Date: May 18,2001
To: Holders of DIRECTION 2275665
Subject: **DIRECTION 2275665**
Enclosed are the REV 2 update pages.

SUMMARY OF CHANGES

- General Update

UPDATE INSTRUCTIONS(This revision can only be inserted in Rev 1 manual);
To properly update your manual, perform the update instructions on the list below.

TAB	REMOVED PAGES	INSERTED PAGES
_	Title Page A to B	Title Page A to B
1	1–9 to 1–10	1–9 to 1–10
2	2–19 to 2–42	2–19 to 2–44
4	4–13 to 4–14	4–13 to 4–14

Yutaka Masumo

GEYMS TP GROUP–MR

GE Medical Systems

Technical Publications

Direction 2275665

Revision 2

Signa® Ovation

Pre–Installation

Architectural/Installation Planning Use Only

Operating Documentation

DAMAGE IN TRANSPORTATION

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

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

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

GE Medical Systems

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REVISION HISTORY

REV	DATE	PRIMARY REASON FOR CHANGE
0	Oct 11, 2000	Initial release
1	Dec 28, 2000	Product Name was changed to Signa Ovation. Added Cooling Cabinet Information. Miscellaneous Correction.
2	May 18, 2001	Update the Magnet Load Pattern. Miscellaneous Correction.

LIST OF EFFECTIVE PAGES

1–3 SYSTEM OPTIONS

Note

SIGNA OpenSpeed Mx system required Pre–Install Kit.
* mark means W.I.P.(Work In Progress) at this timing

The following are optional equipment and software.

TABLE 1–16
OPTIONAL APPLICATIONS (IF REQUIRED)

CATALOG	DESCRIPTION
M20022BP*	EPI Package : SS/MS EPI
M20032BP*	EPI DWI Package : SS EPI DWI, MS EPI DWI (W/Navi Echo), SSFSE DWI
M20042BP*	LSDI : Line Scan Diffusion
M1033JB*	Smart Prep 2000
M1033JK*	Lx FuncTool 2000
M1033JA*	iDrive Pro
M1090PL*	Connect Pro
M20052BP	Multi Slice Multi Angle (for ROAmerica)

TABLE 1–17
OPTIONAL COILS (IF REQUIRED)

CATALOG	DESCRIPTION
M20002BC*	Torso Array (L) (ONE is included in standard coil package)
M20012BC*	C/T/L Array (ONE is included in standard coil package)
M20022BC*	Extremity Array (ONE is included in standard coil package)
M20032BC*	9 inch (ONE is included in standard coil package)
M20042BC*	6 inch (ONE is included in standard coil package)
M20052BC*	Open Breast Array
M20062BC*	Shoulder Array
M20072BC*	Wrist Array
M20082BC*	Torso Array (XL) (ONE is included in standard coil package)
M20092BC*	NV Array
M20102BC*	Open Body coil

1–4 SYSTEM OPTIONS (continued)

TABLE 1–18
KINEMATIC DEVICE (IF REQUIRED)

CATALOG	DESCRIPTION
M20002BA*	KNEE KINEMATIC DEVICE
M20012BA*	ANKLE KINEMATIC DEVICE
M20022BA*	C–SPINE KINEMATIC DEVICE

TABLE 1–19
Patient Monitoring system (IF REQUIRED)(See Note1 in Table)

CATALOG	DESCRIPTION
M21972SS	Patient Monitoring System
Note 1 Need additional arrange of construction at system install.	

TABLE 1–20
Main Disconnect (IF REQUIRED)

CATALOG	DESCRIPTION
TBD	Main Disconnect

TABLE 1–21
Power Tech (IF REQUIRED)

CATALOG	DESCRIPTION
M1710CA	Power Tech (480V 60Hz)
M1710DA	Power Tech (380V 50/60Hz)

2–10–1 Magnet Loading Considerations

In addition to the weight of the riggers equipment, special consideration must be given to the weight of the magnet along the delivery route. Refer to SECTION 8, SHIPPING AND DELIVERY DATA, for the shipping weight of the magnet (i.e. Gradient coil inside magnet bore and without an enclosure). Structural reinforcement may be required along the magnet delivery route. It is required that a structural engineering analysis be performed on the Magnet Room floor and delivery route to determine its load bearing capacity.

During magnet installation, leveling plates or shims MUST be installed between magnet feet and the magnet mounting plate to compensate for variation within levelness. Refer to Section 7 FLOORS for levelness requirements. GE Medical Systems supplied aluminum shims are installed to complete contact between entire surface of each of the four magnet feet and the floor.

2–10–2 Anchoring And Seismic Considerations

The center of gravity for MR system components are given for use in seismic calculations. If the MR cabinets are required by code to be anchored, refer to seismic drawings available on request from your local GEMS Installation Specialist.

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

Note

It is the customer's responsibility to coordinate magnet steel plate connection and mounting methods with the RF shielded room vendor to shield the magnet field and secondary grounding problems.

It is the responsibility of the customer to obtain any and all approvals necessary for the construction of equipment support and seismic anchoring.

2–10–3 Operator Workspace Mounting Requirements

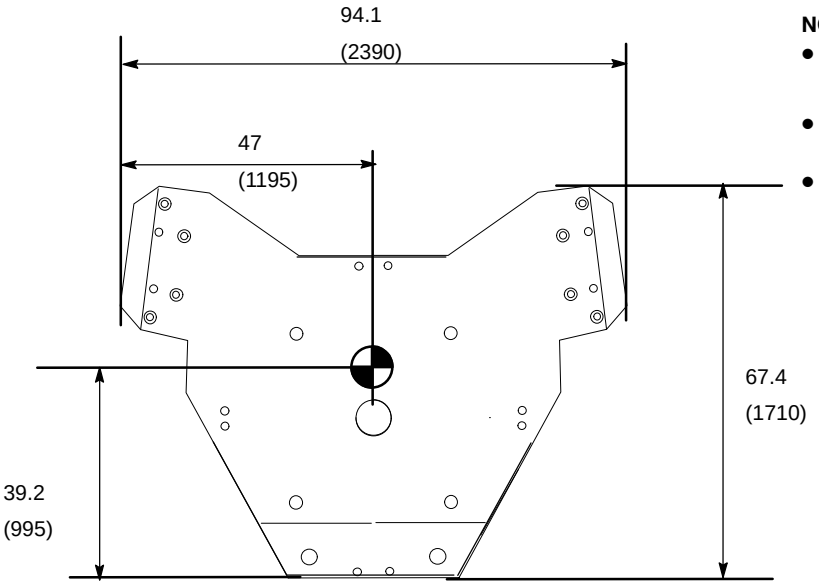
The Operator Workspace Table sets on the floor with the Workspace Cabinet positioned under the Table towards the right side, see Illustration 2–23. Note, the Workspace Table must be bolted to the floor for safe use of the table and equipment positioned on the table.

2–11 COMPONENT DIMENSIONS

To assist in completing your room layout, refer to Table 2–7 for list of component Illustrations.

TABLE 2–7
MR SYSTEM COMPONENT ILLUSTRATIONS LIST

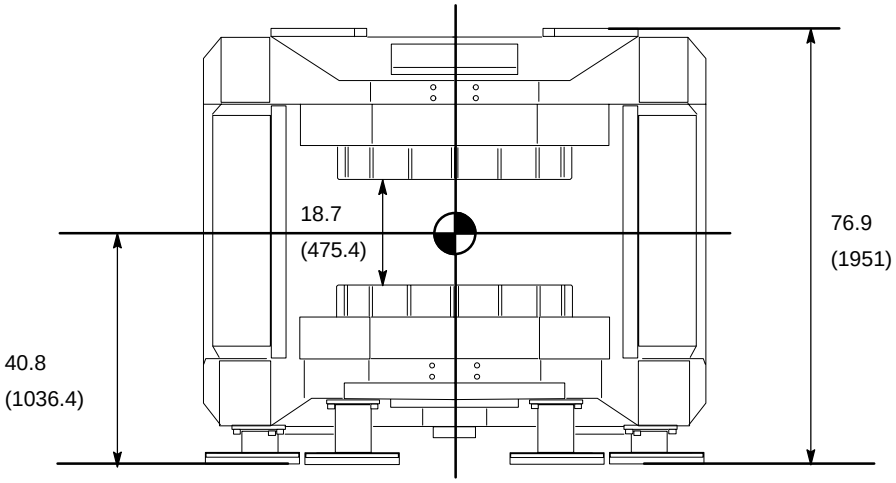
ILLUSTRATION NAME	ILLUSTRATION NUMBER
0.35T MAGNET WITHOUT ENCLOSURE	2–8
MAGNET LOAD PATTERN (1)	2–9
MAGNET LOAD PATTERN (2)	2–10
MAGNET LOAD PATTERN (3)	2–11
MAGNET LOAD PATTERN (4)	2–12
0.35T MAGNET, ENCLOSURE	2–13
0.35T MAGNET, ENCLOSURE, & PATIENT TABLE	2–14
0.35T MAGNET ENCLOSURE CABLE ACCESS (Duct)	2–15
0.35T MAGNET ENCLOSURE CABLE ACCESS (Pit)	2–16
POWER CABINET (MR3)	2–17
SYSTEM CONTROL CABINET (MR2)	2–18
Cooling Cabinet	2–19
PATIENT COOLING COMPRESSOR	2–20
PENETRATION PANEL (PP1)	2–21
PENETRATION PANEL COVER	2–22
OPERATOR WORKSPACE (OW1)	2–23
OPERATOR WORKSPACE CABINET (OW1 A2)	2–24
OPERATOR WORKSPACE COMPONENTS POSITIONED ON TABLE TOP – LCD COLOR MONITOR	2–25
OPERATOR WORKSPACE COMPONENTS POSITIONED ON TABLE TOP – OCTANE COMPUTER	2–26
OPERATOR WORKSPACE COMPONENTS POSITIONED ON TABLE TOP – KEYBOARD	2–27
PNEUMATIC PATIENT ALERT CONTROL BOX (PA1)	2–28
DC LIGHTING CONTROLLER – OPTIONAL	2–29
PATIENT MONITOR CAMERA AND VIDEO BOX(OPTION)	2–30
PATIENT MONITOR (OPTION)	2–31
MAIN DISCONNECT PANEL	2–32



TOP VIEW

NOTE:

- ALL DIMENSIONS ARE IN INCHES. ALL BRACKETED ( ) DIMENSIONS ARE IN MILLIMETERS.
- APPROX. WEIGHT 19000 kg
- INDICATES Magnet Isocenter



