4.1 Automatic Locking Differential (ASD)

4.1 Models 124.128, 129.061, 201 (up to 05/92)

**Diagnosis**
- Diagnostic Trouble Code (DTC) Memory ........................................ 11/1
- Complaint Related Diagnostic Chart .............................................. 12/1

**Electrical Test Program**
- Component Locations ................................................................. 21/1
- Preparation for Test ................................................................. 22/1
- Test ......................................................................................... 23/1

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- Component Locations ................................................................. 31/1
- Preparation for Test ................................................................. 32/1
- Test ......................................................................................... 33/1

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- Component Locations ................................................................. 41/1
- Preparation for Test ................................................................. 42/1
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4.1 Automatic Locking Differential (ASD)  
Models 124.128, 129.061, 201

Diagnosis - Diagnostic Trouble Code (DTC) Memory

Preparation for DTC Readout

The ASD control module (N30/2) features DTC memory which can store only one code in memory.

The first recognized fault is stored in memory. The memory is not erased when the vehicle battery or ASD control module are disconnected.

The DTC can be read via:
- the impulse counter scan tool, or
- the ASD MIL (A1e24) in the instrument cluster.

1. Connect impulse counter scan tool to data link connector (X11/4) according to connection diagram on following page.

   **Note:**
   Connect yellow wire from impulse counter scan tool to:
   ASD control module socket 5.

2. Engine: at Idle.

3. Read out DTC for ASD control module (N30/2), see section 0.

   !
   To erase the DTC, Engine: at Idle.

Special Tools

124 589 19 21 00
Pulse counter
4.1 Automatic Locking Differential (ASD)  

Diagnosis - Diagnostic Trouble Code (DTC) Memory

Connection Diagram - Impulse Counter Scan Tool  
Shown on model 129

![Connection Diagram - Impulse Counter Scan Tool](image)

Figure 1
013 Impulse counter scan tool  
X4/10 Terminal block  
X11/4 Data link connector
DTC readout via the ASD MIL (A1e24)
Shown on model 129

Engine: **at Idle**
Bridge sockets 1 and 5 on the data link connector (X11/4) for approximately one second.
Count number of impulses on ASD MIL (A1e24), see Figure 3.

---

**Figure 2**
A1e24  ASD MIL
A1e25  ASD warning lamp
X11/4  Data link connector
4.1 Automatic Locking Differential (ASD)  

Diagnosis - Diagnostic Trouble Code (DTC) Memory

DTC readout via the ASD MIL (A1e24)

DTC indication

Figure 3

a  Pause for approximately two seconds
b  DTC (e.g. 4)

Special Tools

201 589 00 99 00

Electrical connecting set
## 4.1 Automatic Locking Differential (ASD)

**Diagnosis - Diagnostic Trouble Code (DTC) Memory**

<table>
<thead>
<tr>
<th>Diagnostic trouble code (DTC)</th>
<th>Possible cause</th>
<th>Test step/Remedy ¹)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>No fault in system.</td>
<td>In case of complaint: 23 and 33 (entire test)</td>
</tr>
<tr>
<td>2</td>
<td>ASD control module (N30/2).</td>
<td>Replace N30/2.</td>
</tr>
<tr>
<td>3</td>
<td>Stop lamp switch (S9/1).</td>
<td>23 ⇒ 6.0</td>
</tr>
<tr>
<td>4</td>
<td>Left front axle VSS sensor (L6/1) or VSS from ABS control module, N30.</td>
<td>23 ⇒ 9.0</td>
</tr>
<tr>
<td>5</td>
<td>Right front axle VSS sensor (L6/2) or VSS from ABS control module, N30.</td>
<td>23 ⇒ 10.0</td>
</tr>
<tr>
<td>6</td>
<td>Rear axle VSS sensor (L6) or VSS from ABS control module, N30.</td>
<td>23 ⇒ 11.0</td>
</tr>
<tr>
<td>7</td>
<td>No VSS from any sensor (L6, L6/1, L6/2).</td>
<td>23 ⇒ 9.0, 10.0, 11.0</td>
</tr>
<tr>
<td>8</td>
<td>ASD valve (Y38) or stop lamp switch (S9/1).</td>
<td>23 ⇒ 7.0&lt;br&gt;23 ⇒ 8.0</td>
</tr>
</tbody>
</table>

