Overview - Components

Overview - Planning

1. Based on screen location and projector specifications, determine proper position for projector installation.

2. Confirm that there is adequate space for installation and operation. Minimum clearance above ceiling level varies according to height of projector, optional projector mounting bracket, optional ceiling closure and optional Environmental Housing.

3. Arrange to provide service access to the unit.

4. When installed with Environmental Air Space Housing unit is suitable for use in an environmental air space in accordance with Section 300.22(C) of the National Electrical Code, and Section 2-128, 12-010(3) and 12-100 of the Canadian Electrical Code, Part 1, CSA C22.1.

5. Total capacity of lift including cables, closure, projector, and bracket:

<table>
<thead>
<tr>
<th>Lift</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>SL4</td>
<td>132 LBS.</td>
</tr>
<tr>
<td>SL6</td>
<td>125 LBS.</td>
</tr>
<tr>
<td>SL8</td>
<td>118 LBS.</td>
</tr>
<tr>
<td>SL10</td>
<td>108 LBS.</td>
</tr>
<tr>
<td>SL12</td>
<td>100 LBS.</td>
</tr>
</tbody>
</table>

As Soon As Lift Arrives

1. Open carton and inspect for damage.

2. Locate the following parts:
   A. The unit itself
   B. Controls
   C. Any optional equipment

TOOLS REQUIRED

- PENCIL
- LEVEL
- POWER DRILL
- HARDWARE (by others)
- TAPE MEASURE
- PLIERS
- HEX WRENCH
- SCREWDRIVER

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© 2022 All Rights Reserved | FORM: ScissorLiftSL Inst22
**Important Installation/Operating Instructions**

1. Please read the following installation guidelines thoroughly and follow them carefully. Failure to do so may cause product to fall or otherwise fail, and could result in serious injury.

**DANGER: To reduce risk of shock:**
2. Always disconnect power from lift before cleaning.

**WARNING—To reduce risk of burns, fires, electric shock or injuries to persons:**
3. Turn off power and any nearby equipment or cables carrying electricity before connecting switches, wires, controls, or electrical components.
4. Use this lift only for its intended use as described in these instructions. Do not use attachments not recommended by the manufacturer.
5. Never operate this lift if it has a damaged cord or plug. If it is not working properly, call your dealer or the manufacturer for assistance/repair.
6. Keep cords away from heated surfaces.
8. Never drop or insert any object into any opening.
9. Do not use outdoors.
10. Do not wire motors in parallel without written permission from Draper, Inc.

**Important Safety Information**

**WARNING:** Improper installation and use of the Scissor Lift can result in serious injury or death. Primarily, injuries can occur if the unit falls due to imprecise installation, mishandling of the unit during installation, or installation on an insufficient wall or ceiling structure. Please use extreme care.

11. Test lift prior to installation.
12. During testing or operation, carefully watch the surrounding area for any potential safety concerns including nearby persons or objects.
13. After installation, the entire system, including all sensors, should be carefully tested to ensure safe and normal operation. Extreme care should be taken during testing to remain clear of moving parts to avoid possible injury.
14. **WARNING** – To prevent operation by unauthorized persons the locking switch cover MUST be installed over the 3-button wall switch for installations where the lift show position will descend to a height less than 8 feet above the floor. The actuating switch controls shall be located within sight of the projector lift.
15. Operation of unit should be performed only by authorized and qualified personnel, who have been trained in its safe and effective operation and understand its safety features.
16. The safety features of the unit should never be disabled, bypassed, or overridden. The system should not be operated until all safety features are properly and completely installed, calibrated, and tested.
17. Unit may need to comply with local, state, or district rules and regulations, in particular when installed in schools. All applicable rules and regulations should be reviewed before installation and use.

**Caution:** Risk of Electric Shock—connect this product to a properly grounded electrical supply.

**Important Installation/Operating Instructions**

**WARNING:** To prevent injury, this apparatus must be securely attached to the building structure in accordance with the instructions.

**Caution:** Do not operate lift without a minimum of 15 lbs. of weight attached to the pan. Operating without weight may cause cables to unspool.

