#### General

On reversing, the parking aid system uses the echo-sounding principle to measure the distance between the back end of the vehicle and an obstacle.

For this purpose, the rear bumper is fitted with four ultrasonic sensors.

The sensors are actuated both in combined transmit/receive mode and in pure receive mode.

On the Audi A2, the parking aid control unit features CAN capability, i.e. both the self-diagnosis and the actual system only function when the CAN is active.

#### Function:

The parking aid consists of the following:

- ◆ Parking aid control unit -J446
- ◆ Rear left parking aid sender -G203
- ◆ Centre rear left parking aid sender -G204
- ◆ Centre rear right parking aid sender -G205
- ◆ Rear right parking aid sender -G206
- ◆ Rear parking aid warning buzzer -H15

A self-test lasting less than one second is performed after switching on the ignition.

The control unit is then permanently in operation, however the distance sensing function is only activated on engaging reverse gear.

Job number 900022 Chassis number

Registration number

User M Date 22/03/2002

Workshop Manual

A brief signal tone sounds to indicate that parking aid is ready for operation (time lag of one second on vehicles with automatic gearbox on account of P-D shift).

A high-pitched continuous tone of 5 seconds duration sounds if the control unit detects a fault in the system during the self-test and the parking aid does not function.

On reversing, the proximity warning provided by the two centre sensors and the outer sensors is first given on attaining a distance of roughly 1.60 m and roughly 0.60 m respectively from the obstacle. The warning is given in the form of acoustic pulses with a duration of 75 ms.

The intervals between the acoustic pulses become shorter as a function of the decreasing gap. When the gap is less than 25 cm the pulses become a continuous tone. (Adaption of volume and pitch (audio frequency) with V.A.G 1551 =>Page 01-237)

Special case: Travelling backwards alongside a wall

Note:

The following description relates exclusively to the fault reader V.A.G 1551.

Job number 900022 Chassis number

Registration number

User M Date 22/03/2002

Workshop Manual - 2 -

## Safety precautions

Pay attention to the following if testers and measuring instruments have to be used in the course of a test drive:

#### Attention:

- ◆ Proceed as follows during measurement and test drives so as to avoid the risk of accident:
- ♦ Exclusive use is to be made for measured value block readout of VAS 5051 or V.A.G 1551, which is to be attached to rear seat and operated from there by a second person.

# Heed the following so as to avoid possible injury and/or the destruction of electrical and electronic components:

- Switch off ignition before disconnecting and connecting measuring instruments and testers.
- ◆ Certain tests may lead to a fault being detected by the control unit and stored. The fault memory is therefore to be interrogated and if necessary erased on completion of all tests and repair work.
- ♦ Switch off ignition before disconnecting and connecting battery so as not to damage control units.

## Test requirements:

- ◆ Use current flow diagram to check that fuse is OK.
- ◆ Connect up vehicle diagnostic, testing and information system VAS 5051/fault reader V.A.G 1551 => Page <u>01-240</u>.

#### Notes:

♦ If no display appears, use current flow diagram to check power supply for V.A.G 1551.

Job number Chassis number Registration number User Date Workshop Manual 900022 M 22/03/2002 - 1 -

Type 8Z	Type description Audi A2	MY 2002	Engine ID BAY	Gearbox EWQ	Kilometer reading	
		◆ Additional operating	g instructions can be called u	p by pressing the fault re	ader HELP key.	
		◆ Next step in program sequence can be selected by pressing ⇒ key.				
		◆ Incorrect entries ca	n be terminated by pressing	C-key.		
		◆ Function 00 "Automatic test sequence" can be implemented in mode 1 "Rapid data transfer". This involves automatic interrogation of all vehicle control units.				
		- Switch on ignition.				
	- Switch on printer by pressing PRINT key (lamp in key lights).					
		- Press key 1 for "Rapid data transfer" mode.				
Rapid data transfer Enter address word XX	HEL	P ← Indicated on display:				
		Address word for pa	rking aid: 76			
		- Press keys 7 and 6.				
Rapid data transfer 76 - Parking aid	C	♀ Indicated on display:				
70 - 1 arking aid		- Confirm entry with Q	key.			
8Z0919283 Parking sys. A2 Code 00102	2 RoW D02 : WSC 068	<ul> <li>Parking system A</li> <li>D02: Software ve</li> </ul>	number of parking aid contro 2: Component designation rsion of parking aid control un the for parking aid control unit	nit	List)	
		$Press \Rightarrow key.$				
Rapid data transfer No control unit response	HEL	P   If one of the adjacent program for diagnostice  =>	messages appears on the di c wire.	splay, perform fault-findin	g in line with fault-finding	
Job number 900022	Chassis number	Registration number	User M	Date 22/03/2002	Workshop Manual - 2 -	

