Installation and User Manual
E-Lift™ Version 3

Revision 0319254

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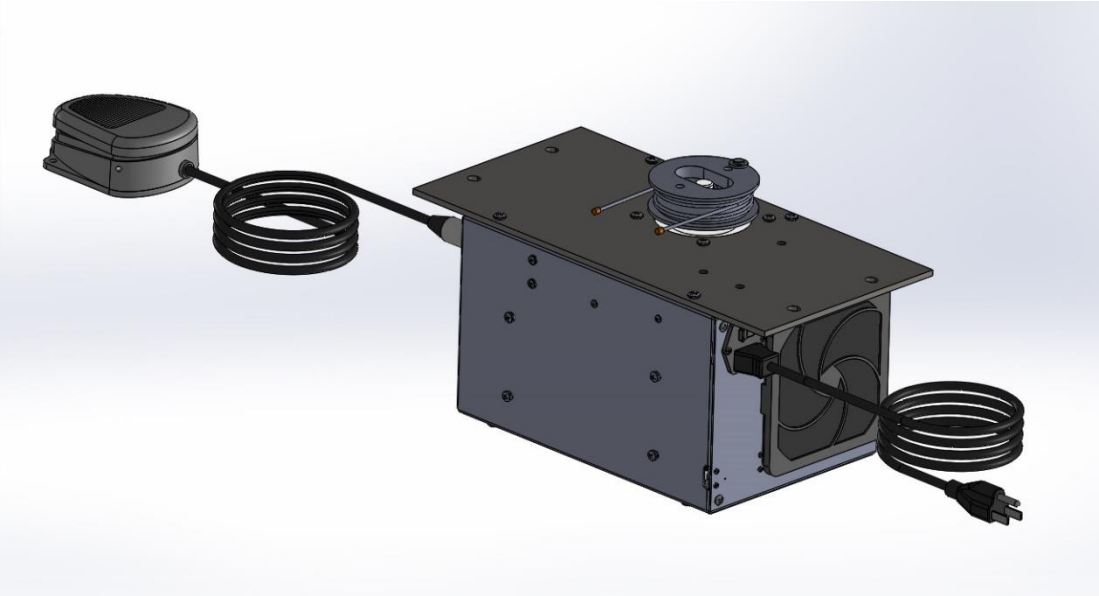
Introduction

Congratulations on your purchase of the E-Lift system. The E-Lift does all the hard work of opening and closing the shed. You just press the switch and weave! The assistance this system provides eliminates the physically tiring action of treadling, reducing leg strain and fatigue. The E-Lift even enables weaving where it might otherwise be too difficult for people with mobility issues.

Version 3 of AVL's E-Lift is the first design using closed loop operation, which simplifies both installation and operation of the E-Lift. No more crawling on the floor to set the starting position, just press and hold the foot switch for optimal positioning.



BEFORE GETTING STARTED: PLEASE READ THE ENTIRE MANUAL BEFORE USING THE LOOM.

Support and Warranty

Your new E-Lift is designed to provide years of dependable service. It comes with a lifetime of phone and email support and a standard AVL one year warranty for the original owner. Want to discuss the warranty in more detail,

or get support for your AVL product? Please contact AVL at 530-893-4915 or by email to support@avlusa.com.

Safety

Warnings

EQUIPMENT SHOULD ONLY BE USED FOR TEXTILE MANUFACTURING. IF THE EQUIPMENT IS USED IN A MANNER NOT SPECIFIED BY THE MANUFACTURER, THE PROTECTION PROVIDED BY THE EQUIPMENT MAY BE IMPAIRED AND THE WARRANTY VOIDED.

ELECTRICAL SHOCK HAZARD. DO NOT TAMPER WITH ELECTRICAL WIRES OR OPERATE E-LIFT WITH SAFETY PANELS OPENED OR REMOVED.

PINCH AND CRUSH HAZARD. DO NOT PLACE HANDS IN MOVING MECHANISMS.

EQUIPMENT IS HEAVY. TO AVOID MUSCLE STRAIN OR INJURY, USE PROPER LIFTING TECHNIQUES AND A HELPER.

USE OF CONDUCTIVE FIBER OR YARN ON OR AROUND THIS EQUIPMENT WILL VOID WARRANTY AND MAY DAMAGE EQUIPMENT.

THIS EQUIPMENT IS CLASSIFIED FOR HOME USE ONLY.

Package Contents

We strive to package our products with care to ensure that they arrive intact and undamaged. Even with our best efforts, issues can occur during shipping. It is important for you to inspect and verify the completeness of your order as soon as it arrives. Please inspect the outer package for damage, take pictures and immediately report any significant concerns to AVL. Once you are ready to open the package, please carefully remove all contents from the packaging and verify that all parts, hardware arrived. Your package should contain:

- *E-Lift system* (1) with attached: lower motor cable (for lifting) (1), upper motor cable for lowering

  NOTE: Do not unwrap the packaging/tape from the motor pulley until indicated by the instructions below.
- *Mounting blocks* (2)
- *Cam-cylinder assemblies* (2) secured in mounting order, including: lifting cam-cylinder with dobby to cylinder lifting cable (1) , lowering cam-cylinder with dobby to cylinder lifting cable assembly (1)

  NOTE: Do not unwrap the packaging/tape from the cam-cylinder assemblies until indicated by the instructions below.
- *Foot or hand switch* with cord (as ordered) (1)
- *Power cord* (1)
- Hardware pack, includes:
    - Cable and spring (taped together): for attaching to the slide plate (will include a quick link) or dobby arm
    - Mounting hardware for E-Lift and mounting blocks
    - Hairpin or clips (2) for attaching motor pulley cables to cam-cylinders
    - Allen wrench for ½" or 5/8" ID stop collars (where applicable)
    - Stop collars & bushings – If bushings are used in your application, they will be pre-inserted in the cam-cylinders. Each configuration uses different quantity and size of stop collars which are provided in mounting order. See chart below.

	A-Series w/neg.dobby	A-Series w/pos.dobby	V-Series	PDL, SDL & TDL
½" dia. Stop Collars			4	3
5/8" dia. Stop Collars	4	2		
5/8" long Bushings		1	1	1
1 ¼" long Bushings		1	2	1

NOTES on PDL, SDL & TDL:

- Stop collars are provided for the diameter axle used on the specific loom type.
- Where axle caps have been used to retain the cam cylinder axles in the side frame, remove the rear or right side axle cap with pliers. This process will destroy the axle cap. A stop collar is provided to replace the axle cap.
- An Allen wrench for the stop collar is provide in the hardware pack.

Definitions

The "Switch"

An electrical switch selection is how the user communicates with the E-Lift. The standard configuration for the E-Lift includes a foot switch for operating the E-Lift. There is also an option for a hand switch that is mounted to the beater top. When this document calls out the "switch", it is intended to indicate either foot or hand switch.

There are two types of switch selection actions: *quick on/off* selection (for normal weaving operation), or *press and hold* selection (for Homing or changing Modes).

