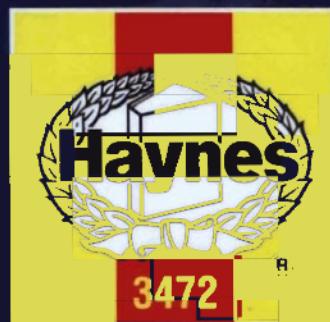


AUTOMOTIVE

# DIAGNOSTIC FAULT CODES MANUAL

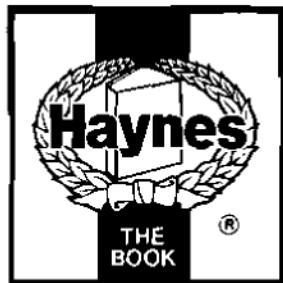


Engine management and fuel injection system fault codes for all popular petrol cars and light commercial vehicles



- Extracting, interpreting and clearing of fault codes
- Fault code tables and step-by-step instructions
- The guide that shows you how and saves you money

**TECHBOOK**



# Automotive Diagnostic Fault Codes Techbook

Charles White

(3472 - 256)

## Systems covered

Bosch KE-Jetronic  
Bosch KE-Motronic  
Bosch LH-Jetronic  
Bosch Mono-Jetronic  
Bosch Mono-Motronic  
Bosch Motronic  
Daihatsu MPi  
Bosch EZ-K and EZ-L Ignition  
Fenix  
Ford EEC IV and EEC V  
GM/Delco SPI  
GM Multec

Isuzu I-Tec  
Lucas 11CU and 14CUX  
Lucas LH  
Magneti-Marelli G5 and G6  
Magneti-Marelli 8F and 8P  
Mazda EGi  
Mercedes HFM and PMS  
Mitsubishi ECI-Multi  
Nissan ECCS  
Proton ECI-Multi and ECI-SEFi  
Renix  
Rover MEMS

Rover PGM-Fi  
Saab Trionic  
Siemens Bendix MPI  
Siemens MS4.0  
Simos  
Simtec  
Subaru MPFi  
Suzuki EPi  
Toyota TCCS  
VAG MPi and MPFi  
VW Digifant  
Weber-Marelli 1AW

© Haynes Publishing 1998

A book in the Haynes Techbook Series

All rights reserved. No part of this book may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying, recording or by any information storage or retrieval system, without permission in writing from the copyright holder.

ISBN 1 85960 472 2

British Library Cataloguing in Publication Data

A catalogue record for this book is available from the British Library.

ABCDE  
FGHI  
JKLMNO  
PQ

Printed in the USA

**Haynes Publishing**

Sparkford, Nr Yeovil, Somerset BA22 7JJ, England

**Haynes North America, Inc**

861 Lawrence Drive, Newbury Park, California 91320, USA

**Editions Haynes S.A.**

Tour Aurora - La Défense 2, 18 Place des Réflets, 92975 PARIS LA DEFENSE Cedex

**Haynes Publishing Nordiska AB**

Box 1504, 751 45 UPPSALA, Sverige

# **Contents**

---

## **GENERAL INFORMATION**

Introduction	Page 0•4
Safety first!	Page 0•5
<b>Index of vehicles covered</b>	<b>Page 0•6</b>
Chapter 1 Introduction to Self-Diagnosis	Page 1•1
Chapter 2 Test equipment, training and technical data	Page 2•1
Chapter 3 General test procedures	Page 3•1
Chapter 4 Component test procedures	Page 4•1

## **SYSTEM SPECIFICS (BY MANUFACTURER)**

Chapter 5 Alfa Romeo	Page 5•1
Chapter 6 Audi	Page 6•1
Chapter 7 BMW	Page 7•1
Chapter 8 Citroën	Page 8•1
Chapter 9 Daewoo	Page 9•1
Chapter 10 Daihatsu	Page 10•1
Chapter 11 Fiat	Page 11•1
Chapter 12 Ford	Page 12•1
Chapter 13 Honda	Page 13•1
Chapter 14 Hyundai	Page 14•1
Chapter 15 Isuzu	Page 15•1
Chapter 16 Jaguar	Page 16•1
Chapter 17 Kia	Page 17•1

# Contents

---

Chapter 18	Lancia	Page 18•1
Chapter 19	Land Rover	Page 19•1
Chapter 20	Lexus	Page 20•1
Chapter 21	Mazda	Page 21•1
Chapter 22	Mercedes	Page 22•1
Chapter 23	Mitsubishi	Page 23•1
Chapter 24	Nissan	Page 24•1
Chapter 25	Peugeot	Page 25•1
Chapter 26	Proton	Page 26•1
Chapter 27	Renault	Page 27•1
Chapter 28	Rover	Page 28•1
Chapter 29	Saab	Page 29•1
Chapter 30	Seat	Page 30•1
Chapter 31	Skoda	Page 31•1
Chapter 32	Subaru	Page 32•1
Chapter 33	Suzuki	Page 33•1
Chapter 34	Toyota	Page 34•1
Chapter 35	Vauxhall/Opel	Page 35•1
Chapter 36	Volkswagen	Page 36•1
Chapter 37	Volvo	Page 37•1

## REFERENCE

Abbreviations, Warnings and Glossary of technical terms

Page REF•1

## 0•4 Introduction

This book is devoted to the gathering of fault codes, and to the understanding and testing of the self-diagnosis element of the modern engine management system. This Automotive Diagnostic Fault Code Techbook is a companion volume to the Haynes Engine Management and Fuel Injection Systems Manual, and for a complete understanding of the modern engine management system, the content of both books should be examined.

The book first gives a technical overview of self-diagnosis. Other Chapters describe test equipment and general test routines for individual components which may be indicated to be defective by the presence of a stored fault code. Finally, each vehicle manufacturer is given a specific Chapter with a comprehensive list of fault codes, details of how to obtain codes, and other relevant information. Even if the reader has no intention of actually attempting to investigate faults on his or her own vehicle, the book still provides valuable insight into self-diagnosis.

On the other hand, if you relish the task of electronic fault diagnosis, this book will provide you with much of the background knowledge necessary to test the components and circuits on your engine. Generally, we describe how to diagnose faults using simple tools and equipment, which will be available from most good automotive parts retailers. We also mention where the use of more specialised equipment is necessary, and describe some of the common routines used by the professional garage trade.

The vehicle manufacturers may not in fact specifically endorse a number of our tests and routines. In the main, this will be because the manufacturer's test routines are becoming

more focused on their own dedicated test equipment which is not generally available outside of a main dealer network. In almost all instances, our own tests follow well-defined testing methods taught in independent training schools, and used by many modern vehicle technical specialists. We mainly describe simple testing methods that are possible with the aid of the ubiquitous digital multi-meter (DMM).

Refer to the companion volume (Haynes Engine Management Techbook) for a description of the operation and test procedures of the modern engine management system. Our test procedures are necessarily generic. However, in many cases, following our procedures in conjunction with a good wiring diagram will reveal the reason for most faults.

The routine and test methods which we describe are perfectly safe to carry out on electronic systems, so long as certain simple rules are observed. These rules are actually no more than the observation of good electrical practice. Be aware that damage to highly-expensive electronic control modules can result from not following these rules. Refer to the Warnings section in the Reference section at the back of this book - these warnings will be repeated/referred to where necessary in the various procedures.

Throughout Europe, the USA and the Far East, the various manufacturers tend to use their own particular terms to describe a particular component. Of course, all these terms tend to be different, and the problem is exacerbated by translation into different languages. This often leads to confusion when several terms are used to describe

essentially the same component. There have been several attempts to bring all the manufacturers into line, with a common naming standard for all. One such does now exist (J1930), but it seems unlikely that all manufacturers will adopt this particular standard, and we are not sure that the terms used are that meaningful anyway. Thus, the terms used in this book will follow those which are commonly used in the UK. To reduce confusion, we will apply these terms for the whole range of manufacturers covered in this book, and any commonly-used alternatives will be listed in the Reference section at the end.

### Acknowledgements

We would like to thank all those at Sparkford and elsewhere who have helped in the production of this book. In particular, we would like to thank Equiptech for permission to use illustrations from the "CAPS" fuel injection fault diagnosis database, and for providing much of the technical information used. We also thank Kate Eyres, who compiled the lists and tables, John Merritt for his work on many of the Chapters, and Simon Ashby of RA Engineering for additional technical information.

We take great pride in the accuracy of information given in this book, but vehicle manufacturers make alterations and design changes during the production run of a particular vehicle of which they do not inform us. No liability can be accepted by the authors or publishers for loss, damage or injury caused by any errors in, or omissions from, the information given.

Working on your car can be dangerous. This page shows just some of the potential risks and hazards, with the aim of creating a safety-conscious attitude.

## General hazards

### Scalding

- Don't remove the radiator or expansion tank cap while the engine is hot.
- Engine oil, automatic transmission fluid or power steering fluid may also be dangerously hot if the engine has recently been running.

### Burning

- Beware of burns from the exhaust system and from any part of the engine. Brake discs and drums can also be extremely hot immediately after use.

### Crushing

- When working under or near a raised vehicle, always



supplement the jack with axle stands, or use drive-on ramps.

**Never venture under a car which is only supported by a jack.**

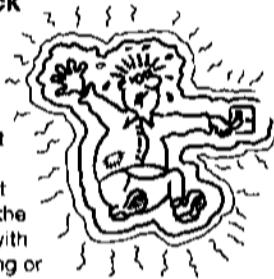
- Take care if loosening or tightening high-torque nuts when the vehicle is on stands. Initial loosening and final tightening should be done with the wheels on the ground.

### Fire

- Fuel is highly flammable; fuel vapour is explosive.
- Don't let fuel spill onto a hot engine.
- Do not smoke or allow naked lights (including pilot lights) anywhere near a vehicle being worked on. Also beware of creating sparks (electrically or by use of tools).
- Fuel vapour is heavier than air, so don't work on the fuel system with the vehicle over an inspection pit.
- Another cause of fire is an electrical overload or short-circuit. Take care when repairing or modifying the vehicle wiring.
- Keep a fire extinguisher handy, of a type suitable for use on fuel and electrical fires.

