



TECHNICAL DOCUMENTATION

AFTERMARKET CATALOG EXCHANGE STANDARD (ACES®)

VERSION: 4.2

REVISION 2 | REVISED 10/31/2024



Revision History

Each time this document is modified, increment the version number appropriately and add a new row to the table below. In the Comments column, make sure to document the changes that were made and any deficiencies or outstanding issue the document may still have.

| Revision Number | Revision Date | Author | Notes |
|-----------------|---------------|-----------|---|
| 1 | 7/6/2021 | M.Grimes | Initial draft |
| 2 | 10/31/2024 | T.Schiavo | Merged section 4.4 Valid Positions into Section 4.3 Position. Updated section 4.3 Positions, specifically around the position “N/A” to clarify the rules. |

Table of Contents

1. Introduction6

2. What’s New in ACES® Version 4.2.....7

 2.1 Introduction 7

 2.2 Documentation Updates..... 7

 2.4 XSD Updates 9

3. Vehicle Configuration database (VCdb) 10

 3.1 VCdb Mission Statement..... 10

 3.2 VCdb Structure 10

 3.3 VCdb Efficiency - Stages 10

 3.4 VCdb Change Management..... 11

 3.5 VCdb Change Log 11

 3.6 VCdb ID Retention 12

 3.7 VCdb Table Field Definitions..... 12

4. Parts Classification database (PCdb).....48

 4.1 PCdb Mission Statement..... 48

 4.2 PCdb Structure 48

 4.3 Positions 49

 4.4 Multifunction Parts 52

 4.5 PCdb Change Management..... 52

5. Qualifier database (Qdb).....53

 5.1 Overview 53

| | |
|---|----|
| 5.2 Reasons for having “Coded Qualifiers” | 53 |
| 5.3 Qdb Structure..... | 53 |
| 5.4 Qdb Qualifier Grouping | 54 |
| 5.5 Qdb Version Control | 54 |
| 5.6 Qdb Change Log..... | 55 |
| 5.7 Qdb Parameters..... | 55 |
| 5.8 Qdb Parameter Types..... | 56 |
| 5.9 Qualifier Language Translation | 57 |
| 5.10 Qdb Review Process | 57 |
| 6. Application Data Transfer File..... | 58 |
| 6.1 Transfer File Purpose | 58 |
| 6.2 Physical Characteristics | 58 |
| 6.3 Transfer File Naming Convention | 58 |
| 6.4 Delivering Changes Only | 59 |
| 6.5 ACES Root Element..... | 59 |
| 6.6 Header Information | 60 |
| 6.7 Applications..... | 60 |
| 6.8 Digital Assets | 66 |
| 6.9 Footer Information..... | 68 |
| 6.10 General Rules | 68 |
| 6.11 Delivering Invalid Applications | 68 |
| 6.12 XML Elements..... | 70 |
| 7. XML Specifics | 94 |



7.1 Declaration Statement..... 94

7.2 Character Encoding 94

7.3 Reserved Symbols..... 94

7.4 Comments..... 94

7.5 Empty Element Tags..... 95

7.6 Element Tag Order 95

7.7 ACES Coded Values..... 95

8. Legacy Make Model Table 95

Appendix A. ACES Element Data Tags 96

Appendix B. Example Transfer File..... 98

Appendix C. Delivering “Invalid” Applications..... 101

Appendix D. Delivering Application Digital Assets..... 102

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1. Introduction

This document explains the structure of the Aftermarket Vehicle Database and how to deliver your catalog information in terms of that database. This specification was designed with extensive input from a broad coalition of participants in the Automotive Aftermarket, including all leading electronic catalog companies.

The objective was to arrive at a standard sufficient to meet the needs of the widest variety of trading partners. With a widely accepted industry standard for the exchange of application catalog data, the number of proprietary methods of coding and exchange can be reduced, lessening the cost and time delays associated with supporting multiple formats.

Some of the rules in the standard allow flexibility in how data is formatted and exchanged. Specific data partners may impose requirements in how the standard is practiced with them. But it is essential for the industry to follow the standard as closely as possible if the full business value is to be realized.

2. What's New in ACES® Version 4.2

2.1 Introduction

Welcome to version 4.2 of the Aftermarket Catalog Exchange Standard (ACES). This version of the Data Delivery Specification and XML Schema is designed and tested to meet the aftermarket industry's evolving requirements for the exchange of application catalog information.

2.2 Documentation Updates

- Updated ACES Documentation Version 4.2
 - 3.2 VCdb Structure
 - Added new statements regarding the Primary Key and Foreign Key relationships
 - Updated table counts to include the additional Equipment tables
 - Clarified statement regarding configurations and VehicleTo relationships
 - 3.4 VCdb Change Management
 - Updated hyperlink for release notes based on new autocare.org web site
 - 3.7 VCdb Table Field Definitions
 - Updated LanguageTranslation table fields to align with published table
 - Updated LanguageTranslationAttachment table fields to align with published table
 - Added – Missing PublicationStage table
 - Added – Removed valid region choices in the Region table
 - Added – Missing PublicationStageID, PublicationStageSource and PublicationStageDate fields in the Vehicle table
 - 5.10 Qdb Data Rules
 - Removed Qdb Data Rules from the ACES 4.2 Technical Documentation and placed in a stand-alone Qdb Data Rules and Policies document to align with the precedent set by the VCdb

- 6.5 ACES Root Element
 - Updated Root Element list to include “4.2”
 - Removed outdated versions from list
 - Added – Full example of ACES Root Element
- 6.7 Applications
 - Added – Under the Vehicle Identification section in the ACES 4.2 Technical Documentation, the ability to catalog applications by a vehicle system utilizing the existing Equipment format was added
- 6.12 XML Elements
 - ACES – Updated to include 4.2 as a valid value and removed invalid values
 - ApprovedFor – Labeled as “Deprecated” for future removal
 - Country – Updated Description for addition of PartsApprovedFor XML element
 - Part – Updated to include optional use of SubBrand Code
 - PartsApprovedFor – Added as an optional header element for identifying the default market / country the part numbers in the file are approved for sale in, by country code
 - RegionFor – Added as an optional header element as a default region for the complete file
 - SubBrandAAIAID – Added as an optional header element as the default SubBrand code for the complete file
- 7.7 ACES Coded Values
 - Added – New section added stating ACES Coded Values are now located in the Product Classification Database (PCdb) which is published on a monthly basis.
- Appendix A. ACES Element Data Tags
 - RegionFor – Added as a new Header / Footer Tag
 - SubBrandAAIAID – Added as a new Header / Footer Tag

- Appendix B. Example Transfer File
 - PartsApprovedFor – Added in header of Example Transfer File
 - RegionFor – Added in header of Example Transfer File
 - SubBrandAAIAID – Added in header of Example Transfer File
- Updated VCdb Data Rules as follows:
 - Added – New regional information for Argentina and Brazil
 - Updated Equipment section to include cataloging by vehicle system
- Added Qdb Data Rules document
 - Updated special character rule from avoiding above 128 ASCII characters to utilizing UTF-8 character coding
 - Added – New rule regarding no stand-alone PCdb part terminologies

2.4 XSD Updates

- Removed all codes from XSD these will be added to the PCdb ACES Coded Values tables
- Added SubBrandAAIAID as an optional element to the Header
- Added PartsApprovedFor as an optional element to the Header
- Added RegionFor as an optional element to the Header
- Added SubBrandAAIAID as an optional attribute to the Part element

3. Vehicle Configuration database (VCdb)

3.1 VCdb Mission Statement

Design, populate, and implement a data repository that contains the most common attributes required to describe a vehicle in the Automotive Aftermarket. Vehicle configurations will be defined and validated at the lowest level that is economically feasible but will not exclude the delivery of applications at higher levels. Publish the database and a specification to deliver catalog applications for the purpose of establishing an industry standard.

3.2 VCdb Structure

The Vehicle Configuration database is a normalized relational database made up of over seventy tables, representing over fifty vehicle attributes. Configuration tables are used to define valid combinations of vehicle attributes and VehicleTo tables define a relationship between the vehicle and its major vehicle systems.

Data within these tables are linked together by record identification (IDs) fields. Within the VCdb, each table row or record has a unique numeric Primary Key ID (PKID). The unique PKID value can be used in one or more tables as Foreign Key IDs (FKID) to identify the relationship between the records in various data tables. The IDs numeric value is the same in both tables which creates relationship between the tables and specific records within each table. ID fields within the VCdb have a suffix of "ID".

3.3 VCdb Efficiency - Stages

The VCdb Efficiency Project was introduced in 2012 as a way to get information into the VCdb much faster. To accomplish this, vehicle additions to the database are made in four stages, beginning with the Base Vehicle, Submodel, and Region (Stage 1). As more complete information about the vehicle becomes available from OEM sources, the vehicles will be published and move through the remaining stages. The value, PublicationStageID, is based on a new table, PublicationStage. The PublicationStageID of a vehicle tracks the current stage and is stored in the Vehicle table.

Stages are defined as:

- **Stage 1:** Vehicle (Base Vehicle, Submodel, and Region) is published
- **Stage 2:** Full Engine Configuration is published

- **Stage 3:** Any additional Attributes / VehicleTo's are published
- **Stage 4:** Remaining VCdb Attributes / VehicleTo Relationships are published

* The updated Stage definitions will only be applied to new research going forward. All existing vehicles will remain in Stage 4.

3.4 VCdb Change Management

Representatives of the Auto Care Association are responsible for updating and publishing the VCdb monthly. In addition to a fully refreshed dataset, changes are documented and reported separately in the release notes <https://www.autocare.org/data-and-information/data-standards/release-notes>. Petitions for changes or additions to the VCdb will be accepted from any licensed subscriber and reviewed in the regular update cycle. These change requests are maintained and monitored through <https://autocarevip.com>

3.5 VCdb Change Log

When data changes, changes are recorded in the Vehicle Configuration database (VCdb) change log tables*.

VCdb change log new structure includes:

- A reference ID to what table is changing
- The primary key and the column (field) within the table that is changing
- The before and after values of the change
- An ID to identify the change (Add, Delete, Modify)
- A change table stating when the change occurred

*The VCdb change log tables were introduced in April 2015

3.6 VCdb ID Retention

When the VCdb was created, the ability to update records within the database could only change by adding and deleting records. This means when a change to a record occurred, the IDs are deleted for all records linked to the PKID, all the FKID records from multiple tables would be removed as well. New records with the changes are then added to the database with new ID record connections.

Between VCdb releases, the IDs could change drastically. For a catalog mapping software company using VCdb IDs within their system, the IDs changing from month to month created a need for tracking differences between the releases and updating their systems accordingly. This tracking process can take hours, days or weeks depending on the automation levels available in each system. In addition to the challenge of tracking changes, lack of ID retention makes systems more prone to errors such as dropping records, improper deletes, orphan records, and others data errors which are difficult to detect and cumbersome to correct with constantly changing IDs.

With the implementation of VCdb ID Retention, data value changes can occur with no change to the IDs. This process enables mapping software to choose an update process that minimizes ID errors and potentially reduces the update processing time within their systems.

The VCdb ID Retention introduced in April 2015

3.7 VCdb Table Field Definitions

Table: Abbreviation

| Field | Data Type | Description/Example |
|-----------------|------------|--|
| Abbreviation | Text (3) | N/A, N/R, U/K, - (dash). Each base table will have one row for each of these values. U/K will initially be used internally by our data partners to differentiate values that have not been researched yet from values that are N/A. The dash (-) indicates a value intentionally left blank, except for Wheelbase which was not populated for cars. |
| Description | Text (20) | Not Available (N/A), Not Required (N/R), Unknown (U/K), Intentionally blank (-). |
| LongDescription | Text (200) | A sentence describing the abbreviation. |

Table: Aspiration

| Field | Data Type | Description/Example |
|----------------|-----------------------|---|
| AspirationID | Number (Long Integer) | Unique, system generated identifier. |
| AspirationName | Text (30) | Aspiration or Boost Type name – Naturally Aspirated, Turbocharged, Supercharged, etc. |

Table: Attachment

Note: This table is currently delivered without data.

| Field | Data Type | Description |
|-----------------------|-----------------------|---|
| AttachmentID | Number (Long Integer) | Unique, system generated identifier. |
| AttachmentFileName | Text (50) | TBD |
| AttachmentURL | Text (100) | TBD |
| AttachmentDescription | Text (50) | TBD |
| AttachmentTypeID | Number (Long Integer) | Unique, system generated identifier from the AttachmentType table |

Table: AttachmentType

Note: This table is currently delivered without data.

| Field | Data Type | Description |
|--------------------|-----------------------|--------------------------------------|
| AttachmentTypeID | Number (Long Integer) | Unique, system generated identifier. |
| AttachmentTypeName | Text (20) | TBD |

Table: BaseVehicle

| Field | Data Type | Description |
|---------------|-----------------------|---|
| BaseVehicleID | Number (Long Integer) | Unique, system generated identifier. |
| YearID | Number (Long Integer) | Unique, system generated identifier from the Year table – ID and year value are same. |
| MakeID | Number (Long Integer) | Unique, system generated identifier from the Make table. |
| ModelID | Number (Long Integer) | Unique, system generated identifier from the Model table. |

Table: BedConfig

| Field | Data Type | Description |
|-------------|-----------------------|---|
| BedConfigID | Number (Long Integer) | Unique, system generated identifier. |
| BedLengthID | Number (Long Integer) | Unique, system generated identifier from the BedLength table. |
| BedTypeID | Number (Long Integer) | Unique, system generated identifier from the BedType table. |

Table: BedLength

| Field | Data Type | Description |
|-----------------|-----------------------|--|
| BedLengthID | Number (Long Integer) | Unique, system generated identifier. |
| BedLength | Text (10) | Pickup bed length represented in inches to one decimal point of precision |
| BedLengthMetric | Text (10) | Pickup bed length represented in centimeters to one decimal point of precision |

Table: BedType

| Field | Data Type | Description |
|-------------|-----------------------|--|
| BedTypeID | Number (Long Integer) | Unique, system generated identifier. |
| BedTypeName | Text (50) | Marketing or industry accepted terminology for bed type (Stepside, Fleetside, etc.). |

Table: BodyNumDoors

| Field | Data Type | Description |
|----------------|-----------------------|---|
| BodyNumDoorsID | Number (Long Integer) | Unique, system generated identifier. |
| BodyNumDoors | Text (3) | Numerical representation for number of doors ranging from 0 to 8. |

Table: BodyStyleConfig

| Field | Data Type | Description |
|-------------------|-----------------------|--|
| BodyStyleConfigID | Number (Long Integer) | Unique, system generated identifier. |
| BodyNumDoorsID | Number (Long Integer) | Unique, system generated identifier from the BodyNumDoors table. |
| BodyTypeID | Number (Long Integer) | Unique, system generated identifier from the BodyType table. |

Table: BodyType

| Field | Data Type | Description |
|--------------|-----------------------|---|
| BodyTypeID | Number (Long Integer) | Unique, system generated identifier. |
| BodyTypeName | Text (50) | Industry accepted name for body type - Coupe, Sedan, etc. |

Table: BrakeABS

| Field | Data Type | Description/Example |
|--------------|-----------------------|---|
| BrakeABSID | Number (Long Integer) | Unique, system generated identifier. |
| BrakeABSName | Text (30) | Brake ABS: Non-ABS, 2-Wheel ABS or 4-Wheel ABS. |

Table: BrakeConfig

| Field | Data Type | Description |
|------------------|-----------------------|--|
| BrakeConfigID | Number (Long Integer) | Unique, system generated identifier. |
| FrontBrakeTypeID | Number (Long Integer) | Unique, system generated identifier from the BrakeType table – for the front of the vehicle. |
| RearBrakeTypeID | Number (Long Integer) | Unique, system generated identifier from the BrakeType table – for the rear of the vehicle. |
| BrakeSystemID | Number (Long Integer) | Unique, system generated identifier from the BrakeSystem table. |
| BrakeABSID | Number (Long Integer) | Unique, system generated identifier from the BrakeABS table. |

Table: BrakeSystem

| Field | Data Type | Description/Example |
|-----------------|-----------------------|--------------------------------------|
| BrakeSystemID | Number (Long Integer) | Unique, system generated identifier. |
| BrakeSystemName | Text (30) | Brake system: Manual or Power. |

Table: BrakeType

| Field | Data Type | Description/Example |
|---------------|-----------------------|--------------------------------------|
| BrakeTypeID | Number (Long Integer) | Unique, system generated identifier. |
| BrakeTypeName | Text (30) | Brake type: Disc or Drum. |

Table: ChangeAttributeStates

| Field | Data Type | Description |
|------------------------|-----------------------|--|
| ChangeAttributeStateID | Number (Long Integer) | Unique, system generated identifier |
| ChangeAttributeState | Text (255) | An indicator of the intent of the change request in terms of physical action on the target record within the target table to insert, update, or delete data. |

Table: ChangeDetails

| Field | Data Type | Description |
|------------------------|-----------------------|---|
| ChangeDetailID | Number (Long Integer) | Unique, system generated identifier |
| ChangeID | Number (Long Integer) | Foreign key ID which links the associated record from the Changes table. |
| ChangeAttributeStateID | Number (Long Integer) | Foreign key ID which links the associated ChangeAttributeState to reference the record's state before and/or after the change is applied. |
| TableNameID | Number (Long Integer) | Foreign key ID which references the affected table within VCdb. |
| PrimaryKeyColumnName | Text (55) | The field name containing the primary key id for the table where the data is changing. |

| | | |
|-------------------|-----------------------|--|
| PrimaryKeyBefore | Number (Long Integer) | ID value which references the associated record prior to change within the table which is referenced by the TableNameID, and field referenced by the PrimaryKeyColumnName (applicable for delete and modify requests). |
| PrimaryKeyAfter | Number (Long Integer) | ID value which references the associated record after change within the table which is referenced by the TableNameID, and field referenced by the PrimaryKeyColumnName (applicable for delete and modify requests). |
| ColumnName | Text (55) | The field impacted by the change. |
| ColumnValueBefore | Text (255) | The actual value of the field referenced by the change request. |
| ColumnValueAfter | Text (255) | The actual value of the field impacted by the change. |

Table: ChangeReasons

| Field | Data Type | Description |
|----------------|-----------------------|---|
| ChangeReasonID | Number (Long Integer) | Unique, system generated identifier |
| ChangeReason | Text (255) | The reason that is selected upon approval of the change request to indicate the basis of the request. |

