FIRE STORM™

MALLORY FIRESTORM 36-1 CRANK TRIGGER INSTALLATION - PN 76301, 76302, 76303, 76304, 76305

The Mallory Crank Trigger is available in five versions: PN76301 for Big Block Chevy, PN 76302 for Small Block Chevy, PN76303 Small Block Chev 6", 76304 Small Block Ford and 76305 for Universal applications. These Instructions apply to all versions.

To ensure you are using the most current instruction sheet, please visit www.malloryfirestorm.com.

WARNING: *Please make sure battery cables are disconnected prior to installing this kit. Remove all spark plugs for ease of rotating the engine and to also avoid compression forced backward rotations.*

IMPORTANT: Read the instructions before attempting the installation.
PARTS INCLUDED NEED TO BE MODIFIED TO WHAT IS INCLUDED IN THE BOX

1 - Trigger Wheel	2 - Bolts, 3/8" - 16 x 1.5"
1 - Pickup Mount	2 - Bolts, 5/16"- 24 x 1.25"
1 - Centering Ring	3 - Bolts, 3/8" - 24 x 1"
1 - Non Magnetic Pickup	2 - 5/16" Washers
Assembly, PN 8276	4 - Spacers
1 - Locknut	

NOTE 1: On some custom applications, the Mallory Crank Trigger Kit may require some modifications to accommodate special front mount motor plates, pulley systems, etc.
NOTE 2: Recess on trigger wheel is machined to fit the alignment bosses of Fluidampr™ harmonic vibration dampers and any other damper with a 4.745" diameter alignment boss and a 3.2" diameter three hold bolt circle. Trigger wheel will not fit the alignment bosses on stock Chevy harmonic dampers. Do not attempt to mount on stock Chevy dampers or misalignment and trigger wheel damage will result.

ASSEMBLING PICKUP BRACKET TO ARM
1. The Arm can be installed on either the right or left side of the engine block. Decide which side is best suited for your installation, then bolt the pickup bracket and adjustment assembly to the arm using the washers and self-locking nuts provided. Do not tighten the self-locking bolts at this point. (FIGURE 1)

INSTALLING THE ARM
1. Temporarily bolt trigger wheel to harmonic balancer.
2. Screw in the 3 wire Hall Effect Sensor; make sure to only let a few threads protrude through the bracket (4 to 5 threads). Do not tighten the jam nut.
3. Inspect alignment of trigger wheel with center of sensor and if necessary add aluminum spacers (provided) behind the arm until proper alignment is achieved. Tighten arm mounting bolts.

INSTALLING THE TRIGGER WHEEL
1. Turn the engine by hand until 45 Degrees BTDC #1 cylinder on the compression stroke. (FIGURE 2)
2A. Remove bolts holding the wheel from balancer and rotate (Clockwise on most engines) so that the MISSING TOOTH area is slightly passed the Hall Effect sensor.
2B. Rotate Counter Clockwise for Boat engines or on some import applications with Reverse rotating engine.
3. Recess on trigger wheel should fit over boss on harmonic damper (see NOTE 2). Install any pulleys, screw bolts in and tighten pulley/trigger wheel.
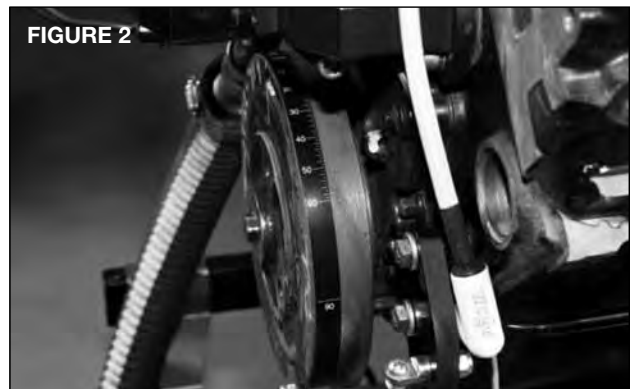

FIGURE 1

FIGURE 2

4. Rotate balancer so a tooth is directly in front of Hall Effect sensor. Now continue to screw sensor into bracket until gap between trigger wheel and bracket is .050" -.060". Tighten jam nut on Sensor/pickup.

5. Rotate balancer in 90 Degree increments and make sure that sensor gap is at the least .40 away from any tooth. (It is normal at times for sensor to wheel distance to vary + or - .010"

6. Rotate Balancer back to 45 BTDC #1 cylinder on the compression stroke.

7. Turn adjustment screw until Hall Effect sensor is in alignment with the falling edge of the last tooth before the missing tooth on trigger wheel (FIGURE 3). Tighten nuts on pivot bolt and pickup bracket.

8. If CAM sensor is being installed please go to step 9. If CAM sensor is not being utilized, skip anything to do with CAM signal setup. (CAM SENSOR IS REQUIRED FOR ICT and Multi-Channel operations in section 2 of the instructions).