¹) Observe Preparation for Test, see 22.
### 4.1 Automatic Locking Differential (ASD) Models 124.128, 129.061, 201

#### Diagnosis - Complaint Related Diagnostic Chart

<table>
<thead>
<tr>
<th>Complaint/Problem</th>
<th>Possible cause</th>
<th>Remedy/Test step</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASD warning lamp (A1e25) does not come on, ASD MIL (A1e24) comes on with Ignition: <strong>ON</strong></td>
<td>Wiring between N30/2 and A1e25, Bulb, Electronic part of A1e25, N30/2.</td>
<td>23 ⇒ 4.0</td>
</tr>
<tr>
<td>ASD warning lamp (A1e25) does not change intensity when turning on exterior lamps with Ignition: <strong>ON</strong></td>
<td>Electronic part of A1e25.</td>
<td></td>
</tr>
<tr>
<td>ASD MIL (A1e24) does not come on, ASD warning lamp (A1e25) comes on with Ignition: <strong>ON</strong></td>
<td>Wiring between N30/2 and A1e25, Bulb, N30/2.</td>
<td>23 ⇒ 5.0</td>
</tr>
<tr>
<td>ASD warning lamp (A1e25) and ASD MIL (A1e24) stay on continuously with engine running.</td>
<td>Wiring between N30/2 and circuit 61e, No voltage on circuit 61e, N30/2.</td>
<td>23 ⇒ 2.0, If there is no voltage on circuit 61e, this will also be evident on the generator charge indicator lamp (A1e5). Check wiring, generator and voltage regulator, N30/2.</td>
</tr>
<tr>
<td>ASD warning lamp (A1e25) and ASD MIL (A1e24) do not come on with Ignition: <strong>ON</strong></td>
<td>Wiring, N30/2, Overvoltage protection relay module (K1/2), Circuit board in instrument cluster.</td>
<td>23 ⇒ 1.0</td>
</tr>
</tbody>
</table>
4.1 Automatic Locking Differential (ASD) Models 124.128, 129.061, 201

Electrical Test Program - Component Locations

Component Locations on Front Axle, in Engine Compartment and in Instrument Cluster Model 124

Figure 1
A1e24  ASD MIL
A1e25  ASD warning lamp
L6/1   Left front axle VSS sensor
L6/2   Right front axle VSS sensor
K1/2   Overvoltage protection relay module
N30/2  ASD control module
X11/4  Data link connector (DTC readout)
4.1 Automatic Locking Differential (ASD)  

Models 124.128, 129.061, 201

Electrical Test Program - Component Locations

Electrical Components in Right Rear Chassis, on Rear Axle and in Passenger Compartment  
Model 124

Figure 2

<table>
<thead>
<tr>
<th>Component</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>L6</td>
<td>Rear axle VSS sensor</td>
</tr>
<tr>
<td>S9/1</td>
<td>Stop lamp switch (4-pole)</td>
</tr>
<tr>
<td>Y38</td>
<td>ASD valve</td>
</tr>
</tbody>
</table>
Electrical Test Program - Component Locations

Electrical Components in Engine Compartment, and Passenger Compartment
Model 129

Figure 3
A1e24  ASD MIL
A1e25  ASD warning lamp
K1/2   Overvoltage protection relay module
N30   ABS control module
N30/2  ASD control module
S9/1    Stop lamp switch (4-pole)
X11/4  Data link connector (DTC readout)
4.1 Automatic Locking Differential (ASD)  

Models 124.128, 129.061, 201

Electrical Test Program - Component Locations

Electrical Components in Right Rear Chassis, on Front and Rear Axles  
Model 129

Figure 4

L6 Rear axle VSS sensor  
L6/1 Left front axle VSS sensor  
L6/2 Right front axle VSS sensor (not shown)  
X62/14 Left front axle VSS sensor connector (axle spindle)  
Y38 ASD valve
4.1 Automatic Locking Differential (ASD) Models 124.128, 129.061, 201

Electrical Test Program - Component Locations

Electrical Components in Engine Compartment and Passenger Compartment
Model 201

Figure 5
A1e24 ASD MIL
A1e25 ASD warning lamp
K1/2 Overvoltage protection relay module
N30/2 ASD control module
S9/1 Stop lamp switch (4-pole)
Electrical Test Program - Component Locations

Electrical Components in Engine Compartment, on Front and Rear Axle and ASD Valve Location Model 201

Figure 6
L6    Rear axle VSS sensor
L6/1  Left front axle VSS sensor
L6/2  Right front wheel VSS sensor (not shown)
X11/4 Data link connector (DTC readout)
Y38   ASD valve
4.1 Automatic Locking Differential (ASD)  

Models 124.128, 129.061, 201

Electrical Test Program - Preparation for Test

Preliminary work:
Diagnosis - Diagnostic Trouble Code (DTC) Memory  

1. Ignition: **OFF**
2. Remove plastic cover.
3. Disconnect ASD control module (N30/2).
3. Connect socket box (04) with test cable (02) according to connection diagram.

**Electrical Wiring Diagrams:**
- Electrical Troubleshooting Manual, Model 124
- Electrical Troubleshooting Manual, Model 129
- Electrical Troubleshooting Manual, Model 201

**Special Tools**

- 35-pin socket box
  - 124 589 00 21 00
- Test cable
  - 124 589 28 63 00
- Electrical connecting set
  - 201 589 00 99 00

**Equipment**

<table>
<thead>
<tr>
<th>Digital multimeter ¹)</th>
<th>Fluke models 23, 83, 85, 87</th>
</tr>
</thead>
</table>
| ¹) Available through the MBUSA Standard Equipment Program.
4.1 Automatic Locking Differential (ASD) Models 124.128, 129.061, 201

Electrical Test Program - Preparation for Test

Connection Diagram - Socket Box
Model 124

Figure 1
01 ASD control module connector
02 Test cable
03 Digital multimeter
04 Socket box (35-pole)
4.1 Automatic Locking Differential (ASD)  

Models 124.128, 129.061, 201

Electrical Test Program - Preparation for Test

Connection Diagram - Socket Box
Model 129

Figure 2

01 ASD control module connector
02 Test cable
03 Multimeter
04 Socket box (35-pole)
4.1 Automatic Locking Differential (ASD)  

Models 124.128, 129.061, 201

Electrical Test Program - Preparation for Test

Connection Diagram - Socket Box  
Model 201

Figure 3

01  ASD control module connector  
02  Test cable  
03  Multimeter  
04  Socket box (35-pole)
## 4.1 Automatic Locking Differential (ASD)

### Models 124.128, 129.061, 201

#### Electrical Test Program - Test

<table>
<thead>
<tr>
<th>Test step</th>
<th>Test scope</th>
<th>Test connection</th>
<th>Test condition</th>
<th>Nominal value</th>
<th>Possible cause/Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>⇒ 1.0</td>
<td><strong>ASD control module (N30/2)</strong>&lt;br&gt;Voltage supply&lt;br&gt;Circuit 87 E</td>
<td>N30/2</td>
<td>Ignition: ON</td>
<td>11 – 14 V</td>
<td>⇒ 1.1&lt;br&gt;Fuse in K1/2, Wiring, K1/2, ⇒ 1.2</td>
</tr>
<tr>
<td>⇒ 1.1</td>
<td>Voltage supply from overvoltage protection relay module (K1/2)</td>
<td>N30/2</td>
<td>Ignition: ON</td>
<td>11 – 14 V</td>
<td>Fuse in K1/2, Wiring, K1/2, ⇒ 1.2</td>
</tr>
<tr>
<td>⇒ 1.2</td>
<td>Ground wire</td>
<td>N30/2</td>
<td>Ignition: OFF</td>
<td>&lt; 1 Ω</td>
<td>Wiring, <strong>Model 124, 201</strong>&lt;br&gt;Ground (W10), <strong>Model 129</strong>&lt;br&gt;Ground (W16).</td>
</tr>
</tbody>
</table>
## 4.1 Automatic Locking Differential (ASD) Models 124.128, 129.061, 201

