Part 3: **Hybrid and Electric Powertrains**
Part 4: **Transmission and Driveline**

encyclopedia of automotive engineering

3

Editors-in-Chief
David Crolla | David E. Foster | Toshio Kobayashi | Nicholas Vaughan

WILEY

ENCYCLOPEDIA OF AUTOMOTIVE ENGINEERING

Volume 3

Part 3: Hybrid and Electric Powertrains (continued)
Part 4: Transmission and Driveline

Editors-in-Chief

David Crolla†
University of Leeds, Leeds, UK

David E. Foster
University of Wisconsin—Madison, Madison, WI, USA

Toshio Kobayashi
Japan Automobile Research Institute, Tokyo, Japan

Nicholas Vaughan
Cranfield University, Bedford, UK

† Deceased

WILEY

This edition first published 2015

Registered office

John Wiley & Sons Ltd, The Atrium, Southern Gate, Chichester, West Sussex, PO19 8SQ, United Kingdom

For details of our global editorial offices, for customer services and for information about how to apply for permission to reuse the copyright material in this book please see our website at www.wiley.com.

Library of Congress Cataloging-in-Publication Data

Encyclopedia of automotive engineering / editors-in-chief, David Crolla, David E. Foster, Toshio Kobayashi, Nicholas Vaughan.
volumes cm
Includes bibliographical references and index.
ISBN 978-0-470-97402-5 (cloth)
1. Automobiles–Encyclopedias. I. Crolla, David A.
TL9.E5227 2015
629.203–dc23

2014025608

A catalogue record for this book is available from the British Library.
ISBN: 978-0-470-97402-5

Typeset in 10/12pt Times by Laserwords Private Limited, Chennai, India
Printed and bound by Markono Print Media Pte Ltd.

This book is printed on acid-free paper responsibly manufactured from sustainable forestry, in which at least two trees are planted for each one used for paper production.

ENCYCLOPEDIA OF AUTOMOTIVE ENGINEERING

Editorial Board

Editors-in-Chief

Advisory Board

Associate Editors

Contents

VOLUME 1

VOLUME 2

VOLUME 3

VOLUME 4

VOLUME 5

VOLUME 6

PART 3
Hybrid and Electric Powertrains (continued)

Traction Motor Drives