Clutch

Product competence from EUROPART

- Clutches
- Flywheels and accessories
- Clutch release
- Workshop requirements
- Technical information
Clutches

Product competence Clutch

<table>
<thead>
<tr>
<th>suitable for</th>
<th>( \varnothing )</th>
<th>Order no.</th>
<th>Comparative no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Renault Rapid Kasten, Super 5 Kasten</td>
<td>180 mm</td>
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<td>LuK 618 0217 06</td>
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<tr>
<td>Seat Cordoba Kombi</td>
<td>200 mm</td>
<td>9734 002 846</td>
<td>LuK 620 1284 00</td>
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<tr>
<td>Skoda Fabia Kombi, Octavia Kombi, Roomster</td>
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<tr>
<td>VW Bora Kombi, Caddy III, Golf Variant</td>
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<tr>
<td>Seat Cordoba Kombi</td>
<td>210 mm</td>
<td>9734 005 514</td>
<td>LuK 621 3014 09</td>
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<tr>
<td>Skoda Octavia Kombi</td>
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<td>VW Bora Kombi, Golf Variant 3, Golf Variant 4</td>
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<td>Seat Cordoba Kombi</td>
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<td>210 mm</td>
<td>3564 700 014</td>
<td>LuK 621 2218 09</td>
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<td>VW Bora Kombi, Golf 4 Variant</td>
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<tr>
<td>VW Golf 3 Kombi, Polo Kombi</td>
<td>190 mm</td>
<td>9734 005 510</td>
<td>LuK 619 0286 00</td>
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</tbody>
</table>

1 without release bearing

Service life of clutch linings

As a friction clutch is a dry clutch, the wear during the slip phase—in which the difference in speed between the drive and power take-off is compensated—is a completely normal process. The main requirement for a long clutch lining service life is a well-functioning release system. In addition, achieving a long clutch lining service life depends a lot on the driving mode. The possibility of clutch misuse must therefore be excluded.

The service life of the lining is adversely affected by:

- High start-up speeds and incorrect gear selection
- Stop-and-go operation, shunting operation
- Allowing the clutch to slip for a long period of time
- Holding down the clutch pedal continuously
- Using the clutch to hold the vehicle on a gradient
- Allowing the clutch to brake the vehicle rather than using the accelerator pedal to match the speed when shifting down a gear

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Clutch kit

-适合于

<table>
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<th>suitable for</th>
<th>( \varnothing )</th>
<th>Order no.</th>
<th>Comparative no.</th>
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<td>LuK 624 1313 00</td>
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<td>Iveco Daily, 05/1999-</td>
<td>270 mm</td>
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<tr>
<td>Iveco Daily, 05/2004-04/2006 Daily, 05/2006-</td>
<td>280 mm</td>
<td>9735 003 191</td>
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<td>9735 003 089</td>
<td>LuK 628 3088 00</td>
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<td>3564 701 611</td>
<td>LuK 624 3182 09</td>
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<tr>
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<td>VW T4</td>
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</tr>
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</table>

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Clutch kit
Version automatic readjustment
∅ 240 mm

Application range
Engines with dual mass flywheel

Scope of supply
with central clutch release

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<tr>
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<tr>
<td>Mercedes-Benz Sprinter (901, 902, 903, 904)</td>
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<td>LuK 624 3148 34</td>
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<td>Mercedes-Benz Sprinter (901, 902, 903, 904)</td>
<td>9734 005 645</td>
<td>LuK 624 3182 33</td>
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</table>

1 for 7.9mm flywheel depth
2 for 11.9mm flywheel depth

Clutch kit
Version automatic readjustment
∅ 240 mm

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<tr>
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<td>LuK 600 0056 00</td>
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<td>9734 006 000</td>
<td>LuK 600 0060 00</td>
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<td>LuK 600 0065 00</td>
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<td>9734 007 200</td>
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### Clutch kit in exchange

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<tr>
<td>MAN Lion's Coach (RH 463), Lion's Star (RH 464)</td>
<td>9735 003 308</td>
<td>LuK 643 3308 00</td>
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<tr>
<td>Neoplan Cityliner (N 12XX), Starliner (N 52XX), Tourliner (N 2216)</td>
<td>9735 003 308</td>
<td>LuK 643 3308 00</td>
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<tr>
<td>Mercedes-Benz Citaro I (O 530), Conecto I (O 345)</td>
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<td>LuK 643 2918 00</td>
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<td>Mercedes-Benz Citaro II (O 530), Integro II (O 550), Tourismo II, Travego I (O 580)</td>
<td>9735 003 315</td>
<td>LuK 643 3315 00</td>
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<tr>
<td>Mercedes-Benz Tourino (O 510)</td>
<td>9735 003 316</td>
<td>LuK 643 3316 00</td>
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<tr>
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<td>9735 003 318</td>
<td>LuK 643 3318 09</td>
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<tr>
<td>VDL Futura, 09/2001-</td>
<td>9735 003 318</td>
<td>LuK 643 3318 09</td>
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<tr>
<td>Volvo B12</td>
<td>9735 003 318</td>
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1 with release bearing

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### Clutch kit

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<tr>
<td>Iveco EuroCargo</td>
<td>9735 003 097</td>
<td>LuK 643 3097 00</td>
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<tr>
<td>Iveco EuroCargo I (09/2000-)</td>
<td>9735 003 314</td>
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<tr>
<td>Iveco EuroCargo I (09/2000-), EuroFire</td>
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<td>LuK 643 3514 00</td>
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<tr>
<td>Iveco Stralis I, Trakker, EuroStar, EuroTech, EuroTrakker</td>
<td>9735 003 314</td>
<td>LuK 643 3514 00</td>
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<tr>
<td>MAN L2000, M2000L</td>
<td>9735 003 177</td>
<td>LuK 643 3017 33</td>
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<td>MAN L2000, M2000L, M90</td>
<td>9735 003 302</td>
<td>LuK 643 3023 33</td>
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<td>MAN TGL</td>
<td>9735 003 343</td>
<td>LuK 643 3025 33</td>
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<td>MAN TGL, L2000, M2000L</td>
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<td>LuK 643 3025 09</td>
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<td>MAN TGM, L2000, M2000M/L</td>
<td>9735 003 301</td>
<td>LuK 643 3001 00</td>
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<td>MAN TGX, TGX, TGA</td>
<td>9735 003 207</td>
<td>LuK 643 3207 00</td>
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<tr>
<td>MAN TGX, TGS, TGA</td>
<td>9735 003 201</td>
<td>LuK 643 3201 00</td>
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<td>MAN TGX, TGS, TGA</td>
<td>9735 003 308</td>
<td>LuK 643 3308 00</td>
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<td>Mercedes-Benz Actros I/MP2/MP3, Axor I/II</td>
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<td>LuK 643 3006 18</td>
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<td>LuK 643 3006 18</td>
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<td>Mercedes-Benz Actros MP2/MP3, Axor I/II, Atego I</td>
<td>9735 003 292</td>
<td>LuK 643 3292 00</td>
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<tr>
<td>Mercedes-Benz Atego I/II, LK/LN2, Vario</td>
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<td>LuK 643 3305 09</td>
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<tr>
<td>Mercedes-Benz Axor I/II, Atego I/II</td>
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<td>LuK 643 3015 00</td>
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<td>Mercedes-Benz Axor I/II, Atego I/II</td>
<td>9735 003 314</td>
<td>LuK 643 3014 19</td>
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<tr>
<td>Mercedes-Benz LK/LN2, NG</td>
<td>9735 003 873</td>
<td>LuK 643 2873 00</td>
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<tr>
<td>Mercedes-Benz SK, MK</td>
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<td>LuK 643 3291 00</td>
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<td>Renault Magnum, Premium II, Kerax (10/2005-)</td>
<td>9735 003 318</td>
<td>LuK 643 3318 09</td>
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<td>Scania Series 4</td>
<td>9735 003 318</td>
<td>LuK 643 3318 09</td>
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<td>Volvo FH12, FH16 (01/2003-), FH II (09/2005-), FM12, FM II (09/2005-), FMX</td>
<td>9735 003 327</td>
<td>LuK 643 3027 18</td>
</tr>
</tbody>
</table>

