INSTRUCTION MANUAL

Electric Scissor Lift (ESC)

The Electric Scissor Lift (ESC) is designed for installation in furniture or cabinets to lift presentations or home theater applications weighing up to 300 pounds. The heavy duty, all steel, scissors like construction compacts into a 4.25” closed position.

The ESC is easy to install, has easy access for servicing and wiring, and it has adjustable stopping points anywhere between 4.25” and 24” high. Additionally, you have the option to select remote control (RC-10/IR-10). When installed, your ESC will provide a smooth, quiet and reliable lift to your presentation or home theater application.

BEFORE YOU BEGIN

- **CAUTION: To prevent damage to the Electric Scissor Lift, which could affect or void the Factory warranty, thoroughly study all instructions and illustrations before you begin to install or operate the unit. Pay particular attention to the “Important Precautions” on Page 1.**
- If you have any questions about this installation, contact Chief Manufacturing at 1-800-582-6480.

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www.chiefmfg.com
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IMPORTANT WARNINGS and CAUTIONS!

WARNING: **A WARNING alerts you to the possibility of serious injury or death if you do not follow the instructions.**

CAUTION: A **CAUTION** alerts you to the possibility of damage or destruction of equipment if you do not follow the corresponding instructions.

- **WARNING: Be aware during the installation that this is a motorized device, and there are pinch points for people and for electrical wiring.**
- **WARNING: Be aware of the potential for personal injury or damage to the unit if it is not adequately mounted. The lift (without a projector) weighs approximately 60 lbs (27 kg).**
- **WARNING: Be sure the lift is installed square and parallel in all dimensions to avoid damage to the lift. Avoid stressing the unit at any time during installation.**
- **WARNING: Electrical outlets must be installed by a qualified electrician. Follow all electrical codes.**
- **WARNING: Maximum load capacity is 300 pounds.**
- **WARNING: Always balance the load to prevent tipping.**
- **CAUTION:** Test the unit for shipping damage. See “DIMENSIONAL DRAWING” on page 3.

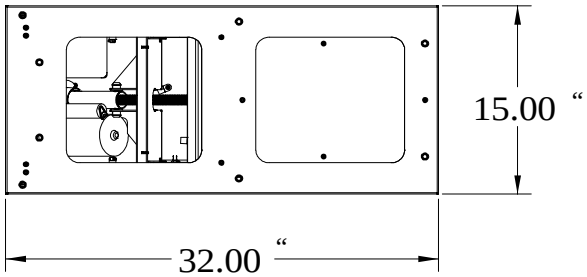
TOOLS REQUIRED FOR INSTALLATION

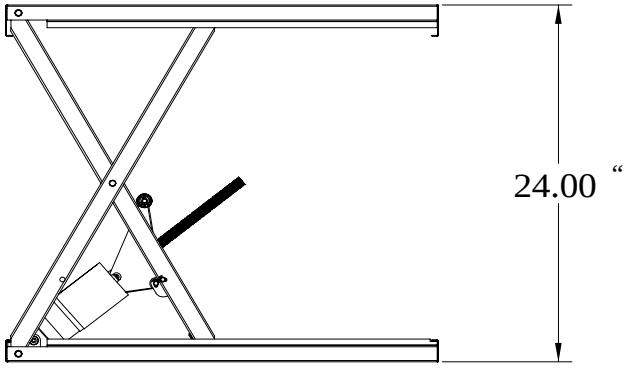
- Phillips screwdrivers, No. 1 and No. 2
- Electric drill and 17/64” drill bit
- Allen Wrench (1/8”)
- Single pole, double throw switch (units without low voltage controller)
- Socket set with extension

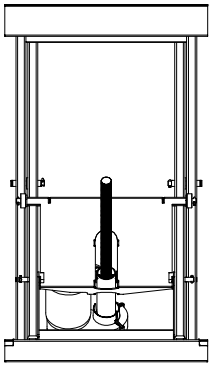
NOTE: Other tools may be required depending on the method of installation.

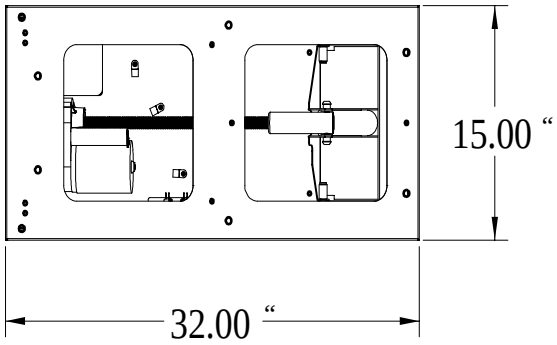
CONTENTS

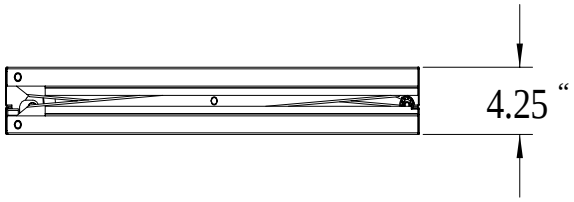
DIMENSIONAL DRAWING











INSPECT AND TEST THE LIFT BEFORE INSTALLING

Inspect The Lift

1. Carefully inspect the lift for shipping damage. If any damage is apparent, call your carrier claims agent and do not continue with the installation until the carrier has reviewed the damage.

   NOTE: Read all assembly instructions before starting assembly.

2. Carefully inspect the Electric Scissor Lift (ESC) components for damage.

IMPORTANT: Before mounting the lift in the furniture/cabinet, make the following tests to be sure that it operates properly and has not been damaged in shipping.

Test The Lift

1. Set the ESC on a clean, level surface.

WARNNG: You will be working with 120 volt electrical system. Be careful and always disconnect power source when performing wiring operations.

