

Date: Jan 18,2002
To: Holders of DIRECTION 2275665
Subject: **DIRECTION 2275665**
Enclosed are the REV 4 update pages.

SUMMARY OF CHANGES

- Cable Interconnect List and Raceway description was updated according to the regulation.

UPDATE INSTRUCTIONS(This revision can only be inserted in Rev 3 manual);
To properly update your manual, perform the update instructions on the list below.

TAB	REMOVED PAGES	INSERTED PAGES
–	Title Page A to B	Title Page A to B
2	2– 13 to 2–14	2– 13 to 2–14
4	4–13 to 4–14	4–13 to 4–14
6	6–7 to 6–18	6–7 to 6–18

Yutaka Masumo

GEYMS TP GROUP–MR



GE Medical Systems

Technical Publications

Direction 2275665

Revision 4

Signa[®] Ovation Pre-Installation

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Operating Documentation

DAMAGE IN TRANSPORTATION

All packages should be closely examined at time of delivery. If damage is apparent, have notation of "bad order" placed by the delivering driver on all copies of freight or express bill. If damage is of a concealed nature, notify transportation agent as soon as possible to make an "inspection report of damage" but in any event not later than 15 days after delivery. A transportation company usually will not pay a claim for concealed damage if an inspection is not requested within this 15 day period. Complete instructions regarding claim procedure are found in section "S" of the Policy & Procedure Bulletins.

If shipment was handled by moving van service – uncrate – call Traffic – Milwaukee immediately when any damage is found. Do not attempt to call any local agent. At this time be ready to describe type of damage, type of equipment, serial numbers and if possible the order number.

The above paragraph is in regard to equipment requiring installation only, and does not apply to supply items. The F.O.B point for these items is as shown in the Price Book.



GE Medical Systems

GE Medical Systems: Telex 3797371
P.O. Box 414, Milwaukee, Wisconsin 53201 U.S.A.
(Asia, Pacific, Latin America, North America)

GE Medical Systems — Europe: Telex 698626
283, rue de la Minere, B.P.34, 78533 Buc Cedex
France

REVISION HISTORY

REV	DATE	PRIMARY REASON FOR CHANGE
0	Oct 11, 2000	Initial release
1	Dec 28, 2000	Product Name was changed to Signa Ovation. Added Cooling Cabinet Information. Miscellaneous Correction.
2	May 18, 2001	Update the Magnet Load Pattern. Miscellaneous Correction.
3	Oct 26, 2001	Added the Swing Table Style B ware plate location in Sec 2. Added MDP Document in Sec 11. Miscellaneous Correction.
4	Jan 18, 2002	Cable Interconnect List and Raceway description was updated according to the regulation.

LIST OF EFFECTIVE PAGES

PAGE	REV	PAGE	REV	PAGE	REV	PAGE	REV	PAGE	REV	
Title page	4	1-9	1	3-3 to 3-10	1	6-2	blank	PREINSTALLATION CHECKLIST / TOOLS AND TEST EQUIPMENT Tab 9		
GE Logo page	-	1-10	2			6-3 to 6-6	1			
Direction 15214	5	1-11	1	SITE ENVIRONMENT Tab 4		6-7	4			
a to b	1	1-12	blank	4-1 to 4-13	1	6-8 to 6-9	1			
c	4			4-14	4	6-10 to 6-17	4			
d	blank			4-15 to 4-22	1	6-18	1			
A	4	ROOM LAYOUTS Tab 2							9-1	1
B	blank	2-1	1						9-2	blank
i.	1	2-2	blank	POWER REQUIREMENTS Tab 5		RF SHIELD ROOM Tab 7			9-3 to 9-10	1
ii.	3	2-3 to 2-12	1	5-1	3	7-1	1		SAFETY CONSIDERATIONS Tab 10	
iii.	1	2-13	4	5-2	blank	7-2	blank	10-1	1	
iv.	3	2-14 to 2-19	1	5-3 to 5-4	1	7-3 to 7-18	1	10-2	blank	
v to viii.	1	2-20	2	5-5	3	7-19	3	10-3 to 10-5	1	
		2-21	1	5-6 to 5-8	1	7-20 to 7-34	1	10-6	blank	
		2-22 to 2-44	3	5-9 to 5-18	3					
SYSTEM CONFIGURATION Tab 1		MAGNETIC FIELD CONSIDERATIONS Tab 3		INTERCONNECT DATA Tab 6		SHIPPING AND DELIVERY DATA Tab 8		MAIN DISCONNECT PANEL Tab 11		
1-1	1	3-1	1	6-1	1	8-1	1	11-1	3	
1-2	blank	3-2	blank			8-2	blank	11-2	blank	
1-3 to 1-7	1					8-3 to 8-14	1	11-3 to 11-28	3	
1-8	3									

2-6 CABLING CONSIDERATIONS

Several different methods for running cables are listed below and the customer should carefully consider the advantages and disadvantages of each.

Note

Customer current and future system utilization should be considered when determining method of running cables, i.e. surface floor duct or access floor behind magnet may not be acceptable if customer access is desired around the entire magnet.

