

Willow Engine Instructions

Start the Engine

1. Open seawater seacock, if closed.
2. The engine keys are on the nav station.
3. The engine instrument panel is just starboard of the companionway in the cockpit.
4. Remove the Sunbrella cover from the wheel and pedestal.
5. Make sure that the engine stop cable is all the way down.
6. Put the transmission into neutral.
7. Start the engine.
 - If the temperature is below ~60°F, the engine will need the help of the cold start device.
8. Check that water is coming out the exhaust on the boat's stern.

Stop the Engine

1. Pull the red throttle lever all the way aft to reduce the engine speed to idle.
2. Pull up the engine stop cable until the engine stops.
3. Once it stops, push the engine stop cable all the way back down.
4. The engine alarm "school" bell will start ringing. This is normal.
5. Turn the engine ignition switch key counterclockwise and remove the key.
6. Put the key back on the nav station.

Potential Problems

1. **The "school" bell doesn't stop ringing within 20 seconds after starting the engine.**
 - Immediately stop the engine.
 - Check the engine's oil level.
2. **There is no water coming out of the exhaust.**
 - Immediately stop the engine.
 - Make sure that the engine's seawater intake seacock is open.
 - There may be an air lock at the seawater pump.
 - Loosen the four thumbscrews on the seawater pump's faceplate. The engine's seawater pump is on its forward portside.
 - Loosen it enough for water to start dripping out.
 - Gently tighten the thumbscrews.
 - Try starting the engine, again.
3. **The engine doesn't start and it's below 60°F**
 - The cold start device may not be working (did the voltage on the engine voltmeter drop while engaging the cold start device?).
 - Try starting the engine again, cranking for no more than 10 seconds.
 - If that doesn't work, try cranking it one more time for no more than 10 seconds.
 - If that doesn't work, that's the way it goes.

ANY ISSUES, QUESTIONS, OR CONCERNS, CHECK THE NOTES ON THE FOLLOWING PAGE

Start the Engine

1. Open seawater seacock, if closed

- The seacock is under the aft-most floorboard, which is the floorboard closest to the galley sink.
- The floorboard unlocks by raising the bronze handle and turning it a quarter-turn clockwise.
- There are two strainers in the bilge access under the floorboard. The forward strainer (the larger) is the engine seawater strainer.
- The yellow seacock handle is near the engine seawater strainer.
- Rotate the handle a quarter-turn counter-clockwise until it is in-line with the seacock and hose. The handle is difficult to rotate.

2. The engine keys are on the nav station

- The nav station is just to port after going into the cabin.
- The keys have a blue foam float attached to them.
- The largest of the three keys is the ignition key.

3. The engine instrument panel is just starboard of the companionway in the cockpit

- A rotatable clear Plexiglas circle covers the ignition switch.
- Rotate the Plexiglas circle clockwise to expose the ignition switch.
- Insert the key into the ignition switch, but don't turn it, yet.

4. Remove the Sunbrella cover from the wheel and pedestal

- The red throttle lever is on the starboard side of the wheel.
- Pushing it forward increases engine speed.
- Pull it aft (if not already there) and gently nudge it just a bit forward. When the engine starts, this will increase the engine speed just a bit above idle.

5. Make sure that the engine stop cable is all the way down

- The stop cable has a black handle.
- Its location is to starboard of the wheel and pedestal, just above the cockpit sole on the starboard seat bulkhead.
- The black handle needs to be all the way down for the engine to run.

- Pulling up the black handle pulls a cable that cuts off the fuel delivery to the engine, thereby stopping the engine. It may take some force to pull the cable up.

6. Put the transmission into neutral

- The transmission lever is the black handle to port on the pedestal aft and below the compass.
- Push the lever fully down to put the boat into reverse.
- Pull the lever fully up to put the boat into forward.
- Neutral is with the lever horizontal and has a small "click" feel between forward and reverse.

7. Start the engine

- If the temperature is below ~60°F, the engine will need the help of the cold start device (not a glow plug)
 - Turn the ignition key one detent clockwise.
 - The oil pressure/over temperature "school" bell will start ringing—that's normal.
 - With the bell ringing, push the key in (don't rotate it)
 - ▶ Pushing in the key starts the cold start device.
 - ▶ Keep the key pushed in for ~10 seconds.
 - ▶ Watch the voltmeter gauge just to the left of the key. The needle pointer will start drifting to the left, indicating that the voltage is dropping. This is normal and shows that the cold start device is working.
 - Turn the key clockwise until the starter motor engages and the engine starts.
 - Release the key once you hear the engine running on its own. **DO NOT CRANK FOR MORE THAN 10 SECONDS.**
 - The oil pressure/over temperature "school" bell will ring—that's normal—while starting the engine. It should stop within a few seconds of the engine starting.
 - Pull the throttle lever all the way aft to set the engine speed at idle.
- ### 8. Check that water is coming out the exhaust on the boat's stern
- The exhaust is on the transom down low on the starboard side.
 - You can see it if you poke your head over the pushpit.
 - Water should be spurting out, not necessarily a constant stream, at low engine speed.
 - If there is no water, quickly shut down the engine and check under the previous "Potential Problems" section.