

MONOSHOCK SUSPENSION

An early attempt to create a hard heave limiter and still allow some roll was monoshock suspension. The major downside of monoshocks is that all of the handling adjustability available from a separate damper on each corner is lost. Monoshocks are very poorly suited to rough tracks because they lack the one-wheel-bump swallowing ability of independent suspension, and most implementations suffer from a total lack of roll damping.

THIRD AND FOURTH SPRINGS

Most cars, including road cars, need more total roll stiffness than they can stand in ride. So, an individual suspension spring on each corner and an anti-roll bar across each axle is the right solution. However, high downforce cars on slow and rough tracks, like street circuits, need more total ride stiffness than they can stand in roll. The additional ride stiffness reduces the heave and pitch travel through the very large speed and downforce range experienced during a lap. That’s what 3rd springs do: they only add ride stiffness and have zero roll stiffness. The usual implementation is to link the 3rd spring to the center of a T-bar anti-roll bar so that the T-bar acts as a symmetric bias bar.

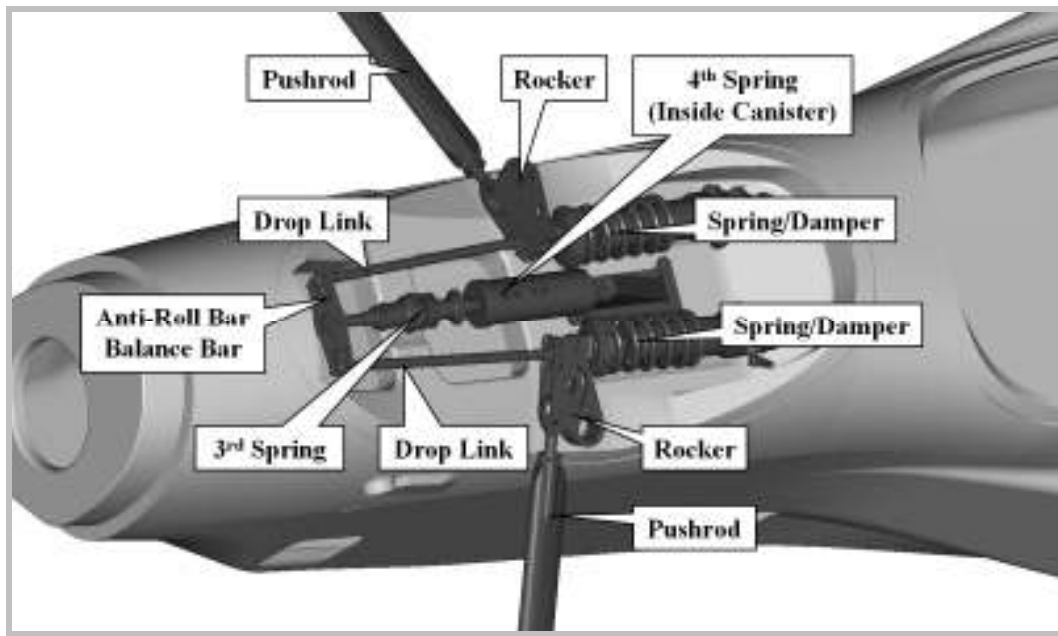


Figure 24 Third and fourth springs are preferable to any other option if the car needs more heave rate than it can stand in roll. In this illustration, the third and fourth springs are polyurethane disc springs, so they do not look like coil springs.