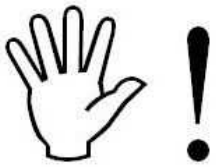
Instruction Manual

PERFORMANCE ELECTRONICS

Installation Instructions for:
Crank Angle Sensor replacement for EMS P/N 30-6620
1990-1995 Nissan 300ZX VG30DE, VG30DETT
1989-1998 Nissan Skyline RB26DETT,
1993-1998 Skyline RB25DET,
1989-1994 Skyline RB20DET,
1988-1990 S13 180SX, 200SX and Silvia CA18DET



STOP!

THIS PRODUCT HAS LEGAL RESTRICTIONS.
READ THIS BEFORE INSTALLING/USING!

WARNING! THIS IS A RACE ONLY PRODUCT MANUFACTURED AND SOLD FOR INSTALLATION ON VEHICLES DESIGNED TO BE USED SOLELY FOR COMPETITION PURPOSES. ONCE THIS PART IS INSTALLED, THE VEHICLE MAY NEVER BE USED, OR REGISTERED OR LICENSED FOR USE, ON A PUBLIC ROAD OR HIGHWAY. IF YOU INSTALL THIS PART ON YOUR VEHICLE AND USE THE VEHICLE ON A PUBLIC ROAD OR HIGHWAY, YOU WILL VIOLATE THE CLEAN AIR ACT AND MAY BE SUBJECT TO PERSONAL CIVIL OR CRIMINAL LIABILITY, INCLUDING FINES OF UP TO $4,819 PER DAY.

IT IS THE RESPONSIBILITY OF THE INSTALLER AND/OR USER OF THIS PRODUCT TO ENSURE THAT IT IS USED IN COMPLIANCE WITH ALL APPLICABLE LAWS AND REGULATIONS. IF THIS PRODUCT WAS PURCHASED IN ERROR, DO NOT INSTALL AND/OR USE IT. THE PURCHASER MUST ARRANGE TO RETURN THE PRODUCT FOR A FULL REFUND.

THIS POLICY ONLY APPLIES TO INSTALLERS AND/OR USERS WHO ARE LOCATED IN THE UNITED STATES; HOWEVER CUSTOMERS WHO RESIDE IN OTHER COUNTRIES SHOULD ACT IN ACCORDANCE WITH THEIR LOCAL LAWS AND REGULATIONS.

WARNING!

Improper installation and/or adjustment of this product can result in major engine/vehicle damage. For technical assistance visit our dealer locator to find a professional installer/tuner near you.

Note: AEM holds no responsibility for any engine damage or personal injury that results from the misuse of this product, including but not limited to injury or death.

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Instruction Part Number: 10-6620-A supplement

****Cam / Crank Angle Sensor: AEM trigger disc MUST be used**

Discrepancies have been observed in the OEM cam/crank signals between model years and/or trim levels; to avoid confusion the Series 2 EMS does not support the OEM Nissan trigger pattern. A replacement trigger disc is now included with every Nissan EMS and must be installed before attempting to start the engine. The following installation was performed on a stock 300ZX. Installation in a Skyline or modified 300ZX may require removal of different components to access the CAS sensor, but the procedure for the CAS disc change should be identical.

Tools/parts required:

- Replacement trigger disc for Nissan RB/VG/VE cam angle sensor (AEM P/N 35-8761, supplied with 30-6620 EMS)
- ¼" ratchet
- 4-6" extension
- 8mm socket
- 10 mm socket
- Sharpie
- Pick
- Small needle-nose pliers
- ¼ " flat screwdriver
- No. 1 Phillips screwdriver
- No. 2 Phillips screwdriver
- Small mallet or dead blow hammer
- Medium-sized hammer
- Small prybar (or wide flat screwdriver)
- 3 M4x45mm cap screws (available at McMaster-Carr in pack of 25 for $1.47; p/n: 91280A149)
- Medium-sized pliers
- 3/8" pin punch
- 1/8" pin punch
- Vise or area to place sensor assembly on
- Red threadlocker

WARNING:

Failure to perform the following procedure correctly could result in permanent damage to mechanical and electrical sensor components, which could result in engine damage. Please read all instructions carefully **before** attempting this procedure, and do not attempt the install if you feel you may not be able to perform all operations safely without damaging components. AEM will not be held liable for any damage that occurs as a result of these instructions.

Instructions:
Locate the CAS sensor on your vehicle as shown in figures 1, 2, and 3.

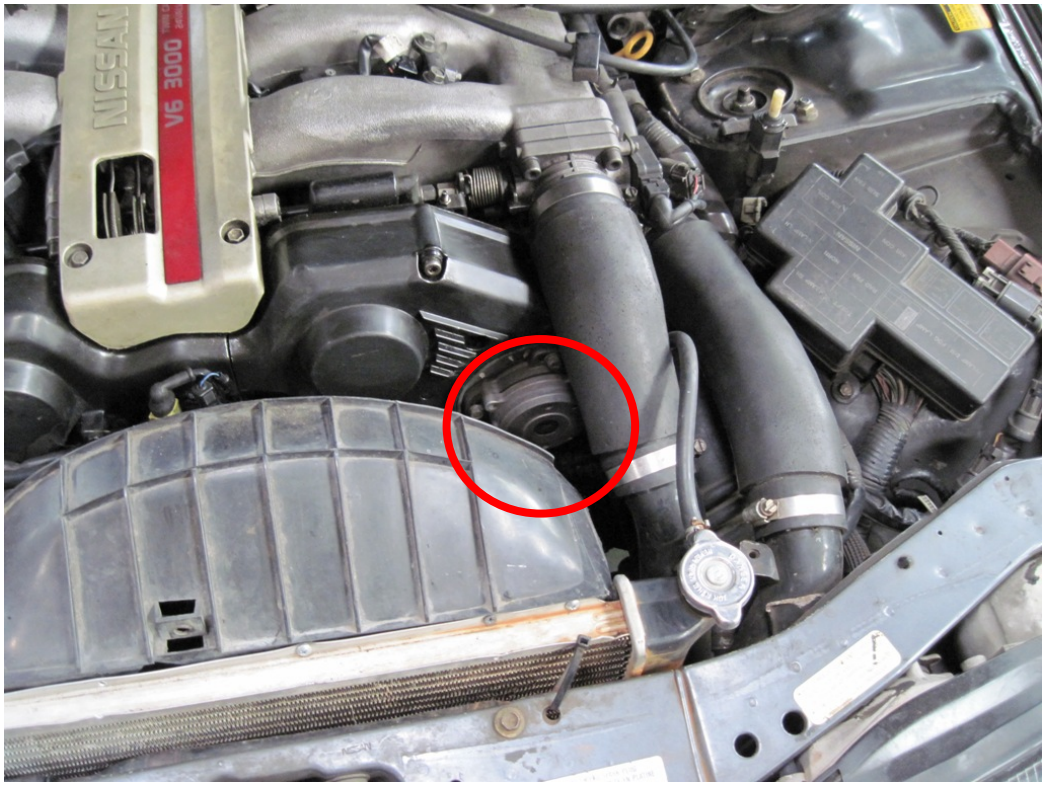

Figure 1: Location of the CAS sensor


Figure 2: Location of the CAS sensor

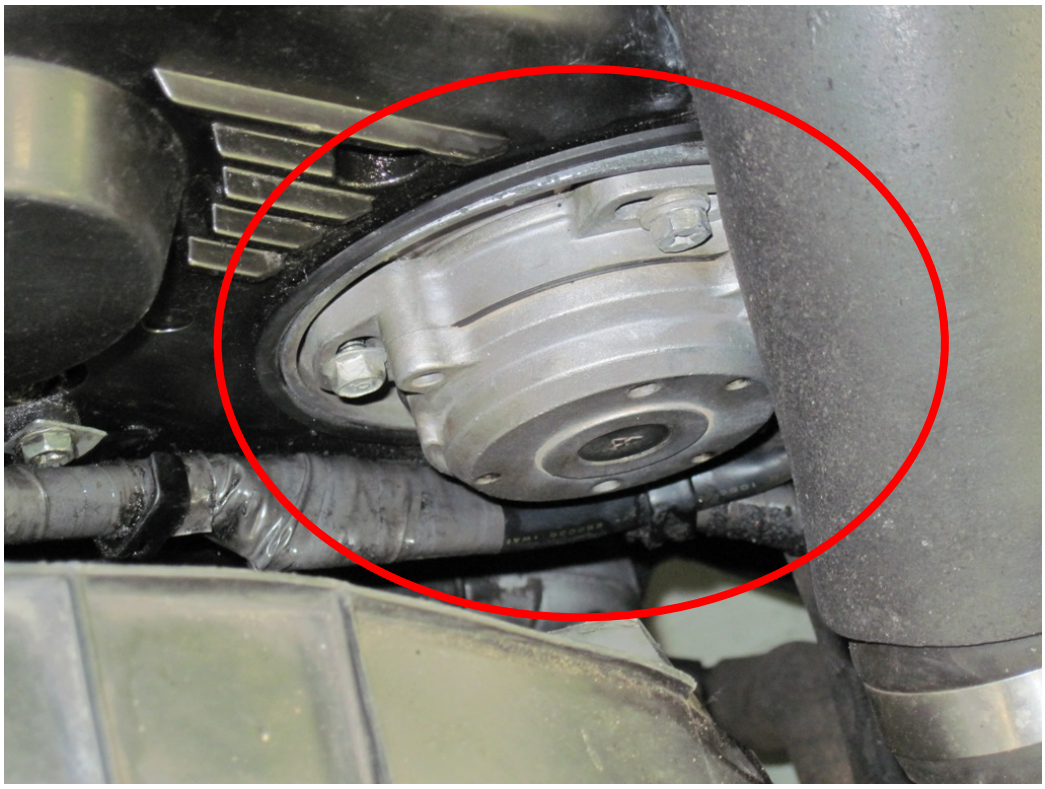

Figure 3: Close-up of CAS sensor

Remove intake tube obstructing access to the CAS sensor using an 8mm socket as shown in figures 4 and 5. Figure 6 shows how access to the CAS sensor looks once the tube is removed.

Figure 4: Removal of intake tube using 8mm socket

Figure 5: Removal of intake tube using 8mm socket

Figure 6: Intake tube removed to access CAS sensor

Mark the three bolts on the CAS sensor with your Sharpie as shown in figures 7 and 8 so that the sensor will go back into its original position upon reinstallation.

Figure 7: Marking position of CAS sensor

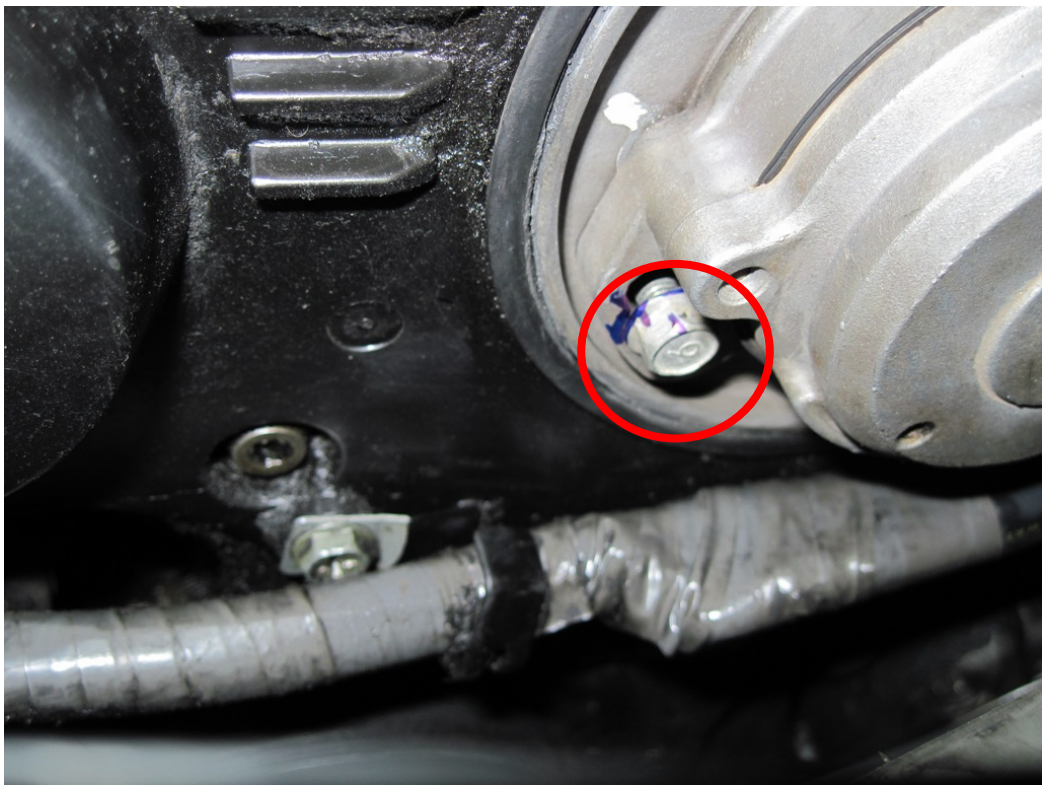

Figure 8: Marking position of CAS sensor

Remove clip that holds the harness to the CAS sensor using a pick and a pair of needle-nose pliers as shown in figures 9 and 10. This may be done after removing the CAS assembly, but is best done now.

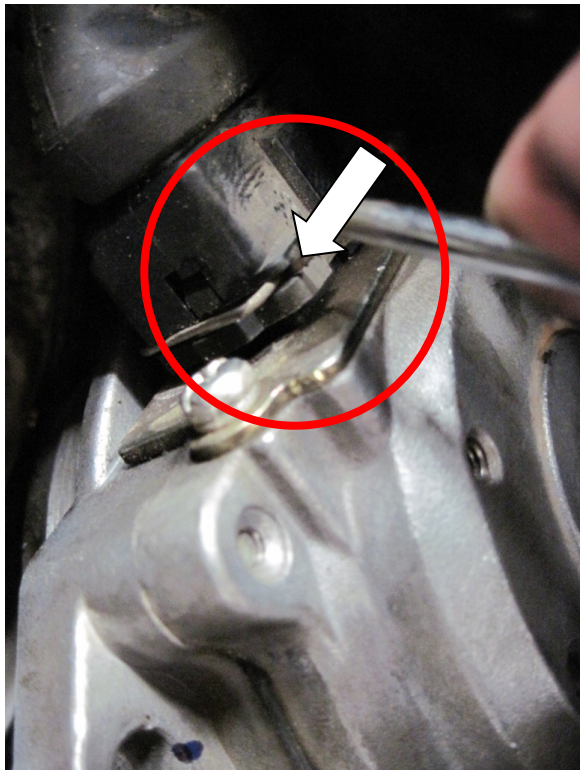

Figure 9: Pry here to remove this clip

Figure 10: Remove clip with needle-nose pliers

Remove the three bolts on the CAS sensor using a 10mm socket as shown in figure 11. Take care not to turn the sensor. Mark with your Sharpie so that the sensor can be reinstalled correctly as shown in figure 12. Figure 13 shows the cam with the CAS assembly removed. (If you turn the sensor by accident, make sure to align it with cam and mark it)

Figure 11: Removal of 3 CAS sensor bolts using 10mm socket

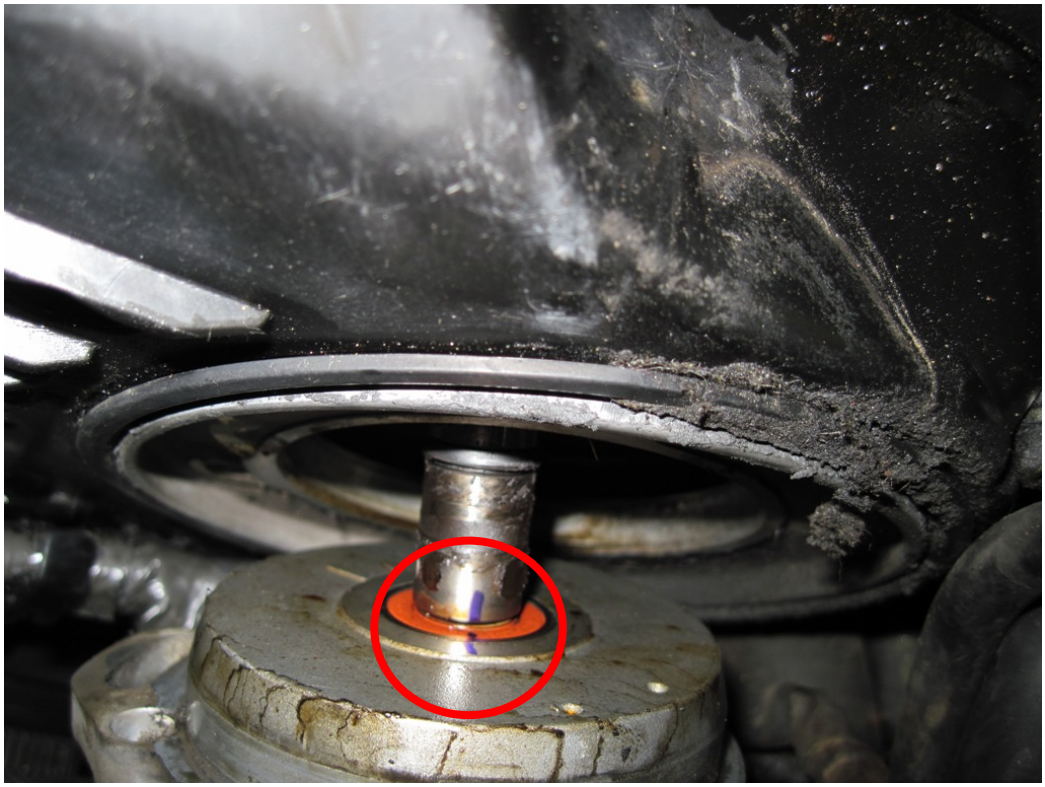

Figure 12: Mark shaft relative to housing for correct reinstallation onto cam

Figure 13: CAS sensor removed

Remove the three screws holding the CAS assembly together using a ¼" flat screwdriver (use the flat screwdriver since these screws are tightly installed, but soft) as shown in figure 14.

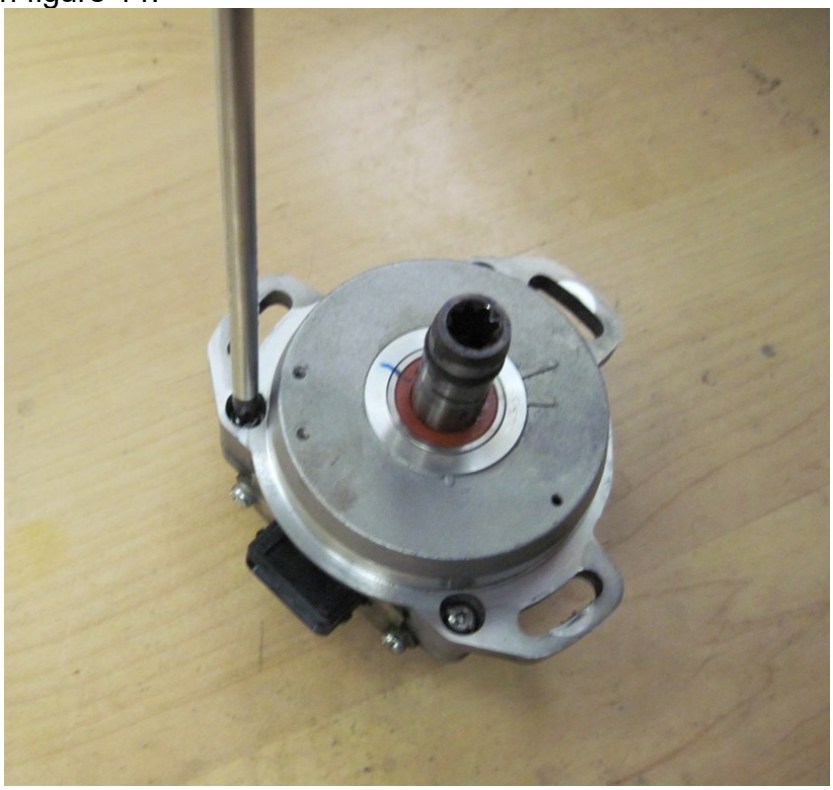

Figure 14: Taking apart CAS assembly using number 2 Phillips screwdriver

Remove screws holding the seal cover onto the assembly using a ¼" flat screwdriver as shown in figure 15.

Figure 15: Removing seal cover on CAS assembly using ¼" screwdriver

Screw in the M4x45mm cap screws so that plenty of threads are engaged and lightly tap the three bolts evenly using a mallet so that the assembly will separate as shown in figure 16. If prying between the two halves is necessary as shown in figure 17, be extremely careful not to damage the sensor inside or the rubber seal.

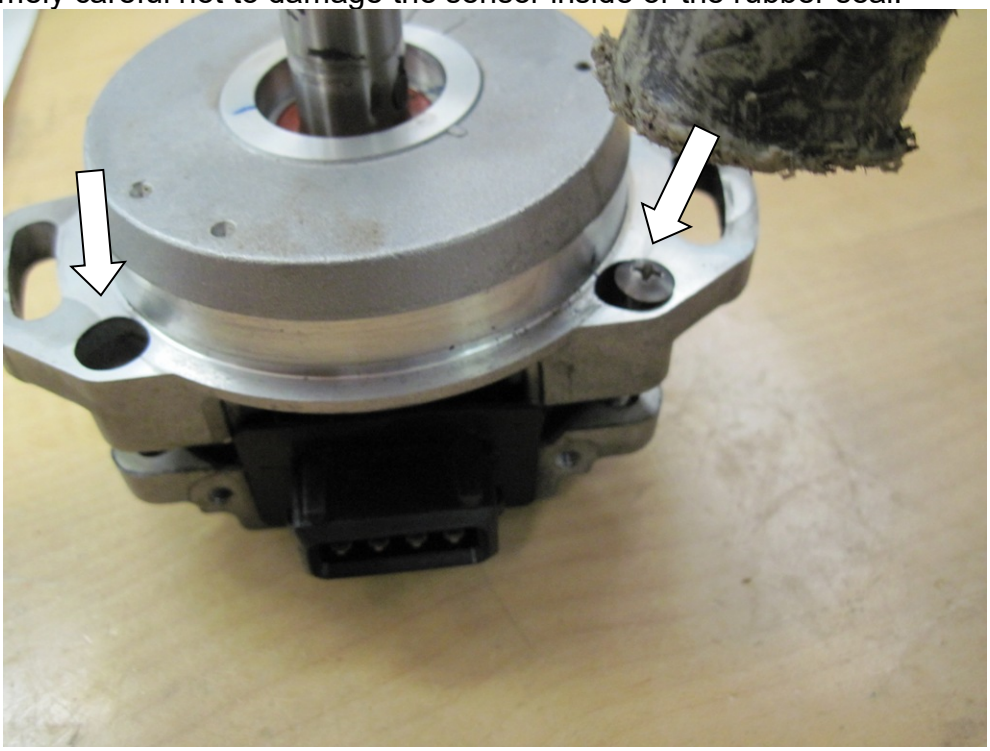

Figure 16: Using cap screws and mallet to loosen/remove cover

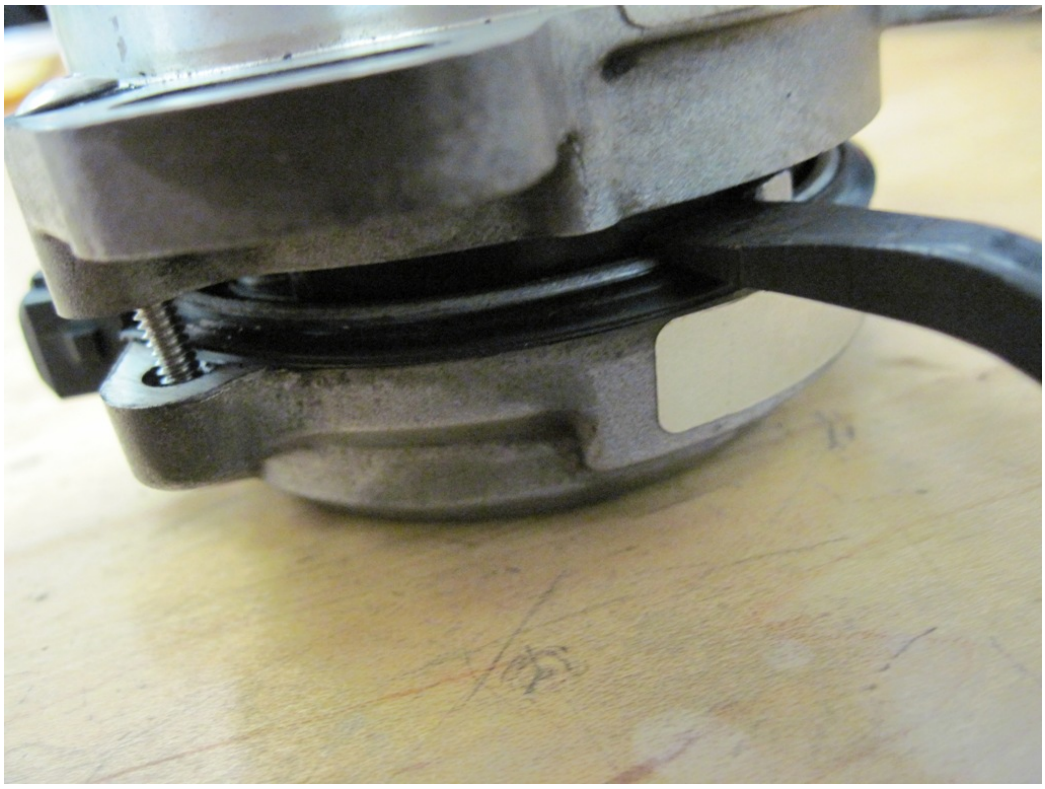

Figure 17: Using prybar to remove cover

Remove the 3 screws holding the CAS sensor onto the assembly as shown in figure 18 as well as the rubber seal shown in figure 19. Make sure that you do not remove the screws in figure 20 because this may render the CAS sensor useless.

