

ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	5490-Mach	Machined Cover for RHS®
2	1	5490-CG	Cam Gear - LS Sprint Cover/Gear Drive
3	1	5490-IDG	Idler Gear - LS Sprint Cover/Gear Drive
4	1	5490-CRG	Crank Gear - LS Sprint Cover/Gear Drive
5	1	5490-IFP	Front Idler Mounting Plate w/ Axle Asm - LS Sprint Cover/Gear Drive, Raised Cam
6	1	5490-IRP	Idler Rear Plate - LS Sprint Cover/Gear Drive, Raised Cam
7	2	5490-ITB	Idler Thust Bearing - LS Sprint Cover/Gear Drive
8	2	5490-ISL	Idler Plate Long Spacer - LS Sprint Cover/Gear Drive
9	1	5490-CTP	Cam Thrust Plate Assembly - LS Gear Drives, RHS®
10	1	5490-CTW	Cam Trigger Wheel - LS Sprint Cover/Gear Drive
11	1	5490-WPA	Water Pump Drive Adapter - LS Sprint Cover/Gear Drive
12	1	5490-ISS	Idler Plate Short Spacer - LS Sprint Cover/Gear Drive
13	1	5490-MB	Magneto Bushing (.5"ID, .625"OD, .75"L Bronze Bushing)
14	1	5490-MC	Mag Clamp - LS Sprint Cover/Gear Drive
15	1	5490-OPA	Mag/Oil Pump Drive Adaptor
16	1	54900TPOR	Cam Thrust Plate O-ring - RHS®
18	2	5490-OR1	-221 O-Ring
19	2	5490-OR2	-211 O-Ring
20	2	5490-OR3	-217 O-Ring
21	1	5490-OR4	30 inches of .139" O-Ring Cord
22	4	5490-B2	5/16-18x3/4 Socket Head Cap Screw
23	6	5490-B3	M8x1.25x20 Socket Head Cap Screw
24	4	5490-B4	M8x1.25x50mm Double Ended Stud
25	7	5490-B6	M8x1.25x30mm Flat Countersunk Socket Head Cap Screw
26	3	5490-B7	M8x1.25x30mm Socket Head Cap Screw
27	3	5490-B8	M8x1.25x35mm Socket Head Cap Screw
28	1	5490-B9	M8x1.25x55mm Socket Head Cap Screw
29	3	5490-B10	M8x1.25x20mm Flat Countersunk Socket Head Cap Screw
30	1	5490-B11	M8x1.25x75mm Double End Stud
31	7	5490-B12	M6x1x16mm Low Profile Socket Head Cap Screw
32	2	5490-B13	M8x1.25x25mm Hex Head Bolt
33	3	5490-B14	M8x1.25x25 Socket Head Cap Screw
34	5	5490-LN1	M8 Nylock Hex Nut
35	1	5490-SW	M8 Stato-seal
36	4	5490-WA	M8 Washer
37	2	5490-BW1	INA AS4060 Bearing Washer
38	2	5490-BW2	INA AS4565 Bearing Washer

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Part #COMP4-158
Revised 11/29/16

39	1	5490-NB1	INA AXK4060 Axial Needle Bearing
40	1	5490-NB2	INA AXK4565 Axial Needle Bearing
41	1	5490-NB3	SCH1612 Needle Bearing (for Idler Gear)
42	1	5490-AN8	AN-8 Plug
43	2	5490-AN10	AN-10 Radius Fitting
44	2	5490-AN12	AN-12 Radius Fitting

Installation Instructions

Please ensure that you have received all necessary components before beginning installation. Item numbers will be referred to in brackets in the instructions below. **Note: all stated torque specs are for dry bolts.**

Note: This kit is designed to work with FAST™ crank sensor PN 301180CS and COMP Cams® cam sensor PN 5490-CS. Sensors are not included with this kit. Please contact a COMP Cams® sales representative to purchase these parts.

Step 1: With the cam and crank installed, begin by sliding the AXK4060 forward thrust bearing [39] and AS4060 washers [37] over the cam snout. The forward thrust bearings and washers are the smaller of the two sets of thrust bearings.

