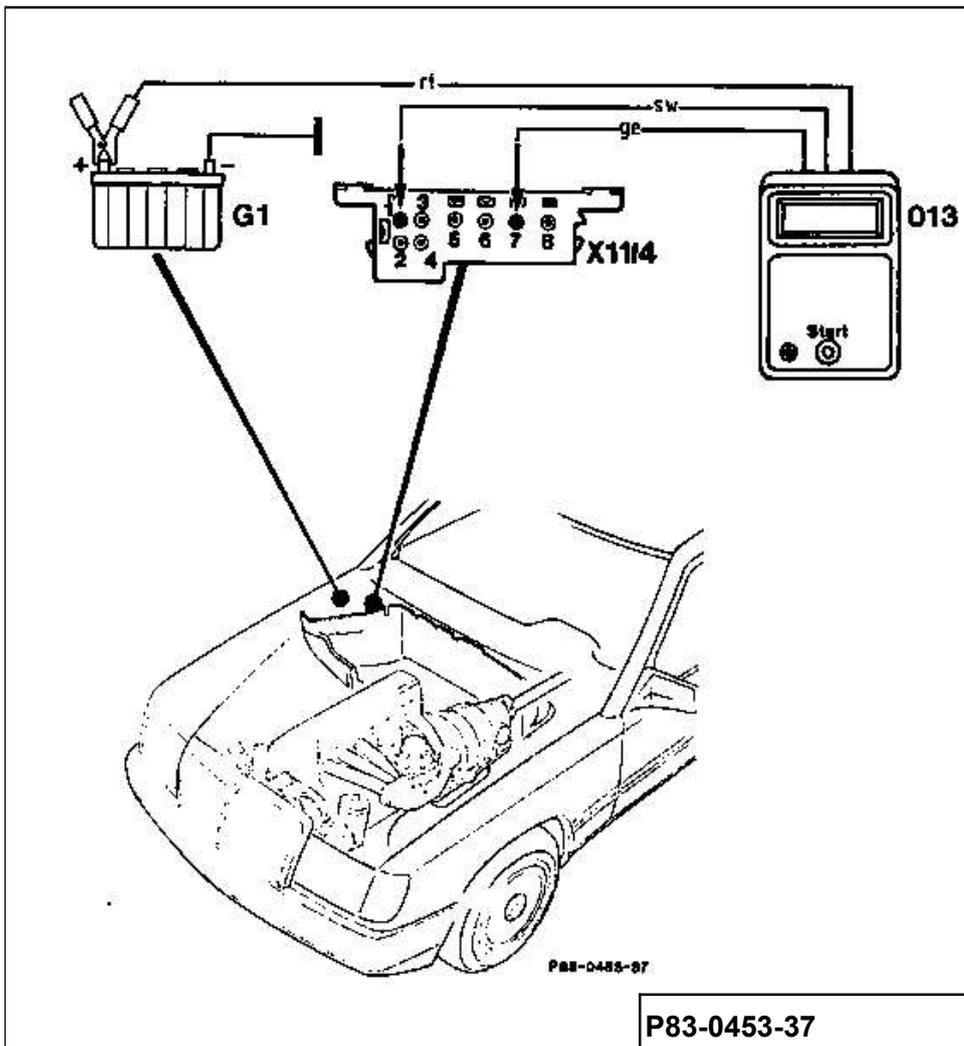


# 83-503 Testing air conditioner/automatic temperature control with pulse counter as of 09/87

Preceding work:

Operation no. of operation texts and work units or standard texts and flat rates:

## A. All models 124 except 124.034/036 up to 07/91



### Connection diagram

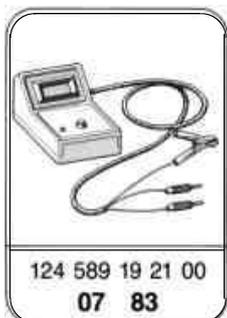
- 013 Pulse counter
- G1 Battery
- X11/4 Test connector for diagnosis, 8-pin (pulse signal)

The quantity of pulses shows which component or which lines are defective

Pulse readout	Components
1	All functions "in order"
2	In-car temperature sensor, short-circuit
3	In-car temperature sensor, interrupt

