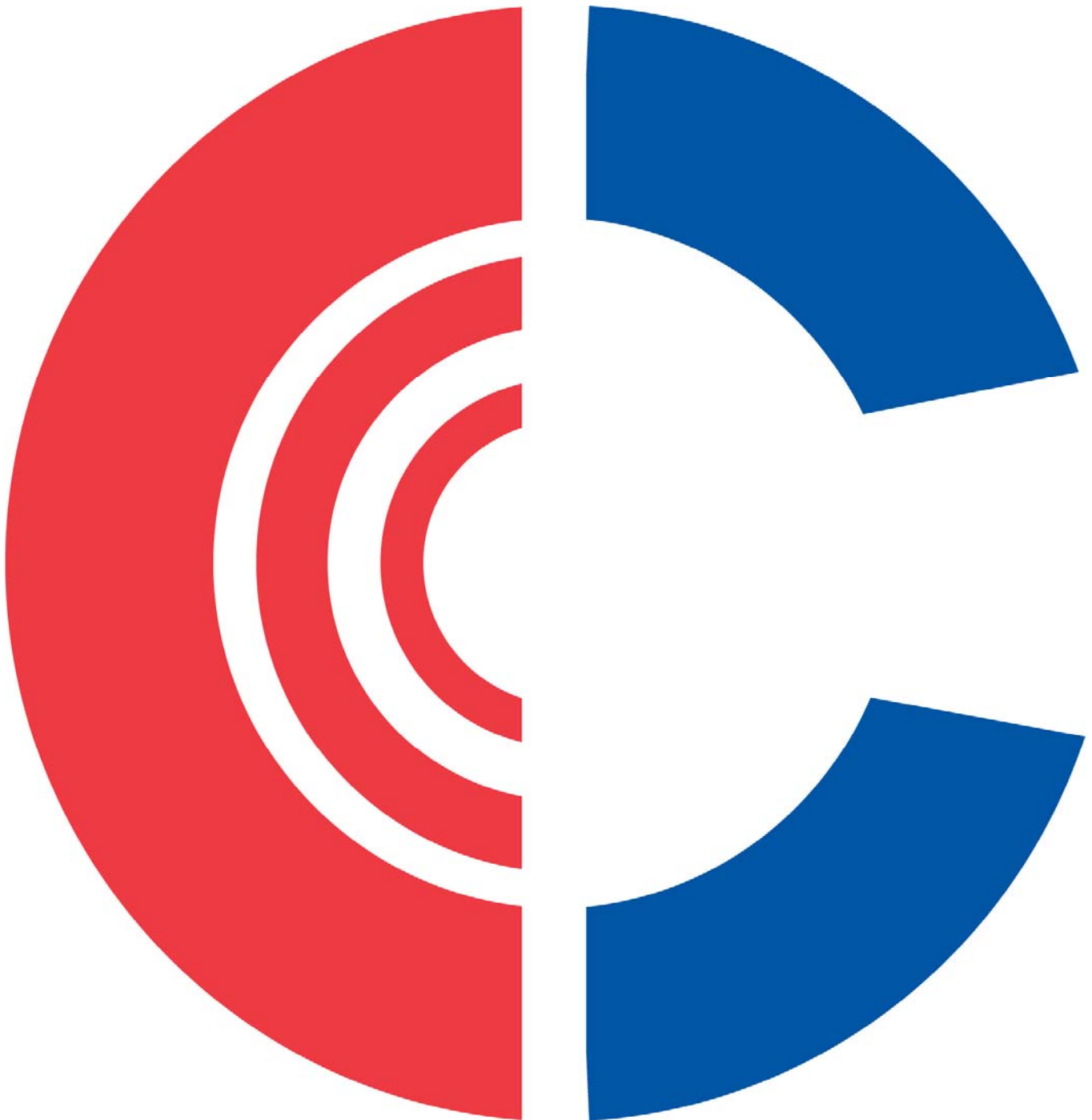

The Centripetal Circuit driving guide





The Centripetal Circuit (aka “skid pad”) is at once the most essential and rudimentary tool in the racer's arsenal. There's nothing fancy about the Centripetal Circuit. It's just a large, flat and (preferably) smooth area of pavement on which a car can be driven in a circle with a radius of 300 feet.

There is not anything terribly complicated about driving a car on a skid pad. A driver simply accelerates steadily around a specific radius circle until the tires begin to lose adhesion and the car can go no faster without driving outside of the circle. At that point, the car's speed is recorded and, through the formula for centripetal force ($F=mv^2/r$), a baseline for its handling capabilities in terms of lateral g-forces is determined.

Then the fun begins. By adjusting the tires and the chassis components, the car's handling capabilities can be changed for the better -- or worse. Wheel camber, caster, toe-in and tire pressure are just a few of the adjustments that can affect a car's handling. If that's not enough, there's the compression and rebound of the shocks -- on all four corners -- to consider, along with spring rates (again on all four corners), corner weights, ride height and rake. And we haven't even begun to tackle the subject of aerodynamics.

Ideally, after the baseline handling is established, all the chassis and tire settings are recorded. Then one by one, as in *never* changing more than thing at a time, the effects of adjusting each of the components can be determined by making incremental changes and measuring the resulting g-forces on the skid pad.

Thus does a race car engineer develop a methodical approach to chassis-tuning; to not only understand how to alter the chassis set-up to achieve its maximum performance in theory, but how to tailor that chassis set-up to the changing conditions of the race track (is it wet or dry, hot or cold) and, most challenging of all, to the likes and dislikes of his or her driver.

Speaking of the driver, the Centripetal Circuit is also the ideal environment for a driver to “play” with his or her race car; to learn how to induce and cope with oversteer and understeer, and experience driving near, at or over the limit without fear of damage.

The Centripetal Circuit is not the be-all and end-all tool of race car chassis engineering or driver development. After all, a myriad of “real-world” factors difficult to replicate on the skid pad, including different track surfaces (asphalt, concrete) and varying track conditions (billiard table smooth to rough and rougher – sometimes on the same race track), have a dramatic impact on a car’s performance. And driving a car on the limit on the skid pad is nothing like doing the same on a race track with two dozen or more race cars in close proximity. However, the Centripetal Circuit remains one of racing’s essential tools.