



# Diagnosis of the automatic gearboxes 0AM and 02E

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Self-study programme

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# 1. Introduction

This workshop teaching aid complements the previously published self-study brochures:

- SSP No. 56, six-speed automatic transmission 02E
- SSP No. 75, seven-speed automatic transmission 0AM

Important **technical modifications** are described in this brochure, which have been carried out since the publication of the above mentioned SSP.

The main part of the teaching aid is dedicated to describing the correct implementation of the diagnosis of the automatic gearboxes 02E and 0AM, finding the causes of problems and faults that can occur when operating vehicles with these gearboxes, as well as determining the procedure for their rectification, including references to the corresponding maintenance documentation.

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You will find the instructions for the installation and removal, repair, diagnosis as well as detailed user information in the diagnostic units VAS and in the onboard literature.

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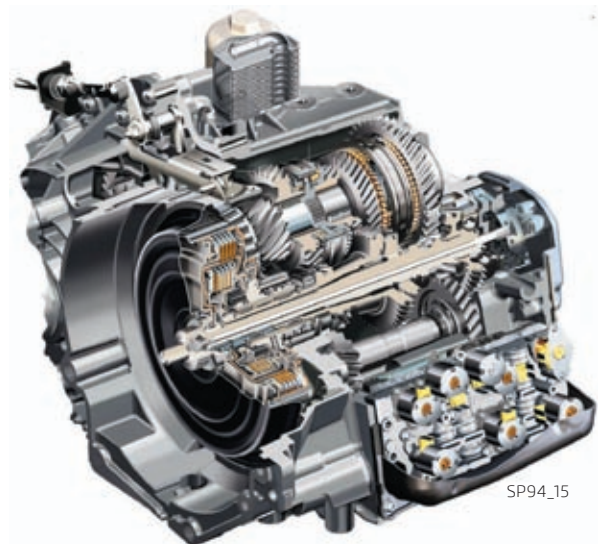


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## 2. Comparison of the automatic gearboxes

### Automatic gearboxes OAM and O2E - Specification

Designation of gearbox	OAM (DQ 200)	O2E (DQ250)
Number of gears	7	6
Torque transmission	up to 250 Nm	up to 350 Nm
Design of the clutch	The torque is transmitted by the two-plate dry clutch and by means of mechanical actuation	The torque is transmitted by the oil-bathed two-plate dry clutch
Oil circuit	The oil circuit of the mechatronics is separated from the oil circuit of the gearbox	Mutual oil circuit for the gearbox as well as the mechatronics
Oil cooling	No heat exchanger for the oil or the coolant	Oil cooler
Oil pump	Electrical oil pump in the mechatronics (shifting based on need)	The mechanical oil pump, located on the gearbox, is permanently connected
Filling quantities of gearbox oil	1.7 ltr.	7.2 ltr.
Interval for gearbox oil change	filled for life	after 60 000 km



### 3. Seven-speed automatic transmission OAM



#### 3.1 Changes in the mechanical part of the gearbox OAM

##### 3.1.1 Modification of the clutches as of 01.06.2011 (PK02 package)

On the seven-speed automatic transmission OAM, changes in the design of the clutch were carried out as of 01.06.2011.

The modified clutch cannot be exchanged against the original clutch which was fitted up to the stated date.

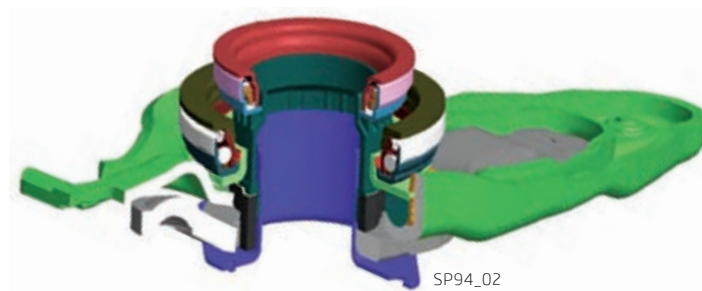


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#### Description of the changes:

- a) Design modifications to the cut-off levers of the clutches - Replacement of forgings by plate compacts (changing the lever's shape).



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b) Modified bearing on the new version of the cut-off lever for the clutches



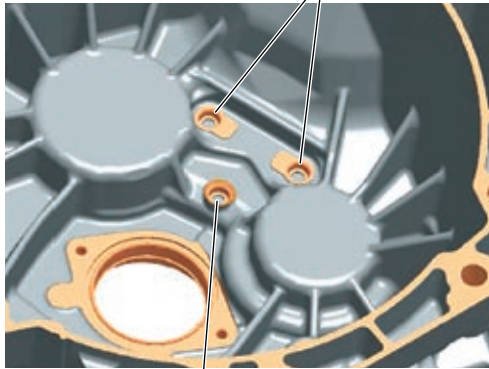
new assembly of the lever on clutch K1\*  
(as of 01.06.2011)



new assembly of the lever on clutch K2\*  
(as of 01.06.2011)

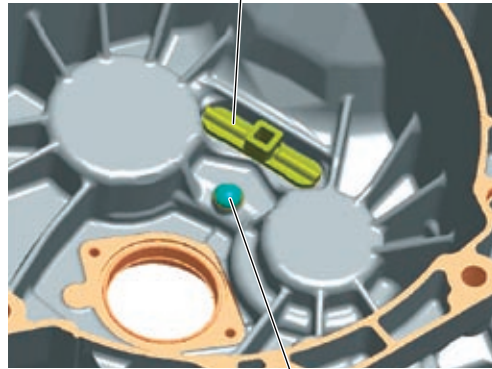
c) Changes to the shape of the housing on the dual-clutch and modified bearings of the clutch levers in the housing

new bolt bearing of the lever on  
clutch K1\*



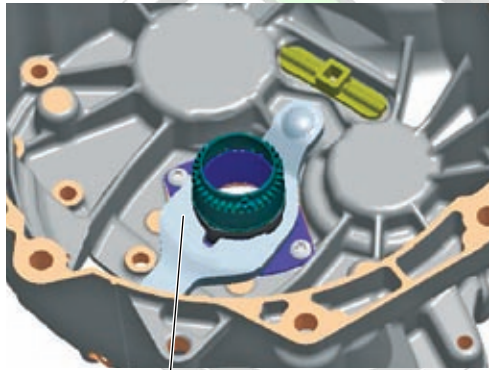
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new bolt of the lever on  
clutch K1\*



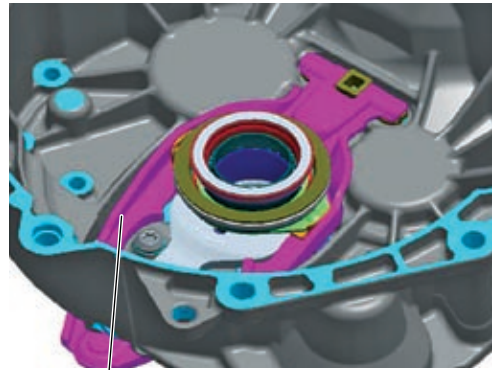
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new bolt bearing of the lever  
on clutch K2\*



SP94\_07

new bolt of the lever on  
clutch K2\*



SP94\_08

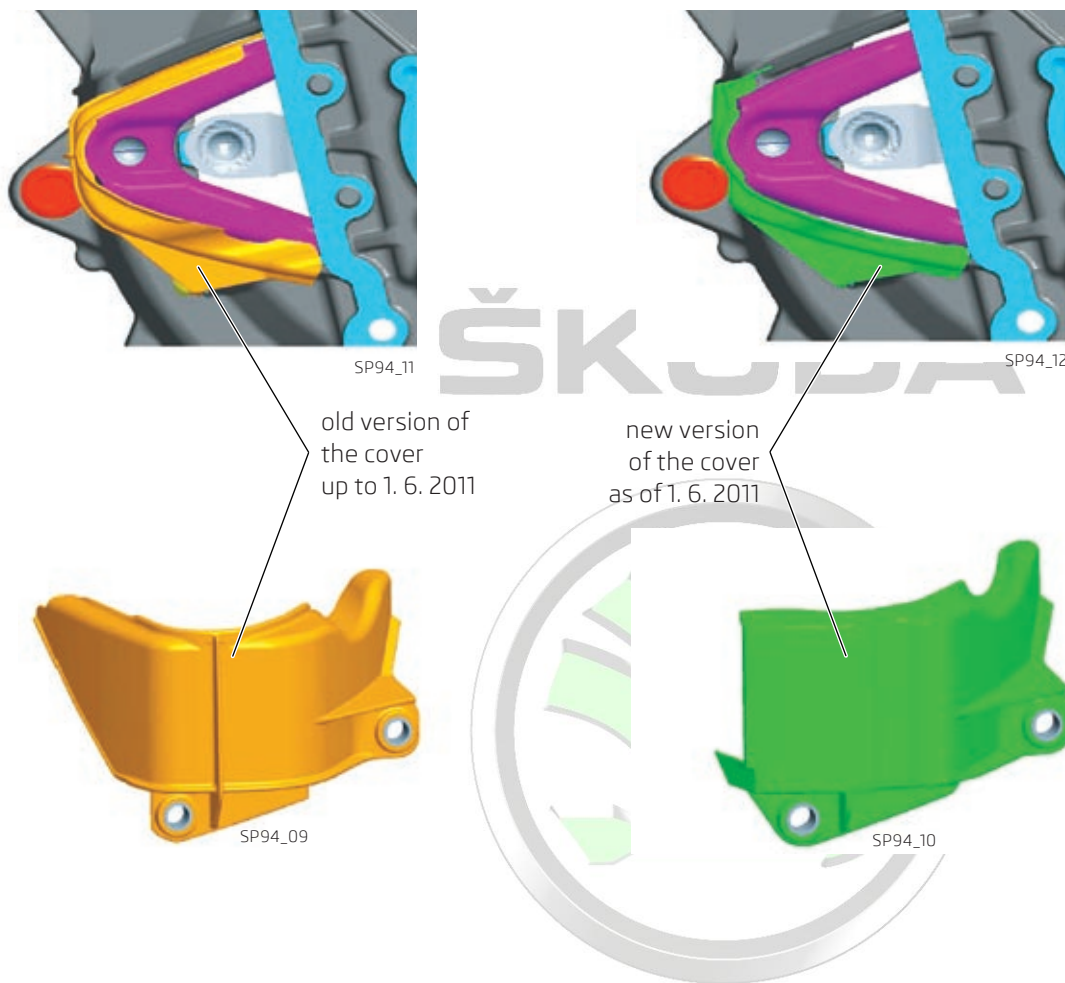
lever on clutch K2\*  
(as of 01.06.2011)

lever on clutch K1\*  
(as of 01.06.2011)

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\* Designation of the individual clutches K1, K2, see brochure SSP75.

d) Modification of the clutch lever cover (depending on the changes carried out to the shape of the lever):



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## 3.2 Diagnosis of the automatic gearbox 0AM

