Izglītības programma: Autotransports

Kvalifikācija: Autoelektriķis, 3.līmenis

Mācību priekšmets: Profesionālā angļu valoda

Mācību materiāls: Kardānvārpsta

Skolotājs: Dace Cine

A **drive *shaft(vārpsta)****,* **driveshaft**, **driving shaft**, **propeller shaft** (**prop shaft**), or **Cardan shaft** is a mechanical component for transmitting [torque](http://en.wikipedia.org/wiki/Torque) *(griezes moments)* and rotation, usually used to connect other components of a [drive train](http://en.wikipedia.org/wiki/Drive_train) that cannot be connected directly because of distance or the need to allow for relative movement between them.

As torque carriers, drive shafts are subject to [*torsion*](http://en.wikipedia.org/wiki/Torsion_%28mechanics%29)*(griezt)* and [shear stress](http://en.wikipedia.org/wiki/Shear_stress), equivalent to the difference between the input torque and the *load(slodze).* They must therefore be strong enough *to bear (nest, izturēt)*the stress, whilst avoiding too much additional weight as that would in turn increase their [inertia](http://en.wikipedia.org/wiki/Inertia).

To allow for variations in the *alignment (noregulēt)*and distance between the driving and driven components, drive shafts frequently incorporate one or more [universal joints](http://en.wikipedia.org/wiki/Universal_joint), [*jaw couplings*](http://en.wikipedia.org/wiki/Jaw_coupling)*(žokļu skavu sakabe),* or [rag joints](http://en.wikipedia.org/wiki/Rag_joint), and sometimes a [splined joint](http://en.wikipedia.org/wiki/Rotating_spline) or [prismatic joint](http://en.wikipedia.org/wiki/Prismatic_joint).

An [automobile](http://en.wikipedia.org/wiki/Automobile) may use a longitudinal shaft to deliver power from an engine/transmission to the other end of the vehicle before it goes to the wheels. A pair of short drive shafts is commonly used to send power from a central [differential](http://en.wikipedia.org/wiki/Differential_%28mechanics%29), [transmission](http://en.wikipedia.org/wiki/Transmission_%28mechanics%29), or [transaxle](http://en.wikipedia.org/wiki/Transaxle) to the wheels.

In [front-engined, rear-drive](http://en.wikipedia.org/wiki/FR_layout) vehicles, a longer drive shaft is also required to send power the length of the vehicle. Two forms dominate: The [torque tube](http://en.wikipedia.org/wiki/Torque_tube) with a single [universal joint](http://en.wikipedia.org/wiki/Universal_joint) and the more common [Hotchkiss drive](http://en.wikipedia.org/wiki/Hotchkiss_drive) with two or more joints. This system became known as [*Système Panhard*](http://en.wikipedia.org/wiki/Syst%C3%A8me_Panhard) after the automobile company [Panhard et Levassor](http://en.wikipedia.org/wiki/Panhard) patented it.

Most of these vehicles have a [clutch](http://en.wikipedia.org/wiki/Clutch) and [*gearbox*](http://en.wikipedia.org/wiki/Gearbox)*(pārnesumkārba) (or transmission)* mounted directly on the engine with a drive shaft leading to a final drive in the rear axle. When the vehicle is stationary, the drive shaft does not rotate. A few, mostly sports, cars seeking improved weight balance between front and rear, and most commonly [Alfa Romeos](http://en.wikipedia.org/wiki/Alfa_Romeo_Alfetta) or [Porsche 924s](http://en.wikipedia.org/wiki/Porsche_924), have instead used a rear-mounted [transaxle](http://en.wikipedia.org/wiki/Transaxle). This places the clutch and transmission at the rear (aizmugure)of the car and the drive shaft between them and the engine. In this case the drive shaft rotates continuously as long as the engine does, even when the car is stationary and out of gear.

A drive shaft connecting a rear differential(*aizmugurējais diferenciālis*) to a rear wheel may be called a half-shaft. The name derives from the fact that two such shafts are required to form one [rear axle](http://en.wikipedia.org/wiki/Axle#Drive_axles)(*aizmugurējā ass/tilts).*

Early automobiles often used [chain drive](http://en.wikipedia.org/wiki/Chain_drive) or [belt drive](http://en.wikipedia.org/wiki/Belt_drive) mechanisms rather than a drive shaft. Some used electrical generators and motors to transmit power to the wheels.

An **axle***(tilts/ass)* is a central [shaft](http://en.wikipedia.org/wiki/Shaft) for a [rotating](http://en.wikipedia.org/wiki/Rotation) [wheel](http://en.wikipedia.org/wiki/Wheel) or [gear](http://en.wikipedia.org/wiki/Gear). On wheeled vehicles, the axle may be fixed to the wheels, rotating with them, or fixed to the vehicle, with the wheels rotating around the axle. In the former case, [bearings](http://en.wikipedia.org/wiki/Bearing_%28mechanical%29) or [bushings](http://en.wikipedia.org/wiki/Bushing_%28bearing%29) are provided at the mounting points where the axle is supported. In the latter case, a bearing or bushing sits inside a central hole in the wheel to allow the wheel or gear to rotate around the axle. Sometimes, especially on [bicycles](http://en.wikipedia.org/wiki/Bicycle), the latter type axle is referred to as a [spindle](http://en.wikipedia.org/wiki/Spindle_%28tool%29).

*Resursu avots:* [*www.wikipedia*](http://www.wikipedia)

*L.White “Engineering”, Oxford, 2003*