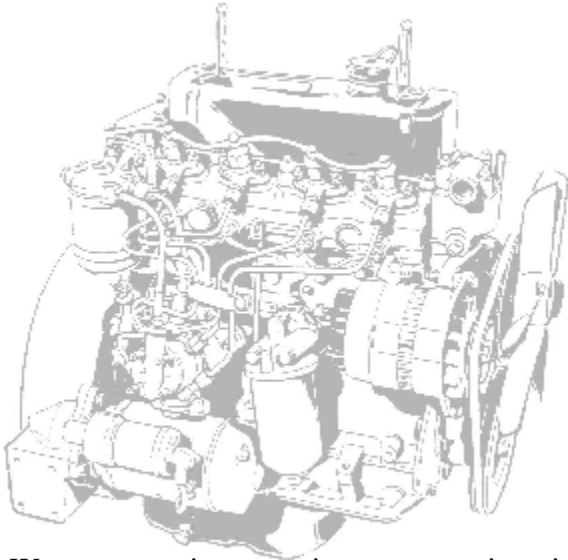


BMC 1.5 diesel engine



The BMC 1.5 Diesel engine was probably the most widely used engine within the marine industry throughout the 1960's and 70's. Its ability to withstand abuse, abundant and cheap spares parts made it the most favoured engine in the hire boat industry. Many companies marinised the engine and sold it as a 'turn key' ready to run kit for boat installation.

Thornycroft, CT marine, Tempest and Newage all offered the engine marinised and ready to run.

Perkins offered the 4.107 but this was bigger, more expensive and technically more advanced, which meant it was more difficult to repair and spare parts were very expensive. With this in mind most of the hire fleet operators fitted 1.5 BMC engines as standard.

The Elysian 27 and 34 models were offered to private buyers with a standard option of either Perkins or BMC. Most private models left Appleyard Lincoln with a Perkins 4.107 however, craft destined for hard work on the hire fleet left the premises with either a BMC 1.5 or no engine. The hire yards already had their BMC's waiting for 'direct labour' installation to save money. For this reason, many Ex Hire Elysian's have non standard engine installations.

We are not going to go into great engineering detail, this is simply an overview of the do's and don'ts concerning the operation of the engine in marine installations. We will cover the engines good points, bad points and dispel some of the myths that surround this historic engine.

The Good Points

1. Excellent reliability. Easy to find spare parts, relatively cheap and easy to maintain.
2. Economical diesel fuel consumption burning less than a gallon per hour working under normal loads.
3. Good access to most parts of the engine including the diesel injector pump
4. In good condition, these engines are almost as smooth as any 'modern' diesel engine of today.
5. Standard Lucas automotive starter motor and alternator can be used.

The Bad Points

1. **Do not believe the rumours that you can overheat a 1.5 BMC**, seize it solid then let it cool down and restart the engine with no long term damage. This abuse puts a 'twist' in the crankshaft, one day when you least expect it, you will hear a CLONK and a CRUNCH and then complete silence. The crankshaft snaps near the centre main bearing. Overheating causes twisted cranks, reduces bearing life and warps cylinder heads causing head gasket failures.

2. **They like clean fuel**, free from water and dirt. The lift pump has two valves, a tiny build up of dirt in these valves will cause the lift pump to fail. Always replace your fuel filters as part of the routine maintenance.

3. **Unlike a Perkins 4.07/8 engine, the 1.5 BMC has a timing chain.** Thankfully these don't break unless left unchecked for 30 years. Working BMC's are getting to the age where the timing chain should be changed for a new one. A new timing chain costs less than £20.00. If the old one should break, the camshaft will not operate the valves in time to miss the oncoming pistons. Valves meeting pistons at great velocity will completely wreck an engine. In severe conditions it can even send a Connecting Rod through the engine block, leaving you with an engine that can not even be rebuilt.

4. **Oil leaks**, a good friend and skilled mechanic once said "there are two engines in this world that always have oil leaks, one is a Land Rover and the other a Rolls Royce." We think the 1.5 BMC should be added to the list as they just love marking their spot!. The golden rule is never over fill this engine with oil. It will simply destroy the front crankshaft oil seal creating an annoying drip just behind the front crankshaft pulley. It will also blow the excess oil out via the breather pipe making a sticky mess inside the air-filter.

5. **Distorted rocker covers.** The two bolts that hold the rocker cover in place are often over tightened causing the mild steel cover to distort. This creates an oil leak around the top of the cylinder head, so the temptation is to tighten them up even more to stop the leak. All that is needed is a new cork gasket correctly set down and the rocker cover tightened up by hand using a short reach spanner.

