

**SCANIA**

**05:08-02**

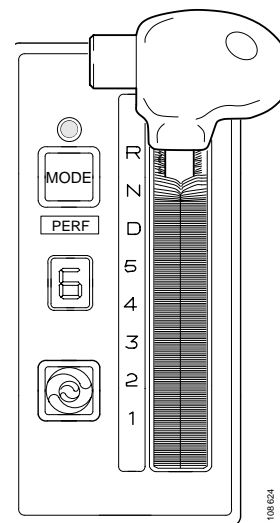
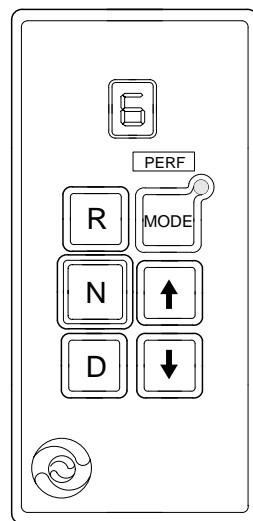
Issue 1 en

# Automatic gearbox GA750/751/752 and GA851/852 including variants

(Allison World Transmission of type MD or HD)

## Troubleshooting

Applies to vehicles built from December 1997  
(from chassis no. 123759)



# Contents

Troubleshooting	General.....	3
	Quick reference of fault codes .....	8
	Stalling speed test .....	46
	Measuring basic pressure.....	48

# Troubleshooting

## General

### Objective

The objective of troubleshooting is to check whether the fault can be rectified without carrying out major work, or if the gearbox has to be replaced.

If troubleshooting indicates that the gearbox must be replaced, contact your Allison dealer before taking any further action.

## Before starting the troubleshooting

- 1 Switch off the engine and turn off the supply voltage.
- 2 Remove (or fit) a connector in the cable harness.
- 3 When removing a connector from the cable harness do not pull on the wiring, pull on the connector body. Otherwise, the insulation by the connector may be damaged or come loose.
- 4 Check each connector for any damage. The pins may be bent, oxidised or damaged in some other way.
- 5 If a connector is contaminated, it must be cleaned with a good quality cleaning agent. The cleaning agent must not be conductive as there is a risk of a short circuit.
- 6 If the voltage is switched on while the connector is removed, the control unit will generate fault codes. If this happens, switch off the voltage, refit the connector and clear the fault codes.

## Basic check

If a fault on the gearbox arises a basic check should be carried out before taking any further action.

**Note:** The gearbox needs to be at operating temperature when checking the oil level. Checking the oil level on a cold gearbox is not accurate. This is only done when roughly correcting the oil level before bringing the gearbox to operating temperature.

- 1 Check the oil level.

**Note:** Too much or too little oil can severely damage the gearbox.

- 2 Check that the operating temperature of the gearbox is correct, i.e. between 70 and 90 °C.
- 3 Make an external check of the gearbox to make sure that no external damage may have caused the problem.
- 4 Check the engine idle speed with the gearbox in neutral (N). The engine speed should be 500–550 rpm.

## Reading and clearing fault codes

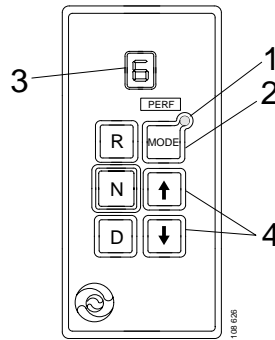
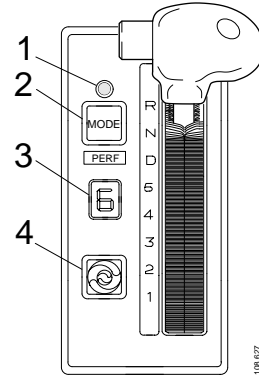
The control unit can store five fault codes in the memory. The fault codes are stored in order of priority with the most serious fault first.

### Reading fault codes

1 Activating fault code mode:

- Lever switch: Depress the logo switch (4) twice.
- Button switch: Depress the switches for upshifting and downshifting (4) simultaneously twice.

**Note:** The electronic oil level check is activated when pressing once.



2 The display (3) indicates the fault codes. If the fault is active the LED (1) will be on. The first digit in the fault code is the storage number followed by four digits which make up the fault code.

**d → 2 → 1 → 3 → 1 → 2** b113577

*This sequence is interpreted as follows: The second fault code in order of priority with fault code number 13-12.*

**d → 1 → — → d → 1 → —** b113578

*No fault codes are registered.*

- 3 Depress the MODE switch (2) to see the next fault code.
- 4 Go back to normal mode:
  - Lever switch: Depress the logo switch once.
  - Button switch: Depress the switches for upshifting and downshifting simultaneously once.

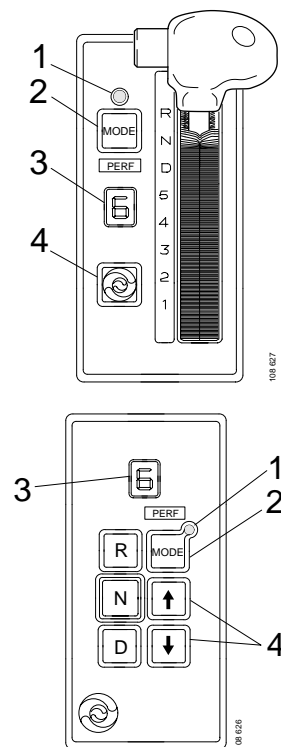
### Clearing fault codes

- 1 Clearing fault codes:
  - Lever switch: Depress the logo switch twice.
  - Button switch: Depress the switches for upshifting and downshifting simultaneously twice.

