

2020 BREMI Germany Cam/Crankshaft Sensor Catalog

Kurbel- & Nockenwellensensoren | Crankshaft & Camshaft Sensors

- OEM-quality sensors that meet IATF 16949 OE-standards and are produced precisely to the individual specifications of car manufacturers.



OEM-Supplier for Generations!
AUDI, BENTLEY, BMW, MERCEDES & VOLKSWAGEN



Why choose Bremi Germany Camshaft & Crankshaft Sensors?

Bremi Fahrzeug-Elektrik produces every component of their Sensor Program (Air Mass, Wheel Speed & Cam/Crankshaft) in their own factories.

The final completion and testing of each sensor is completed 100% in Germany. Their acquisition of "Streicher Plast" in Germany has allowed them to become a leader in Injection molded parts for electronics and microelectronics, utilizing the same material, fit and function as OE.

All Bremi Cam/Crankshaft Sensors contain Hall-Effect Sensor IC's from OE manufacturers. Each Sensor is subjected to an electrical test which compares the sensor data to the OE profile to ensure that it is within optimal range and meets IATF 16949 OE-standards.

Additionally, Bremi performs this electrical test both before and after a full thermal shock test to ensure performance under all environmental conditions.

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CYL	APPLICATION	NOTES	YEAR	KARLYN #
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ACURA

CL

V6	3.2 LTR.		2003	60131
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ILX

L4	2.4 LTR.	K24Z7 Eng.	13-15	60450
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MDX

V6	3.5 LTR.		03-06	60131
V6	3.7 LTR.		07-10	60131

RDX

L4	2.3 LTR.		07-12	60133
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RL

V6	3.5 LTR.		05-08	60131
V6	3.7 LTR.		09-10	60131

RSX

L4	2.0 LTR.		02-06	60133
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TL

V6	3.2 LTR.		04-08	60131
V6	3.5 LTR.		07-08	60131

TSX

L4	2.4 LTR.		09-14	60450
L4	2.4 LTR.	Exhaust side	04-08	60133
L4	2.4 LTR.	Intake side	04-08	60147

AUDI

A3

L4	1.8 LTR.		15-16	60449
L4	2.0 LTR.	CZRA Eng.	2017	60449
L4	2.0 LTR.	BPY Eng.	2008	60141
L4	2.0 LTR.	CBFA Eng.	08-13	60440
L4	2.0 LTR.	CCTA Eng.	08-13	60440
L4	2.0 LTR.		06-07	60012

A3 Quattro

L4	2.0 LTR.	CNTC Eng.	15-17	60449
L4	2.0 LTR.	CCTA Eng.	09-13	60440
V6	3.2 LTR.		06-09	60011

A3 Sportback e-tron

L4	1.4 LTR.		16-17	60449
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CYL	APPLICATION	NOTES	YEAR	KARLYN #
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A4

L4	1.8 LTR.		97-06	60095
L4	2.0 LTR.		2017	60449
L4	2.0 LTR.	CAEB Eng.	2009	60440
L4	2.0 LTR.		10-16	60440
L4	2.0 LTR.		07-08	60141
L4	2.0 LTR.		05-06	60141
V6	2.8 LTR.		98-01	60095
V6	2.8 LTR.	AHA Eng.	1997	60095
V6	3.0 LTR.		02-05	60012
V6	3.2 LTR.		06-07	60026

A4 Quattro

L4	1.8 LTR.		97-05	60095
L4	2.0 LTR.		2017	60449
L4	2.0 LTR.		09-16	60440
L4	2.0 LTR.	BWT Eng.	07-08	60141
L4	2.0 LTR.	BPG Eng.	05-06	60141
V6	2.8 LTR.		98-01	60095
V6	3.0 LTR.		02-06	60012
V6	3.2 LTR.	CALA Eng.	2009	60440
V6	3.2 LTR.		05-09	60026

A5

L4	2.0 LTR.		10-14	60440
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A5 Quattro

L4	2.0 LTR.		10-17	60440
V6	3.2 LTR.	CALA Eng.	08-10	60440

A6

L4	2.0 LTR.		16-17	60449
L4	2.0 LTR.		12-15	60440
V6	2.8 LTR.	AHA Eng.	98-99	60095
V6	2.8 LTR.	ATQ Eng.	00-01	60095
V6	3.0 LTR.		02-04	60012
V6	3.2 LTR.		2006	60026
V6	3.2 LTR.		07-11	60440

CYL	APPLICATION	NOTES	YEAR	KARLYN #
A6 Quattro				
L4	2.0 LTR.		16-17	60449
L4	2.0 LTR.		13-15	60440
V6	2.7 LTR.		00-04	60095
V6	2.8 LTR.	AHA Eng.	98-99	60095
V6	2.8 LTR.	ATQ Eng.	00-01	60095
V6	3.0 LTR.		09-15	60440
V6	3.0 LTR.		02-04	60012
V6	3.0 LTR. Supercharged		16-17	60449
V6	3.0 LTR. Turbo Diesel		2016	60440
V6	3.2 LTR.		07-08	60440
V8	4.2 LTR.	ART Eng.	2000	60095
V8	4.2 LTR.	BVJ Eng.	07-11	60440
V8	4.2 LTR.		05-06	60026
V8	4.2 LTR.	AWN Eng.	01-04	60095
A7 Quattro				
V6	3.0 LTR.		12-17	60440
A8				
V8	3.7 LTR.		97-99	60095
A8 Quattro				
V6	3.0 LTR.		13-15	60440
V6	3.0 LTR. Supercharged		16-17	60449
V6	3.0 LTR. Turbo Diesel		2016	60440
W12	3.6 LTR.		12-15	60011
V8	4.0 LTR.		13-17	60449
V8	4.2 LTR.		97-06	60095
V8	4.2 LTR.		07-12	60440
W12	6.0 LTR.		05-09	60106
Allroad				
L4	2.0 LTR.		13-16	60440
Allroad Quattro				
V6	2.7 LTR.		01-05	60095
V8	4.2 LTR.	Left side	03-05	60026
V8	4.2 LTR.	Right side	03-05	60012
Q3				
L4	2.0 LTR.	CCTA Eng.	15-16	60440
Q3 Quattro				
L4	2.0 LTR.	CCTA Eng.	15-16	60440
Q5				
L4	2.0 LTR.	CPMA Eng.	2013	60440
L4	2.0 LTR.	CPMB Eng.	14-17	60440
L4	2.0 LTR.		11-16	60440
V6	3.0 LTR.	CPNB Eng.	14-17	60440
V6	3.0 LTR.	CTUC Eng.	13-17	60440
V6	3.2 LTR.	CALB Eng.	09-12	60440

CYL	APPLICATION	NOTES	YEAR	KARLYN #
Q7				
V6	3.0 LTR.		2017	60449
V6	3.0 LTR.	CJWE Eng.	2012	60440
V6	3.0 LTR.	CJWC Eng.	2011	60440
V6	3.0 LTR.	CNRB Eng.	13-15	60440
V6	3.0 LTR.	CTWA Eng.	13-15	60440
V6	3.0 LTR.	CTWB Eng.	13-15	60440
V6	3.0 LTR.	CJWB Eng.	11-12	60440
V6	3.0 LTR.	CATA Eng.	09-12	60440
V6	3.6 LTR.		07-10	60011
V8	4.2 LTR.	BAR Eng.	07-10	60440
R8				
V8	4.2 LTR.		11-15	60440
V8	4.2 LTR.	BYH Eng.	08-10	60440
V10	5.2 LTR.		2017	60449
V10	5.2 LTR.	BUJ Eng.	2010	60440
V10	5.2 LTR.		11-15	60440
RS4				
V8	4.2 LTR.	BNS Eng.	07-08	60440
RS5				
V8	4.2 LTR.		13-15	60440
RS6				
V8	4.2 LTR.		2003	60095
RS7				
V8	4.0 LTR.		14-17	60449
S3				
L4	2.0 LTR.		15-17	60449
S4				
V6	2.7 LTR.		00-02	60095
V6	3.0 LTR.	CGXC Eng.	2013	60440
V6	3.0 LTR.	CTUB Eng.	14-16	60440
V6	3.0 LTR.	CCBA Eng.	10-12	60440
V8	4.2 LTR.	Left side	04-09	60026
V8	4.2 LTR.	Right side	04-09	60012
S5				
V6	3.0 LTR.		10-17	60440
V8	4.2 LTR.		2012	60440
V8	4.2 LTR.	CAUA Eng.	08-11	60440
S6				
V8	4.0 LTR.		13-17	60449
V8	4.2 LTR.		02-03	60095
V10	5.2 LTR.	BXA Eng.	07-11	60440
S7				
V8	4.0 LTR.		13-17	60449

CYL	APPLICATION	NOTES	YEAR	KARLYN #
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S8

V8	4.0 LTR.		13-17	60449
V8	4.2 LTR.		01-03	60095
V10	5.2 LTR.	BSM Eng.	07-09	60440

SQ5

V6	3.0 LTR.		14-17	60440
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TT

L4	1.8 LTR.		00-06	60095
L4	2.0 LTR.	CCTA Eng.	2009	60440
L4	2.0 LTR.	BPY Eng.	08-09	60141

TT Quattro

L4	1.8 LTR.		00-06	60095
L4	2.0 LTR.		16-17	60449
L4	2.0 LTR.	CETA Eng.	11-15	60440
L4	2.0 LTR.	CDMA Eng.	09-15	60012
L4	2.0 LTR.	CCTA Eng.	09-10	60440
L5	2.5 LTR.	CEPB Eng.	12-13	60440
V6	3.2 LTR.		08-09	60011
V6	3.2 LTR.		04-06	60106

BMW

1 Series M

L6	3.0 LTR.	Use 12 14 1 748 398 O-ring	2011	60015
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128i

L6	3.0 LTR.	Use 12 14 1 748 398 O-ring	08-13	60015
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135i

L6	3.0 LTR.	Use 12 14 1 748 398 O-ring	08-13	60015
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228i

L4	2.0 LTR.	Use 12 14 1 748 398 O-ring	14-16	60015
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228i xDrive

L4	2.0 LTR.	Use 12 14 1 748 398 O-ring	15-16	60015
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318i

L4	1.9 LTR.		96-98	60149
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318is

L4	1.9 LTR.		96-97	60149
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318ti

L4	1.9 LTR.		96-99	60149
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320i

L4	2.0 LTR.	Use 12 14 1 748 398 O-ring	13-18	60015
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320i xDrive

L4	2.0 LTR.	Use 12 14 1 748 398 O-ring	13-18	60015
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323Ci

L6	2.5 LTR.		2000	60043
L6	2.5 LTR.		2000	60139

CYL	APPLICATION	NOTES	YEAR	KARLYN #
323i				
L6	2.5 LTR.	Exhaust side	99-00	60043
L6	2.5 LTR.	Intake side	99-00	60139
L6	2.5 LTR.	Convertible	98-99	60138
323is				
L6	2.5 LTR.		98-99	60138
325Ci				
L6	2.5 LTR.	Exhaust side	01-06	60043
L6	2.5 LTR.	Intake side	01-06	60139
325i				
L6	2.5 LTR.		93-95	60156
L6	2.5 LTR.	Exhaust side	01-05	60043
L6	2.5 LTR.	Intake side	01-05	60139
L6	3.0 LTR.	Use 12 14 1 748 398 O-ring	2006	60015
325is				
L6	2.5 LTR.		93-95	60156
325xi				
L6	2.5 LTR.	Exhaust side	01-05	60043
L6	2.5 LTR.	Intake side	01-05	60139
L6	3.0 LTR.	Use 12 14 1 748 398 O-ring	2006	60015
328Ci				
L6	2.8 LTR.	Exhaust side	2000	60043
L6	2.8 LTR.	Intake side	2000	60139
328i				
L4	2.0 LTR.	Use 12 14 1 748 398 O-ring	12-16	60015
L6	2.8 LTR.	Exhaust Side	99-00	60043
L6	2.8 LTR.	Intake side	99-00	60139
L6	2.8 LTR.	Convertible	96-99	60138
L6	3.0 LTR.	Use 12 14 1 748 398 O-ring	07-13	60015
328i GT xDrive				
L4	2.0 LTR.	Use 12 14 1 748 398 O-ring	14-16	60015
328i xDrive				
L4	2.0 LTR.	Use 12 14 1 748 398 O-ring	13-16	60015
L6	3.0 LTR.	Use 12 14 1 748 398 O-ring	09-13	60015
328is				
L6	2.8 LTR.		96-99	60138
328xi				
L6	3.0 LTR.	Use 12 14 1 748 398 O-ring	07-08	60015
330Ci				
L6	3.0 LTR.	Exhaust side	01-06	60043
L6	3.0 LTR.	Intake side	01-06	60139
330i				
L6	3.0 LTR.	Use 12 14 1 748 398 O-ring	2006	60015
L6	3.0 LTR.	Exhaust side	01-05	60043
L6	3.0 LTR.	Intake side	01-05	60139

CYL	APPLICATION	NOTES	YEAR	KARLYN #
330xi				
L6	3.0 LTR.	Use 12 14 1 748 398 O-ring	2006	60015
L6	3.0 LTR.	Exhaust side	01-05	60043
L6	3.0 LTR.	Intake side	01-05	60139
335i				
L6	3.0 LTR.	Use 12 14 1 748 398 O-ring	07-15	60015
335i GT xDrive				
L6	3.0 LTR.	Use 12 14 1 748 398 O-ring	14-16	60015
335i xDrive				
L6	3.0 LTR.	Use 12 14 1 748 398 O-ring	09-15	60015
335is				
L6	3.0 LTR.	Use 12 14 1 748 398 O-ring	11-13	60015
335xi				
L6	3.0 LTR.	Use 12 14 1 748 398 O-ring	07-08	60015
428i				
L4	2.0 LTR.	Use 12 14 1 748 398 O-ring	14-16	60015
428i Gran Coupe				
L4	2.0 LTR.	Use 12 14 1 748 398 O-ring	15-16	60015
428i xDrive				
L4	2.0 LTR.	Use 12 14 1 748 398 O-ring	14-16	60015
428i xDrive Gran Coupe				
L4	2.0 LTR.	Use 12 14 1 748 398 O-ring	15-16	60015
435 xDrive Gran Coupe				
L6	3.0 LTR.	Use 12 14 1 748 398 O-ring	15-16	60015
435i				
L6	3.0 LTR.	Use 12 14 1 748 398 O-ring	14-16	60015
435i Gran Coupe				
L6	3.0 LTR.	Use 12 14 1 748 398 O-ring	15-16	60015
435i xDrive				
L6	3.0 LTR.	Use 12 14 1 748 398 O-ring	14-16	60015
525i				
L6	2.5 LTR.		93-95	60156
L6	2.5 LTR.	Exhaust side	01-05	60043
L6	2.5 LTR.	Intake side	01-05	60139
L6	3.0 LTR.	Use 12 14 1 748 398 O-ring	06-07	60015
525xi				
L6	3.0 LTR.	Use 12 14 1 748 398 O-ring	06-07	60015
528i				
L4	2.0 LTR.	Use 12 14 1 748 398 O-ring	12-16	60015
L6	2.8 LTR.	Exhaust side	99-00	60043
L6	2.8 LTR.	Intake side	99-00	60139
L6	2.8 LTR.		97-98	60138
L6	3.0 LTR.	Use 12 14 1 748 398 O-ring	08-11	60015

CYL	APPLICATION	NOTES	YEAR	KARLYN #
528i xDrive				
L4	2.0 LTR.	Use 12 14 1 748 398 O-ring	12-16	60015
L6	3.0 LTR.	Use 12 14 1 748 398 O-ring	09-10	60015
528xi				
L6	3.0 LTR.	Use 12 14 1 748 398 O-ring	2008	60015
530i				
L6	3.0 LTR.	Use 12 14 1 748 398 O-ring	06-07	60015
L6	3.0 LTR.	Exhaust side	01-05	60043
L6	3.0 LTR.	Intake side	01-05	60139
530xi				
L6	3.0 LTR.	Use 12 14 1 748 398 O-ring	06-07	60015
535 xDrive				
L6	3.0 LTR.	Use 12 14 1 748 398 O-ring	09-15	60015
535i				
L6	3.0 LTR.	Use 12 14 1 748 398 O-ring	08-16	60015
535i GT				
L6	3.0 LTR.	Use 12 14 1 748 398 O-ring	10-17	60015
535i GT xDrive				
L6	3.0 LTR.	Use 12 14 1 748 398 O-ring	11-16	60015
535xi				
L6	3.0 LTR.	Use 12 14 1 748 398 O-ring	2008	60015
540i				
V8	4.4 LTR.		99-03	60101
545i				
V8	4.4 LTR.		04-05	60043
550i				
V8	4.4 LTR.	Use 12 14 1 748 398 O-ring	11-16	60015
V8	4.8 LTR.	Use 12 14 1 748 398 O-ring	06-10	60015
550i GT				
V8	4.4 LTR.	Use 12 14 1 748 398 O-ring	10-15	60015
550i GT xDrive				
V8	4.4 LTR.	Use 12 14 1 748 398 O-ring	10-17	60015
550i xDrive				
V8	4.4 LTR.	Use 12 14 1 748 398 O-ring	11-16	60015
640i				
L6	3.0 LTR.	Use 12 14 1 748 398 O-ring	12-17	60015
640i Gran Coupe				
L6	3.0 LTR.	Use 12 14 1 748 398 O-ring	13-17	60015
640i xDrive				
L6	3.0 LTR.	Use 12 14 1 748 398 O-ring	14-17	60015
640i xDrive Gran Coupe				
L6	3.0 LTR.	Use 12 14 1 748 398 O-ring	14-17	60015