BMC 1.5 diesel engine cont'd

Basic servicing can be done by most boat owners with a simple understanding of engines. We recommend Oil changes should be done every 50 hours of running and the filter changed every 100 hrs. Also at the start of each season we recommend the fuel filters are changed and the primary filter cleaned. Below is a simple 'how to' bleed the fuel system after installing new filters. If in doubt, always seek expert advise.

1. Ensure that there is an adequate supply of fuel in the tank.
2. Slacken the union at the filter end of the injection pump feed pipe. Operate the lift pump by hand, and when the fuel coming from the slackened union is free of air bubbles, tighten the union.
3. Slacken the plug in the unused connection in the filter head. Operate the lift pump, and when fuel coming from the connection is free of air bubbles, tighten the plug.
4. Slacken the two bleed valves on the injection pump illustrated in Fig. 1. Operate the lift pump, and when fuel coming from both valves is free of air bubbles, tighten the valves.
5. Slacken the unions at the injector ends of any two high-pressure pipes. Ensure that the stop control is in the run position and the throttle in the fully open position. Crank the engine until the fuel coming from both pipes is free of air bubbles, then tighten the unions.
6. Start the engine and allow it to run until it is running on all four cylinders.

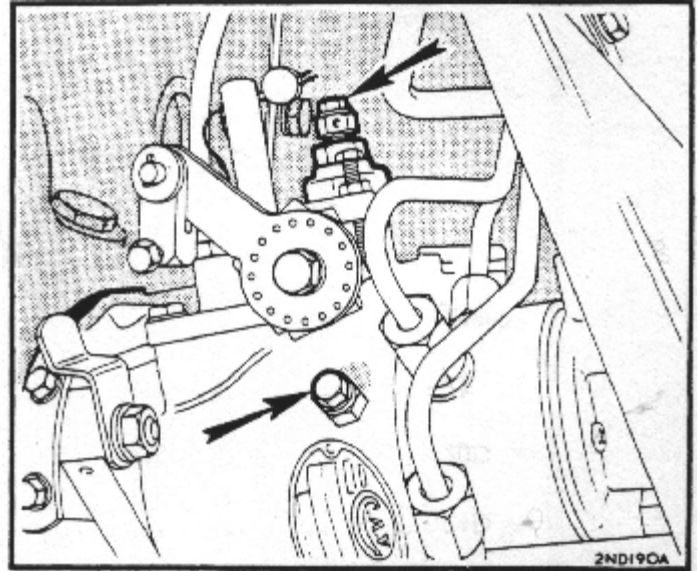


Fig. 1

A repair manual is available for the BMC 1.5 from A.S.A.P. Supplies. Using the Elysian Register discount scheme, the manual can be purchased for £11.75 plus p&p. It should be noted that the manual only covers the engine itself and not the marine cooling system, heat exchangers or other marinisation parts. A.S.A.P. can be contacted on 01502 716993. Remember to quote our customer number 85E1582 to get your discount.

BMC 1.5 diesel engine and the future

To replace this engine with an equivalent new 4 cylinder diesel engine will cost you in the region of £4,500. Due to the vast availability of spare parts for the BMC 1.5, it is still cheaper to have your old unit reconditioned rather than replace it for a modern Japanese engine. Therefore with this in mind, the future of the little old English engine is looking good. Sadly, the same cannot be said for the Perkins 4.107 which has now become 'obsolete' as many of the spare parts are simply not obtainable or priced beyond the reach of the average Elysian owner.

Keeping it smooth

The idle speed for a BMC 1.5 is 500 - 600 rpm but remember this is only a general setting. If you experience a lot of vibration at idle, try increasing the idle speed to perhaps 650 rpm. Every engine has its 'sweet spot' at idle speed, you should try and find this sweet spot rather than tolerate the noise and vibration sometimes experienced when setting everything up in conjunction with the manual. (The chairman has his Perkins 4.107 idle set to 850 rpm because that is its sweet spot which eliminates nearly all the vibration at tick over speed.)

Handy to know

Minimum Oil pressure at idle	= 15 psi
Minimum Oil pressure at normal running speeds	= 50 psi
Engine Oil capacity	= 4.7 litres (may vary due to sump sizes)
Cylinder Head skimming allowance	= 0.38mm (0.015 in)
Cylinder Head nuts torque figure	= 71 lb ft
Valve to Rocker Clearance (cold)	= 0.38mm (0.015 in)