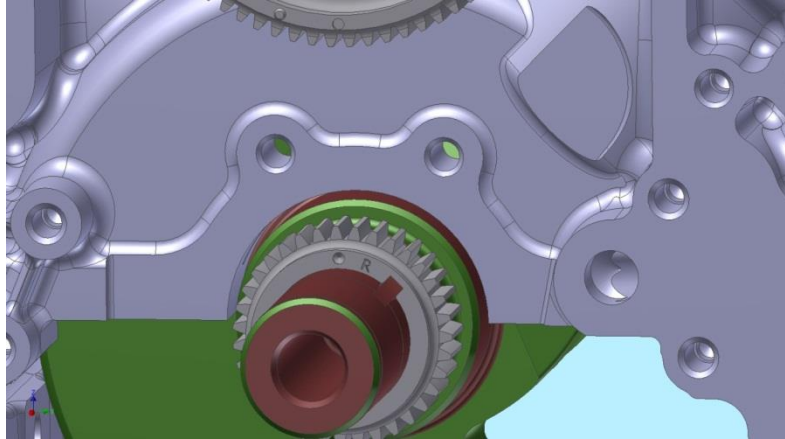
Step 2: Install the cam thrust plate [9] along with the six (for RHS® blocks) or four (for GM Blocks) M8X1.25x20mm socket head cap screws [23]. Be sure that the supplied o-ring [16] is properly seated in the cam thrust plate before installation. Torque the bolts to 27 ft-lbs.

Step 3: Slide the AXK4565 rearward thrust bearing [40] and AS4565 washers [38] over the shoulder on the back of the cam gear [2]. Install the proper cam degree bushing [45] and install the gear onto the cam using the three supplied M8X1.25x35mm socket head cap screws [27]. Torque the bolts to 27 ft-lbs.

Cam Degree	Color
0°	Black
2°	Silver
4°	Copper
6°	Gold
8°	Dark Grey

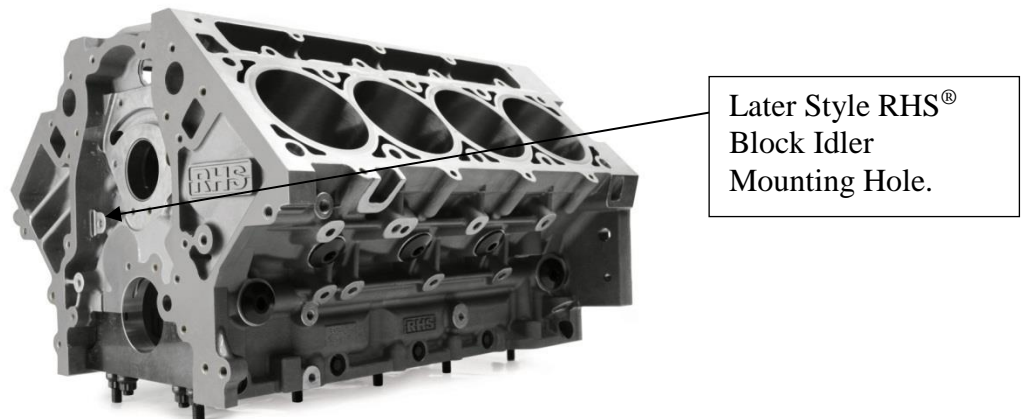
Step 4: Drive on the crank gear [4]. Note that there are two key slots. With the #1 piston at TDC, install gear with the dimple located next to the “R” pointed up (toward the cam) for RHS® (or any raised cam height) block or use the dimple next to the “S” for GM (or and standard cam height) blocks.

Figure 1: Crank Gear Installed in RHS® (raised cam) Block Configuration with Crank at #1 TDC



Step 5: Press the SCH1612 idler bearing [41] into the idler gear [3]. Preassemble the idler gear and two bronze thrust washers [7] onto the axle on the front idler mounting plate [5]. Assemble so that the slots on the washers are facing the idler gear. Slide the rear idler mounting plate [6] over the axle ensuring that the counterbore is facing toward the gear. Place the two long aluminum spacers [8] in between the two idler mounting plates and install the M8X1.25x75mm [30] stud through the front plate, spacer, and into the threaded hole of the back plate. **Note: if you have a later style RHS® block, you can thread the stud into the block itself instead of the rear idler mounting plate. If you run this configuration, drill out the threaded hole in the rear idler mounting plate to 23/64ths.**

Figure 2: Later Style RHS® Block Idler Mounting Hole

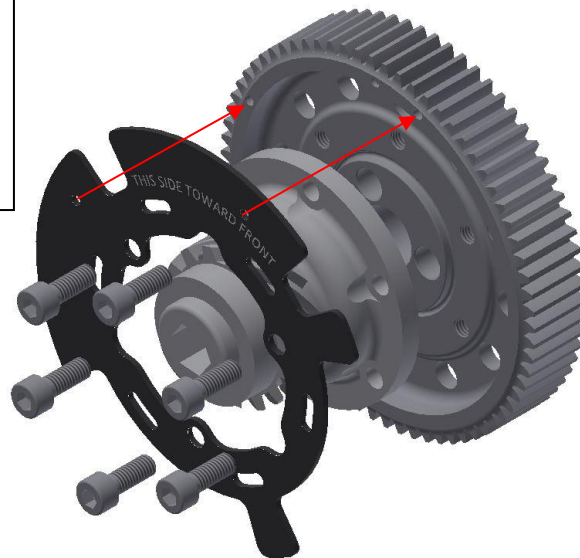


Step 6: After ensuring that the proper dimple is still pointing directly up on the crank gear, set the cam gear so that the dimple is pointing directly down. Now slide the idler gear and mounting plate assembly into place between the cam and crank gears. Ensuring that the long spacer is in place, use the M8X1.25x55mm socket head cap screw [28] to attach the assembly to the block through the driver side hole. Now use the M8X1.25x30mm bolt [26] along with the short aluminum spacer [12] to mount to the block using the lower passenger side hole. Do not tighten these bolts until proper backlash is set.

Step 7: Proper backlash is 0.010-.015" of clearance between each gear. An easy way to attain this setting is to run a stack of newspaper into the gears that is two sheets thick, then force the gears together and tighten the two mounting plate bolts to 27 ft-lbs.

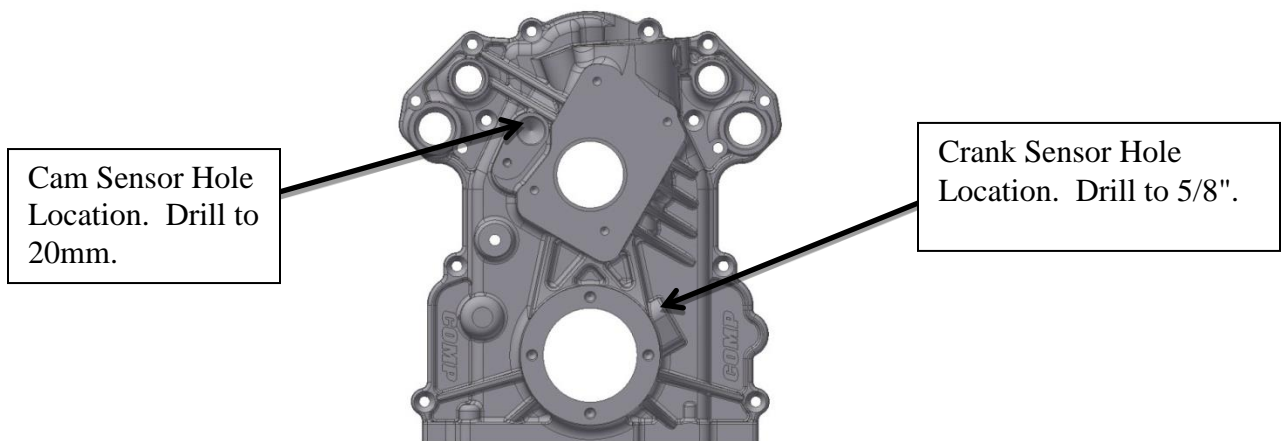
Step 8: Mount the oil pump/magneto adapter [15] and cam trigger wheel [10] (if using a cam sensor in your set up.) Do this by locating the adapter onto the shoulder on the front of the cam gear. Install the cam trigger wheel over top of the adapter so that you can see the two 1/8" holes in the cam gear through the two holes along the perimeter of the trigger wheel. Then attach the adapter and trigger wheel using the M6x16mm low profile socket head cap screws [31]. Torque to 10 ft-lbs.

Begin by ensuring that laser etching points towards front of the engine! Then, be sure that BOTH holes in trigger wheel align with hole in cam gear!