**Note:** The electronic oil level check is activated when pressing once.

- 2 Depress the MODE switch (2) and keep it depressed for at least 10 seconds. The LED (1) will flash twice: the first flash after 3 seconds and the second flash after 10 seconds. This confirms that the fault codes have been cleared. Release the switch. Only the active fault codes have been cleared after the first flash (3 seconds).

**Note:** The control system can clear some fault codes on its own when these have been inactive for a longer period of time, for instance after the ignition has been turned on 10 times.



## Quick reference to fault codes

The quick reference is a list of various fault codes and their effect on the operation of the automatic gearbox.

### Fault code 13

#### Fault

Fault code 13-xx is generated when there is a power fault to the control unit.

#### Cause

Fault code	Cause	Check Trans
13 12	The voltage to the control unit is too low (below 8 V).	On
13 13	The voltage to the control unit is lower than it should be.	Off
13 23	The voltage to the control unit is too high (above 33 V).	On

#### Remarks

If the voltage is too low the battery may be faulty or the vehicle alternator circuit may be faulty. An alternator fault may cause the voltage to be too high.

#### Action

- 1 Check the battery voltage.
- 2 Check the voltage to the control unit.
- 3 Check the alternator.



## Fault code 14

### Fault

Fault code 14-xx is generated when there is a fault on the oil level sensor.

### Cause

Fault code	Cause	Check Trans
14 12	The voltage from the oil level sensor is too low.	Off
14 23	The voltage from the oil level sensor is too high.	Off

### Warning!

Never measure the resistance on the oil level sensor as it may be damaged!

### Action

Check the oil level.

## Fault code 21

### Fault

Fault code 21-xx is generated when there is a fault on the throttle actuation sensor.

### Cause

Fault code	Cause	Check Trans
21 12	The voltage from the throttle actuation sensor is too low.	Off
21 23	The voltage from the throttle actuation sensor is too high.	Off

### Remarks

The control unit has detected a fault on one of the following:

- the sensor setting
- the connector to the sensor
- the lead between the sensor and the control unit.

### Action

- 1 Check the voltage to the control unit.
- 2 Check the connector of the sensor.
- 3 Check the sensor, e.g. if it is fitted correctly and has the correct setting, if it is damaged, corroded or contaminated.
- 4 Check the lead between the sensor and the control unit.

## Fault code 22

### Fault

Fault code 22-xx is generated when there is a fault on the speed sensors.

### Cause

Fault code	Cause	Check Trans
22 14	The signal from the speed sensor on the input shaft is incorrect.	Off
22 15	The signal from the speed sensor on the turbine shaft is incorrect.	On
22 16	The signal from the speed sensor on the output shaft is incorrect.	On

### Remarks

The fault code indicates that there is a fault on:

- the sensor
- the lead to the sensor
- the lead between the sensor and the control unit.

### Action

- 1 Check the connector of the sensor.
- 2 Check the sensor, e.g. if it is fitted correctly, damaged, corroded or contaminated.
- 3 Check the resistance of the sensor according to the table in section Speed sensor in the Function and work description.
- 4 Check the lead between the sensor and the control unit.
- 5 Check the voltage to the control unit.

## Fault code 23

### Fault

Fault code 23-xx is generated when there is a fault on the drive mode selector.

### Cause

Fault code	Cause	Check Trans
23 12	Fault on the drive mode selector.	On
23 14	Fault on drive mode selector no. 2.	On
23 16	Fault on the drive mode selector display.	Off

### Remarks

Fault code 23-14 refers to a function not used by Scania.

### Action

- 1 Check the connectors of the drive mode selector and the control unit.
- 2 Check the lead between the drive mode selector and the control unit.
- 3 Check the voltage to the control unit.

## Fault code 24

### Fault

Fault code 24-xx is generated when the oil sump temperature is out of range.

### Cause

Fault code	Cause	Check Trans
24 12	The oil sump temperature is between $-32\text{ °C}$ and $-7\text{ °C}$ .	On
24 23	The oil sump temperature is above $128\text{ °C}$ .	Off

### Remarks

This fault code may be generated if the outdoor temperature is low. If the oil temperature is below  $-7\text{ °C}$  only R, N and D modes will operate (here it is limited to gear 2). When the outdoor temperature is below  $-7\text{ °C}$  it may be necessary to heat the oil sump.

### Action

- 1 Check the oil level.
- 2 Check the temperature sensor lead.

## Fault code 25

### Fault

Fault code 25-xx will be generated if there is a fault on the speed sensor on the output shaft.

### Cause

Fault code	Cause	Check Trans
25 00	The speed sensor on the output shaft indicates 0 rpm on low gear L.	On
25 11	The speed sensor on the output shaft indicates 0 rpm on gear 1.	On
25 22	The speed sensor on the output shaft indicates 0 rpm on gear 2.	On
25 33	The speed sensor on the output shaft indicates 0 rpm on gear 3.	On
25 44	The speed sensor on the output shaft indicates 0 rpm on gear 4.	On
25 55	The speed sensor on the output shaft indicates 0 rpm on gear 5.	On
25 66	The speed sensor on the output shaft indicates 0 rpm on gear 6.	On
25 77	The speed sensor on the output shaft indicates 0 rpm on reverse gear R.	On

### Remarks

When the speed sensor on the output shaft indicates 0 rpm the sensor may be faulty, or the disc coupling for the gear in question may not be applied when the drive mode selector is shifted from N to a drive mode.

Fault code 25-00 refers to a function not used by Scania.