E-Lift Weaving Modes

1. Double-shed Mode

Double-shed is the default mode when the E-Lift is powered on. It is the most efficient mode for weaving. When in double-shed mode each time the switch is selected, the movement ends with an open shed, or if no harnesses are selected in the dobby, where the slide plate or dobby arm are in the down position.

2. Single-shed Mode

   In Single-shed Mode operation, each switch selection moves the slide plate or dobby arm to the next position (up or down). Single-shed can only be accessed by changing modes. Single-shed is intended primarily for aiding in loom or warp diagnostics.

Home Position

The "Home" position is the starting point for normal E-Lift weaving operation. Once set correctly, this will place the loom's slide plate or dobby arm in the UP position resting on the rubber bumper located on the right slide rod or right side dobby arm slot. When the slide plate or dobby arm are in the up position, the harnesses are down in the "Shed Closed" position. And when the slide plate or dobby arm is down the harnesses are raised in the "Shed Open" position. The rest of this document will refer to these two states as Shed Closed or Shed Open.

Orientation

For physical orientation, all directional references (e.g., right and left) are relative to facing the loom.

Front of the loom – This is where the where the weaver sits.
Back of the loom – This is where the warp beam(s) reside.
Right side of the loom – With all AVL dobby looms, the right side of the loom is where the dobby resides.

Acronyms / Loom Identifiers

A-Series – successor to full frame looms (PDL, TDL, AVL40), negative or positive/classic dobby, in production since 2002

AVL40 – successor to the UDL, shares frame with TDL, 40 harness negative dobby, in production between 2001-2002

BML – Basic Modular Loom; shares frame with PDL, side tie-up, in production between 1981-2003

FDL – Folding Dobby Loom; 16 harness positive/classic dobby, folding frame loom originally called "small frame production loom", in production between 1981-2008

FML – Folding Modular Loom; shares frame with FDL, side tie-up, in production between 1981-2003

Home Loom – side tie-up, mid-sized frame, in production since 1990

Jacq3G – 3rd Generation, modified A-Series frame, in production since 2007

K-Series – countermarch dobby, mid-sized loom, in production since 2018

Little Weaver – 8/16/24 harness countermarch dobby, table top loom, in production between 2011-2016

PDL – Production Dobby Loom; 16 harness positive/classic dobby, original full frame loom in production between 1977-2002

SDL – Studio Dobby Loom; 16 or 24 harness positive/classic dobby, small to mid-sized frame loom, in production since 1992

TDL – Technical Dobby Loom; 20 or 24 harnesses positive/classic dobby, modified PDL frame loom, in production between 1988-2002

UDL – Ultimate Dobby Loom; first 40 harness on positive/classic dobby, shares TDL frame, in production between 1999-2001

V-Series – negative dobby, shares SDL frame, in production since 2009

WDL – Workshop Dobby Loom; 8/16/24 harness negative dobby, small 'X-frame' loom, in production since 2002

Tools Needed for Installation

- 7/16" & 1/2" wrenches
- 7/16" & 1/2" sockets with wrench
- Phillips head screwdriver
- Pliers
- Drill motor
- 11/32" drill bit
- Tape measure
- Pencil
- Ferule crimping tool (Pre-1988 PDL & TDL looms only)

Installing the E-Lift – A-Series, PDL & TDL

NOTE: The E-Lift 3 mounts directly in the same location and same way as the E-Lift 2 & 2+ with the additional step of removing the return spring lever and spring from the rear treadle crossmember. Thus, if you are replacing an existing E-Lift 2 or 2+ skip steps 1 & 5-7 in *Preparing the loom*.

Preparing the Loom

1. Lightly mark in pencil each treadle pulley support cross member for correct positioning, with reference to front/back and up/down, before removing them from the loom. Also, lightly mark the dobby arm in pencil with an "R" for which hole is used with the cable to the cam-cylinder, and with an "L" for which hole is used with the cable to the left treadle.
2. Disconnect the treadle cables at the treadles. Remove the treadles, treadle support mounting blocks and axles from the loom.
3. Disconnect both cables from the slide plate or dobby arm. On older looms (pre-1988), dobby arm cables are crimped in place and must be cut to remove them. On newer dobby arm-equipped looms, black plastic cable retainer buttons are used in the dobby arm to retain the cables. The buttons are removed from the opposite side as the cable entry hole by pushing the cable further into its entry hole. Retain the buttons for later use.
4. Remove the cam-cylinder and single pulley from the loom by removing the rear stop collar or axle cap, sliding the axle towards the front of the loom and partially out of the rear vertical side frame member until the cam-cylinder and single pulley are free to be removed. Remove them now along with the cables attached to the cam-cylinder. If removing an axle cap, it will be destroyed during the process, and will be replaced by the supplied stop collar.
5. Remove the treadle pulley support cross member assembly from the loom. Once off the loom, disassemble it by removing the treadle pulley axles and pulleys from the cross members.
6. Drilling the cross members: With the cross members located on a workbench or other suitable working surface, drill the holes required, as shown in Figure & Chart 1.

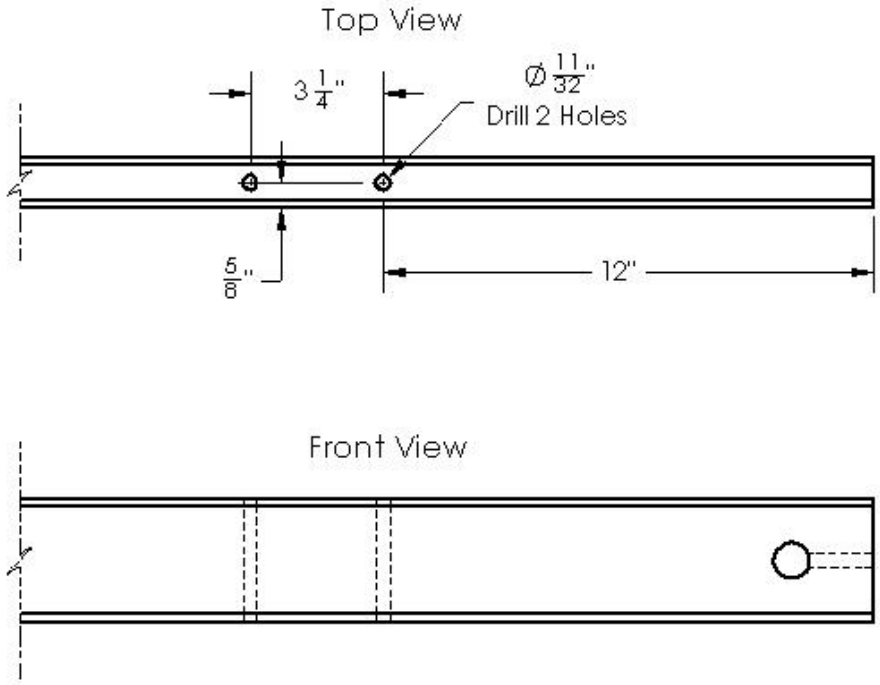


Figure 1 – *A-Series, PDL & TDL Treadle Pulley Support Cross Members (Front and Rear) Holes*

HOLE NO.	CROSS MEMBE	HOLE SIZE	HOLE ORIENTATI	DISTANCE FROM EDGE
1	front	11/32”	vertical	12”
2	front	11/32”	vertical	15 1/4”
3	rear	11/32”	vertical	12”
4	rear	11/32”	vertical	15 1/4”

Chart 1 – *A-Series, PDL & TDL Cross Member Hole Information*

7. Reinstall the cross members, remembering to align them as before.

Mounting the E-Lift

WARNING: The Motor Box is heavy. Rather than attempting to lift the E-Lift while mounting, it is recommended that you use a stack of books or 2 support blocks 2”Tx4”Wx~6-12”L placed on edge under the bottom of the E-Lift housing to elevate it into position for mounting.

