



**MIDAS**

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# How to Check & Replace ENGINE OIL & OIL FILTER



## ***This workshop procedure guide contains:***

Step-by-step instructions on how to check and change engine oil and oil filter.

## ***Personal safety:***

Whenever you perform a task you must use personal protective clothing and equipment that is appropriate for the task. Among other items, this may include:

- Work clothing, such as overalls and steel-capped footwear.
- Eye protection, such as safety glasses and face masks.
- Ear protection, such as earmuffs and earplugs.
- Hand protection, such as rubber gloves and barrier cream.
- Respiratory equipment, such as face masks and valved respirators.

## ***TIPS ON CHECKING ENGINE OIL***

### ***Safety check:***

- If the engine has been running, be careful not to burn your hand or arm on the exhaust manifold or any other hot part of the engine when reaching for the dipstick. Remember, the dipstick and the oil on it will also be hot.
- Dripping oil from the dipstick will smoke or burn if it falls on any hot engine areas.
- Make sure that the bonnet is secure with a bonnet stay rod.
- Always make sure that you wear the appropriate personal protection equipment before starting the job. It is very easy to hurt yourself even when the most exhaustive protection measures are taken.
- Always make sure that your work area/environment is as safe as you can make it. Do not use damaged, broken or worn out workshop equipment.
- Always follow any manufacturer's personal safety instructions to prevent damage to the vehicle you are working on.

## Points to note:

- Make sure the vehicle is on a level surface and the engine is off before taking a reading. If you don't, you'll get inaccurate readings. The oil will collect in the sump when the engine is off.
- Typically, the amount of oil needed to raise the oil level from the low mark, on the dipstick, to the high mark is about a litre. Never fill the engine with oil to the top of the filler cap!
- Although fresh oil is translucent, and oil that needs to be replaced looks black and dirty, it is often difficult to assess the condition of engine oil simply by its colour. Oil loses its clean, fresh look very quickly and yet may still be serviceable. The best guide to changing oil is knowing the vehicle's mileage and period of time since the last oil change.
- If the oil on the dipstick is not blackish in colour but looks milky grey, this could indicate that there is some water (or coolant) being mixed into the oil. There may be a serious problem somewhere in the engine, such as a leaking head gasket.
- Engine operating conditions can also influence the oil's condition. For instance, continuously stopping and starting the engine with very small operating cycles can cause condensation inside the engine. An extreme case of this will cause very rapid oil deterioration, and will require frequent oil changes.
- Don't forget to replace the filler cap after topping up the oil.

## Checking Engine Oil

### 1. Locate dipstick



The dipstick is located on the side of the engine block and is usually very easy to find...



...with a distinctively shaped or brightly colored handle.

## 2. Remove dipstick and wipe clean



Remove the dipstick, catching any drops of oil on a rag, and wipe it clean.



There are markings on the lower end of the stick to indicate whether the oil level needs to be topped up.

## 3. Take the oil level reading



Replace the dipstick and push it back down into the sump as far as it will go.



Remove it again, and the level of oil in the oil sump will be clearly visible on the stick. If the level is below the 'full' or topmost mark, then you should top up the engine to that level with fresh oil.

## 4. Check condition of oil



If the oil appears very black and dirty, it may have lost some of its protective and lubricating qualities and may need to be completely changed.



Check the service record to see when the oil was last changed.

## 5. Adjust level if necessary



If additional oil is needed, estimate the amount by checking the service manual guide to the dipstick markings.



Unscrew the filler cap at the top of the engine...



...and using a funnel to avoid spillage, gently pour the oil into the engine.

## 6. Recheck the dipstick level



Replace the oil filler cap,...



...and check the dipstick again to make sure the level of oil in the engine is now correct.



