



Pedevator 2

Operations and Instructions Manual

Revision 1

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Distributed by Hitachi Kokusai Electric America, Ltd.
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PRECAUTIONARY STATEMENT

Please read all of the following documentation before attempting the installation and configuration of these systems. If any of the instructions are unclear to you, call your servicing dealer or Hitachi before proceeding for clarification. Failure to correctly configure and install these systems may cause damage to the equipment, and will void the warranties. Please make sure before connecting or disconnecting any cables that the power supplies are turned OFF.

WARRANTY

Hitachi Kokusai Electric America, Ltd. warrants to the original customer that each Pedevator 2 unit shall be free from malfunction due to defective workmanship or component failure for a period of ONE YEAR from the original date of delivery to the customer. For service under the warranty period, return authorization must be obtained before returning the product. This warranty does not apply to finish or appearance items, to malfunction due to abuse, or operation in violation of published operating specifications, or to failures caused by improper installation, connections, modifications, alterations, or other unauthorized repairs. This warranty does not cover labor or shipping costs for removal and/or reinstallation of equipment under warranty. Under no circumstances shall Hitachi Kokusai Electric America, Ltd. or Display Devices, Inc., their owners or employees be liable to you for any special damages, including any lost profits, lost savings, or other incidental or consequential damages, or for any claim by any other party.



IMPORTANT SAFETY INSTRUCTIONS

1. Read ALL The Instructions! All the safety and operating instructions should be read before the product is operated
2. Retain Instructions. These safety and operating instructions should be retained for future reference.
3. Heed Warnings. All warnings on the product and the operating instructions should be adhered to.
4. Follow Instructions. All operating and use instructions should be followed.
5. Cleaning. Unplug this product from the power supply before cleaning. Do not use liquid cleaners or aerosol cleaners. Use only a damp cloth for cleaning.
6. Attachments. Do not use attachments not recommended by the product manufacturer as they may cause hazards.
7. Water and Moisture. Do not use this product near water--for example, near a bath tub, wash bowl, kitchen sink, or laundry tub, wet basement, swimming pool, pond, or similar areas.
8. Accessories. Do not place this product on an unstable cart, stand, tripod, bracket, or table. The product may fall, causing serious injury to a child or adult, and cause serious damage to the product. Use only with a cart, stand, tripod, bracket, or table recommended by the manufacturer, or sold with the product. Any mounting of the product should follow the manufacturers' instructions, and should use only mounting accessories recommended by the manufacturer.

9. Moving. A Pedevator and PT head/camera combination should be moved with care. Quick stops, excessive force, and uneven surfaces may cause the Pedevator/camera/PT head combination to overturn.
10. Power Sources. This product should be operated only from the type of power source indicated on the marking label. If you are not sure of the type of power supply to your facility, consult your product dealer or local power company.
11. Grounding or Polarization. This product's power supply is supplied with a three wire grounding type plug; a plug having a third (grounding) pin. This is a safety feature. If you are unable to insert the plug into the outlet, contact an electrician to replace the obsolete outlet. Do not defeat the purpose of the grounding plug.
12. Power cord protection. Power supply cords should be routed such that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to the cords at plug, receptacle, and to the point at which they enter the power supply and the product.
13. Lightning. For added protection for this product during a lightning storm, or when it is left unattended and unused for long periods of time, unplug it from the wall outlet. This will prevent damage to the product due to lightning and power line surges.
14. Overloading. Do not overload wall outlets, extension cords, or receptacles as this can result in a risk of fire or electric shock.
15. Object and liquid entry. Never push objects of any kind into this product through openings as they may touch voltage points or short out parts that could result in a fire or electrical shock. Never spill liquid of any kind on the product.
16. Flammable and Explosive substances. Avoid using this product where there are gases and also where there are flammable and explosive substances in the immediate vicinity.
17. Heavy shock or vibration. When carrying this product around, do not subject the product to heavy shock or vibration.
18. Servicing. Follow instructions for configuration inside this document. Do not attempt to service this product yourself as opening or removing covers may expose you to dangerous voltage or other hazards. Refer all servicing to qualified service personnel.
19. Damage requiring service. Unplug this product from the wall outlet and refer servicing to qualified service personnel under the following conditions: a--When the power supply cord or plug is damaged. b--if liquid has been spilled, or objects have fallen into the product. c--If the product has been exposed to rain or water. d-- if the product does not operate normally by following the operating instructions. Adjust only those controls which are covered by the operating instructions as improper adjustment of other controls may result in damage and will often require extensive work by a qualified technician to restore the product to its normal operating range. e-- if the product has been dropped or damaged in any way. f--When the product exhibits a distinct change in performance, this indicates a need for service.
20. Replacement parts. When replacement parts are required, be sure that the service technician has used replacement parts specified by the manufacturer or have the same characteristics as the original part. Unauthorized substitutions may result in fire, electric shock, or other hazards.
21. Safety Check. Upon completion of any service or repairs to this product, ask the service technician to perform safety checks to determine that the product is in proper operating condi-

tion.

22. Heat. The product must be situated away from heat sources such as radiators, heat registers, stoves, or other products (including amplifiers or direct sunlight) that produce heat.

