
8. Rear axle

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8.1. Troubleshooting

Rear wheel wobble

- Unbalanced tyre
- Bent rim
- Axle incorrectly tightened
- Loose engine support
- Low tyre pressure

Soft suspension

- Weakened spring
- Oil leakage
- Soft preload

Hard suspension

- Uneven preload on shock absorbers
- Hard preload
- Incorrectly mounted shock absorber
- Shock absorber rod bent
- Damaged swing axle bearings
- Defective engine support

Underpowered rear brake

- Contaminated disc
- Contaminated tablets
- Air in hydraulic system
- Worn pads
- Warped disc
- Unbalanced clamp
- Clogged hose

Rear wheel noise

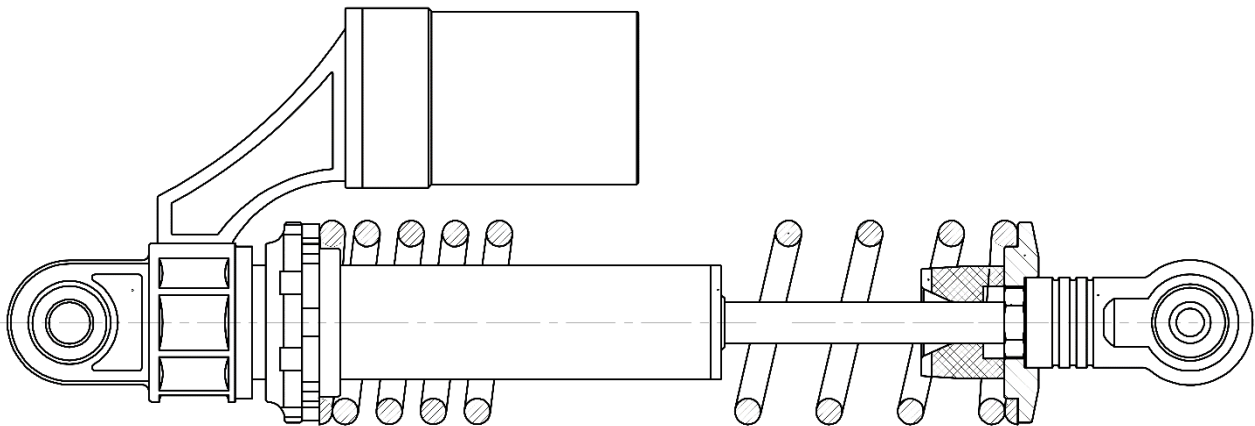
- Worn bearings
- Worn pads
- Deformed swingarm

8.2. Rear axle characteristics

Component	Service limit
Rear wheel radial warpage	2.0 mm
Rear axial rim flare	2.0 mm
Rear brake disc thickness	3.0 mm
Rear brake disc warpage	0.3 mm

8.3. Tightening torques

Component	Screw type	Tightening torque
Rear caliper fixing screws	M8x30	25±5 Nm
Rear disc fixing screws	M8x25	25±3 Nm
Rear axle nut	M16	95±10 Nm
Semi-hinged fixing screws	M8x35	25±3 Nm
Upper shock absorber fixing screw	M10x40	40±3 Nm
Lower right shock absorber fixing screws	M8x30	20±4 Nm
Lower left shock absorber fixing screws	M8x50	25±5 Nm



8.4. Shock absorber characteristics

Component	Value
Shock absorber wheelbase	325 ± 2 mm
Elastic constant hard spring rate	39.22 N/mm
Elastic constant soft spring rate	13.07 N/mm
Quantity of hydraulics	90 ± 1 cc
Hydraulic oil viscosity	Suspension oil no. 22
Shock absorber travel	58 mm

8.5. Removal of the left shock absorber

Necessary tools



Offset or open-ended spanner
16 mm

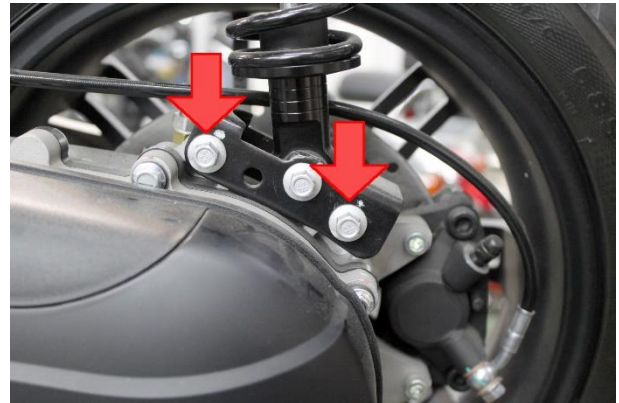


Socket spanners 10
and 15 mm



Large flat
screwdriver

Use a 10 mm socket spanner to remove the two screws marked with arrows that secure the left shock absorber lower anchor support to the transmission housing.



