Summary

Wiring

The *charging coil* that charges the internal capacitor of this ACCDI can be connected in two different ways:

Full-Rectification
One wire of the charging coil is connected to the connector on **pin 2** (*HV input*) and the other wire goes to connector **pin 3** (*HV input*)
This wiring provides an isolated ground (*stator output is not connected to the ground in any way*) and a Full-Rectification that double the AC voltage.
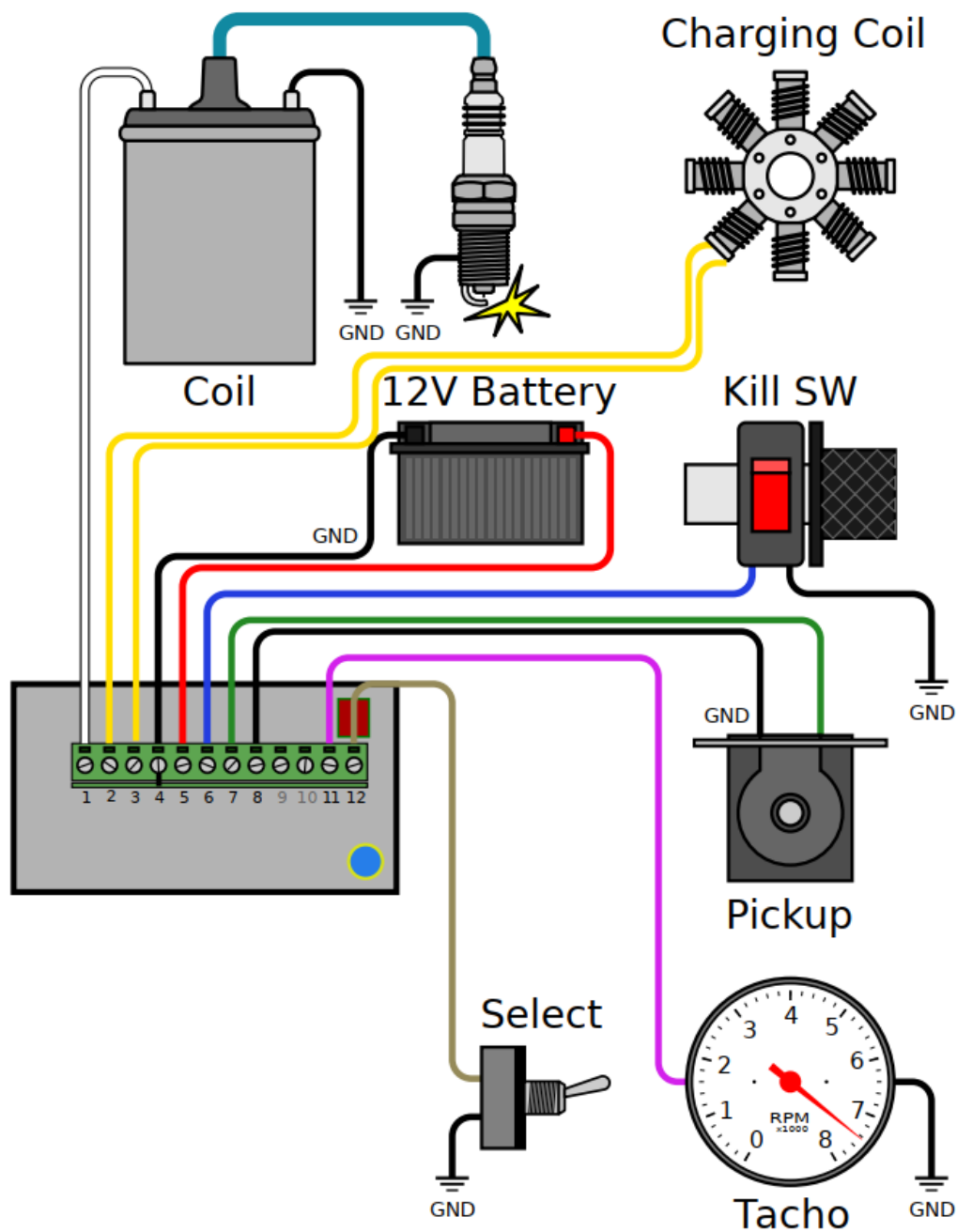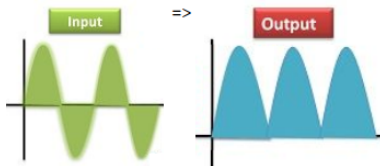
Half-Rectification

One wire of the charging coil is connected to the connector on **pin 2** (*HV input*) and the other wire goes to connector **pin 4** (*Ground of the ACCDI*) or on any metal part of the frame connected to ground/minus battery

Stator

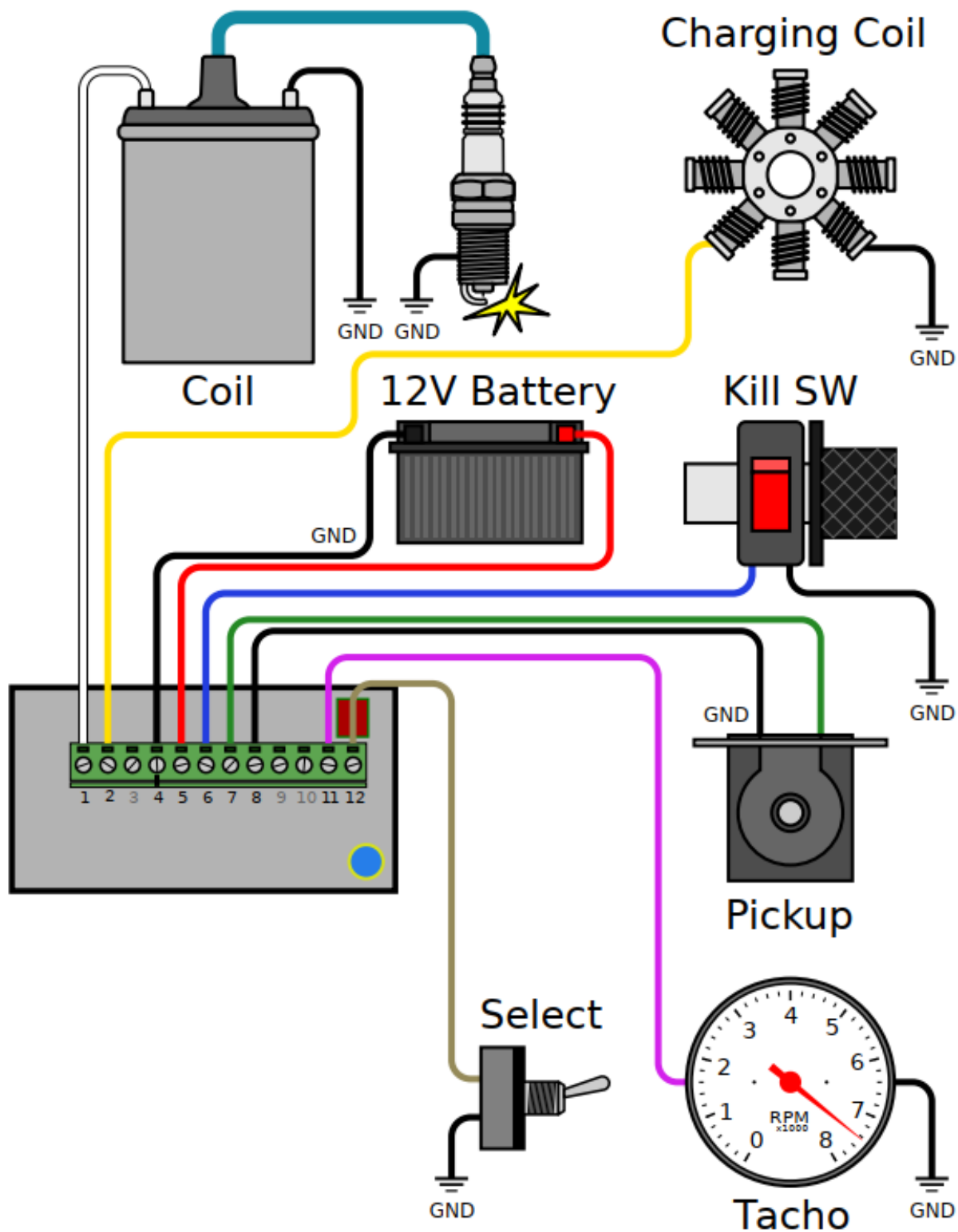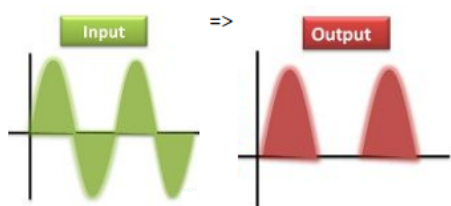All AC-CDI need a working stator/High Voltage AC charging system.

Even if the stator passes the User Manual resistance check, only a voltage test will show if the stator is reliable throughout the rev range.

The voltage fluctuates with rpm. Check the voltage across the rpm range as well, since it should grow as the revs raise.

Voltage depend on the type of charging coils, number of coils and magnets etc...
For example, at 1500rpm, it should read approximately 30-40Vac, at 3000rpm it should read 60-80Vac, at 6000rpm 120-160vac and so on.
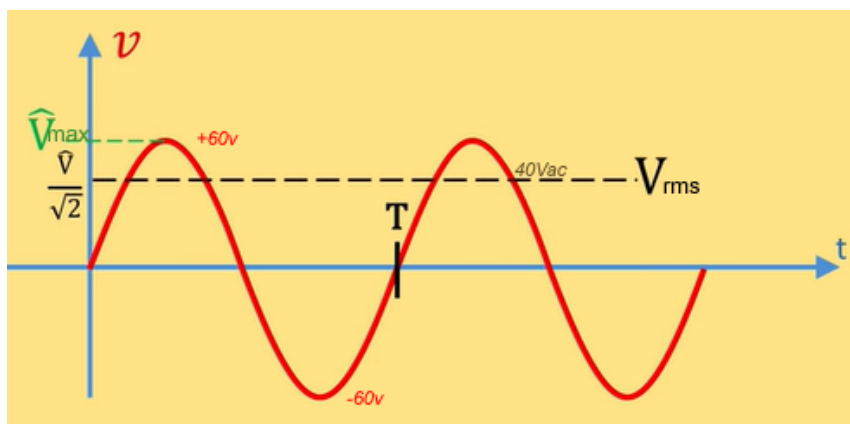
An oscilloscope will show you the peak to peak voltage.

ie: +60V max to -60v min = 120V peak to peak

RMS Voltage = Vmax / $\sqrt{2}$ = 60/1.414=40vac

The given formula only applies to pure sinus waves. Because a stator produces a non-sinusoidal waveform, a basic Digital Multimeter will provide inaccurate readings.

Only TrueRMS Multimeters can display a stator output's RMS value.

Connector

Pin	Type	Description
1	output	**To ignition coil**
2	input	High Voltage from Charging Coil
3	input	High Voltage from Charging Coil
4	input	**ground frame (=minus from battery)**
5	input	**+12Vdc from battery**
6	input	Kill switch
7	input	Analog Pickup
8	input	Pickup or Hall Sensor Ground
9	input	Digital Hall Effect Sensor *
10	input	If second analog Pickup for Low RPM
11	output	Tachometer *
12	input	Curve Selection *

V12R4C1

Kill Switch

The ignition uses the Kill switch input as a selector between 2 functions:

- Setup

- Stop engine.

Setup Mode

1) Turn the **Kill Switch ON** (*connector pin6 connected to ground*) **PRIOR** to power on the ignition box.

2) **Power on** the ignition box with a 6 to 12v battery.
<mark>Warning: The Power and Ground connections MUST BE SECURE.</mark>
<mark>A power outage during the setup process may cause the ignition box to brick !</mark>
When the ignition box detects that the kill switch is already grounded, it turns into SETUP Mode.

3) The **Blue Led** blinks 5 times then flashes every 5 seconds.

4) The ignition box starts a **Wifi AP** (Access Point)

5) On your phone, laptop, PC, whatever, go to the **Wifi setting** and search for a new SSID called **Transmic_ign**
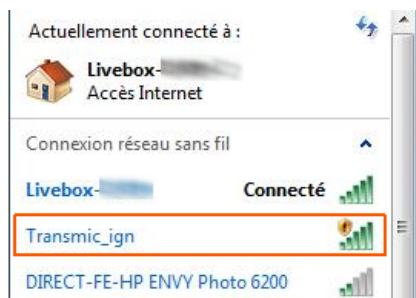
6) **Connect** to it
From CDIv12r0 to CDIv12r2 *no password* was required
Up from ACDCCDIv12r3 password is required: it's "***password***"
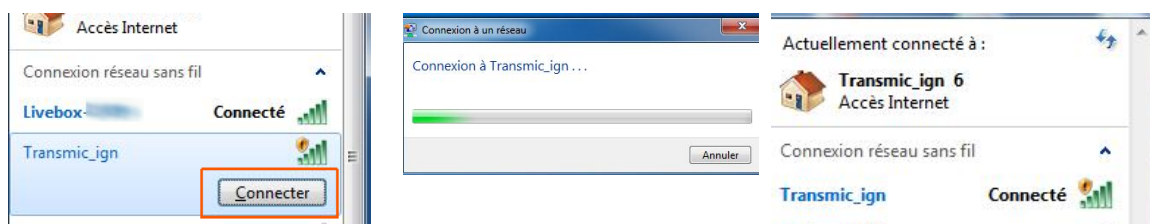
8) Once your device is connected to the AP, open up a **browser** and type in the address bar:
- Until version ACDCCDIv12r3c3:   http://192.168.4.1
- From version ACDCCDIv12r4c0 (August2023) :   http://192.168.4.1/setup
(http not https !)

9) Once connected your browser should display:

TRANSMIC.FR

<MODEL> <VERSION>

You are now connected
to your ignition box.
Options: 5
Serial: 2301 ©

[Configuration]

10) Turn the **Kill Switch OFF for Running mode**.

V12R4C1

No WiFi Access Point appears:

- Check that the 12pins connector is FULLY inserted and there is nothing preventing the male connector from fully engaging.

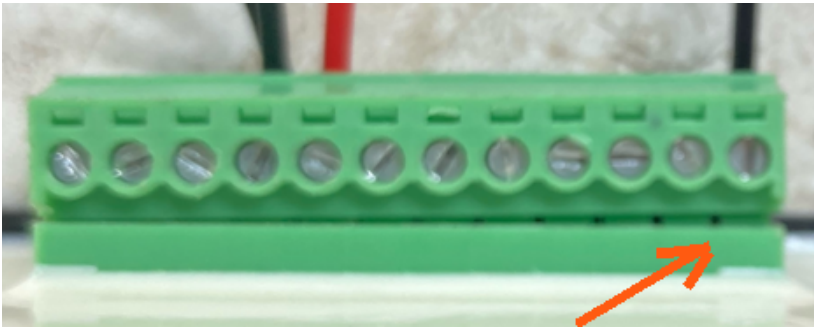- You can see available SSID with a WiFi Analyzer as NetSpot for Android or Wifi-Analyzer for W10

- Reboot the ignition box. (Power off/power up)

WiFi Access Point appears:

- Connect to the WiFi AP and test the network connection from your laptop to the ignition box:

Open a command Prompt:
Type "*cmd*" into the address bar of File Explorer and hit Enter
or Press Windows+R to open "*Run*" box. Type "*cmd*" and then click "*OK*"
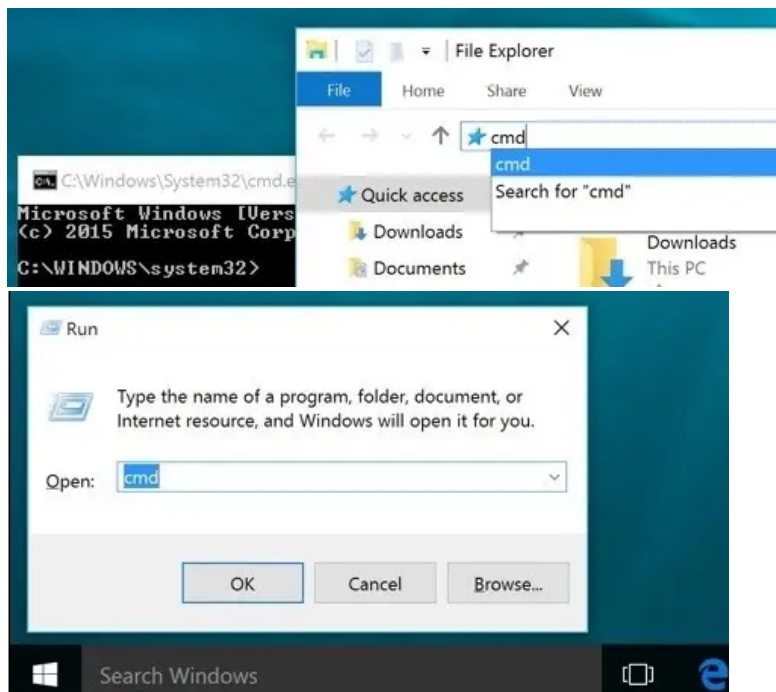
ping the ignition box, it should replies:

C:\>**ping 192.168.4.1**
Pinging 192.168.4.1 with 32 bytes of data :
Reply from 192.168.1.1 : bytes=32 time<1ms TTL=64
Reply from 192.168.1.1 : bytes=32 time<1ms TTL=64
Reply from 192.168.1.1 : bytes=32 time<1ms TTL=64

Clear DNS cache

Windows:	in MsDos console:	C:\>**ipconfig /flushdns**
MacOS:	in Terminal :	sudo dscacheutil -flushcache
Linux:	in Terminal:	sudo systemd-resolve –flush-caches

V12R4C1

Troubleshooting display

- Ignore any browser message saying it's not connected to internet:

Offline mode
Firefox is currently in offline mode and can't browse the Web.

It's a Warning, not an Error.
Indeed, it's connected ONLY to the Ignition box, not to the web.
(*It's impossible to reach Google and the ignition box at the same time*)

Console URL is **http**:// NOT **https**:// but some browsers like Chrome automatically switch to secure https://

- in Chrome, disable **HSTS** (*HTTP Strict Transport Security*) that forces to open websites in HTTPS:
     - Write **chrome://net-internals/#hsts** in the address bar.
     - Scroll down the page to :

Delete domain security policies

Input a domain name to delete its dynamic HSTS policy. (*You cannot delete preloaded entries.*):

Domain: 192.168.4.1   Delete
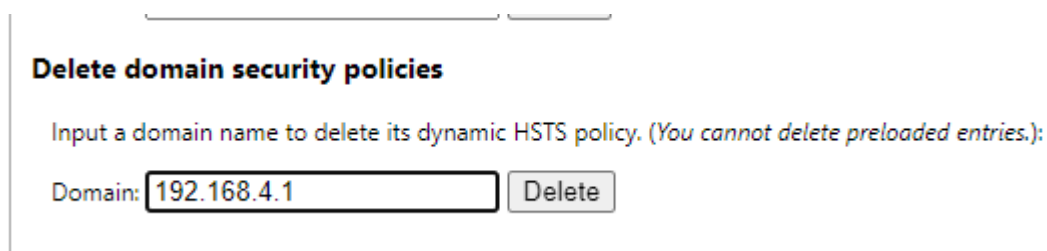
     - add **192.168.4.1** and hit **Delete** to disable Force https for this particular website.

- Or use Firefox. *Close <u>all</u> Firefox windows than relaunch it.*

- Or use a lightweight, portable browser as *QtWeb*

Ignition Timing

Assuming you want this ignition curve:
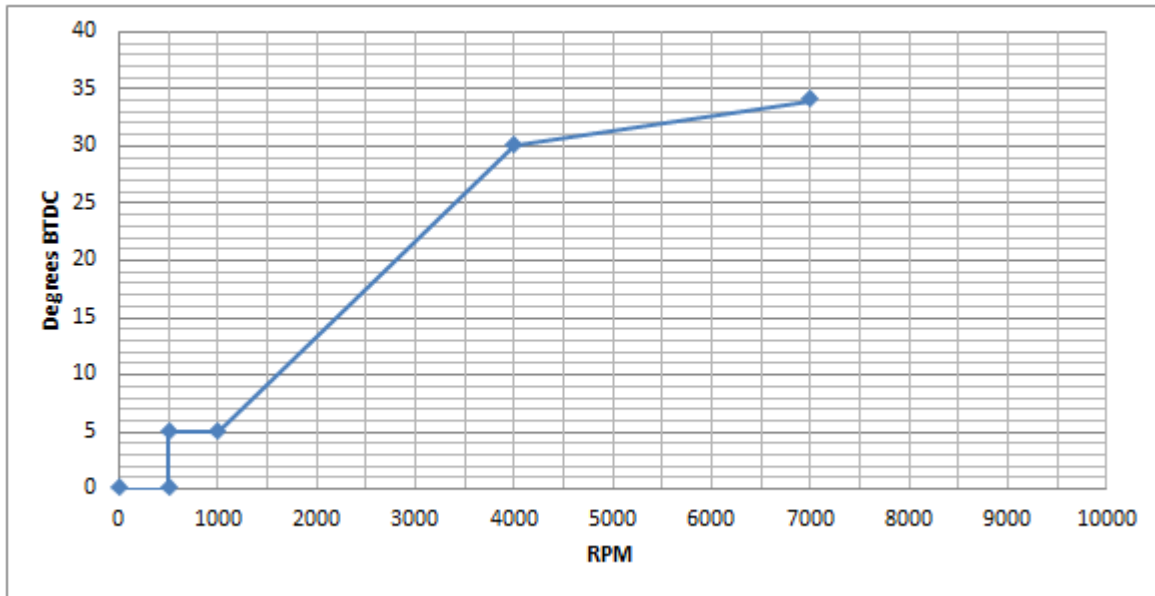
One can define the curve with 4 points but you can use up to 13 points.

(0 to 500rpm at 0° BTDC is hard coded for no kickback.)

The curve above is defined by 4 pairs of values

```
500  rpm      =      5°   BTDC
1000 rpm      =      5°   BTDC
4000 rpm      =      30°  BTDC
7000 rpm      =      34°  BTDC
```

Those 4 couples of values MUST be filled out in the form consecutively and in ascending order of RPM along with the pickup position.

V12R4C1

Pickup Type

Default: 0

Select the type of pickup attached to the CDI.

MENU	PICKUP TYPE	PICKUP POSITION
STROKES	SHAFT	CYLINDERS
ADVANCE TIMING N°1	ADVANCE TIMING N°2	
ADVANCE 0-500rpm	AUTO SPARK	KICSP
DCCDI	CONSOLE	MODIFY

[0]

○ 0: Analog Pickup Coil (VR)
○ 1: Digital Hall Effect Sensor *

Send

option

0 = VR stands for Variable Reluctor aka pickup coil (Analog signal)

1 = Hall Effect Sensor (Digital signal) *

VR pickup

Analog **VR pickup** is connected between **pin 7 and pin 8/gnd**
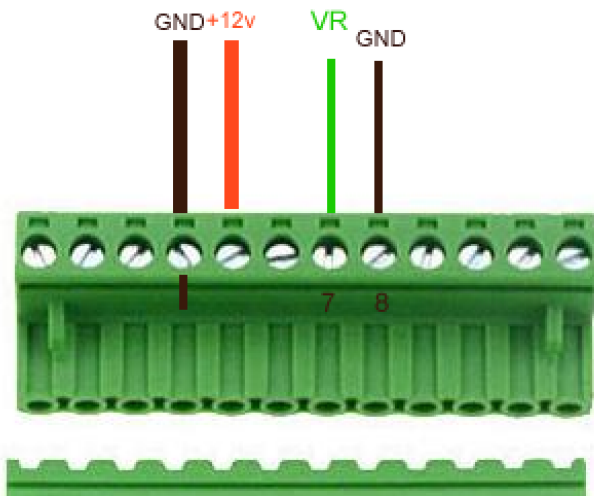
The pickup coil MUST be connected in order to send a **POSITIVE PULSE FIRST**.
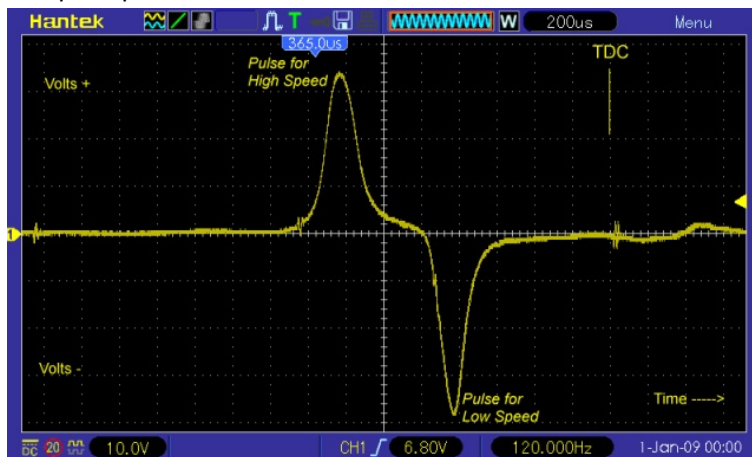
If the first pulse is Negative then the timing will be completely off (spark AFTER TDC) so no damage except hot engine.

Just swap the wires to change the polarity!

To avoid ElectroMagnetic Interference (EMI) it's safer to connect the pickup sensor through a shielded cable.
Shield grounded on one side only.
Twisted pair is better.

V12R4C1

Hall Sensor

Digital **Hall Sensor** is connected between **pin 9 and pin 8/gnd**
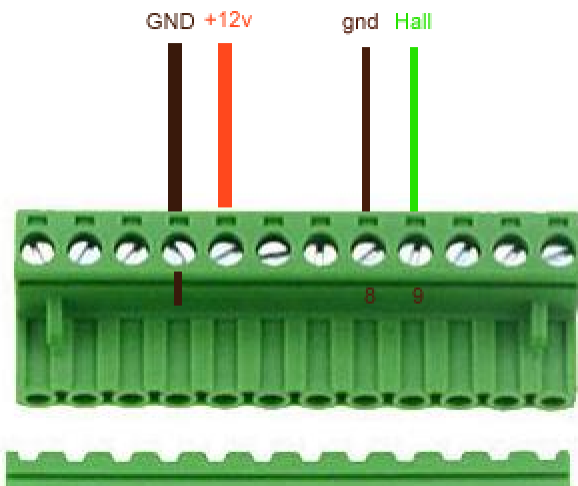
2 types of Sensors

- Hall sensors with **open-collector** output, give a floating voltage when no magnet.
They needs a pull-up resistor.
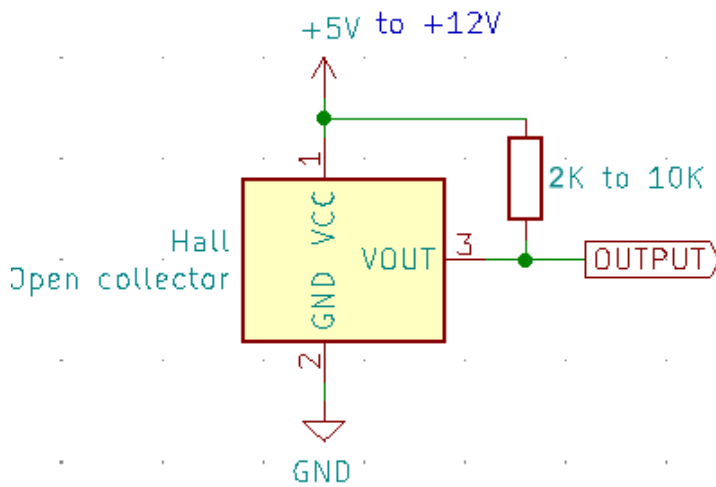
- Hall sensors with **built-in pull-up resistor** give positives voltage when no magnet.
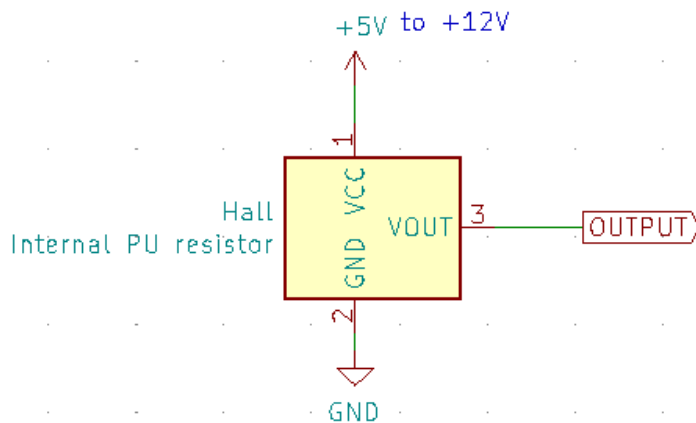
Hall sensors require a +5v to +12vdc supply voltage. *See datasheet*

*You can even connect an **Optical Sensor** as long as it puts out a CLEAN square signal similar to the one above.*

See Appendix 2 for Position

V12R4C1

Output of a Hall sensor

When a magnet passes
in front of the Hall sensor

+5 to +24v

Default state is HIGH

0v
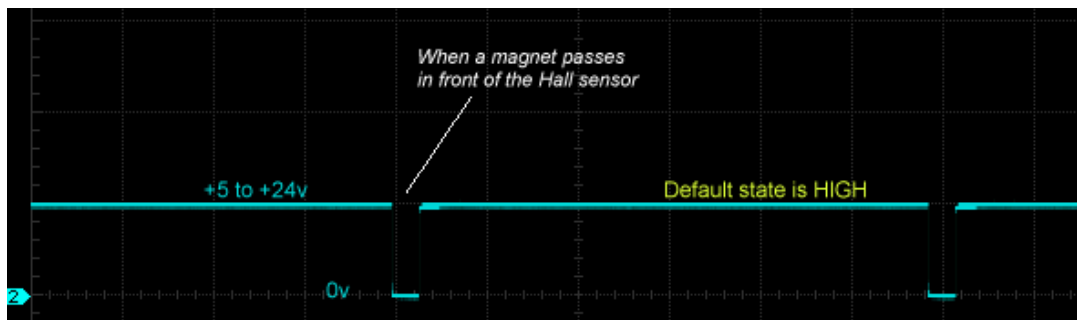
Timing

The ignition box uses the **rising edge** of the Hall sensor signal.

Hall sensor output

Pickup Position

- Go back to the opened browser and first thing first, enter the **Pickup Position** then click **Send**
Formula is: ***Pickup position = Base advance + Magnet Length***
Magnet Length:

See [Appendix](#) 1,2,3,4 to find the physical position of the pickup relative to TDC.

