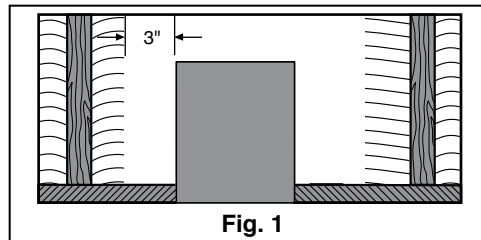


INSTALLATION INSTRUCTIONS FOR ACULUX LED 3 1/4" RECESSED HOUSING WITH BLACK BODY DIMMING AND TUNABLE WHITE LED TECHNOLOGY

WARNING: For your safety, read and understand instructions completely before starting installation. Before wiring to power supply, turn off electricity at fuse or circuit breaker box.

NOTE: Aculux recessed fixtures are designed to meet the latest NEC requirements and are listed in full compliance with the relevant UL standards. Before attempting installation of any recessed lighting fixture, check your local electrical building code. This code sets the wiring and installation requirements for your locality and should be understood before starting your work. Use of Non Aculux trims voids warranty.

TYPE TC for Non-Insulated Ceilings

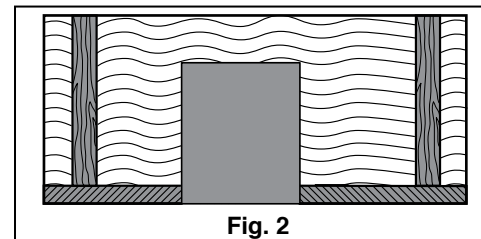


Aculux "TC" fixtures (type non-IC) are designed for installations where the housing and J-Box will not come into contact with insulation*. Insulation must be spaced at least 3" away from the housing and J-Box. Blinking or powering off of the light during use indicates an overheating condition which may be caused by insulating material being too close to or covering fixture.

Caution: failure to correct an overheating condition may result in fire and serious injury.

*In Canada, when insulation is present, Type IC fixtures must be used.

TYPE IC for Insulated Ceilings



Aculux type IC fixtures are designed for direct contact with insulating materials approved for the application. They may also be used in non-insulated ceilings.

Air-Loc

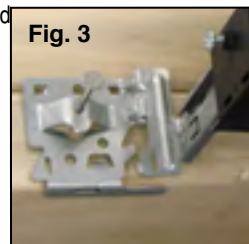
Aculux IC and Non-IC recessed housings meet energy code air leakage requirements per ASTM E283. This stops infiltration and exfiltration of air, which contributes to reduced heating and cooling costs.

Installation into Joist Construction

Aculux residential fixtures equipped with the patented Pro-VI™ hanger bar system are designed to fit in common joist spacings up to 24" on center, and are compatible with various construction materials such as dimensional lumber, engineered lumber, and steel studs.

The Pro-VI™ hanger bar feet also include additional fastener holes for mounting in special applications where the pre-installed nail location is not compatible.

1. Position fixture between joists, and slide towards the first joist. (Note: Square and round housings include integral v-notch markings on plaster frame return to assist in locating fixtures.) (Fig. 3)
2. Align the flanges on hanger bar feet with the bottom of the joist, ensuring that the flanges are flat and parallel with the bottom of joist.
3. Drive nails securely into the first joist.
4. Slide the fixture along the telescoping bars towards the second joist, ensuring the bars remain perpendicular to the joists.
5. Repeat steps 2 and 3 to secure.
6. Slide fixture to the desired position on the hanger bars, and tighten the screws on the bar guides to lock in place.

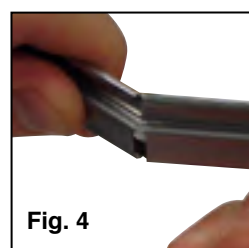


Shortening Pro-VI™ Bars

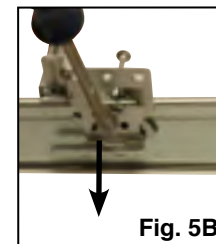
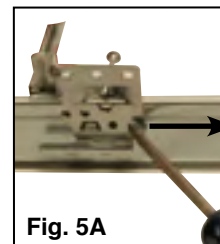
In some applications, mounting the Aculux fixture in joist spans smaller than 16" on center is desired. The Pro-VI™ hanger bar system allows tool-less field shortening to fit within a 9-1/4" wide opening for type non-IC fixtures (TC) and a 10-3/4" wide opening on type IC fixtures.

