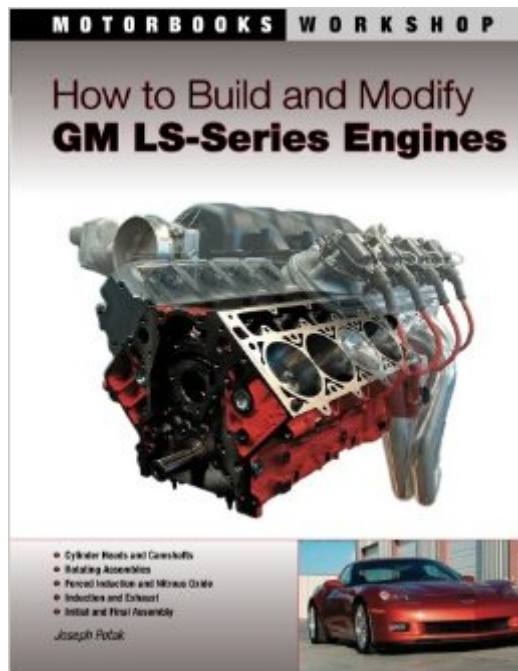


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# How To Build And Modify GM LS-Series Engines (Motorbooks Workshop)



## Synopsis

When first introduced in the 1997 Corvette, GM's LS1 engine shook the performance world and achieved instant fame. Its combination of massive power, light weight and impressive fuel economy set new precedents for performance engines--and continues to do so generation after generation. The latest version, the supercharged LS9, makes some 638 hp from just 6.2 liters, far eclipsing even the mightiest big-blocks from the muscle car era--while meeting modern standards for emissions and fuel economy. It's no wonder, then, that the LSX and LS-Series engines have become some of the most popular for high-performance applications. For those who want to build or modify their LS-Series engine, this book provides the most detailed and extensive instructions ever offered for engine buildup and assembly. Whatever your performance goals might be, *How to Build and Modify GM LS-Series Engines* shows you what modifications are needed and how to make them. Premier LS engine technician Joseph Potak addresses every question that might come up, covering topics including crankshafts, connecting rods and piston assemblies, cylinder heads, camshafts, valvetrain, block choices, machine work and modifications, and setting up ring and bearing clearances for particular uses. In short, this book is the ultimate resource for building the ultimate LS-Series engine.

## Book Information

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## Customer Reviews

In the late-'90s, when I began covering the LS1 engine and its truck engine siblings for magazines,

there were no good technical books, other than Factory Service Manuals, on these engines. What a difference a decade makes. Today, there are many books on the Gen 3/4 engines, most good and some bad. This book, *How to Build and Modify GM LS-Series Engines* is one of the good ones...in spite of one of its little problems being the title itself. This book, by Texas Speed and Performance technician and ls1tech.com moderator, Joseph Potak, is really about how to properly assemble a high-performance street or racing Gen 3/4 engine. Content on modifications is pretty limited to engine hard parts and there's little or nothing on camshaft choices, headers, superchargers, nitrous oxide systems or other parts with which you'd modify an LS-series engine. This "problem" really isn't much of an issue-I look at it more as a typographical error in the title than anything else-because this book is a useful reference to anyone, especially DIY's, who are blueprinting and assembling a high-performance Gen 3/4 engine. The book covers short block parts identification, machine work, short block assembly and upper end assembly and it does it with more detail than other books on the Gen 3s and 4s which I've reviewed. That is a good thing because the Gen 3/4 engine builders in the hobby are hungry for information. This book feeds that appetite. On the modification front, there is useful information on aftermarket crankshafts, connecting rods, pistons and cylinder heads but, again, the information is limited and that limiting is a good thing. It allows the depth to which Potak goes in covering machine work and assembly.

Don't rely on this book. "For those who want to build or modify their LS-Series engine, this book provides the most detailed and extensive instructions ever offered for engine buildup and assembly. Whatever your performance goals might be, *How to Build and Modify GM LS-Series Engines* shows you what modifications are needed and how to make them. "For the most part, this book raises questions and too often doesn't answer them. Well, at least you're aware of the issue. It is also missing some \*crucial\* information that will cost you \$10k - \$15k when you destroy your brand new LS7. Here is everything said about getting the correct lifter preload, "...to adjust preload you either need different length pushrods or rocker arm shims and sometime a combination of both to be perfect (if you need one of those in-between sizes). With the current availability of pushrods in 0.025 inch length increments, shim use should be rare, but it may be required with non-OEM valve lengths or different heads." 1) Shims are not the same as lash caps. Shims are for between the rocker and head, to raise the rocker. 2) Lash caps are mentioned zero times in its 176 pages. Not even that such a thing exists. 3) Titanium valves (also not mentioned that they even EXIST) are factory parts on the LS7. 4) (most) Titanium valves require lash caps to protect the tip of the valve stem. (and factory LS7s titanium valves do require them) 5) Without lash caps, the tips of the titanium valve

stems will pop off from the retainer groove up in less than 1000 miles. The tip that pops off is just about what the hydraulic lifters can make up for, so far as lash goes. So, there is little to no valve train noise when this happens.

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