

# **TAARKS**

**THE PERFORMANCE SPECIALISTS**

## SR20ve Hall Sensor Kit Part #200001

**WARNING!** Please read the whole guide before installing this part.

### **Legals:**

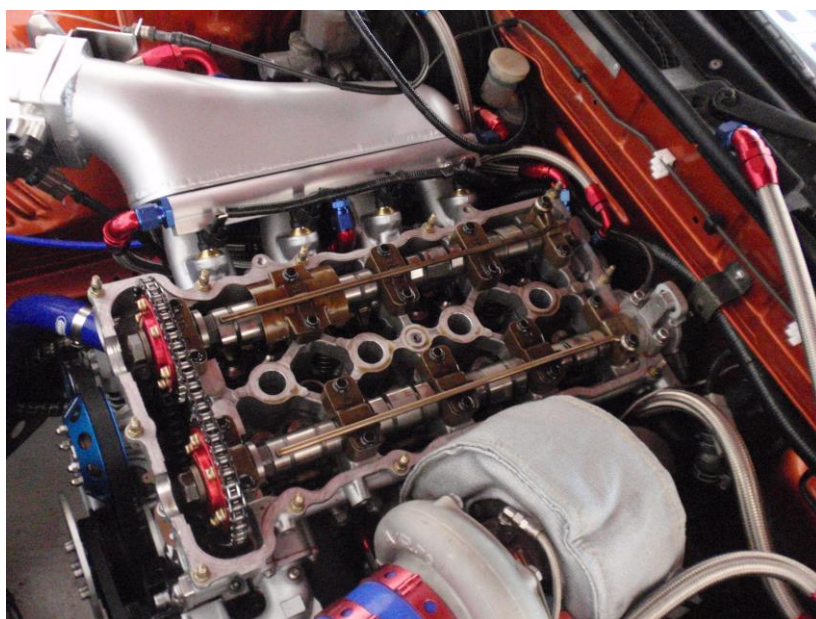
TAARKS SR20ve Hall Sensor Kit has been designed and is intended for off-road use only. The installation of this part on a vehicle intended for use on public roads may violate laws and regulations in your country/state. Additionally, this part is sold with a LIMITED warranty that only covers defects in manufacturing. This warranty does not cover any damage incurred by using this part. The installation of this part may also void any vehicle warranties. Refer to a performance specialist for proper installation.

After opening the packaging please check to see if any parts are missing or damaged. If something is missing or damaged please contact us immediately. Do not install the product.

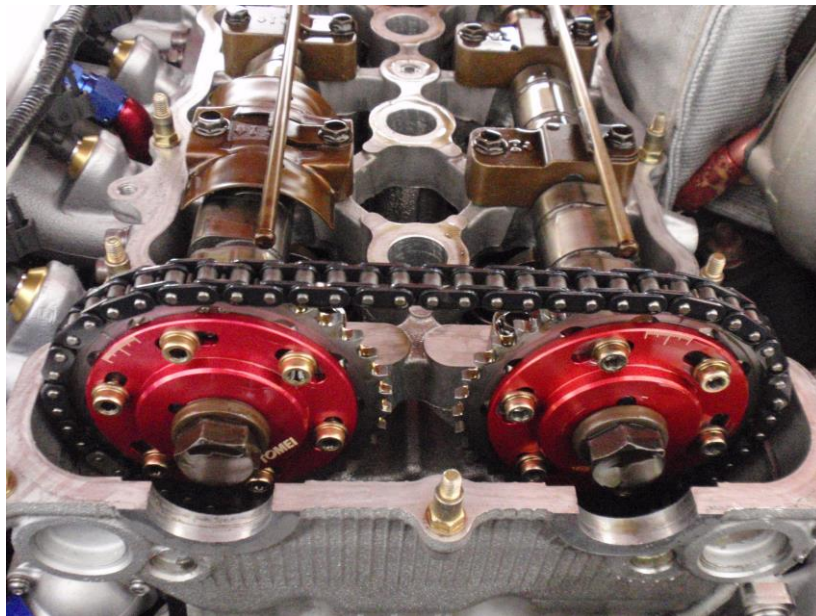
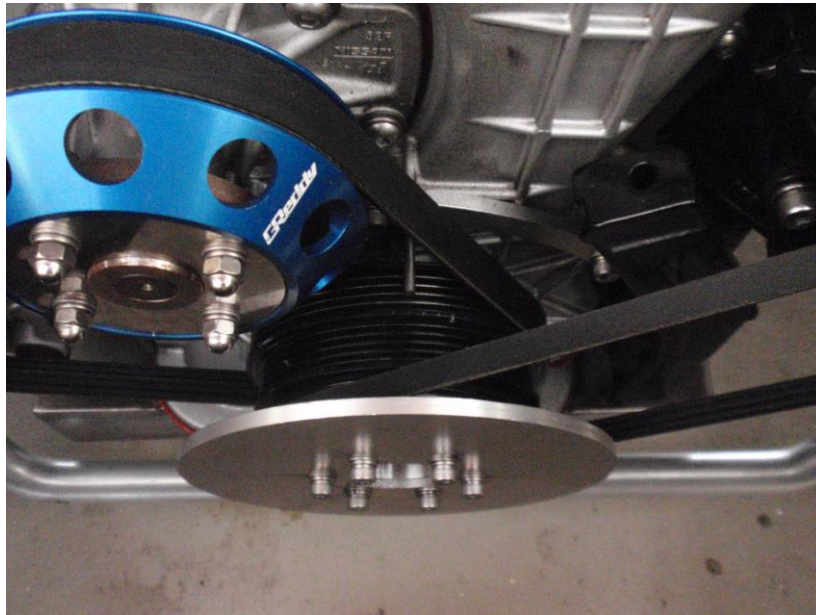
Do not modify this part in any way. Modifying the part may result in failure of the part and voids all possible warranties.

