

# ALUMINUM WIRING

Most electrical wire is made of copper. Copper is predominately used in residential construction with the exception of the service cable and single purpose high-ampereage circuits such as sub-panels, electrical ranges or air conditioners. Since copper is a better conductor than aluminum, the aluminum wire must be larger to safely carry the same current as copper.

Some houses built or remodeled between the early 1950s and late 1970s were wired with aluminum . This wiring can be identified by the letters **AL** or the word **ALUMINUM** stamped on the plastic covering or cable. Don't confuse the brand name **ALCAN** with solely aluminum wiring. Alcan makes both copper and aluminum wiring for residential purposes.

There are basically three reasons why aluminum wiring may be of concern:

- **IT HAS A TENDENCY TO OXIDIZE WHICH INCREASES THE WIRE'S RESISTANCE RESULTING IN THE WIRE OVERHEATING AT THE RECEPTACLE**
- **IT IS MORE MALLEABLE(SOFTER) THAN COPPER AND THEREFORE EASILY NICKED**
- **BECAUSE OF ITS HIGH THERMAL EXPANSION, IT HAS A TENDENCY TO CHANGE SHAPE AT THE TERMINAL SCREWS AND THUS BECOME LOOSE OR CREEP OFF**

Given its incompatibility with fittings designed for other metals in the electrical system, improper connections may cause electrical resistance which in turn may cause overheating and fire. To overcome the incompatibility, the aluminum wiring may have been "pigtailed" with copper using proper connectors, (*Marrette*-purple; *Ideal*-brown)

## **WARNING SIGNS OF UNSAFE ALUMINUM WIRING:**

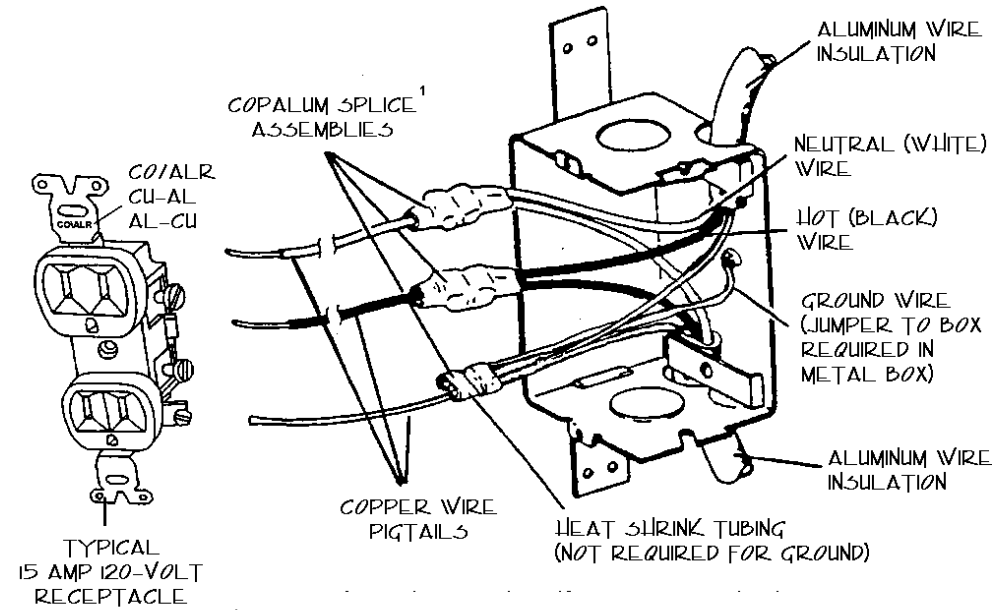
- **UNUSUALLY WARM OR WARPED OUTLETS AND SWITCH COVER PLATES**
- **SMOKE OR SPARKS COMING FROM RECEPTACLES AND SWITCHES**
- **STRANGE ODORS IN THE AREA OF RECEPTACLES AND SWITCHES**
- **UNTRACEABLE PROBLEMS WITH PLUG-IN LIGHTS AND APPLIANCES**
- **PERIODIC FLICKERING OF LIGHTS**

