

in. (100.0mm) beyond the end of the original equipment plate for Ski and Sport Divisions or 7.00 in. (177.80mm) for the Runabout Division. 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.

- 22.10.3 **Impeller:** Impeller may be modified or aftermarket. The original diameter must be maintained in Stock class.
- 22.10.4 **Pump:** Replacement wear rings that are within OEM internal diameter specifications may be used. **Replacement wear rings must be of the same OEM material in Stock class.** Silicone adhesive sealant may be used in addition to original equipment seal to seal the pump inlet. If equipped, a visibility spout must be removed or plugged.
- 22.10.5 **Fuel Tank:** Fuel tank must be OEM as supplied by the OEM manufacturer. An OEM fuel tank is the only tank that can be used to supply fuel to the engine.

RULE 23 - TECHNICAL RULES – STOCK CLASSES

23.1 OVERVIEW

- 23.1.1 The intent of the Stock class rules is to establish a venue in which all riders and machines can compete at their own level with a relatively modest investment in equipment and maintenance costs. These rules are definitions and guidelines for allowable modifications or alterations. If a definition, modification or alteration is not cited, then it is to be construed that no modification, alteration or change can be made to the component unless it is specifically approved by the APBA Rules Committee. Original equipment parts may be updated to newer original equipment parts of the same model. The part must be a bolt-on type part that requires no modifications to that part or any other parts except where rules allow substitutions or modifications. The rules and regulations below are in addition to all General Technical rules listed in Rule 22.

23.2 AMATEUR SKI BOX STOCK

- 23.2.1 **Overview:** For the 2008 season the APBA has created a new class to provide an inexpensive class with minimal cost and modifications allowed to participate in the class. The class is open to all Ski models with a stock OEM horsepower rating of 85 hp or less. All the General Technical rules listed in Rule 22 are allowed with the following exceptions:
- 23.2.2 **General Replacement Parts:** Replacement of general maintenance parts (e.g., spark plugs, wiring, seals, water hoses, fuel lines, clamps and fasteners) shall not be restricted to original equipment. Aftermarket water hoses must be the same length and size as the OEM hose it is replacing. All fittings must remain OEM. Aftermarket pump and driveshaft bearings must be OEM.

- 23.2.2 **Steering Shaft and Components:** Steering shaft, steering shaft holder and handlebar holder must be OEM. Quick-turn steering modifications to alter steering ratio are NOT allowed. Aftermarket steering cables will be allowed.
- 23.2.3 **Handlepole:** Handlepole assemblies and mounting bracket must be OEM. Handlepole attaching point may be reinforced. Handlepole springs will be allowed.
- 23.2.4 **Sponsons:** Addition of aftermarket sponsons is NOT allowed.
- 23.2.5 **Engine Displacement:** Engine displacement must not exceed 0.50mm bore over stock.
- 23.2.6 **Carburetor:** 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.

23.3 STOCK SKI SPEC CLASS

- 23.3.1 **Overview:** For the 2008 season the APBA has changed the name of “Stock Ski” to “Stock Ski Spec” to better describe the class. The goal for of the class is integrate two and four stroke watercraft from several different brands into competitive racing classes.
- 23.3.2 **Boost Pressure:** Four-Stroke turbocharged watercraft may race in all Stock Ski Spec classes provided the maximum boost pressure does not exceed 4psi.
- 23.3.3 **Boost Regulator Value:** The APBA requires all four-stroke turbocharged watercraft to run an APBA approved boost regulator valve set at 4psi of boost.
- 23.3.4 **Data Recorder:** The APBA reserves the right to install a data recorder on the turbocharger of any four-stroke turbocharged boat in order to test the peak boost output at wide open throttle at full load.
- 23.3.5 **Stock Ski Only - Pump Nozzle:** Pump nozzle and directional nozzle may be modified or aftermarket. Overall length of the complete pump and nozzle assembly may be no more than 50.00mm (1.97 in.) longer than original equipment.

23.4 SEATS

- 23.4.1 **Sport and Runabout Division Only:** Original equipment seat base must be used. The seat cover and padding may be changed. Seat height may be changed provided the original seat base is used.

23.5 HULL

- 23.5.1 **Trim Plate:** Replacement trim plates or trim tabs may be used. Only replacement parts that offer handling characteristics the same as stock are allowed. The material shall not be restricted to original equipment as long as a hazard is not created (example: aluminum may be used in place of plastic). The Trim plate should be free of any sharp edges.

