Traction Control Unit

Contents

Requirements

The TN traction controller requires the following supporting hardware:

1. VR ABS (passive) or hall effect style speed sensors with:
   a. A single sensor on the undriven wheel
   b. At least 1 sensor on a powered wheel, preferably two sensors from each wheel (left and right).
2. An ECU capable of at least 1 of the following setups:
   a. An Odb1 style outputting to a single spark wire to the distributor
   b. A Coil on plug ECU configured or reconfigured in wasted spark mode.
   c. An ECU that can interpret 5V analog signal to retard timing.

   Note: If your ECU is converted to a coil on plug system then the ICM wire from the ecu that goes to the coil on plug controller will be intercepted. Eg: **HondaRulez COP mini.**

Hardware Installation

Overview

We shall describe instructions for regular ECU and **Hondata** based ECUs

Regular ECU

There are speed sensors feeding into the device. We also intercept the ECU's ignition output, that is, we pass the ignition signal through the device. The ecu's spark output is cut and connected to the TCS yellow wire. The spark output of the TCS is at the white wire.
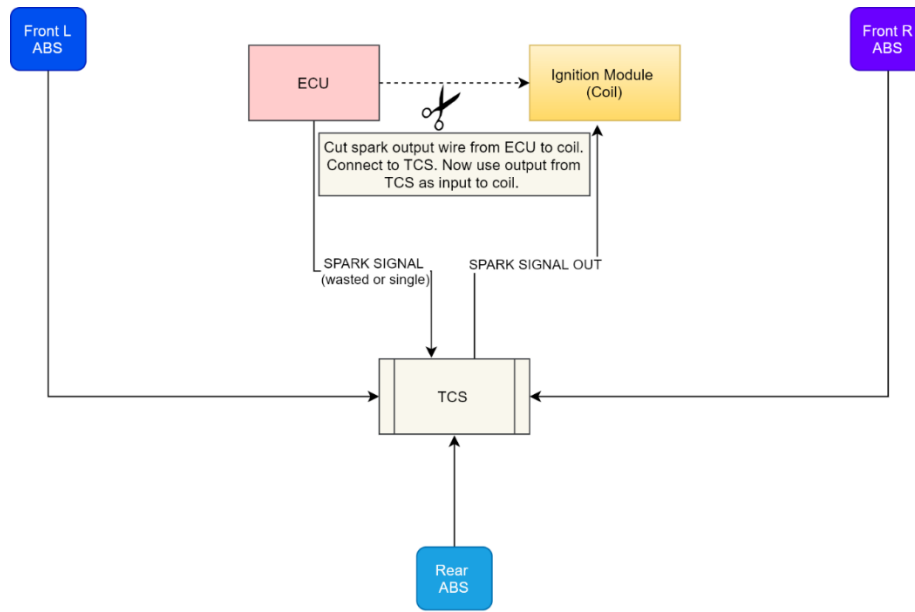

Figure 1 - Regular ECU

Hondata ECU

For Hondata ECUs, we connect the Ignition output signal to our #1 spark input on the TCS. There is no need to splice the wire and place the device between the ECU spark output and distributor ignitor. We also connect the 5V output from the device to the Hondata's 5V input for TCS.
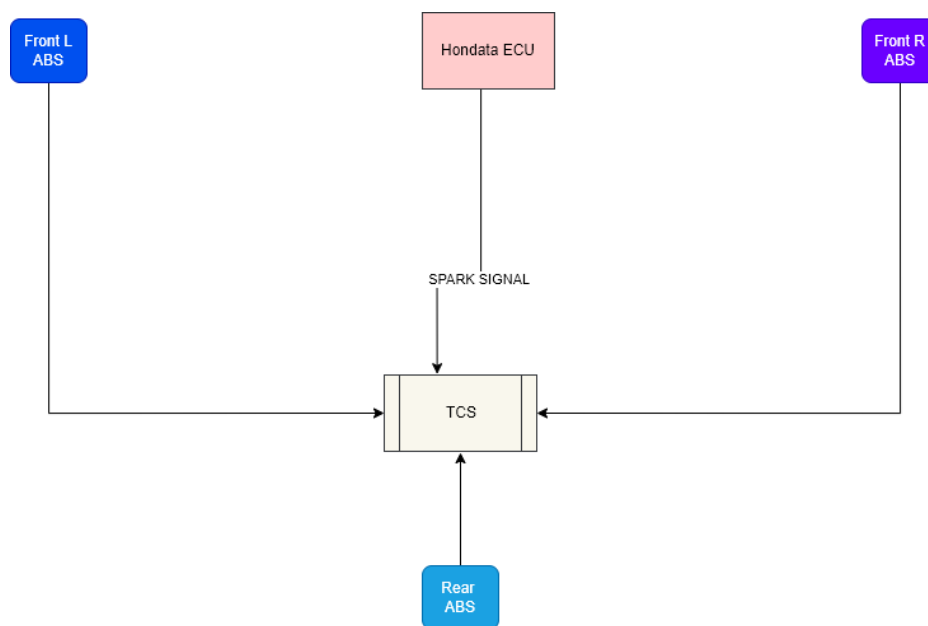

