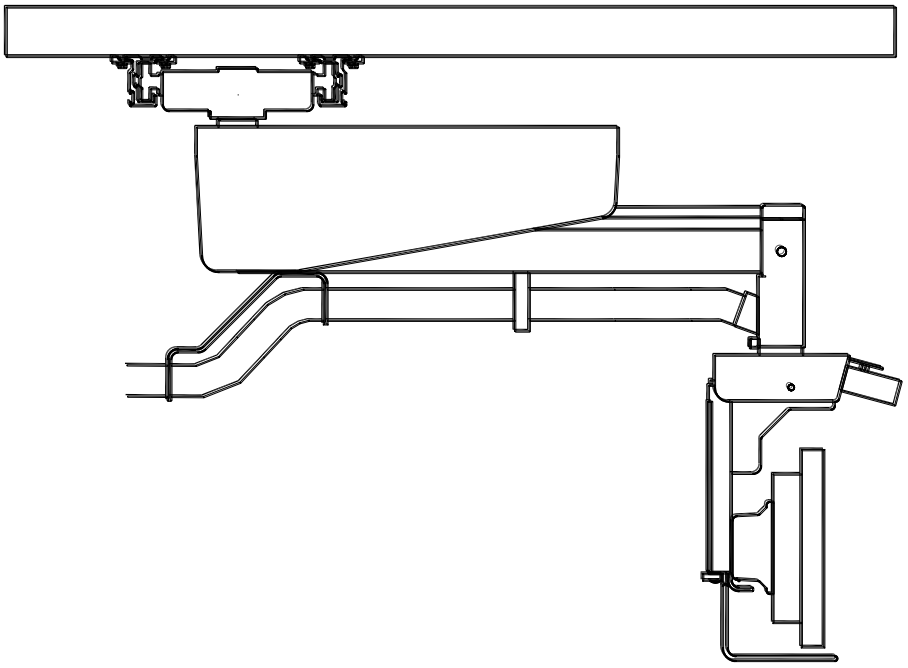
Manufacturer of Quality Medical Products

Image Diagnostics, Inc.

IDI 1000F Series Monitor Suspension System
Model IDI 1000F-1 thru 1000F-6



With Adapter to CAS 8000 Rails
Installation and Maintenance Guide

The text of this manual was originally written, approved and published by the manufacturer in English.

The information in this manual is subject to change without notice.

CONTENTS

A. INTRODUCTION

The IDI 1000F Flat Panel Suspension System transports monitors used in medical imaging procedures. The system features a counterbalanced arm with vertical travel and internal cable routing. A dual-axis flat panel monitor mount permits independent panel mounting and positioning. This mobile package includes clip-mounted ceiling rails.

PRODUCT DATA

Package Includes:

Mobile gantry and counterbalanced swing arm with 42" sweep radius, 25" vertical travel and $\pm 180^{o}$ rotation

Anodized aluminum ceiling rails with *Easymount* clip system

Flat panel array with $\pm 180^{o}$ rotation

Array includes display panel mounts with $\pm 10^{o}$ tilt

Complete installation package; meter box mounts, all mounting hardware and cable management components; brackets, covers and 25' "flexhaust" hose

OPERATION

The monitors are moved along the overhead rails, positioned vertically, and rotated manually using the handle.

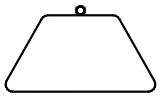
B. SYMBOLS

Attention, consult accompanying documents.
Failure to follow these instructions can cause accidents resulting in serious injury to patient, user, and damage to equipment.

Caution, risk of electrical shock

Protective Ground
This is the common tie point between the AC monitor cord grounds, frame ground, and service (main) ground.

Alternating Current



Weight Limit

Recycle
Some of the materials can be recycled rather than discarded.

C. GENERAL SAFETY

Attention, consult accompanying documents.
Failure to follow these instructions can cause accidents resulting in serious injury to patient, user, and damage to equipment.

Only qualified persons may install, operate or maintain this equipment.

Installation of this unit must adhere to applicable codes and authorities having any jurisdiction over this installation. The customer's architect or engineer is responsible for assuring that the structural support plans comply with all applicable codes and regulations.

The unit should be used only in rooms that comply with state, federal and local recommendations concerning electrical safety when used in medical installations. All electrical connections shall be done by licensed/approved electrician per national electric codes.

CAUTION:

- Always switch off mains before performing nonelectrical tests or maintenance.
- Many positions exist where equipment or patient collision may occur. Care must be exercised during equipment positioning to avoid a patient or equipment collision.

Changes and additions to the equipment may be performed only by an authorized representative. These changes must conform to regulations and accepted standards of good practice. To prevent defeat of the built-in safety mechanisms, changes must be submitted in writing to the manufacturer for review.

Use only parts specified by Image Diagnostics, Inc. when repairing or servicing this equipment.

This equipment is intended to only be used with Image Diagnostics, Inc. rails.

D. SAFETY HAZARDS

Installers and Operators using this equipment should understand the safety issues and operating instructions provided.

Comments and questions regarding safety should be addressed to:

Customer Support
Image Diagnostics, Inc.
310 AUTHORITY DRIVE
FITCHBURG, MA 01420
USA

Or call IDI at (978)829-0009 or send fax to (978)829-0027
Or call IDI Toll Free at (877)304-5434

SAFETY HAZARDS ALERTS

Alert	Circumstances for use
DANGER	Indicates an ***imminently*** hazardous situation which, if not avoided, will result in death or serious injury.
WARNING	Indicates a ***potentially*** hazardous situation which, if not avoided, could result in death or serious injury.
CAUTION	Indicates a ***potentially*** hazardous situation which, if not avoided, may result in minor or moderate injury or equipment damage.

