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

This installation manual is applicable to the following engine;

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

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

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If in doubt, seek professional help.

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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 Cam angle sensor unit
- 1x Crank angle sensor unit
- 1x Wiring rail
- 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 wiring rail
- 4x Zip ties for wiring rail
- 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 Duetsch DTM connector for crank angle sensor unit
- 1x 3 pin Delphi female connector for cam sensor
- 2x Cam angle sensor unit shims (keep as spare)

Purchasable components **that are required**;

- Honda USDM OBD2 Type R B series oil pump (fitment is not guaranteed on aftermarket OBD2 oil pump where certain parts of the casting may require grinding to clear the trigger tooth)
- Honda USDM OBD2 B Series lower timing cover
- Honda USDM OBD2 B Series lower timing cover seal
- Honda B Series oil pick up gasket
- Honda B Series oil pump O-ring
- Honda OBD1 B Series crank pulley 'short' square key (if your existing engine is USDM OBD2 with a long crank key, you may cut it down to 11mm long)
- Distributor drive key and pin (taken from your existing distributor)

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.

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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.

5. If you have an OBD1 oil pump, you need to replace it with the OBD2 oil pump along with supporting parts as per the list on previous page. Refer to factory service manual on oil pan/pump removal and installation.

6. Install the supplied crank sprocket and crank sensor unit onto the oil pump as shown. The trigger tooth is closest to the oil pump. The OBD1 OEM washer between the oil pump and crank sprocket **IS NO LONGER USED**.

Figure 1 - Install the supplied crank sprocket and crank sensor

7. Using the supplied socket head cap bolts, dummy fit the wiring rail onto the assembly. Long bolt goes on the exhaust side, short bolt goes on the intake side. Place one zip tie over the wiring harness to retain its position.

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Figure 2 - Dummy fit the wiring rail and zip tie the wiring harness

8. Remove the wiring rail and zip tie the wiring harness at the remaining locations.

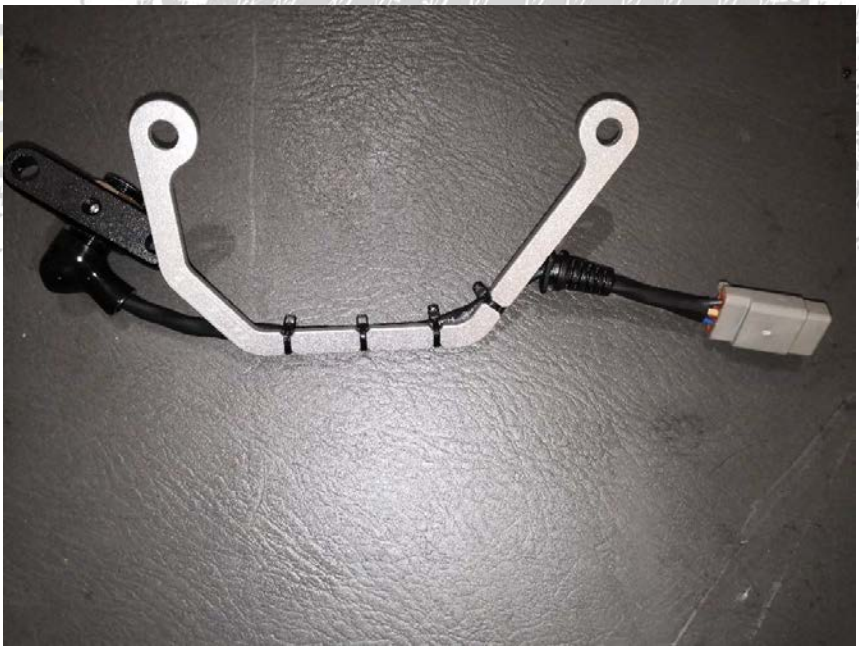

Figure 3 - Zip tie the wiring harness onto the wiring rail

9. Install the assembly back onto the oil pump and tighten the bolts to 9Nm (blue Loctite advised). Using a feeler gauge, check the gap between the trigger tooth and the sensor face. The gap is **SET** from us to be between 0.6mm to 0.9mm. If the gap is outside these values, **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.

