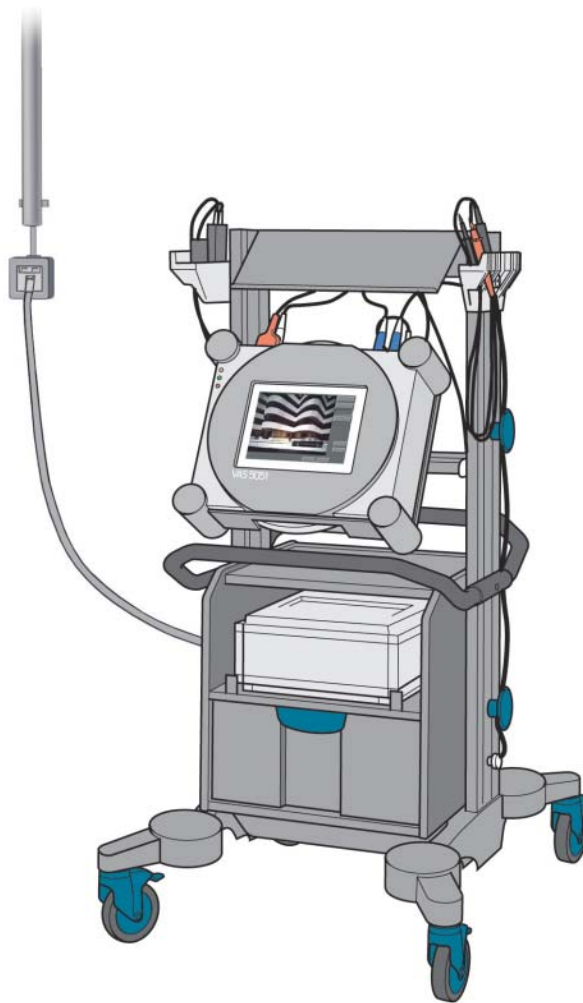


Service.



VAS 5051 on-line link

Self Study Programme 294



To date, the diagnosis system VAS 5051 only permitted communication with the vehicle. The on-line link extends the potential offered by the tester.

To coincide with the market launch of the Audi A8 '03, two on-line functions are available for the diagnosis tester.

Firstly, telediagnosis which permits remote control of the tester from another location.

Secondly, the diagnosis tester link to a central data base.

Fully automatic adaption of the immobilizer components is effected by means of direct communication between data base and tester.

This facilitates the procedure when replacing such components in the vehicle and also further enhances system reliability.

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The Self Study Programme contains information on design features and functions.

The Self Study Programme is not intended as a Workshop Manual.

Values given are only intended to help explain the subject matter and relate to the software version applicable when the SSP was compiled.

Use should always be made of the latest technical publications when performing maintenance and repair work.

New



Attention Note



Prerequisites



Diagnosis tester link to PC network

For implementation of on-line functions with the diagnosis tester, a tester upgrade kit VAS 5051/45 is now available.

This is an Ethernet PC card specially tailored to the requirements of the tester and includes the necessary accessories. Upgrading the tester with this card enables it to be linked to the dealer's PC network.



294_002

Software required

Telediagnosis is integrated into the basic software as of version 03.10.

The immobilizer 4 and component protection functions (refer to Pages 18 and 19) require basic software as of version 4.0.

Administration	Unit number:	02759
List of directories	Importer number:	123
Select directory	Dealership number:	00370
	Service	
Basic	V03.10	28/01/2002
Audi	V03.32	24/01/2002

