



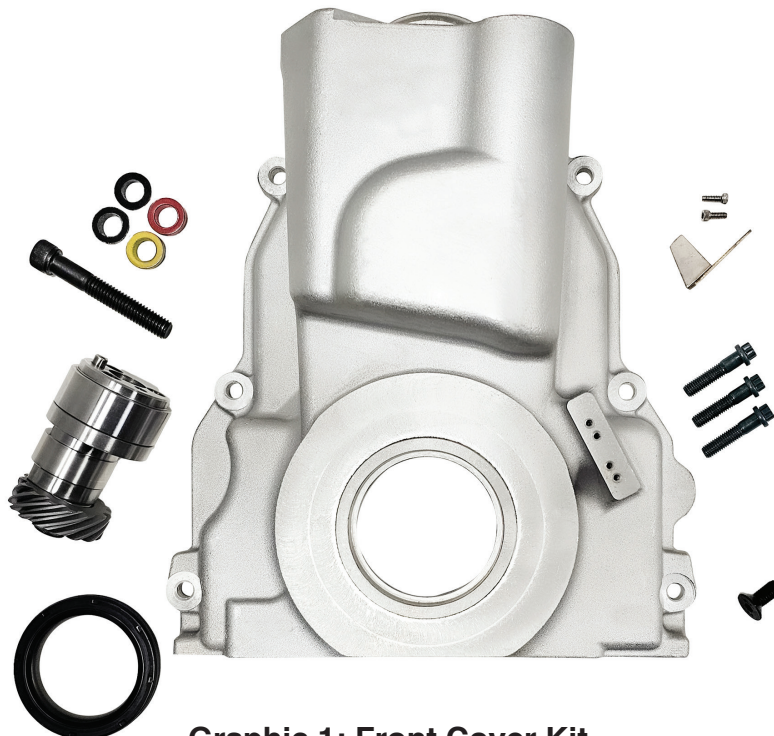
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## ***LS MAIN FRONT COVER ASSEMBLY INSTALLATION GUIDE***

***PART NUMBER: 5234600***

COMPONENTS	QTY
MACHINED FRONT COVER. (SEE GRAPHIC 1)	1
FUEL PUMP ECCENTRIC I DISTRIBUTOR DRIVE GEAR KIT ASSEMBLY. (SEE GRAPHIC 4)	1
ADAPTER UNIT WITH FOUR (4) COLOR CODED SPACERS.	1
ASSEMBLY BOLTS	5
EACH DRIVE-UNIT BOLT, 3-EACH 12PT ADAPTER BOLTS, 1-EACH COUNTERSUNK FRONT COVER BOLT	1
FRONT COVER SEAL.	1



**Graphic 1: Front Cover Kit**

## REQUIRES:

GM PN: 88958675 4-BBL Intake Manifold.

PN: 8382 or 8579 MSD Distributor or equivalent. Requires coil & MSD6AL controller, HEI Distributor Option.

(See Page 6 for sources and part numbers)

PN: 9860 Mr. Gasket Distributor Hold Down Clamp.

PN: M60454 Street-Strip

PN: M60968 Race – Carter Fuel Pump.

PN: STE50025 Water Pump.

(See Page 6 for contact information.)

PN: 917776 Steel hub ATI Damper 6.325" diameter, or 917215 Aluminum ATI Damper 6.325" diameter damper with Steel Hub.

(See Page 6 for contact information)

PN: 918993-1 ATI drill fixture kit for TDC Locating (See Page 6 for contact information)

PN: 12565673 GM Front Cover Seal (or equivalent)

ADDL: Spark Plug Wire Loom

## INSTALLATION PROCEDURE:

SPECIAL NOTES: Always utilize proper eye protection. Exercise caution when working with combustible materials. Refer to the GM Service Manuals for appropriate engine disassembly and reassembly instructions.