Type 8Z	Type description Audi A2	MY 2002	Engine ID BAY	Gearbox EWQ	Kilometer reading
Rapid data transfer Fault in communication link	HELP				
Rapid data transfer K-wire not switched to earth			al Fault-finding and Fit	ting Locations binder	
Rapid data transfer K-wire not switched to positi	HELP				
Rapid data transfer Select function XX	HELP	lndicated on display:			
		<ul> <li>Pressing HELP key prints out a</li> <li>Press ⇒ key to select next ste</li> </ul>			
		Self-diagnosis functions			
		Possible functions:			
		01 - Interrogating control unit ve	rsion=> Page <u>01-214</u>		
		02 - Interrogating fault memory	=> Page <u>01-215</u>		
		05 - Erasing fault memory => P	age <u>01-224</u>		
		06 - End of output => Page <u>01-2</u>	<u>226</u>		
		07 - Encoding control unit => Pa			
		08 - Reading measured value b	lock => Page <u>01-231</u>		
lob number	Chassis number	10 - Adaption=> Page <u>01-237</u>	Llear	Data	Workshop Manual

## Parking aid fault table

#### Notes:

- ◆ Listed in the following in ascending order of 5-digit fault codes are all the faults which can be detected by the parking aid and printed out on V.A.G 1551.
- ◆ The fault code only appears on the printout.
- Before replacing components found to be defective, use current flow diagram to check wiring and connectors to these components as well as earth connections.
- ◆ On completion of repair work and system functional test, always interrogate fault memory again with fault reader V.A.G 1551 and erase it.
- ♦ All static and sporadic faults are stored in the fault memory:

  A fault is recognised as being static if it is present for at least 2 seconds. If fault is then no longer present, it is stored as being sporadic and "/SP" appears on the right of the display.
- After switching on ignition, all faults present are set to sporadic and only stored as being static if they are still present after checking.
- ◆ Sporadic faults are erased if they do not re-occur in the course of 50 driving cycles (ignition on for at least 5 minutes, vehicle speed > 30 km/h).
- ♦ When eliminating an open circuit in the event of a data bus fault, always remember to twist the two data wires of the corresponding bus system together to prevent electromagnetic interference.

Job number 900022 Chassis number

Registration number

User M Date 22/03/2002 Workshop Manual

Output on printer of V.A.G 1551	Possible cause of trouble	Fault remedy
00532		
Supply voltage		
◆ Signal too low	◆ Open circuit in wiring or short circuit in power supply	- Use current flow diagram to perform fault-finding
00625		
Speed signal		
◆ Implausible signal	◆ Fault is set if vehicle-speed signal is implausible (e.g. 500 km/h); occurs, for example, in the event of loose contact in wiring	- Use current flow diagram to perform fault-finding

Output on printer of	Possible cause of trouble	Fault remedy
V.A.G 1551		
01317		
Control unit with display in dash panel insert -J285		
◆ No communication	<ul> <li>◆ Open circuit in wiring or short circuit</li> <li>◆ Dash panel insert adaption not performed correctly</li> </ul>	- Use current flow diagram to perform fault-finding Eliminate open circuit in wiring Select adaption channel 61 and enter correct adaption value => Page 01-121
01336		
Group convenience data bus		
◆ Defective	◆ Short to positive/earth in both signal wires at one control unit in Group convenience data bus	- Use current flow diagram to perform fault-finding Eliminate short circuit

Job number 900022 Chassis number

Registration number

User M Date 22/03/2002 Workshop Manual - 2 -

Output on printer of V.A.G 1551	Possible cause of trouble	Fault remedy
01543		
Parking aid warning buzzer -H15		
<ul><li>◆ Short to positive</li><li>◆ Open circuit/short to earth</li></ul>	<ul> <li>◆ Open circuit in wiring or short circuit between -H15 and control unit</li> <li>◆ Warning buzzer defective</li> </ul>	- Use current flow diagram to perform fault-finding Replace -H15
01545		
RL parking aid sender -G203		
<ul> <li>◆ Short to positive</li> <li>◆ Open circuit/short to earth</li> <li>◆ Defective component</li> <li>◆ Implausible signal</li> </ul>	<ul> <li>◆ Open circuit in wiring or short circuit between -G203 and control unit</li> <li>◆ -G203 defective</li> </ul>	- Use current flow diagram to perform fault-finding Replace -G203

Output on printer of	Possible cause of trouble	Fault remedy
V.A.G 1551		
01546		
RL, ctr, parking aid sender -G204		
◆ Short to positive	◆ Open circuit in wiring or short circuit between -G204 and	- Use current flow diagram to perform fault-finding
◆ Open circuit/short to earth	control unit	Replace -G204
◆ Implausible signal	◆ -G204 defective	
01547		
RR, ctr, parking aid sender -G205		
◆ Short to positive	◆ Open circuit in wiring or short circuit between -G205 and	- Use current flow diagram to perform fault-finding
◆ Open circuit/short to earth	control unit	Replace -G205
◆ Implausible signal	◆ -G205 defective	