- The **blue Led flashes** when values are processed.
Current value appears in blue on the form.

Shaft

ADVANCE TIMING N°1	SHAFT	ADVANCE 0-500rpm
ADVANCE TIMING N°2	DWELL	AUTOSPARK
CONSOLE	BYPASS	MODIFY

[0]

○ 0: CrankShaft
○ 1: CamShaft

Send

Current value appears in blue on the form.

- Select if the pickup is placed on the crankshaft through the flywheel (2stk,4stk) with 1 pulse per rotation or is on the camshaft (4stk) with 1 pulse per 2 rotations.

Advance Timing

- Proceed now to enter the advance timing.

We want to setup:

```
500  rpm     =       5°   BTDC
1000 rpm     =       5°   BTDC
4000 rpm     =       30°  BTDC
7000 rpm     =       34°  BTDC
```

Enter values consecutively in ascending order of RPM !

Pair 500:5 first etc etc…

7000 being the last value (*as the firmware stops reading when it meets a null value*),

7000 will act as the hard rev-limiter: No more sparks at 7001 RPM !

MENU	PICKUP TYPE	PICKUP POSITION
ADVANCE TIMING N°1	SHAFT	ADVANCE 0-500rpm
ADVANCE TIMING N°2	DWELL	AUTOSPARK
CONSOLE	BYPASS	MODIFY

Curve N°1

[500rpm => 5°]
[2000rpm => 15°]

RPM
`3000`

ADV
`14`

Send

Stored Values:

Timing Curve 1:

0	500
4	5
8	1000
12	5
16	3000
20	40
24	8000
28	30
32	0
36	0
40	0
44	0

RPM can be entered with a 100rpm step but RPM will be measured with **1rpm** precision.

Timing can be entered with a precision of 1° but the processor calculate all timing values between the points you entered, using linear interpolation so an **accuracy of 0.1°** is done at this step.

Any timing values will be COMPLETELY OFF IF PICKUP POSITION IS FALSE: **PICKUP POSITION IS KEY**

See Appendix 1 for Position

Curve N°1 is stored at addresses 0 to 100

Pickup Polarity

MENU	PICKUP TYPE	PICKUP POSITION
ADVANCE TIMING N°1	SHAFT	ADVANCE 0-500rpm
ADVANCE TIMING N°2	DWELL	AUTOSPARK
CONSOLE	BYPASS	MODIFY

[0]

○ 0: Analog Pickup Coil (VR)
○ 1: Digital Hall Effect Sensor *

Send

option

Current value appears in blue on the form.

When the LEADING edge of the magnet passes in front of the pickup coil, a wave is produced and another wave of opposite voltage is generated when the FALLING edge of the magnet leaves the pickup coil. Depending on the wiring, the first pulse at Leading Edge can be positive (then negative at Falling edge), or the exact opposite.

Pickup Polarity MUST be Positive then Negative to work with this CDI

Like that:

V12R4C1
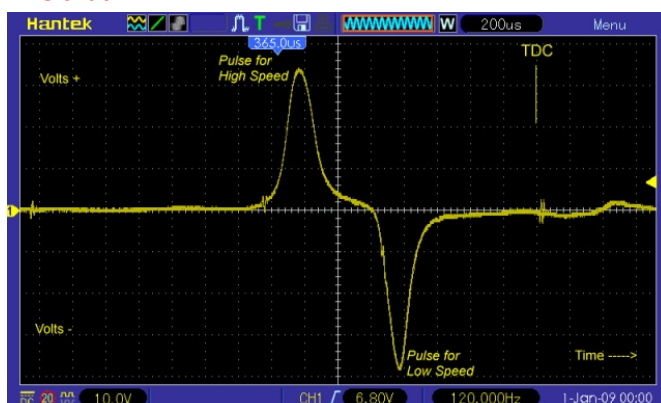
Select curve

Default: curve N°1

If you bought the 2 curves option, then connect a switch between connector **pin 12 and ground**.

When switch is **open** (or no switch connected), **curve N°1** will be used.

If switch is **on** (*pin 12 connected to ground*) <u>BEFORE</u> turning on the ignition box, then **curve N°2** will be used.

You cannot change the curve while running. (*The switch is not read by the ignition*)

| ADVANCE TIMING N°2 | DWELL | AUTOSPARK |
| CONSOLE | BYPASS | MODIFY |

Curve N°2 *

RPM

ADV °

Send

* *option*

96	0
100	0

Timing Curve 2:

104	501
108	5
112	1001
116	8
120	3001
124	30
128	10001
132	40
136	0
140	0
144	0
148	0
152	0
156	0
160	0
164	0
168	0
172	0
176	0
180	0
184	0
188	0
192	0
196	0
200	0
204	0

Settings:

Curve N°2 is stored at addresses 104 to 204

Read

- To display the values that have been set, click on the **Read** button on the **Home** page :

MENU	PICKUP TYPE	PICKUP POSITION
STROKES	SHAFT	CYLINDERS
ADVANCE TIMING N°1	ADVANCE TIMING N°2	
ADVANCE 0-500rpm	AUTO SPARK	KICSP
DCCDI	CONSOLE	MODIFY

Read	Dump

Clear Timing	Clear All

Factory Restore	Home

Stored Values:

Timing Curve:

0	500
4	5
8	1000
12	5
16	4000
20	30
24	7000
28	34
32	0
36	0
40	0
44	0
48	0
52	0
56	0
60	0
64	0
68	0
72	0
76	0
80	0
84	0
88	0
92	0
96	0
100	0

✔ exit (at 32)

Stored Values:

Timing Curve:

0	500
4	5
8	1000
12	5
16	4000
20	30
24	0
28	0
32	0
36	0
40	7000
44	34
48	0
52	0
56	0
60	0
64	0
68	0
72	0
76	0
80	0
84	0
88	0
92	0
96	0
100	0

✖ ── exit (at 24)

92	0		196	0
96	0		**200**	0
100	0		204	0

Settings:

212	400	Kick Speed (AC/DCCDI)
216	50	Pickup Position (°btdc)
232	0	Pickup Type (0:VR)
233	3	Dwell (TCI)
234	0	DwellType (TCI)
235	0	
236	0	Adv 0-500rpm (°atdc)
237	0	Console output (0:No)
238	0	HV Boost (DCCDI)
239	0	Shaft (0=crankshaft)
240	0	Autospark (TCI/DCCDI)
241	0	
242	0	
243	0	Bypass (TCI)
244	1	Cylinders
245	2	Strokes
248	2	Starts

Home

All values must be **consecutive** and in ascending order of RPM !

V12R4C1

Dump

Read EEPROM addresses and display them in HEX values for <u>debug</u> purpose.

MENU	PICKUP TYPE	PICKUP POSITION
STROKES	SHAFT	CYLINDERS
ADVANCE TIMING N°1	ADVANCE TIMING N°2	
ADVANCE 0-500rpm	AUTO SPARK	KICSP
DCCDI	CONSOLE	MODIFY

| Read | Dump |

| Clear Timing | Clear All |

| Factory Restore | Home |

Dump EEPROM Hex Values:

```
0     F4 01 00 00 05 00 00 00
8     40 1F 00 00 28 00 00 00
16    34 21 00 00 28 00 00 00
24    00 00 00 00 00 00 00 00
32    00 00 00 00 00 00 00 00
40    00 00 00 00 00 00 00 00
48    00 00 00 00 00 00 00 00
56    00 00 00 00 00 00 00 00
64    00 00 00 00 00 00 00 00
72    00 00 00 00 00 00 00 00
80    00 00 00 00 00 00 00 00
88    00 00 00 00 00 00 00 00
96    00 00 00 00 00 00 00 00
104   00 00 00 00 00 00 00 00
112   00 00 00 00 00 00 00 00
120   00 00 00 00 00 00 00 00
128   00 00 00 00 00 00 00 00
136   FE 00 00 00 00 00 00 00
144   00 00 00 00 00 00 00 00
152   00 00 00 00 00 00 00 00
160   00 00 00 00 00 00 00 00
168   00 00 00 00 00 00 00 00
176   00 00 00 00 00 00 00 00
184   00 00 00 00 00 00 00 00
192   00 00 00 00 00 00 00 00
200   00 00 00 00 00 00 00 00
208   00 00 00 00 00 00 00 00
216   32 00 00 00 00 00 00 00
224   02 00 00 00 00 00 00 00
232   00 00 00 00 00 00 00 00
240   00 00 00 00 01 00 00 00
```

Home

V12R4C1

Modification

Say you want to modify the advance timing for 7000rpm and set 35° instead of 34°

In *Read* mode above, we saw that RPM 7000 is stored at address 24 and timing for 7000rpm is at address 28.

