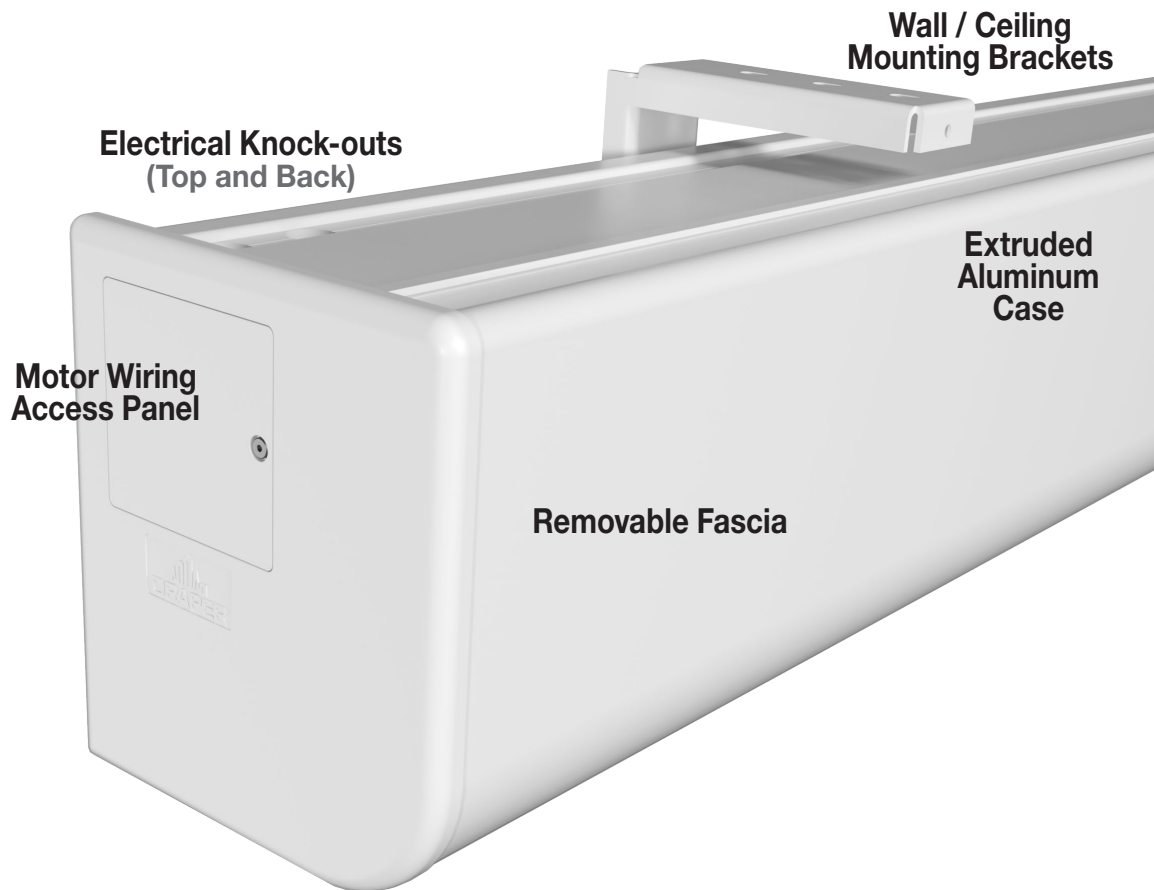


# Acumen® XL E & V

Electric projection screen

## INSTRUCTIONS INSTALLATION & OPERATION

### Overview - Components



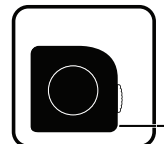
#### TOOLS REQUIRED



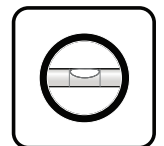
PENCIL



POWER DRILL



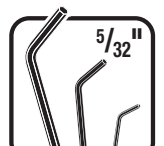
TAPE MEASURE



LEVEL



HARDWARE (by others)



HEX WRENCH

### ⚠ CAUTION ⚠

**Read and understand all warnings (Page 2 of this document) before beginning installation.**

#### Contents

Overview - Components.....	1	Section 6 - Limit Adjustments.....	6
PLEASE READ - Safety Information.....	2	Section 7 - Wiring: Standard and Quiet Motor .....	7
Section 1 - Electrical Connections.....	2	Section 8 - Wiring: Motor with Internal Low-Voltage Controller (LVC-IV).....	8
Section 2 - Fascia Removal .....	3	Section 9 - Accessing Internal Low-Voltage Control Unit (LVC-IV) .....	9
Section 3 - Removing Shipping Brackets (Tab-Tensioned Screens Only).....	3	Section 10 - Tab-Tension Adjustment Procedure .....	10
Section 4 - Operation.....	3	Section 11 - Dimensions and Methods of Installation.....	11
Section 5 - Hanging Screen.....	4	BACK PAGE - Wall & Ceiling Bracket Dimensions for Mounting	

If you have any difficulties installing or servicing your Acumen XL, call your dealer or Draper, Inc.

PLEASE READ - **Safety Information****Important Safety Information****WARNING****Important Safety Information**

**Improper installation and use of the Acumen XL screen 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.**

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.
2. 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.
3. 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.
4. It is the installer's responsibility to make sure appropriate fasteners are used for mounting.
5. All hardware must be installed level. Unit must be level and square.
6. Never leave the area while operating the unit during installation, maintenance, or normal operation, unless it is secure and safe.
7. 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.
8. Turn off power and any nearby equipment or cables carrying electricity before connecting switches, wires, controls, or electrical components.
9. Do not wire motors in parallel without written permission from Draper, Inc.
10. During testing or operation, carefully watch the surrounding area for any potential safety concerns including nearby persons or objects.
11. 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.
12. 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.
13. 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.
14. 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.
15. **Failure to precisely follow installation guidelines invalidates all warranties.**
16. 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.

**Before Beginning Installation**

1. Look for any job site conditions that could interfere with installation or operation of the system.
2. Read carefully and be sure to understand all installation instructions and all related operations manuals. These instructions are intended to serve as a guide for the installer and owner. They should be followed closely and combined with the expertise of experienced qualified installers. Draper, Inc., is not responsible for improper installation, application, testing, or workmanship related to the product at place of installation. Please retain all instructions for future use.
3. Open cartons lengthwise.
4. Locate and lay out all pieces.
5. Inspect all boxes to make sure you have received the proper unit and parts. Controls may be shipped separately, or in same carton as unit.
6. If you have any difficulties with installing, servicing, or operating your unit, call your dealer or Draper, Inc., 765-987-7999.

Section 1 - **Electrical Connections**

Screen operates on 110-120V, 60 Hz. current. Screen ships with internal wiring complete and control switch(es) fully boxed.

Electrical wire for connecting screen to switch(es) and switch(es) to power supply should be furnished by installer.

**Please Note:** Screen 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.

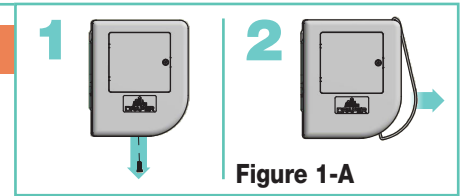
**CAUTION:** All operating switches should be "off" before power is connected.

