Balancing weights

Note

Specified weights of balancing weights include retaining clip

Weight (g) Width "B" of retaining clip mm	Rim version	Surface protection	Version (remark)
Width of retaining clip = 16.2	Steel in conjunction with steel wheel trim cover. Light alloy	–	Up to 12/79
B = 16.2	Steel in conjunction with steel and plastic wheel trim cover. Light alloy	–	As of 01/80 to 12/84
B = 15.1	Steel in conjunction with steel and plastic wheel trim cover. Light alloy	–	As of 01/85 to 10/87
B = 15.0	Steel in conjunction with steel and plastic wheel trim cover. Light alloy	–	As of 11/87 to 07/88. (Use up stocks on steel rims)

Weight (g) Width "B" of retaining clip mm	Rim version	Surface protection	Version (remark)
B = 15.0	Steel in conjunction with steel and plastic wheel trim cover. Light alloy	Plastic balancing weights	As of 11/87
B = 15.0		Plastic coated	As of 08/88.

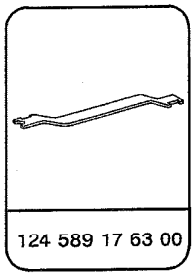
Retaining clip for balancing weights

Width "B" mm Length "L" mm	Rim version	Surface protection	Version (remark)
108 401 03 28 B = 16.0 L = 18.2	Steel Light alloy	Gloss-galvanized	Up to 07/82
126 401 06 28 B = 16.0 L = 17.7	Steel Light alloy	Gloss-galvanized	As of 08/82 to 12/84
124 401 05 28 B = 15.0 L = 16.3	Steel Light alloy	Gloss-galvanized	As of 01/85 to 07/88 (part no. 124 401 07 28 use up stocks on steel rims)

Retaining clips for balancing weights

Width "B" mm Length "L" mm	Rim version	Surface protection	Version (remark)
124 401 07 28 B = 14.95 L = 17.9	Light alloy	Dacroment-coated (silver-matte surface)	As of 08/88 (required due to the change of rim flange thickness)
126 401 08 28 B = 14.95 L = 16.3	Steel	Chromatized (olive-green surface)	As of 08/88

Special tool



124 589 17 63 00

Commercially available tools

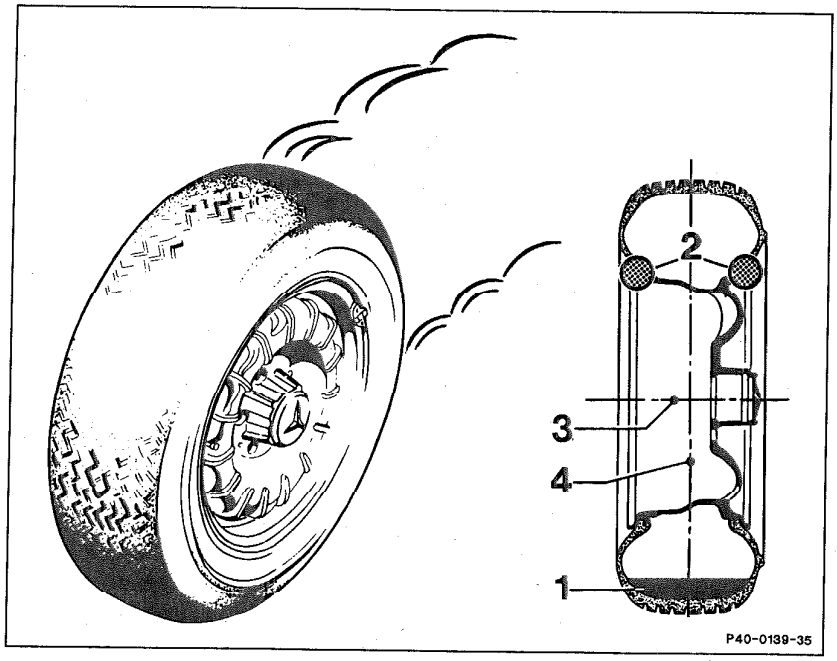
Wheel balancing machine	e.g.	Schenk, D-6100 Darmstadt Rapid 7
Centering ring with 0° 30' taper	e.g.	Haweka, D-3006 Burgwedel 1

Note

The wheel unbalance is caused by uneven distribution of masses on tires and rim. We distinguish between two types of unbalance:

1. **Static unbalance**

   We talk about static unbalance if a symmetrical mass distribution exists in the middle plane. Static unbalance causes the wheel to jump.



