

Arago 3™

Installation Instructions

Form TEEWA533A

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Form 5838-84

INTRODUCTION

An Arago 3™ aligner is installed much the same as conventional imaging machines, however there are unique considerations which must be addressed. Several supporting documents are referred to during this procedure, if unsure of document availability make arrangements prior to attempting the installation. Follow these instructions carefully for a successful installation.

An Arago 3™ system normally does not require RCP calibration at installation. The camera assemblies are factory calibrated and can be placed into service shortly after installation and setup. Camera assemblies do not have to be replaced as a pair, however if ISO traceable factory calibration is to be maintained, they must be replaced as a pair. No field calibration is required in this case. It is also possible to replace the camera assemblies singly, but a field RCP procedure must be performed

These instructions cover the main aspects of Arago 3™ installation:

- ⇒ Preparing for installation
- ⇒ Qualifying the site for installation
- ⇒ Console assembly and setup
- ⇒ Placement/assembly base and support columns
- ⇒ Placement/assembly and setup of the Pod motorized transport system
- ⇒ Camera aiming procedures
- ⇒ Initial operation of Arago 3™ software

Before attempting installation, read these instructions thoroughly and understand the tasks involved. Review all requirements of installation to avoid oversights resulting in lost revenue, and lost customer confidence. Be aware of the environment conducive to the optimum performance of imaging alignment. Procure the necessary tools to do a quality job and last most important, perform the installation safely by observing all precautions associated with the task at hand.

INSTALLATION PROCEDURES

1. Qualify the site for installation

Verify site requirements per JBC Pre-Installation Form 5705. The Pre-Installation checklist was created primarily with sales personnel in mind, however it can be used as tool to verify bay conformance to requirements. Below are some key issues to consider for a successful installation. See Figure 5 on page 11 for a typical bay layout.

Power Source

115 volts AC, 15 amp noise free dedicated service, assure a good ground

Rack integrity:

Is the rack/lift safe, are the lock mechanisms secure

Check for runway coplanar at all heights

Is rack relatively level - for ease of rollback

Turntable condition - free from binding, do they exhibit good rotational stability

Rollback requirements - is a kit required - acquire if necessary

Is the field of view conducive with imaging alignment (no obstructions)

Floor integrity:

Will the floor adequately support the rack, has a core test been performed?

Is the concrete properly cured, new flooring should be cured at least 28 days.

Are there any pipes, or wiring under the floor that could be drilled into?

Will the floor flex, crumble, are there expansion joints?

Environmental concerns

Inspect the area for heaters, reflections, adjacent machinery, fans, RFI etc.

Space requirements or system footprint

Can the support assemblies (towers) be positioned from the TT a distance of 90" to 120" (108" - 114" recommended)

The distance between the support shields at 81" to 93" (87" recommended) This value is not to be confused with the installation baselines to be determined later.

Take into consideration the size of the rack and the space required of the Arago.

Adjacent Power Noise

Look for motor noise/hash, shared processors, RFI

Ergonomics

Can the operator move about freely to work safely and view the CRT

Will the movable camera feature be utilized in the installation?

Typical Arago 3™ Installation

2. Tools and equipment required for installation

Study the list below and make procurement arrangements prior to installation. Time is poorly spent searching for proper tools once the project has begun. The check list below is comprehensive and based on actual installations in a variety of locations.

- T-handle Ball-end Hex Wrenches; 3/8, 3/16, 1/8, 3/32, 5/32
- #1 Phillips Screwdriver - Pod Covers
- #2 Phillips Screwdriver - Pulley Assemblies and Covers
- Heavy Duty Wire/Cable Cutter - Used To Cut Or Trim Transport Cable
- Pliers - Installation Of Lanyard Cables
- Box End or Combination Wrenches: 3/4 - 7/8; 9/16 - 1/2; 7/16 - 3/8
- Tape Measure - Used To Square The Optics With The Lift Center Line, And For Camera offset
- Chalk Line - Used For Lift Center Line
- 2 Or 4 Foot Level - Leveling Support Columns
- Tin Snips - Used To Open Carton Banding
- Box Cutters - Opening Cartons
- Electrical Tape - Secure Wires
- Plastic Wire Ties - Dressing Cables
- VOM - Verifying Supply Voltage
- 16 Oz. Hammer - Set Anchor Bolts
- Hammer Drill And 1/2" Bit
- Carpenters Pencil - Mark Support Location On Floor
- Calibration Bar - Camera aim
- Glass Cleaner And Rags - Cleaning Of Targets After Install if Necessary
- Small Flashlight
- Adjustable Wrench
- Instructions

3. Assembly and setup of the console

Consoles are shipped mostly complete, however some minor assembly is required upon installation. Refer to the illustration below for a completed console. The installation personnel will be required to assemble the clamp hanger brackets to the cabinet, In addition, the computer and its peripherals must be placed into the console and wired together.

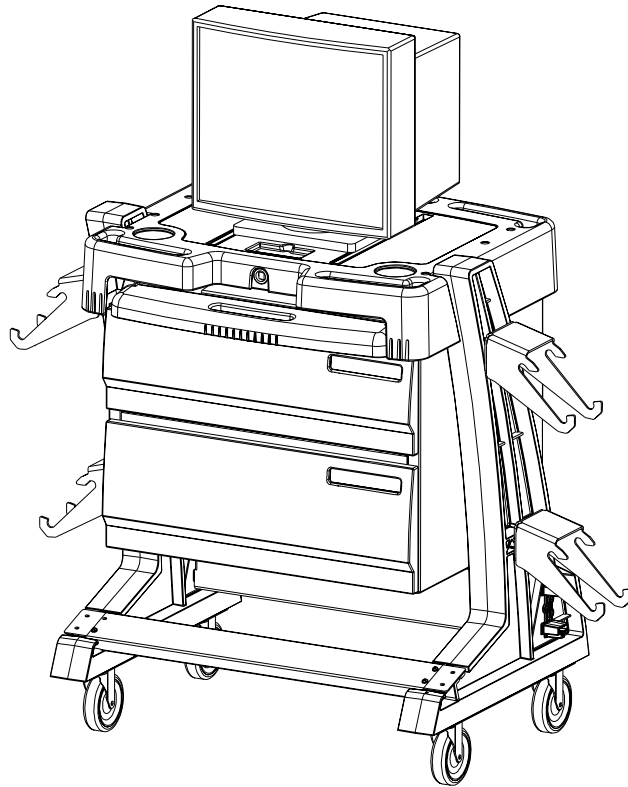


Figure 1 - Fully Assembled Console

1. Remove the console from the skid.
2. Install the wheel clamp hanger brackets onto the side of the console.
3. Locate all cartons associated with the console and computer assembly.
4. Inspect each component for damage, notify shipping company immediately if damaged, report any shortages to customer service.
5. Place the Monitor on the console top, secure with the sliding fasteners.
6. Remove the back panel from the rear of the console as shown in Figure 2.
7. Place the desktop PC into the top console shelf from the front.
8. Place the keyboard and the mouse on the sliding drawer. Feed the cables through the hole in the middle of the drawer. Secure cables to underside of drawer with plastic cable ties.
9. Place the printer in the bottom console drawer. Install toner cartridges and paper.
10. Route cables from each of the above peripherals to the PC. Refer to the drawing detail in Figures 2 and 3 for proper cable connections. **IMPORTANT** - Connect the Mouse to the front USB port.