1. Disconnect battery and drain anti-freeze. (Note: Dispose of un-used Hazard Waste Fluids properly.)
2. Remove all engine accessory drive brackets, belts and hoses.
3. Remove harmonic damper utilizing the proper installation and removal tool.
4. Remove stock front cover bolts with a 10mm socket. Remove the two (2) lower front oil pan bolts.
5. Remove stock front cover and set aside the gasket & bolts (these will be reused).
6. Remove camshaft gear bolts, camshaft gear and chain for access to cam retainer & bolts.
7. SPECIAL NOTE: Cam retainer is pre-drilled with two (2) each 0.025" holes. Confirm those are present, and if so, install cam gear provided and torque bolts to 26 ft lbs.
8. If thru holes are not present, refer to Camshaft Retainer Instructions below.
9. Remove oil pump & timing chain drive gear from crankshaft using the appropriate puller.
10. Drill the crankshaft using the ATI fixture PN: 918993-1.
11. Reinstall the timing chain drive gear on the crankshaft. Reinstall the oil pump.
12. See Graphic 4 for "How-to" complete Distributor cam drive kit assembles to the camshaft gear.
13. Install the correct colored cam gear spacer specified in the Application Chart Below. Choose the correct spacer that fits camshaft gear in your engine (See Application Chart Below). Engine Damage will occur if not used.
14. Position drive kit adapter against camshaft gear with dowel pin engaged in the proper hole. Make certain that the countersunk holes in the adapter are properly oriented "outward" so the M8-1.25 12pt bolts are recessed when installed and tightened. Torque the three bolts to 25 ft lbs.
15. Position the fuel pump/distributor drive gear and locate the dowel pin in the correct adapter hole. Install the 7/16" Allen head bolt and torque to 60 ft lbs. (See Graphic 3)
16. Graphic 5 shows the complete drive unit installed on an engine.

17. Install the 9585673 GM front cover seal in the cover using a proper seal installation tool.
18. Clean and dry the front of the engine block. Apply silicone sealer sparingly on each corner of the oil pan and engine block where the front cover/pan/ block meet.
19. Install the front cover to engine block using 7 of the 8 OEM bolts. Install the countersink head bolt included in the kit in the countersunk hole located above the fuel pump. Install the two (2) oil pan bolts. Tighten all front cover bolts first then the oil pan bolts. Torque to 18 ft lbs.
20. Install the balancer per instructions and torque to 100 ft lbs. Locate and mark top dead center (TDC).
21. Install Distributor and Fuel pump. (Lubricate the gear and eccentric with oil or assembly lube included)
22. Install spark plug wires. Refer to Firing Order notes below for proper routing of wires.
23. Install the water pump and torque bolts to 18 ft lbs. Install thermostat, hoses & clamps.
24. Install front pulleys and belts as needed and torque to proper specifications.
25. Start engine and set timing to 29-32 degrees @ 4000 RPM's (See engine timing section below.)
26. Run engine for 8-10 minutes at 1,500 RPM to break in eccentric.
27. Check and fill fluids to proper levels. Check for leaks before driving vehicle.

### **CAMSHAFT RETAINER PLATE INSTRUCTIONS:**

Check to assure that the retainer plate is predrilled. If not, you must drill the necessary holes in the cam retainer plate and deburr. Using the template provided, Page 7, mark the retainer plate and use a center punch to locate the exact drill point locations. Drill the 0.025" holes and debur. Failure to drill the two (2) holes in the plate will cause Catastrophic Engine Failure due to premature drive gear and eccentric wear. Reinstall the retainer plate and torque bolts to 18 ft lbs.

**Colored Spacer Application Chart:** (See Graphic 2)

Spacer required or failure will occur.

GREEN	Use with Stock GM LS 1 & LS6 Cam Gear. (GreenSpacerhas 0.554"diameterregister)
BLACK	Use with Stock GM LS2 Cam Gear. (Black Spacerhas 0.550"diameter register)
RED	Use with PN: CS 1 140 Roll Master Double Roller. (Red Spacerhas 0.685"diameterregister)
YELLOW	Use with PN: 9-3153A Cloyes Hex-Adjust True Roller. ( YellowSpacerhas 0.686"diameter register)

### **Engine Timing:**

Bring the engine to TDC to adjust the timing pointer. Use GM PN: 12364087 TDC tool and follow instructions carefully to locate TDC. Adjust front cover pointer to line up with TDC on the balancer. Set timing at 29-32 degree. BTDC @ 4000 rpm with a standard timing light.

