

MINTEX®

BRAKING WITH TRADITION

Practical Tips



HISTORY IN THE BRAKING

Questions?

Do you have any questions about the product and/or technology?

Ring the Mintex Service hotline for quick and competent help.

+49 2171-703 2397

E-mail: serviceline@tmdfriction.de

Important!

Please pay attention to the instruction leaflet in the Mintex disc brake pad packages. This contains information on special installation regulations, such as

- directional disc brake pads
 - coloured markings on the backing plate and their meaning
 - warnings regarding work on the electrohydraulic brake system
- disc brake pads with removable foil on the backing plate for glued attachment, etc.

► **Attention! In the case of vehicles with an electrohydraulic brake (e.g., SBC-Sensotronic Brake Control). Never change the pad / lining and brake fluid at the same time! Work on the electronic brake system is only to be performed by trained personnel.**

Please note!

The instructions of the vehicle and brake system manufacturers regarding repair and maintenance must always be observed.

Explanation of the individual points in the brake check list

1. A test drive in advance is strongly advised as it will uncover pre-existing defects in the area of the brakes and chassis. Failure to find and correct these faults during the repair could lead to problems after the repair has been completed. E.g.: Already existing steering-wheel rotary vibrations, pulsating brake pedal, one-side brake pull, wheel imbalance, rumbling chassis, track offset or the vehicle pulls to one side when accelerating.

2. A defective shock absorber has a negative effect on the brake (longer braking distance, less comfort).

3. Functional test. During this test the braking force distribution and efficiency are checked. The wear state must be determined visually.

4. The state of brake fluid must be checked (water content, boiling point, age). Attention! Most brake fluids (Glycol based) are hygroscopic, any extra water content could make the brake system unsafe! Check the fluids boiling point with a suitable tool or replace with an appropriate new brake fluid. Note: Brake fluids must be changed in accordance with manufacturers guidance.

5. Defective rims have a negative effect on the brake. Attention must be paid to damage to the rim flange and to the contact surfaces of the wheel bolts or nuts. The tyres must be checked for porosity, tread depth and imbalance. Imbalances have a lasting effect on the comfort behaviour of the brake system.

6. A defective wheel bearing and impermissible wheel-bearing play also lead to brake comfort problems.

7. Even a shock-absorber that is still functioning adequately during the test can already have an oil leak that will lead to a drop in efficiency within a short time. In this context, it should be noted that a gas pressure shock absorber also contains oil!

8. Defective drive shafts also have a negative effect on the wheel brake.

9./10./11. Defective axle bearing, stabilizers, thrust rods, and steering elements transmit vibrations more strongly and, thus, have a negative effect on the comfort behaviour of the brake system.

12. The wear pattern of the individual components indicates possible brake defects (e.g., uneven wear, different wear on the right and left / inside and outside).

13. Only if the piston is operating smoothly is the play correct. Depending on the brake manufacturer, special basic adjustments are necessary (piston displacement, combined calipers).

14. Perform high and low-pressure test.

15. In addition, check all hydraulic components for leaks (visual check).

16. Load controller. Check the transfer parts for smooth operation and play. Check setting (in particular, after chassis modification).

17. Visually check the brake hoses for damage, porosity, correct laying, and date of manufacture.

18. Check brake line for corrosion and damage (kinks, effects from extraneous elements, twisting).

19. Always check sliding elements of calipers for wear, smooth operation and sealing. In order to ensure perfect operation, the specified torque must always be adhered to when fitting.

20. Accessories/set of fasteners: It is recommended to replace the accessories/set of fasteners each time a repair is carried out. The retaining clasps, springs and retaining springs are subject to material fatigue, i.e., even if a spring or a retaining clasp looks o.k., the elasticity may have decreased which, at best, can lead to losses of comfort, such as screeching sounds.

21. Wheel hub: It is recommended to check the cleaned wheel hub for lateral run-out. The higher wobble at the hub increases with growing diameter of the brake disc and, over the operating period, leads to rubbing phenomena. An impermissible wobble can only be eliminated by replacing the wheel hub.

22./23. Threads of the wheel fastening and caliper brackets. Stiff wheel bolts/threads produce unequal torque. Unequal torque when tightening leads to stress and, thus, to problems in the brake. It is important to replace any defective wheel bolts. The renewal of defective threads requires replacement of the wheel mount.

