

## Installation & Operation Manual for VHM™ Series Arms

The purpose of this manual is to describe general installation, operation, and adjustment procedures for VHM™ Series Arms. This manual should be used in conjunction with any instrument-specific installation guides. Please read this manual and all instrument-specific installation material before installing or using this product.

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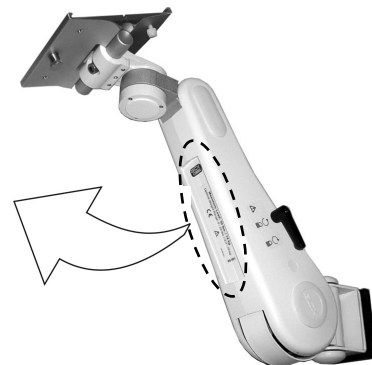
### Read This Before Installing the Arm:



**WARNING!** Do not position the Arm or instrument over a patient.

The VHM Arm contains a strong spring which is used to counterbalance the weight of the mounted instrument. The Arm housing should never be disassembled by non-GCX personnel. Additionally, the mounted instrument should only be removed with the Arm in its highest vertical position, and with the Height Locking Lever engaged. Failure to follow these guidelines could result in serious injury.

1. If wall mounted, verify that the channel has been installed and approved in accordance with channel installation guide.
2. Ensure that the weight of the instrument being mounted does not exceed the load rating of the VHM Arm. Check the bottom surface of the Arm for one of the "load rating" labels shown below. The mounted instrument should be within the "Optimal Weight Range" for best performance.



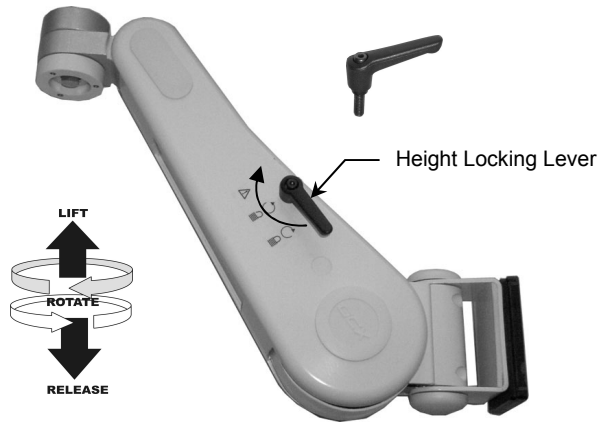
3. Note that this arm has a wide range of motion both up/down and side to side. Please consider carefully the instrument being mounted and the proximity of the assembly to other equipment, hospital personnel, and the patient. GCX recommends that the hospital's risk management personnel verify the appropriateness of the application prior to installation and use.
4. Install your VHM in the sequence presented in this manual (Sections 1.0, 2.0, and 3.0).
5. If assistance is needed regarding an application, please contact GCX at (800) 228-2555.

## 1.0 Installing the VHM Arm in the Channel

- 1.1 Thread the Height Locking Lever into the mounting hole in the right side of the Arm. The Lever operates by turning clockwise to tighten or counterclockwise to loosen. Ensure that the Locking Lever is in the locked position before mounting the Arm in the channel.

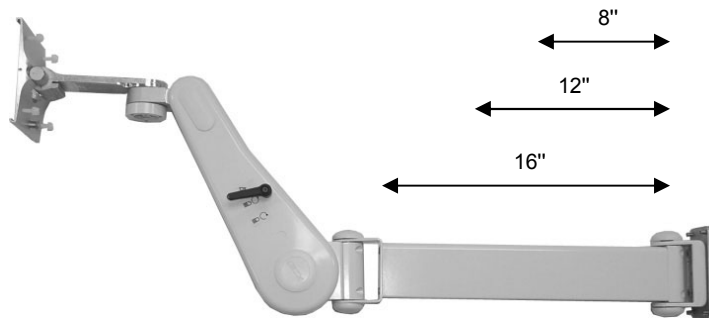
**Installation Note:** VHM Arms with a Spring Lock are equipped at the factory with a Locking Knob (see below).

