Table Of Contents
Acknowledgments
Preface

Chapter 1: Engine Cooling System Basic Operation
Thermodynamics
Thermodynamic Laws
Thermal Expansion
Pressure
Heat Transfer
Cooling System Operation
Cooling System Components

Chapter 2: Coolant Selection
Coolant Is Antifreeze and Water
Antifreeze Types
Antifreeze Components
Waterless Glycerol-Based Coolant
BeCool Coolant
Coolant Service

Chapter 3: Radiators
Radiator Design
Radiator Materials
Radiators Types
Pressurized Cooling System
Closed Cooling System
Aftermarket Overflow Tank
OEM Radiator Design and Testing
Radiator Selection
Radiator Inefficiency

Chapter 4: Coolant Flow

Centrifugal Water Pump Components

Centrifugal Water Pump Operation

Hydraulics

Water Pump Design Issues

Water Pump Construction

High-Performance Water Pumps

Electric Water Pumps

Thermostats

Thermostat Selection

Coolant Hoses

Chapter 5: Radiator Airflow

Airflow

Airflow to Remove Heat

Radiator Shrouds

Chapter 6: Cooling Fans

General Cooling Fan Information

Modified Stock and Race Car Cooling Fan Issues

Viscous Clutch

Electric Fans

Electric Cooling Fan Control

Cooling Fan Selection

Chapter 7: Basic System Diagnosis

Information Gathering

Inspections

Diagnostic System Checks

Intermittent Electrical Conditions

Isolate Root Cause, Repair, and Verify Fix

Engine Overheating Diagnostics

Pressure Testing a Cooling System

Thermostat Diagnosis

Thermostat Service

Checking Coolant Protection

Hose Service

Water Pump Service

Drive Belt Tension and Replacement

Radiator Replacement

Head Gasket Replacement

Heater Core Replacement

Cooling System Design and Service Issues

Chapter 8: Installation

Coolant System Flow Review

Wiring Harness

Water Pump Selection

Water Pump Installation

Thermostat, Inlet, and Outlet Selection

Coolant Hoses

Radiator Selection

Electric Cooling Fans

Expansion and Overflow Tanks

Coolant

When it comes to quality auto repair manuals, S-A Design is the brand you can depend on.