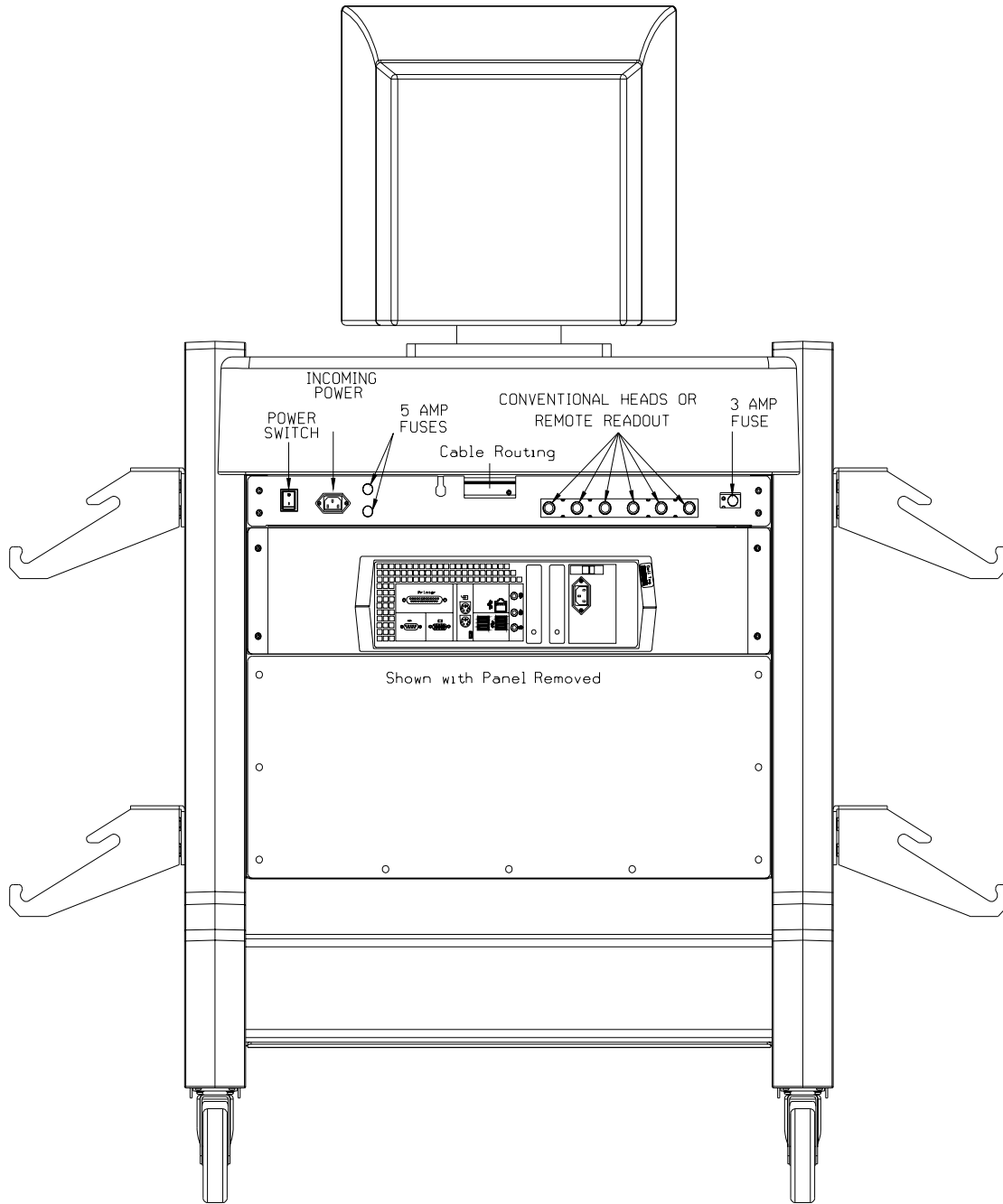


Figure 2 - Console rear view with PC access panel removed

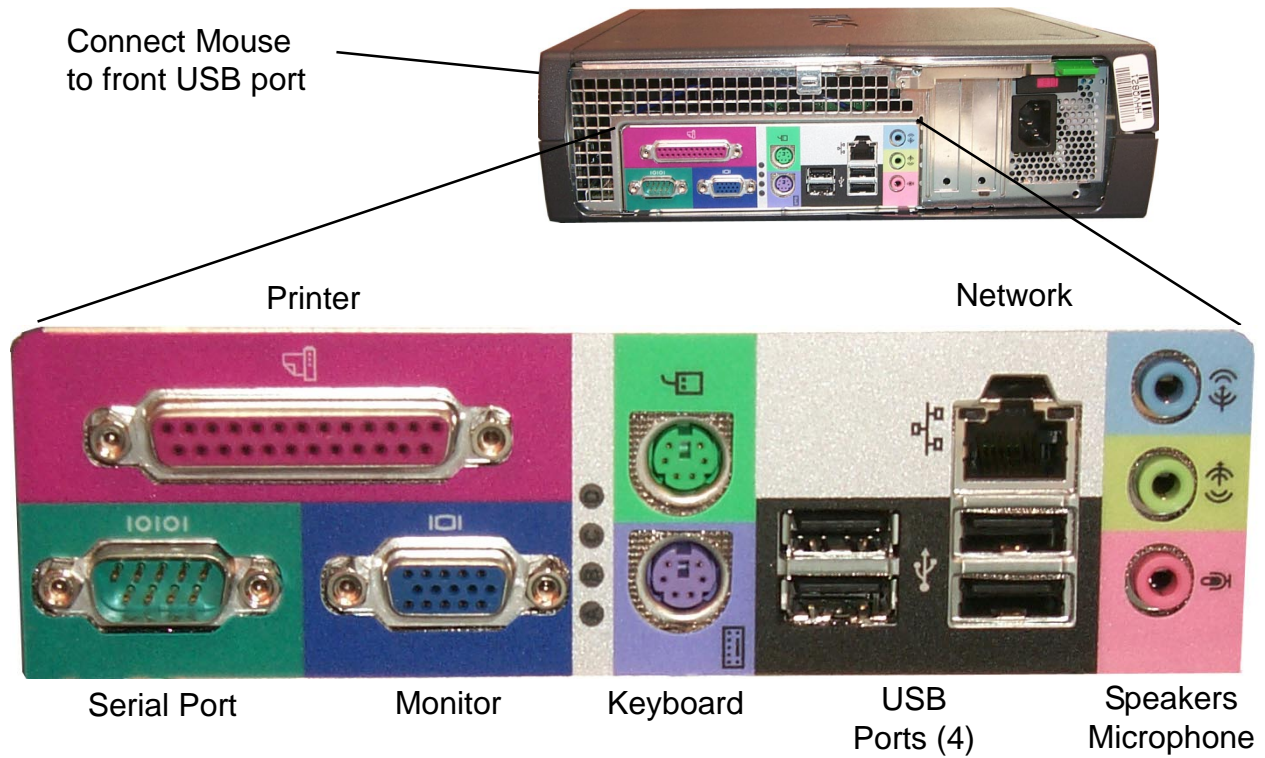


Figure 3 - Rear view of PC

NOTE: Check interconnect harnesses and cables before applying powering to PC. Using the Console to View Camera Assembly Instructions

Once the Console is assembled, the PC can be booted and software configuration finalized. Verify proper PC operation before reattaching rear panel.

4. Installation Baseline layout

These instructions assume a lift or rack is being used as the alignment surface. If the floor is to be used, identify the spot where the turntables will rest, and base measurements from that spot.

1. Determine the **Lift Centerline**. Measure between runways front and rear and mark midpoints on both. A mark can be made forward of the lift by placing one end of a string at a spot on one side of the lift, placing a marker on the other end of a string, and scribing an arc forward of the lift across the centerline. Repeat scribing an arc from the same spot on the other side of the lift. The intersection of the two arcs is the lift centerline. Use a chalk line to snap a centerline between the marks, and project out at least 114 inches in front of the rack, or to the shop wall if closer. See *Figure 5*.
2. Determine the **Turntable Centerline** by raising the lift to the predetermined alignment height (step 1). Use a plumb-bob from the center of the turntable and mark a spot on the floor next to each turntable. Snap a chalk line through the marks to establish the centerline. Use the plumb bob on the outside of the turntables to mark a center spot on the floor on the outside of each runway (See *Figure 5*).
3. Determine the **Turntable Height** (the normal operating height of the rack). On a multilevel lift (i.e. parallelogram) put an average size car on the lift and raise it until the alignment technician feels comfortable performing wheel turns, rolling the vehicle back and forth, and making toe/camber adjustments from underneath. On other lifts/racks (such as a hoist rack) it is necessary to use the leveling leg height. Typical turntable height is from 30" to 36".

Measure the distance from the floor to the top of the lift turntables, record this value on page 21 as TURNTABLE HEIGHT, measurement "A"

If the user will be operating the Arago 3™ without the moveable feature you may want to mark this height position so it is easy to raise the lift to this chosen height later – this is the height the operator must use when performing alignments.

4. Determine the **Support Baseline**. The Arago 3™ camera supports must be installed a minimum of 80 inches (2032 mm), and no greater than 110 inches (2794 mm) from the center of the turntables to the **face** of the cameras. The face of the camera can be considered to be in the same plane as the front two holes of the support base. The support base will be used as a point to place the baseline. Measure 80" – 110" (or whatever the space will allow within the above parameters) from the turntable centerline forward at two locations and mark these points. Snap a chalk line on the floor through these two points. This is the **installation baseline** (See *Figure 5*).

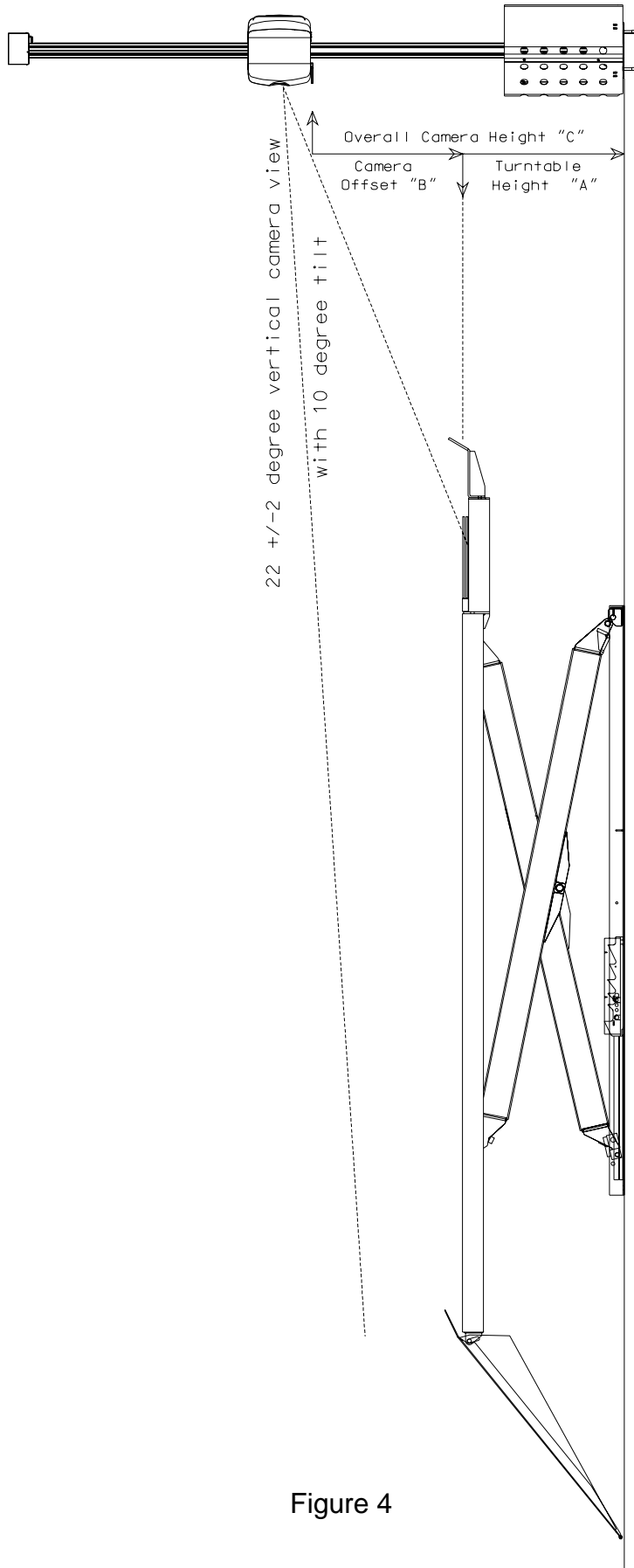


Figure 4

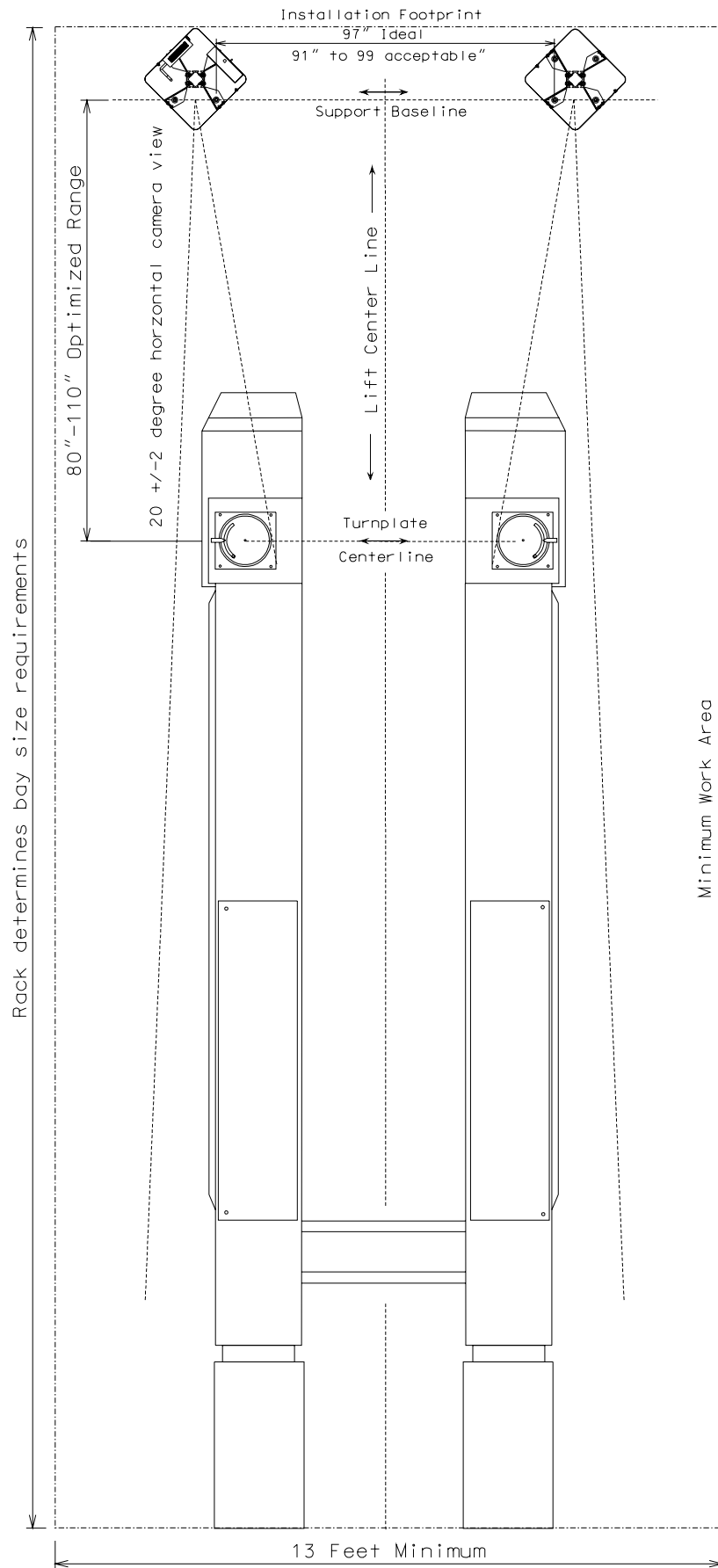


Figure 5

5 - Support Bracket Assembly

1. Loosely assemble two (2) T-nuts onto each of the two base support brackets. Note the location of nut extrusions, they should face away from the bracket. Refer to Figure 6 for orientation. Do not tighten screws at this time.
2. Set base assemblies onto floor in the approximate location where they are to be installed. Locate the drilled and tapped end of each column, this will be the top. Place the bottom of a column into each of the base assemblies in the upright position. Tighten the T-nuts firmly. This procedure should stabilize the column and base.

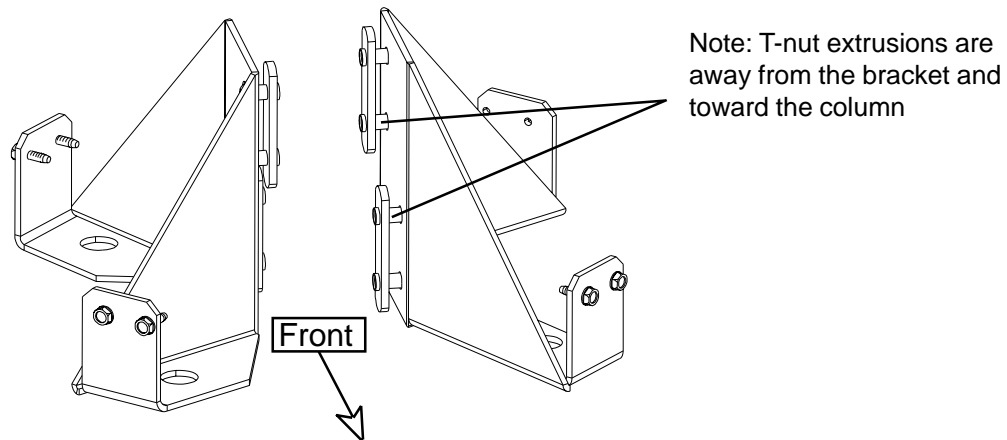


Figure 6

3. Position base/column assemblies onto floor centered on baseline measurements made earlier. See Figure 7. Base Plates will generally be 97 inches apart as measured between the inner holes. Refer to Figure 5 on page 11 for layout detail. Using a marker, mark the hole locations for the 4 mounting bolts with each plate.
4. Using a rotary hammer drill equipped with a 1/2 x 12 inch bit, bore each hole carefully. It is generally a good idea to drill all the way through the slab so that if the anchor must be removed later, it can be driven through the concrete and into the ground below. Clear debris before proceeding.

HINT: Bore one hole, tap in an anchor bolt and lightly secure the base with this one bolt. Proceed boring another hole using the hole in the base as a guide. Continue one hole at a time until all four are inserted.

