



Elevation Innovation Inc

877-345-4387

www.eilifts.com

Inteli-Lift

CPLD Relay Logic

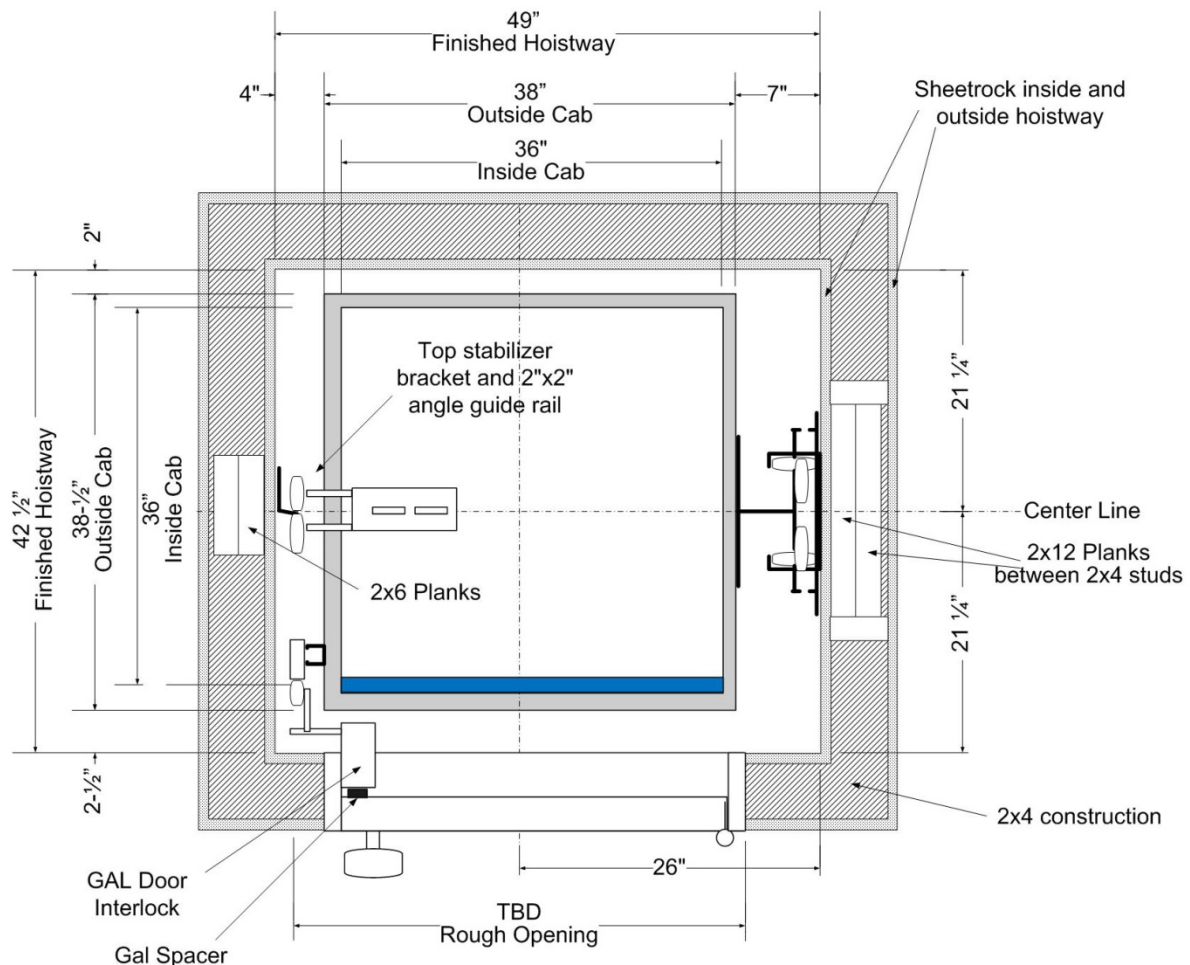
300 / 500 Lb. DUMBWAITER

Installation Manual

Installation Manual

This manual will cover the installation procedure step-by-step. The installation of this dumbwaiter is easiest if the hoistway is properly prepared. Pay close attention to hoistway drawings and the following notes.

