

Will This Work On Your Six Volt.

By Bill Wurzell, Editor

John Shenton, Jr., first explained this concept to me about two years ago. John related that he tried this application on his 1949 Chrysler Windsor sedan shortly after the restoration was pretty much completed and the car was on the road. John says his Chrysler runs and idles much better since doing the polarity change.

In my effort to gain permission to use this article from Dodge Brothers News December/January 2012, I contacted an officer of the Dodge Brothers Club News and was given the telephone number of the author, Thomas Turner. I subsequently called Mr. Turner and discussed the polarity change concept; he also granted permission to excerpt his article.

The following explanation is very technical and unless one has a firm grasp on automotive electrical issues and the physics behind such, it will probably be difficult to comprehend. Furthermore, this theory is applied to antique vehicles with six volt, positive ground systems. No mention is made as to how or if it should be applied to more modern twelve volt vehicles. However, with expensive, sensitive computer controlled vehicles of today, it absolutely is not recommended. Leave electronic issues to the dealer and an OBD II scanner.

The results of a test made on a 1928 Packard's dual ignition System have been misinterpreted. The Packard owner states that when he connected its coils with their (plus) terminals to the negative side of the battery, ignition output voltage to the spark plugs nearly doubled. The voltage required to fire a spark plug and successfully ignite or kindle the charge in a cylinder is proportional to the compression pressure in the cylinder. At idle speed with the throttle nearly closed and manifold vacuum high, compression pressure in the cylinder is low, so a 'weak' spark of 5 KV or so will suffice to ignite the charge. On the other hand, when accelerating at high speed with wide open throttle, compression pressure in at 5:1 compression ratio, engine can reach 60 psig where a 15 KV spark may be necessary for reliable ignition of the fuel charge.

When the breaker points open, high voltage energy is released from the coil secondary to be distributed to a spark plug. The center electrode of the plug is at a higher temperature than the base or ground electrode that is surrounded by the water jacket. Similar to electron emission from the hot cathode filament of a thermionic vacuum tube, the hot center electrode of a spark plug should be negative so the high voltage will not have to 'fight' the negative electrons emitted from it.

Modern ignition coils, designed for high

The excerpt below is from *Old Car Garage*, December/January edition, referenced in this article.

The best way to determine if a coil is correctly connected is to measure the high-tension voltage. I have dual modern coils in my 1928 Packard, which is a six-volt system with a positive ground, and I originally hooked up the coils the way I thought they should be (negative to the ignition, and positive to the points).

Using a high-tension voltage tester, I found that the output was 10,000 to 12,000 volts. I then switched the COIL connections and wired the positive terminals to the ignition and negative terminals to the points.

The voltage soared 20,000 to 24,000 volts--a 100 percent increase! "Two friends made the same test on different cars and both had the same results." Frank Wemple Mansfield Center, Connecticut

compression engines, are polarity marked to ensure that they will be connected so as to produce a negative going spark. Old style coils, such as North East Electric, used on the four cylinder Dodge Brothers automobiles, typically were not polarity marked. In these low speed, 4:1 compression engines, the coil has sufficient spark margin (difference between the coil's output voltage and the minimum voltage required to fire the plug) the spark polarity was largely immaterial.

Quoting from Allen Electric and Equipment Company's 'Modern Engine Tune Up' circa 1947. The efficiency of a coil's output can be impaired by connecting the coil in the primary circuit in the reverse polarity. If the positive post of the battery is grounded, the positive terminal (marked plus) should be connected to the distributor primary terminal.

The reason the spark voltage doubled when the venerable old Packard's coils were connect-

ed in reverse polarity is because of increased resistance through the spark plug when voltage polarity was contrary to the hot center electrode. The increased resistance 'seen' by the coil's secondary voltage caused the voltage to rise to a high value to overcome this resistance and fire the plug. But what of the spark current?

The heating or kindling power of the spark comes from current. The increased spark plug resistance and the increased coil output voltage to overcome, it means lower output current. Much of the coil's energy had gone to voltage at the expense of current.

