As the leading manufacturer of engine management products, Standard® has earned a reputation for producing quality components that exceed all expectations. Because we are a basic manufacturer, we control the production process from beginning to end, resulting in consistently superior parts which are always equal to or better than OE.

To meet your needs, we offer the choice of Standard® Blue Streak, Standard®, and Standard® T-Series. We are continually improving our products by investing in research and development, as well as upgrading and expanding the lines to ensure that we always have the best parts in the aftermarket. Standard® carries over 30,000 SKUs, including a wide variety of engine management products for import and domestic cars and light trucks. With ninety years of expertise behind us, our customer service and training are considered to be second to none.

Standard® products are manufactured to strict form, fit and function specifications; a replacement part with enhanced design and superior performance. When OE fails...trust Standard®.

The CHOICE is yours
### Standard® and T-Series Overview

**Standard®**: Provides two-thirds of the popular part numbers to help containing some of the most exceptional parts to deliver exceptional performance and extended service life.

**T-Series**: A competitively priced line containing some of the most popular part numbers to help you meet your market needs. The T-Series offering represents two-thirds of the total engine management line. T-Series is a fit whenever a commercially acceptable product is called for.

#### Standard® and Standard® Blue Streak

<table>
<thead>
<tr>
<th>Component</th>
<th>Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard® Blue Streak caps</td>
<td>- High dielectric strength glass/mineral reinforced polyester resin for less carbon tracking</td>
</tr>
<tr>
<td></td>
<td>- Greater resistance to electrical breakdown and superior performance</td>
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<tr>
<td></td>
<td>- Solid brass terminals make better connections and greater resistance to electrical pitting and corrosion</td>
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<td></td>
<td>- Brass terminal studs reduce resistance to permit higher current flow, even in the hottest environments for better performance</td>
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<tr>
<td></td>
<td>- Polyester-insulated magnet wire, cadmium-plated copper discs and solid contact bolts reduce voltage drop and deliver full battery power to the starter while providing greater protection against electrical overload</td>
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</tbody>
</table>

#### T-Series

<table>
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<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>Standard® T-Series distributor caps</td>
<td>- Use glass-filled polyester resin or high-grade polyester and aluminum inserts to match OE performance.</td>
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<tr>
<td></td>
<td>- Made of durable phenolic plastic or high-grade polyester with a stainless steel spring. Standard® T-Series rotors are designed for dependable service.</td>
</tr>
<tr>
<td>Standard® T-Series solenoids</td>
<td>- Feature copper windings for a strong magnetic field to ensure reliable operation.</td>
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<tr>
<td></td>
<td>- High quality terminal studs eliminate stripping and provide full power delivery to ensure that all Standard® T-Series starter solenoids perform like the original.</td>
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<tr>
<td>Standard® T-Series DIS ignition coils</td>
<td>- Coil terminals are steel or aluminum, as indicated by OE.</td>
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<td></td>
<td>- High efficiency laminations optimize magnetic field build-up to produce high spark energy and reliable performance</td>
</tr>
<tr>
<td>Standard® T-Series EGR valves</td>
<td>- EGR valves rotate 360° and along with the necessary washers they accommodate multi-fit applications.</td>
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<tr>
<td></td>
<td>- All Standard® T-Series EGR valves are built for a long life of dependable performance.</td>
</tr>
<tr>
<td>Standard® T-Series voltage regulators</td>
<td>- Have an OE-style single-wire bond for all connections, for a dependable service life.</td>
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<tr>
<td></td>
<td>- T-Series module have an OE-type backplate for heat dissipation to prevent premature failure.</td>
</tr>
</tbody>
</table>

### Key Features

- All Standard parts are engineered for an extended service life.
- Standard® EGR valves are designed as direct-fit OE replacements.
- All stainless steel internal components and fully encapsulated copper windings and connections on Standard® electronic EGR valves ensure precision operation and greater protection against the tough operating environment.
- Standard® premium EGR valves will respond to a weak signal from the crankshaft position sensor and begin energizing the coils immediately for better starts in cold weather.
- Standard® T-Series modules have an OE-style single-wire bond for all connections, for a dependable service life.
- Standard® T-Series module have an OE-type backplate for heat dissipation to prevent premature failure.
Ford P0401 Issues

The Ford EGR Pressure Feedback system is known for persistent P0401 EGR low flow code issues. Bear in mind, low flow can be caused by several issues.

