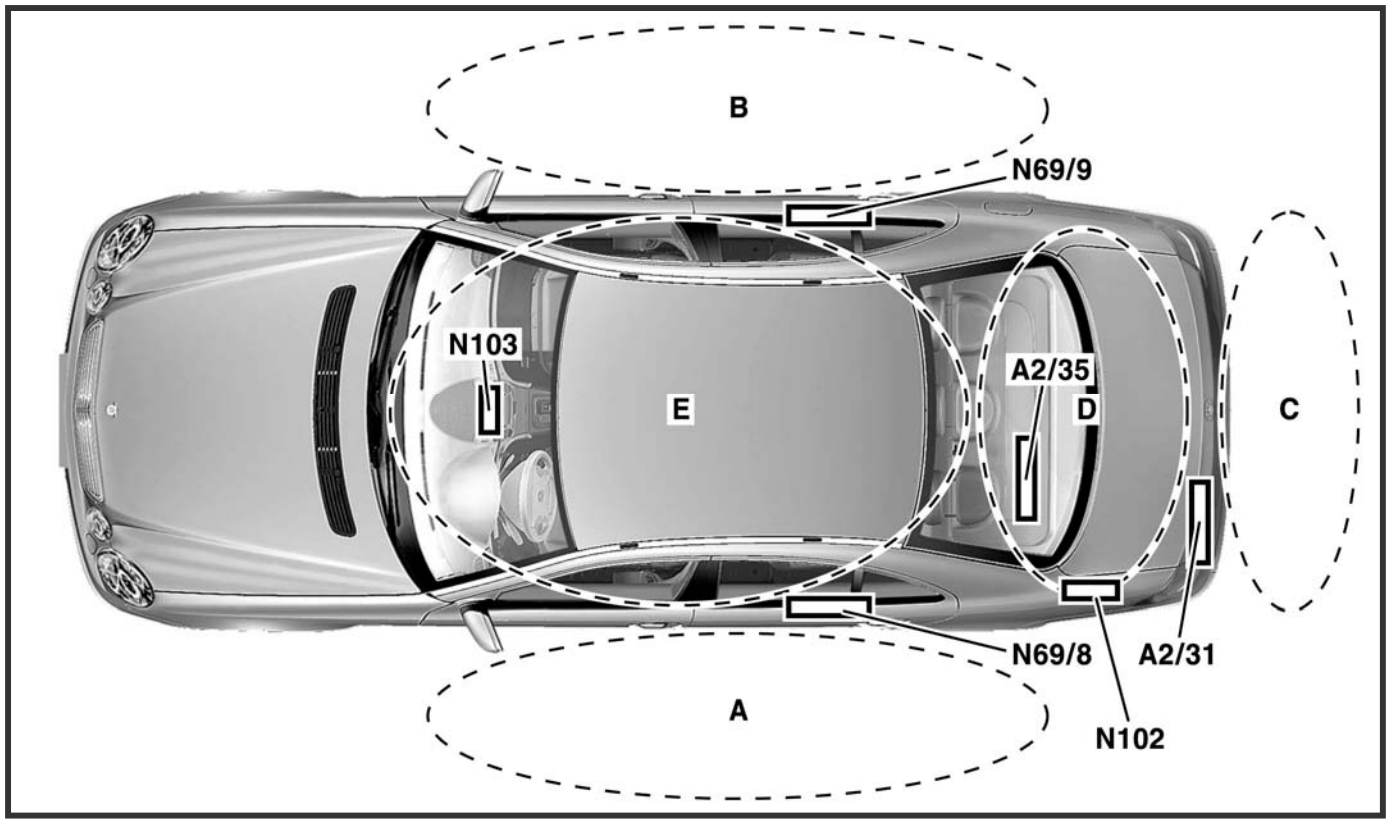
Mercedes-Benz

Keyless Go - W211



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To help avoid personal injury to you or others, and to avoid damage to the vehicle on which you are working, you must always refer to the latest Mercedes-Benz Technical Publication and follow all pertinent instructions when testing, diagnosing or making repair. Illustrations and descriptions in this training reference are based on preliminary information and may not correspond to the final US version vehicles. Refer to the official introduction manual and WIS when available.

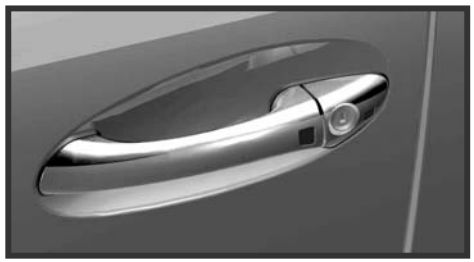
Published by Mercedes-Benz USA, LLC
Printed in U. S.A.

Keyless Go (KG) Topic Layout

- Introduction
  - Function & Purpose
  - Advantages
  - Identification
- Customer operation
- Operation overview
- Components
  - KG CAN
  - Key
  - Control modules
  - Antennas
- Details of operation
- Module 8-1
- Appendix

Identifying KG Option

- A number on the KG key
  - Number on a KG key starts with “175”



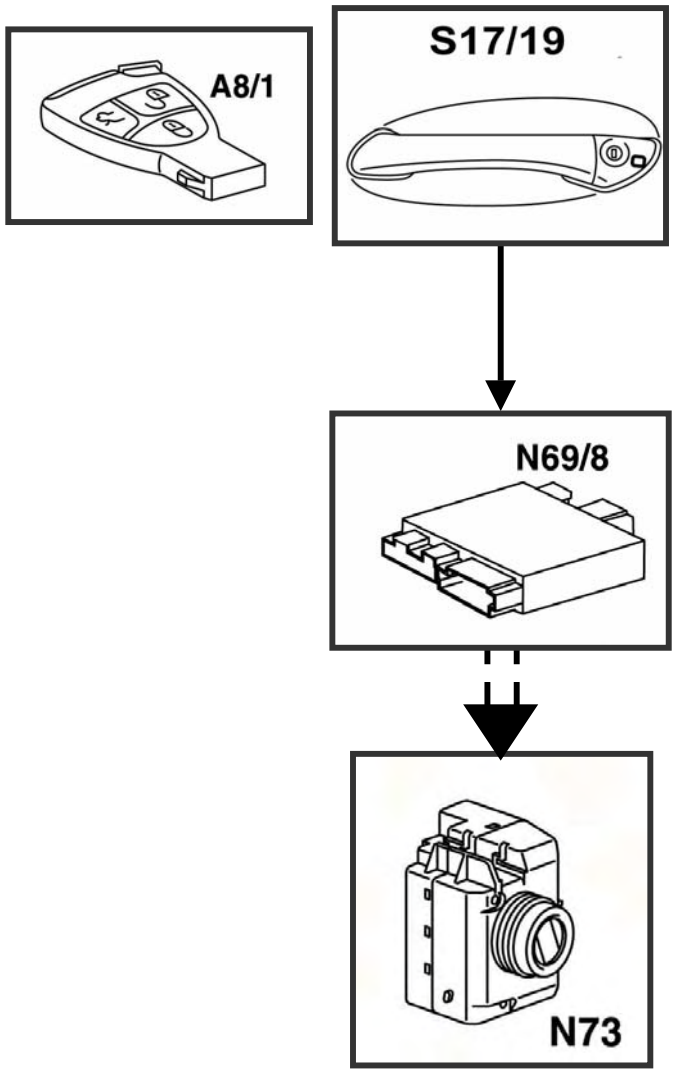
- All exterior door handles have push button for locking

- Engine start/stop button on gear selector lever

- Lock button (1) at trunk lid

Operation Overview

(Example: Unlock request at driver's door)



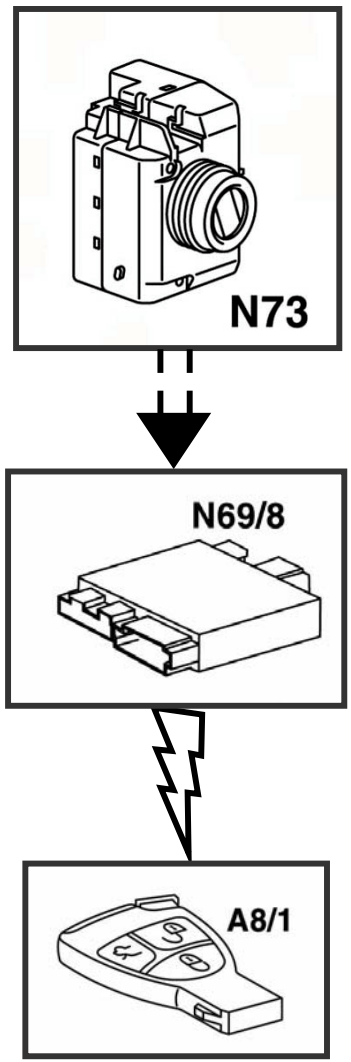
1. With key present, switch on inside of driver's door is activated

2. Door handle switch is connected to the rear door KG control module

3. Rear door KG control module communicates request to Electronic ignition Switch (EIS)

Operation Overview (cont.)