ITEMS INCLUDED with your Pedevator pan tilt/camera lift:

PT-PED Pedevator main column with base

3x Steel legs and Locking casters

5 pin to 5 pin extension cable to power Eagle™ pan tilt head from Pedevator 2

5 pin Phoenix™ power/data connector and back shell kit

3x 3/8-16" x 3/4" mounting bolts, lock washers, and flat washers

2x Quick release mounting pins, 1/2" x 3"

TOOLS REQUIRED:

3/4" wrenches (2) for tightening leg bolts

5/32" hex key for lockdown screw on sliding mount assembly

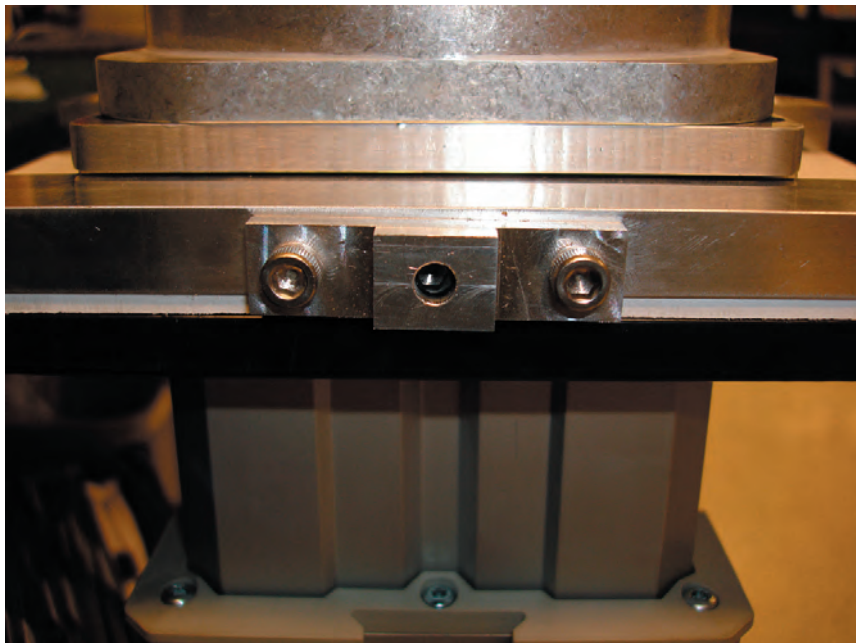
Hex key for removal/replacement of safety bolt on sliding mount assembly

UNPACKING AND ASSEMBLING THE PT-PED2 PEDEVATOR 2



Carefully remove the Pedevator 2 column and accessories from the protective foam packaging. It is recommended that two people complete the assembly of the Pedevator 2, as the base column unit alone weighs 70 lbs., and the legs weigh another 40 lbs. It is recommended to save this packaging until the installation is complete and the column has been put into operation, in the unlikely event that there is damage from shipping and it needs to be returned for service.

- 1) Begin by removing all of the Pedevator 2 parts from the shipping box. Check them against the included parts list to verify you have received all parts.
- 2) Open the plastic bag surrounding the column/base assembly (#17, 1, 2) and remove the assembly. Set the base down onto the floor, with the column pointing upwards.
- 3) Take one of the legs (#47) from its package and insert it into the space between the two base plates. It is recommended to start with the front leg. The front leg is located opposite of the control box which is mounted to the rear of the column. Remove the two bolts that are loosely in place, slip the leg in between the plates (with the caster pointed down), align the holes, insert the bolts and tighten securely with 3/4" wrenches to hold the leg in place.
- 4) Repeat the process with the other two legs, but instead of two bolts, use only one bolt inserted into the hole closest to the column. Into the other hole you will use the quick release pin (#20) to allow the two rear legs to be swiveled between in-use and travel configurations. See drawing page 1, top left corner, to see the two different configurations. Once all 3 legs are in place, tighten all mounting bolts and nuts securely.
- 5) The pan tilt / camera combination is mounted to the top of the Pedevator by means of the removable sliding mounting block. (See drawing page 3) The block (#9) is held in place by a safety bolt (#40) at the end of the travel rails, and by a lockdown assembly in the middle of the slide. Using a 5/32" hex driver, turn the hex screw clockwise to loosen the lockdown, counterclockwise to tighten the lockdown. Remove the safety bolt, turn the hex screw (#41) clockwise to loosen



the lockdown, and slide the mounting block out of the rails.

6) Attach the mounting block to the bottom of your pan tilt head with the included 3/8-16" hex head mounting bolts, lock washers, and flat washers. If mounting an Eagle™ PT-220 or 250 pan tilt head, make sure that the tripod adapter plate included with the PT head is first attached to the PT head base, then attach the Pedevator mounting block to the adapter plate.

7) Slide the completed PT head/mounting block assembly back into the mounting rails. Center the assembly on the top of the mounting block, then turn the lockdown bolt counterclockwise to tighten it against the mounting block. Replace the safety bolt at the end of the sliding rails.

8) Build up the power/data connection cable as shown on the next page.

