



ACES Data Rules & Policies

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Introduction

ACES Data Rules & Policies is an addendum to the Vehicle Configuration database (VCDB) schema and the Data Dictionary documentation. The goal of this document is to capture the many decisions and practices that govern the data values in the VCDB, Parts Classification database (PCdb) and Qualifier database (Qdb). We aim to clearly explain the series of conditions that validate information before it is published as part of the standard. And, when exceptions are required or permitted, we shall explain the logic behind the management of the exceptions.

This document is dynamic and will be updated at regular intervals to reflect the evolving scope and role of the ACES database components.

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Vehicle Configuration Database (VCDB)

The Vehicle Configuration database (VCdb) is a standardized reference database to facilitate the management and exchange of any information that refers to a vehicle or motorized equipment. The structure of the database ensures a high level of referential integrity and data validation. The rules governing the structure of ACES data files are intended to ensure the exchange of accurate, valid vehicle information files.

As an impartial and industry-sponsored arbiter of vehicle configuration data, the role of the VCDB is not to provide content about any specific vehicle. But it does standardize, and therefore clarify, the description of the vehicle which is the subject of the data content being exchanged. A standard reference table allows for faster and less costly integration of data content from multiple sources.

Base Vehicle

A **Base Vehicle** is comprised of a Year, Make and Model and the Base Vehicle ID number is the primary method of identifying a vehicle for an application catalog file or other automotive data; such as service and repair information, maintenance intervals, fluid capacities, alignment specifications, OE parts information, Vehicle PARC data and more.

Year refers to the manufacturer’s Sales Year for a particular vehicle. It is validated by the 10th digit of the Vehicle Identification Number (VIN) in the case of most North American light duty vehicles.



The VCDB does not address “split years” – these are annotated by a Qualifier statement in an ACES catalog file

Make Name is the Brand name under which vehicles are sold. For example, the VCDB lists Chevrolet and Buick – not General Motors. A Make Name may apply to vehicles in more than one Vehicle Type Group. For example, the Make Name “Honda” is used for Light Duty Cars and Trucks as well as Motorcycles, Lawn Mowers and other lawn and garden products

Model Name is principally the original manufacturer’s Badge name or Emblem on the vehicle. A secondary source of Model Name is the OE manufacturer’s Marketing Designation. Each Model Name is assigned one or more Vehicle Types (ie. Car, Truck or Van). For this reason, no reference to the vehicle Type is included in the Model Name. For example, an F150 does not include “Pick-up” in the Model Name because the Model Name record is linked to the Vehicle Type for Truck. The exception to this is when the same Year, Make and Model Name are valid for a particular Vehicle Type Group. For example, in 1980 Volkswagen marketed both a Rabbit pick-up and a Rabbit car (both Light Duty vehicles). Therefore, the VCDB lists the pick-up as Rabbit Pick-up to offer unique Base Vehicles for VW in 1980 and avoid presenting Rabbit and Rabbit in a user interface that filtered on Year, Make and Model.

Model Name is intended to be faithful to the vehicle badge or marketing name and does not reflect the OE parts catalog or service sources. BMW occasionally appends a letter to their Marketing Model Name in their EPC and Service information (T for Touring, A for Automatics Transmission and C for Convertible). However, there is no vehicle badged with 325iC and that Model is listed in the VCdb as a 325i with a Convertible Body Type.

Distinct Model Names are used for vehicles from the same Make in a Model Year that do not share the same platform. For example, the Ford Explorer and Explorer Sport Trac do not share the same platform and are, therefore, distinct Model Names, contributing to distinct Base Vehicle records.

Vehicle Types are the specific class of vehicle assigned to each Model Name. Within the Light Duty Vehicle Type Group there are Car, Truck and Van Vehicle Types. There can be more than one Vehicle Type assigned to a Model Name. For example Model 165 is a Hino Medium Duty Truck as well as an Electrolux Lawn Edger (Agricultural Equipment).