The 1928 line of Dodge Brothers, Inc., six-cylinder motor cars have compression ratios of 5 to 1. It is possible that the 1928 Packard also is 5 to 1. But perhaps Packard had not yet taken the leap to higher compression with the advent of higher octane 'ethyl' gasoline. In any event, sufficient spark margin existed even with the reversed polarity to allow the engine to start

Tom Dawson Provides An Excellent

By Tom Dawson, Secretary

Chesapeake Region Secretary, Tom Dawson, is a veteran 'old car guy'. Over the years, he has become very proficient in the operation of many hand and power tools. Tom has also developed a keen sense of how each tool should be described, especially if it has a 'secondary' usage. Tom advises to always keep a first aid kit in easy reach of all tools.

DRILL PRESS: A tall upright machine useful for suddenly snatching flat metal bar stock out of your hands so that it smacks you in the chest and flings your beer across the room, denting the freshly-painted project which you had carefully set in the corner where nothing could get to it.

WIRE WHEEL: Cleans paint off bolts and

then throws them somewhere under the workbench with the speed of light. Also removes fingerprints and hard-earned calluses from fingers in about the time it takes you to say, 'oh, #%*!'

SKIL SAW: A portable cutting tool used to make studs to short.

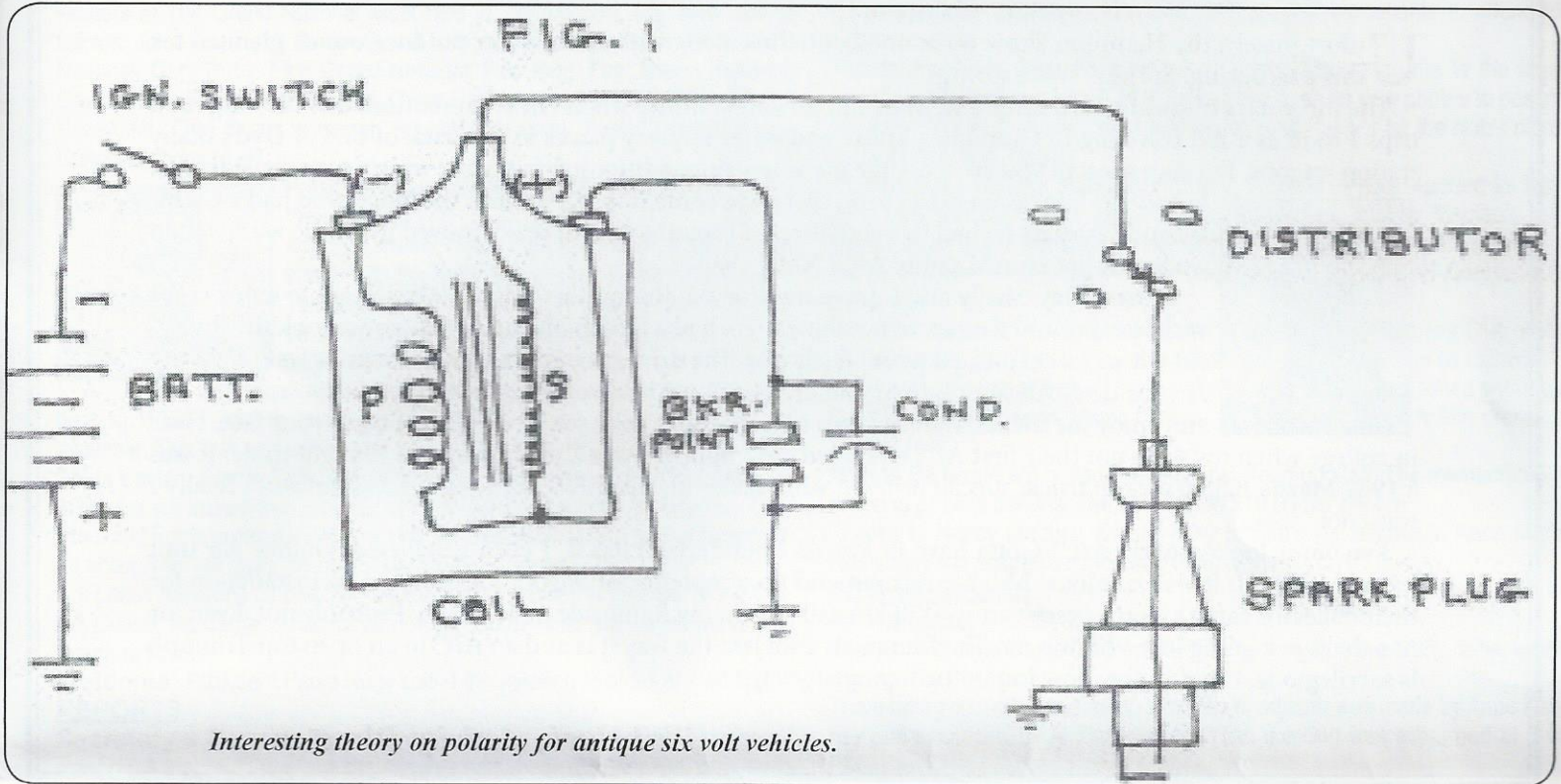
PLIERS: Used to round off bolt heads. Sometimes used in the creation of blood-blisters.