Care must be taken to protect interconnecting cords and cables from physical damage (including water). Branch circuit conductors must be enclosed in metal raceway or metal wireway when concealed or when installed under raised flooring.

Consult local/national code for interconnects separation requirements (i.e. signal, power, etc.).

Note

If National Electric Code (NEC) is applied at the site, the following items must be complied.

1. MRI systems shall use non-ferrous metal raceways, covers, fasteners, in all exam/magnet rooms.
2. Raceways shall be certified/rated for electric power purposes.
3. Raceway minimum size shall be certified/rated for electric power purpose.
4. Raceways minimum size shall 18h x 31/2d, and divided into 3 equal partitions of total cross-sectional area.
5. PVC or other non-conductive material are NOT a substitute metal raceways.

2-6-1 Floor Duct

Recessed floor duct has advantages when used within a single room or two adjacent rooms. Floor duct combines a neat functional appearance with accessibility and room for expansion. The disadvantage is the amount of work required to install it, which is generally prohibitive in old installations. Floor ducts can be used in the Magnet Room, however, they must meet the requirements in **Section 7, RF SHIELDED ROOM**.

2-6-2 Raceway

Raceways offer some unique advantages when routing cables. It is very practical to use in existing structures since it is surface-mounted. There is no problem with pre-terminated cables since the entire raceway system can be opened. Raceway systems are relatively easy to expand as compared to other means of routing cables. However, surface-mounted raceways are not recommended for routing cables within the Magnet Room due to the number/size of cables and the trip hazard of the raceway.

2-6-3 Raised Flooring

Raised flooring is recommended for use in both the Equipment and Magnet Rooms due to the number and size of cables in the system. Cable accessibility and ease of alteration are just a few advantages of using raised flooring. Floor duct with dividers placed above the Magnet Room floor but beneath the raised flooring is a convenient method of separating electrical lines from water lines. However, if the area under the raised flooring is used for an air plenum, cables may have to be in raceway depending on local and national codes.

Note

The Signa system interconnecting cables in the Equipment room are FT4 rated, not air plenum rated.

2-6-4 Conduit

Conduit has some important restrictions when used with a MR system. The primary problem is that the majority of cables used are pre-terminated, which greatly simplifies interconnection, but makes cabling difficult because of the added dimensions of the connectors. As a consequence, conduit size must allow for the dimension of the connectors and the possibility of additional cables being added as the system is upgraded in the future. Always size the conduit to allow the cable to pass through with all other cables already in the conduit. Conduit should not be used for running the main GE MR system cables in the Magnet Room due to the number and size of conduits needed.

Note

MR personnel must have an unobstructed path from the patient table to the area directly behind the Magnet. Therefore cable routing methods must not interfere with this pathway.

Cable runs in the Magnet Room as well as throughout the system must be in accordance with local and national codes.

2-7 FLOORING

2-7-1 Cable Routing Areas

Use of a raised floor with covering to minimize static discharge is recommended in the Equipment Room and the portion of the Magnet Room for cable routing. For safety purposes in the Magnet Room, it is required that the raised flooring be made of aluminum. Depending on local and national codes, the area under the raised floor may possibly be used as an air conditioning plenum. If the area under the raised floor is to be used as an air plenum and for cable routing, 10 in. (254mm) of clear space from the underside of the raised floor to the permanent floor is recommended. Cabling, plumbing (water lines), etc. routed under the raised floor may affect air flow and needs to be considered if used as an air conditioning plenum. Also check local and national codes for fire protection requirements under raised floor.

Note

The Signa system interconnecting cables in the Equipment room are FT4 rated, not air plenum rated.

Ensure that the raised flooring, if used, can support the equipment and any transport device needed to move the equipment.

2-7-2 Finished Floor

The finished floor in the Magnet Room should be waterproof and be a conductive type flooring to reduce the possibility of a static discharge. Hard surface finished flooring is required in the Magnet Room for operation of the Swing Patient Table. Information on RF shielded room floor requirements can be found in Section 7, RF SHIELDED ROOM.

If carpeting is used in the Control Room, it should either be anti-static carpeting or treated with an anti-static solution.

4-10-3 Distances For AC Power Lines, Transformers And Electric Motors

In general most AC equipment in sites is not an issue if it kept outside the 5 gauss line. If a site has large AC equipment (building mains, substations, electric trains, or subways) calculate or measure the field along the Z axis at the magnet isocenter.

Electrical currents flowing in high voltage power lines, transformers, and large generators or motors near the magnet can affect the magnetic field homogeneity that is essential to the proper performance of the MR System. Although it is highly unlikely that induced magnetic fields will be a problem, possible sources of AC interference are identified by GE during the site evaluation visit. GE will analyze this information and advise if further shielding or site rearrangement are necessary.