FIRING ORDER: 1 – 8 - 7 - 2 – 6 – 5 – 4 – 3

### **RECOMMENDATIONS:**

GM recommends pointing the rotor towards #1 cylinder when installing the Distributor. Mark the location of #1 on the cap before securing to the distributor. The Distributor rotates Counter Clockwise. Install the spark plug wires in the cap. Use the above firing order starting with #1 marked on the cap. SPECIAL ATTENTION: Remember the wires must be installed counter clockwise. Make sure wiring does not contact exhaust manifolds or headers.

### **Torque Specifications:**

#### **DO NOT OVER TORQUE BOLTS!!!**

Drive Adapter M8-1.25 12pt bolts: 25 Ft Lbs

Dist Drive Adapter 7/16" Allen bolt: 60 Ft Lbs

Front Cover Bolts: 18 Ft Lbs.

Cam Retainer Bolts: 18 Ft Lbs

Camshaft Gear Bolts: 26 Ft Lbs

Intake Bolts: 90 Inch Lbs

Balancer Bolt: 100 Ft Lbs



**Graphic 2. Drive Adapter with Colored Spacers & bolts. Refer to Colored Spacer Application Chart.**



**Graphic 3. Distributor Drive Gear, Fuel Pump Eccentric & bolt.**



**Graphic 4. Installation sequence with Spacer. "How-to-Assembly" bolts to Camshaft**



**Graphic 5. Complete drive unit installed on camshaft, including fuel pump & cam drive gear**



**Drill Fixture – Balancer  
Locator**



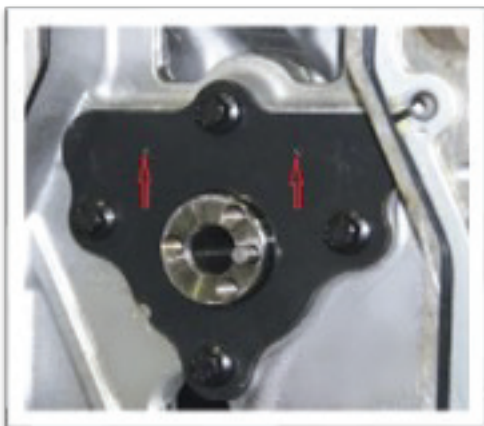
**Torque Distributor Drive  
Bolt**



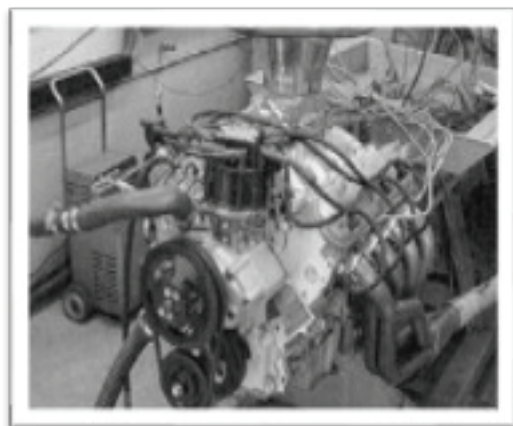
**Balancer Installation**



**Water Pump Assembly  
Installation**



**Cam Shaft Retainer  
Plate Refer to Page 7 for  
Drill Template**



**Ready to Run & Dyno Test**

## **Aftermarket Contact Information:**

### **WATER PUMP: STEWART COMPONENTS**

2701 North 30th Street Escanaba, MI 49829  
(906) 789-2816  
[www.StewartComponents.com](http://www.StewartComponents.com)

### **DAMPER & DRILL FIXTURE: ATI PERFORMANCE PRODUCTS**

6747 Whitestone Rd.  
Baltimore, MD 21207  
(800) 284-3433  
[www.ATIperformanceproducts.com](http://www.ATIperformanceproducts.com)

### **MSD Contact Info: MSD PERFORMANCE PRODUCTS**

1801 Russellville Road Bowling  
Green, KY 42101  
(866) 464-6553  
[www.holley.com/brands/msd](http://www.holley.com/brands/msd)

