



SURFACE VEHICLE RECOMMENDED PRACTICE

J645™

NOV2022

Issued 1956-04
Revised 2022-11

Superseding J645 AUG2017

(R) Automotive Transmission, Transaxle,
and Electrified Transmission Terminology

RATIONALE

Updates to the latest terminology in common practice for automotive transmissions and transaxles, as well as updates with respect to the latest relevant electrified powertrain, transmission/transaxle, and driveline developments and terminologies as determined by the Automatic Transmission and Transaxle Committee (ATTC) and related SAE Committees.

1. SCOPE

The following listed definitions are intended to establish terminology and criteria for describing the various kinds of automotive transmissions. A specific arrangement may be described by a combination of several of these definitions.

2. REFERENCES

2.1 Applicable Documents

The following publications form a part of this specification to the extent specified herein. Unless otherwise indicated, the latest issue of SAE publications shall apply.

2.1.1 SAE Publications

Available from SAE International, 400 Commonwealth Drive, Warrendale, PA 15096-0001, Tel: 877-606-7323 (inside USA and Canada) or +1 724-776-4970 (outside USA), www.sae.org.

SAE J1715 Hybrid Electric Vehicle (HEV) and Electric Vehicle (EV) Terminology

2.2 Related Publications

The following publications are provided for information purposes only and are not a required part of this SAE Technical Report.

2.2.1 SAE Publications

Available from SAE International, 400 Commonwealth Drive, Warrendale, PA 15096-0001, Tel: 877-606-7323 (inside USA and Canada) or +1 724-776-4970 (outside USA), www.sae.org.

SAE J901 Universal Joints and Driveshafts - Nomenclature - Terminology - Application

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3. DEFINITIONS

3.1 TRANSMISSION

A device for transmitting power at a multiplicity of speed and torque ratios.

3.2 TRANSAXLE

A device which combines a transmission with a final drive unit that includes a differential. In all definitions using the word "transaxle," the word "transmission" can also be substituted.

3.3 TRANSMISSION TYPES

3.3.1 Automatic Transmission

A transmission in which ratio changes are affected automatically without requiring manual assist.

3.3.2 Traction Drive Transmission

A transmission or subsystem in which power transfer and ratio change is affected through friction drive members without direct, discrete mechanical connections such as gear teeth. These contacts can be driven through belts, discs, or other friction contact elements.

3.3.3 Hydrodynamic Transmission

An automatic transmission or subsystem using either a fluid coupling or torque converter, typically as a launch device.

3.3.4 Hydrostatic Transmission

A transmission or subsystem using a positive displacement pump to drive a positive displacement motor, and where to provide for variable speed ratios either the pump or motor has to utilize a variable displacement mechanism.

3.3.5 Countershaft or Layshaft Transmission

A mechanical transmission or subsystem in which selectable gears are located on parallel shafts.

3.3.6 Manual Transmission

A transmission in which ratio changes can only be obtained by direct operator input.

3.3.7 Planetary Transmission

A transmission or subsystem using epicyclic gears.

3.3.8 Overdrive Transmission

A transmission which provides a speed ratio wherein the transmission output speed is greater than the input speed.

3.3.9 Power-Split, or Split Torque Drive, Transmission

A transmission which comprises two or more parallel torque paths. The individual paths may be any of several types such as mechanical, hydrodynamic, hydrostatic, or electromechanical.

3.3.10 Continuously Variable Transmission

A transmission or subsystem with infinitely variable speed ratios within a finite range, not including neutral.

3.3.11 Hydromechanical Transmission

A transmission or subsystem having both hydrostatic pump and motor and mechanical elements in the power path.

3.3.12 Auxiliary Transmission

A transmission or subsystem used to supplement the gearing in a main transmission. Two, three, or more speeds are typically included in the auxiliary unit. It may be manually or automatically shifted.

3.3.13 Transfer Case

A device for transmitting power from one drive unit to one or more outputs. It may include additional ratios.

3.3.14 Dual Clutch Transmission

A single automatic unit which incorporates two discrete transmissions in parallel with a single output, where each has a friction clutch as its input device.

3.3.15 Infinitely Variable Transmission

A transmission with infinitely variable speed ratios within a defined range which covers from a given forward ratio, through neutral, to a given reverse ratio.

3.3.16 Step Ratio Transmission

A transmission with multiple discrete speed ratios within a defined range which covers from underdrive to overdrive ratios and also include a given reverse ratio.

3.3.17 Electric Variable Transmission

A transmission with infinitely variable speed ratios within a defined range by using electric motors/generators to ratio between defined gear ratios.

3.3.18 Hybrid Transmission

A transmission connected to a fueled prime mover with electric motors/generators, pump motors, or other reversible machines used as inputs and/or outputs to drive the vehicle.

3.3.19 Dedicated Hybrid Transmission

A hybrid transmission which was designed exclusively for hybrid use and has no non-hybrid use or non-hybrid design counterpart.

3.3.20 Electrified Transmission, E-Transmission, E-Transaxle, or E-Axle

A device which combines the transmission, transaxle, or axle, and the electric drive subsystem.

3.3.21 3-in-1 System

An electrified transmission system that contains and integrates the full geartrain, electric machine, and the inverter.

3.3.22 2-in-1 System

An electrified transmission system that contains and integrates the full geartrain and the electric machine but is physically separate from the inverter.