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Figure 4 - Check the gap between the crank sensor and trigger tooth

10. Install the timing belt and check timing after few engine rotations.

Figure 5 - Install the timing belt

11. Install the outer timing belt washer **(note direction as per FSM).**

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Figure 6 - Install the outer timing belt washer (note direction as per FSM)

12. Install the lower timing belt cover.

Figure 7 - Install the lower timing belt cover

Note: Lower timing cover is interchangeable across all B16, B18, B20 blocks. Height difference between B16 vs B18/20 is accounted on the upper timing cover.

13. Install crank pulley with the 'short' square key. If you're currently have the long USDM OBD2 crank key, you may cut it down to 11mm long.

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DISTRIBUTOR SIDE

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

Figure 8 - Mark alignment locations for future reference

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

Figure 9 - Rotate c-clip to align with pin hole

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

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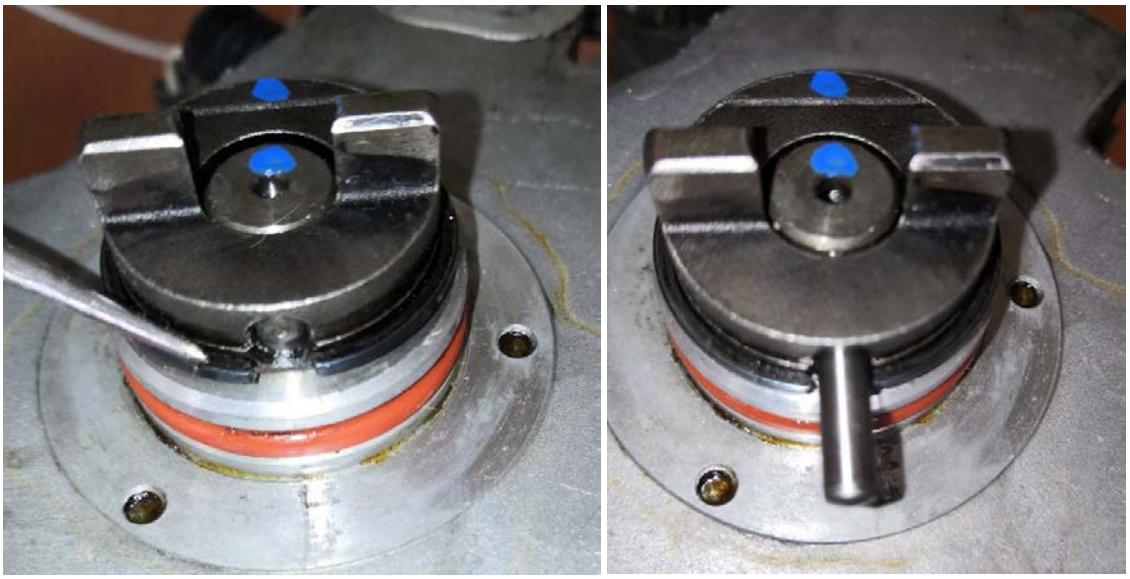

Figure 10 – Slide the pin out and remove the distributor drive key

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

Figure 11 - Alignment marker on the shaft

18. 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.

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Figure 12 - Install the correct combination of shims behind the drive key (note the drive key alignment)

19. 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.

