



TECHNICAL BULLETIN



SUBJECT: Modified Sea-Doo PWC Unable to Achieve Expected Top Speed

MODELS: 2022+ Sea-Doo PWC with 1630cc Engine

There are many factors that affect top speed. Prior to modifying your watercraft it is important to have an accurate baseline to compare against once the modifications are complete. A craft that is not running properly beforehand will not perform as expected when modified. If you are experiencing difficulty in reaching expected top speed after modification, we recommend checking the following points:

- 1) **Hose clamps:** Check all intake system and exhaust system couplers, tubes and clamps to ensure they are installed properly and secure.
- 2) **Jet Pump Components:**
 - Wear Ring: A worn or damaged wear ring will cause increased cavitation resulting in poor acceleration and slower top speed. If there are any signs of damage the wear ring must be replaced. We offer OEM plastic wear rings as well as upgraded stainless steel wear rings for improved performance. [Click Here](#)
 - Pump Stator: Damaged stator vanes will reduce pump efficiency and limit top speed. [Click Here](#)
 - Pump Seal: If installed incorrectly will cause excess cavitation resulting in poor performance. [Click Here](#)
 - Pump Impeller: Damage from debris or cavitation (pitting) will reduce efficiency requiring the impeller be repaired, or in some cases, replaced entirely. We recommend contacting [Impros](#) for impeller repair service.
- 3) **Jet Pump Calibration:** Aftermarket pump impellers are manufactured in a variety of preset variable pitch combinations to match different engine output levels. Every craft, rider and location differ from one to another. If after installing the recommended aftermarket pump impeller for your modifications you find that your craft doesn't accelerate like it should or it is unable to achieve expected top speed, you may need to repitch it (change the angle of the blades) to optimize them for your conditions, load out, etc. We recommend contacting [Impros](#) to see how they can help you get your pump impeller dialed in.

For questions or more information related to this technical bulletin contact:

RIVA Racing Technical Support

tech_support@rivaracing.com | 954.247.0705



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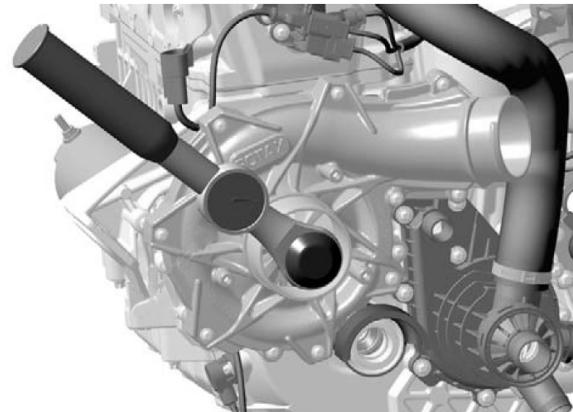


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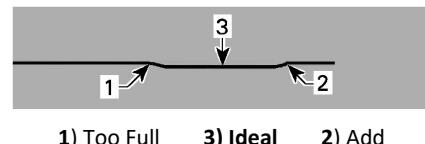
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4) **Supercharger:** Supercharger slip moment must be adjusted to our recommended torque setting for optimal performance. The slip moment setting directly affects the boost performance of your supercharger.

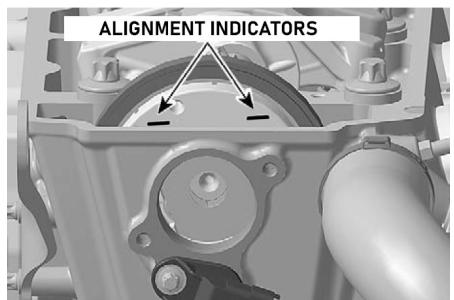
Slip Moment for STOCK Supercharger	15 lbf•ft
Slip Moment for MODIFIED Supercharger	17~18 lbf•ft
Locking Nut (Clutch Side)	24 lbf•ft
Impeller Nut	22 lbf•ft



5) **Oil Level:** For optimum performance engine oil level should be no higher than midway on the dipstick. Be sure to follow warm up procedure outlined in your owner's manual prior to checking oil level.



6) **Compression:** Compression should be 150psi ideally. Higher compression (>5psi) is a sign the Camshaft Gear is not aligned properly and should be checked.



7) **Cam Gear Position:** Verify cam gear is secure not out of position. Alignment marks should favor exhaust side over intake side. Advancing or retarding further can result in loss of top speed. See reference image. →

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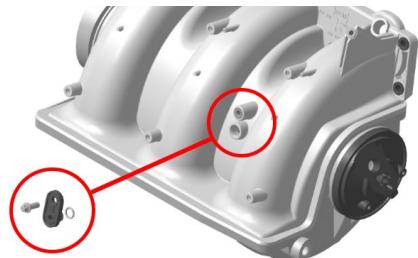


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8) **Intake Manifold:**

- If you chose to utilize the “blank” plastic cover on the intake manifold for a vacuum port fitting, check to make sure it is not cracked and that the O-ring is not dislodged or missing. We recommend a billet aluminum replacement designed to reliably accept vacuum line fittings. [RS12050-VPA](#)



- Higher boost output on modified engines can cause the plastic intake manifold to split where its halves are joined together. As a preventative measure, we recommend installing an Intake Manifold Girdle to securely clamp the two halves together where they’re prone to failing.