HINT: Pour a small amount of water into the hole as it is being bored to significantly reduce concrete dust. Use a shop vacuum to clean area before proceeding.

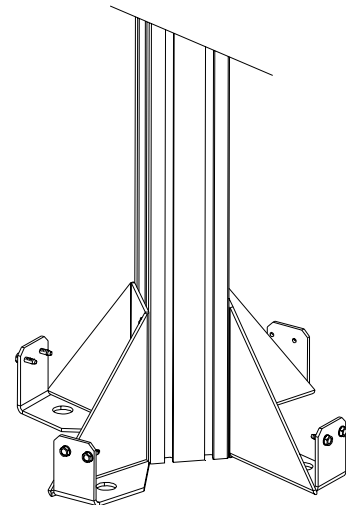
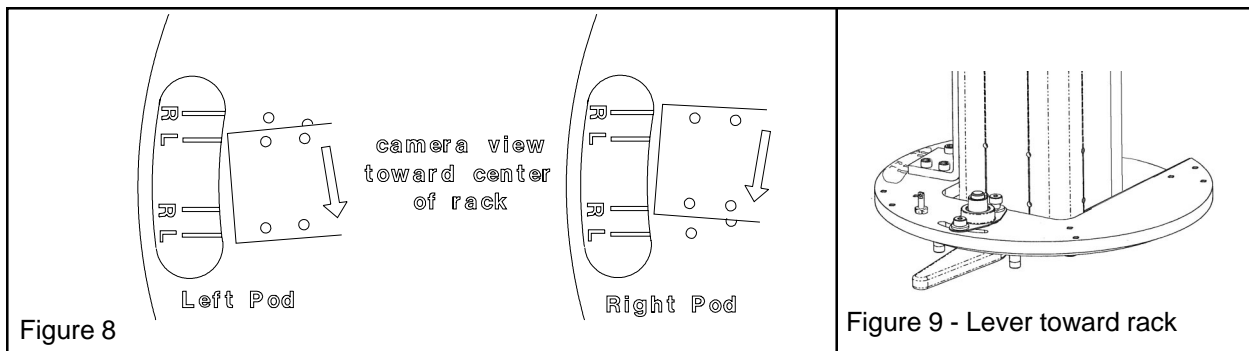


Figure 7

!! DO NOT BOLT DOWN PLATE PERMANENTLY AT THIS TIME !!

6. Assembling Support Columns

1. Place both column-base assemblies horizontally across 2 cardboard boxes or saw-horses for component assembly. Its important to note the orientation of the column. Refer to Figure 6 for detail. The brackets will be attached to the sides of the column. Mark or label the front of the column. Electrical or masking tape is ideal.
2. Remove the pod covers from both pod cars, set aside until later.
3. Locate and install one T-nut rubber stop-bumper about the halfway point of both columns, this will prevent the pod car from sliding down during assembly. Do not over-tighten bumper. The left drive side bumper will be discarded after cable installation, the bumper on the right side will be lowered for travel limiting.
4. Place pod cars on the support columns. Left and right pod cars are identified by the position of the camera mounting bracket. The mounting bracket is associated with a label as shown in Figure 8. The label designates the location of the camera frame mounting bracket making it a left or right pod. Position the Pod Car as shown in Figure 9. Make sure the levers are pointing in the forward position. Slide the pod car to about the mid way point on the tower and resting on the bumper.



NOTE: Camera assemblies will be attached to the Pod car later.

NOTE: Make sure that the pod cars slide easily, if not, slide adjustment may be required.

Left (Drive) Column Assembly

1. Assemble counter weight, cable to the front, belt to the rear. Make sure the ribbed part of the belt is oriented as in Figure 10. Make sure the cable connections are tight, and jam-nuts are installed. Slide the weight-cable assembly into the center of the left tower with the cable to the front and belt to the rear. Do not allow cable and belt to twist. See Figure 10 for assembly detail.
2. Remove belt guide by loosening the top two motor drive mounting screws. See Figure 12a
 - A. Attach motor drive to top of left tower with Cover Base using (3) 5mm x 16mm allen head flange screws with a washer. See Figure 10 for assembly detail.
 - B. Feed cable and belt through cover base and motor drive.
 - C. Route cable over front pulley.
 - D. Route belt over rear pulley.

NOTE: Pay close attention to the cable/belt orientation. **DO NOT ALLOW CABLE and BELT TO TWIST AROUND EACH OTHER.** Refer to Figure 10 for detail.

3. Attach loose end of belt to left pod car in the *outer* hole with nut and jam nut. See Figure 11. Make sure eye bolt is attached as close as possible to the pod car.
4. Reinstall belt guide so the plastic roller makes light contact with the belt. Figure 12b.
5. Install control cable onto motor drive unit.
6. Route the motor drive cable through the rear of the pod car and into one of the rear tower ribs and secure with the plastic cover. Removal of upper and lower cable strain reliefs are necessary to feed cable through rear of pod. Secure the cable to the tower by snapping the plastic channel cover into one of the grooves over the cable. Replace the upper strain relief as shown in Figure 11. Leave the lower strain relief off for camera cable attachment later.

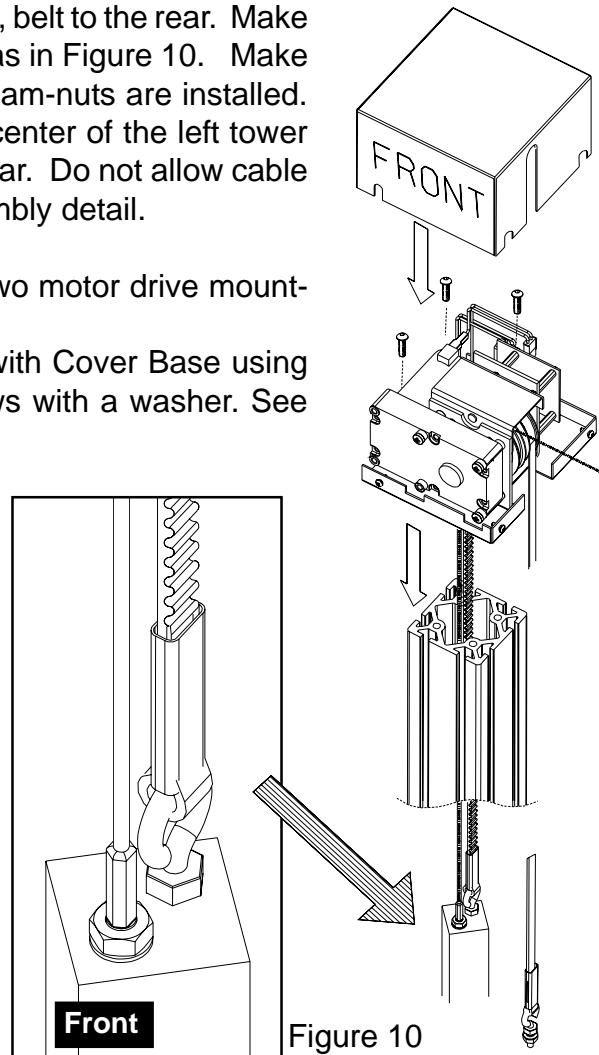


Figure 10

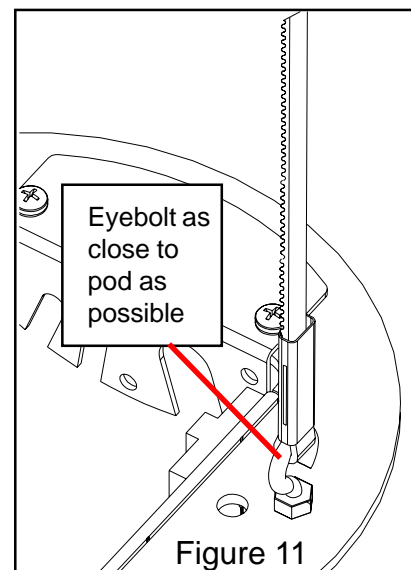


Figure 11

7. Mount motor drive cover as shown in Fig. 10.
8. Lift column slowly at an angle, allow weight to slide downward to remove slack in belt.
9. Raise the Left Tower assembly over the anchors set earlier and into the standing position. Snug anchor nuts to prevent tilting.
10. Remove the bumper installed in step 4, gently slide left pod car downward to put tension on the belt.
11. Using a 2 or 4 foot Level, shim or adjust the column base-bracket assembly until column is level. Tighten anchors to 50 ft lbs torque.
12. Mount the lower limit switch to the front of the left column at 31 inches above the floor. This distance is necessary to prevent pinching of the hand or obstacles between the camera and lower shields. The distance between the upper limit switch and the lower limit switch should be approximately 86 inches. Measure with a tape measure for use later. The distance measured is: _____ inches.