### 3.2.1 Introduction

The following operating modes are available in the diagnostic unit VAS:

- **controlled fault finding**
- **controlled functions**

The gearbox electronics enables the following functions:

- Identification services (information regarding the installation)
- Coding of the gearbox control unit (code 20 for 02E and 0AM)
- Reading the measured values
- Basic setting - complete (checking the shifting of the gears, setting the engagement point on the clutches)
- Basic setting - neutral (only before replacing the mechatronics, all the adjusters must be in the neutral position)
- Modification
- Fault storage in the event memory
- Processing the measured values and their display in the measured value block

Shifting into the basic setting is carried out in accordance with:

- the mechatronics assembly
- the gearbox assembly
- the selector lever assembly
- the installation of other control units (e.g. engine control units), ABS or diagnostic interface for data buses (Gateway)

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### 3.2.2 Measured value blocks

Selected measured value blocks of the gearbox electronics serve to carry out a correct fault diagnosis on the automatic gearboxes DSG. Therefore, if a fault is detected on the automatic gearbox, a printout of all the measured value blocks must be sent (at idle speed, if the vehicle is stationary or in P, N or D mode). The following information can be read in the measured value blocks (MVB):

- Identification of the software and hardware level of the automatic gearbox control unit
- current operating values (oil pressure values in the mechatronics, positions of the individual gear adjusters, clutch status, speeds of the individual shafts, selector lever position, etc.)
- the current values recorded during the operation (journey time in the individual driving modes, operating temperatures of the clutches, journey time in all operating temperatures and warnings, etc.)
- specific environmental conditions when the last two faults occurred

#### Description of the operating mode for actuating the automatic gearbox

- The mechatronics controls the individual gearbox parts by means of its actuators. It comprises two actuation elements, each operating the corresponding clutch K1 or K2 independently. Furthermore, it comprises four actuation elements for changing the gears (1+3, 2+4, 5+7, 6+R). The positions of all the actuation elements can be checked using the measured value blocks (MVB).
- It is important that the mechatronics is supplied with pressure oil in order to ensure its proper operation. Insufficient pressure can cause a jolt or a complete loss of function of the automatic gearbox. The current pressure can be checked in the MVB 30.3.
- The mechatronics alters the contact pressure exerted on the corresponding clutch depending on the transmitted torque – thus, the clutch is not permanently under continuous pressure, yet it changes while driving.
- The state of the clutch K1 can be determined by reading the MVB 95-97, whereas the state of the clutch K2 can be determined by reading the MVB 115-117. It is possible to determine the current position of the adjuster for K1 in the MVB 91 and for K2, in the MVB 111.
- The MVB 235-244 store the environmental conditions at the last fault entry, the MVB 245-254 store the environmental conditions at the entry of the second last fault.

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#### Important measured value blocks

Measured value blocks		
Nbr.	Description	Value example
4.1	Position of the selector lever (E313)	P (R, N, D, S, T+, T-)
5.1	Gearbox input speed (sender G641 / G182, i. e. in front of the clutches)	766/rpm
5.2	Engine speed (CAN value)	766/rpm
5.3	Input shaft speed 1 (sender G632 – behind the clutch K1)	0/rpm
5.4	Input shaft speed 2 (sender G612 – behind the clutch K2)	0/rpm
80.1	Manufacturing date of the mechatronics	TFK-535 05.07.11
30.1	Max. permitted pressure in the mechatronics (S1 max.)	60.00 bar
30.2	Min. permitted pressure (S4 min.)	42.00 bar
30.3	Actual pressure value (V401)	30.34 bar (example of an incorrect/low value)

**Current position of the actuation elements of the clutches (when the vehicle is stationary in P mode):**

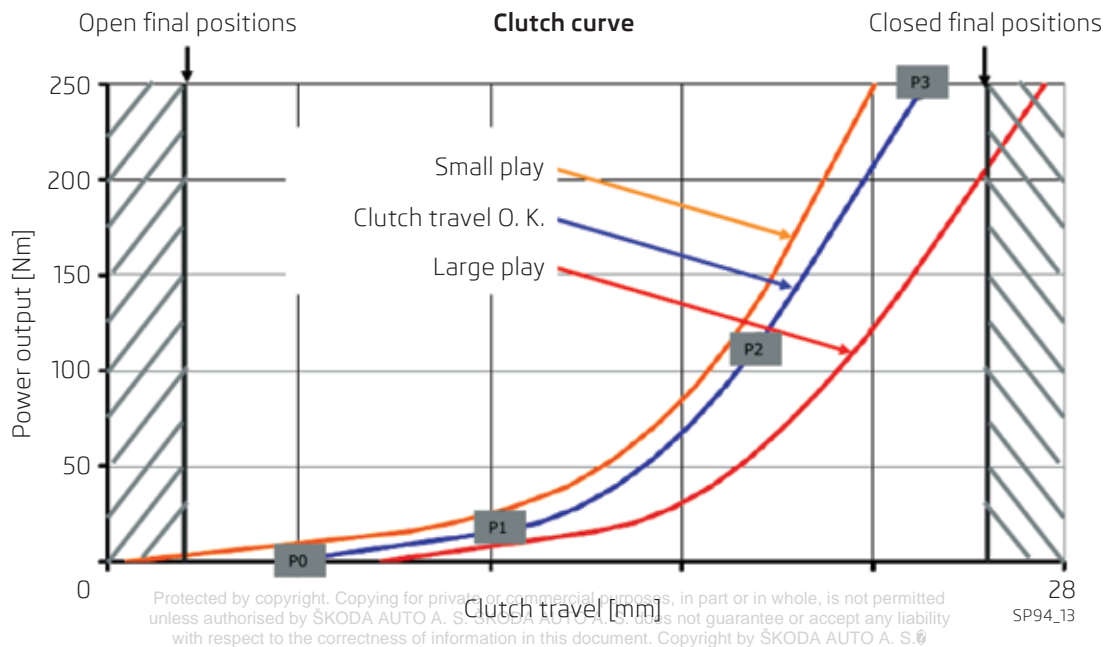
**Measured value blocks: Current position of the actuation elements of the clutches - Example of the values in P**

Nbr.	Description	Value example
91.1	Desired position of the adjuster for K1	0.0 mm
91.2	Actual value of the adjuster for K1	2.1 mm
111.1	Desired position of the adjuster for K2	0.0 mm
111.2	Actual value of the adjuster for K2	2.3 mm

While driving it is almost impossible to distinguish between the nominal or the actual value, only when the vehicle is stationary in the P or N mode is the actual position of the adjuster slightly higher than when in the desired position.



**Clutch characteristic curve**



- Blue curve: The characteristics of the clutch are O. K.
- Red curve: The clutch closes already at 200 Nm, however it should transmit a torque of up to 250 Nm. The customer complains about weak engine power, the vehicle can also jolt.
- Yellow curve: The clutch is engaged, which can be determined from the measured value blocks 5.3 and 5.4.

## State of the play and wear of K1 in the measured value blocks

Measured value blocks - State of play and wear of clutch K1				
Nbr.	Description	Example No. 1	Example No. 2	Example No. 3
95.1	Changes to the position 0	9.0 mm	<b>3.0 mm</b>	12.0 mm
95.2	Torque for the position 0	0.0 Nm	0.0 Nm	0.0 Nm
95.3	Changes to the position 1	11.7 mm	6.7 mm	14.7 mm
95.4	Torque for the position 1	16.0 Nm	16.0 Nm	16.0 Nm
96.1	Changes to the position 2	18.2 mm	14.2 mm	22.0 mm
96.2	Torque for the position 2	153.4 Nm	153.4 Nm	153.4 Nm
96.3	Changes to the position 3	21.6 mm	20.3 mm	<b>26.3 mm</b>
96.4	Torque for the position 3	249.9 Nm	249.9 Nm	193.3 Nm
97.1	<b>Clutch K1 - Final position in the open position</b>	2.4 mm	<b>2.4 mm</b>	2.4 mm
97.2	<b>Clutch K1 - Final position in the closed position</b>	27.4 mm	27.4 mm	<b>27.4 mm</b>

### 95.1 minus 97.1 must be greater than 2 mm,

Due to insufficient clutch play, shifting of the input shaft occurs. (This will be entered in the fault memory.)  
See example No. 2 and a low difference in value of the blocks 95.1 minus 97.1.

### 97.2 minus 96.3 must be greater than 1 mm,

At a lower value the maximum torque is not transmitted and a clutch slippage occurs. The vehicle may start to jolt when driving in higher gears or when accelerating. (This will be entered in the fault memory.)  
See example No. 3 and a low difference in value of the blocks 97.2 minus 96.3 (subsequently a low torque is transmitted and entered in block 96.4.).

## State of the play and wear of K2 in the measured value blocks

Measured value blocks - State of play and wear of clutch K2				
Nbr.	Description	Example No. 1	Example No. 2	Example No. 3
115.1	Changes to the position 0	8.3 mm	<b>3.1 mm</b>	12.0 mm
115.2	Torque for the position 0	0.0 Nm	0.0 Nm	0.0 Nm
115.3	Changes to the position 1	10.4 mm	6.7 mm	14.7 mm
115.4	Torque for the position 1	16.0 Nm	16.0 Nm	16.0 Nm
116.1	Changes to the position 2	17.4 mm	14.2 mm	22.0 mm
116.2	Torque for the position 2	153.4 Nm	153.4 Nm	153.4 Nm
116.3	Changes to the position 3	21.6 mm	20.3 mm	<b>26.3 mm</b>
116.4	Torque for the position 3	249.9 Nm	249.9 Nm	193.3 Nm
117.1	<b>Clutch K2 - Final position in the open position</b>	2.4 mm	<b>2.4 mm</b>	2.4 mm
117.2	<b>Clutch K2 - Final position in the closed position</b>	27.4 mm	27.4 mm	<b>27.4 mm</b>

### 115.1 minus 117.1 must be greater than 2 mm,

Due to insufficient clutch play, shifting of the input shaft occurs. (This will be entered in the fault memory.)  
See example No. 2 and a low difference in value of the blocks 117.1 minus 115.1.

### 117.2 minus 116.3 must be greater than 1 mm,

At a lower value the maximum torque is not transmitted and a clutch slippage occurs. The vehicle may start to jolt when driving in higher gears or when accelerating. (This will be entered in the fault memory.)  
See example No. 3 and a low difference in value of the blocks 117.2 minus 116.3 (subsequently a low torque is transmitted and entered in block 116.4.).

## Modification of the clutches

### Measured value blocks: Modifications of the clutches K1 and K2

Nbr.	Description	Value example
180.1	Clutch 1 – number of successful changes	236
180.2	Clutch 1 – last successful change made to the mileage travelled (in km)	15 240 km
200.1	Clutch 2 – number of successful changes	322
200.2	Clutch 2 – last successful change made to the mileage travelled (in km)	15 410 km

The minimum value for a new vehicle amounts to 50 successful changes. Further changes are continuously carried out while driving. In special cases and in specific driving modes, it may happen that it is not possible to carry out this change over an extended period of time and thus the vehicle becomes uncomfortable when shifting. This can be traced back from the MVB for the last successful change. In such a case it is necessary to perform a basic setting and to carry out a test drive according to the instructions in the VAS.

