

LED Tube Retrofit Process

1. Gather required materials

Tools

- SAE nut driver set
- Small flat-bladed screwdriver (1/8" or 3/16")
- Wire cutters / strippers
- Optional: small needlenose pliers
- Ladder or stepstool
- Permanent marker
- Area lighting – flashlight, trouble lamp, Ryobi work light

Supplies

- 8x non-shunted T8/T12 tombstones
- 4x LED tubes
- 18 gauge solid-core 600V-rated wire
- 2x Wire nuts (sufficient for 2x 12ga wires)
- Blue painter's tape
- LED fixture labels

2. Assess situation for lights to be serviced

- a. Remove diffuser
- b. Examine condition of the fixture
- c. Form a plan based on the specifics of the fixture – you will likely not need the entire set of tools
- d. Note condition of existing florescent lamps

3. Prepare location

- a. Turn off light
- b. Tape off switch so it is not accidentally turned on
- c. Label switch with warning not to turn on

4. Remove florescent components

- a. Remove lamps – retain those that were working and dispose of those that were not



Fixture with lamps removed

- b. Remove ballast cover



Fixture with ballast cover removed

- c. Disconnect power (black/white) wires by untwisting wire nuts
- d. If ballast is not working *or* is magnetic
- i. Cut lamp socket wires (yellow, red, blue) as close to the ballast as possible
 - ii. Remove ballast from fixture using nut driver *and dispose of*
- e. If ballast is working *and* is electronic
- i. Remove lamp socket plates from the fixture
 - ii. Remove ballast from the fixture using nut driver *and retain*
 - iii. Cut lamp wires (yellow, red, blue) as close to the lamp sockets as possible
- f. Dispose of original lamp sockets
- g. Remove lamp socket plates
- i. If lamp socket plates are retained by a screw



Typical screw-retained plate

1. Remove screw using a nut driver

2. Plate will drop away from location of screw, hinging on a tab at the opposite end
 3. Retain lamp socket plate
- ii. If lamp socket plates are held captive



Typical captive plate

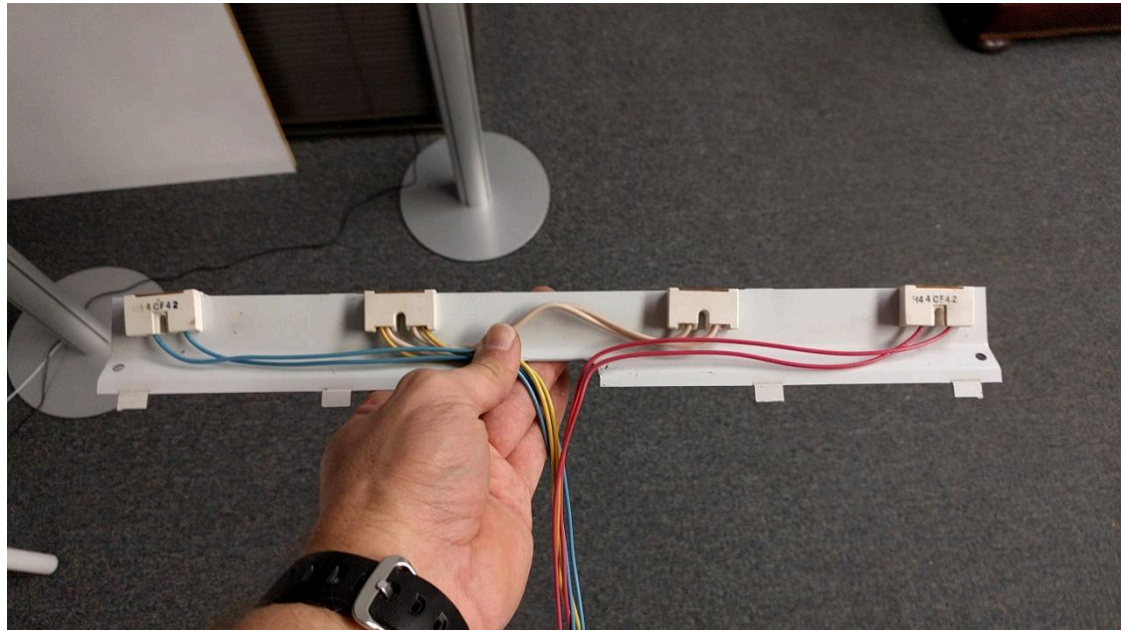
1. Use flat-bladed screwdriver to wedge plate out from one retaining divot