### Electrical Test Program - Test

<table>
<thead>
<tr>
<th>Test step</th>
<th>Test scope</th>
<th>Test connection</th>
<th>Test condition</th>
<th>Nominal value</th>
<th>Possible cause/Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>⇒ 2.0</td>
<td>Circuit 61 voltage</td>
<td>N30/2 8 ➔ 13</td>
<td>Ignition: ON, Engine: at idle</td>
<td>&lt; 2 V, 11 – 14 V</td>
<td>Wiring, Generator (G2).</td>
</tr>
<tr>
<td>⇒ 3.0</td>
<td>Diagnosis output</td>
<td>X11/4 5 ➔ 2</td>
<td>Engine: OFF</td>
<td>&lt; 1 Ω</td>
<td>Wiring, Data link connector (X11/4).</td>
</tr>
</tbody>
</table>

Wiring.
## 4.1 Automatic Locking Differential (ASD)

### Electrical Test Program - Test

<table>
<thead>
<tr>
<th>Test step</th>
<th>Test scope</th>
<th>Test connection</th>
<th>Test condition</th>
<th>Nominal value</th>
<th>Possible cause/Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.0</td>
<td><strong>Stop lamp switch (S9/1)</strong> N.O. contact</td>
<td>N30/2 8 – 11</td>
<td>Ignition: <strong>OFF</strong></td>
<td>&lt; 1 V</td>
<td>Fuse in F1, Wiring, S9/1.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Brake pedal not depressed.</td>
<td>11 – 14 V</td>
<td></td>
</tr>
<tr>
<td>7.0</td>
<td><strong>Stop lamp switch (S9/1)</strong> N.C. contact</td>
<td>N30/2 8 – 10</td>
<td>Ignition: <strong>ON</strong></td>
<td>11 – 14 V</td>
<td>Wiring, S9/1, 8.0</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Brake pedal not depressed.</td>
<td>&lt; 1 V</td>
<td></td>
</tr>
<tr>
<td>8.0</td>
<td><strong>ASD valve (Y38)</strong> Function</td>
<td>N30/2 8 – 10</td>
<td>Ignition: <strong>ON</strong></td>
<td>ASD valve switches on.</td>
<td>8.1, Wiring.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>ASD valve switches off.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.1</td>
<td><strong>Coil resistance</strong></td>
<td>Y38x1 1 – 2</td>
<td>Ignition: <strong>OFF</strong></td>
<td>5 – 7 Ω</td>
<td>Wiring, Y38.</td>
</tr>
</tbody>
</table>
### 4.1 Automatic Locking Differential (ASD) Models 124.128, 129.061, 201