4	Outside air temperature sensor, short-circuit
5	Outside air temperature sensor, interrupt
6	Evaporator temperature sensor, short-circuit
7	Evaporator temperature sensor, interrupt
8	Left heat exchanger temperature sensor, short-circuit
9	Left heat exchanger temperature sensor, interrupt
10	Right heat exchanger temperature sensor, short-circuit
11	Right heat exchanger temperature sensor, interrupt
12	Coolant temperature sensor, short-circuit
13	Coolant temperature sensor, interrupt
30	Circulation pump, short-circuit/interrupt
31/32	Duo valve, short-circuit/interrupt
33	Compressor cut-out control unit, short-circuit/interrupt
34	Auxiliary fan 2nd stage (actuation), short-circuit
56	Fresh air/recirculated air flap switchover valve (long stroke), short-circuit
57	Fresh air/recirculated air flap switchover valve (short stroke), short-circuit

## Special tool



## Notes on pulse output

The pulse output indicates existing faults, however faults which occur temporarily are not stored.

Testing with pulse counter is to be performed for more rapid fault finding in the event of faults in the air conditioner/automatic temperature control.

If one or more faults are displayed by the pulse output, then these are to be eliminated and the pulse output to be repeated. This ensures that all faults which are recorded by the pulse output have been eliminated.

If no fault is displayed by the pulse output, but there is a complaint, it is possible that there is a tolerance deviation of components, e.g. too low ohmic value in the case of sensors. Since such a deviation is not recorded by the pulse output, the system is to be completely checked using the socket box and volt-ohmmeter.

### Testing

Connect pulse counter in accordance with the connection diagram.

"UBatt" light emitting diode must light up, if not:  
Switch on ignition.

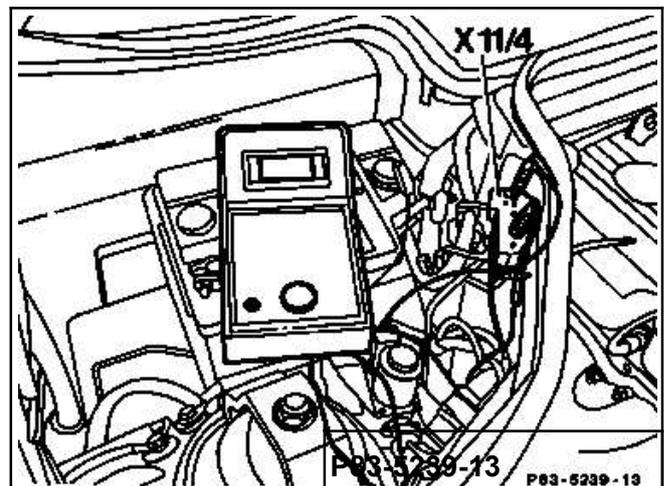
- a) Check fuse
- b) Check socket 1 on test coupling (X11/4) versus battery positive. Nominal value 11-14 V.
- c) Check socket 1 against socket 7 on test coupling (X11/4). Nominal value 6-12 V.

Operate start button for between 2 and 4 seconds.

Read off and note pulse code display.

Number 1 means that no fault has been recorded by the pulse output. All further numbers are assigned to a particular fault circuit. If there are several faults in the system, the next fault is automatically output with the subsequent operation of the start button.

Operate the start button again for between 2 and 4 seconds. If there is no fault in the system, the first number re-appears.

