

# CAMBRIDGE

## ELEVATING

### BES3 RESIDENTIAL INSTALLATION GUIDE

#### TECHNICAL SUPPORT:

Call or Text: 866-209-3421

Technical information web site:

[cambridgeelevating.com/technicians/](http://cambridgeelevating.com/technicians/)

Email: [partsorders@cambridgeelevating.com](mailto:partsorders@cambridgeelevating.com)

Refer to OLS operator manual, BES3 installation manual, BES3 service manual, electrical drawings, hoist-way layout, and CE connection drawings for details.

#### Preparation

- Pre-install site check
- Plan the machine room
- Plan the hoist-way wiring
- Plan the hydraulic lines

#### Not supplied by Cambridge elevating

- 5 pails of AW32 hydraulic oil
- Fasteners for rail brackets if rail wall not wood  
Unless engineering is advised there is concrete
- Clamps for hydraulic lines
- Hydraulic lines (unless ordered)
- Clips for wiring and drain line
- ¼ and 2-inch #8 wood screws (few)
- Two-sided tape
- Cable ties
- ½ inch all round strapping
- Cleaning supplies
- Metal shims for the rail base plate 1/8 to ¼ inch

#### Running sling

- Mark the rail bracket centerline on the rail wall
- Choose method for mounting rail brackets depending on wall type and engineering specifications.
- Plan/prepare to work safely in the hoist-way
- Rail brackets
  - Align with centerline
  - Install a bolt loosely in the center hole
  - Level
  - attach
- Baseplate
- Must be level and between the rails
- Right side rail
  - Work bottom up, tongue up, grove down, short rails may be at the top, bottom or both refer to the elevation drawings

- *\*rail center to wall = 5 inches*
- Jack post (M7)
  - 2 spacers required one thick and one thin
  - Install Jack post Plumb and true
  - Secure with U-bolt
- Cylinder (H1)
  - 70 or 80mm OLS cylinders
    - One thin spacer between the cylinder and the bracket
  - 90mm cylinder
    - No spacer required
  - Install U-bolt but leave loose till plumbed
  - Install line rupture valve onto the cylinder
  - **Loosen lock nut, turn adjustment all the way out, then 2 turns in, then tighten lock nut.**
- Sling
  - Lock shackles up
  - Adjust blue rollers up
  - Adjust side rollers if necessary
  - Engage sling with the right rail
  - Align with the left rail location
- Sling cross piece
  - Attach so that it is flush at top
- Left side rail
  - Insert rail through the sling rollers and through the safeties and lower rollers
  - Work bottom up, tongue up, grove down, short rail will normally go at top (if any)
  - Refer to elevation drawing.
  - *\*rail center to wall = 5 inches*
  - *\*DBG = 27 15/16th inches*
- Hydraulic lines
  - Keep inside of lines and fittings clean
  - Rubber hose recommended in machine room to prevent vibration transfer.
- Hydraulic drain line
  - Attach plastic 90-degree fitting
  - Run line to pit and into a 4L container.
- Sheave
  - Remove cylinder shipping bracket
  - Remove the bottom plate from Sheave
  - Attach bottom plate to the cylinder with the large bolt
  - Attach sheave to the bottom plate
  - 1/16<sup>th</sup> inch gap at shoe
  - Make sure sheave assembly is parallel to rails
- Ropes to sling
  - Leave room to adjust at shackles
- Main controller and HPU connections
  - Incoming motor power
  - Incoming lighting power
  - Controller to power unit power connections
  - Controller to power unit control connections
  - Connect remote

*\*The power unit is preset and tested, major adjustments should not be necessary*

- Bleed air from cylinder
- Pre-stroke
- Manually Lift sling to level with the lowest floor and block in place
- Ropes to jack post
  - Leave room to adjust at shackles
- Sling extensions
- Adjust sling rollers
  - Do not move white rollers
  - All blue rollers should touch rail but turn
- Cab floor
  - location based on drawings
  - Secure floor to the sling
- Adjust safeties
  - Should be evenly spaced front to back
  - Use brake setting shim tool to set the roller
- Test the safeties ensure the slack rope sw. works
- Remove scaffolding
- Testing the travel of the sling
- Confirm clearances and door centerlines