Magnetic field interference at 50 or 60 Hz must not exceed 1.8 milligauss RMS at the magnet location. The following equation can be used as a general guide in determining allowable current in feeder lines at a given distance from the magnet isocenter.

$$I = \frac{aX^2}{S}$$

where:

a= Coefficient

I= Maximum allowable RMS single phase current (in amps) or maximum allowable RMS line current (in amps) in three phase feeder lines

S=Separation (in meters) between single phase conductors or greatest separation between three phase conductors

X=Minimum distance (in meters) from the feeder lines to isocenter of the magnet

4-11 CONSTRUCTION MATERIALS

The following recommendations are for maintaining field homogeneity of the magnet. All construction must comply with local and national building codes.

Note

When welding in an MR room with system equipment installed, the return path for the welding must be in very close proximity to the welding. The close proximity is needed to make sure the welding currents do not cause damage to the system. Never use the building structure as a return path for welding.

Note

If National Electric Code (NEC) is applied at the site, the following items must be complied.

1. MRI systems shall use non-ferrous metal raceways, covers, fasteners, in all exam/magnet rooms.
2. Raceways shall be certified/rated for electric power purposes.
3. Raceway minimum size shall be certified/rated for electric power purpose.
4. Raceways minimum size shall 18h x 31/2d, and divided into 3 equal partitions of total cross-sectional area.
5. PVC or other non-conductive material are NOT a substitute metal raceways.

4-11-1 Floors

The magnet room floor should be poured slab on grade with polypropylene fiber impregnated or epoxy reinforced concrete. Non-magnetic stainless steel rebar or fiberglass rebar may also be used as a reinforcing material. Steel reinforcing rods or corrugated iron sheets should be avoided especially within the 50 gauss for the 0.35T magnet. If these materials exist at the site, or if installation of these materials is contemplated, they must be taken into account in the structural steel evaluation of the site. Refer to Section 3, MAGNETIC FIELD CONSIDERATIONS, for more information.

The 0.35T Magnet may require the magnet steel plate be installed into the Magnet Room floor to shield the magnet field. The plate may be recessed into an existing floor and/or the floor may be built up to the top of the steel plate. The magnet steel plate must be utilized to shield under the Magnet and the magnet steel plate must be rigidly mounted directly to the concrete without any voids. Refer to **Section 7-4 Floor Shield**.

The 0.35T magnet is capable of being shimmed with the maximum 60 kg/m² (12.2lb/ft²) of ferrous steel in an area of 2.4 meters x 2.4 meters within 3-15 mm distance from the bottom of the magnet feet. See Table 7-2 Steel Plate.

Steel rebar must not be positioned in such a manner as to interfere with anchor bolt locations for the magnet or magnet room equipment, refer to **Section 7-4 FLOOR SHIELDING**.

TABLE 6-2
POWER DISTRIBUTION UNIT (PD1) CABLES

GROUP NUMBER	GROUP AREA in. ² (mm ²)	FROM PD1* TO *SEE NOTE 1	USABLE LENGTH ft (m)	RUN NUMBER	CABLE DIAMETER in. (mm)	CABLE LEADS AWG/Number	RATING (V)	ACTUAL (V)	NOTES
6	0.905 (584)	MR2	26 (7.93)	030	0.92 (23.4)	#8/5	600	208	
				037	0.188 (4.78)	#10/1	600	0	Ground Cable
				703	0.375 (9.50)	#22/15	300	<30	See Note 2
				706	0.36 (9.14)	#22/9	300	<30	PD1 Remote Control See Note 3
77	0.27 (172)	RF COMMON GND STUD	—	—	0.584 (14.8)	#(1/0)/1			Customer supplied ground cable.
1	0.568 (367)	Cooling Unit	33 (10.0)	1007	0.75 (19.0)	#10/4	600	208	RF Cooling Power Line
				1008	0.41 (10.3)	# 4/1	600	0	Ground Cable
90	0.413 (266)	OW1	51 (15.5)	047	0.70 (17.78)	#10/4	600	208	
				048	0.188 (4.78)	#10/1	600	0	Ground Cable
2	0.175 (113)	PP1	52 (16.0)	1009	0.47 (12.0)	#10/2	600	208	TCU POWER Line See Note4

Note 1 The PDU is a module (PD1) in the lower portion of the Power Cabinet (MR1).
 2 Plug pulling diameter x length for Run 703: 1.6 x 2.0 in. (41.1 x 50.8 mm) both ends.
 3 Plug pulling diameter x length for Run 706: 1.3 x 2.0 in. (33.5 x 50.8 mm) both ends.
 4 Connect the cable to MDP if MDP is used in site.

6-3 EMERGENCY OFF WIRING

Note

Emergency OFF wiring is NOT used for Japan.

6-3-1 Introduction

This section addresses wiring for the Emergency Off circuit (also known as protective disconnect circuit). Refer to Section 5-3, RECOMMENDED POWER DISTRIBUTION SYSTEM, for information on the recommended protective disconnect device and emergency off button locations and mounting.

The emergency off wiring for the MR system is unique because the wiring into the magnet room must be RF tight.

