

# SENSOR PROGRAM

1

NAPA® Echlin® offers more than 9,000 different Sensors in nearly 90 categories

2

Echlin® provides industry-leading coverage with 2,500 ABS Speed Sensors

3

Echlin® Sensors use the latest technology to optimize accuracy, speed and durability.

**What's in your box?™  
Here's what's in ours.**



# Growing Market

The number of sensors on modern vehicles continues to grow. The addition of electronic safety systems and advancements in internal combustion engines to improve performance while reducing emissions have created multiple new sensor categories.

With more than 9,000 Sensors already available, Echlin® is committed to continually developing the latest sensor technology to meet the demands of professional technicians.

Source: NAPAEchlin.com eCatalog

## Echlin® Chevrolet Silverado 1500 Sensor Coverage

**2000 Chevrolet Silverado 1500**

**20 Sensors**



**2018 Chevrolet Silverado 1500**

**40 Sensors**



We offer 2X as many sensors for a 2018 Silverado compared to a 2000 model

# Impact on Vehicle Systems



Many sensors operate in a harsh environment (heat, dirt, fluids, etc.).

When a new sensor is installed, also replace the related connector



Control modules are continually monitoring and processing the data received from a vehicle's onboard sensors. In some cases, a trouble code may be set for one system, but it may be an unrelated sensor that is at fault



Every diagnosis should begin with a complete vehicle scan. Sensor failures in companion systems may put other systems in a default mode

# Accuracy, Speed, and Durability

Modern vehicles are equipped with more sensors than ever before. Echlin's state-of-the-art Sensors are designed with multiple features to optimize accuracy, speed, and durability, and provide today's vehicle systems with the information they require to operate properly.



## Accuracy

Consistency and accurate performance is driven by advanced circuitry, OE-matched connectors, and meticulous assembly processes

Echlin® Sensors are protected against electromagnetic interference for accurate, long-term performance in all conditions



## Speed

Deliver the data that vehicles need in real-time to keep every system operating as designed - no delays

Undergo rigorous testing for operational temperature, extreme conditions, humidity, contamination, and mechanical service to ensure peak speed and performance



## Durability

Integrated waterproof connectors keep moisture out

High-strength material and sealed cases prevent intrusion of dirt and debris

Protective sleeve prevents wires from chafing and creating short circuits\*

\*(where applicable)

# A Complete Sensor Program

Echlin® offers nearly 90 different types of Sensors across multiple categories. The Echlin® Sensors Program includes Chassis and Drivetrain Sensors, Fluid Level Sensors, Fuel Sensors, Position Sensors, Temperature Sensors, Pressure Sensors, ADAS Sensors and more.

Echlin® Sensors are engineered and tested for precision and will integrate correctly with the complex systems on today's vehicles.

## Echlin® Sensor Program

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### Chassis & Drivetrain Sensors

- ABS Speed Sensors
- Brake Pad Wear Sensors
- Brake Pedal Position Sensors
- Ride Height Sensors
- Transmission Input and Output Sensors
- Turbocharger Speed Sensors
- Vehicle Speed Sensors

### Position Sensors

- Accelerator Pedal Position Sensors
- Camshaft Position Sensors
- Crankshaft Position Sensors
- EGR Valve Position Sensors
- Fuel Vapor / Vent Pressure Sensors
- Throttle Position Sensors

### Fluid Level Sensors

- Brake Fluid Level Sensors
- Coolant Level Sensors
- Engine Oil Level Sensors
- Fuel Level Sensors
- Windshield Washer Level Sensors

### ADAS Sensors

- Blind Spot Detection Sensors
- Cruise Control Distance Sensors
- Park Assist Sensors
- Steering Angle Sensors

### Fuel Sensors

- Diesel Injection Control Pressure Sensors
- Diesel Nitrogen Oxide (NOx) Sensors
- Flex Fuel Sensors
- Fuel / Water Separator Sensors
- Knock Sensors
- Mass Air Flow Sensors

### Temperature Sensors

- Ambient Air Temperature Sensors
- Cabin Air Temperature Sensors
- Coolant Temperature Sensors
- Cylinder Head Temperature Sensors
- Exhaust Gas Temperature Sensors
- Intake Air Temperature Sensors

### Pressure Sensors

- Diesel Particulate Filter Pressure Sensors
- EGR Valve Pressure Feedback Sensors
- Exhaust Back Pressure Sensors
- Fuel Pressure Sensors
- MAP Sensors
- TPMS Sensors
- ...and more

# What's New

## ABS Speed Sensors

Complex safety systems featured in new vehicles depend on real-time data from ABS sensors. Echlin® is regularly delivering new numbers to make sure technicians have the coverage needed to get their customers back on the road.

For the most recent applications, check the online catalog at [NAPAEchlin.com](http://NAPAEchlin.com).



**534034**  
Rear  
RAM 1500  
(2025-19) VIO: 1.4M



**533957**  
Left Front  
GM Trucks & SUVs  
(2024-21) VIO: 2.9M



**534046**  
Left Front  
GM Trucks  
(2024-20) VIO: 1M



**533769**  
Front  
RAM Trucks  
(2018-13) VIO: 801K



# What's New

## Cam and Crank Sensors

Echlin® offers more than 1,100 Cam and Crank Sensors, representing 698 million repair opportunities. New Sensors are introduced regularly to make sure technicians have the late-model coverage they need.

For the most recent applications, check the online catalog at [NAPAEchlin.com](https://www.NAPAEchlin.com).



**CSS2082**  
Camshaft Sensor  
Genesis Cars & SUVs  
(2024-21) VIO: 98K



**CSS9296**  
Crankshaft Sensor  
Genesis / Kia Cars  
(2023-18) VIO: 44K



**CSS21176**  
Crankshaft Sensor  
Toyota Highlander  
(2022-17) VIO 1.1M



**CSS2020**  
Crankshaft Sensor  
Nissan Cars & SUVs  
(2024-19) VIO 1M



ECHLIN

Cam and Crank Sensors

[NAPAEchlin.com](https://www.NAPAEchlin.com)

# What's New

## MAP Sensors

Echlin® offers more than 300 Manifold Absolute Pressure (MAP) Sensors, covering 226 million vehicles on the road. Echlin® is committed to regularly introducing new MAP Sensors to cover late-model import and domestic vehicles.

For the most recent applications, check the online catalog at [NAPAEchlin.com](http://NAPAEchlin.com).