Figure 2 - Hondata ECU

Wiring

The diagram below gives the pinout and wire colours for the wire harness. It is recommended to install a 2A in-line fuse on the PWR line of this device.

This diagram assumes a Front Wheel Driven car. The undriven wheel is therefore the rear wheel (R-ABS).

VR ABS sensor wires are not polarity sensitive, there is no negative or positive.

Hall effect sensors carry **+VE** signal and **GND.**

1 PWR	3 SPARK IN1	5 F-ABS 1	7 F-ABS 2	9 R-ABS	11 5V Analog	13 SPARK IN 2
2 GND	4 Trim	6 F-ABS 1	8 F-ABS 2	10 R-ABS	12 SPARK OUT1	14 SPARK OUT2
		Powered Wheels		Unpowered Wheel		
	Connect the other wire of TRIM to GND					

The trim input is already connected in the harness.

- **1. PWR** – switched 12V power

- **2. GND** – Ground

- **3. Spark in** – Spark output from ECU that goes to ignition coil. This is the RPM signal wire. See A or B below for wiring. **A** is for **hondata**, **B** is for regular ECU.

  o **A**. Connect this wire to the ICM wire of the Hondata ECU. Tap into the wire, do not cut the wire if you don't have to.

  o **B**. If using regular ECU (not hondata) then you will need to splice the device so that it sits between the ignition output wire and ECU. The #12 white wire will then go to the ignition coil.

- **4**. **Trim -** The trim knob for quickly adjusting level of traction.

- **5/6. F-ABS 1** – Front left ABS sensor wire pairs. If using hall effect sensors, only connect the top wire (odd numbers). If using a 3 wire hall effect sensor only connect the output to the #6 or #5 wire, but not both. If using 2 wire ABS please connect both wires.

- **7/8. F-ABS 2** - Front right ABS sensor. Same rule apply as above.

- **9/10. R-ABS** – Rear (undriven) ABS sensor. Same rule apply as above.

- **11. 5V Analog** – 0 to 5V output for ECUs that can interpret this for retard (**Hondata** 5V input for example). For hondata ECU:

  ▪ ELD input is good 5V input pin.

  ▪ Pin D12 can be used as a 0-5V analog input. Note that the ECU must have a 0.1uF capacitor in C42 for the ECU to read the voltage correctly.

  ▪ Pin B6 can be used as a 0-5V analog input. Note that the ECU must have R2 and R3 removed or replaced with 1N4148 diodes.

- **12. Spark Out** – This is where the spark is sent to the ignition coil from the traction device. This goes to ignition coil wire that was cut. If using **Hondata** this wire should be ignored.

- **13. Spark In 2 –** Second spark input. If using wasted spark in 4 cylinder this will handle the other 2 cylinders, while pin #3 above will handle the first 2. Ignore for **Hondata**
- **14. Spark Out 2 –** Spark output for second spark input above. Ignore for **Hondata**.

Distributed Spark Systems

In this configuration the single spark output wire from the ecu to the distributor is intercepted. We splice in the TCS between the ECU and Distributor on this wire. In other words, cut the wire that goes to distributor, connect the yellow TCS wire to the ecu side and the white wire to distributor side.

For coil on plug converted using Honda Rulez, cut the internal ICM wire that was soldered.
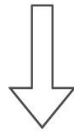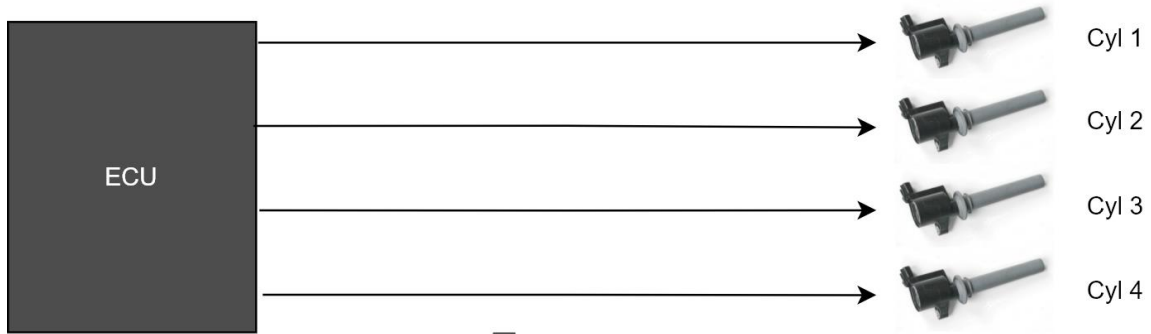
4 to 8 Cylinder Distributed Spark