CYL	APPLICATION	NOTES	YEAR	KARLYN #
645Ci				
V8	4.4 LTR.		04-05	60043
650 i xDrive				
V8	4.4 LTR.	Use 12 14 1 748 398 O-ring	12-17	60015
650i				
V8	4.4 LTR.	Use 12 14 1 748 398 O-ring	12-17	60015
V8	4.8 LTR.	Use 12 14 1 748 398 O-ring	06-10	60015
650i Gran Coupe				
V8	4.4 LTR.	Use 12 14 1 748 398 O-ring	13-17	60015
650i xDrive Gran Coupe				
V8	4.4 LTR.	Use 12 14 1 748 398 O-ring	13-17	60015
740i				
L6	3.0 LTR.	Use 12 14 1 748 398 O-ring	11-15	60015
V8	4.4 LTR.		99-01	60101
740iL				
V8	4.4 LTR.		99-01	60101
740Li				
L6	3.0 LTR.	Use 12 14 1 748 398 O-ring	11-15	60015
740Li xDrive				
L6	3.0 LTR.	Use 12 14 1 748 398 O-ring	13-15	60015
745i				
V8	4.4 LTR.		02-05	60043
745Li				
V8	4.4 LTR.		02-05	60043
750i				
V8	4.4 LTR.	Use 12 14 1 748 398 O-ring	09-17	60015
V8	4.8 LTR.	Use 12 14 1 748 398 O-ring	06-08	60015
750i xDrive				
V8	4.4 LTR.	Use 12 14 1 748 398 O-ring	10-17	60015
750iL				
V12	5.4 LTR.		98-01	60154
750Li				
V8	4.4 LTR.	Use 12 14 1 748 398 O-ring	09-15	60015
V8	4.8 LTR.	Use 12 14 1 748 398 O-ring	06-08	60015
750Li xDrive				
V8	4.4 LTR.	Use 12 14 1 748 398 O-ring	10-15	60015
760Li				
V12	6.0 LTR.	Use 12 14 1 748 398 O-ring	10-15	60015
ActiveHybrid 3				
L6	3.0 LTR.	Use 12 14 1 748 398 O-ring	13-15	60015
ActiveHybrid 5				
L6	3.0 LTR.	Use 12 14 1 748 398 O-ring	12-16	60015

CYL	APPLICATION	NOTES	YEAR	KARLYN #
ActiveHybrid 7				
L6	3.0 LTR.	Use 12 14 1 748 398 O-ring	13-15	60015
Alpina B6 xDrive Gran Coupe				
V8	4.4 LTR.	Use 12 14 1 748 398 O-ring	15-17	60015
Alpina B7				
V8	4.4 LTR.	Use 12 14 1 748 398 O-ring	11-15	60015
V8	4.4 LTR.		07-08	60043
Alpina B7 xDrive				
V8	4.4 LTR.	Use 12 14 1 748 398 O-ring	11-15	60015
Alpina B7L				
V8	4.4 LTR.	Use 12 14 1 748 398 O-ring	11-15	60015
Alpina B7L xDrive				
V8	4.4 LTR.	Use 12 14 1 748 398 O-ring	11-15	60015
M2				
L6	3.0 LTR.	Use 12 14 1 748 398 O-ring	16-18	60015
M235i				
L6	3.0 LTR.	Use 12 14 1 748 398 O-ring	14-16	60015
M235i xDrive				
L6	3.0 LTR.	Use 12 14 1 748 398 O-ring	15-16	60015
M3				
L6	3.0 LTR.		1995	60156
L6	3.0 LTR.	Use 12 14 1 748 398 O-ring	15-18	60015
L6	3.2 LTR.		96-99	60138
L6	3.2 LTR.	Exhaust side	01-06	60005
V8	4.0 LTR.		08-13	60093
M4				
L6	3.0 LTR.	Use 12 14 1 748 398 O-ring	15-18	60015
M5				
V8	4.4 LTR.	Use 12 14 1 748 398 O-ring	13-16	60015
V8	5.0 LTR.	Exhaust side	00-03	60005
M6				
V8	4.4 LTR.	Use 12 14 1 748 398 O-ring	12-17	60015
M6 Gran Coupe				
V8	4.4 LTR.	Use 12 14 1 748 398 O-ring	14-17	60015
X1				
L4	2.0 LTR.	Use 12 14 1 748 398 O-ring	13-15	60015
L6	3.0 LTR.	Use 12 14 1 748 398 O-ring	13-15	60015
X3				
L4	2.0 LTR.	Use 12 14 1 748 398 O-ring	13-17	60015
L6	2.5 LTR.	Exhaust side	04-05	60043
L6	2.5 LTR.	Intake side	04-05	60139
L6	3.0 LTR.	Use 12 14 1 748 398 O-ring	07-17	60015
L6	3.0 LTR.	Exhaust side	04-06	60043
L6	3.0 LTR.	Intake side	04-06	60139

CYL	APPLICATION	NOTES	YEAR	KARLYN #
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X4

L4	2.0 LTR.	Use 12 14 1 748 398 O-ring	15-17	60015
L6	3.0 LTR.	Use 12 14 1 748 398 O-ring	15-17	60015

X5

L6	3.0 LTR.	Use 12 14 1 748 398 O-ring	07-17	60015
L6	3.0 LTR.	Exhaust side	01-06	60043
L6	3.0 LTR.	Intake side	01-06	60139
V8	4.4 LTR.	Use 12 14 1 748 398 O-ring	10-17	60015
V8	4.4 LTR.		04-06	60043
V8	4.4 LTR.		00-03	60101
V8	4.6 LTR.		02-03	60101
V8	4.8 LTR.	Use 12 14 1 748 398 O-ring	07-10	60015
V8	4.8 LTR.		04-06	60043

X6

L6	3.0 LTR.	Use 12 14 1 748 398 O-ring	08-17	60015
V8	4.4 LTR.	Use 12 14 1 748 398 O-ring	08-17	60015

Z3

L4	1.9 LTR.		96-98	60149
L6	2.5 LTR.	Exhaust side	99-02	60043
L6	2.5 LTR.	Intake side	99-02	60139
L6	2.8 LTR.	Exhaust side	99-00	60043
L6	2.8 LTR.	Intake side	99-00	60139
L6	2.8 LTR.		97-98	60138
L6	3.0 LTR.	Exhaust side	01-02	60043
L6	3.0 LTR.	Intake Side	01-02	60139
L6	3.2 LTR.		98-00	60138
L6	3.2 LTR.	Exhaust side	01-02	60005

Z4

L4	2.0 LTR.	Use 12 14 1 748 398 O-ring	12-16	60015
L6	2.5 LTR.	Exhaust side	03-05	60043
L6	2.5 LTR.	Intake side	03-05	60139
L6	3.0 LTR.	Use 12 14 1 748 398 O-ring	06-16	60015
L6	3.0 LTR.	Exhaust side	03-05	60043
L6	3.0 LTR.	Intake side	03-05	60139
L6	3.2 LTR.	Exhaust side	06-08	60005

Z8

V8	4.8 LTR.		2003	60101
V8	5.0 LTR.	Exhaust side	00-03	60005

CHEVROLET

Prizm

L4	1.8 LTR.		98-01	60067
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CHRYSLER

300

V8	5.7 LTR.		05-07	60072
V8	6.1 LTR.		05-07	60072

CYL	APPLICATION	NOTES	YEAR	KARLYN #
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Aspen

V8	4.7 LTR.		2007	60072
V8	5.7 LTR.		2007	60072

DODGE

Charger

V8	5.7 LTR.		06-08	60072
V8	6.1 LTR.		06-08	60072

Dakota

V8	4.7 LTR.		00-07	60072
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Durango

V8	4.7 LTR.		00-07	60072
V8	5.7 LTR.		04-07	60072

Magnum

V8	5.7 LTR.		05-07	60072
V8	6.1 LTR.		06-07	60072

Nitro

V6	3.7 LTR.		2007	60072
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Ram 1500

V6	3.7 LTR.		02-08	60072
V8	4.7 LTR.		02-06	60072
V8	5.7 LTR.		06-07	60072

Ram 2500

V8	5.7 LTR.		03-07	60072
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Ram 3500

V8	5.7 LTR.		03-07	60072
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Sprinter 2500

L5	2.7 LTR.		2006	60041
V6	3.0 LTR.		08-09	60041

Sprinter 3500

L5	2.7 LTR.		2006	60041
V6	3.0 LTR.		08-09	60041

HONDA

Accord

L4	2.4 LTR.		08-12	60450
L4	2.4 LTR.	Exhaust side	03-07	60133
L4	2.4 LTR.	Intake side	03-07	60147
V6	3.0 LTR.		03-07	60131

Civic

L4	1.3 LTR.		03-11	60133
L4	1.7 LTR.		01-05	60132
L4	2.0 LTR.	Intake side	06-11	60147
L4	2.0 LTR.	Exhaust side	02-11	60133
L4	2.4 LTR.		12-15	60450

CYL	APPLICATION	NOTES	YEAR	KARLYN #
Crosstour				
L4	2.4 LTR.		12-15	60450
CR-V				
L4	2.4 LTR.		10-14	60450
L4	2.4 LTR.	Intake side	07-09	60147
L4	2.4 LTR.	Exhaust side	02-09	60133
Element				
L4	2.4 LTR.	Exhaust side	03-11	60133
L4	2.4 LTR.	Intake side	03-11	60147
Fit				
L4	1.5 LTR.		07-08	60133
Odyssey				
V6	3.5 LTR.		05-10	60131
Pilot				
V6	3.5 LTR.		05-08	60131
Ridgeline				
V6	3.5 LTR.		06-08	60131

HYUNDAI

Azera				
V6	3.3 LTR.		07-14	60073
V6	3.8 LTR.		06-11	60073
Elantra				
L4	1.8 LTR.		11-15	60129
L4	2.0 LTR.		14-15	60129
L4	2.0 LTR.		04-12	60129
Elantra Coupe				
L4	1.8 LTR.		2013	60129
L4	2.0 LTR.		2014	60129
Elantra GT				
L4	1.8 LTR.		2013	60129
L4	2.0 LTR.		2014	60129
Entourage				
V6	3.8 LTR.		07-08	60073
Genesis				
V6	3.8 LTR.		09-14	60073
Genesis Coupe				
L4	2.0 LTR.		10-14	60030
V6	3.8 LTR.	J Eng., Left side	13-15	60073
V6	3.8 LTR.		10-12	60073
Santa Fe				
L4	2.4 LTR.		10-12	60030
V6	2.7 LTR.		01-06	60124
V6	3.3 LTR.		07-09	60073
V6	3.5 LTR.		10-12	60073

CYL	APPLICATION	NOTES	YEAR	KARLYN #
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Santa Fe Sport

L4	2.0 LTR.		13-14	60030
L4	2.4 LTR.		13-14	60030

Sonata

L4	2.0 LTR.		11-14	60030
L4	2.4 LTR.		2005	60124
L4	2.4 LTR.		06-15	60030
V6	2.5 LTR.		99-01	60124
V6	2.7 LTR.		02-05	60124
V6	3.3 LTR.		06-10	60073

Tiburon

L4	2.0 LTR.		04-08	60129
V6	2.7 LTR.		03-08	60124

Tucson

L4	2.0 LTR.		11-15	60030
L4	2.0 LTR.		05-09	60129
L4	2.4 LTR.		10-15	60030
V6	2.7 LTR.		05-09	60124

Veracruz

V6	3.8 LTR.		07-12	60073
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INFINITI

EX35

V6	3.5 LTR.		08-12	60076
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EX37

V6	3.7 LTR.		2013	60512
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FX35

V6	3.5 LTR.		09-12	60076
V6	3.5 LTR.	Left side	03-08	60040
V6	3.5 LTR.	Right side	03-08	60102

FX37

V6	3.7 LTR.		2013	60512
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FX45

V8	4.5 LTR.		03-08	60040
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G25

V6	2.5 LTR.	VQ25HR Eng.	11-12	60076
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G35

V6	3.5 LTR.	VQ35HR Eng.	07-08	60076
V6	3.5 LTR.	VQ35DE Eng., Left side	03-07	60040
V6	3.5 LTR.	VQ35DE Eng., Right side	03-07	60102

G37

V6	3.7 LTR.		08-13	60512
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I35

V6	3.5 LTR.	Left side	02-04	60040
V6	3.5 LTR.	Right side	02-04	60102

CYL	APPLICATION	NOTES	YEAR	KARLYN #
JX35				
V6	3.5 LTR.		2013	60076
M35				
V6	3.5 LTR.		09-10	60076
V6	3.5 LTR.	Left side	06-08	60040
V6	3.5 LTR.	Right side	06-08	60102
M35h				
V6	3.5 LTR.	VQ35HR Eng.	12-13	60076
M37				
V6	3.7 LTR.		11-13	60512
M45				
V8	4.5 LTR.		06-10	60040
V8	4.5 LTR.	VK45DE Eng.	06-10	60040
V8	4.5 LTR.		03-04	60040
Q45				
V8	4.5 LTR.		02-06	60040
Q50				
L4	2.0 LTR.		2018	60451
L4	2.0 LTR. Turbo		16-17	60451
V6	3.5 LTR.		14-15	60076
V6	3.7 LTR.		2014	60512
Q60				
L4	2.0 LTR.		17-18	60451
V6	3.7 LTR.		14-15	60512
Q70				
V6	3.5 LTR.		14-15	60076
V6	3.7 LTR.		2014	60512
QX30				
L4	2.0 LTR.		17-18	60451
QX4				
V6	3.5 LTR.		01-03	60135
QX50				
V6	3.7 LTR.		14-17	60512
QX56				
V8	5.6 LTR.		04-10	60040
QX60				
V6	3.5 LTR.		14-15	60076
QX70				
V6	3.7 LTR.		2014	60512

JAGUAR

F-Type				
V6	3.0 LTR.		14-17	60034
V8	5.0 LTR.		14-16	60034

CYL	APPLICATION	NOTES	YEAR	KARLYN #
S-Type				
V6	3.0 LTR.		03-08	60058
XF				
V6	3.0 LTR.		13-17	60034
V8	5.0 LTR.		10-15	60034
XFR				
V8	5.0 LTR.		10-15	60034
XFR-S				
V8	5.0 LTR.		13-15	60034
XJ				
V6	3.0 LTR.		13-17	60034
V8	5.0 LTR.		10-15	60034
XJR				
V8	5.0 LTR.		14-17	60034
XK				
V8	5.0 LTR.		10-15	60034
XKR				
V8	5.0 LTR.		10-15	60034
XKR-S				
V8	5.0 LTR.		12-15	60034
X-Type				
V6	2.5 LTR.		02-05	60058
V6	3.0 LTR.		02-08	60058

JEEP

Commander				
V6	3.7 LTR.		06-07	60072
V8	4.7 LTR.		06-07	60072
V8	5.7 LTR.		06-07	60072
Grand Cherokee				
V6	3.0 LTR.		07-09	60041
V8	4.7 LTR.		99-07	60072
Liberty				
V6	3.7 LTR.		02-07	60072

KIA

Amanti				
V6	3.8 LTR.		07-09	60073
Borrego				
V6	3.8 LTR.		2009	60073
Cadenza				
V6	3.3 LTR.	Left side	14-15	60073

CYL	APPLICATION	NOTES	YEAR	KARLYN #
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Forte

L4	1.8 LTR.		14-15	60129
L4	2.0 LTR.		14-15	60129
L4	2.0 LTR.		10-13	60030
L4	2.4 LTR.		10-13	60030

Forte Koup

L4	2.0 LTR.		14-15	60129
L4	2.0 LTR.		10-13	60030
L4	2.4 LTR.		10-13	60030

Optima

L4	2.0 LTR.		11-15	60030
L4	2.4 LTR.		06-15	60030
V6	2.5 LTR.		2001	60124
V6	2.7 LTR.		02-05	60124

Rondo

L4	2.4 LTR.		07-12	60030
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Sedona

V6	3.5 LTR.		11-14	60073
V6	3.8 LTR.		06-10	60073

Sorento

L4	2.4 LTR.		11-15	60030
V6	3.3 LTR.		08-09	60073
V6	3.5 LTR.		11-13	60073
V6	3.5 LTR.		03-06	60074
V6	3.8 LTR.		07-09	60073

Soul

L4	2.0 LTR.		10-15	60129
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Spectra

L4	1.8 LTR.		2004	60129
L4	2.0 LTR.		04-09	60129

Spectra5

L4	2.0 LTR.		05-09	60129
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Sportage

L4	2.0 LTR.		95-02	60112
L4	2.0 LTR.		11-15	60030
L4	2.0 LTR.		06-10	60129
L4	2.4 LTR.		11-15	60030

LAND ROVER

LR2

L6	3.2 LTR.		08-12	60034
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LR3

V8	4.4 LTR.		05-09	60150
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CYL	APPLICATION	NOTES	YEAR	KARLYN #
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LR4

V6	3.0 LTR.		14-16	60034
V8	5.0 LTR.		10-13	60034

Range Rover

V6	3.0 LTR.		14-18	60034
V8	4.2 LTR.	Right side	06-09	60150
V8	4.4 LTR.	Right side	06-09	60150
V8	4.4 LTR.		03-05	60101
V8	5.0 LTR.		10-18	60034

Range Rover Sport

V6	3.0 LTR.		14-18	60034
V8	4.2 LTR.	Right side	06-09	60150
V8	4.4 LTR.	Right side	06-09	60150
V8	5.0 LTR.		10-18	60034

LEXUS

CT200h

L4	1.8 LTR.		11-16	60033
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ES300

V6	3.0 LTR.	Right side	99-03	60067
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ES300h

L4	2.5 LTR.		13-16	60033
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ES330

V6	3.3 LTR.	3MZ-FE Eng.	04-06	60067
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ES350

V6	3.5 LTR.	2GRFE Eng.	07-16	60033
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GS F

V8	5.0 LTR.		2016	60033
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GS300

V6	3.0 LTR.	3GR-FSE Eng.	2006	60033
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GS350

V6	3.5 LTR.	2GR-FSE Eng.	07-15	60033
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GS400

V7	4.0 LTR.	1UZ-FE Eng.	98-00	60032
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GS430