6-3-2 Protective Disconnect Device Connections

The emergency off circuit is shown in Section 5-3, POWER DISTRIBUTION SYSTEM, Illustration 5-1. The circuit utilizes the normally closed series loop shown. The MDP provides 2 emergency off buttons.

Note

The actual number of emergency off switches may vary from what is shown in Section 5-3, RECOMMENDED POWER DISTRIBUTION SYSTEM, Illustration 5-1.

6-3-3 Magnet Room Wiring

GE provides two cables for routing the emergency off circuit through the Penetration Panel and into the magnet room (Runs 296 and 297). Alternate wiring may be used by the customer; however, the use of these cables ensures that the emergency off wiring will be RF tight.

In Illustration 5-1 black and red wires are used for connections on the ends of Runs 296 and 297. Actually any pair of wires on these runs could be used so long as both ends are consistent with one another. (Runs 296 and 297 are actually nine wire cables.)

6-4 SYSTEM INTERCONNECTS

6-4-1 Introduction

Table 6-3 contains information on interconnects between all system components. Cables found in Tables 6-2 are not repeated here, although their groups are referenced for completeness. Conduit or pipe is not recommended for cable runs since the system uses many prefabricated cables with large connectors. Unless otherwise specified, cables and components listed in Table 6-3 are supplied by GE.

6-4-2 Definition of Terms

The definition of terms used in Tables 6-3 are:

- Group Number: identifying number referenced to bundles (i.e. groups) of cables as shown in Illustrations 6-1
- Between Units (From/To): component designators as found in Table 6-1
- Area: cross-sectional area of the combined cables in a group

Note

The group area was found by adding up the circular cross-sectional areas of all individual cables within a group. It does not take any fill factors or air space between cables into account. Adhere to applicable electrical codes for fill factors.

- Usable Length: total length of a cable MINUS any required take up within cabinets
- Run Number: unique number assigned to each GE-supplied cable

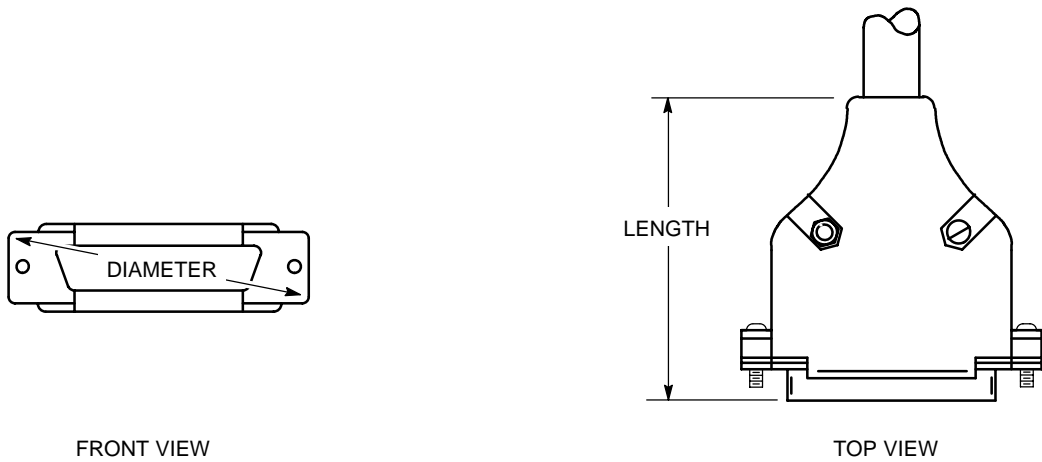
Note

The run number must be used when making special cable orders.

- Cable Diameter: diameter of an individual cable
- Plug Pulling Diameter x Length: cable plug dimensions as shown in Illustration 6-2

Note

In some cases, a cable has more than one connector on an end. These cables will have the number of connectors following the english dimensions of the plug pulling diameter times length (e.g. '2.0x3.25 -x2' means there are 2 connectors with dimensions of 2.0 in. diameter and 3.25 in. length). Of course, the same number of connectors apply to the metric dimensions as well.



SUBMINIATURE-D CONNECTOR PLUG PULLING DIMENSIONS
ILLUSTRATION 6-2

TABLE 6-3
INTERCONNECT LIST

GROUP NUMBER	GROUP AREA in. ² (mm ²)	BETWEEN UNITS		USABLE LENGTH ft (m)	RUN NUMBER	CABLE DIAMETER in. (mm)	PLUG PULLING DIAMETER X LENGTH in. (mm)		RATING (V)	ACTUAL (V)	NOTES
		FROM	TO				FROM	TO			
1	—	Facility Power	MDP	—	—	—	—	—	N/A		Customer Furnished.
1A	—	Facility Emergency Power	MDP	—	—	—	—	—	N/A		Customer Furnished.
2	—	MDP	PD1	—	—	—	—	—	N/A		Customer Furnished.
3	—	RF Filter	RF Common Ground Stud	—	—	—	—	—	N/A		Customer Furnished Ground.
4	—	—	—	—	—	—	—	—			Not Used
5	—	—	—	—	—	—	—	—			Not Used
6	—	PD1	MR2	—	—	—	—	—	N/A		Refer to Table 6-2.
7 to 19	—	—	—	—	—	—	—	—			Not Used

