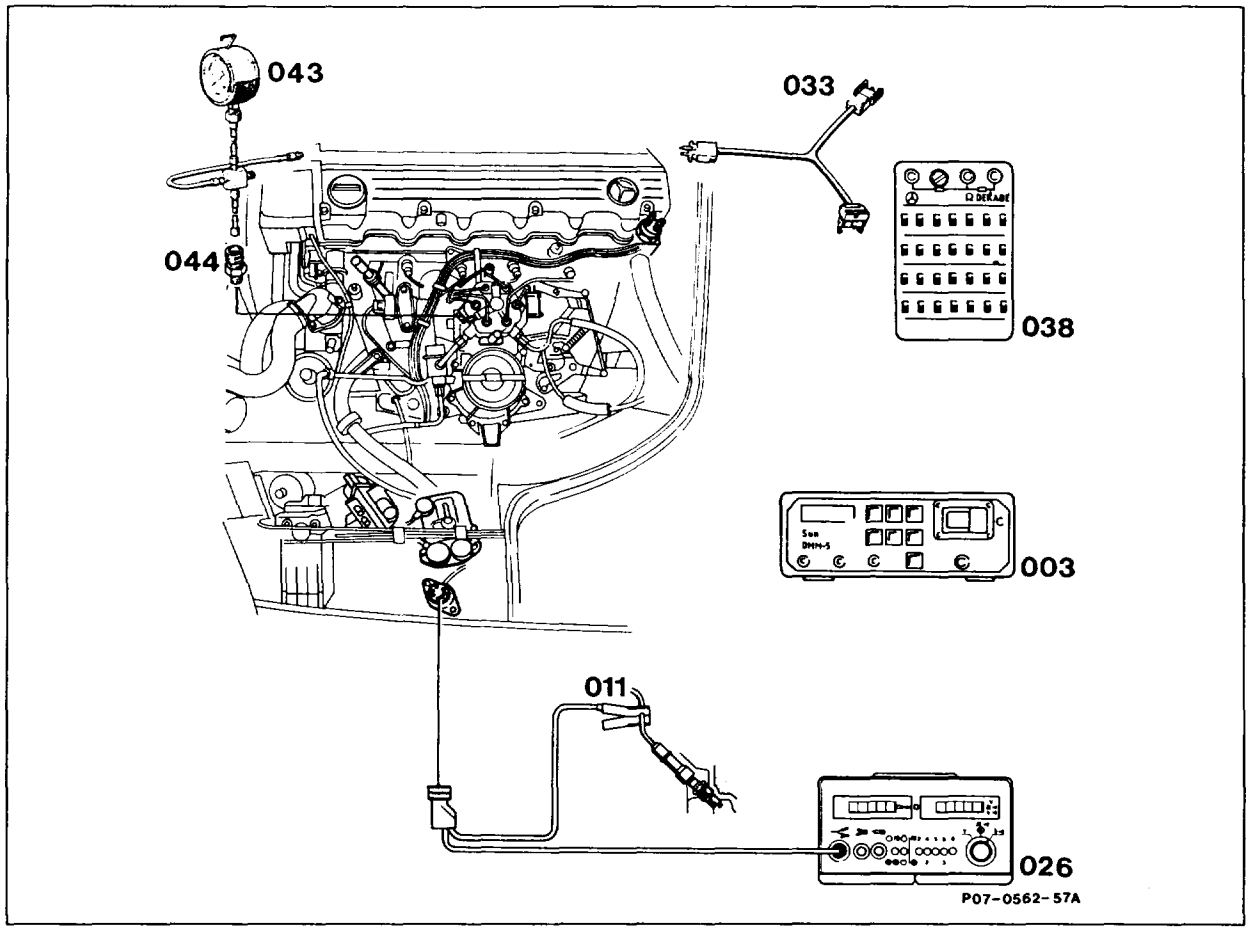
07.3–2353 Testing starting device

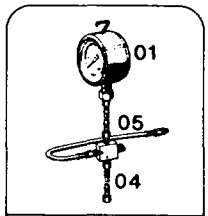
Proceding work:
Testing, adjusting engine (07.3–1100).

Operation no. of operation texts and work units or standard texts and flat rates: 07–2353.

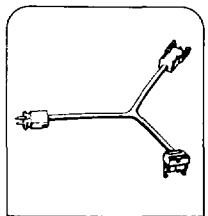


Testers	connect: multimeter (003), engine tester (026), trigger clamp (011), test cable (033) 102 589 04 63 00, ohms decade (038) 124 589 09 63 00, pressure measuring device (043), threaded connector (044).
Fuel pressures and internal leaktightness	test (07.3–1603).
Start valve	check operation and leaktightness.
Post-start enrichment	test.

