

A QUICK GUIDE TO ENGINE SWAPS

Dieselise your gas-guzzling sterndrive and save the whole cost of a new engine in 300 hours full power use!

Initial considerations

1. Determine the power that you require from your new (slightly heavier) diesel engine, by reference to performance on your existing gasoline power, or from the Lancing Marine computer. Remember that gasoline engines give 30-40hp less than their model numbers might indicate.
2. If your required swap is shown on the spreadsheet on page 20 of the Price Book, you can be reasonably sure that the job is technically feasible.
3. Check that you have enough room for the new engine(s) by reference to the dimensions on pages 4 & 5, or measurement of your proposed engine. Ask Lancing Marine for final advice.

Engine removal

Volvo

Remove drive cover and disconnect control cable. Remove steering pivot screw, rubber bellows and clamps.
Support drive and remove lock screws. Drive pivot pins inwards into bellows area using a suitable drift and a 2lb. hammer.
Pull drive aft to disengage drive line. Early type 100 drives will dump their oil if laid on their sides.
Support engine with hoist. Remove 6 bolts and 3 locktabs from around the outside of the driveshaft housing. Grease the three holes now exposed and insert 3 of the bolts into these holes, and tighten to 50 lbs-ft.
This should jack the locking off of the driveshaft housing. Heating locking with gas torch may help.
If this proves difficult, consult Lancing Marine for further advice.

MerCruiser

Remove nuts and washers from outer ends of trim rams and pull rams sideways to disengage.
Shift gearshift into forward gear and remove 6 stainless nuts on back of upper gear case.
Take the weight of the drive on lift eye with a rope from above.
Lift the leg part way and drop it down. This should cause the upper unit to kick out and disengage the drive line, allowing the whole unit to be pulled out of the transom shield.
Undo two rear engine mount bolts. Nuts should be captive in the inner transom shield.

All engines

Disconnect battery cables from engine and battery
Disconnect fuel hose and ensure that it cannot spill fuel.
Disconnect water inlet hose and exhaust outlet hose(s).
Disconnect wiring harness at multi-pin plug.
Disconnect control cable(s) fixed to engine.
Disconnect any extra items connecting engine to boat.
Disconnect front mounts from the hull. (if present)
Lift engine forwards and upwards with suitable lifting equipment.
Take care as it is quite heavy....

COMPONENT REMOVAL

Remove wiring harness from engine, together with senders.
Remove flywheel housing from engine.
Remove MerCruiser coupling from engine.
Remove exhaust connection from transom shield if a blanking plate is to be fitted.

ASSEMBLY AND INSTALLATION

Follow guidance notes supplied with engine.

General notes

D-I-Y kits contain all marinisation and modification parts and services to complete ex-vehicle engines to specifications similar to those of our completely prepared engines. The engine swaps listed are the more popular ones, but others can be quoted on a one-off basis. Whilst every attempt is made to ensure 100% compatibility, there may be variations of makers' specifications or boatbuilders installations that we have not foreseen, in which case we will try to vary the parts we supply at least possible cost. Existing installation photographs will often help us to customise the equipment we supply at minimal extra cost.
Fuel tanks that are galvanised or zinc plated inside must have their interiors protected from the effects of diesel fuel, owing to its high sulphur content. Diesel engines to be used on inland waterways require fuel system modification. See price book.

A higher standard of fuel filtration is required for diesel engines than for gasoline, so we suggest the fitment of our pre-filter with water separator. The following parts need to be sent with your order to Lancing Marine for modification or installation on the replacement engine:-

Flywheel housing	Engine half wiring harness
Temperature and oil pressure senders	Flywheel coupling
Power steering pump and mount	
Exhaust connection from transom shield, if modification is required, or blanking plate to be made.	

IF IN DOUBT, ASK LANCING MARINE FOR HELP.

Kits for D-I-Y dieselisation and marinisation for other drive systems are also available

Do's and Don'ts of D-I-Y Marinisation

1. First try to establish just how much power you need in order to obtain the performance you require from the boat that you wish to power, either by asking the original boatbuilder or by using Lancing Marine's propeller and speed calculation computer program.
2. Look for engines of suitable power that also appear in the pricebook, and avoid non-listed engines, as you may find marinisation parts for them practically unobtainable.
3. Try to obtain engines that are still in good running order, either from crashed vehicles, or from M.O.T. failures. Don't buy an engine that is not in running order, as it is often more expensive to repair a worn-out motor than to buy a brand new one.
4. Always ask to see the engine run before buying it. Watch for white or blue smoke from the exhaust, fumes blowing out of the oil filler, and listen for knocks, especially on the over-run as you blip it, and at idle. These are all portents of potential disaster. Look at the oil on the dip-stick and if it is very black and sludgy, the piston rings may be badly worn.
5. Before stripping any parts, give the engine a good scrub with Jizer and hose it off. This makes the job much more pleasant. Then remove external automotive parts that will not be re-used, and drain the engine oil.
6. Lay the engine on its side, or stand it on end on its flywheel, taking care that it will not fall over, and remove the sump. Examine the residue in the sump for metal particles, and odd parts that may have fallen off. If you find anything like this, start worrying . . .
7. Remove bearing caps and examine bearings and journals, push feeler gauges up between the piston skirt and the bore to measure the wear, and examine all the lobes of the camshaft. If you find any serious damage or wear at this stage, reject the engine and ask your supplier for a better one, as it is a lot cheaper to start on another one than to try to repair serious faults.
8. Reassemble the engine, do normal service checks, and fit the marinisation parts, gearbox, mountings, etc. If you have any problems in this respect, then phone Lancing Marine for advice.
9. Prior to installation in the boat, fill up with water and lubricants, connect up a fuel supply, battery cables, and fit on your exhaust hose, and silencer if you have one, so that it dumps into a clean tank. Fill the tank with water and connect a hose from the tank to the water pump pick-up.
10. Make sure the engine cannot fall over, and fire it up. Check oil pressure as soon as it starts and run it for long enough to get well warmed up, checking for leaks and unusual noises, and re- checking the oil pressure. Take time over testing, as it is much easier to correct faults whilst the engine is out of the boat, than it is once it has been installed.
11. "Whatever happens do not panic. Instead phone Mike Bellamy on 01273 410025".



HAPPY BOATING