## Section 2 - Fascia Removal

**MUST BE DONE PRIOR TO REMOVAL OF SHIPPING BRACKETS**

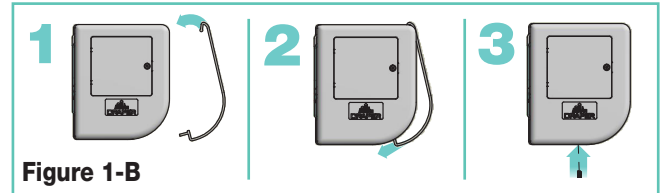
### To remove fascia:

1. Remove the screws from bottom from lip at each end of the fascia using 5/32" hex wrench.
2. Lift fascia off of the top lip of the case spine extrusion.



### To install fascia:

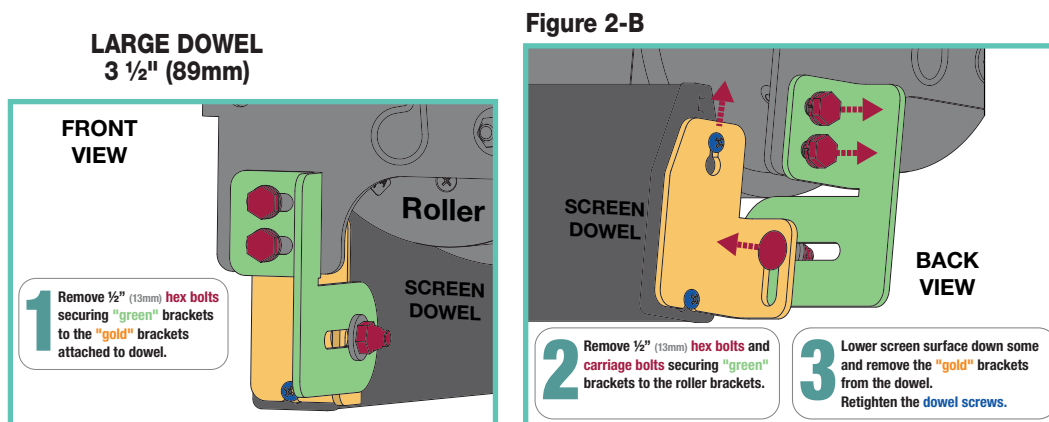
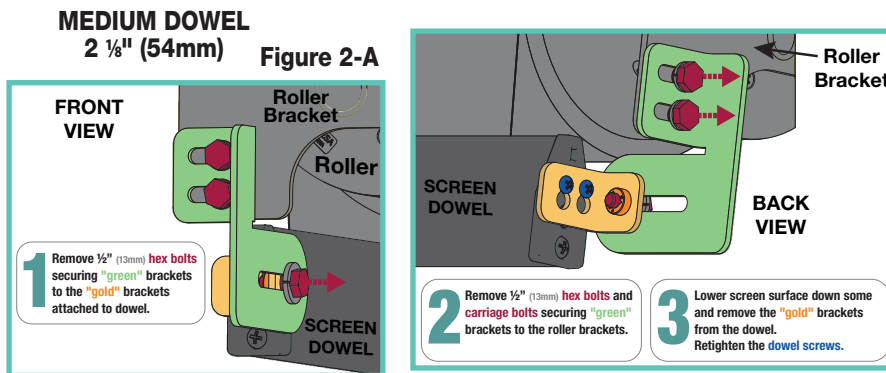
1. Hook the top lip of fascia over the top lip of spine extrusion.
2. Push bottom edge of fascia towards the case spine.
3. Align holes in fascia with end cap holes and screw in the attachment screw using 5/32" hex wrench.



## Section 3 - Removing Shipping Brackets (Tab-Tensioned Screens Only)

**Screen should not be operated until after dowel shipping brackets are removed**

**Please Note:** Before fully operating screen: lower viewing surface enough to fully expose shipping brackets, then remove shipping brackets See Fig. 1 below.



## Section 4 - Operation

**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.

### For LVC-IV Controls:

**24V Control** – Three-button up-stop-down switch(es) stop at any point desired, operate in any sequence. Factory adjusted limit switches automatically stop screen when fully down or fully up.

1. Key-operated power supply switch controls power to unit and switches. When "off", switches will not operate. Key may be removed in either "on" or "off" position.
2. A three-position key switch permits screen to be operated directly by key. In this case, screen operator must always have a key.

**RS232 / Ethernet** – Serial communication and network communication available.

## Section 5 - Hanging Screen

### Section 5.1 - General:

1. **Wall Mounting Brackets** (minimum of 3) must be attached to the case regardless of mounting method.
2. Screen should be lifted into position only by case end caps. Keep case level by lifting case end caps simultaneously to prevent surface damage. Never attempt to lift screen along its length.
3. When locating viewing surface and checking clearance for screen's operation, remember surface is centered in case. Handle case carefully to protect its finish.
4. Regardless of mounting method, screen should be positively and securely supported so that vibration or even abusive pulling on viewing surface will not cause case to loosen or fall. Installer must ensure that fasteners used are of adequate strength and suitable for mounting surface chosen.

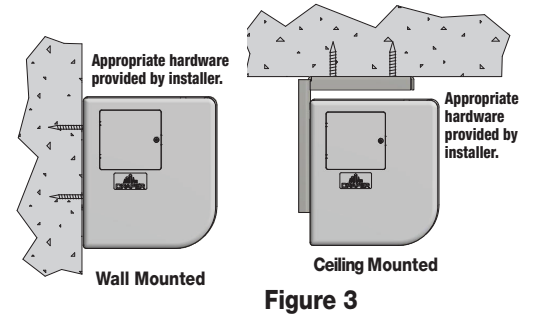


Figure 3

## REFER TO DIAGRAM ON LAST PAGE OF MANUAL FOR WALL BRACKET DIMENSIONS

### Section 5.2 - Wall Installation:

1. Secure the Mounting Brackets (minimum of 3) to the wall using appropriate hardware (*by others*) See Fig. 4.

**CAUTION:** Product is very heavy: Installer must provide adequate attachment hardware and anchors as required. Installer must also ensure that structure is of adequate strength.

2. Ensure that **mounting brackets** are level.
3. Slide all **Bracket Locks** to the center of case.
4. Holding the case by the endcaps, lift it up and over the cleats on the **mounting brackets** (see Fig.3). **Wall Bracket Mounting Channels** are shown in Fig. 5 below.

