General Operating and Service Manual

Air suspension systems and axles with drum brakes

Edition 04/2007
Air suspension system, Type INTRA

The axle type designation (Version), identification number and serial number (see type plate) are required for the warranty procedure.

Identification if the type plate is missing:
The Serial No. of the axle is embossed in the axle end on the right-hand side (as seen in the direction of travel).

Air suspension system, Type MODUL

The Serial No. of the axle is embossed in the axle end on the right-hand side (as seen in the direction of travel).
Vehicle and axle identification

Trailer manufacturer..................................................................................................................
Body type...................................................................................................................................
Chassis No. ..................................................................................................................................
Date of delivery/date of registration .............................................................................................

Spare parts service for SAF-HOLLAND axles and suspension systems

Exact type designations are required for spare parts orders.

Please enter the identification data of the suspension system in the type plate illustrated below so that the correct information is available when necessary.
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Please observe the following safety instructions in order to maintain the operational and road safety of your SAF-HOLLAND axles and suspension systems:

1. The wheel contact surfaces between the wheel disc and wheel hub and the wheel nut contact surface at the wheel disc must not be additionally painted. The contact surfaces must be clean, smooth and free from grease. Failure to observe this may result in the wheel coming loose. Any additional instructions of the wheel manufacturer must also be observed.

2. Only the wheel and tyre sizes approved by the trailer builder may be used. The tyres must always have the specified inflation pressure.

3. The brake systems of the tractor and the trailer/semi-trailer must be synchronised by means of a tractor/trailer brake synchronisation not later than 5,000 km after the initial start of operation of the trailer/semi-trailer in order to ensure a safe and uniform braking behaviour and uniform brake pad wear. Tractor/trailer brake synchronisations should be carried out by appropriately qualified and equipped brake workshops.
   The use of an additional braking system, such as a trailer anti-jackknife brake is forbidden by law on vehicles with type approval after January 1999.

4. Before starting a journey, ensure that the maximum permissible axle load is not exceeded and that the load is distributed equally and uniformly.

5. On trailers with air suspension, ensure that the air bags are completely filled with air before starting the journey. Incompletely filled air bags may result in damage to axles, suspension, frame and superstructure and impair road safety.

6. Ensure that the brakes are not overheated by continuous operation.
   With drum brakes, overheating can result in a hazardous deterioration in the braking efficiency.
   With disc brakes, overheating can result in damage to surrounding components – in particular the wheel bearings. This can result in a significant deterioration in road safety, e.g. failure of wheel bearings.

7. The parking brake must not be immediately applied when the brakes are hot, as the brake discs and brake drums may be damaged by different stress fields during cooling.

8. Use the supports provided when loading and unloading in order to avoid damage to the axle.

9. Observe the operating recommendation of the trailer builder for off-road operation of the installed axles and suspension systems.
   The SAF-HOLLAND definition of OFF-ROAD means driving on non-asphalted / non-concreted routes, such as e.g. gravel roads, agricultural and forestry tracks, on construction sites and in gravel pits.
   Off-road operation of SAF-HOLLAND axles and suspension systems not designed for the purpose may result in damage and hence to an impairment of road safety.

10. SAF-HOLLAND axles and suspension systems require continuous care, service and maintenance in order to maintain operational and road safety and to be able to recognise natural wear and defects in good time.
    The daily inspection of the trailer for road safety before starting the journey is one of the driver’s obligations.
    SAF-HOLLAND recommends that at least the inspections and maintenance operations described on page 6 should be carried out.

We recommend the use of original SAF-HOLLAND spare parts.
A close-knit service network of SAF-HOLLAND partner companies is available for the technical support of the SAF-HOLLAND axles and suspension systems and for the supply of original SAF-HOLLAND spare parts (see rear cover or on the Internet under www.safholland.com).
Updates will be published as necessary on the Internet under www.safholland.com.
• **Caution:** After every wheel change, always retighten the wheel nuts to the prescribed torque after 50 km and again after 150 km.

• Check the brake lining thickness at regular intervals.

• Carry out general visual inspections of the brakes, tyres and all suspension components at regular intervals and check for proper attachment, wear, leaks, corrosion and damage.

• Carry out regular visual inspections of the wheel bearing unit for grease leaks and axial clearance. Wheel bearing grease change, see pages 9, 11, 13, 14 and 15.

• Regularly check the camshaft for smooth return and the slack adjuster for proper function.

• Lubricate the camshaft at regular intervals.

• Inspect the brake drum for wear* and cracking at every brake lining change. Minimum wear limits*, see pages 8 to 15.

• Replace the brake shoe return springs at every brake lining change.

• Check the air suspension ride height at regular intervals in accordance with the trailer builder’s specifications and adjust as described on page 25.

• With aluminium and stainless steel hanger brackets, check that the bolts of the spring brackets and shock absorbers are tightened to the prescribed torques as described on page 7.

• On all units, check that the bolts of the U-brackets are tightened to the prescribed torques as described on page 7.

• For steering axles, observe also the points on pages 16 and 17.

• Carry out a general safety check in accordance with the statutory provisions.

• We recommend the use of original SAF-HOLLAND spare parts.