1 in exchange
2 without release bearing
### LuK RepSet SmarTAC – The most powerful clutch system!
**Self-adjusting. Reliable. OE approved.**

LuK RepSet SmarTAC is a path-controlled and constantly self-adjusting clutch system. Equipped with its innovative clutch lining, LuK HD 30 PLUS offers a new clutch generation with a unique advantage compared with traditional, self-adjusting technologies:

- In operation it works for twice as long! OE approved!

For more information, contact your local branch!

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### LuK HD 30 PLUS – The newest generation friction linings

The LuK HD 30 PLUS lining is the result of innovative development, which strives for durability, product innovation and environmental compatibility. This new lining for difficult applications is now available in sizes 430mm, 400mm and 360mm. The clutch lining material is strengthened with continuous fibres. Its special features lie in the two-layer design and the innovative manufacturing process.

The LuK HD 30 PLUS lining offers:
- Very high mileage
- Very good resistance to wear and tear
- Very good resistance to bursting
- High thermal stability
- High fading stability
- First class comfort properties
- Cost neutrality

Manufactured in an environmentally friendly and resource-saving process, free of solvents, asbestos, lead, cadmium, mercury and chromium VI.

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### Clutch plate

- **430 mm**
- Number of teeth: 18
- Hub profile: 50 x 45

<table>
<thead>
<tr>
<th>Suitable for</th>
<th>Motor type</th>
<th>Order no.</th>
<th>Comparative no.</th>
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<tr>
<td><strong>Mercedes-Benz New Actros (07/2011-)</strong>, Antos (07/2012-), Arocs (01/2013-)</td>
<td>OM 470.906, CM 471.900, CM 471.909</td>
<td>9753 250 410</td>
<td>Valeo 827445</td>
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<tr>
<td><strong>Mercedes-Benz New Actros (07/2011-)</strong>, Antos (07/2012-), Arocs (01/2013-)</td>
<td>OM 936.916</td>
<td>9753 250 420</td>
<td>Valeo 827443</td>
</tr>
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### GOOd TO knOW

- **Clutch kit**
  - **Model:** LuK RepSet SmarTAC
  - **Scope of supply:** Disc, automatic unit, release bearing

<table>
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<tr>
<th>Ø</th>
<th>Order no.</th>
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<td>400 mm</td>
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<td>LuK 640 3030 00</td>
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<td>430 mm</td>
<td>9735 004 232</td>
<td>LuK 643 330 200</td>
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<td>430 mm</td>
<td>9735 003 231</td>
<td>LuK 643 3231 00</td>
</tr>
<tr>
<td>430 mm</td>
<td>9735 003 315</td>
<td>LuK 643 3315 00</td>
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<tr>
<td>430 mm</td>
<td>9735 003 321</td>
<td>LuK 643 3321 00</td>
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</table>

1 in exchange

This figure corresponds to 9735 003 315

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### EUROPART GOOD TO KNOW

- **Luk Hd 30 PLUS – The newest generation friction linings**
- **Clutch kit**
- **Scope of supply:** Disc, automatic unit, release bearing
- **Order no.**
- **Comparative no.**
**Flywheels and accessories**

**Flywheel:**
As a mating component of the clutch disc, the flywheel often shows clear markings when the clutch has been in use for a long period of time. Scoring, burn marks or bumps indicate that the flywheel has become very hot. It is essential that these "tracks" are removed. However, this restoration work, i.e. grinding work, may be performed only in line with the specified tolerances. When performing this work, ensure that the mounting surface on the clutch is reworked to the same degree as the contact surface. This work also provides an opportunity to check the starter ring gear and the centring ring for damage.

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**Fastening set for flywheel**

<table>
<thead>
<tr>
<th>Length</th>
<th>M16 x 1.5</th>
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<tbody>
<tr>
<td>Thread</td>
<td>74 mm</td>
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<tr>
<td>Version</td>
<td>complete</td>
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**Scope of supply**
1 axial seal (outside Ø 140 mm), 1 race (outside Ø 120 mm), 1 pilot bearing (outside Ø 62 mm), 10 bolts M16 x 1.5

**Order no.** 9060 000 103

**Comparative no.** Mercedes-Benz 010 981 31 25

---

**Fastening set for flywheel**

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<tr>
<th>Length</th>
<th>72 mm</th>
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<td>Thread</td>
<td>M16 x 1.5</td>
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<tr>
<td>Spanner size</td>
<td>19 mm</td>
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**Scope of supply**
1 axial seal (outside Ø 140 mm), 1 race (outside Ø 120 mm), 1 pilot bearing (outside Ø 62 mm), 10 bolts M16 x 1.5

**Order no.** 9060 000 104

**Comparative no.** MAN 51.90020-0298

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**EUROPART – Europe’s No. 1 for truck, trailer, van and bus spare parts.**
Pilot bearing (clutch guide bearing): A faulty pilot bearing causes noise and ultimately leads to the clutch disc being destroyed. If the pilot bearing is missing or faulty, this leads to an angular or parallel displacement between the engine and the transmission. As a result, the transmission input shaft wobbles, causing the torsional damper for the clutch disc and for the bearing of the transmission input shaft to be destroyed.

