Vehicle Identification Number (VIN), Using Manufacturer VIN Specifications as a Standard

Michael D Frenchik
Safety Systems Management Division (SSMD), Chief
Vehicle Identification Number (VIN)
What is it? How is it used?

- VINs are used to identify vehicles that are intended to be operated on roads throughout the world

- A VIN is broken up into six main parts
  - World Manufacturer Index (WMI)
  - Manufacturer Specification Data
  - Check Digit
  - Model Year
  - Plant Location
  - Vehicle Unique Number

NHTSA manages the standard of how VINs are applied within the United States through CFR 49 Part 565.
Vehicle Identification Number (VIN)

How is it generated?

VIN Specification
- Unique to the vehicle
- Follows guidance based on NHTSA’s standard (CFR 49 Part 565)
- Specifications reported minimum 60 days prior to production
- Manufacturers are required to maintain a standard for creation

<table>
<thead>
<tr>
<th>World Manufacturer Index (WMI)</th>
<th>Manufacturer Spec (Detail May Vary)</th>
<th>Manufacturer Coded Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Details may vary by Manufacturer</td>
</tr>
</tbody>
</table>

- Required minimum: Model, Series, Engine, Body
- and Base Safety System Data

<table>
<thead>
<tr>
<th>Extended WMI for Small Manufactures / Large Subsidiary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sometimes also used for additional data from various manufactures (e.g., Tesla uses 12th for Series ID)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Vehicle Specific Sequential ID</th>
</tr>
</thead>
<tbody>
<tr>
<td>Considered PII within the VIN</td>
</tr>
</tbody>
</table>

NOT INCLUDED in vPIC-List
Partnership with SAE

- NHTSA maintains the reporting requirements from the manufacturers and VIN standards / regulations
  - CFR 49 Part 565 (Vehicle Identification Number Guidance)
  - Manufacturers are required to submit to NHTSA

- SAE maintains the process for World Manufacturer Indexes (WMIs)
  - Includes trying to maintain WMI records for foreign companies
  - Issuance of WMI Certificate Letters

NHTSA’s Public Manufacturer Data / VIN Decoding Platform

What is it?

NHTSA Product Information Catalog and Vehicle Listing (vPIC)

– To Serve as a centralized authoritative data source for VIN associated, and VIN specific data:
  • Manufacturer 565 Submittals – Primary Source
  • > 10,000 submitted documents used;
  • New vPIC Data Standard Used for Core (565-based)

– Includes data intended to represent all regulated vehicles by NHTSA
  • Model Year 1995 Forward
  • Older model years lower confidence / completeness
## vPIC: Vehicle Types Included

<table>
<thead>
<tr>
<th>Passenger Vehicles</th>
<th>Multi Purpose Vehicles (MPVs)</th>
<th>Motorcycles / Scooters</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trucks</td>
<td>Buses</td>
<td>Low Speed Vehicles (LSVs)</td>
</tr>
<tr>
<td>Trailers</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Some manufacturers have included off-road / track-only vehicles for purposes of transparency / crash decoding (Not regulated by NHTSA)
vPIC Overview
What is in a vPIC “Vehicle Configuration”?

vPIC “Vehicle Configuration” - Not a Complete VIN
• A Vehicle Identification Number (VIN) is specific to a vehicle and is considered PII.
• NO sequential IDs in vPIC
• Only decoding information

“Vehicle Configuration”
• Refers to a group of vehicles with a similar configuration
• Comprises of the first 11-14\textsuperscript{th} digits of the VIN
  • 11 digits for Large Volume Manufacturers
  • 14 digits for Low Volume Manufacturers (< 999 vehicles / year)
    • Requires a “9” in 3\textsuperscript{rd} Digit of the Coding
vPIC Demonstration
Please show me what you are talking about …..

vPIC Public Interface:

- **Link:** [http://vpic.nhtsa.dot.gov/](http://vpic.nhtsa.dot.gov/)
- Includes three Public application areas:
  - **vPIC Decoder**
    - Full decoding capability
  - **Manufacturer Information Database (MID)**
    - General manufacturer information
    - WMI entries
    - View submittals
  - **Application Programming Interfaces (APIs)**
    - Single and Batch Decoding
    - Attributes and values
    - Manufacturer information (Name, Make, Models, etc.)
### vPIC: MID Search

#### Search Criteria

- **Manufacturer**
  - Toyota

#### Search Results

- **Make Name**: Toyota
  - **Model Name**:
    - **Model Year**: 2016
    - **WMI**: Various
      - **Product Type**: Various
        - **Equipment**
          - **DOT**: Various
            - **Address**: Various
              - **City**: Various
                - **State**: Various
                  - **Country**: United States