18. Installation and calibration of the unit should only be performed by an authorized, qualified, and experienced professional. In particular, electrical work and wiring [indicated in diagram by dashed lines] must be completed only by a qualified professional electrician who has read this manual completely and is familiar with the construction and operation of this equipment and the hazards involved.

19. Do not affix the unit to walls or ceilings that have inadequate strength to permanently hold the unit during use. It is the owner’s and installer’s responsibility to confirm the wall or ceiling to which the unit attaches is sufficient to permanently hold the weight and stress loads of the unit at all times. Draper*, Inc., is not responsible for improper installation, application, testing, or workmanship related to the product at place of installation.

20. It is the installer’s responsibility to make sure appropriate fasteners are used for mounting.

21. All hardware must be installed level. Unit must be level and square.

22. Never leave the area while operating the unit during installation, maintenance, or normal operation, unless it is secure and safe.

23. Before testing or operation, carefully inspect the entire area and path (especially underneath) of unit to be sure no persons or objects are in the area.

24. Failure to precisely follow installation guidelines invalidates all warranties.

25. Do not obstruct operation of Scissor Lift with fingers or any object. Serious injury or damage could result.

26. Lift to be used with product weighing no more than: See chart on page 1.

27. Scissor Lift is designed to accommodate ceiling suspended equipment.

28. Equipment should not be allowed to rest on optional ceiling closure during operation (refer to section titled “Installing Projector”).

29. Entire bottom of unit must be unobstructed to permit proper operation. Sufficient clearance must be allowed below projector or optional ceiling closure: 4’ for Model SL4, 10’ for Model SL10, etc.

30. Unit operates on 115V AC 60 Hz. current. 14 amps current draw (2 amps for lift, 12 amps for outlet).

31. Verify the show position when testing lift. Make required changes by referring to adjustment instructions on page 4 of this document.

32. **WARNING** – To prevent risk of injury, verify that no person is in the vicinity of the device before raising or lowering.

33. The maintenance/service factory limit setting must not be adjusted to a lower position than the preset factory limit setting. In addition, Draper does not recommend setting show position at the maintenance/service position—for example, if you wish to have 8 foot show position, order a lift with at least a 10 foot maintenance position.

34. When the Scissor Lift is to be installed in “other space used for environmental air” the optional environmental air space housing must be installed per instructions to isolate the lift from the “other space used for environmental air.”

35. When Scissor Lift is NOT installed in environmental air space housing and optional ceiling closure, the ALTERNATE wiring for up limit switch may be used (see Alternate Wiring schematic on page 5).

36. Custom products/installations may not be reflected in this manual. Call Draper, Inc., if you have questions about the installation of custom products or any questions about your installation.

**Caution:** Before servicing unit, disconnect hardwired control and remote control.

Note: Unit has been thoroughly inspected and tested at factory and found to be operating properly prior to shipment.
Section 1 - Hanging Unit

**Please note:** If using Environmental Air Space Housing option, see installation instructions included with Environmental Air Space Housing.

The Scissor Lift may be installed in a variety of ways; recessed above the ceiling, or suspended below the ceiling. The lift should be supported by four \( \frac{3}{4} \) threaded mounting rods or bolts with locking nuts.

If ceiling recessed, the entire unit (including the projector) should set approximately \( 1\frac{1}{2}\)" above the finished ceiling in its “stored” position. The threaded rods should pass through the corner mounting flanges and be secured by nuts above and below. The unit should then be guy wired or blocked to prevent swinging.

**Please Note:** Scissor Lift must be installed in accordance with the requirements of the Local Building Codes, the Canadian Electrical Code (CEC), CAN/CSA C22.1 and the National Electric Code (NEC), NFPA 70, as required. An appropriate disconnect device shall be provided as part of the building installation.

All installations should observe the following guidelines:

1. Installer must ensure that all fasteners and supports are of adequate strength to securely support Lift and projector. Hardware structure should be held to hold at least four \( 16 \times \) times the combined weight of the lift, projector, housing, closure, and ceiling material attached to closure.
2. Fastening methods must be suitable for mounting surface, and securely anchored so that vibration or abusive pulling on unit will not weaken installation.
3. Bottom of unit must be unobstructed after installation. Sufficient clearance must be allowed below projector or optional ceiling closure.
4. Do not use unit to support adjacent ceiling, light fixtures, etc.
5. Do not complete the ceiling below unit until electrical connections have been completed and unit has been operated successfully.

