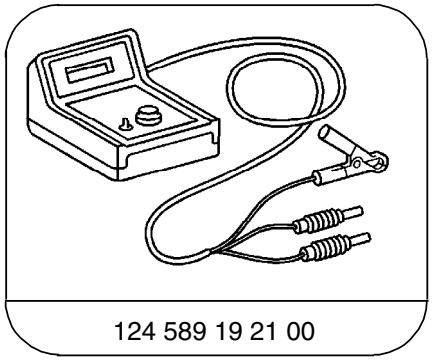
7.1 Engines 104, 119 with LH Sequential Multiport Fuel Injection System (LH-SFI) Models 124.034, 140

Diagnosis - Diagnostic Trouble Code (DTC) Readout

Preparation for DTC Readout

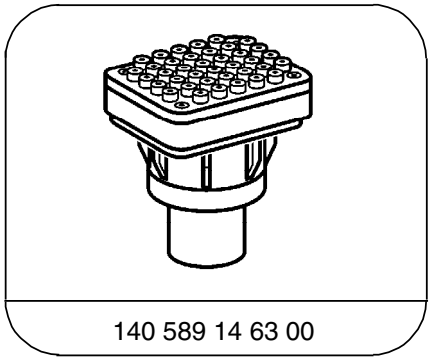
- Connect impulse counter scan tool and/or HHT to data link connector (X11/4) according to connection diagram (see section 0).
  yellow wire to socket 7

Special Tools



124 589 19 21 00

Pulse counter



140 589 14 63 00

Adapter

Equipment

Hand-Held Tester (HHT) [1]	see current MBUSA service information in groups 58 and 99

[1] Available through the MBUSA Standard Equipment Program.

Diagnosis - Diagnostic Trouble Code (DTC) Readout

Diagnostic trouble code (DTC)		Possible cause	Test step/Remedy [1]
1	–	No fault in system	–
2	002	CC/ISC control module (N4/3)	N4/3
	006	Safety contact switch (M16/3s1)	23⇒ 6.0–8.0
		Stop lamp switch (S9/1)	23⇒ 17.0
		Cruise control switch (S40) OFF	23⇒ 2.0
	007	CC/ISC control module (N4/3)	N4/3
		Actual value potentiometer (M16/1r2)	23⇒ 3.0, 5.0
		Starter lock-out/back-up lamp switch (S16/3) (transmission range recognition)	23⇒ 11.0
	008	Engine speed (TNA) signal	23⇒ 14.0
		Vehicle speed signal (VSS)	23⇒ 15.0, 16.0
	009	Safety relay within CC/ISC control module (N4/3)	N4/3
	025	CC/ISC control module (N4/3)	N4/3
		Engine harness	Check harness wire insulation.
–	037	Conditions for activation of CC/ISC actuator (M16/2) not fulfilled.	Conditions: Engine: **OFF** Transmission range: **P/N**

[1] Observe Preparation for Test, see 22.

Diagnosis - Diagnostic Trouble Code (DTC) Readout

Diagnostic trouble code (DTC)		Possible cause	Test step/Remedy [1]
3	054, 056	CC/ISC actuator (M16/2)	23⇒ 3.0–10.0
	048	Throttle valve actual valve potentiometer (M16/2r2)	23⇒ 5.0
	049	Drive actual value potentiometer (M16/2r1)	23⇒ 4.0
	050	Safety contact switch (M16/2s1)	23⇒ 6.0, 8.0
	051	Closed throttle recognition switch (M16/2s2)	23⇒ 6.0, 7.0
	057	CC/ISC actuator (M16/2) (voltage supply)	23⇒ 3.0
	055	Reset not accomplished (actuator adaptation)	Erase DTC: Ignition: **OFF** Ignition: **ON** (for at least 90 seconds). If DTC reappears: CC/ISC actuator (M16/2)
4	064	Cruise control switch (S40)	23⇒ 2.0
5	080	Stop lamp switch (S9/1)	23⇒ 17.0
6	097	*Not valid for U.S.A. vehicles*	

[1] Observe Preparation for Test, see 22.

Diagnosis - Diagnostic Trouble Code (DTC) Readout

Diagnostic trouble code (DTC)		Possible cause	Test step/Remedy [1]
7	112 115	**CAN databus:** Message from CC/ISC control module (N4/3) faulty Reception from LH-SFI control module (N3/1) faulty	N4/3 23⇒ 21.0
8	129, 130	Left front axle vehicle speed signal (L6/1) from ABS control module (N30)	23⇒ 15.0
9	144	Rear axle vehicle speed signal (L6) from ABS control module (N30)	23⇒ 16.0
10	160	Engine speed signal (TNA) from base module (N16/1)	23⇒ 14.0
11	176, 182 177–179	Fuel safety shut-off signal to LH-SFI control module (N3/1) Closed throttle recognition signal to LH-SFI control module (N3/1)	23⇒ 19.0 23⇒ 20.0
12	192, 193	Voltage supply, circuit 87	23⇒ 1.0

[1] Observe Preparation for Test, see 22.

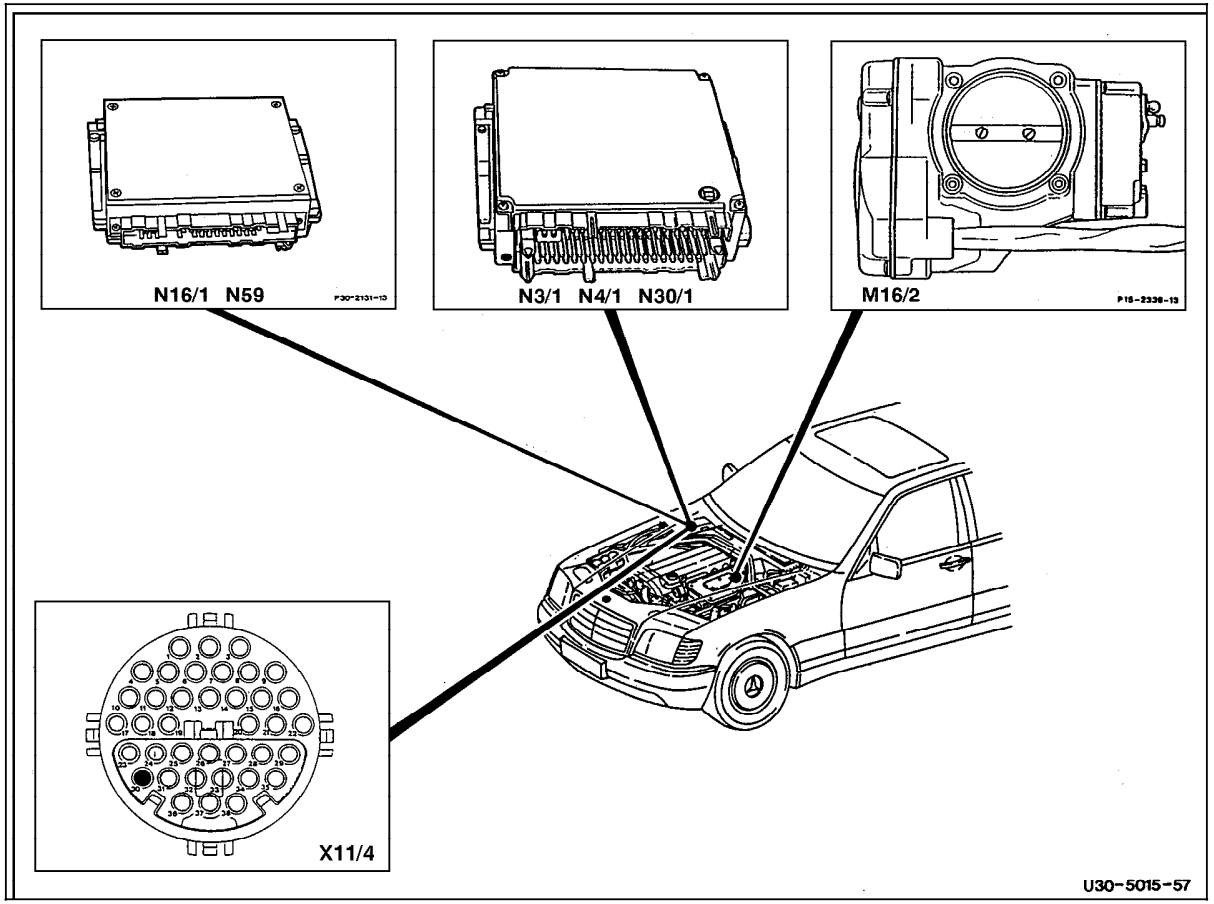
Diagnosis - Complaint Related Diagnostic Chart

Complaint/Problem	Possible cause	Test step/Remedy [1]
Cruise control/idle speed control operates in “limp-home” mode	CC/ISC control module (N4/3) voltage supply CC/ISC actuator (M16/2)	23⇒ 1.0 23⇒ 3.0 – 10.0
Engine speed limiter active at 1200 – 1900 rpm	Fuel safety shut-off to LH-SFI control module (N3/1)	23 ⇒ 19.0

[1] Observe Preparation for Test, see 22.