#### Electrical Test Program - Test

<table>
<thead>
<tr>
<th>Test step</th>
<th>Test scope</th>
<th>Test connection</th>
<th>Test condition</th>
<th>Nominal value</th>
<th>Possible cause/Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>9.0</td>
<td>Left front VSS</td>
<td>N30/2</td>
<td>Raise front of vehicle. Ignition: <strong>ON</strong> Rotate left front wheel (approx. 1 rev./sec.).</td>
<td>&gt; 3 V~</td>
<td>Wiring, 9.1.</td>
</tr>
<tr>
<td>9.1</td>
<td>ABS control module (N30) left front VSS output</td>
<td>N30 N30</td>
<td>Raise front of vehicle. Ignition: <strong>ON</strong> Rotate left front wheel (approx. 1 rev./sec.).</td>
<td>&gt; 3 V~</td>
<td>9.2.</td>
</tr>
<tr>
<td>9.2</td>
<td>Left front VSS sensor (L6/1)</td>
<td>N30 N30</td>
<td>Raise front of vehicle. Ignition: <strong>ON</strong> Rotate left front wheel (approx. 1 rev./sec.).</td>
<td>&gt; 0.1 V~</td>
<td>Wiring, 9.3.</td>
</tr>
<tr>
<td>9.4</td>
<td>Internal resistance</td>
<td>N30</td>
<td>Ignition: <strong>OFF</strong> Disconnect ABS control module (N30).</td>
<td>0.8 – 2.3 kΩ</td>
<td>Wiring, L6/1.</td>
</tr>
</tbody>
</table>
## Electrical Test Program - Test

<table>
<thead>
<tr>
<th>Test step</th>
<th>Test scope</th>
<th>Test connection</th>
<th>Test condition</th>
<th>Nominal value</th>
<th>Possible cause/Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>10.0</td>
<td>Right front VSS</td>
<td>N30/2</td>
<td>Raise front of vehicle. Ignition: ON Rotate right front wheel (approx. 1 rev./sec.)</td>
<td>&gt; 3 V~</td>
<td>Wiring, ⇒ 10.1.</td>
</tr>
<tr>
<td>10.1</td>
<td>ABS control module (N30) right front VSS output</td>
<td>N30 20</td>
<td>Raise front of vehicle. Ignition: ON Rotate right front wheel (approx. 1 rev./sec.)</td>
<td>&gt; 3 V~</td>
<td>⇒ 10.2.</td>
</tr>
<tr>
<td>10.2</td>
<td>Right front VSS sensor (L6/2)</td>
<td>N30 23</td>
<td>Raise front of vehicle. Ignition: ON Rotate right front wheel (approx. 1 rev./sec.)</td>
<td>&gt; 0.1 V~</td>
<td>⇒ 10.3.</td>
</tr>
<tr>
<td>10.3</td>
<td>Internal resistance</td>
<td>N30 20</td>
<td>Ignition: OFF Disconnect ABS control module (N30).</td>
<td>&gt; 20 kΩ</td>
<td>Wiring, ⇒ 10.4.</td>
</tr>
<tr>
<td>10.4</td>
<td>Internal resistance</td>
<td>N30 23</td>
<td>Ignition: OFF Disconnect ABS control module (N30).</td>
<td>0.8 – 2.3 kΩ</td>
<td>Wiring, L6/2.</td>
</tr>
</tbody>
</table>
### Electrical Test Program - Test