1. Build hoistway to exact dimensions as instructed in the provided drawings. The dimensions indicated in drawings are **FINISHED DIMENSIONS**, after sheetrock has been installed
2. Insure that hoistway walls are built plumb and square.
3. The reinforced rail wall must be built with 2 sets of 2x12 planks as shown in the drawings (the 2x12 joints should be off set and glued or can be a concrete or filled block wall, the rail, cab, and load are all supported by this reinforced wall.
4. The entire inside of the hoistway must have sheetrock installed prior to starting the installation
5. It is recommended to leave sheetrock off the outside of hoistway wall until installation is complete – this makes running of wire harnesses much easier.
6. Installation of the rail, motor and cab assembly is much easier if one wall on bottom level is left unfinished – once the rail and motor assembly and cab are mounted, this wall can be finished.
7. A machine access door should be installed on the proper level for access to the motor assembly. **THIS DOOR MUST HAVE A LOCK AND REMAIN LOCKED AT ALL TIMES.** This door will be monitored with a safety switch.
8. For safety during installation, the installer should install a temporary floor across the hoistway at each of the upper levels. This will prevent people from falling down the dumbwaiter shaft during installation.



Installing the Guide Rail

FOR YOUR SAFETY: INSTALL A TEMPORARY FLOOR ACROSS THE HOISTWAY AT EACH OF THE UPPER LEVELS. This will make installation of the rail easier, and prevent anyone from falling down the dumbwaiter shaft. Leave 7" of space from the reinforced wall for the rail to slide past the temporary floor.

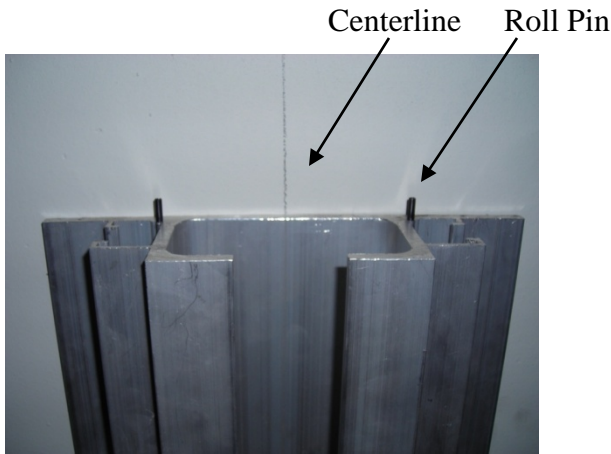
Mark a center line down the load bearing wall. This can be done with a chalk line, or a straight edge.

For a car opening at 36" off the floor -

Draw a mark 24" from the floor along the center line – 12" below the landing level. This will designate the bottom edge of the rail.

Floor loading with a 12" pit, start the rail 4" above the pit floor.

Floor loading with an 8" start rail at bottom of pit (INSTALL WHEEL MODULES FIRST)



Attach the supplied roll pins to join the pieces of rail prior to installing on the wall.

Hold the 1st rail against the wall with the bottom edge at the designated mark. The center line on the wall should be visible down the center line of each piece of rail.

Mark the location of the bottom and top holes in the rail and drill pilot holes using a 1/4" drill bit for anchoring to 2x12 wood studs with 1/2" lag bolts, or 3/8" concrete anchors for a concrete wall.

Insert roll pins in the slots at the top of each rail to be joined together. Leave 1/4" of roll pins protruding from the top of the rail to join the next section.

Mount the rail on the wall using lag bolts provided (1/2" x 3 1/2") or 3/8" concrete anchors.

CAUTION: Do not tighten the sections of rail until all sections are attached and the sheave assembly is installed at the top of the rail.

Drill pilot holes and install lag bolts in remaining holes in the rail.

Stabilizer rail – install the 2" x 1" x 1/8" aluminum angle opposite the guide rail on the centerline, the entire length of the hoist-way. (see the hoist-way drawing) **This angle is supplied by Elevation Innovation Inc.**

Install the rail sheave assembly at the top of the rail prior to tightening all the rail bolts down. It will drop into the rail and mount with two lag bolts or concrete anchors.

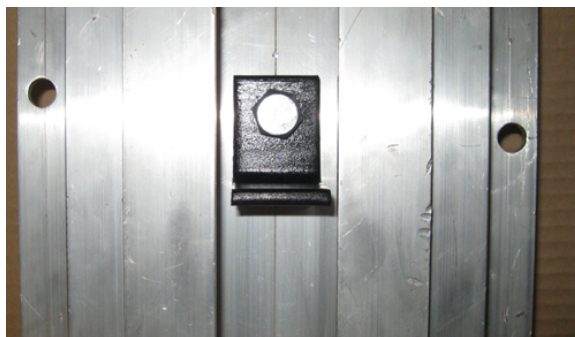


Overhead motors do not require a sheave. Mount the overhead motor on the centerline provided on the motor drum, match with the centerline on the wall and **keep the winding drum exactly 6" from the load bearing wall**. Use the 3" long x 1/2" grade 5 nuts bolts and washers supplied (6).