Since we want to modify the advance timing at line 28, we now have to enter :
Line   **28**
New value   **35**
then   **Send**

Same thing to change any other values.

Remember: All timing values must be in <u>ascending</u> order of RPM and <u>no blank address</u> between timing values.
Use <u>Read</u> button to check that.

V12R4C1

Add points

Say you want **to add** one advance timing of 34° @ 8000rpm

In *Read* mode above, we saw that last RPM 7000 is stored at address 24 and timing for 7000rpm is at address 28.

The next 2 empty slots available are:

24	7000
28	34
32	0
36	0
40	0

Address **32** for RPM and Address **36** for timing

We now have to enter :

Line	**32**
New value	**8000**
then	**Send**

Line	**36**
New value	**34**
then	**Send**

Remember: All timing values must be <u>**consecutive**</u> and in <u>ascending</u> order of RPM !

Use Read *button to check that.*

Clear points

Say you want to remove the last advance timing of 34° @ 7000rpm

In *Read* mode above, we saw that last RPM 7000 is stored at address 24 and timing for 7000rpm is at address 28.

24	7000
28	34
32	0
36	0
40	0

To zero out those values we now have to enter :

Line	**24**
New value	**0**
then	**Send**

Line	**28**
New value	**0**
then	**Send**

Remember: All timing values must be <u>**consecutive**</u> and in <u>ascending</u> order of RPM !
Use <u>Read</u> button to check that.

Stored Values:

Timing Curve:

0	500	
4	5	
8	1000	
12	5	
16	4000	
20	30	
24	0	— exit
28	0	
32	0	
36	0	
40	7000	
44	34	
48	0	
52	0	
56	0	
60	0	
64	0	
68	0	
72	0	
76	0	
80	0	
84	0	
88	0	
92	0	
96	0	
100	0	

Clear Timing

This button will **clear TIMING values** WITHOUT confirmation.
Pickup position, polarity, shaft, dwell etc are kept.

Browser shows :

Timing values cleared!

Please restart the ignition box.

This box now has no Advance Curve and cannot operate until you set timing values.

Restart the ignition box. (power off/power on)

Don't forget the Kill switch position if you want to return in Setup mode….

Clear All

This button will **clear ALL values** WITHOUT confirmation.
Timing, Pickup position, polarity, shaft, dwell etc are zeroed.

Browser shows :

EEPROM values cleared!

Please restart the ignition box.

This box is now *empty* and cannot operate until you set values. '

Restart the ignition box. (power off/power on)

Don't forget the Kill switch position if you want to return in Setup mode….

Factory Restore

This button will **Restore Factory Default** WITHOUT confirmation.

Timing, Pickup position, polarity, shaft, dwell etc are set to default values.

Browser shows :

Init All done!

This box now have a default Advance Curve which is not the one you need...
Tune the values before to start the engine!

Restart the ignition box. (power off/power on)

Don't forget the Kill switch position if you want to return in Setup mode….

Advanced settings

If you don't need those Extra settings, just let them to their default value.

Advance at kick start

Default: 0
Range of values: 0 to 10

For an easier Manual Kick start and to avoid kick backs, you can delay the advance between 0 to 500rpm to send the spark a few degrees **After** Top Dead Center (ATDC)

ADVANCE TIMING N°1	SHAFT	ADVANCE 0-500rpm
ADVANCE TIMING N°2	DWELL	AUTOSPARK
CONSOLE	BYPASS	MODIFY

[0]

ATDC

[_____] °

Send

Current value appears in blue on the form.

Kick Speed

For an easier Manual Kick start and to avoid kick backs, you can select what will be the RPM of the very first engine rotation when it is kick started.

ADVANCE 0-500rpm	AUTO SPARK	KICSP
DCCDI	CONSOLE	MODIFY

[800]

Kick Speed

[ ] rpm

Send

Current value appears in blue on the form.

Console

Enable the Console output:
- Turn the ignition box in **Setup Mode**
- Go to "**CONSOLE**", check "1" to enable the console output, press Send

Current value appears in blue on the form.

- Power **off** the ignition box
- **Disconnect** the **Kill** wire from ground
1) **Power on** the ignition box, it goes in "**Run Mode**"

2) The **blue LED** flashes once if curve N°1 is selected or flashes twice for curve N°2

4) The ignition box also creates a **WiFi AP** (*Access Point*)

5) On your phone, laptop, PC, whatever, go to the **Wifi setting** and search for a new SSID called **Transmic_ign**
You can see available SSID with a Wifi Analyzer as <u>*NetSpot for* Android</u> *or* <u>Wifi-Analyzer for W10</u>
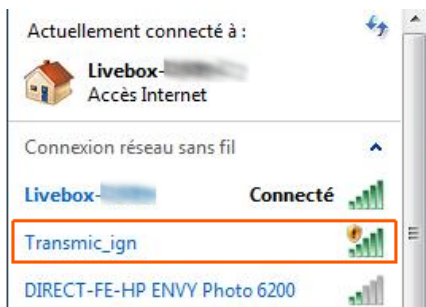
6) **Connect** to it

From CDIv12r0 to CDIv12r2 *no password* was required

Up from CDIv12r3 password is required: it's "***password***"
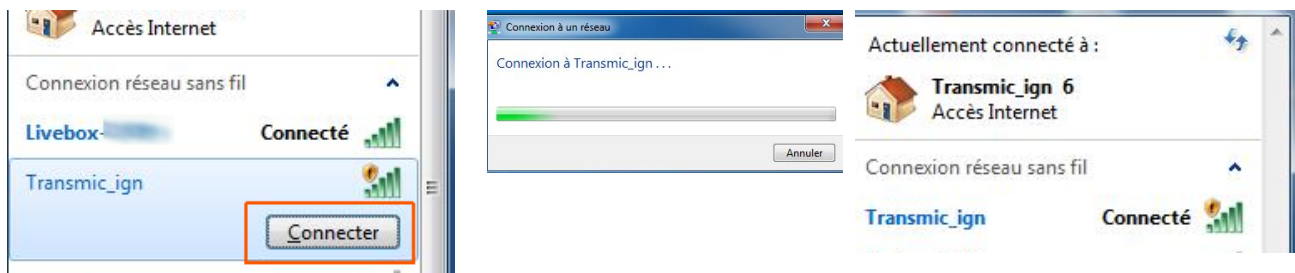
7) **Start** the engine

8) Once your device is connected to the AP, open up a **browser** and type in the address bar:
- Until version ACDCCDIv12r3c3: http://192.168.4.1
- From version ACDCCDIv12r4c0 (August2023) : http://192.168.4.1/console

9) After a few seconds, the browser should display both the **RPM and the advance timing** in degrees BTDC followed by 2 bargraphs