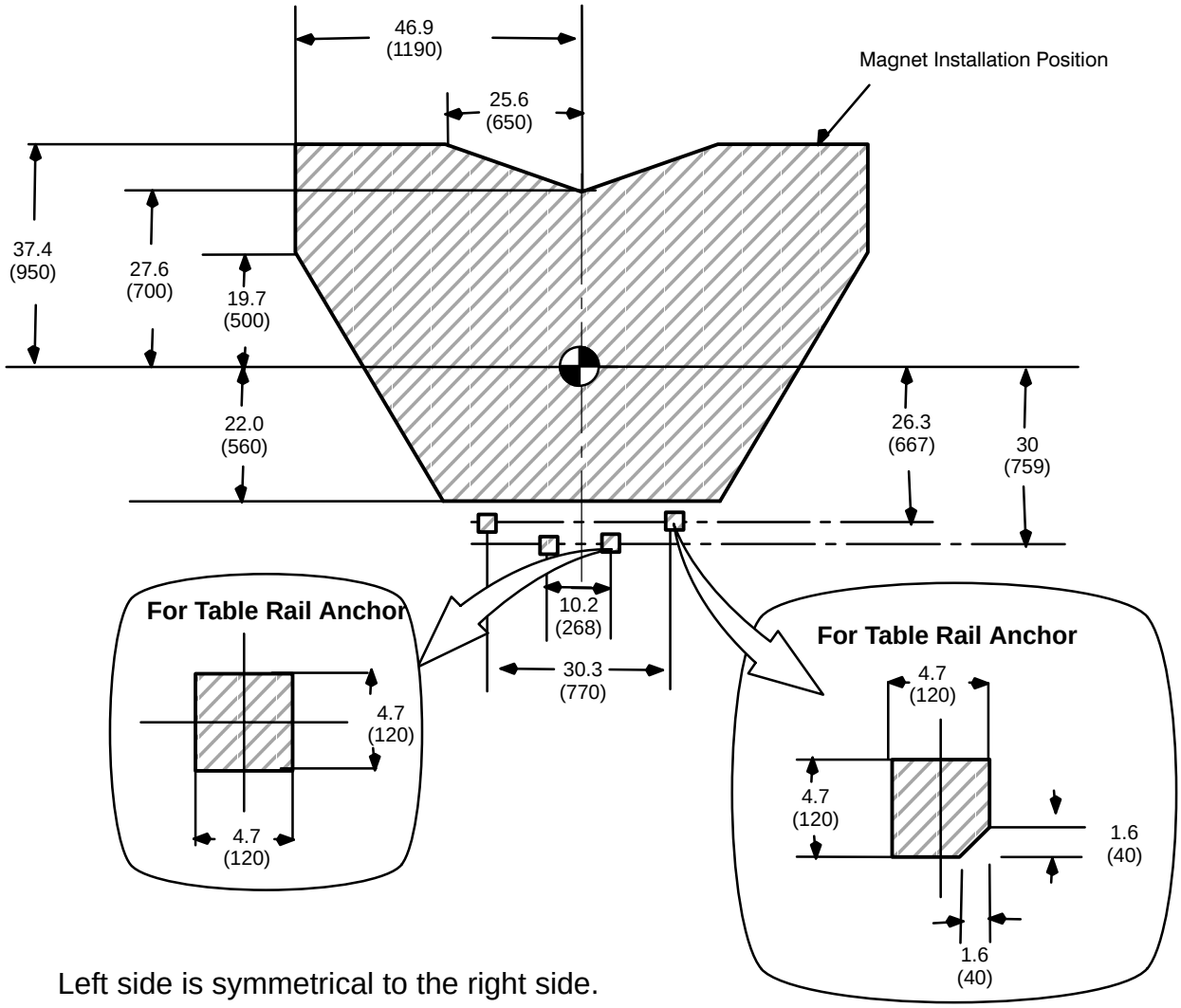
FRONT VIEW

0.35T MAGNET WITHOUT ENCLOSURE
ILLUSTRATION 2–8

1. Draw the line for magnet and table anchor according to the following illustration.
   Then, cut the floor along the line and peal the finished floor.

NOTE:
ALL DIMENSIONS ARE IN INCHES.
ALL BRACKETED ( ) DIMENSIONS ARE IN MILLIMETERS.

INDICATES Magnet Isocenter

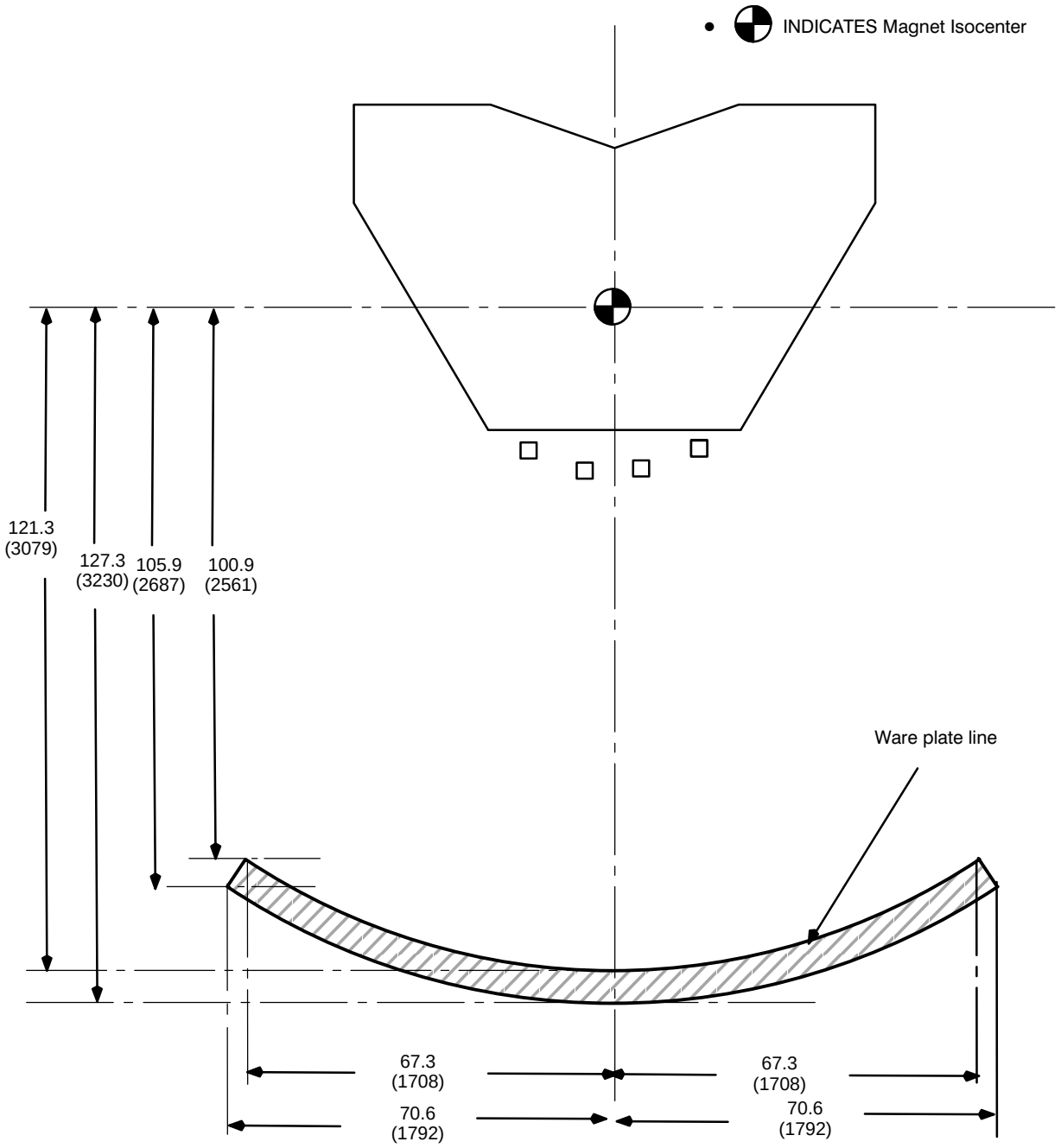


Left side is symmetrical to the right side.

MAGNET LOAD PATTERN (1)
ILLUSTRATION 2–9

2. Draw the ware plate line according to the following illustration. Cut the floor along the line and peal the finished floor.

NOTE:
ALL DIMENSIONS ARE IN INCHES.
ALL BRACKETED ( ) DIMENSIONS ARE IN MILLIMETERS.

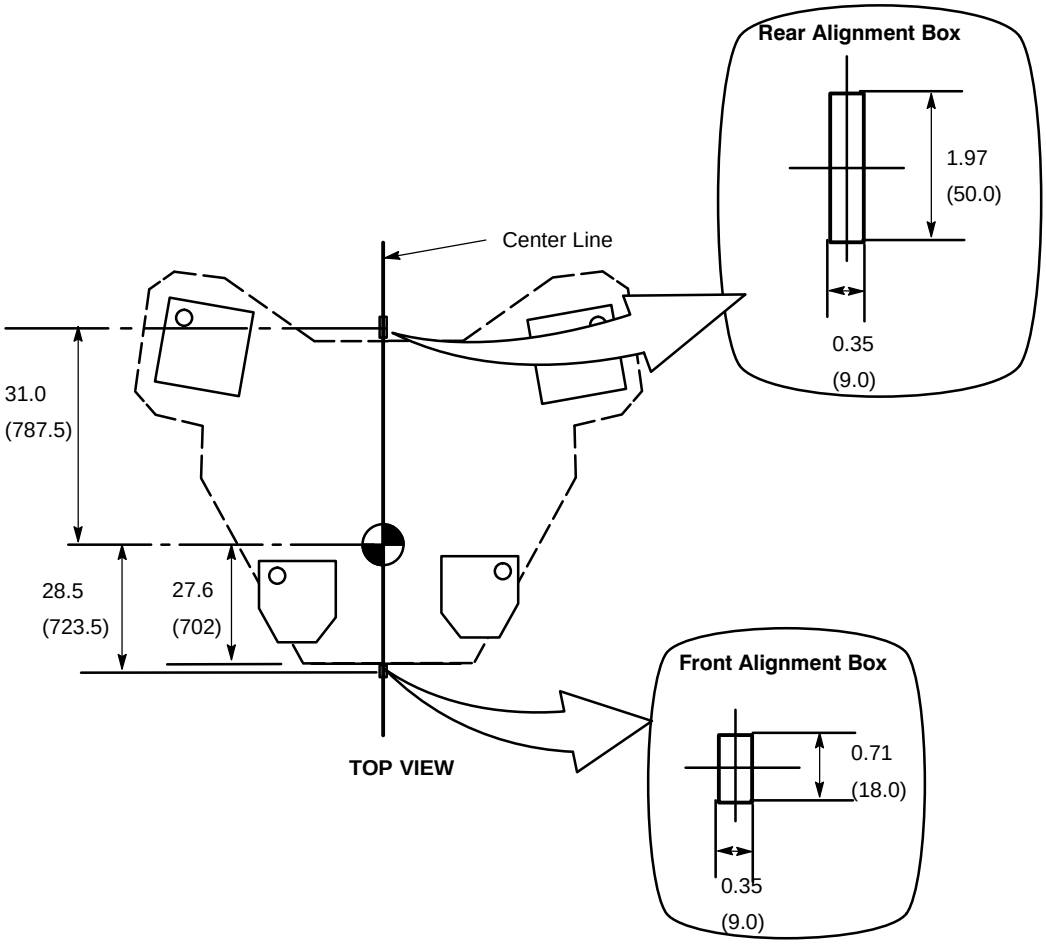


MAGNET LOAD PATTERN (2)
ILLUSTRATION 2–10

3. Draw Magnet Center line.
4. Draw Magnet Alignment box (Front and Rear).

NOTE:
ALL DIMENSIONS ARE IN INCHES.
ALL BRACKETED ( ) DIMENSIONS ARE IN MILLIMETERS.