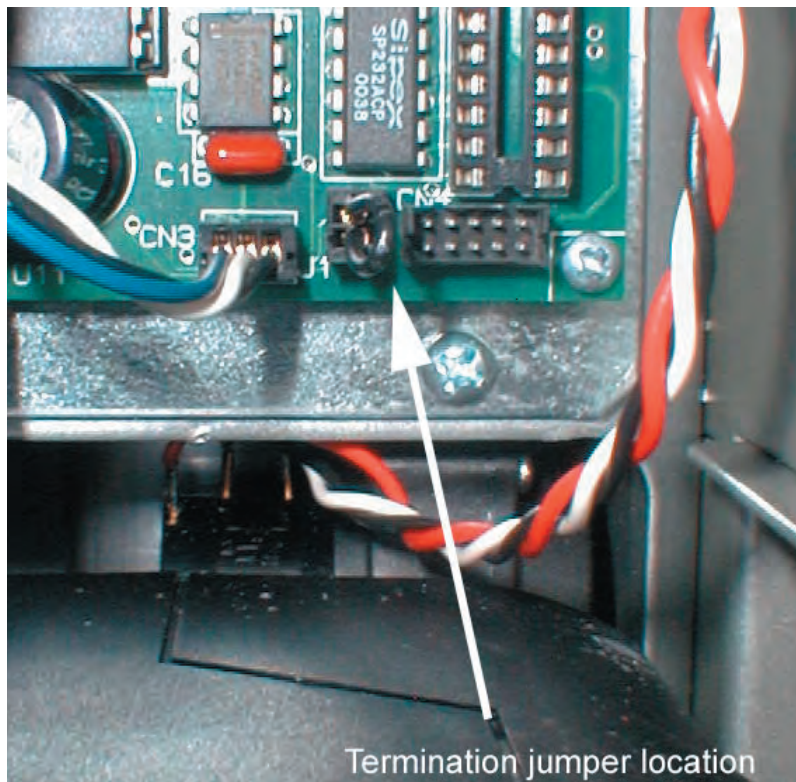
PIN #1	RS-485 GROUND FROM CONTROLLER PIN 5
PIN #2	RS-485 LINE 1 FROM CONTROLLER PIN 2
PIN #3	RS-485 LINE 2 FROM CONTROLLER PIN 3
PIN #4	24VDC FROM POWER SUPPLY PIN 1 OR 2
PIN #5	DC GROUND FROM POWER SUPPLY PIN 3 OR 4

POWER AND RS-485 CONNECTION AND TERMINATION

The above table shows the pin outs for the Phoenix™ 5 pin connector on the lower front of the Pedevator 2 control box. 24 VDC power is required for the operation of the Pedevator 2. The motor in the Pedevator 2 requires at least 1.5A @ 24VDC. The Eagle™ pan tilt on top of the Pedevator 2 also has its' own 24 VDC current requirements. Make sure that when selecting your power supply that both of the needs are met, as inadequate power will result in poor performance. Use at least an 18 gauge (1.0 mm) conductor wire for power to the Pedevator 2.

Communications for the Eagle™ pan tilt system is transmitted via the RS-485 standard, a common multidrop network configuration. Three wires are required for RS-485 communications, two for signal and one for ground. Using 20 AWG shielded twisted pair cable, maximum communication length without a repeater is 4,000 feet. Also included with your system is a 5 pin to 5 pin interconnection cable. This cable provides loop through power and data from the Pedevator to any Eagle™ pan tilt head mounted on top of the Pedevator. Simply plug the connector into the provided jack on the Pedevator control box and into the mating connector on the base of your Eagle™ pan tilt head.

To connect multiple units to the same communication line, you may connect the three wires in parallel from unit to unit, or make a "home run" from each unit to the central controller. On each of the Pedevator 2 unit, pan tilt heads and in the controller is a 120 ohm terminating resistor. The resistor on the Pedevator 2 is connected in series to a removeable jumper for easy configuration; this jumper for termination is located on the inside of the unit (under the removeable access panel) at the bottom of the main control board (see photo) With the jumper in place the head is terminated; with the jumper out of circuit, the head is unterminated. Heads are shipped with the termination jumper in place. The easiest way to terminate



your system is to terminate the device that is farthest away by cable distance, and leave the controller terminated. Any other head or Pedevator should NOT be terminated.

ENERGIZING THE SYSTEM (Pedevator 2 with Eagle™ Pan Tilt head)

It is recommended to power up the Eagle™ pan tilt controller before powering up the pan tilt head/Pedevators. When this is done, you may now power up the power supply for the Pedevators. Observe the red status LED lens on the top of the Pedevator control box. About two seconds after power is applied, the LED should blink twice. This is to signal that the main microprocessor is active, and ready to receive a command. The LED provides important visual feedback to the status of the unit; if the unit has been powered up and is being talked to by a controller, the LED is on mostly solid, with some flickering. If the head is attached to the RS-485 line and hearing a command being sent to another head, it will flicker.

If the LED comes on solid, with no flickering at all, it usually means the RS-485 wiring is incorrect. Usually the ground and one of the data lines have been swapped. Check the wiring and try again.

INSTALLING AND USING EAGLE™ PEDEVATOR WITH EAGLE™ CONTROL PANELS

The Eagle™ PT-TSC2, PT-C, or PT-C55 controllers are the preferred controller for use with the Pedevator 2 unit, but you may also use an AMX or Crestron control system instead. The Pedevator 2 responds just as an Eagle™ pan tilt head does, only it just has up and down motion that is controlled by the tilt axis of the joystick and no pan action. It has the same addressing requirements as a pan tilt head, and saves and recalls preset height positions just like a PT head.

LIMITS and PRESETS

Safety limits for up and down range are preset into the Pedevator 2 firmware, and are not user changeable. You may set preset positions any where you desire through out the 500mm (19.5") range of travel.