* We recommend that a general safety check is carried out when the minimum wear limit is reached.
Tightening torques

**Tightening torques SAF INTRA with steel hanger bracket**

- **M20x1.5 (WAF19)**
  - 600 Nm
- **M16 (WAF24)**
  - 180 Nm for steel plunger piston
  - 80 Nm for plastic plunger piston
- **M30 (WAF46)**
  - 400 Nm + 120°
- **M12 (WAF19)**
  - 40 Nm

**Tightening torques SAF INTRA with aluminium hanger bracket and stainless steel hanger bracket**

- **M20x1.5 (WAF30)**
  - 600 Nm
- **M20x1.5 (WAF30)**
  - 40 Nm
- **M30 (WAF46)**
  - 400 Nm + 120°
- **M16 (WAF24)**
  - 180 Nm for steel plunger piston
  - 80 Nm for plastic plunger piston

**NOT MAINTENANCE-FREE!**

**Tightening torques SAF MODUL**

- **M30 (WAF46)**
  - 400 Nm + 120°
- **M24x2 (WAF36)**
  - 400 Nm
- **M22x1.5 (WAF32)**
  - 580 Nm
- **M20 (WAF30)**
  - 180 Nm
- **M12 (WAF19)**
  - 80 Nm for steel plunger piston
- **Cut-screw K100x40 (WAF10)**
  - 20 Nm for plastic plunger piston

**Attention!**
- Threads not to be oiled or greased!
- Pivot bolt on steel hanger brackets maintenance-free.
- Service intervals for aluminium hanger brackets and stainless steel hanger brackets:
  - first check after 500 km, further check after every 6 months
- Spring eye bolt: Inspection torque 1,200 Nm
- Shock absorber bolt: Inspection torque 400 Nm
Axle types

Wheel bearing play, wheel bearing grease
Adjustment of wheel bearing play not necessary.
Note during brake repairs:
Lubricate the camshafts, rotating the camshaft through 360° several times.
Use a vacuum cleaner to remove brake dust.
Use of a high-pressure cleaner or liquid cleanser is not permitted on the brake drum and brake hub.
Remove old grease from the stub axle and regrease.
Replace the O-ring.
Replace the brake shoe return springs at every brake pad change.

Grease specifications
For camshaft
Part No. 5 387 0011 05
For axle stub end:
Mounting paste
Part No. 5 387 0021 05
For ball in brake carrier:
Copper paste
Part No. 5 387 0014 01

Tighten axle nuts
On left-hand side in direction of travel:
Left-hand thread
On right-hand side in direction of travel:
Right-hand thread
Pretightening: 150 Nm, then turn the hub unit slowly by 5 revolutions.
Final tightening: Retighten by 1 increment (30°)
Marking of the nuts with left-hand thread:
Milled groove on outside of hexagon.
Max. permissible axial backlash of hub unit: 0 - 0.20 mm

BRAKE SNK 420
Max. admissible brake drum machining diameter: 424.0 mm
Max. admissible brake drum wear diameter: 425.0 mm
Brake lining qualities recommended and approved by SAF-HOLLAND:
SAF 396, BREMSKERL 6386
Machine new brake linings to diameter + 0.3 mm of the brake drum.
When riveting on, observe the lining form (see instructions in the pack).

<table>
<thead>
<tr>
<th>Brake size</th>
<th>Part No.</th>
<th>Brake drum / brake lining Repair stages in mm</th>
<th>Brake lining</th>
<th>Rivet</th>
<th>Rivet DIN 7338</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Normal dimension</td>
<td>1st repair stage</td>
<td>2nd repair stage</td>
<td>Number per axle</td>
</tr>
<tr>
<td>SNK 420</td>
<td></td>
<td>d₁ - 420.0</td>
<td>d₁ - 422.0</td>
<td>d₁ - 424.0</td>
<td></td>
</tr>
<tr>
<td>x 180</td>
<td>3 057 3960 00</td>
<td>20.6</td>
<td>21.6</td>
<td>22.6</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td></td>
<td>20.0</td>
<td>21.0</td>
<td>22.0</td>
<td>4</td>
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<tr>
<td>x 200</td>
<td>3 057 3966 00</td>
<td>20.6</td>
<td>21.6</td>
<td>22.6</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td></td>
<td>20.0</td>
<td>21.0</td>
<td>22.0</td>
<td>4</td>
</tr>
</tbody>
</table>

Assembly tools
Axle nut wrench
Part No. 4 434 3828 00
Brake shoe tensioner
Part No. 3 349 1001 00
Puller for wheel hub
Part No. 4 434 3822 00
Axle types
SK RS / RZ 9042 / 11242

Wheel bearing play, wheel bearing grease
Adjustment of wheel bearing play not necessary.
Change the wheel bearing grease after 500,000 km or 50 months.
Inspect taper roller bearing for serviceability at grease changes.
Replace the O-ring and fit the wheel cap.
Note during brake repairs:
Lubricate the camshafts, rotating the camshaft through 360° several times.
Do not dismantle the wheel bearing unit.
Use a vacuum cleaner to remove brake dust.
Use of a high-pressure cleaner or liquid cleanser is not permitted on the brake drum and brake hub.
Remove old grease from the stub axle and regrease.
Replace the brake shoe return springs at every brake pad change.

Grease specifications
For wheel bearings:
Part No. 5 387 0011 05
For camshaft
Part No. 5 387 0011 05
For axle stub end:
Mounting paste
Part No. 5 387 0021 05
For ball in brake carrier:
Copper paste
Part No. 5 387 0014 01

Tighten axle nuts

On left-hand side in direction of travel:
Left-hand thread
On right-hand side in direction of travel:
Right-hand thread
Tightening torque 900 Nm. Each hub unit must be rotated smoothly at least twice while tightening the bolts.
Marking of the nuts with left-hand thread:
Milled groove on outside of hexagon.
Max. permissible axial backlash of hub unit: 0 - 0.20 mm

BRAKE SNK 420
Max. admissible brake drum machining diameter: 424.0 mm
Max. admissible brake drum wear diameter: 425.0 mm
Brake lining qualities recommended and approved by SAF-HOLLAND: SAF 396, BREMSKERL 6386
Machine new brake linings to diameter + 0.3 mm of the brake drum.
When riveting on, observe the lining form (see instructions in the pack).