<table>
<thead>
<tr>
<th>Test step</th>
<th>Test scope</th>
<th>Test connection</th>
<th>Test condition</th>
<th>Nominal value</th>
<th>Possible cause/Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>⇒ 11.0</td>
<td>Rear axle VSS</td>
<td>N30/2</td>
<td>Raise front of vehicle. Ignition: <strong>ON</strong></td>
<td>3 V~</td>
<td>Wiring, ⇒ 11.1.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>7 → △(+)→ 1</td>
<td>Rotate either rear wheel (approx. 1 rev./sec.).</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>8 → △(+)→ 1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>9 → △(+)→ 1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>⇒ 11.1</td>
<td>ABS control module (N30) rear axle VSS output</td>
<td>N30</td>
<td>Raise front of vehicle. Ignition: <strong>ON</strong></td>
<td>3 V~</td>
<td>⇒ 11.2.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>20 → △(+)→ 30</td>
<td>Rotate either rear wheel (approx. 1 rev./sec.).</td>
<td></td>
<td></td>
</tr>
<tr>
<td>⇒ 11.2</td>
<td>Rear axle VSS sensor (L6)</td>
<td>N30</td>
<td>Raise front of vehicle. Ignition: <strong>ON</strong></td>
<td>0.1 V~</td>
<td>⇒ 11.3.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>7 → △(+)→ 9</td>
<td>Rotate either rear wheel (approx. 1 rev./sec.).</td>
<td></td>
<td></td>
</tr>
<tr>
<td>⇒ 11.3</td>
<td>Internal resistance</td>
<td>N30</td>
<td>Ignition: <strong>OFF</strong></td>
<td>20 kΩ</td>
<td>Wiring, ⇒ 11.4.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>20 → △(+)→ 7</td>
<td>Disconnect ABS control module (N30).</td>
<td></td>
<td></td>
</tr>
<tr>
<td>⇒ 11.4</td>
<td>Internal resistance</td>
<td>N30</td>
<td>Ignition: <strong>OFF</strong></td>
<td>0.6 – 1.6 kΩ</td>
<td>Wiring, L6.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>7 → △(+)→ 9</td>
<td>Disconnect ABS control module (N30).</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
4.1 Automatic Locking Differential (ASD) Models 124.128, 129.061, 201

Electrical Test Program - Test

Figure 1
Model 124 Right component compartment
- K1/2 Overvoltage protection relay module
  (87E/87L/30a, 9-pole)
- N30/2 ASD control module

Figure 2
Model 124 Right rear passenger compartment
- L6x1 Rear axle VSS sensor connector
- Y38x1 ASD solenoid valve connector

Figure 3
Model 129
- K1/2 Overvoltage protection relay module
  (87E/87L/30a, 9-pole)
- N30 ABS control module
- N30/2 ASD control module
Electrical Test Program - Test

Figure 4
Model 129
X30/1 Multi-function connector block
X11/4 Data link connector (DTC readout)

Figure 5
Model 129
L6/1 Left front axle VSS sensor
L6/2 Right front axle VSS sensor
X62/14 Left front axle VSS sensor connector (axle spindle)
X62/15 Right front axle VSS sensor connector (axle spindle)

Figure 6
Model 129
X62/7 Left front axle VSS sensor connector (component compartment)
4.1 Automatic Locking Differential (ASD) Models 124.128, 129.061, 201

Electrical Test Program - Test

Figure 7
Model 129
X4/10 Terminal block (circuit 30/circuit 61 battery) (3-pole)
X62/6 Right front axle VSS sensor connector (component compartment)

Figure 8
Model 129
X62/5 Valve connector (ASD) (2-pole)

Figure 9
Model 129
A1 Instrument cluster
A1e24 ASD MIL
A1e25 ASD warning lamp

A1e24 ASD MILA1e25 ASD warning lamp
4.1  Automatic Locking Differential (ASD)  

Electrical Test Program - Test

Figure 10
Model 201 Right component compartment
K1/2 Overvoltage protection relay module
(87E/87L/30a, 9-pole)
N30 ABS control module
N30/2 ASD control module
X11/4 Data link connector (DTC readout)

Figure 11
Model 201 Left footwell
X5/1 Terminal block (interior)

Figure 12
Model 201 Right footwell
Y38x1 ASD solenoid valve connector
4.1 Automatic Locking Differential (ASD) Models 124.128, 129.061, 201

Electrical Test Program - Test

**Figure 13**  
Pedal assembly, all models  
S9/1 Stop lamp switch (4-pole)

**Figure 14**  
Rear axle center piece, all models  
L6 Rear axle VSS sensor  
L6a Rear axle VSS sensor mounting screw

**Figure 15**  
ASD control module (N30/2) pin layout  
1 Rear axle VSS sensor (L6) from N30  
2 ASD warning lamp (A1e24) and Data link connector (X11/4)  
3 Right front axle VSS sensor (L6/2) from N30  
4 ASD MIL (A1e25)  
5 Left front axle VSS sensor (L6/1) from N30  
6 Not used  
7 – 9 Ground  
10 ASD valve (Y38) (–) and Stop lamp switch (S9/1) N.C. contact  
11 Stop lamp switch (S9/1) N.O. contact  
12 Not used  
13 Circuit 61 voltage  
14 Circuit 87 voltage
4.1 Automatic Locking Differential (ASD)  Models 124.128, 129.061, 201