### Printout of the environmental conditions for the last two faults stored in the event memory

All collision values from the measured value blocks are stored in the event memory. In this way, a printout of the environmental conditions for the **last** as well as the **second last** recorded faults is stored. An example of a printout for the environmental conditions from the fault memory is provided below.

#### Printout of the environmental conditions when the last fault was recorded:

235_1 snapshot 1 ID of the fault	116	237_4 snapshot 1 shaft speed	2 192/rpm	239_2 snapshot 1 actuation elements of the gears 2-4, actual current of the valve	0.528 A	241_1 snapshot 1 accelerator pedal	0.00 %
235_2 snapshot 1 km	68340 km	238_1 snapshot 1 actual position of the gears 1-3	-0.3 mm	239_3 snapshot 1 actuation elements of the gears 5-7, actual current of the valve	0.540 A	241_2 snapshot 1 engine torque with external depressions	-7.8 Nm
235_3 snapshot 1 counter	11	238_2 snapshot 1 actual position of the gears 2-4	-0.3 mm	239_4 snapshot 1 actuation elements of the gears 6-R, actual current of the valve	0.528 A	241_3 snapshot 1 part transmission 1, actual current of the valve	0.588 A
235_4 snapshot 1 pressure supply, actual pressure	48.50 bar	238_3 snapshot 1 actual position of the gears 5-7	-0.3 mm	240_1 snapshot 1 actual position of the clutch 1	12.8 mm	241_4 snapshot 1 part transmission 2, actual current of the valve	0.570 A
236_1 snapshot 1 selector lever pos.	P	238_4 snapshot 1 actual position of the gears 6-R	-0.2 mm	240_2 snapshot 1 actual position of the clutch 2	20.8 mm	242_1 snapshot 1 voltage of terminal 15	14.2 V
236_2 snapshot 1 vehicle clutch	0x0014	239_1 snapshot 1 actuation elements of the gears 1-3, actual current of the valve	0.534 A	240_3 snapshot 1 clutch 1, actual current of the valve	0.000 A	242_2 snapshot 1 voltage of terminal 30, electric motor	14.2 V
236_3 snapshot 1 desired gear	7			240_4 snapshot 1 clutch 2, actual current of the valve	0.000 A	242_3 snapshot 1 hybrid temperature	0.0 °C
236_4 snapshot 1 preselected gear	6					242_4 snapshot 1, temperature of clutch 1 and 2, maximum	90.0 °C
237_1 snapshot 1 speed, drive	1056/rpm						
237_2 snapshot 1 speed, output	2496/rpm						
237_3 snapshot 1 shaft speed	11 088 /rpm						

#### Printout of the environmental conditions when the second last fault was recorded:

245_1 snapshot 2 ID of the fault	117	247_4 snapshot 2 shaft speed	2 192/rpm	249_2 snapshot 2 actuation elements of the gears 2-4, actual current of the valve	0.528 A	251_1 snapshot 2 accelerator pedal	0.00 %
245_2 snapshot 2 km	68340 km	248_1 snapshot 2 actual position of the gears 1-3	-0.3 mm	249_3 snapshot 2 actuation elements of the gears 5-7, actual current of the valve	0.540 A	251_2 snapshot 2 engine torque with external depressions	-7.8 Nm
245_3 snapshot 2 counter	12	248_2 snapshot 2 actual position of the gears 2-4	-0.3 mm	249_4 snapshot 2 actuation elements of the gears 6-R, actual current of the valve	0.528 A	251_3 snapshot 2 part transmission 1, actual current of the valve	0.588 A
245_4 snapshot 2 pressure supply, actual pressure	48.50 bar	248_3 snapshot 2 actual position of the gears 5-7	-0.3 mm	250_1 snapshot 2 actual position of the clutch 1	12.8 mm	251_4 snapshot 2 part transmission 2, actual current of the valve	0.570 A
246_1 snapshot 2 selector lever pos.	P	248_4 snapshot 2 actual position of the gears 6-R	-0.2 mm	250_2 snapshot 2 actual position of the clutch 2	20.8 mm	252_1 snapshot 2 voltage of terminal 15	14.2 V
246_2 snapshot 2 vehicle clutch	0x0014	249_1 snapshot 2 actuation elements of the gears 1-3, actual current of the valve	0.534 A	250_3 snapshot 2 clutch 1, actual current of the valve	0.000 A	252_2 snapshot 2 voltage of terminal 30, electric motor	14.2 V
246_3 snapshot 2 desired gear	7			250_4 snapshot 2 clutch 2, actual current of the valve	0.000 A	252_3 snapshot 2 hybrid temperature	0.0 °C
246_4 snapshot 2 preselected gear	6					252_4 snapshot 2 temperature of clutch 1 and 2, maximum	90.0 °C
247_1 snapshot 2 speed, drive	1056/rpm						
247_2 snapshot 2 speed, output	2496/rpm						
247_3 snapshot 2 shaft speed	11 088 /rpm						

### 3.2.3 Faults of the gearbox OAM and their rectification

#### List of common faults

- 1a. - Vehicle does not run, gearbox control unit without communication.
- 2a. - Uncomfortable sensation during start-up (jerking when starting up), fault in the event memory P0841 02115X or 02113 sender 1 of hydraulic pressure, gearbox - signal invalid.
- 3a. - Metal noise when driving over bumps, memory without faults, SW less than 21xx.
- 4a. - Some gears do not shift, faults will be entered in the event memory.
- 5a. - Uncomfortable sensation during start-up (jerking during acceleration, especially if going uphill or under load).
- 6a. - Uncomfortable sensation during start-up or when accelerating, SW 21xx and higher, event memory without faults, clutches O.K. according to MVB.
- 7a. - Uncomfortable sensation when accelerating, in 2nd gear at low speed, SW 21xx and higher, event memory without faults, clutches O.K. according to MVB.
- 8a. - Delayed upshifting and poor operation of the cruise control on the 1.6 TDI CR 77 kW.
- 9a. - Noise coming from the gearbox, 6th gear cannot be shifted, fault P073B.
- 10a. - The display of the gears flashes, the vehicle does not run.
- 11a. - The display of the gears lights up, the vehicle does not run.
- 12a. - The gear(s) does/do not shift.
- 13a. - The gears do not shift, the display of the gears flashes.

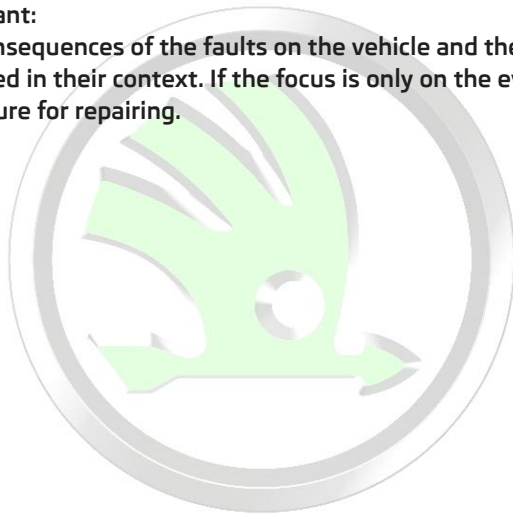
#### Faults after replacing the components

- 1b.- After replacing the mechatronics, the basic setting cannot be performed, it is not possible to shift into any gears.
- 2b.- After replacing the clutches, the basic setting cannot be performed, it is not possible to shift into any gears, clutch is outside the tolerance.



#### Important:

**The consequences of the faults on the vehicle and the diagnostic results must always be fully assessed in their context. If the focus is only on the event memory, it can result in an incorrect procedure for repairing.**



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### 1a. The vehicle does not run, gearbox control unit without communication.

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*Assessment:*

- In the event memory: P0562 / 21148 Supply voltage for the engine too low  
P177F / 21065 Excessive voltage drop of hydraulic pump motor  
P175F / 21098 Basic setting of the gearbox not performed  
P189C / 21247 The diagnosis of the pressure increase cannot be carried out  
P174A / 21108 Valve 3 in the gearbox part, electrical fault or automatic gearbox control unit without communication
- In other control units, faults in the communication with the gearbox control unit (mechatronics)

*Cause:*

**It is an internal fault of the mechatronics - short circuit in the power supply part.  
This fault occurs on vehicles with mechatronics manufactured up to 01.06.2011.**

*Solution:*

**TPI 2023768** (Replacing the mechatronics, checking/replacing the fuse SB2/SB5)

### 2a. Uncomfortable sensation during start-up. Jerking during start-up.

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*Assessment:*

- SW of the control unit of the automatic gearbox 21xx, or lower.
- In the event memory: P0841 02115X or 02113 sender 1 of hydraulic pressure, gearbox - signal invalid.

*Cause:*

**The cause of the fault is a slow oil pressure build-up after the ignition is switched on.**

*Solution:*

**TPI 2027607** (Updating the SW of the automatic gearbox control unit using the so-called Action Code)

### 3a. Metal noise when driving over bumps in 2nd gear.

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*Assessment:*

- Metal noise at slow speed when driving over bumps
- No faults are stored in the event memory
- SW of the automatic gearbox control unit lower than 21xx

*Cause:*

**This is caused by the excitation of oscillations when upshifting into the 3rd gear**

*Solution:*

**TPI 2027607** (Updating the SW of the automatic gearbox control unit to SW 21 xx and higher using the action code). The SW 21xx and higher receives the ABS signal indicating when the vehicle drives over bumps, thereby the mechatronic system disengages the 3rd gear and activates the clutch K1. Thus, damping force is applied in response to the shocks. The 3rd gear is then only shifted at the time when it is necessary.

#### 4a. Gears are not shifted.

##### Assessment:

- Some gears are not shifted
- The vehicle does not run and the display of the selector lever flashes.
- In the event memory: Gear X cannot be shifted

##### Cause:

**Carry out a test of the speed for the input shafts (MVB 5.3 and 5.4) at idling speed in P and N modes. The input shafts must not rotate. However, if they rotate, check the positions of the adjuster for the clutches (MVB 91 and 111), they must be a min. of 2 mm below the engagement point when in the P mode (otherwise the mechatronics is defective).**

**If the following is entered in the event memory:**

**P189A/21186 clutch 1 - insufficient play**  
**P073F/21086 unsuccessful synchronisation of the 1st gear**  
**P072C/21066 1st gear cannot be engaged**

##### Solution:

**TPI 2025571** (Replacing the clutches). This is caused by the insufficient play of clutch K1 due to the clutch engaging too early (this affects vehicles fitted with clutches manufactured in the CW 12/2009)

If the input shafts do not rotate in the P mode and the following is still entered in the event memory: gear x cannot be engaged, remove the mechatronics and check the adjusters of the individual gears for mechanical damage (adjuster jammed = defective gearbox).