SPEED and DUTY CYCLE

The PT-PED2 has just one speed range; it is variable throughout this range just as all Eagle™ pan tilt heads are. The lift motor has a duty cycle of 2 on / 18 off meaning 2 minutes continuous use followed by 18 minutes of rest. **It is not rated for continuous usage.**

SETTING ADDRESS OF PEDEVATOR

The units' address is set by the factory to #1 when shipped. If a change is required, simply use the address change procedure as documented in the manual for your particular controller.



Note that the readdressing procedure will only work if you know the number the unit is currently set to; if you don't know the number, first select CAMERA, ALL. This will allow you to talk to any head that is correctly wired up.

Also note that selecting CAMERA, ALL will set the number for all heads on the RS-485 comm line; you must disconnect the power or communication for all the heads except the one you wish to address, otherwise all the powered heads will be set to the same address!

PEDEVATOR AND PAN TILT COMBINED OPERATIONS



Be sure to follow all of the installation and safety instructions included with the Pedevator and Eagle™ pan tilt head before starting to use the combined system !!

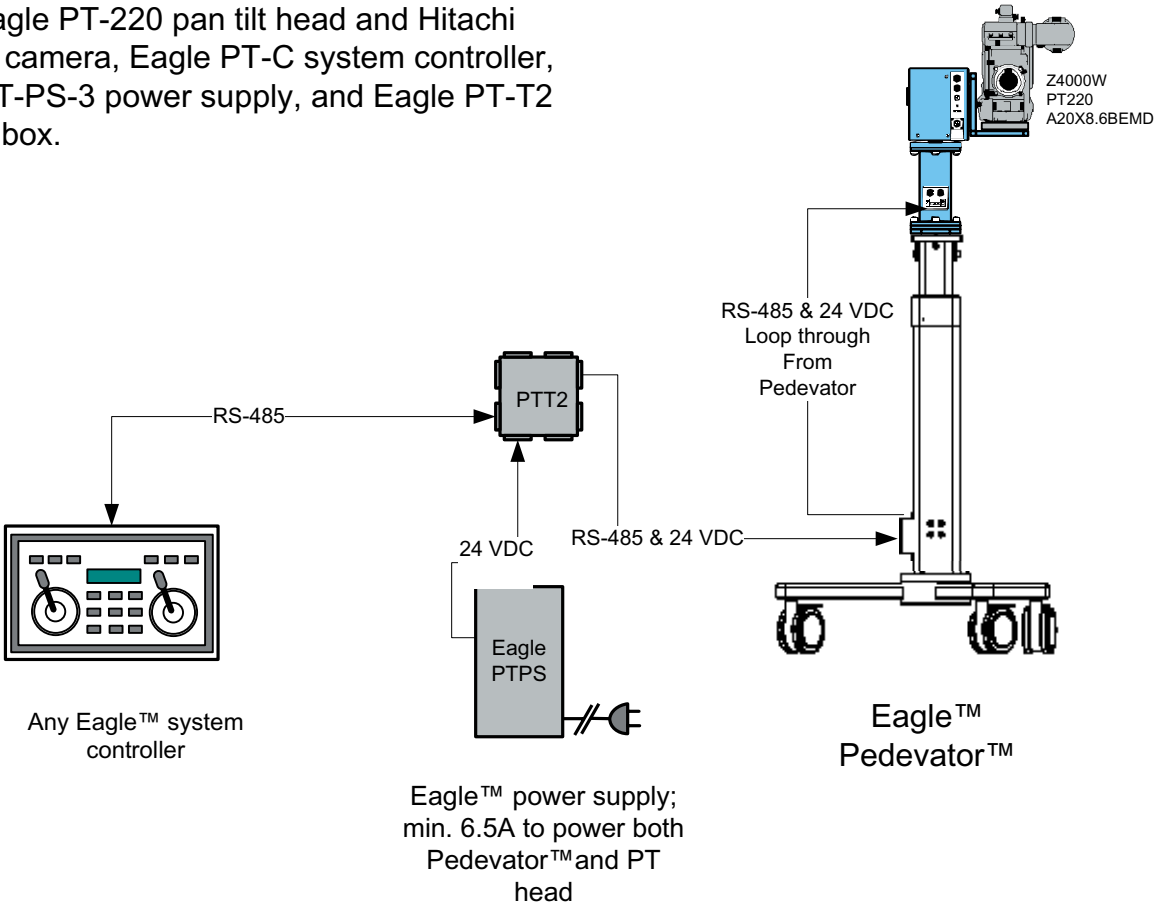
First, select the address of the device you wish to control. Since several Eagle™ devices may be on a single RS-485 line, you must choose the correct one to control (only 8 may be controlled from the PT-C55 controller). Select CAMERA, then the number of the head or Pedevator to be controlled. Head addresses can be changed as described in the section of your controller manual about addressing. See the basic system configuration diagram on page 10 for an understanding of system wiring connections.

It is best to keep a separate address number for each pan tilt and Pedevator you are controlling. While it is theoretically possible to set the address for both to be the same, this can create some problems when trying to operate one separately from another.

Use the controller joystick to raise or lower the Pedevator elevation. Pushing up on the joystick raises the column; pulling down on the joystick lowers the column. Note that this direction of travel is preset into the firmware and may not be changed by using the INVERT command as you can on a pan tilt head.

To save a preset position, simply go to the desired height and save the preset. You do not need to be in POSITION mode to save a preset height on the Pedevator as with a pan tilt head, as there is no lens feedback to be concerned about.