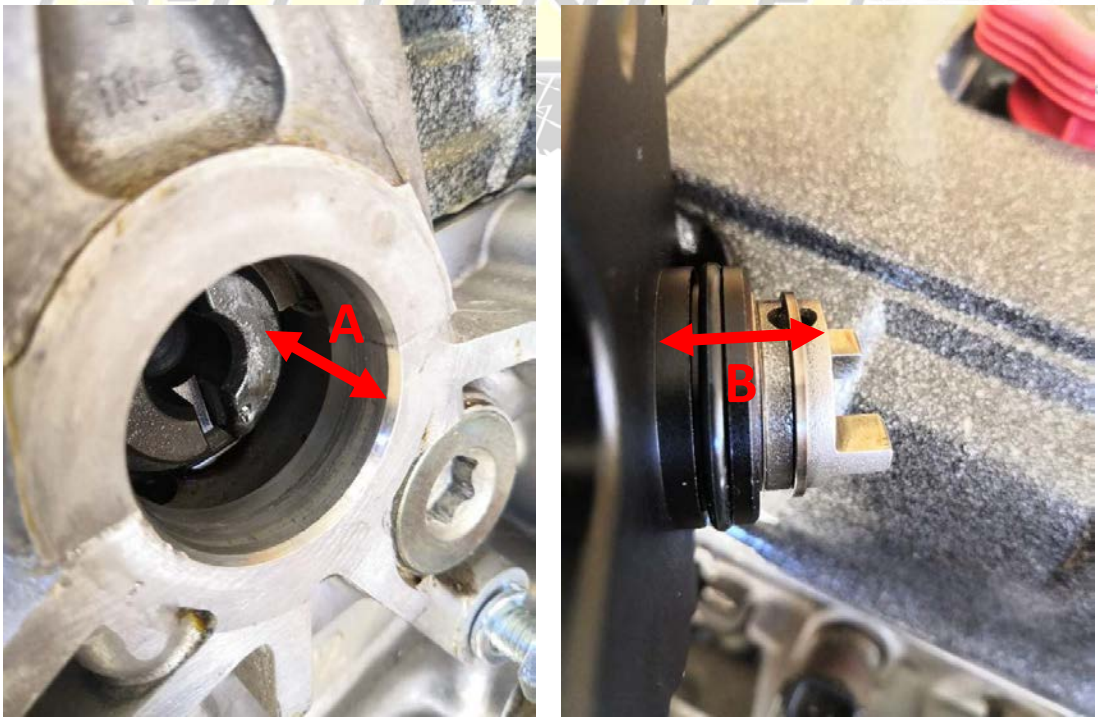

Figure 13 - Camshaft end to key drive clearance check

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20. 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 14 - Install the cam sensor unit onto the engine

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21. Configure the ECU trigger settings.

Baseline Configuration for Haltech Elite

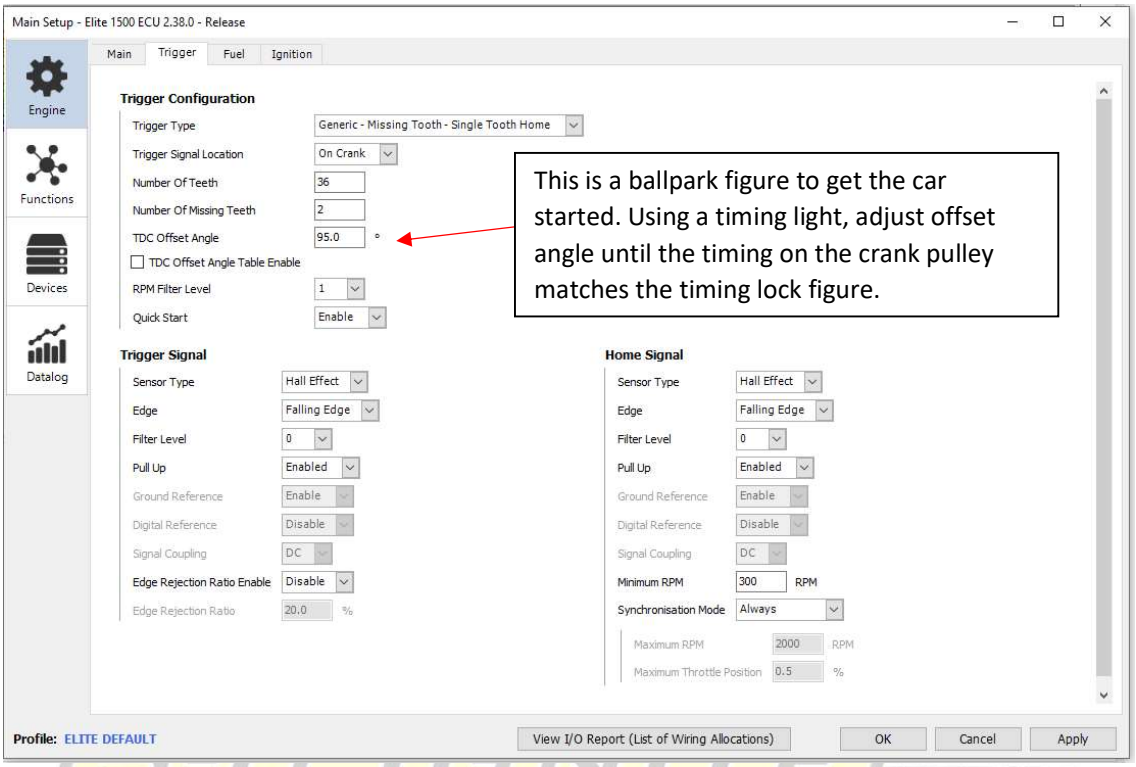

Figure 15 - Haltech Elite Trigger Settings

- 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.