#### 5a. Uncomfortable sensation during start-up. Jerking during acceleration, especially if going uphill or under load).

##### Assessment:

- Jerking during acceleration or when starting up (not just a single jerk).
- SW of the control unit of the automatic gearbox is 21xx, or higher
- Engine running is O.K.
- One fault is entered in the event memory - one of the clutches has reached the upper tolerance limit or exceeded it and is free of defects, faults

##### Solution:

**TPI 2027607** If no fault is entered in the event memory, perform the basic setting and check once more the fault during the test drive.

If the fault is not rectified after performing the basic setting, check the condition of the clutches according to the MVB 95-97 and 115-117. If one of the clutches has nearly reached the wear limit or is below the wear limit for transferring the max. torque, replace the clutches.

#### 6a. Uncomfortable sensation during start-up or when accelerating. Jerking.

##### Assessment:

- A single jerk (not several) when starting up or after shifting (sometimes this situation is described by the customer as a delay in the acceleration or as a short-term increase in engine speed with acceleration failure)
- SW of the automatic gearbox control unit 21xx and higher
- Engine running is O.K.
- Condition of the clutches according to MVB 95-97 and 115-117 is O.K.
- No fault is entered or faults are entered in the event memory

##### Cause:

**If the position of the clutch adjuster cannot be changed steplessly, jolts occur i.e. when starting up or when shifting into gears; this may be caused by impurities in the mechatronics leading to an erratic movement of the actuation element of the clutch.**

##### Solution:

**Replacing the mechatronics.**



### 7a. Uncomfortable sensation when accelerating, jerking when accelerating slightly in the 2nd gear at low engine speed.

#### Assessment:

- Jerks/vibrations when changing gears from 1st to 2nd gear (always repeated jolts, not just a single jolt)
- Jerks and vibrations at low speeds or when accelerating slightly from approx. 1200 to 2000 rpm in 2nd gear
- Engine running is O.K.
- Condition of the clutches according to MVB 95-97 and 115-117 is O.K.
- No faults are stored in the event memory

#### Cause:

**Uneven power transmission of clutch K2 (change of friction coefficient) when engaging and disengaging the clutch K2**

#### Solution:

**TPI 2028367** Replacing the clutch set (using the clutch set see TPI, not according to the company ETKA).

### 8a. Delayed upshifting and poor operation of the cruise control on the 1.6 TDI CR 77 kW.

#### Assessment:

- When driving slowly on a slope (most often in parking garages) the vehicle changes late from the 1st into the 2nd gear
- When activating the cruise control with the SET button (most often at about 140 km/h), the vehicle downshifts two gears, the cruise control remains active and the vehicle operates at high speed
- The fault can be detected even after replacing the mechatronics

#### Cause:

**- Fault of the SW of the automatic gearbox control unit.**

#### Solution:

**TPI 2028079** (Updating the SW of the automatic gearbox control unit using the so-called Action Code)

### 9a. Noise coming from the gearbox, 6th gear cannot be shifted, fault P073B.

#### Assessment:

- Noise coming from the gearbox
- 6th gear cannot be shifted
- After switching off and on the ignition, the gearbox is O.K.
- The following is stored in the event memory: P073B - 6th gear cannot be engaged, invalid signal

#### Cause:

**- Fault of the SW of the automatic gearbox control unit.**

#### Solution:

Online updating of the SW of the automatic gearbox control unit (on SW 26xx, or 34xx)

### 10a. The display of the gears flashes, the vehicle does not run.

---

*Assessment:*

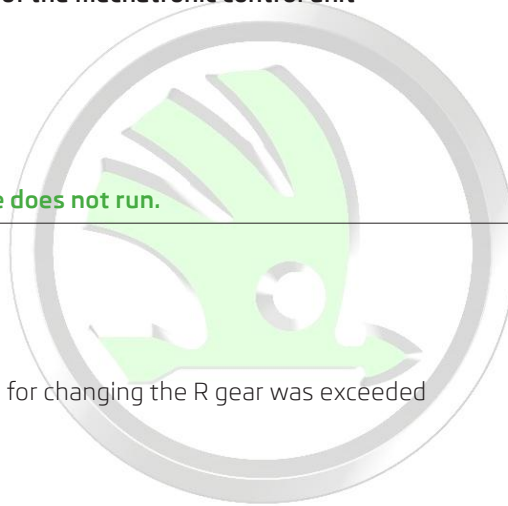
- The display of the gears flashes
- The vehicle does not run
- The following is stored in the event memory:
  - 21062/21184 - P175 clutch 1 switches off inadvertently
  - 21063/21185 - P176E clutch 2 switches off inadvertently
  - 21094/21095 - P072C/D 1st/2nd gear cannot be shifted
  - 21096/21097 - P073A/B 5th/6th gear cannot be shifted

*Cause:*

**Fine impurities in the pressure control valves of the mechatronic control unit**

*Solution:*

**TPI 2027598** (Replacing the mechatronics)



### 11a. The display of the gears lights up, the vehicle does not run.

---

*Assessment:*

- The display of the gears lights up.
- The vehicle does not run
- The following is stored in the event memory:
  - P072B/21073 Number of authorised attempts for changing the R gear was exceeded
  - P2789/10121 Path 4 of clutch 2 is too short
  - P1899/21265 Function of clutch 2 is limited

*Cause:*

**The path of the plunger for clutch K2 is too short. This applies to vehicles fitted with a clutch manufactured up to 25.05.2009.**

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*Solution:*

**TPI 2025592** (Basic setting and drive for adapting the clutch, if the fault persists, replace the clutch set).

### 12a. Certain gears cannot be shifted.

---

*Assessment:*

- Initially sporadic, at a later stage the display of the gears remains lit
- Noise while shifting
- The vehicle does not run (initially sporadic)
- The following fault(s) is/are stored:
  - P173A - Transducer 1, paradoxical signal
  - P173B - Transducer 2, paradoxical signal
  - P173C - Transducer 3, paradoxical signal

*Cause:*

**Metal shavings on the magnets for holding the positions of the adjuster/adjusters of the gears. This applies to gearboxes manufactured up to 08.10.2008.**

*Solution:*

**TPI 2026829** (Replacing the gearbox).

### 13a. Certain gears cannot be shifted, the display of the gears flashes.

---

*Assessment:*

- The vehicle does not shift into another gear
- The display of the gears flashes
- Vibrations/jerks while driving
- Sometimes the vehicle does not start
- The following fault is stored in the event memory: P171BF 2127X, or 1538 – Play protection for hydraulic pump

*Cause:*

**Internal fault of the mechatronics, this applies to mechatronics manufactured up to CW 45/2010.**

*Solution:*

**TPI 2024664** (Replacing the mechatronics)

#### Faults after replacing the components

### 1b. After replacing the mechatronics, the basic setting cannot be performed.

---

*Assessment:*

- After replacing the mechatronics, the basic setting cannot be performed and it will be completed with a fault code
- The following fault is shown in the event memory: upper limit of clutch tolerance is reached
- The following fault is shown in the event memory: e.g. gear x cannot be shifted, it is not adjustable

*Recommendation:*

- Inspecting the plastic cap on the actuation element for clutches (the cap can be torn off or is lost when using an incorrect tool or during a negligent installation)
- Inspecting the correct seating of the clutch adjuster. If the clutch adjuster is not located in the correct position, one of the clutches may be partially coupled, for this reason, the input shaft is engaged (check the speed according to the MVW 5.3 and 5.4)
- If the mechatronics is removed, reset the correct positions of the gear adjusters on the mechatronics (25 mm) as well as the neutral position of the actuation elements of the gears on the gearbox. Then install the mechatronics

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### 2b. Delayed upshifting and poor operation of the cruise control on the 1.6 TDI CR 77 kW.

---

*Assessment:*

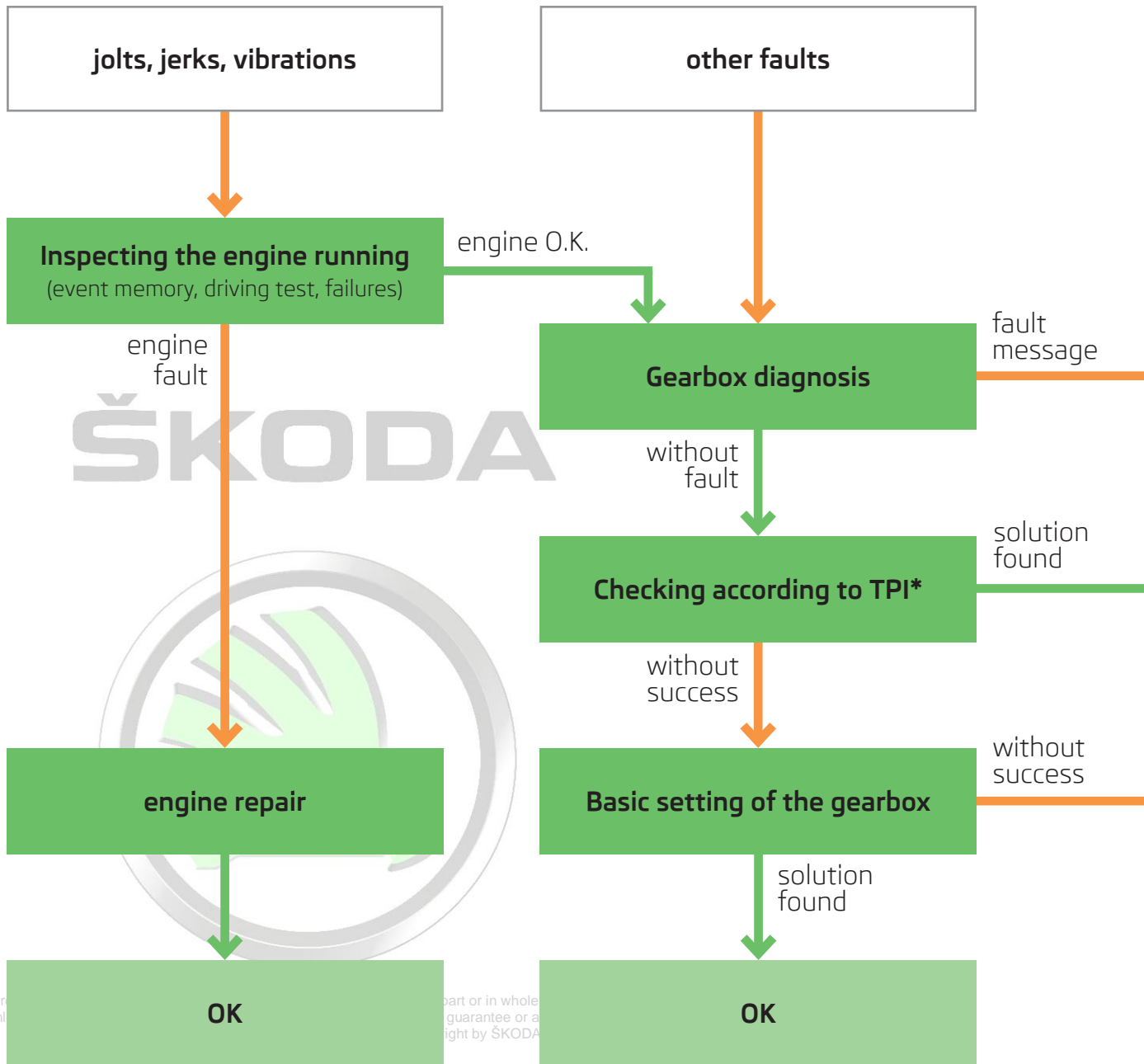
- After replacing the clutches the basic setting cannot be performed, it will be completed with a fault code
- The following fault is stored in the event memory: gear x cannot be shifted

*Causes and recommendations:*

- Preset clutch set (the clutches are coupled permanently); as a result of an impact on the clutch set when installing the complete gearbox in the vehicle (in MVB 5.3 and 5.4, the speed of the input shafts can also be detected in the position P), in this case the assembly of a new clutch set is required!
- Miscalculating the washers for the clutches. If incorrect washers are used, the new clutch may be irreversibly damaged. It is necessary to perform a new measurement and calculation or to carry out the installation of a new clutch set.
- Inspecting the plastic cap on the actuation element for clutches (the cap can be torn off or is lost when using an incorrect tool or during a negligent installation). Reinstall the plastic cap.
- Inspecting the correct seating of the clutch adjuster. If the clutch adjuster is not located in the correct position, one of the clutches may be partially coupled, for this reason, the input shaft is engaged (check the speed according to the MVW 5.3 and 5.4). Correctly position the adjusters.

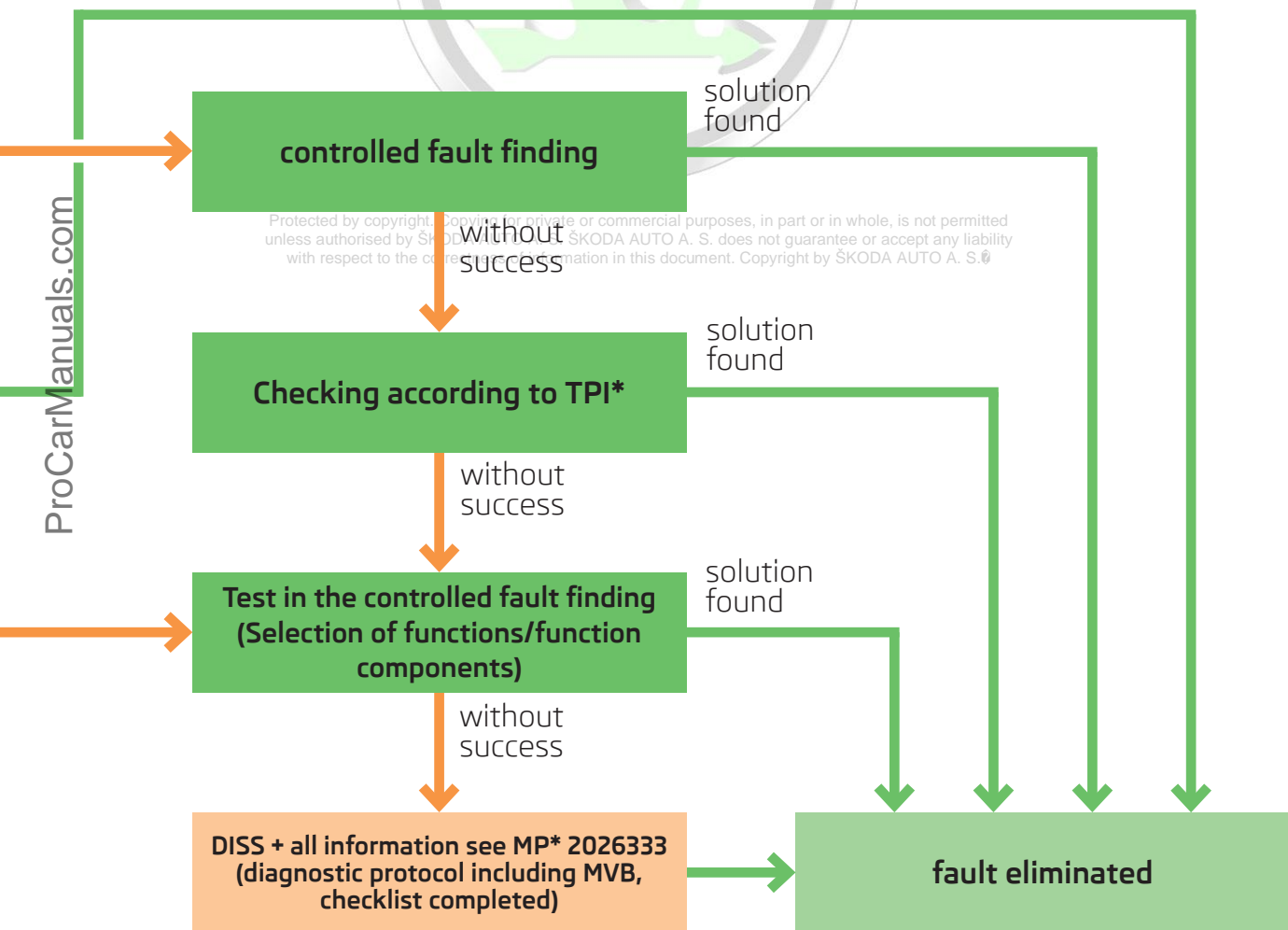
### 3.2.4 Diagram of the recommended procedure for repairing the seven-speed gearbox OAM

This is only valid for faults resulting from the operation.  
 (the diagram refers neither to the faults occurring after the repair nor to the faults occurring after replacing the gearbox components).



\* Checking according to TPI: Do not only check the fault but also the manufacturing period, referring to the TPI.

\*\* MP - Compulsory registration



## 4. Six-speed automatic transmission 02E

# SKODA

### 4.1 Diagnosis of the six-speed automatic transmission 02E

#### 4.1.1 Introduction

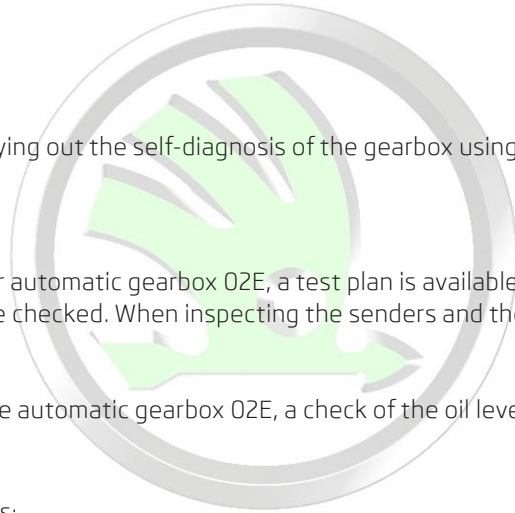
The following operating modes are available when carrying out the self-diagnosis of the gearbox using the diagnostic unit VAS:

- **Controlled fault finding**

In the operating mode "Controlled fault finding" for automatic gearbox 02E, a test plan is available that allows the senders, actuators and the mechatronics to be checked. When inspecting the senders and the actuators, follow the instructions of the diagnostic unit VAS.

- **Controlled functions**

In the operating mode "Controlled functions" of the automatic gearbox 02E, a check of the oil level must be carried out.



The gearbox electronics enables the following functions:

- Inspecting the oil level.
- Coding the control unit (code 20 for DSG).
- Checking the gears.
- Checking the shifting.
- Basic setting – complete (everything is set).
- Reading the measured value blocks

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Shifting into the basic setting is carried out in accordance with:

- the replacement of the engine
- the replacement and the coding of the engine control unit
- the replacement of the automatic gearbox control unit J217
- the removal and installation of the gearbox
- the removal and installation of the electric accelerator pedal

## 4.1.2 Measured value blocks

Selected measured value blocks of the gearbox electronics serve to carry out a correct fault diagnosis on the automatic gearboxes DSG.

Therefore, if a fault is detected on the automatic gearbox, a printout of all the measured value blocks must be sent (at idle speed, if the vehicle is stationary in P, N or D mode)

The following information can be read in the measured value blocks (MVB):

- Identification of the software and hardware level of the automatic gearbox control unit
- current operating values (oil pressure values in the mechatronics, positions of the individual gear adjusters, clutch status, speeds of the individual shafts, selector lever position, etc.)
- the current values recorded during the operation (journey time in the individual driving modes, operating temperatures of the clutches, journey time in all operating temperatures, warnings, etc.
- specific environmental conditions when the last two faults occurred

### Important measured value blocks

Measured value blocks		
Nbr.	Description	Value example
1.1	Brake light switch F	
1.2	Brake light switch F47	
1.3	Shift lock N110 <sup>I)</sup>	
1.4	Vehicle speed	
3.3	Tiptronic shifting on steering wheel + <sup>II)</sup>	
3.4	Tiptronic shifting on steering wheel - <sup>II)</sup>	
4.1	Position of the selector lever	P, R, N, D, S, TT, PL, MI, RS, ER <sup>IV)</sup>
4.2	Driving direction (G251)	
4.3	Output speed 1 (G195) <sup>III)</sup>	
4.4	Output speed 2 (G196) <sup>III)</sup>	

I) To 1.3: The signal from switch F is sufficient for activating the electromagnet N110.

II) K 3.3, 3.4: Switching over into the tiptronic mode is performed by operating one of the two rocker switches on the steering wheel (when selector lever is in position "D" or "S"). The tiptronic system is active for 8 s. The gearbox returns to the normal automatic operating mode after 8 s. If the switches on the steering wheel are activated once more, this period of time is extended. The time delay of 8 s when cornering (exceeding the value of G251 - the transversal acceleration senders), engine braking or when driving under full load, is cancelled.

III) The gearbox control unit determines the vehicle speed and the driving direction from the signals of the senders G195 and G196. The ESP control unit uses the driving speed and the driving direction from the CAN bus drive as a replacement signal.

IV) P - Parking

R - Reverse gear

N - Neutral

D - Drive (normal driving)

S - Drive (sporty driving)

TT - Tiptronic mode

PL - Plus (upshift in tiptronic mode)

MI - Minus (downshift in tiptronic mode)

RS - intermediate position (selector lever between two stages or gears)

ER - ERROR (fault)

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## Important measured value blocks

Measured value blocks	
Nbr.	Description
5.2	Enabling the starter closed/open <sup>v)</sup>
8.1	Gearbox input speed - (G182) <sup>vi)</sup>
8.2	Input speed of shaft 1 - (G501)
8.3	Input speed of shaft 2 - (G502)
8.4	Gearbox input speed - (G195)
10.1	Accelerator pedal position
10.2	Kickdown switch closed/open
10.3	Engine torque

V) closed - start-up enabled open - start-up disabled

The activation of the starter (terminal 50) is only performed in the selector lever position "P" or "N".

