retainer Ring

Section 6-6
Jumper and Dip Switch Setting

6-6-1 Dip Switch Setting

Dip switche setting represents the version and revision of the board.

This section describes how to read the dip switches in case that a service engineer might need to confirm and communicate the setting of the dip switches.

Normally the dip switches shall not be adjusted because those are set properly when the system or the board is shipped out from the factory. In case of special needs, such as scanner upgrade, refer to each instructions/documentations for proper setting..

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

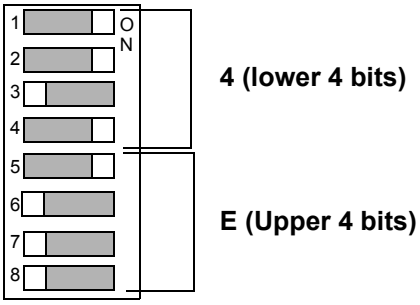


Figure 6-103 A Example of DipSwitch Setting

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

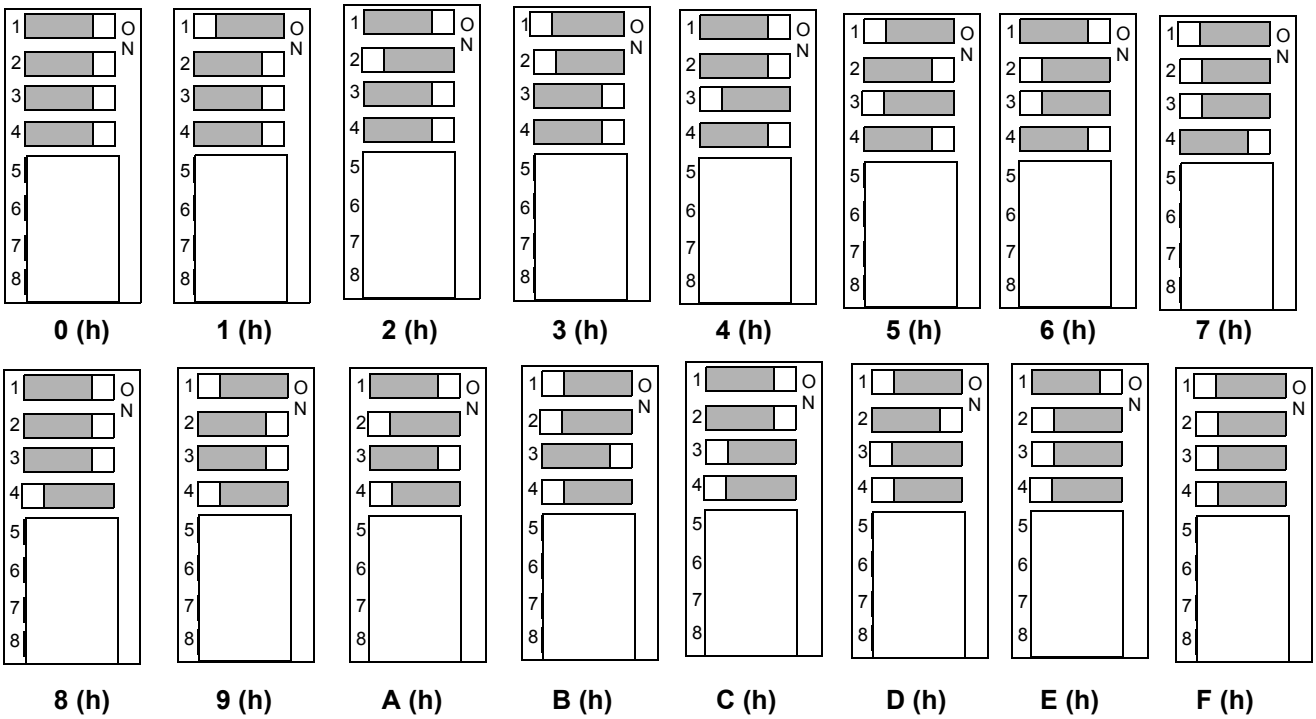


Figure 6-104 Bit Setting for DIP Switch 1 to 4

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

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

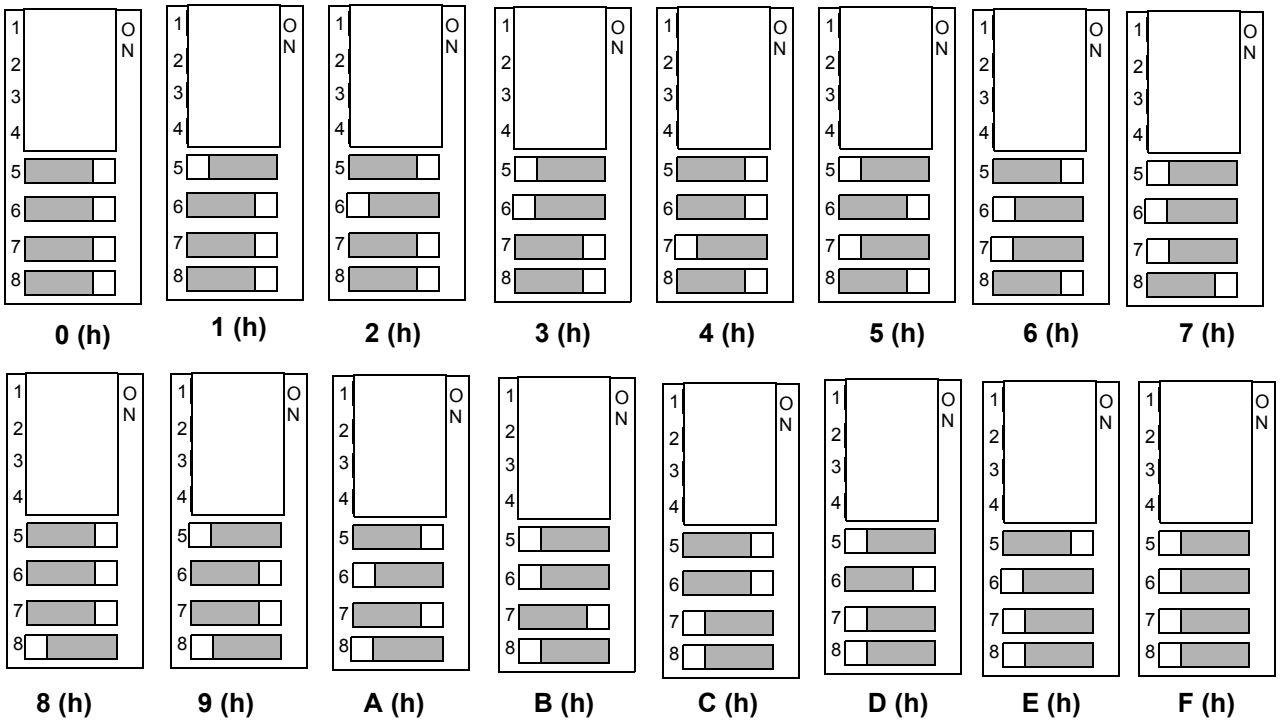


Figure 6-105 Bit Setting for DIP Switch 5 to 8

6-6-2 Jumper Setting

6-6-2-1 HDD (Parallel Type)

Always set the jumper between MASTER pins.

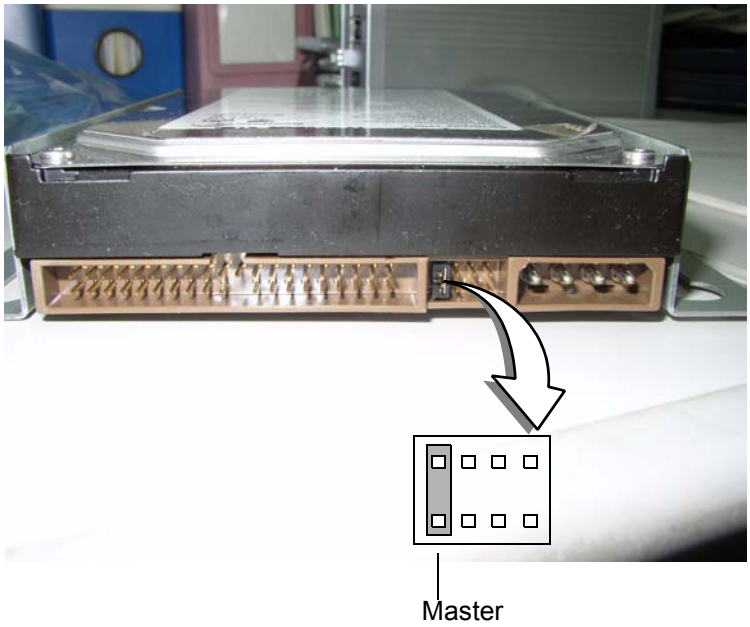


Figure 6-106 HDD (Parallel Type) Jumper

6-6-2-2 HDD (SATA Type)

Always set the jumper between “1.5Gb/s operation” pins.

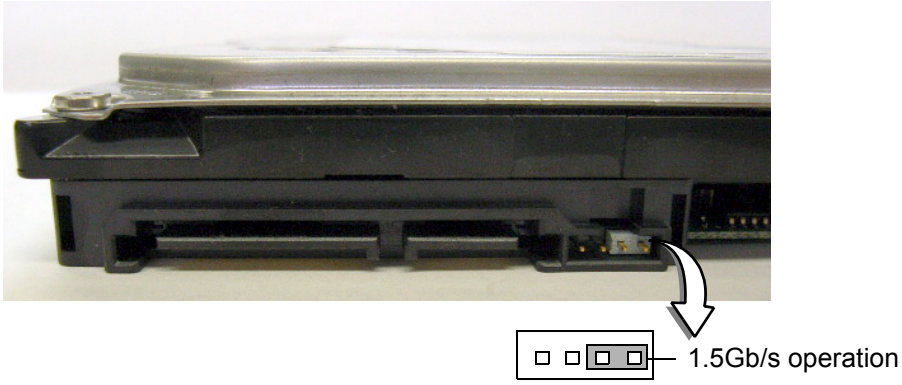


Figure 6-107 HDD (SATA Type) Jumper

6-6-3 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.

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

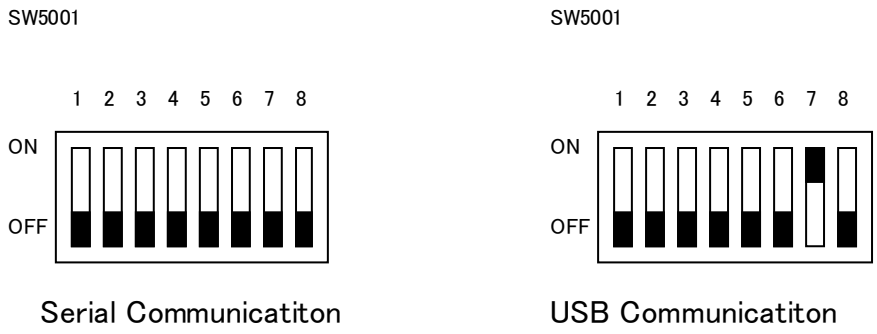


Figure 6-108 MD-3000 Dip Switch

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

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

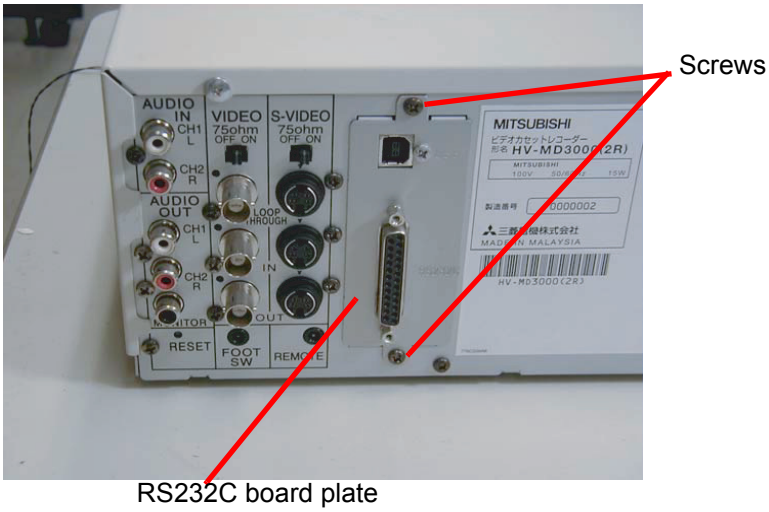


Figure 6-109 Opening Board Plate

6-6-3-2 Accessing Dip Switch Module for inspection (cont'd)

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

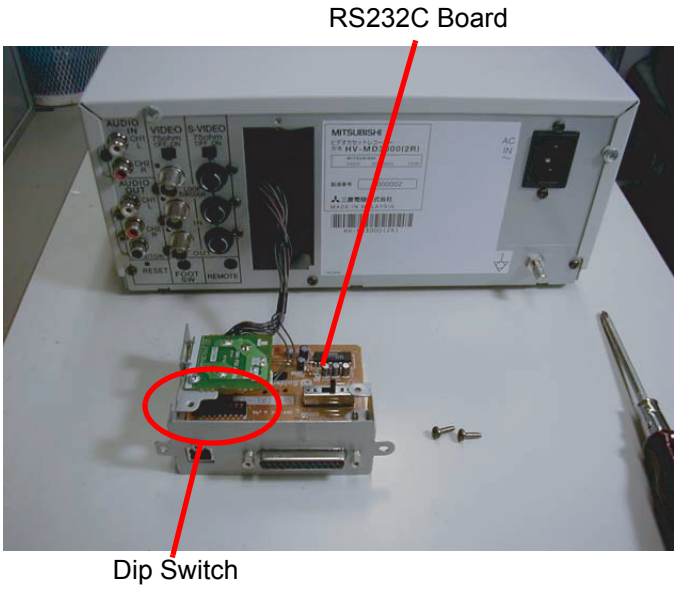


Figure 6-110 Removing Board

6-6-4 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.

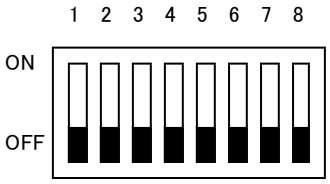


Figure 6-111 CP30D Dip Switch (All OFF)

Section 6-7
Daylight Saving Time (DST) - New Dates

This adjustment applies to:

- Issue 1: All Ultrasound products in USA, Canada, Australia, Egypt, and Sri Lanka.

  Note: This list may be incomplete. Check your local standards for changes to Daylight Saving Time (DST) start and end dates.

- Issue 2: All LOGIQ S6 systems

6-7-1 Problem

Issue 1:
DST start and end dates have changed in some countries.

Issue 2:
The automatic Daylight Saving Time feature in Microsoft Windows products may no longer run on the correct date, causing the systemÅfs time to be incorrect.

6-7-2 Cause

Some countries have changed their start and end dates for DST.

6-7-3 Solution

Access Microsoft website http://support.microsoft.com/kb/928388 to determine if the system's location site is affected.

Issue 1:
Adjust the system time manually at the start of DST and again at the conclusion.

Issue 2:
If the system relies on the automatic DST feature in Microsoft Windows, turn off the feature and then set the correct system time. Adjust the system time manually at the start of DST and again at the conclusion of DST.

NOTE: For all products, whenever you install or reinstall application software, or perform a complete or partial base image load, confirm that the date and time are set correctly and that the Windows automatic DST feature is off, if applicable.

6-7-4 Procedures

6-7-4-1 To turn off the automatic DST feature and set the system time

1.) From the touch panel, press **Utility -> System**.
2.) Select **Date/Time**.
3.) On the Date and Time Properties screen, select the **Time Zone** tab.
4.) Uncheck the Automatically adjust clock for daylight saving changes checkbox, and select **Apply**.
5.) Select the **Date & Time** tab.
6.) Set the proper time for the system's location and select **OK**.
7.) On the System screen, select **Save**.

6-7-4-2 To check or set the system time

1.) From the touch panel, press **Utility -> System**.
2.) Select **Date/Time**.
3.) On the Date and Time Properties screen, select the **Date & Time** tab.
4.) Set the proper time for the system's location and select **OK**.
5.) On the System screen, select **Save**.

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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 7-59 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.

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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 8-60 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.

8-1-3 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.***

Section 8-2
Software Loading Procedure Guide

According to your system configuration, select the proper section for software loading:

Table 8-61 Software Loading Procedure Guide

BTxx	BT06			BT08			
Release Version	**R6.1.2**	**R6.2.2**	**R6.2.3**	**R7.6.0**	**R7.6.1**	**R7.7.0**	
BECOMP Type	BECOMP3						BECOMP4 (See Note)
Application CD GPN	5176956	5195312	5220774-2	5269591-3	5316351	5315082-2	
Ghost CD GPN	5170144-2	5194288	5220776	5252046		5324919	5305207
For Software loading, refer to Section:	-			-			Section 8-3
Note: Refer to 5-2-2-1 How to Identify LS6 BT08 with BEP4 Units.							

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Section 8-3
Software Loading Procedures (R7.7.x or later with BEP4)

This instructions describe the LOGIQ S6 R7.7.x Application Software installation procedures with BEP4.

8-3-1 General

This procedure describes re-loading of the base system load and application load. This procedure is NOT intended for upgrades. Follow appropriate manuals for upgrade procedures.

.

⚠ **CAUTION** **Loading R7.7.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.**

8-3-2 Parts Required

Refer to Section 8-2 Software Loading Procedure Guide.

8-3-3 Time Required

Approximately 1 hour

8-3-4 Software Loading Steering Guide

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

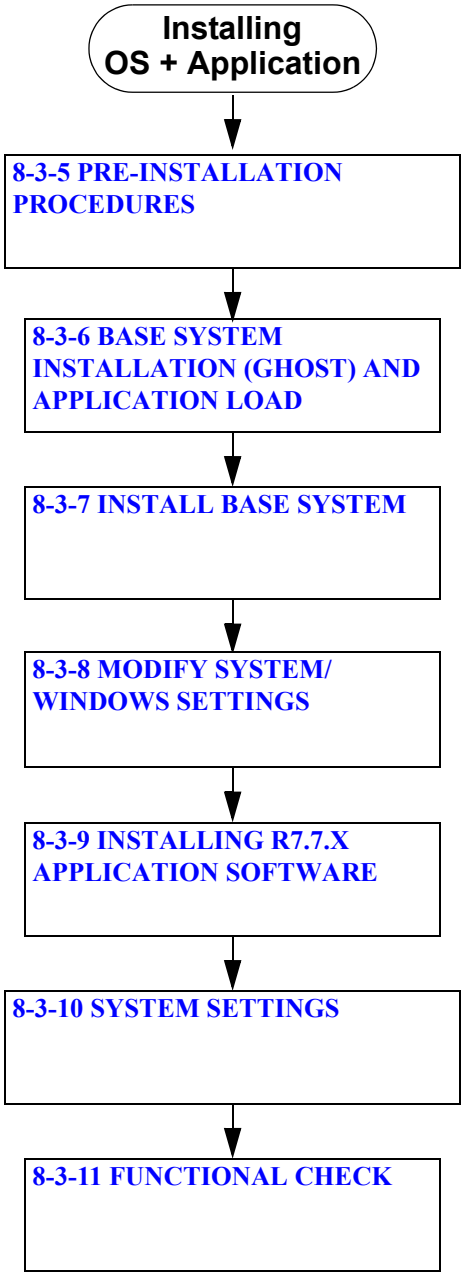


Figure 8-112 BT08 Software Loading Procedures

8-3-4-1 Processes prior to R7.7.x Installation

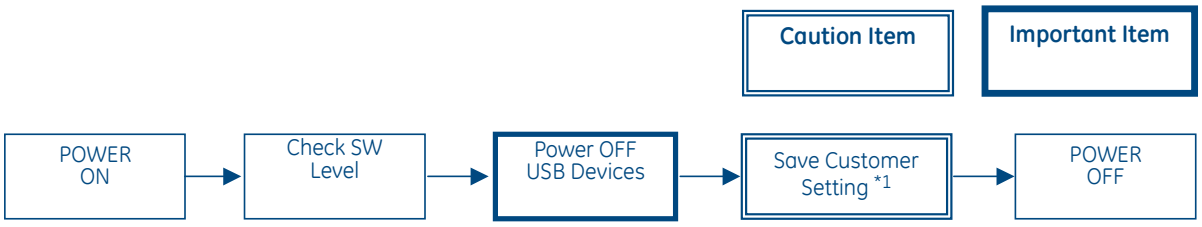


Figure 8-113 Pre-installation Procedures

NOTICE ***1:** Loading R7.7.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 R7.7.x installation.
In case of Full Ghost, customer data/setting must be saved for restoration after the process.

8-3-4-2 Processes to install R7.7.x

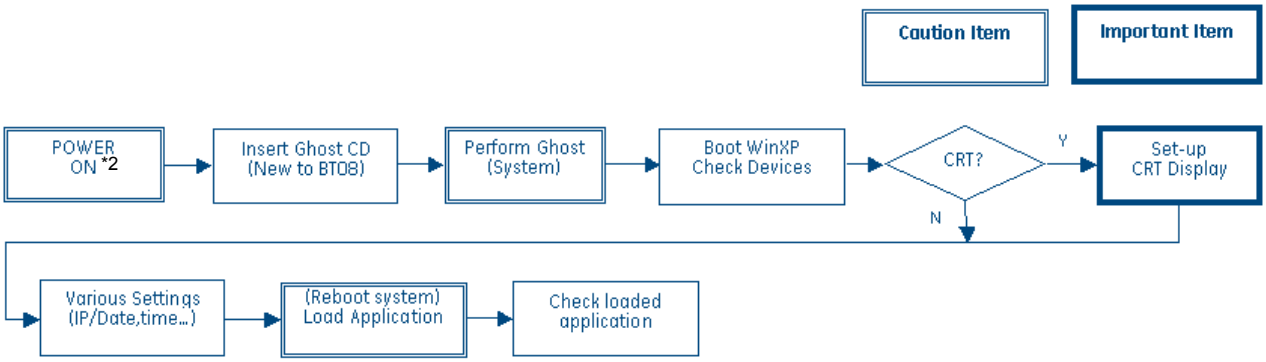


Figure 8-114 Software Loading Procedures

NOTICE ***2:** Do not power ON the peripherals when installing base system image. Disconnecting LAN is also recommended procedure to ensure stable process.

8-3-4-3 After installation of R7.7.x

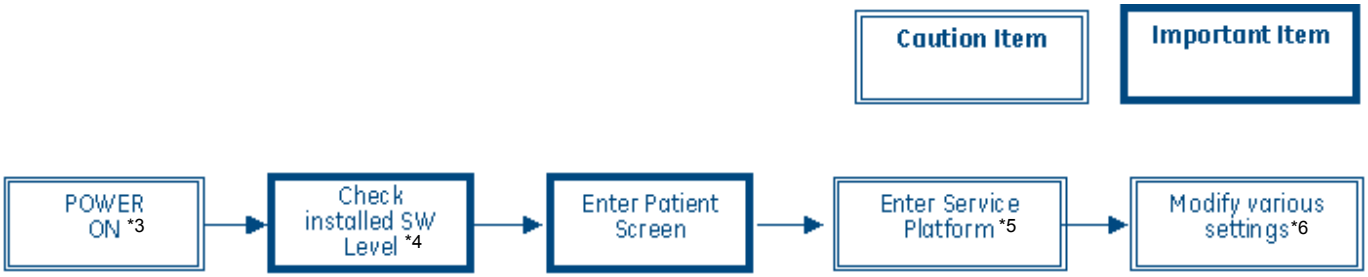


Figure 8-115 Post Installation Procedures

NOTICE ***3:** Verify that Probes are not connected to the scanner. Other peripheral devices such as printers should be turned ON at this time.

***4:** 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).

***5:** 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.

***6:** 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 **LS6-123456YM1**. 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.

8-3-5 Pre-installation Procedures

CAUTION **Loading R7.7.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.

8-3-5-1 Disabling USB Devices

1.) Disconnect all USB peripherals connected to the scanner.

8-3-5-2 Save Customer Data / Setting

1.) Save the following user data.
   - Patient image data (Refer to operation manual.)

2.) Confirm if the customer has any Not-Finalized-Media (CD/DVD-R), used on the current version. All Not-Finalized-Media must be finalized before the system is upgraded to BT08.

8-3-5-3 Operator Login Password

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

Figure 8-116 Operator Login Window

Table 8-62 Recording Operator Login Password

Parameters	Descriptions
Operator Login Password	

8-3-5-4 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:

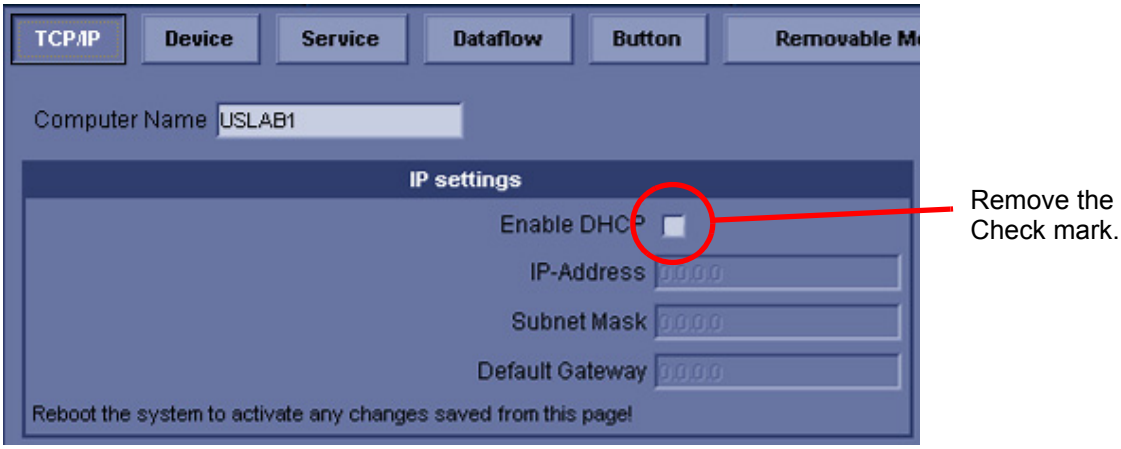


Figure 8-117 TCP/IP Screen

Table 8-63 Saving Connectivity

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.	

8-3-5-5 Software Option

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

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

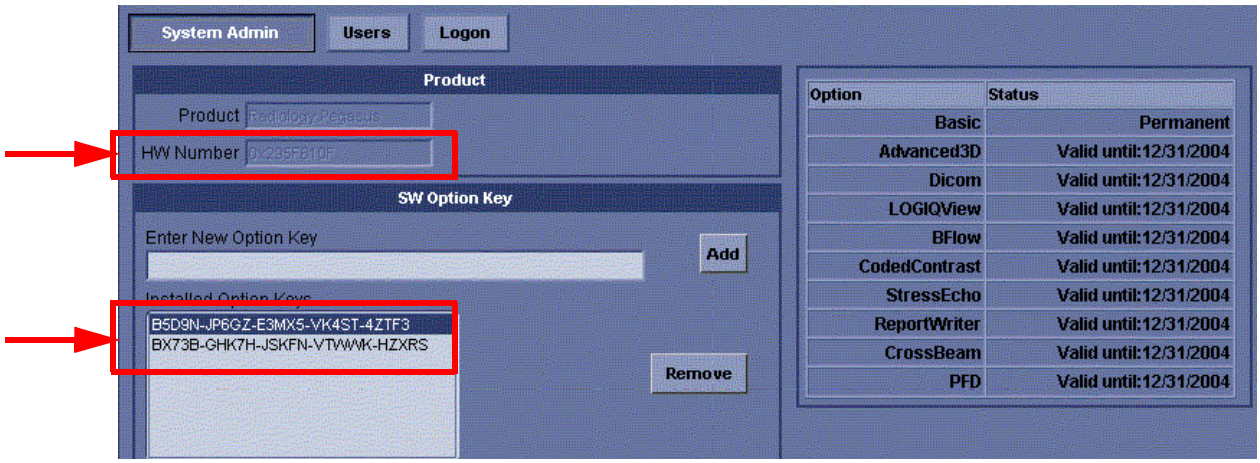


Figure 8-118 System Admin Screen

Table 8-64 Option Check

Items	Descriptions
HW Number	
Installed Option Key	

8-3-5-6 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.

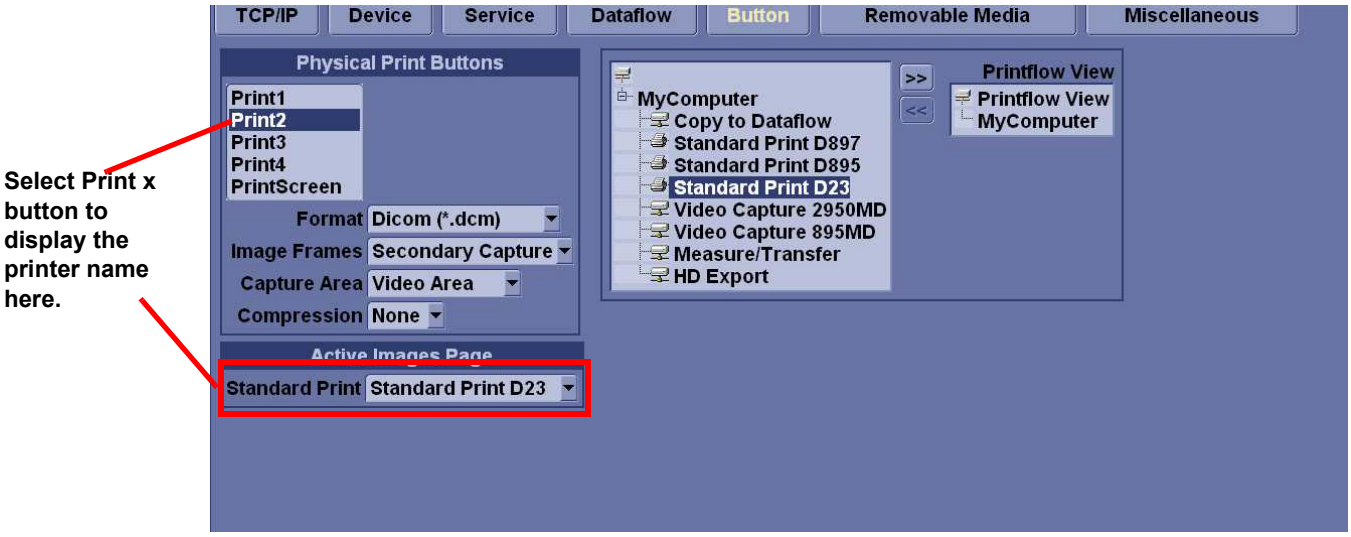


Figure 8-119 Button Setting Screen

Table 8-65 Recording Active Imager Printer

Button	Active Image Printer
Print1	
Print2	
Print3	
Print4	
PrintScreen	

8-3-6 Base System Installation (Ghost) and Application Load

This section describes actual system installation and application loading procedures.

NOTE: It takes approx. 25 minutes to complete software loading. It is longer than software loading to the BEP3 installed system. Slow response or delayed display is normal during software loading.

8-3-7 Install Base System

1.) Power OFF the scanner. Wait 5 or more seconds for PC protection.
2.) Then power ON the scanner, and open the DVD drive and set the Ghost DVD.
3.) DVD drive reads Ghost DVD automatically and following screen appears, press the **Enter** key.