Tightening torque:

Lower left shock absorber support bolts
 25 ± 5 Nm

Remove the upper fixing bolt of the shock absorber and the corresponding nut with a 16 mm open-ended spanner or ring spanner on the outside of the nut and a 15 mm socket on the outside (bolt).



Tightening torque:

Upper shock absorber screw 40 ± 3 Nm

If the lower shock absorber anchor does not come off by itself, use a large flat screwdriver to pry the lower anchor bracket of the left shock absorber from the back of the lower anchor.

Remove the shock absorber.

The assembly sequence is the reverse of the disassembly sequence.



8.6. Removal of the right shock absorber

Necessary tools



Offset or open-ended spanner
16 mm

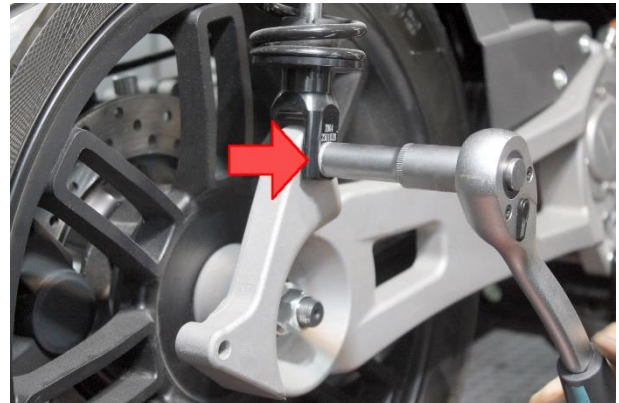


Socket spanners 15
and 13 mm

Remove the lower fixing screw of the shock absorber with a 13 mm socket.

Tightening torques:

Lower right shock absorber bolt 20 ± 4 Nm



Remove the upper fixing bolt of the shock absorber and the corresponding nut with a 16 mm open-ended spanner or ring spanner on the outside of the nut and a 15 mm socket on the outside (bolt).

Tightening torques:

Upper shock absorber screw 40 ± 3 Nm



Remove the shock absorber by hand.
The assembly sequence is the reverse of the disassembly sequence.



8.7. Preload adjustment of shock absorbers

Necessary tools



Crescent
spanner (x2)



Gauge

Use a crescent spanner to lock the nut on the spring, and use the other crescent spanner to loosen the lock nut by sliding it to the top of the thread.



Tighten or loosen the nut that rests on the spring with the crescent spanner to achieve a harder (higher load carried on the scooter or sporty riding) or softer preload respectively.



