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Automotive drive axle terminology and definition

汽车驱动桥术语及定义

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Automotive drive axle terminology and definition

1 Scope

This standard specifies the terms and definitions of automotive drive axles.

This standard applies to automotive drive axle assemblies and their main components.

2 Terms and definitions of drive axle and its main components

2.1

Drive axle

A device, which is composed of the final drive, differential, axle housing, axle shaft, located at the end of the transmission system, used to transmit power to the wheels.

2.1.1

Integral drive axle

A drive axle, in which the axle shaft bushings and final drive housing are rigidly connected to the axle housing.

2.1.2

Disconnected drive axle

A drive axle, in which the drive wheels on both sides can move as relative to the final drive, in a plane such as the transverse direction of the vehicle.

2.2

Final drive

A device, which is usually located in the middle of the axle housing, to reduce the input power and transmit it to the axle shafts and wheels.

2.2.1

Single reduction final drive

A final drive, which has only one pair of gear pairs for speed reduction.

2.2.2

Double reduction final drive

A final drive, which has two pairs of gear pairs for speed reduction.

2.2.3

Thru-drive

A final drive, that can transmit power to other final drivers, along the front or rear direction of the vehicle.

2.2.3.1

Single reduction thru-drive

A thru-drive, which is composed of a pair of bevel gear pairs.

2.2.3.2

Double reduction thru-drive

A thru-drive, which is composed of two pairs of gear pairs.

2.2.4

Two speed final drive

A final drive, which has two reduction ratios and a set of shifting devices.

2.3

Hub reduction gear

A mechanism, which is arranged at the wheel end, to reduce the speed and torque transmitted by the final drive AND then transfer it to the wheel.

2.3.1

Planetary hub reduction gear

A hub reduction gear, which is composed of a planetary cylindrical gear mechanism.

2.3.2

Differential geared wheel reductor

2.4.3

Inter-wheel differential

A differential, that acts as a differential between the wheels of the drive axle.

2.4.4

Inter-axle differential

A differential, that acts as a differential between the drive axles.

2.5

Axle housing

A component, which is equipped with final drive, axle shaft and other parts, can also support the gravity load of the vehicle mass, transmit various forces on the wheels to the components of the vehicle frame or body, through the suspension system.

2.5.1

Banjo axle housing

An axle housing, which is manufactured separately from the final drive housing and bolted together.

2.5.1.1

Cast rigid axle housing

Axle housing, whose body is casted.

2.5.1.2

Punching-welded axle housing

Axle housing, whose body is a welded part after stamping the plate.

2.5.1.3

Bulge-forming axle housing

Axle housing, whose body is formed by expanding the steel tube.

2.5.2

Trumpet-type axle housing

Axle housing, which is cast integrally with the final drive housing AND bolted at

the joints of two or more castings to form an integral axle housing.

2.5.3

Unitized carrier-type axle housing

Axle housing, which is cast integrally with the final drive housing AND fixed by pressing both ends into the axle tube.

2.6

Axle shaft

A shaft, that transmits the torque from the differential or final reducer to the wheel or hub reduction gear's driving gear (some also bear bending moments).

2.6.1

Full-floating axle shaft

An axle shaft, that transmits only torque.

2.6.2

Semi-floating axle shaft

An axle shaft, that transmits torque and bears bending moments.

3 Terms and definitions of main technical parameters of drive axle

3.1

Drive axle maximum input torque

A torque, which is transmitted to the input end of the final drive, as calculated based on the maximum net output torque of the power source, the lowest gear of the transmission, the low gear reduction ratio of the transfer case (excluding transmission efficiency).

3.2

Slip torque

The torque, when the drive wheel slips, which is the product of the rated axle load of the drive axle, the maximum adhesion coefficient, the rolling radius of the wheel.

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