

RX-7 first gen distributor tests
at RX for your 7
October 12, 2016

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E. Avilés

RX-7 first gen distributor testing

Key observations:

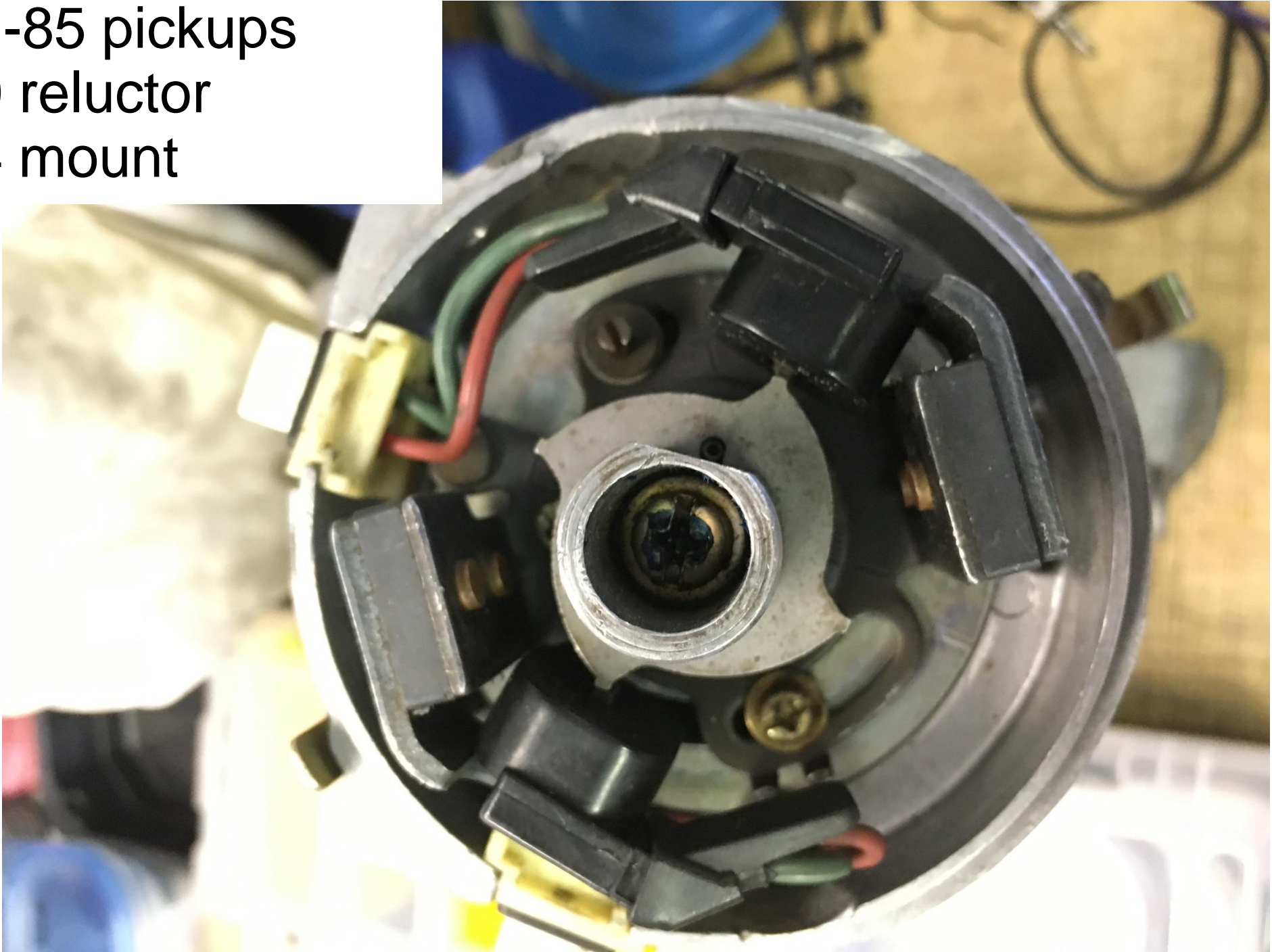
1. MSD recommends using Mazda OEM ignitors to trigger their units. This gives a nice square trigger pulse. When doing this:
 - a) Use MSD red to ignitor +
 - b) MSD white to ignitor -

2. When using Mazda magnetic pickups to trigger MSD boxes, need to use MSD polarity which is the reverse of Mazda factory polarity, thus:
 - a) MSD purple connects to Mazda green lead from pickup
 - b) MSG green connects to Mazda red lead from pickup

3. When using an oscilloscope to observe signals, check:
 - a) for electrical noise in test setup – on power supply to ignitors and on power supply to laptop/oscilloscope
 - b) Make sure the scope sampling rate is fast enough, need 5 millisec per division or faster