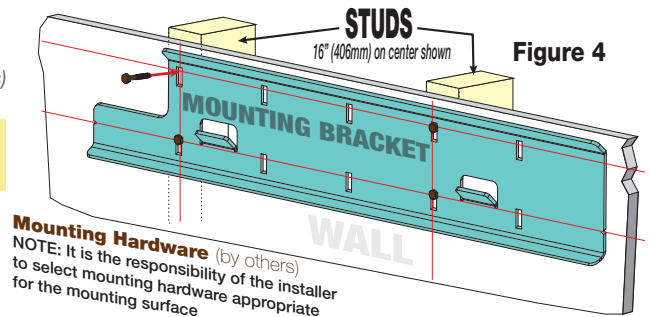


Figure 4

**Mounting Hardware** (*by others*)  
NOTE: It is the responsibility of the installer to select mounting hardware appropriate for the mounting surface

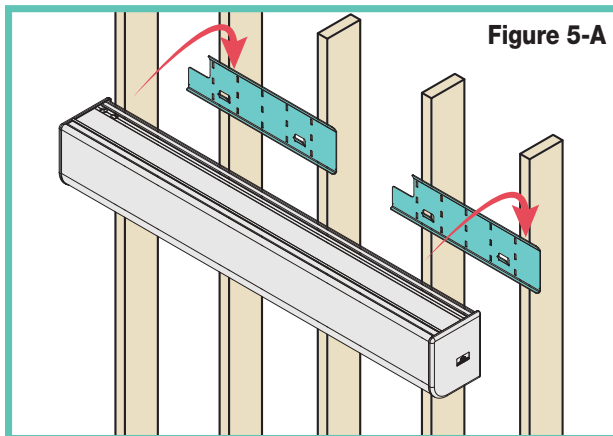


Figure 5-A

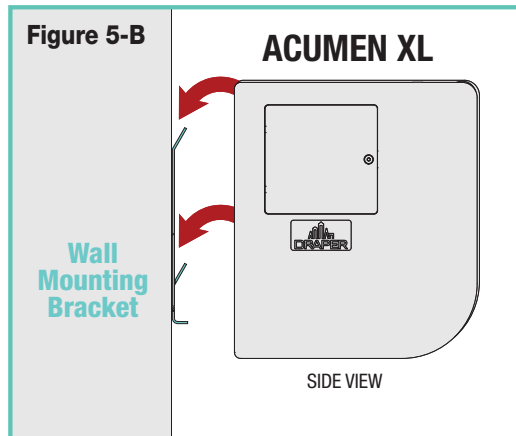


Figure 5-B

5. Once the case is settled on the mounting brackets, slide the **Bracket Locks** to the center of each **mounting bracket** (see Fig. 6) and secure set screw on the lock.

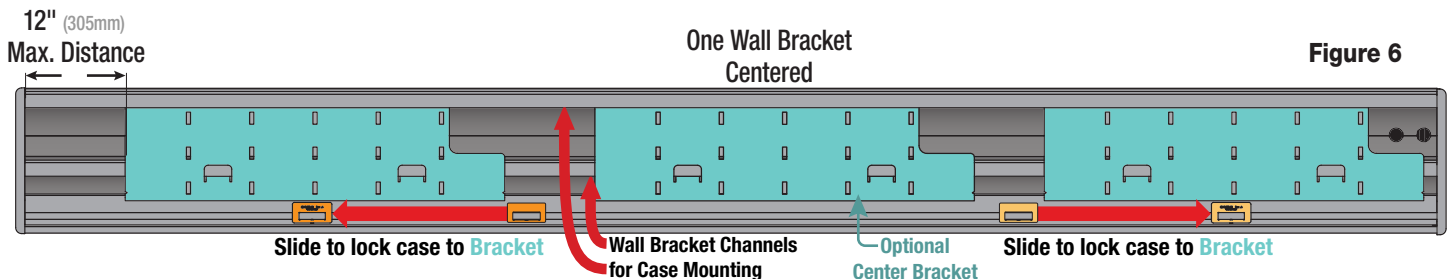


Figure 6

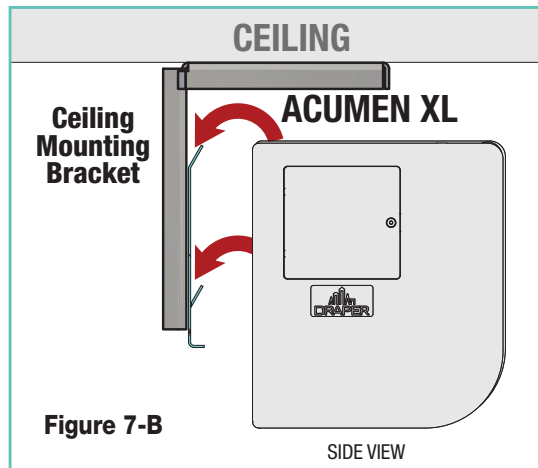
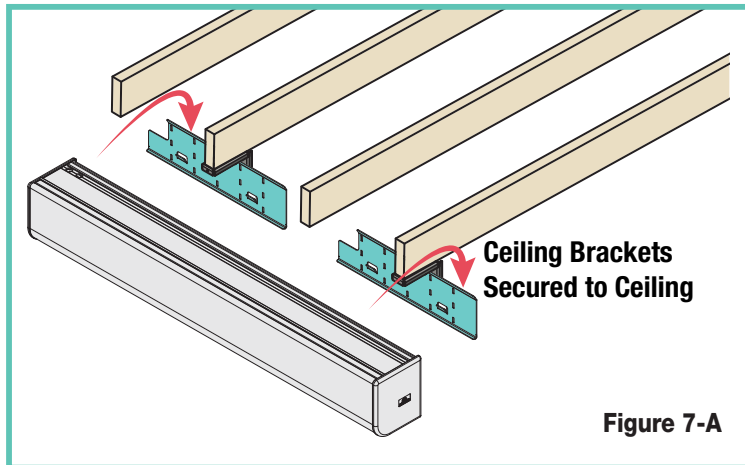
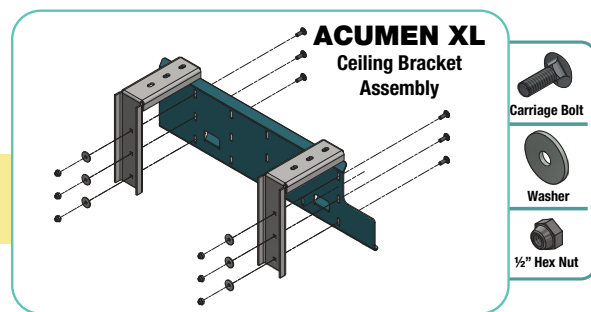
## Section 5.3 - Ceiling Installation:

1. Attach Ceiling Brackets (minimum of 5) to **Mounting Brackets** using the provided hardware (see figure at right).
2. Secure the Ceiling Brackets to the ceiling using appropriate hardware (by others).