V8	4.3 LTR.	3UZ-FE Eng.	01-07	60032
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GS450h

V6	3.5 LTR.	2GR-FXE Eng.	13-16	60033
V6	3.5 LTR.	2GR-FSE Eng.	07-11	60033

GS460

V8	4.6 LTR.	1UR-FSE Eng.	08-11	60033
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GX460

V8	4.6 LTR.	1UR-FE Eng.	10-16	60033
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CYL	APPLICATION	NOTES	YEAR	KARLYN #
GX470				
V8	4.7 LTR.		05-09	60032
HS250h				
L4	2.4 LTR.	2AZ-FXE Eng.	10-12	60067
IS F				
V8	5.0 LTR.	2UR-GSE Eng.	08-14	60033
IS250				
V6	2.5 LTR.	4GR-FSE Eng.	06-15	60033
IS300				
V6	3.5 LTR.		2016	60033
IS350				
V6	3.5 LTR.	2GR-FSE Eng.	06-16	60033
LS400				
V8	4.0 LTR.	1UZ-FE Eng.	98-00	60032
LS430				
V8	4.3 LTR.	3UZ-FE Eng.	01-06	60032
LS460				
V8	4.6 LTR.	1UR-FSE Eng.	07-16	60033
LS600h				
V8	5.0 LTR.		08-16	60033
LX470				
V8	4.7 LTR.		05-07	60032
LX570				
V8	5.7 LTR.		08-16	60033
NX300h				
L4	2.5 LTR.		15-16	60033
RC F				
V8	5.0 LTR.		15-16	60033
RC300				
V6	3.5 LTR.		2016	60033
RC350				
V6	3.5 LTR.		15-16	60033
RX300				
V6	3.0 LTR.	1MZ-FE Eng.	99-03	60067
RX330				
V6	3.3 LTR.	3MZ-FE Eng.	04-06	60067
RX350				
V6	3.5 LTR.		15-16	60033
V6	3.5 LTR.	2GRFE Eng.	07-14	60033
RX400h				
V6	3.3 LTR.	3MZ-FE Eng.	06-08	60067

CYL	APPLICATION	NOTES	YEAR	KARLYN #
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RX450h

V6	3.5 LTR.		2016	60033
V6	3.5 LTR.	2GR-FXE Eng.	10-15	60033

SC400

V8	4.0 LTR.	1UZ-FE Eng.	98-00	60032
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SC430

V8	4.3 LTR.	3UZ-FE Eng.	02-10	60032
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LINCOLN

LS

V6	3.0 LTR.		02-05	60058
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MAZDA

3

L4	2.3 LTR.		07-13	60003
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6

L4	2.3 LTR.		06-07	60003
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CX-7

L4	2.3 LTR.		07-12	60003
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MERCEDES-BENZ

AMG GT

V8	4.0 LTR.		17-18	60451
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AMG GT C

V8	4.0 LTR.		2018	60451
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AMG GT R

V8	4.0 LTR.		2018	60451
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AMG GT S

V8	4.0 LTR.		16-18	60451
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B250

L4	2.0 LTR.		13-19	60451
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C230

L4	1.8 LTR.		03-05	60168
L4	2.3 LTR.		97-00	60050

C240

V6	2.6 LTR.		01-05	60168
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C250

L4	1.8 LTR.		12-15	60437
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C280

V6	2.8 LTR.		98-99	60168
L6	2.8 LTR.		1997	60050

C300

L4	2.0 LTR.		15-18	60451
V6	3.0 LTR.		11-12	60437

CYL	APPLICATION	NOTES	YEAR	KARLYN #
C32 AMG				
V6	3.2 LTR.		02-04	60168
C320				
V6	3.2 LTR.		01-05	60168
C350e				
L4	2.0 LTR.		16-18	60451
C36 AMG				
L6	3.6 LTR.		1997	60050
C43 AMG				
V8	4.3 LTR.		98-00	60168
C63 AMG				
V8	4.0 LTR.		16-18	60451
C63 AMG S				
V8	4.0 LTR.		15-18	60451
CL500				
V8	5.0 LTR.		98-05	60168
V8	5.0 LTR.		2006	60168
CL55 AMG				
V8	5.5 LTR.		01-06	60168
CL600				
V12	5.5 LTR.		2014	60437
V12	6.0 LTR.		98-99	60168
CL65 AMG				
V12	6.0 LTR.		08-14	60437
CLA250				
L4	2.0 LTR.		14-18	60451
L4	2.0 LTR.	FLEX	14-18	60451
CLA45 AMG				
L4	2.0 LTR.		14-18	60451
CLK320				
V6	3.2 LTR.		98-05	60168
CLK430				
V8	4.3 LTR.		99-03	60168
CLK500				
V8	5.0 LTR.		03-06	60168
CLS500				
V8	5.0 LTR.		2006	60168
CLS55 AMG				
V8	5.5 LTR.		2006	60168
CLS550				
V8	5.5 LTR.		2011	60437
E300				
L4	2.0 LTR.		17-19	60451

CYL	APPLICATION	NOTES	YEAR	KARLYN #
E320				
V6	3.0 LTR.		07-09	60041
V6	3.2 LTR.		98-05	60168
L6	3.2 LTR.		96-97	60050
L6	3.2 LTR.		05-06	60041
E350				
V6	3.0 LTR.		11-13	60041
V6	3.5 LTR.		2011	60437
E420				
V8	4.2 LTR.		1997	60168
E430				
V8	4.3 LTR.		98-02	60168
E500				
V8	5.0 LTR.		03-06	60168
E55 AMG				
V8	5.5 LTR.		99-06	60168
E550				
V8	5.5 LTR.		2011	60437
E63 AMG S				
V8	4.0 LTR.		2018	60451
G500				
V8	5.0 LTR.		02-08	60168
G55 AMG				
V8	5.5 LTR.		03-11	60168
G550				
V8	4.0 LTR.		16-18	60451
V8	5.5 LTR.		11-15	60437
G550 4X4				
V8	4.0 LTR.		17-18	60451
GL320				
V6	3.0 LTR.		07-09	60041
GL350				
V6	3.0 LTR.		10-16	60041
GL450				
V8	4.6 LTR.		11-12	60437
GL550				
V8	5.5 LTR.		11-12	60437
GLA250				
L4	2.0 LTR.		15-18	60451
L4	2.0 LTR.	FLEX	15-18	60451
L4	2.0 LTR. Turbo		2016	60451
GLA45 AMG				
L4	2.0 LTR.		15-18	60451

CYL	APPLICATION	NOTES	YEAR	KARLYN #
GLC300				
L4	2.0 LTR.		16-17	60451
GLC350e				
L4	2.0 LTR.		2019	60451
GLC63				
V8	4.0 LTR.		2018	60451
GLC63 S				
V8	4.0 LTR.		2018	60451
GLK350				
V6	3.5 LTR.		11-12	60437
Maybach S560				
V8	4.0 LTR.		2018	60451
Metris				
L4	2.0 LTR.		16-18	60451
ML320				
V6	3.0 LTR.		07-09	60041
V6	3.2 LTR.		98-03	60168
ML350				
V6	3.0 LTR.		10-14	60041
V6	3.5 LTR.		11-12	60437
V6	3.7 LTR.		03-05	60168
ML430				
V8	4.3 LTR.		99-01	60168
ML450				
V6	3.5 LTR.		2011	60437
ML500				
V8	5.0 LTR.		02-07	60168
ML55 AMG				
V8	5.5 LTR.		00-03	60168
ML550				
V8	5.5 LTR.		2011	60437
R320				
V6	3.0 LTR.		07-09	60041
R350				
V6	3.0 LTR.		10-12	60041
V6	3.5 LTR.		2011	60437
R500				
V8	5.0 LTR.		06-07	60168
S320				
L6	3.2 LTR.		97-99	60050
S350				
V6	3.0 LTR.		12-13	60041

CYL	APPLICATION	NOTES	YEAR	KARLYN #
S400				
V6	3.5 LTR.		11-13	60437
S420				
V8	4.2 LTR.		96-99	60168
S430				
V8	4.3 LTR.		00-06	60168
S500				
V8	5.0 LTR.		96-06	60168
S55 AMG				
V8	5.5 LTR.		01-06	60168
S550				
V8	5.5 LTR.		2011	60437
S560				
V8	4.0 LTR.		2018	60451
S600				
V12	6.0 LTR.		96-99	60168
V12	6.0 LTR.		2015	60437
S63 AMG				
V8	4.0 LTR.		2018	60451
S65 AMG				
V12	6.0 LTR.		07-13	60437
SL320				
L6	3.2 LTR.		1997	60050
SL500				
V8	5.0 LTR.		96-06	60168
SL55 AMG				
V8	5.5 LTR.		03-08	60168
SL550				
V8	5.5 LTR.		11-12	60437
SL600				
V12	6.0 LTR.		96-02	60168
SL65 AMG				
V12	6.0 LTR.		05-14	60437
SLC300				
L4	2.0 LTR.		17-18	60451
SLK230				
L4	2.3 LTR.		98-00	60050
SLK250				
L4	1.8 LTR.		12-14	60437
SLK300				
L4	2.0 LTR.		2016	60451
V6	3.0 LTR.		2011	60437

CYL	APPLICATION	NOTES	YEAR	KARLYN #
SLK32 AMG				
V6	3.2 LTR.		02-04	60168
SLK320				
V6	3.2 LTR.		01-04	60168
SLK350				
V6	3.5 LTR.		2011	60437
Sprinter 2500				
V6	3.0 LTR.		10-17	60041
Sprinter 3500				
V6	3.0 LTR.		10-17	60041

MINI

Cooper				
L4	1.6 LTR.		07-15	60059
L4	1.6 LTR.	W10B16A Eng.	02-08	60144
L4	1.6 LTR.	W11B16A Eng.	02-08	60144
Cooper Countryman				
L4	1.6 LTR.		11-16	60059
Cooper Paceman				
L4	1.6 LTR.		13-16	60059

MITSUBISHI

Eclipse				
L4	2.4 LTR.		06-11	60029
V6	3.8 LTR.		06-11	60029
Endeavor				
V6	3.8 LTR.		04-11	60029
Galant				
L4	2.4 LTR.		04-11	60029
V6	3.8 LTR.		04-09	60029
Lancer				
L4	2.4 LTR.		04-06	60029
Outlander				
L4	2.4 LTR.		04-06	60029
Raider				
V6	3.7 LTR.		06-08	60072
V8	4.7 LTR.		06-07	60072

NISSAN

350Z				
V6	3.5 LTR.		07-09	60076
V6	3.5 LTR.	Left side	03-06	60040
V6	3.5 LTR.	Right side	03-06	60102

CYL	APPLICATION	NOTES	YEAR	KARLYN #
370Z				
V6	3.7 LTR.		09-18	60512
Altima				
L4	2.5 LTR.		07-15	60076
L4	2.5 LTR.		02-06	60165
V6	3.5 LTR.		07-15	60076
V6	3.5 LTR.	Left side	02-06	60040
V6	3.5 LTR.	Right side	02-06	60102
Armada				
V8	5.6 LTR.		05-15	60040
Cube				
L4	1.8 LTR.		09-14	60089
Frontier				
L4	2.5 LTR.		05-17	60165
V6	4.0 LTR.	Left side	05-17	60040
V6	4.0 LTR.	Right side	05-15	60102
GT-R				
V6	3.8 LTR.		09-15	60076
Maxima				
V6	3.5 LTR.		09-14	60076
V6	3.5 LTR.	Left side	02-08	60040
V6	3.5 LTR.	Right side	02-08	60102
Murano				
V6	3.5 LTR.		09-15	60076
V6	3.5 LTR.	Left side	03-07	60040
V6	3.5 LTR.	Right side	03-07	60102
NV1500				
V6	4.0 LTR.	VQ40DE Eng., Left side	12-17	60040
V6	4.0 LTR.	VQ40DE Eng., Right side	12-15	60102
NV200				
L4	2.0 LTR.		13-15	60089
NV2500				
V6	4.0 LTR.	VQ40DE Eng., Left side	12-17	60040
V6	4.0 LTR.	VQ40DE Eng., Right side	12-15	60102
V8	5.6 LTR.	VK56DE Eng.	12-17	60040
NV3500				
V6	4.0 LTR.	VQ40DE Eng., Left side	13-17	60040
V6	4.0 LTR.	VQ40DE Eng., Right side	12-15	60102
V8	5.6 LTR.	VK56DE Eng.	12-17	60040

CYL	APPLICATION	NOTES	YEAR	KARLYN #
Pathfinder				
V6	3.5 LTR.		13-15	60076
V6	3.5 LTR.		03-04	60135
V6	3.5 LTR.	Rear	01-02	60135
V6	4.0 LTR.	Left side	12-15	60040
V6	4.0 LTR.	Right side	05-12	60102
V8	5.6 LTR.		08-12	60040

Pathfinder Armada				
V8	5.6 LTR.		2004	60040

Quest				
V6	3.5 LTR.	VQ35DE Eng.	11-15	60076
V6	3.5 LTR.	Left side	04-09	60040
V6	3.5 LTR.	Right side	04-09	60102

Rogue				
L4	2.5 LTR.	QR25DE Eng.	08-17	60076

Rogue Select				
L4	2.5 LTR.		14-15	60076

Sentra				
L4	1.8 LTR.		13-17	60089
L4	1.8 LTR.		00-06	60040
L4	2.0 LTR.		07-12	60089
L4	2.5 LTR.		07-12	60076
L4	2.5 LTR.		02-06	60165

Titan				
V8	5.6 LTR.		04-15	60040

Versa				
L4	1.8 LTR.		07-12	60089

Xterra				
V6	4.0 LTR.	Left side	05-15	60040
V6	4.0 LTR.	Right side	05-15	60102

PONTIAC

Vibe				
L4	1.8 LTR.		03-08	60067
L4	2.4 LTR.		2009	60067

PORSCHE

911				
H6	3.4 LTR.		99-01	60168
H6	3.4 LTR.		12-16	60437
H6	3.6 LTR.		2002	60168
H6	3.6 LTR.		05-12	60437
H6	3.8 LTR.		05-17	60437
H6	4.0 LTR.		2011	60437

CYL	APPLICATION	NOTES	YEAR	KARLYN #
911 40th Anniversary Edition				
L6	3.6 LTR.		2004	60037
911 Carrera				
L6	3.6 LTR.		03-04	60037
911 Carrera 4				
L6	3.6 LTR.		03-04	60037
911 Carrera 4S				
L6	3.6 LTR.		03-04	60037
911 GT2				
L6	3.6 LTR. Turbo		03-05	60037
911 GT3				
L6	3.6 LTR.		04-05	60037
911 Turbo				
L6	3.6 LTR.		03-05	60037
911 Turbo S				
L6	3.6 LTR.		2005	60037
Boxster				
H6	2.5 LTR.		97-99	60168
L6	2.7 LTR.		2004	60037
H6	2.7 LTR.		13-15	60437
H6	2.7 LTR.		05-08	60437
H6	2.7 LTR.		00-02	60168
H6	2.9 LTR.		09-12	60437
H6	3.2 LTR.		03-06	60437
H6	3.2 LTR.		00-02	60168
H6	3.4 LTR.		07-16	60437
H6	3.8 LTR.		2016	60437
Boxster Roadster				
L6	2.7 LTR.		2003	60037
Boxster Roadster S				
L6	3.2 LTR.		2003	60037
Boxster S				
L6	3.2 LTR.		2004	60037
Cayenne				
V6	3.0 LTR. Supercharged	ELECTRIC/GAS	11-17	60440
V6	3.0 LTR. Turbo Diesel		11-16	60440
V6	3.2 LTR.		04-06	60106
V8	4.5 LTR.		03-06	60168
V8	4.8 LTR.	M48.51 Eng.	09-10	60437
V8	4.8 LTR.	M48.01 Eng.	08-09	60437

CYL	APPLICATION	NOTES	YEAR	KARLYN #
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Cayman

H6	2.7 LTR.		14-16	60437
H6	2.7 LTR.		07-08	60437
H6	2.9 LTR.		09-12	60437
H6	3.4 LTR.		06-16	60437
H6	3.8 LTR.		2016	60437

Panamera

V6	3.0 LTR. Supercharged	ELECTRIC/GAS	12-16	60440
V6	3.0 LTR. Turbo Diesel		12-16	60440

SCION

iM

L4	1.8 LTR.		2016	60033
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iQ

L4	1.3 LTR.		12-15	60033
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tC

L4	2.4 LTR.		05-10	60067
L4	2.5 LTR.		11-16	60033

xB

L4	2.4 LTR.		08-15	60067
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xD

L4	1.8 LTR.		08-14	60033
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SUBARU

BRZ

H4	2.0 LTR.		13-15	60146
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Forester

H4	2.0 LTR.		14-15	60146
H4	2.5 LTR.		11-15	60146

Impreza

H4	2.0 LTR.		12-15	60146
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Legacy

H4	2.5 LTR.		13-15	60146
H6	3.6 LTR.		10-15	60046

Outback

H4	2.5 LTR.		13-15	60146
H6	3.6 LTR.		10-15	60046

Tribeca

H6	3.6 LTR.		08-14	60046
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WRX

H4	2.0 LTR.		2015	60146
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XV Crosstrek

H4	2.0 LTR.		13-15	60146
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CYL	APPLICATION	NOTES	YEAR	KARLYN #
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TOYOTA

4Runner

L4	2.7 LTR.	3RZ-FE Eng.	97-00	60067
L4	2.7 LTR.	2TR-FE Eng.	2010	60032
V6	4.0 LTR.	1GR-FE Eng.	05-17	60033
V6	4.0 LTR.	1GR-FE Eng.	03-04	60067
V8	4.7 LTR.		05-09	60032

