

## 6.1 STOCK CLASS COMPETITION

Intended to promote interest in stock personal watercraft competition and to enable individuals to become active competitors with relatively modest investment and maintenance costs. Watercraft competing in these classes must conform to the specifications which follow. Note: classes may be offered that have greater restrictions than these Stock Class Provisions. Such class offerings must be named to differentiate the applicable rules (ie Novice Ski Showroom Stock, etc.)

**WEIGHT ADDENDUM: Four Stroke Runabouts, competing in Stock Classes, must weigh within a difference of no more than 35 lbs (15.88 kg) lighter than the OEM weight as determined by IJSBA.**

**LITES ADDENDUM: LITES is a special designation applied to Stock Classes to implement a horsepower limit. Ski Lites are Stock Class Ski PWC with a maximum of 85 Horsepower as furnished by the manufacturer. Runabout Lites eligible watercraft are normally aspirated Four- Stroke Runabout PWC under 2000cc built to Stock Class specifications and normally aspirated Two-Stroke Runabout PWC, under 1300cc, built to Limited Class specifications.**

**CLASS NAMING ADDENDUM: Different competition markets make have drastically different demographics of Personal Watercraft. Based on the needs of the market, the promoter may choose to rename classes to best describe the bulk of participation. For example, where Lites type Ski are more prevalent, a promoter may name the Lites Class as "Stock" while giving the non-Lites Stock class a name such as "Performance Stock," or "Four Stroke Stock."**

- 6.1.1 **All watercraft must remain strictly stock, except where rules allow or require substitutions or modifications. Changes or modifications not listed here are not permitted. The IJSBA may allow additional modifications to Stock Classified PWC which provide for replacement/reinforcements to parts and components (i.e. intercooler end caps, brackets, fittings, etc.) that have known failure risks in race conditions. Such changes will only be allowed if the allow for no volume or performance gains. Such allowances are only legal if published by the IJSBA.** Some original equipment components may not comply with IJSBA rules. Hull Identification Numbers must be displayed as furnished by the manufacturer.

**NOTE: When rules permit or require equipment to be installed, replaced, altered or fabricated, it is the sole responsibility of the rider to select components, materials and/or fabricate the same so that the watercraft operates safely in competition.**

- 6.1.2 Original equipment parts may be updated or backdated to newer original equipment parts of the same model. The part must be a bolt-on requiring no modifications to that part or any other parts except where rules allow substitutions or modifications. (Refer to Model Homologation listing on page 10.)

- 6.1.3 Sound level shall not exceed 86 dB(a) at 22.86m (75 ft.). See Section 19.5 (pg. 73).

- 6.1.4 Engine fuel must consist of gasoline meeting the criteria defined in Section 19.4.3 (pg. 73).

## 6.2 HULL

- 6.2.1 All watercraft must have a flexible tow loop attached to the bow. The tow loop should be made of a flexible material (e.g., nylon strap, rope, etc.) so as not to create a hazard. Tow hooks which protrude beyond the plane of the hull must be removed.

- 6.2.2 6.2.2 Hull and deck repairs may be made. However, these repairs must not alter the original configuration by more than 2.00mm (0.08 in.). Handles, drop-in type storage buckets, bolt-on type mirrors and gauges may be modified, aftermarket or removed provided a hazard is not created. Other than for the use of fasteners and the placement of allowable relocated parts (i.e., ECU), the bulkhead may not be modified.

- 6.2.3 All watercraft may be equipped with a maximum of two sponsons. Original equipment sponsons may be modified, aftermarket, repositioned or removed. Overall length of each sponson shall not exceed 91.45cm (36.00 in.). Sponsons shall not protrude from the side of the hull by more than 100.00mm (3.94 in.) when measured in a level horizontal plane. The vertical channel created by the underside of the sponson shall not exceed 63.5mm (2.50in). No part of the sponson shall extend downward below the point at which the side of the hull intersects the bottom surface of the hull by more than 38.00mm (1.50 in.). Aftermarket or modified sponsons must exceed 6mm (0.24 in.) in thickness. All leading edges must be radiused so as not to create a hazard. Sponsons may not be attached to the planing surfaces of the hull. Fins, rudders, skegs and other appendages that may create a hazard will not be allowed. (See diagrams in Appendix.)

**Ski Division Only:** Sponsons may be attached to the inside of the bond flange, but no part of the sponson may extend more than 38.00mm (1.500 in.) below the lower part of the bond flange (bumper removed). Sponsons attached to the inside of the bond flange shall not protrude outside the bond flange (bumper removed) when measured in a level horizontal plane.