(Example: Unlock request at driver's door)



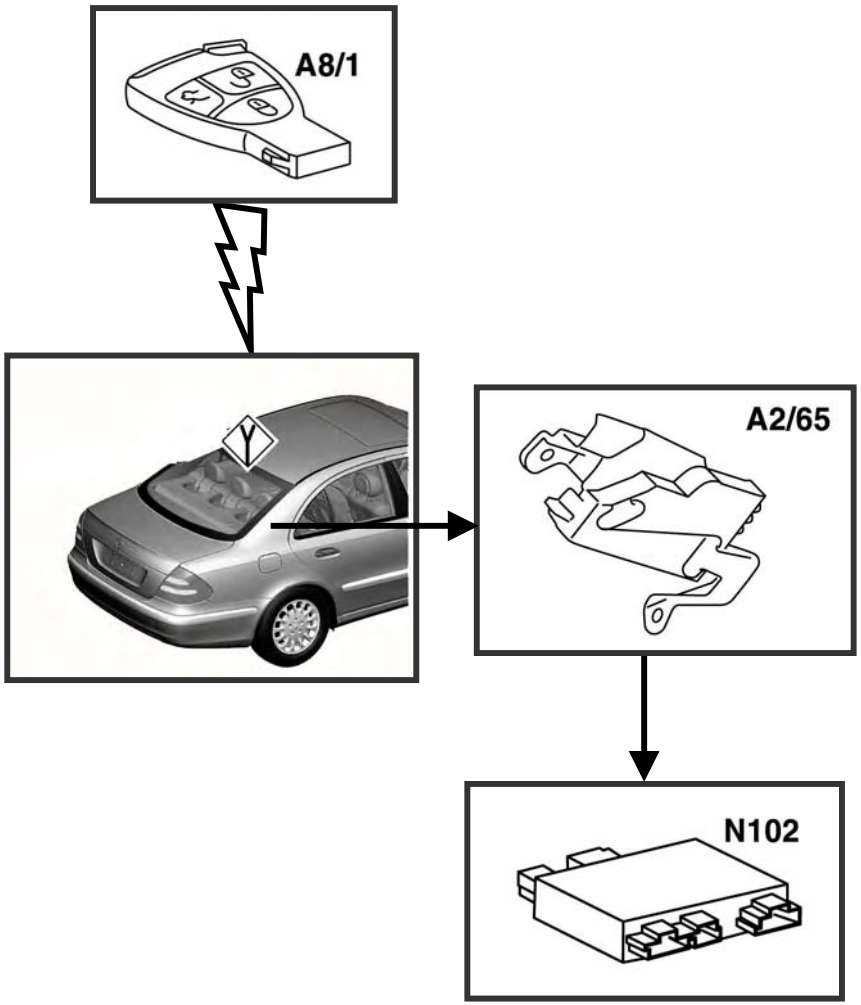
4. EIS transmits command signal to left rear door KG control module

5. Left rear door KG control module uses its integrated antenna to send out a radio frequency (RF) signal to wake up the KG key

6. Key within range of antenna wakes up

Operation Overview (cont.)

(Example: Unlock request at driver's door)



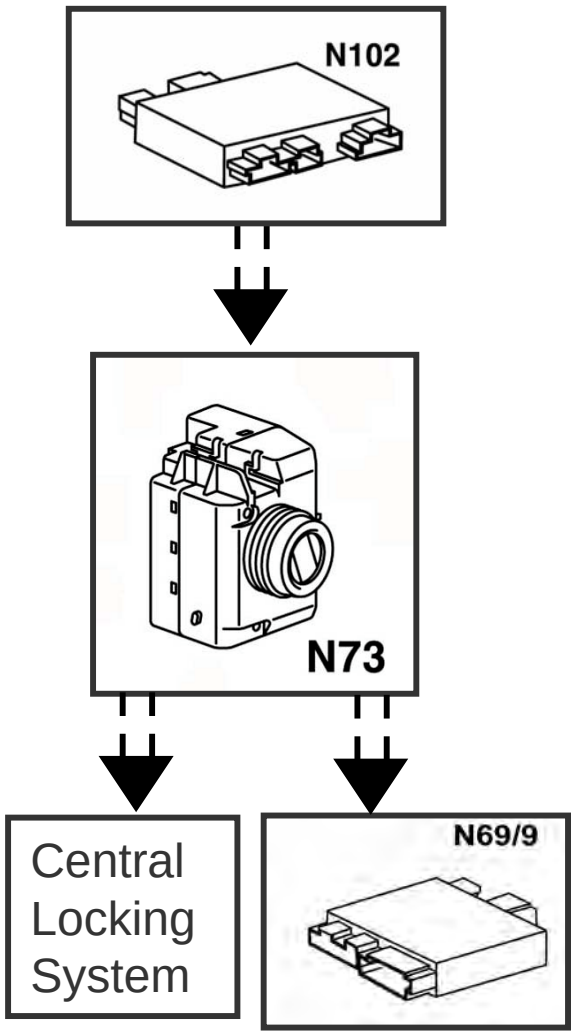
7. Key transmits authorization code via RF

8. RF signal is received by rear window antenna, which is connected to right antenna amplifier module

9. Right antenna amplifier module sends signal to rear KG module

Operation Overview (cont.)

(Example: Unlock request at driver's door)