<table>
<thead>
<tr>
<th>Brake size</th>
<th>Part No. Brake lining</th>
<th>Brake drum / brake lining Repair stages in mm</th>
<th>Brake lining</th>
<th>Rivet</th>
<th>Rivet size DIN 7338</th>
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</thead>
<tbody>
<tr>
<td>SNK 420</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>x 180</td>
<td>3 057 3960 00</td>
<td>20.6</td>
<td>21.6</td>
<td>22.6</td>
<td>4 64 B 8 x 15</td>
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<tr>
<td></td>
<td></td>
<td>20.0</td>
<td>21.0</td>
<td>22.0</td>
<td></td>
</tr>
<tr>
<td>x 200</td>
<td>3 057 3966 00</td>
<td>20.6</td>
<td>21.6</td>
<td>22.6</td>
<td>4 64 B 8 x 15</td>
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<tr>
<td></td>
<td></td>
<td>20.0</td>
<td>21.0</td>
<td>22.0</td>
<td></td>
</tr>
</tbody>
</table>

Assembly tools
Axle nut wrench
Part No. 1 012 0024 00
Brake shoe tensioner
Part No. 3 349 1001 00
Brake drum mounting flanges
Part No. 3 434 1040 01
Wheel bearing mounting mandrel
Part No. 3 434 1043 00
Puller for wheel hub
Part No. 4 434 3822 00
Axle types

Wheel bearing play, wheel bearing grease
Adjustment of wheel bearing play not necessary.
Note during brake repairs:
Lubricate the camshafts, rotating the camshaft through 360° several times.
Use a vacuum cleaner to remove brake dust.
Use of a high-pressure cleaner or liquid cleanser is not permitted on the brake drum and brake hub.
Remove old grease from the stub axle and regrease.
Replace the O-ring.
Replace the brake shoe return springs at every brake pad change.

Tighten axle nuts
On left-hand side in direction of travel:
Left-hand thread
On right-hand side in direction of travel:
Right-hand thread
Pretightening: 150 Nm, then turn the hub unit slowly by 5 revolutions.
Final tightening: Retighten by 1 increment (30°)
Marking of the nuts with left-hand thread:
Milled groove on outside of hexagon.
Max. permissible axial backlash of hub unit:
0 - 0.20 mm

BRAKE SNK 367
Max. admissible brake drum machining diameter:
371.0 mm
Max. admissible brake drum wear diameter:
372.0 mm
Brake lining qualities recommended and approved by SAF-HOLLAND:
SAF 396, BREMSKERL 6386
Machine new brake linings to diameter + 0.3 mm of the brake drum.
When riveting on, observe the lining form (see instructions in the pack).

Grease specifications
For camshaft
Part No. 5 387 0011 05
For axle stub end:
Mounting paste
Part No. 5 387 0021 05
For ball in brake carrier:
Copper paste
Part No. 5 387 0014 01

### Brake drum / brake lining
- **Wheel bearing play, wheel bearing grease**
- **Adjustment of wheel bearing play not necessary.**
- **Note during brake repairs:**
  - Lubricate the camshafts, rotating the camshaft through 360° several times.
  - Use a vacuum cleaner to remove brake dust.
  - Use of a high-pressure cleaner or liquid cleanser is not permitted on the brake drum and brake hub.
  - Remove old grease from the stub axle and regrease.
  - Replace the O-ring.
  - Replace the brake shoe return springs at every brake pad change.

### Tighten axle nuts
- **On left-hand side in direction of travel:**
  - Left-hand thread
- **On right-hand side in direction of travel:**
  - Right-hand thread
- **Pretightening:** 150 Nm, then turn the hub unit slowly by 5 revolutions.
- **Final tightening:** Retighten by 1 increment (30°)
- **Marking of the nuts with left-hand thread:**
  - Milled groove on outside of hexagon.
- **Max. permissible axial backlash of hub unit:**
  - 0 - 0.20 mm

### BRAKE SNK 367
- **Max. admissible brake drum machining diameter:** 371.0 mm
- **Max. admissible brake drum wear diameter:** 372.0 mm
- **Brake lining qualities recommended and approved by SAF-HOLLAND:** SAF 396, BREMSKERL 6386
- **Machine new brake linings to diameter + 0.3 mm of the brake drum.**
- **When riveting on, observe the lining form (see instructions in the pack).**

### Brake drum / brake lining repair stages in mm

<table>
<thead>
<tr>
<th>Brake size</th>
<th>Part No.</th>
<th>Brake drum / brake lining</th>
<th>Brake lining</th>
<th>Rivet</th>
<th>Rivet DIN 7338</th>
</tr>
</thead>
<tbody>
<tr>
<td>SNK 367</td>
<td></td>
<td>Normal dimension</td>
<td>1st repair stage</td>
<td>2nd repair stage</td>
<td>Number per axle</td>
</tr>
<tr>
<td></td>
<td>3 057 3168 00</td>
<td>d₀ - 367.0</td>
<td>21.1 20.5</td>
<td>22.1 21.5</td>
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<tr>
<td></td>
<td>3 057 3170 00</td>
<td>d₀ - 367.0</td>
<td>21.1 20.5</td>
<td>22.1 21.5</td>
<td>4</td>
</tr>
</tbody>
</table>

### Assembly tools
- **Axle nut wrench**
- **Brake shoe tensioner**
- **Brake drum mounting flanges**
- **Puller for wheel hub**

### Grease specifications
- **For camshaft:**
  - Part No. 5 387 0011 05
- **For axle stub end:**
  - **Mounting paste**
    - Part No. 5 387 0021 05
  - **Copper paste**
    - Part No. 5 387 0014 01
Axle types
SK RS/RZ 6537 / 9037 / 11037

Wheel bearing play, wheel bearing grease
Adjustment of wheel bearing play not necessary.
Change the wheel bearing grease after 500,000 km or 50 months.
Inspect taper roller bearing for serviceability at grease changes.
Replace the O-ring and fit the wheel cap.
Note during brake repairs:
Lubricate the camshafts, rotating the camshaft through 360° several times.
Do not dismantle the wheel bearing unit.
Use a vacuum cleaner to remove brake dust.
Use of a high-pressure cleaner or liquid cleanser is not permitted on the brake drum and brake hub.