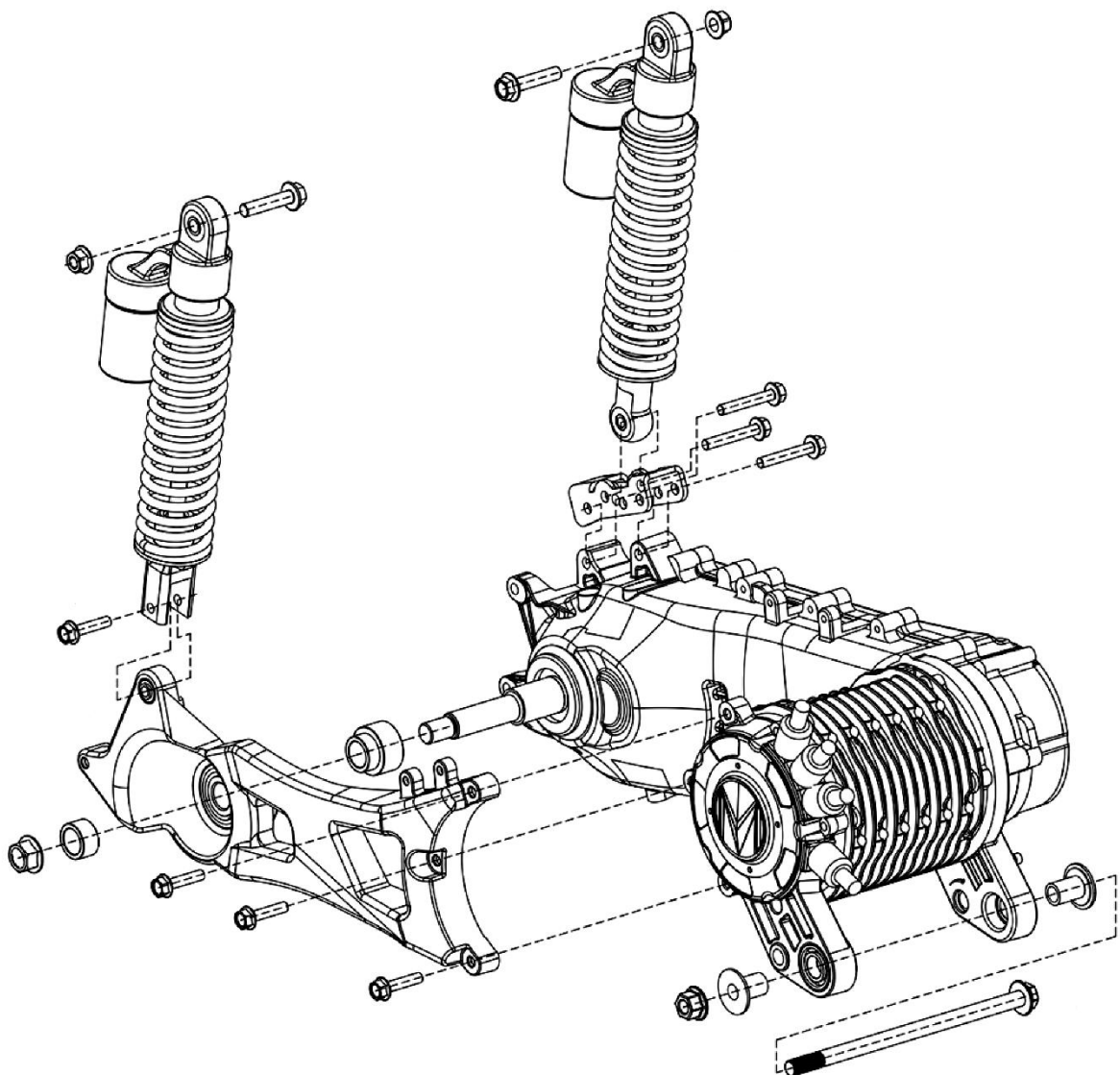
Re-tighten the spring loaded nut with a crescent spanner and tighten the locknut with the other crescent spanner to fix the preload position.



Measure the thread clearance between the locknut and the top of the shock absorber with the feeler gauge and apply the same clearance to the other shock absorber following the above steps.



8.8. Removal of the right swingarm



Required prior operations:

- Remove only the right shock absorber (→ See 8.6. Shock absorber removal)
- Remove the rear mudguard (→ See 1.11. Disassembly of the rear mudguard)

Necessary tools



10 and 21 mm
socket
spanners

Remove the rear axle nut with a 21 mm socket spanner.

Tightening torques:

Rear axle nut 95 ± 10 Nm



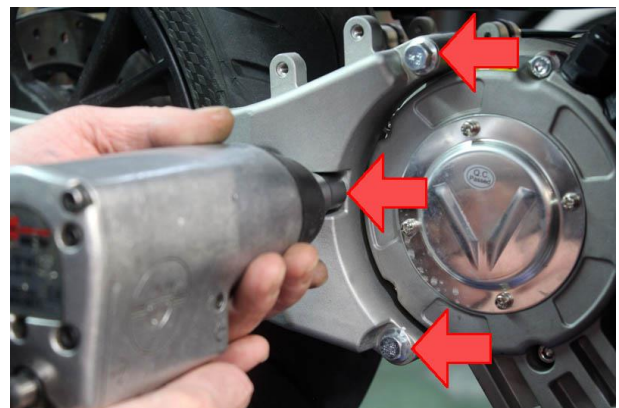
Remove the spacer bushing.



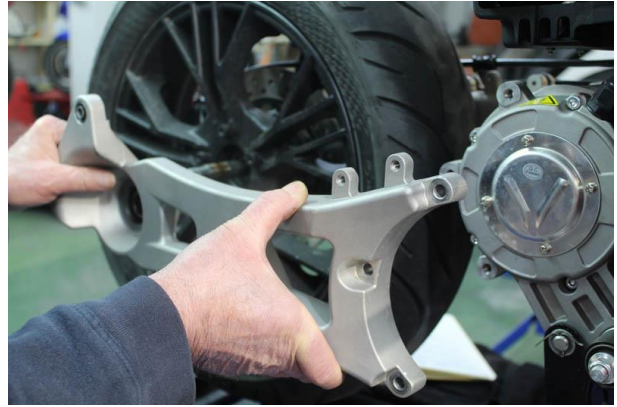
Remove the three screws holding the front of the swingarm to the electric engine support with a 10 mm socket spanner.