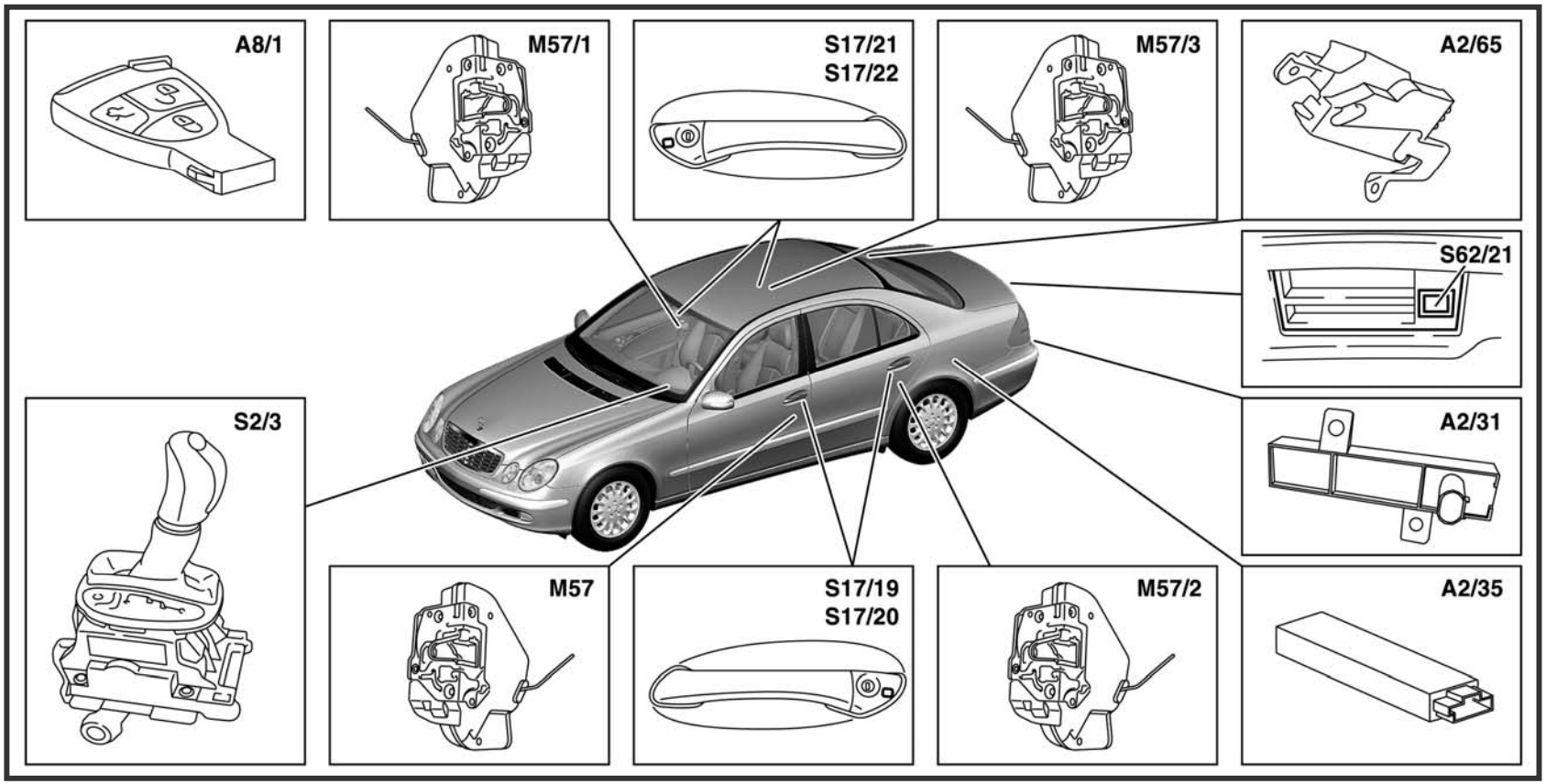


10. Rear KG module sends key data to EIS

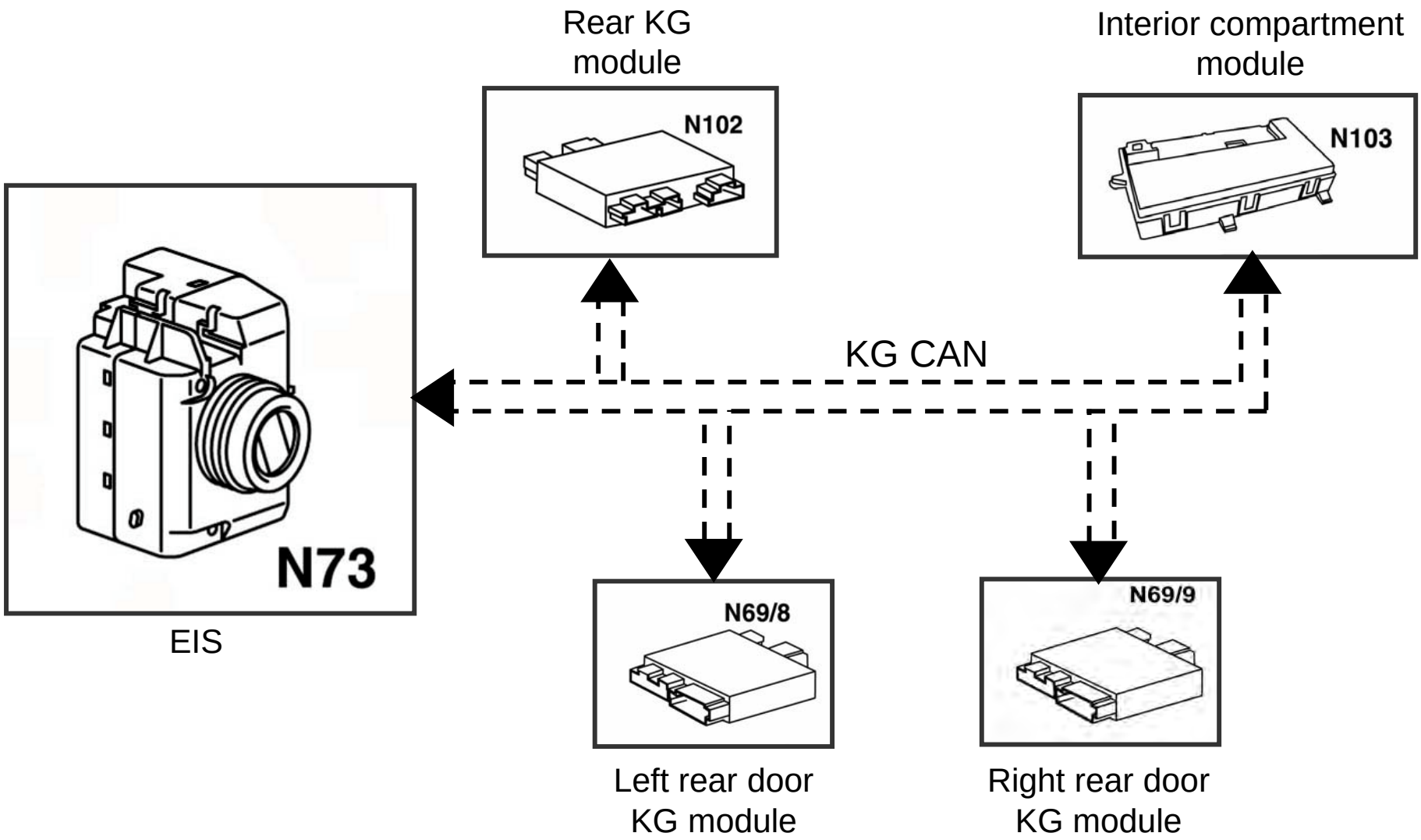
11. EIS provides KG authorization.

12. EIS generates an "unlock" command plus a signal to Left rear door KG control module to "pop" open driver's door when handle is pulled

KG Components in Detail



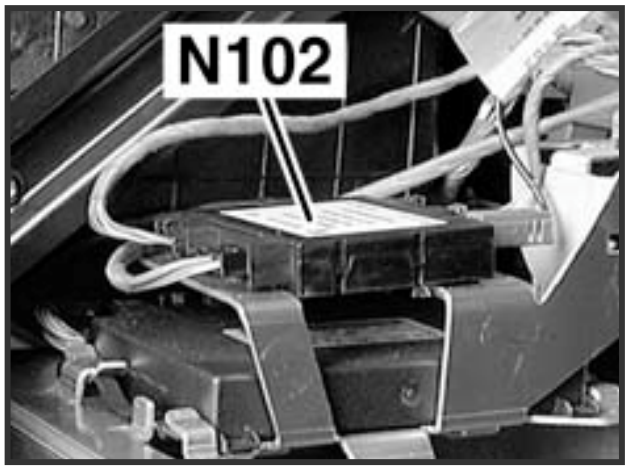
Components on the KG CAN



Electronic Ignition Switch (N73)

- Incorporates functions performed by a separate KG control module on S, CL and SL models.
- Connected to CAN C, CAN B and the KG CAN
- Determines source of locking / unlocking request in order to operate appropriate wake-up antenna
- Determines source of unlocking request in order to operate appropriate door opening assist motor

Rear KG Module (N102)

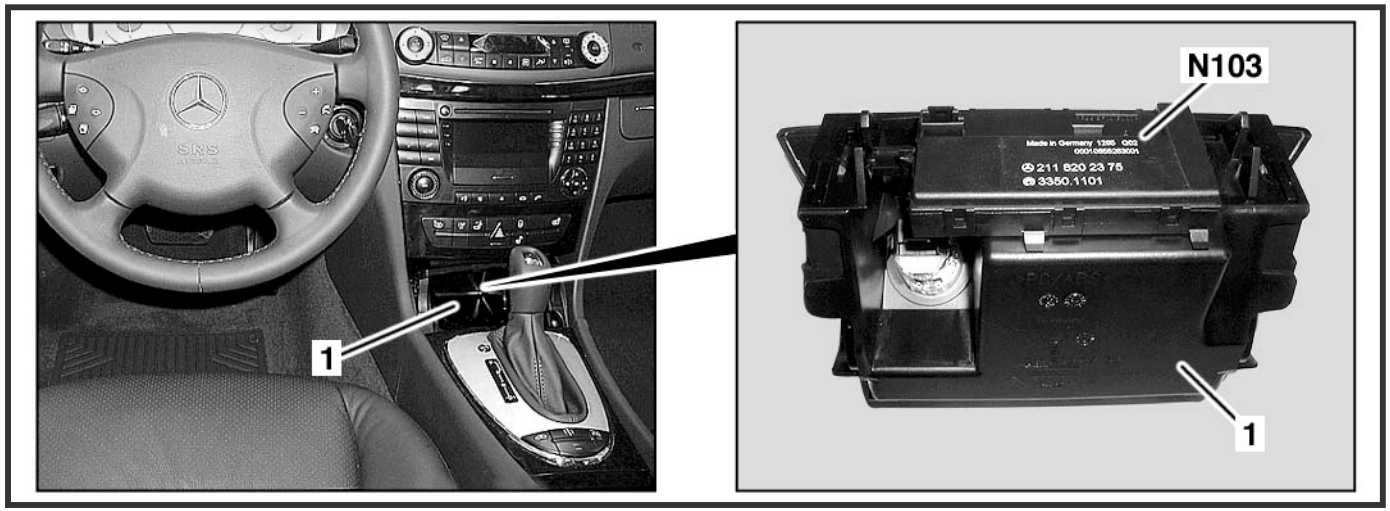


2 3

1 5 4

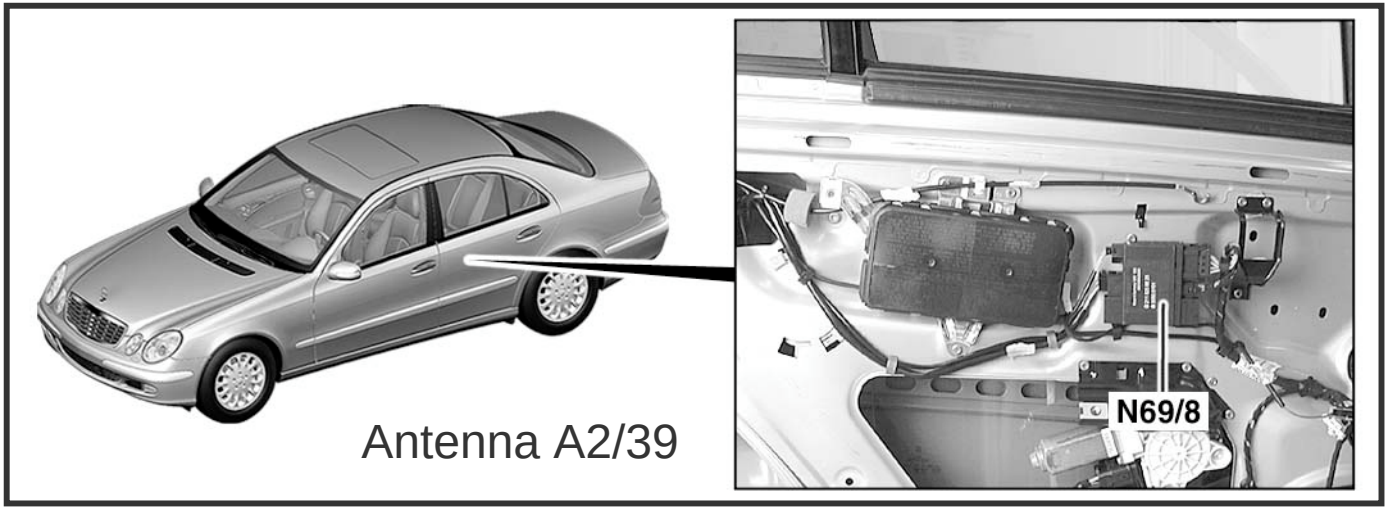
- Located on left side of trunk area
- 5 connectors
- Connected to KG CAN
- Power supplied by F34f24 (Circuit 30)
- Discrete wire to trunk lid push button switch
- Controls wake-up signal from rear bumper antenna (A2/31) and Trunk KG antenna (A2/35)
- Receives RF signal from right rear window antenna amplifier (A2/65) and transmits it to EIS over KG CAN

