

9.3 Traction Systems (ABS, ASR, ETS) and SPS

Electrical Test Program – Preparation for Test

Preparation for Test

1. Review section 0 entirely before starting Electrical Test Program.
2. Additionally review: 21, 22, 23 (connector connections).
3. Review the following ETM diagrams:
PE00.19-P-1100B
PE42.00-P-1100B
PE00.19-P-1100D
PE42.00-P-1100D
PE00.19-P-1100A
PE42.00-P-1100A
4. Review control module CAN data, starting with 22/6
5. Ignition: **OFF**
6. Disconnect traction control module (N47).
7. Connect socket box with test cable as per connection diagram (Figures 1-3).
8. Perform test steps.

Electrical Wiring Diagrams:

(location of grounds and connectors).

Electrical Troubleshooting Manual, Models 129, 140, 170, 202, 208, 210



When exchanging an ETS/SPS control module, the replacement module must have the code data entered via the HHT. Follow instructions as given by HHT display. In order to code the control module, select “?” on HHT key pad.

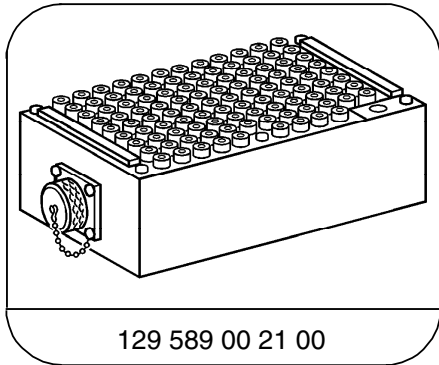


The electrical test includes ETS, ASR and SPS. In order to avoid listing all traction control modules (ABS [N47-7], ETS [N47-2], ASR [N47-1]) and all hydraulic units (ASR/ETS/ESP [A7/3]) used in the traction control systems, the general designation N47 (traction control module) will be used for all traction control modules, and A7/3 (ASR/ETS/ESP hydraulic unit) for all traction control hydraulic units, regardless of what is actually installed in vehicle.

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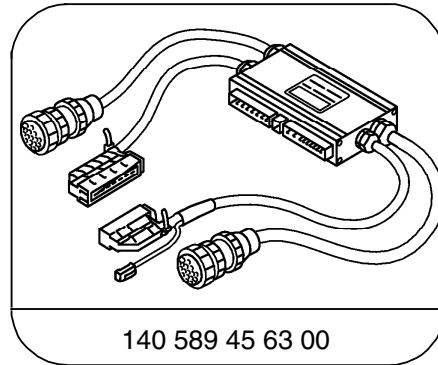
Electrical Test Program – Preparation for Test

Special Tools



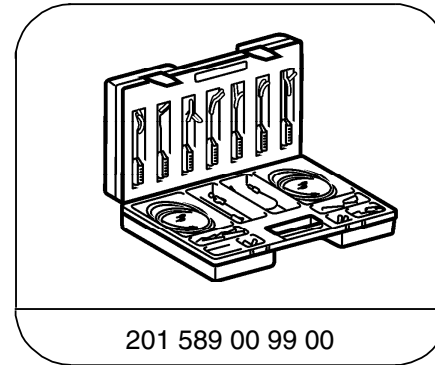
129 589 00 21 00

126-pin socket box



140 589 45 63 00

80-pin test cable



201 589 00 99 00

Electrical connecting set

Test equipment; See MBUSA Standard Service Equipment Program

| Description | Brand, model, etc. |
|--------------------|-------------------------------------|
| Digital multimeter | Fluke models 23, 77 III, 83, 85, 87 |

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Connection Diagram – Socket Box Model 129, 140