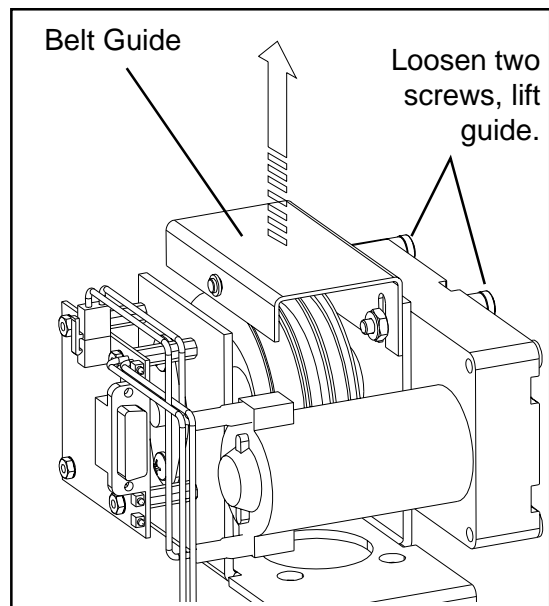


Figure 12a - Cable Guide must be positioned as shown .

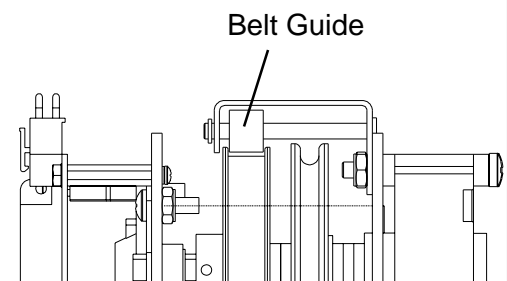


Figure 12b - Guide installation

Right Column Assembly

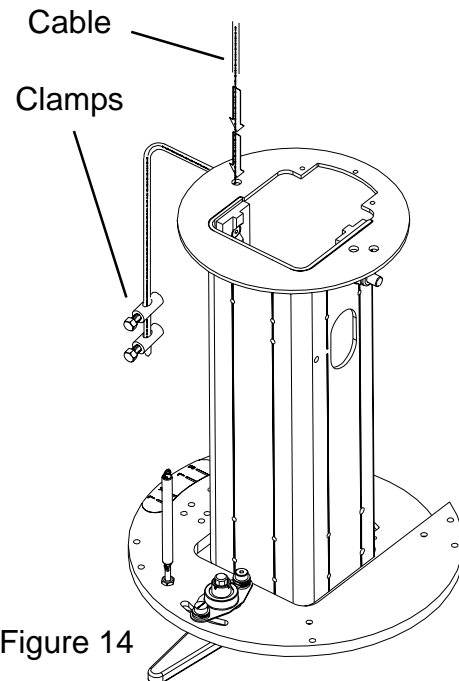
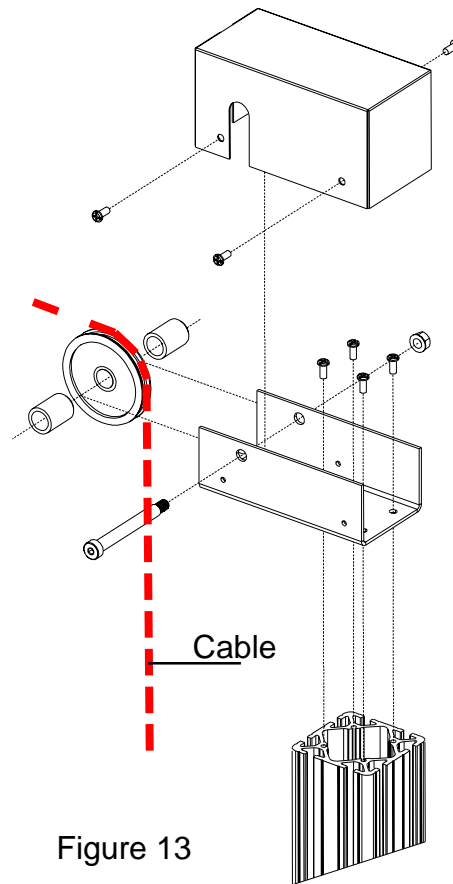
1. Assemble pulley, spacers, bolt and nut to bracket as shown in Figure 13.
2. Attach Pulley bracket to top of tower.
3. Place main cable over outer pulley. This is the cable from the left tower.
4. Raise right tower into position and anchor into place. Level as required, tighten anchor bolts as directed earlier.
5. Loosen the rubber stop bumper, move the right pod car to the same height as the left pod car. Make sure the cable has no slack. Attach main cable through hole on left side of pod, secure with cable clamp. See Figure 14.

NOTE: Generally with the cable pulled hand tight, raise the pod 1/2 inch higher than the left side, tie off cable. Let the weight of the car remove any residual slack of the cable, the car should now be even with the left pod car. Adjust further if required to level. Trim excess cable after pod cars are leveled.

6. The rubber stop bolt should be located 1" below the bottom of the pod assembly, fully tighten nut.
7. Install pulley cover as shown in Figure 13.

7 - Attachment of Cameras

1. The left camera assembly is referred to as the "Cam-cam" while the right side is referred to as the "Cam-Targ". Camera assemblies are shipped with camera and Pod Car together and un-assembled for shipping protection. The camera assemblies are installed onto the Pod Car after all support tower assembly and transport work is completed. This assures that the camera will be out of harms way until required for setup. See Figure 15.



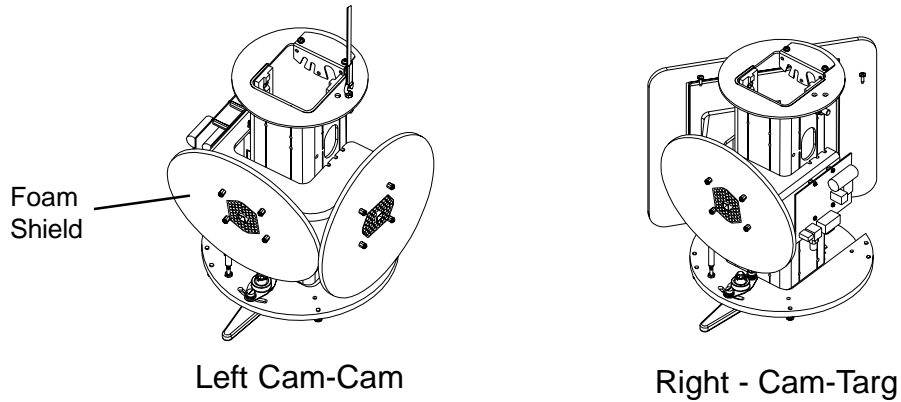


Figure 15

2. Carefully attach the “Cam Cam” to the left Pod Car. The cam-cam is secured with two socket head screws located on the left side of the Pod Car. The third screw on the bracket is used to adjust camera vertical aim. Secure the top end of the spring to the hole in the lower edge of the camera assembly.
3. Repeat the above steps for the “Cam-Targ” assembly to be mounted to the right Pod Car. The right camera assembly requires the camera chassis to be “maneuvered” from the left toward the Pod car and then moved to the right into position. Do not attempt to force the pieces together. Any deformation of the chassis will void the calibration. Check all mechanical connections before proceeding.

8 - Attach Base Shields

1. Attach column base shields using four 10-32 x 3/8 phillips head screws each. Attach the shield to the “ears” of the base brackets by sliding the screws into the key-holes on the lower edge of each shield. Do not tighten until all screws are started.
2. Connect front and rear shields to each other with two 10-32x3/8 philips head screws on each edge. Tighten all shield screws. Refer to Figure 16 for detail.
3. Locate the power supply and interface box assemblies. Attach the power supply to left side of the left rear Base shield using three 6-32 x 3/8 screws and nuts. Refer to Figure 16 for detail.
4. Attach the IVS interface box to the right side of the left rear base shield using four 6-32 x 3/8 socket head cap screws. Plug motor drive cable into the IVS interface box, tighten (2) strain relief screws. Figure 16.