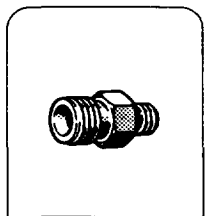
Special tools



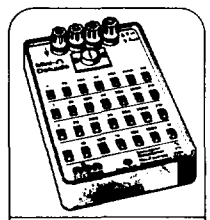
103 589 00 21 00
07



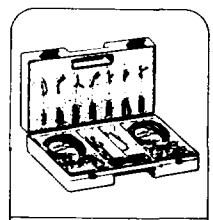
102 589 04 63 00
07



102 589 06 63 00
07



124 589 09 63 00
15 54



201 589 00 99 00
15 54

Commercially available tools and testers (see Workshop Equipment Manual)

Designation	e. g. Make, order no.
Multimeter	Sun, DMM-5
Digital tester (engine speed, dwell angle, ignition angle)	Bosch, MOT 002.02 Sun, 1019

Symbols for testers

- Multimeter
- Contact box
- Contact
- Ground

Symbols for test mode with multimeter

- Multimeter DC voltage mode
- Multimeter DC mode

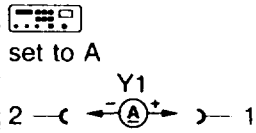
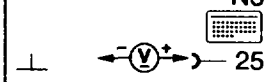
Test condition

- Battery voltage 11–14 V

Note

If the specification e.g. of step 2.0 is in order, it is not necessary to perform step 2.1.
See corresponding wiring diagram volume for wiring diagrams.

Test step	Test scope	Test connection	Operation/ Requirement	Specification	Possible cause/Remedy
1.0	Fuel pressures and internal leaktightness	Test lower chamber pressure	Ignition: **OFF** Coolant temperature +20 °C	4.8 – 5.0 bar	Test coolant temperature sensor (07.3–0121)
2.0	Operation and leaktightness of starting valve	Detach fuel line at starting valve Remove starting valve and reconnect fuel line Simulate 10 kΩ at coolant temperature sensor (B11/2) with ohms decade Hold starting valve in a vessel	Engine: **start**	Starting valve must spray	Test starting valve actuation (07.3–1607)
2.1	Leaktightness	–	Dry off nozzle of starting valve	No formation of drops	Replace starting valve

Test step	Test scope	Test connection	Operation/ Requirement	Specification	Possible cause/Remedy
3.0	Post-start enrichment		Ignition: **OFF** Connect test cable 102 589 09 63 00 to actuator (Y1) Coupling disconnected from coolant temperature sensor (B11/2) and simulate with 2.5 kΩ (equals approx. 20 °C) [1] KAT: Unplug connector G3/2x2 (oxygen sensor) Engine: **start** Engine runs at fast idle speed	 See table	Test TD engine speed signal at KE control unit (N3)
3.1	TD engine speed signal		Engine: **start**	6–12 V	Open circuit

[1] Two resistance decades with 4-pin temperature sensor: contact 1 – contact 3, contact 2 – contact 4.

Electrical test data of post-start enrichment

Basic version and national version, except (J) (USA)

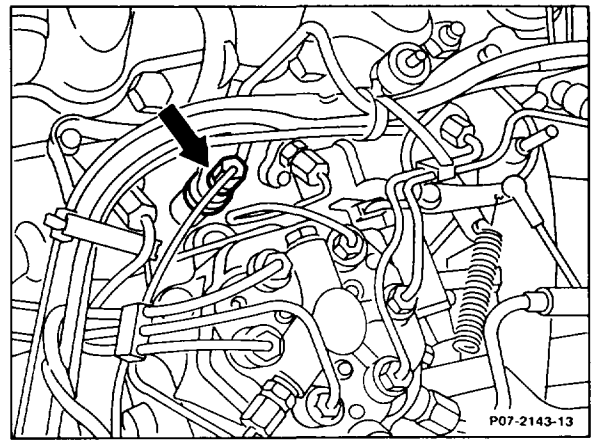
Engine	Version	Coolant temperature sensor Coolant temperature +20 °C (warming-up base value) Resistance 2.3–2.8 kΩ Current at actuator mA	Post-start enrichment +20 °C Current at actuator mA
103.94	KAT as of 08/85 up to 08/87	2–6	3–9
	RÜF as of 08/85 up to 08/87	16–22	25–31
	KAT as of 09/87	-1 to -5 60 s after start	4–8 20 s constant
	RÜF as of 09/87	16–22	25–31 20 s constant
	KAT as of 09/90 [1])	0 to -4 60 s after start	4–8 20 s constant
103.980	Std.	15–22	21–27
103.982	KAT	2–6	8–12
	RÜF	15–22	21–27
103.983	KAT as of 09/90 [1])	0 to -4 60 s after start	4–8 20 s constant
103.981 103.983 103.985	KAT up to 08/87	2–6	8–12
	RÜF up to 08/87	15–22	21–27
	KAT as of 09/87	-1 to -5 60 s after start	4–8 20 s constant
	RÜF as of 09/87	15–22	21–27 20 s constant
103.984	KAT	0 to -4 60–120 s after start	4–0 0–20 s after start
	without KAT	15–22 60–120 s after start	21–27 0–20 s after start

[1]) (CH) (DK) (N) (S) (SF) as of model year 1991.

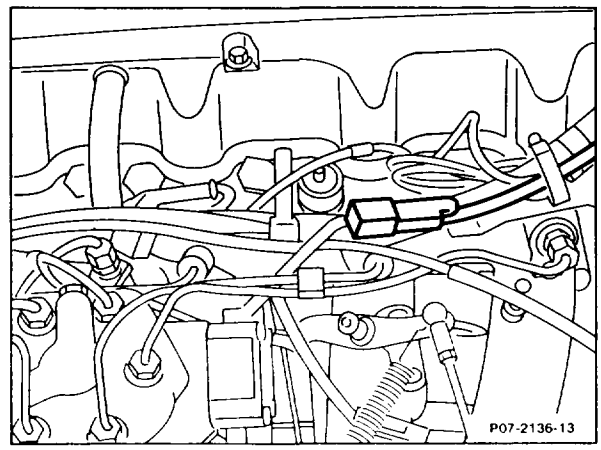
National version, (J) (USA)

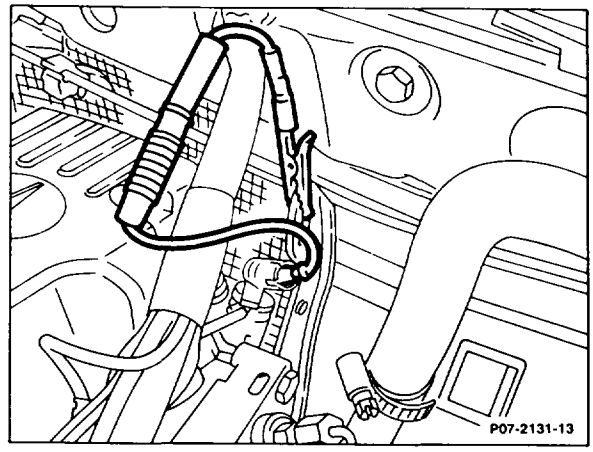
Engine	Version	Coolant temperature sensor Coolant temperature +20 °C (warming-up base value) Resistance 2.3–2.8 kΩ Current at actuator mA	Post-start enrichment +20 °C Current at actuator mA
103.94	(J) (USA) 1987	2–6	4–8
	(J) (USA) as of 1988 up to 1989	0 ± 1	4–8
	(USA) as of 1990	0–1 14–110 s after start	8–12 0–8 s after start
103.98	(J) (USA) 1987	2–6	4–8
	(J) (USA) as of 1988 up to 1989	0 ± 1	4–8
	(J) as of 1990	0 ± 1	4–8
	(USA) as of 1990	0–1 14–110 s after start	8–12 0–8 s after start

Arrangement of starting valve fuel line (arrow)



Arrangement of test cable 102 589 04 63 00





Arrangement of test cable 102 589 05 63 00

Note
Models 107, 124, 126, 201
Plastic connector of starting valve colored green (previously blue).

Production breakpoint: August 1988

Model	Engine	Engine end no. manual transmission	Engine end no. automatic transmission
107.041	103.982	002059	008946
124.026	103.940	023484	052909
124.030/050/090	103.983	025718	132893
124.226	103.943	000306	000695
124.230/290	103.985	001461	005179
126.020	103.941	003608	012193
126.024/025	103.981	006066	066140
201.029	103.942	011110	015021

Note

Start valve with 1.2 amperes (previously 3 amperes) and improved seal at armature.

Production breakpoint: 05/90

Model	Engine	Engine end no. manual transmission	Engine end no. autom. transmission
124.026	103.940	030980	083228
124.030/050/090	103.983	037025	210930
124.226	103.943	000522	001278
124.230/290	103.985	002519	011486
126.020	103.941	004622	015299
126.024/025	103.981	008095	116454
129.060	103.984	000278	001083
201.029	103.942	017184	047204