1. Place your support books or blocks (“supports”) on the floor within the loom frame. Set the E-Lift on top of the supports oriented so that the power switch faces to the rear of the loom and the round switch receptacle faces the front of the loom. Slide the everything under the treadle pulley support cross members to align the holes in the E-Lift mounting plate with Holes 1, 2, 3, & 4 from *Preparing the loom*.
2. Attach the E-Lift plate to the mounting blocks using the supplied hardware. Insert the felt squares on the hex bolts between the E-Lift mounting plate and the mounting blocks.
   NOTE: PDL mounting varies by loom age and treadle crossmember width.

   <u>All Looms, except for pre-1988 Production Dobby Looms</u>
   a. Insert one 5/16-18 x 6 1/2” hex bolt and flat washer into the #s 1, 2, 3 & 4 holes from the top down, letting them hang with the exposed ends pointing to the floor.
   b. Insert a mounting block onto a set of bolts in line with the cross member, engage the bolts in the corresponding holes in the E-Lift mounting plate, and then loosely install a flat washer, lock washer and hex nut on each hex bolt.
   c. Repeat with the other set of bolts, adding the mounting block, E-Lift and remaining flat washers, lock washers and hex nuts.
   d. Tighten the mounting hardware.

   <u>Pre-1988 Production Dobby Looms</u>
   a. For the front crossmember holes (#s 1 & 2), insert one 5/16-18 x 6 1/2” hex bolt and flat washer into the front crossmember from the top down, letting them hang with the exposed ends pointing to the floor.
   b. Insert a mounting block onto a set of bolts in line with the cross member, engage the bolts in the front holes in the E-Lift mounting plate, and then loosely install a flat washer, lock washer and hex nut on each hex bolt.

c. NOTE: For the rear holes, the processes is slightly different. Due to narrower dimensions of the cross member spacing, the rear hex bolts are screwed directly into threaded holes in the top of the E-Lift top plate.
d. Place the mounting block onto the E-Lift mounting plate directly below the rear crossmember.
e. Insert the remaining 5/16-18 x 6 1/2” hex bolts with lock and flat washers into the rear (#s 3 & 4) crossmember holes from the top down, threading them into the top of the E-Lift mounting plate.

Installing the Cam-Cylinders

E-Lift 3 comes with two cam-cylinders, one for lifting harnesses and one for lower harnesses. They will be secured in order of mounting in the packaging to help you see the correct configuration.

NOTE: Do not unwrap the packaging/tape securing the cables until directed to do so in the steps below.

1. Measure the diameter of your cam-cylinder axle. If the diameter measures 5/8” you will remove the bushings supplied with the cam-cylinders as they won’t be used.
2. Find the configuration for your loom in the following *Figure 3x* images. The assembly of cam-cylinders in the packaging will match the figure.
3. Lubricate the axle. Beeswax is a long-lasting lubricant that is rubbed directly onto the axle under where the cam-cylinders will operate. A dry, clear, spray Teflon or Silicone lubricant is also suitable, though it provides less longevity.
4. Remove the string or bar holding the cam-cylinders together and then slide the cam-cylinders and stop collars onto the axle in the pre-configured order and as shown in the figure.
5. Slide the axle back into place in the rear vertical slide frame member and secure with a stop collar.

Aligning the Cam-Cylinders

The “cylinder” portion (smaller diameter pulley) of the lifting cam-cylinder is designed with a specific length to establish a direct route for its cables with as little angle as possible.

1. By line of sight, align the *lifting* cam cable groove directly to the left side of the E-Lift motor pulley.

2. Align the *lowering* cam cable groove directly to the right side of the small, white tensioner pulley mounted to the top of the E-Lift plate.
3. Move the stop collars to lightly sandwich each cam-cylinder, leaving a slight gap between the stop collars and the cam-cylinders to allow free movement of the cam-cylinders. Tighten the set screws in the stop collars to lock them in place.

   NOTE: Pinching the cam-cylinders between the stop collars can create too much resistance with the cam-cylinder rotation and result in E-Lift motor stalls.

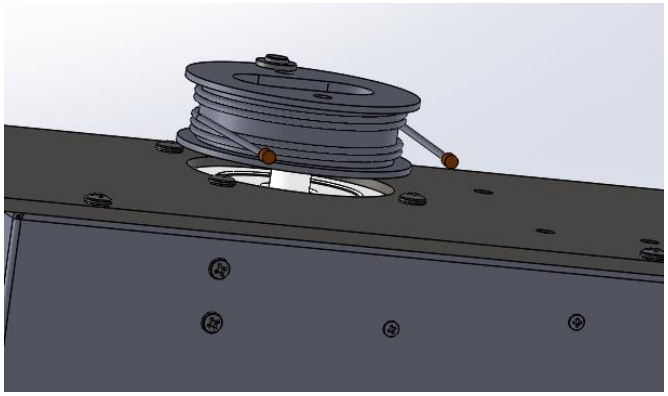


Fig. 2a – *E-Lift Motor Double Pulley Cables (right side view)*

NOTE: The *lower* cable on the motor pulley attaches to the *lifting* cylinder. The *upper* cable attaches to the *lowering* cylinder.