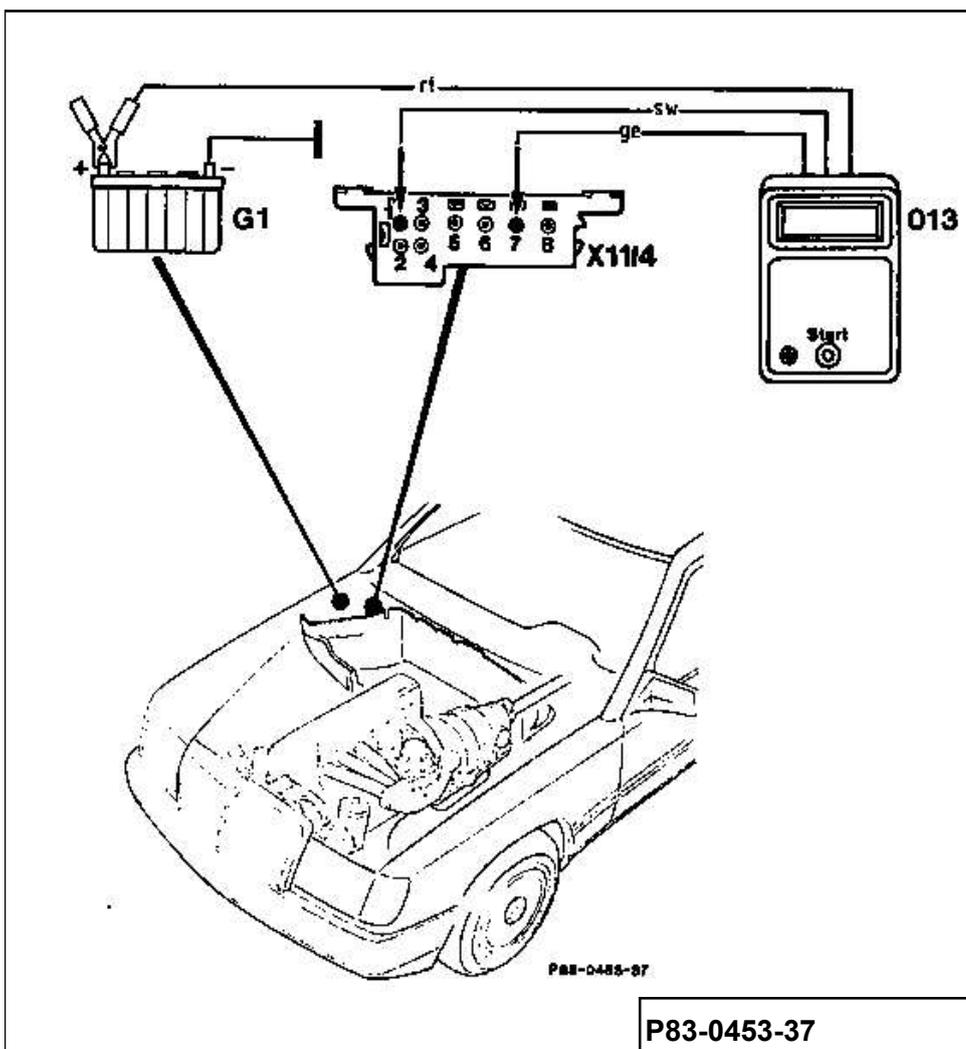


Eliminate noted faults (pulse output) and repeat pulse output, and also switch the ignition on and off.

**Note**

During the pulse output the light emitting diode in the fresh air/recirculated air switch flashes with 1 Hz.

**B. All models 124 except models 124.034/036 as of 08/91**



**Connection diagram**

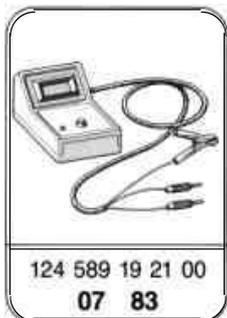
- 013 Pulse counter
- G1 Battery
- X11/4 Test connector for diagnosis, 8-pin (pulse signal)

## The quantity of pulses indicates which component or which lines are defective

Pulse readout	Components
1	All functions "in order"
2	In-car temperature sensor, short-circuit
3	In-car temperature sensor, interrupt
4	Outside air temperature sensor, short-circuit

Pulse readout	Components
5	Outside air temperature sensor, interrupt
6	Evaporator temperature sensor, short-circuit
7	Evaporator temperature sensor, interrupt
8	Left heat exchanger temperature sensor, short-circuit
9	Left heat exchanger temperature sensor, interrupt
10	Right heat exchanger temperature sensor, short-circuit
11	Right heat exchanger temperature sensor, interrupt
12	Coolant temperature sensor, short-circuit
13	Coolant temperature sensor, interrupt
30	Circulation pump, short-circuit/interrupt
31/32	Duo valve, short-circuit/interrupt
33	Compressor cut-out control unit, short-circuit/interrupt
34	Auxiliary fan 2nd stage (actuation), short-circuit
56	Valve block (4 connections) (Y11), short-circuit or interrupt
57	Valve block (4 connections) (Y11), short-circuit or interrupt
58	Valve block (4 connections) (Y11), short-circuit or interrupt

## Special tool



## Notes on pulse output

The pulse output indicates existing faults, however faults which occur temporarily are not stored.