2. Connect the White wire to 110 volt supply common (see Figure 1).

   NOTE: The lift draws approximately 1.5 amps. at 120 volts

WARNNG: Be aware during the installation that this is a motorized device, and there are pinch points for people and for electrical wiring. Keep hands and electrical wiring away from internal components of the mechanism (see Figure 2).

3. Supply constant electrical current to the Red wire, allowing the lift to extend to its limit stop. Limit stop adjustment is explained in “ADJUSTMENTS” on page 7.

4. Disconnect electrical current to the Red wire and supply constant electrical current to the Black wire, allowing the lift to retract to its limit stop. Limit stop adjustment is explained in “ADJUSTMENTS” on page 7.

5. Disconnect all power to the lift.

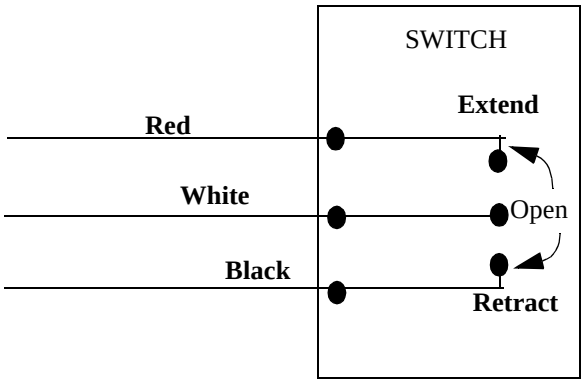


Figure 1. Electrical Test Wiring

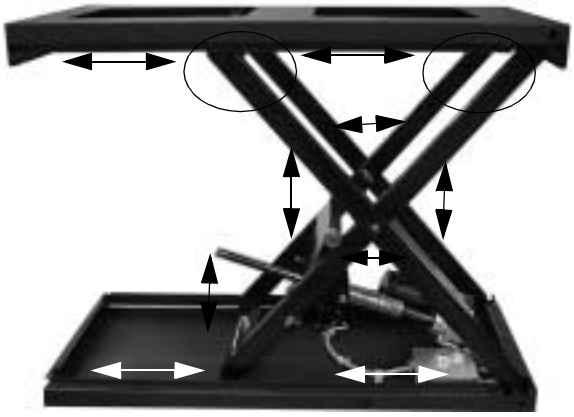


Figure 2. Examples of Pinch Points

PREPARE THE FURNITURE/CABINET/CASE AND INSTALL THE LIFT

Because of the wide variety of possible mounting situations, Chief Manufacturing can only provide general guidelines for lift installation. Study the following information carefully, and adapt it as necessary to fit your specific installation.

WARNING: Be especially aware of the weight of the unit, and the potential for personal injury or of damage to the unit if it is not adequately mounted. The lift (without a load) weighs approximately 65 lbs (30 kg).

The "General Guidelines" below and the information on the following pages cover the most common mounting situations:

General Guidelines

- Compare the inside dimensions of the furniture/cabinet/case in which the lift will be installed with the dimensional requirements of your display and any additional space required for your application. Allow for movement of the lift and the display.

Prepare the Furniture/Cabinet/Case

WARNNG: Be aware during the installation that this is a motorized device, and there are pinch points for people and for electrical wiring. Keep hands and electrical wiring away from internal components of the mechanism.

The following design specifications are the minimum required specifications.

1. Make sure the bottom of the furniture/cabinet/case can support more than the combined weight of the lift and the load.
2. Minimum furniture/cabinet/case inside dimensions must allow for operating clearance plus:
   32" length x 15" width x 4.5" depth(I.D. closed)

Install the Lift into the Furniture/Cabinet/Case

1. Place the lift mechanism into the furniture/cabinet/case.
2. Center the lift as much as possible in all directions.
3. With the lift centered, use the base of the lift mechanism as a template (see Figure 3) to transfer at least 4 holes, as close to corners as possible, to the bottom of the enclosure.
4. Remove the lift mechanism from the enclosure.
5. Drill through transfer holes (17/64" diameter) in the enclosure bottom.
6. Place the unit into the enclosure so the holes in the mechanism line up with the holes in the enclosure.
7. Secure the unit into the enclosure using thru bolts (1/4-20 or larger), fender washers (top and bottom), and Nyloc nuts (not included). Tighten securely.

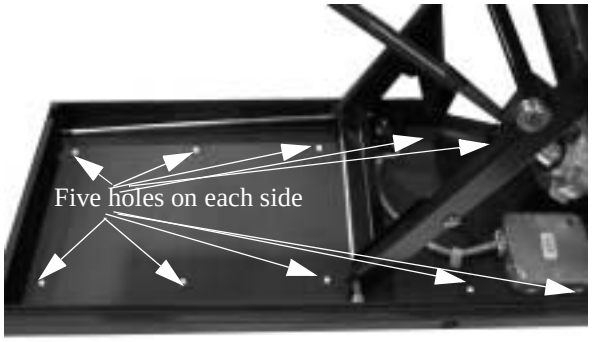


Figure 3. Secure Lift

ELECTRICAL WIRING

WARNNG: You will be working with 120 volt electrical system. Be careful and always disconnect power source when performing wiring operations.

NOTE: If the lift is supplied with the optional PB24 circuit board, consult the instructions "OPTIONAL CIRCUIT BOARD WIRING" on page 9.

The lift draws approximately 1.5 amps.

If using a single pole, double throw switch, connect the wires as follows (see Figure 4):

1. Connect the Red wire to the extend side of the switch.
2. Connect the Black wire to the retract side of the switch.
3. Connect the power source to the Common of the switch.
4. Connect equipment Ground and Neutral to power source.