294_003

	Notes	

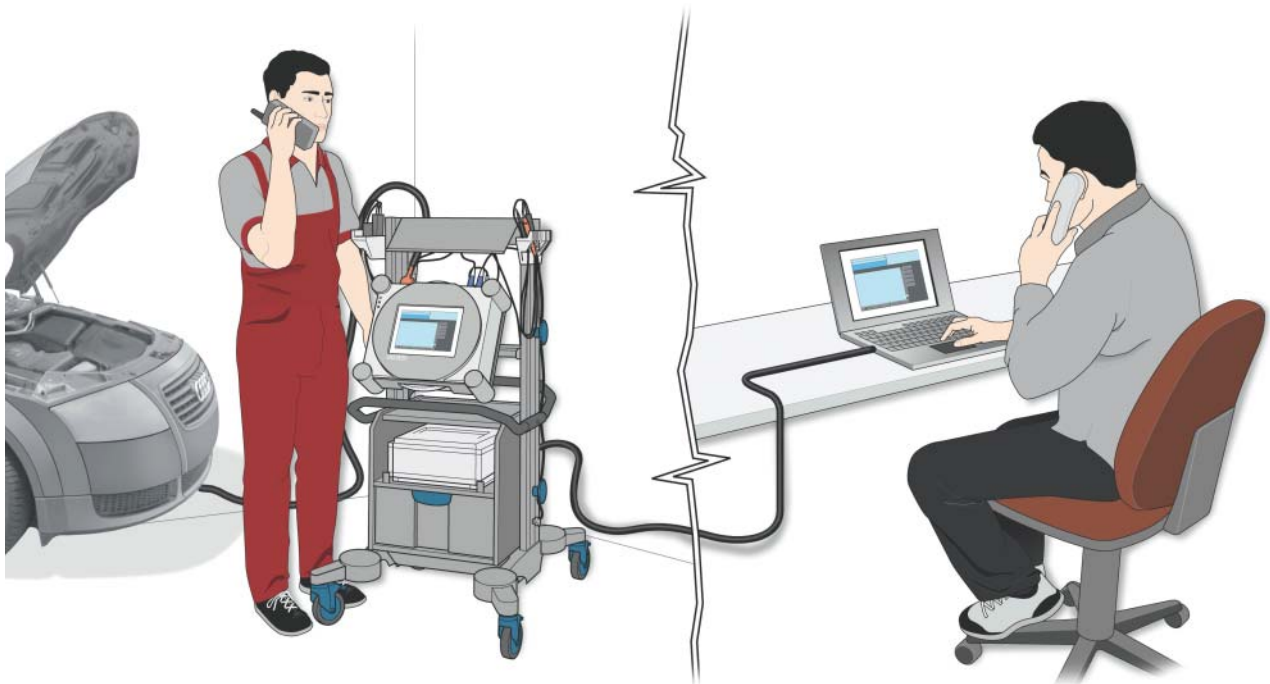
Telediagnosis



What is the purpose of telediagnosis?

To date, product consultants could only provide support for workshops by way of telephone and telefax.

Telediagnosis enables product consultants to observe and control the tester screen information alongside the mechanic in the workshop.



294_005

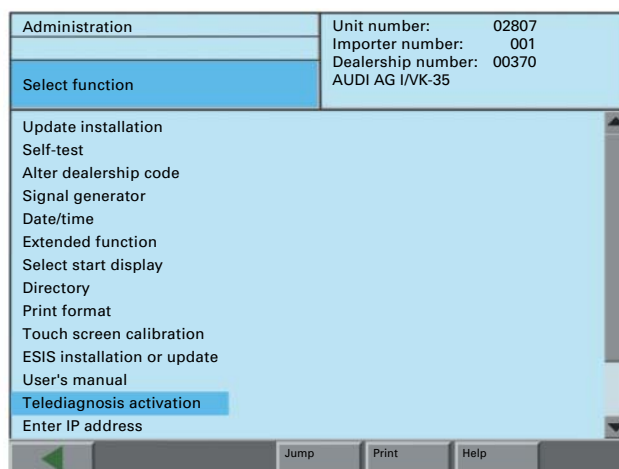
Activating telediagnosis

If telephone assistance proves not to be adequate to solve a particular problem, the product consultant can decide to activate telediagnosis. Data are transferred by way of the Ethernet link.

All the screen information from the workshop unit is available on the product consultant's PC. The unit can be operated either by the mechanic in the workshop or from the product consultant's workplace. Instructions, for example concerning the connection of test cables or the implementation of functions on the vehicle, can be given by way of the parallel telephone link.

To be able to establish the link, the product consultant must be aware of which diagnosis tester has been activated for telediagnosis.

This involves informing the product consultant of the computer name in the network. If the product consultant is only informed of the dealership number from the "Administration" menu, it will not be possible to clearly identify the diagnosis tester as there may be several dealership testers available for selection on the product consultant's PC.



294_006

Immobilizer

What is immobilizer 4?

Immobilizer 4 is not a control unit but rather a function.

This includes:

- Storage of all theft-specific control unit features in a central data base
- Immobilizer control unit communication with the other components involved
- Encoding procedures for data communication between the components involved




Central data base FAZIT

An essential immobilizer 4 component is the central data base FAZIT at Audi in Ingolstadt. **FAZIT** in German stands for **V**ehicle information and **c**entral **i**dentification **t**ool. This data base contains all the theft-specific data of the control units integrated into the "Immobilizer" and "Component protection" functions. The control units involved cannot be adapted without an on-line link to FAZIT.



Access requirements for mechanics

All users of the **GeKo** system (standing for **security and component protection**) with the tester functions "Immobilizer adaption", "Radio code enquiry" and "Component protection" must be individually registered in the dealership user administration system. The registration procedure includes the release form, which is sent to the importer or regional sales centre as confirmation. Following access authorisation, the mechanic receives a personal user ID and password.



Freischaltung für System GeKo

Online Anbindung des Diagnosesetters VAS 5051 (GeKo - Geheimnis und Komponentenschutz) zum Anlernen von Wegfahrsperrenkomponenten und Schlüsseln und zum Ermitteln von Radio-Codes.

Neben der Anmeldung im CPIS (Benutzerverwaltung Händlersystem) ist für eine Freischaltung dieses System dieses ausgefüllte Formblatt an Ihr zuständiges VZ/Importeur zu senden.