**Note:** The Height Locking Lever is a multi-position clamping lever that operates by lifting, rotating, and releasing the handle.



### VHM Arm with Extension

This type of Arm is designed to provide extension from the mounting surface for easier access and a wider range of motion. The Arm pivots both at the channel and at the attachment to the Arm. Extensions are available in 8, 12, and 16 inches. Arms with Extensions have the same operational characteristics as other VHM Arms.



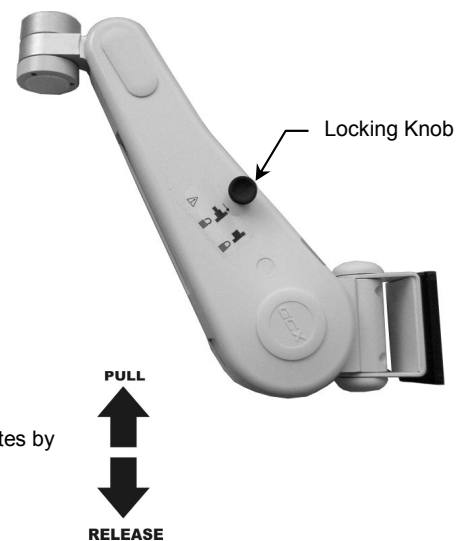
### VHM Arm with Spring Lock

This type of Arm is designed for use with transport monitors only. The Locking Knob is installed at the factory. Ensure that the Locking Knob is in the locked position before attempting to mount the Arm in the channel.



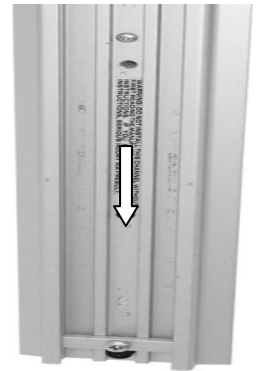
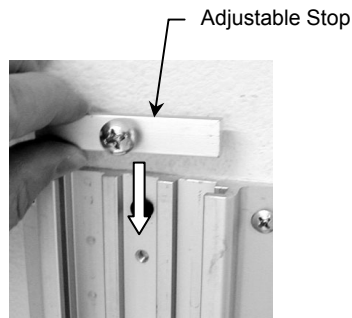
**Do not disengage the Locking Knob unless an instrument is mounted on the end of the Arm – the Arm could unexpectedly move upward when an instrument is not mounted.** For proper function of the locking mechanism, the arm must be properly adjusted to counterbalance the weight of the mounted instrument (see section 3.0).

**Note:** The Locking Knob operates by pulling and releasing Knob.



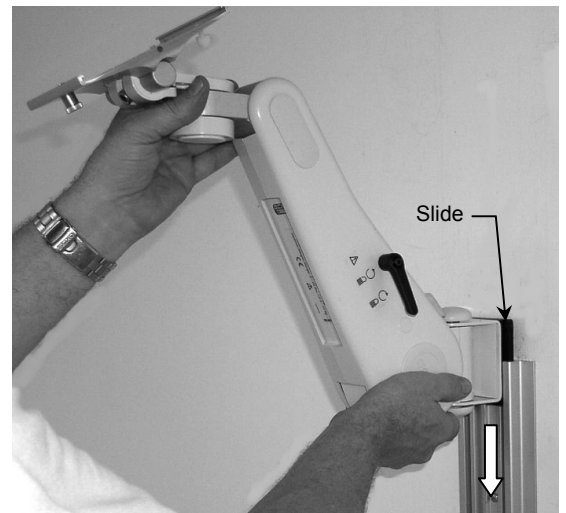
1.2 Insert the \*Adjustable Stop in the top of the Channel and let it slide to rest against the Fixed Stop at the bottom of the Channel.

