



3.65 Error No 65

SPN	865
Description	The select operation of the main gear group has failed
Error detection	During a gear shift the select operation of the main gear group couldn't be finished correctly despite repeated attempts
System reaction	no

Error 61, 62, 107, 112, or 113 is present

Processing as described in diagnosis codes 61, 62, 107, 112 or 113

Testing of pressure build-up

When the pump is triggered, a pressure of approx. 83 bar must be generated.
The pump is activated from < 60 bar.

Testing of pressure build-up not OK

Processing as described in diagnosis code 129

Testing of pressure build-up OK

Only carry out the following measures if the pressure build-up is OK.

Testing of selection sensor

The selection sensor displays a valid but implausible value:
- Is there visible damage to the sensor?
- Is there visible damage to the vehicle wiring?
- Sensor resistance: 70 - 73 Ohm

Testing of selection sensor wiring

The wiring must be checked for passage from the ECU connection (transmission end X3) to the shift sensor (X30):
X3 pin 3 <==> X30 pin 1
X3 pin 1 <==> X30 pin 2

Testing of transmission actuator

Remove transmission actuator and carry out testing as follows:
- Can selector and shift cylinder be moved?
- Is sensor drive guaranteed by the sensor pin?

Diagnosis: sensor drive is not guaranteed

Within WTY: replace transmission actuator
Outside WTY: revamp sensor pin (kit)

Testing result: cylinders cannot be moved

Replace the transmission actuator

Selection sensor is defective

Within the warranty: replace transmission actuator



Selection sensor is defective

Outside the warranty: exchange sensor (kit)

Teach-in

Bleed and teach in the system again:

- Bleed the pump
- Bleed the transmission
- Bleed the clutch
- Teach in the transmission
- Teach in the clutch characteristic curve
- Teach in the clutch touchpoint

Diagnosis: error can be reproduced

Only carry out the following measures if reproducible errors continue to be present

Remove transmission

Remove transmission

Disassemble transmission (shift system)

- Check the parts relevant to the shift system for defects

Diagnosis: no defect

Only carry out the following measures if no defect can be identified

Vehicle in WTY

The vehicle is within the ZF warranty: replace powerpack

Vehicle outside WTY

The vehicle is outside the ZF warranty: replace ECU

Program driving software

Program and then configure the ECU with software including EEPROM file.

Diagnosis: defective components

Carry out repair in accordance with parts list

Install transmission

Bleed and teach in the system again:

- Bleed the pump
- Bleed the transmission
- Bleed the clutch
- Teach in the transmission
- Teach in the clutch characteristic curve
- Teach in the clutch touchpoint



3.90 Error No 90

SPN	890
Description	Gear detection failure
Error detection	Values of gear detection sensor not plausible to gearbox shift-pattern
System reaction	Controller shift disabled Controller select disabled Keep current gear Manual mode Open clutch at standstill

Error 61 is present

This error can occur as a subsequent error to ZF diagnosis code 61. In this case, this error must be processed.

Diagnosis: air in hydraulic system

- Bleed the pump
- Bleed the transmission
- Bleed the clutch

Diagnosis: taught-in values incorrect

- Teach in the transmission
- Teach in the clutch characteristic curve
- Teach in the clutch touchpoint

Diagnosis: error can be reproduced

Only carry out the following measures if reproducible errors continue to be present

Testing of shift sensor wiring

The wiring must be checked for passage from the ECU connection (transmission end X3) to the shift sensor (X31):

- X3 pin 3 <==> X31 pin 1
- X3 pin 1 <==> X31 pin 2

Testing of shift sensor

The shift sensor displays a valid but implausible value:

- Is there visible damage to the sensor?
- Is there visible damage to the vehicle wiring?
- Sensor resistance: 70 - 73 Ohm

Diagnosis: shift sensor is defective

Within WTY: replace transmission actuator
Outside WTY: exchange sensor (kit)



Testing of selection sensor wiring

The wiring must be checked for passage from the ECU connection (transmission end X3) to the shift sensor (X30):

X3 pin 3 <==> X30 pin 1

X3 pin 1 <==> X30 pin 2

Selection sensor is defective

Within the warranty: replace transmission actuator

Outside the warranty: exchange sensor (kit)

Testing of selection sensor

The selection sensor displays a valid but implausible value:

- Is there visible damage to the sensor?
- Is there visible damage to the vehicle wiring?
- Sensor resistance: 70 - 73 Ohm

Testing of transmission actuator

Remove transmission actuator and carry out testing as follows:

- Can selector and shift cylinder be moved?
- Is sensor drive guaranteed by the sensor pin?

Diagnosis: sensor drive is not guaranteed

Within WTY: replace transmission actuator

Outside WTY: revamp sensor pin (kit)

Testing result: cylinders cannot be moved

Replace the transmission actuator

Diagnosis: no defect

Only carry out the following measures if no defect can be identified

Replace powerpack

Replace powerpack (complete)

Program driving software

Program and then configure the ECU with software including EEPROM file.

Teach-in

Bleed and teach in the system again:

- Bleed the pump
- Bleed the transmission
- Bleed the clutch
- Teach in the transmission
- Teach in the clutch characteristic curve
- Teach in the clutch touchpoint