

ATOMIC 4 REPLACEMENT GUIDELINES



The Atomic 4 gasoline engine may be replaced by one of a range of Beta Marine diesels, from 14 to 35h.p. Since the Atomic 4 was installed as original power in everything from 25ft to 40+ ft boats, it is important to choose the correct Beta model for your boat – one size does not fit all!

For help with engine power selection please refer to our general guidelines or call us for help with your specific vessel.

Once the appropriate Beta model has been selected, there are a number of options that you may require to aid in the installation:

1. **Atomic 4 Pattern Mounts** – Beta supply the narrow (11.5” centres) Atomic 4 mountings on engines up to 30h.p. upon request.

Note: If your old Atomic 4 is secured to the engine bed using the four lugs that are part of the engine's oil pan, then you have the 11.5” centres. However, if the engine is mounted with adjustable jacking feet, then the mounting centres are wider - approx. 14.5” - which closely matches the Beta Marine standard mounts on the smaller engines (14 to 25 H.P.), and slightly narrower than the standard mounts on the Beta 30 to 35 (16”).

Be sure to order the correct mounts as this greatly eases the installation process.

2. **Propeller Shaft Coupling**

The Atomic 4 propeller shaft coupling is not compatible with any of the modern transmission coupling patterns, a new shaft coupling is required.



Beta Marine Canada can supply the correct coupling if advised of your propeller shaft diameter.

Note: Some Atomic 4 propeller shafts were 3/4" diameter. This is inadequate for all but the smallest Beta replacement engines, and may have to be upgraded.

3. Propeller

When selecting your new Beta Marine engine thought must be given to the propeller. Any direct drive Atomic 4 (no reduction in rpm to the propeller) was equipped with either an 11" or 12" diameter propeller and, since this was part of the original design of the boat, there is often very limited room to fit a larger diameter propeller.

Generally speaking, the replacement Beta Marine diesel will require a larger propeller, more so with higher horsepower engines. In order to determine the most suitable propeller for your application a number of factors must be taken into account, with a limited propeller diameter being a prime concern. Please consult Beta Marine Canada or a propeller specialist for recommendations before placing an order as the choice of transmission ratio is important in this process.

4. Gear shift



The Atomic 4 gear shift control required a heavy 64 series control cable, because of the long throw, high effort lever on the transmission. All marine transmissions now use a 33 series cable which is much smaller than the 64 series cable, with a shorter throw and mounting configuration.

You have two options:

- a) Modify the existing control to accept the 33 series cable.
Note: If you have pedestal controls this is the only solution.
- b) Install a new control. Beta can supply a single lever control and cables that give excellent "feel" and positive F-N-R engagement

5. Exhaust System

Your Atomic 4 exhaust system may have utilized a tower style exhaust or a waterlock muffler. If you have the tower style system it must be replaced with the waterlock layout. Also, regardless of whether your system has an antisiphon loop and valve now, Beta requires the use of one, appropriately located. All of these components can be supplied with the engine if required.

The Atomic 4 exhaust system was commonly 1 1/2" diameter I.D.. If it is in good condition this may be re-used on Beta Marine engines up to 25h.p. Over 25h.p. the system must be increased to 2" diameter.

6. Fuel System

The entire fuel system must be flushed and upgraded as necessary. Any flexible fuel lines must be upgraded to meet current standards (ABYC – type A1). The primary fuel filter must be suitable for diesel fuel filtration and have a water trap bowl of sufficient capacity, preferably see-through for ease of monitoring. Again, Beta Marine can supply a fuel filter and hoses if required.

Note 1 : The fuel tank may be thoroughly flushed, if possible, and re-used. However, it is often easier and more cost effective to install a new tank..

Note 2 : Your Beta Marine diesel requires a fuel return to the tank. Often your original tank, if retained, does not have a dedicated return port. In this case it is possible to install a T-fitting in the fuel tank vent line as long as the returned fuel flows straight down into the tank and does not pool in the vent line (this would prevent the ftank from venting properly and cause problems on the fuel delivery side).

Note 3 : The deck filler for the fuel tank **MUST** be re-labelled “Diesel”.

7. Cooling System

The Atomic 4 raw water intake is 1/2” I.D., this is too small for a diesel. The Beta Marine Atomic 4 replacement diesels utilize a 3/4” I.D. intake. Your raw water intake system must have a 3/4”, or better, I.D. from the through-hull to the engine. Be sure to check all the fittings and increase the size if necessary. Beta Marine recommend the installation of a raw water strainer to prevent debris from damaging the pump impeller and clogging the engine's heat exchanger. Beta Marine can supply a suitable strainer with your engine package, if required.

8. Instrumentation



The Atomic 4 instrument panels varied in size and features. Select an appropriate Beta panel for your requirements and dimensions. If the panel you desire will not fit the panel recess on your boat, please advise us as there are a number of options to solve this problem.