Mounting the motor and buffer pad. The motor frame and buffer pad both have 1/2" mounting holes for concrete anchors or lag bolts. Keep the drum 3" from the wall. **See page 6 for motor and drum mounting location.**



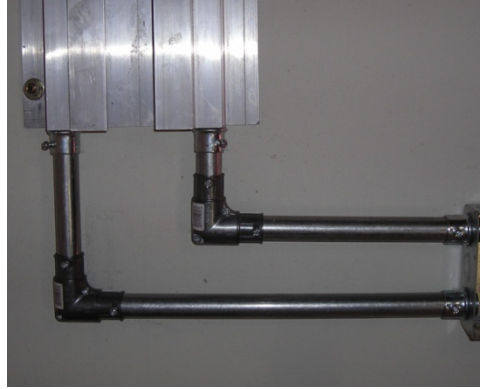
Mechanical emergency stop, this is a 2"x 2"x1/4" piece of angle iron to be attached to the center of the rail near the top to stop the dumbwaiter before damage could occur to the gate and cab.



Installation Manual

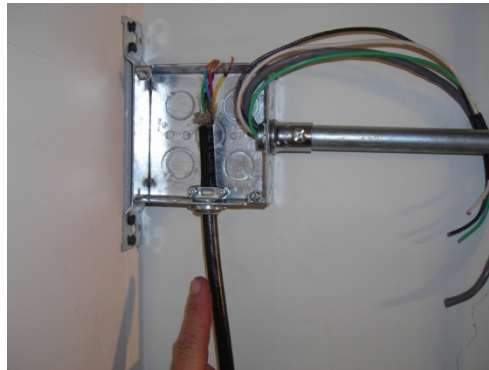
Main junction box.

After mounting the motor and buffer it is time to run the conduit to the top or bottom of the rail. Left side of the rail will be the travel cable lead chase way. Right side for the call / send wiring. The motor wires should come out of the bottom of the junction box and routed thru flexible conduit to the motor. Motor comes pre-wired with 6' leads.



Traveling cable: →

The half way junction box will mount against the wall on the left side of the rail. The travel cable will also come with a cable strain relief system to support the cable on the cab and junction box.



The travel cable will be pre-installed on the top of the cab and pre-wired to the lights, gate switch and slack cable switch.

The traveling cable conduit will come directly out of the side of the guide rail. 1/2" rigid conduit connectors will screw into the side of the rail and create their own threads. Tap with a hammer and use channel locks to screw it in.



Mounting the motor:

Minimum of 1.5 wraps of cable on the drum when at the lowest level for motor below and 3 wraps of cable on the drum for motor above.

Motor below: align the right side of the drum with the left side of the guide rail

The drum should be 3-4" from the wall.

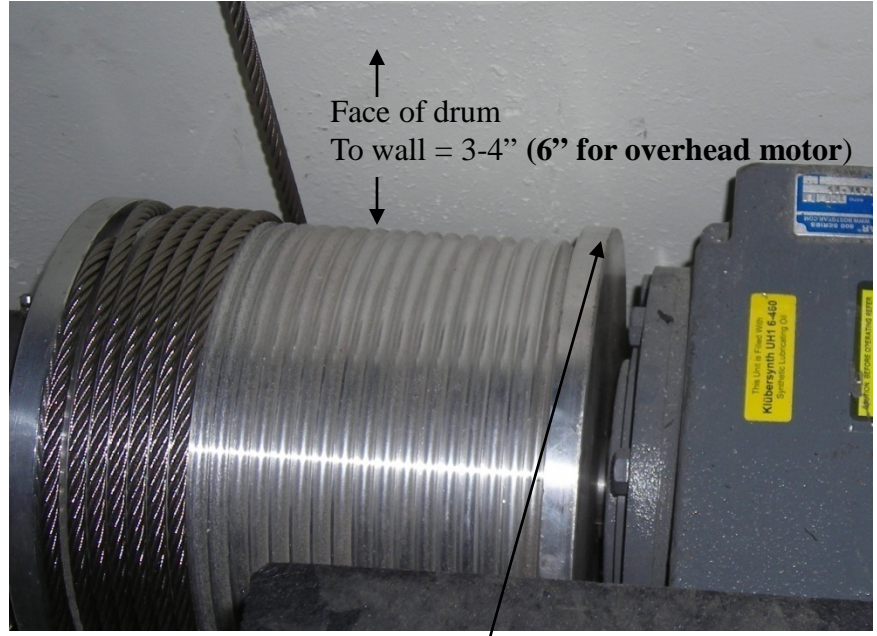
Motor above: Determine your total travel. Each wrap on the drum is 2'. If your travel is 12', that is 6 wraps on the drum. Including the 3 wraps to get started you have 9 wraps on the drum. THIS IS YOUR CENTER LINE for mounting the motor. When the car is at the top level the cable should be perpendicular to the center line on the guide rail (straight up and down). The face of the drum should be 6" from the rail wall. We will put a center line on the drum.