Guide bearing for flywheel

Type 6005-2RS1
Outer Ø 47 mm
Inner Ø 25 mm
Height 12 mm

suitable for

Order no.
MAN TGM, TGL 8001 600 522
MAN Lion's Classic Ü (A72)

Inner Ø 25 mm
Outer Ø 62 mm
Height 17 mm
Order no.
8001 630 520

Suitable for

MAN TGX (2007-), TGX (2013-), TGS
MAN Lion's City (A20), Lion's Coach (R07/R08), Lion's Regio (R12/R13), EL (A12), NG (A11), NL (A10/A15)
Neoplan Cityliner (N 12XX), Skyliner (N 1122/2011-), Starliner (N 52XX), Tourliner (N 2216), Trendliner (N 3516)
Scania K94/114/124/380, L94
Mercedes-Benz Actros MP2/MP3, New Actros (2012-), Axor II
MAN Lion's Coach (R07/R08)
Mercedes-Benz Citaro II (O 530), Conecto I (O 345), Integro II (O 550), O 405 N, O 407, O 408, Tourismo I/II (O 350), Travego I/II (O 580)
Neoplan Cityliner (N 12XX)

Shaft sealing rings:
Small traces of grease or oil significantly impair the function of the clutch. Traces of oil in the clutch bell or on the clutch indicate that the shaft sealing rings must be re-sealed. On older vehicles with a higher mileage reading, the seals must be replaced as a general rule. Shaft seal rings that are leaking remain one of the main causes for clutches to fail.

EXPERT TIP
Translation not available
## Clutch release

### Clutch servo

Operating pressure: max. 10 bar

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<th>Stroke</th>
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<td>0730 514 120</td>
<td>WABCO 970 051 412 7</td>
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<tr>
<td>MAN Lion’s Coach (R07), Lion’s Regio (R13)</td>
<td>85 mm</td>
<td>0730 514 057</td>
<td>WABCO 970 051 431 7</td>
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<tr>
<td>Neoplan Tourliner (N 2216), Trendliner (N 3516)</td>
<td>85 mm</td>
<td>0730 514 410</td>
<td>WABCO 970 051 441 0</td>
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</tbody>
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### Repair kit for release bearings

- Outer ∅ 32/36 mm
- Bore hole ∅ 12 mm
- Length 160 mm
- Distance between holes 134 mm
- Number of holes 2

### Clutch master cylinder

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<td>350 000 654</td>
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### Clutch actuator

Version: electronic

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<td>Volvo FH12/16, FM7/9/10/12</td>
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<td>3400 158 750 Knorr K015875N50</td>
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</tbody>
</table>

**EUROPART – Europe's No. 1 for truck, trailer, van and bus spare parts.**
Release fork and release shaft:
The bearing points in the release system must operate smoothly and with as little play as possible. Run-in or worn bearing arrangements in the release system lead to the release fork tilting and ultimately to the clutch grabbing.

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This figure corresponds to 9460 008 453

Release fork

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<td>MAN Lion’s Coach (R07/R08), Lion’s Regio (R12)</td>
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<td>Neoplan Cityliner (N 12XX), Skyliner (N 1122/2011-), Starliner (N 52XX), Tourliner (N 2216)</td>
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<td>Setra S 416 HDH, S 431 DT</td>
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<tr>
<td>MAN TGX, TGA</td>
<td>5234 110 007</td>
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Concentric slave cylinder:
Just like the clutch, the concentric slave cylinder is subject to natural wear that is not always possible to locate visually. To be on the safe side, replacing the concentric slave cylinder is also recommended at the same time as the clutch. The installation instructions from the vehicle manufacturer must be observed when installing and bleeding the concentric slave cylinder. Before a new concentric slave cylinder is installed, hydraulic release systems must be purged and then refilled in accordance with the specifications provided by the vehicle manufacturer.

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Central release mechanism

<table>
<thead>
<tr>
<th>Suitable for</th>
<th>Version</th>
<th>Operating liquid</th>
<th>Order no.</th>
<th>Comparative no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mercedes-Benz Atego I/II, Axor I/II, Unimog</td>
<td>with sensor</td>
<td>Brake fluid</td>
<td>9305 175 710</td>
<td>LuK 510 0057 10</td>
</tr>
<tr>
<td>Mercedes-Benz Atego I/II, Axor I/II</td>
<td>without sensor</td>
<td>mineral oil</td>
<td>9305 172 310</td>
<td>LuK 510 0123 10</td>
</tr>
<tr>
<td>Mercedes-Benz Atego I/II, Axor I/II</td>
<td>with sensor</td>
<td>mineral oil</td>
<td>9305 175 510</td>
<td>LuK 510 0155 10</td>
</tr>
<tr>
<td>MAN TGL</td>
<td>with sensor</td>
<td>mineral oil</td>
<td>9305 171 910</td>
<td>LuK 510 0119 10</td>
</tr>
</tbody>
</table>
Workshop-pit lifters

**Air-hydraulic**

Flexible for use in a pit as well as on the workshop floor under a platform, the telescopic cylinder makes it also ideal for transmission repairs, built-in manual foot pump for fine adjustment, fast and precise air-hydraulics with fast up and down travel, spring-mounted transport base secure against unintentional movements when lifting from 800 kg, dead-man control and safety valve for maximum safety, can be used for all traditional lifting tasks.

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Load capacity</td>
<td>15 t</td>
</tr>
<tr>
<td>Version</td>
<td>floor-running</td>
</tr>
<tr>
<td>Seat ∅</td>
<td>60 mm</td>
</tr>
<tr>
<td>Height, max.</td>
<td>2206 mm</td>
</tr>
<tr>
<td>Height, min.</td>
<td>921 mm</td>
</tr>
<tr>
<td>Piston stroke</td>
<td>1285 mm</td>
</tr>
<tr>
<td>Cylinder ∅</td>
<td>60 mm</td>
</tr>
<tr>
<td>Operating pressure</td>
<td>12 bar</td>
</tr>
<tr>
<td>Air consumption</td>
<td>350 l/min</td>
</tr>
<tr>
<td>Base plate</td>
<td>844 x 1004 mm</td>
</tr>
</tbody>
</table>

Order no. 5322 520 127

---

Transmission plate

Can be tipped +/- 10° to all sides for the precise removal and installation of transmissions, extremely flat construction offers many possible applications, sturdy construction ensures optimum stability.

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Load capacity</td>
<td>1 t</td>
</tr>
<tr>
<td>Seat ∅</td>
<td>60 mm</td>
</tr>
<tr>
<td>Dimensions</td>
<td>542 x 385 mm</td>
</tr>
</tbody>
</table>

Order no. 5322 520 122

---

Testing tool kit

**For dual mass flywheel**

Tests can be performed on the vehicle with the clutch removed, the tests consist of inclination tolerance (axial bearing play) and clearance angle (rotation of the secondary disc in relation to the primary disc until the spring pressure is applied), can be used universally, easy to operate, allows clean, professional and precise work.