ECU ─Spark Out─→ TCS ─Spark Out─→ Distributor
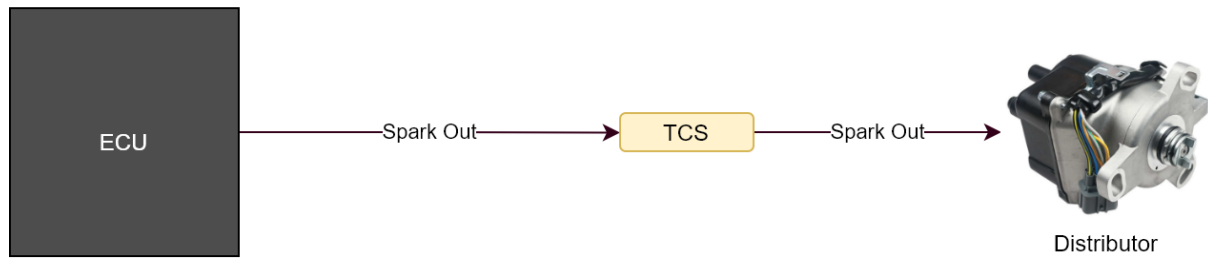
4 Cylinder Coil On Plug Wiring

In this configuration we take a regular 4 cylinder with 4 coils and reconfigure the output as wasted spark. You will pair cylinders 1 and 4, 2 and 3 if your firing order is 1,3,4,2.