*\*Adjustable Stop not required for Arm with Extension (see 1.4).*



1.3 While supporting the bottom of the Arm, guide the Slide (rear of Arm) into the top of the wall channel.

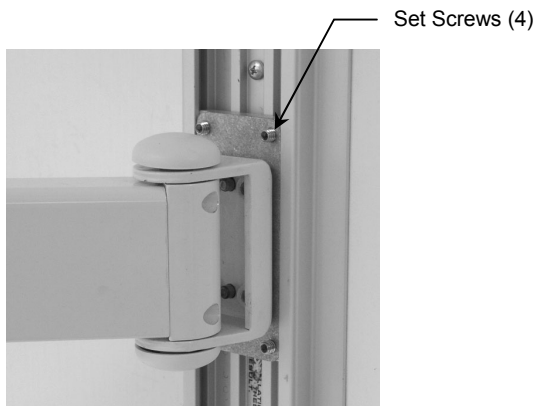
**Installation Note** (This note *does not apply* to Aluminum Slides on Arms with Extensions). If the Arm does not slide easily in the channel, the small shear tabs on the sides of the Slide may be filed down slightly. **Caution:** File a very small amount at a time – removal of too much material will result in a loose fit in the Channel and poor operation. Place the VHM Arm on a countertop and use a double-cut 8" metal file, or similar, to file the shear tabs. Only one to three laps are necessary for each tab, as too much removal will result in a loose fit in the Channel.



1.4 Move the Arm to the desired height.

**Arm without Extension:** Slide the Adjustable Stop up the Channel until it rests against the bottom of the Slide. Tighten the center screw in the Adjustable Stop to secure the Arm in position (photos on right).

**Arm with Extension:** Using a 1/8" hex key (provided), tighten four (4) set screws in Slide to secure Arm in channel (below).



Adjustable Stop

## 2.0 Mounting the Instrument on the VHM Arm

GCX makes considerable effort to ensure that the user of the VHM Arm has all hardware necessary to mount an instrument securely to the Arm. As a result, most instruments will require the attachment of an instrument-specific Mounting Adapter provided by GCX or by the instrument supplier. Please install the Mounting Adapter in accordance with the installation guide included with the Adapter.

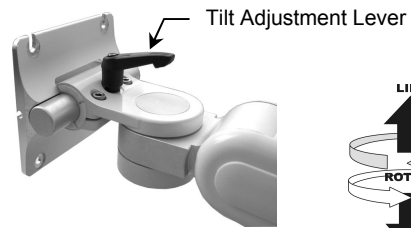


**The Arm must be LOCKED IN THE HIGHEST POSITION before an instrument is mounted on or removed from the Arm. This Caution does not apply to an Arm with a Locking Knob.**

### 2.1 Mounting Orientation

The Mounting Plate Assembly should have either a Tilt Adjustment Lever installed for rear-mounted instruments or a Tilt Limit Screw for bottom-mounted instruments. In some cases, it may be necessary to remove or install either the Tilt Adjustment Lever or the Tilt Limit Screw prior to mounting the instrument. If the orientation of the Mounting Plate Assembly is not compatible with the instrument Mounting Adapter, refer to the procedures below and perform the appropriate modification.

**Tilt Adjustment Lever:** Insert and rotate clockwise to install. Rotate counterclockwise to remove.



**Tilt Limit Screw:** Remove or install using the supplied 1/4" hex key. Screw size is 5/16-18 x 1/2" SHCS.

Tilt Limit Screw

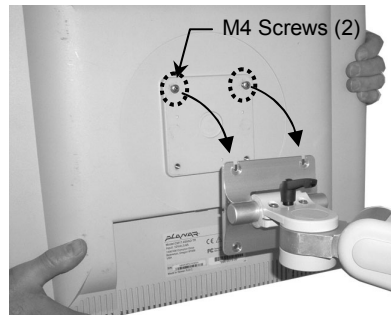


**Note:** The Tilt Adjustment Lever is a multi-position clamping lever that operates by lifting, rotating, and releasing the handle.

