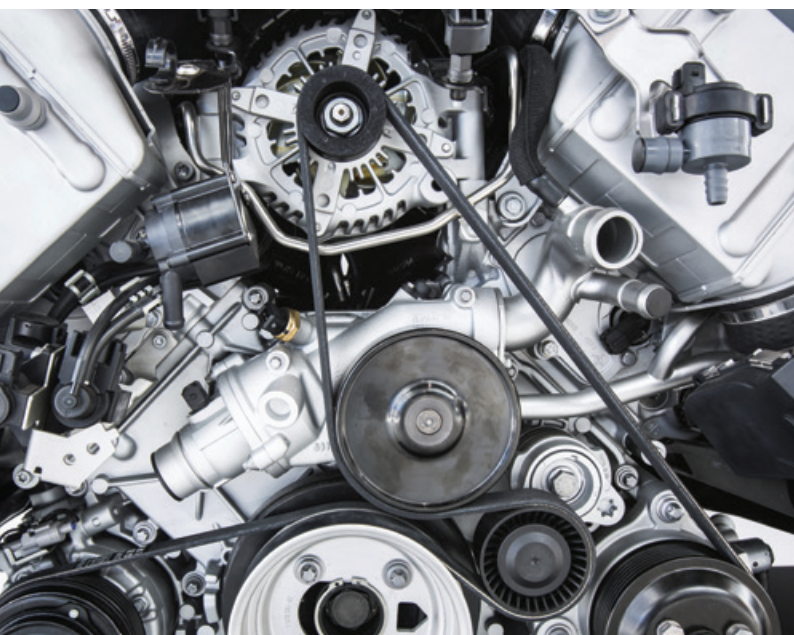


Components & Consumables

Module Directory



Introduction

This **Components & Consumables Module Directory** provides a quick overview of the components data available in the **EnginLink™**, **OE Link™**, **CV Link™** and **PartsLink™** proprietary databases built and maintained by Power Systems Research (PSR). The modules are not stand-alone products and can be purchased only as part of a subscription/extract to one of the databases, EnginLink™, OE Link™, CV Link™ or PartsLink™.

For more information:

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Specifications

Engine Oil Specifications

Database: **OE Link™**, **CV Link™** and **PartsLink™**

Regions/Segments covered: Medium-Heavy Vehicles (MHV), Light Commercial Vehicles (LCV), Agricultural, Construction, Industrial worldwide

Available fields:

- **Engine Oil Spec Grade**. Oil Specification recommended by the Engine Manufacturer (i.e. CJ4, ACEA E9)

Engine Oil Capacity

Database: **OE Link™**, **CV Link™** and **PartsLink™**

Regions/Segments: Medium-Heavy Vehicles (MHV), Light Commercial Vehicles (LCV), Agricultural, Construction, Industrial worldwide

Available fields:

- **Oil Capacity Description**. Unique characteristics (i.e. Deep Pan, Shallow Pan)
- **Oil Capacity (Gallons)**. Recommended Oil Change Capacity in Gallons
- **Oil Capacity (Liters)**. Recommended Oil Change Capacity in Liters
- **Oil Capacity (Quarts)**. Recommended Oil Change Capacity in Quarts

Engine Oil Change Intervals

Database: **OE Link™**, **CV Link™** and **PartsLink™**

Regions/Segments: Medium-Heavy Vehicles (MHV), Light Commercial Vehicles (LCV), Agricultural, Construction, Industrial worldwide

Available fields:

- **Engine Oil Change Interval (fuel usage)***
Recommended amount of fuel used between each oil change - listed according to the manufacturer specs

Specifications (Continued)

Engine Oil Change Intervals

(Continued)