Testing with the pulse counter is to be performed for more rapid fault finding in the event of faults in the air conditioner/automatic temperature control.

If one or more faults are displayed by the pulse output, then these are to be eliminated and the pulse output to be repeated. This ensures that all faults which are recorded by the pulse output have been eliminated.

If no fault is displayed by the pulse output, but there is a complaint, it is possible that there is a tolerance deviation of components, e.g. too low ohmic value in the case of sensors. Since such a deviation is not recorded by the pulse output, the system is to be completely checked using the socket box and volt-ohmmeter.

### Testing

Connect pulse counter in accordance with the connection diagram.

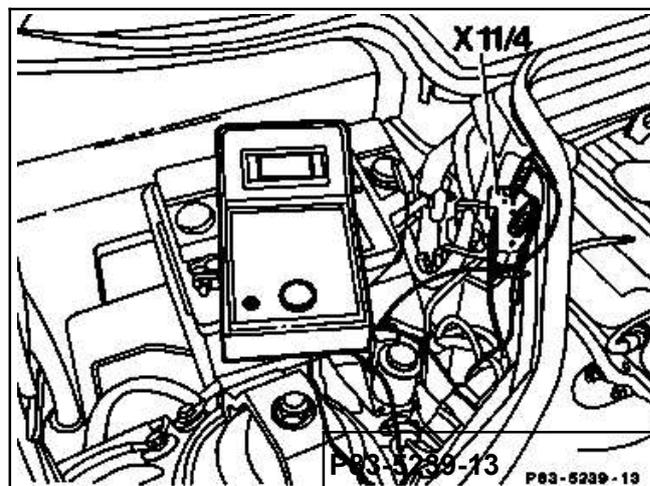
"UBatt" light emitting diode must light up, if not:

Switch on ignition.

- a) Check fuse
- b) Check socket 1 on test coupling (X11/4) versus battery positive. Nominal value 11-14 V.
- c) Check socket 1 against socket 7 on test coupling (X11/4). Nominal value 6-12 V.

Operate start button for between 2 and 4 seconds.

Read off and note pulse code display.



Number 1 means that no fault has been recorded by the pulse output. All further numbers are assigned to a particular fault circuit. If there are several faults in the system, the next fault is automatically output with the subsequent operation of the start button.