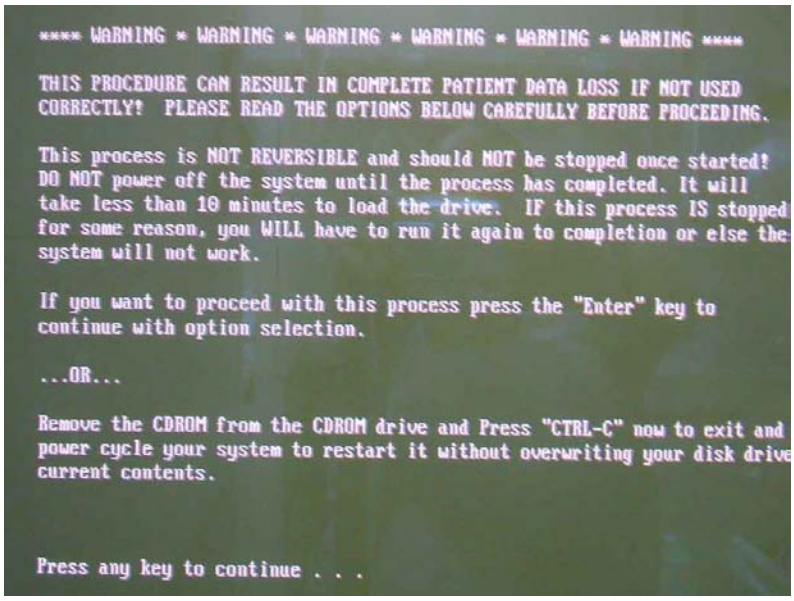


Figure 8-120 Loading Software

8-3-7 Install Base System (cont'd)

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

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

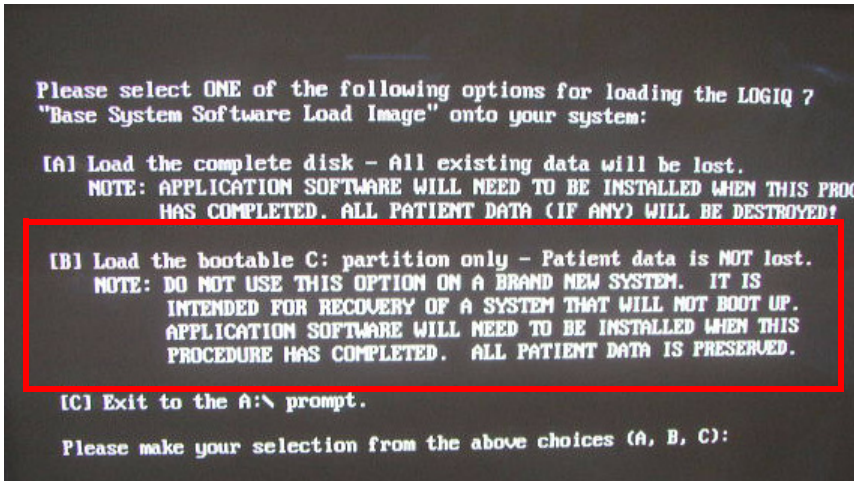


Figure 8-121 Selecting Initialized Drive

Starting loading Base Image Software. The following appears.

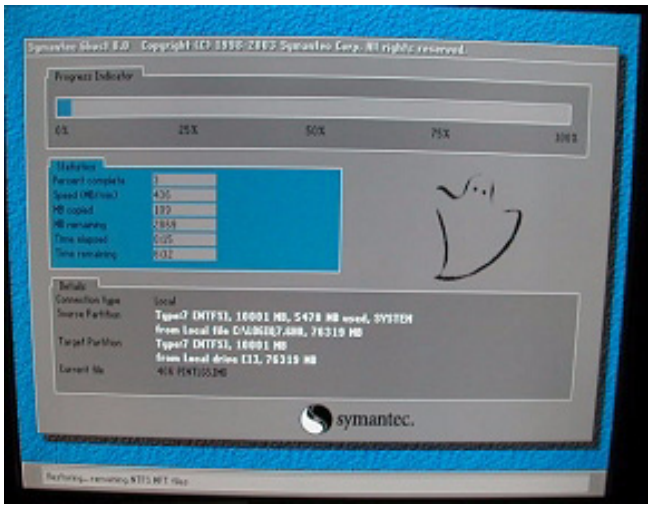


Figure 8-122 Software Loading Start Screen

8-3-7 Install Base System (cont'd)

5.) When complete Ghost installation, the following screen appears. Eject the **Base System Software Load Image DVD** from the drive.

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

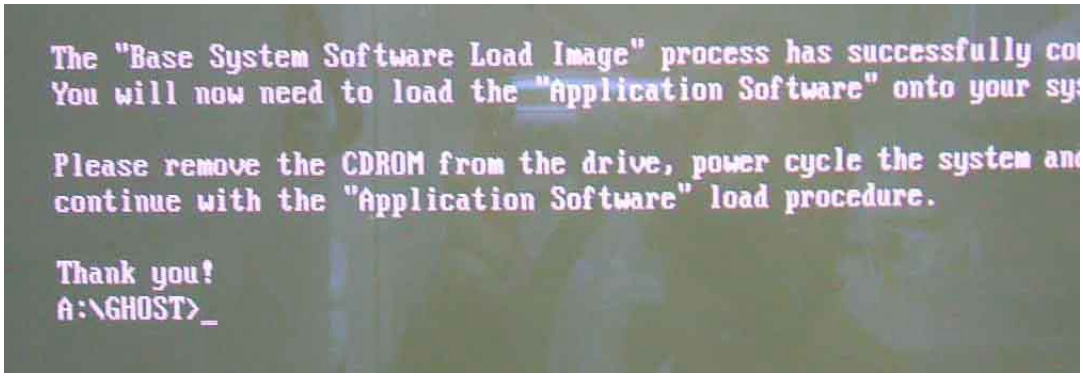


Figure 8-123 Ghost Success Message

6.) To restart the system, press **Ctrl + Alt + DEL** key at the same time.
The desktop will be automatically displayed.

8-3-8 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 8-66 Summery of modification

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
Matrox for CRT	Check off automatic pop-up window	Set Taskbar into CRT Display CRT Display mode: 800 x 600 75Hz Touch Panel Display mode: 640 x 480 60Hz
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

8-3-8-1 UPS Setting

UPS setting is done by Ghost automatically and no manual setting is necessary. The following window appears.

Figure 8-124 Checking Power Supply

Click on **OK**.

The following screen may appears few times. Click on **Yes** using right button of the trackball to restart the system.

Figure 8-125 System Setting Change

8-3-8-2 Drive Letter Setting

The following message appears .

Figure 8-126 Auto Assign

1.) Click on OK
2.) Check the Drive Letter is set as below from Windows Explorer.
   - DVD Drive is assigned to G:
   - MOD Drive is assigned to H:
   - Drive F: (Swap) is removed.
3.) If any Drive Letter is different from the above, double-click the "Remap Drive Letter" icon on the desktop.
4.) Reconfirm the Drive Letter setting is changed correctly.

8-3-8-3 Matrox for CRT (Resolution setup)

For CRT Monitor System ONLY:

1.) Drag and drop the taskbar into the desktop.

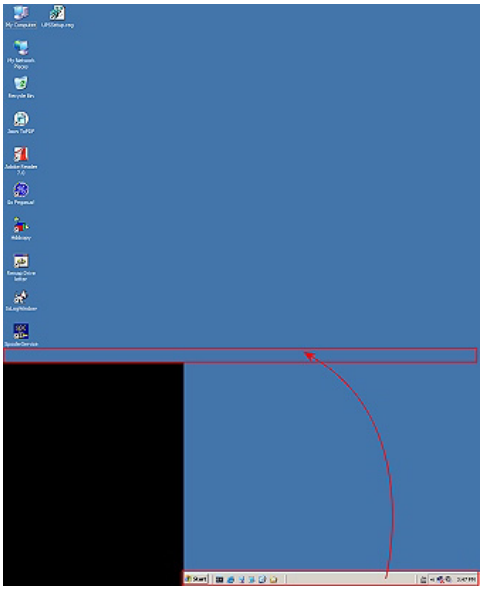


Figure 8-127 Drag and Drop Task bar

2.) Click on **<<** in the task tray to show the MatroxPowerDesk-SE icon.

Figure 8-128 Click on << icon

3.) Right-click on **MatroxPowerDesk-SE** icon to show the popup menu.

Figure 8-129 Click on MatroxPowerDesk-SE

8-3-8-3 Matrox for CRT (Resolution setup) (cont'd)

4.) Select **Multi-Desplay Setup...**

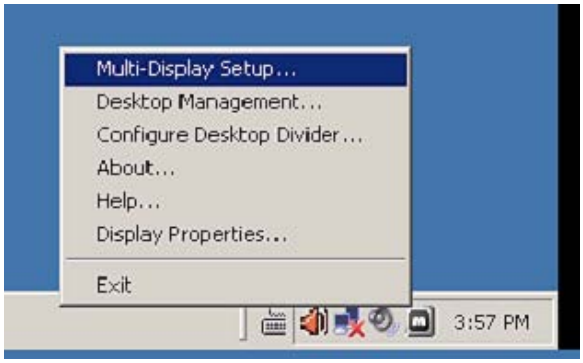


Figure 8-130 Multi-Display Setup...

5.) When the setting dialog is displayed, click on **Use advanced Matrox display controls** option, then click on **Independent mode**.

6.) Set **800 x 600 @ 75Hz** as Display mode of Display 1.

7.) Set **640 x 480 @ 60Hz** as Display mode of Display 2.

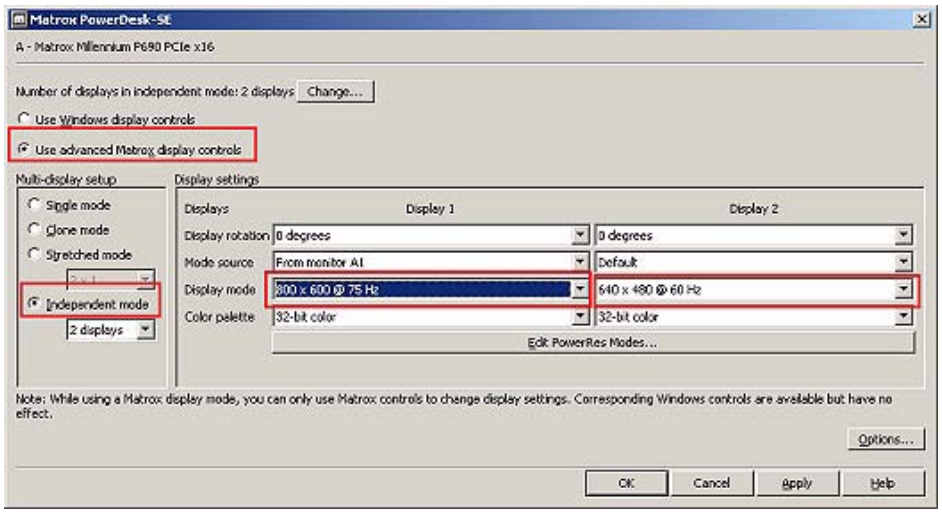


Figure 8-131 Setting Dialog

8.) Click on **OK** button to close the dialog.

8-3-8-3 Matrox for CRT (Resolution setup) (cont'd)

9.) Click on **Yes** button on the confirmation dialog.

Figure 8-132 Yes

10.) Right-click on the Desktop and select Properties from the popup menu.

11.) When the Display Properties Dialog is displayed, select the Settings tab.

12.) Click on the icon that is displayed as "**1**".

13.) Verify that the Screen Resolution for Display1 is **800x600**.

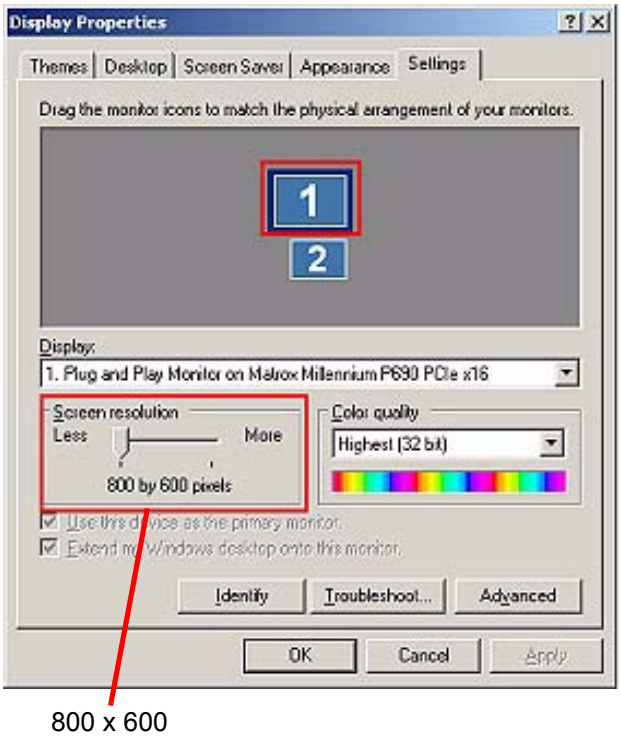


Figure 8-133 Verification for CRT1

8-3-8-3 Matrox for CRT (Resolution setup) (cont'd)

14.) Click on the **Advanced** button, then click on the **Monitor tab** on the Advanced Settings dialog.

15.) Verify that Screen refresh rate is **75Hertz**.

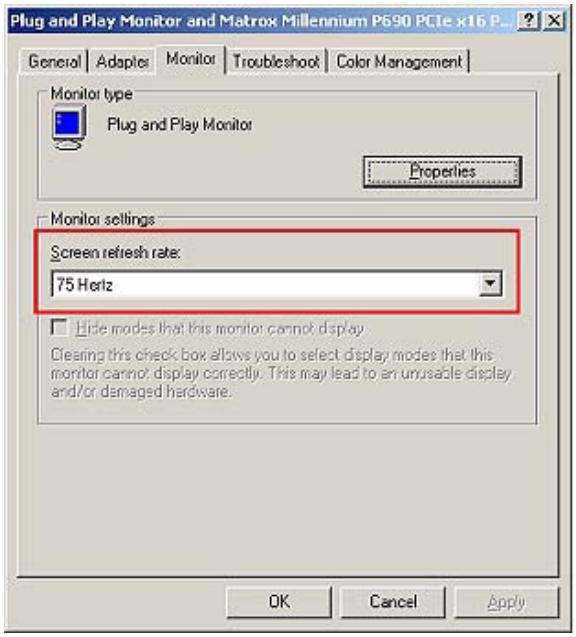


Figure 8-134 Monitor Tab

16.) Click on **Cancel** button to close the Advanced Settings dialog.

17.) Click on the icon that is displayed as "**2**".

18.) Verify that Screen Resolution for Display2 is **640x480**.

19.) Click on the **Advanced** button, then click the **Monitor tab** on the Advanced Settings dialog.

20.) Verify that Screen refresh rate is **60Hertz**.

21.) Click on **Cancel** button to close the Advanced Settings dialog.

22.) Click on **Cancel** button to close the Display Properties dialog.

23.) Restart the system.

8-3-8-4 Hardware Device Check:

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

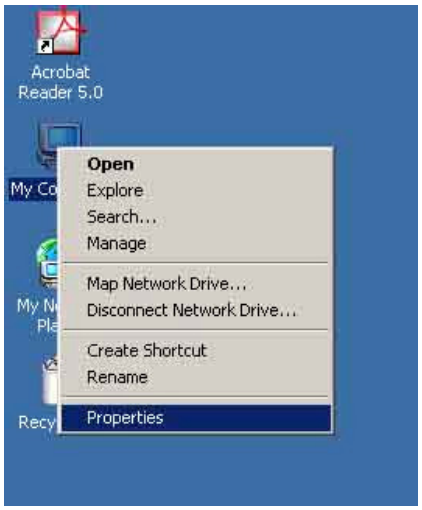


Figure 8-135 My Computer Properties

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

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

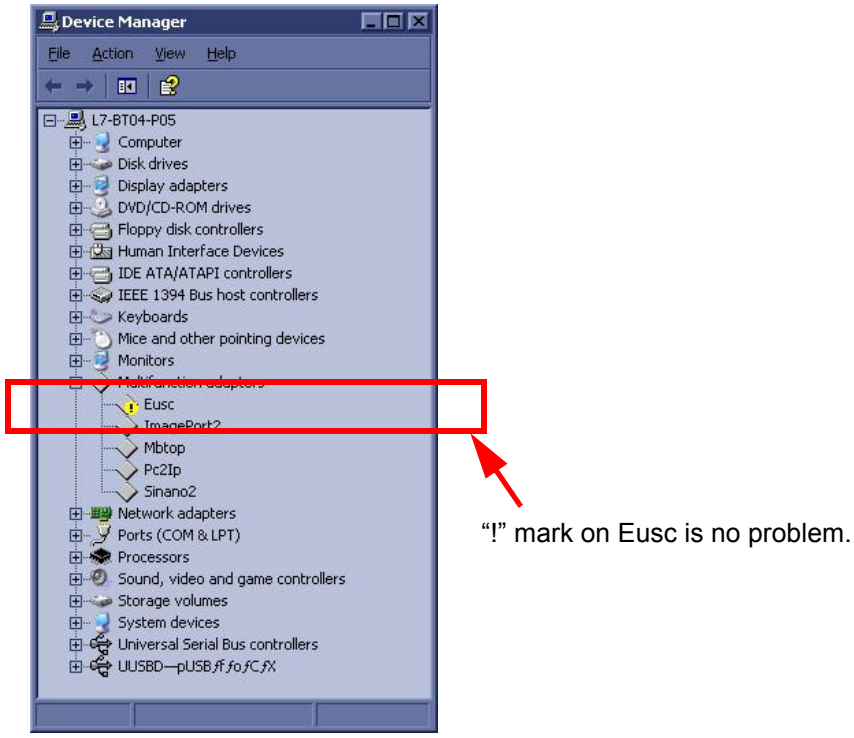


Figure 8-136 Divice Manager Check

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

8-3-8-4 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.

6.) Go to 8-3-8-4 Hardware Device Check:

8-3-8-5 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.)

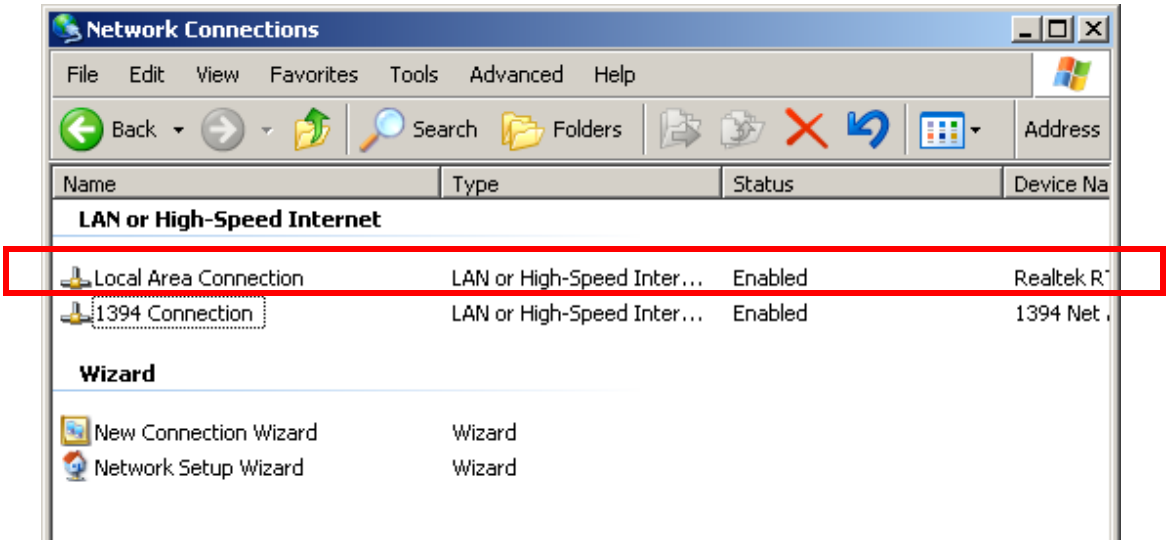


Figure 8-137 Network Connections

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 8-138 Local Area Connection Enabling

8-3-8-5 LAN Parameter Setting (cont'd)

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

Figure 8-139 Canceling Local Area Connection Properties

6.) Close all windows.

8-3-8-6 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").

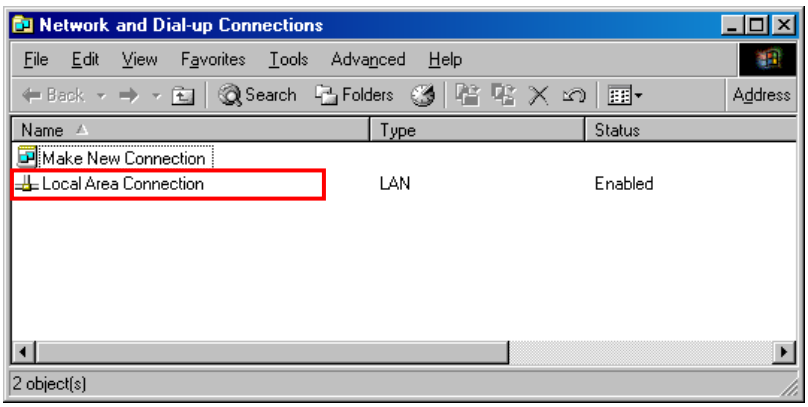


Figure 8-140 Local Area Connection

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

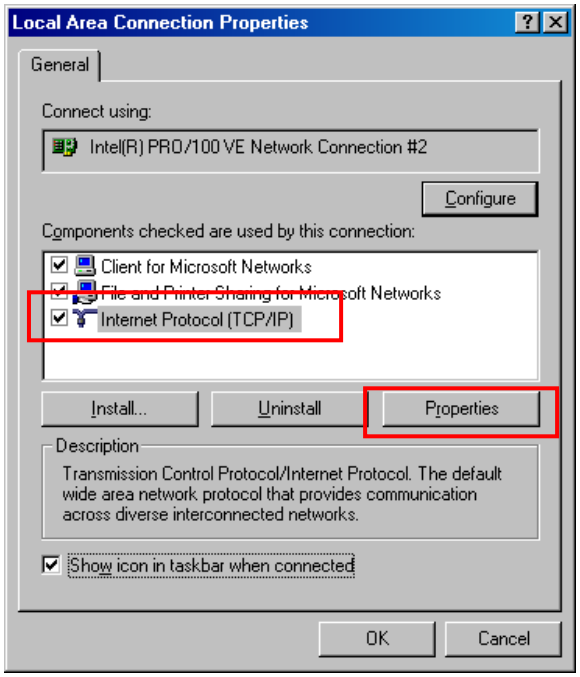


Figure 8-141 Internet Protocol

8-3-8-6 TCP/IP Filter Setup (cont'd)

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

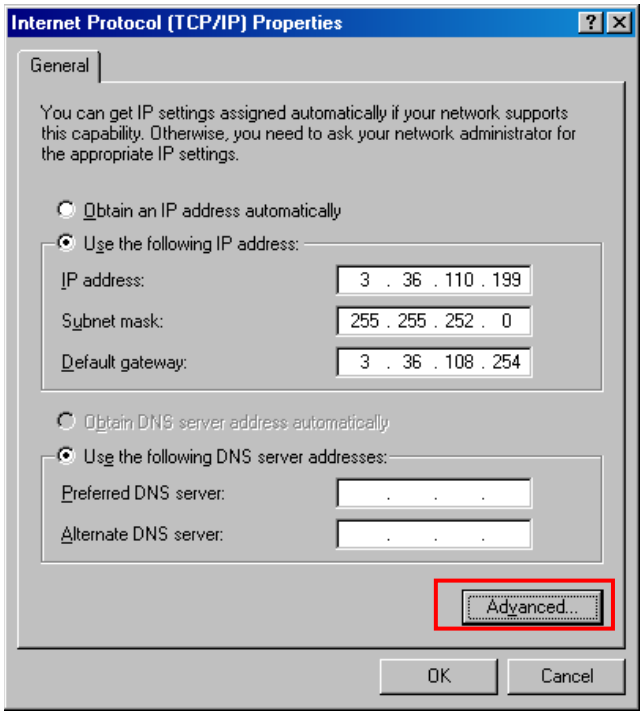


Figure 8-142 Go to Advanced

8-3-8-6 TCP/IP Filter Setup (cont'd)

5.) Click **Options** tab.

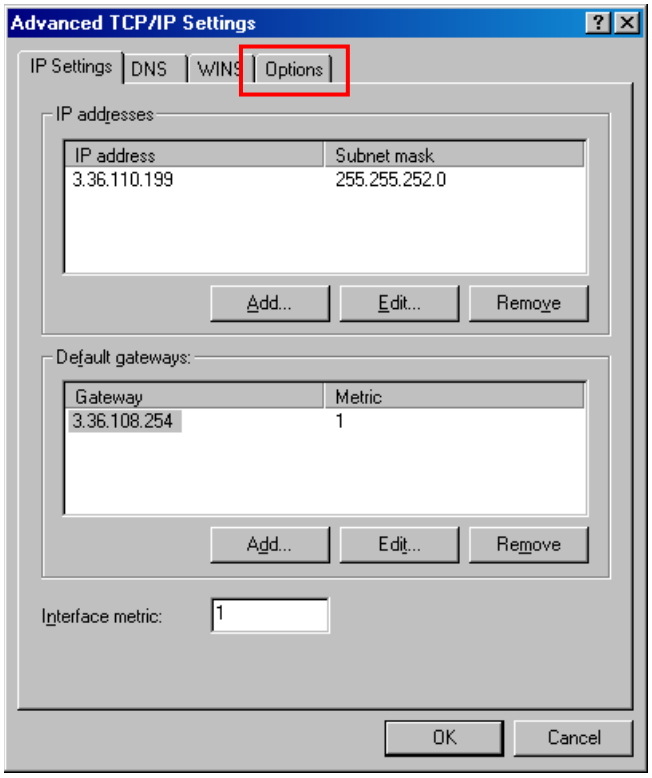


Figure 8-143 Options tab

8-3-8-6 TCP/IP Filter Setup (cont'd)

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

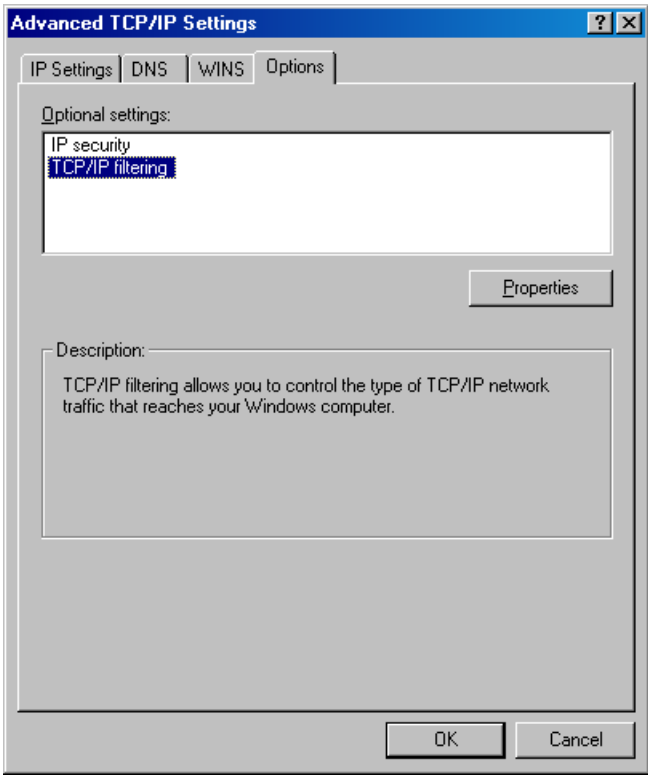
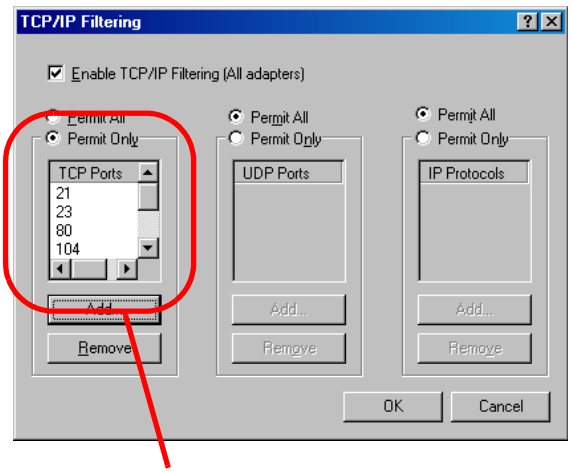


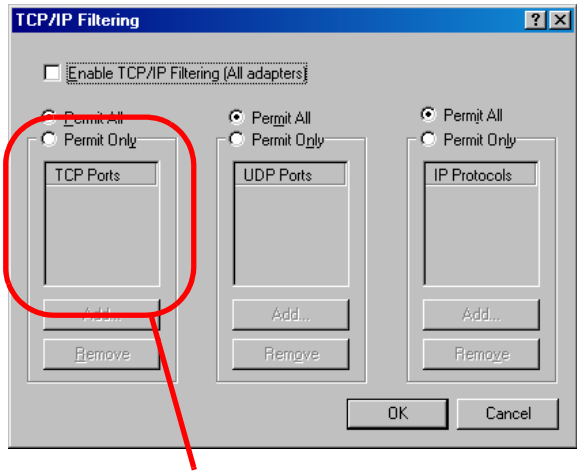
Figure 8-144 TCP/IP Filtering

8-3-8-6 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 8-145 TCP/IP Setting

* 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.

8-3-8-6 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**.

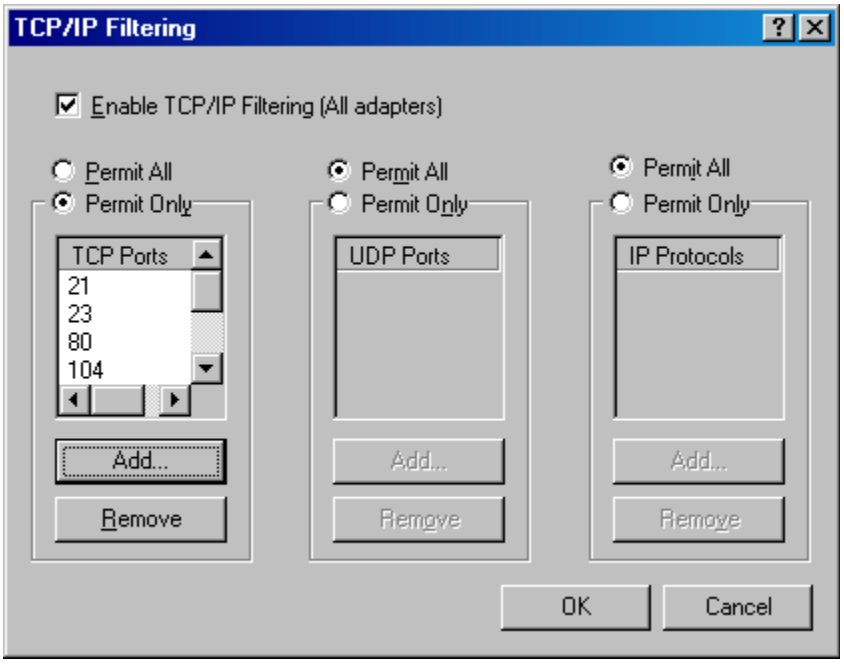


Figure 8-146 TCP/IP Filter Setup

9.) The following dialog box appears. Click **No** to proceed the other settings. (After completion of all system checks, the system is shut down.)