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Application range</td>
<td>passenger cars and trucks</td>
</tr>
<tr>
<td>Accessories</td>
<td>Counter (Measuring range 0-10 mm, Scale division 0,01 mm)</td>
</tr>
</tbody>
</table>

Order no. 9557 050 050

---

EUROPART – Europe’s No. 1 for truck, trailer, van and bus spare parts.
**Centring process:**
Before the clutch pressure plate is screwed into position, the clutch disc must be centred on the flywheel using an alignment tool that is guided through the pilot bearing. The clutch pressure plate must then be screwed onto the flywheel evenly, one section at a time and tightening the opposite screws in each step. In doing so, the specified tightening torque must be observed. The two parts of the clutch bell must be accurately centred in relation to each other. The centring ring or the centring pins and bores must be checked for wear. Later, when pushing together the engine and transmission, ensure that the two assemblies are precisely aligned and that the gearing of the transmission input shaft is very carefully threaded into the hub gearing on the clutch disc.

**Klann**

**Centring tool**

*for trucks, buses and vans with one/two plate clutch*

allows rapid and easy centring of the clutch disc or clutch discs, the centring is done via the guide bearing in the crankshaft

**Application range**

for trucks, buses and vans with one/two plate clutch

**Scope of supply**

Clutch centring tool for truck/bus, clutch centring tool for van, in plastic case

<table>
<thead>
<tr>
<th>Order no.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>9501 557 043</td>
<td>Centring mandrel Size 1, ∅ 36-44 mm</td>
</tr>
<tr>
<td>9501 557 044</td>
<td>Centring mandrel Size 2, ∅ 42-51 mm</td>
</tr>
<tr>
<td>9557 069 610</td>
<td>Centring sleeve, ∅ 20 mm</td>
</tr>
<tr>
<td>9557 069 620</td>
<td>Centring sleeve, ∅ 25 mm</td>
</tr>
<tr>
<td>9557 702 306</td>
<td>Centring sleeve, ∅ 27 mm</td>
</tr>
<tr>
<td>9557 702 314</td>
<td>Centring sleeve, ∅ 30 mm</td>
</tr>
<tr>
<td>9515 570 856</td>
<td>Plastic carrying case</td>
</tr>
</tbody>
</table>

**EUROPART**

**GOOD TO KNOW**

**Centring tool**

*for trucks with single/dual disc clutch*

single and dual disc clutches of trucks and tractors can be correctly centred towards the engine using the centring mandrel set

mandrel size 1 is suitable for a hub inner diameter of 36-45 mm

mandrel size 2 is suitable for a hub inner diameter of 42-52 mm

**Scope of supply**

centring sleeves with diameter of 20, 25, 27 and 30 mm

centring sleeves with a diameter of 20, 25, 27 and 30 mm, clutch centring mandrel sizes 1 and 2, with plastic case

<table>
<thead>
<tr>
<th>Order no.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>9501 557 043</td>
<td>20 mm</td>
</tr>
<tr>
<td>9501 557 044</td>
<td>25 mm</td>
</tr>
<tr>
<td>9501 557 045</td>
<td>27 mm</td>
</tr>
<tr>
<td>9501 557 046</td>
<td>30 mm</td>
</tr>
</tbody>
</table>

**Accessories**

<table>
<thead>
<tr>
<th>Description</th>
<th>Order no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plastic carrying case</td>
<td>9515 570 856</td>
</tr>
</tbody>
</table>
Programming the clutch
Programming the clutch is the concluding part of any clutch repair on vehicles with automatic transmission. When the clutch is replaced, the exact position of the clutch is no longer recognised by the electronics. This can lead to faults when various systems are controlled, and these faults are often wrongly interpreted as clutch engagement problems. The engagement and disengagement point of the new clutch must therefore be programmed in the control unit. This process is known as the "small programming process". The "big programming process" must be conducted only when replacing the entire transmission.
As the "small programming process" can differ from vehicle to vehicle, it must be conducted based on the instruction leaflet in the clutch box or in accordance with the specifications provided by the vehicle manufacturer.

Diagnosis unit

APT08 Axone 4 Commercial Vehicle/Bus/Trailer
- full and versatile data processing and display interface with internet connection
- large 9.7" TFT touchscreen with a resolution of 1024 x 768, powerful Intel Atom processor with 2 Gigabytes RAM, 32 Gigabytes solid state hard drive

A Wi-Fi wireless connection (WLAN) is available as standard for connection to the workshop network and to enable downloading of available updates, and the dedicated TEXA interface is used to communicate about the individual repairs over the Bluetooth connection. Equipped with a VGA camera which is useful for documentation and storage of various job steps and is of practical help in spare parts sourcing and also video assistance. The device has been developed exclusively to connect with a TEXA interface using Bluetooth. It is able to communicate with all other TEXA devices in the area of traditional measurements (UNIProbe and TwinProbe) as well as during on-board diagnosis (OBD MATRIX and OBD Log). Combined and simultaneous use of 2 devices is permitted if necessary.

AXONE 4 can be equipped with an HSDPA module, which then provides a fast telephone connection (via the Internet) with the TEXA servers, to be able to perform updates and make connection with the search function which can be performed outside the particular workshop as well.

Operating temperature 0 to +50 °C
Protection class IP65
Dimensions 240 x 180 x 45 mm

Scope of supply
Wi-Fi and Bluetooth module, lithium batteries, mini-docking, IDC4 PLUS Premium software and manual
Navigator TXTS PASS-THRU diagnostic interface for vehicles with OBD socket

<table>
<thead>
<tr>
<th>Description</th>
<th>Order no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accessories set Power supply and adaptor cable truck, new for TXTs</td>
<td>9539 003 382</td>
</tr>
<tr>
<td>Docking station for table and trolley</td>
<td>9539 003 670</td>
</tr>
<tr>
<td>Equipment case</td>
<td>9539 003 673</td>
</tr>
<tr>
<td>Protective frame</td>
<td>9539 003 015</td>
</tr>
</tbody>
</table>

Order no. 9539 003 625
Puller
for release shaft
for extracting the clutch release shaft, necessary during transmission removal, for instance when changing the clutch or for transmission repair
Application range
vehicles with pull type clutch

Dismantling mandrel
for release bearings
Application range
vehicles with pull type clutch

Mounting tool set
for clutches/flywheels
Application range
LuK SAC clutch
Scope of supply
with case

Angular degree disc
when used together with a 1/2” torque wrench, allows precise tightening of nuts and bolts to torque and angular degree

Brake maintenance unit
This electric device operates with a pulsating fluid stream. Because of this intermittent movement of the fluid stream, even the smallest air bubbles in the brake/clutch system are removed. The electronic deactivation prevents air from entering the system.
Version  steplessly adjustable working pressure
Volume  5 l
Scope of supply
without fluid container

Brake maintenance unit
Vario 5-20 MO
one-main operation, intelligent technology with automatic control mechanisms, suitable for hydraulic clutches and gearshift control, stepless adjustment of pressure control range, with electronic deactivation
Pressure range  0-3.5 bar
Temperature range  0 to 45 °C
Length of filling hose  3.5 m
Length of mains cable  5 m
Power supply  230-60 V
**Accessories set**

