

Programming/Operating Instructions

Encoder for Scissor Lift SL Video Projector Lift by Draper

When using an encoder, the Lift LVC must be version 5, and the Lift LVC MUST be in scissor lift mode before connecting the encoder to the manual input pins and applying power. If this is not done, the motor will move randomly until power is removed.

Splitter V1 is compatible with Lift LVC V4 or V5, but the encoder must be connected when using Lift LVC V5.

Select Scissor Lift mode and set Main channel

- ① Short the programming pins on the processor, red LED will come on.
- ② Within 10 seconds, press Key open command (Open 51 – 56). LED will go off then blink once and stay off indicating it is in Lift mode. Main switch channel, Group channel and Key channel are set appropriately. For example, if Key is channel 52, then Main is 2 and Group is 42.
- ③ Select Lift LVC mode and set Main channel.
- ④ Short the programming pins on the processor, red LED will come on.
- ⑤ Within 10 seconds, press open command channel 1 through 6). LED will go off indicating it is in LVC-III mode. Main switch channel is set the same as sent in item 2.

If the Lift LVC is in **standard mode** (using the same Lift LVC defaults as V3), on power up the LED will blink 4 times. The 3rd blink will be longer than the rest.

If the Lift LVC is in **Scissor Lift mode**, on power up the LED will blink 4 times: short-short-long-long.

Terms When in Scissor Lift mode

Sticky—means the motor will go in that direction if it is stopped, will stop (for 1 second) and change direction if moving the other way, and will keep going if already moving in the correct direction.

Up—the direction to store the lift.

Down—the direction to deploy the lift.

Encoder—a Bourns ECW series digital contacting encoder mechanically connected to the limit mechanism.

Main channel—the channels sent by the 3 button wall switch (default = open/close 1).

Key channel—the channels sent by the key/maintenance switch (default = open/close 51).

Group channel—the channels used for Show Position 2 (default = open/close 41).

Run time—the maximum time the relays will remain energized, 420 seconds in scissor lift mode.

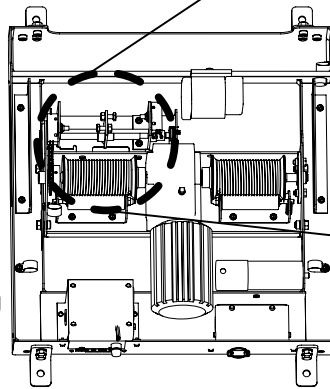
SOBR—stop on button release action, means the motor will stop when the command stops.

Scissor Lift operation after Show Position has been set and lift has been stored

While above the Show Position:

- ① Main Open (UP) will send motor up with sticky action. The stop command will stop the motor. Motor will also stop if run time expires.
- ② Main Close (DN) will send motor down with sticky action. Motor will stop at Show Position. The stop command will stop the motor. Motor will also stop if run time expires.
- ③ Key Open (UP) will power motor up with SOBR action.
- ④ Key Close (DN) will power motor down with SOBR action. Motor will not stop at either Show Position.
- ⑤ Group Close (DN) will send motor in appropriate direction to go to Show Position 2 with sticky action (if the position is set). Motor will stop at Show Position 2. The stop command will stop the motor. Motor will also stop if run time expires.

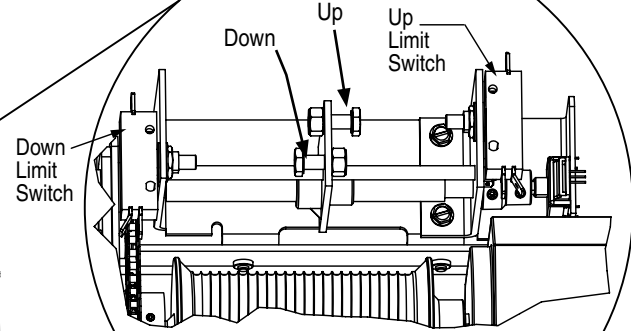
The Up and Down limit switches shown in the drawing are for setting the "Up and Fully Down." These can be adjusted manually by loosening or tightening the screws to increase or reduce the travel.