### **Installation Guide**

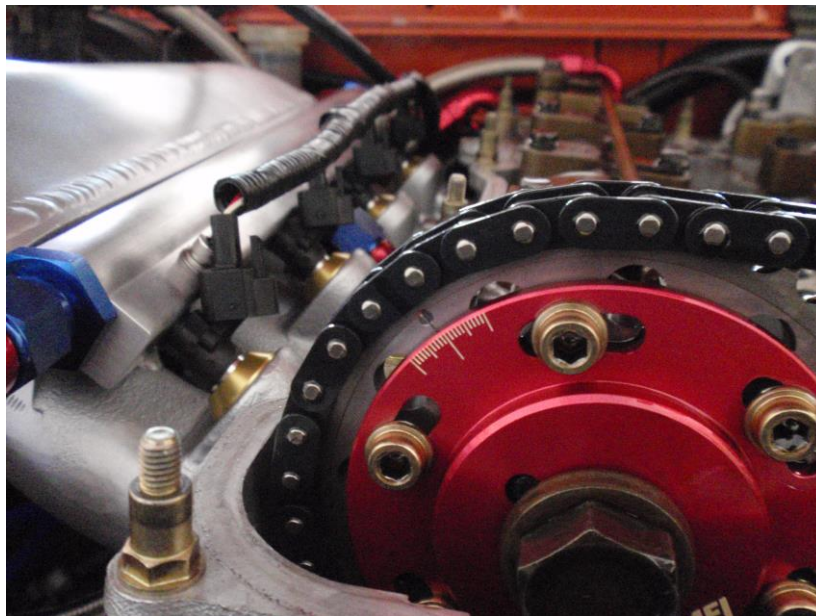
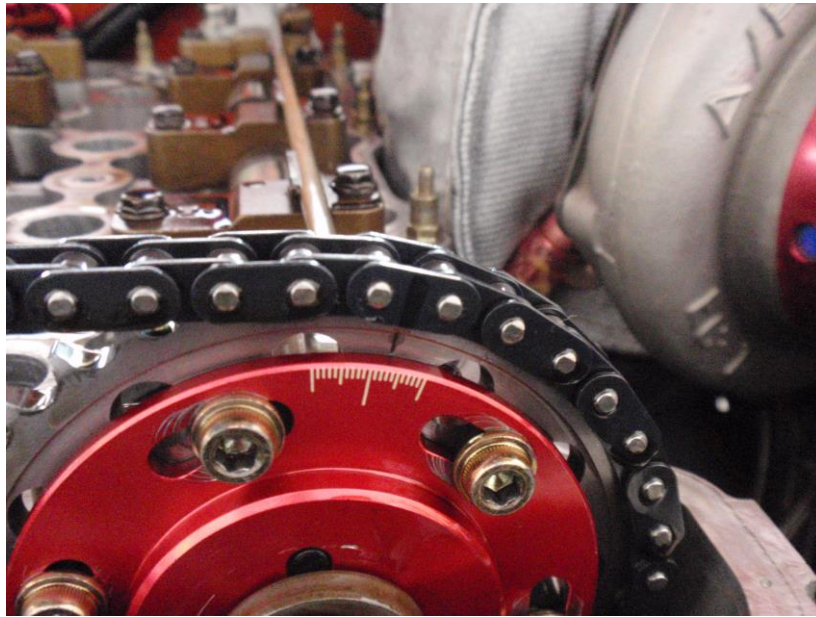
Remove the rocker cover and everything attached to the rocker cover.



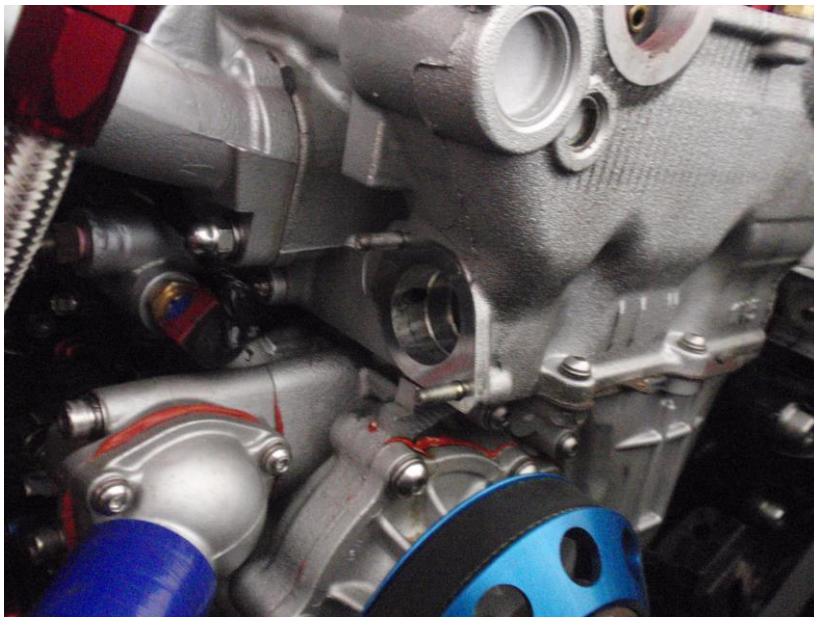
Set the motor to TDC on cylinder one. The lobes on the camshafts for cylinder one will face away from each other.



