5-0 IGNITE 36-2+1 PRO CRANK TRIGGER INSTALLATION GUIDE

This installation guide is applicable to the following engine;

- Honda B Series DOHC (B16A/B16B/B18C/B18B/B20B) VTEC and Non-VTEC. NOT compatible with B20A.

Fitment: OBD1 & NON-USDM OBD2 oil pump (global market)

Please read this installation guide carefully prior to installing the product.

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If in doubt, seek professional help.

For further information, visit www.50ignite.com/terms-and-conditions/

PREFACE

Thank you for purchasing 5-0 Ignite crank trigger kit. We have done all the hard work to ensure that your installation is a breeze and clean. Your kit should include the following items;

- 1x Crank sprocket with integrated 36-2 tooth trigger wheel
- 1x Crank sprocket washer
- 1x Crank sprocket key
- 1x Cam angle sensor unit
- 1x Crank angle sensor unit
- 1x Wiring boot
- 1x Shim set for cam angle sensor unit key drive (0.1, 0.2, 0.3, 0.4 and 0.5mm)
- 1x M6x1 socket head cap 'long' bolt for crank sensor unit
- 1x M6x1 socket head cap 'short' bolt for crank sensor unit
- 2x M8 dress up washers for cam angle sensor unit
- 2x M8x1.25 socket head cap bolts for cam angle sensor unit
- 1x 3 pin male & female Deutsch DTM connector pair for crank angle sensor unit
- 1x 3 pin Delphi female connector for cam sensor (option 1) **OR** 1x 3 pin male Deutsch DTM connector for cam sensor (option 2)
- 1x Cam sensor cover (option 2 only)
- 2x Cam angle sensor unit shims (keep as spare)

Purchasable components **that are required**;

- Cam sensor drive key (otherwise transferrable from your existing distributor)

If you have purchased the cam sensor drive key with your kit, it would be pre-installed onto your cam sensor unit.

INFORMATION AND LIMITATIONS

Installation of this kit requires moderate to advance level of mechanical skills and experience due to the requirement of timing belt removal/installation and calibration of the vehicle's ECU.

This kit will require a modern/capable ECU (Haltech, Link, Motec, Emtron, AEM) that allows you to set the trigger type (missing tooth + home), trigger edge and trigger angle.

This kit will require a sound knowledge of automotive electrical wiring systems (sheathing, splicing, crimping and terminations).

Fastening of bolts (i.e timing belt tensioner, cam pulley bolt, crank pulley etc.) shall follow manufacturer's recommended specifications.

PROCEDURE

1. Set the engine to TDC.

2. Disconnect/remove;
   a. Ancillary belts
   b. Crank pulley
   c. Valve cover/timing covers
   d. Distributor

3. Ensure the engine is on T.D.C by aligning the mark on the crank timing sprocket to the oil pump.

4. Remove timing belt. Clean lower timing/oil pump area. Replace oil pump seal/water pump if required.

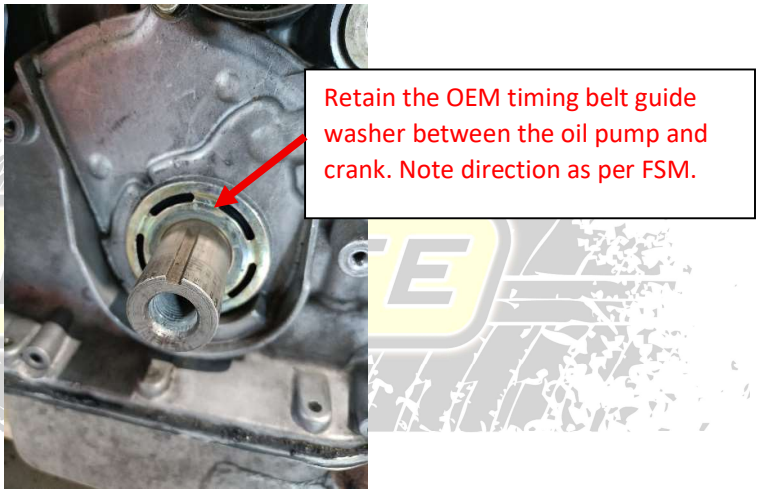

Figure 1 - Remove existing timing belt and sprocket

5. Remove the indicated oil pump bolt. This bolt will no longer be used.

Figure 2 - Remove indicated oil pump bolt

6. Installation of the timing belt differs from the OEM procedure. The recommended installation order are as follows;

    6.1 Ensure that cam and crank is at TDC. Place timing belt over both intake and exhaust cam gear. Maintain light tension so the timing belt doesn't pop out of groove.

    6.2 Install the supplied crank sprocket with the integrated trigger wheel onto the crank. Install the square key. The trigger tooth position is towards the crank pulley side. Prior to sliding the crank sprocket fully home, slip the timing belt into position.