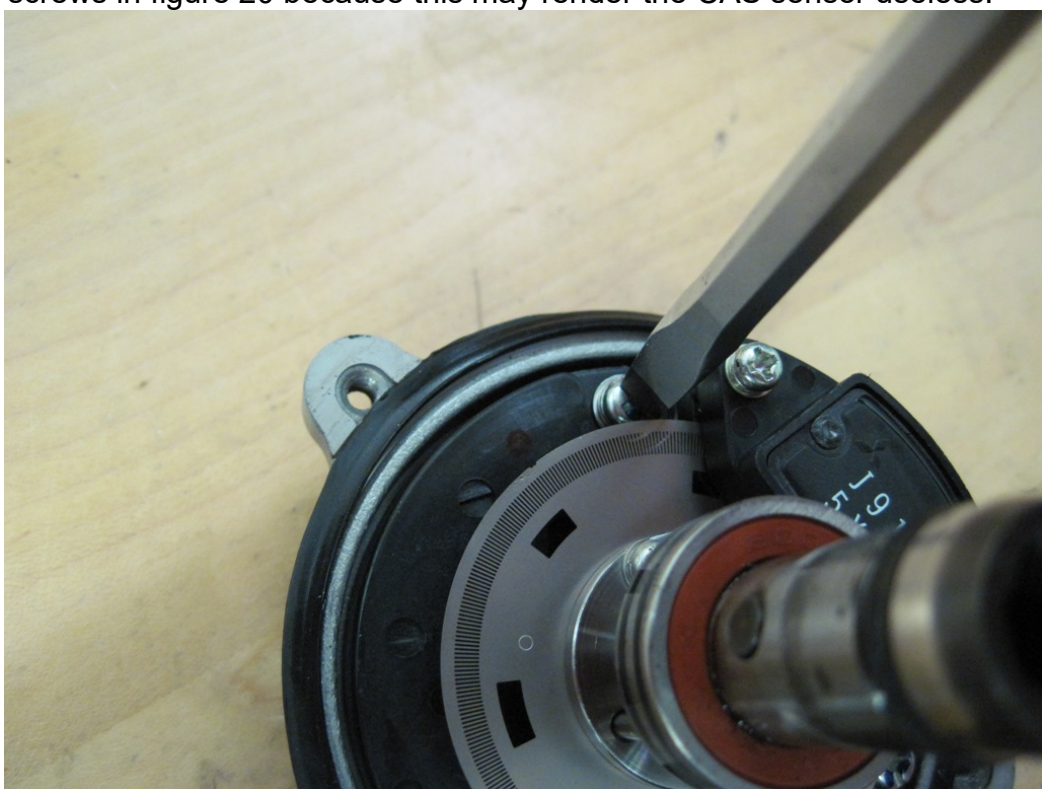

Figure 18: Remove 3 screws holding sensor using ¼" flat screwdriver

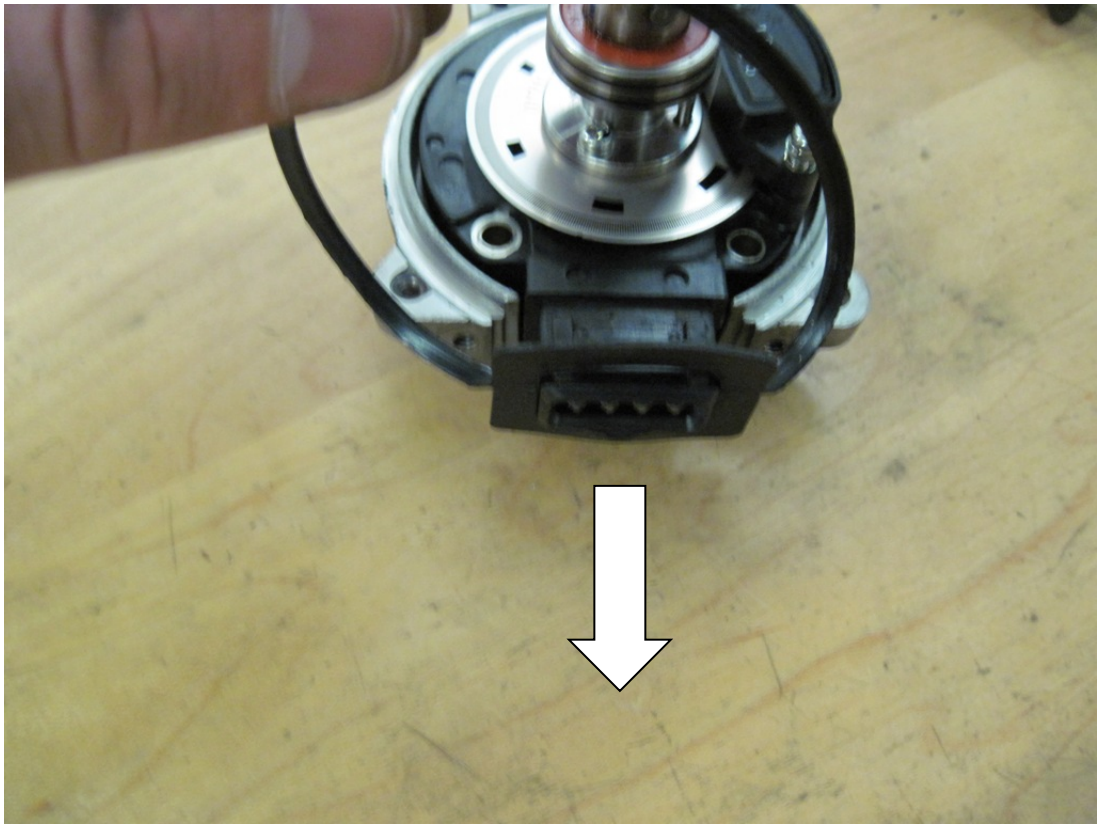

Figure 19: Remove seal from CAS assembly

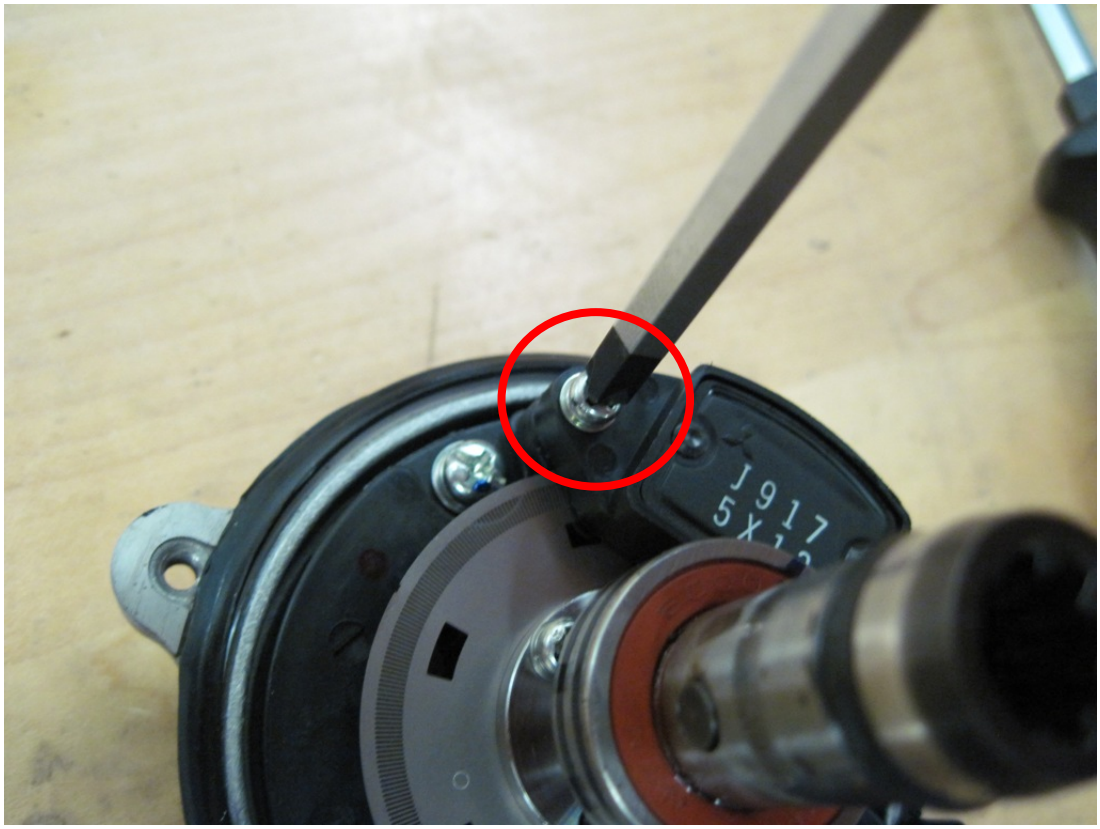

Figure 20: DO NOT REMOVE THESE SCREWS!

Mount the assembly in a vise placing the two ears that stick out of the cover shown in figure 21 on the jaws being mindful of the plastic connector to the CAS sensor as shown in figure 22.

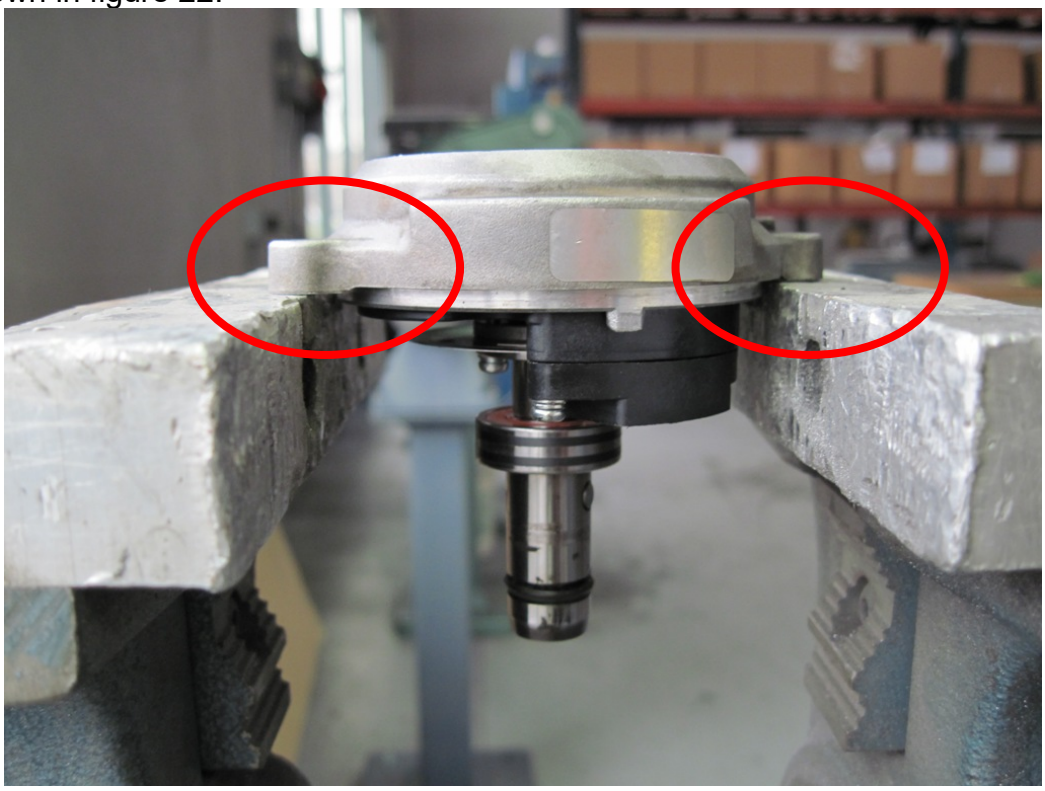

Figure 21: Mounting CAS assembly in vise to separate from shaft

Figure 22: Mounting CAS assembly in vise to separate from shaft

Remove the shaft from the remaining half of the housing using a 3/8” pin punch as shown in figure 23. Figure 24 shows the sensor separated from the housing.

Figure 23: Separation of shaft from housing using 3/8” pin punch and hammer

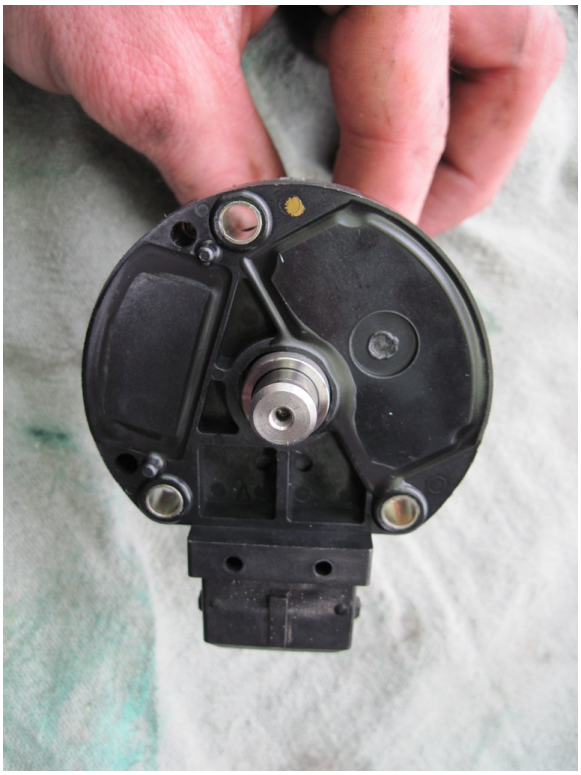

Figure 24: CAS sensor removed from housing

This step requires a lot of finesse or help from a friend to hold the shaft from falling off the vise. Mark the star socket relative to the shaft and remove the pin holding the star socket onto the shaft using a 1/8” pin punch as shown in figure 25.

Figure 25: Removal of pin using 1/8” pin punch

Remove the star socket with a ¼” flat screwdriver as shown in figure 26. Figure 27 shows the star socket removed with the small rubber seal that is inside it.

Figure 26: Removal of star socket using ¼” flat screwdriver

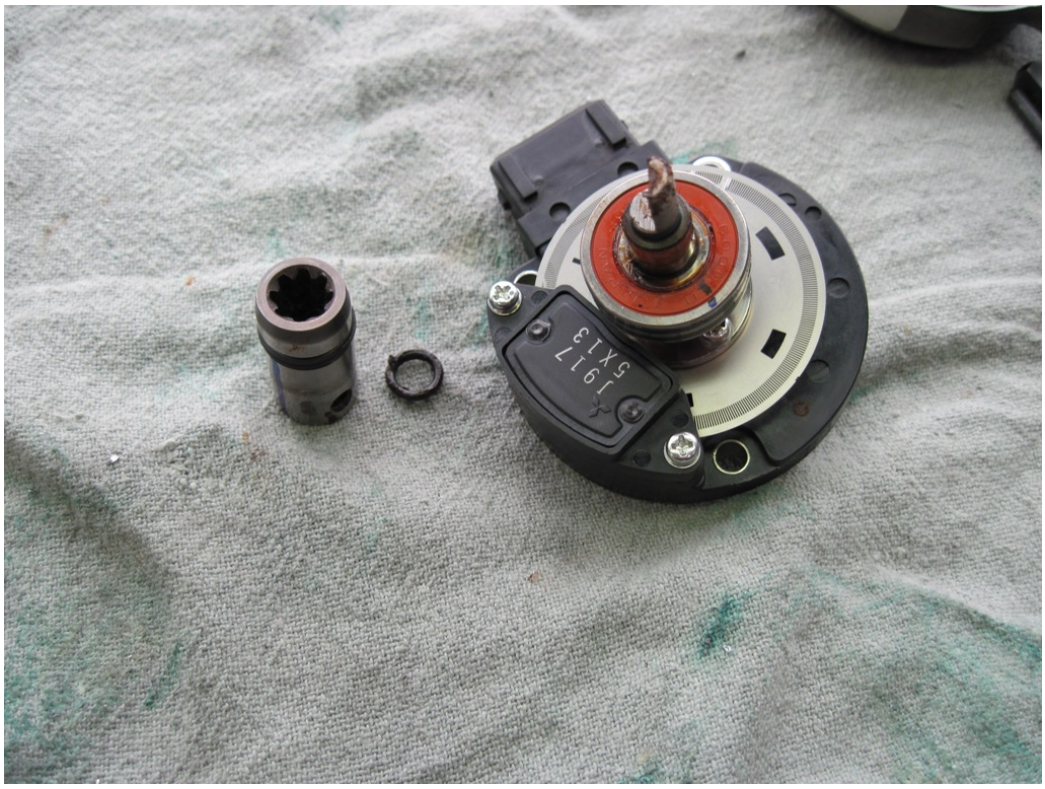

Figure 27: Star socket removed from CAS sensor

This is another step that requires a little finesse or a friend. Remove the remaining bearing using a pair of pliers with flat jaws to have a firm grip on the shaft but be narrow enough to fit in between the collar on the shaft and the bearing. Hit the pliers with a mallet. Note how the shaft is placed into the vise in figure 28. Figure 29 shows the bearing removed from the shaft.


Figure 28: Removal of bearing from shaft using pliers

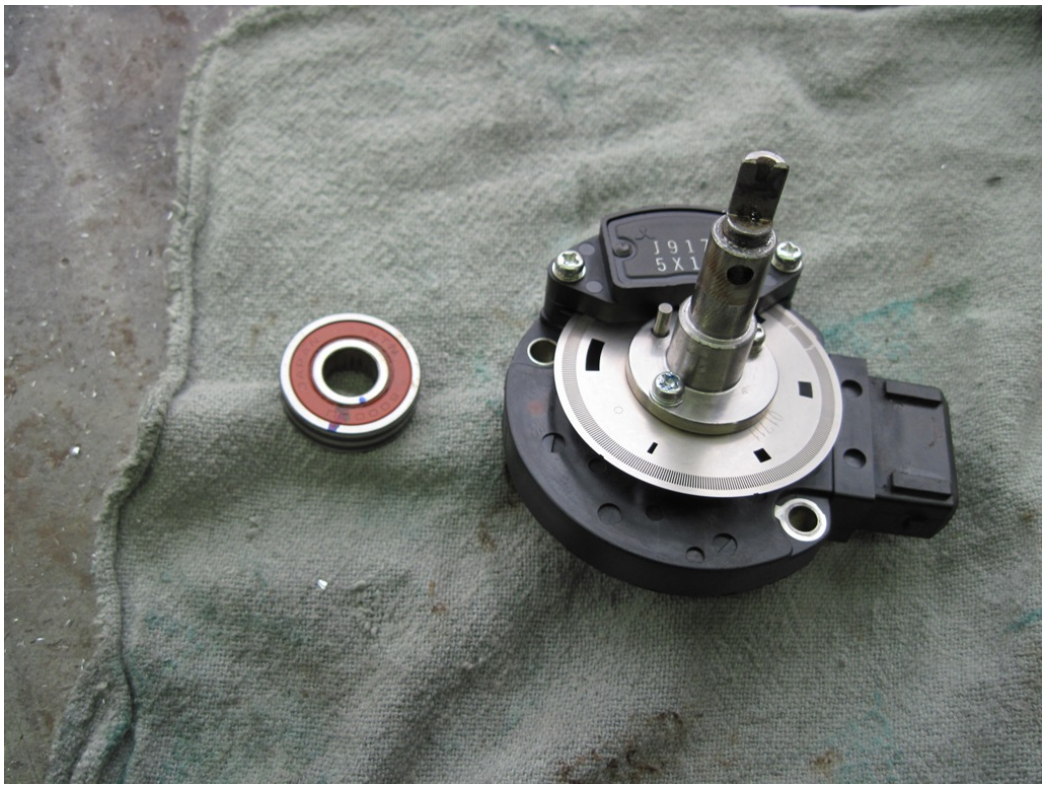

Figure 29: Bearing removed from shaft

Using the number 2 Phillips screwdriver remove the screws holding the CAS disc onto the shaft as shown in figure 30.

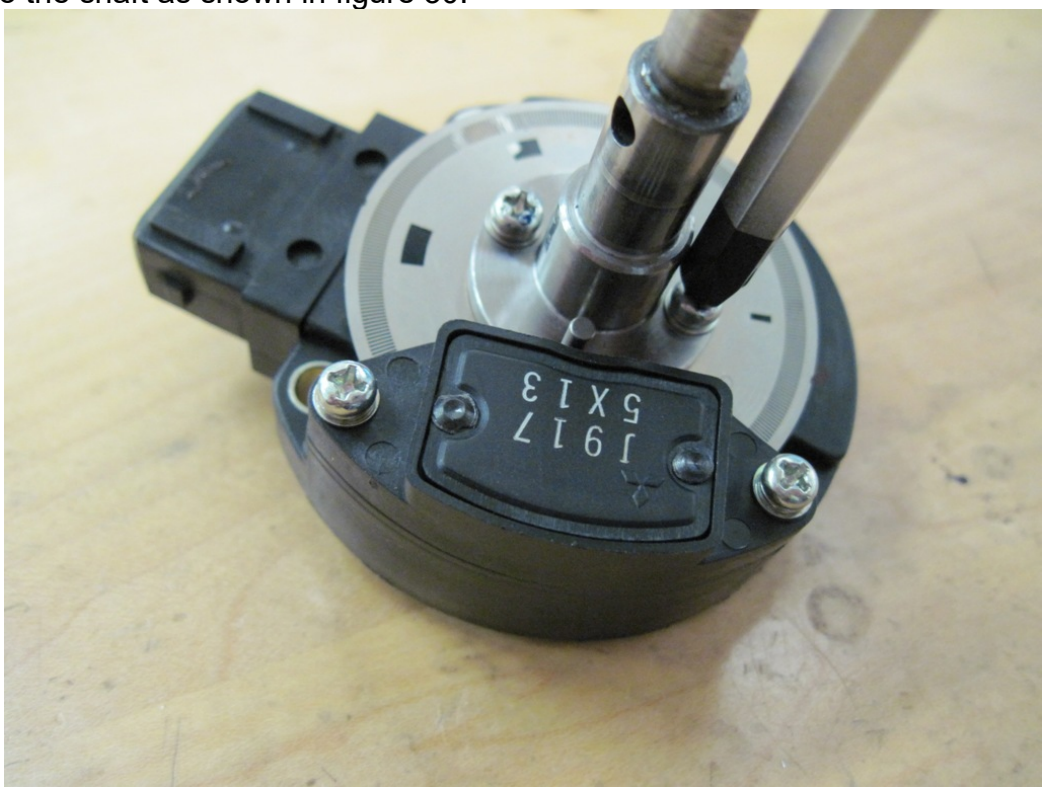

Figure 30: Removal of 2 screws on CAS disc using number 2 Phillips screwdriver

Figure 31 shows the shaft removed once the screws are removed. Mark the disc so that you can identify how it was mounted for future reference. Carefully remove the CAS disc from the sensor by rotating the disc in the direction of the large arrow relative to the locating pin so that it will pull directly up over the pin in the direction of the small arrow.

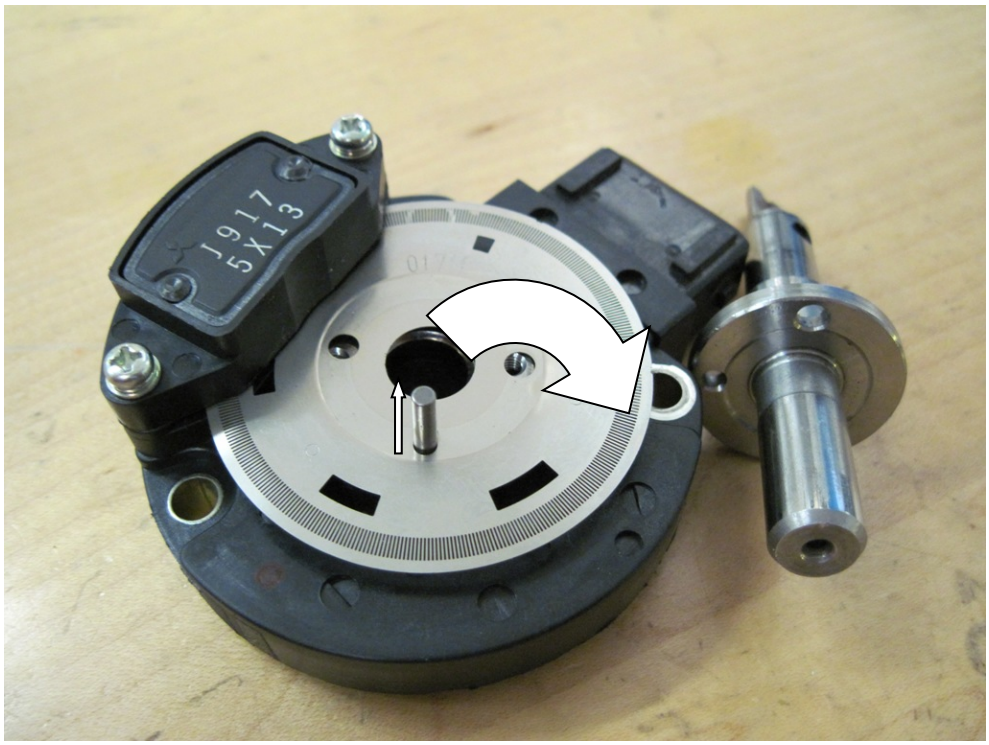

Figure 31: CAS disc screws and shaft removed

The original and AEM trigger discs must be aligned in the correct orientation since the locating pin is slightly offset as shown in figure 32.

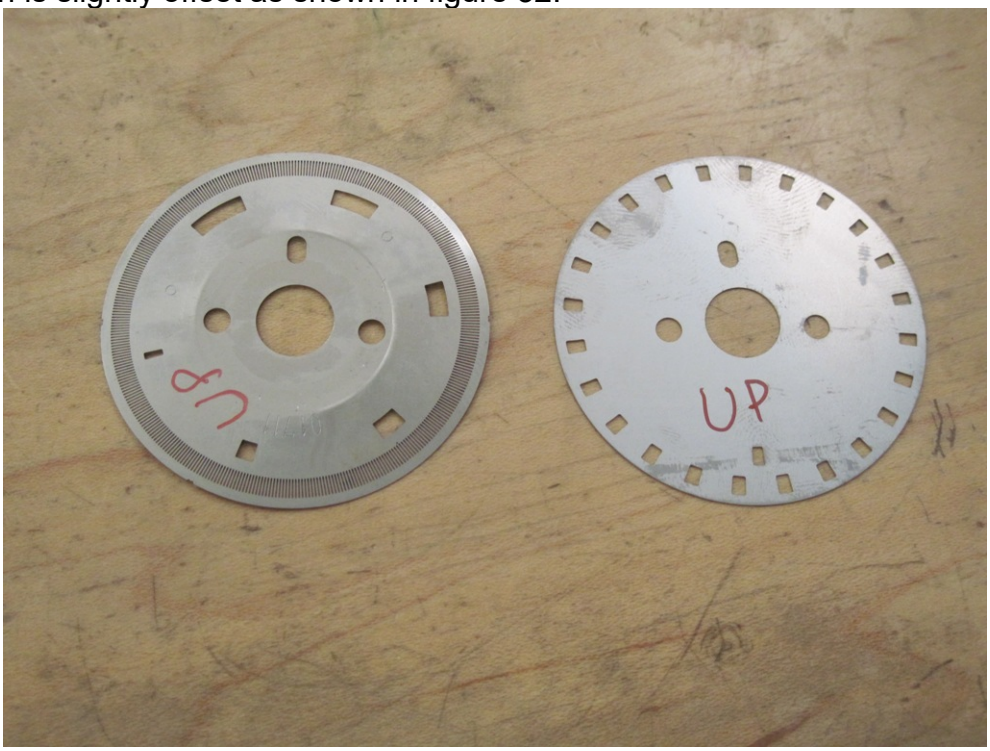

Figure 32: Comparison of original and AEM trigger discs

Install the AEM CAS sensor disc (AEM PN 35-8761) as shown in figure 33.

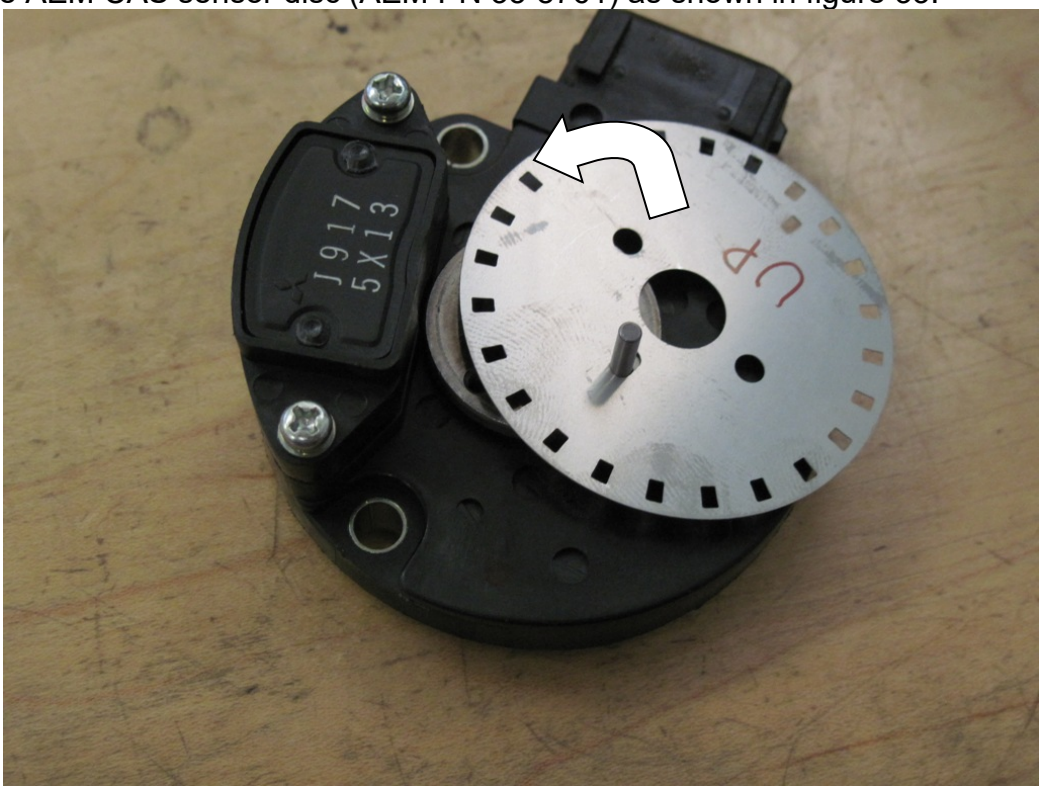

Figure 33: AEM trigger disc being installed

Reinstall the shaft onto the CAS sensor as shown in figure 34 and replace the screws on the shaft with some thread locker as shown in figure 35.

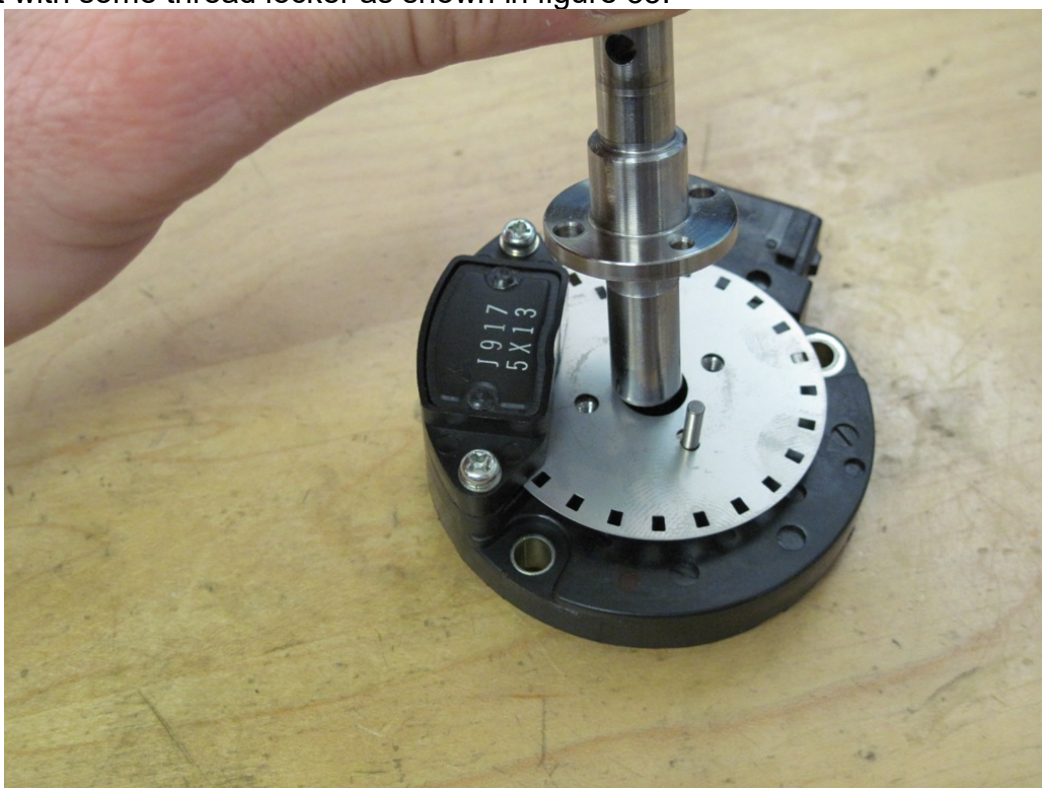

Figure 34: CAS sensor shaft reinstallation

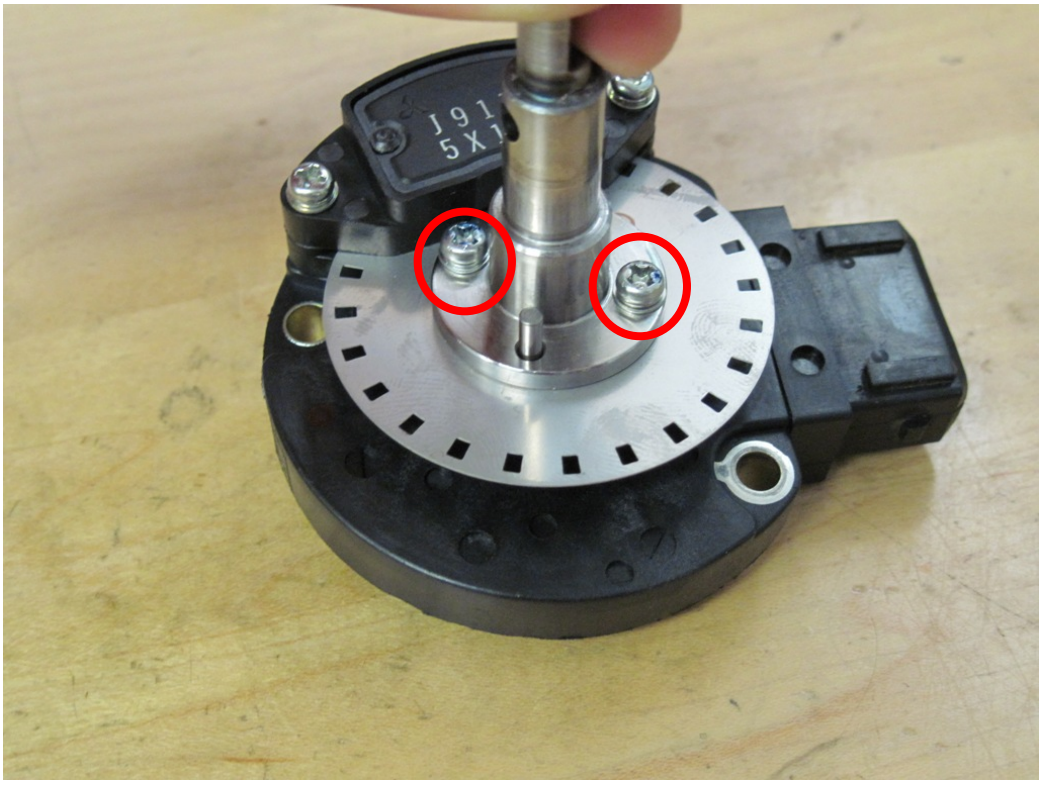

Figure 35: Screws for CAS shaft replaced

Reinstall bearing as shown in figure 36. Next add some grease or spray lube onto the o-ring that came off of the star socket that goes over the bearing and lightly hammer the star socket on a flat surface so that you are only hammering the shaft until the hole for the pin that holds the star socket lines up as shown in figure 37. A pin punch can be used to align the hole for the pin if it is slightly off.