Eagle™ Pedevator™ system configuration using Eagle PT-220 pan tilt head and Hitachi Z4000w camera, Eagle PT-C system controller, Eagle PT-PS-3 power supply, and Eagle PT-T2 junction box.



FREQUENTLY ASKED QUESTIONS / SETUP PROBLEMS

My pan tilt head/Pedevator was working, but now has stopped responding. I still have a picture from the camera, but have no control. What happened?

A: You are either trying to control the wrong head number, or the unit has accidentally been re-addressed to an unknown number, or the serial communications have failed. If you are certain that you are trying to control the correct head, follow this procedure to regain control.

1) On the Eagle controller, select CAMERA, ALL. This will talk to any head/Pedevator on the control line as long as it's wired correctly and has not suffered a major failure. Try to move the head up, down, left, or right. If it responds, then you have good communications. Follow the procedure in your controller manual to readdress the head to the number you want it to be.

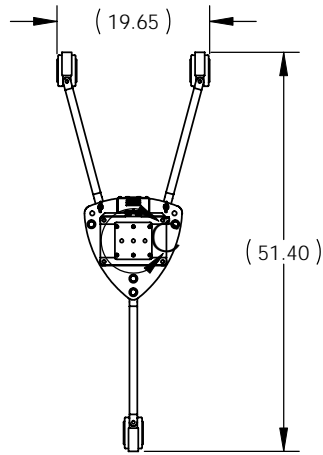
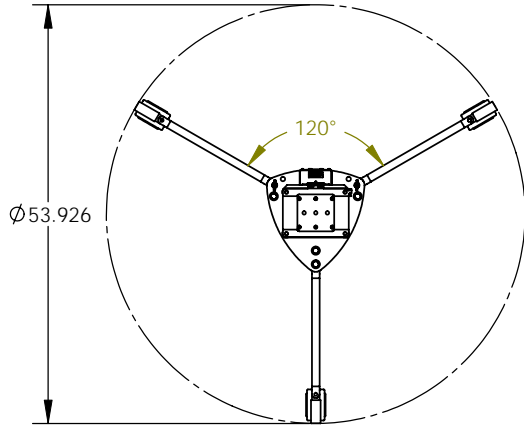
2) If it doesn't respond, then check the RS-485 serial wiring path from the controller to the head(s). If you have multiple heads, and the other heads work correctly, then your wiring path is most likely correct, but should still be tested. Try moving the non-working head to a known working location and retesting.

3) The red LED on the side panel of the head/Pedevator is for troubleshooting and status. If a head is correctly wired and addressed, when you move the joystick, the LED will glow solid, with some modulation(flickering) seen as you move the joystick. If the LED comes on solid upon power up, then the RS-485 ground and one of the comm lines are reversed. Check your wiring again. If the LED never comes on solid, but only flickers, then either the head is hearing traffic for another head, or the RS-485 A & B comm lines are reversed. If you are certain the head is addressed properly, then swap the A&B comm lines and test again. If the LED never comes on after the two blink power up code, then the wires are broken or the RS-485 comm driver chip is blown.

If it still doesn't work at a known good location, you have swapped the comm lines, and tried readdressing, then the comm chip in the head may be faulty. Contact Eagle tech support at (877) 862-6865 or www.eaglepantilt.com.

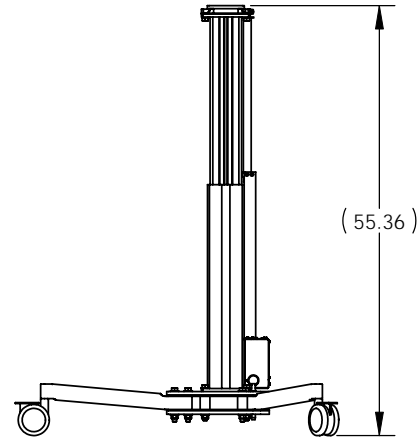
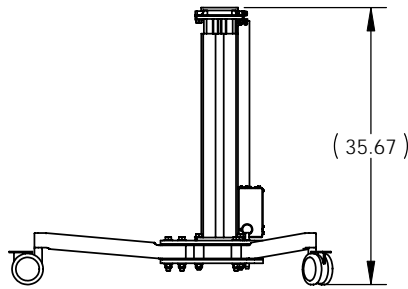
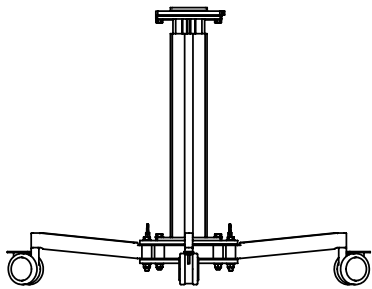
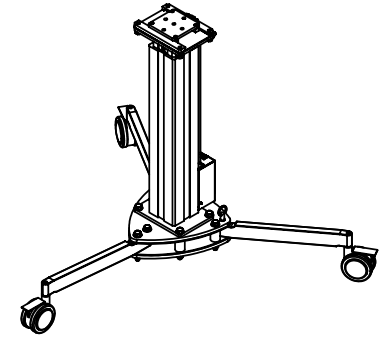
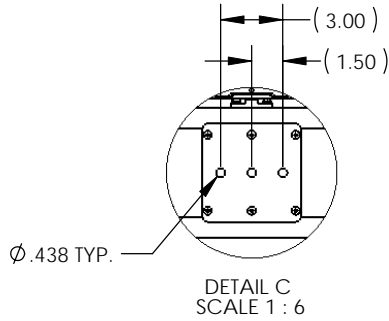
DETAILED DRAWINGS

FOLLOW ON PAGES 14-18



SHOWN WITH LEGS FOLDED TO FIT THROUGH TIGHT SPACES

DRAWING REVISION BLOCK				DRAWN	CHECKED	APPROVED	DATE
REV	ECO	DESCRIPTION					
AX1	-	RELEASE FOR PROTOTYPE		BSV			4/3/2008



5. ALL THREADS TO BE FREE OF POWDER COAT AND, OR PAINT.

4. DEBUR ALL SHARP EDGES.

3. \otimes = ITEM CHANGED AT LAST REVISION.