(Continued)

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TABLE 6-3 (Continued)
INTERCONNECT LIST

GROUP NUMBER	GROUP AREA in. ² (mm ²)	BETWEEN UNITS		USABLE LENGTH ft (m)	RUN NUMBER	CABLE DIAMETER in. (mm)	PLUG PULLING DIAMETER X LENGTH in. (mm)		RATING (V)	ACTUAL (V)	NOTES
		FROM	TO				FROM	TO			
		20	0.784 (506)				MR2	MR3 in MR1			
21	—	—	—	—	—	—	—	—			Not Used
22	0.825 (533)	MR2	MR1	14 (4.27)	229	0.212 (5.38)	0.57x2.00 (14.5x50.8)	0.57x2.00 (14.5x50.8)	1900 VRSM	<30	Run 708 is flexible conduit containing fiber optic cable(s) with a minimum bend of 2 in. (51 mm).
					702	0.35 (8.90)	1.30x2.00 (33.5x50.8)	1.30x2.00 (33.5x50.8)	300	<30	
					708	0.83 (21.1)	0.83x2.00 (21.1x50.8)	0.83x2.00 (21.1x50.8)	N/A	0	
					774	0.44 (11.2)	2.30x2.00 (58.4x50.8)	2.30x2.00 (58.4x50.8)	300	<30	
23	1.064 (686)	MR2	PP1	31 (9.45)	231	0.212 (5.38)	0.57x2.00 (14.5x50.8)	0.57x2.00 (14.5x50.8)	1900 VRSM	<30	Run 711/712 is a flexible conduit containing fiber optic cables with a minimum bend of 2 in. (51 mm).
					488	0.24 (6.1)	0.55x1.10 (14.0x27.9)	0.55x1.10 (14.0x27.9)	300	<30	
					489	0.24 (6.1)	0.55x1.10 (14.0x27.9)	0.55x1.10 (14.0x27.9)	300	<30	
					490	0.24 (6.1)	0.55x1.10 (14.0x27.9)	0.55x1.10 (14.0x27.9)	300	<30	
					711/ 712	1.04 (26.4)	1.04x2.00 (26.4x50.8)	1.04x2.00 (26.4x50.8)	300	0	
					929	0.234 (5.94)	0.57x2.00 (14.5x50.8)	0.57x2.00 (14.5x50.8)	1900 VRSM	<30	

(Continued)

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TABLE 6-3 (Continued)
INTERCONNECT LIST

GROUP NUMBER	GROUP AREA in. ² (mm ²)	BETWEEN UNITS		USABLE LENGTH ft (m)	RUN NUMBER	CABLE DIAMETER in. (mm)	PLUG PULLING DIAMETER X LENGTH in. (mm)		RATING (V)	ACTUAL (V)	NOTES
		FROM	TO				FROM	TO			
24	—	—	—	—	—	—	—	—			Not Used
25	2.245 (1448)	MR1	PP1	21 (6.40)	044	0.20 (5.1)	1.32x0.23 (33.5x5.8)	1.32x0.23 (33.5x5.8)	600	0	Ground Cable for MR1 System Support Module
					487	0.45 (11.4)	1.60x2.00 (40.6x50.8)	1.60x2.00 (40.6x50.8)	300	<30	
					726	0.45 (11.4)	1.60x2.00 (40.6x50.8)	1.60x2.00 (40.6x50.8)	300	<30	
					745/935	0.50 (12.7)	0.91x2.50 (23.0x63.5)	0.91x2.50 (23.0x63.5)	5000 Vrms	775	
					768	0.525 (13.3)	2.80x2.00 (70.4x50.8)	2.80x2.00 (70.4x50.8)	300	<30	
					769	0.44 (11.2)	2.30x2.00 (57.2x50.8)	2.30x2.00 (57.2x50.8)	300	<30	
					770	0.31 (7.9)	1.30x2.00 (33.5x50.8)	1.30x2.00 (33.5x50.8)	300	38.5VDC	
					771	0.415 (10.5)	2.30x2.00 (57.2x50.8)	2.30x2.00 (57.2x50.8)	300	38.5VDC	
					771	0.415 (10.5)	2.30x2.00 (57.2x50.8)	2.30x2.00 (57.2x50.8)	300	<30	
					772	0.525 (13.3)	2.80x2.00 (70.4x50.8)	2.80x2.00 (70.4x50.8)	300	<30	
					773	0.64 (16.3)	1.60x2.00 (40.6x50.8)	1.60x2.00 (40.6x50.8)	1900 VRSM	1000VDC	
					775	0.212 (5.4)	0.57x1.125 (14.5x28.6)	0.57x1.125 (14.5x28.6)	1900 VRSM	1000VDC	
					777	0.212 (5.4)	0.57x1.125 (14.5x28.6)	0.57x1.125 (14.5x28.6)	4000VDC (887) 5000Vrms (932)	245	
					887/932	0.59 (15.0)	0.91x2.50 (23.0x63.5)	0.91x2.50 (23.0x63.5)	4000VDC (887) 5000Vrms (932)	245	
					888/933	0.59 (15.0)	0.91x2.50 (23.0x63.5)	0.91x2.50 (23.0x63.5)	4000VDC (887) 5000Vrms (932)	245	
26	—	—	—	—	—	—	—	—			Not Used

(Continued)

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TABLE 6-3 (Continued)
INTERCONNECT LIST

GROUP NUMBER	GROUP AREA in. ² (mm ²)	BETWEEN UNITS		US-ABLE LENGT H ft (m)	RUN NUMBER	CABLE DIAMETER in. (mm)	PLUG PULLING DIAMETER X LENGTH in. (mm)		RATING (V)	ACTUAL (V)	NOTES
		FROM	TO				FROM	TO			
27	3.450 (740.2)	MR3	PP1	33 (10.0)	1001	0.88 (22.4)	Hard wired	Ring Terminals	600	250	
					1002	0.88 (22.4)	Hard Wired	Ring Terminals	600	250	
					1003	0.88 (22.4)	Hard Wired	Ring Terminals	600	250	
28 to 38	—	—	—	—	—	—	—	—	—	—	Not Used
39	—	Facility Emerg Power	Filter	—	—	—	—	—	—	—	Refer to Section 5-7 for DC Lighting Controller option cabling.
40	—	—	—	—	—	—	—	—	—	—	Not Used
41	—	Filter	Magnet Room Lights	—	—	—	—	—	—	—	Refer to Sections 5-6 and 5-7.
42 *	0.096 (61.94)	PP1	EO1	84 (25.6) minus takeup at EO1	297	0.35 (8.9)	1.30x2.00 (33.5x50.8)	Hard Wired	300	<30	Refer to Section 6-3.
43	0.096 (61.94)	MR2	RF Door Switch	67 (20.4) minus takeup at RF Door Switch	701	0.35 (8.9)	1.30x2.00 (33.5x50.8)	Hard Wired	300	<30	RF Door Switch provided by RF Screen Room vendor.
44 *	—	MDP	EO2	—	—	—	—	—	—	—	Customer Furnished. (Refer to Section 6-3.)
(Continued)											

Note

Group Number 42 and 44 are only used for High Voltage Areas(380, 400, 415,or 480 Vrms).

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TABLE 6-3 (Continued)
INTERCONNECT LIST

GROUP NUMBER	GROUP AREA in. ² (mm ²)	BETWEEN UNITS		US-ABLE LENGTH H ft (m)	RUN NUMBER	CABLE DIAMETER in. (mm)	PLUG PULLING DIAMETER X LENGTH in. (mm)		RATING (V)	ACTUAL (V)	NOTES
		FROM	TO				FROM	TO			
45	5.145 (3314)	PP1	MG3	30 (9.15)	711/ 712	1.04 (26.4)	1.04x2.00 (26.4x50.8)	1.04x2.00 (26.4x50.8)	N/A	0	Run 711/712 is flexible conduit containing fiber optic cables with a minimum bend radius of 2 in. (51 mm).
					1016	0.525 (13.3)	2.80x2.00 (70.4x50.8)	2.80x2.00 (70.4x50.8)	300	<30	
					716	0.34 (8.64)	1.60x2.00 (40.6x50.8)	1.60x2.00 (40.6x50.8)	300	<30	
					746/912	0.50 (12.7)	0.91x2.50 (23x63.5)	0.91x2.45 (23x62.2)			
					1014	0.212 (5.38)	0.57x1.125 (14.5x28.6)	0.57x1.125 (14.5x28.6)	1900 VRSM	1000VDC	
					1015	0.212 (5.38)	0.57x1.125 (14.5x28.6)	0.57x1.125 (14.5x28.6)	1900 VRSM	1000VDC	
					841	0.35 (8.9)	1.30x2.00 (33.5x50.8)	1.30x2.00 (33.5x50.8)	300	<30	
					842	0.44 (11)	0.63x2.01 (15.9x51.1)	0.63x2.01 (15.9x51.1)	300	<30	
					843	0.525 (13.3)	2.80x2.00 (70.4x50.8)	2.80x2.00 (70.4x50.8)	300	<30	
					889	0.59 (15.0)	0.91x2.50 (23.0x63.5)	0.91x2.50 (23.0x63.5)			
					890	0.59 (15.0)	0.91x2.50 (23.0x63.5)	0.91x2.50 (23.0x63.5)			
(Continued)											

ARCHITECTURAL/INSTALLATION PLANNING USE ONLY

GE MEDICAL SYSTEMS

SIGNA Ovation PRE-INSTALLATION

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TABLE 6-3 (Continued)
INTERCONNECT LIST