### 2.2 Mounting the Instrument

Mount the instrument in accordance with your instrument-specific installation guide. **Installation Note:** VHM Arms will have either a "slide-on" or "VESA Standard" type Mounting Plate at the front of the Arm. In the absence of specific instructions, follow the applicable procedure below:

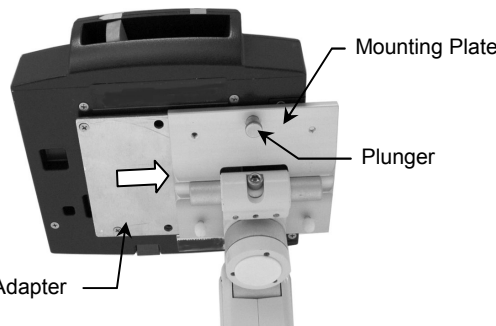
**"VESA Standard" Type:** Thread two (2) M4 screws into the top threaded holes of the 75 x 75mm mounting pattern, leaving 3mm of thread exposed. Lift the instrument onto the Mounting Plate by guiding the M4 screws into the slots in the Plate. Thread two (2) M4 screws into the lower mounting holes. Tighten all screws.



**"Slide-on" Type:** Pull the Plunger at the front of the Mounting Plate. Slide the instrument Mounting Adapter into the Mounting Plate until the Plunger snaps into the clearance hole in the Adapter. Tighten the Nylon screws on the rear or underside of the Plate.