### Electric shock

- Ignition HT voltage can be dangerous, especially to people with heart problems or a pacemaker. Don't work on or near the ignition system with the engine running or the ignition switched on.



- Mains voltage is also dangerous. Make sure that any mains-operated equipment is correctly earthed. Mains power points should be protected by a residual current device (RCD) circuit breaker.

### Fume or gas intoxication

- Exhaust fumes are poisonous; they often contain carbon monoxide, which is rapidly fatal if inhaled. Never run the engine in a confined space such as a garage with the doors shut.
- Fuel vapour is also poisonous, as are the vapours from some cleaning solvents and paint thinners.



### Poisonous or irritant substances

- Avoid skin contact with battery acid and with any fuel, fluid or lubricant, especially antifreeze, brake hydraulic fluid and Diesel fuel. Don't syphon them by mouth. If such a substance is swallowed or gets into the eyes, seek medical advice.
- Prolonged contact with used engine oil can cause skin cancer. Wear gloves or use a barrier cream if necessary. Change out of oil-soaked clothes and do not keep oily rags in your pocket.
- Air conditioning refrigerant forms a poisonous gas if exposed to a naked flame (including a cigarette). It can also cause skin burns on contact.

### Asbestos

- Asbestos dust can cause cancer if inhaled or swallowed. Asbestos may be found in gaskets and in brake and clutch linings. When dealing with such components it is safest to assume that they contain asbestos.

## Special hazards

### Hydrofluoric acid

- This extremely corrosive acid is formed when certain types of synthetic rubber, found in some O-rings, oil seals, fuel hoses etc, are exposed to temperatures above 400°C. The rubber changes into a charred or sticky substance containing the acid. Once formed, the acid remains dangerous for years. If it gets onto the skin, it may be necessary to amputate the limb concerned.
- When dealing with a vehicle which has suffered a fire, or with components salvaged from such a vehicle, wear protective gloves and discard them after use.

### The battery

- Batteries contain sulphuric acid, which attacks clothing, eyes and skin. Take care when topping-up or carrying the battery.
- The hydrogen gas given off by the battery is highly explosive. Never cause a spark or allow a naked light nearby. Be careful when connecting and disconnecting battery chargers or jump leads.

### Air bags

- Air bags can cause injury if they go off accidentally. Take care when removing the steering wheel and/or facia. Special storage instructions may apply.

### Diesel injection equipment

- Diesel injection pumps supply fuel at very high pressure. Take care when working on the fuel injectors and fuel pipes.

**Warning:** Never expose the hands, face or any other part of the body to injector spray; the fuel can penetrate the skin with potentially fatal results.

## Remember...

### DO

- Do use eye protection when using power tools, and when working under the vehicle.
- Do wear gloves or use barrier cream to protect your hands when necessary.
- Do get someone to check periodically that all is well when working alone on the vehicle.
- Do keep loose clothing and long hair well out of the way of moving mechanical parts.
- Do remove rings, wristwatch etc before working on the vehicle – especially the electrical system.
- Do ensure that any lifting or jacking equipment has a safe working load rating adequate for the job.

### DON'T

- Don't attempt to lift a heavy component which may be beyond your capability – get assistance.
- Don't rush to finish a job, or take unverified short cuts.
- Don't use ill-fitting tools which may slip and cause injury.
- Don't leave tools or parts lying around where someone can trip over them. Mop up oil and fuel spills at once.
- Don't allow children or pets to play in or near a vehicle being worked on.