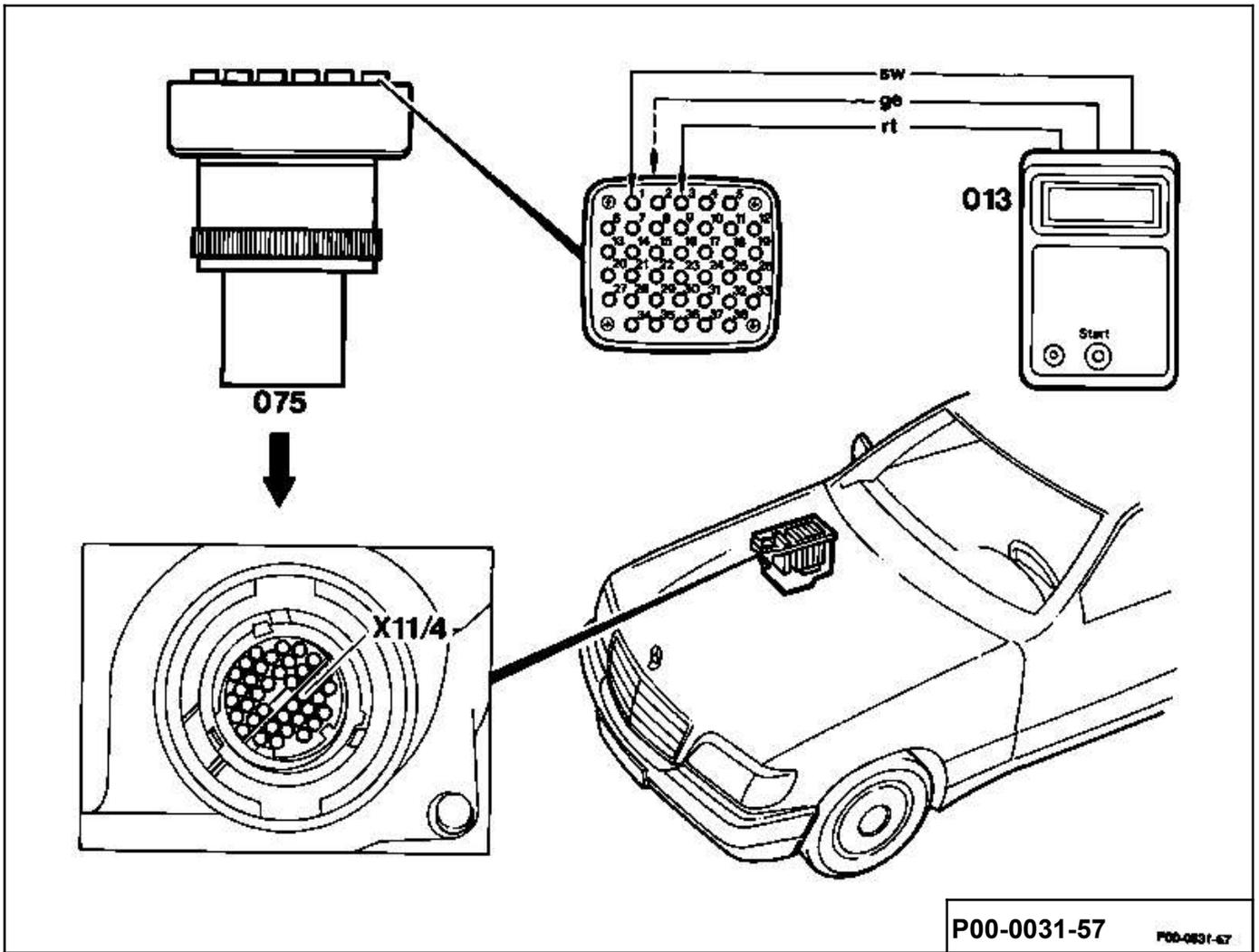
Operate the start button again for between 2 and 4 seconds. If there is no fault in the system, the first number re-appears.

Eliminate noted faults (pulse output) and repeat pulse output, and also switch the ignition on and off.

**Note**

During the pulse output the light emitting diode in the fresh air/recirculated air switch flashes with 1 Hz.

**C. Models 124.034/036 up to 07/91**



P00-0031-57

P00-0031-57

Socket 1	Terminal 31 (ground)
Socket 3	Terminal 30 (positive)
075	Pulse counter adapter
013	Pulse counter
X11/4	Test connector for diagnosis, 38-pin (pulse signal)

### Note

Connect yellow lead to socket 16.

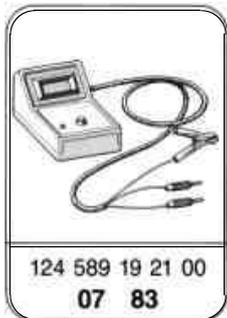
### The quantity of pulses indicates which component or which lines are defective

Pulse readout	Components
1	All functions "in order"
2	In-car temperature sensor, short-circuit

Pulse readout	Components
3	In-car temperature sensor, interrupt

4	Outside air temperature sensor, short-circuit
5	Outside air temperature sensor, interrupt
6	Evaporator temperature sensor, short-circuit
7	Evaporator temperature sensor, interrupt
8	Left heat exchanger temperature sensor, short-circuit
9	Left heat exchanger temperature sensor, interrupt
10	Right heat exchanger temperature sensor, short-circuit
11	Right heat exchanger temperature sensor, interrupt
12	Coolant temperature sensor, short-circuit
13	Coolant temperature sensor, interrupt
30	Circulation pump, short-circuit/interrupt
31/32	Duo valve, short-circuit/interrupt
33	Compressor cut-out control unit, short-circuit/interrupt
34	Auxiliary fan 2nd stage (actuation), short-circuit
56	Switchover valve fresh air/recirculated air flap (long stroke), short-circuit
57	Switchover valve fresh air/recirculated air flap (short stroke), short-circuit

## Special tool



### **Notes on pulse output**

The pulse output indicates existing faults, however faults which occur temporarily are not stored.