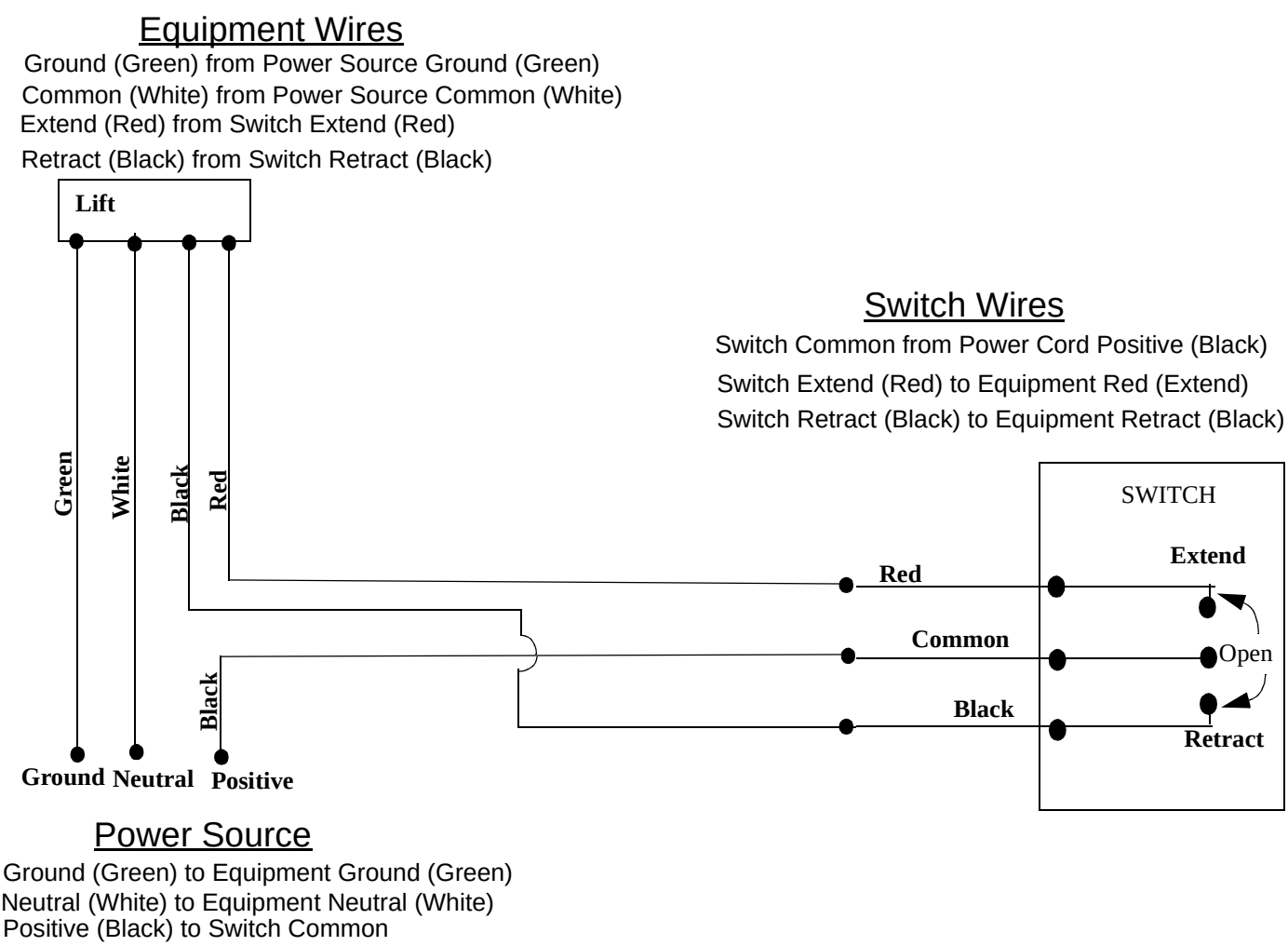


Figure 4. Wiring Switch

ADJUSTMENTS

Adjustment rod is located on base (see Figure 6).

WARNING: Be aware during the installation that this is a motorized device, and there are pinch points for people and for electrical wiring.

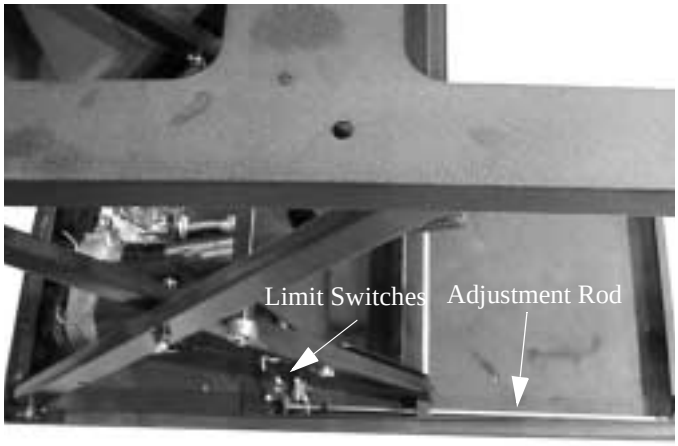


Figure 5. Adjustment Rod Location

Adjust Extend Limit Switch

Adjust the extend limit switch as follows:

NOTE: With the limit stops at their maximum, the motor will shut off automatically at maximum travel. All extend/retract adjustments are made using the stops on the limit adjustment rod (see Figure 5).

1. Using a 1/8” Allen Wrench, loosen the set screw on the extend limit stop (see Figure 6).
2. Power the lift to the desired extend position and stop lift by disconnecting power.
3. Position the extend limit stop (see Figure 6) at the travel location on the limit stop rod.
4. Using a 1/8” Allen Wrench, tighten the set screw on the extend limit stop (see Figure 6).

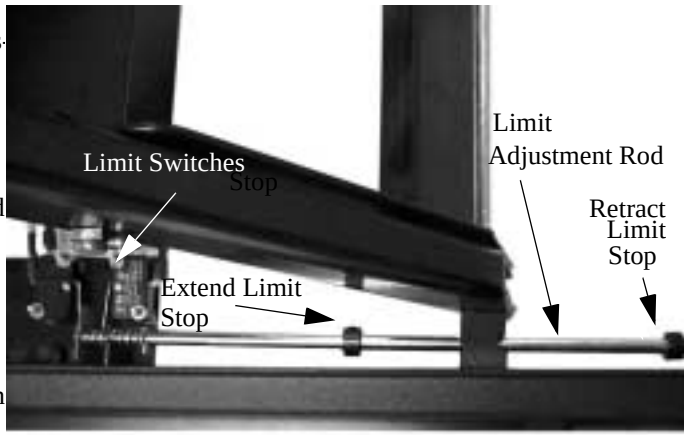


Figure 6. Limit Stops

Adjust Retract Limit Switch

Adjust the retract limit switches follows:

NOTE: All extend/retract adjustments are made using the stops on the limit adjustment rod (see Figure 6).

1. Using a 1/8” Allen Wrench, loosen the set screw on the retract limit stop (see Figure 7).
2. Power the lift to the desired retract position and stop lift by disconnecting power.
2. Position the retract limit stop (see Figure 6) at the travel location on the limit stop rod.
3. Using a 1/8” Allen Wrench, tighten the set screw on the retract limit stop (see Figure 6).

TROUBLESHOOTING

Check the following first:

1. Power to the unit.
2. Check for binding, loose or missing parts, or noise indicating obvious problem (humming, clicking, etc.).
3. If the lift is supplied with the optional circuit board, and the unit does not operate properly, disconnect the circuit board and test the unit using the “ELECTRICAL WIRING” on page 6.
   a. If the unit does not work with direct wiring, call the Technical Service Department.
   b. If the unit works with direct wiring, check to ensure you have followed wiring instructions, paying particular attention to your control system.
   c. If the unit attempts to work with direct wiring, but stops, check for binding or overload situation.
   d. If the unit stops after numerous periods of consecutive operation, wait 5 minutes for thermal overload to reset before testing the unit again.

If the lift is installed according to these instructions, it should operate trouble-free indefinitely. If you do encounter a problem, call the Technical Services Department at Chief Manufacturing:

1-800-582-6480

952-894-6280

OPTIONAL CIRCUIT BOARD WIRING

Change Electrical Supply Cables

WARNNG: Make sure all power is disconnected.

1. At the electrical junction box on the base of the lift, disconnect the three electrical connectors (see Figure 7).
2. Loosen the two screws clamping down the electrical supply cable and remove the cable.
3. Thread new cable (see Figure 8) into place, connect three connectors (see Figure 9), and secure cable clamp.

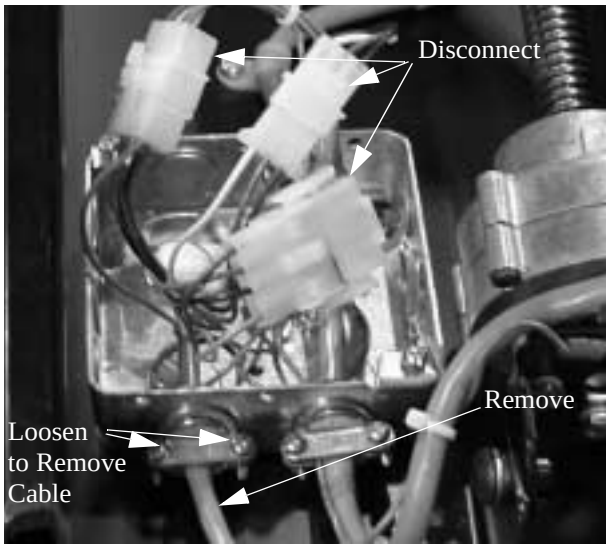


Figure 7. Electrical Connectors

Install Terminal Blocks on Cable

The optional circuit board cable (see Figure 8) requires the installation of two terminal blocks (see Figure 9).

1. On the small terminal block, connect the white wire to terminal #1 (see Figure 9).
2. On the small terminal block, leaving terminals #2 and #3 disconnected (no wires), connect the black wire to terminal #4.
3. On the small terminal block, connect the red wire to terminal #5.
4. On the large terminal block, connect the red wire to terminal #1.
5. On the large terminal block, connect the black wire to terminal #2.
6. On the large terminal block, leaving terminal #3 disconnected (no wire), connect the white wire to terminal #4.
7. On the large terminal white, connect the green wire to terminal #5.

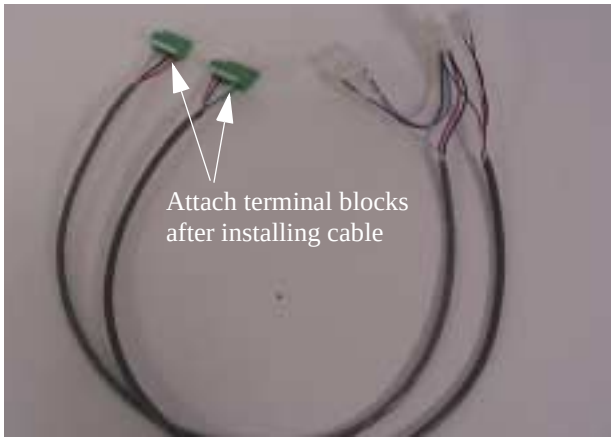


Figure 8. Optional Circuit Board Cable (with Terminal Blocks attached)