Section 2 - Operation

Before operating or testing the unit, make sure the packaging has been removed from the unit. Remove the corrugated block from the cardboard sleeve (bottom-most packaging material), then collapse the sleeve and remove it, along with the rest of the packaging. Next, using the 3 button switch, operate the lift in the “up” direction, so the lift's control encoder will recognize it's “home” location. Until you do this, the Down function will not work. You must also do this if the Scissor Lift ever loses or is disconnected from the power.

When unit is first operated, be cautious! If unit fails to operate properly, press “STOP” and recheck electrical connections before proceeding. Cycle unit down and up several times to confirm satisfactory operation.

**Caution:** Do not pull on or touch safety belt when unit is in motion. If belt locks, the cables will unspool.

**WARNING:** To prevent operation by unauthorized persons the locking switch cover MUST be installed over the 3-button wall switch for installations where the lift show position will descend to a height less than 8 feet above the floor. The actinguate switch controls shall be located within sight of the projector lift.

**Caution:** Obstructing bottom pan may cause cables to unspool.

**Caution:** Do not operate Scissor Lift without a minimum of 15 lbs. of weight attached to the pan. Operating without weight may cause cables to unspool.

**Standard Single Station Low Voltage Control** (Fig. 1)

One three-button switch with “UP”, “DOWN”, and “STOP” buttons. Lift starts up or down when appropriate button is pressed, and may be stopped by pressing “STOP” button. Factory set limit switches stop lift automatically when projector is in “show” position. One momentary key switch lowers lift from “show” to “service” position.

**Optional Multiple Station Control**

Optional, moves lift from “stored” to “show” position only. Each switching station has a three-button switch with “UP”, “DOWN”, and “OFF” buttons. Lift starts up or down when appropriate button is pressed, and may be stopped by pressing “OFF” button. Factory set limit switches stop lift automatically when projector is in “show” position.

**Optional Key Operated Switch**

If ordered, the standard Lift LV Switch can be replaced with a second single station, momentary key-operated three position (up/off/down) switch. Multiple Station Control required for this option. Moves lift from “stored” to “show” position only.

**Optional RS232 Control**

For Serial communication an R2D7 Serial Communications Interface is optionally available.

**Optional Infrared or Radio Frequency Remote Control**

If ordered, a three-button transmitter is provided, with “UP”, “DOWN”, and “STOP” buttons. Unit starts up or down when appropriate button is pressed, and may be stopped by pressing “OFF” button. Factory set limit switches stop unit automatically when projector is in “show” position. Only controls “show” and “stored” positions.

**Low Voltage Trigger**

Input provided for Low Voltage Trigger from projector (see diagram on page 4).

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[Diagram of LIFT LV SWITCH, LIFT LV SWITCH WITH LOCKING COVERPLATE, and SP-KSM Service]
Section 3 - Adjusting for Level or Center of Gravity

Preferred Method—Adjusting Projector Pan
The Projector Pan can be moved forward or back.
1. Ensure Bottom Pan is supported.
2. Remove the Lifting Cable Bar.
3. Remove screws holding Projector Pan on Bottom Pan.
4. Move Projector Pan forward or back.
5. Replace screws.
6. Replace Lifting Cable Bar.

Secondary Method—Adjusting Lifting Cable Bar (if above does not work)
1. Run unit to its “Service” position and ensure Bottom Pan is level.
2. Ensure Bottom Pan is not more than ¾” (19mm) out of level. However, the pan does not have to be perfectly level, as long as its positioning is consistent and repeatable in “Show” and “Closed” positions.
3. Ensure Bottom Pan is supported.
4. Remove screws holding Lifting Cable Bar to the Projector Pan.
5. Move Lifting Cable Bar forward or back.
6. Replace screws.
7. Check level again. If still not level, repeat.

Section 4 - Installing Projector
Draper’s optional Universal Projector Mount will hold up to 26 lb (12kg).
See Installation Instructions included with Universal Projector Mount.
If not using Draper’s Universal Projector Mount, generally the video projector should be suspended from the bottom pan according to projector manufacturer’s instructions.