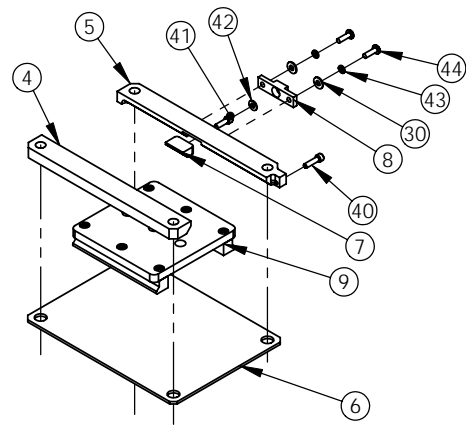
2. ALL DIMENSIONS ARE IN INCHES.

1. DO NOT SCALE DRAWING.

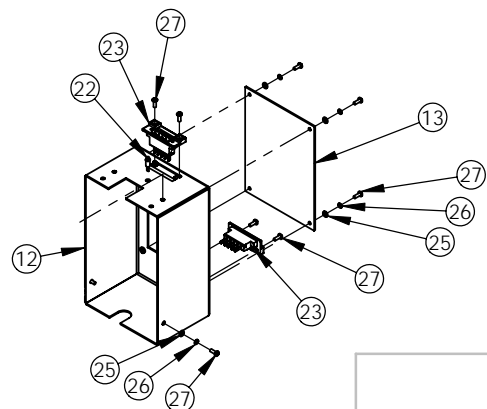
NOTES: UNLESS OTHERWISE SPECIFIED

THE INFORMATION CONTAINED IN THIS DRAWING IS THE PROPERTY OF DISPLAY DEVICES, INC. ANY REPRODUCTION IN PART OR WHOLE WITHOUT THE WRITTEN PERMISSION OF DISPLAY DEVICES, INC IS PROHIBITED.		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES. TOLERANCES: .XX = $\pm .02$.XXX = $\pm .010$.XXXX = $\pm .0050$ ANGLE = ± 0.5		DISPLAY DEVICES 5880 SHERIDAN BLVD ARVADA, CO 80003	
DRAWN: BSV		DATE: 4/3/2008		TITLE: PEDEVATOR	
CHECKED:		DATE:		SIZE: B	
MATERIAL: -		SCALE: NONE		DRAWING NO.: 150-320	
FINISH: -		FILE NAME: 150-320.SLDDRW		REV: AX1	
				SHEET 1 OF 5	