24. Optimum measurement of the lateral run-out of the brake disc is only possible from the inside with a properly mounted wheel. Since this measurement is in the μm range, optimum fastening of the dial gauge must be ensured.

25./26. A final functional check should, of course, be carried out on the test bench and during the test drive.

TMD Friction Services GmbH
Schlebuscher Str. 99
51381 Leverkusen
Germany
info@mintex.com
www.mintex.com

Mintex is a registered trademark of TMD Friction.

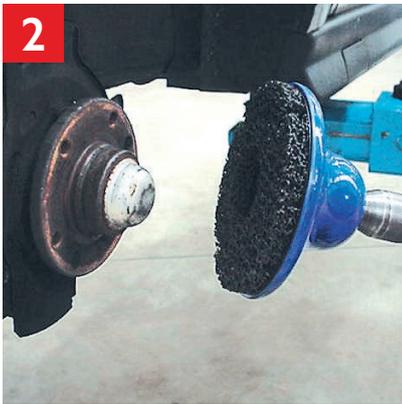
Documentation of a disc brake repair



Start of brake repair

Visually check the brake disc and/or pads for sign of reaching their wear limit. Before starting the brake repair, all relevant components in the area of the axle and the hydraulic system must be checked.

► **It is important to replace any defective parts.**



Remove rust from the contact surfaces and hub

After dismantling the old brake discs, remove rust from the contact surface and the hub edge using appropriate tools (e.g., a wire brush, Emery paper, etc).

► **Attention: Do not damage the wheel hub!**

The caliper, which is still connected to the hydraulic system, must be fastened so that no tensile load is exerted on the brake hose.



Cleaning the contact surface and hub

Use a brake cleaner to clean the bright metal contact surface.

We recommend checking the cleaned hub with an appropriate measuring gauge (measuring dial with stand) for possible lateral run-out deviations.



Remove rust from the guide shafts of the caliper bracket

Depending on the design, remove rust and residues from the guide shafts of the dismantled caliper bracket using a wire brush and/or caliper file.

► **Attention: Do not damage the caliper bracket!**

Visually check the bracket for damage.



Greasing the guide surfaces of the caliper bracket

Grease the cleaned guide surfaces of the caliper bracket with a non-conductive, heat-resistant and solids-free (non-metallic) agent (Mintex CERA TEC).

► Do not use copper paste!



Fitting the brake disc

Fit the new brake disc on the wheel hub and - depending on the type and system - fasten with the retaining screws.

We recommend measuring the newly fitted brake discs for lateral run-out approx. 15 mm below the maximum radius using a dial gauge. Ideally, this measurement is performed with a properly mounted wheel.



Moving back the brake piston

The brake piston must always be moved back using appropriate adjusting tools in order to prevent the piston jamming or twisting.

In doing so, attention is to be paid to the different versions of the caliper and/or the brake system, as well as to the manufacturer-specific requirements and special tools.



Greasing the contact points

Where **damping lacquer coatings** or **damping shims** are fitted metal free anti-squeal lubricant is not required. Only use the metal free anti-squeal lubricant (Mintex CERA TEC) in the area of contact of the pad on the guide shafts. Lubrication is only vital in the area of the **contact points** of the pad and on the guide shafts. The torque settings and specifications/guidelines of the vehicle and system manufacturers are to be observed in all steps of the repair process.

Fault diagnosing

Check, diagnose and replace if necessary: (Tips for avoiding complaints)

I



- ▶ **Wheel bearing**
 - ✓ play/damage
- ▶ **Wheel hub**
 - ✓ clean (metallic bright)
 - ✓ lateral run-out using a dial gauge
 - ✓ visible damage
 - ✓ corrosion protection (excluding solids contents)
- ▶ **Axle nut**
 - ✓ tightness and security
- ▶ **Wheel bolt thread**
 - ✓ damage
 - ✓ can the bolts easily be screwed in by hand?

II



- ▶ **Traverse link mount**
 - ✓ replace in case of porosity and increased play

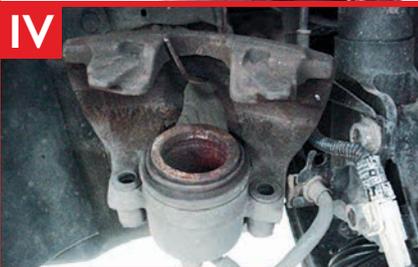
Attention!
Depending on the axle design, an impermissible play can be difficult to ascertain.