Remove old grease from the stub axle and regrease.
Replace the brake shoe return springs at every brake pad change.

Tighten axle nuts
On left-hand side in direction of travel:
Left-hand thread
On right-hand side in direction of travel:
Right-hand thread
Tightening torque 900 Nm. Each hub unit must be rotated smoothly at least twice while tightening the bolts.
Marking of the nuts with left-hand thread: Milled groove on outside of hexagon.
Max. permissible axial backlash of hub unit: 0 - 0.20 mm

BRAKE SNK 367
Max. admissible brake drum machining diameter: 371.0 mm
Max. admissible brake drum wear diameter: 372.0 mm
Brake lining qualities recommended and approved by SAF-HOLLAND: SAF 396, BREMSKERL 6386
Machine new brake linings to diameter + 0.3 mm of the brake drum.
When riveting on, observe the lining form (see instructions in the pack).

<table>
<thead>
<tr>
<th>Brake size</th>
<th>Part No. Brake lining</th>
<th>Brake drum / brake lining Repair stages in mm</th>
<th>Brake lining</th>
<th>Rivet</th>
<th>Rivet DIN 7338</th>
</tr>
</thead>
<tbody>
<tr>
<td>SNK 367</td>
<td></td>
<td>Normal dimension 1st repair stage 2nd repair stage Number per axle</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>x 150</td>
<td>3 057 3174 00</td>
<td>d₄-367.0 d₃-369.0 d₂-371.0</td>
<td>4 4 64</td>
<td>B 8 x 15</td>
<td></td>
</tr>
<tr>
<td>x 180</td>
<td>3 057 3168 00</td>
<td>21.1 20.5 22.1 21.5 23.1 22.5</td>
<td>4 4 64</td>
<td>B 8 x 15</td>
<td></td>
</tr>
<tr>
<td>x 200</td>
<td>3 057 3170 00</td>
<td>21.1 20.5 22.1 21.5 23.1 22.5</td>
<td>4 4 64</td>
<td>B 8 x 15</td>
<td></td>
</tr>
</tbody>
</table>

Assembly tools
Axle nut wrench 1 012 0024 00
Brake shoe tensioner 3 349 1001 00
Brake drum mounting flanges 3 434 1040 01
Wheel bearing mounting mandrel 3 434 1058 00
Brass bush mounting device 1 434 1056 00
Brass bush mounting mandrel 1 434 1055 00
Puller for wheel hub 4 434 3822 00

Grease specifications
For wheel bearings:
Part No. 5 387 0011 05
For camshaft
Part No. 5 387 0011 05
For axle stub end:
Mounting paste
Part No. 5 387 0021 01
For ball in brake carrier:
Copper paste
Part No. 5 387 0014 01

Service schedule
nominal size 1st oversize 2nd oversize
Axle types

Wheel bearing play, wheel bearing grease
Adjustment of wheel bearing play not necessary.
Note during brake repairs:
Lubricate the camshafts, rotating the camshaft through 360° several times.
Use a vacuum cleaner to remove brake dust.
Use of a high-pressure cleaner or liquid cleanser is not permitted on the brake drum and brake hub.
Remove old grease from the stub axle and regrease.
Replace the O-ring.
Replace the brake shoe return springs at every brake pad change.

Grease specifications
For camshaft
Part No. 5 387 0011 05
For axle stub end:
Mounting paste
Part No. 5 387 0021 05
For ball in brake carrier:
Copper paste
Part No. 5 387 0014 01

Tighten axle nuts
On left-hand side in direction of travel:
Left-hand thread
On right-hand side in direction of travel:
Right-hand thread
Pretightening: 150 Nm, then turn the hub unit slowly by 5 revolutions.
Final tightening: Retighten by 1 increment (30°)
Marking of the nuts with left-hand thread:
Milled groove on outside of hexagon.
Max. permissible axial backlash of hub unit:
0 - 0.20 mm

BRAKE SNK 300
Max. admissible brake drum machining diameter: 303.0 mm
Max. admissible brake drum wear diameter: 304.0 mm
Brake lining qualities recommended and approved by SAF-HOLLAND:
SAF 396, BREMSKERL 6386
Machine new brake linings to diameter + 0.3 mm of the brake drum.
When riveting on, observe the lining form (see instructions in the pack).