**Ski PWC Homologated under 4.1.2 Only (500 Units):** If a model has not had the hull updated for greater than five years then all updated year models shall be allowed an additional set of sponsons for a total of four sponsons. The total sponson length shall be limited to 1,524 mm (60 in) in a single or two sponson configuration. All other provisions of 6.2.3 remain intact.

The decision of the Technical Director and/or Race Director regarding modifications will be final. Any question regarding the

- legality of modifications should be directed to the IJSBA or IJSBA affiliate prior to use in competition.
- 6.2.4 Intake grate may be modified or aftermarket. Intake grate is required and must be the full-length type with at least one bar running parallel to the drive shaft. Grates may not extend more than 12.00mm (0.47 in.) below the flat plane of the pump intake area. All leading edges must be radiused so as not to create a hazard.
- 6.2.5 Pump cover plate may be modified or aftermarket. An extension may be added to the rear of the pump cover plate but shall not exceed the width of the original equipment plate. Modified and aftermarket plates must not extend more than 100.00mm (3.94 in.) beyond the end of the original equipment plate for **Ski** and **Sport Division** or 177.80mm (7.00 in.) for **Runabout Divisions**. The sides of the extension must be connected to the radiused portion of the pump plate so as not to create a hazard. Fins, rudders, skegs and other appendages that may create a hazard will not be allowed. (See diagram in Appendix.)
- 6.2.6 Replacement trim plates may be used. Only replica parts that offer handling characteristics the same as stock are allowed. Material shall not be restricted to original equipment provided a hazard is not created (i.e., aluminum in place of plastic). See Glossary of Terms for definition of Replacement and Replica.
- 6.2.7 Replacement bumpers may be used provided a hazard is not created.
- 6.2.8 A soft, flexible water-spray deflector may be attached to the hull sides or to the bond flange provided a hazard is not created. No part of the deflector may extend beyond the perimeter of the original equipment bumper or side moldings as measured by a plumb line.
- 6.2.9 Handlebar, throttle, throttle cable, and grips may be modified or aftermarket. Handlebar cover may be modified or removed. Aftermarket switches and switch housings may be used. Steering shaft, steering shaft holder and handlebar holder may be aftermarket. The handlebar must be padded at the mounting bracket or, if it has a crossbar, the crossbar must be padded. Quick-turn steering modifications to alter steering ratio are allowed. Aftermarket steering cables will be allowed.
- 6.2.10 **Ski Division Only:** Handlepole (and mounting bracket) may be modified or aftermarket provided it functions as originally designed. Handlepole attaching point may be reinforced.
- 6.2.11 **Sport and Runabout Division Only:** Original equipment seat base must be used. Seat cover may be changed. Seat foam may be modified or aftermarket. The OEM seat height cannot be changed by more than +/- 12.7mm (0.5 in.).
- 6.2.12 Padding and/or mat kits may be added and custom painting is allowed. The surface finish of any metal component outside the hull area above the bond flange may be polished, shot peened or painted.
- 6.2.13 Original bilge pump may be modified or disconnected. Aftermarket bilge draining systems that do not create a hazard are allowed.
- 6.2.14 Engine compartment ventilation tubes may be modified, aftermarket, or removed. Inlet and outlet openings may not be enlarged (i.e., when the tube is removed, the opening may not be larger than stock). Vents may be shielded or plugged. No other modifications to the hood will be allowed.
- 6.2.15 Ballast weight may be added within the normally exposed areas of the hull to alter the handling of the watercraft provided a hazard is not created. Only weight consisting of constant mass (i.e., water or other fluid is not allowed) that does not require the modification or relocation of any parts will be allowed unless such modification or relocation is specified by other rules.
- 6.2.16 Original equipment braking devices may be disabled for safety purposes.
- 6.3 ENGINE — TWO-STROKE
- 6.3.1 Engines may be bored. Replacement piston assemblies may be used provided the original port timing, compression ratio, dome profile, skirt length and shape and type of material are not changed. Non-conforming pistons (ie skirt shape that is not an exact replica of the OEM piston) may be approved by the IJSBA but such approval must be obtained in writing. Replacement piston assemblies must weigh within  $\pm 25.00\%$  of original equipment. Engine displacement must not exceed class designation (e.g., 550cc in 550 Stock, 850cc in 850 Stock, etc.) unless otherwise noted. Chamfering of cylinder ports must not exceed 1.00mm (0.04 in.) at a 30 degree maximum angle. (See diagram in Appendix.)
- 6.3.2 Crankshaft may be rebuilt using replacement counterweights, crank pins, bearings and connecting rods. Counterweights, crank pins and connecting rods made of non-ferrous metals are not allowed. Stroke and rod length may not be changed. Counterweights on non-rebuildable style crankshafts may be machined to accept a press-through crank pin. Replacement bearings must maintain their original type and dimensions. Replacement counterweights must resemble the original part (i.e., holes and/or pockets not existing on the original part may not be on the replacement part). Total weight of the crankshaft assembly must be within  $\pm 5.00\%$  of original equipment. Crankpins may be welded and/or keyed to the counterweights.
- 6.3.3 Repairs to cracked or punctured crankcases may be made provided only one damaged area affecting one cylinder bank has been repaired. No other modifications or repairs are allowed.
- 6.3.4 External modifications to the engine finish (e.g., plating, polishing and/or painting) are allowed for cosmetic purposes only.
- 6.3.5 No internal modifications of any kind, including grinding, surfacing, polishing, machining, shot peening, etc., will be allowed on any engine components.
- 6.3.6 Exhaust system must remain stock as supplied by the manufacturer. An insert may be added to reduce the inside diameter of the stinger portion of the exhaust system.
- 6.3.7 Engine, Intercooler, and Oil Cooler water cooling systems may be modified or aftermarket. Additional water cooling lines and aftermarket water bypass fittings may be added. OEM water bypass fittings may be modified or relocated.