If installing with a small closure, maximum projector size is:
18” x 8¾” (45.7 x 22.2 cm) (width x length x Environmental Air Space Housing height).

If installing with a large closure, maximum projector size is:
18” x 18” (45.7 x 45.7 cm) (width x length x housing height).
The projector plate is not pre-drilled.

When drilling initial holes for mounting projector, or if for any reason the hole placement must be changed, completely lower lift before attempting to drill holes. When attaching projector bracket to plate, make sure screws are short enough that they do not touch the motor/roller above the plate when lift is closed.

Unit and projection system should be operated, checked and adjusted as necessary at this time (see Sec. 8 for limit adjustment procedures).

CAUTION: Keep fingers & other objects away from ceiling closure when unit is operating. Serious injury or damage can result.

Section 5 - Attaching Universal Projector Mount to Projector Pan

Please Note: If unit is ordered with optional Universal Projector Mount pre-installed, disregard these instructions.
If unit is NOT ordered with optional Universal Projector Mount pre-installed, it is necessary to install a new Projector Pan, which includes the Universal Projector Mount’s rectangular plate.

1. Lower unit until the Bottom Pan is resting on a tabletop or other stable and sturdy surface.
2. Remove Lifting Cable Bar from Bottom Pan.
3. Remove bolts holding Projector Pan to Bottom Pan.
4. Remove Projector Pan and set aside.
5. Place new Projector Pan with Universal Mount into place.
6. Re-attach Projector Pan to Bottom Pan.
7. Re-attach Lifting Cable Bar to Bottom Pan.
Section 6 - Installing Optional Environmental Air Space Housing

The Environmental Air Space Housing ships in pieces, and must be assembled by the installer. Height is set by drilling out the knockouts at the desired locations then using screws to connect side panels.

Draper recommends installing an access panel in the ceiling to allow future access. The optional Environmental Air Space Housing must be installed to isolate the lift from the “other space used for environmental air.” Includes trim ring for ceiling opening.

See installation instructions included with Environmental Air Space Housing.

**Please Note:** The factory wiring of ‘UP’ Limit Switch MUST ALWAYS be used when installed in Environmental Air Space Housing and optional ceiling closure.

---

**Installing Optional Ceiling Trim Kit**

1. Install Lift.
2. Install bottom section of housing in opening by suspending with wire, or by mounting directly to the ceiling joists (if space permits).
3. Install projector and attach optional ceiling closure.

---

**Section 7 - Installing Ceiling Closure**

If unit is equipped with a ceiling closure system, use either as is, or in conjunction with a piece of existing ceiling tile.

Please refer to diagrams at right for instructions.

1. If installing with ceiling tile, it may be necessary to cut tile so overall dimensions are same as (or slightly less than) closure panel. Place tile into trim frame. Lay closure panel on top (back side) of ceiling tile, and tighten screws to hold in place.
2. If installing large closure, attach brackets to bottom of projector plate.
3. Attach 5/16” (8mm) threaded rods to slots in projector plate or brackets.
   **CAUTION:** Ensure nuts and bolts attaching brackets to Lift are completely tightened.
4. Run unit “up” until bottom pan stops at highest position. Mark position on 5/16” (8mm) rods flush with ceiling level and cut rods to length (removing from pan if convenient).
5. Run unit “down” until bottom pan stops at “show” position.
6. Attach closure to lower end of 5/16” (8mm) rods by slipping into four corner slots and secure with nuts above and below slots.
7. Run unit “up” again to highest position. Measure distance by which panel fails to reach required “closed” height for surrounding ceiling.
   **CAUTION:** Make sure nuts are completely tightened.
8. Run unit “down” then re-adjust mounting of 5/16” (8mm) rods in traveling grid to raise panel required distance.
9. Test unit operation to confirm that panel will stop in closed position just before touching ceiling.
   **CAUTION:** DO NOT hang from, “ride,” or pull down on unit. This could create a failure and cause damage and/or injury.

