

Introduction

This service manual is the product of existing technical publications. Special care has been taken to provide accurate information on removal, disassembly, inspection, installation, and adjustment procedures, together with the necessary technical data for the particular job.

The material in this manual is divided according to the Mercedes-Benz Component Group System as outlined on the GROUP INDEX page. This page will quickly direct the reader to the Major Component Group. Each Major Component Group begins with a JOB INDEX listing all jobs within that group.

Mercedes-Benz of North America, Inc. recommends that repairs to, and maintenance of Mercedes-Benz automobiles be performed by **trained Mercedes-Benz personnel** at authorized Mercedes-Benz dealerships.

The information contained in this special publication is ordinarily issued by Mercedes-Benz of North America, Inc., in conjunction with supplementary service literature and special tools supplied **only to** its authorized dealers. The repair and maintenance procedures outlined herein are intended for use by **trained Mercedes-Benz service and dealership personnel**. This manual can also be useful for Mercedes-Benz owners in diagnosing vehicle systems and performing repairs. Supplementary service literature will not be provided with this publication, but may be contained in reprints of this service manual.

Please note that this manual has been compiled from various sources, some of which cover models other than the subject of this book. Always refer to the engine and vehicle identification table for model and component information.

Special tools required in performing certain service jobs are identified in the manual and are recommended for use. Any part numbers given are only used for identification and easier differentiation between individual components, and are not intended for ordering purposes.

If your Mercedes-Benz model differs from the specifications contained in the manual you select, consult your authorized Mercedes-Benz dealer.

All procedures, illustrations and specifications contained in this manual were based on the latest information available at the time of publication. All rights are reserved to make production, design and specification changes at any time, without notice and without obligation to give notice. Any such changes will not be contained in this manual.

Caution!

The proper performance of service and repair procedures is essential for both the safety of the mechanic and the safe and efficient operation of the vehicle. The use of incorrect service procedures and tools may greatly increase the risk of personal injury and render the vehicle unsafe. The procedures in this manual are described in such a manner that the service may be performed safely and accurately.

However, it is a general assumption that the reader is familiar with basic automotive repair procedures and Mercedes-Benz vehicles. You should not attempt to use this manual if this is not the case.

Mercedes-Benz of North America, Inc. assumes no liability for any damage to person or property caused by the utilization of this publication to effect maintenance or repair work on Mercedes-Benz automobiles.

Complete Service Manual coverage for late model year Mercedes-Benz vehicles requires four individual manuals:

- Service Manual, Engine
- Service Manual, Chassis and Body
- Service Manual, Automatic Climate Control
- Electrical Troubleshooting Manual

Throughout these manuals, the vehicles are identified by their chassis and engine numbers. These numbers are made up of the first six digits of the respective serial number. For the actual location of chassis and engine numbers, see page 00-015/1. In cases where the repair instructions apply to all versions, only the first three digits of the respective number are referenced.

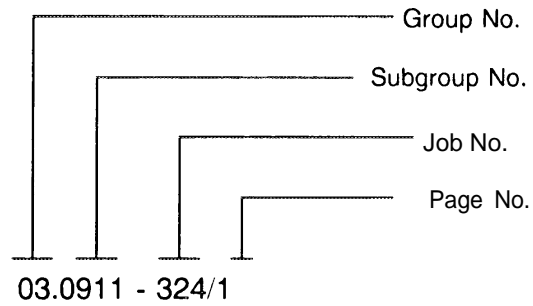
For example, chassis 124 applies to all 124 models. However, chassis 124.051 would apply only to model 300CE with engine 104.

Location of specific repair instructions

First locate the Group No. in the Group Index. Individual groups are separated by an easily visible dividing page, which is followed by the job index page. The exact job required is found in the job index. The initial page of a typical job description appears as follows:

03-324 Replacement of front crankshaft radial seal

Job Title appears on same line as Group No.



Technical data, tightening torques and tools are listed at the beginning of each job.

All dimensions are in metric units unless otherwise indicated. Any part numbers given are only used for identification and differentiation between individual components, and are not intended for ordering purposes.

Special Instructions



Warning

Appears throughout service instructions indicating the possibility of personal injury if procedures are not followed.

Caution!

Indicates possible equipment or vehicle damage if procedures are not followed.

Note

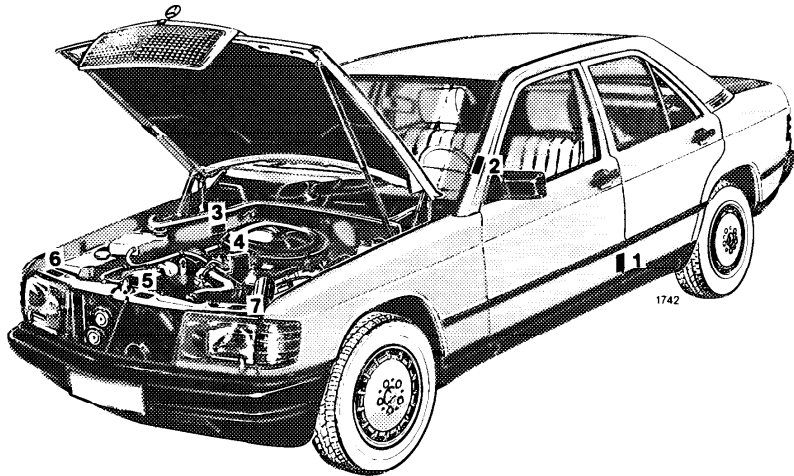
Provides helpful information for the described procedure.

