

91-750 Test program for belt tensioner (without airbag)

Special tool



Testers

Digital pocket multimeter

e.g. Hermann Avometer 2003
e.g. Fluke, 23

Multimeter

e.g. Sun, DMM-5

The following tests for triggering or function must be performed:

- a) Following an accident with visible deformation to
 - the guide rail
 - the belt retractor
 - the belt buckle

- b) After removing a belt tensioner

- c) After installing optional equipment requested by the customer, which may influence the function of the belt tensioner system either mechanically or electrically.

The test program is divided into:

- A. Mechanical function
- B. Electrical function

A. Mechanical function

Testing the belt tensioners for triggering (center pillar covering or belt tensioner removed).

Cable tensioner (1st version, 2nd version)

Check whether the colored mark on the cable (green or yellow) is still visible. If the colored mark is still visible, the belt tensioner has not been triggered. If no colored mark can be seen, the belt tensioner has been triggered and must be renewed.



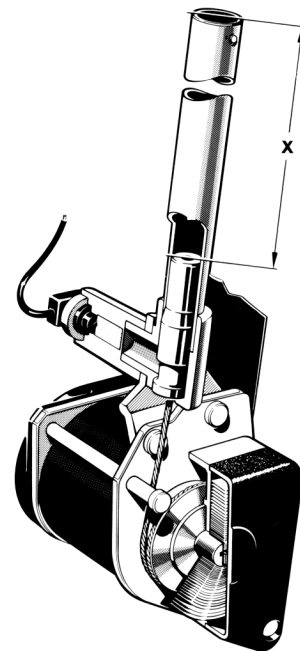
2 When the series was introduced, some vehicles were built with no colored mark on the cable of the belt tensioner. These must be tested as follows:

Remove protective rubber cap on end of tube and measure distance "X".

To do this, insert a round implement or screwdriver of approx. 10 mm diameter and measure the depth.

Model	Distance "X"
124	170 mm \pm 5 mm

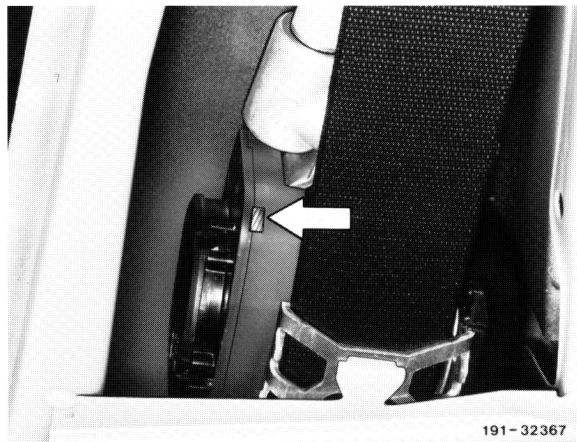
If the measured distance is shorter than the distance given in the table, the belt tensioner has been triggered and must be renewed.



As of 01/86, there is an observation window in the housing of the belt tensioner, through which the cable is visible.

This means that it is no longer necessary to remove the belt tensioner for the test.

Belt tensioners where no cable is visible have been triggered and must be renewed.

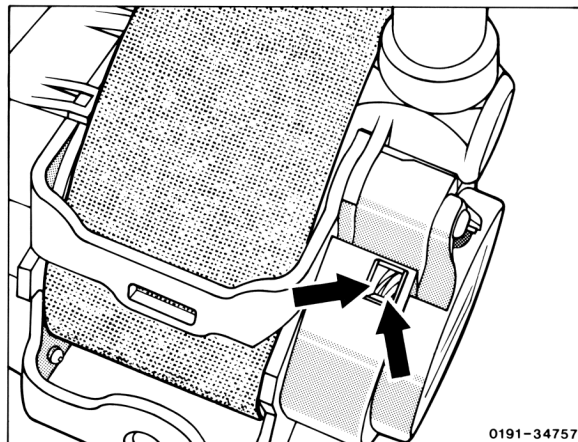


As of 08/87 belt tensioners are supplied by two manufacturers.

There is also an observation window on the housing of Autoflug belt tensioners, through which **2 cables** are visible. **Autoflug** belt tensioners where **only 1 cable or no cable** is visible, have been triggered and must be renewed.

Autoflug belt tensioners have always been equipped with an approx. 80 mm shorter tube than the Repa belt tensioners.

Repa belt tensioners also incorporate this shorter version of tube as of 01/88.