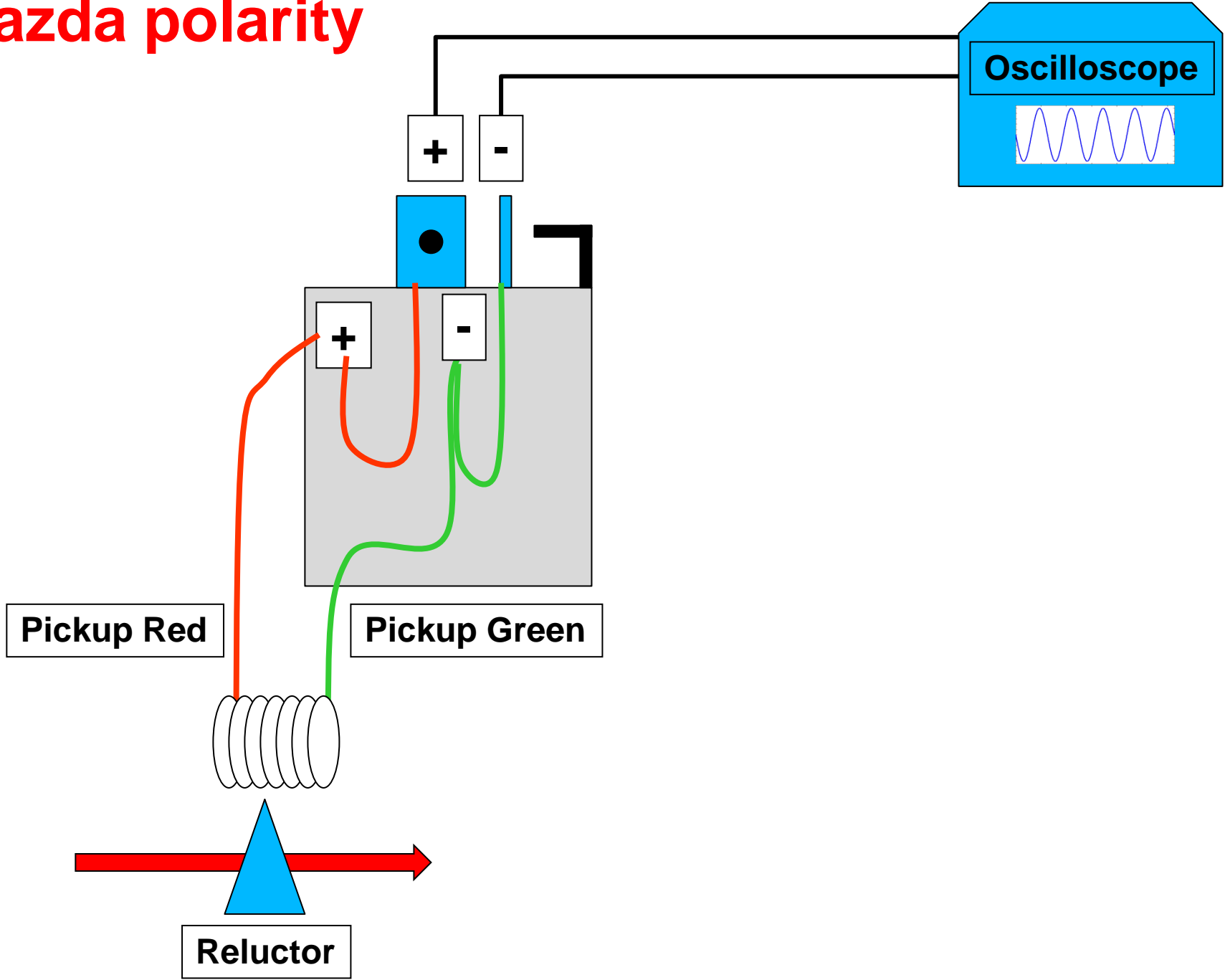
Test results

Hybrid distributor
81-85 pickups
80 reluctor
74 mount

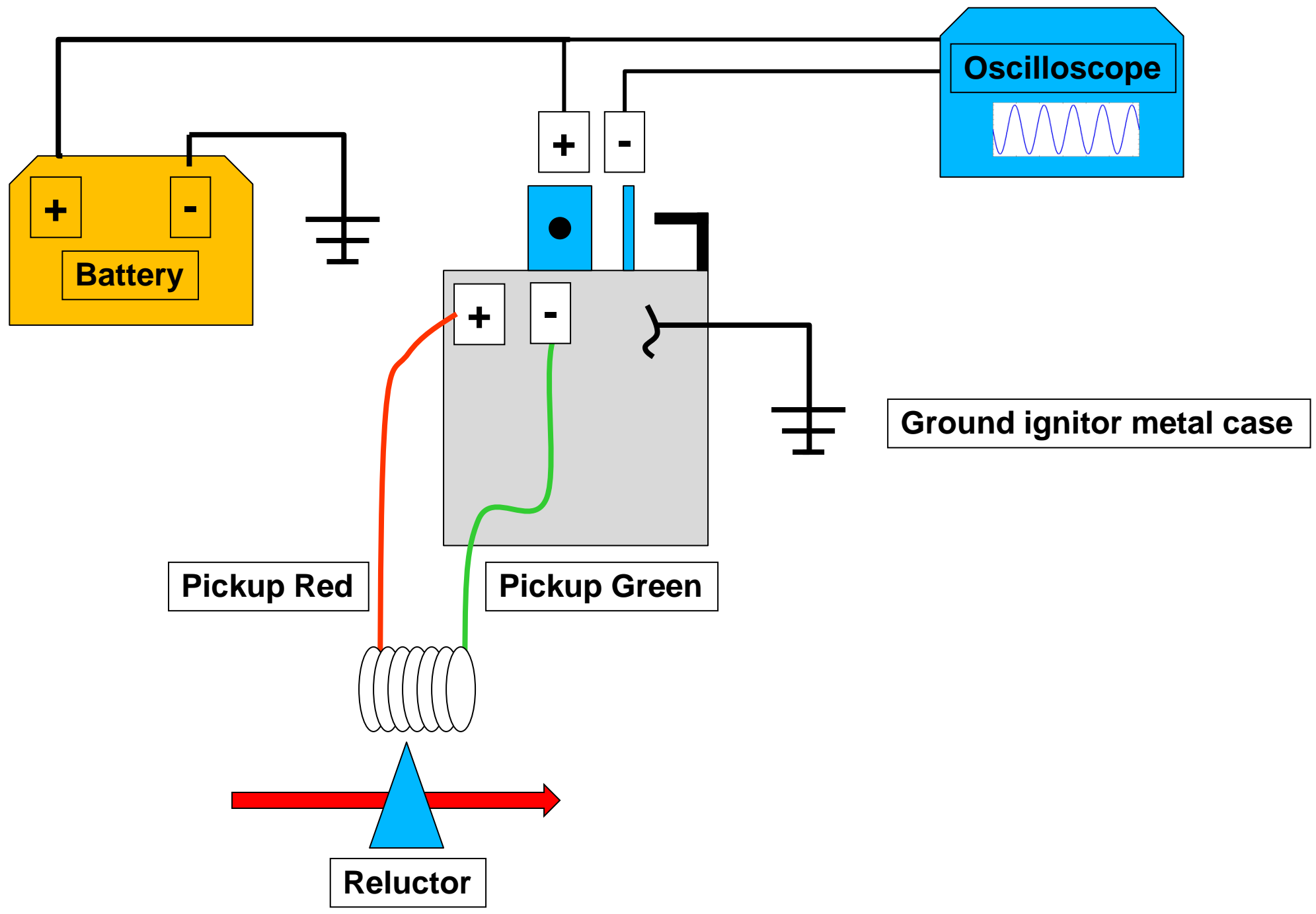


Direct connect (hollow ignitor) Test Circuit

Mazda polarity

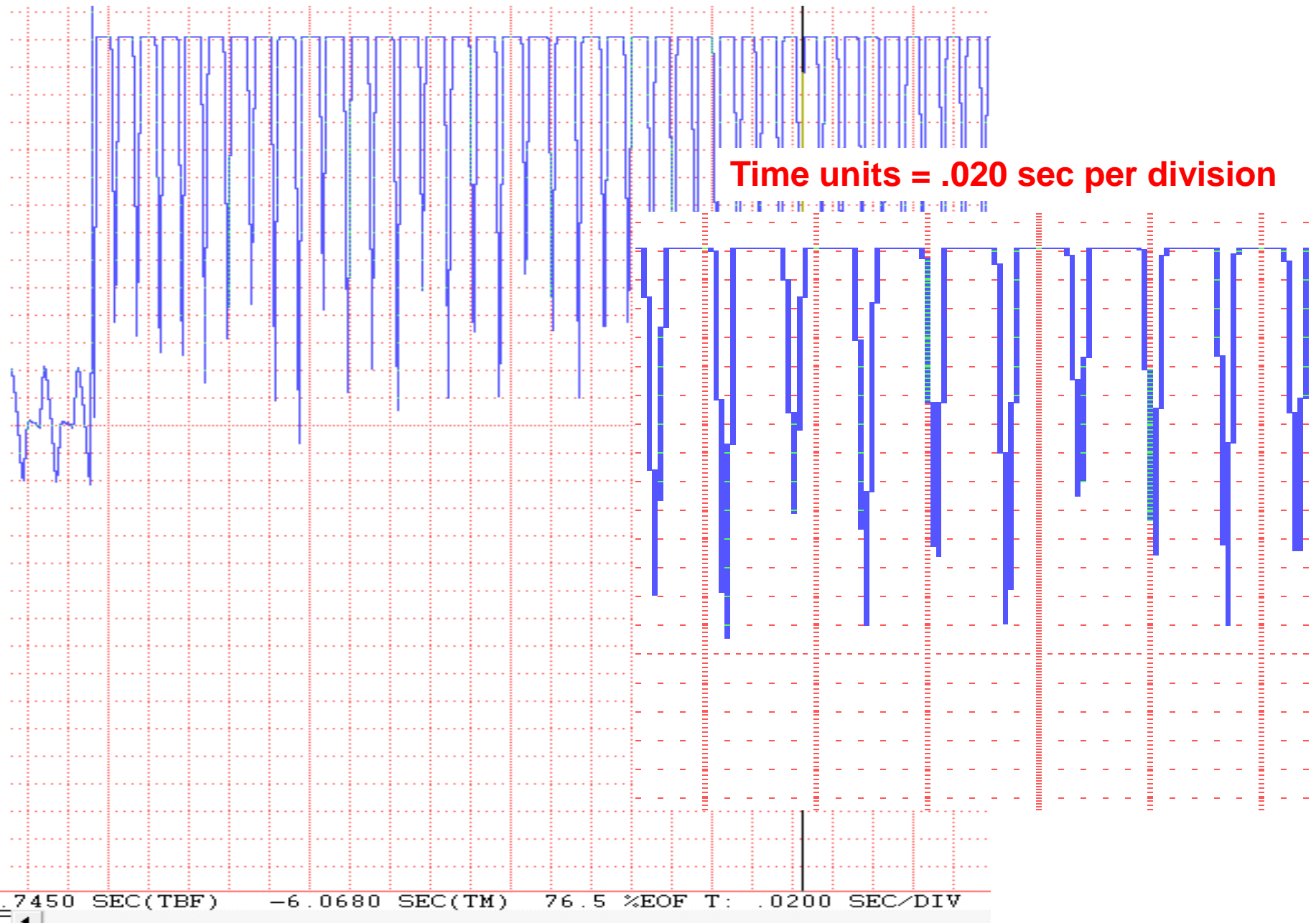


Mazda ignitor test circuit for use with oscilloscope



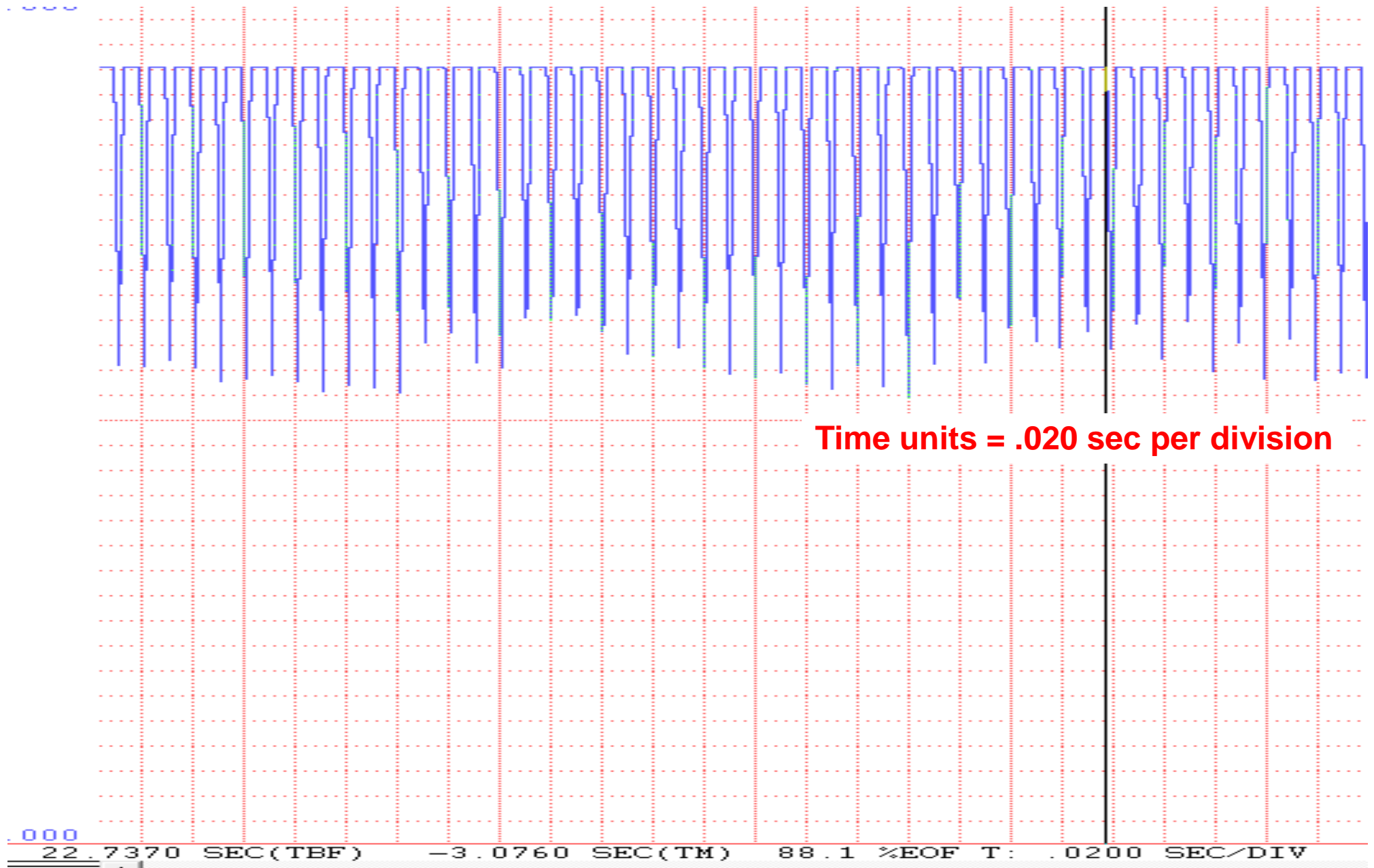
File 1 Run 2 – Hybrid distrib with **ignitor 1** on **leading** pickup

- note noise before start of run – due to laptop power supply
- also need faster sampling on oscilloscope – variability could be due to sampling error

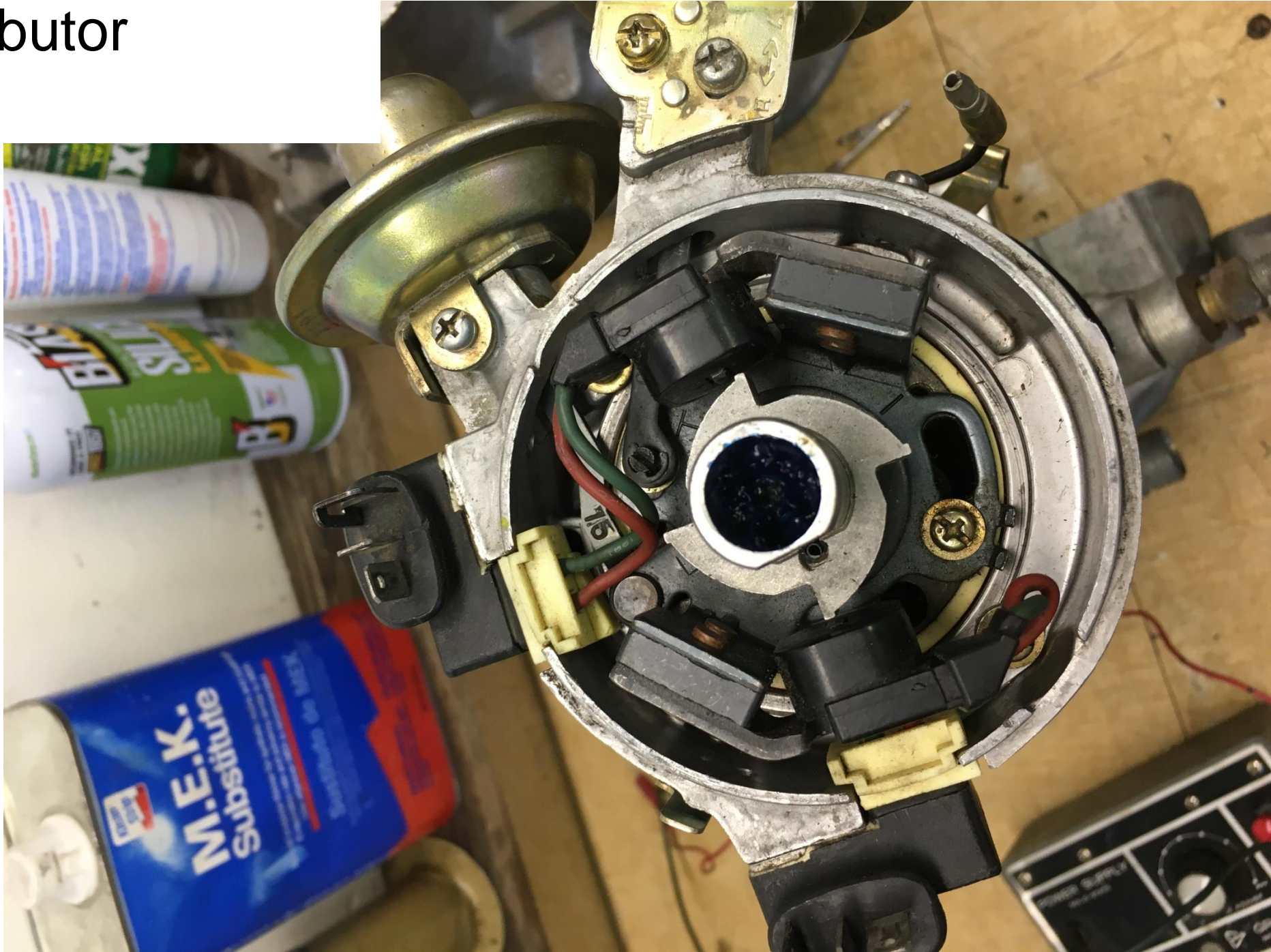


File 1 Run 3 – Hybrid distrib with **ignitor 2** on **leading** pickup

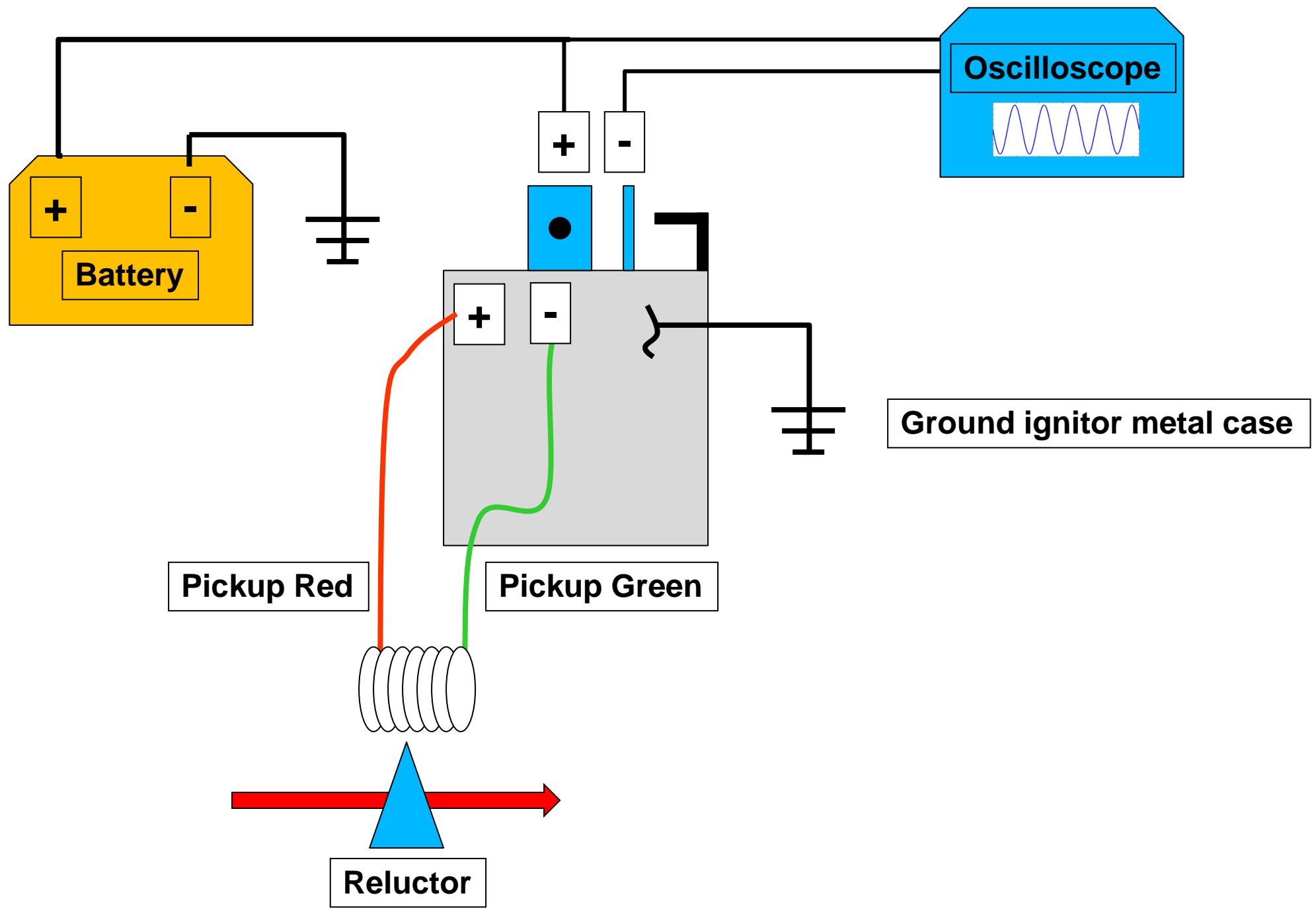
- note noise before start of run – due to laptop power supply
- also need faster sampling on oscilloscope – variability could be due to sampling error



