

Document title Component description for intelligent servo module for DIRECT SELECT

Document number gf2719p4020ahl

TRANSMISSION 722.9 (except 722.930/931) in MODEL 212**Location**

The intelligent servo module for DIRECT SELECT is mounted on the left of the transmission housing.

Automatic transmission viewed from left

A80 Intelligent servo module for DIRECT SELECT



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Task

The task of the intelligent servo module for DIRECT SELECT is subdivided into the following subtasks:

- **General**
- **Input and output signals**

General

The driver's gear range request "P", "R", "N", "D" is not transmitted from the control to the transmission via a rod (mechanical connection) but by means of an electronic connection ("wire"). This electronic connection consists of the DIRECT SELECT lever (S16/13) and the intelligent servo module for DIRECT SELECT. The overall system is called "Shift-by-wire". The intelligent servo module for DIRECT SELECT controls the main motor and the emergency motor.

Input and output signals**Signal inputs and outputs***Direct input signals*

- circuit 30
- Circuit 31
- Power supply for emergency motor

i The intelligent servo module for DIRECT SELECT measures the position of the eccentric shaft via the eccentric shaft position sensor and the actual position of the range selector lever via the angle sensor.

*Chassis CAN (CAN E) input signals**For vehicles up to facelift 13*

- Wheel speeds and the position of the BAS release switch (A7/7s1) from the Electronic Stability Program control unit (N30/4) (except Code (233) DISTRONIC PLUS) or from the Premium Electronic Stability Program control unit (N30/7) (with code (233) DISTRONIC PLUS)
- Request to engage selector lever position "P" or "N", from electronic ignition lock control unit (N73)
- Feedback "circuit 54 ON" as additional information for parking interlock function, from front SAM control unit with fuse and relay module (N10/1)

Drive train CAN (CAN C) input signals

- Specified position of range selector lever from fully integrated transmission control unit (Y3/8n4)

*Chassis CAN output signals**For vehicles up to facelift 13*

- Position of DIRECT SELECT gear selector switch to instrument cluster (A1)

Drive train CAN output signals

- Actual position of range selector lever (for "circuit 15 ON") to fully integrated transmission control unit

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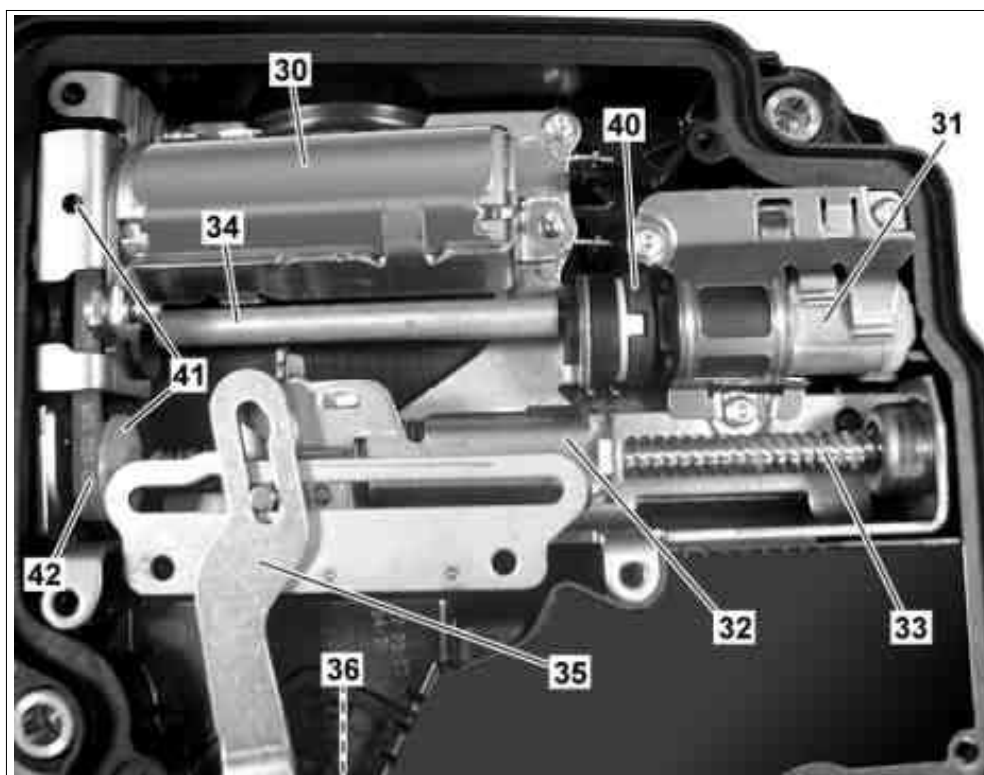
As of facelift 13 the current chassis CAN will be replaced by the chassis CAN 1 (CAN E1). An additional chassis CAN 2 (CAN E2) is used between the instrument cluster and the front SAM control unit with fuse and relay module.

The ME-SFI [ME] control unit (N3/10) or the CDI control unit (N3/9) is the interface between the drive train CAN and the chassis CAN 1. The interface between chassis CAN 1 and chassis CAN 2 is formed by the front SAM control unit with fuse and relay module.

Body

Shown in range selector lever position "N"

- 30 Main motor
- 31 Emergency motor
- 32 Slider
- 33 Worm shaft
- 34 Eccentric shaft
- 35 Range selector lever
- 36 Angle sensor
- 40 Eccentric shaft position sensor
- 41 Drive pulleys
- 42 Drive belt



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Function

The main motor is actuated and the worm shaft is turned via the drive belt and the two drive pulleys. The carriage moves to the required position and the range selector lever assumes the specified position selected.

The actual position is detected by the angle sensor and sent via the drive train CAN to the fully integrated transmission control unit.

i With "circuit 15 ON" the intelligent servo module for DIRECT SELECT sends the selector lever position sent from the fully integrated transmission control unit to the gear indicator (A1p12). With "circuit 15 OFF" the intelligent servo module sends the selector lever position transmitted from the steering column tube module control unit (N80) to the gear indicator.

With "circuit 15 OFF" and vehicle standstill, selector lever position "P or N" is engaged, as soon as the transmitter key (A8/1) is removed from the electronic ignition lock control unit.

On vehicles with code (889) Keyless Go, the request for selector lever position "P", with "circuit 15 OFF" and the vehicle at a standstill is made as soon as the driver door is opened.

If selector lever position "N" is engaged before "Circuit 15 OFF" and the driver door is opened after "Circuit 15 OFF", selector lever position "N" remains engaged.

	Wiring diagram for intelligent servo module (ISM) control unit		PE27.60-P-2101-97DAA
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