# TIPS ON DRAINING ENGINE OIL

## Draining Engine Oil

### 1. Prepare the work area



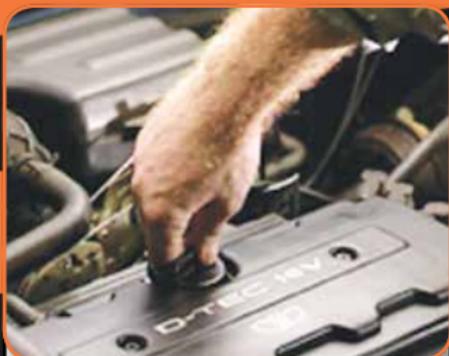
Before you begin, you will need to mop up any oil spills...



...you must have ready a container large enough to hold all the oil from the engine you are about to drain...



...and have enough new oil of the correct type to refill the engine later.



In some vehicles, the engine will drain more easily if the filler cap at the top of the engine has been removed, so do this before the car is lifted.

### 2. Identify drain plug and removal tool



Always use the Service Manual to help you locate and identify components if you are not completely sure of their location.



The oil drain plug is found underneath the sump, which holds all the oil in the engine.



Some vehicles have two drain plugs, draining separate sump areas.



To minimise the possibility of damage to the head of the bolt, you will need a ring spanner or socket wrench to remove and replace the drain bolt. Be very careful that you do not remove the transmission drain plug by mistake.

### **3. Remove drain bolt and inspect**



When you have removed the drain bolt, separate the sump plug gasket from the bolt and clean the threads. If the threads are damaged then the bolt may need to be replaced.



Look for solid metal particles stuck to the bolt. They may indicate an undiagnosed problem with the engine.

### **4. Drain the oil**



The oil will drain more efficiently from the engine if it is hot, so run the engine for a few minutes before draining.



If the oil is hot it can burn you, so be VERY careful when you remove the plug so that the oil does not spill onto your hand.



If the engine is cold you will need to allow much longer for it to completely drain...



...or the new oil will become contaminated by residual oil still clinging to the inside surfaces of the engine.

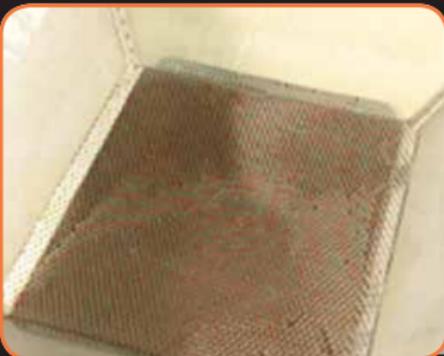
## **5. Safely dispose of the drained oil**



If the drained oil is hot, take extra care not to spill it, especially onto yourself.



When tipping the oil from the draining container into the recycle container...



...again look for signs of metal particles left at the bottom of the container.

## TIPS ON REFILLING ENGINE OIL

### Safety check:

- Make sure that you understand and observe all personal safety procedures when carrying out the following tasks.

### Points to note:

- If the engine has been running, be careful not to burn your hand or arm on the exhaust manifold or any other hot part of the engine when reaching for the dipstick. The dipstick and the oil on it will also be hot.
- Although fresh oil is translucent, and oil that needs to be replaced looks black and dirty, it is often difficult to assess the condition of engine oil simply by its colour. Oil loses its clean, fresh look very quickly and yet may still be serviceable. The best guide to changing oil is knowing the vehicle's mileage and period of time since the last oil change.
- If the oil on the dipstick is not blackish in color but looks milky grey, this could indicate that there is some water (or coolant) being mixed into the oil. There may be a serious problem somewhere in the engine, such as a leaking head gasket.

## Refilling Engine Oil

### 1. Replace drain bolt

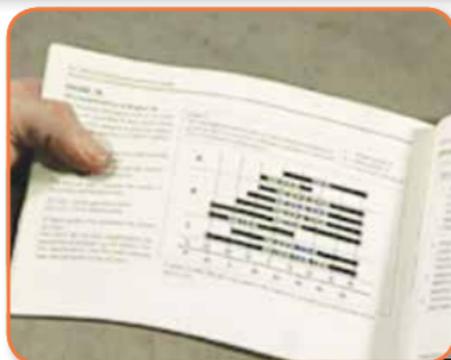


Before fitting the drain bolt, install a new sump plug washer. By replacing the washer you minimise the risk of stripping it, as the plug is made of a softer metal than the sump.