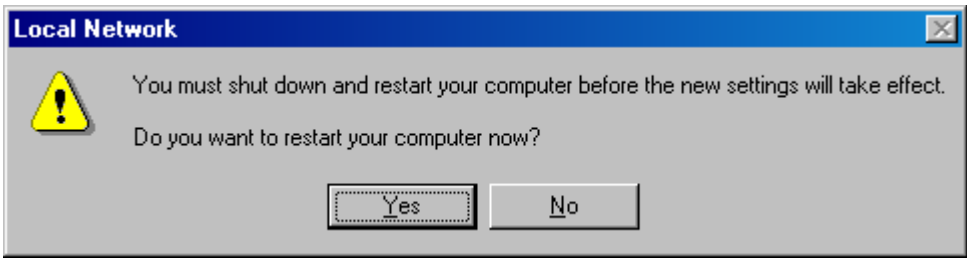


Figure 8-147 Local Network

⚠ **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 Section 1-13 Post Installation Setup.

8-3-8-7 Date and Time Setting

1.) Select **Start > Settings > Control Panel > Date and Time.**l
2.) Click on **Time Zone** tab.

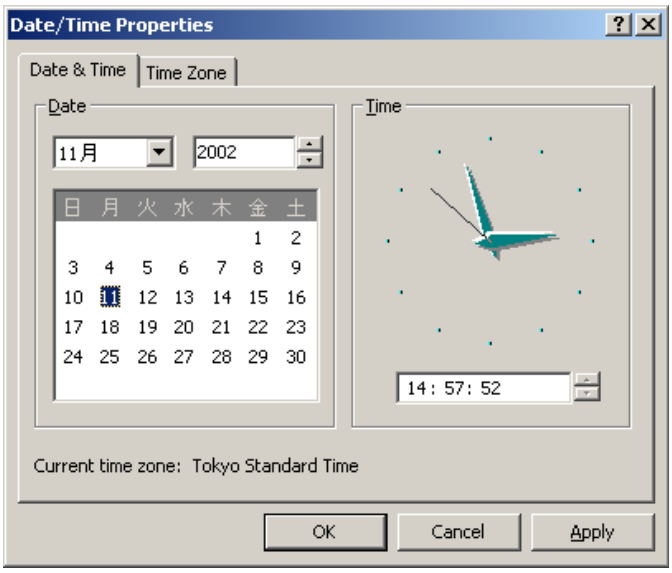


Figure 8-148 Date & Time

3.) Select the appropriate time zone. Then click on **Apply.**
4.) Then click on Date & Time tab.

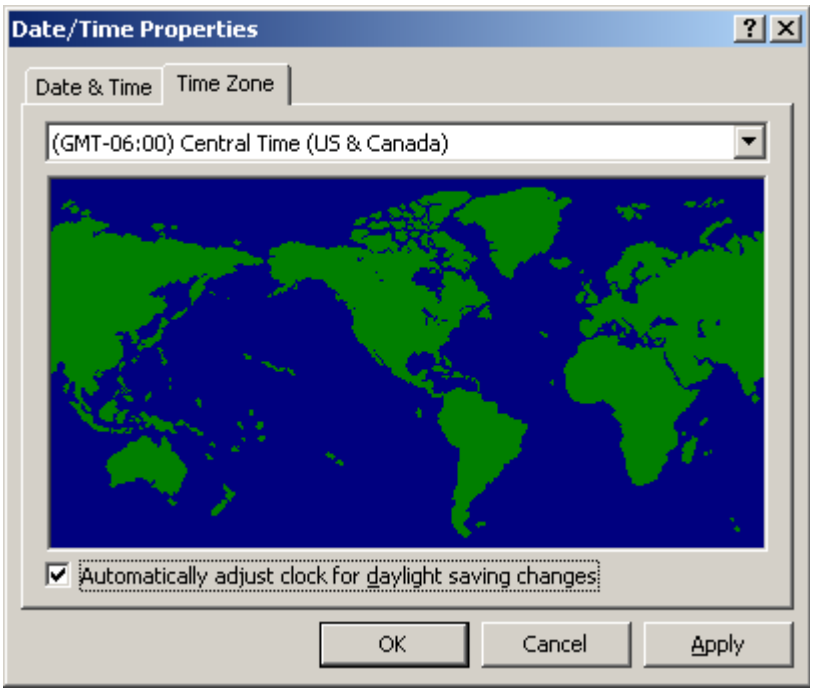


Figure 8-149 Time Zone

8-3-8-7 Date and Time Setting (cont'd)

5.) Set the current date and time.

6.) Click on **Apply.**

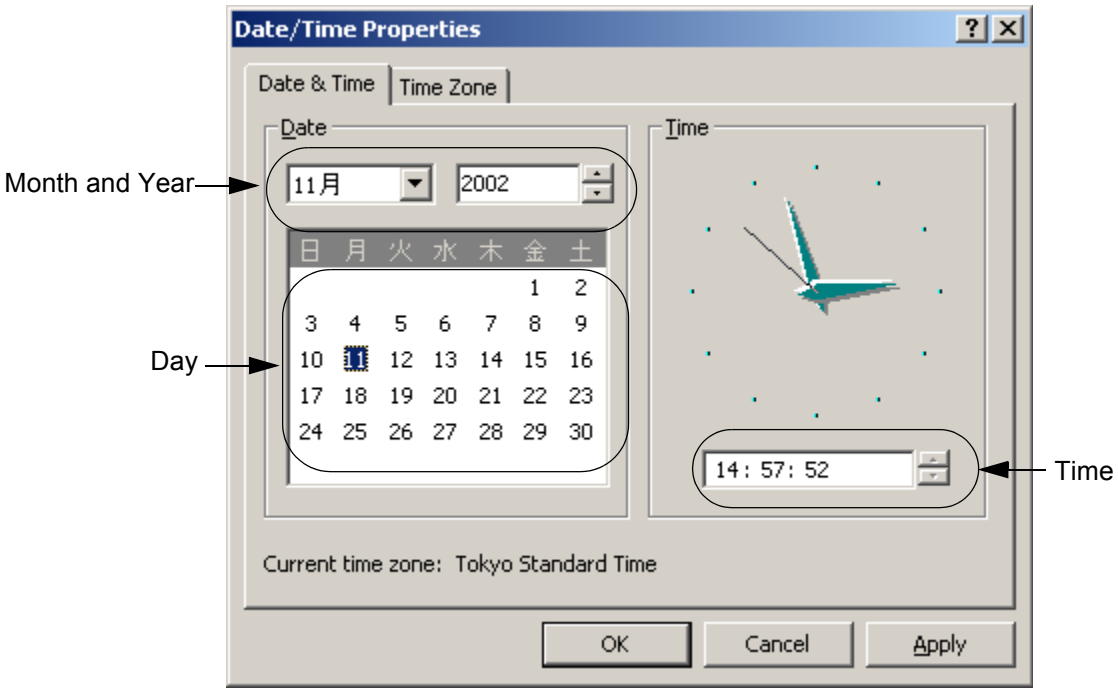


Figure 8-150 Setting time

7.) Click on **OK** to close the Date and Time window.

8.) Select **Start > Shutdown > OK** to power OFF the scanner.

8-3-9 Installing R7.7.x Application Software

NOTICE You must install BT08 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.”

8-3-9-1 Installing R7.7.x Application Software

1.) Power ON the scanner. The windows desktop appears.

2.) Insert the Application Software CD-ROM into the DVD drive.

NOTICE Wait approx. 20 seconds until the disk can be read.

3.) Click on **My Computer**, then double-click on **(G:)** Drive icon.

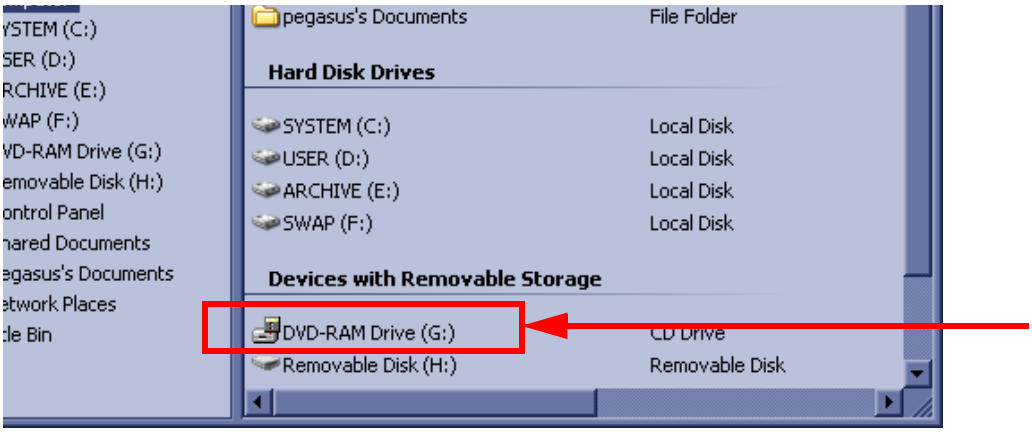


Figure 8-151 DVD-RAM Drive

8-3-9-1 Installing R7.7.x Application Software (cont'd)

4.) Double-click on **LoadSoftware.bat.**

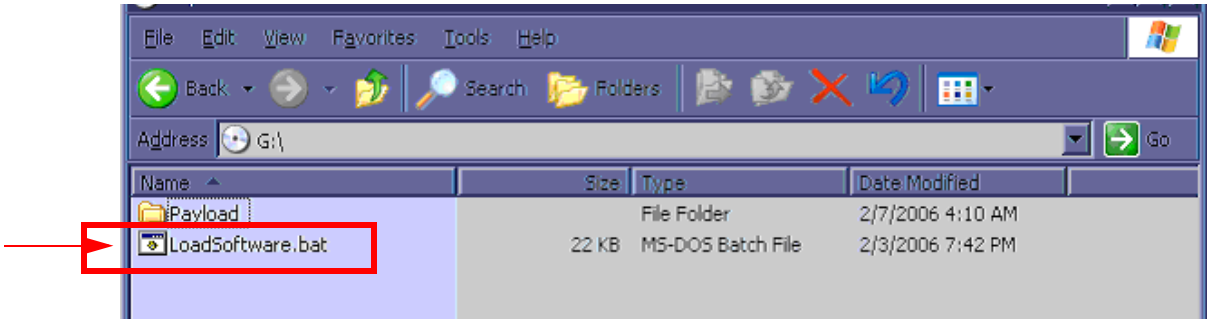


Figure 8-152 LoadSoftware.bat

5.) The Installation program will start, and the command prompt screen will be shown on the monitor.

6.) The following screen appears.

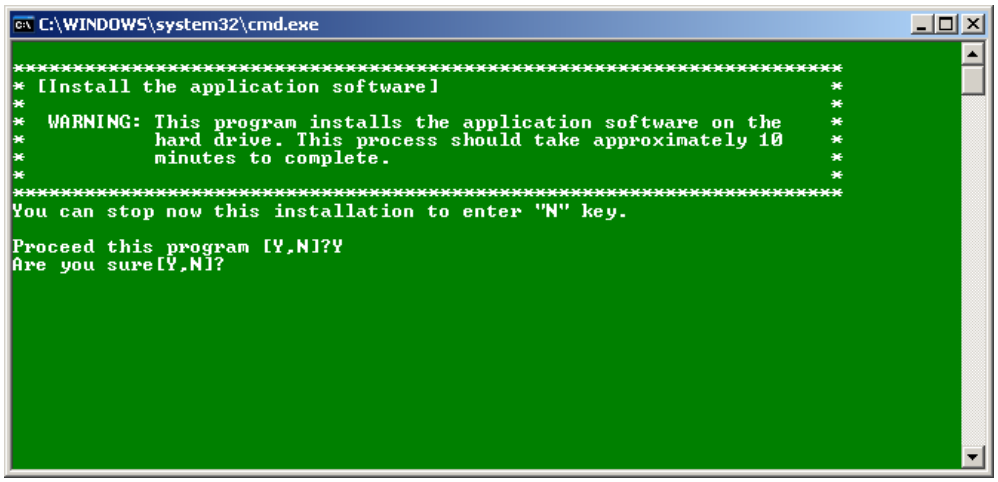


Figure 8-153 Command Prompt Screen

7.) Press the **Y** key to continue.
Then the program requests confirmation (Are you sure?), press the **Y** key again.

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.

8.) 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 may be restarted automatically during installation.**

9.) After the installation procedures are completed, the system will power OFF automatically.

8-3-10 System Settings

After application is successfully installed, various LOGIQ™ S6 system parameters must be properly set.

Table 8-67 System Setting Summery

Item	Method	Proper Value
Software Version	Utility _System _About	 s/w version : R7.7.x Image Part No. : 5305207
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 8-67 System Setting Summery

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

8-3-10-1 Confirmation of the software version

1.) Touch the **Utility** button on the Touch Panel.

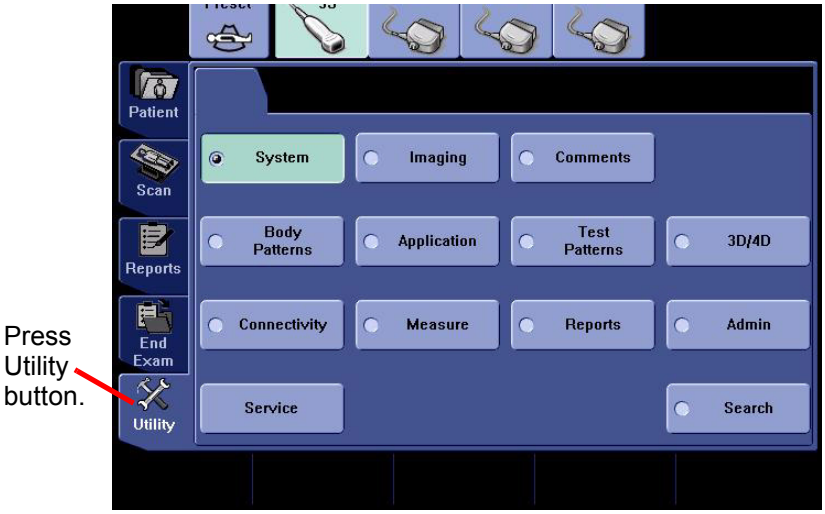


Figure 8-154 Utility

*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**.*

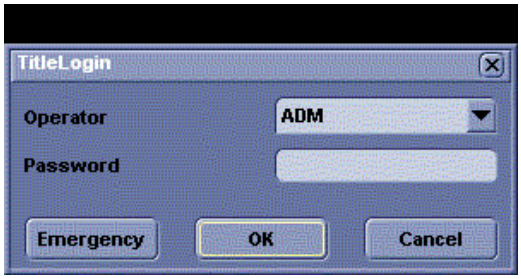


Figure 8-155 Log on

8-3-10-1 Confirmation of the software version (cont'd)

2.) Touch the **System** button on the Touch Panel.

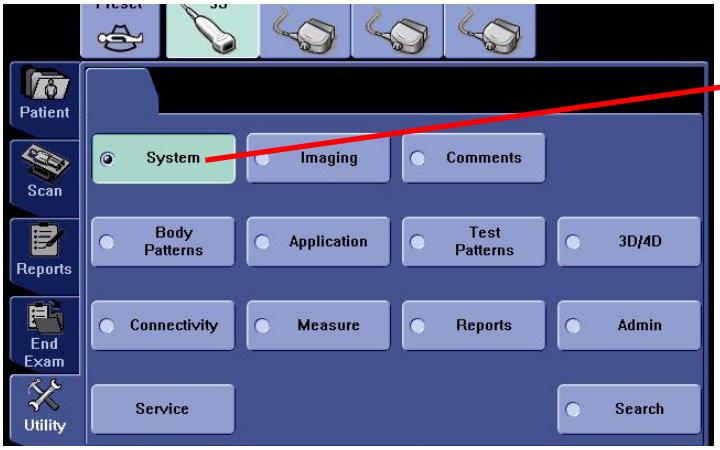


Figure 8-156 System

3.) Click on **About** tab. The software version will be shown on the monitor as shown. Confirm the following:

- Software Version (**R7.7.x**)
- Preset Region (**Americas, Europe, Asia, Japan, or None)**

NOTICE For Upgraded BT08, this shall remain NONE.

- Image Part Number (described on the Base System Software Image DVD)

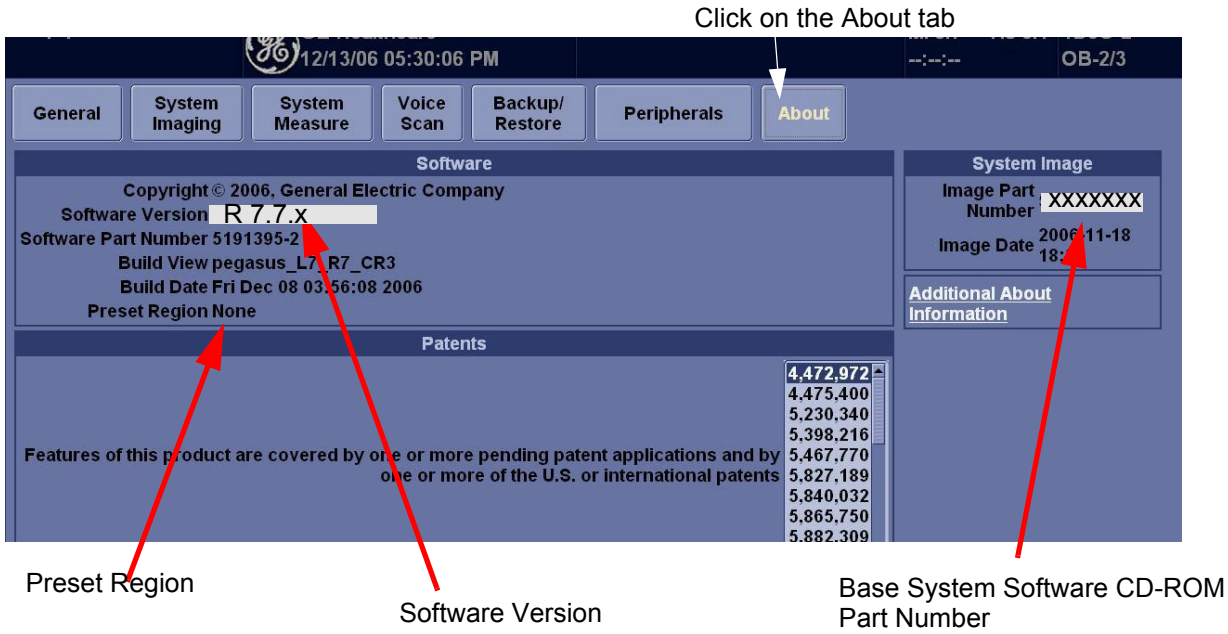


Figure 8-157 About

8-3-10-2 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, **LS6-123456YM1** 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 1-5-5 Saving Connectivity.

NOTICE If the “Save settings” is NOT performed, you can NOT enter the new patient screen!!

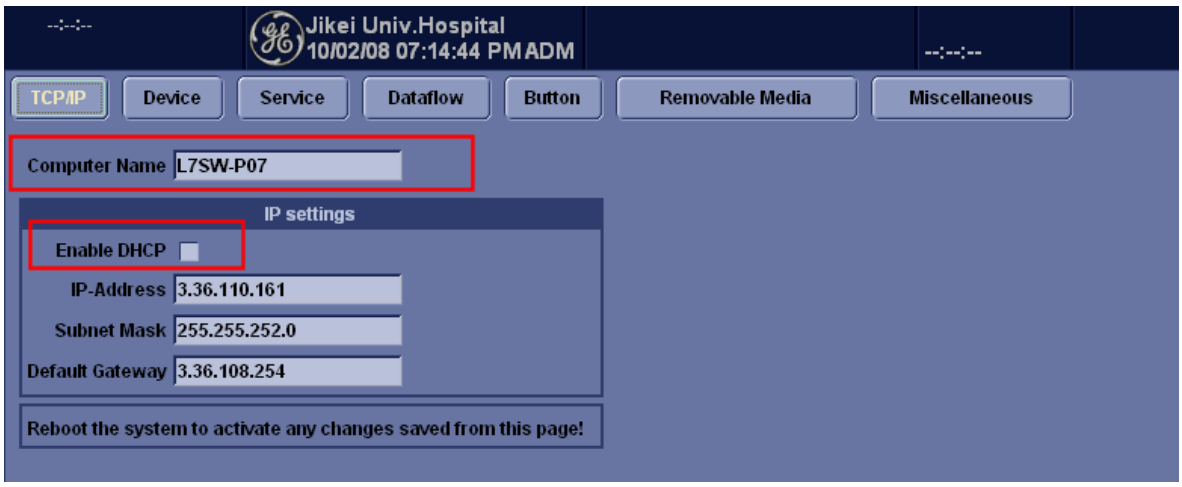


Figure 8-158 TCP/IP

6.) Click on **OK** for confirmation dialog box.

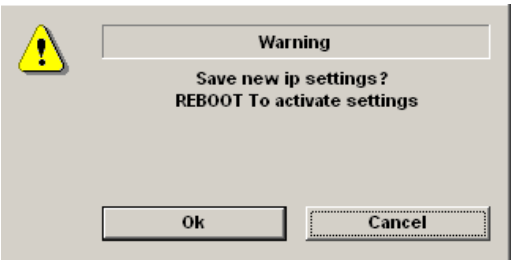


Figure 8-159 Confirmation Dialog Box

8-3-10-2 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.

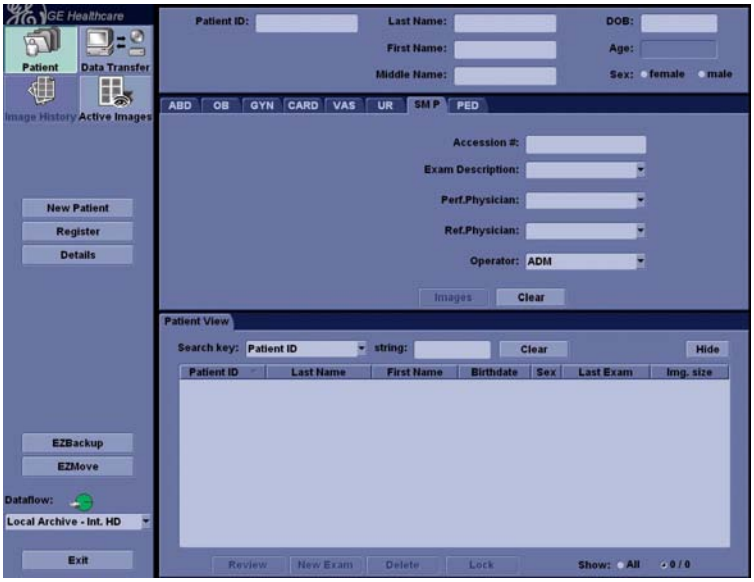


Figure 8-160 Patient

8-3-10-3 Check LCD Monitor Hardware Setting

8-3-10-3-1 Identify LCD Type before adjusting the monitor

There are two types of LCD panel, Conventional LCD: GA500 and New LCD: GA500C. To distinguish the LCD type, confirm if the “Identification Label” is on the rear cover of LCD, as shown in the figure below.

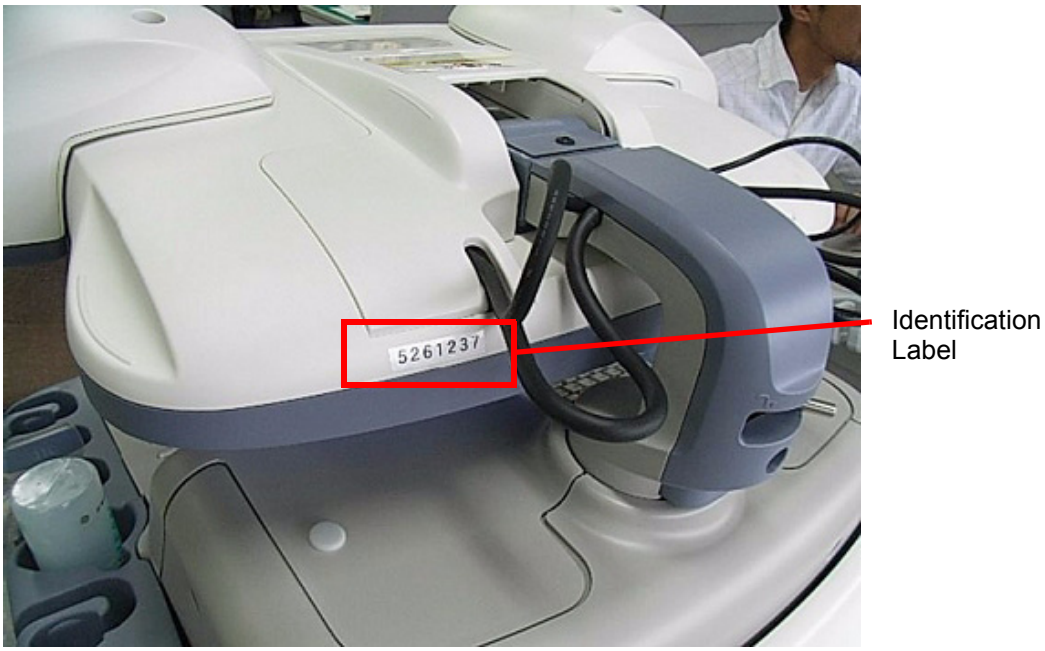


Figure 8-161 Identification Label

NOTE: GA500C’s GPN:5261237 is on the Identification Label.

- If the Identification label is not on the LCD rear cover, it is conventional LCD (GA500). Go to 8-3-10-3-2 to adjust the LCD parameters.
- If the identification label is on the LCD rear covet, it is new LCD (GA500C). Go to 8-3-10-3-3 to adjust the LCD parameters.

8-3-10-3-2 For conventional LCD Monitor : GA500

NOTICE To determine the LCD type, refer to 8-3-10-3-1.

Generally recommended setting is:

- Brightness: 55
- Contrast: 90
- Temperature: 15000
- Gamma: 2.6

8-3-10-3 Check LCD Monitor Hardware Setting (cont'd)

To adjust the contrast and brightness:

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

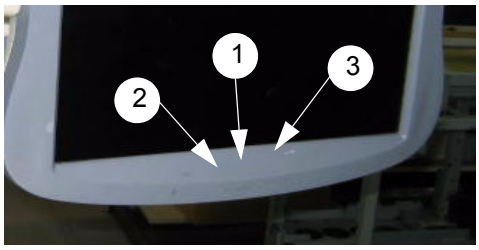


Figure 8-162 Monitor Buttons

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.

8-3-10-3-3 For new LCD Monitor: GA500C

NOTICE To determine the LCD type, refer to 8-3-10-3-1.

To adjust the brightness:

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

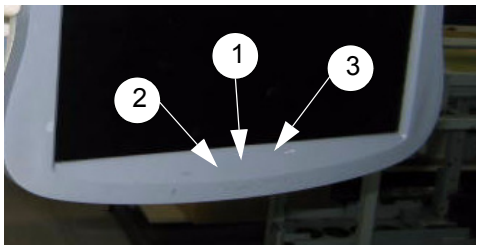


Figure 8-163 LCD Monitor Adjustment buttons

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: Only brightness adjustment is necessary on new LCD: GA500C.

8-3-10-4 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**.**

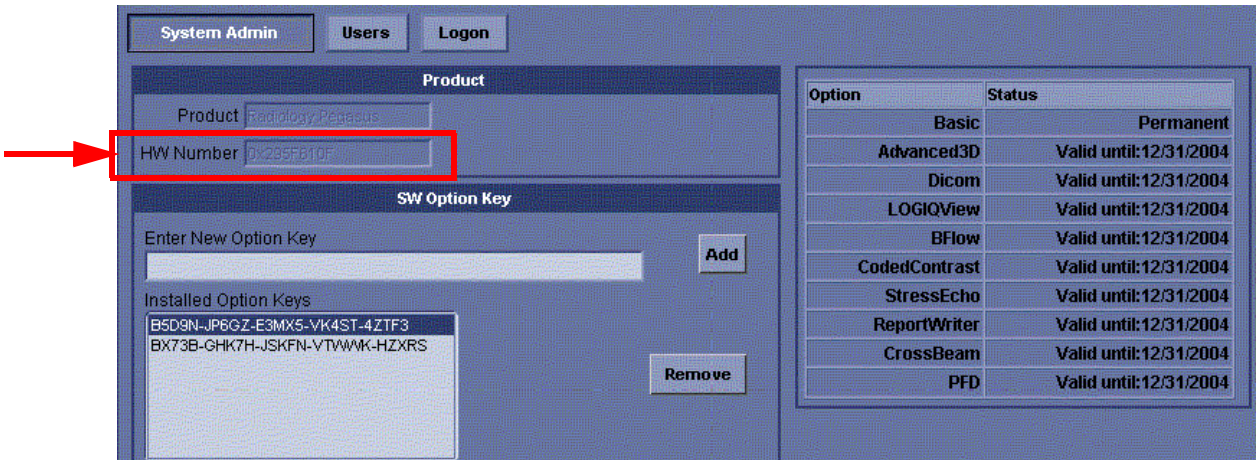


Figure 8-164 System Admin

3.) Also, verify that the all software options, checked prior to the installation, are listed with the same status as before.

4.) Enter "BT07 Option" Key code to enable BT08 features. (Refer to Section 1-1-1 - Parts Required for details)

8-3-10-5 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

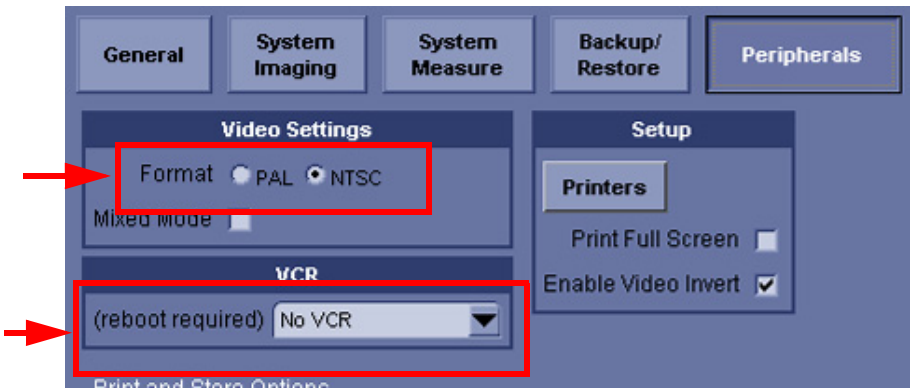


Figure 8-165 Peripherals

4.) Shut down the scanner, then restart the scanner.
5.) Verify that the VCR can be properly operated with no error (remote, play...) .

8-3-10-6 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

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.

NOTICE Do not change “Language used in menus and dialogs” option. It should be English.