**Action**

- 1 Check the battery voltage.
- 2 Check the voltage to the control unit.
- 3 Check the oil level.
- 4 Check the connector to the speed sensor on the output shaft.
- 5 Check the speed sensor on the output shaft, e.g. if it is fitted correctly, damaged, corroded or contaminated.
- 6 Check the lead between the sensor and the control unit.
- 7 Check the resistance of the sensor according to the table in section Speed sensor in the Function and work description.

## Fault code 26

### Fault

Fault code 26-xx is generated when there is a fault on the signal for throttle actuation/coolant temperature.

### Cause

Fault code	Cause	Check Trans
26 00	There is no signal for throttle actuation.	Off
26 11	There is no signal for coolant temperature.	Off

### Remarks

-

### Action

If fault code 26-00 is generated, see action for fault code 21-xx.



## Fault code 32

### Fault

Fault code 32-xx is generated when there is a fault on the pressure monitor in the gearbox.

### Cause

Fault code	Cause	Check Trans
32 00	Pressure monitor C3 is open when low gear L is selected.	On
32 33	Pressure monitor C3 is open when gear 3 is selected.	On
32 55	Pressure monitor C3 is open when gear 5 is selected.	On
32 77	Pressure monitor C3 is open when reverse gear R is selected.	On

### Remarks

The control unit has detected that the gearbox ratio is correct, but that the pressure monitor C3 is open when it should be closed.

Fault code 32-00 refers to a function not used by Scania.

### Action

Check the cable harness between the control unit and the gearbox.

## Fault code 33

### Fault

Fault code 33-xx is generated when there is a fault on the oil sump temperature sensor.

### Cause

Fault code	Cause	Check Trans
33 12	The oil sump temperature is abnormally low (-45 °C).	Off
33 23	The oil sump temperature is abnormally high (177 °C).	Off

### Remarks

The control unit may detect this as a fault on the sensor or related lead.

### Action

- 1 Check the oil level.
- 2 Check the battery voltage.
- 3 Check the voltage to the control unit.
- 4 Check the cable harness between the control unit and the gearbox.

## Fault code 34

### Fault

Fault code 34-xx is generated if there is an internal fault in the control unit.

### Cause

Fault code	Cause	Check Trans
34 12	Internal fault in the control unit.	On
34 13	Internal fault in the control unit.	On
34 14	Internal fault in the control unit.	Off
34 15	Internal fault in the control unit.	Off
34 16	Internal fault in the control unit.	On
34 17	Internal fault in the control unit.	On

### Remarks

Fault in the control unit program.

Fault code 34-14 may be generated at the same time as fault code 35-00. If this is the case, first rectify fault code 35-00, clear the fault codes and check if fault code 34-14 is generated again.

### Action

Replace the control unit.

## Fault code 35

### Fault

Fault code 35-xx is generated when there is a power fault to the control unit.

### Cause

Fault code	Cause	Check Trans
35 00	Power cut to the control unit before the supply voltage was switched off with the starter key.	Off
35 16	The voltage to the control unit is incorrect.	On

### Remarks

The fault code may be generated if the vehicle has a main power switch which is switched off before switching off the supply voltage with the starter key.

### Action

- 1 Check the battery voltage.
- 2 Check the voltage to the control unit.
- 3 Replace the control unit.

## Fault code 36

### Fault

Fault code 36-xx is generated if there is an internal fault in the control unit.

### Cause

Fault code	Cause	Check Trans
36 00	Internal fault in the control unit.	On

### Remarks

-

### Action

Replace the control unit.

## Fault code 42

### Fault

Fault code 42-xx is generated when there is a fault on the solenoid valve circuit.

### Cause

Fault code	Cause	Check Trans
42 12	Short circuit to supply voltage on solenoid valve circuit A.	On
42 13	Short circuit to supply voltage on solenoid valve circuit B.	On
42 14	Short circuit to supply voltage on solenoid valve circuit C.	On
42 15	Short circuit to supply voltage on solenoid valve circuit D.	On
42 16	Short circuit to supply voltage on solenoid valve circuit E.	On
42 21	Short circuit to supply voltage on solenoid valve circuit F.	Off
42 22	Short circuit to supply voltage on solenoid valve circuit G.	On
42 23	Short circuit to supply voltage on solenoid valve circuit H.	Off
42 24	Short circuit to supply voltage on solenoid valve circuit J.	Off
42 26	Short circuit to supply voltage on solenoid valve circuit N.	Off

### Remarks

-

### Action

- 1 Check the battery voltage.
- 2 Check the voltage to the control unit.
- 3 Check the cable harness and its connectors.

## Fault code 44

### Fault

Fault code 44-xx is generated when there is a fault on the solenoid valve circuit.

### Cause

Fault code	Cause	Check Trans
44 12	Short circuit to earth on solenoid valve circuit A.	On
44 13	Short circuit to earth on solenoid valve circuit B.	On
44 14	Short circuit to earth on solenoid valve circuit C.	On
44 15	Short circuit to earth on solenoid valve circuit D.	On
44 16	Short circuit to earth on solenoid valve circuit E.	On
44 21	Short circuit to earth on solenoid valve circuit F.	Off
44 22	Short circuit to earth on solenoid valve circuit G.	On
44 23	Short circuit to earth on solenoid valve circuit H.	Off
44 24	Short circuit to earth on solenoid valve circuit J.	Off
44 26	Short circuit to earth on solenoid valve circuit N.	Off

### Remarks

-

### Action

- 1 Check the battery voltage.
- 2 Check the voltage to the control unit.
- 3 Check the cable harness and its connectors.

## Fault code 45

### Fault

Fault code 45-xx is generated when there is a fault on the solenoid valve circuit.