## 0•6 Index of vehicles covered

Model	Engine code	Year	System
<b>ALFA ROMEO</b>			
33, 1.7ie, Sportwagon, 4x4 cat	307.37	1993 to 1995	Bosch Motronic MP3.1
33, Boxer 16V, 4x4 and cat	307.46	1990 to 1995	Bosch Motronic ML4.1
75 3.0i V6 cat	061.20	1987 to 1993	Bosch Motronic ML4.1
145 1.3ie SOHC	AR33501	1994 to 1997	Weber IAW 8F.6B
145 1.6ie SOHC	AR33201	1994 to 1996	Bosch Motronic MP3.1
145 1.6ie SOHC	AR33201	1994 to 1997	GM Multec XM
145 1.7 16V DOHC	AR33401	1994 to 1997	Bosch Motronic M2.10.3
145 2.0 16V DOHC	AR67204	1996 to 1997	Bosch Motronic M2.10.3
146 1.3ie SOHC	AR33501	1994 to 1997	Weber IAW 8F.6B
146 1.6ie SOHC	AR33201	1994 to 1996	GM Multec XM
146 1.7 16V DOHC	AR33401	1994 to 1997	Bosch Motronic M2.10.3
146 2.0 16V DOHC	AR67204	1996 to 1997	Bosch Motronic M2.10.3
155 T-Spark DOHC cat	AR671.03	1992 to 1992	Bosch Motronic 1.7
155 1.8 T-Spark DOHC cat	AR671.02	1992 to 1996	Bosch Motronic 1.7
155 2.0 T-Spark DOHC cat	AR671.02	1992 to 1996	Bosch Motronic 1.7
155 2.5 V6 SOHC cat	AR673.01/03	1992 to 1996	Bosch Motronic 1.7
155 2.0 16V DOHC T-Spark	AR67204	1996 to 1997	Bosch Motronic M2.10.3
164 2.0 T-Spark DOHC	064.20	1990 to 1993	Bosch Motronic ML4.1
164 2.0 T-Spark DOHC cat	064.16	1990 to 1993	Bosch Motronic ML4.1
164 2.0 T-Spark DOHC 16V	AR64.103	1993 to 1996	Bosch Motronic 1.7
164 V6	064.10	1988 to 1993	Bosch Motronic ML4.1
164 V6 and cat	064.12	1988 to 1993	Bosch Motronic ML4.1
164 V6 Cloverleaf cat SOHC	064.301	1990 to 1993	Bosch Motronic ML4.1
164 V6 24V	066.301	1993 to 1995	Bosch Motronic 1.7
164 V6 24V	AR56.302	1995 to 1997	Bosch Motronic 1.7
164 V6 24V Cloverleaf	064.304	1994 to 1997	Bosch Motronic 1.7
164 V6 24V Cloverleaf	AR64.308	1995 to 1997	Bosch Motronic 1.7
GTV 2.0 16V DOHC	AR162.01	1996 to 1997	Bosch Motronic M2.10.3
Spider DOHC cat	015.88	1990 to 1994	Bosch Motronic ML4.1
Spider 2.0 16V DOHC	AR162.01	1996 to 1997	Bosch Motronic M2.10.3
<b>AUDI</b>			
Audi A3 1.6	AEH	1996 to 1997	Simos
Audi A3 1.8	AGN	1996 to 1997	Bosch Motronic 3.2
Audi A3 1.8i	AGN	1997 on	Bosch Motronic 3.8.2
Audi A3 1.8 Turbo	AGU	1996 to 1997	Bosch Motronic 3.2
Audi A4 1.6	ADP	1995 to 1997	Bosch Motronic 3.2
Audi A4 1.8	ADR	1995 to 1997	Bosch Motronic 3.2
Audi A4 1.8 Turbo	AEB	1995 to 1997	Bosch Motronic 3.2
Audi A4 2.6	ABC	1995 to 1997	VAG MPFi
Audi A4 2.8	AAH	1995 to 1996	VAG MPI
Audi A4 2.8	ACK	1996 to 1997	Bosch Motronic MPi
Audi A6 2.0i	ABK	1993 to 1996	VAG Digifant
Audi A6 2.8 30V	ACK	1995 to 1997	Bosch Motronic
Audi A6 S6 2.2 cat	AAN	1991 to 1997	Bosch Motronic M2.3.2
Audi A6 2.6	ABC	1992 to 1997	VAG MPFi
Audi A6 2.8	AAH	1991 to 1997	VAG MPI
Audi A6 S6 4.2	AHK	1996 to 1997	Bosch Motronic
Audi A6 S6 4.2	AEC	1994 to 1997	Bosch Motronic
Audi AB 2.8i V6	AAH	1994 to 1997	VAG MPFi
Audi AB 2.8	ACK	1996 to 1997	Bosch Motronic
Audi AB 3.7	AEW	1995 to 1997	Bosch Motronic
Audi AB 4.2	ABZ	1994 to 1997	Bosch Motronic M2.4
Audi VB 3.6 cat	PT	1989 to 1994	Bosch Motronic M2.4
Audi VB 4.2 cat	ABH	1992 to 1994	Bosch Motronic M2.4
Audi 80 1.6 cat	ABM	1992 to 1995	Bosch Mono-Motronic MA1.2
Audi 80 1.6 cat	ADA	1993 to 1995	VAG MPI
Audi 80 1.8i and 4x4 cat	JN	1986 to 1991	Bosch KE-Jetronic
Audi 80 1.8i and 4x4 cat	PM	1988 to 1989	Bosch Mono-Jetronic A2.2
Audi 80 1.8 and 4x4 cat	PM	1990 to 1991	Bosch Mono-Motronic
Audi 80 2.0i Quattro cat	ABT	1992 to 1995	Bosch Mono-Motronic
Audi 80 Coupe 16V 2.0 cat	6A	1990 to 1995	Bosch KE1.2 Motronic
Audi 80 Coupe 2.0 and 4x4 cat	3A	1988 to 1990	Bosch KE1.1 Motronic
Audi 80 Coupe and 4x4 2.0 cat	AAD	1990 to 1992	Bosch KE1.2 Motronic

