

NAPA® ECHLIN® SENSOR PROGRAM

Highlights

1

NAPA® Echlin® offers more than 9,000 different Sensors covering over 80 categories

2

NAPA® Echlin® has more than 2,600 ABS Speed Sensors, representing 700M repair opportunities

3

Many popular Sensor categories are powertrain-neutral, meaning they fit gas, diesel, hybrid and electric vehicles



What's in your box?



Growing Market

Modern vehicles are equipped with more sensors than ever. Electronic safety systems and a focus on reducing emissions have created entirely new categories of sensors that were unimaginable 20 years ago.

The Automotive Sensors market is expected to grow at 6.6% annually through 2030.

Sources: SMP Internal Data
Reports Insights, Automotive Sensors Market Study, Nov 2022

NAPA® Echlin®
has more than 2X
the Sensors for a 2018
Toyota RAV4
compared to a
2000 model



2018 RAV4 32 Sensors

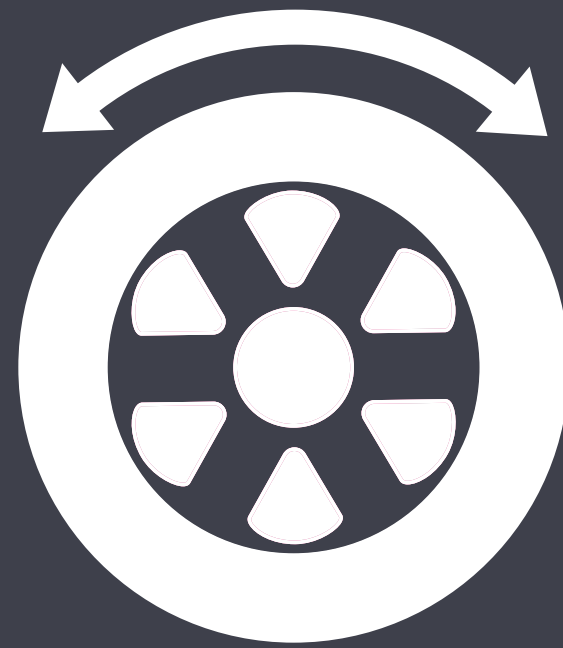
- | | |
|----------------------------------|--------------------------------|
| ABS Speed Sensors X 4 | Front Park Assist Sensors X 4 |
| Ambient Air Temperature Sensor | Rear Park Assist Sensors X 4 |
| Transmission Input Sensor | TPMS Sensors X 4 |
| Transmission Output Sensor | Vehicle Speed Sensor |
| Battery Current / Volt Sensor | Windshield Washer Level Sensor |
| Blind Spot Detection Sensors X 2 | |
| Brake Pedal Travel Sensor | |
| Camshaft Position Sensors X 2 | |
| Coolant Temperature Sensor | |
| Crankshaft Position Sensor | |
| Cruise Control Distance Sensor | |
| Knock Sensor | |
| MAP Sensor | |

2000 RAV4 14 Sensors

- | | |
|--------------------------------|----------------------------|
| ABS Speed Sensors X 4 | Crankshaft Position Sensor |
| Ambient Air Temperature Sensor | Air Intake Temp Sensor |
| Transmission Oil Temp Sensor | Knock Sensor |
| Camshaft Position Sensor | MAP Sensor |
| Coolant Temperature Sensor | Throttle Position Sensor |
| | Vehicle Speed Sensor |

NAPA® ECHLIN® SENSORS

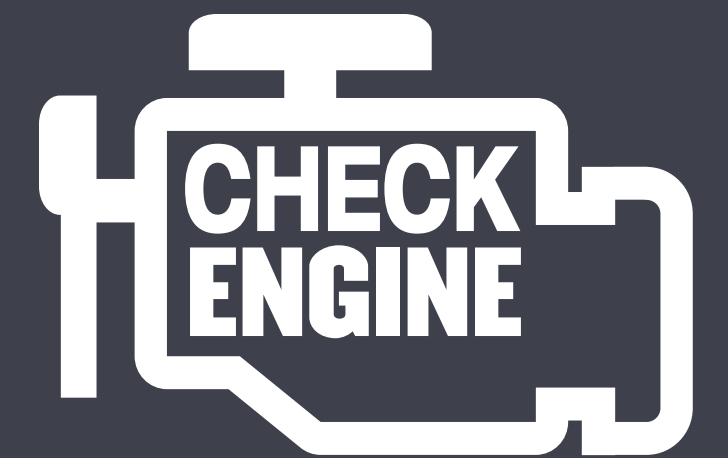
Impact on Engine Systems



**Sensors on modern vehicles
are becoming more
complex. Some ABS speed
sensors include multiple
sensors that also measure
the direction of the
wheel rotation**



**Any sensor that measures
vehicle position, speed,
throttle position, wheel
speed, or proximity can
affect the performance of
electronic safety systems**



**A faulty cam sensor can
cause an extended crank
situation. When the
vehicle is being started,
the engine may just
continue rotating as the
computer is looking for
enough information**

A Complete Sensor Program

NAPA® Echlin® offers more than 80 different kinds of Sensors across multiple categories. The NAPA® Echlin® Sensors Program includes Chassis and Drivetrain Sensors, Fluid Level Sensors, Fuel Sensors, Position Sensors, Temperature Sensors, Pressure Sensors ADAS Sensors, and more.