Installing the Sling

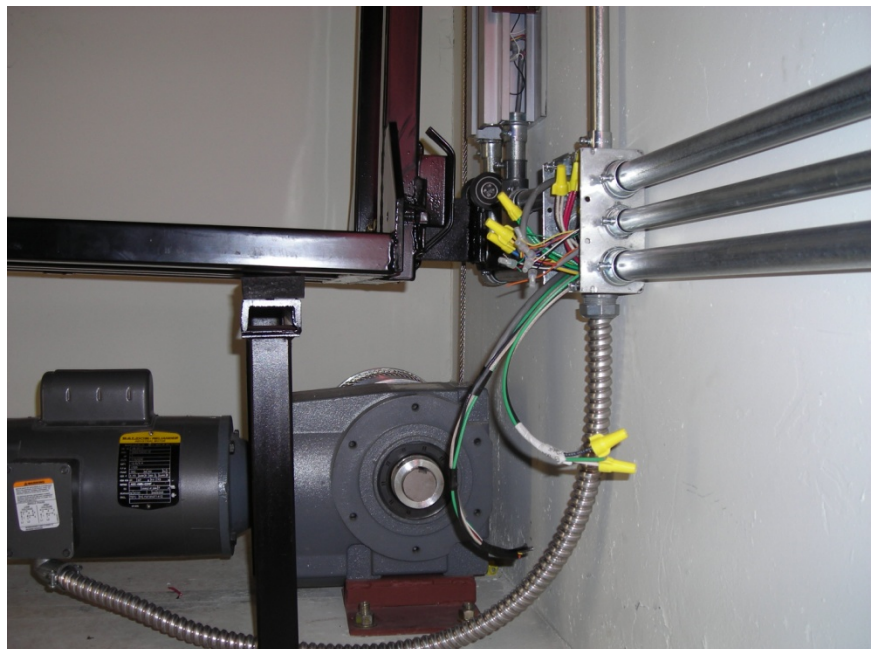
After the motor and buffer are secured and wired up you can place the sling on the buffer and attach the top wheel set by sliding it up the rail. Then attach the lower wheel set.

Motor Below

Now route the lifting cable over the sheave and back to the cable drum and attach the cable with the allen head set screws on the side of the drum.



Right side of drum aligned
With the left side of the guide rail



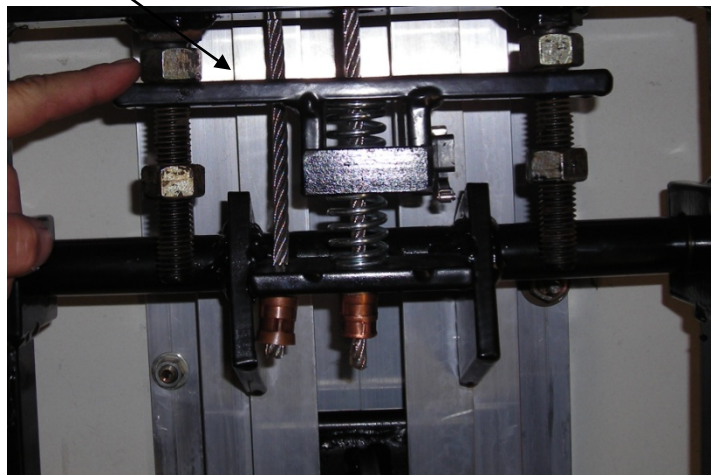
Installation Manual

Slide the top wheel set up the rail to attach to the sling.