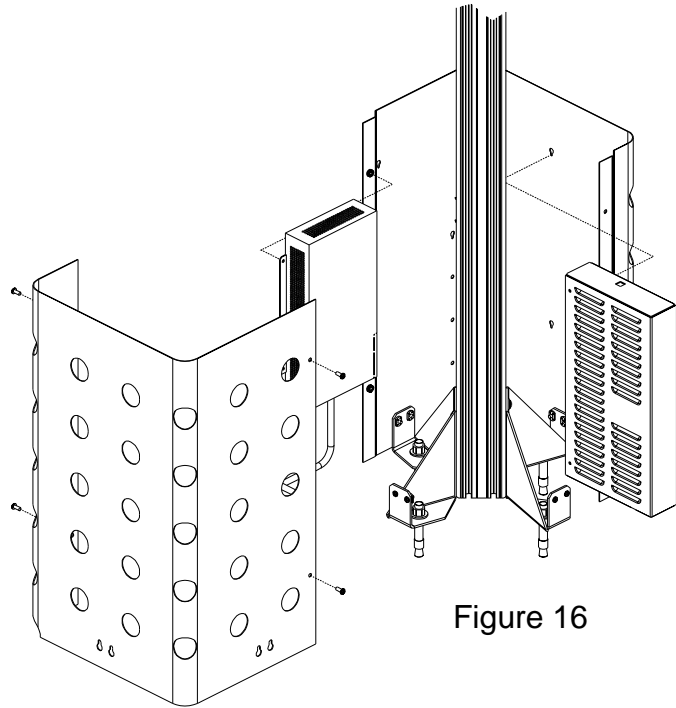


Figure 16

Route power and video cables for cable management

1. The cables will fall into the guard assemblies more reliably if the small video cables are routed inside the large power cable, see Figure 17. Mesh the two video cables together and feed both through the large power cable. After this is done and the strain relief is re-installed, push the pods to the top of the columns. Stretch the left cables down and tie-wrap them in place below the lower limit switch. The tie-wraps should hold the cables just below the curls and the ends of the tie-wraps should be trimmed after they are pulled tight. The location of the tie-wraps below the limit switch will have to be determined on a case-by-case basis since this depends on how much the cables are stretched. Use personal judgment on what cable restraint location causes the cables to fall into the guard best.



Figure 17

Electrical Assembly

9 - Cable Connection Cam-Cam Pod (left side)

1. Route the cable "bundle" by feeding the 3 cables from underneath the Pod and securing with the strain relief bracket. Note, the cable ends intended to connect to the camera have molded strain-reliefs to be used in conjunction with the pod strain relief bracket.

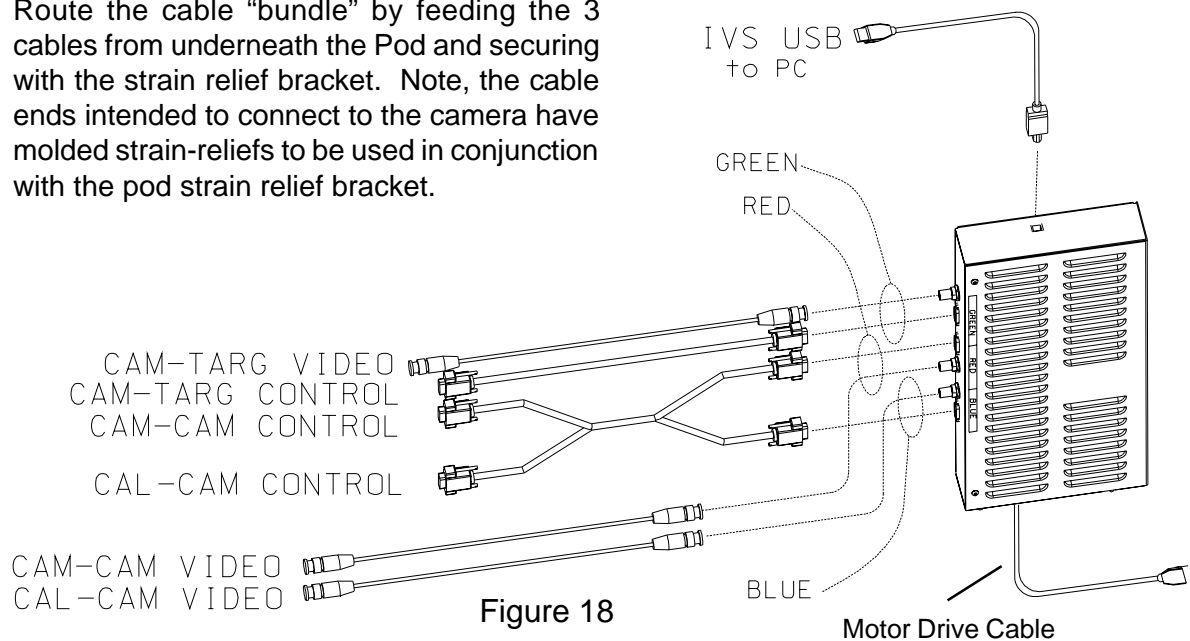


Figure 18

2. After the cables have been secured, attach to the camera PCBs. The PCBs and cables are identified with color bands. Match the bands of the cables to the bands on the PCBs. Likewise the IVS interface box is labeled with color bands. The Left camera PCB is located on the outboard side of the Pod and is identified with a RED band. The Calibration Camera, marked with a BLUE band, uses the PCB on the inside location. Refer to the Illustration in Figure 18
3. Carefully connect cables from Left Camera Pod to the IVS BOX. Note the position of the color bands, match accordingly. Refer to Figure 18 for IVS detail.

Cam-Targ Pod (right side)

1. Locate the long single ended communications cable with the Green band, and one long video cable. Route small video cable through the center of the Power cable as discussed earlier. Install these on the right camera pod by feeding the 2 cables from underneath the Pod and secure with the strain relief bracket.
2. After the cables have been secured, attach to the camera PCB. The PCB and cables are identified with color bands. Match the bands of the cables to the bands on the PCBs.
3. Carefully connect cables from Camera Pods to the IVS BOX. The IVS interface box is labeled with color bands as is the camera pod PCBs. The Right camera PCB is identified with a green band, the left camera with red and the calibration camera; blue. Refer to Figure 18 for IVS detail.
4. Connect the IVS USB cable to the console PC USB receptacle. See Figure 3 on page 8 for PC connector detail and Figure 18.
5. Connect AC power cable to camera/IVS power supply.

NOTE: Recheck all connections for mechanical and electrical integrity

10 - CALIBRATE POD MOTORS

The software needs to know distance traveled each time it searches for the targets. The computer calculates speed by knowing the distance times the length of time while moving. Calibration determines this speed, usually a few inches a second. An accurate distance is required to get an accurate speed. The result of an inaccurate motor calibration may be jerky target search where the motor moves too far each search increment or too little.

Before beginning the calibration process the camera pods must be adjusted to the very bottom or the very top of their travel.

1. From the Main Menu, select the Maintenance tab.
2. From the Maintenance tab, select Aligner Diagnostics.
3. From the Aligner Diagnostic, select Camera View.

NOTE: IT IS NOT NECESSARY THAT THE CAMERAS SEE TARGETS AT THIS TIME.

4. Using the mouse, select Manual Mode, then “Go to the bottom” (Figure 19). The motor should power up and move both cameras to the bottom of their travel (bottom shut-off switch).
5. Exit by clicking on the “Home” key in the toolbar.
6. From the Main Menu, select the Preference tab.
7. From the Preference tab, select the System Configuration Icon.
8. Make sure that the Imaging System Type is set to Three Cameras. (Figure 20)
9. Check both the “Pod Motors Available” and “Enable Motor Target Search” boxes”.
10. Measure the distance between the two limit switches. Input this value into the distance section. See Step 28 page 16 for this recorded value.
11. Using the mouse pointer click on “Calibrate Pod Motors”.

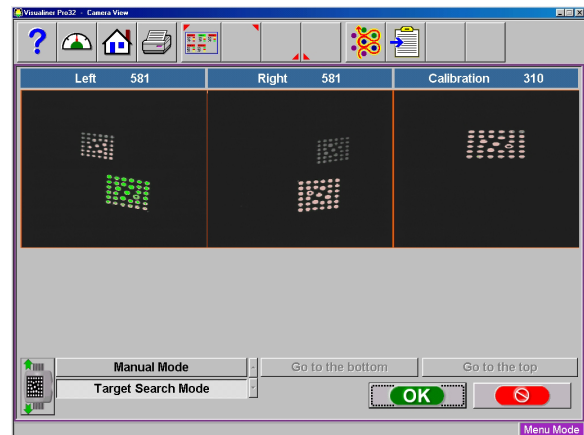


Figure 19

12. The pod motor should travel to the upper limit switch and then travel the lower shut-off switch. Pay attention that the cables hanging from the Left Hand camera does not accidentally trip the lower shut-off switch. If this should happen the technician must repeat the “Calibrate Pod Motor” procedure. After the cameras travel the distance the unit should automatically enter both the “Up” and “Down” distance, usually the distance would be a couple of inches a second.
13. If the Up or Down speed is greater than 3.0 in/sec the speed is not calibrated correctly. Go back to Step 4 and repeat the pod motor calibration.