Electrical Test Program - Component Locations

Engine 104, Model 140



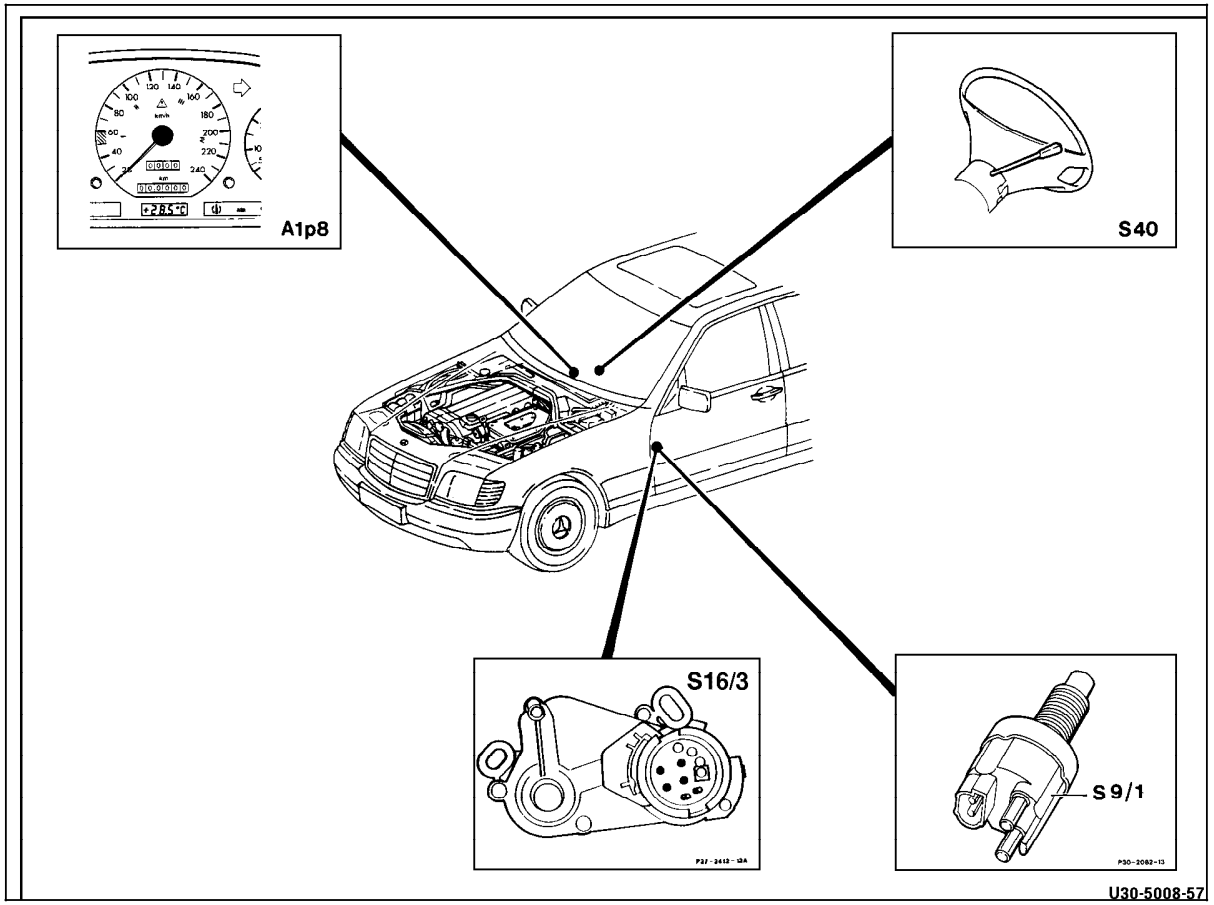
U30-5015-57

Figure 1

M16/2	CC/ISC actuator
N3/1	LH-SFI control module
N4/3	CC/ISC control module
N16/1	Base module
N30	ABS control module
N59	Diagnostic module (OBD I)
X11/4	Data link connector (DTC readout) (38-pole)

Electrical Test Program - Component Locations

Engine 104, Model 140



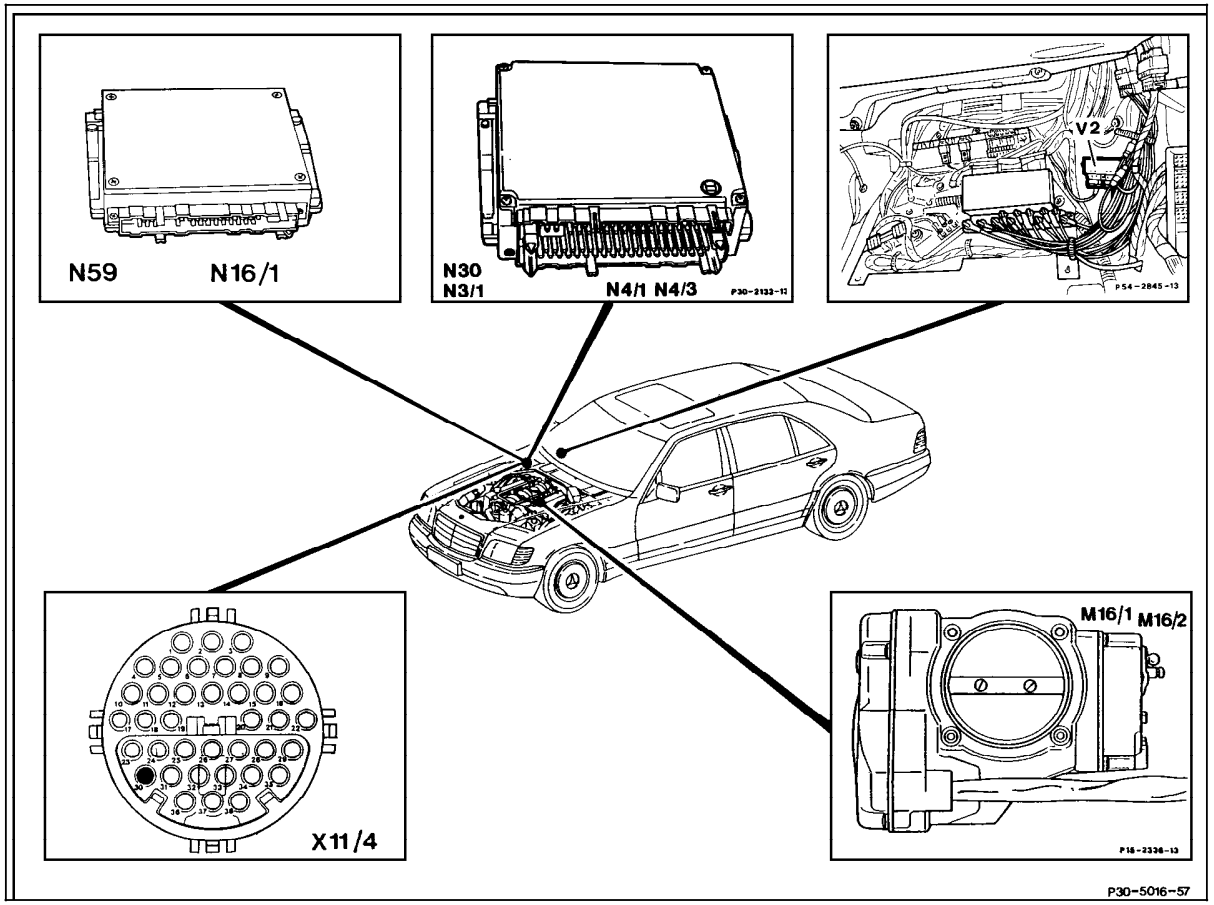
U30-5008-57

Figure 2

A1p8	Electronic speedometer with top speed limitation
S9/1	Stop lamp switch
S16/3	Starter lock-out/backup lamp switch (transmission range recognition)
S40	Cruise control switch
	V Decelerate/set
	B Accelerate/set
	SP Resume
	A Off