#### Cab and electrical

- Assemble cab
- Adjust cab so it is level, true and square
- Attach cab to sling
- Install hoist-way wiring (including pit switch)
- Install Cartop electrical
- Install and make connections to COP
- Install Coded strips and limit switch cams
  - As per site drawings
  - Center of strip will be at ceiling level
- Install sensor head
- Travel cable
  - Hang from height of pre-stroked sheave
- Remove remote (run bug, pendant)
- Confirm slack rope, low pressure and all 3 E-stops are in their normal state and the light curtains are not registering an obstruction
- The following LED's should be on 52 and 53 at the main controller, and 54, 55, and 50 at the cartop MCU board
- Turn on service mode and Run from the cartop

#### Cab gate(s)

- Install OLS (Victory) gate operator or folding car gate
- Install the light curtains

#### Landing doors

- Run the blue and white (if DPI's used) cables to each call station location
- Install landing door frames and doors or swing door with interlocks
- Install the call stations
- Connect landing door contacts or interlocks

## Finishing touches and testing

- Running in auto
  - Confirm all 15 green LED's at the main controller are on
  - Confirm no yellow LED's are on
  - Move the cab to mid hoist-way
  - Remove the remote
  - Turn MCU off and then on
- Expected startup routine
  - Step 1– System checks to make sure that system is clear of faults.
  - Step 2– System checks that the standby voltage is good.
  - Step 3– System checks MCM.
  - Step 4– Pauses.
  - Step 5– Moves up starting slow, if not already at top it will speed up.
  - Step 6– The batteries are tested while elevator is traveling up fast.
  - Step 7– Up fast, slowing at each regular coded strip.
  - Step 8– Reaches top strip, slows down when close to top.
  - Step 9– Stop at top of coded strip or at limit whichever comes first.
  - Step 10 or 20– Reaches top of Coded strip.
  - Step 11 or 21– Down fast then slow to around middle of top coded strip.
  - Step 12 or 22– Up fast then slow to top limit.
  - Step 13 or 23– Down to bottom of top floor coded strip.
  - (Only if previous step was 23), Step 13– Pause at bottom of top floor cam, place top floor call.
  - System normal– Up fast then slows down and stop at programmed floor level.
- Test everything
- Set the floor levels
- Handrail(s)
- Final cleaning
- Final adjustments up movement
- Final adjustments down movement
- Test the low-pressure and the slack rope switch
- Test the line rupture valve
- Set and test the pressure release valve
- Connect phone line and test the telephone
- Power failure test
- Pre-inspection before Inspector
- Inspection
- Customer training

## How to get the elevator out of the pit

Turn the INSTALLATION switch on and short top 2 pins of the 3 pin REMOTE CONTROL connector

## Setup and Adjustment of the Cambridge Elevating

### Hydraulic Power Unit.

#### Adjustment #1 (BP) – Up Delay

FUNCTION- Determines the length of the delay from pump start to car movement.

PRESET- Adjust in till click is heard then 3 turns out.

OPERATION- Turn in (CW) for less delay.

SETTING– Adjust so that the delay is approximately 1 second.

#### Adjustment #2 (UA) – Up Acceleration

FUNCTION- Determines how long it takes the elevator to reach full speed from a stop.

PRESET- Gently turn in (CW) until stop then turn out (CCW) one and a half turns.

OPERATION- Turning in (CW) will cause the elevator to take longer to reach full speed.

SETTING- Adjust so that car takes 2 seconds to reach full speed

#### Adjustment #3 (UD) – Up Full Speed Deceleration.

FUNCTION- Determines how quickly the car slows down to levelling speed.

PRESET- Gently turn in (CW) until stop then turn out (CCW) one and a half turns.

OPERATION- Turning in (CW) will increase the time it takes to slow down to levelling speed from full speed.