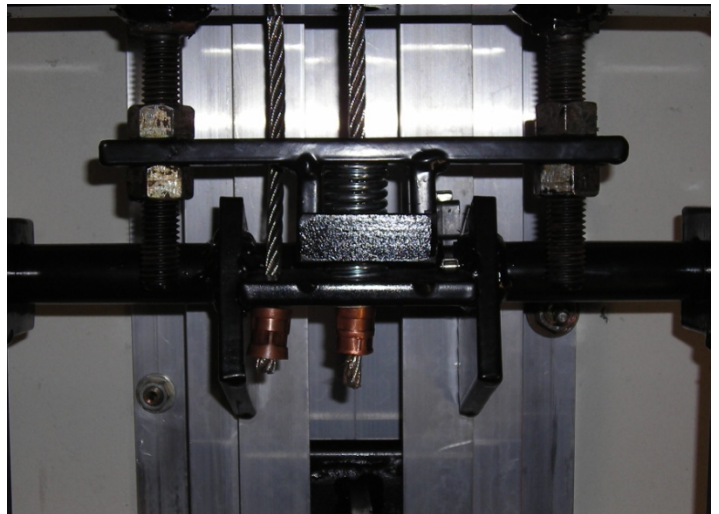
Either release the spring pressure on the brake system by loosening the nuts or use a open end wrench to compress the spring and get the sling into position.

When you tighten the cable make sure the brake system is under a load. When the cable tightens the brakes will release.

The lifting cable should not need to be cut, you should be able to wrap any extra cable onto the drum. 1.5 wraps on the drum minimum for motor below and 3 wraps minimum for motor above (code is 1.5 wraps above or below). The drum takes up 2' of cable on each rotation. Use a cable cutter should the cable need to be cut.



Brake system unloaded



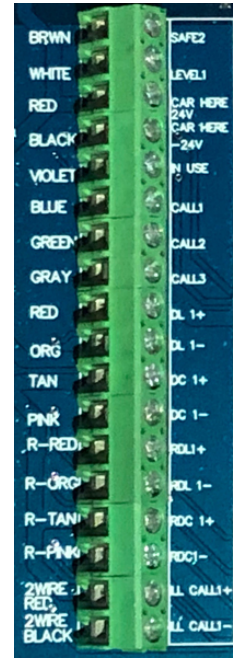
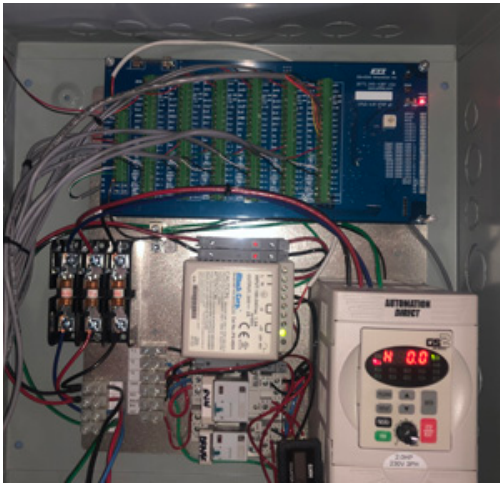
Brake system under a load.



Sling Leveling

After the sling is installed check it with a level as you may need to use the supplied shim to achieve proper floor leveling at the top or bottom wheel set.

Installation Manual



CPLD Solid State Relay Logic Controller

POWER OFF WHEN INSTALLING WIRES!

LED's Safe2, Slack, (slack cable), Gate & BK (brake) illuminate red if circuit is open. Level 1,2,3 etc will illuminate green when at that level. Any door that is open will illuminate green – lift will not operate if a door or gate is open or the safe circuit / slack cable is activated.

Door Open circuit is connected to the door lock system, this is a two or four wire pig tail off of each call / send station that is wired to the door lock. Door Close circuit wires into DL 1+ and DL 1-. If you have a Honeywell RDI or CDI interlock the DC+ and DC- run the 24V DC Solenoid. Rear doors wire into the R-Red, R-ORG, R-Tan, R- Pink, all other wires are doubled up in the terminal strip color for color.

Limit Switch circuit, this is a two wire pig tail off of each call / send station that gets wired to the N/C normally closed side of the landing limit switch. When lift is at that level the corresponding LED will illuminate. Each level limit switch will connect to the call / send station pre-wired lead marked L.

Car Gate / Cab Light– is wired to the traveling cable to monitor the car gate on the dumbwaiter cab, see appendix B. If the unit has a cab light this also gets wired into the traveling cable.

Safety Circuit starts at the “slack cable” top sheave pulley system, this has a manually resettable switch by code. This is a two wire simple continuity circuit. Next in line on the safety circuit is the upper final limit switch that is must be wired into the system. You have the choice to wire in a lower final limit switch and a machine room access door switch.

Power in Terminal Strip– Can be 120v 1Ph, 208V 3Ph or 230v 1Ph

Motor Power Out– Includes three lines, a ground and a 24 volt brake circuit for the .5Hp 3Ph motor.