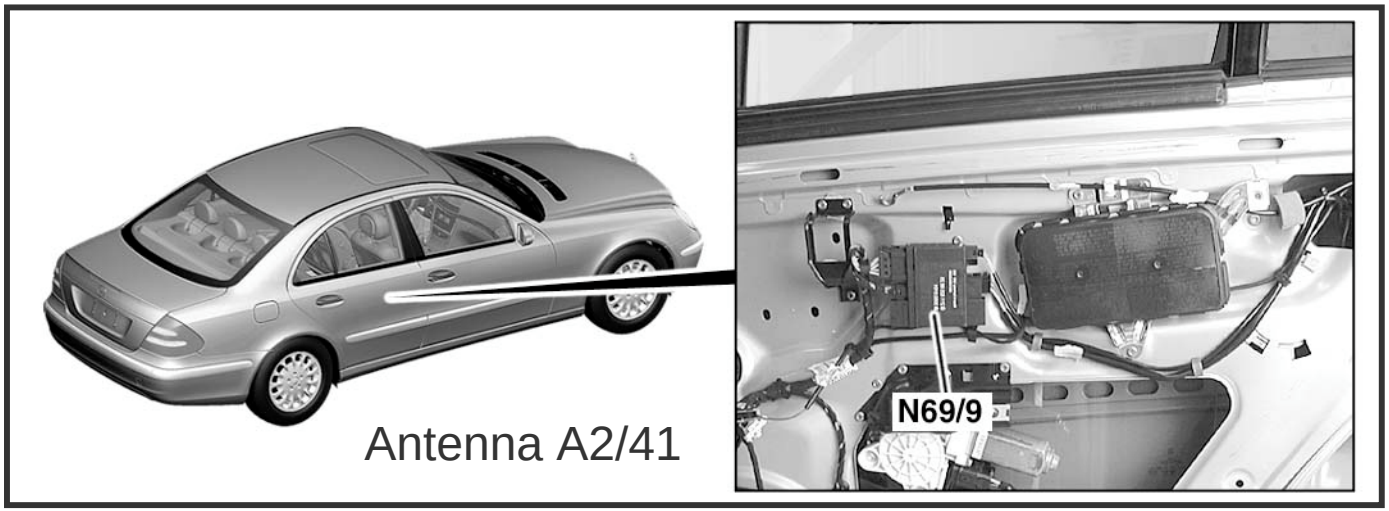
Interior Compartment Module (N103)



- Located behind ashtray, center console
- Integrated antenna
- Connected to KG CAN
- Receives signal from key to detect key inside vehicle
- Power and ground supplied by Rear KG Module (N102)

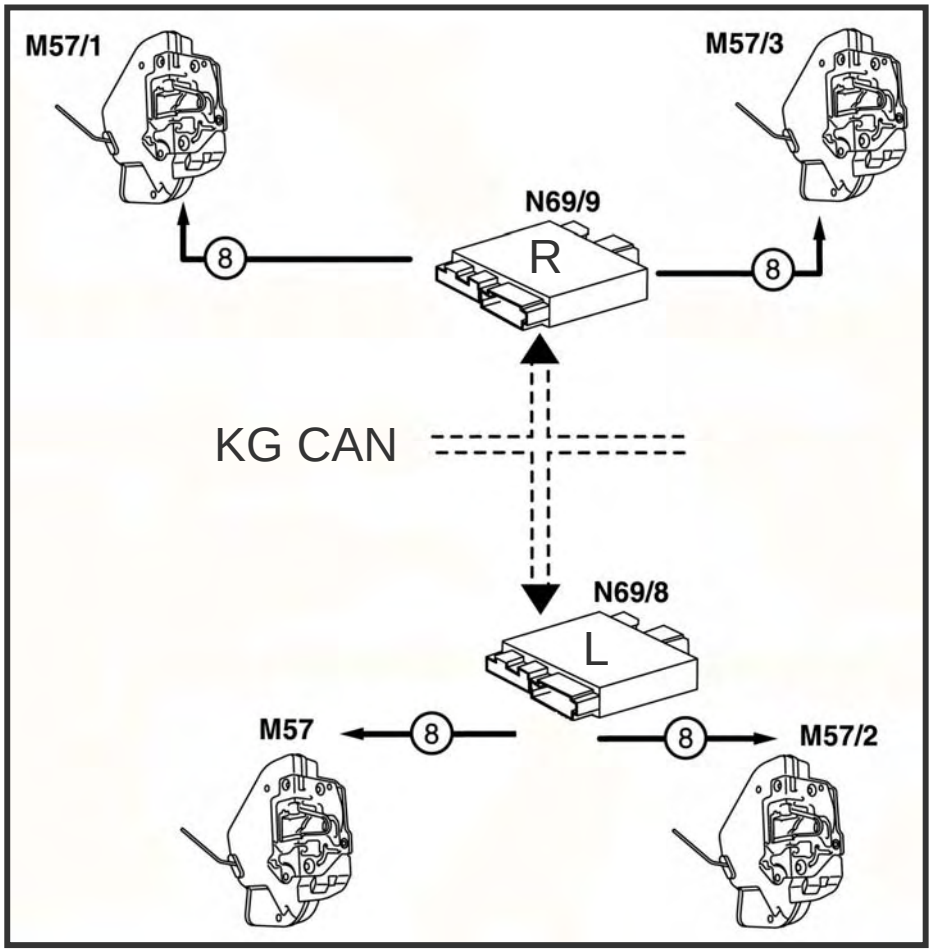
Left and Right Rear Door KG Control Modules (N69/8 & N69/9)





- Each rear door KG control module has an associated antenna
- Connected to KG CAN
- Power supply for both: F34f24 (Circuit 30)
- Responsible for operating Door Opening Assist Motors

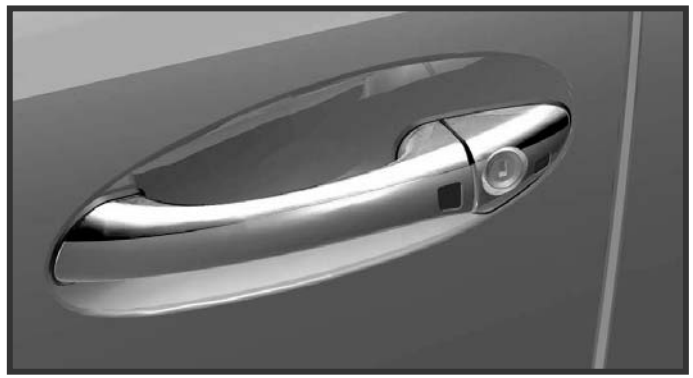
KG Door Opening Assist Motors



- M57 & M57/2 (left) and M57/1 & M57/3 (right)
  - "Pops" door open when an unlock request is accompanied by a pull on that door handle
  - Not used when opening an unlocked door
  - Located next to door lock motors (M14/5,6, 8 or 9)
  - Can be checked using EIS "Actuations"

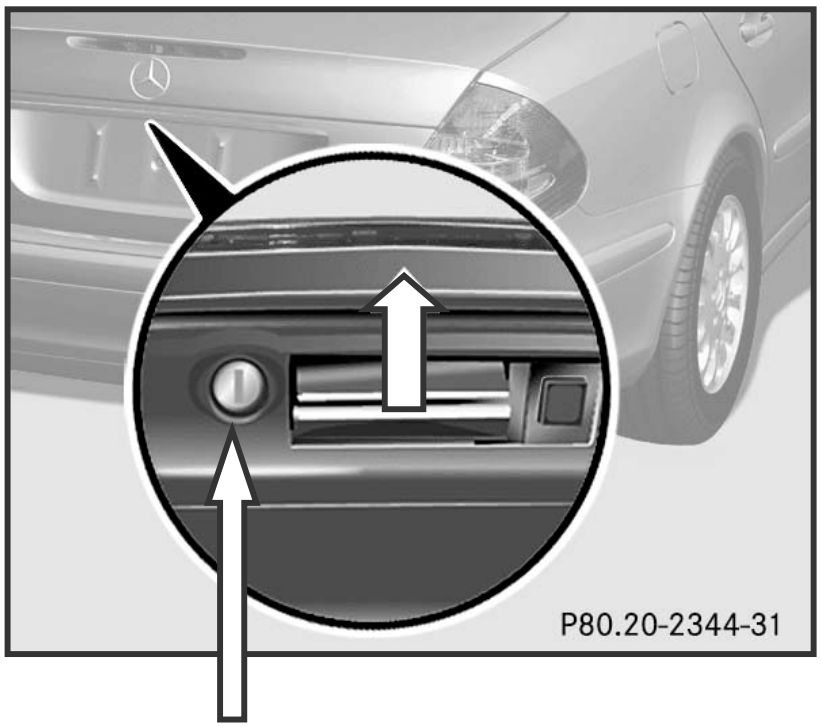
KG Door Handle (S17/19, 20, 21, 22)

KG door handle switches at <u>each</u> door, with discrete wiring to the rear door KG control module located on same side of vehicle.