SETTING- Adjust so that the transition to levelling speed is quick but not uncomfortable (1 to 2 seconds).

#### Adjustment #4 (UL) – Up Levelling Speed.

FUNCTION- Determines levelling speed in the up direction.

PRESET- Adjust until screw is flush with casing.

OPERATION- Turning in will decrease the levelling speed.

SETTING- Adjust so that the levelling speed is approximately 8-10 feet per minute (1.5 to 2 inches in per second). The best way to set this is to turn off the high-speed switch located on the main controller board.

#### Adjustment #5 (US) – Up Levelling Speed Deceleration

FUNCTION- Determines how quickly the elevator stops

PRESET- Turn all the way out

#### Adjustment #6 (DA) – Down Acceleration

**Note:** Adjustment #6 can be affected by adjustment #8.

FUNCTION- Determines how long it takes the elevator to reach full speed from a stop.

PRESET- Gently turn in (CW) until stop then turn out (CCW) 1 turn.

OPERATION- Turning in (CW) will cause the elevator to take longer to reach full speed.

SETTING- Car should take 2 seconds to reach full speed.

#### Adjustment #7 (DF) – Down full speed

FUNCTION- Determines the car speed in the down direction.

PRESET- Adjust until screw is flush with casing.

OPERATION- Turn in to reduce the down speed.

SETTING- Adjust so that car travels up & down at the same speed

#### Adjustment #8 (DD) – Down deceleration

**Note:** Adjustment #8 can affect adjustment #6

FUNCTION- Determines how quickly the elevator transitions from full speed to levelling speed and from levelling speed to a stop.

PRESET- Gently turn in (CW) until stop turn out (CCW) 3 turns

OPERATION- Turn in to increase time it takes to slow

SETTING- Adjust for a smooth stop but no coasting

#### Adjustment #9 (DL) – Down Levelling speed

FUNCTION- Determines the speed of the car when traveling down in levelling speed.

PRESET- Adjust until screw is flush with casing.

OPERATION- Turn in to reduce the levelling speed.

SETTING- Adjust so that the levelling speed is approximately 10 feet per minute (2 inches in per second).

### The startup routine

Step 1- System checks to make sure that system is clear of faults

Step 2- System checks that the standby voltage is good.

Step 3- System checks MCM.

Step 4- Pauses.

Step 5- Moves up starting slow then fast

Step 6- The batteries are tested while elevator is going up fast

Step 7- Up fast, slowing at each regular coded strip.

Step 8- Reaches top strip, slows down when close to top.

Step 9- Stop at top of coded strip or at limit whichever is first.

Step 10/20- Reaches top of Coded strip.

Step 11/21- Down fast then slow to around middle of top strip

Step 12/22- Up fast then slow to top limit.

Step 13/23- Down to bottom of top floor coded strip.

Pause at bottom of top floor cam, place top floor call.

System normal- Up fast then slows down and stop at

programed floor level. The door will not open/unlock

### Setting Floor Levels

Note: System must be in automatic and able to take calls.

1. Travel to a floor using a car call button.

2. Open COP to access leveling controls.

3. Press and hold 2 enable buttons.

4. Use up and down buttons to move the car up and down until it is level with the floor. Remember to account for flooring if it is not installed yet.

5. As soon as you let go of the enable buttons, the new position will be stored in memory.

6. If the car will move up and down but not far enough, you will need to move the coded strip for that floor:

a. If you move the car up but the car is still too low, move the strip up one inch more than the distance you are short.

Return to step 1).

b. If you move the car down but the car is still too high, move the strip down a little more than the distance you are short.

Return to step 1).

7. Once all floors have been leveled, travel back to each floor to confirm level is correct.

Note: Unlike our previous model, you do not have to be in service mode.

### Setting the Number of Stops

Note: System must be in automatic and able to take calls.

1. Restart the system, cab should travel to the top floor.

2. Gain access to the car and open the COP

3. Press and hold 2 enable buttons.