**2-27437**

Dodge / Jeep / Fiat SUVs  
(2025-19) VIO: 80K



**2-27476**

Ford Cars, Trucks & SUVs  
(2024-19) VIO: 1.8M



**2-27474**

Subaru Cars & SUVs  
(2023-19) VIO: 481K



**2-27466**

Hyundai / Kia Cars & SUVs  
(2025-19) VIO: 1M





# Top Movers: ABS Speed Sensors

**IMPORT  
APPLICATIONS**



**531340**

Left Front / Left Rear  
Toyota / Lexus  
Trucks & SUVs  
(2024-03)



**531905**

Front  
Nissan  
Cars  
(2014-07)



**531339**

Right Rear  
Toyota / Lexus  
Trucks & SUVs  
(2024-03)



**532249**

Left Front  
Toyota  
Trucks & SUVs  
(2017-07)



**532248**

Right Front  
Toyota  
Trucks & SUVs  
(2017-07)

**DOMESTIC  
APPLICATIONS**



**532391**

Rear  
Dodge / Jeep  
SUVs  
(2018-07)



**532377**

Front  
Jeep  
Wrangler  
(2018-07)



**531924**

Front  
GM  
Trucks & SUVs  
(2014-07)



**532701**

Front  
Ford / Lincoln / Volvo  
Cars, SUVs & Vans  
(2020-04)



**533002**

Front / Rear  
GM  
Trucks and SUVs  
(2020-14)



**ECHLIN**

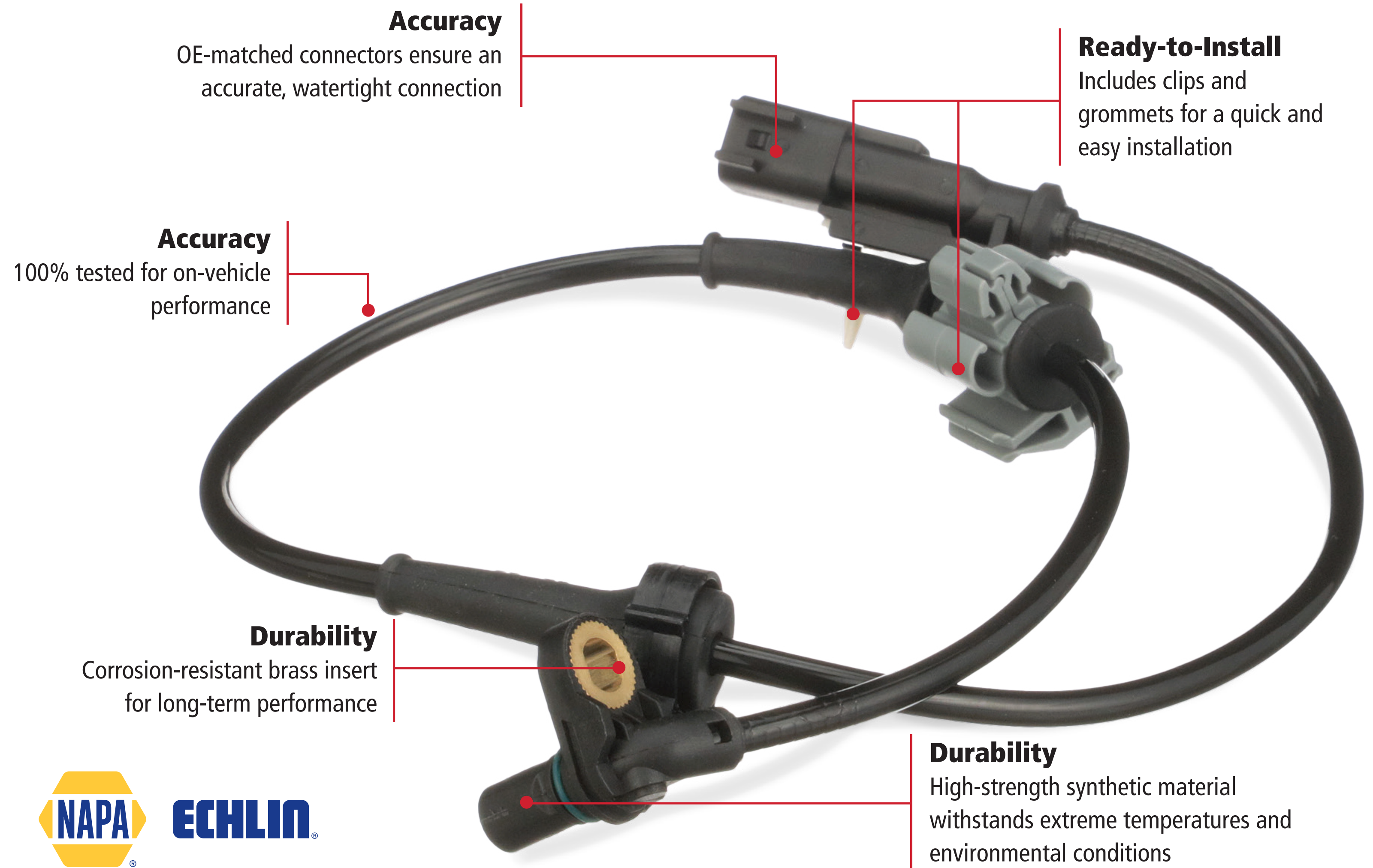
ABS Speed Sensors

[NAPAEchlin.com](https://www.napaechlin.com)

# Engineering & Performance

Echlin® ABS Speed Sensors are designed to provide consistent performance, matching the OE for precise function. Features such as superior magnetic circuit materials are engineered into our Sensors to deliver higher voltage output and prevent ABS system failure.

Superior design is one reason Echlin's ABS Sensors perform like the original.



## Accuracy

OE-matched connectors ensure an accurate, watertight connection

## Ready-to-Install

Includes clips and grommets for a quick and easy installation

## Accuracy

100% tested for on-vehicle performance

## Durability

Corrosion-resistant brass insert for long-term performance

## Durability

High-strength synthetic material withstands extreme temperatures and environmental conditions



**ECHLIN**

**533002**

Front / Rear  
GM Trucks & SUVs  
(2020-14)



**ECHLIN**

ABS Speed Sensors

[NAPAEchlin.com](http://NAPAEchlin.com)

# Engineering & Performance

The ABS speed sensors on some newer vehicles measure more than just the speed of each wheel. They also monitor the direction in which the wheel is rotating. A wheel that is rotating backwards will send a unique signal to the ECU that lets the vehicle know the speed and direction of that wheel. This data is used by the electronic safety systems to help keep everyone in the vehicle safe.

