

# Diagnostic protocol for automatic gearbox

License plate no. ....  
 Car make and model ..... Year .....  
 Engine size and fuel ..... Mileage ..... km

Has the gearbox's oil been replaced (usually not included in service)? If yes, when? .....  
 AWD (4x4)    Emergency vehicles    Taxi    Courier    Newspaper delivery truck    Vehicles for other heavy use  
 Does the car regularly carry heavy trailers or heavy load?

<b>Lacking drive on any gear?</b>	<input type="checkbox"/> No	<input type="checkbox"/> Yes	
<b>Is the (ATF) oil burned?</b>	<input type="checkbox"/> No	<input type="checkbox"/> Yes	<input type="checkbox"/> Not checked
<b>Metal parts/coarse metal chips?</b>	<input type="checkbox"/> No	<input type="checkbox"/> Yes	<input type="checkbox"/> Not checked
<b>Glycol in the oil?</b>	<input type="checkbox"/> No	<input type="checkbox"/> Yes	<input type="checkbox"/> Not checked

*The gearbox is damaged and needs to be repaired/replaced if the gearbox is switching gears poorly and if any of the questions to the left are answered with yes.*

**Symptoms**

Is the oil level correct?  Yes  No Findings .....

Did an error occur at a specific situation? What happened? When? .....

.....

.....

Error codes from gearbox .....

Error codes from engine .....

Other error codes .....

Noise	CAR OWNER'S ANSWER	CAR MECHANICS ANSWER
<input type="checkbox"/> None <input type="checkbox"/> No information	.....	.....
Which gears? Sound level? Does the sound level increase with the car's speed? Type of sound (racing/winning)?	.....	.....

Slip	CAR OWNER'S ANSWER	CAR MECHANICS ANSWER
<input type="checkbox"/> None <input type="checkbox"/> No information	.....	.....
Which gears? Upon acceleration? When shifting gears?	.....	.....

Shifting gears	CAR OWNER'S ANSWER	CAR MECHANICS ANSWER
<input type="checkbox"/> No problem <input type="checkbox"/> No information	.....	.....
Which gears? Type of problem? Sporadic error? Is the error occurring when the gearbox is hot, cold or independent of temperature?	.....	.....

Vibrations	CAR OWNER'S ANSWER	CAR MECHANICS ANSWER
<input type="checkbox"/> None <input type="checkbox"/> No information	.....	.....
When (speed, speed, throttle, engine brake)? Does the vibration increase at the speed of the car or the engine speed? How powerful is the vibration?	.....	.....

## Car mechanic's comments about gearbox symptoms and the customer style of driving

Some automatic gearboxes can also be manually switched. Are the error symptoms different when manually switching gears?

### Describe the difference

### Procedure

**If the automatic gearbox appears to be involved in the symptoms that the car is showing, a number of tests should be performed to show if the automatic gearbox is defective and, regardless of the origin of the problem, if it needs to be replaced. For example, if there is glycol in the gearbox's oil.**

It is often difficult to get a completely clear message if it is the automatic gearbox or, for example, a control computer that is defective. In-depth troubleshooting through exclusion by remedying possible sources of error (parts/oil) is an accessible way until actions begin to be too costly for the customer. After in-depth troubleshooting, the likelihood of the whole error being resolved by replacing the gearbox is high. Only about 5% of the cases still have some kind of electronics failure that needs further troubleshooting after replacing the gearbox. If the fault

persists after the gearbox has been replaced contact the gearbox supplier for technical support. Faults in, for example, a control computer or air massometer may cause a new gearbox breakdown.

#### After-inspection and documentation

After a gearbox replacement, a check is performed according to instructions and work is completed by archiving all documentation about the reason for the gearbox replacement (fault description/troubleshooting). Copies are sent to the supplier of the gearbox and to the customer. Post-check and documentation are very helpful if the reason for the change of the gearbox turns out to be a malfunction in a car which needs further investigation.

#### About "high mileage cars"

The automatic gearbox in a so-called "high mileage car", where the service has

been neglected, is tired. If the automatic gearbox is not working properly, it is usually a change of gearbox that is needed. It is therefore rarely worth to perform an oil flushing, this type of gearbox often get worse from a flushing.

What is considered to be a "high mileage car" varies, but in this context a mileage of 250 000 km is considered a guideline.

#### About flushing of an automatic gearbox before a gearbox change

Always start by checking and controlling the oil level. Low levels usually affect the gearbox's function more than too high level.

- Is the oil tired? Flush the gearbox.
- Does the gearbox slip (not completely burned oil)? Flush gearbox.
- Poor gear switching when the gearbox is cold? Flush the gearbox.

### Instructions for driving a car with error symptoms in the automatic gearbox

**Test drive is a key part of the troubleshooting. With a memorandum list, it will be easier to take full advantage of trial run - it's not always you get more than one chance. The test run should take place both when the automatic gearbox is cold and when it is warm. Several symptoms are only noticeable when the gearbox is cold, while others only appear when it is warm.**

- Please note the customer's description of the problems experienced. Be sure to also test drive according to the customer's instructions for the best chance to repeat the customer's problem. The rest of the test run will be used to find other potential errors.
- Start the car in parking position (P).
- With the brake pedal depressed, shift to D and then R.

- Shift to R and back up a little bit.
- Shift to D and drive with light acceleration.
- Be particularly observant of lock-up (usually on top gear, but it is now common with lock-up on lower gear).

**Keep an eye on the turntable. With lockup locked, the speed will only increase with the car's speed - otherwise the speed increases as soon as you accelerate.**

- Engine brake so that the gearbox switches a gear. Press the gas pedal to accelerate slightly. Does the gear shift appear normal? Brake the engine again so that the gearbox shifts to a lower gear and repeat this procedure until all gears are tested.
- Accelerate faster until you reach the highest gear (be aware of speed limits

- retrieve last gear if necessary).
- Try kick-down from any of the higher gears by gasping strongly.

The automatic gearbox should be warm by now. Repeat the test run with the same accuracy as before.

If error codes appear during test run: does the car go into emergency mode?

#### Avoid test driving of a car that has:

- **strong dissonance**
  - **heavy slip**
  - **too little oil**
  - **glycol in the oil**
- This could significantly reduce the condition of the gearbox!**