    6.3 Wrap timing belt around the water pump.

    6.4 Slip on the timing belt around the tensioner and set belt tension.

    6.5 Check that the crank and cams are at TDC. Rotate engine counterclockwise several times and re-verify TDC.

Figure 3 – Install crank sprocket and slip timing belt into position before fully seating it home

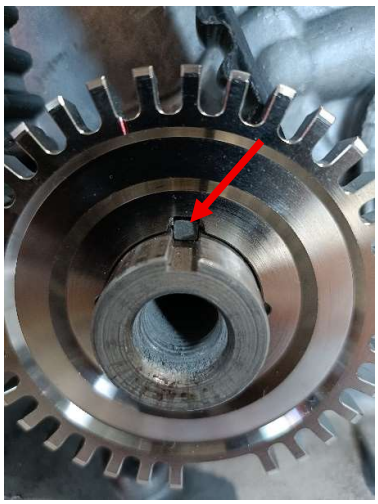

Figure 4 - Ensure the supplied square key is installed

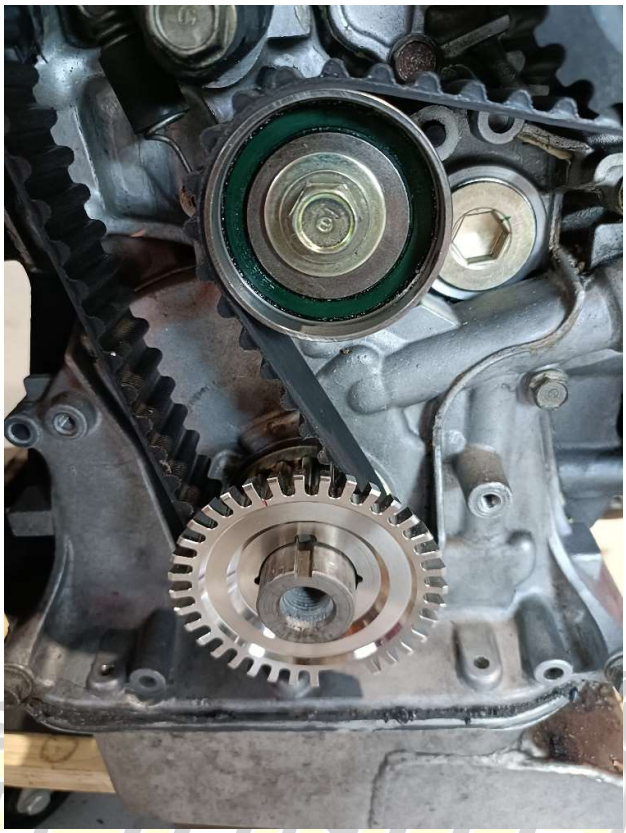

Figure 5 - Timing belt installed

7. Prepare the crank sensor wiring harness (refer to the end of this installation guide for wiring diagram). The wiring route would be different depending on your preferred configuration. In this example, the wiring is routed to be under the oil pump to exit at intake side and such, the harness is prepared like so;

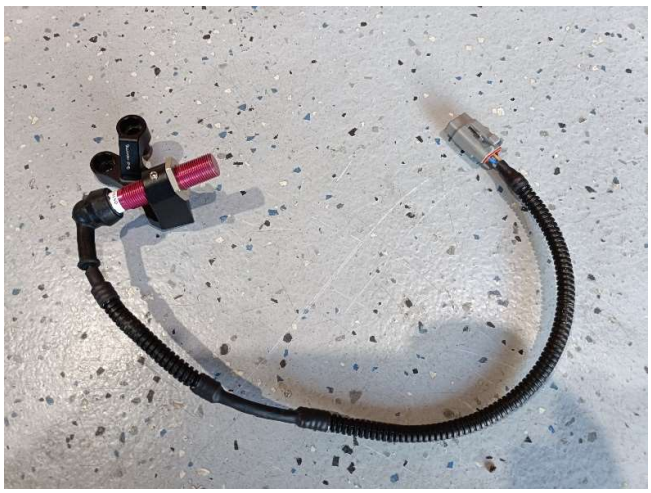

Figure 6 - Prepare the crank sensor wiring harness

8. Trial fit the crank sensor onto your oil pump using the supplied bolts. Set the crank sensor air gap to be between 0.6mm to 0.9mm. **Undo the nut and loosen the grub screw** in order to wind the sensor in/out. The crank sensor housing to the oil pump has a small amount of play that allows small adjustments of the sensor gap. **CHECK and confirm** that the trigger teeth position is centred to the sensor centreline especially with aftermarket oil pump.