If the temperature of the gearbox oil (G93) is below -10°C, the start-up is only enabled in the selector lever position "P". At low temperatures, an increase in the driving torque occurs in the clutches. For this reason, enabling the start-up is only allowed in the position "P" (the secure grip secures the vehicle reliably).

The control unit J743 transmits the signal P/N via a discrete cable (triggering the start-up of the gearbox) in the control unit J519. The information about the signal P/N is simultaneously received by the control unit J519 via the CAN data bus. The engine start-up is not enabled when there is a fault in the voltage supply for J743, E313, or of the signal P/N as well as the CAN bus.

VI) In the event of a complete signal loss of the sender G182, the switching quality deteriorates. During sporadic signal failures, a fluctuation of the speed may occur. Checking the engaged clutch with the gear shifted in P (G501, G502).

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Measured value blocks (in driving mode)		
Nbr.	Description	Value range
11.1	Speed of input shaft 1 (G501)	0 ... 8160 /rpm
11.2	Nominal torque of clutch K1	-600 ... 600 Nm
11.3	Current of clutch valve 1 (N215)	0 ... 1,53 A
11.4	Actual pressure of clutch 1 (G193)	-327.68 ... 327.67 bar
12.1	Speed of input shaft 2 (G502)	0 ... 8160 /rpm
12.2	Nominal torque of clutch K2	-600 ... 600 Nm
12.3	Current of clutch valve 2 (N216)	0 ... 1,53 A
12.4	Actual pressure of clutch 2 (G194)	-327.68 ... 327.67 bar (max. 10 bar)

G501 - Speed sensor of drive shafte 1

G502 - Speed sensor of drive shafte 2

N215 - Pessure regulator valve 1

N216 - Pessure regulator valve 2

G193 - Gearbox hydraulic pressure sender 1

G194 - Gearbox hydraulic pressure sender 2



### Measured value blocks

Nbr.	Description
16.1	Path of adjuster for gears 1-3 (G487) <sup>VII)</sup>
16.2	Path of adjuster for gears 2-4 (G488) <sup>VII)</sup>
16.3	Path of adjuster for gears 5-N (G489) <sup>VII)</sup>
16.4	Path of adjuster for gears 6-R (G490) <sup>VII)</sup>
19.1	Temperature of gearbox oil (G93) Standard <sup>VIII)</sup>
19.2	Temperature in the control unit (G510) <sup>IX)</sup>
19.3	Oil temperature of multi-plate clutch (G509) <sup>X)</sup>

VII) approx. 8 mm - Adjuster is correctly set

VIII) The sender G93 transmits more accurate values than the sender G510.

IX) The sender G510 serves mainly for checking the validity of the signal of sender G93.

X) At a temperature (G93) higher than 138°C, the mechatronic control unit J743 triggers a reduction in engine torque. Up to a temperature of 145°C, a progressive reduction in engine torque occurs until the engine runs only at idle speed. The multi-plate clutches are then uncoupled, the vehicle is no longer powered.

### Measured value blocks

Nbr.	Description
20.1	Desired gear
20.2	Currently engaged gear
20.3	Information about the engaged gear in the instrument panel
54.1	Identification of the mechatronics
64.1	Number of values exceeded (170 °C) <sup>XI)</sup>
64.2	Number of warnings (160 °C) <sup>XI)</sup>
80	Identification of the control unit
81	Identification of the control unit
82	Identification of the control unit
84	Manufacturing date of the gearbox and gearbox code.

XI) Value of sender G509 - sensor for oil temperature in the multi-plate clutch. When reaching an oil temperature of 160°C, the safety function is then activated and the clutches pulsate, which is perceived in the vehicle as a strong jerk (warning jerk). When reaching 170 °C, the clutches disengage. Sporadic signal failures can result in harsh shifting or skipping gears. As of MY 2013, the sender G509 is no longer present and the temperature is recalculated.

### Measured value blocks - Temperature of the gearbox oil

Nbr.	Description
109.1	Total mileage travelled in kilometres
140.1	Oil temperature <90°C
140.2	Oil temperature >=90°C - <110°C
140.3	Oil temperature >=110°C - <120°C
140.4	Oil temperature >=120°C - <130°C
141.1	Oil temperature >=130°C - <140°C
141.2	Oil temperature >=140°C
141.3	Maximum temperature value is reached

The time intervals, during which the oil temperature moves within the specific temperature ranges, are recorded in the blocks 140.x.

## Printout of the environmental conditions for the last two faults stored in the event memory

All collision values from the measured value blocks are stored in the fault memory. The printout of the environmental conditions is also stored for the **last** as well as the **second last** recorded faults. An example of a printout for the environmental conditions from the fault memory is provided below.

Printout of the environmental conditions when the **last** fault was recorded:

90_1 S1		92_1 S1		93_4 S1		105_4 S1	
<b>Fault ID</b>	<b>342</b>	<b>actuation elements of the gears 1-3</b>	<b>480</b>	<b>G510 - temperature sender in control unit</b>	<b>91 °C</b>	<b>lower point of current for adapting K2</b>	<b>0.215 A</b>
90_2 S1		92_2 S1		104_1 S1		110_1 S1	
<b>clutch</b>	<b>3</b>	<b>actuation elements of the gears 2-4</b>	<b>248</b>	<b>Actuating the actuation element of the gears, special conditions</b>	<b>0x0000</b>	<b>mileage in km</b>	<b>85880 km</b>
90_3 S1		92_3 S1		104_2 S1			
<b>accelerator pedal</b>	<b>0.0 %</b>	<b>actuation elements of the gears 5-N</b>	<b>480</b>	<b>different gears</b>	<b>0x0027</b>		
90_4 S1		92_4 S1		104_3 S1			
<b>selector lever position</b>	<b>87</b>	<b>actuation elements of the gears 6-R</b>	<b>416</b>	<b>battery voltage</b>	<b>13.0 V</b>		
91_1 S1		93_1 S1		104_4 S1			
G182 - input speed of the gearbox	640/rpm	N215 - current of valve for clutch 1	0.00 A	<b>engine torque</b>	<b>14 Nm</b>		
91_2 S1		93_2 S1		105_1 S1			
<b>G501 - speed of drive shaft 1</b>	<b>0/rpm</b>	N216 - current of valve for clutch 2	0.00 A	<b>clutch pressure</b>	<b>K1 0.10 bar</b>		
91_3 S1		93_3 S1		105_2 S1			
<b>G502 - speed of drive shaft 2</b>	<b>0/rpm</b>	N217 - current of valve for main pressure 3	0.006 A	<b>lower point of current for adapting K1</b>	<b>0.210 A</b>		
91_4 S1				105_3 S1			
<b>G195/196 - gearbox output speed</b>	<b>0/rpm</b>			<b>clutch pressure K2</b>	<b>0.10 bar</b>		

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Printout of the environmental conditions when the **second last** fault was recorded:

94_1 S2		96_1 S2		97_4 S2		107_4 S2	
<b>Fault ID</b>	<b>65535</b>	<b>actuation elements of the gears 1-3</b>	<b>0</b>	<b>G510 - temperature sender in control unit</b>	<b>60 °C</b>	<b>lower point of current for adapting K2</b>	<b>0.000 A</b>
94_2 S2		96_2 S2		106_1 S2		111_1 S2	
<b>clutch</b>	<b>0</b>	<b>actuation elements of the gears 2-4</b>	<b>0</b>	<b>Actuating the actuation element of the gears, special conditions</b>	<b>0x0000</b>	<b>mileage in km</b>	<b>0 km</b>
94_3 S2		96_3 S2		106_2 S2			
<b>accelerator pedal</b>	<b>0.0 %</b>	<b>actuation elements of the gears 5-N</b>	<b>0</b>	<b>different gears</b>	<b>0x0000</b>		
94_4 S2		96_4 S2		106_3 S2			
<b>position of the selector lever</b>	<b>0</b>	<b>actuation elements of the gears 6-R</b>	<b>0</b>	<b>battery voltage</b>	<b>0.0 V</b>		
95_1 S2		97_1 S2		106_4 S2			
G182 - gearbox input speed	0/rpm	N215 - current of valve for clutch 1	0.0 A	<b>engine torque</b>	<b>98 Nm</b>		
95_2 S2		97_2 S2		107_1 S2			
<b>G501 - speed of drive shaft 1</b>	<b>0/rpm</b>	N216 - current of valve for clutch 2	0.0 A	<b>clutch pressure</b>	<b>K1 0.00 bar</b>		
95_3 S2		97_3 S2		107_2 S2			
<b>G502 - speed of drive shaft 2</b>	<b>0/rpm</b>	N217 - current of valve for main pressure 3	0.0 A	<b>lower point of current for adapting K1</b>	<b>0.000 A</b>		
95_4 S2				107_3 S2			
<b>G195/196 - gearbox output speed</b>	<b>0/rpm</b>			<b>clutch pressure K2</b>	<b>0.00 bar</b>		

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## 4.1.3 Faults of the gearbox 02E and their rectification

### List of common faults

- 1a.- Uncomfortable sensation when shifting gears (Octavia II, Superb II)
- 2a.- Paradoxical shifting
- 3a.- Malfunction of the shifting
- 4a.- Failure of the power transmission to the wheels
- 5a.- Incorrect downshifting of the gearbox
- 6a.- Delayed acceleration



#### Important:

The consequences of the faults on the vehicle and the diagnostic results must always be fully assessed in their context. If the focus is only on the event memory, it can result in an incorrect procedure for repairing.

### 1a. Uncomfortable sensation when shifting gears (Octavia II, Superb II)

#### Assessment:

- While driving or when shifting the individual gears, uncomfortable shifting, jerking, jolting, etc. occur.
- In most cases no fault is stored in the event memory of the gearbox control unit.

#### Cause:

**This is an internal fault of the mechatronic gearbox control unit.**

#### Solution:

- Checking the manufacturing date of the mechatronics. Test procedure:
  - Self-diagnosis,
  - 02 - Gearbox
  - 011 - Measured value block - channel 54
  - H07 A0001 - J21 N0560
  - H = Year 2007; 07 = Calendar week
  - J = Year 2008; 21 = Calendar week

#### TPI 2022347 issued

Determine if the manufacturing date falls in the previous time period (**H07 - J21**), if so replace the mechatronics. After replacing it, perform the basic setting and carry out a test drive.

### 2a. Paradoxical switch-over.

#### Assessment:

- If the speed is reduced abruptly when braking (e.g. from 130 km/h to 80 km/h) the automatic gearbox shifts down into third or second gear when in the operating mode D or S. At this moment, the engine speed increases and will remain above 3000 rpm for a few seconds. A similar phenomenon may also occur when braking, while rolling to an intersection, if the gearbox downshifts into first gear and the engine speed temporarily increases.

#### Solution:

#### TPI 2025846 issued

On vehicles with ESP control unit with the index ... 379A replace the sender G419 (without G251) with the sender G419 (with G251).

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### 3a. Malfunction of the shifting.

