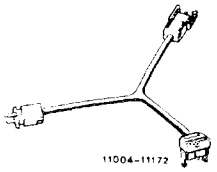
b) Engine 116 NV KAT (closed-loop)
Engine 116 starting model year 1983
Engine 117 starting model year 1984

Test values

Drive position	Engine oil temperature	Idle speed
Gear stop not engaged	<16 °C	800–950/min
	>16 °C	600–750/min
Gear stop engaged	<16 °C	650–750/min
	>16 °C	450–550/min

Special tool

Test cable for measuring current	 11004-11172	102 589 04 63 00

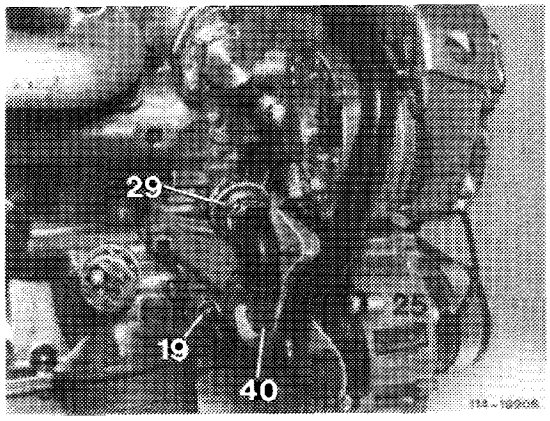
Conventional tools

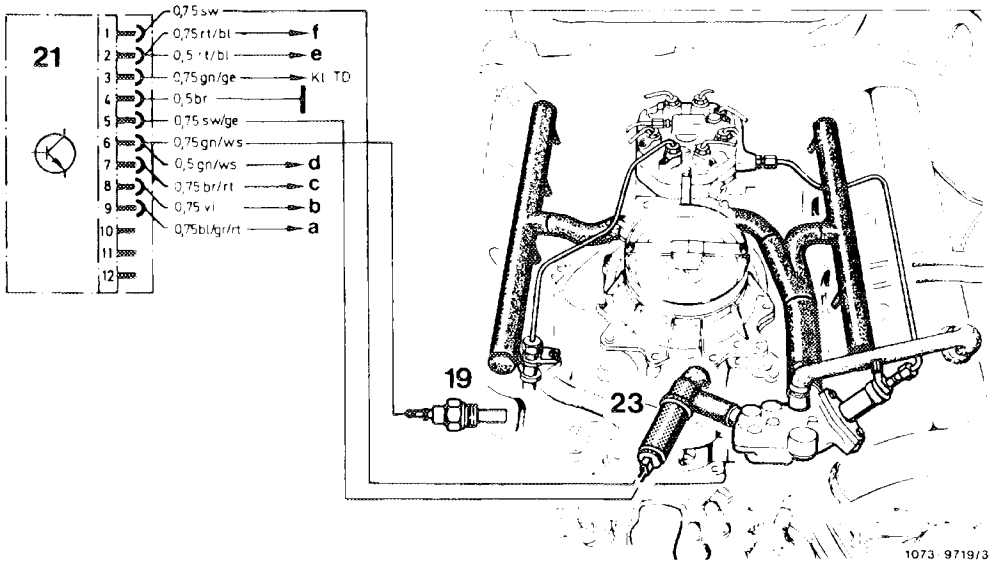
Digital tester (rpm, dwell angle, ignition angle)	e.g. Bosch, MOT 001.03
Multimeter	e.g. Sun, DMM–5

Note

The switchover point for engine speed is tapped at the 16 °C oil temperature switch (19), which at the same time supplies a signal to the control unit of the lambda control.

It is not possible to fit the control unit from former model years.

