



**LS1/LS2 Two Piece Timing Cover  
For Gen III/IV Small Block Chevy Engines  
Part #4254 & #4255  
INSTALLATION INSTRUCTIONS**

**PLEASE** study these instructions carefully before beginning this installation. Most installations can be accomplished with common tools and procedures. However, you should be familiar with and comfortable working on your vehicle. If you do not feel comfortable performing this installation, it is recommended to have the installation completed by a qualified mechanic. If you have any questions, please call our **Technical Hotline at: 1-800-416-8628**, 7:00 am - 5:00 pm, Pacific Standard Time, Monday through Friday or e-mail us at [Edelbrock@Edelbrock.com](mailto:Edelbrock@Edelbrock.com).

**IMPORTANT NOTE: Proper installation is the responsibility of the installer. Improper installation will void your warranty and may result in poor performance and engine or vehicle damage.**

**DESCRIPTION:** Edelbrock Two Piece Timing Covers are designed to offer convenient access for timing adjustments and cam swaps in 1998-2004 LS1/LS6 Gen III Chevrolet engines and 2004 and later Gen IV engines. A small metal plate held in by cap screws can be removed to provide access to the camshaft and upper timing gear while the main crank seal and timing cover gasket remain undisturbed. Please note that accessing this plate will require removal of the water pump, and draining of the cooling system (though not necessarily in that order).

**NOTE:** Timing Cover #4254 is not compatible with Chevrolet Gen IV engines, which include LS2, LS4, LS7 and others. Timing Cover #4255 is not compatible with Chevrolet Gen III engines, which include LS1, LS6, and others. Please refer to the table on the next page if you are uncertain of your engine generation.

**BEFORE BEGINNING:** This installation is most easily accomplished with the engine out of the vehicle. However, if your engine is in the vehicle, the removal of all vehicle pieces in order to provide access to the engine front cover and the removal of parts in order to provide clearance to remove and install the camshaft will not be covered. These items may include the cooling fans, radiator, emissions equipment bracketry, A/C brackets, A/C condenser, etc. Depending on the model of your vehicle, if the engine is in the vehicle, temporarily raising the engine in the engine compartment may be required to gain enough clearance to remove and install the camshaft. Please refer to your factory service manual for these procedures. If the vehicle needs to be raised for any reason, always use the factory recommended lift points and methods of supporting the vehicle. **Failure to do so could result in vehicle damage, personal injury, and/or death.**

**LEGAL NOTICE:** If the Air Conditioning condenser needs to be removed to provide clearance for timing cover or camshaft removal, have the system evacuated by an appropriate repair facility BEFORE starting the installation. The same facility can recharge the system after installation. Discharging the air conditioning coolant to atmosphere violates EPA regulations and is punishable by law.

**ADDITIONAL PARTS REQUIRED FOR INSTALLATION:**

- Front Crank Seal (GM P/N: 12585673)       - Timing Cover Gasket (GM P/N: 12574294)

**PARTS REMOVAL**

1. Make sure the vehicle is on level ground and supported properly. Drain engine coolant, storing it in an appropriate container or disposing of it properly. Refer to the factory service manual for proper draining procedure. Make sure the negative battery cable is disconnected.
2. After getting access to the front of the engine, remove the serpentine accessory drive belt, accessory drive belt tensioner, drive belt idler pulley, and any hoses connected to the water pump. Follow the factory service manual procedure.
3. Remove the water pump (*See service manual*).
4. Remove the balancer bolt. Using the Crankshaft Balancer Remover (*J-41816*) and the Crankshaft End Protector (*J-41816-2*), remove the balancer from the crankshaft. **NOTE:** Some LS1 engines (originally installed in Corvettes) do not use a key or keyway to position the crankshaft balancer on the crank. If your engine does not use a key, mark or scribe the end of the crankshaft and the balancer before removal. Refer to the factory service manual for the proper procedure to remove and install the balancer.
5. Remove the front cover and gasket. Edelbrock recommends installing a new front crank seal as it will difficult to remove your stock seal without damaging it. At this time, you should inspect the oil pan gasket for damage. Remove the oil pan and replace the gasket if necessary (*See service manual*).