Installation note

Provides detailed information during assembly.

Model 201

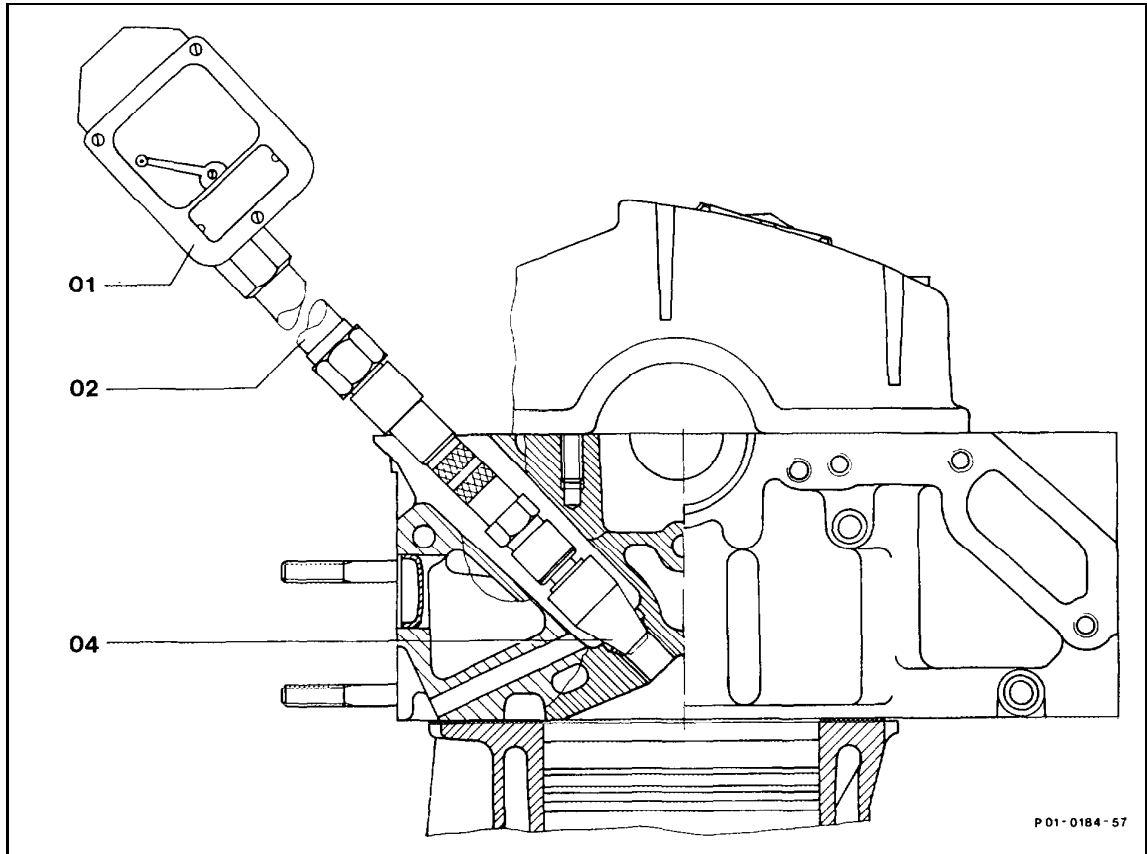
When ordering spare parts, please specify chassis and engine numbers.



- 1 Certification Tag (left door pillar)
- 2 Identification Tag (left window post)
- 3 Vehicle Identification No.
- 4 Engine No.
- 5 Body No. and Paintwork No.
- 6 Informatron Tag
California version
Vacuum line routing for emission control system
- 7 Emission Control Tag
- 8 Emission Control Tag
Catalyst Information
(from model year 1964 up to 1966)

01-010 Testing compression pressure

Preceding work:
Removing spark plug (15-018).



- 01 Compression pressure recorder, special tool 001 589 76 '21 00
- 02 Adapter piece
- 04 Sealing cone with check valve

Test data with engine at normal operating temperature (80°C) in bar

Subject		When new	Limit value
Compression ratio	$\epsilon = 9.0 - 9.4$	10 - 12	approx. 8.5
	$\epsilon = 10.0$	13.5 - 15.5	approx. 12
	$\epsilon = 7.5 - 8.3$	9 - 10	approx. 7.5
	$\epsilon = 7.2$ (102.92)	8 - 9	approx. 6.5

Permissible difference between individual cylinders max. 3

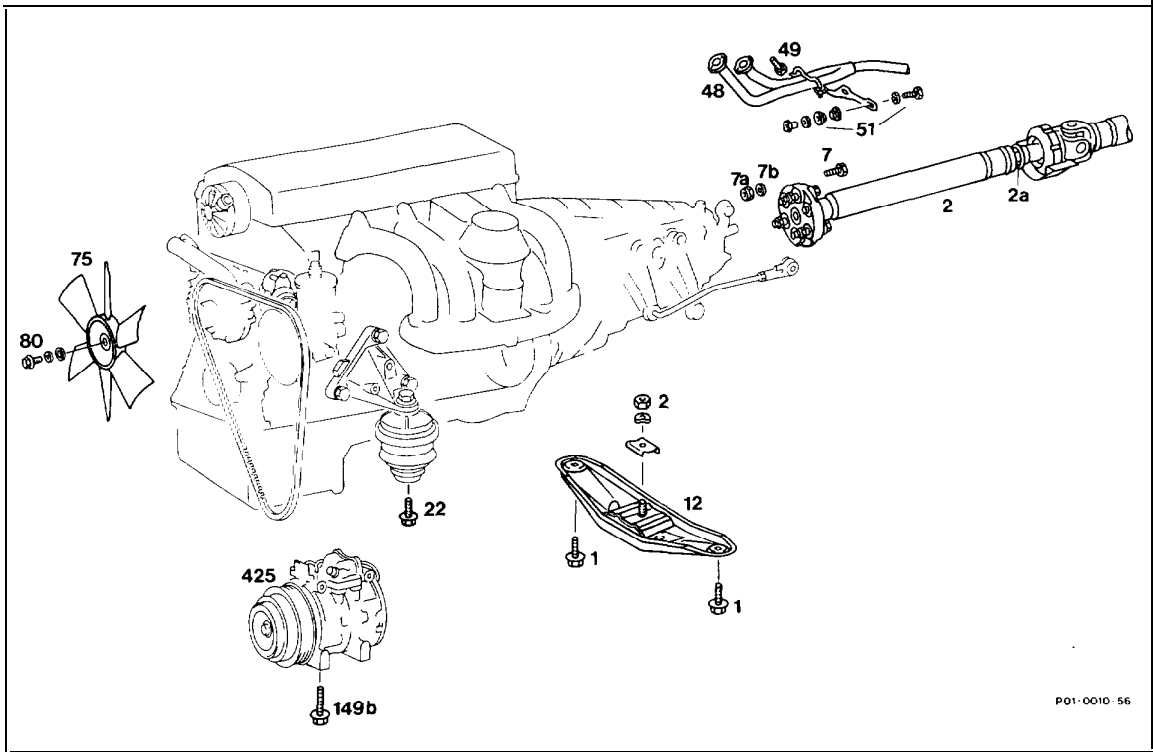
01-030 Removal and installation of engine

Preceding work:

Removal and installation of bottom engine compartment fairing (01-006).

Removal and installation of air filter (09-400 or 09-410).

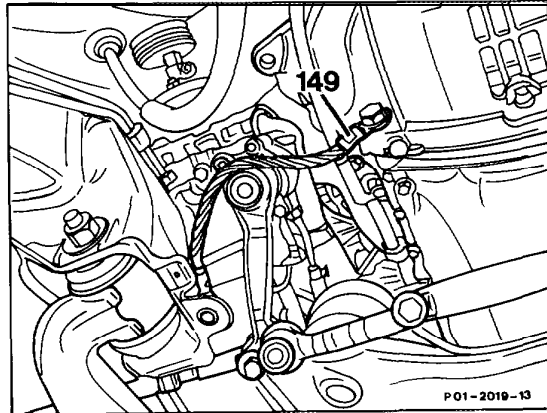
Removal and installation of radiator (20-420).



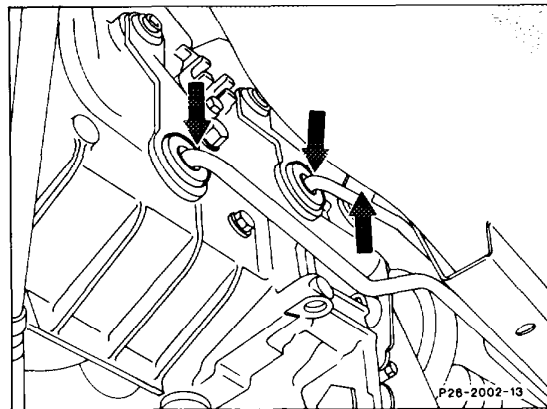
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Battery positive cable	disconnect, connect.
Fan (75)	remove, install, 25 Nm.
Alternator cable connector	detach (step 3).
Lines for pressure oil pump	detach, attach (step 4).
Cover for evaporator	insert (step 5).
Cover for engine wiring harness	remove at component partition wall (steps 6 and 7).
Starter wiring harness	remove, install (step 8).
Terminal block terminal 50	disconnect, connect (step 9).
Terminal 30	disconnect, connect at terminal block (step 10).
Engine wiring harness	disconnect, connect at the individual connections (steps 11 to 18).

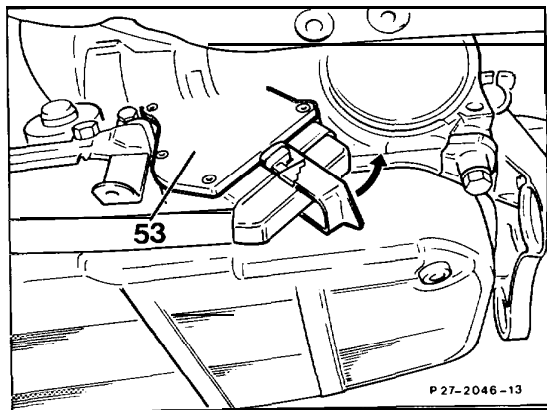
47 Unbolt ground cable (149) at transmission, bolt on. Tightening torque 45 Nm.