III




- ▶ **Supporting ball joint**
- ▶ **Tie rod end**
 - ✓ joint play
 - ✓ check sealing collars for porosity and leakage
 - ✓ fastening of joints (securing screws)

IV



- ▶ **Brake caliper**

Piston	Dust collar	Sliding element	Caliper housing
<ul style="list-style-type: none"> ✓ fluid leaks, smooth-running 	<ul style="list-style-type: none"> ✓ fluid leaks, porous 	<ul style="list-style-type: none"> ✓ play, smooth-running ✓ seal 	<ul style="list-style-type: none"> ✓ damage

V



- ▶ **Brake hose**
 - ✓ fluid leaks, porous, chafe marks
 - ✓ inner diameter (swollen)
 - ✓ screwed connection
 - ✓ check maximum service life

VI



- ▶ **Strut**
 - ✓ fluid leaks (detectable oil seepage)
 - ✓ shock-absorber efficiency test, in advance
 - ✓ strut fracture
 - ✓ shock-absorber mount
 - ✓ fastening

Attention!
Changes to the chassis have an effect on the efficiency and comfort of the brake system.

VII



- ▶ **Drive shaft boot**
 - ✓ fluid leaks, porous

Brake check list

for the service and hand brake

Measures	O.K.	not O.K.	Anomaly/remark
1. Test drive before starting replacement	<input type="checkbox"/>	<input type="checkbox"/>	
2. Test shock absorber operation before starting replacement	<input type="checkbox"/>	<input type="checkbox"/>	
3. Test brake operation on roller test bench	Front axle F.A. <input type="checkbox"/>	<input type="checkbox"/>	
	Rear axle R.A. <input type="checkbox"/>	<input type="checkbox"/>	
4. Test brake fluid before starting replacement	<input type="checkbox"/>	<input type="checkbox"/>	
5. Visually check rims/tyres	<input type="checkbox"/>	<input type="checkbox"/>	
6. Check wheel bearing play	<input type="checkbox"/>	<input type="checkbox"/>	
7. Visually check chassis	<input type="checkbox"/>	<input type="checkbox"/>	
8. Check drive/half-shafts for joint play and fluid leaks (collars)	<input type="checkbox"/>	<input type="checkbox"/>	
9. Check axle bearing (supporting ball joints, transverse link mount)	<input type="checkbox"/>	<input type="checkbox"/>	
10. Check stabilizers and thrust rods	<input type="checkbox"/>	<input type="checkbox"/>	
11. Check steering	<input type="checkbox"/>	<input type="checkbox"/>	
12. Check wear state of complete wheel brake incl. parking brake	<input type="checkbox"/>	<input type="checkbox"/>	
13. Brake calipers: Check operation and check for fluid leaks	<input type="checkbox"/>	<input type="checkbox"/>	
14. Main brake cylinder: Check operation and check for fluid leaks	<input type="checkbox"/>	<input type="checkbox"/>	
15. Wheel cylinder: Check operation and check for fluid leaks	<input type="checkbox"/>	<input type="checkbox"/>	
16. Check operation and check for fluid leaks of load sensing valve (load-dependent brake), as well as operation of hand brake cables	<input type="checkbox"/>	<input type="checkbox"/>	
17. Brake hoses: Check for porosity and fluid leaks	<input type="checkbox"/>	<input type="checkbox"/>	
18. Brake lines: Check for rust and fluid leaks	<input type="checkbox"/>	<input type="checkbox"/>	
19. Sliding elements of brake calipers: Check for wear and smooth operation	<input type="checkbox"/>	<input type="checkbox"/>	
20. Check accessory/set of fasteners replaced?	<input type="checkbox"/>	<input type="checkbox"/>	
21. Check cleaned wheel hub for damage/lateral run-out	<input type="checkbox"/>	<input type="checkbox"/>	
22. Check threads for wheel bolts/nuts for damage/smooth operation	<input type="checkbox"/>	<input type="checkbox"/>	
23. Check threads for caliper brackets/guide elements	<input type="checkbox"/>	<input type="checkbox"/>	
24. Final check of newly fitted and centered brake disc, lateral run-out	<input type="checkbox"/>	<input type="checkbox"/>	
25. Functional test on roller test bench	<input type="checkbox"/>	<input type="checkbox"/>	
26. Test drive after replacement	<input type="checkbox"/>	<input type="checkbox"/>	

Other anomalies/remarks:

Stamp: