PHOTO: SUZUKI*

Throttle down

Georgie Corlett discovers which outboard to choose for your RIB, tender or dayboat

When choosing an outboard, think first about the type of boat you are looking to power – a 3m RIB providing safety cover for club racing will have very different requirements compared to a sportsboat needing an auxiliary engine.

Size and power

The first thing to establish is the amount of horsepower you're looking for. Outboard options range from 1hp to 300hp, but there's generally a tight margin that's suitable for any given hull, depending size and shape.

'All boats, including tenders, inflatables and small RIBs, will have a CE plate which shows the maximum power the craft is "rated to",' says Jeff Turner, Yamaha marketing manager. 'This figure may be given in horsepower, indicated as HP (or the European equivalent, PS), but whichever measurement is used the maximum power should not be exceeded as the figure is there for a reason. It may be set to govern the top speed of the craft or it might be restricted because of the engine's weight and transom strength.

'Having established the maximum size of engine you can put on your transom we often get asked if a smaller engine will be sufficient. This depends on usage of course; for example, a small tender, fully loaded and pushing against a strong tidal stream will probably require the maximum horsepower permissible, whereas a 4 or 5m safety boat may be fine with a wider range of engines, from say 25hp to 50hp.'

Engine size has a bearing on top speed and therefore fuel consumption,

> "The new generation of direct-injection two-stroke engines have fewer emissions, better fuel efficiency and quieter running"

The electric option

Recent advances in battery technology have made electric outboards more of a feasible option than ever before, from 1hp up to around 80hp. The smallest models use an integrated lithium ion battery, which are fully waterproof to IP67, ideal for the smallest of dinghies. Larger models connect to external batteries; some can even be attached to solar panels for charging, giving an infinite power source.

But how do electric outboards measure up to their petrol equivalents? John Arnold, UK sales manager for Torqeedo, the market leader in electric outboards, says: 'In order to compete with the petrol engines, we produce exceptionally efficient electric outboards. By comparison, if you look at power going into the motor versus power at the prop, our engines work at typically 50 per cent efficiency, compared to around 10 per cent with a petrol outboard.

'The favourite term in electric mobility is "range anxiety" – essentially, will I get from A to B without running out of charge, unlike with a petrol outboard where I can simply add another can of fuel. On all of our engines, an integrated on board computer with GPS-based range calculation updates constantly so you can see your remaining range, allowing you to reduce speed if necessary.

'To give you an idea of capabilities, using our 3hp with integral lithium battery on a 3.5m inflatable running at a variety of speeds has a range of around 4.5 hours on one charge of battery.'

Starting an electric outboard is simple; there's no cord to pull: press a button, attach the kill cord and go, with both tiller and remote console steering options available for higher hp versions.

So what does it cost? Typically the initial purchase cost will be around 40 per cent higher than an equivalent petrol model. However, the bonus comes in zero maintenance and running costs over a battery lifetime of around seven to 10 years. There are also a host of environmental benefits – no exhaust emissions, no risk of fuel spillage and very little noise.

PHOTO: TORQEEDO*

PHOTO: HONDA*

PHOTO: MERCURY*

but also on price. With this in mind, users on non-tidal lakes and reservoirs may choose to scale back on horsepower for a small purchase cost saving. But, as Gareth Lumsdaine from Suzuki GB warns, buying the smallest engine you can get away can be a false economy. 'Sometimes better performance, longevity and fuel efficiency can be achieved with a larger engine that is not being worked so hard.'

The general advice is to opt for an engine at or towards the top end of the permissible power range. Iain Botwood of Honda Marine, breaks down the rationale: 'There's often a benefit in putting the most powerful engine you can on the back, because typically an engine at full throttle uses twice the fuel of an engine at three-quarters throttle. To access the top 25 per cent of the available power band can cost you up to 100 per cent more fuel.

'What you want to avoid is taking an engine anything beyond three-quarters throttle. So for example, if you've compare a 100hp and a 75hp outboard, the 100hp at three-quarters throttle, theoretically, would be doing less work than the 75hp at full throttle – the 75hp would be blasting fuel through it in order to achieve performance.'

The higher the horsepower, the heavier the engine will be so the more weight you have sitting on the transom of your boat. This can affect the way in which your boat handles. Higher powered engines also have a higher level of torque steer – the rotation of the prop that causes the boat to turn. If you are looking for an auxiliary engine and need to be able to carry out tight manoeuvres in a marina, for example, check the engine will give you sufficient steerage in both forward and reverse.

It is likely your boat manufacturer will be able to recommend a specific engine. Failing that, it's worthwhile looking at similar types of boat to see what option other owners have chosen and even ask to try them out to get a feel for power and handling characteristics.

Two-stroke or four-stroke?