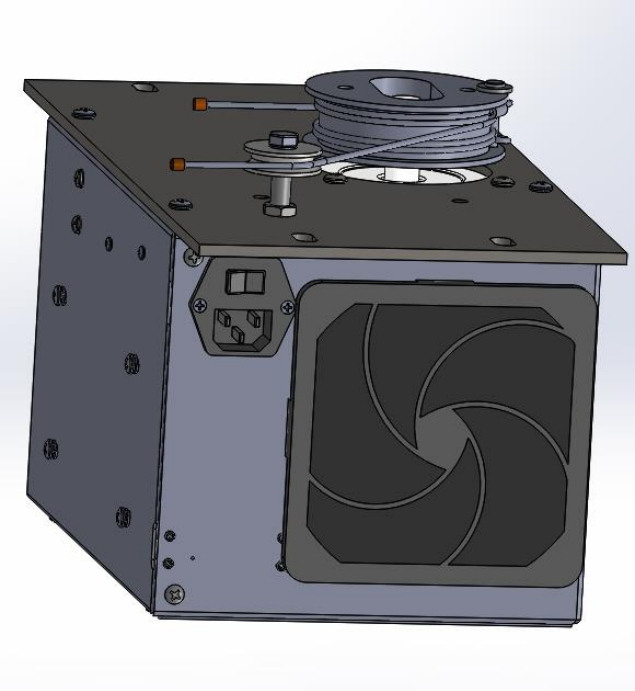


Fig. 2b – *E-Lift Cable Routing (rear view)*

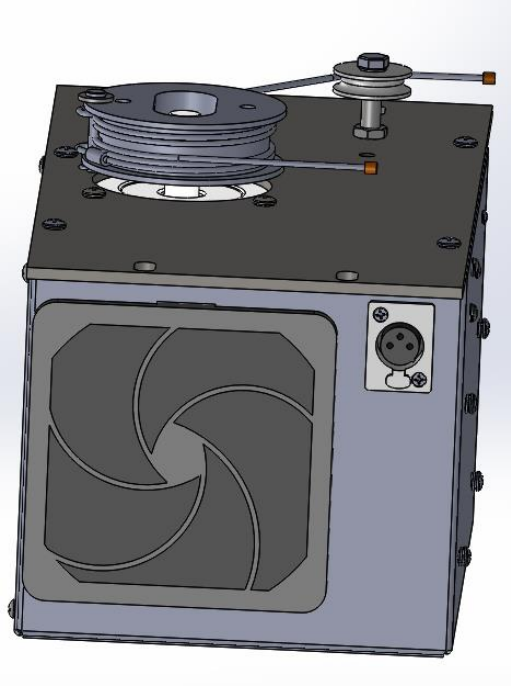


Fig. 2c – *E-Lift Cable Routing (front view)*

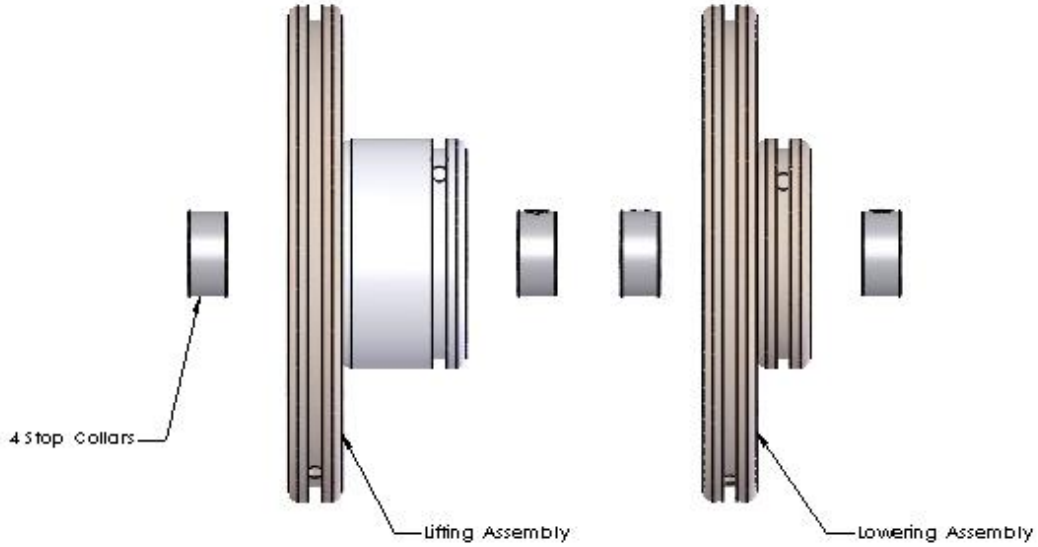


Fig. 3-A/N – *Cam-cylinders Configuration for A-Series with Negative Dobby (right side view)*

NOTE: Three possible configurations exist for the A-Series: negative dobby-style head with the narrow "16H" back plate, negative dobby-style head with the wide "24/40H" back plate, and positive dobby-style head with the wide "24H" back plate. All three configurations will have

the same parts, however the cylinder on the lifting cam-cylinder will be of different lengths for each configuration.