Testing with the pulse counter is to be performed for more rapid fault finding in the event of faults in the air conditioner/automatic temperature control.

If one or more faults are displayed by the pulse output, then these are to be eliminated and the pulse output to be repeated. This ensures that all faults which are recorded by the pulse output have been eliminated.

If no fault is displayed by the pulse output, but there is a complaint, it is possible that there is a tolerance deviation of components, e.g. too low ohmic value in the case of sensors. Since such a deviation is not recorded by the pulse output, the system is to be completely checked using the socket box and volt-ohmmeter.

### **Testing**

Fuse 7 in order.

Battery voltage 11-14 V.

Temperature selectors in white area.

Connect pulse counter in accordance with connection diagram.

Ignition ON, "UBatt" light emitting diode must light up.

## **D. Models 124.034/036 as of 08/91**

Operate start button for between 2 and 4 seconds.

Read off and note pulse code display.

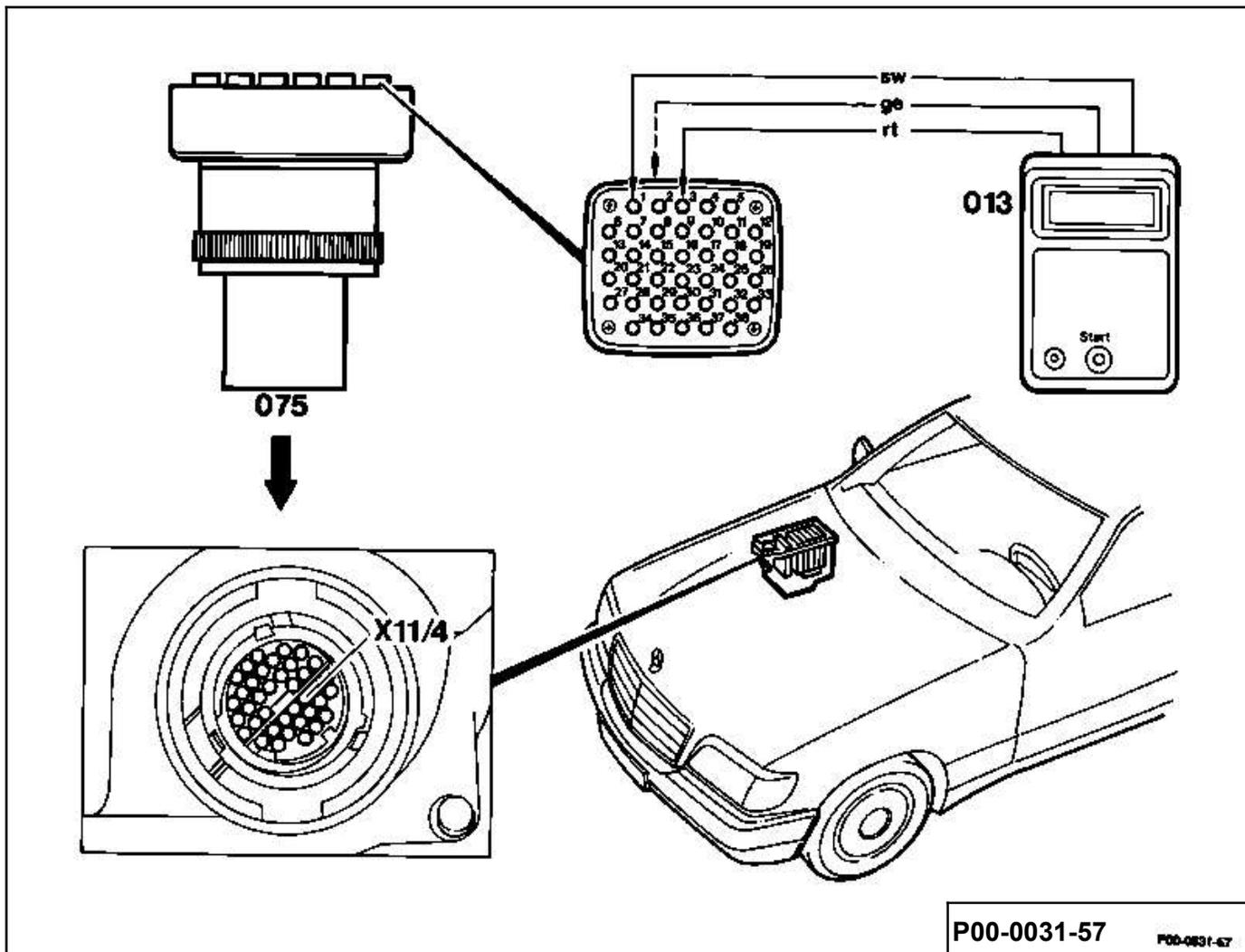
Number 1 means that no fault has been recorded by the pulse output. All further numbers are assigned to a particular fault circuit. If there are several faults in the system, the next fault is automatically output with the subsequent operation of the start button.