In recent years, ABS speed sensors have taken on additional responsibilities in safety systems. Electronic stability control, hill hold assist, and automated braking all depend on ABS sensors to function properly.



**Aftermarket  
Competitor**

Uses one sensor to measure wheel speed

Generates the same wheel speed signal for forward and reverse

Doesn't give the ECU enough information, especially in emergency situations



**Echlin®  
531339**

Uses multiple microsensors to measure wheel speed and wheel rotation

Generates the correct separate wheel speed signals for forward and reverse

Provide the ECU with accurate and complete information to keep crash avoidance systems operating as designed

# Top Movers: Cam and Crank Sensors

## IMPORT APPLICATIONS



**CSS1095**

Camshaft / Crankshaft Sensor  
Nissan / Infiniti  
Cars, Trucks, SUVs & Vans  
(2021-02)



**CSS1096**

Camshaft / Crankshaft Sensor  
Nissan / Infiniti  
Cars, Trucks, SUVs & Vans  
(2017-00)



**CSS1451**

Camshaft Sensor  
Hyundai / Kia  
Cars & SUVs  
(2023-11)



**CSS1004**

Camshaft / Crankshaft Sensor  
Nissan  
Cars, Trucks & SUVs  
(2018-01)



**CSS1387**

Crankshaft Sensor  
Audi / Volkswagen  
Cars & SUVs  
(2023-10)

## DOMESTIC APPLICATIONS



**CSS1440**

Camshaft Sensor  
Chrysler / Dodge / Jeep / RAM  
Cars, Trucks & SUVs  
(2024-11)



**CSS1394**

Crankshaft Sensor  
Chrysler / Dodge / Jeep / RAM  
Cars, SUVs & Vans  
(2023-11)



**CSS1416**

Camshaft Sensor  
Ford / Lincoln  
Cars, Trucks, SUVs & Vans  
(2024-11)



**CSS9290**

Camshaft / Crankshaft Sensor  
Dodge / RAM  
Trucks  
(2020-02)



**CSS634**

Camshaft / Crankshaft Sensor  
Chrysler / Dodge / Jeep  
Cars & SUVs  
(2011-00)

# Camshaft Sensors

The performance of variable valve timing on modern engines is dependent on real-time data from the camshaft position sensors. This is why every Echlin® Camshaft Sensor is designed for accurate performance, fast processing and long-term durability. We put each unit through end-of-line timing, pulse width, and signal amplitude testing.

Echlin® Camshaft Position Sensors include multiple design features for accuracy, speed and durability.

## Echlin® Camshaft Position Sensors



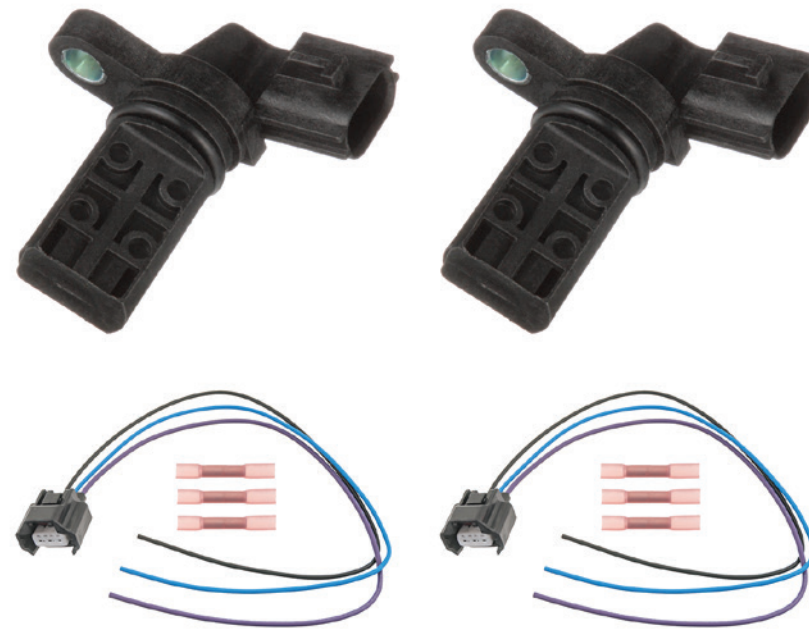
# Product Quality

Echlin® high-quality Camshaft Sensor Kits provide technicians with all of the parts needed to do the complete job right, every time.

Our enhanced Kits include two Echlin® Camshaft Sensors along with the high-quality connectors to replace the melted or damaged original parts.

We offer more than 20 Camshaft Sensor Kits, with more kits on the way.