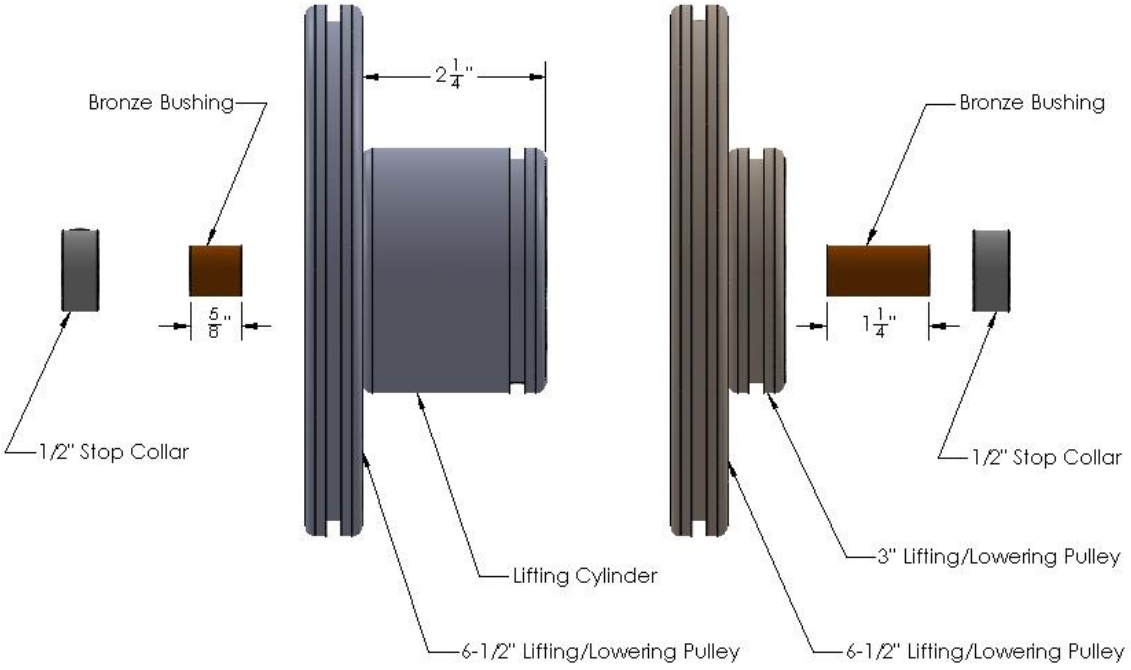


Fig. 3-P – *Cam-cylinders Configuration for PDL (right side view)*

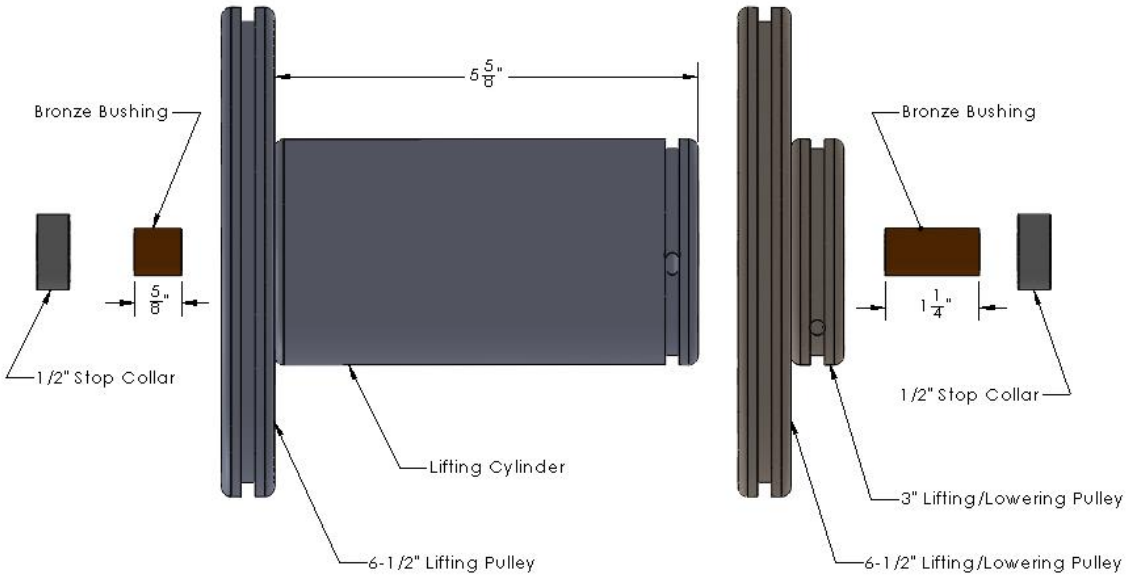


Fig. 3-T – *Cam-cylinders Configuration for TDL (right side view)*

Attaching Coated Steel Cables

1. Lower the slide plate or dobby arm to the bottom of its travel without any harnesses lifted. With a slide plate this requires pressing in the dobby cables to avoid being caught by the dobby insert.
2. Remove the packaging securing the cable from the smaller *cylinder* side of the *lifting* cam-cylinder. Route the cable up to the slide plate or dobby arm and secure it.
   a. If attaching to the slide plate the cable will end in a loop. The loop slides over the open eye bolt at the bottom of the slide plate. If he eye bolt is closed, then use the quick link to connect the cable to the eye bolt.
   b. If attaching to a post-1988 dobby arm, the cable will end in a crimped ferrule. The ferrule end of the cable will be inserted in the bottom "R" (as marked in 1.a. above) hole in the dobby arm. Pop the ferrule up and out of the top of the dobby arm, attach the black plastic cable retainer button, and then pull the cable back down to seat it and the button in the dobby arm.
   c. If attaching to a pre-1988 dobby arm, the cable end will be stripped of sheathing. A loose ferrule will be supplied. Push the cable up through the "R" hole and then using a crimping tool, crimp the ferrule onto the stripped end of the cable.

      NOTE: Crimping the ferrule requires multiple squeezes to ensure the entire ferrule is fully compressed and smooth. This ensures optimal strength of the crimped joint. Please contact AVL for rental or purchase of a crimping tool if you do not already have one.
3. Remove the packaging securing the lower cable from the motor pulley. This is the cable that exits the motor pulley to the left. Pull the cable towards the lifting cam (large pulley), insert the cable end into the hole in the groove until it appears in the side access hole. Continue inserting the cable until you are able to place the cable retaining hairpin or clip over the able just behind the crimped fitting on the end of the cable. After the clip is securely on the cable so that the cable will not slip back through the entry hole, turn the motor pulley in a clockwise direction until all of the cable slack is wound onto the motor pulley.
4. Attach the loose cable with spring to the top of the slide plate or dobby arm.

a. If attaching to the slide plate the cable will end in a loop with a quick link. Open eye bolt and secure it to the eye bolt before closing it.
b. If attaching to a post-1988 dobby arm, the cable will end in a crimped ferrule. The ferrule end of the cable will be inserted in the bottom "R" (as marked in 1.a. above) hole in the dobby arm. Pop the ferrule up and out of the top of the dobby arm, attach the black plastic cable retainer button, and then pull the cable back down to seat it and the button in the dobby arm.
c. If attaching to a pre-1988 dobby arm, the cable end will be stripped of sheathing. A loose ferrule will be supplied. Push the cable up through the "R" hole and then using a crimping tool, crimp the ferrule onto the stripped end of the cable.

   NOTE: Crimping the ferrule requires multiple squeezes to ensure the entire ferrule is fully compressed and smooth. This ensures optimal strength of the crimped joint. Please contact AVL for rental or purchase of a crimping tool if you do not already have one.

Once attached, route the cable up over the pulley in the upper right corner of the dobby back, and then down towards the bottom of the loom.

NOTE: For slide plate equipped looms, the pulley and cable retainer are mounted to the dobby back by a hex bolt. You will need to loosen this bolt in order to raise the cable retainer enough for clearance for the cable. Once the cable is on the pulley, lower the retainer so that it is very close to but not touching the pulley edges and retighten the hex bolt securing the pulley and retainer.

5. Remove the packaging securing the cable from the cylinder of the "lowering" cam-cylinder, extend it up to and attach it to the spring. Use painter's tape to temporarily secure the lower cable to the spring.

NOTE: After the cables are all attached and the E-Lift is working, remove all of the tape from the lowering cables and spring.

6. Remove the packaging securing the upper cable from the motor pulley, and unwrap the cable from the motor pulley. Turn the lowering cam-cylinder counter-clockwise until the slide plate or dobby arm is raised to the top of its travel. You should be able to see the cable entry hole in the groove near the bottom of the lowering cam. Check that there is

approximately 1 wrap of the cable on the lowering cylinder in this position. Insert the free end of the upper cable from the motor pulley into the lowering cam groove hole, and push it in until it appears in the side access hole. Continue pushing the cable in until you can place the hairpin or retaining clip over the cable just behind the crimped end. You may need to leave the cable out of the cam groove and off of the small tensioner pulley to gain enough clearance to install the hairpin or retainer clip. After the clip is securely on the cable so that the cable will not slip back through the entry hole, pull the cable into the cam groove and then onto the small tensioner pulley on the E-Lift plate.

Last Steps

1. Connect the foot or hand switch cord to the E-Lift, ensure the plug is fully seated.
2. Connect the power cord to the E-Lift, then plug into a power supply/wall outlet.
   Refer to Figures 2b & 2c for locations of plug receptacles.

Congratulations, your E-Lift 3 is now ready to operate!

Installing the E-Lift – SDL & V-Series Looms

NOTE: If you are replacing an existing E-Lift 2 or 2+ the mounting holes change location. Follow Figure 1a & Chart 1a for mounting hole drilling.

