CLASS C

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GE Healthcare

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Student Guide
Leading an Installation

Leadership and Customer Skills
Version: 1.0

Imagination at work

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Activity

Objectives for this activity

- As a Service Professional identify and assess the skills and tasks needed to lead the mechanical installation of GE Healthcare Diagnostic Imaging equipment in compliance with applicable documentation.

20 minutes for this activity

Scenario

This is your first time leading an installation!

...but what does it take to lead an installation?

- How do you manage a project?
- How do you interact with the customer?
- How do you negotiate?
- How do you assess the work?

Exercise: Start a checklist of skills. As we proceed through this course, think about how these skills are applied in each of these scenarios.

Leadership Skills

Leading an installation is more than just technical skill – you need to be able to lead. That includes:

- Time Management
- Leading by example
- Getting others to follow direction
- Communication Skills (Interact with Customers, PMI, Mechanical Assistants, Contractors)

As the leader of a Mechanical Installation, you will be expected to provide guidance and direction to all levels of installation as well as providing technical expertise.

Leading vs. Managing

In leadership, people will either follow you because they have to (positional power) or because they want to (personal power).

When leading a Mechanical Installation, you need to be able to lead by example: Communicate, Manage, Strategize, give orders, take orders, negotiate, and positively influence people.

Roles and Responsibilities

As the Lead Installer, your main points of contact are the PMI (Project Manager of Installation) and Mechanical Installation assistants.

PMI: The job of the PMI is to interact with the customer and be the main GE point-of-contact between all of the key roles of an installation.

Mechanical Installation Assistants: These are your team members who will assist you on installations. You will need to be aware of their skill level, direct them, and be able to answer questions they may have.

Customers: You may need to interact with the customer on occasion. In these cases, you will need to represent GE Healthcare in the same way that a GE Employee would represent GE.

Installation Roles and Responsibilities

PMI	MECH INSTALLER	FE	CONTRACTOR
Site Ready	Mechanical Installation	Calibrations	Execute Civil Works needed
Missing Items	FE Handover	Configurations	
Mech. Install Planning		Mech Install (some places)	
Communicate Dates		Prepare Delivery Route and other Conditions agreed	

Partnerships

- Customers want the "human touch" – Communication
- Customers push back against organizations who "just" provide technical services
- They want partners

- What is your customer's view/perspective on you as a service professional and GE as an organization?
- *Customer's perception must change because the customer's perception is reality.*

Time Management

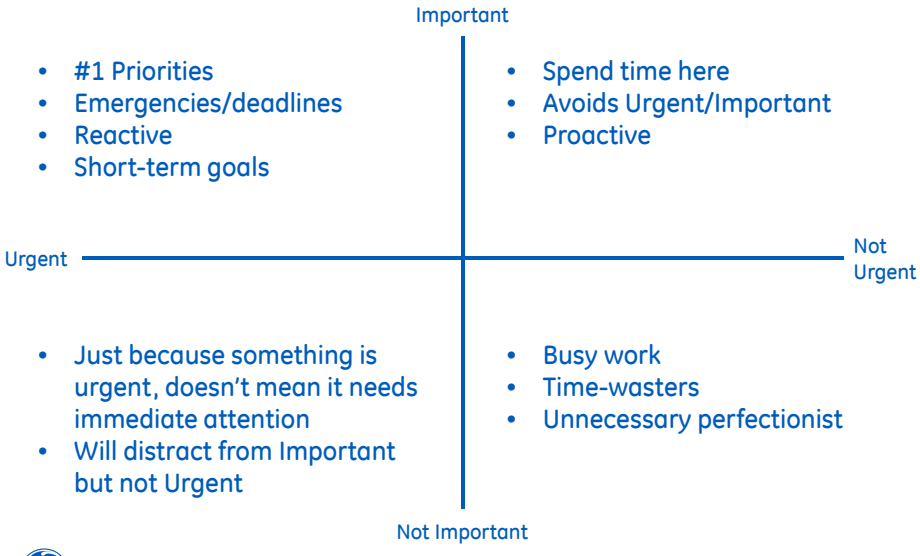
Time Management

Part of an installation includes the ability to effectively manage time. You will need to pay close attention to:

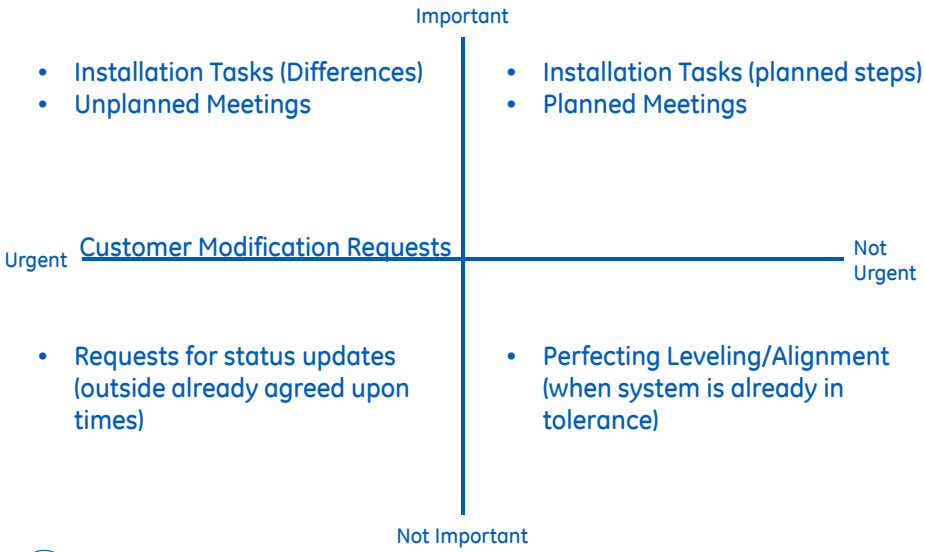
- The time expectation the PMI and Customer have for Mechanical Installation
- The amount of time each individual task takes
- How delays will affect the expected completion of the project

Any modification of time expectations should be discussed with the PMI ***before*** talking to the customer.

Urgent vs. Important



Installation Example



Scenario

Review the Installation Workflow for the CT Revolution Evo.

Even without having been part of a CT Installation, how would you use this to effectively manage time?

Where might there be some efficiencies? Are two people required for the entire installation? What about time required, where might there be extra time needed?

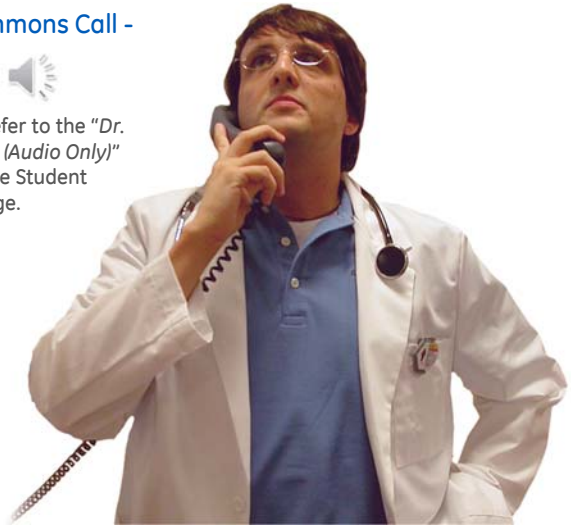
Exercise: Download the CT Installation Workflow from the Student Materials page.

Active Listening

Active Listening – Doctor Simmons

Dr. Simmons Call -

*Note: Refer to the "*Dr. Simmons (Audio Only)*" link on the Student Index page.



Scenario – Actively Listening to Dr. Simmons

What seems to be Dr. Simmon's most urgent problem?

A. Setting up the camera is too hard for his techs.

B. He can't use the equipment the way it is.

C. The Table is not moving properly.

D. He's losing money because he can't do as many exams as he would like.

Scenario – Actively Listening to Dr. Simmons

What are other complaints he has?

A. He has had to call for service too frequently.

B. He didn't know that his regular FE was on vacation.

C. He didn't know that Jim had been there… or why.

D. The system problem still isn't fixed.

E. The system problem won't be fixed for another two days.

F. He didn't know there was an imaging problem.

G. The system is not functioning up to spec.

Scenario – Actively Listening to Dr. Simmons

What does Dr. Simmons want FE Jim to do?

1. Fix the table problem.
2. Let him know when he's coming and when the problem is fixed.
3. Don't fix problems when non are called in.
4. Wait for Dave to come back from vacation.
5. Service his system as if it were his own, not just something to fit in if he has time.
6. Teach his techs how to adjust the camera settings the next time the table doesn't work properly.

Active Listening

Definition of Active Listening:

Active listening means that we try to understand things from the speaker's point of view. It includes letting the speaker know that we are listening and that we have understood what was said. This is not the same as **hearing**, which is a physical process, where sound enters the eardrum and messages are passed to the brain. Active listening can be described as an attitude that leads to listening for shared understanding.

Reading Cues:

- What are the speakers' facial expressions, hand gestures, and posture telling us?
- Is their voice loud or shaky?
- Are they stressing certain points?
- Are they mumbling or having difficulty finding words they want to say?
- Does their body language indicate they are uncomfortable or feeling like their message is not being heard?

Identifying Good Listeners

Person:

_____

Qualities:

- _____
- _____
- _____
- _____
- _____
- _____

Activity:

Identify someone in your life who is a good listener. What are the qualities that make them a good listener?

Take some time to think of one person and what skills they have.

Listening Tips! (1 of 2)

- Make a decision to listen. Close your mind to clutter and noise and look at the person speaking with you. Give them your undivided attention.
- Don't interrupt people. Make it a habit to let them finish what they are saying. Respect that they have thoughts they are processing and speaking about, and wait to ask questions or make comments until they have finished.
- Keep your eyes focused on the speaker and your ears tuned to their voice. Don't let your eyes wander around the room, just in case your attention does too.

Listening Tips! (2 of 2)

- Don't be afraid to ask the other person what they want from the conversation. Are they looking for advice, validation, an opinion, or just an opportunity to vent? Knowing what they want will help you structure your listening approach to effectively communicate with them.
- Ask a few questions throughout the conversation. When you ask, people will know that you are listening to then, and that you are interested in what they have to say. Your ability to summarize and paraphrase will also demonstrate that you heard them.
- When you demonstrate good listening skills, they tend to be infectious. If you want others to communicate well, you have to set a high example.

Customer Active Listening

- Be Ready to Listen
  - Requires total focus
  - Block out internal and external noise
- Attentiveness – all ears on the customer (don't multi-task!)
  - Show you are listening
  - Demonstrate your concern
- Restate/Rephrase – validates you heard accurately
  - Involves the listener
  - Matching their tone of voice to demonstrate both understanding of content and emotion

Why is Active Listening so Difficult?

Why is Active Listening so difficult?

- Listening is comprised of three components: Speaking, Listening, Thinking
- Average speaker uses about 250 words/minute
- Average listener hears up to 450 words/minute
- Average person thinks up to 2000+ words/minute

Communication

Basic Communication

4 Ws

1. What is the next step
2. Who is involved
3. When will it happen
4. Where to contact you if needed

Scenario – What Can Go Wrong?

Refer to the Student Material Page and view the "What Can Go Wrong" video

Video

Scenario – A Better Way?

Refer to the Student Material Page and view the "A Better Way" video

Video

Communication with the Customer

There are different expectations for communicating with the customer than there are for communicating with the PMI or members of your team.

Remember – You are a representative of GE to the customer. Their perception of GE is going to be partially based on how you communicate with them.

If you communicate poorly, that will reflect on GE poorly.

Tips for Communicating with the Customer

- Never make promises without first talking with the PMI. The PMI must maintain a balance of everything going on during the installation and must be aware of all contact/requests/etc. made by the customer.
- Always portray a positive attitude – never be rude, angry, indifferent or display a negative attitude in front of the customer.
- Don't badmouth GE in front of the customer – if you have complaints, take them up with the PMI.
- If the customer asks you to do something outside of the scope of work (such as a plan modification) tell them you will have to contact the PMI for approval before you can proceed.

Tips for Communicating with the PMI

- Always keep the PMI informed of status. Discuss with the PMI:
  - How often they want status updates
  - The best way to get ahold of them (and best way they can get ahold of you)
- Inform the PMI of:
  - Any comments and requests made by the customer
  - Any missing/damaged parts
  - Any additional needs that arise

Customer Perception

Customer Perception:

- Telephone:
  - 18 % Words Used
  - 82 % Tone of Voice
- In-Person:
  - 10 % Words Used
  - 35 % Tone of Voice
  - 55 % Body Language

First Few Words:

- Negative:
  - You should Know…
  - What do you expect me to do?
  - I'm sorry.
  - Obviously
  - There's nothing I can do.
- Positive:
  - As you may be aware…
  - Thanks for bringing that to my attention – let me see what I can do
  - I apologize
  - What you might want to consider…

Positive Image Words

Can-Do Words:

- Can
- Able
- Happy to Help
- Sure
- Yes
- Good News
- Provide
- Will
- Certainly
- Of course

Can't-Do Words

- Can't
- Don't
- I'm Sorry but
- No
- Unfortunately
- Tough
- All we can do
- There's no way
- No guarantee
- Won't

Thinking from a Customer's Perspective

When having interactions with the Customer, be sure to put yourselves in their shoes.

- What pressures are they facing?
  - Budget
  - Timing
  - Patient Load
  - Operations

  It helps to think about where they might be coming from in any given situation.

Body Language

Given that more communication takes place than just the words we use, consider how other communication might be taking place!

Body language is often an unconscious communication that will display how we are feeling or thinking.

Think about what you might be doing with your body the next time you're talking with someone. Are you crossing your arms? Shifting your weight?

The goal is to portray a neutral stance without showing any negative movements.

The next page contains a list of potential body language basics – some may differ based on culture or region.

Body Language Basics (1 of 2)

- Looking at Watch: bored and wondering how much longer
- Arms Behind Back: good, but some might find it untrustworthy
- Crossed Arms: closed to the topic being discussed / disinterested
- Eye Contact: shows where our attention lies
- Shifting Eyes: uncomfortable
- Hands on Hips: prepared to take action

Body Language Basics (2 of 2)

- Scratching Head: lack of confidence
- Head tilted back: disdain or pride
- Palm down: confidence, assertiveness, dominance
- Palm up: vulnerable, non-aggressive
- Body Shift: skepticism, change of emotion

Dealing with an Angry Customer

1. Do you understand…
    1. Who your customer is?
    2. How your customer is feeling?

CLEAR the Air

- C: Calm yourself
- L: Let them vent
- E: Emotion first, logic second
- A: Avoid Trigger words
- R: React appropriately

5 Critical Components of Change

If we're open to changing and adopting, there are five critical elements of change:

1. Information
2. Skills
3. Motivation
4. Opportunity to Practice
5. Reinforce and Reward

Negotiation

Defining Negotiation

Definition:

Negotiation is a process centered on a discussion that is intended to produce an agreement. In its simplest form it could be considered to be about power as the parties work to achieve their own interests.

Other words to describe "Negotiation":

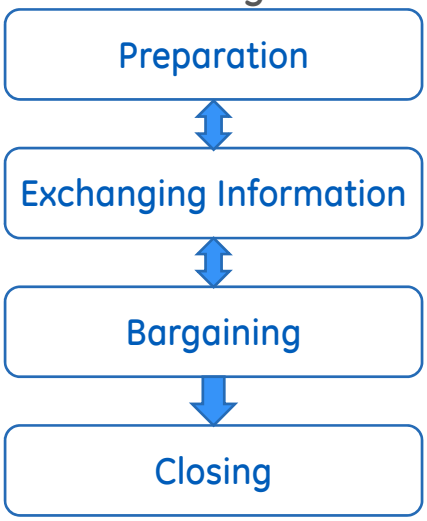
- Agreement
- Compromise
- Discussion

- Mediation
- Meeting
- Transaction

Criteria for Negotiation

1. If agreement is possible, the conclusion should include an actual agreement.
2. Process and result should be efficient.
3. Relationship between negotiators should not be damaged and may even improve as a result of the process.

Phases of Negotiation



Successful Negotiation (1 of 2)

- Communication Skills
  - Active Listening
  - Asking Questions
    - Open Questions:
      1. Give us more information
      2. Encourage your conversation partner to speak openly
      3. Encourage people to share opinions and ideas
      4. Help us determine if people have interpreted what we say accurately

Successful Negotiation (2 of 2)

    - Closed Questions:
      - Can be answered with a single word or two
      - Give you control over types of answers you recieve
  - Probing Techniques
    - Ask an Open question
    - Pause
    - Reflective or mirroring Qs
    - Paraphrase
    - Summary Questions

Solution Types (1 of 2)

Possible Outcomes:

- Lose - Lose
  - Least favorable
  - "Agreement" may not be enforceable
  - Issues may be unresolved and may have to be reopened
- Win - Lose
  - One party achieves it's goals at the exclusion of the other
  - Fails to address root-cause
  - Future conflicts over the same issue likely

Solution Types (2 of 2)

- Win - Win
  - Conflict is resolved and future conflicts less likely
  - Both parties are satisfied
  - Helps ensure both parties will fulfill the agreement

Getting Consensus

- Three Questions to ask:
  1. Please explain what we have agreed to.
  2. Do you agree with what we have agreed to?
  3. Are you committed to carry out the agreement? If not, what factors need to be clarified?

Leadership

Positional and Personal Power

- Positive Power is:
  - Externally derived
  - Limited
  - Inflexible
  - Implicit
- Personal Power is:
  - Internally derived
  - Unlimited
  - Enables us to meet objectives and build relationships
  - Flexible
  - Behavioral and direct

Methods of Influence

Influencing others means getting people to do things because they want to do them. That includes making sure other people feel involved, respected, and there is something in it for them.

There are several methods of Influencing, including:

- Persuading
- Asserting

  } Push

- Bridging
- Attracting

  } Pull

- Disengaging } Move Away

Persuading

Proposing: One clear specific proposal

Reasoning: 2-3 reasons tailored to the target

Energy: Head based, rational, matter-of-fact

Outcome: The target is convinced by logic and evidence

Positives: Excellent use of data, rational, objective tone

Negatives: Recognize the limits of logic, overused

Words: I suggest, I recommend, The reasons are, Because..

Persuading

- Points
  - Balance your behaviors: use 1 proposal and 2-3 reasons
  - Structure the presentation as an influence event
  - Be specific, direct and concise: eliminate qualifiers
  - Tailor your reasons to the target
  - Problem solving, reality testing

Asserting (1 of 2)

Stating expectations: one clear statement of wants

Evaluating: a positive and negative evaluation of the target's behavior relative to your wants

Incentives & pressures: explicit statement of enticements and consequences

Energy: Gut based, visceral, conversational

Outcome: You and the target agree on a settlement

Positives: Needs of both are legitimate, clear, concise

Negatives: Easy to sound aggressive, force

Words: I want, I need, I like that you, I don't like that you, If you do I will, If you don't I will...

Asserting (2 of 2)

- Points
  - Balance your behaviors: use all five asserting behaviors
  - Balance your exchanges: be careful not to force or avoid
  - Leave reasoning out
  - Seek and recognize the target's needs
  - Assertiveness, emotional self-awareness, independence, stress tolerance

Bridging (1 of 2)

Involving: Open ended questions to involve and clarify

Listening: Paraphrasing content, reflecting feelings

Disclosing: Making self vulnerable by sharing feelings and uncertainness

Energy: Genuine, attrentive, sometimes involves emotion

Outcome: Target is involved and engaged

Positive: Builds Trust, fosters mutal respect

Negatives: must be open to influence or can be seen as maniuplitive

Words: How do you?, What would it take to?, It sounds as if, So you think, I am unsure

Bridging (2 of 2)

- Performance Guidelines – involving, listening, disclosing
- Performing Points
  - Balance your behaviors – use all three behaviors to create a bridge
  - Use listening to summarize before moving to a new topic
  - Disclose selectivity to build trust or motivate the other to provide more information
  - Legitimize the discussion of feelings, needs, and implications
  - EQ – Empathy, emotional self-awareness, inter-personal relationships and flexibility

Attracting (1 of 2)

Finding Common Ground: Statement of shared experiences, values, etc.

Sharing Visions: Describing a future state so that people see themselves there and join in

Energy: Full body experience (words, tones, non-verbal)

Outcome: Target is aligned, excited and committed

Positives: Energizing, enthusiastic

Negatives: Relies on common ground or it sounds like a performance or sales pitch

Words: We have agreed that, we both believe in, imagine, picture yourself

Attracting (2 of 2)

- Performance Guidelines: Finding common ground, sharing vision
- Points:
  - Balance Behaviros – left finding common ground work with sharing vision
  - Eliminate persuading – avoid facts and logic, use imagery, your senses, word pictures, metaphors, or analogies
  - Commit yourself to the out come – show enthusiasm and intensity. Describe your future vision as though it has already occurred. Be genuine.
  - Establish strong common ground – identify shared goals, values, and asperations

Disengageing

- When to disengage:
  - With low or negative reactors
  - You slip out of style
  - New information surfaces
  - Emotions Overwhelm
- Goal:
  - Manage tension
  - Remain issue-oriented – do not provoke or be provoked
  - Create a positive environment for re-engaging
  - Maintain strength and purpose

Stages of Influence

- Obtain Perspective
  - Ask Questions – make others feel involved
  - Discover other people's points of view
- Acknowledge
  - Listen and focus
  - Paraphrase key points
- Propose
  - Present your thoughts, focus on common interests
  - Help others to see your point of view

Assessing the Work

Assessing Skill Level of Team Mates

After you have reviewed the Installation instructions, assess the skills of your team mates. Have a conversation with them to get the background on their experience. Ask them about their experience in this modality, experience with tools, their mechanical background, etc.

Observe them performing their first few tasks to determine how much they can safely do. Let them know they shouldn't be afraid to ask questions or ask for help if they need it.

Assessing Difficulty of Work

There are many ways to assess the difficulty of the work. Review the direction in the manual, then consider:

- How many people are required to perform this task?
- What special tools are required?
- Are there any special skills required?
- Is the procedure straight-forward or does it make assumptions of knowledge and skill?

Setting Goals and Distributing Work

Review the Installation workflow – determine which items can be done in parallel and which need focus and multiple team members. Example: Template layout may be done in parallel with parts inventory, but moving the gantry into place requires focus from at least two people.

Set a goal for each day. Many installation workflows already have the work laid out by day (though each site may be different based on local factors). Share your goals with the PMI, along with any disruptions to those goals.

Managing Customer Expectations

When working with customers (or the PMI), it's important to manage expectations. Be very careful not to overpromise!

Use the skills we've talked about:

- Prioritize / Organize
- Listen / Communicate
- Keep the PMI Informed
- Make Realistic promises (but not necessarily too specific)

PMI Interaction and Pre-Installation

Version: 1.0

Imagination at work

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Activity

Objectives for this activity

- As a Service Professional identify the pre-installation audit tasks that need to be performed prior to the mechanical installation of GE Healthcare Diagnostic Imaging equipment in compliance with applicable documentation.

20 minutes for this activity

Scenario

You're now confident that you're ready to lead an installation and effectively communicate with the PMI and the Customer.

- What needs to be done before the Mechanical Installations starts?
- What should you expect?
- What has been done, by whom? And what do YOU still need to do?

Exercise: Download the Site Readiness Checklist for the XR656.

Introduction to the PMI

Pre-Installation

Before Mechanical Installation begins, the PMI has been working with the Customer, the Sales Team, and others to make sure everything is ready for a successful Mechanical Installation.

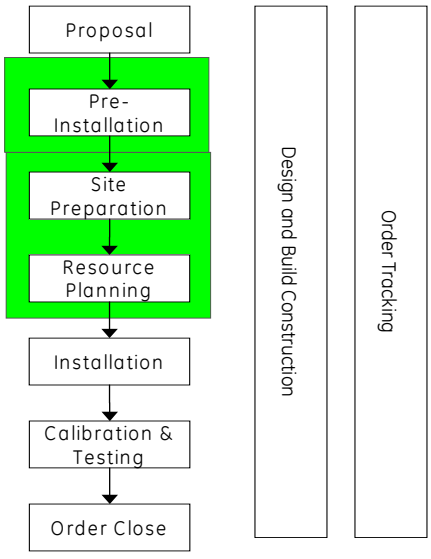
But what has a PMI done before you get on site?

Annie is a Project Manager of Installation and will walk us through what she has already accomplished.

Installation Process

GE Healthcare Americas Region – HPM

"PMI's are in charge of various customer installation sites within GEHC. PMI's manage the schedule and resources. Their duties include the timing of equipment delivery, placement drawings availability, and coordinating and scheduling GEHC and Mechanical Installer personnel."



Roles and Responsibilities

PMI – Owns site preparation through project management. Is the primary contact for customers, contractors, architects, etc. Fully manages site prep and is responsible for schedule and communication with customer team.

Primary FE – Assists PM with assessing site readiness and monitoring site prep progress. Will help by being onsite frequently and communicating issues as needed.