All bypass fittings must be directed downward and/or rearward so as not to create a hazard for other riders. Additional cooling supply lines and fittings may be added to the pump. Pump water inlet covers and water strainers (filters) may be modified or aftermarket. Intercooler assembly/housing must remain OEM in stock class, additional cooling supply lines and bypass fittings may be added to the OEM Intercooler Housing. Additional cooling supply lines may be added to water inlet covers that are removable from the engine block. Existing fittings may be aftermarket or modified so long as the OEM thread diameter is maintained. Fittings may not be added to the cylinder head, cylinder, or crankcase. Intercooler pressure relief valves (mechanical) are allowed for the purposes of regulating water pressure. Any valves used within the entire cooling system must be of the fixed type or automatic (e.g., thermostats, pressure regulators, etc.). Electronically controlled valves or water injections systems are not allowed unless originally equipped. Manually controlled devices (by any means of actuation) that alter the flow of cooling water during operation are not allowed. Cooling system flush kits are allowed.”

6.3.8 Replacement starter motor and bendix may be used.

6.3.9 Replacement engine mounts may be used.

6.3.10 Oil-injection system may be disconnected or removed.

6.3.11 Replacement of general maintenance parts (e.g., gaskets, seals, spark plugs, spark plug wires, spark plug caps, wiring, water hoses, fuel lines, clamps and fasteners) shall not be restricted to original equipment providing the following:

1) Replacement gaskets may be used but must be of the same type (e.g., sheet, o-ring, etc.) as their OEM counterparts. With the exception of head gaskets and base gaskets, all replacement gaskets must maintain a thickness of plus or minus 20% of the OEM gasket thickness as furnished by the manufacturer. Base gasket cannot be thicker than 0.8mm (0.032in). Head gaskets must be no thinner than .005mm (0.002in) than the OEM thickness as supplied by the manufacturer. Head gaskets must be no thicker than 1.55mm (0.06in) than the OEM thickness as supplied by the manufacturer.

**Ski Division Only:** Two Stroke engines that have a displacement of less 780cc shall be allowed a minimum head gasket thickness of .75mm (0.03 in) with a tolerance of -10% and a base gasket thickness of .5mm (0.02 in) with a tolerance of +/- 10%.

2) Stripped threads must be repaired to the original size.

3) Fasteners (e.g., bolts, nuts and washers) may not be substituted with titanium pieces unless originally equipped. Fasteners may integrate locking mechanisms.

6.3.12 Cylinders may be interchanged between homologated watercraft of the same manufacturer subject to restrictions announced by the IJSBA. Any modifications to the cylinder or crankcase must be approved, in writing, by the IJSBA. This provision is only applicable to Two Stroke Ski PWC Homologated under provision 4.1.2.

6.3.13 (Two Stroke Ski PWC Homologated under 4.1.2 only) If the OEM cylinders or the cylinders allowed under 6.3.12 do not provide for a displacement within 10% of the maximum allowable displacement then an aftermarket cylinder sleeve may be utilized. The aftermarket sleeve must maintain the same port sizes and specifications as the original OEM cylinder sleeve.