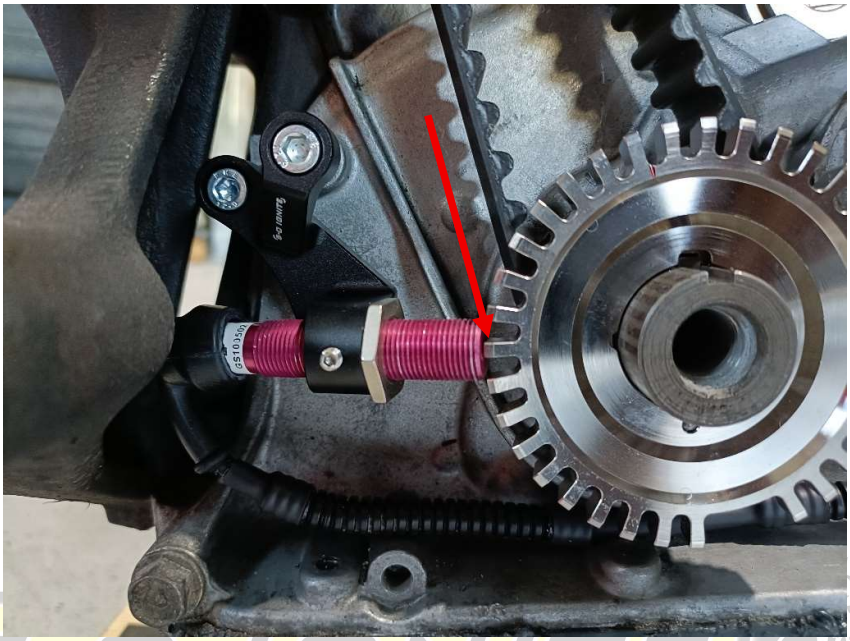

Figure 7 - Trial fit and set crank sensor air gap

9. Once gap is set, tighten the grub screw and the sensor nut. Do not overtighten!

10. This kit is compatible with the OEM lower timing cover with few modifications. If you wish to retain the lower timing cover, you must cut the following areas to clear the trigger wheel (blue line). This may require several trial fitments to ensure that nothing rubs on the lower timing cover.

Figure 8 - Lower timing cover cut line

Figure 9 - Final lower timing cover

11. Unbolt the crank sensor from step 8, slip in the sensor wiring harness on the oil pump and install the lower timing cover.

Figure 10 – Install the lower timing cover

12. Re-install the crank sensor mount, place the required feeler gauge thickness to maintain gap and tighten the sensor mount bolts.

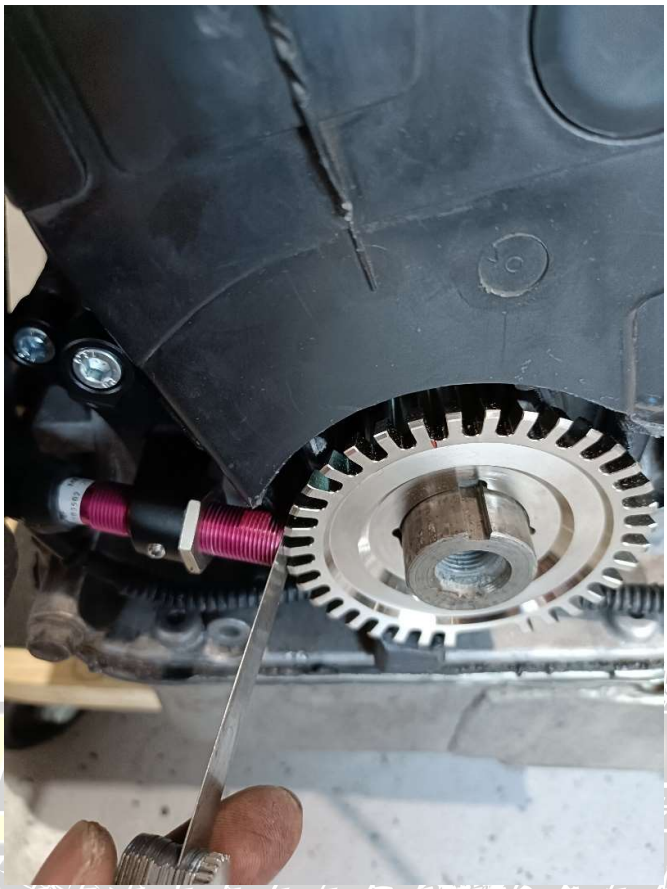

Figure 11 – Re-install the crank sensor

13. Install the indicated supplied crank sprocket washer (important), your existing crank pulley square key and crank pulley.

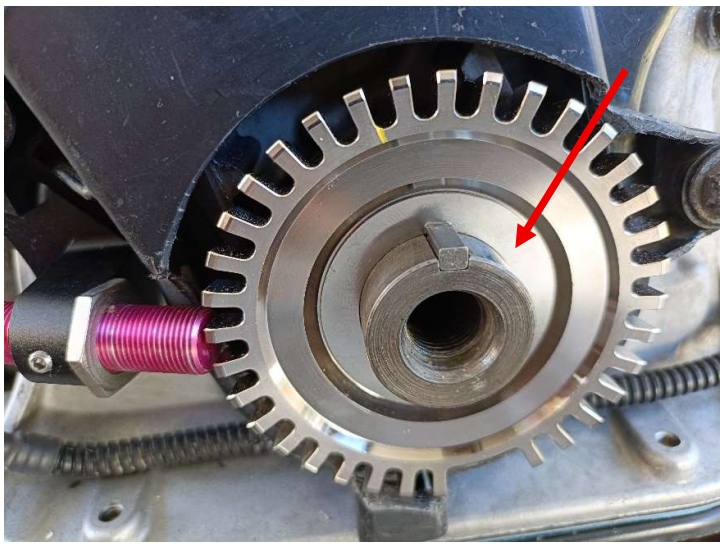

Figure 12 - Install crank sprocket washer and crank pulley

14. Due to a large variety of B series crank pulleys, check and ensure that there is clearance to the sensor nut/crank sensor mount. The sensor nut may be ground shall the corners of the hex touches the crank pulley.

