

Electrical Test Program – Preparation for Test

Preliminary work:
 Diagnosis - Malfunction Memory 11

1. Ignition: **OFF**
2. Connect test cable with socket box to engine control module (N3/10) according to connection diagram

Electrical wiring diagrams :
 Electrical Troubleshooting Manual, Model 129,
 Electrical Troubleshooting Manual, Model 140,
 Electrical Troubleshooting Manual, Model 210.



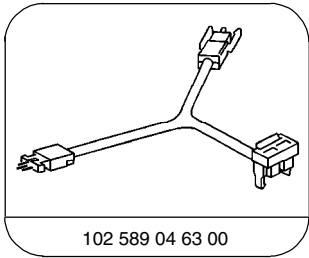
**Connect interior harness connector to connection 1 on test cable.
 Connect engine harness connector to connection 2 on test cable.**

Note:
 The test program is divided into four sections:
 23 SFI Test
 24 Ignition System Test
 25 EA System Test
 26 CC System Test

Note regarding “Test Connection” column:
 The numbers indicated in parentheses, for example, ⇒ 1.0 (1.23) signify:
 1= Connector 1 on wiring diagram,
 23= Socket 23 on wiring diagram.

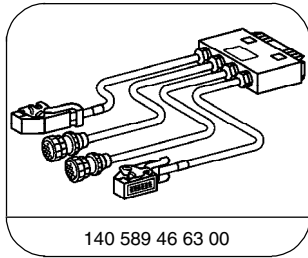
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Special Tools



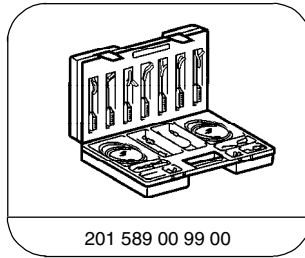
102 589 04 63 00

Test cable



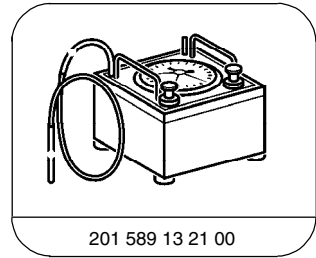
140 589 46 63 00

Test cable, 117-pin



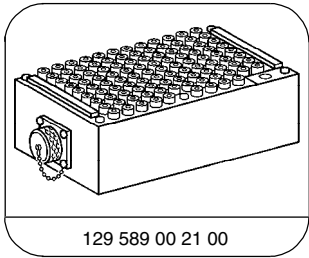
201 589 00 99 00

Electrical connecting set



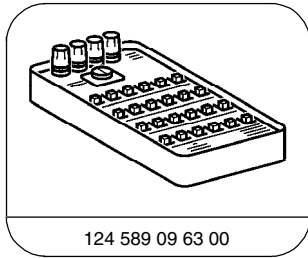
201 589 13 21 00

Tester



129 589 00 21 00

126-pin socket box



124 589 09 63 00

Ohm decade

Test Equipment; See MBUSA Standard Service Equipment Program

Description	Brand, model, etc.
Digital multimeter	Fluke models 23, 77 III, 83, 85, 87
Engine analyzer	Bear DACE Herman Electronics

Electrical Test Program – Preparation for Test

To Avoid Damage to the Ignition System

- To avoid damage to the engine control module (N3/10), connect/disconnect the control module connectors only with the ignition: **OFF**.
- Do not connect a test lamp to circuit 1 or 15 of the ignition coil.
- The high output side of the ignition system must carry at least 2 k Ω of load (spark plug connector).
- To avoid damaging the ignition coils during individual testing, do not load the coil with more than 28 kV.

 **WARNING!**
High Voltage!

- Primary connections carry a voltage of up to 400 V. The iron core bracket of the ignition coils must always be connected to vehicle ground.
- Persons with pacemakers should not work on this type of ignition system.

Using Test Equipment

- **Ensure that the engine and ignition are OFF when connecting/disconnecting test equipment to a coil.**

Electrical Test Program – Component Locations

Connection Diagram - Socket Box



Connect interior harness connector to connection 1 on test cable.
 Connect engine harness connector to connection 2 on test cable.