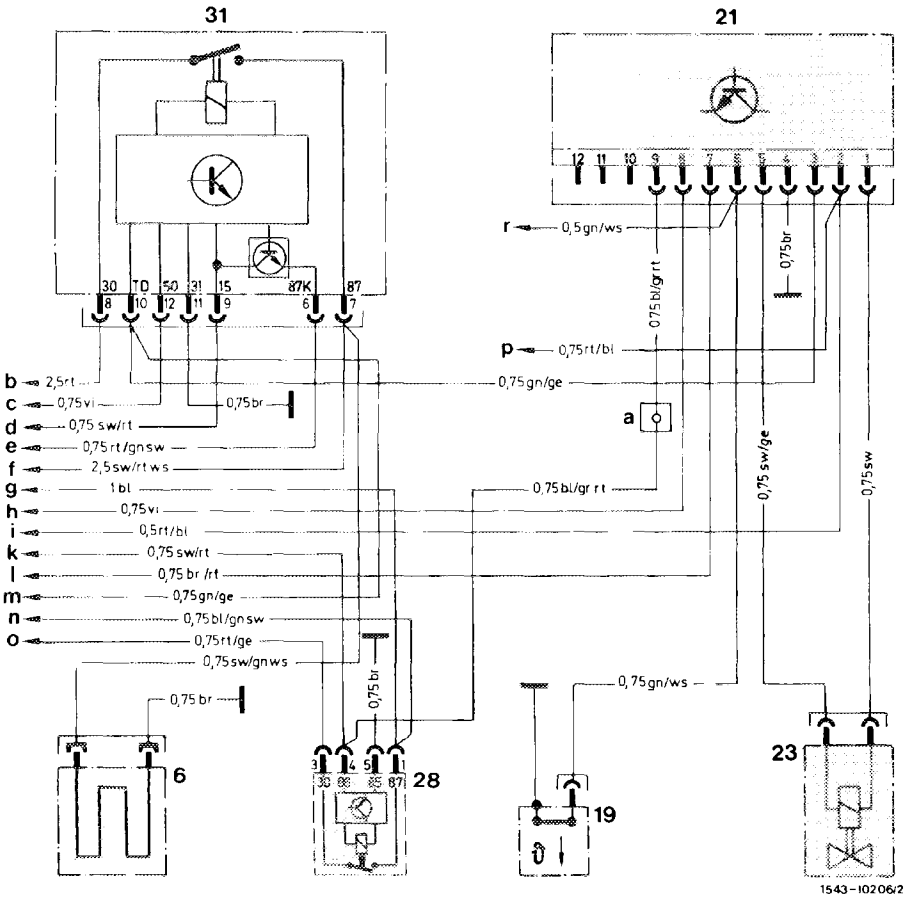




Function diagram

19 16 °C oil temperature switch
21 Control unit, electronic idle speed control
23 Idle speed adjuster

a To lug (a) automatic climate control
b To ignition starter switch terminal 50
c To control unit lambda control terminal 6, looped on lambda control to throttle valve switch
d To control unit lambda control terminal 7
e To relay overvoltage protection
f To 42 °C coolant temperature switch



Electric wiring diagram idle speed control

6 Warm-up compensator
19 16 °C oil temperature switch
21 Control unit, electronic idle speed control
23 Idle speed adjuster
28 Relay air conditioning or automatic climate control
31 Fuel pump relay

a Lug air conditioning or automatic climate control
b To lug terminal 30, model 126
To cable connector engine, terminal 30, model 107
c To cable connector engine, terminal 50
d To fuse box terminal 15
e To starter lockout and backup light switch, terminal 7
f To tail lamp harness terminal 2
g To coupling of refrigerant compressor
h To ignition starter switch terminal 50
i To relay lambda control with overvoltage protection, terminal 2
k To low pressure switch refrigerant compressor
l To control unit lambda control terminal 6
m To cable connector terminal TD, model 126
To revolution counter, model 107
n To switching unit temperature control
o To fuse box terminal 15X
p To 42 °C coolant temperature switch
r To control unit lambda control terminal 7

Cable colour coding
bl = blue
br = brown
ge = yellow
gn = green
gr = grey
rt = red
sw = black
vi = purple
ws = white

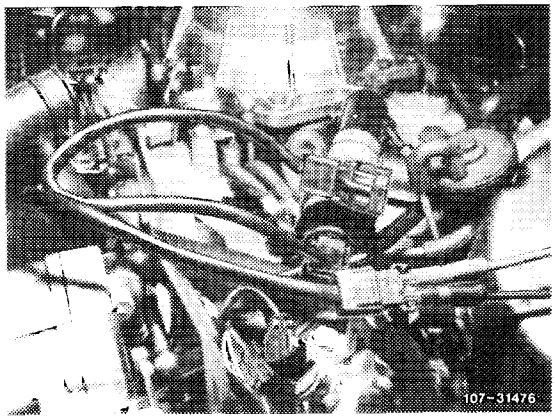
Idle speed adjuster

Switch ignition on and off.	
Idle speed adjuster is heard and felt to switch.	Idle speed adjuster does not switch.

