Model: Coil Storage Cart
Category: Cart, Storage
Subcategory: MRI Coil
Manufacturer: Siemens Medical Imaging
Catalog #: 14416952

CAD ID: STC0021
Atta 3 ID: STC-3DE30
Atta ID: 7811-003
RefID 1:
RefID 2:

MRI coil storage cart. Features: Non-ferromagetic, 133 millimeters high upper drawer, 90 millimeters high tray and 240 millimeters high lower drawer.

General Production Detail

Arch Sig: No
Arch Code: 03-Movable Non-Electrical
Critical Path: No
Type: Medical
Furnish Install: Owner / Owner
Spatial Sig: Yes
ADA: No
Antimicrobial: No
Green: No

Physical Requirements

Width (in.): 55.1180
Depth (in.): 21.2590
Height (in.): 47.6370
Product Weight (lbs): 130.0000
Max Operating Weight (lbs):
Mounting: Floor - Mobile
Specification notes:
Left (in.): N/A
Right (in.): N/A
Front (in.): N/A
Back (in.): N/A
Top (in.): N/A
Bottom (in.): N/A

Structural Requirements

Seismic: No
Structural notes:
OPA #:
Pre-Approval:

Technology Requirements

Has Technical Connections: No
Patient Data: No
Connection Type: N/A
Technical Connection notes:
Network:
System:

Electrical Requirements

Volts:
Hz: N/A
KVA:
UPS: N/A
Emerg. Power: No
Other Volts Avail.: No
BTU/hr: N/A
Electrical notes:
Watts: N/A
Amps: N/A
Circuit: No
Plug Type: N/A
Plug Detail:
Electrical Phase: N/A

Utility Requirements

Water - Cold: No
Water - Hot: No
Water - Treated: No
Drain: No
Drain Location:
Steam: No
Vacuum - Den. / Med.: No/No
Plumbing notes:
Mechanical notes:
Gas Type:
Gas Location:
Medical Gas: No
Vent Needed: No
Vent Type:
Heat Dissipation: N/A
Dissipation Type: Actual

Locations

CAD ID	Level	Arch Dept	Room	Room #	Status	Item Qty
STC0021	Level 1	Imaging	MRI	——	New	1

Total: 1

Comfort Kit			
Vacuum cushions for stable and comfortable positioning of the patient during the examination			
Vacuum pump connection at the Tim Table			
3 anatomically shaped cushions of different size for patient stabilization and comfort (spine, head, multi-purpose)			
May significantly reduce patient set-up times and improve image quality by minimizing the occurrence of motion artifacts			
Coil Storage Cart			
Specially designed non-ferromagnetic cart for easy storage of some of the most commonly used coils and accessories			
May be rolled to convenient locations in the examination room			
Additional storage space on the inside of the doors when doors are opened			
Coil storage	Width	cart closed	1400 mm (4'7")
		cart opened	2800 mm (9'2")
	Depth		540 mm (1'9")
	Height		1210 mm (3'12")
Upper drawer	Height		133 mm
Tray	Height		90 mm
Lower drawer	Height		240 mm

> Additional optional accessories and consumables for MR: siemens.com/healthcare-accessories

Model: Metrasens Vantage with View module
Category: Detector
Subcategory: Ferromagnetic, MRI
Manufacturer: Metrasens
Catalog #: 989803224118

CAD ID: DCT-2E36D
Atta 3 ID: DCT-2E36D
Atta ID: DCT-2E36D
RefID 1:
RefID 2:

Vantage provides intelligent, adaptive detection to control entry into Zone IV, alerting only when genuine ferromagnetic threats are present. With configurable detection regions, smart blackout zones, and permission-based alerts, it enhances safety while keeping workflow smooth.

General Production Detail

Arch Sig: *Yes*
Arch Code: 01-Fixed Equipment
Critical Path: No
Type: Medical
Furnish Install: Owner / Vendor
Spatial Sig: No
ADA:
Antimicrobial:
Green:

Physical Requirements

Width (in.):
Depth (in.):
Height (in.):
Product Weight (lbs):
Max Operating Weight (lbs):
Mounting: Wall
Specification notes:
Left (in.): N/A
Right (in.): N/A
Front (in.): N/A
Back (in.): N/A
Top (in.): N/A
Bottom (in.): N/A

Structural Requirements

Seismic:
Structural notes:
OPA #:
Pre-Approval:

Technology Requirements

Has Technical Connections: Yes
Patient Data: N/A
Connection Type: N/A
Technical Connection notes:
Network: N/A
System: N/A

Electrical Requirements

Volts: 120
Hz: N/A
KVA:
UPS: N/A
Emerg. Power: *No*
Other Volts Avail.:
BTU/hr: N/A
Electrical notes:
Watts: N/A
Amps: N/A
Circuit:
Plug Type:
Plug Detail: POE
Electrical Phase:

Utility Requirements

Water - Cold:
Water - Hot:
Water - Treated:
Drain:
Drain Location:
Steam:
Vacuum - Den. / Med.: /
Plumbing notes:
Mechanical notes:
Gas Type: N/A
Gas Location:
Medical Gas:
Vent Needed: No
Vent Type:
Heat Dissipation: N/A
Dissipation Type:

Locations

CAD ID	Level	Arch Dept	Room	Room #	Status	Item Qty
DCT-2E36D	Level 1	Imaging	MRI	––	New	1

Total: 1

metrasens

Metrasens Vantage Pre-Install checklist and Cutsheets

Version 1.5 | 2026

Pre-Install Checklist

Installation appointments are contingent upon completion of this checklist. Failure to have the equipment on-site or complete the necessary prework upon the installer's arrival will result in a substantial return travel fee for subsequent visits.

1. REQUIREMENTS FOR INSTALLATION OF THE DETECTION UNITS:

a. Either side of MRI door: 1″/25mm conduit (with pull wire) run to planned position of View Module, refer to page 5 ☐

b. Ensure a minimum clearance of 4″/100mm on the sides of the MRI door near the corner edges of the door frame i.e. remove any obstructions (signs, switches, guard rails etc) Photo provided ☐

c. Identify any electrical circuits running within close proximity to MRI door frames Photo provided ☐

d. Identify what side of the door the system display should be fitted Left ☐ Right ☐

e. MRI Door dimensions Height _____in/mm Width _____in/mm

f. Architectural drawings and photos provided showing doorway and surrounding area ☐

2. REQUIREMENTS FOR INSTALLATION OF THE VIEW MODULE:

a. Clearly mark ceiling / ceiling tile at intended location of the View Module, refer to page 4 Photo provided ☐

b. Confirm ceiling type _____

   i. If suspended ceiling, approximate tile dimensions _____in/mm by _____in/mm

   ii. If solid ceiling, confirm distance to closest access hatch _____ in/mm

c. Ceiling height at intended location of the View Module _____in/mm

3. CONDUITS:

a. Pull cords to be tied off at the marked location of the View Module ☐

b. Conduit **must** be run directly up vertically from conduit exit point to ceiling ☐

4. REQUIREMENTS FOR NETWORK CONNECTION

a. Can the Vantage View Module connect to a facility network? Yes ☐ No ☐

   i. If yes, is a suitable POE source available? The requirements are:

PoE++ 802.3bt (Type 4) Injector or Switch. Must be rated to supply 90W at 52-57V Yes ☐ No ☐

b. Are mains power sockets available? Refer to page 6 for location requirements Yes ☐ No ☐

5. EQUIPMENT CHECKS

a. Is the magnet fully ramped Yes ☐ No ☐

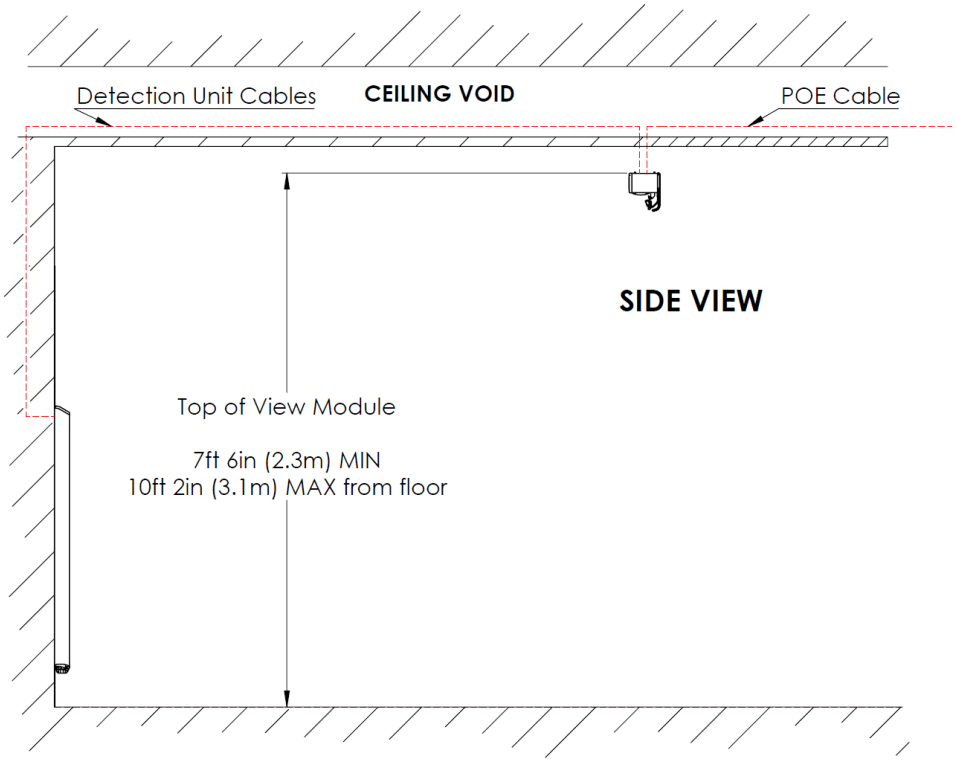
b. Ladder: A facility-provided ladder is required for the engineer's fitting of the View Module ☐

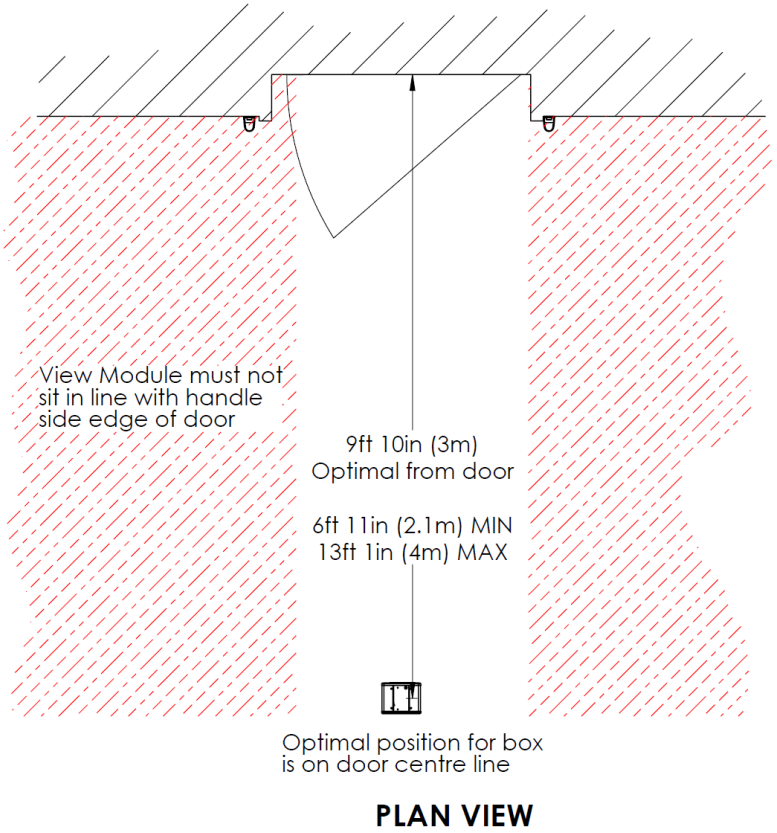
c. Metrasens Vantage Units: Ensure all units are available at the installation location and remain unopened ☐

Installation Schedule and Considerations:

- Installations are conducted Monday through Friday from 8am to 5pm local time. After-hours installation is available for an additional fee.
- During the installation multiple ceiling tiles will be removed and remain out during the installation process. The door will be opened and closed multiple times during calibration.

View Module


Detection Unit Cables
CEILING VOID
POE Cable
SIDE VIEW
Top of View Module
7ft 6in (2.3m) MIN
10ft 2in (3.1m) MAX from floor


View Module must not sit in line with handle side edge of door
9ft 10in (3m)
Optimal from door
6ft 11in (2.1m) MIN
13ft 1in (4m) MAX
Optimal position for box is on door centre line
PLAN VIEW

Detection Units

1 All holes outside MR Room **NOT in zone 4**

2 Conduit must be run from holes to ceiling void

3 Flat surfaces required.

No protruding surfaces, signage, corner guards etc.

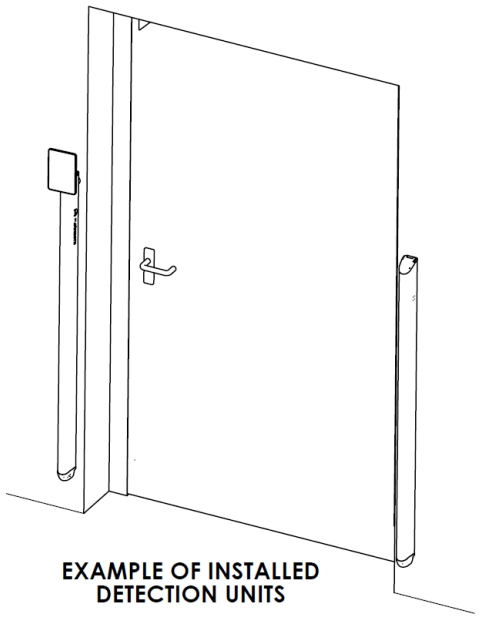
4 **Do Not damage R.F. Shielding**

5 Ethernet cables to be run from conduit exit point on wall to View Module location on ceiling

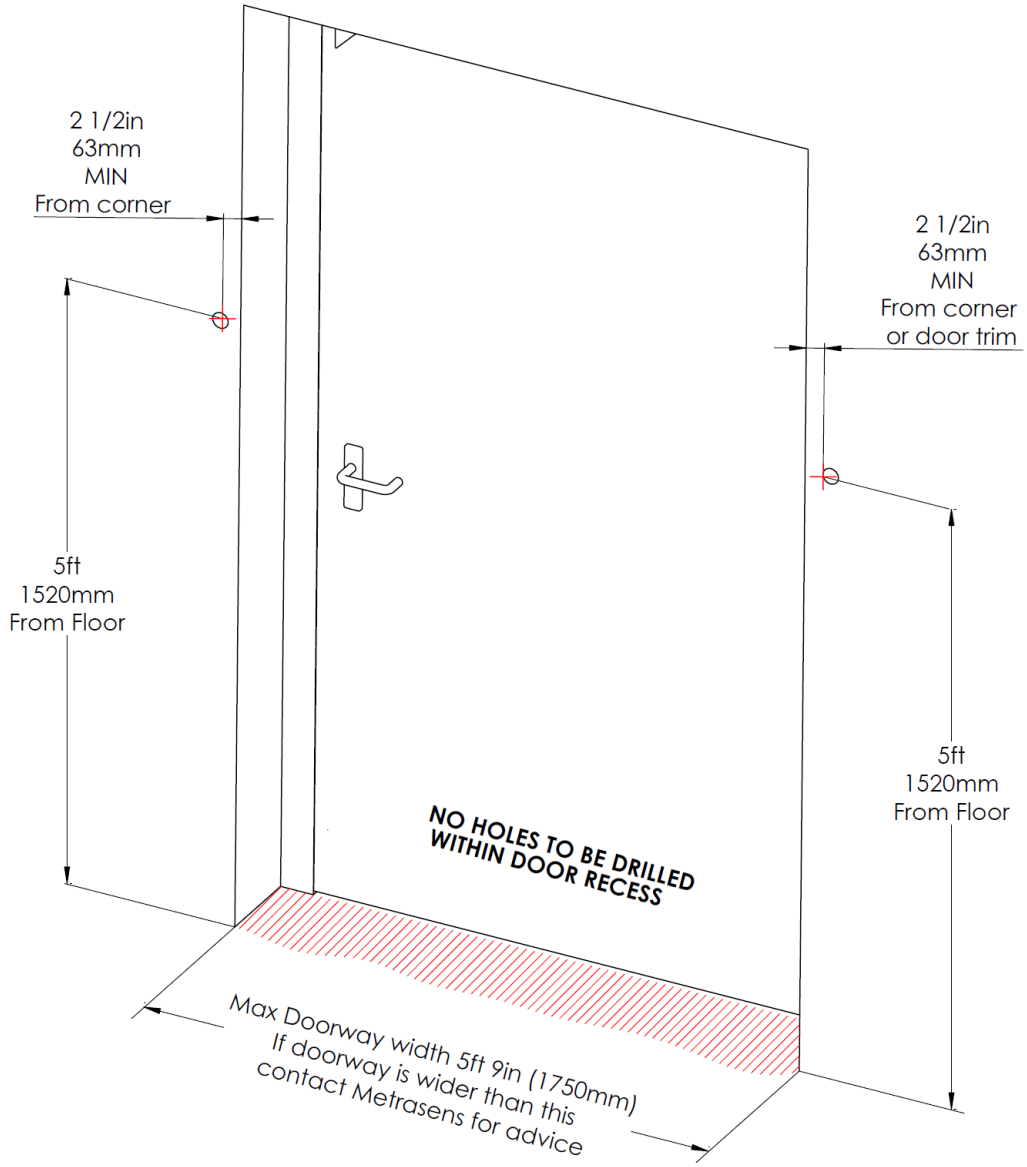
6 Refer to sheet 3 for View Module location considerations

7 Marked holes to be:

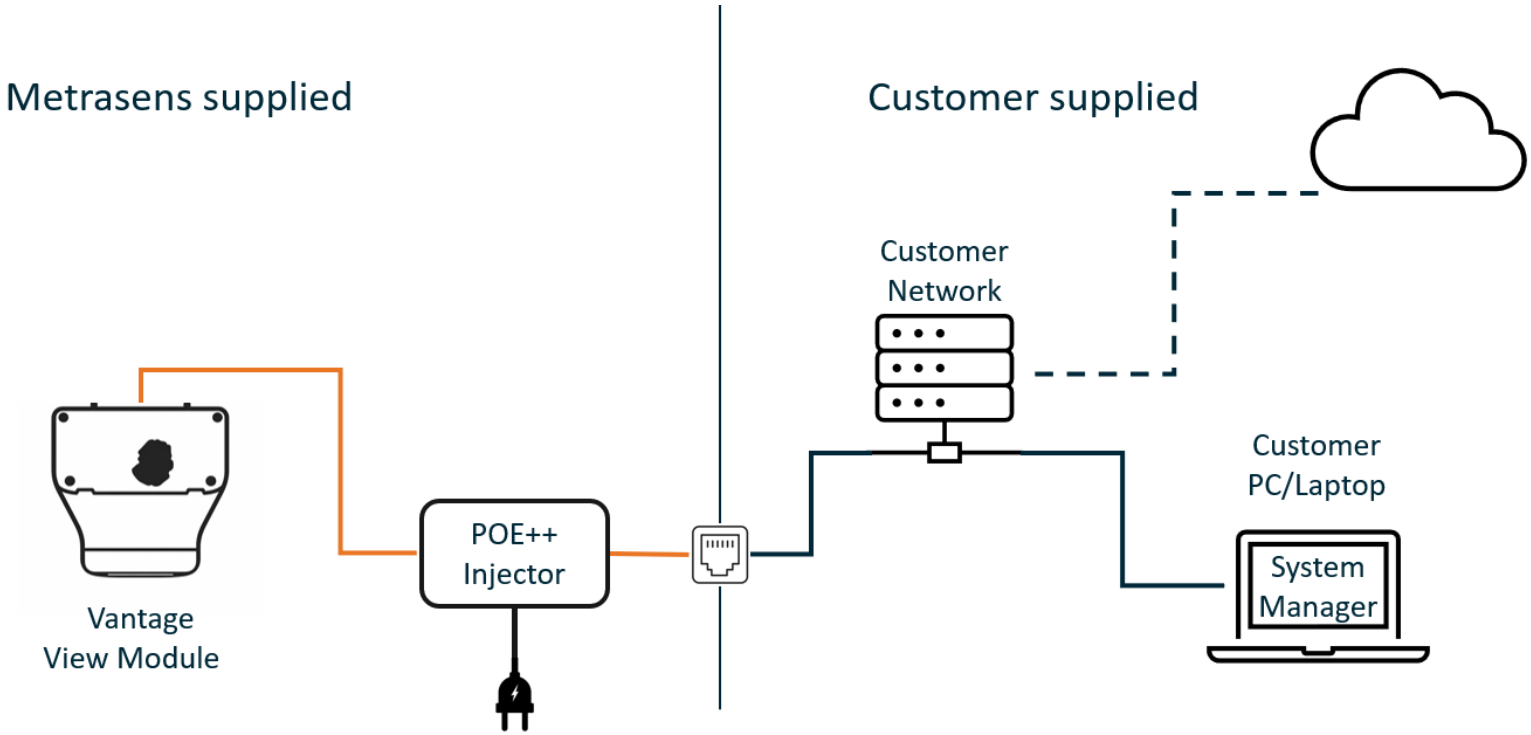
∅1in (25mm) MIN (Conduit ID)
∅1 1/2in (38mm) MAX (Conduit OD)



EXAMPLE OF INSTALLED DETECTION UNITS



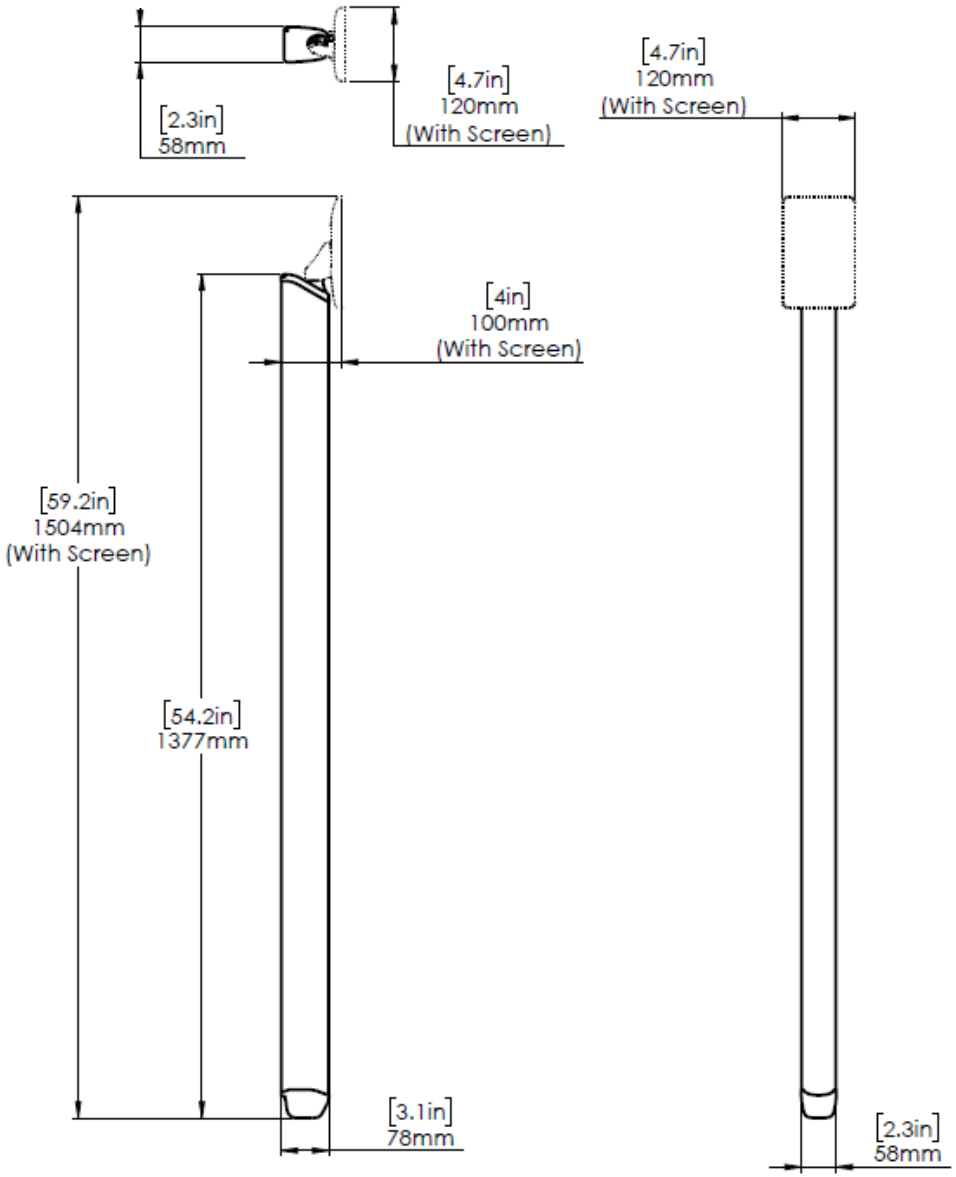
Network setup



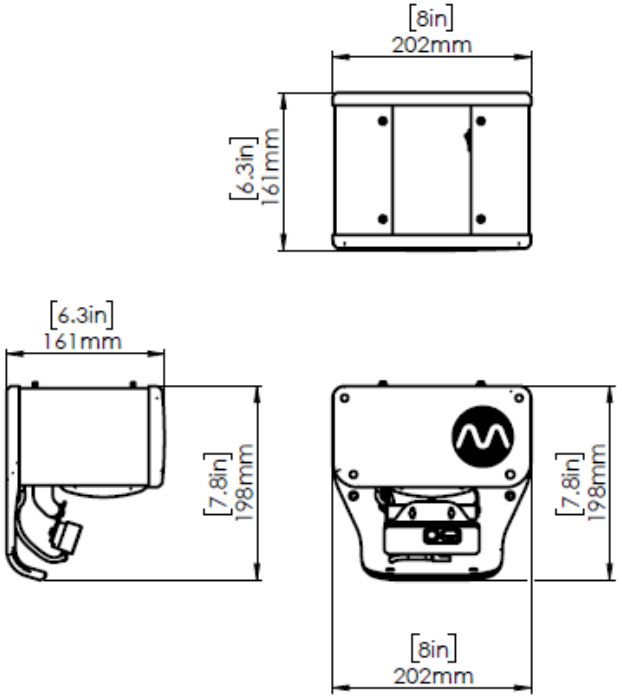
CONNECTION REQUIREMENTS:

1. Network port within 15ft (5m) of the MRI door (to allow for the running of the 30ft (10m) cable supplied)
2. Two AC power outlets, within 6 ½ft (2m) of network port
3. POE++ Injector cannot be located in plenum spaces for compliance reasons
4. POE++ injector are wall mountable (fixings not supplied)

System dimensions



Detection unit



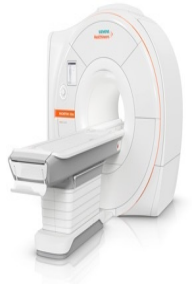
View Module

Detection unit: 3kg / 6.6lbs

Detection unit w/ system display 3.5kg / 7.7lbs

View Module: 1.8kg / 2.2lbs


metrasens



Model: MAGNETOM Altea System
Category: MRI Unit
Subcategory: 1.5T
Manufacturer: Siemens Medical Imaging
Catalog #:

CAD ID: MRI0141
Atta 3 ID: MRI-9D5B8
Atta ID: 4083-066
RefID 1:
RefID 2:

1.5T MRI unit. Features: 70 centimeters open bore design. Zero Helium boil-off technology. XJ gradients 33/125 simultaneously [1.3 MVA]. 180 max number of channels. 32 Number of independent receiver channels that can be used simultaneously in one single scan and in one single FoV, each generating an independent partial image. Eco-Power technology. **Configurable per site, actual list price may vary. See manufacturer for site specific pricing and documentation.

General Production Detail

Arch Sig: Yes
Spatial Sig: Yes
Arch Code: 01-Fixed Equipment
ADA: No
Critical Path: No
Antimicrobial: No
Type: Medical
Green: No
Furnish Install: Owner / Vendor

Physical Requirements

Width (in.): 91.0000
Left (in.): N/A
Depth (in.): 170.0000
Right (in.): N/A
Height (in.): 86.0000
Front (in.): N/A
Product Weight (lbs): 8779.0000
Back (in.): N/A
Max Operating Weight (lbs):
Top (in.): N/A
Mounting: Floor
Bottom (in.): N/A
Specification notes:

Structural Requirements

Seismic: Yes
OPA #:
Pre-Approval:
Structural notes:

Technology Requirements

Has Technical Connections: Yes
Network:
Patient Data: No
System:
Connection Type: Data
Technical Connection notes:

Electrical Requirements

Volts: 480
Watts: N/A
Hz: 60
Amps: 100.0000
KVA:
Circuit: Yes
UPS: N/A
Plug Type: Hardwire
Emerg. Power: *No*
Plug Detail:
Other Volts Avail.: No
Electrical Phase: 3 Phase
BTU/hr: 7506.0000
Electrical notes:

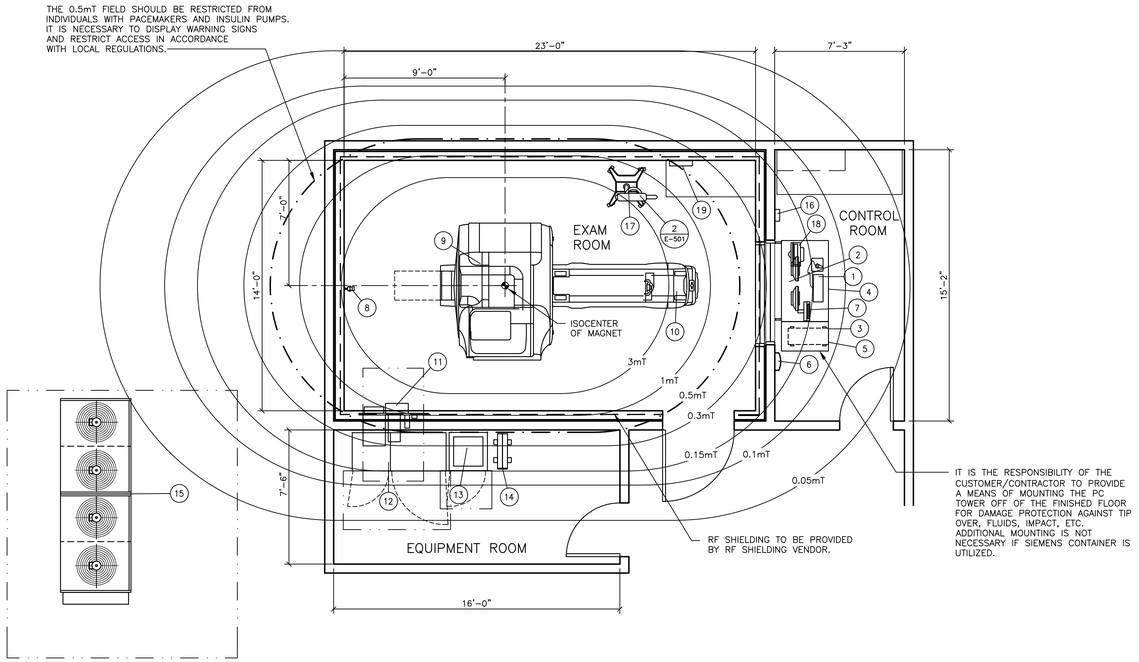
Utility Requirements

Water - Cold: Yes
Gas Type:
Water - Hot: No
Gas Location:
Water - Treated: No
Medical Gas: No
Drain: No
Vent Needed: Yes
Drain Location:
Vent Type:
Steam: No
Heat Dissipation: 7506.0000
Vacuum - Den. / Med.: No/No
Dissipation Type: Actual
Plumbing notes:
Mechanical notes:

Locations

CAD ID	Level	Arch Dept	Room	Room #	Status	Item Qty
MRI0141	Level 1	Imaging	MRI	––	New	1

Total: 1



CHILLER MAY OPTIONALLY BE SUPPLIED BY SIEMENS, LOCATED AND INSTALLED BY CUSTOMER/CONTRACTOR. REFER TO MANUFACTURER'S INFORMATION.

IF A CLOSET IS DESIRED TO CONCEAL THE FILTER PLATE AND CABLE CONNECTIONS, IT IS TO BE DESIGNED AND SPECIFIED AND PROVIDED BY THE CUSTOMER OR THEIR REPRESENTATIVE. A 30 1/4" CLEARANCE IS REQUIRED FOR SERVICE AND CABLING.

THERE SHALL BE A SEPARATE RF ROOM PENETRATION PANEL FOR NON-SIEMENS EQUIPMENT. THE OUTSIDE EQUIPMENT MANUFACTURER (OEM) WILL SPECIFY ANY AND ALL FILTER AND PENETRATION PANEL REQUIREMENTS.