- **Engine Oil Change Interval* (hours).** Recommended hours between each oil change - listed according to the manufacturer specs
- **Engine Oil Change Interval (kilometers).** Recommended kilometers between each oil change - listed according to the manufacturer specs
- **Engine Oil Change Interval (miles).** Recommended miles between each oil change - listed according to the manufacturer specs
- **Engine Oil Change Interval (months).** Recommended months between each oil change - listed according to the manufacturer specs
- **Engine Oil Change Interval Operation.** Brief description of type of operation and how it affects oil changes – Normal, Severe – uses manufacturers descriptions
- **Engine Oil Change Interval Operation Description.** A more detailed description of what the “Operation” means – for example Severe could mean “< 5.5 mpg, and/or > 40% idle time” – uses manufacturers descriptions – can and does change among manufacturers

*With the exception of some vocational applications, most manufacturers of MHV or LCV do not identify Change Intervals by Fuel Usage or in Hours. These fields apply primarily to other market segments, such as Agricultural or Construction.

Engine Oil Consumption

Database: **PartsLink™**

Regions/Segments: Agricultural, Construction, Industrial worldwide

Available fields:

- **Oil Consumed.** (Liters)

Emissions

Database: **OE Link™**, **CV Link™**, **PartsLink™**

Regions/Segments: All segments worldwide

Available fields:

- **Emissions Certification Level.** Level of certification met by the engine (i.e. Euro 4, EPA Tier 4)
- **Emissions Certifying Agency.** Agency that certified the standard (i.e. US EPA, European Union)
- **Emissions Solution Strategy.** After treatment products utilized to meet the standard (i.e. EGR, DPF, SCR)

Emissions

Database: **EnginLink™**

Regions/Segments: All segments worldwide

Available fields:

- **Engine Emissions Compliance.** Emissions standard (i.e. Euro 4, EPA Tier 4)
- **Engine Emissions Device.** After treatment products utilized to meet the standard (i.e. EGR, DPF, SCR)

System Voltage

Database: **EnginLink™**

Regions/Segments: All segments worldwide.

Compression Engines ONLY

Available fields:

- **Electrical System Voltage.** The voltage of the electrical system (i.e. 12 Volt, 24 Volt)

System Voltage

Database: **OE Link™**

Regions/Segments covered – All segments worldwide

Available fields:

- **Electrical System Voltage.** The voltage of the electrical system (i.e. 12 Volt, 24 Volt)



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Components

Brake Type

Database: OE Link™, CV Link™

Regions/Segments: MHV United States, Canada and South America

Available Fields:

- **Brake Type** (i.e. Air, Hydraulic, Air over Hydraulic)

Cylinder Block and Head Material

Database: EnginLink™, OE Link™

Regions/Segments: All segments worldwide

Available fields:

- **Cylinder Block Material** (i.e. CGI, Cast Iron, Aluminum)
- **Cylinder Head Material** (i.e. CGI, Cast Iron, Aluminum)

Fuel Injection Equipment (FIE)

Database: EnginLink™, OE Link™, CV Link™, and PartsLink™

Regions/Segments: All segments worldwide, where applicable

Available fields:

- **FIE Equipment Type**. Common Rail, Direct Gasoline Injection, Electronic Unit Injector, Hydraulic Unit Injector, Inline, Mechanical Unit Injector, Rotary, Unit Pump
- **FIE Nozzle Manufacturer**
- **FIE Nozzle Country**
- **FIE Nozzles per Engine**
- **FIE Pump Manufacturer**
- **FIE Pump Model**
- **FIE Pump Country**
- **FIE Pumps per Engine**

Generators (Alternators)

Database: OE Link™

Countries Covered: Germany and the UK

Available fields:

- **Generator Ambient Temp.** The temperature used during the factory test to certify the ratings
- **Generator Application.** The application where the gen set is used (i.e. Stand-by, Cogeneration, base load)
- **Generator Brand.** The Brand used to commercialize the Generator
- **Generator IP Level.** The certified IP Level of the generator. (For more info on all IP levels and their description please visit http://en.wikipedia.org/wiki/IP_Code)
- **Generator Model.** The model name of the generator
- **Generator Platform.** Code utilized by the generator suppliers to identify the platform/frame size of the generator. (Not all the suppliers use this code.)
- **Generator Pole Count.** Number of poles of the generator
- **Generator Power kVA.** The rating of the generator in kVA. If not specified by the gen set supplier, the standard rating is the stand-by rating
- **Generator Power kW.** The rating of the generator in kW. If not specified by the gen set supplier, the standard rating is the stand-by rating
- **Generator Supplier.** The actual manufacturer of the generator
- **Generator Type.** There are 2 options available for this field: Synchronous or Asynchronous
- **Generator Voltage.** The voltage used in the configuration

Components (Continued)

Rear (Drive) Axle

Database: OE Link™, PartsLink™

Regions/Segments: Trucks Class 4 through 8, North America, All Years

Available Fields:

- **Drive Type** (i.e. 4x2, 6x2, 6x6)
- **Axle Manufacturer**. Who manufactures the Rear (Drive) Axle.
- **Axle Lubricant Specification**. OEM recommended axle fluid specification.
- **Axle Lubricant Viscosity**. OEM recommended axle fluid viscosity.
- **Axle Lubricant Capacity** (Pints, Liters) Recommended fluid change capacity in Pints or Liters.
- **Axle Lubricant Chemistry** (i.e. Mineral, Synthetic)

Axle Configuration

Database: OE Link™, CV Link™ and PartsLink™

Regions/Segments: MHV, worldwide, All Years

Available fields:

- **Axle Configuration**. (i.e. 4x2, 6x2, 6x6)

Transmissions

Database: OE Link™, CV Link™ and PartsLink™

Regions/Segments: MHV, LCV worldwide

Available fields:

- **Transmission Manufacturer**. Who manufactures the transmission
- **Transmission Brand**. Brand name under which the transmission is sold
- **Transmission Model**.
- **Number of Forward Gears**.
- **Number of Reverse Gears**.
- **Transmission Design**. Manual, Automatic, AMT, etc.
- **Transmission Production Country**.

PLEASE NOTE: Transmission data is based on the equipment model, not the engine model.

Transmissions

Database: OE Link™, PartsLink™

Regions/Segments: Off-Highway, Agricultural, Construction, Industrial, worldwide.

Available fields:

- **Transmission Design**. (i.e. Manual, Powershift, Hydrostatic)
- **Transmission Manufacturer**. Who manufactures the Transmission

PLEASE NOTE: Transmission data is based on the equipment model, not the engine model.

Turbos

Database: EnginLink™, OE Link™, CV Link™, and PartsLink™

Regions/Segments: All segments worldwide, where applicable

Available fields:

- **Turbo Supplier**. Manufacturer of the Turbo
- **Turbo Supplier Group**. Turbo Supplier parent
- **Turbo Geometry**. Fixed or VGT
- **Turbo Layout**. Simple or 2-Stage
- **Turbo Quantity**.

Starter Batteries

Database: OE Link™, Parts Link™

Available fields:

- **Battery Group Size**. Group Size identifies the basic dimensions and polarity of the battery
- **Battery CCA**. Cold Cranking amps at 0 degrees Fahrenheit
- **Battery Quantity**. Number of batteries per application
- **Comments**. Additional information required to fit correct battery

Consumables

Starter Batteries (Continued)

Regions/Segments for Batteries

MHV and Recreational Products, worldwide

Agricultural Equipment, worldwide for the following

Applications & Products

- Ag Tractors
- Balers
- Combines
- Other Ag Equipment
 - Ag Mowers
 - CRVs
 - Harvesters
 - Other Ag Equipment Self-Propelled

Construction Equipment, worldwide for the following

Applications & Products

- Crawlers
- Excavators
- Forestry Equipment
 - Feller Bunchers
 - Forwarders
 - Log Loaders Self-Propelled
 - Skidders
 - Tree Harvesters
- Graders
- Off-Highway Tractors
- Off-Highway Trucks
- Pavers
- Rollers
- Scrapers
- Skid-Steer Loaders
- Tractor/Loader/Backhoes
- Trenchers
- Wheel Loaders & Dozers

Power Generation, worldwide for the following

Applications and Products

- APUs

Industrial Equipment, worldwide for the following

Applications and Products

- Utility Vehicles

All other Segments, US and Canada, Lawn & Garden,
Light Commercial Vehicles, Industrial, Minivans and
SUVs and Passenger Cars.