Wir melden folgenden Mitarbeiter/ folgende Mitarbeiterin, der/die künftig für unseren Betrieb Wegfahrsperren über die Online Anbindung des Diagnosesetters VAS 5051 frei schalten soll.

VZ / Betriebs-Nr.: _____

Name des Benutzers: _____

Vorname: _____

Telefon-Nr. im Betrieb: _____

Personalausweis-Nr.: _____

VCS-User ID: _____

USER-ID aus CPIS: _____

(Benutzerkennung (Händlername)) (VZ-Wert)

Sicherheitsmaßnahmen/ Widerrechtliche Benutzung

Die Nutzung der Benutzerkennung ist unter folgenden Voraussetzungen zulässig:

1. Die Nutzung der einzelnen Funktionen, die durch den Systemzugang bereitgestellt werden, beschränkt sich allein auf die zur Erfüllung der dem jeweiligen Arbeitsgebiet zu Grunde liegenden Aufgaben. Die Nutzung zu anderen Zwecken ist nicht zulässig.
2. Die Weitergabe von überlassenen Daten an Dritte ist ausdrücklich untersagt, es sei denn Audi stimmt diesem Vorhaben schriftlich zu.
3. Überlassene Daten dürfen nur temporär aufbewahrt und gespeichert werden und sind bei Auftrags erledigung sofort zu vernichten/ löschen bzw. zurückzugeben.
4. Die Nutzung einer fremden Audi Benutzerkennung sowie die Weitergabe des für das GeKo-System vergebenen Passwortes an Dritte (das sind auch Audi-Mitarbeiter) ist nicht zulässig.
5. Sofern der Zugang zum System GeKo nicht mehr erforderlich ist, ist die Benutzerkennung beim VZ/ Importeur abzumelden.

Alle durchgeführten Transaktionen im Zusammenhang mit dieser Benutzerkennung werden protokolliert. Die Auswertung der Protokolle erfolgt unter Beachtung der Bestimmungen des Betriebsverfassungs- und Bundesdatenschutzgesetzes. Wir weisen ausdrücklich auf die Geheimhaltung der Daten hin.

Beim Tausch bzw. Neuanlernen von Motorsteuergeräten, Wegfahrsperrengeräten (separate Geräte oder Kombiinstrumente o.ä.), Schlüsseln und Schließgeräten müssen der Personalausweis und der Fahrzeugschein vom Kunden vorgelegt und vom Partner/Händler in die Audi-Rechweiskarte (vgl. H.S.T. 4.1-311 und Bild-Nr. 2102) eingetragen werden. Zum Schutz des Kunden ist der Händler angehalten, eine Kopie des Personalausweises und des Fahrzeugscheins anzufertigen und datumsorientiert zu archivieren. Für den Fall, dass eine Abschrift des Personalausweises nicht möglich ist, sind die Kundendaten mit der Personalausweisnummer zu ergänzen und festzuhalten. Ein Abgleich mit der am Fahrzeug befindlichen Fahrgestellnummer ist vom Partner bzw. seinen Mitarbeitern eigenhändig vorzunehmen und im Vordruck mit seinem Namen zu bestätigen.

Zu Überprüfungszwecken ist die angelegte vollständige Dokumentation jederzeit der AUDI AG zur Verfügung zu stellen. Der Tausch bzw. das Neuanlernen von Motorsteuergeräten, Wegfahrsperrengeräten (separate Geräte oder Kombiinstrumente o.ä.) und Schlüsseln darf nur von den autorisierten Audi Partnern, auf keinen Fall durch unbefugte Dritte durchgeführt werden.

Verpflichtungserklärung

Durch meine Unterschrift bestätige ich, dass ich die oben aufgeführten Sicherheitsbestimmungen gelesen und inhaltlich verstanden habe, und dass ich meinen Verpflichtungen aus diesen Sicherheitsbestimmungen uneingeschränkt nachkommen werde.

Name, Vorname: _____ Unterschrift Mitarbeiter: _____ Unterschrift Geschäftsleitung: _____ Ort, Datum: _____

Bearbeitung durch das Vertriebszentrum / Importeur: _____

Die übermittelten Daten wurden auf Vollständigkeit geprüft:
Die Autorisierung zur Benutzung der Anwendung GeKo: ☐ wurde erteilt ☐ nicht erteilt

Name, Vorname: _____ Unterschrift von der AUDI AG legitimiert Mitarbeiter: _____ Ort, Datum: _____

Version 1.0/03 24.01.2002 Team/Deutsches Audi AG

294_008

Mandatory entries

The following entries always have to be made on accessing FAZIT:

- Vehicle chassis number
- Name of customer
- Number of customer's identity document
- Customer's nationality
- Mechanic's user ID
- Mechanic's password

Assisted fault-finding	Audi V03.32 24/01/2002
Functional test	Other vehicles for immobilizer on-line
Radio code enquiry	All Model Years All versions All engine code letters