Call / Send Terminal strips are color coded and labeled for each floor. Units will come with a wiring harness for each floor level for bi-parting or slide up door systems. If you have swing doors without built in call / sends and interlocks, you will be provided a pre-wired call send station and supplied Honeywell EMI interlocks or Commercial locks with door close circuit.

Rear Door call / send wiring Double up all the color coded wires **accept the rear door wires** and insert them into the rear door terminal strip below the top door, refer to the wiring diagram for colors for your specific lift

Controller – Manual operation – EXERCISE EXTREME CAUTION

To run the unit in “Manual Mode” slide the “Override” switch to the override position to the right – USE CAUTION the machine will now run up / down using the constant pressure buttons on the circuit board and you can use any call send station that is connected also – floor one button is “Down” and floor 2 button is “Up” regardless of how many floors your lift will service.

AUTOMATIC MODE – When the car is between floors and no limit LED is illuminated on the circuit board THE ONLY BUTTON THAT WILL WORK IS LEVEL 1. This way the unit will only move in the down direction when it does not know where it is.

Do not interrupt rotary dial on the circuit board – Position 1 is set from the factory and will make the “In Use Light” flash for 13 seconds and prevent calls from any other floor - each additional position will keep the unit from accepting a call for 8 additional seconds. In use light will flash during this time delay. Example 1 = 13 seconds, 2 = 21 seconds and so on for a total of 77 seconds. This could be modified with a custom program. Position 0 is no delay.

TECH SUPPORT – USA – 877-345-4387 Direct world wide – 530-295-4900

All limit switches are pre-wired from the factory.

ALL SAFETY SWITCHES – Slack cable, final upper and machine room door are N/C normally closed.

LIMIT SWITCHES FOR LANDINGS ARE – N/O Normally open and close upon arrival.

VFD - GS2 variable frequency drive

To set and navigate parameters press “Program” to enter the parameter settings.

Press “Program” to navigate and cycle through the whole numbers.

Use the up and down arrows to navigate and cycle through the decimal numbers.

Press “Enter” to select the parameter you wish to set/change.

Use the arrows to set the desired parameter.

Press “Enter” to set parameter.

Press “Display” to take you back to the main screen.

To reset to factory settings: Set 908 to setting 99 and hit enter and you have reset the drive to factory.

Installation Manual

8" Drum Parameters

All VFD drives are pre-programmed from the factory

Relay Logic Parameters for GS2 drive 500lb

50 ft per minute speed 60 HZ

2HP BS30-64U/D09SA4-K/ESX010A9HN/AV

0-00: Motor Nameplate Voltage = 230 (Volts)

0-01: Motor Name Plate Amps = 6.6 (Amps)

0-02: Motor Base Frequency = 60

0-03: Motor Base RPM = 1680 (RPM)

0-04: Motor Max RPM = 1680 (RPM)

1-00: Stop Methods (Ramp to Stop) = 0

1-01: Acceleration Time 1 (in seconds) = 0.5 Seconds

1-02: Deceleration Time (in seconds) = 0.4 Seconds

2-00: Volts/Hertz Settings (1=High Starting Torque) = 1

3-00: Source of Operation Command = 1

3-01: Muilt-function Input Terminals (D/1-D/2) = 0

You must set 3-04 to 99 prior to setting 3-02 and 3-03. Set them in the order noted.

3-04: Muilt-function Input (D/5) = 99 (input disable)

3-03: Muilt-function Input (D/4) = 04 (Multi-speed/PID SP Bit 2)

3-02: Muilt-function Input (D/3) = 03 (Multi-speed/PID SP Bit 1)

3-16: Desired Frequency = 60 HZ

3-17: Desired Current = 6.6 (Drive Rated Amps)

5-01: Multi-Speed 1 = 60 HZ

6-00: Electronic Thermal Overload Relay = 0 (0=Constant Torque)

6-01: Auto Restart After Fault = 0

6-02: Momentary Power Loss = 0 (Stop operation after momentary power loss)

6-03: Reverse Operation Inhibit = 0 (0 = Enable reverse operation)

6-04: Auto Voltage Regulation = 0 (AVR enabled)

6-05: Over-Voltage Stall Prevention = 01 (Enable over-voltage stall prevention)

6-06: Auto Adjustable Accel/Decel = 0 (Linear accel/decel)

6-07: Over Torque Detection Mode = 1 (Enabled during constant speed operation)