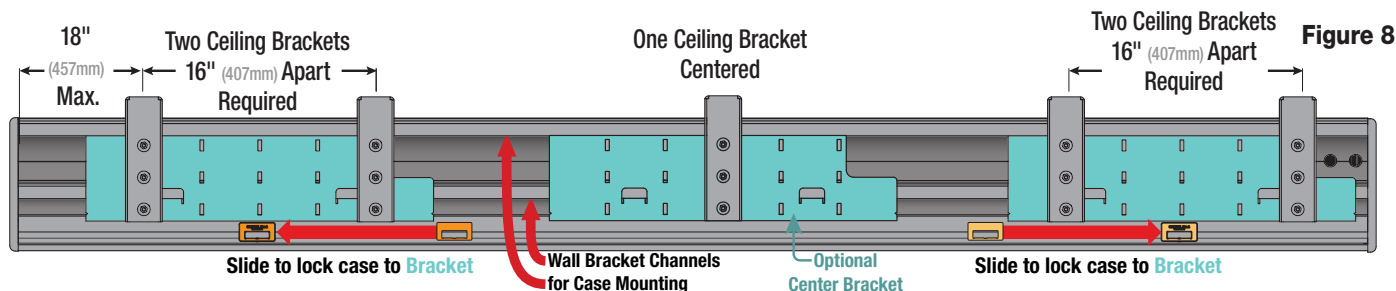
**CAUTION:** Product is very heavy: Installer must provide adequate attachment hardware and anchors as required. Installer must also ensure that structure is of adequate strength

3. Ensure that **mounting brackets** are level.
4. Slide all **Bracket Locks** to the center of the case.

### Ceiling Bracket Assembly



5. Holding the case by the endcaps, lift it up and over the cleats on the **mounting brackets** (see Fig. 7). **Wall Bracket Mounting Channels** are shown in Fig. 8 below.

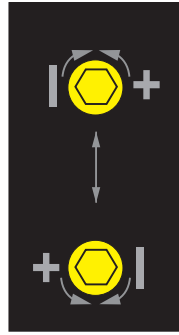


6. Once the case is settled on the mounting brackets, slide the **Bracket Locks** to the center of each **mounting bracket** (see Fig. 6) and secure set screw on the lock.

## Section 6 - Limit Adjustments

**Figure 9**

**Please Note:** Screen limits are factory set for optimum performance of the screen. Any adjustment of these limits could void the warranty. Please check with Draper prior to resetting screen limits.



**DOWN Limit (D):**  
Clockwise decreases **down** travel.

**UP Limit (U):**  
Counterclockwise increases **up** travel.

### Section 6.1 - Standard Motors (Fig. 10)

#### Section 6.1.1 - "Down" Limit Adjustment (requires 5/32" (4 mm) hex key wrench)

##### To Reduce Screen Drop:

1. Raise screen surface approximately 1' (30 cm) above desired setting and turn off.
2. Turn DOWN (D) limit screw clockwise (3 screw turns = 1/2 roller revolution).
3. Test by lowering screen. Repeat steps 1 & 2 until desired position is reached.

##### To Increase Screen Drop:

1. Lower screen to down limit.
2. With down switch on, turn DOWN (D) limit screw counterclockwise (3 screw turns = 1/2 roller revolution) to increase drop.
3. Test by raising screen approximately 1' (30 cm) then down to new down limit.
4. Repeat steps 2 and 3 until desired position reached.

#### Section 6.1.2 - "Up" Limit Adjustment

##### If Screen Raises Too High:

1. Lower screen surface approx. 1' (30 cm) below desired setting and turn off.
2. Turn UP (U) limit screw clockwise (3 screw turns = 1/2 roller revolution).
3. Test by advancing screen up.
4. Repeat steps 1 through 3 until desired position is reached.

##### If Screen Needs to Raise Higher:

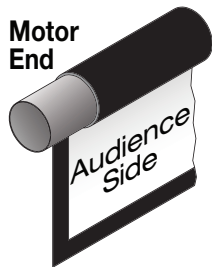
1. Lower screen surface approx. 1' (30 cm) below desired setting and turn off.
2. With UP switch on, turn UP (U) limit screw counterclockwise (3 screw turns = 1/2 roller revolution).
3. Repeat steps 1 and 2 until desired position is reached.

**CAUTION:** DO NOT allow dowel to wrap over roller when operating screen! This could damage screen.

**CAUTION:**

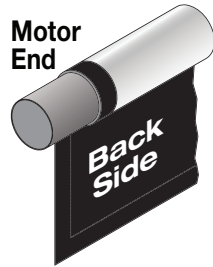
- Be sure all switches are in "off" position before adjusting limit switches.
- Be prepared to shut off manually while testing.
- Screen may be damaged by lowering it too far and exposing roller.
- Motor must be installed so that limit switches are pointed down.

**Figure 10**



### Standard Roll

White Socket—Down  
Yellow Socket—Up



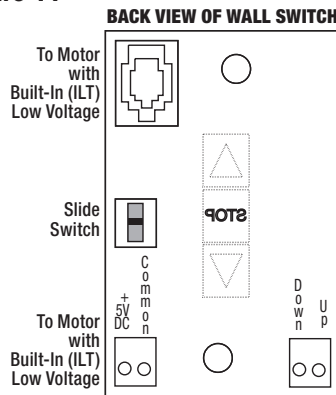
### Reverse Roll

White Socket—Down  
Yellow Socket—Up

## Section 6.2 - Limit Adjustments for Motors with Internal Low-Voltage Controllers (Fig. 12)

**Please Note:** Hold STOP button for 3-5 seconds while in programming mode to reverse motor direction.

**Figure 11**



POSITION	FUNCTION
DOWN	Set LOWER limit
UP	Set UPPER limit
CENTER	Normal Operation

1. Connect internal low-voltage switch to motor via terminal blocks, or via modular port using a four conductor modular cable. When using modular cable, cable connectors MUST NOT be crimped in reverse, as with standard telephone cable. (For Dry Contacts Wiring Diagram, see Section 8.)
  2. Set slide switch to lower position. Hold DOWN button to move viewing surface to desired lower limit. If screen moves in opposite direction, release DOWN button and hold STOP button for 4 seconds. This reverses operation of UP and DOWN switches.
  3. Move slide switch into center position. Wait several seconds.
- Please Note: Do Not** move slide switch from DOWN to UP in one motion. This will set limits in same position.
4. Set slide switch to higher position. Move viewing surface to desired upper limit by holding UP button on wall switch.
  5. Return slide switch to center position to resume normal operation.
  6. To set viewing surface to alternate format position, move viewing surface to desired position and press STOP button. Hold STOP button for at least 3 seconds to record position.

**Please Note:** Press and release UP button on switch to move screen to upper limit. Press and release DOWN button to move screen to lower limit.

- While motor is in motion, press STOP button for less than 2 seconds to stop viewing surface at present position.
- Once motor is stopped, press STOP button to move viewing surface to alternate format position.
- Hold STOP button, when motor is at rest or in motion, for 3-5 seconds to record new alternate format position.
- Hold STOP button for 3-5 seconds while in programming mode to reverse motor direction.