**Installation Note:** A bottom-mounted instrument is shown here. The same procedure applies to rear-mounted instruments

Mounting Adapter

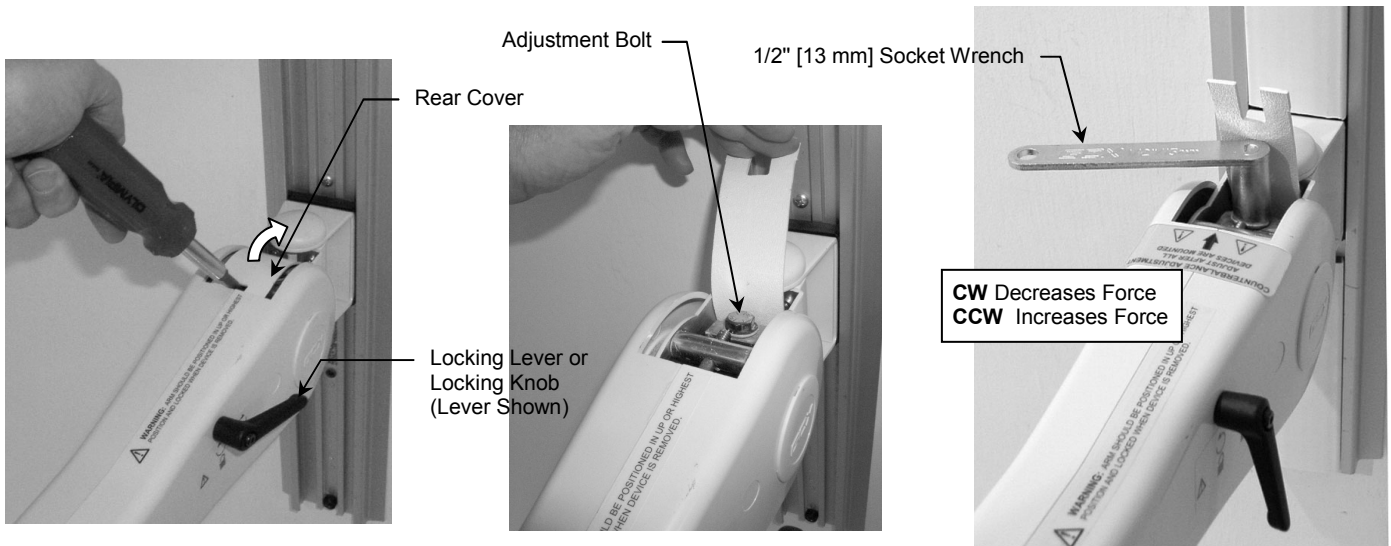


### 3.0 Adjusting Counterbalance

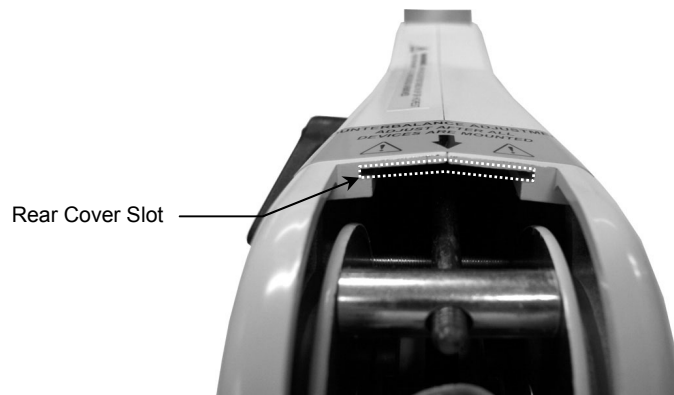
The VHM Arm must be adjusted to counterbalance the mounted instrument throughout the Arm's vertical range of motion. When properly counterbalanced, the VHM Arm will maintain its height when the Locking Lever or Locking Knob is disengaged. Because instrument weights vary, some adjustment is required to achieve optimal performance.

 **Use Caution while performing this procedure. Do not attempt counterbalance adjustment unless the instrument and accessories are mounted on the Arm.**

- 3.1. Grasp the Arm behind the mounted instrument to prevent sudden upward motion. Carefully unlock the Arm and move it to a horizontal position. Lock Arm in horizontal position.
- 3.2. Open the Rear Cover by inserting a flat blade screwdriver in the slot in the top of the Cover and prying outward. The Counterbalance Adjustment Bolt should be visible from the top of the Arm.
- 3.3. Grasp the Arm behind the mounted instrument, as in Step 1, and carefully unlock the Arm. Using the 1/2" [13mm] socket wrench (provided), turn the Adjustment Bolt *counterclockwise (CCW)* to increase counterbalance force, or *clockwise (CW)* to decrease counterbalance force. Counterbalance is correctly adjusted when the instrument can be moved up or down with minimal force and does not rise or fall after releasing the Arm.



- 3.4. Reinsert the Rear Cover in the slot in the Arm Housing shown below.



## 4.0 Making Adjustments to the VHM Arm

Check the pivot, tilt, and front swivel mechanism for proper tension. Refer to the applicable section and follow the adjustment procedure.

### 4.1 Counterbalance Adjustment – See Section 3.0

### 4.2 Positioning VHM Arm in Channel

**Caution:** Never attempt to remove the Arm from the Channel when loaded with an instrument.

- 4.2.1. Lock the Arm in position using the Locking Lever or Locking Knob.
- 4.2.2. Loosen the Adjustable Stop (Arms without Extensions) or loosen four (4) set screws on Arms with Extensions.
- 4.2.3. To raise or lower the Arm in the Channel, relieve the weight of the mounted instrument by lifting against the underside of the Arm, near the instrument. Simultaneously, push up or pull down the opposite end of the Arm just in front of the Slide.
- 4.2.4. Reposition the Adjustable Stop against the bottom of the Slide or tighten four (4) set screws.



