

Analysis of Automobile Engine Oil Burning Causes and Fault Maintenance Countermeasures

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Abstract: With the increasing use of cars, the problem of engine burning oil has become a phenomenon of concern. Taking the burning oil of automobile engine as an example, the causes of this problem, including piston ring damage, poor valve sealing and cylinder head sealing problems. For these reasons, corresponding fault maintenance countermeasures are proposed, such as regular oil and filter element replacement, checking and replacing piston rings, maintaining the sealing of valve and valve catheter, and checking and replacing of cylinder head seals. These countermeasures aim to solve the problem of oil combustion, improve the engine performance, and provide practical reference for the relevant personnel.

Keywords: Automobile Engine; Burning Oil; Fault Maintenance; Countermeasure Analysis

Introduction

Automobile engine burning oil is a common problem, which seriously affects the engine performance. It is very important to discuss the reasons for burning oil and the solutions. The problem affects the stability of the vehicle, and fault repair is critical to maintaining engine efficiency. Exploring the reasons of oil burning and putting forward effective maintenance countermeasures can improve the engine life and reduce the maintenance cost, which has important guiding significance for the automobile maintenance industry and car owners.

1. Car engine burns the engine oil reason

1.1 The piston ring is damaged

The health state of the piston ring directly affects the normal operation and combustion process of the engine. When the piston ring is damaged or worn, it may cause a series of problems, the most significant of which is the abnormal loss of oil and the blue smoke emitted by the engine, which not only affects the engine performance, but also aggravates the oil consumption of oil. The possible forms of piston ring damage include wear, fracture, or deformation. Because the piston ring loses its original seal, the oil may flow through the cylinder above the piston and then penetrate into the combustion chamber. This resulted to mixing of oil in the combustion chamber, and the oil is ignited during combustion, producing blue smoke. Due to the damage of the piston ring, the oil loss speed is accelerated, leading to the excessive consumption of the oil, which then affects the lubrication and cooling function of the engine.

1.2 Poor sealing of the valve

The valve and valve catheter play a key role in regulating the intake and exhaust in the engine, and the process depends on their tight seal. When the valve is poorly sealed, it may cause a series of problems, mainly involving the abnormal entry of the oil into the combustion chamber, causing adverse effects on the fuel system. The main manifestation of poor valve sealing is oil leakage around the valve and valve catheter, which may be due to damaged sealing gasket, aging of the sealing ring or problems with the valve itself. In this case, the oil may follow the valve lever into the combustion chamber, mix with burning air and fuel, and eventually be ignited during combustion. This phenomenon causes an unexpected combustion of the oil, creating blue smoke and potentially unstable effects on the entire fuel system.

1.3 Cylinder head seal

Usually gaskets or seals ensure sealing between the engine head and block to prevent oil leakage from this area. However, if the cylinder head is poorly sealed, it may cause a series of problems, mainly including the abnormal leakage of the oil inside the engine, which then leads to the oil to be burned, affecting the performance of the whole engine. Poor sealing of cylinder head may be due to aging, damage or

improper installation of sealing gasket. In this case, the engine oil may leak into the combustion chamber through a crack or leak between the cylinder head and the cylinder mass, mixing with the burning air and fuel. In the combustion chamber, the oil is ignited to form a blue smoke, which is eventually discharged into the atmosphere.

2. Automobile engine burning oil maintenance countermeasures

2.1 Change the oil and filter element regularly

Fresh engine oil plays a key role in providing better lubrication performance. The oil lubricates the moving parts such as piston rings and valves, thereby reducing friction and wear. By changing the oil regularly and ensuring that the oil viscosity and additives remain within the standard range specified by the manufacturer, it can effectively reduce the wear of key parts and improve their life. The oil filter element is also crucial, which is responsible for filtering the impurities and particles in the engine oil. As the engine runs, various impurities such as metal particles, dust and debris. The right oil filter element can effectively prevent these particles from entering the engine interior. This not only keeps the oil clean, reduces the contaminants in the oil, but also helps to keep the piston ring and the valve running smoothly. Regular oil and filter changes also help maintain engine performance and fuel efficiency by slowing the piston ring wear^[1]. Reducing internal friction can reduce heat generation in the engine and improve fuel economy, thus reducing fuel consumption. Regular oil and filter element replacement is an economical and effective way to ensure that the engine is kept in optimal condition.