Table: Changes

| Field | Data Type | Description |
|----------------|-----------------------|---|
| ChangeID | Number (Long Integer) | Unique, system generated identifier. |
| RequestID | Number (Long Integer) | Foreign key ID which references the request in the Request table. |
| ChangeReasonID | Number (Long Integer) | Foreign key ID which provides the reason that is selected upon approval of the change request to indicate the basis of the request. |
| RevDate | Date | Date of last revision of the record. |

Table: ChangeTableNames

| Field | Data Type | Description |
|------------------|-----------------------|---|
| TableNameID | Number (Long Integer) | Unique, system generated identifier |
| TableName | Text (255) | The VCdb table name to which the change is applied. |
| TableDescription | Text (255) | A description of the table's purpose as it relates to the VCdb. |

Table: Class

| Field | Data Type | Description/Example |
|-----------|-----------------------|--------------------------------------|
| ClassID | Number (Long Integer) | Unique, system generated identifier. |
| ClassName | Text (1) | Vehicle weight class (1-8) |

Table: CylinderHeadType

| Field | Data Type | Description/Example |
|----------------------|-----------------------|--|
| CylinderHeadTypeID | Number (Long Integer) | Unique, system generated identifier. |
| CylinderHeadTypeName | Text (30) | Value of cylinder head name, SOHC, DOHC and OHV. |

Table: DriveType

| Field | Data Type | Description/Example |
|---------------|-----------------------|--|
| DriveTypeID | Number (Long Integer) | Unique, system generated identifier. |
| DriveTypeName | Text (30) | Drive Type name or description – FWD, AWD, RWD, 4WD. |

Table: ElecControlled

| Field | Data Type | Description/Example |
|------------------|-----------------------|--|
| ElecControlledID | Number (Long Integer) | Unique, system generated identifier |
| ElecControlled | Text (3) | A boolean (Y/N) indicator of whether the Transmission is electronically controlled |

Table: EngineBase

| Field | Data Type | Description/Example |
|-----------------|-----------------------|--|
| EngineBaseID | Number (Long Integer) | Unique, system generated identifier. |
| Liter | Text (6) | Number of engine liters to one decimal point of precision - 2.8, 3.0, etc. |
| CC | Text (8) | Cubic centimeters represented as a whole number – 2800, 3200, etc. |
| CID | Text (7) | Cubic inches of displacement represented as a whole number – 350, 400, etc. |
| Cylinders | Text (2) | Number of engine cylinders represented as a whole number – 4, 6, 8, etc. |
| BlockType | Text (2) | Engine block type – V, In-line, Rotary, etc. |
| EngBoreIn | Text (10) | Engine cylinder bore in inches to a minimum of two decimal points of precision – 1.14, 3.50, etc., or to a maximum of four decimal points of <u>significant</u> precision – eg. 1.233 not 1.2330. |
| EngBoreMetric | Text (10) | Engine cylinder bore in millimeters to a minimum of one decimal point of precision – 28.0, 32.5, etc., or to a maximum of four decimal points of <u>significant</u> precision – eg. 2.093 not 2.0930 |
| EngStrokeIn | Text (10) | Engine cylinder stroke in inches to a minimum of two decimal points of precision – 1.14, 3.50, etc., or to a maximum of four decimal points of <u>significant</u> precision – eg. 1.233 not 1.2330. |
| EngStrokeMetric | Text (10) | Engine cylinder stroke in millimeters to a minimum of one decimal point of precision – 54.0, 67.5, etc., to a maximum of four decimal points of <u>significant</u> precision – eg. 2.093 not 2.0930. |

Table: EngineBase2

| Field | Data Type | Description/Example |
|--------------------|-----------------------|--|
| EngineBaseID | Number (Long Integer) | Unique, system generated identifier. |
| EngineBlockID | Number (Long Integer) | Unique, system generated identifier from the EngineBlock table. |
| EngineBoreStrokeID | Number (Long Integer) | Unique, system generated identifier from the EngineBoreStroke table. |

Table: EngineBlock

| Field | Data Type | Description/Example |
|---------------|-----------------------|---|
| EngineBlockID | Number (Long Integer) | Unique, system generated identifier. |
| Liter | Text (6) | Number of engine liters to one decimal point of precision - 2.8, 3.0, etc. |
| CC | Text (8) | Cubic centimeters represented as a whole number – 2800, 3200, etc. |
| CID | Text (7) | Cubic inches of displacement represented as a whole number – 350, 400, etc. |
| Cylinders | Text (2) | Number of engine cylinders represented as a whole number – 4, 6, 8, etc. |
| BlockType | Text (2) | Engine block type – V, In-line, Rotary, etc. |

Table: EngineBoreStroke

| Field | Data Type | Description/Example |
|--------------------|-----------------------|--|
| EngineBoreStrokeID | Number (Long Integer) | Unique, system generated identifier. |
| EngBoreIn | Text (10) | Engine cylinder bore in inches to a minimum of two decimal points of precision – 1.14, 3.50, etc., or to a maximum of four decimal points of <u>significant</u> precision – eg. 1.233 not 1.2330. |
| EngBoreMetric | Text (10) | Engine cylinder bore in millimeters to a minimum of one decimal point of precision – 28.0, 32.5, etc., or to a maximum of four decimal points of <u>significant</u> precision – eg. 2.093 not 2.0930 |
| EngStrokeIn | Text (10) | Engine cylinder stroke in inches to a minimum of two decimal points of precision – 1.14, 3.50, etc., or to a maximum of four decimal points of <u>significant</u> precision – eg. 1.233 not 1.2330. |
| EngStrokeMetric | Text (10) | Engine cylinder stroke in millimeters to a minimum of one decimal point of precision – 54.0, 67.5, etc., to a maximum of four decimal points of <u>significant</u> precision – eg. 2.093 not 2.0930. |

Table: EngineConfig

| Field | Data Type | Description |
|----------------------|-----------------------|---|
| EngineConfigID | Number (Long Integer) | Unique, system generated identifier. |
| EngineDesignationID | Number (Long Integer) | Unique, system generated identifier from the EngineDesignation table. |
| EngineVINID | Number (Long Integer) | Unique, system generated identifier from the EngineVIN table. |
| ValvesID | Number (Long Integer) | Unique, system generated identifier from the Valves table. |
| EngineBaseID | Number (Long Integer) | Unique, system generated identifier from the EngineBase table. |
| FuelDeliveryConfigID | Number (Long Integer) | Unique, system generated identifier from the FuelDeliveryConfig table. |
| AspirationID | Number (Long Integer) | Unique, system generated identifier from the Aspiration table. |
| CylinderHeadTypeID | Number (Long Integer) | Unique, system generated identifier from the CylinderHeadType table. |
| FuelTypeID | Number (Long Integer) | Unique, system generated identifier from the FuelType table. |
| IgnitionSystemTypeID | Number (Long Integer) | Unique, system generated identifier from the IgnitionSystemType table. |
| EngineMfrID | Number (Long Integer) | Unique, system generated identifier from the Mfr table for the engine manufacturer, i.e. Chevrolet, Honda, etc. |
| EngineVersionID | Number (Long Integer) | Unique, system generated identifier from the EngineVersion table. |
| PowerOutputID | Number (Long Integer) | Unique, system generated identifier from the PowerOutput table |

Table: EngineConfig2

| Field | Data Type | Description |
|----------------------|-----------------------|---|
| EngineConfigID | Number (Long Integer) | Unique, system generated identifier. |
| EngineDesignationID | Number (Long Integer) | Unique, system generated identifier from the EngineDesignation table. |
| EngineVINID | Number (Long Integer) | Unique, system generated identifier from the EngineVIN table. |
| ValvesID | Number (Long Integer) | Unique, system generated identifier from the Valves table. |
| EngineBaseID | Number (Long Integer) | Unique, system generated identifier from the EngineBase table. |
| EngineBlockID | Number (Long Integer) | Unique, system generated identifier from the EngineBlock table. |
| EngineBoreStrokeID | Number (Long Integer) | Unique, system generated identifier from the EngineBoreStroke table. |
| FuelDeliveryConfigID | Number (Long Integer) | Unique, system generated identifier from the FuelDeliveryConfig table. |
| AspirationID | Number (Long Integer) | Unique, system generated identifier from the Aspiration table. |
| CylinderHeadTypeID | Number (Long Integer) | Unique, system generated identifier from the CylinderHeadType table. |
| FuelTypeID | Number (Long Integer) | Unique, system generated identifier from the FuelType table. |
| IgnitionSystemTypeID | Number (Long Integer) | Unique, system generated identifier from the IgnitionSystemType table. |
| EngineMfrID | Number (Long Integer) | Unique, system generated identifier from the Mfr table for the engine manufacturer, i.e. Chevrolet, Honda, etc. |

| | | |
|-----------------|-----------------------|---|
| EngineVersionID | Number (Long Integer) | Unique, system generated identifier from the EngineVersion table. |
| PowerOutputID | Number (Long Integer) | Unique, system generated identifier from the PowerOutput table |

Table: EngineDesignation

| Field | Data Type | Description/Example |
|-----------------------|-----------------------|--------------------------------------|
| EngineDesignationID | Number (Long Integer) | Unique, system generated identifier. |
| EngineDesignationName | Text (30) | Manufacturer unique code, 2-TC, etc. |

Table: EngineVersion

| Field | Data Type | Description/Example |
|-----------------|-----------------------|---|
| EngineVersionID | Number (Long Integer) | Unique, system generated identifier. |
| EngineVersion | Text (20) | Engine version, i.e. "Windsor", "Cleveland", "Modified", etc. |

Table: EngineVIN

| Field | Data Type | Description/Example |
|---------------|-----------------------|---|
| EngineVINID | Number (Long Integer) | Unique, system generated identifier. |
| EngineVINName | Text (5) | Manufacturers code for engine configuration found in VIN (Vehicle Identification Number), i.e. 2, H, etc. |

Table: EnglishPhrase

Note: This table is currently delivered without data.

| Field | Data Type | Description |
|-------|-----------|-------------|
|-------|-----------|-------------|

| | | |
|-----------------|-----------------------|--------------------------------------|
| EnglishPhraseID | Number (Long Integer) | Unique, system generated identifier. |
| EnglishPhrase | Text (100) | English phrase. |

Table: Equipment

| Field | Data Type | Description/Example |
|-----------------|-----------------------|---|
| EquipmentID | Number (Long Integer) | Unique, system generated identifier. |
| EquipmentBaseID | Number (Long Integer) | Unique, system generated identifier from the EquipmentBase table. |
| RegionID | Number (Long Integer) | Unique, system generated identifier from the Region table. |
| ProductionStart | Number (Long Integer) | Calendar year production began for the Equipment |
| ProductionEnd | Number (Long Integer) | Calendar year production ended for the Equipment |

Table: EquipmentBase

| Field | Data Type | Description/Example |
|------------------|-----------------------|--|
| EquipmentBaseID | Number (Long Integer) | Unique, system generated identifier. |
| EquipmentModelID | Number (Long Integer) | Unique, system generated identifier from the EquipmentModel table. |
| MfrID | Number (Long Integer) | Unique, system generated identifier from the Mfr table. |
| VehicleTypeID | Number (Long Integer) | Unique, system generated identifier from the VehicleType table. |

Table: EquipmentModel

| Field | Data Type | Description |
|--------------------|-----------------------|---|
| EquipmentModelID | Number (Long Integer) | Unique, system generated identifier. |
| EquipmentModelName | Text (100) | Name of model based on manufactures marketing nomenclature. |

Table: EquipmentToEngineConfig

| Field | Data Type | Description/Example |
|---------------------------|-----------------------|--|
| EquipmentToEngineConfigID | Number (Long Integer) | Unique, system generated identifier. |
| EquipmentID | Number (Long Integer) | Unique, system generated identifier from the Equipment table. |
| EngineConfigID | Number (Long Integer) | Unique, system generated identifier from the EngineConfig table. |

Table: FuelDeliveryConfig

| Field | Data Type | Description |
|-------------------------|-----------------------|---|
| FuelDeliveryConfigID | Number (Long Integer) | Unique, system generated identifier. |
| FuelDeliveryTypeID | Number (Long Integer) | Unique, system generated identifier from the FuelDeliveryType table. |
| FuelDeliverySubTypeID | Number (Long Integer) | Unique, system generated identifier from the FuelDeliverySubType table. |
| FuelSystemControlTypeID | Number (Long Integer) | Unique, system generated identifier from the FuelSystemControlType table. |
| FuelSystemDesignID | Number (Long Integer) | Unique, system generated identifier from the FuelSystemDesign table. |

Table: FuelDeliverySubType

| Field | Data Type | Description/Example |
|-------------------------|-----------------------|---|
| FuelDeliverySubTypeID | Number (Long Integer) | Unique, system generated identifier. |
| FuelDeliverySubTypeName | Text (50) | Description of fuel system configuration, 2BBL (2 barrel carb), TBI (throttle body injection), etc. |

Table: FuelDeliveryType

| Field | Data Type | Description/Example |
|----------------------|-----------------------|---|
| FuelDeliveryTypeID | Number (Long Integer) | Unique, system generated identifier. |
| FuelDeliveryTypeName | Text (50) | Description of fuel delivery method - Carburetion, Fuel Injection, etc. |

Table: FuelSystemControlType

| Field | Data Type | Description/Example |
|---------------------------|-----------------------|--|
| FuelSystemControlTypeID | Number (Long Integer) | Unique, system generated identifier. |
| FuelSystemControlTypeName | Text (50) | Fuel system method of control - Electronic, Mechanical, etc. |

Table: FuelSystemDesign

| Field | Data Type | Description/Example |
|----------------------|-----------------------|---|
| FuelSystemDesignID | Number (Long Integer) | Unique, system generated identifier. |
| FuelSystemDesignName | Text (50) | The design or manufacturer of the fuel system - Holley, Bosch, etc. |

Table: FuelType

| Field | Data Type | Description/Example |
|--------------|-----------------------|--------------------------------------|
| FuelTypeID | Number (Long Integer) | Unique, system generated identifier. |
| FuelTypeName | Text (30) | Fuel type - Diesel, Gas, etc. |

Table: IgnitionSystemType

| Field | Data Type | Description/Example |
|------------------------|-----------------------|---|
| IgnitionSystemTypeID | Number (Long Integer) | Unique, system generated identifier. |
| IgnitionSystemTypeName | Text (30) | Basic ignition system type - Distributor-Breaker, Distributorless, etc. |

Table: Language

Note: This table is currently delivered without data.

| Field | Data Type | Description |
|--------------|-----------------------|--------------------------------------|
| LanguageID | Number (Long Integer) | Unique, system generated identifier. |
| LanguageName | Text (20) | TBD |
| DialectName | Text (20) | TBD |

Table: LanguageTranslation

Note: This table is currently delivered without data.

| Field | Data Type | Description |
|-----------------------|-----------------------|---|
| LanguageTranslationID | Number (Long Integer) | Unique, system generated identifier. |
| EnglishPhraseID | Number (Long Integer) | Unique, system generated identifier from the EnglishPhrase table. |
| LanguageID | Number (Long Integer) | Unique, system generated identifier from the Language table. |
| Translation | Text (150) | TBD |

Table: LanguageTranslationAttachment

Note: This table is currently delivered without data.

| Field | Data Type | Description |
|---------------------------------|-----------------------|--------------------------------------|
| LanguageTranslationAttachmentID | Number (Long Integer) | Unique, system generated identifier. |
| LanguageTranslationID | Text (20) | TBD |
| AttachmentID | Text (20) | TBD |

Table: Make

| Field | Data Type | Description/Example |
|----------|-----------------------|--------------------------------------|
| MakeID | Number (Long Integer) | Unique, system generated identifier. |
| MakeName | Text (50) | Make name - Subaru, Volvo, etc. |

Table: Mfr

| Field | Data Type | Description/Example |
|---------|-----------------------|--|
| MfrID | Number (Long Integer) | Unique, system generated identifier. Referenced in the EngineConfig and Transmission |
| MfrName | Text (30) | Name of component manufacturer – Allison, Borg Warner, Ford, Toyota, etc. |

Table: MfrBodyCode

| Field | Data Type | Description/Example |
|-----------------|-----------------------|--|
| MfrBodyCodeID | Number (Long Integer) | Unique, system generated identifier. |
| MfrBodyCodeName | Text (10) | Manufacturers unique code for body platform - "A" body, "C" Platform - Not all manufacturers designate body codes. |

Table: Model

| Field | Data Type | Description |
|---------------|-----------------------|--|
| ModelID | Number (Long Integer) | Unique, system generated identifier. |
| ModelName | Text (100) | Name of model based on manufacturer marketing nomenclature – Malibu, Corolla, etc. |
| VehicleTypeID | Number (Long Integer) | Unique, system generated identifier from the VehicleType table. |

Table: PowerOutput

| Field | Date Type | Description |
|---------------|-----------------------|---|
| PowerOutputID | Number (Long Integer) | Unique, system generated identifier |
| HorsePower | Text (10) | Engine Power output expressed in Horsepower, including a decimal point only when required to represent fractional values. |
| KiloWattPower | Text (10) | Engine Power output expressed in Kilowatts, including a decimal point only when required to represent fractional values. |

Table: PublicationStage

| Field | Data Type | Description |
|----------------------|-----------------------|--|
| PublicationStageID | Number (Long Integer) | Unique, system generated identifier |
| PublicationStageName | Text (10) | Publication Stage for a vehicle based on the level of research performed and published |

Table: Region

| Field | Data Type | Description/Example |
|------------|-----------------------|--|
| RegionID | Number (Long Integer) | Unique, system generated identifier. |
| ParentID | Number (Long Integer) | Unique, system generated identifier for the parent region, e.g. this ID would refer to North America for the USA region. Currently, this field is not populated in the VCdb. |
| RegionAbbr | Text (3) | ISO standard country abbreviations. |
| RegionName | Text (50) | Description of Region – Identifies the region the vehicle was manufactured for. |

Table: SpringType

| Field | Data Type | Description/Example |
|----------------|-----------------------|--|
| SpringTypeID | Number (Long Integer) | Unique, system generated identifier. |
| SpringTypeName | Text (50) | Suspension spring type - Coil, Leaf, Torsion Bar, Air. |

Table: SpringTypeConfig

| Field | Data Type | Description |
|--------------------|-----------------------|---|
| SpringTypeConfigID | Number (Long Integer) | Unique, system generated identifier. |
| FrontSpringTypeID | Number (Long Integer) | Unique, system generated identifier from the SpringType table – for the front of the vehicle. |
| RearSpringTypeID | Number (Long Integer) | Unique, system generated identifier from the SpringType table – for the rear of the vehicle. |