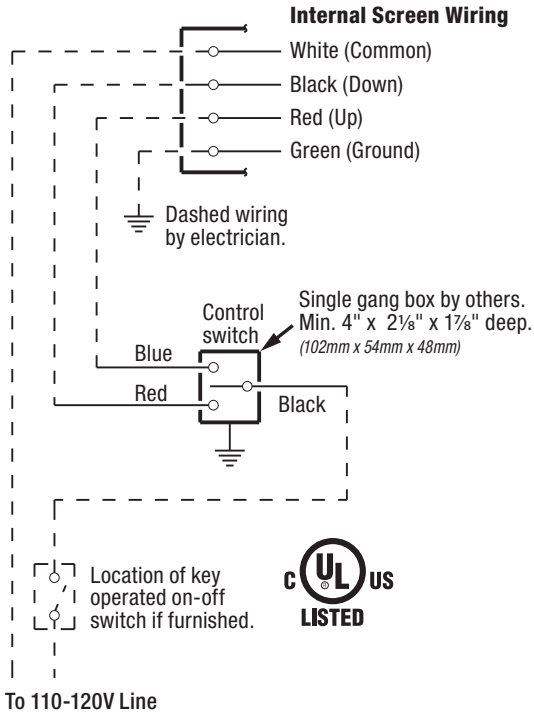
**Please Note:** 5V DC must be connected to be able to set limits using the wall switch.

## Section 7 - Wiring Diagrams: 120V Standard and Quiet Motor

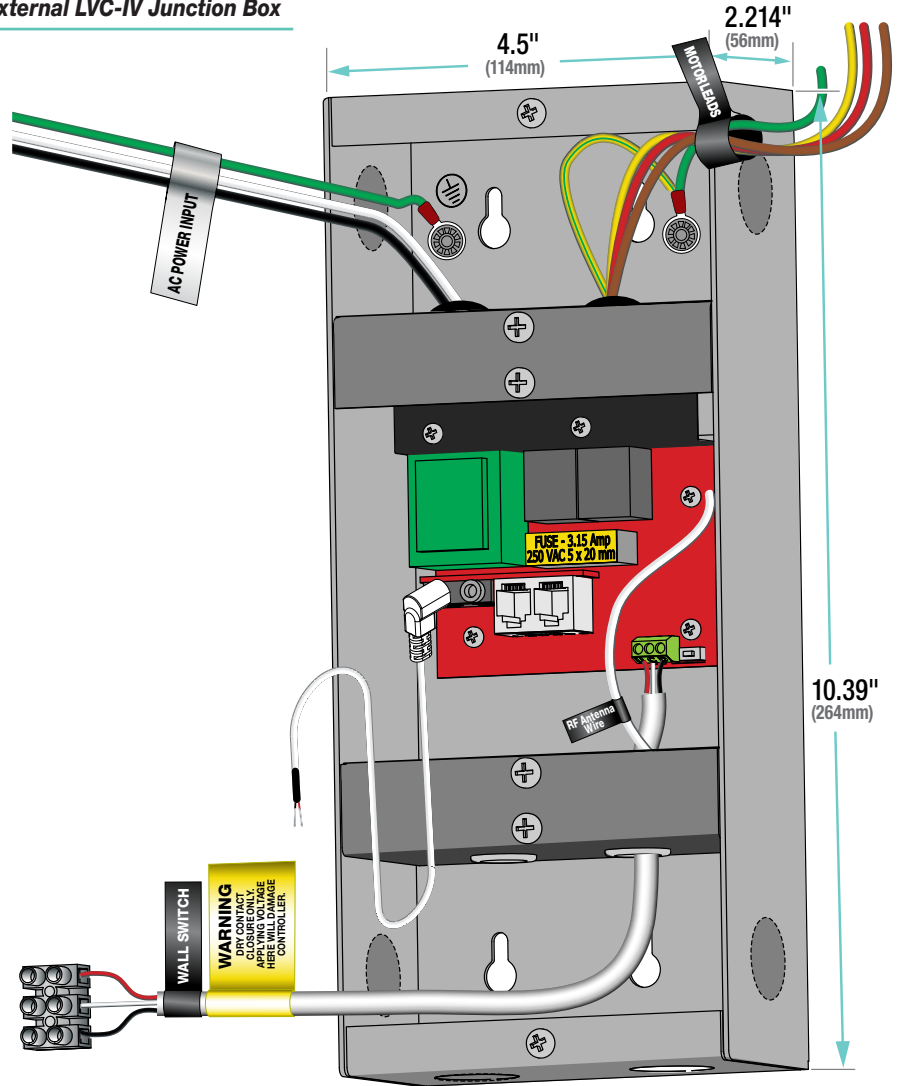
Please Note: Do not wire motors in parallel.

### 110-120V MOTOR

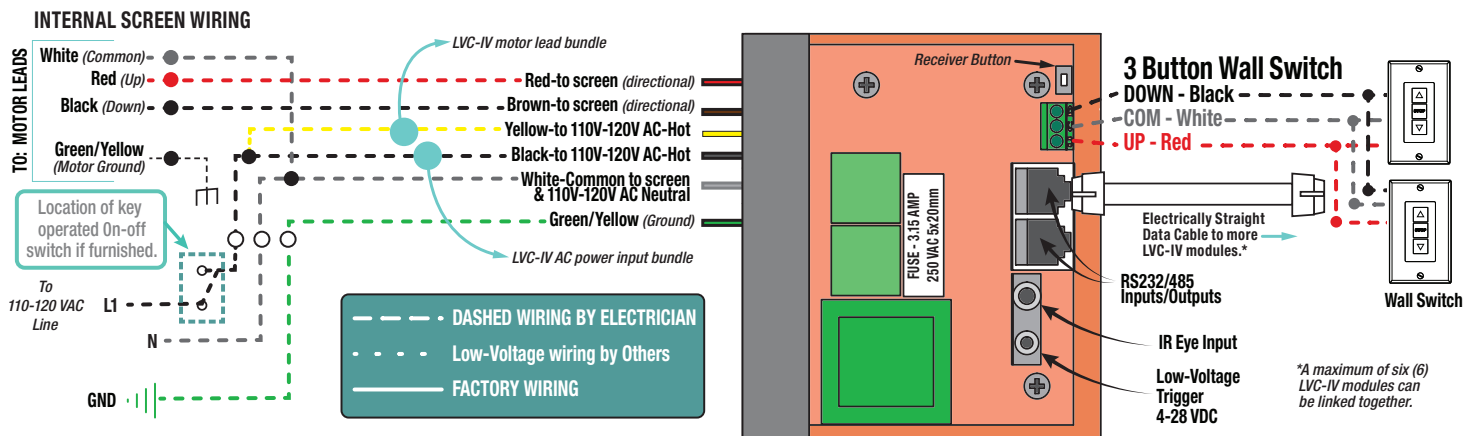
#### Single Station Control



#### External LVC-IV Junction Box



### WIRING DIAGRAM - External LVC-IV (Low-Voltage Control Module)

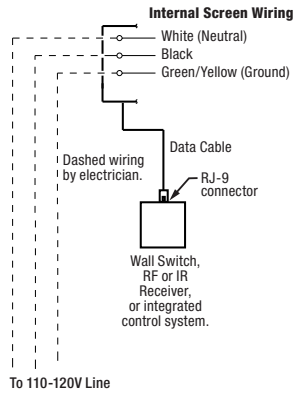


## Section 8 - Wiring Diagrams: Motor with Internal Low-Voltage Controller (LVC-IV)

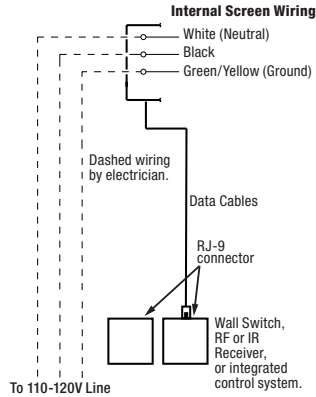
### 110-120V Motor

(motor with internal low-voltage controller)