4 Cylinder Coil on Plug
with firing order 1,3,4,2

ECU

Cyl 1
Cyl 2
Cyl 3
Cyl 4

4 Cylinder Reconfigured as
Wasted Spark

ECU

TCS Spark 1

TCS Spark 2

Cyl 1
Cyl 2
Cyl 3
Cyl 4
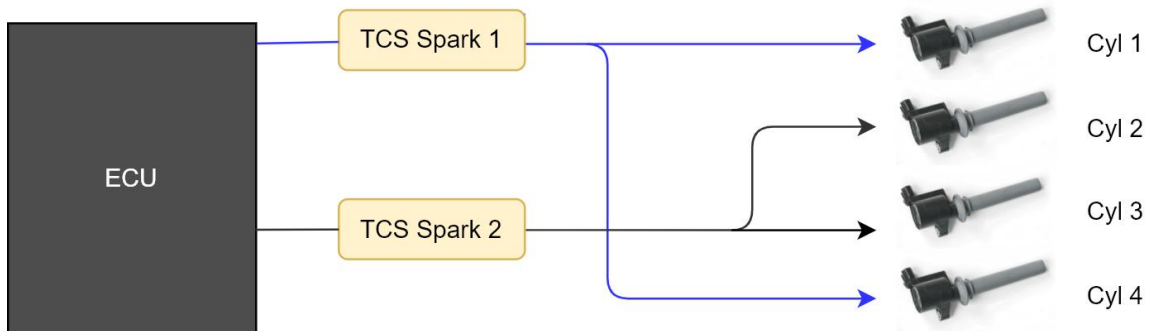
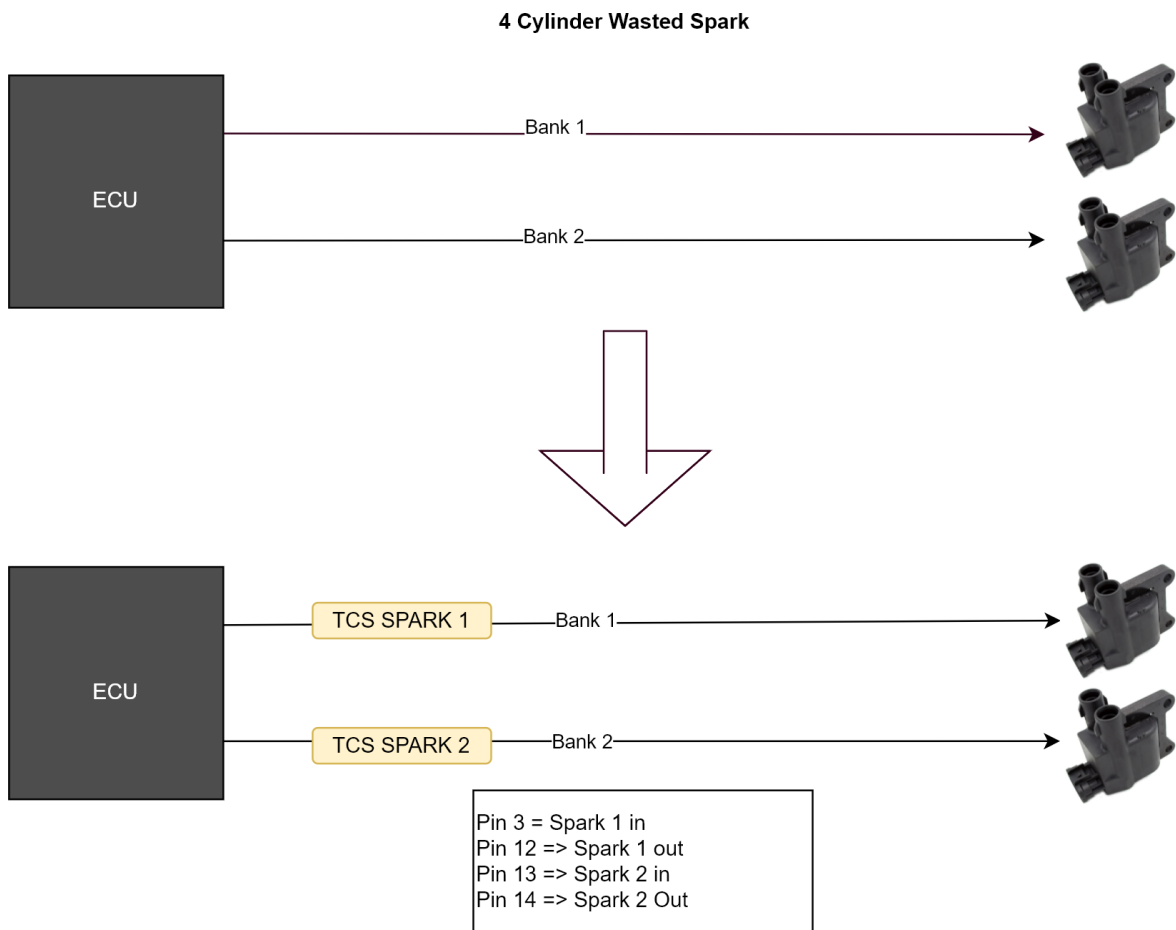Cylinders 1 and 4 will share spark and fire in wasted mode

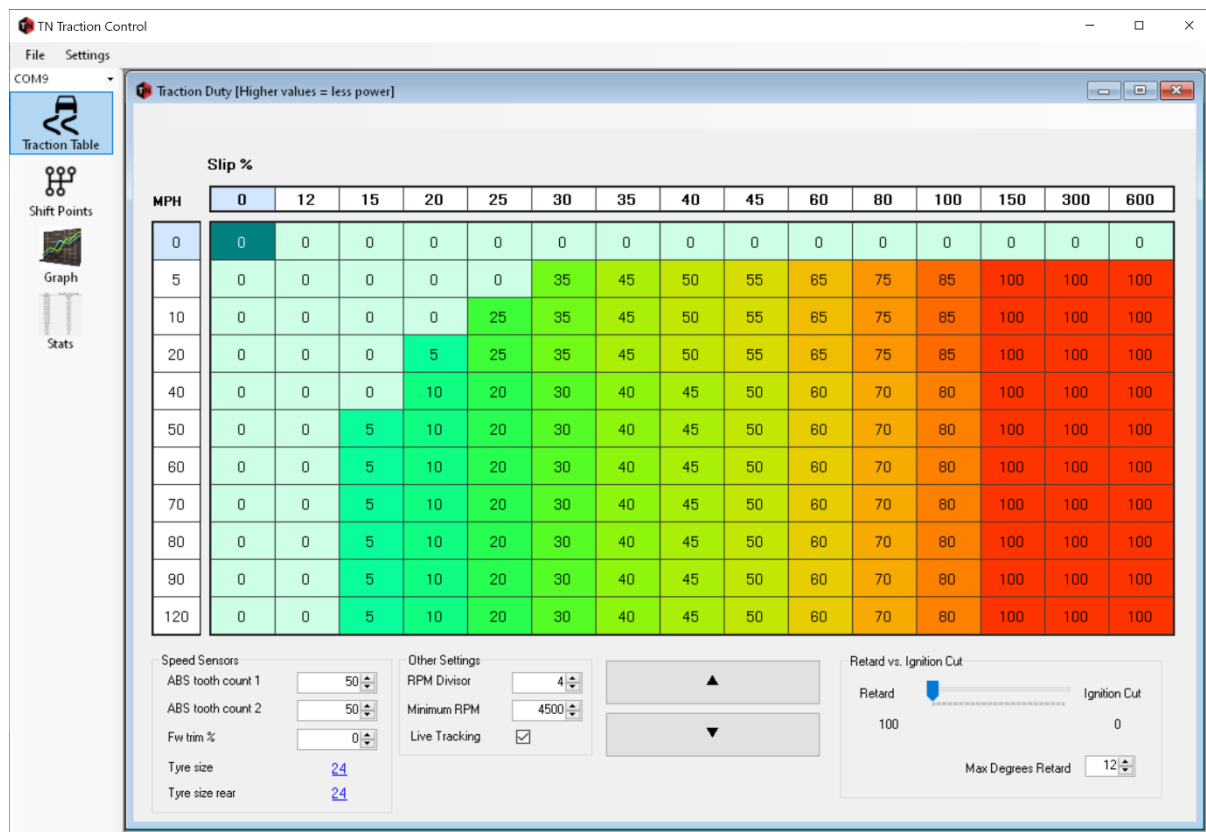Cylinders 2 and 3 will share spark and fire in wasted mode

