

00 TECHNICAL DATA

TRANSMISSION IDENTIFICATION

The "6-speed automatic transmission 09 all wheel drive " is installed in combination with various engine types, and is identified accordingly on the transmission type plate. Application --> **Code letters, transmission application, ratios, equipment.**

The transmission code letters are given on the type plate - **arrow** - located on bottom front of transmission next to 16-pin connector.

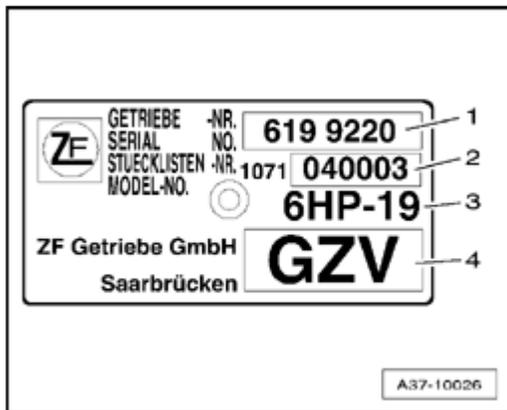


Fig. 1: Identifying Type Plate

Courtesy of VOLKSWAGEN UNITED STATES, INC.

The type plate lists the following information:

1. Serial number of transmission
2. Part number
3. Transmission designation, in this example 6HP19
4. Code letters, in this example GZV

Additional data are production-related.

NOTE:

- The code letters for the transmission are also given on the vehicle data stickers.

NOTES ON THE AUTOMATIC 6-SPEED TRANSMISSION 09L

Notes on the automatic 6-speed transmission 09L

Transmission

The 6-speed automatic transmission 09L (all wheel drive) has six hydraulically activated forward gears. When the lock-up clutch is closed these forward gears become mechanically driven gears by cutting out the torque

converter slip.

Torque converter

The torque converter is equipped with a slip-controlled lock-up clutch.

Mechatronics unit

The mechatronics unit incorporates the hydraulic control system, the electronic Transmission Control Module (TCM) J217 , the Multi-Function Transmission Range (TR) Switch F125 and the sensors and actuators as a complete unit. The mechatronics unit is installed in the transmission within the oil pan.

Transmission Control Module (TCM) J217

The control module is part of the mechatronics unit in the transmission.

The switching points are calculated automatically (depends on driving situation and driving resistance).

Advantages:

- Gear changes are timed for maximum fuel economy.
- Maximum engine output is always available
- Individual adaptation of gear change points in all driving situations
- Gear change points are infinitely variable

Self-diagnosis

Before performing repairs to the automatic transmission, determine the cause of the fault as precisely as possible using "Guided fault finding".

"Guided fault finding" is performed using the vehicle diagnostic, testing and information system VAS5051.

Gearshift point variations for hills

An additional gear change map automatically selects gear changes for hills depending on accelerator pedal position and driving speed.

- Gear change map for extreme uphill stretches is matched to engine output
- Gear change map for extreme downhill stretches is matched to the braking effect of the engine
- The engine braking effect can also be fully exploited via a specific gear, e.g. on hills when towing a trailer, by directly selecting a gear with the tiptronic.

CODE LETTERS, TRANSMISSION APPLICATION, RATIOS, EQUIPMENT

Code letters, transmission application, ratios, equipment

2008 Audi A6 Quattro

TRANSMISSION Automatic transmission 09L, all wheel drive

Automatic transmission		09L	09L
Transmission	Code letters	GUT	HAV
	Manufactured	01.04 06.04	02.04 08.04
Torque converter	Code letters	D76	H77
Application	Model	Audi A6 2005 -->	Audi A6 2005 -->
	Engine	4.2 V8 engine 247 kW	3.2 V6 engine 188 kW
Electronic Power Control (EPC) system (electronic throttle)		With electronic throttle	With electronic throttle
Primary drive		26 : 28 = 0.929	33 : 29 = 1.138
Spur gear drive to front axle		31 : 29 = 1.069	31 : 29 = 1.069
Front axle bevel gearing		30 : 9 = 3.333	32 : 11 = 2.909
Overall front drive ratio = Primary drive x spur gear drive x bevel gearing		3.309	3.539
Rear axle bevel gearing		32 : 9 = 3.556	31 : 10 = 3.100
Overall rear drive ratio = Rear axle bevel gearing x primary drive		3.302	3.528

Application of mechatronics unit according to transmission code letters.