Avalon

L4	2.5 LTR.	2AR-FXE Eng.	13-17	60033
V6	3.0 LTR.	1MZ-FE Eng.	00-04	60067
V6	3.5 LTR.	2GRFE Eng.	05-17	60033

Camry

L4	2.2 LTR.	5S-FE Eng.	97-01	60119
L4	2.2 LTR.	5S-FNE Eng.	00-01	60119
L4	2.4 LTR.		02-11	60067
L4	2.5 LTR.	2AR-FXE Eng.	13-17	60033
L4	2.5 LTR.	2AR-FE Eng.	10-17	60033
V6	3.0 LTR.	1MZ-FE Eng.	03-06	60067
V6	3.3 LTR.	3MZ-FE Eng.	04-06	60067
V6	3.5 LTR.	2GRFE Eng.	07-17	60033

Celica

L4	1.8 LTR.	1ZZ-FE Eng.	00-05	60067
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Corolla

L4	1.8 LTR.	1ZZ-FE Eng.	98-08	60067
L4	1.8 LTR.	2ZR-FAE Eng.	14-17	60033
L4	1.8 LTR.		09-17	60033
L4	2.4 LTR.	2AZ-FE Eng.	09-10	60067

FJ Cruiser

V6	4.0 LTR.	1GR-FE Eng.	07-14	60033
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Highlander

L4	2.4 LTR.	2AZ-FE Eng.	01-07	60067
L4	2.7 LTR.	1AR-FE Eng.	09-17	60033
V6	3.0 LTR.	1MZ-FE Eng.	01-03	60067
V6	3.3 LTR.	3MZ-FE Eng.	04-10	60067
V6	3.5 LTR.	2GR-FXE Eng.	11-16	60033
V6	3.5 LTR.	2GRFE Eng.	08-16	60033

Land Cruiser

V8	4.7 LTR.		06-07	60032
V8	5.7 LTR.		08-17	60033

Matrix

L4	1.8 LTR.		10-13	60033
L4	1.8 LTR.	1ZZ-FE Eng.	03-08	60067
L4	2.4 LTR.	2AZ-FE Eng.	09-13	60067

MR2 Spyder

L4	1.8 LTR.	1ZZ-FE Eng.	00-05	60067
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CYL	APPLICATION	NOTES	YEAR	KARLYN #
Prius				
L4	1.8 LTR.		10-17	60033
Prius Plug-In				
L4	1.8 LTR.		13-15	60033
Prius V				
L4	1.8 LTR.		12-17	60033
RAV4				
L4	2.0 LTR.	3S-FE Eng.	98-00	60119
L4	2.0 LTR.	1AZ-FE Eng.	01-03	60067
L4	2.4 LTR.	2AZ-FE Eng.	04-08	60067
L4	2.5 LTR.	2AR-FXE Eng.	16-17	60033
L4	2.5 LTR.	2AR-FE Eng.	09-17	60033
V6	3.5 LTR.	2GRFE Eng.	06-12	60033
Sequoia				
V8	4.6 LTR.		10-12	60033
V8	4.7 LTR.		05-09	60032
V8	5.7 LTR.		08-17	60033
Sienna				
L4	2.7 LTR.	1AR-FE Eng.	11-12	60033
V6	3.0 LTR.	1MZ-FE Eng.	01-03	60067
V6	3.3 LTR.	3MZ-FE Eng.	04-06	60067
V6	3.5 LTR.	2GRFE Eng.	07-16	60033
Solara				
L4	2.2 LTR.	5S-FE Eng.	99-01	60119
L4	2.4 LTR.	2AZ-FE Eng.	02-08	60067
V6	3.3 LTR.	3MZ-FE Eng.	04-08	60067
Tacoma				
L4	2.4 LTR.	2RZ-FE Eng.	97-04	60067
L4	2.7 LTR.	3RZ-FE Eng.	97-04	60067
L4	2.7 LTR.	2TR-FE Eng.	05-15	60032
V6	3.5 LTR.	2GR-FKS	16-17	60033
V6	4.0 LTR.	1GR-FE Eng.	05-15	60033
Tundra				
V6	4.0 LTR.		10-14	60033
V6	4.0 LTR.	1GR-FE Eng.	05-09	60033
V8	4.6 LTR.	1UR-FE Eng.	10-17	60033
V8	4.7 LTR.		05-09	60032
V8	5.7 LTR.		07-17	60033
Venza				
L4	2.7 LTR.	1AR-FE Eng.	09-15	60033
V6	3.5 LTR.	2GRFE Eng.	09-15	60033

CYL	APPLICATION	NOTES	YEAR	KARLYN #
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VOLKSWAGEN

Beetle

L4	1.8 LTR.		99-05	60095
L4	1.8 LTR.		2014	60449
L4	1.9 LTR.	ATD Eng.	2004	60010
L4	1.9 LTR.	BEW Eng.	2004	60010
L4	1.9 LTR.		05-07	60010
L4	2.0 LTR.		98-05	60021
L4	2.0 LTR.	CPPA Eng.	2014	60449
L4	2.0 LTR.	CPLA Eng.	13-14	60449
L4	2.0 LTR.	CBFA Eng.	12-13	60440
L4	2.0 LTR.	CCTA Eng.	12-13	60440
L5	2.5 LTR.		10-14	60141
L5	2.5 LTR.	BPR Eng.	06-09	60141
L5	2.5 LTR.	BPS Eng.	06-09	60141

CC

L4	2.0 LTR.		12-17	60440
L4	2.0 LTR.	CBFA Eng.	10-11	60440
L4	2.0 LTR.	CCTA Eng.	09-11	60440
V6	3.6 LTR.		09-15	60011

Eos

L4	2.0 LTR.	BPY Eng.	2009	60012
L4	2.0 LTR.	CBFA Eng.	2009	60440
L4	2.0 LTR.	CCTA Eng.	2009	60440
L4	2.0 LTR.		07-08	60012
L4	2.0 LTR. Turbo		10-16	60440
V6	3.2 LTR.	BUB Eng.	07-08	60011

EuroVan

V6	2.8 LTR.	AES Eng.	1999	60106
V6	2.8 LTR.	AXK Eng.	01-03	60106

Golf

L4	1.8 LTR.		15-17	60449
L4	1.8 LTR.		00-06	60095
L4	1.9 LTR.	BEW Eng.	2004	60010
L4	1.9 LTR.		05-06	60010
L4	2.0 LTR.		99-06	60021
L5	2.5 LTR.	CBTA Eng.	10-14	60141
L5	2.5 LTR.	CBUA Eng.	10-14	60141
V6	2.8 LTR.		98-05	60106
V6	3.2 LTR.		2004	60106

Golf Alltrack

L4	1.8 LTR.		2017	60449
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Golf R

L4	2.0 LTR.		15-18	60449
L4	2.0 LTR.		12-13	60012

CYL	APPLICATION	NOTES	YEAR	KARLYN #
Golf SportWagen				
L4	1.8 LTR.		15-17	60449
GTI				
L4	2.0 LTR.	CBFA Eng.	08-14	60440
L4	2.0 LTR.	CCTA Eng.	08-14	60440
L4	2.0 LTR.	BPY Eng.	06-08	60012
Jetta				
L4	1.4 LTR.	CZTA Eng.	16-18	60449
L4	1.4 LTR.	CNLA Eng.	13-16	60449
L4	1.8 LTR.		2014	60449
L4	1.8 LTR.		00-05	60095
L4	1.9 LTR.		04-05	60010
L4	2.0 LTR.		99-05	60021
L4	2.0 LTR.	CPLA Eng.	13-14	60449
L4	2.0 LTR.	CPPA Eng.	13-14	60449
L4	2.0 LTR.	CBFA Eng.	12-13	60440
L4	2.0 LTR.	CCTA Eng.	12-13	60440
L4	2.0 LTR.	CBPA Eng.	11-15	60021
L4	2.0 LTR.	Front	06-08	60012
L5	2.5 LTR.		05-14	60141
V6	2.8 LTR.	AFP Eng.	99-02	60106
V6	2.8 LTR.	BDF Eng.	02-04	60106
Passat				
L4	1.8 LTR.		98-05	60095
L4	1.8 LTR.		14-17	60449
L4	2.0 LTR.		2008	60141
L4	2.0 LTR.	CCTA Eng.	2008	60440
L4	2.0 LTR.		09-10	60440
L4	2.0 LTR.		06-07	60012
L5	2.5 LTR.	CBTA Eng.	12-14	60141
L5	2.5 LTR.	CBUA Eng.	12-14	60141
V6	2.8 LTR.		98-05	60095
V6	3.6 LTR.	CDVB Eng.	12-15	60011
V6	3.6 LTR.		06-08	60011
W8	4.0 LTR.		02-04	60106
Phaeton				
V8	4.2 LTR.		04-06	60095
W12	6.0 LTR.	BRP Eng.	2006	60106
W12	6.0 LTR.	BAP Eng.	2005	60106
W12	6.0 LTR.		2004	60106
R32				
V6	3.2 LTR.		2008	60011
Rabbit				
L5	2.5 LTR.		06-09	60141
Tiguan				
L4	2.0 LTR.		13-17	60440
L4	2.0 LTR.	CCTA Eng.	09-12	60440

CYL	APPLICATION	NOTES	YEAR	KARLYN #
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Touareg

V6	3.0 LTR.	CNRB Eng.	13-16	60440
V6	3.0 LTR.	CGFA Eng.	11-15	60440
V6	3.0 LTR.	CATA Eng.	09-12	60440
V6	3.2 LTR.	BAA Ang.	2004	60106
V6	3.2 LTR.	BMX Eng.	05-06	60106
V6	3.6 LTR.	CGRA Eng.	11-17	60011
V6	3.6 LTR.	BHK Eng.	07-10	60011
V8	4.2 LTR.	BAR Eng.	07-09	60440
V8	4.2 LTR.		04-07	60095

VOLVO

S60

L4	2.0 LTR.		2015	60034
L6	3.0 LTR.		11-15	60034

S80

L4	2.0 LTR.		2015	60034
L6	3.0 LTR.		08-15	60034
L6	3.2 LTR.		07-14	60034

V60

L4	2.0 LTR.		2015	60034
L6	3.0 LTR.		2015	60034

V70

L6	3.2 LTR.		08-10	60034
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XC60

L4	2.0 LTR.		15-16	60034
L6	3.0 LTR.		10-15	60034
L6	3.2 LTR.		10-15	60034

XC70

L4	2.0 LTR.		15-16	60034
L6	3.0 LTR.		08-15	60034
L6	3.2 LTR.		08-15	60034

XC90

L6	3.2 LTR.		07-14	60034
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CYL	APPLICATION	NOTES	YEAR	KARLYN #
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ACURA

ILX

L4	2.0 LTR.		13-15	60516
L4	2.4 LTR.		13-15	60259

MDX

V6	3.5 LTR.		03-06	60332
V6	3.7 LTR.	J37A1 Eng.	10-13	60259
V6	3.7 LTR.		07-09	60332

RDX

L4	2.3 LTR.		07-12	60218
V6	3.5 LTR.		2013	60218
V6	3.5 LTR.		14-17	60259

RL

V6	3.5 LTR.		05-08	60332
V6	3.7 LTR.	J37A2 Eng.	11-12	60259
V6	3.7 LTR.		09-10	60332

RLX

V6	3.5 LTR.	J35Y4 Eng.	14-17	60259
V6	3.5 LTR.		14-16	60259

RSX

L4	2.0 LTR.		02-06	60361
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TL

V6	3.2 LTR.		04-08	60332
V6	3.5 LTR.	J35Z6 Eng.	09-14	60259
V6	3.5 LTR.		07-08	60332
V6	3.7 LTR.	J37A4 Eng.	09-14	60259

TLX

L4	2.4 LTR.		15-18	60516
V6	3.5 LTR.	SOHC	15-18	60516
V6	3.5 LTR.		15-16	60516

TSX

L4	2.4 LTR.	K24Z3 Eng.	09-14	60259
L4	2.4 LTR.		04-08	60218
V6	3.5 LTR.	J35Z6 Eng.	10-14	60259

ZDX

V6	3.7 LTR.	J37A5 Eng.	10-13	60259
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AUDI

A3

L4	1.8 LTR.		15-16	60472
L4	2.0 LTR.		2017	60472
L4	2.0 LTR.	CBFA Eng.	08-13	60457
L4	2.0 LTR.	CCTA Eng.	08-13	60457
L4	2.0 LTR.	BPY Eng.	06-08	60197

CYL	APPLICATION	NOTES	YEAR	KARLYN #
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A3 Quattro

L4	2.0 LTR.		15-17	60472
L4	2.0 LTR.		09-13	60457
V6	3.2 LTR.		06-09	60438

A4

L4	1.8 LTR.		01-06	60191
L4	2.0 LTR.	Cabriolet Model Only	2009	60197
L4	2.0 LTR.	Only for Models up to Production Date 04/17/2017	13-17	60472
L4	2.0 LTR.	CAEB Eng.	09-12	60457
L4	2.0 LTR.		05-08	60197
V6	2.8 LTR.		98-99	60187
V6	2.8 LTR.		00-01	60187
V6	3.0 LTR.	BGN Eng.	2005	60187
V6	3.0 LTR.	AVK Eng.	02-05	60187

A4 Quattro

L4	1.8 LTR.		01-05	60191
L4	2.0 LTR.	Cabriolet Model Only	2009	60197
L4	2.0 LTR.	Only for Models up to Production Date 04/17/2017	13-17	60472
L4	2.0 LTR.	CAEB Eng.	09-12	60457
L4	2.0 LTR.		05-08	60197
V6	2.8 LTR.		98-99	60187
V6	2.8 LTR.		00-01	60187
V6	3.0 LTR.		02-06	60187
V6	3.2 LTR.	CALA Eng.	2009	60504

A5

L4	2.0 LTR.		13-14	60472
L4	2.0 LTR.		10-12	60457
V6	3.2 LTR.		08-10	60504

A5 Quattro

L4	2.0 LTR.		13-16	60472
L4	2.0 LTR.		10-12	60457
V6	3.2 LTR.	CALA Eng.	08-10	60504

A6

L4	2.0 LTR.		12-17	60472
V6	2.8 LTR.		98-04	60187
V6	3.2 LTR.	CALA Eng.	2010	60504

CYL	APPLICATION	NOTES	YEAR	KARLYN #
A6 Quattro				
L4	2.0 LTR.		13-17	60472
V6	2.7 LTR.	w/ Manual Trans.	00-04	60187
V6	2.7 LTR.	w/ Automatic Trans.	00-01	60191
V6	2.8 LTR.		98-01	60187
V6	3.0 LTR.		2012	60500
V6	3.0 LTR.		02-04	60187
V6	3.0 LTR. Supercharged		2016	60500
V6	3.0 LTR. Supercharged		12-13	60500
V6	3.0 LTR. Turbo Diesel		2016	60500
V6	3.0 LTR. Turbo Diesel		12-13	60500
V8	4.2 LTR.		00-06	60323
A7 Quattro				
L4	2.0 LTR. Turbo		2017	60500
V6	3.0 LTR.		2012	60500
V6	3.0 LTR. Supercharged		12-17	60500
V6	3.0 LTR. Turbo Diesel		14-16	60500
A8 Quattro				
V6	3.0 LTR. Supercharged		13-17	60500
V6	3.0 LTR. Turbo Diesel		14-16	60500
V8	4.0 LTR. Turbo		14-16	60500
V8	4.2 LTR.		11-12	60504
V8	4.2 LTR.		00-03	60323
W12	6.3 LTR.		13-14	60500
Allroad				
L4	2.0 LTR.		13-16	60472
Allroad Quattro				
V6	2.7 LTR.		01-05	60187
V8	4.2 LTR.		03-05	60323
Q5				
L4	2.0 LTR.		13-17	60472
L4	2.0 LTR.	CAEB Eng.	11-12	60457
V6	3.0 LTR. Diesel		10-12	60504
V6	3.2 LTR.		09-12	60504
Q51				
V6	3.0 LTR. Supercharged		13-17	60500
V6	3.0 LTR. Turbo Diesel		13-17	60500
Q7				
L4	2.0 LTR.		2017	60472
V6	3.0 LTR. Supercharged		11-14	60504
V6	3.0 LTR. Turbo Diesel		13-14	60500
V6	3.6 LTR.		07-10	60190
V8	4.2 LTR.		07-10	60331
RS5				
V8	4.2 LTR.		13-15	60504

CYL	APPLICATION	NOTES	YEAR	KARLYN #
RS6				
V8	4.2 LTR.		03-04	60331
RS7				
V8	4.0 LTR.		14-17	60500
S3				
L4	2.0 LTR.		15-17	60472
S4				
V6	2.7 LTR.		00-02	60187
V6	3.0 LTR.		13-16	60500
V6	3.0 LTR. Supercharged		2013	60500
V6	3.0 LTR. Supercharged		10-12	60504
V8	4.2 LTR.		04-09	60323
S5				
V6	3.0 LTR.		13-16	60500
V6	3.0 LTR. Supercharged		2013	60500
V6	3.0 LTR. Supercharged		10-12	60504
V8	4.2 LTR.		08-12	60504
S6				
V8	4.0 LTR.		13-17	60500
V8	4.2 LTR.		02-03	60323
S7				
V8	4.0 LTR.		13-17	60500
S8				
V8	4.0 LTR.		13-17	60500
V8	4.2 LTR.		01-03	60323
SQ5				
V6	3.0 LTR.		14-17	60500
TT				
L4	1.8 LTR.	AWP Eng.	01-06	60197
L4	1.8 LTR.	ATC Eng.	00-01	60187
L4	2.0 LTR.	CCTA Eng.	2009	60457
L4	2.0 LTR.	BPY Eng.	08-09	60197
TT Quattro				
L4	1.8 LTR.	AMU Eng.	2002	60197
L4	1.8 LTR.	AWP Eng.	2002	60197
L4	1.8 LTR.		2001	60197
L4	1.8 LTR.		2000	60187
L4	2.0 LTR.	CETA Eng.	11-17	60472
L4	2.0 LTR.	CDMA Eng.	09-14	60197
L4	2.0 LTR.	CCTA Eng.	09-10	60457
L5	2.5 LTR.		12-13	60319
V6	3.2 LTR.		04-09	60438