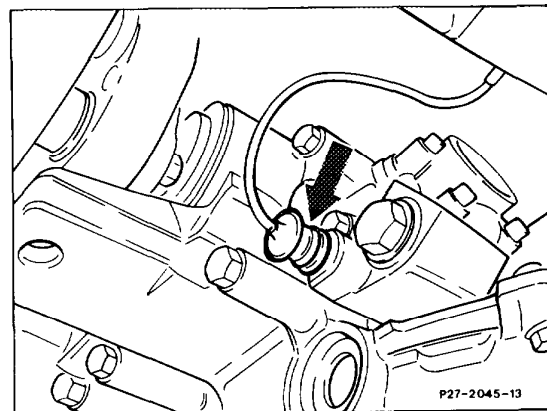
48 Detach shift rods at transmission, attach (arrows). Take the clip locks off the transmission shift levers to perform this step.



49 If equipped with automatic transmission, turn white plastic lock on starter lockout, backup light switch (53) approx. 45° to the right and unplug cable connector, plug in.

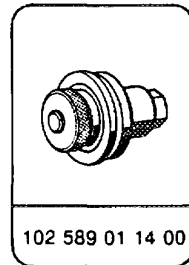
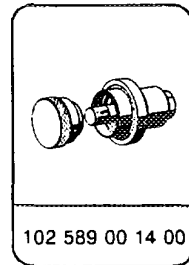
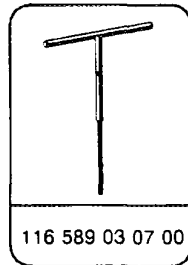
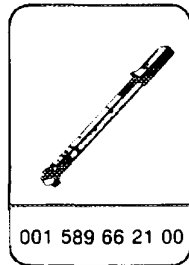


50 Unplug cable (arrow) at the kickdown solenoid valve, plug in.

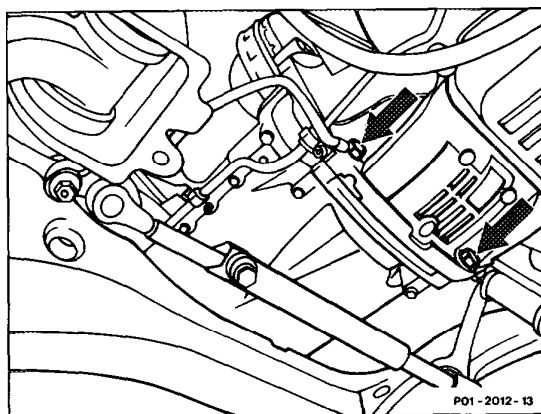


Connector (327)	unplug at alternator, plug in (step 5).
Alternator (G2)	unscrew, screw on, 30 Nm (step 6).
Bracket (156)	for alternator, unbolt, bolt on, 25 Nm (step 7).
TDC pulse generator cable (1)	unbolt, bolt on (step 8). If timing case cover has been replaced, the TDC pulse generator bracket must be adjusted (03345).
Bracket (8)	for oil pump strainer basket, unbolt, bolt on, 25 Nm, (step 9).
Timing case cover	remove remaining bolts, take off timing case cover (steps 10 and 11). Do not damage cylinder head gasket: replace cylinder head gasket if damaged.
Mating surfaces	clean (step 12).
Timing case cover	coat with sealant 001 989 25 20 and install timing case cover (steps 13 and 14). Use fitting tool 102 589 00 14 00 and spacer ring 102 589 01 14 00 for replacement of radial seal.

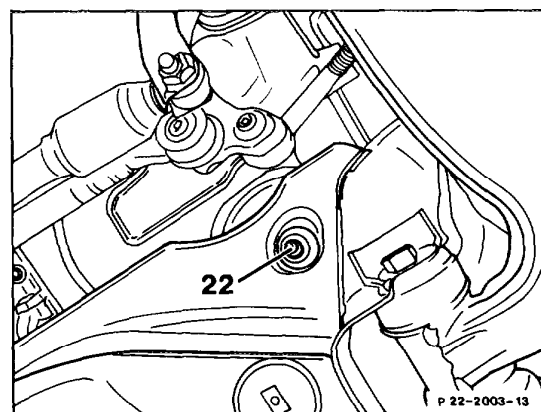
Special tools



6 Remove two bolts at the transmission – engine joint (M10, arrows), bolt on. Tightening torque 45 Nm.



7 Remove both bottom bolts (22) for engine mounting fixture, bolt on. Tightening torque 45 Nm.



Len side shown

8 Raise engine with the engine hoist.

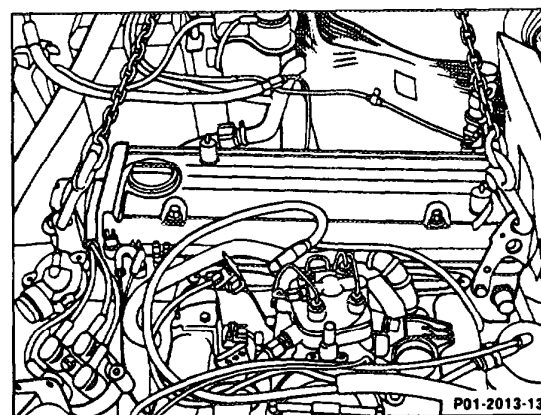
9 Remove remaining bolts (32, 34) for attaching oil pan, bolt on and remove oil pan.

Tightening torque:

M6 10 Nm,

M8 25 Nm.