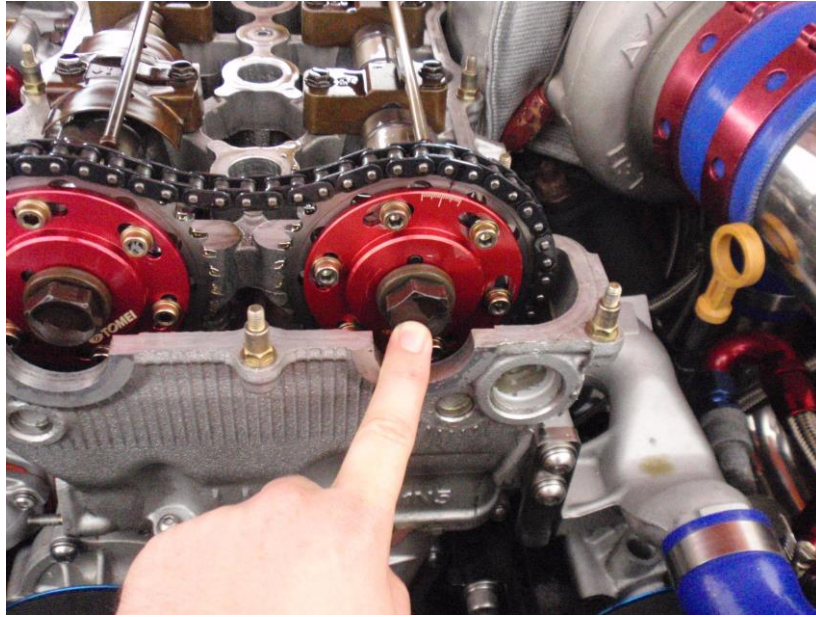
Mark the timing chain with a marker at the timing marks on the cam gears.



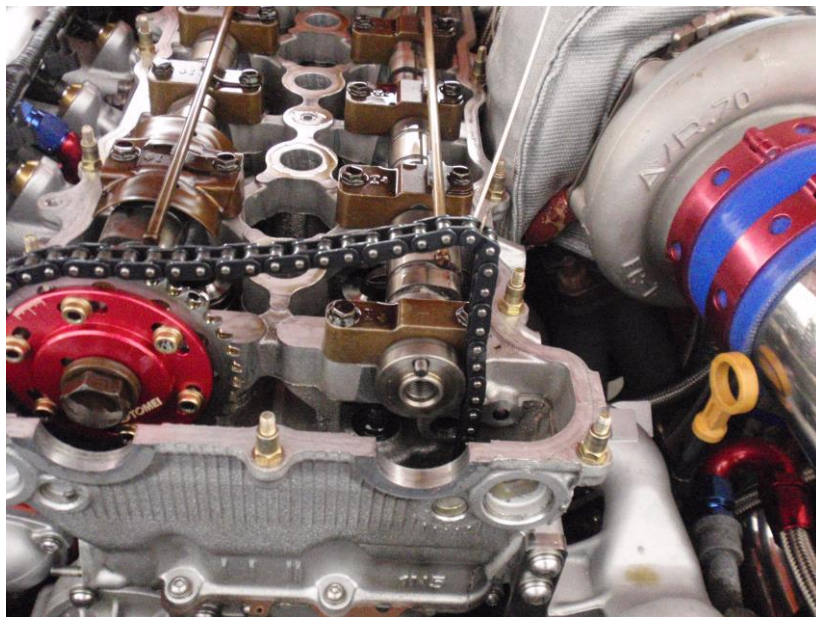
Remove the timing chain tensioner.



Remove the 24mm bolt from the front of the exhaust camshaft.



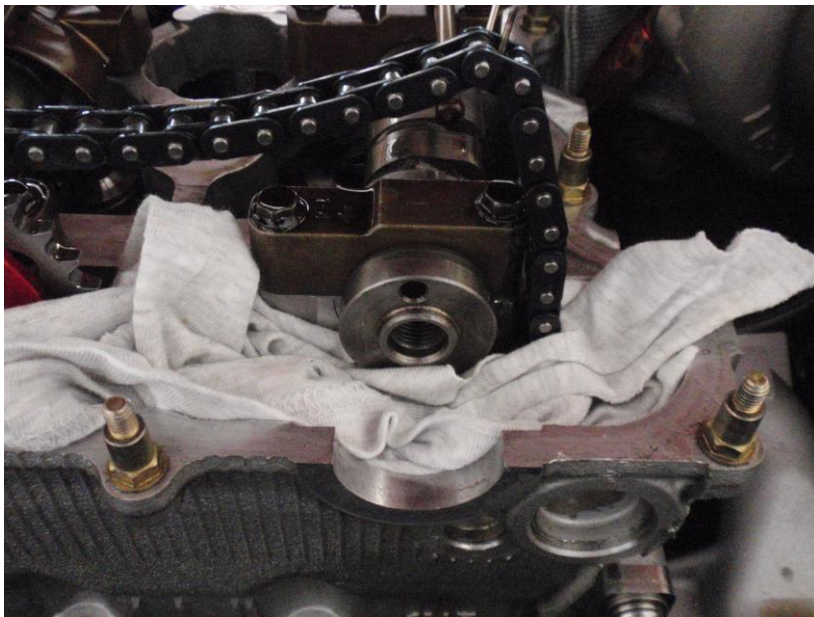
Remove the exhaust cam gear and support the chain. Do not let the chain drop.