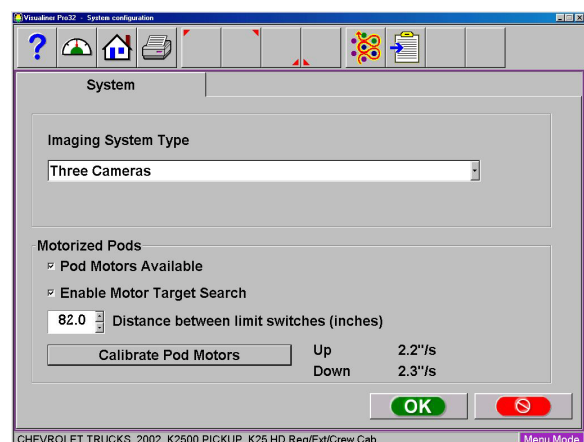


Figure 20

11 - CAMERA AIM PROCEDURES - VERTICAL / HORIZONTAL ADJUSTMENT

(For 3 camera systems)

A. Set the lift/rack to the normal alignment height and set the lift down on the locks. Measure the distance from the floor to the turntables and record this value below (Turntable Height "A").

B. Determine overall camera height using the calculation below:

(A) Turntable Height _____ inches

(B) Camera Offset Height + 30 inches

(C) Overall Camera Height = _____ inches
(EYE OF THE CAMERA)

C. From the Main Menu, select the "Maintenance" tab.

D. From the Maintenance tab, select Aligner Diagnostics.

E. From Aligner Diagnostic, select Camera View. Set the cameras to Manual Mode. Move the center of the left camera to the Overall Camera Height (C) recorded in (step B) (± 1 "). Make sure the camera assemblies are fully seated and tight under the two button head screws beside the vertical aim adjustment (Figure 21).

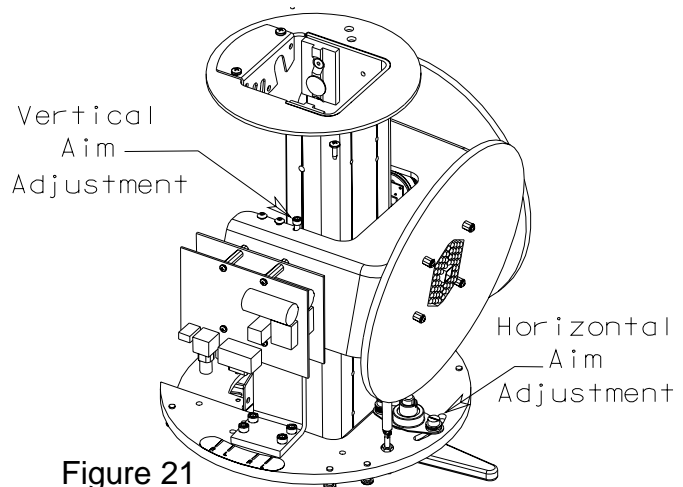


Figure 21

F. Turn the left and right pod levers all the way out (away from lift centerline). (Figure 22)

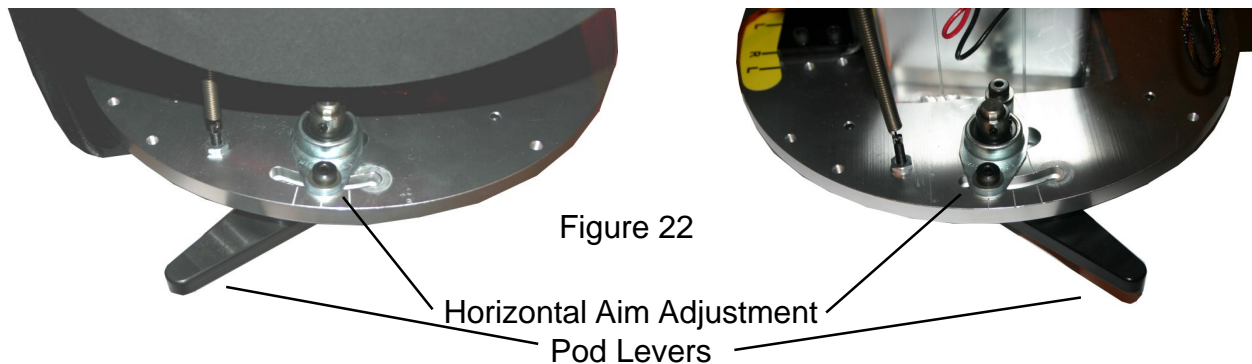


Figure 22

Horizontal Aim Adjustment
Pod Levers

- G. Check the screen to make sure the top of calibration target is located $\frac{1}{4}$ " from the top of the calibration view screen (Figure 23). If the target is not in the correct location on the screen, the left camera will have to be aimed. Horizontal adjustments to the camera aim can be made after loosening the socket head cap screw above the lever at the bottom of the left pod (Figure 22). Make sure the lever stays to the far left while rotating the pod assembly. When the calibration camera is aligned properly, tighten the socket head cap screw.

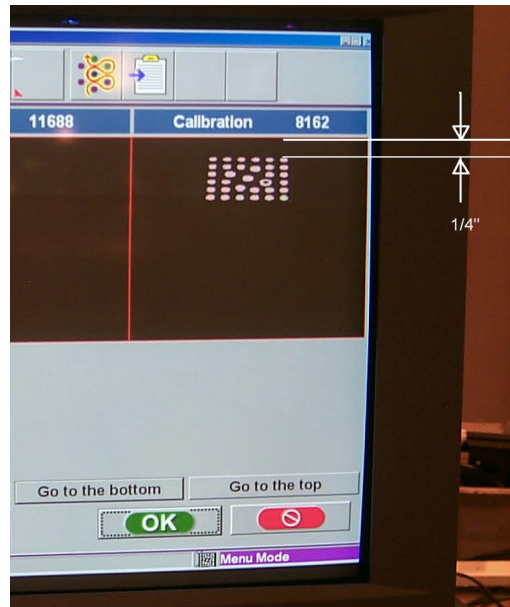


Figure 23

- H. Clamp the front targets to the turntables making sure they are centered on the turntable. Move the left turntable-target assembly out until a portion of the front target can be seen in the left camera view screen (Figure 24). Levers are still all the way out. Mount the right front target on the turntable and move the assembly out to the same distance from the rack centerline as the left turntable-target assembly.

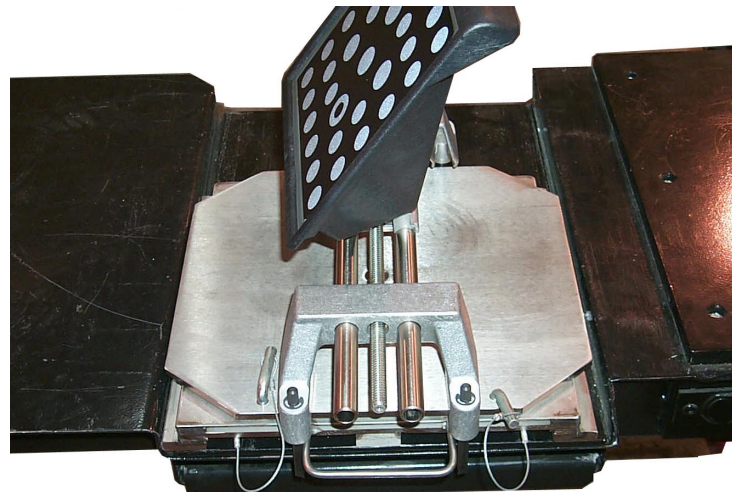


Figure 24

- I. Set the rear targets as far back on the lift as is reasonable (Figure 25). Make sure they are equal distance from the lift centerline and the target clamps are square to the lift. The clamps should be spread equal distances and the rear targets should be equal distances from the front targets.



Figure 25

- J. Set the vertical aim of the left camera so that the distance from the top of the rear target to the top of the view window is the same as the distance from the bottom of the front target to the bottom of the view screen (Figure 26). Vertical camera aim is adjusted using the socket head cap screw on the left side of the pod car near the two button head screws that hold the camera assembly on the pod (Figure 27).