Preparing the loom

1. Lightly mark in pencil each treadle pulley support cross member for correct positioning, with reference to front/back and up/down, before removing them from the loom. Also, lightly mark the dobby arm in pencil with an "R" for which hole is used with the cable to the cam-cylinder, and with an "L" for which hole is used with the cable to the left treadle.
2. Disconnect the treadle cables at the treadles. Remove the treadles, treadle support mounting blocks and axles from the loom. Remove the return spring lever and spring from the rear treadle crossmember.
3. Disconnect both cables from the slide plate or dobby arm. Black plastic cable retainer buttons are used in the dobby arm to retain the cables. The buttons are removed from the opposite side as the cable entry hole by pushing the cable further into its entry hole. Retain the buttons for later use.
4. Remove the cam-cylinder and single pulley from the loom by removing the rear stop collar or axle cap, sliding the axle towards the front of the loom and partially out of the rear vertical side frame member until the cam-cylinder and single pulley are free to be removed. Remove them now along with the cables attached to the cam-cylinder. If removing an axle cap, it will be destroyed during the process, and will be replaced by the supplied stop collar.
5. Remove the treadle pulley support cross member assembly from the loom. Once off the loom, disassemble it by removing the treadle pulley axles and pulleys from the cross members.
6. Drilling the cross members: With the cross members located on a workbench or other suitable working surface, drill the holes required, as shown in Figure & Chart 1a.

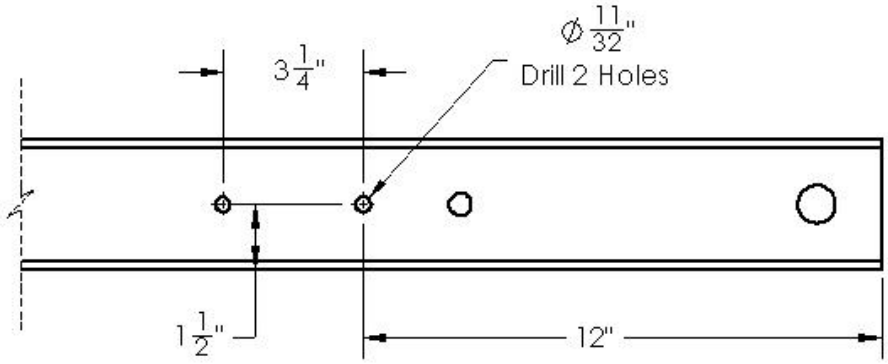


Figure 1a – *SDL & V-Series Treadle Pulley Support Cross Members (Front and Rear) Holes*

HOLE NO.	CROSS MEMBE	HOLE SIZE	HOLE ORIENTATI	DISTANCE FROM EDGE
1	front	11/32”	horizontal	12”
2	front	11/32”	horizontal	15 1/4”
3	rear	11/32”	horizontal	12”
4	rear	11/32”	horizontal	15 1/4”

Chart 1a – *SDL & V-Series Cross Member Hole Information*

7. Attach the E-Lift mounting blocks to the crossmembers using the 5/16-18" x 3 ¼” hex bolts, flat washers and hex nuts. The mounting blocks attach on the inside face of their respective crossmembers so that the mounting blocks face each other.
8. Reinstall the crossmembers on the loom, remembering to align them as before.

Mounting the E-Lift

WARNING: The Motor Box is heavy. Rather than attempting to lift the E-Lift while mounting, it is recommended that you use a stack of books or 2 support blocks 2”Tx4”Wx~6-12”L placed on edge under the bottom of the E-Lift housing to elevate it into position for mounting.

1. Place your support books or blocks (“supports”) on the floor within the loom frame. Set the E-Lift on top of the supports oriented so that the power switch faces to the rear of the loom and the round switch receptacle faces the front of the loom. Slide everything under the treadle pulley support cross members to align the holes in the E-Lift mounting plate with the mounting blocks vertical holes.
2. Insert one 5/16-18 x 6 1/2” hex bolt and flat washer into each of the mounting block vertical holes from the bottom up.
3. Add the felt washers to the hex bolts between the E-Lift mounting plate and the mounting blocks.
4. Engage the bolts in the corresponding holes in the E-Lift mounting plate, and then loosely install a flat washer, lock washer and hex nut on each hex bolt.

Installing the Cam-Cylinders

E-Lift 3 comes with two cam-cylinders, one for lifting harnesses and one for lower harnesses. They will be secured in order of mounting in the packaging to help you see the correct configuration.

NOTE: Do not unwrap the packaging/tape securing the cables until directed to do so in the steps below.

1. Measure the diameter of your cam-cylinder axle. If the diameter measures 5/8” you will remove the bushings supplied with the cam-cylinders as they won’t be used.
2. Find the configuration for your loom in the following *Figure 3x* images. The assembly of cam-cylinders in the packaging will match the figure.
3. Lubricate the axle. Beeswax is a long-lasting lubricant that is rubbed directly onto the axle under where the cam-cylinders will operate. A dry, clear, spray Teflon or Silicone lubricant is also suitable, though it provides less longevity.

4. Remove the string or bar holding the cam-cylinders together and then slide the cam-cylinders and stop collars onto the axle in the pre-configured order and as shown in the figure.
5. Slide the axle back into place in the rear vertical slide frame member and secure with a stop collar.

Aligning the Cam-Cylinders

The "cylinder" portion (smaller diameter pulley) of the lifting cam-cylinder is designed with a specific length to establish a direct route for its cables with as little angle as possible.

1. By line of sight, align the *lifting* cam cable groove directly to the left side of the E-Lift motor pulley.
2. Align the *lowering* cam cable groove directly to the right side of the small, white tensioner pulley mounted to the top of the E-Lift plate.
3. Move the stop collars to lightly sandwich each cam-cylinder, leaving a slight gap between the stop collars and the cam-cylinders to allow free movement of the cam-cylinders. Tighten the set screws in the stop collars to lock them in place.

   NOTE: Pinching the cam-cylinders between the stop collars can create too much resistance with the cam-cylinder rotation and result in E-Lift motor stalls.

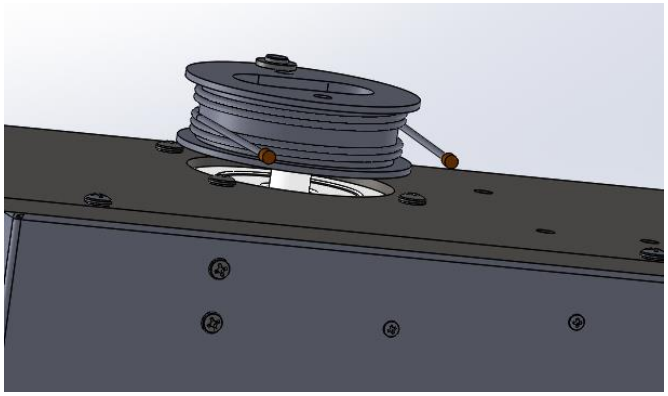


Fig. 2a – *E-Lift Motor Double Pulley Cables (right side view)*

NOTE: The *lower* cable on the motor pulley attaches to the *lifting* cylinder. The *upper* cable attaches to the *lowering* cylinder.