To field shorten:

1. Remove telescoping bars from the fixture by extending to the maximum length and pulling apart (past the stop)
2. Locate the notch in the bar furthest from the foot.
3. Grip bar on both sides of this notch, and bend the bar in the direction opposite the notch. As this notch spreads open, the bar will break along the score line. (Fig. 4)
4. Repeat step 3 on the other bar.
5. Reinstall bars into the guides on the fixture.



Installation into Suspended T-bar Grid Ceilings



Aculux fixtures contain either the patented Pro-VI™ hanger bar systems or standard butterfly-style mounting brackets, which both provide secure mounting in suspended T-bar ceilings. The Pro-VI™ hanger bar system mounts to T-Bars spaced on 24" centers and the butterfly-style mounting brackets can accommodate 1/2" EMT, 3/4" & 1-1/2" C-channel, and linear bars.

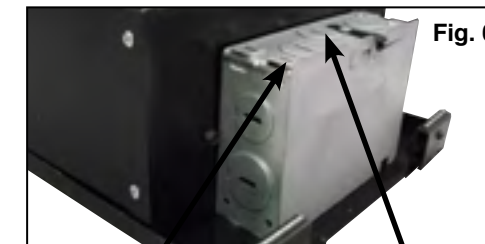
To mount the Aculux Pro-VI™ hanger bar system to T-Bar ceilings:

1. Determine the desired position for the fixture and cut a hole in the ceiling tile according to the recommended cut-out dimensions.
2. Fully expand the bars of the Pro-VI™ hanger bar system until the stop is reached.
3. Position the fixture in the ceiling tile opening and clip the four hanger bar feet over the T-bar.
4. Lock each hanger bar foot to the T-bar using the two integral locks or a sheet metal screw (supplied by others). If tie-wire is desired for additional support, each bar hanger foot has holes suitable attachment of wire. (Fig. 5A)
5. Tighten the set screws on the hanger bar guides to lock the bar position.
6. If desired, bend the break-away flange on the hanger bar foot to snap off. This can prevent interference with adjacent ceiling tiles. (Fig. 5B)

To mount Aculux fixture using butterfly-style mounting brackets:

1. Determine the desired position for the fixture and cut a hole in the ceiling tile according to the recommended cut-out dimensions.
2. Pass the EMT, C-channel, or linear bars through the openings in the butterfly style bracket.
3. Position fixture in the ceiling tile opening. Adjust butterfly brackets to the desired height using the wing nuts located on the bracket. When desired height is reached, tighten wing nuts to lock.
4. Secure mounting bars to corresponding structure.

Electrical Connection Instructions



Knock-outs for Non-Metallic Cable

Knock-outs for Metal Conduit

All Aculux fixtures contain an integral junction box that allows both connection of power to the fixture and passing additional conductors through the junction box. Type IC fixtures are UL listed for (4) through branch circuit conductors rated at 90°C, and type Non-IC (TC) are UL listed for (8) through branch circuit conductors rated at 90°C.

All Aculux housings also come pre-wired with UL Listed push-in style wire connectors for connection of the branch circuit supply and ground conductors to the fixture. These push-in wire connectors allow up to two 12AWG or 14AWG solid copper wires to be connected to each fixture lead and ground.