BMW

1 Series M

L6	3.0 LTR.	Use 12 14 1 748 398 O-ring	2011	60308
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CYL	APPLICATION	NOTES	YEAR	KARLYN #
128i				
L6	3.0 LTR.	Use 12 14 1 748 398 O-ring	08-13	60308
135i				
L6	3.0 LTR.	Use 12 14 1 748 398 O-ring	08-10	60308
323Ci				
L6	2.5 LTR.		2000	60257
323i				
L6	2.5 LTR.		98-00	60257
323is				
L6	2.5 LTR.		98-99	60257
325Ci				
L6	2.5 LTR.		01-06	60257
325i				
L6	2.5 LTR.		92-95	60387
L6	2.5 LTR.		01-05	60257
L6	3.0 LTR.	Use 12 14 1 748 398 O-ring	2006	60308
325is				
L6	2.5 LTR.		92-95	60387
325xi				
L6	2.5 LTR.		01-05	60257
L6	3.0 LTR.	Use 12 14 1 748 398 O-ring	2006	60308
328Ci				
L6	2.8 LTR.		2000	60257
328i				
L6	2.8 LTR.		96-00	60257
L6	3.0 LTR.	Use 12 14 1 748 398 O-ring	07-13	60308
328i xDrive				
L6	3.0 LTR.	Use 12 14 1 748 398 O-ring	09-13	60308
328is				
L6	2.8 LTR.		96-99	60257
328xi				
L6	3.0 LTR.	Use 12 14 1 748 398 O-ring	07-08	60308
330Ci				
L6	3.0 LTR.		01-06	60257
330i				
L6	3.0 LTR.	Use 12 14 1 748 398 O-ring	2006	60308
L6	3.0 LTR.		01-05	60257
330xi				
L6	3.0 LTR.	Use 12 14 1 748 398 O-ring	2006	60308
L6	3.0 LTR.		01-05	60257
335i				
L6	3.0 LTR.	Use 12 14 1 748 398 O-ring	07-10	60308
335i xDrive				
L6	3.0 LTR.	Use 12 14 1 748 398 O-ring	09-10	60308

CYL	APPLICATION	NOTES	YEAR	KARLYN #
335is				
L6	3.0 LTR.	Use 12 14 1 748 398 O-ring	11-13	60308
335xi				
L6	3.0 LTR.	Use 12 14 1 748 398 O-ring	07-08	60308
525i				
L6	2.5 LTR.		91-95	60387
L6	2.5 LTR.		01-05	60257
L6	3.0 LTR.	Use 12 14 1 748 398 O-ring	06-07	60308
525xi				
L6	3.0 LTR.	Use 12 14 1 748 398 O-ring	06-07	60308
528i				
L6	2.8 LTR.		97-00	60257
L6	3.0 LTR.	Use 12 14 1 748 398 O-ring	08-11	60308
528i xDrive				
L6	3.0 LTR.	Use 12 14 1 748 398 O-ring	09-10	60308
528xi				
L6	3.0 LTR.	Use 12 14 1 748 398 O-ring	2008	60308
530i				
L6	3.0 LTR.	Use 12 14 1 748 398 O-ring	06-07	60308
L6	3.0 LTR.		01-05	60257
530xi				
L6	3.0 LTR.	Use 12 14 1 748 398 O-ring	06-07	60308
535i				
L6	3.0 LTR.	Use 12 14 1 748 398 O-ring	08-10	60308
535i xDrive				
L6	3.0 LTR.	Use 12 14 1 748 398 O-ring	09-10	60308
535xi				
L6	3.0 LTR.	Use 12 14 1 748 398 O-ring	2008	60308
540i				
V8	4.4 LTR.		97-03	60201
545i				
V8	4.4 LTR.		04-05	60281
550				
V8	4.4 LTR.	Use 12 14 1 748 398 O-ring	11-13	60308
550i				
V8	4.4 LTR.		11-14	60307
V8	4.8 LTR.		2006	60281
V8	4.8 LTR.		07-10	60307
550i GT				
V8	4.4 LTR.		10-14	60307
550i GT xDrive				
V8	4.4 LTR.		10-14	60307
550i xDrive				
V8	4.4 LTR.		11-14	60307

CYL	APPLICATION	NOTES	YEAR	KARLYN #
645Ci				
V8	4.4 LTR.		04-05	60281
650				
V8	4.4 LTR.	Use 12 14 1 748 398 O-ring	2012	60308
650i				
V8	4.4 LTR.		12-13	60307
V8	4.8 LTR.		2006	60281
V8	4.8 LTR.		07-10	60307
650i xDrive				
V8	4.4 LTR.		12-13	60307
740i				
L6	3.0 LTR.	Use 12 14 1 748 398 O-ring	11-12	60308
V8	4.4 LTR.		97-01	60201
740iL				
V8	4.4 LTR.		96-01	60201
740Li				
L6	3.0 LTR.	Use 12 14 1 748 398 O-ring	11-12	60308
745i				
V8	4.8 LTR.		02-05	60281
745Li				
V8	4.4 LTR.		02-05	60281
750i				
V8	4.4 LTR.		09-12	60307
V8	4.8 LTR.		2006	60281
V8	4.8 LTR.		07-08	60307
750i xDrive				
V8	4.4 LTR.		10-13	60307
750iL				
V12	5.4 LTR.		95-01	60201
750Li				
V8	4.4 LTR.		09-13	60307
V8	4.8 LTR.		2006	60281
V8	4.8 LTR.		07-08	60307
750Li xDrive				
V8	4.4 LTR.		10-13	60307
760Li				
V12	6.0 LTR.		10-15	60307
840Ci				
V8	4.4 LTR.		96-97	60201
850Ci				
V12	5.4 LTR.		95-97	60201
Alpina B7				
V8	4.4 LTR.		07-13	60307

CYL	APPLICATION	NOTES	YEAR	KARLYN #
Alpina B7 xDrive				
V8	4.4 LTR.		11-13	60307
Alpina B7L				
V8	4.4 LTR.		11-13	60307
Alpina B7L xDrive				
V8	4.4 LTR.		11-13	60307
M3				
L6	3.0 LTR.		1995	60387
L6	3.2 LTR.		96-99	60257
V8	4.0 LTR.	Use 12 14 1 748 398 O-ring, Manual Trans.	08-13	60308
V8	4.0 LTR.	w/ Auto Dual Clutch Trans.	08-13	60201
M5				
V8	4.4 LTR.	Use 12 14 1 748 398 O-ring	13-16	60308
V10	5.0 LTR.	Use 12 14 1 748 398 O-ring, Manual Trans.	06-10	60308
V10	5.0 LTR.	w/ Auto Dual Clutch Trans.	06-10	60201
V8	5.0 LTR.		00-03	60201
M6				
V8	4.4 LTR.	Use 12 14 1 748 398 O-ring	12-16	60308
V10	5.0 LTR.		06-10	60201
V8	5.0 LTR.	Use 12 14 1 748 398 O-ring	06-10	60308
X3				
V6	2.5 LTR.		04-06	60257
L6	3.0 LTR.	Use 12 14 1 748 398 O-ring	07-12	60308
V6	3.0 LTR.		04-06	60257
X5				
L6	3.0 LTR.	Use 12 14 1 748 398 O-ring	07-10	60308
L6	3.0 LTR.		01-06	60257
V8	4.4 LTR.		10-13	60307
V8	4.4 LTR.		04-06	60281
V8	4.8 LTR.		07-10	60307
V8	4.8 LTR.		04-06	60281
X6				
L6	3.0 LTR.	Use 12 14 1 748 398 O-ring	08-10	60308
V8	4.4 LTR.		08-14	60307
Z3				
L6	2.5 LTR.		99-02	60257
L6	2.8 LTR.		97-00	60257
L6	3.0 LTR.		01-02	60257
L6	3.2 LTR.		98-00	60257
Z4				
V6	2.5 LTR.		03-05	60257
L6	3.0 LTR.	Use 12 14 1 748 398 O-ring	06-16	60308
V6	3.0 LTR.		03-05	60257
Z8				
V8	5.0 LTR.		00-03	60201

CYL	APPLICATION	NOTES	YEAR	KARLYN #
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CHEVROLET

Cobalt

L4	2.0 LTR.		05-07	60249
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CHRYSLER

Cirrus

L4	2.0 LTR.		2000	60342
L4	2.4 LTR.		97-00	60342

Crossfire

V6	3.2 LTR.		04-08	60270
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Neon

L4	2.0 LTR.		00-02	60342
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PT Crusier

L4	2.4 LTR.		01-02	60342
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Sebring

L4	2.0 LTR.		97-99	60342
L4	2.4 LTR.		01-02	60342

Voyager

L4	2.4 LTR.		00-02	60342
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DODGE

Avenger

L4	2.0 LTR.		98-99	60342
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Caravan

L4	2.4 LTR.		98-01	60342
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Dakota

V6	3.7 LTR.		04-10	60272
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Durango

V6	3.7 LTR.		04-09	60272
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Neon

L4	2.0 LTR.		98-02	60342
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Nitro

V6	3.7 LTR.		09-10	60272
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Ram 1500

V6	3.7 LTR.		04-10	60272
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Ram 2500

L6	5.9 LTR.		2007	60272
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Ram 3500

L6	5.9 LTR.		2007	60272
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CYL	APPLICATION	NOTES	YEAR	KARLYN #
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Sprinter 2500

V6	2.7 LTR.		03-06	60270
V6	3.0 LTR.		2007	60270
V6	3.0 LTR.		08-09	60231
V6	3.5 LTR.		2008	60231
V6	3.5 LTR.		2007	60270

Sprinter 3500

L5	2.7 LTR.		03-06	60270
V6	3.0 LTR.		2007	60270
V6	3.0 LTR.		08-09	60231
V6	3.5 LTR.		2008	60231
V6	3.5 LTR.		2007	60270

Stratus

L4	2.0 LTR.		97-00	60342
L4	2.4 LTR.		97-02	60342

EAGLE

Talon

L4	2.0 LTR.		97-98	60342
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FREIGHTLINER

Sprinter 2500

V6	3.0 LTR.		09-10	60231
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Sprinter 3500

V6	3.0 LTR.		09-10	60231
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HONDA

Accord

L4	2.0 LTR.	ELECTRIC/GAS	14-15	60516
L4	2.4 LTR.		13-17	60516
L4	2.4 LTR.	Trim: EX	13-16	60516
L4	2.4 LTR.	K24Z2 Eng.	08-12	60259
L4	2.4 LTR.	K24Z3 Eng.	08-12	60259
L4	2.4 LTR.		03-07	60218
V6	3.0 LTR.		03-07	60332
V6	3.5 LTR.		08-17	60259

Accord Crosstour

V6	3.5 LTR.	J35Z2 Eng.	10-11	60259
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CYL	APPLICATION	NOTES	YEAR	KARLYN #
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Civic

L4	1.3 LTR.		03-11	60361
L4	1.7 LTR.		01-05	60360
L4	1.8 LTR.		12-15	60516
L4	1.8 LTR.	CNG	12-15	60516
L4	1.8 LTR.		06-11	60218
L4	2.0 LTR.		02-11	60361
L4	2.4 LTR.		12-15	60259
L4	2.4 LTR.		02-09	60361

Crosstour

L4	2.4 LTR.	K24Y2 Eng.	12-15	60259
V6	3.5 LTR.		12-15	60259

CR-V

L4	2.4 LTR.		15-18	60516
L4	2.4 LTR.		10-14	60259

Element

L4	2.4 LTR.		03-11	60218
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Fit

L4	1.5 LTR.		07-08	60218
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HR-V

L4	1.8 LTR.		16-18	60516
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Odyssey

V6	3.5 LTR.	J35Z8 Eng.	11-17	60259
V6	3.5 LTR.	J35A7 Eng.	08-10	60259
V6	3.5 LTR.	J35A6 Eng.	05-10	60332
V6	3.5 LTR.	J35A7 Eng.	05-07	60332

Pilot

V6	3.5 LTR.	J35Z4 Eng.	09-15	60259
V6	3.5 LTR.		05-08	60332

Ridgeline

V6	3.5 LTR.	J35Z5 Eng.	09-14	60259
V6	3.5 LTR.		06-08	60332

HYUNDAI

Accent

L4	1.5 LTR.		00-02	60223
L4	1.6 LTR.		12-17	60214
L4	1.6 LTR.		01-11	60223

Elantra

L4	1.8 LTR.		11-16	60214
L4	2.0 LTR.		14-17	60214

Elantra Coupe

L4	1.8 LTR.		2013	60214
L4	2.0 LTR.		2014	60214

CYL	APPLICATION	NOTES	YEAR	KARLYN #
Elantra GT				
L4	1.8 LTR.		2013	60214
L4	2.0 LTR.		14-17	60214
Rio				
L4	1.6 LTR.		06-11	60223
Rio5				
L4	1.6 LTR.		06-11	60223
Santa Fe				
L4	2.4 LTR.		10-12	60224
V6	2.7 LTR.		01-06	60209
Santa Fe Sport				
L4	2.0 LTR.		13-14	60224
L4	2.4 LTR.		13-14	60224
Sonata				
L4	2.0 LTR.		11-14	60224
L4	2.4 LTR.		06-15	60224
V6	2.5 LTR.		99-01	60209
V6	2.7 LTR.		02-05	60209
Tiburon				
V6	2.7 LTR.		03-08	60209
Tucson				
L4	2.0 LTR.		11-13	60224
L4	2.4 LTR.		10-15	60224
V6	2.7 LTR.		05-09	60209
Tuscon				
L4	2.0 LTR.		14-17	60214
Veloster				
L4	1.6 LTR.		12-17	60214

INFINITI

EX35				
V6	3.5 LTR.		08-12	60276
EX37				
V6	3.7 LTR.		2013	60276
FX35				
V6	3.5 LTR.		09-12	60276
V6	3.5 LTR.		03-08	60325
FX37				
V6	3.7 LTR.		2013	60276
FX45				
V8	4.5 LTR.		03-08	60040
G35				
V6	3.5 LTR.	VQ35HR Eng.	07-08	60276
V6	3.5 LTR.	VQ35DE Eng.	03-07	60325

CYL	APPLICATION	NOTES	YEAR	KARLYN #
G37				
V6	3.7 LTR.		08-13	60276
I30				
V6	3.0 LTR.		96-01	60363
I35				
V6	3.5 LTR.		02-04	60325
JX35				
V6	3.5 LTR.		2013	60276
M35				
V6	3.5 LTR.		09-10	60276
V6	3.5 LTR.		06-08	60325
M35h				
V6	3.5 LTR.		12-13	60276
M37				
V6	3.7 LTR.		11-13	60276
M45				
V8	4.5 LTR.		06-10	60040
V8	4.5 LTR.	VK45DE Eng.	06-10	60040
V8	4.5 LTR.		03-04	60040
Q45				
V8	4.5 LTR.		02-06	60040
Q50				
V6	3.5 LTR.		2014	60276
V6	3.7 LTR.		2014	60276
Q60				
V6	3.7 LTR.		2014	60276
Q70				
V6	3.5 LTR.		2014	60276
V6	3.7 LTR.		2014	60276
QX4				
V6	3.5 LTR.		01-03	60363
QX50				
V6	3.7 LTR.		2014	60276
QX56				
V8	5.6 LTR.		04-10	60040
QX60				
V6	3.5 LTR.		2014	60276
QX70				
V6	3.7 LTR.		2014	60276

JEEP

Commander				
V6	3.7 LTR.		06-10	60272

CYL	APPLICATION	NOTES	YEAR	KARLYN #
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Grand Cherokee

V6	3.0 LTR.		07-09	60231
V6	3.7 LTR.		05-10	60272

Liberty

V6	3.7 LTR.		04-10	60272
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KIA

Forte

L4	1.8 LTR.		2014	60214
L4	2.0 LTR.		2014	60214
L4	2.0 LTR.		10-13	60224
L4	2.4 LTR.		10-13	60224

Forte Koup

L4	2.0 LTR.		2014	60214
L4	2.0 LTR.		10-13	60224
L4	2.4 LTR.		10-13	60224

Forte5

L4	2.0 LTR.		14-17	60214
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Optima

L4	2.0 LTR.		11-14	60224
L4	2.4 LTR.		06-14	60224
V6	2.5 LTR.		2001	60209
V6	2.7 LTR.		02-06	60209

Rio

L4	1.6 LTR.		12-14	60214
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Rondo

L4	2.4 LTR.		07-12	60224
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Sorento

L4	2.4 LTR.		11-14	60224
V6	3.5 LTR.		03-06	60275

Soul

L4	1.6 LTR.		10-14	60214
L4	2.0 LTR.		12-14	60214

Sportage

L4	2.0 LTR.		2005	60209
L4	2.0 LTR.		11-14	60224
L4	2.4 LTR.		11-14	60224
V6	2.7 LTR.		05-10	60209

LAND ROVER

Discovery

V8	4.0 LTR.		98-02	60510
V8	4.6 LTR.		03-04	60510

LR2

L6	3.2 LTR.		08-12	60232
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CYL	APPLICATION	NOTES	YEAR	KARLYN #
Range Rover				
V8	4.0 LTR.		99-00	60510
V8	4.6 LTR.		99-02	60510
LEXUS				
CT200h				
L4	1.8 LTR.		11-17	60462
ES300				
V6	3.0 LTR.	1MZ-FE Eng.	94-03	60045
ES300h				
L4	2.5 LTR.		13-17	60462
ES330				
V6	3.3 LTR.	3MZ-FE Eng.	04-06	60045
ES350				
V6	3.5 LTR.	2GRFE Eng.	07-17	60264
GS300				
V6	3.0 LTR.	3GR-FSE Eng.	2006	60264
GS350				
V6	3.5 LTR.	2GR-FSE Eng.	07-15	60264
GS400				
V8	4.0 LTR.	1UZ-FE Eng.	98-00	60226
GS430				
V8	4.3 LTR.	3UZ-FE Eng.	01-07	60226
GS450h				
V6	3.5 LTR.	2GR-FXE Eng.	13-17	60264
V6	3.5 LTR.	2GR-FSE Eng.	07-11	60264
GX470				
V8	4.7 LTR.		03-09	60226
HS250h				
L4	2.4 LTR.	2AZ-FXE Eng.	10-12	60242
IS250				
V6	2.5 LTR.	4GR-FSE Eng.	06-15	60264
IS350				
V6	2.5 LTR.	2GR-FSE Eng.	06-17	60264
LS400				
V8	4.0 LTR.		98-00	60226
LS430				
V8	4.3 LTR.	3UZ-FE Eng.	01-06	60226
LX470				
V8	4.7 LTR.		98-07	60226
NX300h				
L4	2.5 LTR.		15-17	60462