No. 98 MO, for brake maintenance unit VARIO 5 MO

Scope of supply
- adapter, 3 hoses, bleeder bottle

<table>
<thead>
<tr>
<th>suitable for</th>
<th>Version</th>
<th>Order no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAN TGA</td>
<td>5-piece</td>
<td>9539 500 047</td>
</tr>
</tbody>
</table>

**Accessories set**

no. 102 MO, for brake maintenance unit VARIO 5 MO

for filling and bleeding the clutch and gearshift control

Scope of supply
- 2 adapters, 3 hoses, canister

<table>
<thead>
<tr>
<th>suitable for</th>
<th>Version</th>
<th>Order no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mercedes-Benz Actros MP2, Axor, Atego</td>
<td>6-piece</td>
<td>9539 500 048</td>
</tr>
</tbody>
</table>

**Brake fluid**

DOT 4

high-grade synthetic brake fluid which has been especially developed for use in brake systems with drum and/or disc brakes, suitable for all hydraulic car brake and coupling systems, except for systems using mineral oil, can be mixed with all brake fluids that meet the same requirements


- Wet boiling point 170 °C
- Dry boiling point 260 °C

Also suitable for vehicles with ABS.

<table>
<thead>
<tr>
<th>Contents</th>
<th>Container</th>
<th>Order no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>250 ml</td>
<td>Bottle</td>
<td>9785 000 014</td>
</tr>
<tr>
<td>1 l</td>
<td>Bottle</td>
<td>9785 000 015</td>
</tr>
<tr>
<td>5 l</td>
<td>Canister</td>
<td>9785 000 016</td>
</tr>
<tr>
<td>20 l</td>
<td>Canister</td>
<td>9785 000 017</td>
</tr>
<tr>
<td>60 l</td>
<td>Barrel</td>
<td>9785 000 018</td>
</tr>
</tbody>
</table>

**Hydraulic oil**

Divinol Central hydraulic fluid S

Colour green

<table>
<thead>
<tr>
<th>Contents</th>
<th>Container</th>
<th>Order no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 l</td>
<td>Bottle</td>
<td>9909 028 360</td>
</tr>
</tbody>
</table>
Certain criteria must be taken into account and a specified procedure must be followed when assessing faults on the clutch system, when diagnosing damage and when locating and correcting faults to ensure that the troubleshooting processes are efficient and have a lasting impact.

The order of tasks for troubleshooting on clutch systems is as follows:

1. Reason for complaint
2. Troubleshooting
3. Damage diagnosis
4. Fault elimination

The reason for the complaint provides the basic information for the subsequent troubleshooting process, which will identify one or multiple causes. A visual inspection or, if applicable, a test measurement must be performed on parts that are still installed or that have already been removed. These tasks will provide information about the correct damage diagnosis, leading to the affected clutch components being repaired or replaced.

The five possible reasons of complaint for a clutch.

- Clutch does not disengage
- Clutch slips
- Clutch grabs
- Clutch makes a noise
- Clutch operation is stiff

Troubleshooting

A clear statement regarding the reason for the complaint means that troubleshooting can focus on a specific area. However, a common mistake is to begin immediately by disassembling the clutch components, which generally requires a lot of work. Instead, it is a better idea to start by searching for the fault at a point where it could be relatively easy to resolve, i.e. within the clutch environment and, more specifically, within the release system for instance. In the majority of cases, the causes of faults in the clutch environment are not associated with faulty clutch function. Upon closer inspection it often becomes clear that a variety of external influences are impairing the clutch function.
Clutch disc

**Damaged spline hub profile**

**Cause**
- Installation error
  - Force was applied when the transmission shaft was threaded into the hub splines of the disc (disc was not centred during installation)
- Incorrect disc

**Outcome:**
Problems disengaging because the clutch disc may no longer be able to slide freely on the transmission input shaft

**Remedy:**
Replace the clutch
Check the transmission input shaft

**Spline damaged and worn to a taper**

**Cause**
- Missing or faulty pilot bearing
- Parallel or angular displacement between the engine and the transmission
- Bearing arrangement of the main transmission shaft or of the transmission input shaft faulty
- Vibration damage
- Gearring on the transmission input shaft worn

**Outcome:**
Clutch noise

**Remedy:**
Check the pilot bearing and replace if necessary
Check the bearing arrangement of the transmission shafts
Replace the clutch

**Scoring on the lining (flywheel side)**

**Cause**
- Flywheel not replaced
- Friction surface on the flywheel not reworked
  - Scoring in the flywheel are introduced on the friction lining

**Outcome:**
Clutch grabs

**Remedy:**
Replace the clutch and flywheel

**Lateral running deviations shown by the clutch disc**

**(lateral run-out/deformation of the lining pad retainer)**

**Cause**
- Clutch disc was not checked for lateral run-out before installation (maximum of 0.5 mm permitted)
- Shipping damage
- Installation error
  - The clutch disc was deformed when the transmission and the engine were pushed together
  - Engine or transmission released when being pushed together

**Outcome:**
Clutch does not disengage

**Remedy:**
Replace the clutch
**Clutch disc**

**Overheating tracks on the pressure plate; friction linings burnt**

- **Cause**
  - Thermal overloading due to:
    - Driving errors (clutch allowed to slip for a long period of time during start-up and when shifting gears)
    - Release system stiff or faulty
    - Wear on clutch disc exceeds the wear limit
- **Outcome:**
  - Clutch slips
- **Remedy:**
  - Replace the clutch
  - Check the flywheel and release system

**Burst Lining**

- **Cause**
  - The speed of the clutch disc was higher than the burst speed of the lining. This condition occurs when the vehicle is drifting and the clutch is engaged and if the speed of the vehicle is higher than the corresponding maximum speed of the engaged gear. This damage is not related to the engine speed — the decisive factor is the speed of the main transmission shaft
- **Outcome:**
  - Clutch does not disengage
- **Remedy:**
  - Replace the clutch

**Lining area carbonised**

- **Cause**
  - Thermal overloading due to:
    - Driving errors (clutch allowed to slip)
    - Rotary shaft seal for engine/transmission leaking
- **Outcome:**
  - Clutch slips
- **Remedy:**
  - Replace the clutch
  - Rectify the leak

**Lining greased or oiled**

- **Cause**
  - Hub covered in excess grease
  - Excess grease on the hub profile was not removed
  - Faulty rotary shaft seal on the engine or transmission
- **Outcome:**
  - Clutch slips
- **Remedy:**
  - Replace the faulty rotary shaft seal
  - Clean the parts; replace the clutch if necessary
Clutch disc

