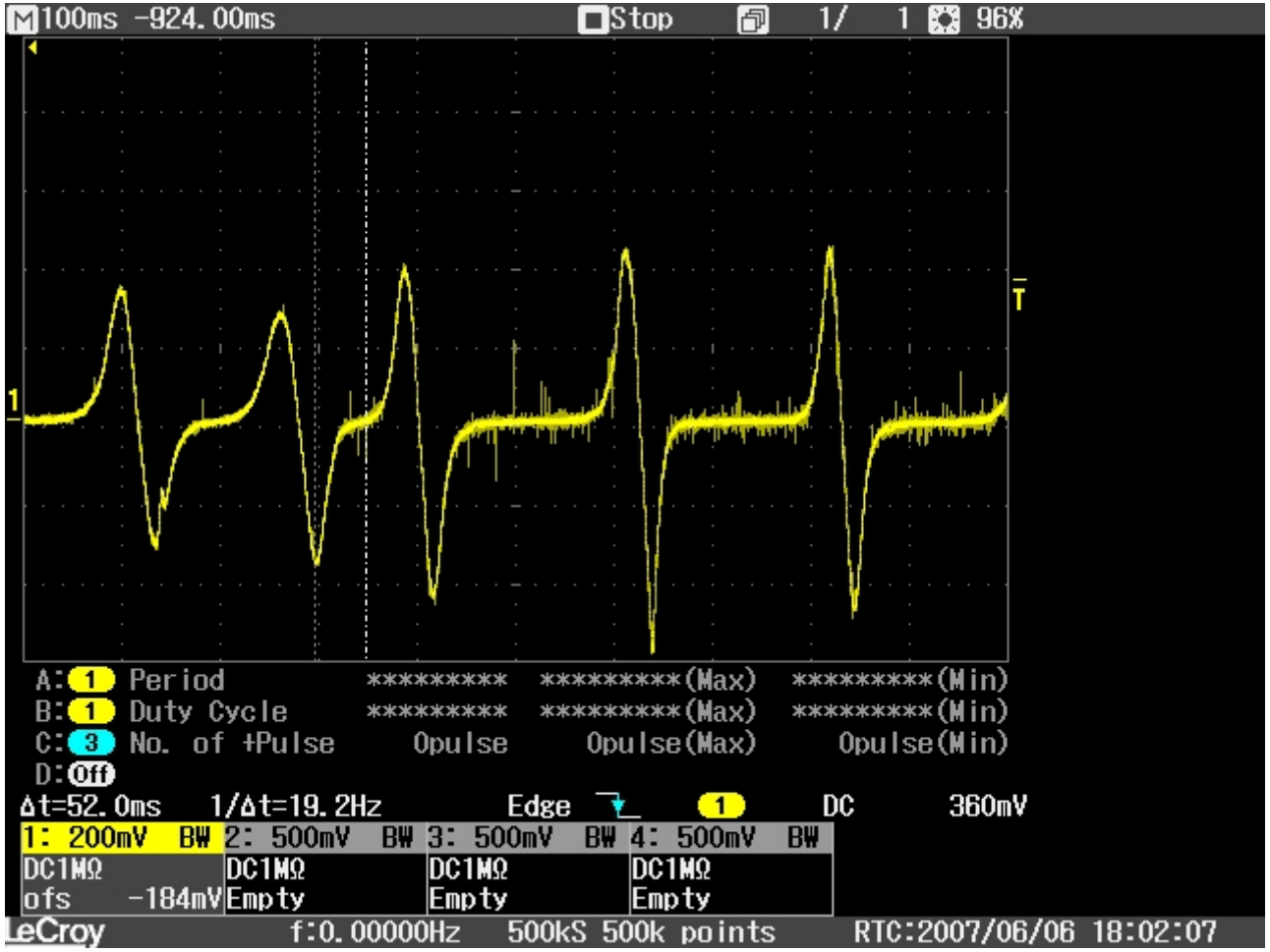
# Orientation of Magnetic Rotating Sensors