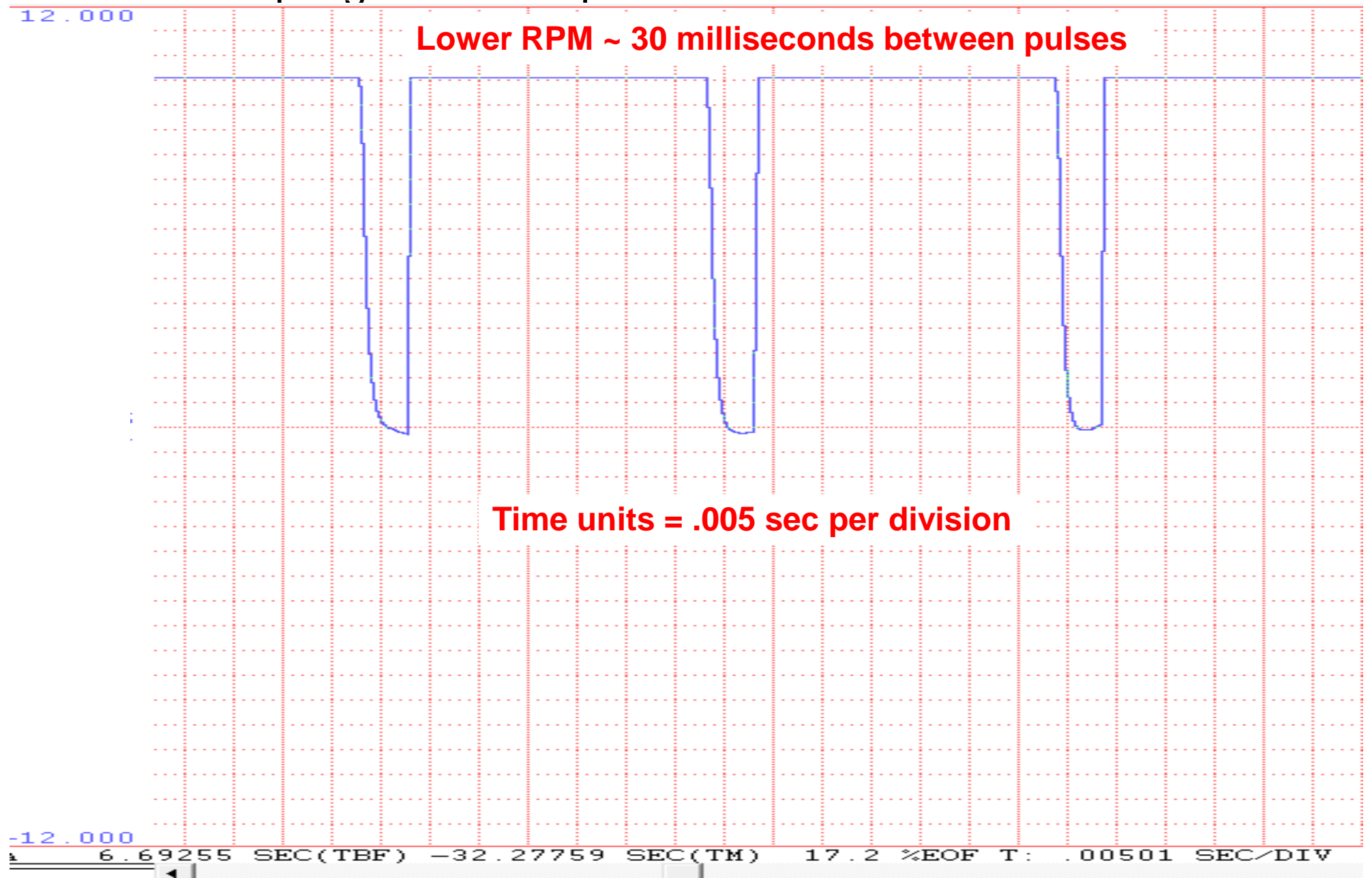
Stock 81-85 distributor



Mazda ignitor test circuit for use with oscilloscope



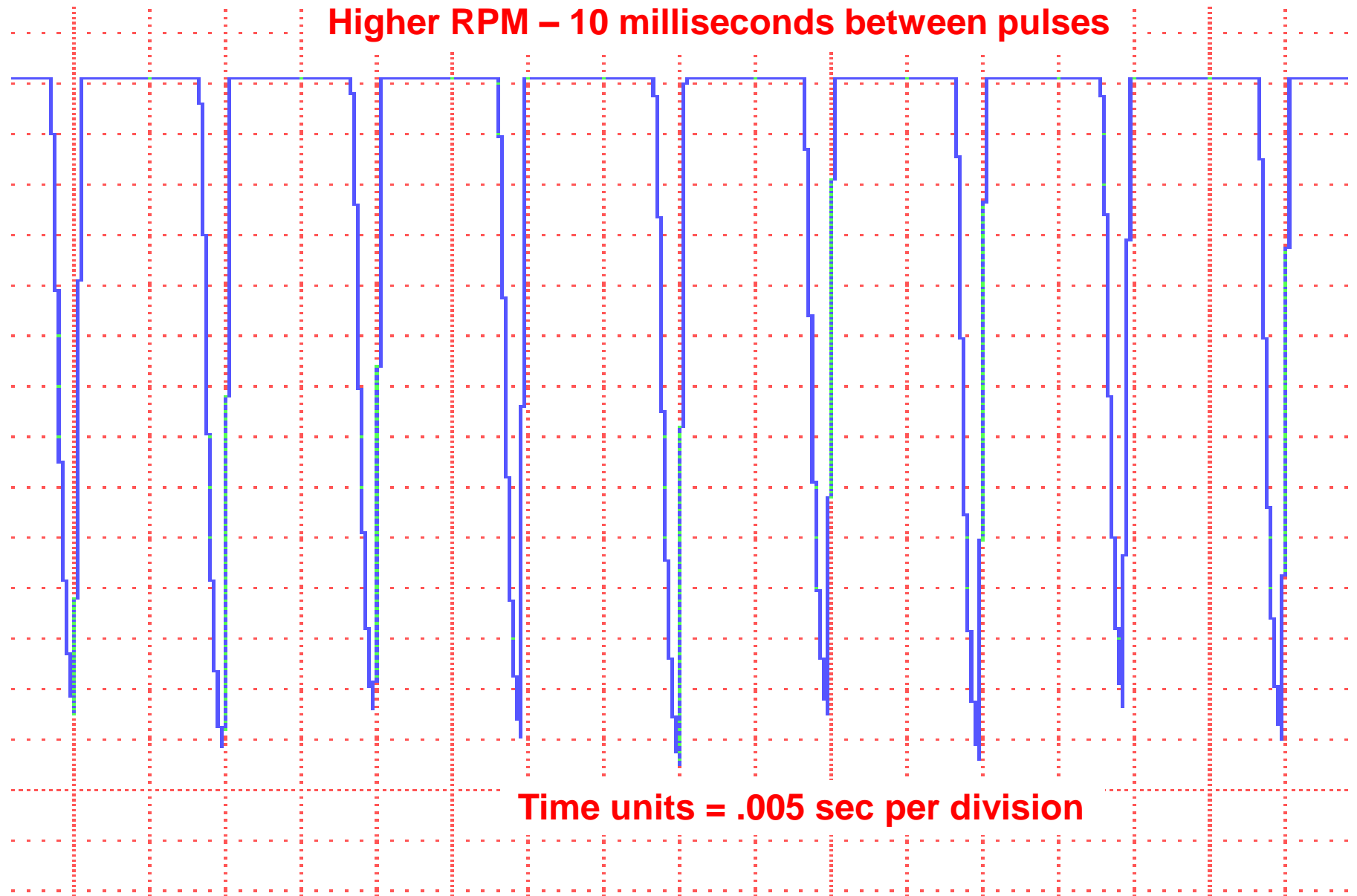
File 2 Run 1 – Stock distrib with **ignitor 2** on **leading** pickup
- running on laptop battery only for reduced noise
- increased sampling to 5 msec per division – much better



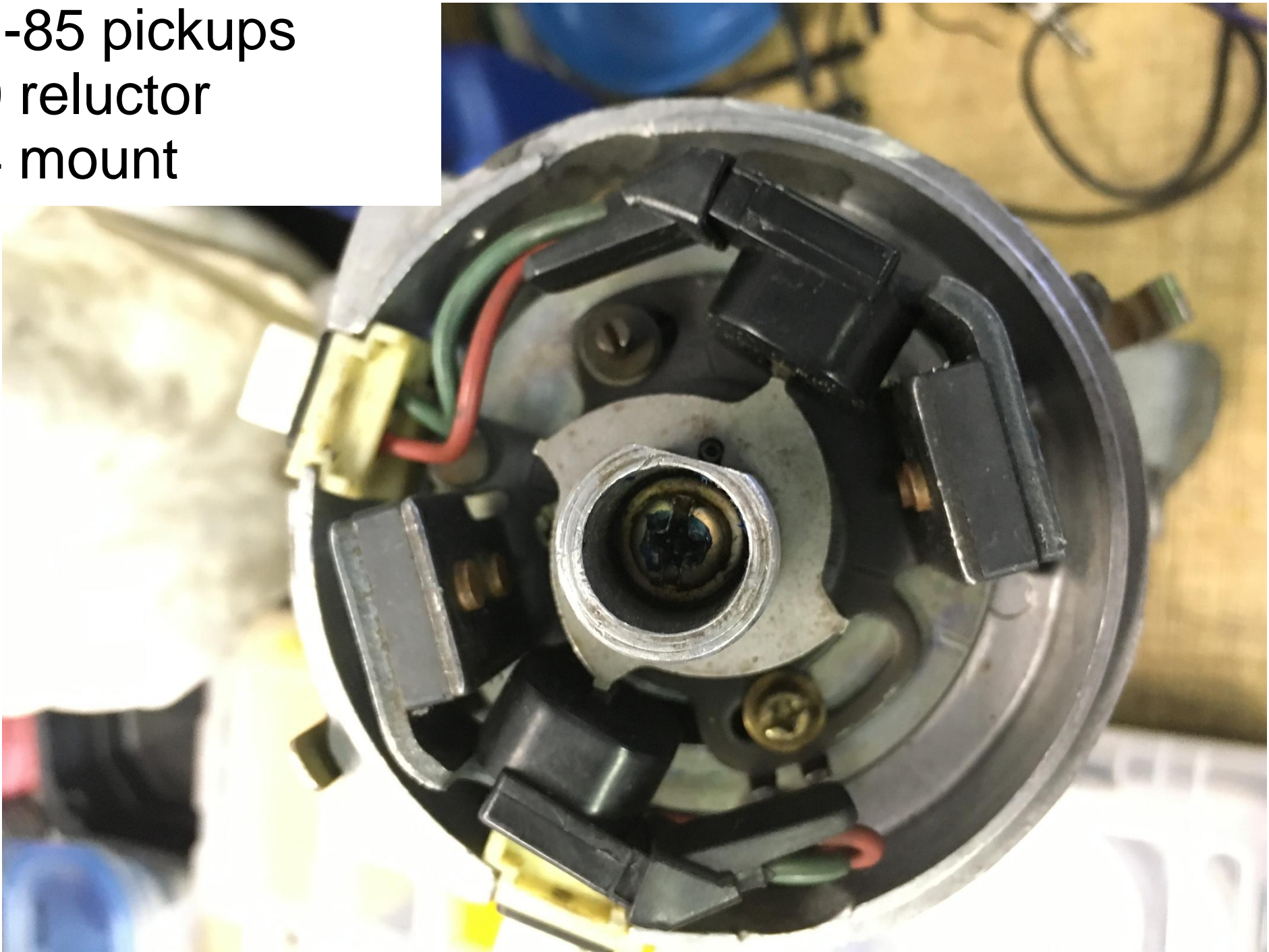
File 2 Run 1 – Stock distrib with **ignitor 2** on **leading** pickup

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- increased sampling to 5 msec per division – much better

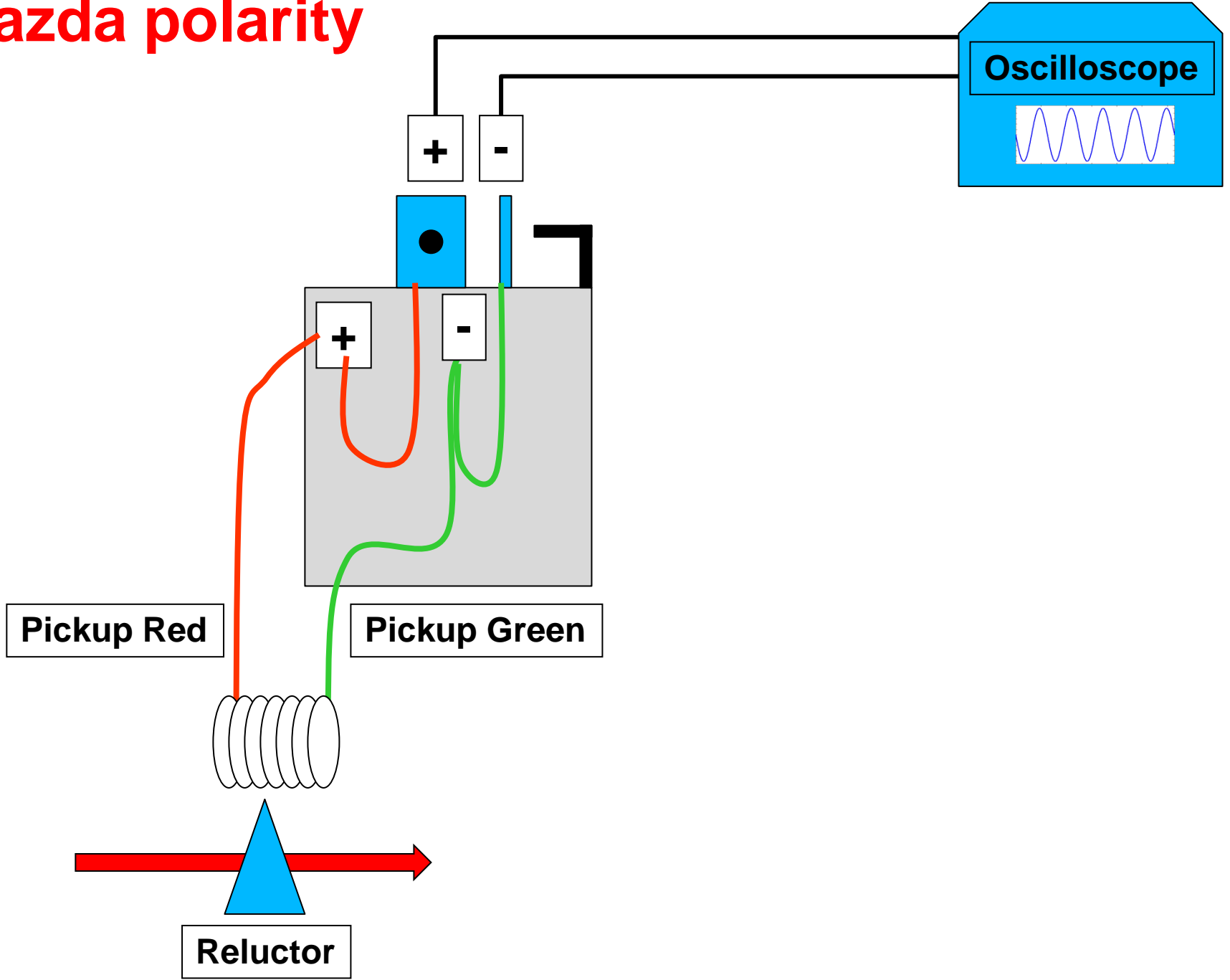


Hybrid distributor
81-85 pickups
80 reluctor
74 mount



Direct connect (hollow ignitor) Test Circuit

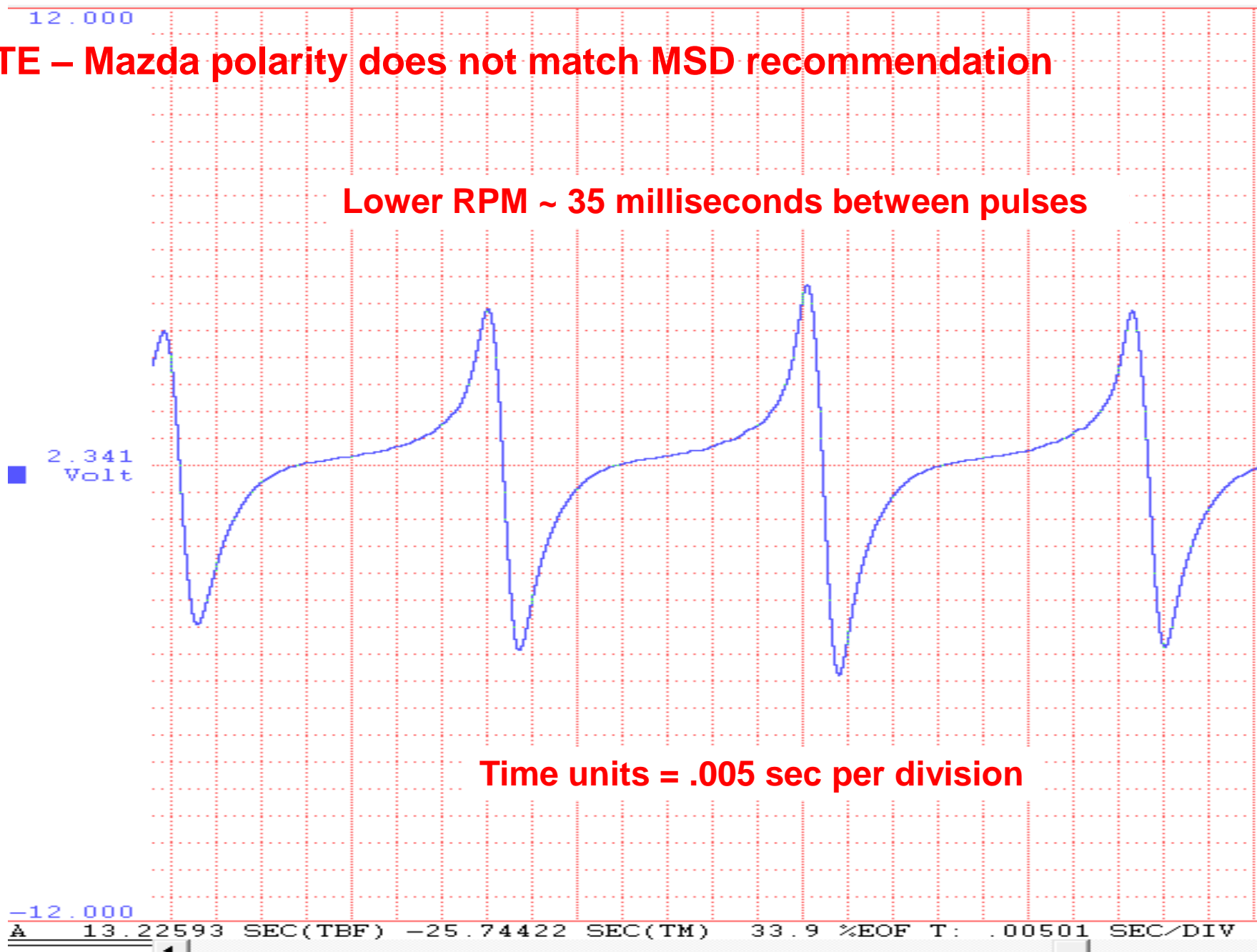
Mazda polarity



File 2 Run 2 – Hybrid distrib with **direct connect** on **trailing** pickup
- running on laptop battery only for reduced noise