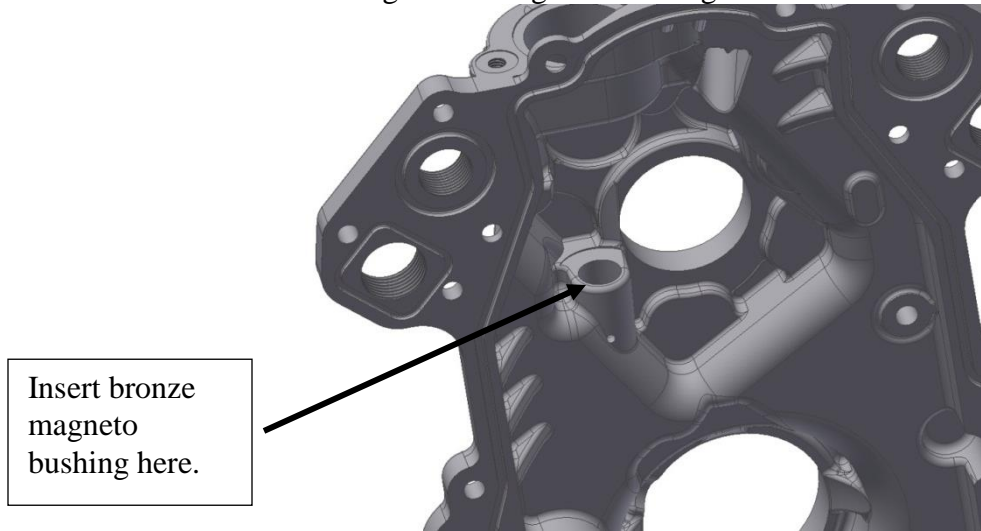
Step 9: At this point, if you plan to use an integrated cam and/or crank sensor, drill out the appropriate hole(s) in the cover. The cam sensor hole should be drilled to 20mm and the crank sensor hole to 5/8".

Figure 3: Sensor Holes



Step 10: Begin preassembly of the front cover [1]. Start by inserting the bronze magneto bushing [13] into its hole inside the cover.

Figure 4: Magneto Bushing Hole

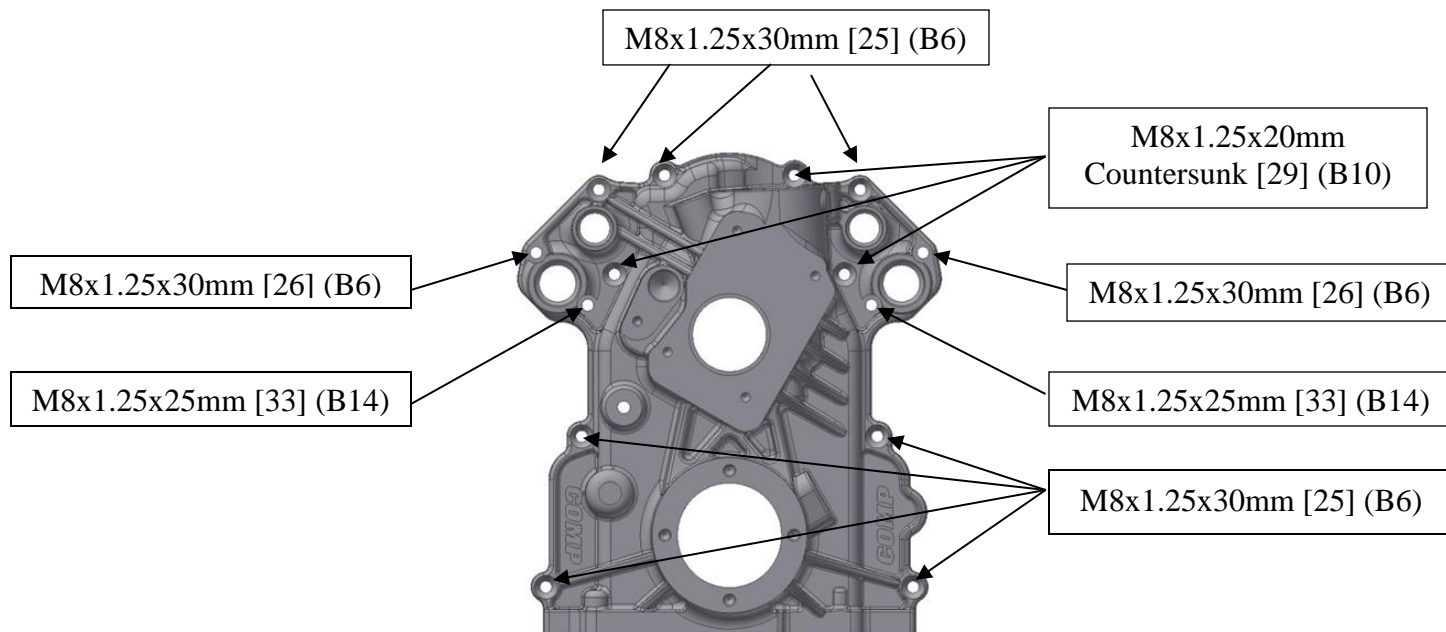


Step 11: Thread the four M8X1.25x50mm double ended studs into the holes around the water pump interface with the shorter section of thread going into the cover.