## **CARE TO BE TAKEN WITH ALUMINUM WIRING:**

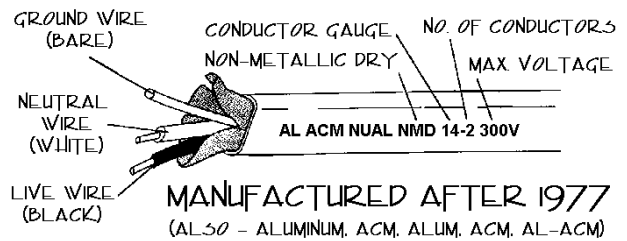
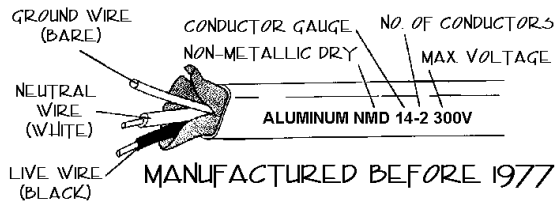
- Do not overfuse aluminum wiring. The **AWG** (American Wire Gauge) rating of **#12** aluminum wiring is equivalent to **#14** copper wiring. Both are rated for **15 amps**, so use only the **15 amp** rated glass fuse, cartridge fuse or breaker for aluminum wiring stamped either **12/2** or **12/3**.
- Copper and Aluminum should never be connected together except using special anti-oxidant paste and crimped with approved clamp connectors. If you use twist-on connectors (wire-nuts or marrettes) make sure they are approved for use with aluminum wiring.
- When purchasing replacement receptacles, switches or fixtures ensure that they are compatible for aluminum wiring. Typically, receptacles that are approved for aluminum wiring will be stamped **COALR**, **CU-AL** or **AL-CU** indicating they can be used for both copper and aluminum.
- Do not use receptacles stamped with **AL** and a line through it. These receptacles are incompatible with aluminum wiring.
- As part of your preventative maintenance plan for the home, check switches and receptacles by removing the cover plates and visually inspecting the wires for any signs of scorching, looseness, heat and/or odor.
- Aluminum wiring is not handyman-friendly. If you suspect anything unusual, have a licensed electrician work on circuits with aluminum wiring.

For further information contact your local public utilities office or a licensed electrician.

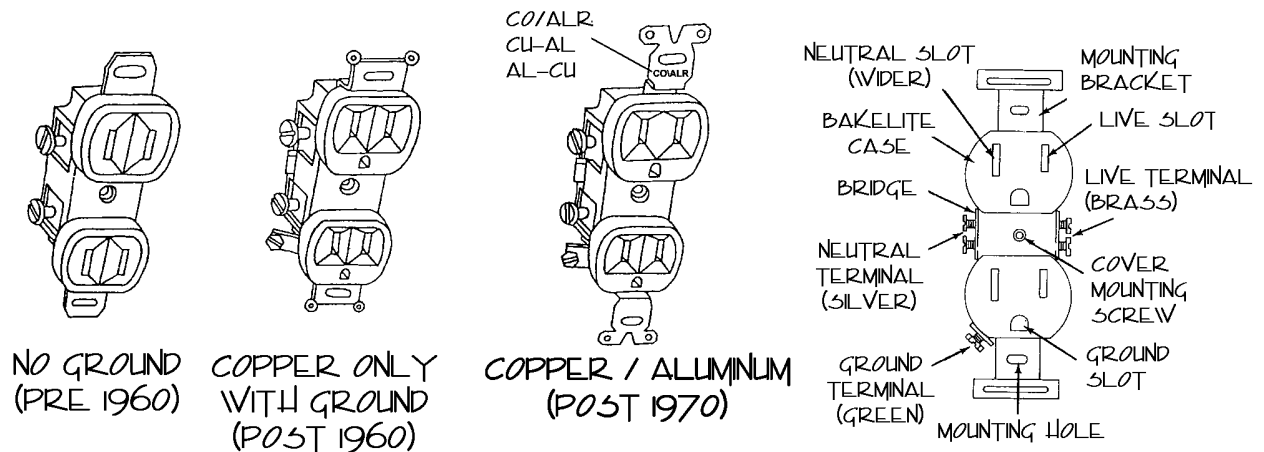
# ALUMINUM WIRING



## "PIGTAILING" ALUMINUM WIRING AND PROPER RECEPTACLE



## TWO-WIRE NONMETALLIC ALUMINUM CABLE



## TYPICAL 15 AMP / 120-VOLT RECEPTACLES