ARCHITECTURAL EQUIPMENT PLAN

SCALE: 1/4" = 1'-0"

EQUIPMENT LEGEND

NO	DESCRIPTION	SMS SYM	WEIGHT (LBS)	BTU/HR TO AIR	DIMENSIONS (INCHES) W	D	H	REMARKS
1	MRC KEYBOARD	KB	5	---	27 1/4	10 1/8	1 3/4	ON CONSOLE/COUNTER
2	COLOR MONITOR FOR MRC	MO	22	239	18 5/16	16 15/16	4 3/4	ON CONSOLE/COUNTER
3	HOST PC MRC	MRC	49	2,389	11	27	18 1/8	
4	MRC OPERATING CONSOLE TABLE (OPTION)	CO	132	---	47 1/4	31 1/2	28	
5	CONTAINER FOR HOST PC 500 (OPTION)	CO	238	---	19 5/8	31 1/2	28 3/8	
6	ALARM BOX	AB	2	---	9	4	9	
7	PATIENT MONITOR (OPTION)	PM	30	---	13	8	12 1/2	
8	PATIENT SUPERVISION CAMERA (OPTION)	PC	3	---	3 1/8	6 3/4	6 3/4	WALL MOUNTED
9	ALTEA MAGNET IN OPERATION	MS	8,779	7,506	91	170	86	
10	PATIENT TABLE (MOBILE)	CO	529	---	29 1/2	97 1/4	21-41	
11	RF-FILTER PLATE	FI	287	853	46 1/2	35 1/8	21 5/8	
12	ELECTRONICS CABINET (GPA/EPC CABINET)	GPA	3,307	<3,412	61 1/2	26	77 1/2	
13	SEP CABINET	SEP	750	<3,412	25 5/8	25 5/8	73 5/8	
14	LIEBERT GXT4 UPS WITH BATTERY (OPTION)	UPS	164	TBD	17	23 5/8	6 3/4	
15	DIMPLEX CHILLER (45kW) (OPTION)	MO	4,000	---	138	44	84 1/2	CUST. TO LOCATE/INSTALL
16	DIMPLEX STATUS PANEL (OPTION)	MS	---	3	6 1/8	1 1/2	3 1/4	WALL MOUNTED IN CONTROL ROOM
17	MRXPERION INJECTOR STAND AND HEAD (OPTION)	MS	94	---	23 3/8	28 3/8	71 7/8	INJECTOR ON STAND
18	MRXPERION ICBC INJECTOR CRU (OPTION)	MS	17.6	---	15 3/4	10 1/4	13 1/2	ON CUSTOMERS COUNTER
19	MRXPERION ICBC INJECTOR POWER SUPPLY (OPTION)	MS	6	---	15 3/8	3 3/8	15 1/2	LOCATED IN EXAM ROOM OUTSIDE 5mT FIELD

PROTECTING THE MAGNETIC FIELD

THE SIEMENS MR SYSTEM UTILIZES A SUPERCONDUCTIVE MAGNET WITH AN EXTREMELY HOMOGENOUS FIELD WITHIN THE MAGNET TO PROVIDE DISTORTION FREE IMAGING. THE PRESENCE OF FERROMAGNETIC MATERIAL WITHIN THE VICINITY OF THE MAGNET CAN ADVERSELY AFFECT THE UNIFORMITY OF THE USEFUL MAGNETIC FIELD. THIS APPLIES TO STATIONARY FERROUS MATERIAL (STRUCTURAL STEEL) WHICH IS TO BE MINIMIZED. STATIONARY STEEL COMPENSATION MAY BE ACHIEVED BY MAGNET POSITIONING AND SELECTIVE USE OF SHIMS. DISTORTION CAUSED BY MOVING FERROMAGNETIC OBJECTS (MOTOR VEHICLES, ELEVATORS) IS MORE DIFFICULT TO COMPENSATE AND MAY REQUIRE THE USE OF MAGNETIC SHIELDING.

REV 0

PROTECTING THE ENVIRONMENT

PROTECTING THE IMMEDIATE ENVIRONMENT FROM THE EFFECT OF THE MAGNETIC FIELD REQUIRES CONSIDERATION: INFORMATION STORED ON MAGNETIC DATA CARRIERS SUCH AS DISCS, TAPES AND CARDS MAY BE ERASED IF NEAR THE MAGNET. CAUTION WITH REGARD TO HEART PACEMAKERS MUST BE EXERCISED. MOST PACEMAKER UNITS EMPLOY A REED RELAY WHICH MAY CHANGE OPERATING MODE WHEN EXPOSED TO AN EXTERNAL MAGNETIC FIELD. PACEMAKER USERS MUST BE KEPT AT A SPECIFIED DISTANCE FROM THE MAGNET WHICH IS DETERMINED BY THE MAGNET FIELD STRENGTH.

REV 0

MAGNETIC FRINGE FIELDS

MAGNETIC FIELDS MAY AFFECT THE FUNCTION OF DEVICES IN THE VICINITY OF THE MAGNET. THESE DEVICES MUST BE OUTSIDE CERTAIN MAGNETIC FIELDS. THE DISTANCES LISTED ARE FROM THE MAGNET ISOCENTER AND DO NOT CONSIDER ANY MAGNETIC ROOM SHIELDING.

FIELD	X & Y	Z AXIS	DEVICES
3.0mT	6'-1"	9'-2"	SMALL MOTORS, WATCHES, CAMERAS, CREDIT CARDS, MAGNETIC DATA CARRIERS.
1.0mT	7'-3"	11'-7"	COMPUTERS, MAGNETIC DISK DRIVES, OSCILLOSCOPES, PROCESSORS
0.5mT	8'-3"	13'-2"	CARDIAC PACEMAKERS, X-RAY TUBES, INSULIN PUMPS, B/W MONITORS, MAGNETIC DATA CARRIERS (LONG-TERM STORAGE)
0.15mT	10'-4"	17'-4"	SIEMENS CT SCANNERS
0.1mT	11'-2"	19'-1"	CRT MONITORS, SIEMENS LINEAR ACCELERATORS
0.05mT	13'-6"	22'-8"	X-RAY IMAGE INTENSIFIERS, GAMMA CAMERAS, PET/CYCLOTRON, ELECTRON MICROSCOPES, LINEAR ACCELERATORS

THE OWNER/USER IS TO VERIFY THE LOCATION OF THE 0.5mT FIELD AND ENSURE THAT IT IS MAINTAINED AS A RESTRICTED AREA.

MAGNET SITING REQUIREMENTS

IT MUST BE ENSURED THAT THE MAGNET IS LOCATED SO THAT THE STABILITY AND HOMOGENEITY OF THE MAGNETIC FIELD ARE NOT ADVERSELY AFFECTED BY EXTRANEOUS FIELDS AND STATIC OR DYNAMIC FERROMAGNETIC OBJECTS.

X & Y AXES	Z AXIS	SOURCE OF INTERFERENCE
4'-2"		FLOOR STEEL REINFORCEMENT<20 LBS./ FT^2 IRON BEAMS < 66 LBS./FT.
16'-1"	19'-1"	MOVING METAL UP TO 110 LBS.
13'-1"		WATER COOLING UNIT (CHILLER)
17'-5"	21'-4"	MOVING METAL UP TO 440 LBS.
18'-1"	24'-8"	MOVING METAL UP TO 2,000 LBS.
20'-5"	29'-7"	ELEVATORS, TRUCKS UP TO 10,000 LBS.
13'-1"	13'-1"	AC TRANSFORMERS LESS THAN 650 KVA
16'-5"	16'-5"	AC TRANSFORMERS LESS THAN 1600 KVA
5'-0"	5'-0"	AC CABLES, MOTORS LESS THAN 250 AMPS
8'-3"	8'-3"	AC CABLES, MOTORS LESS THAN 1000 AMPS

FOR IRON OBJECTS LOCATED UP TO 45° FROM THE Z AXIS, THE DISTANCES FOR THE Z AXIS MUST BE USED. REDUCTION IS POSSIBLE WITH STEEL SHIELDING.

ARCHITECTURAL NOTES

1) ALL PRELIMINARY EQUIPMENT LAYOUTS SUBMITTED BY SIEMENS MEDICAL SOLUTIONS, INC. (SMS HEREAFTER) ARE BASED ON THE RECOMMENDED SPACE NECESSARY FOR THE OPERATION AND SERVICEABILITY OF THE EQUIPMENT BEING PROPOSED. SMS WILL NOT SUBMIT AN EQUIPMENT LAYOUT THAT IS NOT IN THE BEST INTEREST OF BOTH THE CUSTOMER AND SMS. ALL EQUIPMENT LAYOUTS ARE BASED EITHER ON AN ACTUAL SITE LOCATION SURVEY OR ARCHITECTURAL DRAWINGS SUPPLIED TO SMS. SMS WILL NOT BE RESPONSIBLE FOR ANY ALTERATIONS THAT ENCROACH WITHIN DESIGNATED SAFETY AND SERVICE CLEARANCE ZONES AS INDICATED ON DRAWINGS (IE. PIPE CHASES, VENTILATION DUCTS, CASEWORK, AND SOFFITS, ETC.) MADE BY THE CUSTOMER OR REQUIRED BY A CUSTOMER'S ARCHITECTURAL FIRM ONCE PRELIMINARY DRAWINGS HAVE BEEN SUBMITTED AND APPROVED. DO NOT ALTER ANY SPECIFICATIONS AND/OR DIMENSIONS WITHOUT CONTACTING AND RECEIVING WRITTEN CONFIRMATION FROM SMS PROJECT MANAGER.
2) SMS IS NOT AN ARCHITECTURAL OR ENGINEERING FIRM. DRAWINGS SUPPLIED BY SMS ARE NOT CONSTRUCTION DRAWINGS. THEREFORE, THESE DRAWINGS ARE TO BE USED ONLY FOR INFORMATION TO COMPLEMENT ACTUAL CONSTRUCTION DRAWINGS AVAILABLE FROM A CUSTOMER APPOINTED ARCHITECTURAL REPRESENTATIVE OR A CUSTOMER'S ENGINEERING DESIGN GROUP. THE CUSTOMER'S ARCHITECT AND GENERAL CONTRACTOR SHALL BE ULTIMATELY RESPONSIBLE FOR COMPLIANCE WITH ALL APPLICABLE CODES AND PROFESSIONAL DESIGN REQUIREMENTS.
3) THE CUSTOMER IS RESPONSIBLE FOR ALL ROOM AND AREA PREPARATION COSTS, PROFESSIONAL FEES, PERMITS, REPORTS, AND INSPECTION FEES.
4) EQUIPMENT WARRANTIES, EXPRESSED OR IMPLIED ON THE PART OF SMS SHALL BE CONTINGENT UPON STRICT COMPLIANCE WITH THE ARCHITECTURAL, STRUCTURAL, ELECTRICAL, MECHANICAL AND RECOMMENDATIONS AND REQUIREMENTS CONTAINED IN THESE DRAWINGS, UNLESS SPECIFIED OTHERWISE.
5) ALL DIMENSIONS SHOWN ARE TAKEN FROM FINISHED SURFACES UNLESS SPECIFIED OTHERWISE.
6) THIS DRAWING DOES NOT PROVIDE RADIATION SHIELDING REQUIREMENTS FOR X-RAY AND ASSOCIATED EQUIPMENT. THE CUSTOMER IS RESPONSIBLE FOR CONSULTING WITH A REGISTERED RADIATION PHYSICIST. ACTUAL PROTECTION REQUIREMENTS SHALL BE SPECIFIED BY A REGISTERED RADIATION PHYSICIST AT CUSTOMER'S ENGAGEMENT AND EXPENSE. RESPONSIBILITY FOR ALL INFORMATION AS TO THE ROOM LOCATION, USE, AND NUMBER OF ANTICIPATED EXAMINATIONS TO BE PERFORMED PER TIME PERIOD SHALL BE PROVIDED TO THE PHYSICIST BY THE CUSTOMER. THE CUSTOMER SHALL FURTHER TAKE ALL RESPONSIBILITY IN THE COMMUNICATION AND COORDINATION OF ACTIVITIES OF THE RADIATION PHYSICIST AND THE ARCHITECTURAL REPRESENTATIVE.
7) SMS SHALL BE RESPONSIBLE FOR SMS EQUIPMENT INSTALLATION AND CALIBRATION, CONNECTION AND INSTALLATION OF SMS PROVIDED CABLES. THE CUSTOMER/ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR TERMINATIONS OF CUSTOMER/ELECTRICAL CONTRACTOR-SUPPLIED CABLES TO SMS EQUIPMENT. IN THE EVENT THAT SPECIFIC TRADE RULES OR LICENSE REQUIREMENTS PROHIBIT THIS, THE CUSTOMER SHALL INITIATE THE SERVICES OF APPROVED OTHER CONTRACTORS AND PAY FOR SELECTED, APPROVED PARTIES TO PERFORM THIS WORK WITH JOB SUPERVISION TO BE PROVIDED BY SMS. CALIBRATION WHEN ACCOMPLISHED OUTSIDE OF NORMAL INSTALLATION SEQUENCES DUE TO CONTRACTOR OR TRADE RULE ACTIONS OR REQUIREMENTS SHALL BE SUPPORTED BY, CHARGED TO, AND ACCEPTED BY THE CUSTOMER AS AN ADDITIONAL INSTALLATION EXPENSE.
8) THE CUSTOMER SHALL VERIFY WITH SMS PROJECT MANAGER FINAL INSTALLATION DRAWINGS THE LOCATIONS AND TRAVEL OF ALL ANCILLARY EQUIPMENT TO BE CEILING OR WALL MOUNTED (IE: O.R. LIGHTS, MEDICAL GAS COLUMNS, PHYSIOLOGICAL MONITORING INJECTORS, CRT PLATFORMS, SPRINKLER HEADS, SMOKE DETECTORS, ELECTRICAL OUTLETS, HVAC GRILLES, SPEAKERS, AND GENERAL ROOM LIGHTING, ETC.).
9) THE GENERAL CONTRACTOR/CUSTOMER SHALL BE RESPONSIBLE FOR ALL FINAL PAINT, TOUCH-UP AND ANY COSMETIC OR TRIM WORK WHICH NEEDS TO BE OR IS REQUIRED TO BE COMPLETED AFTER THE INSTALLATION OF THE SMS EQUIPMENT AND ANY ASSOCIATED SUPPORT APPARATUS.

CONSTRUCTION REQUIREMENTS

THE CUSTOMER/CONTRACTOR IS RESPONSIBLE FOR SUPPLYING AND INSTALLING ALL CONSTRUCTION MATERIALS INCLUDING ELECTRICAL AND MECHANICAL DEVICES REQUIRED BY SIEMENS SPECIFICATIONS AND TO ENSURE THAT THE MATERIAL USED INSIDE THE RF-SHIELDING IS AS FREE OF FERROMAGNETIC PROPERTIES AS POSSIBLE. STEEL WALL STUDS ARE PERMITTED BUT MUST BE SECURED PROPERLY. ANY FERROUS MATERIAL INSIDE THE EXAM ROOM MAY BECOME A MISSILE AND CAUSE INJURY TO PEOPLE AND DAMAGE TO EQUIPMENT. FERROUS ITEMS INSIDE THE EXAM ROOM ARE THE LIABILITY OF THE CONTRACTOR AND/OR INSTALLER.

REV 2

CASEWORK & ACCESSORY NOTES

1) ALL CASEWORK IS EITHER EXISTING OR IS TO BE DESIGNED, DETAILED, FURNISHED AND INSTALLED BY THE CUSTOMER AND/OR CONTRACTOR. FOLLOW DESIGN RECOMMENDATIONS INCLUDED HEREWITH, AS THEY ARE ESSENTIAL FOR THE SUCCESSFUL INSTALLATION & OPERATION OF THE SIEMENS EQUIPMENT.

2) ALL FURNITURE (CHAIRS, ETC.) FOR THE CONTROL ROOM ARE TO BE PROVIDED BY THE CUSTOMER.

REV 0

RESOURCE LIST (SMS USE ONLY)

DESIGNATION	PG NUMBER	DATE
DRAFT PLANNING GUIDE	M11-010.891.01.02.02	12.04.18

ALTEA REV D

SYSTEM SPECIFICATION STATUS

PLEASE NOTE: CURRENT STATUS IS DRAFT

SIEMENS RESERVES THE RIGHT TO MAKE CHANGES AND OTHER MODIFICATIONS BASED UPON, BUT NOT LIMITED TO, NEW TECHNICAL DEVELOPMENTS, UNTIL RELEASE OF THE PLANNING GUIDELINE, CONTENT OF PRELIMINARY AND FINAL PLANNING IS SUBJECT TO CHANGE AND MODIFICATION.

STATE AGENCY REVIEW

PRIOR TO SIEMENS EQUIPMENT INSTALLATION, APPROVAL OF CONSTRUCTION OR STRUCTURAL MODIFICATIONS FOR DIAGNOSTIC OR THERAPEUTIC PURPOSES, MUST BE OBTAINED BY THE CUSTOMER FROM THE APPROPRIATE STATE AGENCY, IF APPLICABLE.

MAGNETIC FIELD WARNING

PLEASE BE AWARE THAT DURING THE CALIBRATION PHASE OF THE MRI INSTALLATION, THE MAGNET WILL BE AT FULL FIELD STRENGTH AND ALL NECESSARY PRECAUTIONS WHEN WORKING IN THE VICINITY OF STRONG MAGNETIC FIELDS MUST BE TAKEN. WHEN THE CALIBRATION OF THE MAGNET OVERLAPS WITH FINAL CONSTRUCTION ACTIVITIES, THERE IS THE POSSIBILITY OF THE INTRODUCTION OF FERROUS MAGNETIC OBJECTS BY WORKERS INTO THE MR ROOM. IT IS THE RESPONSIBILITY OF THE CUSTOMER TO ENSURE THAT ALL PRECAUTIONS ARE TAKEN TO ENSURE THAT THIS DOES NOT HAPPEN, AS EQUIPMENT DAMAGE AND SERIOUS BODILY INJURY COULD OCCUR.

REV 0

EXAM ROOM LIGHTING

THE MAGNETIC FIELD ADVERSELY AFFECTS THE OPERATING LIFE OF LIGHT BULBS LOCATED IN THE IMMEDIATE VICINITY OF THE MAGNET. THE FILAMENT IN THE BULBS OSCILLATES WITH THE FREQUENCY OF THE POWER SUPPLY. LIGHTS IN THE VICINITY OF THE MAGNET CONNECTED TO A DC POWER SUPPLY CAN REDUCE THIS EFFECT. RESIDUAL DC RIPPLE SHOULD BE LESS THAN 5%.

REV 2

MAGNET CO-SITING

MINIMUM DISTANCE MAGNET-MAGNET (SIEMENS)

	0.2T	0.35T	1.0T	1.5T	3.0T
0.2T	32'-9"	32'-9"	16'-5"	19'-9"	32'-9"
0.35T	32'-9"	32'-9"	16'-5"	19'-9"	32'-9"
1.0T	16'-5"	16'-5"	14'-10"	16'-5"	19'-9"
1.5T	19'-9"	19'-9"	16'-5"	16'-5"	19'-9"
3.0T	32'-9"	32'-9"	19'-9"	19'-9"	19'-9"

DO NOT RAMP ONE MAGNET WHILE THE OTHER IS RUNNING APPLICATIONS. SHIM IS ONLY OPTIMIZED WHEN BOTH MAGNETS ARE RAMPED UP DURING THE SHIMMING PROCEDURE.

WHEN CO-SITING AN MR SYSTEM WITH A MAGNETIC NAVIGATION SYSTEM THE MINIMUM DISTANCE FOR CLINICAL IMAGING IS 98'-6", FOR SPECTROSCOPY THE MINIMUM SEPARATION IS 121'-5".

REV 0

OEM ACCESSORY ITEMS

FOR OEM (OUTSIDE EQUIPMENT MANUFACTURER) ITEMS THAT ARE SOLD AS ACCESSORIES TO THE SIEMENS MR SYSTEM (INJECTORS, LASER LIGHTS, ELASTOGRAPHY, CHILLERS, UPS, ETC.). PLEASE REFER TO THE SIEMENS PROJECT MANAGER AND THE ACTUAL EQUIPMENT VENDOR.

REV 0

PROJECT MILESTONES

	PROJECT MILESTONES TO BE COMPLETED BEFORE EQUIPMENT DELIVERY	REFERENCE SHEET
☐	DELIVERY PATH VERIFIED	A-102
☐	FLOOR LEVEL MEETS SIEMENS SPECIFICATIONS AND ALL BASEPLATES INSTALLED	S-101
☐	RF ROOM TEST COMPLETED AND MEETS SIEMENS SPECIFICATIONS	A-502
☐	ALL RACEWAY, CONDUITS AND JUNCTION BOXES INSTALLED	E-101
☐	ALL PLUMBING INSTALLED AND TESTED	M-101
☐	POWER SCHEDULE COMPLETED	E-102
☐	ALL EPO BUTTONS INSTALLED AND TESTED	E-101
☐	MR COMPATIBLE LIGHTING AND CEILING GRIDS INSTALLED IN MAGNET ROOM	A-101
☐	CONTROL ROOM COMPLETED ENOUGH TO FACILITATE THE INSTALLATION	A-101
☐	CHILLED WATER SUPPLY AVAILABLE AND MEETS SIEMENS SPECIFICATIONS	M-101
☐	MR COMPATIBLE LIGHTING AND CEILING GRIDS INSTALLED IN MAGNET ROOM	A-101
☐	HVAC SYSTEM COMPLETE, TESTED AND WORKING PER SIEMENS SPECIFICATIONS	M-101
☐	QUENCH PIPE CONSTRUCTED AND INSTALLED PER SIEMENS SPECIFICATIONS	M-501
☐	ETHERNET CONNECTION INSTALLED AND IN OPERATION AT THE SHOWN LOCATIONS	E-101

CEILING HEIGHTS

EXAM ROOM 7'-11" MINIMUM
CONTROL ROOM 6'-11 MINIMUM
EQUIPMENT ROOM 7'-3" MINIMUM

SYM	DATE	DESCRIPTION
△	N/A	TYPICAL DRAWING SET

-ISSUE BLOCK-

ATTENTION:

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- ALL DIMENSIONS SHOWN ON THIS DRAWING ARE FROM FINISHED SURFACES.
- THIS DRAWING DOES NOT PROVIDE RADIATION SHIELDING REQUIREMENTS FOR X-RAY AND ASSOCIATED EQUIPMENT. THE CUSTOMER IS RESPONSIBLE FOR CONSULTING WITH A REGISTERED RADIATION PHYSICIST TO SPECIFY RADIATION PROTECTION.

SIEMENS

MAGNETOM ALTEA

TYPICAL FINAL DRAWING SET

SCALE: AS NOTED | REF. #: ---

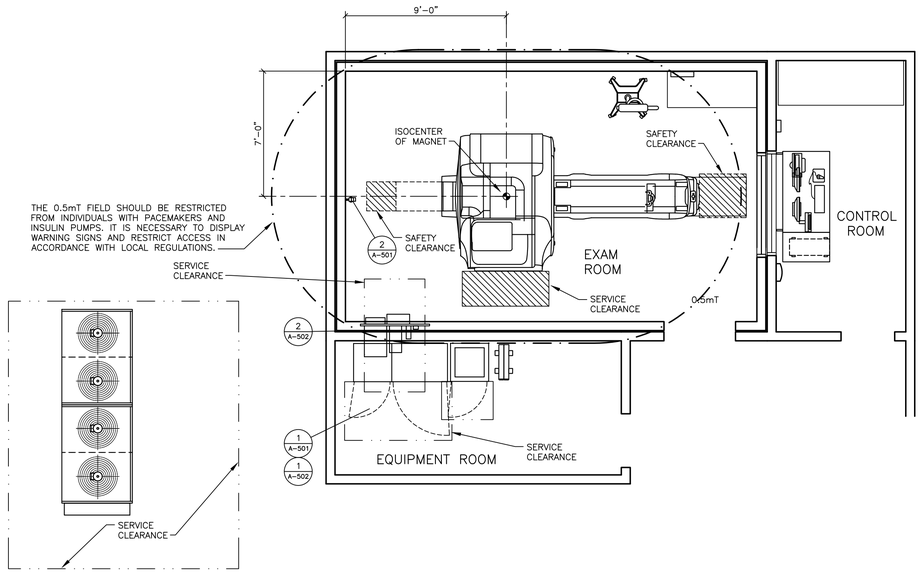
PROJECT #: 19073

SHEET 1 OF 10 | DRAWN BY: B. HERRMANN

DATE: N/A

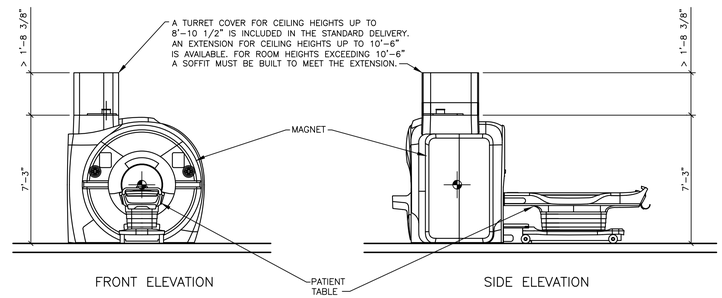
SHEET: A-101

REFERENCE DOCUMENT - NOT FOR CONSTRUCTION

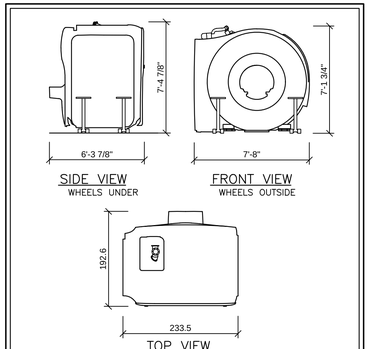


SAFETY/SERVICE CLEARANCE PLAN

SCALE: 1/4" = 1'-0"



–	ALTEA MAGNET HEIGHT	SCALE: NONE



LARGEST ITEM – MAGNET – 8,779 LBS.

THE MINIMUM TRANSPORT HEIGHT OF 7'-1 3/4" DIMENSION CAN BE REDUCED TO 7'-0 3/4" BY REMOVING THE CABLE TRANSPORT SUPPORT.

THE ROOF HATCH/DELIVERY OPENING SHOULD BE 4" LARGER THAN THE TRANSPORT DIMENSIONS.

TO TRANSPORT THE GPA/EPC CABINET (2,822 POUNDS) A MINIMUM ROOM HEIGHT OF 6'-6" IS REQUIRED, 6'-3" WITH WHEELS REMOVED, 6'-1" WITH WHEELS AND MAINS CONNECTION REMOVED.

THE RF DOOR AND COMPLETE PATH FROM EXAM ROOM TO THE EXTERIOR OF THE BUILDING MUST HAVE A MINIMUM CLEARANCE OF 40". THIS IS REQUIRED FOR REPLACEMENT PARTS AND HELIUM FILLS.

REV 0

–	TRANSPORT DETAIL	NO SCALE

SYSTEM SPECIFICATION STATUS

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NOISE LEVELS xJ GRADIENTS

SYSTEM ROOM	NOISE LEVEL / dB(A)
CONTROL ROOM	<55
EXAMINATION ROOM	80.3 dB(A) – 8 HOUR AVERAGE 98.7 dB(A) MAXIMUM, MEASURED INSIDE THE EXAM ROOM.
EQUIPMENT ROOM	<65

NOISE LEVELS ARE BASED ON AN AVERAGE MEASUREMENT OVER 8 HOURS OF CLINICAL SCANNING. PEAK LEVELS MAY BE HIGHER FOR CERTAIN SEQUENCES.

IT IS THE CUSTOMER'S RESPONSIBILITY TO ENSURE THAT ALL LOCAL/STATE/OSHA NOISE REGULATIONS ARE ADHERED TO. ADDITIONAL NOISE DATA MAY BE PROVIDED BY SIEMENS PROJECT MANAGER UPON REQUEST.
03/19/18

SURFACE COIL STORAGE

SURFACE COILS ARE COMPONENTS OF THE MRI SYSTEM THAT ARE ATTACHED TO THE PATIENT TABLE DURING EXAMS. WHEN NOT IN USE COILS SHOULD BE STORED SO THAT THEY ARE FREE FROM DAMAGE. THE DESIGN OF THE MR EXAM ROOM MUST HAVE AMPLE STORAGE SPACE TO ACCOMMODATE ANY COILS THAT THE OWNER WILL HAVE. COILS MAY BE SELECTED FROM THE LIST BELOW. STORAGE PROVIDED BY CUSTOMER/CONTRACTOR.

COIL NAME	POUND WEIGHT	INCHES LENGTH	INCHES WIDTH	INCHES HEIGHT
BODY COIL 18	4	15 1/8	23 1/4	3
HEAD/NECK COIL 20	11	17 3/8	13	14 5/8
SPINE COIL 32	24	47 1/4	19 1/4	3
FLEX COIL LARGE 4	1.2	20 3/8	8 7/8	–
FLEX COIL SMALL 4	1	14 3/8	6 7/8	–
PERIPHERAL ANGIO 36	18	33 7/8	26	11
HAND/WRIST COIL 16	6	13 1/8	8 1/2	4 1/2
HAND/WRIST COIL BASE	4	20 5/8	12 3/8	1 1/4
FOOT/ANKLE COIL 16	7	16 1/8	13	15 3/8
FOOT/ANKLE COIL BASE	15	16 3/4	13 1/8	15 1/8
SHOULDER COIL LARGE 16	15	15	17	19
SHOULDER COIL SMALL 16	15	12	17	19
CP EXTREMITY	15	16	10 5/8	11 3/8
TX.RX 15 CHANNEL KNEE	15	10 1/8	14 1/8	12 1/4
BI BREAST COIL 4 CH.	23	34 5/8	18 1/2	8 1/4
AI BREAST COIL 16 CH.	24	28	18 1/2	7 7/8
SENTINELLE VANGUARD IMMOBILIZER	45	43 1/4	22 7/8	11

CEILING HEIGHTS

EXAM ROOM 7'–11" MINIMUM
CONTROL ROOM 6'–11 MINIMUM
EQUIPMENT ROOM 7'–3" MINIMUM

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SYM	DATE	DESCRIPTION
△	N/A	TYPICAL DRAWING SET

–ISSUE BLOCK–

SCALE: AS NOTED | REF. #: ---

ALTEA REV D

SIEMENS

MAGNETOM ALTEA

TYPICAL FINAL DRAWING SET

PROJECT #: 19073

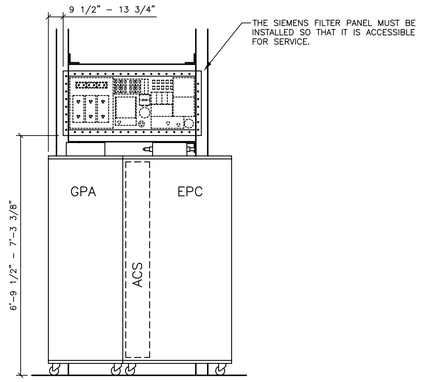
SHEET OF 2 10

DRAWN BY: B. HERRMANN

DATE: N/A

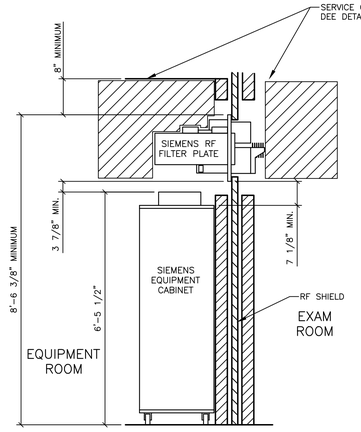
SHEET: A-102

REFERENCE DOCUMENT - NOT FOR CONSTRUCTION



VIEW FROM EQUIPMENT ROOM SIDE

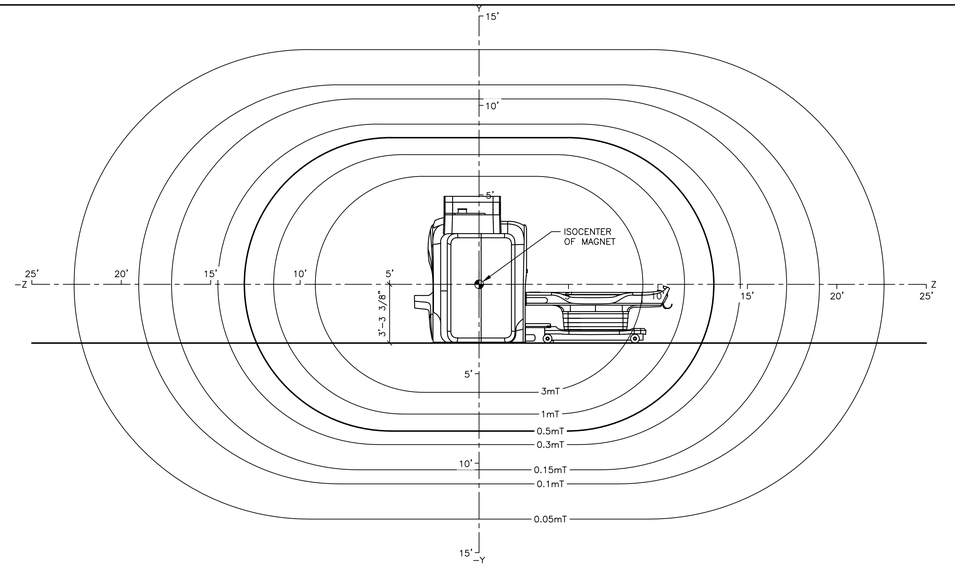
IN THIS STANDARD INSTALLATION THE SIEMENS FILTER PANEL IS INSTALLED DIRECTLY ABOVE THE ELECTRONIC CABINET. THE RELATIONSHIP AS DIMENSIONED ABOVE IS CRITICAL FOR THE CONNECTION OF SUPPORTING CABLES.