Next comes the long-debated question of two-stroke versus four-stroke. The two types of engine have very different characteristics, each with their own pros and cons. Thanks to technology, these days it's easier than ever to determine which best suits your needs.

'The choice between two-stroke and four-stroke mostly depends on horsepower,' Jeff explains. 'The advantage of a four-stroke over most two-strokes are that they are quieter with less vibration; they have better fuel economy (especially at cruising pace, with around one-third to two-thirds of the throttle open); they have lower emissions and give off less smell/smoke; they are known for giving excellent reliability – especially at lower speeds where they will not foul the spark plugs. And, unlike some small two-strokes, there is no need for pre-mixing oil with fuel.'

The big downside with a traditional four-stroke is the need to store it carefully on one side to avoid engine oil spillage from the sump, which has often deterred those looking for a small stowable engine but suit those choosing a fixed engine for a RIB or dory.

In contrast, two-stroke engines are lighter (up to 20 per cent compared to an equivalent four-stroke) and therefore deliver a better power to weight ratio; particularly relevant with lower horse power engines. With fewer component parts – no cam shaft, valves or timing belt - they also typically have a lower initial purchase cost.

The new generation of direct-injection two-stroke engines – which have fewer emissions, better fuel efficiency and quieter running – offers a more practical solution for small boat owners than their predecessors.

Two-stroke injection engines deliver greater fuel efficiency by putting fuel directly into a closed system, rather than relying on a carburettor. With no fuel able to escape from the exhaust, it acts more like a four-stroke system. The resulting benefits are decreased exhausts and greatly improved fuel efficiency. Add in its lighter weight, and the new direct injection two-stroke engines are fast becoming a popular choice.

Other features

Another modern development, engine management modules, comes into play on models that carry a fuel injection system, typically around 40hp and above, although Suzuki extends it to their newest 15hp and 20hp models. These mini computers make millions of calculations per second to regulate the engine's functions – ignition timing, fuel injection, spark generation – optimising efficiency and minimising emissions.

The choice of tiller steering versus a console also tends to depend on size. Iain explains: 'Below 25hp, outboard engines will tend to be mostly tiller steer. At around 25hp and upwards, outboards tend to be fixed, bolted to the transom, and quite substantial in size; they can weigh around 75kg or more, which is the weight of a person. These outboards tend to be remote control as invariably, at 25hp upwards, the boat will be big enough to warrant a remote control.'

Starter systems come in two versions: recoil and electric. Most smaller engines are only available with recoil starters, because the added weight and battery required by an electric system would not be feasible at that size. Likewise, the torque necessary to start a very large engine makes a manual recoil start on the biggest engines unrealistic; that said, manufacturers have developed ever-more user friendly systems, so you can actually find them on engines of up to 50hp. It goes without saying that a killcord should come as standard – and be worn every time.

Choosing the correct shaft length is critical, as it directly affects the position of the propeller in the water: too long and it will create too much

PHOTO: SUZUKI*

drag; too short and you risk cavitation, particularly when turning. Although the engine will often still operate with an incorrect shaft length, efficiency will suffer. The length will be determined by the depth of the transom: measure the distance from the top of the transom mounting to the lowest point of the hull at the transom. This distance should generally match the distance between the highest point on the b-mounting bracket and the cavitation plate of the engine. Your engine manufacturer will be happy to help you.

Power trim is useful if you are purchasing a heavier engine that that is too sizeable to manually lift out of the water, or if you are regularly moving in and out of shallow waters. A push of the button lifts the leg of the outboard out of the water. The other advantage is that they can be adjusted whilst underway – particularly when planing over a long passage or in rough sea conditions – to improve efficiency by altering the engine angle. Power trim is great to have, but can add additional expense.

Low horsepower engines will feature plastic propellers, which are durable and inexpensive, whilst larger engines tend to have slightly more costly aluminium propellers. If you're purchasing a propeller separately, make sure you match the RPM range of your prop to that of the engine.

> "Typically an engine at full throttle uses twice the fuel of an engine at three-quarters throttle"

It is important to consider what type of water you are running your boat in. Gareth says: 'Whether you're in freshwater, saltwater or brackish water will determine what anodes you should have fitted to your outboard to help prevent corrosion.'

Common sense

Last but by no means least, there are some common sense questions to ask before you buy. Bear in mind the cost of ownership is not just purchase and fuel, with full service and winterisation costs averaging around £130 per year.

Reliability should be high up the list, but especially for operators of safety and training boats. Length of warranty is a good indicator, as although a basic warranty is a requisite under European legislation, the time period offered can vary between manufacturers. Stringent emissions criteria are guaranteed by the CE stamp on the transom plate.

If you're buying second-hand, ensure you purchase an engine that is specifically designed for marina use, with marinised fixtures and fittings, preferably from a reputable dealer! Ask to see evidence of the engine's age, hours run, service history and any remaining warranty. ❑