E. INSTALLATION

UNPACK

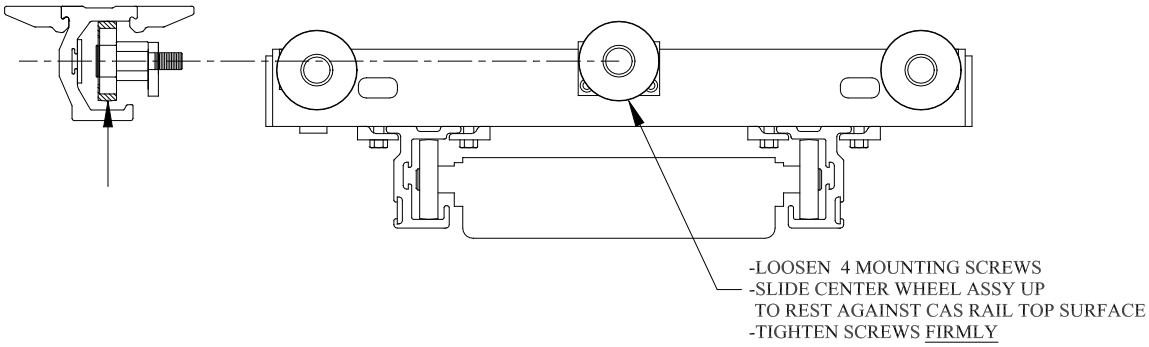
No special handling is required for unpacking this equipment at the site.
Conventional shipping materials are used.
Recycle or disposal of shipping material per local regulations

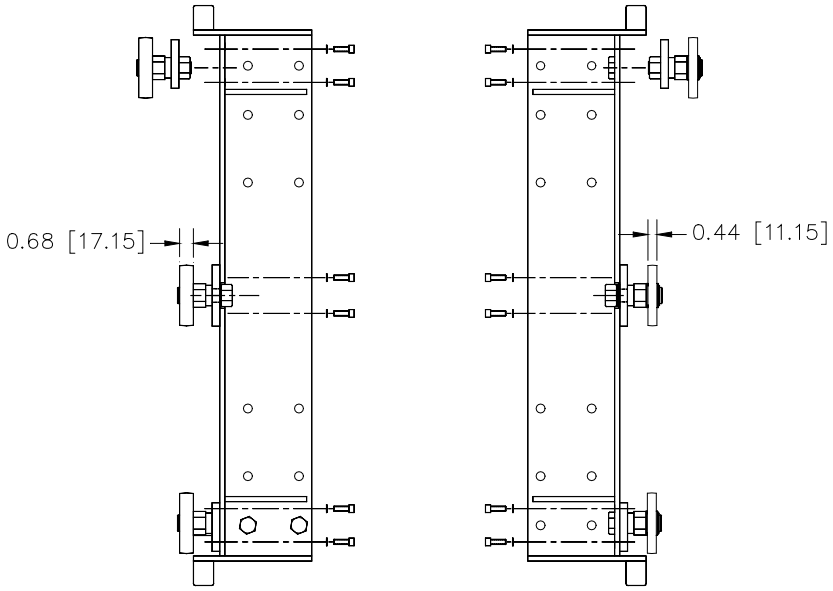
BUILD TRANSVERSE BRIDGE *(Refer to Adapter Assembly Drawing)*

1. Please note the X/Y ceiling carriage assembly consists of two rail adapter subassemblies, two unistrut braces and two transverse rails. It is important to note the two adapters are not identical; the "guide" adapter can be identified by the thicker wheels and greater wheel offset, (left adapter in drawing below, note 2). The guide adapter will be fitted with a pair of guide wheel bars later on this assembly.

2. The bridge assembly can be accomplished in position on the longitudinal rails on the ceiling (recommended) or on the floor and then end loaded into the longitudinal rails with a Hi-Jack if there is sufficient room between longitudinal rail ends and any walls or obstructions. To assemble the bridge structure in place you must first slide each adapter subassemblies onto the left and right longitudinal rails. If you have sufficient space between the longitudinal rails and the wall you can simply end load each adapter. If you do not have adequate space at the end of the longitudinal rails, you may need to remove the center wheel subassembly so that you can install the adapters by "rolling" them in from the inside of the "C" section. See figure below.

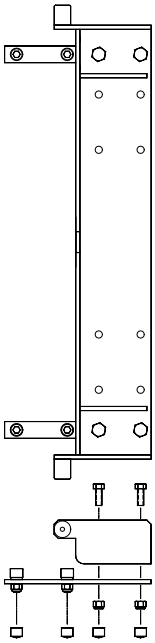
3. To side load adapters into longitudinal rails, you must loosen (preferably) or remove the wheel mounts (items 6 & 7) from the rail adapter carriages (item 2) by removing the mounting hardware (items 21, 22 & 31). If you have removed the two center wheel mount subassemblies position them on the rails as you rotate each adapter into place and align the wheel stud and mounting plate to the adapter. Once the adapters have been loaded into the rails tighten or reinstall hardware (with **LOCTITE #242** or equivalent) **while applying upward pressure on the wheel to maintain contact with the top of the longitudinal rails.**





GUIDE (left view) and STANDARD RAIL ADAPTER SUBASSEMBLIES

4. Next, mount the two guide bars (item 27) to the guide rail adapter carriage subassembly using screws (item 33) and locknuts (item 16) as shown below. Slip white covers (item 36) over the total of eight locknuts associated with the two guide bars.

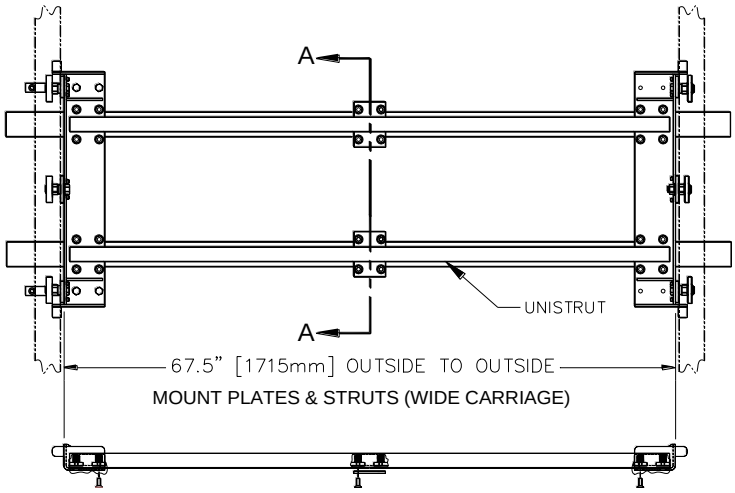


MOUNT GUIDE BARS

INSTALL BRIDGE STRUTS *(Refer to Adapter Assembly Drawing)*

1. Attach the two bridge support plates (item 23) to the two bridge struts (item 1) using flathead screws (item 24) and strut nuts (item 19). Center the plates on the struts.