B. Electrical function

Testing the triggering circuit of the detonators:

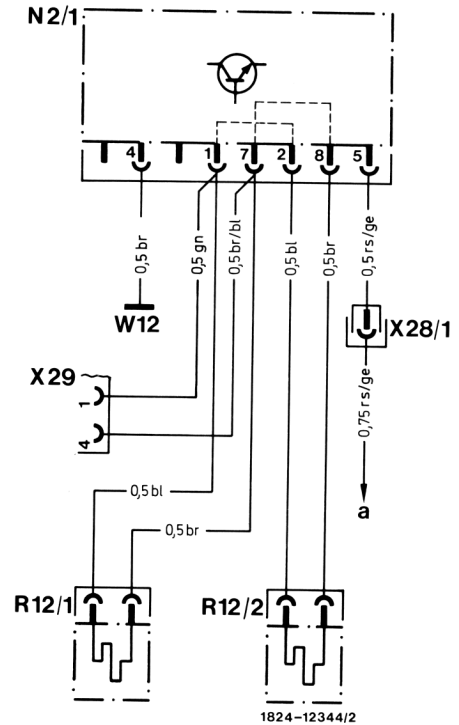
- 1 Disconnect negative terminal of battery and cover.
- 2 Connect multimeter to the 4-pin test coupling (X29) (2 pins used).

Note

The test coupling (X29) is connected in parallel with the detonators.

Wiring diagram for belt tensioner

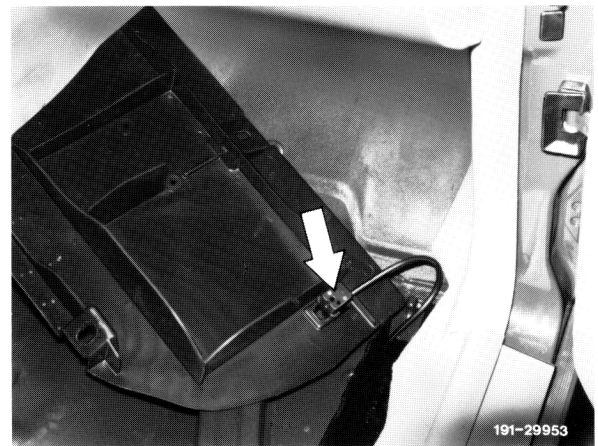
N2/1	Control unit, belt tensioner
R12/1	Detonator, belt tensioner, front left
R12/2	Detonator, belt tensioner, front right
X28/1	Plug connection, power supply, belt tensioner
X29	Test coupling, belt tensioner
W12	Main ground point, center console
a	To fuse box, terminal 15 R



Location of test coupling X29 in the vehicle

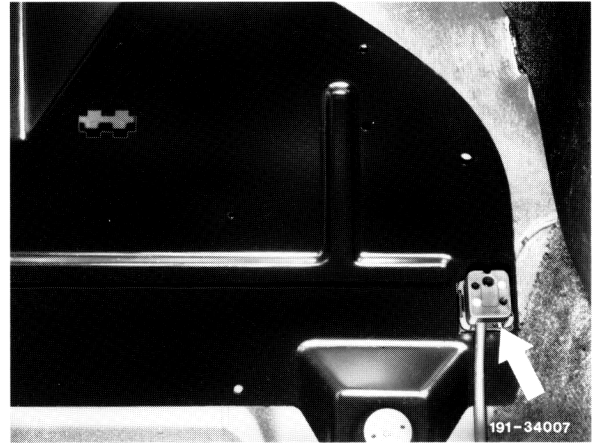
Model 124, 1st version

Under the foot rest in the passenger's footwell.



Model 124, 2nd version

On the plate situated under the foot rest in the passenger's footwell.



Measure insulation resistance at both occupied poles of the 4-pin test coupling (X29) to ground.
Reference value: $\geq 20 \text{ k}\Omega$ EEE ∞

Reference value correct

Reference value incorrect

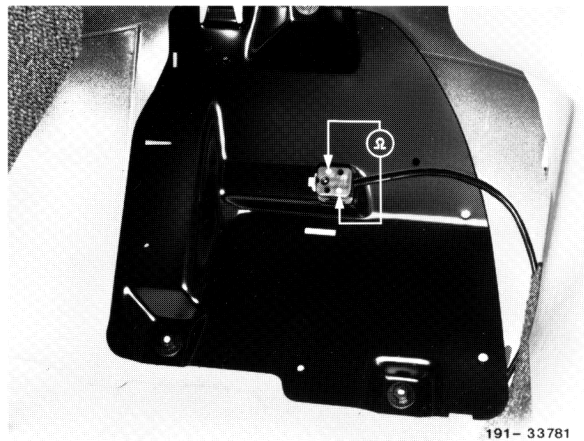
Check cable harness for damage and renew if necessary.