The most common issue is the failure of the EGR Pressure Feedback sensor commonly known as the DPFE sensor. If the diaphragm in the sensor becomes weak or the sensor is contaminated with moisture it can fail to supply the computer with the correct reference voltage. When this occurs, the computer increases the vacuum supply to the EGR valve causing the vehicle to run poorly. When the low flow signal is unable to be corrected by the computer’s adjustment, then the computer sets a P0401 code for EGR flow.

The other parts that commonly get overlooked are the EGR Valve Regulator (EVR), which is cataloged as an EGR control solenoid, the DPFE hoses, and carbon build-up inside the EGR system. The EVR is responsible for supplying the proper vacuum to the EGR valve. Any resistance in this control circuit or failure of the EVR can cause a P0401 code. The original DPFE hoses are a special high-temperature hose. These hoses can crack or collapse internally over time due to intense thermal cycling that takes place within the EGR system.

To prevent a reoccurrence of the P0401 code, Standard recommends inspecting and replacing if necessary, the EVR and DPFE hoses when replacing the DPFE sensor. To further guard against a P0401 code, a de-carbonization treatment of the EGR system should be performed.
Just the Facts
EGR Position and EGR Pressure Sensors

What does an EGR Position Sensor do?
The EGR Position sensor detects the movement and position of the EGR valve pintle. The EGR Pressure sensor detects exhaust gas flow through the EGR passage.

Where are these sensors located?
Mechanical EGR valve position sensors are mounted on the top of the EGR valve. EGR pressure sensors will be located close to the EGR valve as the exhaust gas hose must be connected to the sensor as well as the valve.

Will a malfunctioning EGR Position or Pressure Sensor illuminate the check engine light or affect vehicle operation?
Yes, a failing sensor can illuminate the MIL, and may cause drivability problems. The signal is critical to the performance of the engine management system. Too much flow and the engine will stall or have a rough idle. Too little flow and emission gasses (especially NOx) will be elevated and detonation will occur.

What are the common causes of failure?
Typical failure is due to opens, shorts or intermittent signals. A DTC P0400 – P0408 can be set due to gas flow malfunctions including no flow, too much or too little flow.

How to determine if these sensors are malfunctioning.
A scan tool can be used to monitor the EGR Position or EGR Pressure data for changes during EGR operation.

What makes Standard EGR Sensors the best.
- Standard EGR sensors use the finest components including multiple precious metal contacts and polymer thick film resistors to provide extended service life
- Meticulous quality control and manufacturing processes assure that each EGR sensor’s voltage output measurement will always be accurate
- Each sensor undergoes a rigorous end-of-line test validating output voltages to exacting specifications for reliable, trouble-free operation

Ford
VP1
Ford
VP11
Ford
VP8
Ford
VP16
Ford
VP3
Toyota
VP20
## 21st Century Tune-Up Interview Checklist

### Customer Interview
- Have you noticed poor performance?
- Are you planning a long vacation trip?
- Are you aware of any specific problem?
- When and how does the problem occur?
- How confident are you in your vehicle?
- Has the check engine light ever been on?
- What services have been done recently?
- When was your last emissions inspection?
- Have the fuel injectors ever been cleaned?
- Have the oxygen sensors ever been replaced?

### Customer Comments

### Technician Comments

#### Battery, Charging & Starting System
- **Quick Test (QT)** - Visual inspection of parts
- **Quick Test (QT)** - Check no load battery voltage
- **Quick Test (QT)** - Check cranking voltage
- **Quick Test (QT)** - Check charging voltage
- **Diagnostic Testing (DT)** - Load test battery

#### Engine Mechanical
- **Quick Test (QT)** - Check idle vacuum
- **Quick Test (QT)** - Check 2000 RPM vacuum
- **Quick Test (QT)** - Check for gauge fluctuations
- **Quick Test (QT)** - Check coolant level
- **Quick Test (QT)** - Check coolant condition
- **Diagnostic Testing (DT)** - Check coolant flow

#### Powertrain Control
- **Quick Test (QT)** - Check scan tool sensor data
- **Quick Test (QT)** - Check for computer recalibration updates
- **Quick Test (QT)** - Check for diagnostic trouble codes
- **Quick Test (QT)** - Check for history codes
- **Quick Test (QT)** - Check for snapshot data
- **Quick Test (QT)** - Check OBD II readiness monitors
- **Diagnostic Testing (DT)** - Check for technical service bulletins

#### Fuel System
- **Quick Test (QT)** - Check fuel trim specification
- **Diagnostic Testing (DT)** - Check fuel pressure
- **Diagnostic Testing (DT)** - Check fuel volume
- **Diagnostic Testing (DT)** - Perform injector balance test