Automatic transmission			09L	09L
Transmission	Code letters		HLK	HLL
	Manufactured	from	09.04 05.05	06.04 05.05
Torque converter	Code letters		H77	D76
Allocation	Model		Audi A6 2005 -->	Audi A6 2005 -->
	Engine		3.2 V6 engine 188 kW	4.2 V8 engine 247 kW
Electronic Power Control (EPC) system (electronic throttle)			With electronic throttle	With electronic throttle
Primary drive			33 : 29 = 1.138	26 : 28 = 0.929
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Overall rear drive ratio = Rear axle bevel gearing x primary drive			3.528	3.302

Application of mechatronics unit according to transmission code letters.

REAR FINAL DRIVE IDENTIFICATION

Rear final drive identification

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The final drive 01R is allocated to the automatic transmission 09L all wheel drive.

Assembly allocation --> **00 TECHNICAL DATA** .

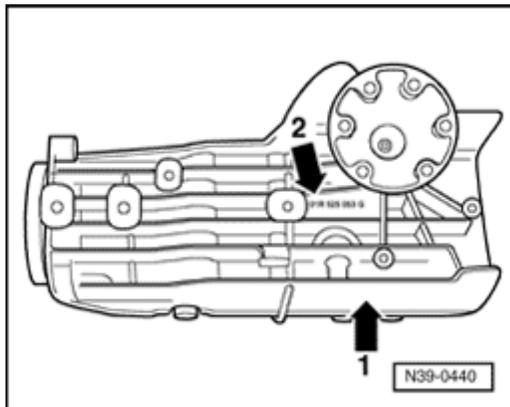


Fig. 2: Locations Of Final Drive Identification
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Location on final drive

Code letters and date of manufacture - **arrow1** -

Final drive 01R - **arrow2** -

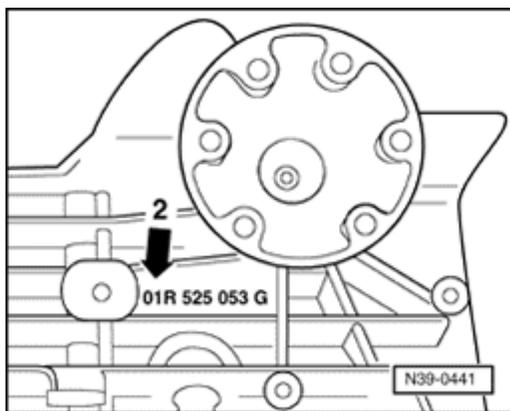


Fig. 3: Final Drive 01R
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Final drive 01R - **arrow2** -

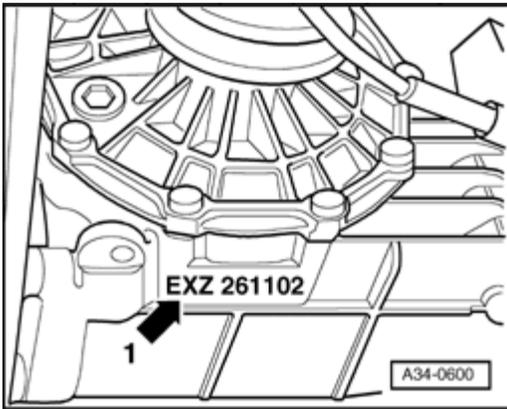


Fig. 4: Rear Final Drive Identification

Courtesy of VOLKSWAGEN UNITED STATES, INC.

Final drive code letters and date of manufacture - **arrow 1** -

Example:	EXZ	26	11	02
	I	I	I	I
	I	I	I	I
	Code letters	Day	Month	Year of manufacture (2002)

Additional data is production-related.

Code letters, ratios, capacities --> **00 TECHNICAL DATA** .

CAPACITIES

Planetary gearbox

Capacities	Planetary gearbox	Automatic transmission
Initial filling	9.8 ltr.	09L
Change interval	No changing Lifetime filling: change only after repair, approx. 8 liters if oil pan has been removed	
Lubricant	ATF (Shell ATF M-1375.4)	

ATF is available as a replacement part.