INDICATES Magnet Isocenter

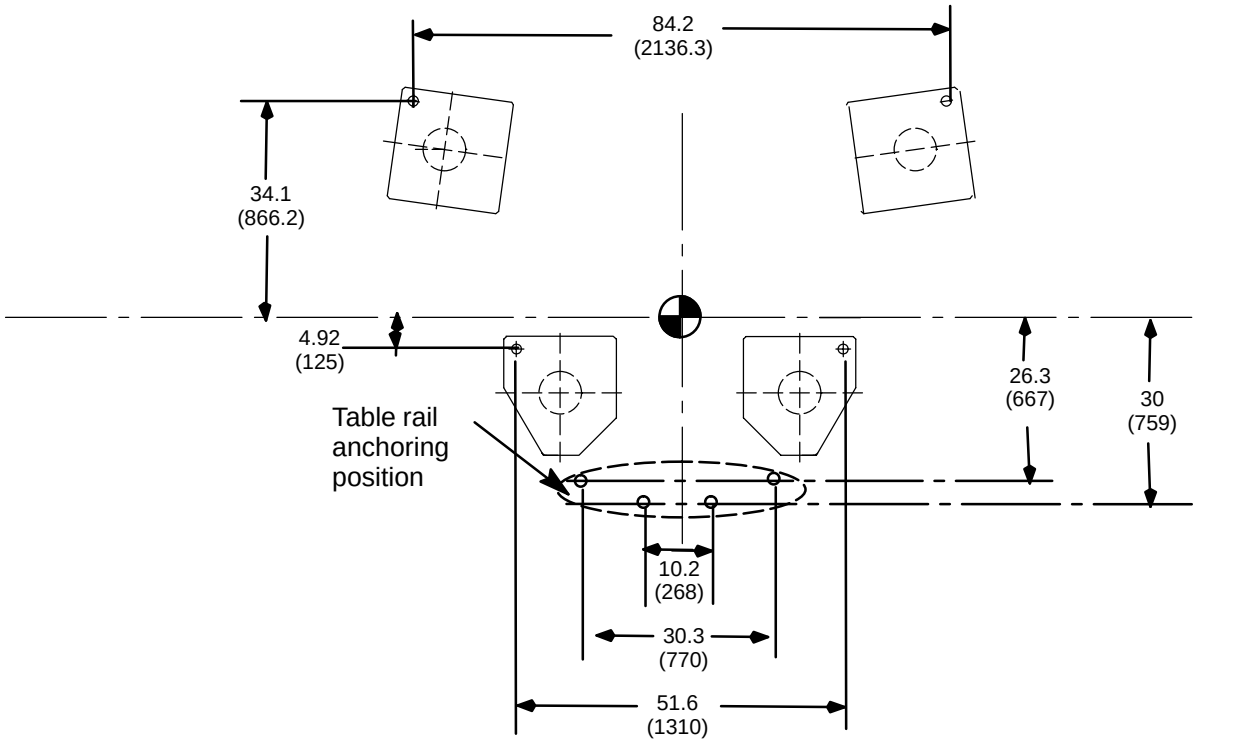


MAGNET LOAD PATTERN (3)
ILLUSTRATION 2–11

5. Draw the anchor position.

- INDICATES Magnet Isocenter

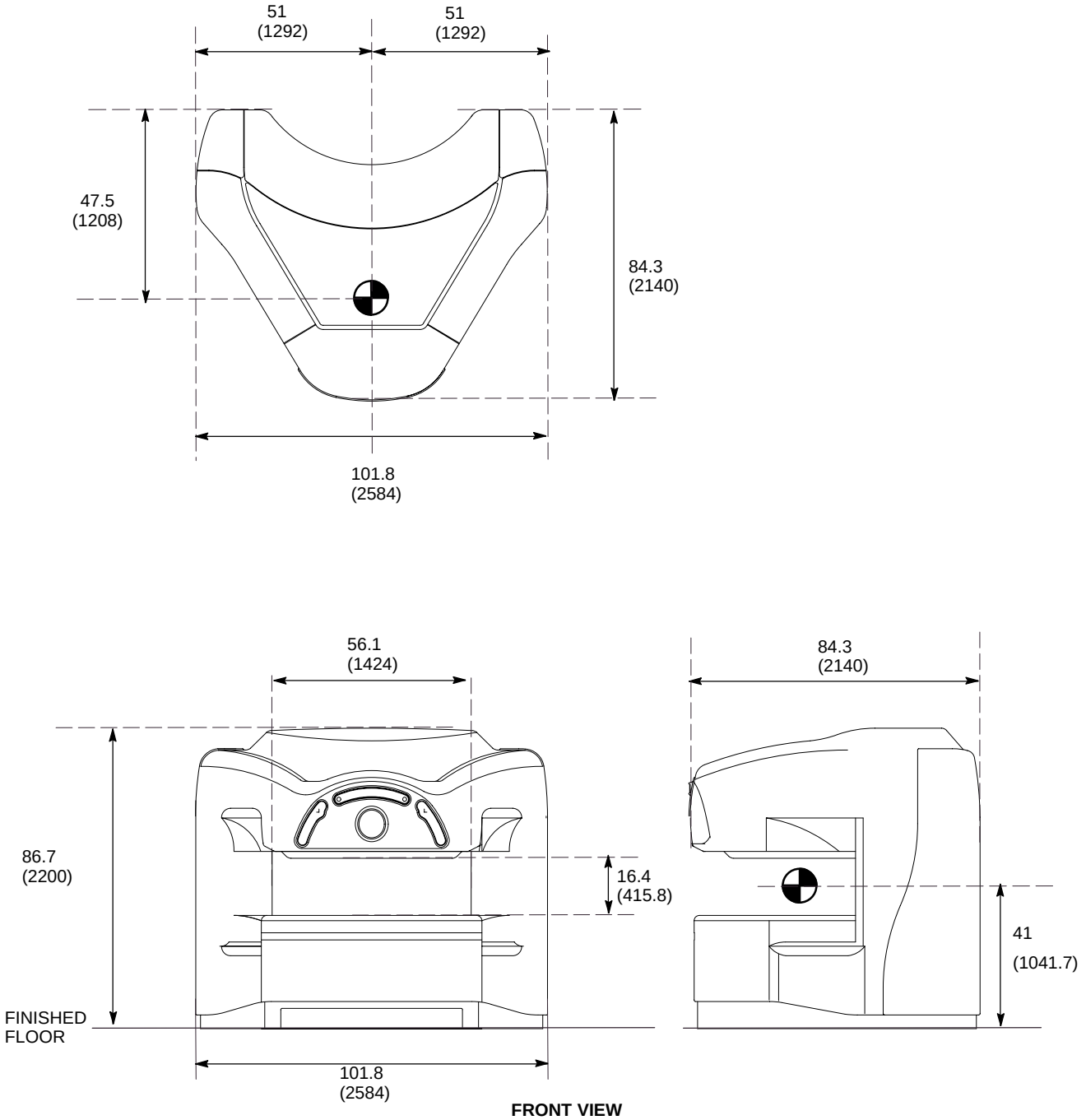
NOTE:
ALL DIMENSIONS ARE IN INCHES.
ALL BRACKETED ( ) DIMENSIONS ARE IN MILLIMETERS.



MAGNET LOAD PATTERN (4)
ILLUSTRATION 2–12

NOTE:
ALL DIMENSIONS ARE IN INCHES.
ALL BRACKETED ( ) DIMENSIONS
ARE IN MILLIMETERS.

INDICATES Magnet Isocenter



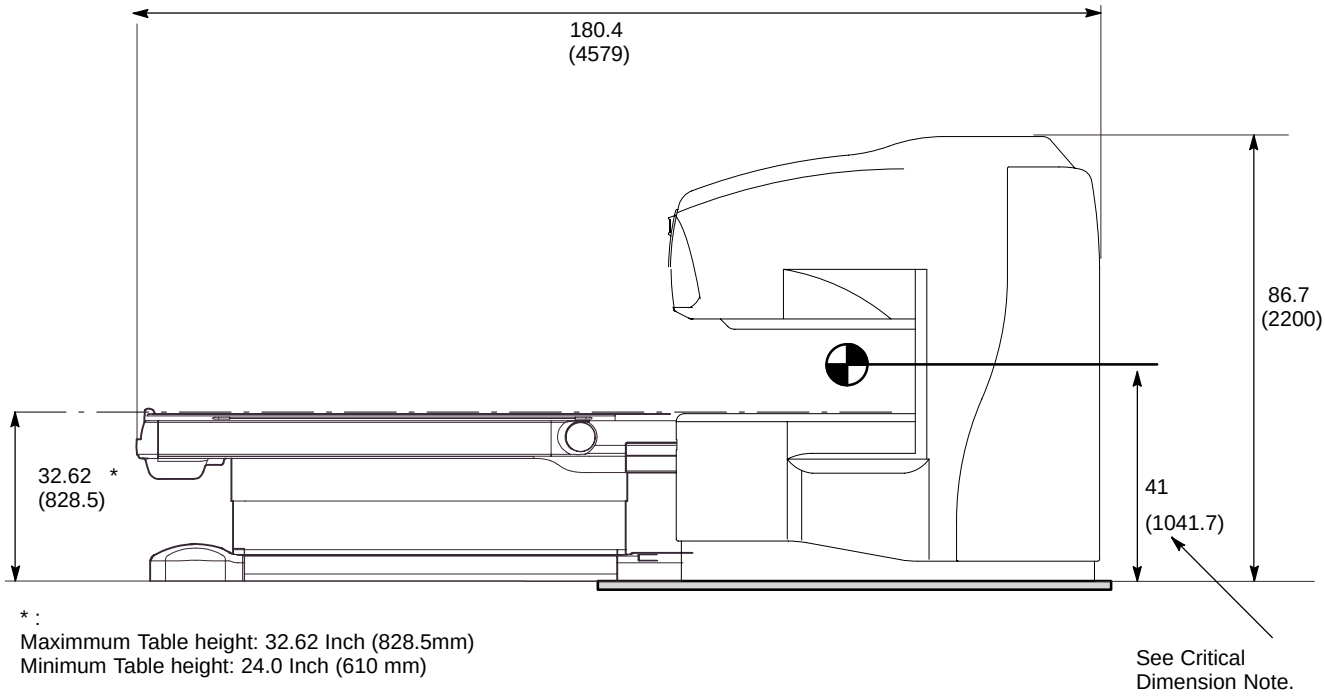
0.35T MAGNET, ENCLOSURE
ILLUSTRATION 2–13

NOTE:

- ALL DIMENSIONS ARE IN INCHES. ALL BRACKETED ( ) DIMENSIONS ARE IN MILLIMETERS.

INDICATES Magnet Isocenter

- THE CRITICAL DIMENSION OF 1041.7 MM +/– 3MM TO VERTICAL CENTER OF THE MAGNET AND PATIENT SWING TABLE REAR WHEEL PLATE MUST BE MUST BE MAINTAINED. THIS WILL ALLOW THE PATIENT SWING TABLE TO SWING WITHOUT OBSTRUCTION FROM THE FLOOR. REFER TO **SECTION 7–6–2 FLOORS.**



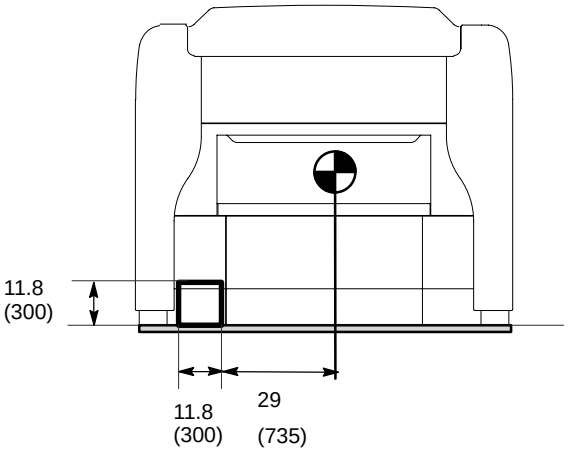
SIDE VIEW

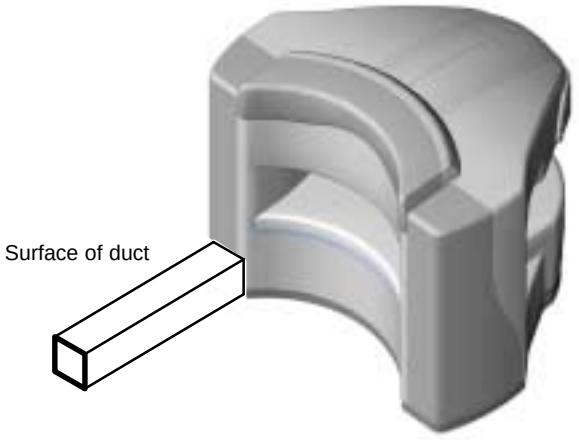
0.35T MAGNET, ENCLOSURE, & PATIENT TABLE
ILLUSTRATION 2–14

NOTE:
ALL DIMENSIONS ARE IN INCHES.
ALL BRACKETED ( ) DIMENSIONS
ARE IN MILLIMETERS.