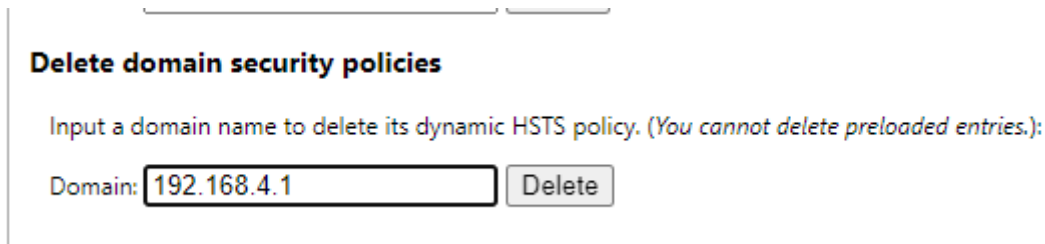**Display appears ONLY when engine is running.**

V12R4C1

Troubleshooting

Console URL is http:// NOT https:// but some browsers like Chrome automatically switch to https://

Workarounds

- Use Firefox. *Close <u>all</u> Firefox windows than relaunch it.*

- Use a lightweight, portable browser as *QtWeb*

- In Chrome, disable **HSTS** (*HTTP Strict Transport Security*) that forces to open websites in HTTPS:
       - Write **chrome://net-internals/#hsts** in the address bar.
       - Scroll down the page to :

       - add **192.168.4.1** and hit **Delete** to disable Force https for this particular website.

Running Mode

1) **Disconnect** the **Kill** wire from ground if you previously went into **Setup Mode**

2) **Power on** the ignition box, it goes in "**Run Mode**"

3) The **blue LED** flashes one time.

4) Start the engine. The blue LED **blinks** in sync **with RPM**.

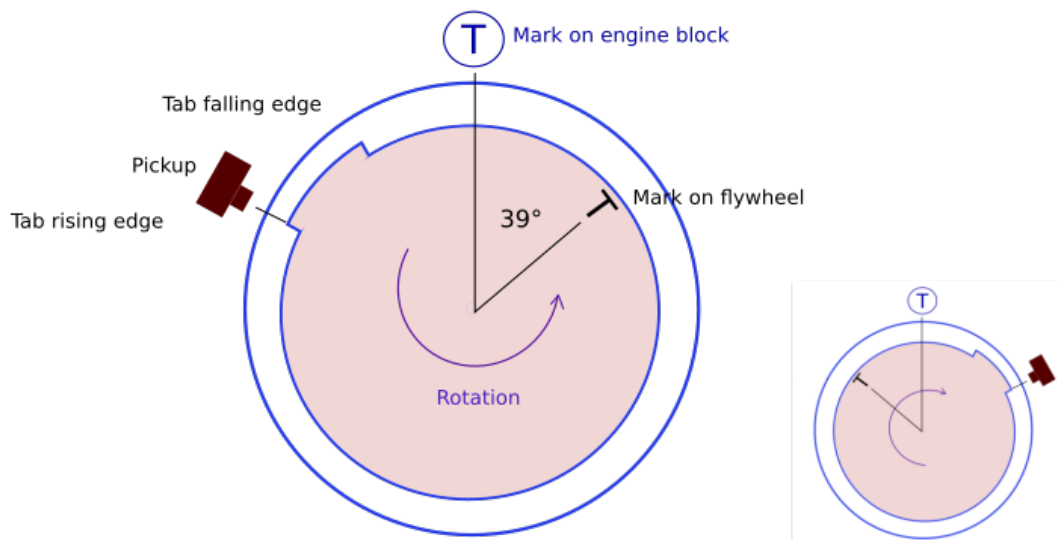5) When the engine runs, if **Kill** wire is connected **to ground** THEN it **stops** the engine.

/!\ XT550-XT600: Kill the engine with the Kill switch BEFORE shutting down the +12v.
(As it's a software kill, the processor must be powered on to be able to kill the engine!)
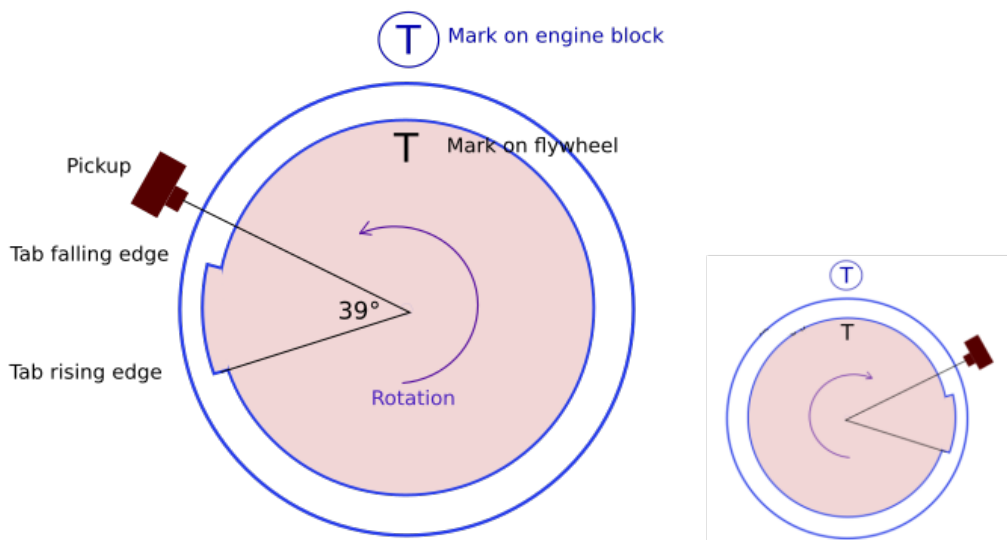
Appendix 1

Find the Hall sensor or Pickup position.

In the example below the pickup/sensor is set at 39° BTDC

Method N°1
Pickup aligned with rising edge

T — Mark on engine block

Tab falling edge

Pickup

Tab rising edge

39°

Mark on flywheel

Rotation

T

Method N°2
Engine at TDC

T — Mark on engine block

T — Mark on flywheel

Pickup

Tab falling edge

Tab rising edge

39°

Rotation

T

T

Leading|Rising edge generate pulse for high revs
Trailling|Falling edge generate pulse for idle.
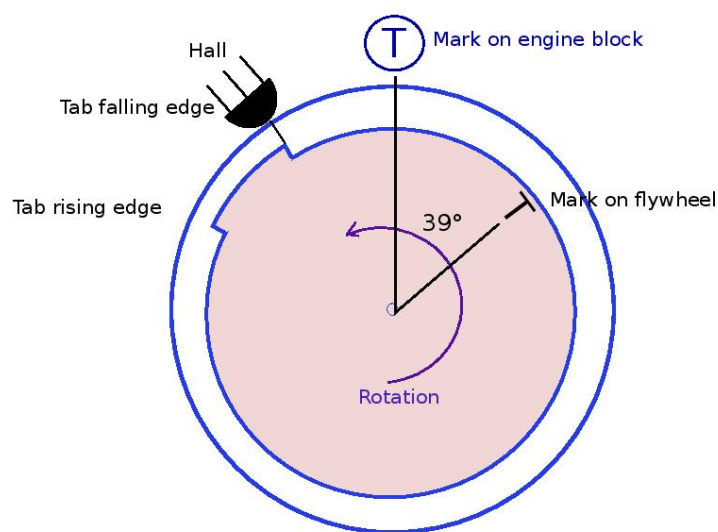
calageTDC_pickup_2methods.svg

Appendix 2

Find the physical position of the digital **Hall Sensor** relative to Top Dead Center.

