HOMEOWNER REPAIR GUIDE

FLUORESCENT LIGHTING

For do-it-yourself repairs

The use of fluorescent lighting has become very commonplace in do-it-yourself remodeling projects. Fluorescent lights have a longer service life, use much less electricity, and generate less heat than do incandescent bulbs. The light-to-wattage ratio is much greater, as well. This means a 22 watt fluorescent light bulb can deliver the same amount of lumens (a measure of light) as a 60 watt incandescent bulb.

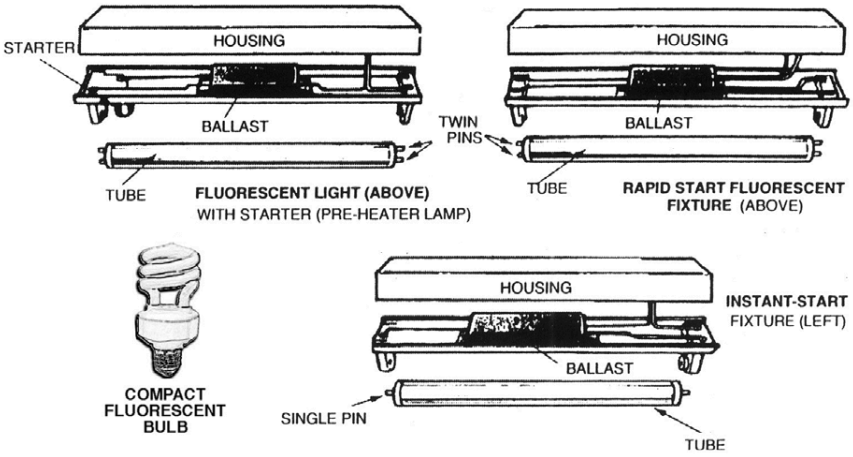
COLOR TEMPERATURE

Fluorescent lamps can be purchased with different chromaticity (perceived color temperature) values. Warm white tubes appear to enhance reds and yellows; cool white tubes enhance blues and greens.

CHROMATICITY	COLOR TEMPERATURE
“Warm”	Lamps with color temperatures of 3000 Kelvin (K) or less are considered “warm.”
“Moderate”	Those tubes with chromaticity values of 3000K to 4000K are called “moderate.”
“Cool”	Tubes that have values above 4000K are called “cool.”

FIXTURE TYPES & WIRING

There are many different types of fluorescent lighting, but all fluorescent fixtures fall into one of three categories: preheat, rapid start, and instant start (see illustrations). Installation can be as simple as screwing a bulb into an existing fixture or lamp; on the other hand, a permanent fluorescent fixture will need to be hard-wired into a lighting circuit. In all cases, the fixture must be correctly wired for the light to function properly. (A fixture that is wired incorrectly often won't light up.)



Preheat (with starter), rapid start and instant start fixtures, and a compact fluorescent bulb

POLARIZE HARD-WIRED FIXTURES

A hard-wired fluorescent fixture must be polarized to the circuit. That means the black wire on the ballast must connect to the hot wire of the lighting circuit (usually a black wire), and the white wire on the ballast must connect to the neutral circuit (white) wire. The fixture housing should be grounded for the fixture to light reliably.

COMPACT FLUORESCENT LAMPS (CFLS)



Spiral CFL

A compact fluorescent lamp (CFL) is a bulb that contains a miniaturized fluorescent tube packaged into an integral ballast screw base. These bulbs can be installed into nearly any table lamp or lighting fixture. A common style has a spring-shaped tube, but other bulbs have a long u-shaped tube. Also, there are floodlight bulbs for exterior use or for recessed ceiling fixtures. Some u-shaped fluorescents are of the “modular” type, having separate bulbs and ballasts that can be replaced individually.

CFLs are being promoted as energy-saving alternatives to incandescent bulbs, as CFLs use about one-fourth as much electricity. For example, a 13-watt CFL produces the same amount of light as a 60-watt incandescent bulb (approximately 850 lumens) and remains much cooler. While more expensive than incandescent bulbs, CFLs last far longer – some are guaranteed for 8,000 - 10,000 hours, while incandescent bulbs typically last 800 - 1000 hours.

Besides saving money on the electric bill, CFLs also help to reduce pollution created by the generating plant. However, despite these benefits, there are some drawbacks to CFLs.

DRAWBACKS

- Compact fluorescent lamps usually do not produce full light output until they warm up for a minute or so; in an outdoor fixture in cold weather, a CFL may take even longer to warm up fully and, when first started, may produce as little as 25 percent of its light output for several minutes.
- Traditionally, the light produced has not been the same color quality as incandescent bulbs, distorting the perceived color of walls and furnishings (although the newest models have come close to eliminating this issue).
- To work well, compact fluorescent lamps need to be used in lamps with polarized plugs, where the large prong on the plug is the neutral and is wired to the threaded shell of the bulb socket, and the smaller prong on the plug is the hot and is wired to the brass tab in the bottom of the bulb socket. This design allows the bulb to light reliably during its entire service life.
- Most CFLs won’t work with an ordinary dimmer switch.
- Lastly, CFLs are often physically larger than incandescent bulbs they replace, so they simply may not fit a lamp or fixture at all.

IF A BULB BREAKS

Caution must be taken when handling fluorescent bulbs, as they contain a small amount of mercury in the tube.

> **DO NOT VACUUM THE DEBRIS**
>
> If a bulb breaks, do not vacuum the debris, as the vacuum can spray minute droplets of mercury into the air.

1. Wearing disposable gloves, wipe up the debris with damp paper towels and place it in a plastic bag.
2. Then, wash the area with soap-moistened paper towels and place those in the plastic bag.
3. Finally rinse the area with clean wet paper towels and place them in the plastic bag.
4. Seal the bag closed and dispose of it in the trash.

(The Environmental Protection Agency currently (as of 2008) allows homeowners to send small amounts of hazardous waste like this, as well as intact fluorescent bulbs, to landfills. For alternative disposal methods in Cuyahoga County, call the Cuyahoga County Solid Waste District at 216-443-3749.)

Fluorescent lighting is one more way you can reduce the energy costs of operating your home or business. The reduced energy use means less fuel will be burned to generate electricity, and less pollution will result from using those fuels.

Home Repair Resource center

Home Repair Resource Center empowers homeowners to maintain their homes for sustainable and diverse communities.

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