

[Table Of Contents](#)

**Dedication**

**Acknowledgments**

**Introduction**

**Chapter 1:**

Airflow Basics

Airflow Path

The Seven Cycles to Max Power

Torque and Horsepower

Volumetric Efficiency

Theoretical CFM

Understanding BSFC

Contributing Engine Systems

**Chapter 2:**

Relevant Properties of Air

Physical Composition of Air

Mass and Weight

Density

Coping with Variables

The Ideal Gas Laws

Correction Factors

The MSA and the Air Density Index

Density Altitude

Fuel Properties to Consider

Octane Rating

Gasoline Variables

Conclusion

**Chapter 3:**

Engine Airflow Components

Fundamentals of Air Motion

Cross Sections and Path Lengths

Carburetors and Throttle Bodies

Air Velocity and Boundary Layers

Obstructions and Pressure Changes

Wave Tuning

Torque Peak RPM

#### **Chapter 4:**

Intake Manifold

Intake Manifold Types

Plenum Characteristics

Mixture Conditioning

Surface Texturing

Reversion

Additional Intake Considerations

Extrude Honing

Flow Testing Intake Manifolds

#### **Chapter 5:**

Cylinder Heads

Component Compatibility

Airflow Control Point

Street versus Race Heads

Where the Power Comes From

Best Racing Combo

Flow Factors

Valves and Valve Sizes

Evaluating Cylinder Head Potential

Piston CFM Demand

Critical Valve Transitions

Bore Size

Port Taper

## **Chapter 6:**

Combustion Chambers

Cylinder Filling and Pressure Recovery

Combustion Power and Efficiency

Chamber Types

Chamber Flow Concerns

Chamber Texture

Valve Shrouding

## **Chapter 7:**

Exhaust System

Pressure Wave Tuning

Flow Path Disruptions

Exhaust Flow Tuning

Power Adders

Exhaust Port Surface Texture

Valve Shape and Angle

## **Chapter 8:**

Flow-Bench Testing

What Is a Flow Bench?

Consider Application Differences

Flow-Bench Information

Flow-Bench Limitations

Calculating Lift-to-Diameter Ratios

Calculating Valve Curtain Area

Flow-Bench Tools

## **Chapter 9:**

Practical Applications

Begin with a Software Program

Air Filters

Carburetors and Throttle Bodies

Intake Manifolds

Cylinder Heads

The Exhaust Side

**Conclusion**

**Source Guide**