Enter customer name

Enter customer's first name and surname:

HANS MUSTERMANN

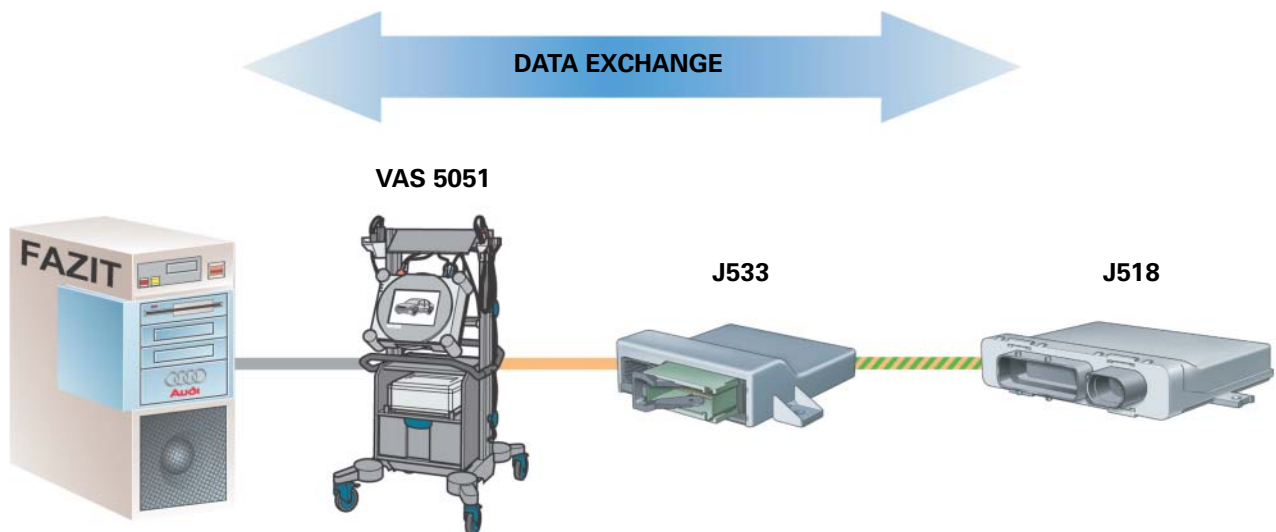
Measurement Jump Print Help

294_032

Immobilizer

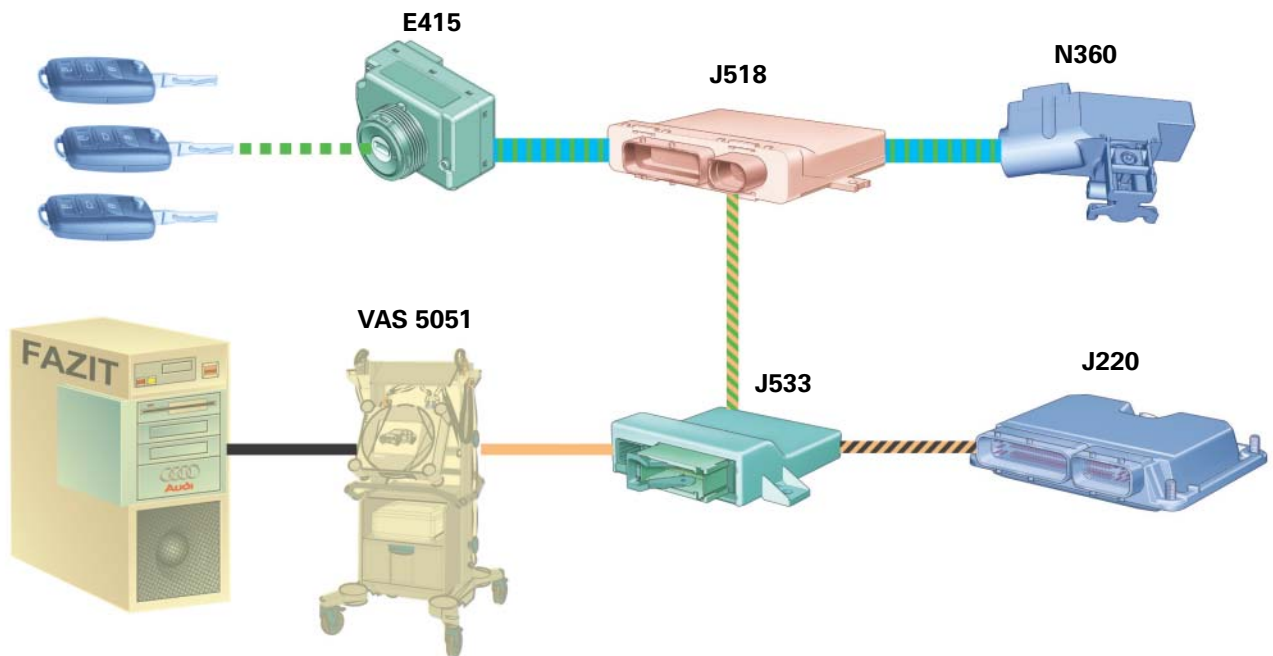
New features of immobilizer 4

- On-line enquiry by the diagnosis tester is the only way of ensuring safe, rapid and reliable data transfer to the vehicle. Immobilizer component PIN enquiries by fax and provisional component release are not possible.
- All components involved with the immobilizer must be adapted on-line.
- All vehicle keys - including re-orders - are pre-encoded at the factory for a particular vehicle and can only be matched to this vehicle.