9. Install CAM sensor and set falling edge at 50 to 60 Degrees BTDC #1.
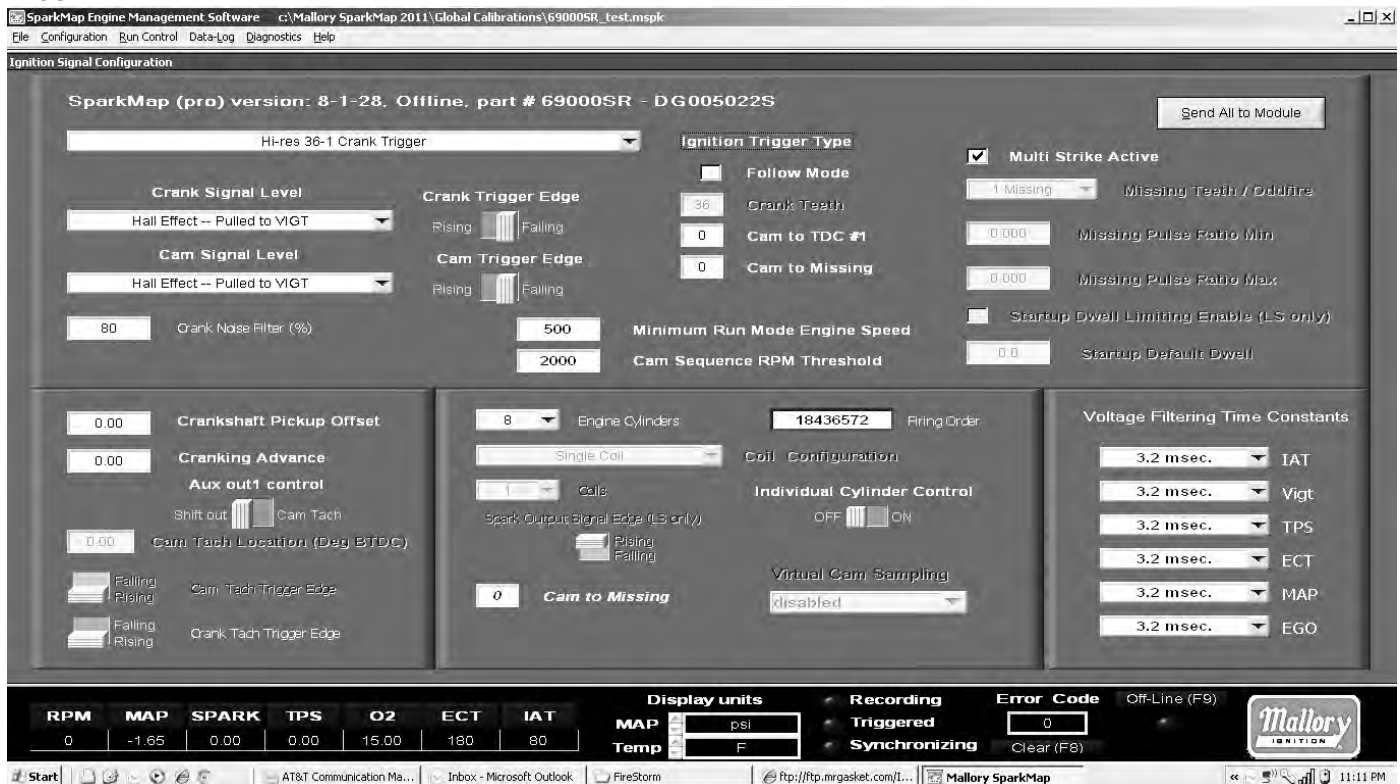

FIGURE 3
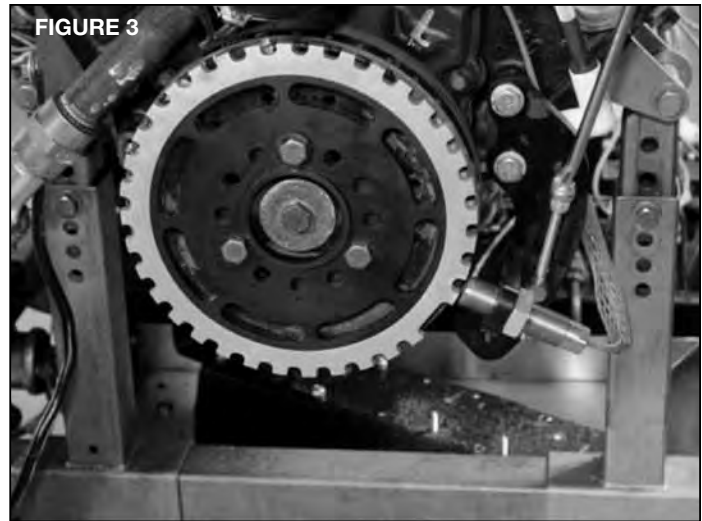
Configuring CAM/CRANK Ignition Signal Through SparkMap Software Using FireStorm 69000SR Single Channel Ignition Module
(For Multi-Channel applications, go to section 2 of instructions)