Electrical Test Program - Component Locations

Engine 119, Models 124.034, 140



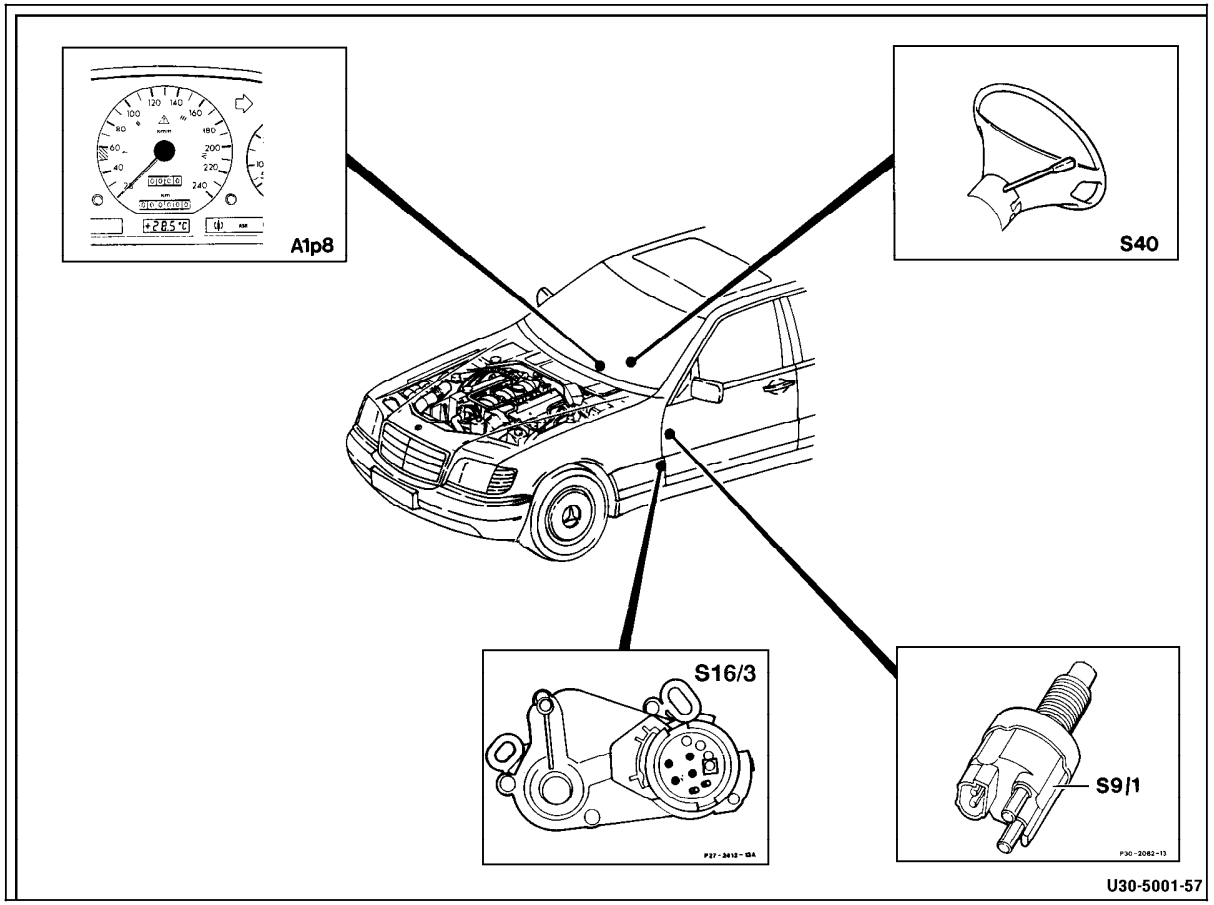
P30-5016-57

Figure 3

M16/2	CC/ISC actuator
N3/1	LH-SFI control module
N4/3	CC/ISC control module
N16/1	Base module
N30	ABS control module
N59	Diagnostic module (OBD I) (California)
X11/4	Data link connector (DTC readout) (38-pole)
V2	Engine rpm increase diode matrix (right footwell, model 140 with engine 119 only)

Electrical Test Program - Component Locations

Engine 119, Models 124.034, 140



U30-5001-57

Figure 4

A1p8	Electronic speedometer with top speed limitation
S9/1	Stop lamp switch
S16/3	Starter lock-out/backup lamp switch (transmission range recognition)
S40	Cruise control switch
	V Decelerate/set
	B Accelerate/set
	SP Resume
	A Off

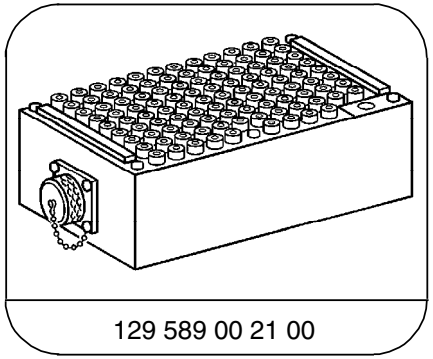
Electrical Test Program - Preparation for Test

Preliminary work: Diagnosis – Diagnostic Trouble Code (DTC) Readout 11

1. Ignition: **OFF**
2. Remove CC/ISC control module (N4/3).
3. Connect socket box (see connection diagram, Figure 1 to 3)

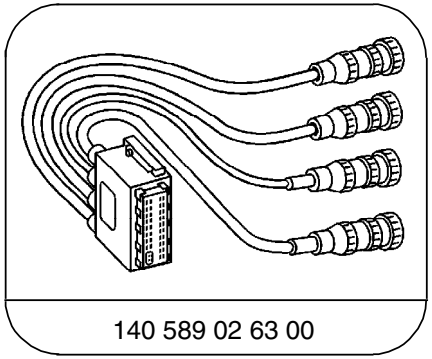
Electrical wiring diagrams :
Electrical Troubleshooting Manual, Model 124
Electrical Troubleshooting Manual, Model 140