2.2 Check and replace the piston ring regularly

The piston ring is the key component in the engine, which directly affects the sealing ability and movement efficiency between the piston and the cylinder wall. As the piston ring damage may cause oil leakage, timely inspection and maintenance is crucial. When regularly checking the piston rings, the first thing you need to pay attention to is their wear and damage. The worn piston ring may no longer be able to effectively seal the combustion chamber, causing the oil to go into the combustion chamber, followed by an abnormal consumption of the oil and the emission of blue smoke. Through the use of specialized tools and testing equipment, the condition of the piston ring can be accurately assessed, ensuring that timely action are taken before problems arise. According to the inspection results, the piston ring should be replaced if necessary. Replacement of the piston ring usually requires the removal of the engine, so it is best performed by a professional technician. When selecting the appropriate replacement piston ring, consider the manufacturer's recommended specifications and models to ensure that it matches the engine and provides good sealing and wear resistance. The advantage of a regular piston ring replacement is not only to prevent oil leakage, but also to maintain the stability of the internal parts of the engine^[2]. The new piston ring can effectively seal the combustion chamber, improve the efficiency of the piston movement in the cylinder, and reduce friction and wear.

2.3 Maintain the sealing ability of the valve and valve catheter

Regular inspection of the valve and its associated seals is a key step to keep the valve sealed. The inspection process includes observing the appearance of the valve, detecting for signs of air leakage, and ensuring that the valve opens and closes normally. Also, the seals shall be inspected in detail, including valve seat seal, valve stem seal and valve catheter seal, to ensure that they are not aging, worn or damaged. This regular inspection helps to detect potential problems early and prevent oil leakage into the combustion chamber. Timely adjustment or replacement of valves and seals is an important means to maintain the sealing ability. If the valve is found to be poorly sealed, adjust the valve clearance or replace the seal to ensure good sealing of the valve. For aging, hardened or worn seals, timely replacement is necessary to avoid oil leakage and entry into the combustion chamber, thereby affecting engine performance and emissions. Regular cleaning of valves and valve tubes is also an important step in maintaining sealing. Carbon deposition accumulated on the valves and tubes may lead to poor sealing and affect the normal operation of the valve. The regular cleaning process can effectively remove these deposits, keep the valves and catheter clean, and help to maintain good sealing.

2.4 Check and replace the cylinder head seal

Perform regular cylinder head seal inspection is critical. This includes close observation around the cylinder head for signs of oil marks

or leakage, and inspection of the appearance and status of the sealing gasket. The sealing gasket is usually located between the cylinder head and the cylinder block, and plays a key role in preventing oil leakage. Regular visual inspection allows for early detection of potential problems to prevent the adverse effects of oil leakage on the engine. Replacing damaged seals if necessary. Aging, hardening or damage of sealing gaskets may cause poor sealing, leaking oil to the outside of the engine or into the combustion chamber. Once the cylinder head is poorly sealed, especially on the sealing gasket, immediate action should be taken. Replacing the sealing gaskets usually requires dismantling the engine, so it is best performed by a professional technician to ensure the accuracy and quality of the work^[3]. Regular replacement of the cylinder head seals also helps to prevent further oil burning problems. The new seal ensures a good seal between the cylinder head and the cylinder block, preventing oil leakage and maintaining normal lubrication system operation. This helps to reduce engine oil consumption, improve engine performance, and extend its life.

Conclusion

Through in-depth analysis of the causes of automobile engine burning and the corresponding fault maintenance countermeasures, it provides key insight for improving the vehicle performance and extending the engine life. In the future, continued research and innovation will further improve solutions to advance engine technology and reduce fuel consumption and emissions. It is expected that the application of new materials and intelligent monitoring systems will bring a more sustainable future for the automotive industry, providing a safer and efficient driving experience.

References

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