

ELECTRICAL TERMS

In house wiring we make frequent reference to the terms volts, amperes, and watts.

It is easy to understand these terms if we compare the flow of electricity through a wire to the flow of water through a pipe.

VOLTAGE

Water pressure in a pipe can be compared to electrical pressure in a conductor. Water pressure is measured by pounds per square inch. Electric pressure, or voltage, is measured in volts (V).

CURRENT

In measuring the amount of water passing through a pipe, the term gallons is used. In electricity, the number of electrons flowing, the current, is measured. The unit of measurement for current is amperes (A). Various parts of a wiring system – circuit breakers, switches, receptacles, etc. – are rated in amperes. The rating of the components in amperes indicates the greatest amount of current with which they should be used.

RESISTANCE

Resistance can be described as electrical friction or the tendency of a conductor (wire) to keep the electric current from passing through it. Electrical energy lost is given off as heat. Conductors such as copper, silver, and aluminum, offer very little resistance to the flow of electric current. Examples of poor conductors (insulators) are glass, wood, and paper. The unit measure of resistance is the ohm (O). We speak of ohms of resistance in electricity like we speak of pounds of pull required to break a certain fishing line.

OHM'S LAW

Using a formula known as Ohm's law, voltage, current, or resistance can be calculated if the other two factors are known. The formulas for Ohm's law are as follows:

$$\text{Voltage} = \text{Current} \times \text{Resistance}$$

$$\text{Current} = \text{Voltage} \div \text{Resistance}$$

$$\text{Resistance} = \text{Voltage} \div \text{Current}$$

POWER

The watt (W) is the unit of measurement power. It tells us how much electricity is being used. Watts consumed are determined by using the following formula:

$$\text{Power} = \text{Voltage} \times \text{Current}$$

or

$$\text{Watts} = \text{Volts} \times \text{Amperes}$$

One kilowatt is equal to 1000 watts. One kilowatt hour (kWh) is equal to 1000 watts used for one hour. The kilowatt hour is the unit by which electricity is metered (sold).

CIRCUIT

In an electrical circuit, a wire or path is provided for electricity to flow from the power source (such as a generator or distribution box) to the final use (such as an electric light or appliance) and back.

SWITCH

A Switch is a device for controlling the flow of current in an electric circuit by opening and closing the circuit. With the switch in the open position, there is no electrical connection between the terminals.

DIRECT CURRENT

Direct current (dc) flows only in one direction. Batteries (such as storage and dry cell) are important sources of direct current. One terminal of a battery is always positive (+) and the other is always negative (-).

ALTERNATING CURRENT

In alternating current (ac), the voltage flows first in one direction, then the other. Each two reversals of the direction of the current is called a cycle. The number of cycles per second is called the frequency. The unit measure of frequency is hertz (Hz). There is a very short interval of time between changes of direction when no current is flowing.

Most house wiring in the United States is 60 cycle (or 60 hertz). You may wonder why an electric light operated by current which changes direction of flow 60 times per second does not flicker. This is because the filament in the light bulb does not have time to cool while there is no current flowing.



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ELECTRICAL TERMS: REVIEW QUESTIONS

Please answer each of the following true or false. If false, change the statement to make it true.

1. An ohm is a unit of measurement of electrical pressure.
2. An ampere is a unit of measurement of electrical current.
3. A volt is a unit of measurement of electrical resistance.
4. Electric frequency is measured in hertz.
5. Most house wiring in the U.S. is 120 cycle.
6. Current flowing in one direction is called direct current.
7. According to Ohm's law, Voltage = Current + Resistance.
8. When a switch is in the open position, an electrical connection exists between the terminals.
9. Resistance is the tendency of a conductor to keep the electric current from passing through it.
10. Conductors such as copper, silver, and wood offer very little resistance to the flow of electric current.



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ELECTRICAL TERMS: REVIEW QUESTIONS ANSWER KEY

1. FALSE. A volt is a unit of measurement of electrical pressure.
2. TRUE.
3. FALSE. An ohm is a unit of measurement of electrical resistance.
4. TRUE.
5. FALSE. Most house wiring in the U.S. is 60 cycle.
6. TRUE.
7. FALSE. According to Ohm's law, Voltage = Current x Resistance.
8. FALSE. When a switch is in the open position, an electrical connection does not exist between the terminals.
9. TRUE.
10. FALSE. Conductors such as copper, silver, and aluminum offer very little resistance to the flow of electric current.



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