Special Tools



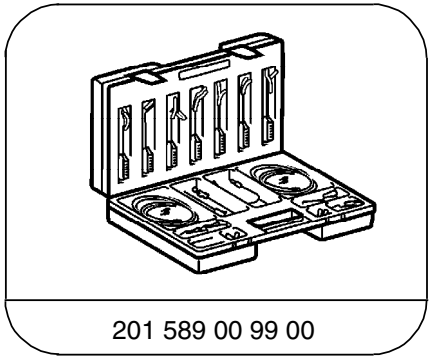
129 589 00 21 00

126-pin socket box



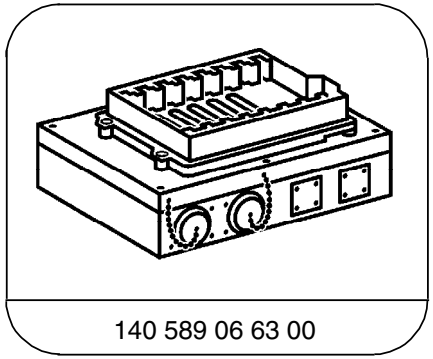
140 589 02 63 00

Contacting module 2



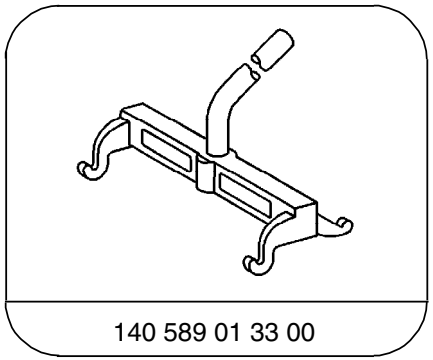
201 589 00 99 00

Electrical connecting set



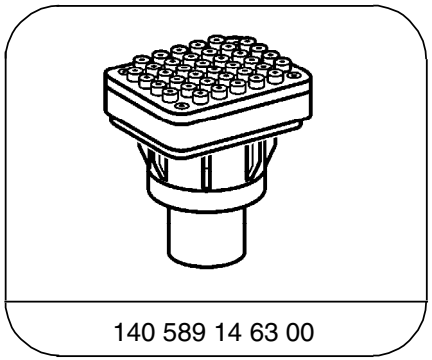
140 589 06 63 00

Contacting box



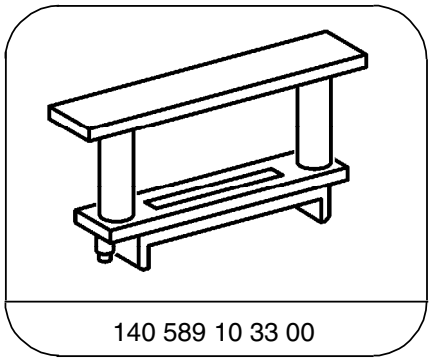
140 589 01 33 00

Mounting lever



140 589 14 63 00

Adapter



140 589 10 33 00

Spacer

Equipment

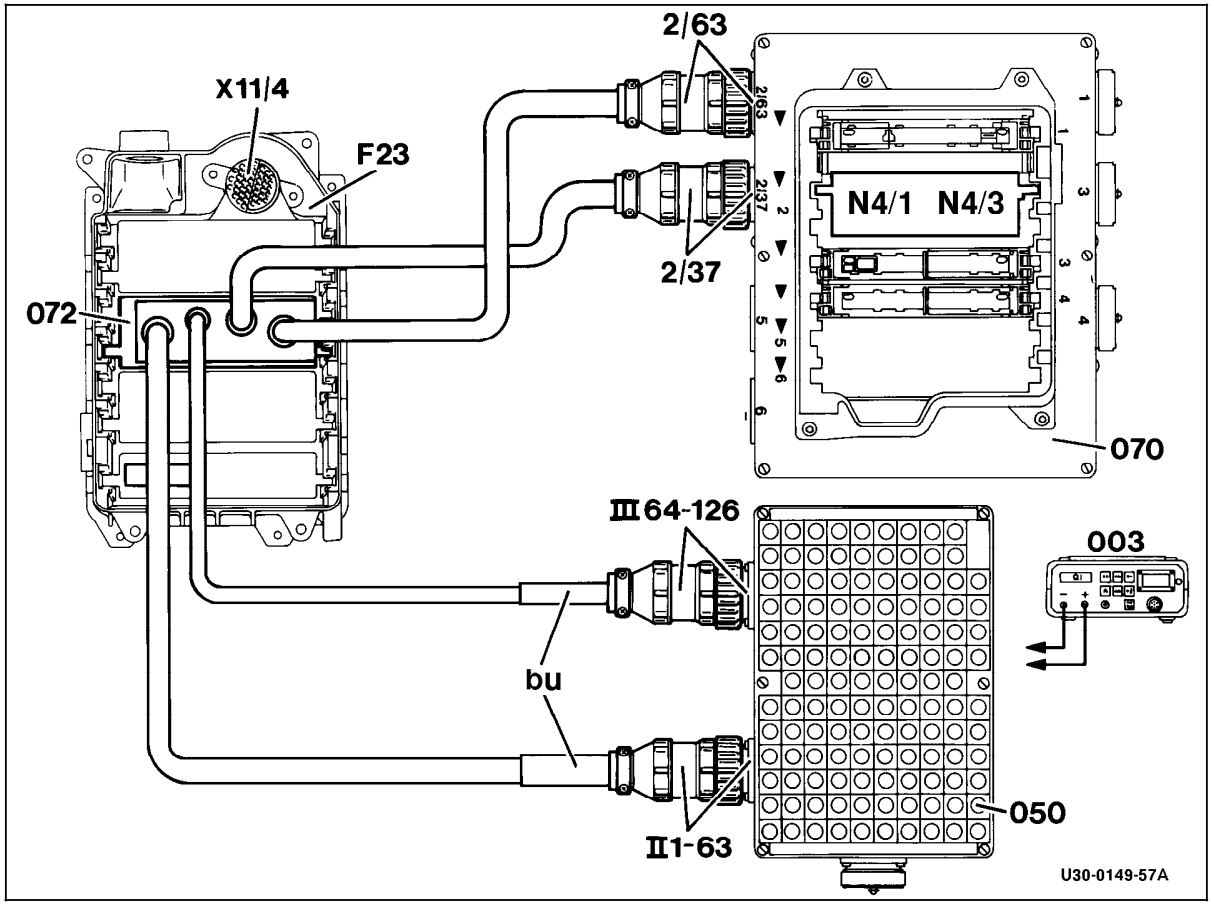
Digital multimeter [1]	Fluke models 23, 83, 85, 87
Signal generator [1] [2]	Sun DTR 8416

[1] Available through the MBUSA Standard Equipment Program.

[2] ⚠ Two signal generators and two multimeters are required for testing the potentiometer and cruise control.

Electrical Test Program - Preparation for Test

Connection Diagram – Socket Box
Engine 119, Model 124.034



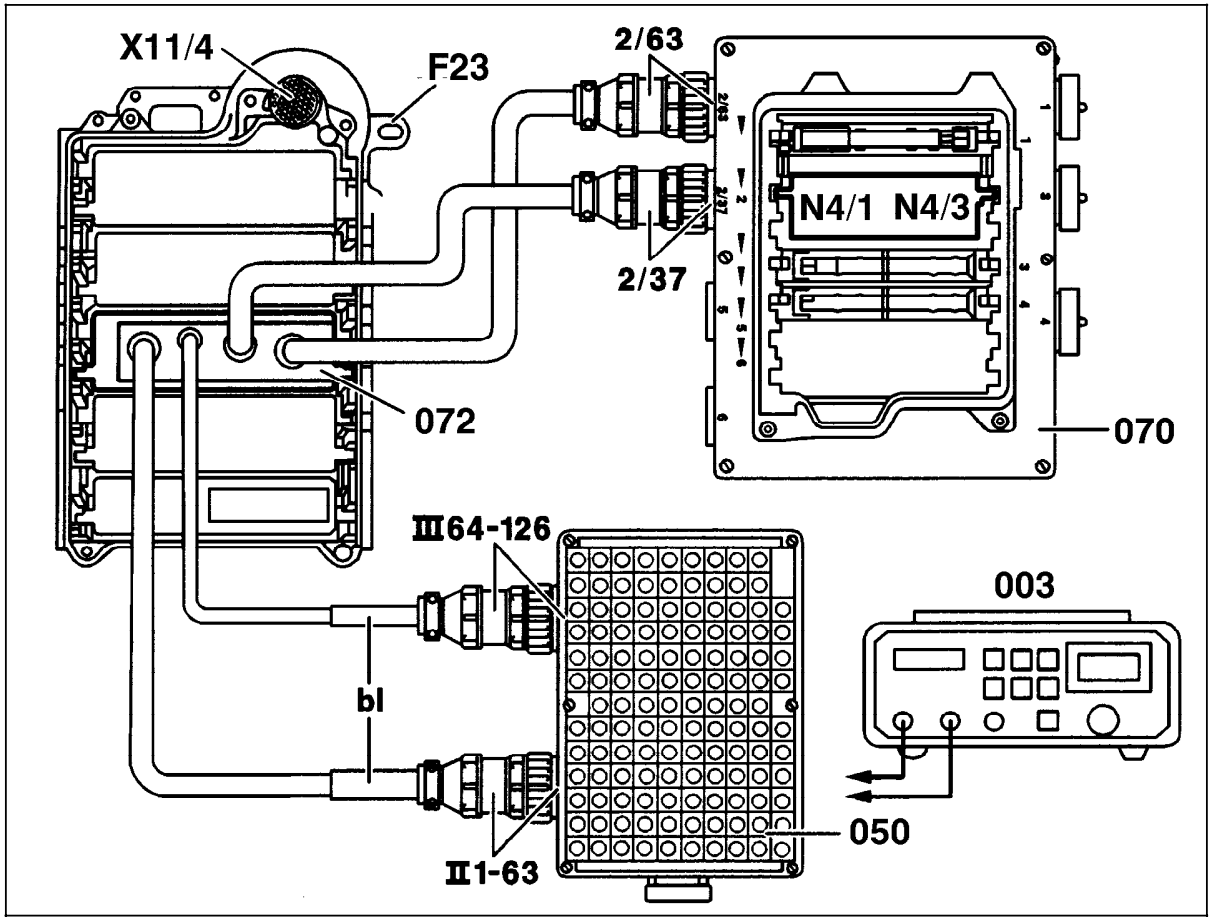
U30-0149-57A

Figure 1

F23	Module box
N4/3	CC/ISC control module
X11/4	Data link connector (DTC readout) (38-pole)
003	Digital multimeter
050	Socket box (126-pole)
070	Contact box
072	Contact module 2
bu	blue