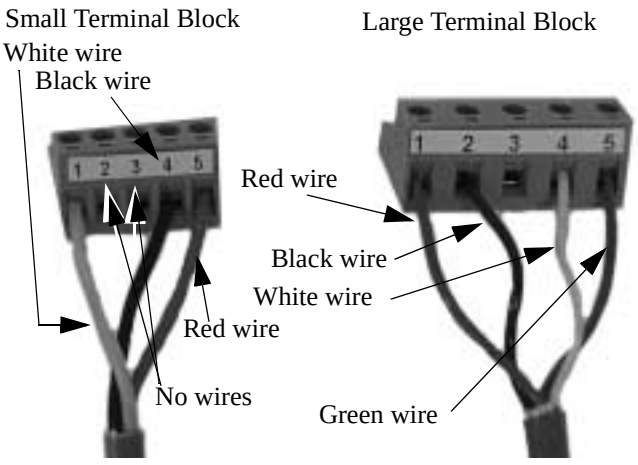


Figure 9. Terminal Blocks

Electrical Control Box Connections

1. Connect the large terminal block (wired to cable in “Electrical Control Box Connections” on page 10 in the control box (see Figure 9 and Figure 10).
2. Connect the small terminal block (wired to cable in “Electrical Control Box Connections” on page 10 in the control box (see Figure 11).
3. Install two 10 pin terminal blocks (provided) in the control box (see Figure 11).

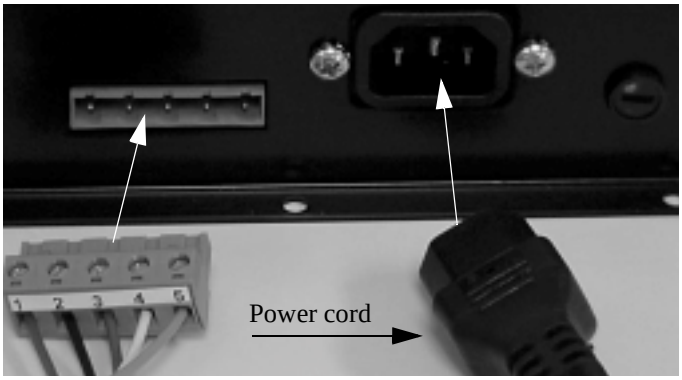


Figure 10. Connection to Housing

Test The Circuit Board

The lift is supplied with a momentary pushbutton on the end of a cable to help you pretest operation.

1. Set the ESC on a clean, level surface.
2. Connect a jumper wire between terminal #3 and terminal #6 (see Figure 12).
3. Connect one lead of the momentary pushbutton (provided) cable leads to terminal #4.
4. Connect the other lead of the momentary pushbutton cable to terminal #5.
5. Connect one end of the power cord (see Figure 10) into the lift and the other end into a 110V 60 Hz 15-amp power source.

WARNNG: Be aware during the installation that this is a motorized device, and there are pinch points for people and for electrical wiring. Keep hands and electrical wiring away from internal components of the mechanism.

6. Operate the lift much like a garage-door opener: press the button when the lift is at its “lowered” position and it will “raise”; press again when it is at its “top” position and it will move “down”; press while moving and it will stop.

   Use the push button to check that the lift runs to the top and bottom of its travel without any interference that might indicate damage during shipment.
7. Unplug the lift’s power cord.
8. Remove wiring installed for test.

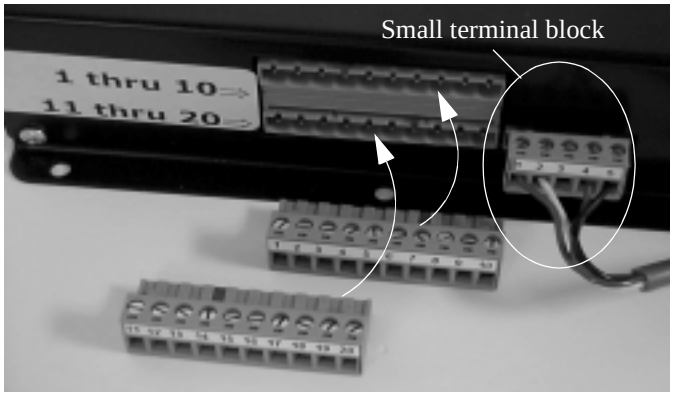


Figure 11. Terminal Block Installation

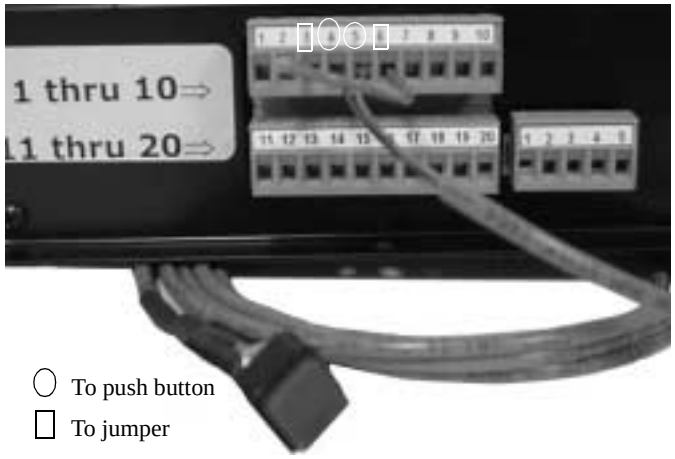


Figure 12. Test Wiring

Wiring Instructions

For your specific application, see tables and examples on the following pages.