10 Carefully clean mating face at oil pan and on crankcase.



01-415 Removal and installation of cylinder head

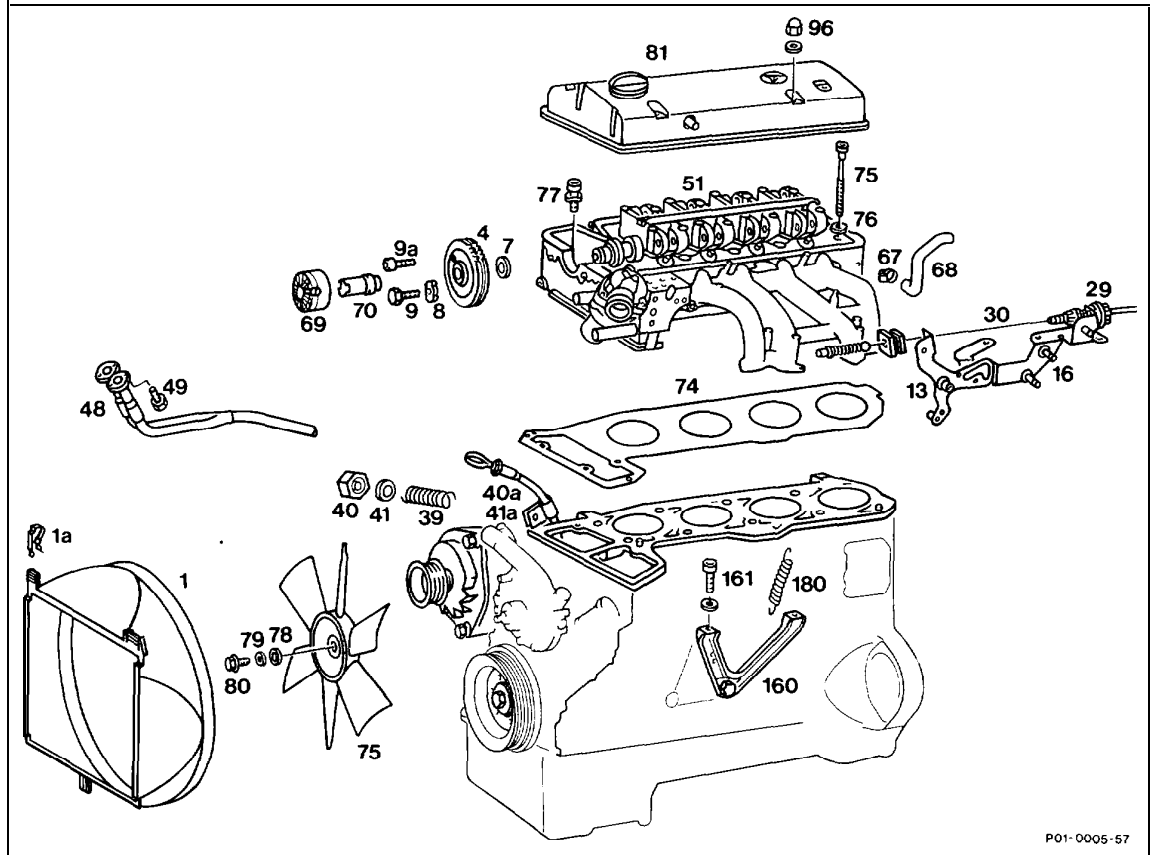
Preceding work:

Removal of air filter (09-400).

Draining engine coolant (20-010).

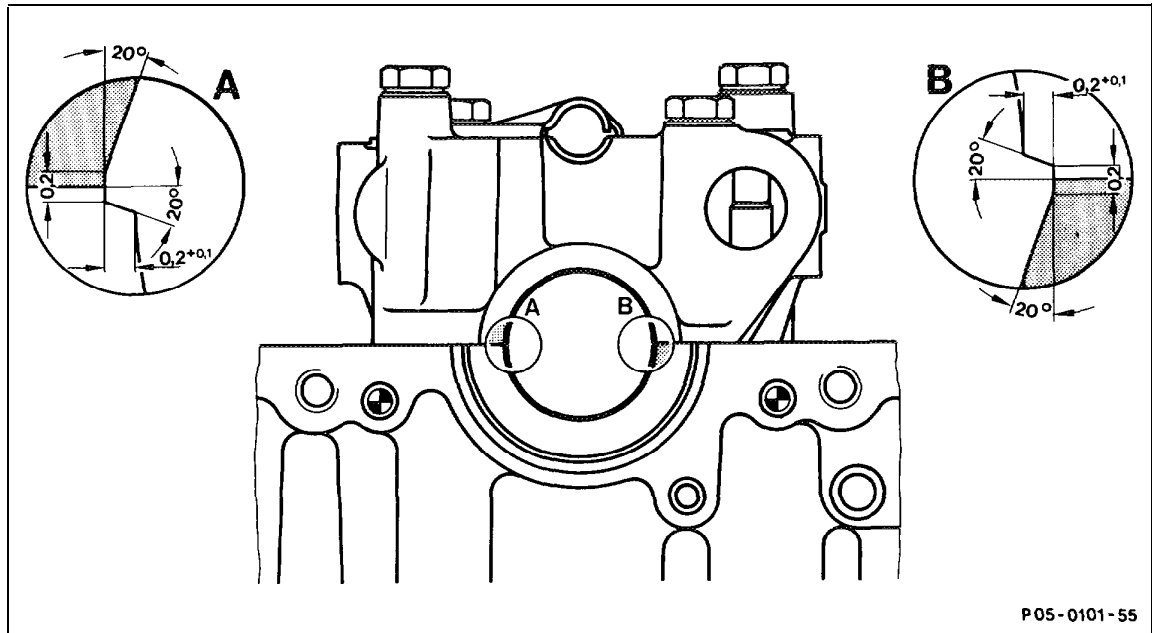
Removal of guide rail in cylinder head (05-340).