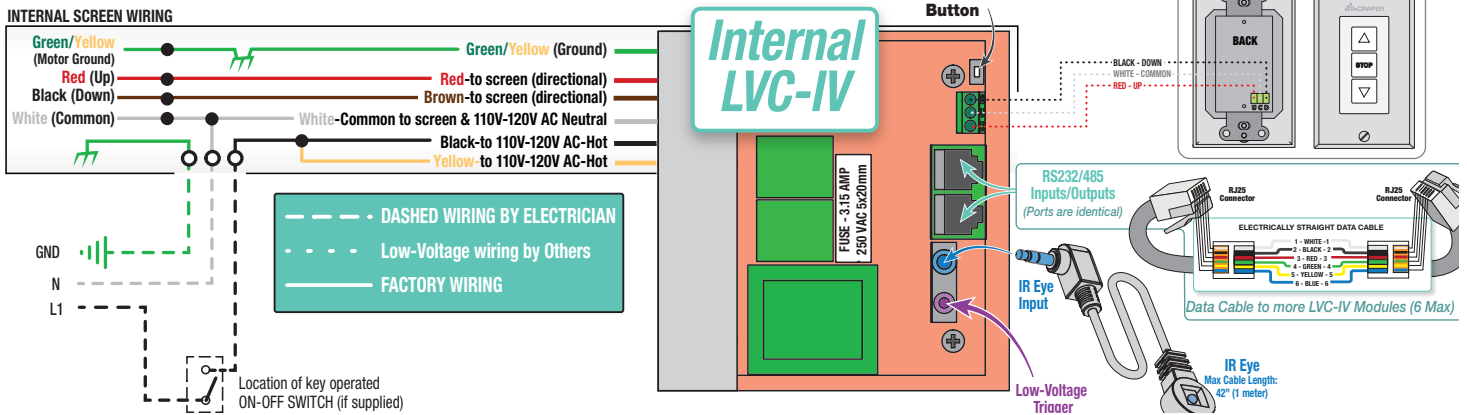
#### Single Station Control



#### Multiple Station Control

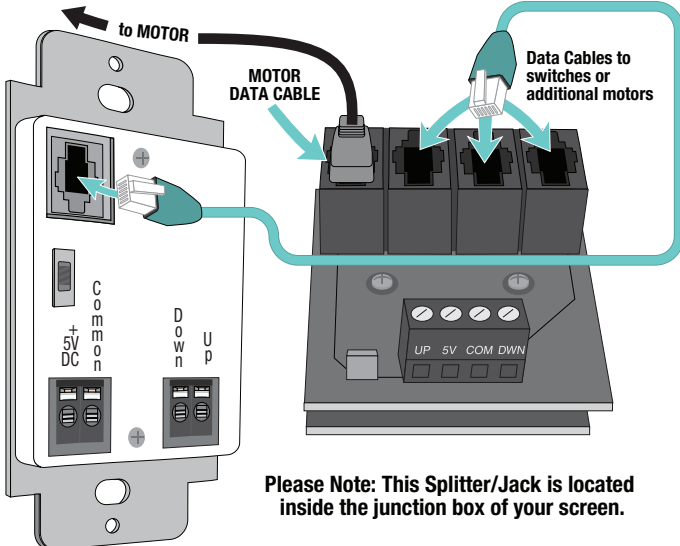


### Internal LVC-IV - Single or Multiple Projection Screen Wiring Diagram

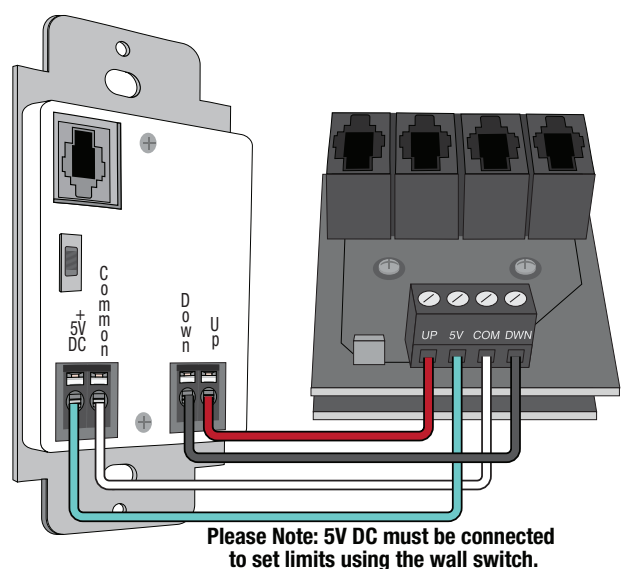


### Motor with Internal Low-Voltage Controller: Switch-to-Motor (ILT Data Cable or Dry Contacts connection)

#### ILT Data Cable Connection



#### ILT Dry Contacts Connection

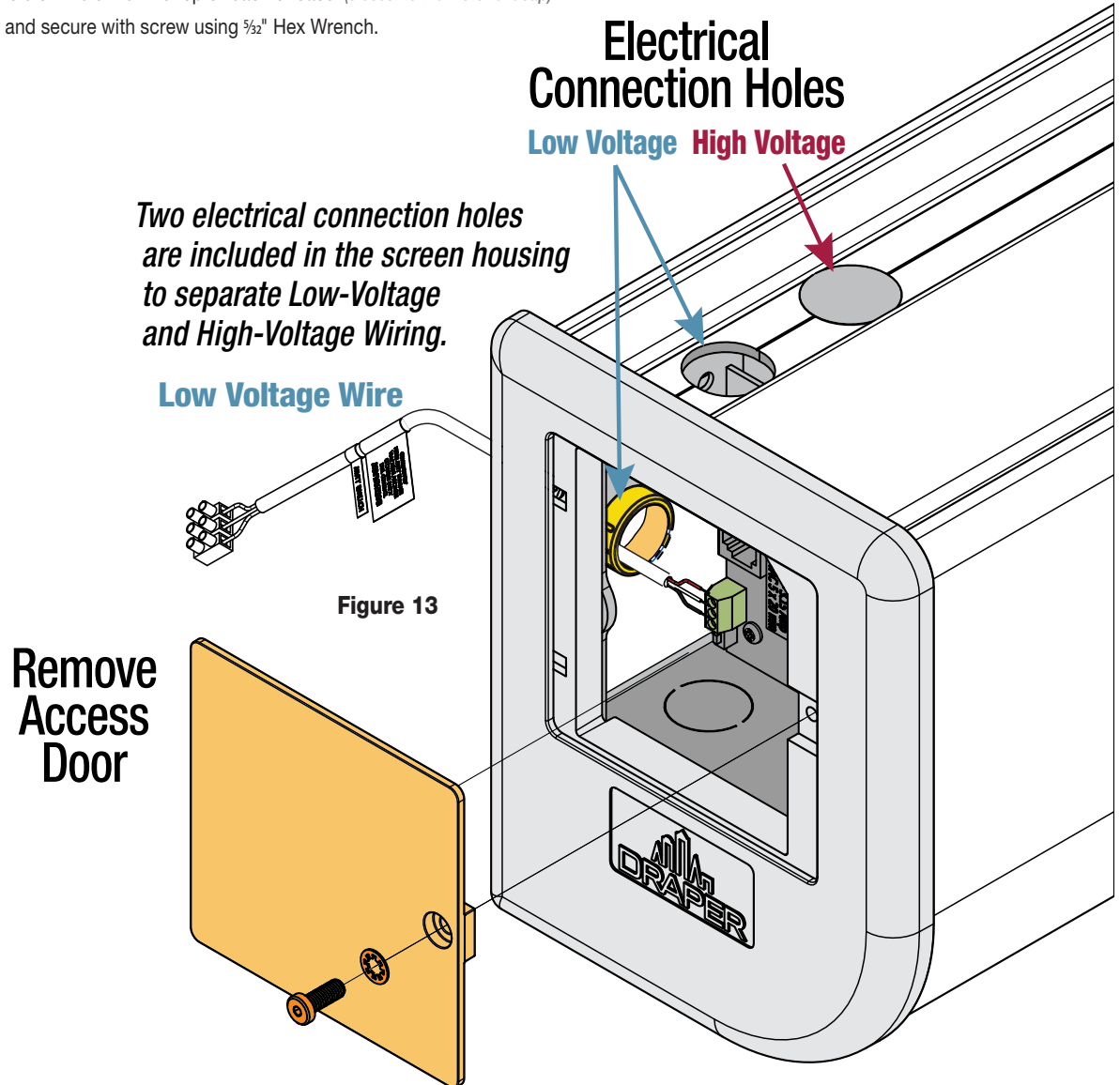




## Section 9 - Accessing Internal Low-Voltage Control Unit (LVC-IV)

**PLEASE NOTE:** Applies ONLY if Unit is built into case.

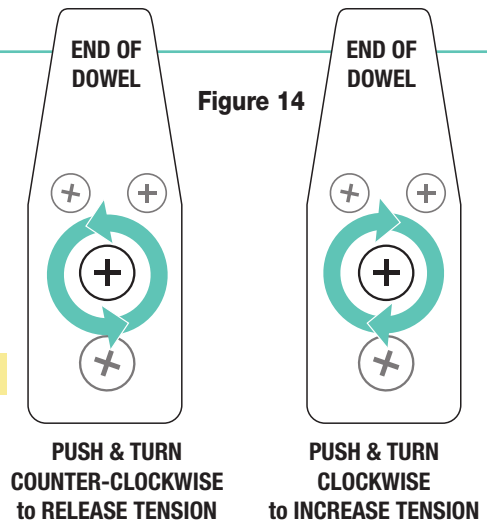
1. Using a 5/32" Hex Wrench, remove the screw from the wiring access door on the motor end of the case.