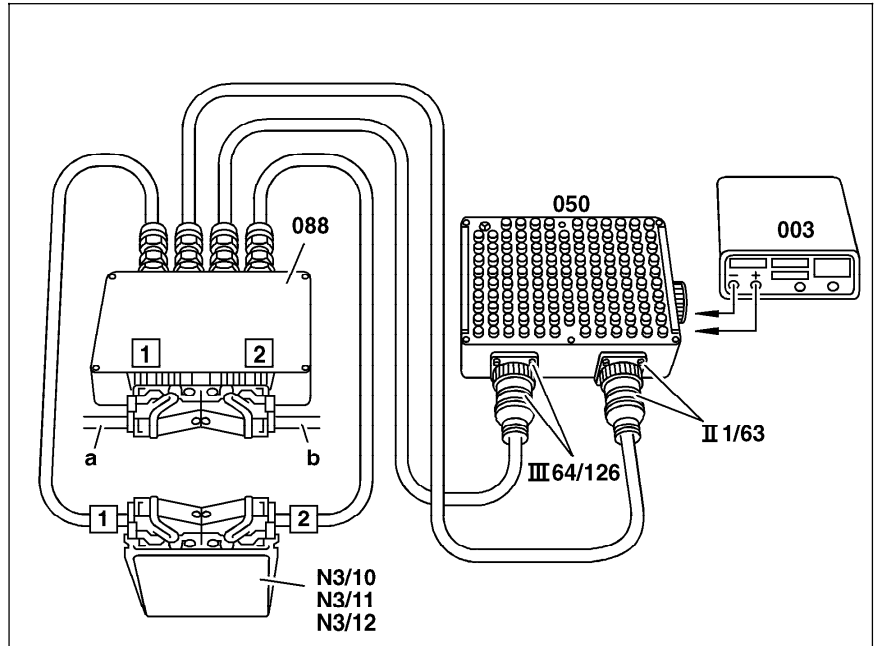


Figure 1

- 003 Digital multimeter
- 050 Socket box (126-pole)
- 088 Test cable
- N3/10 Engine control module (ME-SFI)

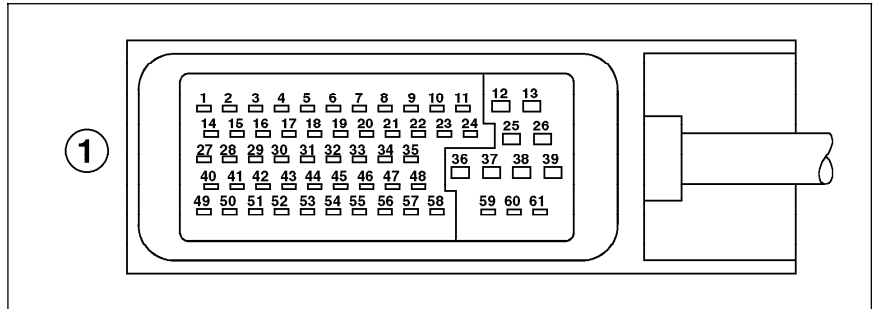
- a Interior harness
- b Engine harness

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Electrical Test Program – Preparation for Test

Connector Layout - Engine Control Module
Connector 1 – Interior

- 1 Stop lamp switch (S9/1) N.O. contact
- 2 CC switch (S40), accelerate/set
- 3 Stop lamp switch (S9/1) N.C. contact
- 4 Pedal value sensor (B37) nominal potentiometer 2 (+)
- 5 Pedal value sensor (B37) nominal potentiometer 2 (-)
- 6 Pedal value sensor (B37) nominal value potentiometer 2 (wiper)
- 7 -
- 8 A/C pushbutton control module (N22) (only til 05/96, as of 06/96 via CAN)
- 9 Left front axle VSS (L6/1)
- 10 Purge control valve (Y58/1)
- 11 "CHECK ENGINE" MIL (A1e26) (only til 05/96, as of 06/96 via CAN)
- 12 O2S 2 (after TWC) heating (G3/5) (G3/6)
- 13 O2S 1 (before TWC) heating (G3/3) (G3/4)
- 14-17 -
- 17 Pedal value sensor (B37) nominal value potentiometer 2 (+)
- 18 Pedal value sensor (B37) nominal value potentiometer 2 (-)
- 19 Pedal value sensor (B37) nominal value potentiometer 1 (wiper)
- 20 -
- 21 EA warning lamp (A1e39)
- 22 Left rear axle VSS (L6/3)
- 23 Tank open signal (only USA, up to 05/96, as of 06/96 via CAN)
- 24 FP relay module (K27), Model 129/140
Relay module K40, Model 210
Voltage supply, (circuit 87M), Model 129/140 from N16/1
- 25 Voltage supply, (circuit 87M), Model 210 from K40
- 26 Output ground (W15), right foot well
- 27 CC switch (S40), control contact
- 28 CC switch (S40), off
- 29 -