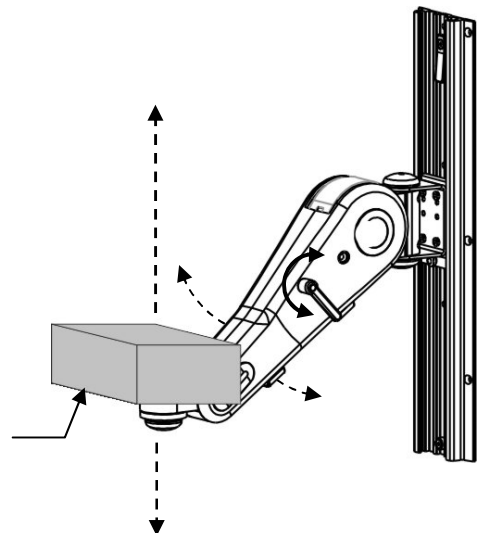
### 4.3 Height Adjustment

**Caution:** Do not attempt to make a height adjustment without a mounted instrument.

- 4.3.1. Unlock Height Locking Lever or disengage Locking Knob.
- 4.3.2. Grasp mounted instrument (or handle) and push up or pull down to desired height.
- 4.3.3. \*Tighten Height Locking Lever or engage Locking Knob to lock the Arm in the desired position.

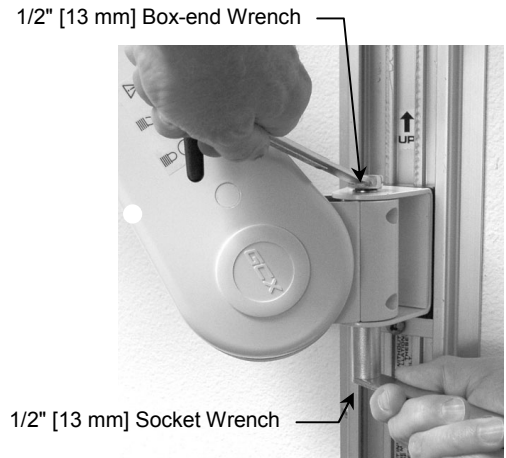
*\*When Arm is counterbalanced correctly (sec 3.0), it will maintain position without engaging the Height Locking Lever.*

**Instrument Must Be Mounted When Making Height Adjustment**



#### 4.4 Pivoting the VHM Arm and Adjusting Pivot Tension

- 4.4.1. To pivot the Arm (at the Channel), simply push on the side of the Arm.
- 4.4.2. To adjust pivot tension, first remove the top and bottom plastic bolt caps from the Pivot Bolt. Using the 1/2" [13mm] socket wrench provided and a 1/2" [13mm] box or open-end wrench, tighten or loosen the Pivot Bolt and Hex Nut to the desired tension. When finished, press the bolt caps back over each end of the Pivot Bolt.



#### 4.5 Swiveling the Mounted Instrument and Adjusting Swivel Tension

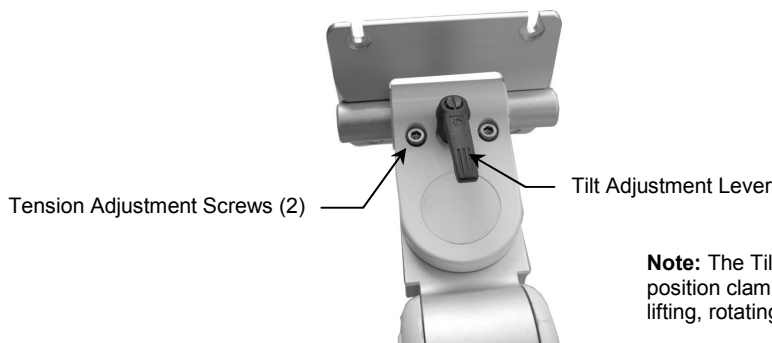
- 4.5.1. To swivel the mounted instrument simply push or pull the corners of the instrument.
- 4.5.2. To adjust swivel tension, remove the plastic bolt cap or existing Down Post from Swivel Cup (bottom of front end of Arm). Tighten or loosen the Swivel Tension Bolt using the 1/2" [13 mm] socket wrench provided.



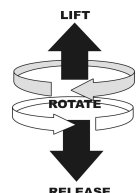
#### 4.6 Adjusting Tilt Tension and Tilting the Mounted Instrument

In most configurations, the mounted instrument may be tilted and tilt tension may be adjusted.