Escalations – Proactive escalations are good. Knowing and escalating early while creating a contingency plan to maintain project schedule and customer satisfaction is critical

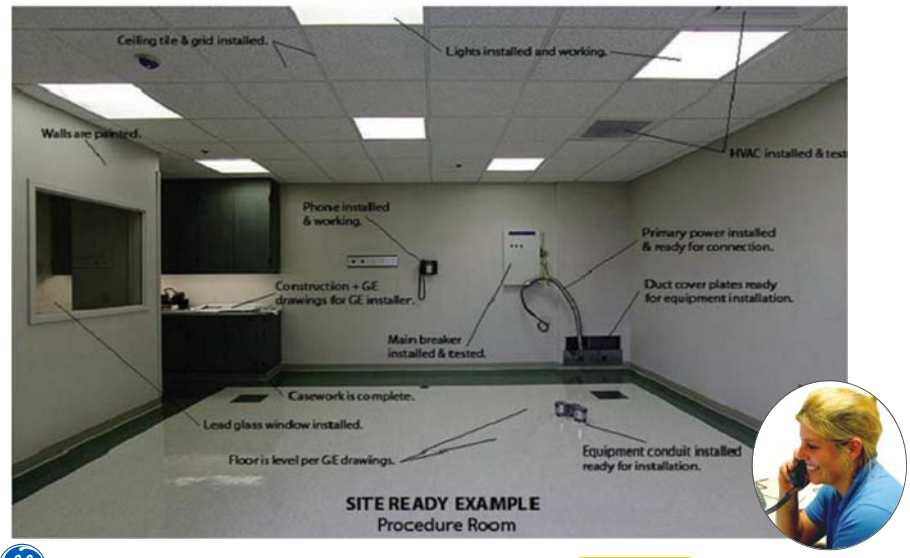
Site Ready Checklist

"I'll complete a Site Ready Checklist which includes:

- General Site Planning
- Storage
- Delivery
- Power Requirements
- HVAC & Vent Exhaust
- Broadband Availability
- Modality Specific Items"

Site Readiness Checklist (DI)		PMI Final Site Assessment before Installation Start	IMS & Hand Shake B/T PMI & FSE)
SO number :	Equipment:		
PMI Name:			
Account Manager Name:	FE Name:		
Customer Name:	Country / City:		
Required site assessment milestones	Date of completion (dd/mm/yyyy)		
1) Check site before delivery		Y	N
2) Check site before installation start		Y	N
General Site Planning			
Equipement Room, storage area, delivery route and all work related areas are EHS Compliant.			
Room dimensions (including ceiling height) for all Exam, Equipment & Control rooms match GE final drawings.			
Floor (levelling, flatness) meets requirements.			
Floor material can hold GE Supplied anchoring system or alternative anchoring solution validated.			
Raised floor height > +0.2m for Equipment Room: finished and cleaned, vent, grilles and cable acess openings available in amount described in GE Final Drawings (if applicable).			
Radiation protection (shielding) finished, including radiological doors and windows & if applicable			
Radioprotection approval obtained.			
Ceiling support structure ready for accessories installation (Injector, Monitor, Radshiled, Lamps, ...) as per OEM Spec.			
Internal room construction finished & dust-free (finished ceiling, finished walls primed, floor covered with floor finish)			
GE Final drawings & Packing List prepared and available for installers			
Precautions must be taken to prevent dust from entering rooms containing equipment.			
Ensure precautions have been taken to provide security and protect GE assets prior to transfer to the customer. The customer is aware of these security issues, implications and responsibility.			
Toilets available for GEHC installation team			
Customer/Contractor scheduled to provide required drilling or cutting into floors, ceilings, and walls; OR surface penetration permit available and posted in the room when GEHC will perform the work.			
Storage			
Sufficient & secured Storage Space is planned with the customer.			
Environmental Requirements for Storage Place are met as per PIM.			
Temporary Power for MR compressor & Chiller is available (Mind MR cooling configurations)			
Chilled water (for WCC) or Transformer (for ACC) - for Cryogen compressor is ready and meet GE specifications (kW capacity, filters, temperature, pressure, pH) . (Mind MR cooling configurations)			
Delivery			
Adequate delivery route from truck to final destination (as per the PIM) has been reviewed with all stakeholders to safely access - no obstacle, no trip hazard - to final destination, all communications/notifications have occurred, arrangements have			

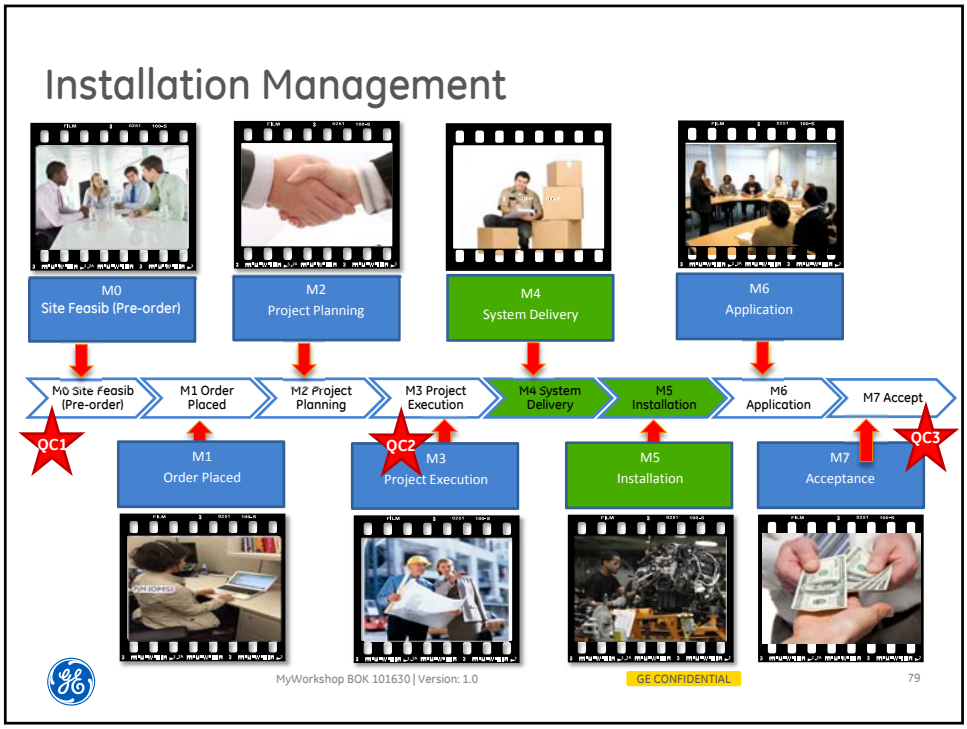
Ideal Site Ready example



Pre-Installation

PROCESS	Site Feasibility	Site Planning	De-Installation	Site Preparation	Site Readiness	Delivery	Installation	Application Training
Owner People	PMI, AM, MSS, Customer Reps	PMI, Customer Reps, PjM, Drafters	PMI, FE, Customer Reps, Contractors	PMI Customer Reps, PjM, Contractors	PMI, PjM, Customer Reps,	PMI, PjM, Contractors	PMI, FE, Contractors, Customer Reps	PMI, CES, Customer Reps, FE,
Tasks	•Technical validation • Siting costs estimation • Key dates estimation •Preliminary drawings	•Detailed drawings • Cables Option select • Key estim • e-Or	•Dismantling oval from as	•Civil work and site preparation monitoring • Key unde	•Check and approval of environmental	•Shipment to site •Delivery	•Mechanical installation •Power up & Calibration hecks &	•Customer training
References (Procedures / Working instructions / Guidelines)	Pre-Installation Ma (PIM) as published for each product •DOC0326216 Sales ITO procedure •DOC0326217 Order Management procedure		3124 allation Procedure and associated forms and instructions	•Pre- each docu •DOC asso			al ce as d for duct	•DOC0326219 Customer Training Process and associated instructions
Quality Checkpoints	QC1 Go/No Go based on PIM specifications			QC2 Checklists as per PIM guidelines				QC3 Acceptance by Customer

There are three Main Check points in the process – one will be completed before Uninstall and another that will be completed before Mech Install.



Planning a Radiology Department

Planning the Radiology Department

The Radiology Department:

- Provides specialized diagnostic services with imaging technique for indoor, out-patients and walk-in patients.
- Provides therapeutic services like radio therapy, nuclear medicine as well as interventional radiography.

Planning:

- Planning involves determining the need for the project, analyzing requirements for equipment, space and personnel, followed by scheduling and designing various aspects of the project.
- Steps discussed in this presentation are necessary to ensure the success of any construction project in a diagnostic imaging department.

Special Installation Regulations

Some sites have special requirements that will affect installation.

Examples:

- Office of Statewide Health Planning and Development (OSHPD) in California has seismic code requirements. Anchoring must be inspected by the agency and is generally arranged by the PMI (the mechanical installer should be aware of scheduling).
- Florida has instituted cable installation and labeling requirements after Katrina to mitigate flood damage.

Discuss unique requirements with the customer and the PMI prior to starting mechanical installation.

Patient Flow

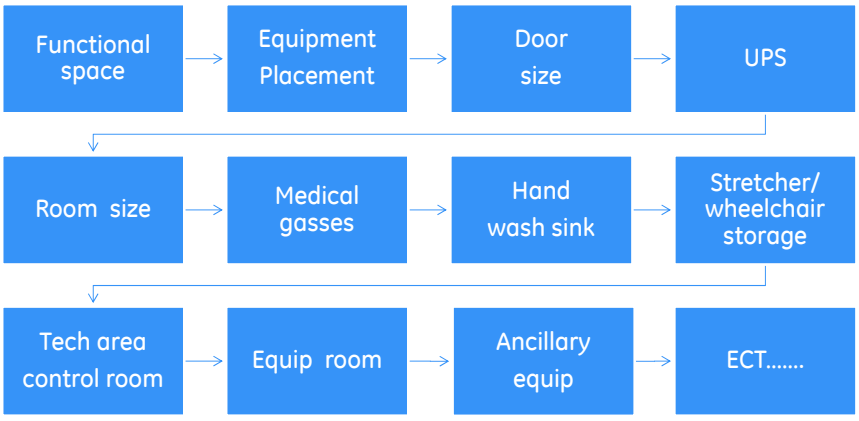
Patient flow encompasses the systematic process of attending to patients, from the time they walk into a medical facility to the time they check out for discharge.

Patient flow includes both medical and administrative functions, which may often overlap.

I have to take into consideration how the staff, patient, and maintenance are going to get around!

Areas considered in Patient Flow

Following are some areas in an imaging room where Planning can hinder or facilitate patient flow:



Planning the Walls

Planning the patient flow is not limited to floor space, the walls need to be planned as well. The walls must be furnished with the necessary equipment as follows:

Switches

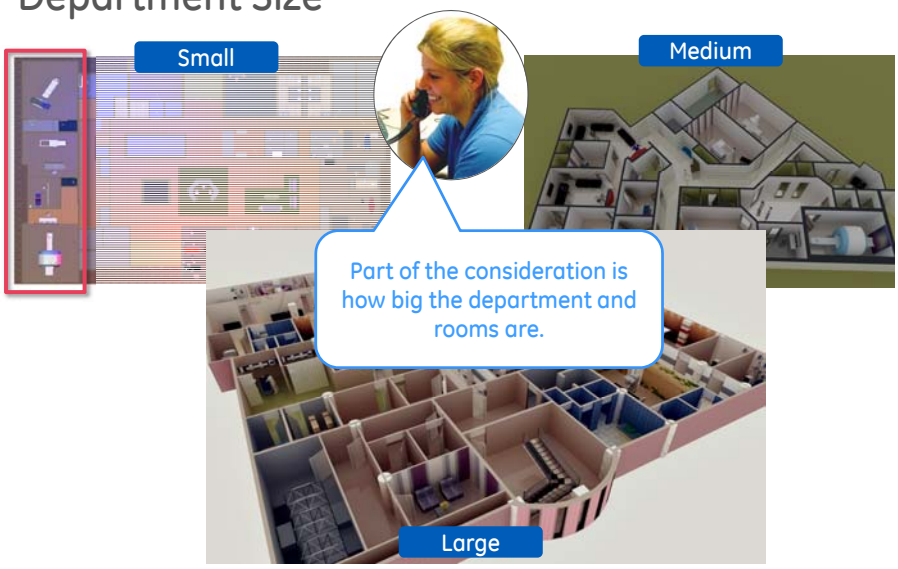
Wash Basins

Panic buttons

Plug-ins

Charging points

Department Size



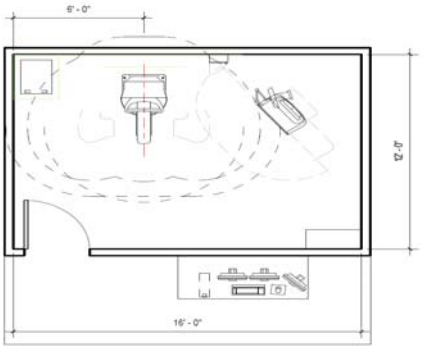
Room / Equipment Dimensions

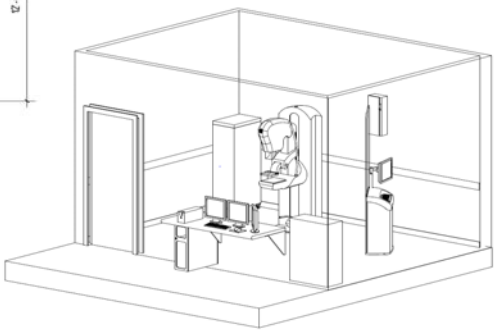
The PMI must look at the individual room and determine if the room is sufficient.

- Space for Equipment Movement?
- Space to bring in a patient?
- Space for FEs to work?
- Shielding?
- Power?

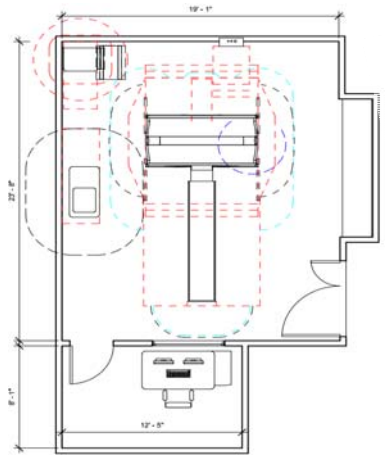
Next, I have to take into consideration the equipment itself!

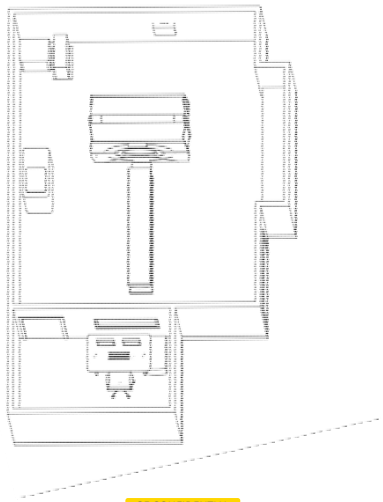
Mammography Dimensions



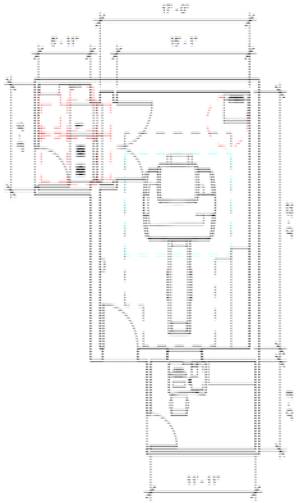


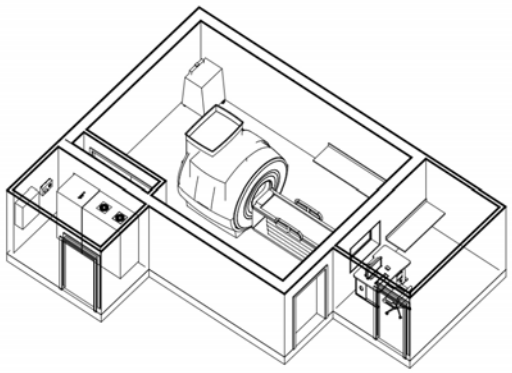
CT Dimensions



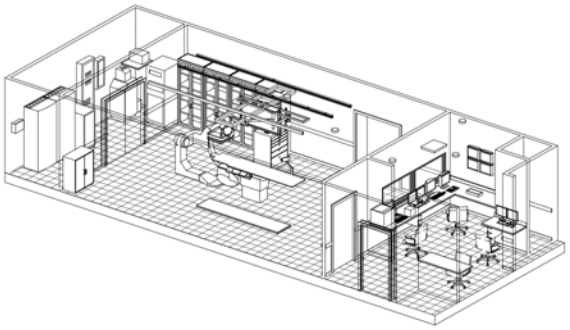


MRI Dimensions

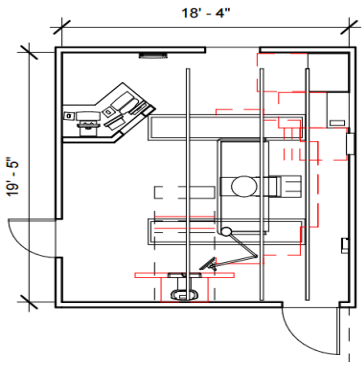


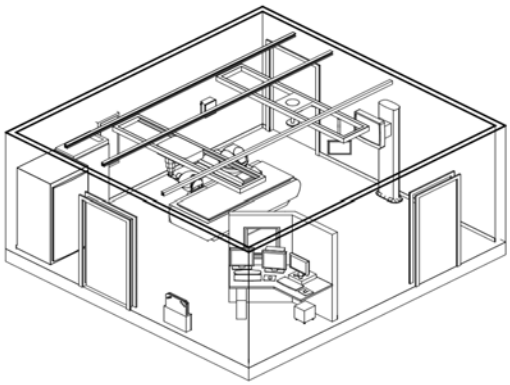


Vascular Dimensions

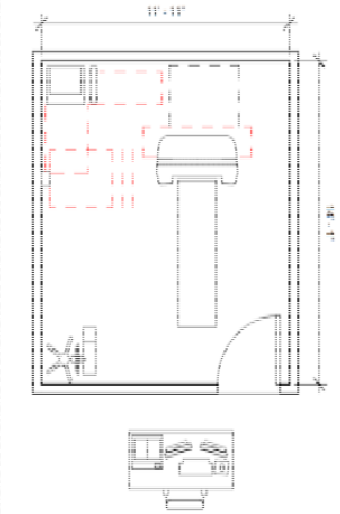


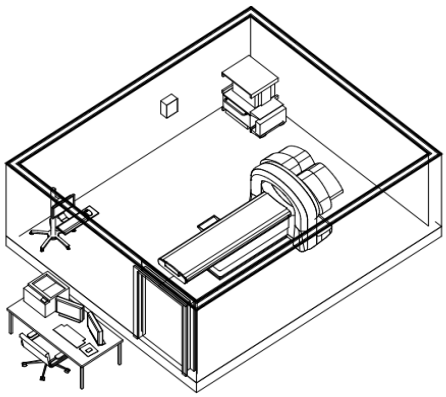
X-Ray Dimensions





Nuclear Medacine Dimensions





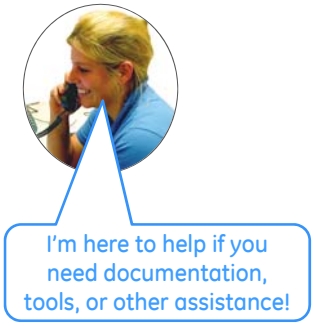
De-Installation

De-Installation

In many cases you will need to de-install a system from the room in order to proceed with installation of a new system.

There are many different possible outcomes for the old system and depending on where the old system is going will depend on the care/speed balance that can be applied to the de-install.

The old system Installation manual should have de-installation instructions for that machine – you may need to obtain that manual from the PMI (if the manual isn't provided or onsite).



De-Installation Steps

The key steps are similar to installation:

1. Verify a reviewed and signed surface penetration permit is posted.
2. Mitigate any electrical, mechanical, structural elements or hazardous materials in surface that are to be penetrated.
3. Prep – Obtain the proper tools and fixtures
4. Site Prep – Verify the site can accommodate the removal of the equipment
5. De-Cabling – Remove the system and customer cables and wiring
6. De-Installation – Move the equipment to the pick up area
7. Completion – Cleanup

Bio-Hazard

After years of use, the machine will have likely seen some interesting stories. Make sure the customer has done a complete and through cleanup of potential hazards at the site, including: broken glass, needles, and bodily fluids.

Biohazards can be found under covered areas such as tables, cradles, base covers, scan windows, and foot switches.

- Do not accept equipment for removal that has not been cleaned by facility staff.
- Cover all superficial cuts and wounds before starting work.
- Wear gloves during the de-installation process.
- Disinfect tools that have possibly contacted biohazards.
- Wash your hands.

Requests

Prior to the de-installation:

- Request needed documentation (including non-GE Healthcare support documentation, especially for accessories).
- Inspect the methods used to anchor the subsystems. You may need to contact the PMI and/or the customer if non-standard anchoring was used.
- Request shipping dollies / de-installation kits and system specific tools
  - Must be ordered through Universal Metrics Incorperated (UMI) at least a week in advance: http://www.umi-dollyshop.com/
- Review the Safety Risk Assessment

You may need to request the help of the PMI to obtain these materials.

Site Preparation

- Make sure the site preparation has been completed.
- Verify Equipment route is valid (likely the same route that will be used to bring the new equipment in).
- Patient Data has been removed.
- Verify with PMI:
  - All RFSs have been closed and service contracts have been terminated
  - Global Installed Base (GIB) has been updated
  - De-Installation request form has been completed and submitted
    - http://supportcentral.ge.com/ProcessMaps/form_new_request.asp?prod_id=63343&form_id=231082&node_id=385576&map_id=&reference_id=&reference_type=

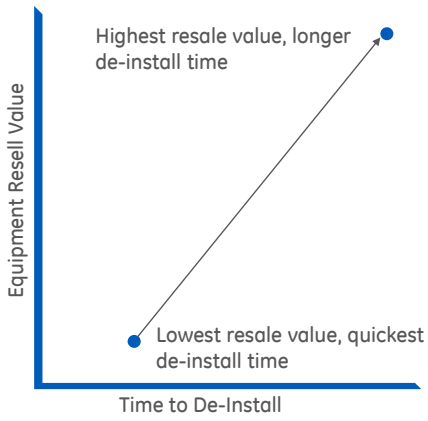
Equipment Removal

- Allow components to cool, especially X-Ray Tubes, after shutdown
- Verify motor driven components, such as table and gantry, are positioned for shipment before shutdown
- Verify all facility power connections have been isolated
- Drain coolants and dispose as directed by facility manager
- Keep system components upright at all times
- Life equipment using specified procedures from the manual
- Pack peripherals
- Label faulty, broken, or missing parts
- Do NOT cut tables, especially sub-system internal cables
- All parts/manuals/cables MUST be accounted for!

Time to De-Install vs. Delicacy

There are many different possibilities for what becomes of a de-installed system. Some systems are sold directly to another customer so great care must be taken to make sure no components are damaged. Other Systems are harvested for parts and can be de-installed more quickly.

Have a conversation with the PMI to determine the speed vs. delicacy factor. Help them to understand the higher the level of system turnover equates to a longer, slower de-install time.



De-Install Points

- Care must be taken by de-installers:
  - Do not cut cables
  - Do not damage components during removal
  - Carefully package components
  - Verify all components, cables, manuals, software, etc. that was received during initial installation (and any subsequent upgrades) is accounted for
  - Verify integrity of packing/strapping to avoid shipping damage
  - Document anything missing or damage

NOTICE

A charge may be incurred if equipment is damaged during de-installation.

Site Preparation

Site Preparation

After the old system has been de-installed, or for a new room, the PMI must make sure the room is sufficient for the system to be installed. They will look at the following:

- Construction
- Electricity
- Refrigeration
- Shielding
- Gas/Cryo
- IT

These items may be different based on the modality. If work needs to be done prior to system delivery, I will coordinate with the customer to ensure work is completed prior to your arrival.