#### Ignition System
- **Quick Test (QT)** - Check secondary circuit voltage
- **Diagnostic Testing (DT)** - Check primary circuit voltage
- **Diagnostic Testing (DT)** - Check primary circuit current draw
- **Diagnostic Testing (DT)** - Check base timing at idle
- **Diagnostic Testing (DT)** - Check knock sensor operation

#### Emission System
- **Quick Test (QT)** - Check oxygen sensor operation
- **Diagnostic Testing (DT)** - Check EGR system operation
- **Diagnostic Testing (DT)** - Check PCV system operation
- **Diagnostic Testing (DT)** - Check EVAP system operation
- **Diagnostic Testing (DT)** - Check catalytic converter efficiency
- **Diagnostic Testing (DT)** - Perform exhaust gas analysis

### Marginal Results Explained Here

**Good**

**Marginal**

**Fail**

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This sheet is for customer review only. Actual repair quote will be provided separately.
THE 21ST CENTURY TUNE-UP initially consists of a customer interview and a series of 18 “quick test” vehicle inspections, followed by diagnostic testing as needed. The customer interview gives you the opportunity to find out how the customer feels about the vehicle’s performance, how the vehicle is treated and a sense of the vehicle’s history. The “Quick Test” (QT) vehicle inspections are designed to be completed in about 30 minutes.

CUSTOMER INTERVIEW
- Have you noticed poor performance?
- Are you planning a long vacation trip?
- Are you aware of any specific problem?
- When and how does the problem occur?
- How confident are you in your vehicle?
- Has the check engine light ever been on?
- What services have been done recently?
- When was your last emissions inspection?
- Have the fuel injectors ever been cleaned?
- Have the oxygen sensors ever been replaced?

The vehicle owner is concerned with the reliability of the vehicle. He may have a wife and small children or they may be older couples who want to minimize the chance of a breakdown occurring. Whether preparing for a change of seasons, a vacation or handing the car down to a child, investing a reasonable cost to ensure family safety is easily accepted by the vehicle owner.

After the interview, the “quick test” inspections will give you an accurate report on the vehicle health, pointing to systems that need further diagnostic tests and allowing you to explain all options to your customer.

The 21st Century Tune-Up program will:
- Improve reliability
- Reduce air pollution
- Improve performance
- Improve fuel economy
- Create customer confidence

BATTERY, CHARGING & STARTING SYSTEM
- QT - Visual inspection of parts
- QT - No load battery voltage
- QT - Cranking voltage
- QT - Charging voltage
- DT - Load test battery

Often a poorly maintained base system will cause significant problems in the electronic control systems. Low engine vacuum can point to mechanical problems in the engine. Poor cooling system performance will affect the computer controls on the engine.

ENGINE MECHANICAL
- QT - Idle vacuum
- QT - 2000 RPM vacuum
- QT - Gauge fluctuations
- QT - Coolant level
- QT - Coolant condition
- DT - Coolant flow

POWERTRAIN CONTROL
- QT - Computer recalibration updates
- QT - Diagnostic trouble codes
- QT - History codes
- QT - Snap shot data
- QT - OBD II readiness monitors
- QT - Scan tool sensor data
- DT - Technical service bulletins

Computer recalibration may correct what seems to be a mechanical problem and is often called for in technical service bulletins. Using the history codes and readiness monitors will help you determine overall powertrain conditions.

FUEL SYSTEM
- QT - Fuel trim specification
- DT - Fuel pressure
- DT - Fuel volume
- DT - Perform injector balance test

Long term fuel trim will point you to possible mechanical fuel system problems causing the computer to compensate by adjusting fuel delivery. Unequal fuel distribution can cost up to six percent in fuel economy before tripping the check engine light.

EMISSION SYSTEM
- QT - Oxygen sensor operation
- DT - EGR system operation
- DT - PCV system operation
- DT - EVAP system operation
- DT - Catalytic converter efficiency
- DT - Perform exhaust gas analysis

Worn or “lazy” oxygen sensors can cost your customer up to six percent fuel economy! The emissions systems check can be performed on your inspection machine at the same time as the exhaust gas analysis.

IGNITION SYSTEM
- QT - Secondary circuit voltage
- DT - Primary circuit voltage
- DT - Primary circuit current draw
- DT - Base timing at idle
- DT - Knock sensor operation

Inadequate primary system voltage will always lead to poor performance. A secondary ignition misfire can cause up to a five percent loss in fuel economy.

THE 21ST CENTURY TUNE-UP

21st Century Tune-Up™