Measure resistance of detonators.
Reference value: $1.0\text{--}1.7 \text{ }\Omega$

Reference value correct

Reference value incorrect

End of test



Check detonator and belt tensioner cable harness on the left-hand side.
 Remove panelling for right-hand center pillar.
 Disconnect electrical connection for right-hand belt tensioner detonator (R12/2).
 Measure resistance at test coupling (X29).
 Reference value: (with only 1 detonator)
 2.0–6.0 Ω

Reference value
 correct

Reference value
 incorrect



Check cable harness for open circuit.
 Remove panelling on left-hand center pillar.
 Disconnect electrical connection for left-hand belt tensioner detonator (R12/1) and bridge contacts.
 Measure resistance at test coupling (X29).
 Reference value: < 1 Ω

Reference value
 correct

Reference value
 incorrect



Renew cable harness

Renew left-hand belt
 tensioner unit

Reconnect left-hand (R12/1) and
 right-hand (R12/2) belt tensioner
 detonators and measure resistance of
 detonators at test coupling (X29).

Reference value: (with parallel circuit)
 1.0 –1.7 Ω

End of test

Reconnect right-hand belt tensioner detonator (R12/2).

Check right-hand detonator and belt tensioner cable harness.
Remove panelling on left-hand center pillar.
Disconnect electrical connection for left-hand belt tensioner detonator (R12/1).
Measure resistance at test coupling (X29).
Reference value: (with only 1 detonator) approx. 2.0–6.0 Ω

Reference value correct	Reference value incorrect
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Check cable harness for open circuit.
Disconnect electrical connection for right-hand belt tensioner detonator (R12/2) and bridge contacts.
Measure resistance at test coupling (X29).
Reference value: < 1 Ω

Reference value correct	Reference value incorrect
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Renew cable harness

Renew right-hand belt tensioner unit



Reconnect both left-hand (R12/1) and right-hand belt tensioner detonators (R12/2) and measure resistance of detonators at test coupling (X29).

Reference value: (with parallel circuit)
1.0–1.7 Ω



End of test

Note

If the vehicle is severely damaged, the control unit (N2/1) on the transmission tunnel must be checked for visible deformation or damage to the housing. Control units with damaged housings must be renewed.

Programmed repairs Airbag and belt tensioner Model 124

Complaint:

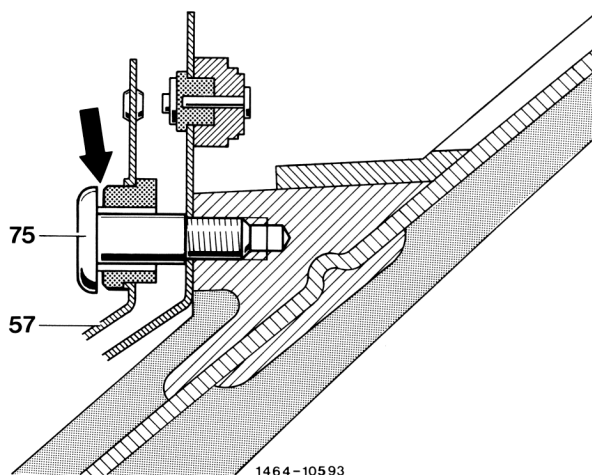
Noise in the airbag unit on the steering wheel.

Cause/remedy:

Axial play at the retaining bolts (75) of contact bridges (57) or radial play in triangular springs.

Move airbag unit (cushioned panel) on the steering wheel back and forth in a diagonal direction to localize the axial play.

Unscrew airbag unit from steering wheel.
Observe safety regulations.

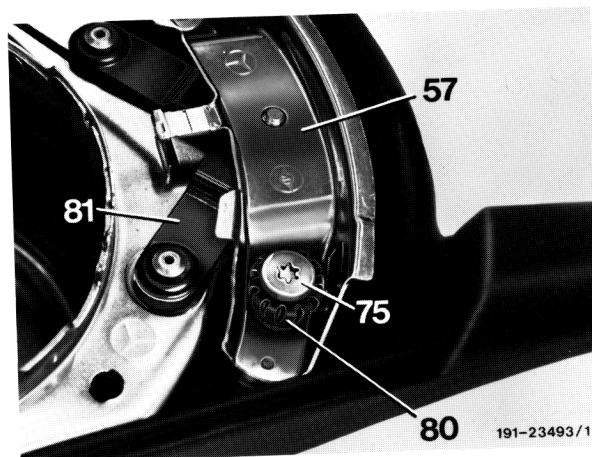


Steering wheel, 1st version

There is a positioning wheel on the right-hand contact bridge to eliminate axial play.