Table: SteeringConfig

| Field | Data Type | Description |
|------------------|-----------------------|--|
| SteeringConfigID | Number (Long Integer) | Unique, system generated identifier. |
| SteeringTypeID | Number (Long Integer) | Unique, system generated identifier from the SteeringType table. |
| SteeringSystemID | Number (Long Integer) | Unique, system generated identifier from the SteeringSystem table. |

Table: SteeringSystem

| Field | Data Type | Description/Example |
|--------------------|-----------------------|--------------------------------------|
| SteeringSystemID | Number (Long Integer) | Unique, system generated identifier. |
| SteeringSystemName | Text (30) | Steering system: Manual or Power. |

Table: SteeringType

| Field | Data Type | Description/Example |
|----------------|-----------------------|--------------------------------------|
| SteeringTypeID | Number (Long Integer) | Unique, system generated identifier. |

| | | |
|------------------|-----------|------------------------------|
| SteeringTypeName | Text (30) | Steering type: Gear or Rack. |
|------------------|-----------|------------------------------|

Table: SubModel

| Field | Data Type | Description |
|--------------|-----------------------|---|
| SubModelID | Number (Long Integer) | Unique, system generated identifier. |
| SubModelName | Text (50) | Name of submodel based on manufacturers marketing nomenclature. |

Table: Transmission

| Field | Data Type | Description/Example |
|------------------------------|-----------------------|---|
| TransmissionID | Number (Long Integer) | Unique, system generated identifier. |
| TransmissionBaseID | Number (Long Integer) | Unique, system generated identifier from the TransmissionBase table. |
| TransmissionMfrCodeID | Number (Long Integer) | Unique, system generated identifier from the TransmissionMfrCode table. |
| TransmissionElecControlledID | Number (Long Integer) | Unique, system generated identifier from the ElecControlledID table |
| TransmissionMfrID | Number (Long Integer) | Unique, system generated identifier from the Mfr table |

Table: TransmissionBase

| Field | Data Type | Description |
|---------------------------|-----------------------|---|
| TransmissionBaseID | Number (Long Integer) | Unique, system generated identifier. |
| TransmissionTypeID | Number (Long Integer) | Unique, system generated identifier from the TransmissionType table. |
| TransmissionNumSpeedsID | Number (Long Integer) | Unique, system generated identifier from the TransmissionNumSpeeds table. |
| TransmissionControlTypeID | Number (Long Integer) | Unique, system generated identifier from the TransmissionControlType table. |

Table: TransmissionControlType

| Field | Data Type | Description/Example |
|-----------------------------|-----------------------|---|
| TransmissionControlTypeID | Number (Long Integer) | Unique, system generated identifier. |
| TransmissionControlTypeName | Text (30) | Type of transmission or transaxle - Automatic, Standard, etc. |

Table: TransmissionMfrCode

| Field | Data Type | Description/Example |
|-----------------------|-----------------------|---|
| TransmissionMfrCodeID | Number (Long Integer) | Unique, system generated identifier. |
| TransmissionMfrCode | Text (30) | A manufacturer assigned model or unit designation code - AW03-72L, 4HP22H, etc. |

Table: TransmissionNumSpeeds

| Field | Data Type | Description/Example |
|-------------------------|-----------------------|--|
| TransmissionNumSpeedsID | Number (Long Integer) | Unique, system generated identifier. |
| TransmissionNumSpeeds | Text (3) | Number of forward speeds for transmission or transaxle - 3, 4, 5, etc. |

Table: TransmissionType

| Field | Data Type | Description |
|----------------------|-----------------------|--------------------------------------|
| TransmissionTypeID | Number (Long Integer) | Unique, system generated identifier. |
| TransmissionTypeName | Text (30) | Transmission or Transaxle. |

Table: Valves

| Field | Data Type | Description/Example |
|-----------------|-----------------------|---|
| ValvesID | Number (Long Integer) | Unique, system generated identifier |
| ValvesPerEngine | Text (3) | Total number of intake and exhaust valves in the engine – 8, 16, 24, etc. |

Table: VCdbChanges

| Field | Data Type | Description/Example |
|-------------|-----------------------|--|
| Versiondate | Date | Refers to the publication date of the VCdb |
| TableName | Text (30) | Refers to the name of a Table in the VCdb |
| ID | Number (Long Integer) | Unique, system generated identifier from a table in the VCdb |

| | | |
|--------|----------|--|
| Action | Text (1) | The Action made upon the record corresponding with the ID. Add (A), Delete (D), Change (C) |
|--------|----------|--|

Table: Vehicle

| Field | Data Type | Description/Example |
|------------------------|-----------------------|--|
| VehicleID | Number (Long Integer) | Unique, system generated identifier. |
| BaseVehicleID | Number (Long Integer) | Unique, system generated identifier from the BaseVehicle table. |
| SubModelID | Number (Long Integer) | Unique, system generated identifier from the SubModel table. |
| RegionID | Number (Long Integer) | Unique, system generated identifier from the Region table. |
| Source | Text (10) | Applies only to changes submitted by subscribers, not original data. Contains the source of the information, e.g. OE, internet, catalog. |
| PublicationStageID | Number (Long Integer) | Unique, system generated identifier to identify Publication Stage |
| PublicationStageSource | Text (100) | Source utilized to verify vehicle. |
| PublicationStageDate | Date | Date of last revision of the record. |

Table: VehicleToBedConfig

| Field | Data Type | Description/Example |
|----------------------|-----------------------|---|
| VehicleToBedConfigID | Number (Long Integer) | Unique, system generated identifier. |
| VehicleID | Number (Long Integer) | Unique, system generated identifier from the Vehicle table. |
| BedConfigID | Number (Long Integer) | Unique, system generated identifier from the BedConfig table. |

| | | |
|--------|-----------|--|
| Source | Text (10) | Applies only to changes submitted by subscribers, not original data. Contains the source of the information, e.g. OE, internet, catalog. |
|--------|-----------|--|

Table: VehicleToBodyConfig

| Field | Data Type | Description/Example |
|-----------------------|-----------------------|--|
| VehicleToBodyConfigID | Number (Long Integer) | Unique, system generated identifier. |
| VehicleID | Number (Long Integer) | Unique, system generated identifier from the Vehicle table. |
| WheelbaseID | Number (Long Integer) | Unique, system generated identifier from the Wheelbase table. |
| BedConfigID | Number (Long Integer) | Unique, system generated identifier from the BedConfig table. |
| BodyStyleConfigID | Number (Long Integer) | Unique, system generated identifier from the BodyStyleConfig table. |
| MfrBodyCodeID | Number (Long Integer) | Unique, system generated identifier from the MfrBodyCode table. |
| Source | Text (10) | Applies only to changes submitted by subscribers, not original data. Contains the source of the information, e.g. OE, internet, catalog. |

Table: VehicleToBodyStyleConfig

| Field | Data Type | Description/Example |
|----------------------------|-----------------------|---|
| VehicleToBodyStyleConfigID | Number (Long Integer) | Unique, system generated identifier. |
| VehicleID | Number (Long Integer) | Unique, system generated identifier from the Vehicle table. |

| | | |
|-------------------|-----------------------|--|
| BodyStyleConfigID | Number (Long Integer) | Unique, system generated identifier from the BodyStyleConfig table. |
| Source | Text (10) | Applies only to changes submitted by subscribers, not original data. Contains the source of the information, e.g. OE, internet, catalog. |

Table: VehicleToBrakeConfig

| Field | Data Type | Description/Example |
|------------------------|-----------------------|--|
| VehicleToBrakeConfigID | Number (Long Integer) | Unique, system generated identifier. |
| VehicleID | Number (Long Integer) | Unique, system generated identifier from the Vehicle table. |
| BrakeConfigID | Number (Long Integer) | Unique, system generated identifier from the BrakeConfig table. |
| Source | Text (10) | Applies only to changes submitted by subscribers, not original data. Contains the source of the information, e.g. OE, internet, catalog. |

Table: VehicleToClass

| Field | Data Type | Description/Example |
|------------------|-----------------------|--|
| VehicleToClassID | Number (Long Integer) | Unique, system generated identifier. |
| VehicleID | Number (Long Integer) | Unique, system generated identifier from the Vehicle table. |
| ClassID | Number (Long Integer) | Unique, system generated identifier from the Class table. |
| Source | Text (10) | Applies only to changes submitted by subscribers, not original data. Contains the source of the information, e.g. OE, internet, catalog. |

Table: VehicleToDriveType

| Field | Data Type | Description/Example |
|----------------------|-----------------------|--|
| VehicleToDriveTypeID | Number (Long Integer) | Unique, system generated identifier. |
| VehicleID | Number (Long Integer) | Unique, system generated identifier from the Vehicle table. |
| DriveTypeID | Number (Long Integer) | Unique, system generated identifier from the DriveType table. |
| Source | Text (10) | Applies only to changes submitted by subscribers, not original data. Contains the source of the information, e.g. OE, internet, catalog. |

Table: VehicleToEngineConfig

| Field | Data Type | Description/Example |
|-------------------------|-----------------------|--|
| VehicleToEngineConfigID | Number (Long Integer) | Unique, system generated identifier. |
| VehicleID | Number (Long Integer) | Unique, system generated identifier from the Vehicle table. |
| EngineConfigID | Number (Long Integer) | Unique, system generated identifier from the EngineConfig table. |
| Source | Text (10) | Applies only to changes submitted by subscribers, not original data. Contains the source of the information, e.g. OE, internet, catalog. |

Table: VehicleToMfrBodyCode

| Field | Data Type | Description/Example |
|------------------------|-----------------------|--|
| VehicleToMfrBodyCodeID | Number (Long Integer) | Unique, system generated identifier. |
| VehicleID | Number (Long Integer) | Unique, system generated identifier from the Vehicle table. |
| MfrBodyCodeID | Number (Long Integer) | Unique, system generated identifier from the MfrBodyCode table. |
| Source | Text (10) | Applies only to changes submitted by subscribers, not original data. Contains the source of the information, e.g. OE, internet, catalog. |

Table: VehicleToSpringTypeConfig

| Field | Data Type | Description/Example |
|-----------------------------|-----------------------|--|
| VehicleToSpringTypeConfigID | Number (Long Integer) | Unique, system generated identifier. |
| VehicleID | Number (Long Integer) | Unique, system generated identifier from the Vehicle table. |
| SpringTypeConfigID | Number (Long Integer) | Unique, system generated identifier from the SpringTypeConfig table. |
| Source | Text (10) | Applies only to changes submitted by subscribers, not original data. Contains the source of the information, e.g. OE, internet, catalog. |

Table: VehicleToSteeringConfig

| Field | Data Type | Description/Example |
|---------------------------|-----------------------|--|
| VehicleToSteeringConfigID | Number (Long Integer) | Unique, system generated identifier. |
| VehicleID | Number (Long Integer) | Unique, system generated identifier from the Vehicle table. |
| SteeringConfigID | Number (Long Integer) | Unique, system generated identifier from the SteeringConfig table. |
| Source | Text (10) | Applies only to changes submitted by subscribers, not original data. Contains the source of the information, e.g. OE, internet, catalog. |

Table: VehicleToTransmission

| Field | Data Type | Description/Example |
|-------------------------|-----------------------|--|
| VehicleToTransmissionID | Number (Long Integer) | Unique, system generated identifier. |
| VehicleID | Number (Long Integer) | Unique, system generated identifier from the Vehicle table. |
| TransmissionID | Number (Long Integer) | Unique, system generated identifier from the Transmission table. |
| Source | Text (10) | Applies only to changes submitted by subscribers, not original data. Contains the source of the information, e.g. OE, internet, catalog. |

Table: VehicleToWheelbase

| Field | Data Type | Description/Example |
|----------------------|-----------------------|--|
| VehicleToWheelbaseID | Number (Long Integer) | Unique, system generated identifier. |
| VehicleID | Number (Long Integer) | Unique, system generated identifier from the Vehicle table. |
| WheelbaseID | Number (Long Integer) | Unique, system generated identifier from the Wheelbase table. |
| Source | Text (10) | Applies only to changes submitted by subscribers, not original data. Contains the source of the information, e.g. OE, internet, catalog. |

Table: VehicleType

| Field | Data Type | Description/Example |
|--------------------|-----------------------|--|
| VehicleTypeID | Number (Long Integer) | Unique, system generated identifier. |
| VehicleTypeName | Text (50) | Car, Truck or Van. |
| VehicleTypeGroupID | Number (Long) | Unique, system generated identifier from the VehicleTypeGroup table. |

Table: VehicleTypeGroup

| Field | Data Type | Description/Example |
|----------------------|-----------------------|---|
| VehicleTypeGroupID | Number (Long Integer) | Unique system generated identifier |
| VehicleTypeGroupName | Text (50) | Aggregation of vehicle types. For example, Motorcycle and Snowmobile are VehicleTypes of the VehicleTypeGroup Powersports |

Table: Version

| Field | Data Type | Description |
|-------------|---------------|---|
| VersionDate | Smalldatetime | Date this version was released to the public. |

Table: WheelBase

| Field | Data Type | Description |
|-----------------|-----------------------|--|
| WheelBaseID | Number (Long Integer) | Unique, system generated identifier. |
| WheelBase | Text (10) | Wheelbase length represented in inches to one decimal point of precision |
| WheelBaseMetric | Text (10) | Wheelbase length represented in to one decimal point of precision. |

Table: Year

| Field | Data Type | Description |
|--------|-----------------------|---|
| YearID | Number (Long Integer) | Unique identifier for year - Note: value for year is the unique number. |

4. Parts Classification database (PCdb)

4.1 PCdb Mission Statement

Design, populate, and implement a data repository for coded hierarchical terminology describing replacement parts, service items and supplies commonly sold in the Automotive Aftermarket. The design of the database will support terminology for many industry segments, including Collision Repair, and will support classification of application-specific as well as generic commodities found in the Aftermarket. PCdb codes are central to the exchange of electronic catalog application data and serve to classify and categorize application records. The design of the database allows the hierarchy to be integrated into other automotive industry efforts such as the Product Information Exchange Standard (PIES).

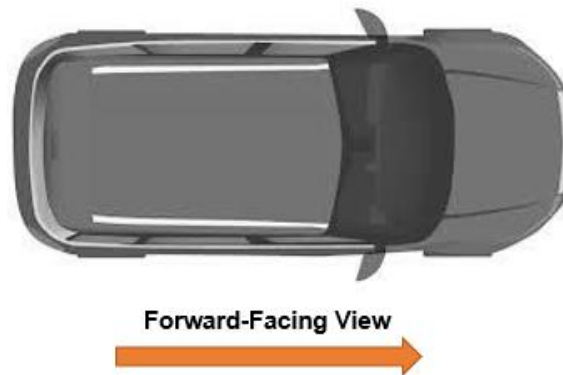
4.2 PCdb Structure

The Parts Classification Database is a normalized relational database. While each item in the PCdb hierarchy follows a single path from Category and SubCategory, there are no limitations issued by the designers on how PartTerminology (xml attribute:PartType) codes are classified. Trading Partners may agree on other, or multiple, Category and SubCategory classifications for a particular PartTerminology (xml attribute:PartType). In any case, only the lowest level will be delivered with an application.

4.3 Positions

PCdb Positions are only referenced in an ACES® Data Standard application record. A “position,” also referred to as a “location”, describes where a part is installed on the vehicle beyond what can be determined by the PartTerminologyName alone when there is more than one of the Part Terminology on the vehicle. (For example – Right, Left, Front, Rear, Dashboard, Headrest, etc...) The Positions table of the PCdb holds all unique positions that exist. Each part terminology is then assigned specific “valid” positions that can **only** be used for each part terminology. In ACES®, if the Position element is present in the file, it must use “valid” positions for the part terminology used.

The position/location of a product is determined from a forward-facing view, relative to others of the same part terminology on a vehicle. The position field allows users to communicate additional distinction in an ACES® file for vehicle fitment.



Position Example:

Part Number A and B are both Disc Brake Calipers (Part Terminology) which fit the same vehicle. Part Number A fits the “Front Left” and “Rear Right” positions of the vehicle only, while Part Number B fits the “Front Right” and “Rear Left” positions of the same vehicle only. The position field allows users to communicate this distinction in an ACES® file.

| Part Number | Part Terminology | Vehicle | QTY per car | Position |
|-------------|--------------------|-----------------|-------------|-------------|
| A | Disc Brake Caliper | 2005 Ford F-150 | 1 | Front Left |
| A | Disc Brake Caliper | 2005 Ford F-150 | 1 | Rear Right |
| B | Disc Brake Caliper | 2005 Ford F-150 | 1 | Front Right |
| B | Disc Brake Caliper | 2005 Ford F-150 | 1 | Rear Left |

Location Example: Part Number A and B are both a Speaker (Part Terminology) which fit the same vehicle. Part Number A fits the “A-Pillar (Left)” location (aka position) of a vehicle only, while Part Number B fits the “A-Pillar (Right)” location of the same vehicle only. The position field allows users to communicate this distinction in an ACES® file.

| Part Number | Part Terminology | Vehicle | QTY per car | Position |
|-------------|------------------|-----------------|-------------|------------------|
| A | Speaker | 2005 Ford F-150 | 1 | A-Pillar (Left) |
| B | Speaker | 2005 Ford F-150 | 1 | A-Pillar (Right) |

Position: N/A

By default, all part terminologies in the PCdb are assigned a Position of N/A (Position ID=1). The position N/A should never be delivered as a position on an ACES® application record. This default value is applied to all part terminologies in the PCdb because:

1. Not all part terminologies require ACES® applications to catalog.
 - a. Example: Bubble Gum
2. The part terminology exists only once on a specific vehicle, and there is no need to differentiate using position.

| Part Number | Part Terminology | Vehicle | QTY per car | Position | Explanation |
|-------------|-------------------|--------------------------|-------------|---|----------------------------------|
| 13-5987 | Engine Water Pump | 2005 Dodge Ram 1500 – V8 | 1 | The Position Element in ACES® would not be used for the application record | There is only ONE on the vehicle |

3. The part number/part terminology exists multiple times on a specific vehicle, and there is no need to differentiate using position.

| Part Number | Part Terminology | Vehicle | QTY per car | Position | Explanation |
|-------------|------------------|--------------------------|-------------|---|---|
| 36-5648 | Spark Plug | 2005 Dodge Ram 1500 – V8 | 8 | The Position Element in ACES® would not be used for the application record | The position of one spark plug to the next is irrelevant for a vehicle when they are all the same part. |

If an application record in ACES® does not require a position to be communicated, leave the Position element off the application record. Leaving the Position element off the application record indicates that a Position does not apply. In any case, the Position of N/A should never be delivered as a position on an ACES® application record.