Battery Electric Specs

Databases: OE Link™

Regions/Segments: Forklifts, United States

Available Fields:

- Amp Hour (Ah)
- Battery Chemistry
- Voltage

Spark/Glow Plugs

Databases: EnginLink™, OE Link™ and PartsLink™

Regions/Segments: All segments worldwide

Available Fields:

- OEM Spark/Glow Plug Supplier
- OEM Spark/Glow Plug Supplier Part Number
- Spark Plug Gap Size in Inches
- Spark/Glow Plug Type
- Spark/Glow Plugs per Engine

Tires

Database: OE Link™

Regions/Segments: Most off-highway products
worldwide

Available fields:

- Standard Front Tire
- Standard Rear Tire
- Tires per Vehicle
- Tire Spec
- Tire Width
- Rim Diameter
- Tire Type
- Tire Brand
- TRA Code

More than 40 Years of Growth: PSR Milestones

- 1976**
- PSR Founded in Grantsburg, WI USA
 - EnginLink™ Launched

- 1981**
- PSR Opens in Japan
 - PSR/TRG Partnership

- 1984**
- PSR Opens St. Paul Headquarters

- 1985**
- PartsLink™ Launched
 - OE Link™ Launched
 - All databases are available on personal computers via diskettes.

- 1986**
- PSR Opens in Brussels

- 1992**
- Compass Survey Center™ Acquired
 - 25 Employees

- 2000**
- PSR Opens in Detroit

- 2007**
- MarineLink™ Launched

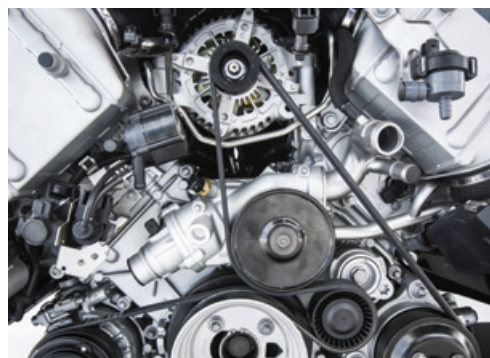
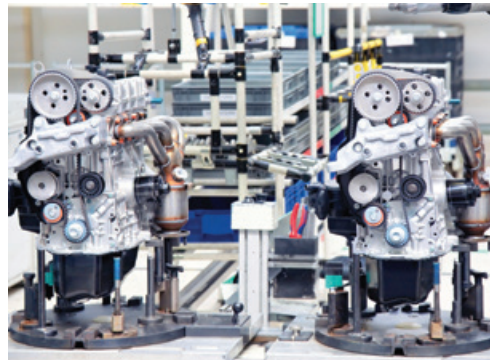
- 2008**
- PSR Opens in China
 - CVLink™ Launched

- 2011**
- PSR Opens in Brazil
 - PSR Opens in India

- 2012**
- PSR Opens in Russia

- 2015**
- PSR China – Subsidiary Launched
 - PSR India – Subsidiary Launched

- 2016**
- 8 Offices, 200 Countries, 4 Continents
 - Billions of Data Points





Power Systems Research has been tracking the production of engines and their use around the world for more than 40 years. We're the leading company in the world doing this research and building these databases.

Our customers include many of the largest companies in the world: Cummins, John Deere and Caterpillar, etc. They subscribe to our unique databases, and their facilities around the world access our data and forecasts through the Internet 24/7.

We're based in St. Paul, Minnesota, USA, and we have offices and analysts located around the world, from Brussels to Beijing and Tokyo to Brazil, to help us collect and analyze this data.

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