## Echlin® Camshaft Sensor Kits



CSS1092K



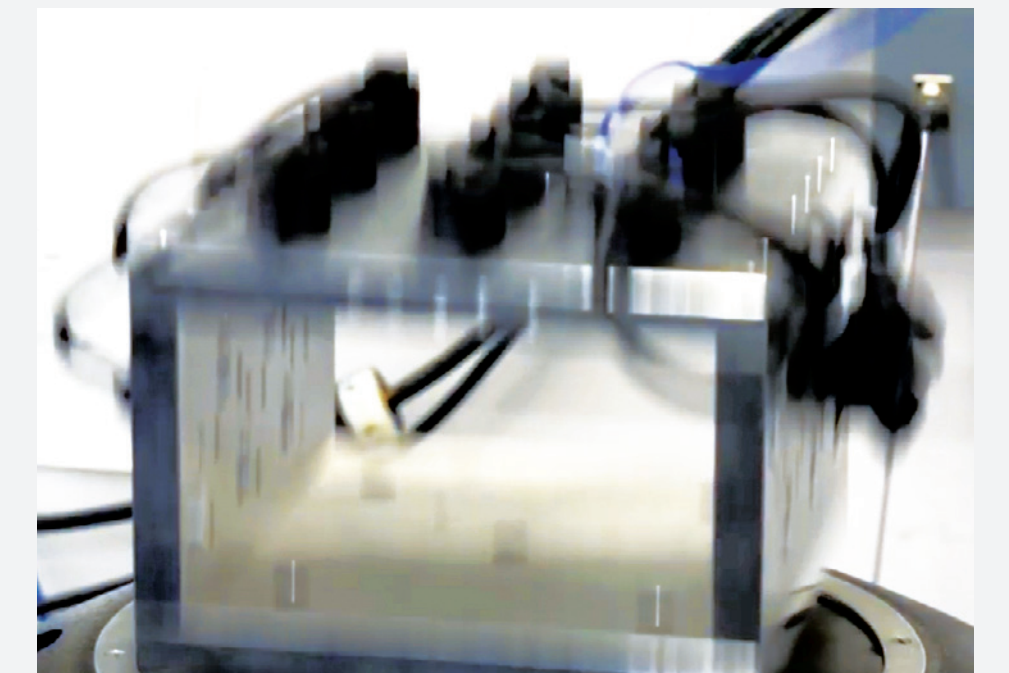
CSS1094K



CSS1096K

### Testing and Validation

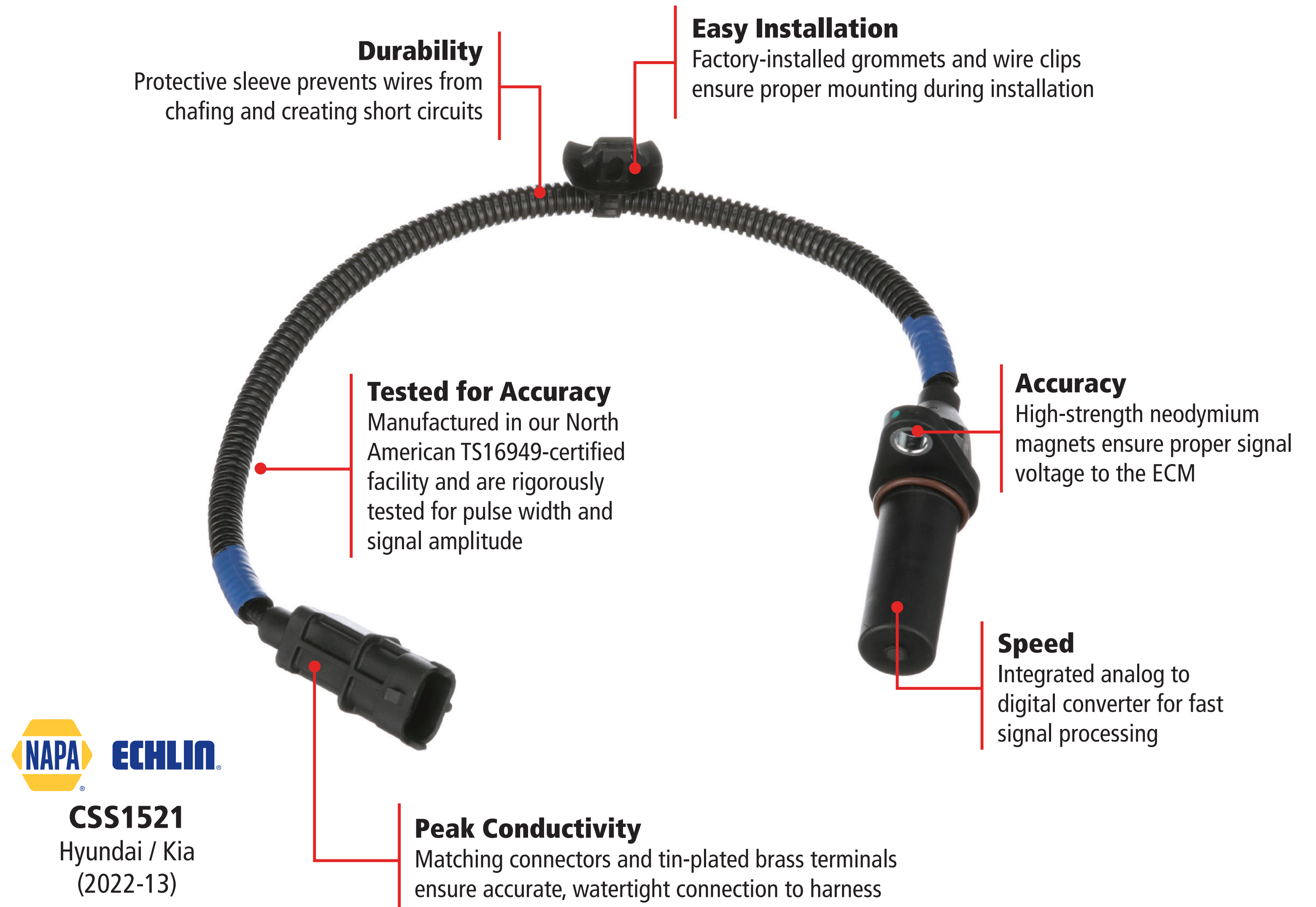
Our Camshaft Sensors undergo 48-to 68-hour vibration tests to ensure performance under the harshest conditions. Each sensor is subjected to end-of-line timing, pulse width, and signal amplitude testing.



# Crankshaft Sensors

Correct ignition timing depends on quick and accurate data from the crankshaft position sensors. All Echlin® Crankshaft Position Sensors are precision engineered and manufactured for accuracy, speed and durability. To ensure operation under extreme conditions, our Crankshaft Position Sensors are subjected to extensive testing including a 48- to 64-hour-long vibration test across three different planes.

## Echlin® Crankshaft Position Sensors



# Product Quality

Echlin® developed high-quality Crankshaft Sensor Kits to provide technicians with what they need to do the complete job.

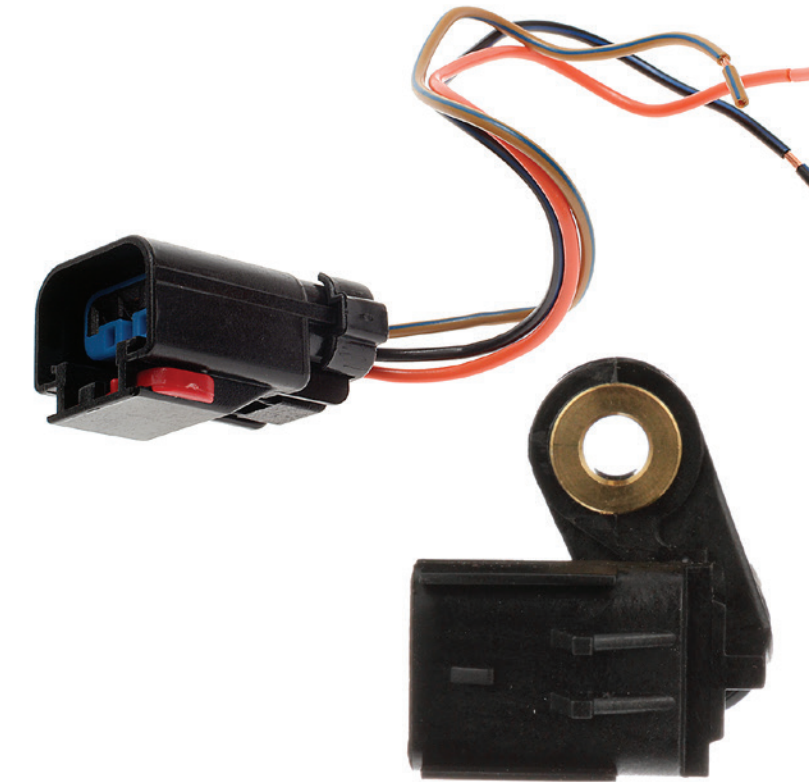
Echlin® Kits contain premium Crankshaft Sensors along with a high-quality electrical connector to replace the melted or damaged original parts.