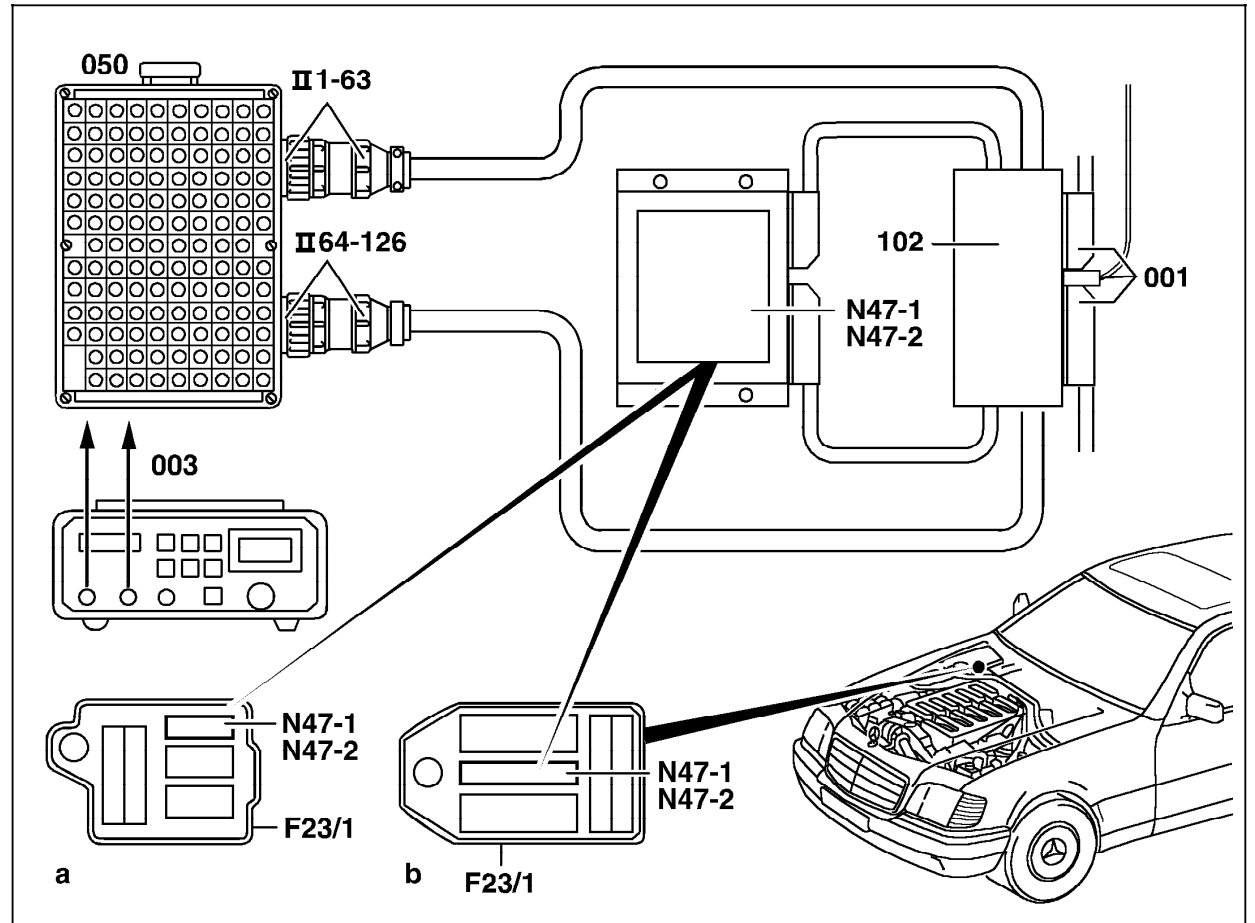


Figure 1

- 001 Control module connector
- 003 Digital multimeter
- 050 Socket box, 126-pole
- 102 Test cable
- F23/1 Control module box
- N47-1 ASR/SPS control module
- N47-2 ETS/SPS control module
- a Model 129
- b Model 140

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Connection Diagram – Socket Box Model 202 *without* control module box