Tightening torques:

Semi-hinged fixing screws 25 ± 3 Nm



Remove the swingarm by hand.



A second spacer bushing is located on the inside of the swingarm support.

The assembly sequence is the reverse of the disassembly sequence.



8.9. Rear brake caliper removal

Necessary tools



12 mm socket spanner

Remove the two screws securing the caliper to the transmission housing using a 12 mm socket spanner.

Tightening torque:

Rear brake caliper fixing screws 25 ± 5 Nm



Pull the caliper off the disc with your hands.



8.10. Changing the rear brake pads

Required prior operations:

- Remove the rear brake caliper (→ See 8.9. Rear brake caliper removal)

Necessary tools



Fine-nosed
pliers

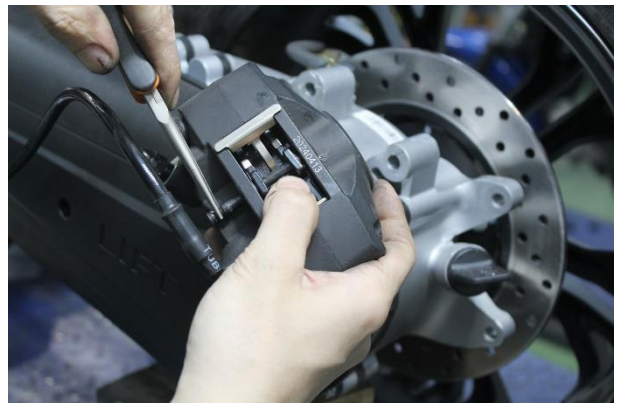


Large flat
screwdriver

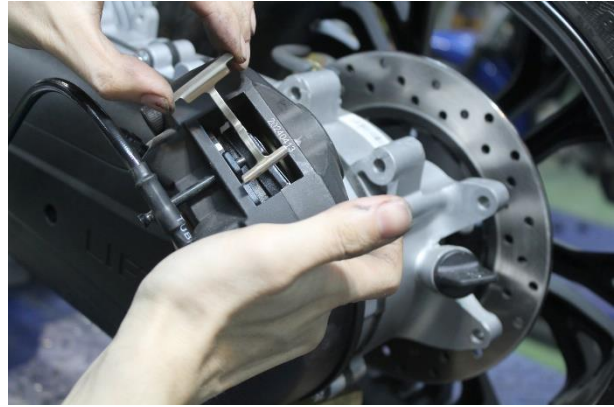
Remove the pin lock with the tip of a pair of needle-nose pliers.



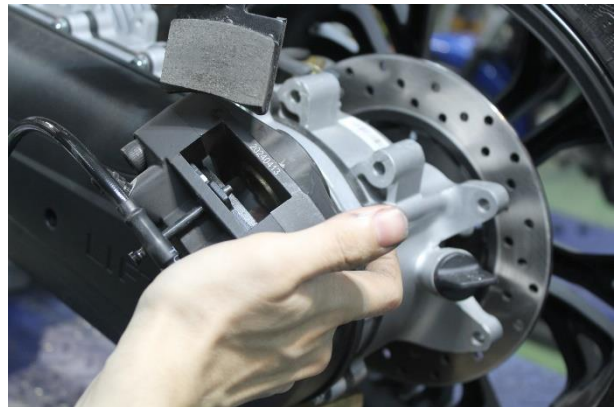
Pull out the pin with the pliers while holding the spring plate compressed with the other hand to prevent it from popping out when the pin is removed.



Remove the elastic plate.



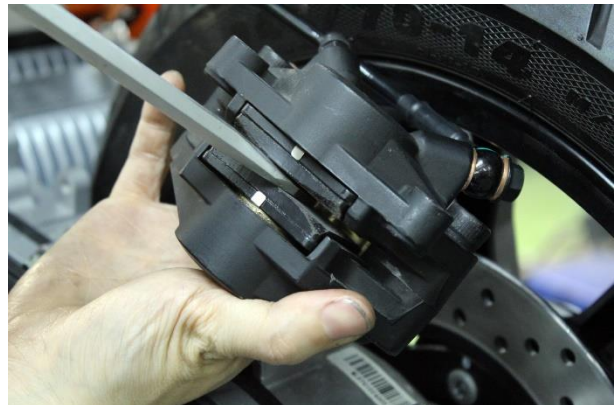
Remove the tablets.