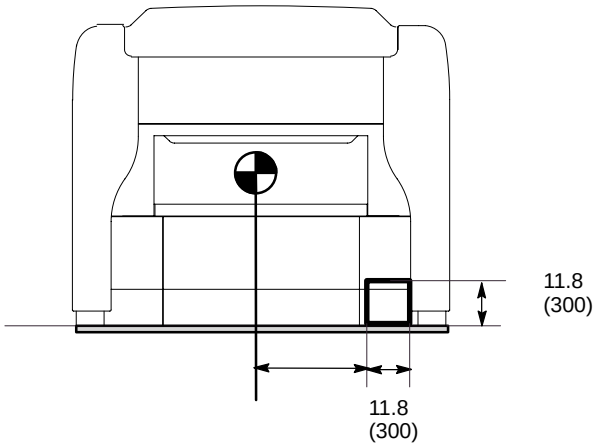
INDICATES Magnet Isocenter

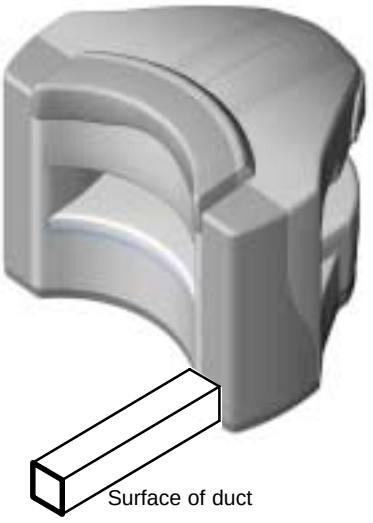
Case 1: Cable duct is installed at left side of magnet rear cover.





Case 2: Cable duct is installed at right side of magnet rear cover.



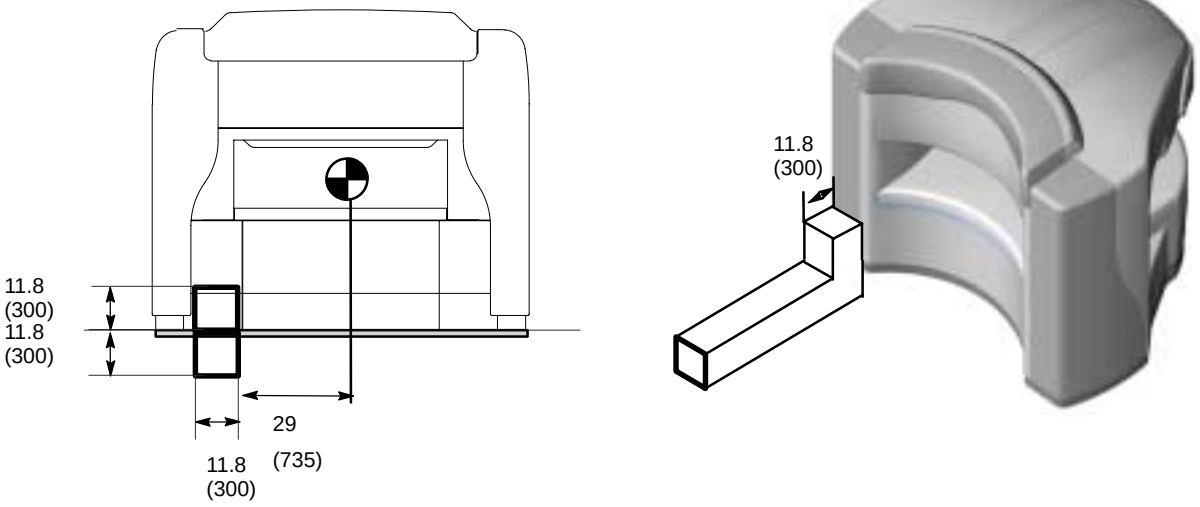


0.35T MAGNET ENCLOSURE CABLE ACCESS (DUCT)
ILLUSTRATION 2–15

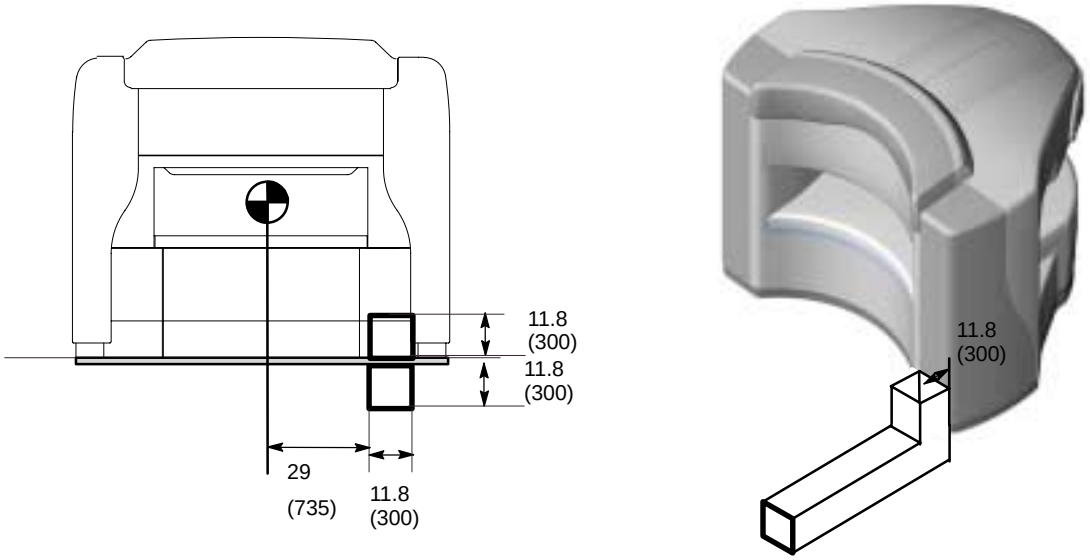
NOTE:
ALL DIMENSIONS ARE IN INCHES.
ALL BRACKETED ( ) DIMENSIONS
ARE IN MILLIMETERS.

INDICATES Magnet Isocenter

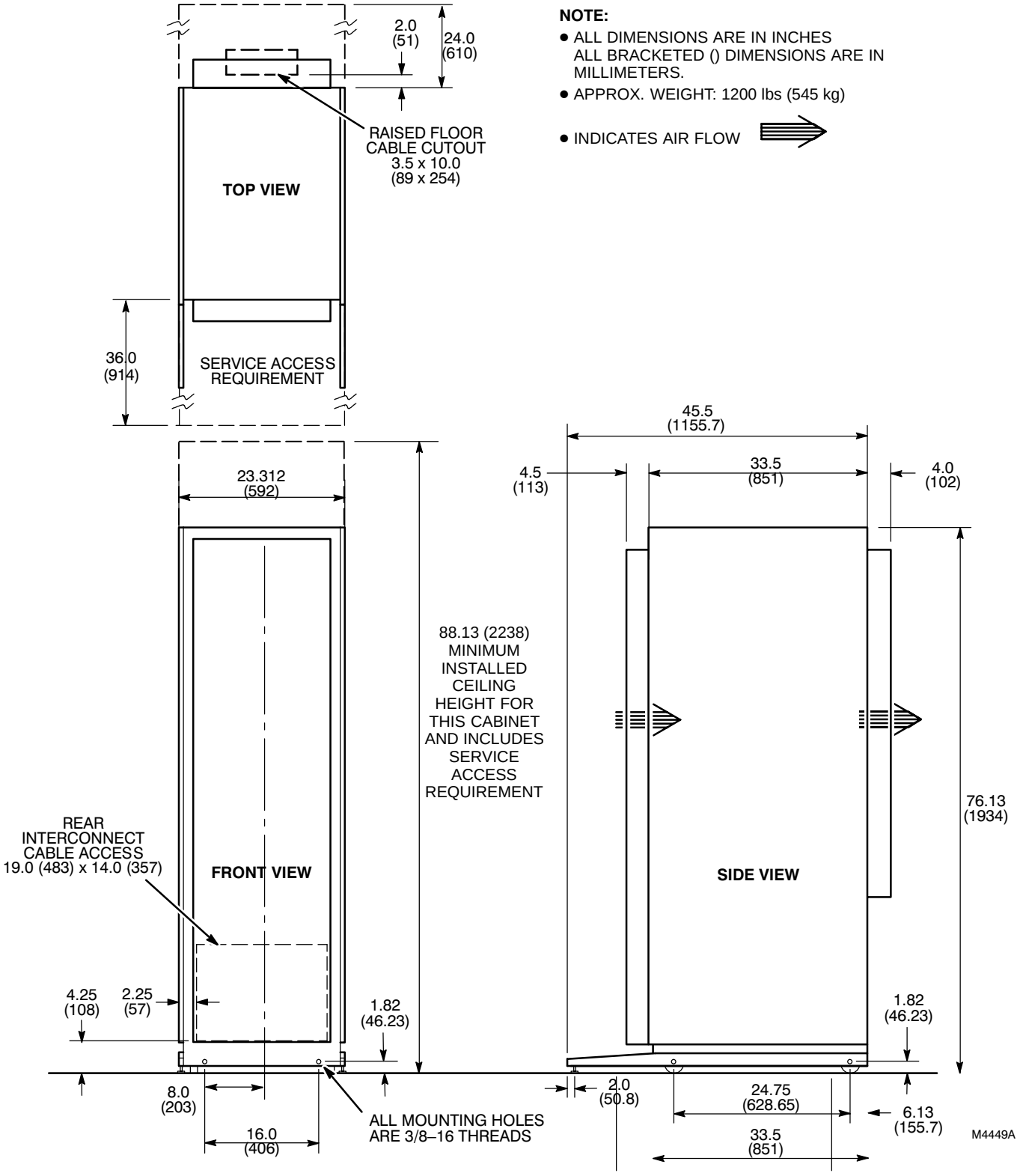
Case 1: Cable pit is located at left side of magnet rear cover.



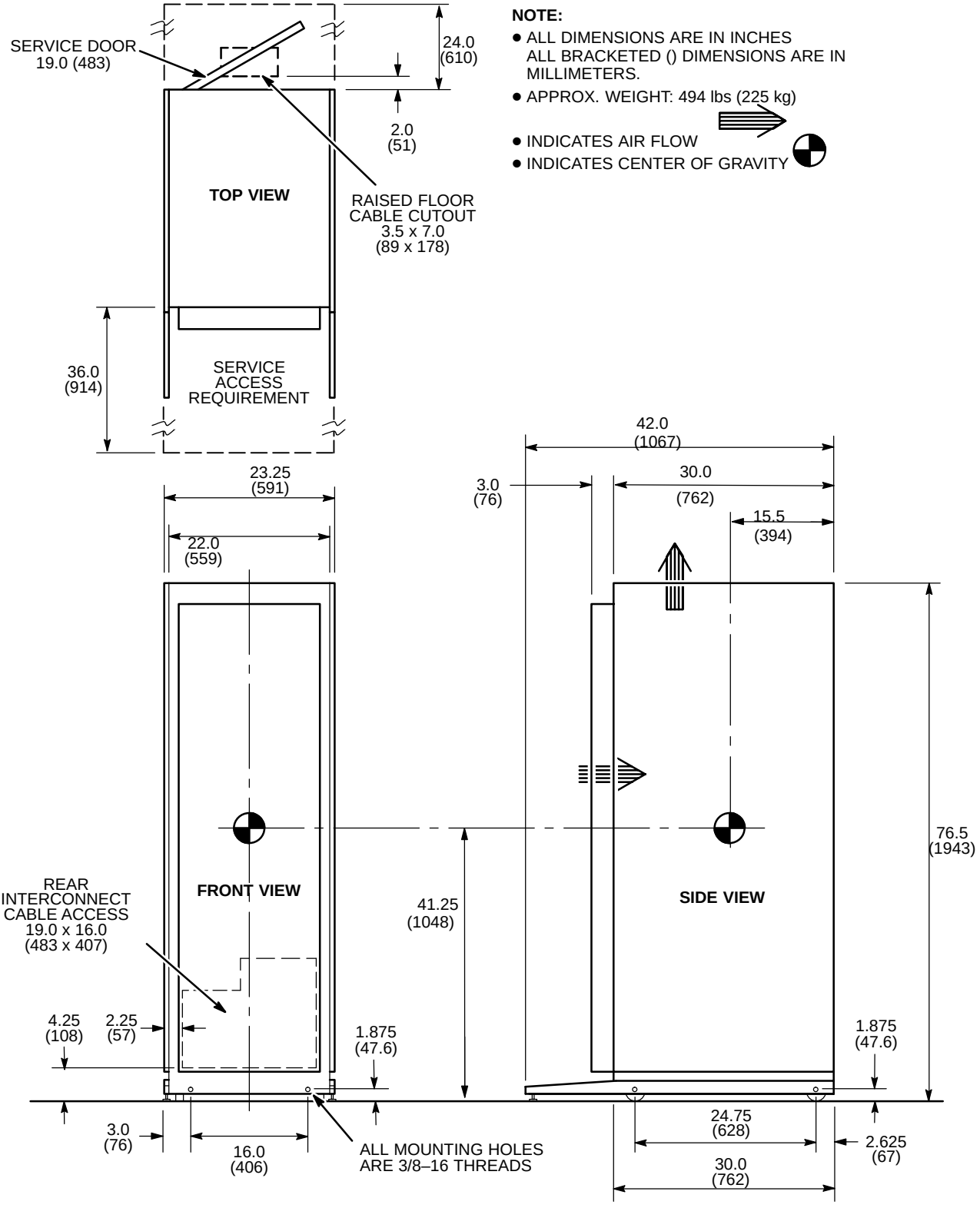
Case 2: Cable pit is locateded at right side of magnet rear cover.