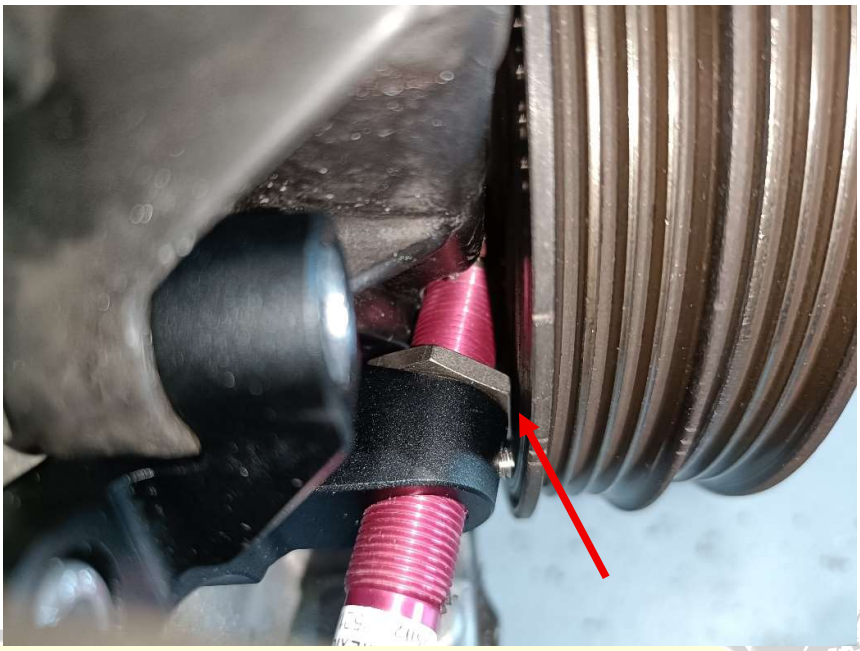

Figure 13 – Check for clearance

15. Torque the crank pulley bolt to spec. Zip tie the crank sensor wiring harness for it to be secure and away from drive belts or moving components.