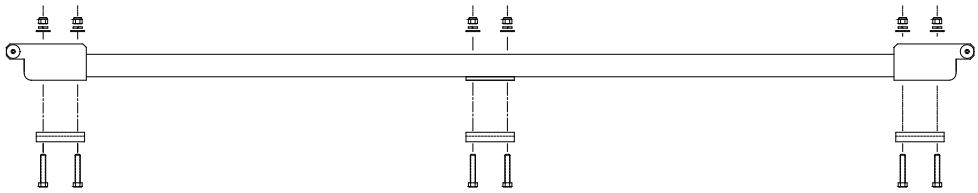
2. Attach the two pieces of painted unistrut that make up the bridge (item 1) between the rail adapter carriage subassemblies using flathead screws (item 24) and strut nuts (item 19). Use **LOCTITE #242** on screws. Snug up hardware to maintain required dimension and parallelism. Final tightening can be done after final adjustments.



MOUNT PLATES & STRUTS

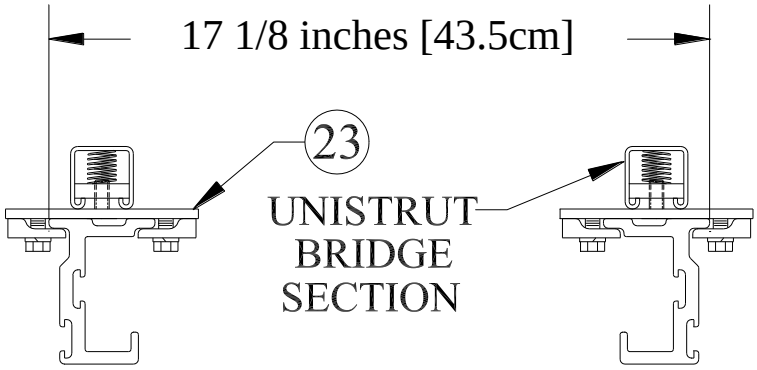
3. Check bridge assembly carefully for both parallelism between components and perpendicularity with the longitudinal rails. Verify the load bearing support wheels on both sides of the adapter run true and as close as possible to the center of the longitudinal rails. Once this check is complete tighten all flathead screws (item 24).

4. Loosely attach rail clips (item 5) to the rail adapter carriage subassemblies (item 2) with hardware (items 14, 26, 15, 16).



5. Remove one outboard rail clip (item 5) from each corner of adapter carriages and the bridge support plate (item 23). Place one rail (item 9), perpendicular to the adapter carriages and hold in place. Replace rail clip (item 5), around the rail flanges. Lightly tighten hardware. Attach the second rail in the same manner.

6. Slide the rails back and forth to center them under the adapter carriages and to align both ends. Make adjustments until the rails are spaced 17 1/8" (43.5cm) apart at both ends. Tighten clip hardware in 16 places. Reference section view AA shown in step 2, page 10.



7. Attach clips to middle plates (item 23) installed in step 5 with hardware (item 14, 26, 15, 16). Using **LOCTITE #242** and tighten securely.

NOTE: Center wheel (item 10) can be raised or lowered to adjust the space (lash) between the adapters and the top of the rails. Loosen screws (item 21) to move mounting plate (item 7) until wheel comes in contact with the surface on the top of the rail.

WARNING!	**Failure to properly install this bridge system and securely attach all mounting hardware may result in serious injury to patient, user, and damage to equipment.**

INSTALL RAIL END PLATE *(Refer to End Plate Assembly Drawing)*

1. Install one end plate (item 22) at the far end of the rails, making sure rubber bumper (item 23) faces in towards the rails. Use **LOCTITE #242** on all threads.

END-LOAD GANTRY *(Refer to End Plate Assembly Drawing)*

1. Remove shipping straps and packing material from carriage. Using Hi-Jack or other suitable lift table, raise gantry (still attached to pallet) up and into the rails. Adjust center wheels if necessary per figure on page 8. ***Make sure all carriage wheels are engaged onto rails before lowering Hi-Jack***. Remove pallet and shipping bars from support unit.

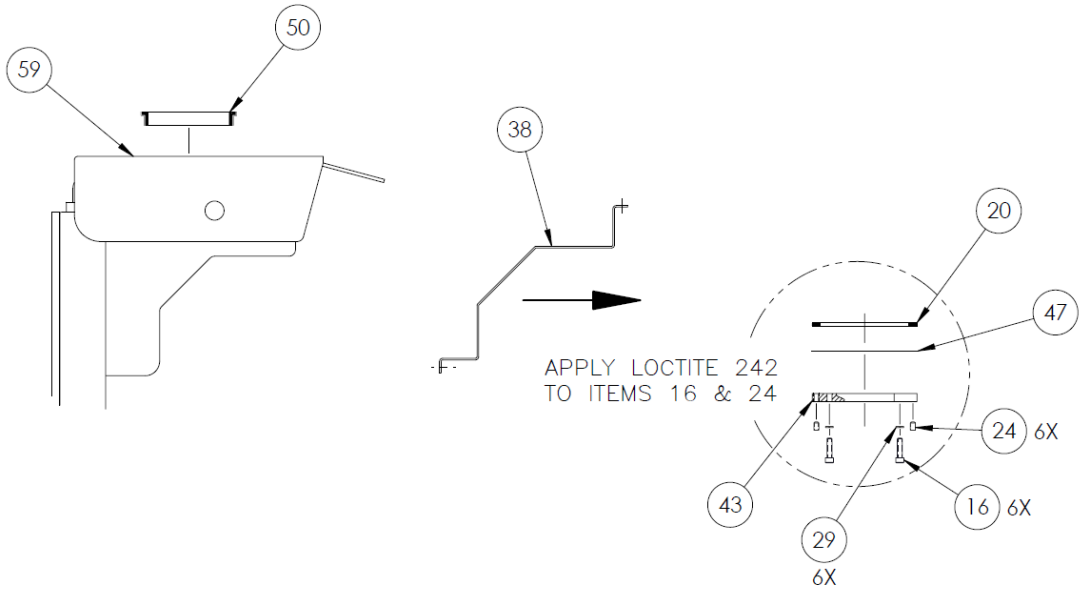
WARNING!	**Remove plastic cover and remove block of wood between gantry core and arm. Failure to do so may result in serious injury to user and damage to equipment.**

2. Install the second end plate (item 22) at the near end of the rails, making sure rubber bumper faces in towards the carriage. Use **LOCTITE #242** on all threads.

WARNING!	**Failure to install both rail end plates may result in serious injury to user.**

INSTALL MONITOR MOUNT *(Refer to Monitor Mount Assembly Drawing)*

NOTE TO INSTALLER: It is important that the load be balanced on the monitor mount. Take into account any differences in size and weight of the monitors.



1. Remove wireway cover (item 38).

2. Drop rotation bearing (item 50) into pivot plate (item 59).

3. Take the thicker thrust ring (item 20) and put around rotation bearing (item 50).

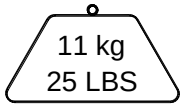
4. Place stainless-steel thrust ring (item 47) below the thicker thrust ring (item 20).

5. The six bolts (item 16) with lockwashers (item 29) go through rotation cap (item 43) and rotation bearing (item 50) into the pivot tube (item 43 in the Core Assembly Drawing). Use **LOCTITE #242** on hardware.

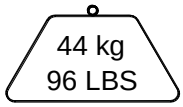
6. Apply a very little amount of **LOCTITE #242** to and insert the six setscrews (item 24) into the six threaded holes on second rotation cap (item 43). Thread the setscrews in until they contact the rotation cap (item 43). The setscrews may be tightened or loosened later to adjust rotational resistance.

WARNING!	**Failure to securely attach hardware may result in serious injury to patient, user, and damage to equipment.**

INSTALL MONITOR *(Refer to Monitor Mount Assembly Drawing)*



Maximum weight of any individual monitor.



Maximum total weight of monitors.

1. To attach a monitor to the system, first remove a monitor mounting bracket (item #30) by removing its mounting screw (item #21). Fasten the bracket to the monitor (hardware not provided). Reinstall the bracket with the monitor.

WARNING!	**Failure to securely attach hardware may result in serious injury to patient, user, and damage to equipment.**

2. Monitors can be tilted and rotated.

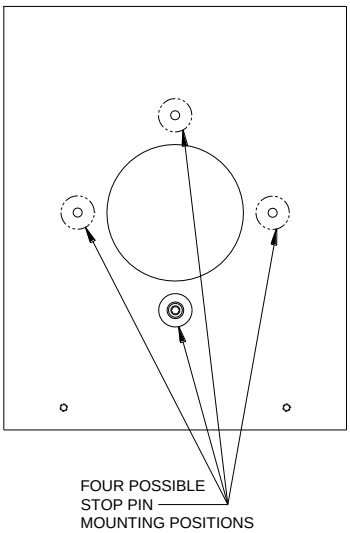
3. If monitor tilt resistance is inadequate and it fails to stay in the desired position, tighten bolt (item 21).

4. If monitor rotation resistance is inadequate and it fails to stay in the desired position, tighten bolt (item 22).

   NOTE TO INSTALLER: Ground stud (item 27) has been provided to properly ground monitors as a group. Terminal strip (item 31) has been provided for distribution of line voltage to each monitor. Cut and strip each monitor power cord to fit.

SET ROTATIONAL LIMITS *(Refer to Monitor Mount Assembly Drawing)*

1. If desired, the stop pin (item 4) can be relocated to another of its four possible mounting locations. Remove rotational cover (item 35) to access the stop pin mounting screw (item 52).



ELECTRICAL CONNECTIONS

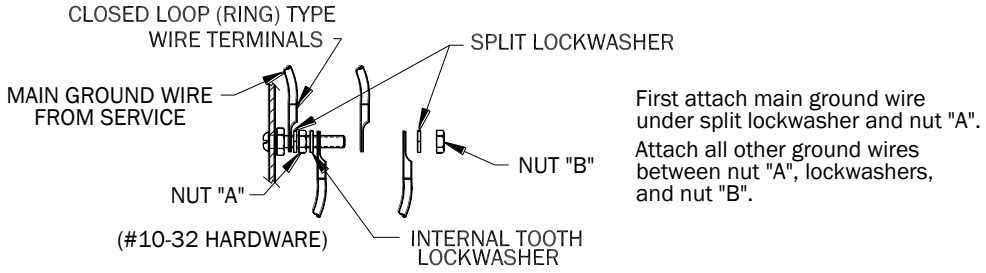
1. Colors of conductors in power supply cords shall be in accordance with IEC publication 60227 (amendment #1) or with IEC publication 60245.

   Wiring Color Codes:
   International: brown (line), blue (neutral), green/yellow (ground)
   North America: black (line), white (neutral), green/yellow (ground)

2. Cable tie mounting platforms are supplied near the terminal block for anchoring the monitor cords and the wires from the mains. Use nylon cable ties. (Tying the cord into a knot or tying the ends with string shall not be used for cord anchorage).

3. Conductors of the power supply cord shall be arranged that the protective earth conductor is not subject to strain as long as the phase conductors are in contact with their terminals.

4. All power cords used for mains connection shall have double insulation. Conduit provided for routing cables shall not be relied on for insulation.

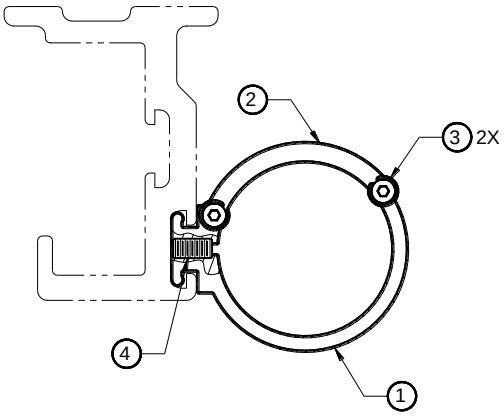


5. Connect all monitor ground wires and the service ground wire as shown in the figure above. (The number of wires varies with the number of monitors installed).