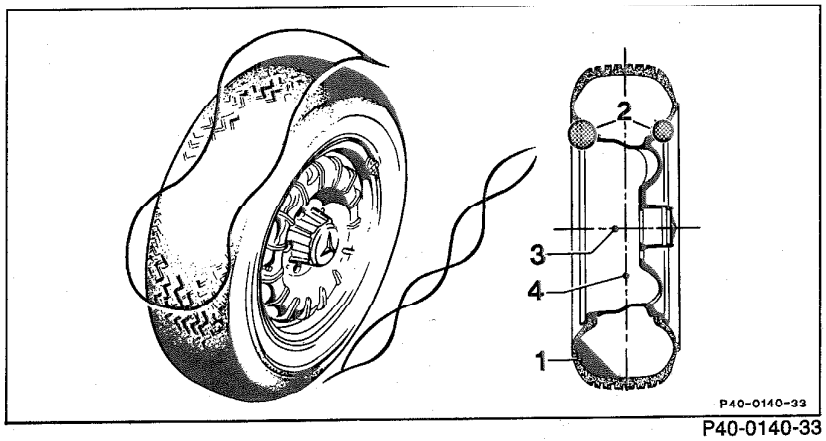
P40-0139-35

1 Static unbalance
2 Uniform compensation on the inner and outer rim flange
3 Rotating axis
4 Middle plane

2. **Dynamic unbalance**

   The mass distribution occurs unsymmetrically relative to the middle plane, a dynamic unbalance is created. The dynamic unbalance causes the wheel to wobble.

   Balancing is only practical if carried out statically and dynamically.



P40-0140-33

1 Dynamic unbalance
2 Compensation according to the position of the unbalance on the outer and inner rim flange
3 Rotating axis
4 Middle plane

Excessive wheel unbalance is the most frequent cause for complaints such as vibrations at speeds from approx. 70 km/h and steering wheel shimmy. Large unbalances can also lead to increased wear of wheel bearings, wheel joints and the steering as well as the steering linkage. Particularly careful balancing of the wheels is necessary for fast vehicles.

If no satisfactory true running can be obtained on a vehicle despite careful wheel balancing, other causes must be examined (see under paragraph "True running test of rims and tires" and "Wheel mounting").

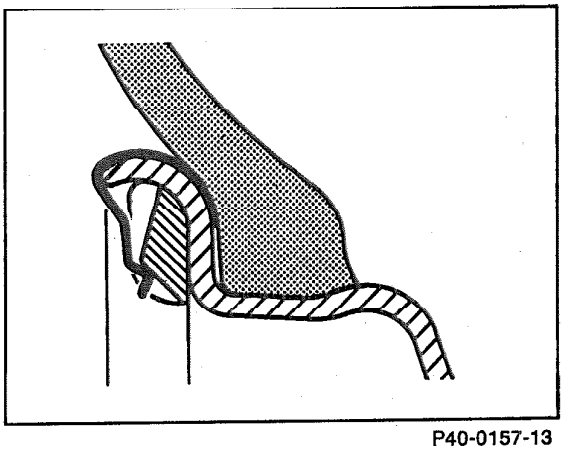
State-of-the-art wheel balancing equipment includes:

1. A stationary wheel balancing machine dynamically measuring in one measuring run the existing unbalance for each plane, indicating the required weight (in gram) and the direction (angle).

2. The mounting facilities required to mount the wheel onto the wheel balancing machine can have a cylindrical centering with a clearance of 0.02 to 0.1 mm, but a clearance-free tapered centering facility on the wheel inside is better (see chapter "Centering and mounting the wheels on the wheel balancing machine").

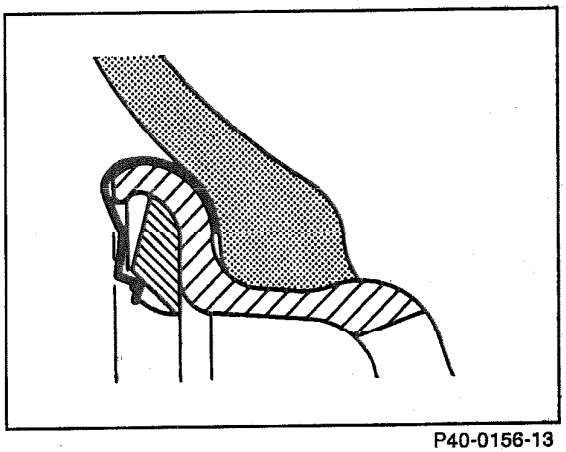
Balancing weights
Use only balancing weights with separate retaining clip prescribed by us.

Avoid impermissible combinations of rims and balancing weights!



