Optimal pressure of balls on rocker plates

One of the most important components of a rocker plate are the balls, which are responsible for damping your lateral tilting motion. A rocker plate "wobbles" from right to left and is usually mounted on 50 x 50 mm rubber bumpers. These rubber buffers make the stepless inclination of your upper rocker plate possible. At the same time they form the axis of rotation/tilt of your setup. Without a buffering / suspension by balls, the holding force of these rubbers would not be sufficient and your plate would tilt without much effort all the way to the side and then hit the lower board.

That's why we use 6 inch / 15 cm plastic balls to cushion our Rocker Plates. The upper and lower board of our Rocker Plate already has a cutout into which the balls can nestle. The edges that are in contact with the balls and press them in during operation, so to speak, are extremely rounded to avoid damaging the balls while driving. If you build your own rocker plate in the DIY process, make sure that the edges are sufficiently rounded, this is the cause of most ball bursts (in addition to too high pressure, more on this later) not in the ball quality. Our customers have not experienced any ball failures so far.

Damping behavior of the Rocker Plate balls

The damping behavior of the balls is progressive and essentially dependent on the ball pressure used. We recommend a maximum pressure of 0.3 bar for the balls. We recommend to start at about 0.1 - 0.15 bar. You can tell when the ball pressure is too high by the way the ball pushes through the lower plate towards the ground. This means that you cannot level the ball and the ball pressure must be reduced.

First we would like to explain why we use balls to dampen our rocker plates.

In the specifications of a damper for rocker plates is progressive damping behavior, i.e. a hardening of the spring element towards the end of the spring travel.

At the beginning of a progressive suspension by means of air (damping ball), the damping behavior is sensitive and becomes increasingly harder the further you tilt your plate to the side. Since the ball can be filled with different amounts of air, you can adjust the sensitivity yourself, this is an essential factor to have fun with your Rocker Plate.

So the use of balls as a damping system has the following advantages:

- progressive spring behavior
- easy adjustable spring force via air pressure (a pressure gauge can be used for adjustment)
- inexpensive and easy to build yourself

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rather low or high ball pressure?

We would like to report our experiences from the last few years and have therefore listed the following advantages and disadvantages of the respective ball pressures:

High ball pressure - significant force required for tipping movement

0.2 - 0.3 bar ball pressure / very high / for heavy system weights / user(s)

- advantage of a lower rocking movement is felt as pleasant by beginners

- already noticeable relief of your sit bones by the minimal tilting movement

- Relief of your bike because fixed / stiff mounting load is lower
- Danger of too high ball pressure, the balls press through to the ground / leveling impossible. In this case, the ball pressure must be reduced.
- Disadvantage is a lower training effect on the core/upper body due to smaller compensating movements.
- Disadvantage is an unrealistic pedal load while driving / Here a clear force must be exerted to simulate the sideways movement of driving
- Disadvantage when riding standing and or sprinting (clear leaning to the side necessary, usually in conjunction with the pedal travel down to the side of the desired tilting movement) In the outdoor ride it is exactly the opposite. There the bike needs no impulse, tilts without effort laterally opposite to the side of the under pedal dead center.

Low ball pressure - little to no effort required to tilt sideways

0.1 - 0.2 bar ball pressure

- Your Rockerplate tilts sideways to the maximum and thus also relieves your sit bones to the maximum or distributes the pressure again and again. You sit maximally comfortable and can also complete long workouts-group rides on Zwift.
- The driving experience changes again maximally in the direction of reality and especially when standing it feels excellent.
- When standing, your bike can swing relatively freely sideways and you can ride high tilt angles. Realistic standing riding (tipping to the left and right pedal down) is easily possible and can be ridden without targeted effort.
- high training effect on sense of balance as well as core, since maximum cooperation is required

Disadvantage: especially beginners need to get used to this "freedom" on the trainer, some hours of driving time!

CONCLUSIONS:

The goal should be to be able to drive with as high a tilt angle as possible, which means low ball pressure with extremely low inflation. The dampening medium should be progressive, for this purpose 5 or 6 inch plastic balls are successfully used, which have an adjustable dampening range due to different ball pressure. Your plate should have an extreme rounding at the contact surface to the balls, so that a bursting of the balls is almost impossible. In the beginning, experience shows that a higher pressure is used than with experienced rocker plate users.

Very important: For us the purpose of a Rocker Plate is to maximize the riding time on the trainer and the riding fun. The goal to get as close to reality as possible is hardly or only with high effort realizable. In our case, rides of up to 8 - 9 hours at a stretch are possible. Without the Rocker Plate, we had pain in the seat area and motivation problems after a maximum of 45 minutes.

RIDE ON

Armin

www.rockerplates.de

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