294_009

System components



- Control unit not integrated into immobilizer
- Control unit integrated into immobilizer
- Master control unit
- PC/mainframe

- Wireless data transfer
- Bidirectional data transfer
- Convenience CAN
- Diagnosis CAN
- Drive system CAN
- PC network

- E415** Entry and start authorisation switch
- J518** Entry and start authorisation control unit
- N360** Steering column lock control element
- J533** Data bus diagnostic interface
- J220** Motronic control unit

294_011



This Self Study Programme only describes the component features of relevance to the "Immobilizer" function in the AUDI A8 '03.

A general functional description can be found in the Self Study Programme 287 "AUDI A8 '03 - Electrical Components".

Immobilizer

Immobilizer control unit

To date, vehicles were either fitted with separate immobilizer control units or the control system was integrated into the dash panel insert. Both are possible with immobilizer 4.

In the Audi A8 '03, the immobilizer is integrated into the entry and start authorisation control unit -J518. On this vehicle, the dash panel insert is not part of the immobilizer, but does form part of the component protection system (refer to Pages 18 and 19).

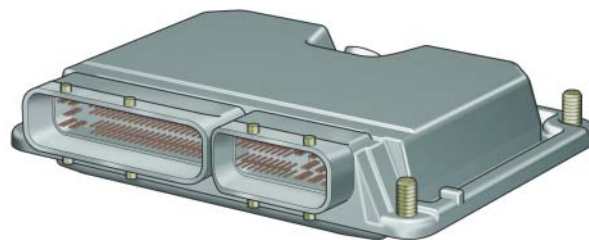
On-line adaption is the only means of releasing the control unit.



294_012

Engine control unit

All engine control units form part of the immobilizer and their release involves on-line adaption.



294_013

Vehicle key

The key has a mechanically encoded hinged bit, used exclusively for the functions in the lock cylinders (driver's door, tailgate/boot lid). The transponder function is an integral part of the electronics and can be used even without battery voltage in the key. The keys for the Advanced Key function additionally contain electronics for wireless bidirectional communication with the entry and start authorisation control unit.

Up to 8 keys can be matched to the system.

The vehicle keys for immobilizer 4 vehicles are mechanically and electronically pre-encoded at the factory for the corresponding vehicle, i.e. the internal profile of the key is milled and basic encoding performed so that the key can only be matched to the vehicle for which it was ordered.

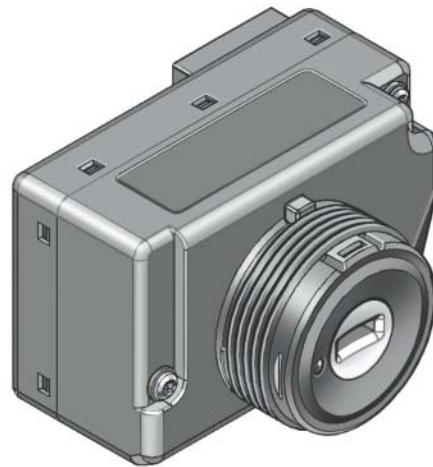


294_014

Entry and start authorisation switch -E415

The Audi A8 '03 does not feature a conventional ignition/starter switch. The entry and start authorisation switch does not evaluate the mechanical encoding of the key. An integral feature of the key is the reader coil which transmits the transponder data of the ignition key in encoded form via a bidirectional data wire to the entry and start authorisation control unit.

The entry and start authorisation switch does not have to be matched to the immobilizer system.

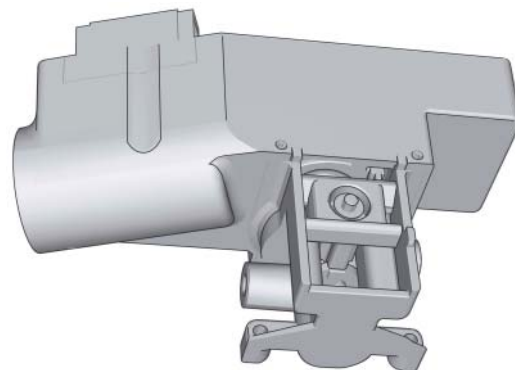


294_015

Steering column lock control element -N360

The steering column lock control element - N360 is actuated by the entry and start authorisation control unit. It locks and releases the steering column. Encoded data transfer between -J518 and -N360 only takes place at term. 15.