6-08: Over Torque Detection Level = 130%

6-09: Over Torque Detection Time = 0.1 Seconds

6-10: Over Current Stall Prevention During Acceleration = 150%

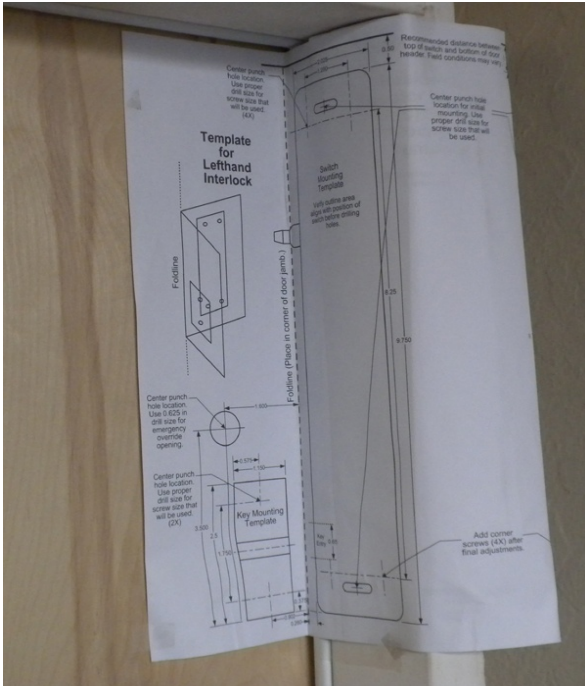
6-11: Over Current Stall Prevention During Operation = 150%

6-30: Line Start Lockout: Disable Line Start Lockout = 01

Residential or Commercial EMI Interlocks

Install the doors at each level. **DOORS MUST HAVE A LATCH TO KEEP THEM SHUT – INTERLOCKS ARE NOT A LATCH.**

The interlocks are mounted in the upper corner of the door jam, on the side opposite the hinges. The interlock ‘keeper’ is mounted on the inside of the door such that it latches with the interlock when the door is closed.



To mount the interlocks, use the paper template provided to mark mounting holes. Fold the template along the dotted line. Position the template in the upper corner of the door, opposite the hinges and use a center punch to push through the paper, marking the hole positions.

Keeper →



Drill pilot holes for each of the mounting points. Use caution when drilling pilot holes for the keeper as you do not want to drill completely through the door. Fasten mounting screws hand tight using a screwdriver. Do not use a drill to fasten these screws as you will risk over tightening.

Mount the interlock such that the keeper locks in place when the door is shut.

Connecting the door interlocks

Commercial CDI Use the supplied Cat 5 cable (blue) connect to the interlock.

Residential RDI wire into the lock – Green =A White =B Black =C Red =D

Red and Green run the solenoid circuit and white and black run the door close circuit.

Manual door lock opening from controller: Use a jumper wire from the power supply V- (negative) to DL- for whatever floor you want to open. Someone must open the door at the same time, or temporarily screw in place.

Installation Manual

Pre-wired limit switches will mount on the right side of the rail and are installed on a mounting plate. They will need to have the wire run out of the side of the rail with a 1/2" rigid conduit connector to the hoist-way door and butt connected to the provided limit pig tail. (use channel locks and screw the conduit connector into the built in electrical chase-way in the rail, it makes it's own threads). →



Installing the cab

The one piece cab is very simple to install, simply place the cab on the sling and attach the two 3/8" bolts on the top of the cab to the sling. Then you can use manual mode to raise the cab to attach the two 3/8" bolts in the bottom of the cab to the sling. If needed use a clamp to pull the cab into the sling for proper alignment. →



Opposite guide Rail Stabilizer Roller Install the stabilizer roller on the bottom of the cab and adjust it to the proper location in the 2 x 1 x 1/8" angle (Aluminum supplied) installed opposite of the guide rail. (see the hoist-way drawing.) **The cab should hang naturally so all wheels in the guide rail are making contact. Do not pull the cab left or right to adjust clearance, the guide rail must be plumb and square to the hoist way. The stabilizer roller should remain 1"+ away from the wall, so run the lift in manual mode to confirm clearance.** →



Rail on the Left : requires that the limit switch wiring is run in 1/2" conduit around the hoist-way. Drill a 3/4" hole for the 1/2" conduit (a step drill bit may be the best option) as close to wall as possible through the opposite guide rail. Ensure the OGR roller set is only running on the last 3/4" to 1" of the opposite guide rail so it will not touch the conduit. Manual mode operation is best to check running clearances.

Installation Manual

Bi –Parting or Slide Up Gate System installation

4- bolts, 2 at the top and 2 at the bottom of the cab.