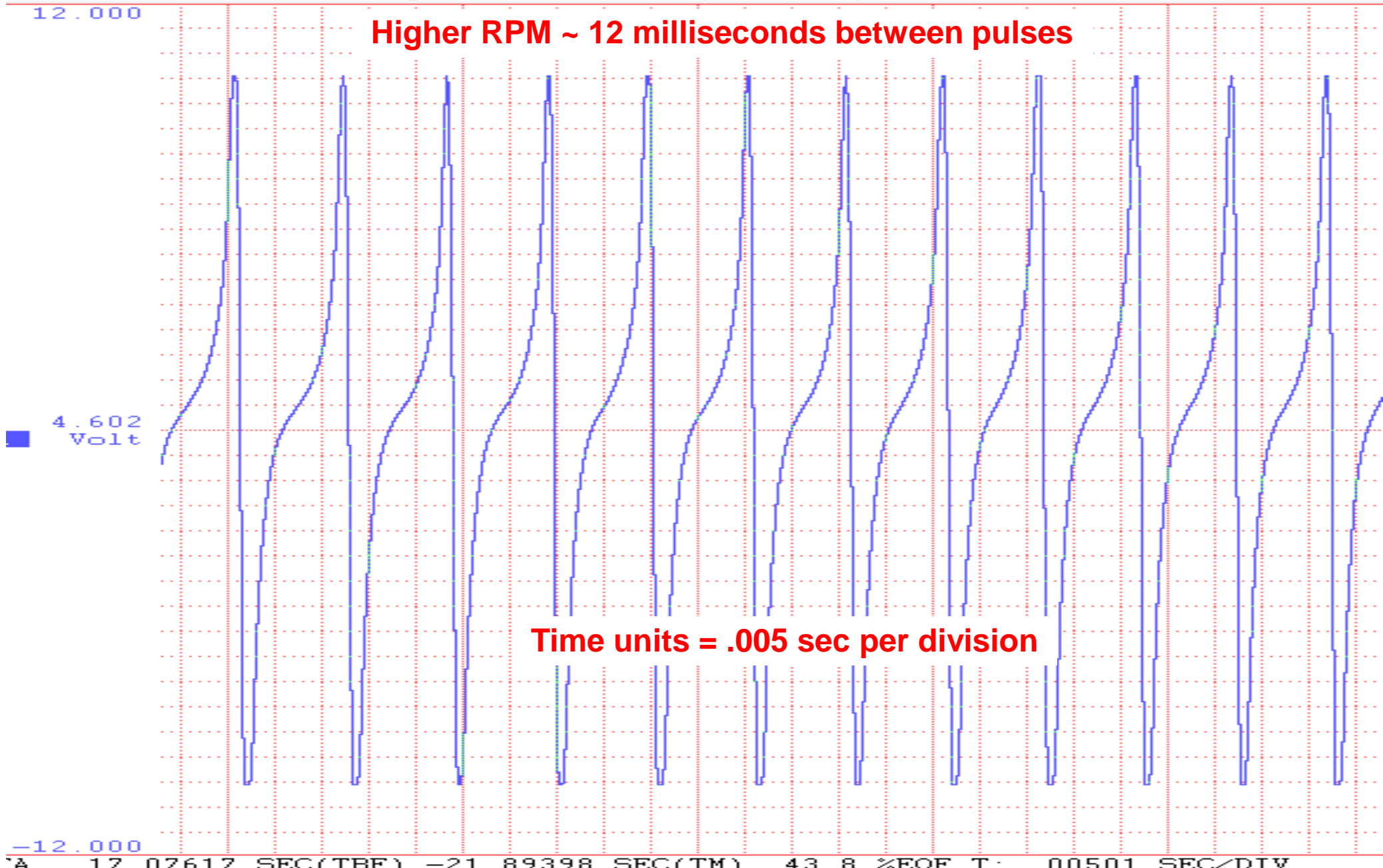
***** NOTE – Mazda polarity does not match MSD recommendation**

Lower RPM ~ 35 milliseconds between pulses



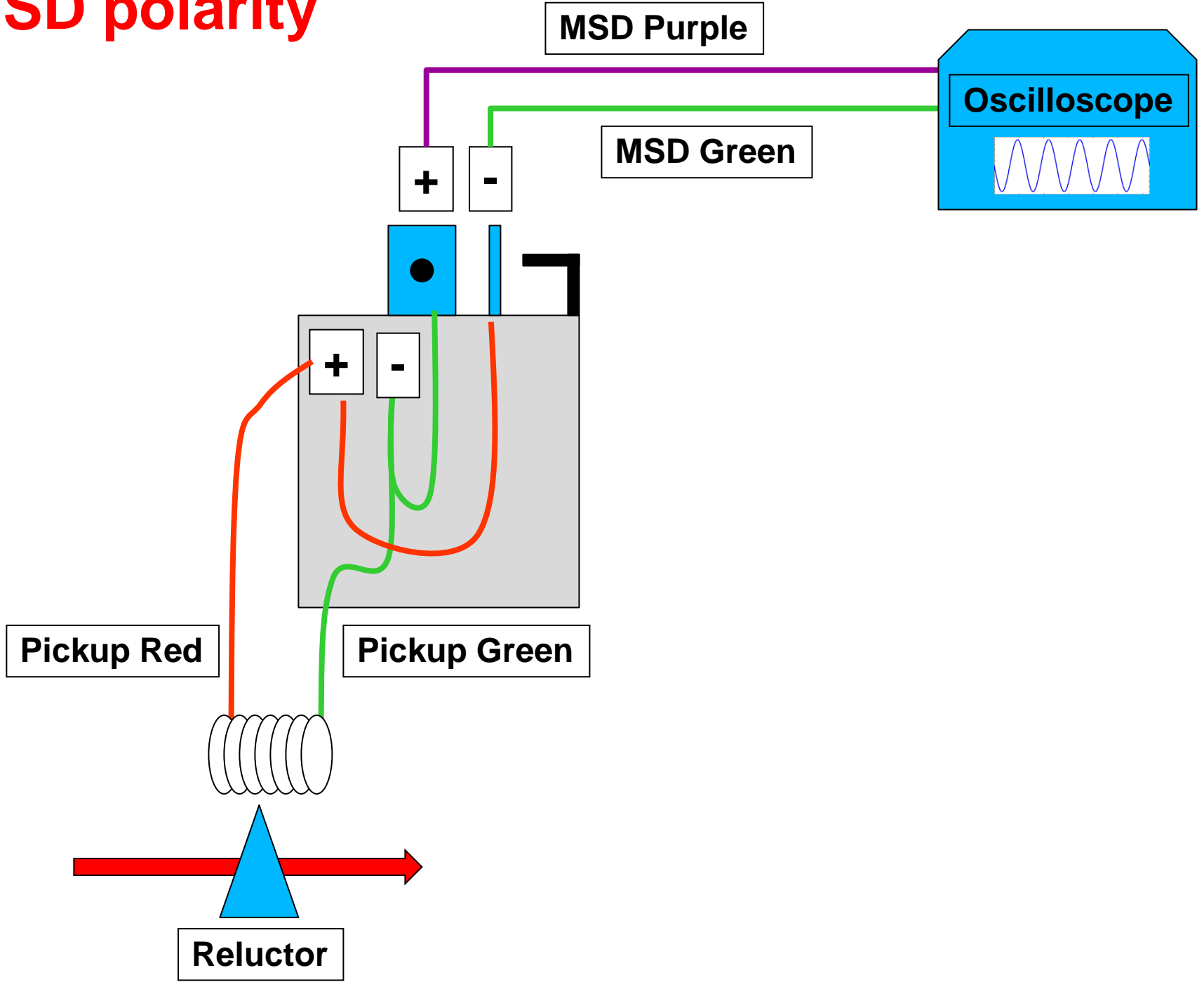
File 2 Run 2 – Hybrid distrib with **direct connect** on **trailing** pickup
- running on laptop battery only for reduced noise

***** NOTE – Mazda polarity does not match MSD recommendation**



Direct connect (hollow ignitor) Test Circuit

MSD polarity



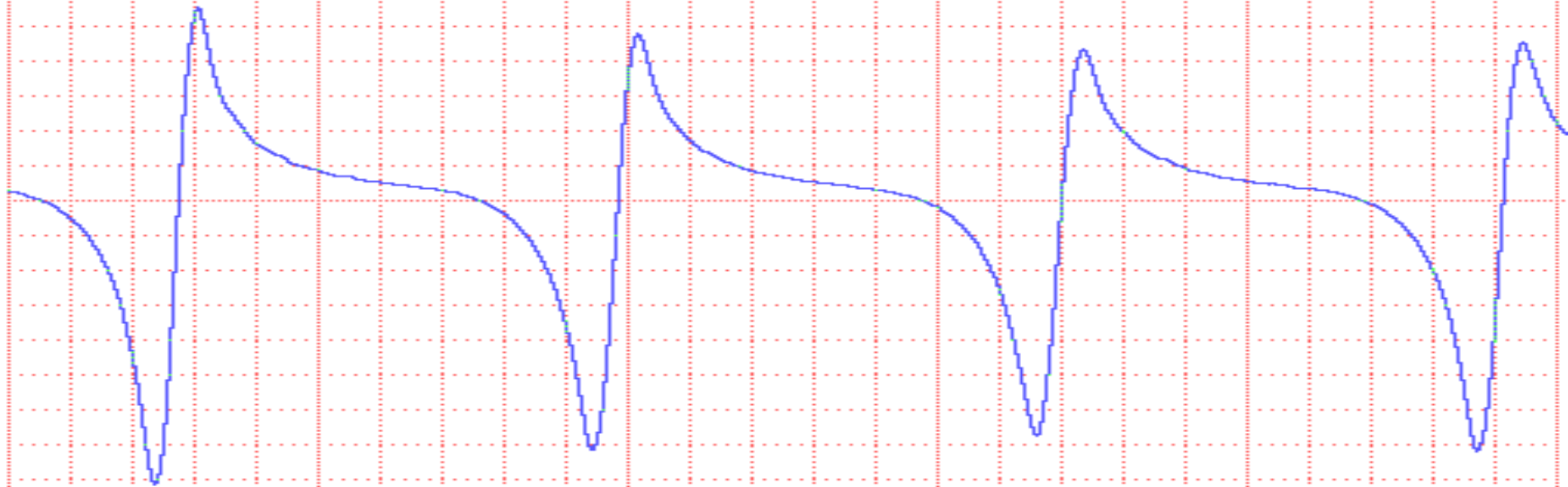
File 2 Run 3 – Hybrid distrib with **direct connect** on **leading** pickup
- running on laptop battery only for reduced noise

File Edit View Search Scaling Transform XY Options Help

12.000

***** NOTE – MSD polarity used**

Slower RPM ~ 35 milliseconds between pulses



Time units = .005 sec per division

-12.000

DATA 22.12158 SEC(TBF) -16.84856 SEC(TM) 56.8 %EOF T: .00501 SEC/DIV

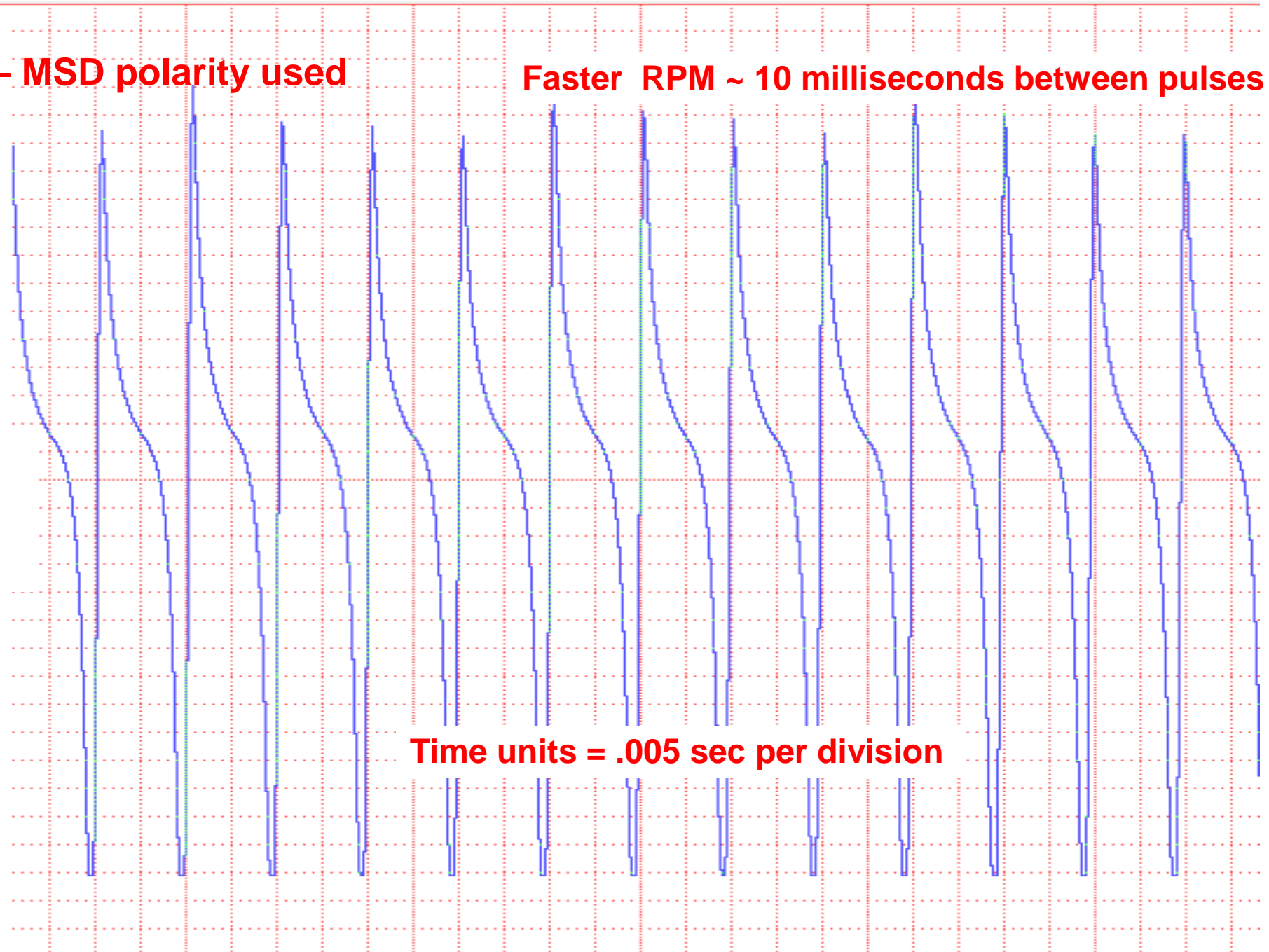
File 2 Run 3 – Hybrid distrib with **direct connect** on **leading** pickup
- running on laptop battery only for reduced noise

