

# Which small 4-stroke?

Alex Bell and the PBO test team put seven small four-stroke outboard motors through their paces



It is now some three years since tougher EU emission regulations banned the import of carburettor-fed two-stroke outboard motors. This ban covered small two-stroke engines and, although for a period engines that had already been imported were still available, that supply of new engines has now dried up.

Manufacturers have responded and there are now six different types of four-stroke engine between 2 and 4 hp on the UK market, with some branding variations. Besides the established players of Honda, Suzuki, Tohatsu (who share their engine design with the Mercury/Mariner brand) and Yamaha, we now have Selva and Parsun.

The best advice prior to the import ban was to buy a two-stroke model. This was because two-strokes are much simpler than four-strokes, with no valve gear, no oil sumps and an oily petrol mix to lubricate the

working parts, ideal for a marine environment. They also need less maintenance than four-strokes.

## Pros and cons of four-strokes

But four-stroke engines do have advantages, besides being kinder to the environment. Like four-stroke lawnmowers, there is no need to mix oil and petrol to create the correct two-stroke mixture, a significant point since the oil is expensive and it's never easy to get the precise ratio. Four-stroke engines are also more economical because all the fuel is combusted on the power stroke.

Weight-wise they are heavier than two-strokes, coming in at between 15 to 20 kg, except for the Honda and Suzuki which are similar to the older engines at 12.5kg and 13kg respectively. However, they are bulkier because the cylinder head has to include the valve gear. You also have to be careful how you

handle them (Selva excepted) because, if you lay them down, they must be laid on the correct side to avoid the sump oil draining through the crankcase breather.

## Advanced features

Those moving on to a small four-stroke engine from a two-stroke will notice quite a few refinements. All the engines tested have a twist throttle on the end of the tiller, allowing much safer speed control without having to reach back to a lever on the engine casing. The throttles can also be set so that they spring back to tick over position when let go – a useful safety feature. All the engines have a kill cord attachment point which, when pushed, will also shut down the engine, although later two-strokes also had this feature. Another refinement is a neutral and forward gear, controlled either by a gear lever on the starboard side or by a centrifugal clutch which

automatically engages forward gear when the throttle is opened up. This is the system used on the Honda and Selva engines. Having a clutch means that the engines can be started in neutral, which is safer and should assist starting.

All the engines have pull out chokes, which are easy to operate and clear when on or off. Reverse gear is simple: just turn the engine through 180°. Care is needed to keep the kill cord in position when it is attached to the tiller arm.

## Starting procedures

Because four-strokes require two engine revolutions to complete one cycle it is important to pull the start cord until a strong resistance is felt. This resistance is the beginning of the compression stroke. The cord should then be let back into the recoil unit and then gently pulled out until resistance is felt. Never jerk the cord, just give it a firm pull. The choke needs to be used sparingly, unless it's a very cold day and should be disengaged as quickly as possible, but this will vary with different engines and you need to find out what your engine prefers! If the engine doesn't fire up by the third pull, check that there is fuel in the tank, that the fuel tap is in the open position, and the tank air vent is open. Failing that, I always look at the spark plug lead to make sure it's firmly attached and has not been soaked in salt water.

## Desirable features

- A large fuel cap with a breather valve that is easy to use with cold hands and doesn't break
- An easy-to-read fuel valve
- A convenient choke control that is clear when on or off
- A twist-grip throttle with a friction adjustment

- Clamp toggles that can be locked with a padlock
- A tilt system that doesn't seize and can be accessed easily
- A comfortable carry handle
- A clear oil level indicator
- A clear coolant tell-tale
- An easily accessible gear lever
- A sturdy hinged tiller arm

- A quiet motor so you can talk when in the dinghy
- A robust cover that can be used to tilt the engine
- Low vibration to avoid strain
- An accessible spark plug that doesn't get splashed
- A non-wearing pull cord
- An easily replaced shear pin



Bob checks the sound meter display having just taken a reading



A bollard pull test gives an indication of the engine's thrust

## 7 Top outboard engine tips

- 1 Try to avoid laying the engine down, this will prevent water running down the exhaust pipe and entering the cylinder. If you do have to lay it down, always let the cooling water drain out first and lay it on the correct side
- 2 Flush the engine through with fresh water after use. Some sailing clubs have freshwater flushing tanks to enable the engine to be run for a few minutes
- 3 Always open the fuel tank vent first before opening the fuel tap
- 4 Regularly check the oil level in the sump
- 5 Don't overfill the lubrication oil sump as this may hinder running at slow speeds
- 6 Run the carburettor dry before laying the engine up for long periods
- 7 To ensure the petrol is clean when filling the fuel tank, use a paper (coffee) filter in a funnel to remove any particles

## HOW WE TESTED THEM

We tested the engines in Emsworth Marina using two identical inflatable tenders, each manned with two crew. After a few minutes to warm up, the first test was to run the engines at full throttle, using a handheld GPS to measure their maximum speed. We next noted the static 'bollard pull' by attaching the tender to a spring balance.

We also recorded the noise level each engine produced, locating the sound meter at the helmsman's head height, and attempted to measure fuel consumption by weighing the engines before and after a 10-minute run at maximum speed. However, although the results were fairly consistent across the engines, the test conditions made accurate measurements difficult. Fuel consumption will vary considerably with throttle setting. Expect about a litre an hour flat out and less than half that at more gentle settings.

To check for any maintenance issues we consulted Bill Mitchell of Home Marine, an independent outboard specialist based in Emsworth Marina. His comments are added to the end of each review.



Weighing the engines to assess their fuel consumption