- Unlocking grip handle (pull) microswitch
  - – Black, on inner side of handle
- Lock (push) button on each door
  - – Black button on outside of handle

Trunk Unlocking Handle (S88/8) & Trunk Lid Pushbutton Switch (S62/21)

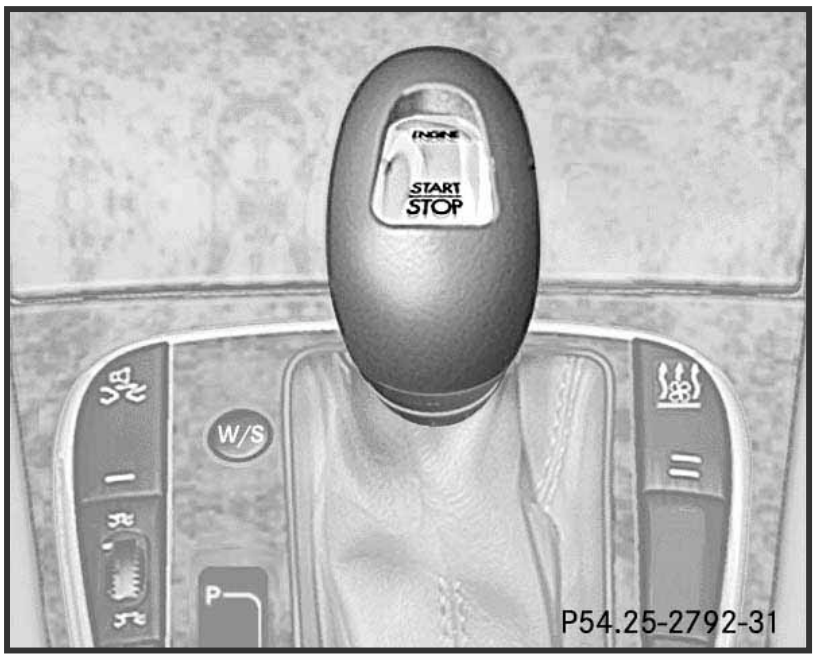


S88/6 provides signal to rear SAM to ignore any request to open trunk

- Trunk Unlocking Handle
  - Discrete wire to rear SAM (N10/2)
  - Rear SAM informs EIS via CAN B
  - Remote trunk release operates

- Trunk Lid Pushbutton Switch
  - Discrete wire to rear KG module (N102)
  - Functions as a locking request when pressed
  - Rear KG module informs EIS via KG CAN

Start /Stop Switch (S2/3) & Electronic Selector Module (N15/5)



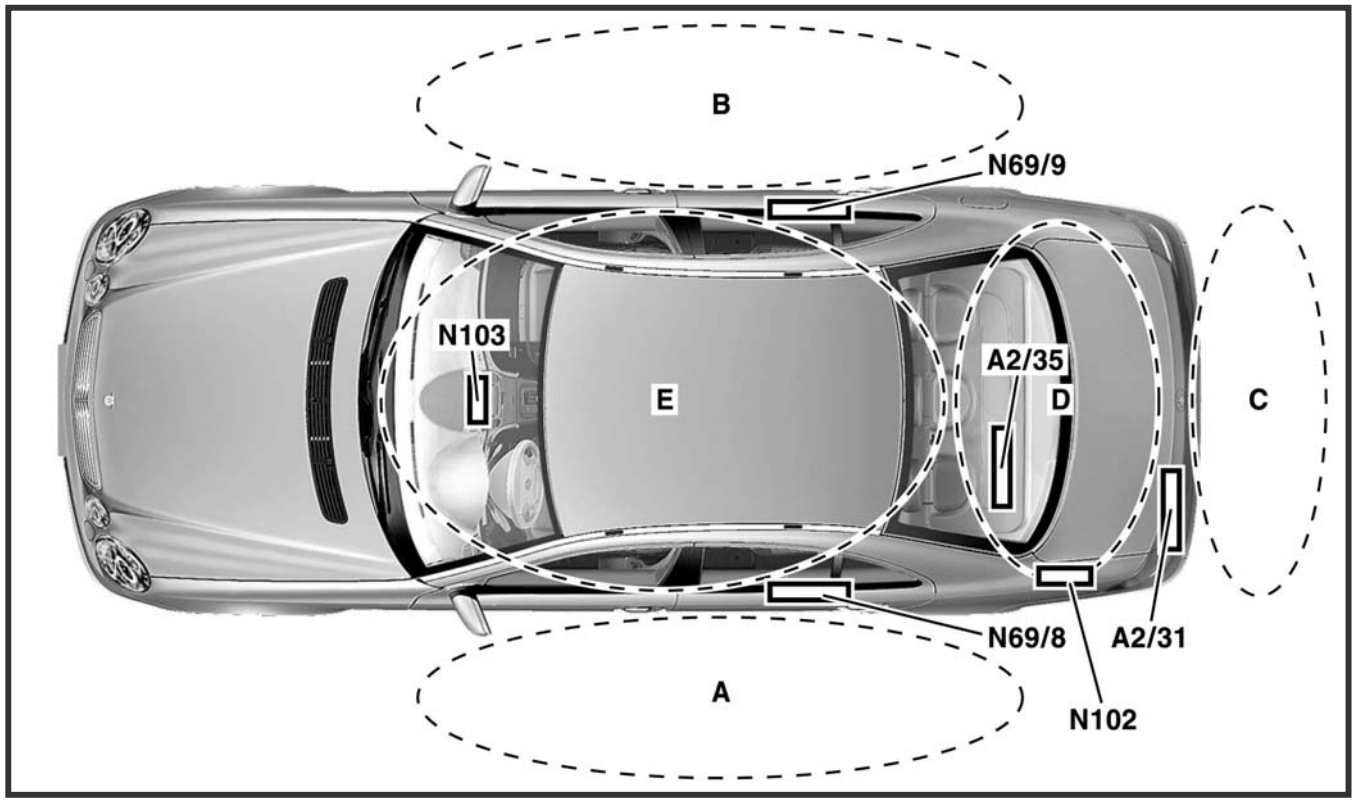
- Start / stop switch (S2/3) connected to EIS by a discrete wire
- Electronic Selector Module provides Park position signal to EIS over CAN C

Brake switch signal required when starting engine.

Information flow:

Brake switch > SBC hydraulic unit > Rear SAM > CAN B > EIS

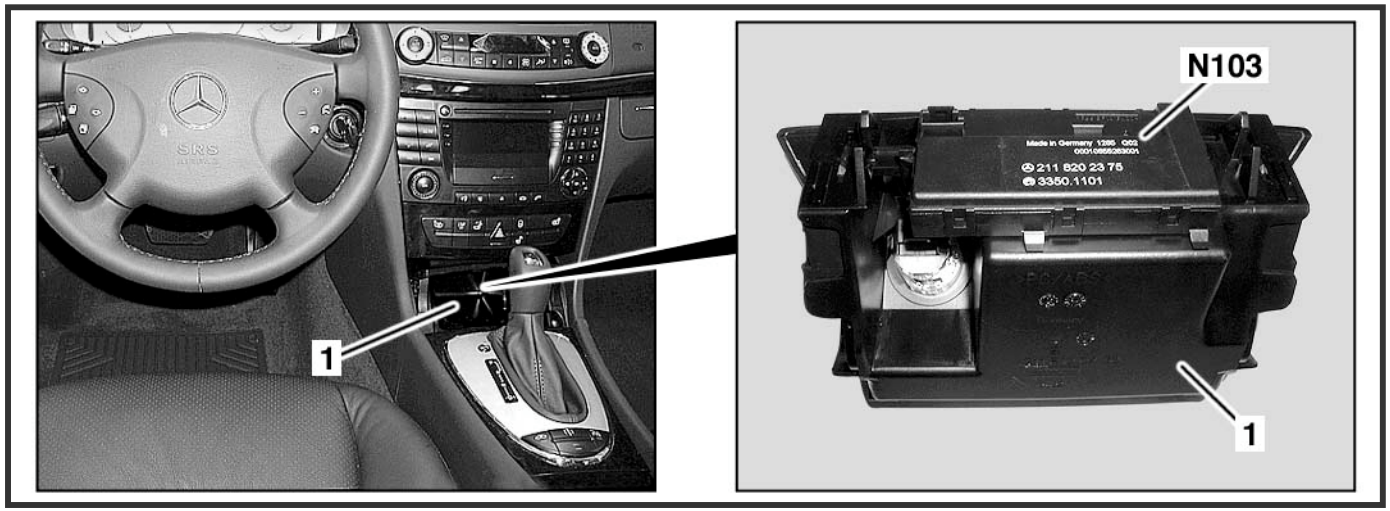
Antennas Used to Wake-up Remote Control Key



Key in zones A, B or C will wake-up for external locking and unlocking

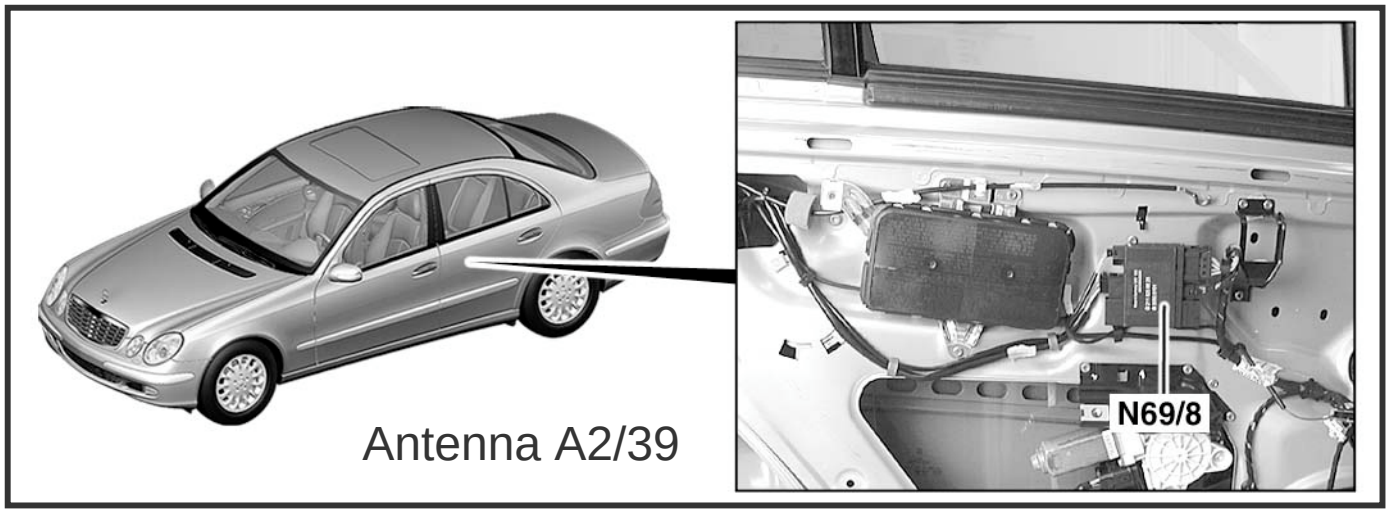
Key in zones D or E will wake-up for starting engine