Remove the dowel pin from the exhaust camshaft.



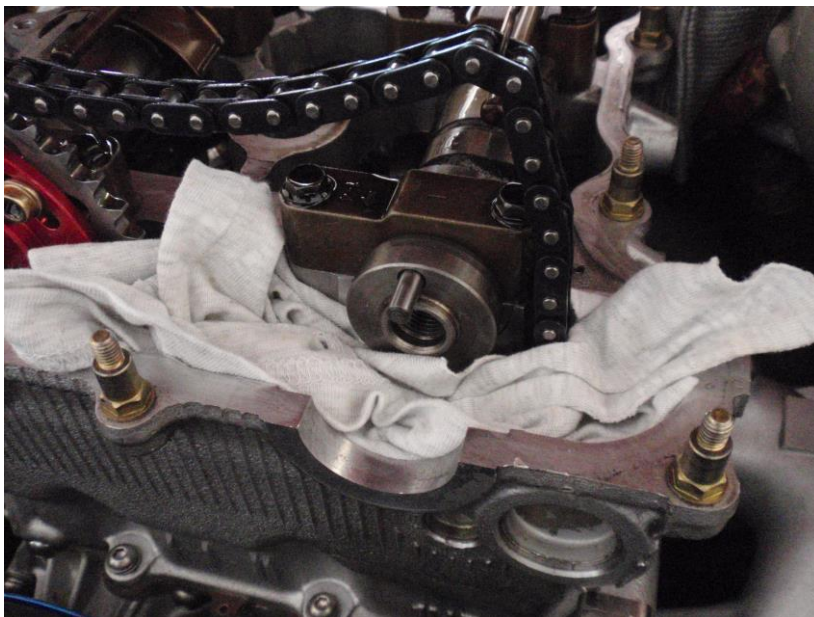
Place rags under the camshaft in case you drop the dowel.



Install the supplied dowel pin into the exhaust camshaft. Note that the tapered end goes in first, as pictured.



Installed.



Remove the 30mm welsh plug from the front of the head. The plug needs to be pushed from the rear. This can be done very gently with large screwdriver (or similar) and a rubber mallet.



Removed.





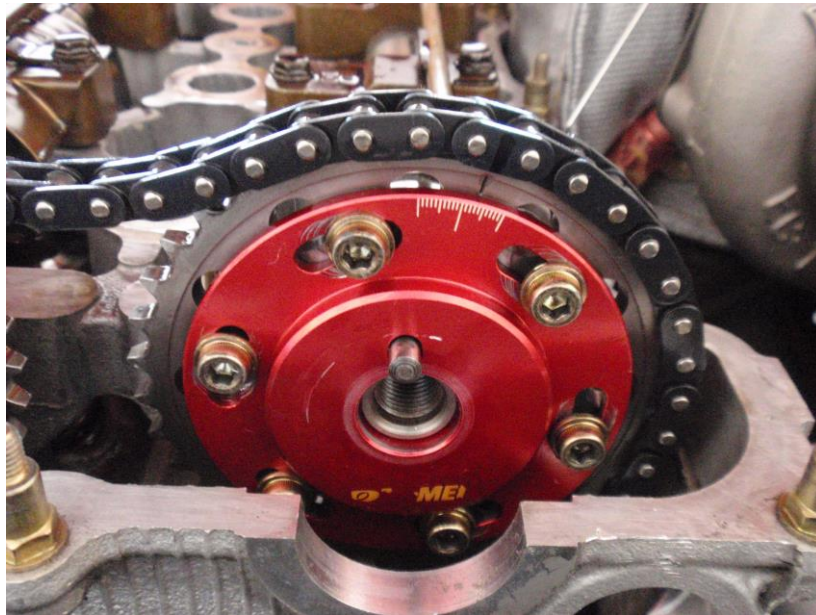
Once the plug has been removed use some 1000 or 1200 grit sand paper to clean any residue out of the hole. Place a rag at the back to stop any dust or debris from falling into the motor.



Clean.



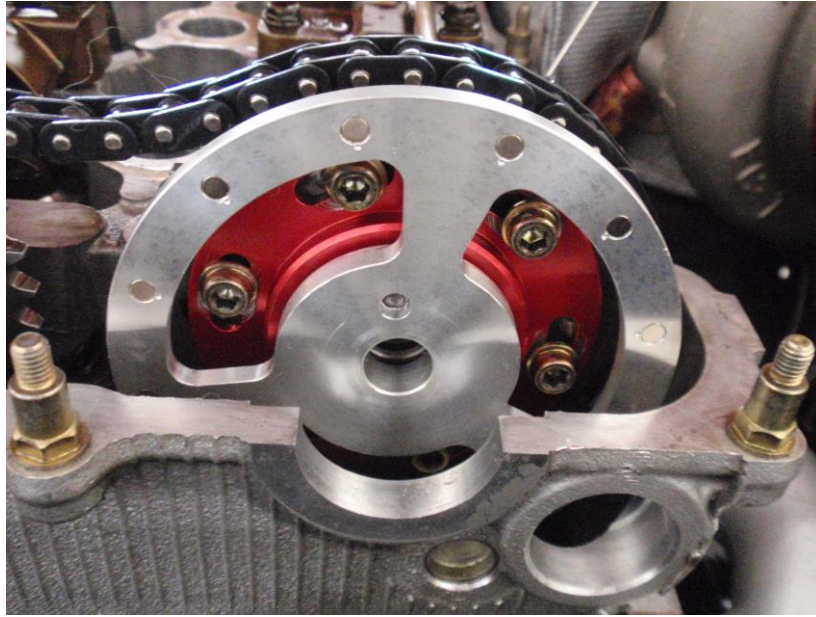
Install the cam gear & timing chain. Remember to line the timing marks up.