### Cause

Fault code	Cause	Check Trans
45 12	Open circuit to earth or no voltage on solenoid valve circuit A.	On
45 13	Open circuit to earth or no voltage on solenoid valve circuit B.	On
45 14	Open circuit to earth or no voltage on solenoid valve circuit C.	On
45 15	Open circuit to earth or no voltage on solenoid valve circuit D.	On
45 16	Open circuit to earth or no voltage on solenoid valve circuit E.	On
45 21	Open circuit to earth or no voltage on solenoid valve circuit F.	Off
45 22	Open circuit to earth or no voltage on solenoid valve circuit G.	On
45 23	Open circuit to earth or no voltage on solenoid valve circuit H.	Off
45 24	Open circuit to earth or no voltage on solenoid valve circuit J.	Off
45 26	Open circuit to earth or no voltage on solenoid valve circuit N.	Off

### Remarks

-

### Action

- 1 Check the voltage to the control unit.
- 2 Check the battery voltage.
- 3 Check the cable harness and its connectors.



## Fault code 46

### Fault

Fault code 46-xx is generated when there is a fault on the solenoid valve circuit.

### Cause

Fault code	Cause	Check Trans
46 21	Current consumption on solenoid valve F is high.	Off
46 26	Current consumption on solenoid valves N and H is high.	Off
46 27	Current consumption on solenoid valve A is high.	On

### Remarks

-

### Action

- 1 Check the battery voltage.
- 2 Check the voltage to the control unit.
- 3 Check the cable harness and its connectors.

## Fault code 51

### Fault

Fault code 51-xx is generated when there is a fault on the gear changing sequence.

### Cause

Fault code	Cause	Check Trans
51 01	The correct disc coupling is not released when changing from low gear L to gear 1. The gearbox returns to low gear L.	On
51 10	The correct disc coupling is not released when changing from gear 1 to low gear L. The gearbox returns to gear 1.	On
51 12	The correct disc coupling is not released when changing from gear 1 to gear 2. The gearbox returns to gear 1.	On
51 21	The correct disc coupling is not released when changing from gear 2 to gear 1. The gearbox returns to gear 2.	On
51 23	The correct disc coupling is not released when changing from gear 2 to gear 3. The gearbox returns to gear 2.	On
51 24	The correct disc coupling is not released when changing from gear 2 to gear 4. The gearbox returns to gear 2.	On
51 35	The correct disc coupling is not released when changing from gear 3 to gear 5. The gearbox returns to gear 3.	On
51 42	The correct disc coupling is not released when changing from gear 4 to gear 2. The gearbox returns to gear 4.	On
51 43	The correct disc coupling is not released when changing from gear 4 to gear 3. The gearbox returns to gear 4.	On
51 45	The correct disc coupling is not released when changing from gear 4 to gear 5. The gearbox returns to gear 4.	On
51 46	The correct disc coupling is not released when changing from gear 4 to gear 6. The gearbox returns to gear 4.	On
51 53	The correct disc coupling is not released when changing from gear 5 to gear 3. The gearbox returns to gear 5.	On
51 64	The correct disc coupling is not released when changing from gear 6 to gear 4. The gearbox returns to gear 6.	On
51 65	The correct disc coupling is not released when changing from gear 6 to gear 5. The gearbox returns to gear 6.	On
51 XY	The correct disc coupling is not released when changing from X to Y. The gearbox returns to gear X.	On

## Remarks

When a new gear is selected the control unit expects that the previous gear ratio should no longer be detected. If the previous gear ratio is still detected the control unit interprets this as if the disc coupling in question has not been released. The gearbox will then return to the previous gear in order to avoid a breakdown.

Other fault codes may be generated for other gears. X refers to the gear from which the change is made, Y refers to the gear into which the change is made.

Fault code 51-01 and 51-10 refers to a function not used by Scania.

## Action

- 1 Check the oil level.
- 2 Check the battery voltage.
- 3 Check the voltage to the control unit.
- 4 Check leads and connectors between the control unit and the turbine speed sensor and also between the control unit and the output shaft speed sensor.
- 5 Check resistances of the sensor according to the table in section Speed sensor in the Function and work description.

## Fault code 52

### Fault

Fault code 52-xx is generated when there is a fault on the gear changing sequence.

### Cause

Fault code	Cause	Check Trans
52 01	The pressure monitor to coupling C3 is not opened when changing from low gear L to gear 1.	On
52 08	The pressure monitor to coupling C3 is not opened when changing from low gear L to gear N1.	On
52 32	The pressure monitor to coupling C3 is not opened when changing from gear 3 to gear 2.	On
52 34	The pressure monitor to coupling C3 is not opened when changing from gear 3 to gear 4.	On
52 54	The pressure monitor to coupling C3 is not opened when changing from gear 5 to gear 4.	On
52 56	The pressure monitor to coupling C3 is not opened when changing from gear 5 to gear 6.	On
52 71	The pressure monitor to coupling C3 is not opened when changing from reverse gear R to gear 1.	On
52 72	The pressure monitor to coupling C3 is not opened when changing from reverse gear R to gear 2.	On
52 78	The pressure monitor to coupling C3 is not opened when changing from reverse gear R to gear N1.	On
52 79	The pressure monitor to coupling C3 is not opened when changing from reverse gear R to gear 2.	On
52 99	The pressure monitor to coupling C3 is not opened when changing from gear N3 to gear N2.	On
52 XY	The pressure monitor to coupling C3 is not opened when changing from X to Y.	On

**Remarks**

The control unit expects the pressure monitor to open when coupling C3 is released at gear change. If the pressure monitor does not open the control unit interprets this as if the coupling has not been released. The gearbox returns to the previous gear. If the fault code is generated when changing direction of travel, put the gearbox in neutral.