We offer more than 20 Crankshaft Sensor Kits, with more kits on the way.

## Echlin® Crankshaft Sensor Kits



CSS212K



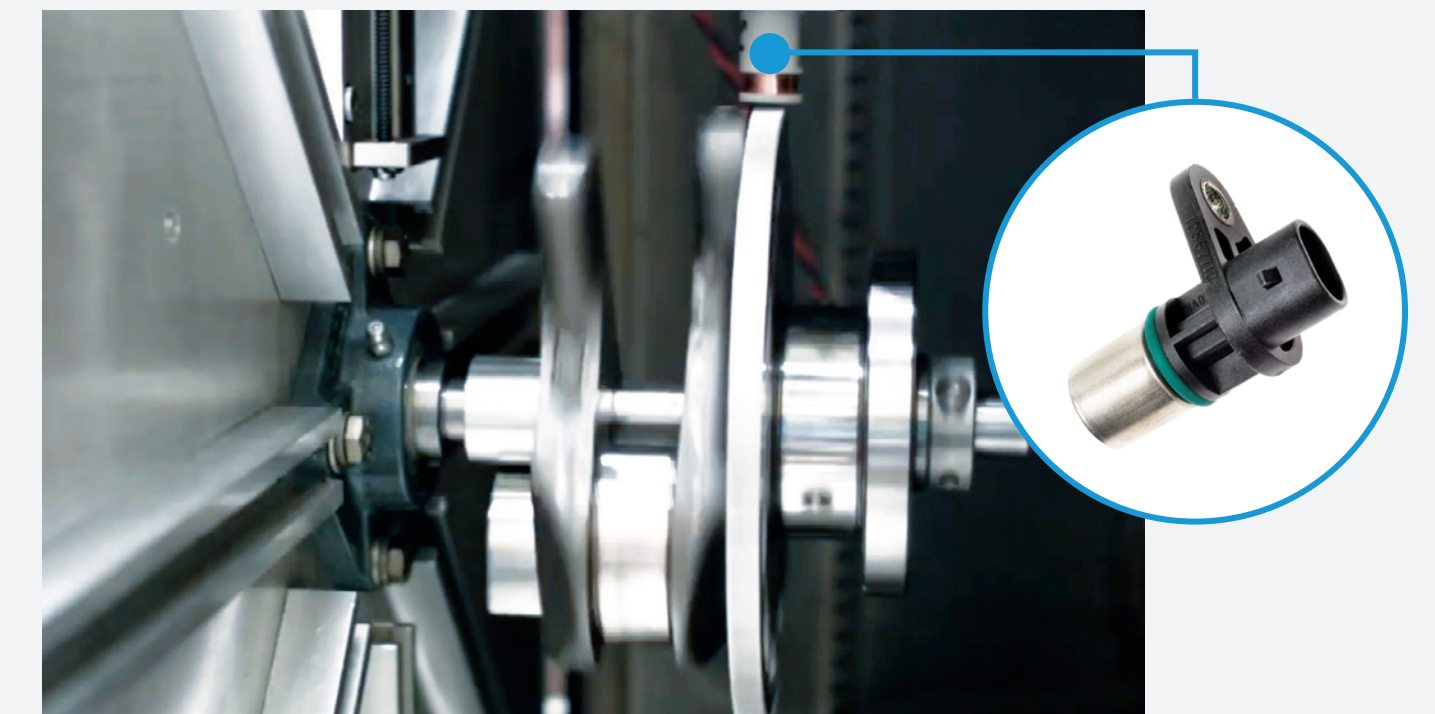
CSS634K



CSS620K

### Testing and Validation

Our Crankshaft Sensors undergo chamber testing that cycles from -40 degrees to 257 degrees Fahrenheit. This testing is performed to ensure our Crank Sensors maintain accuracy during extreme temperature conditions.





# A Closer Look

Manifold Absolute Pressure (MAP) sensors convert vacuum/manifold pressure to an electric signal. The real-time information is used for both fuel delivery and ignition.

## Did You Know

Many modern turbocharged engines utilize both MAP and Mass Air Flow (MAF) sensors to provide the vehicle's computer with precise information

## Echlin<sup>®</sup> MAP Sensors

### Accuracy

100% tested to ensure variations in pressure generate the correct output to match OE performance in all conditions

### Peak Conductivity

Utilizes precise automated wire bonding and inspection processes to ensure consistent and reliable electrical connections



**2-27136**  
Hyundai / Kia  
(2024-08)



### Durability

High-temperature, glass-reinforced plastic case forms a hermetically sealed cavity for the sensor on one side, with a port for pressure on the other

# Accelerator Pedal Sensors

The performance and accuracy of accelerator pedal sensors is critical to safety, vehicle performance, and fuel economy. Echlin® has over 400 Accelerator Pedal Sensors covering 250 million vehicles.

Echlin® Sensors undergo intense testing to make sure the output matches the slope and linearity of the original in all pedal positions.

## Echlin® Pro Training Tip

Due to the location of the APS and the amount of moisture or condensation that comes from wet floor mats and/or drivers' wet feet, it is advisable to use dielectric grease on the electrical connector.

## Echlin® Accelerator Pedal Sensors



### Accuracy

Multi-finger wiper design accurately controls sensor contact to within a few grams of force

### Precise Control

Features redundancy measures for safety and a comfortable, familiar pedal force profile

### Durability

High-impact synthetic polymer construction provides best solution to pedal support and spring guide components



**2-80164**

GM  
Trucks & SUVs  
(2020-07)

# Echlin® Quality

As an expert manufacturer, we have complete control of the process to deliver a trouble-free sensor. All Echlin® Vehicle Speed Sensors (VSS) undergo environmental and endurance testing for signal amplitude and polarity to ensure consistent product reliability and application-specific performance.