The assembly sequence is the reverse of the disassembly sequence.

Always change the tablets in pairs.

When mounting the caliper on the disc, it may be necessary to open the pad spacing by retracting the caliper pistons. To do this, refit the worn calipers and, using a large flat-blade screwdriver, open the brake pads so that the pistons are retracted.



8.11. Checking the rear brake disc

➔ Follow similar procedure as in 7.6. for the front disc.

8.12. Checking the rear wheel rim

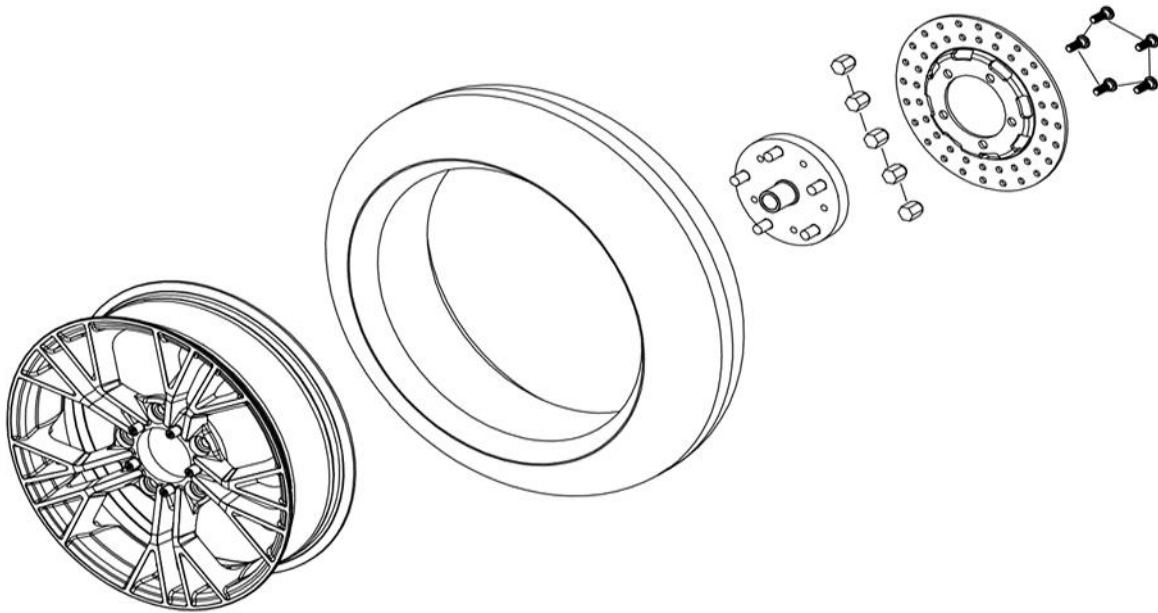
➔ Follow similar procedure as in 7.7 for the front wheel rim

8.13. Hydraulic system purging

➔ Follow similar procedure as in 7.15. for the front brake.

8.14. Rear wheel removal

Diagram



Required prior operations:

- Remove only the right shock absorber (→ See 8.7 Removal of the right shock absorber).
- Remove the swingarm (→ See 8.8 Removal of the swingarm).
- Remove the rear brake caliper (→ See 8.9 Removal of the rear brake caliper)

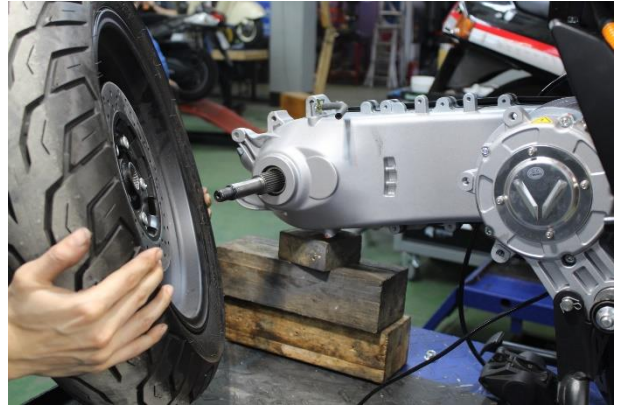
Remove the second spacer bushing and check the seal and bearing for wear or damage. Replace the oil seal and/or bearing with new ones if necessary.