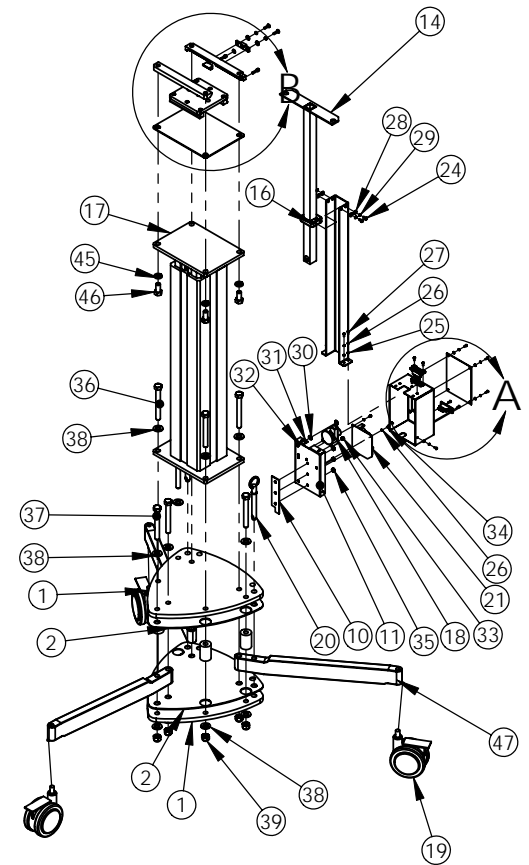
ITEM NO	QTY	PART NO	DESCRIPTION
1	2	150-323	MOUNT PLATE
2	2	150-324	PIVOT PLATE
3	4	150-325	STANDOFF
4	1	150-326	CLAMP PART 1
5	1	150-327	CLAMP PART 2
6	1	150-328	MOUNT SLIDE
7	1	150-329	PINCH PART
8	1	150-330	PINCH COVER
9	1	150-333	MOUNT ASSEMBLY
10	1	150-334	CONTROL BOARD PINCH PLATE
11	1	150-335	CONTROL BOARD MOUNT
12	1	150-336	ELECTRICAL BOX
13	1	150-337	ELECTRICAL BOX COVER
14	1	150-342	EXTENSION WELDMENT
15	1	150-340	COVER CHANNEL
16	1	150-341	GUIDE BLOCK
17	1	5300-11520	LIFT COLUMN
18	1	4450-00007	POTENTIOMETER, LINEAR, 25"
19	3	5800-15930	CASTER, TWIN WH, M12X20, 4.0DIA X 2.516
20	2	5400-00010	PIN, QR,RING, SHOULDER,1/2X3,STL,ZI
21	1	PCB1003	CONTROL BOARD
22	1	4900-10650	LED LIGHT HARNESS
23	2	4000-00039	5 PIN FT PANEL HEADER
24	4	5900-29050	8-32 X 3/8, PH, P, STL, ZI
25	10	5950-11800	#4, FL WASHER, STL, ZI
26	13	5950-14800	#4, LK WASHER, STL, ZI
27	14	5900-27000	4-40 x 5/16, PH, P, STL, ZI
28	4	5950-12100	#8, FL WASHER, STL, ZI
29	4	5950-13150	#8, LK WASHER, STL, ZI
30	3	5950-11900	#10,FL WASHER,SAE,STL,ZI
31	1	5950-00018	#10, LK WASHER, STL, BZ
32	1	5900-4110	10-32 X 5/16, PH, P, STL, ZI
33	2	6000-10500	6-32, KEPS NUT, STL, ZI
34	3	5900-17100	4-40 X 1/4, PH, P, STL, ZI
35	3	6000-12450	10-32, KEPS NUT, STL, ZI
36	4	5900-00181	1/2-13 X 4-1/4, 1.25 THREAD, HHCS, GR5, ZI
37	4	5900-00180	1/2-13 X 4, 1.25 THREAD, HHCS, HX, GR5, ZI
38	16	5950-12700	1/2, FL WASHER, USS, STL, ZI
39	8	6000-12750	1/2-13, NYLK NUT, STL, ZI
40	1	5900-21800	10-32 X 3/4" SHCS, HX, GR8, BO
41	1	5900-21850	10-32 X 5/8, SHCS, STL, BO
42	1	5950-10001	#10, FL WASHER, NY, B
43	2	5950-13550	#10, LK WASHER, STL, ZI
44	2	5900-41000	10-32 X 5/8,PH,P,STL,ZI
45	4	5950-13200	1/2, LK WASHER, STL, ZI
46	4	5900-25500	1/2-13 X 1.00, HHCS, GR5, ZI
47	3	150-322	LEG