Removing poly V-belt (13-342).

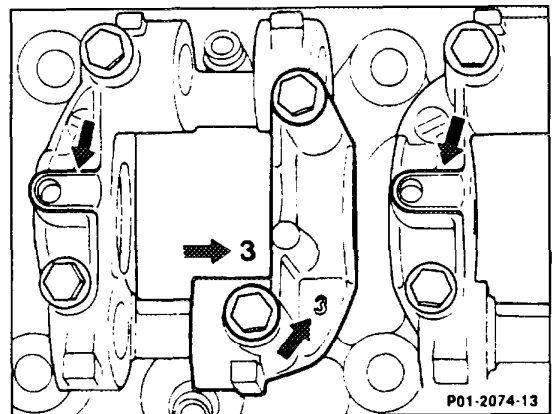


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Fan shroud (1) and fan (75)	remove, install, 25 Nm (steps 1 and 2).
Cylinder head cover (81)	remove, install, with ignition cable and distributor cover (01-406).
Exhaust pipes (48)	unbolt at exhaust manifold, bolt on, 25 Nm (step 4).
Dipstick guide tube (40a)	unbolt, bolt on (step 5).
Bowden cable (30)	detach, attach, adjust (30-325, step 6).
Intake manifold strut (160) and return spring (180)	at intake manifold, unbolt, bolt on, return spring, detach, attach (steps 7 and 8).



The bearing brackets differ. Each bearing bracket has a number stamped to identify it. This number must agree with the number stamped on the cylinder head (arrows). If correctly installed, the contact faces for the oil pump are facing to the rear and the code numbers are on the righthand side (direction of travel) (arrows).



On engine 102.985 ^(USA) the rectangular ring manufactured by **Götze** is installed in groove I of the piston manufactured by Mahle and KS. The running surface of this piston ring is chrome-plated, asymmetrically crowned and sharp-edged at the bottom to reduce oil consumption.

Standard Implementation: 03/88 (Mahle)

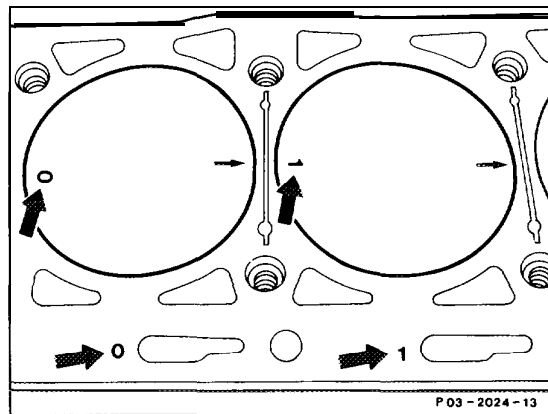
Model	Engine	Engine End No.		Vehicle Ident End No.	
		Manual transmission	Automatic transmission	A	F
201.028 ^(USA)	1102.985	023341	069631		484718

Standard Implementation: 03/88 (KS)

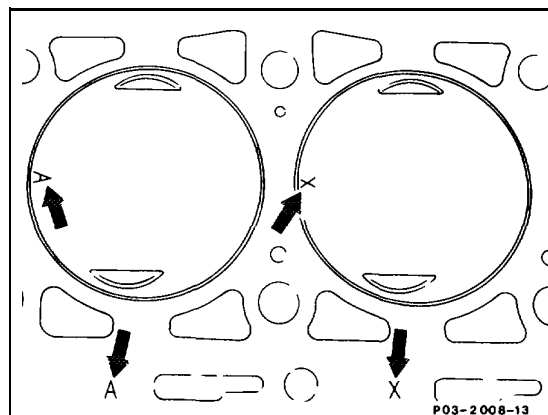
Model	Engine	Engine End No.		Vehicle Ident End No.	
		Manual transmission	Automatic transmission	A	F
201.028 ^(USA)	102.985	023788	070989		492527

The Group code numbers on the pistons and on the mating face of the crankcase have been replaced by Group code letters. As a result, the cylinder diameters and matching of pistons and cylinders have also been modified (refer to data).

Crankcase with Group numbers



Crankcase with Group code letters



Thrust washers of the same thickness must always be installed on both sides.
 It is not permitted to regrind thrust washers.
 The thrust washers are available only as sets as replacement parts. A set consists of one top and one bottom thrust washer (23 and 23a).