8-3-10-6 Regional Setup (For the system with language other than English ONLY) (cont'd)

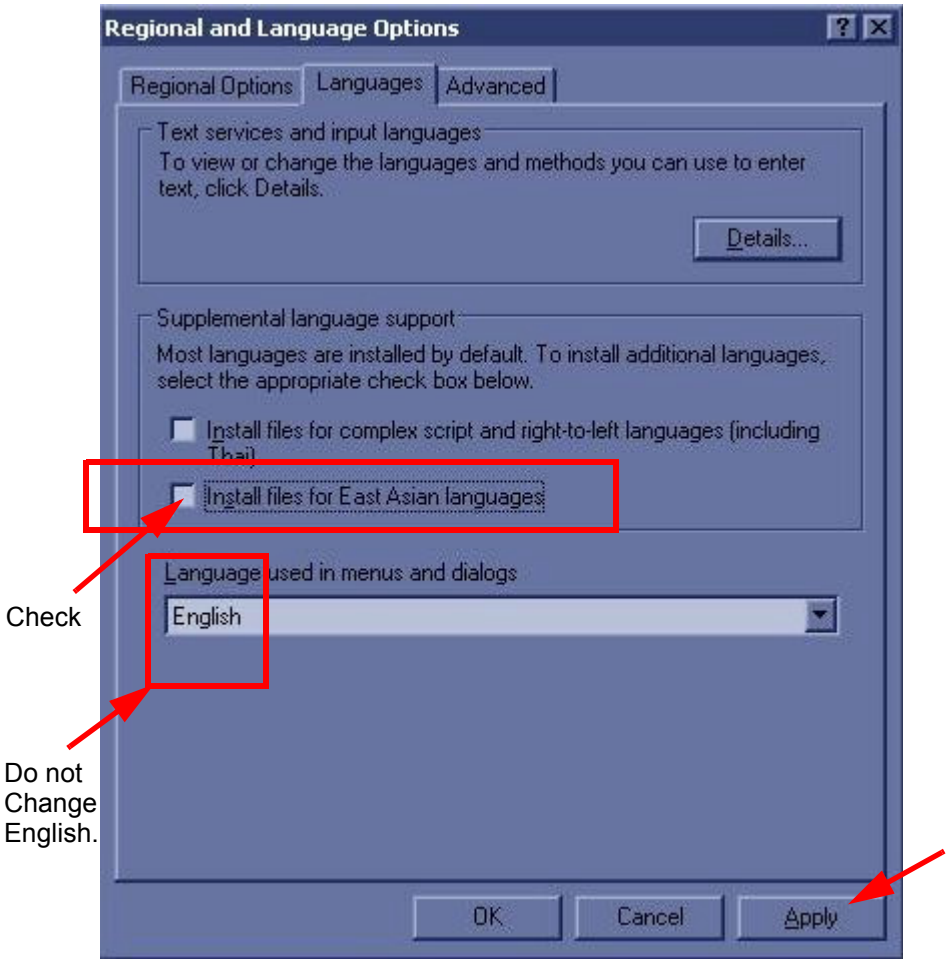


Figure 8-166 Regional and Language Options

6.) In **Utility> System> General**, set the Language as JPN. Save this setting, but do not reboot the system yet.

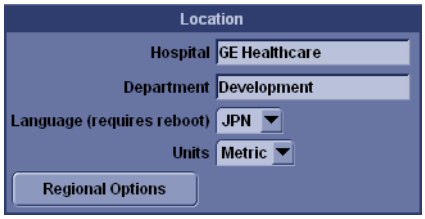


Figure 8-167 JPN as Language

8-3-10-6 Regional Setup (For the system with language other than English ONLY) (cont'd)

7.) Press **Regional Options**, under Standards and Formats select **Japanese**, under Location select **Japan**. Press **Apply**.

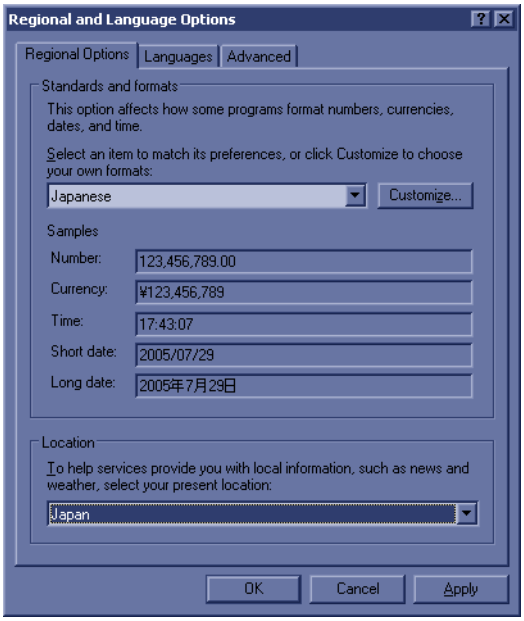


Figure 8-168 Selecting Japanese

8.) Select the **Language tab**, press **Details**, under Installed Services select the **Japanese keyboard**, under Default input language select **Japanese**, press **Apply**, Press **OK**.

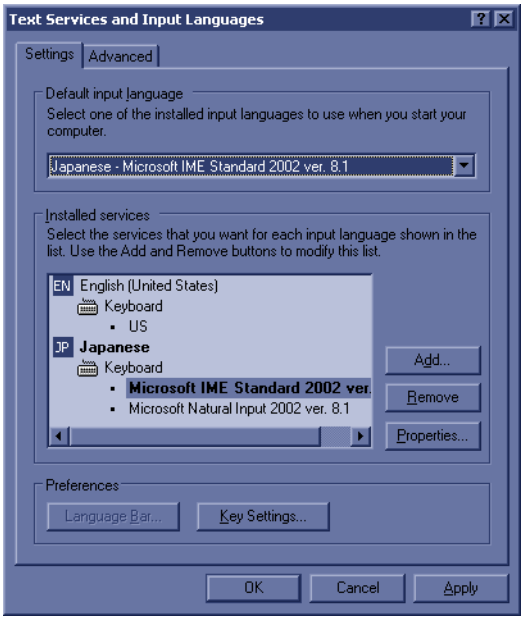


Figure 8-169 Text Services and Input Languages

8-3-10-6 Regional Setup (For the system with language other than English ONLY) (cont'd)

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**.

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.

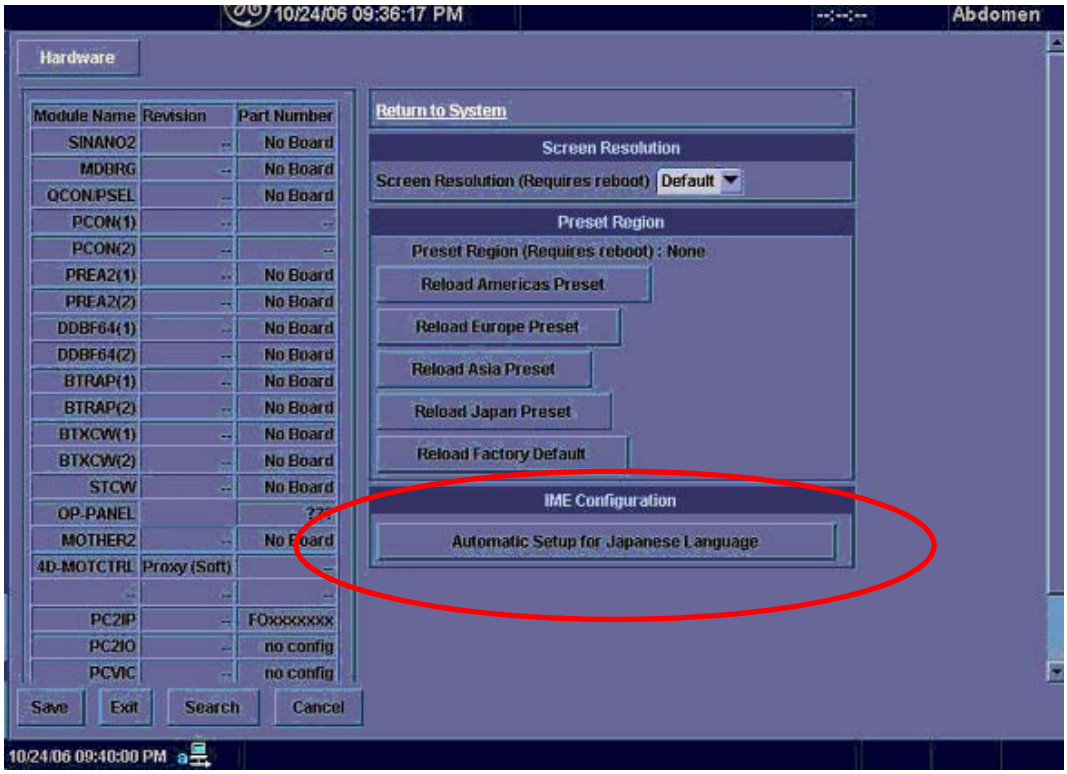


Figure 8-170 Automatic Setup for Japanese Language

14.) Reboot the system.

8-3-10-6 Regional Setup (For the system with language other than English ONLY) (cont'd)

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.

8-3-10-6 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.

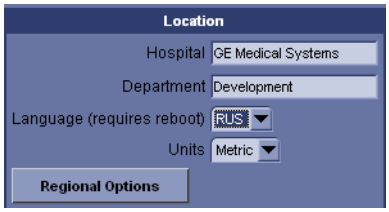


Figure 8-171 Russian or Greek as Language

2.) Press **Regional Options**, under Standards and Formats select **Russian or Greek**, under Location select **Russia or Greece**. Press **Apply**.

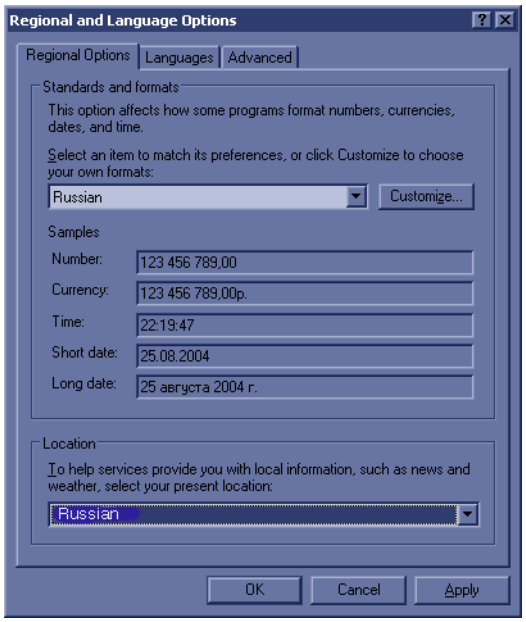


Figure 8-172 Selecting Russian or Greek

8-3-10-6 Regional Setup (For the system with language other than English ONLY) (cont'd)

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**.

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.

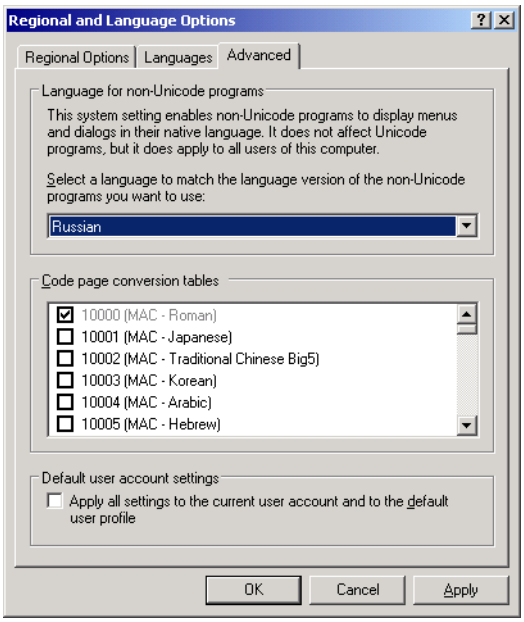


Figure 8-173 Advanced Tab

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.

8-3-10-6 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**".

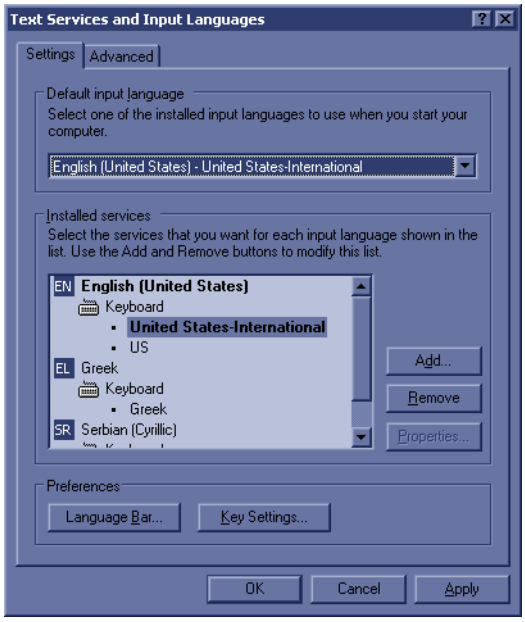


Figure 8-174 Text Services and Input Languages

8-3-10-6 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.

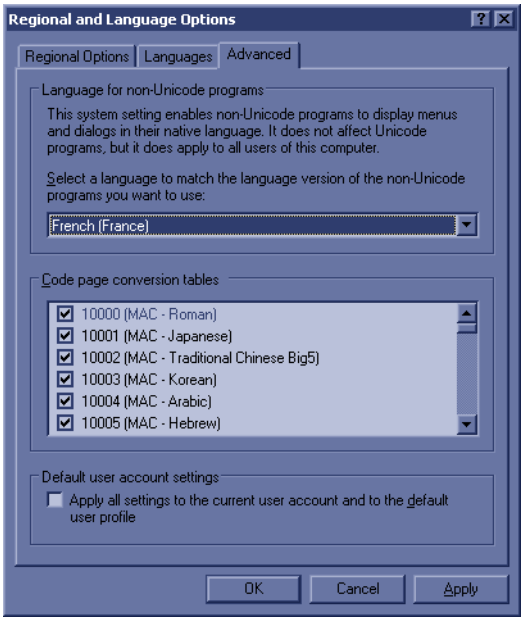


Figure 8-175 Advanced Tab

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**.

8-3-10-7 Regional Setup (For the system with English language only)

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

2.) Press **Regional Options** button.

Figure 8-176 Regional Options

3.) The Regional and Language Options screen appears.
Select **Languages** tab.

4.) Press **Details...** button.

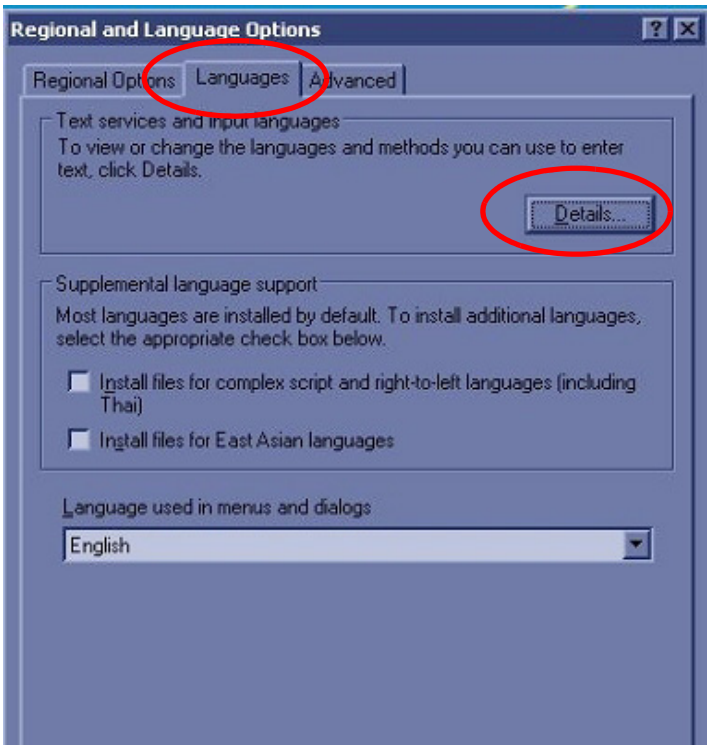


Figure 8-177 Details

8-3-10-7 Regional Setup (For the system with English language only) (cont'd)

5.) The **Text Services and Input Languages** window pops up.
On BT08 or later version, **Default input language** becomes **English [United States]- United States-International** every time after loading the application software.

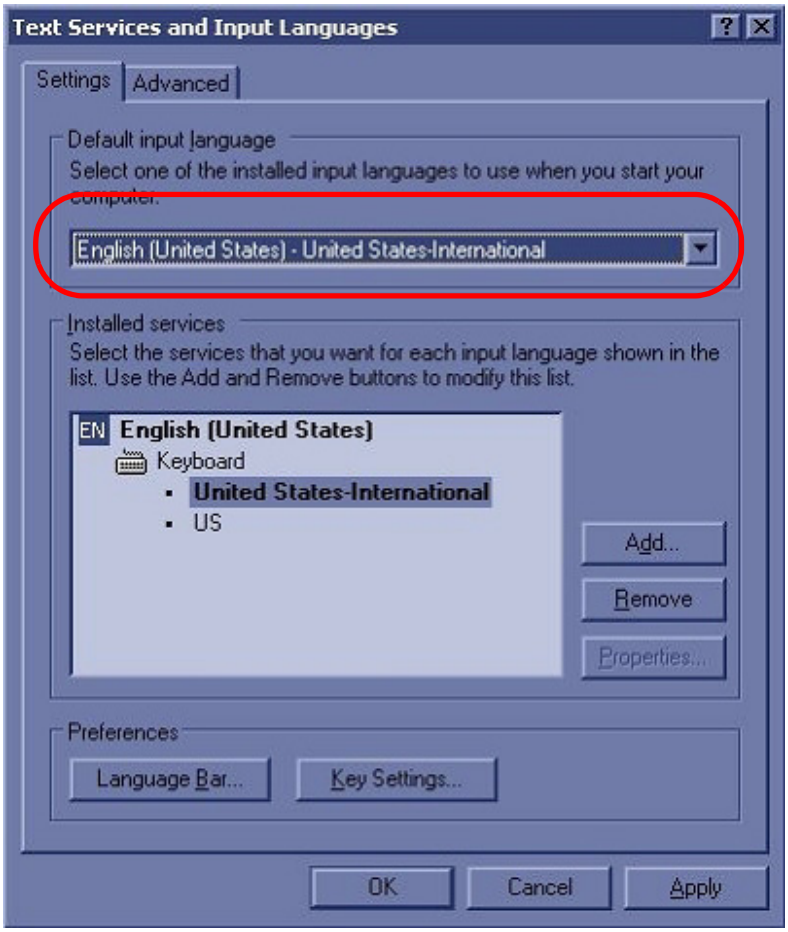


Figure 8-178 Default input language

8-3-10-7 Regional Setup (For the system with English language only) (cont'd)

6.) If Default input language was English [United States]-US before installing the application, change the setting to **English [United States]-US** and press **OK** to close the window..

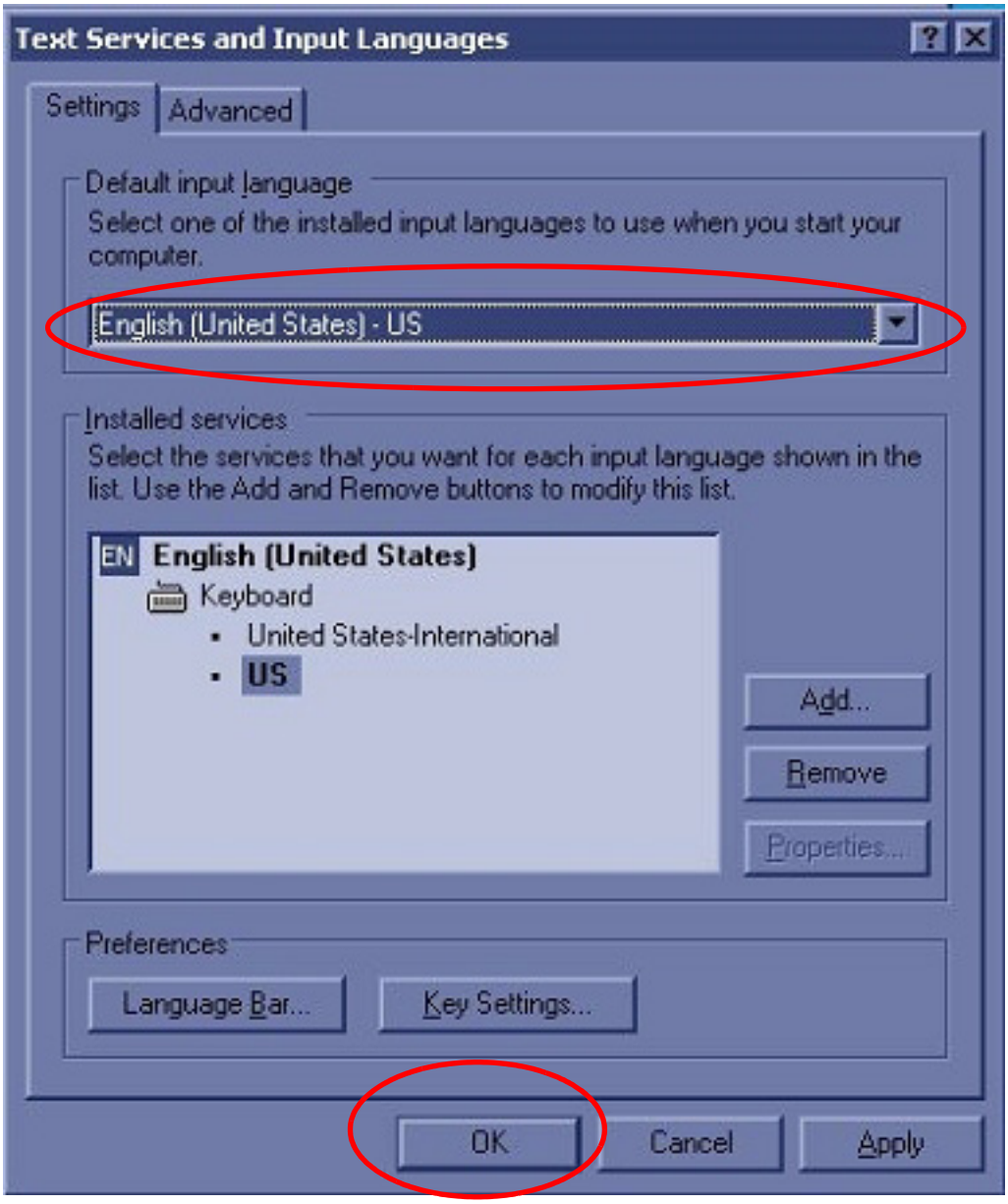


Figure 8-179 Default input language

⚠ **NOTICE** Keyboard function with **English [United States]-United States-International** is different from **English [United States]-US**, though it is still English.

8-3-10-8 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 1-5-7 Printer Registration.

4.) Click on **>>** to add Printflow View.

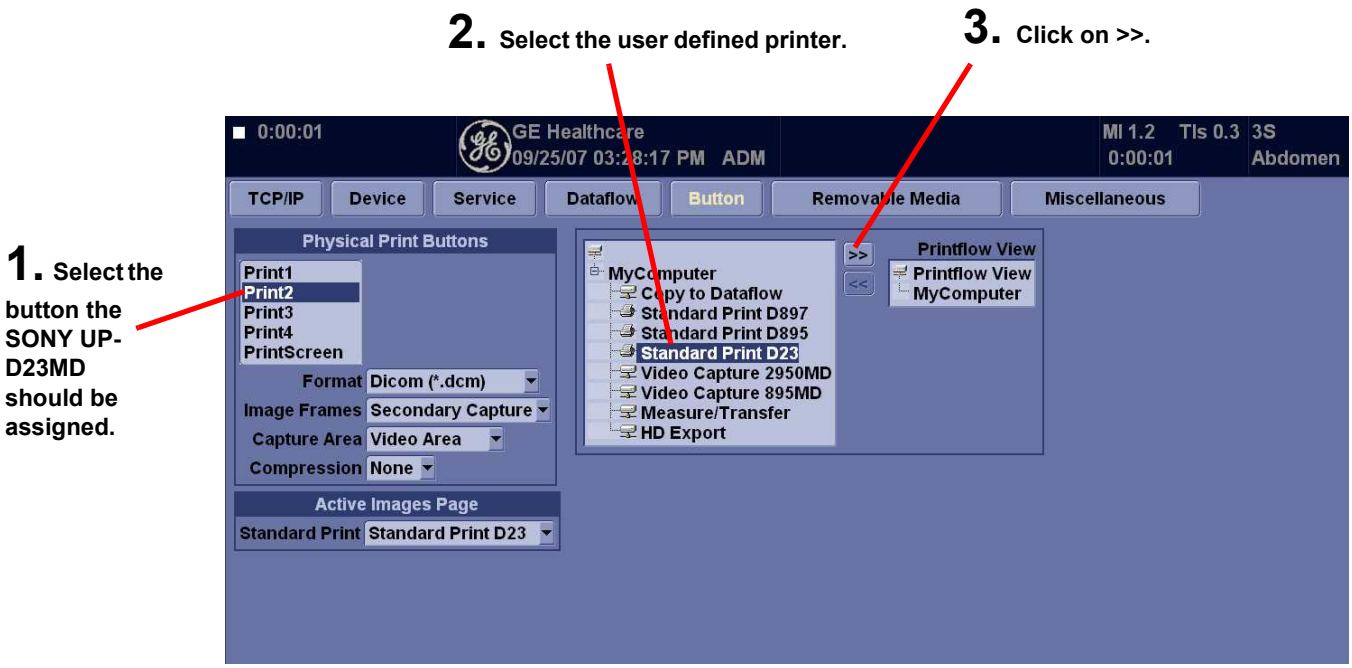


Figure 8-180 Printer Setting Screen

8-3-10-8 Printer Registration (cont'd)

5.) Verify that the user defined printer is added in Printflow View.(Example shown: UP-D23MD)

6.) For UP-D23:
When upgrading to BT08, updated printer driver may be loaded and assigned. Before assigning Print Button to Printer, check 'DEVICE' Tab for multiple UP-D23 Printer, and check for active printer.

7.) Right-click on **Save.**

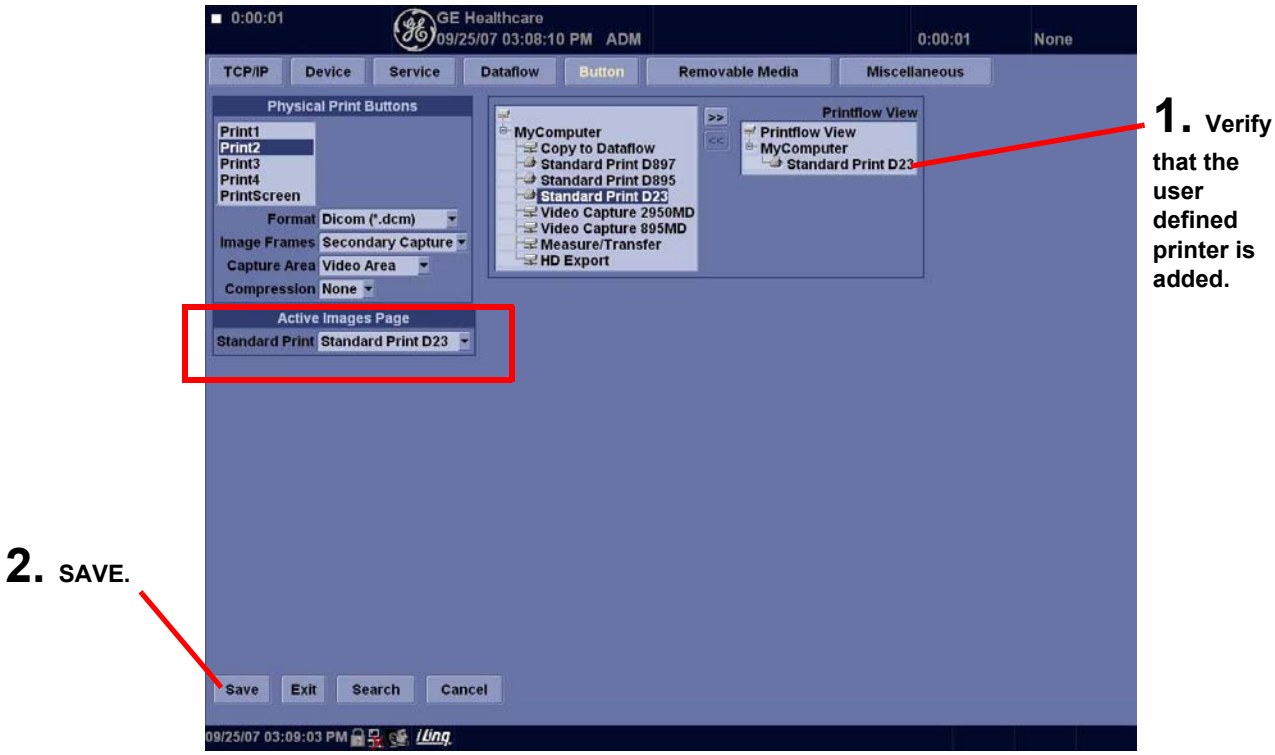


Figure 8-181 Save

8-3-10-9 Regional Preset

NOTICE For the system other than "NONE" selected as Regional Preset, resetting MUST be required.

8.) Touch **Utility > System**.

9.) Click **About** tab.

10.) Click **Additional About Information**.

11.) Check the region name of **Preset Region (Rquires reboot):**
If it is None, skip this section.

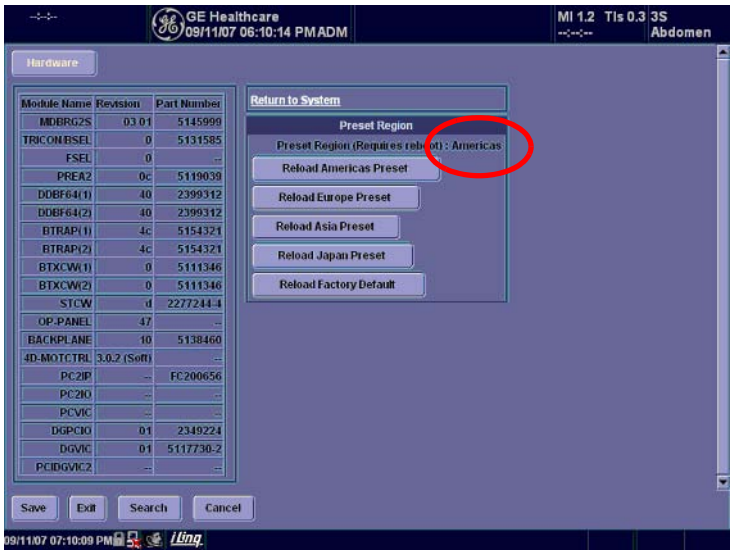


Figure 8-182 Preset Region

12.) Click **Reload Factory Default** button.

13.) Click **OK** on confirmation dialog box.

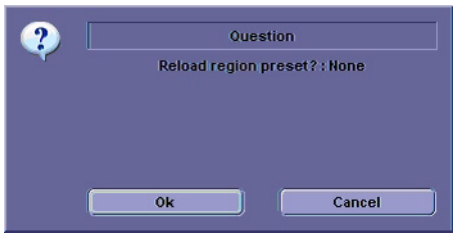


Figure 8-183 Reload Factory Default

This changes Preset Region (Requires reboot) to **None**.

8-3-10-9 Regional Preset (cont'd)

14.)Click the button **Reload **** Preset** corresponding you noted.

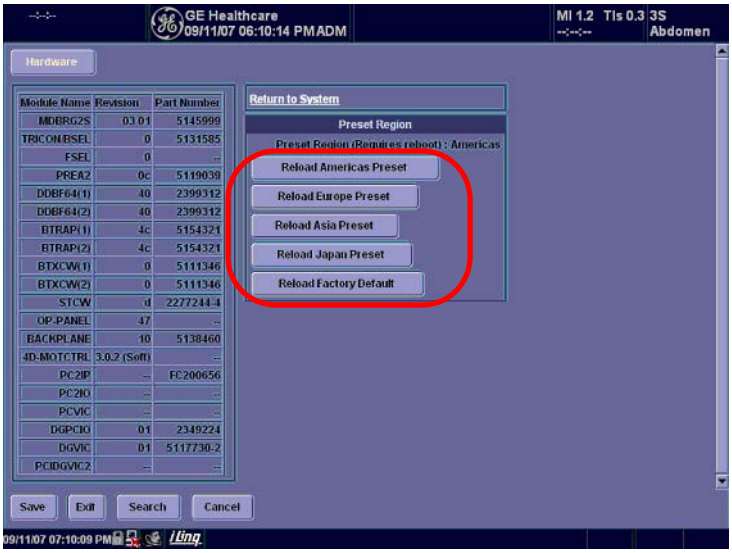


Figure 8-184 Reload buttons

15.)Click **OK** on confirmation dialog box.

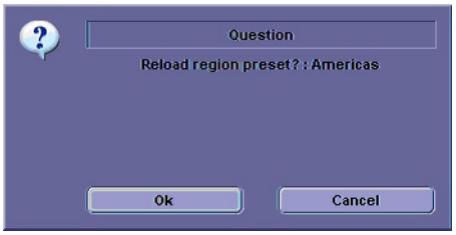


Figure 8-185 OK

8-3-10-9 Regional Preset (cont'd)

16.) Check **Preset Region (Requires reboot)**: is right region you selected.

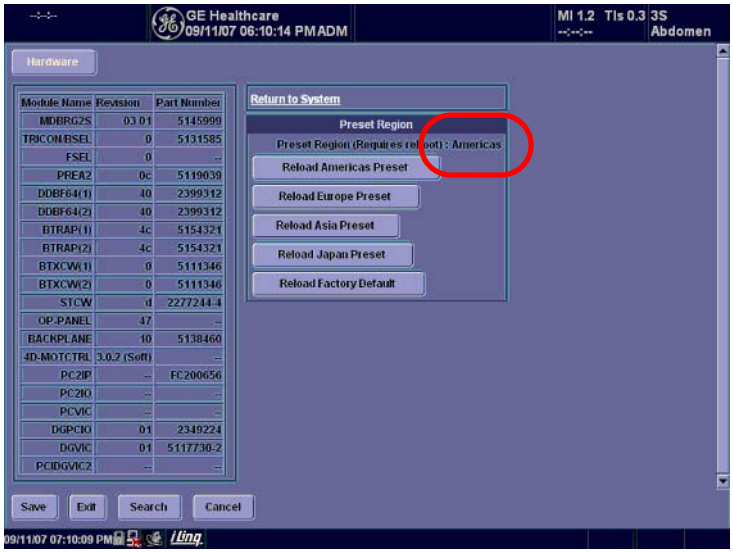


Figure 8-186 Preset Region

8-3-11 Functional Check

8-3-11-1 Service Platform

1.) Click on **Utility > Service.** It will take about ten (10) seconds for activating.

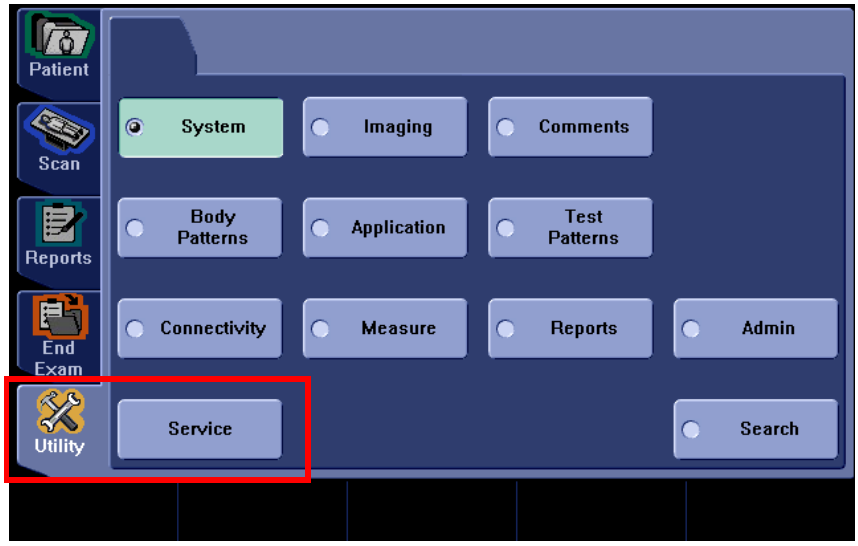


Figure 8-187 Service

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.

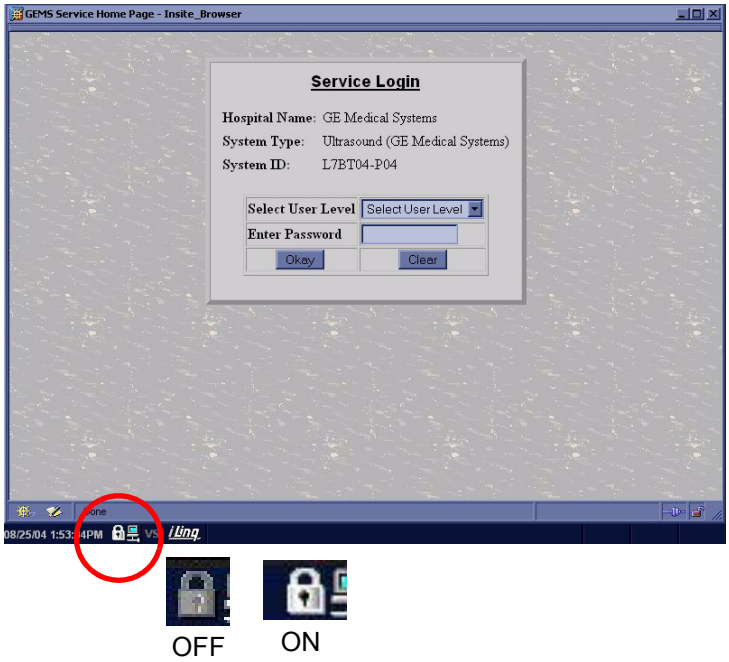


Figure 8-188 CAPS OFF

8-3-11-1 Service Platform (cont'd)

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**.

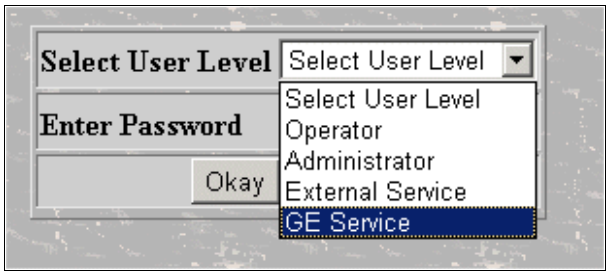


Figure 8-189 GE Service

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.

NOTICE When the service platform is NOT displayed, check if **CAPS** lock is selected. The **CAPS** should not be selected.

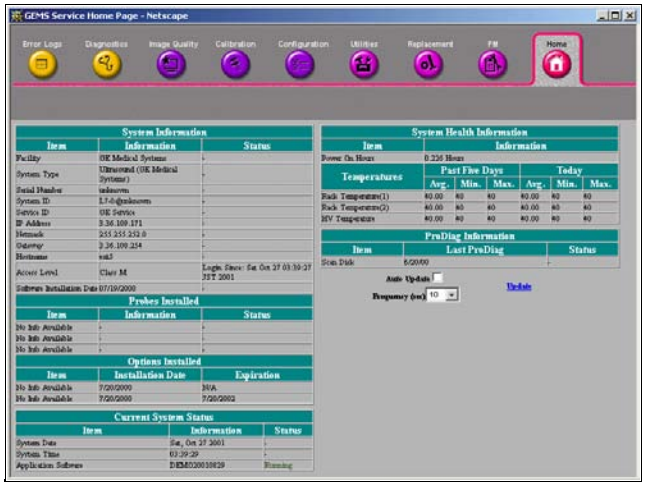


Figure 8-190 Service Platform

8-3-11-2 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.

8-3-11-3 Replacing Ghost / Application CD

1.) Remove the left side cover to access the application CD holder.
2.) Remove all existing CDs from the CD holder.
3.) Place the new Ghost CD and R7.7.x Application CD into the CD holder.
4.) Discard the removed CDs, scratching the surface with an edged tool.

⚠ **NOTICE** Leave the latest e-Doc CD with the customer.

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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™ S6.

Table 9-68 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 BT08 with BECOMP4

9-3-1 BT08 with BECOMP4: Equipment Models Covered in this Chapter

Table 9-69 Material List

Part Name	Part Number	Quantity																Description
LOGIQ S6 R7.7.0 Application Software CD	5315082-2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
LOGIQ S6 Ghost CD for BECOMP4	5305207	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
LS6 M12L Enable Option	5175356		1	1	1	1												
LS6 M7C Enable Option	5175187		1	1			1	1	1	1	1	1	1	1	1	1	1	
LS6 M3S Enable Option	5175946		1	1														
CROSS BEAM OPTION LS6	5173238						1	1	1	1	1	1	1	1	1	1	1	
SRI OPTION LS6	5172730									1	1	1	1	1	1			
LOGIQView OPTION LS6	5166914									1	1	1	1	1	1			
DICOM OPTION LS6	5173166									1	1	1	1	1	1			
REPORT WRITER OPTION LS6	5154930									1	1	1	1					
LOGIS S6 eDoc CD	5323487-200	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
LOGIQLEAN HARD	2369383	1																
GELAQUASONIC GEL	U0403BD		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
MSDS FOR KAO ACOUSTIC GEL	5306541	1																
MSDS FOR PARKER AQUASONIC100	2384142		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
CD-R Media 700MB	5118386	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
DVD-R 8x speed Media	5160800-2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
P KEY LABEL 1	2360320	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
LOGIQ 7 WEEE instruction	5143413	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
WARRANTY CARD C ASSY	P9889AH	1																
LOGIQ S6 R7.6.0 Tempu-Bunsho	5272317	1																
AIUM Safety Pamphlet	5118349		1	1														
AIUM Safety Pamphlet License	5123992		1	1														
AC CORD 100V JPN W/CLAMP	2371416	1																
AC CORD 100V USA W/CLAMP	2371417		1	1						1		1					1	
AC CORD 200V EU with CLAMP	2371418				1	1	1	1	1		1		1	1	1			
AC CORD 200V CHIN W_CLAMP	2371415-2															1		
POWER CABLE TAG	2304574	1	1	1														
Caution sheet for Power cables - US	5180867	1																
VERMONT HG LABEL	5241494		1	1														
KOREAN PATCH LABEL L7 LS6	5224131								1									
KFDA LABEL LS6	5229762								2									
GENDER LABEL L7	5257292								1									
CHINA RoHS EFUP 20 LABEL	5196197															1		
SFDA LABEL LS6	5170503															1		
LOGIQ S6 Ceritification of Quality Inspection for China	5229807															1		
P9893PA SOFTWARE_CERTIFICATION	2137225-100									1	1	1	1					

Table 9-69 Material List

Part Name	Part Number	Quantity															Description
PDF CREATOR SOFTWARE LICENSE	2394132									1	1	1	1				
OP CSL TYPE_C JPN LS6	5324059	1															100V NTSC, Standard Height
OP CSL TYPE_C USA-ASIA-CALA120 LS6	5324061		1									1				1	120V NTSC, Standard Height
OP CSL TYPE_C USA-ASIA-CALA120 TALL LS6	5324062			1						1							120V NTSC, Tall Height
OP CSL TYPE_C EU-ASIA-CALA220 LS6	5324063				1		1						1		1		220V PAL, Standard Height
OP CSL TYPE_C EU-ASIA-CALA220 TALL LS6	5324064					1		1			1			1			220V PAL, Tall Height
OP CSL TYPE_C KOREA LS6 (220V/ NTSC, LCD)	5324065								1								220V NTSC, Standard Height
OP CSL TYPE_C CHINA LS6	5324060														1		220V PAL, Standard Height
LS6 BT08 JPN (5324066)																LS6 BT08 ASIA 120 (5324066-9)	
LS6 BT08 USA STD (5324066-2)															LS6 BT08 CHINA (5324066-10)		
LS6 BT08 USA TALL (5324066-3)														LS6 BT08 ASIA SP 220 STD (5324066-11)			
LS6 BT08 EU STD (5324066-4)													LS6 BT08 ASIA SP 220 TALL (5324066-12)				
LS6 BT08 EU TALL (5324066-5)												LS6 BT08 CALA SP 220 STD (5324066-13)					
LS6 BT08 ASIA220 STD (5324066-6)											LS6 BT08 CALA SP 120 STD (5324066-14)						
LS6 BT08 ASIA220 TALL (5324066-7)										LS6 BT08 CALA SP 220 TALL (5324066-15)							
LS6 BT08 KOREA (5324066-8)									LS6 BT08 CALA SP 120 TALL(5324066-16)								

9-3-2 BT08 with BECOMP4 Parts

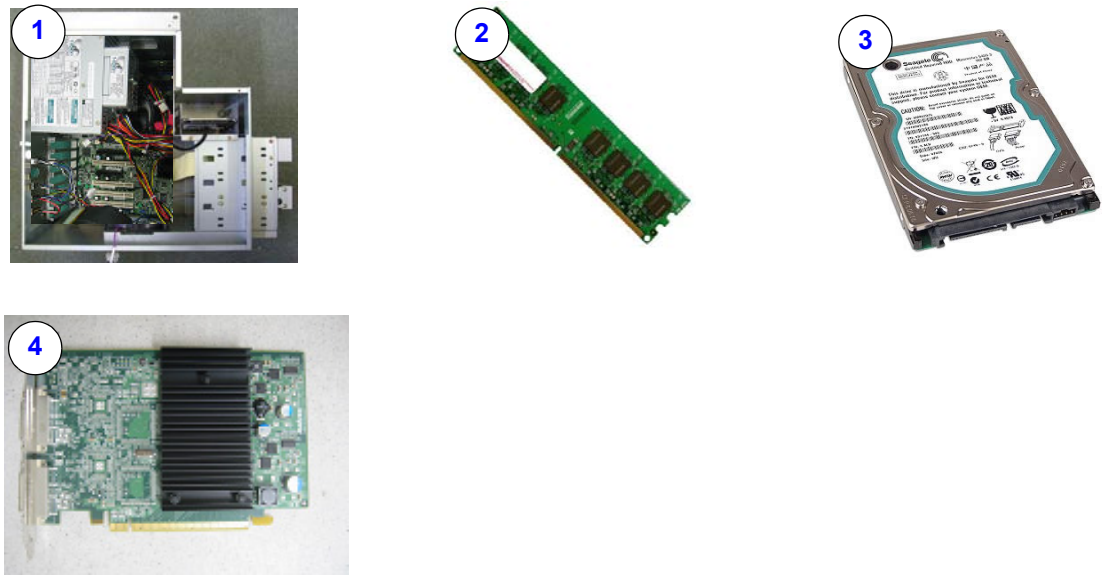


Figure 9-191 BT08 with BECOMP4 Parts

Table 9-70 BT08 with BECOMP4 Parts

Item	Part Name	Part Number	Description	Qty	FRU
1	SVP-BECOMP4-LS6	5308151	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 Accessory	5316350	Small parts collection for BEP4	1	1
-	LOGIQ S6 R7.7.0 Application Software CD	5315082-2	R800 common software for both upgraded BT08 and pure BT08	1	1
-	LOGIQ S6 Ghost DVD for BECOMP4	5305207	Base image (Ghost) for pure BT08 (BEP4 system) only	1	1
-	LOGIQ S6 Ghost CD for BEP-NP, R7.7.0	5324919	Base image (Ghost) for upgraded BT08 (BEP3 system)	1	1

Section 9-4
Renewal Parts List For BT08, LCD with BECOMP3

9-4-1 BT08, LCD: Equipment Models Covered in this Chapter

Table 9-71 Material List

Part Name	Part Number	Quantity																Description
LOGIQ S6 R7.6.0 Application Software CD	5269591-3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
LOGIQ S6 Ghost CD for BEP-NP, R7.6.0	5252046	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
LS6 M12L Enable Option	5175356		1	1	1	1												
LS6 M7C Enable Option	5175187		1	1			1	1	1	1	1	1	1	1	1	1	1	
LS6 M3S Enable Option	5175946		1	1														
CROSS BEAM OPTION LS6	5173238						1	1	1	1	1	1	1	1	1	1	1	
SRI OPTION LS6	5172730									1	1	1	1	1	1			
LOGIQView OPTION LS6	5166914									1	1	1	1	1	1			
DICOM OPTION LS6	5173166									1	1	1	1	1	1			
REPORT WRITER OPTION LS6	5154930									1	1	1	1					
LOGIS S6 eDoc CD	5264512-200	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
LOGIQLEAN MIDDLE	2369384	1																
GELAQUASONIC GEL	U0403BD		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
MSDS FOR KAO ACOUSTIC GEL	2384010	1																
MSDS FOR PARKER AQUASONIC100	2384142		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
CD-R Media 700MB	5118386	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
DVD-R 8x speed Media	5160800-2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
P KEY LABEL 1	2360320	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
LOGIQ 7 WEEE instruction	5143413	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
WARRANTY CARD C ASSY	P9889AH	1																
LOGIQ S6 R7.6.0 Tempu-Bunsho	5272317	1																
AIUM Safety Pamphlet	5118349		1	1														
AIUM Safety Pamphlet License	5123992		1	1														
AC CORD 100V JPN W/CLAMP	2371416	1																
AC CORD 100V USA W/CLAMP	2371417		1	1						1		1					1	
AC CORD 200V EU with CLAMP	2371418				1	1	1	1	1		1		1	1	1			
AC CORD 200V CHIN W_CLAMP	2371415-2															1		
POWER CABLE TAG	2304574	1	1	1														
Caution sheet for Power cables - US	5180867	1																
VERMONT HG LABEL	5241494		1	1														
KOREAN PATCH LABEL L7 LS6	5224131								1									
KFDA LABEL LS6	5229762								2									
GENDER LABEL L7	5257292								1									
CHINA RoHS EFUP 20 LABEL	5196197															1		
SFDA LABEL LS6	5170503															1		
LOGIQ S6 Ceritification of Quality Inspection for China	5229807															1		
P9893PA SOFTWARE_CERTIFICATION	2137225-100									1	1	1	1					

Table 9-71 Material List

Part Name	Part Number	Quantity																Description
LOGIQ S6 Software Option Installation Instruction	5173830									1	1	1	1					
PDF CREATOR SOFTWARE LICENSE	2394132									1	1	1	1					
OP CSL TYPE_B JPN LS6	5268701	1																100V NTSC, Standard Height
OP CSL TYPE_B USA-ASIA-CALA120 LS6	5272223		1									1					1	120V NTSC, Standard Height
OP CSL TYPE_B USA-ASIA-CALA120 TALL LS6	5263818			1						1								120V NTSC, Tall Height
OP CSL TYPE_B EU-ASIA-CALA220 LS6	5269076				1		1						1		1			220V PAL, Standard Height
OP CSL TYPE_B EU-ASIA-CALA220 TALL LS6	5264909					1		1			1			1				220V PAL, Tall Height
OP CSL TYPE_B KOREA LS6	5265707								1									220V NTSC, Standard Height
OP CSL TYPE_B CHINA LS6	5272246															1		220V PAL, Standard Height
LS6 BT08 JPN (5265960)																	LS6 BT08 ASIA 120 (5265960-9)	
LS6 BT08 USA STD (5265960-2)															LS6 BT08 CHINA (5265960-10)			
LS6 BT08 USA TALL (5265960-3)														LS6 BT08 ASIA SP 220 STD (5265960-11)				
LS6 BT08 EU STD (5265960-4)													LS6 BT08 ASIA SP 220 TALL (5265960-12)					
LS6 BT08 EU TALL (5265960-5)												LS6 BT08 CALA SP 220 STD (5265960-13)						
LS6 BT08 ASIA220 STD (5265960-6)											LS6 BT08 CALA SP 120 STD (5265960-14)							
LS6 BT08 ASIA220 TALL (5265960-7)										LS6 BT08 CALA SP 220 TALL (5265960-15)								
LS6 BT08 KOREA (5265960-8)									LS6 BT08 CALA SP 120 TALL(5265960-16)									

9-4-2 BT08 with BECOMP3 Parts

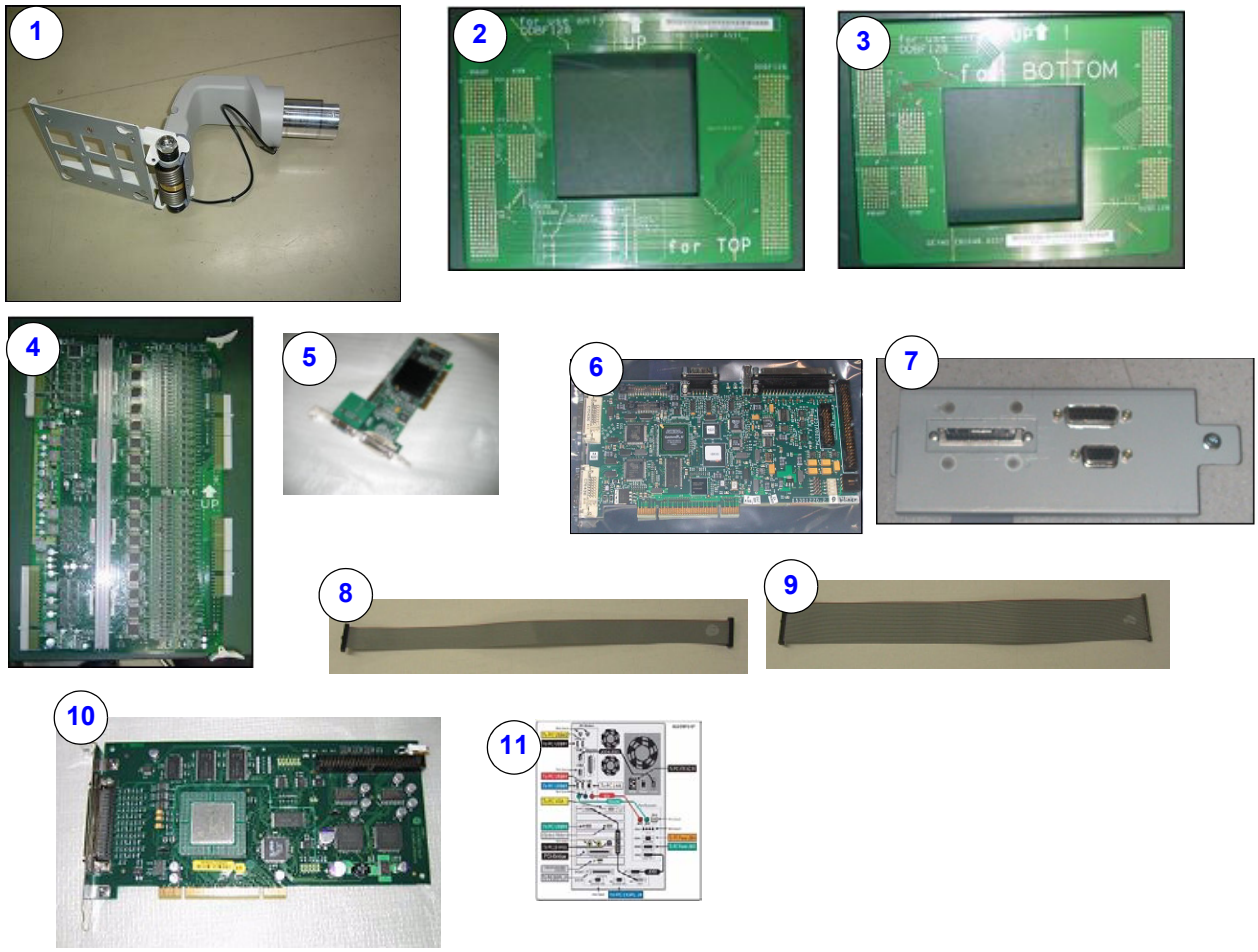


Figure 9-192 BT08 with BECOMP3 Parts

Table 9-72 BT08 with BECOMP3 Parts

Item	Part Name	Part Number	Description	Qty	FRU
-	17 inch IPS-PRO Type	5261237	for forward production of BT08 or later (including the LCD field Upgrade system to BT08 or later) Model Name: GA500C	1	1
1	LCD ARM2	5257403	for use with 17" IPS-PRO type monitor only	1	1
2	EBUS 4T ASSY	5182215	Upper EBUS for forward production of BT08 or later	1	1
3	EBUS 4B ASSY	5182757	Lower EBUS for forward production of BT08 or later	1	1
4	DDBF128 ASSY	5182379	board in nest, slot 6 (for forward production of BT08 or later)	1	1
5	AGP BOARD ASSY	2362887	for CRT monitor system and forward production of BT08 or later	1	1

Table 9-72 BT08 with BECOMP3 Parts

Item	Part Name	Part Number	Description	Qty	FRU
6	PCI-DGVIC2 Assembly	5301220-2	for forward production of BT08 or later. To be used with BEP 5193189.	1	1
7	BulkHead for L7 and LS6	5257226	for forward production of BT08 or later	1	1
8	Cable13 for BulkHead	5257231	for forward production of BT08 or later	1	1
9	Cable25 for BulkHead	5257233	for forward production of BT08 or later	1	1
10	PC2IP3	FC200755	for forward production of BT08 or later	1	1
11	BECOMP3 LS6 LABEL	5257241	for forward production of BT08 or later	1	1

Section 9-5
Renewal Parts List for Original LOGIQ S6 (BT06)

9-5-1 Original LOGIQ S6 : Equipment Models Covered in this Chapter

Table 9-73 Material List (CTR Type)

Part Name	Part Number	Quantity												Description
LOGIQ S6 Application Software CD R6.1.0	5170510	1	1	1	1	1			1	1	1	1	1	
LOGIQ S6 Ghost CD for BEP-NP, R6.1.0	5170144	1	1	1	1	1			1	1	1	1	1	
LS6 M12L Enable Option	5175356		1	1	1	1								
LS6 M7C Enable Option	5175976		1	1										
LS6 M3S Enable Option	5175946		1	1										
LOGIS S6 eDoc CD	5166927-200	1	1	1	1	1			1	1	1	1	1	
LOGIQLEAN MIDDLE	2369384	1												
GELAQUASONIC GEL	U0403BD		1	1	1	1				1	1	1	1	
MSDS FOR KAO ACOUSTIC GEL	2384010	1												
MSDS FOR PARKER AQUASONIC100	2384142		1	1	1	1				1	1	1	1	
CD-R Media 700MB	5118386	1	1	1	1	1				1	1	1	1	
DVD-R 8x speed Media	5160800	1	1	1	1	1				1	1	1	1	
P KEY LABEL 1	2360320	1	1	1	1	1				1	1	1	1	
LOGIQ 7 WEEE instruction	5143413	1	1	1	1	1				1	1	1	1	
WARRANTY CARD C ASSY	P9889AH	1												
LOGIQ S6 Highlight Document with all probe data	5165006	1												
AIUM Safety Pamphlet	5118349		1	1										
AIUM Safety Pamphlet License	5123992		1	1										
AC CORD 100V JPN W/CLAMP	2371416	1												
AC CORD 100V USA W/CLAMP	2371417		1	1						1				
AC CORD 200V EU with CLAMP	2371418				1	1					1	1	1	
AC CORD 200V CHIN W_CLAMP	2371415-2								1					
POWER CABLE TAG	2304574	1	1	1										
DEVICE AC CAUTION LABEL	5119836	2	2	2	2	2				2	2	2	2	
OP CSL TYPE_A CRT JPN L6	5169603	1												100V NTSC, Standard Height
OP CSL TYPE_A CRT USA L6	5170424			1										120V NTSC, Tall Height
OP CSL TYPE_A CRT EU-ASIA220 L6	5170279				1								1	220V PAL, Standard Height
OP CSL TYPE_A CRT EU-ASIA220 TALL L6	5175648					1						1		220V PAL, Tall Height
OP CSL TYPE_A CRT KOREA L6	5170451										1			220V NTSC, Standard Height
OP CSL TYPE_A CRT ASIA120 L6	5170310		1							1				120V NTSC, Standard Height
OP CSL TYPE_A CRT CHINA L6	5170418								1					220V PAL, Standard Height

JAPAN 5165990
USA (Standard) 5165990-7
USA (Tall) 5165990-2
EU (Standard) 5165990-8
EU (Tall) 5165990-9
ASIA220V (Standard) 5165990-3
ASIA220V (Tall) 5165990-10
KOREA 5165990-4
ASIA120V 5165990-5
CHINA 5165990-6

Table 9-74 Material List (LCD Type)

Part Name	Part Number	Quantity												Description
LOGIQ S6 Application Software CD R6.1.0	5170510	1	1	1	1	1			1	1	1	1		
LOGIQ S6 Ghost CD for BEP-NP, R6.1.0	5170144	1	1	1	1	1			1	1	1	1		
LS6 M12L Enable Option	5175356		1	1	1	1								
LS6 M7C Enable Option	5175976		1	1										
LS6 M3S Enable Option	5175946		1	1										
LOGIS S6 eDoc CD	5166927-200	1	1	1	1	1			1	1	1	1		
LOGIQLEAN MIDDLE	2369384	1												
GELAQUASONIC GEL	U0403BD		1	1	1	1				1	1	1		
MSDS FOR KAO ACOUSTIC GEL	2384010	1												
MSDS FOR PARKER AQUASONIC100	2384142		1	1	1	1				1	1	1		
CD-R Media 700MB	5118386	1	1	1	1	1				1	1	1		
DVD-R 8x speed Media	5160800	1	1	1	1	1				1	1	1		
P KEY LABEL 1	2360320	1	1	1	1	1				1	1	1		
LOGIQ 7 WEEE instruction	5143413	1	1	1	1	1				1	1	1		
WARRANTY CARD C ASSY	P9889AH	1												
LOGIQ S6 Highlight Document with all probe data	5165006	1												
AIUM Safety Pamphlet	5118349		1	1										
AIUM Safety Pamphlet License	5123992		1	1										
AC CORD 100V JPN W/CLAMP	2371416	1												
AC CORD 100V USA W/CLAMP	2371417		1	1						1				
AC CORD 200V EU with CLAMP	2371418				1	1					1	1		
AC CORD 200V CHIN W_CLAMP	2371415-2								1					
POWER CABLE TAG	2304574	1	1	1										
DEVICE AC CAUTION LABEL	5119836	2	2	2	2	2				2	2	2		
OP CSL TYPE_A LCD JPN L6	5170369	1												100V NTSC, Standard Height
OP CSL TYPE_A LCD USA L6	5170380			1										120V NTSC, Tall Height
OP CSL TYPE_A LCD EU-ASIA220 L6	5170264				1								1	220V PAL, Standard Height
OP CSL TYPE_A CRT EU-ASIA220 TALL L6	5175648					1						1		220V PAL, Tall Height
OP CSL TYPE_A LCD KOREA L6	5170314										1			220V NTSC, Standard Height
OP CSL TYPE_A LCD ASIA120 L6	5170218		1							1				120V NTSC, Standard Height
OP CSL TYPE_A LCD CHINA L6	5170354								1					220V PAL, Standard Height