- 4.6.1. **Tilt Tension:** Adjust overall tilting tension by evenly tightening or loosening the two (2) Tension Adjustment Screws with the 5/32" hex key provided. Once the overall tilt tension is set, use the Tilt Adjustment Lever to fine tune/lock the tilt position.
- 4.6.2. **Tilt Adjustment:** Turn the Tilt Adjustment Lever counterclockwise (CCW) to loosen. Lever provides ratchet-style adjustment (see **Note** below right). Grasp the device and tilt to desired angle. Turn Tilt Adjustment Lever clockwise (CW) to tighten and lock position.



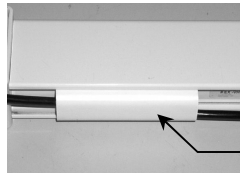
**Note:** The Tilt Adjustment Lever is a multi-position clamping lever that operates by lifting, rotating, and releasing the handle.



## 5.0 Cable Management

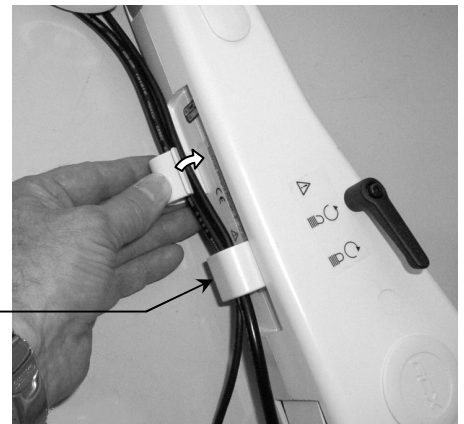
Two (2) Cable Guides are provided to facilitate routing of cables along the underside of the \*arm. Squeeze the Cable Guide until its edges snap into the grooves in the bottom surface of the arm. Leave some extra cable loose at the front and rear of the arm to prevent cable binding, connector damage, or Cable Guide damage.

\*Longer Cable Guides are provided for Arms with Extensions (section 1.1). Guides snap into grooves on the bottom of the Extension.



Longer Cable Guides for Extensions

Cable Guides (2)



## 6.0 Routine Maintenance

Periodically check all tilting, swiveling, pivoting, and mounting hardware. Tighten as necessary for optimal operation.

## 7.0 Cleaning the Mounting Assembly

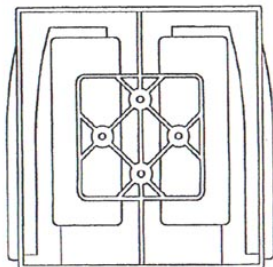
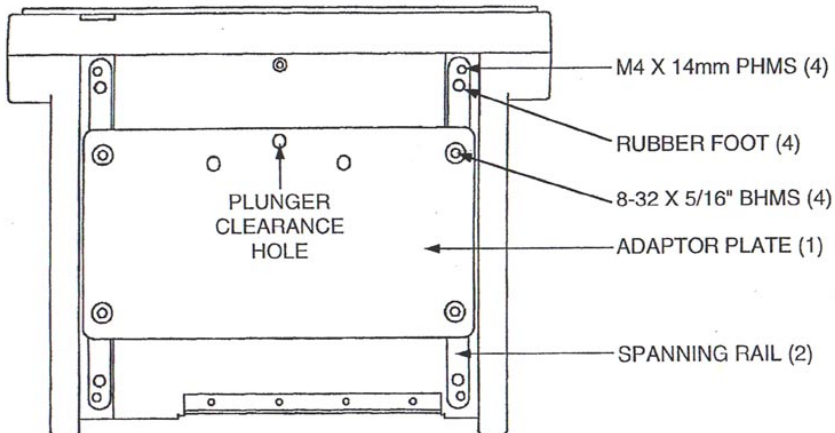
- 7.1. The mounting assembly may be cleaned with most mild, non-abrasive solutions commonly used in the hospital environment (e.g. diluted bleach, ammonia, or alcohol solutions).
- 7.2. The surface finish will be permanently damaged by strong chemicals and solvents such as acetone and trichloroethylene.
- 7.3. Steel wool or other abrasive material should *never* be used.
- 7.4. Damage caused by the use of unapproved substances or processes will not be warranted. It is recommended that you test any cleaning solution on a small area of the arm that is not visible, to verify compatibility.
- 7.5. Never submerge the arm, and do not allow liquids to enter the arm. Wipe any cleaning agents off of the arm immediately, using a water-dampened cloth. Dry the arm thoroughly after cleaning.