#### 6.4 ENGINE — FOUR-STROKE

6.4.1 Engines may be bored. Replacement piston assemblies may be used provided the original port timing, compression ratio, dome profile, skirt length and shape and type of material are not changed. Non-conforming pistons (ie skirt shape that is not an exact replica of the OEM piston) may be approved by the IJSBA but such approval must be obtained in writing. Replacement piston assemblies must weigh within  $\pm 25.00\%$  of original equipment. Engine displacement must not exceed class designation unless otherwise noted. Chamfering of cylinder ports must not exceed 1.00mm (0.04 in.) at a 30 degree maximum angle. (See diagram in Appendix.).

Cylinder head combustion chambers may be cleaned by bead blasting with valves seated in place. Intake and exhaust ports may not be bead blasted or cleaned with abrasive material such as steel wool or Scotch-Brite®. Repairs to the cylinder head affecting one cylinder bank are allowed.

6.4.2 Crankshaft must remain stock. Replacement bearings or bearing shells are allowed, providing they maintain their original type and dimensions.

6.4.3 Camshaft(s) must remain stock. Replacement bearings or bearing shells are allowed, providing they maintain their original type and dimensions. Camshaft timing may be changed.

6.4.4 Intake and exhaust valves may be shimmed with OEM or aftermarket shims. Valves and valve seats are not restricted to OEM providing that any replacement valves or seats maintain the OEM weights and dimensions.

6.4.5 Engine, Intercooler, and Oil Cooler water cooling systems may be modified or aftermarket. Additional water cooling lines and aftermarket water bypass fittings may be added. OEM water bypass fittings may be modified or relocated. All bypass fittings must be directed downward and/or rearward so as not to create a hazard for other riders. Additional cooling supply lines and fittings may be added to the pump. Pump water inlet covers and water strainers (filters) may be modified or aftermarket. Intercooler assembly/housing must remain OEM in stock class, additional cooling supply lines and bypass fittings may be added to the OEM Intercooler Housing. Additional cooling supply lines may be added to water inlet covers that are removable from the engine block. Volume changes to OEM water supply fittings are not allowed. Existing fittings may be aftermarket or modified so long as the OEM thread diameter is maintained. Fittings may not be added to the cylinder head, cylinder, or crankcase. Intercooler pressure relief valves (mechanical) are

allowed for the purposes of regulating water pressure. Any valves used within the entire cooling system must be of the fixed type or automatic (e.g., thermostats, pressure regulators, etc.). Electronically controlled valves or water injections systems are not allowed unless originally equipped. Manually controlled devices (by any means of actuation) that alter the flow of cooling water during operation are not allowed. Cooling system flush kits are allowed.”

