

Advanced Transmission Systems:
Dual-Clutch, Automated Manual
& Hybrid Gearboxes:
Comprehensive Guide to
Maintenance, Troubleshooting,
and Performance Optimization
Beyond CVT

Future of Automotive Engineering Series, Volume 8

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ADVANCED TRANSMISSION SYSTEMS:
DUAL-CLUTCH, AUTOMATED MANUAL &
HYBRID GEARBOXES: COMPREHENSIVE GUIDE
TO MAINTENANCE, TROUBLESHOOTING, AND
PERFORMANCE OPTIMIZATION BEYOND CVT

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Preface

The automotive world is evolving faster than ever. From traditional manual gearboxes to advanced dual-clutch, automated manual, and hybrid transmissions, understanding how these systems work—and how to maintain, troubleshoot, and optimize them—is critical for engineers, technicians, and enthusiasts alike. This book was born out of a desire to fill a gap in professional automotive literature: a comprehensive guide covering all major transmission technologies beyond the CVT, presented in a clear, practical, and hands-on manner.

My journey in the automotive field spans both academic and practical arenas. I have been a passionate car tuner since 1998, personally tuning five of my own vehicles to extract maximum performance while maintaining reliability. Between 2001 and 2003, I competed in formal Egyptian autocross races, gaining firsthand experience in the demands of high-performance driving and vehicle dynamics.

In addition to hands-on tuning and racing experience, I hold advanced qualifications in mechanical and industrial engineering, allowing me to analyze automotive systems both practically and theoretically. I also share my passion and knowledge through my YouTube channel, **CarTuningLovers**, where I provide insights, tutorials, and performance tips to a growing community of car enthusiasts.

This book represents the culmination of over two decades of experience in automotive performance, diagnostics, and engineering. It is designed to help professionals, students, and enthusiasts alike navigate the complex world of advanced

transmissions, from traditional automatics and Tiptronic systems to wet and dry dual-clutch gearboxes, automated manuals, and hybrid/electric drivetrains.

My goal is simple: to provide a clear, structured, and practical guide that empowers readers to **understand, maintain, troubleshoot, and optimize advanced transmissions**—ensuring both performance and reliability in modern vehicles.

Whether you are a professional technician, a tuning enthusiast, or a student seeking to deepen your knowledge, this book offers the tools, explanations, and practical guidance you need to master advanced automotive transmission systems.