<table>
<thead>
<tr>
<th>Brake size</th>
<th>Part No.</th>
<th>Brake drum / brake lining</th>
<th>Brake lining</th>
<th>Rivet</th>
<th>Rivet DIN 7338</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Normal dimension</td>
<td>1st repair stage</td>
<td>2nd repair stage</td>
<td>Number per axle</td>
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<tr>
<td></td>
<td></td>
<td>d₁=300.0</td>
<td>d₁=302.0</td>
<td>d₁=303.0</td>
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</tr>
<tr>
<td>SNK 300</td>
<td></td>
<td>d₁=300.0</td>
<td>15.5</td>
<td>16.7</td>
<td>17.1</td>
</tr>
<tr>
<td>x 150</td>
<td>3 057 3133 00</td>
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<td>16.5</td>
<td>16.7</td>
<td>17.1</td>
</tr>
<tr>
<td>x 200</td>
<td>3 057 3124 00</td>
<td>15.5</td>
<td>16.5</td>
<td>16.7</td>
<td>17.1</td>
</tr>
</tbody>
</table>

Assembly tools
Axle nut wrench
Part No. 4 434 3828 00
Puller for wheel hub
Part No. 3 301 0010 00
Puller for wheel hub
Part No. 4 434 3822 00
### Axle types

**SK RS / RZ 6530 / 9030 / 11030 / RZ 12030**

Adjust wheel bearing clearance:
- Tighten the WAF 85 axle nut to 150 Nm, turning the wheel hub at the same time.
- Turn back the axle nut by 2 1/2 holes of the lock washer.
- Push on the lock washer and secure the axle nut with the locking pin.
- Tighten the lock nut to 400 Nm.
- Check the running and rock of the wheel bearing.
- The wheel must turn without resistance and no rock may be felt at the wheel rim. Correct the adjustment, if necessary.
- Replace the O-ring and fit the wheel cap.
- Replace the brake shoe return springs at every brake pad change.

#### Grease specifications

- **For wheel bearings:**
  - Part No. 5 387 0011 05
- **For camshaft:**
  - Part No. 5 387 0011 05
- **For axle stub end:**
  - Mounting paste
  - Part No. 5 387 0021 01
- **For ball in brake carrier:**
  - Copper paste
  - Part No. 5 387 0014 01

Tighten axle nuts

**Note during brake repairs:**
- Lubricate the camshafts, rotating the camshaft through 360° several times.
- Use a vacuum cleaner to remove brake dust.
- Use of a high-pressure cleaner or liquid cleanser is not permitted on the brake drum and brake hub.
- Remove old grease from the stub axle and regrease.
- **Max. permissible axial backlash of hub unit:** 0 - 0.20 mm

**BRAKE SNK 300**

- Max. admissible brake drum machining diameter:
  - 303.0 mm
- Max. admissible brake drum wear diameter:
  - 304.0 mm
- Brake lining qualities recommended and approved by SAF-HOLLAND:
  - SAF 396, BREMSKERL 6386
- Machine new brake linings to diameter + 0.3 mm of the brake drum.
- When riveting on, observe the lining form (see instructions in the pack).

<table>
<thead>
<tr>
<th>Brake size</th>
<th>Part No.</th>
<th>Brake drum / brake lining size</th>
<th>Brake lining</th>
<th>Rivet size</th>
<th>Rivet DIN 7338</th>
</tr>
</thead>
<tbody>
<tr>
<td>SNK 300</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>x 150</td>
<td>3 057 3133 00</td>
<td>15.5 16.5 16.7 17.1 18.1</td>
<td>4 4 64</td>
<td>B 8 x 15</td>
<td></td>
</tr>
<tr>
<td>x 200</td>
<td>3 057 3124 00</td>
<td>15.5 16.5 16.7 17.1 18.1</td>
<td>4 4 64</td>
<td>B 8 x 15</td>
<td></td>
</tr>
</tbody>
</table>

**Assembly tools**

- Axle nut wrench: 4 382 3828 00
- Puller for wheel hub: 3 301 0010 00
- Fitting mandrel for wheel bearing and seal ring: 3 434 1014 00
- Fitting mandrel for wheel bearing: 3 434 3308 00
- Brass bush mounting mandrel: 1 434 1055 00
- Brass bush mounting device: 1 434 1056 00
Adjust wheel bearing clearance:
Tighten the WAF 85 axle nut to 150 Nm, turning the wheel hub at the same time.
Turn back the axle nut by 2 1/2 holes of the lock washer.
Push on the lock washer and secure the axle nut with the locking pin.
Tighten the lock nut to 400 Nm.
Check the running and rock of the wheel bearing.
The wheel must turn without resistance and no rock may be felt at the wheel rim. Correct the adjustment, if necessary.
Replace the O-ring and fit the wheel cap.
Replace the brake shoe return springs at every brake pad change.

Tighten axle nuts

Note during brake repairs:
Lubricate the camshafts, rotating the camshaft through 360° several times.
Do not dismantle the wheel bearing unit.
Use a vacuum cleaner to remove brake dust.
Use of a high-pressure cleaner or liquid cleanser is not permitted on the brake drum and brake hub.
Remove old grease from the stub axle and regrease.
Max. permissible axial backlash of hub unit: 0 - 0.20 mm

BRAKE SNK 420
Max. admissible brake drum machining diameter:
Max. admissible brake drum wear diameter:
Brake lining qualities recommended and approved by SAF-HOLLAND:
Machine new brake linings to diameter + 0.3 mm of the brake drum.
When riveting on, observe the lining form (see instructions in the pack).