TERMINAL FUNCTION DEFINITIONS

TERMINAL NUMBER	FUNCTION	DESCRIPTION	WIRING OPTIONS	NOTES
1	24 VOLT AC	24 volt AC output		This is an internal power supply for powering external devices & Remote Controllers. Chief Mfg. offers the RC-10 Radio Frequency Remote Controller which runs off of this power supply.
2	24 VOLT AC COMMON	24 volt AC common		
3	GROUND	Ground		This is an internal power supply for powering external devices &/or used for initiating specific functions (Extend/Retract 5 or Voltage Sensor 7).
4	12 VOLT DC	12 volt DC		
5	EXTEND/ RETRACT	Initiates movement if lift is static, or stops movement if lift is in motion. Direction of travel will be opposite of last direction of travel.	<u>To Operate using Internal Power Source</u> Connect terminals 3 & 6 with Jumper Wire. Connect Momentary Switch to terminal 4. Connect other line of Momentary Switch to terminal 5. <u>To Operate using External Power Source</u> Connect External Power Supply's Common to terminal 6. Connect initiating signal to terminal 5.	Function operates on momentary switch only. Operating range is 5 – 30 Volts AC or DC
6	EXTEND/ RETRACT COMMON	Used in conjunction with Extend/Retract when using an external power source to initiate movement.		NOT TO BE USED AS GROUND FOR FUNCTION OTHER THAN EXTEND/RETRACT TERMINAL 5.
7	VOLTAGE SENSOR	When terminal senses voltage, unit will extend. When terminal senses cessation of voltage, unit will retract.	<u>Voltage Sensing</u> Connect positive lead to terminal 7. Connect Ground of switching device to terminal 8. <u>Single-Pull/Throw Latching Switch</u> Connect terminals 3 & 8 with Jumper Wire. Connect first Switch Terminal to terminal 4. Connect other Switch Terminal to terminal 7.	Operating range is 5 – 30 Volts AC or DC
8	VOLTAGE SENSOR COMMON	Used in conjunction with Voltage Sensor when using an external power source to initiate movement.		NOT TO BE USED AS GROUND FOR FUNCTION OTHER THAN VOLTAGE SENSOR TERMINAL 7.
9	NOT USED			Feature not available on all models. If using Latching Switch, be sure to disengage Switch prior to initiating any other function.
10	GROUND	Ground		

11	EXTEND	Extends unit to preset travel limit. Customer within a preset maximum range may adjust travel limits.	Momentary or Latching contact to Ground terminals 3, 10, 13, or 20.	If using Latching Switch, be sure to disengage Switch prior to initiating any other function.
12	RETRACT	Retracts unit to preset travel limit. Travel limits may be adjusted by customer within a preset maximum range.		If using Latching Switch, be sure to disengage Switch prior to initiating any other function.
13	GROUND	Ground		
14	EXTEND ERROR	Immediately reverses direction of travel when triggered while unit is extending.	Momentary contact to Ground terminals 3, 10, 13, or 20.	Chief Mfg. offers the SS-10 Pressure Sensitive Safety Strip to provide this function. Please specify how many inches required spanning entire pinch zone. The SS-10 must be ordered with the ST-1 Terminals.
15	RETRACT ERROR	Immediately reverses direction of travel when triggered while unit is retracting.		
16	EXTEND LIMIT RELAY	Closes set of internal dry contacts when unit reaches full extension.		RATED FOR 1 AMP @ 24 VOLTS
17	EXTEND LIMIT RELAY COMMON			
18	RETRACT LIMIT RELAY	Closes set of internal dry contacts when unit reaches full retraction.		RATED FOR 1 AMP @ 24 VOLTS
19	RETRACT LIMIT RELAY COMMON			
20	GROUND	Ground		

WIRING THE RC-10

Connect white lead to terminal 1, red lead to terminal 2, and black lead to terminal 5. Place jumper wire from terminal 2 to terminal 6

WIRING A MOMENTARY PUSH BUTTON

Connect terminals 3 & 6 with Jumper Wire. Connect Momentary Switch to terminal 4. Connect other line of Momentary Switch to terminal 5.

OPTIONAL CIRCUIT BOARD WIRING EXAMPLES

The information on the following pages cover the most common wiring options:

- Pushbutton
- Extend/Retract for momentary or latching contacts
- Remote (RC-10)
- 12 Volt out supply
- 24 Volt out supply
- Two dry contact closures
- Voltage Sensing