The steering column lock control element forms part of the immobilizer and has to be adapted to the system following replacement.



294_016

Other components

None of the other electronic components, such as door handles, aerials and start/stop buttons feature microcontroller actuation and they are not integrated into the "Immobilizer" and "Component protection" security systems.



Immobilizer

Re-adaption following immobilizer control unit theft

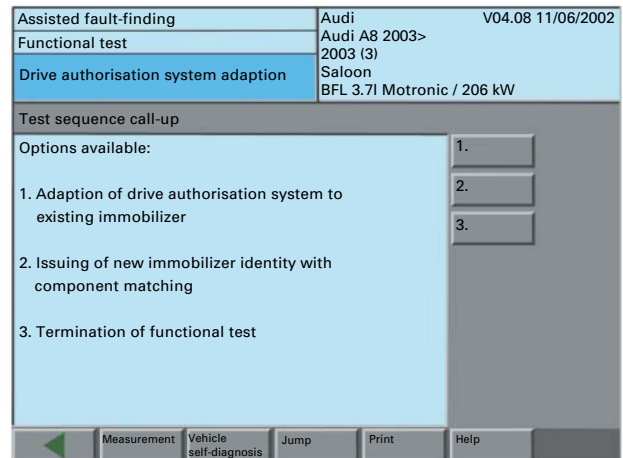
The **"New identity"** menu provides all control units integrated into immobilizer 4 with new basic encoding.

The central data base FAZIT is informed of the new basic encoding.

If the engine control unit, for example, has been stolen, it is not necessary to replace all control units integrated into the immobilizer.

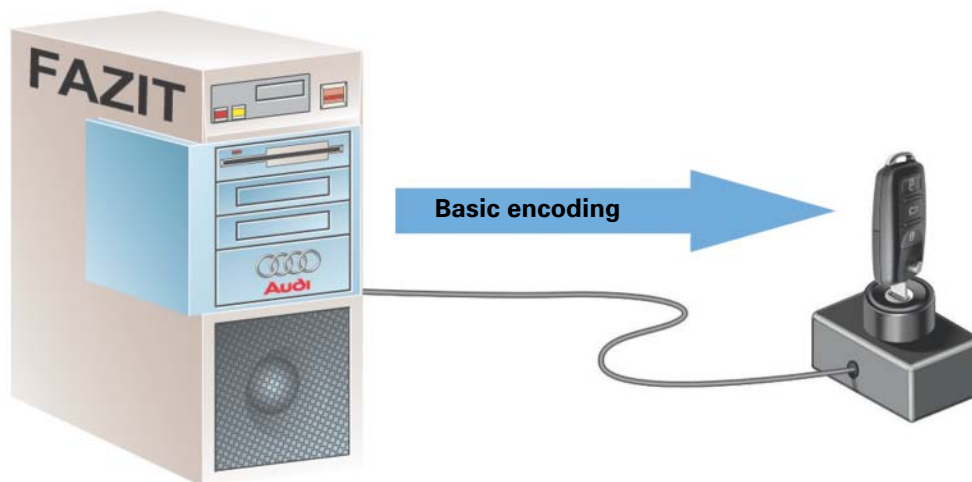
The "New identity" menu is integrated into the assisted fault-finding routine under entry and start authorisation control unit.

After re-encoding, any vehicle keys which were still functional and the steering column lock control element can no longer be used.



294_017

Key programming at the factory



294_018



Re-ordered keys are provided with their basic encoding from the FAZIT data base. If a vehicle has been given a "new identity",

- "new identity" must be quoted on ordering the keys or
- the keys are not to be ordered until the "new identity" has been issued.

Adaption for immobilizer 4

All immobilizer adaption function menus are implemented as part of "Assisted fault-finding" mode and are menu-driven. The functions are vehicle-specific. Use can therefore not be made of the "Other vehicles" option (see below).

The engine cannot be started for 5 minutes if one or more of the following components has/have been adapted:

- Steering column lock control element
- Entry and start authorisation control unit
- Key set with new first key

The disable time can be read out in the entry and start authorisation control unit as measured value block.



294_019

Adaption for immobilizers 1 to 3

All vehicles which cannot be specifically selected are covered by the "Other vehicles for immobilizer on-line" menu item. For "Other vehicles", the vehicle system test is restricted to immobilizer-specific systems. Other control units are not interrogated.

Assisted fault-finding	Audi	V03.32 24/01/2002
Vehicle identification		
Select model		
Audi A2 2002>		
Audi A3 1997>		
Audi A4 1995>		
Audi A4 2001>		
Audi A6 1998>		
Audi A8 1994>		
Audi TT 1999>		
Other vehicles for immobilizer on-line		
Audi A4 USA 1995>		
Audi A4 USA 2001>		
Audi A6 USA 1998>		
Audi A8 USA 1997>		
Audi TT USA 1999>		
Measurement	Vehicle self-diagnosis	Jump
Print	Help	

294_020

Menus for immobilizers 1 to 3

The adaption of all components of immobilizer generations 1 to 3 is menu-driven.