1. Provide electrical service according to your local electrical code to the Aculux junction box located on the plaster frame. Supply wire insulation must be rated for at least 90°C.
2. Remove the junction box cover and attach the electrical service as follows: (Fig. 6)
 - a. **Metal conduit:** Remove appropriate round knock-out(s) and connect conduit to junction box with proper fittings (supplied by others).
 - b. **12/2 or 14/2 non-metallic sheathed cable (type NM-B):** Remove appropriate knock-out(s) from top of junction box and insert cable, pushing it past the cable grip (Additional connectors are not required).
 - c. **12/3 or 14/3 non-metallic sheathed cable (type NM-B):** Remove appropriate round knockout(s) and connect cable to junction box with proper fittings (supplied by others).
3. Strip 3/8" insulation from the branch-circuit supply and ground wires, and insert into the corresponding push-in wire connector as shown in the corresponding wiring diagram.
4. Place all wiring and connections in junction box and replace cover.

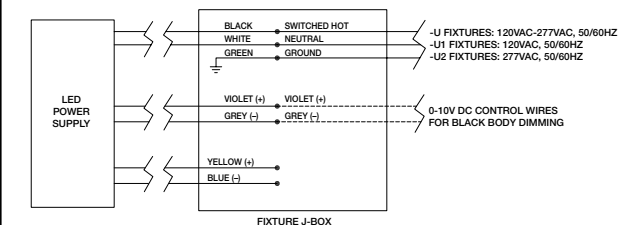
Wiring

Aculux recessed housings with Black Body Dimming and Tunable White technology are controllable with standard 0-10VDC current sinking protocol or DMX512 protocol.

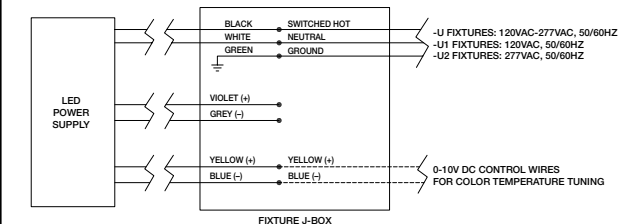
Note: For DMX512 Control it is recommended that these connections are made by a low voltage wiring specialist. [Reference Aculux DMX Installation Guide P6160.](#)

0-10V Control (-U, -U1, -U2) – This requires switched input power with separate low voltage control wires. Fixtures can be controlled with (1) or (2) sets of control wires in one of the following ways:

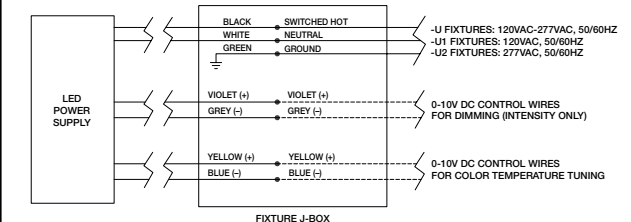
1. **Black Body Dimming –** Uses violet & grey control wires (yellow & blue capped off). Fixture shifts color temperature from 3000K to <1800K as fixture is dimmed to 1% output, mimicking a traditional halogen source.



2. **Tunable White –** Uses yellow & blue control wires (violet & grey capped off). Fixture color temperature is adjustable from 4350K to 2000K while luminous flux remains at full intensity.



3. **Tunable White with Dimming –** Uses violet & grey control wires for changing intensity (100% - 1% output) and yellow & blue control wires for adjusting color temperature along the Black Body Locus from 4350K to 2000K. In this mode, intensity and color tuning function independently.



INSTALLATION INSTRUCTIONS FOR ACULUX LED 3 1/4" RECESSED HOUSING WITH BLACK BODY DIMMING AND TUNABLE WHITE LED TECHNOLOGY

Optional Dimmer Learn Feature (0-10V only)

To ensure compatibility with common 0-10V DC controls, black body dimming and tunable white modes are factory set to operate in the 2-8VDC range. Fixtures can be programmed to learn a specific dimmer range if desired. This can improve responsiveness of the fixture and reduce "dead travel" when dimming with a wall box dimmer. Please note that this feature is optional. The factory setting is fully functional with common 0-10V DC controls even if this feature is not used.