Vehicle Type Group is a collection of related Vehicle Types useful in parsing the applications in the VCDB. There are currently Six (6) Vehicle Type Groups in the VCDB. Light Duty, Medium Duty (Class 4-7), Heavy Duty (Class 8), Powersports; Lawn & Garden and Agricultural Equipment

The level of complete data population in the VCdb varies by Vehicle Type Group and by Year range

Vehicle Type	Year Range	Populated Attributes
Light Duty	1975 – present, USA / CAN	All
Light Duty	1995 – present, MEX	All
Light Duty	1942 – 1974, USA / CAN	All – based on availability of



		donor data
Light Duty	1896 – 1941, USA only	Vehicle table - only
Note: Vehicle Configuration is populated only for 1985 and later, Light Duty, USA only		
Medium Duty	1980-present, USA only	Vehicle + Engine Configuration
Note: MD Model Name is the Mfr-assigned designation and not the vehicle series. Submodel is the Chassis Code – Base is the Default		
Class 8	1974-present, USA only	Vehicle + Engine Configuration
Note: Class 8 Vehicles are factory configured vehicles, only, and does not include “spec’d” vehicles such as over-the-road trucks. Submodel defaults to Base		
Powersports	Varies (1980 and later for most) USA Only. Submodel defaults to Base	Vehicle + Engine CC displacement
Lawn & Garden	Varies (1975 and later for most) USA Only. Submodel defaults to Base	Vehicle + Engine Config
Agricultural Equipment	Varies (1978 and later for most) USA Only. Submodel defaults to Base	Vehicle + Engine Config

Vehicle

The Vehicle record introduces the Submodel and Region to Base Vehicles to produce Vehicle records. All other attributes in the VCdb are joined to the Vehicle table for valid configurations.

Region is the geographic Region of Intended Sale and the scope of the VCDB is currently the USA, Canada and Mexico. The VCDB includes vehicles imported or sold by the original manufacturers in a particular country. Grey Market or Independently Imported vehicles are not included in the VCDB. No Japanese Domestic Market (JDM) vehicles are valid in the VCDB

Submodel is primarily the Badge or emblem when found on the vehicle. In the absence of a Badge, Submodel reflects the OEM Marketing literature, which includes MSRP pricing information. Pricing information helps distinguish between a Submodel or Trim Level, and a package of optional equipment. Packages are bundled options that can be applied to one or more Models and Submodels of the Vehicle. Submodels are configured with additional equipment and trim by the Manufacturer and priced with unique MSRP.



Engine Base

Engine Base is the minimum amount of meaningful information about the Engine in most applications. EngineBaseID is a valid tag in ACES catalog files that include engine-based applications.

For all Light Duty (car, truck, van) applications all fields of the Engine Base table are populated with information from OE sources.

Engine Displacement is expressed in Liter for all Light Duty applications from present back to 1942. When the Liter value from OE sources does not closely match the CC or CID displacement, the value from the badging on the vehicle may be used. For example, the Ford 302 CID engine calculates to 4.9 Liters. But, the vehicle is badged and commonly known as the 5.0. In model year 2005 and later, both the CID and the CC displacement are populated for Light Duty vehicles. Prior to 2005, the CID was populated for English-based vehicles (generally Domestic) and the CC was populated for Asian and European vehicles.

Engine Bore and Stroke is researched from OE sources and calculated only as needed. English measurements are expressed to the 100th (2 decimal places) and the Metric values are expressed to the 10th (1 decimal place).

Engine Configuration

The Engine Configuration is a valid factory-specified combination of engine attributes and is linked only to the vehicle applications where the Engine Configuration was valid and offered from the factory.

The Engine Designation Code is sometimes referred to as an Option Code or other technical designation from the OEM supplier.