Electrical Test Program - Preparation for Test

Connection Diagram – Socket Box
Engine 119, Model 129



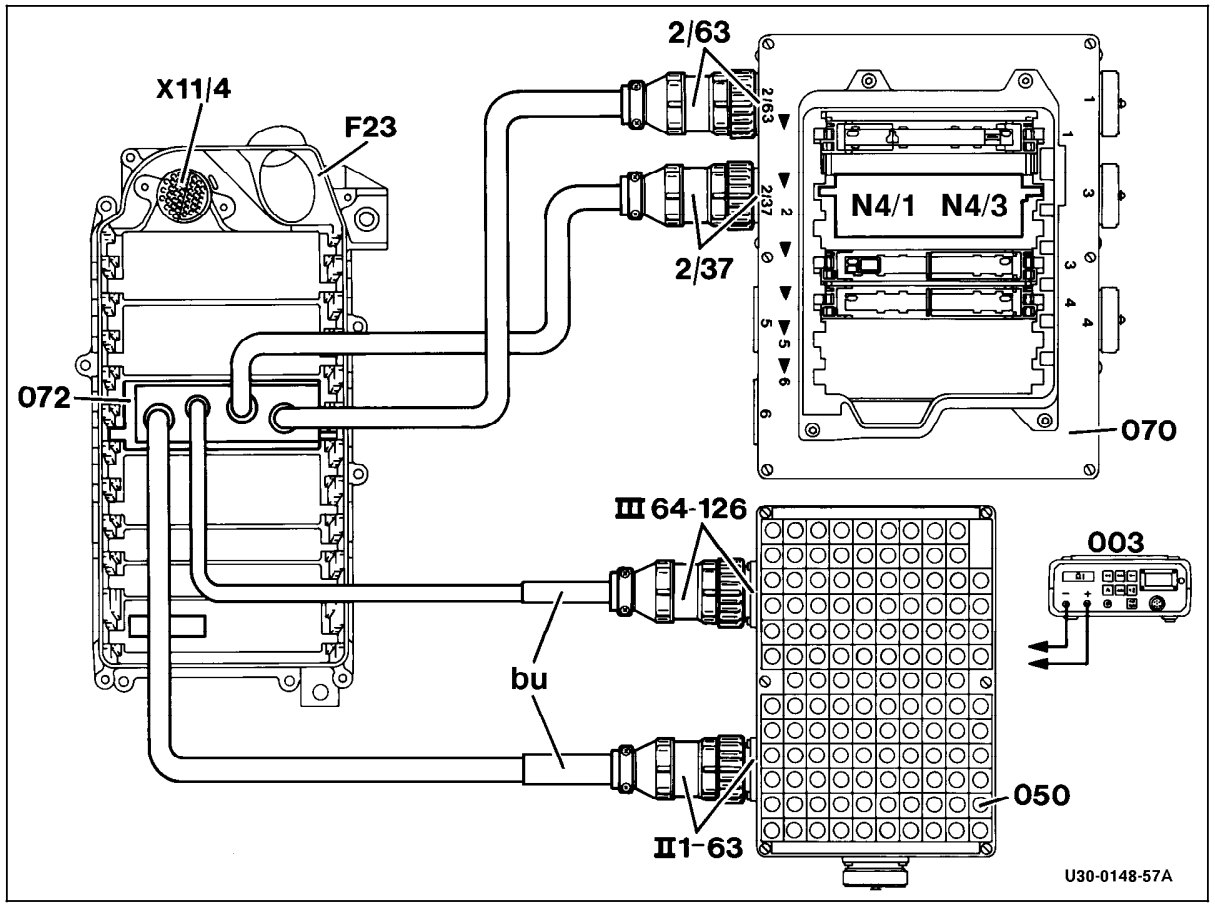
P30-5300-57

Figure 2

F23	Module box
N4/3	CC/ISC control module
X11/4	Data link connector (DTC readout) (38-pole)
003	Digital multimeter
050	Socket box (126-pole)
070	Contact box
072	Contact module 2
bl	blue

Electrical Test Program - Preparation for Test

Connection Diagram – Socket Box
Engine 104, 119, Model 140



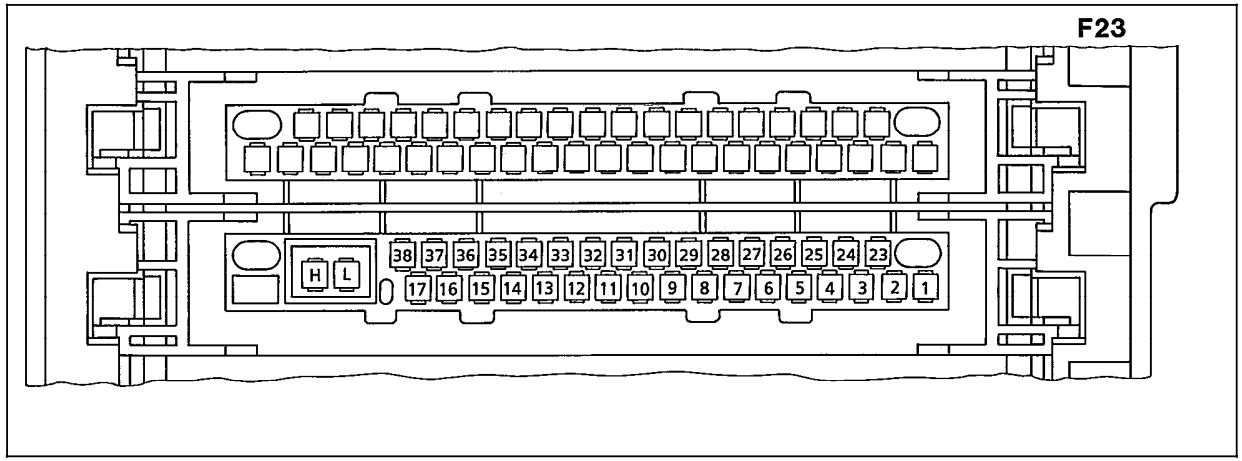
U30-0148-57A

Figure 3

F23	Module box
N4/3	CC/ISC control module
X11/4	Data link connector (DTC readout) (38-pole)
003	Digital multimeter
050	Socket box (126-pole)
070	Contact box
072	Contact module 2
bl	blue

Electrical Test Program - Preparation for Test

Layout of Cruise Control/Idle Speed Control Module Connector "1"



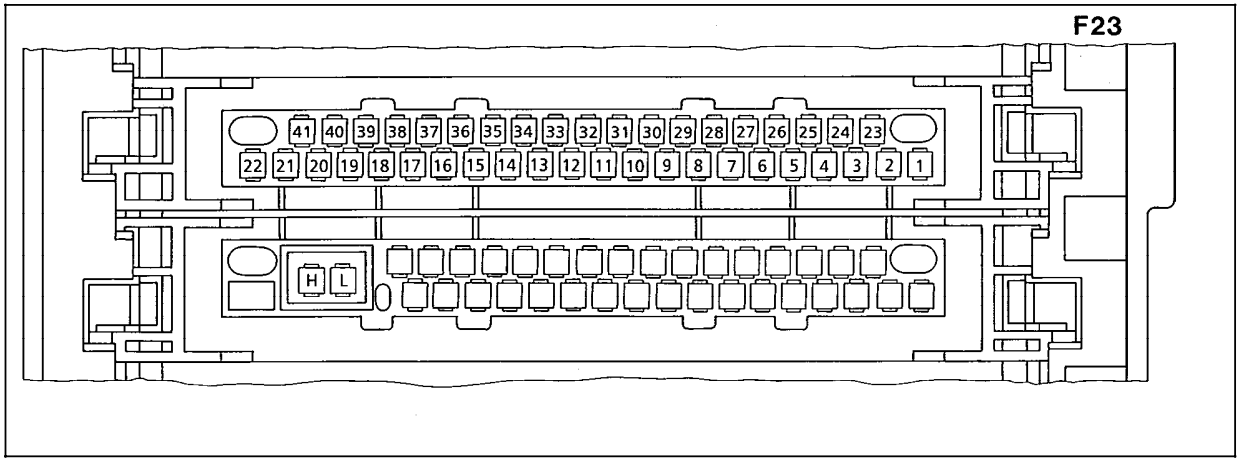
P07-5171-53

Figure 4

1	Not used
2	Cruise control switch (control switch contact)
3	Starter lock-out/backup lamp switch, "D" recognition
4	Starter lock-out/backup lamp switch, "D" recognition
5	Data link connector (DTC readout), 38-pole
6	Not used
7	Fuel safety shut-off (LH-SFI control module signal)
8 – 9	Not used
10	Cruise control switch (SET, DECEL.)
11	Cruise control switch (SET, DECEL.)
12	Rear axle speed sensor, ABS control module
13	Brake lamp switch (ground)
14	Not used
15	Left front wheel speed sensor, ABS control module
16	A/C compressor input signal (base module)
17	Do not contact!
18 – 23	Not used
24	Closed throttle position recognition (LH-SFI control module)
25 – 29	Not used
30	Brake lamp switch
31	Cruise control switch (SET, RESUME)
32	Diode matrix, idle speed increase (only model 140 with engine 119)
33	Cruise control switch
34	Engine speed signal (base module)
35	Voltage supply, unfused circuit 87 Ug (base module)
36	Voltage supply, unfused circuit 87 Ug (base module)
37	Model 140: Ground W15, output ground, electronics (right footwell) Model 124: Ground W16, component compartment
38	Model 140: Ground W15, output ground, electronics (right footwell) Model 124: Ground W16, component compartment
"L"	Data line (–) Controller Area Network
"H"	Data line (+) Controller Area Network