CYL	APPLICATION	NOTES	YEAR	KARLYN #
RC300				
V6	3.5 LTR.	2GR-FSE Eng.	06-17	60264
RC350				
V6	3.5 LTR.	2GR-FSE Eng.	15-17	60264
RX300				
V6	3.0 LTR.	1MZ-FE Eng.	99-03	60045
RX330				
V6	3.3 LTR.	3MZ-FE Eng.	04-06	60045
RX350				
V6	3.5 LTR.	2GRFE Eng.	07-15	60264
RX400h				
V6	3.3 LTR.	3MZ-FE Eng.	06-08	60045
RX450h				
V6	3.5 LTR.	2GR-FXE Eng.	10-15	60264
SC400				
V8	4.0 LTR.	1UZ-FE Eng.	98-00	60226
SC430				
V8	4.3 LTR.	3UZ-FE Eng.	02-10	60226

MAZDA

3				
L4	2.0 LTR.		06-13	60172
L4	2.3 LTR.		06-13	60172
L4	2.5 LTR.		10-13	60172
5				
L4	2.3 LTR.		08-10	60172
L4	2.5 LTR.		12-15	60172
6				
L4	2.3 LTR.		06-08	60172
L4	2.5 LTR.		09-13	60172
CX-7				
L4	2.3 LTR.		07-12	60172
L4	2.5 LTR.		10-12	60172
MX-5 Miata				
L4	2.0 LTR.		06-15	60172

MERCEDES-BENZ

C230				
L4	1.8 LTR.		03-05	60270
L4	2.3 LTR.		99-02	60270
V6	2.5 LTR.		06-09	60231
C240				
V6	2.6 LTR.		01-05	60270

CYL	APPLICATION	NOTES	YEAR	KARLYN #
C250				
L4	1.8 LTR.		12-15	60231
L4	1.8 LTR. Turbo		12-15	60333
V6	2.5 LTR.		2012	60333
C280				
V6	2.8 LTR.	w/1 Locking Tab	98-99	60270
V6	2.8 LTR.	w/2 Locking Tabs	98-00	60376
L6	2.8 LTR.		94-97	60376
V6	3.0 LTR.		06-07	60231
C300				
L4	2.0 LTR.		2015	60333
V6	3.0 LTR.		08-12	60231
V6	3.5 LTR.		13-14	60333
C32 AMG				
V6	3.2 LTR.		02-04	60270
C320				
V6	3.2 LTR.		01-05	60270
C350				
V6	3.5 LTR.		12-15	60333
V6	3.5 LTR.		06-11	60231
C36 AMG				
L6	3.6 LTR.		95-97	60376
C43 AMG				
V8	4.3 LTR.	From Eng.# 60 002421, w/1 Locking Tab	98-00	60270
V8	4.3 LTR.	To Eng.# 60 002420, w/2 Locking Tabs	98-00	60376
C55 AMG				
V8	5.5 LTR.		05-06	60270
C63 AMG				
V8	6.3 LTR.		08-15	60231
CL500				
V8	5.0 LTR.		98-06	60270
CL55 AMG				
V8	5.5 LTR.		01-06	60270
CL550				
V8	4.7 LTR.		11-14	60333
V8	5.5 LTR.		07-10	60231
CL600				
V12	5.5 LTR.		03-14	60270
V12	5.8 LTR.		01-02	60270
CL63 AMG				
V8	5.5 LTR.		11-14	60333
V8	6.3 LTR.		08-10	60231
CL65 AMG				
V12	6.0 LTR.		05-14	60270

CYL	APPLICATION	NOTES	YEAR	KARLYN #
CLK 320				
V6	3.2 LTR.		98-00	60376
CLK320				
V6	3.2 LTR.		98-05	60270
CLK350				
V6	3.5 LTR.		06-09	60231
CLK430				
V8	4.3 LTR.		99-03	60270
CLK500				
V8	5.0 LTR.	113.968 Eng.	2006	60270
V8	5.0 LTR.		03-05	60270
CLK55 AMG				
V8	5.5 LTR.		01-06	60270
CLK550				
V8	5.5 LTR.		07-09	60231
CLK63 AMG				
V8	6.3 LTR.		07-08	60231
CLS500				
V8	5.0 LTR.		2006	60270
CLS55 AMG				
V8	5.5 LTR.		2006	60270
CLS550				
V8	4.7 LTR.		12-17	60333
V8	5.5 LTR.		07-11	60231
CLS63 AMG				
V8	5.5 LTR.		12-14	60333
V8	6.3 LTR.		07-11	60231
CLS63 AMG S				
V8	5.5 LTR.		14-17	60333
E250				
L4	2.1 LTR. Diesel		14-17	60333
E320				
V6	3.2 LTR.	From Eng.# 30 370999 & 31 000001, w/1 Locking Tab	98-05	60270
V6	3.2 LTR.	To Eng.# 30 370998 & 31 000000, w/2 Locking Tabs	98-03	60376
L6	3.2 LTR.		1997	60376
L6	3.2 LTR.		05-06	60270
E350				
V6	3.0 LTR.		11-13	60231
V6	3.0 LTR. Diesel		11-13	60333
V6	3.5 LTR.		12-16	60333
V6	3.5 LTR.		06-11	60231
E400				
V6	3.0 LTR. Turbo		15-16	60333
V6	3.5 LTR.	ELECTRIC/GAS	13-15	60333

CYL	APPLICATION	NOTES	YEAR	KARLYN #
E430				
V8	4.3 LTR.	From Eng.# 30 039710, w/1 Locking Tab	98-02	60270
V8	4.3 LTR.	To Eng.# 30 039709, w/2 Locking Tabs	98-02	60376
E500				
V8	5.0 LTR.		03-06	60270
E55 AMG				
V8	5.5 LTR.	From Eng.# 60 002693, w/1 Locking Tab	99-06	60270
V8	5.5 LTR.	To Eng.# 60 002692, w/2 Locking Tabs	99-02	60376
E550				
V8	4.7 LTR.		12-17	60333
V8	5.5 LTR.		07-11	60231
E63 AMG				
V8	5.5 LTR.		12-15	60333
V8	6.3 LTR.		07-11	60231
E63 AMG S				
V8	5.5 LTR.		14-16	60333
G500				
V8	5.0 LTR.		02-08	60270
G55 AMG				
V8	5.5 LTR.		03-11	60270
G550				
V8	5.5 LTR.		09-15	60231
G63 AMG				
V8	5.5 LTR.		13-17	60333
GL350				
V6	3.0 LTR. Turbo Diesel		11-16	60333
GL450				
V6	3.0 LTR.		15-16	60333
V8	4.6 LTR.		07-12	60231
V8	4.7 LTR.		13-14	60333
GL550				
V8	4.7 LTR.		13-16	60333
V8	5.5 LTR.		08-12	60231
GL63 AMG				
V8	5.5 LTR.		13-16	60333
GLK250				
L4	2.1 LTR. Diesel		13-15	60333
GLK350				
V6	3.5 LTR.		13-15	60333
V6	3.5 LTR.		10-12	60231
ML320				
V6	3.2 LTR.	From Eng.# 30 358407, w/1 Locking Tab	98-03	60270
V6	3.2 LTR.	To Eng.# 30 358406, w/2 Locking Tabs	98-03	60376

CYL	APPLICATION	NOTES	YEAR	KARLYN #
ML350				
V6	3.0 LTR. Turbo Diesel		11-14	60333
V6	3.5 LTR.		12-15	60333
V6	3.5 LTR.		06-11	60231
V6	3.7 LTR.		03-05	60270
ML430				
V8	4.3 LTR.		99-01	60270
ML450				
V6	3.5 LTR.		10-11	60231
ML500				
V8	5.0 LTR.		02-07	60270
ML55 AMG				
V8	5.5 LTR.		00-03	60270
ML550				
V8	4.7 LTR.		12-14	60333
V8	5.5 LTR.		08-11	60231
ML63 AMG				
V8	5.5 LTR.		12-15	60333
V8	6.3 LTR.		07-11	60231
R320				
V6	3.0 LTR.		07-09	60231
R350				
V6	3.0 LTR. Turbo Diesel		11-12	60333
V6	3.5 LTR.		2012	60333
V6	3.5 LTR.		06-11	60231
R500				
V8	5.0 LTR.		06-07	60270
R63 AMG				
V8	6.3 LTR.		2007	60231
S350				
V6	3.0 LTR. Diesel		2012	60333
V6	3.7 LTR.		2006	60270
S400				
V6	3.5 LTR.		11-13	60231
S430				
V8	4.3 LTR.		00-06	60270
S500				
V8	5.0 LTR.		00-06	60270
S55 AMG				
V8	5.5 LTR.		01-06	60270
S550				
V8	4.7 LTR.		12-17	60333
V8	5.5 LTR.		07-11	60231

CYL	APPLICATION	NOTES	YEAR	KARLYN #
S600				
V12	5.5 LTR.		03-13	60270
V12	5.8 LTR.		01-02	60270
S63 AMG				
V8	5.5 LTR.		11-17	60333
V8	6.3 LTR.		08-10	60231
S65 AMG				
V12	6.0 LTR.		06-13	60270
SL500				
V8	5.0 LTR.		99-06	60270
SL55 AMG				
V8	5.5 LTR.		03-08	60270
SL550				
V8	4.7 LTR.		13-17	60333
V8	5.5 LTR.		07-12	60231
SL600				
V12	5.5 LTR.		04-09	60270
SL63 AMG				
V8	5.5 LTR.		13-17	60333
V8	6.3 LTR.		09-12	60231
SL65				
V12	6.0 LTR.		13-17	60333
V12	6.0 LTR.		05-11	60270
SLK230				
L4	2.3 LTR.		99-04	60270
SLK250				
L4	1.8 LTR.		12-15	60333
SLK280				
V6	3.0 LTR.		06-08	60231
SLK300				
V6	3.0 LTR.		09-11	60231
SLK32 AMG				
V6	3.2 LTR.		02-04	60270
SLK320				
V6	3.2 LTR.		01-04	60270
SLK350				
V6	3.5 LTR.		12-16	60333
V6	3.5 LTR.		05-11	60231
SLK55 AMG				
V8	5.5 LTR.		12-16	60333
V8	5.5 LTR.		05-10	60270
SLR McLaren				
V8	5.5 LTR.		05-09	60270

CYL	APPLICATION	NOTES	YEAR	KARLYN #
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SLS AMG

V8	6.3 LTR.		11-15	60231
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Sprinter 2500

L4	2.1 LTR. Diesel		14-17	60333
V6	3.0 LTR.		10-18	60231

Sprinter 3500

L4	2.1 LTR. Diesel		14-17	60333
V6	3.0 LTR.		10-18	60231

MINI

Cooper

L4	1.6 LTR.		07-15	60383
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Cooper Countryman

L4	1.6 LTR.		11-16	60383
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Cooper Paceman

L4	1.6 LTR.		13-16	60383
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MITSUBISHI

Eclipse

V6	3.8 LTR.		06-12	60372
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Endeavor

V6	3.8 LTR.		05-11	60372
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Galant

V6	3.8 LTR.		04-09	60372
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Mirage

L4	1.8 LTR.		97-00	60284
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Raider

V6	3.7 LTR.		06-09	60272
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NISSAN

350Z

V6	3.5 LTR.		07-09	60276
V6	3.5 LTR.		03-06	60325

370Z

V6	3.7 LTR.		09-14	60276
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Altima

L4	2.5 LTR.		07-18	60461
L4	2.5 LTR.		02-06	60165
V6	3.5 LTR.		07-14	60276
V6	3.5 LTR.	w/ Manual Trans.	04-05	60325
V6	3.5 LTR.		02-03	60325

Armada

V8	5.6 LTR.		05-15	60040
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CYL	APPLICATION	NOTES	YEAR	KARLYN #
Cube				
L4	1.8 LTR.		09-14	60216
Frontier				
L4	2.5 LTR.		05-17	60165
V6	4.0 LTR.		05-17	60326
GT-R				
V6	3.8 LTR.		09-14	60276
Maxima				
V6	3.0 LTR.	VQ30DE Eng.	95-00	60363
V6	3.5 LTR.	SE w/ Manual Trans. & SL w/ Automatic Trans.	2004	60325
V6	3.5 LTR.		09-14	60276
V6	3.5 LTR.	SE w/ Manual Trans.	05-06	60325
V6	3.5 LTR.		02-03	60325
Murano				
V6	3.5 LTR.		09-14	60276
V6	3.5 LTR.		03-07	60325
NV1500				
V6	4.0 LTR.		12-17	60326
NV200				
L4	2.0 LTR.		13-17	60216
NV2500				
V6	4.0 LTR.		12-17	60326
V8	5.6 LTR.		12-17	60040
NV3500				
V6	4.0 LTR.		12-17	60326
V8	5.6 LTR.		12-17	60040
Pathfinder				
V6	3.5 LTR.	VQ35DE Eng.	13-16	60276
V6	3.5 LTR.		03-04	60325
V6	3.5 LTR.		01-02	60363
V6	4.0 LTR.		05-12	60326
V8	5.6 LTR.		08-12	60040
Pathfinder Armada				
V8	5.6 LTR.		2004	60040
Quest				
V6	3.5 LTR.	S & SL w/ Automatic Trans.	2004	60325
V6	3.5 LTR.		11-17	60276
V6	3.5 LTR.	Base; S w/ Automatic Trans.	05-06	60325
Rogue				
L4	2.5 LTR.		08-17	60461
Rogue Select				
L4	2.5 LTR.		14-15	60461

CYL	APPLICATION	NOTES	YEAR	KARLYN #
Sentra				
L4	1.8 LTR.		00-06	60040
L4	2.0 LTR.		07-12	60216
L4	2.5 LTR.		07-12	60461
L4	2.5 LTR.		02-06	60165

Titan				
V8	5.6 LTR.		04-15	60040

Versa				
L4	1.6 LTR.		09-17	60216
L4	1.8 LTR.		07-12	60216

Versa Note				
L4	1.6 LTR.		14-17	60216

Xterra				
V6	4.0 LTR.		05-15	60326

PLYMOUTH

Breeze				
L4	2.4 LTR.		97-00	60342

Grand Voyager				
L4	2.4 LTR.		1997	60342

Neon				
L4	2.0 LTR.		98-01	60342

Voyager				
L4	2.4 LTR.		97-00	60342

PONTIAC

Vibe				
L4	2.4 LTR.		09-10	60242

PORSCHE

Cayenne				
V6	3.0 LTR. Supercharged	ELECTRIC/GAS	11-12	60500
V6	3.2 LTR.		04-06	60190
V6	3.6 LTR.		08-10	60190

Panamera				
V6	3.0 LTR. Supercharged	ELECTRIC/GAS	2012	60500
V6	3.0 LTR. Turbo Diesel		2012	60500

SAAB

900				
L4	2.0 LTR.		96-98	60230
L4	2.3 LTR.		96-98	60230

CYL	APPLICATION	NOTES	YEAR	KARLYN #
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9-3

L4	2.0 LTR.	Arc, Linear & Vector	2003	60249
L4	2.0 LTR.	SE	2003	60230
L4	2.0 LTR.		04-11	60249
L4	2.0 LTR.		00-02	60230
L4	2.3 LTR.		99-02	60230

9-3X

L4	2.0 LTR.		10-11	60249
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9-5

L4	2.3 LTR.		99-09	60230
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SATURN

Ion

L4	2.0 LTR.		04-07	60249
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SCION

iM

L4	1.8 LTR.	2ZR-FAE Eng.	2016	60462
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tC

L4	2.4 LTR.	2AZ-FE Eng.	2010	60242
L4	2.4 LTR.		05-09	60242
L4	2.5 LTR.		11-16	60462

xB

L4	2.4 LTR.		14-15	60242
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xD

L4	1.8 LTR.	2ZR-FE Eng.	08-14	60462
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TOYOTA

4Runner

V6	4.0 LTR.	1GR-FE Eng.	03-17	60264
V8	4.7 LTR.		03-09	60226

Avalon

L4	2.5 LTR.	2AR-FXE Eng.	13-17	60462
V6	3.0 LTR.	1MZ-FE Eng.	95-04	60045
V6	3.5 LTR.	2GRFE Eng.	05-17	60264

Camry

L4	2.4 LTR.	2AZ-FXE Eng.	07-11	60242
L4	2.4 LTR.	2AZ-FE Eng.	02-09	60242
L4	2.5 LTR.	2AR-FXE Eng.	12-17	60462
L4	2.5 LTR.	2AR-FE Eng.	10-17	60462
V6	3.0 LTR.	1MZ-FE Eng.	96-06	60045
V6	3.0 LTR.		94-95	60045
V6	3.3 LTR.	3MZ-FE Eng.	04-06	60045
V6	3.5 LTR.	2GRFE Eng.	07-17	60264