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Baseline Configuration for Link G4+/G4X PnP

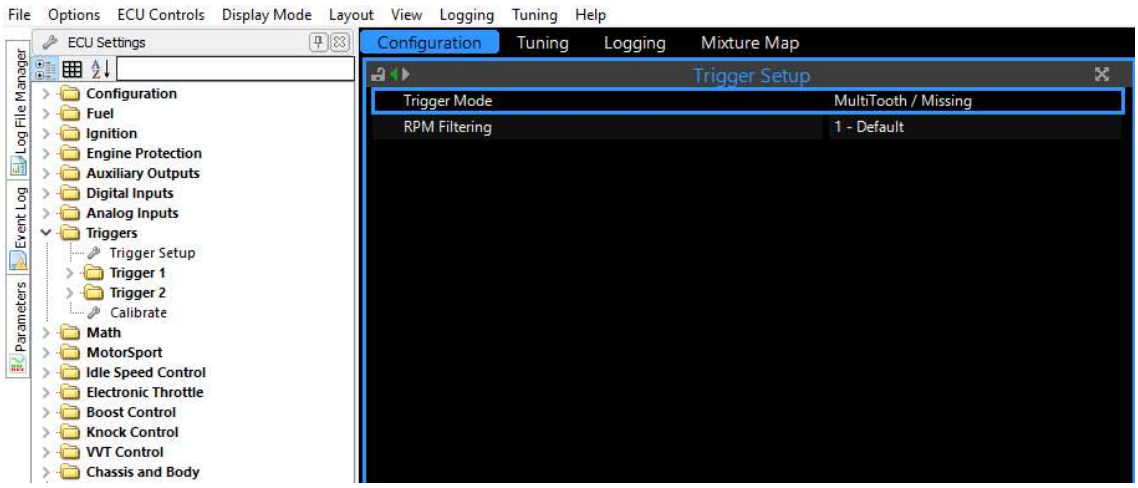

Figure 16 - Link Trigger Setup

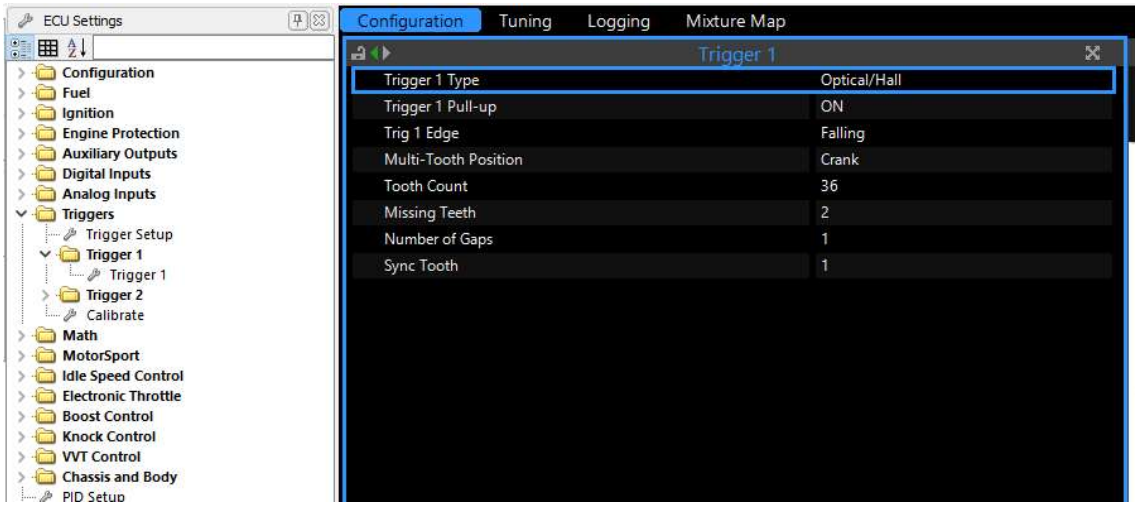

Figure 17 - Link Trigger 1 Setup