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

NAPA® Echlin® Sensor Program

Chassis & Drivetrain Sensors

- ABS Speed Sensors
- Vehicle Speed Sensors
- Transmission Input and Output Sensors
- Turbocharger Speed Sensors

Fluid Level Sensors

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

ADAS Sensors

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

Fuel Sensors

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

Position Sensors

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

Temperature Sensors

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

Pressure Sensors

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

NAPA® ECHLIN®
ABS SPEED SENSORS

What's New

New vehicles with complex safety systems depend on real-time data from ABS sensors. NAPA® Echlin® delivers new numbers to make sure you have the coverage needed to get your customers back on the road.

For the most recent applications, check the online catalog at www.NAPAEchlin.com.



533639
Ford Super Duty
(2016-2013)
VIO: 1.2M



533653
Audi / VW Cars and SUVs
(2022-2019)
VIO: 797K



533711
Toyota Corolla
(2022-2019)
VIO: 823K



NAPA® ECHLIN®
CAM AND CRANK SENSORS

What's New

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

For the most recent applications, check the online catalog at www.NAPAEchlin.com.



CSS2037
Camshaft Sensors
Ford Super Duty
(2021-20)
VIO: 139K



CSS2004
Camshaft Sensors
Hyundai / Kia
Cars and SUVs
(2022-2017)
VIO: 136K



CSS2032
Crankshaft Sensors
Toyota Cars and SUVs
(2021-18)
VIO: 1.05M



NAPA® ECHLIN® MAP SENSORS

What's New

NAPA® Echlin® offers more than 330 MAP (Manifold Absolute Pressure) Sensors, covering 200 million vehicles on the road. NAPA® 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 www.NAPAEchlin.com.



2-27461
GM Cars and Trucks
(2021-19)
VIO: 51K



2-27467
GM SUVs
(2019-2017)
VIO: 15K



2-27469
Hyundai / Kia Cars
(2020-2019)
VIO: 138K



NAPA® ECHLIN® ABS SPEED SENSORS

Top Movers

IMPORT APPLICATIONS



531905

Nissan Cars
(2014-07)



532022

Honda / Acura Cars
(2012-08)



532011

Honda / Acura Cars
(2012-08)



531339

Toyota / Lexus Trucks & SUVs
(2022-03)



531145

Audi / VW Cars
(2019-05)

DOMESTIC APPLICATIONS



532391

Dodge / Jeep SUVs
(2017-07)



532377

Jeep SUVs
(2018-07)



531158

GM Trucks & SUVs
(2014-99)



531924

GM Trucks & SUVs
(2014-07)



532832

Ford Cars, SUVs & Vans
(2019-04)

NAPA® ECHLIN®
ABS SPEED SENSORS

Engineering & Performance

The ABS speed sensors on some newer vehicles measure more than just the speed of each wheel. They also monitor the direction 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 each wheel. This data is used by the electronic safety systems to help keep everyone in the vehicle safe.



Aftermarket
Competitor

Uses one simple sensor to measure wheel speed

Generates the same signal for forward and reverse

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



NAPA® Echlin®
531339

Uses multiple micro sensors to measure wheel speed and wheel rotation

Generates separate signals for forward and reverse

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

NAPA® ECHLIN® CAM AND CRANK SENSORS

Top Movers

IMPORT APPLICATIONS



CSS1435

Hyundai / Kia Cars & SUVs
(2022-10)



CSS1215

Nissan Trucks & SUVs
(2020-05)



CSS9099

Nissan / Infiniti Cars & SUVs
(2008-02)



CSS1275

Nissan / Infiniti Cars & SUVs
(2020-06)



CSS1312

Honda Cars
(2015-08)

DOMESTIC APPLICATIONS



CSS1184

Chrysler, Dodge & Jeep
Cars, Trucks & SUVs
(2020-05)



CSS146

GM Cars, Trucks & SUVs
(2010-97)



CSS9252

GM Cars, Trucks & SUVs
(2020-06)



CSS1143

Ford Trucks & Vans
(2019-90)



CSS715

Chrysler, Dodge & Jeep
Cars, Trucks & SUVs
(2008-99)