**Note:** Multiple search criteria are treated as an "AND". To increase search results, enter fewer search criteria. Likewise, to reduce search results, enter more search criteria.
vPIC: Decoding Screenshot

2003 SUBARU - PASSENGER CAR

Manufacturer: Fuji Heavy Industries U.S.A., Inc. (D/ Subaru of America)
Vehicle Type: PASSENGER CAR
Model Year: 2003
Make: SUBARU
Model: Legacy
Body Class: Wagon

Show All Vehicle Details

Other Information

Information provided below is based on the details provided by the manufacturer of this vehicle to NHTSA in the part 565 submittal:
Series:
Gross Vehicle Weight Rating:
Cylinders:
Engine Model:
Engine Manufacturer:
Transmission Style: Manual/Standard

Error Code: 0 - VIN decoded clean. Check Digit (9th position) is correct.

111111111
VIN Decoder
VIN: 4S3BH656X368000X
Model Year: Vehicle's Model Year
When entered, the year from VIN is ignored.
Decode
vPIC: APIs – Data Feeds

The NHTSA Product Information Catalog Vehicle Listing (vPIC) Application Programming Interface (API) specifications. The vPIC Dataset is populated using the information submitted by the Motor Vehicle manufacturer. The VIN assigned by the manufacturer is captured in this catalog and used to decode a VIN and extract vehicle information.

API Actions

Decode VIN

/vehicles/DecodeVin/5UXWX7C5*BA?format=xml&modelyear=2011
More information

Decode VIN (flat format)

/vehicles/DecodeVinValues/5UXWX7C5*BA?format=xml&modelyear=2011
More information

Decode VIN Extended

/vehicles/DecodeVinextended/5UXWX7C5*BA?format=jsv&modelyear=2011
More information

Decode VIN Extended (flat format)

/vehicles/DecodeVinValuesExtended/5UXWX7C5*BA?format=jsv&modelyear=2011
More information

Decode WMI

/vehicles/Decodewmi/1FD?format=xml
More information

Get All Makes

/vehicles/GetAllMakes?format=csv
More information

Get Parts

/vehicles/GetParts?type=56&fromDate=1/1/2015&toDate=5/5/2015&format=xml&page=1
More information

<Response>
  <Count>114</Count>
  <Message>Results returned successfully</Message>
  <SearchCriteria>VIN(s): 5UXWX7C5*BA</SearchCriteria>
  <Results>
    -- <DecodedVINValues>
      <VIN>5UXWX7C5*BA</VIN>
      <BatteryInfo/>
      <BatteryType/>
      <BedType/>
      <BodyCabType/>
      <BodyClass/>
        Sport Utility Vehicle (SUV)/Multi Purpose Vehicle (MPV)
      <BodyClass/>
      <Country/>
      <EngineCylinders>6</EngineCylinders>
      <DestinationMarket/>
      <DisplacementCC>2979.1682352</DisplacementCC>
      <DisplacementCI>181.8</DisplacementCI>
      <DisplacementL>3.0</DisplacementL>
      <Doors>4</Doors>
      <DriveType/>
      <Assist/>
      <Cylidea>
      <EngineModel/>
      <EngineKW>402 30662700</EngineKW>
      <EntertainmentSystem/>
      <FuelTypePrimary>Gasoline</FuelTypePrimary>
      <GVWR>Class ID: 5,001 - 6,000 lb (2,268 - 2,722 kg)</GVWR>
      <Make>BMW</Make>
      <Manufacturer>BMW MANUFACTURER CORPORATION / BMW NORTH AMERICA</Manufacturer>
      <Model>X3</Model>
      <ModelYear>2011</ModelYear>
      <PlantCity>Munich</PlantCity>
      <Seats/>
      <Series>X3</Series>
      <SteeringLocation/>
      <TransmissionStyle/>
      <Trim>xDrive35i</Trim>
      <VehicleType>MULTIPURPOSE PASSENGER VEHICLE (MPV)</VehicleType>
      <Windows/>
    </DecodedVINValues>
  </Results>
</Response>
vPIC: Online Public Platform

http://vpic.nhtsa.dot.gov/

FREE FOR PUBLIC USE
Manufactures Can Update
View Submittals and Company Info
Research Vehicle Data

Safer drivers. Safer cars. Safer roads.
vPIC Discussion
Conclusion / Questions

NHTSA Contact Information:

Michael D. Frenchik
NHTSA NCSA ODA
Safety Systems Management Division (SSMD), Chief
Michael.Frenchik@dot.gov
Phone: (202)366-0641