Other fault codes may be generated for other gears. X refers to the gear from which the change is made, Y refers to the gear into which the change is made.

Fault code 52-01 and 52-08 refers to a function not used by Scania.

**Action**

- 1 Check the battery voltage.
- 2 Check the voltage to the control unit.

## Fault code 53

### Fault

Fault code 53-xx is generated when there is a fault on the gear changing sequence.

### Cause

Fault code	Cause	Check Trans
53 08	When changing from low gear L to gear N1 a fault was detected at the comparison of speed.	On
53 18	When changing from gear 1 to gear N1 a fault was detected at the comparison of speed.	On
53 28	When changing from gear 2 to gear N1 a fault was detected at the comparison of speed.	On
53 29	When changing from gear 2 to gear N2 a fault was detected at the comparison of speed.	On
53 38	When changing from gear 3 to gear N1 a fault was detected at the comparison of speed.	On
53 39	When changing from gear 3 to gear N3 a fault was detected at the comparison of speed.	On
53 48	When changing from gear 4 to gear N1 a fault was detected at the comparison of speed.	On
53 49	When changing from gear 4 to gear N3 a fault was detected at the comparison of speed.	On
53 58	When changing from gear 5 to gear N1 a fault was detected at the comparison of speed.	On
53 59	When changing from gear 5 to gear N3 a fault was detected at the comparison of speed.	On
53 68	When changing from gear 6 to gear N1 a fault was detected at the comparison of speed.	On
53 69	When changing from gear 6 to gear N4 a fault was detected at the comparison of speed.	On
53 78	When changing from reverse gear R to gear N1 a fault was detected at the comparison of speed.	On
53 99	When changing from gear N2 to N3 or N3 to N2 a fault was detected at the comparison of speed.	On
53 XY	When changing from X to Y a fault was detected at the comparison of speed.	On

## Remarks

The input shaft speed is compared to the turbine speed of the gear which is deselected when changing gears. The control unit interprets the turbine speed as too low in comparison to the input shaft speed. Neutral mode is engaged even if a coupling is not applied.

Other fault codes may be generated for other gears. X refers to the gear from which the change is made, Y refers to the gear into which the change is made.

Fault code 53-08 refers to a function not used by Scania.

## Action

- 1 Check that the gearbox has reached its operating temperature.
- 2 Check the oil level.
- 3 Check the battery voltage.
- 4 Check the voltage to the control unit.
- 5 Check leads and connectors between the control unit and the input shaft speed sensor and also between the control unit and the turbine speed sensor.
- 6 Check the input shaft speed sensor. The turbine speed sensor should also be checked on GA851/852 and versions.

## Fault code 54

### Fault

Fault code 54-xx is generated when there is a fault on the gear changing sequence.

### Cause

Fault code	Cause	Check Trans
54 01	After changing from low gear L to gear 1 the gear ratio for gear 1 is incorrect.	On
54 07	After changing from low gear L to reverse gear R the gear ratio for reverse gear R is incorrect.	On
54 10	After changing from gear 1 to low gear L the gear ratio for low gear L is incorrect.	On
54 12	After changing from gear 1 to gear 2 the gear ratio for gear 2 is incorrect.	On
54 17	After changing from gear 1 to reverse gear R the gear ratio for reverse gear R is incorrect.	On
54 21	After changing from gear 2 to gear 1 the gear ratio for gear 1 is incorrect.	On
54 23	After changing from gear 2 to gear 3 the gear ratio for gear 3 is incorrect.	On
54 24	After changing from gear 2 to gear 4 the gear ratio for gear 4 is incorrect.	On
54 27	After changing from gear 2 to reverse gear R the gear ratio for reverse gear R is incorrect.	On
54 32	After changing from gear 3 to gear 2 the gear ratio for gear 2 is incorrect.	On
54 34	After changing from gear 3 to gear 4 the gear ratio for gear 4 is incorrect.	On
54 35	After changing from gear 3 to gear 5 the gear ratio for gear 5 is incorrect.	On
54 42	After changing from gear 4 to gear 2 the gear ratio for gear 2 is incorrect.	On
54 43	After changing from gear 4 to gear 3 the gear ratio for gear 3 is incorrect.	On
54 45	After changing from gear 4 to gear 5 the gear ratio for gear 5 is incorrect.	On
54 46	After changing from gear 4 to gear 6 the gear ratio for gear 6 is incorrect.	On
54 53	After changing from gear 5 to gear 3 the gear ratio for gear 3 is incorrect.	On



<b>Fault code</b>	<b>Cause</b>	<b>Check Trans</b>
54 54	After changing from gear 5 to gear 4 the gear ratio for gear 4 is incorrect.	On
54 56	After changing from gear 5 to gear 6 the gear ratio for gear 6 is incorrect.	On
54 64	After changing from gear 6 to gear 4 the gear ratio for gear 4 is incorrect.	On
54 65	After changing from gear 6 to gear 5 the gear ratio for gear 5 is incorrect.	On
54 70	After changing from reverse gear R to low gear L the gear ratio for low gear L is incorrect.	On
54 71	After changing from reverse gear R to gear 1 the gear ratio for gear 1 is incorrect.	On
54 72	After changing from reverse gear R to gear 2 the gear ratio for gear 2 is incorrect.	On
54 80	After changing from gear N1 to low gear L the gear ratio for low gear L is incorrect.	On
54 81	After changing from gear N1 to gear 1 the gear ratio for gear 1 is incorrect.	On
54 82	After changing from gear N1 to gear 2 the gear ratio for gear 2 is incorrect.	On
54 83	After changing from gear N1 to gear 3 the gear ratio for gear 3 is incorrect.	On
54 85	After changing from gear N1 to gear 5 the gear ratio for gear 5 is incorrect.	On
54 86	After changing from gear N1 to gear 6 the gear ratio for gear 6 is incorrect.	On
54 92	After changing from gear N2 to gear 2 the gear ratio for gear 2 is incorrect.	On
54 93	After changing from gear N3 to gear 3 the gear ratio for gear 3 is incorrect.	On
54 95	After changing from gear N3 to gear 5 the gear ratio for gear 5 is incorrect.	On
54 96	After changing from gear N4 to gear 6 the gear ratio for gear 6 is incorrect.	On
54 XY	After changing from gear X to gear Y the gear ratio for gear Y is incorrect.	On