2. Remove the wiring access door and locate the Low Voltage Wiring Whip.
3. Make appropriate Low Voltage wiring connections (see Section 8). Low Voltage wiring should exit through the Low Voltage connection hole on the either the top or back of case. (closest to the motor endcap).
4. Replace the access door and secure with screw using 5/32" Hex Wrench.



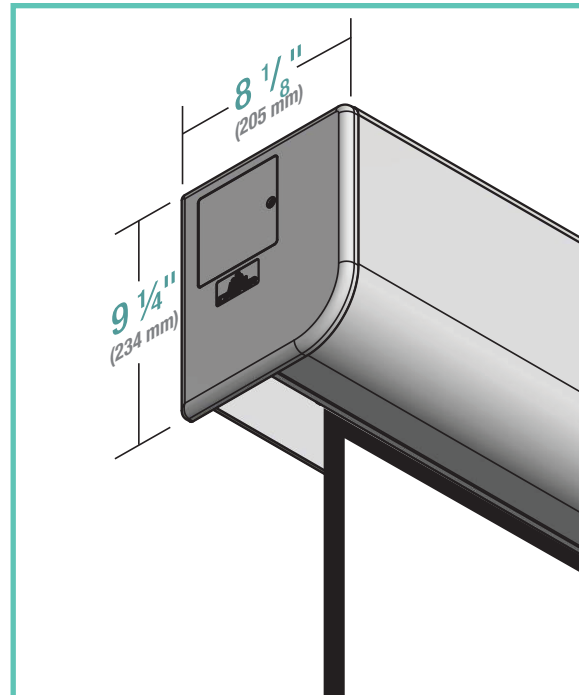
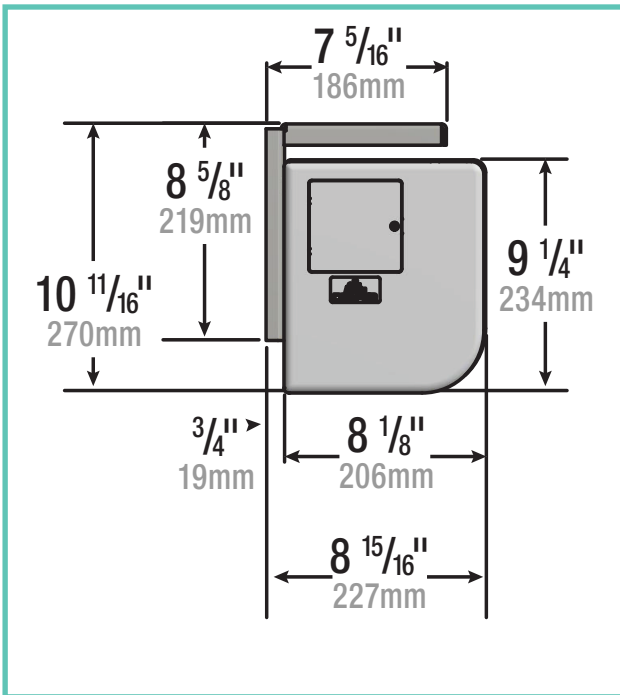
## Section 10 - Tab-Tension Adjustment Procedure

**Please Note:** The Draper Tab-Tensioning System is factory-set, and under normal circumstances will not require field adjustment. If wrinkles are observed, however, follow the adjustment procedure shown in Figure 9.