The newly designed hall wheels now have 6 dowel pin locations. This is so you can change when TDC offset of the home signal occurs. Some ECU's require the home/sync signal to occur in a particular window in the engine cycle. If you plan to use the provided ECU settings at the end of this guide you will need to use the dowel hole circled below. Make sure the home magnet (circled) is as pictured in the photo.



Install the supplied hall wheel. Gently tap the hall wheel onto the dowel.



Using a thin cutting disc on a grinder slice the thick washer on the standard cam bolt as pictured below, be careful not to go too deep and into the bolt.



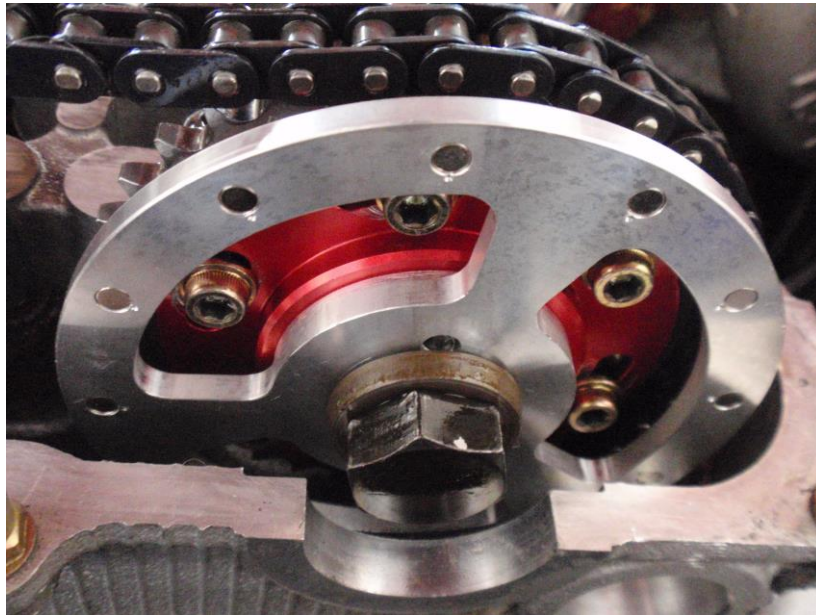
Flip the washer over and cut the same on the opposite side.



Use a cold chisel or flat blade screw driver and break the washer off. Once removed you will be left with just the bolt.



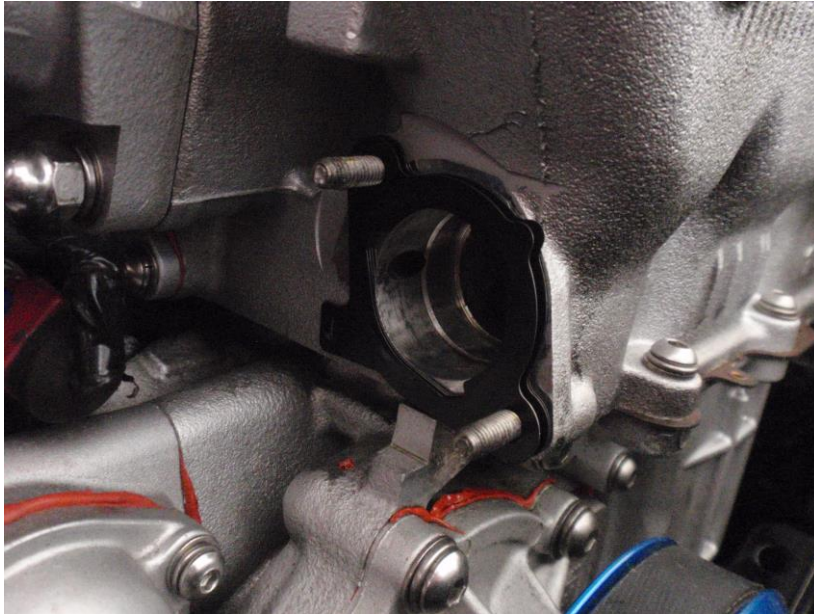
Using the supplied cam washer gently tighten the bolt to pull the hall wheel up against the cam gear.



Push the tensioner piton in and re-clip.



Install a new tensioner gasket.



Install the tensioner.

Wind the motor backwards from the crank bolt until the tensioner catch drops.

Wind the motor forwards until the tensioner is extended.