To use this feature, there is a red push-button switch located inside fixture on junction box access panel. (Note: these steps can be done concurrently on multiple fixtures if desired)

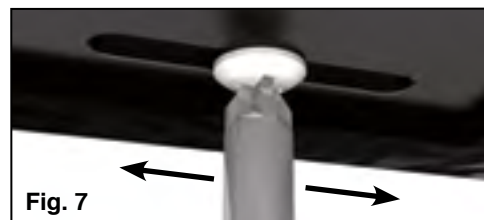
To learn a dimmer range:

1. With fixture power off, press red push-button switch inside housing.
2. Turn fixture power on. There will be a 5 second delay, followed by orange colored blinking. This signals that fixture is now in "learn mode". Slide dimmer through the full range a couple times, and then turn power off.
3. When fixture is powered on, dimmer range has been learned and fixture is fully operational with the new settings.

To reset fixture to default range:

1. With power on or off, set dimmer to midpoint of travel so that the dimmer signal is between 2-8VDC.
2. Power off fixture(s) (if on in step 1).
3. Press red push button switch inside fixture(s).
4. Power fixture(s) on. There will be a 5 second delay, followed by orange colored blinking. This indicates the fixture is re-learning the default 2-8VDC range. **DO NOT ADJUST DIMMER DURING THIS STEP.**
5. Power off fixture(s).
6. When power is turned back on, fixture is fully operational in default mode.

Tru-Line™ Translation

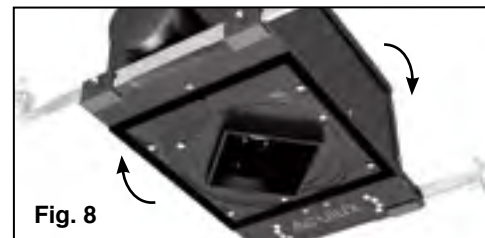


Aculux fixtures contain a patented adjustment feature that allows shifting the plaster frame aperture parallel to the joists up to 1/2" in both directions without detaching the fixture, providing the installer with an easy way to achieve precise layouts.

1. Locate the screw on the plaster frame above and to the left of the Aculux logo (about 3" diagonally).
2. Loosen screw and slide the plaster frame aperture in the desired direction. (Fig. 7)
3. Tighten screw securely to lock plaster frame aperture in the new position.

Note: If adjustment more than 1/2" in either direction is needed, the Pro-VI™ hanger bar system contains bugle-head nails that can easily be pulled-out with a hammer claw for repositioning.

Rotating Housing Aperture (Square Housings Only)



Aculux Square housings allow rotation of the square aperture in multiple directions to accommodate an infinite number of layout possibilities. The housings ship with the square aperture locked in the 0° position. To rotate the aperture to a new position:

1. On the bottom of the housing, locate the screw in the curved slot of the plaster frame, directly above the angle markings.
2. Loosen screw and rotate the aperture in the desired direction. The indicator arrow and angle markings, which are marked every 5°, help ensure accurate placement. (Fig. 8)
3. Tighten screw securely to lock into adjusted position.

Ceiling Cutout Dimensions

For best results, match ceiling cutout size to the specified dimensions. Using a properly sized hole saw or a rotary cutter with a 1/8" diameter bit will provide the best quality cutout.

For round aperture Aculux housings:

- When using standard (with separate trim frame) or self-flanged trims, cut a 4-1/4" diameter hole in the ceiling.
- When using flush mount trims and separate flush mount adapter accessory for drywall ceilings, make ceiling cutout 4-3/8" diameter.
- When using flush mount trims and separate flush mount adapter accessory for wood, stone, tile and other solid ceilings, make precise ceiling cutout 4.145" diameter (adapter can be used as a template). (Refer to separate flush mount adapter instruction sheet for detailed information.)

For square aperture Aculux housings:

- When using self-flanged trims, cut a 4-1/8" x 4-1/8" square opening.
- When using flush mount trims and separate flush mount adapter accessory for drywall ceilings, make ceiling cutout 4-1/4" x 4-1/4" square.
- When using flush mount trims and separate flush mount adapter accessory for wood, stone, tile and other solid ceilings, make precise ceiling cutout 4.020" x 4.020" square (adapter can be used as a template). (Refer to separate flush mount adapter instruction sheet for detailed information.)