8. REAR AXLE

If the left shock absorber has been removed, support the transmission housing on suitable brackets.

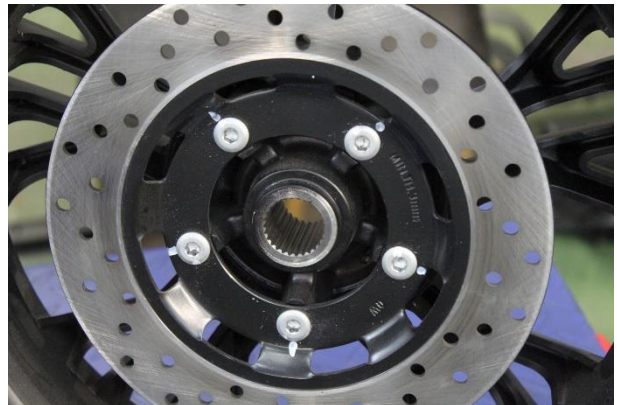
Pull the rear wheel off the axle with your hands.



Check the rear wheel axle splines for damage or wear.

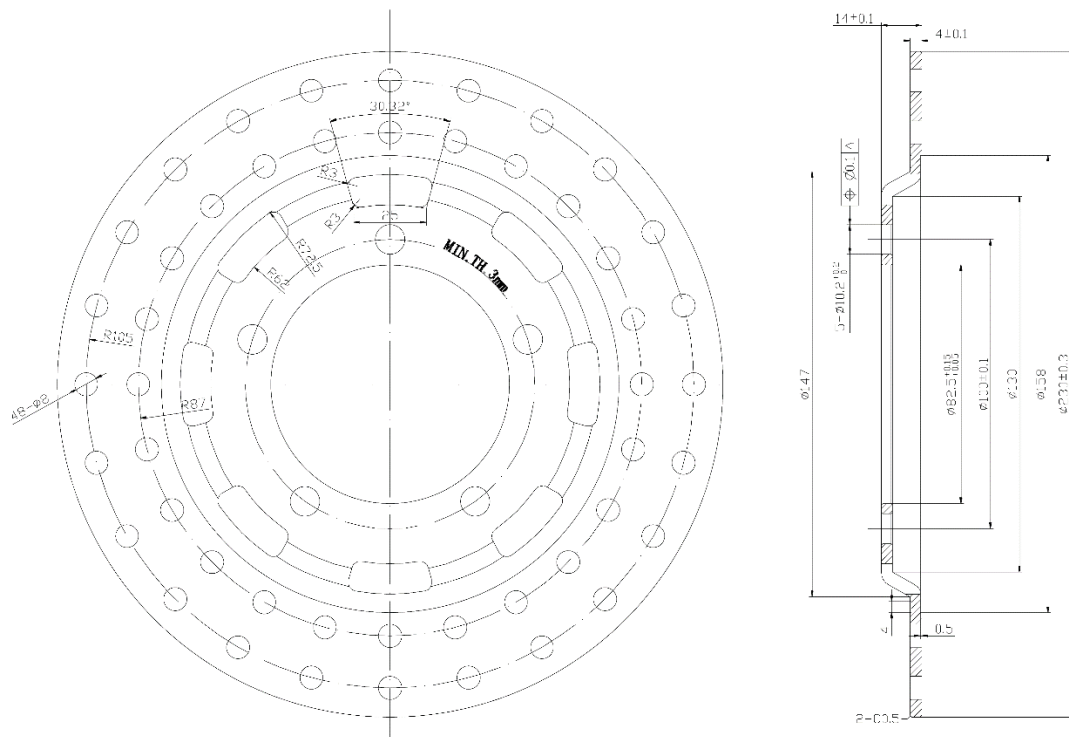


Check the splines of the axle housing on the rear rim for damage or wear.



8.15. Removal of the rear brake disc

Diagram



Required prior operations:

- Remove only the right shock absorber (→ See 8.7 Removal of the right shock absorber).
- Remove the swingarm (→ See 8.8 Removal of the swingarm).
- Remove the rear brake caliper (→ See 8.9 Removal of the rear brake caliper)
- Remove the rear wheel (→ See 8.14 Disassembly of the rear wheel).

Necessary tools



6 mm Allen key

8. REAR AXLE

Remove the 5 screws securing the rear brake disc to the rear rim using a 5 mm Allen key.

Tightening torque:

Rear brake disc screws 25 ± 5 Nm

Remove the rear brake disc by hand.