CYL	APPLICATION	NOTES	YEAR	KARLYN #
C-HR				
L4	2.0 LTR.	3ZR-FAE Eng.	2018	60462
Corolla				
L4	1.8 LTR.	2ZR-FAE Eng.	14-17	60462
L4	1.8 LTR.	2ZR-FE Eng.	09-17	60462
L4	2.4 LTR.	2AZ-FE Eng.	09-10	60242
Corolla iM				
L4	1.8 LTR.	2ZR-FAE Eng.	17-18	60462
FJ Crusier				
V6	4.0 LTR.	1GR-FE Eng.	07-14	60264
Highlander				
L4	2.4 LTR.	2AZ-FE Eng.	01-07	60242
L4	2.7 LTR.	1AR-FE Eng.	09-17	60462
V6	3.3 LTR.	3MZ-FE Eng.	04-10	60045
V6	3.5 LTR.	2GR-FXE Eng.	11-16	60264
V6	3.5 LTR.	2GRFE Eng.	08-16	60264
Land Cruiser				
V8	4.7 LTR.		98-07	60226
Matrix				
L4	1.8 LTR.	2ZR-FE Eng.	09-13	60462
L4	2.0 LTR.	1AZ-FE Eng.	01-03	60242
L4	2.4 LTR.	2AZ-FE Eng.	09-13	60242
Prius				
L4	1.8 LTR.	2ZR-FXE Eng.	10-17	60462
Prius Plug-In				
L4	1.8 LTR.		12-15	60462
Prius Prime				
L4	1.8 LTR.		2017	60462
Prius V				
L4	1.8 LTR.	2ZR-FXE Eng.	12-17	60462
RAV4				
L4	2.4 LTR.	2AZ-FE Eng.	04-08	60242
L4	2.5 LTR.	2AR-FXE Eng.	16-17	60462
L4	2.5 LTR.	2AR-FE Eng.	09-17	60462
V6	3.5 LTR.	2GRFE Eng.	06-12	60264
Sequoia				
V8	4.7 LTR.		01-09	60226
Sienna				
L4	2.7 LTR.	1AR-FE Eng.	11-12	60462
V6	3.0 LTR.	1MZ-FE Eng.	98-03	60045
V6	3.3 LTR.	3MZ-FE Eng.	04-06	60045
V6	3.5 LTR.	2GRFE Eng.	07-16	60264

CYL	APPLICATION	NOTES	YEAR	KARLYN #
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Solara

L4	2.4 LTR.	2AZ-FE Eng.	02-08	60242
V6	3.0 LTR.	1MZ-FE Eng.	99-03	60045
V6	3.3 LTR.	3MZ-FE Eng.	04-08	60045

Tacoma

V6	4.0 LTR.	1GR-FE Eng.	05-15	60264
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Tundra

V6	4.0 LTR.	1GR-FE Eng.	05-14	60264
V8	4.7 LTR.		00-09	60226

Venza

L4	2.7 LTR.	1AR-FE Eng.	09-15	60462
V6	3.5 LTR.	2GRFE Eng.	09-15	60264

VOLKSWAGEN

Atlas

V6	3.6 LTR.		2018	60472
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Beetle

L4	1.8 LTR.	APH Eng.	99-01	60187
L4	1.8 LTR.		2005	60197
L4	1.8 LTR.	AWV Eng.	2001	60187
L4	1.8 LTR.	AWP Eng.	02-04	60197
L4	1.8 LTR.	AWV Eng.	02-04	60197
L4	2.0 LTR.	AEG Eng.	98-01	60187
L4	2.0 LTR.	CBFA Eng.	12-13	60457
L4	2.0 LTR.		04-05	60197
L4	2.0 LTR.	AVH Eng.	01-03	60197
L4	2.0 LTR.	AZG Eng.	01-02	60197
L5	2.5 LTR.	CBTA Eng.	12-14	60319
L5	2.5 LTR.	CBUA Eng.	12-14	60319
L5	2.5 LTR.	BPR Eng.	06-10	60319
L5	2.5 LTR.	BPS Eng.	06-10	60319

Cabrio

L4	2.0 LTR.		95-99	60390
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CC

L4	2.0 LTR.		09-17	60457
V6	3.6 LTR.		09-11	60438

Eos

L4	2.0 LTR.	CBFA Eng.	09-16	60457
L4	2.0 LTR.	CCTA Eng.	09-16	60457
L4	2.0 LTR.	BPY Eng.	07-09	60197
V6	3.2 LTR.		07-08	60438

EuroVan

V6	2.8 LTR.	AES Eng.	99-00	60330
V6	2.8 LTR.		1997	60330
V6	2.8 LTR.	AXK Eng.	01-03	60190

CYL	APPLICATION	NOTES	YEAR	KARLYN #
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Golf

L4	1.8 LTR.	CNSA Eng.	2015	60472
L4	1.8 LTR.		02-06	60197
L4	1.8 LTR.		00-01	60187
L4	2.0 LTR.	AEG Eng.	99-01	60187
L4	2.0 LTR.	ABA Eng.	95-99	60390
L4	2.0 LTR.		93-94	60390
L4	2.0 LTR.	AVH Eng.	2001	60197
L4	2.0 LTR.	AZG Eng.	2001	60197
L4	2.0 LTR.		12-13	60197
L4	2.0 LTR.		02-06	60197
L5	2.5 LTR.	CBTA Eng.	10-14	60319
L5	2.5 LTR.	CBUA Eng.	10-14	60319
V6	2.8 LTR.	AFP Eng.	99-02	60190
V6	2.8 LTR.	AAA Eng.	96-98	60330
V6	2.8 LTR.	BDF Eng.	02-05	60438
V6	3.2 LTR.		2004	60190

Golf R

L4	2.0 LTR.		15-18	60472
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GTI

L4	2.0 LTR.	CBFA Eng.	08-14	60457
L4	2.0 LTR.	CCTA Eng.	08-14	60457
L4	2.0 LTR.	BPY Eng.	06-08	60197

Jetta

L4	1.8 LTR.		02-05	60197
L4	1.8 LTR.		00-01	60187
L4	2.0 LTR.		99-00	60187
L4	2.0 LTR.	ABA Eng.	95-99	60390
L4	2.0 LTR.		93-94	60390
L4	2.0 LTR.	AEG Eng., Sedan	2001	60187
L4	2.0 LTR.	CBPA Eng.	11-15	60197
L4	2.0 LTR.	CBFA Eng.	08-13	60457
L4	2.0 LTR.	CCTA Eng.	08-13	60457
L4	2.0 LTR.		06-08	60197
L4	2.0 LTR.		01-05	60197
V6	2.5 LTR.	AAA Eng.	96-99	60330
L5	2.5 LTR.	CBTA Eng.	08-14	60319
L5	2.5 LTR.	CBUA Eng.	08-14	60319
L5	2.5 LTR.	BGP Eng.	05-07	60319
L5	2.5 LTR.	BGQ Eng.	05-07	60319
V6	2.8 LTR.	AFP Eng.	99-02	60190
V6	2.8 LTR.	BDF Eng.	02-04	60438

CYL	APPLICATION	NOTES	YEAR	KARLYN #
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Passat

L4	1.8 LTR.	AWM Eng.	01-05	60191
L4	1.8 LTR.	AUG Eng.	00-01	60191
L4	2.0 LTR.		95-96	60390
L4	2.0 LTR.	CBFA Eng.	2010	60457
L4	2.0 LTR.	CCTA Eng.	08-10	60457
L4	2.0 LTR.	BPY Eng.	06-08	60197
L5	2.5 LTR.		12-14	60319
V6	2.8 LTR.		98-05	60187
V6	2.8 LTR.		96-97	60330
V6	3.6 LTR.		06-08	60438

R32

V6	3.2 LTR.		2008	60438
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Rabbit

L5	2.5 LTR.		06-09	60319
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Tiguan

L4	2.0 LTR.		09-17	60457
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Touareg

V6	3.0 LTR. Supercharged	ELECTRIC/GAS	11-14	60500
V6	3.0 LTR. Turbo Diesel		11-14	60500
V6	3.2 LTR.		04-06	60190
V6	3.6 LTR.		07-10	60190
V8	4.2 LTR.	BAR Eng.	2007	60331
V8	4.2 LTR.		08-09	60331
V8	4.2 LTR.		04-06	60331

VOLVO

240

L4	2.3 LTR.		90-93	60411
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244

L4	2.3 LTR.		1989	60411
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245

L4	2.3 LTR.		1989	60411
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740

L4	2.3 LTR.		88-92	60411
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760

L4	2.3 LTR.		88-90	60411
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940

L4	2.3 LTR.		91-95	60411
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C30

L5	2.4 LTR.		08-10	60220
L5	2.5 LTR.		08-13	60220

CYL	APPLICATION	NOTES	YEAR	KARLYN #
C70				
L5	2.3 LTR.		02-04	60220
L5	2.4 LTR.		02-04	60220
L5	2.5 LTR.		06-13	60220
S40				
L5	2.4 LTR.		04-10	60220
L5	2.5 LTR.		04-11	60220
S60				
L5	2.3 LTR.		02-04	60220
L5	2.4 LTR.		02-09	60220
L5	2.5 LTR.		03-12	60220
L6	3.0 LTR.		11-15	60232
S80				
L5	2.5 LTR.		04-06	60220
L6	2.9 LTR.		02-05	60220
L6	3.0 LTR.		08-15	60232
L6	3.2 LTR.		07-14	60232
V8	4.4 LTR.		07-10	60220
V50				
L5	2.4 LTR.		05-10	60220
L5	2.5 LTR.		05-11	60220
V60				
L6	3.0 LTR.		2015	60232
V70				
L5	2.3 LTR.		02-04	60220
L5	2.4 LTR.		02-07	60220
L5	2.5 LTR.		03-07	60220
L6	3.2 LTR.		08-10	60232
XC60				
L6	3.0 LTR.		11-15	60232
L6	3.0 LTR. Turbo		2010	60232
L6	3.2 LTR.		11-15	60232
XC70				
L5	2.5 LTR.		03-07	60220
L6	3.0 LTR.		11-15	60232
L6	3.0 LTR. Turbo		09-10	60232
L6	3.2 LTR.		08-15	60232
XC90				
L5	2.5 LTR.		03-06	60220
L6	2.9 LTR.		03-05	60220
L6	3.2 LTR.		07-13	60232
V8	4.4 LTR.		05-11	60220

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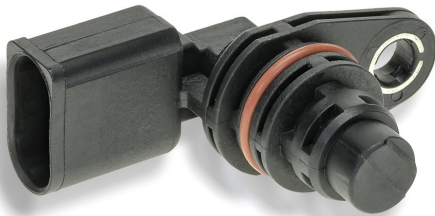
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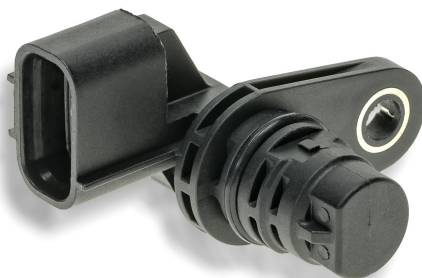
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60030
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60032
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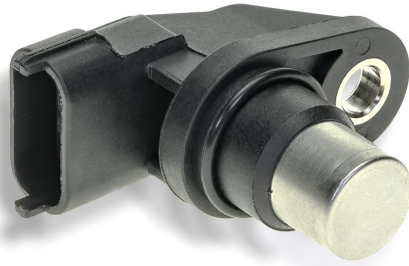
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60040

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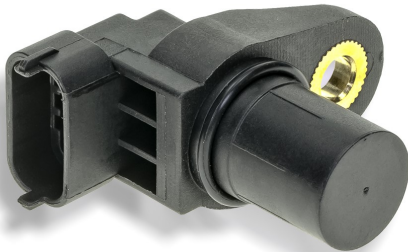
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60045

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60046

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60050

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60058

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60067

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60072

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(CHRYSLER/DODGE/JEEP/MITSUBISHI
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<p># 60089 CAMSHAFT (NISSAN OE #23731-3LM1A)</p> 	<p># 60093 CAMSHAFT (BMW OE #13-62-7-837-904)</p> 	<p># 60095 CAMSHAFT (AUDI/VW OE #058-905-161-B/C)</p> 
<p># 60101 CAMSHAFT (BMW/LAND ROVER OE #12-14-7-539-166, 12-14-1-438-083, 8510301)</p> 	<p># 60102 CAMSHAFT (INFINITI/NISSAN OE #23731- 5M016/10/15, 23731-6J905/06)</p> 	<p># 60106 CAMSHAFT (AUDI/PORSCHE/VW OE #06A-905-161A, 955-606-106-00)</p> 
<p># 60112 CAMSHAFT (KIA OE #0K013-18131/18131A/1813X)</p> 	<p># 60119 CAMSHAFT (TOYOTA OE #19300-74010, 19300-03010)</p> 	<p># 60124 CAMSHAFT (HYUNDAI/KIA OE #39350-37110/100)</p> 

60129

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(HYUNDAI/KIA OE #39350-23910,
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60131

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(ACURA/HONDA OE #37840-PGE-A11)



60132

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(HONDA OE #37840-PLC-006,
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60133

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60135

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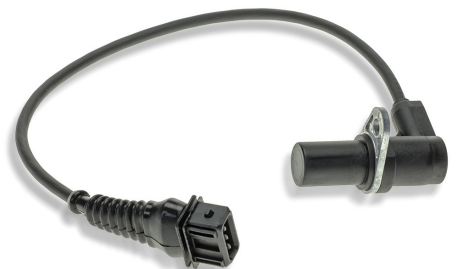
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60141

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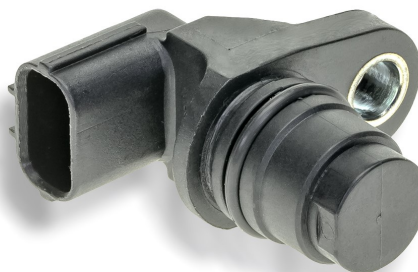
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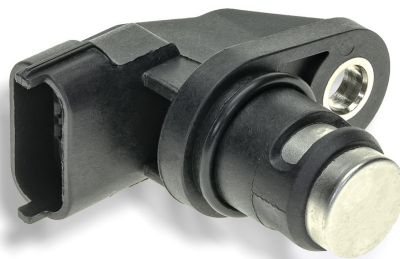
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60168
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60172
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60190
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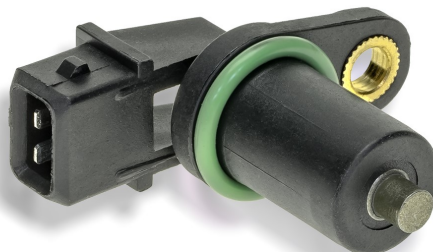
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60209
CRANKSHAFT
(HYUNDAI/KIA OE #39180-37200/150)



<p># 60214 CRANKSHAFT (HYUNDAI/KIA OE #39180-2B000)</p> 	<p># 60216 CRANKSHAFT (NISSAN OE #23731-ED01A/1KT0A/1VA0A/EN20A)</p> 	<p># 60218 CRANKSHAFT (ACURA/HONDA OE #37500-RAA-A01)</p> 
<p># 60220 CRANKSHAFT (VOLVO OE #31331765)</p> 	<p># 60223 CRANKSHAFT (HYUNDAI/KIA OE #39180-22600, 39180-26900)</p> 	<p># 60224 CRANKSHAFT (HYUNDAI/KIA OE #39180-25200/300)</p> 
<p># 60226 CRANKSHAFT (LEXUS/TOYOTA OE #90919-05035, 90919-A5001)</p> 	<p># 60230 CRANKSHAFT (SAAB OE #55557326, 30561772, 9177221)</p> 	<p># 60231 CRANKSHAFT (DODGE/FREIGHTLINER/JEEP/MB OE #642-905-00-00, 642-153-07-28, 5175763AA/AB, 68039478AA/AC)</p> 
<p># 60232 CRANKSHAFT (LAND ROVER/VOLVO OE #31331753, LR030200)</p> 	<p># 60242 CRANKSHAFT (LEXUS/PONTIAC/SCION/TOYOTA OE #90919-05047, 90080-19024)</p> 	<p># 60249 CRANKSHAFT (CHEVY/SAAB/SATURN OE #12789959)</p> 

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(BMW OE #12-14-1-709-616,
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60259
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(ACURA/HONDA OE #37500-R40-A01)



60264
CRANKSHAFT
(LEXUS/TOYOTA OE #90919-A5003)



60270
CRANKSHAFT
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60272
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60275
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60276
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OE #23731-JA10C/10B)



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60284
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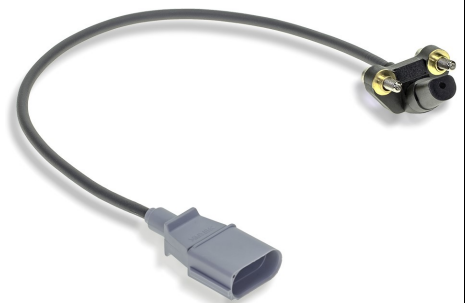
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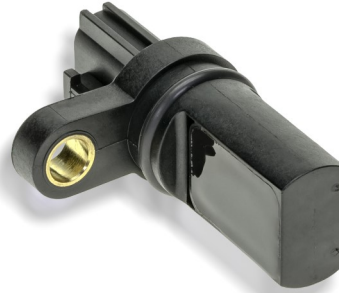
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60323
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(AUDI OE #077-905-381-F)



60325
CRANKSHAFT
(INFINITI/NISSAN
OE #23731-AL60C/8J105/8J106)



60326
CRANKSHAFT
(NISSAN OE #23731-EA20C)



60330
CRANKSHAFT
(VW OE #021-906-433-C/A/D)



60331
CRANKSHAFT
(AUDI/VW OE #077-905-381-G/N)



60332
CRANKSHAFT
(ACURA/HONDA OE #37500-RCA-A01)



60333
CRANKSHAFT
(MB OE #276-153-01-28,
276-905-07-00-28)



60342
CRANKSHAFT
(CHRYSLER/DODGE/EAGLE/
MITSUBISHI/PLYMOUTH
OE #5269703, M05235377)



60360
CRANKSHAFT
(HONDA OE #37500-PLC-005/015)



60361
CRANKSHAFT
(ACURA/HONDA OE #37500-PNA-003,
37500-PNB-003)



60363
CRANKSHAFT
(INFINITI/NISSAN OE #23731-31U11/10)



60372
CRANKSHAFT
(MITSUBISHI OE #MR985145)



60376

CRANKSHAFT

(MB OE #003-153-96-28/95-28)



