

## 1) General:

Thank you for purchasing a product of Approved green. We wish you and the end user many enjoyable rides.

The success of this transaction -and with it your satisfaction- is determined by 2 factors:

- **Quality of the delivered product:** Approved Green has done their utmost to optimize the quality of the delivered product.
- **Quality of the refitting:** Therefore, we ask you to study these refitting instructions to avoid problems and, thus, irritation. Damage as a result of faulty refit is not covered by the warranty. If you do experience problems afterwards, please contact our company directly.

When removing or refitting, we advise you to always use the original specifications of the manufacturer. Only when these are not available, these general instructions can be of service to you.

## 2) Receipt:

- Check the product directly upon receipt for possible transport damage. If the product is damaged, please notify the event on the delivery note of the driver. Only then the damage can be claimed with the insurance of the transport company concerned. If you neglect to do this and sign the delivery note as being correct, you can no longer make any claims and any extra costs will be at your expense. If possible, take photographs of the damage. This can contribute to simplifying and thus speeding up the completion.
- Also check whether the delivered type is correct. Carefully check the threaded holes in the block and the attachment points for the various sensors. Some products are delivered with temporary parts. (timing cover, oil suction sieve, sump and/or valve cover) If this is the case, then you should replace these, at your expense, using the parts of your old engine. When converting you need to thoroughly clean these parts and check their quality

## 3) Tracing old damage:

To prevent the newly delivered product from being damaged in the same way as the old part, we first need to detect and eliminate what caused the old damage. Please, think for example of the following:

### Air inlet system:

- Check the quality of the air inlet system. Leakages in the system can let in dirt or dust, which can lead to increased wear and tear.
- Check the inlet manifold for the presence of strange and/or broken parts. Tap it till it is empty and subsequently blow air through it.
- Check the joint face of the manifold.
- Cooling; optimal cooling is crucial for the life span of your product.
- Check the flow from the radiator.
- Check the operation of the fan, sensors and thermostat.

- Check the operation of the viscous coupling.
- Check the cap of the radiator and/or expansion tank.
- Check the quality of the water hoses and hose clamps.
- If we haven't supplied the water pump you must check your old water pump in respect of the bearing, the seal and for excessive corrosion.
- Check sealing rubber and aerial conduction plates so a good air flow is ensured. Pollution of the fan can also cause vibrations.
- Fuel system; an incorrect ratio of the fuel mixture can cause overheating and/or excessive wear to piston rings and cylinders.
- Check the quality of the fuel filter. This can also cause deviations in the ratio of the fuel mixture.
- Check the diaphragm of the feed pump. A leaking diaphragm can lead to dilution of the motor oil which can cause damage to the bearing.
- Have a specialist check the injection parts. A correct adjustment and injection timing are vital to the performance of the engine.
- An incorrect adjustment and/or injection timing can cause excessive wear and tear and poor performance of your engine.
- Have a specialist check the injectors. A leaking injector can e.g. directly cause piston damage.
- Ignition; the ignition quality and timing largely determine the life span of the engine and, with that, its performance.
- Check the various parts of the engine management system with special test equipment.
- When working on old ignitions, check the ignition timing.
- Check the hoses and the diaphragm of the vacuum advance.
- Sump ventilation; blocked sump ventilation causes an increased sump pressure which can result in the leaking of oil retaining seals and gaskets.
- Exhaust; check the exhaust for broken parts that may block the transit.

## **4) Assembly:**

Take your time to assemble the product in the right way. This will ultimately prevent problems and you will not lose extra precious time. Install as many conversion parts on the product on your worktable and not in the engine space at a later stage. It will make the work far more enjoyable and you will have better control of your activities.

### **Cleaning:**

- Start by cleaning the engine compartment; it will make your work more enjoyable and provides an extra service to your client.
- Clean all attachment parts of your old engine as you will need them when reassembling the delivered product. This will prevent damage to the screw thread and deviations in the tightening strain.
- Before assembling, carefully clean all parts that are needed for the assembly. Think e.g. of: injection pipes, inlet system, exhaust system, sump ventilation and the various parts of the cooling system.
- If the oil cooler has not been supplied, the old one needs to be cleaned/rinsed out. When the old engine had a bearing damage or if in any other way metal swarf got into the oil, then the oil cooler must always be replaced.
- When you have purchased a cylinder head you also need to clean (if applicable) the camshaft, tappets, rockers and rocker shaft. When doing this, pay sufficient attention to possible internal oil channels. Make sure they are open.

- When doing this keep on checking the quality of the various parts and replace parts if you have a doubt about their quality.
- Make sure the gaskets are assembled in the right way and don't block holes unintentionally.

**Filters:**

- Install a new quality air filter and clean the air filter housing.
- Install a new quality oil filter. When purchasing a new engine, a new oil filter is almost always included.
- Install a new quality fuel filter. Check the old filter if there were water particles in the fuel system. If this is the case you must clean the entire fuel system including the tank.