INSTALL STATIONARY CABLE HANDLING ASSEMBLY

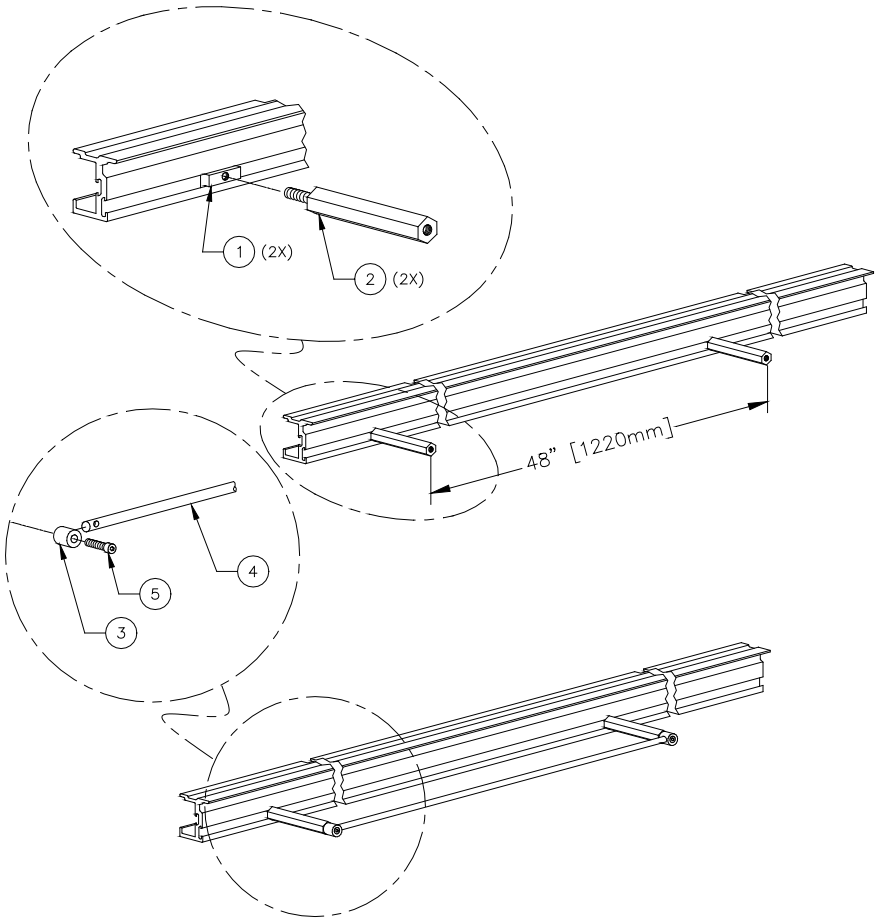
(Refer to Stationary Cable Handling Kit Drawing)

1. Determine which rail end the *stationary* cable handling kit will be positioned. If, at the far end of the rail, slide kit into rail track; slide kit into rail track *prior* to positioning the *mobile* cable handling kit. If stationary kit is to be positioned at the near end of rail, slide into rail *after* positioning mobile cable handling kit. Stationary kit is typically mounted approximately 6 inches (15cm) from rail end.
2. After applying LOCTITE #242 to threads, tighten the setscrew (item 4) to secure in place.
3. Remove retainer (item 2) by taking out the two mounting screws (item 3).
4. Place section of cable hose into clamp (item 1).
5. Reinstall retainer (item 2) screws (item 3).



INSTALL MOBILE CABLE HANDLING ASSEMBLY *(Refer to Cable Handling Kit Assembly Drawing)*

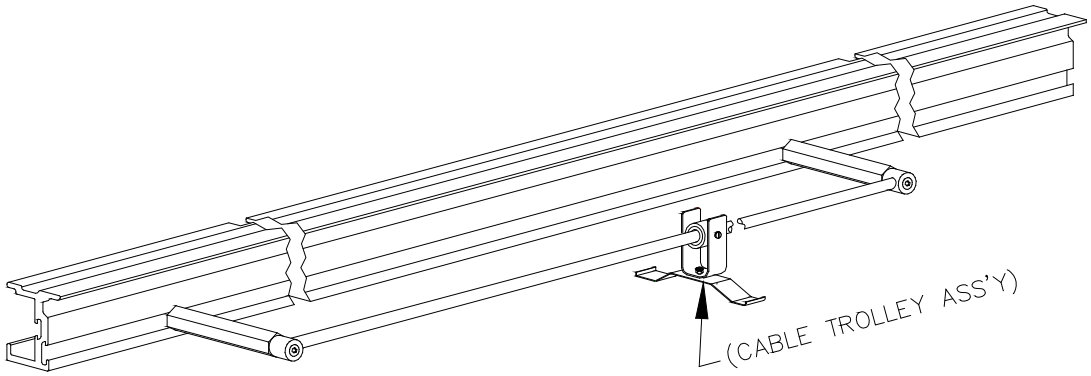
1. Slide nut plate of two hanger standoff assemblies (items 1&2) into rail track. After ***applying LOCTITE #242*** to the end that will be secured into the nutplate (item 1), position standoffs approximately 48" (122cm) from each other. To assure proper fit and positioning, temporarily assemble cable hanger shaft (item 4) to standoffs. Place one shaft support (item 3) onto far end standoff. Place the other shaft support to the second standoff, while temporarily installing cable hanger shaft (item 4) into holes of shaft supports. Lightly tighten socket head cap screws (item 5). ***Use LOCTITE #242 on hardware.***



2. Position shaft/cable handling subassemblies (items 1-5) to desired location on rail. Without disrupting alignment, remove shaft and shaft supports. Torque standoffs to ~35-50 inch pounds, 4.2-6.0(Nm). ***Use LOCTITE #242 on hardware.***