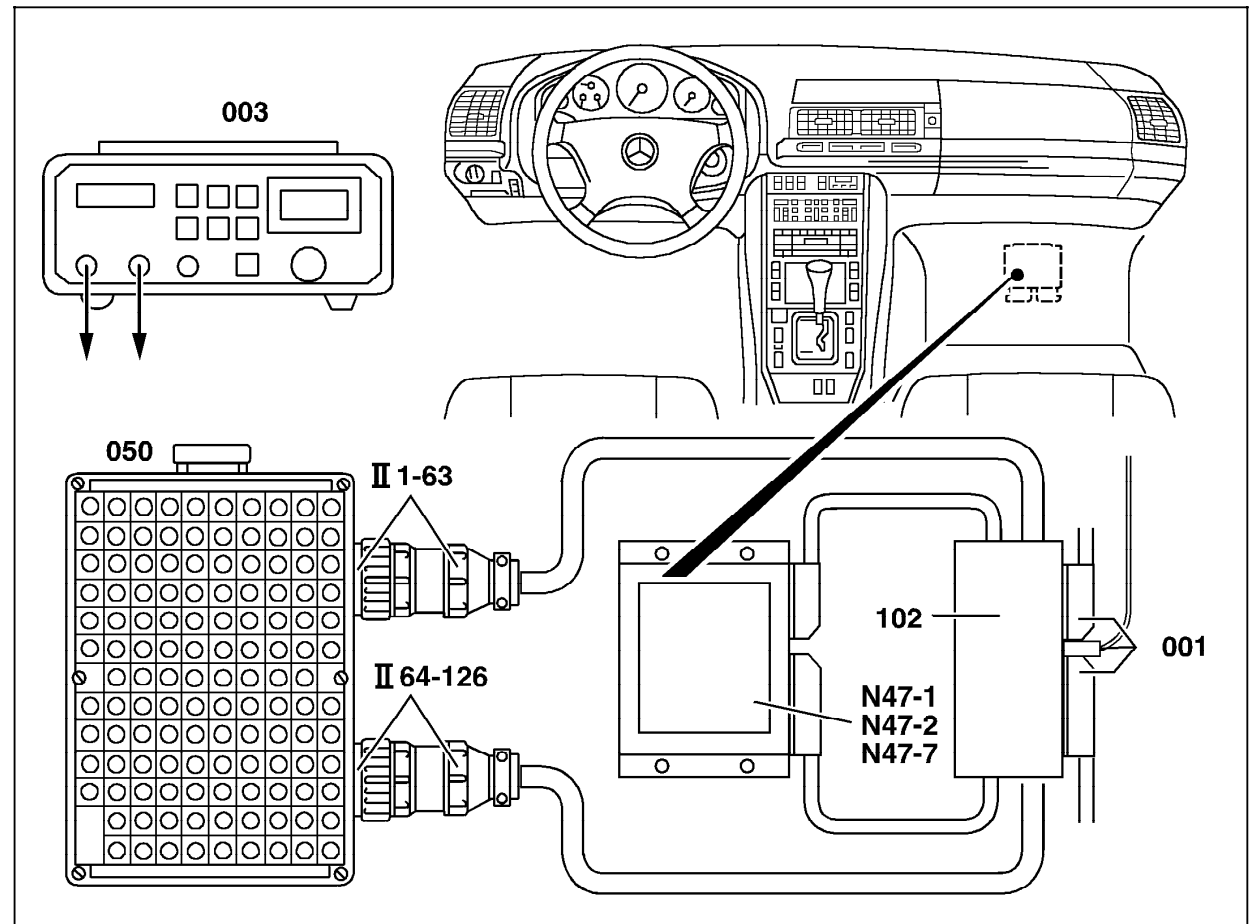


Figure 2

- 001 Control module connector
- 003 Digital multimeter
- 050 Socket box, 126-pole
- 102 Test cable
- N47-1 ASR/SPS control module
- N47-2 ETS/SPS control module
- N47-7 ABS control module

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9.3 Traction Systems (ABS, ASR, ETS) and SPS

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Connection Diagram – Socket Box
 Model 170, 208, 210
 Model 202 *with* control module box

