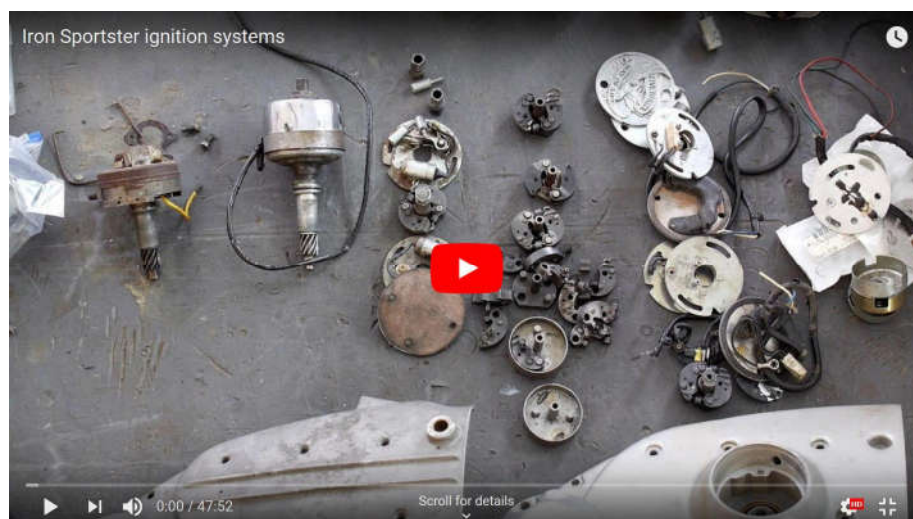


# Iron Sportster ignition systems

**An overview of ignitions from the 1952 K-model to the 1985 Ironhead.**

## The tips and tricks:

1. **1952 to 1964 use 6V coils.**
2. **There are 6V and 12V coils that look identical.**
3. **The mechanical advance in 1971-1979 bikes wear and break.**
4. **The 1979 electronic setup needs resistor wires and plugs.**
5. **1980-1985 put electronics in a module under the seat.**
6. **1983-85 use VOES vacuum switch.**
7. **Aftermarket in-cone modules can be single- or dual-fire.**
8. **Single-fire setups needs two coils.**
9. **A stock ignition works just fine in most every Sportster.**



Here is an overview of the ignition systems used in K-models and Sportsters. (Click for video.)

A stock ignition setup works fine, certainly for any stock bike. The mechanical points worked great from 1952 to 1970. Then they put the points sideways in the cone motor from 1970 to 1978. The flyweights loosen and bang into the points plate. This breaks the mounting bolt and kills your bike. If you check this often, even a cone points ignition works fine.

If you want to get rid of the weights, you can convert any cone motor to the late-1980s factory setup, either with a VOES switch or without. This might not work with kick-starter bikes though. This puts the electronics module under the seat and extends reliability. Aftermarket electronic setups are inside the cone, and they might not work in a kickstart bike, be sure to research things carefully. I have gotten aftermarket in-cone modules working fine, but I burned a piston once because I did not time the ignition.



This type of cam cover is used from 1952 to 1970.



From 1952 to 1964 the engine had a cable-adjusted advance circuit breaker.



In 1965 the cable advance was replaced with a circuit breaker with automatic advance weights in the base. It seals with a O-ring to cam cover. This unit has the optional tachometer drive on the cover.



This "cone motor" cover started in 1971 for both Sportsters and big bikes.



The same flyweights now mount sideways which causes problems.



In 1979 only, Harley used an electronic ignition but kept the troublesome advance weights. Having electronics in the hot cone means less reliability, but even less reliable is the mechanical advance.





In 1980 the factory put a sensor only inside the cone, and a module on the frame under the seat area.



There are several aftermarket ignitions that put the module inside the cone. Some will not work on kick-started bikes.



Here are three advance weight sets that have gone bad. The left one is aftermarket with little washers at the pivots. The right one has wear on the tips by the springs where it has hit the points plate. This will break the 1/4-28 bolt that holds the advance setup to the camshaft. There are needle-bearing aftermarket units, and the factory lists a teflon-coated shaft and plate part number 32629-80, over \$100 eBay.



A bad weight set with the pivot egged-out so the weight lifts up.



This is how bad the weights can get, twisting so much that they hit the plate.



The top-left plate has had the advance weights hit. There are deep grooves worn in that plate, compared to the other three plates. The constant impact will eventually break the 1/4-28 bolt, shearing it off right at the camshaft. Use anti-sieze on the bolt so you can work out the broken piece with a scratch awl. No Loctite, ever.



A close-up of the plate shows how badly the advance weights have worn it. The plate might still work, but you have to replace the advance weights, or maybe just replace the whole setup. I have not tried the aftermarket needle-bearing unit.



I designed a plate and cup so that the weights would not twist when flung outwards. It used the pivot pins from the old plate, and I drove the roll pin out of the weights. It was a total failure, the weights would bounce off the hard steel cup and the bike would run terrible the second it came off idle.

The most reliable electronic setup is like the factory does, no surprise. They put only a Hall-effect magnetic sensor down inside the hot vibrating cone.



Left coils are factory 1965 and later 12V coils. They also make a 6V coil in this shape. Early coils were large vertical units. Top right is a Crane aftermarket the bottom right is a Dyna aftermarket, the orange is a mystey aftermarket. RH top and bottom are 12V factory, middle bottom is 12V 1985 and later.

31609-52 are 6V coils used 1952 ~ 1958.  
31609-52A are 6V improved 1958-64.  
31609-52B are 6V retrofit with new shape.  
31609-65 are 12V like LH above.  
31609-65A are improved retrofit ~ 1978.  
31609-80 like LH above, 1980-1984.  
31614-83 like middle bottom, 1985-1999.  
There are aftermarket setups where you use two coils, one for each spark plug. This needs a "single fire" module. Or you can use the above dual-fire coils in dual-plug bikes, with one coil running the two spark plugs in each cylinder.

Many aftermarket coils brag about having lower resistance, 2 ohms or less. A factory 12V coil is 5.8 ohms. It works fine in dual-fire mode for any RPM a stock Sportster can achieve. Lower resistance coils are harder on the battery and will drag down the generator voltage at idle.

For simplicity, a stock coil and mechanical advance works, but check those advance weights. For electric start only, a 1983 factory setup (or aftermarket) with VOES switch is best. The factory module may not work with kickstart bikes.