## Index of vehicles covered 0-7

<b>Model</b>	<b>Engine code</b>	<b>Year</b>	<b>System</b>
Audi 80 2.0 cat	ABK	1992 to 1995	VAG Digitant
Audi 80, 90 Coupe and Cabrio 2.3	NG	1987 to 1995	Bosch KE3-Jetronic
Audi 80 2.3 cat	NG	1992 to 1994	Bosch KE3-Jetronic
Audi 80 2.6 cat	ABC	1992 to 1995	VAG MPFi
Audi 80, 90 2.0 cat	PS	1987 to 1991	Bosch KE Jetronic
Audi 80, 90 2.8 cat	AAH	1992 to 1994	VAG MPI
Audi 80 S2	ABY	1993 to 1995	Bosch Motronic + Turbo
Audi 90 Coupe 2.0 20V cat	NM	1988 to 1991	VAG MPI
Audi 90 Coupe and 4x4 2.3 cat	7A	1988 to 1991	VAG MPI
Audi 100 1.8i cat	4B	1988 to 1991	Bosch Mono-Jetronic
Audi 100 1.8i cat	PH	1985 to 1991	Bosch KE-Jetronic
Audi 100 2.0 cat	AAE	1991 to 1994	Bosch Mono-Motronic MA1.2
Audi 100 2.0i	ABK	1993 to 1996	VAG Digitant
Audi 100 2.0 cat	AAD	1991 to 1994	Bosch KE-Motronic
Audi 100 4x4 2.0 16V cat	ACE	1992 to 1994	Bosch KE-Motronic
Audi 100 S4 2.2 cat	AAN	1991 to 1997	Bosch Motronic 2.3.2
Audi 100 2.3E cat	NF	1986 to 1991	Bosch KE3-Jetronic
Audi 100 2.3 cat	AAR	1991 to 1994	Bosch KE3-Jetronic
Audi 100 2.6	ABC	1992 to 1997	VAG MPFi
Audi 100 2.8	AAH	1991 to 1997	VAG MPI
Audi 100 S4 4.2	ABH	1993 to 1994	Bosch Motronic
Audi 200 4x4 Turbo cat	3B	1989 to 1991	Bosch Motronic + Turbo
Audi Coupe S2	3B	1990 to 1993	Bosch Motronic + Turbo
Audi Coupe and Cabrio 2.0 cat	ABK	1992 to 1997	VAG Digitant
Audi Coupe and Cabrio 2.6 cat	ABC	1993 to 1997	VAG MPFi
Audi Coupe and Cabrio 2.8	AAH	1991 to 1997	VAG MPI
Audi Coupe S2	ABY	1993 to 1996	Bosch Motronic + Turbo
Audi Quattro 20V cat	RR	1989 to 1991	Bosch Motronic + Turbo
Audi RS2 Avant	ADU	1994 to 1996	Bosch Motronic + Turbo

### **BMW**

316i (E30) and cat	M40/B16 164E1	1988 to 1993	Bosch Motronic 1.3
316i (E36) cat	M40/B16 164E1	1990 to 1993	Bosch Motronic 1.7
316i (E36) cat and Compact	M43/B16	1993 to 1997	Bosch Motronic 1.7
318i (E30) Touring and cat	M40/B18 184E11	1988 to 1993	Bosch Motronic 1.3
318i (E30) and Touring	M40/B18	1989 to 1992	Bosch Motronic 1.7
318i (E36) and cat	M40/B18 184E2	1991 to 1993	Bosch Motronic 1.7
318i (E36)	M43/B18	1993 to 1997	Bosch Motronic 1.7
318iS (E30) 16V Touring and cat	M42/B18 184S1	1990 to 1991	Bosch Motronic 1.7
318iS (E36) and Compact	M42/B18 184S1	1992 to 1996	Bosch Motronic 1.7
320i (E30)	M20/B20 206EE	1986 to 1988	Bosch Motronic 1.1
320i (E30) and Touring and cat	M20/B20 206EE	1988 to 1993	Bosch Motronic 1.3
320i (E36) 24V cat	M50/B20 206S1	1991 to 1993	Bosch Motronic 3.1
320i (E36) 24V cat	M50 2.0 Vanos	1993 to 1996	Bosch Motronic 3.1
320i (E36) 24V cat	M50/B20	1993 to 1996	Siemens MS4.0
325i (E30) and 4x4	M20/B25 5K1	1985 to 1987	Bosch Motronic 1.1
325i and Touring (E30)	M20/B25 6K1	1988 to 1993	Bosch Motronic 1.3
325iX (E30-4)	M20/B25 6E2	1985 to 1987	Bosch Motronic 1.1
325ix and Touring	M20/B25 6E2	1988 to 1993	Bosch Motronic 1.3
325i (E36) 24V cat	M50/B25 256S1	1991 to 1993	Bosch Motronic 3.1
325i (E36) 24V	M50 2.5 Vanos	1993 to 1996	Bosch Motronic 3.1
325e (E30) and cat	M20/B27	1986 to 1991	Bosch Motronic 1.1
518i (E34)	M40/B18	1988 to 1993	Bosch Motronic 1.3
518i (E34) cat	M43/B18	1993 to 1996	Bosch Motronic 1.7
520i (E34) and cat	M20/B20M 206KA	1988 to 1991	Bosch Motronic 1.3
520i (E34) 24V and Touring cat	M50/B20 206S1	1990 to 1993	Bosch Motronic 3.1
520i (E34) 24V and Touring cat	M50 2.0 Vanos	1993 to 1996	Bosch Motronic 3.1
520i (E34) 24V cat	M50/B20	1993 to 1996	Siemens MS4.0
525i (E34) and cat	M20/B25M 256K1	1988 to 1991	Bosch Motronic 1.3
525i (E34) 24V cat	M50/B25 256S1	1990 to 1993	Bosch Motronic 3.1
525i (E34) 24V	M50 2.5 Vanos	1993 to 1996	Bosch Motronic 3.1
530i (E34) and cat	M30/B30M 306KA	1988 to 1992	Bosch Motronic 1.3
540i (E34) V8 4.0 32V DOHC cat	M60	1993 to 1996	Bosch Motronic 3.3
535i (E34) and cat	M30/B35M 346KB	1988 to 1993	Bosch Motronic 1.3
635 CSi (E24)	M30/B34	1986 to 1987	Bosch Motronic 1.1