4.4 Multifunction Parts

A Multifunction part is a single physical item that is used in more than one way on one or more vehicles. It is important to classify Multifunction Parts exactly as they are used on a vehicle. The use of the part on the vehicle is how the search will be done. Therefore, the PCdb must include all of the uses of a part in all vehicle applications.

Part to Use Table

To manage Multifunction Parts in the PCdb a PartsToUse table has been added to indicate whether each Part Terminology is appropriate for an ACES application file, a PIES Product Information file or both. The PartsToUse table joins Part Terminology ID's with Use codes from the Use table in valid combinations

- Use ID1 indicates the Terminology is appropriate for an ACES application file
- Use ID 2 indicates the Terminology is appropriate for a PIES product information file

4.5 PCdb Change Management

The PCdb will be updated as often as bi-monthly in response to petitions from the industry for changes and additions. In addition to a fully refreshed dataset, the Auto Care Association will publish documentation of all changes made to the PCdb. **All petitions will be accepted unless the petition duplicates an existing position.** This includes somewhat non-standard “positions” such as “AC to Alternator” for belt routing. This policy allows standardized positions and keeps positions out of free-form notes.

The delivery XML schema includes a header tag (PcdbVersionDate) to designate which version of the PCdb was used to code PartTerminology (PartType) and Position information.

5. Qualifier database (Qdb)

5.1 Overview

The Qualifier database (Qdb) is a standardized reference database to facilitate the management and exchange of information. The structure of the database ensures a high level of referential integrity and data validation.

The Qdb helps standardize terminology within the industry and reduce the number of potentially confusing free-form text expressions found in applications. The Qdb can replace free-form text notes with consistent terminology reducing redundant notes and inaccurate interpretation of unlimited free-form text formats. The Qdb streamlines communication making it easier to parse data into catalogs and increases the search-ability of data. Users can apply validation to Qdb data increasing reliability over free-form text which cannot be validated in scalable ways. Use of the Qdb generates more accurate, higher quality data.

Qualifiers not covered by a vehicle attribute will be contained in the Qdb. In general, only individual qualifiers are stored in the table. You can create compound expressions by joining multiple entries from this table. A placeholder (i.e. parameter) will replace variable data found in a qualifier. This mechanism greatly reduces the number of qualifiers stored in the table.

5.2 Reasons for having “Coded Qualifiers”

Faster selection of the correct part at the counter. If the terminology is standardized and the presentation of complex qualifiers is also standardized, there should be less training and experience required to understand and use the catalog.

More sophisticated data management opportunities. If all data is coded, it should be easier to match information from different sources. This might include OE (original equipment) data and VIO (vehicles in operation) data, for example. If you can match this information accurately, you should be able to make better product management decisions.

Centralized language translation. If all qualifiers are coded, it helps facilitate a centralized translation effort. Without a centralized Qdb, each sender would need to translate qualifier data independently.

5.3 Qdb Structure

The Qualifier Table contains six fields: QualifierID, QualifierText, ExampleText, QualifierTypeID, NewQualifierID, WhenModified. The QualifierID is a unique primary key for this table. The QualifierText

field contains the actual qualifier expression. The QualifierTypeID field is used to segment the table entries for special use (some examples are “Fitment”, “OE Only”, “Product” and “Installation”). The ExampleText field is used to provide assistance in selecting the correct qualifier and is especially helpful for qualifiers that have parameters. The NewQualifierID is used to supersede the current qualifier to another. Qualifiers with a NewQualifierID should not be used on new applications. Qualifiers with a NewQualifierID of “-1” should not be used and represent administrative or technical errors. The WhenModified field contains the date when the record was added or last changed.

5.4 Qdb Qualifier Grouping

The Qdb includes a GroupNumber table and a QualifierGroup table which allows qualifiers to be logically grouped. There was no mechanism in the Qdb to determine if qualifiers had a relationship to each other. All Qdb qualifiers were stand-alone entries that served as an application fitment note coding system. The addition of qualifier grouping provides knowledge regarding complementary grouping amongst qualifiers. This gives the industry greater optimization opportunities and deeper automated validation of ACES files.

Software cannot reliably know that “with Grease Fitting” (14695) and “without Grease Fitting” (18581) are complimentary branches in a decision tree.

Most groups will have two qualifiers each because the majority of groupings are binary (with/without). However, it is conceivable that there would be more than two qualifiers in a group. “with Aluminum Piston” (13008), “with Cast Iron Piston” (13480) and “with Phenolic Piston” (15950) could represent a logical grouping of qualifiers.

Qualifiers will be limited to only 1 group.

5.5 Qdb Version Control

The Qdb includes a Version table and a QdbChanges table (similar to the VCdb). Each release of the Qdb posts a new release date in the Version table and includes a list of changes to the qualifiers in the QdbChanges table.

Any changes to an existing qualifier definition (except simple spelling, punctuation or word choice that does not affect the current meaning) will result in a new QualifierID being assigned. The NewQualifierID field will contain a reference to the new Qualifier record.

The delivery XML schema includes a header tag (QdbVersionDate) to designate which version of the QDB was used to code the qualifier data.

5.6 Qdb Change Log

When data changes, changes are recorded in the Qualifier database (Qdb) change log tables*.

Qdb change log structure includes:

- A reference ID to what table is changing
- The primary key and the column (field) within the table that is changing
- The before and after values of the change
- An ID to identify the change (Add, Delete, Modify)
- A change table stating when the change occurred

*The Qdb change log tables were introduced in February 2018

5.7 Qdb Parameters

Qualifiers found in applications often contain common strings but may differ in small ways. For example, dates or serial numbers are often used to identify mid-year production changes (“From 2/20/98”, “To Chassis #92817820”).

Rather than create a new Qdb entry for every date or chassis number that might be needed, a “parameter” is used. Instead of “From 12/1/2002” for example, the entry would include just the static text (“From”) and leave a placeholder for the actual date.

All parameters found in the English (template) expression must be uniquely identified to support language translation. (It may be incorrect to simply rearrange the translation and then substitute parameters by the order they are found. The first parameter in English might become the second parameter in another language.) By convention, the first parameter tag in the English qualifier expression will be **p1**, the second **p2**, and so on.

Standard XML coding is used to define qualifier parameters. This provides flexibility to add validation or other features in the future (as with the “min” and “max” attributes, for example). The following table shows several qualifier examples that might be found in the Qdb:

| QualifierID | QualifierText |
|-------------|---|
| 1 | With Air Conditioning |
| 2 | From <p1 type="date"/> To <p2 type="date"/> |
| 3 | Except <p1 type="size"/> Wheels |

A parameter may also represent a list of related values. (For example 60, 70, 80 Amp Alternator, where “60, 70, 80” is the one parameter to the Qdb template: “<p1 type=“idlist”/> Amp Alternator”)

5.8 Qdb Parameter Types

The following table lists the available parameter types along with a description. These types are used in the parameter tags found in the Qualifier table (e.g. <p1 **type**=“num” min=“0” max=“100”/>).

| Type | Arguments | Description |
|---------------|-----------------|--|
| date | | A valid date in “m/d/y” or “m/y” format |
| idlist | | One or more identifying strings separated by a comma |
| name | | A company name, company brand, or geographic place. |
| num | <i>min, max</i> | A single whole, decimal or fractional number. “Shilling fractions” can be used (“2-1/2”), but symbol (case) fractions (“2½”) should not. It is left to the receiver to change presentation if desired. |
| part | | A related part number that must be mentioned with the application |
| phone | | Phone number |
| size | | A single whole, decimal or fractional number. A linear unit of measure (uom) is required when delivering size values. Valid uom strings include “in”, “ft”, “mm”, and “cm”. “Shilling fractions” can be used (“2-1/2”), but symbol (case) fractions (“2½”) should not. It is left to the receiver to change presentation if desired. |
| clock | | Used to indicate relative positions on a clock. For example “2 o’clock”. Valid values are whole numbers between 1 and 12. |
| type | | Similar to “name”, but specifically referring to a well-known term for a component that has become generic. |
| weight | | A single whole or decimal number. A weight unit of measure (uom) is required when delivering weight values. Valid uom strings include “mg”, “g”, “kg”, “oz”, “lb”, and “ton”. |

5.9 Qualifier Language Translation

Since many suppliers must deliver Canada (French) and Mexico (Spanish) catalog data, we need to provide support for non-English translations for each qualifier expression. Complicating matters is the fact that some languages require phrases to be rearranged so they can be expressed correctly. In addition, the formatting of certain parameters such as **dates** and **decimal numbers** may need to be changed according to the rules of the target language.

If a receiver of a file wants to translate a qualifier to French for the Canadian market, they might look up the French version of QualifierID 2 above in a translation table and find:

À Partir De <p1 type="date"/> Jusqu'à <p2 type="date"/>

They could then make the required substitutions to generate the following French translation:

À Partir De 1980-05-01 Jusqu'à 1980-10-01

Notice the date formats were localized properly for the target language. This translation method will work as long as a standard date format is used for English and the parameter values themselves do not need to be translated. When substituting parameter data, the parameter positions must match the parameter numbers in the qualifier expression (p2 may actually appear before p1 in the translated text). See [Section 6 – Application Data Transfer File below](#) for more information.

5.10 Qdb Review Process

The Qdb will be updated as often as daily in response to petitions from the industry for changes and additions. All petitions following the rules will be accepted. With the addition of the Qdb change log, existing Qdb entries can be deleted with 30-day notification. Word changes to an existing entry will never be allowed to change meaning.

Qdb Submissions

Qdb Submissions may be made one at a time or in batch by uploading a file in a Contact Us message. Both submissions must be made through the autocarevip.com website interface.

6. Application Data Transfer File

The Application Data Transfer File ("Transfer File") is the mechanism used to transmit new (or changed) catalog records between data partners. Its physical characteristics, format and content are described in this section.

6.1 Transfer File Purpose

The purpose of the Transfer File is to provide a predictable record format and syntax that can be widely used to exchange application-driven data coded to the relational databases, collectively referred to as the Aftermarket Catalog Exchange Standards (ACES). By publishing a recommended data format, data partners can devote more resources to quality assurance and presentation of the data, and fewer resources to communication of the data.

This record format must not impose a technology requirement for either party beyond what is commonly used in the industry today. The format should impose rules and minimum requirements that reflect the needs of all major data partners. However, the format should be easily customized to meet specific data partner requirements.

6.2 Physical Characteristics

The Transfer File must include only plain text delimited by "valid" XML tags (as defined below). A CR/LF (ASCII 13,10 decimal) should separate lines and the text should use UTF-8 character encoding. An example of this format is included in Appendix B.

6.3 Transfer File Naming Convention

The file name should include the company, a short catalog title, the delivery date (yyyy-mm-dd) and the word "FULL", "UPDATE", or "TEST" all separated by underlines and an ".xml" extension. For example:

ACMESupply_BrakeHardware_2001-01-18_FULL.xml

When delivering one or more Transfer Files, use an archiving program (such as WinZip, or Windows XP "Compressed (zipped) Folders") to compress the files into a single ZIP archive. Name the archive as above but without the catalog title and with a ".zip" extension. (**Note**, to remain compatible with older versions, use only classic pkzip "deflate" format, not PPMd or bzip2 formats now available in WinZip 10 and later).

6.4 Delivering Changes Only

As indicated in Section [6.3](#), there are two ways to deliver (non-test) application data (1) all applications found in the catalog ("FULL"), and (2) only changes made to the catalog since the last delivery ("UPDATE"). The "action" attribute is used to indicate changes. All records in the initial FULL load of a catalog should be coded with an "A". If desired, after the initial FULL load with a trading partner, updates can be sent instead of the entire file. When delivering updates, only transmit applications that are new or have changed in some way. Changes are accomplished with a pair of "D" (delete) and "A" (add) records. The "D" record should match the existing record as originally delivered, and the corresponding "A" record should contain the information as you now want it stored.

If you originally delivered a year-range application and you now want to change a single year of that range, it is acceptable to delete one year using the old information and add the updated information for that year.

6.5 ACES Root Element

XML documents must contain a single begin and end tag to define the "root" element. All other elements must be nested within this root element. The **ACES** tag is the root element for ACES data files and contains a single "version" attribute. There are currently three valid values for the version attribute: "4.0", "4.1" or "4.2".

```
<ACES version="4.2">
```

```
<Header>...</Header>
```

```
    <App>...</App>
```

```
    <Asset>...</Asset>
```

```
    <DigitalAsset>...</DigitalAsset>
```

```
<Footer>...</Footer>
```

```
</ACES>
```

All versions are included in the current specification and XML schema files. Receivers of ACES data should check the version number to determine how to interpret the file; however, each schema version is designed to be backward compatible.

6.6 Header Information

Information is included at the beginning of the Transfer File to describe what is being delivered as well as the company and contact information. See the valid header tags in section [6.12](#) below. The order of the tags within the header is defined by the XML schema. (See section [6.7](#) for more information on XML element ordering). All “required” header tags must be included.

6.7 Applications

Catalog data should only include the information necessary to unambiguously select the correct part. The following information is required for each application: (1) Vehicle Identification, (2) Part Type, (3) Part Number, and (4) Part Quantity. Optionally, you may include (5) Vehicle Attributes, (6) Comments, and (7) Position information as necessary.

Vehicle Identification

Either a Base Vehicle (which by definition includes a year) or a Make / Year-Range combination must be included with each application. (In practice, Make / Year-Range by itself is not very useful without adding optional Vehicle Attributes such as Model, Engine or Transmission.) Some data receivers may not accept both methods or may require one over the other.

ACES 4.0 included In addition to vehicle applications, equipment content could also be sent. Either an Equipment Base or a Manufacturer, Equipment Model and Vehicle Type must be sent with each equipment application.

ACES 4.2 included in addition to vehicle and equipment applications, catalog applications for vehicle systems may also be sent. Cataloging by vehicle systems will follow the Equipment format for identifying the system.

Examples of systems that will be added to the VCdb include, but are not limited to: Axles, Trailers and Containers, Converter Dollies, Compressors, Tire Inflation Systems, Mechanical Refrigeration Units and Crate Engines.

System attributes not included in the Equipment format may be communicated with Qdb qualifiers.

Check with your trading partner before sending application data.

Part Type (Part Terminology)

A valid Part Terminology ID, the lowest level of the Product Classification Database (PCdb), must be included with each application. Position information, if supplied, will be validated against this ID.

Part Number

A single part number, formatted for end-user viewing, should be included with each application. Do not include parenthetical information (e.g. quantity, position or footnote information) with the part number (this information is handled separately).

Part Quantity

All applications must contain a “Per Car Quantity” that reflects the appropriate number of parts needed for the given part number, part type and vehicle.

If the application (or part description) contains Position information (e.g. Brake Hose-Left Rear) the “Per Car Quantity” should reflect the number for that specific Position (in this case “1”). If the application does not contain *complete* Position information for the vehicle, but instead refers to multiple Positions, the “Per Car Quantity” should reflect the total quantity associated with that part number. For instance, if the vehicle has two “Brake Hose-Rear” applications that use the same part number, then the quantity would be “2”. (In this case, “Brake Hose-Rear” might be used to mean both Left Rear and Right Rear). See example below.

| Description | Part Number | Per Car Quantity |
|-----------------------|-------------|------------------|
| Brake Hose-Left Rear | 1234 | 1 |
| Brake Hose-Right Rear | 1234 | 1 |
| Brake Hose-Rear | 1234 | 2 |

For parts that are typically purchased one at a time and cannot be validated using the Valid Vehicle Table (e.g., Wheel Bolts or Lug Nuts) the “Per Car Quantity” should be “1”. It is very unlikely that someone will want to purchase a full set of wheel bolts or lug nuts.

Consideration should be given to the “Per Car Quantity” for sets. For instance, a vehicle may have two Valve Cover Gaskets but if they are packaged as a “set” then the “Per Car Quantity” should be “1”.

Vehicle Attributes

All ID fields that make up the vehicle, equipment, system or engine configuration (as defined in the VCdb) may be used to further qualify (i.e., limit the scope of) an application. These vehicle attributes are references to an identifier (primary key) in a related table. For example, ID 10 in the BodyType table represents a “Convertible”. Since only the ID is used, there is no concept of “Except” when using these vehicle attribute fields. (See Section [6.7.6](#))

One or more of these “vehicle attribute” tags may be used on a single application. If more than one of these tags is used in an application, however, they will be interpreted to be joined with a logical “AND.” As a result of this rule, it is not valid to use two of the same vehicle attribute tags in an application (e.g., a vehicle cannot be both a Coupe and a Sedan).

Special codes (also called “Abbreviations” in the VCdb) are used as attribute values to indicate missing data. Vehicle attribute IDs containing one of these abbreviations should **not be used** when delivering applications.

| Abbreviation | Description | Explanation |
|--------------|----------------------|--|
| - | Intentionally blank. | Indicates the attribute was intentionally left blank because it is both VCdb and Legacy, and the Legacy value was blank. Also used for Wheelbase for cars, since Wheelbase was not populated for cars. |
| N/A | Not Available | Indicates the attribute was researched, but no information is available at this time. |
| N/R | Not Required | Indicates the attribute is not required for the vehicle. |
| U/K | Unknown | Indicates the attribute has not been researched yet. |

Except Logic

As mentioned above, there is no direct support for Except Logic with Vehicle Attributes. Instead, you must translate the Excepted Expression into positive logic. This is possible in most cases because the VCdb supplies the complete list of valid attributes for a vehicle.

Excepted Attributes when Values are Not Known

Vehicles before 1975 and vehicles with incomplete information (N/A or U/K values), however, will not have a complete list of valid attributes. In these cases, you should include the **Excepted Expression** as a Note (e.g., <Note>Exc. Sedan</Note>).

Qualifiers [ACES 2.0+]

Any qualifiers needed for an application should be delivered using one or more **Qual** tags. The Qual tag (1) references a primary key in the Qualifier table, (2) provides optional **param** elements as necessary, and (3) shows the expanded qualifier expression in a required **text** element. The following is an example of a simple qualifier referencing a Qdb entry (123, “With Air Conditioning”).

Qual id="123">

<text>With Air Conditioning</text>

</Qual>

The text element is required to help with early adoption of coded qualifiers. All qualifiers on an application must be coded. The Note tag is only to be used for Excepted attribute strings on vehicles where the attributes are not researched or are unknown.