Container size 1.0 ltr. Part No. **G 055 005 A2**

Use only the correct type of ATF (available as a replacement part) for the planetary gearing in automatic transmission 09L. Other oils cause faults and/or failure of the transmission.

- o Checking ATF level in planetary gearbox --> **ATF level, checking and correcting.**

2008 Audi A6 Quattro

TRANSMISSION Automatic transmission 09L, all wheel drive

Front final drive

Capacities	Front final drive	Automatic transmission
Initial filling	1.1 ltr.	09L
Change interval	No change required Lifetime filling: change only after repairs, up to 1.1 liters if differential cover has been removed	
Lubricant	Gear oil SAE 75 W 90 (synthetic oil)	

Gear oil SAE 75 W 90 (synthetic oil) is available as a replacement part in the following container sizes:

- 0.5 ltr. - Part No. **G 052 145 A1**
- 1.0 ltr. - Part No. **G 052 145 S2**
- Checking oil in front final drive --> **Front final drive gear oil.**

Transfer gear

Capacities	Transfer gear	Automatic transmission
Initial filling	0.55 ltr.	09L
Change interval	No change required Lifetime filling: change only after repairs, up to 0.55 liters if Torsen differential cover has been removed.	
Lubricant	Gear oil SAE 75 W 90 (synthetic oil)	

Gear oil SAE 75 W 90 (synthetic oil) is available as a replacement part in the following container sizes:

- 0.5 ltr. - Part No. **G 052 145 A1**
- 1.0 ltr. - Part No. **G 052 145 S2**
- Check transfer gear oil --> **Transfer gear oil level.**

Rear final drive

- Check gear oil in rear final drive --> **39 FINAL DRIVE, REAR DIFFERENTIAL .**

Capacities and specifications --> **00 TECHNICAL DATA .**

NOTES ON TOWING

Notes on towing

CAUTION: When vehicle is being towed, the selector lever must be set to position "N" and the vehicle must not to be towed for more than 50 km or at a speed in excess of 50 km/h, as the transmission would otherwise be destroyed.

NOTE:

- **It is not possible to start the engine by means of tow-starting, for instance in the case of insufficient battery charge or if starter is not working.**

REPAIR INSTRUCTIONS

Contact corrosion

- Contact corrosion can occur if non-approved fasteners are installed on the vehicle (bolts, nuts, washers etc.).
- For this reason, all fasteners used are treated with a special surface coating. These parts can be identified by their greenish color.
- Rubber, plastic and adhesives also consist of non-conductive materials.
- If you are not sure whether used parts can be re-installed, always install new parts.

CAUTION:

- **Use only Genuine Audi parts.**
- **Accessories must be approved by AUDIAG.**
- **Damage resulting from contact corrosion is not covered by the warranty.**

General repair instructions

The maximum possible care and cleanliness and proper tools are essential for satisfactory and successful transmission repairs. The usual basic safety precautions also naturally apply when carrying out vehicle repairs.

A number of generally applicable instructions for the various repair procedures - which were previously repeated at numerous places in the article - are summarized here. They apply to the work described in this article.

Special tools

For a complete list of special tools used in this article "Special tools".

Jacking mode (vehicles with pneumatic suspension)

Before raising the vehicle on a platform (wheels off the ground) you must first activate the jacking mode --> **43 - SELF LEVELING SUSPENSION** .

Manual release of the selector mechanism

If the battery has been removed or is empty and you wish to tow or push the vehicle please note that you will have to manually release the selector mechanism from position "P" in order to be able to move it from "P" to "N" --> **Operating manual selector mechanism release.**

Transmission

- Read the rules when working on the automatic transmission --> **Read the rules**.
- Do not run engine or tow vehicle with oil pan removed or when there is no ATF in the transmission.
- If transmission has been removed from vehicle, secure torque converter to prevent it from falling out.
- Thoroughly clean all joints and surrounding areas before disassembling.
- Before installing transmission check position of torque converter.
- When installing transmission ensure dowel sleeves are correctly seated.
- Carefully cover or seal open components if repairs cannot be carried out immediately.
- When installing a new automatic transmission, check the following fluid levels and top off if necessary: ATF in the planetary gearbox --> **ATF level, checking and correcting** , the gear oil in the front final drive --> **Front final drive gear oil** , the gear oil in the transfer gear --> **Transfer gear oil level**.
- When installing a new rear final drive, check the oil level in the rear final drive and top off if necessary. Capacities and specifications --> **00 TECHNICAL DATA** .

