

engines breaking in

Break in or Break Down

Treat your new engine right in the first several hours, and it will return the favor.



BY ALAN JONES

You've finally sprung for a new engine and can't wait to get on the water. So what if you forgot to bring the owner's manual. No worries, mate. Just take it easy and you'll be OK ... right? Not really. Although new engines are robust, what you do in your first 10-20 hours could determine whether you get a peach or a lemon.

Manufacturers have their own procedures, so go to the trouble of cracking open the manual and seeing what it says. In the old days, you could tell the dealer, "I followed the procedure to the letter" and get away with it. But most of today's engines have a computer tattletale that will rat you out. Not following the procedure could even void your warranty.

Volvo Penta

→ **Here's what the manufacturer recommends for its gas sterndrives:**

First five to 10 minutes: Run at fast idle above 1500 rpm.

Remainder of first two hours: Get on plane and reduce speed to minimum plane. During this period, vary speed to three-quarter throttle for two to three minutes and then back to minimum plane. After operating temperature is reached, reduce throttle and then accelerate to assist break-in of rings and bearings. Maintain plane to avoid excessive engine load. For this period, do not run engine at constant rpm for a prolonged period of time.

Next eight hours: Run at less than

three-quarter throttle, only going to full throttle for periods of less than two minutes.

Next 10 hours: You may run at full throttle for periods up to 10 minutes at a time.

The first service inspection should occur at 50 hours.

BREAK-IN TIPS

→ Do not remove the break-in oil supplied by the manufacturer. Failure to adhere to the break-in schedule may void the warranty. Pay close attention to water temperature and oil pressure, and don't worry if the engine is using oil during the break-in.

Mercury

→ **Here's what the manufacturer recommends for its OptiMax direct-injected two-strokes:**

First hour: Allow the engine to warm up for 60 seconds. Run the engine at varied throttle settings between 3000 and 4500 rpm or three-quarter throttle, changing engine speed every two minutes. Avoid idle speeds for more than 10 minutes in duration. Short bursts of WOT for up to 10 seconds are OK. Avoid trimming the engine up beyond vertical.

Next 3 hours: Change engine speed every 10 minutes.

BREAK-IN TIPS

→ The engine's ECU automatically increases the oil ratio during break-in with no owner involvement needed.

Here's what Mercury recommends for its Verado four-strokes:

First two hours: Run engine at varied throttle settings up to 4500 rpm or three-quarter throttle and at WOT for about one minute every 10 minutes.

Next eight hours: Avoid continuous operation at full throttle for more than five minutes at a time.

Yamaha

→ Here's what the manufacturer recommends for its four-strokes:

First hour: Run the engine at 2000 rpm or at approximately half throttle.

Second hour: Run the engine at 3000 rpm or at approximately three-quarter throttle. Increase engine speed as much as necessary to put the boat on plane (but avoid full-throttle operation), then back off on the throttle while keeping the boat at a planing speed. Vary speed occasionally during operation.

Next eight hours: Take the engine to wide-open throttle but for no longer than five minutes at a time. Let the engine cool between full-throttle runs by reducing the rpm to idle or cruising (half throttle).

Here's what the manufacturer recommends for its HPDI two-strokes:

First 10 minutes: Run the engine at a fast in-gear idle speed.

Next 50 minutes: Engine speed should not exceed half throttle, or approximately 3000 rpm, varying speed occasionally. If

you have a boat that is easy to plane, put the boat on plane (but avoid full-throttle operation), then immediately reduce the throttle to 3000 rpm or less. Avoid wide-open throttle.

Second hour: Go on plane and reduce the engine speed to 4000 rpm or approximately three-quarter throttle. Vary engine speed occasionally.

Next eight hours: Take the engine to wide-open throttle but for no longer than five minutes at a time. Let the engine cool between full-throttle runs by reducing the rpm to idle or half throttle (cruising).

After 20 hours: Take it in for Yamaha service and inspection.

BREAK-IN TIPS

→ The biggest mistake is not following procedure. If you "baby" a new outboard, internal parts may not wear-in correctly, resulting in improperly seated rings. Don't rush break-in; take your time and do it right

Suzuki

→ Here's what the manufacturer recommends:

First 15 minutes: Run at in-gear idle speed only.

Next hour and 45 minutes: Run at half throttle or 3000 rpm max, varying the throttle every five minutes.

Third hour: Run at 4000 rpm or less, varying the throttle every five minutes.

Next seven hours: Run at any speed, including full throttle, varying throttle settings at least every five minutes.

First service is an oil change and inspection at 20 hours.

BREAK-IN TIPS

→ Always let the engine warm up for five minutes at idle at each phase. Avoiding full throttle during the first three hours is especially important. During the break-in, avoid long periods of idle, as the rings won't set and gas will seep into the oil, known as "making oil." You can run at full throttle after three hours, but no more than five minutes at a time.

MerCruiser

→ Here's what the manufacturer recommends for its stern drives:

First 10 hours: Shift into gear as soon as possible after starting and avoid operating below 1500 rpm.

Do not exceed three-quarter throttle, and avoid operating at the same speed.

Next 10 hours: Full throttle for up to five minutes at a time is acceptable after warmup. Avoid full-throttle acceleration from idle speed. It is normal for oil consumption to be high during the break-in period.

BREAK-IN TIPS

→ Although many dealers recommend changing oil after 20 hours, Mercury is comfortable with an oil change at 100 hours. Learn what an engine's operating specs are, and watch closely for variances.

Honda

→ Here's what the manufacturer recommends:

First 15 minutes: Use the minimum throttle opening to operate the boat at a safe trolling speed.

Next 45 minutes: Run the engine up to a maximum of 2000 to 3000 rpm, or 10 to 30 percent of the maximum throttle opening, but limit that to 50 percent of this period.

Second hour: Run the engine up to a maximum of 4000 to 5000 rpm, or 50 to 80 percent of the throttle's maximum opening; again, limit that to 50 percent of the second hour. Thirty-second full-throttle bursts are OK, but do not operate the engine continuously at full throttle. For boats that plane easily, bring the boat up on plane, and then reduce the throttle opening to the recommended rpm range.

Final eight hours: Do not run the

engine at full throttle for more than five minutes at a time, and vary rpm every so often to ensure proper seating of the piston rings.

Also, change the gearcase oil and crankcase oil after 20 hours, and replace the oil filter after 200 hours or one year. Check the throttle linkage, idle speed and general lubrication points.

BREAK-IN TIPS

→ Avoid splitting the break-in schedule into small segments. Some people will launch their boat, run 15 minutes to their favorite fishing spot and shut off the engine. After 30 minutes of fishing, the engine has cooled. They repeat this for what they think is the entire break-in time. A continuously warm running engine is needed for a proper break-in period.