---

*Assessment:*

- malfunction of the automatic gearbox
- the display of the engaged gears disappears sporadically in the Maxi-Dot
- the engaged gear cannot be changed
- jerks can be felt when in operating mode "D"
- after shifting into "R", the vehicle does not drive
- the fault 19143 004 is stored in the fault memory of the gearbox; P2711 - Gearbox control unit without signal/communication stored

*Solution:*

**TPI 2024152 issued**

Replacing the clutch set

### 4a. Failure of the power transmission to the wheels.

---

*Assessment:*

- The gearbox control unit detects an incorrect clutch temperature and evaluates it as a clutch overload. Consequently, the safety function of the clutch is activated (the display showing the shifting flashes, the vehicle jerks, the engine torque drops and the clutch switches off).

*Solution:*

**Maintenance intervention 37F2**

Updating the SW of the gearbox control unit

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### 5a. Incorrect downshifting of the gearbox.

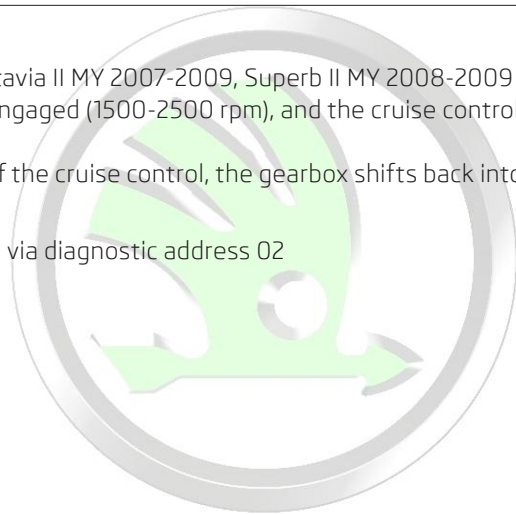
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*Assessment:*

- Vehicle model: Octavia II MY 2007-2009, Superb II MY 2008-2009
- When gear D4 is engaged (1500-2500 rpm), and the cruise control is activated, the gearbox shifts down into D2 (4000 rpm).
- After switching off the cruise control, the gearbox shifts back into D4.

*Solution:*

Updating online and via diagnostic address 02



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## 6a. Delayed acceleration.

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### Assessment:

- Vehicle model: Octavia II MY 2006–2011, Superb II MY 2008–2011, Yeti MY 2009–2011
- After deceleration (e.g. when rolling to an intersection) and subsequent acceleration, the engine speed increases and the vehicle drives off with delay.
- When shifting manually into tiptronic mode (3-2, 4-3 or 5-4), the engine speed increases and the vehicle reacts again with delay.

### Solution:

Updating online and via the engagement code (see table).

**Table of engagement codes**

Vehicle model	Engagement code
Octavia II	308A
Octavia II China	308B
Superb II	308C
Yeti	308D
Yeti RUS	3091

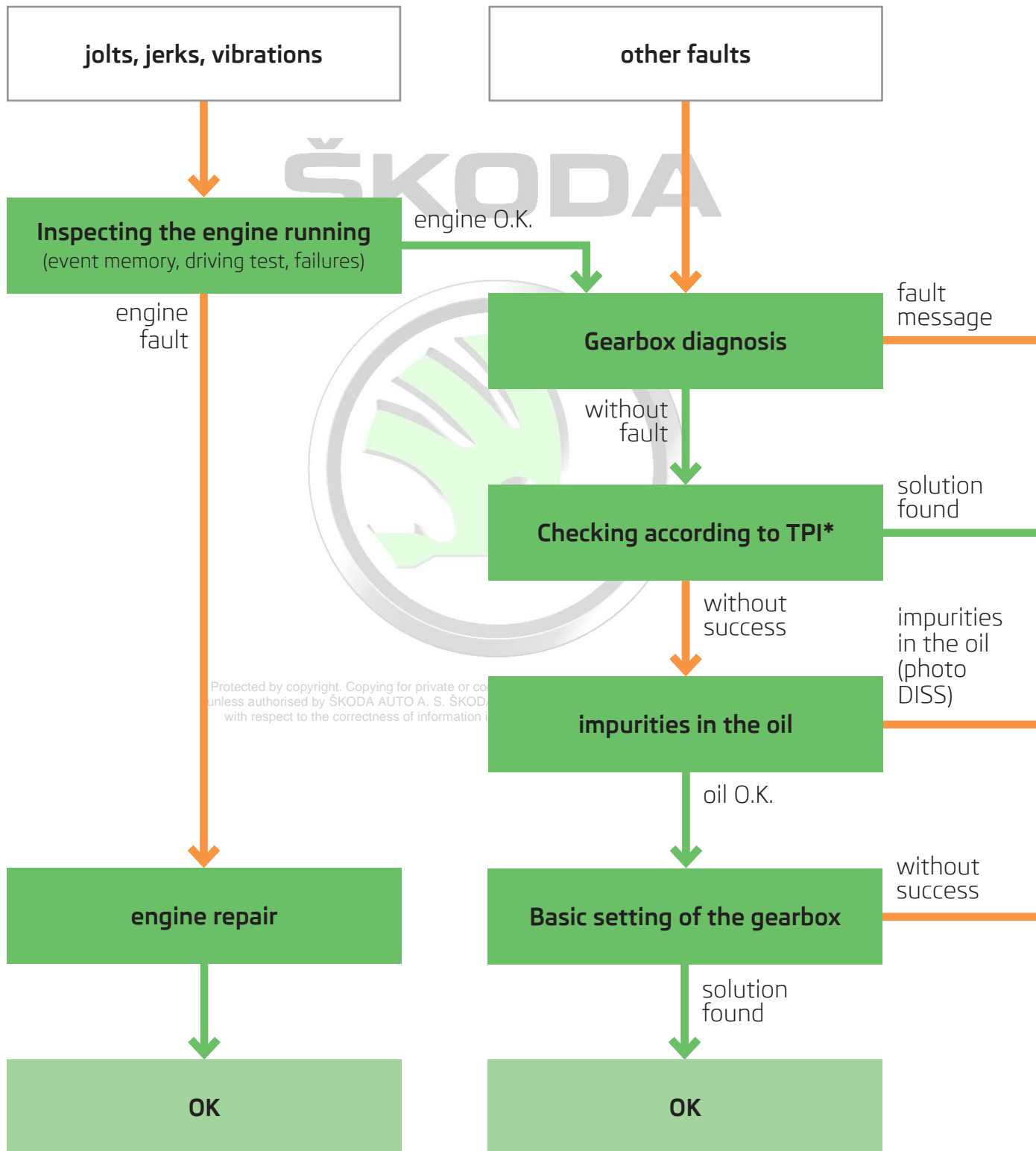
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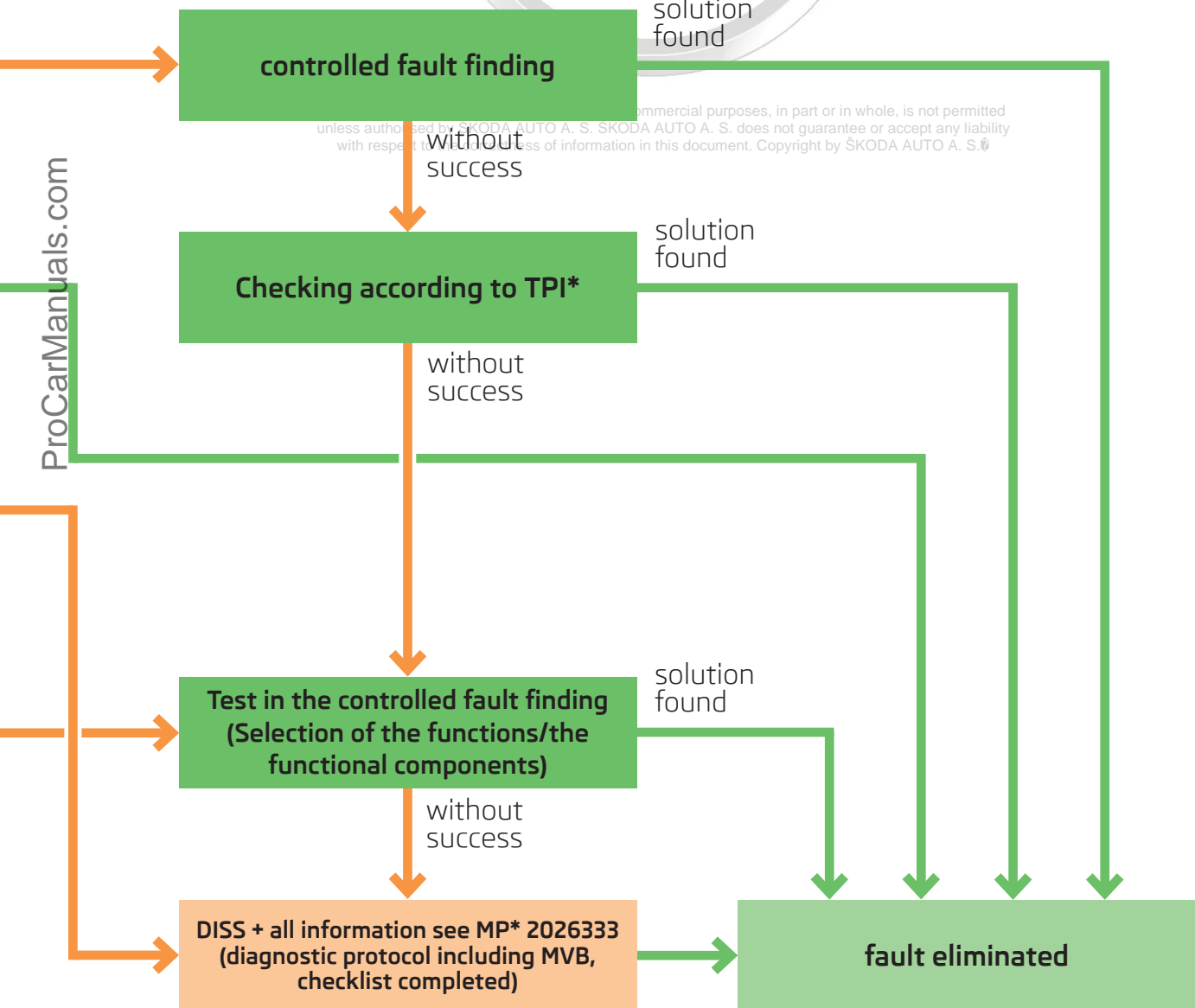
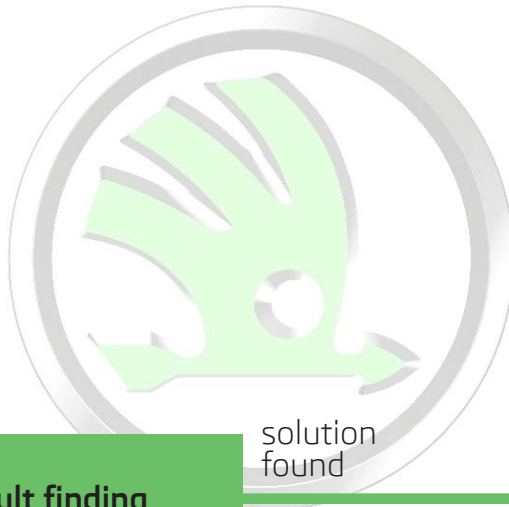
#### 4.1.4 Diagram of the recommended procedure for repairing the six-speed gearbox 02E

This is only valid for faults resulting from the operation.  
 (the diagram refers neither to the faults occurring after the repair nor to the faults occurring after replacing the gearbox components).