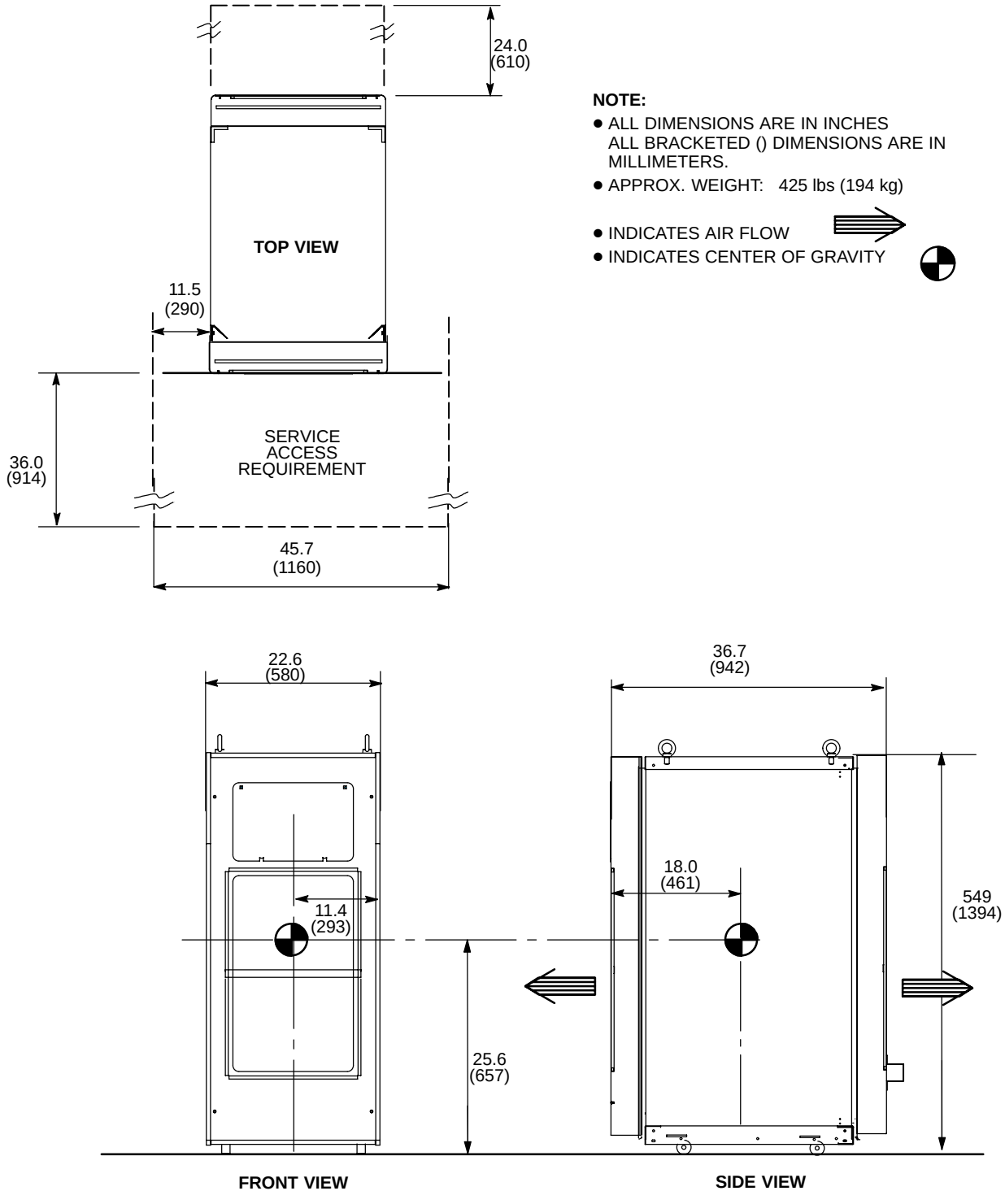
0.35T MAGNET ENCLOSURE CABLE ACCESS (PIT)
ILLUSTRATION 2–16



POWER CABINET (MR1)
ILLUSTRATION 2–17



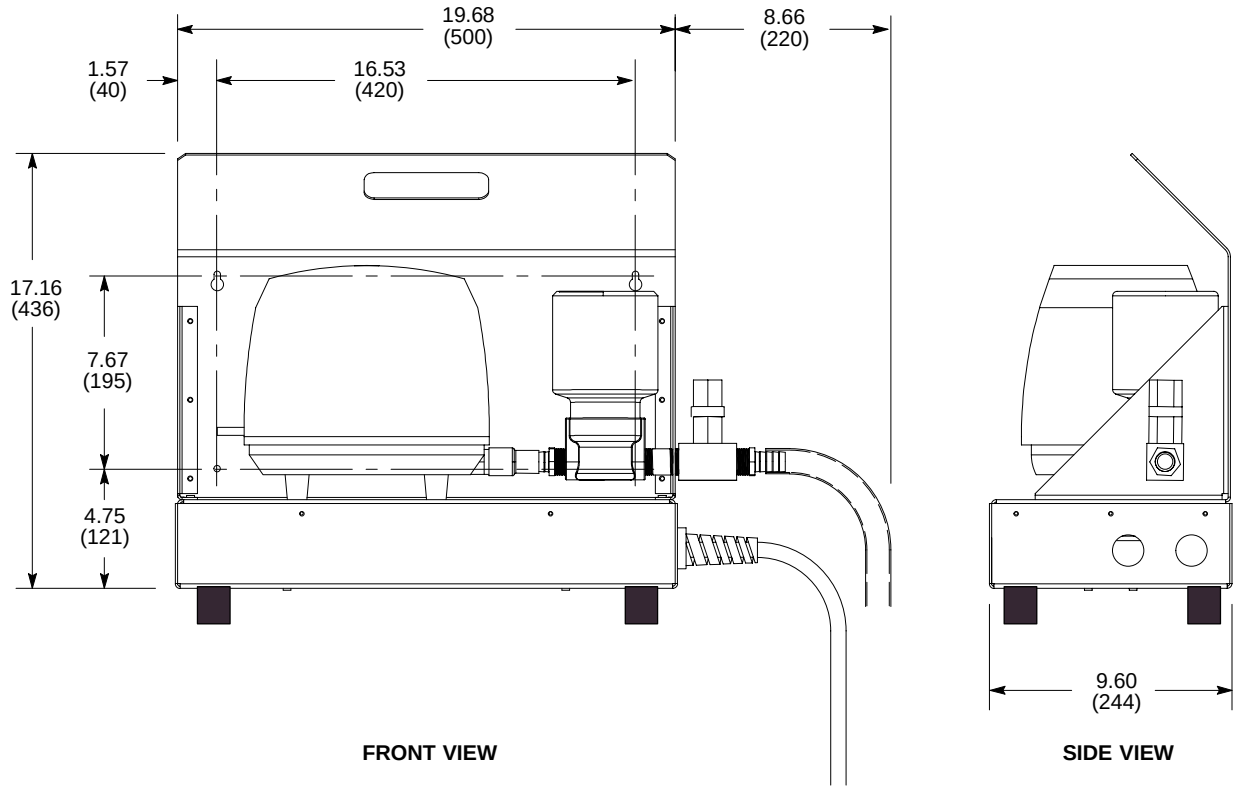
SYSTEM CABINET (MR2)
ILLUSTRATION 2–18



COOLING CABINET
ILLUSTRATION 2–19

This Unit is placed on the floor.
Please Consider the area of this unit.

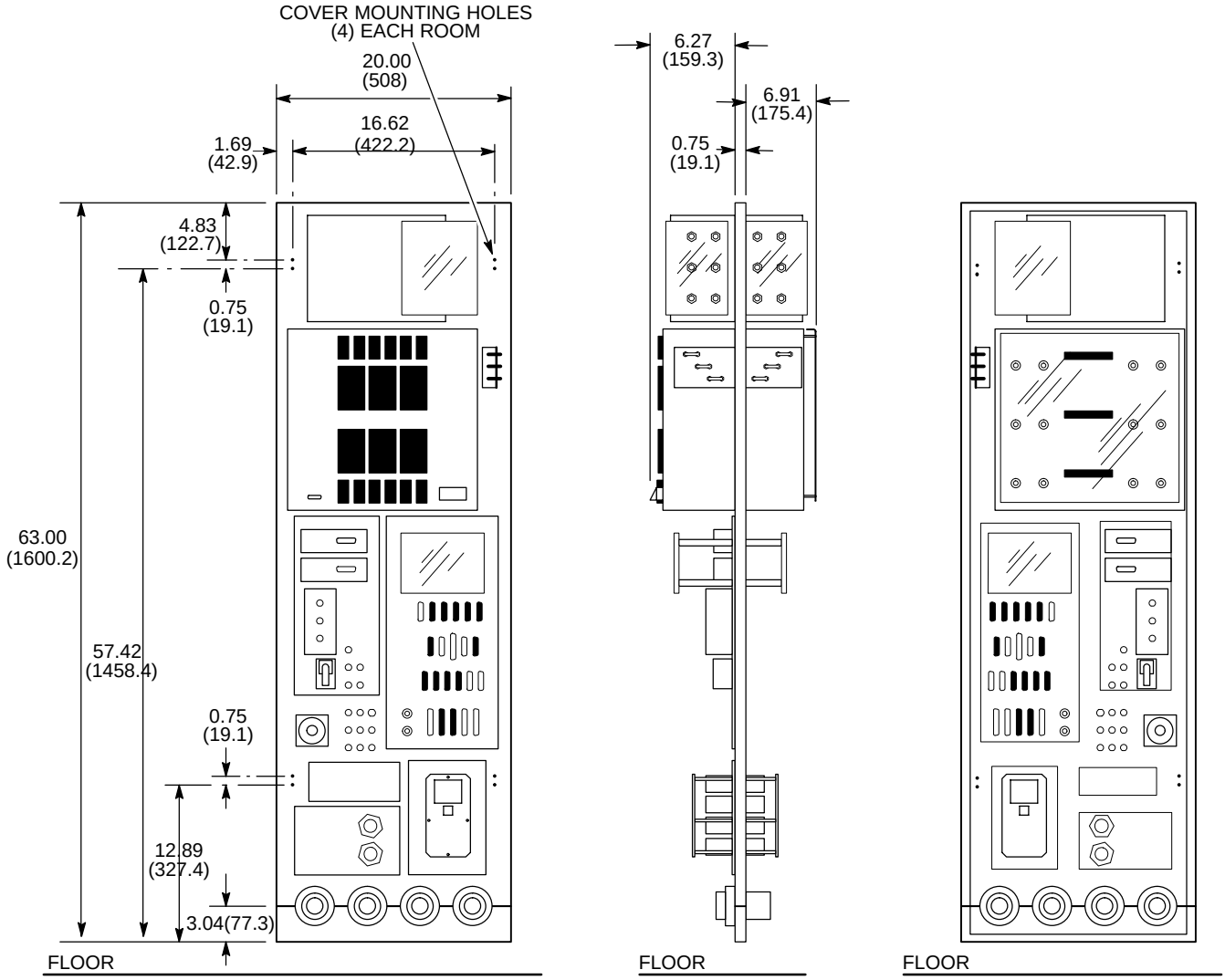
NOTE:
- ALL DIMENSIONS ARE IN INCHES ALL BRACKETED () DIMENSIONS ARE IN MILLIMETERS.
- APPROX. WEIGHT: 45 lbs (20.5 kg)



PATIENT COOLING COMPRESSOR
ILLUSTRATION 2–20

NOTE:

- ALL DIMENSIONS ARE IN INCHES. ALL BRACKETED ( ) DIMENSIONS ARE IN MILLIMETERS.
- APPROX. WEIGHT: 52 lbs (23.6 kg)

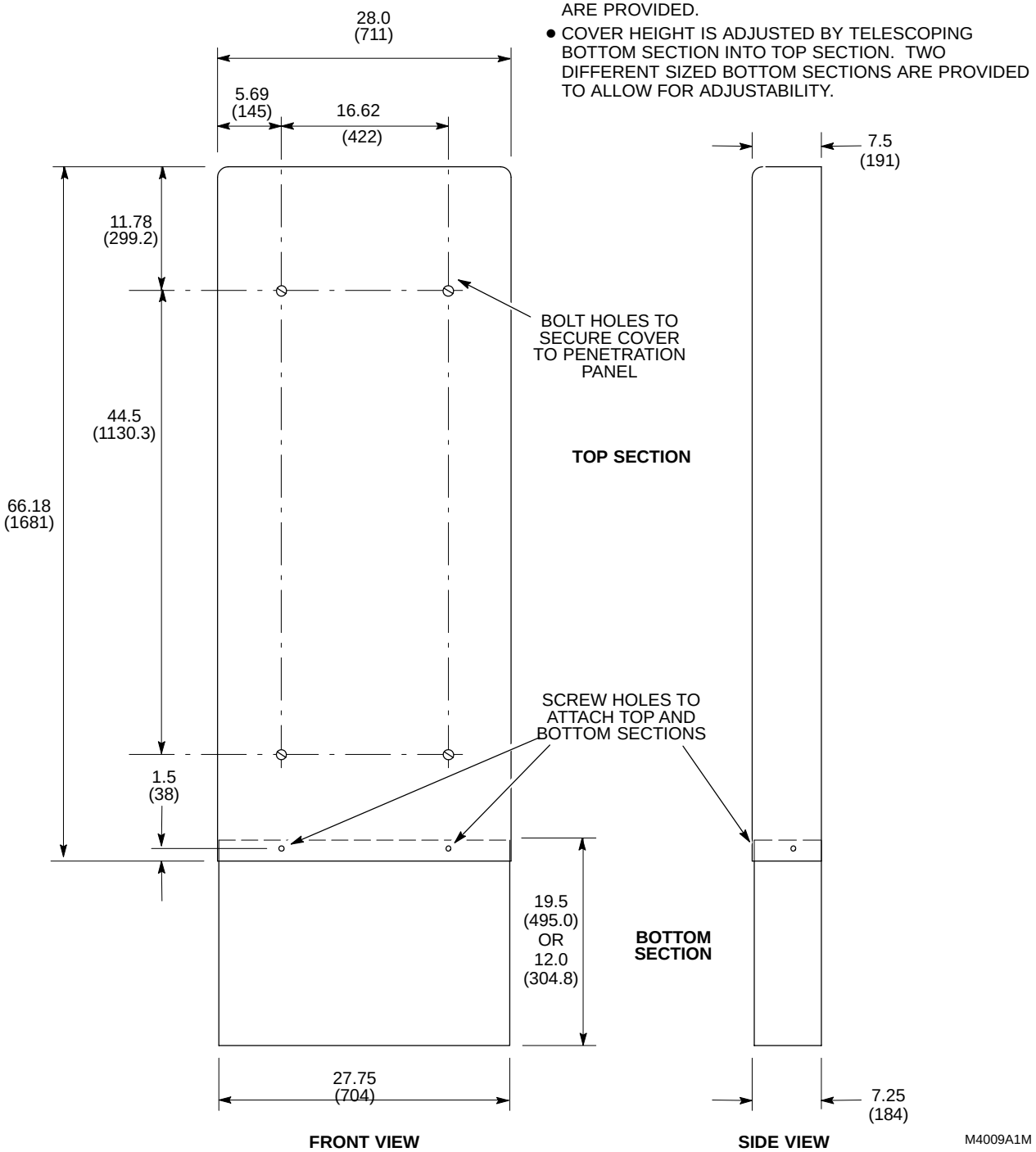


M4528A

PENETRATION PANEL (PP1)
ILLUSTRATION 2–21

NOTE:

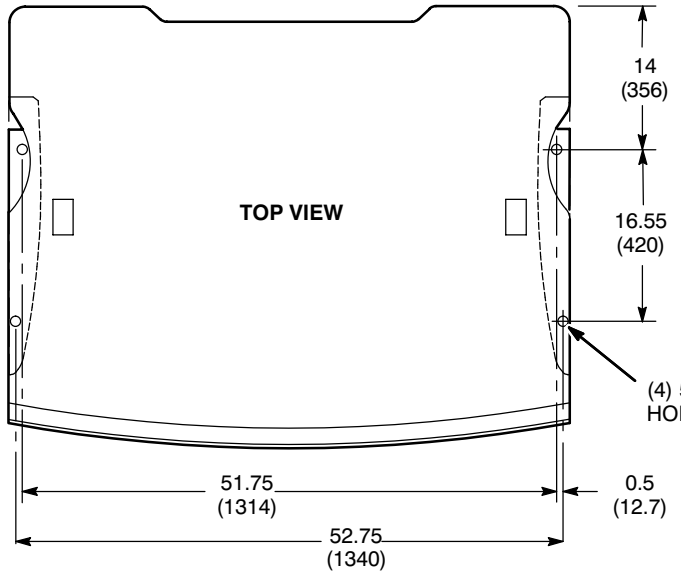
- ALL DIMENSIONS ARE IN INCHES
  ALL BRACKETED () DIMENSIONS ARE IN MILLIMETERS.
- COVER USED ON BOTH EXAM ROOM AND EQUIPMENT ROOM SIDES OF PENETRATION PANEL. TWO COVERS ARE PROVIDED.
- COVER HEIGHT IS ADJUSTED BY TELESCOPING BOTTOM SECTION INTO TOP SECTION. TWO DIFFERENT SIZED BOTTOM SECTIONS ARE PROVIDED TO ALLOW FOR ADJUSTABILITY.

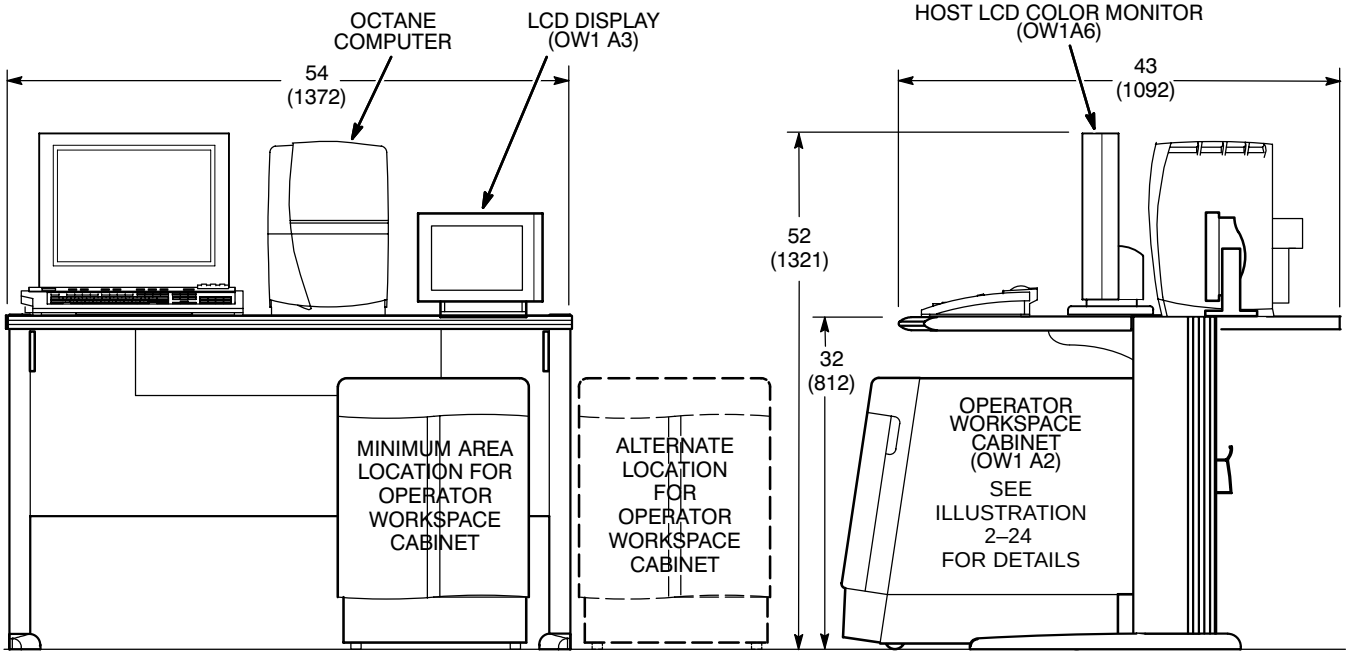


PENETRATION PANEL COVER
ILLUSTRATION 2–22

NOTE:

- ALL DIMENSIONS ARE IN INCHES.
  ALL BRACKETED () DIMENSIONS ARE IN MILLIMETERS.
- ASSEMBLIES WHICH MOUNT TO UNDERSIDE OF TABLE AND IN TABLE CABLE TRAY ARE NOT SHOWN.
- OW TABLE IS AN INTEGRAL PART OF THE REGULATORY APPROVED SYSTEM. OW TABLE PROVIDES MOUNTING FOR SEVERAL ASSEMBLIES (E.G. OW INTERFACE MODULE, OW POWER DISTRIBUTION BOX, MODEM, DASM) AND CABLE ROUTING FOR OW INTERCONNECTS. DIMENSIONS OF EQUIPMENT LOCATED ON TOP OF OW TABLE ARE PROVIDED IN ILLUSTRATIONS 2–25 THROUGH 2–27 OW TABLE TOP LAYOUT PLANNING PURPOSES.