Construction (1 of 2)

System/Requirements	Structural Reinforcement	Floor Plate/Structure	Ceiling Structure	Ceiling Cable Trays	Floor Conduits	Removable Ceiling	Raised Floor	Acoustica Isolation	Non-Magnetic Environment	Lockable Doors	Accessories Furniture
DIGITAL X-RAY	*		X	X	X	X				X	
R & F		X			X					X	
VASCULAR	*	X	X	X	X	X	X			X	X
DIGITAL MAMMO					X					X	X
BMD										X	

* Structural reinforcement and vibration must be consulted with a physicist

** Depending on the options it may be possible to have some ceiling structures and cabling

*** Country regulations dependent

**** A drain in technical room may be advisable

Construction (2 of 2)

System/Requirements	Structural Reinforcement	Floor Plate/Structure	Ceiling Structure	Ceiling Cable Trays	Floor Conduits	Removable Ceiling	Raised Floor	Acoustica Isolation	Non-Magnetic Environment	Lockable Doors	Accessories Furniture
CT	*		**	**	X					X	X
MR (SV PRODUCTS)	*				X	X	X	X	X	X	X
MR (DV PRODUCTS)	*		X			X		X	X	X	X
PET CT	*		**	**	X					X	X
NM (SPECT)	*				X					X	
NM (SPECT-CT)	*		**	**	X					X	X

* Structural reinforcement and vibration must be consulted with a physicist

** Depending on the options it may be possible to have some ceiling structures and cabling

*** Country regulations dependent

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Electricity (1 of 2)

System/Requirements	Emergency Stop Butt	Start/Stop Switch	Power Distribution Bo	X-RAY Door Lights	Three Phase Power	MR Compatible Light	Door Interlock	Isolated Power Systen	Temperature Alarm
DIGITAL X-RAY	X	X	X	X	X		***		
R & F	X	X	X	X	X		***		
VASCULAR	X	X	X	X	X		***	X	
DIGITAL MAMMO	X	X	X	X			***		
BMD			***				***		

* Structural reinforcement and vibration must be consulted with a physicist

** Depending on the options it may be possible to have some ceiling structures and cabling

*** Country regulations dependent

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Electricity (2 of 2)

System/Requirements	Emergency Stop Buttons	Start/Stop Switch	Power Distribution Box	X-RAY Door Lights	Three Phase Power	MR Compatible Lighting	Door Interlock	Isolated Power System	Temperature Alarms
CT	X	X	X	X	X		***		
MR (SV PRODUCTS)	X	X	X		X	X	X		X
MR (DV PRODUCTS)	X	X	X		X	X	X		X
PET CT	X	X	X	X	X		***		
NM (SPECT)	X	X	X		X		***		
NM (SPECT-CT)	X	X	X	X	X		***		

* Structural reinforcement and vibration must be consulted with a physicist

** Depending on the options it may be possible to have some ceiling structures and cabling

*** Country regulations dependent

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Refrigeration (1 of 2)

System/Requirements	Air Conditioning	Chilled Water	City Water and Drain	Operating Room Havoc	Exhaust Vent
DIGITAL X-RAY	X				
R & F	X				
VASCULAR	X		***	X	
DIGITAL MAMMO	X				
BMD	X				

* Structural reinforcement and vibration must be consulted with a physicist

** Depending on the options it may be possible to have some ceiling structures and cabling

*** Country regulations dependent

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Refrigeration (2 of 2)

System/Requirements	Air Conditioning	Chilled Water	City Water and Drain	Operating Room Havoc	Exhaust Vent
CT	X			***	
MR (SV PRODUCTS)	X	X	X		X
MR (DV PRODUCTS)	X	X	X		X
PET CT	X				
NM (SPECT)	X				
NM (SPECT-CT)	X				

* Structural reinforcement and vibration must be consulted with a physicist

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*** Country regulations dependent

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Shielding (1 of 2)

System/Requirements	Radioprotection Shielding	Magnetic Shielding	Radiofrequency Cage
DIGITAL X-RAY	X		
R & F	X		
VASCULAR	X		
DIGITAL MAMMO	X		
BMD	X		

* Structural reinforcement and vibration must be consulted with a physicist

** Depending on the options it may be possible to have some ceiling structures and cabling

*** Country regulations dependent

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Shielding (2 of 2)

System/Requirements	Radioprotection Shielding	Magnetic Shielding	Radiofrequency Cage
CT	X		
MR (SV PRODUCTS)		X	X
MR (DV PRODUCTS)		X	X
PET CT	X		
NM (SPECT)	X		
NM (SPECT-CT)	X		

* Structural reinforcement and vibration must be consulted with a physicist

** Depending on the options it may be possible to have some ceiling structures and cabling

*** Country regulations dependent

**** A drain in technical room may be advisable

Gas/Cryo (1 of 2)

System/Requirements	Medical Gases	Quench Pipe	Helium Refill	O2 Monitor
DIGITAL X-RAY	X			
R & F	X			
VASCULAR	X			
DIGITAL MAMMO				
BMD				

* Structural reinforcement and vibration must be consulted with a physicist

** Depending on the options it may be possible to have some ceiling structures and cabling

*** Country regulations dependent

**** A drain in technical room may be advisable

Gas/Cryo (2 of 2)

System	Medical Gases	Quench Pipe	Helium Refill	O2 Monitor
CT	X			
MR (SV PRODUCTS)	X	X	X	X
MR (DV PRODUCTS)	X	X	X	X
PET CT	X			
NM (SPECT)	X			
NM (SPECT-CT)	X			

* Structural reinforcement and vibration must be consulted with a physicist

** Depending on the options it may be possible to have some ceiling structures and cabling

*** Country regulations dependent

**** A drain in technical room may be advisable

IT (1 of 2)

System/Requirements	Data Network	Remote Connectivity
DIGITAL X-RAY	X	X
R & F	X	X
VASCULAR	X	X
DIGITAL MAMMO	X	X
BMD	X	X

* Structural reinforcement and vibration must be consulted with a physicist

** Depending on the options it may be possible to have some ceiling structures and cabling

*** Country regulations dependent

**** A drain in technical room may be advisable

IT (2 of 2)

System/Requirements	Data Network	Remote Connectivity
CT	X	X
MR (SV PRODUCTS)	X	X
MR (DV PRODUCTS)	X	X
PET CT	X	X
NM (SPECT)	X	X
NM (SPECT-CT)	X	X

* Structural reinforcement and vibration must be consulted with a physicist

** Depending on the options it may be possible to have some ceiling structures and cabling

*** Country regulations dependent

**** A drain in technical room may be advisable

System Delivery

System Delivery

The PMI will have a coordination role during the System Delivery phase.

They will make sure all items that need to be completed are completed and notify the appropriate party when things need to be done or are off schedule.

The next several slides walks through the PMI role during System Delivery.

During the system delivery phase, I'll be there to coordinate activities and make sure things run according to schedule. On the next few slides, I've highlighted in green where you will be involved.

M4: Execute/M&C– System Delivery

M4: System Delivery
Arrange/Plan for Delivery
Involve customer & Rigging company
Manage Storage Space
Prepare the POD & PL
Request for FE presence during delivery
Make sure to delivery as per PL.
Customer to sign & Stamp the POD.
Delivery NL Items
Send POD & update on Project progress.

Arrange and Plan for Delivery

Prior to equipment delivery

1. Request time of arrival of installation team and equipment delivery and enter into Eagle
2. Confirm who will be accepting delivery from customer side
3. If not able to have installation team at delivery, contact the installation team lead for input on how to place equipment in room
4. Maintain open communication for successful installation and to avoid delays
5. Coordinate any additional safety training/orientation required by customer and contractor for the install team so they can show up early
6. Confirm required documentation needed by site from the install team
7. Advise of any short shipments to avoid wasting time looking for missing items
8. Ensure installation drawings are available and confirm with customer contact
9. EHS guidelines need to be followed and respected to be compliant

M4: Execute/M&C Phase – System Delivery

M4: System Delivery
Arrange/Plan for Delivery
Involve customer & Rigging company
Manage Storage Space
Prepare the POD & PL
Request for FE presence during delivery
Make sure to delivery as per PL.
Customer to sign & Stamp the POD.
Delivery NL Items
Send POD & update on Project progress.

Involve Customer's representative and Delivery Company (movers/riggers)

- Reconfirm delivery route
- Site protection (floors, walls)
- Site security (badges, NCIC check)
- Site Interim Life Safety Measures (ILSM) orientation
- EHS guidelines need to be followed and respected to be compliant

M4: Execute/M&C Phase – System Delivery/Storage (1 of 2)

M4: System Delivery
Arrange/Plan for Delivery
Involve customer & Rigging company
Manage Storage Space
Prepare the POD & PL
Request for FE presence during delivery
Make sure to delivery as per PL.
Customer to sign & Stamp the POD.
Delivery NL Items
Send POD & update on Project progress.

<u>Inquire about supplemental storage space as required</u>

- PMI confers with customer on the final room delivery location
- If the site preparation is still on going, equipment must be delivered to a temporary storage location and customer must provide as per PIM requirements.
- TEMPORARY STORAGE ROOM MUST BE WITHIN A HOSPITAL FACILITY/PREMISES
- All requirements for equipment safety and security is customer responsibility.

M4: Execute/M&C Phase – System Delivery/Storage (2 of 2)

M4: System Delivery
Arrange/Plan for Delivery
Involve customer & Rigging company
Manage Storage Space
Prepare the POD & PL
Request for FE presence during delivery
Make sure to delivery as per PL.
Customer to sign & Stamp the POD.
Delivery NL Items
Send POD & update on Project progress.

- Minimum storage requirements (examples):
  - Temporary power
  - Water lines/water chillers/air-cooled chillers (MR specific)
  - Equipment storage must be clean and secure
- All other DI equipment temporary storage must follow PIM storage guidelines. HPM PMI provides all technical support and follows PIM requirement for a customer manage their own temporary storage for equipment delivered

M4: Execute/M&C Phase – System Delivery (1 of 10)

M4: System Delivery
Arrange/Plan for Delivery
Involve customer & Rigging company
Manage Storage Space
Prepare the POD & PL
Request for FE presence during delivery
Make sure to delivery as per PL.
Customer to sign & Stamp the POD.
Delivery NL Items
Send POD & update on Project progress.

<u>Prepare the Proof of Delivery (POD) and Packing List (PL)</u>

- POD and PL documents can be obtained from PjM/OMS prior to acceptance delivery
- Customer needs to sign the POD, not the GE employee.
- POD must have the following:
  - Official customer name/carrier name letterhead
  - Hospital name, location and address
  - Global order number (GON)/Sales order number
  - Must have equipment type (MR, CT, X-ray, etc.)
  - Customer must sign the POD document
  - POD document should be clean without any pre-conditions of acceptance

M4: Execute/M&C Phase – System Delivery (2 of 10)

M4: System Delivery
Arrange/Plan for Delivery
Involve customer & Rigging company
Manage Storage Space
Prepare the POD & PL
Request for FE presence during delivery
Make sure to delivery as per PL.
Customer to sign & Stamp the POD.
Delivery NL Items
Send POD & update on Project progress.

<u>Request FSE during delivery (1 of 2):</u>

Mechanical Installation Information – Prior to equipment delivery

- PMI will request time of arrival of installation team, rigger and equipment delivery and enter into Eagle
- FSE Team will be default and mechanical team will be secondary. Mechanical Team will accept the installation once date is entered and confirmed green
- PMI will plan ahead to ensure that installation team is onsite for delivery of equipment.
  - if installation team cannot be on-site, then contact the installation team lead for input on how to place equipment in room

M4: Execute/M&C Phase – System Delivery (3 of 10)

M4: System Delivery
Arrange/Plan for Delivery
Involve customer & Rigging company
Manage Storage Space
Prepare the POD & PL
Request for FE presence during delivery
Make sure to delivery as per PL.
Customer to sign & Stamp the POD.
Delivery NL Items
Send POD & update on Project progress.

Request FSE during delivery (1 of 2):

- PMI/DPM ensures the selected Mechanical Installation (Mech Install) team are trained and certified on GE medical equipment
- HPM PMI verifies the Mech Install team is providing mechanical installation reports to the FSE. This will serve as evidence that Mech Install team are trained on the medical equipment.

M4: Execute/M&C Phase – System Delivery (4 of 10)

M4: System Delivery
Arrange/Plan for Delivery
Involve customer & Rigging company
Manage Storage Space
Prepare the POD & PL
Request for FE presence during delivery
Make sure to delivery as per PL.
Customer to sign & Stamp the POD.
Delivery NL Items
Send POD & update on Project progress.

Request FSE during delivery (2 of 2):

Mechanical Installation Information –
Prior to equipment delivery

- Maintain open communication for successful installation and to avoid delays
- Coordinate any additional safety training/orientation required by customer and contractor for the install team so they can show up early
- Confirm required documentation needed by site from the install team
- Advise of any short shipments to avoid wasting time looking for missing items
- Ensure installation drawings are available and confirm with customer contact

M4: Execute/M&C Phase – System Delivery (5 of 10)

Make sure to deliver as per Packing List (1 of 3):

Best Practice: Set up delivery of equipment and installation team at same time so the team can orientate the equipment into the room with minimal movement after delivery company is gone

M4: System Delivery
Arrange/Plan for Delivery
Involve customer & Rigging company
Manage Storage Space
Prepare the POD & PL
Request for FE presence during delivery
Make sure to delivery as per PL.
Customer to sign & Stamp the POD.
Delivery NL Items
Send POD & update on Project progress.

- This will limit the moving of the equipment inside scan room causing damage to floor and walls as well as avoid wasting additional time.
- With installation team onsite – the equipment can be placed in the best position in the room
- If installation team cannot be at delivery – they prefer to have HPM PMI call them and work with local FSE to verify how to position equipment in room to avoid time and risk issues
- Final drawings must be available during final equipment positioning in the scan room

M4: Execute/M&C Phase – System Delivery (6 of 10)

Make sure to deliver as per Packing List (3 of 3):

PMI needs to ensure the contractor has the RF vendor/elec (mechanical engineering plumber) lined up same day as m

M4: System Delivery
Arrange/Plan for Delivery
Involve customer & Rigging company
Manage Storage Space
Prepare the POD & PL
Request for FE presence during delivery
Make sure to delivery as per PL.
Customer to sign & Stamp the POD.
Delivery NL Items
Send POD & update on Project progress.

- Electrician will wire up the cryogen compressor
- MEP will hook up water lines and ensure chiller functioning properly
- RF vendor will seal up the RF shield and install blower box/table dock bolts, install penetration panel frames (if applicable) and perform RF test

M4: Execute/M&C Phase – System Delivery (7 of 10)

M4: System Delivery
Arrange/Plan for Delivery
Involve customer & Rigging company
Manage Storage Space
Prepare the POD & PL
Request for FE presence during delivery
Make sure to delivery as per PL.
Customer to sign & Stamp the POD.
Delivery NL Items
Send POD & update on Project progress.

Make sure to deliver as per Packing List (2 of 3):

Best Practice for MR: Set up delivery of magnet, rigger and same time so the delivery team can orientate the magnet to its exact location.

CRITICAL: All delivery team members need to be onsite to make the delivery successful.

The rigger will maneuver the magnet into the room safely and correct with no damage to the property and get it bolted to vibro-pads

The FSE team will check the levelness of magnet as well as the helium levels and get the vent stack connected to the waveguide

The FSE team will get magnet hooked up on life support and if able to connected to a network drop so magnet can be monitored remotely

M4: Execute/M&C Phase – System Delivery (8 of 10)

M4: System Delivery
Arrange/Plan for Delivery
Involve customer & Rigging company
Manage Storage Space
Prepare the POD & PL
Request for FE presence during delivery
Make sure to delivery as per PL.
Customer to sign & Stamp the POD.
Delivery NL Items
Send POD & update on Project progress.

Customer to sign and stamp the POD

- POD document should be clean without any pre-conditions of acceptance
- Once equipment is delivered to hospital final room/temporary storage, PMI needs to provide the following documents:
  - Packing List
  - System Configuration
  - Copy of the contacts

M4: Execute/M&C Phase – System Delivery (9 of 10)

Send POD and Update on Project progress

- Once the PMI obtains the signed POD, he/she needs to send the document to PjM/OMS, DPM, financial controller team and commercial team
- HPM PMI needs to update Eagle with these milestone updates and upload all documentation to Eagle.

M4: System Delivery
Arrange/Plan for Delivery
Involve customer & Rigging company
Manage Storage Space
Prepare the POD & PL
Request for FE presence during delivery
Make sure to delivery as per PL.
Customer to sign & Stamp the POD.
Delivery NL Items
Send POD & update on Project progress.

M4: Execute/M&C Phase – System Delivery (10 of 10)

Delivery Non-Listed (NL) items

Examples
* Water/Air-cooled chiller (MR only)
Uninterrupted Power Supply (UPS)
Radioactive Materials
* RF Cages
Injectors
Accessory not sold by GE
Others

** To be delivered and installed prior to system delivery*

M4: System Delivery
Arrange/Plan for Delivery
Involve customer & Rigging company
Manage Storage Space
Prepare the POD & PL
Request for FE presence during delivery
Make sure to delivery as per PL.
Customer to sign & Stamp the POD.
Delivery NL Items
Send POD & update on Project progress.

System Delivery

By this point you should have...

- Times and schedules
- Training completion
- Delivery Route
- Storage Space Plan
- Equipment Delivered

If you don't have all of these items, let me know as soon as possible!

Mechanical Installation

Mechanical Installation

The next phase is the Mechanical Installation. The PMI will work with you to determine if the site is ready. They will also provide you with the appropriate documentation:

- Final Site Drawings
- Packing List
- Installation Manual

They will also be there to help deal with any issues that pop up along the way and to coordinate activites.

During the system delivery phase, I'll be there to coordinate activities and make sure things run according to schedule.

M5: Execute/M&C Phase – Installation (1 of 4)

M5: Installation
Site Readiness 100%
Submit Site Readiness Docs to FE
Mechanical Installation
Power up & Calibration
Assess Risks
Plan for Application Training
Communicate Project Update
Installation Report by FE

Ensure site readiness is 100% complete

- PMI needs to have the site readiness checklist provided to FSE and to ensure the "handshake" between PMI and FSE took place.
- In certain regions/countries, Mech Install teams are used for mechanical installation. PMI needs to ensure the site readiness checklist (signed by PMI and FSE) is also handed over to Mech Install team to confirm site readiness prior to beginning mechanical installation.

M5: Execute/M&C Phase – Installation (2 of 4)

M5: Installation
Site Readiness 100%
Submit Site Readiness Docs to FE
Mechanical Installation
Power up & Calibration
Assess Risks
Plan for Application Training
Communicate Project Update
Installation Report by FE

Submit Necessary Documentations to FSE

- Documents to FSE
  - Site Readiness Checklist
  - Packing List (PL)
  - Configurations and Final drawings
- PMI needs to ensure the "handshake" took place between PMI/FSE to confirm site is ready for installation
- PMI needs to upload site readiness checklist to Eagle

M5: Execute/M&C Phase – Installation (3 of 4)

M5: Installation
Site Readiness 100%
Submit Site Readiness Docs to FE
Mechanical Installation
Power up & Calibration
Assess Risks
Plan for Application Training
Communicate Project Update
Installation Report by FE

Mechanical Installation

- A mechanical procedure to install equipment physically inside a hospital exam room
- HPM PMI needs to ensure the Mech install team are trained and certified on the system being installed.
- Some modality specific (CT) have dollies delivered with system requiring storage at customer site, HPM PMI needs to ensure communication is made with customer in advance.
- PMI to insure for all DI modalities the following:
  - Review drawings with FSE and Mech Install team for placement of equipment
  - Inventory equipment with FSE and identify any damaged or missing pieces to notify PjM/OMS to order it

M5: Execute/M&C Phase – Installation (4 of 4)

M5: Installation
Site Readiness 100%
Submit Site Readiness Docs to FE
Mechanical Installation
Power up & Calibration
Assess Risks
Plan for Application Training
Communicate Project Update
Installation Report by FE

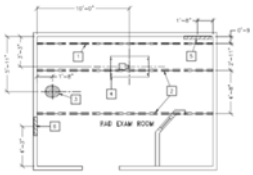
Power-Up and Calibration

- Mechanical install completion → FSE start system calibr
- FSE to configure equipment for customer use by:
  - Power up the system
  - Install system software and perform complete system check
  - Basic image calibration
  - Calibrate the system for clinical use by the customer
  - Run several tests before handing over to customer
  - PMI needs to insure hospital network is available for broadband connections

Site Readiness

Let us Verify Site Readiness....

Measuring the Unistrut – 3 Rail System



Step 1: Identify Unistrut location dimensions per installation drawings (A1 & S1)

Step 2: Measure the distance of the cable drape rail strut from the wall

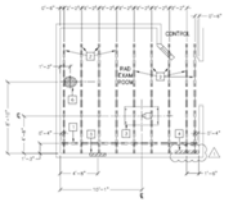
Step 3: Measure the distance between the cable drape rail and the rear stationary rail support.

Step 4: Measure the distance between the two stationary rail supports at one end of the room.

Step 5: Measure the distance between the two stationary rail supports at the other end of the room. (checks if struts are parallel)

Conclusion: If any of the locations appear to be out of spec per the installation drawings, the PMI should have the contractor/customer representative perform a more thorough verification and take necessary corrective action.

Measuring the Unistrut – Grid System



Step 1: Identify Unistrut location dimensions per installation drawings (A1 & S1).

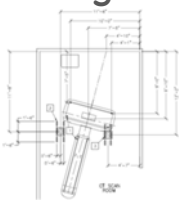
Step 2: Measure the distance of the 1st strut strut from the wall.

Step 3: Continue measuring the distance between each Unistrut..

Step 4: Confirm that all the struts are located as shown on the installation drawings.

Conclusion: If any of the locations appear to be out of spec per the installation drawings, the PMI should have the contractor/customer representative perform a more thorough verification. If the Unistrut grid is found to be spaced other than shown, the customer/contractor needs to provide a structural solution (typically means adding additional strut below the grid). **Note:** Modification of stationary rail mounting hole locations is not an approved mounting solution.

Measuring the Floor Levelness

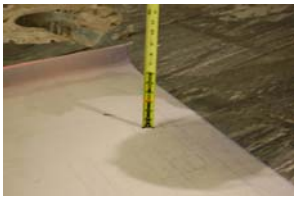


Step 1: Identify center line and floor mounting location dimensions per installation drawings (A1 & S1).

Step 2: Identify area on the floor to be measured using template, center line, PIM, etc.

Step 3: Place laser in approximate middle of area to be measured.

Step 4: Using tape measure, t-square or other type ruler, measure height of laser at first mounting point.



Step 5: Measure the height of the laser beam at all mounting points, recording the variance at each location.

Conclusion: If the levelness of the floor appears to be out of spec per the installation drawings/applicable Pre-Installation Manual or visible defects are observed, the PMI should have the contractor /customer representative perform a more thorough verification and take necessary corrective action.

Unpacking

Escalation

If you find missing or damaged parts, work with the sales team and PMI to get the parts replaced as soon as possible.

If you can't access the forms, work directly with the PMI.

Also notify the PMI if you notice Personal Safety or Environmental Safety factors present in the room.

Missing Parts

Contact your Sales person immediately for items missing on GON. Sales will work with the PMI to create an Order Change.

Missing at Site Claim

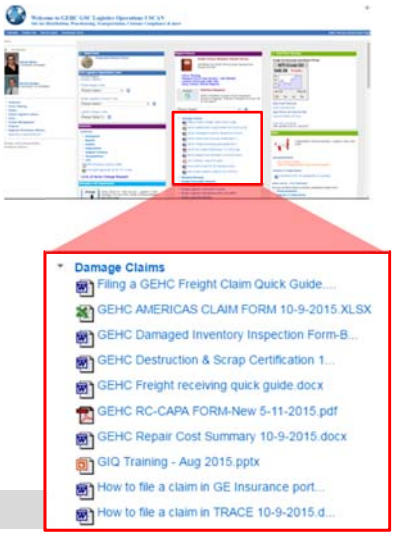
- 2-million or 46-number items:
  - Order through CARES/FEMC
  - Debrief with dispatch code 009
- Catalogue part (starting with a letter)
  - Call the Missing at Site line 1-800-548-3366, Option 6
  - Must have GON and part number

Note: Claims Traffic will send additional instructions.

Damaged Parts

Damaged Equipment:

- Follow Missing at Site claim instructions.
- File a Damage Loss Claim Form.
  - http://supportcentral.ge.com/products/sup_products.asp?prod_id=40145
- Take photos of damage.
- Send form and photos to:
  - Internal: @ Health Claims – Traffic, Attn: Claims
  - External: Claims-Traffic@med.ge.com, Attn: Claims
  - Fax: 262.312.1183, , Attn: Claims



Note: Claims Traffic will send additional instructions.

Damaged Parts Form

Form to complete and send, along with photos of damaged equipment.

GE Healthcare

Damaged Inventory Inspection Report

GENERAL INFORMATION

Claim No:	GE Reference No:
Date Freight Delivered:	Owner Reference No:

SUBJECT INVENTORY

Part No.	Serial No.	Item Description	Quantity	Weight

The parts listed above were inspected at _____ (Location) on _____ (Date)

We certify that damage to the above parts resulted in a (select one)

- ☐ TOTAL LOSS – Parts are totally damaged and retain no value. They will be discarded.
- ☐ PARTIAL LOSS – A portion of the part can be salvaged or used "as is." (Provide detail below)
- ☐ REPAIRABLE LOSS – Parts can be repaired to minimize the loss. (Describe repair process/cost below)

PACKAGING (Circle all that apply)

PACKAGING TYPE	MATERIAL	INNER PACKAGING	MARKINGS	RECEIVING FACILITIES
Box	Fiberboard	Corrugated Liners	Direction	Sidewalk level
Crate	Corrugated	Slotted Partitions	Fragile	Tailgate level
Pallet	Wood	Corner Posts	Handle with Care	Handtruck
Roll	Single Wall	Excelsior	Freezable	Fork lift
Other (Specify)	Double Wall	Paper	Shockwatch Activated? (Y/N)	Conveyor
		None	Tilt-watch Activated? (Y/N)	Other

Was shipping packaging available for inspection? (Y/N)
Did packaging show exterior evidence of loss of damage? (Y/N)

DESCRIPTION OF THE PACKAGING DAMAGE

DETAILED DESCRIPTION OF THE DAMAGE TO THE PARTS AND ANY POSSIBLE MITIGATION/REPAIR

DECLARATION

I certify that this report is true and correct to the best of my knowledge.