Contact tracks on the torsional damper

**Cause**
- Installation error
  - Disc installed in the wrong position
  - Incorrect disc or clutch

**Outcome:**
Clutch does not disengage; Clutch noise

**Remedy:**
Replace the clutch; ensure that the installation position is correct

Lining worn down to the rivets

**Cause**
- Lining wear
  - Vehicle has been driven despite the fact that the clutch is slipping
  - Driving error
  - Clutch allowed to slip for too long
  - Incorrect clutch
  - Faulty release system

**Outcome:**
Clutch does not disengage; Clutch slips

**Remedy:**
Replace the clutch; check the flywheel

Rust and corrosion on the hub splines

**Cause**
- Hub splines not greased

**Outcome:**
Clutch grabs and does not disengage correctly

**Remedy:**
Remove rust from the hub splines and grease them; replace the clutch if necessary

Grease hole plug for the torsional damper destroyed

**Cause**
- Driving error
  - Torsional damper overused as a result of driving at a low speed
  - Faulty release system
  - Incorrect clutch disc installed

**Outcome:**
Clutch noise

**Remedy:**
Replace the clutch; check the flywheel
Replace the faulty parts of the release system
Pressure plate

Diaphragm spring fingers worn

Cause
- Incorrect pre-load on the release bearing
- Faulty release bearing
- Release bearing seized

Outcome:
Clutch grabs, slips and/or makes noise

Remedy:
Check the release system (pre-load spring)

Cam breakage

Cause
- Clutch dropped
- Shipping damage

Outcome:
Clutch does not disengage

Remedy:
Replace the clutch

Pressure plate broken

Cause
- Pressure plate overheats as a result of the clutch being allowed to slip for too long (driving error)
- Release system stiff
- Slave cylinder faulty

Outcome:
Clutch slips; Clutch fails to disengage

Remedy:
Replace the clutch, flywheel and slave cylinder as necessary

Tangential straps broken

Cause
- Play within the powertrain
- Operating error
  > Gearshift errors
  > Improper “tow start” of the vehicle

Outcome:
Clutch does not disengage

Remedy:
Replace the clutch; check the powertrain
Release system/transmission shaft

### Release fork worn

**Cause**
- Faulty release system
  - Faulty guide sleeve
  - Faulty bearing arrangement on the release shaft

**Outcome:**
- Clutch noise

**Remedy:**
- Replace faulty parts

### Release fork carrier on the release bearing worn

**Cause**
- Release fork worn
  - Bearing arrangement on the release shaft worn
  - Guide sleeve worn

**Outcome:**
- Clutch noise

**Remedy:**
- Check the release system; replace faulty parts

### Release fork shaft stiff

**Cause**
- Bearing arrangement on the release fork worn

**Outcome:**
- Clutch grabs

**Remedy:**
- Check the release fork shaft; replace if necessary
- Check the release bearing

### Transmission input shaft worn

**Cause**
- Transmission input shaft not greased/replaced
  - Clutch disc sticks on the gearing and therefore cannot disengage

**Outcome:**
- Clutch grabs

**Remedy:**
- Check the transmission input shaft; replace if necessary
- Check the clutch; replace if necessary
Flywheel shows temper colours, scoring and heat cracks

**Cause**
- Thermal overloading due to:
  > Driving errors (clutch allowed to slip)
  > Flywheel not reworked/replaced

**Outcome:**
Clutch grabs

**Remedy:**
Replace the clutch and flywheel

Centring ring of flywheel broken

**Cause**
- Installation error
  > External centring not observed
  > Mounting screws tightened unevenly

**Outcome:**
Clutch does not disengage

**Remedy:**
Replace the flywheel

---

**EUROPART® – a powerful brand**

Alongside well-known manufacturer’s brands, EUROPART also offers a strong assortment of its own-brand products with 6000 items from the various EUROPART ranges.

**Your advantages:**
- Highest quality standards
- Maximum availability at 200 locations in 27 countries
- Increasing your competitiveness
- Consistent service package
Causes of faults at a glance

For troubleshooting purposes, the causes of the faults described in the following section and their remedies are set out according to the possible reasons for the complaint.

Clutch does not disengage

The cause for this complaint is not necessarily the clutch itself. In many cases, faults on the release system or a faulty pilot bearing are to blame. In addition, important installed instructions are often not followed.

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tangential straps bent</td>
<td>Clutch pressure plate dropped</td>
<td>Replace the clutch pressure plate</td>
</tr>
<tr>
<td></td>
<td>Abrupt load cycle</td>
<td>Check the powertrain</td>
</tr>
<tr>
<td>Cover</td>
<td>Centring pin not checked</td>
<td>Replace the clutch pressure plate</td>
</tr>
<tr>
<td></td>
<td>Improper installation/handling</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Shipping damage</td>
<td></td>
</tr>
<tr>
<td>Lateral run-out of the clutch disc too high</td>
<td>Shipping damage/improper handling</td>
<td>Align or replace the clutch disc</td>
</tr>
<tr>
<td></td>
<td>Lateral run-out not checked (maximum of 0.5 mm permitted)</td>
<td></td>
</tr>
<tr>
<td>Lining covered in rust</td>
<td>Vehicle left unused for a long period of time (high level of humidity)</td>
<td>Remove rust from the affected parts (including the lining surface)</td>
</tr>
<tr>
<td>Linings sticking</td>
<td>Grease/oil on lining</td>
<td>Replace the clutch disc/seal the clutch environment</td>
</tr>
<tr>
<td>Clutch disc stuck to the transmission shaft</td>
<td>Hub profile worn</td>
<td>Rework hub profile</td>
</tr>
<tr>
<td></td>
<td>Hub covered in rust</td>
<td>Restore free movement and lubricate</td>
</tr>
<tr>
<td></td>
<td>Incorrect grease used</td>
<td>Do not use grease that contains adipic components</td>
</tr>
<tr>
<td></td>
<td>Hub profile or transmission shaft profile knocked out</td>
<td>Replace the clutch disc or transmission shaft or both</td>
</tr>
<tr>
<td>Dimensions of the clutch disc incorrect</td>
<td>Incorrect clutch disc installed</td>
<td>Use the correct parts</td>
</tr>
<tr>
<td>Fouling marks on the Torsional damper</td>
<td>Clutch disc installed the wrong way round or incorrect clutch disc installed</td>
<td>Install the correct clutch disc as specified</td>
</tr>
<tr>
<td>Guide sleeve worn</td>
<td>Incorrect release bearing installed</td>
<td>Replace</td>
</tr>
<tr>
<td></td>
<td>Incorrect pairing</td>
<td>Use the correct parts</td>
</tr>
<tr>
<td></td>
<td>Not greased (metal – metal pairing)</td>
<td>Lubricate</td>
</tr>
<tr>
<td>Faulty pilot bearing</td>
<td>Wear</td>
<td>Replace</td>
</tr>
<tr>
<td></td>
<td>Angular or parallel displacement of the engine in relation to the transmission</td>
<td></td>
</tr>
<tr>
<td>Release travel too low</td>
<td>Air in the hydraulic system</td>
<td>Bleed</td>
</tr>
<tr>
<td></td>
<td>Faulty master/slave cylinder</td>
<td>Replace faulty components and bleed the system</td>
</tr>
</tbody>
</table>

Frequent triggers for whistling noises include the release bearing running off-centre, a faulty pilot bearing or the transmission input shaft not being centred.