Use a **param** tag to deliver parameter values for qualifiers that need them. The order of the param tag is important and should match the order implied by the numbered parameters. For example:

Qdb: 1797, Camber Adjustment From <p1 type="num"/> to <p2 type="num"/> Degrees

```
xml:  <Qual id="1797">
      <param value="1"/>    <-- 1st parameter -->
      <param value="2"/>    <-- 2nd parameter -->
      <text>Camber Adjustment From 1 to 2 Degrees</text>
    </Qual>
```

Decimal and Fractional Parameters

Certain parameter types (e.g., “num”, “size” and “weight”) may include decimal or fractional values. The following table shows several common values in both fractional and decimal form:

| Value | Fractional | Decimal |
|------------------|------------|---------|
| Three Quarters | 3/4 | 0.75 |
| One and One-Half | 1-1/2 | 1.5 |
| Nine Sixteenths | 9/16 | 0.5625 |

The parameter concept allows you to deliver the number in either format as long as mixed fractions are delivered in a standard way (i.e. #-#/#). For example,

```
<param value="1-1/2"/>
```

With these conventions, the receiver can check for a valid value and perform format conversions as necessary. In most cases, the data will be displayed exactly as received (as a fraction or a decimal), so you should use the format you would most like to see published.

Unit of Measure for Parameters

Certain parameter types (e.g. “size” and “weight”) must include a “unit of measure” (uom) value along with their actual value. For example,

Qdb: 100, With <p1 type="size"/> Diameter Alternator Case


```
xml:  <Qual id="100">
      <param value="4-3/4" uom="in"/>
      <text>With 4-3/4" Diameter Alternator Case</text>
    </Qual>
```

The **uom** attribute of the param tag tells the receiver what measurement the value represents. There is a small list of valid values for the uom attribute. For example: “in”, “mm”, “lb”, “kg”, “g”. (See the table in Section [5.8](#)).

It is important to remember that the display of the qualifier is up to the “presenter.” They could choose to display “With 4.75 inch Diameter Alternator Case”, for example.

Alternate Values for Parameters

If you want to deliver two representations for the same value (in different units), use the **altvalue** and **altuom** attributes of the param tag.

```
xml: <param value="4-3/4" uom="in" altvalue="120" altuom="mm"/>
```

It would then be up to the presenter to put the alternate value in parenthesis (or in some other form to indicate the equivalent value).

Representing Complex Expressions

When translating paper catalogs to electronic form, it's common to find applications with complex qualifier expressions (possibly created to save space). Here are a few example expressions that include OR logic:

1. 4WD Japan Built or RWD
2. Convertible or Sedan w/Disc Brakes
3. 8" Diameter Booster w/ABS or 10" Diameter Booster

Since Vehicle Attribute/Qualifier tags on an application are combined logically with “AND”, we need a way to represent “OR”. The solution is to create separate applications. Here is the coding for the first expression shown above. Notice two applications were created. (Some required tags are not shown).

```
<App action="A" id="1" ref="1">
  <DriveType id="8">4WD</DriveType>
  <Note>Japan Built</Note>
</App>
```

```
<App action="A" id="2" ref="1">
  <DriveType id="7">RWD</DriveType>
</App>
```

The second example is like the first, except you need to interpret what it means. It could mean the part fits all Convertibles as well as Sedans with Disc Brakes. Or it could mean it fits all Convertibles with Disc Brakes as well as all Sedans with Disc Brakes. A further complication is the need to designate the correct front or rear brake tag (<FrontBrakeType id="5"/>). A similar problem is found with 2 and 4 wheel ABS. The third example shown above would produce the following three applications (assuming the vehicle came with both 2/4 ABS):

| | |
|---|---|
| <App action="A" id="1" ref="3"> | <App action="A" id="2" ref="3"> |
| <BrakeABS id="7">2-Wheel ABS</BrakeABS> | <BrakeABS id="8">4-Wheel ABS</BrakeABS> |
| <Note>8" Diameter Booster</Note> | <Note>8" Diameter Booster</Note> |
| </App> | </App> |
| | |
| <App action="A" id="3" ref="3"> | |
| <Note>10" Diameter Booster</Note> | |
| </App> | |

Applications written with “Except” logic can be particularly challenging since Except is not supported on vehicle attributes. (Except can be included in Vehicle Qualifier text, however). The following rules (known as DeMorgan’s Laws) can be used to translate Except logic in your applications.

Exc. (A and B) ↔ Exc. A or Exc. B

Exc. (A or B) ↔ Exc. A and Exc. B

An understanding of these rules is necessary because parentheses are often implied in many real-world expressions (and since this kind of grouping is not supported in the delivery of applications). These rules can be used to put applications in the form: (A and B) or (C and D) or (E and F). It is then a simple matter to split the ORed applications as required (in this case, into three separate applications).

Comments

Any additional information not covered by a vehicle attribute or qualifier tag should be included in a *Note* tag. The Note tag contains free-form text and should be used primarily for informational comments (i.e. comments not used to determine which part fits which vehicle). Normally, this text would contain information the manufacturer wants the catalog reader to be aware of when ordering a part. An example of this type of comment might be an installation instruction such as “Coil wire modification required. Splice in original connector.” (See the <Note> tag in Section [6.12](#) for more information).

It is preferred that logically distinct notes be placed in separate <Note> tags for an application (multiple note tags are allowed in a single application). It should be understood, however, that these notes would most likely be appended together and displayed without further modification. An optional ID may be included as an attribute of the note tag to reference an external comment file. Since this external comment file must be agreed upon between trading partners, this method should be considered less universal.

Position

Position is used to indicate where the part should be applied to the vehicle. The position ID is validated against the Part Terminology used on the application (by the CodeMaster table in the PCdb) and may only be used if valid on that Part Terminology. (See Section [4.3](#) for more information).

MfrLabel

MfrLabel is an optional text field that permits a manufacturer to specify the part label used to describe their specific parts. The label is a short description of the specific part or a manufacturer specified part differentiation. It is also useful when the part description is **more specific** than the Part Terminology being used.

Example: Platinum and Copper core spark plugs are provided in the same Part Terminology. The manufacturer again wishes to differentiate these parts by using a specific part label.

DisplayOrder

DisplayOrder is an optional field that permits a manufacturer to specify the order in which parts are presented for display in an electronic catalog. The order value is used when multiple parts are available for a specific application within a part type.

Example 1: A Spark plug wire manufacturer offers 3 different wire sets for each application. They wish to dictate that the premium wire should always display first, followed by the better grade, and finally the standard grade.

Example 2: A tailpipe for a specific vehicle is composed of multiple pieces. The manufacturer wishes to display the parts in order from Front-to-Rear to avoid confusion.

6.8 Digital Assets

ACES supports looking up *any type* of content, not just part numbers. This content could include *application-specific* digital assets such as diagrams (exhaust, belts, suspension, etc.), technical bulletins,

installation instructions; vehicle images, etc. (Note that part-specific digital asset links are defined using PIES). See Appendix D for further information and examples. As of this release, 3 types of asset references are defined: Application, Vehicle and Digital File Information.

Logical Asset Identifier (AssetName Element)

Key to delivering application or vehicle level digital assets is the concept of a logical asset identifier. A manufacturer will often have several “physical” files (different formats, resolutions, URL's, etc.) representing a single digital asset for the App or Asset. A key reference to these files, as defined in the DigitalFileInformation element, is represented by a “logical” name for each file. The AssetName element references this logical name and is valid in the App and Asset elements. Each physical file intended to be referenced by the App or Asset element containing an AssetName element should be represented in a DigitalFileInformation element with the same AssetName attribute.

Application Level Assets (within the App Element)

The delivery of an application-specific digital asset is optional to deliver a single application with the use of the AssetName element.

Vehicle Level Assets (within the Asset Element)

A digital asset may be vehicle specific as opposed to a part number specific. This element is identical to the App element but without the Part, Part Type, Position, Qty, DisplayOrder, AssetItemOrder and AssetItemRef elements.

Stand Alone Digital Assets Metadata (DigitalAsset Element)

In addition to supplying relational information between an Asset and a vehicle or application, the metadata of the actual asset is needed when providing digital assets within an ACES file to help with easy consumption of the data by data receivers. Within the DigitalAsset container includes the DigitalFileInformation element. The DigitalFileInformation element is comprised of sub-elements that further define the actual asset. The AssetName is an attribute of the DigitalFileInformation (and is required) that will provide the key relationship to the asset's use via the AssetName element in the Application (App element) or Vehicle assets (Asset element). Each physical file that needs to be referenced by an App element or Asset element should be delivered in a DigitalFileInformation element with the same AssetName attribute.

Identifying Asset Elements

While the part number is the focus of an application record. When identifying an item in a diagram, additional App elements available to help indicate *portions* of a digital asset: AssetItemOrder, AssetItemRef.

- **AssetItemOrder** is optional to show relative position (usually front-to-rear, and when applicable left-to-right.).
- **AssetItemRef** is optional to use when Part and AssetItemOrder don't apply. AssetItemRef is used to ensure proper identification within the image, but how this identifier may be used is left to the receiver.

6.9 Footer Information

Footer Information is included in the Transfer File to indicate the end of the data and provide a count of the applications transferred.

6.10 General Rules

1. Catalog applications should be able to "stand alone." Context cannot be guaranteed when applications are displayed in an electronic catalog.
2. Only include information that is necessary to determine the proper part to use.

6.11 Delivering Invalid Applications

While it is possible to deliver applications with vehicle and attribute combinations not found in the VehicleTo configuration tables, this is usually not a good practice and most likely would result in those applications being removed by the receiving trading partner. An exception is made for applications with "un-researched" attributes (N/A, U/K). **These attributes should be delivered using normal coded tags.** Applications that are unable to be represented by identifiers in the VCdb should not (and indeed cannot) be delivered. (See Appendix C for more information on this topic.)

A method for subscribers to petition for changes and additions to the VCdb is available at:
autocarevip.com.

To reduce confusion with the following abbreviations N/R, N/A, and N/S, definitions have been provided.

N/R – Not Required

A data supplier may feel the need to send an N/R when a vehicle does not contain a part applicable to their product line or the vehicles covered within their data set. If the vehicle did not have a certain part, there is no need to send any information for this vehicle.

If a part is not required on a vehicle, (it did not come with it), a customer will not look to replace the nonexistent part on their vehicle, and therefore it does not need to be in the catalog. The industry has discussed Negative Fitments, and does not wish to pursue this approach. This would require significantly more records to represent all the non-applicable combinations of car parts to cars. This exercise would not provide value for members.

N/A - Not Applicable

See N/R

N/A – Not Available

If a data supplier does not currently have a part number for an application, but does have application information for a new part number yet to be determined, the N/A should **NOT** be used as a place holder for future applications.

A data supplier should not send data until the valid information can be provided.

N/S – Not Serviceable or Non-Serviceable

This can be used in instances in which a part does exist on a vehicle but due to vehicle configuration the part cannot be replaced. It is not intended to be used if a data supplier does not make a replacement part for a specific application. In most instances these applications are identified by the OE as Non-Serviceable.

Data can be provided for applications in which an OE Manufacture may list an application as N/S however a data supplier has come up with a Solution to provide a replacement part for this application.

The key will be to ensure the fitment note specifies replacing this part may require 'Modification to the Original Vehicle Configuration'.

6.12 XML Elements

This section defines the valid XML Elements that may be used in the Transfer File (in alphabetical order).

XML Element lists the XML name for this field per the ACES XML Schema. When used within an ACES file they will include an opening and closing tag, Example would be <App></App>. Note that the second tag includes “/” which comes before the name, this denotes that this is the closing element.

XML Attribute lists the XML attribute name(s) for the field per the ACES XML Schema.

Segment lists the specific area within the XML the element is used.

Requirement is part of the Segment column there are two values: req = required, opt = optional.

Description will contain general descriptive information about each element.

The **Example XML Code** cell will show data value samples from most fields.

| XML Element | XML Attribute | Segment Requirement | Description | Example XML Code |
|-------------|---------------|------------------------|---|---|
| ACES | version | Structure req | Root element. Top level document tag. The version attribute should contain the ACES version number (currently “4.0”, “4.1” or “4.2”). | <ACES version="4.2"> <Header>...</Header> <App>...</App> <Asset>...</Asset> <DigitalAsset>...</DigitalAsset> <Footer>...</Footer> </ACES> |

| XML Element | XML Attribute | Segment Requirement | Description | Example XML Code |
|-----------------------------|---------------------------|-------------------------|---|---|
| App | action, id, ref, validate | Structure <i>opt</i> | Groups information that defines an application. One or more can be used in the file. The action attribute can be “A” or “D” (for add or delete). The id attribute should be a sequential number that uniquely identifies this application in the transfer file. Both the action and id attributes are required. The ref attribute can optionally be used to reference a source record. The “validate” attribute defaults to “yes”. If “no”, the receiver will not validate the application against the VehicleTo tables. | <App action="A" id="234"> ... </App> |
| ApprovedFor (DEPRECATED) | None | Header <i>opt</i> | Groups information that defines which countries applications are approved for. | <ApprovedFor> <Country>US</Country> <Country>CA</Country> </ApprovedFor> |
| Aspiration | id | VehAttr <i>opt</i> | References the Aspiration table. AspirationID should be used for valid values of the id attribute. | <Aspiration id="74"/> |

| XML Element | XML Attribute | Segment Requirement | Description | Example XML Code |
|------------------|---|--------------------------------|---|---|
| Asset | action, id, ref, validate ACES 3.0.1 | Structure <i>opt</i> | Groups information that defines an asset lookup. The action attribute can be “A” or “D” (for add or delete). The id attribute should be a sequential number that uniquely identifies this application in the transfer file. Both the action and id attributes are required. The ref attribute can optionally be used to reference a source record. The “validate” attribute defaults to “yes”. If “no”, the receiver will not validate the application against the VehicleTo tables. | <Asset action="A" id="234"> ... </Asset> |
| AssetDescription | None | DigitalAsset <i>opt</i> | Free text field to describe the application-specific digital asset. | <AssetDescription>High resolution image from brochure</AssetDescription> |
| AssetDimensions | UOM | DigitalAsset <i>opt</i> | Groups Asset Dimensions together for height and width of the application-specific digital asset. | <AssetDimensions UOM="PX"> <AssetHeight>250</AssetHeight> <AssetWidth>250</AssetWidth> </AssetDimensions> |

| XML Element | XML Attribute | Segment Requirement | Description | Example XML Code |
|----------------|------------------|-----------------------------------|--|------------------------------------|
| AssetHeight | None | DigitalAsset <i>opt</i> | Vertical measurement of application specific digital asset file. | <AssetHeight>250</AssetHeight> |
| AssetItemOrder | None ACES 3.0 | App <i>opt</i> | To support application-specific Digital Assets. | <AssetItemOrder>1</AssetItemOrder> |
| AssetItemRef | None ACES 3.0 | App <i>opt</i> | To support application-specific Digital Assets. | <AssetItemRef>A</AssetItemRef> |
| AssetName | None ACES 3.0 | App DigitalAsset <i>opt</i> | To support application-specific Digital Assets. | <AssetName>A12345</AssetName> |
| AssetType | None | DigitalAsset <i>opt</i> | Code identifying the Asset Type of the application-specific Digital Asset. | <AssetType>BRO</AssetType> |
| AssetWidth | None | DigitalAsset <i>opt</i> | Horizontal measurement of application-specific digital asset file. | <AssetWidth>250</AssetWidth> |
| Background | None | DigitalAsset <i>opt</i> | Code identifying the Background of the application-specific Digital Asset. | <Background>WHI</Background> |

| XML Element | XML Attribute | Segment Requirement | Description | Example XML Code |
|--------------|---------------|---------------------------|---|---|
| BaseVehicle | id | VehAttr <i>opt</i> | References the BaseVehicle table. BaseVehicleID should be used for valid values of the id attribute. One of the following must be sent in the Vehicle Ident Group: a Base Vehicle ID; a Make / Year or Make / Year-Range combination must be included with each application; a Base Equipment ID; or a Mfr / Equipment Model / Vehicle Type | <BaseVehicle id="9946"/> <!-- 2002 Ford Taurus --> |
| BedLength | id | VehAttr <i>opt</i> | References the BedLength table. BedLengthID should be used for valid values of the id attribute. | <BedLength id="3"/> <!-- 72.0 inches --> |
| BedType | id | VehAttr <i>opt</i> | References the BedType table. BedTypeID should be used for valid values of the id attribute. | <BedType id="5"/> <!-- Stepside --> |
| BodyNumDoors | id | VehAttr <i>opt</i> | References the BodyNumDoors table. BodyNumDoorsID should be used for valid values of the id attribute. | <BodyNumDoors id="1"/> <!-- 2 Doors --> |
| BodyType | id | VehAttr <i>opt</i> | References the BodyType table. BodyTypeID should be used for valid values of the id attribute. | <BodyType id="4"/> <!-- Sedan --> |
| BrakeABS | id | VehAttr <i>opt</i> | References BrakeABS table. BrakeABSID should be used for valid values of the id attribute. | <BrakeABS id="7"/> <!-- 2-Wheel ABS --> |

| XML Element | XML Attribute | Segment Requirement | Description | Example XML Code |
|-------------|----------------------|--|---|---|
| BrakeSystem | id | VehAttr <i>opt</i> | References the BrakeSystem table. BrakeSystemID should be used for valid values of the id attribute. | <BrakeSystem id="5"/> <!-- Power --> |
| BrandAAIAID | None ACES 3.0 | Header <i>opt</i> | The default brand for the file. This element is optional but strongly recommended. It is a 4 character reference to the "Brand Code" level of the Brand table. | <BrandAAIAID>BBBB</BrandAAIAID> |
| ColorMode | None | DigitalAsset <i>opt</i> | Code identifying the ColorMode of the application-specific Digital Asset. | <ColorMode>RGB</ColorMode> |
| Company | None | Header <i>req</i> | The company delivering the data. | <Company>ACME Mfg.</Company> |
| Country | None | Header DigitalAsset <i>opt</i> | Child Element of PartsApprovedFor.and DigitalFileInformation. ISO published a document 3166-1 that catalogs all the ISO "Country Codes." County Codes are 2-letters (alpha). Example United States = US. The PIES standard uses this table and it is recommended that these codes be used here as well. | <Country>US</Country> |