Travel Cable –For gate, cab Light and slack cable. The travel cable is pre-wired and attached to the cab. Install a junction box 1' above half the total travel on the rail wall on the left side of the rail in the corner of the hoist-way. Use the provided low voltage wire to run back to the controller. This 10 conductor wire has all the matching colors, see the wiring diagram. Support the cable with the installed Kellems Grips. Connect to the bottom of the cab opposite the guide rail on the left where indicated. When the car is at the lowest point (on the final lower limit) The cable should have a droop in it, but not touching the floor. Be sure nothing is able to be caught during total travel. Use manual mode to check – see page 9.



Level Adjustments

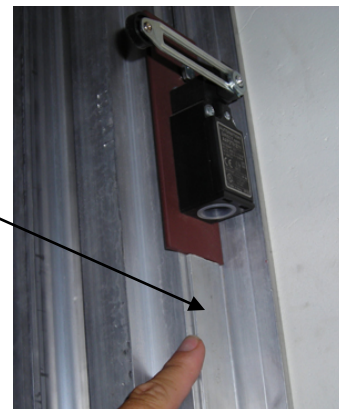
When running in automatic mode with the cab completely assembled, you may find the need to adjust the limit switch levels. Test the leveling of the cab at each level, calling from up direction and down direction. Do this several times to determine if a limit switch is too high or low. If the level must be adjusted, take a measurement to determine the distance that the limit switch must be moved.

Use Manual Mode (see page 9) to move the cab out of the doorway, leaving access to the limit switch to be moved. Draw a line under and over the limit switch to designate the original location. Loosen the limit switch and re-attach at the measured offset.

When the new location is confirmed, the limit switch must be permanently mounted by tightening the ¼" spring nut, make sure the limit mounting plate is square with the rail. When all limits are at the correct location and the unit is functioning properly it is time to cut and install the supplied snap in cap to create the conduit chase-way.

The limit switches are adjustable and will take some fine tuning for 3 and 4 stop units. The unit will stop within ¼" in the up and down direction on the middle floors. Middle floor limits should be 3-3/4" from the wall to the end of the roller on the limit switch.

Snap in Cap



Installation Manual

Trouble Shooting Guide

The unit will not run if the “Safe2”, “Gate” or any door lock LED is illuminated

Never install any wires into the circuit board when the power is turned on you can short circuit the board and you will be liable for the cost of the repair. All boards are thoroughly tested prior to shipping – every circuit.

AUTOMATIC MODE – When the car is between floors and no level LED is illuminated on the circuit board **THE ONLY BUTTON THAT WILL WORK IS LEVEL 1**. This way the unit will only move in the down direction when it does not know where it is.

Note – You can put a jumper wire on the circuit board for any safety to prove the control board is operating properly – never leave a jumper installed during automatic mode, never install a jumper when the power is turned on.

Safe2 LED illuminated – This is a two wire continuity circuit. This includes the “Upper Final Limit” (a safety switch above the top floor limit switch) and “Lower Final Limit” (a safety switch below the bottom floor limit switch). It may also include the “Motor Access Switch” (machine room door). These switches must be installed in line – refer to the wiring diagram provided. If illuminated one of these switches is activated. If it is the “Upper / Lower Final Limit” this means the dumbwaiter passed the upper / lower floor landing limit switch. Inspect the top / bottom floor limit switch for : Proper activation, switch should be 3-3/4” from the back of the rail to the tip of the roller. Wired into the N/C (normally closed) side of the switch, and that it is connected properly to the controller.

Slack Cable LED - This LED is illuminated when the car is on the buffer pad or stuck on an obstruction in the hoist-way and created slack in the hoisting cable. AFTER INSPECTION You can use “Manual Mode” to move the dumbwaiter. When the issue has been resolved this “Slack Cable” switch must be manually reset on the dumbwaiter sling – upper right side of the sling the switch will have a **blue button that must be pulled out to reset it (required by code)**.

Gate LED Illuminated – This LED is illuminated when the car gate is open or the connection is broken. Check the wires on the gate switch on the car, check the connection at the black travel cable, check the travel cable to controller wire in the half way junction box, check the connection on the circuit board in the controller. To test the controller install a jumper wire in the Gate 1 & 2, this will prove the controller is functioning properly. Remove the jumper and connect the gate wires for standard operation. **The Car Light** will illuminate when the gate switch is opened.

Door Lock LED – Indicates that a door circuit is open and the dumbwaiter will not run. If the door is closed and the LED is on check the wiring for this door lock all the way back to the controller starting at the door lock, then the call station flying leads and finally the controller circuit board. A jumper wire can be used to test the controller in DL+ and DL-. Remove the jumper prior to automatic operation.