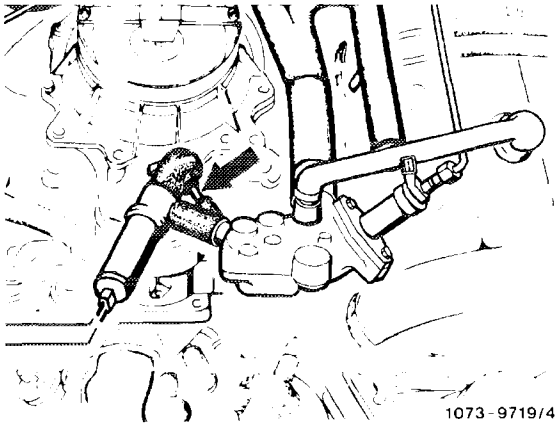
Connect test cable 102 589 04 63 00 into circuit at idle speed adjuster. Tester to mA. Connect revolution counter. Engine idling (approx. 80 °C engine oil temperature). Switch off air conditioning.

Current consumption	
1050–1200 mA	< 1050 mA

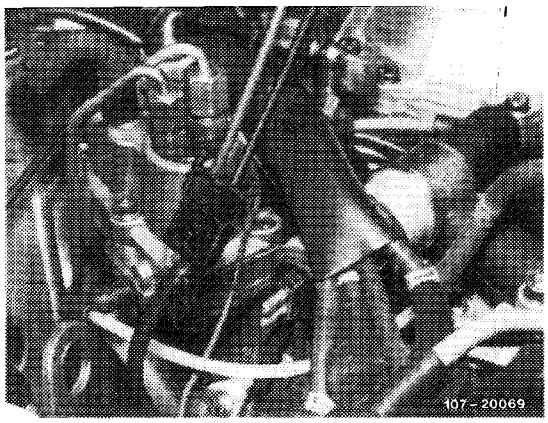
Idle speed		
600–750/min	<600/min	>1500/min



Check bypass line for passage, or cut off. Retrofit bypass line (arrow), as the case may be (Programmed repairs, Combustion II).



Switch off engine. Detach connector at idle speed adjuster. Switch on ignition. Test whether battery voltage exists at connector.	
Yes	No



Renew idle speed adjuster.

Detach connector at control unit (21). Switch on ignition. Test whether battery voltage exists at contact 2 (positive) and 4 (ground)

If no voltage exists:

a) Test black/red cable between contact 2 and fuse 14 (terminal 15).

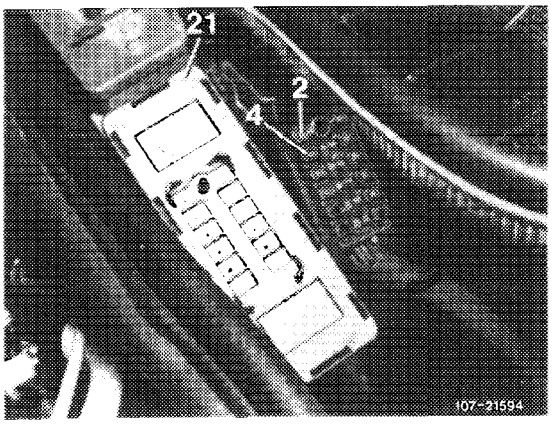
b) Test brown cable, contact 4, to ground (refer to wiring diagram).