Hydraulic Test Program - Component Locations

Hydraulic Components
Model 124.128

Figure 1

3/4  Hydraulic unit with pressure reservoir
60  Bearing cover plate with ring cylinder (M104)
80  Hydraulic oil reservoir
82  Hydraulic tandem pump
A  Suction line - oil reservoir to pressure pump
HS  Pressure line - hydraulic unit to ring cylinder
T  Return line - hydraulic unit to oil reservoir
N  Without leveling function:
  Return line - hydraulic unit to oil reservoir
  With leveling function:
  Return line - leveling valve to oil reservoir
P  Pressure line - pressure pump to hydraulic unit
Y38  ASD valve
4.1 Automatic Locking Differential (ASD)  
Models 124.128, 129.061, 201

Hydraulic Test Program - Component Locations

Hydraulic Components
Model 129.061

Figure 2

45  Tandem pump
70  Ring cylinder
80  Oil reservoir
L6  Rear axle vehicle speed sensor
Y38 ASD valve
HS Pressure line - hydraulic unit to ring cylinder
T  Return line - hydraulic unit to oil reservoir
N  Without leveling function:
   Return line - hydraulic unit to oil reservoir
   With leveling function:
   Return line - leveling valve to oil reservoir
4.1 Automatic Locking Differential (ASD) Models 124.128, 129.061, 201

Hydraulic Test Program - Component Locations

Hydraulic Components
Model 201.028

Figure 3
49 Hydraulic oil pump (camshaft driven)
3/4 Hydraulic unit with pressure reservoir
70 Ring cylinder
80 Oil reservoir
A Suction line - oil reservoir to pressure pump
HS Pressure line - hydraulic unit to ring cylinder
T Return line - hydraulic unit to oil reservoir
N Without leveling function:
  Return line - hydraulic unit to oil reservoir
  With leveling function:
  Return line - leveling valve to oil reservoir
P Pressure line - pressure pump to hydraulic unit
Y38 ASD valve

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4.1 ASD 31/3
Hydraulic Test Program - Component Locations

Hydraulic Components
Model 201.029

Figure 4
45  Tandem pump
80  Oil reservoir
A  Suction line - oil reservoir to pressure pump
T  Return line - hydraulic unit to oil reservoir
N  Without leveling function:
    Return line - hydraulic unit to oil reservoir
    With leveling function:
    Return line - leveling valve to oil reservoir
P  Pressure line - pressure pump to hydraulic unit
4.1 Automatic Locking Differential (ASD)  

Models 124.128, 129.061, 201

Hydraulic Test Program - Preparation for Test

Preparation for Test
1. Ignition: **OFF**
2. Check oil level in oil reservoir, correct if necessary.
3. Release system pressure.
4. Connect the pressure gauge to pressure release screw on hydraulic unit according to connection diagram.

**Note:**
Checking hydraulic pump:
Model 129: 3.1 32 (ADS)
Model 124, 201: See SMS, Job No. 32-0530

Special Tools

Tester

126 589 14 21 00
Hydraulic Test Program - Preparation for Test

Connection Diagram - Pressure Gauge
Shown on model 129

Figure 1
Hydraulic Test Program - Preparation for Test

Figure 2

83c  Closing screw
# 4.1 Automatic Locking Differential (ASD) Models 124.128, 129.061, 201