### Remarks

The turbine speed compared with the output shaft speed after changing gears does not correspond with the result the control unit is expecting. The gearbox returns to the previous gear. If the fault code is generated when changing direction of travel, the gearbox will go into neutral.

Possible faults are that the correct disc coupling has not been applied, or that there is a fault on one of the speed sensors.

Other fault codes may be generated for other gears. X refers to the gear from which the change is made, Y refers to the gear into which the change is made.

Code 54-12 can also be generated if the control unit has been calibrated for a close ratio gearbox, but is installed in a wide ratio gearbox or vice versa.

Fault code 54-01, 07, 10, 70 and 80 refers to a function not used by Scania.

### Action

- 1 Check the oil level.
- 2 Check the battery voltage.
- 3 Check the voltage to the control unit.
- 4 Check leads and connectors between the control unit and the turbine speed sensor and also between the control unit and the output shaft speed sensor.
- 5 Check resistances of the sensors according to the table in section Engine speed sensor in the Function and work description.
- 6 Check the basic pressure, see Measuring basic pressure.
- 7 Replace the control unit.

## Fault code 55

### Fault

Fault code 55-xx is generated when there is a fault on the gear changing sequence.

### Cause

Fault code	Cause	Check Trans
55 07	Pressure sensor C3 has not closed when changing from gear L to R.	On
55 17	Pressure sensor C3 has not closed when changing from gear 1 to R.	On
55 27	Pressure sensor C3 has not closed when changing from gear 2 to R.	On
55 87	Pressure sensor C3 has not closed when changing from gear N1 to R.	On
55 97	Pressure sensor C3 has not closed when changing from neutral to gear R.	On
55 XY	Pressure sensor C3 has not closed when changing from gear X to Y.	On

### Remarks

The control unit expects the pressure monitor to close when coupling C3 is applied at gear change. If the pressure monitor does not close a fault code is generated and the gearbox goes into neutral N1.

Other fault codes may be generated for other gears. X refers to the gear from which the change is made, Y refers to the gear into which the change is made.

Fault code 55-07 refers to a function not used by Scania.

### Action

- 1 Check the oil level.
- 2 Check the battery voltage.
- 3 Check the voltage to the control unit.
- 4 Check the basic pressure. See Measuring basic pressure.

## Fault code 56

### Fault

Fault code 56-xx is generated when there is a fault on the gear changing sequence.

### Cause

Fault code	Cause	Check Trans
56 00	The gear ratio for low gear L is incorrect.	On
56 11	The gear ratio for gear 1 is incorrect.	On
56 22	The gear ratio for gear 2 is incorrect.	On
56 33	The gear ratio for gear 3 is incorrect.	On
56 44	The gear ratio for gear 4 is incorrect.	On
56 55	The gear ratio for gear 5 is incorrect.	On
56 66	The gear ratio for gear 6 is incorrect.	On
56 77	The gear ratio for reverse gear R is incorrect.	On

### Remarks

The gear ratio test (the turbine speed compared to the output shaft speed) on the relevant gear did not give the result expected by the control unit.

Fault code 56-00 refers to a function not used by Scania.

**Action**

- 1 Check the oil level.
- 2 Check the battery voltage.
- 3 Check the voltage to the control unit.
- 4 Check leads and connectors between the control unit and the turbine speed sensor and also between the control unit and the output shaft speed sensor.
- 5 Check the turbine and output shaft speed sensors.
- 6 Check resistances of the sensors according to the table in section Speed sensor in the Function and work description.

## Fault code 57

### Fault

Fault code 57-xx is generated when there is a fault on the gear changing sequence.

### Cause

Fault code	Cause	Check Trans
57 11	The pressure monitor C3 is closed on gear 1.	On
57 22	The pressure monitor C3 is closed on gear 2.	On
57 44	The pressure monitor C3 is closed on gear 4.	On
57 66	The pressure monitor C3 is closed on gear 6.	On
57 88	The pressure monitor C3 is closed on gear N1.	On
57 99	The pressure monitor C3 is closed on gear N2 or N4.	On

### Remarks

The pressure monitor on coupling C3 is closed when it should be open, which means that three disc couplings could be applied. This would make the gearbox seize.

The control unit will then select another gear which does not use disc coupling C3.

### Action

- 1 Check the battery voltage.
- 2 Check the voltage to the control unit.
- 3 Check the cable harness between the control unit and the gearbox.

## Fault code 61

### Fault

Fault code 61-xx is generated when there is a fault on the oil temperature of the retarder.

### Cause

Fault code	Cause	Check Trans
61 00	The oil temperature of the retarder is too high (above 168 °C).	Off

### Remarks

The fault code may be generated as a result of excessive and prolonged retarder braking.

### Action

Check the oil level.

