

# **TRACK TERMINOLOGY**

## TYRES & BRAKES:

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**ANTI-LOCK BRAKES (ABS)**—A factory installed computer and hydraulic system that modulates brake pressure at individual wheels to prevent brake lockup. The system is an advantage for untrained drivers but reduce the control a skilled driver could exercise.

**BRAKE FADE**—Heating the brake pads beyond their design limit resulting in a hard brake pedal with very little braking effect, or overheating the brake fluid causing a bubble of compressible air to form in the brake line or calliper resulting in reduced or no brake pedal resistance or brake effect (sometimes referred to as a “soft pedal”)

**BEDDING IN BRAKES**—The process of braking with new brake pads in a pattern specified by the brake pad manufacturer to heat and cool the brake pads to prepare them for use.

**BRAKE LOCKUP**—When braking causes a wheel to stop rotating and starting to skid.

**BRAKING POINT**—A point on track at which brake application begins.

**BALANCE**—The dynamic relationship between the load on individual wheels and their ability to turn, brake, or accelerate. This relationship is greatly influenced by vehicle design (*i.e.*, motor placement, gearbox placement, anti-roll bars, etc.).

**CENTRIFUGAL FORCE**—The force that tends to cause a car in a turn to increase the radius of the turn.

**CONTACT PATCH**—The small area (approx. 20– 30 square inches) of tyre in contact with the ground at any point in time.

**ENGINE BRAKING**—Using the engine to provide resistance to slow the car—for example by changing to a lower than optimal gear.

**LIFT**—Reduce pressure on the throttle, tending to slow the car.

**THRESHOLD BRAKING**—To decelerate using the brakes to their maximum capacity before wheels lock (or, if so equipped, before ABS activates).

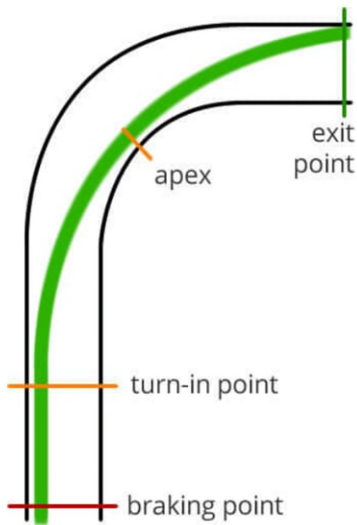
**TRAIL BRAKING**—Maintain a low and decreasing brake pressure while turning in (as opposed to finishing all braking before turning in)

**TRACTION**—The ability of the tyre to adhere to a surface. It is a function of weight, tyre contact area, and tyre compound.

**TRACTION LIMIT**—The maximum forward, rearward, or sideways force that may be applied to the tyres before they lose traction. Typically reached by acceleration or braking.

## CORNERS & STRAIGHTS:

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**APEX**–The point at which the driving line touches, or comes closest to, the inner radius of a curve. See also Late Apex and Early Apex.

**APEX**–The geometric mid–point along the inside radius of a curve. Also known as the “Classic Apex”.

**CLIPPING POINT**–a point along a curve where the car’s inside wheel touches the inside edge of the track.

**CONSTANT-RADIUS TURN**–when the radius of the turn does not change.

**DECREASING-RADIUS TURN**– when the radius of the turn decreases, or tightens, from the start of the turn to the end of the turn, requiring a slower speed after the apex than before the apex.

**EARLY APEX**– When the apex of the line driven occurs between the turn-in point, or entry point, and the geometric apex. Generally, requires a slower speed from turn-in point to apex than from apex to exit point. Faster in and slower out.

**EXIT POINT**–The point where the turn ends.

**HAIRPIN**–A very sharp turn, one shaped like a hairpin.

**IDEAL LINE**–The fastest path around a track considering all factors (can change based on conditions)

**INCREASING-RADIUS TURN**– when the radius of the turn increases, or eases, from the start of the turn to the end of the turn, allowing a higher speed after the apex than before the apex.

**LARGEST POSSIBLE RADIUS**–The largest radius that may be driven by the car whilst remaining on track (the fastest line through a turn).

**LATE APEX**–When the apex of the line driven occurs between the geometric apex and the exit point. Generally, allows a higher speed from apex to exit point than from turn-in point to apex. Slower in and faster out.

**NEGATIVE CAMBER (OFF-CAMBER)**–When the track slopes away from the apex of a turn. Negative camber decreases grip (less compression).

**POSITIVE CAMBER (ON-CAMBER)**–When the road slopes toward the apex of a turn. Positive camber increases grip (more compression).

**RADIUS**–The distance from a circle to its centre, the path driven by a car in a turn.

**S-CURVE (ESSES)**–two or more connected turns which alternate direction, shaped like an “S” (or series of esses strung together)

**STRAIGHT**–A length of the track where the vehicle is not turning.

**TURN-IN POINT or ENTRY POINT**–The point at which one begins to steer into a turn.

## STEERING & HANDLING:

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**ACTIVE SUSPENSION**—computer-controlled suspension system that dynamically changes the amount of damping based on sensors that measure disturbances and loading on each wheel. Many newer vehicles are equipped with such systems.

**CENTER OF GRAVITY**—the point in the car where all forces acting on the car (gravity, acceleration, etc.) are balanced.

**DEAD PEDAL**—The area in the driver's footwell, to the far left of the pedals, where the driver may rest their left foot without affecting the pedals.