## Echlin® Pro Training Tip

VSS can be located in various locations such as in the transmission or in the differential. These locations expose the sensor to oil, road debris, and salt. Experts recommend replacing the electrical connector when a new sensor is installed.

## Echlin® Vehicle Speed Sensors



**VSS1003**  
Ford Cars & Trucks  
(2014-99)

# ADAS Sensor Program

Advanced driver assistance systems (ADAS) rely on multiple sensors to provide real-time data to both the driver and the vehicle. Sensors that have failed or are not correctly calibrated may put the motorist and the occupants at risk.

NAPAEchlin.com includes the most up-to-date information on our latest ADAS Components.



## Blind Spot Detection Sensors

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Echlin® BSD Sensors are direct-fit replacements to ensure proper fit and performance. All BSD Sensors undergo extensive quality testing and product validation.

125+ SKUs / VIO: 104M



## Cruise Control Distance Sensors

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Designed and manufactured to stringent quality standards to match the original for an easy install and to deliver precise performance.

75+ SKUs / VIO: 37M



## Steering Angle Sensors

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Echlin® Steering Angle Sensors are rigorously tested for proper fit and precise performance to match the original application they are replacing.

270+ SKUs / VIO: 230M



## Park Assist Sensors

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Echlin® Park Assist Sensors are direct-fit replacements utilizing advanced ultrasonic technology that exactly matches the detection capabilities of the original sensors.

200+ SKUs / VIO: 1B

# TPMS Program

Echlin® offers both QWIK-SENSOR® Multi-Frequency Sensors and pre-programmed OE-Match Sensors. The QWIK-SENSOR® can be quickly programmed to fit almost any vehicle. OE-Match Sensors can be installed right out of the box, without any programming.

NAPAEchlin.com features additional information on our TPMS Sensors, Service Kits, and Programming Tools.

**QWIK**®  
*sensor* **MULTI-FREQUENCY**  
Programmable TPMS Sensors



Available with rubber or metal valve stems

Can be programmed on or off of the vehicle

Works on both domestic and import vehicles with 314.9 MHz to 434 MHz systems

Military-grade lithium battery for maximum battery life

**NAPA** **ECHLIN**® **OE-Match**  
**TPMS**  
SENSORS



Pre-programmed at the factory with exact OE protocol, so it's ready to install

Direct-fit replacement that matches the fit and performance of the original

Military-grade lithium battery for maximum battery life

# Manufacturing and Testing

All Echlin® TPMS Sensors are designed and manufactured to meet the latest SAE2657 specifications.

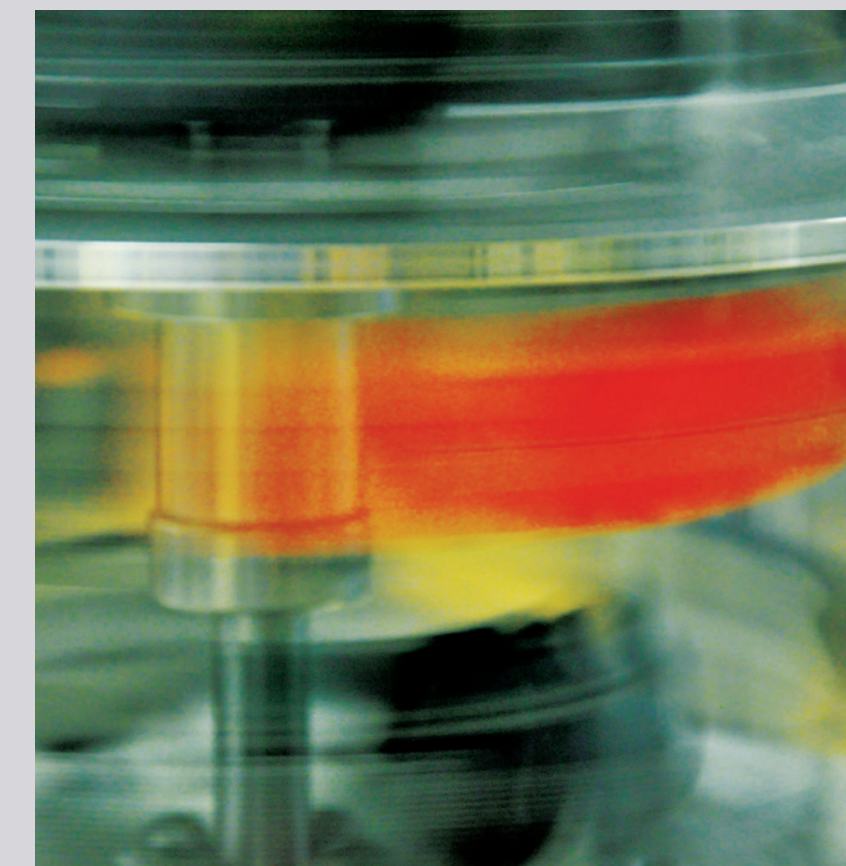
Our TPMS Sensors are subjected to multiple tests for operational temperature, thermal shock, extreme temperatures, humidity, contamination, salt fog, centrifugal force and mechanical testing. The result is a Sensor that works correctly in all conditions, and lasts.

NAPAEchlin.com features additional information on our TPMS Sensors, Service Kits, and Programming Tools.



## Echlin® TPMS Manufacturing

Our facility produces more than a million Sensors each year and has earned multiple certifications, including US FCC, European E-Mark, and Canada IC while meeting FMVSS 138, SAE J2657, ISO 9001 and IATF 16949 quality standards.



## Echlin® TPMS Testing

To make sure our TPMS Sensors last, we subject them to a high-speed accelerated life test.