JAPAN 5165848
USA (Standard) 5165848-7
USA (Tall) 5165848-2
EU (Standard) 5165848-8
EU (Tall) 5165848-9
ASIA220V (Standard) 5165848-3
ASIA220V (Tall) 5165848-10
KOREA 5165848-4
ASIA120V 5165848-5
CHINA 5165848-6

9-5-2 Plastic Covers

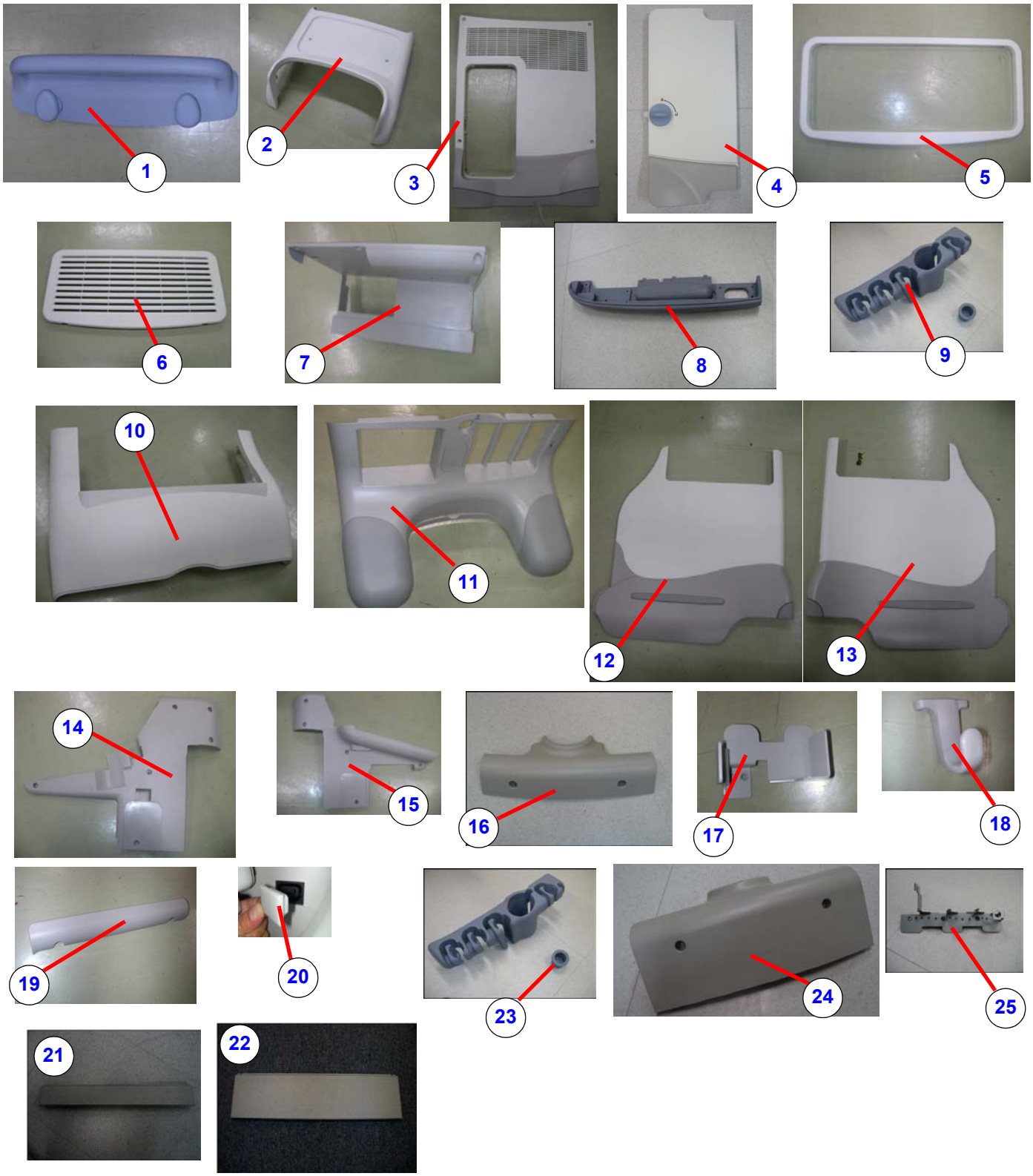


Figure 9-193 Plastic Covers

Table 9-75 Plastic Covers

Item	Part Name	Part Number	Description	Qty	FRU
1	REAR HANDLE	5170162		1	2
2	CONSOLE TOP COVER ABS	5171964	without tapping screw	1	2
3	REAR COVER ASSY L6	5170246	China and Korea are exluded.	1	2
4	REAR DOOR COVER ASSY L6	5168993		1	2
5	SIDE FRINGE	2303896		1	2
6	CONSOLE SIDE CAP ABS	2301527		1	2
7	KBD Bottom Cover	2301529	without bottom curtain, same composition as LOGIQ5	1	2
8	OP FRONT BUMPER L6	5168868		1	2
9	OP PROBE HOLDER L6	5175882	without gel holder	1	2
10	FRONT COVER ASSY L6	5168957		1	2
11	FRONT BASE COVER ASSY L6	5170181		1	2
12	SIDE COVER R ASSY L6	5169002		1	2
13	SIDE COVER L ASSY L6	5168881		1	2
14	OP SIDE R COVER ABS	5170142		1	2
15	OP SIDE L COVER ABS	2301532		1	2
16	OP REAR COVER2 ABS GE GRAY	2371537	For Standard	1	2
17	CWD BRACKET L6	5147526		1	2
18	ECG CABLE HOOK	2283028		1	2
19	OP SIDE DUMMY COVER ABS	2301531		1	2
20	BLOCK GEL WARMER POWER CAP	2328024		1	2
21	Front Bottom Curtain Short	2374267	without plate (for standard)	1	2
22	Front Bottom Curtain Long	5162514	without plate (for tall)	1	2
23	GEL HOLDER L6	5168986		1	2
24	OP REAR COVER TALL L6	5162515	For Tall	1	2
25	PROBE HOLDER BRACKET L6	5147525-2		1	2

9-5-3 Monitor

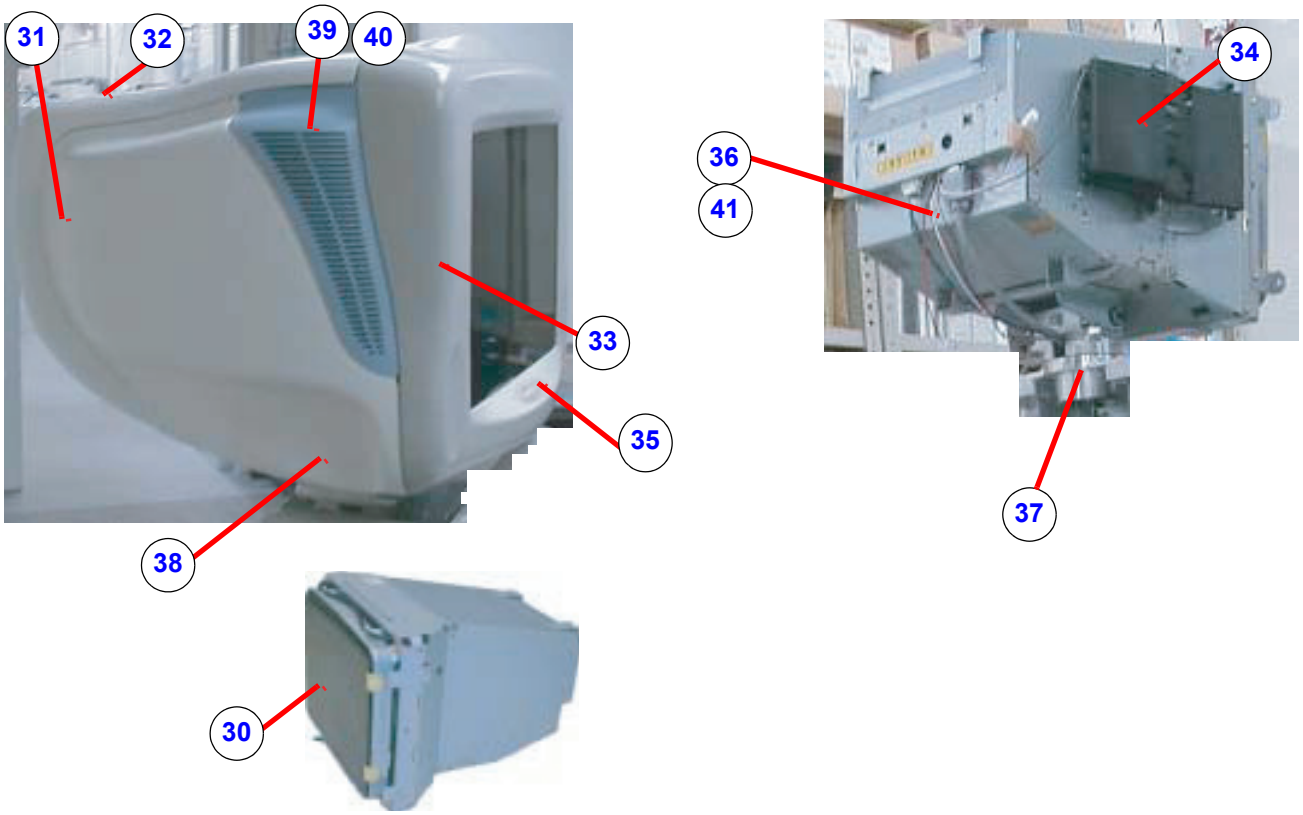


Figure 9-194 Monitor

Table 9-76 Monitor

Item	Part Name	Part Number	Description	Qty	FRU
30	CRT MONITOR ASSY	2283334-5	Monitor, not including the following parts (31 ~ 41)	1	1
31	MON-REAR-WSP-ASSY	2303930	rear cover of monitor	1	1
32	MON-CAP-ASSY	2303932	cap to cover screws	1	2
33	MON-FRONT-ASSY	2303929-3	front cover of monitor	1	2
34	SPEAKER & BRACKET ASSY	2386616		2	1
35	USER SW ASSY OF MONITOR	2297050	microphone and switch	1	1
36	MON-CABLE-ASSY	2304171	cable	1	1
37	NECH-PIPE	5147551		1	1
38	NECK ASSY	2284225		1	1
39	Grill, Left	2279675		1	2
40	Grill, Right	2279676		1	2
41	CRT CONN ASSY	5155394	CB47+CB48+CB49	1	1

9-5-4 LCD Monitor

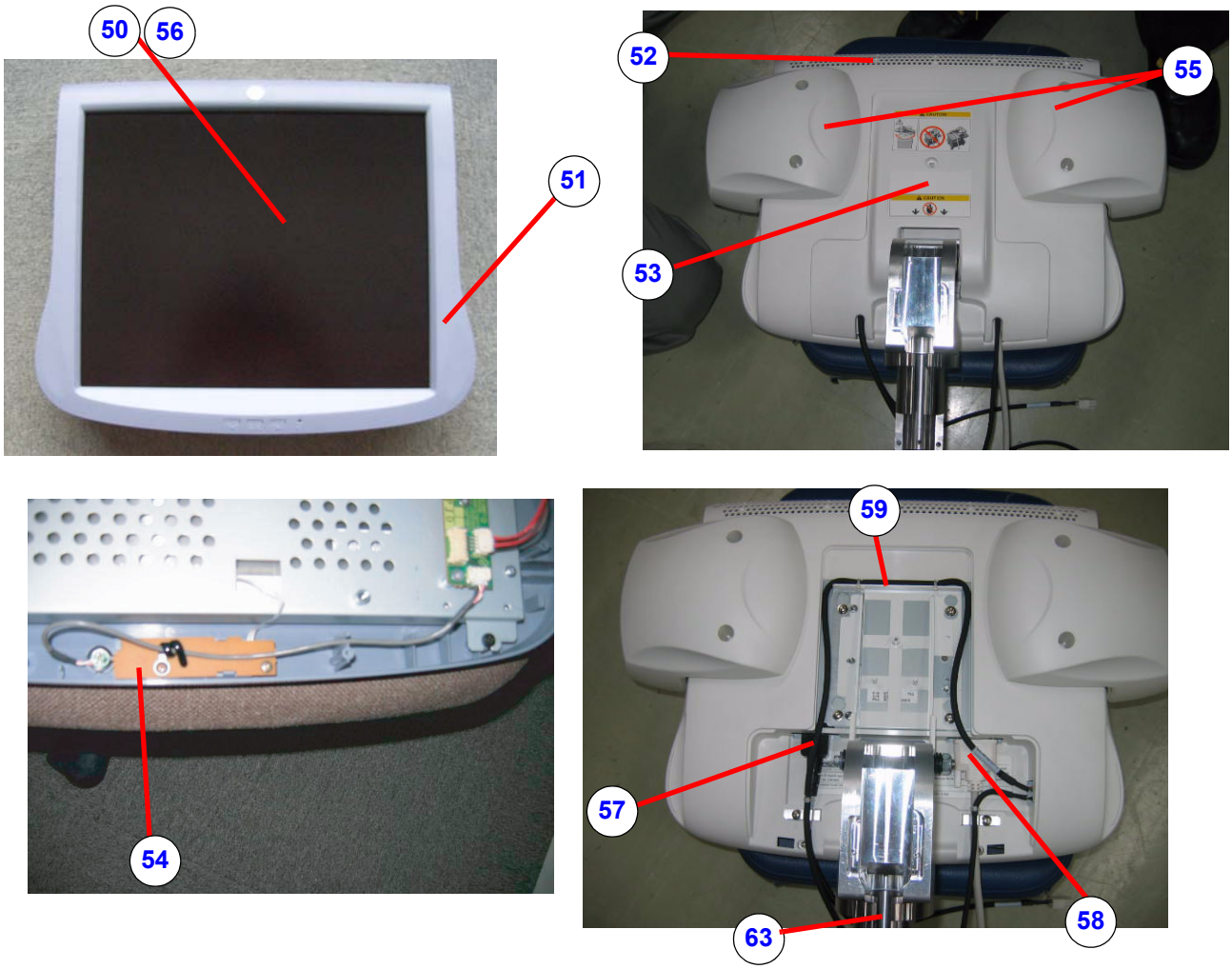
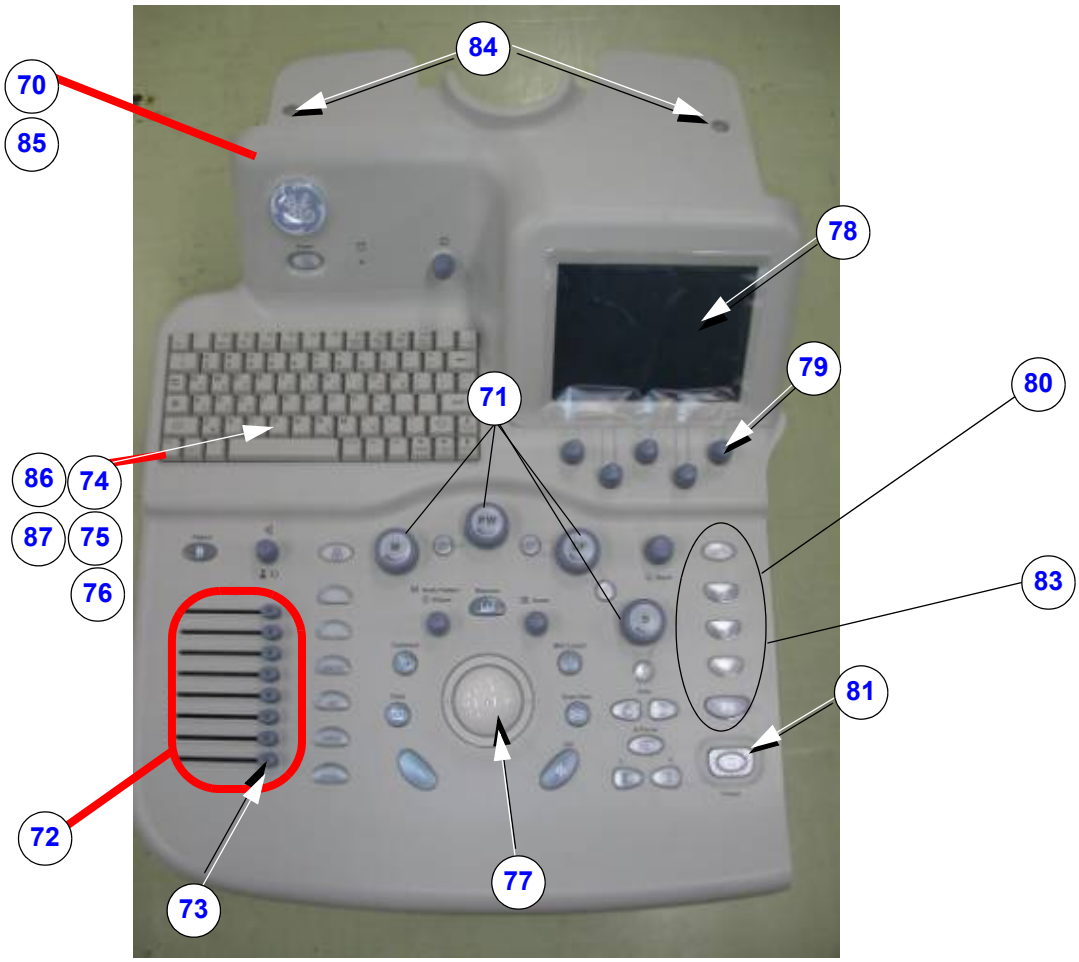


Figure 9-195 LCD Monitor

Table 9-77 LCD Monitor

Item	Part Name	Part Number	Description	Qty	FRU
50	17 inch LCD MONITOR ASSY	5169935	for backward production before BT08 (including the software upgrade system to BT08 or later) Model Name: GA500	1	1
51	PANEL FRONT LCD L7	5132572	17inch IPS-PRO Type cannot be used.	1	2
52	PANEL REAR LCD L7	5132573	17inch IPS-PRO Type cannot be used.	1	1
53	COVER VESA LCD L7	5170026	Korea is excluded	1	2
54	SWITCH MIC_ASSY LCD_MONITOR	5137744	Set of SWITCH and MIC	1	1
55	SPEAKER SET (L&R) LCD L7	5132576	Including left and right speakers	1	1
56	Monitor Screws LCD L7	5137688	Special screw set used on LCD monitor (17inch IPS-PRO Type cannot be used)	1	1
57	LCD AC CABLE CSL L6	5159752	CB56	1	1
58	LCD DVI CABLE TOP CSL L6	5159751	CB55	1	1
59	LCD SPK MIC CABLE CSL L6	5159753	CB57	1	1
60	ARM Assy	5160392	17inch IPS-PRO Type cannot be used.	1	1
61	ARM COVER	5170282		1	2
62	NECK PIPE FOR LCD	5160391		1	1
63	ARM LOCK Assy	5170278		1	1

9-5-5 OP Panel and Keys



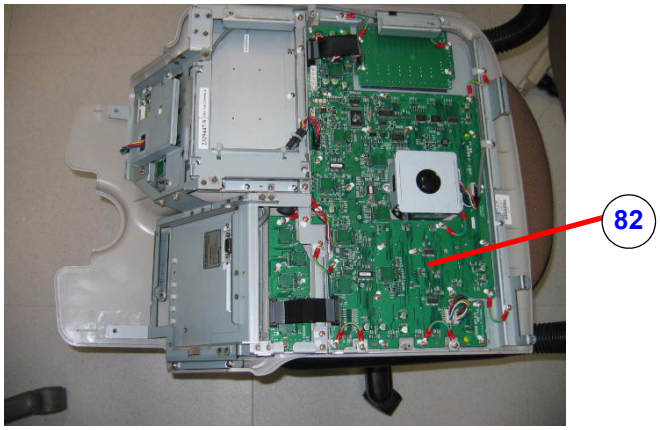


Figure 9-196 OP Panel and Keys

Table 9-78 OP Panel and Keys

Item	Part Name	Part Number	Description	Qty	FRU
70	KEYBOARD FOR CRT	5170515	For use with R6.x.x Systems only	1	1
70	KEYBOARD FOR CRT	5170515-2	Full Compatibility (R6/R7) for CRT system	1	1
71	OP PANEL ENCODER Assy	2317341	all encoders with cables	1	1
72	OP PANEL TGC Assy	5123003	for keyboard Assy version (2299986-8) or higher	1	1
73	TGC KNOB SET	2356244	TGC plastic knobs only	1	2
74	OP PANEL A/N KEY BOARD Assy	2317343-2	PCB board and alphanumeric keyboard	1	1
75	GREEK AN KEYTOP OPTION	5181098		1	1
76	RUSSIAN AN KEYTOP OPTION	5181031		1	1
77	OP PANEL TRACKBALL	2317344	LOGIQ3 common	1	1
78	OP PANLE LCD Assy	2317346-3	CIRCUIT board	1	1
79	LCD ENCODER Assy	5122999	for keyboard Assy version (2299986-8) or higher	1	1
80	P KEY LABEL	2364143	USER DEFINE key label	1	2
81	FREEZE KEY	5122997	Freeze key, PCB and cables included. For keyboard Assy version (2299986-8) or higher	1	1
82	KEYBOARD MAIN BOARD	5122993	For keyboard Assy version (2299986-8) or higher	1	1
83	KEY CAP SET	2390710	plastic key cover cap set - Printer (P2, P3, and P4), LOGIQ View, Contrast, 3D Harmonics, 2 blank key cap and 1 pc of B Flow clear cap	1	2
84	CAP SET	5170215	6 pcs	1	2
85	KBD FOR LCD (S6 LCD)	5170397	For use with R6.x.x Systems only	1	1
85	KBD FOR LCD (S6 LCD)	5170397-2	Full Compatibility (R6/R7) for LCD System	1	1
86	SWEDISH AN KEYTOP OPTION	5193888		1	1
87	NORWEGIAN DANISH AN KEYTOP OPTION	5193889		1	1

9-5-6 Front End Assemblies

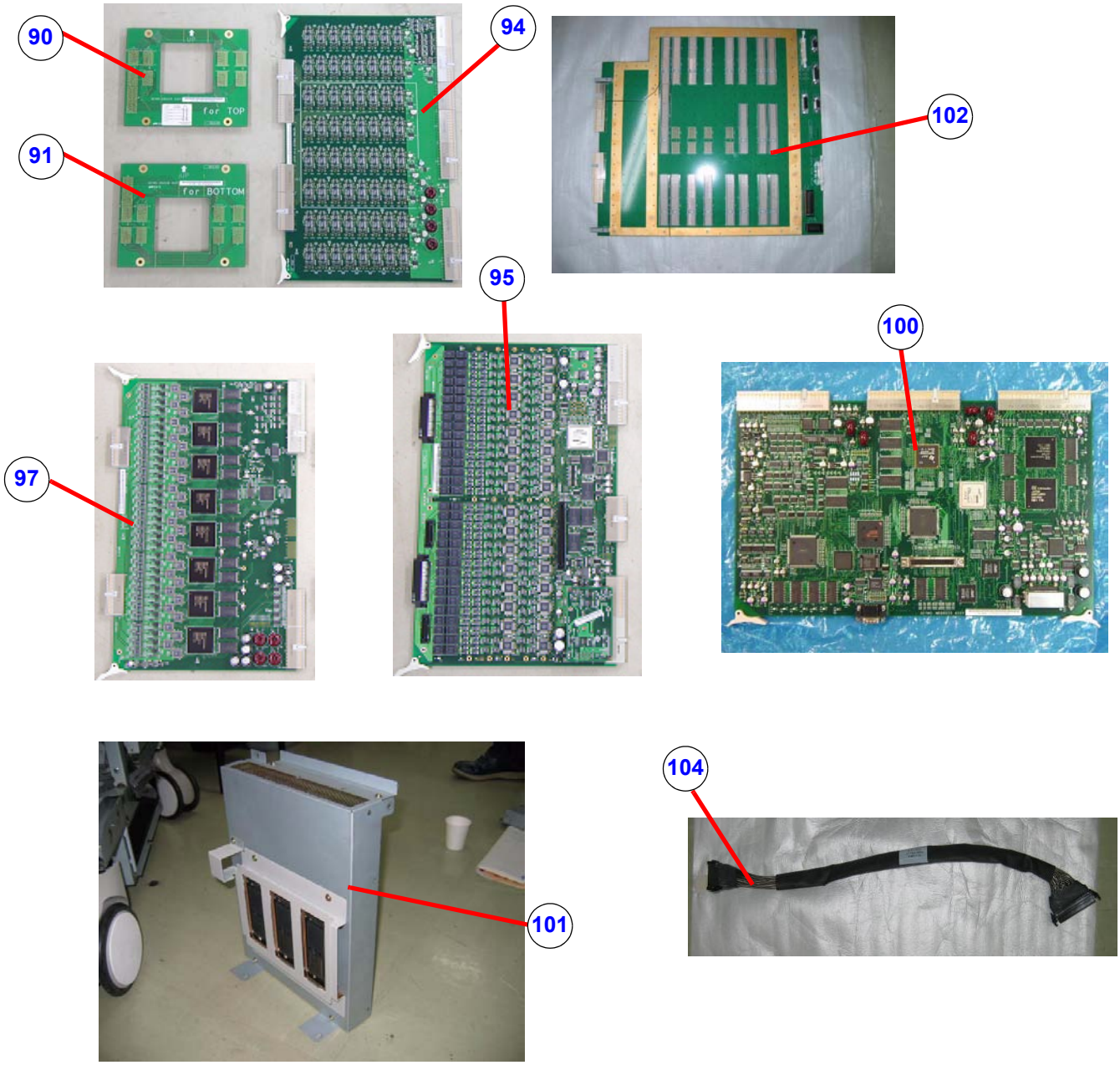


Figure 9-197 Front End Assemblies

Table 9-79 Front End Assemblies

Item	Part Name	Part Number	Description	Qty	FRU
90	EBUS 3T ASSY	5111348	Upper EBUS for backward production before BT08 (including the software,LCD field upgrade system to BT08 or later)	1	1
91	EBUS 3B ASSY	5112465	Lower EBUS for backward production before BT08 (including the software,LCD field upgrade system to BT08 or later)	1	1
94	PREA2F ASSY	5119039	board in nest, slot 1	1	1
95	BTRAPP5AHV Assy	5154321	board in nest, slot 3 - 4	1	1
96	BTxCW ASSY	5111346	Installed on the HBTRAP (Option)	1	1
97	DDBF64 ASSY	2399312	board in nest, slot 5 - 6 (for backward production before BT08. Including the software,LCD field upgrade system to BT08 or later.)	1	1
99	STCW ASSY	2277244-4	board in nest, slot 2 (option) (Not Shown)	1	1
100	MDBRG2S ASSY	5145999	board in nest, slot 9	1	1
101	TRICON Assy	5170473	without sheet metal attachment	1	1
102	BACK PLANE	5138460		1	1
103	NEST Board JIG Assy	2315492	Tools to remove a board in the NEST Assy (Not Shown)	1	2
104	Tx CABLES Assy CSL L7	2305111-3		4	1