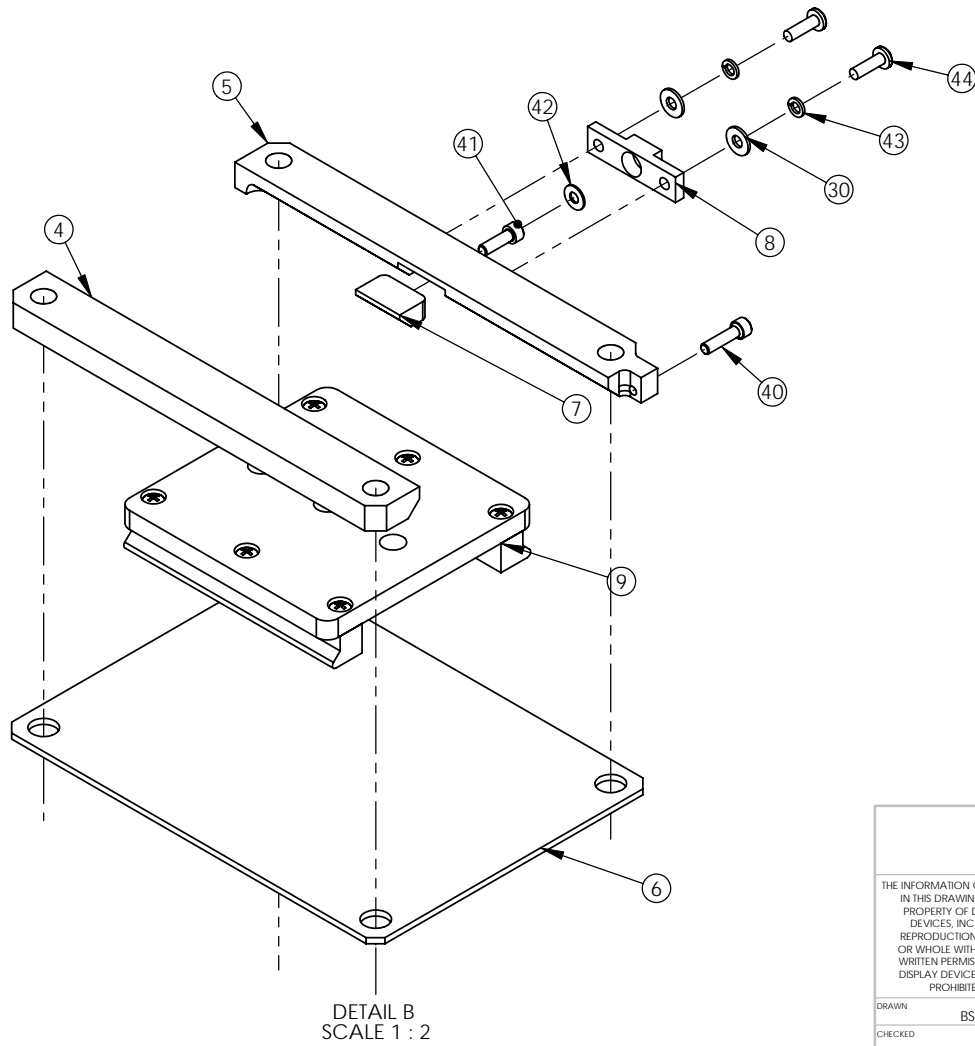
DETAIL B
SCALE 1 : 5



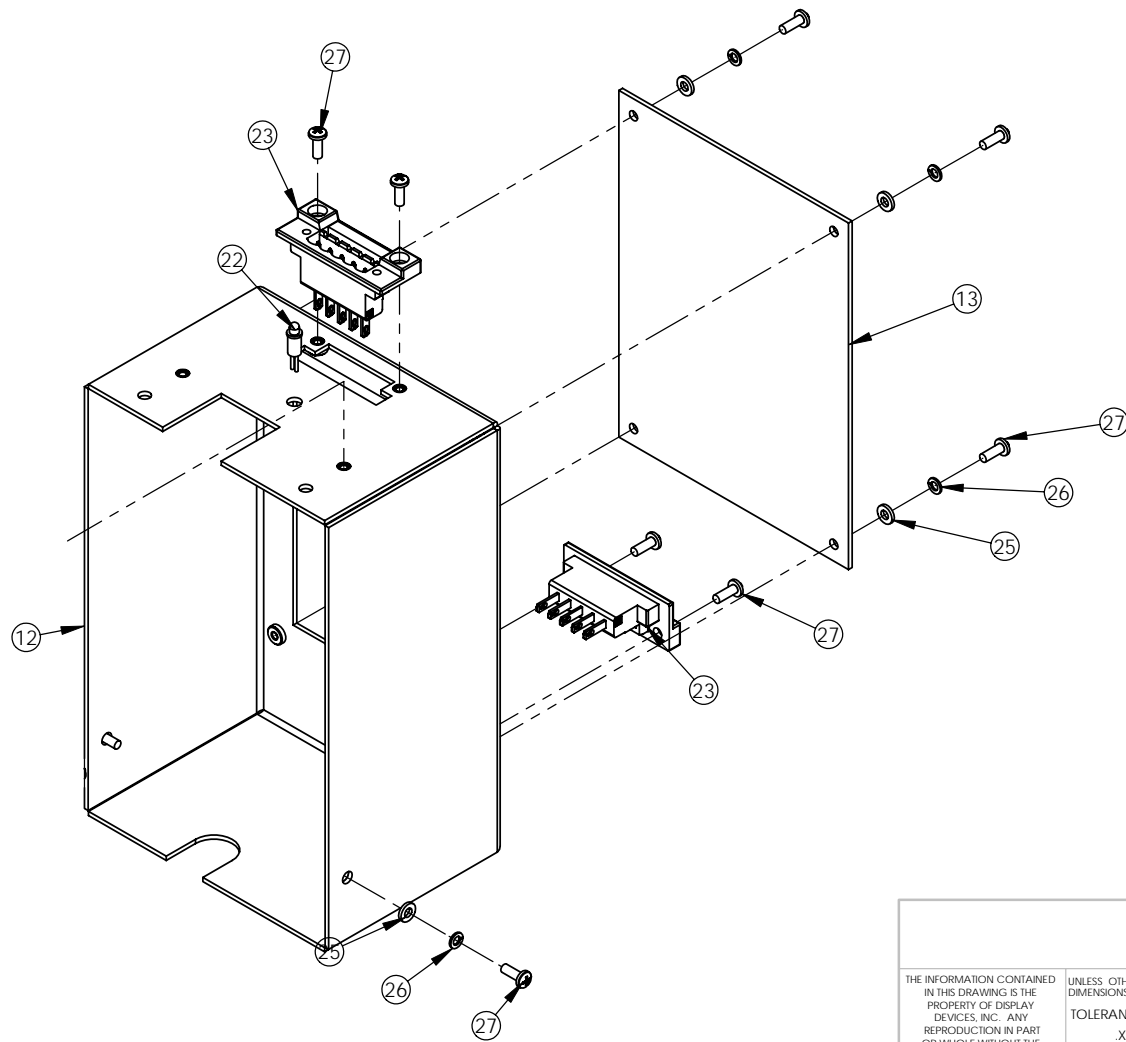
DETAIL A
SCALE 1 : 5



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DRAWN: BSV		DATE: 4/3/2008		TITLE: PEDEVATOR	
CHECKED:		DATE:		REV: AX1	
MATERIAL: -		SCALE: NONE		DRAWING NO.: 150-320	
FINISH: -		FILE NAME: 150-320.SLDDRW		SHEET 2 OF 5	



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		TITLE		PEDEVATOR	
DRAWN	DATE	SIZE	DRAWING NO.	REV	
BSV	4/3/2008	B	150-320	AX1	
CHECKED	DATE	SCALE	FILE NAME		
		NONE	150-320.SLDDRW	SHEET 3 OF 5	
MATERIAL					
FINISH					



DETAIL A
SCALE 1 : 1.5

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		TITLE		PEDEVATOR	
DRAWN	DATE	SIZE	DRAWING NO.	REV	
BSV	4/3/2008	B	150-320	AX1	
CHECKED	DATE	SCALE	FILE NAME	SHEET 4 OF 5	
		NONE	150-320.SLDDRW		
MATERIAL					
FINISH					