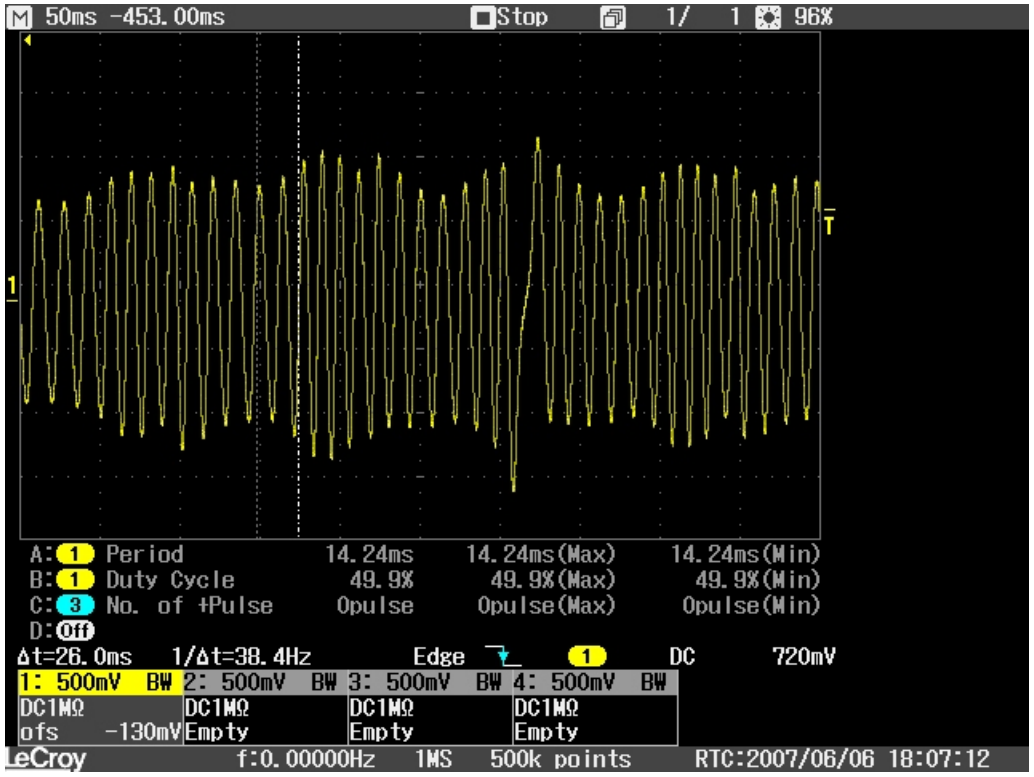

## Cam Sensor

Shown is an oscilloscope trace of a typical magnetic cam sensor pattern when cranking. The orientation is correct when the voltage seen at the signal pin rises as the tooth approaches and falls sharply when the tooth recedes.

If the sensor is connected with reversed polarity then the signal position will appear to move causing cam shaft errors and apparent movement in cam position.

Note the presence of high frequency noise on this signal. This is the result of not using shielded twisted pair wire for this sensor. If this is strong enough cam shaft errors will result and the engine may not run at all.

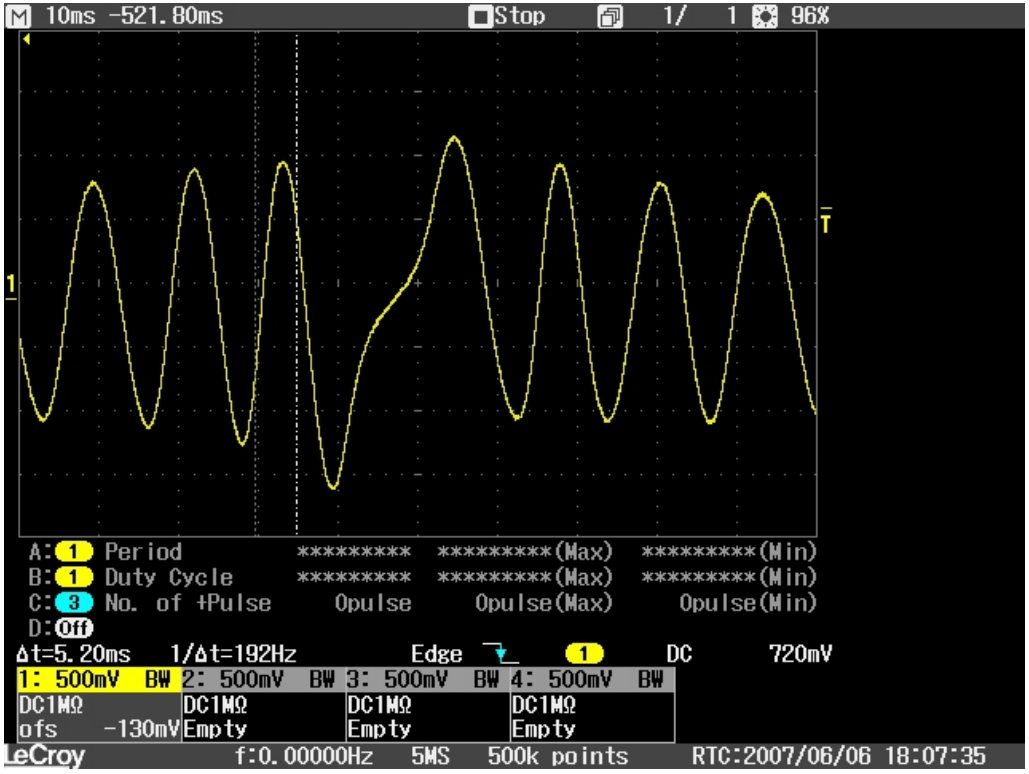
# Crank Sensor




On the left is an oscilloscope trace of a good clean signal from a magnetic crank sensor on a 36 - 1 wheel. Note the voltage rising through the gap. This is the correct polarity.

If the voltage falls through the gap then the engine may start but at a certain RPM will begin to give crank shaft errors and re-synchronisations.

The voltage variation is caused by successive compression strokes slowing the rotation speed during cranking.




On the right is a more detailed view of the gap itself. Note the voltage rising as the gap traverses the sensor.

You can also see that this signal is free of high frequency noise. The correct screened twisted pair wire has been used for this sensor. Both cam and crank traces are from the same vehicle.