9-5-7 Back End Assemblies

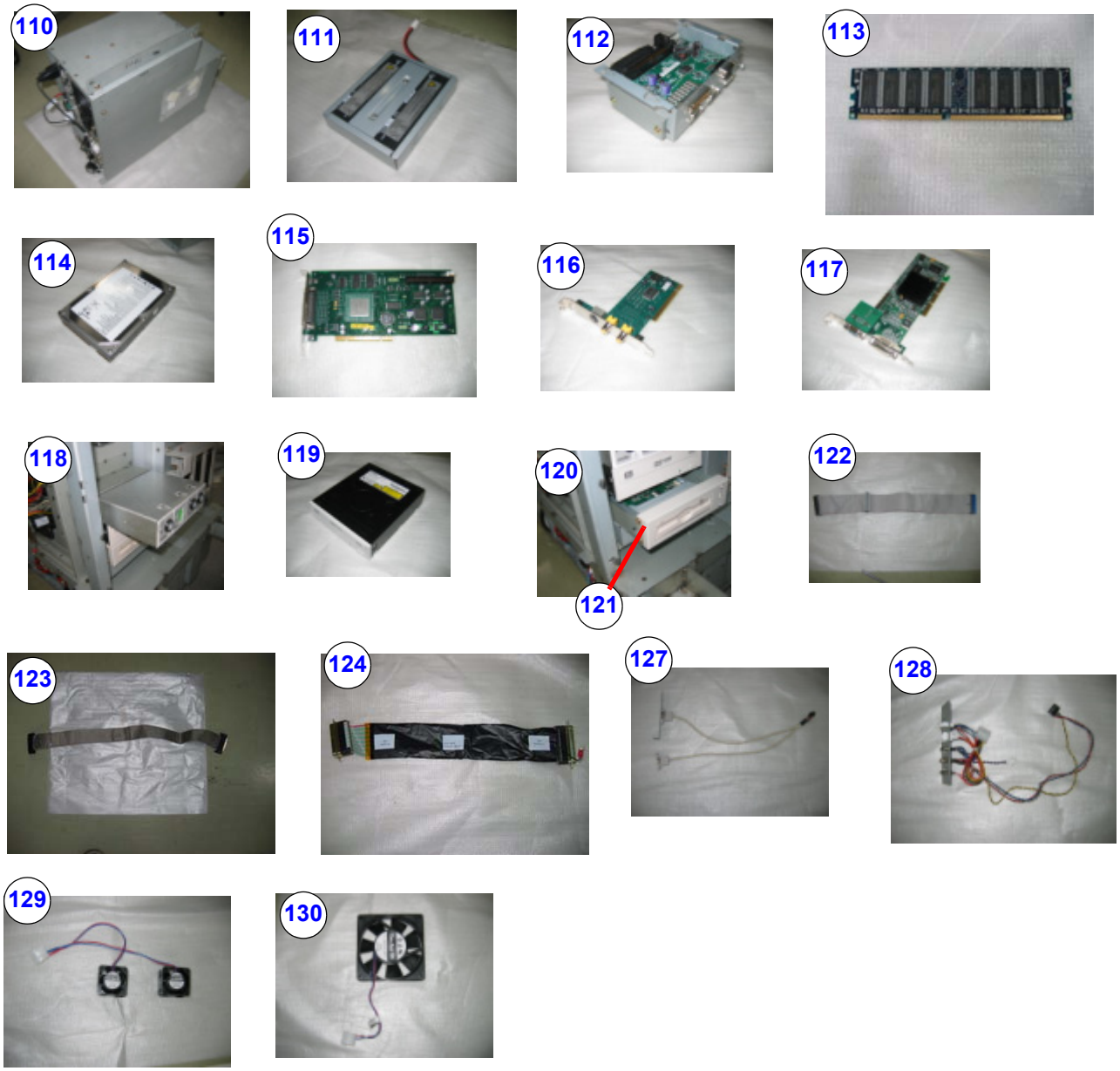
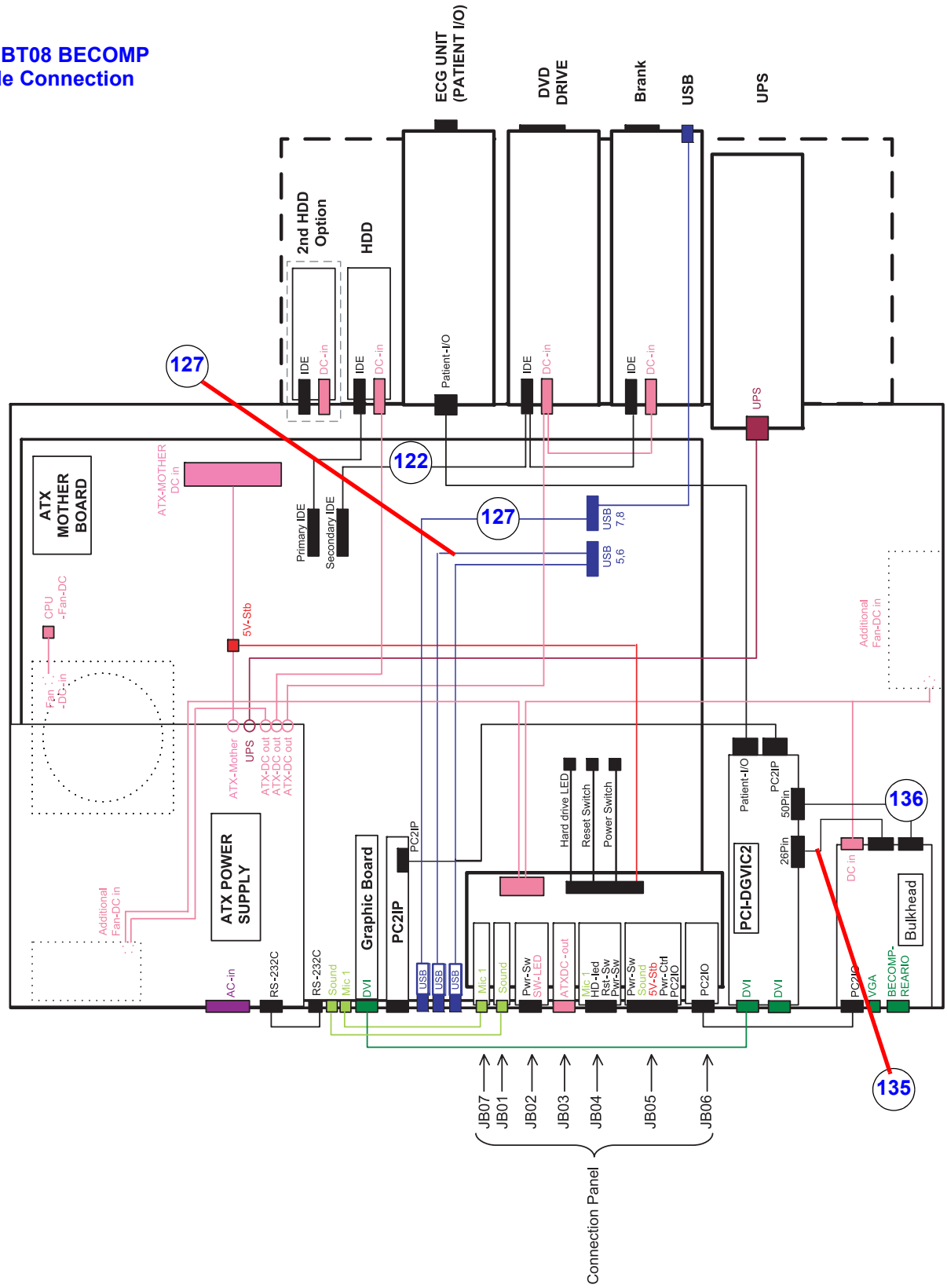


Figure 9-198 Back End Assemblies

LS6 BT08 BECOMP Cable Connection



LS6 BECOMP Cable Connection (For backward production before BT08, including the software, LCD field ugprade system to BT08 or later)

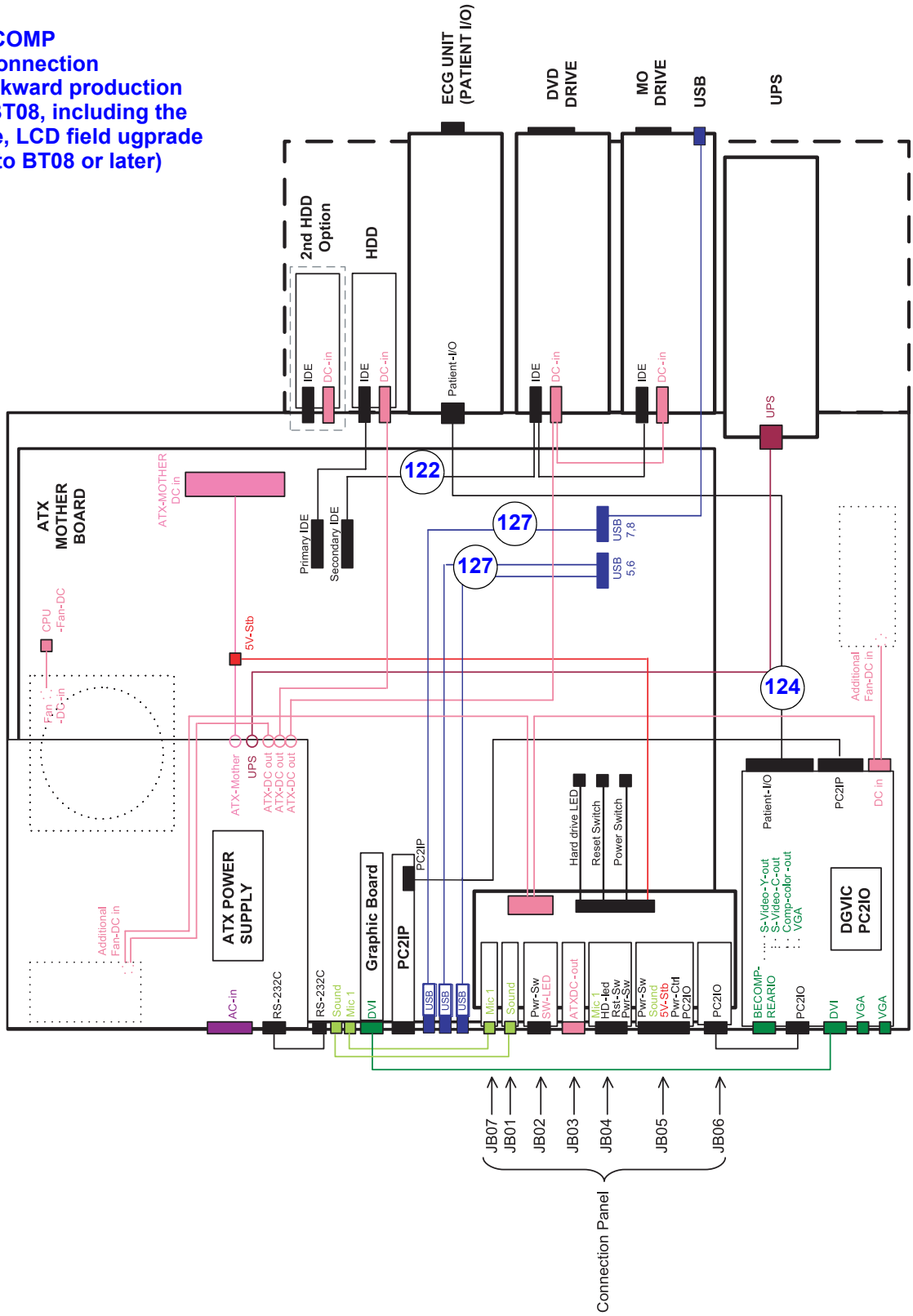


Table 9-80 Back End Assemblies

Item	Part Name	Part Number	Description	Qty	FRU
110	SVP-BECOMP3-NP	5193189	without Video card/FALCON	1	1
111	Battery Pack LOGIQ7	2304809-2		1	1
112	DGPCIO VIC 2-A ASSY	5133526	for backward production before BT08 (including the software,LCD field upgrade system to BT08 or later)	1	1
113	Extended MEMORY3 LOGIQ7	5118511	option	1	1
114	HD LOGIQ7	5118510		1	1
115	PC2IP 2B	FC200656	for backward production before BT08 (including the software,LCD field upgrade system to BT08 or later)	1	1
116	Capture Board	5147460		1	1
117	AGP BOARD ASSY	2362887	for CRT monitor system and forward production of BT08 or later	1	1
118	PAT. I/O	FA200801	option (ECG)	1	1
119	DVD drive 6	5150568-2		1	1
120	MO Drive LOGIQ7	5113449	(Not support forward production of BT08 or later)	1	1
121	MO Panel CSL LS6	5169668		1	1
122	HDD Extension Cable LOGIQ7	5122012		1	1
123	PCI Cable	2389075		1	1
124	EMC Parts L7	5149429		1	1
127	EXTENDED USB PORT	2384469		2	1
129	BECOMP3 REAR FAN CSL L7	5142743		1	1
130	PC BOX FAN ASSY	2305014		1	1
131	DUAL DVI AGP (Not Shown)	5111298-2	for backward LCD production before BT08 (including the software,LCD field upgrade system to BT08 or later)	1	1
132	PCI VGA (Not Shown)	5121039	for backward LCD production before BT08 (including the software,LCD field upgrade system to BT08 or later)	1	1

9-5-8 Rear and I/O Assemblies

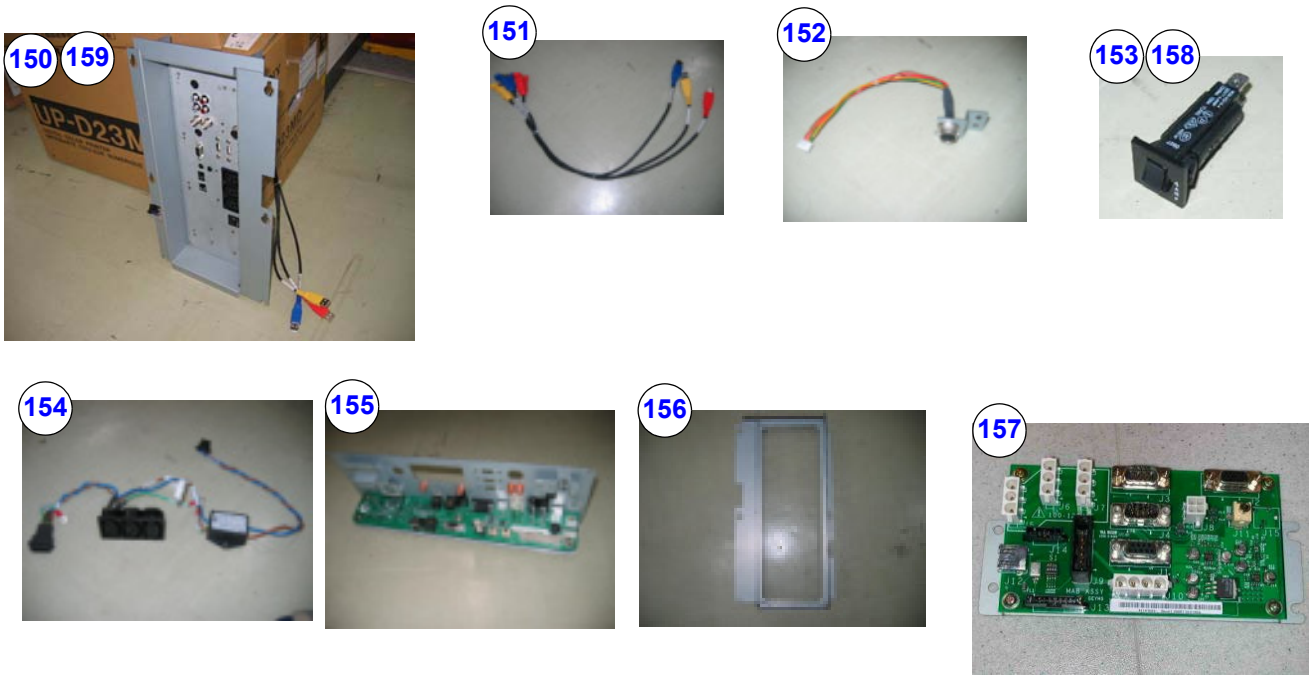


Figure 9-199 Rear and I/O Assemblies

Table 9-81 Rear and I/O Assemblies

Item	Part Name	Part Number	Description	Qty	FRU
150	REAR Assy, 100V, 120V	5170173		1	1
151	REAR PANLEL CABLE Assy CSL L6	5152284-2		1	1
152	FOOT SW CONNECTOR CSL L6	5165834		1	1
153	PROTECTOR, 100V, 120V	U0026EK		1	1
154	AC EXTERNAL OUTLET Assy	5152282		1	1
155	PEAR BOARD Assy	5149653		1	1
156	REAR CONNECTOR CASE L6	5147515		1	2
157	MAB Assy	5168873		1	1
158	PROTECTOR 220V	U0047EK		1	1
159	REAR Assy 220V	5170230		1	1

9-5-9 Power Supply

Figure 9-200 Power Supply

Table 9-82 Power Supply

Item	Part Name	Part Number	Description	Qty	FRU
170	LV UNIT	5168931	LV with cables	1	1
171	HV UNIT	5168761-2	with sheet metal	1	1
173	SSR BOARD	5118606		1	1
174	TRANS	2373331-2		1	1
175	FAN Assy	5168756		1	1
176	AC INLET Assy 100V, 120V	5169662		1	1
177	AC NOISE FILTER, 100V, 12V	5168999	Board + Filter + Plate + Cable	1	1
178	LHV - BP CABLE Assy CSL L6	5168928	Cable Assy + Plate	1	1
179	AC PANEL CABLE Assy CSL L6	5168815	Cable + Plate	1	1

Table 9-82 Power Supply

Item	Part Name	Part Number	Description	Qty	FRU
180	HV - TRICON CABLE CSL L6	5152274		1	1
181	FUSE	2315585		1	1
182	SSR CABLE Assy CSL L6	5152285		1	1
183	FAN CONNECT CABLE CSL L6	5159703		1	1
184	AC INLET Assy 220V	5169695		1	1
185	FUSE HOLDER CAP	5118614		1	1
186	FUSE HOLDER	5118613		1	1

9-5-10 Other Mechanical Assemblies

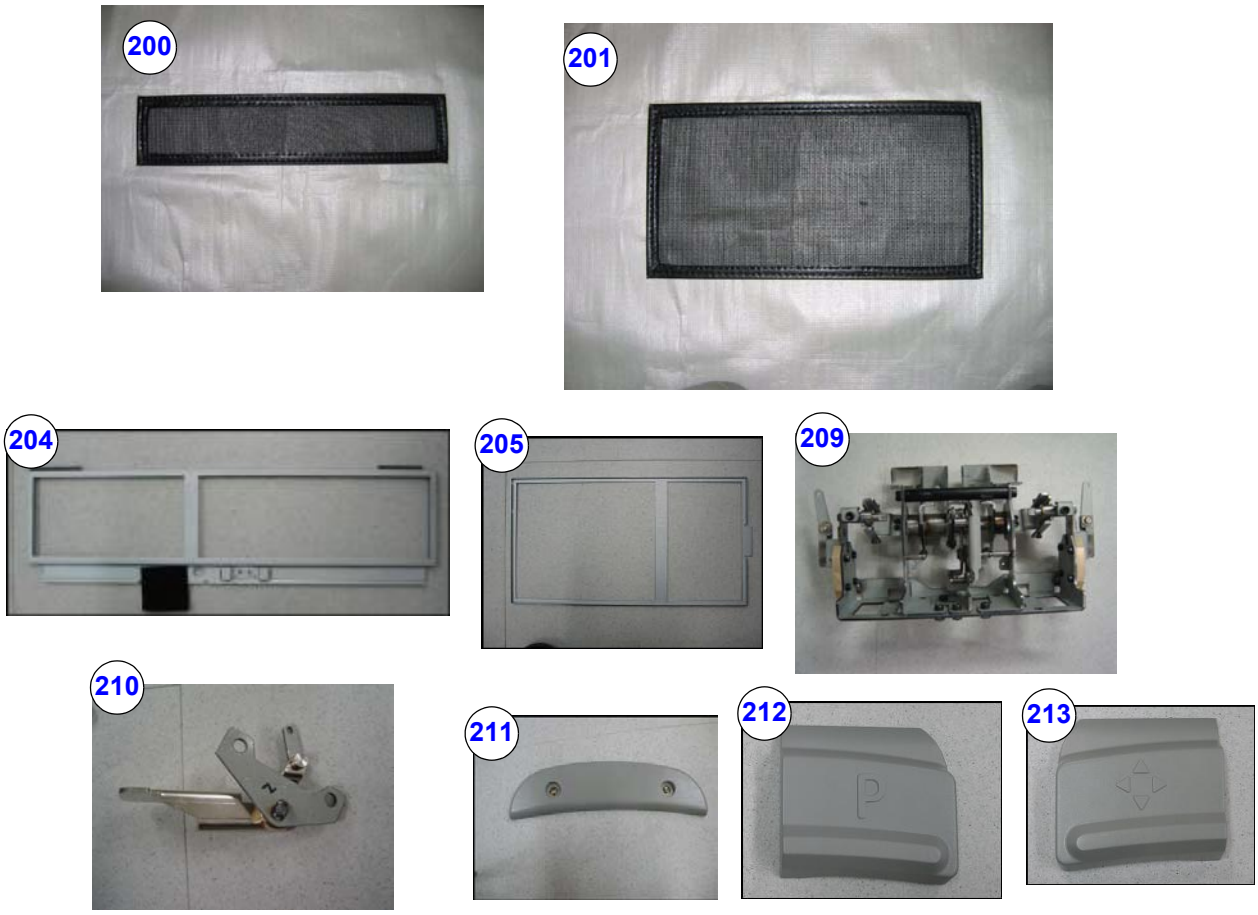


Figure 9-201 Other Mechanical Assembles

Table 9-83 Other Mechanical Assembles

Item	Part Name	Part Number	Description	Qty	FRU
200	Side Air Filter	5147508		1	1
201	Bottom Air Filter	5147506		1	1
204	Air Filter tray Side	5176611		1	1
205	Air Filter tray Bottom	5147505		1	1
206	Caster Free	5233772	(Not Shown)	1	1
207	Caster Swvl Lock	5233773	(Not Shown)	1	1
208	Caster Total Lock	5233774	(Not Shown)	2	1
209	Front Pedal Assy	5172590	with 2 lock pin	1	1
210	Rear Pedal Assy	5172617	with 1 lock pin	1	1
211	Front Crescent Pedal Cover	5167902		1	2

Table 9-83 Other Mechanical Assembles

Item	Part Name	Part Number	Description	Qty	FRU
212	Front Pedal Cover (Park)	5172857		1	2
213	Front Pedal Cover (Release)	5172962		1	2
214	Caster Assy 3	2381035-3	Caster Set (Free:1, Swivel:1, Lock:2, Screw:16)	1	2

9-5-11 Misc. Cables

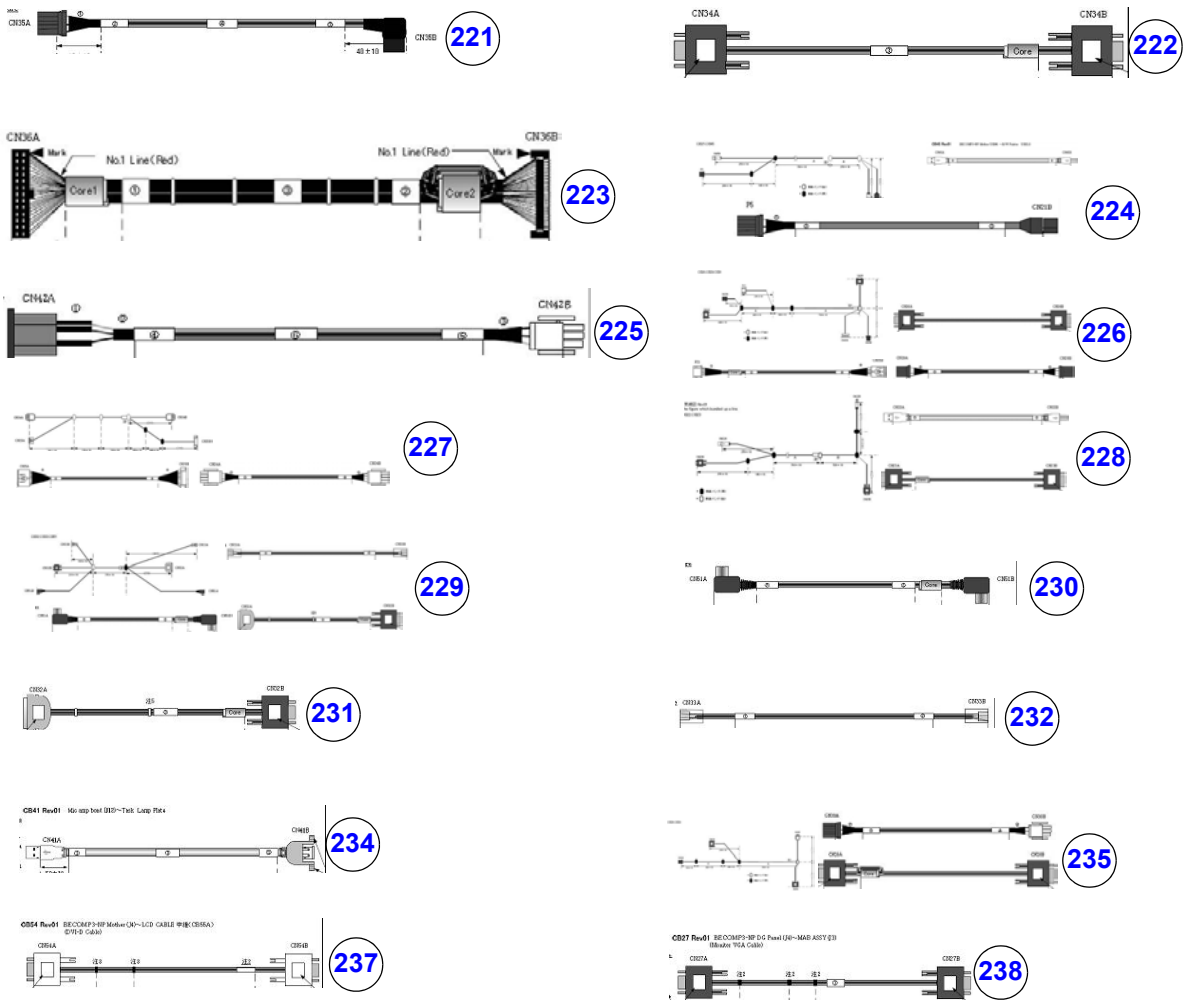
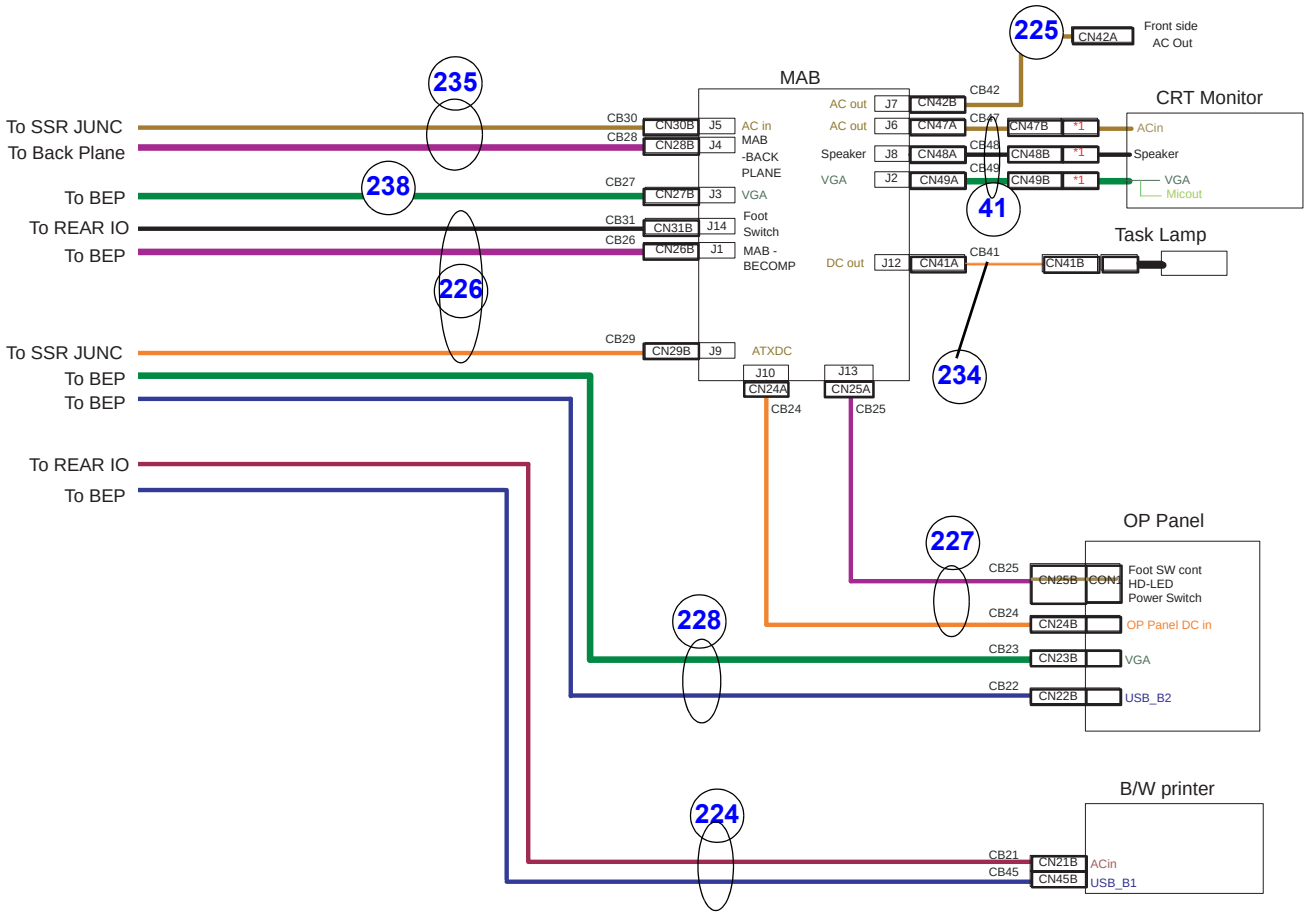
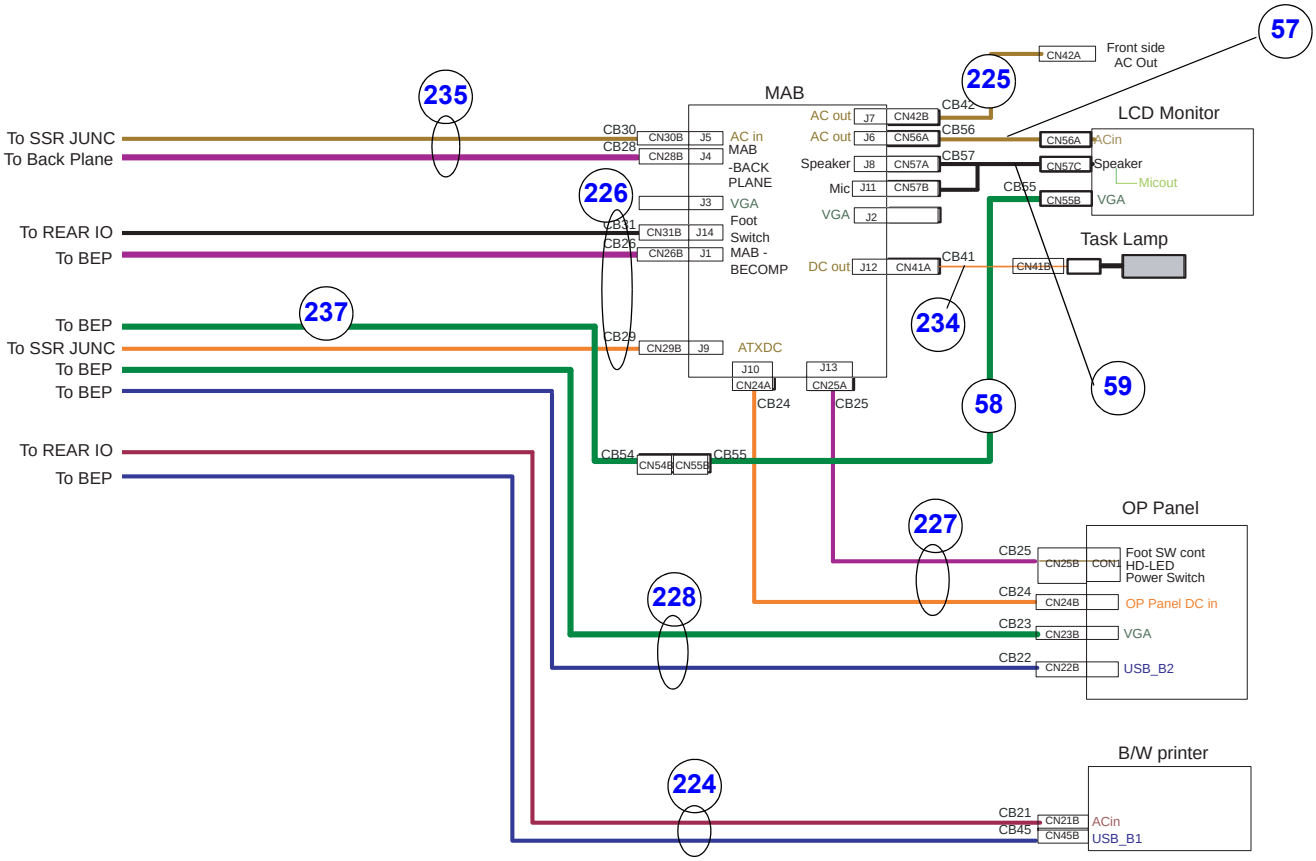


Figure 9-202 Misc. Cables

CRT Diagram


225
CN42A
Front side
AC Out
MAB
CRT Monitor
235
To SSR JUNC
To Back Plane
CB30
CB28
CN30B
CN28B
J5
J4
AC in
MAB
-BACK
PLANE
AC out
AC out
Speaker
VGA
J7
J6
J8
J2
CN42B
CN47A
CN48A
CN49A
CB42
CB47
CB48
CB49
CN47B
CN48B
CN49B
*1
ACin
Speaker
VGA
Micout
238
To BEP
CB27
CN27B
J3
VGA
41
To REAR IO
To BEP
CB31
CB26
CN31B
CN26B
J14
J1
Foot
Switch
MAB -
BECOMP
Task Lamp
DC out
J12
CN41A
CB41
CN41B
226
To SSR JUNC
To BEP
To BEP
CB29
CN29B
J9
ATXDC
J10
CN24A
J13
CN25A
CB24
CB25
234
To REAR IO
To BEP
OP Panel
227
CB25
CN25B
CON1
Foot SW cont
HD-LED
Power Switch
228
CB24
CN24B
OP Panel DC in
CB23
CN23B
VGA
CB22
CN22B
USB_B2
B/W printer
224
CB21
CB45
CN21B
CN45B
ACin
USB_B1