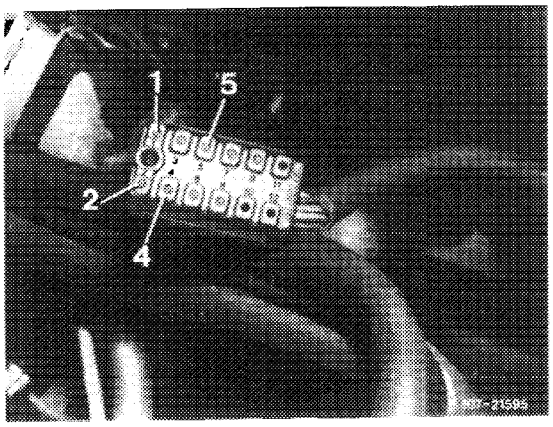
If voltage exists:

Briefly jumper contacts 1 and 2 and 4 and 5 simultaneously (max. 5 seconds). Idle speed adjuster must be heard to switch.

Idle speed adjuster switches.	Idle speed adjuster does not switch.

Check contour hoses for passage.
Renew control unit.



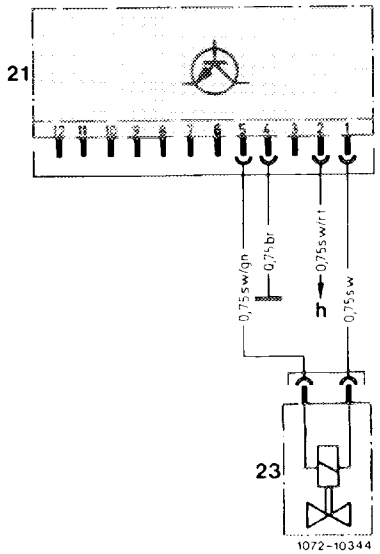


Test cables (contacts 1 and 5) between idle speed adjuster and control unit for continuity.

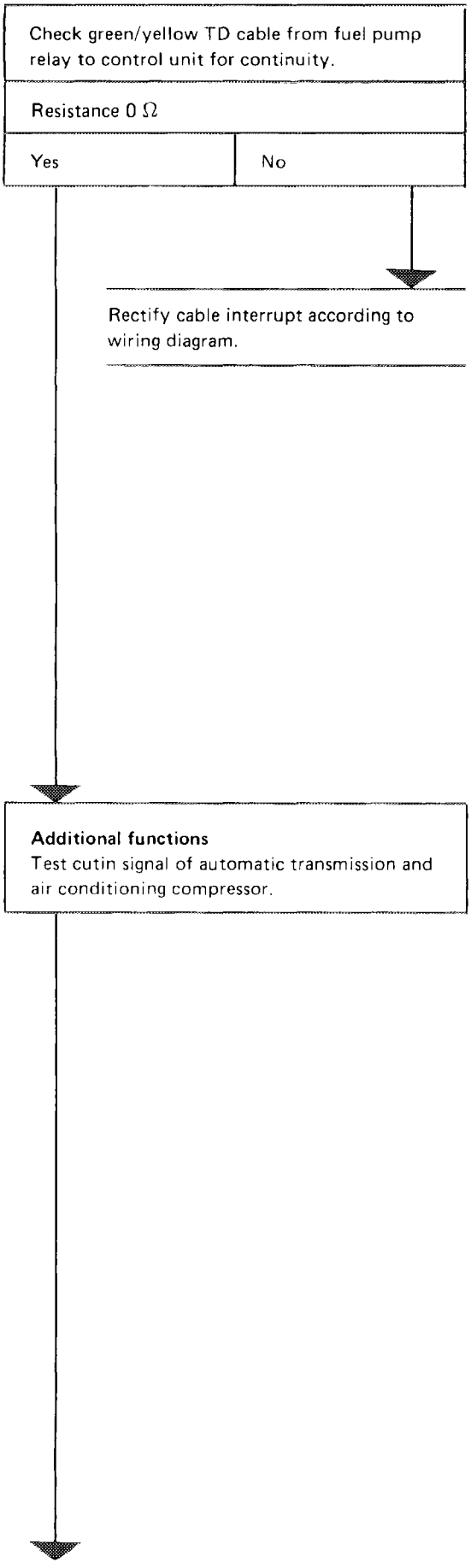
Resistance approx. 0 Ω.