For older immobilizer systems, it may be necessary to manually enter the chassis number via an input mask.

As with immobilizer 4, all adaption operations require FAZIT data base login with personal user ID and password.

Assisted fault-finding	Audi	V03.32 24/01/2002
Functional test	Other vehicles for immobilizer on-line	
Immobilizer adaption	All Model Years	
	All versions	
	All engine code letters	
Test sequence call-up		
The following immobilizer III adaption functions can be selected:		
1. Following replacement of dash panel insert		
2. Following replacement of engine control unit		
3. Following replacement of dash panel insert and engine control unit		
4. Following replacement of injection pump with V6 TDI (MY '02 onwards)		
1.		
2.		
3.		
4.		
5.		
Measurement	Vehicle self-diagnosis	Jump
Print	Help	

294_021

Radio Code

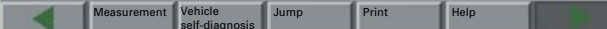
Radio code enquiry (not for A8 '03)

The on-line link also permits call-up of the 4-position radio codes. These are indicated on the tester display and have to be entered in the usual manner via the radio buttons for radio release.

The diagnosis tester does not have to be connected to a vehicle for implementing the menu item "Radio code enquiry". Selecting "Other vehicles for immobilizer on-line" avoids a complete vehicle system test which would involve connecting the vehicle to the tester.

Once the vehicle has been selected and the immobilizer system automatically recognised, the "Radio code enquiry" menu can be called up under "Function/component selection".

Assisted fault-finding	Audi	V03.32 24/01/2002
Function/component selection	Other vehicles for immobilizer on-line	
Select function/component	All Model Years	
	All versions	
	All engine code letters	
Radio code enquiry		
On-line system test		
Documents		

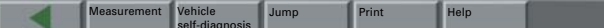


294_022

In addition to the general mandatory entries such as chassis number, user ID and password, the serial number of the radio is also requested for radio code enquiry.

The procedure is logged in the FAZIT data base via the on-line link and the radio code then displayed on the diagnosis tester.

Assisted fault-finding	Audi	V03.32 24/01/2002
Functional test	Other vehicles for immobilizer on-line	
Radio code enquiry	All Model Years	
	All versions	
	All engine code letters	
Data output		
Radio PIN:		
0751		
- Enter this code in radio.		
END OF TEST		



294_023

	Notes	

Component Protection

What is meant by component protection?

Component protection is an electronic safeguard for control units designed to prevent their use in other vehicles if stolen.

The control units integrated into the component protection system are mainly from the infotainment and convenience sectors.

In multimedia components in the Audi A8 '03, the "Component protection" function replaces the 4-position radio code.

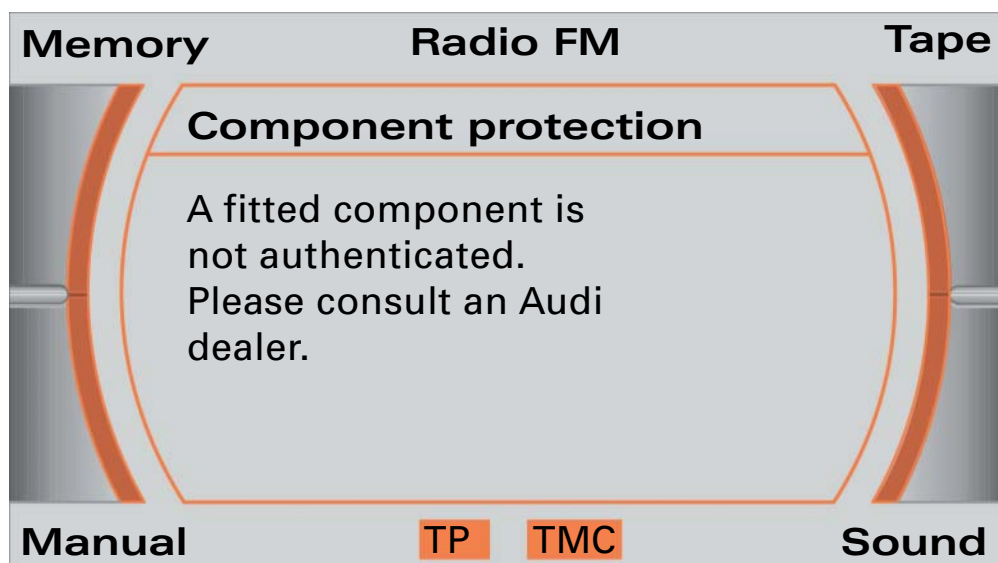


Component protection function

Control units with component protection function are encoded for a specific vehicle.