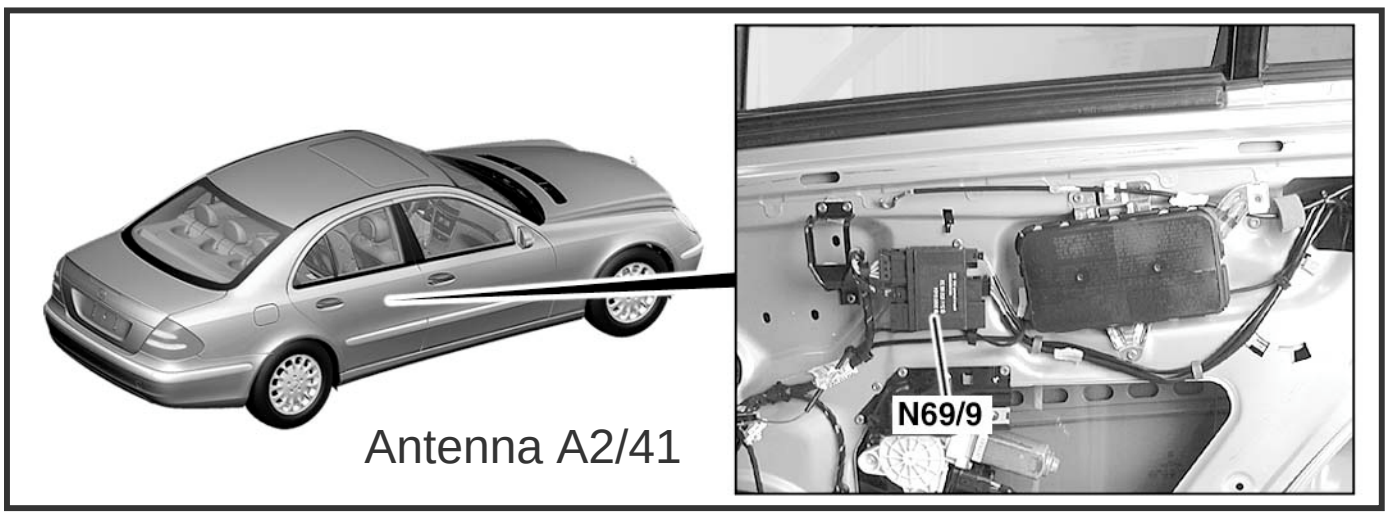
Interior Compartment Module with Antenna



- Integrated antenna confirms that key is inside vehicle while driving

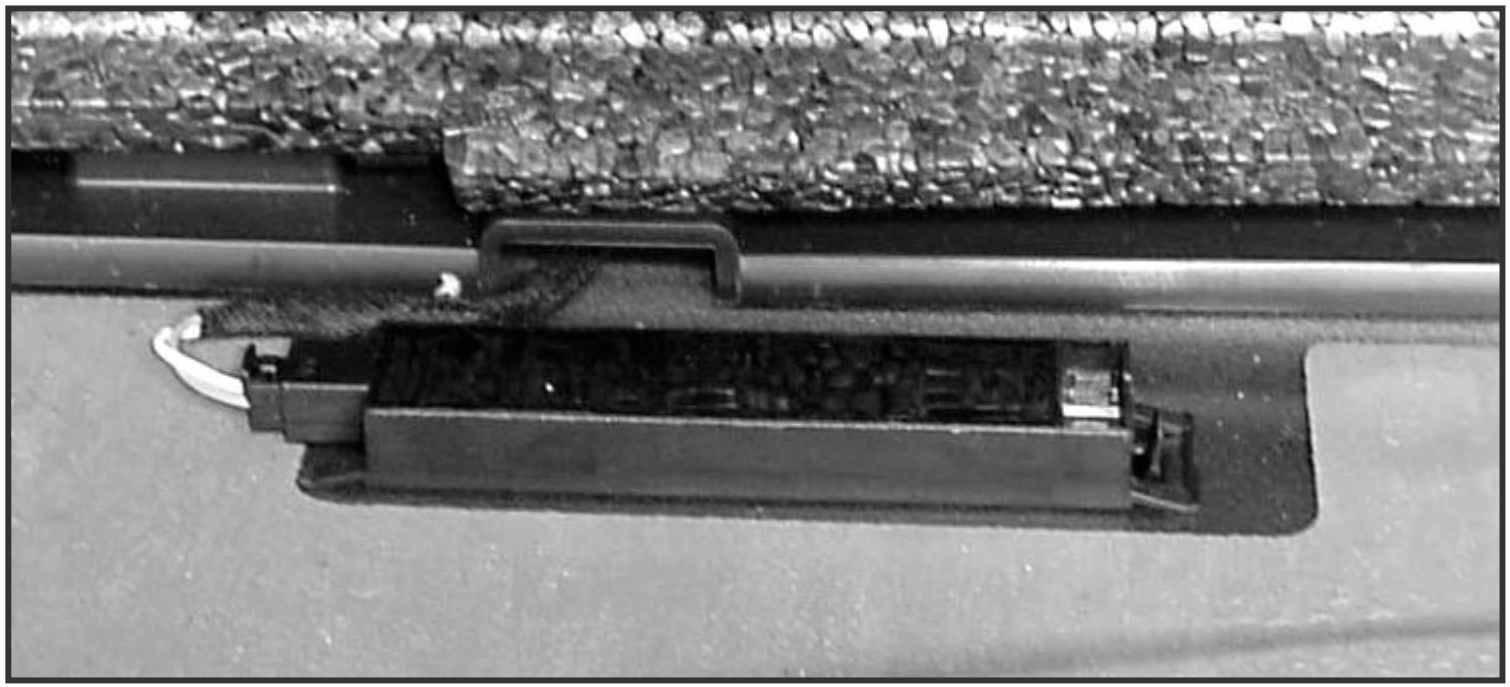
Rear Door KG Control Module Antennas





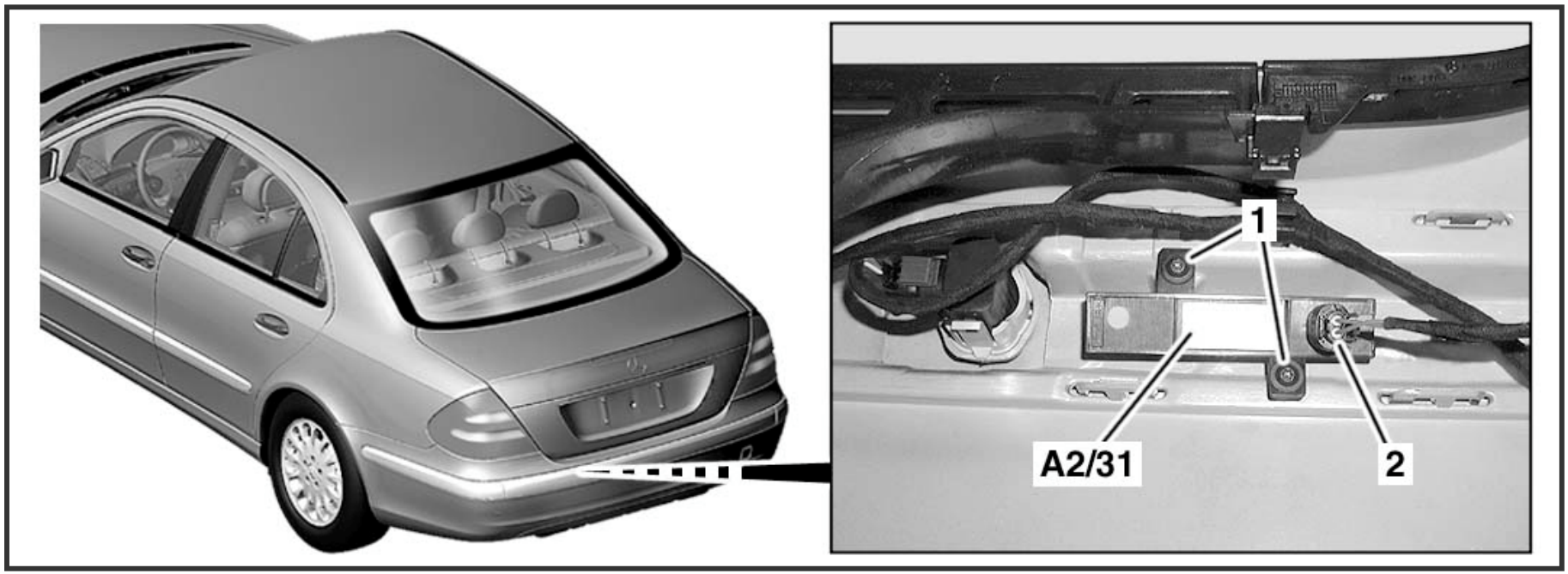
- Each rear door KG control module has an associated antenna
- Antenna output controlled by a KG CAN signal from EIS