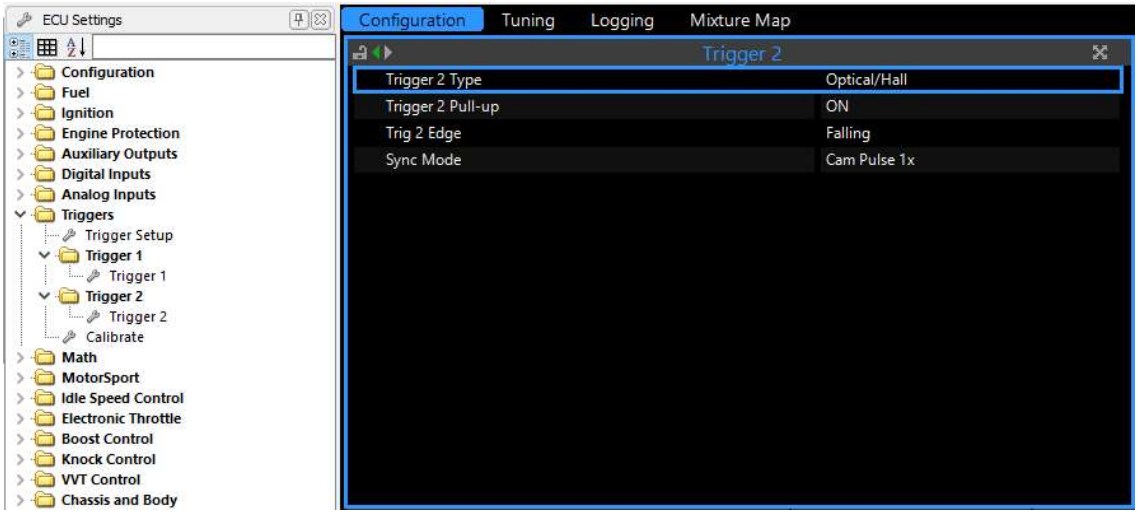

Figure 18 - Link Trigger 2 Setup

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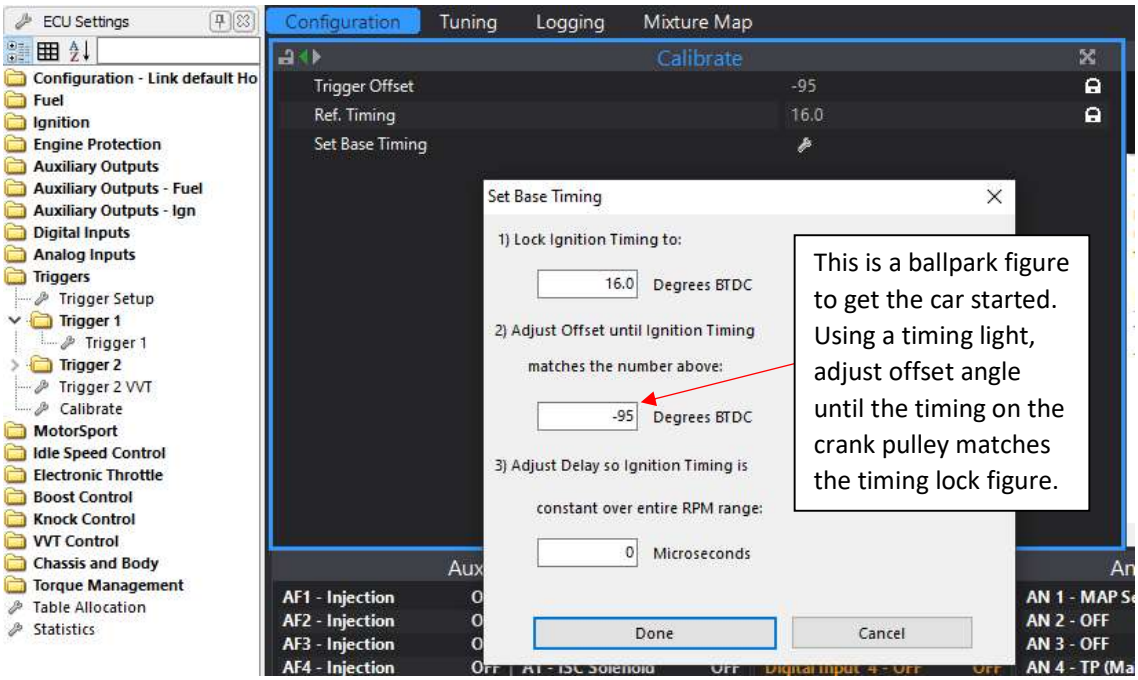

Figure 19 - Link Trigger Offset Angle Calibration

- 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.