| XML Element | XML Attribute | Segment Requirement | Description | Example XML Code |
|------------------------|--|--------------------------------|---|--|
| CylinderHeadType | id | VehAttr <i>opt</i> | References the CylinderHeadType table. CylinderHeadTypeID should be used for valid values of the id attribute. | <CylinderHeadType id="6"/> <!-- DOHC --> |
| DigitalFileInformation | AssetName <i>action</i> LanguageCode | DigitalAsset <i>opt</i> | Groups information that defines the application-specific digital asset meta data. The action attribute can be "A" – Add, "D" – Delete. The AssetName attribute should be a group identifier for digital assets in the transfer file. Both the action and AssetName attributes are required. The languagecode attribute is used to reference the language of textual values. Values come from the ISO 639-1 table. | <DigitalFileInformation AssetName="234" action="A" LanguageCode="en" > ... </DigitalFileInformation> |
| DisplayOrder | None | App <i>opt</i> | Allows a manufacturer to specify the order in which parts are presented for display in an electronic catalog. The order value is used when multiple parts are available for a specific application within a part type. | <DisplayOrder>1</DisplayOrder> |
| DocFormNumber | None | Header <i>opt</i> | Catalog Form number | <DocFormNumber>F02991</DocFormNumber> |

| XML Element | XML Attribute | Segment Requirement | Description | Example XML Code |
|------------------|---------------|--|--|--|
| DocumentTitle | None | Header <i>req</i> | Catalog name or other identifying information | <DocumentTitle>ACME Brake Hardware</DocumentTitle> |
| DriveType | id | VehAttr <i>opt</i> | References the DriveType table. DriveTypeID should be used for valid values of the id attribute. | <DriveType id="5"/> <!-- FWD --> |
| EffectiveDate | None | Header <i>req</i> DigitalAsset <i>opt</i> | The date shown on the catalog. Format is CCYY-MM-DD where "CC" represents the century, "YY" the year, "MM" the month and "DD" the day. Zero fill if necessary. | <EffectiveDate>2000-06-01</EffectiveDate> |
| EngineBase | id | VehAttr <i>opt</i> | References the EngineBase table. EngineBaseID should be used for valid values of the id attribute. | <EngineBase id="315"/> <!-- V6 3.0L --> |
| EngineBlock | id | VehAttr <i>opt</i> | References the EngineBlock table. EngineBlockID should be used for valid values of the id attribute. | <EngineBlock id="117"/> |
| EngineBoreStroke | id | VehAttr <i>opt</i> | References the EngineBoreStroke table. EngineBoreStrokeID should be used for valid values of the id attribute. | <EngineBoreStroke id="10"/> |

| XML Element | XML Attribute | Segment Requirement | Description | Example XML Code |
|-------------------|---------------|---------------------------|--|--|
| EngineDesignation | id | VehAttr <i>opt</i> | References the EngineDesignation table. EngineDesignationID should be used for valid values of the id attribute. | <EngineDesignation id="22"/> <!-- 2TC --> |
| EngineMfr | id | VehAttr <i>opt</i> | The manufacturer that actually built the engine. References the Mfr table. MfrID should be used for valid values of the id attribute. | <EngineMfr id="544"/> <!-- Ford --> |
| EngineVersion | id | VehAttr <i>opt</i> | References the EngineVersion table. EngineVersionID should be used for valid values of the id attribute. | <EngineVersion id="45"/> <!-- Cleveland --> |
| EngineVIN | id | VehAttr <i>opt</i> | References the EngineVIN table. EngineVINID should be used for valid values of the id attribute. | <EngineVIN id="15"/> <!-- X --> |
| EquipmentBase | id | VehAttr <i>opt</i> | References the EquipmentBase table. EquipmentBaseID should be used for valid values of the id attribute. Either the EquipmentBase tag or the Mfr, EquipmentModel and VehicleType tags are required for each application. | <EquipmentBase id="101"/> |

| XML Element | XML Attribute | Segment Requirement | Description | Example XML Code |
|------------------|---------------|--------------------------------|--|---|
| EquipmentModel | id | VehAttr <i>opt</i> | If a EquipmentBase tag is not used in an application, an EquipmentModel tag must be supplied. | <EquipmentModel id="42"/> |
| ExpirationDate | None | DigitalAsset <i>opt</i> | The date shown on the catalog. Format is CCYY-MM-DD where "CC" represents the century, "YY" the year, "MM" the month and "DD" the day. Zero fill if necessary. | <ExpirationDate>2000-06-01</ExpirationDate> |
| FileDateModified | None | DigitalAsset <i>opt</i> | The date shown on the catalog. Format is CCYY-MM-DD where "CC" represents the century, "YY" the year, "MM" the month and "DD" the day. Zero fill if necessary. | <FileDateModified>2000-06-01</FileDateModified> |
| FileName | None | DigitalAsset <i>opt</i> | File name (including file extension) of application-specific digital asset. | <FileName>xyz.jpg</FileName> |
| FilePath | None | DigitalAsset <i>opt</i> | Location of file in application-specific digital asset collection provided by Supplier. Path should be identified from the Root level (\). Generally, the collection refers to a CD/DVD/Archive File which contains multiple Digital Assets. | <FilePath>\Mfg\xyz.jpg</FilePath> |

| XML Element | XML Attribute | Segment Requirement | Description | Example XML Code |
|---------------------|---------------|----------------------------|--|--|
| FileSize | None | DigitalAsset <i>opt</i> | File size of application-specific digital asset as measured in Kilobytes (kb). | <FileSize>123456</FileSize> |
| FileType | None | DigitalAsset <i>opt</i> | Code identifying the File Type and purpose of the application-specific digital asset. | <FileType>JPG</FileType> |
| Footer | None | Structure <i>req</i> | Occurs after the last application tag in the file. Used as a container for footer tags. | <Footer> ... </Footer> |
| FrontBrakeType | id | VehAttr <i>opt</i> | The brake type used on the front wheels. References the BrakeType table. BrakeTypeID should be used for valid values of the id attribute. | <FrontBrakeType id="1"/> <!-- Disc --> |
| FrontSpringType | id | VehAttr <i>opt</i> | The basic suspension type used in the front of the vehicle. References the SpringType table. SpringTypeID should be used for valid values of the id attribute. | <FrontSpringType id="45"/> <!-- Coil --> |
| FuelDeliverySubType | id | VehAttr <i>opt</i> | References the FuelDeliverySubType table. FuelDeliverySubTypeID should be used for valid values of the id attribute. | <FuelDeliverySubType id="6"/> <!-- 2BBL --> |

| XML Element | XML Attribute | Segment Requirement | Description | Example XML Code |
|-----------------------|---------------|-----------------------------|--|--|
| FuelDeliveryType | id | VehAttr <i>opt</i> | References the FuelDeliveryType table. FuelDeliveryTypeID should be used for valid values of the id attribute. | <FuelDeliveryType id="4"/> <!-- CARB --> |
| FuelSystemControlType | id | VehAttr <i>opt</i> | References the FuelSystemControlType table. FuelSystemControlTypeID should be used for valid values of the id attribute. | <FuelSystemControlType id="6"/> <!-- Mechanical --> |
| FuelSystemDesign | id | VehAttr <i>opt</i> | References the FuelSystemDesign table. FuelSystemDesignID should be used for valid values of the id attribute. | <FuelSystemDesign id="47"/> <!-- Carter --> |
| FuelType | id | VehAttr <i>opt</i> | References the FuelType table. FuelTypeID should be used for valid values of the id attribute. | <FuelType id="84"/> <!-- GAS --> |
| Header | None | Structure <i>req</i> | Occurs at the beginning of the file before any application tags. Used as a container for header tags. | <Header> ... </Header> |

| XML Element | XML Attribute | Segment Requirement | Description | Example XML Code |
|--------------------|---------------|---------------------------|---|---|
| IgnitionSystemType | id | VehAttr <i>opt</i> | References the IgnitionSystemType table. IgnitionSystemTypeID should be used for valid values of the id attribute. | <IgnitionSystemType id="78"/> <!-- Distributor Breakerless --> |
| Make | id | VehAttr <i>opt</i> | References the Make table. MakeID should be used for valid values of the id attribute. One of the following must be sent in the Vehicle Ident Group: a Base Vehicle ID; a Make / Year or Make / Year-Range combination must be included with each application; a Base Equipment ID; or a Mfr / Equipment Model / Vehicle Type | <Make id="26"/> <!-- Ford --> |
| MapperCompany | None | Header <i>opt</i> | Company responsible for mapping the data to ACES. | <MapperCompany>ACME Mapping, Inc.</MapperCompany> |
| MapperContact | None | Header <i>opt</i> | Person to contact at the mapping company | <MapperContact>Joe Mapper</MapperContact> |
| MapperEmail | None | Header <i>opt</i> | Mapping contact email address | <MapperEmail>joe@mapper.com</MapperEmail> |
| MapperPhone | None | Header <i>opt</i> | Phone number of mapping contact | <MapperPhone>111-111-1111</MapperPhone> |

| XML Element | XML Attribute | Segment Requirement | Description | Example XML Code |
|----------------|---------------|---------------------------|---|--|
| MapperPhoneExt | None | Header <i>opt</i> | Phone number extension of mapping contact | <MapperPhoneExt>111 </MapperPhoneExt> |
| Mfr | id | VehAttr <i>opt</i> | The manufacturer that actually built the equipment. References the Mfr table. MfrID should be used for valid values of the id attribute. This tag is required if Equipment tags are being supplied. | <Mfr id="544"/> <!-- Ford --> |
| MfrBodyCode | id | VehAttr <i>opt</i> | References the MfrBodyCode table. MfrBodyCodeID should be used for valid values of the id attribute. | <MfrBodyCode id="18"/> <!-- K --> |
| MfrLabel | None | App <i>opt</i> | Allows a manufacturer to specify the part label used to describe their specific parts. | <MfrLabel>ACME Superduper Strut</MfrLabel> |
| Model | id | VehAttr <i>opt</i> | If a BaseVehicle tag is not used in an application, a Model tag must be supplied. | <Model id="697"/> <!-- Taurus --> |

| XML Element | XML Attribute | Segment Requirement | Description | Example XML Code |
|-----------------|---------------|----------------------------|--|---|
| Note | id, lang | App <i>opt</i> ACES 1.0 | The Note tag is used to deliver comment information not covered by the reference tags. An optional “ id ” may be supplied to reference an external coded note file. An optional “ lang ” attribute may be used for multi-language notes (ISO table 639 values). If multiple Note tags are used in an application, they are logically joined by “and.” Only use this tag in special cases for ACES 2.0 files. The Note tag is deprecated in favor of the Qual tag and may be removed in future releases. | <pre><Note>w/AC</Note></pre> <pre><Note id="258"/></pre> <pre><Note lang="fr">je ne parle pas français</Note></pre> <pre><Note>Exc. A.C. or H.D. tow package</Note></pre> |
| OrientationView | None | DigitalAsset <i>opt</i> | Code identifying the Orientation View of application-specific Digital Asset. | <pre><OrientationView>ANG</OrientationView></pre> |

| XML Element | XML Attribute | Segment Requirement | Description | Example XML Code |
|------------------|---------------|---------------------|---|---|
| Part | BrandAAIAID | App req | The part number as it should be displayed to the user. The optional BrandAAIAID attribute is used to override the default brand defined in the Header. It is a 4 character reference to the “Brand Code” level of the Brand table. The optional SubBrandAAIAID attribute is used to override the default subbrand defined in the Header. It is a 4 character reference to the “SubBrand Code” level of the Brand table. | <Part <BrandAAIAID="BBBB"> <SubBrandAAIAID="BBBB">P 192- 12</Part> |
| PartsApprovedFor | None | Header opt | Used in the ACES header to identify the market(s) that the part number(s) in the file are approved for sale in, by country code. | <PartsApprovedFor> <Country>US</Country> <Country>CA</Country> </PartsApprovedFor> |
| PartType | id | App req | A reference to the PCdb Part Terminology ID. | <PartType id="15"/> |

| XML Element | XML Attribute | Segment Requirement | Description | Example XML Code |
|-----------------|----------------------------------|-----------------------|--|--|
| PcdbVersionDate | None | Header <i>req</i> | Contains value of PcdbVersionDate from the PCdb Version table used to create the Transfer File. Format is YYYY-MM- DD where "YYYY" is the year, "MM" the month and "DD" the day. | <PcdbVersionDate>2001-02-15 </PcdbVersionDate> |
| Position | id | App <i>opt</i> | References the Position table. (Part of the relational PCdb). PositionID should be used for valid values of the id attribute. | <Position id="23"/> <!-- Upper --> |
| PowerOutput | Id ACES 3.0 | VehAttr <i>opt</i> | References the PowerOutput table. PowerOutputID should be used for valid values of the id attribute. | <PowerOutput id="5"/> |
| ProductionYears | Production Start, Production End | VehAttr <i>opt</i> | Reference the Equipment table. Both attributes are optional. One of the following must be sent in the Vehicle Ident Group: an Equipment Base ID; a Mfr / Equipment Model / Vehicle Type combination must be included with each application | <ProductionStart="1988" ProductionEnd="1991"/> |

| XML Element | XML Attribute | Segment Requirement | Description | Example XML Code |
|----------------|---------------|----------------------------|---|--|
| QdbVersionDate | None | Header <i>req</i> | Contains value of QdbVersionDate from the Qdb Version table used to create the Transfer File. Format is YYYY-MM-DD where "YYYY" is the year, "MM" the month and "DD" the day. | <QdbVersionDate>2001-02-15 </QdbVersionDate> |
| Qty | None | App <i>req</i> | A required value to denote the number of parts required at that position for the application. | <Qty>1</Qty> |
| Qual | id | App <i>opt</i> ACES 2.0 | Coded replacement for the Note tag. The required "id" attribute references the Qdb table. Sub-elements include one or more optional "param" tag and a required "text" tag. | <Qual id="123"> <param value="14" uom="in"/> <text>With 14" Wheels</text> </Qual> |
| RearBrakeType | id | VehAttr <i>opt</i> | The brake type used on the rear wheels. References the BrakeType table. BrakeTypeID should be used for valid values of the id attribute. | <RearBrakeType id="1"/> <!-- Disc --> |

| XML Element | XML Attribute | Segment Requirement | Description | Example XML Code |
|----------------|---------------|----------------------------|--|---|
| RearSpringType | id | VehAttr <i>opt</i> | The basic suspension type used in the rear of the vehicle. References the SpringType table. SpringTypeID should be used for valid values of the id attribute. | <pre><RearSpringType id="45"/> <!-- Coil --></pre> |
| RecordCount | None | Footer <i>req</i> | The actual number of application tags contained in the file. | <pre><RecordCount>5</RecordCount></pre> |
| RegionFor | id | Header <i>opt</i> | <p>Used in the ACES header to identify the vehicle region the applications are approved for, by country code.</p> <p>Identifying it as Region would make it clear that it is for the vehicle application base region</p> | <pre><RegionFor> <Region id="1"/> <!--United States --> </RegionFor></pre> |
| Region | id | VehAttr <i>opt</i> | Region where sold. References the Region table. RegionID should be used for valid values of the id attribute. | <pre><Region id="1"/> <!--United States --></pre> |
| Representation | None | DigitalAsset <i>opt</i> | Code identifying the Representation of the application-specific Digital Asset. | <pre><Representation>A</Representation></pre> |
| Resolution | None | DigitalAsset <i>opt</i> | Code identifying the Resolution of the application-specific Digital Asset. | <pre><Resolution>72</Resolution></pre> |

| XML Element | XML Attribute | Segment Requirement | Description | Example XML Code |
|----------------|----------------------|---------------------------|---|---|
| SenderName | None | Header <i>opt</i> | Contact name at the Company | <SenderName>Joe Sender </SenderName> |
| SenderPhone | None | Header <i>opt</i> | Contact Phone number | <SenderPhone>111-111-1111 </SenderPhone> |
| SenderPhoneExt | None | Header <i>opt</i> | Contact Phone Extension | <SenderPhoneExt>111 </SenderPhoneExt> |
| SteeringSystem | id | VehAttr <i>opt</i> | References the SteeringSystem table. SteeringSystemID should be used for valid values of the id attribute. | <SteeringSystem id="5"/> <!-- Power --> |
| SteeringType | id | VehAttr <i>opt</i> | References the SteeringType table. SteeringTypeID should be used for valid values of the id attribute. | <SteeringType id="1"/> <!-- Rack --> |
| SubBrandAAIAID | None ACES 4.2 | Header <i>opt</i> | The default SubBrand for the file. This element is optional. It is a 4 character reference to the "SubBrand Code" level of the Brand table. | <SubBrandAAIAID>ZZZY </SubBrandAAIAID> |
| SubmissionType | None | Header <i>req</i> | FULL, UPDATE, or TEST. See the discussion in section 5.4 . | <SubmissionType>FULL </SubmissionType> |

| XML Element | XML Attribute | Segment Requirement | Description | Example XML Code |
|-------------------------|---------------|-----------------------|--|--|
| SubModel | id | VehAttr <i>opt</i> | References the SubModel table. SubModelID should be used for valid values of the id attribute. If a <SubModel> tag is used, you must also include a <Model> tag. | <SubModel id="176"/> <!-- Deluxe --> |
| TransElecControlled | Id | VehAttr <i>opt</i> | References the ElecControlled table. ElecControlledID should be used for valid values of the id attribute. | <TransElecControlled id="2"/> <!-- Yes --> |
| TransferDate | None | Header <i>req</i> | When the transfer file was created. Format is YYYY-MM-DD where "YYYY" the year, "MM" the month and "DD" the day. Zero fill if necessary. | <TransferDate>2001-02-15 </TransferDate> |
| TransmissionBase | id | VehAttr <i>opt</i> | References the TransmissionBase table. TransmissionBaseID should be used for valid values of the id attribute. | <TransmissionBase id="13"/> <!-- 4 Speed, AT--> |
| TransmissionControlType | id | VehAttr <i>opt</i> | References the TransmissionControlType table. TransmissionControlTypeID should be used for valid values of the id attribute. | <TransmissionControlType id="107"/> <!-- AT--> |

| XML Element | XML Attribute | Segment Requirement | Description | Example XML Code |
|-----------------------|---------------|--------------------------------|---|--|
| TransmissionMfr | id | VehAttr <i>opt</i> | The manufacturer that actually built the transmission. References the Mfr table. MfrID should be used for valid values of the id attribute. | <TransmissionMfr id="544"/> <!-- Ford --> |
| TransmissionMfrCode | id | VehAttr <i>opt</i> | References the TransmissionMfrCode table. TransmissionMfrCodeID should be used for valid values of the id attribute. | <TransmissionMfrCode id="37"/> <!--AW70 --> |
| TransmissionNumSpeeds | id | VehAttr <i>opt</i> | References the TransmissionNum- Speeds table. TransmissionNum-SpeedsID should be used for valid values of the id attribute. | <TransmissionNumSpeeds id="5"/> <!-- 4 Speed--> |
| TransmissionType | id | VehAttr <i>opt</i> | References the TransmissionType table. TransmissionTypeID should be used for valid values of the id attribute. | <TransmissionType id="6"/> <!-- Transaxle --> |
| URI | none | DigitalAsset <i>opt</i> | URI (Uniform Resource Indicator) or URL location of the application-specific digital asset. This can refer to a specific Digital asset item, or a page of content. | <URI>http://www.mfg.com/Images/xyz.jpg</URI> |

| XML Element | XML Attribute | Segment Requirement | Description | Example XML Code |
|-----------------|---------------|-----------------------|---|---|
| ValvesPerEngine | id | VehAttr <i>opt</i> | References the Valves table. ValvesID should be used for valid values of the id attribute. | <ValvesPerEngine id="5"/> <!-- 24 Valves --> |
| VcdbVersionDate | None | Header <i>req</i> | Contains value of VcdbVersionDate from the VCDB Version table used to create the Transfer File. Format is YYYY-MM-DD where "YYYY" is the year, "MM" the month and "DD" the day. | <VcdbVersionDate>2001-02-15 </VcdbVersionDate> |
| VehicleType | id | VehAttr <i>opt</i> | References the VehicleType table. VehicleTypeID should be used for valid values of the id attribute. This tag is required if Equipment tags are being supplied. | <VehicleType id="2"/> <!-- Truck--> |
| WheelBase | id | VehAttr <i>opt</i> | References the WheelBase table. WheelBaseID should be used for valid values of the id attribute. | <WheelBase id="21"/> <!-- 101 Inches--> |

| XML Element | XML Attribute | Segment Requirement | Description | Example XML Code |
|-------------|---------------|---------------------------|---|--------------------------------|
| Years | from, to | VehAttr <i>opt</i> | Reference the Year table. Both attributes are required, even if they are the same. One of the following must be sent in the Vehicle Ident Group: a Base Vehicle ID; a Make / Year or Make / Year-Range combination must be included with each application; a Base Equipment ID; or a Mfr / Equipment Model / Vehicle Type | <Years from="1982" to="1990"/> |

7. XML Specifics

This section defines some of the special requirements of the XML file.

