

workshop manual for 4.2482, 4.248, T4.236, 4.236, 4.212 & T4.38 diesel engines

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This publication is written for world wide use. In territories where legal requirements govern engine smoke emission, noise, safety factors etc., then all instructions, data and dimensions given must be applied in such a way that, after servicing (preventive maintenance) or repairing the engine, it does not contravene the local regulations when in use.

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Amendment Status

| Number | Description | Date |
|--------|---|-----------|
| 1 | Note: Amendment page sets 1 to 4 are included in this publication. | 1985-1988 |
| 5 | To revise and add new information. | Jan. 1993 |

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| *Operating and maintenance information can be found in the multi-lingual
| 4.236 Series Users Handbook.

Unified Threads and Engine No. Location

All threads used on the 4.2482, 4.248, T4.236, 4.236 and 4.212 Engines except perhaps on proprietary equipment are Unified Series, and American Pipe Series. Later engines use some metric threads.

Unified threads are not interchangeable with B.S.F. and although B.S.W. have the same number of threads per inch as Unified Coarse Series, interchanging is not recommended, due to a difference in thread form.

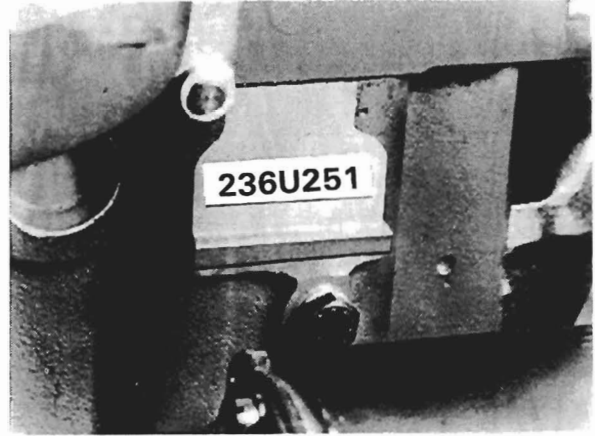
The Engine Number is stamped on the cylinder block as shown in the illustrations. The number position and composition have been changed at various times as detailed below.

Early 4.236 engines (Phase I Type) are stamped on a pad on the right hand side of the cylinder block above the rear end of the tappet cover. The number consists of 7 digits commencing with the figure '4'. Where a letter 'A' follows the engine number, the cylinder block is fitted with $\frac{3}{8}$ in diameter cylinder head studs.

Later 4.236 engines (Phase II Type) and earlier 4.248 and 4.212 engines are stamped on a pad on the right hand side of the cylinder block above the dynamo or alternator. The number consists of a combination of figures and letters, e.g. 248U251, 236U251 or 212U251. Other letters may be included in the combination, denoting specific information, e.g. a letter 'C' at the end of the number indicates that the engine is fitted with chrome plated cylinder liners.

Current engines numbers are stamped on a label which is fitted to the left hand side of the cylinder block above the fuel injection pump. Some engines also have the engine number stamped at the top of the rear face of the cylinder block. A typical number for this latest system is LD21498U510256D.

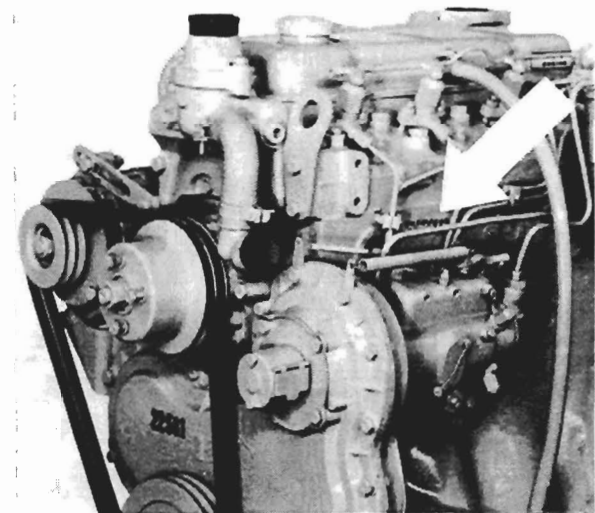
The engine number should be quoted in full and in the correct sequence, together with the type of vehicle or machine in which it is fitted, when requesting information or ordering parts.