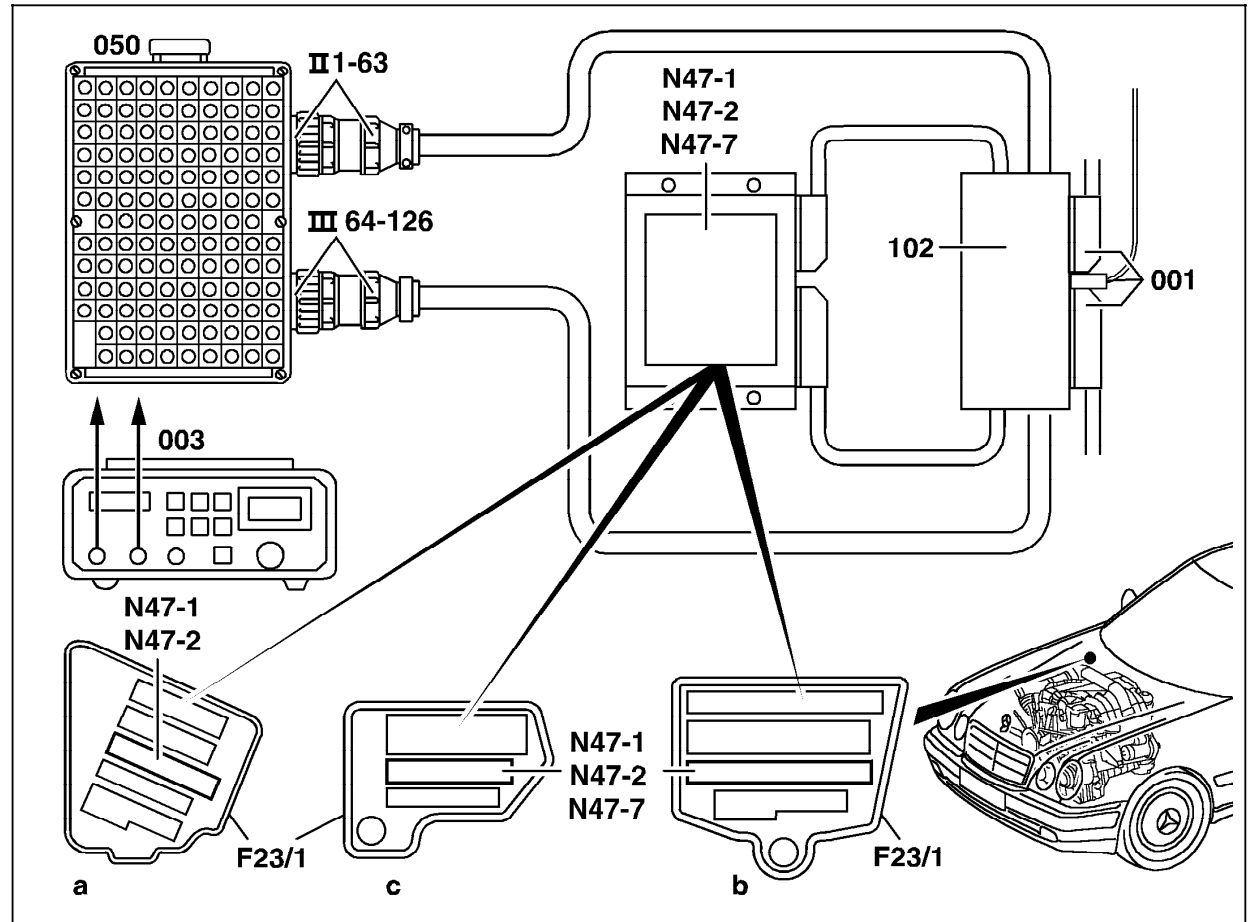


Figure 3

- 001 Control module connector
- 003 Digital multimeter
- 050 Socket box, 126-pole
- 102 Test cable
- F23/1 Control module box
- N47-1 ASR/SPS control module
- N47-2 ETS/SPS control module
- N47-7 ABS control module
- a Model 210
- b Model 170
- c Model 202, 208

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Electrical Test Program – Preparation for Test

CAN data outputs, ABS control module (N47-7)

| CAN signal | Information |
|--|--|
| ABS status | <ul style="list-style-type: none"> • Brake lining wear indicator lamp (A1e6) • Parking brake operated indicator lamp (A1e7) • ABS defect indicator lamp (A1e17) • System fault or diagnosis • Stop lamp switch S9/1): brake not operated brake operated no signal • Cruise control operation OFF • ABS operational • ABS operation OFF |
| Front left wheel vehicle speed signal (VSS) | <ul style="list-style-type: none"> • Wheel speed |
| Front right wheel vehicle speed signal (VSS) | <ul style="list-style-type: none"> • Wheel speed |
| Rear left wheel vehicle speed signal (VSS) | <ul style="list-style-type: none"> • Wheel speed |
| Rear right wheel vehicle speed signal (VSS) | <ul style="list-style-type: none"> • Wheel speed |
| Front left wheel speed signal for CC | <ul style="list-style-type: none"> • Wheel speed |
| Front right wheel speed signal for CC | <ul style="list-style-type: none"> • Wheel speed |

