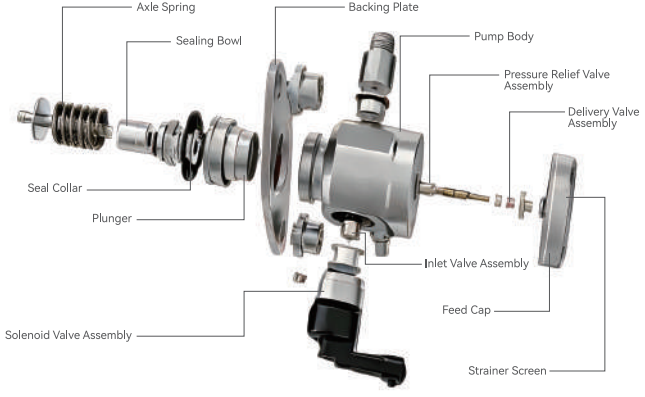
I. PRODUCT INTRODUCTION

This high-pressure fuel pump is engineered as a precise OEM replacement, perfectly matching original vehicle specifications. It delivers stable, efficient pressure support for the vehicle's fuel supply system, ensuring worry-free maintenance.

- **Exceptional Durability:** Crafted from premium materials with core components undergoing rigorous processing, it exhibits outstanding wear and corrosion resistance, ensuring long-term reliable operation.
- **Superior Fuel Delivery:** Precisely controls fuel pressure to guarantee optimal fuel atomization, enhancing combustion efficiency. This boosts engine power output while contributing to reduced fuel consumption.



II. PRE-INSTALLATION TROUBLESHOOTING

1) **Battery Inspection:** With the vehicle off, measure the battery voltage using a multimeter. The standard value must be ≥12.5V. If the voltage is below this value, charge or replace the battery first to avoid inaccurate test results due to insufficient power supply after installation.
2) **Preliminary Inspection of Related Wiring and Connectors:** Visually inspect high-pressure fuel pump connections for damage or signs of leakage. Check connectors for oxidation, looseness, or damage. Tidy wiring harnesses, ensuring no obvious breaks or wear to confirm basic wiring integrity. Inspect fuel hoses, high-pressure lines, and other connectors for aging or cracking.

3) **Installation Site Cleanliness Check:** Inspect the vacuum pump and surrounding installation area for no visible oil contamination or debris accumulation to prevent foreign objects from entering components during installation and causing damage.
4) **For further details, refer to "Section VI: Fault Diagnosis."**

III. PRE-INSTALLATION PREPARATIONS

1. Product Inspection and Verification

Verify that the received high-pressure fuel pump and accessories (including O-rings, roller tappets, mounting bolts, spring clamps, etc.) are undamaged and all components are present.

2. Component Comparison

Compare the new high-pressure fuel pump with the original vehicle's used part. In special cases, minor cosmetic differences may exist without affecting installation. Contact customer service if you have any questions.

3. Required Tools

- **Essential:** Wrench, torque wrench, spring clip tool, feeler gauge (for auxiliary inspection), multimeter, gloves, clean engine oil.
- **Optional:** Battery charger or memory saver.

4. Installation Environment

Park the vehicle on a flat, level surface. Ensure the vehicle is securely parked and the parking brake is fully engaged. Clear debris from the surrounding installation area to ensure adequate working space. Keep open flames away from the installation site.

IV. INSTALLATION STEPS AND PRECAUTIONS

INSTALLATION STEPS:

Release High-pressure System Fuel Pressure → Inspect Components → Install Roller Lifters → Install High-pressure Pump → Connect Fuel Hoses And Lines → Install Mounting Clamps → Re-energize And Test

1. Relieve High-Pressure System Fuel Pressure

Before removing the high-pressure fuel pump, release fuel pressure in the high-pressure system according to the vehicle maintenance manual to prevent fuel injection hazards.



PRECAUTIONS:

1) Wear insulated gloves and safety goggles for personal protection.
2) Prepare a container to collect any potential fuel leakage to prevent waste or fire hazards.
3) Avoid striking fuel line connectors with metal tools to prevent damage to sealing structures.
4) During installation, tighten all bolts simultaneously to ensure even force distribution and secure fastening.
5) During disassembly, loosen all bolts simultaneously to prevent uneven stress distribution.

2. Inspect Components

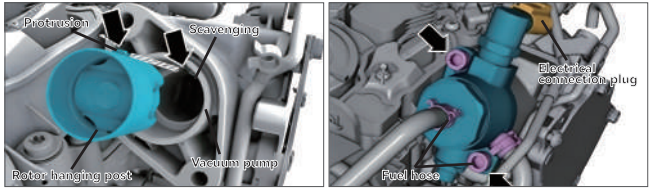
1) Inspect the high-pressure pump O-ring for damage or deformation, and lightly lubricate it with clean engine oil.
2) Inspect the roller tappets for damage or wear; replace if necessary. Ensure the protrusions on the roller tappets are undistorted and align properly with the vacuum pump groove.

3. Installing the Roller Lifters

Insert the rroller tappets into the vacuum pump. During assembly, align the protrusions on the roller lifters with the grooves on the vacuum pump to ensure proper installation without looseness. Avoid introducing debris into the vacuum pump during installation.

4. Install the high-pressure pump

1) Rotate the crankshaft as far as possible until the roller tappet is at its lowest point. Gently insert the high-pressure pump into the vacuum pump, ensuring a snug fit.
2) First, cross-tighten the bolts by hand. Then, using a torque wrench, cross-tighten the bolts to the manufacturer's specified torque to prevent uneven stress causing component deformation.