e Edit View Search Scaling Transform XY Options Help

12.000

***** NOTE – MSD polarity used**

Faster RPM ~ 10 milliseconds between pulses



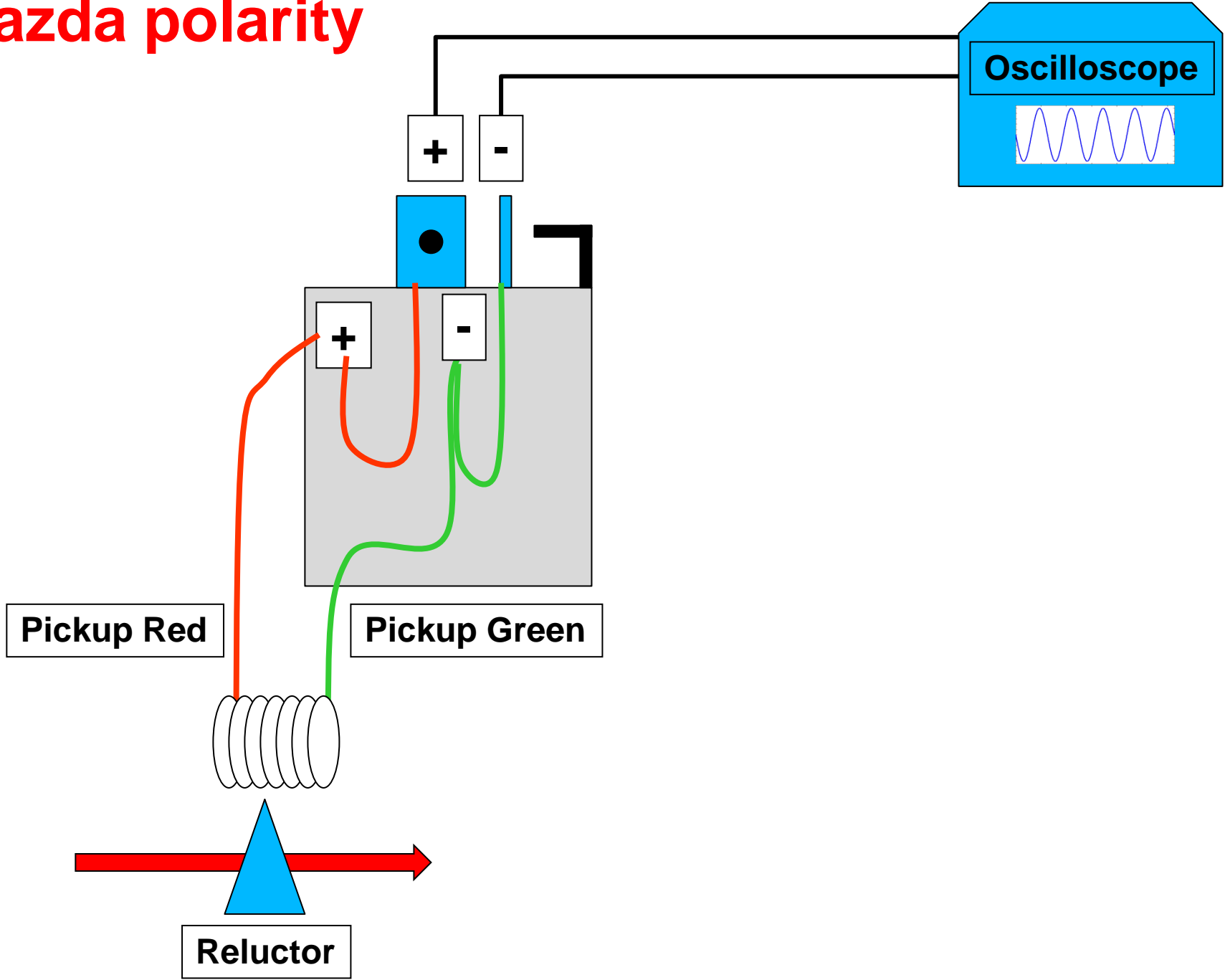
Time units = .005 sec per division

-12.000

28.14360 SEC(TBF) -10.82654 SEC(TM) 72.2 %EOF T: .00501 SEC/DIV

Direct connect (hollow ignitor) Test Circuit

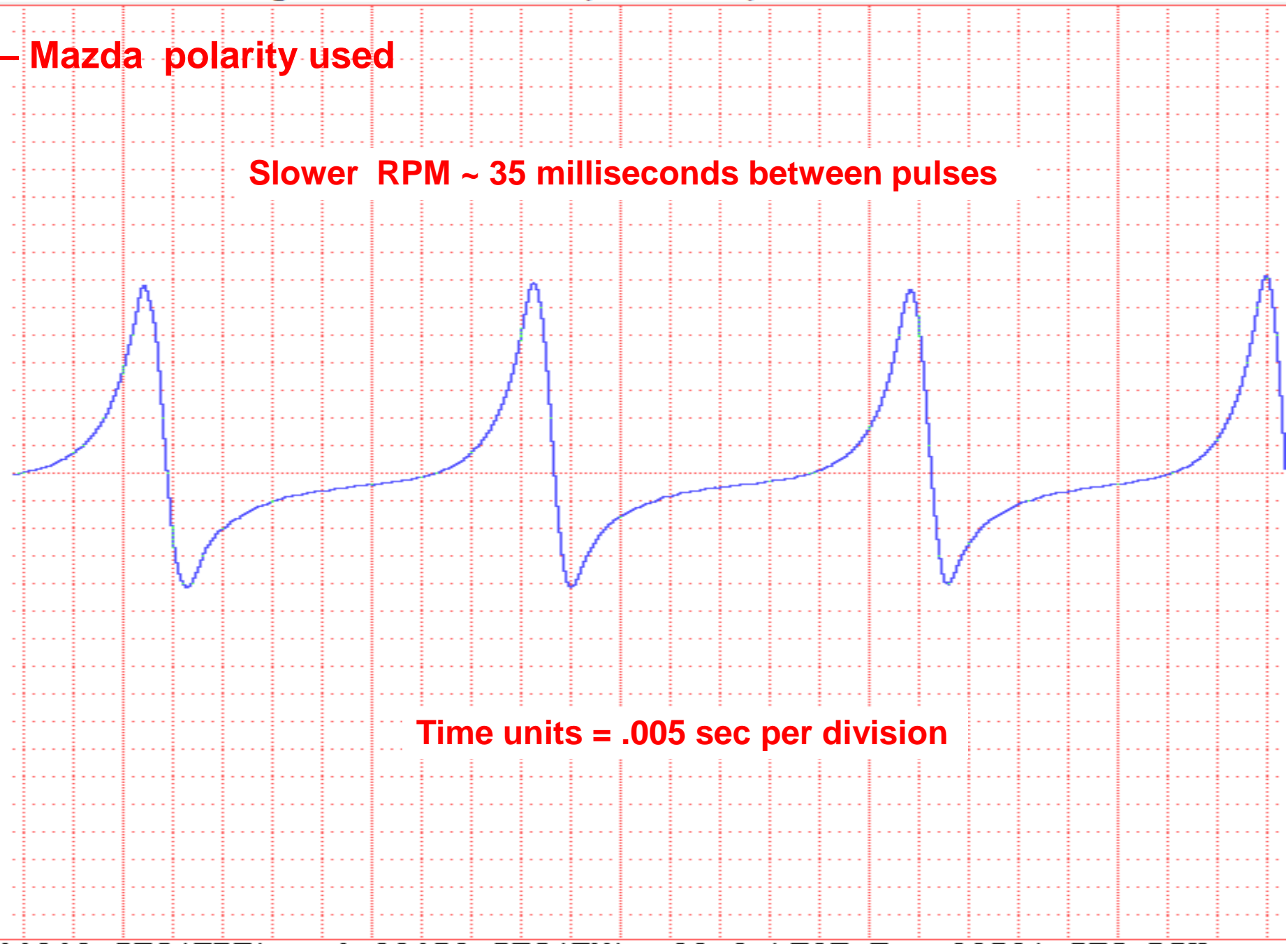
Mazda polarity



File 2 Run 4 – Hybrid distrib with **direct connect** on **trailing** pickup
- running on laptop battery only for reduced noise

***** NOTE – Mazda polarity used**

Slower RPM ~ 35 milliseconds between pulses



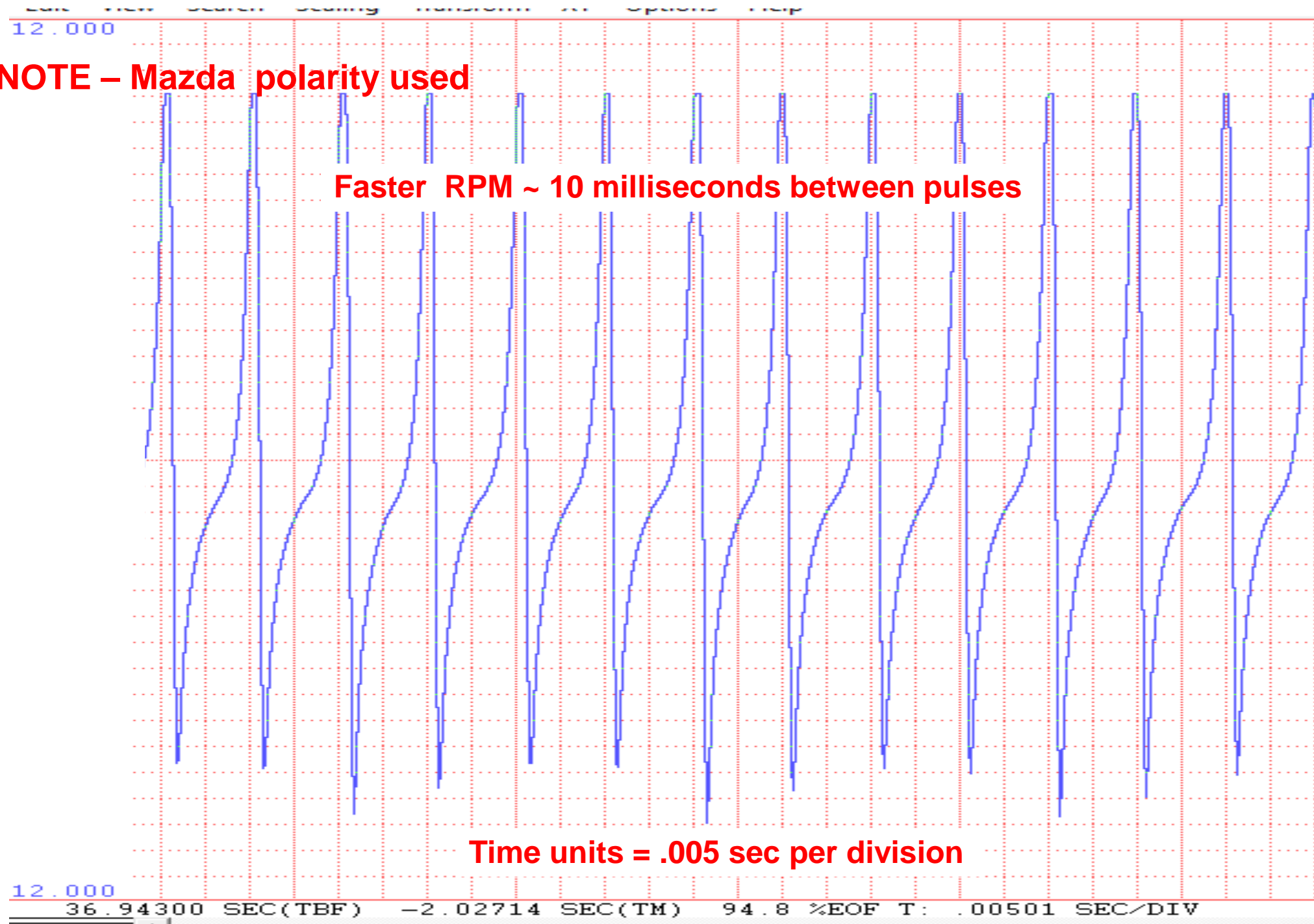
Time units = .005 sec per division

File 2 Run 4 – Hybrid distrib with **direct connect** on **trailing** pickup
- running on laptop battery only for reduced noise

