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IT'S MORE THAN AMPS AND WATTS

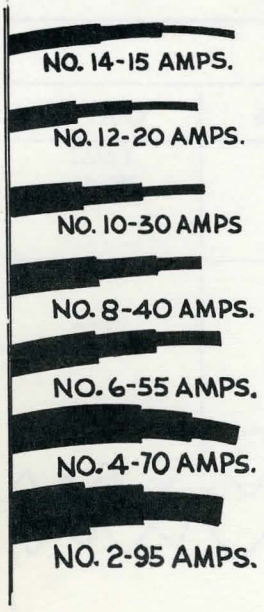
Every year we are seeing more and more electric labor-saving appliances for the home. When they are well made, installed properly, handled carefully, they give good service and are perfectly safe. But when we don't know how to handle them correctly, we can spark a lot of trouble. We are told that one in ten fires starts from the misuse of electricity.

Amperes, volts, watts and fuses are terms we all used haphazardly, but just what do they mean? They're terms we'll have to live with the rest of our lives in this inventive age, so it is a good idea to have a working knowledge of them.

An ampere measures the rate of flow of the electric current, how fast it is going. In water it's so many gallons a minute; in electricity it's so many amperes.

A volt is the measurement of the pressure, the push that keeps the electricity moving, like the pressure that keeps the flow of water going in your plumbing.

A watt is a measurement of the power you use when you turn on an electric light or a piece of household equipment that will work for you, either as heat, light or power. The number of units of power that is required is usually stamped on the appliance -- 60 watts, 1000 watts, or whatever it is. The watt is so small that the term kilowatt (KW) is used. One thousand watts are equivalent to one kilowatt; kilo means one thousand. Watts travel over wires buried behind walls and through cords to appliances, providing power to heating, lighting and motor devices. It is the total of these watts that determines (1) the size of wire required, (2) the capacity of safety devices needed, and (3) the amount of monthly utility bills.



A fuse is a "safety valve" to protect your electrical circuits from overload. Overloading a circuit is one of the commonest causes of fuses blowing. When too many appliances are operating on one circuit the wires can't take it. They heat up, and may get so hot that they set fire to the house. The amount of current it takes to do this will blow the proper size fuse. That's your signal to use less wattage on the circuit. Fuses are rated to fit certain sizes of wire. What size wire was used in your house? If you don't know, ask your electrician.

Unfortunately four out of five houses today are inadequately wired and suffer from wiring weakness known as "low housepower." A No. 14 wire will accommodate a 15 amp. fuse. Most families use enough electric power to require No. 12 (20 amp.) circuits and more. Many household appliances need the higher amperage wires and some should be on a separate circuit of their own. Electric motors require several times more electricity to start them than to operate them.

Fusestat and fusetron are special "time-delay" fuses designed to overcome a temporary overload. They are similar in appearance to the common fuse. A fusestat requires a special adapter to be screwed in a normal fuse socket. Each size fusestat has its own size adapter, making it impossible to overfuse the circuit. A fusetron does not need an adapter. For safety never use a fuse of incorrect rating in an effort to prevent blowing a fuse! If you do not know the size of your circuits, use only fuses of 15 ampere rating.

HOW DO YOU IDENTIFY INADEQUATE WIRING?

If the circuit is overloaded you'll know it soon enough (as long as the fuse is the right size). Suddenly you are plunged in darkness. It's hard to find the wall switch at the doors. The radio fades. The television picture shrinks. The toaster or other heat appliance is slow and does not reach a high enough heat. You have to move furniture to find an outlet or there are long extension cords strung around the room. Motors are sluggish and run hot. All this means you are being notified in unmistakable terms that your circuit is overloaded.

Three other symptoms of inadequate wiring, just as serious although less obvious, are an "octopus" of plugs at the outlet, only two wires coming into the house from the power pole, and only four or less fuses in the circuit box.

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If a fuse blows, correct the cause first if you can. Then replace the fuse or reset the circuit breaker. Be sure to use only one hand and do not stand in a puddle or on a damp floor when working with the circuit box. If the fuses continue to blow after you have replaced them with new ones, you had better call an electrician to get at the root of the trouble.

COUNT YOUR AMPS AND WATTS

Many electrical appliances are inefficient because they are being starved of the current they need. It is easy to know when your electric wiring is adequate for the service you demand of it. Just count your amps and watts and compare the total demand to the capacity of the circuit.

MAXIMUM LOAD FOR ELECTRICAL WIRES

Wire Size	Amperage	Recommended for:
No. 14 Gauge	15 amperes	Lighting only.
No. 12 Gauge	20 amperes	Appliance and power circuits.
No. 10 Gauge	30 amperes)	(Individual circuits 120/240
No. 8 Gauge	40 amperes)	(volt for ranges, dryers, etc.
No. 6 Gauge	55 amperes)	

You will find somewhere on each piece of equipment the number of watts of electric current it uses. Example below shows how to chart each circuit in your house:

ESTIMATE OF ELECTRICITY BEING USED

Col. 1	Col. 2	Col. 3	Col. 4	Col. 5	Col. 6	Col. 7
Circuits	Correct Fuse Rating	Circuit Capacity	Rooms on Circuit	Appliances and Lights Used on Circuit	Watts for Each Use	Total Watts
No. 1 Wire Size No. 12	20 Amps.	2400 Watts	Living Room	Lamps and Lights, Television, Radio, Vacuum cleaner	700 300 100 500	1600

TOTAL CAPACITY OF CIRCUITS . . . . . _____ WATTS

TOTAL WATTAGE FOR ALL USES . . . . _____ WATTS

When you add up the wattages of the appliances and lights you now have (Col. 7), the total may surprise you. How does this compare with the wattage capacity shown in Col. 3? And, don't forget new appliances are sure to come along. Obviously you are not going to have all these appliances and lights in operation simultaneously. Your capacity does not need to be as high as the total wattage owned. National Electrical Code suggest that capacity should be approximately 75% of wattage on all appliances owned. Of course there could be some variation in this according to types of equipment you are using. The answer you obtain in Col. 7 is probably the maximum electricity that you can "demand" at one time. Most homes today need a 3-wire, 100-ampere, 24,000 watt service. What's yours?

This leaflet prepared by Mrs. Clara N. Leopold, State Extension Specialist, Home Management & Equipment, Extension Service, University of Nebraska, College of Agriculture, Lincoln 3, Nebraska.