_____ Signature of person completing this form

_____ Date

Printed Name:
Title:
Phone:
E-mail:

Ordering Tools/Parts

Some systems may require specialized tools (such as lifting fixtures or laser alignment tools). These parts will either ship with the equipment or will be ordered by the PMI.

Most of these parts are part of a tool pool and are shared across modalities and regions. If a part is not included, work with the PMI to get the part ordered / sourced.

Cable Routing and Management

Version: 1.0

Imagination at work

GE CONFIDENTIAL

Activity

Objectives for this activity

- As a Service Professional identify the process and procedures for routing and managing cables for GE Healthcare Diagnostic Imaging equipment in compliance with applicable documentation.

20 minutes for this activity

Cable Management

Each system will have standards on Cable Management in the installation manual. Local laws and regulations, as well as customer policy, may also play into which cables can be run together and which may be separate.

Example:

- HV X-Ray cables must run in a separate section of the raceways or ductwork to avoid signal crosstalk.
- Liquid Coolant lines (MR / X-Ray Detectors) must run separate from all electrical cables and wires.

NOTICE

Avoid cutting or shortening power or ground cables. If shorter cables are needed, have the PMI order the short cable set.

Identifying Cables (Ex: Revolution CT)

The Revolution CT system identifies cables by subsystem designator (with a designator label and color) and run numbers.

Cables are grouped into three runs, specified by where the cable is coming from and where it's going to.

Group	From	To	Run#	Type
Group 1	PDU	System Cabinet	051	Power
		Scanner Desktop	053	Power
		Gantry (Power Pan)	050	Power
		Gantry (AC Plug)	052	Power
		Gantry (Front Ground Bar)	055	Power
		Gantry (Rear Interface J1)	100	Data
Group 2	System Cabinet Scan Room	Gantry	054	Ground
		Gantry (Rear Interface J4)	104	Data
Group 3	Scanner Desktop	Gantry	056	Ground
		Gantry (Rear Interface J2 & J3)	101	Data
		Gantry (Switch Hub)	102	Data
		System Cabinet (J2)	103	Data
		System Cabinet (J4)	105	Data
		System Cabinet (J5)	106	Data

Excess Cable

Check with the PMI and site electrician to determine the location of storage for excess cable. The site electrician will be able to provide you with the maximum fill rate for the site.

Excess cable should not be stored:

- Behind or underneath components, including:
  - Gantry
  - PDU
  - System Cabinet
  - Console or Workstation

Cable Routing (Review)

After cables are grouped, pull the cables through the duct using the appropriate method described in the Installation manual.

- Use Pull strings (if available) or fish tape
- Pull cables from the direction which allows the smaller of the cable ends to pass through the conduit to minimize cable ends catching in the conduit
- Conduit with junction boxes may require separate cable pulls to each box
- Excess cable stored in the cable trough must be routed in a “Figure Eight” pattern, then ty-wrapped at either the ends or middle of looped cable
  - Be sure to cut the ty-wraps flush to avoid a sharp edge – this could be a danger to anybody who pulls these cables in the future and to other cables.

Connecting Cables (Review)

- Before connecting cables, make sure LOTO has been applied and power has been removed.
- Connect cables in the order specified in the Service Manual.
- Unless specified, do not connect cables before they have been routed in the duct.
- Once cabling is completed, a Power and Grounding Audit must be completed by a P&G Auditor. Work with the PMI to schedule the audit.

Working with Electric Contractors

Some systems will require you to work with the onsite electrician. The PMI should have already discussed power needs as part of the pre-installation work. Keep the electrician updated on any questions or needs that arise as part of the installation.

Installation Update – IGS7X0

Vascular IGS 7X0
Version: 1.0

Imagination at work

GE CONFIDENTIAL

Activity

Objectives for this activity

- As a Service Professional identify the differences for installing Revolution CT equipment in compliance with applicable documentation.

20 minutes for this activity

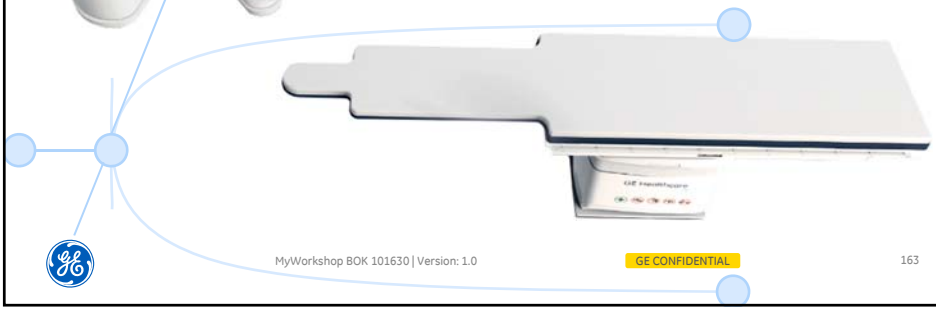
Scenario

You have been contacted to install a brand new Vascular IGS 730 system at Springfield General. It is a brand new installation.

What is the IGS 7X0?

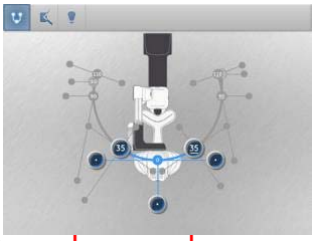
Discovery IGS 730

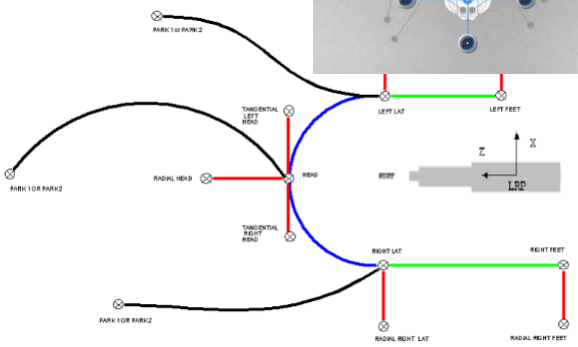
The Discovery IGS 730 is a Vascular mobile platform that brings all the power of a fixed imaging system to the table, yet it can be moved aside, so multi-disciplinary teams can complete procedures comfortably, with unobstructed access to patients.



System Movement

- Movement limited to Pre-programed Circuit (defined at Installation)
- Working Trajectories
  - Swivel (Blue)
  - Panning (Green)
- Patient Access (Red)
- End of Exam – Parking (Black)





Discovery IGS 730

Innova

AGV

OR Environment
- Interaction with OR equipments
- Space management
- Contamination, Cleaning

Clinical Procedures
- Hybrid Procedures
- Open Surgery Procedures
- IR/IC Procedures

System "Features"
- Gantry Motion
- Gantry SOD
- Parking & Backout
- Increased Patient Coverage

Pre-Install / Install
- Room, components layout
- Floor
- Trajectories planning

Acronyms: New

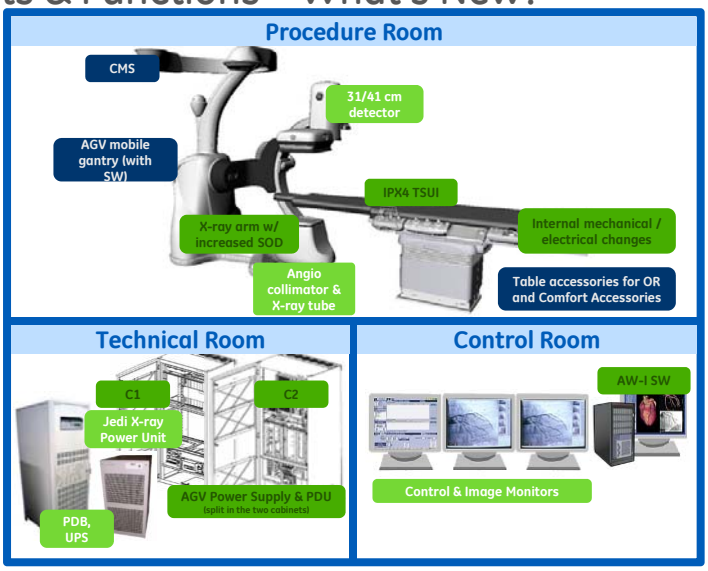
- **AGV** = Advanced Guided Vehicle
- **CMS** = Cable Management System
- **HLP** = Height of Laser Plane
- **LSI** = Laser System Integrated
- **NP** = Navigation Point
- **PDS** = Proactive Digital Services
- **PDS** = Product Data Sheet
- **TS** = Touch Screen (AGV)
- **LRP** = Lab Reference Point (same as
- **RIRP** = Room Interventional Referen

Components & Functions – What's New?

New
- AGV Gantry (HW & SW)
- CMS

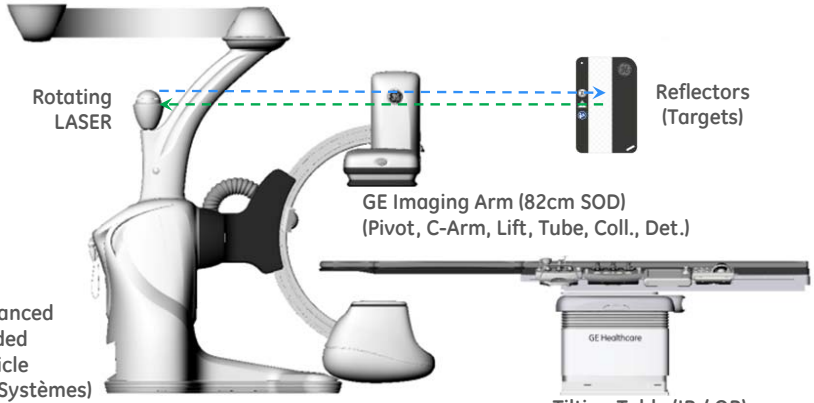
Modified
- C1/C2 Cabinets
- IPX4 TSUI
- X-ray arm (increased SOD)
- OR Table and Accessories
- SW
  - Positioner Control
  - RTAC & DL (minor)
  - AW-I (minor)
- System Cables groups

Reuse
- Imaging Chain
  - X-ray generator
  - Tube
  - Collimator
  - Detector
  - Image Processing & Display
- Monitors & Suspensions
- Acquisition Console
- PDB, UPS



Components & Features

Cable Management System
- Tethered to ceiling



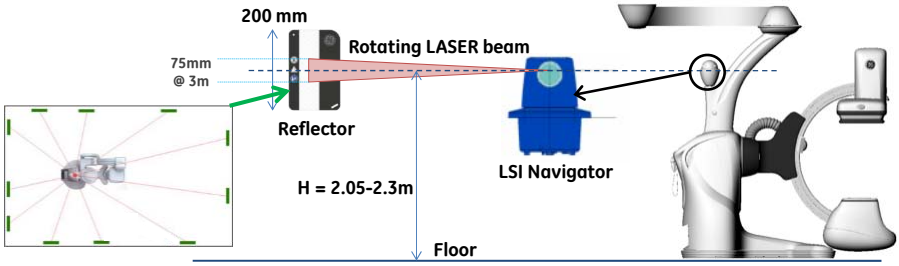
Advanced Guided Vehicle (BA Systèmes)
- Mobile Gantry – Guided motorized motion via LASER/Reflectors/wheel encoders

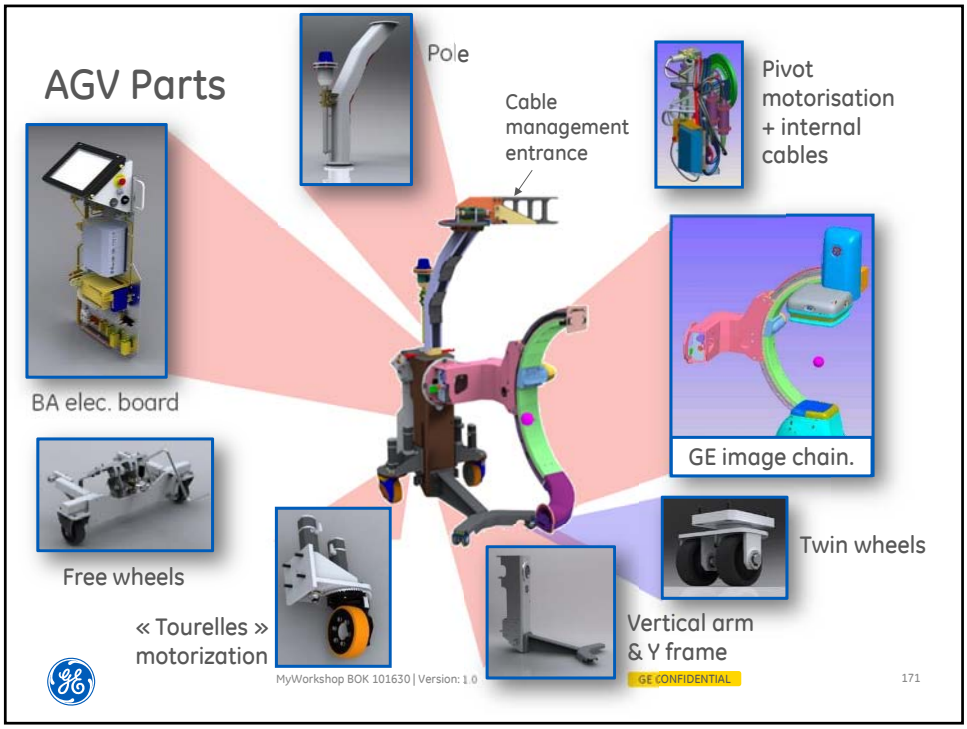
New Assemblies

- Advanced Guided Vehicle – AGV (**1**), composed of:
  - AGV pole or AGV mast (**2**)
  - AGV Laser LSI (**3**)
  - AGV Touchscreen (**4**)
  - Pivot arm (**5**)
  - C-arm (**6**)
- CMS is composed of:
  - Pivot (**7**)
  - Chain (**8**)
  - Saucer (**9**)

Laser Navigation

- Uses a Laser-based Localization System to determine location in room
  - Laser is Class 1 – no danger for people working in the room
- AGV position determined by detection of fixed reflectors mounted on walls
- Laser-based localization system requires 3 or more visible reflectors (operating in POOR condition, 5 or more to operate in GOOD condition)




AGV Parts
Pole
Cable management entrance
Pivot motorisation + internal cables
BA elec. board
GE image chain.
Free wheels
« Tourelles » motorization
Twin wheels
Vertical arm & Y frame
MyWorkshop BOK 101630 | Version: 1.0
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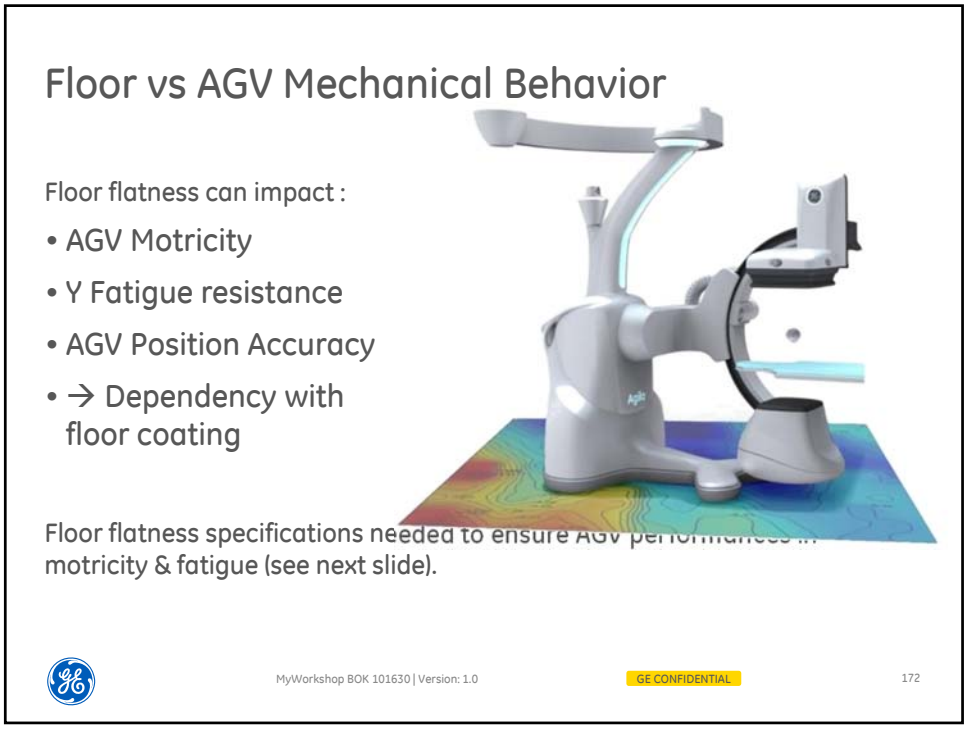
Floor vs AGV Mechanical Behavior
Floor flatness can impact :
• AGV Motricity
• Y Fatigue resistance
• AGV Position Accuracy
• → Dependency with floor coating
Floor flatness specifications needed to ensure AGV performances in motricity & fatigue (see next slide).
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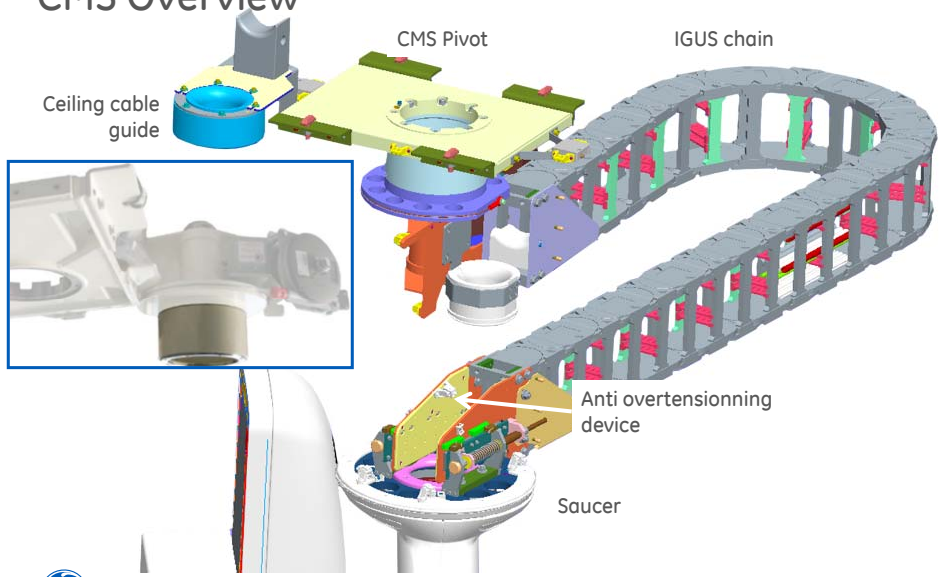
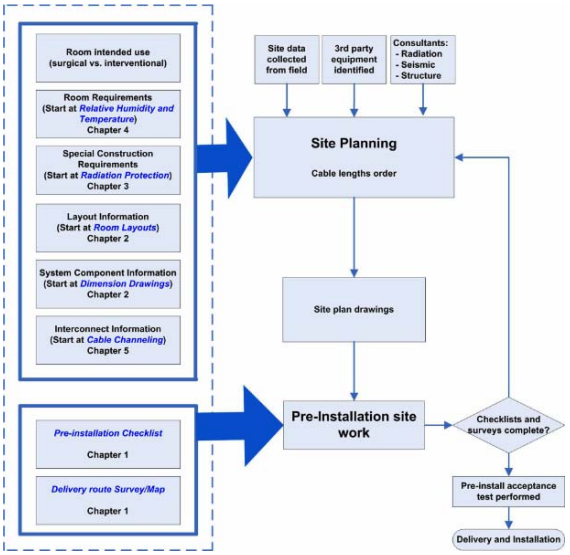
Discovery IGS 730 CMS

CMS Overview



Pre-Installation

Pre-Installation Process

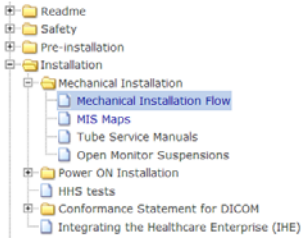


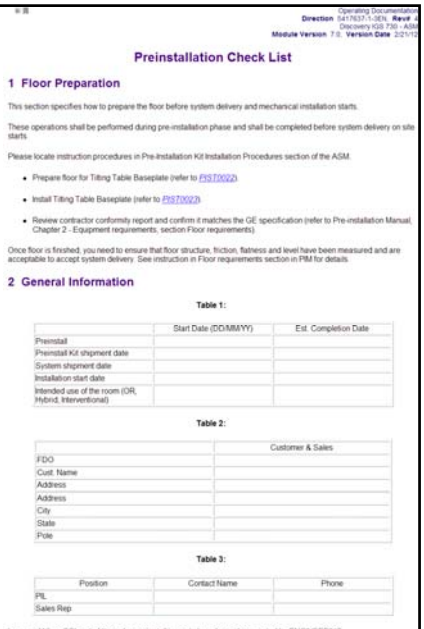
Pre-Installation Requirements

- Floor
  - Critical – Floor must be Flat & Level
  - Use of Template
  - Prep of Table base cover / IQ Table baseplate must be mounted
- Walls
  - Positioning targets
  - Room width larger than Innova
  - Customizable gantry circuits can interfere with 3rd party equipment
- Ceiling
  - Pre-defined heights (2740, 2845, 2900) and OR height (3050)
  - Ceiling structure to support CMS required
  - Impact of Open Suspension
- Technical Room
  - System cable routing to AGV add constraint on Tech room location
- Site Planning
  - Additional pre-install acceptance testing
  - Confirm structural floor/ceiling

Documentation

- Pre-Installation Check List is on the Mechanical Installation Flow page





Preinstallation Check List

1 Floor Preparation

This section specifies how to prepare the floor before system delivery and mechanical installation starts.

These operations shall be performed during pre-installation phase and shall be completed before system delivery on site starts

Please locate instruction procedures in Pre-Installation Kit Installation Procedures section of the ASM.

- Prepare floor for Tilting Table Baseplate (refer to FIST0022).
- Install Tilting Table Baseplate (refer to FIST0022).
- Review contractor conformity report and confirm it matches the GE specification (refer to Pre-installation Manual, Chapter 2 - Equipment requirements, section Floor requirements).

Once floor is finished, you need to ensure that floor structure, friction, flatness and level have been measured and are acceptable to accept system delivery. See instruction in Floor requirements section in PIM for details

2 General Information

Table 1:

	Start Date (DD/MM/YY)	Est. Completion Date
Preinstall		
Preinstall Kit shipment date		
System shipment date		
Installation start date		
Intended use of the room (OR, Hybrid, Interventional)		

Table 2:

	Customer & Sales
FDO	
Cust. Name	
Address	
Address	
City	
State	
Pole	

Table 3:

Position	Contact Name	Phone
PIL		
Sales Rep		

In case of NL or SOI part of the order, preinstall impacts have been documented by ENGINEERING.

Mechanical Installation

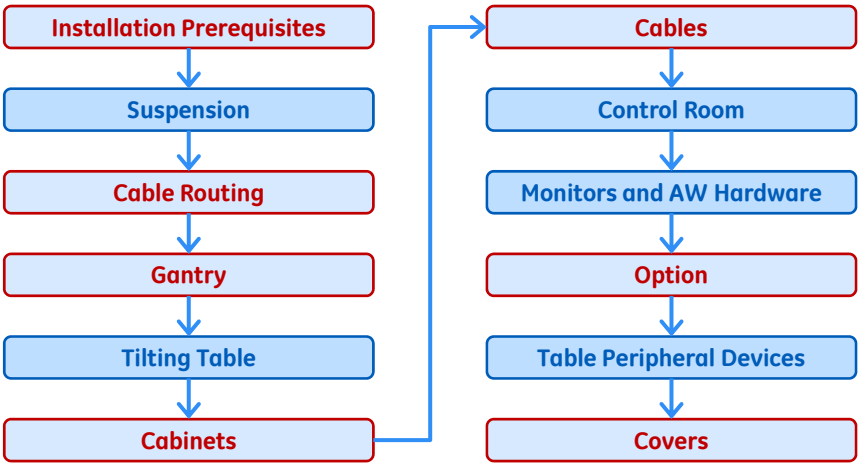
Overview

- This module will cover new processes and tools used during installation. Documentation and forms are reviewed noting differences.

New Installation Tools

- Leica TS06 Survey Tool (CHK0137)
- AGV Calibration Tool
- CMS Lift Tool (Genie) – Not supplied with the system
- Room Template
- CMS Install Kit (ring, hoist, Intermediate rails)
- Discovery Dolly (TOOL0009)

Installation Workflow

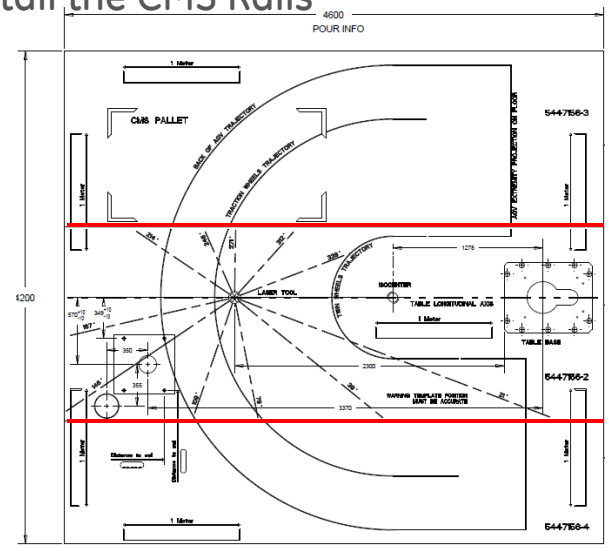


Installation Time

Step	Delta Time (IR) (hours)	Delta Time (OR) (hours)	Explanation
Pre-Installation	+1	+1	New tasks relating to the floor
Material	0	0	No Change
MAVIG Suspension	0	0	No Change
Cable Routing	-1	-1	Removal of LC Base routing
AGV Gantry	+4.25	+4	CMS/AGV Mechanical Installation
Innova IQ Table	0	0	No Change
CMS Cables Routing	+4	+4	CMS/AGV Cable routing
Cabinets	0	0	No Change
Cables	-4	-4	Removal of LC Cabling
Control Room	0	0	No Change
Monitors & AW Hardware	0	0	No Change
Options (full)	-0.5	-0.5	Modem removed
Covers	+2	+3	Addition of CMS/AGV covers (CMS joint sealing for OR)

Install the CMS Rails

*CMS = Cable Management System



Install CMS Spacer

Job Card: *IST0350*

- Install the spacer specified by the installation manual according to room configuration.
  - There are four CMS Configurations:
    - None
    - Small (Default mounted)
    - Medium
    - Large

Note: Space size determined by room height as measured from the ceiling rails.

Remove AGV from Discovery Dolly

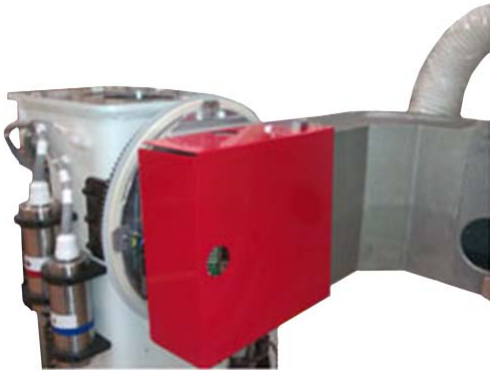
- Prerequisite step for IST0341 – AGV Mast Installation
- Next, put AGV Operation in Service Mode (TOOL0004) and engage the AGV's free wheels

Job Card: *TOOL0009*

Offset Arm Covers

Job Card: *IST0363*

- A protective cover protects the x-ray LED board during transport.
- The cover is red and must be removed during installation. It can be discarded when removed.



Install AGV Mast

- Use tooling provided in the CMS Install Kit
- Attach Hoist to the CMS Rails or Mounting structure and life AGV Mast
- Connects to AGV using 8 screws (24 Nm Torque)

Job Card: *IST0341*

Install CMS Assembly

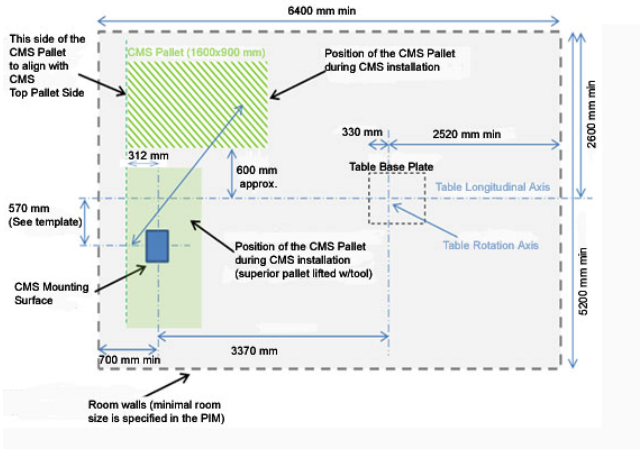
Job Card: *IST0337*

What's in the box?

- Pre-cabled CMS Chain
- CMS Pivot
- Mounting Screws
- Pivot Mechanical Stops
- Spacers
- Pivot Cable Guide
- Roof Cable Guide

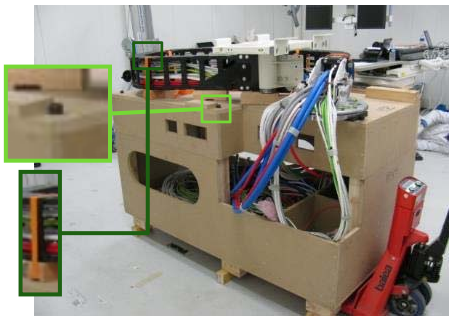
Install CMS Assembly

- Use the template to determine positioning of the CMS Pivot



Install CMS Assembly

- Prepare Installation
  - Position pallet according to procedure
  - Remove the four screws used to fix the upper part of the palette
  - Remove the straps used to fix the chain to the pallet
  - Remove the CMS Saucer and put it into Working Position
  - Secure the saucer to the wooden support using the belt provided.



Install CMS Assembly

Lift the top pallet assembly using the Genie Lift SLA10

Install CMS Assembly

- AGV is brought manually to the CMS saucer for connection.
- Lower the upper part of the pallet and put it on the bottom part.

Install CMS Assembly

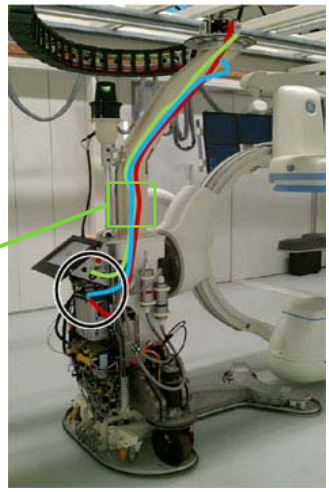
- Remove CMS Tensioner cable lock

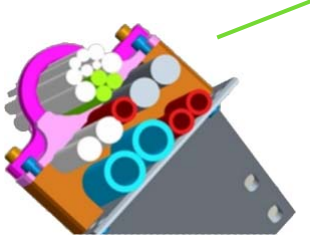
- Install Mechanical stops (if applicable)

Cables

CMS Cable Routing

- Install Roof Cable guide and Pivot Cable guide
- Route cables through the mast
- Install CMS Pivot Ground cable

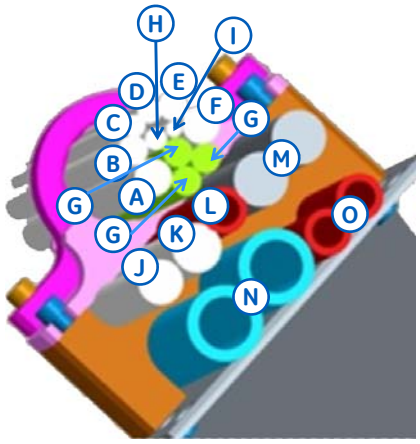




DOCS Job Card: *IST0343*

Cables

A. Data Cable subd25
B. Data Cable SCSI
C. Ingrid Cable
D. Detector Data Cable
E. Collimator Cable
F. Thermal Switch Cable
G. Ground Cable
H. Detector Power Cable
I. Ethernet Cable
J. Stator Cable
K. Power Cable
L. Fiber Optic
M. HV Cables
N. Tube Cooling Hoses
O. Detector Cooling Hoses

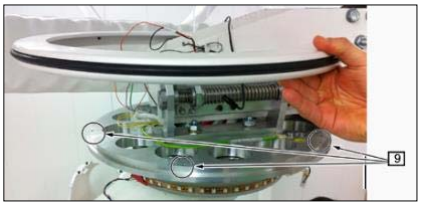


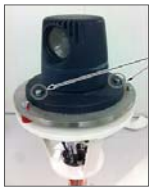
AGV Components Installation and Connection

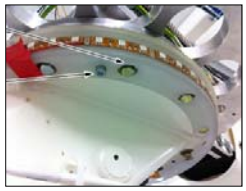
Mount the following components:

- Laser Support Leveling and Laser Mounting
- AGV Saucer Sensor
- Top pole LED assembly
- Pole LED assembly
- AGV screen + power module

Job Card: *IST0342*

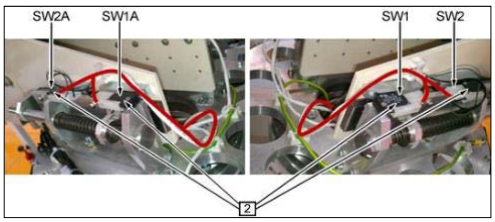






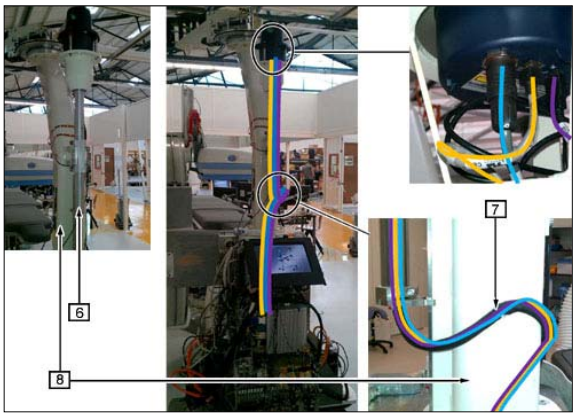
AGV Cable Routing – Pole Cable

- Connect gantry flying saucer cable with Saucer switches and J3 connector
- Connect gantry flying saucer ground cables
- Connect gantry top pole light cable



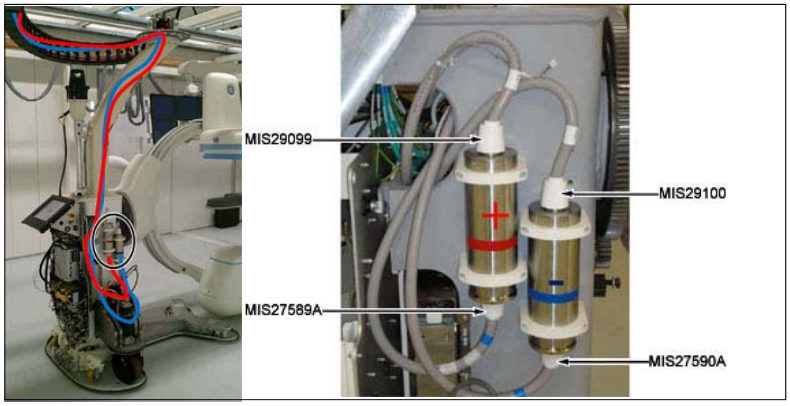
AGV Cable Routing – Laser Connection

- Connect three laser cables (Ethernet, USB, Data) and pass them through the laser pole.



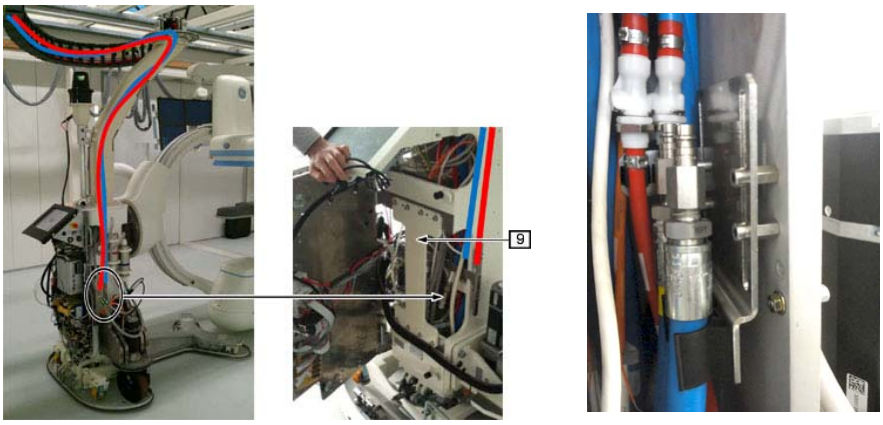
AGV Cable Routing – High Voltage Cables

- Connect HV Anode cable to Internal Gantry Cable



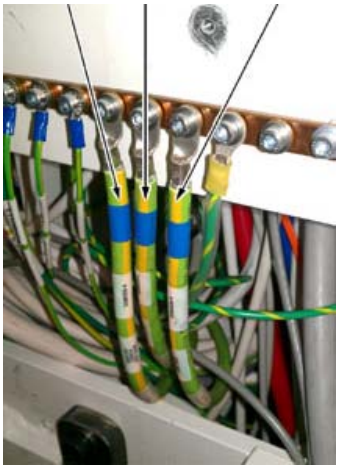
AGV Cable Routing – Coolant Hoses

- Connect tube cooling hoses to internal gantry hoses



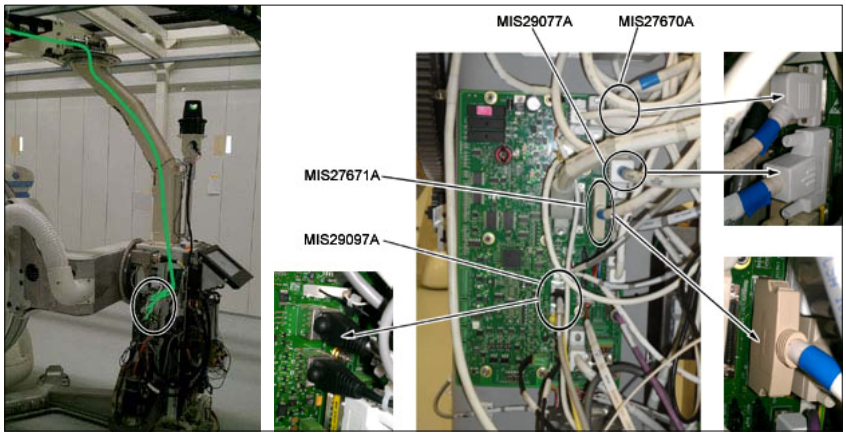
AGV Cable Routing – Grounding Cables

- Connect three grounding cables on the AGV grounding bar.



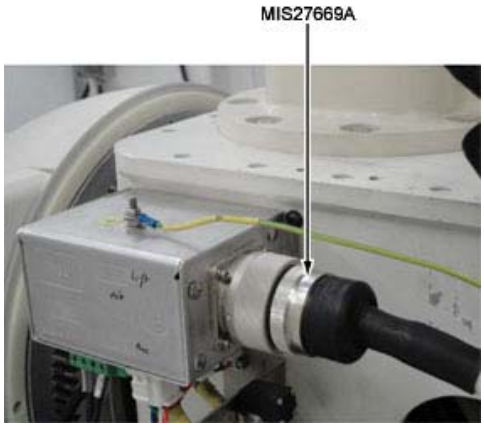
AGV Cable Routing – Toucan Cables

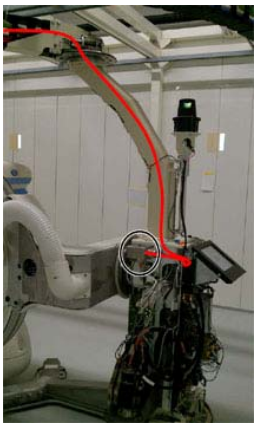
- Connect cables to the Toucan board.



AGV Cable Routing – Power Rest Point

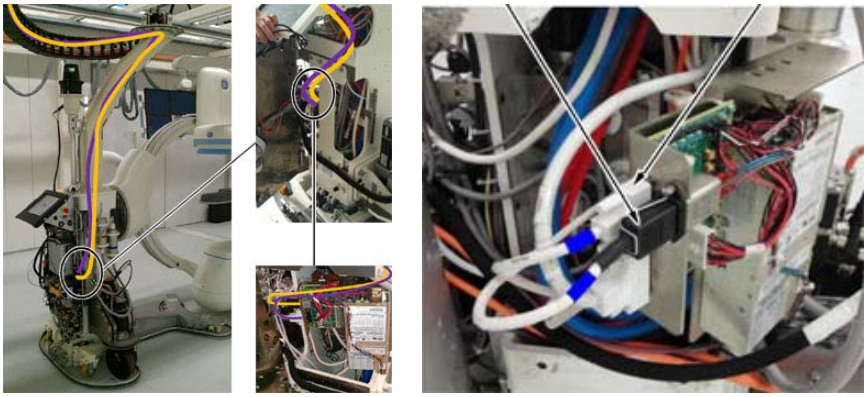
- Connect MIS27669A to J100 connector on the Power Rest Point.





AGV Cable Routing – Detector Power Supply

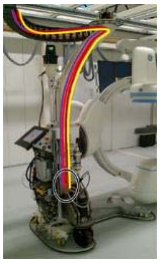
- Connect the power and data cables to the detector power supply.



AGV Cable Routing – System Cables

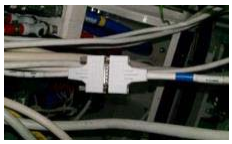
- Connect Ingrid cable to gantry cable
- Connect stator cable to gantry cable
- Connect thermal tube security switch cable to gantry cable
- Clamp shield of system, and stator/thermal gantry cables toge EMC continuity)
- Connect fiber optic cable to gantry fiber optic

Stator cable



Fiber optic cable

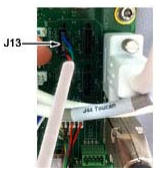
Thermal tube security switch cable



Ingrid Cable

AGV Cable Routing – Pole Base Cables

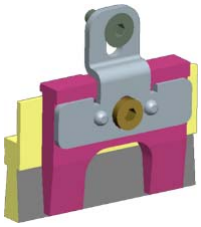
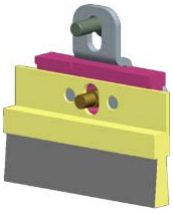
- Connect gantry pole light cable to pole LED assembly and toucan board (J13)



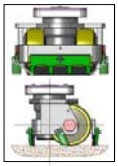
Install AGV Anti-Crushing

Job Card: *IST0338*

- Anti-Crushing for Traction Wheels

- Anti-Crushing for Twin Wheels




Covers

Install Covers

#	Cover's Group
1	Bottom antico covers
2	Fixation parts for Y cover
3	AGV handles
4	Enable handle assy
5	AGV covers set
6	Pole and laser covers
7	Saucer technical covers
8	Ulysse tube covers with sensor
9	"Agila" offset arm covers
10	C-arc end Cover with Bumper new color
11	WP LIFT COVER 30 ASSY
12	WP SWITCH RING 30 COVER ASSY
13	WP 31 cm Detector Covers assy
14	Agila 41 cm Detector Covers
15	WP SWITCHRING EQUIPED
16	WP Det 3100 Cover assy without antenna

Job Card: *IST0364*

Assembly sequence

Sequence:

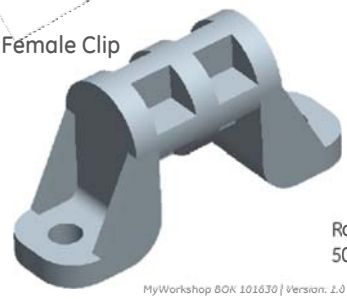
1. Floor Covers
2. Y Cover
3. Laser Cover
4. AGV Pole Covers
5. AGV Handle
6. Right/Left AGV Cover
7. Top AGV Cover
8. Screen Cover
9. Service Cover
10. Free Wheels Cover

Job Card: *IST0336*

Covers Fixation

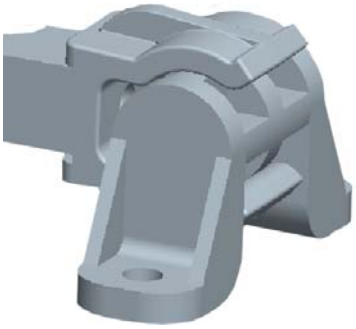
Male Clip

Female Clip



Important: All screws used for covers are captive screws

Covers are fixed each other with clipped fixation



Robustness of clips fixation will be tested over 500 cycles.

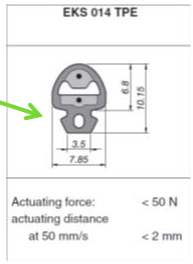
Mayser Sensor on Covers

Mayser Sensor

Resistor 1,2kΩ

Connected to TOUCAN

Mayser Sensor clip on covers

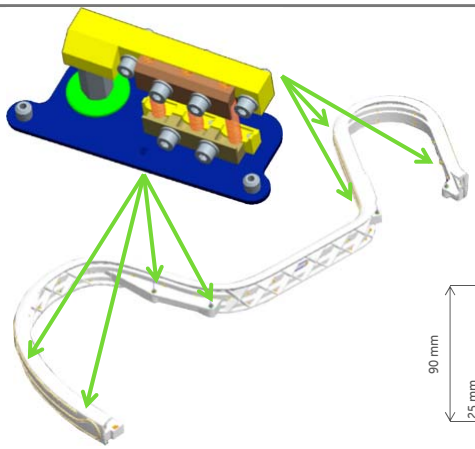


Sensor Fastener clip on covers

Bottom Antico Covers (5415932)

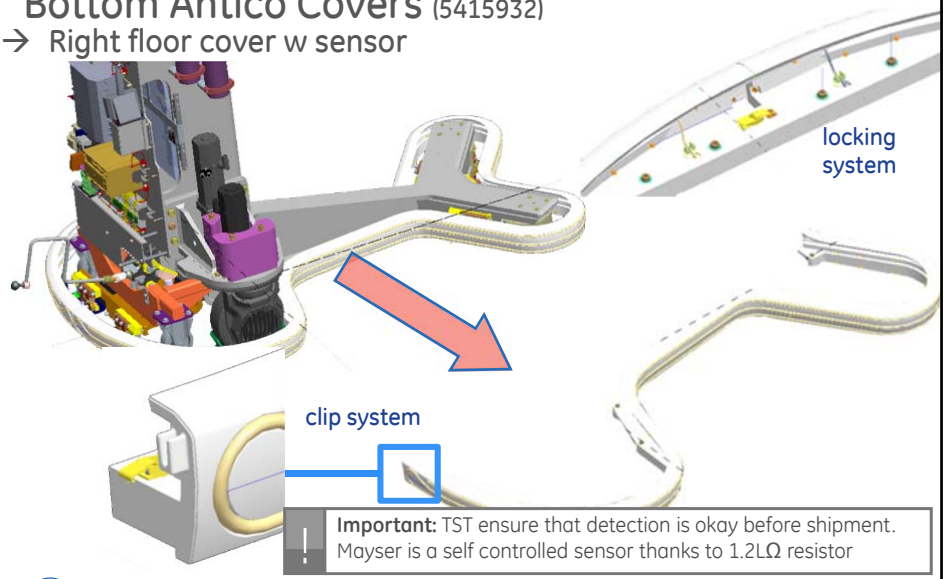
→ Left floor cover w sensor

Important: TST ensure that detection is okay before shipment.
Mayser is a self controlled sensor thanks to 1.2LΩ resistor



Bottom Antico Covers (5415932)

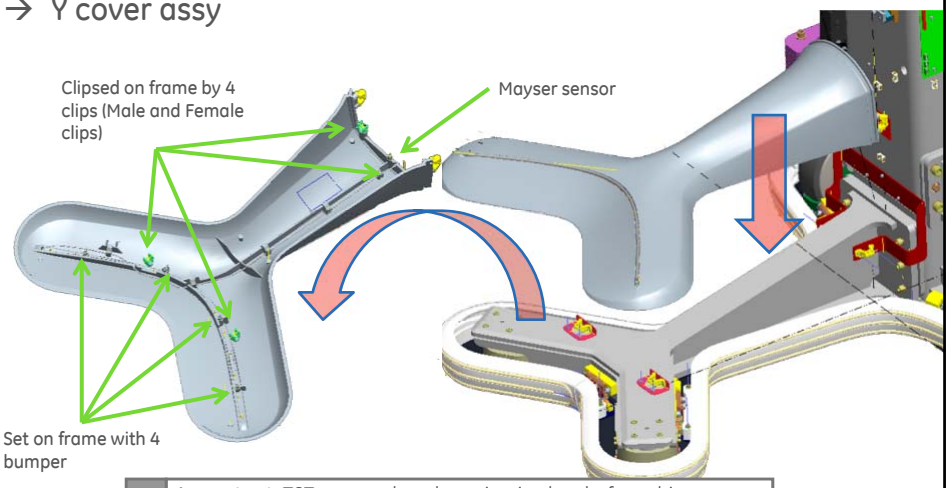
→ Right floor cover w sensor



Important: TST ensure that detection is okay before shipment.
Mayser is a self controlled sensor thanks to 1.2LΩ resistor

Bottom Antico Covers (5415932)

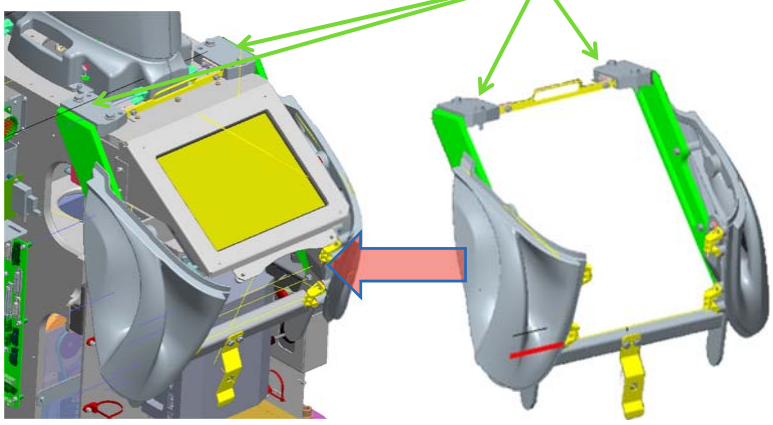
→ Y cover assy



Important: TST ensure that detection is okay before shipment. Mayser is a self controlled sensor thanks to 1.2LΩ resistor

AGV Handles (5416073)

Important: No TST



AGV Covers Set (5416072)

→ Left AGV assy & Right AGV assy

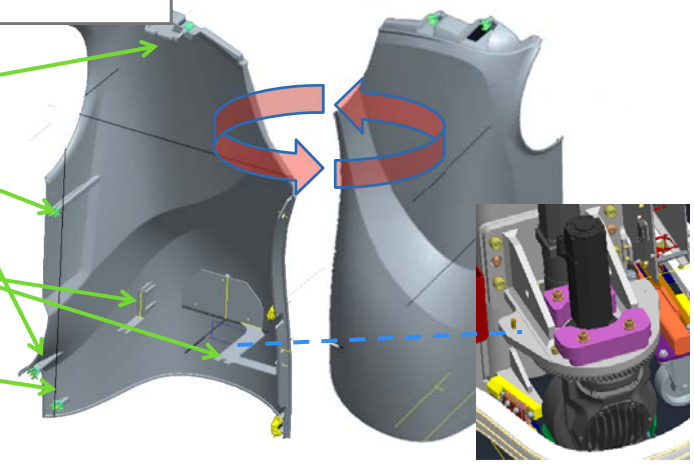
Important: No TST

2 Screws on frame

Clipped on Right(Left) AGV (2x)

2 centering pins and landing zone on frame

Clipped on Y Cover (1x)



AGV Covers Set (5416072)

→ Service cover assy

Important: TST ensure that RJ45/RJ11 connection is working before shipment.