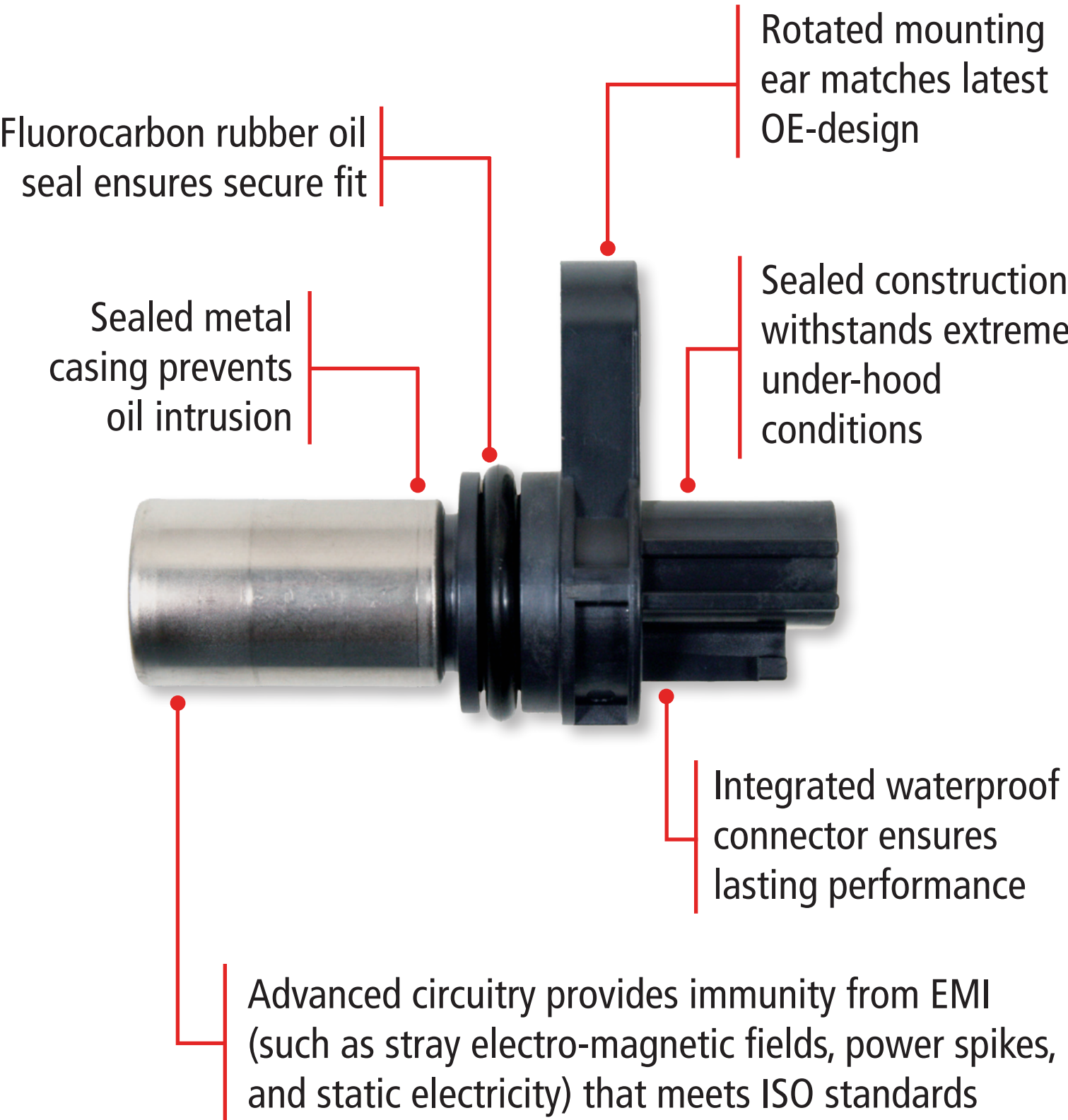
NAPA® ECHLIN® QUALITY

Cam and Crank Sensors

Today's advanced engines depend on information from cam and crank sensors to make thousands of decisions per mile about fuel and ignition. Failing or low-quality sensors can affect fuel economy and vehicle performance.

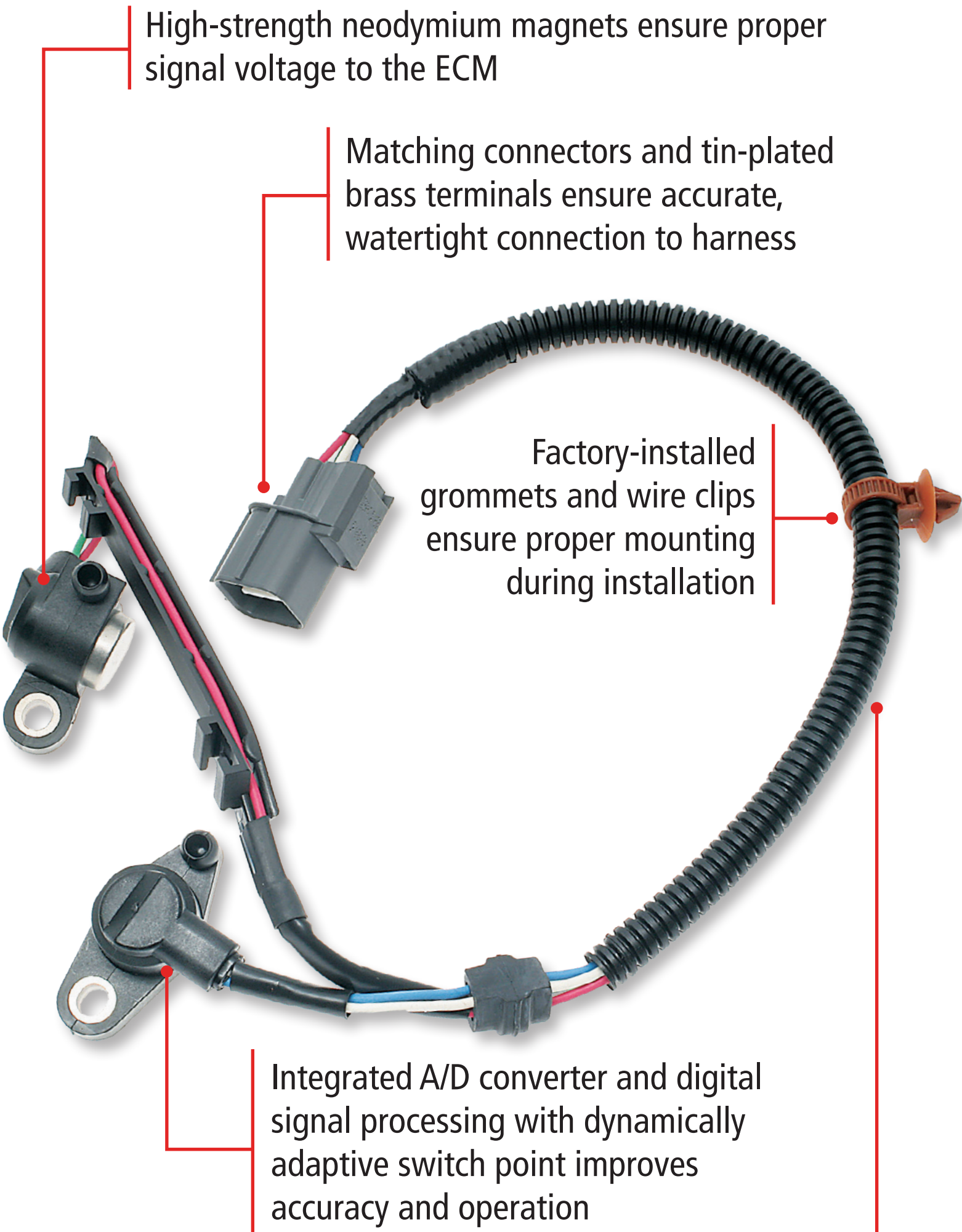
NAPA® Echlin® considers every signal detail to deliver a Sensor that operates correctly in all conditions.

NAPA® Echlin® Camshaft Position Sensors



CSS1004
Nissan
(2018-01)

NAPA® Echlin® Crankshaft Position Sensors



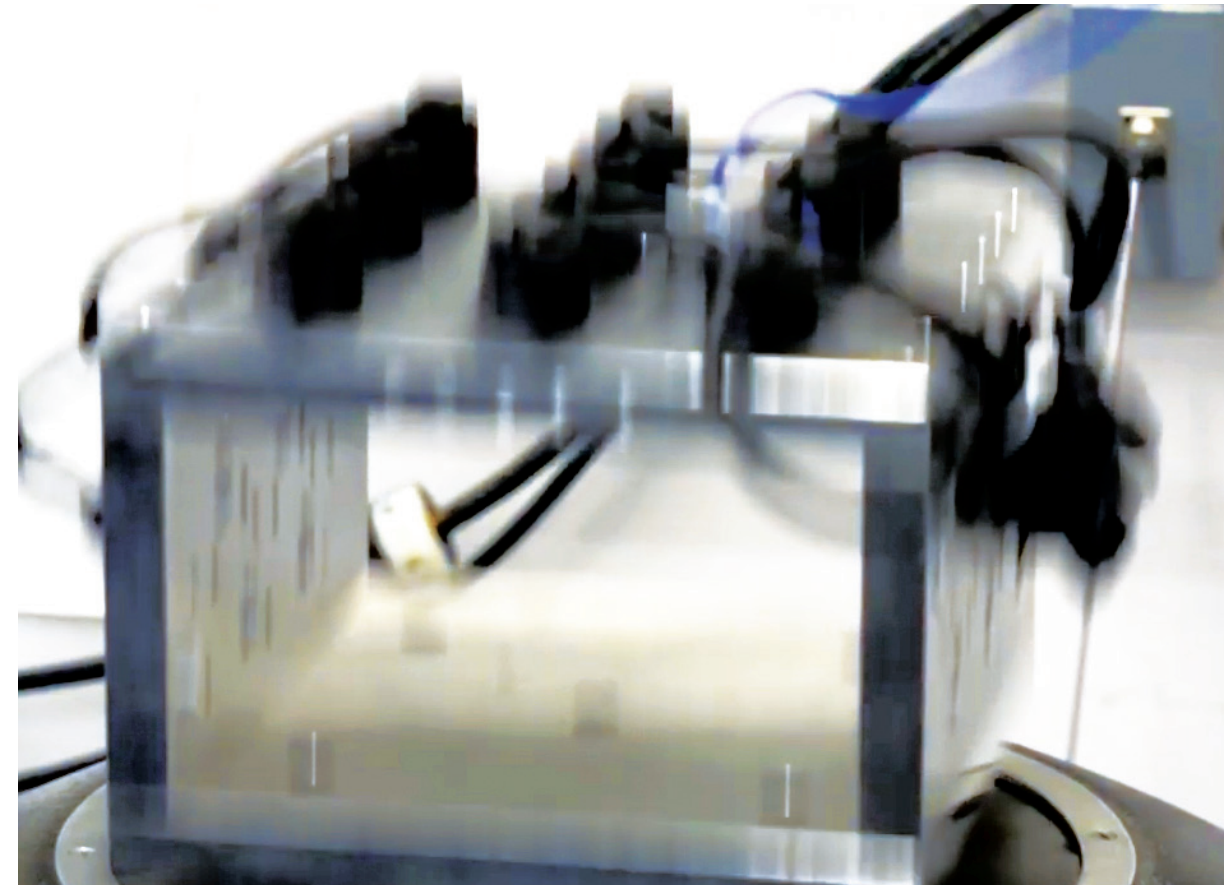
CSS996
Honda/Acura
(2002-95)