- ⑥ Group Open (UP) is used to set Show Position 2 (see below).
- ⑦ Motor power is removed if the encoder does not sense motion for .4 seconds.

While stopped at the Show Position:

- ① Main Open (UP) will send motor up with sticky action.
- ② Main Close (DN) is ignored.
- ③ Key Open (UP) will clear the show position if held long enough.
- ④ Key Close (DN) will power motor down with SOBR action.
- ⑤ Group Close (DN) will send motor up to Show Position 2 with sticky action



(if the position is set). Motor will stop at Show Position 2.

- ⑥ Group Open (UP) is used to clear Show Position 2 (see below).

While below the Show Position:

- ① Key Open (UP) will power motor up with SOBR action. Motor will not stop at Show Position.
- ② Key Close (DN) will power motor down with SOBR action. (See below for clearing Show Position).
- ③ Motor power is removed if the encoder does not sense motion for .4 seconds.
- ④ Main Open (UP) and Close (DN) and Group Open (UP) and Close (DN) are ignored.

Scissor Lift operation if position is unknown (motor has not been stored since power cycle)

- ① Main Open (UP) will send motor up with sticky action. The operator should let this continue until the motor reaches the stored limit and stops, and then the Lift LVC senses this and shuts off power to the motor (.4 seconds later). At this point the Lift LVC knows where the motor is at and can perform correctly.

- ② Key Open (UP) and Close (DN), Group Open (UP) and Close (DN), and Main Close (DN) are ignored.
- ③ The stop command will stop the motor if needed.

Note: If power fails while stored, the "store" button must be pressed once before the other commands will work (the Lift LVC must detect that the motor is actually stored).

Scissor Lift operation if position is known but the Show Position has not yet been set:

- ① Main Open (UP) will send motor up with SOBR action.
- ② Main Close (DN) will send motor down with SOBR action.
- ③ Key Open (UP) and Group Open (UP) and Close (DN) are ignored.
- ④ Key Close (DN) is used to set Show Position (see below).
- ⑤ Motor power is removed if the encoder does not sense motion for .4 seconds.

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Set Show Position (can only be set if it is cleared, i.e. it cannot be re-set)

- 1 Use Main Open (UP)/Close (DN) in SOBR action to get motor at desired Show Position.
- 2 Press and hold Key Close (DN) (Lift LVC LED will blink once).
- 3 Continue holding until motor starts moving up (approx. 5 sec, Key can be released anytime after movement starts). The motor will move up for 2 seconds, then stop for 1 second, then go down for 1 second and stop. This action is used to measure the amount of coast that happens near the Show Position.
- 4 The coast is calculated and the Show Position is set.
- 5 The motor now goes down to the Show Position which should be where the process started.

Clear Show Position (Method 1)

- 1 Put the lift at the show position using the Main Close (DN) button.
- 2 Press and hold Key Open (UP) (Lift LVC LED will blink once).
- 3 Continue holding until motor starts moving up (approx. 5 sec, Key can be released anytime after movement starts). The motor will move up for .75 seconds then stop. This indicates the Show Position is cleared.

Note that once the Show Position is cleared, the Key Switch no longer works! (See the operation above where Show Position is not yet set.)

Clear Show Position (Method 2)

- 1 Press and hold Key Close (DN) to get motor to bottom limit. Continue to hold until motor stops and Lift LVC senses the encoder has stopped and it removes power from the motor (.4 seconds after stop).
- 2 Release the Key.
- 3 Again, press and hold Key Close (DN) (Lift LVC LED will blink once).
- 4 Continue holding until motor starts moving up (approx. 5 sec, Key can be released anytime after movement starts). The motor will move up for .7 seconds then stop. This indicates the Show Position is cleared.

Note that once the Show Position is cleared, the Key Switch no longer works! (See the operation above where Show Position is not yet set.)