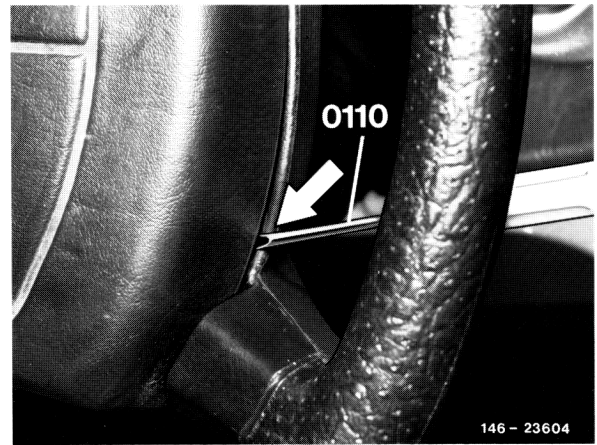
Example

If play is at bottom left or top right, turn positioning wheel (80) to the left using a suitable tool until the play is eliminated.



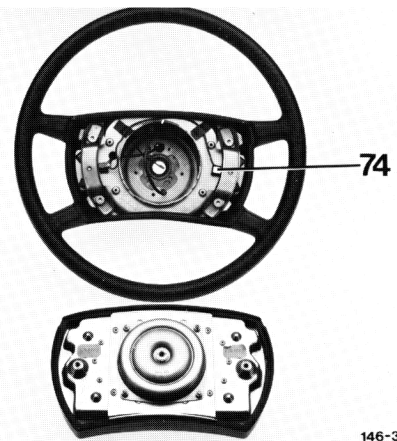


The airbag unit need not be removed for this. There is a channel molded into the foam covering of the steering wheel in the region of the positioning wheel to receive the adjusting tool (see arrow).



Steering wheel, 2nd version (standard as of 12/85)

Slacken oval-head torx socket bolts and align airbag unit on steering wheel so that it is correctly seated. Screw in both torx socket bolts a few threads. Then first tighten left-hand torx socket bolt to the prescribed tightening torque. Gently pull right-hand side of airbag unit from steering wheel and tighten torx socket bolt to the prescribed tightening torque.



Complaint:

RS or SRS warning lamp flickers, lights up intermittently or shines constantly.

Cause/remedy:

- 1 Film of grease on collector ring in steering wheel. Clean collector ring thoroughly (behind the tracks as well). Wash down with cleaning benzine, blast with air and rub dry using a fuzz-free cloth; install new collector ring if necessary.

2 "Cold soldering point" on cable harness.
Check cable harness using tester or with socket box and multimeter (as of 09/87) whilst moving cable harness plug connection. Test values must remain constant.
Resolder cable correctly.

3 Plug sleeves of plug connections stretched producing insufficient contact with relevant components.
Move 10-pin plug connection (X29/9) during the test cycle (10 s or 4 s as of 09/87) of the RS or SRS warning lamp (A1e15). Warning lamp must not light up. Connect tester or socket box and multimeter (as of 09/87) and move plug connections.
Test values must remain constant.
Renew plug sleeves.

4 Bolts on positive or negative connections of airbag cable harness loose.
Tighten bolts.

5 Insufficient press-on force of carbon contacts.
Check smoothness of carbon contacts.
Renew carbon contacts.

6 Voltage transformer (N24) faulty (only in vehicles up to 09/87).
Disconnect voltage transformer connection (built-in fault detection). If warning lamp goes out renew voltage transformer.
For test step 2, the test value must remain constant for at least 30 s.
Renew voltage transformer.

7 Reserve power source (C1) faulty (only in vehicles up to 09/87).
Check reserve power source using tester (reference value). Renew reserve power source.

8 Control unit (N2/2) faulty.

Connect control unit and check airbag and belt tensioner system by means of RS or SRS warning lamp. Renew control unit.

9 Airbag unit or belt tensioner unit triggered.
Renew parts.

The following points only apply for vehicles as of 09/87.

10 If pulse display 10 appears (airbag not triggered).

Renew control unit and attach additional ground-cable shoe from airbag cable harness to lowest point.

11 Check cable to test coupling for diagnosis, 8-pin (X92), socket 6, for short to ground.
Renew cable.

12 Plug connection for driver's or passenger's belt buckle not connected.

Contact plug connection.

13 Overvoltage. Check power supply (11–14 V).

Check battery and alternator.

14 Open circuit in cables to collector rings (X28/4 - collector rings).

Renew collector rings.

15 Intermittent or constant short to ground in cable to test coupling for diagnosis (X92), socket 6, at battery frame. Renew cable. Smooth battery frame.

16 Wrong control unit installed (airbag 1/3).
Renew control unit.