Output on printer of	Possible cause of trouble	Fault remedy
V.A.G 1551		-
01548		
RR parking aid sender -G206		
◆ Short to positive	◆ Open circuit in wiring or short circuit between -G206 and	- Use current flow diagram to perform fault-finding
◆ Open circuit/short to earth	control unit	Replace -G206
◆ Implausible signal	◆ -G206 defective	
01549		
Voltage supply for parking aid sender		
◆ Short to earth	◆ Short to earth between parking aid sender and control	- Use current flow diagram to perform fault-finding
	unit	

Output on printer of V.A.G 1551	Possible cause of trouble	Fault remedy
01550		
Reverse gear signal		
◆ Implausible signal	◆ Short to earth between reversing light switch and parking aid control unit (reverse gear signal = 1 and vehicle speed > 100 km/h)	
65535		
Control unit defective		
	◆ Parking aid control unit -J446 defective	- Replace control unit

# **Encoding control unit**

This function can be used to encode parking aid control unit as follows:

- ◆ Gearbox version: Manual/automatic
- ♦ Signal tone for engaged reverse gear: With or without acknowledgement of function
- ◆ Body version: Saloon
- ◆ Vehicle model: e.g. Audi A2

### Note:

The encoding adapts the universal parking aid control unit -J446 to the particular requirements of the vehicle concerned.

# Implementing encoding function

Rapid data transfer HELF Select function XX	<ul> <li>← Indicated on display:</li> <li>- Press keys 0 and 7 to select "Encoding control unit" function.</li> </ul>
Rapid data transfer Q 07 - Encoding control unit	<ul><li>← Indicated on display:</li><li>- Confirm entry with Q key.</li></ul>
Encoding control unit Enter code number XXXXX (0-32000)	<ul> <li>← Indicated on display:</li> <li>- Enter code number as per encoding table =&gt; Page <u>01-230</u>.</li> <li>Example: 00102</li> </ul>

Type 8Z	Type description Audi A2		MY 2002		Engine II BAY	)	Gearbox EWQ	Kilometer reading
		0					Not used at present	
			0				Manual gearbox	
				1			With acknowledgeme	nt of function
					0		Saloon (standard)	

Encoding control unit Q Enter code number 00102 (0-32000)

- Confirm entry with Q key.

8Z0919283 Parking sys. A2 RoW Code 00102 WSC 06812

D02 ⇒ ← Indicated on display:

- Conclude encoding by pressing ⇒ key.

Rapid data transfer Select function XX

# **Encoding table**

0	Not used at present
0	Manual gearbox
1	Automatic gearbox
0	No acknowledgement of function
1	With acknowledgement of function (ex works)
0	Saloon (standard)
6	A6
4	A4
3	A3
2	A2

Audi A2

# Reading measured value block

# Implementing "Reading measured value block" function

Rapid data transfer HELF Select function XX	<ul><li>← Indicated on display:</li><li>- Press keys 0 and 8 to select "Reading measured value block" function.</li></ul>
Rapid data transfer Q 08 - Reading measured value block	<ul><li>← Indicated on display:</li><li>- Confirm entry with Q key.</li></ul>
Reading measured value block HELF Enter display group number XXX	<ul> <li>← Indicated on display:</li> <li>- Enter display group number (from table =&gt; Page <u>01-232</u>) and confirm with Q key.</li> </ul>

The measured value block selected is then displayed in standardised form.

List of display groups:

Job number 900022 Chassis number

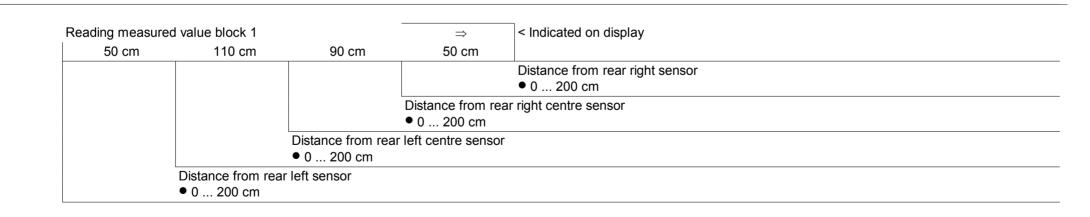
Registration number

User M Date 22/03/2002

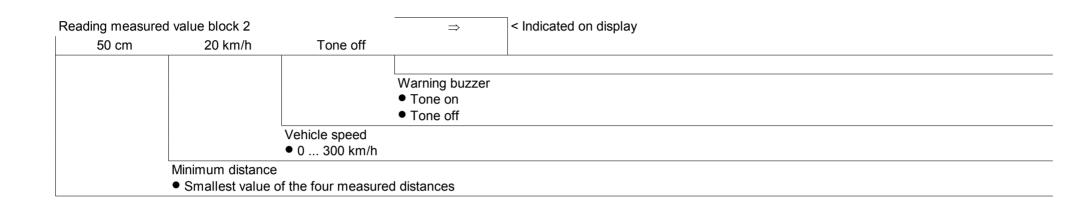
Workshop Manual

Display group number	Indicated on display
001	1 = Distance from rl sensor in cm
	2 = Distance from rlc sensor in cm
	3 = Distance from rrc sensor in cm
	4 = Distance from rr sensor in cm
002	1 = Minimum distance in cm
	2 = Vehicle speed km/h
	3 = Warning buzzer
003	1 = Supply voltage V
	2 = Reverse gear
	3 = Trailer
004	1 = rl sensor settling time in ms
	2 = rlc sensor settling time in ms
	3 = rrc sensor settling time in ms
	4 = rr sensor settling time in ms

## Measured value block 001



## Measured value block 002



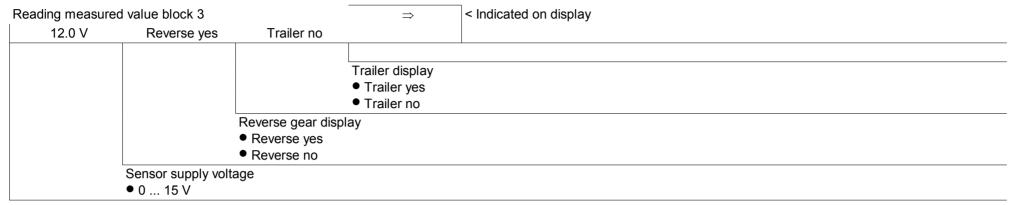
Measured value block 003

Job number 900022 Chassis number

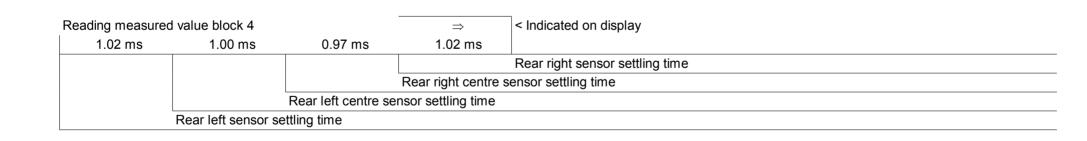
Registration number

User M Date 22/03/2002

Workshop Manual - 3 -



#### Measured value block 004



Workshop Manual

- 4 -

#### Note:

Values of greater than 4.00 ms with reverse gear engaged are an indication of a defective ultrasonic sensor or an open circuit in the wiring.

Job number	Chassis number	Registration number	User	Date
900022			M	22/03/2002

Engine ID Type Type description MY Gearbox Kilometer reading Audi A2 2002 BAY 8Z **EWQ** Adaption The adaption function can be used to make and store the following changes: ◆ Volume of warning tone ◆ Pitch (audio frequency) of warning tone Implementing function "10 - Adaption" Rapid data transfer Select function XX - Press keys 1 and 0 to select "Adaption" function. Rapid data transfer Q 10 - Adaption - Confirm entry with Q key. Adaption Enter channel number XX - Enter channel number in line with adaption table => Page 01-239. Example: 01 - Press keys 0 and 1. - Confirm entry with Q key. Channel 1 Adaption 6 (- 1 3-L - Adaption value can either be decremented with key 1 or incremented with key 3 or use can be made of  $\Rightarrow$  key. - Press  $\Rightarrow$  key.

Type 8Z		Type description Audi A2		MY 2002	Engine ID BAY	Gearbox EWQ	Kilometer reading
Channel Enter adaption v	1 alue XXXX	Adaption (	6	⇔ Indicated on display:			
				- Now enter adaption value	by hand (e.g. 00005).		
Channel Enter adaption v	1 ralue 00005	Adaption	6 Q				
				- Confirm entry with Q key.			
Channel	1 (	Adaption - 1	5 Q 3-L				
				- Confirm entry with Q key.			
Channel Store altered val	1 lue?	Adaption	5 Q				
				- Confirm entry with Q key.			
Channel Altered value sto	1 ored	Adaption	5 ⇒	⇔ Indicated on display:			
				- Conclude sensitivity adapti	ion by pressing ⇒key.		
Rapid data trans Enter address w			HELP	⇔ Indicated on display:			

# Adaption table

Adaption channel	Adaption function	
01	Volume adjustable in stages from 2 to 6	
02	Pitch (audio frequency), adjustable in stages from 0 to 4 (500 Hz to 2 kHz)	

Job number 900022

Chassis number

Registration number

User Μ

Date 22/03/2002 Workshop Manual - 2 -