### **HEI STYLE DISTRIBUTORS: PRO-FORM PARTS – HEI DISTRIBUTOR**

PN: 66969R  
[www.proformparts.com](http://www.proformparts.com)

### **PERFORMANCE DISTRIBUTORS**

PN: 31820  
2699 Barris Drive  
Memphis, TN 38132  
(910) 396-5782  
[www.performancedistributors.com](http://www.performancedistributors.com)

### **FUEL PUMP and Alternative Parts Providers: SUMMIT RACING**

[www.SummitRacing.com](http://www.SummitRacing.com)

### **JEGS AUTOMOTIVE**

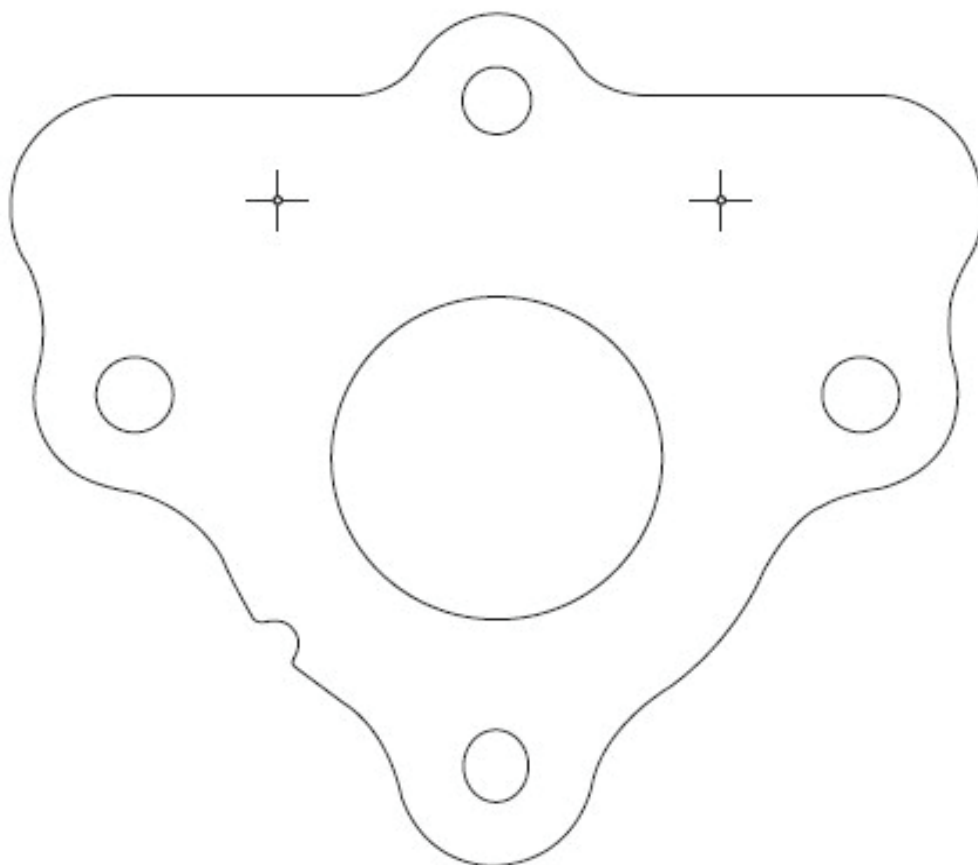
[www.JEGS.com](http://www.JEGS.com)

### **OPTIONAL VALVE COVERS:**

GM Bow-Tie valve Covers fit Gen III & IV engines. PN: 25534398 has grommet hole for breather or PCV valve. PN: 25534399 does not have a filler hole. Covers are sold separately. Each cover includes mounting bolts and v/cover seal and do not have provisions for coil mounting.

PRW Valve Cover alternatives: 4034620 (Silver Anodized), 4034621 (Polished), and 4034627 (Black Anodized) Fabricated Aluminum Valve Covers without stand-offs and includes Oil Filler on one valve cover (Sold in Pairs). Contact your local dealer for pricing and availability.

## Drilling Template for Cam Retaining Plate



To ensure accuracy of template, make  
sure this line measures exactly 6" long.