7.1 Declaration Statement

The following line should be placed at the beginning of the Transfer File. It tells XML parsers that they are reading a valid file, what version of XML it is coded with, and the character set used.

```
<?xml version="1.0" encoding="UTF-8"?>
```

7.2 Character Encoding

The currently supported character encoding for ACES XML files is “UTF-8”. You should not, however, assume all 191 characters of this encoding are accepted by all trading partners. For example, you should ask before sending these common symbols: (a) degree sign (°); (b) plus or minus (±); or (c) registered trademark (®).

7.3 Reserved Symbols

The following symbols may not be used in the **element text** and should be coded with “entity tags” as shown.

| Symbol | Entity Tag |
|--------|------------|
| & | & |
| < | < |
| > | > |

The following symbols may not be used in **XML attribute values** and should be coded with “entity tags” as shown. (There should be no reason for these codes when the attribute represents an “id” value, however).

| Symbol | Entity Tag |
|--------|------------|
| & | & |
| < | < |
| > | > |
| " | " |
| ' | ' |

7.4 Comments

Standard XML comments may be used for documentation or other purposes. Receivers of the data will not process these comments and so should be used for internal use only. The syntax is:

<!-- comment goes here -->

7.5 Empty Element Tags

Empty element tags are supported in two ways: <tag/> and <tag></tag>. The first style is a simplified form often used with tags that contain only an attribute value (such as an id).

7.6 Element Tag Order

A specific order of the sub-elements within the Header and App elements must be followed to create a “valid” delivery file. For example, the Company tag must be the first tag in the Header section followed by the SenderName and SenderPhone. See the *XML schema* (xsd) files for details. (**Note:** some receivers of the data may relax this restriction, but it is always a good practice to create an XML file that will validate against the xsd.)

7.7 ACES Coded Values

All ACES Coded Values can be found in the **Product Classification database (PCdb)**, which is updated and published monthly on [AutoCareVIP.com](https://www.autocarevip.com).

8. Legacy Make Model Table

As of December 31, 2012 the Legacy Make Model Table is no longer supported.

Appendix A. ACES Element Data Tags

Main Structure Tags

ACES
App
Asset [ACES 3.0]
DigitalAsset
Footer
Header

Vehicle Identification Tags

BaseVehicle
Make
Years
EquipmentBase
Mfr
EquipmentModel
VehicleType
ProductionYears

Vehicle Attribute Tags*

Aspiration
BedLength
BedType
BodyNumDoors
BodyType
BrakeABS
BrakeSystem
CylinderHeadType
DriveType
EngineBase
EngineBlock
EngineBoreStroke
EngineDesignation
EngineMfr

EngineVersion
EngineVIN
FrontBrakeType
FrontSpringType
FuelDeliverySubType
FuelDeliveryType
FuelSystemControlType
FuelSystemDesign
FuelType
IgnitionSystemType
MfrBodyCode
Model
PowerOutput [ACES 3.0]
RearBrakeType
RearSpringType
Region
SteeringType
SteeringSystem
SubModel
TransElecControlled
TransmissionBase
TransmissionControlType
TransmissionMfr
TransmissionMfrCode
TransmissionNumSpeeds
TransmissionType
ValvesPerEngine
VehicleType
WheelBase

Header/Footer Tags

ApprovedFor (DEPRECATED)
BrandAAIAID [ACES 3.0]
SubBrandAAIAID [ACES 4.2]
Company
Country
DocFormNumber
DocumentTitle
EffectiveDate
MapperCompany
MapperContact
MapperEmail
MapperPhone
MapperPhoneExt
PcdbVersionDate
QdbVersionDate
RecordCount
RegionFor
SenderName
SenderPhone
SenderPhoneExt
SubmissionType
TransferDate
VcdbVersionDate

App-Specific Tags

AssetItemOrder [ACES 3.0]
AssetItemRef [ACES 3.0]
AssetName [ACES 3.0]
DisplayOrder
MfrLabel
Note* [deprecated]
Part
PartType
Position
Qual* [ACES 2.0]
Qty

* Also valid in Asset element groups.

Digital Asset Tags

AssetDescription
AssetDimensions
AssetHeight
AssetName [ACES 3.0]
AssetType
AssetWidth
Background
ColorMode
Country
DigitalAsset
DigitalFileInformation
EffectiveDate
ExpirationDate
FileDateModified
FileName
FilePath
FileSize
FileType
OrientationView
Representation
Resolution
URI

Appendix B. Example Transfer File

```
<?xml version="1.0" encoding="UTF-8"?>
<ACES version="4.0">
<Header>
    <Company>AcmeSupply</Company>
    <SenderName>Joe Smith</SenderName>
    <SenderPhone>999-999-9999</SenderPhone>
    <TransferDate>2018-06-04</TransferDate>
    <BrandAAIAID>ZZZZ</BrandAAIAID>
    <SubBrandAAIAID>ZZZY</SubBrandAAIAID>
    <DocumentTitle>Electrical Switches</DocumentTitle>
    <EffectiveDate>2018-06-04</EffectiveDate>
    <PartsApprovedFor>
        <Country>US</Country>          <!-- United States -->
        <Country>MX</Country>         <!-- Mexico -->
    </PartsApprovedFor>
    <RegionFor>
        <Region id="1"/> <!-- United States -->
        <Region id="3"/> <!-- Mexico -->
    </RegionFor>
    <SubmissionType>FULL</SubmissionType>
    <VcdbVersionDate>2018-05-25</VcdbVersionDate>
    <QdbVersionDate>2018-05-25</QdbVersionDate>
    <PcdbVersionDate>2018-05-25</PcdbVersionDate>
</Header>

<App action="A" id="1">
    <BaseVehicle id="2771"/>          <!-- 1997 Cadillac Catera -->
    <Qty>1</Qty>
    <PartType id="4472"/> <!-- Headlight Switch -->
    <Part>SW1406</Part>
</App>

<App action="A" id="2">
    <BaseVehicle id="2772"/>          <!-- 1998 Cadillac Catera -->
```

```
<Qty>1</Qty>
<PartType id="4472"/> <!-- Headlight Switch -->
<Part>SW1406</Part>
</App>
<App action="A" id="3">
  <Years from="1997" to="1998"/>
  <Make id="46"/>      <!-- 1997-1998 Cadillac Catera -->
  <Model id="404"/>
  <Qty>1</Qty>
  <PartType id="4472"/> <!-- Headlight Switch -->
  <Part>SW1406</Part>
</App>
<App action="A" id="4">
  <BaseVehicle id="2771"/>      <!-- 1997 Cadillac Catera -->
  <EngineBase id="389"/>      <!-- V6 181ci 3.0L -->
  <EngineVIN id="18"/> <!-- [R] -->
  <Qual id="23">
    <text>With Air Conditioning</text>
  </Qual>
  <Qual id="929">
    <param value="90487546"/>
    <text>w/Starter 90487546 (1st Design)</text>
  </Qual>
  <Qty>1</Qty>
  <PartType id="4188"/> <!-- Starter Solenoid -->
  <Part>SS769</Part>
</App>
<App action="A" id="5">
  <BaseVehicle id="9281"/>      <!-- 1972 Ford LTD -->
  <Note>Exc. Wagon</Note>      <!-- Allowed because BodyType is U/K -->
  <Qty>1</Qty>
  <PartType id="4472"/> <!-- Headlight Switch -->
  <Part>SW1406</Part>
</App>
<App action="A" id="6" validate="no">
```

```
<BaseVehicle id="5404"/>      <!--1980 Ford Fairmont -->
<Aspiration id="6"/>      <!-- Turbo (not valid in VehicleTo table) -->
<Qty>1</Qty>
<PartType id="10068"/>      <!-- Radiator Coolant Hose -->
<Position id="46"/>      <!-- Upper -->
<Part>H9281</Part>

</App>

<Footer>
    <RecordCount>6</RecordCount>
</Footer>
</ACES>
```

Appendix C. Delivering “Invalid” Applications

It is understood that the VCdb cannot be “perfect.” For example, there will always be un-researched information on older vehicles. The following are common conditions you may encounter and how they should be handled.

1. Your application has an attribute not found in the VehicleTo table on a “completely researched” vehicle (i.e. there are no N/A or U/K values for that attribute).

*You should petition for it to be added. (If you can't wait, include it with an existing attribute id and flag the application with **validate="no"** in the App or Asset tag so receivers can easily identify them.)*

2. Your application has an attribute on an “incompletely researched” vehicle that is not in the VehicleTo table.

You are allowed to code it as if it was valid. It should not be rejected by the receiver.

3. Your application has an “excepted” attribute on an “incompletely researched” vehicle.

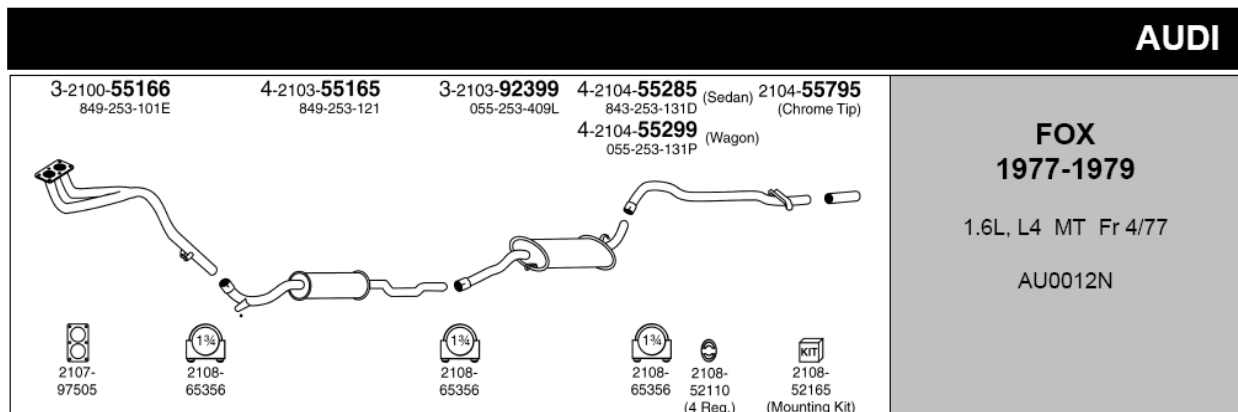
This has always been handled as an “excepted attribute” in the Notes (e.g. “Exc. Sedan”). A future release may assign a special tag for this condition instead of using Notes.

4. Your application has a new attribute that doesn't exist in the vehicle table at all.

This should be an infrequent occurrence, but if it happens, you should petition for the new attribute value to be added to the appropriate table. (Exceptions are transmission codes or engine designations which tend to change more often).

Appendix D. Delivering Application Digital Assets

Catalog Diagram 1



Key Points:

1. The manufacturer may have several “physical” files (format, resolutions, URL’s, etc.) to represent this “logical” image (diagram AU0012N).
2. This image includes fitment detail in the heading (Make, Model, Years, Engine, TransControlType) that must be propagated to App records
3. Unvalidated, this image represents approx. 12 App records using the YearRange-Make method, and approx. 36 App records using the BaseVehicle method

```
<?xml version="1.0" encoding="UTF-8"?>
<ACES version="4.0">
<Header>
...
</Header>
<App action="A" id="1">
    <Years from='1977' to='1979'/>
    <Make id="73"/>        <!-- Audi -->
    <Model id="954"/>      <!-- Fox -->
    <EngineBase id="953"/>    <!-- L4-1588cc/97cid 1.6L -->
    <TransmissionControlType id="6"/>    <!-- Standard -->
```

```
<Note>Fr 4/77</Note>
<Qty>1</Qty>
<PartType id="5836"/> <!-- Exhaust Pipe Flange Gasket -->
<Part>2107-97505</Part>
<AssetName>AU0012N</AssetName>
<AssetItemOrder>1</AssetItemOrder>
</App>
<App action="A" id="9">
  <Years from='1977' to='1979'/>
  <Make id="73"/>      <!-- Audi -->
  <Model id="954"/>    <!-- Fox -->
  <BodyType id="5"/>   <!-- Sedan -->
  <EngineBase id="953"/>      <!-- L4-1588cc/97cid 1.6L -->
  <TransmissionControlType id="6"/>    <!-- Standard -->
  <Note>Fr 4/77</Note>
  <Qty>1</Qty>
  <PartType id="10023"/> <!-- Exhaust Tail Pipe -->
  <Part>4-2104-55285</Part>
  <DisplayOrder>1</DisplayOrder>
  <AssetName>AU0012N</AssetName>
  <AssetItemOrder>9</AssetItemOrder>
</App>
<App action="A" id="10">
  <Years from='1977' to='1979'/>
  <Make id="73"/>      <!-- Audi -->
  <Model id="954"/>    <!-- Fox -->
  <BodyType id="6"/>   <!-- Wagon -->
  <EngineBase id="953"/>      <!-- L4-1588cc/97cid 1.6L -->
  <TransmissionControlType id="6"/>    <!-- Standard -->
  <Note>Fr 4/77</Note>
  <Qty>1</Qty>
  <PartType id="10023"/> <!-- Exhaust Tail Pipe -->
  <Part>4-2104-55299</Part>
  <DisplayOrder>2</DisplayOrder>
  <AssetName>AU0012N</AssetName>
```



```
<AssetItemOrder>9</AssetItemOrder>

</App>

<App action="A" id="12">
  <Years from='1977' to='1979' />
  <Make id="73" />      <!-- Audi -->
  <Model id="954" />    <!-- Fox -->
  <EngineBase id="953" />      <!-- L4-1588cc/97cid 1.6L -->
  <TransmissionControlType id="6" />    <!-- Standard -->
  <Note>Fr 4/77</Note>
  <Qty>1</Qty>
  <PartType id="14907" /> <!-- Exhaust Tail Pipe Tip -->
  <Part>2104-55795</Part>
  <AssetName>AU0012N</AssetName>
  <AssetItemOrder>11</AssetItemOrder>
</App>

...

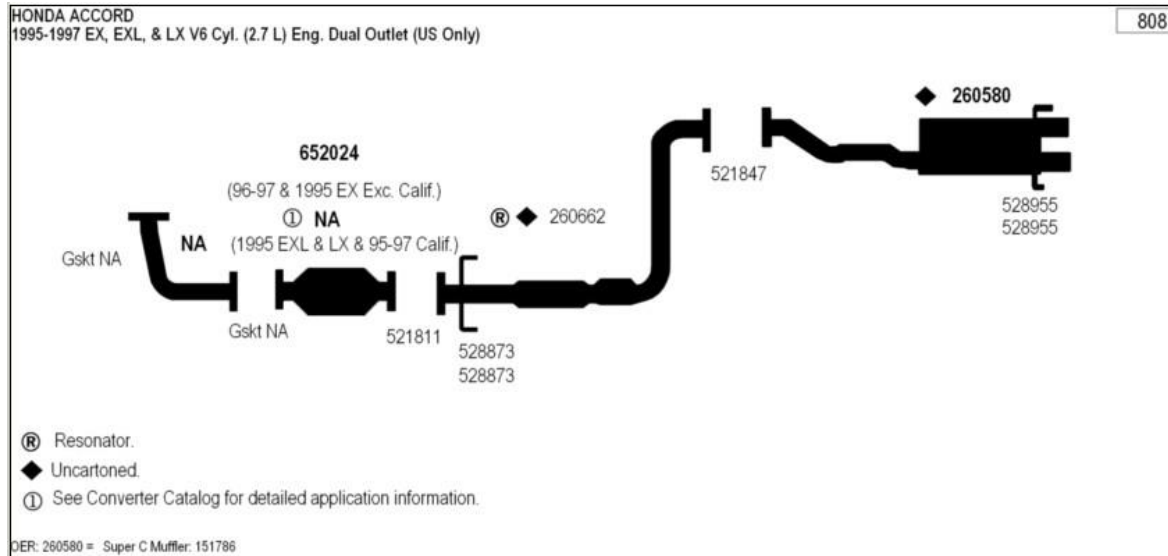
<DigitalAsset>
  <DigitalFileInformation AssetName="AU0012N" action="A" LanguageCode="EN">
    <FileName>abc.jpg</FileName>
    <AssetDetailType>LIN</AssetDetailType>
    <FileType>JPG</FileType>
    <Representation>A</Representation>
    <FileSize>123456</FileSize>
    <Resolution>72</Resolution>
    <ColorMode>RGB</ColorMode>
    <Background>WHI</Background>
    <OrientationView>NUL</OrientationView>
    <AssetDimensions UOM="PX">
      <AssetHeight>250</AssetHeight>
      <AssetWidth>250</AssetWidth>
    </AssetDimensions>
    <AssetDescription>Line Art Diagram</AssetDescription>
    <FilePath>\Mfg\abc.jpg</FilePath>
    <URI>http://www.mfg.com/Images/abc.jpg</URI>
    <FileDateModified>2013-01-31</FileDateModified>
```

```
<EffectiveDate>2013-01-31</EffectiveDate>
<ExpirationDate>2013-12-31</ExpirationDate>
<Country>US</Country>
</DigitalFileInformation>
</DigitalAsset>
<Footer>
<RecordCount>12</RecordCount>
</Footer>
</ACES>
```

Key Points:

1. AssetName is the “logical” name of the image and is a key reference to the DigitalFileInformation with the same value for the AssetName attribute.
2. AssetItemOrder is the logical order of the items within the Asset, specified by the data provider.
3. Apps and Assets are not directly related. The receiver can choose how/whether to integrate them, using the AssetName.
4. Asset heading fitment details have been propagated to the Apps (Years, Make, Model, Engine, TransControlType, Note)
5. Certain Apps have fitment details (i.e. BodyType) that are in addition to those propagated from the Asset heading.