325hp Models: [RS12220-IMG](#)

300hp Models: [RS12050-IMG-1](#)



- 325hp models exhibit a common boost leak due to the inconsistent length of original bushings and thinner gaskets that can trigger a P2282 fault code. We offer a kit with precision machined bushings and broader individual seals that ensure even clamping and improved sealing on stock and modified craft. [RS12220-IBSK](#)



9) **Intercooler:** Due to its efficiency in cooling the super hot air from the supercharger, it’s common to see condensation exiting the air outlet side of the intercooler. However, excessive moisture could indicate a leak in the cooling element resulting in reduced performance. A simple pressure test can be performed to verify. ***Do not exceed 10psi when pressure testing.*** Additionally, a “dirty” intercooler will reduce thermal efficiency resulting in lower performance. Inspect the air inlet side for sludge or corrosion. If found, soak intercooler overnight in Simple Green or CLR. Rinse thoroughly and allow to dry completely before replacing. It may be necessary to repeat this process several times. We offer both OEM replacement intercoolers and upgraded ‘GEN-4’ Power Coolers. [Click Here](#)

10) **iBR/ECU/Cluster Pairing:** If there is a break in communication between the iBR, ECU or Cluster (dash display) you will need to “pair” them again using the Maptuner X [Dealer Service Application](#) or by taking your craft to an authorized Sea-Doo dealer who can use the OEM Diagnostic System (B.U.D.S.).

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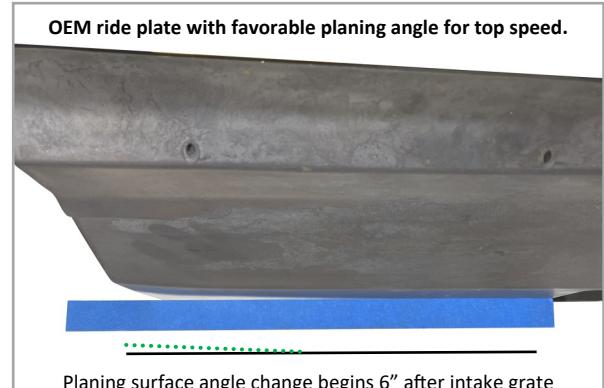
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11) **Ride Plate:** Through extensive testing we have determined there is a manufacturing variance between OEM ride plates on 2022 & newer Sea-Doo watercraft that can inhibit top speed gains on affected units. This variance is not a manufacturing defect as the watercraft reach factory specified performance levels and only exhibit reduced speed gains when modified.

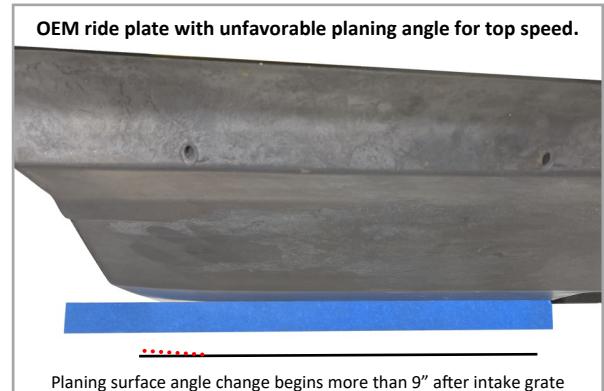
Fast Ride Plate Identification (No Top Speed Loss)

On ride plates with a favorable planing surface for top speed, the change in planing surface angle begins approximately 6 inches after the intake grate mounting point, progressively rising until the end of the ride plate. This contributes to dynamic lift enabling the bow to rise for reducing drag and allowing top speed gains on modified craft.



Slow Ride Plate Identification (Reduced Top Speed)

On ride plates with an unfavorable planing surface for top speed, the change in planing surface angle begins further back after the intake grate mounting point (7 inches or more) resulting in less dynamic lift. This causes additional drag that prevents modified craft from achieving expected top speed gains.



SOLUTION

By modifying affected ride plates to match the more favorable specification, we are able to achieve expected top speeds on modified craft. Gains of up to 5+ MPH are common with this modification to affected ride plates.

OEM RIDE PLATE MODIFICATION SERVICE

RIVA Racing offers an 'OEM Sea-Doo Ride Plate Modification Service' (Part#: [RSS21120-RPM](#)) for 2022+ Sea-Doo models with 1630cc engine. The service involves machining your affected ride plate to the faster specification utilizing an accurate and repeatable process.

Please contact RIVA Technical Support for details **prior to** sending us your ride plate. Ride plates will be inspected when received to determine condition. Any that appear damaged or warped will not be modified and will be returned.

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