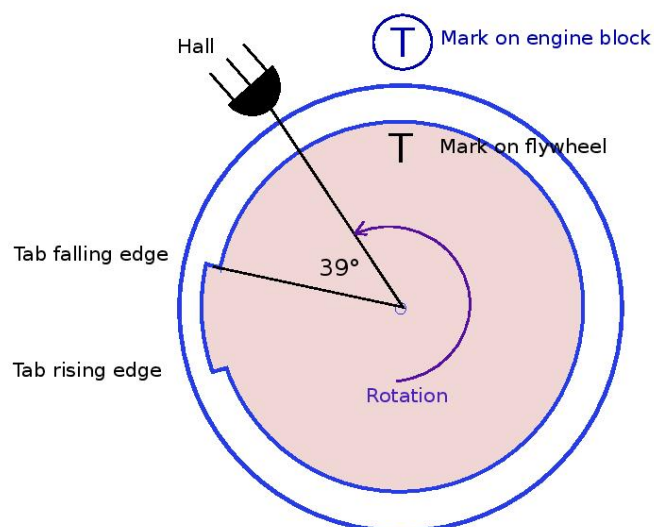*In the example below the sensor is set at 39° BTDC*

Method N°1
Hall sensor aligned with falling edge
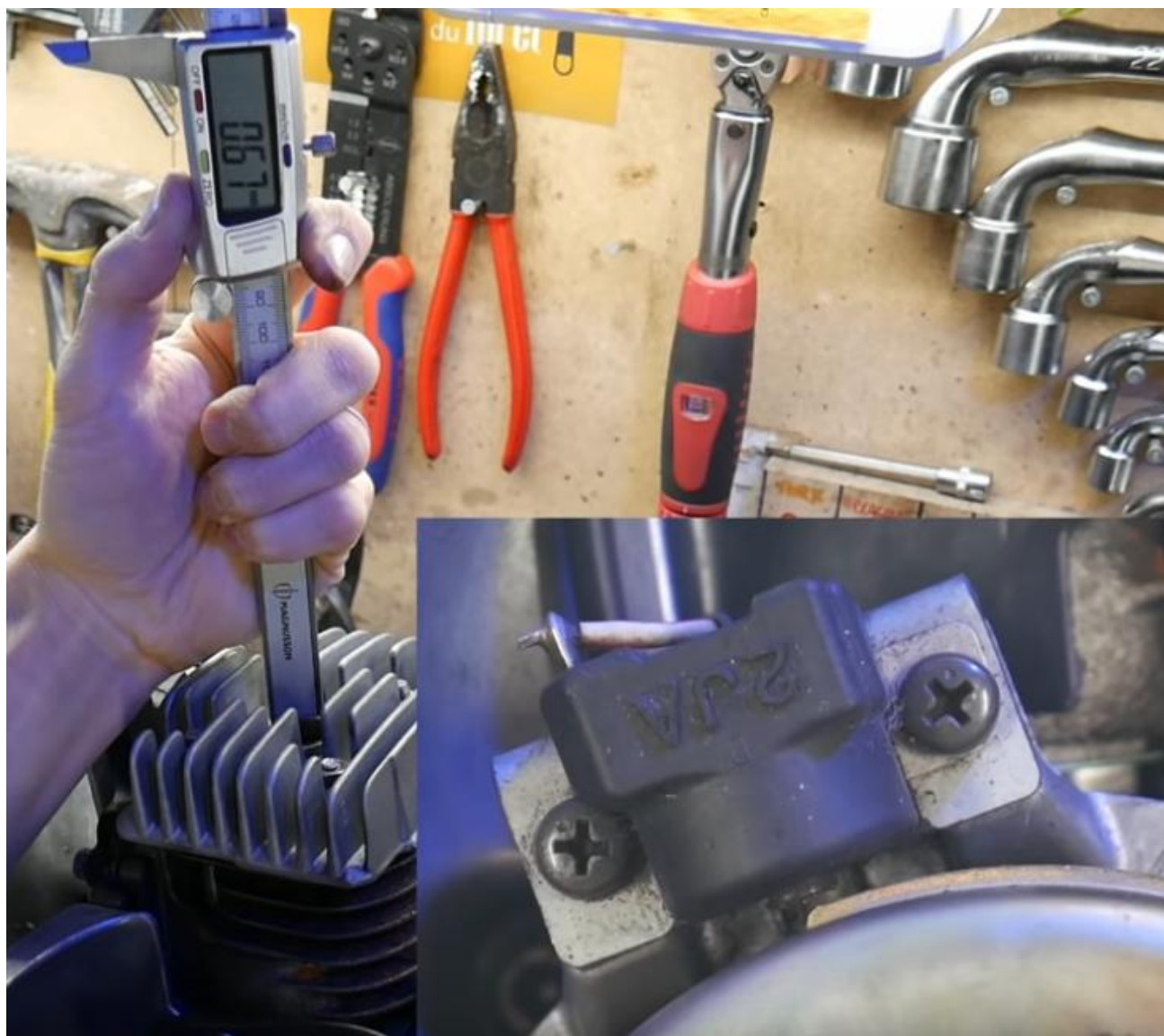

Method N°2
Engine at TDC

Appendix 3

A) Remove the sparkplug, find the TDC position with a *dial indicator gauge* or a *caliper rule*:

B) Align the pickup with the beginning of the magnet on the rotor and measure the travel of the piston with the caliper rule:
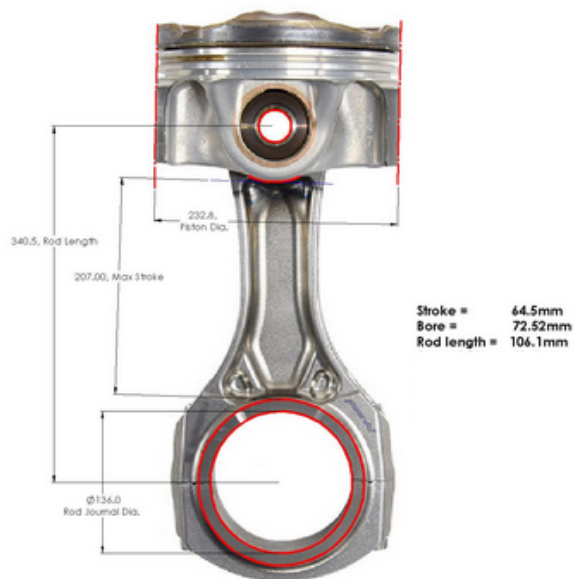
C) Use an online timing calculator to convert millimeters into degrees:

https://lambretta-images.com/tuningh/port-timing-calculators/degrees-to-mm-timing-calculator/

or

http://www.ajcshop.fr/Calculettes/html/calculette-convertisseur-allumage.htm

ie:

Stroke = 64.5mm
Bore = 72.52mm
Rod length = 106.1mm

=>

1	->	64.5	Course en mm
2	->	106.1	Longueur de bielle (entraxe) en mm
3	->		Diamètre (D) du volant en mm (uniquemer
4	->	0.67	Avance en mm
	Calculer	10.25	Avance en degrés (angle α) (renseigner 1, 2, 4) Le résultat est en ° et centièmes de °

Appendix 4

Tries and errors and Timing Lamp

First method:

For example, if you set the "*Pickup position*" to 40° BTDC plus some timing points then with your Timing Lamp you measure MORE advance than what is set in the user interface (ie you measure 35° instead of 30°@3000rpm) then INCREASE the "*Pickup position*" (40° → 45°)

If you set the "*Pickup position*" to 40° BTDC and with your Timing Lamp you measure LESS advance than what is set in the user interface (ie you measure 25 instead of 30°@3000rpm) then LOWER the "*Pickup position*" (40° → 35°)

Second method:

Set a FLAT advance timing with a SAFE value:
Example: 10° BTDC from 500 to 4000rpm

Run the bike and measure the timing with a Timing Lamp.

If you measure say 15° BTDC (instead of 10°) that mean the "*Pickup Position*" is off by 5°.
Increase the "*Pickup Position*" by 5.

If you measure say 5° BTDC (instead of 10°) that mean the "*Pickup Position*" is off by 5°.
Lower the "*Pickup Position*" by 5.