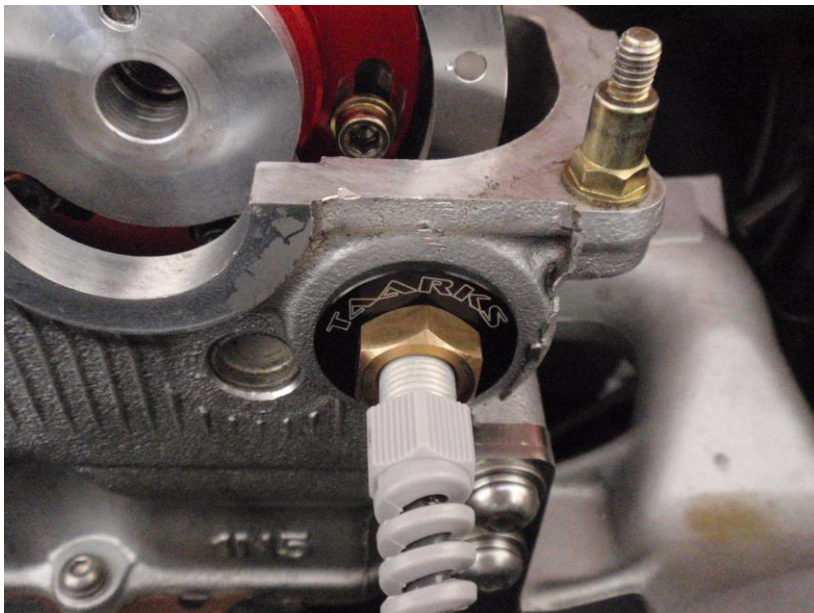
Apply 3-4 turns of thread tape around the sensor starting 10mm in from the end.



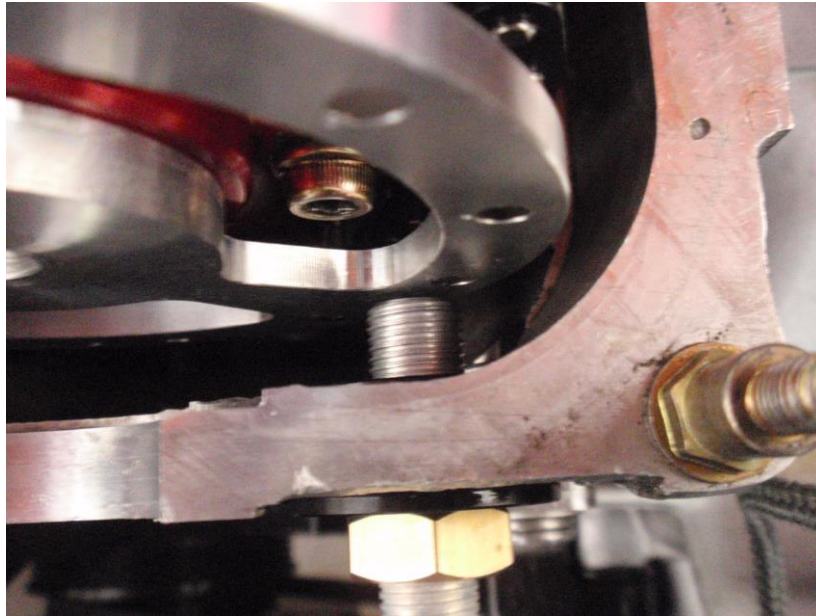
Install the hall sensor into the sensor holder. Leave about 10mm of the sensor sticking out. Do not tighten the nut just yet. Apply some engine oil to the o-ring.



Slide the sensor into the hole.

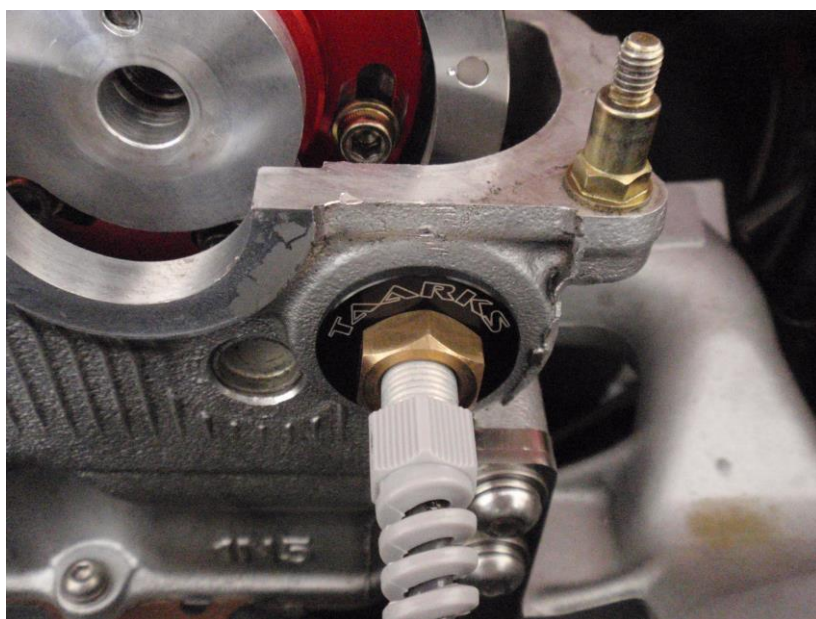


Wind the sensor in until the end of the sensor is 1mm away from the hall wheel. Use a feeler gauge to check the distance, rotate the engine and check the distance at several points around the hall wheel. (This distance may need to be adjusted once the motor is up and running, a gap no smaller than 0.5mm may be used)