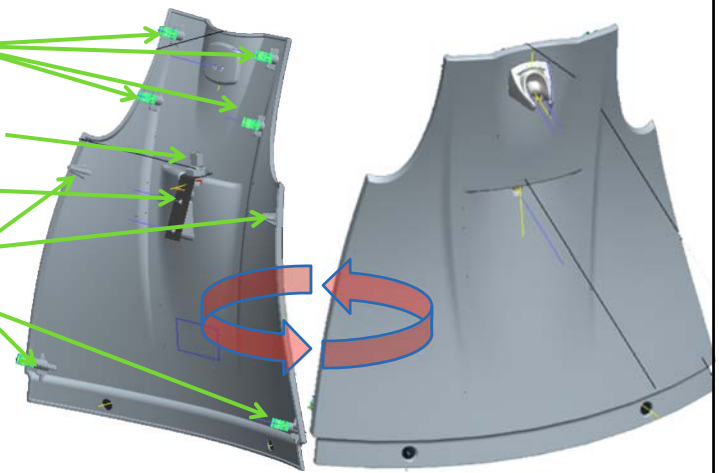
Clipped on AGV Handles (4x)

RjJ45/RJ11 Connecteur (Enable handle)

Screwed on AGV Handles

Centering pins on Right(Left) AGV (2x)

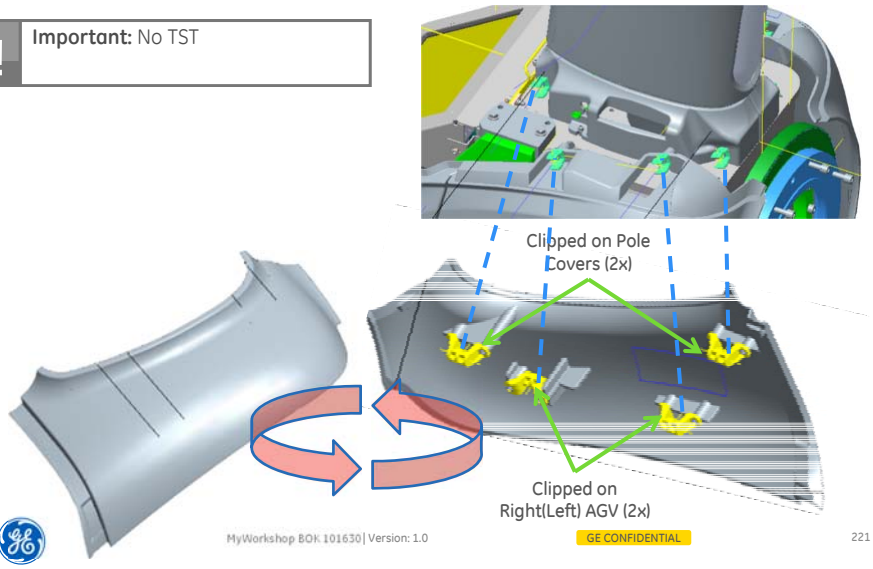
Clipped on Right(Left) AGV (2x)



AGV Covers Set (5416072)

→ Top AGV cover left assy & Top AGV right cover assy

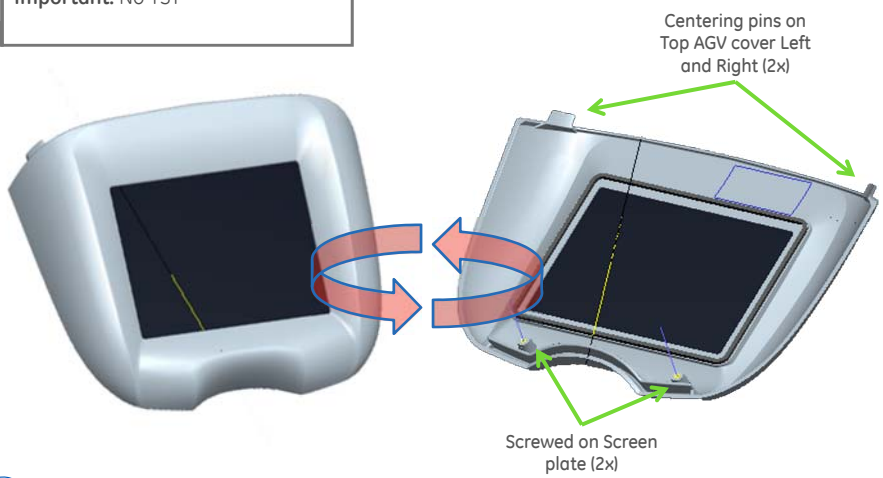
Important: No TST



AGV Covers Set (5416072)

→ Screen cover assy

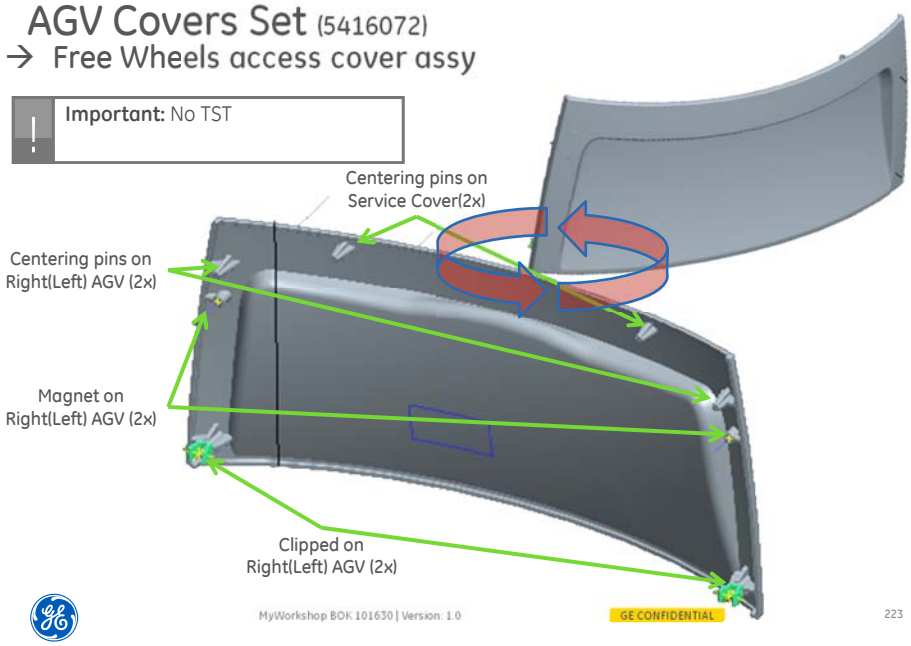
Important: No TST



AGV Covers Set (5416072)

→ Free Wheels access cover assy

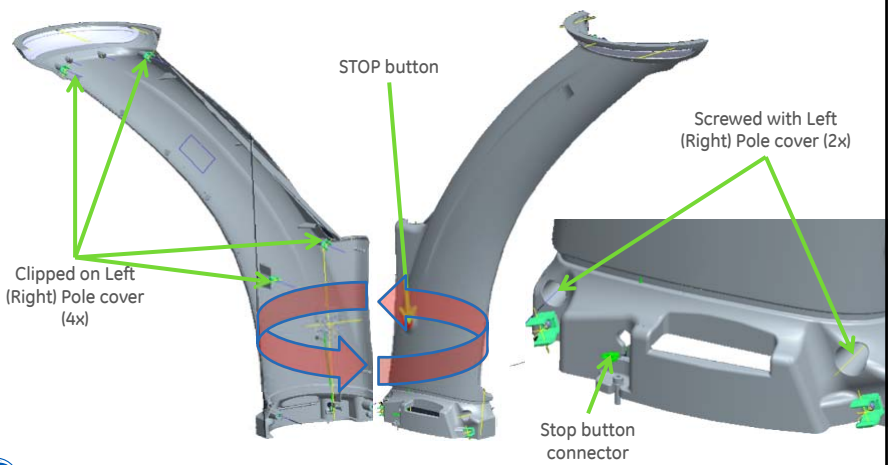
Important: No TST



Pole and Laser Covers (5416120)

→ Right pole covers assy

Important: TST ensure that STOP Button is working before shipment



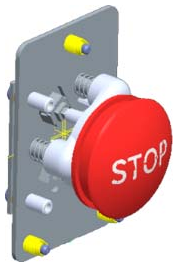
Pole and Laser Covers (5416120)

→ Left pole covers assy

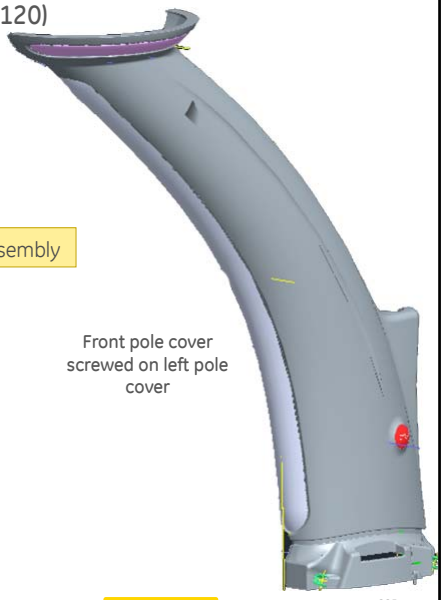
Important: TST ensure that STOP Button is working before shipment

Note: Same fixation system as the Right Pole cover assembly

STOP button screwed on left(right) pole cover



Front pole cover screwed on left pole cover

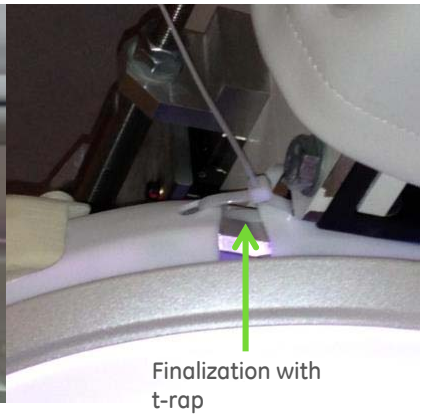


Pole Covers & Light Leakage

DOCS Job Card: *DR0755*

- There is a joint in the LED and Sensor Pole covers to prevent light leakage.

Joint – Final version will be black



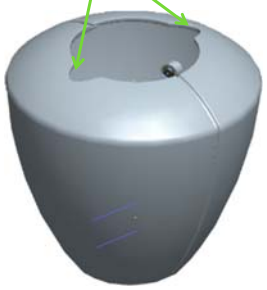
Finalization with t-rap

Pole and Laser Covers (5416120)

→ Laser cover assy

Important: No TST

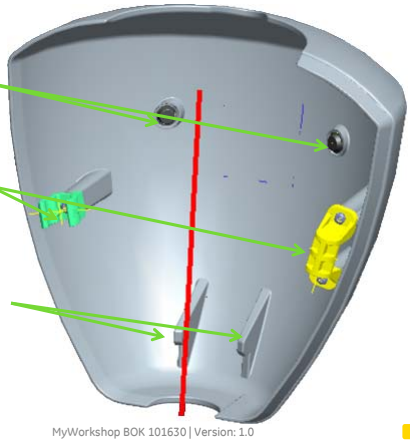
Fingers gap



Docking pins on Laser pole (2x)

Clipped on Right(Left) laser cover (2x)

Docking pins on Laser pole plate (2x)



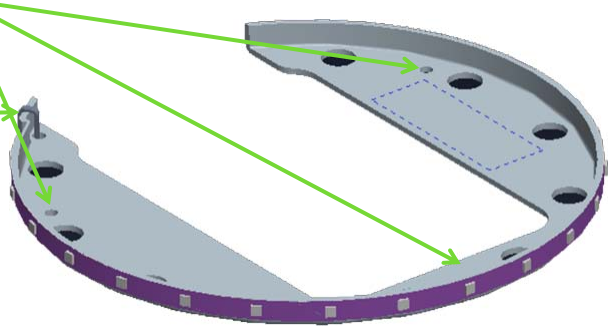
Saucer Technical Covers (5416139)

→ Top pole LED support assy

Important: TST ensures that LED band is working before shipment

Screwed on Flying saucer(3x)

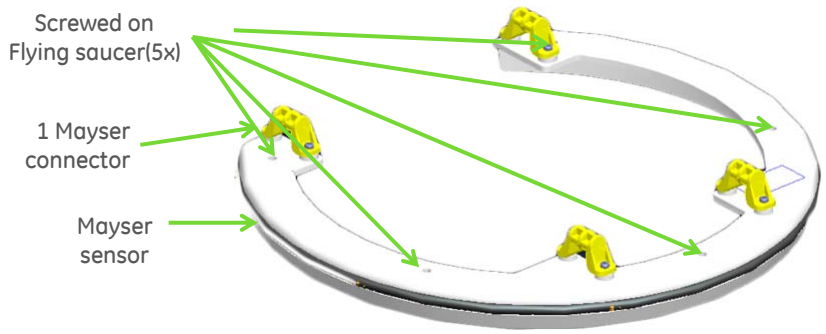
Led connected to Pole



Saucer Technical Covers (5416139)

→ Pole Sensor Support assy

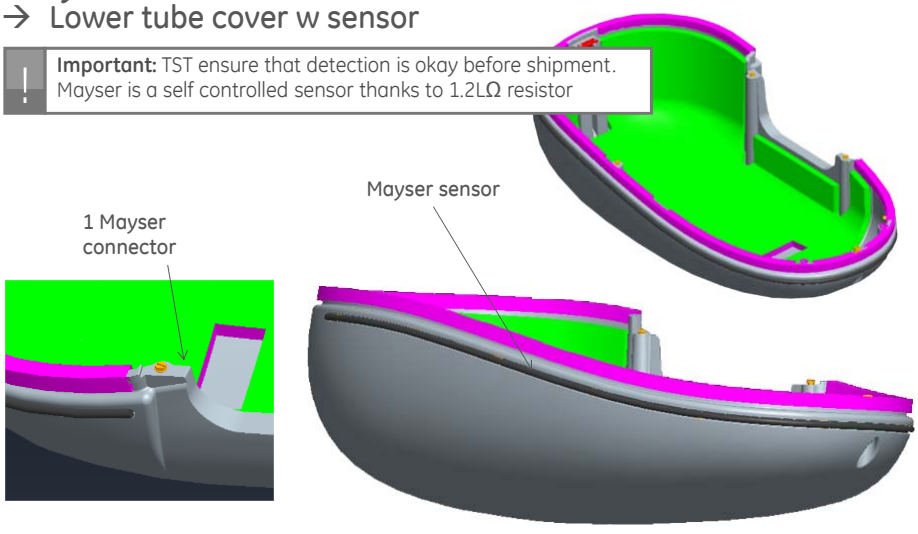
Important: TST ensure that detection is okay before shipment.
Mayser is a self controlled sensor thanks to 1.2LΩ resistor



Ulysses Tube Covers with Sensor (5117634-4)

→ Lower tube cover w sensor

Important: TST ensure that detection is okay before shipment.
Mayser is a self controlled sensor thanks to 1.2LΩ resistor

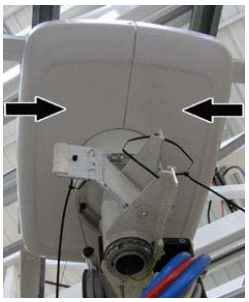


Install CMS Covers

- Install CMS Housing Kit
- Install CMS Saucer Cover
- Install CMS Ceiling Cover
- Install CMS Short Pivot Cover

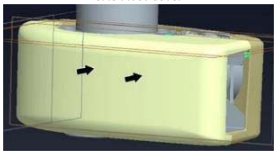
CMS Chain Housing Kit

CMS Saucer Cover



CMS Ceiling Cover

CMS Pivot Cover



Documentation Changes

MisMap Changes/Differences

- Changes
  - Added Cables to the AGV
  - Added High Voltage Rest Junction
  - Added new sources/destinations
  - Added 13M trench/Cable restriction for cable group 5 from CMS to Cabinets

Check Your Understanding

Which installation step(s) are not new or have not been significantly modified?

A. Pre-Requisites
B. Suspension
C. Cable Routing
D. Control Room
E. Covers

Check Your Understanding

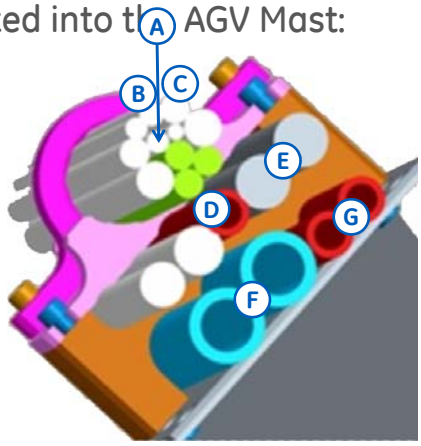
Which of the follow is NOT true regarding the Lecia Laser Tool?

A. The Lecia tool is a Class 3a laser
B. When in use, all windows must be sealed and signs posted outside the door
C. The tool does NOT come with every installation kit, tool deployment is shared per region
D. The Lecia laser is the same type of laser used in the AGV to determine location

Check Your Understanding

Identify the CMS Cables routed into the AGV Mast:

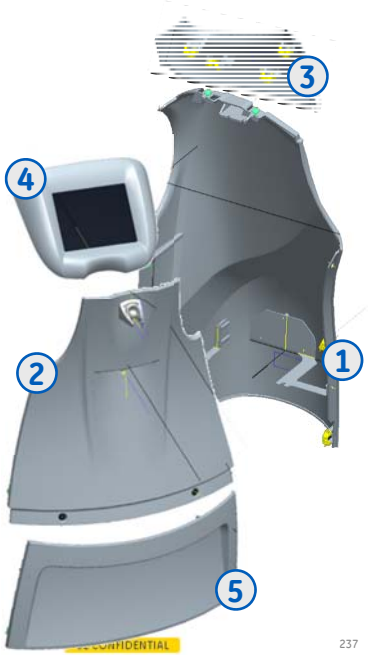
A.
B.
C.
D.
E.
F.
G.



Check Your Understanding

Identify the covers:

1.
2.
3.
4.
5.



Installation Walkthrough

Using CT Revolution As An Example

Version: 1.0

Imagination at work

GE CONFIDENTIAL

Activity

Objectives for this activity

- As a Service Professional identify the differences for installing Revolution CT equipment in compliance with applicable documentation.

20 minutes for this activity

Scenario

You have been contacted to install a brand new Revolution CT system at Springfield General. It will be replacing a Lightspeed system.

Note: When you see a video reference (example below), locate the corresponding video on the Student Materials page.

Video: *Table-Dolly Prep for Scanner Room*

How is Revolution CT Different than CT?

CT Room Sizes

SYSTEM	Recommended Scan Room Size	Minimum Scan Room Size
Revolution CT	N/A	w/ 2 scan room doors 22'-0" x 11'-8.2" (6710mm x 3560mm)
Revolution GSI/HD Discovery CT750 HD	1700 table - 22'-0" x 14'-0" (6710mm x 4270mm) 2000 table - 24'-0" x 14'-0" (7320mm x 4270mm)	1700 table - 20'-0" x 11'-8" (6100mm x 3560mm) 2000 table - 22'-0" x 11'-8" (6710mm x 3560mm)
Revolution EVO Optima CT660	N/A	1700 table - 18'-3" x 10'-11" (5563mm x 3327mm) 2000 table - 20'-5" x 10'-11" (6223mm x 3327mm)
Discovery CT590 Optima CT580	1700 table - 14'-6" x 22'-0" (4420mm x 6706mm) High Capacity table - 14'-6" x 22'-8" (4420mm x 6915mm)	1700 table - 12'-2" x 20'-0" (3708mm x 6096mm) High Capacity table - 12'-2" x 22'-0" (3708mm x 6706mm)
Optima CT540	13'-2" x 20'-8" (4000mm x 6300mm)	12'-10" x 19'-4" (3900mm x 5900mm)
Optima CT520	20'-8" x 13'-2" (6283mm x 4000mm)	18'-8" x 12'-10" (5675mm x 3900mm)
Brightspeed Elite	13'-2" x 20'-8" (4000mm x 6300mm)	12'-10" x 19'-4" (3900mm x 5900mm)
Brivo CT315/325	No Adapter (not in scan room) 15'-5" x 10'-5" (4700mm x 3180mm) Adapter in scan room 15'-5" x 11'-11" (4700mm x 3640mm)	No Adapter (not in scan room) 13'-9" x 8'-2" (4200mm x 2500mm)
Brivo CT385	15'-5" x 11'-11" (4700mm x 3633mm)	13'-4" x 9'-0" (4080mm x 2745mm)

GE CT Differences

Revolution CT

- Redesigned gantry and patient table
- Gantry is delivered in two pieces due to size and weight
- Gantry does not tilt
- Brand new gantry covers
- TIO style console computer
- Systems cabinet

Patient table options:

- Standard 500 lbs
- Heavy 675 lbs

The stationary gantry is placed first and the rotating gantry is attached before the table is placed. Note, the rotating dolly does not come apart. So if the gantry is being delivered through a wall opening that the wall opening remains open until the rotating dolly is removed from the room.