**CAUTION:** GCX makes no claims regarding the efficacy of the listed chemicals or processes as a means for controlling infection. Consult your hospital's infection control officer or epidemiologist. To clean or sterilize mounted instruments or accessory equipment, refer to the specific instructions delivered with those products.

## 8.0 Troubleshooting the VHM Arm

Symptom	Possible Cause	Remedy
Mounted instrument does not appear level or parallel to the floor.	Channel not plumb. Check with level.	Adjust Channel to plumb, or reinstall Channel.
	Weight of instrument not compatible with Load Rating of the Arm.	Mount instrument on arm with compatible Load Rating.
	Adjustable Stop loose or missing from Channel.	Reposition and tighten Adjustable Stop. Replace Adjustable Stop.
	Swivel hardware loose.	Adjust Swivel Bolt (section 4.5).
	Pivot hardware loose.	Adjust Pivot Bolt (section 4.4).
	Mounting surface (e.g. wall, side of anesthesia machine, etc.) not structurally sound (does not hold mounting hardware).	Mounting surface must be reinforced or Channel must be relocated.
	Channel loose at mounting surface.	Check for plumb and tighten, or relocate (reinstall) Channel.
Instrument drifts up or down when the Arm is unlocked.	Arm not counterbalanced correctly for weight of the instrument.	Perform counterbalance adjustment per section 3.0.
	Weight of mounted instrument (load) not compatible with Load Rating of Arm.	Use arm with compatible Load Rating, and perform counterbalance adjustment per section 3.0.
Arm pivots too freely.	Pivot Bolt too loose.	Adjust Pivot Bolt (section 4.4).
Arm does not pivot easily.	Pivot Bolt too tight.	
Instrument swivels too freely.	Swivel Bolt too loose.	Adjust Swivel Bolt (section 4.5).
Instrument difficult to swivel.	Swivel Bolt too tight.	
Instrument difficult to tilt.	Tilt Adjustment Lever too tight.	Adjust tilt and tilt tension per section 4.6.
	Excessive tilt tension.	
Instrument will not maintain tilt position.	Tilt Adjustment Lever too loose.	
	Insufficient tilt tension.	
Arm difficult to move up or down when unlocked.	Arm not counterbalanced correctly for weight of mounted instrument.	Perform counterbalance adjustment per section 3.0.
Arm inadvertently slides down Channel.	Adjustable Stop has slipped to the bottom of the Channel.	Reposition Adjustable Stop beneath Slide (section 1.4).
	Adjustable Stop is missing from Channel.	Remove Arm and install an Adjustable Stop (sections 1.2 – 1.4).
Locking Knob (Arms with Spring Lock) will not pull out (release).	Arm not counterbalanced correctly for weight of mounted instrument.	Perform counterbalance adjustment per section 3.0.
	Weight of mounted instrument (load) not compatible with Load Rating of Arm.	
Counterbalance Bolt difficult to adjust.	Arm not locked in a horizontal position.	Reposition Arm and lock in horizontal position.

**BOTTOM VIEW AGILENT M1275A /  
M1205 / V24 PATIENT MONITOR**



**AGILENT "M1275A" SHOE  
AGILENT P/N: M1276A-61060  
WITH FOUR M4 INSERTS  
ATTACH MULTI CLAMP  
FOR POLE MOUNTING  
RACK MODULE**