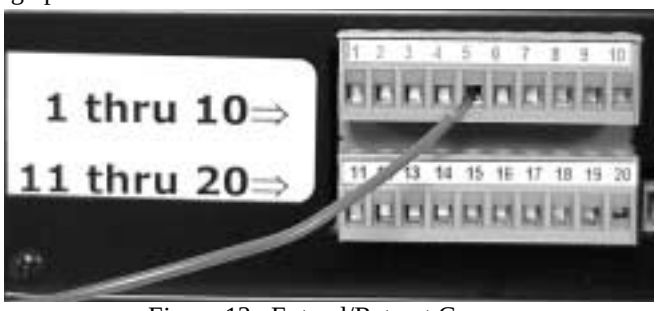


Figure 13. Extend/Retract Common

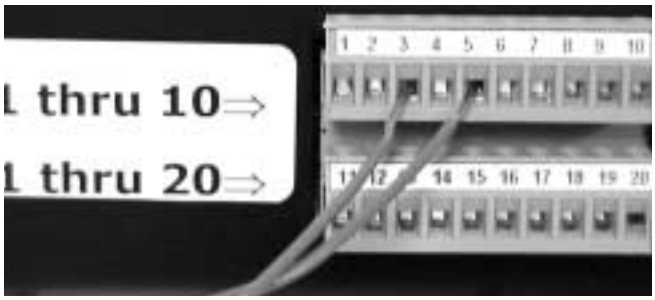


Figure 14. 12 Volt internal Supply Jumper

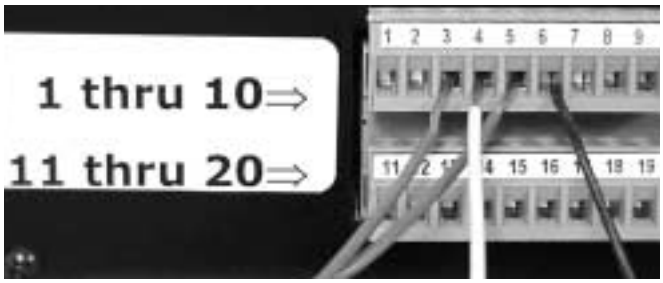


Figure 15. Pushbutton Connection

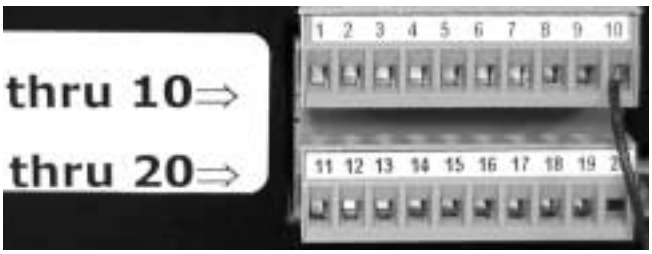


Figure 16. Contacts Connection

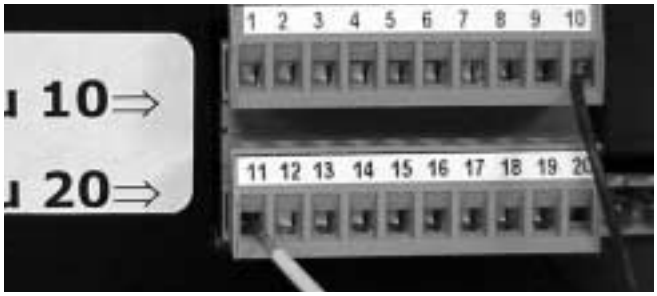


Figure 17. Contacts Connection

Pushbutton

Wire for pushbutton operation as follows:

1. Install a wire between terminal 5 (extend/retract common) and the ground/common of a power source (5-30 volts). See Figure 13.

   Example: Use 12 volt internal power supply terminal #3 as shown in Figure 14.

2. Connect wires from pushbutton to power supply source (5-30 volts) and terminal #6 (extend/retract). See Figure 15.
3. Connect power source.
4. Push button once and the unit should extend. Push the button during travel and the unit will stop at that location. Push the button after the unit is extended or stopped in mid-travel and the unit will retract.

Extend/Retract for Momentary or Latching Contacts

These terminals can be used with any latching contacts, momentary contacts, or a wall switch

NOTE: The connection between the ground (#10 or #13) and any other terminal connection must be broken (open) before completing the next circuit.

1. Install a wire between terminal #10 (shown) or terminal #13 and contacts or switch (see Figure 16).
2. Connect power source
3. For extend, complete the circuit to terminal #11 (see Figure 17).
4. Make sure circuit to terminal #11 is open and, for service extend, complete the circuit to terminal #9.
5. Make sure circuit to terminal #9 is open and, for retract, complete the circuit to terminal #12.

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Remote (RC-10)

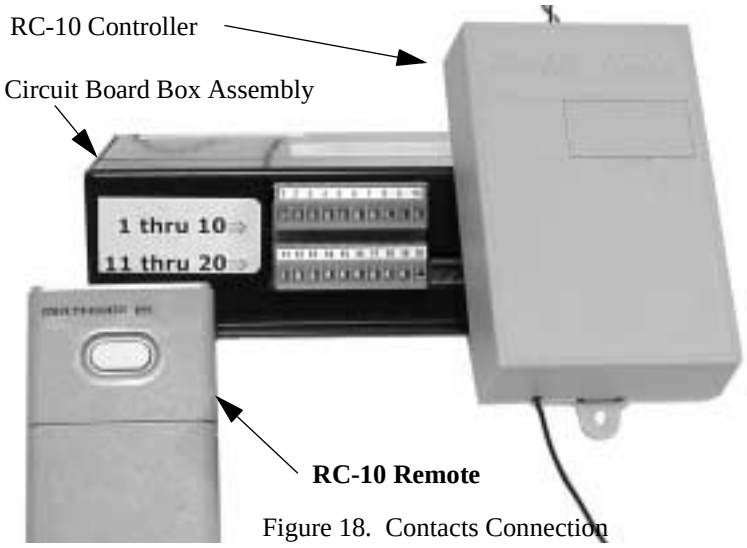

Figure 18. Contacts Connection

Wire for remote (RC-10) operation as follows (see Figure 18):

1. Install a jumper wire between terminals #6 and terminal #2 (see Figure 19).
2. Connect the white wire of the RC-10 controller unit to terminal #1 (see Figure 20).
3. Connect the red wire of the RC-10 controller unit to terminal #2.
4. Connect the black wire of the RC-10 controller unit to terminal #5.
5. Connect the power source to the lift.

NOTE: If the unit does not activate, check to make sure the 9 volt battery is working and make sure the dip switches in the sending unit match the dip switch settings in the controller unit (see Figure 21).