**Fasteners:**

- Stretch bolts cannot be re-used.
- Fasten all bolts and nuts with the required torque.
- Keep using the required torque for that particular type of bolt and/or nut. It could otherwise cause damage since the torque depends on the type of bolt and the dimensioning.
- Stretch bolts need to be fastened with a torque after which they always need to be done and verified from a given angle.
- Keep checking whether you have the right information with regard to the tightening strains.
- Even the sequence of tightening bolts can be outlined. Follow this to the letter.
- Before the assembly of the flywheel you need to check whether the thread holes in the crankshaft are correctly drilled. If so, you need to apply a liquid locking agent to the screw thread of the flywheel bolts.
- Tighten the bolts and nuts of the injection parts at the right time. Especially with modern engines this can prevent problems. When doing this, think also of the injection pipes.

**Assemble engine:**

- Make sure the delivered engine is positioned solidly on your worktable. Note on which side you position the product.
- If you have to transfer transport parts, you need to either use the supplied gaskets or a quality liquid sealant.
- Most openings in the engines are closed off with red sealing caps. Only remove these caps when reassembling the fittings. In doing so you prevent strange parts ending up in the engine and you will also prevent pollution of the engine during reassembly.
- Fix all fittings with the proper tightening strains.
- Carefully install the crankshaft pulley. When doing so, check the run-up face of the seal and make sure the pin isn't pushed aside during assembly.
- The crankshaft pulley needs to be fastened at the right torque. In some cases the use of a liquid locking agent is recommended.
- Assemble the distribution according to manufacturer specifications. One notch can make a significant difference and can have serious consequences.
- Check the settings of the fuel pump according to manufacturer specifications.
- Install the injectors with new seals and fire stop plates.
- Carefully install the protective caps and check whether they are clear from rotating parts.
- Renew the V-belt/Multi belt.
- When an automatic transmission is installed you need to carefully press the hollow shaft of the torque converter in the oil pump of the housing. Make sure the drive cams of the hollow shaft are correctly fitted in the notches of the oil pump.
- To prevent damage to the radiator it is our recommendation that you disassemble it before the engine is refitted.
- Use the right hoisting equipment to assemble the engine in the engine space.

- This will prevent damage when refitting.
- When assembling, check all plug connections.
- Use good hoses and hose clamps. Use a quality motor oil and coolant and fill both to the correct level. It is important that the cooling system has been properly vented.

## **5) Starting procedure:**

Before starting it is important to make sure that all parts are fastened, that there is sufficient oil in the sump, that there is sufficient coolant in the cooling system and that the belt tension is good.

- With a petrol engine, first loosen the spark plug cables. With a diesel engine, prevent the fuel supply to the cylinders.
- First start the engine till it has sufficient oil pressure. If this doesn't work, you need to vent the lubricating system by filling the oil filter with oil and fully inject the oil channel with an oil sprayer. (attention, there are cars without oil pressure indication light, here you have to measure the pressure manually)
- If there is sufficient oil pressure, you can connect the spark plug cables, or with a diesel engine open the fuel flow to the cylinders.
- Start the engine and let it run at a high engine revolution rate.
- Closely watch the oil pressure and the temperature of the engine.
- During venting add sufficient coolant.
- Check for leakage of oil and/or water.
- Check whether the entire cooling system functions properly.
- Check whether the thermostat opens. Check whether the fan strikes.
- Check if the correct software is loaded into the ECU, chip tuning can cause engine damage and if the car is tuned the warranty will expire

## **6) Running-in instruction:**

- Make sure the engine is at the right operational temperature before placing a load on it.
- You need to prevent extreme load till 1000 kilometers. So gear down in time to prevent the engine from running with low revolutions and a high load.
- Charge the engine to only 80% of its capacity.
- Avoid lengthy engine idle and driving with constant engine revolutions.
- But don't be too careful. When doing this the piston rings don't get a chance to properly run in which can result in excessive oil use.

## **7) Returning of old parts:**

- Take the old part you wish to return and remove all oil and fuel residue.
- Close all holes with the red caps that were used on the delivered product.
- Check whether the old part is complete. In case of missing parts there will be a recalculation which, as such, will be deducted from the deposit to be credited.

- Pack the old part in our packaging or frame.

## **8) Post-check:**

- After 1000 kilometers we advise that you check the engine.
- Check all fastenings to make sure nothing got loose due to vibration.
- Check the oil and coolant level.
- Check for oil and coolant leakage.
- At 1000 kilometers replace the oil filter.
- The above mentioned instructions are of a general nature. Therefore, we like to stress explicitly that Approved Green cannot be held accountable for damage as a result of deviations in the above mentioned instructions, as compared to the original instructions of the manufacturer. Approved Green cannot be held accountable for possible interpretation mistakes and/or printing errors in the information we provide.