

Rocky Mountain Chapter BMW CCA Car Control Clinic

Instructor Guide

Braking Exercise

Weight Transfer. Explain how braking and throttle lift transfers weight from rear to front.

Threshold Braking. Threshold braking is the maximum amount of braking force that can be applied and not stop the tires from rotating. We want to achieve this to stop controllably in the shortest distance. Explain how ABS creates threshold braking for you.

Squeeze. Avoid jamming on the brakes. Squeeze the brake pedal quickly, smoothly and firmly to reach the threshold braking point or ABS activation. Squeezing allows the weight to transfer in a controlled manner.

Squeeze and Stop. Use threshold braking/ABS to stop quickly in a straight line. Squeeze brakes and maintain pedal pressure (ABS) or threshold braking until stopped. Ask: Do you feel feedback in the brake pedal; steering wheel? Do you hear the ABS; the tires? Discuss how you use this information to maintain/manage threshold braking.

Squeeze and Steer. Threshold braking/ABS also allows you to maintain steering control while braking. Squeeze brakes and hold constant pedal pressure (ABS) or modulate pedal pressure to maintain threshold braking (non-ABS). Steer the car through the corner while braking.

Skid pad

Hand Position. Remind student to place hands at 9 & 3. Demonstrate shuffle steer during instructor orientation laps.

Look Ahead. Remind student to look where you want the car to go. Look through the corner-the car will go where you look.

Throttle Steering. Fixed hands, constant arc. Adjust car position closer to circle by lifting throttle, farther from circle by applying throttle. Explain/demonstrate how front-to-rear weight transfer makes the front wheels work less effectively and rear-to-front weight transfer makes the front wheels work more effectively.

Understeer. Rear wheels have more grip than front wheels. Front of car slides. Wheels are turned, car does not turn. Hold wheel steady, add throttle-front of car pushes to the outside of circle. Explain how to use throttle, steering to correct.

Oversteer. Front wheels have more grip than rear wheels. Back of car slides. Demonstrate trailing-throttle oversteer-abruptly lift off the throttle while turning the steering wheel toward circle-rear of car slides to the outside of circle. Demonstrate throttle oversteer. Explain how to use throttle, steering to correct. Turn on/off DSC / ASC / traction control devices to demonstrate how they impact car control.

Slalom

Hand Position. Remind student to place hands at 9 & 3.

Look Ahead. Remind student to look ahead and to where you want the car to go (to look through the next several cones, not at the next cone).

Weight Transfer. Throttle inputs transfer weight from front to rear. Steering inputs transfer weight from side-to-side. Discuss how energy is stored in the springs and released during weight transfers from side-to-side. Describe how excess energy (too much speed, weight transferred beyond the ability of the springs/tires to handle) can lead to slides, tank slapping (oscillating slides) and/or spins.

Position, then Speed. Concentrate more on correctly positioning the car nearer to slalom cones than on adding 1 to 2 MPH in speed. Once the car is correctly positioned, speed will come.

Turn early and less. To go faster, the arc you are running must be bigger. A bigger arc requires less steering. To make a bigger arc that is centered in the same place, the arc must start sooner (turn earlier).

Attack the back. Think about trying to run over the back side of each slalom cone with the inside rear tire of the car. To hit the back of the cone with the rear tire, the car must be arcing well before the cone.