## 0•8 Index of vehicles covered

Model	Engine code	Year	System
<b>BMW (Continued)</b>			
635 CSi (E24) and cat	M30/B35M 346EC	1988 to 1990	Bosch Motronic 1.3
M635 CSi (E24)	M88/3	1987 to 1989	Bosch Motronic 1.3
730i (E32) and cat	M30/B30M2 306KA	1986 to 1987	Bosch Motronic 1.1
730i (E32) and cat	M30/B30M2 306KA	1988 to 1994	Bosch Motronic 1.3
730i (E32) V8 3.0 cat	M60B330	1992 to 1994	Bosch Motronic 3.3
735i (E32) and cat	M30/B35M2	1986 to 1987	Bosch Motronic 1.1
735i (E32) and cat	M30/B35M2 346EC	1987 to 1992	Bosch Motronic 1.3
740iL (E32) V8 cat	M60/B40	1992 to 1994	Bosch Motronic 3.3
740i (E38) V8 4.0 32V DOHC cat	M60	1994 to 1997	Bosch Motronic 3.3
750i and cat	M70/B50 5012A	1992 to 1994	Bosch Motronic 1.7
750iL	M70/B50 5012A	1992 to 1994	Bosch Motronic 1.7
750i	M70/B54	1994 to 1997	Bosch Motronic 1.2
840i V8 4.0 32V DOHC cat	M60	1993 to 1997	Bosch Motronic 3.3
850i	M70/B50 5012A	1989 to 1994	Bosch Motronic 1.7
M3 (E36)	S50/B30	1993 to 1997	Bosch Motronic 3.3
M5 (E34)	S38/B38 386S1	1992 to 1996	Bosch Motronic 3.3
Z1	M20/B25	1988 to 1992	Bosch Motronic 1.3
<b>CITROËN</b>			
AX 1.0i cat	TU9M/L.Z (CDY)	1992 to 1997	Bosch Mono-Motronic MA3.0
AX 1.0i cat	TU9M/L.Z (CDZ)	1992 to 1996	Bosch Mono-Motronic MA3.0
AX 1.1i cat	TU1M (HDZ)	1989 to 1992	Bosch Mono-Jetronic A2.2
AX 1.1i cat	TU1M/L.Z (HDY)	1992 to 1997	Magneti-Marelli G6-11
AX 1.1i cat	TU1M/L.Z (HDZ)	1992 to 1997	Magneti-Marelli G6-11
AX GT 1.4 cat	TU3M (KDZ)	1988 to 1990	Bosch Mono-Jetronic A2.2
AX GT and 1.4i cat	TU3PMC/L.Z (KDY)	1990 to 1992	Bosch Mono-Jetronic A2
AX 1.4i cat	TU3FM/L.Z (KDX)	1992 to 1996	Bosch Mono-Motronic MA3.0
AX 1.4 GTi	TU3J2/K (K6B)	1991 to 1992	Bosch Motronic MP3.1
AX 1.4 GTi cat	TU3J2/L.Z (KFZ)	1991 to 1996	Bosch Motronic MP3.1
Berlingo 1.1	TU1M (HDZ)	1996 to 1997	Bosch Motronic MA3.1
Berlingo 1.4	TU3JP (KFX)	1996 to 1997	Magneti-Marelli
BX 14i cat	TU3M (KDY)	1991 to 1994	Bosch Mono-Jetronic A2.2
BX 16i cat	XU5M (BDZ)	1990 to 1992	Bosch Mono-Jetronic or MM G5/6