NAPA® ECHLIN® TESTING

Cam and Crank Sensors

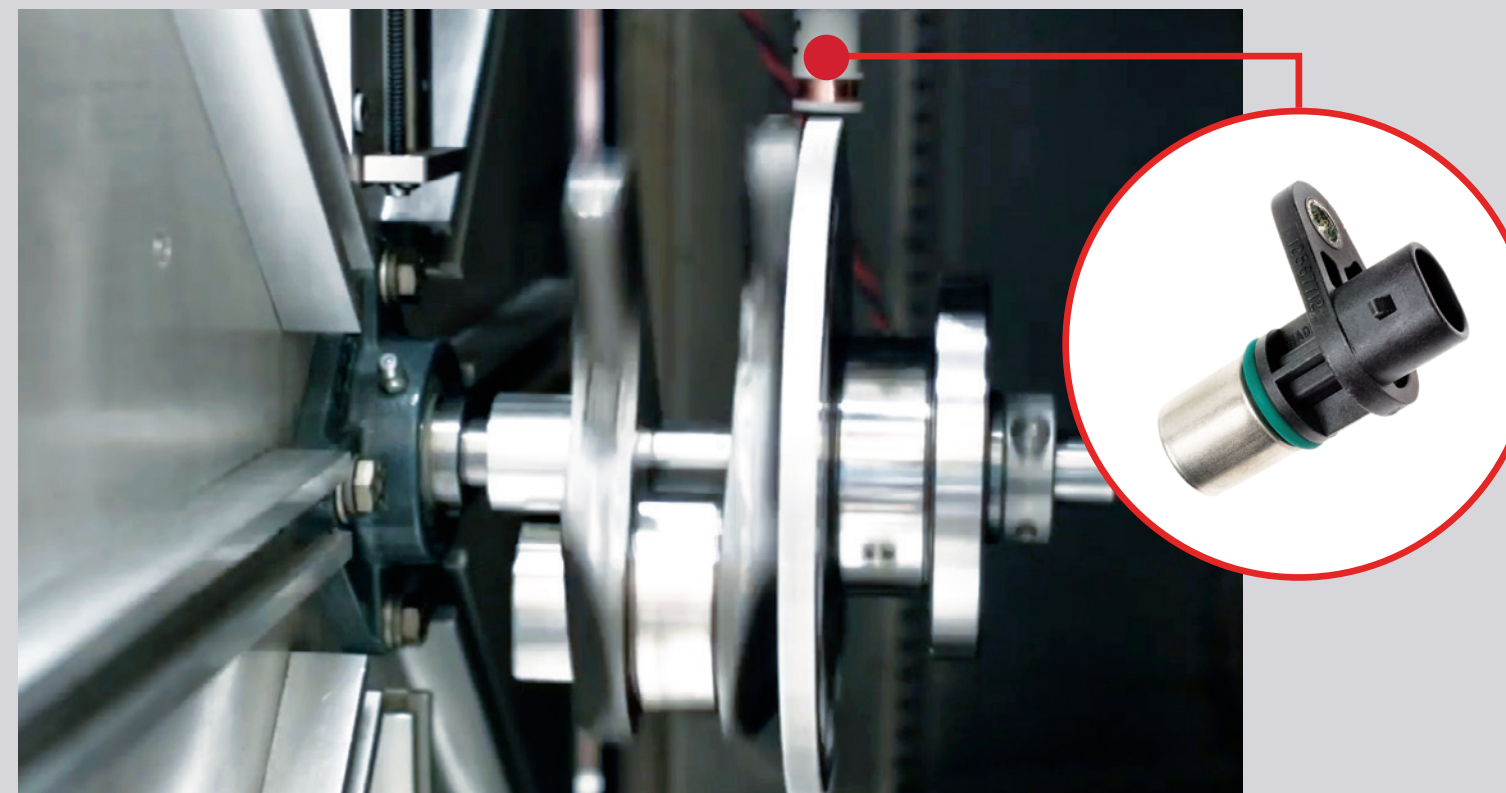
NAPA® Echlin® Cam and Crank Sensors are manufactured in our North American TS16949-certified facility and are rigorously tested for pulse width and signal amplitude.

NAPA® Echlin® Camshaft Position Sensors



NAPA® Echlin® Camshaft Position Sensors are subjected to 48-68 hour vibration tests across multiple planes. This helps to ensure correct and accurate performance in any situation.

NAPA® Echlin® Crankshaft Position Sensors



NAPA® Echlin® Crankshaft Position Sensors undergo intense chamber testing from -40 to 257 degrees. Our extensive testing helps protect against incorrect voltage output and short circuits to maintain accuracy in all conditions.