## Hydraulic Test Program - Test

<table>
<thead>
<tr>
<th>Test step</th>
<th>Test scope</th>
<th>Test connection</th>
<th>Test condition</th>
<th>Nominal value</th>
<th>Possible cause/Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>⇒ 1.0</td>
<td><strong>Gas pressure in pressure reservoir</strong></td>
<td>250 bar at pressure release screw on hydraulic unit</td>
<td>Engine: <strong>at Idle</strong> System depressurized.</td>
<td>Rapid pressure buildup up to 22 bar followed by slow buildup up to 33 bar.</td>
<td>If rapid pressure buildup stops at 10 bar, replace pressure reservoir.</td>
</tr>
<tr>
<td>⇒ 2.0</td>
<td><strong>Pressure test</strong></td>
<td>250 bar</td>
<td>Engine: <strong>at Idle</strong></td>
<td>27 – 33 bar</td>
<td><strong>Pressure &lt; 27 bar:</strong> Model 124, 201</td>
</tr>
<tr>
<td></td>
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<tr>
<td></td>
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<td></td>
<td><strong>Pressure &gt; 38 bar:</strong> Replace hydraulic unit.</td>
</tr>
<tr>
<td></td>
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<td></td>
<td></td>
<td></td>
<td><strong>Model 129</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3.1 32</td>
</tr>
</tbody>
</table>

---
4.1 Automatic Locking Differential (ASD)  
Models 124.128, 129.061, 201

Mechanical Test Program - Component Locations

Mechanical Components
Shown on Model 129

Figure 1
060  Frictional torque measurement adaptor plate
4.1 Automatic Locking Differential (ASD)  
Models 124.128, 129.061, 201

Mechanical Test Program - Preparation for Test

Preparation for Test

1. Ignition: **OFF**
2. Check oil level in oil reservoir, correct if necessary.
3. Lift vehicle at rear on one side.
4. Attach frictional torque measurement adaptor plate (Figure 1) using two opposing wheel bolts on raised wheel. Screw studs with shorter threads into the rear axle shaft flange until they bottom out. Slide frictional torque measurement adaptor plate over studs and tighten knurled nuts by hand.
5. Disconnect ASD control module (N30/2).
6. Bridge sockets 8 and 10 of the ASD control module connector.

**Special Tools**

- Drive flange 140 589 00 46 00
- Electrical connecting set 201 589 00 99 00

**Equipment**

<table>
<thead>
<tr>
<th>Torque Wrench</th>
<th>Local Purchase</th>
</tr>
</thead>
<tbody>
<tr>
<td>Range: 16 – 65 Nm</td>
<td></td>
</tr>
<tr>
<td>80 – 260 Nm</td>
<td></td>
</tr>
</tbody>
</table>
Frictional Torque Measurement
Shown on Model 201

Figure 1
060 Frictional torque measurement adaptor plate
## Mechanical Test Program - Test

<table>
<thead>
<tr>
<th>Test step</th>
<th>Test scope</th>
<th>Test connection</th>
<th>Test condition</th>
<th>Nominal value</th>
<th>Possible cause/Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>⇒ 1.0</td>
<td>Frictional torque without ASD engaged</td>
<td>Torque wrench (15 – 65 Nm)</td>
<td>Turn torque wrench through 90° (see 42, Figure 1). Observe and record the value.</td>
<td>See ⇒ 2.0</td>
<td>⇒ 2.0</td>
</tr>
<tr>
<td>⇒ 2.0</td>
<td>Frictional torque with ASD engaged</td>
<td>N30/2 8 – 10</td>
<td>Disconnect ASD control module (N30/2). Return wheel to its starting position in ⇒ 1.0 (see 42, Figure 1). Engine: <strong>at idle</strong> Pressure within hydraulic system: 27 – 33 bar. (see 33 ⇒ 2.0)</td>
<td>Measured frictional torque in ⇒ 2.0 <strong>minus</strong> measured frictional torque in ⇒ 1.0: &gt; 100 Nm.</td>
<td>If frictional torque difference is &lt; 100 Nm, replace rear axle centerpiece.</td>
</tr>
</tbody>
</table>