Electrical Test Program - Preparation for Test

Layout of Cruise Control/Idle Speed Control Module Connector "2"



P07-5170-53

Figure 5

1 – 7	Not used
8	CC/ISC actuator (drive actual value potentiometer signal)
9	CC/ISC actuator (throttle valve actual value potentiometer signal)
10	CC/ISC actuator (potentiometer ground)
11	Do not contact!
12	CC/ISC actuator (voltage supply, drive and throttle valve actual value potentiometer)
13 – 15	Not used
16	CC/ISC actuator (voltage supply, safety contact and closed throttle position switch)
17 – 18	Not used
19	CC/ISC actuator (magnetic clutch ground)
20	CC/ISC actuator (motor voltage supply)
21	CC/ISC actuator (motor ground)
22	CC/ISC actuator (motor ground)
23 – 34	Not used
35	CC/ISC actuator (closed throttle position contact signal)
36 – 37	Not used
38	CC/ISC actuator (safety contact)
39	Not used
40	CC/ISC actuator (voltage supply)
41	CC/ISC actuator (voltage supply)

Electrical Test Program - Test

Test step DTC	Scope of test	Test connection	Test condition	Nominal value	Possible cause/remedy
⇒ 1.0 12	**CC/ISC control module (N4/3)** Voltage supply Circuit 87	N4/3 78 (1.37) — V — 76 (1.35) 79 (1.38) — V — 77 (1.36)	Ignition: **ON**	11 – 14 V	⇒ 1.1, Wiring, Base module (N16/1), DM, Chassis and Drivetrain, Vol. 1, section 1.1
⇒ 1.1	**Model 124** Ground, component compartment (W16)	N4/3 78 (1.37) — V — X11/4 3	Ignition: **ON**	11 – 14 V	Wiring, W15 (Model 140), W16 (Model 124).
	Model 140 Ground, output ground, electronics (W15) (right footwell)	N4/3 79 (1.38) — V — X11/4 3	Ignition: **OFF**		

Electrical Test Program - Test

Test step / DTC	Scope of test	Test connection	Test condition	Nominal value	Possible cause/remedy
⇒ 2.0 Ч	**Cruise control switch (S40)**	N4/3	Ignition: **ON**		Wiring, S40.
	V Decelerate/set	79 (1.38) — V — 51 (1.10)	Switch not activated	< 1 V	
			Position “DECEL.”	11 – 14 V	
	SP Resume	79 (1.38) — V — 72 (1.31)	Position “RESUME”	11 – 14 V	
	B Accelerate/set	79 (1.38) — V — 52 (1.11)	Position “ACCEL.”	11 – 14 V	
	A Off	79 (1.38) — V — 74 (1.33)	Switch not activated	11 – 14 V	
			Position “OFF”	< 1 V	
	Control switch contact	79 (1.38) — V — 43 (1.2)	Switch not activated	< 1 V	
			Control switch contact in position: “DECEL.” “ACCEL.” “RESUME” “OFF”	11 – 14 V	

Electrical Test Program - Test

Test step DTC	Scope of test	Test connection	Test condition	Nominal value	Possible cause/remedy
⇒ 3.0	**CC/ISC actuator (M16/2)** Voltage supply Drive actual value potentiometer (M16/2r1) and throttle valve actual value potentiometer (M16/2r2)	N4/3 10 (2.10) — V — 12 (2.12)	Ignition: **ON**	4.7 – 5.3 V **Reference value for tables I, II.**	Wiring, CC/ISC actuator (M16/2) CC/ISC control module (N4/3).
⇒ 4.0	**CC/ISC actuator (M16/2)** Drive actual value potentiometer (M16/2r1) signal	N4/3 79 (1.38) — G — 56 (1.15)	Ignition: **OFF** Unplug ABS control module (N30) **Connect first signal generator.** (front axle speed simulation) Set voltage to 10 V. f = value from table **IV**		Wiring, CC/ISC actuator (M16/2), CC/ISC control module (N4/3).
		N4/3 79 (1.38) — G — 53 (1.12)	**Connect second signal generator.** (rear axle speed simulation) Set voltage to 10 V. f = value from table **IV**		
		N4/3 79 (1.38) — V — 9 (2.9)	Ignition: **ON** Accelerator pedal position: Closed throttle position.	**Table I,** column "**a**".	

Electrical Test Program - Test

Test step DTC	Scope of test	Test connection	Test condition	Nominal value	Possible cause/remedy
⇒ [4.0]			Activate cruise control switch (S40). Position: "ACCEL". **Note:** Activate switch until constant voltage value can be read.	**Table I**, columns "**b**",	
⇒ 5.0	**CC/ISC actuator (M16/2)** Throttle valve actual value potentiometer (M16/2r2) signal	N4/3 10 (2.10) — V — 8 (2.8)	Ignition: **ON** Accelerator pedal position: Closed throttle Wide open throttle or Kickdown	**Table II,** column "**e**", column "**f**",	Wiring, CC/ISC actuator (M16/2), CC/ISC control module (N4/3).
⇒ 6.0	**CC/ISC actuator (M16/2)** Voltage supply safety contact switch (M16/2s1) and closed throttle position recognition switch (M16/2s2)	N4/3 79 (1.38) — V — 16 (2.16)	Ignition: **ON** Accelerator pedal position: Closed throttle	6 – 12 V (value jumps)	Wiring, CC/ISC actuator (M16/2).

Electrical Test Program - Test

Test step DTC	Scope of test	Test connection	Test condition	Nominal value	Possible cause/remedy
⇒ 7.0	**CC/ISC actuator (M16/2)** safety contact switch (M16/2s1) switching point	N4/3 79 (1.38) — V — 35 (2.35)	Ignition: **ON** Accelerator pedal position: Closed throttle Slowly depress accelerator until switching point occurs.	6 – 12 V (value jumps) 1 V	Wiring, CC/ISC actuator (M16/2).
⇒ 8.0	**CC/ISC actuator (M16/2)** Closed throttle position recognition switch (M16/2s2) switching point ⚠ To reference the correct voltage value in Table III, columns “h” and “i”, observe the reference value obtained in test step 3.0.	N4/3 79 (1.38) — G f — 56 (1.15) N4/3 79 (1.38) — G f — 53 (1.12)	Ignition: **OFF** Unplug ABS control module (N30). **Connect first signal generator.** (front axle speed simulation) Set voltage to 10 V. f = value from table **IV** **Connect second signal generator.** (rear axle speed simulation) Set voltage to 10 V. f = value from table **IV**		Wiring, CC/ISC actuator (M16/2).