4 Cylinder Wasted Spark Wiring

In this configuration the ECU has 2 outputs for spark that goes to 2 ignition coils. Intercept both signal banks.

4 Cylinder Wasted Spark

Pin 3 = Spark 1 in
Pin 12 => Spark 1 out
Pin 13 => Spark 2 in
Pin 14 => Spark 2 Out

Software Configuration

3D Table

This table allows you to configure the amount of power reduction per slip/per mph.

0 = no reduction, 100 = maximum reduction according to retard and ignition cut preference.

Speed sensors

- Abs tooth count – This is the number of teeth on the ABS ring. Typically both front and rear will have same number of teeth on the ABS ring.
- Fw trim % - This allows you to adjust a multiplier to the reading of the front wheel. Usually this is at 0.
- Tyre size – the size of the tyres. Front and rear can be set.
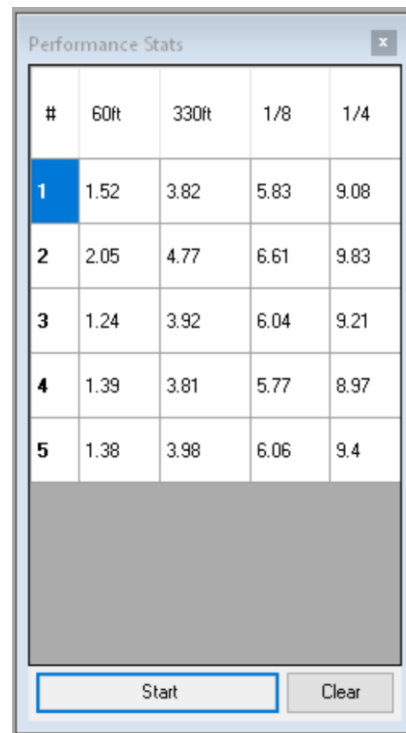
Other settings

- RPM Divisor – Adjust this value until the RPM of the software matches that of the car's tachometer.
- Minimum RPM – This is the minimum RPM that the TCS will start working. Below this number all slipping will be ignored.

Retard vs Ignition Cut

- This setting allocates a balance between ignition retard and ignition cut for power reduction. The retard percentage is calculated against the max degrees retard.
  Note: If using a distributor system, the max degree retard we recommend must not be greater than 12 degrees. This is because if a low timing number is commanded by the ecu along with TCS retard it can send spark to the wrong cylinder.

Performance Stats

This tool allows you to see improvements of straight-line performance (drag racing). To use this tool, bring the vehicle to a stop then click the start button. The software timer will not start immediately, instead it begins the recording from the moment you move.

Performance Stats				☒
#	60ft	330ft	1/8	1/4
1	1.52	3.82	5.83	9.08
2	2.05	4.77	6.61	9.83
3	1.24	3.92	6.04	9.21
4	1.39	3.81	5.77	8.97
5	1.38	3.98	6.06	9.4

Start   Clear