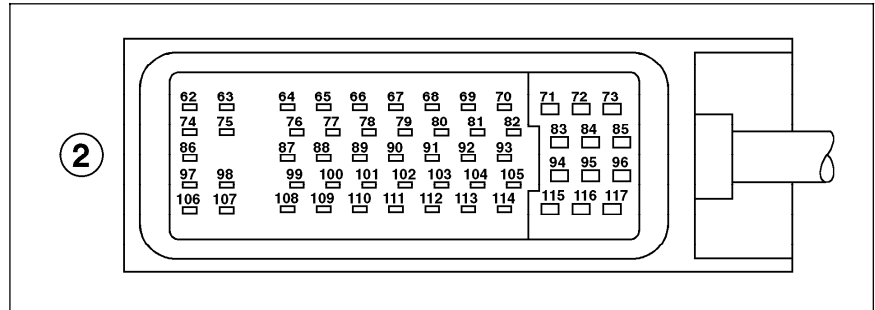


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- | | | | |
|----|---|-------|---|
| 30 | CC switch (S40), resume | 45-46 | - |
| 31 | CC switch (S40), decelerate/set | 47 | Not applicable to U.S.A. version vehicles |
| 32 | Oil level switch (S43) | 48 | Body acceleration sensor (B24), signal (up to 05/96) |
| 33 | Fuel reserve signal (only til 05/96, as of 06/96 via CAN) | 49 | Left O2S 1 (before TWC) signal (G3/3) |
| 34 | Activated charcoal canister shut-off valve (Y58/4) (only USA, model 140/210, Model 129 as of 09/97) | 50 | Left O2S 2 (after TWC) signal (G3/5) (only USA) |
| 35 | Voltage supply, circuit 30, Model 129/140 from N16/1 | 51 | Purge monitoring pressure sensor (B4/4) (only USA, Model 129 up to 08/97) |
| | Voltage supply, circuit 30, Model 210 from K40 | | Fuel tank pressure sensor (B4/3) (Model 140/210, Model 129 as of 09/97) |
| | | 52 | Not applicable to U.S.A. version vehicles |
| | | 53 | Ground, sensors |
| | | 54 | - |
| | | 55 | Diagnosis output (injection system), DLC (X11/4) |
| | | 56 | Diagnosis output, (engine speed) DLC (X11/4) |
| | | 57 | AIR relay module (K17), Model 129, 140 (only USA) |
| | | 58 | Instrument cluster (fuel consumption signal) |
| | | 59 | - |
| | | 60 | CAN data line "H" |
| | | 61 | CAN data line "L" |

Electrical Test Program – Preparation for Test

Connector Layout - Engine Control Module
Connector 2 – Engine



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62 - 63	-	81	-	97	EA/CC/ISC actuator, actual value potentiometer (wiper) (M16/1r1)
64	IAT sensor (+) (B17)	82	Injector (Y62y8)	98	EA/CC/ISC actuator, actual value potentiometer (-) (M16/1r1-r2)
65	Pressure sensor (B28) (only USA)	83	Ignition coil (T1/1)	99 - 102	-
66	CMP sensor signal (L5/1)	84	Ignition coil (T1/5)	103	Injector (Y62y7)
67	Hot film MAF sensor (+) (B2/5)	85	Ignition coil (T1/4)	104-105	-
68	Hot film MAF sensor (-) (B2/5)	86	-	106	EA/CC/ISC actuator, actual value potentiometer (+) (M16/1r1 - r2)
69	Injector (Y62y3)	87	Ground: IAT sensor, Intake MAP sensor, CMP sensor, ECT sensor,	107	EA/CC/ISC actuator, actual value potentiometer (wiper) (M16/1r2)
70	Injector (Y62y6)		pressure sensor (B28) (only USA)	108-110	-
71	Injector (Y62y5)	88	Pressure sensor (B28),	111	Left adjustable camshaft timing solenoid (Y49/1)
72	Injector (Y62y1)		5V voltage supply (only USA)	112	Injector (Y62y2)
73	Ground bridge to pin 96	89	CKP sensor (+) (L5)	113	Right adjustable camshaft timing solenoid (Y49/2)
74	EA/CC/ISC actuator (-) (M16/1)	90	Left KS 2 (+) (A16g2)	114	AIR pump switchover valve (Y32) (only USA)
75	EA/CC/ISC actuator (+) (M16/1)	91	Left KS 2 (-) (A16g2)	115	Ignition coil (T1/3)
76	ECT sensor (+) (B11/4)	92	Air relay module (K17), Model 210 (only USA)	116	Ignition coil (T1/7)
77	-	93	Injector (Y62y4)	117	Ignition coil (T1/2)
78	CKP sensor (-) (L5)	94	Ignition coil (T1/6)		
79	Right KS 1 (+) (A16g1)	95	Ignition coil (T1/8)		
80	Right KS 1 (-) (A16g1)	96	Ground bridge to pin 73		