9.3 Traction Systems (ABS, ASR, ETS) and SPS

Electrical Test Program – Preparation for Test

CAN data outputs, ETS/ASR/ESP control module (N47)

| CAN signal | Information |
|--------------------|---|
| ABS status | <ul style="list-style-type: none"> • Cruise control operation OFF • ABS operational • ABS operation OFF • System fault or diagnosis |
| ETS/ASR/ESP status | <ul style="list-style-type: none"> • Brake lining wear indicator lamp (A1e6) • Parking brake operated indicator lamp (A1e7) • ABS defect indicator lamp (A1e17) • ETS/ASR/ESP defect indicator lamp (A1e22/35/42) • ASR/ESP OFF switch operated - warning light on permanently • Slip or system operates - flashing warning light • Stop lamp switch (S9/1): <ul style="list-style-type: none"> brake not operated brake operated no signal • ASR request "Start off in 2nd gear" • ASR request "Hold gear" • Quicker ASR/EBR torque intervention • Increase in specified engine torque (EBR active) |

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CAN data outputs, ETS/ASR/ESP control module (N47) (continued)

| CAN signal | Information |
|--|--|
| ETS/ASR/ESP status | <ul style="list-style-type: none">• Reduction in specified engine torque (ASR active)• Cruise control operation OFF• ASR operational• ABS/ASR operation OFF• System fault or diagnosis |
| Front left wheel vehicle speed signal (VSS) | Wheel speed |
| Front right wheel vehicle speed signal (VSS) | Wheel speed |
| Rear left wheel vehicle speed signal (VSS) | Wheel speed |
| Rear right wheel vehicle speed signal (VSS) | Wheel speed |
| Front left wheel speed signal for CC | Wheel speed |
| Front right wheel speed signal for CC | Wheel speed |

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CAN data inputs, ETS/ASR/ESP control module

| CAN signal | Information | From control module |
|---------------|---|---|
| Engine status | <ul style="list-style-type: none"> • Engine speed (rpm) | <ul style="list-style-type: none"> • Engine control module |
| Engine status | <ul style="list-style-type: none"> • Adjusted engine torque for traction control | <ul style="list-style-type: none"> • Engine control module |
| Engine status | <ul style="list-style-type: none"> • Atmospheric pressure | <ul style="list-style-type: none"> • Engine control module |
| Engine status | <ul style="list-style-type: none"> • Acknowledgment of torque requirement | <ul style="list-style-type: none"> • Engine control module |
| Engine status | <ul style="list-style-type: none"> • Pedal value | <ul style="list-style-type: none"> • Engine control module |
| Engine status | <ul style="list-style-type: none"> • Indicated engine torque | <ul style="list-style-type: none"> • Engine control module |
| Engine status | <ul style="list-style-type: none"> • Engine friction torque | <ul style="list-style-type: none"> • Engine control module |
| Engine status | <ul style="list-style-type: none"> • Maximum engine torque | <ul style="list-style-type: none"> • Engine control module |
| Engine status | <ul style="list-style-type: none"> • Clutch depressed (NON-USA) | <ul style="list-style-type: none"> • Engine control module |
| Vehicle code | <ul style="list-style-type: none"> ● Model • Body style • Engine • Transmission | <ul style="list-style-type: none"> • Engine control module |

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Electrical Test Program – Preparation for Test

CAN data inputs, ETS/ASR/ESP control module (continued)

| CAN signal | Information | From control module |
|-----------------------------------|--|---|
| Transmission status | <ul style="list-style-type: none"> ● Actual gear • Target gear | <ul style="list-style-type: none"> • ETC |
| Transmission status | <ul style="list-style-type: none"> ● Rear-wheel drive • 4 wheel drive | <ul style="list-style-type: none"> • ETC |
| Transmission status | <ul style="list-style-type: none"> ● Shift introduction • Transmission in limp-home mode | <ul style="list-style-type: none"> • ETC |
| Transmission code | <ul style="list-style-type: none"> ● Large transmission • Small transmission | <ul style="list-style-type: none"> • ETC |
| Transmission status | <ul style="list-style-type: none"> ● Torque converter lockup clutch engaged • Torque converter lockup clutch disengaged • Torque converter lockup clutch slip | <ul style="list-style-type: none"> • ETC |
| Automatic clutch status (NON-USA) | <ul style="list-style-type: none"> • 1st gear | <ul style="list-style-type: none"> • Automatic clutch control module |
| Automatic clutch status (NON-USA) | <ul style="list-style-type: none"> ● Shift introduction • Clutch engaged • Clutch disengaged • Clutch slip | <ul style="list-style-type: none"> • Automatic clutch control module |
| Automatic clutch status (NON-USA) | <ul style="list-style-type: none"> ● Emergency limp-home mode | <ul style="list-style-type: none"> • Automatic clutch control module |