Electrical Test Program - Test

Test step **DTC**	Scope of test	Test connection	Test condition	Nominal value	Possible cause/remedy
⇒ [8.0]		N4/3 79 (1.38) — V — 9 (2.9)	**Connect first multimeter**.		
		N4/3 79 (1.38) — V — 38 (2.38)	**Connect second multimeter**.		
			Ignition: **ON** Read voltage on first multimeter (drive actual value potentiometer)	**Table III**, column "**h**"	
			Read voltage on second multimeter (safety contact switch)	6 – 10 V (value jumps, safety contact switch closed)	
			Hold CC switch in position "ACCEL" until voltage on first multimeter does no longer drop (drive actual value potentiometer)	**Table III,** column "**i**"	

Electrical Test Program - Test

Test step **DTC**	Scope of test	Test connection	Test condition	Nominal value	Possible cause/remedy
⇒ [8.0]			Simultaneously read voltage on second multimeter (safety contact switch) Note: If voltage does not drop release CC switch, change frequency slightly on second signal generator and repeat test procedure.	1 V (safety contact switch open)	
⇒ 9.0	**CC/ISC actuator (M16/2)** Actuator motor (M16/2m1) resistance	N4/3 21 (2.21) — Ω — 20 (2.20) 22 (2.22) — Ω — 41 (2.41)	Ignition: **OFF** Accelerator pedal position: Closed throttle	< 10 Ω	Wiring, CC/ISC actuator (M16/2).
⇒ 10.0	**CC/ISC actuator (M16/2)** Magnetic clutch (M16/2k1)	N4/3 19 (2.19) — V — 40 (2.40)	Ignition: **ON**	7.5 – 10 V	Wiring, CC/ISC actuator (M16/2). CC/ISC control module (N4/3).

Electrical Test Program - Test

Test step **DTC**	Scope of test	Test connection	Test condition	Nominal value	Possible cause/remedy
⇒ 11.0 Б	**Starter lock-out/backup lamp switch (S16/3)** Transmission range recognition voltage	N4/3 44 (1.3) — (V) — 45 (1.4)	Ignition: **ON** Transmission range: P → R → N → D → 3 → 2 →	 1.0 V 0.3 V 4.0 V 3.5 V 2.5 V 1.8 V (± 10%)	Wiring, Starter lock-out/backup lamp switch (S16/3), ⇒ 11.1 CC/ISC control module (N4/3).
⇒ 11.1	Transmission range recognition resistance	N4/3 44 (1.3) — (Ω) — 45 (1.4)	Ignition: **OFF** Unplug CC/ISC control module (N4/3). Transmission range: P → R → N → D → 3 → 2 →	 1400 Ω 294 Ω 28000 Ω 11400 Ω 5900 Ω 3100 Ω (± 10%)	Wiring, Starter lock-out/backup lamp switch (S16/3).

Electrical Test Program - Test

Test step **DTC**	Scope of test	Test connection	Test condition	Nominal value	Possible cause/remedy
⇒ 12.0	**CC/ISC control module (N4/3)** A/C compressor signal	N4/3 79 (1.38) — V — 57 (1.16)	Engine: **Start** Accelerator pedal position: Closed throttle Switch on climate control (A/C compressor)	<1 V 11 – 14 V	Wiring, Base module (N16/1), DM, Chassis and Drivetrain, Vol. 1, section 1.1
⇒ 13.0 **Model 140 with engine 119**	**CC/ISC control module (N4/3)** Idle speed increase signal from diode matrix (V2) [1]	N4/3 79 (1.38) — V — 73 (1.32)	Engine: **Start** Accelerator pedal position: Closed throttle Switch on the following consumers individually: Front seat heaters Rear seat heaters Rear window defroster Blower speed setting 3	<1 V 11 – 14 V 11 – 14 V 11 – 14 V 11 – 14 V	Wiring, Idle speed increase diode matrix (V2), ⇒ 13.1.
⇒ 13.1	Idle speed increase diode matrix (V2) (right footwell) Voltage supply	V2 W15 — V — 3	Ignition: **OFF** Ignition: **ON**	<1 V 11 – 14 V	Fuse, Wiring.

[1] Starting Model Year 1993, the diode marix (V2) is without function, the housing and wires are still present.

Electrical Test Program - Test

Test step / DTC	Scope of test	Test connection	Test condition	Nominal value	Possible cause/remedy
⇒ 14.0 10	**CC/ISC control module (N4/3)** Engine speed (TNA) signal from base module (N16/1)	N4/3 79 (1.38) — V — 75 (1.34)	Engine: **Start** Accelerator pedal position: Closed throttle position	6 – 12 V	Wiring, Base module (N16/1), DM, Chassis and Drivetrain, Vol. 1, section 1.1.
⇒ 15.0 8	**Left front axle vehicle speed sensor (L6/1)** Speed signal	N4/3 79 (1.38) — V — 56 (1.15)	Lift front of vehicle. ABS control module connected. Ignition: **ON** Turn left front wheel by hand **Note:** Upon completion of test, erase DTC's from ABS control module (N30) memory.	4 – 8 V	Wiring, Left front axle vehicle speed sensor (L6/1) ABS control module (N30) DM, Chassis and Drivetrain, Vol. 2, section 6.2.
⇒ 16.0 9	**Rear axle vehicle speed sensor (L6)** Speed signal	N4/3 79 (1.38) — V — 53 (1.12)	Lift rear of vehicle. ABS control module installed. Ignition: **ON** Turn left rear wheel by hand **Note:** Upon completion of test, erase DTC's from ABS control module (N30) memory.	4 – 8 V	Wiring, Rear axle vehicle speed sensor (L6/1) ABS control module (N30) DM, Chassis and Drivetrain, Vol. 2, section 6.2.

Electrical Test Program - Test

Test step	DTC	Scope of test	Test connection	Test condition	Nominal value	Possible cause/remedy
⇒ 17.0	5	**Stop lamp switch (S9/1)** Signal (N.O. contact)	N4/3 79 (1.38) — (V) — 71 (1.30)	Ignition: **ON** Brake pedal not applied Brake pedal applied	<1 V 11 – 14 V	Wiring, Stop lamp switch (S9/1). ⇒ 17.1, Fuse, ABS control module (N30)
⇒ 17.1		Stop lamp switch (S9/1) Signal (N.C. contact)	N4/3 79 (1.38) — (V) — 54 (1.13)	Ignition: **ON** Brake pedal not applied Brake pedal applied	11 – 14 V <1 V	Wiring, Stop lamp switch (S9/1), ABS control module (N30)
⇒ 18.0	6	***Non-USA vehicles only!*** ***Continue to next test step***				
⇒ 19.0	11	**CC/ISC control module (N4/3)** Fuel safety shut-off signal to LH-SFI control module (N3/1)	N4/3 79 (1.38) — (V) — 48 (1.7)	Ignition: **ON**	2 – 11 V (value jumps)	Wiring, CC/ISC control module (N4/3), CC/ISC actuator (M16/2), LH-SFI control module (N3/1) DM, Engine, Vol. 2, section 3.1
⇒ 20.0		**CC/ISC control module (N4/3)** Idle speed recognition signal to LH-SFI control module (N3/1)	N4/3 79 (1.38) — (V) — 65 (1.24)	Ignition: **ON** Closed throttle position Accelerator pedal applied	 4.8 V 5.5 V	Wiring, CC/ISC control module (N4/3),

Electrical Test Program - Test

Test step DTC	Scope of test	Test connection	Test condition	Nominal value	Possible cause/remedy
⇒ 21.0	**Serial data bus (CAN)**	N4/3x1 "L" – Ω + "H"	Ignition: **OFF** CC/ISC control module (N4/3) unplugged. Measure resistance at connector (Figure 5).	 55 – 65 Ω	Wiring, LH-SFI control module (N3/1), see DM, Engine, Vol. 2, section 3.1, Ignition control module (N1/3), see DM, Engine, Vol. 2, section 5.2.

Electrical Test Program - Test

Table I Voltage values - drive actual value potentiometer

Reference Voltage Supply Value	"**a**" Accelerator pedal position: **Closed Throttle**	"**b**" CC switch: **Actuated until voltage is constant**
4.7 V	4.46 V	0.23 V
4.8 V	4.56 V	0.24 V
4.9 V	4.65 V	0.24 V
5.0 V	4.75 V	0.25 V
5.1 V	4.84 V	0.25 V
5.2 V	4.94 V	0.26 V
5.3 V	5.03 V	0.26 V

Electrical Test Program - Test

Table II Voltage values - throttle valve actual value potentiometer

Reference Voltage Supply Value	"**e**" Accelerator pedal position: **Closed Throttle**	"**f**" Accelerator pedal position: **Wide Open Throttle or Kickdown**
4.7 V	4.55 V	0.23 V
4.8 V	4.65 V	0.24 V
4.9 V	4.75 V	0.24 V
5.0 V	4.85 V	0.25 V
5.1 V	4.94 V	0.25 V
5.2 V	5.04 V	0.26 V
5.3 V	5.14 V	0.26 V

Electrical Test Program - Test

Table III Voltage values - actual value potentiometer at safety contact switch (M16/2s1) switch point

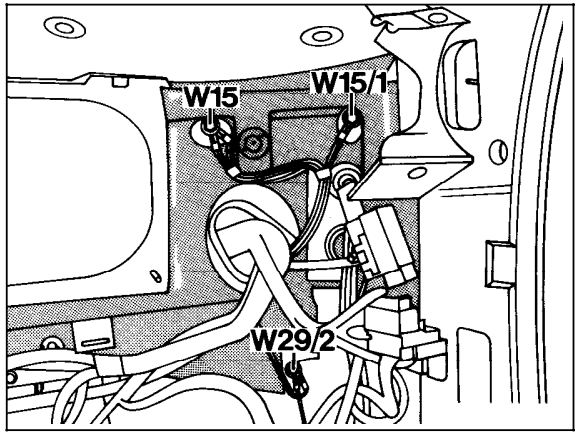
Reference Voltage Supply Value	"**h**" Safety contact switch **"Closed"**	"**i**" Safety contact switch **"Open"**
4.7 V	4.09 V	3.66 V
4.8 V	4.17 V	3.74 V
4.9 V	4.26 V	3.82 V
5.0 V	4.35 V	3.90 V
5.1 V	4.43 V	3.97 V
5.2 V	4.52 V	4.05 V
5.3 V	4.61 V	4.13 V

Electrical Test Program - Test

Table IV Frequency values for vehicle speed simulation (front and rear axle vehicle speed sensors)

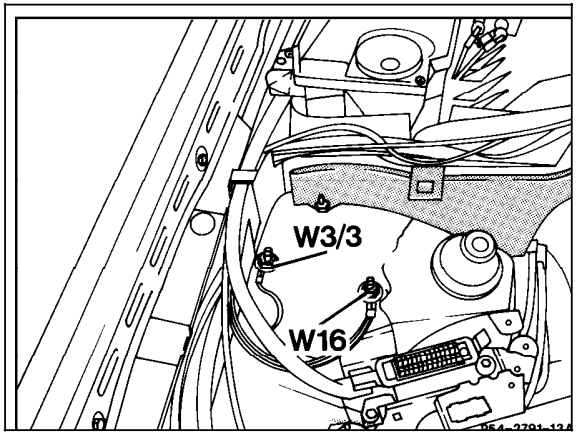
Model	Front axle	Rear axle			
	Frequency (Hz)	4 speed AT Axle ratio	Frequency (Hz)	5 speed AT Axle ratio	Frequency (Hz)
124.034	1379	2.24	1200	–	–
140.032	635	–	–	3.69	1200
140.042/043	635	2.82	1269	–	–

Electrical Test Program - Test



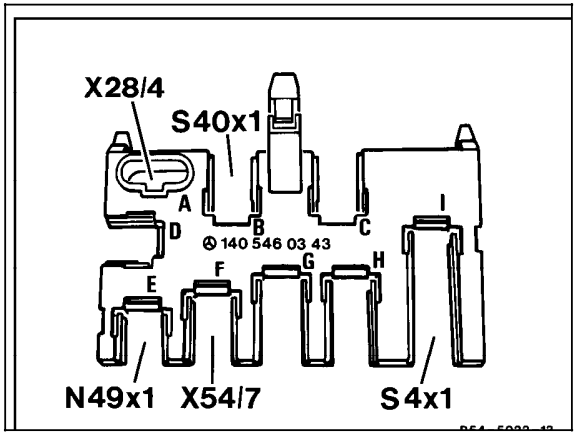
P54-2796-13

Figure 1
Model 140
W15 Ground, output ground, electronics (right footwell)



P54-2791-13A

Figure 2
Model 124.034
W16 Ground, component compartment



P54-5022-13

Figure 3
S40x1 Cruise control switch connector

Electrical Test Program - Test

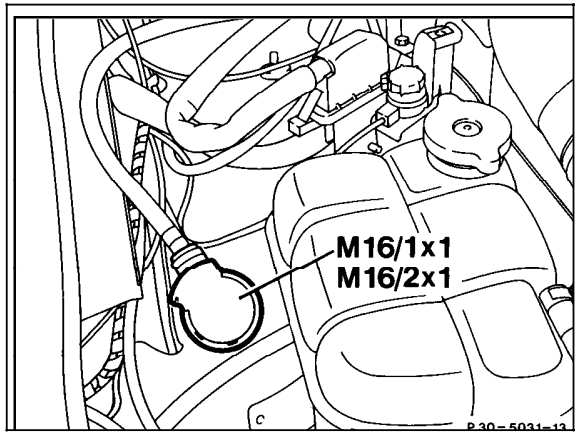


Figure 4

M16/2x1 CC/ISC actuator connector

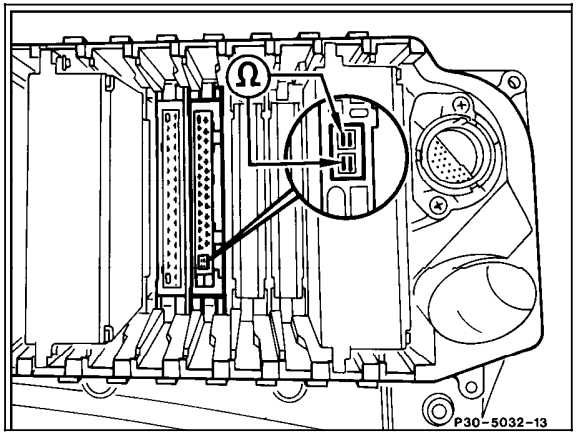


Figure 5

N4/3x1 CC/ISC control module connector
Circle = CAN bus

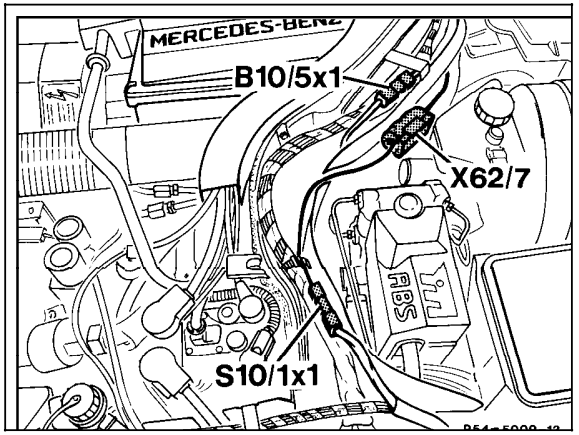
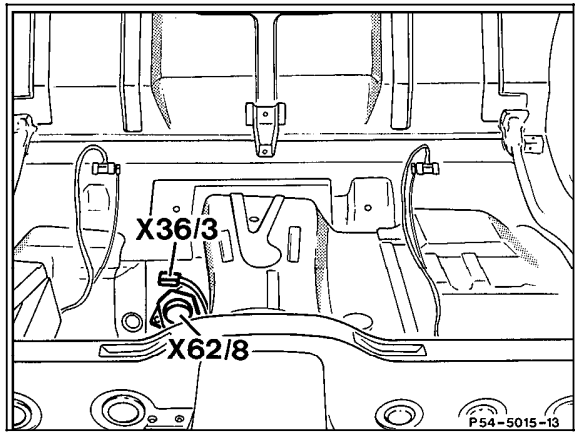


Figure 6

X62/7 Left front axle wheel speed sensor connector
(component compartment)

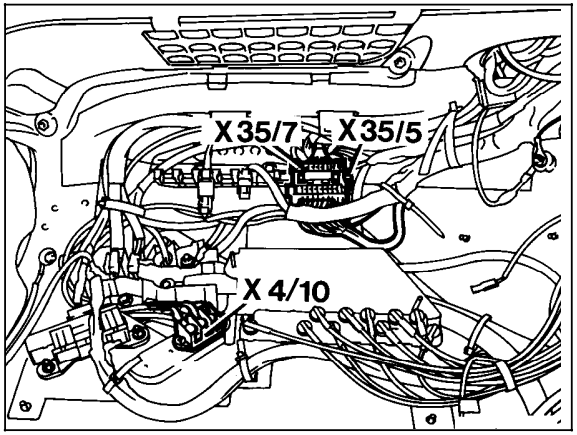
Electrical Test Program - Idle Speed Control Test



P54-5015-13

Figure 7

X62/8 Rear axle multiple circuit junction connector



P07-2623-13

Figure 8

X4/10 Terminal block, terminals 30/30Ü
X35/5 Module box/taillamp harness plug connection (ABS) (14-pole)
X35/7 Cockpit/module box plug connection (18-pole)