## Fault code 62

### Fault

Fault code 62-xx is generated when there is a fault on:

- Engine coolant temperature sensor
- The oil temperature sensor of the retarder.

### Cause

Fault code	Cause	Check Trans
62 12	The oil temperature of the retarder is implausibly low (below -45 °C).	Off
62 23	The oil temperature of the retarder is implausibly high (above 177 °C).	Off
62 32	Implausibly low engine coolant temperature.	Off
62 33	Implausibly high engine coolant temperature.	Off

### Remarks

-

### Action

Check the cable harness between the control unit and the retarder temperature sensor.



## Fault code 63

### Fault

Fault code 63-xx is generated when there is a fault on the neutral inhibitor, the kick-down and the brake pedal.

- The neutral inhibitor
- The kick-down
- The brake pedal (depressed when accelerating)

### Cause

Fault code	Cause	Check Trans
63 00	Conflicting signals if the neutral inhibitor should be activated or not.	On
63 26	The kick-down switch is closed, at the same time as the throttle actuation sensor indicates less than 90 % of full throttle.	Off
63 40	The brake pedal is depressed at the same time as the gearbox output shaft speed increases.	Off

### Remarks

The gearbox should warn the driver if he tries to move the drive mode selector from neutral to a drive mode. This is to stop unintentional start of the vehicle when for example the power take-off is activated. Fault code 63-00 is generated if the signals for the neutral inhibitor are conflicting for longer than 2 minutes.

Fault code 63-40 refers to a function not used by Scania.

### Action

- 63-00: Check the signals to the neutral inhibitor.
- 63-26: Check the kick-down switch.

## Fault code 64

### Fault

Fault code 64-xx is generated when there is a fault on the switch for activating the retarder.

### Cause

Fault code	Cause	Check Trans
64 12	Implausibly low voltage from the controls for activating the retarder.	Off
64 23	Implausibly high voltage from the controls for activating the retarder.	Off

### Remarks

The retarder cannot be used.

### Action

- 1 Check the circuits to the hand lever and to the switch for activating the retarder via the brake pedal.
- 2 Check the separate resistance units for these controls.

## Fault code 66

### Fault

Fault code 66-xx contains communication faults with the engine control unit.

### Cause

Fault code	Cause	Check Trans
66 00	Communication fault with the engine control unit.	Off
66 11	Communication fault with the engine control unit.	Off

### Remarks

Fault code 66-00 refers to a function not used by Scania.

### Action

-

## Fault code 69

### Fault

Fault code 69-xx is generated if there is an internal fault in the control unit.

### Cause

Fault code	Cause	Check Trans
69 27	Internal fault in the control unit.	On
69 28	Internal fault in the control unit.	On
69 29	Internal fault in the control unit.	Off
69 33	Internal fault in the control unit.	Off
69 34	Internal fault in the control unit.	On
69 35	Internal fault in the control unit.	Off
69 36	Internal fault in the control unit.	Off
69 39	Internal fault in the control unit.	Off
69 41	Internal fault in the control unit.	Off
69 42	Internal fault in the control unit.	On
69 43	Internal fault in the control unit.	On

**Remarks**

Faulty drive stage within the control unit.

**Action**

Fault codes 69-27, 69-28 and 69-29:

- 1 Check the battery voltage.
- 2 Check the voltage to the control unit.
- 3 Check the cable harness and its connectors.
- 4 If the fault disappears after replacing the control unit, change back to the old control unit to confirm that it really contains this fault. If the fault reoccurs, the old control unit is faulty and should be replaced.

For other fault codes, replace the control unit.

## Stalling speed test

A stalling speed test is carried out when the vehicle does not perform satisfactorily in order to determine whether there is a fault in the engine or the gearbox.

Compare the stalling speed for the engine under load with the values in the table Stalling speed.

- 1 Bring the gearbox to operating temperature so that the oil temperature is between 70 and 90 °C.
- 2 Disengage the exhaust brake and the white smoke limiter.
- 3 Apply the parking brake.
- 4 Depress the brake pedal.
- 5 Put the drive mode selector in mode D.



**WARNING!**

**It is not enough to only use the parking brake to keep the vehicle stationary. Brake with the brake pedal!**

---

- 6 Depress the throttle pedal fully and read the engine speed when it has stabilised.

**Note:** Do not carry out the test for more than 30 seconds. The gearbox will then overheat.

- 7 If the test needs to be repeated, the gearbox has to cool down first. Put the drive mode selector in mode N and keep the engine speed at approx. 1500 rpm for 2–3 minutes.

**Note:** The stalling speed may be different from the listed values. This may be due to the energy level of the fuel used. Smaller deviations do not necessarily mean that any action is necessary.

The stalling speed table below contains stalling speed for current combinations of engines and gearboxes.

The given stalling speed is valid as long as the engine is in good working order.

## Stalling speed

	<b>GA750(R)</b>	<b>GA751(R)</b>	<b>GA752(R)</b>	<b>GA851(R)</b>	<b>GA852(R)</b>
DC901 (230 HP)	1550-1750 rpm with TC419 TC421: 1400-1600	1550-1750 rpm with TC419 TC421: 1400-1600	1400-1600 r/min with TC421	-	-
DC902 (260 HP)	1450-1650 rpm with TC421	1450-1650 rpm with TC421	1450-1650 rpm with TC421	1400-1600 rpm with TC531	1400-1600 rpm with TC351
DC903 (300 HP)	1550-1750 rpm with TC421	1550-1750 rpm with TC421	1550-1750 rpm with TC421	1450-1650 rpm with TC531 TC541: 1350-1550	1350-1550 rpm with TC541 TC531: 1450-1650
DSC911 (220 HP)	1500-1700 rpm with TC419 TC421: 1350-1550	1500-1700 rpm with TC419 TC421: 1350-1550	1350-1550 rpm with TC421	-	-
DSC912 (260 HP)	1450-1650 rpm with TC421	1450-1650 rpm with TC421	1450-1650 rpm with TC421	1450-1650 rpm with TC531	1450-1650 rpm with TC531
DSC915 (310 HP)	-	1550-1750 rpm with TC421	1550-1750 rpm with TC421	1300-1500 rpm with TC541 TC531: 1450-1650	1450-1650 rpm with TC531 TC541: 1300-1500
DSC1201 (400 HP)	-	-	-	1500-1700 rpm with TC541	1500-1700 rpm with TC541
DSC1202 (360 HP)	-	-	-	1450-1650 rpm with TC541	1450-1650 rpm with TC541