DISTRIBUTOR SIDE – IF TRANSFERRING YOUR EXISTING CAM SENSOR DRIVE KEY

16. Mark alignment locations on the existing distributor as indicated for future reference.

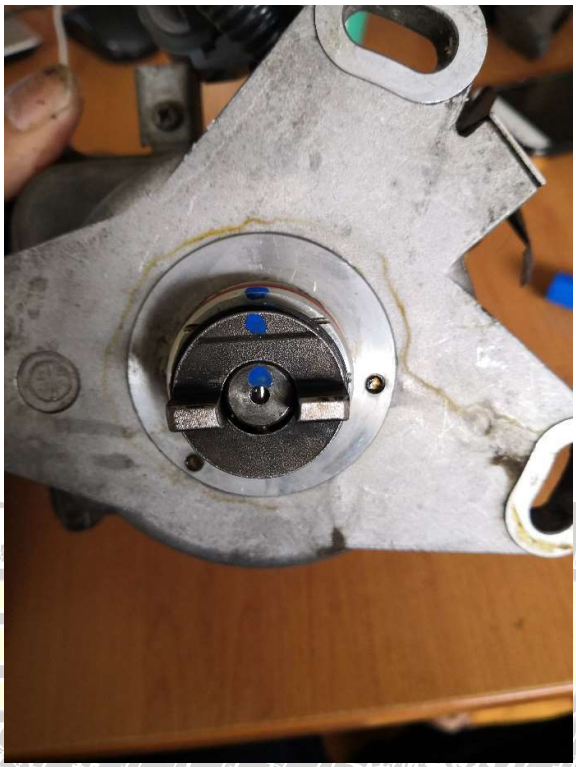

Figure 14 - Mark alignment locations for future reference

17. Rotate the c-clip of the distributor drive key so that the split line is aligned with the pin hole.

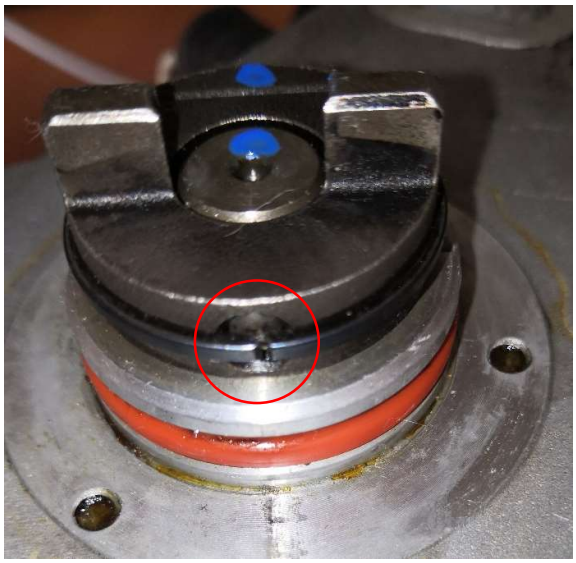

Figure 15 - Rotate c-clip to align with pin hole

18. Using a pick, pry the c-clip towards the bottom and slide the pin out.

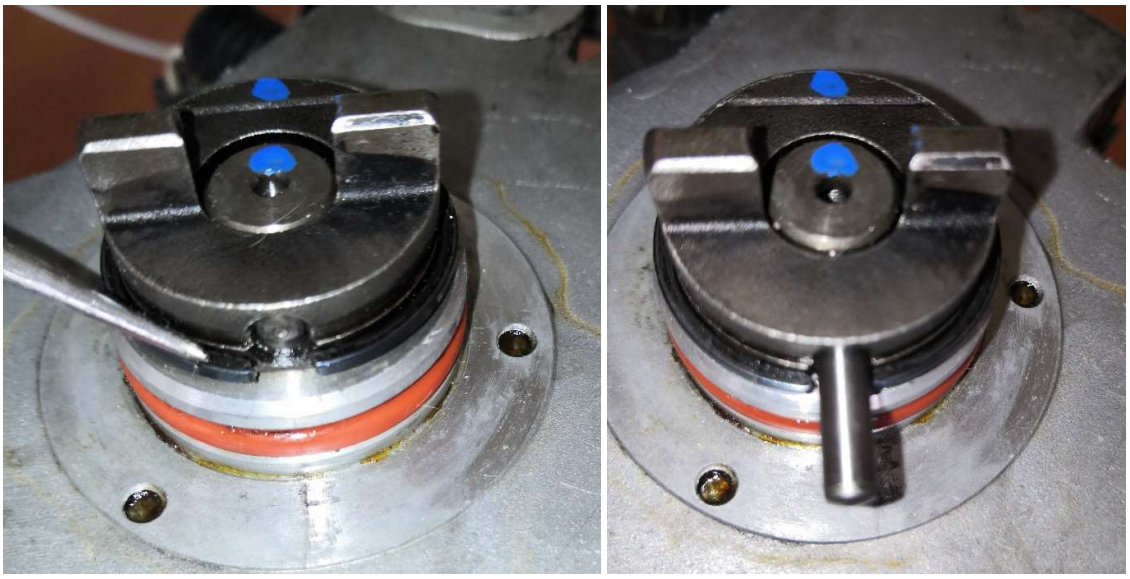

Figure 16 – Slide the pin out and remove the distributor drive key

19. On the cam sensor unit, rotate the shaft so the dot on the shaft is aligned to the alignment markers.

Figure 17 - Alignment marker on the shaft

20. Using the OEM drive key shim or the supplied shim set or a combination of either, install the drive key onto the new cam sensor unit. Reduce shim thickness if the pin is not able to slide

in. Increase shim thickness if the drive key has excessive rocking. **Select the right combination of shims to minimise the rocking of the drive key**. Note the drive key alignment.

Figure 18 - Install the correct combination of shims behind the drive key (note the drive key alignment)

21. With either the OEM cam sensor drive key or 5-0 Ignite cam sensor drive key, **drive key clearance check is mandatory!**

    Measure distance 'A' on your engine (fit face to camshaft end) and measure distance 'B' on the cam angle sensor unit (fit face to key face). Distance 'A' must be greater than distance 'B' for clearance (i.e. A=18mm & B=17.5mm == OK). If distance 'B' is greater than distance 'A', **CONTACT US** for adjustment guidance.