1. Go Online with Module.
2. Select CTRL I to view Ignition Signal Configurations Screen (Figure 4)

FIGURE 4

3. Select HI-RES 36-1 Crank Trigger from IGNITION TYPE drop down (PRESS F10)

4. SparkMap automatically lays out the proper settings for the incoming signals except for CAM TO TDC and CAM TO MISSING.

5. CAM TO TDC (Must be set correctly to utilize INDIVIDUAL CYLINDER TIMING or ICT feature)

This calibration item stores the number of crank trigger edges to skip after the 1st crank pulse that occurs from the cam trigger edge to identify the location of TDC of cylinder 1. Please make sure the falling edge of the CAM is not too close to the falling edge of any crank tooth or the missing tooth.

The cam input is used as a synchronization element in the Firestorm ignition strategy. Setting the cam to TDC #1 value tells the Firestorm module which crank tooth is the location of TDC #1. The Firestorm module identifies TDC #1 by counting how many crank teeth are detected after the

cam trigger event occurs. In this example, after the cam falling edge occurs, the Firestorm module begins counting crank trigger events (i.e. crank signal falling edges for this particular setup).

NOTE: There are 2 crank revolutions per cam revolution. For instance, if there are 36 teeth on the crank, this value can range from 0 - 72 where 72 is the case where TDC occurs directly before the cam trigger edge.

After CAM signal falls, rotate the engine clockwise and start counting the amount of crank teeth passing the Hall Effect Sensor until #1 Cylinder is at TDC. Input the number into the box marked CAM TO TDC and select ENTER then F10 on keyboard.

UNPLUG COILS/DISABLE STARTING WHILE CRANKING

6. CAM TO MISSING: Cam to missing can be obtained by the SparkMap software. While Online with module, crank the motor, and watch the display. CAM TO MISSING count will appear in the lower display box in middle of the screen.

Input the number into the box marked CAM TO MISSING and select ENTER then F10 on keyboard.

7. Select number of cylinders.

8. Input engine firing order. (Required when CAM Sensor is used for ICT control)

DEFAULTED TO SINGLE COIL, CHANGE TO DESIRED COIL CONFIGURATION

Final Adjustment

Before starting engine, make sure the Distributor rotor is phased to 25 degrees BTDC. **(ONLY IN SINGLE COIL OPERATION)**

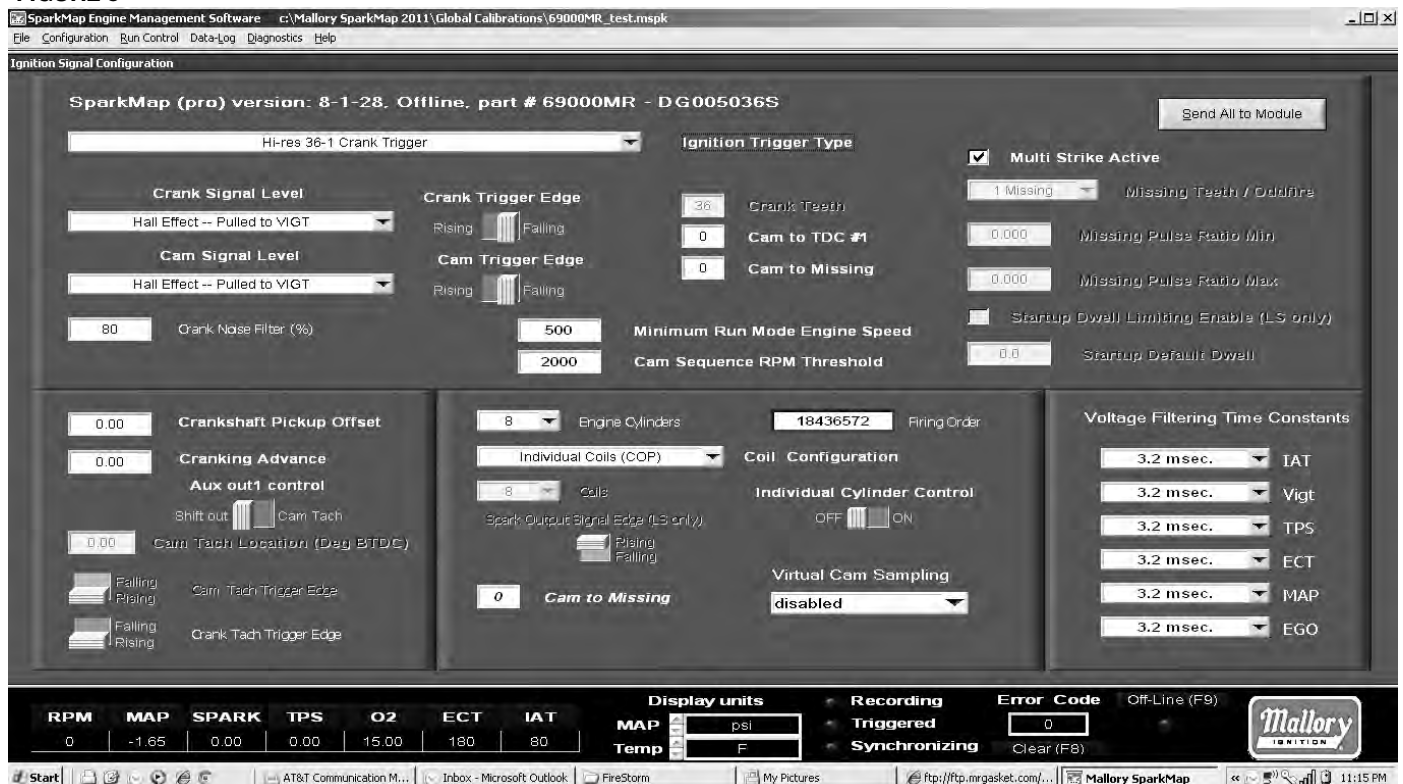If using a FireStorm Dual Sync distributor, loosen both Torx screws at bottom of rotor tower to set rotor phase.