Note: Aculux square and round housings are designed for ceiling thicknesses from 1/2" up to 7/8". For ceiling thicknesses 7/8" and greater, thick ceiling adapter accessories are required. Thick ceiling adapter accessories are not required when using flush mount adapters for wood, stone, tile and other solid ceilings.

Acu-Aim™ Precision Geared Hot-Aiming



Aculux housings contain a precision geared adjustment mechanism, optimized for center beam optics and hot aiming. This allows the directional beam of the LED to be easily fine-tuned using a standard Phillips screwdriver for exact aiming. The mechanism allows 45° tilt and 370° rotation to eliminate aiming dead spots.

To adjust aiming angle:

1. Find the upper Phillips head drive gear, located near the face of the light engine.
2. Turn the drive gear counter-clockwise to increase tilt, and clockwise to decrease tilt. Fixtures include angle markings to ensure correct position. Fig. 9 (A)

To adjust rotation:

1. Find the lower Phillips head drive gear, located near the fixture aperture.
2. Turn the drive gear to achieve desired rotation. Fig. 9 (B)

Installing Finishing Trims

Aculux round and square trims contain high-grade constant tension wire-form springs that keep the trims flush to the finished ceiling, improving flatness and eliminating possible light leak. To install the finishing trims into the housings:

Round housings:

1. Compress the springs and insert into the corresponding oval slots, located about 1-1/2" deep in the housing.
2. Push trim upwards, until the springs pull trim tight to the ceiling.

Square Housings:

1. Grab the end of one spring, and rotate up (away from the finished face of the trim).
2. Engage the spring over the upper edge of the square housing opening.
3. While holding trim in position, rotate second spring up and insert into housing opening.
4. Push trim up until both springs engage.

Caution: The springs on the square trims snap closed upon removal from the housing. Remove slowly and observe the location of the springs. Keep fingers and hands clear of these springs to prevent injury when removing.

Lens and Optic Installation and Replacement

Aculux LED housings contain a patent-pending lens holder that accepts up to (3) standard 2" light control or color control accessories without sacrificing performance or optimum light position.

To install lens (refer to fig. 11):

1. Twist to unlock outer lens holder (A) and remove.
2. Place lenses (B) into outer lens holder.
3. Line up the notches in lens holder (C) with tabs (D) in housing. Press upward until seated and twist to lock into place.

Aculux LED housings are shipped with an optic which provides the beam spread specified at the time of purchase. However, this optic can be replaced if a different beam spread is desired.

To replace optic (refer to fig. 11):

1. Remove the outer lens holder (A) as described in Step 1 above.
2. Unscrew threaded bezel (E) from inner optic housing (F) and remove optic (G).
3. Insert new optic into inner optic housing.
4. Reinstall threaded bezel onto inner optic housing.
5. Replace outer lens holder with any accessory lenses as described in Step 3 above.

INSTALLATION INSTRUCTIONS FOR ACULUX LED 3 1/4" RECESSED HOUSING WITH BLACK BODY DIMMING AND TUNABLE WHITE LED TECHNOLOGY

LED Replacement

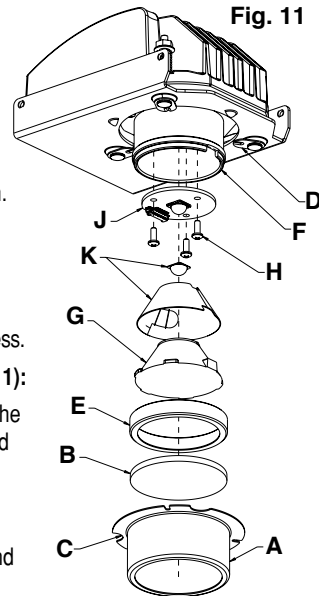
The LED can be easily removed from the housing for replacement. Before servicing, disconnect or switch off electrical supply to fixture. Failure to do so can result in electrical shock and/or injury.

To Remove LED (refer to fig. 11):

1. Remove lens holder (A) and optional lenses (B), threaded bezel (E), optic (G), and optical components (K) as described in *Lens and Optic Installation and Replacement* section.
2. Loosen and remove screws (H) that secure LED board (J).
3. Remove LED board (J) and disconnect wire harness.