Trunk KG Antenna (A2/35)



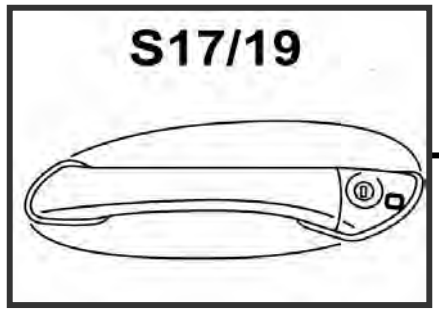
- Located at front left of trunk area - visible when accessing spare tire
- Discrete wire to rear KG module (N102)
- Output controlled by rear KG module

Rear Bumper Antenna (A2/31)

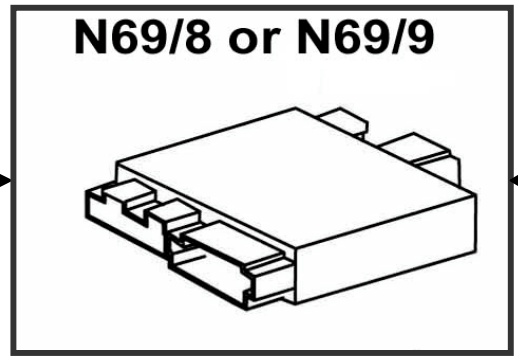


- Beneath rear bumper
- Discrete wire to rear KG module (N102)
- Output controlled by rear KG module

Requesting Locking & Unlocking

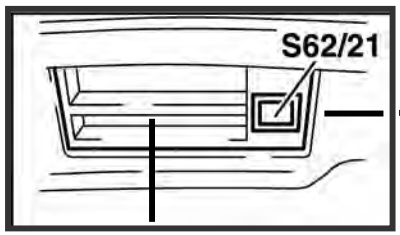


Door handle switches

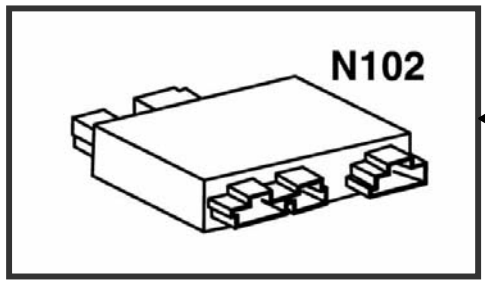


Rear door KG modules

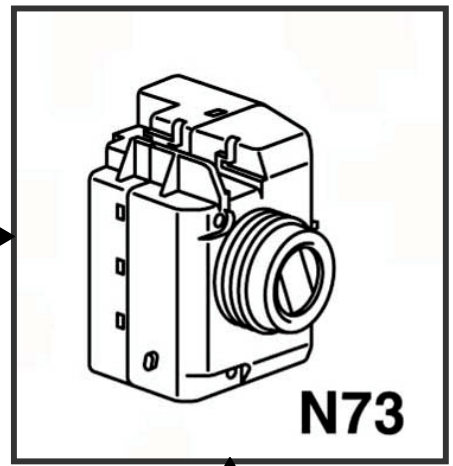
KG CAN



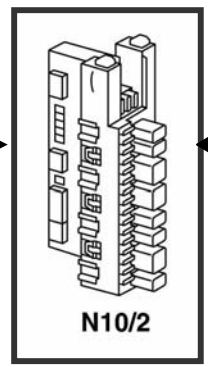
Trunk switches



Rear KG module



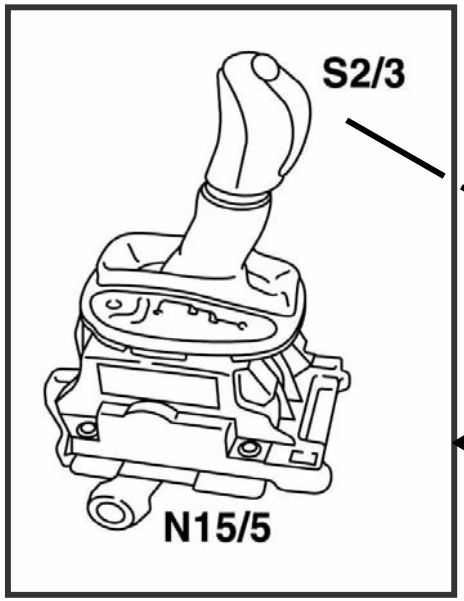
EIS



Rear SAM

CAN B

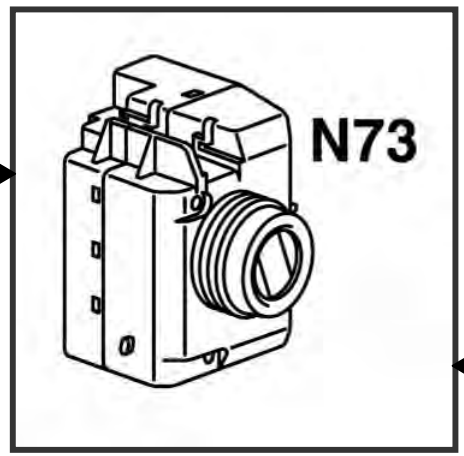
Requesting Engine Start



Electronic Selector Module

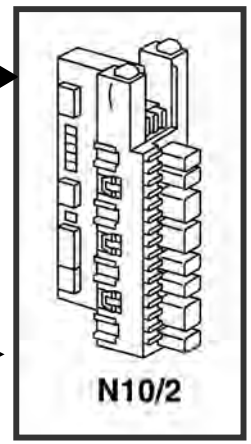
“Park”