NAPA® ECHLIN® MAP SENSORS

A Closer Look

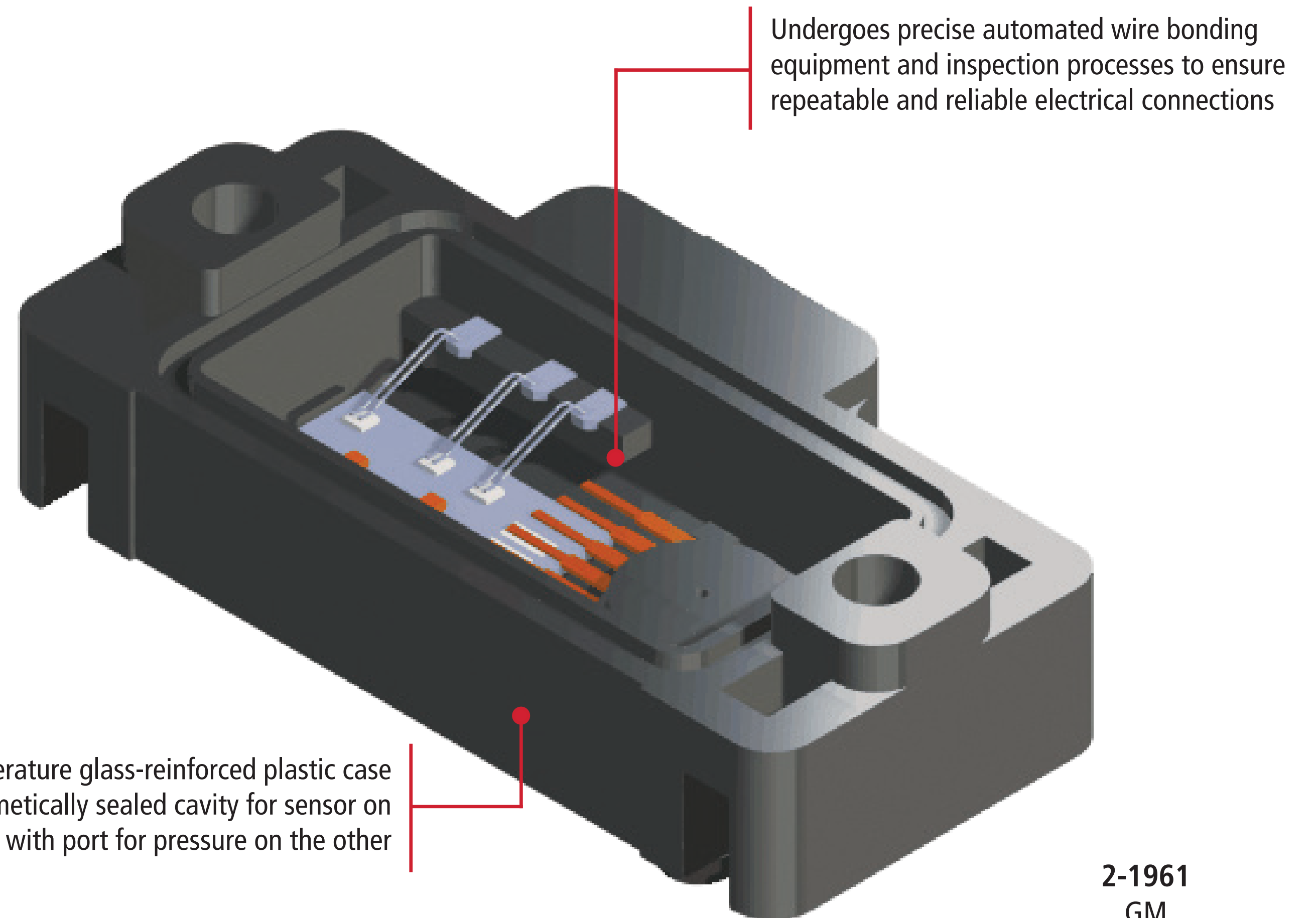
MAP sensors convert vacuum/manifold pressure to an electric signal. The real-time information is used for both fuel delivery and ignition.

NAPA® Echlin® MAP Sensors are 100% tested to make sure variations in pressure generate the correct output to match OE performance in all conditions.

Did you Know?

Many modern turbocharged engines use both MAP and MAF sensors.

NAPA® Echlin® MAP Sensors



2-1961
GM
(2004-82)

NAPA® ECHLIN® SENSORS

Accelerator Pedal Sensors

The performance and accuracy of Accelerator Pedal Sensors is critical to vehicle performance, fuel economy and safety. NAPA® Echlin® has over 425 Accelerator Pedal Sensors, covering 250 million vehicles.