SECTION VIEW

TO USE THE 2 METER CABLE SET, THE DISTANCE FROM THE RF SHIELD TO THE BACK OF THE SIEMENS ELECTRONICS CABINET CANNOT EXCCED 2'-11"

1 | FILTER PANEL AND ELECTRONICS CABINET INSTALLATION | SCALE: 1/2"=1'-0"



– | ALTEA MAGNETIC FIELDS – SIDE ELEVATION | SCALE: 1/4"=1'-0"

SYSTEM SPECIFICATION STATUS

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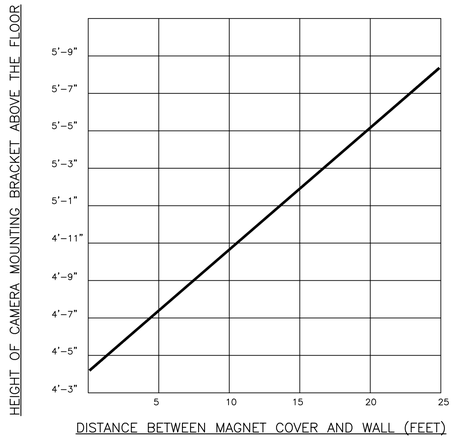
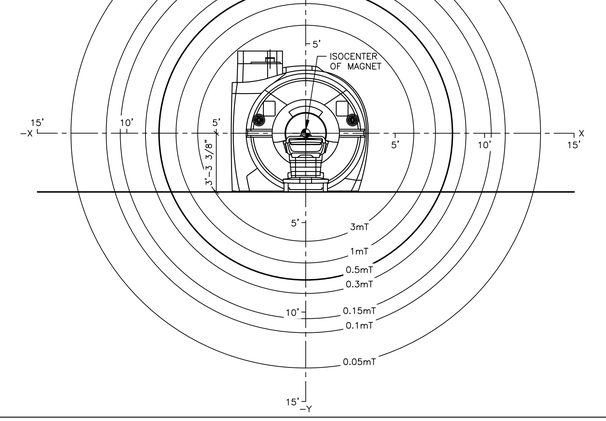
PATIENT VIDEO MONITORING

IT IS IMPORTANT TO VISUALLY MONITOR THE PATIENT DURING AN MR EXAM, IF OPERATING PERSONNEL CANNOT VISUALLY OBSERVE THE PATIENT THROUGH AN RF ROOM WINDOW VIDEO CAMERAS ARE OPTIONALLY AVAILABLE FROM SIEMENS. THE CAMERA INSIDE THE EXAM ROOM WILL HAVE TO BE INSTALLED ON THE FINISHED WALL. THE CAMERA WALL BRACKET IS PART OF THE DELIVERY. MOUNTING SCREWS AND DOWELS SHOULD BE PROVIDED LOCALLY. THE CHART BELOW SHOWS SUGGESTED MOUNTING HEIGHTS RELATED TO THE WALL DISTANCE FROM THE MAGNET COVER.



REV 0

2 | PATIENT SUPERVISION CAMERA | SCALE: NONE



– | ALTEA MAGNETIC FIELDS – FRONT ELEVATION | SCALE: 1/4"=1'-0"

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SYM	DATE	DESCRIPTION
△	N/A	TYPICAL DRAWING SET

–ISSUE BLOCK–

ALTEA REV D

SIEMENS

MAGNETOM ALTEA

TYPICAL FINAL DRAWING SET

PROJECT #: 19073

SHEET: A-501

SHEET 3 OF 10

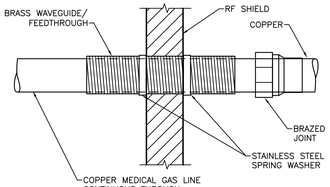
DRAWN BY: B. HERRMANN

SCALE: AS NOTED

REF. #: ---

DATE: N/A

REFERENCE DOCUMENT - NOT FOR CONSTRUCTION



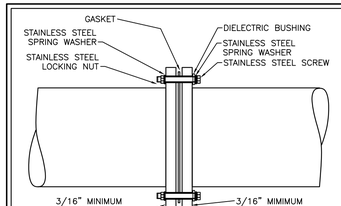
THE MEDICAL GAS FEED THROUGH SHOULD BE AS CLOSE TO THE SIEMENS FILTER PANEL AS POSSIBLE. WITHIN 3 FEET IS STRONGLY RECOMMENDED.

THE FINAL MEDICAL GAS CONNECTION TO THE WAVEGUIDE CANNOT BE MADE UNTIL GROUND ISOLATION MONITORING IS COMPLETE.

THE MEDICAL GAS MUST BE GROUNDED TO THE WAVEGUIDE AND RF SHIELD.

REV 0

–	MEDICAL GAS EXAMPLE	NO SCALE



DIELECTRIC ISOLATION HAS TO BE INSTALLED TO AVOID ELECTRICAL NOISE BEING PICKED UP BY LOOPS BETWEEN THE MAGNET, THE QUENCH TUBE, THE RF ROOM, AND THE BUILDING.

IT IS NECESSARY TO HAVE ONE DIELECTRIC ISOLATION OF THE QUENCH TUBE INSIDE THE RF ROOM (PROVIDED BY SIEMENS AT THE MAGNET) AND ONE OUTSIDE THE RF ROOM (PROVIDED BY THE QUENCH TUBE MANUFACTURER).

REV 0

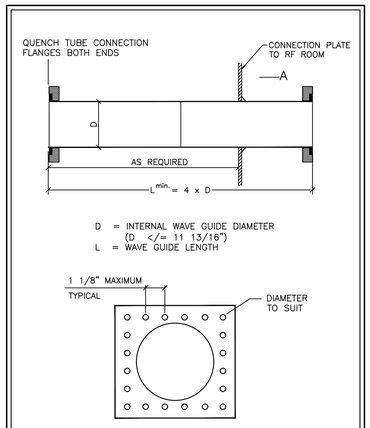
–	DIELECTRIC ISOLATION	NO SCALE

IMAGE QUALITY CONCERNS

BROADBAND RF NOISE IS A SINGLE TRANSIENT OR CONTINUOUS SERIES OF TRANSIENT DISTURBANCES CAUSED BY AN ELECTRICAL DISCHARGE. LOW HUMIDITY ENVIRONMENTAL CONDITIONS WILL HAVE HIGHER PROBABILITY OF ELECTRICAL DISCHARGE. THE ELECTRICAL DISCHARGE CAN OCCUR DUE TO ELECTRICAL ARCING OR MERELY STATIC DISCHARGE. SOME POTENTIAL SOURCES CAPABLE OF PRODUCING ELECTRICAL DISCHARGE INCLUDE:

- LOOSE HARDWARE/FASTENERS–VIBRATION OR MOVEMENT (ELECTRICAL CONTINUITY MUST ALWAYS BE MAINTAINED).
- FLOORING MATERIAL INCLUDING RAISED ACCESS FLOORING (PANELS AND SUPPORT HARDWARE) AND CARPETING.
- ELECTRICAL FIXTURES (LIGHTING FIXTURES, TRACK LIGHTING, EMERGENCY LIGHTING, BATTERY CHARGERS, OUTLETS).
- DUCTING FOR HVAC AND CABLE ROUTING.
- RF SHIELD SEALS (WALLS, DOORS, WINDOWS, ETC.).

REV 0



D = INTERNAL WAVE GUIDE DIAMETER
(D </= 11 13/16")
L = WAVE GUIDE LENGTH

VIEW A

THE RF CABIN FEED THROUGH NEEDS TO CONFORM TO CERTAIN GEOMETRIC CONSTRAINTS IN ORDER TO GUARANTEE THE RF INTEGRITY OF THE RF CABIN.

AS A FUNCTION OF INTERNAL PIPE DIAMETER, THE FOLLOWING APPLIES TO MINIMUM PIPE LENGTH FOR FREQUENCIES UP TO 128 MHz AND 110 dB ATTENUATION.

DEPENDING ON RF CABIN DESIGNS, RF SEALS CAN BE REQUIRED BETWEEN THE MOUNTING FLANGE AND THE RF CABIN.

QUENCH TUBE RF CABIN FEED THROUGH

REV 0

–	WAVE GUIDE	NO SCALE

RF DOOR OPENING

IN THE EVENT OF A CATASTOPHIC FAILURE OF THE QUENCH VENT DURING A QUENCH, PRESSURE BUILT UP MAY PREVENT OPENING A DOOR THAT OPENS INTO THE RF ROOM, PREVENTING EVACUATION FROM LIFE THREATENING CONDITIONS.

FOR THIS REASON THE RF DOOR SHOULD OPEN TO THE OUTSIDE OF THE RF ROOM. IF THE DOOR CANNOT OPEN OUT FROM THE RF ROOM, OTHER APPROPRIATE MEANS HAVE TO BE PROVIDED SO THAT THE RF ROOM DOOR IS NOT PREVENTED FROM OPENING DUE TO PRESSURE.

IF THE DOOR OPENS INTO THE RF ROOM, A 24"x24" OPENING FOR PRESSURE EQUALIZATION INTO THE RF ROOM MUST BE INSTALLED. THIS IS MANDATORY. THIS IS NOT AN ESCAPE HATCH. THE PURPOSE OF THE OPENING IS TO RELIEVE PRESSURE AND ALLOW THE MAIN DOOR TO BE OPENED SO THAT OCCUPANTS CAN BE EVACUATED.

THE OPENINGS WILL HAVE PANELS INSTALLED IN THE RF ROOM OR THE DOOR THAT CAN BE UNLOCKED AND OPENED TO THE OUTSIDE IN CASE OF EMERGENCY. THESE PANELS REQUIRE AN RF SEALED INSTALLATION. AFTER OPENING THE PANEL, THE OUTLET SHOULD MEASURE AT LEAST 24"x24". WHEN USING RECTANGULAR PANELS, THE SHORTER SIDE SHOULD MEASURE OF MINIMUM OF 24".

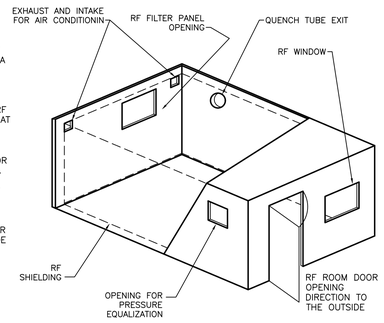
TO ENSURE UNOBSTRUCTED VENTING, THIS OPENING CANNOT BE SUBDIVIDED. THIS MEANS THAT, FOR EXAMPLE, RF SEALED HONEYCOMB GRIDS ARE NOT PERMITTED.

EASY REMOVAL OF THE PANEL BY A PERSON HAS TO BE ENSURED AND A MINIMUM DISTANCE OF 40" TO A FIXED OBJECT MUST BE MAINTAINED. THE PANEL SHOULD BE INSTALLED IN AN ACCESSIBLE LOCATION AND ALLOW ESCAPE OF THE LOW DENSITY HELIUM.

AS AN ALTERNATIVE TO AN OUTSWING DOOR, THE STATIONARY OBSERVATION WINDOW IS REPLACED BY A WINDOW OPENING INTO THE CONTROL AREA OR THE DOOR IS REPLACED WITH AN RF SEALED SLIDING DOOR. IT SHOULD BE ENSURED THAT THE DOOR CLOSES IN A WAY THAT ALLOWS IT TO MOVE AWAY FROM THE FRAME IN CASE OF OVERPRESSURE.

IF THE DOOR OPENS TO THE OUTSIDE, THE OPENING IN THE RF ROOM IS STILL RECOMMENDED.

THE RF ROOM MANUFACTURER CAN PROVIDE YOU WITH ADDITIONAL RF SEALED ROOM OPENINGS THAT LEAD DIRECTLY TO THE OUTSIDE. HOWEVER, THESE OPENINGS ARE ALSO CONDUITS FOR NOISE GENERATED OUTSIDE THE RF ROOM. UNOBSTRUCTED FLOW THROUGH THIS PIPE MUST BE GUARANTEED.



SAFETY ASPECTS FOR THE RF ROOM:
IT MUST BE POSSIBLE TO LOCK THE RF ROOM (EXAMINATION ROOM) DOOR FROM THE OUTSIDE. IT MUST ALSO BE POSSIBLE TO OPEN THE DOOR FROM THE INSIDE WITHOUT A KEY OR ADDITIONAL DEVICE.

THE RF DOOR IS AN IMPORTANT COMPONENT FOR GOOD IMAGE QUALITY AS WELL AS SAFETY. THE OWNER/OPERATOR OF THE MR SYSTEM MUST MAINTAIN THE RF ROOM AS INSTRUCTED BY THE RF ROOM MANUFACTURER IN ORDER TO GUARANTEE CORRECT FUNCTION OF THE RF DOOR.

NO FERROMAGNETIC ITEMS CAN BE BROUGHT INTO THE RF ROOM AFTER THE MAGNET HAS BEEN RAMPED UP TO FIELD. MAGNETIC ITEMS WILL BECOME ATTRACTED TO THE MAGNET WITH NO WARNING AND DUE TO THE HIGH MAGNETIC FIELD, WILL BECOME MISSILES.

NOTE: FOR DOORS MOVED BY AN AUXILIARY DRIVES (ELECTRICAL OR PNEUMATIC), MANUAL OPERATION HAS TO BE ENSURED. AN OUTSIDE WINDOW SHOULD BE IN THE VICINITY TO ALLOW VENTING EXHAUSTED GAS TO THE OUTSIDE. THE INTEGRITY OF THE RF SHIELD MUST BE TESTED AFTER REMODELING.

REV 0

–	SAFETY INFORMATION – PRESSURE EQUALIZATION	SCALE: NONE

RF SHIELDING

1) THE EXAMINATION AREA MUST BE SHIELDED TO PROVIDE A REDUCTION OF RADIO FREQUENCY WAVES EMANATING FROM EXTERNAL TRANSMITTERS. THE REQUIRED ATTENUATION IS 90dB IN THE FREQUENCY RANGE OF 15–128 MHz. IF CO–SITING TWO SYSTEMS EACH ROOM SHOULD BE 100 dB.

2) THE RF SHIELD MUST BE TESTED BEFORE AND AFTER MAGNET PLACEMENT IN THE RF ROOM AND AFTER THE SIEMENS RF FILTER PANEL IS INSTALLED. THE RF–SHIELDING MUST BE INSULATED FROM ALL GROUNDS SUCH THAT THE ONLY GROUND IS THE SINGLE POINT GROUND ON THE OUTSIDE OF THE RF–ROOM WALL. RESISTANCE ≥ 100 OHMS.

3) ALL ELECTRICAL LINES INTO THE RF ROOM MUST BE ROUTED THROUGH RF FILTERS (PROVIDED BY RF SHIELDING SUPPLIER). ALL ELECTRICALLY NON–CONDUCTIVE SUPPLY LINES (E.G. FIBER OPTIC CABLES, OR HOSES) INTO THE RF ROOM MUST BE ROUTED THROUGH RF SEALED WAVE GUIDES (PROVIDED BY RF SHIELDING SUPPLIER).

4) FOR PRESSURE EQUALIZATION PURPOSES THE RF DOOR SHOULD OPEN TO THE OUTSIDE OF THE RF ROOM. AS AN ALTERNATIVE A 24"X24" OPENING IN THE RF ROOM FOR PRESSURE EQUALIZATION IS REQUIRED.

REV 1

SHIELDING GENERAL NOTES

1) SIEMENS REQUESTS THAT THE SHIELDING MANUFACTURER(S) SUBMIT FINAL SHOP DRAWINGS TO SIEMENS FOR REVIEW PRIOR TO THEIR INCLUSION IN CONSTRUCTION DOCUMENTS. SIEMENS SHALL BE COPIED ON ALL FIELD ORDER CHANGES CONCERNING CHANGES IN RF AND MAGNETIC SHIELDING CONDITIONS, CONFIGURATION AND SPECIFICATION. THE RF AND MAGNETIC SHIELDING CONTRACTOR(S) SHALL FURNISH "AS BUILT" SCALED AND DIMENSIONED PLANS REFLECTING ANY AND ALL FIELD ORDER CHANGES PRIOR TO THE COMPLETION OF THE CONSTRUCTION DOCUMENTS.

2) ALL CHANGES TO SIEMENS RECOMMENDED OPENINGS AND PENETRATIONS SHALL BE APPROVED BY THE SIEMENS PROJECT MANAGER PRIOR TO THE COMPLETION OF THE CONSTRUCTION DOCUMENTS.

3) THE SIZE, LOCATION, AND DIMENSIONS OF ANY MAGNETIC SHIELDING REQUIRED HAS BEEN DETERMINED BY SIEMENS. THIS INFORMATION HAS BEEN SUPPLIED TO THE MAGNETIC SHIELDING FABRICATOR TO DESIGN THE STRUCTURAL SUPPORT SYSTEM REQUIRED FOR THE MAGNETIC SHIELDING MATERIAL.

REV 0

EXAM ROOM INTERIOR NOTES

1) ONLY NON–MAGNETIC MATERIALS ARE TO BE USED AND INSTALLED IN THE RF ROOM. SEE CONSTRUCTION REQUIREMENTS.

2) A SUSPENDED CEILING MUST BE STATICALLY SUSPENDED, NOT SUSPENDED WITH MOVABLE CLAMPS, SPRINGS, ETC.

3) RODS IN SUSPENDED CEILINGS MUST BE INSTALLED SECURELY. GALVANIC CONTENT BETWEEN THE RODS MUST BE GUARANTEED, THEY MUST NOT JUST LIE ON TOP OF ONE ANOTHER. A WIRE JUMPER BETWEEN RODS MAY BE USEFUL.

4) ELECTRICAL WIRING, FOR AMBIENT LIGHTS FOR EXAMPLE, MUST NOT SIMPLY REST ON THE SUSPENDED CEILING, THEY MUST BE FASTENED OR INSIDE A CONDUIT TO PREVENT MOTION.

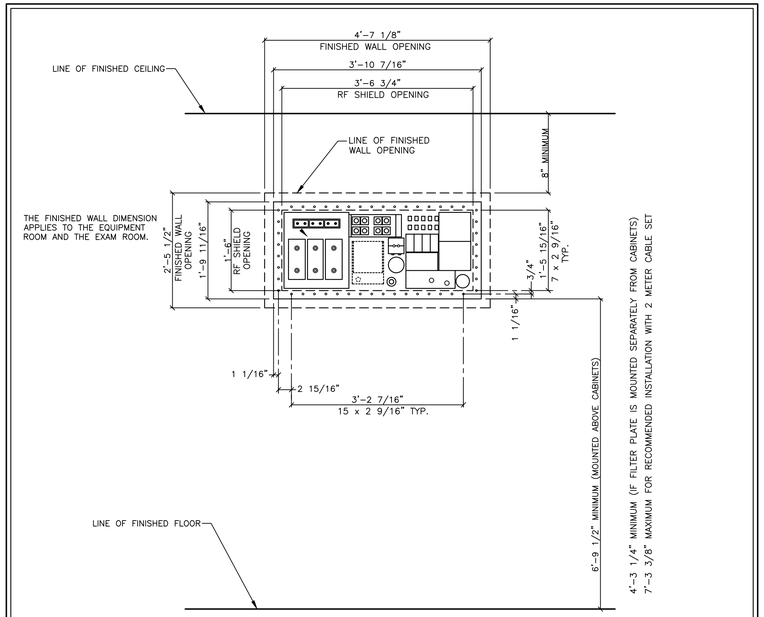
REV 1

FILTER PLATE GENERAL NOTES

1) STRUCTURAL SUPPORT AND INTEGRATION OF THE SIEMENS SUPPLIED AND INSTALLED FILTER PLATE WITH MAGNETIC AND RF SHIELDING SHALL BE SPECIFIED, DETAILED AND NOTED BY THE RF AND MAGNETIC SHIELDING MANUFACTURER(S) WITH OVERALL COORDINATION WITH SIEMENS SITE SPECIFIC RECOMMENDATIONS TO BE THE RESPONSIBILITY OF THE ARCHITECT OF RECORD.

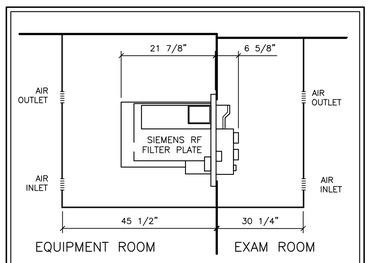
2) THE FILTER PLATE FRAME, RF FILTER PLATE BLANK, RF GASKET AND MOUNTING HARDWARE FOR THE PURPOSES OF TESTING THE INTEGRITY OF THE RF ENCLOSURE PRIOR TO THE INSTALLATION OF THE SIEMENS SUPPLIED AND INSTALLED RF FILTER PLATE SHALL BE PROVIDED AND INSTALLED BY THE SHIELDING CONTRACTOR(S) UNLESS SPECIFIED OTHERWISE.

REV 0



12/09/16

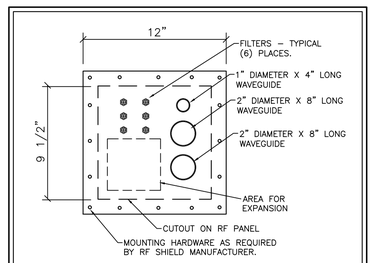
1	EQUIPMENT ROOM SIDE FILTER PLATE ELEVATION	SCALE: 3/4"=1'–0"



IF A COVER IS DESIRED TO CONCEAL THE FILTER PANEL INSIDE THE EXAM ROOM (NOT INCLUDED IN DELIVERY), IT IS NECESSARY TO HAVE VENTILATION AND PROPER CLEARANCE FOR CABLING AND SERVICE. RECOMMENDED SIZE IS 4'–4" WIDE. THERE SHOULD BE A MINIMUM 8" CLEAR FROM THE TOP OF THE FILTER TO THE CEILING ABOVE.

12/18/09

2	FILTER PANEL COVERS	NO SCALE



NON–SIEMENS EQUIPMENT REQUIRING RF ROOM PENETRATION REQUIRES A SEPARATE PENETRATION PANEL BE PROVIDED BY THE CUSTOMER AND INSTALLED BY THE RF ROOM MANUFACTURER. SIEMENS FILTER PANEL IS RESERVED FOR SIEMENS PRODUCTS AND FUTURE UPGRADES ONLY.

TYPICAL OEM (ORIGINAL EQUIPMENT MANUFACTURER) EQUIPMENT MAY INCLUDE, BUT NOT BE LIMITED TO, INJECTORS, fMRI, AND SAFETY RELATED ITEMS. SPECIFIC EQUIPMENT MANUFACTURERS WILL HAVE DETAILED INFORMATION REGARDING REQUIRED PENETRATIONS. ABOVE IS AN EXAMPLE OF A PENETRATION PANEL THAT WILL MEET MANY REQUIREMENTS. THE PENETRATION PANEL SHALL BE LOCATED IN CLOSE PROXIMITY TO THE SIEMENS FILTER PANEL AND BE COMPLIANT WITH ALL SIEMENS RF ROOM REQUIREMENTS.

REV 0

–	OEM FILTER PANEL	NO SCALE

SYSTEM SPECIFICATION STATUS

PLEASE NOTE: CURRENT STATUS IS DRAFT

SIEMENS RESERVES THE RIGHT TO MAKE CHANGES AND OTHER MODIFICATIONS BASED UPON, BUT NOT LIMITED TO, NEW TECHNICAL DEVELOPMENTS. UNTIL RELEASE OF THE PLANNING GUIDELINE, CONTENT OF PRELIMINARY AND FINAL PLANNING IS SUBJECT TO CHANGE AND MODIFICATION.

ATTENTION:

– THIS DRAWING IS DESIGNED TO CONFORM TO FEATURES AND EQUIPMENT REQUIREMENTS PRESENTED AT THE TIME OF THEIR PREPARATION. SINCE BOTH THESE FACTORS ARE SUBJECT TO DESIGN MODIFICATION, THEY ARE NOT TO BE USED FOR CONSTRUCTION PURPOSES.
– THIS SET OF PLANS REPRESENTS A COMPLETE SET OF DETAILS AND SHOULD NOT BE SEPARATED.

– IT IS RECOMMENDED THAT THE SIEMENS DRAWINGS BE INCORPORATED WITH THE CONSTRUCTION DOCUMENTS FOR REFERENCE.

– ALL DIMENSIONS SHOWN ON THIS DRAWING ARE FROM FINISHED SURFACES.
– THIS DRAWING DOES NOT PROVIDE RADIATION SHIELDING REQUIREMENTS FOR X–RAY AND ASSOCIATED EQUIPMENT. THE CUSTOMER IS RESPONSIBLE FOR CONSULTING WITH A REGISTERED RADIATION PHYSICIST TO SPECIFY RADIATION PROTECTION.

SYM	DATE	DESCRIPTION
△	N/A	TYPICAL DRAWING SET

–ISSUE BLOCK–

ALTEA
REV D

SIEMENS

MAGNETOM ALTEA

TYPICAL FINAL DRAWING SET

SCALE: AS NOTED | REF. #: ---

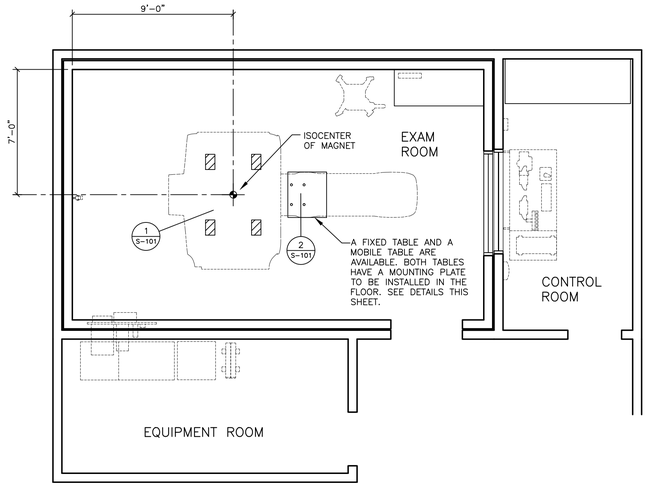
PROJECT #: 19073

SHEET 4 OF 10 | DRAWN BY: B. HERRMANN

DATE: N/A

SHEET: A-502

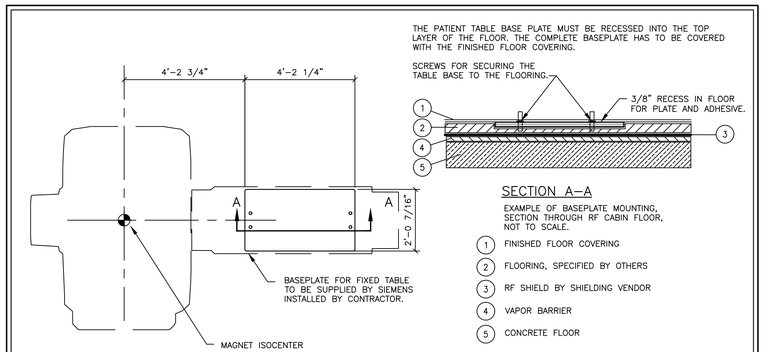
REFERENCE DOCUMENT - NOT FOR CONSTRUCTION



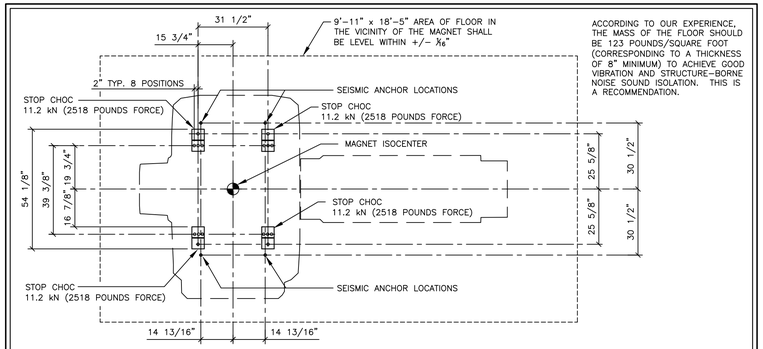
NOTE: FOR THE WEIGHTS OF ALL SIEMENS EQUIPMENT SHOWN ON THIS PLAN, SEE THE "EQUIPMENT LEGEND" ON SHEET A-101.

STRUCTURAL FLOOR PLAN

SCALE: 1/4" = 1'-0"



2 | BASEPLATE FOR FIXED PATIENT TABLE | SCALE: 3/8"=1'-0"



ACCORDING TO OUR EXPERIENCE, THE MASS OF THE FLOOR SHOULD BE 123 POUNDS/SQUARE FOOT (CORRESPONDING TO A THICKNESS OF 8" MINIMUM) TO ACHIEVE GOOD VIBRATION AND STRUCTURE-BORNE NOISE SOUND ISOLATION. THIS IS A RECOMMENDATION.

VIBRATION OF THE SITE HAS THE ABILITY TO AFFECT THE STABILITY AND HOMOGENEITY OF THE MAGNETIC FIELD. THEREFORE EXTERNAL VIBRATIONS OR SHOCKS AFFECTING THE MAGNET MAY DEGRADE IMAGE QUALITY. IN THE THREE SPATIAL ORIENTATIONS THE BUILDING MUST NOT EXCEED ACCELERATION OF 0.001 m/s^2 OR -80 dB(G) G=9.81 m/s^2

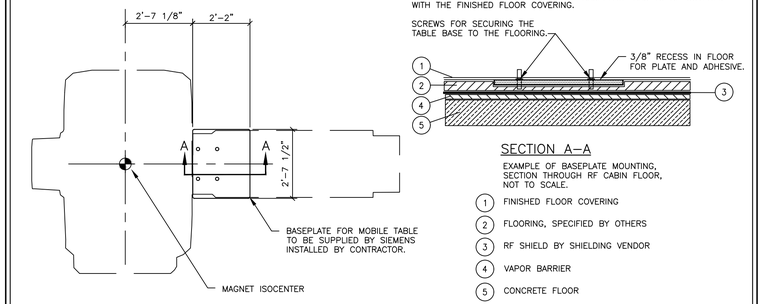
THE REQUIREMENT FOR a_{max} IS REASURED AS MAXIMUM RMS VALUE PER FREQUENCY COMPONENT <0.5Hz IN THE FOURIER TRANSFORMATION OF THE RECORDED SIGNAL (SPECTRUM).

THE VIBRATION LEVEL OF CONTINUOUS VIBRATIONS (CAUSED BY AIR CONDITIONER, COMPRESSOR, ETC.) AT THE LOCATION OF THE MAGNET MUST NOT EXCEED THE SPECIFIED VALUES. FOR ALL NON-CONTINUOUS TRANSIENT VIBRATIONS THE FIGURES SHOULD BE MULTIPLIED BY 4 (OR 12 dB).

CONTACT SIEMENS PROJECT MANAGER FOR MORE DETAILS.

ANTI STATIC FLOOR COVERING IS NECESSARY TO REDUCE THE RISK OF STATIC ELECTRIC DISCHARGES THAT MAY DAMAGE SENSITIVE EQUIPMENT AND COMPONENTS.

1 | MAGNET BASE DETAIL | SCALE: 3/8"=1'-0"



2 | BASEPLATE FOR MOBILE PATIENT TABLE | SCALE: 3/8"=1'-0"

STRUCTURAL NOTES

1) THE CUSTOMER/CONTRACTOR SHALL FURNISH AND INSTALL ALL STRUCTURAL SUPPORT MEMBERS AND NEEDED HARDWARE FOR THE INSTALLATION OF THE SIEMENS EQUIPMENT.

2) THE OVERHEAD STRUCTURAL SUPPORT SYSTEM SHALL BE FIXED, RIGID AND BRACED FOR SWAY.

3) ALL STRUCTURAL SUPPORT MEMBERS SHALL BE TRUE, SQUARE, LEVEL, PARALLEL AND COPLANAR WITH RESPECT TO EACH OTHER, WITH A HORIZONTAL STRUCTURAL SUPPORT MEMBER TO BE LOCATED AND SET WITH A TRANSIT.

4) ALL STRUCTURAL SUPPORT DETAILS SHOWN ARE SAMPLE DETAILS BASED UPON TYPICAL AND STANDARD BUILDING PRACTICES AND ARE NOT INTENDED AS ACTUAL CONSTRUCTION DETAILS. ALL CONSTRUCTION DETAILS AND SUPPORT CALCULATIONS SHALL BE PREPARED BY A PROFESSIONAL STRUCTURAL ENGINEER AT THE CUSTOMER'S EXPENSE. IN THE EVENT AN EXISTING SUPPORT SYSTEM IS TO BE USED, IT WILL BE THE CUSTOMER'S RESPONSIBILITY TO VERIFY THE INTEGRITY OF THAT SYSTEM.

5) MOUNTING PLATES, FRAMES, AND HARDWARE SUPPLIED BY SIEMENS AS DETAILED IN THIS DRAWING SET ARE INSTALLED BY SIEMENS UNLESS OTHERWISE REQUIRED. ANY DEVIATION FROM THE PROVIDED MATERIALS OR MOUNTING METHODS MUST BE DESIGNED AND DOCUMENTED BY THE STRUCTURAL ENGINEER OF RECORD. ALTERNATE MOUNTING MATERIALS (I.E. ANCHORS, THREADED ROD, BACKING PLATES, ETC.) MUST BE SUPPLIED BY THE CUSTOMER/CONTRACTOR. SIEMENS MAY REQUIRE ASSISTANCE FROM THE CUSTOMER/CONTRACTOR WITH INSTALLATION WHEN UTILIZING ALTERNATE MOUNTING MATERIALS.