Operate the start button again for between 2 and 4 seconds. If there is no fault in the system, the first number re-appears.

Eliminate noted faults (pulse output) and repeat pulse output, and also switch the ignition on and off.

### **Note**

During the pulse output the light emitting diode in the fresh air/recirculated air switch flashes with 1 Hz.



- |          |                        |       |   |
|----------|------------------------|-------|---|
| Socket 1 | Terminal 31 (ground)   | 075   | Pulse counter adapter                               |
| Socket 3 | Terminal 30 (positive) | X11/4 | Test connector for diagnosis, 38-pin (pulse signal) |
| 013      | Pulse counter          |       |   |

**Note**

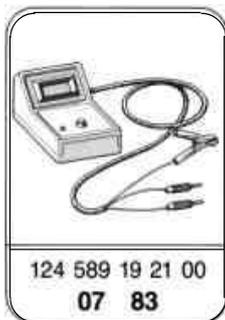
Connect yellow lead to socket 16.

**The quantity of pulses indicates which component or which lines are defective**

Pulse readout	Components
1	All functions "in order"
2	In-car temperature sensor, short-circuit
3	In-car temperature sensor, interrupt
<hr/>	
Pulse readout	Components
4	Outside air temperature sensor, short-circuit
5	Outside air temperature sensor, interrupt

6	Evaporator temperature sensor, short-circuit
7	Evaporator temperature sensor, interrupt
8	Left heat exchanger temperature sensor, short-circuit
9	Left heat exchanger temperature sensor, interrupt
10	Right heat exchanger temperature sensor, short-circuit
11	Right heat exchanger temperature sensor, interrupt
12	Coolant temperature sensor, short-circuit
13	Coolant temperature sensor, interrupt
30	Circulation pump, short-circuit/interrupt
31/32	Duo valve, short-circuit/interrupt
33	Compressor cut-out control unit, short-circuit/interrupt
34	Auxiliary fan 2nd stage (actuation), short-circuit
56	Valve block (4 connections) (Y11), short-circuit or interrupt
57	Valve block (4 connections) (Y11), short-circuit or interrupt
58	Valve block (4 connections) (Y11), short-circuit or interrupt

## Special tools



### Notes on pulse output

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### Testing

Fuse 7 in order.

Battery voltage 11-14 V.

Temperature selectors in white area.

Connect pulse counter in accordance with connection diagram.

Ignition ON, "UBatt" light emitting diode must light up.

Operate start button for between 2 and 4 seconds.

Read off and note pulse code display.

Number 1 means that no fault has been recorded by the pulse output. All further numbers are assigned to a particular fault circuit. If there are several faults in the system, the next fault is automatically output with the subsequent operation of the start button.

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