

# Technical Bulletin



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Model(s)	Year	Eng. Code	Trans. Code	VIN Range From	VIN Range To
All	1998 - 2008	All	All	All	All

## Condition

97 07 02 Feb. 12, 2007 2002201 Supersedes T. B. Group 97 number 98-03 due to additional model years and inclusion into ElsaWeb.

Wiring Harness, Repairing

Instruction for repairing wiring harnesses using special tool VAS 1978A.

## Technical Background

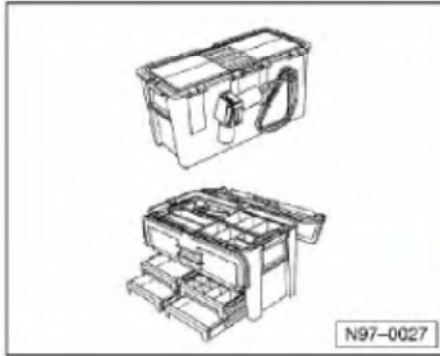
Various electrical malfunctions could have been caused by improper repairs to the wiring harness (i.e. soldering, wire nuts, taping etc.).

New generation vehicles have a "platform wire harness" concept, where the majority of the wiring is contained in a single wire harness. This allows for a reduction in the number of terminations, and thus in the total electrical resistance within the wiring harness.

The "platform wire harness" also uses;

- Extremely small terminals (0.64 mm wide) and wires (0.34 mm<sup>2</sup> cross-section) carrying very low level signals (e.g. sensor and control signals) which could be damaged by using improper repair procedures.
- Interlinked electronic and mechanical functions within a specific system (e.g. MIL, Airbag, Sat-Nav, etc.) which cause repairs to be complex.
- There is also a marked reduction in both installation and accessible space.

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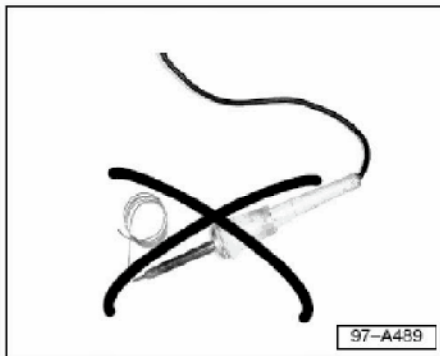
The VAS 1978A wiring harness repair kit was developed as a tool for wiring harness repairs.

All approved materials and a repair guide are supplied in the repair kit, including approved closed barrel butt splice connectors with thermoplastic material inside and shrink tubing outside, specified for 3 defined wire gage ranges that are color coded (red, blue, yellow).



Tip:

Another excellent source of information in regards to wiring harness repair is the [Wiring Harness Inspection and Repair self-study program](#), course number 871003. This self study program covers inspection of components, theory and application of the VAS 1978 concept.

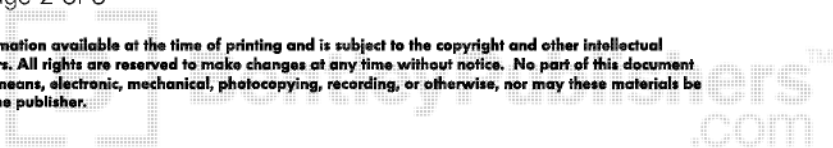


Soldering is specifically omitted from VAS 1978A repair instructions due to:

- Questionable quality and reliability of soldered joints.
- Potential for consequential damage at soldered joints (due to hot soldering iron in close proximity to other components and wiring).
- Safety hazards posed by a "spark gap" condition at soldered joints, when two very large gage wires are "soldered" together. The heat generated could be sufficient to cause the insulation to melt or flame, and there is a potential for personal injury caused by molten solder.
- Latent "Broken Wire" defect near soldered joints, where a wire separates under the insulation due to corrosion and/or fatigue, caused by overheating wire strands during the soldering process. Overheating promotes wire embrittlement, wire strand fatigue, and corrosion.
- Technical inferiority of a soldered joint, where wires are "stuck" together, versus a crimped or welded joint, where the wires are fused together. There is only minimal contact between wires in a soldered joint, where the main transmission path is through the solder (increased resistance). When properly accomplished, crimping reduces the nominal cross-section of a wire by about 20%. Although there is some small resistance, transmission is essentially unimpeded across a crimped joint.

## Production Solution

No production change required.



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## Service

If wiring harness repairs are required:

1. Always use the VAS 1978A Wire Harness Repair Kit.
2. If the wire harness cannot be repaired using the procedure and materials contained in VAS 1978A, then the wire harness must be replaced.
3. No other procedure or materials, other than those in VAS 1978A, may be used for wire harness repairs, specifically soldering, wire nuts, generic repair kits, etc.



**Note:**

Always review Safety Precautions in the VAS 1978A Instruction Manual prior to performing any wiring harness repairs.



**WARNING**

Shielded wiring for components such as speed sensors and knock sensors, may not be repaired, but must ALWAYS be replaced. Twisted wiring such as CAN bus, must be twisted to match the original wiring. Do Not lengthen wiring any more than what is necessary to make the repair, butt connectors must be staggered. DO NOT use solder when repairing a wiring harness. Only use approved methods and materials if wiring harness repairs are required.

## Warranty

Information only.

## Required Parts and Tools

No Special Tools required.

No Special Parts required. Always see ETKA for the latest part(s) information.