**NOTE:** Now is a good time to inspect the timing set. Replace, if necessary, following the service manual procedure.

## INSTALLATION

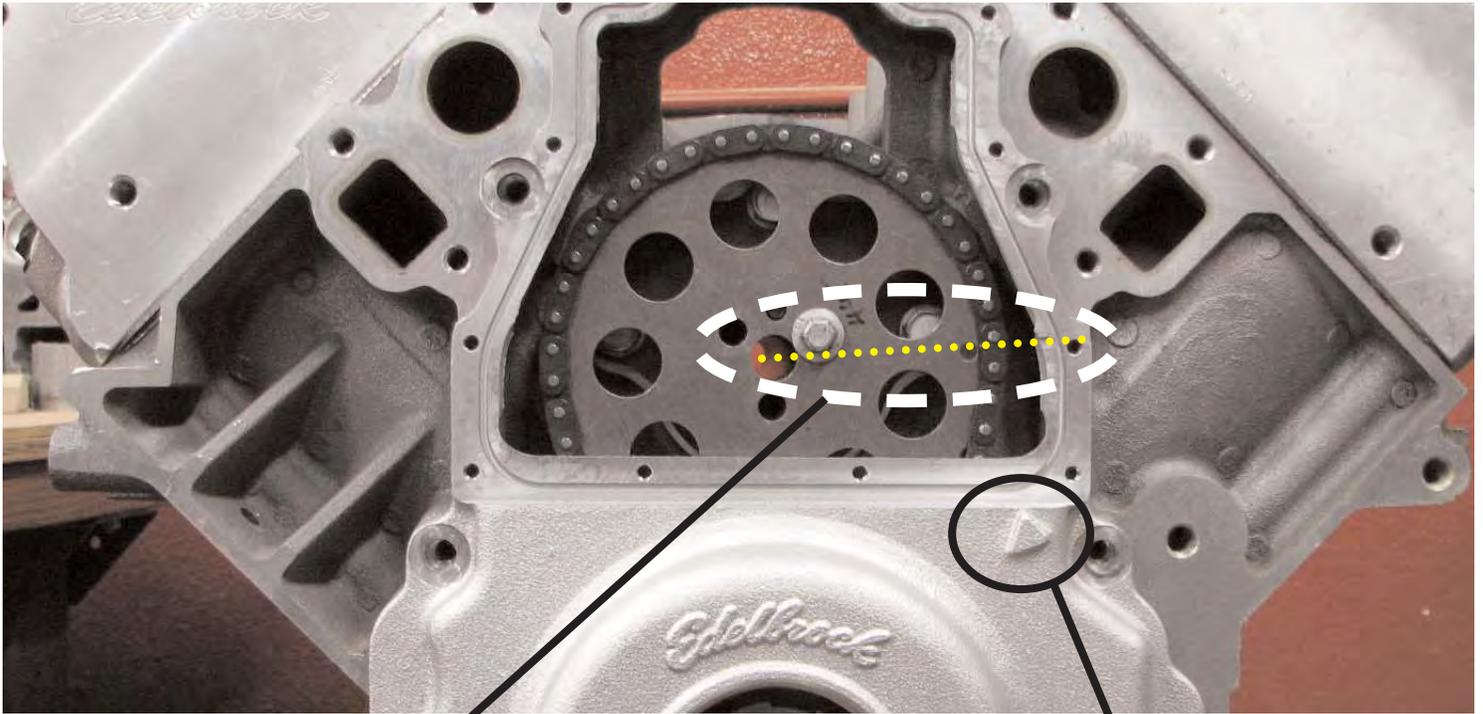
- The timing cover gasket is intended to be reusable, however it should be inspected for damage and replaced if necessary. With the gasket in place, install the timing cover, then install the front cover bolts hand tight ONLY. Shift the front cover until the lower edge of the cover is flush with the block or use a front cover alignment tool (GM P/N: J-41476). Failure to correctly align the cover to the block can cause oil leaks or damage to the pan itself. Install the crankshaft balancer bolt and tighten by hand until snug. Tighten the front cover bolts to 18 ft./lbs. Make sure the bottom of the front cover is flush with the oil pan gasket surface.
- Apply a small amount of sensor safe RTV silicone to the corners of the front cover where the oil pan sealing surface and block meet. Tighten the oil pan bolts.
- Install the balancer using a new balancer bolt and torque to the factory spec. Make sure it is aligned as marked previously. If your engine uses a keyway, use the original key to align the balancer properly. Install the cam position sensor in the cover if working on a Gen IV engine.
- Install the water pump, serpentine accessory drive belt idler pulley and tensioner. Install the serpentine belt and any components that were removed in order to gain access to the front of the engine (*See service manual for installation procedures*). Early LS1 water pumps used a backing plate secured with bolts that may contact the cover. These five bolts should be replaced with the low profile allen head bolts supplied in the kit.
- Once the two piece timing cover is installed it is only necessary to repeat steps #1 - #3 to access the camshaft for adjustment or replacement.