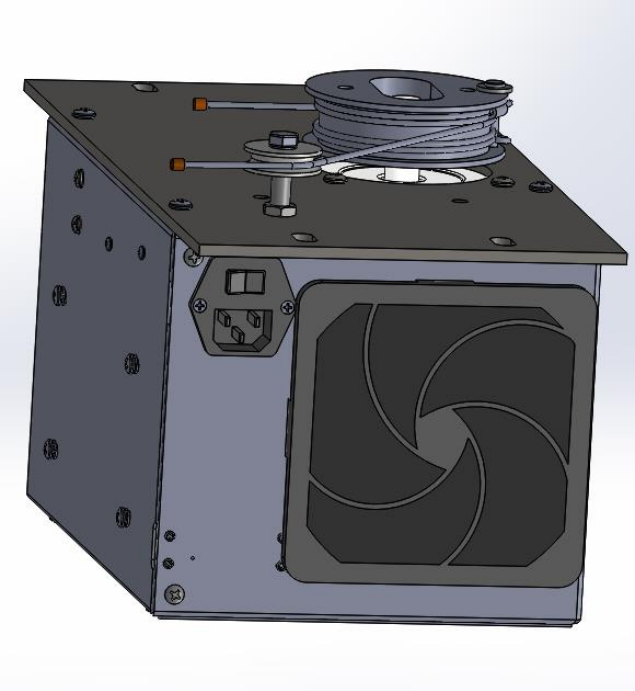


Fig. 2b – *E-Lift Cable Routing (rear view)*

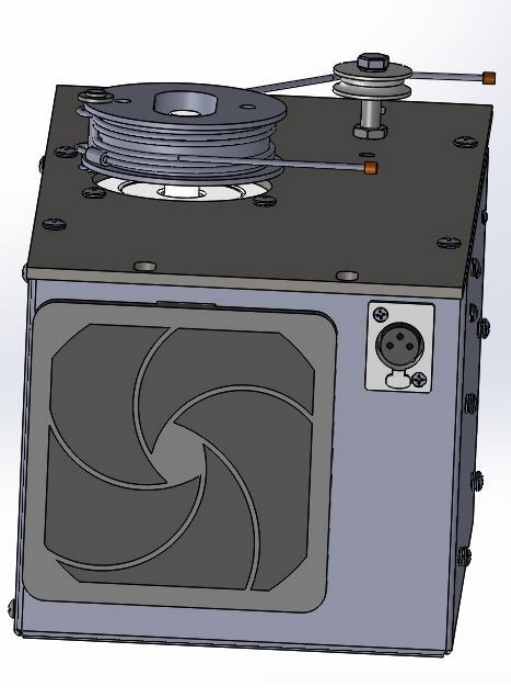


Fig. 2c – *E-Lift Cable Routing (front view)*

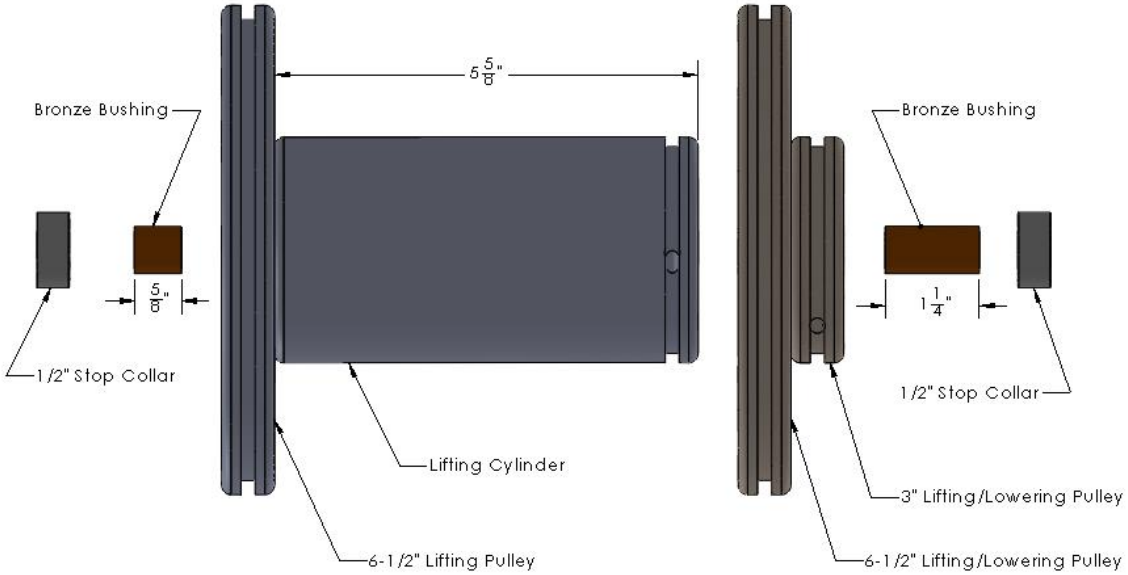


Fig. 3-S – *Cam-cylinders Configuration for SDL (right side view)*

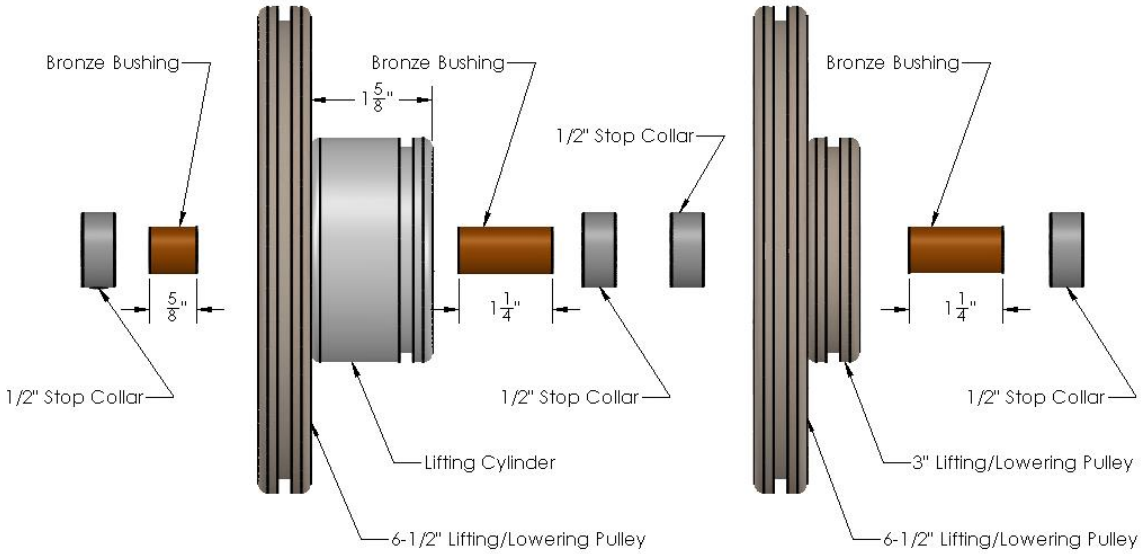


Fig. 3-V – *Cam-cylinders Configuration for V-Series (right side view)*

Attaching Coated Steel Cables

1. Lower the slide plate or dobby arm to the bottom of its travel without any harnesses lifted. With a slide plate this requires pressing in the dobby cables to avoid being caught by the dobby insert.
2. Remove the packaging securing the cable from the smaller *cylinder* side of the *lifting* cam-cylinder. Route the cable up to the slide plate or dobby arm and secure it.
   a. If attaching to a slide plate the cable will end in a loop. The loop slides over the open eye bolt at the bottom of the slide plate. If he eye bolt is closed, then use the quick link to connect the cable to the eye bolt.
   b. If attaching to a dobby arm, the cable will end in a crimped ferrule. The ferrule end of the cable will be inserted in the bottom "R" (as marked in 1.a. above) hole in the dobby arm. Pop the ferrule up and out of the top of the dobby arm, attach the black plastic cable retainer button, and then pull the cable back down to seat it and the button in the dobby arm.
3. Remove the packaging securing the lower cable from the motor pulley. This is the cable that exits the motor pulley to the left. Pull the cable towards the lifting cam (large pulley), insert the cable end into the hole in the groove until it appears in the side access hole. Continue inserting the cable until you are able to place the cable retaining hairpin or clip over the able just behind the crimped fitting on the end

of the cable. After the clip is securely on the cable so that the cable will not slip back through the entry hole, turn the motor pulley in a clockwise direction until all of the cable slack is wound onto the motor pulley.

