



# VCDB DATA RULES & POLICIES



## Table of Contents

Overview .....	2
VCdb Coverage .....	2
VCdb Vehicle Available Data Attributes .....	2
Vehicle Configuration Database (VCdb) .....	4
Base Vehicle .....	5
Vehicle .....	6
Engine Base.....	6
Engine Configuration .....	7
Body Style.....	8
Brakes.....	9
Drive Type.....	9
Mfr Body Code .....	9
Steering.....	9
Transmission.....	9
Contact Information.....	9

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## Overview

ACES Data Rules & Policies is an addendum to the Vehicle Configuration database (VCdb) schema and the Data Field Definition documentation. The goal of this document is to capture the many decisions and practices that govern the data values in the VCdb, Product 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.

## VCdb Coverage

Vehicle Type	Region	Year Range
Light Duty	Canada	1942 – present
Light Duty	USA	1896 – present
Light Duty	Mexico	1975 – present
PowerSports	USA	1980 – present
Medium / Heavy Tru	USA / Canada	1981 – present

## VCdb Vehicle Available Data Attributes

Attribute Configuration	Attribute Table	Light Vehicle Pre-1975	Light Vehicle 1975 - Present	Power Sports <sup>3</sup>	Medium Duty (Current Listings) <sup>1</sup>	Medium / Heavy Duty (New Listings) <sup>2</sup>
<b>Vehicle</b>	<b>BaseVehicle</b>	Y	Y	Y	Y	Y
	<b>Make</b>	Y	Y	Y	Y	Y
	<b>Model</b>	Y	Y	Y	Y	Y
	<b>VehicleType</b>	Y	Y	Y	Y	Y
	<b>VehicleTypeGroup</b>	Y	Y	Y	Y	Y
	<b>Years</b>	Y	Y	Y	Y	Y
	<b>Vehicle</b>	Y	Y	Y	Y	Y

VCdb Data Rules & Policies

	<b>SubModel</b>	Y	Y	Y	Y	Y
	<b>Region</b>	Y	Y	Y	Y	Y
<b>Engine</b>	<b>EngineBase</b>	O	Y	Y	Y	Y
	<b>Liters</b>	O	Y	CC's Only	Y	Y
	<b>CC</b>	O	Y	CC's Only	Y	Y
	<b>CID</b>	O	Y	CC's Only	Y	Y
	<b>Cylinders</b>	O	Y	CC's Only	Y	Y
	<b>Block Type</b>	O	Y	CC's Only	Y	Y
	<b>Bore and Stroke</b>	O	Y	CC's Only	Y	Y
	<b>Aspiration</b>	O	Y	O	Y	N
	<b>CylinderHeadType</b>	O	Y	O	Y	N
	<b>EngineDesignation</b>	O	Y	O	Y	Y
	<b>EngineMfr</b>	O	Y	O	Y	Y
	<b>EngineVersion</b>	O	Y	O	Y	N
	<b>EngineVIN</b>	O	Y	O	Y	N
	<b>FuelDeliverySubType</b>	O	Y	O	Y	N
	<b>FuelDeliveryType</b>	O	Y	O	Y	N
	<b>FuelSystemControlType</b>	O	Y	O	Y	N
	<b>FuelSystemDesign</b>	O	Y	O	Y	N
	<b>FuelType</b>	O	Y	O	Y	Y
	<b>IgnitionSystemType</b>	O	Y	O	Y	N
	<b>PowerOutput</b>	O	Y	O	Y	N
	<b>ValvesPerEngine</b>	O	Y	O	Y	N
<b>Bed</b>	<b>BedLength</b>	O	Y	O	Y	N
	<b>BedType</b>	O	Y	O	Y	N
<b>Body</b>	<b>BodyNumDoors</b>	O	Y	O	Y	N
	<b>BodyType</b>	O	Y	O	Y	Y
<b>Brake</b>	<b>BrakeABS</b>	O	Y	O	Y	N