6) ALL CEILING FIXTURES (I.E. AIR SUPPLY GRILLES, AIR RETURN GRILLES, EXHAUST GRILLES, SPRINKLER HEADS, INCANDESCENT AND FLUORESCENT LIGHT FIXTURES, INTERCOM SPEAKERS, MEDICAL GAS COLUMNS, ETC.) SHALL BE INSTALLED FLUSH MOUNTED WITH THE FINISHED CEILING TO PROVIDE FREE AND UNRESTRICTED TRAVEL OF THE SMS CEILING MOUNTED EQUIPMENT.

7) THE STRUCTURAL PLANNING AS SHOWN ON THE 1/4" STRUCTURAL PLAN HAS BEEN COORDINATED WITH THE EQUIPMENT LOCATION AS SHOWN ON THE 1/4" EQUIPMENT LAYOUT PLAN. FOR THIS REASON, ANY DEVIATIONS FROM THE STRUCTURAL PLANNING AS SHOWN MUST BE APPROVED BY SMS PLANNING DEPARTMENT.

8) THE STRUCTURAL ENGINEER OF RECORD SHALL BE RESPONSIBLE FOR THE DESIGN AND DETAIL OF FLOOR, WALL AND CEILING STRUCTURES IN ACCORDANCE WITH THE WEIGHTS, MOMENTS AND FORCES AS SHOWN ON OUR STRUCTURAL CALCULATIONS, OR INFORMATION,IN CONSIDERATION OF FORCES AS DETERMINED PER LOCAL GOVERNING BUILDING CODES.

SYSTEM SPECIFICATION STATUS

PLEASE NOTE: CURRENT STATUS IS DRAFT

SIEMENS RESERVES THE RIGHT TO MAKE CHANGES AND OTHER MODIFICATIONS BASED UPON, BUT NOT LIMITED TO, NEW TECHNICAL DEVELOPMENTS. UNTIL RELEASE OF THE PLANNING GUIDELINE, CONTENT OF PRELIMINARY AND FINAL PLANNING IS SUBJECT TO CHANGE AND MODIFICATION.

CEILING HEIGHTS

EXAM ROOM 7'-11" MINIMUM
CONTROL ROOM 6'-11 MINIMUM
EQUIPMENT ROOM 7'-3" MINIMUM

ATTENTION:

- THIS DRAWING IS DESIGNED TO CONFORM TO FEATURES AND EQUIPMENT REQUIREMENTS PRESENTED AT THE TIME OF THEIR PREPARATION. SINCE BOTH THESE FACTORS ARE SUBJECT TO DESIGN MODIFICATION, THEY ARE NOT TO BE USED FOR CONSTRUCTION PURPOSES.
- THIS SET OF PLANS REPRESENTS A COMPLETE SET OF DETAILS AND SHOULD NOT BE SEPARATED.
- IT IS RECOMMENDED THAT THE SIEMENS DRAWINGS BE INCORPORATED WITH THE CONSTRUCTION DOCUMENTS FOR REFERENCE.
- ALL DIMENSIONS SHOWN ON THIS DRAWING ARE FROM FINISHED SURFACES.
- THIS DRAWING DOES NOT PROVIDE RADIATION SHIELDING REQUIREMENTS FOR X-RAY AND ASSOCIATED EQUIPMENT. THE CUSTOMER IS RESPONSIBLE FOR CONSULTING WITH A REGISTERED RADIATION PHYSICIST TO SPECIFY RADIATION PROTECTION.

SYM	DATE	DESCRIPTION
△	N/A	TYPICAL DRAWING SET

-ISSUE BLOCK-

ALTEA REV D

SIEMENS

MAGNETOM ALTEA

TYPICAL FINAL DRAWING SET

PROJECT #: 19073

SHEET: S-101

SHEET 5 OF 10

DRAWN BY: B. HERRMANN

SCALE: AS NOTED

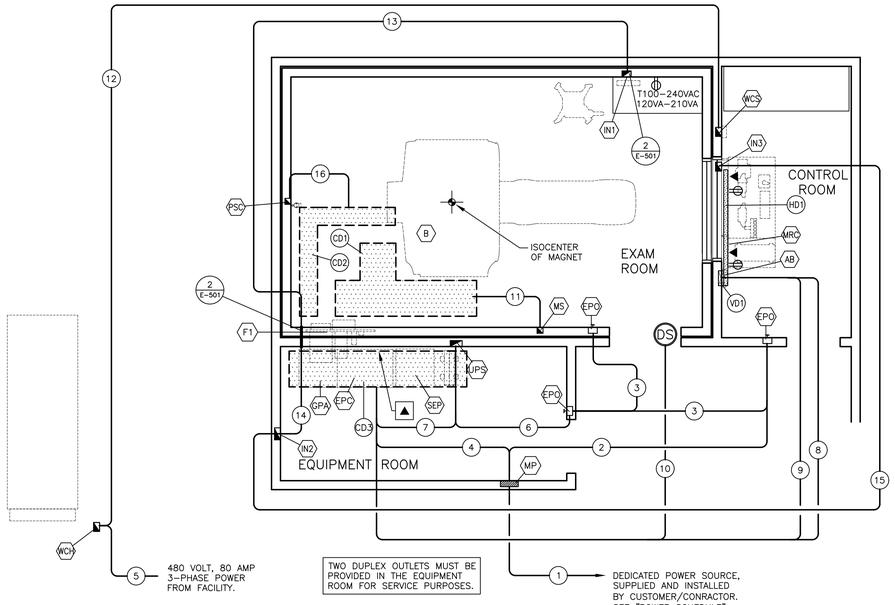
REF. #: ---

DATE: N/A

NOT FOR CONSTRUCTION - REFERENCE DOCUMENT -

ELECTRICAL RACEWAY PLAN

SCALE: 1/4" = 1'-0"



SYMBOLS

ALL MAY NOT APPLY

	CAUTION OR WARNING
	CRITICAL NOTE(S)
	PANEL OR ENCLOSURE BY CUSTOMER/CONTRACTOR
	OPENING IN RACEWAY OR TRENCHDUCT
	PULLBOX IN (FLOOR/WALL/CEILING)
	OPENING IN ACCESS FLOORING
DS	RF DOOR SWITCH – MCMASTER-CARR SUPPLY ROLLER LIMIT SWITCH 7076k14 PROVIDED BY CONTRACTOR, AND MOUNTED AT TOP OF DOOR. COORDINATE WITH SIEMENS PROJECT MANAGER.
	(EPO) EMERGENCY POWER OFF BUTTON
	CEILING DUCT
	SURFACE MOUNTED DUCT
	VERTICAL DUCT
	ETHERNET CONNECTION TO CUSTOMER'S INFORMATION SYSTEMS NETWORK IN AN ACCESSIBLE LOCATION (VERIFY WITH SIEMENS PROJECT MANAGER).
	110 VOLT, 20 AMP, HOSPITAL GRADE DUPLEX OUTLET LOCATED NEAR THE ETHERNET CONNECTION.

REV 2

ELECTRICAL LEGEND

SYM	SIZE	DESCRIPTION SUPPLIED AND INSTALLED BY CUSTOMER/CONTRACTOR	REMARKS
AB	3"ø	OPENING IN FACE OF VERTICAL DUCT 5'-0" ABOVE FINISHED FLOOR IN LOCATION TO BE COORDINATED WITH THE ARCHITECT.	ALARM BOX
EPA EPA EPA	18" x 18"	LOCATION FOR CABLES TO DROP OUT OF BOTTOM OF RACEWAY.	ELECTRONICS CABINETS
B	AS REQUIRED	LOCATION FOR CABLES TO DROP OUT OF BOTTOM OF RACEWAY.	MAGNET CABLE ACCESS
EPA	----	EMERGENCY POWER OFF BUTTONS, MOUNTED WITH CENTERLINE AT 5'-0" ABOVE FINISHED FLOOR. ALL PARTS ARE TO BE NONFERROUS INSIDE THE RF ROOM. EXACT LOCATIONS ARE TO BE VERIFIED WITH THE ARCHITECT OF RECORD.	SEE POWER SCHEDULE, SHEET E-102
F1	----	SIEMENS RF FILTER PANEL TO BE MOUNTED ON RF SHIELDED WALL	FILTER PANEL
IN1	AS REQUIRED	NON-FERROUS PULL BOX MOUNTED FLUSH WITH FINISHED WALL MOUNTED 2'-0" ABOVE FINISHED FLOOR. PROVIDE NEATLY FINISHED AND REMOVABLE COVER WITH CABLE EXIT. EXACT LOCATION TO BE COORDINATED WITH THE ARCHITECT.	INJECTOR POWER SUPPLY- MUST BE LOCATED OUTSIDE OF 5mT FIELD
IN2	AS REQUIRED	PULL BOX MOUNTED FLUSH WITH FINISHED WALL IN EQUIPMENT ROOM, MOUNTED 2'-0" ABOVE FINISHED FLOOR. PROVIDE NEATLY FINISHED AND REMOVABLE COVER WITH CABLE EXIT. EXACT LOCATION TO BE COORDINATED WITH THE ARCHITECT.	INJECTOR POWER SUPPLY
IN3	AS REQUIRED	PULL BOX MOUNTED FLUSH WITH FINISHED WALL IN CONTROL AREA, MOUNTED 2'-0" ABOVE FINISHED FLOOR. PROVIDE NEATLY FINISHED AND REMOVABLE COVER WITH CABLE EXIT. EXACT LOCATION TO BE COORDINATED WITH THE ARCHITECT.	INJECTOR CONTROL CONSOLE
MP	----	MAIN PANEL WITH MAIN BREAKER. EXACT LOCATION DETERMINED BY CUSTOMER/CONTRACTOR	SEE POWER SCHEDULE
MRC	4" x 4"	OPENING IN FACE OF RACEWAY IN SHOWN LOCATION.	HOST COMPUTER
MS	AS REQUIRED	NON-FERROUS SINGLE GANG BOX MOUNTED FLUSH WITH FINISHED WALL MOUNTED 6'-0" ABOVE FINISHED FLOOR. PROVIDE NEATLY FINISHED AND REMOVABLE COVER WITH CABLE EXIT. EXACT LOCATION TO BE COORDINATED WITH THE ARCHITECT.	MAGNET STOP
PSC	AS REQUIRED	PULL BOX MOUNTED FLUSH WITH FINISHED WALL REFER TO HEIGHT CHART A-501-3. THE PULL BOX CAN BE MOUNTED AT APPROXIMATELY 5'-0" ABOVE THE FINISHED FLOOR IN MOST CASES, DEPENDING ON THE DISTANCE FROM THE MAGNET TO THE WALL.	PATIENT SUPERVISION CAMERA
UPS	AS REQUIRED	PULL BOX MOUNTED FLUSH WITH FINISHED WALL AT FLOOR LINE IN SHOWN LOCATION PROVIDED WITH 2"ø OPENING IN FINISHED COVER.	UEBERT 9XT4 UPS
CD1	24"x4"	ALUMINUM LADDER TRAY, MOUNTED AT HEIGHT COORDINATED WITH SIEMENS PROJECT MANAGER, IN THE EXAM ROOM, MAINTAINING 12" CLEARANCE ABOVE THE TRAY FOR ACCESS. CABLE LADDER IS REQUIRED TO SUPPORT INTERCONNECTING CABLES BETWEEN THE FILTER PANEL AND THE MAGNET. A 15" MINIMUM CLEARANCE IS REQUIRED BETWEEN THE LADDER TRAY AND THE RF FILTER PANEL (F1). WHEN ROUTING ALL RACEWAYS REFER TO DETAIL E-501/2 TAKING CARE SO THAT MAXIMUM CABLE LENGTHS ARE NOT EXCEEDED. DO NOT LOCATE THIS CABLE TRAY ABOVE THE MAGNET.	CABLE TRAY SEE DETAIL E-501/1
CD2	12"x4"	ALUMINUM LADDER TRAY, MOUNTED AT HEIGHT COORDINATED WITH SIEMENS PROJECT MANAGER IN EXAM ROOM. A 12" SEPARATION BETWEEN CD1 AND CD2 MUST BE MAINTAINED. DO NOT LOCATE THIS CABLE TRAY ABOVE THE MAGNET.	CABLE TRAY SEE DETAIL E-501/1
CD3	24"x4"	ALUMINUM LADDER TRAY, MOUNTED AT HEIGHT COORDINATED WITH SIEMENS PROJECT MANAGER IN EQUIPMENT ROOM MAINTAINING 12" CLEARANCE ABOVE THE TRAY FOR ACCESS. CABLE LADDER IS REQUIRED TO SUPPORT INTERCONNECTING CABLES BETWEEN THE EQUIPMENT ROOM AND THE RF FILTER PANEL (F1). AN 18" MINIMUM CLEARANCE IS REQUIRED BETWEEN THE LADDER TRAY AND THE FILTER PANEL.	CABLE TRAY SEE DETAIL E-501/1
HD1	4" x 2"	HORIZONTAL DUCT SURFACE MOUNTED ON WALL IN CONTROL AREA AT FLOOR LINE AS SHOWN, FINISHED TO MATCH WALLS.	
VD1	10" x 3-1/2"	VERTICAL DUCT MOUNTED FLUSH WITH FINISHED WALL IN CONTROL AREA FROM ABOVE FINISHED CEILING TO FLOOR LINE PROVIDED WITH REMOVABLE FINISHED COVERS.	
1	AS PER NEC	CONDUIT FROM FACILITY POWER TO MAIN PANEL "MP".	SEE POWER SCHEDULE, SHEET E-102
2	AS PER NEC	CONDUIT FROM "MP" TO "EPO".	SEE POWER SCHEDULE, SHEET E-102
3	AS PER NEC	CONDUIT FROM "EPO" TO "EPO" TO BE NON-FERROUS WHEN INSIDE THE RF ROOM. CUSTOMER/CONTRACTOR IS TO PROVIDE RF FILTERS FOR ALL NON-SIEMENS WIRING.	SEE POWER SCHEDULE, SHEET E-102
4	(1) 2"ø	CONDUIT FROM "MP" TO END AT "CD3" (EPC) VIA FLEX CONDUIT. THERE MUST BE A DIELECTRIC SEPARATION BETWEEN THE CONDUIT AND THE CONNECTION AT THE SIEMENS EPC CABINET.	SEE POWER SCHEDULE, SHEET E-102
5	(1) 2"ø	CONDUIT FROM FACILITY POWER TO "WCH".	
6	(1) 3/4"ø	CONDUIT FROM "EPO" TO "UPS".	
7	(1) 2"ø	CONDUIT FROM "UPS" TO "CD3" (EPC)	MAXIMUM LENGTH 29 FEET
8	(2) 2 1/2"ø	CONDUIT FROM "VD1" (MRC) TO "CD3" (EPC).	NOT TO EXCEED 54 FT.
9	(1) 1 1/2"ø	CONDUIT FROM "VD1" (AB) TO "CD3" (EPC).	NOT TO EXCEED 60 FT.
10	(1) 1/2"ø	CONDUIT FROM "DS" TO "CD3" (EPC).	NOT TO EXCEED 60 FT.
11	(1) 3/4"ø	CONDUIT FROM "MS" TO "CD1" (WIRES TO MAGNET) TO BE NON-FERROUS WHEN INSIDE THE RF ROOM.	NOT TO EXCEED 25 FT.
12	(1) 2"ø	CONDUIT FROM "WCH" TO "WCS".	NOT TO EXCEED 150 FEET
13	(1) 2"ø	NON-FERROUS CONDUITS FROM NEAR "F1" TO "IN1" FOR INJECTOR CABLES.	NOT TO EXCEED 40 FEET
14	(1) 2"ø	CONDUITS FROM NEAR FILTER LOCATION TO "IN2".	
15	(1) 2"ø	CONDUIT FROM "IN2" TO "IN3" FOR INJECTOR CABLES.	NOT TO EXCEED 150 FEET
16	(1) 1"ø	NON-FERROUS CONDUIT FROM "PSC" TO "CD1".	

CONTRACTOR SUPPLIED CABLES

FROM	VIA	TO	DESCRIPTION	REMARKS
SOURCE	1	MP	(3) PHASE CONDUCTORS, (1) FULL SIZE EQUIPMENT GROUND WIRE TO BE SIZED BY ELECTRICAL CONTRACTOR/ENGINEER.	
MP	2	EPO	DETERMINED BY ELECTRICAL CONTRACTOR.	
EPO	3	EPO	DETERMINED BY ELECTRICAL CONTRACTOR.	
MP	4,CD3	EPC	(3) 2/0 AND (1) 2/0 EQUIPMENT GROUND. TO REDUCE EMI (INTERFERENCE) THE POWER CABLES MUST BE SHIELDED. THIS CAN BE ACHIEVED BY USING EMT, WHICH IS CONSIDERED A SHIELDING DEVICE. IF CABLES ARE RUN IN FREE AIR SHIELDED CONDUCTORS MUST BE USED.	LANDED BY ELECTRICAL CONTRACTOR
SOURCE	5	WCH	(3) PHASE CONDUCTORS, (1) FULL SIZE EQUIPMENT GROUND WIRE TO BE SIZED BY ELECTRICAL CONTRACTOR/ENGINEER.	
EPO	6	UPS	DETERMINED BY ELECTRICAL CONTRACTOR.	6 FOOT TAILS
WCH	12	WCS	DATA CABLE PROVIDED BY CHILLER MANUFACTURER, INSTALLED BY CONTRACTOR.	

CEILING HEIGHTS

EXAM ROOM 7'-11" MINIMUM
CONTROL ROOM 6'-11 MINIMUM
EQUIPMENT ROOM 7'-3" MINIMUM

ELECTRICAL NOTES

1) COMPLIANCE: ELECTRICAL WORK SHALL BE IN COMPLIANCE WITH THE LATEST EDITION OF THE NATIONAL ELECTRICAL CODE (NFPA-70), O.S.H.A. REGULATIONS, AS WELL AS APPLICABLE REGULATIONS OF CITY, COUNTY, STATE AND FEDERAL AGENCIES. PROVIDE MATERIALS AND EQUIPMENT THAT COMPLY TO ANSI, IEEE AND NEMA STANDARDS. WHERE APPLICABLE, PROVIDE ONLY MATERIALS AND PRODUCTS THAT ARE UL LISTED AND LABELED. THE CUSTOMER'S/CONTRACTOR'S WORK SHALL COMPLY WITH THE LATEST EDITION OF NATIONAL ELECTRICAL CODE.
2) QUALITY ASSURANCE: THE CONTRACTOR SHALL VERIFY EXISTING CONDITIONS IN THE FIELD TO INSURE THAT THE NEW WORK WILL FIT THE EXISTING STRUCTURE AS SHOWN ON THE DRAWINGS. SHOULD ANY CONDITIONS EXIST OR BE DISCOVERED THAT PREVENT THE INSTALLATION OF WORK AS SHOWN, THE CONTRACTOR SHALL NOTIFY THE OWNER'S REPRESENTATIVE PRIOR TO FABRICATION OF EQUIPMENT, OR THE PERFORMANCE OF ANY WORK THAT MAY BE AFFECTED. DO NOT ALTER DRAWINGS, DIMENSIONS, OR SPECIFICATIONS IN ANY WAY WITHOUT CONTACTING AND RECEIVING WRITTEN CONFIRMATION FROM SIEMENS PROJECT MANAGER. ALL DIMENSIONS ARE FROM FINISHED SURFACES. CONDUIT AND PULL BOXES TO BE INSTALLED BY THE CUSTOMER/CONTRACTOR WITH LOCATIONS BEING FIELD VERIFIED BY SIEMENS PROJECT MANAGER.
3) POWER SUPPLY SOURCE: POWER SUPPLIES FOR SIEMENS HEALTHCARE EQUIPMENT SHALL BE DEDICATED CIRCUIT.
4) WORK FURNISHED BY CUSTOMER/CONTRACTOR: WORK NOT PROVIDED BY SIEMENS HEALTHCARE BUT SHOWN ON DRAWINGS TO BE FURNISHED AND INSTALLED BY CUSTOMER/CONTRACTOR INCLUDES THE FOLLOWING BUT IS NOT LIMITED TO UNLESS NOTED OTHERWISE: ELECTRICAL RACEWAYS AND DUCTS, WIRING TROUGHS, PULL BOXES, CONDUITS, CIRCUIT BREAKERS, EMERGENCY OFF BUTTONS, DOOR SWITCHES, WARNING LIGHTS, WIRING, WIRING DEVICES, CONNECTORS, LIGHTING EQUIPMENT AND GROUNDING.
5) RACEWAY AND CONDUIT NOTES: ALL ITEMS IN THE MAGNET ROOM SHALL BE NON-FERROUS. ALL CONDUITS SHALL BE INSTALLED PER LATEST NATIONAL ELECTRICAL CODE.
CONDUIT BODIES SHALL NOT BE USED. WHERE A CONDUIT ENTERS A BOX, FITTING, OR OTHER ENCLOSURE, AN INSULATED THROAT CONNECTOR SHALL BE PROVIDED TO PROTECT THE WIRE FROM ABRASION.
KEEP RACEWAYS AT LEAST 6 INCHES AWAY FROM PARALLEL RUNS OF FLUES OR STEAM AND HOT WATER PIPES. INSTALL RACEWAY RUNS ABOVE WATER AND STEAM PIPES PROVIDED THAT CABLE RUN DISTANCES ARE MAINTAINED. USE TEMPORARY CLOSURES TO PREVENT FOREIGN MATTER FROM ENTERING RACEWAY.
CONDUIT RUNS ARE SHOWN SCHEMATICALLY. INSTALL CONDUIT WITH A MINIMUM OF BENDS IN THE SHORTEST PRACTICAL DISTANCE CONSIDERING THE BUILDING CONSTRUCTION AND OBSTRUCTIONS, EXCEPT AS OTHERWISE INDICATED. THE CONTRACTOR SHALL MAKE CERTAIN THAT ANY CONDUIT/RACEWAY RUNS CONTAINING SIEMENS HEALTHCARE CABLES DO NOT EXCEED THE SPECIFIED MAXIMUM DISTANCES AS SHOWN ON THE ELECTRICAL DETAILS.
PROVIDE ENCLOSED METAL SYSTEM (WIRE DUCT) WIRE DUCT RACEWAY SYSTEM WHERE SHOWN ON DRAWINGS WITH DIVIDERS TO SEPARATE THE DUCT FOR POWER AND SIEMENS HEALTHCARE CABLING). DIVIDERS AND CROSSOVER PIECES TO BE PROVIDED AS NECESSARY. FOR UL SYSTEMS, THE CABLE TO CABLE AS WELL AS THE CIRCUIT TO CIRCUIT SEPARATION REQUIREMENT WAS EVALUATED DURING THE UL SYSTEM INVESTIGATION OF THIS EQUIPMENT. ADDITIONAL SEPARATION OF THE SYSTEM CABLE ASSEMBLIES INTO SEPARATE OR PARTITIONED RACEWAYS, UNLESS OTHERWISE NOTED, IS NOT NECESSARY TO INSURE SEPARATION OF CIRCUITS AS THEY CAN BE IN THE SAME RACEWAY.
PROVIDE WIRE DUCT/RACEWAY WITH ACCESSIBLE REMOVABLE COVERS. LOCATIONS OF OPENINGS (I.E. ACCESS PANELS) TO BE CUT IN FIELD ARE TO BE COORDINATED WITH SIEMENS PROJECT MANAGER. ELECTRICAL PULL BOXES AND RACEWAY COVERS SHALL BE INSTALLED IN A MANNER TO ALLOW ACCESSIBILITY FOR INSTALLATION AND MAINTENANCE. IN-FLOOR TRENCH DUCT AND FLUSH FLOOR BOXES SHALL BE PROVIDED WITH FULLY GASKETED REMOVABLE COVERS.
WHEN JUNCTION BOXES AND WIRE DUCT/RACEWAY ARE MOUNTED HIGHER THAN 14 FEET ABOVE FINISHED FLOOR, THE ELECTRICAL CONTRACTOR SHALL PROVIDE TWO ELECTRICIANS TO HELP THE SIEMENS INSTALL TEAM PULL SIEMENS SUPPLIED CABLES AT CUSTOMER EXPENSE.
WHEN JUNCTION BOXES AND WIRE DUCT/RACEWAY ARE MOUNTED ABOVE A HARD CEILING (I.E. SHEET ROCK), A 24" x 24" ACCESS PANEL IS REQUIRED AT EACH JUNCTION BOX AND WITHIN 2 FEET OF EACH RACEWAY TRANSITION IN WIRE DUCT/RACEWAY. THERE MUST BE FREE AND CLEAR ACCESS TO JUNCTION BOXES AND WIRE DUCT/RACEWAY. WHEN ACCESS PANELS ARE LOCATED MORE THAN 3 FEET FROM JUNCTION BOXES AND WIRE DUCT/RACEWAY THE ELECTRICAL CONTRACTOR SHALL PROVIDE TWO ELECTRICIANS TO HELP SIEMENS INSTALL TEAM PULL SIEMENS SUPPLIED CABLES AT CUSTOMER EXPENSE.
6) WIRING: WIRING SHALL BE 600 VOLT CLASS, STRANDED TYPE THHN-THWN, SINGLE CONDUCTOR ANNEALED COPPER FOR A MAXIMUM OPERATING TEMPERATURE OF 75° C (165° F). SIZED AS INDICATED. THE CUSTOMER/CONTRACTOR SHALL LEAVE MINIMUM 10 FT. WIRE TAILS AT ALL OUTLET POINTS WITH WIRE IDENTIFICATION TAGGED AT BOTH ENDS FOR FINAL CONNECTION BY THE CUSTOMER/ELECTRICAL CONTRACTOR.
7) ALL CIRCUIT BREAKERS SHALL BE RATED FOR 25 kV RMS SHORT CIRCUIT RATING.

SYSTEM SPECIFICATION STATUS

PLEASE NOTE: CURRENT STATUS IS DRAFT

SIEMENS RESERVES THE RIGHT TO MAKE CHANGES AND OTHER MODIFICATIONS BASED UPON, BUT NOT LIMITED TO, NEW TECHNICAL DEVELOPMENTS. UNTIL RELEASE OF THE PLANNING GUIDELINE, CONTENT OF PRELIMINARY AND FINAL PLANNING IS SUBJECT TO CHANGE AND MODIFICATION.

ALTEA
REV D

ATTENTION:

- THIS DRAWING IS DESIGNED TO CONFORM TO FEATURES AND EQUIPMENT REQUIREMENTS PRESENTED AT THE TIME OF THEIR PREPARATION. SINCE BOTH THESE FACTORS ARE SUBJECT TO DESIGN MODIFICATION, THEY ARE NOT TO BE USED FOR CONSTRUCTION PURPOSES.
- THIS SET OF PLANS REPRESENTS A COMPLETE SET OF DETAILS AND SHOULD NOT BE SEPARATED.
- IT IS RECOMMENDED THAT THE SIEMENS DRAWINGS BE INCORPORATED WITH THE CONSTRUCTION DOCUMENTS FOR REFERENCE.
- ALL DIMENSIONS SHOWN ON THIS DRAWING ARE FROM FINISHED SURFACES.
- THIS DRAWING DOES NOT PROVIDE RADIATION SHIELDING REQUIREMENTS FOR X-RAY AND ASSOCIATED EQUIPMENT. THE CUSTOMER IS RESPONSIBLE FOR CONSULTING WITH A REGISTERED RADIATION PHYSICIST TO SPECIFY RADIATION PROTECTION.

SYM	DATE	DESCRIPTION
△	N/A	TYPICAL DRAWING SET

-ISSUE BLOCK-

SIEMENS

MAGNETOM ALTEA

TYPICAL FINAL DRAWING SET

PROJECT #: 19073

SHEET: E-101

SHEET OF 6 10

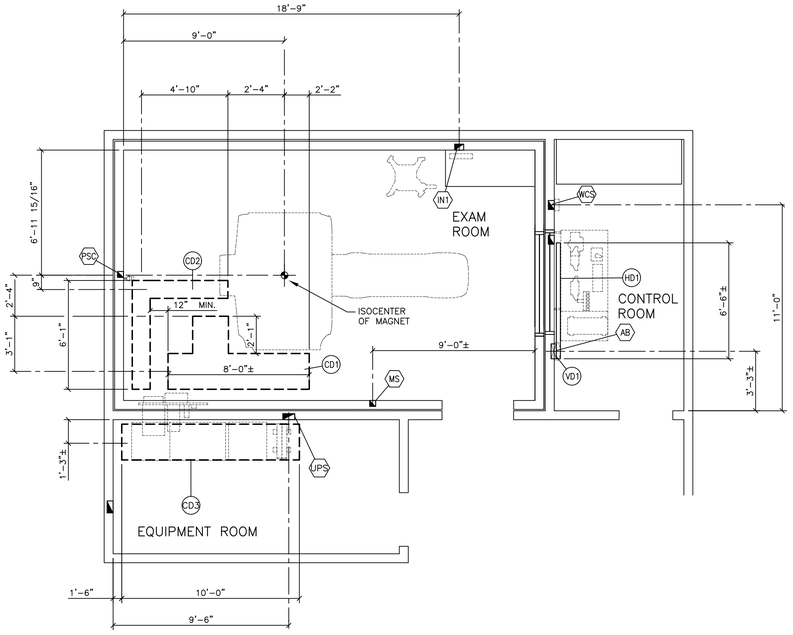
DRAWN BY: B. HERRMANN

SCALE: AS NOTED

REF. #: ---

DATE: N/A

REFERENCE DOCUMENT - NOT FOR CONSTRUCTION

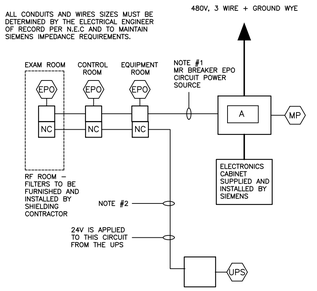


ELECTRICAL DIMENSION PLAN

SCALE: 1/4" = 1'-0"

POWER SCHEDULE

ALL CONDUITS AND WIRES SIZES MUST BE DETERMINED BY THE ELECTRICAL ENGINEER OF RECORD PER N.E.C AND TO MAINTAIN SIEMENS IMPEDANCE REQUIREMENTS.



ITEM	QTY	DESCRIPTION
MP	1	MAIN PANEL WITH MAIN BREAKER FLUSH OR SURFACE MOUNTED.
A	1	MR SYSTEM BREAKER MUST HAVE TRIPPING DEVICE SO WHEN ANY EPO IS PRESSED THE BREAKER TRIPS.
		MR BREAKER AMPS: SEE POWER REQUIREMENTS

VOLTS	PHASES	NEUTRAL	GROUND	TOTAL WIRES
480	3	0	1	4 (NOTE 1)

1) ALL WIRES MUST BE SAME SIZE.
NOTE: UNLESS OTHERWISE NOTED ALL BREAKERS WILL BE 80% RATED.

EPO	VARIES	NOTE 1 – EPO CIRCUIT #1 MAIN CIRCUIT BREAKER EMERGENCY POWER OFF BUTTON WITH PROTECTIVE COVER THAT PREVENTS ACCIDENTAL ACTIVATION. THE EPO MUST BE OF FAIL-SAFE DESIGN, ALL EPO'S TO HAVE MECHANICAL LATCHING MECHANISM. EPO MUST BE RESET BEFORE MR BREAKER CAN RESUME OPERATION. CONTACTS AND WIRING CONFIGURATION TO BE DESIGNED BY ELECTRICAL ENGINEER OF RECORD. NOTE 2 – EPO CIRCUIT #2 EPO CONTACTS TO BE NORMALLY CLOSED, WIRED IN SERIES, CONNECTED TO 9130 UPS ONLY. THE EPO'S MUST BE INSTALLED BY A QUALIFIED ELECTRICAL CONTRACTOR ACCORDING TO NATIONAL ELECTRICAL CODE, STATE AND LOCAL REGULATIONS. THE CUSTOMER IS SOLELY RESPONSIBLE FOR THE IMPLEMENTATION OF THE EPO'S AND THEIR ASSOCIATED CIRCUITS AND MUST MAKE THE FINAL DETERMINATION CONSIDERING ALL SITE CONDITIONS AND REGULATORY FACTORS.

UNLESS OTHERWISE NOTED, ALL ITEMS LISTED IN THIS SCHEDULE SHALL BE SUPPLIED AND INSTALLED BY CUSTOMER/CONTRACTOR.

