



Corvette Clutch Lexicon (Lex·i·con) – the words used in a language or by a person, group of people or a subject.

Reprinted with permission from Mantic Engineering Pty Ltd

Special interest groups, no matter where they come from, tend to develop unique terms. That's certainly the case with automotive enthusiasts. The car collector/restorer/modifier hobby has a great many specialized terms and phrases.

Aramide: Is a high strength, good impact resistance material with good abrasion resistance and compressive strength. It is usually used as fibre reinforcement for polymer matrix composites.

Bearing: Clutch thrust (release) bearing. O.E.(Original Equipment) type fitment. No hydraulics.

Bearing: Radial Face: Release bearing with rolled type face rather than flat face where bearing contacts the diaphragm. No hydraulics.

Clamp: The amount of pressure applied to the Clutch disc when the clutch is fully engaged. (Refer to Clamp vs. Torque)

Clutch Cover Assembly: The cover assembly is the unit that bolts directly to the flywheel. Its purpose is to apply

pressure to the clutch disc allowing the drivetrain to engage and provide torque through the transmission to the wheels.

Clutch Disc: The driven disc(s) that transfer the torque drive to the transmission.

Clutch Pilot Alignment tool: allows you to accomplish the tricky task of aligning your clutch disc between the pressure plate and flywheel before the pressure plate is bolted down.

Coefficient of Friction: (μ) The measured resistance that occurs between two surfaces.

Concentric Slave Cylinder: (CSC) Hydraulic release bearing mounted to the front of the gearbox inside the bell housing. (Usually an O.E. component) . (The CSC bolts directly to the front of the gearbox inside the bell housing.)

Cushion: Cushion is the space (gap) between the two surface areas of the clutch disc. This is used in Mantic Street, Mantic 4WD and in Mantic 9000 Series Cerametallic discs.

Dampening: The springs in the clutch disc which improves NVH and Modulation.

Diaphragm: The spring diaphragm that enables the clutch to pivot on the fulcrum point, to release and engage the clutch. Mantic use chrome vanadium diaphragms springs in all units.

Direct Fit: Complete assembly to replace standard or existing clutch. Complete to fit with no modifications required.

Disengaged: Where the clutch spring diaphragm is activated to allow the clutch cover to release the clutch disc from driving the vehicle.

Drivability: The "feel" and "engagement" action of the clutch. (Also refer "Modulation")

Driveline NVH: Noise, Vibration and Harshness (NVH) while not a major factor on the track, are a serious consideration for the road. Sprung and cushioned discs are used to control NVH. (Refer "Drivability" and "Modulation")





Durability: Refers to the operational life of the clutch. Generally speaking, the smaller diameter and number of discs dictate the service life. More discs and larger diameter offer potentially longer life, where a smaller, lighter clutch with low MMOI offers greater performance.

Dynamic Testing: Mantic clutches are dynamically tested on the only clutch dynamometer in Australia.

Engaged: Where the clutch pedal is in the static position, allowing the clutch to drive the vehicle.

Fade: Fade occurs when the friction material exceeds its designed temperature tolerance.

Friction: Transmits torque through surface friction between the faces of the clutch. (I.e. The surface contact of the clutch disc(s) between the clutch cover and flywheel surface)

Friction Material: "Cerametallic", where the ceramic friction material is bonded to a backing plate, allowing cushioning between the segments to improve modulation, while increasing torque drive.

Forged Hubs: All mantic disc hubs are manufactured from forged alloy steel for maximum strength and reliability.

Heat: The enemy of the clutch. Any clutch will perform better the lower temperature it is able to operate at. Heat is generated by engagement / disengagement of the clutch, and driver induced slippage. It relies on absorption by the clutch cover and flywheel to remain within operating temperatures. The more mass there is in the clutch and flywheel assembly, the greater the amount of heat that can be absorbed.

Intermediate Plate: The plate that separates the clutch discs in a multiple disc assembly. Twin plates have one, triple discs have two.

M.M.O.I.: The Mass Moment of Inertia: measures the ability of the clutch and flywheel assembly to resist changes in rotational speed

about a specific axis. The larger the Mass Moment of Inertia (number), the smaller the angular acceleration about that axis is for a given torque. (That is, the slower the flywheel will accelerate for a given torque amount.) Low MMOI allows faster gear shifts, and improved engine response.

Mean Effective Radius: The effective radius of the friction surface used to calculate torque capacity.

Modular: Refers to the common nature of the clutch assembly, where two and three disc clutches with the same diameter share common parts.

Modulation: The action of the "engagement" of the clutch. Modulation can be harsh where either a solid centre disc is used, or a non cushioned disc(s) are fitted. Harsh engagement is where the pedal movement between engaged and disengaged is minimal (sudden).

Multi Rate Hub: Multi piece hub used to reduce Noise, Vibration, and Harshness (NVH). Most popular in high-compression applications such as diesel engines. High compression engines generate a higher level of noise (rattles), vibration (often felt through the gearstick) and harshness (general cabin noise etc) at idle. Used where necessary in Mantic 4WD.

Pedal Effort: The amount of pressure (Kg's/Lbs) required to depress the clutch pedal and allow the clutch to release. (Also see release effort)

P.C.D: Pitch Circle Diameter: (Usually measured in millimeters) For a 4- or 6-bolt car, this measurement is merely the distance between the centers of two diametrically opposite bolts. For a 3 or 5-bolt pattern: draw a line between any two neighboring bolts, and draw a line from the midpoint of this line to the opposite bolt. Repeat with a different set of three bolts, and the two long lines will cross in the center, thereby making the distance between this intersection and the center of a bolt the radius of the bolt circle.

Pilot Bearing: A small Bronze Bushing, or in some cases a Ball bearing, placed in the end of the Crankshaft or in the center of the Flywheel depending on the vehicle, that is used to support the outboard end of the Transmission Input shaft.

Pressure Plate: This is the plate underneath the machined cover that clamps the clutch disc.

Push Type Clutch: Where the clutch diaphragm is activated by the bearing "pushing" on the spring diaphragm to disengage the clutch.

Pull Type Clutch: Where the clutch is activated by the bearing attached to the spring diaphragm "pulling" on the diaphragm to disengage the clutch.

Release Bearing: The bearing that pushes on the diaphragm to enable the clutch to release. In certain applications, a Concentric Slave Cylinder (CSC) is used instead of a bearing and throw-out lever system.

Release Effort: The amount of pressure (Kg's / Lbs) required to depress the diaphragm, to allow the clutch to release. (Also see pedal effort)

Slippage: The point that the clutch begins to be unable to hold the torque drive from the engine.

Spline: The drive spline inside the Clutch disc hub. Measured by the number of teeth and the outside diameter of the shaft. Some splines are nominally the same, but have different pitch on the teeth.

Sprung Centre: Dampening within the hub of the clutch disc, usually by the addition of heavy duty springs to the centre of the disc. This reduces the "shock" on the transmission when changing gears, and allows smoother driving.

Torque Drive Capacity: This is the amount of engine torque that the clutch will transmit through the driveline.

Source: Mantic Engineering Pty Ltd