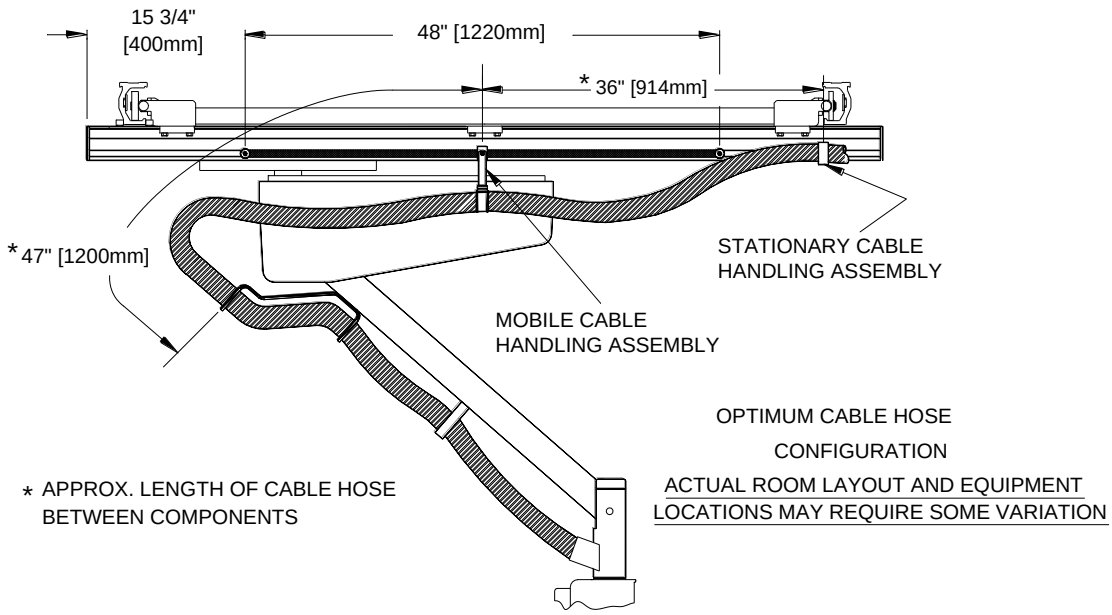
CAUTION!	**Over tightening the standoff will weaken or break the set screw connecting the standoff to the nut plate causing attached components to fall. *DO NOT* loosen or adjust the exposed length of the setscrew on the standoff.**

3. Reattach shaft supports. Install one end of shaft to a shaft support. Tighten socket head cap screw (item 5). Slide cable trolley assembly(s) onto cable hanger shaft (item 4). Install free end of shaft into other shaft support. Tighten second socket head cap screw (item 4). ***Use LOCTITE #242 on hardware.***



DRESS CABLES *(Refer to Gantry Core Assembly)*

1. When the monitors have been properly installed, it is recommended that the cables be brought through the pivot tube (item 43). 2" (5cm) flexaust (provided) is to be attached to pivot tube and to be routed underneath the arm (item 51) via the cable clamps (items 46, 50). Rotate entire system and bring to maximum positions: the system should not drift from any position. If it does, check that enough cable has been left to allow freedom of motion.



BALANCE SYSTEM *(Refer to Gantry Core Assembly)*

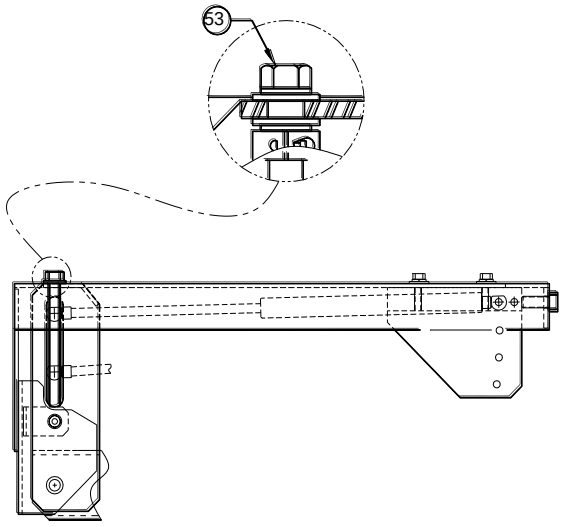
Note: System balance has been set at factory based upon quoted monitor weight.

1. Note initial settings from Spring Data label (item 18). Substantial increases in payload may require spring change.

2. *Prior to adjustment* - payload must be secure and arm *horizontal.* Fine adjustment to compensate monitor counterbalance can be made by turning adjustment screw (item 53). Rotate adjustment nut:

clockwise to *increase* capacity

counter clockwise to *decrease* capacity



Yoke Balance Adjustment

WARNING!	**Yoke has been leveled at manufacturers. Make adjustment only if absolutely necessary to compensate for an unbalanced load.**

NOTE: *Prior to yoke adjustment* - payload must be secure and arm *horizontal.*

1. Fine adjustment, to compensate for yoke balance, can be made by turning the link (item 48). Loosen threaded hex nut (item 24) at outboard rod end (item 10); spin link until yoke is in a horizontal position; retighten hex nut.

MONITOR MOUNT ASSEMBLY ROTATION RESISTANCE

1. The setscrews (item 24) installed in step 6 of "INSTALL MONITOR MOUNT" on page 12 can be loosened or tightened to adjust the rotation resistance of the suspended monitor mount assembly.

2. Replace wireway cover (item 38) after making adjustment.

F. CLEANING THE EQUIPMENT

No part of this unit is designed to be sterilized in an autoclave. Do not allow water or other liquids to enter the equipment as this may cause short circuits or corrosion. Clean parts with a clean cloth dampened with disinfectant or a mild detergent solution. Do not use abrasives, solvents, sprays or corrosive cleaning agents. Gently rub with a clean soft cloth to dry.

If room is to be disinfected by means of an atomizer, the equipment must be covered with plastic or similar sheeting. The equipment must be turned off well in advance of this procedure to prevent convection currents from drawing the disinfectant mist into the equipment. After the mist disperses completely, the sheeting may be removed and the equipment disinfected as described above.

G. MAINTENANCE

"Authorized Technician"

All maintenance procedures should be done by an experienced technician with demonstrated knowledge and skills (electrical and mechanical) relative to this type of equipment.

This individual must have access to this manual and the proper tools.