Screw in the bolt and then tighten it to the torque level recommended by the manufacturer. You will find this information in the vehicle Service Manual.

## **2. Select correct type of oil**



The Service Manual or the owner's manual will also tell you the correct grade of oil for the vehicle, and the quantity you will need to fill the engine.

## **3. Add correct amount of oil**



Pour the oil in carefully so that no oil is spilt onto the outside of the engine, and slowly enough to avoid the risk of blowback or overflow.



Fill the engine only to the level indicated on the engine dipstick, not until the oil is coming out the top of the filler nozzle.



Replace the filler cap.

#### **4. Run the engine and check pressure**



Start the engine and check the oil pressure indicator on the dash.



If the oil pressure is inadequate, stop. Do not continue to run the engine.

#### **5. Inspect under car for oil leaks**



Check underneath the vehicle to make sure that no oil is leaking from the drain plug.

#### **6. Stop engine and inspect level**



Turn the engine off and wait thirty seconds, then check the level again with the dipstick.



It may be necessary to top up the engine by adding a small additional quantity of oil to compensate for the amount absorbed by the new filter.



# TIPS ON REPLACING AN OIL FILTER

## Objective:

Replace the oil filter to the manufacturer's specifications.

## Safety check:

- Make sure that you understand and observe all personal safety procedures when carrying out the following tasks.

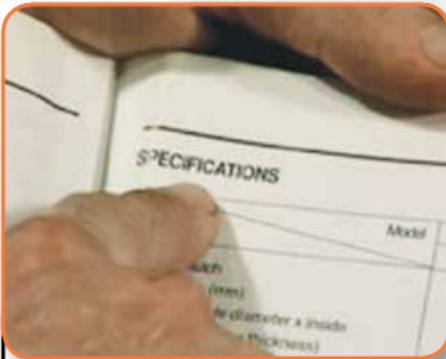
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# Replacing an Oil Filter

## 1. Check new filter availability



Before removing an oil filter, first refer to the Service Manual for the vehicle and identify the type of filter required.



Make sure that a suitable filter will be available as a replacement.

## 2. Locate filter and correct tool



The filter will usually be located on the side of the engine block or at an angle underneath the engine. Some filters have a retaining nut which will require a spanner to remove it...



...but most late model vehicles have filters, which are threaded cartridges. These are removed with an adjustable filter wrench.

## 3. Remove filter and inspect



Remove the filter and clean the seating area on the engine...

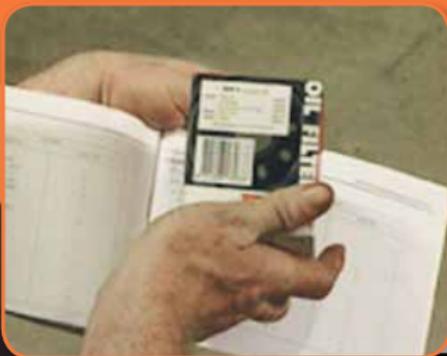


...so that its surface and the surface of the new filter can seal properly.



Make sure that the seal from the removed filter is not still stuck to the engine.

#### **4. Obtain replacement filter**



Confirm the correct part number and obtain the replacement filter from your nearest Midas Store.



It is good practice to fit a new filter every time you drain the sump.



## 5. Correctly fit replacement filter



Smear a little oil or grease on the surface of the new sealing ring. This will help to make a tight seal, but it will also prevent the gasket from binding and distorting while it is being tightened.



Screw in the filter until the two surfaces are touching.



To help judge the correct degree of the turn, make a mark on the outside of the filter with a pencil, or even a dab of oil, but remember to wipe the oil off again when you have finished. Do not over tighten the filter. Typically, three-quarters of a full turn is adequate torque for a seal that will not leak.





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