Engine Number Location
(Earlier 4.248, Phase II 4.236 and 4.212 engines)



Engine Number Location
(4.236 Phase I Type)



Engine Number Location
(Current Engines)

FOREWORD

This Workshop Manual has been compiled for use in conjunction with normal workshop practice. Mention of certain accepted practices, therefore, has been purposely omitted in order to avoid repetition.

Reference to renewing joints and cleaning off joint faces, has to a great extent been omitted from the text, it being understood that this will be carried out where applicable.

Similarly, it is understood that in reassembly and inspection, all parts are to be thoroughly cleaned, and where present, burrs and scale are to be removed.

It follows that any open ports of high precision components, e.g. fuel injection equipment, exposed by dismantling, will be blanked off until reassembled, to prevent the ingress of foreign matter.

To give improved sealing, later engines are built with controlled swell type joints which are fitted dry.

When fitting setscrews into "through" holes into the interior of the engine, a suitable sealant should be used.

Note: Some setscrews may already have sealant coated threads. These can be identified by the colour of the threads which will be red or blue etc.

Engines built for Massey Ferguson applications are designated A4.248, A4.236, AT4.236 and A4.212. Where information specific to these engines is referred to, the appropriate engine designation is given, otherwise the information is the same as listed under standard engine types.

For T4.38 engines, the information given will apply as for T4.236 engines, unless otherwise stated.

Throughout this manual, whenever the "left" or "right" hand side of the engine is referred to, it is that side of the engine when viewed from the flywheel end.

Most of the general information which is included in the multi-lingual 4.236 Series Users Handbooks has not been repeated in this workshop manual and the two publications should be used together.

Read and remember the "Safety precautions". They are given for your protection and must be used at all times.

SAFETY PRECAUTIONS



THESE SAFETY PRECAUTIONS ARE IMPORTANT. You must refer also to the local regulations in the country of use. Some items only apply to specific applications.

- Only use these engines in the type of application for which they have been designed.
- Do not change the specification of the engine.
- Do not smoke when you put fuel in the tank.
- Clean away fuel which has been spilt. Material which has been contaminated by fuel must be moved to a safe place.
- Do not put fuel in the tank while the engine runs (unless it is absolutely necessary).
- Do not clean, add lubricating oil, or adjust the engine while it runs (unless you have the correct training; even then extreme caution must be used to prevent injury).
- Do not make adjustments that you do not understand.
- Ensure that the engine does not run in a location where it can cause a concentration of toxic emissions.
- Other persons must be kept at a safe distance while the engine, or equipment, is in operation.
- Do not permit loose clothing or long hair near moving parts.
- Keep away from moving parts during engine operation. **Attention:** Some moving parts cannot be seen clearly while the engine runs.
- Do not operate the engine if a safety guard has been removed.
- Do not remove the filler cap of the cooling system while the engine is hot and while the coolant is under pressure, because dangerous hot coolant can be discharged.
- Do not use salt water or any other coolant which can cause corrosion in the closed coolant circuit.
- Do not allow sparks or fire near the batteries (especially when the batteries are on charge) because the gases from the electrolyte are highly flammable. The battery fluid is dangerous to the skin and especially to the eyes.

Asbestos Joints

Some joints and gaskets contain compressed asbestos fibres in a rubber compound or in a metal outer cover. The "white" asbestos (Chrysotile) which is used is a safer type of asbestos and the risk of damage to health is extremely small.

The risk of asbestos from joints occurs at their edges or if a joint is damaged when a component is removed or if a joint is removed by abrasion.

To ensure that the risk is kept to a minimum, the procedures given below must be applied when an engine which has asbestos joints is dismantled or assembled.

- Work in an area with good ventilation.
- Do not smoke.
- Use a hand scraper to remove the joints – do not use a rotary wire brush.
- Ensure that the joint to be removed is wet with oil or water to contain loose particles.
- Spray all loose asbestos debris with water and put it in a closed container which can be sealed for safe disposal.