**PLEASE NOTE:** Immediately upon completing surrounding ceiling, operate unit to confirm that optional ceiling closure panel stops 1/8” (3mm) short of ceiling in closed position. If closure panel touches ceiling, motor may continue operating after lift is closed. If it continues to cycle once lift is closed, a failure may occur, making unit descend rapidly and cause damage and/or injury.

---

**For Additional Safety:**

1. Be sure the nuts that attach the threaded rods to the closure panel are tight.
2. Wrap a plastic wire tie around the mounting tab and the threaded rod at all four corners of the closure panel.

**Please Note:** Do NOT use a paper-covered or similar wire tie — use only plastic wire ties for maximum safety.
Section 8 - Connecting Controls to Data Cable Splitter Board

1. Controls plug into the Data Cable Splitter Board (See diagram below) which is located on the Top Frame on the front side of the lift, using RJ45P4C connectors.

2. For IR or RF Remote Control, use data cable with RJ45P4C connectors on both ends. For serial control of "Show" position, use data cable with RJ45P4C connectors on both ends and an R2D7 Serial Control Interface.

3. Plug into the "RP/RQ" input.

Section 9 - Clearing and Resetting Show Position

Clearing the show position at current show position:

1. Move lift to the show position.
2. While lift is at the show position press and hold the Key Up toggle switch and release once the Lift begins moving upward.
3. The show position is now cleared and ready for a new show position to be set.

PLEASE NOTE: At this point the Key Switch will not operate until the new "Show Position" has been set. Also the 3-Button Wall Switch changes into a maintain, push and hold type button, for continuous movement. This allows for easy setting of new "Show Position"

Procedure for setting show position:

1. Now that the show position has been cleared, use wall switch up and down buttons to get lift into desired show position.
2. While lift is at desired show position, press and hold the Key Down toggle switch until lift begins to move upward. Lift will begin a calibration cycle where it will move upward for two seconds, stop, then move down for one second and then the Lift will return to the desired show position.

Section 10 - Optional Delay Feature

1. When the Optional Delay Feature is installed the Delay Switch must be in the "Delay On" position for normal operation.
2. If the Optional Delay Feature is installed and the "Show Position" requires adjusting, then the "Delay Switch" must be switched to OFF while adjusting the show position.

CAUTION: Be sure all switches are in OFF position before adjusting limit switch. Always be prepared to shut lift off manually when new adjustment is being tested. Please refer to wiring diagram.

PLEASE NOTE: If the Scissor Lift loses power, the DOWN function will not work until you operate the lift in the UP direction using the wall switch. This allows the lift’s control encoder to recognize its "home" location.

Please Note:
Any control, including automated dry contact systems, being connected to the wall switch input MUST send a momentary signal.

Please Note:
Data cable connections must be made using electrically straight 6 Pin 4 conductor modular cable (RJ45P4C).

Please Note:
RJ45P4C Data Cables Provided by Others

Please Note:
To RS232 Serial Port:
1 - Blue = Not Used
2 - Yellow = Rx (Data from control system)
3 - Green = Tx (Data to control system)
4 - Red = Not Used
5 - Black = Gnd (Signal Ground)
6 - White = Not Used

Please Note:
Any control, including automated dry contact systems, being connected to the wall switch input MUST send a momentary signal.
Section 11 - Electrical Connections

Lift operates on 115V, 60 Hz. current. 14 amps current draw (2 amps for lift, 12 amps for Outlet) Lift ships with internal wiring complete and control switch(es) fully boxed.

Wire to connect lift to switch(es) and switch(es) to power supply should be furnished by installer.

Please Note: Lift must be installed in accordance with requirements of Local Building Codes, Canadian Electrical Code (CEC), CAN/CSA C22.1 and National Electric Code (NEC), NFPA 70. An appropriate disconnect device shall be provided as part of building installation.

⚠️ CAUTION: All operating switches should be “off” before power is connected.

Terminal strip for field connections is located inside a junction box on the end of the unit. Unit ships with internal lift wiring complete to terminal strip. Use switch to lower lift and remove packing. Remove temporary wiring and complete permanent wiring to electricity and to switches. Wire to connect unit to power supply and to switches should be furnished by installer. Connections should be made in accordance with wiring diagram. Lift should be operated and checked prior to installing projector and/or optional ceiling closure.

