

I'm not a bot



Rehan has had experience with six Vitz models over three years, all of which were 1000cc, but with different models. He drove a 2007 model with 70,000 km without any issues, but noticed engine vibration when started. A user named jizzzy suggested that the vibration might be due to the car saving fuel on idle. However, another user pointed out that Rehan's problem is likely related to low-grade fuel in Pakistan, which isn't suitable for three-cylinder engines like the JDM Vitz. The original poster shares their experience with their Toyota Vitz (1kr-fe engine) and mentions that it vibrates while idling, but this vibration was reduced after changing the spark plugs and having the car serviced at a Toyota dealership. They also cleaned the throttle body and mass airflow sensor (MAF), which further reduced the vibration. Someone else chimes in to say that they got their information from a Toyota Frontier manual, which mentions that the 1kr-fe engine has a manifold absolute pressure (MAP) sensor, not an MAF sensor. Another person suggests that using high-octane fuel might help improve the car's performance. Someone else asks what exactly is meant by "high-octane" and whether it means mixing 30% hi-octane with 70% super fuel or using 100% hi-octane (which would be expensive). The original poster clarifies that they use a mix of 30% hi-octane and 70% super fuel, but also notes that they've tried using 100% hi-octane in the past and didn't see any significant improvement. The same person shares their experience with a fuel system cleaner product from STP, which they claim has improved their car's mileage. They also mention that they've purchased an octane booster and gas treatment to use on their next fill-up. Finally, someone asks how to use the fuel system cleaner product, whether it should be added to the fuel tank or if there are any other steps required. The original poster doesn't specify exactly how to use the product, but another person chimes in to say that they've used similar products in the past without issue. ****Fuel System Cleaner and Performance Tips**** A member on Pakwheel asked for advice on using a Complete Fuel System Cleaner. The original poster recommends filling up with 100% high-octane fuel (RON) when the tank is almost empty, starting with 8-10 liters to diagnose any issues. He also suggests using the cleaner every oil change (around 5,000-6,000 km). ****Using the Fuel System Cleaner**** To use the cleaner, simply pour the entire bottle into a full fuel tank. It's recommended to use it every time you change your engine oil. ****RON and Octane Rating**** The poster explains that RON stands for Octane rating of the fuel, which is often low in Pakistan. The cleaner helps fix problems caused by these low-grade fuels. ****Engine Maintenance**** Another member asks about using a MAF sensor (mass air flow) vs. MAP sensor (manifold absolute pressure). The original poster confirms that his engine has a MAP sensor, and he provides some general advice on engine maintenance. ****Fuel Injector Cleaner vs. OEM Toyota Fuel Injector Cleaner**** A separate question is asked about the similarity between SIP or OEM Toyota fuel injector cleaner. The original poster doesn't have any direct experience with these cleaners but suggests that they might be helpful for someone who has already cleaned their fuel filter and done harmonic fuel injection cleaning. ****Engine Performance and Maintenance**** The member who asked this question also shares some information about his own engine, including the oil he uses (Toyota 10w-30) and his mileage (around 11km/l in city, 14 on highway). He asks if using the Fuel System Cleaner will help improve performance. The original poster hasn't had any issues with the cleaner but advises the member to proceed with caution and hopes his reply will be helpful. The engine in question is the 1KR-FE type, used in various models such as Subaru Justy and Toyota Agya/Wigo. It has an aluminum cylinder block with thin cast iron liners that promote a strong connection. The wall thickness between cylinders is only 7mm, making reboring not possible according to the manufacturer. The water jacket spacer installed allows for more efficient coolant circulation near the top of the cylinder, improving heat dissipation and thermal loading. The crankshaft has been shifted 8mm relative to the cylinder axis lines, reducing piston wear on the cylinder wall. It features six balance weights, four narrow journals, and individual main bearing caps. Pistons are made of alloy with a small skirt and polymer anti-friction coating. However, piston pins are non-full-floating but press-fitted into the connecting rod. The oil pan can be either simple or dual chamber, with the float valve controlling oil exchange between chambers when the engine is running. The design of the cylinder head is traditional, with all exhaust ports converging inside the head to accelerate catalyst heating after starting. At high speeds, however, exhaust gases are cooled to expand the operating range. The valvetrain is DOHC type with an angle of 33.5° between intake and exhaust valves. Variable pitch coil springs are used for both intake and exhaust valves. The VVT sprocket on the inlet camshaft has a range of 45°, and more information about Toyota's operation principles can be found in "Toyota Variable Valve Timing. VVT-i (gen.IV)". The engine features a roller chain with hydraulic tensioner and is driven by a serpentine belt with an automatic tensioner. The timing chain cover houses the water pump and oil pump, while the head cover is made of plastic. The auxiliary drive uses a single serpentine belt. The lubrication system includes a Trochoid oil pump driven by the crankshaft, with internal oil bypass. Oil nozzles are provided for the pistons. The VVT controller has an oil filter and is connected to the VVT control valve, oil pump, and oil strainer. 