Clacking noises generally occur during a load cycle if clutch discs with a first stage damper are installed. However, these noises have no negative impact on the function of the clutch disc.

Installing the clutch disc in the opposite direction to the intended installation direction or installing incorrect parts can also cause noise.

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vibrations when the engine is running</td>
<td>Clutch imbalance (e.g. improper installation/shipping damage)</td>
<td>Replace the pressure plate and/or the clutch disc</td>
</tr>
<tr>
<td>Incorrect clutch disc</td>
<td>Torsional damper does not match the vehicle</td>
<td>Install the correct clutch disc</td>
</tr>
<tr>
<td>Torsional damper destroyed</td>
<td>Incorrect clutch disc/installed; Play in the powertrain (universal shaft); Incorrect driving behaviour (e.g. low speed)</td>
<td>Use the specified clutch disc</td>
</tr>
<tr>
<td></td>
<td>Rectify wear in the powertrain</td>
<td></td>
</tr>
<tr>
<td>Release bearing faulty</td>
<td>Loss of grease due to overheating</td>
<td>Replace the release bearing</td>
</tr>
<tr>
<td></td>
<td>Fault in the release system</td>
<td>Repair the release system</td>
</tr>
<tr>
<td>Faulty pilot bearing</td>
<td>Worn or missing</td>
<td>Replace</td>
</tr>
<tr>
<td>Diaphragm spring fingers worn down</td>
<td>Pre-load on the release bearing incorrect (slave cylinder faulty)</td>
<td>Replace the slave cylinder, replace the clutch</td>
</tr>
</tbody>
</table>
**Clutch slips**

In addition to a faulty clutch disc and pressure plate, there are other things that cause a clutch to slip. The reason is often a faulty release system. An incorrectly reworked flywheel or installing an incorrect clutch can also be the cause.

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pressure plate overheating</td>
<td>Thermal overloading (e.g. by allowing the clutch to slip) Incorrect parts installed Diaphragm spring broken Oil contamination</td>
<td>Replace the entire clutch Seal the clutch environment</td>
</tr>
<tr>
<td>Clutch linings worn</td>
<td>Natural wear Clutch allowed to slip for too long Clamp load too weak (incorrect clutch)</td>
<td>Replace the entire clutch</td>
</tr>
<tr>
<td>Clutch linings oiled/greased</td>
<td>Oil leakage at the rotary shaft seal (engine/transmission) Excess grease on the hub profile Loss of grease on the release bearing (overheating)</td>
<td>Replace the sealing ring Replace the clutch</td>
</tr>
<tr>
<td>Friction lining on the flywheel side shows scoring</td>
<td>Flywheel contact surface shows scoring</td>
<td>Rework the flywheel friction surface; replace the flywheel if necessary</td>
</tr>
<tr>
<td>Flywheel friction surface is deeper than the mounting surface (not applicable for a dished flywheel)</td>
<td>When reworking the flywheel friction surface, the mounting surface was not rotated at the same time</td>
<td>Rework the flywheel in its entirety Replace the flywheel</td>
</tr>
<tr>
<td>Guide sleeve worn</td>
<td>Not lubricated or incorrectly lubricated (only applicable for metal guide sleeves)</td>
<td>Replace the guide sleeve Lubricate correctly</td>
</tr>
<tr>
<td>Heavy operation of the release system</td>
<td>Bearing arrangement on the release shaft worn Bearing arrangement on the release shaft not lubricated Guide sleeve worn</td>
<td>Replace sleeves Lubricate</td>
</tr>
</tbody>
</table>

**Heavy Clutch operation**

The clutch disc, pressure plate or flywheel very rarely cause clutch operation to be stiff. The problem often lies with the release system and its associated components, such as the release bearing, the release shaft or the guide sleeve.

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Incorrect clutch pressure plate</td>
<td>Release load too high</td>
<td>Install the correct clutch pressure plate</td>
</tr>
<tr>
<td>Guide sleeve worn</td>
<td>Release bearing eroded, Incorrect pairing, not greased, greased incorrectly</td>
<td>Replace, combine the correct parts, lubricate Do not use grease that contains adipic components</td>
</tr>
<tr>
<td>Bearing arrangement on the release shaft worn</td>
<td>Sleeves worn, bearing points not greased</td>
<td>Replace, lubricate</td>
</tr>
<tr>
<td>Clutch cable worn</td>
<td>Normal wear Cable routed incorrectly</td>
<td>Replace Route cable correctly</td>
</tr>
</tbody>
</table>

**Clutch grabs**

A faulty engine bearing or an inaccurate engine setting can prevent soft clutch engagement. Installing an incorrect clutch can also cause the clutch to grab.

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pressure plate lifts at an angle</td>
<td>Tangential leaf spring(s) bent/compressed</td>
<td>Replace the clutch pressure plate</td>
</tr>
<tr>
<td>Lining oiled/greased</td>
<td>Faulty rotary shaft seal (engine/transmission) Hub profile covered in excess grease Loss of grease from the release bearing (overheating)</td>
<td>Replace the seal and clutch disc Replace the clutch disc Replace the release bearing</td>
</tr>
<tr>
<td>Incorrect clutch disc</td>
<td>Use the specified clutch disc</td>
<td></td>
</tr>
<tr>
<td>Heavy operation of the release system</td>
<td>Bearing arrangement on the release shaft worn Bearing arrangement on the release shaft not lubricated Guide sleeve worn, faulty master/slave cylinder</td>
<td>Replace worn or faulty components</td>
</tr>
<tr>
<td>Stiff actuation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Air in the hydraulic system of the clutch</td>
<td>Hydraulic system leaking or faulty</td>
<td>Replace faulty components as necessary and bleed according to the manufacturer’s specifications</td>
</tr>
<tr>
<td>Guide sleeve worn</td>
<td>Not greased/incorrectly greased</td>
<td>Replace the guide sleeve, use the specified grease</td>
</tr>
<tr>
<td>Engine/transmission suspension</td>
<td>Suspension faulty/knocked out</td>
<td>Repair or replace</td>
</tr>
<tr>
<td>Faulty pilot bearing</td>
<td>Angular or parallel displacement between the engine and transmission</td>
<td>Replace the pilot bearing Check the centring of the engine and transmission</td>
</tr>
</tbody>
</table>
Leakage in the clutch system

Vehicle type: MAN TGX, TGA, TGS
Neoplan Cityliner, Tourliner, Trendliner

In the vehicles listed above, replacing the clutch can result in leaks in the clutch booster (OE no.: 81.30725.6084).