<table>
<thead>
<tr>
<th>Brake size</th>
<th>Part No.</th>
<th>Brake drum / brake lining</th>
<th>Repair stages in mm</th>
<th>Brake lining</th>
<th>Rivet DIN 7338</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Normal dimension</td>
<td>1st repair stage</td>
<td>2nd repair stage</td>
<td>Number per axle</td>
</tr>
<tr>
<td></td>
<td></td>
<td>d₀-420.0</td>
<td>20.6</td>
<td>21.6</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td></td>
<td>20.0</td>
<td>21.0</td>
<td>22.6</td>
<td>4</td>
</tr>
<tr>
<td>SNK 420</td>
<td>3 057 3960 00</td>
<td></td>
<td></td>
<td></td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>x 180</td>
<td>20.6</td>
<td>21.6</td>
<td>22.6</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td></td>
<td>20.0</td>
<td>21.0</td>
<td>22.6</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>x 200</td>
<td>20.6</td>
<td>21.6</td>
<td>22.6</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td></td>
<td>20.0</td>
<td>21.0</td>
<td>22.6</td>
<td>4</td>
</tr>
</tbody>
</table>

Assembly tools
Axle types 12242

<table>
<thead>
<tr>
<th>Tool</th>
<th>Part No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Axle nut wrench</td>
<td>4 434 3828 00</td>
</tr>
<tr>
<td>Puller for wheel hub</td>
<td>3 301 0010 00</td>
</tr>
<tr>
<td>Universal puller for wheel hub</td>
<td>4 434 3822 00</td>
</tr>
<tr>
<td>Fitting mandrel for wheel bearing and seal ring</td>
<td>3 434 3320 00</td>
</tr>
<tr>
<td>Fitting mandrel for cassette seal ring</td>
<td>3 434 1036 00</td>
</tr>
<tr>
<td>Brake shoe tensioner</td>
<td>3 349 1001 00</td>
</tr>
</tbody>
</table>

Grease specifications
For wheel bearings:
Part No. 5 387 0011 05
For camshaft
Part No. 5 387 0011 05
For axle stub end:
Mounting paste
Part No. 5 387 0021 01
For ball in brake carrier:
Copper paste
Part No. 5 387 0014 01
### Axle types

**K RS/RZ 14242/16242**

Adjust wheel bearing clearance:
- Tighten the axle nut, turning the wheel hub until a slight resistance is felt.
- Turn back the axle nut by 1/12 turn to the next locking possibility.
- Lock the axle nut with the cotter pin.
- Turn back the wheel hub slightly against the front bearing with the wheel hub puller.
- Seal the thread of the wheel cap.
- Screw on the wheel cap.
- Check the running and rock of the wheel bearing. The wheel must turn without resistance and no rock may be felt at the wheel rim. Correct the adjustment, if necessary.
- Replace the brake shoe return springs at every brake pad change.

### Grease specifications

**For wheel bearings:**
- Part No. 5 387 0011 05

**For camshaft**
- Part No. 5 387 0011 05

**For axle stub end:**
- Mounting paste
  - Part No. 5 387 0021 01

**For ball in brake carrier:**
- Copper paste
  - Part No. 5 387 0014 01

---

#### Tighten axle nuts

**Note during brake repairs:**
- Lubricate the camshafts, rotating the camshaft through 360° several times.
- Do not dismantle the wheel bearing unit.
- Use a vacuum cleaner to remove brake dust.
- Use of a high-pressure cleaner or liquid cleanser is not permitted on the brake drum and brake hub.
- Remove old grease from the stub axle and regrease.

**Max. permissible axial backlash of wheel bearing:**

0 - 0.20 mm

---

#### BRAKE SNK 420

- **Max. admissible brake drum machining diameter:** 424.0 mm
- **Max. admissible brake drum wear diameter:** 425.0 mm
- **Brake lining qualities recommended and approved by SAF-HOLLAND:** SAF 396, BREMSKERL 6386
- **Machine new brake linings to diameter + 0.3 mm of the brake drum.**
- **When riveting on, observe the lining form (see instructions in the pack).**

---

#### Brake drum / brake lining

<table>
<thead>
<tr>
<th>Brake size</th>
<th>Part No.</th>
<th>Brake drum / brake lining Repair stages in mm</th>
<th>Brake lining</th>
<th>Rivet</th>
<th>Rivet DIN 7338</th>
</tr>
</thead>
<tbody>
<tr>
<td>SNK 420</td>
<td>3 057 3960 00</td>
<td>Normal dimension d₀-420.0</td>
<td>20.6 20.0</td>
<td>4</td>
<td>64</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1st repair stage d₁-422.0</td>
<td>21.6 21.0</td>
<td>4</td>
<td>B 8 x 15</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2nd repair stage d₂-424.0</td>
<td>22.6 22.0</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>x 180</td>
<td>3 057 3966 00</td>
<td>Normal dimension d₀-420.0</td>
<td>20.6 20.0</td>
<td>4</td>
<td>64</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1st repair stage d₁-422.0</td>
<td>21.6 21.0</td>
<td>4</td>
<td>B 8 x 15</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2nd repair stage d₂-424.0</td>
<td>22.6 22.0</td>
<td>4</td>
<td></td>
</tr>
</tbody>
</table>

---

#### Assembly tools

<table>
<thead>
<tr>
<th>Axle types</th>
<th>Part No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Axle nut wrench</td>
<td>14242</td>
</tr>
<tr>
<td>Puller for wheel hub</td>
<td>1 012 0013 00</td>
</tr>
<tr>
<td>Universal puller for wheel hub</td>
<td>3 301 0007 01</td>
</tr>
<tr>
<td>Fitting mandrel for wheel bearing and seal ring</td>
<td>4 434 3822 00</td>
</tr>
<tr>
<td>Brake shoe tensioner</td>
<td>3 349 1001 00</td>
</tr>
<tr>
<td>46 mm dia. brass bush driver mandrel</td>
<td>1 343 1056 00</td>
</tr>
<tr>
<td>50/46 mm and 42/38 mm dia. mounting mandrel</td>
<td>1 343 1055 00</td>
</tr>
</tbody>
</table>