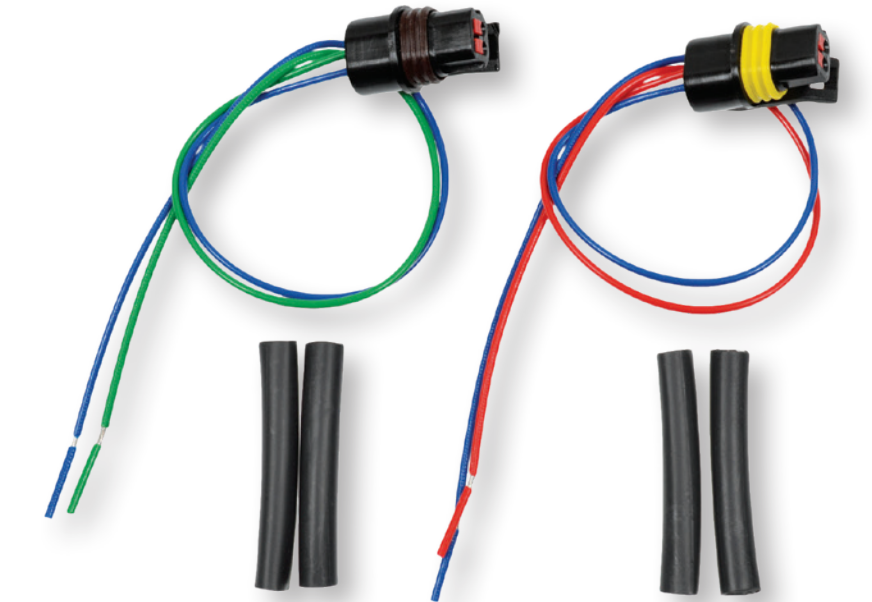
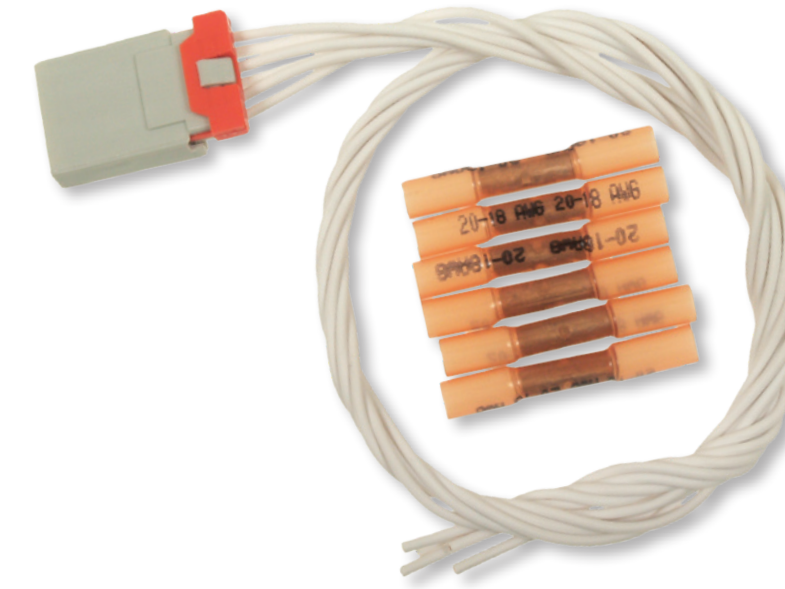
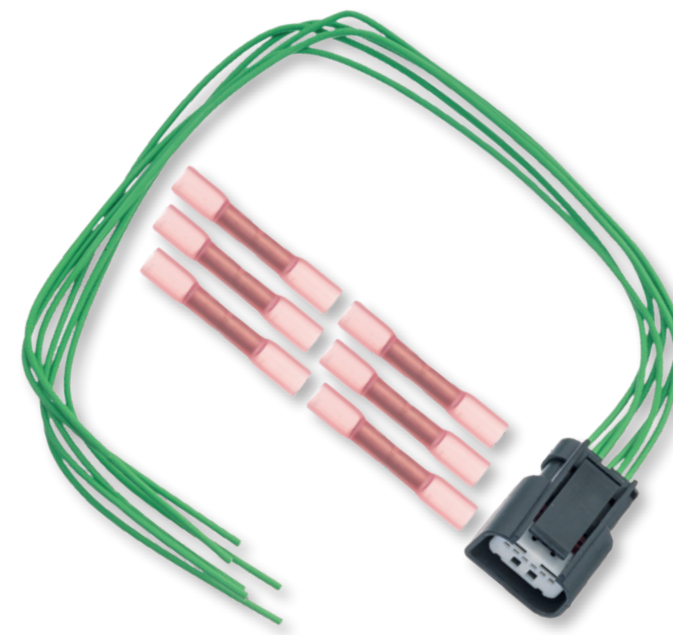
# Related Parts

## Sensor Connectors

In addition to nearly 90 different Sensor categories, we also offers thousands of Connectors technicians may need to get their customers back on the road.

For a comprehensive look at available Echlin's connectors, visit [NAPAEchlin.com](http://NAPAEchlin.com).

## Echlin® Sensor Connectors



ABS Sensor Connectors

Cruise Control Distance Sensor Connectors

Knock Sensor Connectors

Accelerator Pedal Sensor Connectors

EGR Valve Position Sensor Connectors

Mass Air Flow Sensor Connectors

Air Intake Temperature Sensor Connectors

Engine Oil Level Sensor Connectors

Misfire Sensor Connectors

Ambient Air Temperature Sensor Connectors

Engine Oil Temperature Sensor Connectors

Oxygen Sensor Connectors

Blind Spot Detection Sensor Connectors

Engine Speed Sensor Connectors

Park Assist Sensor Connectors

Camshaft Position Sensor Connectors

Exhaust Gas Temperature Sensor Connectors

Steering Angle Sensor Connectors

Crankshaft Position Sensor Connectors

Fuel Pressure Sensor Connectors

Vehicle Speed Sensor Connectors

...and more

# Echlin® Pro Training Tech Tip

As experienced ASE-certified automotive technicians themselves, Echlin® Pro Trainers are experts in engine and sensor technology.

Here's what they say to look out for when replacing a sensor.



**When replacing a crankshaft position sensor, make sure the appropriate relearn is performed. Failing to do this may cause the vehicle to misfire and run poorly**



**Accelerator pedal position sensors are known for poor connections causing intermittent "limp in/default" throttle conditions. Ensure that the electrical connection is clean and tight**



# Echlin® Professional Training

**Award-Winning In-Person, Live  
Virtual, and Online Learning**

Echlin® Pro Training delivers accredited classes that educate technicians in the latest automotive repair technologies, and techs can earn CEU credits.

An extension of Echlin® training, our extensive YouTube video library has over 500 technical and installation videos.