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\* Checking according to TPI: Do not only check the fault but also the manufacturing period, referring to the TPI.  
 \*\* MP – Compulsory registration



## 5. Technical request for repairing the gearboxes OAM or O2E

This procedure applies to all the complaints concerning the automatic gearbox DSG.

- **OAM (DQ200) seven gears**
- **O2E (DQ250) six gears**

The conditions under which the alleged fault occurs, are often specified inaccurately when describing the faults of the automatic gearbox in the DISS system. For this reason, the time for handling the complaint is extended, and vice versa, the time required for resolving the fault is shortened greatly by sending the complete documents.

When creating a "DISS - technical request for repair" the following must always be included:

- **Complete "Checklist of the fault description for DSG gearboxes"**
- **Diagnostic protocol online**
- **Complete measured value blocks**
- **Description of complaints by the customer**
- **Service entries**
- **List of operations that have been carried out on the gearbox before sending the technical request**

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## Checklist – fault description on DSG gearboxes



DQ 200 – 7. speed gearbox



DQ 250 – 6. speed gearbox

**Noises:**

<input type="checkbox"/>	Humming
<input type="checkbox"/>	Whistling
<input type="checkbox"/>	Rattling
<input type="checkbox"/>	Knocking
<input type="checkbox"/>	Metallic noises
<input type="checkbox"/>	While changing gears
<input type="checkbox"/>	While shifting the selector lever to change the driving mode
<u>Other symptom:</u>	

**Gear shifting:**

<input type="checkbox"/>	Doesn't shift gears at all
<input type="checkbox"/>	A particular gear can't be changed
<input type="checkbox"/>	Spontaneous upshifting
<input type="checkbox"/>	Spontaneous downshifting
<input type="checkbox"/>	While accelerating and at high rpm, upshifting is not carried out
<input type="checkbox"/>	While decelerating and at low rpm, downshifting is not carried out
<u>Other symptom:</u>	



**Jerking:**

<input type="checkbox"/>	During a drivery
<input type="checkbox"/>	At a particular gear
<u>While gear shifting</u>	
<u>Other symptom:</u>	

**Vibrations:**

<input type="checkbox"/>	During a drivery
<input type="checkbox"/>	At a particular gear
<u>While gear shifting (describe):</u>	
<u>Other symptom:</u>	

**At what kind of load:**

<input type="checkbox"/>	Acceleration
<input type="checkbox"/>	Deceleration
<input type="checkbox"/>	Stabilized speed
<u>During a change of load:</u>	
<input type="checkbox"/>	From deceleration and subsequent acceleration
<input type="checkbox"/>	From acceleration and subsequent deceleration
<u>Other symptom:</u>	

**At what kind of mode:**

<input type="checkbox"/>	P
<input type="checkbox"/>	R
<input type="checkbox"/>	N
<input type="checkbox"/>	D
<input type="checkbox"/>	S
<input type="checkbox"/>	TIPTRONIC



**Speed indicator on Maxidot:**

<input type="checkbox"/>	Isn't displayed
<input type="checkbox"/>	Gear displayed isn't identical with the engaged one
<input type="checkbox"/>	Blinks
<u>Other symptom:</u>	

**Surface and uphill gradient:**

<input type="checkbox"/>	Motorway
<input type="checkbox"/>	Road of lower quality
<input type="checkbox"/>	Slow down stripe
<input type="checkbox"/>	Downhill
<input type="checkbox"/>	Uphill
<u>Other surface:</u>	

**Symptom is incomparably stronger than with reference vehicle of the same category and with the same engine:**

<input type="checkbox"/>	Yes
<input type="checkbox"/>	No

**At what kind of operation mode:**

<input type="checkbox"/>	Cold
<input type="checkbox"/>	Warm
<u>Temperature (°C):</u>	

**Fault occurs:**

<input type="checkbox"/>	Can be invoke anytime
<input type="checkbox"/>	Sporadically
<u>After a milage of...km:</u>	



**At which gear / rpm / speed**

<input type="text"/>	<b>1 st gear</b>
Rpm:	Km/h:

<input type="text"/>	<b>2 nd gear</b>
Rpm:	Km/h:

<input type="text"/>	<b>3 rd gear</b>
Rpm:	Km/h:

<input type="text"/>	<b>4 th gear</b>
Rpm:	Km/h:

<input type="text"/>	<b>5 th gear</b>
Rpm:	Km/h:

<input type="text"/>	<b>6 th gear</b>
Rpm:	Km/h:

<input type="text"/>	<b>7 th gear</b>
Rpm:	Km/h:

<input type="text"/>	<b>Reverse gear</b>
Rpm:	Km/h:

**Note:** this Checklist is to be completed with:

- Complete diagnostic log
- Measured values block

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# Overview of the previously edited workshop teaching aids

## No. Designation

- 1 Mono-Motronic
- 2 Central locking
- 3 Vehicle alarm
- 4 Working with wiring diagrams
- 5 ŠKODA FELICIA
- 6 Safety of the ŠKODA vehicles
- 7 Principles of ABS - were not published
- 8 ABS - FELICIA
- 9 System for safe start-up with transponder
- 10 Air conditioning in the vehicle
- 11 Air conditioning FELICIA
- 12 1.6 engine - MPI 1AV
- 13 Four-cylinder diesel engine
- 14 Power-assisted steering
- 15 ŠKODA OCTAVIA
- 16 1.9 ltr. TDI diesel engine
- 17 ŠKODA OCTAVIA Convenience electronic system
- 18 ŠKODA OCTAVIA Manual gearbox 02K, 02J
- 19 1.6 ltr. and 1.8 ltr. petrol engines
- 20 Automatic gearbox - fundamentals
- 21 Automatic gearbox 01M
- 22 1.9 ltr./50 kW SDI, 1.9 ltr./81 kW TDI diesel engines
- 23 1.8 ltr./110 kW and 1.8 ltr./92 kW petrol engines
- 24 OCTAVIA, CAN BUS
- 25 OCTAVIA - CLIMATRONIC
- 26 OCTAVIA - safety of the vehicle
- 27 OCTAVIA - 1.4 ltr./44 kW engine and gearbox 002
- 28 OCTAVIA - ESP - fundamentals, design, function
- 29 OCTAVIA 4 x 4 - all-wheel drive
- 30 2.0 ltr. 85 kW and 88 kW petrol engines
- 31 Radio navigation system - design and functions
- 32 ŠKODA FABIA - technical information
- 33 ŠKODA FABIA - electrical systems
- 34 ŠKODA FABIA - electro-hydraulic power-assisted steering
- 35 1.4 ltr. - 16 V 55/74 kW petrol engines
- 36 ŠKODA FABIA - 1.9 ltr. TDI Unit injection
- 37 Manual gearbox 02T and 002
- 38 ŠkodaOctavia; model 2001
- 39 Euro-On-Board-Diagnosis
- 40 Automatic gearbox 001
- 41 6-Speed gearbox 02M
- 42 ŠkodaFabia - ESP
- 43 Exhaust emissions
- 44 Extended service intervals
- 45 Three-cylinder petrol engines 1.2 ltr.
- 46 ŠkodaSuperb; Vehicle presentation; part I
- 47 ŠkodaSuperb; Vehicle presentation; part I
- 48 ŠkodaSuperb; 2.8-ltr./142 kW V6 petrol engine
- 49 ŠkodaSuperb; 2.5-ltr./114 kW TDI V6 diesel engine
- 50 ŠkodaSuperb; automatic gearbox 01V
- 51 2.0 ltr./85 kW petrol engine with balancing shafts and two-stage intake manifold

## No. Designation

- 52 ŠkodaFabia; 1.4 ltr. TDI engine with unit injection system
- 53 ŠkodaOctavia; Vehicle presentation
- 54 ŠkodaOctavia; Electrical components
- 55 FSI petrol engines; 2.0 ltr./110 kW and 1.6 ltr./85 kW
- 56 Automatic gearbox DSG-02E
- 57 Diesel engine; 2.0 ltr./103 kW TDI with pump-nozzle units, 2.0 ltr./100 kW TDI with pump-nozzle units
- 58 ŠkodaOctavia, Chassis and electromechanical power-assisted steering
- 59 ŠkodaOctavia RS, 2.0 ltr./147 kW FSI turbo engine
- 60 2.0 ltr./103 kW 2V TDI diesel engine; particle filter with additive
- 61 Radio navigation systems in Škoda vehicles
- 62 ŠkodaRoomster; Vehicle presentation part I
- 63 ŠkodaRoomster; Vehicle presentation part II
- 64 ŠkodaFabia II; Vehicle presentation
- 65 ŠkodaSuperb II; Vehicle presentation part I
- 66 ŠkodaSuperb II; Vehicle presentation part II
- 67 Diesel engine; 2.0 ltr./125 kW TDI with Common Rail injection system
- 68 1.4 ltr./92 kW TSI petrol engine with turbocharger
- 69 3.6 ltr./191 kW FSI petrol engine
- 70 All-wheel drive with Haldex coupling of the IV. generation
- 71 ŠkodaYeti; Vehicle presentation part I
- 72 ŠkodaYeti; Vehicle presentation part II
- 73 LPG system in Škoda vehicles
- 74 1.2 ltr./77 kW TSI petrol engine with turbocharger
- 75 7-speed dual-clutch automatic gearbox 0AM
- 76 Green Line vehicles
- 77 Geometry
- 78 Passive safety
- 79 Additional heating
- 80 2.0 ltr., 1.6 ltr., 1.2 ltr. diesel engines with Common Rail injection system
- 81 Bluetooth - in Škoda vehicles
- 82 Vehicle sensors - drive
- 83 1.4 ltr./132 kW TSI petrol engine with dual-charging(compressor, turbocharger)
- 84 ŠkodaFabia II RS; Vehicle presentation
- 85 KESSY system in Škoda vehicles
- 86 START-STOP system in Škoda vehicles
- 87 Immobilisers in Škoda vehicles
- 88 Brake and stabilisation systems
- 89 Vehicle sensors - Safety and Convenience
- 90 Increase customer satisfaction with the CSS
- 91 Repairs of electrical systems in Škoda vehicles
- 92 Škoda Citigo Vehicle presentation
- 93 OCF five-speed manual gearbox and automated five-speed manual transmission AMT
- 94 Diagnosis of the automatic gearboxes 0AM and 02E

