36-1 Tooth Crank Trigger Systems for Big Block Chevy P/N 556-113
Installation and Adjustment Instructions

1.0 INTRODUCTION:

These systems are designed to provide an engine speed & position signal specifically to Holley EFI systems. The kit's 1/4", 35 tooth wheel will provide a very accurate crankshaft speed & position signal to the ECU in the most-demanding of racing applications. These systems come with the bracketry, mounting hardware, & ferrous-target, hall-effect sensor necessary for installation.

WARNING! These instructions must be read and fully understood before beginning installation. Failure to follow these instructions may result in poor performance, vehicle damage, personal injury or death. If these instructions are not fully understood, installation should not be attempted. Extreme caution should be exercised when working near or around the 36-1 crank wheel during regular engine operation as serious injury or dismemberment could occur. Keep hair, clothing, & hanging objects away from the crank wheel at all times.

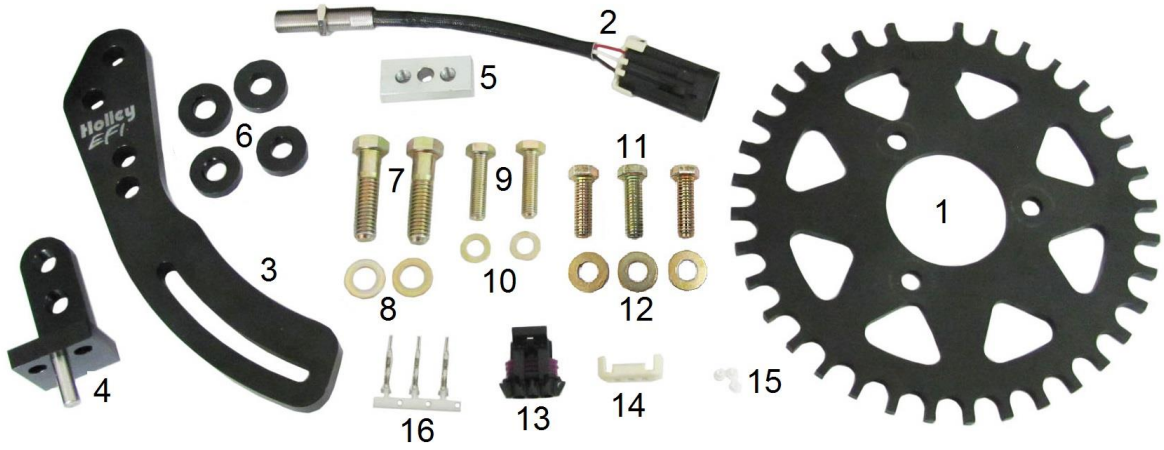
2.0 APPLICATIONS

These kits were designed specifically for use on early model Big Block Chevy applications equipped with a standard, aftermarket ATI *Super Damper* or *Fluidampr* "style" harmonic balancer up to 7-1/4" in diameter. The 8" trigger wheel included with these kits was designed to center off of the hub of the balancer & therefore, does not require a centering ring for wheel centering. Consequently, these kits will not work on balancers which do not have a center-hub extrusion (i.e.: Innovators West, etc.). In addition, these wheels will only work with balancers having a 3-hole, wheel mounting bolt-pattern.

NOTE: Universal 8" & 7.25" diameter, 36-1 tooth, crank wheels are available for custom balancers not supported by this kit. These are available as Holley PN's: 556-125 & 556-126 respectively. These wheels require finished-machining for bolt-hole pattern & hub extrusion recess (if applicable). When selecting a wheel for a given balancer, ensure that the wheel diameter is at least 3/4" larger than the diameter of the balancer it is intended to operate on.

NOTE: Mounting the 36-1 crank trigger wheel will space the lower pulley out 3/16". This requires that all other pulleys be moved out 3/16" as well to maintain proper alignment.

3.0 PARTS IDENTIFICATION



Item #	Qty.	Components	Item #	Qty.	Components
1	1	8” 36-1 Tooth x 1-4” Wheel	9	2	5/16”-24 x 1.25” Screws
2	1	M12 x 1mm Sensor w/ Jam Nut	10	2	5/16” Mil Spec Washers
3	1	Engine Block Bracket	11	3	3/8”-16 x 1.25” Screws
4	1	Sensor Mounting Bracket	12	3	3/8” Mil Spec Washers
5	1	Threaded Back Plate	13	1	Connector
6	4	1/4” Thick Aluminum Spacers	14	1	TPA Lock
7	2	7/16”-14 x 1.75” Screws	15	3	Seals
8	2	7/16” Mil Spec Screws	16	3	Pins

4.0 MATERIALS REQUIRED FOR INSTALLATION

17mm Wrench	9/16” Wrench
1/2” Wrench	Small Crescent Wrench
5/8” Wrench	Medium-Strength Thread Adhesive

5.0 ATTACHING THE SENSOR MOUNTING BRACKET TO THE ENGINE BLOCK BRACKET

1. Use the threaded back-plate (5), 5/16”-24 x 1.25” screws (9), & 5/16” washers (10) to secure the sensor mounting bracket (4) to the engine-block bracket (3) as shown in **Figure 1**.

NOTE: The bolt holes on the threaded back-plate are drilled slightly off-center to accommodate the slot on the engine block bracket. Consequently, the threaded back-plate is directionally oriented & will only go on one way.

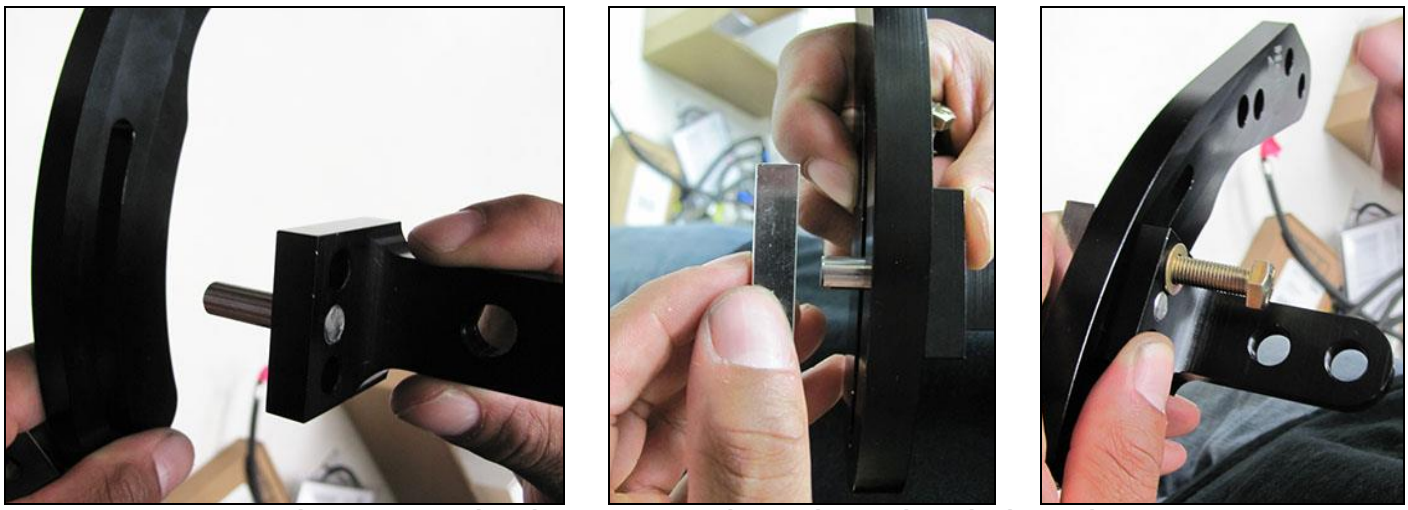


Figure 1: Securing the Sensor Bracket to the Engine Block Bracket

2. Slide the sensor bracket to the approximate center of the block bracket's slot & lock it in place by hand tightening the 5/16" screws, as shown in **Figure 2** below. Do not tighten these screws at this time as final sensor-to-wheel angular adjustment will need to be made prior to doing so. (See **Section 7** for details.)

Figure 2: Centering the Center Bracket

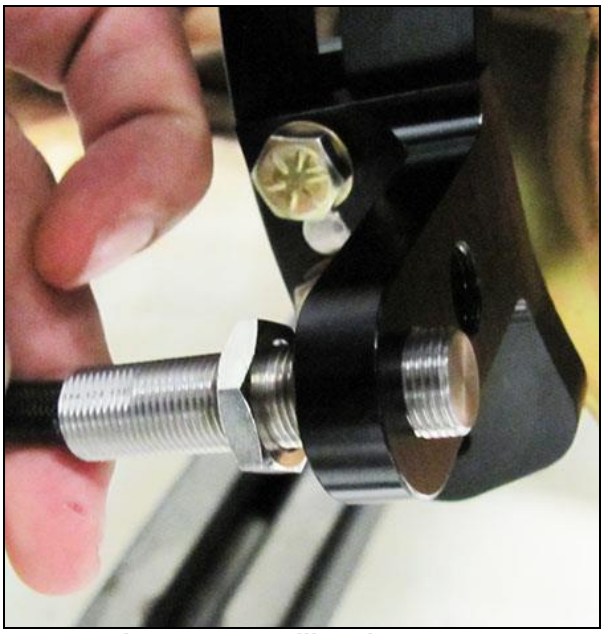


Figure 3: Installing the Sensor.

3. Back the sensor's jam nut approximately half way up the sensor (2) and thread the sensor into the sensor mounting bracket (4) until it protrudes about a 1/8", as shown in **Figure 3** above.

5.0 INSTALLATION OF THE ENGINE BLOCK BRACKET ASSEMBLY

NOTE: This kit includes four 1/4" thick aluminum spacers to be used when attaching the engine block bracket. All four are intended to be used when no front motor plate is used & only two are meant to be used when a front motor plate is used. This assumes a motor plate thickness of 1/4". Due to variations in lower cam pulley thicknesses, motor plate thicknesses, & balancer stack-ups, it may be necessary to eliminate, replace, or modify the provided spacers in some applications. Standard 7/16" washers of various thicknesses can be used for bracket spacing if necessary.

1. Use the 7/16"-14 x 1.75" screws (7), 7/16" washers (8), & 1/4" spacers (6) - as necessary, to mount the motor bracket to the driver's or passenger's side of the engine, as shown in **Figure 4** below.

2. Use a 5/8" wrench to tighten the 7/16" screws. Keep in mind, the engine block bracket may need to be removed later to add or remove spacers or washers to establish proper sensor-to-wheel alignment. For this reason, it is best to wait until final sensor-to-wheel standoff alignment has been verified prior to using thread adhesive.

Figure 4: Mounting the Engine Block Bracket to the Engine.

6.0 INSTALLATION OF THE 36-1 CRANK TRIGGER WHEEL

1. Manually rotate the engine to TDC (Top Dead Center) of the #1 cylinder as shown in **Figure 5** below.

2. Check the hub surface to which the crank trigger wheel (1) will be mounted to ensure that it is smooth & free of any excess dirt, debris, or oil. Clean the face of the balancer as required.

3. With the *Holley EFI* logo facing outward, center the wheel on the hub of the balancer using the recess on the rear of the wheel.

4. Rotate the crank wheel until the 7th-tooth index mark lines up with the approximate centerline of the sensor. The wheel was designed such that the bolt-holes on the wheel should line up to those of the balancer under these conditions. This should provide a mechanical reference angle of 60° BTDC #1, assuming a standard key-way location on the crankshaft.

5. Adjust the wheel as necessary to align the bolt holes & secure the crank wheel to the balancer using the supplied 3/8”-18 x 1.25” screws (11) & 3/8” washers (12), as shown in **Figure 7**. Apply a liberal amount of medium-strength thread adhesive (minimum) to the threads of the screws prior to tightening.

6. Once the crank wheel has been securely fastened to the balancer, make any final sensor-to-wheel angular adjustments by sliding the sensor bracket in the engine-block bracket until the sensor’s centerline is located directly on the 7th-tooth index mark. Use a 1/2” wrench to tighten the sensor bracket in place. Thread adhesive is required on the threads of the 5/16”-24 screws prior to final tightening.

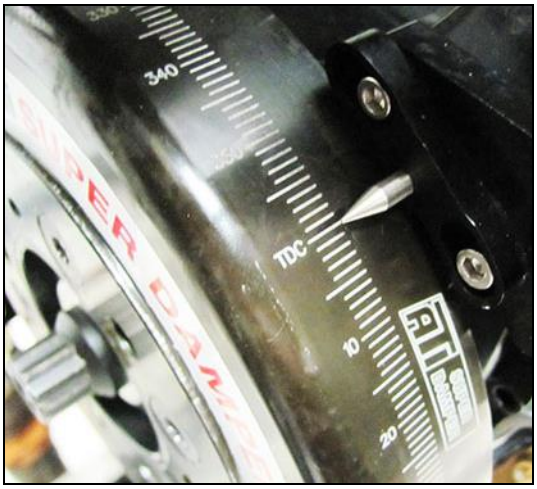


Figure 5: Rotating the Engine to TDC #1

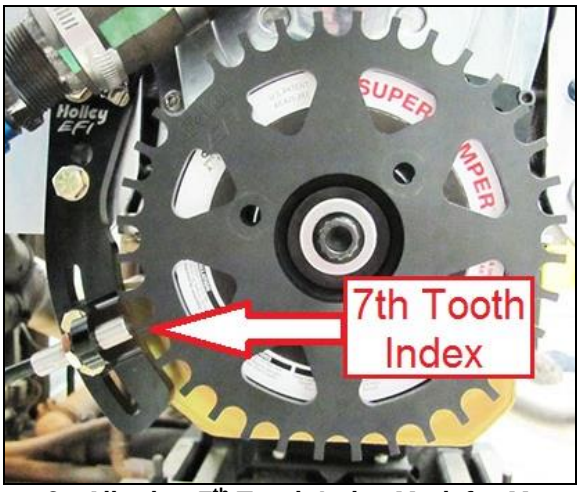


Figure 6: Aligning 7th Tooth Index Mark for Mounting

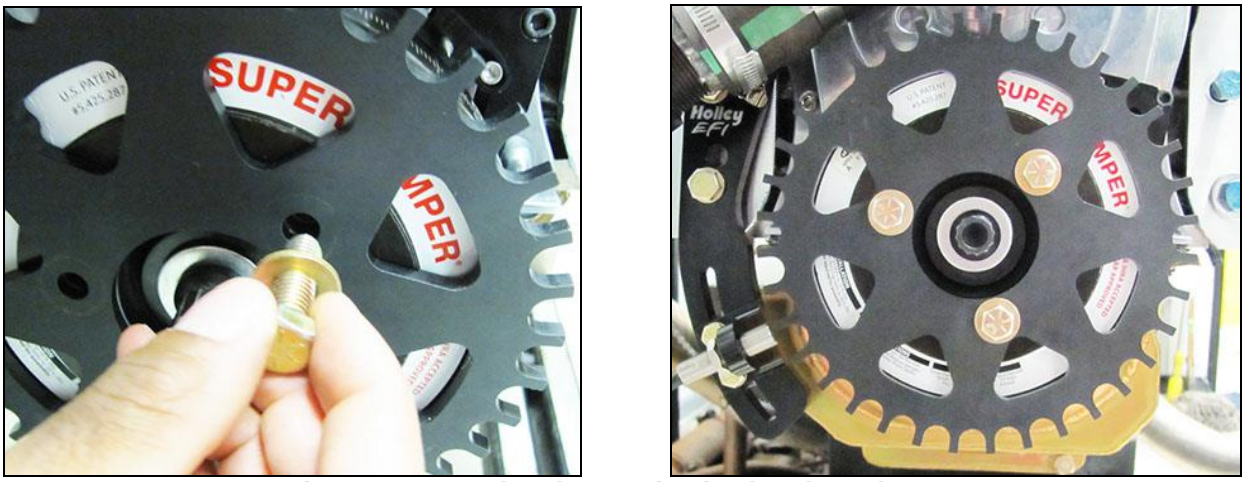


Figure 7: Fastening the Crank Wheel to the Balancer

7.0 ADJUSTING SENSOR ALIGNMENT & SETTING SENSOR GAP

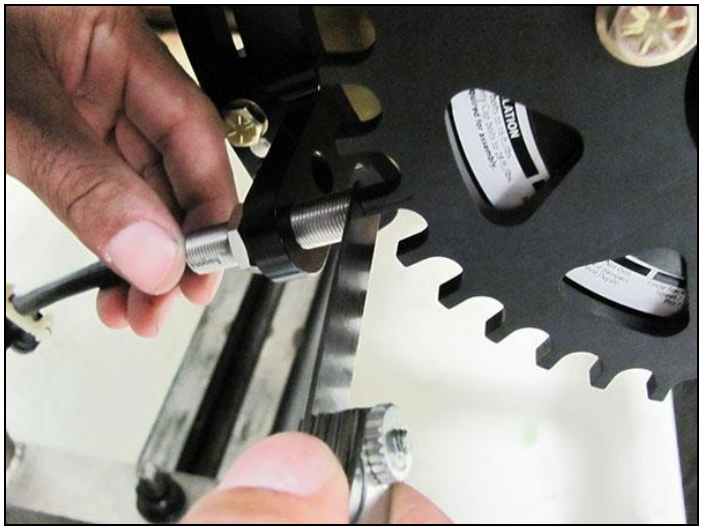


Figure 8: Adjusting the Sensor Gap

Figure 9: Locking the Sensor Gap

1. Before setting final sensor gap, ensure final sensor-to-wheel stand-off alignment by adding, removing, or modifying the provided 1/4" spacers. 7/16" washers may also be used behind the engine-block bracket as needed. A medium-strength thread-adhesive should be used prior to final installation of the engine-block bracket & sensor assembly.

2. Use a feeler gauge to set the gap to .040"-.080" by backing the jam nut off and screwing the sensor in or out of the sensor bracket as shown in **Figure 8**, above. The closer the better.

3. With a small crescent wrench on the sensor & a 17mm on the jam nut, lock the sensor in place by holding the sensor stationary & torqueing down on the nut as shown in **Figure 9** above. Do not tighten the jam nut beyond 23 ft.-lbs or damage to the sensor's threads my result.

NOTE: Ensure there will be no physical contact between the sensor and crank wheel when the engine is in operation. This should be done by manually rotating the engine a full revolution & visually verifying no contact can be made.

8.0 SENSOR WIRING & SETUP

Loose pins (16) and seals (15) are included and must be crimped onto an existing harness like Holley P/N 558-431 or 558-306. Use the proper tools to crimp Metripak 150 style pins (Delphi P/N: 12155975 – Available through Waytek, Inc. Item No. 509). It is advised to use shielded wiring (with drain wire grounded at the ECU end) to connect to this sensor. The pins are inserted into the back of the connector. Install the TPA lock (14) after the wires are inserted.

The following is the proper wiring for this sensor:

A – Red – 8V to 20V clean switched power. Pin B20 ("EST 12V Output") on Holley EFI systems would be a good choice. Pin E at the "Ignition" connector of Holley P/N 558-431 or 558-306.

B – White – Sensor Output to ECU crank signal (Pin A30 on Holley EFI). Pin A at the "Ignition" connector of Holley P/N 558-431 or 558-306.

C – Black – Sensor ground. Connect to a "clean" ECU ground, such as pin A14 ("IPU Ground") on Holley EFI systems. Pin C at the "Ignition" connector of Holley P/N 558-431 or 558-306.

1. If using Holley EFI, set initial ignition software parameters, as seen in **Figure 10** below.

2. Be sure to check the ignition timing after the engine is started. This is best performed using the "Static Timing Set" feature located under the ECU Sync drop-down. Discrepancies in ignition timing can be corrected using the "Timing Offset" field. Ignition timing drift with engine speed can be corrected using the "Inductive Delay" parameter. Adding inductive delay will advance ignition timing with increasing engine speeds & removing it will retard ignition timing with increasing engine speed. These adjustments can be made in increments of 10 usec until the ignition timing is close. A key-off cycle will be required before any of these modifications will be effective.

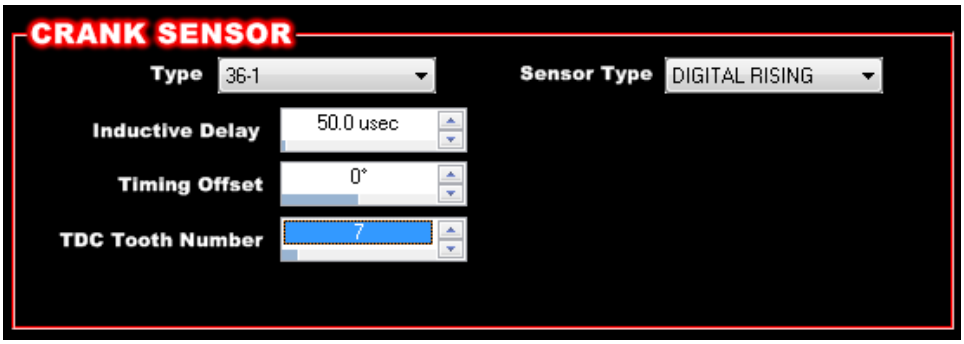


Figure 10: Initial software settings.