Start engine and inspect timing location with a timing light using the forced timing to lock out all timing parameters in module. If the desired timing location is not exact loosen the nuts on the pickup bracket and pivot bolt and turn adjustment screw to achieve desired timing. Re-tighten the nuts on the pivot bolt and pickup bracket.

SECTION 2
Configuring CAM/CRANK Ignition Signal Through SparkMap Software Using FireStorm 69000MR – 69000FR Multi-Channel Ignition Module.

1. Go Online with Module.

2. Select CTRL I to view Ignition Signal Configurations Screen (Figure 5)

FIGURE 5

3. Select HI-RES 36-1 Crank Trigger from IGNITION TYPE drop down (PRESS F10)

4. SparkMap automatically lays out the proper settings for the incoming signals except for CAM TO TDC and CAM TO MISSING.

5. CAM TO TDC (Must be set correctly to utilize INDIVIDUAL CYLINDER TIMING or ICT feature)

This calibration item stores the number of crank trigger edges to skip after the 1st crank pulse that occurs from the cam trigger edge to identify the location of TDC of cylinder 1. Please make sure the falling edge of the CAM is not too close to the falling edge of any crank tooth or the missing tooth.

The cam input is used as a synchronization element in the Firestorm ignition strategy. Setting the cam to TDC #1 value tells the Firestorm module which crank tooth is the location of TDC #1. The Firestorm module identifies TDC #1 by counting how many crank teeth are detected after the cam trigger event occurs. In this example, after the cam falling edge occurs, the Firestorm module begins counting crank trigger events (i.e. crank signal falling edges for this particular setup). The first crank trigger event is ignored, but at the following crank trigger event, coil #1 discharges at 0 degrees on the crank trigger edge that is specified as TDC #1. Hence, setting the cam to TDC #1 value to 1 means that the Firestorm module will skip 1 crank trigger edge after cam trigger edge detection before firing coil # 1.

NOTE: There are 2 crank revolutions per cam revolution. For instance, if there are 36 teeth on the crank, this value can range from 0 - 72 where 72 is the case where TDC occurs directly before the cam trigger edge.

After CAM signal falls, rotate the engine clockwise and start counting the amount of crank teeth passing the Hall Effect Sensor until #1 Cylinder is at TDC. Input the number into the box marked CAM TO TDC and select ENTER then F10 on keyboard.

1. CAM TO MISSING

Cam to missing can be obtained by the SparkMap software. While Online with module, crank the motor, and watch the display. CAM TO MISSING count will appear in the lower display box in middle of the screen. Input the number into the box marked CAM TO MISSING and select ENTER then F10 on keyboard.

2. Select number of cylinders.

3. Input engine firing order. (Required for proper cylinder firing and for using ICT control)

DEFAULTED TO SINGLE COIL, CHANGE TO DESIRED COIL CONFIGURATION

Final Adjustment

Start engine and inspect timing location with a timing light using the forced timing to lock out all timing parameters in module. If the desired timing location is not exact loosen the nuts on the pickup bracket and pivot bolt and turn adjustment screw to achieve desired timing. Re-tighten the nuts on the pivot bolt and pickup bracket.

If you encounter problems or if you need further technical assistance, please call our technical service line at (216)688-8300.