23.5.2 **Hull Extensions – 1990-2007 Yamaha SuperJet Only:** Yamaha SupetJets (all years) may install hull extensions mounted on the hull's transom. All edges must be radiused so that a hazard is not created. Fins, skegs, rudders and other appendages that may create a hazard are not allowed. Hull extensions cannot exceed the width of the planing surface or extend rearward more than 100.00mm (3.94 in.) beyond the end of the original planing surface.

23.5.3 **Ballast Weight:** 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.

23.6 ENGINE - TWO-STROKE

23.6.1 **Engines:** 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 (i.e.: skirt shape that is not an exact replica of the OEM piston) may be approved by the APBA but such approval must be obtained in writing. Replacement piston assemblies must weigh within $\pm 25.00\%$ of original equipment. Chamfering of cylinder ports must not exceed 1.00mm (0.04 in.) at a 30 degree maximum angle. No internal modifications of any kind, including grinding, surfacing, polishing, machining, shot peening, etc., will be allowed on any engine components.

23.6.2 **Engine Displacement:** Engine displacement must not exceed class designation. Exception – Maximum allowable cc over class designation may not exceed 803cc for the 800cc Stock Ski classes.

23.6.3 **Rave Valves and Caps:** Rave Valves may be trimmed to allow for oversized pistons. Rave Valve Caps may be drilled so that an inspection can be made to insure valves are functioning properly. Modifying the Rave Valve and Caps for any other reason is not allowed.

23.6.4 **Gaskets:** Replacement gaskets may be used but must be of the same type (e.g., sheet, o-ring, etc.) as their OEM counterparts. Replacement base gaskets must not be thicker than 0.8 mm (0.032 in). Replacement head gaskets shall be allowed a tolerance of up to 0.005 mm (0.002 in) thinner than the original OEM head gasket and up to 1.5mm (0.06 in) thicker than the original OEM head gasket. All other gaskets shall be allowed a tolerance of plus or minus 20%. Modifications to the head and exhaust manifold to head pipe gaskets is allowed. Additional holes may be added or subtracted. All other gaskets must have the same OEM pattern. All gaskets must meet the thickness and tolerances as outlined in the rule. Yamaha SuperJets may use a stock OEM Waveblaster II metal gasket.

23.6.5 **Reeds:** Reed petals may be modified or aftermarket provided the original equipment reed stop and cage assembly are used.

23.6.6 **Crankshaft:** 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 (e.g., holes and/or pockets not existing on the original part may not be on the replacement part). The total weight of the crankshaft assembly must be within $\pm 5\%$ of the original equipment weight. Crankpins may be welded and/or keyed to the counterweights.

- 23.6.7 **Cooling System:** The cooling system may be modified or aftermarket and aftermarket cooling lines and water bypass systems may be used. Additional cooling supply lines and fittings may be added to the pump. Fittings may not be added to the cylinder head, cylinder, or crankcase. Bypass fittings may be modified, aftermarket and/or relocated but must be directed downward and/or rearward so as not to create a hazard for other riders. Any valves used within the entire cooling system must be of the fixed type or automatic (e.g., thermostats, pressure regulators, etc.). Cooling system flush kits are allowed.
- 23.6.8 **Exhaust:** The 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. Electronically controlled 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. The original OEM water inlet fitting may be drilled to accept a maximum size of $\frac{1}{4}$ inch NPT by $\frac{1}{2}$ inch barbed fitting. Exhaust system stinger end may be drilled and tapped for injection of water only, no other modifications to the exhaust system is allowed.
- 23.6.9 **Waterboxes:** Damaged water boxes may be repaired, including by means of welding. No changes to the interior of the water box (i.e. baffles) are allowed whether these changes are the result of damage or repair. Repairs may cause no performance gains. Sea-Doo XP DI water box may be used as a replacement for XP Limited and Sea-Doo XP (951 cc models).
- 23.6.10 **Exhaust - Yamaha SuperJets Only:** Yamaha Superjets (All model years) will be allowed to run a Wet Pipe with no electronically controlled water injection system in Stock classes. Manually controlled devices (by any means of actuation) that alter the flow of cooling water during operation are not allowed.
- 23.6.11 **Ventilation:** 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.
- 23.6.12 **Driveline Components:** 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.).