BX 16i cat	XU5M3Z (BDY)	1991 to 1994	Magneti-Marelli G6-10
BX19 GTi and 4X4	XU9J2 (D6D)	1990 to 1992	Bosch Motronic MP3.1
BX19 GTi 16V	XU9J4 (D6C)	1987 to 1991	Bosch Motronic ML4.1
BX19 TZi 8V cat	XU9JAZ (DKZ)	1990 to 1993	Bosch Motronic 1.3
BX19 16V DOHC cat	XU9J4Z (DFW)	1990 to 1992	Bosch Motronic 1.3
BX19 16V DOHC	XU9J4K (D6C)	1991 to 1992	Bosch Motronic 1.3
BX19i 4X4 cat	DDZ(XU9M)	1990 to 1993	Fenix 1B
C15E 1.1i Van cat	TU1M (HDZ)	1990 to 1997	Bosch Mono-Jetronic A2.2
C15E 1.4i Van cat	TU3F.M/Z (KDY)	1990 to 1995	Bosch Mono-Jetronic A2.2
C15E 1.4i Van cat	TU3F.M/W2 (KDYZ)	1993 to 1995	Bosch Mono-Jetronic A2.2
Evasion 2.0i cat	XU10J2CZ/L (RFU)	1994 to 1997	Magneti-Marelli 8P22
Evasion 2.0i turbo cat	XU10J2CTEZ/L(RGX)	1994 to 1997	Bosch Motronic MP3.2
Jumper 2.0i cat	XU10J2U (RFW)	1994 to 1997	Magneti-Marelli DCM8P-11
Jumpy 1.6i	220 A2.000	1995 to 1997	Bosch Mono-Motronic MA1.7
Relay 2.0i cat	XU10J2U (RFW)	1994 to 1997	Magneti-Marelli DCM8P-11
Saxo 1.0	TU9M/L3/L	1996 to 1997	Bosch Mono-Motronic MA3.1
Saxo 1.1	TU1M/L3/L	1996 to 1997	Bosch Mono-Motronic MA3.1
Saxo 1.4	TU3JP/L3	1996 to 1997	Magneti-Marelli
Saxo 1.6	TU5JP/L3 (NFZ)	1996 to 1997	Bosch Motronic MA5.1
Synergie 2.0i cat	XU10J2CZ/L (RFU)	1994 to 1997	Magneti-Marelli 8P22
Synergie 2.0i turbo cat	XU10J2CTEZ/L(RGX)	1994 to 1997	Bosch Motronic MP3.2
Xantia 1.6i cat	XU5JP/Z (BFX)	1993 to 1997	Magneti-Marelli DCM8P13
Xantia 1.8i 16V	XU7JP4/L3 (LFY)	1995 to 1997	Bosch Motronic MP5.1.1
Xantia 1.8i and Break	XU7JP/Z (LFZ)	1993 to 1997	Bosch Motronic MP5.1
Xantia 2.0i and Break	XU10J2C/Z (RFX)	1993 to 1997	Magneti-Marelli DCM8P20
Xantia 2.0i 16V cat	XU10J4D/Z (RFY)	1993 to 1995	Bosch Motronic MP3.2
Xantia 2.0i 16V and Break	XU10J4R/Z/L3(RFV)	1995 to 1997	Bosch Motronic MP5.1.1
Xantia Activa 2.0i	XU10J4D/Z (RFT)	1994 to 1996	Bosch Motronic MP3.2
Xantia Turbo 2.0i GT	XU10J2CTE/L3(RGX)	1995 to 1996	Bosch Motronic MP3.2
XM 2.0i MPI	XU10J2 (R6A)	1990 to 1992	Magneti-Marelli BA G5
XM 2.0i cat	XU10J2/Z (RFZ)	1990 to 1992	Bosch Motronic MP3.1