1KR-FE type'18 and its Key Differences from Type'14 The 1KR-FE engine type'18 features several upgrades compared to the earlier version type'14. These changes focus on improving efficiency, cooling, and performance. **#### Early Type (Type'14)** - The early type of 1KR-FE engines features a removable oil separator cover on the cylinder block. - Oil nozzles for pistons are not installed in this version. - The cylinder head has separate exhaust ports with specific positions: - Fuel injector: 1 - Spark plug: 2 - Water jacket: 3 - Exhaust side: c **#### Late Type (Type'18)** The updated engine type'18 introduces several key improvements: - Additional cooling channels in the cylinder block for improved efficiency. - A larger inlet port of the coolant pump to reduce resistance. - A more complex composite spacer is used to equalize the temperature of the cylinder walls. **#### Notable Differences from Type'14** 1. ****Dual Variable Valve Timing (DVVT):**** - VVT actuators are installed for both camshafts, enabling dual variable valve timing with varying timing ranges: - Intake: 41° - Exhaust: 45° - Chain tension arms, chain tensioners, and VVT controllers facilitate the operation of the DVVT system. 2. ****Intake Port Separation:**** - Intake ports are separated (dual port) for improved airflow and efficiency. - This is achieved by installing specific components such as fuel injectors, spark plugs, intake ports, exhaust ports, EGR gas passages, and merged ports. 3. ****EGR Cooler Installation:**** - The installation of the EGR cooler further enhances the efficiency of exhaust gas recirculation. - Changes in cooling circuits have been made since the EGR cooler's installation, including modifications to the throttle body, thermostat, water pump, and heater radiator. 4. ****New Control System Components:**** - Additional components related to DVVT are added to the control system: - Crankshaft position sensor (MRE type) - Ignition coil - VVT control valve assembly (intake) - Camshaft position sensors (intake and exhaust) - Oxygen sensors, knock sensor, neutral position switch, engine coolant temperature sensor, vacuum sensor, and throttle body Sensor (exhaust) • Fuel system - "Dual Injector" type: two injectors for each cylinder. The fuel delivery pipe supplies fuel to the fuel injector, which then injects it into the intake port as close to the valve as possible. The simplest engine in this series lacks a variable valve timing system and is installed on models for emergency markets, with one version being used in Daihatsu Himax. The 1KR-VET (1.0 EFI VVT Turbo) is a turbocharged version of this engine, featuring "dual injector" technology and triple water jackets in the cylinder head. It also has crankcase ventilation with an ejector. One notable aspect of this engine is its lack of an EGR system, which makes it more efficient than some other engines. However, it still suffers from common problems such as piston slap, which can be addressed by replacing the cylinder block and pistons/rings under warranty. Other issues include cylinder liner and piston scratches, which are often repaired by reboring the cylinder for 0.5 oversize pistons without replacing the cylinder liners. Piston ring sticking due to carbon deposits, timing chain wear, and water pump leaks are also common problems with this engine. The KR engine is known to be one of the dirtiest engines from Toyota corporation, with a lot of solid deposits and oil sludge accumulating in various parts such as the crankcase, under the head cover, and separator. To address these issues, recommendations include flushing the throttle, cleaning the intake duct, replacing mounts, and more. Genuine service bulletins, such as EG-0096T-07-14 "KR Engine knocking noise" and EG-0082T-08-15 "KR Engine: Noise from the Exhaust", provide valuable information for addressing these problems. List of Toyota engine issues and repairs: * Multiple problems with the 1KR engine, including: + Engine MIL (malfunction indicator) due to OCV malfunction (2015) + Oxygen sensor no.2 malfunction (2016) + Oil pressure warning light on (2016) + Abnormal noise from Thermostat (2017) + Charge warning light ON with DTC P162B and P161A (2017) * Additional 1KR-FE engine issues: + Engine jerking when driving (2018) + Hard to start (2018) + MIL ON triggered by Misfires DTC P030X (2019) + KR Engine: Air cleaner worn-out appearance (2019) + Impossible to re-start with DTCs P0341, P0366 (2019) * Oxygen sensor malfunction in 1KR-FE engine, refused as design defect and warranty claim by Toyota (2022) * Various other engine issues across multiple models, including: + EGR cooler problems not recognized as design defect by Toyota (2022) + Issues with AZ, MZ, NZ, SZ, ZZ, AR, GR, KR, NR, ZR, AD, GD, ND, VD engines + Specific problems with A25.M20, F33, G16, M15, V35 engine models

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