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E90 Automatic Transmission GA6HP19Z

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E90 Automatic Transmission GA6HP19Z

Model: E90

Production: From Start of Production

OBJECTIVES

After completion of this module you will be able to:

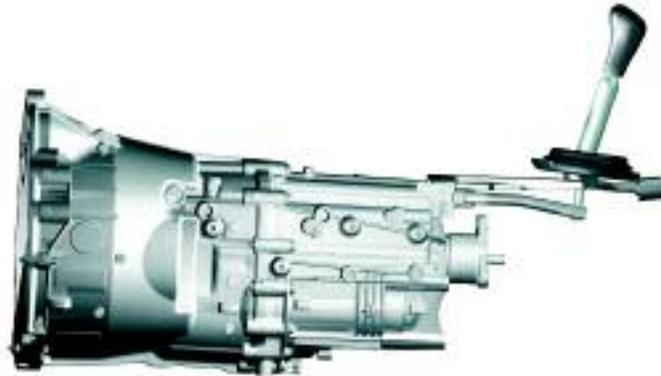
- Establish an overview of E90 transmissions

E90 Transmissions

On the E90 a six speed manual transmission (GS6-37BZ) will be standard and a six speed automatic transmission with STEPTRONIC (GA6HP19Z) will be optional.

Manual Transmission

The Manual Transmission (GS6-37BZ) available on the E90 is the same as that used previously on the E46 and currently on the E60 & E85. The transmission has a lifetime oil fill.



Automatic Transmission

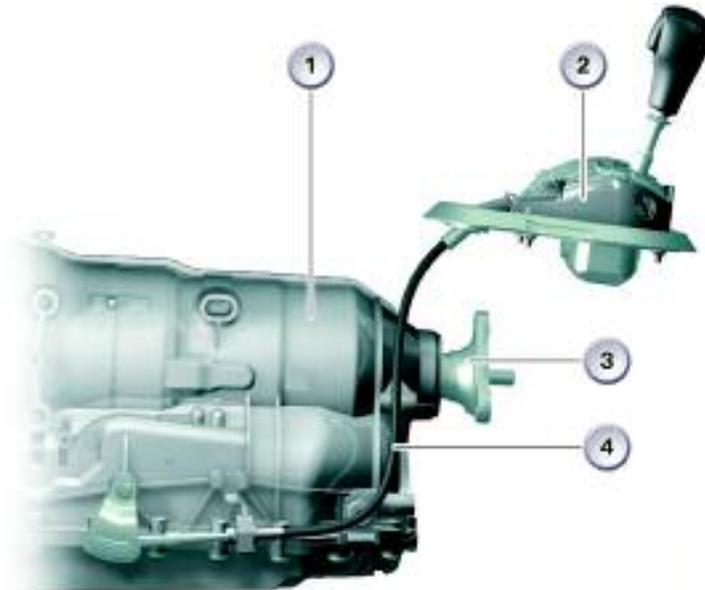
For the first time the 3 series will see a six speed Automatic Transmission (GA6HP19Z) with STEPTRONIC.



The transmission is similar to that used in the E60 with the M54 engine. In order to utilize this transmission on the E90 changes were made to:

- Outer gearshift mechanism with electrical interlock
- New transmission control module
- Adapted hole circle diameter at the output flange

External Gearshift Mechanism



Index	Explanation	Index	Explanation
1	Gearbox Casing	3	Output Flange
2	Selector Lever Unit	4	Cable Assembly

The external gearshift mechanism consists of the selector lever with the following components:

- Cable assembly to gearbox
- Solenoid valve for shiftlock function
- Solenoid valve for interlock function
- Microswitch for detecting locked shift lever
- Emergency release of interlock function
- Switch unit for Steptronic function
- Selector lever position switch indicator

■ Cable Assembly

The cable assembly is the mechanical connection between the selector lever and the inner gearshift mechanism (mechatronics module). The drive stages are preselected and the parking lock engaged with the aid of the cable assembly.

■ Shiftlock

The shiftlock function prevents the vehicle from inadvertently being placed in gear with the ignition on, unless the brake pedal is depressed. A solenoid is used to lock the shift lever in position P or N once the ignition is switched off and the lever has been placed into position P or N. The solenoid is activated by a switched ground signal from the Transmission Control Module

Interlock

The interlock function prevents removal of the remote control “key” when the selector lever is not in position P . The selector lever remains locked in position P if the remote control “key” is not inserted in its slot. For this purpose, the selector lever is locked in position P by two electric magnets once the ignition is switched off.

■ Interlock Without Comfort Access:

The selector lever is locked in position P after ignition OFF and the radio remote control “key” can be removed.

The microswitch on the selector lever unit monitors the lock state of the selector lever and sends the signal to the CAS to release the radio remote control once the selector lever is in position P.

■ Interlock with Comfort Access:

When the vehicle is stationary, the engine or terminal 15 can only be turned off when the selector lever is in position P.

■ Emergency Release

In case of an emergency (e.g. failure of the power supply system), the selector lever can be released by operating the emergency release. The emergency release is accessible by removing the selector lever cover. The selector lever is released by pressing on the pawl (1).



Index	Explanation
1	Emergency Release Pawl for Interlock

Transmission Control Module

The newly developed Transmission Control Module (GS 19.11) is used for the automatic transmission GA6HP19Z (in all models). Compared to its predecessor (GS 19.04) it offers the following advantages:

- Flash memory expanded from 512 Kbit to 1 MB
- Designed to withstand higher temperatures
- Electromagnetic compatibility considerably improved
- Reserve for further functions

The Transmission Control Module is located on the mechatronics module in the gearbox with the same housing and pin assignments from the previous version.

Torque Converter

A torque converter (LUK) with a two-layer torque converter lockup clutch is used.

■ Stationary Disconnection

The gearbox features a stationary disconnection (uncoupling) function for the torque converter. The torque converter is disconnected from the drivetrain instead of running the engine against the torque converter when the vehicle is stationary. By disconnecting the torque converter with the vehicle stationary, the engine is subject to minimum load and fuel consumption is reduced.

Disconnection (uncoupling) of the torque converter is achieved as a function of the following signals:

- Brake operated
- Selector lever position D
- Gear oil temperature $> 20^{\circ}\text{C}$ and $< 120^{\circ}\text{C}$
- No trailer signal applied