	<b>BrakeSystem</b>	O	Y	O	Y	Y
	<b>FrontBrakeType</b>	O	Y	O	Y	N
	<b>RearBrakeType</b>	O	Y	O	Y	N
<b>DriveType</b>	<b>DriveType</b>	O	Y	O	Y	Y
<b>MfrBodyCode</b>	<b>MfrBodyCode</b>	O	Y	O	Y	N
<b>Spring</b>	<b>FrontSpringType</b>	O	Y	O	Y	N
	<b>RearSpringType</b>	O	Y	O	Y	N
<b>Steering</b>	<b>SteeringSystem</b>	O	Y	O	Y	N
	<b>SteeringType</b>	O	Y	O	Y	N
<b>Transmission</b>	<b>TransmissionBase</b>	O	Y	O	Y	N
	<b>TransmissionType</b>	O	Y	O	Y	N
	<b>TransmissionNumSpeeds</b>	O	Y	O	Y	N
	<b>TransmissionControlType</b>	O	Y	O	Y	N
	<b>TransmissionMfrCode</b>	O	Y	O	Y	N
	<b>TransElecControlled</b>	O	Y	O	Y	N
	<b>TransmissionMfr</b>	O	Y	O	Y	N
<b>WheelBase</b>	<b>WheelBase</b>	O	Y	O	Y	N

<sup>1</sup>Current Listings existed in the VCdb prior to December 2014

<sup>2</sup>New Listings are those added to the VCdb after January 2015

<sup>3</sup>Powersports vehicles have begun adding VCdb attributes into their model names. We will continue following this practice and will retain existing model names, however vehicle attributes contained in the model names will become an optional element and reference data and systems will be populated with this content

## 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.

**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.

**Vehicle Type Group** is a collection of related Vehicle Types useful in parsing the applications in the VCdb. There are currently three (3) Vehicle Type Groups in the VCdb. Light Duty, Medium/Heavy Truck, and Powersports.

## 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

**Submodels** are combinations of physical vehicle attributes grouped together by the manufacturer per a given Model. Industry sources will be surveyed to determine the most appropriate designation for a VCdb Submodel.

Packages are bundled optional equipment that can be applied to one or more Models and Submodels of the Vehicle. Nomenclature used by the OEM to identify such Packages, accessories, or interior trim levels will be minimized from being listed in the Submodel field

## 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.

For Medium/Heavy Truck vehicles, Engine Base may only include the Liter, CID, and Cylinders based on the availability of the vendor data

For Powersports vehicles, Engine Base will only include the CC's

**Engine Displacement** is expressed in Liter for all Light Duty and Medium/Heavy applications. 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. Measurements are expressed to a minimum of one decimal points of precision or to a maximum of four decimal points of significant precision.

## 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.

For the Medium/Heavy Truck vehicles, the Engine Manufacturer Number is captured in this table

**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 Type** consists 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. . 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. BiFuel 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

## 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.

The addition of the Body Type for Medium/Heavy Trucks has introduced the compound Body Type into the VCdb due to the different Cab Configurations available for a single Body Type (Tractor Truck – Long Conventional and Tractor Truck – High Tilt are 2 examples)

## Brakes

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

## Drive Type

Drive Type is the generally accepted industry designation – not a marketing name or brand-specific designation. The Jeep “Command-Trac” system will not be captured in the VCdb as this is a 4WD system.

Light Duty vehicles may have the following drive types: 4WD / AWD / FWD / RWD

The Medium/Heavy Truck market utilizes a different methodology of describing the drive type of a vehicle. Medium/Heavy Trucks utilize a numeric combination of the total number of wheels by the drive wheels. Examples include: 4x2 / 4x4 / 6x2 / 6x6 etc.

## Mfr Body Code

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

## Steering

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

## 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.

## Contact Information

For more information and support of ACES contact [technology@autocare.org](mailto:technology@autocare.org) or call (301) 654-6664