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TROUBLESHOOTING

PROBLEM	APPROACH
No signal output from the sensors.	• Check if wiring is correct. • Ensure the crank sensor gap is set correctly. • 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 in 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.

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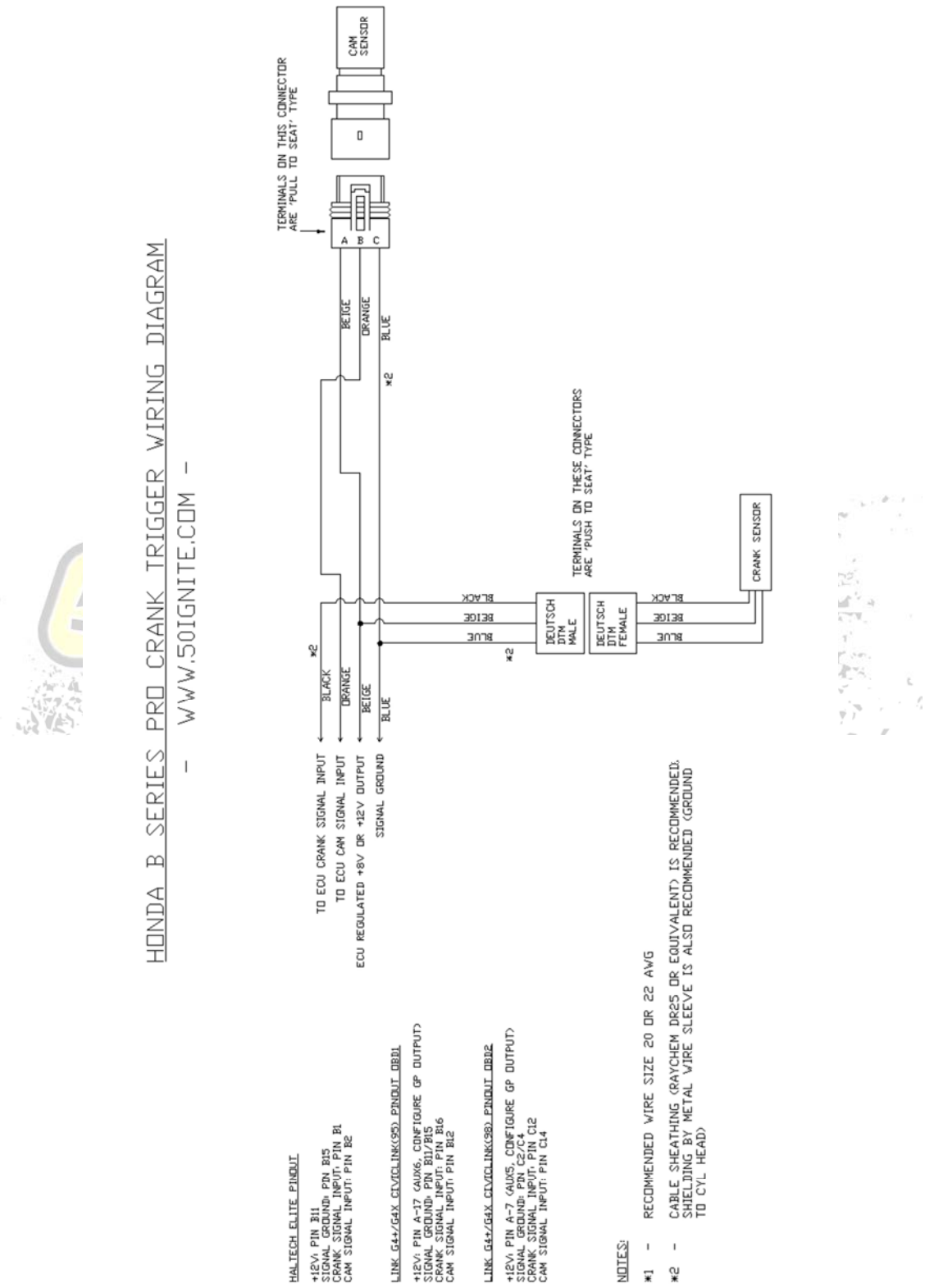
WIRING DIAGRAM



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