REV 0

POWER QUALITY NOTES

1) IT IS THE CUSTOMER'S RESPONSIBILITY TO COMPLY WITH THE POWER QUALITY REQUIREMENTS FOR SIEMENS MEDICAL SYSTEMS EQUIPMENT.
2) THE ELECTRICAL FEEDER TO THE SIEMENS MEDICAL SYSTEMS EQUIPMENT MUST FEED ONLY THE IMAGING SYSTEM AND BE KEPT SEPARATE FROM ELECTRICAL FEEDERS TO HVAC, MOTORS, PUMPS, COMPRESSORS, ELEVATORS, AND OTHER POTENTIAL SOURCES OF ELECTRICAL INTERFERENCE.
3) THE ELECTRICAL FEEDER TO THE IMAGING SYSTEM MUST BE RUN DIRECTLY TO A MAIN FACILITY DISTRIBUTION PANEL OR TO THE FACILITY SERVICE ENTRANCE, WITH NO OTHER LOADS POWERED FROM THIS FEEDER.
4) IN ORDER TO COMPLY WITH IMAGING SYSTEM POWER QUALITY REQUIREMENTS, ADDITIONAL POWER CONDITIONING DEVICES MAY BE REQUIRED. EXAMPLES INCLUDE VOLTAGE REGULATORS, TRANSFORMERS, SURGE PROTECTIVE DEVICES, FILTERS, AND/OR UNINTERRUPTIBLE POWER SUPPLIES (UPS). RECOMMENDED FOR THE INSTALLATION OF ELECTRONIC EQUIPMENT CAN BE FOUND IN IEEE STANDARD 1100-1999 "POWERING AND GROUNDING ELECTRONIC EQUIPMENT.
5) POWER CONDITIONING DEVICES NOT APPROVED BY SIEMENS MEDICAL SYSTEMS MAY NOT BE COMPATIBLE WITH THE MAGNETOM SYSTEM. "FERRORESONANT" POWER CONDITIONING EQUIPMENT RE-APPLIED FROM PREVIOUS GENERATION SYSTEMS IS ALSO GENERALLY EXCLUDED DUE TO HIGHER POWER REQUIREMENTS OF THE NEWER SYSTEMS.
6) INCOMING SOURCE POWER WIRES MUST BE SEPARATED FROM ANY SIEMENS CABLING BY A MINIMUM OF 12".

REV 0

CEILING HEIGHTS

EXAM ROOM 7'-11" MINIMUM
CONTROL ROOM 6'-11 MINIMUM
EQUIPMENT ROOM 7'-3" MINIMUM

POWER REQUIREMENTS

VOLTAGE VARIATION:480 VAC ±10% FOR ALL LINE AND LOAD CONDITIONS
VOLTAGE UNBALANCE: 2% MAXIMUM DIFFERENCE BETWEEN PHASES

VOLTAGE:	480 – 3 PHASE
FREQUENCY:	60 Hz ± 1.0 Hz
LINE IMPEDENCE:	<180 mOHMS
CONNECTION VALUE	69 kVA
SHORT TIME POWER (LESS THAN 3 SECONDS)	75 kVA
MR SYSTEM BREAKER SIZE (A)	100 A
ALL BREAKERS ARE RATED AT 80%	

POWER QUALITY

POOR POWER WILL ALTER EQUIPMENT PERFORMANCE

IT IS IN THE CUSTOMER'S INTEREST THAT THE ELECTRICAL CONTRACTOR BE RESPONSIBLE FOR TESTING AND VERIFYING THAT THE EQUIPMENT POWER SUPPLY COMPLIES WITH THE SIEMENS SPECIFICATIONS.

DEMAND AND CAPACITY

1) IF EQUIPMENT UPGRADE IS ANTICIPATED, INSTALLING ELECTRICAL POWER TO MEET THE REQUIREMENTS OF THE HIGHER POWER GRADIENT PACKAGE AT THE TIME OF INITIAL INSTALLATION WILL REDUCE THE COST TO UPGRADE THE ELECTRICAL SYSTEM LATER.

2) RECOMMENDED TRANSFORMER SIZE (SYSTEM WITHOUT UPS) IS BASED ON INDUSTRY STANDARD ISOLATION TRANSFORMER KVA RATINGS. SOURCE IMPEDANCE FEEDING THE MAGNETOM SYSTEM, INCLUDING ANY ISOLATION TRANSFORMERS, MUST MEET EQUIPMENT REQUIREMENTS AS LISTED HERE. SIEMENS RECOMMENDS A TRANSFORMER WITH COPPER WINDINGS, AN ELECTRO-STATIC SHIELD, AND A LOW IMPEDANCE (<3%) TO ENSURE THAT SOURCE IMPEDANCE REQUIREMENTS ARE MET.

3) OVER CURRENT PROTECTION IS SPECIFIED FOR SYSTEMS WITHOUT AN UNINTERRUPTIBLE POWER SUPPLY (UPS). ADDITION OF A UPS REQUIRES A HIGHER CAPACITY MAINS CONNECTION (DEPENDENT UPON UPS MODEL AND SIZE). MAXIMUM FAULT CURRENT IS DEPENDENT UPON THE IMPEDANCE OF THE FACILITY ELECTRICAL SYSTEM. THE CUSTOMER'S ARCHITECT OR ELECTRICAL CONTRACTOR TO SPECIFY AIC RATING OF OVER CURRENT PROTECTION BASED ON FACILITY IMPEDANCE CHARACTERISTICS.

4) MOMENTARY POWER IS BASED ON A MAXIMUM RMS VALUE FOR A PERIOD NOT TO EXCEED FIVE (5) SECONDS, AS DEFINED IN NEC. 517.2. STAND-BY AND AVERAGE CURRENT ARE SUBSTANTIALLY LOWER.

5) THE CONDUCTOR SIZE SHOULD BE SELECTED TO MEET THE VOLTAGE DROP REQUIREMENTS, TAKING INTO CONSIDERATION THE MAINS CAPACITY, RUN LENGTH, AND ANY ADDITIONAL TRANSFORMERS USED TO OBTAIN THE PROPER EQUIPMENT VOLTAGE LEVEL. NEMA STANDARD XR-9-1989 (R1994,R2000) PROVIDES GENERAL GUIDELINES FOR SIZING CONDUCTORS, TRANSFORMERS, AND ELECTRICAL SYSTEMS FOR MEDICAL IMAGING SYSTEMS.

6) LONG-TIME POWER IS BASED ON THE HIGHEST AVERAGE RMS VALUES FOR A PERIOD EXCEEDING 5 MINUTES DURING CLINICAL SYSTEM OPERATION, AS DEFINED IN NEC 517.2.

7) A CIRCUIT BREAKER WITH A HIGH INRUSH RATING (>8x RATED CURRENT) IS REQUIRED TO PERMIT SWITCH-ON OF THE UPS SYSTEM WITHOUT SPURIOUS TRIPPING. CIRCUIT BREAKERS WITH AN ADJUSTABLE MAGNETIC TRIP (SIEMENS FD6 SERIES OR SIMILAR) ARE HIGHLY RECOMMENDED.

REV 1

SYSTEM SPECIFICATION STATUS

PLEASE NOTE: CURRENT STATUS IS DRAFT

SIEMENS RESERVES THE RIGHT TO MAKE CHANGES AND OTHER MODIFICATIONS BASED UPON, BUT NOT LIMITED TO, NEW TECHNICAL DEVELOPMENTS. UNTIL RELEASE OF THE PLANNING GUIDELINE, CONTENT OF PRELIMINARY AND FINAL PLANNING IS SUBJECT TO CHANGE AND MODIFICATION.

ELECTRICAL INSTALLATION NOTES

1) INSTALL THE MR SYSTEM CIRCUIT BREAKER IN OR NEAR THE EQUIPMENT ROOM. THE PERMITTED FRINGE FIELD FOR THE PANEL IS UP TO 3mT. IF THE FRINGE FIELDS HAVE HIGHER VALUES, MAGNETIC SHIELDING MUST BE PROVIDED OR THE DISTANCE FROM THE MAGNET MUST BE INCREASED.

2) AN ACCEPTABLE MEANS FOR SWITCHING MAIN POWER ON AND OFF SHOULD BE INSTALLED IN THE MAIN BREAKER PANEL. INSTALL EMERGENCY SHUTDOWN BUTTONS IN EACH ROOM WHERE THERE IS SIEMENS EQUIPMENT.

3) THE ELECTRICAL FEEDER TO THE SIEMENS EQUIPMENT MUST FEED ONLY THE IMAGING SYSTEM AND BE KEPT SEPARATE FROM ELECTRICAL FEEDERS TO HVAC, MOTORS, PUMPS, COMPRESSORS, ELEVATORS AND OTHER POTENTIAL SOURCES OF ELECTRICAL INTERFERENCE.

4) THE EMERGENCY POWER OFF (EPO) BUTTONS ARE TO BE MUSHROOM TYPE WITH PUSH LOCK AND PULL TO RELEASE.

5) WALL RECEPTACLES MADE OF FERROMAGNETIC MATERIALS ARE NOT PERMITTED IN THE EXAM ROOM. PERIPHERAL UNITS (SUCH AS VENTILATORS) NOT APPROVED FOR USE IN A HIGH MAGNETIC FIELD ENVIRONMENT CAN INFLUENCE THE MAGNETIC FIELD, COMPROMISING IMAGE QUALITY. THE CUSTOMER IS RESPONSIBLE FOR INSTALLATION AND USE OF RECEPTACLES IN THE EXAM ROOM. INSTALLATION OF RECEPTACLES AND THE FILTERS REQUIRED ARE TO BE COORDINATED WITH THE RF SHIELDING SUPPLIER.

6) THE RF SHIELD MUST BE FITTED WITH A GROUND STUD OR BUS BAR, LOCATED WITHIN 24" OF THE AUXILIARY FILTERS FOR ROOM LIGHTS AND OUTLETS, SUPPLIED AND INSTALLED BY THE RF SHIELD SUPPLIER.

7) IN ORDER TO PREVENT GROUND LOOPS, ALL CUSTOMER OR CUSTOMER/CONTRACTOR SUPPLIED AC POWER ENTERING THE EXAMINATION ROOM (I.E. OUTLETS, EPO, ETC.) SHOULD BE SUPPLIED VIA AN ISOLATION TRANSFORMER. THE ISOLATION TRANSFORMER SECONDARY WINDING GROUND CONDUCTOR SHOULD BE CONNECTED TO THE RF SHIELD GROUND STUD OR BUS BAR. SEE NOTE 6 ABOVE AND THE AUXILIARY AC POWER FOR EXAMINATION ROOM DETAIL.

REV 0

GROUNDING NOTES

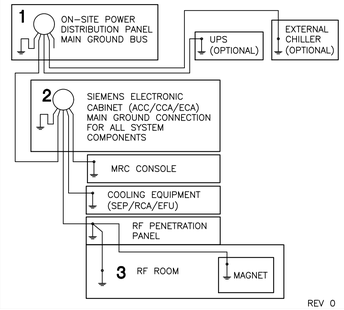
EQUIPMENT GROUND CONDUCTOR TO COMPLY WITH THE FOLLOWING:

1) SIZED EQUIVALENT TO THE PHASE CONDUCTORS (FULL SIZED GROUND).
2) DERIVED FROM THE ELECTRICAL SERVICE, TRANSFORMER OR MAIN DISTRIBUTION PANEL FEEDING THE SIEMENS EQUIPMENT.
3) RUN IN THE SAME CONDUIT, TROUGH OR RACEWAY AS THE PHASE CONDUCTORS.
4) CONTINUOUS, WITH NO BREAKS OR USE OF CONDUIT, CHASSIS OR EARTH AS THE SOLE GROUNDING PATH.
5) BONDED TO CHASSIS AND/OR CONDUIT IN ACCORDANCE WITH THE NEC REQUIREMENTS.
6) MINIMIZE CONNECTIONS OR TERMINALS TO ENSURE CONTINUITY OVER THE LIFE OF THE INSTALLATION.
7) AS A NORM, THERE SHOULD NOT BE ANY CURRENT PRESENCE ON THE GROUND CONDUCTOR, BUT IT IS ACCEPTABLE TO HAVE <u><500mA</u> DURING OPERATION OF THE IMAGING EQUIPMENT.

MR GROUNDING NOTES

THE INTERNAL GROUND WIRING OF THE MR SYSTEM MUST BE INSTALLED WITH MINIMUM GROUND LOOPS. THIS IS TO PREVENT NOISE CURRENTS AND GENERAL DISTURBANCES FROM FLOWING THROUGH THE GROUNDING PATH.

TO ACHIEVE SUCH GROUNDING, THREE MAJOR GROUND POINTS SHOULD BE USED.



REV 0

ALTEA
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NOT FOR CONSTRUCTION - REFERENCE DOCUMENT

ATTENTION:

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- THIS SET OF PLANS REPRESENTS A COMPLETE SET OF DETAILS AND SHOULD NOT BE SEPARATED.
- IT IS RECOMMENDED THAT THE SIEMENS DRAWINGS BE INCORPORATED WITH THE CONSTRUCTION DOCUMENTS FOR REFERENCE.
- ALL DIMENSIONS SHOWN ON THIS DRAWING ARE FROM FINISHED SURFACES.
- THIS DRAWING DOES NOT PROVIDE RADIATION SHIELDING REQUIREMENTS FOR X-RAY AND ASSOCIATED EQUIPMENT. THE CUSTOMER IS RESPONSIBLE FOR CONSULTING WITH A REGISTERED RADIATION PHYSICIST TO SPECIFY RADIATION PROTECTION.

SYM	DATE	DESCRIPTION
△	N/A	TYPICAL DRAWING SET

-ISSUE BLOCK-

SIEMENS

MAGNETOM ALTEA

TYPICAL FINAL DRAWING SET

PROJECT #: 19073

SHEET: E-102

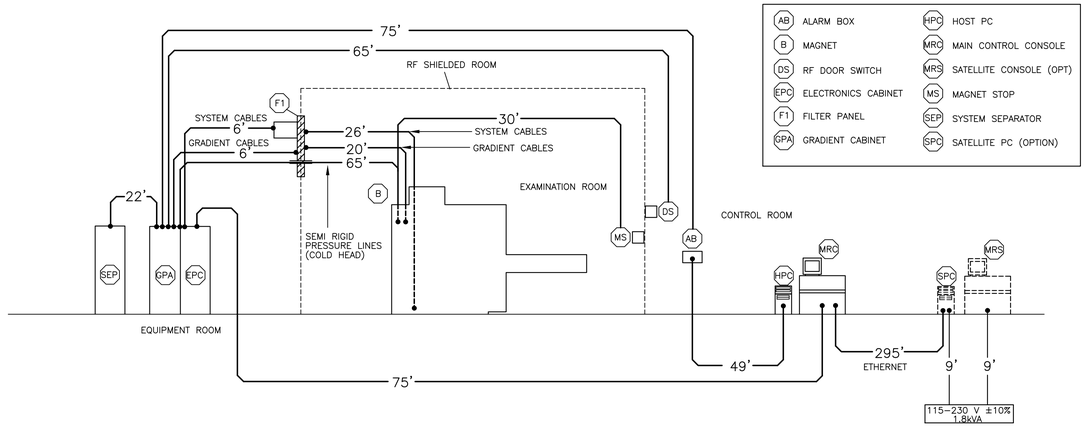
SHEET 7 OF 10

DRAWN BY: B. HERRMANN

SCALE: AS NOTED

REF. #: ---

DATE: N/A

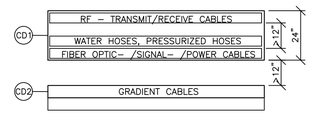


8M/2.5M CABLE SET (GRADIENT CABLES INSIDE THE RF ROOM ARE 6 FEET SHORTER THAN SYSTEM CABLES)

REV 0

1 | SIEMENS SYSTEM CABLING – FREE CABLE LENGTHS | SCALE: NONE

THE PROPER ROUTING OF CABLES IS ESSENTIAL TO ACHIEVE GOOD IMAGE QUALITY. RF CABLES MUST BE SEPARATED FROM FIBER OPTIC BY AT LEAST 12" AND FROM THE GRADIENT CABLES BY AT LEAST 12".FIBER OPTIC CABLES MUST ALSO BE SEPARATED FROM THE GRADIENT CABLES BY AT LEAST 12". THIS SHOWS RACEWAY/CABLE ROUTING.



THIS CABLE TRAY MAY BE 6" OR 12" WIDE, SEE ELECTRICAL LEGEND.

CABLE DESIGNATIONS ARE SHOWN AS AN EXAMPLE, ANY CATEGORY CABLE CAN BE LOCATED IN ANY OF THE COMPARTMENTS OF THE RACEWAY AS LONG AS CORRECT SEPARATIONS ARE MAINTAINED.

WHEN ROUTING RACEWAYS, DO NOT EXCEED THE MAXIMUM LENGTHS LISTED IN DETAIL E-501/2. EXCESS CABLE SHOULD BE ROUTED IN THE RACEWAY IN A MEANDERING METHOD, NEVER ROLLED IN LOOPS.

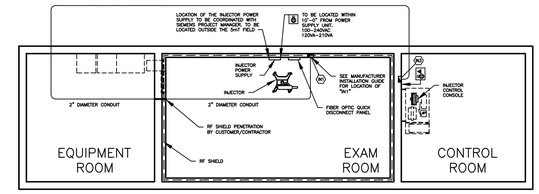
THE BENDING RADIUS FOR THE CABLES MUST BE MAINTAINED.
TRANSMITTER CABLE – 5" WHEN BENT ONCE.
TRANSMITTER CABLE – 14.25 WHEN BENT SEVERAL TIMES.
FIBER OPTIC CABLE – 6"
GRADIENT CABLE – 5.5" (ONLY WITH EXTENDED CABLE SET)
FIBER OPTIC CABLE FOR PATIENT OBSERVATION – 2"

REV 0

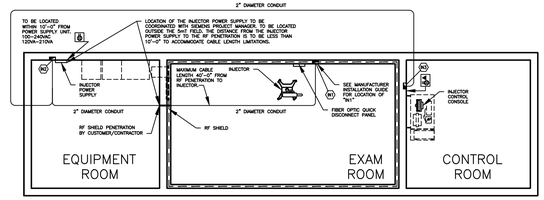
2 | CABLE SEPARATION | SCALE: NONE

INJECTOR INSTALLATION OPTIONS

INJECTORS THAT ARE USED IN MRI APPLICATIONS WILL HAVE THREE COMPONENTS; THE INJECTOR, THE POWER SUPPLY AND THE CONTROL UNIT. THE INJECTOR WILL BE LOCATED IN THE EXAM ROOM AND THE CONTROL UNIT WILL BE LOCATED IN THE CONTROL ROOM. THE POWER SUPPLY MAY BE LOCATED IN THE EQUIPMENT ROOM OR IN THE EXAM ROOM. IN EITHER SITUATION A PENETRATION OR PENETRATIONS OF THE RF SHIELD, SEPARATE FROM THE SIEMENS FILTER PANEL, IS REQUIRED.



METHOD 1 INJECTOR POWER SUPPLY IN EXAM ROOM, PENETRATION TO INCLUDE FILTER AND WAVEGUIDE.



METHOD 2 INJECTOR POWER SUPPLY IN EQUIPMENT ROOM, ELECTRICAL SUPPLY IN EQUIPMENT ROOM, PENETRATIONS TO INCLUDE WAVEGUIDES.

MRXPERION CABLE LENGTHS: THERE IS A 40 FOOT FIBER OPTIC CABLE FROM THE INJECTOR TO THE QUICK DISCONNECT PANEL.THERE IS A 40 FOOT DC POWER CABLE FROM THE INJECTOR TO THE POWER SUPPY. THERE IS A 150 FOOT FIBER OPTIC CABLE FROM THE PENETRATION TO THE CONTROL CONSOLE.

WITH EITHER METHOD IT IS CRITICAL THAT THE SINGLE POINT GROUND IS MAINTAINED AND THAT NO ELECTRICAL NOISE IS INTRODUCED TO THE MR SYSTEM DUE TO THE INJECTOR INSTALLATION. ALWAYS REFER TO THE MANUFACTURER'S INSTRUCTIONS.

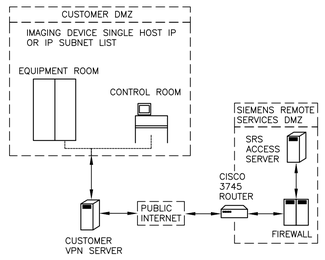
REV 1

3 | MRXPERION MRI CONTRAST INJECTOR | SCALE: NONE

SIEMENS REMOTE SERVICE

TO ENSURE THE UPTIME OF YOUR SYSTEM DURING THE WARRANTY PERIOD (AND BEYOND WITH A SERVICE AGREEMENT), SIEMENS REMOTE SERVICES (SRS) REQUIRES REMOTE LOCAL AREA NETWORK ACCESS TO SIEMENS SYSTEMS.

THE PREFERRED CONNECTION METHOD IS (VPN) VIRTUAL PRIVATE NETWORK (WHERE THE CUSTOMER HAS AVAILABLE A VPN CAPABLE FIREWALL OR OTHER VPN APPLIANCE). THIS METHOD PROVIDES THE POSSIBILITY FOR REMOTE SYSTEM DIAGNOSTICS WITHOUT ADDITIONAL HARDWARE. PLEASE CONTACT SIEMENS REMOTE SERVICES (800–888–SIEM) TO DETERMINE IF THIS METHOD IS SUITABLE FOR YOUR SITE.



CONDUITS AND RACEWAYS

1) ALL POWER CONDUCTORS SUPPLIED BY THE CUSTOMER/ CONTRACTOR SHALL BE INSTALLED IN METAL RACEWAY, 600 VOLT CLASS, STRANDED TYPE THHN–THWN, RATED FOR 75°C (165°F) OPERATION. RECOMMEND MINIMUM 5 FEET WIRE TAILS AT ALL OUTLET POINTS WITH WIRE IDENTIFICATION TAGGED AT BOTH ENDS FOR FINAL CONNECTION BY SIEMENS MEDICAL SYSTEMS.

2) THE CABLE GROUPS INCLUDED WITH THE MAGNETOM SYSTEM MAY BE ROUTED IN THE SAME CABLE TRAY IF PROVIDED WITH AN 8" SEPARATION BETWEEN SMALL SIGNAL LINES, GRADIENT CABLES, AND THE RF TRANSMIT CABLE. A 24" WIDE LADDER TYPE CABLE TRAY IS RECOMMENDED. CABLES SHOULD NOT BE BUNDLED TOGETHER.

3) NOTE THE CABLE CONNECTOR SIZES (LARGEST CONNECTOR SIZE IS 2 1/2" x 2 1/2") FOR CABLE FEED–THROUGHS AND CABLE DUCTS.

4) THE CABLE LENGTHS SPECIFIED ARE THE STANDARD LENGTHS.

5) THE SIEMENS SYSTEM CABLES ARE NOT PLENUM RATED AND SHOULD NOT BE RUN UNPROTECTED IN AN AIR PLENUM UNLESS ENCLOSED IN A SEALED CABLE TRAY OR CONDUIT.

REV 0

CABLE LENGTH RESTRICTIONS

1) THE CABLE SET LENGTH IDENTIFIES THE "FREE CABLE LENGTH". THIS IS THE LENGTH FROM CONNECTION POINT TO CONNECTION POINT. THE CABLE LENGTH IS NOT THE DISTANCE BETWEEN COMPONENTS.

2) THE GRADIENT CABLES INSIDE THE RF SHIELDED ROOM ARE 6'–0" SHORTER THAN THE OTHER SYSTEM CABLES. THIS MEANS THAT IF THE 22' CABLE SET IS SELECTED, THE GRADIENT CABLES WILL BE 16' IN LENGTH. THE GRADIENT CABLES NEED TO GO UP INTO THE CABLE TRAY IN THE CEILING AT THE FILTER PLATE AND DOWN AT THE MAGNET. THESE VERTICAL RUNS MUST BE DEDUCTED FROM THE TOTAL CABLE LENGTH OF 16'.

REV 0

SYSTEM SPECIFICATION STATUS

PLEASE NOTE: CURRENT STATUS IS DRAFT

SIEMENS RESERVES THE RIGHT TO MAKE CHANGES AND OTHER MODIFICATIONS BASED UPON, BUT NOT LIMITED TO, NEW TECHNICAL DEVELOPMENTS. UNTIL RELEASE OF THE PLANNING GUIDELINE, CONTENT OF PRELIMINARY AND FINAL PLANNING IS SUBJECT TO CHANGE AND MODIFICATION.

ALTEA REV D

ATTENTION:

– THIS DRAWING IS DESIGNED TO CONFORM TO FEATURES AND EQUIPMENT REQUIREMENTS PRESENTED AT THE TIME OF THEIR PREPARATION. SINCE BOTH THESE FACTORS ARE SUBJECT TO DESIGN MODIFICATION, THEY ARE NOT TO BE USED FOR CONSTRUCTION PURPOSES.
– THIS SET OF PLANS REPRESENTS A COMPLETE SET OF DETAILS AND SHOULD NOT BE SEPARATED.
– IT IS RECOMMENDED THAT THE SIEMENS DRAWINGS BE INCORPORATED WITH THE CONSTRUCTION DOCUMENTS FOR REFERENCE.
– ALL DIMENSIONS SHOWN ON THIS DRAWING ARE FROM FINISHED SURFACES.
– THIS DRAWING DOES NOT PROVIDE RADIATION SHIELDING REQUIREMENTS FOR X-RAY AND ASSOCIATED EQUIPMENT. THE CUSTOMER IS RESPONSIBLE FOR CONSULTING WITH A REGISTERED RADIATION PHYSICIST TO SPECIFY RADIATION PROTECTION.

SYM	DATE	DESCRIPTION
△	N/A	TYPICAL DRAWING SET

–ISSUE BLOCK–

SIEMENS

MAGNETOM ALTEA

TYPICAL FINAL DRAWING SET

PROJECT #: 19073

SHEET: E-501

SHEET 8 OF 10

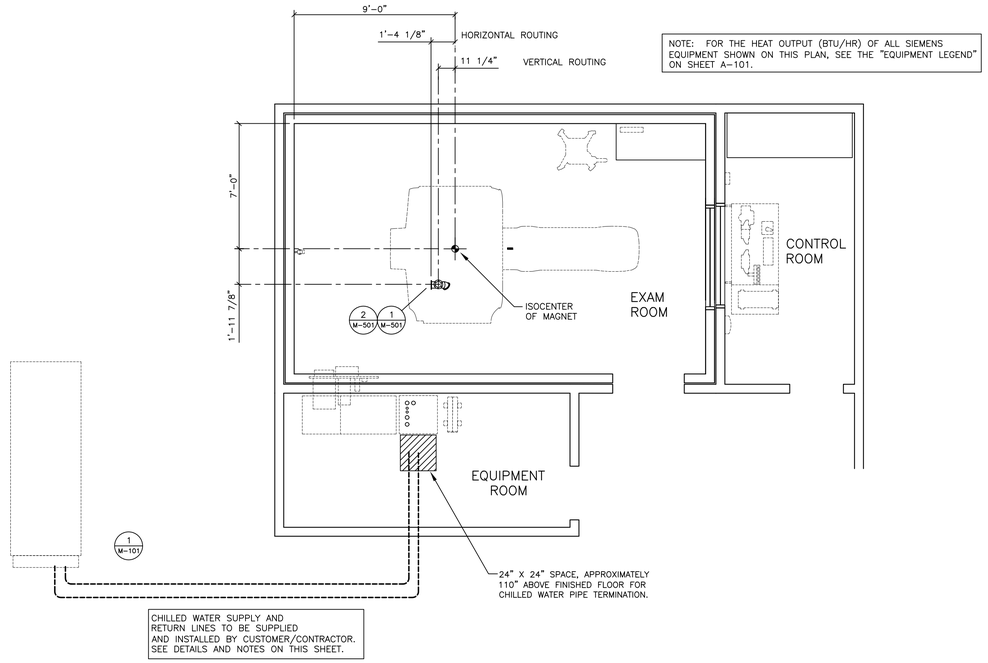
DRAWN BY: B. HERRMANN

SCALE: AS NOTED

REF. #: ---

DATE: N/A

NOT FOR CONSTRUCTION - REFERENCE DOCUMENT



NOTE: FOR THE HEAT OUTPUT (BTU/HR) OF ALL SIEMENS EQUIPMENT SHOWN ON THIS PLAN, SEE THE "EQUIPMENT LEGEND" ON SHEET A-101.

CHILLED WATER SUPPLY AND RETURN LINES TO BE SUPPLIED AND INSTALLED BY CUSTOMER/CONTRACTOR. SEE DETAILS AND NOTES ON THIS SHEET.

MECHANICAL PLAN

SCALE: 1/4" = 1'-0"

ENVIRONMENTAL REQUIREMENTS

1) AIR CONDITIONING IS TO PROVIDE A TEMPERATURE OF 70°F ±5°F IN THE EXAM ROOM, 70°F±10°F IN THE EQUIPMENT & CONTROL AREAS, RELATIVE HUMIDITY OF 40-60% (NON-CONDENSING) IS REQUIRED EXAMINATION ROOM AND 40-80% (NON-CONDENSING) IN ALL OTHER AREAS WHERE SIEMENS EQUIPMENT IS INSTALLED. THESE CONDITIONS ARE TO BE MET AT ALL TIMES; 24 HOURS A DAY, 7 DAYS A WEEK.

2) A DEDICATED AIR CONDITIONING AND HUMIDIFICATION SYSTEM IS RECOMMENDED FOR THE EXAM ROOM. A MINIMUM AIR EXCHANGE RATE OF 6 TIMES PER HOUR FOR THE EXAM ROOM IS REQUIRED. IT IS RECOMMENDED TO INSTALL A FRESH AIR SYSTEM WITH 30%-50% FRESH AIR INTAKE. AIR SUPPLY AND RETURN ABOVE THE FINISHED CEILING IN THE EXAM ROOM IS RECOMMENDED. EACH ROOM SHOULD HAVE A DEDICATED CONTROL AND SENSOR TO MONITOR AND ADJUST THE AIR.

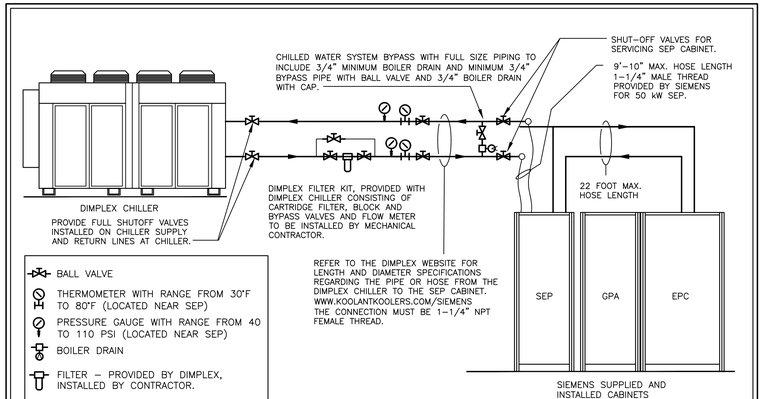
3) THE HEAT INTO THE EXAM ROOM IS LESS THAN 10,236 BTU/HR. THE HEAT INTO THE EQUIPMENT ROOM IS LESS THAN 3,412 BTU/HR. THIS HEAT DISSIPATION IS FROM THE SIEMENS EQUIPMENT ONLY, AUXILIARY SUPPORT EQUIPMENT (ie. UPS) AND LIGHTING MUST BE CONSIDERED FOR TOTAL HEAT LOADS.

4) IT IS IMPORTANT FOR FRESH AIR INTAKE SYSTEMS TO EXHAUST AIR DIRECTLY OUT OF THE BUILDING. THE EXHAUST AIR MUST NOT BE DEFLECTED INTO ANOTHER ROOM. THE MAGNET ROOM EXHAUST AIR SHOULD BE INSTALLED AT LEAST 6'-6" ABOVE FINISHED FLOOR.

5) THE AIR INTAKE OF THE AIR CONDITIONING SYSTEM MUST NOT BE LOCATED IN THE VICINITY OF THE QUENCH VENT EXHAUST.

6) IF THE INPUT DRAWS UPON AIR FROM OUTSIDE THE BUILDING, IT IS RECOMMENDED TO INSTALL AN ON-SITE FILTER TO REMOVE DUST PARTICLES GREATER THAN 10 MICRONS.

7) DO NOT LOCATE ANY HVAC DIFFUSERS ABOVE THE MAGNET. THERE SHALL NOT BE AIR BLOWING DIRECTLY ON THE MAGNET. 12/11/12



NOTES:

ALL PIPING AND PLUMBING FIXTURES SHALL BE FURNISHED, INSTALLED, PRESSURE TESTED AND CHARGED BY THE MECHANICAL CONTRACTOR PRIOR TO THE DELIVERY AND INSTALLATION OF THE SIEMENS SUPPLIED AND INSTALLED EQUIPMENT UNLESS SPECIFIED OTHERWISE.

AT THE HIGHEST POINT OF THE WATER SUPPLY PIPE FROM THE CHILLER AN AUTOMATIC DEAERATION DEVICE (AIR VENT) WITH BALL VALVE MUST BE INSTALLED BY THE MECHANICAL CONTRACTOR.

SYSTEM MUST BE PROVEN TO BE FREE FROM LEAKAGE.

THE MECHANICAL ENGINEER OF RECORD SHALL BE ULTIMATELY RESPONSIBLE FOR THE SITE SPECIFIC DESIGN AND SPECIFICATION OF THE MECHANICAL AND PIPING SYSTEMS AS SHOWN AND SHALL BE IN ACCORDANCE WITH ALL APPLICABLE LOCAL, STATE AND NATIONAL CODES. ALL WORK SHALL BE PERFORMED BY THE MECHANICAL CONTRACTOR AND SHALL BE SUBJECT TO COMPLIANCE WITH ALL APPLICABLE LOCAL, STATE AND NATIONAL CODES.

THE SUPPLY AND RETURN PIPES FROM THE CHILLED WATER SUPPLY TO THE SEP MUST BE LABELED TO SHOW FLOW DIRECTION AND CONTENT (WATER/GLYCOL).