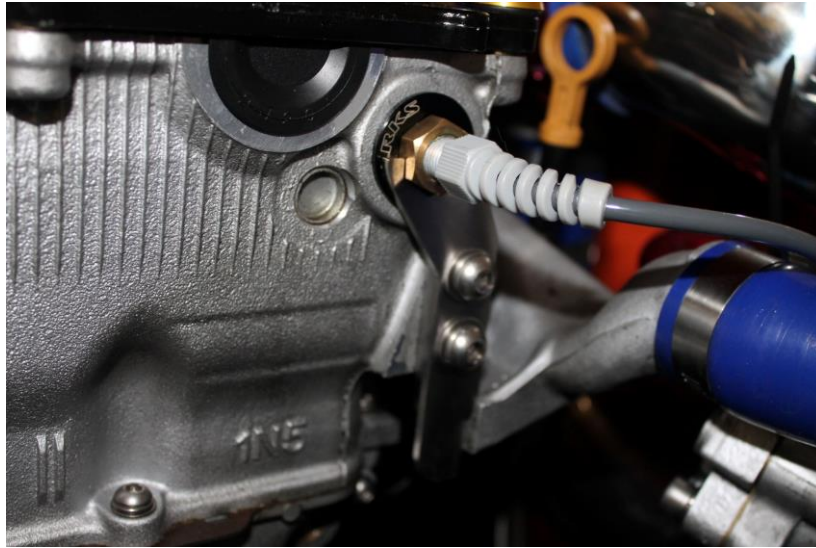
Remove the sensor from the head and tighten the lock nut. The sensor holder should be held in a set of soft vice jaws.

Re-install the hall sensor.





Install the supplied bracket using the 5mm spacer to hold the sensor in place. If you are using the bracket to mount the water outlet you should tighten it's mounting bolt before tightening the 2 main bolts.



Install the CAS block off plug using the supplied stainless bolts. A small amount of oil on the o-rings will help it slide in.



If you are using the P11 rocker cover a small part of the internal fins need to be ground down to clear the hall wheel. (P12 rocker covers do not need this done)



Once the fins have been ground down your rocker cover should look like this:



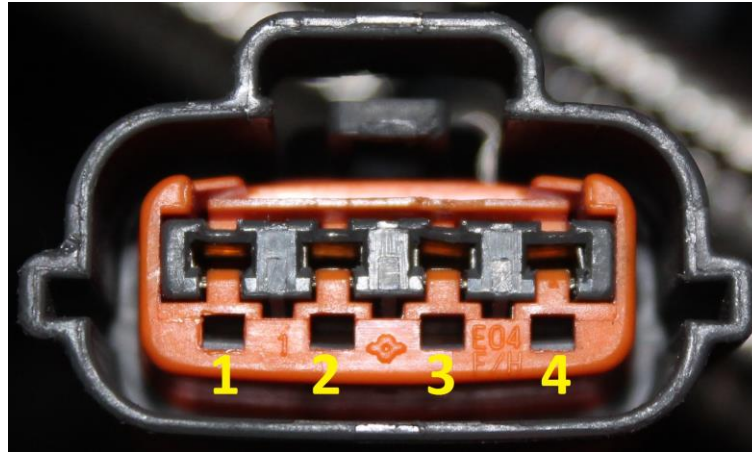
Ensure any metal filings are removed before re-fitting the rocker cover.

Wiring diagram and ECU settings can be found below.

And that's it... You're all done. Enjoy & thank you for supporting TAARKS.

## Wiring Diagram

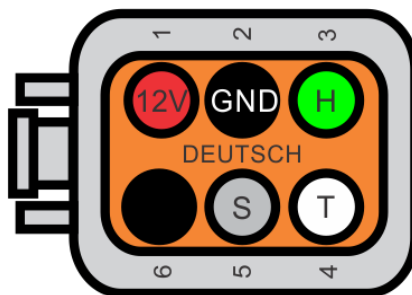
Looking into the SR CAS connector:



1. Ground
2. 12v+
3. Trigger
4. Home

For hall kits purchased before the 06<sup>th</sup> of December 2018:

Looking into the back of the engine loom side Hall Sensor connector:

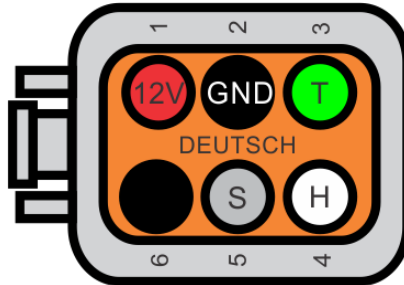


- Pin 1/Red = 12v+ (Filtered from ECU)
- Pin 2/Black = Sensor GND (from ECU)
- Pin 3/Green = Home/Sync (South Pole)
- Pin 4/White = Trigger (North Pole)
- Pin 5/Raw = Shield
- Pin 6 = Not Used

\*\*Using an un-filtered power source and ground can damage the sensor.

For hall kits purchased after the 06<sup>th</sup> of December 2018:

Looking into the back of the engine loom side Hall Sensor connector:

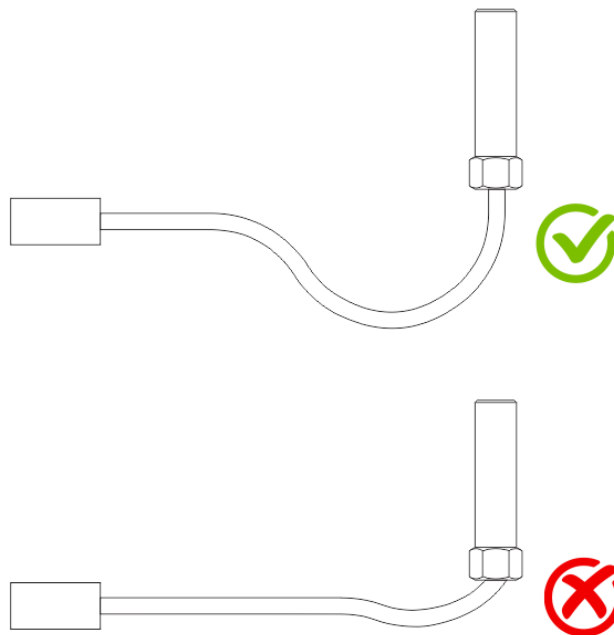


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- Pin 5/Raw = Shield
- Pin 6 = Not Used

\*\*Using an un-filtered power source and ground can damage the sensor.