If the stalling speed is below the given stalling speed by more than 150 rpm, it may mean that there is an engine fault.

If the stalling speed is above the given stalling speed by more than 150 rpm, it may mean that there is a gearbox fault. It may be caused by a slipping disc coupling or a fault in the torque converter. If this is the case, please contact your Allison dealer.

An extremely low stalling speed, i.e. less than approximately 35 % of the given stalling speed, may mean that the stator in the torque converter is disengaged. If this is the case, please contact your Allison dealer.

## Measuring basic pressure

If the basic pressure is too low it may indicate an inner leakage in the gearbox. It may result in slipping disc couplings and that the stalling speed is too high. If this is the case, please contact your local Allison dealer.

Check that the gearbox oil level is correct before measuring the basic pressure. The oil level affects the pressure. If the oil level is too low or too high it may indicate that the pressure is too low which results in slipping disc couplings which may lead to permanent damage to the couplings.

Use a manometer with a range up to 25 bar to check the basic pressure. Hydraulic measuring tool 99 217 can be used.

The test connection is located underneath the gearbox and is marked "MAIN". Undo the plug and connect the measuring tool. The threads for the pressure measuring is 7/16" UNF and the fitted plug has an O-ring.

**Note:** The gearbox should be at operating temperature and the oil temperature between 70-90 °C.

### Measuring

- 1 Drive the vehicle using the various gears and with an engine speed according to the Report for measuring basic pressure.
- 2 Read the basic pressure and note each value.

After carrying out the test according to the measuring report all couplings in the gearbox will have been applied. For further information, see tables under sections Report for measuring basic pressure and Correct basic pressure on all gears.



## Report for measuring basic pressure

Contact your Allison dealer if the measured pressures are incorrect. The disc couplings can be seriously damaged if the basic pressure is too low.

### GA750/751/752 with variants (Allison MD)

Mode/Gear	Engine speed	Correct pressure	Measured pressure
N	600 rpm	15.0 - 19.0 bar	
N	2100 rpm	15.0 - 23.0 bar	
R	600 rpm	15.0 - 19.0 bar	
1	600 rpm	13.0 - 19.0 bar	
2	2100 rpm	10.0 - 14.0 bar	
4	2100 rpm	10.0 - 14.0 bar	

### GA851/852 with variants (Allison HD)

Mode/Gear	Engine speed	Correct pressure	Measured pressure
N	600 rpm	15.0 - 20.7 bar	
N	1800 rpm	18.0 - 21.0 bar	
R	600 rpm	15.0 - 20.7 bar	
1	600 rpm	13.0 - 18.0 bar	
2	1800 rpm	10.5 - 14.0 bar	
4	1800 rpm	10.5 - 14.0 bar	

## Correct pressure on all gears

If the test results indicates that a more thorough investigation needs to be carried out, the table below can be used.

GA750/751/752 with variants (Allison MD)

Engine speed	Mode/Gear	Basic pressure
600 rpm	N	15.0 - 19.0 bar
600 rpm	R	15.0 - 19.0 bar
600 rpm	1 without Lock-up	13.0 - 19.0 bar
600 rpm	2 without Lock-up	13.0 - 19.0 bar
2100 rpm	N	15.0 - 23.0 bar
2100 rpm	R	15.0 - 23.0 bar
2100 rpm	1 without Lock-up	15.0 - 21.0 bar
2100 rpm	2 without Lock-up	15.0 - 21.0 bar
2100 rpm	2 with Lock-up	10.0 - 14.0 bar
2100 rpm	3 with Lock-up	10.0 - 14.0 bar
2100 rpm	4 with Lock-up	10.0 - 14.0 bar
2100 rpm	5 with Lock-up	9.0 - 13.0 bar
2100 rpm	6 with Lock-up	9.0 - 13.0 bar

## GA851/852 with variants (Allison HD)

<b>Engine speed</b>	<b>Mode/Gear</b>	<b>Basic pressure</b>
600 rpm	N	15.0 - 20.7 bar
600 rpm	R	15.0 - 20.7 bar
600 rpm	1 without Lock-up	13.0 - 18.0 bar
600 rpm	2 without Lock-up	13.0 - 18.0 bar
1800 rpm	N	18.0 - 21.0 bar
1800 rpm	R	18.0 - 21.0 bar
1800 rpm	1 without Lock-up	15.5 - 18.0 bar
1800 rpm	2 without Lock-up	15.5 - 18.0 bar
1800 rpm	2 with Lock-up	10.5 - 14.0 bar
1800 rpm	3 with Lock-up	10.5 - 14.0 bar
1800 rpm	4 with Lock-up	10.5 - 14.0 bar
1800 rpm	5 with Lock-up	9.0 - 12.5 bar
1800 rpm	6 with Lock-up	9.0 - 12.5 bar