Insert screwdriver as shown, twist to separate plate from dimple, pull down on plate

2. Pull plate down from divot
3. Repeat steps 1–2 at opposite divot; plate will swing out from longitudinal tabs

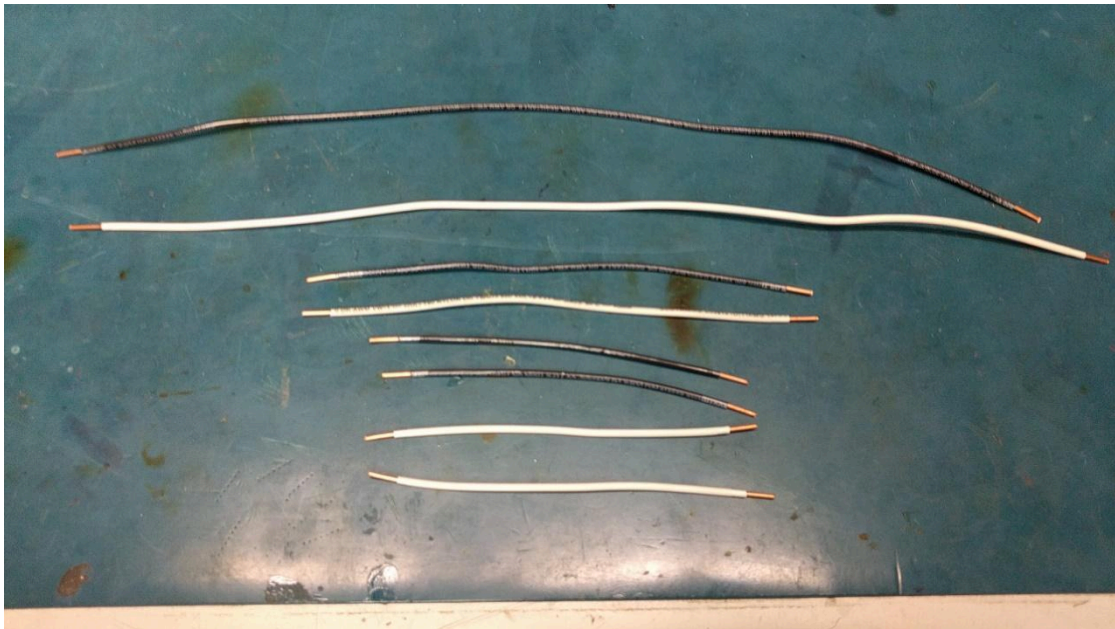
4. Remove and retain lamp socket plate



Typical socket plate

5. **Prepare new sockets**

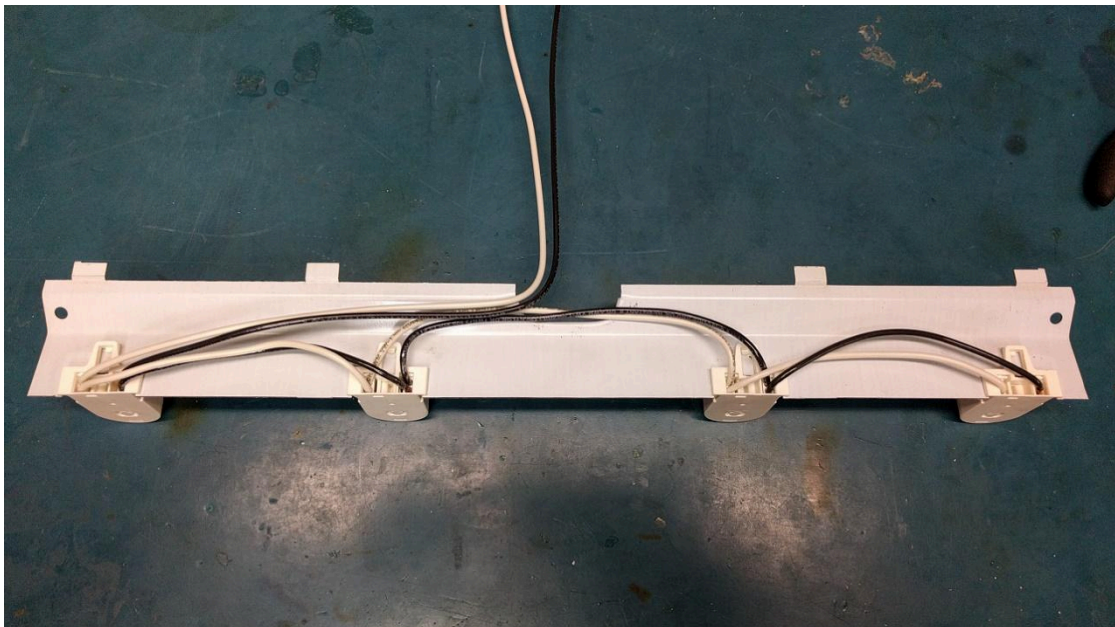
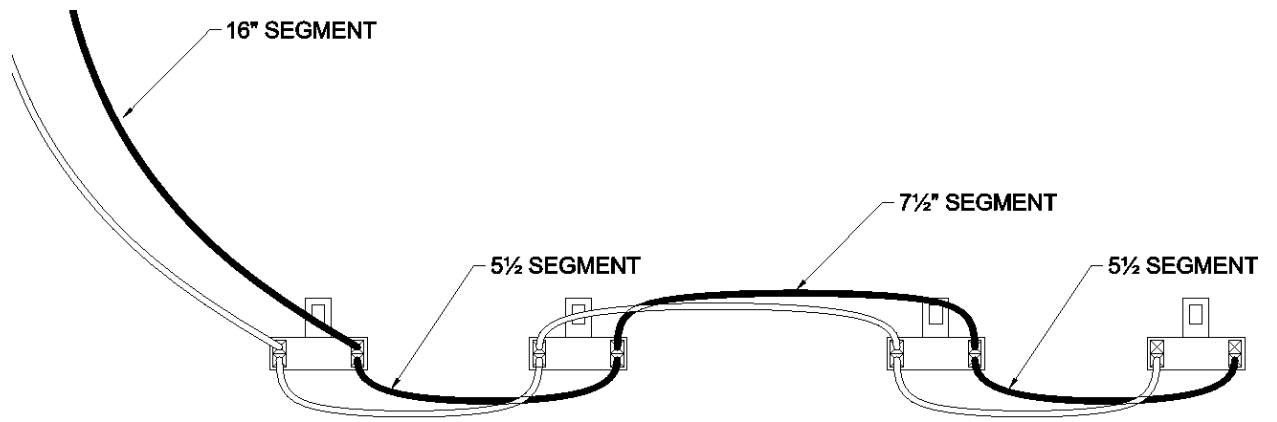
- a. Cut the following from *both* black and white wire spools
 - 2x 5½" wire segment
 - 1x 7½" wire segment
 - 1x 16" wire segment
- b. Strip ½" off all cut wire segments



The complete collection of cut and stripped wires

- c. Gather 4 T8/T12 tombstones

d. Wire tombstones as shown:



- i. Ensure that hot (black) and neutral (white) wires are inserted into *separate* sides of each socket
failure to do so will result in popped circuit breakers!
 - ii. Ensure that segments are wired as shown above
- e. Insert wired tombstones into one of the lamp socket plates
- f. Insert the remaining tombstones into the other lamp socket plate

6. Re Install Components

- a. Reinstall the wired plate at the end *closest* to the mains wiring
- b. Connect wiring
 - i. Connect the new sockets' hot (black) to mains hot (black) using a wire nut
 - ii. Connect the new sockets' neutral (white) to mains neutral (white) using a wire nut
- c. Re-install the ballast plate
- d. Turn on the light fixture
- e. Insert LED tubes into the new sockets
 - i. Ensure that the lens is pointing downwards
 - ii. Ensure that each lamp lights up as it is rotated into position
- f. Once all lamps are installed and operating, affix labels to the ballast plate
 - i. Locate at opposite ends
 - ii. Orient them so they are legible from opposite directions

7. Clean Up

- a. Close the fixture diffuser
- b. Return surplus supplies to the electrical closet
- c. Clean up the work area