**DRIFT**—a skid that is controlled by the driver.

**FEATHERING THE THROTTLE**—gentle and varying application of pressure on the throttle to maintain a constant speed. Generally, as part of balancing the forces acting on the car to maintain or avoid a drift. Also known as **THROTTLE MODULATION**.

**HEAD LEAN**—Driver's canting their head to one side excessively while turning. Generally, an unconscious behaviour ineffectually attempting to cause the car to turn in a smaller radius. Inadvisable because it can adversely affect the driver's sense of position.

**HEEL & TOE (or HEEL/TOE)**—To use the ball of the foot on the brake pedal while the heel is used to control or engage the throttle. Generally, used to blip the throttle as part of a down change to better match the motor's revolutions to those of the new, lower gear. Sometimes effected by rolling the side of the foot on the brake pedal onto the throttle.

**INPUT**—any command given to a car by use of the car's controls: steering wheel, gear change, and change of pressure on a pedal. Generally, used together with adjectives such as smooth, jerky, abrupt, etc.

**MODULATION**—a soft or small adjustment, such as small increase or decrease of pedal pressure during threshold braking.

**OVERSTEER**—condition in cornering where the front wheels have increased traction and the rear wheels lose traction. Requires counter-steering to avoid a loss of control.

**OFF-ROAD RECOVERY**—the vehicle has gone off the paved surface and is able to return onto the paved surface under control

**PLOUGHING or PUSHING**—Excessive under-steer in turns

**POWER SLIDE**—Driving with oversteer induced by applying the throttle, making the rear slide out.

**REACTION TIME**—The time it takes a driver to respond after some indication requiring a response.

**SKID**—condition where the force applied to two or more tyres exceeds their traction capabilities and they lose directional response (*i.e.*, locked tyres, spinning tyres, sliding tyres).

**SLIP ANGLE**—The angle between the direction a tyre is pointing and the direction it is moving. Generally, tyres have maximum grip at a slip angle greater than zero.

**SAWING**–Rapid back and forth movement of the steering wheel by the driver while turning. Discouraged behaviour.

**SPIN**–An uncontrolled slide or skid in which the vehicle rotates 180 degrees (half spin) or 360 degrees (full spin).

**THROTTLE STEER**–Using the throttle to induce a steering action, usually while exiting a turn. Also known as Power-On Over Steer.

**THROTTLE**–The far-right pedal—the accelerator.

**TRACTION (Mechanical Grip)**–The amount of grip a tyre can provide under given conditions. The more weight a tyre has on it, the more traction it can provide. It is a function of both the coefficient of friction between the tyre and the track, and the pressure pressing the tyre onto the track. It is influenced by temperature (ambient, road surface, and tyre), pavement condition (dry, wet, frozen, cold, hot), the number of heat cycles experienced by the tyre, etc.

**TURN-IN**–The change in direction that occurs between traveling in a straight line and cornering generally initiated with a steering input and/or a change in throttle or braking inputs.

**UNDERSTEER**–condition in cornering when the front wheels to experience decreased traction before the rear wheels, causing the car to go straight. Requires slowing down and/or unwinding the wheel until traction is re-established. (also called “pushing”, “ploughing”)

**VEHICLE DYNAMICS**–How the car responds to inputs.

**VEHICLE LANGUAGE**–Signals the car gives the driver on its operating status, such as tyre squeal, brake smoke, chassis roll, sliding, etc.).

**WEIGHT TRANSFER**–The transfer of weight from one side of the car to the other and from front to back, due combinations of acceleration, deceleration, or turning. Weight may be transferred in combination when multiple inputs are given (*i.e.*, braking and steering) and may also be affected by varying road or track conditions (camber, slope, etc.). Weight transfer may be induced momentarily by left-foot braking to plant the front tyres on turn-in as an advanced driving skill.

## ENGINE & GEARBOX:

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**CHANGE POINT**–The RPM at which one changes to another gear, either as up change or down change.

**GEAR CHART**–A chart showing the speed in each gear at various engine speeds (RPMs)

**LABOUR THE ENGINE**–To require larger power outputs (step on throttle hard) at too low an engine speed (RPM) than is good for the engine (for example going full throttle in 4<sup>th</sup> gear at 2,000 RPM). “Don’t labour the engine.”

**OVER REV**–To run the engine at a higher RPM than is desirable or good for the engine. The rev limiter that is part of the car’s controller prevents the throttle from commanding an over rev by cutting off spark. A down change in a manual car at a speed too high for the gear into which the car is changed will require engine RPM higher than that for which the engine is designed can cause substantial engine and gearbox damage. Sometimes called the “money gear change.”

**POWER CURVE**–A plot of horsepower against engine RPM.

**RPM**: Revolutions Per Minute, or how fast the engine is rotating, also known as “REVS”

**RED LINE**–A designated RPM above which possible engine damage may occur. Don’t drive in this range.

**RIDING THE CLUTCH**–Driving with the clutch pedal partially disengaged or with excessive clutch slip in matching gear changes. Will cause damage to or premature wear of the clutch.

**RIDING THE GEAR LEVER**–Driving with the hand resting on the gear lever. Keep both hands on the steering wheel at 9 and 3 o’clock positions except during the act of changing gears.

**TORQUE**–The ability of the engine to produce twisting force.

**SHORT-SHIFT**<sup>1</sup> – an up change well before red line, generally made to avoid needing to make an up change whilst in a turn. Coming off the power in a turn will transfer weight to the front of the car at the same time the tyres are using traction to turn the car which can cause ploughing.

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<sup>1</sup> Two native speakers of Hiberno-English assert that “shift” when used as “short shift” is proper usage.