GROUP NUMBER	GROUP AREA in. ² (mm ²)	BETWEEN UNITS		USABLE LENGTH ft (m)	RUN NUMBER	CABLE DIAMETER in. (mm)	PLUG PULLING DIAMETER X LENGTH in. (mm)		RATING (V)	ACTUAL (V)	NOTES
		FROM	TO				FROM	TO			
45 (continue)	5.145 (3314)	PP1	MG3	30 (9.15)	906	0.415 (10.5)	2.30x2.00 (57.2x50.8)	2.30x2.00 (57.2x50.8)	300	38.5VDC	
					920	0.464 (11.8)	2.30x2.00 (57.2x50.8)	2.30x2.00 (57.2x50.8)	300	<30	
					921	0.35 (8.9)	1.30x2.00 (33.5x50.8)	1.30x2.00 (33.5x50.8)	300	38.5VDC	
					1020	0.24 (6.1)	0.55x1.10 (14.0x27.9)	0.55x1.10 (14.0x27.9)	1900Vrms	10	
					1021	0.36 (9.1)	0.55x1.10 (14.0x27.9)	0.55x1.10 (14.0x27.9)	1900Vrms	10	
					1022	0.24 (6.1)	0.55x1.10 (14.0x27.9)	0.55x1.10 (14.0x27.9)	1900Vrms	10	
					1019	0.24 (6.1)	0.55x1.10 (14.0x27.9)	0.55x1.10 (14.0x27.9)	1900Vrms	10	
					926	0.45 (11.4)	1.60x2.00 (40.6x50.8)	1.60x2.00 (40.6x50.8)	300	<30	
					927	0.45 (11.4)	1.60x2.00 (40.6x50.8)	1.60x2.00 (40.6x50.8)	300	<30	
					Air Line	1.0 (25.4)	air tubing	air tubing	N/A	0	Patient Comfort Compressor air line
Air Line	2.4 (60.4)	air tubing	air tubing	N/A	0	RF Coil Compressor air line					
46 to 54	—	—	—	—	—	—	—	—	—	Not Used	
55	—	Facility Power	Filter	—	—	—	—	—	—	Customer Furnished Magnet Room power (refer to Sections 5-1 and 7-4).	
56 to 76	—	—	—	—	—	—	—	—	—	Not Used	
	—	—	—	—	—	—	—	—	—	Not Used	
77	—	PD1	RF COMMON GND STUD	—	--	—	—	—	—	Refer to Table 6-2.	

(Continued)

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DIRECTION 2275665

TABLE 6-3 (Continued)
INTERCONNECT LIST

GROUP NUMBER	GROUP AREA in. ² (mm ²)	BETWEEN UNITS		USABLE LENGTH ft (m)	RUN NUMBER	CABLE DIAMETER in. (mm)	PLUG PULLING DIAMETER X LENGTH in. (mm)		RATING (V)	ACTUAL (V)	NOTES
		FROM	TO				FROM	TO			
78	0.338 (218)	RF COM- MON GND STUD	MS1 GND STUD	60 (18.29) minus takeup at RF Common GND Stud	040	0.464 (11.79)	Hard Wired	Ring Terminal	600	0	1 ground wire.
79	0.013 (8.0)	OW1	PA1	5 (1.5) minus takeup at PA1	—	0.13 (3.2)	3.00x3.00 (76.2x76.2)	0.38x1.75 (9.6x44.5)	N/A	0	
80**	0.049 (32.1)	PA1	MG2	97 (29.6) minus takeup at PA1	—	0.25 (6.4)	pneumatic tubing	pneumatic tubing	N/A	0	This pneumatic tubing is continuously routed from PA1 through PP1 and MG3 to MG3.
81	0.460 (297.3)	MDP	PP1	40 (12.2)	296	0.35 (8.9)	Hard Wired	1.30x2.00 (33.5x50.8)	N/A	0	Refer to Section 6-3.
82 to 84	—	—	—	—	—	—	—	—	300	<30	Not Used
85	3.450 (740.2)	PP1	MG3	30 (9.15)	1004	0.88 (22.4)	Ring Terminals	Ring Terminals	600	250	
					1005	0.88 (22.4)	Ring Terminals	Ring Terminals	600	250	
					1006	0.88 (22.4)	Ring Terminals	Ring Terminals	600	250	
87	0.643 (417)	PCC	MR1	27 (8.23) minus takeup at PCC	930	0.64 (16.3)	Hard Wired	12.28x3.85 (57.9x97.8)	300	120	
					931	0.64 (16.3)	Hard Wired	12.28x3.85 (57.9x97.8)	600	120	
<p>Note ** If installation requires greater than 97 feet (29.6 meters) of pneumatic tubing between the squeeze bulb, located on the front of the Magnet Enclosure, and the Patient Alert Control Box (PA1), located near the Operator's Console or Operator Workspace, an Extender Kit (46-317758P2) must be ordered. The Extender Kit consists of a small Extender Box (to be mounted in Equipment Room) and 95 feet (29.0 meter) of pneumatic tubing.</p>											
(Continued)											