Step 12: Set all o-rings in their grooves in the cover (note: you may choose to apply some grease to help keep the o-rings in place during assembly.) The o-ring rope [21] is used along the perimeter of the cover and is intended to be trimmed to fit. The smallest diameter o-rings [19] are used to block the lower oil passages. The 1 3/16" ID O-rings [20] install in the round O-ring grooves around the water passages and 1 7/16" ID O-rings [18] install in the rectangular O-ring grooves around the water passages.

Step 13: Install the preassembled cover onto the engine block using seven M8X1.25x30mm flat countersunk socket head cap screws [25], three M8X1.25x20mm flat countersunk socket head cap screws [29], two M8X1.25x30mm socket head cap screws [26], and two M8X1.25x25mm socket head cap screws [33]. Torque these bolts to 27 ft-lbs.

Figure 5: Front Cover Bolts



Step 14: Install the M8 sealing washer [35] and an M8 nylon locking nut [34] onto the M8x1.25x75mm stud that was previously threaded into the rear idler mounting plate. Torque to 27 ft-lbs.

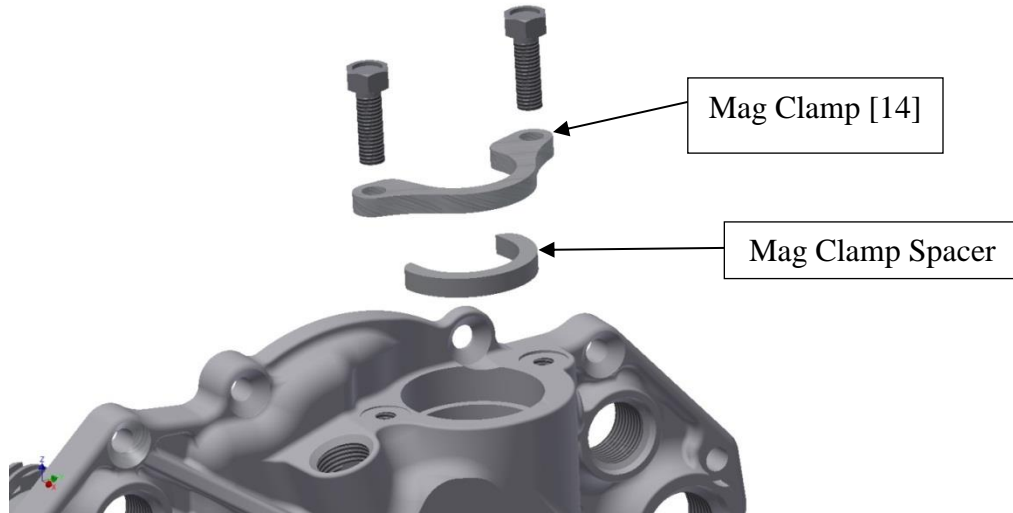
Step 15: Slide the water pump adapter [11] onto the crank snout ensuring that it aligns with the keyway.

Step 16: Install water pump using the previously installed studs along with four M8 nylon locking nuts [34] and M8 plain washers [36]. Torque to 27 ft-lbs.

Step 17: Install the oil pump using customer supplied bolts **Note: oil pump mounting bolts are 5/16"-18 UNC threads.**

Step 18: Install the magneto using the magneto clamp [14] and two M8X1.25x25mm hex head bolts [32]. **Note: the magneto must be a Ford 351W style.** Standard cam height blocks require the supplied crescent shaped magneto spacer to be placed under the magneto clamp during assembly. **Note: Ford distributors rotate counter-clockwise. Be sure to install your plug wires using the LS firing order (1-8-7-2-6-5-4-3) in a counter-clockwise direction.**

Figure 6: Mag Clamp and Spacer (note: mag clamp spacer only used with 5491 kit.)



Step 19: Thread AN fittings [43 & 44] into the water ports and AN plug [42] into sight port.

Note: 5/16-18 x ¾ bolts [22] are included for use when mounting your oil pump. Longer bolts may be required for some oil pumps. Be sure to use 5/16-18 threads if longer bolts are needed.

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- B) Any product that has been physically altered, improperly installed or maintained;**
- C) Any product used in improper applications, abused, or not used in conjunction with the proper parts.**

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