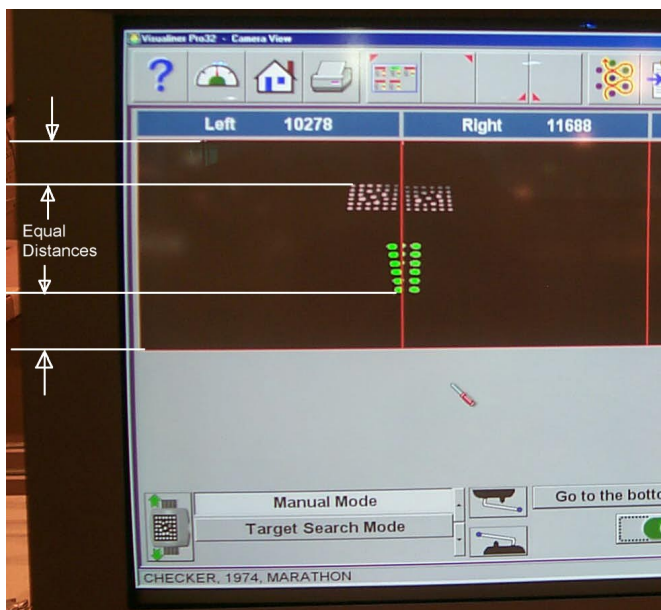


Figure 26

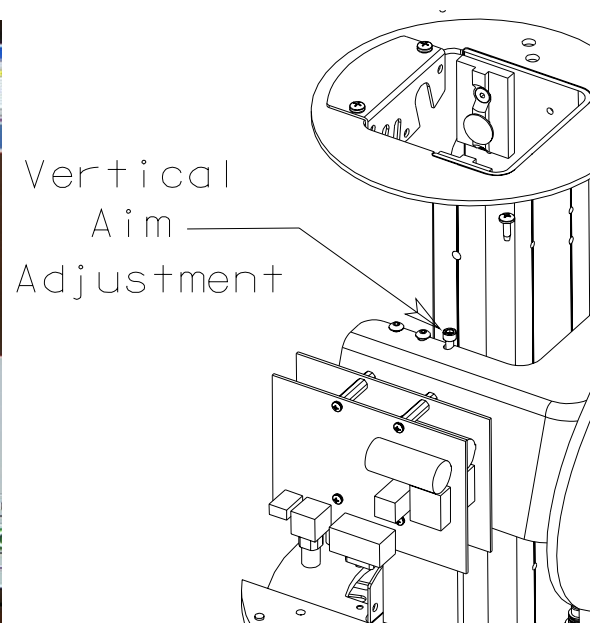


Figure 27

- K. Ensure both pod levers are still turned out (away from lift centerline). A portion of each front target should be seen in each of the Left and Right camera view screens. The right camera pod can now be aligned horizontally with the left so that the same number of fids (reflective dots) are shown on the left and right views (± 1 Fid) (Figure 26). Again, make sure the right pod lever stays to the far right while making adjustments to pod aim.

- L. Set the vertical aim of the right camera so that the fids are aligned across both screens (± 1 Fid).

- M. With the cameras aligned and the rear targets set as described in step H, the rear targets in the camera view should be aligned vertically and should be equal distances from the centerline of the camera views. If the two views are more than 1 fid out of alignment, the alignment and position of the Arago columns needs to be checked.

12 - Camera Pod Rotation

In order to optimize the Arago 3 alignment system, the cameras have been mounted on a swivel pod assembly. This swivel pod allows the right and left cameras to rotate horizontally to see the targets in all fields of views (Narrow, Normal and Wide). The Arago 3 does not require initial RCP because the third camera maintains constant calibration.

The System does however need to know what is narrow, normal and wide. The following steps should be followed to complete system setup in preparation for use. In this step the system is looking at the calibration target only.

1. From the calibration icon single click on the “Camera Pod Rotation” icon. (Figure 28)
2. Adjust the camera levers to the illustrated position shown on the screen and click on **<OK>**. (Figure 29)
3. After clicking on “OK” as indicated in step 2, the camera rotation levers change positions. Move the camera levers to the position shown and click on **<OK>**. (Figure 30)
4. Continue the process until all camera positions have been checked. After the final rotation lever has been checked click on the **<Cancel>** button to exit. (Figure 31)

NOTE: IF A MISTAKE IS MADE DURING THE TEACHING PROCESS, THE OPERATOR CAN SIMPLY CLICK ON THE RESET BUTTON TO CLEAR THE LEARNING PROCESS AND START AT THE BEGINNING.

13 - CHECK CAMERA TRACKING

Put a car on the lift, install targets and adjust the pod aim levers so that the front and rear targets are centered horizontally. From camera Manual Mode go to Target Search Mode and the cameras should find and center the targets in 5 or 6 moves. The cameras should also track the targets if the lift is raised or lowered

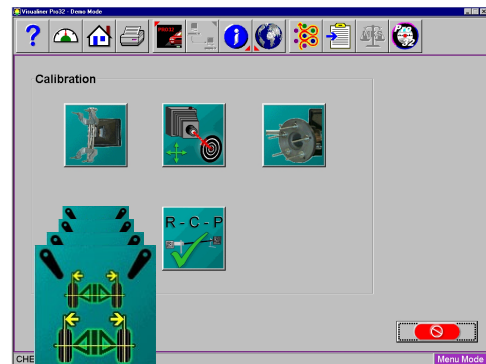


Figure 28

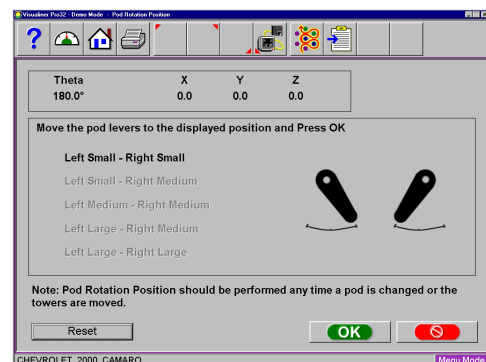


Figure 29

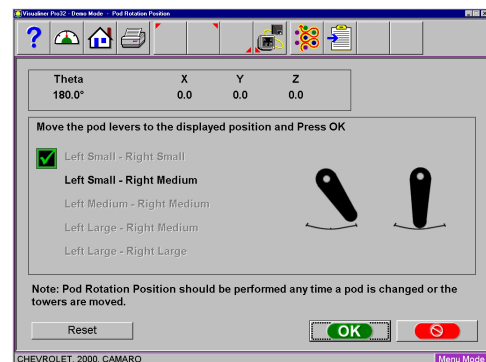


Figure 30

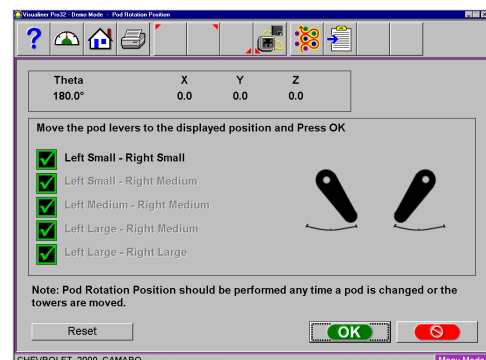


Figure 31

13 - Finalizing the Installation

1. Place protective floor covers over harnesses to prevent damage from traffic. Covers can be secured with 1/4" anchors or with adhesive sealer.
2. Attach the foam shields to the camera Strobe boards using the screws and washers pre-attached to the boards. See Figure 15 on page 17 for illustration.
3. Attach the protective covers to both pod assemblies. Covers are secured with 6 screws on the bottom and 2 on the top. See Figure 32 for detail. Covers should not bind the pod at any point.
4. Inspect all connections for proper contact both mechanical and electrical.
5. Make sure cable covers are in place and are properly installed for motor drive and lower limit switch cables. Snap-in covers must be trimmed to length to cover limit switch cables.
6. Raise and lower the lift several times and make sure the system operates as intended in the "Target Search Mode".
7. Perform a "Target ID" Procedure to ensure accuracy.
7. Perform an alignment, preferably with a vehicle of known integrity, verify results. Refer to service instructions to address any discrepancies incurred at this point.

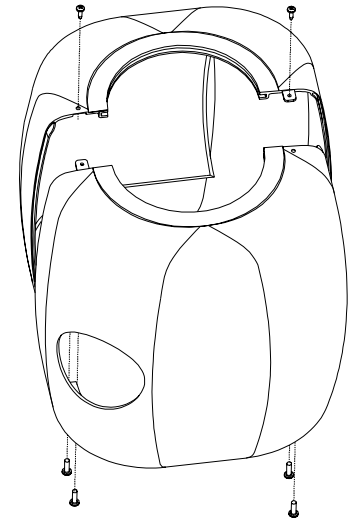


Figure 32

Final Checkout - check that pods travel up and down reliably. Test to see how much force is required to raise pod and again to pull pod lower. Force should be about the same in either direction, and should be about 5 pounds or more.

Insure that pod cars are not dragging on the towers: Inspect for burrs on towers. Bur-nish the towers, by installing pod on tower before it is erected, and slide repeatedly with side force in various directions, until pods slide freely on towers. If binding persists, file the plastic guides. Pods should slide down towers when one end is on floor and other end is resting on lower guard. Only a slight push should start the pod down the slope.

Lubricate the pulleys only if necessary with dry graphite or teflon. Do not lubricate, grease or oil the pod slides.

14 - System training

Spend time with our new customer going over the software flow and operation of his/her new system. A few minutes here will save hours later for both you and the technician. Things to cover are outlined but not limited to the items below:

- ⇒ System features and specifications
- ⇒ Proper system start-up and shut down
- ⇒ Windows operation (if he has a desktop mode activated)
- ⇒ Software navigation
- ⇒ Setup, system interaction, preferences, features
- ⇒ Using Wizards
- ⇒ Perform an alignment
- ⇒ Navigation of the Arago 3™ Pro32 software features

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