Revolution CT Uncompromised

New imaging chain redesigned to deliver uncompromised image quality and clinical capabilities

- 160mm detector coverage
- 0.28sec rotation speed combined with intelligent motion correction
- Best-in-class 0.23mm spatial resolution and 18.2 lp/cm cardiac resolution
- Next generation iterative reconstruction – ASiR – V
- Future proof platform tested to support 0.2 sec rotation and spectral imaging ready

Revolution CT Gantry Delivery

Delivered in two parts:

- Rotationary Assembly (w/Dollies)
  - W:1682 Kg
  - HxLxW: 1905.0x2878x1018
- Stationary Assembly (w/Dollies)
  - W: 1739 Kg
  - HxLxW: 2049'x2753.0x1149

    * At 10 cm above the floor

Assembled and aligned onsite:

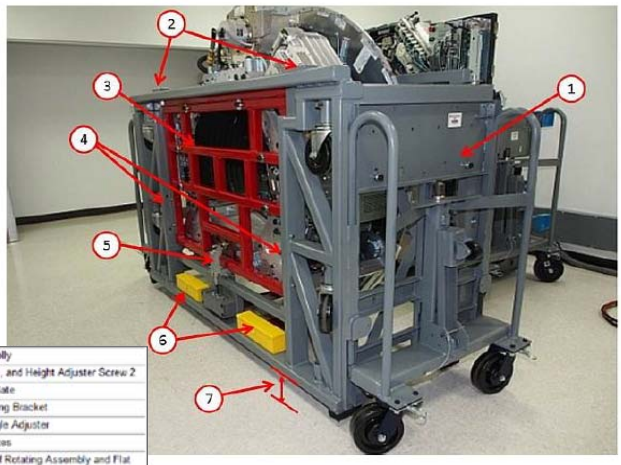
- Mechanical team must be trained
- Longer installation (7-8 days)
  - 4 days mechanical installation

Gantry Delivery – 2 Piece (Rotating & Stationary)

Gantry	Height mm (in.)	Length mm (in.)	Width/Depth mm (in.)	Weight KG/lb
Stationary Assembly (with two transport dollies and upper and lower cross bars.) • Assume the lowest point of its bottom is 101mm (4 in) above the floor. • Adjust the vertical dimensions with transporting dollies to desired height if necessary. • ** Width becomes 925 mm(36.4 in) if cross bars are removed.	2049.0 (80.7)	2753.0 (108.4)	1149.0 (45.2)	1738.8 (3830.0)
Rotating Assembly (with gantry transport cage plus two gantry transport side dollies) **NOTE: Assume the transport cage is raised so the lowest point of its bottom is 97.0 mm (3.8 in) above the floor.**	1905.0 (75.0)	2878.0 (113.3)	1018.0 (40.1)	1681.6 (3704.0)

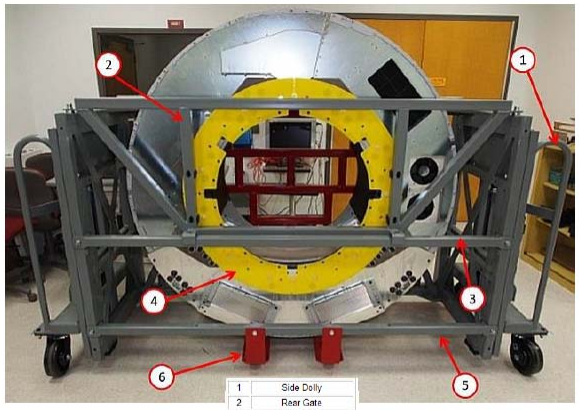
- The physical installation time required to assemble 2 pc is approximately 1.5 hours.
- To review procedure check: http://ctpetsrv/ServDocs/Review/5418652-M/content/1223447.htm#SL12405027-1223447

Gantry Delivery – 2 Piece (Stationary)



1	Side Dolly
2	Jam Nuts, Height Adjuster Screw 1, and Height Adjuster Screw 2
3	Swing Gate
4	L-Shape Shipping Bracket
5	Swing Gate Angle Adjuster
6	Toolboxes
7	Distance Between Front Bottom of Rotating Assembly and Flat Floor

Gantry Delivery – 2 Piece (Rotating)



1	Side Dolly
2	Rear Gate
3	Upper Rear Bar
4	Protective Plastic Covers
5	Lower Rear Bar
6	Skid Plate

Revolution CT
New covers, Table, and Console

1. No dollies to remove covers
   - Covers opening like doors

2. New Table: NG 2000
   - Ground – up
   - Only one table choice

3. Freedom Console
   - Table is optional

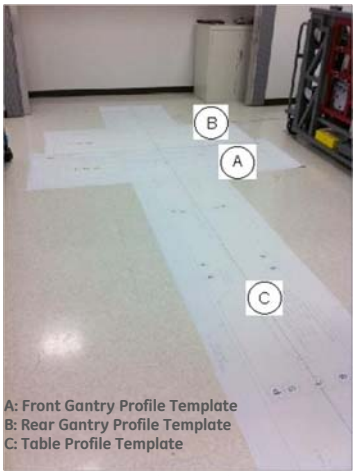
Revolution CT
System Reconstruction Cabinet

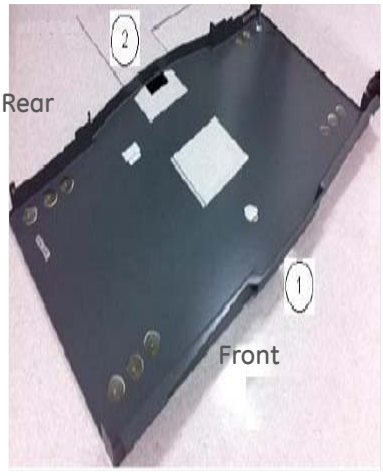
Following are some features of the System Reconstruction Cabinet:

1. New Cabinet
- W: 318 kg
- HxLxW: 1511 x 1221 x 618

2. Can be placed in the exam room or in a separate area.
- Up to 25 m cables to PDU and Gantry.

Setting the Gantry

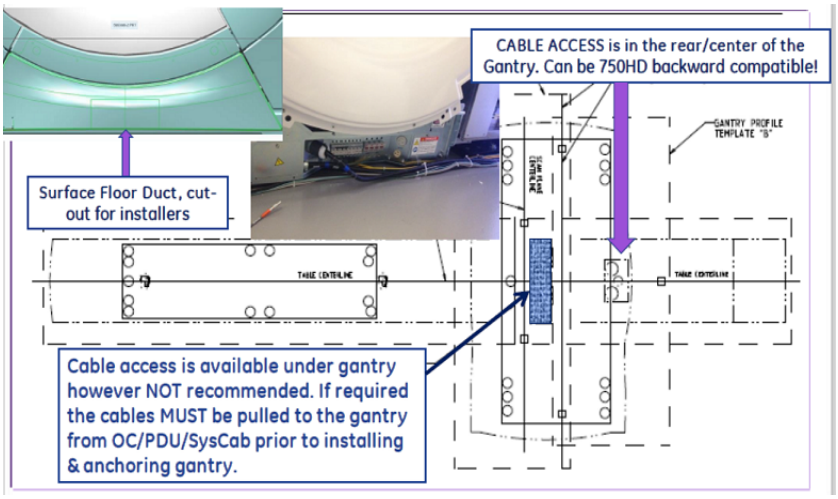




New: Fire Pan, driven by IBC

Floor Template part number 5498509

Gantry Cable Access



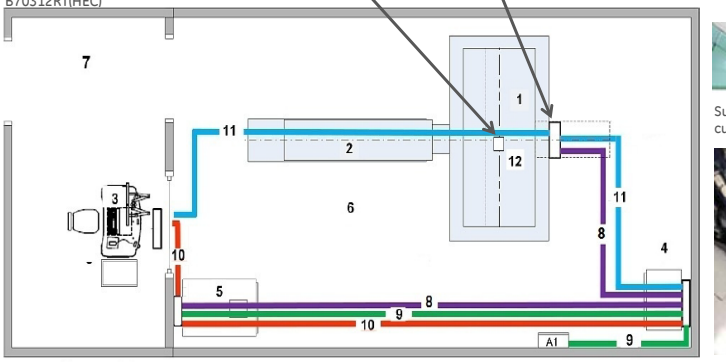
Revolution CT Cabling

Cable access is available under gantry however NOT recommended. If required the cables MUST be pulled to the gantry from OC/PDU/SysCab prior to installing & anchoring gantry

CABLE ACCESS is in the rear/center of the Gantry. Can be 750HD backward compatible!

NOTE: The RPM cable that runs from console to Gantry for injector is now selectable.
5169456(30.5m): 879152AD(YCM), B75022BE(YCM), B7800AS(CTP)
5199717(30.5m): B7716WM(CTP), B70312RT(HEC)

A1	Main Disconnect
1	Gantry
2	Table
3	Scanner Desktop/Computer
4	PDU
5	System Cabinet
6	Scan Room
7	Control Room
8	Accommodate Up to 4 Gigabit Data Cables
9	89.0 mm (3-½ in.) Inside Diameter
10	64.0 mm (2-½ in.) Inside Diameter
11	89.0 mm (3-½ in.) Inside Diameter
12	Alternate Cable Entry Location Under the Gantry (Not Recommended)



Surface Floor Duct, cut-out for installers

Delivery Methodology

Day	Step	Information/Task procedure
1	1	Delivery- Temperature Extremes During Transport
1	2	Delivery- Stored Systems
1	3	Delivery- Damage During Transport Check
1	4	Delivery- Unloading the Truck
1	5	Delivery- (USV Canada Only) Lean Packaging- Wooden Carts on Wheels
1	6	Delivery- Equipment Delivery Route to Scan Suite
1	7	Delivery- Moving Equipment into Scan Suite
1	8	Delivery- Process All Product Locator (PL) Cards
1	9	Delivery- Dolly and Lean Cart Return

Forklifts shall not be used to lift the gantry pieces. However, it is acceptable to place the gantry halves on a flat lifting platform and then use a forklift to raise the platform (with no loads on the gantry halves themselves). Professional riggers are required for this type of delivery.

Moving the gantry assembly or gantry halves over a rough surface or over a threshold may expose the gantry to excessive G-Force loads which may damage the gantry bearing. It is highly recommended that all thresholds be removed from the delivery path.

The estimated floor footprint of all the packages shipped with a standard Revolution CT system takes up an area approximately 45.5 feet (1386.8 cm) long by 8.5 feet (259.1 cm) wide by 7.0 feet (213.4 cm) high

Doorway Clear Opening	Hallway
Minimum Width	
1054.1 mm (41.5 in.)	No hallway or need to turn subsystems to enter the room
Minimum Width Needed to Turn Subsystem**	
1168.4 mm (46.0 in.)	2438.4 mm (96.0 in.)
1219.2 mm (48.0 in.)	2119.3 mm (84.0 in.)
1524.0 mm (60.0 in.)	1802.4 mm (71.0 in.)

Pre-Installation

PMI Call

Get on a conference call with Annie, your PMI. Things to disc

- Dates and Times
- Training Needed
- EHS and Safety
- Equipment Delivery Details
- Tools
- Documentation

De-Installation

De-installation Prep

Work with the PMI to determine needs:

- Speed vs. Delicacy
- Documentation
- Shipping Containers / Equipment
- Tools / De-Installation Kits
- EHS / Safety / PPE

Site Preparation

- Document the room before de-installation – note any damage to the equipment or the room
- Make sure room has been cleaned – watch out for Biohazards
- Verify Equipment Removal Path
- Inspect System Anchor Methods
- Remove Power, LOTO, and allow system components to cool

"Make sure you and your team are wearing proper PPE (such as safety glasses and gloves) and minimize skin exposure. A customer may not have cleaned all areas of a machine (such as beneath the covers)."

De-cabling

Begin by de-cabling:

- Refer to the cabling maps in the system's installation manual
- Do NOT cut any cables – remove cables carefully!
- Note any changes to the cabling as compared to the manual

"Over time, old cables will become brittle. Document the cable state and make sure the PMI is aware."

Mechanical De-Installation

- Drain coolants and dispose as directed
- Verify components are properly positioned for shipment
- Carefully remove components – note any damaged or missing parts
- Make sure parts are properly packaged and ready for shipment

Cleanup / Completion

- Make sure all parts, manuals, and cables have been packaged and ready to be transported
- Clean up the area of parts, tools, and debris

Mechanical Installation

On Site PMI Discussion

On Site, review with the PMI:

- Site Drawings
- Site Readiness Checklist
- Special Site Considerations
- Introduction to the Customer
- Documentation and Template

"When you show up on site, most people who work for the site won't be aware of an installation. Make sure you have both the PMI and Customer's contact information before showing up on site!"

Tools and Supplies

- Make sure you have the tools and supplies needed for installation according to the installation manual
- For Revolution, in addition to the standard installation tools, you will need:
  - Table and Gantry Alignment Kit
  - Leveling Screw (Castle) Wrench
  - Drill Guide

Delivery

The PMI Will coordinate the delivery of the system. They will confirm:

- Delivery Route (probably the same route as de-installation)
- Site Protection (floors, walls, etc.)
- Site Security
- Schedules

"Create a daily update form – let the PMI know what you accomplished today and what the scope is for tomorrow."

Damage During Shipment Check

Inspect the equipment upon arrival:

- Make sure system was not exposed to extreme temperatures (look for condensation)
- Perform visual check – inspect items for damage (look for damaged or open containers)
- Make sure any damage is documented and reported immediately!

Unloading

- A typical Revolution CT system contains 15-20 packages – refer to the packing list and make sure everything is accounted for before accepting delivery
- Packing material must not be removed until ready for installation
- If the equipment is not going to the scan room, it must be stored where it won't be exposed to water, dust, or other contamination

"It is the customer's decision on where equipment is moved to after delivery."

Delivery to Room

- Protect the floor from scratches and marks en route
- Do NOT remove gantry components to reduce dimensions
- Packing materials may be removed before transport if there is no danger of contaminants on the route

Video: *Gantry Stationary Assembly Placement and Leveling*

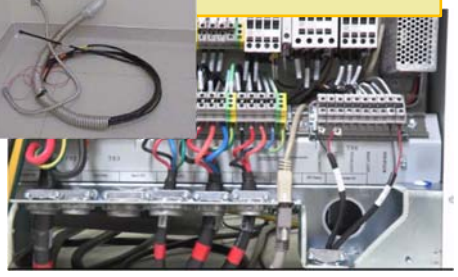
Order of Equipment

- Consult the Installation Manual to determine order of equipment into the room
- If the room is small, make sure there's a storage location for components
- Consider clearance areas needed to move equipment into the room – even if a component is installed later in the process, it may need to be moved in before the gantry is placed

Install PDU

- Make sure to follow all safety instructions
- Position the PDU
- Connect the PDU to site power
- Connect PDU Warning Lights
- Power on the PDU
- Install UPS (where applicable)

"You will work side-by-side with the site electrician on the PDU installation and cabling."



Video: *PDU Installation*

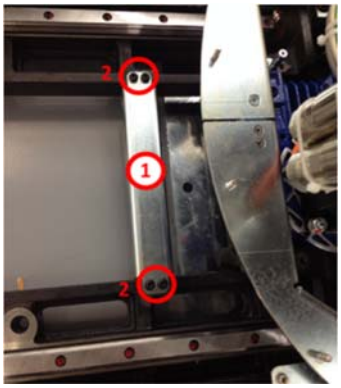
Transfer Table from Shipment to Transport Dolly

- If the table doesn't fit through the corridors, the table can be fitted with the transport dollies
- Transport dollies come affixed to the shipping dollies

Video: *Table-Dolly Prep for Scanner Room*

Prep Table for Installation

- Remove Shipping Brackets
  - You will need a large space – use the scan room before placing the template or the gantry
  - Pay attention to the Notices in the Installation Manual – if not done properly and precisely, damage could occur
- Move the Table Hard Stop bracket
  - Move the base all of the way forward



Video: *Table-Dolly Prep for Scanner Room*

Template

- Place the template on the floor according to the Site Plans
  - Place the Table template first
  - Place the Gantry template and align it to the ISO line on the Table template
    - There are two Gantry templates (A & B) – Align A first, then Align B to A
- Secure the template to the floor
- Use a center punch to mark each of the anchor locations

Video: *Floor Template Layout Floor Prep*

Drill Anchor Holes

- Remove flooring material around anchor holes
- Apply a piece of tape on the drill bit to mark required depth (refer to the install manual for depth)
- Place the Drill Guide Bar and begin drilling
- Use a vacuum to remove dust and residue during drilling

Video: *Table-Dolly Prep for Scanner Room*

Place Footpad

- Remove the left footpad and leveling screw
- Place the footpad over the anchor hole
- Prepare the anchor
- Place the Anchor in the hole
- Set the Anchor
- Remove the leveling screw, but leave the footpad

"Be aware that footpads can sometimes stick to the floor because of the glue used to affix the tile to the floor."

Position the Gantry

- Place the Fire Pan cover over the installed anchors
- Place the footpad, install the thread protector
- Adjust Gantry Leveling Screws
- Raise the Gantry
- Position the Gantry over the anchor bolts
- Lower the Gantry

Video: *Gantry Stationary Assembly Placement and Leveling*

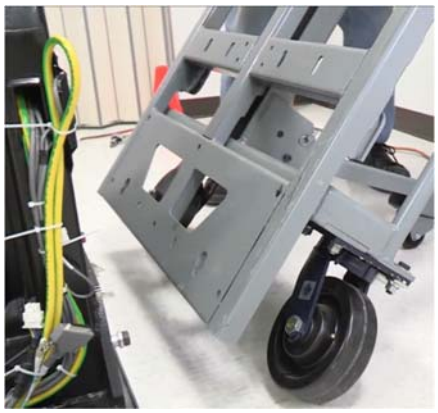
Level the Stationary Assembly

- Use the bubble levels on the right side of the gantry
- Level by adjusting the footpad levelers

Video: *Gantry Stationary Assembly Placement and Leveling*

Remove Dollies

- Adjust dolly wheels and lock into place
- Unscrew top dolly bolt
- Remove dolly shipping bolts
- Move dolly out of the way, prepare for shipping



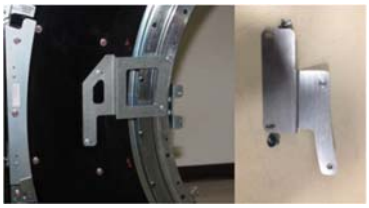
Video: *Gantry Stationary Assembly Placement and Leveling*

Anchoring

- Insert drill guide
- Drill the hole to the depth as marked by the tape
- Use the vacuum to remove dust
- Repeat for each of the anchor locations
- Install Anchors

Assemble Gantry

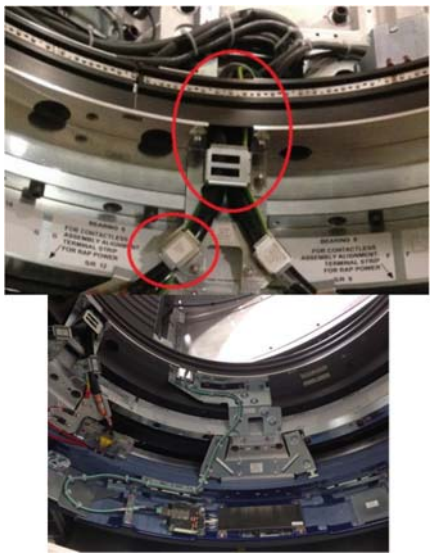
- Remove the shipping bracket
- Move Cable Bundles
- Release Gantry Lock and Rotate the Gantry
- Prepare Rotating Assembly
- Install Rotating Assembly



Video: *Rotating to Stationary Gantry Assembly*

Gantry Cable Installation

- Rotate Gantry and engage gantry locks
- Feed cables through the gantry
- Connect cables to specified terminals
- Apply cable ties



Video: *Rotating to Stationary Gantry Assembly*

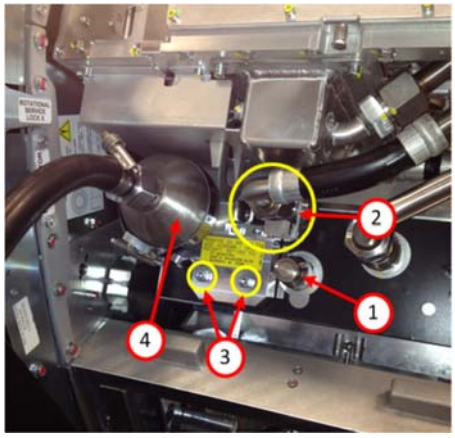
Prepare Dollies for Shipment

- Bolt the two stationary dollies together
- Bolt the rotation dollies together
- Gather all tools that shipped with the dollies and place them with the front dolly for shipping

Video: *Rotating to Stationary Gantry Assembly*

Remove Ship-Store Accumulator

- Remove ship-sore accumulator
- Inspect both halves of the detector coolant
- Connect detector coolant line
- Clean any coolant
- Remove LOTO and perform rotation check
- Check for leaks

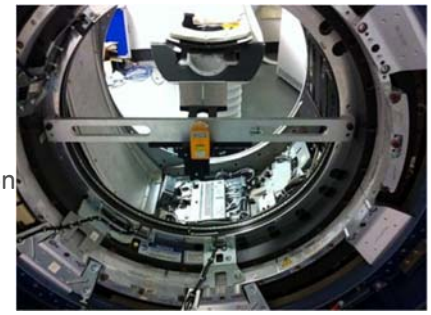


Install Home Flag

- Rotate gantry until lock is engaged
- Install Home Flag
- Torque
- Adjust Home Flag

Install Table Alignment Fixture

- Mount alignment fixture to rotating assembly
- Turn on Laser and rotate gantry until laser is projecting
- Mark lateral adjustment bracket location
- Move table into place and lower
- Remove shipping bolts



Video: *Table Gantry Alignment*

Install Table Gauge Block

- Assemble Gauge block fixture and place between gantry and table
- Move the table up against the block fixture
- Lower, then remove, transport dollies

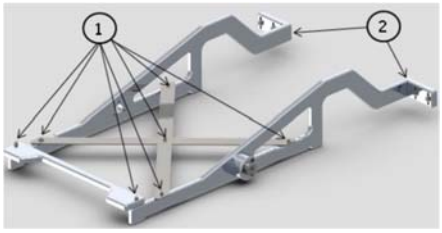
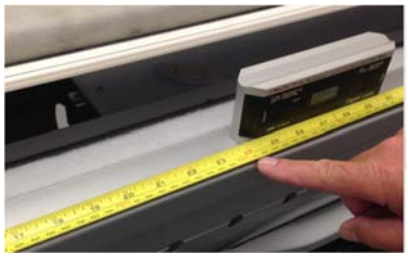


Table Level

- Perform Superset Calibration
- Level Front table base in three point configuration
- Adjust table top extrusion angle
- Check and adjust Lateral Displacement
- Adjust Table height for initial cradle-to-ISO Alignment
- Install Table Lateral Adjustment brackets
- Check cradle travel, then place into safe state



Video: *Table Gantry Alignment*

Cabling

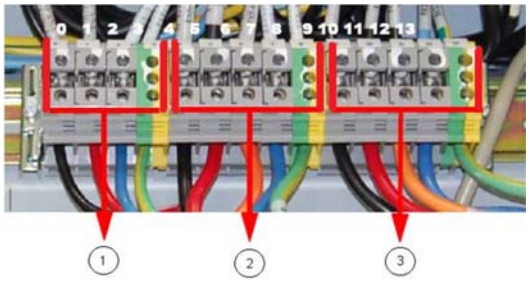
Layout / Pull Cables

- Lay out cables into pull groups:
  - Group 1 – PDU
  - Group 2 – System Cabinet
  - Group 3 – Scanner Desktop

Video: *Subsystem Installation and Cable Connections*

Connect PDU Cables

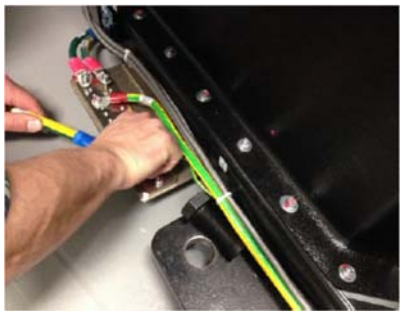
- Remove PDU Covers
- Connect Mains Cable
- Connect HVDC Cable
- Connect Gantry, Console, and System Cabinet Cables
- Verify Warning Light and Scan Room Door Switch Connections



Video: *PDU Installation*

Connect Gantry Cables

- Connect Power and Ground cables
- Connect Data Cables



Video: *Subsystem Installation and Cable Connections*

Connect System Cabinet Cables

- Connect System Cabinet Power and Ground cables
- Connect System Cabinet Data cables

Video: *System Cabinet*

Scanner Desktop

Setup Desktop

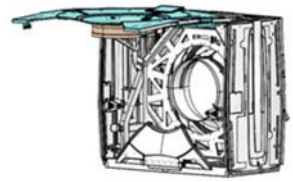
- Set up Table (if required)
- Set up PC, Monitor, Keyboard, Mouse and any other accessories
- Connect power cables to the Scanner Desktop
- Connect data cables to the scanner desktop
- Connect accessory cables to the scanner desktop

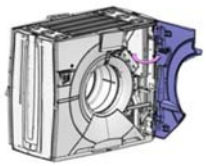
Video: *Scanner Desktop Installation*

Finalization

Install Gantry Covers

- Install Gantry covers:
  - Top Hinged Gantry cover
  - Side Hinged Gantry cover

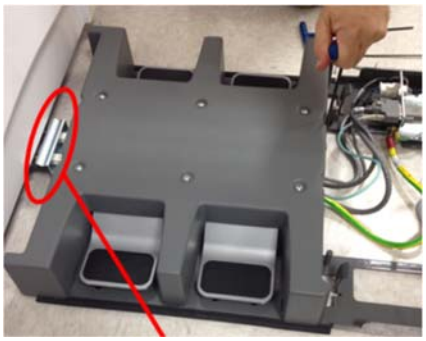




Video: *Gantry Cover Installation*

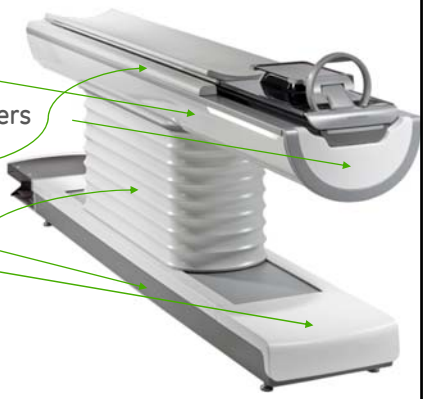
Install Foot Pedal

- Prepare Table Base
- Prepare Foot Pedal
- Install Foot Pedal base frame
- Route and Connect Cables
- Reassemble Foot Pedal



Install Table Covers

- Prepare for table cover installation
- Install upper side extrusion covers
- Install upper extrusion front and rear covers
- Install upper extrusion bumper pads
- Install lower base covers
- Install electronics cage cover
- Install elevation bellows



Mechanical Completion Checklist (1 of 4)

- System Level
  - FE Service cabinet moved to the location shown on the site print.
  - All gantry covers installed and aligned.
  - Table is aligned vertically and table base has been leveled. Dollies removed.
  - Table elevation drive motor brake release screws are above the motor back housing with green lines showing to allow Normal Operation of the motor brake.
  - Gantry anchors are installed and torqued. If GE anchor method as defined in the install manual was not used, ensure alternate anchoring method was completed as defined by Customer's Structural Engineer or firm who defined the alternate anchoring method.
  - All packing materials, trash and boxes removed from the Scan Suite. (US and Canada Only) all packing materials and empty boxes returned to the Lean Carts.