60383

CRANKSHAFT

(MINI OE #13-62-7-561-753)



60387

CRANKSHAFT

(BMW OE #12-14-1-726-065/066)



60390

CRANKSHAFT

(VW OE #021-907-319-B/A)



60411

CRANKSHAFT

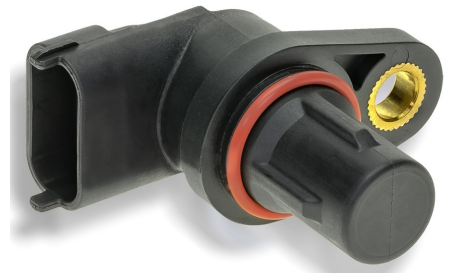
(VOLVO OE #3547847, 271949)



60437

CAMSHAFT

(MB/PORSCHE OE #272-905-0043,
997-606-106-03)



60438

CRANKSHAFT

(AUDI/VW OE #022-957-147)



60440

CAMSHAFT

(AUDI/VW/PORSCHE
OE #07L-905-163C)



60449

CAMSHAFT

(AUDI/VW OE #04C-907-601)



60450

CAMSHAFT

(ACURA/HONDA OE #37510-R40-A01)



60451

CAMSHAFT

(INFINITI/MB OE #270-905-04-00)



60457

CRANKSHAFT

(AUDI/VW OE #06H-906-433)



60461
CRANKSHAFT
(NISSAN OE #23731-JA00C)



60462
CRANKSHAFT
(LEXUS/TOYOTA OE #90919-A5004)



60472
CRANKSHAFT
(AUDI/VW OE #06H-906-433D)



60500
CRANKSHAFT
(AUDI/VW OE #059-906-433J)



60504
CRANKSHAFT
(AUDI/VW OE #059-906-433C)



60510
CRANKSHAFT
(LAND ROVER OE #ERR7354)



60512
CAMSHAFT
(INFINITI/NISSAN OE #23731-EY00B)



60516
CRANKSHAFT
(ACURA/HONDA OE #37500-R60-U01)



CROSS REFERENCE

BECK	KARLYN
180-0261	60363
180-0279	60226
180-0288	60032
180-0299	60284
180-0308	60242
180-0329	60045
180-0333	60223
180-0348	60124
180-0355	60129
180-0357	60074
180-0359	60275
180-0365	60270
180-0368	60223
180-0369	60224
180-0376	60112
180-0381	60197
180-0384	60168
180-0385	60390
180-0392	60361
180-0393	60360
180-0394	60133
180-0395	60147
180-0396	60332
180-0397	60040
180-0402	60029
180-0409	60209
180-0411	60387
180-0414	60187
180-0417	60438
180-0418	60330
180-0419	60190
180-0424	60095
180-0425	60257
180-0429	60156
180-0430	60106
180-0439	60376

BECK	KARLYN
180-0448	60411
180-0452	60372
180-0453	60131
180-0458	60201
180-0459	60139
180-0460	60342
180-0470	60043
180-0471	60138
180-0472	60230
180-0473	60165
180-0481	60264
180-0482	60218
180-0483	60067
180-0487	60331
180-0490	60040
180-0491	60102
180-0492	60220
180-0493	60191
180-0499	60033
180-0501	60325
180-0509	60135
180-0510	60076
180-0512	60046
180-0515	60003
180-0517	60172
180-0518	60172
180-0523	60272
180-0526	60450
180-0531	60132
180-0535	60119
180-0537	60216
180-0543	60326
180-0552	60224
180-0553	60030
180-0557	60281
180-0558	60457

FOR REFERENCE PURPOSES ONLY!
REFER TO OUR MODEL LISTINGS FOR THE CORRECT APPLICATION

CROSS REFERENCE

BECK	KARLYN
180-0566	60249
180-0574	60149
180-0578	60141
180-0579	60050
180-0584	60073
180-0592	60089
180-0598	60010
180-0600	60041
180-0650	60154
180-0654	60308
180-0655	60005
180-0660	60150
180-0678	60144
180-0681	60323
180-0683	60012
180-0684	60026
180-0702	60259
180-0707	60015
180-0710	60101
180-0711	60072
180-0713	60462
180-0716	60461
180-0720	60231
180-0726	60319
180-0729	60276
180-0731	60216
180-0735	60214
180-0739	60307
180-0741	60512
180-0744	60021
180-0746	60437
180-0747	60440
180-0751	60216
180-0759	60093
180-0763	60449
180-0767	60146

BOSCH	KARLYN
0-232-101-024	60095
0-232-103-003	60156
0-232-103-019	60106
0-232-103-022	60168
0-232-103-037	60168
0-232-103-040	60037
0-232-103-064	60059
0-232-103-092	60437
0-232-103-114	60437
0-232-103-125	60451
0-261-210-107	60330
0-261-210-141	60376
0-261-210-147	60187
0-261-210-170	60270
0-261-210-177	60191
0-261-210-190	60323
0-261-210-199	60197
0-261-210-229	60249
0-261-210-269	60230
0-261-210-298	60331
0-261-210-383	60472
0-986-280-431	60026

OEM	KARLYN
003-153-27-28	60270
003-153-28-28	60270
003-153-95-28	60376
003-153-96-28	60376
004-153-00-28	60050
004-153-07-28	60168
004-153-69-28	60168
005-153-13-28	60041
021-906-433-A	60330
021-906-433-C	60330
021-906-433-D	60330
021-906-433-E	60190

FOR REFERENCE PURPOSES ONLY!
REFER TO OUR MODEL LISTINGS FOR THE CORRECT APPLICATION

CROSS REFERENCE

OEM	KARLYN
021-907-319-A	60390
021-907-319-B	60390
021-957-147	60190
022-957-147	60438
022-957-147-A	60190
030-907-601-E	60011
045-957-147-B	60010
04C-907-601	60449
058-905-161-B	60095
058-905-161-C	60095
059-906-433C	60504
059-906-433E	60500
059-906-433J	60500
06A-905-161A	60106
06A-905-161-B	60021
06A-905-161-C	60021
06A-906-433-C	60187
06A-906-433-G	60197
06A-906-433-L	60197
06C-905-163-B	60012
06E-905-163	60026
06H-906-433	60457
06H-906-433D	60472
071-957-147	60191
077-905-381-F	60323
077-905-381-G	60331
077-905-381-N	60331
078-906-433A	60191
07K-906-433-B	60319
07K-907-601-A	60141
07L-905-163C	60440
OK013-18131	60112
OK013-18131A	60112
OK013-1813X	60112
12-14-1-433-263	60154
12-14-1-438-081	60139

OEM	KARLYN
12-14-1-438-082	60043
12-14-1-438-083	60101
12-14-1-485-845	60144
12-14-1-703-221	60138
12-14-1-709-616	60257
12-14-1-726-065	60387
12-14-1-726-066	60387
12-14-1-740-383	60156
12-14-1-740-959	60156
12-14-1-743-072	60149
12-14-7-518-628	60043
12-14-7-539-165	60139
12-14-7-539-166	60101
12789959	60249
13-62-7-525-014	60015
13-62-7-525-015	60308
13-62-7-548-995	60307
13-62-7-561-753	60383
13-62-7-588-095	60059
13-62-7-639-278	60281
13-62-7-796-054	60005
13-62-7-837-904	60093
13-62-7-839-138	60201
19300-03010	60119
19300-74010	60119
1X4E-6B288-CA	60058
1X4E-6B288-CB	60058
1X4E-6B288-CC	60058
1X4Z-6B288-CA	60058
1X4Z-6B288-CB	60058
22056-AA230	60046
22056-AA270	60146
23731-1KTOA	60216
23731-1VA0A	60216
23731-2Y522	60135
23731-2Y523	60135

FOR REFERENCE PURPOSES ONLY!
REFER TO OUR MODEL LISTINGS FOR THE CORRECT APPLICATION

CROSS REFERENCE

OEM	KARLYN
23731-2Y524	60135
23731-2Y52A	60135
23731-31U10	60363
23731-31U11	60363
23731-3LM1A	60089
23731-4M50B	60040
23731-5M005	60040
23731-5M006	60040
23731-5M010	60102
23731-5M015	60102
23731-5M016	60102
23731-6J905	60102
23731-6J906	60102
23731-6N206	60165
23731-6N20D	60165
23731-6N21A	60165
23731-8J105	60325
23731-8J106	60325
23731-93CON	60451
23731-AL60C	60325
23731-AL61A	60040
23731-EA20C	60326
23731-ED01A	60216
23731-EN20A	60216
23731-EN22A	60076
23731-EY00B	60512
23731-JA00C	60461
23731-JA10B	60276
23731-JA10C	60276
23731-JA11A	60076
23731-JA11B	60076
270-905-04-00	60451
271949	60411
272-905-0043	60437
276-153-01-28	60333
276-905-07-00	60333

OEM	KARLYN
276-905-07-00-28	60333
30561772	60230
31272689	60034
31331753	60232
31331765	60220
3547847	60411
37500-PLC-005	60360
37500-PLC-015	60360
37500-PNA-003	60361
37500-PNB-003	60361
37500-R40-A01	60259
37500-R60-U01	60516
37500-RAA-A01	60218
37500-RCA-A01	60332
37510-PNA-003	60133
37510-PNB-003	60133
37510-R40-A01	60450
37510-RAA-A01	60147
37840-PGE-A11	60131
37840-PLC-006	60132
37840-RJH-006	60132
39180-22600	60223
39180-25200	60224
39180-25300	60224
39180-26900	60223
39180-2B000	60214
39180-37150	60209
39180-37200	60209
39310-39800	60275
39318-39800	60074
39318-3C100	60073
39350-23700	60129
39350-23910	60129
39350-25010	60030
39350-37100	60124
39350-37110	60124

FOR REFERENCE PURPOSES ONLY!
REFER TO OUR MODEL LISTINGS FOR THE CORRECT APPLICATION

CROSS REFERENCE

OEM	KARLYN
4427657	60150
5080346AA	60041
5080350AA	60270
5080352AA	60270
5175762AA	60041
5175763AA	60231
5175763AB	60231
5269703	60342
55557326	60230
56028133	60072
56028133-AB	60072
56028133-AC	60072
56028133-AD	60072
56028133-AE	60072
56041479AC	60272
56041479AD	60272
56041584-AF	60072
56044180AB	60272
56044180AC	60272
5WK96011Z	60138
642-153-07-28	60231
642-905-00-00	60231
68039478AA	60231
68039478AC	60231
8510301	60101
90080-19009	60045
90080-19014	60067
90080-19024	60242
90919-05012	60045
90919-05026	60067
90919-05035	60226
90919-05036	60032
90919-05047	60242
90919-05057	60264
90919-05060	60033
90919-A5001	60226

OEM	KARLYN
90919-A5002	60032
90919-A5003	60264
90919-A5004	60462
9177221	60230
955-606-106-00	60106
955-606-147-00	60190
955-606-433-00	60190
958-606-106-01	60440
996-606-106-02	60168
996-606-106-03	60037
997-606-106-03	60437
AJ811224	60034
C2S6438	60058
ERR7354	60510
L3G2-18-221	60172
L3K9-18-221A	60172
L3K9-18-230A	60003
LR014372	60034
LR030200	60232
M05235377	60342
M05269703	60342
MD327122	60284
MR560276	60284
MR578768	60029
MR985145	60372
S107230001Z	60257
S119044012Z	60308
S119445001Z	60015
XR853846	60058

STANDARD	KARLYN
PC79	60045
PC80	60330
PC89	60363
PC166	60342

FOR REFERENCE PURPOSES ONLY!
REFER TO OUR MODEL LISTINGS FOR THE CORRECT APPLICATION

CROSS REFERENCE

STANDARD	KARLYN
PC167	60119
PC172	60284
PC177	60411
PC192	60330
PC211	60257
PC214	60226
PC216	60067
PC231	60387
PC244	60072
PC266	60032
PC302	60201
PC309	60101
PC310	60139
PC330	60124
PC345	60095
PC365	60390
PC371	60209
PC376	60361
PC379	60050
PC384	60156
PC395	60149
PC406	60242
PC422	60112
PC428	60230
PC456	60376
PC458	60135
PC460	60102
PC461	60040
PC462	60040
PC464	60165
PC467	60058
PC477	60360
PC478	60218
PC479	60332
PC482	60043
PC487	60272

STANDARD	KARLYN
PC497	60270
PC499	60325
PC502	60187
PC509	60191
PC520	60323
PC524	60190
PC525	60197
PC531	60223
PC532	60275
PC548	60249
PC557	60372
PC559	60033
PC564	60264
PC580	60510
PC585	60220
PC586	60190
PC595	60190
PC605	60131
PC610	60133
PC618	60132
PC619	60147
PC625	60041
PC626	60106
PC628	60021
PC632	60074
PC641	60168
PC650	60138
PC661	60129
PC669	60154
PC670	60012
PC672	60141
PC676	60037
PC680	60029
PC687	60331
PC700	60011
PC702	60150

FOR REFERENCE PURPOSES ONLY!
REFER TO OUR MODEL LISTINGS FOR THE CORRECT APPLICATION

TESTING OF BREMI WHEEL SPEED SENSORS

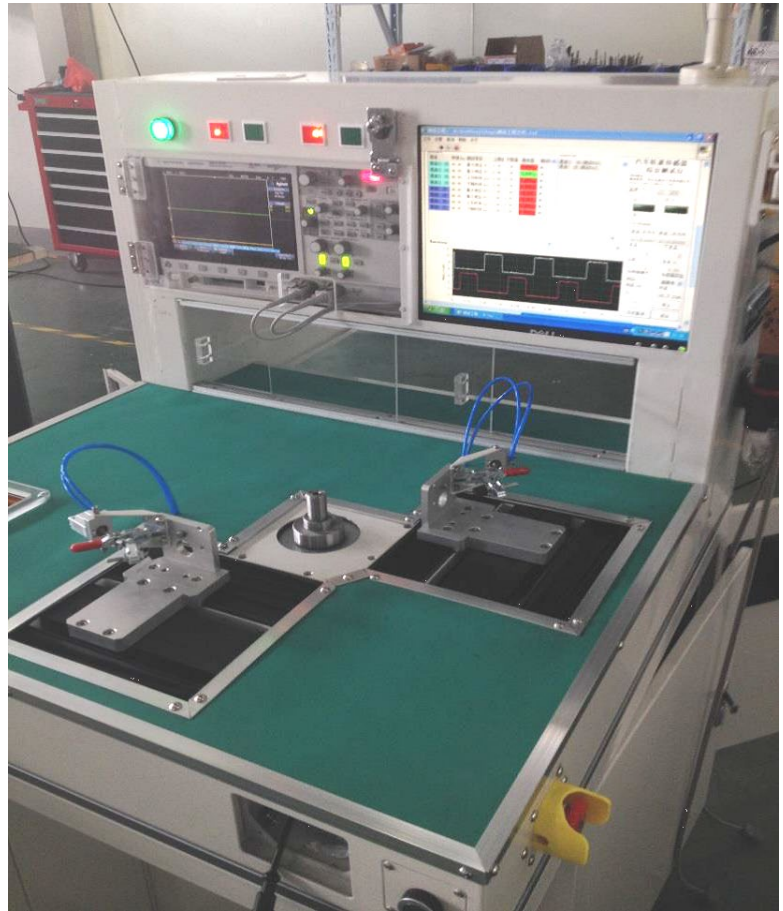
Electrical test

Sensors are subjected to an **electrical test** both *before* and *after* the thermal shock test.

The illustration on the right shows the apparatus used to test the wheel speed sensors.

The following values are recorded and compared to the OE profile to ensure that it is within the optimal range.

- Capacity utilization in %
- Load resistance in Ω
- Frequency in Hz
- VPP ("Volts Peak to Peak")



Thermal shock

Within the context of product qualification, all newly produced wheel speed sensors are subjected to defined **thermal shock cycles**.

Extreme temperatures act on the parts in a special chamber:

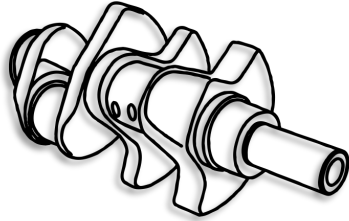
- -40°C for a period of 45 min
- $+130^{\circ}\text{C}$ for a period of 30 min

The change in temperature takes about 10 seconds.

A complete test covers a total of 60 cycles.

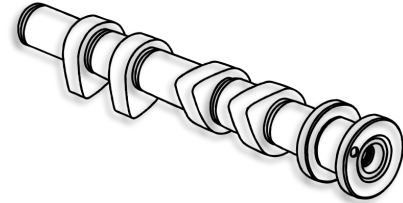


SPEED SENSORS IN ENGINE MANAGEMENT



Crankshaft sensor

- Measures engine speed
- Identifies the crankshaft position
- Ignition timing signal



Camshaft sensor

- Identifies the camshaft position (valve position)
- Ignition timing signal (single spark at ignition coil)
- Start of injection signal (sequential injection)

REASONS FOR FAILURE

Reasons for failure

- Open circuits
- Internal short circuits
- External damage
- Severe contamination
- Mechanical damage to sensor rotor

Effects of failure

The following system characteristics can be recognized when speed sensors fail:

- The engine indicator lamp (exhaust warning lamp) lights up
- A fault code is stored
- Engine management goes into limp-home mode (no output)
- Engine start may not be possible
- Failure of other systems