

Tool Box Talk

Basic Electrical Terms

Special points of interest:

- Volts = the push of current through the line.
- Amp =
An amp (or ampere) is a measure of the quantity of electric current flowing through a wire.
- Watts = Wattage indicates how much energy a device produces or consumes to do work.
- Polarity = The positive and negative poles in a circuit. This is what switches in A/C



- Resistance = Reducing the currents ability to flow.

Over drawing on amps or watts can lead to injury, damaged equipment, or even death.

When talking about electricity an entirely new list of terms are used to describe characteristics of electricity. Many times the terms used and what they represent seem foreign to us at first. However, a basic look at a few of these words and what they mean will give us a clearer understanding of what we need to watch out for while working on our jobs. Such as:

A/C is alternating current, which is the type of current we have in our homes and business, which we receive through power lines. It is called “alternating” because it changes direction from negative to positive constantly as it flows. In the U.S. we utilize 60 Hz/ hertz power which means that the current goes from positive to negative to positive 60 times per second. This type of electricity is the most commonly used due to it’s ability to be modified using transformers to step up or down the voltage.

D/C is direct current which is the type of current supplied via a battery system like our cars and trucks. D/C is different from A/C in that it is “direct”, from one pole to the other, and does not change direction. This type of electricity is very “clean” but is not transformable. You will find D/C current being used by devices requiring very stable or consistent electricity like electronic devices.

The flow of electricity through a wire is similar to the flow of water through a hose or pipe. In the same way that water flowing through a hose has volume and pressure to create power to do work, so does electricity. The water in this example is electrons; the hose is a wire. The “volume”, or amount of electrons flowing, is “current” and is measured as amps. The “pressure or force” that electricity is under is measured as volts. For example, a trickle of water coming out of a hose will not get very much work done, but if you clamp your thumb to the end of the hose, you can increase the pressure and get more work done using the same amount of water.

The work that can be done by a device (watts) depends upon both the amount (amps) and pressure (volts) of the current, and is expressed as: **watts = volts x amps**.

Finally to conclude the basic terms, **resistance**. **Resistance** is the nature of an object to prevent or restrict the flow of electrons and is measured in ohms. An analogy: Drinking a shake out of a straw stir stick. There is way more resistance there than if drank from a normal straw.

The following chart shows sample amp ratings on drills and cords. The second and third line represent an extension cord with multiple receptacles. If ratings are in wattage use the formula above to help solve.

Quantity	Tool	Amp	Total amp on Cord	Cord (amp) Capacity	Safe?
1	Drill	10	10	15	Yes
2	Drills	10 ea.	20	15	No 5 amp over draw
3	Drills	8,9,12	29	15	No 14 amp over draw

Attendance Record

Company: _____

Topic: _____

Trainer: _____

Date: _____

	Signature		Signature
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2.		19.	
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Comments: