



**36-1 Tooth Crank Trigger Systems for Small Block Ford
P/N 556-115
Installation Instructions**

1.0 INTRODUCTION:

Congratulations on your purchase of a Holley 36-1 Tooth Crank Trigger System! Holley Performance Products cannot and will not be responsible for any alleged or actual engine damage, or any loss or damage resulting from misapplication of the product described herein. However, it is our intent to provide the best possible products for our customer-products that perform properly and exceed your expectations.

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

NOTE: These kits are designed for both 3 and 4 bolt small block Ford balancers. Shims and spacers are included that should allow for proper alignment of the sensor and trigger wheels. However, some combinations may require additional shimming for proper alignment.

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	10	4	5/16" Mil Spec Washers
2	1	M12 x 1mm Sensor w/ Jam Nut	11	4	3/8"-16 x 1.25" Screws
3	1	Engine Block Bracket	12	4	3/8" Mil Spec Washers
4	1	Sensor Mounting Bracket	13	1	Connector
5	1	Threaded Back Plate	14	1	TPA Lock
6	2	1.53" Long Aluminum Spacers	15	3	Seals
7	2	5/16-18 x 4.25 Screw	16	3	Pins
8	1	Pilot Ring	17	2	13/16 x .048" Shim
9	2	5/16"-24 x 1.25" Screws	18	2	13/16 x .025" Shim



4.0 MATERIALS REQUIRED FOR INSTALLATION

17mm Wrench	9/16" Wrench/Socket
1/2" Wrench	Small Crescent Wrench
5/8" Wrench	Medium-Strength Thread Locking Compound

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.

NOTE: It is advised to use medium strength thread locking compound on the fasteners in this kit.

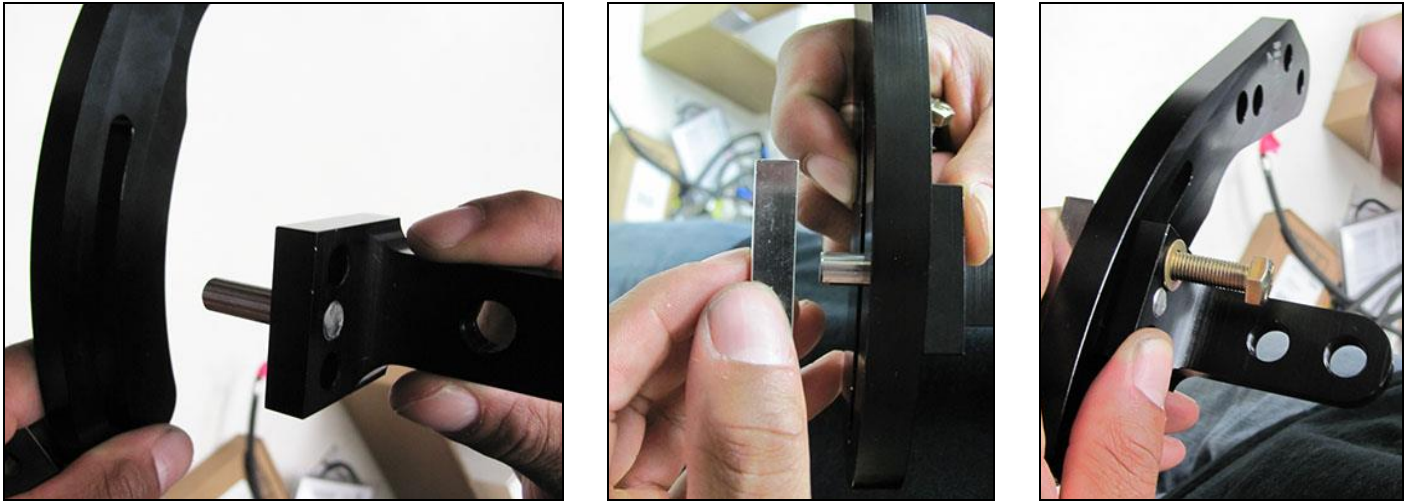


Figure 1: Securing the Sensor Bracket to the Engine Block Bracket

- 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

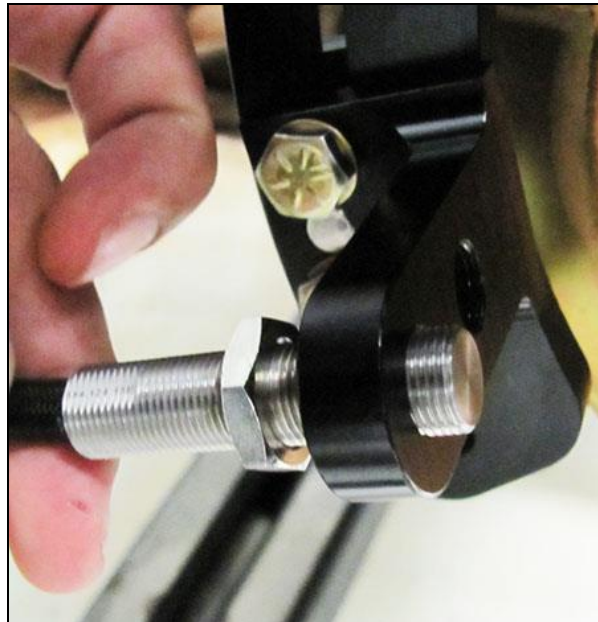


Figure 3: Installing the Sensor.

- 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.

6.0 INSTALLATION OF THE ENGINE BLOCK BRACKET ASSEMBLY

- This kit includes two 4.25" long 5/16-18 4.25" screws (7) and 1.53" long aluminum spacers (6) to be used when attaching the engine block bracket. There are two .025" (17) and two .048" (18) thick shims included that may be necessary on some applications for proper sensor to wheel alignment. Some may be required on only one of the screws and not the other.
- Use a 1/2" wrench to tighten the 5/16-18 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.

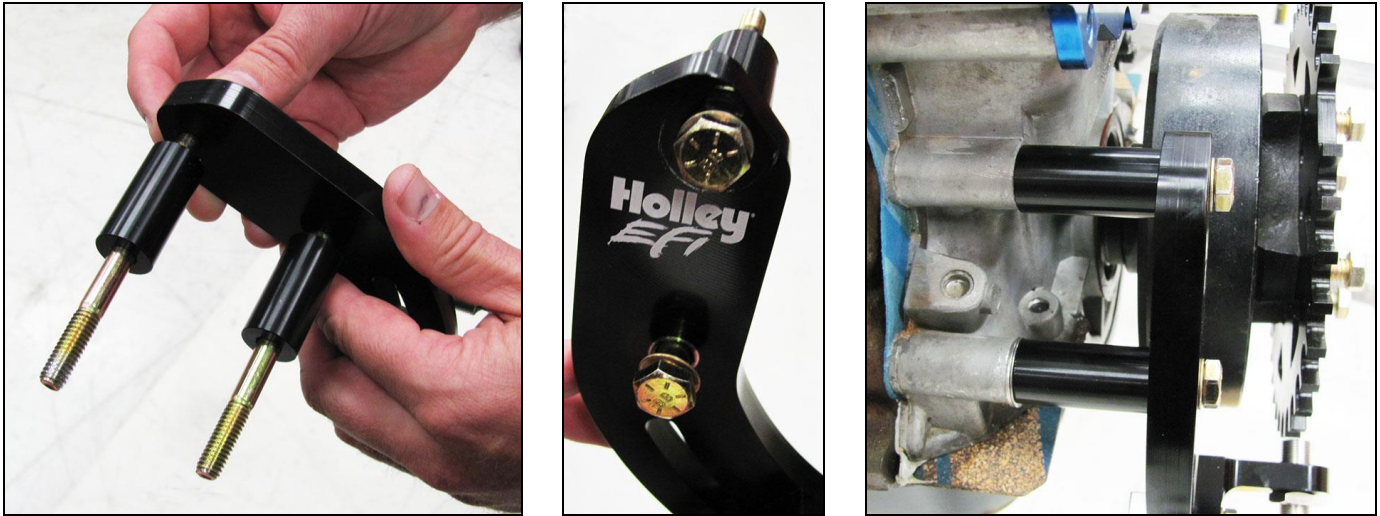


Figure 4: Mounting the Engine Block Bracket to the Engine.

7.0 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. Three bolt harmonic balancers require the adapter (8) to be placed in the trigger wheel before the trigger wheel is installed. Do this at this time if a three bolt balancer is used. 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 an ECU 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.