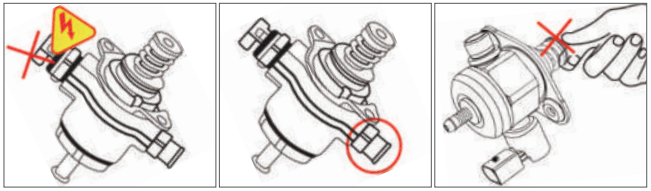


5. Connect Fuel Hose and Piping

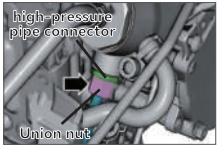
1) Insert the fuel hose and secure it firmly with a spring clamp, ensuring no looseness or leakage.
2) Connect the fuel pressure regulator connector, ensuring the plug is fully seated with good contact.
3) Coat the ball joint of the high-pressure line with engine oil, then install the high-pressure line. Use a wrench to tighten the fuel distributor lock nut.
4) Use one wrench to hold the high-pressure pipe fitting in place while tightening the union nut with another wrench. This prevents rotation of the fitting under load, which could cause damage.

IMPORTANT NOTES:

- Do not unscrew the solenoid valve or apply DC power to prevent component damage.
- Replace the copper fitting after two installations/removals to ensure sealing performance.
- Do not hold the high-pressure fuel pump upside down or strike the plunger. Do not grip or stretch the spring assembly, as this may cause irreparable damage.



6. Installing the High-Pressure Hose Clamp



Install the high-pressure hose clamps and tighten the clamp bolts to the manufacturer's specified torque using a torque wrench. This ensures the high-pressure hose is securely fastened, preventing vibration-induced displacement during operation.

NOTE:

High-pressure hoses must be aligned correctly during installation to prevent oil leakage.

7. Reconnect and Inspect

Reconnect all relevant wiring and the battery negative cable (if previously disconnected). Use a wrench to tighten the negative terminal bolt.

IMPORTANT NOTES:

- All connections must be secure and properly matched. Reverse connections or short circuits are strictly prohibited.
- All fastening bolts must be tightened to the specified torque to prevent loosening, which could cause vibration damage or fuel leakage.

V. POST-INSTALLATION INSPECTION

1) After powering on, use an OBD-II diagnostic tool to clear old fault codes.
2) Start the engine and let it run for several minutes. Inspect all connections (fuel hose fittings, high-pressure line joints, pump body-to-vacuum pump interfaces, etc.) for fuel leaks.
3) Use a multimeter to check circuit voltages and fuel pressure, ensuring they meet the vehicle's normal operating standards.
4) Check the instrument panel for any illuminated warning lights. If no warning lights appear, proceed with a test drive to further verify the high-pressure fuel pump's proper operation.

VI. FAULT DIAGNOSIS

1. Abnormal Fuel Supply Pressure

- Symptoms: Engine power deficiency, sluggish acceleration, unstable idle speed, potential dashboard warning lights, and abnormally increased fuel consumption.

- Diagnostic Methods and Solutions:
- High-Pressure Fuel Pump Inspection: Verify proper installation and secure fastening of mounting bolts. Inspect pump housing for damage or leaks; disassemble for internal component inspection or replace the pump if necessary.
- Fuel Line Inspection: Check fuel hoses and high-pressure lines for aging, damage, or leaks; verify connector tightness. Inspect high-pressure line clamps for secure fastening; replace damaged lines or retighten as needed.
- Pressure Regulator Inspection: Verify proper connection of the fuel pressure regulator. Use specialized equipment to test its operational status; replace if faulty.

2. Failure to Start or Difficulty Starting

- Failure Symptoms: No engine start response after turning the key, or insufficient power during start-up with unstable operation.
- Diagnostic Methods and Solutions:
- Battery Inspection: Measure battery voltage to ensure it exceeds 12.5V. If voltage is insufficient, charge or replace the battery first.
  Fuel Pressure Inspection: Verify fuel system pressure meets specifications. If pressure is too low, investigate whether the high-pressure fuel pump is functioning correctly and whether fuel lines are blocked.
- Wiring Inspection: Inspect all wiring and connectors related to the high-pressure fuel pump for loose connections, oxidation, or damage. Repair or replace wiring as necessary.

3. Relevant Fault Code Analysis

FAULT CODE	DEFINITION	INTERPRETATION AND TROUBLESHOOTING FOCUS
P0087	Low fuel rail/system pressure	Check high-pressure fuel pump operation, fuel line blockage/leakage, and pressure regulator valve failure. Prioritize inspection of fuel pump installation and mounting.
P0088	Fuel rail/system pressure too high	Inspect the fuel pressure regulator and internal seals of the high-pressure fuel pump. Replace corresponding components if faulty.
P0234	Turbocharger Overpressure (Fuel-Related)	Investigate abnormal high-pressure fuel pump supply pressure. Simultaneously inspect the fuel pump and fuel system.
P0191	Fuel rail pressure sensor circuit range/performance issue	Inspect sensor wiring, investigate fuel pump supply stability, and ensure proper fuel pressure.

VII. DISCLAIMER AND CONTACT INFORMATION

Disclaimer:

The information provided in this guide serves as a general technical reference. Due to significant variations in design and diagnostic procedures across different brands, models, and model years, it is essential to consult the official repair manual for the specific vehicle and adhere to all safety protocols before performing any repairs. For individuals unfamiliar with automotive fuel systems and electrical systems, we strongly recommend having the vehicle serviced by a qualified professional repair facility. The manufacturer assumes no liability for any direct or indirect losses resulting from the incorrect use of this information.