---

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### Tightening torques

<table>
<thead>
<tr>
<th>No.</th>
<th>Designation</th>
<th>Number per axle</th>
<th>Tightening torque</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Ball joint screw</td>
<td>2</td>
<td>M30 (340 Nm)</td>
</tr>
<tr>
<td>2</td>
<td>Retaining clamp screw</td>
<td>10</td>
<td>M12 (80 - 90 Nm)</td>
</tr>
<tr>
<td>3</td>
<td>Steering damper screw</td>
<td>2</td>
<td>M24 (600 - 660 Nm)</td>
</tr>
<tr>
<td>4</td>
<td>Lock cylinder screw</td>
<td>4</td>
<td>M6 (8 - 10 Nm)</td>
</tr>
<tr>
<td>5</td>
<td>Stabilising cylinder screw</td>
<td>4</td>
<td>M16 (180 ± 30 Nm)</td>
</tr>
<tr>
<td>6</td>
<td>Lock nut</td>
<td>2</td>
<td>M20 (is locked against the thrust rod)</td>
</tr>
<tr>
<td>7</td>
<td>Cover plate screw</td>
<td>6</td>
<td>M8 (25 - 30 Nm)</td>
</tr>
</tbody>
</table>
– Dimension “A” must be the same; observe the toe-in (approx. 4.0 mm/m)
– Dimension “B” is 537 mm; engage the reversing lock
– On versions with pneumatic stabilisation, a steering damper must be used.
– On versions without pneumatic stabilisation, a steering damper must be used.
– Check: Backlash-free seating of the piston rods of the stabilising cylinders.
  Apply stabilising pressure (min. 2 bar) to the cylinders. Piston and pressure rods must then
  be backlash-free (under slight pressure); otherwise adjust at “C”.
– When setting the track width on the trailer, the cylinders must be under stabilising pressure
  and the correct ride height of the air suspension system must have been set.
– Tighten all bolts to the prescribed torque and lock the nuts or insert the cotter pin.

Note:
During lubrication work on the steering pin bearing, the axle must be relieved (raised).

Lubrication at the bearing points of the king pin bolt
for the first time after 1 month,
then every 6 months
Check the brake setting

Adjustment of S-cam brakes with manual slack adjusters

The natural wear of the brake drum and brake lining necessitate frequent adjustment of the wheel brakes in order to maintain the maximum stroke of the brake cylinders. In order to achieve good braking, it is essential to minimise the clearance between the brake drum and brake lining. In order to check the clearance, the service brake is applied with full pressure and the stroke of the brake cylinder checked. If the stroke at the yoke end is more than 2/3 of the maximum cylinder stroke, the brake must be urgently adjusted. If the brakes are correctly adjusted, it should not be possible to move the piston rod more than 15 mm by hand.

1. Turn the adjusting screw to the right until the brake shoes are firmly up against the brake drum.
2. Turn the adjusting screw to the left until the free travel of the slack adjuster (at 127 mm) is approx. 10 - 15 mm.
3. It must be possible to turn the wheel freely without braking (without scraping noises).

Adjustment is performed at the adjustment screw (WAF 19)

No clearance between piston and diaphragm permitted in the rest position.

Special instructions apply for automatic slack adjusters (see adjustment procedure on the following pages).

A = Angle must not exceed 90° at 1/2 stroke.
B = No contact permissible between slack adjuster and axle beam during emergency braking.
L = Observe piston rod length as per the SAF-HOLLAND specifications.
HALDEX automatic slack adjuster

Note when changing over from mechanical slack adjuster to automatic slack adjuster:
In order to avoid damage to the wheel brake, install only the automatic slack adjuster with the prescribed adjustment gate and corresponding mounting point strap approved by SAF-HOLLAND for the respective axle type.
Changes to the effective brake lever lengths are not admissible.

The field installation of automatic slack adjusters does not require type approval so that no inspection by the technical inspection authorities (TÜV) is necessary.

Technical information on SAF-HOLLAND spare part numbers and correspondence of slack adjusters and axle types can be obtained from the SAF-HOLLAND service partners.
Adjustment of HALDEX automatic slack adjusters

- Cams and brake shoes are in the zero position.
- Observe the correct piston rod length “L” as given in the SAF-HOLLAND specifications.

**Brake chambers**
Before installation, ensure that the brake chamber is in its starting position.

**Spring brake chambers**, on the other hand, must be under full working pressure (min. 6 bar).

**IMPORTANT: If this is not observed, the basic setting will be wrong!**
- Grease the camshaft.
- Install mounting point strap (3); be sure to use two mounting bolts (4).
- Install the slack adjuster on the camshaft.
- The arrow mark (7) points in the braking direction.
- Turn adjusting screw (1) until the bore in the slack adjuster (8.1) is aligned with the bore in the yoke end (9) (see figure).
- Grease cotter pin (8) and secure.
- Hook in return spring (10).
- Turn the control arm in the direction of the arrow (working direction of the slack adjuster) into its end position without using force
- In this end position of control arm (2), tighten mounting bolts (4).
- With the fixed mounting point (11), ensure that the 2 U-profiles engage correctly in one another.

**NOTE FOR SELF-STEERING AXLES:**
- Weld on mounting point strap (3) in this position.
- Fix the slack adjuster on the camshaft.
- Axial clearance: Adjust the nominal value of 0.5 - 2 mm using shims.
- Adjust the clearance of the brake lining by turning adjusting screw (1) in clock-wise direction until the brake lining is in contact with the brake drum. Then back off adjusting screw (1) by 3/4 turn.

**Do not use an impact wrench!**

**FUNCTION CHECK**
- If the adjustment coupling is functioning correctly, a torque of at least 18 Nm must be felt when backing off adjusting screw (1); a ratchet noise should also be clearly audible.
- Actuate the service brake several times, check the free running of the brake drum, check the clearance.
If necessary, repeat the adjustment of the slack adjuster.
Adjustment of S-ABA automatic slack adjusters

- Cams and brake shoes are in the zero position.
- Observe the correct piston rod length “L” as given in the SAF-HOLLAND specifications.

