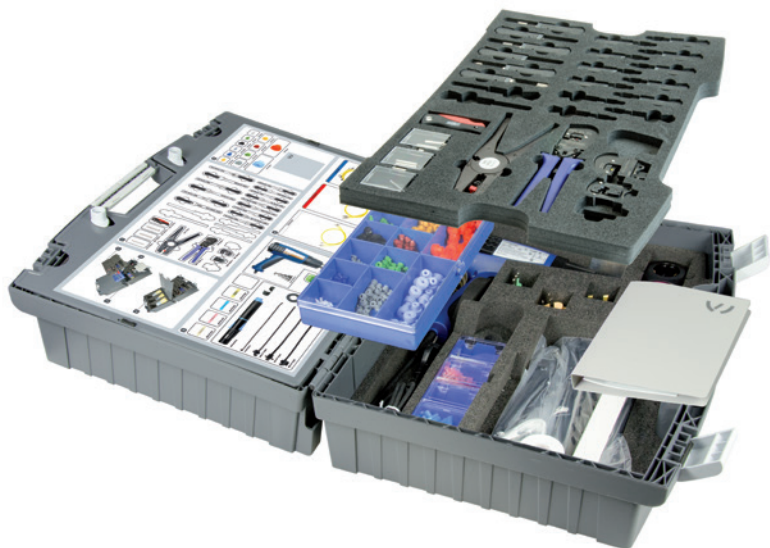


Repair kit VAS 1978B



Technical information



Legend & contents

Unlocking tools



Unlocking secondary locks



Unlocking round terminal systems



Unlocking flat terminal systems



Assembly tools

Tools



Wire strippers



Pressing pliers with insert



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Strip off insulation using the wire strippers



Cut off using the wire strippers



Crimp connections with the pressing pliers



Shrink connector with the electric hot air fan



Shrink connector with the gas-driven hot air fan



Repairing a single wire

More pictograms



For more information, see „Technical information“



Warning



Cut off



Heat



Please note the following.



Arrows to clarify compression, e.g. of the pliers



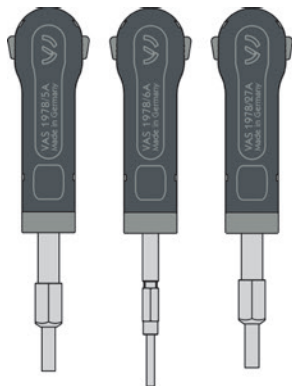
Arrow indicating direction



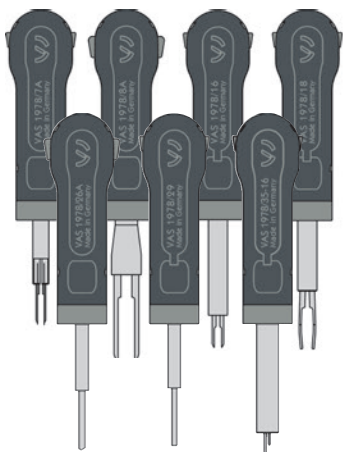
For more information, see section ...



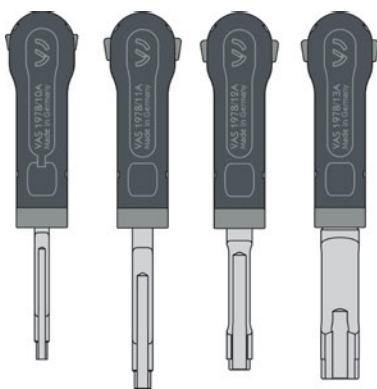
Universal secondary tool for unlocking various secondary fasteners



Various unlocking tools for **round terminal systems** to allow contacts to be unlocked from the contact housings.



Various unlocking tools for **flat terminal systems** to allow contacts to be unlocked from the contact housings.



Various **assembly tools** for insertion of single wire seals into contact housing.

Stripping pliers with wire cutter for stripping insulation and cutting wires.

Wire ends are stripped using 6–7 mm wire strippers.



Wire strippers

The repair kit VAS 1978B contains four different crimp connector sizes.



white	1	red	1
for 0.35–0.5 mm ²		for 0.5–1.0 mm ²	
blue	1	yellow	2
for 1.5–2.5 mm ²		for 4.0–6.0 mm ²	

- 1 Crimp head for 0.35–2.5 mm²
- 2 Crimp head for 4.0–6.0 mm²
- 3 Pressing pliers with crimp head for JPT contact



Pressing pliers with insert



You must follow the operating instructions for the hot air fan without fail.

After crimping, the crimp connector must be shrunk using the hot air fan. Heat the crimp connector in a longitudinal direction from the center outwards until it is completely sealed and the adhesive emerges.