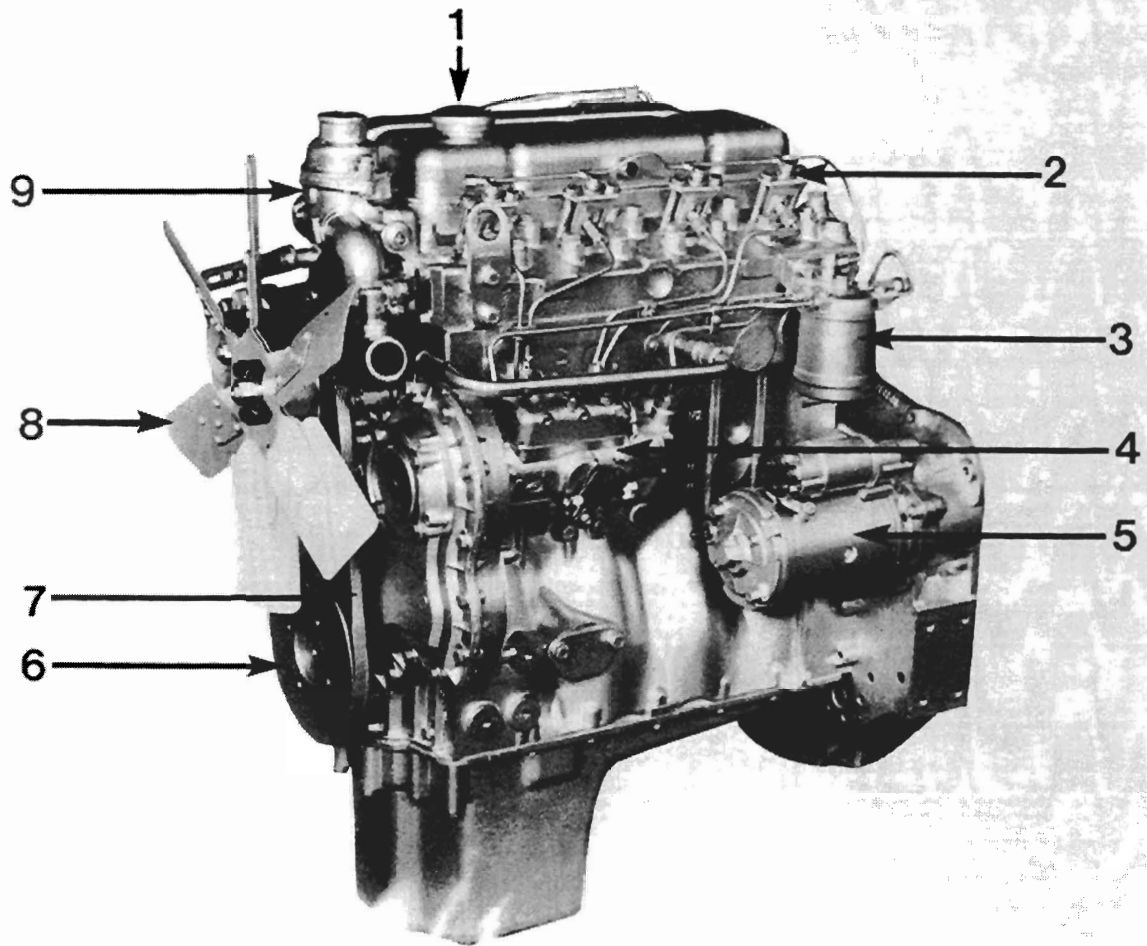
- Disconnect the battery terminals before a repair is made to the electrical system.
- Only one person must control the engine.
- Ensure that the engine is operated only from the control panel or from the operator's position.
- If your skin comes into contact with high-pressure fuel, obtain medical assistance immediately.
- Diesel fuel and lubricating oil (especially used lubricating oil) can damage the skin of certain persons. Protect your hands with gloves or a special solution to protect the skin.
- Do not wear clothing which is contaminated by lubricating oil. Do not put material which is contaminated with oil into the pockets.
- Discard used lubricating oil in a safe place to prevent contamination.
- Do not move mobile equipment if the brakes are not in good condition.
- Ensure that the control level of the transmission drive is in the "out-of-drive" position before the engine is started.
- Use extreme care if emergency repairs must be made at sea or in adverse conditions.
- The combustible material of some components of the engine (for example certain seals) can become extremely dangerous if it is burned. Never allow this burnt material to come into contact with the skin or with the eyes.
- Read and use the instructions relevant to asbestos joints given on this page.
- Fit only genuine Perkins parts.