## CAMSHAFT INSTALLATION

The Edelbrock Two Piece Timing Cover greatly simplifies the process of installing a new camshaft, but timing it properly with the crank gear hidden can be challenging. The standard method of timing the camshaft is to have the timing marks on the crank and cam gears at the twelve o'clock and 6 o'clock positions respectively. The design of the cover and location of the harmonic balancer make this method very challenging so an alternate method has been provided below. It is important that these instructions are followed carefully and that the engine is fully rotated by hand before firing to prevent the possibility of severe engine damage.

- Once the water pump has been removed, remove the bolts holding the cover in place.
- Rotate the engine by hand until the timing mark on the cam gear is at the 3 o'clock position. A notch has been machined into the edge of the timing cover to illustrate this position. A straight edge held against the gear should pass through the center of the camshaft, the timing mark and the notch on the timing cover. (See Figure 1)
- It is recommended that you mark your harmonic balancer so that you can verify its position later. An indicator has been cast into the cover for this purpose. (See Figure 1)
- Unbolt the cam gear and remove it. It is recommended that a small length of wire be used to support the timing chain. Be extremely careful not to drop any hardware into your oil pan.
- Remove the thrust plate covering the camshaft.
- All rocker arms must be loosened or removed prior to removing the camshaft. On Gen III engines the bolt securing the cam sensor in the rear of the block must also be loosened and the sensor lifted. Failure to do so may result in damage to the sensor. (See Figure 2). Gen IV engines will need to have the cam position sensor removed from the access plate or unclipped from the wiring harness.
- Rotate the camshaft so that all lifters remain at the top of their bore. You may now remove the camshaft. Coat all lobe and bearing surfaces of the new camshaft as recommended by the manufacturer and install it by slowly rotating it until it is flush with the surface of the block.
- Reinstall the thrust plate and bolt it down. Install the timing chain on the cam gear before attempting to install the gear. If the timing mark is not in the correct position it will be necessary to drop the gear back down to advance the chain without rotating the crankshaft.
- Verify that all bolts are tight, the timing mark on the camshaft lines up with the notch on the cover, and that the indicator on the cover lines up with mark previously made on the harmonic balancer.

Engine Generation	Engine RPO Code	Displacement	Production Range
GEN III	L33	5.3	2005-2007
GEN III	L59	5.3	2002-2007
GEN III	LM4	5.3	2004
GEN III	LM7	5.3	1999-2007
GEN III	LQ4	6.0	1999-
GEN III	LQ9	6.0	2002-
GEN III	LR4	4.8	1999-2007
GEN III	LS1	5.7	1997-2004
GEN III	LS6	5.7	2001-2004
GEN IV	L76	6.0	2008
GEN IV	L92	6.2	2007-
GEN IV	LC9	5.3	2007-
GEN IV	LH6	5.3	2005-2007
GEN IV	LMG	5.3	2007-
GEN IV	LS2	6.0	2004-
GEN IV	LS3	6.2	2008-
GEN IV	LS4	5.3	2005-2008
GEN IV	LS7	7.0	2006-
GEN IV	LY2	4.8	2007-
GEN IV	LY5	5.3	2007-
GEN IV	LY6	6.0	2007-



**FIGURE 1**

The notch in the right side of the cover, the timing mark, and the center of the cam gear should all be inline when the cam is in the correct position.

Make a mark on the harmonic balancer at the point closest to this indicator. You can then use it later as a reference point to verify that the crankshaft is in the correct position.



**FIGURE 2**

**BEFORE REMOVING THE CAMSHAFT**

Loosen this bolt and lift the sensor, failure to do so can damage the sensor. It is not necessary to remove the sensor altogether. (Gen III engines ONLY)



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