During shrinking, it is absolutely necessary to take care to ensure that the hot nozzle causes no damage to other wires, plastic parts or retention material.

If the repair site was previously taped, this site must be retaped using yellow insulating tape. Where appropriate, you must reattach the wire using a cable tie.



Electric hot air fan with special nozzle for shrinking the crimp connector (with 120 or 240 V).



You must follow the Instructions for use for the gas-driven hot air fan.

A gas-driven hot air fan is included in the delivery. Gas topup bottles must be purchased separately as butane gas (lighter gas) is required.

This device has the advantage of being independent of current.



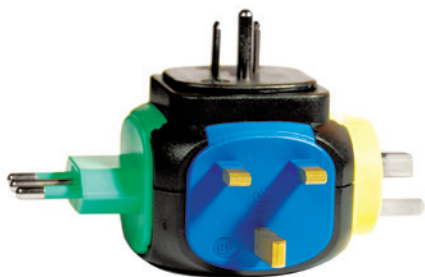
Gas-driven hot air fan with special nozzle for shrinking the crimp connector.



- 1 Mechanism for fast, easy blade replacement
- 2 Thumb cushion for maximum pressure when pressing down.
- 3 Blade compartment with lock securing
- 4 Lever for rapid folding of locking blade



Clasp knife



Technical data:

- maximum load: 16A/230V
- TÜV/GS tested
- Protection class 1

Color system:

- 1 **yellow** Australia, New Zealand, parts of China
- 2 **blue** United Kingdom, Ireland, Middle East, Commonwealth, Africa, Asia
- 3 **red** Switzerland, Liechtenstein
- 4 **green** Italy, Greece, Chile
- 5 **black** USA, Canada, Central and South America, East Asia, Japan, GUS



Adapter plug worldwide

Travel plug adapter with grounded contact system. The country adapters can be exchanged as required. Use of the adapters should be quite simple, thanks to an easy-to-understand color system.

Introduction and ordering instructions

Electrical cable and connector repairs on vehicles from model year 1996 onwards may only be carried out using the repair kits VAS 1978A and VAS 1978B.

Consumables – such as wires, single wire seals, cable ties and insulating strips – are shown on the cover inserts or in the enclosed brochure and can be ordered via OTC-Kassel. Please note that it is essential to store any additional items ordered in the proper compartments in the repair kit. This helps you to select the proper color-codes as noted in the instructions.

Tools and accessories such as the wire strippers can be ordered via Volkswagen's „Operating devices and special tools" catalogue (see CD).

The complete list of contact housings that can be supplied, with allocation of the associated, available repair wires and consumables such as cable ties, single wire seals, crimp connectors and adhesive strips, can be found in the replacement parts catalogue (ETKA 198 „electronic connectors").

Safety instructions



For all repairs, follow the relevant instructions in the corresponding repair guides and the Service technology" manual.

The battery ground terminal must be disconnected before working on the electrical systems. Before starting work on a repair, you must first eliminate the cause of the damage (e.g. body parts with sharp edges, defective replaceable parts, corrosion, etc.). For more information on the installation and removal of individual components, for example, please see the relevant repair guides.

Electrical cable repairs may only be carried out with yellow wires.

These yellow wires, and any sections of the wire cord insulated with yellow tape, indicate a prior repair.

Function testing must be performed after every repair. Where appropriate, you must query the error memory and return the systems to their basic settings.

Allocation of single wires, single wire seals, crimp connectors and crimp forms

Wires, single wire seals

Not all the wire cross-sections present in the vehicle are contained in the repair kit VAS 1978B. If the cross-section required is not present, you must use the next-largest cross-section.

The bags in which the repair wires are kept are color-coded. The single wire seals are placed in compartments which are also color-coded. This color code can be used to determine the relevant crimp connector, the correct size of single wire seal and the crimp form to be used with the pressing pliers.

Example:

If you use a 0.5 mm² wire color-coded red on the bag for a repair, you must use a red crimp connector according to the color code. The red crimp connector must also be crimped in the crimp form of the pliers coded red. The corresponding single wire seal is located in a compartment which is also coded red.

Single wire	Wire cross-section/ mm ²	Compartment color code for single wire seal	Crimp connector	Crimp form/ Pressing pliers
000 979 160E	1.0	red	red	red

Crimp connections, crimp forms of the pliers

The repair kit VAS 1978B contains four different crimp connector sizes.

white	red	blue	yellow
for 0.35–0.5 mm ²	for 0.5–1.0 mm ²	for 1.5–2.5 mm ²	for 4.0–6.0 mm ²

Contacts, gold contacts

Contacts – both standard and gold-plated – are crimped onto the repair wires. The same design must be used as a repair contact as the ones used during series production. Gold contacts, for example, are used on knock sensors and lambda probes.