Yes	No

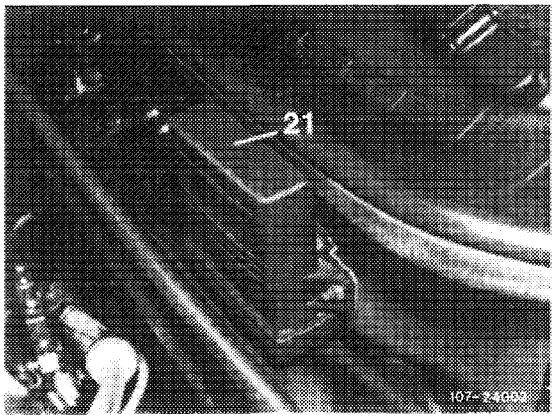
Rectify cable interrupt according to wiring diagram.



21 Control unit, electronic idle speed control
23 Idle speed adjuster
h Fuse box terminal 15 fuse 14


Check green/yellow TD cable from fuel pump relay to control unit for continuity.
Resistance 0 Ω
Yes
No
Rectify cable interrupt according to wiring diagram.
Additional functions
Test cutin signal of automatic transmission and air conditioning compressor.

Idle speed with and without drive position



Engine idling at approx. 80 °C engine oil temperature, engage drive position.

Idle speed drops to 500 rpm.	Idle speed does not drop.

Engine switched off, switch on ignition. Detach connector at control unit (21).

Connect voltmeter between contacts 8 (negative) and 2 (positive). Battery voltage must exist in position "P" or "N".

In drive position contact 8 (negative) is interrupted via starter lockout and backup light switch.

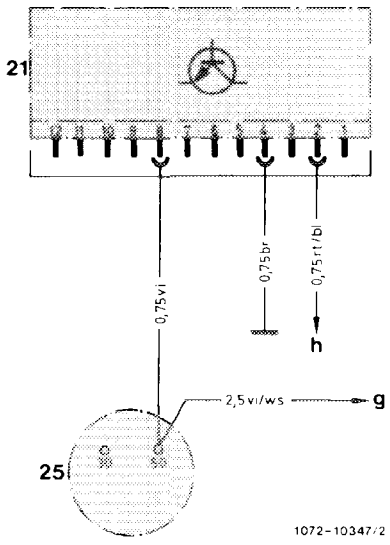
if yes	if no

Renew control unit.

End of test

Test cable from control unit to ignition starter switch.

End of test.



21 Control unit, electronic idle speed control
25 Ignition starter switch
g Starter lockout and backup light switch
h Fuse box terminal 15 input terminal 14

Idle speed stabilization on engines with refrigerant compressor

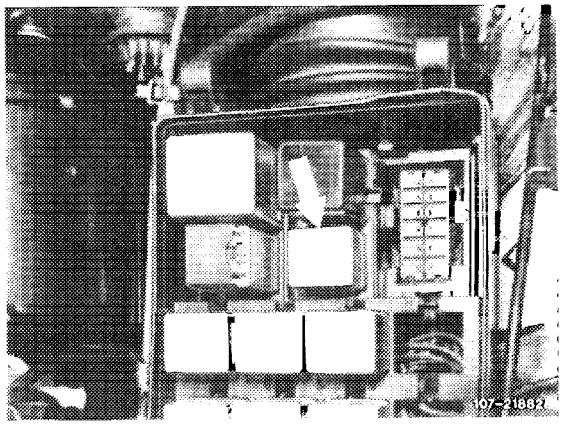
Engine idling at approx. 80 °C engine oil temperature. Switch on refrigerant compressor. Sharp drop in speed.

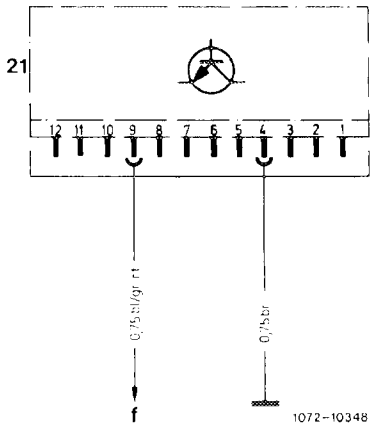
Yes	No
	End of test

Switch off engine. Switch on ignition. Detach connector at control unit. Battery voltage must exist at contact 9 (positive).

Battery voltage yes	Battery voltage no
Renew delay relay (arrow) or control unit.	Test voltage supply according to wiring diagram.

End of test





21 Control unit, electronic idle speed control
f Lug, air conditioning in fuse box