BELT SANDER: An electric sanding tool commonly used to convert minor touch-up jobs into major refinishing projects.

PRY BAR: A tool used to crumple the metal surrounding that clip or bracket you needed to remove in order to replace a 50 cent part.

HACKSAW: One of a family of cutting tools built on the Ouija board principle. It trans-

Positive Ground Vehicle?



and run. But, why not make things current? I'd certainly love to take the gallant old Packard on a drive up Four Fields Hill near Decatur, Michigan. Put her up to 35 mph, and then in mid hill, open the throttle. I bet the car would begin to miss-fire.

Clarification...

The above illustration shows a typical Kettering single-spark ignition circuit. Note that one end of the coil's secondary is connected internally to its primary. Note also that the positive battery terminal is grounded. All Dodge

Brothers vehicles since mid 1922 (when a change was made to a two-terminal horn with button on the steering wheel) have the positive battery terminal grounded. Corrosion tends to form on the positive terminal and if the negative were grounded, a corrosion bridge would form from the positive terminal to the chassis and slowly discharge the battery.

Quoting from 'Automotive Essentials' by Ray F. Kuns, Bruce Publishing, Milwaukee, 1958, page, 214, "in some instances, one end of the secondary winding is connected to one

end of the primary, but that is for convenience in grounding the secondary at one end."

Quoting again from 'Modern Engine Tune-Up.' "In early types of coils, one end of the secondary was grounded to the case of the ignition coil. The present construction has one secondary wire connected to a primary terminal. This is merely to assure a better ground connection through the primary wiring to the frame of the car."--Tom Turner, *Watervliet, Michigan* (reprinted here with permission from the author).

And Hilarious Description Of Hand And Power Tools

forms human energy into a crooked, unpredictable motion, and the more you attempt to influence its course, the more dismal your future becomes.

WISE-GRIPS: Generally used after pliers to completely round off bolt heads. If nothing else is available, they can also be used to transfer intense welding heat to the palm of your hand.

OXYACETYLENE TORCH: Used almost entirely for lighting various flammable objects in your shop on fire. Also handy for igniting the grease inside the wheel hub out of which you want to remove a bearing.

TABLE SAW: A large stationary power tool commonly used to launch wood projectiles for testing wall and sheet-rock integrity.

HYDRAULIC FLOOR JACK: Used for lowering an automobile to the ground after you have installed your new brake shoes, trapping the jack handle firmly under the bumper.

BAND SAW: A large stationary power saw primarily used by most shops to cut good aluminum sheet into smaller pieces that more easily fit into the trash can after you cut on the inside of the line instead of the outside edge.

PHILLIPS SCREWDRIVER: (No, this is not Vodka, orange juice and Phillips Milk of Magnesia!) Normally used to stab the vacuum seals under lids or for opening old-style paper-and-tin oil cans and splashing oil on your shirt; but can also be used, as the name implies, to round out Phillip screw heads.

TWO-TON ENGINE HOIST: A tool for test-

ing the maximum tensile strength of everything you forgot to disconnect.

SLOTTED SCREWDRIVER: A tool for opening paint cans. Sometimes used to convert common slotted screws into non-removable screws and butchering your palms.

HOSE CUTTER: A tool used to make hoses too short. (Not to be confused with a **PIPE-CUTTER:** which is used for making pipes too short.)

HAMMER: Originally employed as a weapon of war, the hammer nowadays is used as a kind of divining rod to locate the most expensive parts adjacent the object we are trying to hit. It is especially valuable at being able to find the EXACT location of the thumb or index finger

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