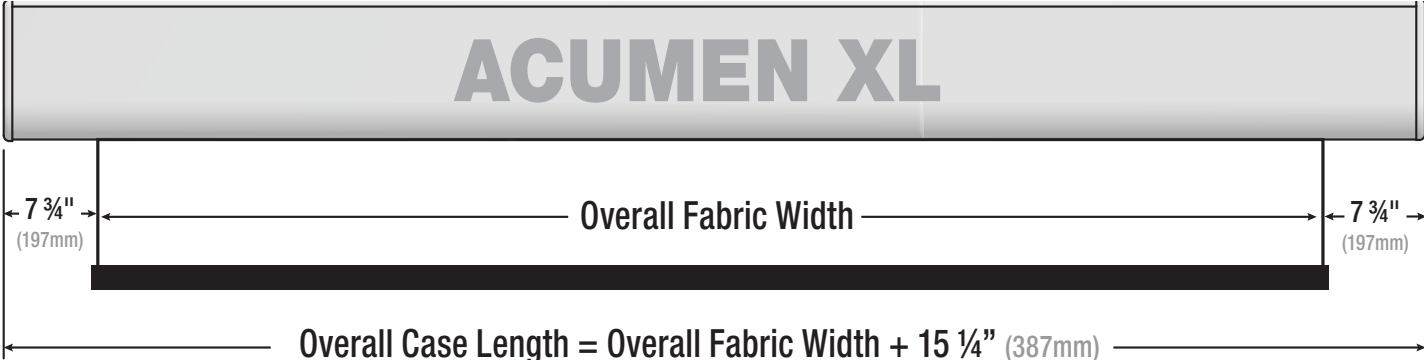
**CAUTION:** Do not touch or bend surface.



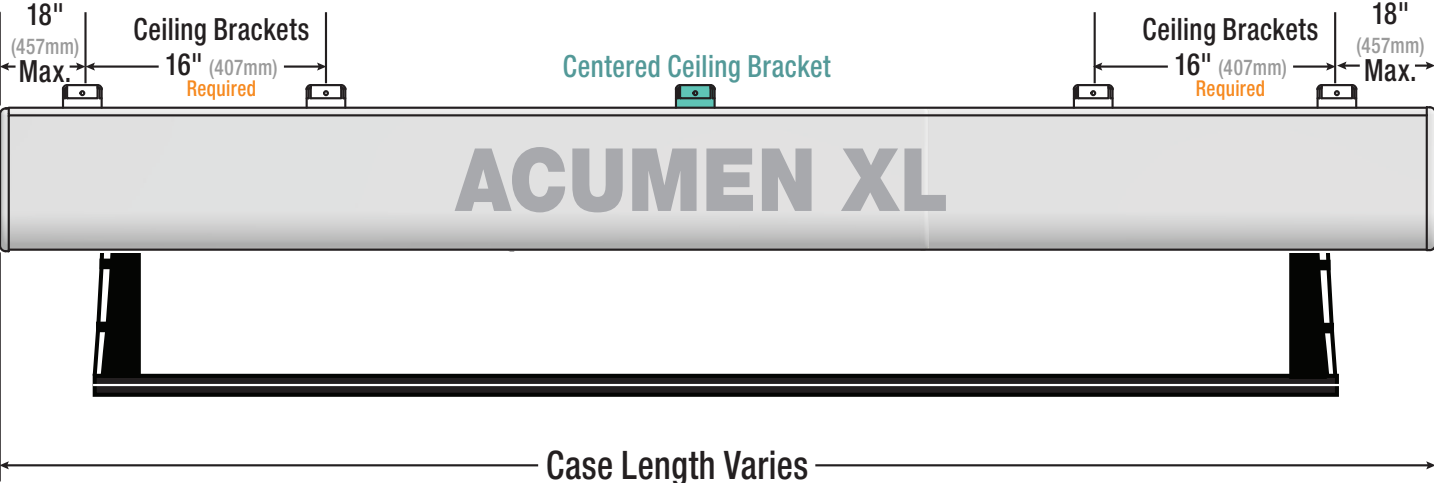
## Section 11 - Dimensions



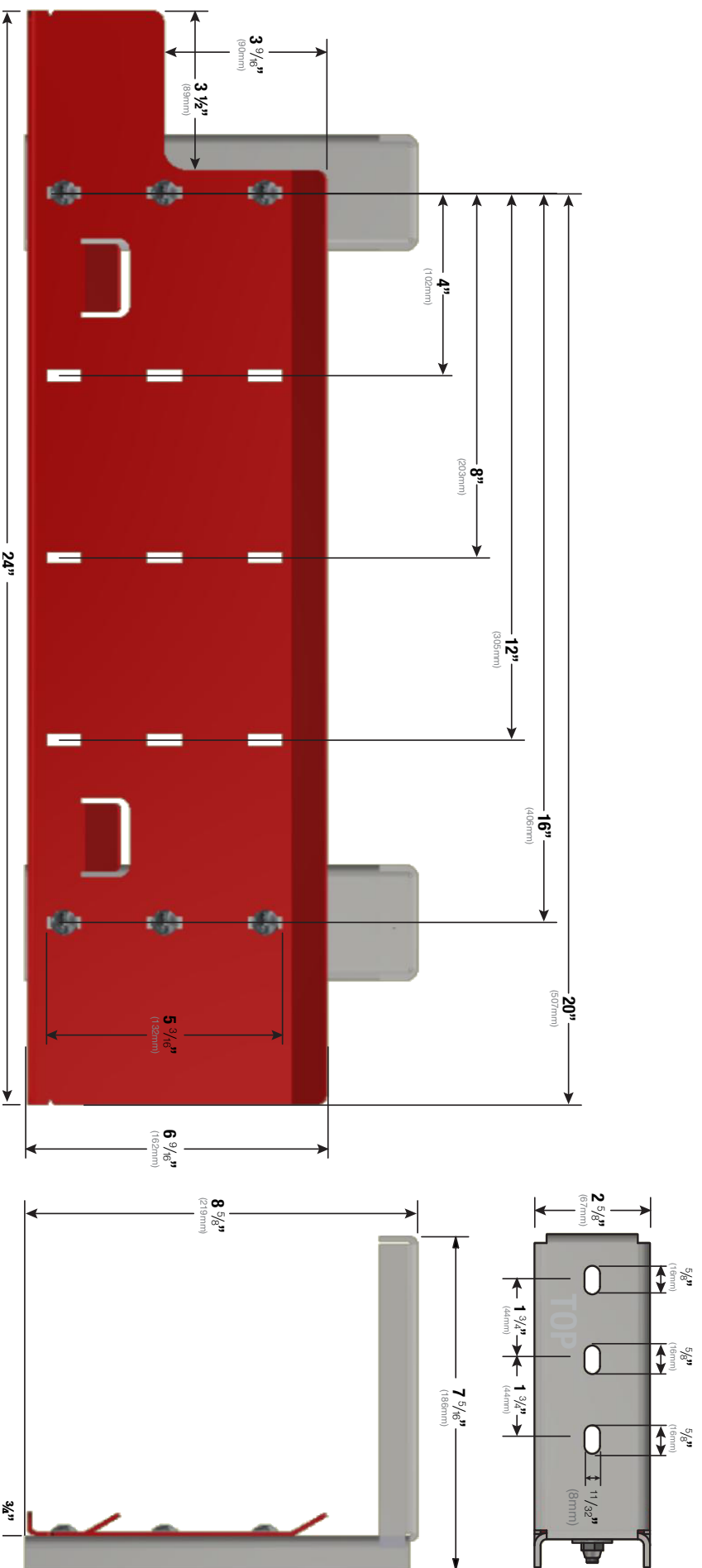
Acumen XLE



Acumen XL V (Tab-Tensioned Surface)



# Wall & Ceiling Bracket Dimensions



## Mounting Hardware (by others)

**NOTE:** It is the responsibility of the installer to select mounting hardware appropriate for the mounting surface.