LCD Diagram


57
CN42A
Front side
AC Out
225
MAB
235
LCD Monitor
To SSR JUNC
To Back Plane
CB30
CB28
CN30B
J5
AC in
MAB
-BACK
PLANE
AC out
J7
CN42B
CB42
AC out
J6
CN56A
CB56
CN56A
ACin
Speaker
J8
CN57A
CB57
CN57C
Speaker
Micout
Mic
J11
CN57B
CB55
CN55B
VGA
226
J3
VGA
Foot
Switch
MAB -
BECOMP
VGA
J2
To REAR IO
To BEP
CB31
CB26
CN31B
J14
CN26B
J1
Task Lamp
DC out
J12
CN41A
CB41
CN41B
237
234
To BEP
To SSR JUNC
To BEP
To BEP
CB29
CN29B
J9
ATXDC
J10
CN24A
J13
CN25A
CB24
CB25
58
59
To REAR IO
To BEP
CB54
CN54B
CN55B
CB55
OP Panel
227
CB25
CN25B
CON1
Foot SW cont
HD-LED
Power Switch
228
CB24
CN24B
OP Panel DC in
CB23
CN23B
VGA
CB22
CN22B
USB_B2
B/W printer
224
CB21
CB45
CN21B
CN45B
ACin
USB_B1

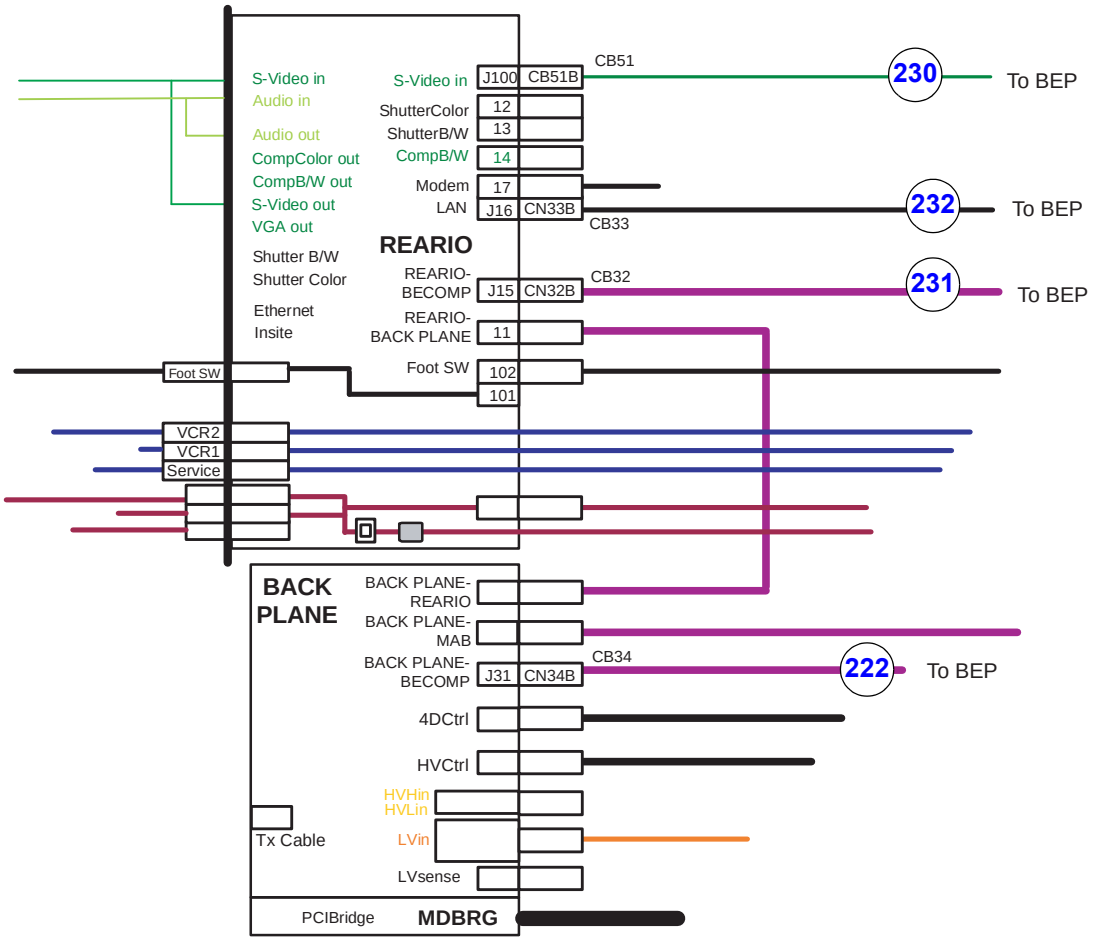

S-Video in
Audio in
Audio out
CompColor out
CompB/W out
S-Video out
VGA out
Shutter B/W
Shutter Color
Ethernet
Insite
S-Video in
ShutterColor
ShutterB/W
CompB/W
Modem
LAN
REARIO
REARIO-
BECOMP
REARIO-
BACK PLANE
Foot SW
J100
CB51B
12
13
14
17
J16
CN33B
J15
CN32B
11
102
101
CB51
CB33
CB32
230
232
231
To BEP
To BEP
To BEP
Foot SW
VCR2
VCR1
Service
BACK
PLANE
BACK PLANE-
REARIO
BACK PLANE-
MAB
BACK PLANE-
BECOMP
J31
CN34B
CB34
222
To BEP
4DCtrl
HVCtrl
HVHin
HVLin
LVin
LVsense
Tx Cable
PCIBridge
MDBRG

Table 9-84 Misc. Cables

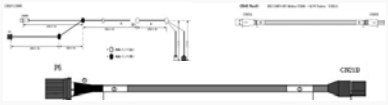
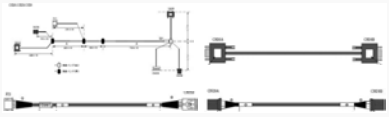
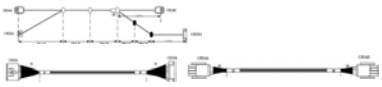
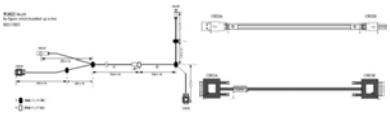
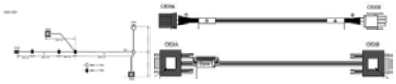
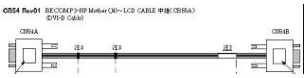
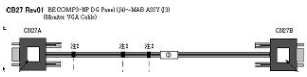
Item	Part Name	Part Number	Description	Qty	FRU
221	ATX POWER CABLE CSL L6	5152269	 CB35	1	1
222	BP - PC CABLE CSL L6	5152270	 CB34	1	1
223	BP - REARIO CABLE CSL L6	5152271	 CB36	1	1
224	BW CABLE Assy CLS L6	5152272-2	 CB21+CB45	1	1
225	KEYBOARD AC OUT CABLE CLS L6	5152276	 CB42	1	1
226	MAB CABLE Assy CLS L6	5152278	 CB26+CB29+CB31	1	1
227	MAB - OP CABLE Assy CSL L6	5152279	 CB24+CB25	1	1
228	OP PANEL CABLE Assy CSL L6	5152280	 CB22+CB23	1	1

Table 9-84 Misc. Cables

Item	Part Name	Part Number	Description	Qty	FRU
230	S-VIDEO CABLE CSL L6	5168059	 CB51	1	1
231	REARIO-PC CABLE CSL L6	5168576	 CB32	1	1
232	LAN CABLE CSL L6	5168194	 CB33	1	1
234	USB LAMP CABLE CSL L6	5152286	 CB41	1	1
235	MAIN MONITOR CABLE Assy CSL L6	5155276	 CB28+CB30	1	1
237	LCD DVI CABLE BOTTOM CSL L6	5159750	 CB54	1	1
238	CRT VGA CABLE CSL L6	5165932	 CB27	1	1

9-5-12 Option

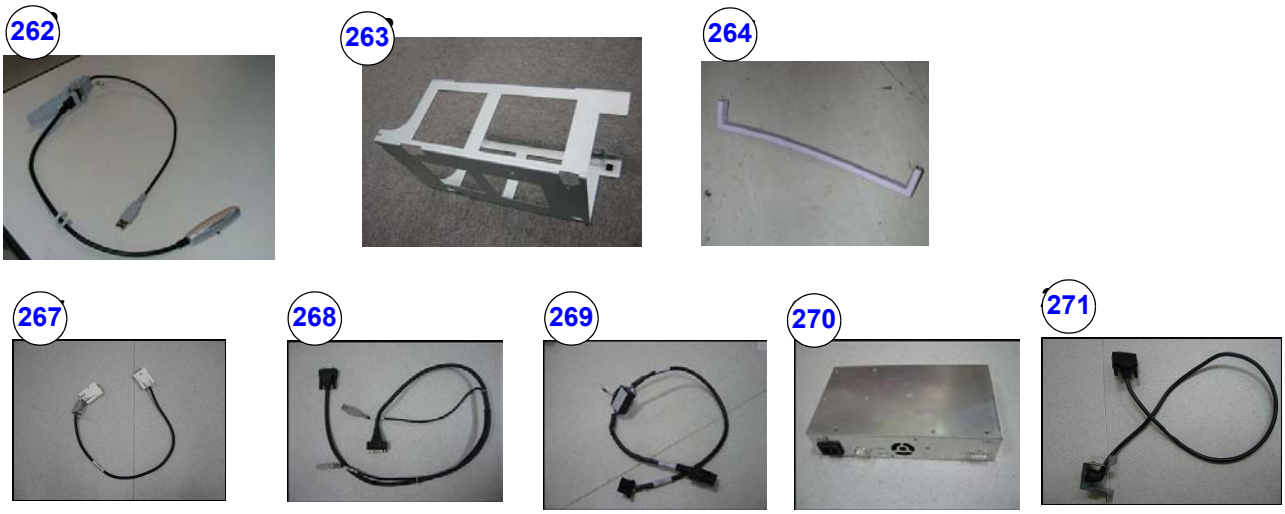


Figure 9-203 Option

Table 9-85 Option

Item	Part Name	Part Number	Description	Qty	FRU
262	Task Lamp	5171887		1	1
263	Printer Tray	5177332		1	1
264	Printer Tray Protector	2354851		1	2
265	Belt Set	5172019	(Not Shown)	1	2
266	TOP DEVICE TRAY	5167984	(Not Shown)	1	2
267	4D-MOTHER2 CABLE	5138724		1	1
268	4DBOX CABLE ASSY	5138723		1	1
269	4D AC Cable CSL L7	5147891		1	1
270	4D MOTOR CONTROLLER BOX	2372904		1	1
271	MOTOR CONTROL CABLE with BRKT L6	5171790		1	1
272	WIRELESS RECEIVER SENNHEISER	5115162	EK100G2-A (Not Shown)		
273	Battery Eliminator LOGIQ7	5123379	(Not Shown)		
274	Accessories for Parts Setting	5121042	(Not Shown)		
275	AC Adapter for Wireless Receiver	5122602	(Not Shown)		
276	AC Cable for Wireless Kit LOGIQ7	5121762	(Not Shown)		
277	USB Extension Cable LOGIQ7	5121749	(Not Shown)		

Table 9-85 Option

Item	Part Name	Part Number	Description	Qty	FRU
278	CABLE-AUDIO OUTPUT FROM RCVR	2383768	(Not Shown)		
279	WIRELESS TRANSMITTER WITH CHARGING CONTACTS SENNHEISER	5116453	SK300G2-A (Not Shown)		
280	Rechargeable Battery Pack for Wireless Transmitter	5116454	Sennheiser BA2015G2 (Not Shown)		
281	AC Adapter for Battery Recharger LOGIQ7	5123383	(Not Shown)		
282	MICROPHONE-OVER THE EAR STYLE	2383779	(Not Shown)		
283	BATTERY RECHARGER STATION FOR WIRELESS TRANSMITTER	5116446	SENNHEISER L2015G2 (Not Shown)		
284	INTERNATIONAL POWER CONNECTOR KIT	2392844	(Not Shown)		
285	Wireless Receiver for JPN LOGIQ7	5121037-2	(Not Shown)		
286	Battery Eliminator for JPN LOGIQ7	5123378	(Not Shown)		
287	Wireless Transmitter for JPN LOGIQ7	5121036-2	(Not Shown)		
288	Battery for Wireless Transmitter JPN LOGIQ7	5123380	(Not Shown)		
289	Battery Charger for JPN LOGIQ7	5123382	(Not Shown)		
-	LQ-MD800P	5120592	DVD Recorder, 120V AC (PAL/NTSC compatible)		
-	LQ-MD800E	5120593	DVD Recorder, 220V AC (PAL/NTSC compatible)		

Section 9-6
Probes

Refer to Section 3-4 - Completing the Installation for available probe list.

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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.**

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™ S6 should be serviced and what items need attention. It is important you have your LOGIQ™ S6 serviced as scheduled in order to retain its high level of safety, dependability and performance.

Your GE Service Representative knows your LOGIQ™ S6 best and can provide competent, efficient service. Please contact us for further information and to schedule GE Healthcare Ultrasound to perform this service for you.

The services and intervals shown in the maintenance schedule assumes that you use your LOGIQ™ S6 for an average patient load (10-12 per day) and not used as a primary "mobile unit".

10-3-1How 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				•	
Surface Probe Leakage Current Checks				•	
Endocavity Probe Leakage Current Checks					
Transesphongeal Probe Leakage Current Checks					
Surgical Probe Leakage Current Checks					
Measurement Accuracy Checks				•	
Probe/Phantom Checks				•	

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

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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, Interoperative, and TV/TR probes often have special considerations and individual probe user manuals. For TEE, Interoperative, and TV/TR 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.

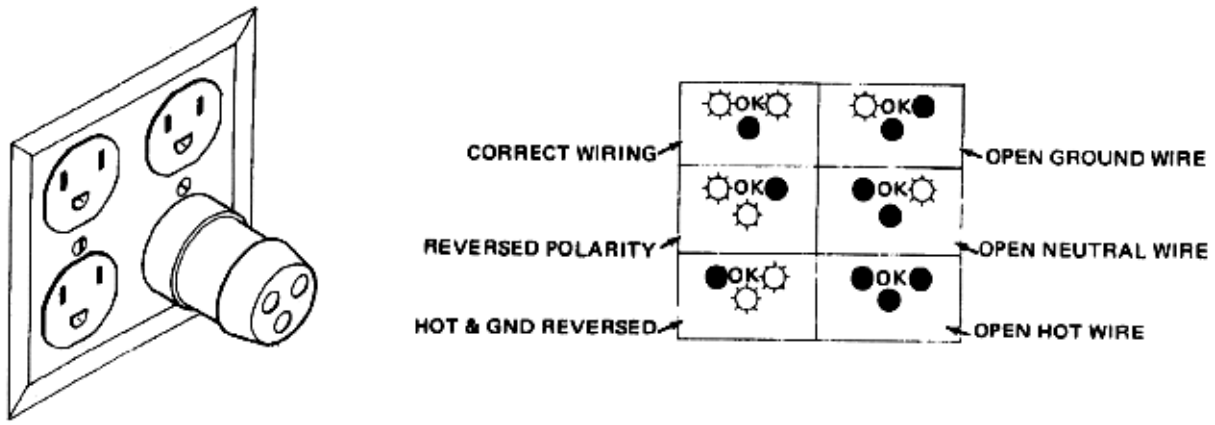
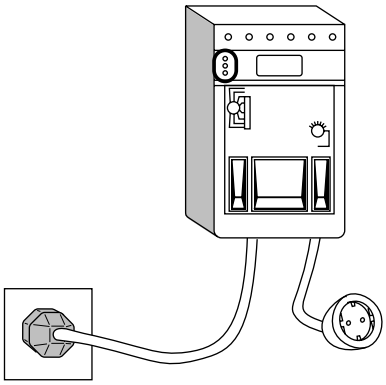


Figure 10-1 Typical Alternate Outlet Tester

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.



Combination of Lights	● ☼ ☼	☼ ☼ ●	● ☼ ●	● ● ●	☼ ● ☼
Condition	CORRECT WIRING	REVERSE POLARITY	OPEN GROUND	OPEN HOT	HOT/GROUND REVERSED

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 60601-1.

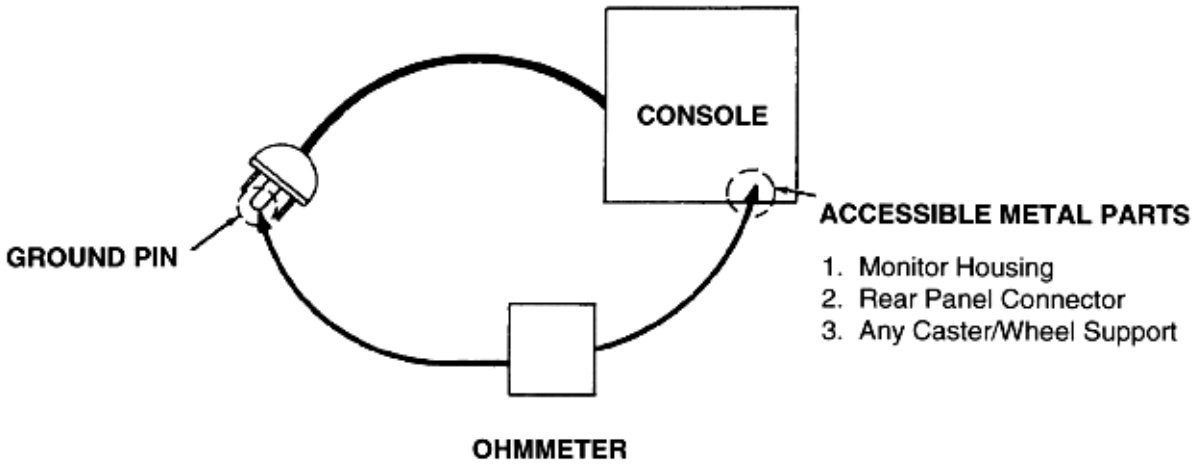


Figure 10-3 Ground Continuity Test

10-7-4-1 Meter Procedure

Follow these steps to test the ground wire resistance.

1.) Turn the LOGIQ™ S6 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™ S6 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 60601-1 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.)

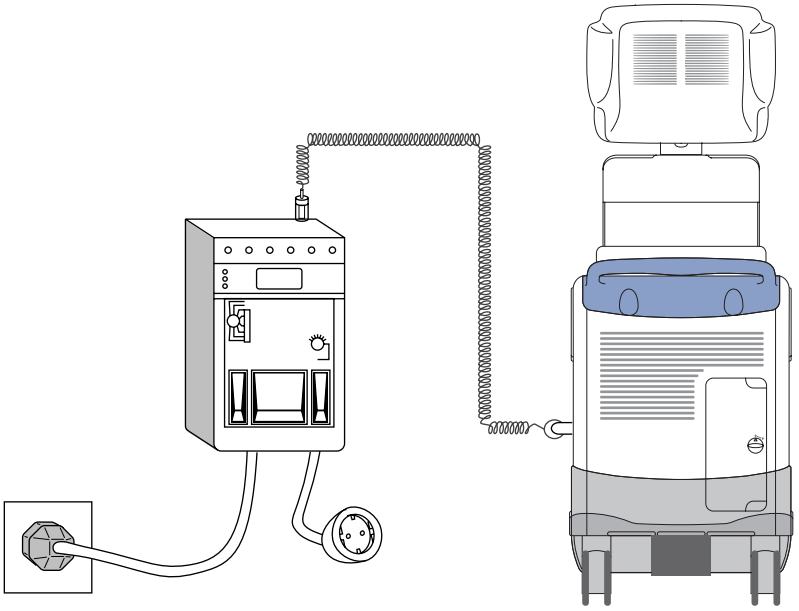


Figure 10-4 Dale 600 Ground Continuity Test

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.

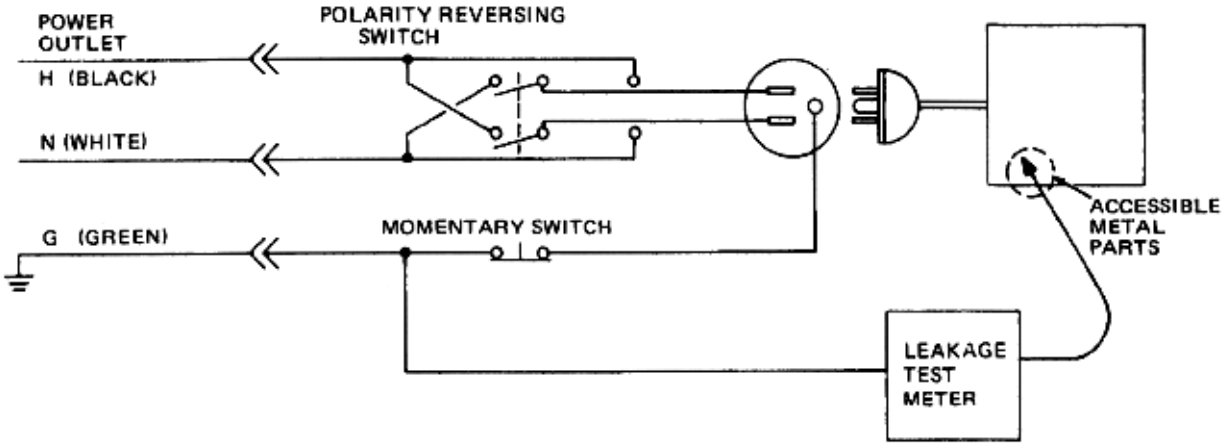


Figure 10-5 Set Up for Chassis Source Leakage Current, IEC 601-1 Clause 19 - Continuos Leakage Currents and Patient, Auxiliary Currents

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 60601-1. 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™ S6 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™ S6.
4.) Set the tester's “FUNCTION” switch to CHASSIS position.

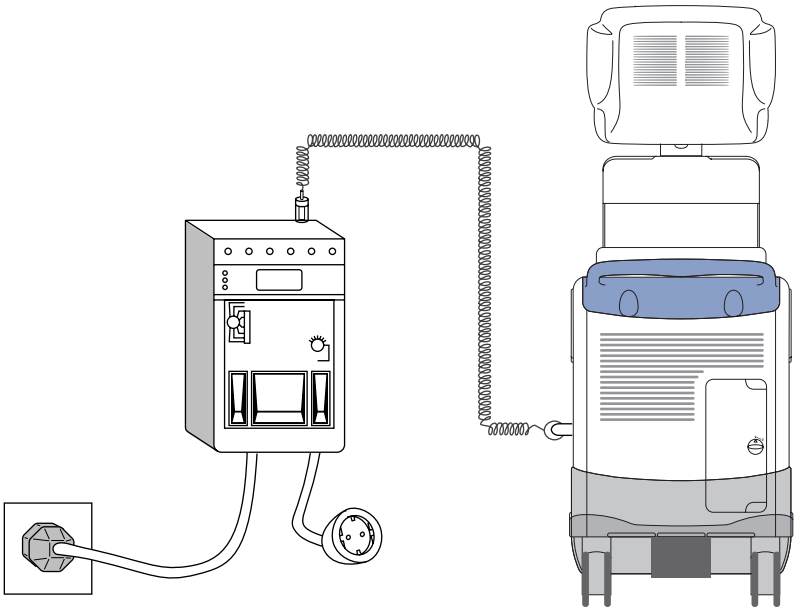


Figure 10-6 Ground and Chassis Leakage Current Test

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.

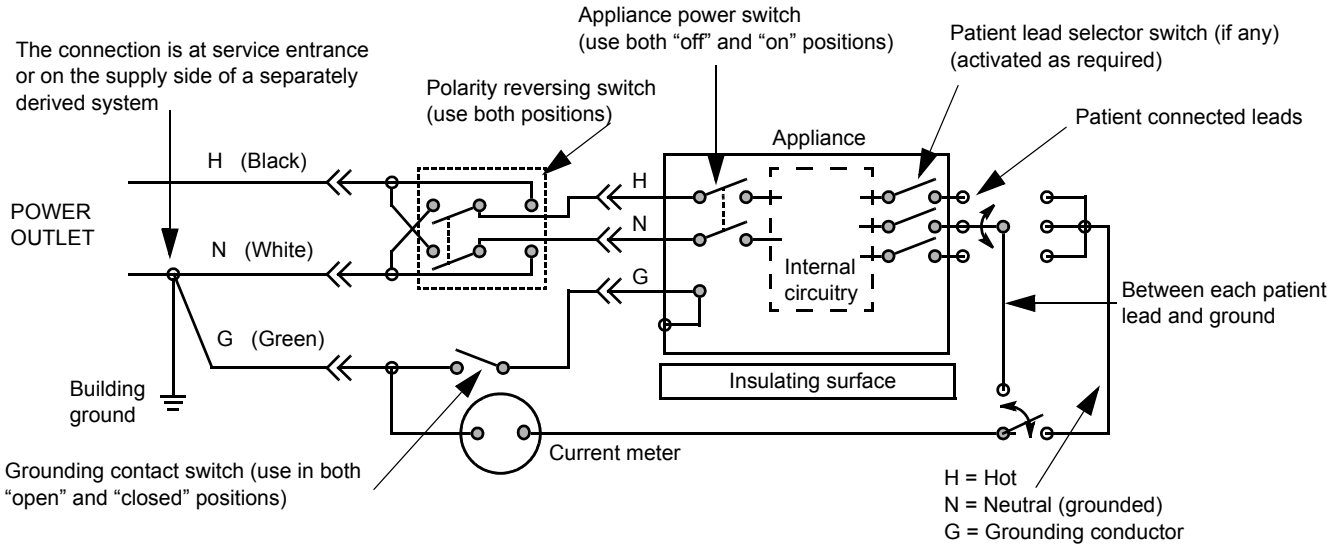


Figure 10-7 Test Circuit for Measuring Non-Isolated Patient Leads

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™ S6 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™ S6 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)

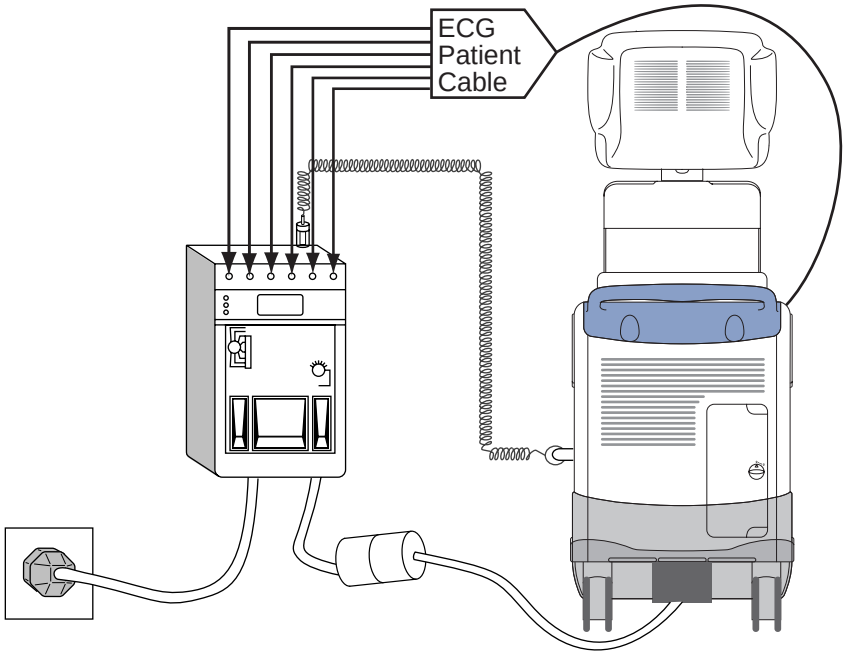


Figure 10-1 ECG Leakage Current Test

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 fGw 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.

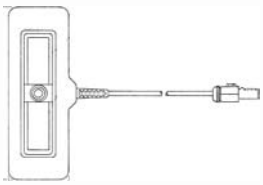
10-7-9-2 Test Equipment

Table 10-23 Test Equipment kits (Chapter 10 LOGIQ™ S6 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.

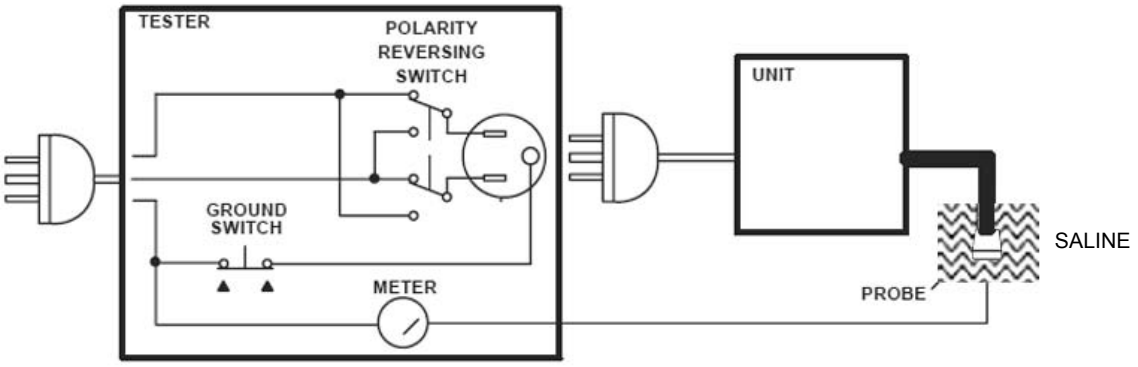


Figure 10-8 Set Up for Probe Leakage Current

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™ S6 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™ S6 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™ S6 unit.
8.) After the LOGIQ™ S6 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".

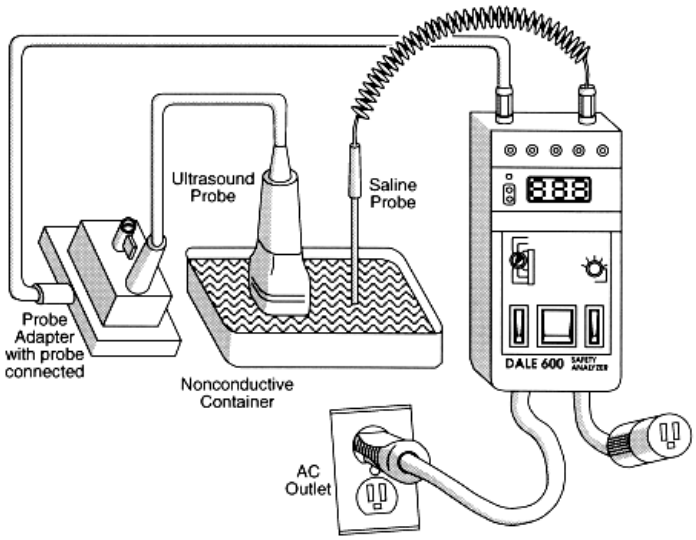


Figure 10-9 Probe Isolation (Sink) Current Test

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™ S6

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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