Catalog Diagram 2



Key Points:

1. The manufacturer has several “physical” files in different formats to represent this “logical” image (diagram 808).
2. This image includes parts that are not available (part number N/A)
3. This image includes graphical fitment detail (bullets, footnotes)
4. This image includes fitment detail in the heading (Make, Model, Years, Submodel, Engine, Note, Region) that must be propagated to App records
5. This image includes fitment detail in the heading that requires multiple values for an Aces tag (Submodel), which requires separate App records for each value, and that must be resolved with values already applied to the App records
6. Unvalidated, this image represents approx. 48 App records using the YearRange-Make method, and approx. 126 App records using the BaseVehicle method


```
<?xml version="1.0" encoding="UTF-8"?>
<ACES version="4.0">
<Header>...</Header>
<App action="A" id="1">
  <Years from='1995' to='1997'/>
  <Make id="59"/>      <!-- Honda -->
  <Model id="751"/>    <!-- Accord -->
  <SubModel id="191"/> <!-- EX-->
  <EngineBase id=" 1738"/>    <!-- V6-2675cc 2.7L -->
  <Region id="1"/>      <!-- USA -->
  <Note>Dual Outlet</Note>
  <Qty>1</Qty>
  <PartType id="5836"/> <!-- Exhaust Pipe Flange Gasket -->
  <Part>NA</Part>
  <AssetName>808</AssetName>
  <AssetItemOrder>1</AssetItemOrder>
</App>
<App action="A" id="2">
  <Years from='1995' to='1997'/>
  <Make id="59"/>      <!-- Honda -->
  <Model id="751"/>    <!-- Accord -->
  <SubModel id="191"/> <!-- EX-->
  <EngineBase id=" 1738"/>    <!-- V6-2675cc 2.7L -->
  <Region id="1"/>      <!-- USA -->
  <Note>Dual Outlet</Note>
  <Qty>1</Qty>
  <PartType id="10038"/> <!-- Exhaust Pipe -->
  <Part>NA</Part>
  <AssetName>808</AssetName>
  <AssetItemOrder>2</AssetItemOrder>
</App>
<App action="A" id="3">
  <Years from='1995' to='1997'/>
  <Make id="59"/>      <!-- Honda -->
  <Model id="751"/>    <!-- Accord -->
```

```
<SubModel id="191"/> <!-- EX-->
<EngineBase id=" 1738"/> <!-- V6-2675cc 2.7L -->
<Region id="1"/> <!-- USA -->
<Note>Dual Outlet</Note>
<Qty>1</Qty>
<PartType id="5836"/> <!-- Exhaust Pipe Flange Gasket -->
<Part>NA</Part>
<AssetName>808</AssetName>
<AssetItemOrder>3</AssetItemOrder>
</App>
<App action="A" id="4">
  <Years from='1995' to='1997'/>
  <Make id="59"/> <!-- Honda -->
  <Model id="751"/> <!-- Accord -->
  <SubModel id="191"/> <!-- EX-->
  <EngineBase id=" 1738"/> <!-- V6-2675cc 2.7L -->
  <Region id="1"/> <!-- USA -->
  <Note>Dual Outlet</Note>
  <Note>Exc. Calif.</Note>
  <Qty>1</Qty>
  <PartType id="5808"/> <!-- Catalytic Converter -->
  <Part>652024</Part>
  <AssetName>808</AssetName>
  <AssetItemOrder>4</AssetItemOrder>
</App>
...
<DigitalAsset>
  <DigitalFileInformation AssetName="808" action="A" LanguageCode="EN">
    <FileName>808_LIN_NUL.jpg</FileName>
    <AssetDetailType>LIN</AssetDetailType>
    <FileType>JPG</FileType>
    <Representation>A</Representation>
    <FileSize>123456</FileSize>
    <Resolution>72</Resolution>
    <ColorMode>RGB</ColorMode>
```

```
<Background>WHI</Background>
<OrientationView>NUL</OrientationView>
<AssetDimensions UOM="PX">
    <AssetHeight>700</AssetHeight>
    <AssetWidth>1500</AssetWidth>
</AssetDimensions>
<AssetDescription>Line Art Diagram</AssetDescription>
<FilePath>\Mfg\808_LIN_NUL.jpg</FilePath>
<URI>http://www.mfg.com/Images/808\_LIN\_NUL.jpg</URI>
<FileDateModified>2013-01-31</FileDateModified>
<EffectiveDate>2013-01-31</EffectiveDate>
<ExpirationDate>2013-12-31</ExpirationDate>
<Country>US</Country>
</DigitalFileInformation>
<DigitalFileInformation AssetName="808" action="A" LanguageCode="EN">
    <FileName>808_LIN_NUL.png</FileName>
    <AssetDetailType>LIN</AssetDetailType>
    <FileType>PNG</FileType>
    <Representation>A</Representation>
    <FileSize>123456</FileSize>
    <Resolution>72</Resolution>
    <ColorMode>RGB</ColorMode>
    <Background>WHI</Background>
    <OrientationView>NUL</OrientationView>
    <AssetDimensions UOM="PX">
        <AssetHeight>700</AssetHeight>
        <AssetWidth>1500</AssetWidth>
    </AssetDimensions>
    <AssetDescription>Line Art Diagram</AssetDescription>
    <FilePath>\Mfg\808_LIN_NUL.png</FilePath>
    <URI>http://www.mfg.com/Images/808\_LIN\_NUL.png</URI>
    <FileDateModified>2013-01-31</FileDateModified>
    <EffectiveDate>2013-01-31</EffectiveDate>
    <ExpirationDate>2013-12-31</ExpirationDate>
    <Country>US</Country>
```

```
</DigitalFileInformation>
</DigitalAsset>
<Footer>
<RecordCount>41</RecordCount>
</Footer>
</ACES>
```

Key Points:

1. AssetName is the “logical” name of the image and is a key reference to all DigitalFileInformation elements with the same value for the AssetName attribute.
2. AssetItemOrder is the logical order of the items within the Asset, specified by the data provider.
3. Apps and Assets are not directly related. The receiver can choose how/whether to integrate them, using the AssetName.
4. Asset heading fitment details have been propagated to the Apps (Years, Make, Model, Submodels, Engine, Region, Note)
5. Unavailable parts are included, in order to provide context for available parts

Catalog Diagram 3

Key Points:

1. The manufacturer may have several “physical” files (format, resolutions, URL’s, etc.) to represent this “logical” image (Figure 1451190).
2. There are no part numbers.
3. There is no vehicle or other description image information – unlike exhaust, the image is the target of a lookup and doesn’t define the lookup.
4. This image illustrates some visual information (numbered locations).

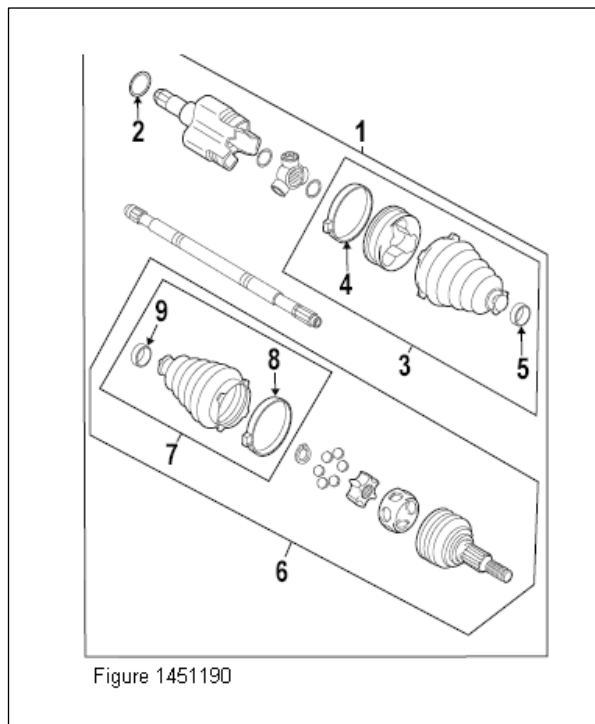


Figure 1451190

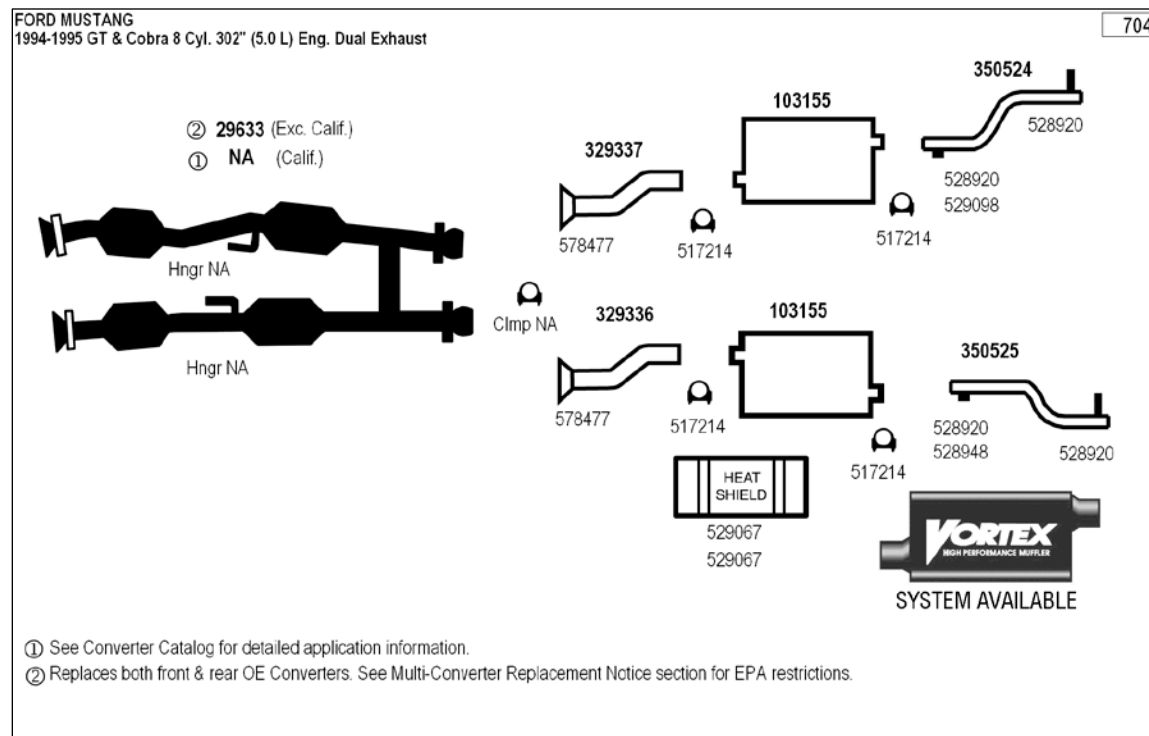
```
<?xml version="1.0" encoding="UTF-8"?>
<ACES version="4.0">
<Header>
...
</Header>
<Asset action="A" id="1">
    <BaseVehicle id="23938"/><!-- 2007 Suzuki XL-7 -->
    <AssetName>1451190</AssetName>
</Asset >
...
<DigitalAsset>
    <DigitalFileInformation AssetName="1451190" action="A" LanguageCode="EN">
        <FileName>1451190_LIN_NUL.jpg</FileName>
        <AssetDetailType>LIN</AssetDetailType>
        <FileType>JPG</FileType>
```

```
<Representation>A</Representation>
<FileSize>123456</FileSize>
<Resolution>72</Resolution>
<ColorMode>RGB</ColorMode>
<Background>WHI</Background>
<OrientationView>NUL</OrientationView>
<AssetDimensions UOM="PX">
    <AssetHeight>1600</AssetHeight>
    <AssetWidth>1200</AssetWidth>
</AssetDimensions>
<AssetDescription>Line Art Diagram</AssetDescription>
<FilePath>\Mfg\1451190_LIN_NUL.jpg</FilePath>
<URI>http://www.mfg.com/Images/1451190\_LIN\_NUL.jpg</URI>
<FileDateModified>2013-01-31</FileDateModified>
<EffectiveDate>2013-01-31</EffectiveDate>
<ExpirationDate>2013-12-31</ExpirationDate>
<Country>US</Country>
</DigitalFileInformation>
</DigitalAsset>
<Footer>
<RecordCount>24</RecordCount>
</Footer>
</ACES>
```

Key Points:

1. The Asset has no fitment detail and is related to the vehicles represented by the BaseVehicleID.
2. AssetName is the “logical” name of the image and is a key reference to the DigitalFileInformation with the same value for the AssetName attribute.

Catalog Diagram 4



Key Points:

1. The manufacturer may have several “physical” files (format, resolutions, URL’s, etc.) to represent this “logical” image (diagram 704).
2. This image includes parts that are not available (part number NA)
3. This image includes graphical fitment detail (P outlined components, footnotes)
4. This image includes fitment detail in the heading (Make, Model, Years, Submodel, Engine, Note) that must be propagated to App records
5. This image includes fitment detail in the heading that requires multiple values for an Aces tag (Submodel), which requires separate App records for each value
6. Unvalidated, this image represents approx. 50 App records using the YearRange-Make method, and approx. 100 App records using the BaseVehicle method

```
<?xml version="1.0" encoding="UTF-8"?>
<ACES version="4.0">
<Header>
...
</Header>
<App action="A" id="1">
    <Years from='1994' to='1995'/>
    <Make id="54"/>      <!-- Ford -->
    <Model id="688"/>    <!-- Mustang -->
    <SubModel id="39"/>  <!-- GT -->
    <EngineBase id=" 143"/>      <!-- V8-302cid 5.0L -->
    <Note>Dual Exhaust</Note>
    <Note>Exc. Calif. </Note>
    <Note>Replaces both front And rear OE Converters</Note>
    <Qty>1</Qty>
    <PartType id="10038"/> <!-- Exhaust Pipe -->
    <Part>29633</Part>
    <AssetName>704</AssetName>
    <AssetItemOrder>1</AssetItemOrder>
</App>
...
<App action="A" id="43">
    <Years from='1994' to='1995'/>
    <Make id="54"/>      <!-- Ford -->
    <Model id="688"/>    <!-- Mustang -->
    <SubModel id="39"/>  <!-- GT -->
    <EngineBase id=" 143"/>      <!-- V8-302cid 5.0L -->
    <Note>Dual Exhaust</Note>
    <Note>If Welded Replace All Required Parts</Note>
    <Qty>1</Qty>
    <PartType id="10023"/> <!-- ExhaustTail Pipe -->
    <Position id="2"/> <!-- Left -->
    <Part>350524</Part>
    <AssetName>704</AssetName>
    <AssetItemOrder>24</AssetItemOrder>
```

```
</App>
<App action="A" id="44">
  <Years from='1994' to='1995'/>
  <Make id="54"/>      <!-- Ford -->
  <Model id="688"/>    <!-- Mustang -->
  <SubModel id="39"/>  <!-- GT -->
  <EngineBase id=" 143"/>      <!-- V8-302cid 5.0L -->
  <Note>Dual Exhaust</Note>
  <Note>If Welded Replace All Required Parts</Note>
  <Qty>1</Qty>
  <PartType id="10023"/> <!-- Exhaust Tail Pipe -->
  <Position id="12"/> <!-- Right -->
  <Part>350524</Part>
  <AssetName>704</AssetName>
  <AssetItemOrder>24</AssetItemOrder>
</App>
...
<DigitalAsset>
  <DigitalFileInformation AssetName="704" action="A" LanguageCode="EN">
    <FileName>704_LIN_NUL.jpg</FileName>
    <AssetDetailType>LIN</AssetDetailType>
    <FileType>JPG</FileType>
    <Representation>A</Representation>
    <FileSize>123456</FileSize>
    <Resolution>72</Resolution>
    <ColorMode>RGB</ColorMode>
    <Background>WHI</Background>
    <OrientationView>NUL</OrientationView>
    <AssetDimensions UOM="PX">
      <AssetHeight>1500</AssetHeight>
      <AssetWidth>1500</AssetWidth>
    </AssetDimensions>
    <AssetDescription>Line Art Diagram</AssetDescription>
    <FilePath>\\Mfg\704_LIN_NUL.jpg</FilePath>
    <URI>http://www.mfg.com/Images/704_LIN_NUL.jpg</URI>
```

```
<FileDateModified>2013-01-31</FileDateModified>
<EffectiveDate>2013-01-31</EffectiveDate>
<ExpirationDate>2013-12-31</ExpirationDate>
<Country>US</Country>
</DigitalFileInformation>
</DigitalAsset>
<Footer>
<RecordCount>50</RecordCount>
</Footer>
</ACES>
```

Key Points:

1. AssetName is the “logical” name of the image and is a key reference to the DigitalFileInformation with the same value for the AssetName attribute.
2. AssetItemOrder is the logical order of the items within the Asset, specified by the data provider.
3. Apps and Assets are not directly related. The receiver can choose how/whether to integrate them, using the AssetName.
4. Asset heading fitment details have been propagated to the Apps (Years, Make, Model, Submodels, Engine, Note)
5. Unavailable parts are included, in order to provide context for available parts
6. Asset graphical details have been applied to the Apps (Position, outlined components)