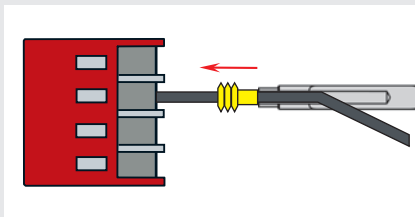
Heatproof wires

Heatproof wires are built into various parts of the vehicle, mainly in the engine compartment. Heatproof wires can be recognized by their slightly softer, more matte insulation. Please note: Only heatproof wires may be used to repair these wires.



Single wire seals

Single wire seals prevent water and dirt from getting into the contact housing. These are fitted in the engine compartment, for example, and must be reinstalled properly following a repair.



As standard, the single wire seal is crimped together with the contact to the wire. This is not the case with the repair wires. Before crimping the repair wire, first push the seal back over the conductor. The crimping collar must point away from the housing (see sketch).

The single wire seal must be exactly the same size as the wire cross-section of the repair wire used.

The external diameter must match the chamber diameter of the contact housing. Perform assembly only using the relevant assembly tool.

Description of repair

Repairing a broken wire at a single repair site

To carry out a repair, you have to uncover the relevant wire (and up to about 20 cm on either side). Where necessary, you have to remove the binding. You can use the clasp knife for this.

Repairing a broken wire at two repair sites

Uncover the wire to be repaired at two sites. You can use the clasp knife for this.

Make sure that if there are several wires to be repaired, you do not place the crimp connectors directly next to one another.

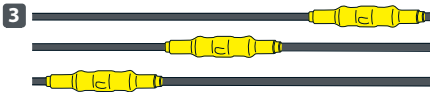
Arrange the crimp connectors in a staggered form so that the circumference of the cable does not become too big.



1 Single repair site



2 2 repair sites with intermediate wire



3 Crimp connector arrangement if there are several wires to be repaired

Repair sites



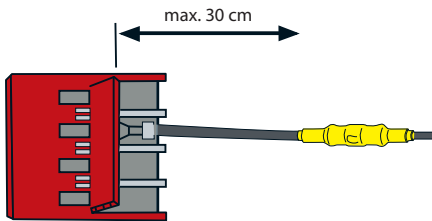
A few rules have to be observed when repairing wires in the airbag and belt tensioner systems and in wet areas.

There can be a maximum of 2 repair sites for each wire.

Repair sites increase the electrical resistance in the wire and can thus trigger errors in the system's self-diagnosis.

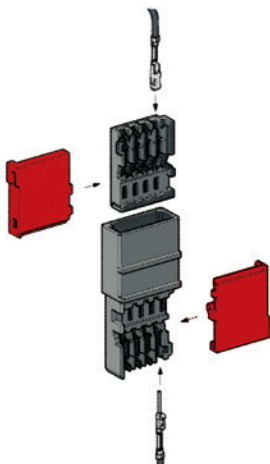
Retape the repair sites in the original cable and make the repair site readily visible using yellow insulating tape.

When repairing airbag or belt tensioner wires and in wet areas, the crimp connectors must be crimped well in order to prevent corrosion.



Repair sites in the area of airbags or belt tensioners should be located no more than 30 cm from the next contact housing. This – along with the yellow insulating tape – allows a quick overview of repairs that have been carried out.

Repair sites near to airbags or belt tensioners



Cutting-clamping technique

General instructions:

For technical reasons, the contact housing for the cutting-clamping procedure can be supplied only with inserted cutting-clamping contacts.

Like all other contact housings, these contacts can be removed if they are not needed.

Repair wires are available with the relevant contacts already crimped on. See the ordering instructions or replacement parts catalogue (ETKA 198 „electrical connectors“).

Unlocking and dismantling contact housings

The forms of contact housing shown in the instructions for use are only a selection meant to illustrate the procedure of secondary locking.

General instructions:

Always use the unlocking tools provided for unlocking. Under no circumstances should the contacts be pulled out of the contact housings by force.

You must completely replace damaged contact housings.
New contact housings can be ordered via OTC-Kassel.

The chamber/pin chart is shown in part on the secondary lock or on the reverse of the contact housing.

The secondary lock is a different color from the rest of the contact housing. This makes it easier to identify secondary locks and may provide information on your procedure.

For the installation sites of the plug connections, please see the file „Circuit diagrams“, „Troubleshooting - electrics“ or „Installation sites“.

Detailed instructions on unlocking contact housings can be found in the unlocking toolkit „VAS 1978/35“.



When unlocking the various contact systems, please note our instructions in the instructions for use.