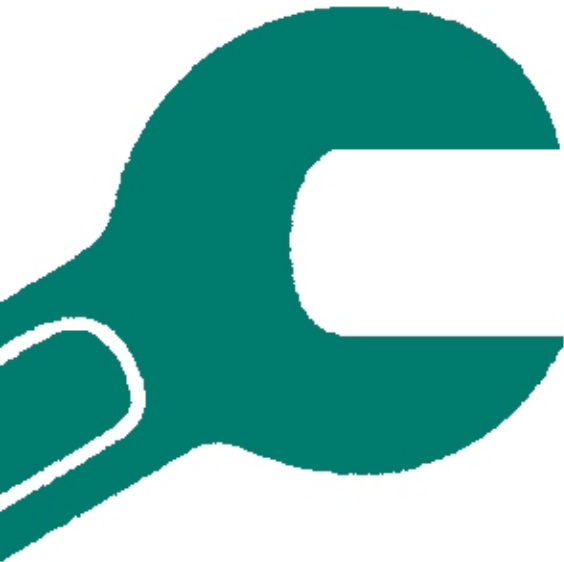


Workshop Manual

Engine unit

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2 (0)

MD6A, MD7A



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**VOLVO
PENTA**

Workshop Manual

Marine diesel engines MD6A, MD7A

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Safety Precautions

Introduction

This workshop manual contains technical data, descriptions and repair instructions for Volvo Penta products or product versions contained in the contents list. Ensure that the correct workshop literature is being used.

Read the safety information and the Workshop Manual “General Information” and “Repair Instructions” carefully before starting work.

Important

In this book and on the engine you will find the following special warning symbols.



WARNING! If these instructions are not followed there is a danger of personal injury, extensive damage to the product or serious mechanical malfunction.



IMPORTANT! Used to draw your attention to something that can cause damage, product malfunction or damage to property.

NOTE! Used to draw your attention to important information that will facilitate work or operations.

Below is a summary of the risks and safety precautions you should always observe or carry out when operating or servicing the engine.



Immobilize the engine by turning off the power supply to the engine at the main switch(es) and lock it (them) in the OFF position before starting work. Set up a warning notice at the engine control point or helm.



Generally, all servicing should be carried out with the engine switched off. Some work (carrying out certain adjustments for example) requires the engine to be running. Approaching a running engine is dangerous. Loose clothing or long hair can fasten in rotating parts and cause serious personal injury.

If working in proximity to a running engine, careless movements or a dropped tool can result in personal injury. Avoid burns. Take precautions to avoid hot surfaces (exhausts, turbochargers, charge air pipes and starter elements, etc.) and liquids in supply lines and hoses when the engine is running or has been turned off immediately prior to starting work on it. Reinstall all protective parts removed during service operations before starting the engine.



Check that the warning information decals on the product are always clearly visible. Replace decals that have been damaged or painted over.



Engine with turbocharger: Never start the engine without installing the air cleaner (ACL). The rotating compressor in the Turbo can cause serious personal injury. Foreign objects entering the intake ducts can also cause mechanical damage.



Never use start spray or similar to start the engine. The starter element may cause an explosion in the inlet manifold. Danger of personal injury.



Avoid opening the filler cap for engine coolant system (freshwater cooled engines) when the engine is still hot. Steam or hot coolant can spray out. Open the coolant filler cap carefully and slowly to release pressure before removing the cap completely. Take great care if a cock, plug or engine coolant line must be removed from a hot engine. It is difficult to anticipate in which direction steam or hot coolant can spray out.



Hot oil can cause burns. Avoid skin contact with hot oil. Ensure that the lubrication system is not under pressure before commencing work on it. Never start or operate the engine with the oil filler cap removed, otherwise oil could be ejected.



Stop the engine and close the sea cock before carrying out operations on the engine cooling system.



Only start the engine in a well-ventilated area. If operating the engine in an enclosed space, ensure that exhaust gases and crankcase ventilation emissions are ventilated out of the working area.



Always use protective goggles where there is a danger of pieces of metal, sparks from grinding, acid or other chemicals being thrown into your eyes. Your eyes are very sensitive, injury can lead to loss of sight!



Avoid skin contact with oil. Long-term or repeated contact with oil can remove the natural oils from your skin. The result can be irritation, dry skin, eczema and other skin problems. Used oil is more dangerous to health than new oil. Use protective gloves and avoid using oil-soaked clothes and rags. Wash regularly, especially before meals. Use the correct barrier cream to prevent dry skin and to make cleaning your skin easier.



Most chemicals used in products (engine and transmission oils, glycol, petrol and diesel oil) and workshop chemicals (solvents and paints) are hazardous to health. Read the instructions on the product packaging carefully! Always follow safety instructions (using breathing apparatus, protective goggles and gloves for example). Ensure that other personnel are not unwittingly exposed to hazardous substances (by breathing them in for example). Ensure that ventilation is good. Handle used and excess chemicals according to instructions.



Be extremely careful when tracing leaks in the fuel system and testing fuel injection nozzles. Use protective goggles! The jet ejected from a fuel injection nozzle is under very high pressure, it can penetrate body tissue and cause serious injury. There is a danger of blood poisoning.



All fuels and many chemicals are inflammable. Ensure that a naked flame or sparks cannot ignite fuel or chemicals. Combined with air in certain ratios, petrol, some solvents and hydrogen from batteries are easily inflammable and explosive. Smoking is prohibited! Ensure that ventilation is good and that the necessary safety precautions have been taken before carrying out welding or grinding work. Always have a fire extinguisher to hand in the workplace.



Store oil and fuel-soaked rags and fuel and oil filters safely. In certain conditions oil-soaked rags can spontaneously ignite. Used fuel and oil filters are environmentally dangerous waste and must be deposited at an approved site for destruction together with used lubricating oil, contaminated fuel, paint remnants, solvent, degreasing agents and waste from washing parts.



Never allow a naked flame or electric sparks near the batteries. Never smoke in proximity to the batteries. The batteries give off hydrogen gas during charging which when mixed with air can form an explosive gas - oxyhydrogen. This gas is easily ignited and highly volatile. Incorrect connection of the battery can cause a spark which is sufficient to cause an explosion with resulting damage. Do not disturb battery connections when starting the engine (spark risk) and do not lean over batteries.



Never mix up the positive and negative battery terminals when installing. Incorrect installation can result in serious damage to electrical equipment. Refer to wiring diagrams.



Always use protective goggles when charging and handling batteries. The battery electrolyte contains extremely corrosive sulfuric acid. If this comes into contact with the skin, wash immediately with soap and plenty of water. If battery acid comes into contact with the eyes, immediately flush with copious amounts of water and obtain medical assistance.



Turn off the engine and turn off power at main switch(es) before carrying out work on the electrical system.



Clutch adjustments must be carried out with the engine turned off.