## Available Classes

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- Applied Voltage Drop Testing
- Brain Teasers
- GM Electric Powertrain Management
- Labscope
- Modern Cylinder Deactivation Techniques and Tips
- Rapid Sensor and Circuit Testing
- SENT Sensor Overview
- Vehicle Electronic Fundamentals 1-7



## Available Classes

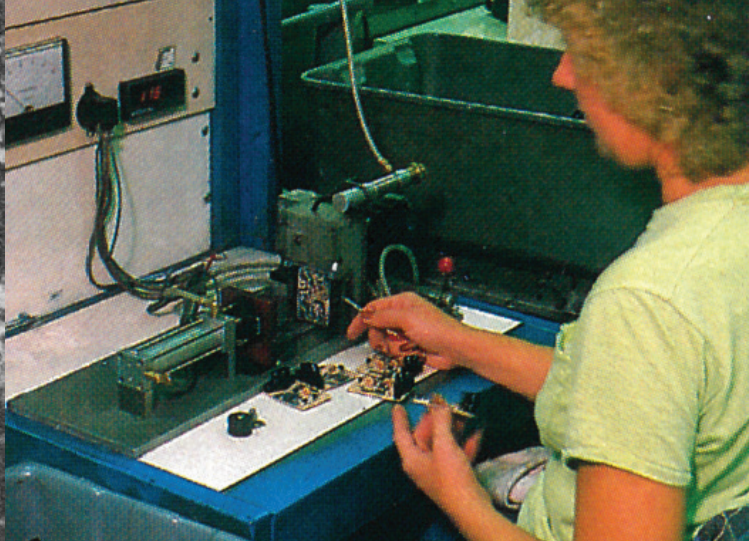
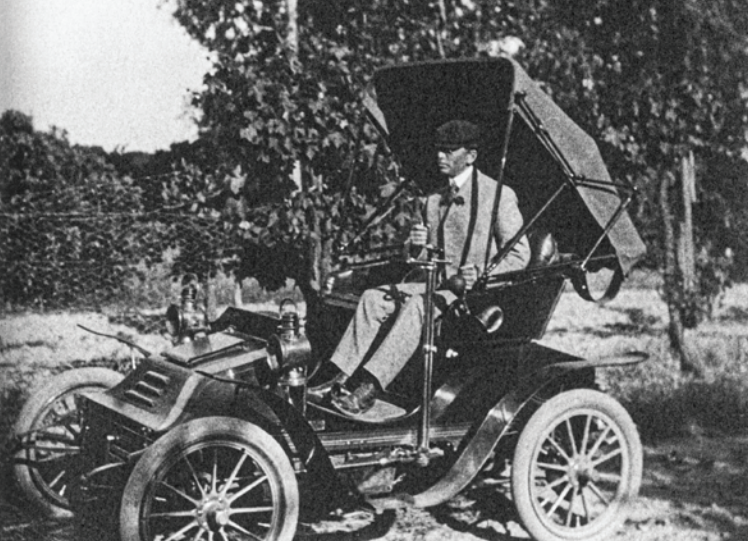
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- Advanced Driveability Diagnosis
- Body Control Electronics Diagnosis
- Ignition System and Cam/Crank Synchronization
- Labscope Power User
- Misfire Diagnosis
- Powertrain Electronics
- Torque Management and Electronic Throttle Control
- Unleash the Power of Your Scan Tool

# 100 Years of Excellence

For 100 years, marketing support materials and advertisements have been created to build Echlin® into a well-known, trusted, and reputable national brand.

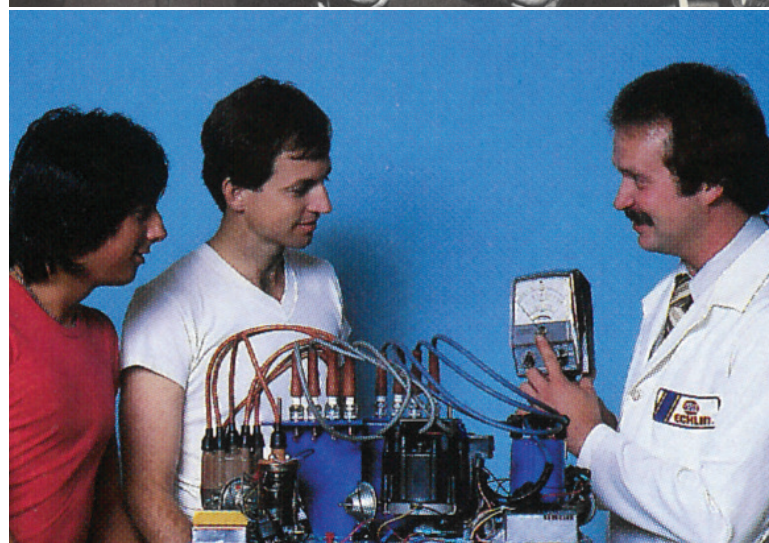
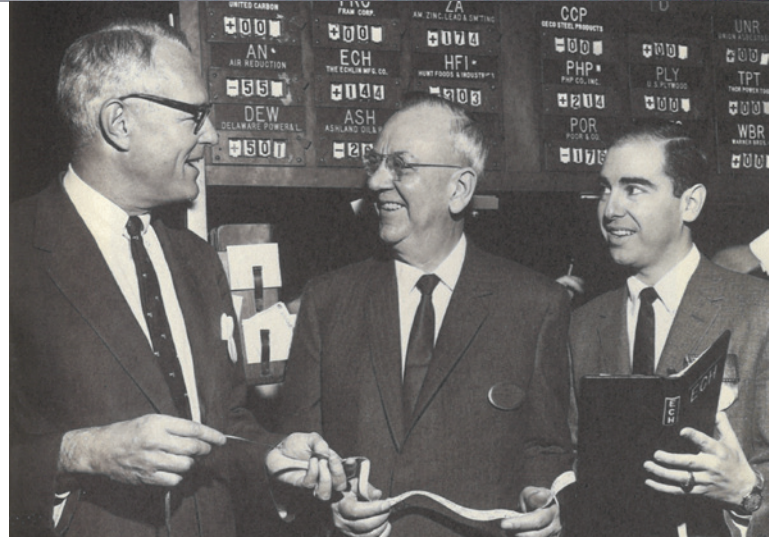
Building brand loyalty and recognition with professional technicians takes decades. For 100 years, Echlin® has been supporting NAPA® with national advertising campaigns and more recently, effective technical training programs. Most importantly, the Echlin® brand has endured because generations of professional technicians know they can trust what's in the box.



# ECHLIN®

# 100

## YEARS OF EXCELLENCE



**Visumatic...**  
a multi-purpose business system

**FOR BRINGING IN REPEAT BUSINESS**

When you finish a brake job, you can proudly say, "Mr. Morgan, I can see independent. Free to buy the best parts made. I installed United Brake Parts. I took pains to replace every part needed to give you safe, trouble-free performance. I am proud of what I did for you."

*"I INSTALLED UNITED BRAKE PARTS... AND I DID A FIRST CLASS JOB!"*

**Visumatic...** FOR BRINGING IN REPEAT BUSINESS