Mechanical Completion Checklist (2 of 4)

- Optional And Regional
  - Seismic mounting installed.
- Site Clean Up
  - All customer items placed on a cabinet or on a counter and labeled customer material.
  - All system service tools placed in the GE service cabinet.
  - System software and options have been placed on the table near the Scanner Desktop LCD monitors.
  - All system publications (Purple box) are placed either in the storage cabinet or near the Scanner Desktop LCD monitors.

Mechanical Completion Checklist (3 of 4)

- System Level
  - System cleaned and there are no blemishes on work surfaces or cabinets.
- Dolly & Cart Return
  - Arrangements made to pick-up and return all dollies.
  - (US and Canada Only) Arrangements made to pick-up and return all Lean Carts.

Mechanical Completion Checklist (4 of 4)

- Paperwork
  - Mechanical installation section of the GE Form e4879 completed.
  - Bearing Bolts Installation and Torque Checklist section of the GE Form e4879 completed.
  - Room information recorded on the GE Form e4879.
  - GE Healthcare personnel notified that the mechanical installation is completed.
  - All installation issues or items not completed in this checklist have been addressed and or documented so GE FE can follow-up as needed.

Handover

- Review checklist with PMI / Lead FE
- Check for short ships
- Complete Paperwork
- Review cable connections

"Make sure the PMI has all the materials – including any pictures or other documentation you made of the site or equipment."

Scenarios

Version: 1.0

Imagination at work

GE CONFIDENTIAL

Activity

Objectives for this activity

- As a Service Professional consider the scenarios listed in this section and how you would respond.

20 minutes for this activity

Scenario 1

You have arrived, with your team, on site at Brookhaven hospital, ready to start the installation. The first step is meeting with the PMI and review the room layout and site plans. When you walk into the room, the PMI is there with the customer.

While reviewing, you have some concerns:

- Where are the floor trunks (trenches)? Why have you prepared underfloor conduits? It is nearly impossible to install the systems and do the cabling using underfloor conduits!
- Why did you install the flooring vinyl too early? They will most probably be scratched and it would have been best if they were left to be done after installation is complete! (Global site readiness checklist indicated flooring should be completed prior to delivery/installation)
- The system comes with IDI network and he doesn't see any network socket prepared in the room for networking connection!

The customer brings up the point about the network socket and asks for your opinion. How would you handle this? (Discussion)

Scenario 1 (Resolution)

Points to consider:

- Remember, don't do anything that would make GE look bad in front of the customer – bring up your concerns with the PMI at a later point during a private conversation. Be open and honest with the PMI in a 1:1 conversation.
- If the customer asks your opinion directly, don't disagree with the PMI in front of the customer. Respond with a statement that you will have to have a follow-up conversation with the PMI.

Scenario 2

You are on a call with the PMI and others on the project team. The PMI is discussing the De-installation and has only scheduled 1 day for de-install. The system is fairly new and just coming off lease and going straight to another customer. Even though you've never de-installed this particular system model, similar systems in that modality have previously taken 2 days to un-install. The PMI is pushing for agreement to the proposed schedule.

How would you handle this situation?

Scenario 2 (Resolution)

Points to Consider:

- Do not agree to a timeline you don't believe is accurate.
- Attempt to get the PMI to discuss the timeline in a 1:1 conversation.
  - If they refuse and continue to push, tell them you would need to review the De-installation procedure for this product system and get back to them with an estimate.
- In a 1:1 call..
  - Ask the PMI for the Un-installation procedure – the un-installation may be easier/quicker than other systems.
  - State your concern that rushing the installation may incur damage to the system, which may be a problem if it's going to another customer.
- If the PMI continues to insist and you don't believe it can be safely done…
  - Escalate the issue to your manager.
  - Make sure there's a written agreement that you won't be held responsible for damage to the system.

Scenario 3

You are on site, doing an inventory of the parts and you find that a critical laser alignment tool is missing. You inform the PMI and they are unable to get the part to the site until 5 days from now. You're scheduled to be on your way to another installation at that time.

How would you handle this situation?

Scenario 3 (Resolution)

Points to Consider:

- Discuss the timing issue with the PMI – if another tool cannot be located, or it causes further delay, you will not be on time for your next installation.
- This may require negotiation with your manager and the PMI (who may have to negotiate with the customer).
- Possible Outcomes:
  - Delaying the current installation and moving up the next installation.
  - Swapping this installation with another team or swapping the next installation with another team.

Scenario 4

You're about to start the installation, but you notice quite a bit of damage to the room:

- Scratches in the new paint on the door
- Deep grooves on the floor
- A crack in the wall
- Dust and dirt all around the room
- Etc.

How would you handle this?

Scenario 4 (Resolution)

Points to Consider:

- Photograph everything you notice in the room.
- Make sure the PMI is aware of the damage.
- If there are any hazardous materials, make sure it is cleaned before you start.

Scenario 5

You are working on the mechanical installation of the XR656. While you are working on the railing installation, the customer comes into the room wanting to talk about a modification to the placement of the Wall Stand. The customer thinks it's a minor modification and doesn't want to go through a lot of red tape trying to get the layout modified.

How would you respond to this situation?

Scenario 5 (Resolution)

Points to Consider:

- You should never make changes to the layout with out approval from the PMI.
- Inform the customer that you will discuss it with the PMI as soon as possible to get it resolved quickly.
- Discuss the situation with the PMI.
- Make sure the PMI knows they have to respond to the customer request.
- If the PMI declines the modification, make sure you know why, in case the customer asks.
- If the customer asks what you think, tell the customer that you have to abide by the GE Installation Guidelines.

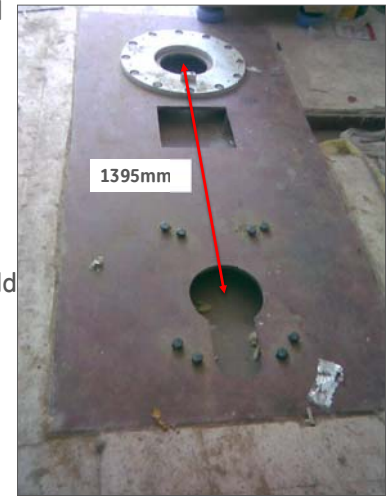
Scenario 6

To use Innova 540 system for angio procedures, the system baseplate is installed on the site, embedded in the floor.

During the site readiness visit, you measure the distance between the isocenter and table–1395mm.

According to your drawing, it should be 1278mm. However, the contractor used an old drawing made for an IGS520, used in cardio config.

What do you think ?



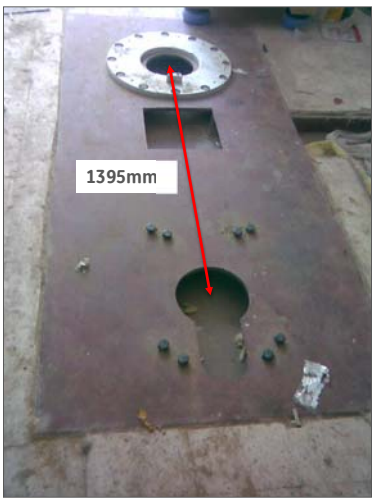
Scenario 6 (Resolution)

POSSIBLE SOLUTIONS:

Replace the base plate
(It takes too much time and will create a lot of trouble and dirt)

SOLUTION IMPLEMENTED IN THIS CASE:

Open new holes for the table in the existing baseplate



Scenario 7

During the site readiness visit, for a vascular system, you notice that the light frame goes 1cm below the ceiling surface.

What do you think ?

Scenario 7 (Resolution)

SOLUTION IMPLEMENTED:

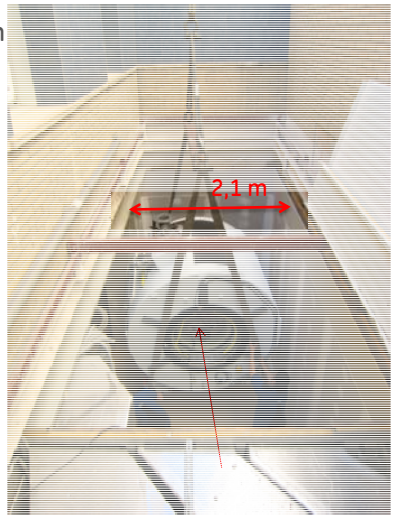
Remove and move the lights to a place they do not interfere with the system or replace by some other align to the ceiling.

Scenario 8

During one of your site visits to the MR360 project, the customer tells you that the 2.4 m width of delivery ceiling hole, which they had committed for the delivery, has been converted into 2.1 m. Due to rain alerts, they had to close the ceiling before than expected. They do not want to remove it as this is a final solution. In addition, the removal process will be expensive and time-consuming.

You are asked for a solution as they have another MR360 in the hospital and seen that the magnet is smaller than 2 m. hence they do not believe that you need 2.4 m delivery ceiling hole.

What do you think?



Scenario 8 (Resolution)

POSSIBLE SOLUTIONS:
Postpone the delivery and enforce customer to give you 2.4 m (It would delay the delivery and would make the customer angry).

SOLUTION:

Cut the Lifting beams. It is also needed to rotate 90º the magnet once past the obstacle since the top lifting beam could be also longer than 2.1 m

Scenario 9

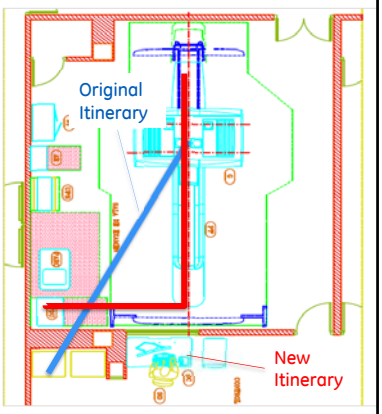
You are leading the installation of the PETCT710 system. You agreed upon all the details with the customer, and they proceed to do all the CW, as agreed.

During one site visit (without you), the architecture did not agree upon the aesthetic of the conduits as they were not parallel to the building structure. He ordered to change them.

While installing the system, you realize that the cables are now shorter by 20-30 cm.

The end of the quarter is approaching.

What would you do?



Scenario 9 (Resolution)

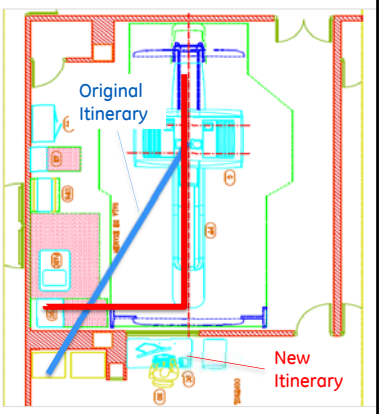
POSSIBLE SOLUTIONS:

Order new cables and wait (1-2 weeks Install stopped, you miss the Quarter deadline and customer apps date)

Enforce customer to redo the conduits (not allowed by the architect, customer not happy and pointing to GE since you discovered too late)

SOLUTION IMPLEMENTED:

Order new cables (long set). It was done on another system in backlog (so at no cost). Install the system temporarily with cables on the floor (EHS approval requested) and do all calibrations. Once the long cables arrive replace them. With this solution the install was not impacted and you solved the issue.



Scenario 10

Mechanical installers install a Brivo DRf.

FEs are not able to calibrate the system correctly. The X-Ray alignment is not correct per the bucky.

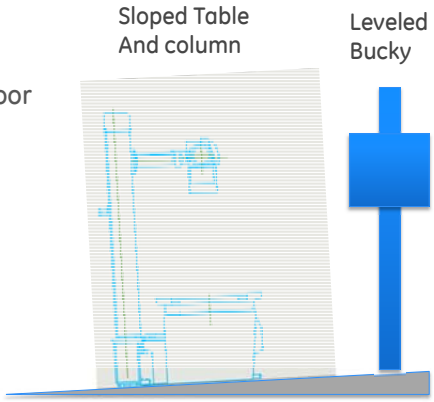
After investigation, they discover the floor has some slope. They call you to find a solution to their problem.

Problems appeared:

No calibration possible

Difficulty to get the generator out (very heavy)

What would you do?



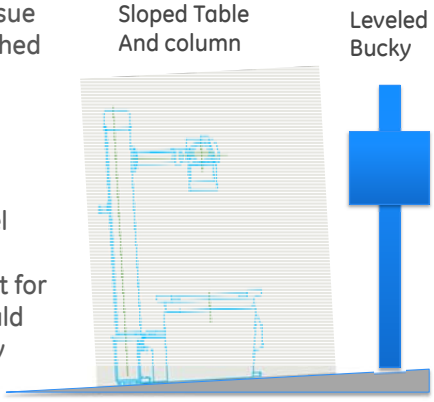
Scenario 10 (Resolution)

POSSIBLE SOLUTION:

De-install the system and enforce customer to solve the floor levelness issue (too long, expensive and dirty on a finished site)

SOLUTION:

Shim the table to level it. Install an steel plate (at customer expense), below the table to allow generator to be taken out for service purposes. Other wise there would be an EHS since the generator was very hard to take out.



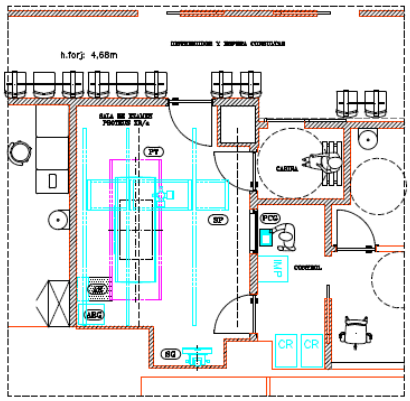
Scenario 11

Mechanical installers are not able to install the system as it appeared in their drawings.

There was a mistake in the GE drawings that could not be discovered until the delivery.

The table that was drawn, rotated 180 degrees.

The end of the quarter is approaching.

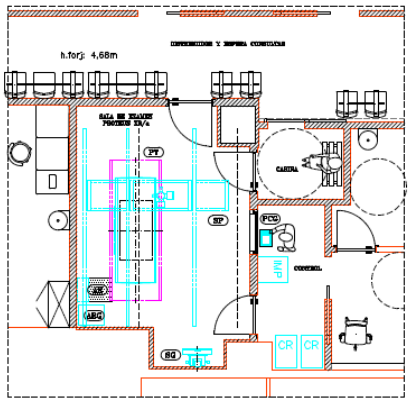


Scenario 11 (Resolution)

SOLUTIONS:

In small rooms, the only solution would be to remake the last part of the floor conduit under the table (already some situations lived in the past).

In this case, the room was big enough, the 50 cm deviation from the orginal position on the drawings could fit on the room and customer accepted this deviation. We were lucky!



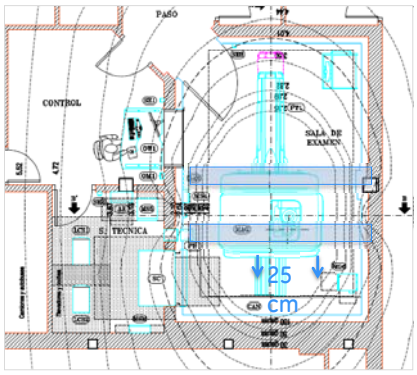
Scenario 12

The customer's architect, on the day of delivery of magnet, realizes there was a mistake in his drawings and that the structural reinforcement is located 30 cm back.

He tells the customer that he has no choice and has to position the magnet 30 cm backwards.

As a result, the rear pedestal will almost touch the wall and the cable tray will hit in it when enlarged.

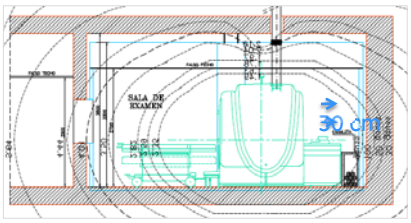
What do you think?



Scenario 12 (Resolution)

POSSIBLE SOLUTIONS:

No option to move the wall. It is a thick one. Magnet already onsite.



SOLUTION:

Open a hole on the wall, RF cage and magnetic shielding, to install a small appenidz to allow the cable to not hit the wall.

Concession request and Service agreement would be strictly required in a situation like this. Service is really affected since everymie rear pedestal needs to be serviced closets should be removed.

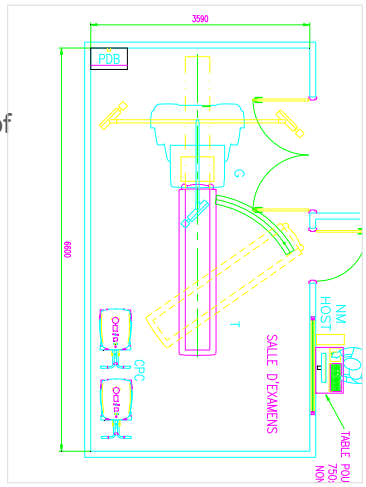
Scenario 13

You are installing the NM system.

Mechanical installers realize that the floor holes to pass the cables do not the position of the pivot point of the patient table.

According to the drawings, the position appears to be correct.

What happened and what solution could you offer?

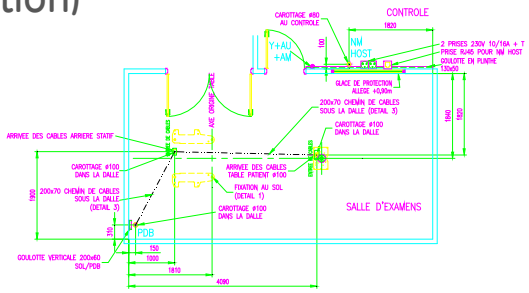


Scenario 13 (Resolution)

SOLUTION:

Open a new hole for the table, no choice.

Lesson learnt. Always reference all dimensions to a single corner of the room. Dimensions from opposite walls could lead to mistakes if room is not perfect (it happens most of the times).



Scenario 14

The customer is responsible to make the baseplate for the system.

He takes GE drawings and builds the baseplate accordingly. Everything looks good so far.

When you install the system, you realize that the gantry and table holes do not have the thread (they are smooth holes).

What would you do?

Scenario 14 (Resolution)

POSSIBLE SOLUTIONS:

Replace the base plate (ok, if discovered early in the site prep)

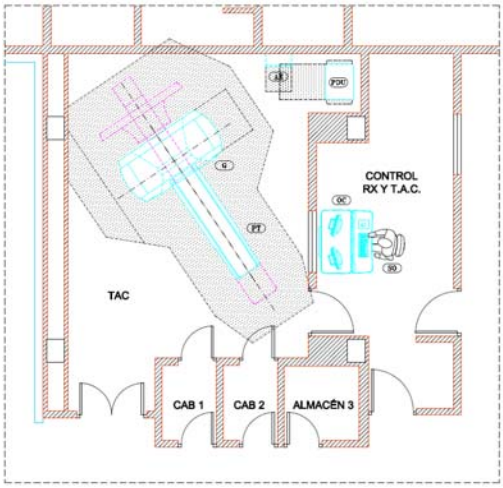
If holes are smaller than required diameter with thread -> Very easy solution by making th thread.

If holes are bigger, some nuts could be embedded and welded into the plate (It can be done in 1-2 days and a simpler way than replacing the baseplate). Liability to be asssumed by customer/contractor.

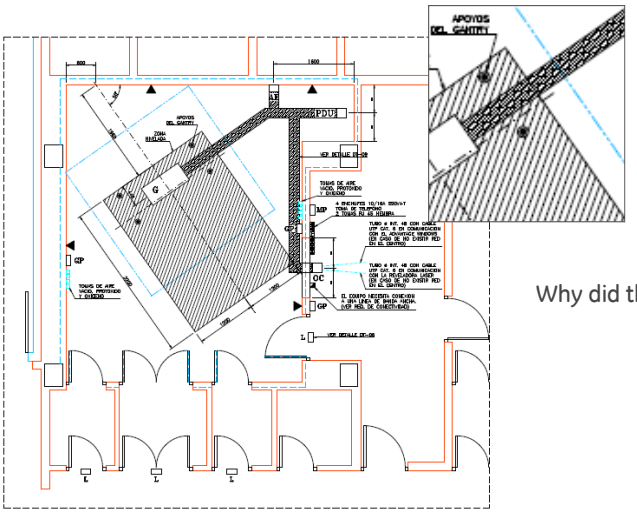
Scenario 15

During the mechanical installation of the CT scanner, you position the system, and one of the gantry pads is finishing on top of the floor conduit.

Why could this happen? Look at the drawings in the next slide.

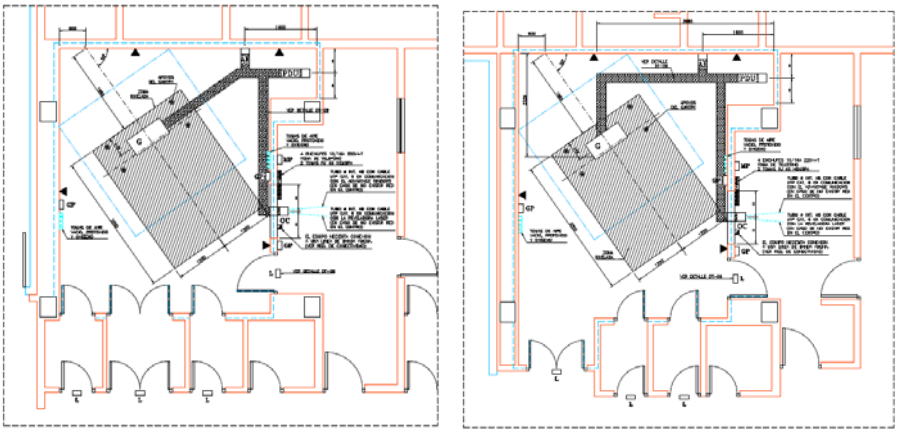


Scenario 15 - Drawings



Why did this happen?

Scenario 15 - Drawings



Drawings Recommendation - Enter the conduit through the back of the Gantry

Scenario 15 (Resolution)

SITUATION CLARIFICATION:

It is easy for construction companies to make mistakes when floor conduits are given on angles, also sometimes the make it bigger.

POSSIBLE SOLUTION:

Modify the floor conduit route (too time-consuming and dirty once system is onsite)

Modify the layout with customer/service agreement (concession request could apply).

Avoid passing floor conduits through the lateral of the gantries. It is better to make them only with 90° or 45° angles and route them through the back of the gantry, so you have much more flexibility to position the gantry.

If some difficult route for floor conduits is present, check very well during site visits

Situation ☠ – Floor Surprise in NMCT670

You are leading the installation of the NMCT670 system. You know that the floor requirements are very important and you insist the customer that at least 17 cm of concrete is needed, and you need a proof.

They conduct a floor test and send you an email claiming that they have 25 cm of concrete and a picture of the tests performed.

While installing the system, the mechanical installer team discovers sand in the floor.

What would you do?

Situation ☠ (Resolution)

SOLUTION:

De-install the system and remake the floor with the system already delivered (Too painful, time consuming and expensive!).

17 cm of concrete should be present and always in the layer directly in contact with the system. Floor must be level. Otherwise, system cannot be installed.