1 PIPING SCHEMATIC FOR CHILLED WATER – DIMPLEX CHILLER — SCALE: NONE

CHILLED WATER SUPPLY

A CHILLED WATER SUPPLY IS REQUIRED TO THE MRI SYSTEM 24 HOURS A DAY, YEAR ROUND FOR THE COLD HEAD AND GRADIENT SYSTEMS. THIS CAN BE PROVIDED BY A cBOXx CHILLER IN COMBINATION WITH A SEP (SEPARATOR) CABINET.

THE PIPE SIZE BETWEEN THE cBOXx CHILLER AND SEP MUST BE 2 INCH UP TO 200 FEET, CONSULT cBOXx FOR LONGER PIPE.

27 GALLONS OF DISTILLED/DE-IONIZED WATER MUST BE PROVIDED FOR FILLING THE SECONDARY WATER CIRCUIT.

THE SUPPLY AND RETURN CHILLED WATER PIPES MUST BE LABELED. THE LOCATION OF THE LABELS MUST BE AT ALL CONNECTION AND REFILLING POINTS AND MUST CONTAIN FLOW DIRECTION AND CONTENTS.

10/22/18

CHILLED WATER REQUIREMENTS

XJ GRADIENTS
WATER REQUIREMENTS TO BE MEASURED AT THE SEP CABINET.

FLOW RATE:	23.78-29.05 GPM
WATER TEMPERATURE:	42.8°F – 53.6°F
BTU DISCHARGE TO THE WATER	170,759 BTU/HR
WATER PRESSURE	MAXIMUM 87 PSI
LOSS OF PRESSURE FOR SEP CABINET	<14.5 PSI 11.6 TYPICAL
CHILLED WATER ACIDITY RANGE	6 pH TO 8 pH
CHILLED WATER HARDNESS	<250 ppm CALCIUM CARBONATE
CHLORINE GAS CONCENTRATION	<200 ppm
FILTRATION	500 um

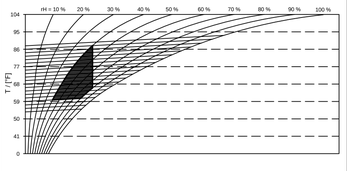
FOR INSTALLATION OF A DIMPLEX CHILLER, IT IS THE RESPONSIBILITY OF THE CUSTOMER/MECHANICAL CONTRACTOR TO PROVIDE A MIXTURE OF WATER WITH 40% ETHYLENE GLYCOL OR 50% PROPYLENE GLYCOL PRIOR TO CHILLER START UP. DO NOT USE AUTOMOTIVE ANTI-FREEZE.

DO NOT MIX DIFFERENT BRANDS OF GLYCOL.

DIMPLEX CHILLERS USE 70-100 GALLONS PLUS THE PIPE LENGTH.

CONTRACTOR TO PROVIDE 65-95 GALLONS OF DE-MINERALIZED WATER. DO NOT USE TAP WATER.

08/10/18



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– TEMPERATURE/HUMIDITY — SCALE: NONE

CEILING HEIGHTS

EXAM ROOM 7'-11" MINIMUM
CONTROL ROOM 6'-11 MINIMUM
EQUIPMENT ROOM 7'-3" MINIMUM

MECHANICAL NOTES

1) THE AIR H.V.A.C. SYSTEM MUST OPERATE FOR A MINIMUM OF 48 CONSECUTIVE HOURS PRIOR TO THE DELIVERY OF THE EQUIPMENT.

2) THE FILTERS MUST BE CHANGED IMMEDIATELY PRIOR TO THE DELIVERY OF THE EQUIPMENT.

3) SIEMENS REQUIRES THE USE OF A DEDICATED H.V.A.C. SYSTEM FOR THE EQUIPMENT ROOM TO BE LOCATED, SIZED AND SPECIFIED BY THE MECHANICAL ENGINEER OF RECORD AND TO BE SUPPLIED AND INSTALLED BY THE MECHANICAL CONTRACTOR.

4) SIEMENS RECOMMENDS THAT THE CUSTOMER PROVIDE AND INSTALL AN OXYGEN MONITORING SYSTEM WITH VISUAL AND AUDIBLE ALARMS TO INDICATE WHEN THE OXYGEN CONTAINED IN AMBIENT AIR FALLS BELOW PRE-PROGRAMMED SAFETY LEVELS WITH THE SENSOR TO BE LOCATED IN THE SCAN ROOM IN THE AREA DESIGNATED FOR CRYOGEN FILLING.

5) THE SIEMENS ACTIVE SHIELDED MAGNET RECIRCULATES LIQUID HELIUM, ELIMINATING THE NEED FOR A DEDICATED CRYOGEN STORAGE AREA. THE RECIRCULATING SYSTEM SIGNIFICANTLY REDUCES THE HELIUM "BOIL OFF". THE MAGNET WILL REQUIRE OCCASIONAL FILLING, A DELIVERY ROUTE FOR CRYOGEN DEWARS MUST BE ESTABLISHED. A MINIMUM 36" CLEARANCE IS REQUIRED.

REV 0

FIRE CONTROL NOTES

1) SIEMENS HAS NO SPECIFIC REQUIREMENT FOR FIRE PROTECTION. FIRE PROTECTION REQUIREMENTS SHALL BE IN ACCORDANCE WITH LOCAL CODES AND CUSTOMER'S INSURANCE REQUIREMENTS. ALL FIRE PROTECTION SYSTEMS SHALL BE DEFINED BY THE ARCHITECT OF RECORD WITH DESIGN, SPECIFICATION AND DETAILING OF THE FIRE PROTECTION SYSTEM BY THE MECHANICAL ENGINEER OF RECORD IN ACCORDANCE WITH SIEMENS GUIDELINES AS STATED HEREIN. THE ELECTRONIC EQUIPMENT OF THE MR SYSTEMS WILL BE DAMAGED BY WATER, REDUCTION OR ELIMINATION OF WATER USED FOR FIRE SUPPRESSION WILL REDUCE POTENTIAL WATER DAMAGE. PRE-ACTION INERT GAS, OR HALOCARBONS OR OTHER METHODS CAN REDUCE OR ELIMINATE WATER. REFER TO YOUR FIRE PROTECTION PROFESSIONAL.

2) THE USE OF SMOKE DETECTORS INSIDE OF THE MR EXAMINATION ROOM IS NOT RECOMMENDED. SMOKE DETECTORS, BY DESIGN, CAN GENERATE NOISE THAT MAY INTERFERE WITH THE MRI EXAMINATION AND CAUSE IMAGE ARTIFACTS. IF THE USE OF A SMOKE DETECTOR IN THE EXAMINATION ROOM IS MANDATED BY LOCAL REQUIREMENTS, SPECIAL NOISE TESTS MUST BE PERFORMED BY SIEMENS SERVICE AFTER THE MRI IS OPERATIONAL. MRI EQUIPMENT PERFORMANCE PROBLEMS DUE TO SMOKE DETECTORS ARE THE RESPONSIBILITY OF THE CUSTOMER AND ARE NOT COVERED UNDER WARRANTY OR SERVICE AGREEMENT.

3) ALL MATERIAL USED INSIDE THE MAGNET ROOM SHALL BE NON-MAGNETIC. SEE CONSTRUCTION REQUIREMENTS.

4) ALL PENETRATIONS IN THE RF CABIN/SHIELD SHALL BE THROUGH A WAVE GUIDE TO BE EQUIPPED WITH A DIELECTRIC COUPLER ON BOTH ENDS OF THE WAVE GUIDE. ALL WAVE GUIDES SHALL BE DESIGNED, DETAILED AND SPECIFIED BY THE RF CABIN/SHIELD CONTRACTOR WITH ALL LOCATIONS TO BE DETERMINED BY THE ARCHITECT AND MECHANICAL ENGINEER OF RECORD TO BE ESTABLISHED IN A PRE-PLANNING MEETING PRIOR TO THE DESIGN, SPECIFICATION, AND FABRICATION OF THE RF CABIN/SHIELD.

5) EACH ELECTRICAL PENETRATION OF THE RF CABIN/SHIELD FOR ELECTRICAL SERVICING OF THE FIRE PROTECTION SYSTEM SHALL BE THROUGH AN RF FILTER TO BE SUPPLIED BY THE RF SHIELD CONTRACTOR WITH FILTER LOCATIONS TO BE DETERMINED BY THE ARCHITECT AND THE ELECTRICAL ENGINEER OF RECORD TO BE ESTABLISHED IN A PRE-PLANNING MEETING PRIOR TO THE DESIGN, SPECIFICATION AND FABRICATION OF THE RF CABIN/SHIELD.

6) IT IS PERMISSIBLE TO RUN "BLACK PIPE" UP TO THE DIELECTRIC COUPLER ON THE OUTSIDE OF THE RF SHIELD.

7) THERE MUST BE NO GROUND CONNECTIONS MADE DURING THE THE INSTALLATION OF EITHER THE PIPING OR ELECTRICAL FOR THE FIRE PROTECTION SYSTEM.

8) THE USE OF HALON IS NOT ACCEPTABLE.

9) THE LOCATION OF FIRE CONTROL SYSTEM COMPONENTS SHALL BE COORDINATED THROUGH THE ARCHITECT OF RECORD WITH ALL LOCATIONS TO BE COORDINATED WITH SIEMENS EQUIPMENT LOCATIONS AS SHOWN ON THE 1/4" SCALE EQUIPMENT LOCATION PLAN.

10) THE FIRE CONTROL CONTRACTOR SHALL VERIFY EQUIPMENT MOUNTING PROCEDURES AND LOCATIONS ON ANY WALLS CONTAINING RF SHIELDING WITH THE SIEMENS PROJECT MANAGER PRIOR TO THE COMMENCEMENT OF WORK.

REV 1

SYSTEM SPECIFICATION STATUS

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COMPRESSOR LINE INSULATION

COMPRESSOR LINES RUNNING FROM THE COMPRESSOR (OR SEP CABINET) TO THE MAGNET ARE INSULATED BY SIEMENS. ADDITIONAL INSULATION (ARMAFLEX OR EQUIVALENT) FOR NOISE REDUCTION (CHIRPING) MAY BE REQUIRED. ADDITIONAL INSULATION NOT PROVIDED BY SIEMENS.

REV 0

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SYM	DATE	DESCRIPTION
△	N/A	TYPICAL DRAWING SET

–ISSUE BLOCK–

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SIEMENS

MAGNETOM ALTEA

TYPICAL FINAL DRAWING SET

SCALE: AS NOTED | REF. #: ---

PROJECT #: 19073

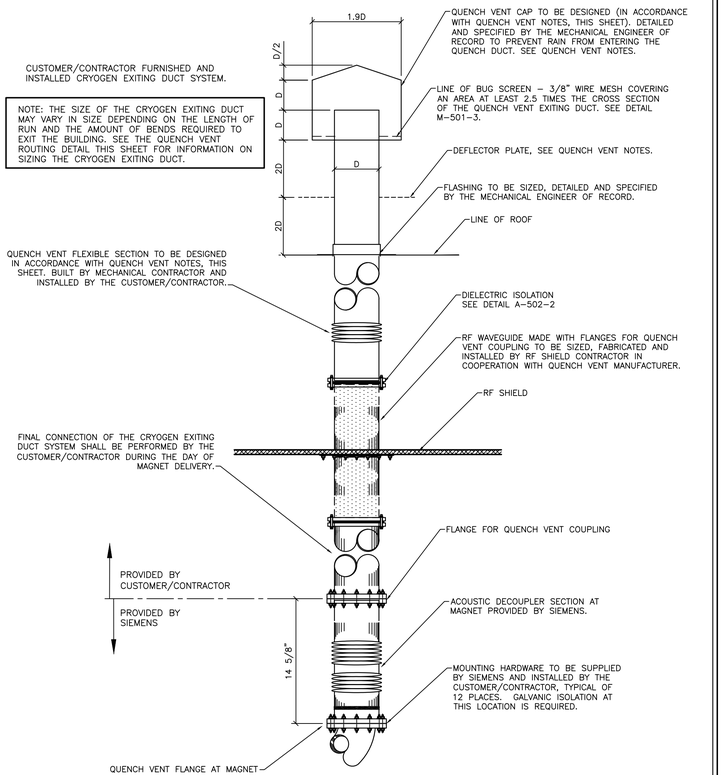
SHEET 9 OF 10

DRAWN BY: B. HERRMANN

DATE: N/A

SHEET: M-101

NOT FOR CONSTRUCTION - REFERENCE DOCUMENT



CRYOGEN EXITING DUCT SYSTEM NOTES:

1) THE MECHANICAL ENGINEER OR RECORD SHALL BE RESPONSIBLE FOR THE DESIGN, DETAIL AND SPECIFICATION OF THE CRYOGEN EXITING DUCT SYSTEM WITH ALL WORK TO PERFORMED BY THE CUSTOMER/CONTRACTOR UNLESS SPECIFIED OTHERWISE.

2) TAKE PROPER PRECAUTIONS WHEN FIELD WELDING IN THE VICINITY OF LIQUIFIED/FROZEN OXYGEN.

3) UNLESS SPECIFIED OTHERWISE ALL MATERIAL AND WORK SHALL BE PERFORMED BY THE CUSTOMER/CONTRACTOR WITH FINAL CONNECTION OF THE CRYOGEN EXITING DUCT SYSTEM TO THE SIEMENS MAGNET TO BE PERFORMED BY THE CUSTOMER/CONTRACTOR UNDER SIEMENS' SUPERVISION.

4) THE DIAMETER OF THE CRYOGEN EXITING DUCT MAY VARY WITH ACTUAL ROUTING.

– CRYOGEN EXITING DUCT SYSTEM DETAIL — SCALE: NO SCALE

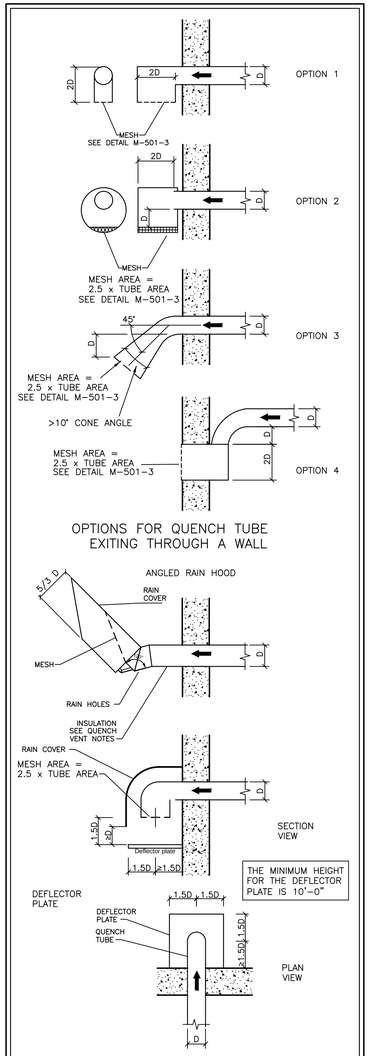
CRYOGEN NOTES

1) "CRYOGENS" IS A TERM USED TO IDENTIFY THE REFRIGERANT USED TO MAKE THE MAGNET "SUPER-CONDUCTING", IN THIS APPLICATION, LIQUID AND GASEOUS HELIUM. SPECIAL CARE MUST BE TAKEN DURING THE TRANSFILLING OF THE MAGNET WITH CRYOGENS AND NORMAL EXHAUST OF CRYOGENS FROM THE SYSTEM. ASIDE FROM THE OBVIOUS DANGER OF FREEZING, HELIUM GAS WILL ALSO DISPLACE THE OXYGEN IN THE ROOM. THE INSTALLATION OF AN APPROVED TOXGARD MONITORING SYSTEM IS RECOMMENDED.

2) THERE SHALL BE A TRANSPORT ROUTE FOR DELIVERY OF CRYOGENS TO THE EXAM ROOM. SPECIAL VESSELS CALLED DEWARS ARE USED TO TRANSPORT HELIUM. A 250 LITER DEWAR WEIGHS 335 POUNDS AND HAS A 32" DIAMETER, A 500 LITER IS 540 POUNDS, AND IS 42" IN DIAMETER.

3) HELIUM GAS CYLINDERS MAY BE USED DURING THE INITIAL FILLING OF HELIUM INTO THE MAGNET. THE FACILITY IN WHICH THESE MAY BE USED NEEDS TO HAVE THE ABILITY TO TEMPORARILY STORE AND SECURE THESE CYLINDERS THAT WILL PREVENT THEM FROM INADVERTENTLY FALLING OVER.

4) OUTSIDE VENTING OF THE HELIUM IS TO BE PROVIDED BY MEANS OF A VENT PIPE OF NON-MAGNETIC MATERIAL CALLED A QUENCH VENT. REV 0



OPTIONS FOR QUENCH TUBE EXITING THROUGH A WALL

SEE QUENCH VENT NOTES REV 1

– HORIZONTAL OUTLET — SCALE: NONE

QUENCH VENT NOTES

QUENCH VENT DESIGN INSTRUCTIONS

1) IN THE EVENT OF A QUENCH, THE THERMAL ENERGY DISSIPATED CAUSES AN EXTREMELY RAPID BOIL OFF OF THE LIQUID HELIUM. THE SYSTEM MUST BE CAPABLE OF VENTING THE LARGE VOLUME OF GAS GENERATED AT THE APPROXIMATE EXPANSION RATIO OF 1:700 FROM LIQUID AT 4.2°K TO ROOM TEMPERATURE GAS. THE EXHAUST SYSTEM IS CRITICAL FOR THE SAFE OPERATION OF THE MAGNET, THE DATA IN THIS DOCUMENT MUST BE FOLLOWED. SINCE HELIUM VENTED IN A QUENCH IS AN ASPHYXIANT & AN EXTREMELY COLD GAS, THE QUENCH TUBE MUST ALWAYS END AT A POINT WHERE ACCESS BY PEOPLE IS NOT POSSIBLE. QUENCH TUBE PLANNING MUST ONLY BE DONE BY QUALIFIED PERSONNEL. IT IS THE OWNER'S RESPONSIBILITY TO ENSURE THAT THE QUENCH TUBE IS MAINTAINED IN AN OPERABLE STATE.

2) IF THE QUENCH VENT IS NOT CONFIGURED CORRECTLY THERE IS A RISK OF DANGER THAT MAY LEAD TO DEATH OR SERIOUS INJURY AND CAN RESULT IN STRUCTURAL DAMAGE. THE EXHAUST MUST NOT BE VENTED IN AN ENCLOSED SPACE. THE OPERATOR OF THE SYSTEM MUST PREPARE AN EMERGENCY PLAN IN THE EVENT OF A QUENCH.

3) THE QUENCH TUBE CONSISTS OF STRAIGHT, HYDRAULICALLY SMOOTH SECTIONS, BENDS UP TO 90° AND A DIFFUSER, IF REQUIRED. THE END OF THE TUBE MUST BE PROTECTED FROM RAIN, SNOW, AND FOREIGN OBJECTS. ROUND SECTIONS ONLY, NO SQUARE SECTIONS.

4) THE SIEMENS MAGNET HAS A QUENCH VALVE ASSEMBLY FOR CONNECTION TO THE TUBE LOCATED AT THE TOP LEFT SIDE OF THE MAGNET (SEE MAGNET ELEVATION). THE MECHANICAL CONTRACTOR WILL SUPPLY AND INSTALL A QUENCH VENT TUBE WITH CAP, TO BE NON-MAGNETIC STAINLESS STEEL (≥22 GAUGE RECOMMENDED). GRADES AISI304, 309, 316, OR 321 ONLY. THERMAL CONDITIONS MAY CAUSE THE TUBE TO CONTRACT UP TO 3mm/METER SO A STAINLESS STEEL BELLOWS OR FLEXIBLE SECTION MUST BE INSTALLED A MINIMUM OF EVERY 32'-9" NOT TO EXCEED 2% OF THE OVERALL LENGTH. THE QUENCH TUBE MAY ALSO BE MADE OF ALUMINUM, EXTRUDED TUBE ALUMINUM GRADES 6063 AND 6082 ONLY MUST BE USED. ROLLED AND WELDED TUBE FROM SHEET ALUMINUM GRADE 5083 ONLY MUST BE USED. THE WALL SECTIONS OF ALUMINUM TUBE MUST BE A MINIMUM 14 GAUGE. THERMAL CONTRACTION OF 4.5 MM/METER MUST BE CONSIDERED FOR ALUMINUM QUENCH TUBES. THE MOVEMENT OF THE BELLOWS MUST BE RESTRICTED TO PREVENT EXCESSIVE EXPANSION DUE TO PRESSURE. THE WEIGHT OF THE TUBE MUST BE SUPPORTED BY THE BUILDING AND BE FLEXIBLE ENOUGH TO ALLOW MOVEMENT FROM THERMAL CONTRACTION. THE WALL EXIT SHOULD ALSO BE FLEXIBLE.

PRESSURE CALCULATION

5) THE MAXIMUM INTERNAL PRESSURE IS CALCULATED AT 1.45 PSI. THE MAXIMUM PRESSURE SHOULD BE ENGINEERED FOR 6.5 PSI.

6) USE THE QUENCH VENT CALCULATOR PROVIDED BY SIEMENS TO DESIGN A QUENCH VENT THAT MEETS DESIGN REQUIREMENTS FOR DIAMETER, LENGTH, NUMBER OF ELBOWS AND PRESSURE DROP. ALL BENDS MUST BE SMOOTH WALLED AND HAVE A CENTERLINE TO INTERNAL PIPE DIAMETER RATIO OF 1.5 TO 5.0. EXPANSIONS TO PIPE DIAMETER CAN BE DONE WITH A DIFFUSER. ONLY ROUND TUBE SECTIONS MAY BE USED, RECTANGULAR SECTIONS ARE NOT ALLOWED.

7) THERE MUST BE A 12-19 INCH FLEXIBLE SECTION OF PIPE FOR CONNECTION TO THE QUENCH VALVE AT THE MAGNET WITH AN INSIDE DIAMETER GREATER THAN 4" (1.5T) OR 6" (3.0T) AND ABLE TO WITHSTAND 6.5 PSI.

CONNECTING SECTIONS

8) SECTIONS OF THE PIPE CAN ONLY BE JOINED BY WELDING OR BOLTED FLANGES WITH FIBER GASKETS. ROTARY FLANGES ARE PERMITTED, VEE CLAMPED FLANGES MAY NOT BE USED.

QUENCH VENT EXIT

9) THE PROTECTION AT THE END OF THE TUBE SHALL BE 3/8" WIRE MESH WITH 1/16 INCH WIRES, COVERING AN AREA AT LEAST 2.5 TIMES THE CROSS SECTION AREA OF THE QUENCH PIPE.

10) WHERE THE QUENCH TUBE EXITS THROUGH A FLAT ROOF, THE THE OUTLET MUST BE ABOVE A LEVEL WHERE WATER COULD ENTER IN THE EVENT THAT THE ROOF DRAINS BECOME BLOCKED. IN THE CASE OF A HORIZONTAL EXIT THROUGH A WALL, THE OUTLET SHALL BE ANGLED DOWNWARD NOT LESS THAN 1 PIPE DIAMETER TO PREVENT RAIN INGRESS. THE EXIT SHALL BE LOCATED ABOVE THE LEVEL OF DRIFTING SNOW.

11) WHERE THE QUENCH TUBE EXITS VERTICALLY, A RAIN COVER MUST ALSO BE FITTED WITH THE DIAMETER TO BE TWO TIMES THE DIAMETER OF THE QUENCH TUBE. THE CLEARANCE BETWEEN THE RAIN GUARD AND THE MESH SHALL 2 TIMES THE DIAMETER OF THE TUBE. A DEFLECTOR PLATE SHALL BE WELDED TO THE TUBE WHERE IT EXITS THE ROOF TO PREVENT HELIUM FROM RE-ENTERING THE BUILDING. THE DEFLECTOR SHALL BE AT LEAST 3 TIMES THE DIAMETER OF THE QUENCH TUBE AND LOCATED TWO PIPE DIAMETERS ABOVE THE ROOF AND TWO PIPE DIAMETERS BELOW THE RAIN GUARD.

DURING A QUENCH THE HELIUM GAS EXITING THE QUENCH PIPE MAY BE AT TEMPERATURES OF LESS THAN -400°F. DUE TO THIS TEMPERATURE ROOFING MATERIALS OR ITEMS AROUND THE VENT EXIT MAY BE ADVERSELY AFFECTED. CONSIDERATION OF MATERIALS AND ITEMS PLACED NEAR THE VENT EXIT SHOULD BE TAKEN INTO ACCOUNT SO DAMAGE DOES NOT OCCUR.

12) WHERE THE QUENCH TUBE EXITS HORIZONTALLY, THE OUTLET MUST CONFORM TO OPTIONS 1-4 OR THE ANGLED RAIN HOOD. THE OUTLET SHOULD NOT BE LOCATED WHERE HELIUM GAS CAN BE DRAWN INTO AN AIR INLET, ENTER AN OPEN WINDOW, OR BLOW DIRECTLY ONTO STRUCTURE OR EQUIPMENT. RESTRICT ACCESS TO WINDOWS AND DOORS TO AVOID INJURY FROM COLD BURNS AND ASPHYXIATION BY 9'-11" ON EACH SIDE, BELOW AND 19'-9" ABOVE, IF THE OUTLET IS POSITIONED TOO LOW A DEFLECTOR PLATE CAN BE USED WITH OPTION 1 AND 3.

WARNING SIGNS AND OUTLET RESTRICTIONS

A WARNING SIGN MUST BE FIXED AND VISIBLE NEAR THE QUENCH VENT OUTLET. THE TUBE MUST HAVE A WARNING POSTED ALONG IT'S ENTIRE LENGTH FOR EXTREMELY COLD HELIUM GAS – AUTHORIZED PERSONNEL ONLY.

13) AREAS WITH ACCESS IN THE AREA OF THE OUTLET MUST BE CLEARLY IDENTIFIED AND FENCED, FOR EXAMPLE, A ROOF OUTLET WITH MAINTENANCE ACCESS.

INSULATION AND GALVANIC SEPARATION

14) THE QUENCH TUBE MUST HAVE MINIMUM 1" INSULATION FOR THE FULL LENGTH. WITHIN THE RF ROOM THERE SHOULD BE A 1" LAYER OF MINERAL FIBER INSULATION WITH A VAPOR BARRIER AND 1" CLASS O OR CLASS AP ARMAFLEX. OUTDOOR PIPES MUST BE WEATHERPROOF. THE INSULATION MUST NOT TOUCH THE MAGNET COVERS. TO AVOID RF DISTURBANCES THE INSULATION MUST NOT MAKE ELECTRICAL CONTACT WITH THE WAVEGUIDE.

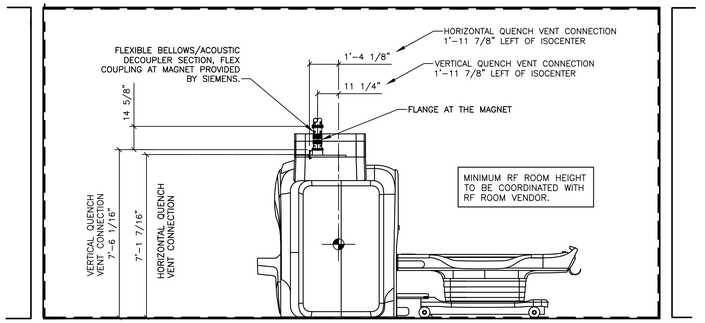
15) GALVANIC SEPARATION MUST BE PROVIDED BETWEEN THE MAGNET, THE QUENCH VENT, THE RF ROOM, AND THE BUILDING, TWO SEPARATIONS ARE REQUIRED USING STAINLESS STEEL BOLTS, INSULATING BUSHES AND LOCKING NUTS. NO OTHER DESIGNS ARE PERMITTED FOR SAFETY.

DOCUMENTATION

16) THE DESIGN AND CONSTRUCTION OF THE QUENCH PIPE MUST BE DOCUMENTED WITH DRAWINGS AND CALCULATIONS THAT ARE KEPT WITH INSTALLATION DOCUMENTS. IT MUST COMPLY WITH THE REQUIREMENTS IN THIS DOCUMENT BEFORE BEING CONNECTED TO THE MAGNET. REV 6

THE EQUIPMENT CONFIGURATION SHOWN ON THESE ELEVATIONS REPRESENT "TYPICAL" INSTALLATION CONDITIONS.

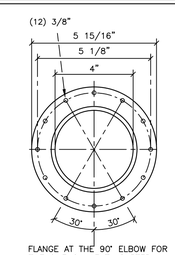
THE QUENCH VENT IS TO BE SUPPLIED AND INSTALLED BY THE MECHANICAL CONTRACTOR. IT MAY BE CONNECTED TO THE FLANGE AT THE MAGNET HORIZONTALLY OR VERTICALLY AND SHOULD BE DESIGNED, CONSTRUCTED AND INSTALLED AS PER THE INSTRUCTIONS ON THIS SHEET.



THE LOCATION, PITCH, AND MOUNTING HEIGHT ABOVE FINISHED FLOOR FOR THE MECHANICAL SYSTEMS SHALL BE SPECIFIED, DETAILED AND NOTED BY THE MECHANICAL ENGINEER OF RECORD. ALL MECHANICAL SYSTEM LOCATIONS SHALL BE COORDINATED WITH THE LOCATION OF THE CABLE TRAYS AS SHOWN ON THE 1/4" SCALE ELECTRICAL PLAN.

NOTE: COMPRESSOR LINES RUNNING FROM THE COMPRESSOR OR SEP CABINET TO THE MAGNET COLD HEAD SHALL BE ELECTRICALLY ISOLATED WITH 1/2" ARMAFLEX OR EQUAL, SUPPLIED BY CONTRACTOR AND INSTALLED BY SIEMENS. LENGTH REQUIRED SHALL BE COORDINATED WITH SIEMENS FIELD SERVICE ENGINEER AT TIME OF EQUIPMENT INSTALLATION.

1 MAGNET SIDE ELEVATION — NO SCALE

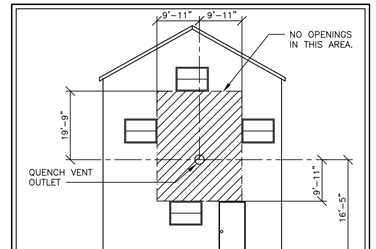


FLANGE AT THE 90° ELBOW FOR THE QUENCH VENT ADAPTER

CONNECTION OF THE QUENCH VENT PIPE TO FLANGE TO BE DESIGNED, DETAILED, AND SPECIFIED BY THE MECHANICAL ENGINEER OF RECORD TO BE FABRICATED AND INSTALLED BY THE MECHANICAL CONTRACTOR UNDER SIEMENS SUPERVISION. THE 90° ELBOW IS PART OF THE DELIVERY VOLUME, THE TWO FLANGES ARE IDENTICAL.

CONNECTING FLANGE REV 0

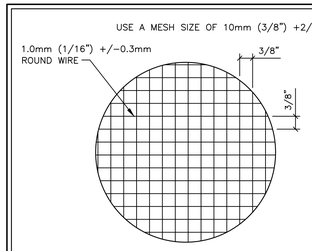
2 QUENCH VENT — NO SCALE



IN THE CASE OF A HORIZONTAL EXIT THROUGH A WALL, THE OUTLET MUST BE TURNED DOWN BY NOT LESS THAN THE LINE OF THE DIAMETER TO PREVENT RAIN INGRESS. THE EXIT MUST BE SITUATED WHERE IT CANNOT BE BLOCKED BY DRIFTING SNOW.
TO AVOID RISK OF INJURY FROM COLD BURNS AND ASPHYXIATION, ACCESS TO THE QUENCH VENT OUTLET MUST BE RESTRICTED AS SHOWN. THE OUTLET MUST NOT BE SITUATED WHERE, IN THE EVENT OF A QUENCH, HELIUM GAS COULD BE DRAWN INTO AN AIR INLET OR OPEN WINDOW. WHERE WINDOWS ARE WITHIN THE RESTRICTED AREA, THEY MUST BE PERMANENTLY CLOSED.

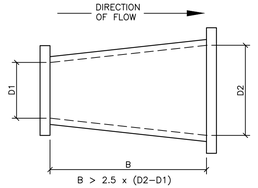
OUTLET SAFETY CLEARANCES REV 1

– QUENCH VENT — NO SCALE



A SQUARE, STAINLESS STEEL WIRE MESH MUST BE FITTED TO ALL OUTLETS. THE AREA OF THE MESH MUST BE >2.5 TIMES THE AREA OF THE QUENCH VENT OUTLET. REV 1

3 QUENCH VENT MESH — NO SCALE



EXPANSION TO A GREATER DIAMETER TUBE CAN BE ACCOMPLISHED BY USE OF A DIFFUSER. THE DIFFUSER MUST MEET QUENCH VENT REQUIREMENTS AND THE GEOMETRIC PARAMETERS SHOWN HERE. THE DIAMETER OF THE PIPE SHOULD NEVER DECREASE IN THE DIRECTION OF FLOW. REV 0

– QUENCH VENT DIFFUSER — NO SCALE

SYSTEM SPECIFICATION STATUS

PLEASE NOTE: CURRENT STATUS IS DRAFT

SIEMENS RESERVES THE RIGHT TO MAKE CHANGES AND OTHER MODIFICATIONS BASED UPON, BUT NOT LIMITED TO, NEW TECHNICAL DEVELOPMENTS. UNTIL RELEASE OF THE PLANNING GUIDELINE, CONTENT OF PRELIMINARY AND FINAL PLANNING IS SUBJECT TO CHANGE AND MODIFICATION.