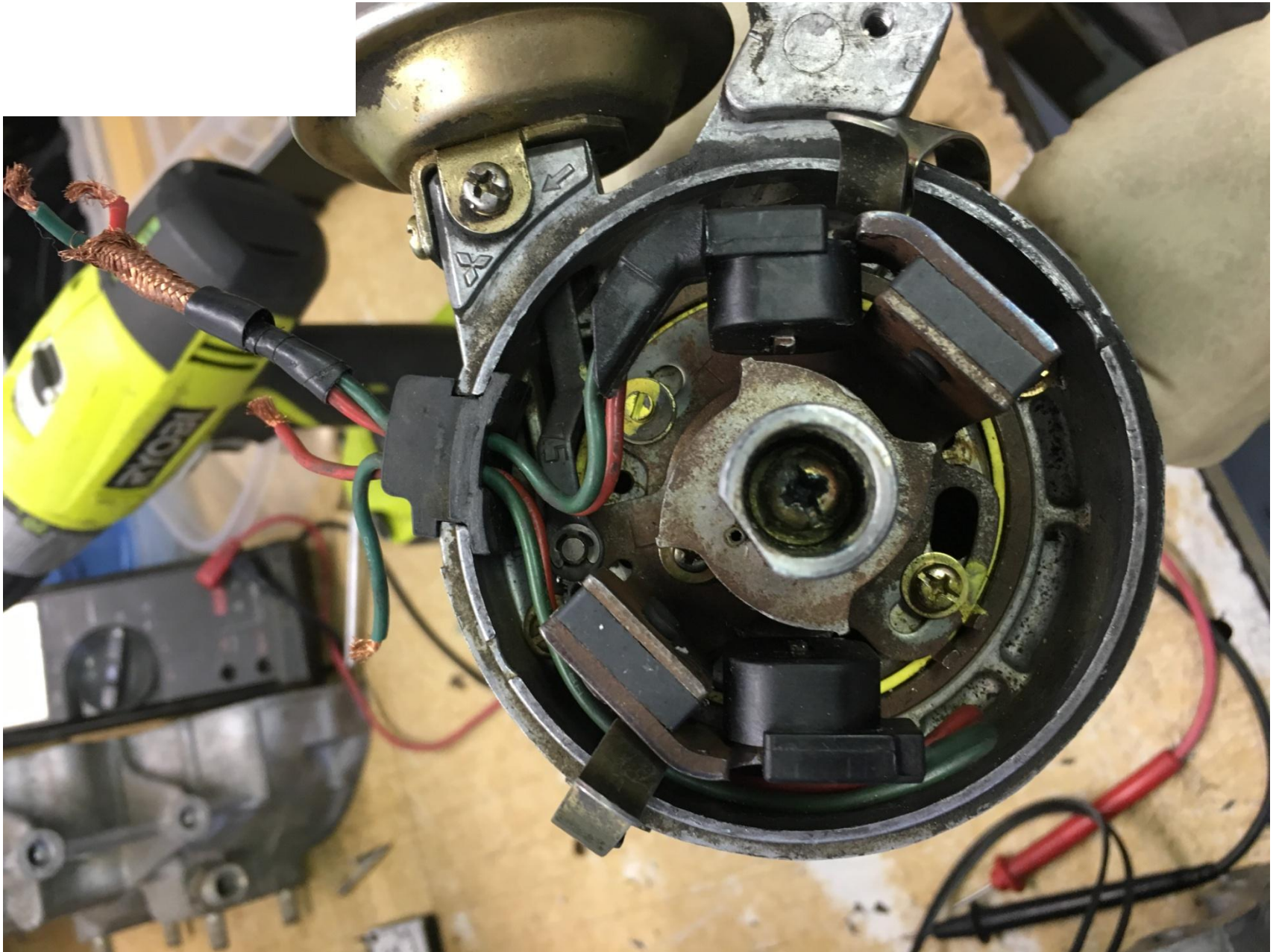
***** NOTE – Mazda polarity used**

Faster RPM ~ 10 milliseconds between pulses

Time units = .005 sec per division

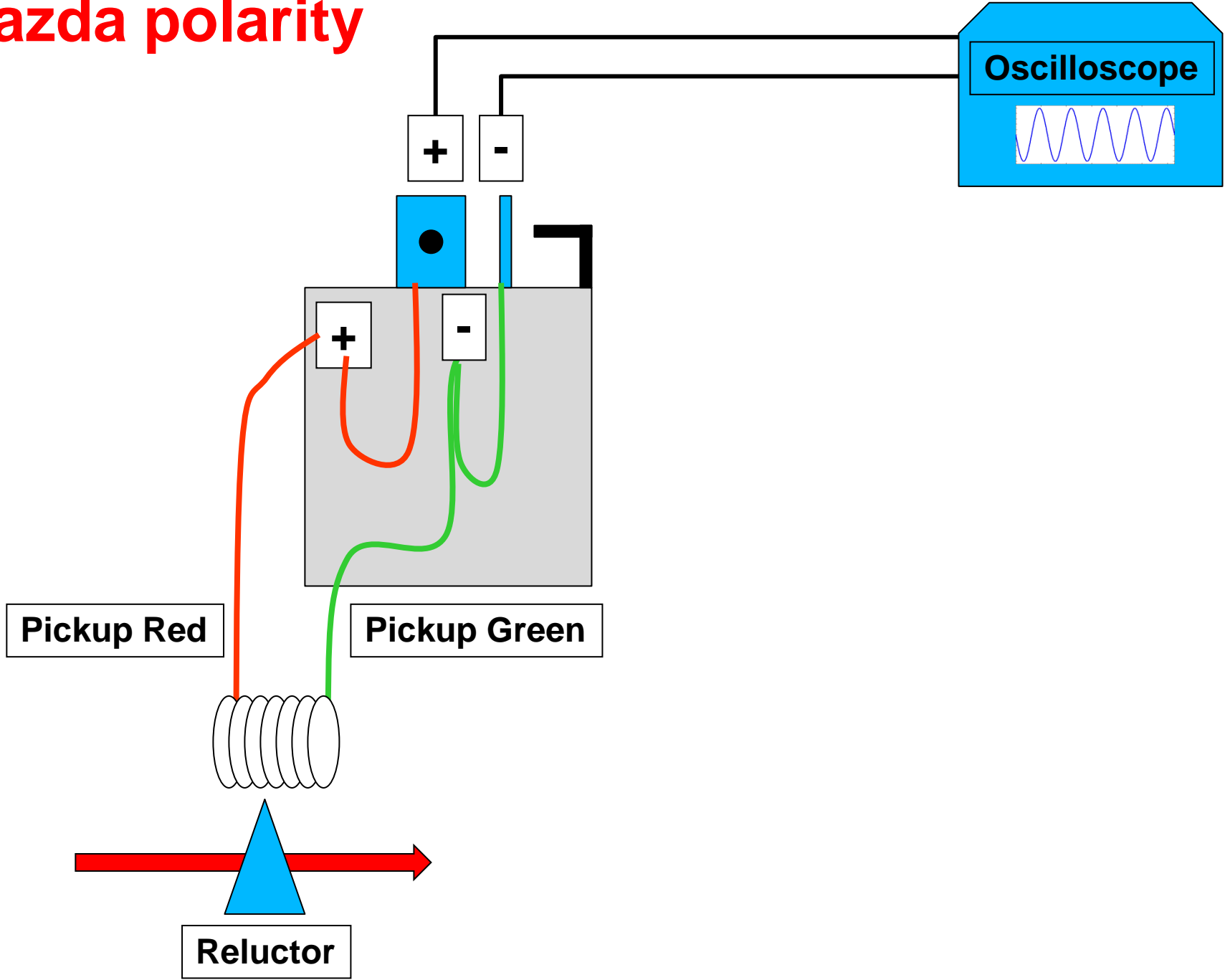


1980 distributor



Direct connect (hollow ignitor) Test Circuit

Mazda polarity



File 3 Run 1 – 1980 distrib with **direct connect** on **leading** pickup

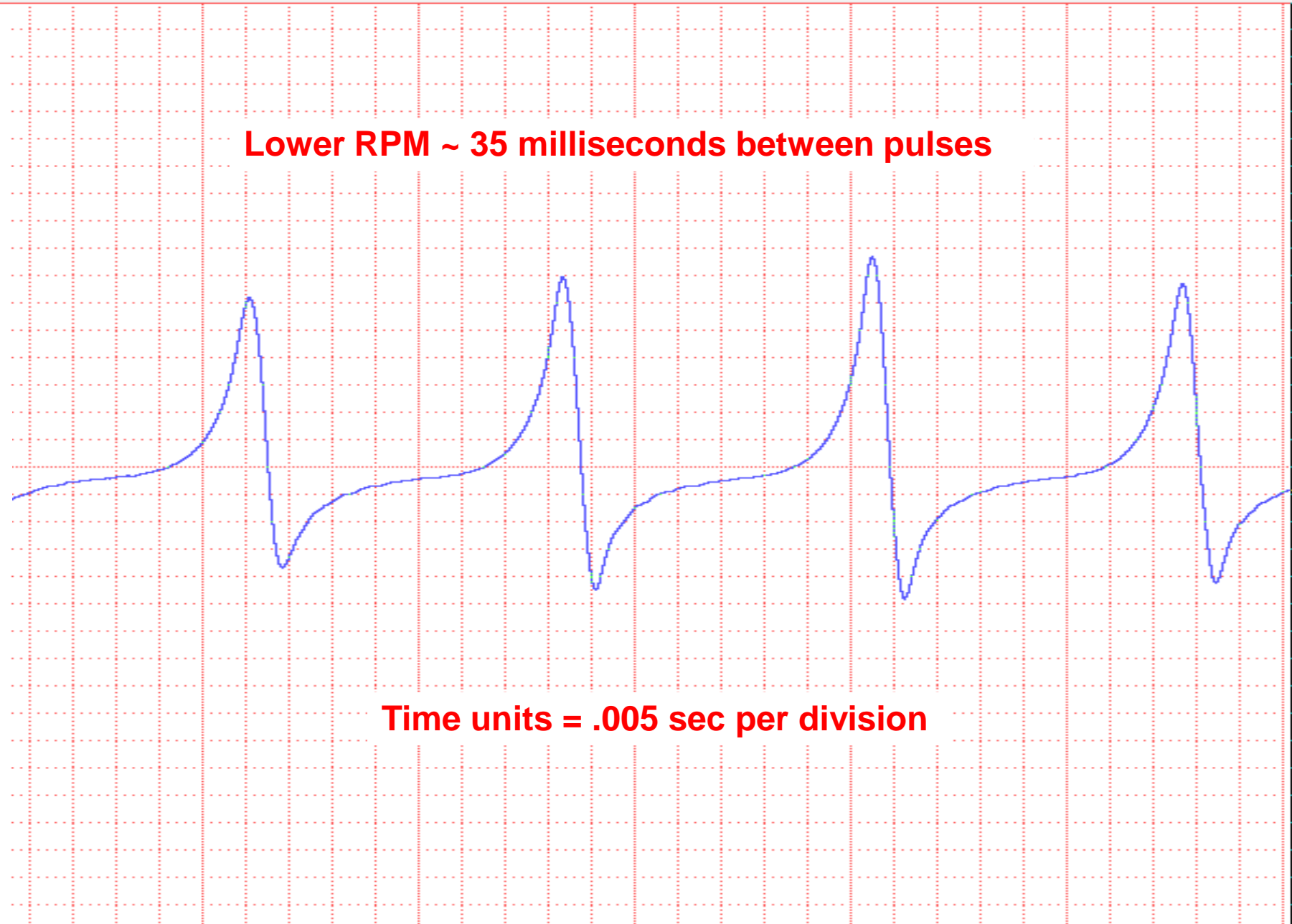
- running on laptop battery only for reduced noise

***** NOTE – Mazda polarity does not match MSD recommendation**

File Edit View Search Scaling Transform XY Options Help

12.000

Lower RPM ~ 35 milliseconds between pulses



Time units = .005 sec per division

-12.000

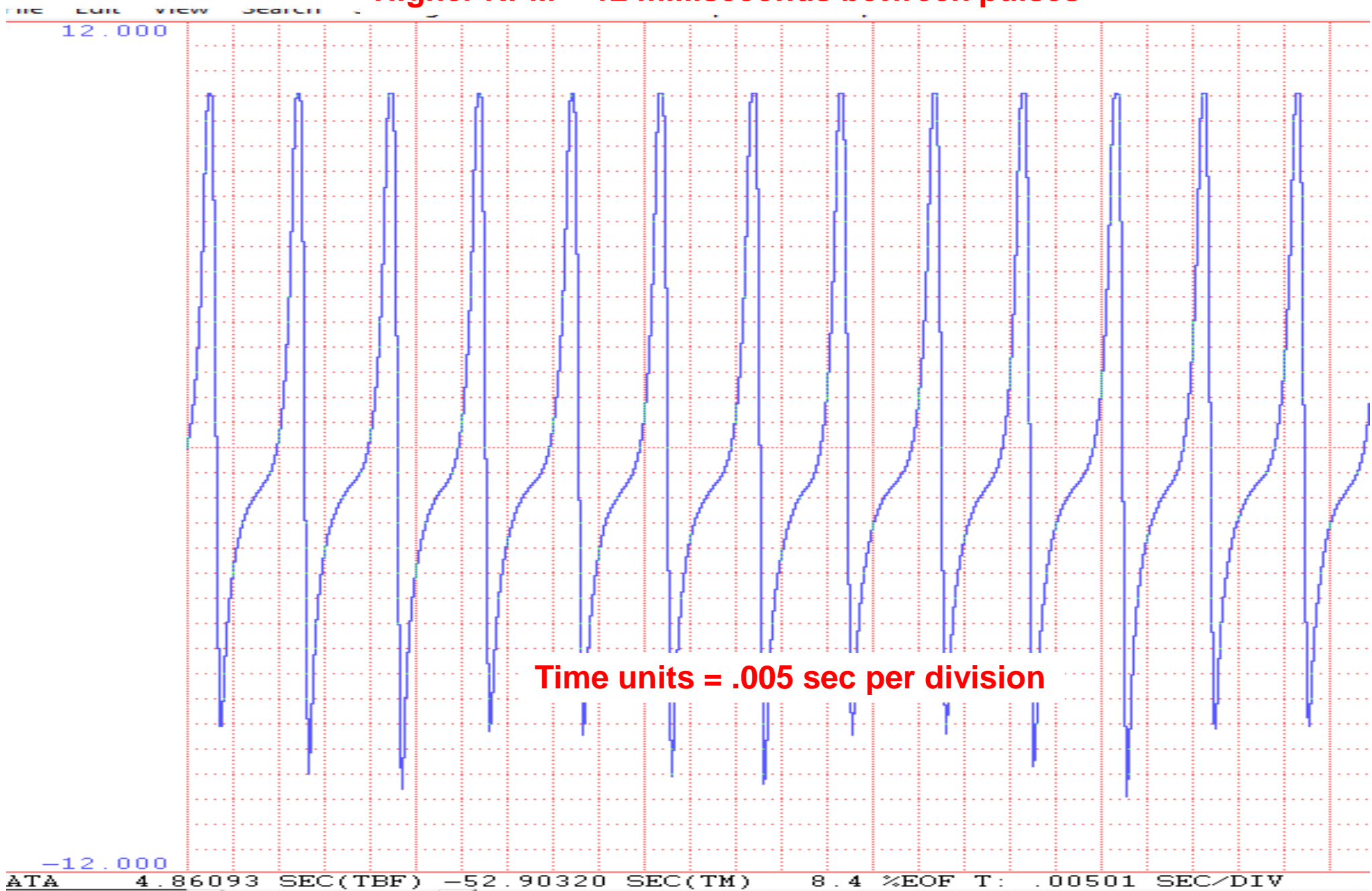
DATA 1.68047 SEC(TBF) -56.08366 SEC(TM) 2.9 %EOF T: .00501 SEC/DIV

File 3 Run 1 – 1980 distrib with **direct connect** on **leading** pickup

- running on laptop battery only for reduced noise

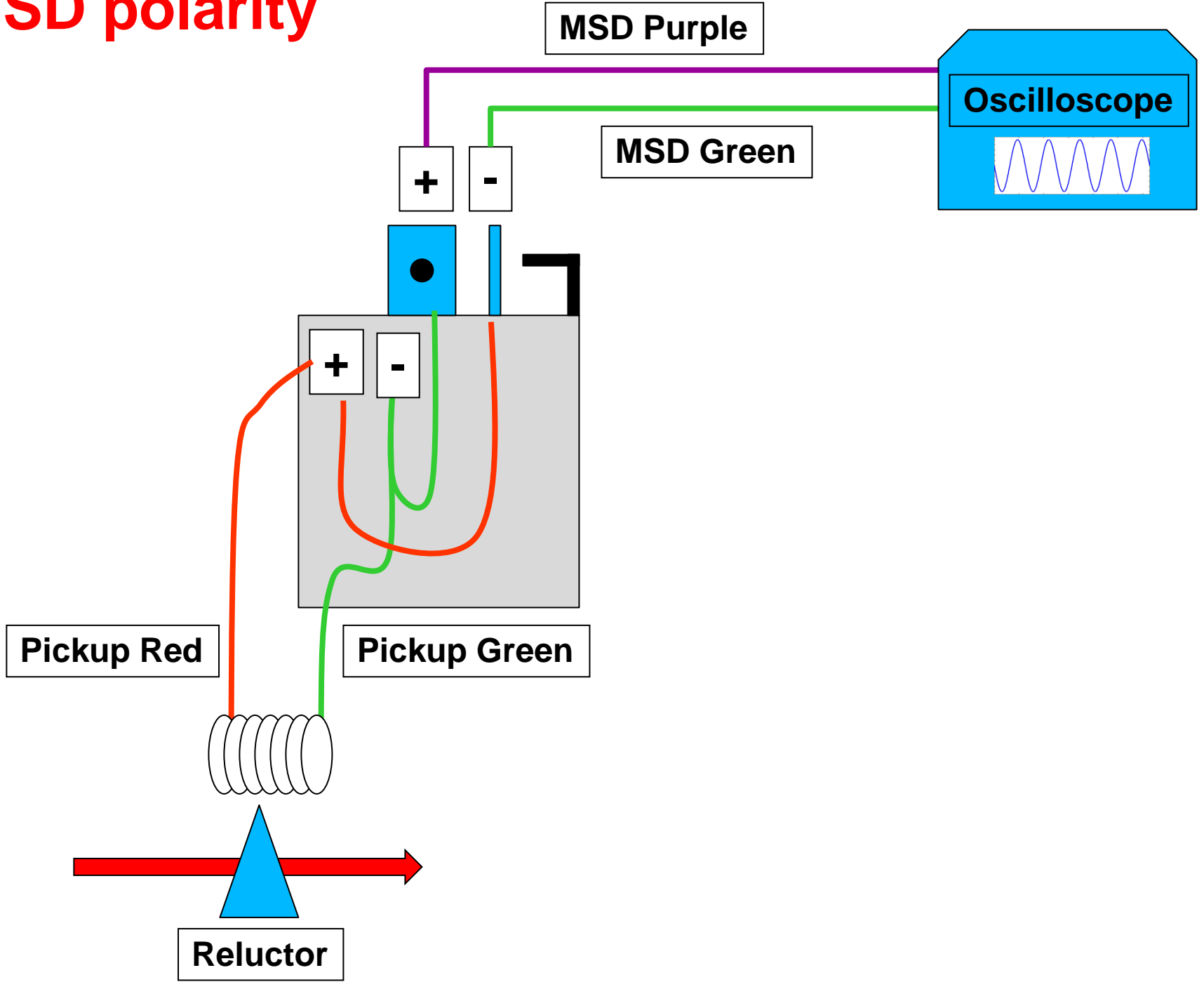
***** NOTE – Mazda polarity does not match MSD recommendation**