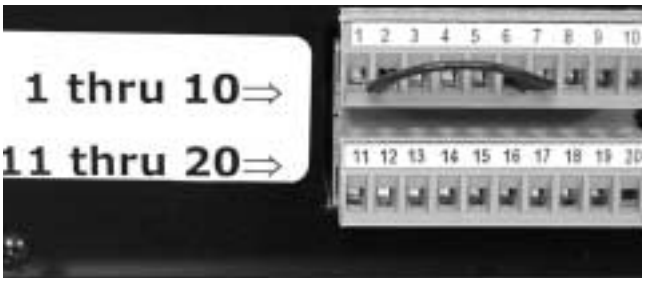

Figure 19. Contacts Connection

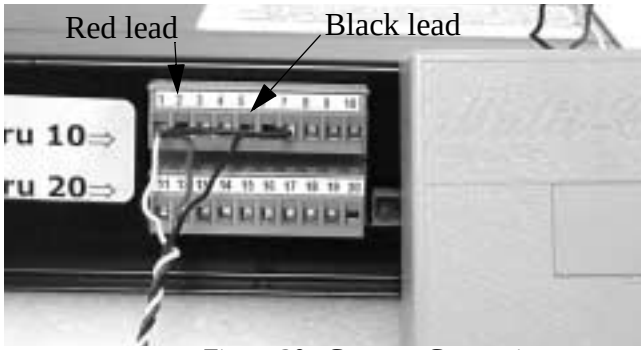

Figure 20. Contacts Connection

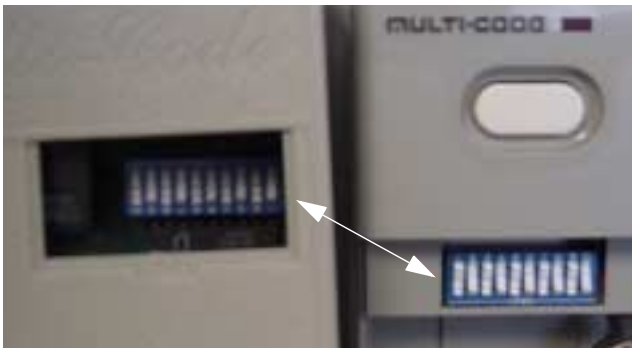

Figure 21. Dip Switches

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12 Volt Out Supply

This internal power supply can be used to power external devices &/or to initiate specific functions (see Pushbutton operation and Figure 22).

1. Connect one lead to 12 VOLT GROUND (terminal #3).
2. Connect one lead to 12 VOLTS OUT (terminal #4).

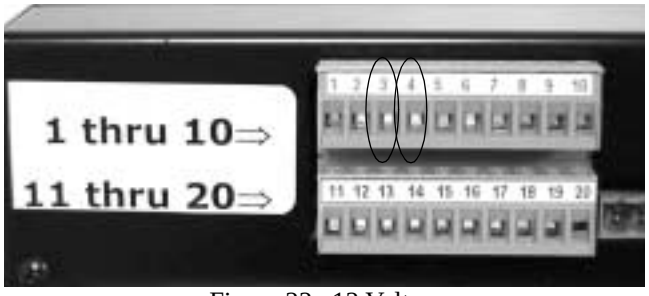

Figure 22. 12 Volts

24 Volt Out Supply

This internal power supply can be used to power external devices & remote controllers (see Figure 23).

1. Connect one lead to 24 VOLT COMMON (terminal #2).
2. Connect one lead to 24 VOLTS OUT (terminal #1).

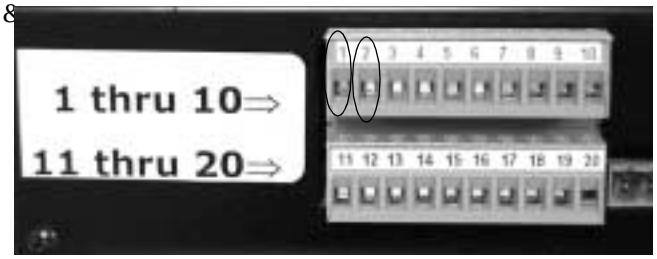

Figure 23. 24 Volts

Two Dry Contact Closures

NOTE: Dry contacts are rated for 1 Amp @ 24 volts.

These contacts can be used to complete circuits to external devices (see Figure 24 and Figure 25).

1. Terminals #16 and #17 (close when unit reaches full extension
2. Terminals #18 and #19 close when unit is fully retracted.

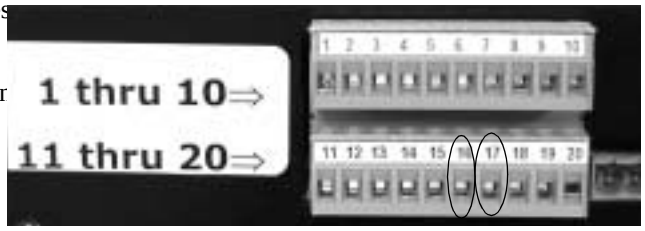

Figure 24. Extend Dry Contacts

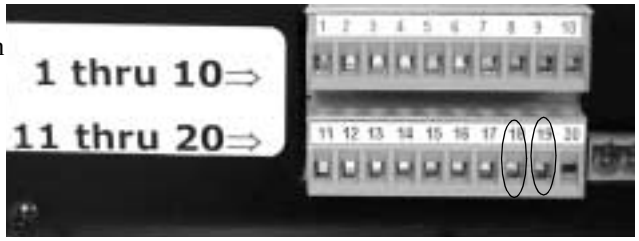

Figure 25. Retract Dry Contacts

Low Voltage Sensing

1. Connect positive lead (5 - 30 volts AC/DC) to terminal #7 and ground of switching device to terminal #8 (see Figure 26). Unit extends when voltage is sensed, retracts when voltage ceases.

   Example using internal 12 volt DC supply (Figure 27):

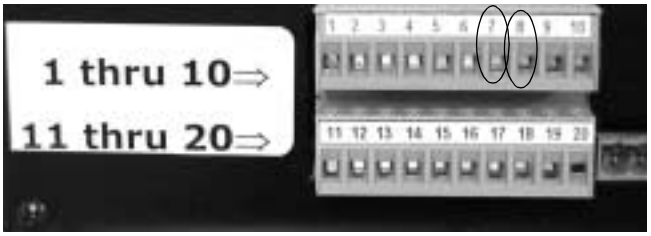

Figure 26. Low Voltage Sensing

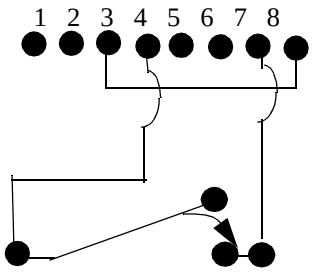

Figure 27. 12 Volt DC Supply