**Brake chambers**
Before installation, ensure that the brake chamber is in its starting position.

**Spring brake chambers**, on the other hand, must be under full working pressure (min. 6 bar).

**IMPORTANT: If this is not observed, the basic setting will be wrong!**

- Grease the camshaft.
- Install mounting point strap (3); be sure to use two mounting bolts (4).
- Install the slack adjuster on the camshaft.
- The arrow mark (7) points in the braking direction.
- Turn adjusting screw (1) until the bore in the slack adjuster (8.1) is aligned with the bore in the yoke end (9) (see figure).
- With the fixed mounting point, ensure that the 2 U-profiles engage correctly in one another.
- Grease cotter pin (8) and secure.
- Hook in return spring (10).
- Fix the slack adjuster on the camshaft.

- Axial clearance: Adjust the nominal value of 0.5 - 2 mm using shims.
- Adjust the control arm.
- Observe the possible setting range for the control lever position.

• **FUNCTION CHECK**
  - If the adjustment coupling is functioning correctly, a torque of at least 18 Nm must be felt when backing off adjusting screw (1); a ratchet noise should also be clearly audible.
  - Actuate the service brake several times, check the free running of the brake drum, check the clearance. If necessary, repeat the adjustment of the slack adjuster.
Tightening instructions for adjustable pivot bolt

**Attention:**
Tightening always within the specified ride height range!
No paint residues between eccentric/thrust washer and hanger!

Pretightening 400 Nm
Use Torque wrench

Marking for angle tightening

Angle tightening 120°
Use impact wrench or extend lever to 2.5 m

Visual inspection

Bolt head always on the eccentric washer side.
Semi-trailer tilt angle

Ride heights

Adjust the ride height of the air suspension axles to the permissible range indicated in the corresponding SAF-HOLLAND documents.

With single axles, allow for a minimum suspension travel of 60 mm.

For trailers with multiple axles, allow for a minimum suspension travel of 70 mm.

Exception:
For multi-axle trailers with lift axles, the minimum suspension travel at the lift axle should not be less than 100 mm in order to ensure an adequate ground clearance.
Tyre changing on fully loaded trailer with INTRA axle

Jack positioning points:
Adjustment of the air suspension system ride height

Air suspension valve

As standard, SAF-HOLLAND air suspension axles and system require only one air suspension valve. The air suspension valve controls the air bag pressure in relation to the trailer load in order to maintain a constant ride height in every load condition.

The air suspension valve is fastened to the trailer frame with screws and connected to the axle via the pivot joint (valve lever and adjustment pipe). On triple-axle trailers, the system is generally connected to the middle axle (normally in the middle of the axle), and on twin-axle trailers to the rear axle. In special cases (e.g. large trailer tilt angle), the air suspension valve can be installed in the rear axle.

For trailers with axle lifting system, the axle to which the system is connected depends on the axle to be lifted.

Installation

The valve lever should be at least 200 mm long and is horizontal when the trailer is in the driving position. As a function check, move the lever down slightly. Air must now escape via the venting cap into the atmosphere. If air flows into the air bags when the lever is pushed down, the valve lever has to be turned through 180°. For this the valve lever has to be disconnected. The ride height is set by adjusting the adjustment pipe in the fulcrums and by turning the lock nuts.

The adjustment must be carried out with the trailer standing on level ground. It can be carried out with the trailer either empty or loaded.

Note

For a final check, the air suspension system should be lowered to the suspension stop or raised to the limit (shock absorbers, stop ropes, air bag length). During this process, the specified angle between valve lever and adjustment pipe must not be exceeded in order that the valve lever does not move in the wrong direction.
Axle alignment

In order to compensate for production tolerances, an axle alignment and, if necessary, a correction should be carried out. The maximum permissible deviations (tolerances) of the alignment values are specified by the tyre manufacturer. The maximum possible wheelbase correction per axle is ± 6 mm.

**Conventional adjustment**

Determine the lengths of the diagonals A - C and A - F for the middle axle (reference axle) by comparison measurements, observing the tolerances.

Check the wheelbases B - C and E - F for the front axle and C - D and F - G for the rear axle and correct, if necessary, observing the tolerances.

**Optical adjustment**

Observe the operating and setting instructions of the measuring system manufacturer.

**Calculation of the toe-in and toe-out values:**

\[
\frac{A1 - B1 \text{ (mm)}}{A \text{ (m)}} = S
\]

- If positive, \( S = \text{Toe-in} \)
- If negative, \( S = \text{Toe-out} \)

Notes

1. In order to avoid tyre wear, we recommend that an axle alignment is performed at regular intervals.
2. We recommend the use of an optical measuring system for carrying out the axle alignment.
3. For alignment, only the centres of the middle of the wheel cap or the middle of the axle stub end are of interest as reference points.
4. Possible causes of deviations in the axle alignment are:
   - Loose U-bolts
   - Wear of the spring guide bearing
   - Deformation of the axle assembly components due to improper use
Ihre neue Servicenummer im Pannenfall:
24 Stunden, 7 Tage die Woche!

Your new service number in case of a breakdown:
24 hours, 7 days each week.

Nouveau numéro du service d’assistance en cas de panne :
24 heures sur 24, 7 jours sur 7.

Il vostro nuovo numero di servizio se restate in panne:
24 ore, 7 giorni la settimana.

En caso de avería, su nuevo número para asistencia técnica:
durante los 7 días de la semana, 24 horas al día.