Daily Maintenance Checks:

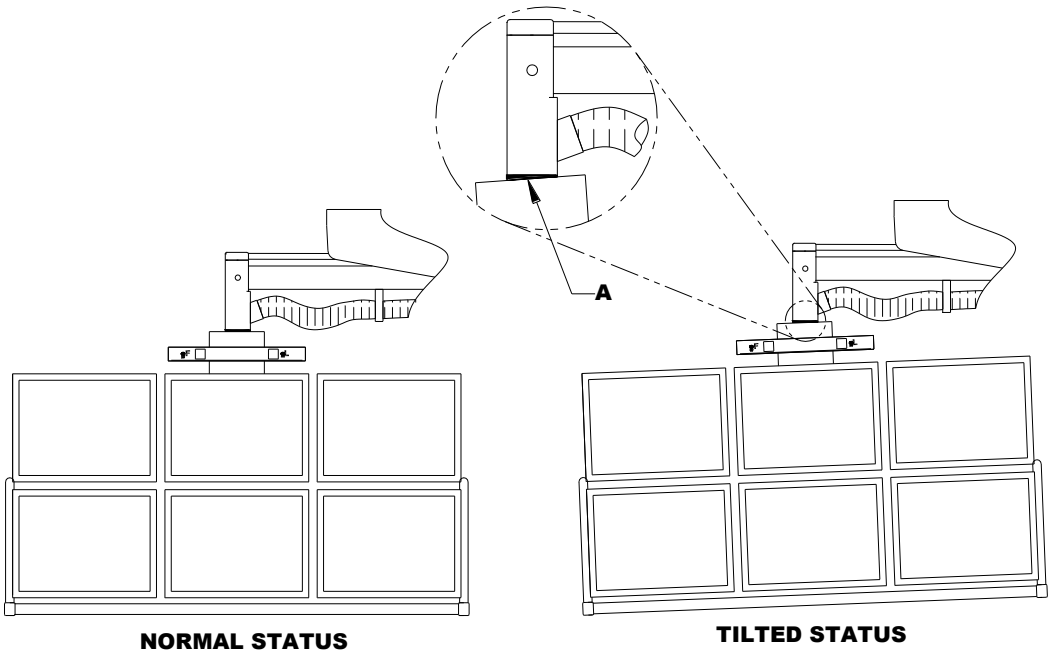
1. **Pre-Operational and Post-Operational Checks**
   Perform daily checks of the monitor suspension BEFORE and AFTER operating the equipment.

CAUTION! If any abnormality is found in the monitor suspension, stop using it. Post a sign reading "DO NOT USE" so that the system is not used by mistake.

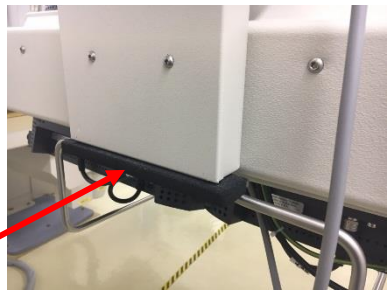
2. **Visual check**
   Before checking the operation, confirm the following:

- The monitor suspension is not tilted. Refer to the following figures.
- Although "A" in the following figure shows a gap, there is no gap at the monitor frame rotation section.
- Monitors installed on the monitor suspension are not tilted.

- Screws or some parts are not loosened or removed.
- The pad mounted to the bottom of the monitor mount assembly is not damaged or missing.



Pad attached to the underside of the monitor mount bracket must be complete and undamaged



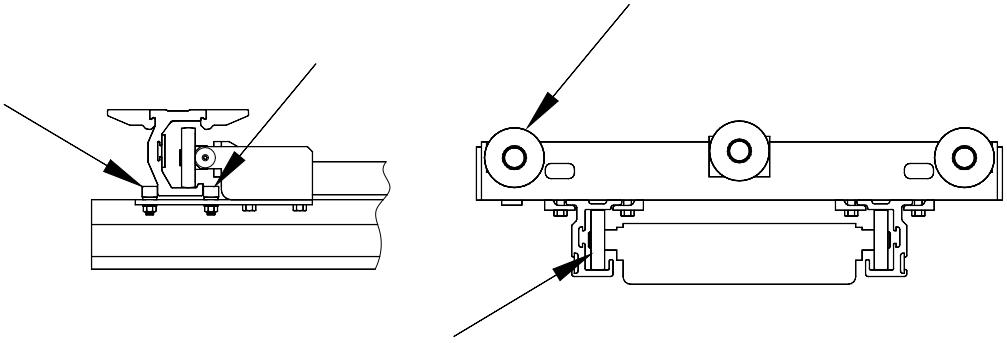
3. **Operational check**

Move all the movable sections and confirm the following:

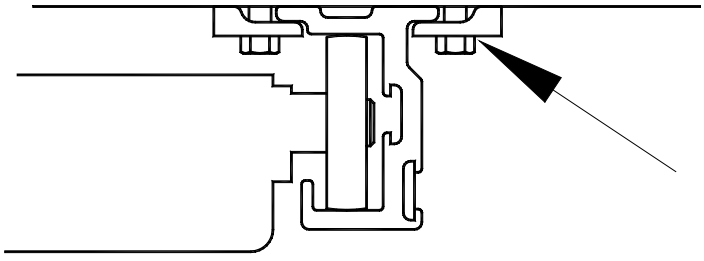
- Operation does not lack smoothness compared to when the monitor suspension was installed.
- There is no play.
- There are no abnormal sounds.
- The monitors or monitor suspension are not tilted due to looseness of secured sections.

Annual Maintenance Check:

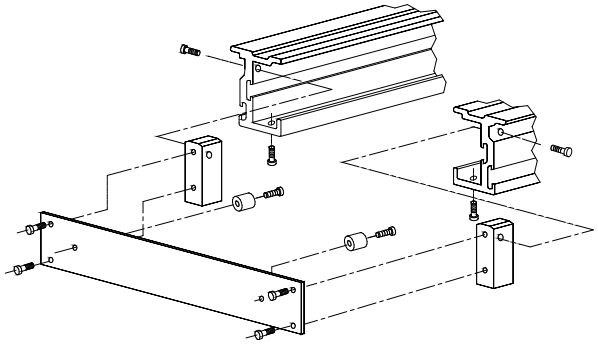
1. Clean carriage wheels and guides and the rails where carriage wheels and guides ride inside the rails.