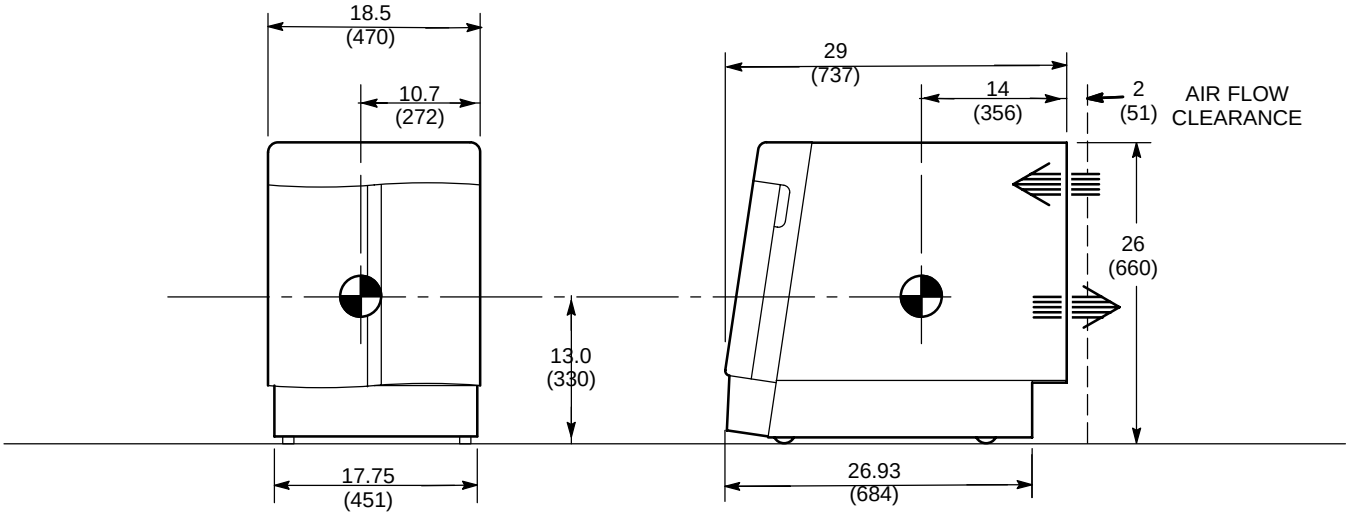


FRONT VIEW **SIDE VIEW**

OPERATOR WORKSPACE (OW1)
ILLUSTRATION 2–23

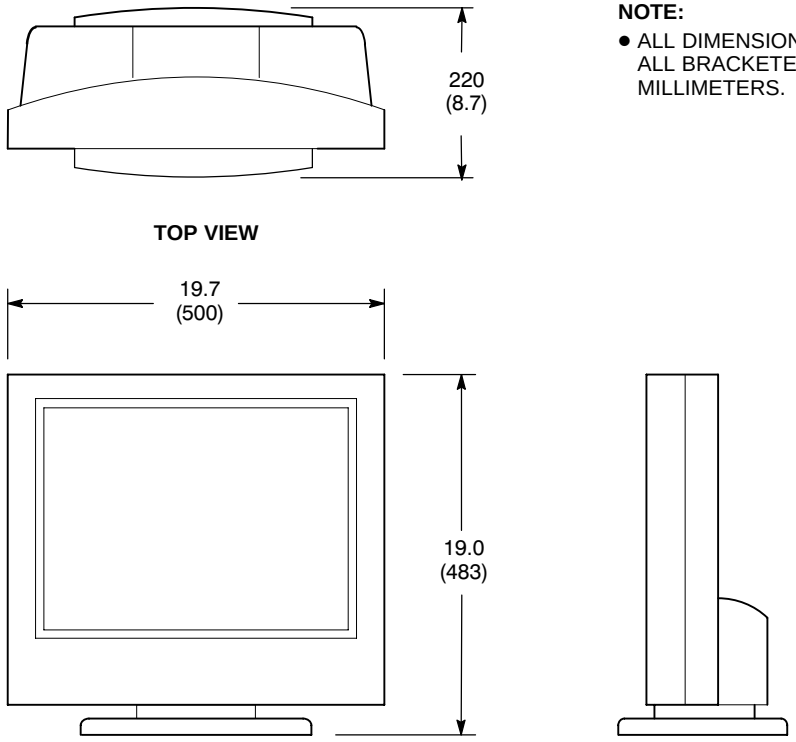
NOTE:

- ALL DIMENSIONS ARE IN INCHES ALL BRACKETED () DIMENSIONS ARE IN MILLIMETERS.
- APPROX. WEIGHT: 192 lbs (87 kg)
- INDICATES AIR FLOW
- INDICATES CENTER OF GRAVITY



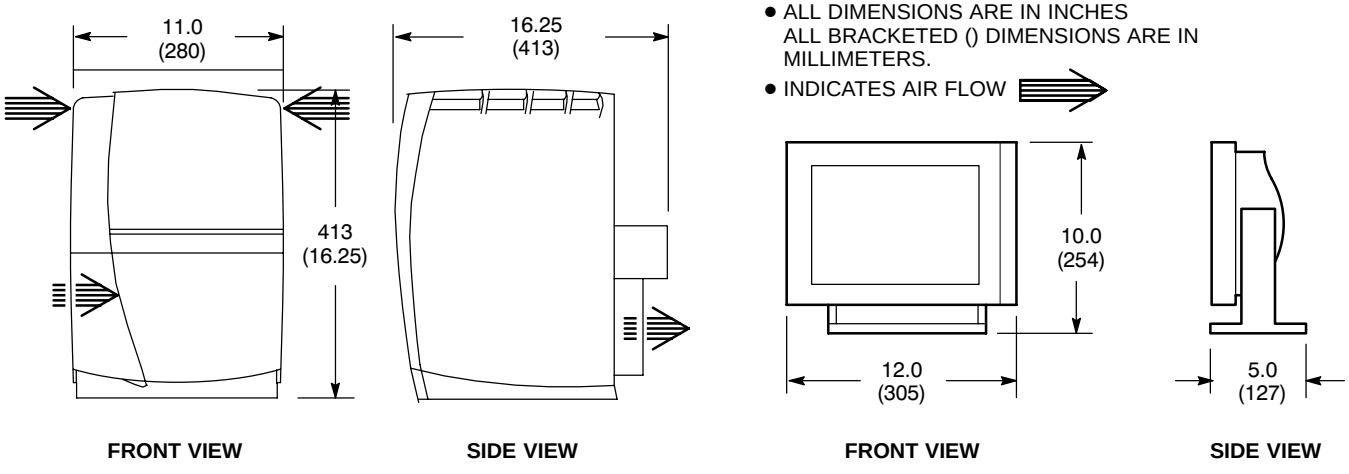
FRONT VIEW **SIDE VIEW**

OPERATOR WORKSPACE CABINET (OW1 A2)
ILLUSTRATION 2–24



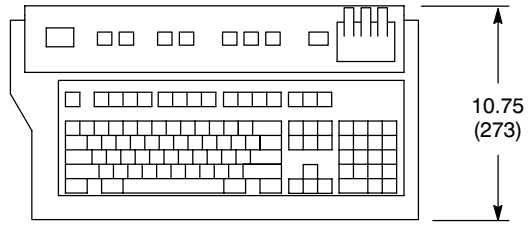
NOTE:
- ALL DIMENSIONS ARE IN INCHES ALL BRACKETED () DIMENSIONS ARE IN MILLIMETERS.

OPERATOR WORKSPACE COMPONENTS POSITIONED ON TABLE TOP – LCD COLOR MONITOR
ILLUSTRATION 2–25

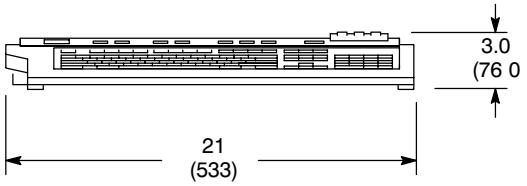


NOTE:
- ALL DIMENSIONS ARE IN INCHES ALL BRACKETED () DIMENSIONS ARE IN MILLIMETERS.
- INDICATES AIR FLOW

OPERATOR WORKSPACE COMPONENTS POSITIONED ON TABLE TOP – OCTANE COMPUTER
ILLUSTRATION 2–26



TOP VIEW



FRONT VIEW

SIDE VIEW

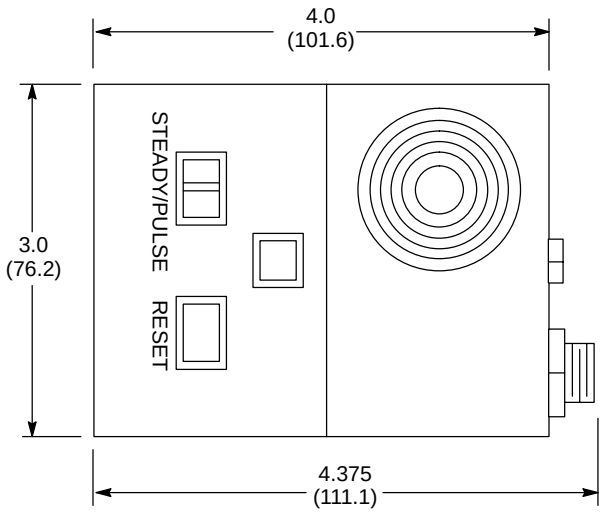
NOTE:

- ALL DIMENSIONS ARE IN INCHES ALL BRACKETED () DIMENSIONS ARE IN MILLIMETERS.

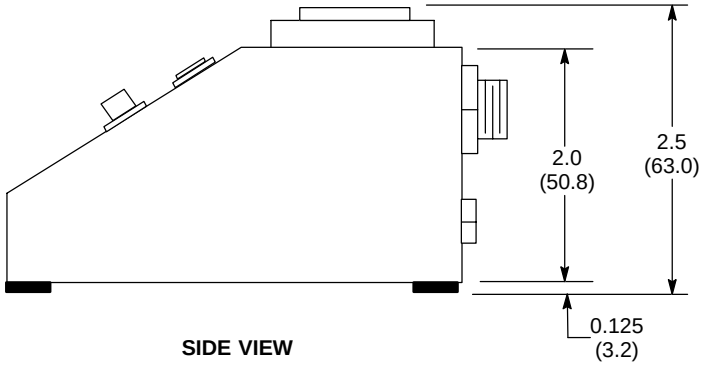
OPERATOR WORKSPACE COMPONENTS POSITIONED ON TABLE TOP – KEYBOARD
ILLUSTRATION 2–27

NOTE:

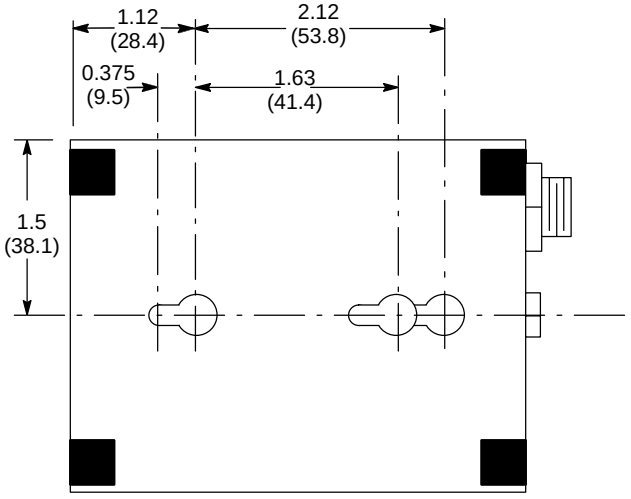
- ALL DIMENSIONS ARE IN INCHES. ALL BRACKETED ( ) DIMENSIONS ARE IN MILLIMETERS.
- APPROX. WEIGHT: 0.5 lbs (0.2 kg)