Engine VIN is the single character from the Vehicle Identification Number (VIN) when the OEM designates a VIN character to represent the Engine

Valves is the total number of intake and exhaust valves per Engine

Fuel Delivery is only of two primary types – Carbureted or Fuel Injected

Fuel Delivery Subtype is a secondary segmentation of the Fuel Delivery System – 4 Barrel Carb or TBI (Throttle Body Injection)

Fuel System Control Type is either electronically controlled by computer or Mechanically controlled

Fuel System Design is a further definition of the Fuel Delivery System and often includes reference to the original manufacturer – Rochester or Bosch, for example. The information is not provided by all OEM's

Aspiration refers to the air intake system and is either Natural, Turbocharged or Supercharged. No accommodation is made for multiple Turbochargers on an engine



Cylinder Head Type is designated by the vehicle manufacturer to describe the valve train configuration – DOHC (dual overhead cam) or OHV (overhead valve) are most common

Fuel Type is specified by the OEM. Hybrid vehicles include both Fuel Types – Electric/Gas or Electric/Flex, for example. Flex Fuel refers to E85 Ethanol blends. Plug-in Electric vehicles do not require other attributes reserved for internal combustion engines. The Chevrolet Volt is listed as a Hybrid because it has both a Gas Engine and Electric propulsion. Bi-Fuel designates a vehicle designed to switch between separate fuel delivery systems – Compressed natural Gas (CNG) and Gas, for example. CNG, LPG or Bi-Fuel are only listed as the Fuel Type for vehicles so equipped from the factory. No allowance is made for aftermarket retrofits.

Ignition Type refers to the technology of the primary ignition system – With a Distributor, Distributorless (coil on plug) or Distributor-Breakerless (solid state), for example

The **Engine Manufacturer** is listed only for those engines when it is provided by the Vehicle Manufacturer

Engine Version refers to a Family of Engines as designated by the Manufacturer – EcoBoost, Cleveland and Windsor, for example

Power Output is represented in SAE Horsepower (HP) as specified by the OEM manufacturer and then converted to Kilowatts (Kw) by calculation. This field value is populated for European Makes only between 1985 and 2009. Power Output is published for all Light Duty applications 2010 and later. In the case of a Hybrid vehicle, the Power Output is the sum of the electric motors and the gasoline engine

Transmission

A Transmission is arranged Longitudinally in the vehicle. A Transaxle includes the differential. A Continuously Variable Transmission (CVT) is listed with the number of Speeds as (N/R - Not Required) – the Nissan Quest is an example. Transmission Control Types are: Automatic; Standard (manual); Automatic CVT or Automatic Dual Clutch. Clutchless Manual Transmissions are listed as Standard. Electric Drive Vehicles may specify 1-speed Transmission.

Brakes

2-Wheel ABS Brake System is defined as ABS on the Front and non-ABS on the Rear

Steering

Steering Type “Gear” is also known as Recirculating Ball. “Rack” is Rack and Pinion

Body Style

Body Number of Doors is defined as the number of passenger entry doors – a hatch is not a door. For the Body Type “Stripped Chassis”, the number of Doors is Zero



Body Type is the generally accepted industry designation – not a marketing name or brand-specific designation. The Dodge “Mega Cab” is a Crew Cab and the Nissan “King Cab” is an Extended Cab, for example.

Mfr Body Code

The Manufacturer Body Code is an OEM designation of the chassis or vehicle platform

Vehicle Configuration

The Vehicle Configuration Table is populated ONLY for 1985 and Later, Light Duty USA-only vehicles. The table lists all researched and valid combinations of all ACES attributes in a factory configuration. The Configuration table is intended for the purpose of validating the combination of attributes selected by the user to describe a vehicle application. If the combination of attributes is not found in a single record in the Configuration table, the vehicle was not offered for sale with that configuration. Data senders and receivers should make use of the Vehicle Configuration to validate their outbound or inbound ACES files. Users should also recognize the limitations of the file.

Vehicle Configuration is NOT INTENDED as a mapping file or support for a User Interface – it includes far more information than any use case would require.

Contact Information

For more information and support of ACES contact aces@aftermarket.org or call (301) 654-6664