### Cable Routing

DO NOT pull the wiring tight from the sensor, this coupled with engine vibration will cause the sensor wiring to fail! Leave a nice loop to allow for movement.



# ECU Setup Guide

These settings are provided as a guide only.

## Haltech Platinum Sport

The screenshot shows the 'Main Setup - Platinum Sport 1000 1.13' window with the 'Trigger' tab selected. The left sidebar contains icons for Basic, Advanced, Outputs, Inputs, Devices, and Data Logging. The main area contains the following settings:

- Trigger Type: Multitooth General
- Trigger Angle: 102.0 °
- Variable Trigger Angle
- Tooth Offset: 3
- Trigger Edge: Falling
- Home Edge: Falling
- Trigger Sensor Type: Hall Effect
- Home Sensor Type: Hall Effect
- Trigger Pull Up: Enabled
- Home Pull Up: Enabled
- Home Window: 16
- Number Of Teeth: 12
- Trigger Filter Level: None
- Home Filter Level: None
- Trigger -ve GND
- Home -ve GND

On the right, a text box reads: "Select the type of trigger that your engine uses from the options in the drop down menu." At the bottom are buttons for OK, Cancel, and Apply.

## Haltech Elite

The screenshot shows the 'Main Setup - Elite 2500 ECU 2.08.0 - Release' window with the 'Trigger' tab selected. The left sidebar contains icons for Engine, Functions, Devices, and Datalog. The main area is divided into sections:

- Trigger Pattern**
  - Trigger Type: Generic - Multi-tooth - Single Tooth Home
  - Number Of Teeth: 12
  - Number Of Missing Teeth: 2
  - Trigger Signal Location: On Cam
  - TDC Offset Angle: 292.0 °
  - TDC Offset Angle Table Enable
  - RPM Filter Level: 1
- Trigger Signal**
  - Edge: Falling Edge
  - Sensor Type: Hall Effect
  - Filter Level: 0
  - Pull Up: Disabled
  - Ground Reference: Disable
  - Digital Reference: Disable
  - Signal Coupling: DC
  - Edge Rejection Ratio Enable: Disable
  - Edge Rejection Ratio: 20.0 %
- Home Signal**
  - Edge: Falling Edge
  - Sensor Type: Hall Effect
  - Filter Level: 0
  - Pull Up: Disabled
  - Ground Reference: Disable
  - Digital Reference: Disable
  - Signal Coupling: DC
  - Minimum RPM: 1000 RPM

At the bottom left, the profile is set to 'ELITE DEFAULT'. At the bottom right are buttons for 'View I/O Report...', OK, Cancel, and Apply.

## Link G4+

Trigger Setup	
Trigger Mode	Multi-Tooth
Trigger Priority	Trig 1
RPM Filtering	1 - Default

Trigger 1	
Trigger 1 Type	Optical/Hall
Trigger 1 Filtering	Level 1 (Low)
Trigger 1 Pullup	ON
Trig 1 Edge	Falling
Multi-Tooth Posn	Cam
Tooth Count	12

Trigger 2	
Trigger 2 Type	Optical/Hall
Trigger 2 Filtering	Level 1 (Low)
Trigger 2 Pullup	ON
Trig 2 Edge	Falling
Sync Mode	Cam Pulse 1x

## RPM signal

**RPM sensor**

RPM sensor type

Hall/VR with pull-up  
 VR internal reference  
 VR differential

RPM sensor edge

Falling

**Crank trigger pattern**

Crank trigger wheel

6 (at crank) or 12 (at cam)

Crank index position

180.0 3 teeth 0.0°

Crank trigger type

No missing tooth

Crank trigger number of teeth

6

Number of missing teeth

0

Additional tooth angle

0.0

Gap duration time

0.00

**Custom crank trigger settings**

GAP	Number of missing teeth	Teeth to next GAP	GAP threshold
0	0	0	0.000
1	0	0	0.000
2	0	0	0.000
3	0	0	0.000
4	0	0	0.000
5	0	0	0.000
6	0	0	0.000
7	0	0	0.000

**Cam sync sensor**

Sensor type

Not used  
 Hall / VR with pull-up  
 VR (Variable Reluctance)  
 VR differential (FT600)  
 Random Hall - Diagnostic  
 Random VR - Diagnostic  
 Random VR differential - Diagnostic (FT600)

Cam sync edge

Falling

**Cam sync sensor for synchronization only**

Enabled

Cam sync sensor will be used only after engine starts for 10 revolutions of the engine and then disconsidered for engine synchronization, but will continue to be record in datalogger.

**Cam Sync Position**

Cam Sync position angle

328.5 °BTDC

Engine position angle (BTDC) when the cam sync sensor is over the cam sync teeth. This information is used to improve noise rejection and prevent cam sync errors and doesnt require precise number since it doesnt affect timing precision.

**Cam sync window filter detection angle**

Window filter detection angle

360 °

The cam sync detection window restricts the reading of signals around the angle of the cam sync position, discarding any signals outside this window. This option makes possible to use multi-teeth cam sync triggers.

Emtron

“Coming Soon”