#### **Table Of Contents**

#### **About the Author**

## Acknowledgments

#### Introduction

### **Chapter 1: What It Takes to Make Power**

Point of Maximum Flow Seat and Port Priorities Do You Need a Flow Bench?

### **Chapter 2: Flow Testing Procedures**

The Standard Pressure Drop Real-World Test Pressures Corrections Floating Pressure-Drop Testing Intake Fixation? Flow Efficiency

## Chapter 3: A Flow Bench—Build or Buy

A Rethink on Matters
Current Conclusions
Flowing the Exhaust
Establishing the Numbers
Summary
Budget Computerization
Audie Technology
Performance Trends
Other Bench Sources

### **Chapter 4: Wet-Flow Testing**

Wet-Flow Testing—What's it Worth? Six Wet-Flow Mistakes to Avoid

# **Chapter 5: Porting Aftermarket Heads**

Air Flow Research Dart Edelbrock EngineQuest

# Racing Head Service Trick Flow Specialties

### **Chapter 6: Porting Tools, Consumables and Safety**

Eye and Lung Safety

Grinders—Air or Electric

Carbide Cutters

**Support Porting Tools** 

Sourcing Consumable Supplies

Chapter 7: Five Golden Porting Rules

Rule Number 1

Rule Number 2

Rule Number 3

Rule Number 4

Rule Number 5

## **Chapter 8: Developing Functional Ports**

Valve Seat Forms

Working Valve Seat Shapes

Alternative Seat Angles

Seats on Valves

Valve Shapes

Clearances and Temperatures

**Cutting Valve Seats** 

## **Chapter 9: Valve Shrouding**

Practical De-shrouding

### **Chapter 10: Developing Functional Heads**

Optimizing Cylinder Head Airflow

Valve and Flow

**Ports** 

Cross-Sectional Area

Port Velocity

**Applied Basic Porting** 

Compression Increase

Modified 170s on the Dyno

The Virtual Flow Bench

### **Chapter 11: The Combustion Process**

**Defining Combustion** 

**Combustion Efficiency** 

British Touring Car Championship Year

Finally: The Chambers

More Combustion Curiosities
Atomization Optimization
Thermal Barriers
Swirl and Quench
More Thermal Management
Small Crevice Volume—Big Consequences
Conclusions

# **Chapter 12: Maximizing Compression Ratio**

Thermodynamics Made Easy
Dynamic Compression
Intake- to Exhaust-Valve Ratios
Containing the Pressure

#### **Source Guide**