Set (or re-set) Show Position 2

- 1 Get motor at desired Show Position 2. Note: Show Position 2 MUST be above main Show Position.
- 2 Press and hold Group Open (UP) (Lift LVC LED will blink once).
- 3 Continue holding until motor starts moving up (approx. 5 sec, button can be released anytime after movement starts). The motor will move up for 2 seconds, then stop for 1 second, then go down for 1 second and stop. This action is used to measure the amount of coast that happens near the Show Position.
- 4 The coast is calculated and the Show Position is set.
- 5 The motor now goes down to the Show Position which should be where the process started.

Clear Show Position 2

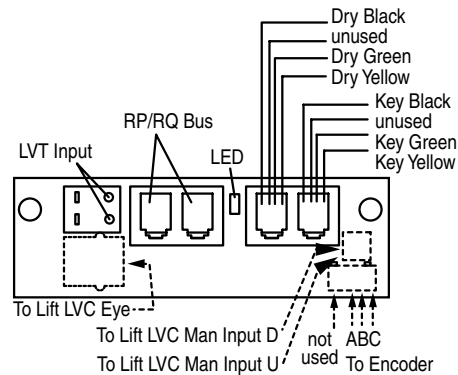
- 1 Put the lift at the show position using the Main Close (DN) button.
- 2 Press and hold Group Open (UP) (Lift LVC LED will blink once).
- 3 Continue holding until motor starts moving up (approx. 5 sec, button can be released anytime after movement starts). The motor will move up for .5 seconds then stop. This indicates that Show Position 2 is cleared (do not confuse this action with Show Position being cleared by key switch).

Steps required to set a scissor lift system to channel 2

- 1 Put an eye in the bus connection on the splitter.
- 2 Using a T24, press S77 then C11, verify red LED on splitter.
- 3 Press open (UP) 2 on transmitter, verify red LED on splitter blinks once then goes off.
- 4 Short the programming pins on the Lift LVC processor, verify red LED is on.

Entire system is now ready for operation on channel 2. Note: The motor will need to go to the top and the Show Position will have to be set. Note: Toggling mode (supported in Lift LVC V4) via holding the stop button for 10 seconds has been removed in V5.

Draper Scissor Lift Splitter V1 Connect as shown



- LVT input is polarity independent, and will work from 6-24 Volts DC. Do NOT apply AC to these pins, damage may result.
- RP/RQ bus mod jack on top side is red. On back side it is gray.
- Switch mod jacks (on top side) are gray.
- LED is bicolor red/green.

WARNING—the switches must be momentary and independent. An SPDT relay from an automation system will NOT work. This type of switch will only work by using a power supply and the LVT input.

To set channels

Channel selection must be made before the LED turns off (approximately 6 seconds). If no selection is made, the LED will turn off indicating no change was made. If a valid selection is made, the LED will blink once to acknowledge the change.

To program this . . .	LED:	On	Blink, then Off
Main Channel to 1 with Key channel = 51	S+7+7	C11	O1
Main Channel to 2 with Key channel = 52	S+7+7	C11	O2
Main Channel to 3 with Key channel = 53	S+7+7	C11	O3
Main Channel to 4 with Key channel = 54	S+7+7	C11	O4
Main Channel to 5 with Key channel = 55	S+7+7	C11	O5
Main Channel to 6 with Key channel = 56	S+7+7	C11	O6

Default from factory:
Main Switch Channel = 1
Key Switch Channel = 51

LED feedback:

- On power-up, the LED will blink red two times.
- During programming the red LED is on.
- When commands are being sent on the bus, LED flickers green. If there is a problem with a command (probably from another input device on the bus) the LED will flicker red.
- When power is first applied to the LVT, the splitter will send open (UP)N for ½ second. When power is released, close (DN)N is sent for ½ second. LED will flicker green appropriately. If any switch is active, this event will be ignored.
- Shorting main switch black to green will send close (DN) main channel for as long as the switch is held.
- Shorting main switch black to yellow will send open (UP) main channel for as long as the switch is held.
- Shorting main switch black to yellow and green will send STOP for as long as the switch is held.
- Shorting Key switch black to green will send close (DN) Key channel for as long as the switch is held, as long as main switch is not active.
- Shorting Key switch black to yellow will send open (UP) Key channel for as long as the switch is held, as long as no other switch is active.
- Key switch does not send stop when black to yellow and green are shorted.