TOP VIEW



SIDE VIEW



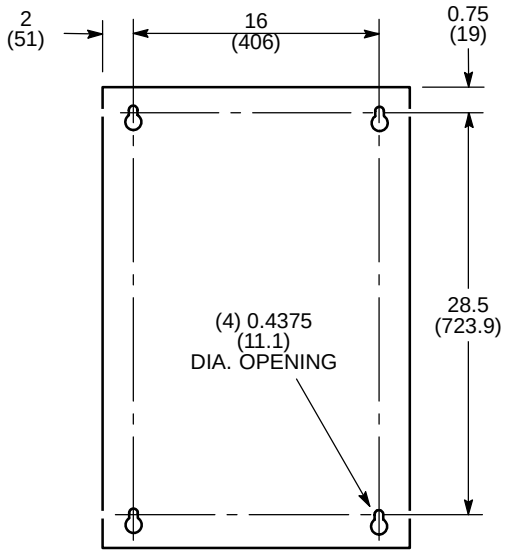
MOUNTING PATTERN

M4263A1

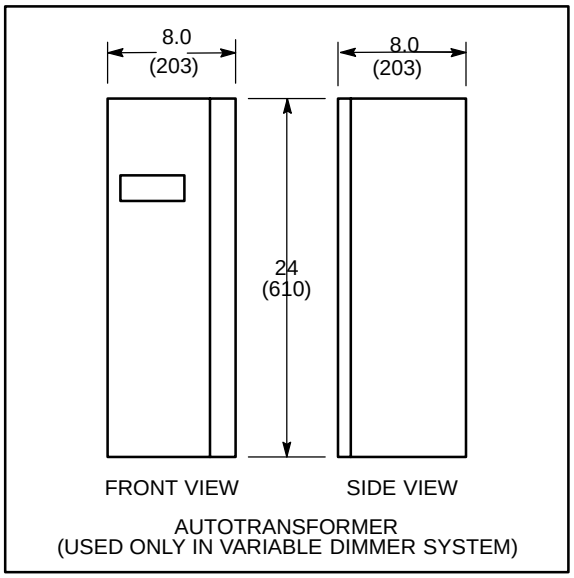
PNEUMATIC PATIENT ALERT CONTROL BOX (PA1)
ILLUSTRATION 2–28

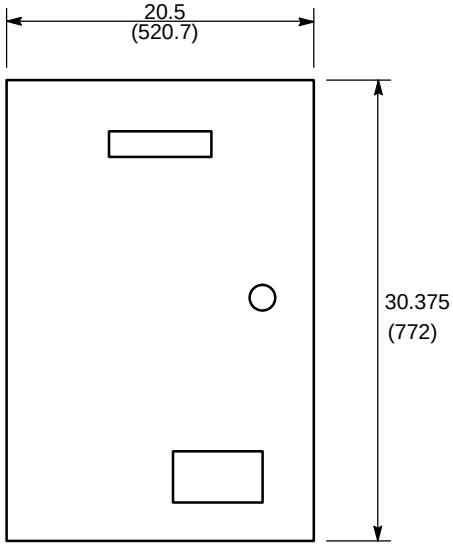
NOTE:

- ALL DIMENSIONS ARE IN INCHES. ALL BRACKETED ( ) DIMENSIONS ARE IN MILLIMETERS.
- APPROX. WEIGHTS:
  CONTROL PANEL: 155 lbs (70 kg)
  AUTOTRANSFORMER: 60 lbs (27 kg)

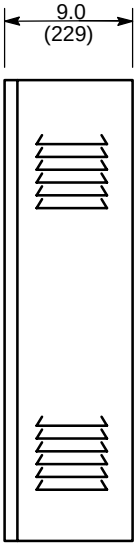


MOUNTING PATTERN
(CONTROL PANEL)





FRONT VIEW
(CONTROL PANEL)



SIDE VIEW
(CONTROL PANEL)

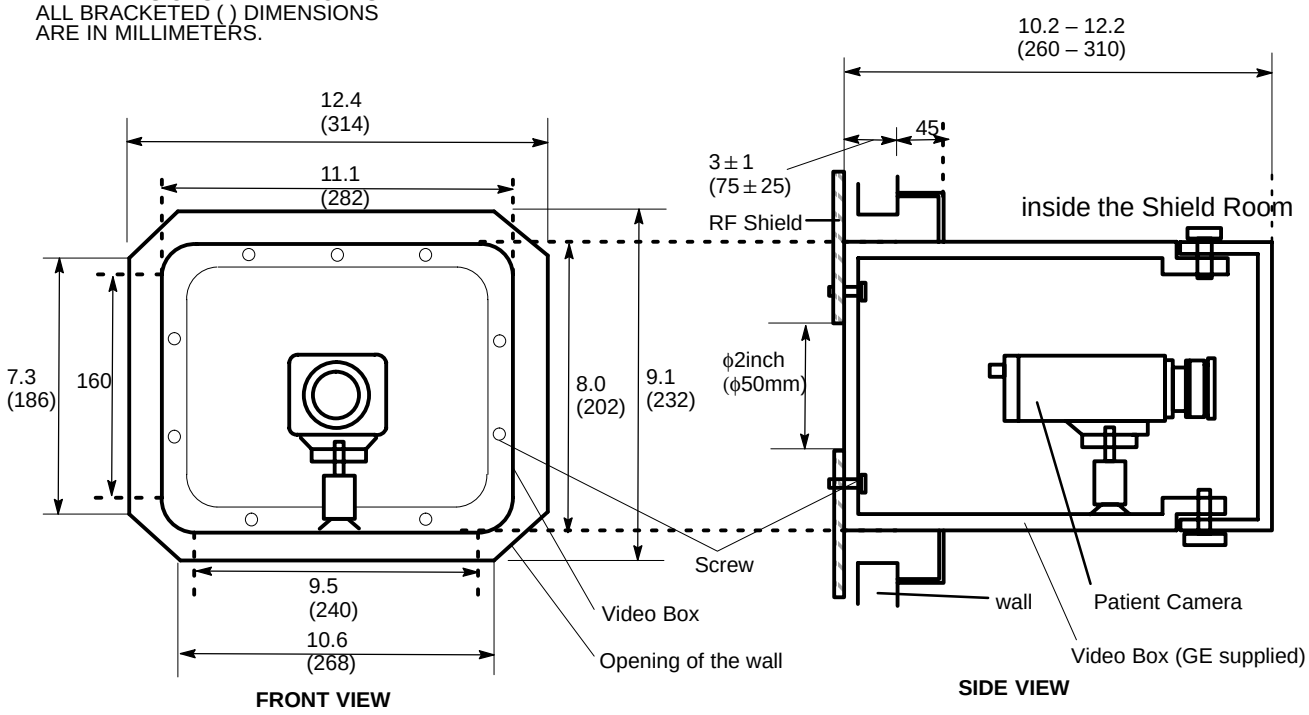
M1519A3M

DC LIGHTING CONTROLLER – OPTIONAL
ILLUSTRATION 2–29

2–11 COMPONENT DIMENSIONS (continued)

NOTE:

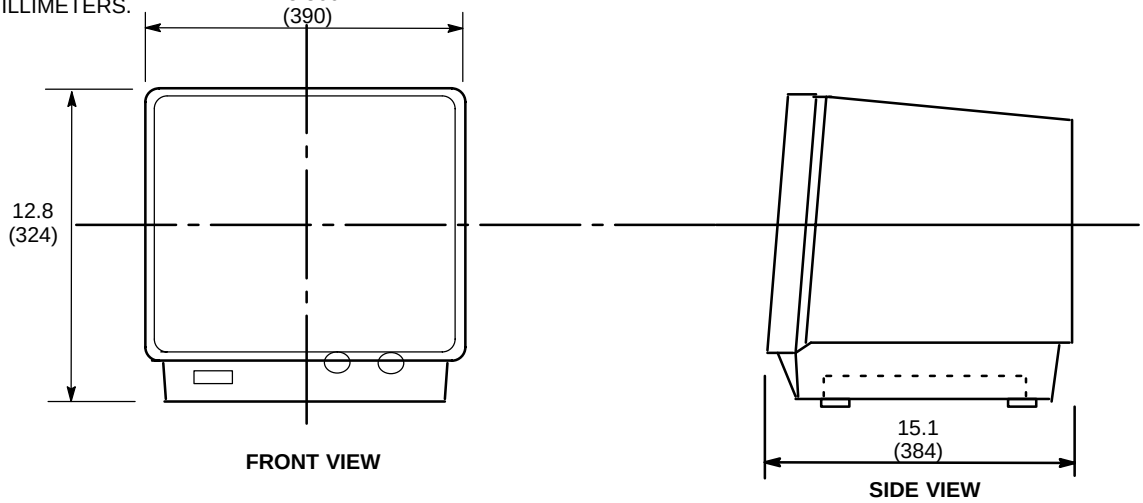
- ALL DIMENSIONS ARE IN INCHES. ALL BRACKETED ( ) DIMENSIONS ARE IN MILLIMETERS.



PATIENT MONITOR CAMERA AND VIDEO BOX(OPTION)
ILLUSTRATION 2–30

NOTE:

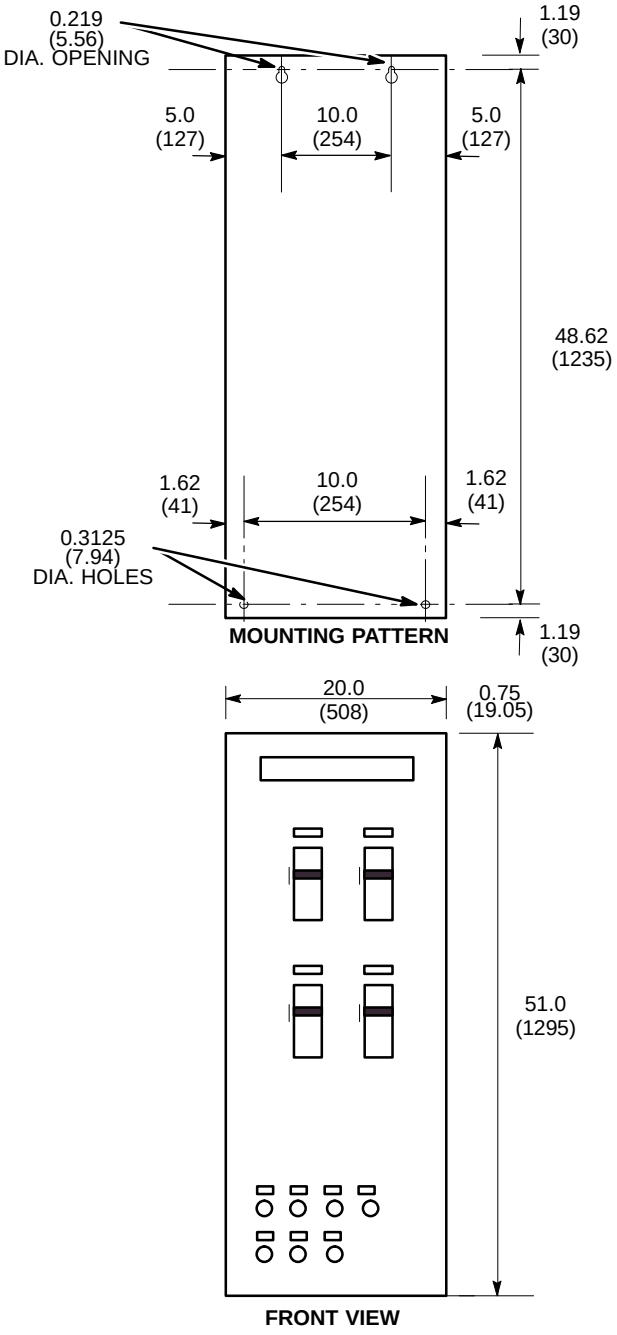
- ALL DIMENSIONS ARE IN INCHES. ALL BRACKETED ( ) DIMENSIONS ARE IN MILLIMETERS.



PATIENT MONITOR (OPTION)
ILLUSTRATION 2–31

Note

Main Disconnect Panel (MDP) is NOT used for Low Voltage Areas(200 or 208 Vrms).



NOTE:

- ALL DIMENSIONS ARE IN INCHES ALL BRACKETED () DIMENSIONS ARE IN MILLIMETERS.
- APPROX. WEIGHT: 190 lbs. (86 kg)

MAIN DISCONNECT PANEL
ILLUSTRATION 2–32

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

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

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

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

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

where:

a= Coefficient

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

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

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

4–11 CONSTRUCTION MATERIALS

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

Note

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

4–11–1 Floors

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

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

The 0.35T magnet is capable of being shimmed with the maximum 60 kg/m^2 (12.2lb/ft^2) of ferrous steel in an area of 2.4 meters x 2.4 meters within 3–15 mm distance from the bottom of the magnet feet. See Table7–2 Steel Plate.

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