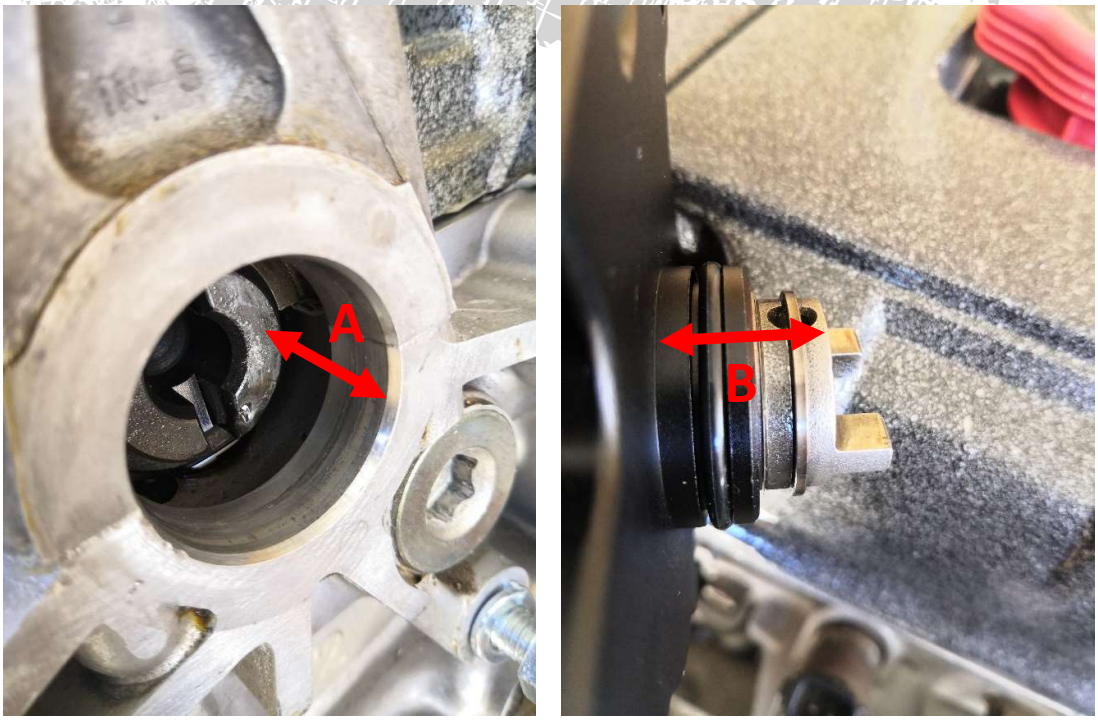

Figure 19 - Camshaft end to key drive clearance check

22. Install the cam sensor unit on the engine using the supplied bolt and washer, tighten to 24Nm. The drive key can only engage onto the camshaft one way.

Figure 20 - Install the cam sensor unit onto the engine

23. Perform the final wiring work. Refer to the wiring diagram on the end of this installation guide.

WARNING

It is essential to run a new, dedicated shielded wiring loom (including power, signal, and ground) directly to your ECU. The sensor must be powered by a regulated voltage source—such as the ECU's 5V or 8V output (and NOT from the ECU's 12V input supplied via the main relay). The warranty does not cover damaged sensor(s) from incorrect wiring, physical damage or powering the sensor(s) with an unregulated voltage source.

All sensors have undergone bench testing prior to dispatch to ensure full functionality. It is the installer's responsibility to check and verify wiring before powering up the sensors.

24. Configure the ECU trigger settings. DO NOT ATTEMPT IF YOU'RE NOT FAMILIAR WITH ECU CONFIGURATIONS.

GENERAL ECU SETTING

Trigger type: Missing tooth crank + 1 home tooth on cam

Number of crank teeth: 36

Number of crank missing tooth: 2

Sensor type: Hall effect (both crank and cam)

Pull up resistor: Enable for both crank and cam

Filtering: Set to 1 or lowest value of the 'on' state

Trigger angle: Set using timing light

FOR OTHER ECU CONFIGURATIONS, REFER TO YOUR ECU MANUFACTURER.

Baseline Configuration for Haltech Elite ESP/NSP

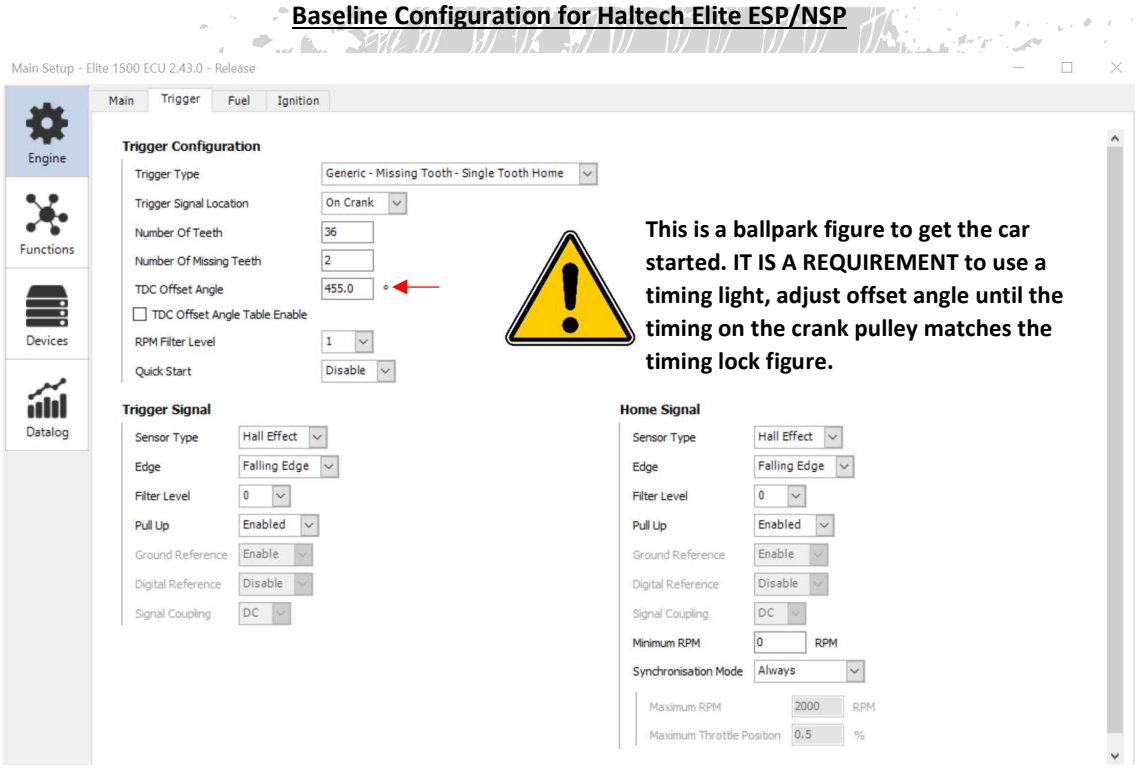

Figure 21 - Haltech Elite ESP/NSP Trigger Settings

- Enable timing lock (i.e. at 0°) and disable the injectors.
- With a timing light and coil on plug extension lead installed (such as DAT-Equipment TE010), crank the engine.

- Adjust the TDC offset angle until the ignition timing on the crank pulley matches the timing lock figure.
- Start the engine and idle.
- Verify the TDC offset angle.
- Once all parameters are set, disable timing lock.

Baseline Configuration for Link G4+/G4X PnP

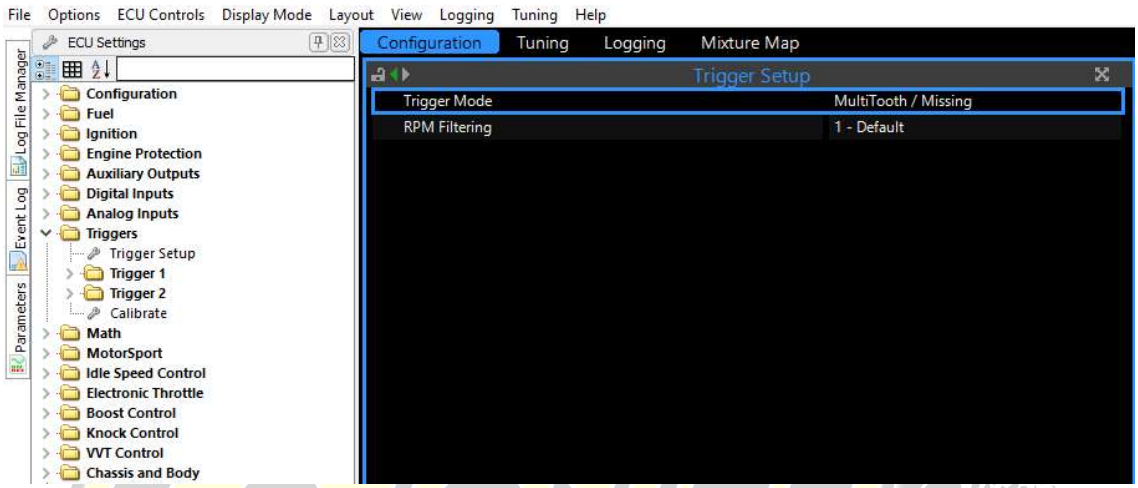

Figure 22 - Link Trigger Setup

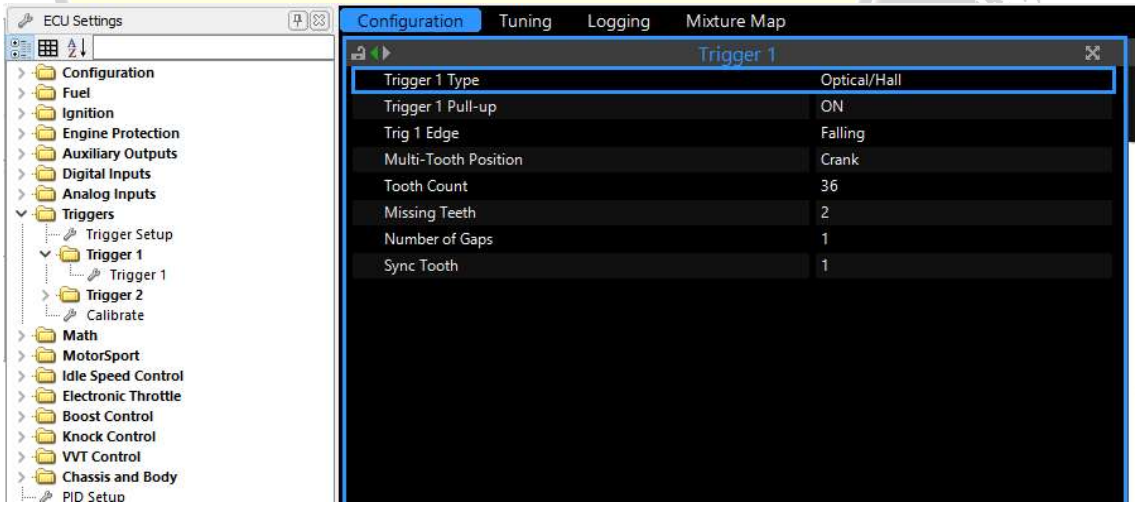

Figure 23 - Link Trigger 1 Setup

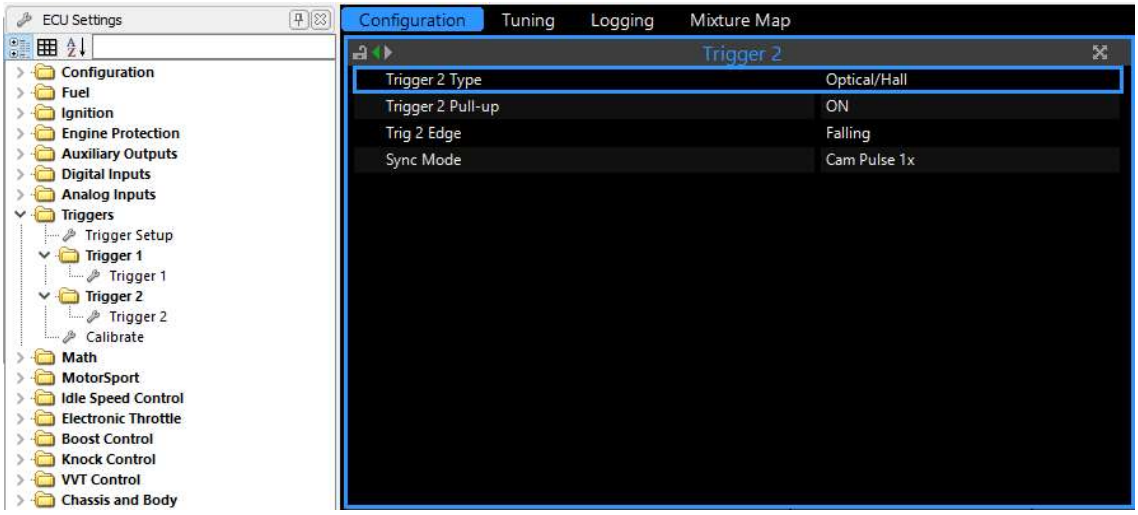

Figure 24 - Link Trigger 2 Setup

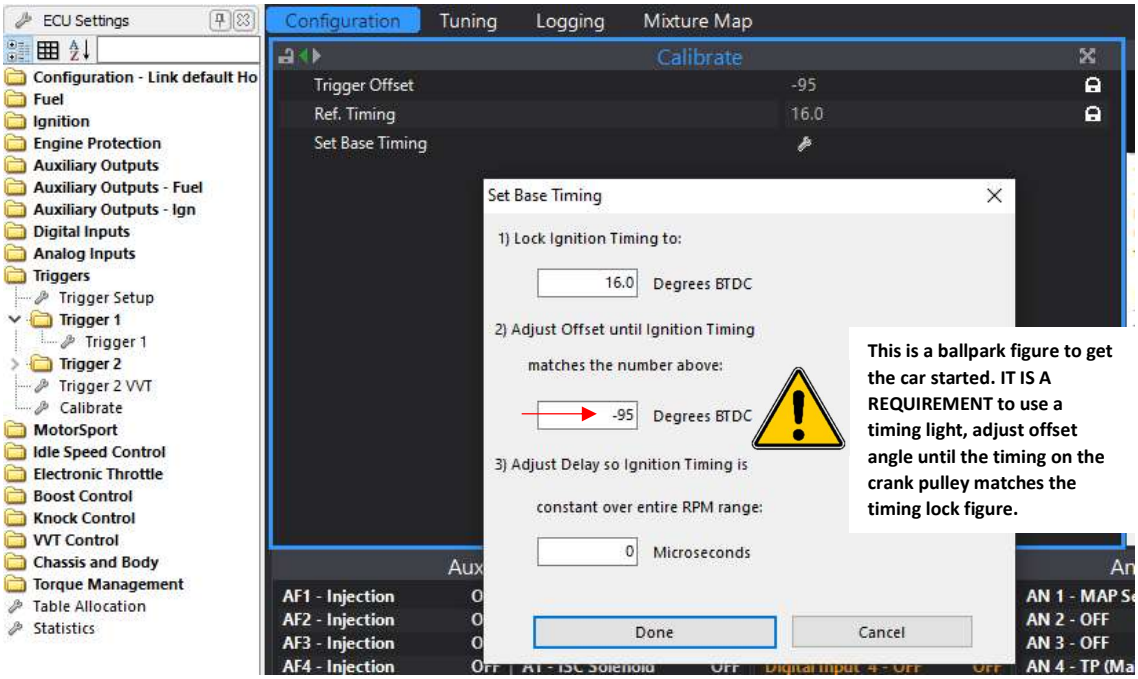

Figure 25 - Link Trigger Offset Angle Calibration

- Disable the injectors (Fuel -> Fuel Main -> Injection Mode=OFF).
- Back to Trigger Calibrations, enter ‘Set Base Timing’.
- With a timing light and coil on plug extension lead installed (such as DAT-Equipment TE010), crank the engine.
- Adjust the Trigger Offset angle until the ignition timing on the crank pulley matches the timing lock figure.
- Enable the injectors and start the engine. Let it idle.
- Verify the TDC offset angle.

TROUBLESHOOTING

PROBLEM	APPROACH
No signal output from the sensors.	• Check if wiring is correct. • Ensure the crank sensor gap is set correctly. • Check the power and ground connection to the sensor. • Make sure pull up resistor is enabled.
Sensors are outputting signal but engine does not start. Continuous miss counts.	• Verify crank and cam sensor wiring is correct to the ECU. • Verify crank and cam trigger settings are correct on the ECU.
Engine misfires when clutch is pressed in.	• Your engine has a severely worn thrust bearing causing excessive crankshaft axial movement, placing trigger teeth outside the sensor's range.

CONCLUSION

Installation is now complete. 5-0 Ignite Honda B series pro crank trigger eliminates ignition timing drift in comparison to the inferior distributor or any systems reliant on the camshaft based only. Benefits includes tuner's confidence in maximising ignition timing whilst keeping consistent engine safety margin.

WIRING DIAGRAM