HELIUM CONTENT

MAXIMUM LIQUID FILL	1,356 LITERS	
TYPICAL BOIL OFF RATE	0.0 L/HR	FOR TYPICAL CLINICAL USE, DEPENDING ON SEQUENCES AND OPERATING TIME.
TYPICAL REFILL INTERVAL	NA	

WITHOUT THE COLD HEAD RUNNING THE LIQUID HELIUM WILL BOIL OFF FROM 97% TO 0% IN APPROXIMATELY 30 DAYS.
THE LOSS DURING SHIPPING IS APPROXIMATELY 65 LITERS PER DAY.

ALTEA REV D

SYM	DATE	DESCRIPTION
△	N/A	TYPICAL DRAWING SET

–ISSUE BLOCK–

SIEMENS

MAGNETOM ALTEA

TYPICAL FINAL DRAWING SET

SCALE: AS NOTED | REF. #: ---

PROJECT #: 19073

SHEET OF 10 10 | DRAWN BY: B. HERRMANN

DATE: N/A

SHEET: M-501

ATTENTION:

– THIS DRAWING IS DESIGNED TO CONFORM TO FEATURES AND EQUIPMENT REQUIREMENTS PRESENTED AT THE TIME OF THEIR PREPARATION. SINCE BOTH THESE FACTORS ARE SUBJECT TO DESIGN MODIFICATION, THEY ARE NOT TO BE USED FOR CONSTRUCTION PURPOSES.
– THIS SET OF PLANS REPRESENTS A COMPLETE SET OF DETAILS AND SHOULD NOT BE SEPARATED.
– IT IS RECOMMENDED THAT THE SIEMENS DRAWINGS BE INCORPORATED WITH THE CONSTRUCTION DOCUMENTS FOR REFERENCE.
– ALL DIMENSIONS SHOWN ON THIS DRAWING ARE FROM FINISHED SURFACES.
– THIS DRAWING DOES NOT PROVIDE RADIATION SHIELDING REQUIREMENTS FOR X-RAY AND ASSOCIATED EQUIPMENT. THE CUSTOMER IS RESPONSIBLE FOR CONSULTING WITH A REGISTERED RADIATION PHYSICIST TO SPECIFY RADIATION PROTECTION.

REFERENCE DOCUMENT - NOT FOR CONSTRUCTION

Model: Expression MR400 w/ Cart
Category: Monitor, Physiologic
Subcategory: MRI
Manufacturer: Philips Healthcare - Monitoring Systems
Catalog #: 866185

CAD ID: MON0859
Atta 3 ID: MON-1C521
Atta ID: 4077-030
RefID 1:
RefID 2:

MRI Patient monitoring system with cart. Standard features include integral color 15 inch LCD display, power supply and NIBP with inflatable cuff, for adult, pediatric and neonate patients. Combines wireless communication, radio frequency (RF) shielding and digital signal processing (DSP) to provide patient monitoring in the MR environment. Intuitive graphical user interface with colored waves and large numerics, portable 8-hour battery, displays up to 8 parameters and 6 waveforms, multi-priority visual and audible alarm signals, unique “alarm flag” messages and pulse tones. Gating both digital pulse and analog waveforms. Simultaneous display of up to thirteen parameters, six waveforms and associated values. Cart display screen size is 15.6 inches diagonal, with audio speaker, keypad, rotary knob navigation, power switch and power indicator. Automatically stores trend information, is user-configurable and can allow four selections at the same time. Wireless ECG and Sp02 modules. 3.0 Tesla Compatible; 5000 Gauss Compliant. **Configurable per site, actual list price may vary. See manufacturer for site specific pricing and documentation.

General Production Detail

Arch Sig: Yes
Spatial Sig: No
Arch Code: 02-Movable Electrical
ADA: No
Critical Path: No
Antimicrobial: No
Type: Medical
Green: No
Furnish Install: Owner / Owner

Physical Requirements

Width (in.): 18.7000
Left (in.): N/A
Depth (in.): 22.0000
Right (in.): N/A
Height (in.): 50.1000
Front (in.): N/A
Product Weight (lbs): 103.3000
Back (in.): N/A
Max Operating Weight (lbs):
Top (in.): N/A
Mounting: Floor - Mobile
Bottom (in.): N/A
Specification notes:

Structural Requirements

Seismic: No
OPA #:
Pre-Approval:
Structural notes:

Technology Requirements

Has Technical Connections: Yes
Network:
Patient Data: No
System:
Connection Type: Data
Technical Connection notes:

Electrical Requirements

Volts: 120
Watts: 168.0000
Hz: 60
Amps: 1.4000
KVA:
Circuit: No
UPS: N/A
Plug Type: Type B (Nema 5-15)
Emerg. Power: Yes
Plug Detail:
Other Volts Avail.: Yes
Electrical Phase: Single Phase
BTU/hr: N/A
Electrical notes:

Utility Requirements

Water - Cold: No
Gas Type:
Water - Hot: No
Gas Location:
Water - Treated: No
Medical Gas: No
Drain: No
Vent Needed: No
Drain Location:
Vent Type:
Steam: No
Heat Dissipation: N/A
Vacuum - Den. / Med.: No/No
Dissipation Type: Actual
Plumbing notes:
Mechanical notes:

Locations

CAD ID	Level	Arch Dept	Room	Room #	Status	Item Qty
MON0859	Level 1	Imaging	MRI	––	New	1

Total: 1

PHILIPS

Technical Data Sheet

Expression Model **MR400**

MRI Patient Monitoring System

The Expression Model MR400 MRI Patient Monitoring System is designed to assist clinicians in monitoring patient vital signs in the dynamic magnetic resonance environment. The Expression Model MR400 MRI Patient Monitoring System combines wireless communication, radio frequency shielding and digital signal processing to address the challenges associated with patient monitoring in the MR environment.

The Expression Model MR400 MRI Patient Monitoring System consists of these primary components:

- Traditional Roll-Around Cart
- Wireless ECG (wECG) module
- Wireless SpO2 (wSpO2) module

Optional Components

- Expression Information Portal (IP5)

Features and Benefits

- Integral color, 15” LED widescreen display for high resolution patient information
- Intuitive touchscreen graphical user interface
- Colored waves and large numeric displays
- Bedside-quality “SINC” parameters
- Exclusive, advanced ECG solution for MRI
- 8-hour battery life and user-replaceable batteries for extended run time
- Simultaneous display of up to thirteen parameters, and six waveforms and associated values
- Multi-priority visual and audible alarm signals, unique “alarm flag” messages, and pulse tones
- Gating, both digital pulse and analog waveform
- Expression Information Portal (IP5), (optional)
- Wireless remote printing to IP5 (optional)

System Parameters

The Expression Model MR400 MRI Patient Monitoring System can include the following vital sign parameters:

- Electrocardiogram (ECG), dual channel
- Blood oxygen saturation/pulse oximetry (SpO2)
- Invasive blood pressure (IBP)
- Non-invasive blood pressure (NIBP)
- End-tidal and inspired CO2
- Respiration from CO2 or bellows
- Anesthetic Agents, including end-tidal and inspired N2O, inspired O2, and Total MAC
- Temperature

The system can include the ability to display these parameters:

- Alarms: High and low selectable limits for each patient parameter
- ECG: Waveform scale, dual channels displayed
- Heart rate: Factory-default derived from ECG; also from pulse oximetry or IBP
- Pulse oximeter: Pulse rate, pulse waveform, and percent saturation
- CO2: End-tidal and inspired
- IBP (two channels, P1 and P2): Systolic, mean, and diastolic pressures
- NIBP: Systolic, mean, and diastolic pressures
- Anesthetic Agents, including end-tidal and inspired N2O, and inspired O2
- Bellows respiration: Rate derived from pneumatic chest bellows
- Temperature
- Trends: Heart rate, respiration rate, IBP (systolic, diastolic, mean), NIBP (systolic, diastolic, mean), CO2, O2, N2O, SpO2, agents, and temperature
- Respiration: Rate derived from CO2
- Time: Battery-backed quartz clock

Main Component

Display Panel

- Type: Liquid Crystal Display (LCD), touch screen, color
- Screen size: 39.5 cm (15.6 inches) diagonal
- Drive type: a-Si TFT active matrix
- Pixels: 1366 (H) by 768 (V) pixels, color
- Area: 344.2 (H) by 193.5 (V) mm
- Dot pitch: 0.084 (H) by 0.252 (V) mm
- Pixel pitch: 0.252 (H) by 0.252 (V) mm
- Contrast ratio: 500:1 (typical)
- Backlight: LED
- Polarizer surface: Anti-glare
- Tilt: Adjustable, 5° to 35°
- Sweep speeds for ECG, SpO2, and IBP: 25 mm/second gives 9.2 seconds of display time, while 50 mm/second gives 4.6 seconds. Sweep speeds for respiration: 0.33, 1.56, 3.13, 6.25, 12.5 or 25 mm/second are provided.
- Waveform display mode: Fixed trace, moving erase bar
- Waveform display width: Approximately 228 mm
- Waveform display height:
    - ECG (single trace): Approximately 40 mm
    - ECG (dual trace): Approximately 20 mm
    - All other waveforms: Approximately 25 mm
- Audio speaker

Control of monitored parameters is provided by these components:

- Power switch
- Touchscreen

User Interface

Four groups of data are displayed:

- Informational
- Vital sign traces
- Vital sign numeric values
- System status

Application Features

Trends

- Automatically can store the parameter trend information for heart rate, IBP, NIBP, SpO2, CO2, N2O, O2, agents, respiration, and temperature
- Trend arrows graphically indicate an increasing, decreasing or stable parameter
- Graphical trends (with the IP5 option)

Alarms

- High, medium, and low alarm severity
  - Visual alarm indicators: Alarm light, flashing numeric values, alarm flags, icons
  - Audible alarms, user-configurable for volume, tone, and silence
- Configurable alarm limits
- 1-Touch Alarms allow alarm limits to be quickly adjusted

Device Connections

Input/output ports permit the connection of external equipment:

- USB port (system update use only)
- ECG and peripheral gating output port

Specifications

Safety Standards

- Conforms to ANSI/AAMI ES 60601-1: 2012. Certified to CAN/CSA C22.2 No. 60601-1-08; IEC 60601-1-2
- Conforms to 93/42/EEC as amended by 2007/47/EEC, *Medical Device Directive*
- Defibrillator protection up to 5 KV

Physical Specifications

Height

- Cart: 127.3 cm (50.1 inches)
- Wireless ECG module: 18.2 cm (7.17 inches)
- Wireless SpO2 module: 13.0 cm (5.13 inches)

Width

- Cart: 47.5 cm (18.7 inches)
- Wireless ECG module: 6.7 cm (2.65 inches)
- Wireless SpO2 module: 6.5 cm (2.55 inches)

Depth

- Cart: 55.9 cm (22 inches)
- Wireless ECG module: 3.1 cm (1.24 inches)
- Wireless SpO2 module: 3.1 cm (1.24 inches)

Weight

- Cart: 46.9 kg (103.3 pounds)
- Wireless ECG module: 340 g (12 ounces)
- Wireless SpO2 module: 204 g (7.2 ounces)

Electrical Specifications

Power Requirements

- Operating voltage range: 100 – 240 VAC
- Frequency range: 50 – 60 Hz
- Current: 1.4 A @ 100 VAC / 0.7 A @ 240 VAC
- Power consumption, maximum: ≤ 65 Watts

Battery Type

- Cart: Lithium-Ion
- Module: Lithium polymer

Battery Operation Time

Cart: Dependent upon enabled parameters and settings:

- All displays, alarms, and monitoring functions continuously for 8 hours
- ECG & SPO2 continuously for 8 hours
- CO2 continuously for 6 hours (with or without AGENT)
- P1 and P2 continuously for 6 hours
- AGENT analysis continuously for 6 hours
- Temperature continuously for 6 hours
- NIBP readings every 5 minutes for 6 hours

Module: Approximately 8 hours

Battery Capacity

- Cart: 75 Wh
- Module: 3.1 Wh

Environmental Specifications

- Operating temperature range:
  - 10 – 35°C (50 – 95°F)
- Relative humidity range:
  - Cart, bellows, SpO2 accessories, LoFlo accessories (optional), gating cables (optional), and IP5 (optional): 15 – 80 percent, non-condensing
  - Wireless modules, ECG cables, and FlexTEMP II sensor: 5 – 80 percent, non-condensing
  - IBP transducer kits and cable (optional): 15 – 85 percent, non-condensing
  - Module batteries: 15 – 90 percent, non-condensing
- Storage and transport temperature range:
  - Cart: -20 – 50°C (-4 – 122°F)
  - Cart batteries: 0 – 40°C (32 – 104°F)

    - Wireless modules, and all other accessories not specified below: -20 – 60°C (-4 – 140°F)
    - Quadtrodes: 10 – 32°C (50 – 90°F)
    - Transducer kits and cable (optional): -15 – 60°C (5 – 140°F)
    - O2 sensor (AGENT option), storage: 5 – 25 °C (41 – 77 °F); transport: -40 – 50 °C (-40 – 122 °F)
    - ECG skin prep gel: Follow instructions on tube

    (When storing or transporting in temperatures beyond the ranges specified above, remove the designated component and store or move it appropriately.)
- Operating pressure range: Up to 3,000 m (9,842 feet) above sea level (708 mbar or 531 mmHg)
- Storage and transport pressure range: 708 – 1020 mbar

MRI Rating

MR Conditional
1.5 and 3.0 Tesla, 5000 gauss, at RF power levels not exceeding 4W/kg SAR and 7.2 µT $B1_{rms}$ in all orientations

Measurement Specifications

Electrocardiogram Channel (ECG)

ECG Amplifier
- Protected against defibrillator and electro-surgery potentials
- Standard lead configurations: I, II, III, AVR, AVL, AVF
- Lead Fail: Passive, sensing signal imbalance
- ECG input impedance: > 2.5MΩ (according to IEC 60601-2-27, 50.102.3)
- Electrode contact impedance: ≤ 20K ohms @ 10 Hz

Heart Rate
- Range: 30 – 250 BPM (adult); 30 – 300 BPM (pediatric and neonate)
- Resolution: 1 beat per minute (BPM)
- Accuracy: ± 1 percent or ± 1 BPM, whichever is greater

Cardiotach
- Sensitivity (Monitor filter):
    - Adult ECG mode: > 200 µV
    - Neonate/Pediatric ECG mode: > 100 µV
- Bandwidth: Monitor: 0.5 – 40 Hz
- QRS Duration:
    - Adult: 70 to 120 ms
    - Neonate/Pediatric: 40 to 120 ms
- Baseline Offset: Automatically removed
- Tall T-wave rejection capability for heart rate indication: 2 mV with a 1 mV QRS amplitude
- Leads-off sensing: Detection by DC current waveform of < 100 nA, not applied

Alarm Limits
- Lower: Off, or 30 – 250 BPM
- Upper: 60 – 250 BPM, or off

Test / Calibrations
- Square wave test signal: 60 BPM ± 1 BPM, 1 mV ± 10 percent

Pulse Oximeter

- Pitch of pulse tone is modulated by saturation value
- Saturation range: 1 – 100 percent
- Saturation value resolution: 1 percent
- Saturation accuracy: ± 3 percent at 70 – 100 percent (the specified accuracy is the RMS difference between the measured and reference values)
- Pulse accuracy: ± 2 percent or ± 1 BPM, whichever is greater
- Pulse rate range: 30 – 250 BPM
- Pulse rate resolution: 1 BPM
- Data update period: 5, 10, or 15 seconds (according to the SPO2 Averaging Time setting)
- Data Update Period during Alarm: 9, 14, or 19 seconds, maximum (4 seconds plus the SPO2 Averaging Time setting of 5, 10, or 15 seconds)
- Wavelength range: 500 – 1000 nm (Information about wavelength range can be especially useful to clinicians)
- Emitted light energy: < 15 mW
- Pulse oximeter calibration range: 70 – 100 percent

Alarm Limits
- SpO2 alarm limits:
    - Lower: Off, or 50 – 100 percent
    - Upper: 70 – 100 percent, or off
- When “HR” is derived from SpO2:
    - Lower: Off, or 30 – 250 BPM
    - Upper: 60 – 250 BPM, or off

CO2 (Optional LoFlo)

Side stream non-dispersive infrared absorption technique, including multiple water trap filtration system and microprocessor control of sample handling and calibration.

Method for determining end tidal CO2 measurement: Measures peak of the expired CO2 waveform every 20 seconds.

- Output: CO2 waveform, EtCO2 and FiCO2 numeric values, and respiration rate
- Initialization time: Waveform displayed in less than 20 seconds, at an ambient temperature of 25°C (77°F); full specifications attained within 2 minutes

- Zero calibration interval: Automatic or user requested
- CO2 unit of measure: Millimeters of mercury (mmHg) or kilopascals* (kPa)
- CO2 resolution: 1 mmHg (0.1 kPa)
- Flow rate: 50 mL per minute ± 10 mL per minute
- Data sample rate: 100 Hz
- End-tidal CO2 (EtCO2) measurement range (in which the accuracy specification is met): 0 – 76 mmHg (0 – 10.1 kPa) for respiration rates ranging from 4 – 60 breaths per minute, inclusive
- Inspired CO2 (FiCO2) measurement range: 3 – 50 mmHg (0.4 – 6.7 kPa) (method: lowest reading of the CO2 waveform in the previous 20 seconds)
- CO2 accuracy: ± 4 mmHg (± 0.5 kPa) or ± 12 percent, whichever is greater
- CO2 stability:
    - Short term drift: Not to exceed 0.8 mmHg (0.1 kPa) over a 4-hour period
    - Long term drift: Accuracy specification maintained over a 120-hour period
- Respiration accuracy: ± 1 breath or ± 3 percent, whichever is greater
- Respiration resolution: 1 breath per minute
- Respiration rate range (in which the respiration accuracy specification is met): 4 – 100 breaths per minute, inclusive
- Accessory usage: Functional without changing accessories for a minimum of 6 hours
- Response and rise times (as measured from the patient gas input of the complete pneumatic circuit, including tubing, from 10 – 90 percent of the measured CO2 levels):
    - Airway adaptor:
        - Response time: 10.89 seconds
        - Rise time: 0.94 seconds
    - Cannula:
        - Response time: 12.44 seconds
        - Rise time: 1.12 seconds
    - Divided cannula:
        - Response time: 16.17 seconds
        - Rise time: 2.01 seconds
- Compensations (automatic CO2 ambient pressure compensation 400 to 800 mmHg [53.3 – 106.6 kPa])
    - For expired O2 balance gas (N2, N2O, O, He) and anesthetic agents
    - Uses gas compensation information to correct the raw carbon dioxide value
- Anesthetic agent effects (MAC levels):
    - Sensitivity (uncompensated): Accuracy maintained for halogenated anesthetic agents present at accepted Minimum Alveolar Concentration clinical levels
    - Sensitivity (compensated): Testing at agent levels defined by accepted regulatory standards (80601-2-55:2011)
- Cross-sensitivity compensation error (additional worst case error when compensation for O2, N2O, anesthetic agents, or helium is correctly selected for the actual fractional gas constituents present):
    - 0 – 40 mmHg: ± 1 mmHg additional error (0 – 5.3 kPa: ± 0.1 kPa additional error)
    - 41 – 70 mmHg: ± 2.5 mmHg additional error (5.5 – 9.3 kPa: ± 0.3 kPa additional error)
    - 71 – 100 mmHg: ± 4 mmHg additional error (9.5 – 13.3 kPa: ± 0.5 kPa additional error)
    - 101 – 150 mmHg: ± 5 mmHg additional error (13.5 – 20 kPa: ± 0.6 kPa additional error)
- Quantitative effects of gas sample humidity or condensate**):
    - 0 – 40 mmHg: ± 2 mmHg (0 – 5.3 kPa: ± 0.2 kPa)
    - 41 – 70 mmHg: ± 5 percent (5.5 – 9.3 kPa: ± 5 percent)
    - 71 – 100 mmHg: ± 8 percent (9.5 – 13.3 kPa: ± ± 8 percent)
    - 101 – 150 mmHg: ± 10 percent (13.5 – 20 kPa: ± 10 percent)

Alarm Limits

- Et CO2:
    - Lower: Off, or 5 – 60 mmHg (Off, or 0.6 – 8.0 kPa)
    - Upper: 5 – 76 mmHg, or off (0.7 – 10.1 kPa, or off)
- Fi CO2:
    - Lower: No low alarm limit
    - Upper: 0 – 20 mmHg, or off (0 – 2.7 kPa, or off)
- Respiration:
    - Lower: Off, or 4 – 40 breaths per minute
    - Upper: 20 – 100 breaths per minute, or off

**For kilopascals (kPa), allow ± 1 least significant digit to accommodate round-off error for calculated values.*

***With appropriate compensations applied*

Invasive Pressure (Optional)

Pressure Amplifier

- Isolation voltage: 5 KVDC
- Signal range: -30 – 250 mmHg
- Sensitivity: 5 µV/V/mmHg
- Gain accuracy: ±0.5 percent
- Bandwidth: 0 – 10 Hz (-3 dB)
- Offset range: ±300 mmHg

Transducer (REF 989803179721)

- Operating pressure: -50 – 300 mmHg
- Overpressure limits: -400 – 5000 mmHg

- Sensitivity: 5 µV/V/mmHg ±1 @ 6 VDC and 22°C (71.6°F)
- Zero offset: < 25 mmHg
- Zero drift: < 2 mmHg in 8 hours
- Input impedance: 300 – 350 ohms
- Output impedance: 300 ohms ± 30 ohms

Auto Zero

- Range: +300 mmHg
- Zero accuracy: ±1.0 mmHg
- Response time: 1 second, notification upon completion

Pressure Wave Display

- Number of channels: 0, 1 or 2
- ABP, PAP and LAP: Numeric display of systolic, diastolic and mean pressures
- CVP and ICP: Numeric display of mean pressure only

Pressure Scale Ranges (User Selectable)

- 0 – 250 mmHg
- 0 – 200 mmHg
- 0 – 150 mmHg
- 0 – 100 mmHg
- 0 – 75 mmHg
- 0 – 45 mmHg

Pulse Rate (When derived from P1 or P2)

- Range: 30 – 250 BPM
- Accuracy: ±2 percent of full scale
- Resolution: 1 BPM

Alarm Delay

- Transducer disconnect: 6 seconds
- Pressure disconnect: 6 seconds
- High and low pressure: 10 seconds

Alarm Limits

- When “HR” is derived from P1 or P2):
  - Lower: Off, or 30 – 250 BPM
  - Upper: 60 – 250 BPM, or off
- Systolic, Mean, Diastolic
  - Lower: Off, or -30 mmHg to 250 mmHg (Off, or -4.0 to 33.3 kPa)
  - Upper: -30 mmHg to 250 mmHg, or off (-4.0 to 33.3 kPa, or off)

Transducer Connector Pin Compatibility

- Pin A: - Signal
- Pin B: + Excitation
- Pin C: + Signal
- Pin D: - Excitation
- Pin E: Shield

Anesthetic Agents (Optional)

Side stream, non-dispersive infrared (NDIR) absorption technique, including water trap filtration system and microprocessor control of sample handling and calibration

- Simultaneously measured gases (any two of the following, inspired or expired, while also measuring CO2, N2O, and O2):
  - Halothane
  - Isoflurane
  - Desflurane
  - Enflurane
  - Sevoflurane
- Measurement Range (after maximum warm-up period):
  - Halothane: 0 – 5.0 volume percent
  - Isoflurane: 0 – 5.0 volume percent
  - Desflurane: 0 – 18.0 volume percent
  - Enflurane: 0 – 5.0 volume percent
  - Sevoflurane: 0 – 8.0 volume percent
  - Carbon dioxide: 0 – 10.0 volume percent
  - Nitrous oxide: 0 – 100 volume percent
- Accuracy (includes stability and drift):
  - Halothane:
    - ±0.15 volume percent at 0 to 1.00 volume percent
    - ±0.20 volume percent at 1.00 to 5.00 volume percent
    - Unspecified > 5.00
  - Isoflurane:
    - ±0.15 volume percent at 0 to 1.00 volume percent
    - ±0.20 volume percent at 1.00 to 5.00 volume percent
    - Unspecified > 5.00
  - Desflurane:
    - ±0.15 volume percent at 0 to 1.00 volume percent
    - ±0.20 volume percent at 1.00 to 5.00 volume percent
    - ±0.40 volume percent at 5.00 to 10.00 volume percent
    - ±0.60 volume percent at 10.00 to 15.00 volume percent
    - ±1.00 volume percent at 15.00 to 18.00 volume percent
    - Unspecified > 18.00
  - Enflurane:
    - ±0.15 volume percent at 0 to 1.00 volume percent
    - ±0.20 volume percent at 1.00 to 5.00 volume percent
    - Unspecified > 5.00
  - Sevoflurane:
    - ±0.15 volume percent at 0 to 1.00 volume percent
    - ±0.20 volume percent at 1.00 to 5.00 volume percent
    - ±0.40 volume percent at 5.00 to 8.00 volume percent
    - Unspecified > 8.00
  - Carbon dioxide:
    - ±0.10 volume percent at 0 to 1.00 volume percent

        - ±0.20 volume percent at 1.00 to 5.00 volume percent
        - ±0.30 volume percent at 5.00 to 7.00 volume percent
        - ±0.50 volume percent at 7.00 to 10.00 volume percent
        - Unspecified > 10.00
    - Nitrous oxide:
        - ±2.00 volume percent at 0 to 20 volume percent
        - ±3.00 volume percent at 20.0 to 100 volume percent
- Interference Gas:
    - CO2: N2O, O2, any agent = 0.1%$_{ABS}$ inaccuracy allowance for each
    - N2O: CO2, O2, any agent = 0.1%$_{ABS}$ inaccuracy allowance for each
    - Agents: CO2 = 0%$_{ABS}$ inaccuracy allowance
    - N2O, O2, second agent = 0.1%$_{ABS}$ inaccuracy allowance for each
- Flow Rate:
    - Adult and pediatric: 200 ±20 ml per min
    - Neonate: 150 ±15 ml per min
- Maximum specified interval for intervention of water (hours at specified minimum sample flow rate):
    - AGENT mode: Adult and pediatric is 17 hours @ 200 ml/min, 37°C, 100% RH; neonate is 17 hours @ 120 ml/min, 37°C, 100% RH
    - CO2 mode: 8 hours @ 50 mL/min +/- 10 ml/min
- System Response and Rise Times (as measured from patient gas input of the complete pneumatic circuit, including tubing, from 10 – 90 percent of measured levels)
    - Cannula, adult:
        - Halothane —
          System response: 11.56 seconds
          Rise time: 5.77 seconds
        - Isoflurane —
          System response: 6.71 seconds
          Rise time: 0.88 seconds
        - Desflurane —
          System response: 6.63 seconds
          Rise time: 0.57 seconds
        - Enflurane —
          System response: 7.55 seconds
          Rise time: 1.75 seconds
        - Sevoflurane —
          System response: 6.45 seconds
          Rise time: 0.62 seconds
        - CO2 —
          System response: 6.62 seconds
          Rise time: 0.61 seconds
        - Oxygen —
          System response: 6.99 seconds
          Rise time: 1.02 seconds
        - Nitrous oxide —
          System response: 6.28 seconds
          Rise time: 0.25 seconds
    - Cannula, infant:
        - Halothane —
          System response: 15.95 seconds
          Rise time: 8.63 seconds
        - Isoflurane —
          System response: 9.26 seconds
          Rise time: 1.70 seconds
        - Desflurane —
          System response: 6.47 seconds
          Rise time: 0.61 seconds
        - Enflurane —
          System response: 11.98 seconds
          Rise time: 4.75 seconds
        - Sevoflurane —
          System response: 6.48 seconds
          Rise time: 0.62 seconds
        - CO2 —
          System response: 6.51 seconds
          Rise time: 0.48 seconds
        - Oxygen —
          System response: 8.61 seconds
          Rise time: 1.13 seconds
        - Nitrous oxide —
          System response: 7.95 seconds
          Rise time: 0.72 seconds
    - Divided cannula, adult:
        - Halothane —
          System response: 20.81 seconds
          Rise time: 14.18 seconds
        - Isoflurane —
          System response: 10.99 seconds
          Rise time: 3.91 seconds
        - Desflurane —
          System response: 7.38 seconds
          Rise time: 0.64 seconds
        - Enflurane —
          System response: 13.83 seconds
          Rise time: 7.11 seconds
        - Sevoflurane —
          System response: 7.48 seconds
          Rise time: 0.78 seconds
        - CO2 —
          System response: 7.57 seconds
          Rise time: 0.64 seconds
        - Oxygen —
          System response: 8.02 seconds
          Rise time: 1.07 seconds

        - Nitrous oxide —
          System response: 7.16 seconds
          Rise time: 0.51 seconds
    - Divided cannula, infant:
        - Halothane —
          System response: 9.98 seconds
          Rise time: 3.95 seconds
        - Isoflurane —
          System response: 6.75 seconds
          Rise time: 0.89 seconds
        - Desflurane —
          System response: 6.25 seconds
          Rise time: 0.60 seconds
        - Enflurane —
          System response: 7.32 seconds
          Rise time: 1.37 seconds
        - Sevoflurane —
          System response: 5.45 seconds
          Rise time: 0.67 seconds
        - CO2 —
          System response: 5.49 seconds
          Rise time: 0.49 seconds
        - Oxygen —
          System response: 7.25 seconds
          Rise time: 0.84 seconds
        - Nitrous oxide —
          System response: 6.51 seconds
          Rise time: 0.39 seconds
- Data sample rate: 25 Hz
- Full accuracy respiration rate (range permitting specified gas accuracy): 2–60 respirations per minute (RPM)
- Total respiration range: 2–100 rpm; accuracy is unspecified from 60–100 rpm
- Relevant interference: 0.5 mmHg equivalent with 37.5°C saturated with H_2O (0.1 percent relative max)
- Display resolution: 0.1 percent volume
- Maximum warm-up time: 10 minutes; ISO accuracy achieved in less than 45 seconds of activation
- Auto ID threshold (full accuracy mode):
    - Primary agent ID: 0.15 percent
    - Secondary agent ID: 0.3 percent
- Multiple agents alarm threshold: 0.3 percent (0.5 percent during ISO accuracy mode) or 5% $_{REL}$ (10 percent for isoflurane) of primary agent if primary agent > 10 percent (For halothane add 0.1%$_{ABS}$ to threshold values)
- CO2 ambient pressure compensation range: 500–900 mmHg
- Pressure compensation: Unaffected by cyclical pressures of up to 10 kPa as, apart from the described automatic pressure compensation, the pump automatically regulates flow so that not only gas readings but also gas sample flow is unaffected
- Calibration interval: Calibration verification (as described in service instructions) must be performed at one year intervals

Alarm Limits

- Et CO2:
    - Lower: Off, or 5 – 60 mmHg (Off, or 0.6 – 8.0 kPa)
    - Upper: 5 – 76 mmHg, or off (0.7 – 10.1 kPa, or off)
- Fi CO2:
    - Lower: No low alarm limit
    - Upper: 0 – 20 mmHg, or off (0 – 2.7 kPa, or off)
- Fi N2O:
    - Lower: No low alarm limit
    - 0 – 80 percent
- Et Halothane:
    - Lower: Off, or 0.1 – 5.0 Vol. %
    - Upper: 0.1 – 5.0 Vol. %, or off
- Fi Halothane:
    - Lower: Off, or 0.1 – 5.0 Vol. %
    - Upper: 0.1 – 5.0 Vol. %, or off
- Et Isoflurane:
    - Lower: Off, or 0.1 – 5.0 Vol. %
    - Upper: 0.1 – 5.0 Vol. %, or off
- Fi Isoflurane:
    - Lower: Off, or 0.1 – 5.0 Vol. %
    - Upper: 0.1 – 5.0 Vol. %, or off
- Et Desflurane:
    - Lower: Off, or 0.1 – 18.0 Vol. %
    - Upper: 0.1 – 18.0 Vol. %, or off
- Fi Desflurane:
    - Lower: Off, or 0.1 – 18.0 Vol. %
    - Upper: 0.1 – 18.0 Vol. %, or off
- Et Enflurane:
    - Lower: Off, or 0.1 – 5.0 Vol. %
    - Upper: 0.1 – 5.0 Vol. %, or off
- Fi Enflurane:
    - Lower: Off, or 0.1 – 5.0 Vol. %
    - Upper: 0.1 – 5.0 Vol. %, or off
- Et Sevoflurane:
    - Lower: Off, or 0.1 – 8.0 Vol. %
    - Upper: 0.1 – 8.0 Vol. %, or off
- Fi Sevoflurane:
    - Lower: Off, or 0.1 – 8.0 Vol. %
    - Upper: 0.1 – 8.0 Vol. %, or off
- Fi O2:
    - Lower: 18 – 100 percent
    - Upper: 20 – 100 percent

CO2

- Range: 0 – 100 percent
- Resolution: 1 percent

O2

- Range: 0 – 100 percent
- Resolution: 1 percent

- Signal Output (at constant temperature and pressure): 10 mV ±1.5 mV @ 20° C / 20.95 percent O_2
- Maximum response time (21 – 100 percent step change through patient sampling line as seen in WPU gas monitor window):
    - Adult and Pediatric: < 7.3 seconds
    - Neonate: < 8.2 seconds
- Accuracy (includes stability and drift), full scale (gas measurement performance met after the maximum warm-up period):
    - ±1 percent at 0 – 40 percent
    - ±2 percent at 40 – 60 percent
    - ±3 percent at 60 – 80 percent
    - ±4 percent at 80 – 100 percent
- Offset: ±1 percent
- O2 interfering gas effects:
    - N2O: < 0.3 volume percent @ 80 volume percent N2O
    - CO2: < 0.3 volume percent @ 5 volume percent CO2
    - Halothane: < 0.3 volume percent @ 5 volume percent halothane
    - Enflurane: < 0.3 volume percent @ 5 volume percent enflurane
    - Isoflurane: < 0.3 volume percent @ 5 volume percent isoflurane
    - Desflurane: < 0.3 volume percent @ 18 volume percent desflurane
    - Sevoflurane: < 0.3 volume percent @ 8 volume percent sevoflurane
    - Acetone: < 0.3 volume percent @ 1 volume percent acetone
    - Ethanol: < 0.3 volume percent @ 0.1 volume percent ethanol
    - Helium: < 0.3 volume percent @ 80 volume percent helium
    - Methane: < 0.3 volume percent @ 0.1 volume percent methane
    - Nitric oxide: < 0.3 volume percent @ 50 ppm nitric oxide
- Oxygen Sensor:
    - Operating temperature: 15 – 35 °C (59 – 95°F)
    - Expected operating life: Product labeled with a use-by date 15 months from manufacturing date (2500 hours at 100 percent O2); exchange recommended every 12 months
    - Expected shelf life: 3 months in sealed container

Respiration (Pneumatic)

- Displayed numerically by detecting the patient's abdominal or chest wall motion through a pneumatic bellows placed at the patient's chest
- No user adjustable options, including alarms, as this parameter is not intended for vital sign monitoring
- Respiration rate measurement range: 0 to 60 breaths per minute
- Respiration rate resolution: 1 breath per minute
- Respiration rate accuracy: ± 1 breath per minute

Temperature (Optional)

For use with the FlexTEMP II Sensor

- Channel: One
- Units: Celsius and Fahrenheit
- Range: 20.0 – 44.0°C (68.0 – 111.2°F)
- Resolution: 0.1°C (0.1°F)
- Accuracy: ±0.5°C (±0.9°F)
- Response time: The measuring time to obtain a steady-state reading within the manufacturer's accuracy specifications is within 15 seconds, compliant to ISO 80601-2-56.
- Numeric display update time: 2 seconds
- Sensor type: Fiber-optic, multiple-use (when used with single-use sterilized jackets)
- Application site: Axillary, esophageal, rectal
- Measurement mode: Direct

Alarm Limits

- Lower: Off, or 20.0 to 44.0°C (Off, or 68.0 to 111.2°F)
- Upper: 20.0 to 44.0°C, or off (68.0 to 111.2°F, or off)

Non-invasive Blood Pressure

Oscillometric method (with inflatable cuff) determines systolic, diastolic and mean arterial pressures, and pulse rate.