ARCHITECTURAL/INSTALLATION PLANNING USE ONLY

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REV 4

DIRECTION 2275665

TABLE 6-3 (Continued)
INTERCONNECT LIST

GRP NUMBER	GRP AREA in. ² (mm ²)	BETWEEN UNITS		USABLE LENGTH ft (m)	RUN NUMBER	CABLE DIAMETER in. (mm)	PLUG PULLING DIAMETER X LENGTH in. (mm)		RATING (V)	ACTUAL (V)	NOTES
		FROM	TO				FROM	TO			
88	0.785 (506)	PCC	PP1	See Notes	Air Line	1.0 (25.4)	Air Line	Air Line	N/A	0	This air line is cut and connected to PP1 at site: total length is 100 ft (30.5 m) including both Equipment and Magnet Rooms. For Magnet Room routing of this interconnects refer to Group 45.
3	—	Cooling Unit	PP1	See Notes	Air Line	2.4 (60.4)	Air Line	Air Line	N/A	0	This air line is cut and connected to PP1 at site: total length is 65.6ft (20.0 m) including both Equipment and Magnet Rooms. For Magnet Room routing of this interconnects refer to Group 45.
1	—	PD1	TBD	—	—	—	—	—			Refer to Table 6-2.
90	—	PD1	OW1	—	—	—	—	—			Refer to Table 6-2.
91	0.615 (398)	MR2	OW1	51 (15.5)	789	0.44 (11.2)	2.30x2.00 (57.2x50.8)	2.30x2.00 (57.2x50.8)	300	<30	OW1 end of cable has 3 connectors, each connector plug pull dimensions are 2.3x2.0 (57.2x50.8). Run 836 is flexible conduit containing fiber optic cable with a minimum bend of 4.5 in. (114 mm).
					791	0.44 (11.2)	2.30x2.00 (57.2x50.8)	2.30x2.00 (57.2x50.8)	300	<30	
					818	0.44 (11.2)	2.30x2.00 (57.2x50.8)	See Notes	300	<30	
					836	0.45 (11.4)	1.75x2.00 (44.5x50.8)	1.75x2.00 (44.5x50.8)	N/A	<30	
92	0.293 (189)	PP1	OW1	53 (16.1)	788	0.44 (11.2)	2.30x2.00 (57.2x50.8)	2.30x2.00 (57.2x50.8)	300	<30	
					837	0.3 (7.6)	1.30x2.00 (33.0x50.8)	1.30x2.00 (33.0x50.8)	300	<30	
					838	0.3 (7.6)	1.30x2.00 (33.0x50.8)	1.30x2.00 (33.0x50.8)	300	<30	

6-5 CONTRACTOR FURNISHED COMPONENTS

Note

Emergency OFF BUTTONS are NOT used for Japan.

Table 6-4 lists contractor furnished components and details for connections to the system.

TABLE 6-4
CONTRACTOR FURNISHED COMPONENTS

ASSOCIATED EQUIPMENT	MATERIAL/LABOR PROVIDED BY CUSTOMER CONTRACTOR
SYSTEM EMERGENCY OFF BUTTONS (Emergency OFF BUTTONS are NOT used for Low Voltage Areas(200 or 208 Vrms.)	Install flush mounted wall switch box for single push button stations provided with system Main Disconnect Panel (MDP). Push button stations have one normally closed contact rated for 24 volts. Red emergency off push button switch have a guard to prevent inadvertent actuation. Also provided is nameplate " SYSTEM EMERGENCY OFF ". Locate 60 in. (1524 mm) from floor near each exit in the magnet and equipment rooms. (See Section5-3, POWER DISTRIBUTION SYSTEM, and Section 6-3, EMERGENCY OFF WIRING.) Note: DO NOT label buttons "Emergency Stop" — they are not the same.
SYSTEM GROUND	Provide ground cable between RF shielded room common ground point and Power Distribution Unit (PD1). (See Section 5-4-2, SYSTEM GROUND, for cable specifications.)
EQUIPMENT POWER <ul style="list-style-type: none"> ● Pneumatic Patient Alert Control Box** ● Service Outlet in Magnet Room 	Provide and install power, duct work, receptacle, and coverplate for each item listed. (See Section5 POWER REQUIREMENTS, for power specifications.)
MAIN DISCONNECT PANEL	Install system provided Main Disconnect Panel, see Section 5-3, POWER DISTRIBUTION SYSTEM, and Section 6-3, EMERGENCY OFF WIRING.)
PENETRATION PANEL MOUNTING HARDWARE	RF shielded room vendor to provide appropriate mounting hardware for GE supplied penetration panel. (See Section 7, RF SHIELDED ROOM.)
RF DOOR SWITCH AND CABLING	RF shielded room vendor to provide and install RF door switches on all RF shielded room doors. All switches must be wired in series. GE supplies a 100 ft (30.5 m) cable from System Cabinet which is terminated with 2 leads. These leads are connected to the set of switches. Switches must be in the open position when RF door is open but closed when door is closed. (See Section7, RF SHIELDED ROOM.)
Note * Optional Equipment. ** The Pneumatic Patient Alert Control Box can be powered from an outlet on the Operator Workspace.	