## Index of vehicles covered 0-9

<b>Model</b>	<b>Engine code</b>	<b>Year</b>	<b>System</b>
XM 2.0i cat	XU10J2/Z (RFZ)	1992 to 1994	Bosch Motronic MP5.1
XM 2.0i 16V cat	XU10J4R/L/Z (RFV)	1994 to 1997	Bosch Motronic MP5.1.1
XM 2.0i turbo cat	XU10J2TE/Z (RGY)	1993 to 1994	Bosch Motronic MP3.2
XM 2.0i CT turbo cat	XU10J2TE/L/Z(RGX)	1994 to 1996	Bosch Motronic MP3.2
XM 3.0 V6 LHD	ZPJ (S6A)	1989 to 1993	Fenix 3B
XM 3.0 V6 cat	ZPJ (SFZ)	1989 to 1994	Fenix 3B
XM 3.0 V6 cat	ZPJ (UFZ)	1994 to 1997	Fenix 3B
XM 3.0 V6 Estate	ZPJ/Z (UFY)	1995 to 1996	Fenix 3B
XM 3.0 V6 24V cat	ZPJ4/Y3 (SKZ)	1990 to 1994	Fenix 4
XM 3.0 V6 24V	ZPJ4/Y3 (UKZ)	1994 to 1997	Fenix 4B
ZX 1.1i cat	TU1M/Z (HDY)	1991 to 1994	Bosch Mono-Jetronic A2.2
ZX 1.1i cat	TU1M/Z (HDZ)	1991 to 1994	Bosch Mono-Jetronic A2.2
ZX 1.1i cat	TU1M/Z (HDY)	1994 to 1997	Bosch Mono-Motronic MA3.0
ZX 1.1i cat	TU1M/Z (HDZ)	1994 to 1997	Bosch Mono-Motronic MA3.0
ZX 1.4i cat	TU3M/Z (KDY)	1991 to 1992	Bosch Mono-Jetronic A2.2
ZX 1.4i and Break cat	TU3M (KDX)	1992 to 1997	Bosch Mono-Motronic MA3.0
ZX 1.4i and Break cat	TU3M (KDX)	1994 to 1996	Magneti-Marelli G6-14
ZX 1.6i	XU5M.2K (B4A)	1991 to 1992	Magneti-Marelli G5 S2
ZX 1.6i	XU5M.3K (B4A)	1991 to 1993	Magneti-Marelli G6.12
ZX 1.6i cat	XU5M.3Z (BDY)	1992 to 1993	Magneti-Marelli G6.10
ZX 1.6i and Break cat	XU5JPL/Z (BFZ)	1994 to 1997	Magneti-Marelli 8P-13
ZX 1.6i and Break cat	XU5JPL/Z (BFZ)	1995 to 1996	Sagem/Lucas 4GJ
ZX 1.8i and Break cat	XU7JPL/Z (LFZ)	1992 to 1997	Bosch Motronic MP5.1
ZX 1.8i and Break cat	XU7JPL/Z (LFZ)	1995 to 1996	Magneti-Marelli 8P-10
ZX 1.9 8V	XU9JAZ (DKZ)	1992 to 1994	Bosch Motronic 1.3
ZX 1.9i	XU9JA/K (D6E)	1991 to 1992	Bosch Motronic MP3.1
ZX 2.0i cat	XUJ10J2/C/L/Z(RFX)	1992 to 1996	Magneti-Marelli 8P-20
ZX 2.0i 16V cat	XUJ10J4/D/L/Z(RFY)	1992 to 1995	Bosch Motronic MP3.2
ZX 2.0i 16V	XUJ10J4/D/L/Z(RFT)	1994 to 1997	Bosch Motronic MP3.2

### **DAEWOO**

Nexia 1.5 8V SOHC	-	1995 to 1997	GM-Multec
Nexia 1.5 16V DOHC	-	1995 to 1997	GM-Multec
Espero 1.5 16V DOHC	-	1995 to 1997	GM-Multec
Espero 1.8 8V SOHC	-	1995 to 1997	GM-Multec
Espero 2.0 8V SOHC	-	1995 to 1997	GM-Multec

### **DAIHATSU**

Applause	HD-E	1989 to 1996	Daihatsu EFI
Charade 1.3i cat SOHC 16V	HC-E	1991 to 1993	Daihatsu EFI
Charade 1.3 SOHC 16V	HC-E	1993 to 1997	Daihatsu MPI
Charade 1.5i SOHC 16V	HE-E	1996 to 1997	Daihatsu MPI
Charade 1.6i SOHC 16V	HD-E	1993 to 1996	Daihatsu MPI
Hi-Jet	CB42	1995 to 1997	Daihatsu MPI
Sportrak cat SOHC 16V	HD-E	1990 to 1997	Daihatsu EFI

### **FIAT**

Brava 1.4 12V	182 AA.1AA	1996 to 1997	Bosch Mono-Motronic SPI
Brava 1.6 16V	182 A4.000	1996 to 1997	Weber Marelli IAW
Bravo 2.0	182 A1.000	1996 to 1997	Bosch Motronic M2.10.4
Cinquecento 899 OHV DIS cat	1170 A1.046	1993 to 1997	Weber-Marelli IAW SPI
Cinquecento 900 OHV DIS cat	170 A1.046	1992 to 1994	Weber-Marelli IAW SPI
Cinquecento Sporting	176 B2000	1995 to 1997	Weber-Marelli IAW SPI
Coupe 16V	836 A3.000	1994 to 1997	Weber-Marelli IAW MPI
Coupe 16V Turbo	175 A1.000	1994 to 1996	Weber-Marelli IAW MPI
Coupe 2.0 20V	-	1997	Bosch Motronic M2.10.4
Croma 2000ie	834 B.000	1986 to 1989	Weber-Marelli IAW MPI
Croma 2000ie DOHC 8V	154 C.000	1989 to 1991	Weber-Marelli IAW MPI
Croma 2.0ie DOHC	154 C3.000	1990 to 1992	Weber-Marelli IAW MPI
Croma 2.0ie DOHC DIS cat	154 C3.046	1991 to 1994	Weber-Marelli IAW MPI
Croma 2.0ie 16V cat	154 E1.000	1993 to 1995	Bosch Motronic M1.7
Fiorino 1500 SOHC cat	149 C1.000	1991 to 1995	Bosch Mono-Jetronic A2.4
Panda 1.0ie OHC and 4x4 cat	156 A2.246	1991 to 1996	Bosch Mono-Jetronic A2.4
Panda 1.1ie OHC cat	156 C.046	1991 to 1997	Bosch Mono-Jetronic A2.4