2. Check that the rail mounting hardware has not become loose.

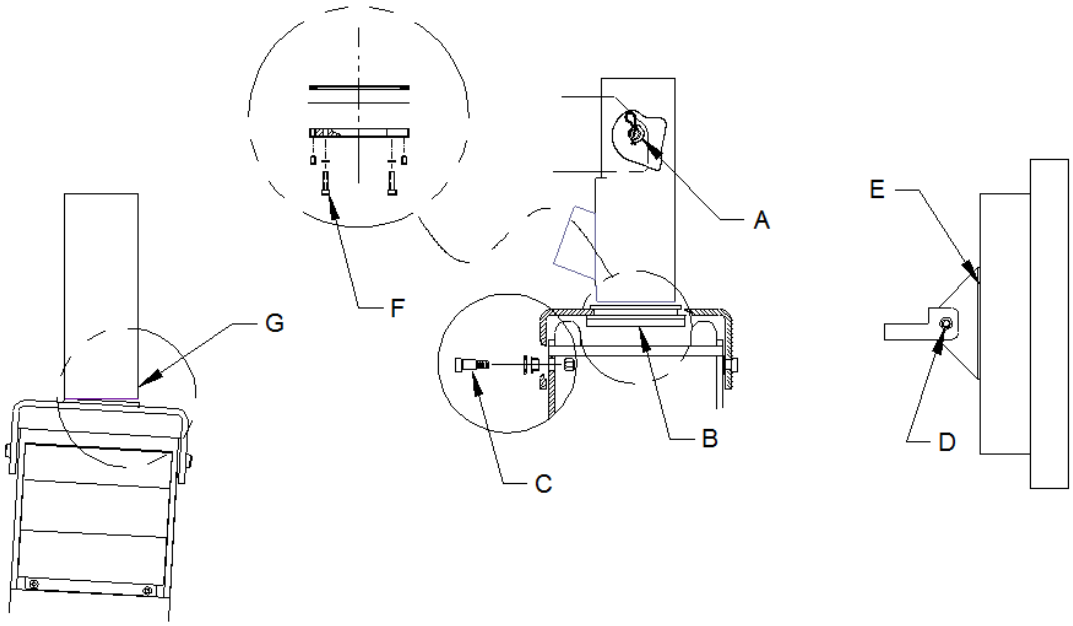


3. Check that the hardware securing the end plates are tight.

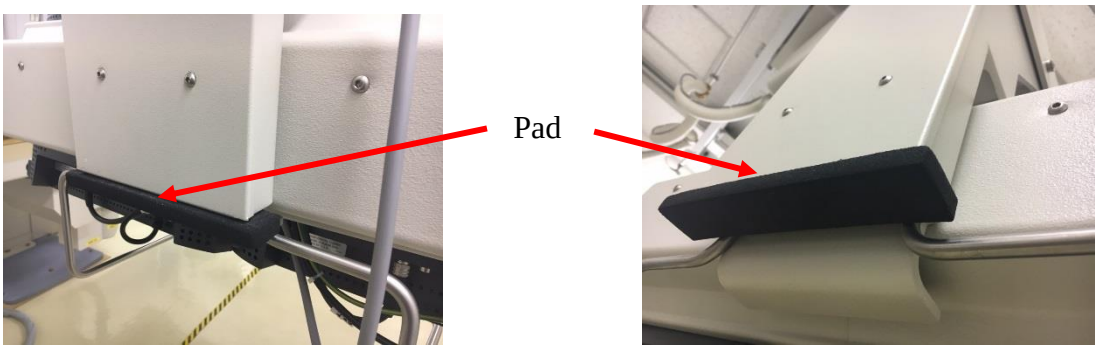


4. Perform a complete functional inspection:
   -Rotate monitor mount assembly through complete range.
   -Raise and lower monitor mount assembly.
   -Roll carriages through complete range of rails.
5. Clean and touch up the painted surfaces.

6. Check that the hardware is tight and that there is no wear at (A) the end of the gantry core arm, (B) the rotational section between the gantry core arm and the monitor mount assembly, (C) the monitor mount assembly pivot joint, (D) the monitor bracket pivot (E), and the monitor. Should the screws labeled (F) become loose, there will be an opening of the mechanical junction between the gantry core arm and the monitor mount assembly (G).



7. Check the pad attached to the underside of the monitor mount. If there is any damage to the pad or if the pad is not properly attached to the unit, it must be replaced.



The procedures mentioned in these instructions are based on the recommendations of HHS, I.E.C., etc.

In cases of increased wear or where severe working conditions exist, maintenance checks should be made at shorter than the specified intervals.

Should any control or indicator fail to operate properly, do not use the equipment until a repair has been affected. Operating equipment with defective components may expose the operator or the patient to safety hazards.

The manufacturer strongly recommends that a maintenance program be initiated and that a maintenance record be kept detailing dates and nature of maintenance performed, the name of the service engineer, and any other relevant information.

WARNING!	**Removal of any hardware requires re-assembly with Loctite #242 or equivalent (depending on hardware size) following manufacturer's instructions.**

H. CUSTOMER SUPPORT

For technical assistance, be sure you have the complete model and serial number before contacting the local or national service office.

I. DISPOSAL GUIDELINES

Most of the components used in this suspension system are made of metal, usually aluminum or steel, and are easily recycled.

The gas springs are nearly 100% recyclable. They must be decompressed, with the remaining oil drained, before processing. (The compressed gas inside is nitrogen).

J. APPROVALS

SGS Testing Service

The system was tested and found to be in compliance with the requirements of all relevant directives and standards in effect within the European Union at the time of manufacture.

EC REP

European Authorized Representative:

Advena Ltd. Tower Business Centre, 2nd Flr., Tower Street, Swatar, BKR 4013 Malta

REVISIONS TO THIS MANUAL

Rev	Date	Description
A	March 2004	Release
B	May 2004	Rev 2 BOM Changes
C	December 2005	Rev 5 BOM Changes
D	June 2006	Additions to Maintenance Check
E	April 2007	ECO 290
F	April 2008	Additions to Maintenance Check

G	August 2008	ECO 294
H	April 2012	ECO 324
J	May 2018	ECO E571 Added warnings for pad.