CAN C

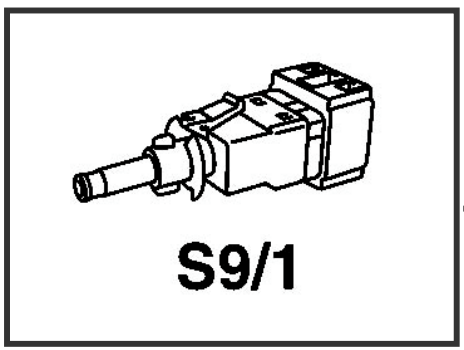


EIS

CAN B



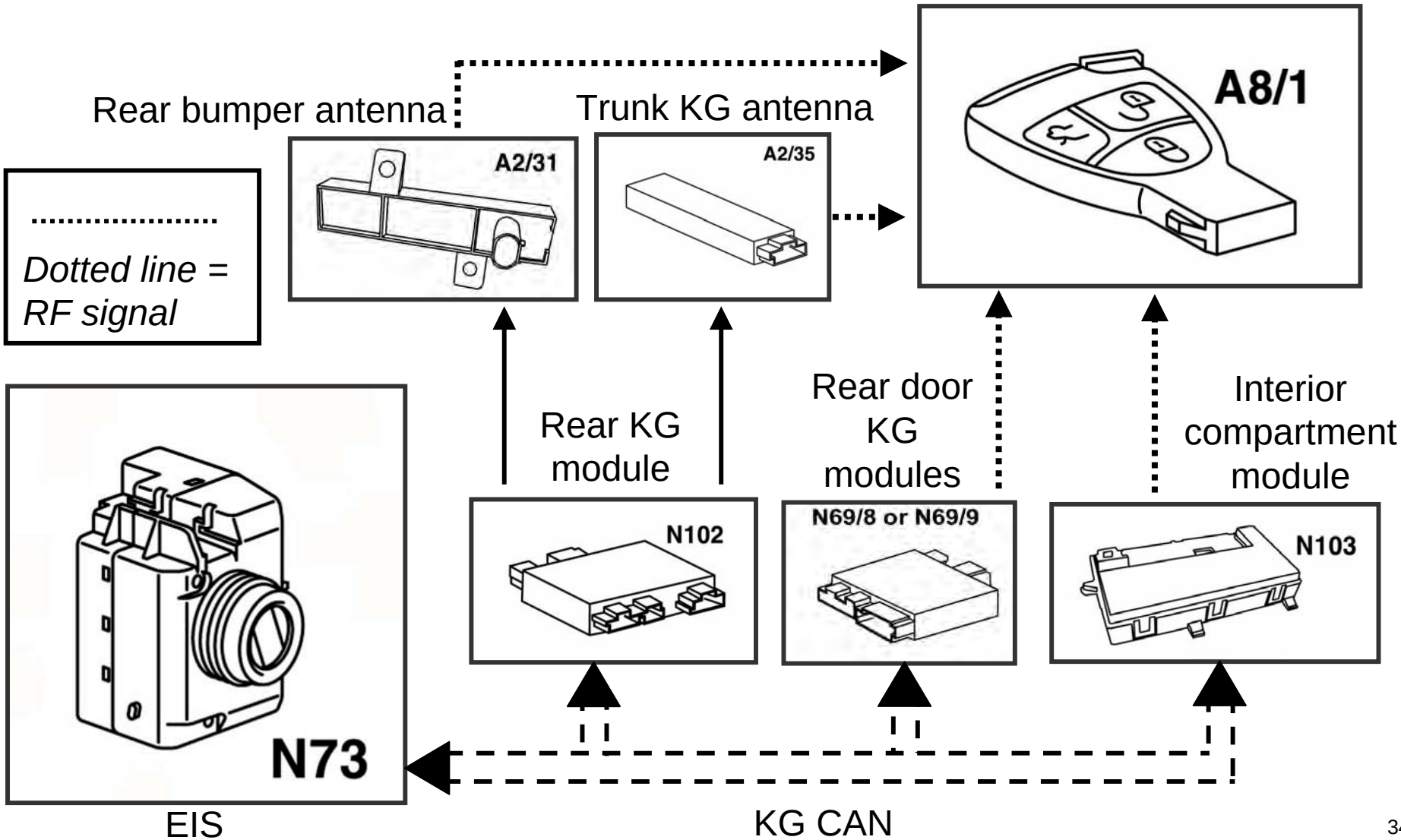
Rear SAM



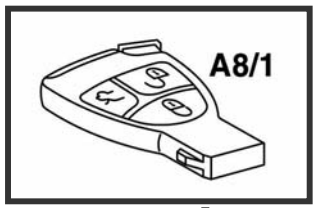
Brake switch

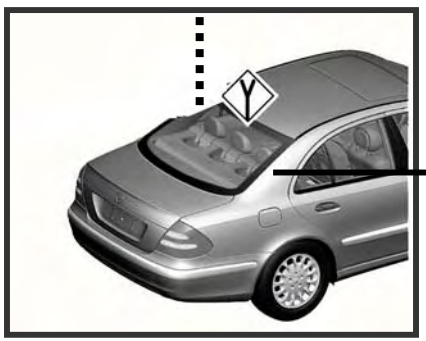
SBC hydraulic unit

Waking-up the Remote Control Key



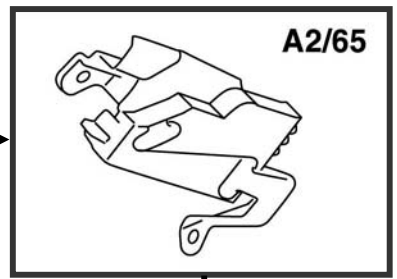
Remote Control Key Replies

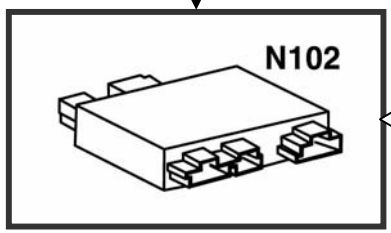




Rear window antenna

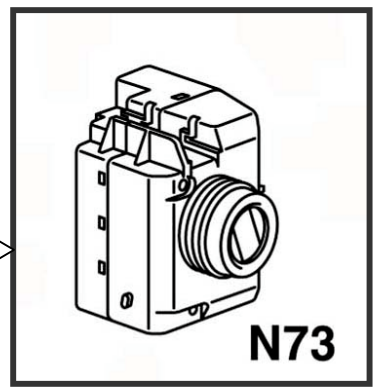
Right antenna amplifier module





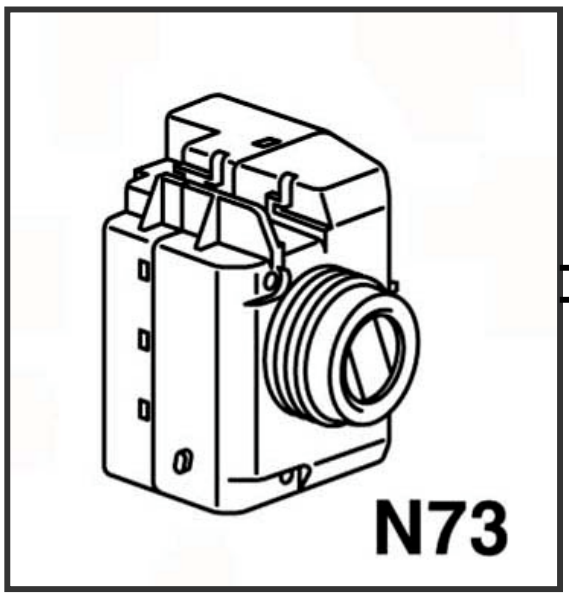
Rear KG module

KG CAN



EIS

When Locking or Unlocking is Authorized:

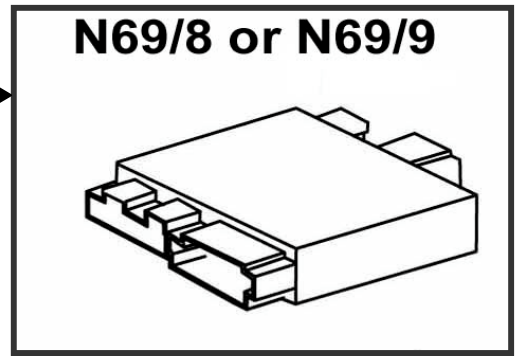


CAN B

Command to lock, unlock or operate remote trunk release

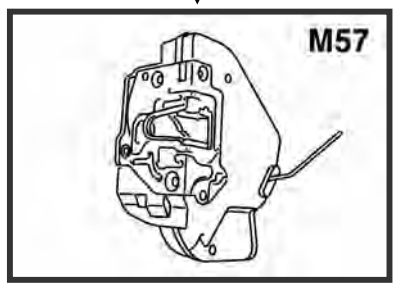
KG CAN

(When unlocking)

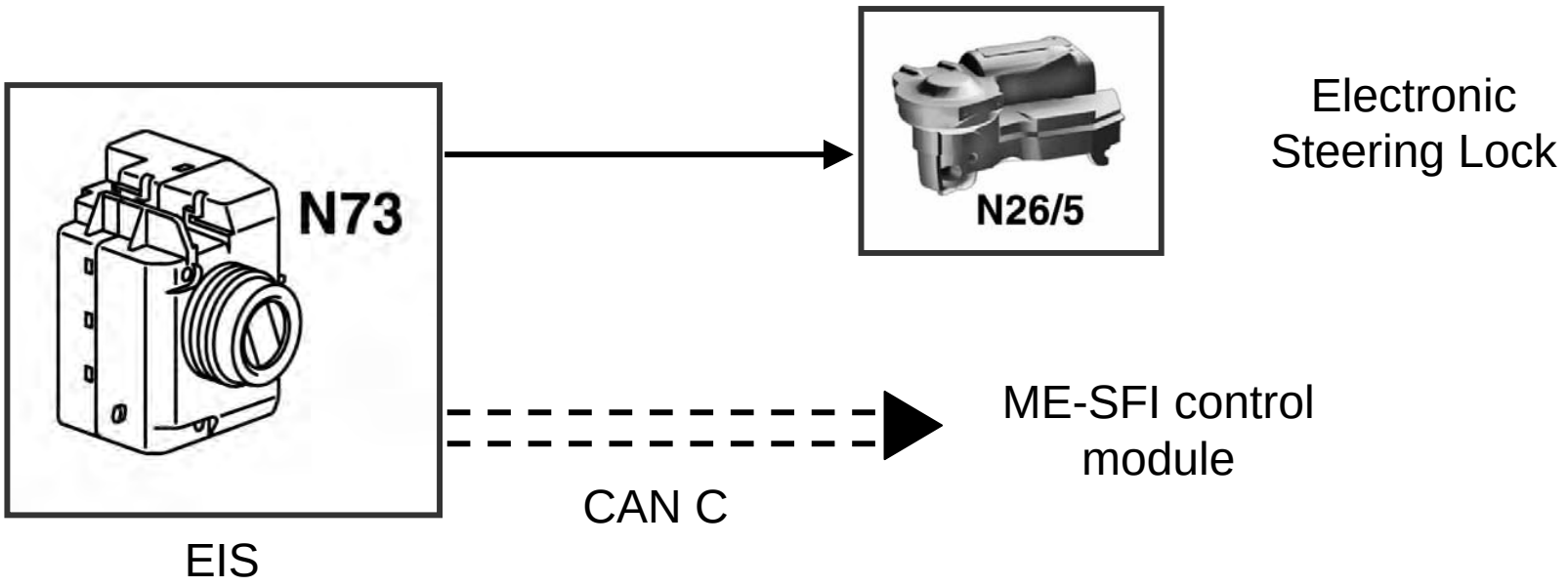


Rear door KG control module

KG Door Opening Assist Motor



Engine Start Authorization



Note: Engine shut-off request does not require EIS to authorize the remote control key

W211 Keyless Go (KG)

Group:	**80.61**
Control unit designation:	**N73**
U.S. Introduction:	**MY2003**
Major components:	**Master keys**
	Pushbutton start/stop switch
	Door antennas
	Interior compartment module/antenna
	Trunk area antenna
	Rear bumper antenna
	Door handle switches
	Door open assist solenoids (1 per door)
	Trunk switch
CAN(s) used	**CAN B, CAN C, KG CAN**
Mils:	**no**
Warning messages in ICM?	**Yes**
DTC capable?	**Yes**
Control unit adaptation?	**“Assign transmitter card to key track”**
Requires control unit adaptation in:	**ICM**

Acronyms Used in This Presentation

CAN	Controller Area Network
DAS	Diagnostic Assistance System
DCM	Door Control Module
DTB	Dealer Technical Bulletin
ECM	Engine Control Module
EIS	Electronic Ignition Switch
ESL	Electronic Steering Lock
ESM	Electronic Selector Module
IC(M)	Instrument Cluster (Module)
KG	Keyless Go
LED	Light Emitting Diode
RF	Right Front
SAM	Signal Acquisition Module
SDS	Star Diagnosis System