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

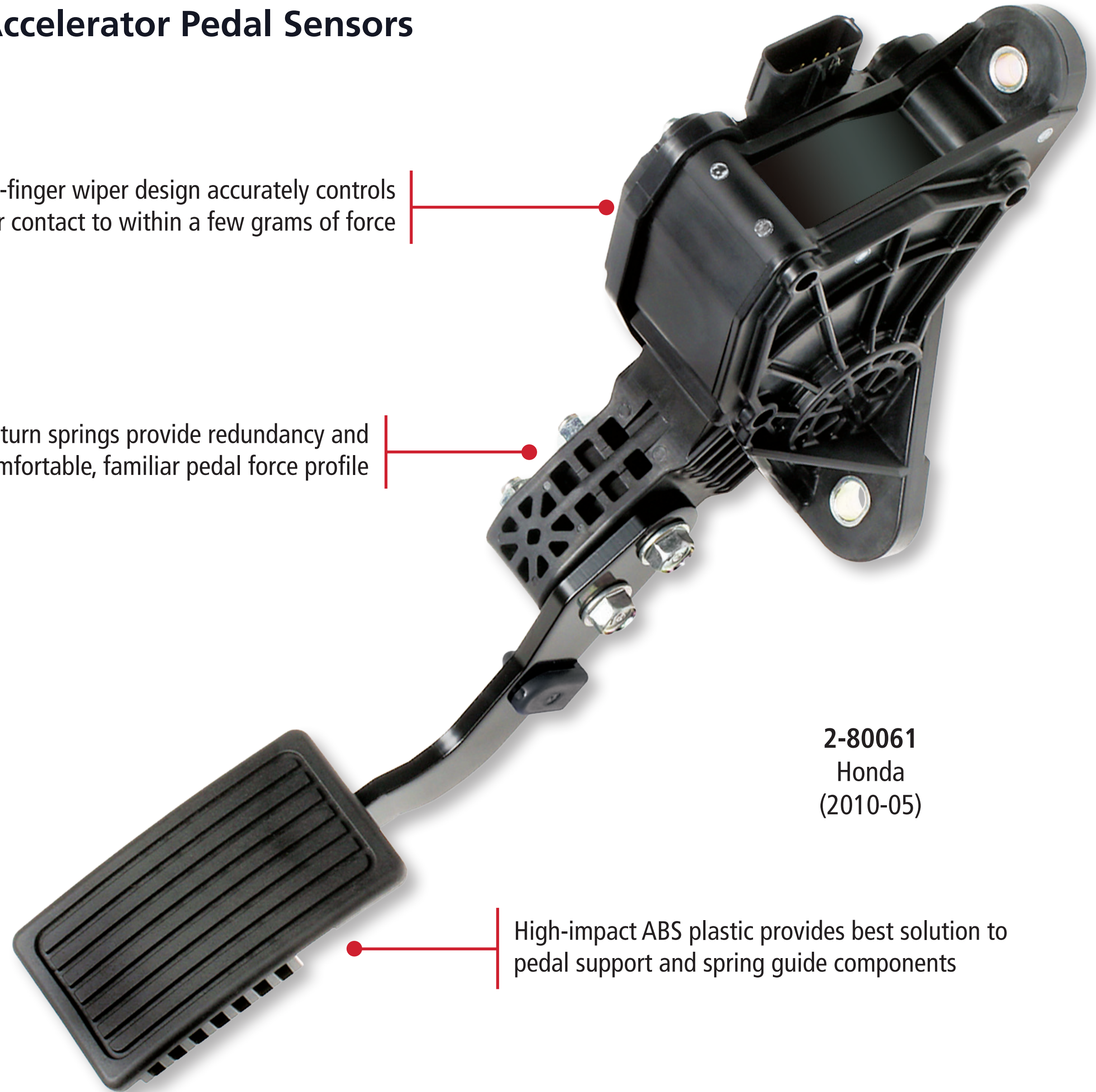
NAPA® Echlin® Accelerator Pedal Sensors

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

Dual return springs provide redundancy and comfortable, familiar pedal force profile

High-impact ABS plastic provides best solution to pedal support and spring guide components

2-80061
Honda
(2010-05)



NAPA® ECHLIN® SENSORS

ADAS Sensor Program

Advanced Driver Assistance Systems 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

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

123 SKUs / 46M Repair Opportunities



Steering Angle Sensors

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

264 SKUs / 205M Repair Opportunities



Cruise Control Distance Sensors

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

71 SKUs / 32M Repair Opportunities



Park Assist Sensors

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

86 SKUs / 425M Repair Opportunities

NAPA® ECHLIN® SENSORS

TPMS Program

NAPA® 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



More than 230 SKUs for the industry's best coverage

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

NAPA® ECHLIN® TPMS PROGRAM

Manufacturing and Testing

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

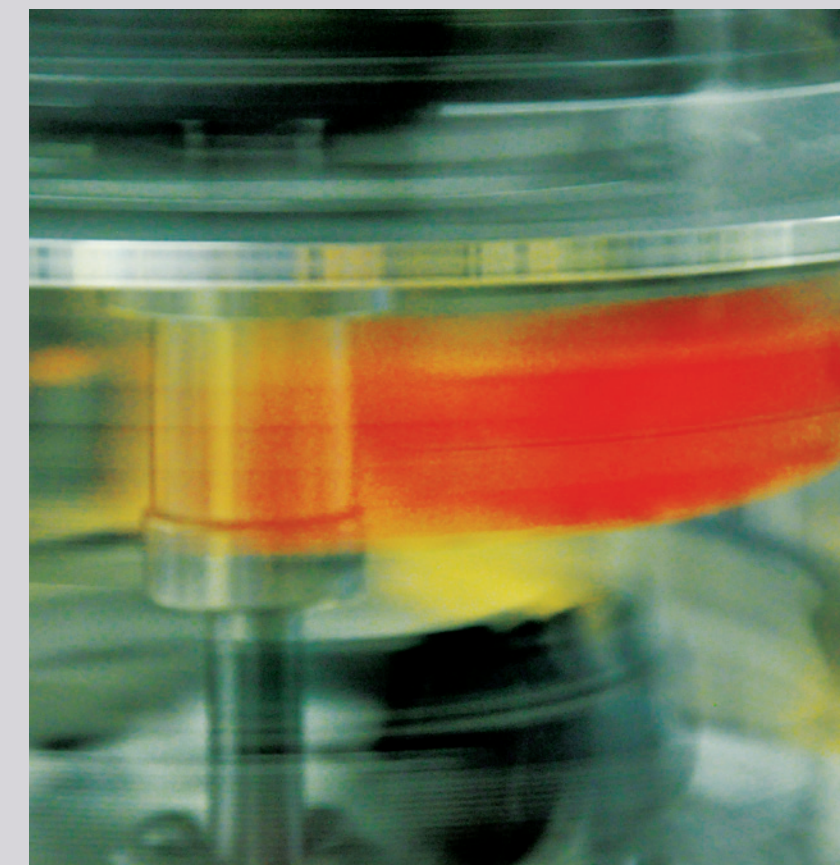
Our TPMS Sensors are subjected to multiple tests for operational temperature, thermal shock, extreme temperatures, humidity, contamination, salt fog, centrifugal force and mechanical testing. The result is a Sensor that works correctly in all conditions and lasts.

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



NAPA® 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 FMVss138, SAE J2657, ISO9001 and IATF16949 quality standards.



NAPA® Echlin® TPMS Testing

To make sure our TPMS Sensors last, we subject them to a high-speed Accelerated Life Test.