This is caused by an adverse combination of pressure plate, clutch disc and flywheel tolerances. When this occurs, the clutch booster actuation ram reaches a position outside its operating limit. The effectiveness of the seal is therefore compromised, and hydraulic fluid escapes via the air flow.

This issue can only be resolved with a modified clutch booster. This is fitted with an extended ram and is available from the vehicle manufacturer under part no. 81.30725.6116.

Please observe the vehicle manufacturer specifications!

Clutch system malfunction

Clutch booster does not function correctly

Vehicle type: Mercedes-Benz Actros MP2, Axor (except GE2)
Type: 930, 932, 933, 934
except code GE2
Electronic drive control II
944, 950, 952, 953, 954, 957
with transmission 715.5

In the above-mentioned vehicles, stiff or blocked pistons in the clutch booster can lead to problems disengaging the clutch.

The complaint can be resolved using the repair kits from the vehicle manufacturer. The kit that is used depends on the relevant hydraulic fluid flow rate.

In vehicles with transmission code G39, the cover plate of the clutch booster must also be resealed after the installation of the repair kit.

Clutch systems filled with Pentosin hydraulic fluid can be identified by the green tank fastener.

Please observe the vehicle manufacturer specifications!
Grabbing clutch
Possibly caused by incorrect adjustment of the clutch booster

*Vehicle type:* Mercedes-Benz
- Actros MP 2 (2003 - 2008)
- Actros MP 3 (2008 - )

*Type:*
- 932, 933, 934 with code (GE2)
- EDC II (Electronic Drive Control)
- 930, 932, 933, 934, 940, 944 with code GE3
- Mercedes PowerShift
- 930, 932, 933, 934 with code (GE7)

In the vehicles listed above, it is possible for the clutch to grab in a variety of driving situations. This may be due to the inaccurate setting of the clutch booster.

In the event of a complaint, the setting of the ram of the clutch booster must be checked first. This can be done using an adjustment device from the vehicle manufacturer.

**Directions for use:**
- Remove the ram from the release lever, unscrew the lock nut and set the ram
- Attach the adjustment device (image 2, left)
- Twist the shaft of the ram until it fits closely with the adjustment device without any play (image 1, right)
- Remove the adjustment device
- Remove the ram and retighten the lock nut
- Insert the ram

*Please observe the vehicle manufacturer specifications!*

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Clutch disc with new first stage damper
Six spring torsional damper with first stage damper for higher capacity

In addition to transmitting engine torque, the clutch disc has the task of preventing torsional engine vibrations from reaching the powertrain, ensuring a smooth start and fast switching.

In order to achieve this, the clutch disc is fitted with a variety of devices, including a torsional damper.

The torsional dampers used today normally comprise eight tangentially arranged helical compression springs. These have a variety of spring rates and form the main damper stage.

Most LuK clutch discs are fitted with six torsion springs. Compared to eight spring dampers, the construction of the springs is longer and they therefore have a larger angular deflection, which reduces the tension and increases the damper capacity.

In order to further increase capacity, an additional first stage damper is integrated into the torsional damper. The first stage damper consists of small springs and a friction control device. The operation resembles that of the torsional damper but with a much lower spring rate. This guarantees the isolation of torsional vibrations from the engine even when idle, and effectively avoids gear rattle.

We have supplemented the entire damper unit with a new hub design that allows for some axial misalignment.

*Please observe the vehicle manufacturer specifications!*

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Grabbing clutch
Possibly caused by incorrect adjustment of the clutch booster

*Vehicle type:* Mercedes-Benz
- Actros MP 2 (2003 - 2008)
- Actros MP 3 (2008 - )

*Type:*
- 932, 933, 934 with code (GE2)
- EDC II (Electronic Drive Control)
- 930, 932, 933, 934, 940, 944 with code GE3
- Mercedes PowerShift
- 930, 932, 933, 934 with code (GE7)
- Mercedes PowerShift 2

In the vehicles listed above, it is possible for the clutch to grab in a variety of driving situations. This may be due to the inaccurate setting of the clutch booster.

In the event of a complaint, the setting of the ram of the clutch booster must be checked first. This can be done using an adjustment device from the vehicle manufacturer.

**Directions for use:**
- Remove the ram from the release lever, unscrew the lock nut and reset the ram
- Attach the adjustment device (image 2, left)
- Twist the shaft of the ram until it fits closely with the adjustment device without any play (image 1, right)
- Remove the adjustment device
- Remove the ram and retighten the lock nut
- Insert the ram

*Please observe the vehicle manufacturer specifications!
Greasing of the release system
The release bearings and guide sleeve do not always need greasing

A well functioning clutch system includes smooth actuation. Having as little friction as possible between the release bearing and the guide sleeve is therefore paramount.

The sliding sleeves of the release bearings can be made out of either metal or plastic. Due to the various possible material pairings, the following greasing guidelines should be followed during fitment:

- If the sliding contact surfaces of the release bearing and the guide sleeve are made from metal they must definitely be greased
- If release bearings with a plastic sliding sleeve (image) are installed, these have already been coated with a thin lubricating film at the production stage. They must not be greased

Note:
To avoid mistakes when selecting a lubricant, Castrol Olista Longtime is recommended.

Please observe the vehicle manufacturer specifications!

Problems changing gear after clutch replacement
The clutch actuator push rod must be adjusted after repair

Manufacturer: Iveco
Models: Stralis AT/AD
        Eurotronic Automated Gear

In the vehicles listed above, the slave cylinder is fitted with a device which automatically compensates for facing wear of the clutch disc.
For this reason, the slave cylinder push rod must be adjusted precisely when the clutch and/or the clutch actuator is replaced.

Procedure:
- For a removed actuator, move the clutch lever in the direction of the clutch until the idle length is cancelled out
- Measure distance A between the deepest point of the ball socket of the clutch lever and the back face of the clutch actuator
- Completely remove the push rod from the clutch actuator
- Unscrew the bleeder screw from the slave cylinder so that the spring in the cylinder can push the piston forward until it reaches the stop

Measure distance B between the back face of the clutch actuator and the front edge of the pressure sleeve. Also measure distance C, which is the depth of the conical pressure sleeve of the piston.

The length (L) of the push rod is then calculated with the following formula:

\[ L = A - B + C + D \]

A, B and C here are measured values. The measurement D describes the value for the greatest stroke of the clutch actuator, which is 33 mm. If the measured value deviates from this, the ball head and the push rod must be twisted by loosening the nut on the push rod until the required length is reached. The nut on the push rod must subsequently be tightened with 52 Nm and inserted into the clutch actuator.

Please observe the vehicle manufacturer specifications!

The dimensions of the push rod can be calculated with the measured values.
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