Section 12 - Operation

⚠️ CAUTION: When operating for the first time, cycle unit down and up several times to confirm satisfactory operation. Be prepared to cut POWER if necessary.

- **110-120V SINGLE STATION CONTROL** - 3-position UP-OFF-DOWN switch permits operation to be stopped at any point. Factory adjusted limit switches automatically stop screen when fully down or fully up.
- **24V CONTROL** - 3-button UP-STOP-DOWN switches stop at any point desired and operate in any sequence. Factory adjusted limit switches automatically stop screen when fully up or fully down. Installer should incorporate an all-pole disconnect in fixed wiring available with RF or IR remote.
- **KEY OPERATED SWITCHING** - Two key-operated switches optionally available with this unit:
  - Key-operated power supply switch controls power to screen and switches. When "off", switches will not operate screen. Key may be removed from switch in either "on" or "off" position.
  - Three-position key switch permits the screen to be operated directly by key. Requires screen operator to have a key.
- **RS232 / ETHERNET** - Serial communication and network communication optionally available.

Section 13 - Testing Safety Limit Switches

⚠️ CAUTION: Lift is equipped with two Safety Limit Switches (see "Adjustments"). This switch may be damaged during shipping or by rough handling on the job site.

1. After the Lift has been installed in the ceiling, but before the projector and closure are attached, the Safety Limit must be tested.
2. Use a screwdriver or other tool to hold down the Safety Limit Switch. While holding down Safety Limit Switch, other installer should operate the unit. If the unit works, Safety Limit Switch is broken and must be replaced.

Section 14 - Adjusting Limit Switches

**PLEASE NOTE:** Changing the fully open or fully closed position will reset the electronic controls and cause the lift to operate improperly. Please call Draper before attempting these adjustments.

**Adjusting FULLY DOWN position**

1. Limit switches for the Scissor Lift are preset at the factory. The DOWN limit switch is set for the fully down (maintenance) position for the size lift you have ordered. The limit switch assembly is located inside the lift and behind the Lifting Cable Drum.
2. The Down limit switches shown in the drawing are for setting the "Fully Down" position. This can be adjusted manually by loosening or tightening the screw to increase or reduce the travel.

⚠️ Caution: The maintenance/service factory limit setting must not be adjusted to a lower position than the preset factory limit setting. In addition, Draper does not recommend setting show position at the maintenance/service position.
Draper recommends inspecting the Scissor Lift at least annually or every 300 cycles—whichever comes first. A recommended maintenance schedule includes:

- **Cables:** Check for fraying.
- **Drive Chain Gears:** Check for rust, breaks, secure attachment.
- **Fasteners along scissor arm assemblies:** Make sure they are not loose. If any are loose, hand tighten the nuts.
- **Closure:** Ensure threaded rod remains seated firmly in the closure panel corners, and that nuts remain tight. If they are loose, tighten them.

**Please Note:** There is no need to tighten nut in the top scissor which slides back and forth in the side slot in the lift. Tightening this fasteners assembly will cause the unit to lock up and lead to damage to the unit.

**Section 15 - Wiring Schematic**

**Section 16 - Dimensions**

<table>
<thead>
<tr>
<th>Model</th>
<th>Closed Height</th>
<th>Extended Height</th>
</tr>
</thead>
<tbody>
<tr>
<td>SL4</td>
<td>8” (20.3cm)</td>
<td>4’ (121.9cm)</td>
</tr>
<tr>
<td>SL6</td>
<td>10” (25.4cm)</td>
<td>6’ (182.9cm)</td>
</tr>
<tr>
<td>SL8</td>
<td>12” (30.4cm)</td>
<td>8’ (243.8cm)</td>
</tr>
<tr>
<td>SL10</td>
<td>14” (35.6cm)</td>
<td>10’ (304.8cm)</td>
</tr>
<tr>
<td>SL12</td>
<td>16” (46.6cm)</td>
<td>12’ (365.8cm)</td>
</tr>
</tbody>
</table>

**Scissor Lift Inspection and Maintenance**

There are four sizes of closure. See separate instructions for details and dims.

**Draper**

**Scissor Lift SL**