To Install LED (refer to fig. 11):

1. Apply thermal grease to the back of LED board (J) and reconnect wire harness.
2. Line up holes in LED board (J) with holes in inner optic housing (F) and secure with screws (H).
3. Reinstall optical components (K), optic (G), bezel (E), and lens holder (A) with any optional lenses.



Servicing and Inspecting Housing

All Aculux housings include features that improve accessibility to the interior of the housing either through the room side aperture (Type IC & Non-IC) or behind the finished ceiling (Type Non-IC only) via the hinged housing lid for inspection of wiring and/or replacement of components such as the driver.

To access the inside of housing:

1. Tilt the adjustment mechanism to the 45° position using adjustment screw A (Fig. 9) to move LED and heat sink assembly out of the way.
2. Rotate the adjustment mechanism using adjustment screw B (Fig. 9) so the open area of the LED heat sink points towards the area to access.
3. When finished, tilt and rotate the adjustment mechanism back to the original position.

Driver Replacement

Aculux LED fixtures allow tool-less replacement of the LED driver electronics from above (Non-IC fixtures) or below (IC and Non-IC fixtures) the finished ceiling. Driver replacement must be performed by a qualified electrician. Before servicing, disconnect or switch off electrical supply to fixture. Failure to do so can result in electrical shock and/or injury.

To replace the driver (refer to fig. 10):

1. Locate driver assembly and position adjustment mechanism for access as described in Servicing and Inspecting Housing section.
2. Disconnect input power connector (N) by depressing lock tab (Q) and pulling the wire in the direction shown.
3. Disconnect DMX (P) or 0-10V (R) control leads as appropriate for fixture type.
4. Loosen and remove the two thumb nuts (S) that secure the driver assembly.
5. Remove the driver assembly from fixture.
6. Cut wire tie (T) taking care to not damage cable and remove LED connector (U).
7. Prior to inserting new driver assembly into fixture, plug the LED connector (U) firmly back into the control board and secure the cable with a wire tie at location (T).
8. Install new driver assembly by inserting into fixture, positioning on the studs, installing and tightening thumb nuts, and reconnecting input power and control wire connectors.

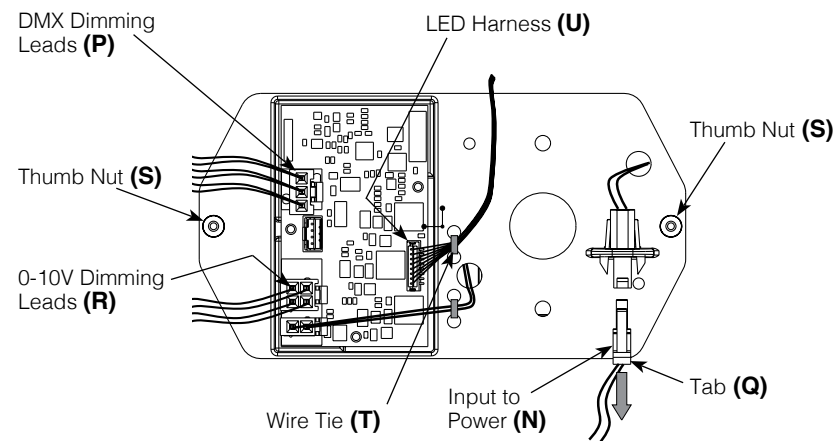


Fig. 10

WARRANTY

Juno Lighting Group provides five year limited warranty on LED components from date of purchase. Juno Lighting Group's obligation is expressly limited to repair or replacement, without charge, at Juno Lighting Group's factory after prior written return authorization has been granted. This warranty shall not apply to products which have been altered or repaired outside of Juno Lighting Group's factory. This warranty is in lieu of all other warranties, expressed or implied, and without limiting the generality of the foregoing phrase, excludes any implied warranty of merchantability. Also, there are no warranties which extend beyond the description of the product on the company's literature setting forth terms of sale.