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The key mounted to the magneto locks or unlocks the ground to the system. <sup>7)</sup>

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When locked, the spark is sent to ground and the bike shuts off. <sup>8)</sup>

When unlocked, the spark is sent to the mag (removes the ground) and the bike will operate.

# IH: Engine Control - Sub-01B

Lights were operated by a toggle on the visor, no other key needed.

Or, no key needed as long as the mag is in the unlocked position.

## Magneto Ignition System

Keys for mag have to be made (don't break) i.e. stuck or worse sending there little metal bits into the mag. <sup>9)</sup>

However, some run fine with the key.

Keys can be made/replaced (using the number on the lock) in the case of a broken one. <sup>10)</sup>

The magneto produces a high voltage discharge to the spark plug which is timed to each cylinder's compression stroke.

## Solid Mount Magneto

It also eliminated the need for a battery for ignition. <sup>3)</sup> as you can kick start or bump start the bike at about 2-1/2 MPH or less. <sup>4)</sup>

Fairbanks-Morse Magneto (keyed) <sup>11)</sup>



circuit  
before TDC  
the magneto  
breaks the  
timing only.  
retard.

Fairbanks-Morse Magneto <sup>12)</sup>

Magneto on a 72 XLCH <sup>13)</sup>



Magneto on a 77 XLCH <sup>14)</sup>



## Adjustable Mount Magneto

AKA Retard Mag (Timing is mechanically advanced)

It's almost like a VOES switch for your mag! <sup>15)</sup>

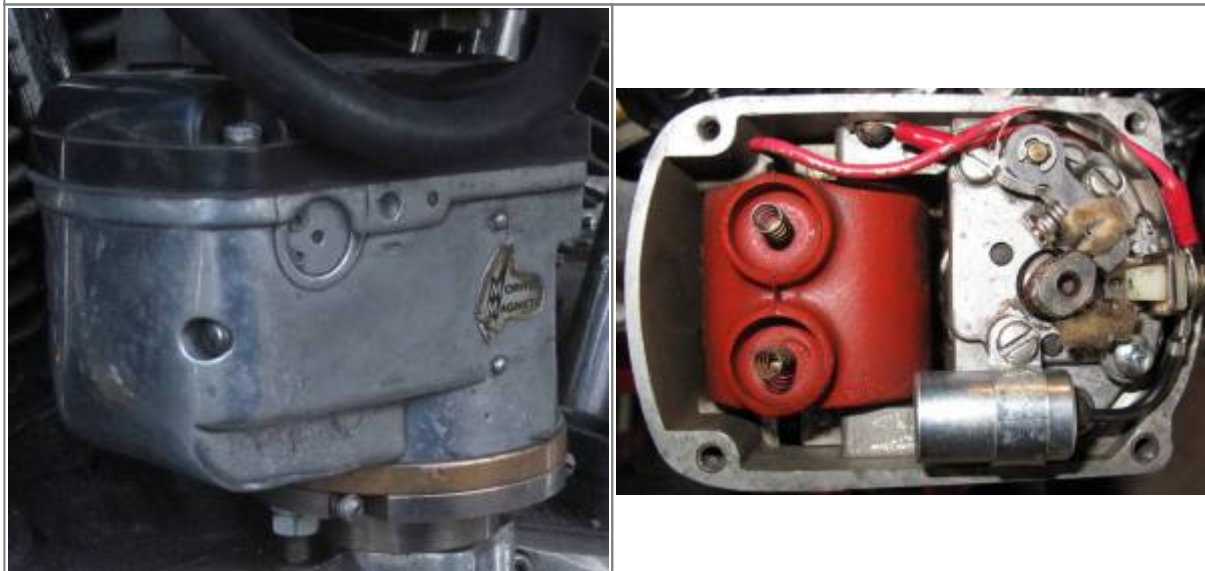
The Morris Auto Advance, uses a small spring under the mag base. <sup>16)</sup>

The MM3 uses a bronze ring and a steel base. <sup>17)</sup>

The MM2 uses a steel ring and a bronze base.

Tighten up the nuts to create a slight drag, retard the spark for starting and the vibration + the spring will advance the unit.

Morris Magneto (MM3) <sup>18)</sup>



Keyed magneto on a 69 XLCH <sup>19)</sup>



## Timing Advance Spring

The spring used is not a heavy one.

You can use a spring similar the old carb return springs on autos. <sup>20)</sup>

Or a simple coil hook spring: <sup>21)</sup>

Hooked it to the bolt on the tappet block and the spring hooked to the indent for the coil bolts.  
Unhook, retard, start, hook it back up.

Makeshift Advance Spring <sup>22)</sup>



## Timing Advance Cable

You can also attach a choke cable to the primary to control the advance. <sup>23)</sup>

Or, a twist lock cable setup:

Do a search for push-pull controls and look for a locking one.  
The L-bracket on the case can be fabricated to mount the T-handle cable lock.  
The arm on the magneto, at the cable connect, is possibly available through a vintage parts supplier or used.  
The cable is held by a pivot and a set screw. <sup>24)</sup>



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