Higher RPM ~ 12 milliseconds between pulses



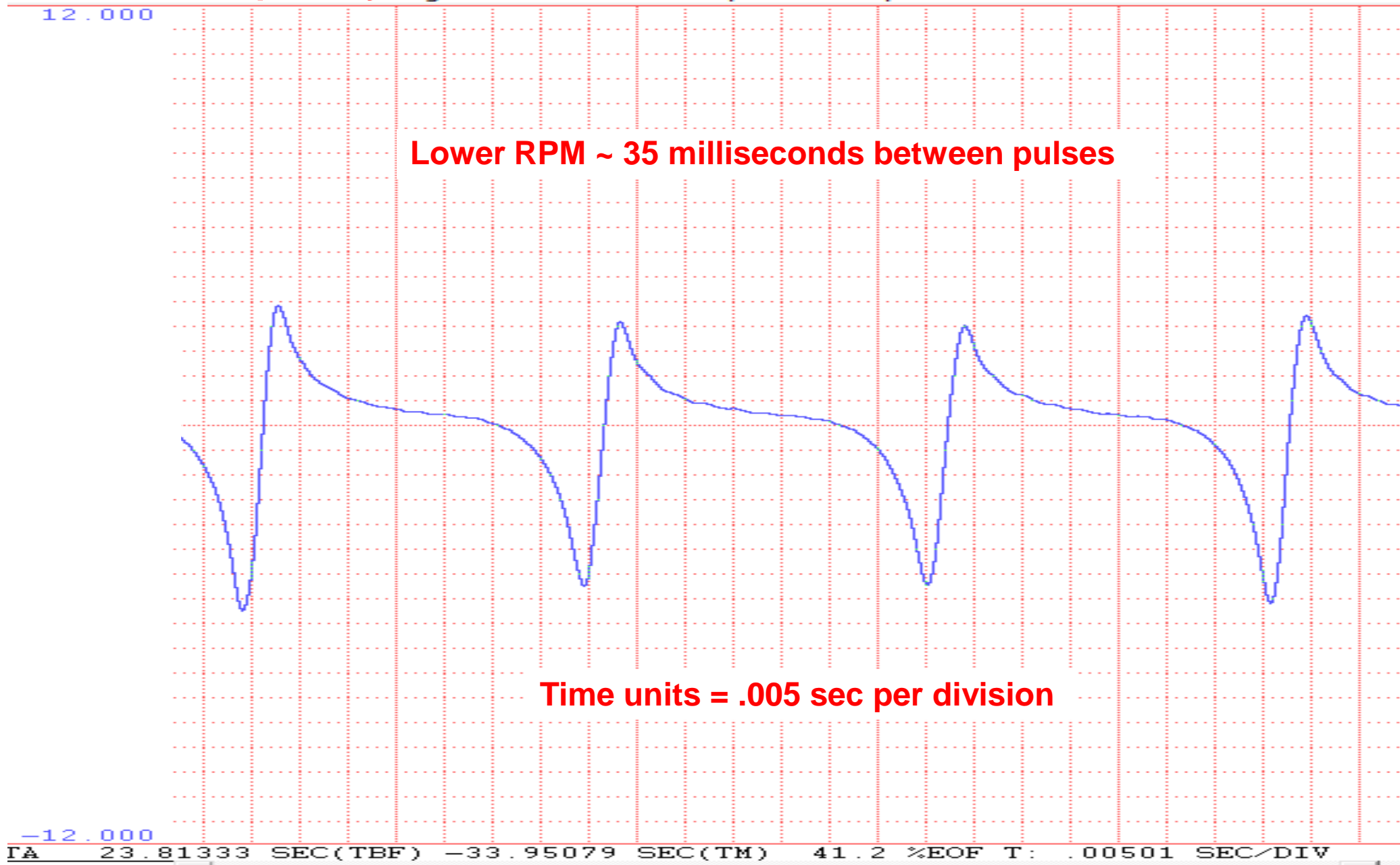
Direct connect (hollow ignitor) Test Circuit

MSD polarity



File 3 Run 1 – 1980 distrib with **direct connect** on **leading** pickup
- running on laptop battery only for reduced noise

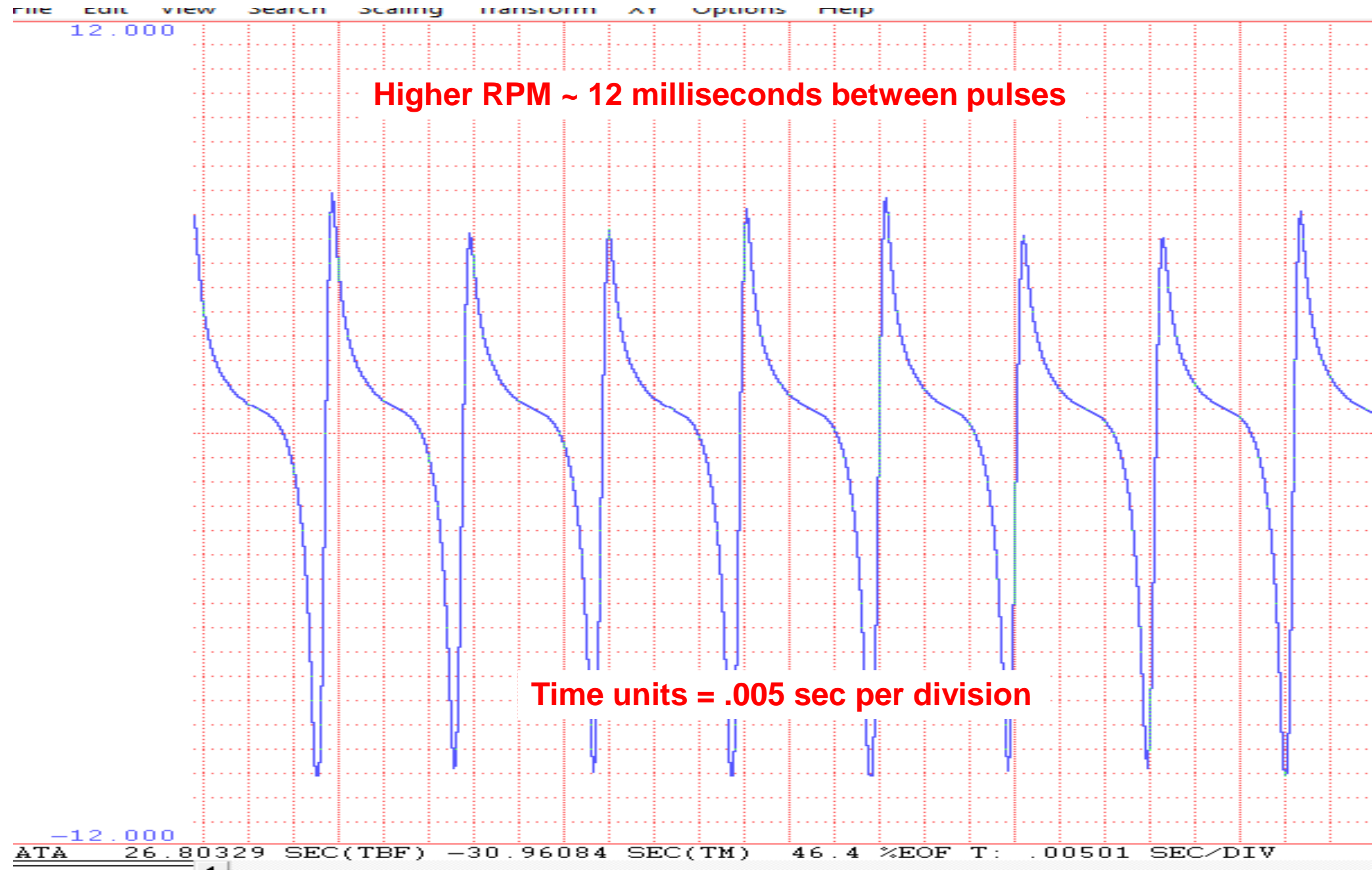
***** NOTE – MSD polarity**



File 3 Run 1 – 1980 distrib with **direct connect** on **leading** pickup

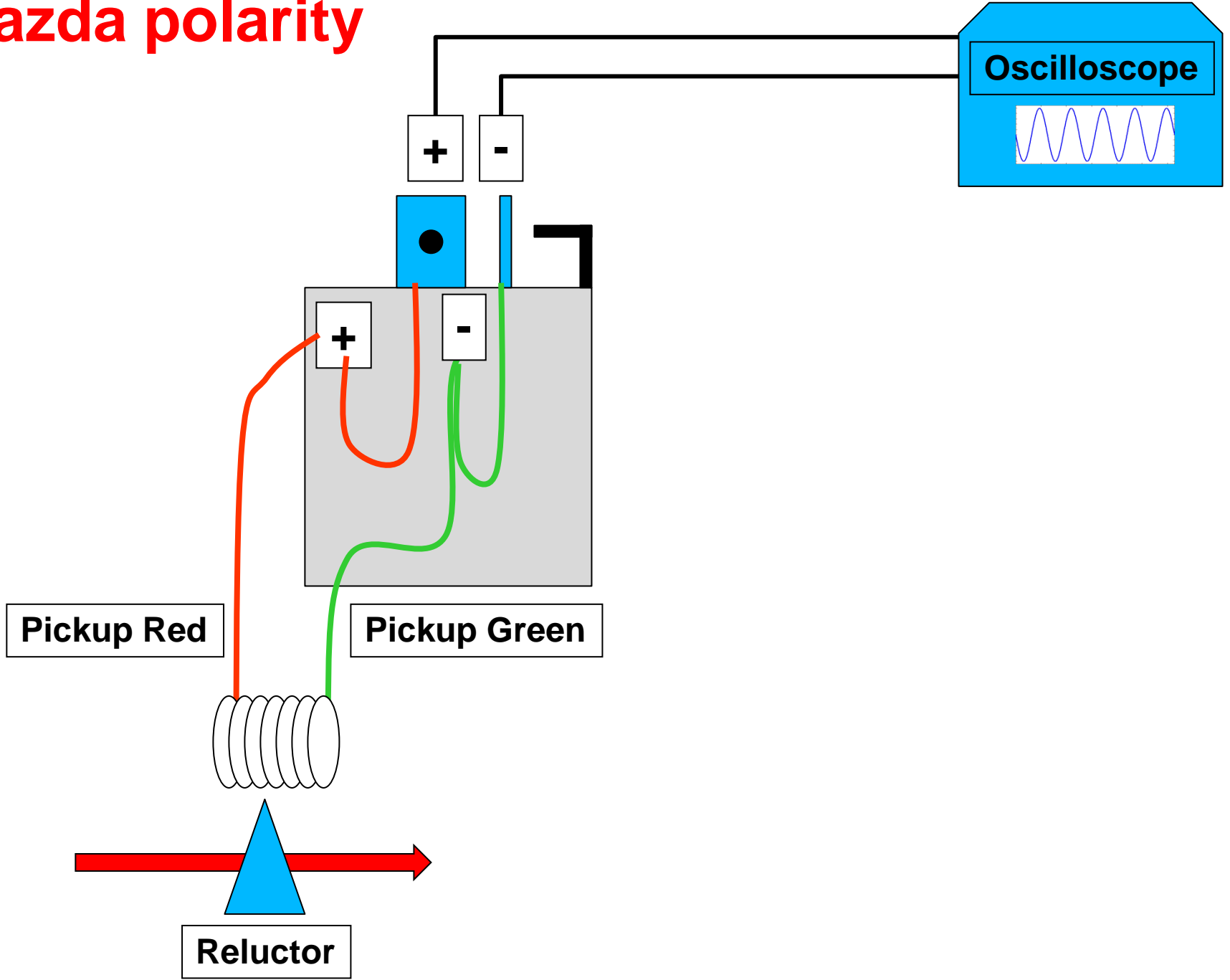
- running on laptop battery only for reduced noise

***** NOTE – MSD polarity**



Direct connect (hollow ignitor) Test Circuit

Mazda polarity



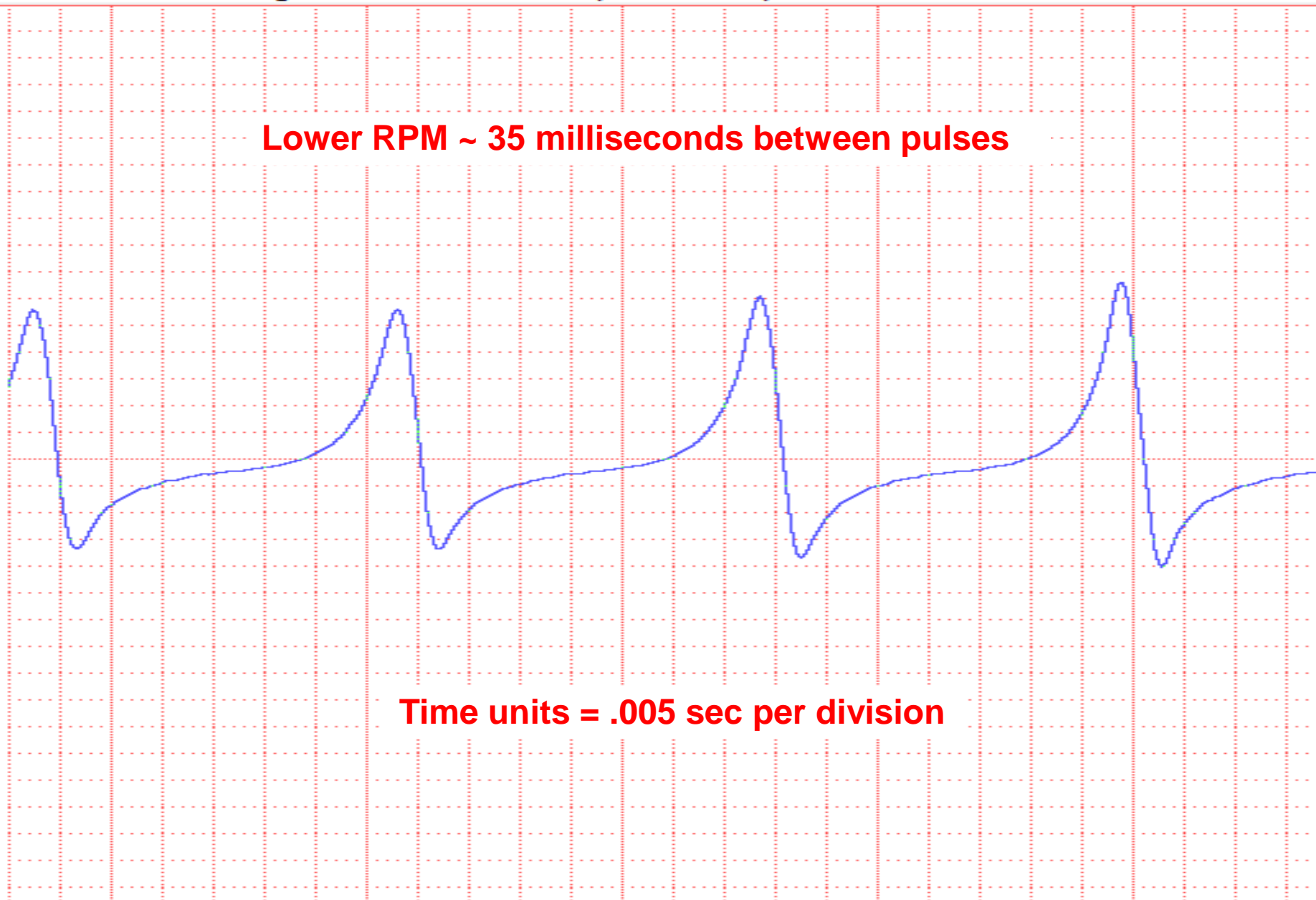
File 3 Run 2 – 1980 distrib with **direct connect** on **trailing** pickup