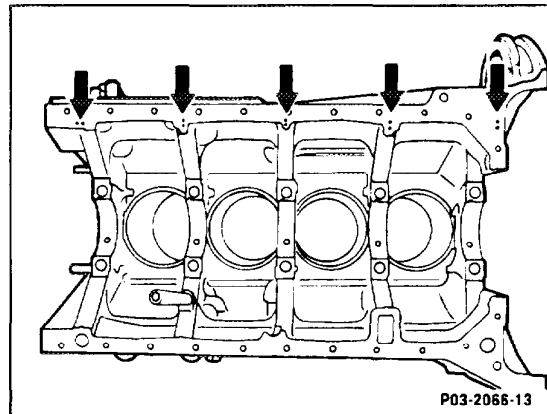
Matching crankshaft bearing shells to crankcase

Crankshaft journal bearing ¹⁾	Basic bores in crankcase		
	1 chisel marks	2 chisel marks	3 chisel marks ²⁾
	Matching bearing shells with color coding		
blue	blue	yellow	yellow
yellow	blue	yellow	red
red	yellow	yellow	red

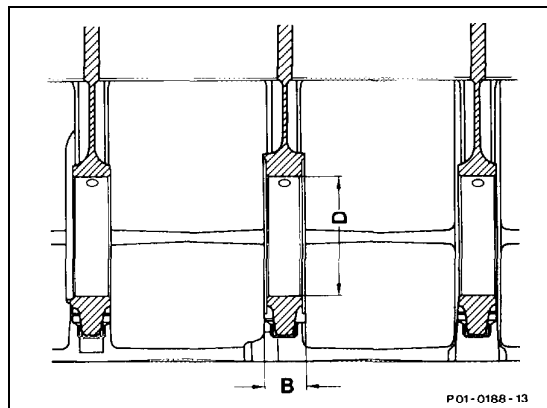
¹⁾ Colored dots on the crank webs or counterweights next to the crankshaft journals.
²⁾ Chisel marks in mating face of crankcase at oil sump end next to basic bore.

The normal size crankshaft bearing shells with the color coding blue, yellow and red are supplied as replacement parts. They should be matched according to the table. The bearing plays do not therefore need to be measured.

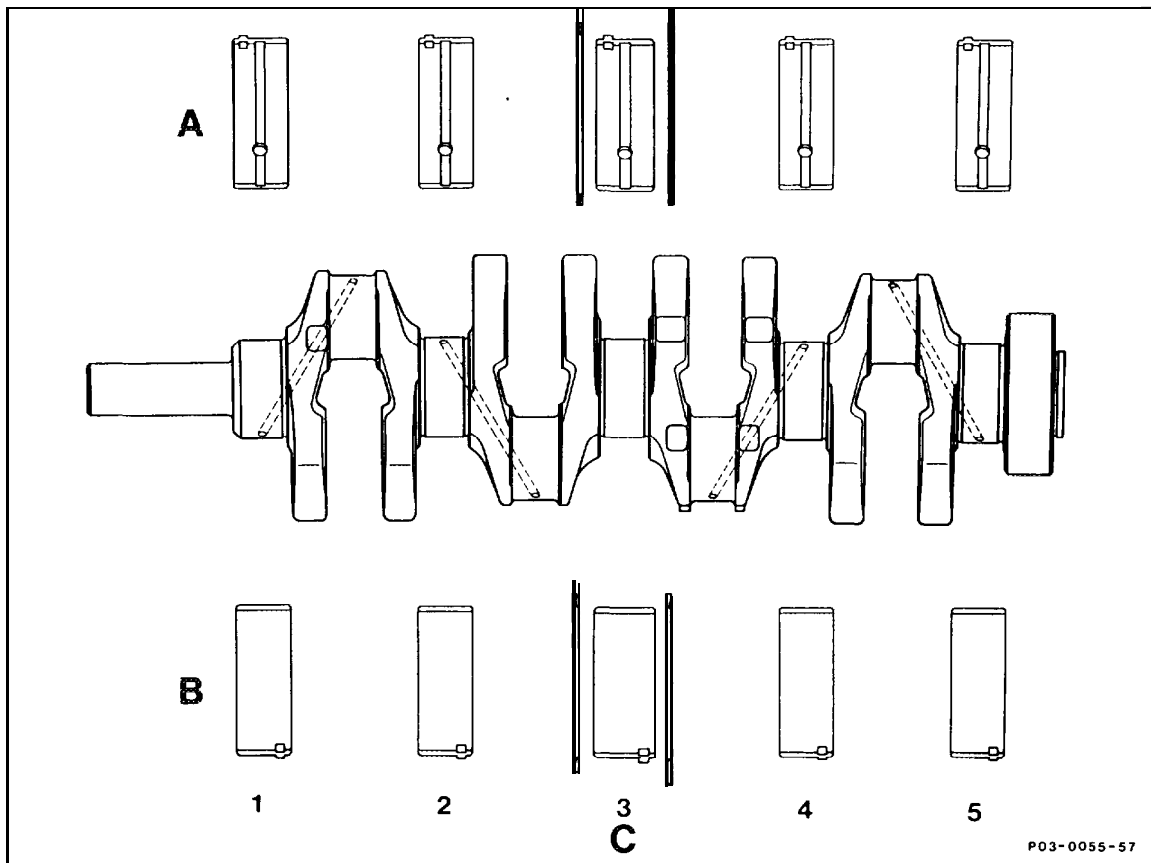
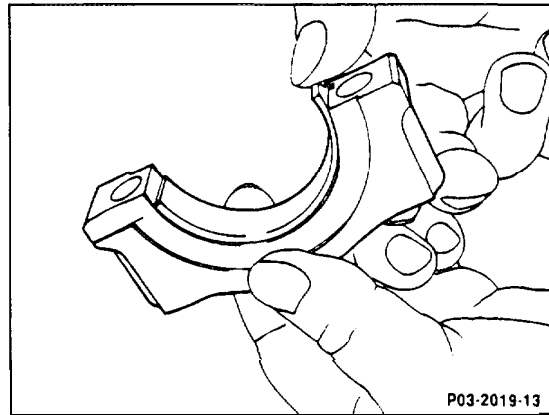
Chisel marks for matching crankshaft bearing shells



In June 1986 the crankshaft bearings were modified from 24 mm to 20 mm (size "B").