Engine Photographs

SECTION A

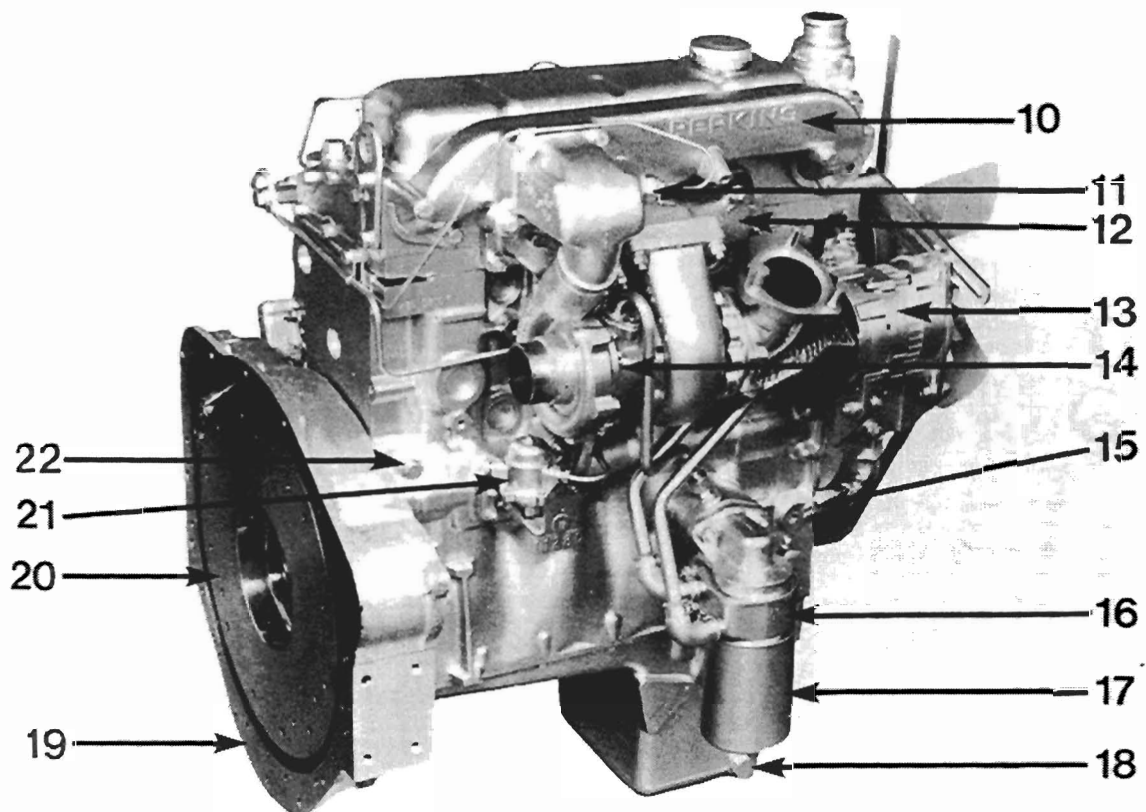
Perkins Engines are built to individual requirements to suit the applications for which they are intended and the following engine views do not necessarily typify any particular specification.