NAPA® ECHLIN® SENSORS

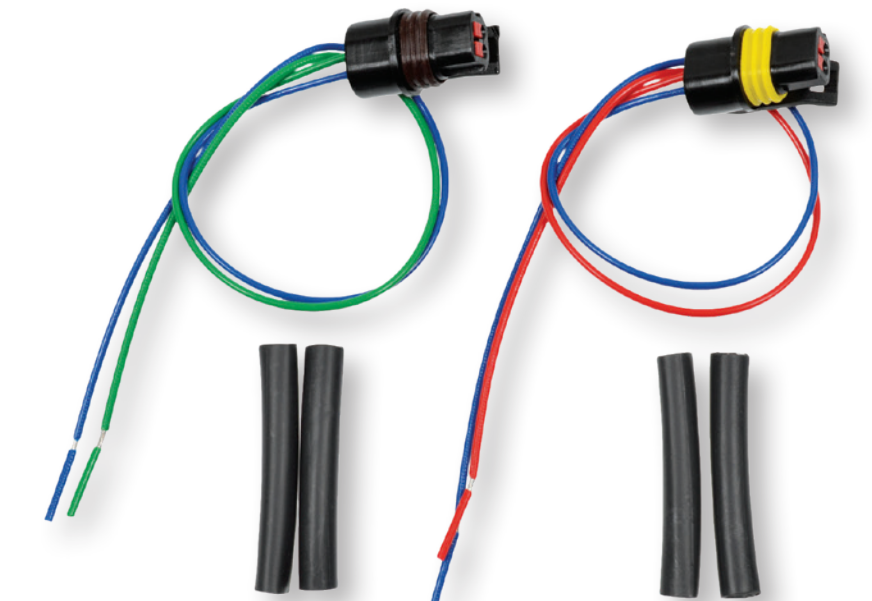
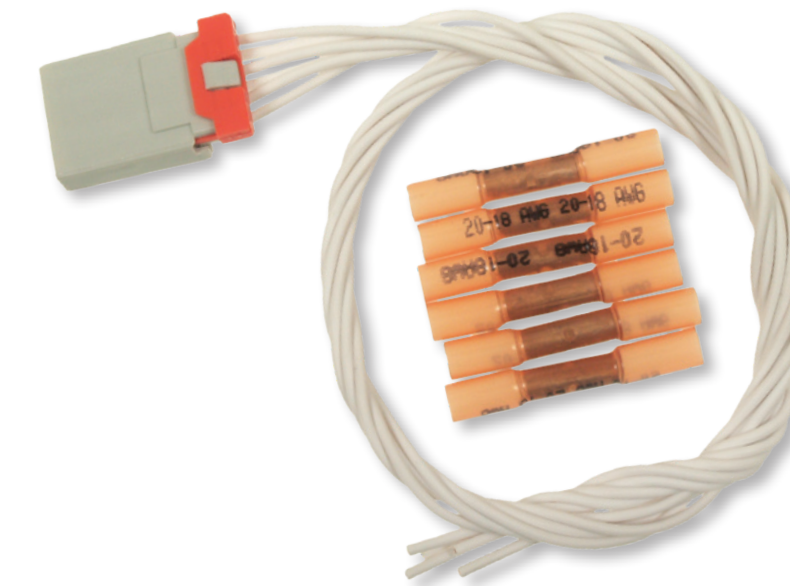
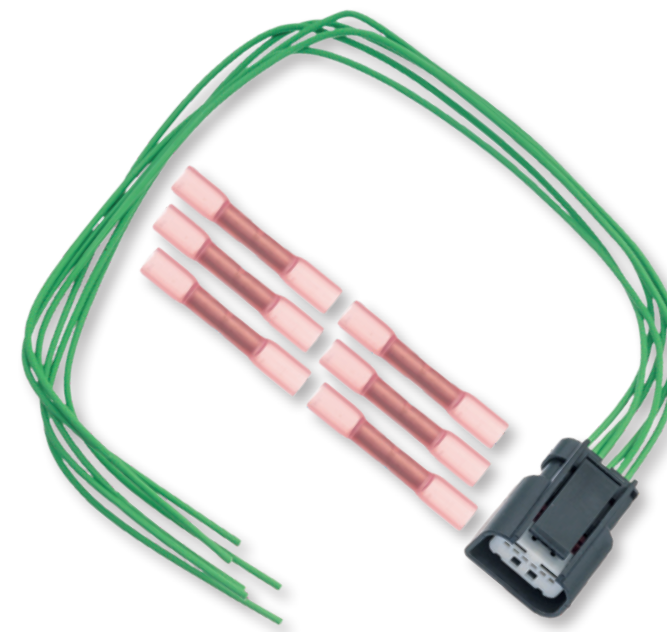
Related Parts

Sensor Connectors

In addition to over 80 different Sensors, we also offer thousands of connectors that you may need to get your customers back on the road.

To find the connector you are looking for, visit [NAPAEchlin.com](https://www.napaechlin.com).

NAPA® 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 Connector

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

NAPA® Echlin® Training Tech Tip

As experienced ASE-certified automotive technicians themselves, NAPA® 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



Some sensor failures could be masked by "default strategy." Be sure to follow the correct diagnostic procedure and clear the memory after a repair

NAPA® ECHLIN® SENSORS

NAPA® Echlin® Professional Training

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

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

An extension of NAPA® Echlin® training, our extensive ADA-compliant YouTube professional video library features more than 500 installation and product videos.



**PRO
TRAINING**
ON-DEMAND

NAPA® Echlin® offers an annual subscription to Pro Training On-Demand. This subscription grants access to more than 200 English, and over 50 Spanish 1-hour courses – and the NAPA® Echlin® on-demand library continues to grow. Topics range from fundamentals to advanced concepts, and include HVAC, diesel, hybrid, ignition, injection, electrical and communication diagnosis.



**PRO
TRAINING**
ON-SITE

Whether in-person at your location or virtually via computer, all NAPA® Echlin® Training classes feature a live instructor and are fully interactive as students work through real-life scenarios. Virtual class “workbooks” include on-demand links to video content and student configurable scan data.

Visit NAPAEchlinTraining.com