

Dictionary of Automotive Engineering

Second Edition



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U

U-engine *Two-stroke* engine in which two parallel pistons are driven by one crank, and therefore move in the same direction for most of the cycle. Sometimes called *split-single*. A variant of this type, the Puch engine, has a Y-shaped connecting rod rather than two separately pivoted rods.

unburned hydrocarbons Unburned or incompletely burned products of engine combustion, particularly as released to the atmosphere as an *exhaust emission*. Also *HC*; *THC*.

underbody (1) The body structure of the underside of a vehicle including floor, wheel wells and stiffening members. (2) The underneath of a vehicle or its effective profile, particularly in an aerodynamic context.

underbody flow The flow of air under a moving vehicle, and the *aerodynamic* characteristics thereof.

underbumper apron See *apron*.

undercarriage The wheels, axles and suspension system of a vehicle, but particularly of a commercial vehicle.

undercoating (UK: underseal) Heavy protective coating applied to the underside of a vehicle to resist corrosion and damage from roadstone impact, and to reduce noise transmitted from under the vehicle.

undercrown The underside of a *piston crown*. See Figures C.6 and P.2.

underhood (1) The engine compartment. (2) (UK: *bonnet*) The engine and ancillary equipment located under the hood.

underrun protection Transverse structure attached to the rear of a commercial vehicle chassis to prevent a smaller impacting vehicle from running under the chassis.

underscreen See *undershield*.

underseal See *undercoating*.

undershield Panelling under an engine compartment, or the whole underside of a car. Also *underscreen*.

underslung worm transmission Worm and worm wheel final drive in which the worm is set below the worm wheel, giving a low propeller shaft. See also *overslung worm transmission*.

undersquare engine Engine having a larger *stroke* than cylinder *bore* diameter.

understeer (1) Response of a vehicle if the ratio of steering wheel angle gradient to overall steering ratio is more than the Ackermann steer angle gradient. (2) Under-response to steering input, as by generation of excessive *slip angle* on front wheels. (3) Response of vehicle to steering input characterized by an incremental increase in *yaw* rate which necessitates an increase in *steer angle* to maintain the intended radius of turn. See Figure U.1.

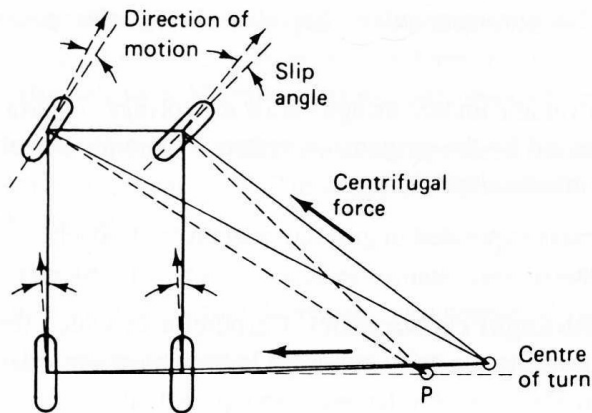


Figure U.1 Diagrammatic representation of understeer, showing the actual center of turn compared with the geometric center of turn that would prevail at low speed.

undertread Reinforcing *plies* laid beneath the *tread* of a *tire*.

uniflow scavenging System of scavenging in *two-stroke* engines in which the fresh mixture enters the cylinder at one end while the exhaust gases leave through valves or ports at the other.

unit fuel injector Assembly which receives fuel at supply pressure and is then actuated by an engine mechanism to meter and inject the fuel charge into the engine *combustion chamber*.

unit pump Injection pump containing a single pumping element operated by an engine cam. Mainly used on marine engines.

unitary construction (US: unitized construction) (1) Of a vehicle drive system, the construction of *engine*, *clutch* and *gearbox* to form one rigid unit, though enabling each individual item to be detached. (2) Monocoque or chassis-less structure of a vehicle body.

universal joint Rotating shaft coupling that permits angular axial displacement. Some types will also operate with linear misalignment of axes. See also *Bendix-Tracta joint*; *Bendix-Weiss joint* *Cardan shaft*; *constant-velocity joint*; *Hooke's joint*; *Layrub joint*; *Rzeppa joint*.

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