Functions will be restricted if a control unit has not been adapted to the vehicle. A message is displayed in the dash panel insert and front information display unit when component protection is active.

In addition, a fault memory entry will be stored in the non-adapted control unit.

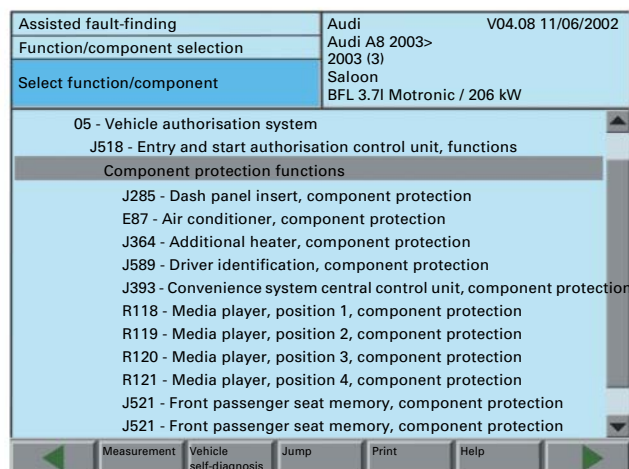


294_031

Adaption of new control unit

If control units with component protection function are installed in a vehicle or even just swapped between 2 vehicles on a trial basis, the control units concerned must be adapted to the appropriate vehicle.

The adaption process is similar to that for a control unit integrated into the immobilizer. Here again the diagnosis tester requires an on-line link and the mechanic concerned needs password access to the FAZIT data base at Audi.



294_027



Component protection diagnosis

The following entries are stored in the fault memory for a control unit with active component protection:

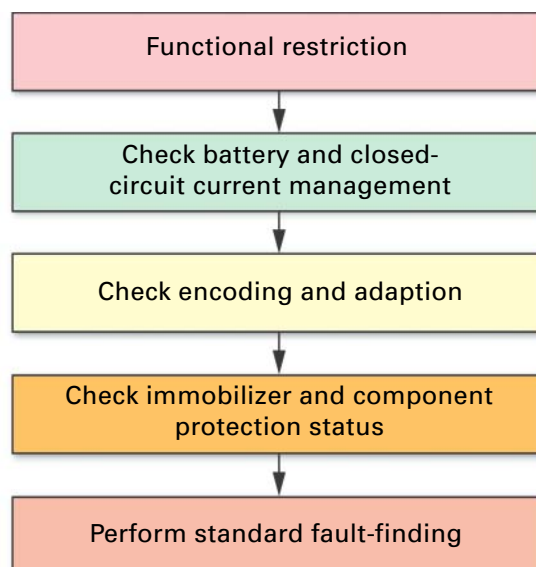
Fault location	Type of fault	Background
Component protection active		Fault is always output as being "static" when functions are restricted. Fault status switches from "static" to "sporadic" if functional restrictions are cancelled again within a terminal 15 cycle. Fault is erased automatically following implementation of a valid adaption procedure for learning new vehicle data.
Immobilizer control unit	No communication	Corresponding bus error is entered in the event of communication problems on data wires.
Component protection	No or incorrect basic setting/adaption	This fault is entered as long as control unit still has "brand new" status. Fault cannot be cancelled via "Erase fault memory". Fault is erased automatically following implementation of a valid adaption procedure for learning new vehicle data. Fault does not then become "sporadic", but rather is removed directly.

294_033

Fault-finding strategy

The new component protection and battery management features in the vehicle may influence component functions.

This gives rise to an extended fault-finding concept in which components are first to be checked for routine functional restrictions before commencing standard fault-finding.



294_028

Checking on-line link

An on-line link test is provided under **Administration -> Self-test**. If the result is **OK**, a data link is established with the Volkswagen network. This link test does not check access to the Audi data base. An additional test is provided for this purpose in the "Assisted fault-finding" menu.

Administration	Unit number: 02759
Self-test	Importer number: 123
	Dealership number: 00370
	Service
Measurement - Unit	OK
Diagnosis bus - Unit	
On-line link	
<div> ◀ Jump Print Help </div>	

294_029



The on-line system test as part of assisted fault-finding checks the transfer of data from the tester via the Volkswagen network to the Audi data base and back again and is thus more comprehensive than the "Administration" -> "Self-test" menu. This test does not require the diagnosis tester to be connected to a vehicle. The user ID and password of the mechanic are however needed and are also checked by way of the on-line link. The system test will not be OK if ID or password is not correctly entered.

Assisted fault-finding	Audi V03.32 24/01/2002
Function/component selection	Other vehicles for immobilizer on-line
Select function/component	All Model Years
	All versions
	All engine code letters
Radio code enquiry	
On-line system test	
Documents	
<div> ◀ Measurement Vehicle self-diagnosis Jump Print Help ▶ </div>	

294_030

	<h1>Notes</h1>		

	Notes	