Figure 36: Bearing placement on CAS shaft

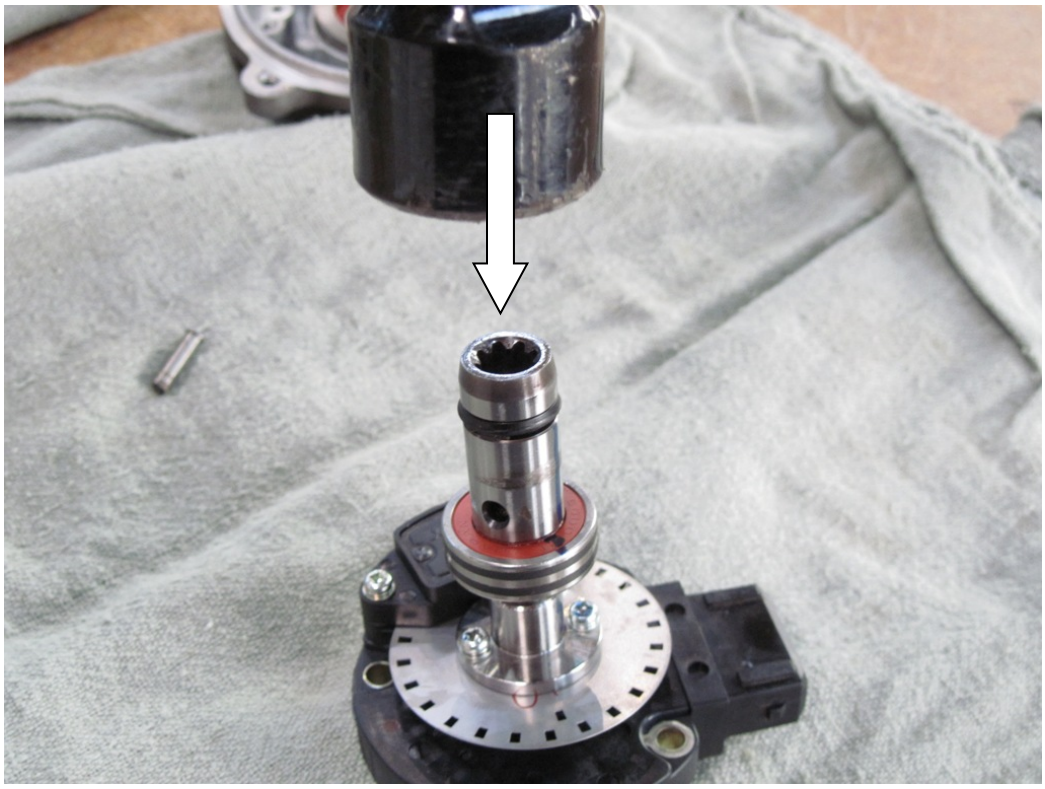

Figure 37: Hammering star socket to press on socket and bearing

Similar to the removal of the pin, the reinstallation of the pin requires hammering the pin back into the hole on the star socket as shown in figure 38 Note: The socket must be aligned relative to the shaft before performing this step.

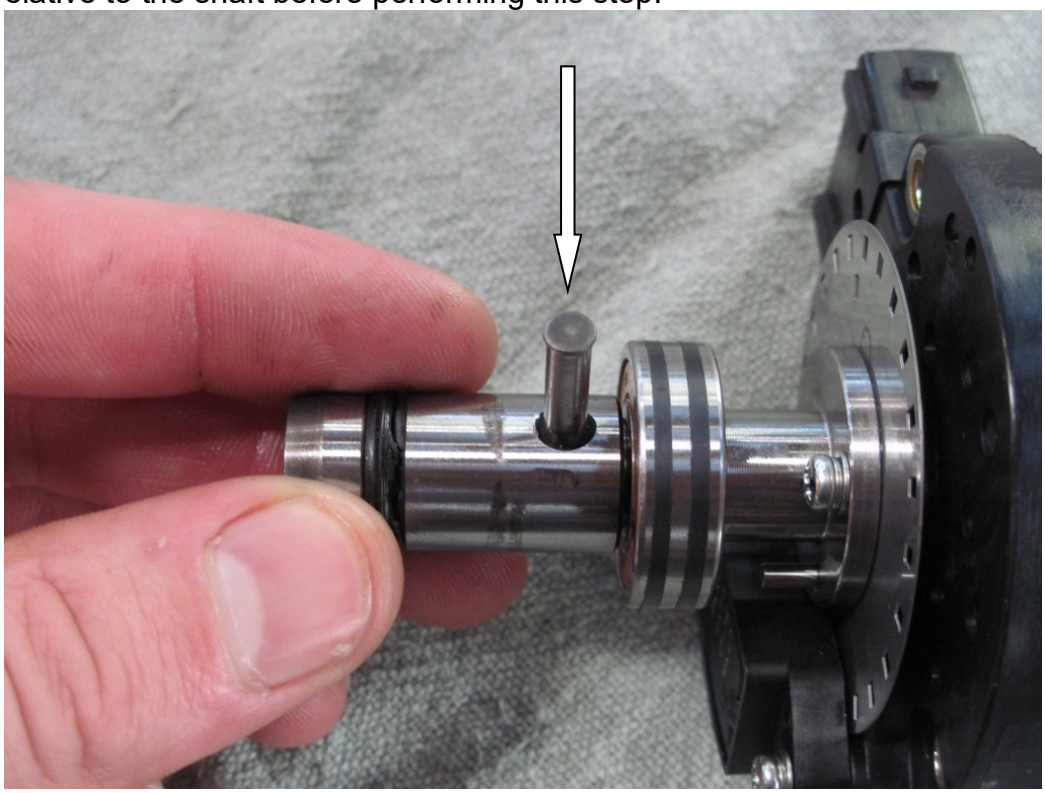

Figure 38: Aligning the star socket retaining pin

Reinstall the screws that hold on the plastic CAS sensor with some threadlocker to the metal housing taking extreme care not to bend the trigger disc. This can be accomplished by lightly pulling the shaft as shown in figure 39.

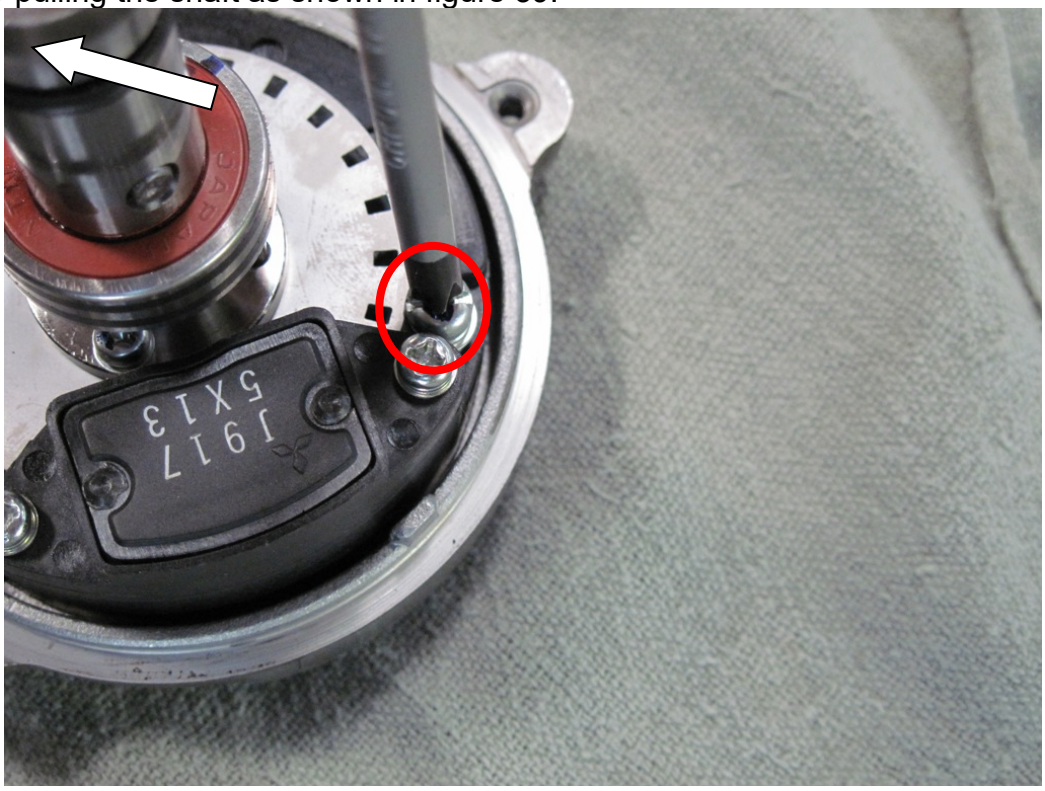

Figure 39: Reinstallation of CAS sensor screws

Reinstall rubber seal for housing as shown in figure 40.

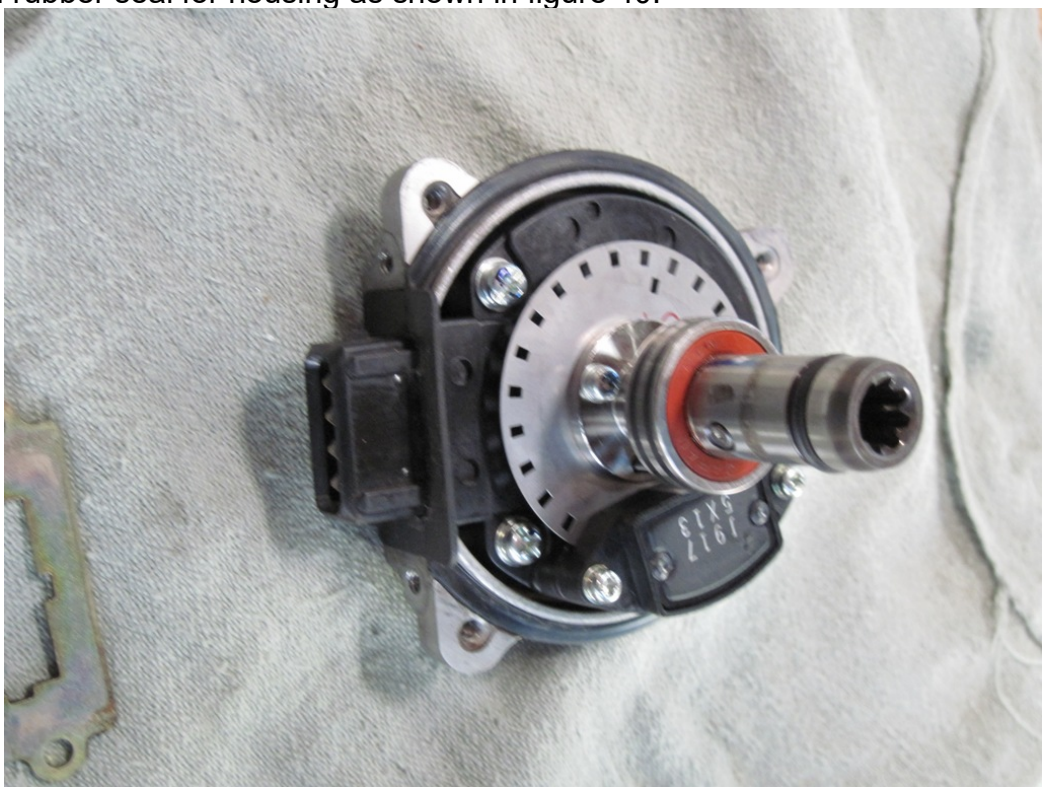

Figure 40: CAS rubber seal reinstalled

Reinstall 2nd CAS housing half making sure that the plastic connector and rubber seal are aligned properly to avoid CAS sensor and disc damage. The housing should be able to be pressed on by hand with even pressure around the whole assembly. Once together, reinstall screws with threadlocker. See figure 41.

Figure 41: Housing cover reinstalled

Reinstall the plastic connector cover as shown in figure 42.

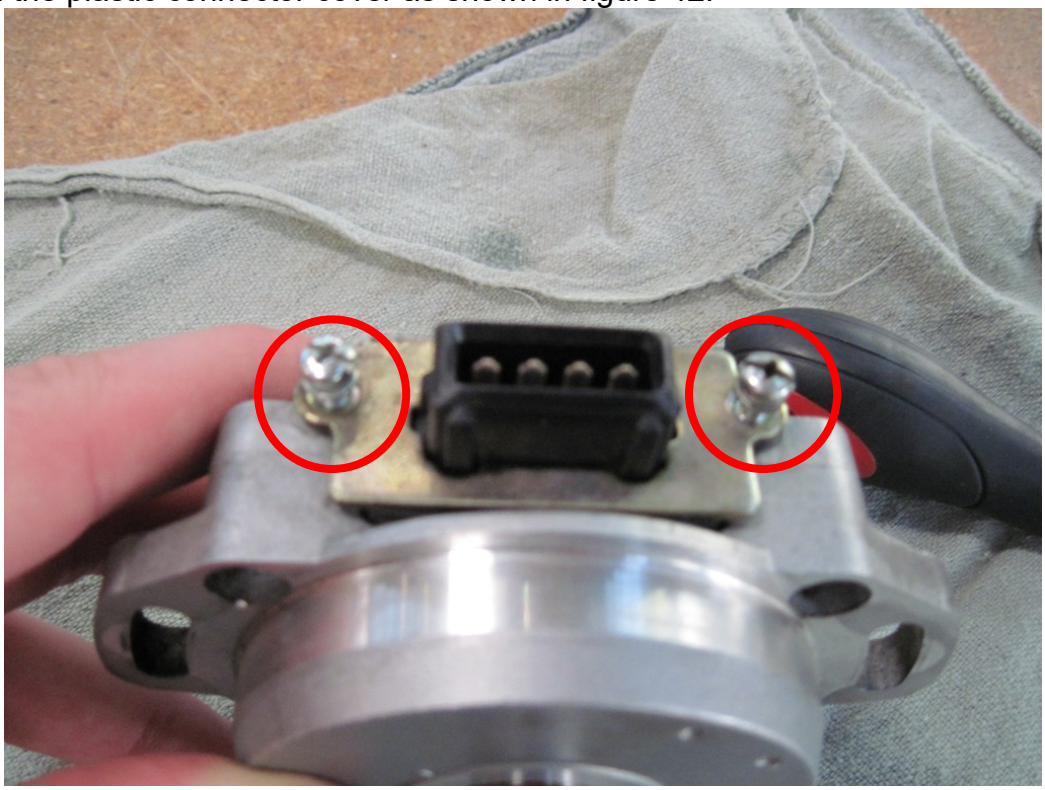

Figure 42: Connector cover reinstalled

Align the CAS sensor with the mark you made at the beginning of the instructions or alternatively, look at the cam and align the sensor with the groove in the cam. Make sure that the sensor is seated properly before reinstalling the bolts. See figure 43.

Figure 43: Reinstalling the CAS sensor

Align bolts with previously made markings and tighten as shown in figure 44.

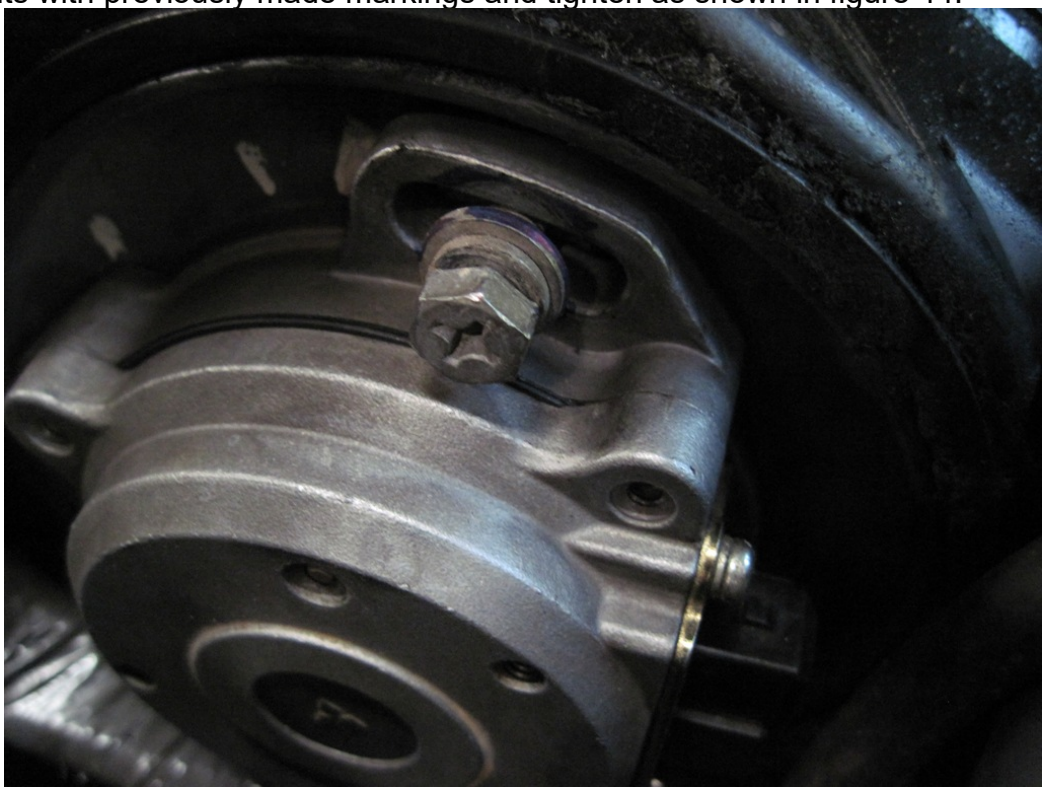

Figure 44: Reinstalling CAS sensor bolts

Reattach the plastic connector to the CAS sensor after making sure the metal retaining clip is present and installed correctly. See figure 45.

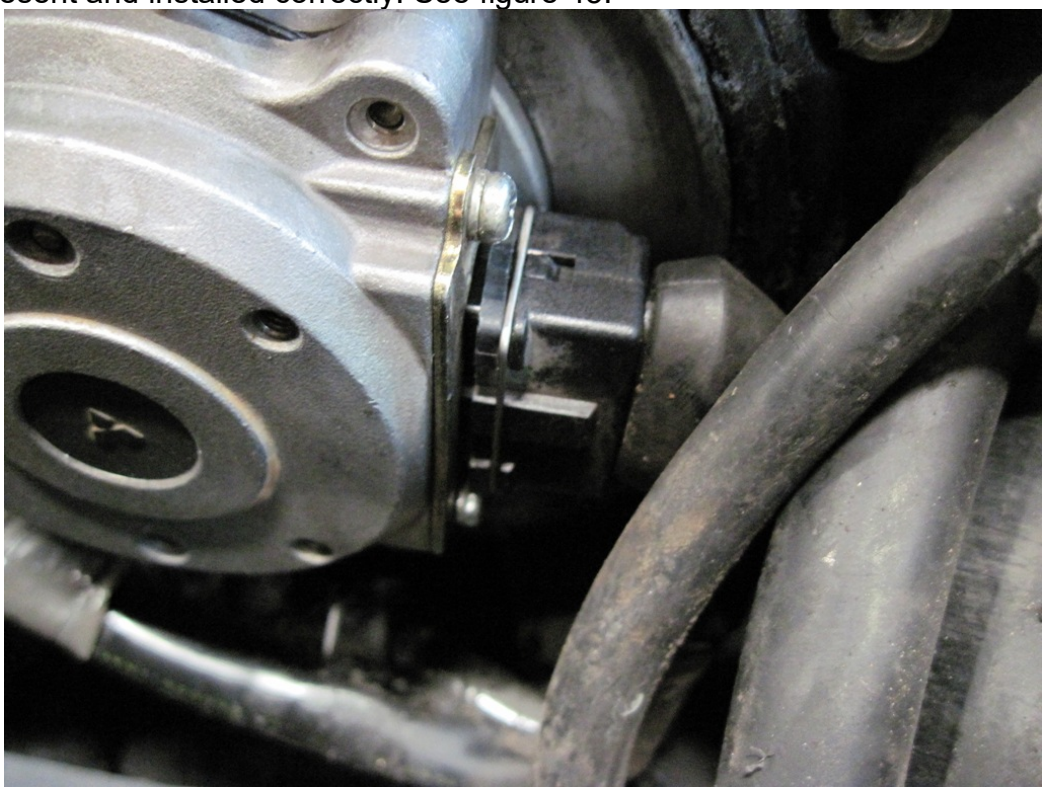

Figure 45: Replacing CAS sensor connector

Reinstall the intake tube in the reverse of removal.