4. Attach the loose cable with spring to the top of the slide plate or dobby arm.
   a. If attaching to the slide plate the cable will end in a loop with a quick link. Open eye bolt and secure it to the eye bolt before closing it.
   b. If attaching to a post-1988 dobby arm, the cable will end in a crimped ferrule. The ferrule end of the cable will be inserted in the bottom "R" (as marked in 1.a. above) hole in the dobby arm. Pop the ferrule up and out of the top of the dobby arm, attach the black plastic cable retainer button, and then pull the cable back down to seat it and the button in the dobby arm.
   c. If attaching to a pre-1988 dobby arm, the cable end will be stripped of sheathing. A loose ferrule will be supplied. Push the cable up through the "R" hole and then using a crimping tool, crimp the ferrule onto the stripped end of the cable.

      NOTE: Crimping the ferrule requires multiple squeezes to ensure the entire ferrule is fully compressed and smooth. This ensures optimal strength of the crimped joint. Please contact AVL for rental or purchase of a crimping tool if you do not already have one.

   Once attached, route the cable up over the pulley in the upper right corner of the dobby back, and then down towards the bottom of the loom.

   NOTE: For slide plate equipped looms, the pulley and cable retainer are mounted to the dobby back by a hex bolt. You will need to loosen this bolt in order to raise the cable retainer enough for clearance for the cable. Once the cable is on the pulley, lower the retainer so that it is very close to but not touching the pulley edges and retighten the hex bolt securing the pulley and retainer.

5. Remove the packaging securing the cable from the cylinder of the "lowering" cam-cylinder, extend it up to and attach it to the spring. Use painter's tape to temporarily secure the lower cable to the spring.

NOTE: After the cables are all attached and the E-Lift is working, remove all of the tape from the lowering cables and spring.

6. Remove the packaging securing the upper cable from the motor pulley, and unwrap the cable from the motor pulley. Turn the lowering cam-cylinder counter-clockwise until the slide plate or dobby arm is raised to the top of its travel. You should be able to see the cable entry hole in the groove near the bottom of the lowering cam. Check that there is approximately 1 wrap of the cable on the lowering cylinder in this position. Insert the free end of the upper cable from the motor pulley into the lowering cam groove hole, and push it in until it appears in the side access hole. Continue pushing the cable in until you can place the hairpin or retaining clip over the cable just behind the crimped end. You may need to leave the cable out of the cam groove and off of the small tensioner pulley to gain enough clearance to install the hairpin or retainer clip. After the clip is securely on the cable so that the cable will not slip back through the entry hole, pull the cable into the cam groove and then onto the small tensioner pulley on the E-Lift plate.

Last Steps

1. Connect the foot or hand switch cord to the E-Lift, ensure the plug is fully seated.
2. Connect the power cord to the E-Lift, then plug into a power supply/wall outlet.
   Refer to Figures 2b & 2c for locations of plug receptacles.

Congratulations, your E-Lift 3 is now ready to operate!

Operating the E-Lift

1. Turn on the E-Lift using the power switch, located next to the power cord. Refer to Figure 2b for power switch location.
2. Set the Home position: Each time you power on the E-Lift you must set the home position by doing the following
   a. Press & hold the switch. After a brief pause, the E-Lift will slowly move the slide plate or dobby arm up towards the Shed Closed position. Be ready to release the switch.
   b. Immediately release the switch when the slide plate or dobby arm touch the upper bumper on the right slide rod or in the right side slot.

   NOTE: If during homing the switch is released too early or too late, the E-Lift must be powered off for 30 seconds, powered back on and the homing procedure repeated. When releasing the switch too early, the slide plate or dobby arm will be too low causing harness miss-lifts because the dobby cannot effectively change the pick selection. This condition will affect the higher number harnesses with a slide plate, or random harnesses with a dobby arm. If during homing the switch is held too long, the spring in the lowering cable will be stretched and the lifting cable will become slack. This may cause the motor to stall during operation. To reset a stalled motor, power off the E-Lift, wait 30 seconds, power it back on, and then repeat the homing procedure.
3. The next press of the switch will be for normal weaving operation.

Changing shedding modes

There are two modes of operation for the E-Lift, Double-shed and Single-shed. Double-shed is the most efficient mode for weaving. Changing between modes is available only after homing is completed. To change modes, press and hold the switch for a full 10 seconds. If the switch is not pressed for a full 10 seconds, the normal operation will be performed. Immediately after releasing the switch, wait for approximately 3 seconds before attempting to engage the switch.
The next switch selection will be in the new mode.

Maintenance and Replacements

Required Maintenance

Your E-Lift is designed to provide years of dependable service. When replacement parts, such as the air filter or cables are needed, AVL is your source. AVL may also be able to rebuild your E-Lift when it reaches the end of its wear cycle. Please contact us at 530-893-4915 or sales@avlusa.com to discuss with your AVL representative.

The following are the recommended maintenance and intervals.

Air Filter Element Cleaning

- Clean weekly or as use and dust & lint conditions dictate.
- Vacuuming of the filter elements while still in place on the E-Lift for basic cleaning.
- For deep cleaning, the square plastic rings may be removed, and then the filter elements may be washed in warm, soapy water. Be sure the element is completely dry before you reinstall it.

NOTE: The filter elements are secured to the front and rear E-Lift housing by square plastic rings that snap on/off.

Cables & Spring Inspection

- Check yearly, looking for especially slack in the cables and an overstretched spring. If the cables are hanging loose, the cables have become stretched or the spring is over-stretched. Remove the spring to determine if it is the cause. Without tension, the spring coils should completely close. If you see space between the coils replace the spring and recheck the cables for slack. If the cables are showing slack with a good spring in place, the cables must be replaced.
- Breakage and delaminating of the cable sheathing also indicate replacement.

Hardware Tightening

- Check the mounting hardware and re-tighten if loose seasonally, or whenever there has been a significant change in the temperature or humidity in the room with the loom.

Lubrication

- Lubricate the cam-cylinder axle yearly, or whenever the cam-cylinders start to squeak.
- Beeswax is a suitable, long-lasting lubricant to rub onto the axle under where the cam-cylinders rotate. Dry, clear, spray Teflon or Silicone lubricants are also suitable, but with shorter working life.