

How to Determine Flight Cable Composition

Using a magnet to determine if a cable is galvanized steel or stainless steel alloy can be unreliable as stainless steel can display magnetic properties which can make alloy discrimination difficult. The unreliability comes from variation in the amount of magnetic permeability found in the stainless steel cable and from strength differences in the magnets used. Stainless steel cables become magnetic in the process of cold working stainless steel wires into cable. The amount of magnetic permeability varies with the amount of cold working the cable was subject to. It is also possible cables in-service will become more magnetic over time as the work harden through use.

A better test is to use an ohm meter to measure the resistance in a length of cable. Stainless steel has more electrical resistance than zinc or tin coated high carbon steel, which allows us to identify cable composition by the amount of resistance in a length of cable. This test is applicable to the most common aircraft cable diameters: 1/16 through 5/32 with 7x7 or 7x19 construction. To ensure accuracy in cable resistance measurements, use the following procedure:

- You will need access to at least 3 feet of cable.
- The ohm meter and leads must be in good condition.
- Electrical isolation of the cable from the aircraft is required for an accurate resistance measurement. The cable should be removed from the aircraft or at least one end of the cable disconnected from the aircraft. Ensure the cable is not touching anything conductive between the freed end and the area of the measurement.
- For non-auto ranging multimeters, set the resistance range to the lowest scale (typically 1x) and zero the meter.
- Measure the resistance of the cable across a span of at least 3 feet. Assure that the cable is clean and you are getting good contact between the cable and the ohm meter leads.
- Do not allow your fingers to touch the metallic probes of the ohm meter leads when measuring.
- Galvanized cable and tin coated cable will register less than 1 ohm resistance while stainless steel will indicate more than 1 ohm.
- If possible, check your meter on a length of cable where the alloy is known.

If the cable is to be returned to service, reinstall and rig the cable as per the aircraft manufacturer's service manual. Install all required safety devices.