4 Insert crankshaft bearing shells, install bearing covers, screw in fastening bolts and tighten to 90 Nm (hexagon bolts) or 55 Nm initial torque and 90° angle of rotation torque (stretch bolts), respectively.

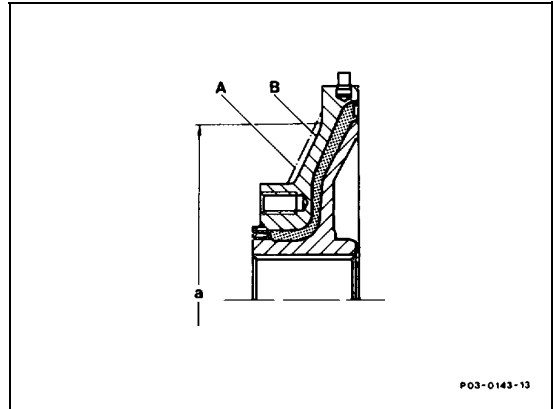


- A Bearing shells in crankcase
- B Bearing shells in bearing covers
- C Thrust bearings with thrust washers

In order to provide greater clearance for the top shock absorber of the poly V-belt tensioning device, the shape of the vibration damper has been modified.

Size "a" = 133.1 mm dia., previously 145 mm dia.

A 1st version
B 2nd version



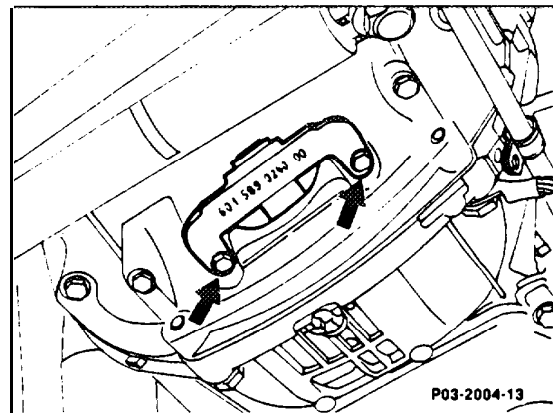
Standard implementation: 10/87

Model	Engine	Engine End No.	
		Manual transmission	Automatic transmission
201.028	102.985	018810	061766

The spacer ring on the crankshaft was made 3.65 mm narrower with implementation of the double roller chain.

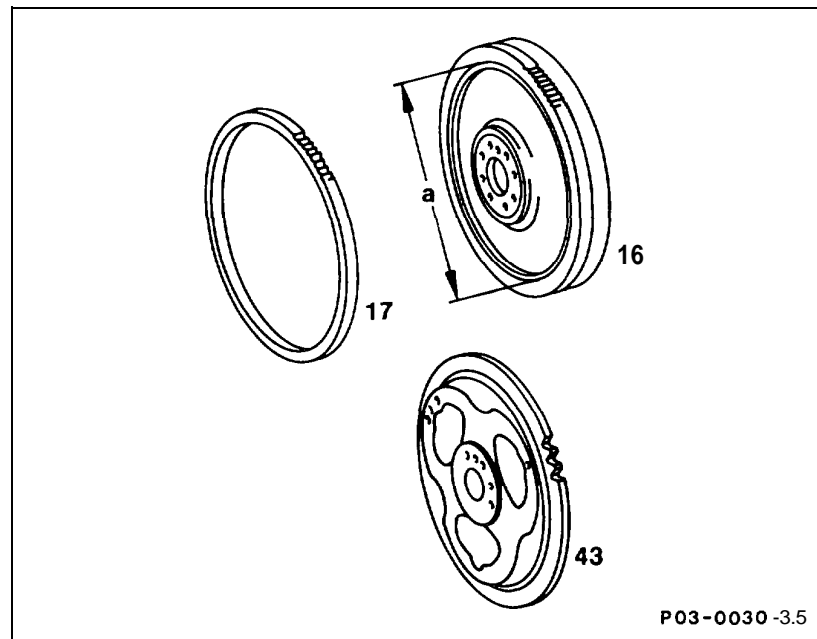
Removal and installation

1 Attach retaining lock 601 589 02 40 00 with two bolts to the oil pan (arrows).



03-430 Replacing ring gear on flywheel

Preceding work:
Removing flywheel (03-410).



Ring gear (17)	Drill old ring gear and snap open with a chisel or heat rapidly and then remove immediately. Heat new ring gear to 220 °C and fit onto the flywheel immediately. Pay attention to instruction. Lateral runout at ring gear max. 0.4 mm.
Flywheel (16)	Centering collar dia. (a) for ring gear 275,31–275,39 mm. Clean contact surface of ring gear at flywheel before installation on ring gear.
Flex plate (43)	This ring gear is welded on and cannot be replaced. Replace driven member complete.

Commercial accessories

Temperature measuring chalk
Colour No. **2815/220** (white) Thermochrom

e. g. AW **Faber-Castell**
D-8504 Stein bei **Nürnberg**
