



Table Of Contents

Introduction: What is a Workbench® Book?

Chapter 1: The Small-Block Chevrolet Reborn: GM's Gen III and IV V-8s

The Small-Block Family Tree

Generation I

Generation II

The Gen III Era Begins

The Gen IV: Improvements Abound

Determining Whether Your Engine is a Gen III/IV

The Small-Block Lives!

Chapter 2: Engine Rebuilding: Skills, Techniques and Tools

What is a "Rebuild?"

Do I Need a Rebuild?

Who Can Perform a Rebuild?

What Tools are Needed?

Where Can a Rebuild be Performed?

Conclusion

Chapter 3: Engine Disassembly

Organization Techniques

Step-By-Step Engine Disassembly

Chapter 4: Parts Inspection and Selection

Parts Selection Words of Wisdom

Engine Block

Rotating Assembly

Cylinder Heads

Valvetrain

Gaskets

Fasteners

Other Engine Parts

Conclusion

Chapter 5: The Machine Shop

Selecting a Machine Shop

Before Heading to the Machine Shop

Block Machine Work

Crankshaft Machine Work

Connecting Rod Machine Work

Piston Machine Work

Balancing the Rotating Assembly

Cylinder Head Machine Work

Other Machining Processes

Final Machine Shop Notes

Chapter 6: Component Cleaning and Preparation

Cleaning Supplies

Safety First!

Final Hints

Step-By-Step Engine Component Cleaning

Chapter 7: Pre-Assembly Procedures

Do I Really Need to Pre-Assemble?

Pre-Assembly Supplies

Step-By-Step Pre-Assembly Procedures

What If Anything Goes Wrong?

Pre-Assembly Complete

Chapter 8: Final Assembly

Before You Begin

Final Assembly Supplies

Final Notes

Step-By-Step Final Assembly Procedures

Chapter 9: Break-In and Tuning

Engine Reinstallation

Final Preparation

Start-Up

Break-In

ECM/PCM Tuning

Conclusion

Appendix

General Calculations for Rotating Assembly

Compression Ratio Calculation

Cylinder Numbers and Firing Order

Torque Sequences

Torque Specifications

Piston Ring Gap Alignment

Timing Belt/Chain Alignment Marks

General Engine Specifications

Helpful Unit Conversions

Glossary of Common Abbreviations

Source Guide