Patient Types

- Adult, pediatric, and neonate

Pneumatic Systems

- Unit of measure: Millimeters of mercury (mmHg) or kilopascals* (kPa)
- Cuff inflation pressure:
    - Initially 165 mmHg (22 kPa) for Adult, 130 mmHg (17.3 kPa) for Pediatric, and 100 mmHg (13.3 kPa) for Neonate; all pressures are ± 15 mmHg (2 kPa)
    - Subsequent inflation pressures determined by last NIBP measurement
- Overpressure protection: release of cuff pressure if inflation pressure exceeds 300 mmHg (40 kPa) for Adult and Pediatric modes, and 150 mmHg (20 kPa) for Neonate mode

Measurement Range

- Systolic:
    - Adult: 30 – 270 mmHg (4.0 – 36 kPa)
    - Pediatric: 30 – 180 mmHg (4.0 – 24 kPa)

- Neonate: 30 – 130 mmHg (4.0 – 17.3 kPa)
- Mean arterial:
  - Adult: 20 – 255 mmHg (2.7 – 34 kPa)
  - Pediatric: 20 – 160 mmHg (2.7 – 21.3 kPa)
  - Neonate: 20 – 120 mmHg (2.7 – 16 kPa)
- Diastolic:
  - Adult: 10 – 245 mmHg (1.3 – 32.7 kPa)
  - Pediatric: 10 – 150 mmHg (1.3 – 20 kPa)
  - Neonate: 10 – 100 mmHg (1.3 – 13.3 kPa)

Accuracy

- Pressure measurement accuracy: Maximum mean error ± 5 mmHg (± 0.6 kPa) with a standard deviation of less than 8 mmHg (1 kPa)
- Pressure measurement resolution: 1 mmHg (0.1 kPa)
- Pressure transducer range: 0 – 300 mmHg (0 – 40 kPa)

Modes

- Manual: Immediate upon operator command
- Automatic: Determinations automatically made with selectable intervals of 1, 2, 3, 5, 10, 15, 20, and 30 minutes

Alarm Limits

- Systolic:
  - Adult:
    - Lower: Off, or 30 to 270 mmHg (Off, or 4.0 to 36.0 kPa)
    - Upper: 30 to 270 mmHg, or off (or 4.0 to 36.0 kPa, or off)
  - Pediatric:
    - Lower: Off, or 30 to 180 mmHg (Off, or 4.0 to 24.0 kPa)
    - Upper: Upper: 30 to 180 mmHg, or off (or 4.0 to 24.0 kPa, or off)
  - Neonate:
    - Lower: Off, or 30 to 130 mmHg (Off, or 4.0 to 17.3 kPa)
    - Upper: 30 to 130 mmHg, or off (4.0 to 17.3 kPa, or off)
- Mean:
  - Adult:
    - Lower: Off, or 20 to 255 mmHg (Off, or 2.7 to 34.0 kPa)
    - Upper: 20 to 255 mmHg, or off (2.7 to 34.0 kPa, or off)
  - Pediatric:
    - Lower: Off, or 20 to 160 mmHg (Off, or 2.7 to 21.3 kPa)
    - Upper: 20 to 160 mmHg, or off (2.7 to 21.3 kPa, or off)
  - Neonate:
    - Lower Off, or 20 to 120 mmHg (Off, or 2.7 to 16.0 kPa)
    - Upper: 20 to 120 mmHg, or off (2.7 to 16.0 kPa, or off)
- Diastolic:
  - Adult:
    - Lower: Off, or 10 to 245 mmHg (Off, or 1.3 to 32.7 kPa)
    - Upper: 10 to 245 mmHg, or off (1.3 to 32.7 kPa, or off)
  - Pediatric:
    - Lower: Off, or 10 to 150 mmHg (Off, or 1.3 to 20.0 kPa)
    - Upper: 10 to 150 mmHg, or off (1.3 to 20.0 kPa, or off
  - Neonate:
    - Lower: Off, or 10 to 100 mmHg (Off, or 1.3 to 13.3 kPa)
    - Upper: 10 to 100 mmHg, or off (1.3 to 13.3 kPa, or off)

**For kilopascals (kPa), allow ± 1 least significant digit to accommodate round-off error for calculated values.*

Gating

Parameter result outputs to the MRI system as data and discrete signals:

- Digital pulses (parameter event-associated signals):
  - ECG (3.3 to 5.0 V p-p signal, pulse duration 10 ms ± 3 ms)
  - SpO2 (3.3 to 5.0 V p-p signal, pulse duration 10 ms ± 3 ms)
  - Negative pulses (-3.3 to -5.0 V p-p signals), other characteristics same as above
- Analog waveforms (monitored parameter representative signals):
  - ECG (1 mV/mV scaling, 5 mA maximum current, 20 mV maximum output voltage)
  - ECG (1 V/mV scaling, ± 5 V maximum output voltage, 5 mA maximum current)
  - IBP (200 mV maximum output voltage)
  - Respiration (± 5 V maximum output voltage, 5 mA maximum current, 1 V p-p signal voltage)
  - SpO2 IR/red (1 V/mV scaling, 40 mV maximum output voltage)
  - SpO2 IR/red (2 V maximum output voltage)

Ordering Information

Standard Features, 866185

- A01: Standard Accessories

Options

- F01: Basic (NBP, ECG, SpO2, CO2, RR)
- F02: Basic + IBP (x2)
- F03: Basic + Temp
- F04: Basic + AA, O2
- F05: Basic + AA, O2, IBP (x2)
- F06: Basic + AA, O2 ,Temp
- F07: Basic + AA, O2, IBP (x2), Temp

Accessories

AGENT

- 989803152561: CANNULA, DISP, ADULT
  - *(Original part number: 9012)*
- 989803152601: CANNULA, DISP, ADULT
  - *(Original part number: 9016)*
- 989803152621: CANNULA,DISP,INT INF, (DIVIDED)
  - *(Original part number: 9016B)*
- 989803152631: CANNULA, DISP, PED, (DIVIDED)
  - *(Original part number: 9016C)*
- 989803152611: CANNULA, DISP, INFANT, (DIVIDED)
  - *(Original part number: 9016A)*
- 989803152591: CANNULA, DISP, INT INFANT
  - *(Original part number: 9015)*
- 989803152571: CANNULA, DISP, PED
  - *(Original part number: 9013)*
- 989803152581: CANNULA, DISP, INFANT
  - *(Original part number: 9014)*
- 989803162051: ANESTHETIC OXYGEN (O2) SENSOR
- 989803152671: KIT,DISPOSABLE WATER TRAP,3160
  - *(Original part number: 94012)*
- 989803152661: KIT,SAMPLE,AGENTS,3160
  - *(Original part number: 94018)*

CO2

- 989803183241: LOFLO SAMPLE LINE, ADULT CANNULA, BOX 20
- 989803183251: LOFLO SAMPLE LINE, PED. CANNULA, BOX 20
- 989803183261: LOFLO SAMPLE LINE, NEO. CANNULA, BOX 20
- 989803183271: LOFLO LINE, ADU DVD CANNULA,BOX 20
- 989803183281: LOFLO LINE, PED DVD CANNULA, BOX 20
- 989803183291: LOFLO LINE, ADU AIRWAY ADPT, BOX 20
- 989803185331: LOFLO SAMPLE LINE, ADULT CANNULA,BOX 100
- 989803185341: LOFLO SAMPLE LINE, PED CANNULA, BOX 100
- 989803185351: LOFLO SAMPLE LINE, NEO CANNULA, BOX 100
- 989803185361: LOFLO LINE, ADU DVD CANNULA, BOX 100
- 989803185371: LOFLO LINE, PED DVD CANNULA, BOX 100
- 989803185381: LOFLO LINE ADU AIRWAY ADPT, BOX 100

ECG

- 989803152291: GEL, ECG/EEG, SKIN PREP, TUBE, 3-PACK
  - *(Original part number: 9009)*
- 989803193721: EXPRESSION MR ECG LEADS, AAMI, CV
- 989803193731: EXPRESSION MR ECG LEADS, AAMI, STANDARD
- 989803193741: EXPRESSION MR ECG LEADS, AAMI, NEONATAL
- 989803193751: EXPRESSION MR ECG LEADS, IEC, CV
- 989803193761: EXPRESSION MR ECG LEADS, IEC, STANDARD
- 989803193771: EXPRESSION MR ECG LEADS, IEC, NEONATAL
- 989803179031: QUADTRODE MRI ECG PAD, 25/BOX
- 989803179041: ELCTRD, MRI ECG, QUTRD.CV, 25/BOX
- 989803179051: ELCTRD, MRI, NEO.QUDTRD, 25/BOX
- 989803192761: WIRELESS ECG PATIENT MODULE (GEN 3) 1-5
- 989803194341: WIRELESS ECG PATIENT MODULE (GEN 3) 6-10

Gating

- 989803152821: CAB, DIGITAL GATING, GE, 3160
  - *(Original part number: 9292)*
- 989803152831: CAB, GATING, SIEMENS, 3160
  - *(Original part number: 9291)*
- 989803152851: CAB, DIG.GATING, HIT/TOSH, 3160
  - *(Original part number: 9293)*
- 989803195521: UNIVERSAL GATING INTERFACE

Invasive Blood Pressure

- 989803194601: EXPRESSION MR IBP TRANSDUCER CABLE, 5FT
- 989803194631: EXPRESSION MR IBP DPT KIT, A/P, BOX 20
- 989803194641: EXPRESSION MR IBP DPT KIT, I/N, BOX 20

Non-invasive Blood Pressure (NIBP)

- 989803182611: NIBP CUFF, SINGLE LUMEN, INFANT
- 989803182621: NIBP CUFF, SINGLE LUMEN, PEDIATRIC
- 989803182631: NIBP CUFF, SINGLE LUMEN, SMALL ADULT
- 989803182641: NIBP CUFF, SINGLE LUMEN, ADULT
- 989803182651: NIBP CUFF, SINGLE LUMEN, ADULT-L
- 989803182661: NIBP CUFF, SINGLE LUMEN, LRG ADULT
- 989803182671: NIBP CUFF, SINGLE LUMEN, LRG ADULT-L
- 989803182681: NIBP CUFF, SINGLE LUMEN, THIGH
- 989803182511: NIBP CUFF, SINGLE LUMEN, INFANT, DISP
- 989803182521: NIBP CUFF, SINGLE LUMEN, PEDIATRIC, DISP
- 989803182531: NIBP CUFF, SINGLE LUMEN, SMALL ADULT,DISP
- 989803182541: NIBP CUFF, SINGLE LUMEN, ADULT, DISP
- 989803182551: NIBP CUFF, SINGLE LUMEN, ADULT-L, DISP
- 989803182561: NIBP CUFF, SINGLE LUMEN, LRG ADULT, DISP
- 989803182571: NIBP CUFF, SINGLE LUMEN,LRG ADULT-L,DISP
- 989803182581: NIBP CUFF, SINGLE LUMEN, THIGH, DISP
- 989803183171: NIBP CUFF, SINGLE LUMEN, NEO #1, DISP
- 989803183181: NIBP CUFF, SINGLE LUMEN, NEO #2, DISP
- 989803183191: NIBP CUFF, SINGLE LUMEN, NEO #3, DISP
- 989803183201: NIBP CUFF, SINGLE LUMEN, NEO #4, DISP
- 989803183211: NIBP CUFF, SINGLE LUMEN, INFANT #5, DISP
- 989803183221: ADULT PRESSURE INTERCONNECT HOSE
- 989803183231: NEONATAL PRESSURE INTERCONNECT HOSE

Respiration (Pneumatic)

- 989803152791: PNEUMOGRAPH, CHEST, NM, 3160
    - *(Original part number: 94023)*

SPO2

- 989803161991: QUICK CONNECT SPO2 PROBE, MRI
- 989803166531: QUICK CONNECT SPO2 CLIP, ADULT
- 989803166541: QUICK CONNECT SPO2 CLIP, PEDIATRIC
- 989803166551: QUICK CONNECT SPO2 GRIP, ADULT, 20/BOX
- 989803166561: QUICK CONNECT SPO2 GRIP, PED, 20/BOX
- 989803166571: QUICK CONNECT SPO2 GRIP, INFANT, 20/BOX
- 989803166581: QUICK CONNECT SPO2 GRIP, NEO, 20/BOX
- 989803192771: WIRELESS SPO2 PATIENT MODULE (GEN 3) 1-5
- 989803194331: WIRELESS SPO2 PATIENT MODULE (GEN 3) 6-10

System

- 989803191341: BATTERY, MODULE (GEN 3)
- 989803169491: BATTERY, MRI, 14.8V, 5.08 AH, UL
- 865471: EXPRESSION INFORMATION PORTAL (IP5)
- 989803176521: ADVANCED COMMUNICATIONS OPTION
- 453564177501: EUROPEAN LINE CORD
- 989803168211: NORTH AMERICAN LINE CORD
- 989803168221: CORD, JUMPER, 25 FEET
- 989803173901: BRAZILIAN POWER CORD, 3 METER
- 989803174171: UK LINE CORD, 3 METER
- 989803181291: POWER CORD, AUS/NZL, 3 METER
- 989803181321: POWER CORD, S AFRICA, 3 METER
- 989803181331: POWER CORD, DANISH, 3 METER
- 989803181341: POWER CORD, ISRAELI, 3 METER
- 989803181351: POWER CORD, ARGENTINA, 3 METER
- 989803181361: POWER CORD, SWISS, 3 METER

Temperature

- 989803194511: FLEXTEMP II SENSOR (ESOPHAGEAL/RECTAL/AXILLARY, DIRECT MODE)
- 989803168891: SURGICAL LUBRICANT, 12 PACK
- 989803178181: FLEXTEMP SYSTEM, JACKET (BOX 10)

Miscellaneous

- 453564557591: MR400 QUICK REFERENCE GUIDE
- 989803195211: MANUAL, SERVICE, MR400
- 989803193191: MANUAL, OPERATOR, MR400, DANISH
- 989803193201: MANUAL, OPERATOR, MR400, DUTCH
- 989803193211: MANUAL, OPERATOR, MR400, ENGLISH
- 989803193221: MANUAL, OPERATOR, MR400, FINNISH
- 989803193231: MANUAL, OPERATOR, MR400, FRENCH

- 989803193241: MANUAL, OPERATOR, MR400, GERMAN
- 989803193251: MANUAL, OPERATOR, MR400, INDONESIAN
- 989803193261: MANUAL, OPERATOR, MR400, ITALIAN
- 989803193271: MANUAL, OPERATOR, MR400, JAPANESE
- 989803193281: MANUAL, OPERATOR, MR400, KOREAN
- 989803193291: MANUAL, OPERATOR, MR400, NORWEGIAN
- 989803193301: MANUAL, OPERATOR, MR400, POLISH
- 989803193311: MANUAL, OPERATOR, MR400, PORTUGUESE
- 989803193321: MANUAL, OPERATOR, MR400, RUSSIAN
- 989803193331: MANUAL, OPERATOR, MR400, SPANISH
- 989803193341: MANUAL, OPERATOR, MR400, SWEDISH
- 989803193351: MANUAL, OPERATOR, MR400, TRAD. CHINESE
- 989803193361: MANUAL, OPERATOR, MR400, TURKISH

PHILIPS

For more information about the Expression Model MR400 MRI Patient Monitoring System or any of our complete solution products, please contact us. We are glad to hear from you.

Invivo, a division of Philips Medical Systems
12151 Research Parkway
Orlando, FL 32826, USA

Phone
USA: 800-722-9377

E-mail
Worldwide: Info@invivocorp.com

Websites
www.ExpressionMR.com
www.invivocorp.com
www.philips.com

REF A-866185-90058 Rev. B

Model: MRidium 3860+ MRI IV w/3861 Sidecar
Category: Pump, Infusion
Subcategory: Dual, MRI
Manufacturer: IRadimed Corporation
Catalog #: MI3860/MI3861

CAD ID: INF0142
Atta 3 ID: INF-40C58
Atta ID: 6609-004
RefID 1:
RefID 2:

MRI dual infusion pump. Non-magnetic linear peristaltic infusion pump. Features Masimo SET SpO2 monitoring and specialized fiber optic sensor, a 10-key numeric keypad, wider pumping range of 0.1 ml/Hr to 1400 ml/Hr, quick programming and broad fluid flow control. Stores user profiles and can be transferred via the SD memory card to other pumps. Large programming screen, 12 Hour battery life, expansion to second pump channel with optional 'Side Car' module, and ability to charge while plugged in during scans. Approved for use in 0.2 to 3.0 T magnets. Completely operational up to the 10,000 gauss line.

General Production Detail

Arch Sig: No
Spatial Sig: No
Arch Code: 02-Movable Electrical
ADA: No
Critical Path: No
Antimicrobial: No
Type: Medical
Green: No
Furnish Install: Owner / Owner

Physical Requirements

Width (in.): 8.0000
Left (in.): N/A
Depth (in.): 6.0000
Right (in.): N/A
Height (in.): 9.5000
Front (in.): N/A
Product Weight (lbs): 18.0000
Back (in.): N/A
Max Operating Weight (lbs):
Top (in.): N/A
Mounting: Counter/Cart/Table/Pole
Bottom (in.): N/A
Specification notes:

Structural Requirements

Seismic: No
OPA #:
Pre-Approval:
Structural notes:

Technology Requirements

Has Technical Connections: No
Network:
Patient Data: No
System:
Connection Type: N/A
Technical Connection notes:

Electrical Requirements

Volts: 120
Watts: 264.0000
Hz: 60
Amps: 2.2000
KVA:
Circuit: No
UPS: N/A
Plug Type: Type B (Nema 5-15)
Emerg. Power: Yes
Plug Detail:
Other Volts Avail.: Yes
Electrical Phase: Single Phase
BTU/hr: N/A
Electrical notes:

Utility Requirements

Water - Cold: No
Gas Type:
Water - Hot: No
Gas Location:
Water - Treated: No
Medical Gas: No
Drain: No
Vent Needed: No
Drain Location:
Vent Type:
Steam: No
Heat Dissipation: N/A
Vacuum - Den. / Med.: No/No
Dissipation Type: Actual
Plumbing notes:
Mechanical notes:

Locations

CAD ID	Level	Arch Dept	Room	Room #	Status	Item Qty
INF0142	Level 1	Imaging	MRI	––	New	1
						Total: 1

MRidium® 3860+

The World's Leader in MRI IV Infusion Systems

The MRidium® 3860+ MRI IV Infusion System meets the demanding clinical needs of today's patient's, by allowing the continuous delivery of fluids and medication within the MRI Suite.

Safely, Accurately and Reliably preserve the ***'Continuity of Care'*** for patients requiring continuous or intermittent infusions throughout their MRI care cycle.

IRADIMED®

MRidium® 3860+ MRI IV INFUSION SYSTEM

Designed for Today's MRI Environment

The MRidium® 3860+ and its ability to infuse medications in the MRI room extends the same quality of bedside care experienced in other areas of the hospital right into the MRI suite.

The MRidium® 3860+ helps replace 'work around' solutions like running long lines from conventional pumps through a sealed MRI door or wave guide. The 'work around' practice of placing long lines from outside the MRI control room may lead to questionable flow rates and alarm delays due to line occlusions, increased infection rates and costly medication waste.

Quality You Can Trust

IRadimed is a leader in MRI patient care with vast experience in MRI products. Our founder is the pioneering developer of the world's first and best selling MRI compatible patient vital signs monitoring system.

Features

- Intuitive Smart IV Pump technology reduces input errors
- Placement up to the 10,000 Gauss Line on a 3T Scanner
- DERS Dose Error Reduction System with custom drug library reduces medication errors
- Optional MasimoSET® SpO_2 patient monitoring
- Infusion Range of 0.1 to 1400 mL/hr
- Easily expandable to a second channel with add-on 3861 Sidecar module
- Long life battery provides >12 hours of operation at 125 mL/hr
- Delivery via Syringe, Bag or Bottle

MRidium® 3865 Wireless Remote Control

Titrating medications is now easily done from within the control room with the MRidium® 3865 Wireless Remote Display. The Wireless Remote eliminates the delays caused by stopping a crucial scan just to review, titrate or deliver a bolus. The MRidium® 3865 is a valuable tool to help decrease the amount of time a patient spends in the MR scanner which may lead to improved throughput and care.

…Titrate on the fly!

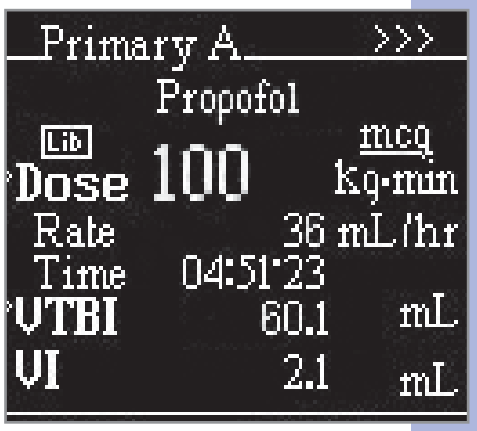
DERS 'Dose Error Reduction System'

The MRidium® 3860+ ***'Dose Error Reduction System'*** provides a comprehensive safety solution at the patients 'point of care'.

Designed to reduce infusion errors, the DERS custom drug library enhances the quality of patient care, maintains compliance with National Safety Standards and provides potential cost savings.

Clinically approved and validated by your pharmacy, the DERS custom drug library with its pre-programmed hard and soft 'SafeGuards' helps prevent infusion errors by defining clinically acceptable dosing ranges.

…Taking the 'guess work' out of Critical Dosing.

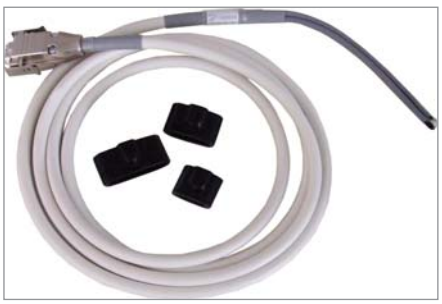


MRidium® 3861 Sidecar Channel

The 3861 Sidecar Channel is the ideal option to help critical patients get their needed MRI procedure. The MRidium® 3860+ with the additional 3861 Sidecar Channel offers a unique and effective way to deliver multiple IV fluids, safely and accurately, next to the MRI system.

…Critical patients? No Problem!

MasimoSET®



MasimoSET® SpO_2 Monitoring

The MRI patient workflow just got a little more efficient with the MasimoSET® SpO_2 monitoring option. Having the SpO_2 option for a second point of reference helps ensure that complex MRI cases with unforeseen difficulties can be completed. The MasimoSET® SpO_2 option also enhances the patient workflow by providing continuous monitoring while the patient is transported throughout the entire MRI care cycle.

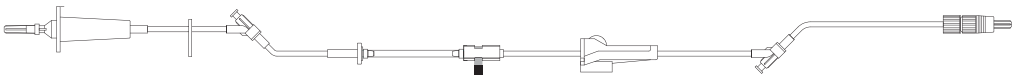
…One less thing to worry about!

IRADIMED®

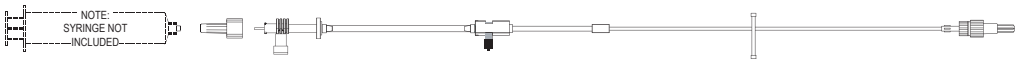
MRidium® 3860+ MRI IV INFUSION SYSTEM

Disposable IV Infusion Sets .... To Order Call 866.677.8022

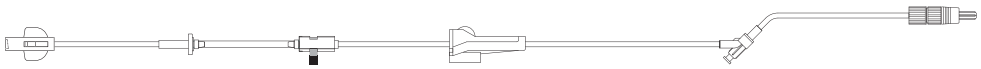
Spike Infusion Set, Part Number 1056
Latex Free Infusion Set with Spike and two needle free injection ports



Vented Syringe Set, Part Number 1057
Latex Free Vented Syringe Set, Microbore 4mL Prime Volume



Extension Set, Part Number 1058
Latex Free Extension Set with one needle free injection port



We're on the web!
www.iradimed.com

Specifications

VOLUMETRIC INFUSION PUMP / MONITOR

ELECTRICAL CHARACTERISTICS

HI/LO Line Voltage Requirements	100 to 240 VAC +/-10%, 50/60 Hz
Power Sources Available	Internal battery power with separate AC charger/power supply
Power Consumption	< 18 Volt-Amperes @ 120 VAC nominal at 125 mL/hr (<100 VA maximum during charging)
Battery Type	Rechargeable Lithium Polymer Pack, 14.8 v at 5.8 Ah
Battery Capacity	> 12 Hours at ≤ 125 mL/hr Rate
Battery Charge Time	< 9 hours to 95% capacity
Battery Cycle Life	> 200 charge/discharge cycles
Leakage Current	< 20 µA RMS (Patient), < 300 µA RMS (Chassis)
Impedance, Chassis to Earth Ground	< 0.1 ohms (with power supply)

MECHANICAL CHARACTERISTICS

Dimensions D x W x H, Total Weight	6 x 8 x 9.5 inches (15.25 x 20.3 x 24.1 cm), 11.5 lbs. (5.2 Kg) with battery
Temperature Range	+10° to +44° C (Operating), -40° to +70° C
Relative Humidity Range	0% to 80% RH, non-condensing
Pole Clamp Mounting (Diameter) Range	1.0 to 1.5 inch (25 to 38 mm) diameter

PERFORMANCE CHARACTERISTICS INFUSION PUMP PERFORMANCE

Flow Rate Range	0.1 to 1400 mL/hr 0.1 to 99.9 mL/hr in 0.1 mL/hr increments, 100 to 1400 mL/hr in 1 mL increments
Flow Rate Display Range	0.1 to 99.9, 100 to 1400 mL/hr
Flow Rate Accuracy	+/-10% (0.1 to 0.9 mL/Hr), +/-5% (1 to 1400 mL/Hr)
Volume To Be Infused (VTBI) Range	0.1 to 999 mL
Total Volume Infused (VI) Range	0.1 to 9,999 mL in 0.1 mL increments
Keep Vein Open (KVO) Rate Range	Adjustable, 1 to 5 mL/hr, or Set Rate, whichever is less
Downstream (proximal) Occlusion	1 to 10 psi, user-adjustable, +/- 10% Detection Range
Occlusion Detection (no flow) Time	Typically < 30 sec, dependent on selected Flow Rate

PERFORMANCE CHARACTERISTICS INFUSION PUMP PERFORMANCE

Inlet Pressure Detector	Detects inlet side occlusions
Air-in-Line Detection Method	Ultrasonic bubble detector, > 100 µL
MRI Performance	
MRI Magnet Compatibility	0.2 to 3.0 Tesla MRI Systems
Magnetic Field Limit	10,000 Gauss line (1T magnetic field line) – Minimal ferrous material used inside Pump (<15 grams); non-magnetic motor used inside Pump
Compliance with Standards	IEC 60601-1-1, IEC 60601-1-2, IEC 60601-2-24, ISO 9919, AAMI ID 26, UL60601

PERFORMANCE CHARACTERISTICS PULSE OXIMETER

Sensor Type	Fiberoptic MRI SpO2 sensor with no RF conductive components
Sensor Length	90 inches (2.3 m)
Accuracy	70 – 99 % SpO2 +/- 3 digits Adult/Pediatric/Infant, Heart Rate +/- 3 BPM (no motion)
Display Ranges	Pulse Oximeter: 70 - 99 % SpO2, Heart Rate: 40-240 BPM

IRADIMED® CORPORATION
1025 Willa Springs Drive
Winter Springs, FL 32708
407.677.8022
866.677.8022 Toll Free
www.iradimed.com

RoHS COMPLIANT

CE 0843

LB003 Rev. C

3861 SIDECAR™ DUAL PUMP DRIVE	
MECHANICAL CHARACTERISTICS	
Dimensions D x W x H	5.5 x 4.5 x 9.5 Inches (14.0 x 11.4 x 24.1 cm)
Total Weight	6 LBS (2.7 Kg)
Operating Temperature Range	+5^{O} to +40^{O} C
Storage Temperature Range	-40^{O} TO +70^{O} C
Operating Relative Humidity Range	0% to 80% RH, non-condensing
Storage Relative Humidity Range	0% to 95% RH, non-condensing
Pole Clamp Mounting (Pole Diameter) Range	None - Attaches directly to 3860/3860+ pump
ELECTRICAL CHARACTERISTICS	
Power Requirements	18 VDC (derived from MRidium Pump)
Power Consumption	< 19 Volt-Amperes @ 120 VAC nominal
Chassis Leakage Current	< 300 µA RMS (included with MRidium Pump)
Chassis Ground Impedance to Earth	< 0.1 ohms
PERFORMANCE CHARACTERISTICS	
Secondary Pump Performance	
Flow Rate Range - 0 to 100 mL/hr	0.1 to 99.9 mL/hr in 0.1 mL/hr increments
Flow Rate Range - > 100 mL/hr	100 to 1400 mL/hr in 1 mL/hr increments
Flow Rate Display Range	0.1 to 99.9, 100 to 1400 mL/hr
Flow Rate Accuracy	within 5% (for 0.1 to 0.9 mL/Hr, within 10%)
Primary Volume To Be Infused (VTBI) Range	0.1 to 99.9, 100 to 999 mL
Secondary Volume To Be Infused (VTBI) Range	0.1 to 99.9, 100 to 999 mL
Total Volume Infused (VI) Range	0.1 to 99.9, 100 to 9999 mL
Keep Vein Open (KVO) Rate Range	adjustable, 1 to 5 mL/hr, or set rate, whichever is lower.
Keep Vein Open (KVO) Default Rate	1 mL/hr
Patient Line (downstream) Back-Pressure Range	+300 to -100 mmHg
Downstream (proximal) Occlusion Detection Range	1 to 10 PSI (6.9 to 68.8 kPa), user-adjustable
Occlusion Detection Mechanism	Two separate (upstream & downstream) semiconductor force sensors
Occlusion Pressure Measurement Range	1 to 10 PSI (6.9 to 68.8 kPa), with 0.2 PSI resolution
Occlusion Pressure Measurement Accuracy	< 2 PSI (13.8 kPa), or within 10% of setting, whichever is greater.
Occlusion Detection (no flow) Time	typically <30 sec, dependent on selected Flow Rate, 55 min max. @ 1 mL/Hr
Occluded I.V. Line bolus volume (25 mL/Hr to 10 PSI occlusion)	0.7 mL max.
Air-in-Line Detection Method	Ultrasonic bubble detector