O-rings, oil seals, gaskets

- Always install new O-rings, oil seals and gaskets.
- After removing gaskets and seals, always inspect the contact surface on the housing or shaft for burrs resulting from removal or for other signs of damage.



Fig. 5: Identifying Space Between Oil Seal Sealing Lips

Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Before installing oil seals, fill the space between the sealing lips - **arrow** - about half full with **grease G 052 128 A1** .
- The open side of the oil seals faces toward the side with fluid filling.
- Before installing, lightly lubricate outer circumference of seal and sealing lips with ATF or gear oil, depending on location.
- Lightly lubricate O-rings with ATF before installation to prevent them getting crushed during assembly.
- Use only ATF in ATF area. Other lubricants will cause the transmission hydraulics to malfunction.

- When installing a new oil seal, position the seal in the housing so that sealing lip does not contact the shaft in the same place as the old seal (make use of insertion depth tolerances).
- Replace paper gaskets, clean all sealing surfaces thoroughly and remove previous gaskets completely.
- After installing, check the relevant fluid levels and top off if necessary: ATF in planetary gearbox --> **ATF level, checking and correcting** , gear oil in front final drive --> **Front final drive gear oil** , transfer gear oil --> **Transfer gear oil level** , gear oil in rear final drive --> **39 FINAL DRIVE, REAR DIFFERENTIAL**

Nuts, bolts

- Loosen bolts in reverse sequence to the specified tightening sequence.
- Nuts and bolts which secure covers and housings should be loosened and tightened in diagonal sequence and in stages if no tightening sequence is specified.
- The tightening torques stated apply to non-oiled nuts and bolts.
- Always replace self-locking bolts and nuts.
- Use a wire brush to clean the threads of bolts which are secured by a locking compound. Then apply **locking fluid AMV 185 101 A1** to bolts before installing.
- Threaded holes which take self-locking bolts or bolts coated with locking fluid must be cleaned (using a tap or similar). Otherwise there is a danger of the bolts shearing when subsequently being removed.

Retaining rings/circlips

- Do not over-stretch circlips.
- Always renew circlips which have been damaged or over-tensioned.
- Retaining rings/ circlips must be properly seated in the base of the groove.

Bearings

- Lubricate bearings with gear oil or ATF, depending on location.

Mechatronics unit

CAUTION:

- **Before touching or removing the mechatronics unit, always discharge any static electricity by touching vehicle ground or other grounded object by hand.**
- **Never touch contacts in 16-pin connector - B - by hand, as static discharge would damage the control module and mechatronics unit.**
- Replace the transmission if any of the shift elements are scorched.
- Allocate mechatronics unit according to transmission code letters.

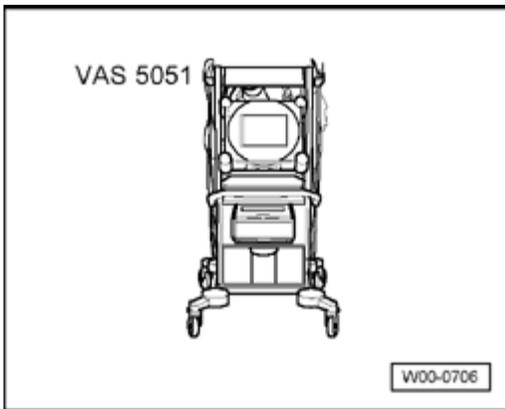


Fig. 6: VAS 5051 Vehicle Diagnosis, Testing & Information System
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Guided fault finding, vehicle self-diagnosis and testing system

- Before servicing the automatic transmission, the exact cause of the failure must be determined as precisely as possible via the vehicle diagnostic, testing and information system VAS5051 in the modes "Guided Fault Finding" , "vehicle self-diagnosis" and "testing system".

READ THE RULES

Read the rules

- Observe the general repair instructions --> **General repair instructions.**
- Thoroughly clean all joints and surrounding areas before disassembling.
- Place removed parts on a clean surface and cover them. Use sheeting and paper. Use lint-free cloths.
- Carefully cover or seal open components if repairs cannot be carried out immediately.
- Only install clean components: do not remove replacement parts from packaging until just before installation.