A1

VIEW OF FUEL PUMP SIDE OF T4.236 ENGINE

1. Lubricating Oil Filler Cap
2. Atomiser
3. Fuel Filter
4. Fuel Injection Pump
5. Starter Motor
6. Crankshaft Pulley
7. Fan Belt
8. Fan
9. Thermostat Housing

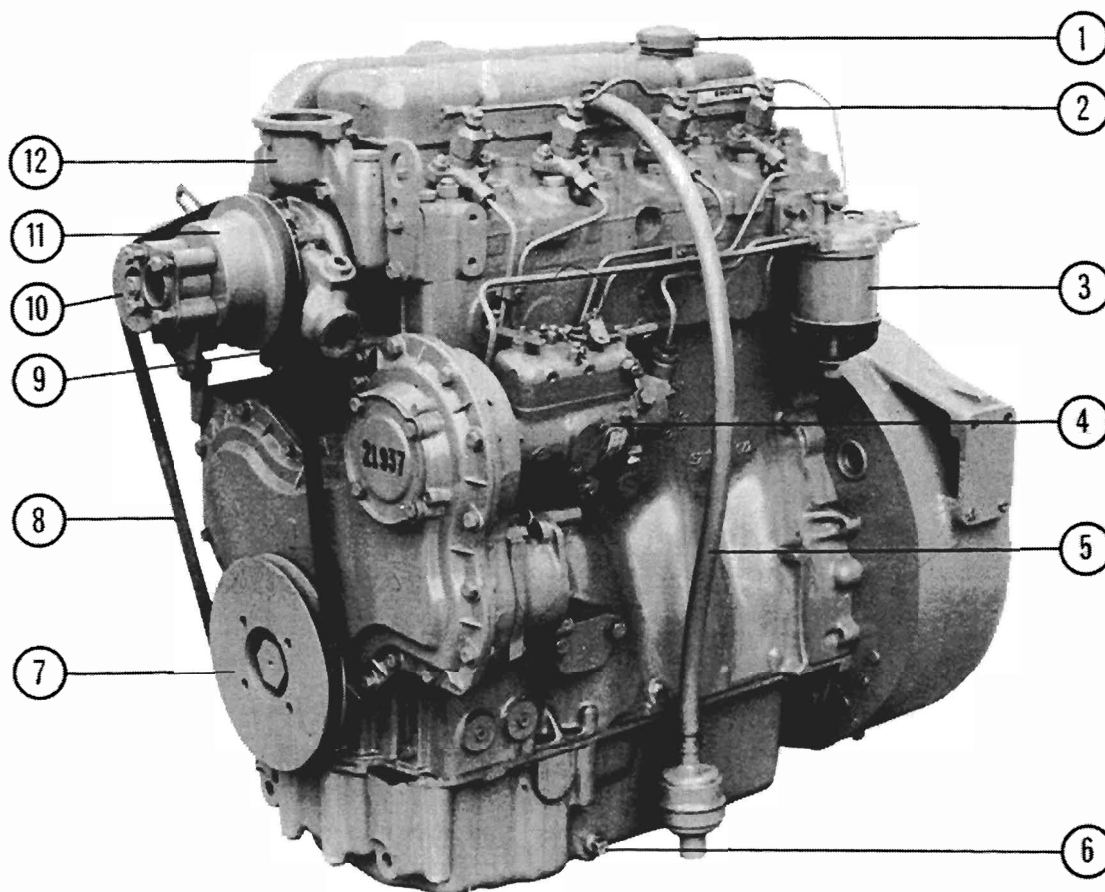


A2

VIEW OF CAMSHAFT SIDE OF T4.236 ENGINE

10. Induction Manifold
11. Thermostart
12. Exhaust Manifold
13. Alternator
14. Turbocharger
15. Lubricating Oil Dipstick
16. Lubricating Oil Cooler
17. Lubricating Oil Filter
18. Lubricating Oil Sump Drain Plug
19. Flywheel Housing
20. Flywheel
21. Fuel Lift Pump
22. Cylinder Block Drain Plug

ENGINE PHOTOGRAPHS—A.4



A3

VIEW OF FUEL PUMP SIDE OF 4.248, 4.236 AND 4.212 ENGINES

1. Lubricating Oil Filler Cap
2. Atomiser
3. Fuel Filter
4. Fuel Injection Pump
5. Breather Pipe
6. Sump Drain Plug
7. Crankshaft Pulley
8. Fan Belt
9. Water Inlet
10. Alternator Pulley
11. Water Pump Pulley
12. Thermostat Housing