- 6.4.6 Valve cover may be modified or replaced for cosmetic purposes and/or weight reduction only.
- 6.4.7 Replacement of general maintenance parts (e.g., gaskets, seals, spark plugs, spark plug wires, spark plug caps, wiring, water hoses, fuel lines, clamps and fasteners) shall not be restricted to original equipment providing the following:
- 1) Replacement gaskets may be used but must be of the same type (e.g., sheet, o-ring, etc.) as their OEM counterparts. With the exception of head gaskets and base gaskets, all replacement gaskets must maintain a thickness of plus or minus 20% of the OEM gasket thickness as furnished by the manufacturer. Base gasket cannot be thicker than 0.8mm (0.032in). Head gaskets must be no thinner than .005mm (0.002in) than the OEM thickness as supplied by the manufacturer. Head gaskets must be no thicker than 1.55mm (0.06in) than the OEM thickness as supplied by the manufacturer.
  - 2) Stripped threads must be repaired to the original size.
  - 3) Fasteners (e.g., bolts, nuts and washers) may not be substituted with titanium pieces unless originally equipped. Fasteners may integrate locking mechanisms.
- 6.4.8 When Four-Stroke and Two-Stroke Ski PWC are combined in the same Stock Class then the IJSBA may require that those Four-Stroke Ski PWC which are not normally aspirated (Turbocharged or Supercharged) shall be affixed with an IJSBA approved boost regulator. The boost regulator shall be set to release any boost pressure above 110% of the stock specifications. The IJSBA shall publish the official interpretation of the stock specifications. **The HSR-Benelli S4 boost pressure is limited to 7.7psi in Stock Class Competition.**
- 6.4.9 (Runabout Only) A stop valve may be affixed to the intercooler supply line in order to prevent surges which might cause damage to the intercooler. Blow off valves may be added to protect engine life.
- 6.4.10 Exhaust manifolds that have previously been drilled or tapped may be used so long as the holes are filled or capped.
- 6.5 AIR/FUEL DELIVERY — TWO-STROKE
- 6.5.1 Aftermarket flame arresters that meet USCG, UL-1111 or SAE J-1928 Marine standards may be used. Carburetor jets (replaceable type), needle valves and needle valve springs may be changed. Choke may be removed provided additional air intake for the engine is not created. Aftermarket primer system may be installed. No other carburetor modifications will be allowed.
- 6.5.2 The entire fuel system is a closed system. The watercraft must not vent or spill fuel at any attitude with or without the engine running. Original equipment fuel tank, fuel pickup, fuel filler, fuel filter, fuel tap assembly and relief valve must be used and cannot be modified. Fuel petcock may be bypassed. Additional fuel filters may be used. Fuel tank filler cap may be modified or aftermarket provided a hazard is not created.
- 6.6 AIR/FUEL DELIVERY — FOUR-STROKE
- 6.6.1 Electronic fuel-injection systems: Flame arresters that meet USCG, UL-1111 or SAE J-1928 Marine backfire flame arrester test standards must be installed. If not equipped with an airflow sensor, the ducting between the flame arrester and throttle body may be modified or aftermarket. If originally equipped with an airflow sensor, the ducting may be modified or aftermarket between the flame arrester and airflow sensor. Modifications to the airflow downstream of the airflow sensor are not allowed. No modifications to the turbocharger and supercharger system, if applicable, are allowed.
- 6.6.2 Carbureted induction systems: Flame arrestors that meet USCG, UL-1111 or SAE J-1928 Marine backfire flame arrester test standards must be installed. Carburetor jets (replaceable type), needle valves and needle valve springs may be changed. Choke may be removed provided additional air intake for the engine is not created. Aftermarket primer system may be installed. No other carburetor modifications will be allowed.
- 6.6.3 Fuel injectors and fuel pump must remain stock. Fuel pressure regulator may be aftermarket or modified to change fuel pressure.
- 6.6.4 Aftermarket Valve Spring Retainers may be used so long as OEM valve springs are used.
- 6.7 IGNITION AND ELECTRONICS — TWO-STROKE
- 6.7.1 Replacement batteries are allowed but must fit into the original equipment battery box and be securely fastened.
- 6.7.2 The original electronic control unit may be modified or aftermarket so long as it does not offer any additional inputs or outputs than the original unit, and it must connect with the original connections. No additional sensors may be added (e.g., exhaust gas temperature, detonation sensors, etc.). Engine temperature sensors may be disabled.
- 6.7.3 Ignition timing may be altered by slotting ignition trigger mounting plate. An adapter plate may be used for the sole purpose of relocating the ignition trigger.
- 6.7.4 Aftermarket spark plugs with a different heat rating may be used.
- 6.8 IGNITION AND ELECTRONICS — FOUR-STROKE
- 6.8.1 Replacement batteries are allowed but must fit into the original equipment battery box and be securely fastened.
- 6.8.2 The original electronic control unit may be modified or aftermarket so long as it does not offer any additional inputs or outputs than the original unit, and it must connect with the original connections. No additional sensors may be added (e.g., exhaust gas temperature, detonation sensors, etc.). Engine temperature sensors may be disabled.

- 6.8.3 Ignition timing may be altered by slotting ignition trigger mounting plate. An adapter plate may be used for the sole purpose of relocating the ignition trigger.
- 6.8.4 Aftermarket spark plugs with a different heat rating may be used.
- 6.9 TURBOCHARGER/SUPERCHARGER
- 6.9.1 Modifications to any part of the turbocharger or supercharger system (i.e., housing, turbines, rotors, sensors, ducting, etc.) are not allowed.
- 6.10 DRIVELINE
- 6.10.1 Impeller may be modified or aftermarket, providing that the original diameter is maintained. Replacement wear rings that are within OEM internal diameter specifications may be used. Silicone adhesive sealant may be used in addition to original equipment seal to seal pump inlet. Visibility spout must be removed or plugged.
- 6.10.2 No internal modifications of any kind, including grinding, surfacing, polishing, machining, shot peening, etc., will be allowed on any driveline components (e.g., pump stator, reduction nozzle, etc.).
- 6.10.3 Hydrospace S4 PWC may use replacement pumps or repaired pumps approval by IJSBA.