Steel rim

P40-0157-13



Light-alloy rim

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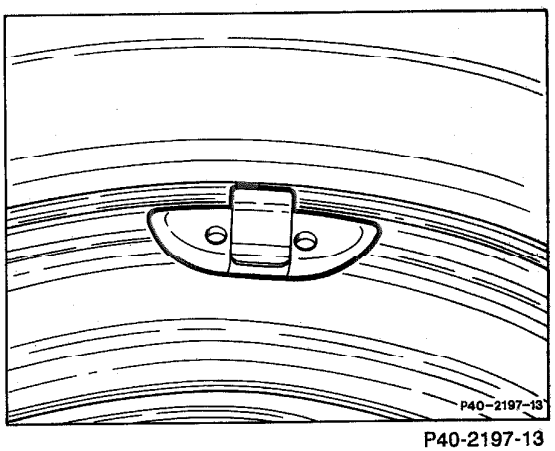
Ensure exact seating when attaching retaining clip and balancing weight.



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Use commercially available tool or clip remover 124 589 17 63 00 to remove and insert the balancing weight and to pull out the retaining clip.

Centering and mounting the wheels on the balancing machine

Observe the operating instructions for the wheel balancing machine used to balance the wheels.
The wheels should not be centered on the wheel balancing machine by means of wheel mounting bolts on the pitch circle, but only in the bore by means of a centering ring with 0° 30' taper together with the appropriate quick clamping device. The fit rim bore – centering ring should be as accurate as possible to avoid that the wheel runs eccentrically on the balancing machine, resulting in a residual unbalance after mounting the wheel on the vehicle.

The rims and tires must be free of dirt and foreign matter.
Balance wheels stationary to 0-value. Ensure this balancing quality by means of a second measurement with the wheel turned by 180°.

Balancing the wheels on the vehicle

Additional balancing of the wheels on the vehicle by means of a mobile balancing machine is not required on our current vehicles with middle centering. The rims are exactly located on the front wheel hub or the rear axle shaft flange that no eccentricity to speak of can occur when the wheels are mounted as specified.

In addition to the above, a wheel additionally balanced on the vehicle must be rebalanced on the vehicle every time the wheel has been removed.

Rebalancing the wheels on the vehicle is only practical if they were subjected to stationary balancing and show proper true operation.

The following must be observed in this context:

- The vehicle must stand on firm ground.
- The vehicle doors must be closed.
- On vehicles with steel rims, check the state of balancing of the wheels with the wheel trim covers fitted.
- Drive the rear wheels only with the vehicle engine in order to avoid damage to the rear axle center piece.
- The balancing weights on the outer wheel plane may only be changed by a maximum of 20 grams, otherwise the overall state of balancing will be impermissibly influenced.

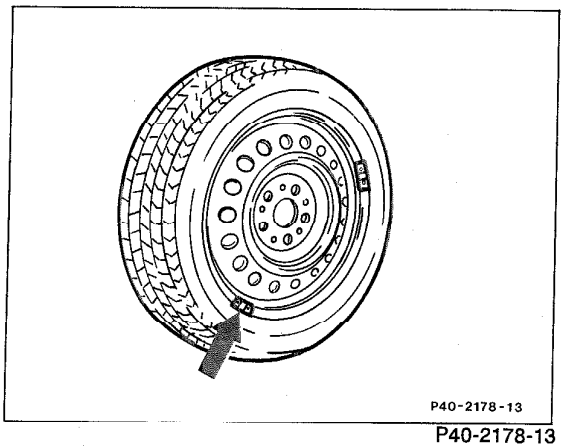
Note

Before fitting a balancing weight, any residual unbalance can be reduced by the following measure utilizing the clearance of the wheel centering:

- Position the lightest point of the wheel at the bottom.
- Completely loosen the wheel bolts and retighten in this position.

When rebalancing the wheels on the vehicle, a second balancing weight (arrow) can be additionally attached.

Note
In order to distinguish this balancing weight, the second weight should be color-coded and not exceed 20 g.



P40-2178-13

Automatic wheel balancer

Extensive investigations by vehicle manufacturers and neutral testers have shown that the automatic wheel balancing disks previously offered by accessories companies do not eliminate the need for stationary wheel balancing. Deterioration was even established on balanced wheels after the installation of these disks.

Checking the wheel balancing machine

Check the wheel balancing machine at regular intervals ensuring accurate indication of the unbalance. Use a so-called O-wheel, i.e. a special wheel absolutely without unbalance for this purpose.
By removing and refitting a certain weight and staggering the wheel in the mounting by 180°, check the indicating accuracy of the balancing machine by way of determination and magnitude of the unbalance.

Test wheels

If test wheels are used to evaluate the vehicle, these must be in a condition allowing reliable diagnosis. Test wheels must therefore be driven very carefully, quick acceleration and sharp braking must be avoided.