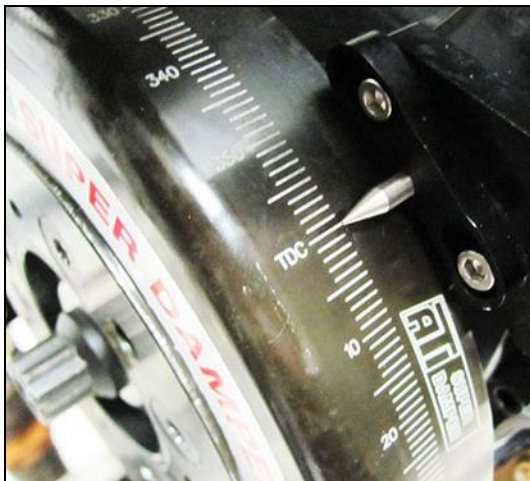


Figure 5: Rotating the Engine to TDC #1

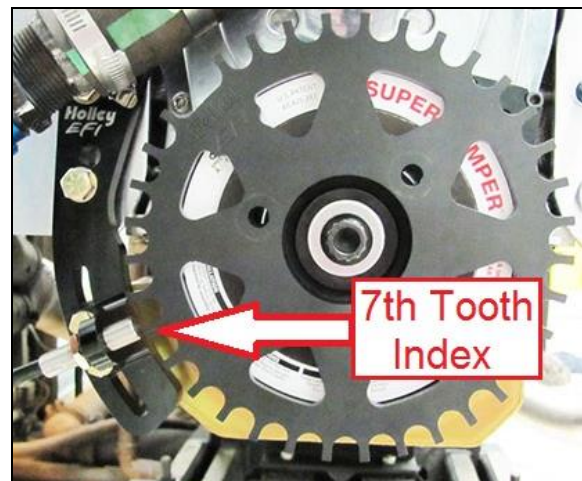


Figure 6: Aligning 7th Tooth Index Mark for Mounting



Figure 7: Fastening the Crank Wheel to the Balancer



8.0 ADJUSTING SENSOR ALIGNMENT & SETTING SENSOR GAP

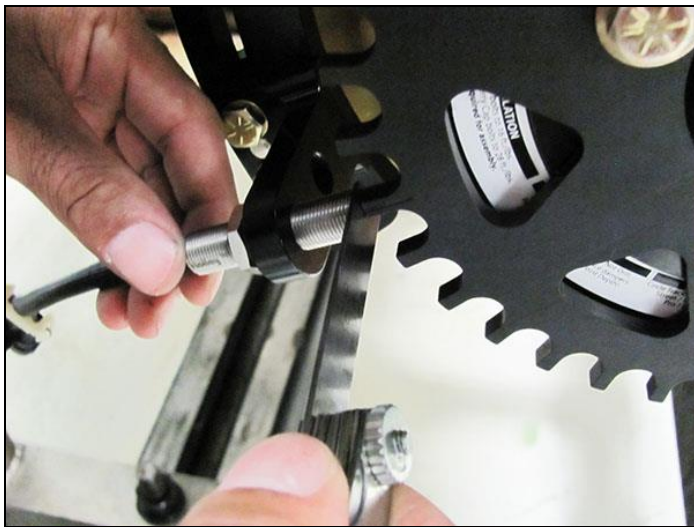


Figure 8: Adjusting the Sensor Gap



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 washers and standoffs. 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 & torquing 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.

9.0 SENSOR WIRING & SETUP

Holley ignition adapter harness PN 558-431 directly plugs into this sensor. Loose pins (16) and seals (15) are included if they need to be installed on the mating harness such as Holley Universal Unterminated Ignition Harness PN 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. If connecting directly to the ECU, ECU pin B20 (“EST 12V Output”) on Quality Holley EFI systems would be a good choice. Pin E at the “Ignition” connector of Holley P/N 558-431 or 558-306 can be used for these harnesses.
 - B – White – Sensor Output to ECU crank signal (ECU pin A30 on Holley EFI). Pin A at the “Ignition” connector of Holley P/N 558-431 or 558-306 can be used for these harnesses.
 - C – Black – Sensor ground. Connect to a “clean” ECU ground, such as ECU pin A14 (“IPU Ground”) on Holley EFI systems. Pin C at the “Ignition” connector of Holley P/N 558-431 or 558-306 can be used for these harnesses.
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.

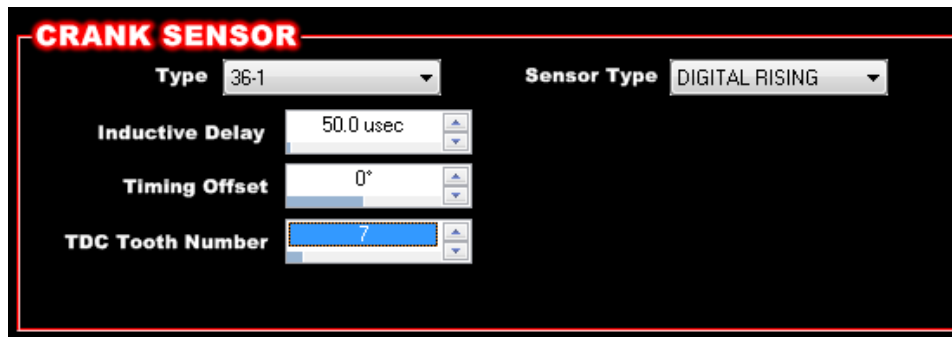


Figure 10: Initial software settings.