- running on laptop battery only for reduced noise

***** NOTE – Mazda polarity does not match MSD recommendation**

File Edit View Search Scaling Transform XY Options Help

12.000



Lower RPM ~ 35 milliseconds between pulses

Time units = .005 sec per division

-12.000

DATA 31.92290 SEC(TBF) -25.84123 SEC(TM) 55.3 %EOF T: .00501 SEC/DIV

File 3 Run 2 – 1980 distrib with **direct connect** on **trailing** pickup

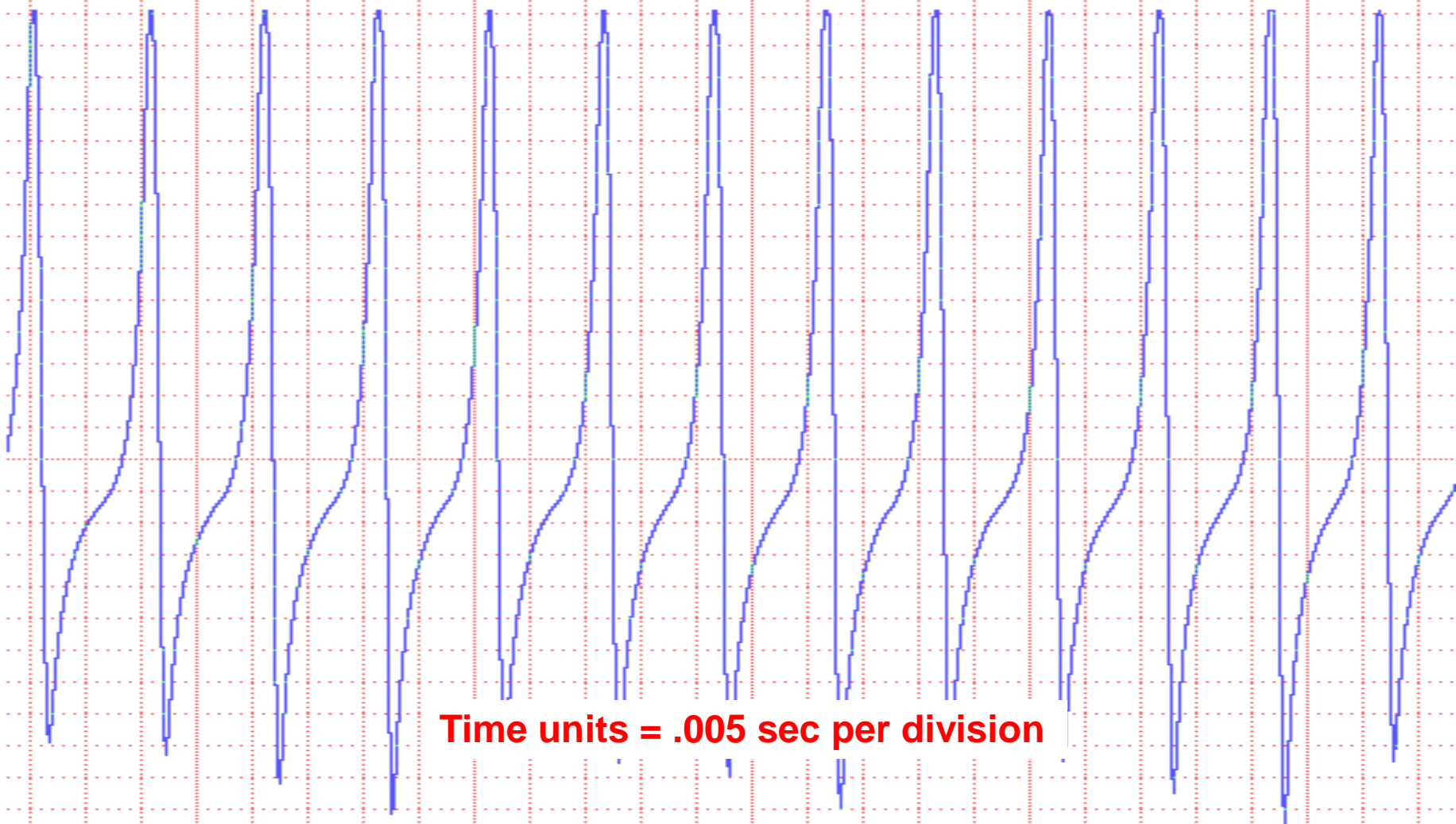
- running on laptop battery only for reduced noise

***** NOTE – Mazda polarity does not match MSD recommendation**

File Edit View Search Scaling Transform XY Options Help

12.000

Higher RPM ~ 12 milliseconds between pulses

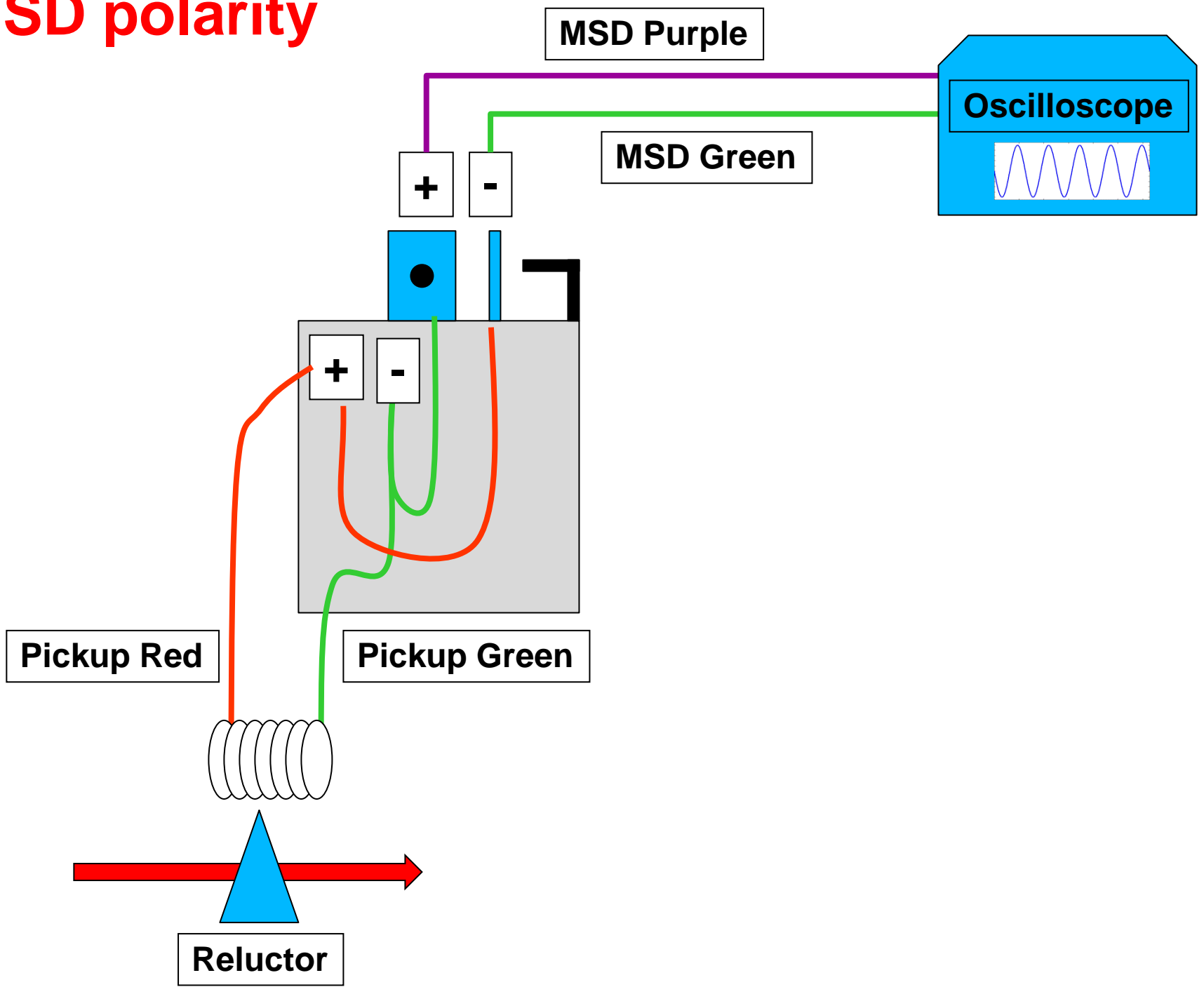


Time units = .005 sec per division

-12.000

Direct connect (hollow ignitor) Test Circuit

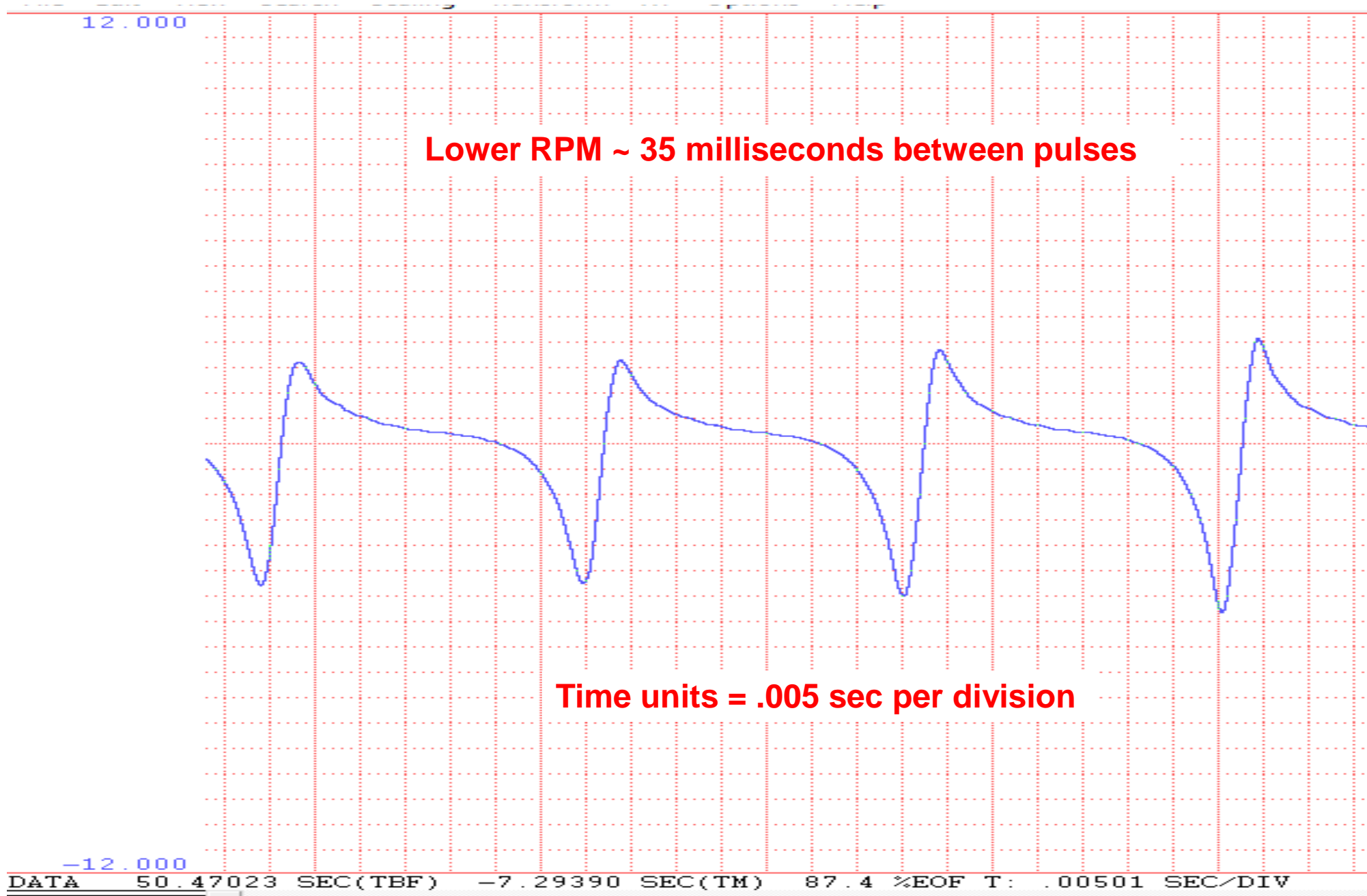
MSD polarity



File 3 Run 2 – 1980 distrib with **direct connect** on **trailing** pickup

- running on laptop battery only for reduced noise

***** NOTE – MSD polarity**

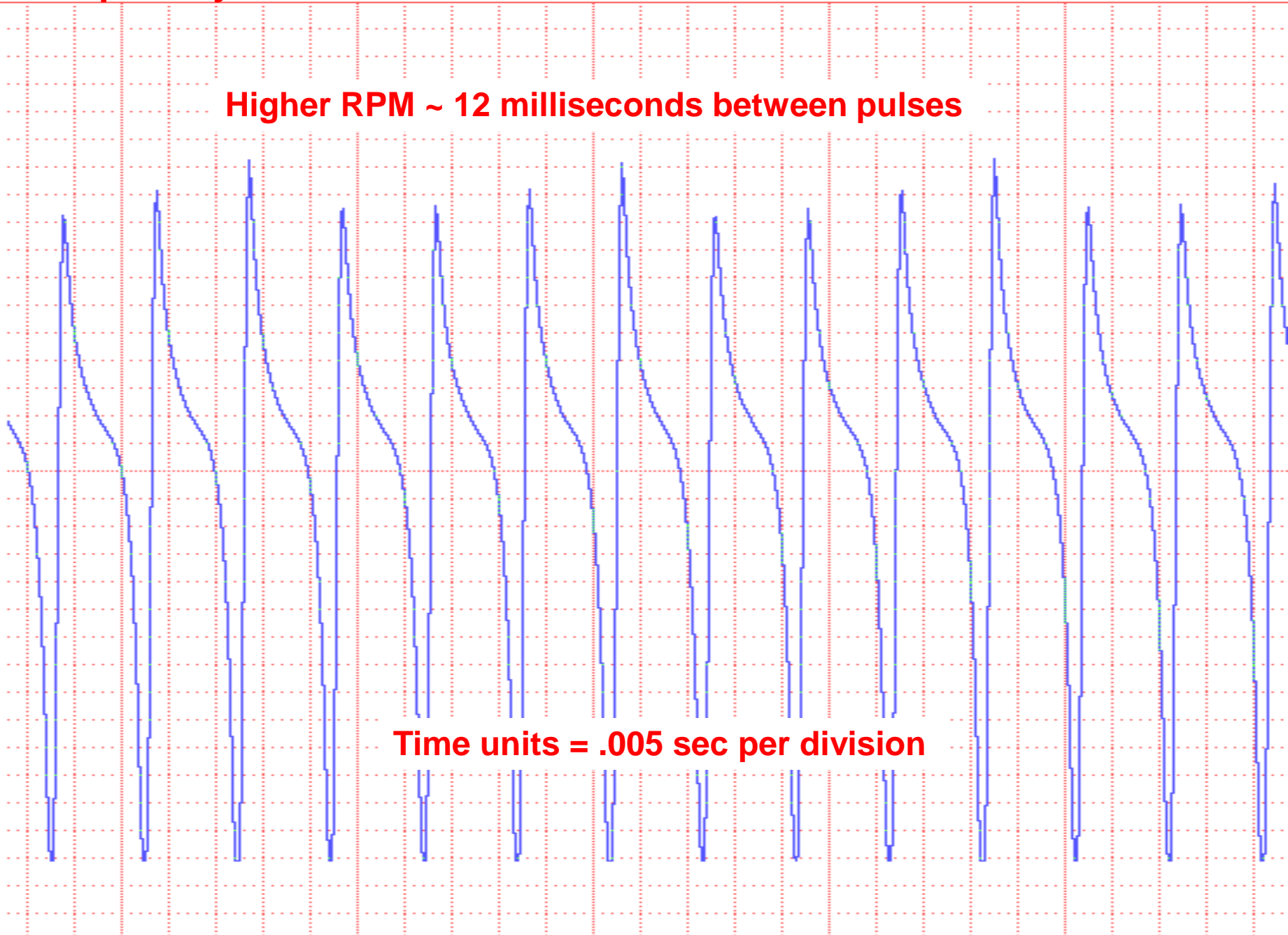


File 3 Run 2 – 1980 distrib with **direct connect** on **trailing** pickup
- running on laptop battery only for reduced noise

***** NOTE – MSD polarity**

12.000

Higher RPM ~ 12 milliseconds between pulses



Time units = .005 sec per division

-12.000

DATA 55.13263 SEC(TBF) -2.63150 SEC(TM) 95.4 %EOF T: .00501 SEC/DIV

2nd gen unit – for reference