23.7 ENGINE - FOUR-STROKE

- 23.7.1 **Cylinder Head:** 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.
- 23.7.2 **Crankshaft:** Crankshaft must remain stock. Replacement bearings or bearing shells are allowed, providing they maintain their original type and dimensions.
- 23.7.3 **Camshafts:** Camshaft(s) must remain stock. Replacement bearings or bearing shells are allowed, providing that they maintain their original type and dimensions.
- 23.7.4 **Intake and Exhaust Valves:** Intake and exhaust valves may be shimmed with OEM or aftermarket shims.
- 23.7.5 **Cooling System:** The cooling system may be modified or aftermarket. Aftermarket cooling lines and water bypass systems may be used. Additional cooling supply lines and fittings may be added to the pump. Fittings may not be added to the cylinder head, cylinder, or crankcase. Bypass fittings may be modified, aftermarket and/or relocated but must be directed downward and/or rearward so as not to create a hazard for other riders. Any valves used within the entire cooling system must be of the fixed type or automatic (e.g., thermostats, pressure regulators, etc.). Electronically controlled 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.
- 23.7.6 **Valve Cover:** Valve cover may be modified or replaced for cosmetic purposes and/or weight reduction only.
- 23.7.7 **Stripped Threads:** Stripped threads must be repaired to the original size.
- 23.7.8 **Fuel System:** Fuel injectors and fuel pump must remain stock. Fuel pressure regulator may be modified to change fuel pressure.
- 23.7.9 **Replacement Fasteners** - Fasteners (e.g., bolts, nuts and washers) may not be substituted with titanium pieces unless originally equipped. Fasteners may integrate locking mechanisms.
- 23.7.10 **Actuator Arm - Hydrospace S4 owners may use an aftermarket waste gate actuating arm.**
- 23.7.11 **Engine Displacement:** Four-stroke Ski watercraft are limited to 1600cc as furnished by the manufacturer. If a Runabout, as furnished by the manufacturer, exceeds 1600cc then the maximum displacement shall be the OEM displacement plus 1mm overbore on all cylinders. The maximum displacement that may be achieved by any Runabout class watercraft is 2000cc.

23.8 IGNITION AND ELECTRONICS - TWO-STROKE

- 23.8.1 **Electronic Control Unit (ECU)** - 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. ECU may not be programmed to alter the original function of the OEM controls and or switches.
- 23.8.2 **Ignition:** 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. Woodruff key may be modified or removed.

23.9 IGNITION AND ELECTRONICS - FOUR-STROKE

- 23.9.1 **Four-Stroke Non Turbo/Supercharged Runabout - Electronic Control Unit (ECU):** 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. ECU may not be programmed to alter the original function of the OEM controls and or switches.
- 23.9.2 **Turbocharged Stock Ski and Turbo/Supercharged Runabout Stock - Electronic Control Unit (ECU):** The original electronic control must be OEM and may not be modified or reprogrammed. No additional sensors may be added (e.g., exhaust gas temperature, detonation sensors, etc.). Engine temperature sensors may be disabled. ECU may not be programmed to alter the original function of the OEM controls and or switches.
- 23.9.3 **Ignition:** 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.

23.10 AIR/FUEL DELIVERY - TWO-STROKE

- 23.10.1 **Flame Arresters:** Aftermarket flame arresters that meet USCG, UL-1 111 or SAE J-1928 Marine standards may be used. Flame arrestor mesh can not be removed or modified. Pre-filter flame arrestor covers are allowed.
- 23.10.2 **Carburetor:** Carburetor jets (replaceable type), needle valves, and needle valve springs may be changed. The choke may be removed provided additional air intake for the engine is not created. An aftermarket primer system may be installed. No drilling, tapping or boring any part of the carburetor. Throttle plate angles or modifications to the throttle plate are not allowed. No other carburetor modifications are allowed.
- 23.10.3 **Fuel System:** 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. The original equipment fuel tank, fuel filter, fuel pickup, fuel filler, 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.

23.11 AIR/FUEL DELIVERY - FOUR-STROKE

- 23.11.1 **Flame Arrestor:** Flame arrestors that meet USCG, UL-1 111 or SAE J-1928 Marine backfire flame arrester test standards must be installed. Flame arrester mesh can not be removed or modified. Pre-filter flame arrester covers are allowed.
- 23.11.2 **Electronic Fuel-Injection Systems:** Flame arrestors that meet USCG, UL-1 111 or SAE J-1928 Marine backfire flame arrester test standards must be installed. Flame arrester mesh can not be removed or modified. Pre-filter flame arrester covers are allowed. 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 are allowed.
- 23.11.3 **Throttle Body:** Throttle body housing must remain as supplied by the OEM manufacturer. No modifications are allowed, including the changing of the number of throttle plates and or angles.
- 23.11.4 **Carburetor:** 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. **The R&D Powershot fuel injection tuning module and fuel controller may be used.**

23.12 TURBOCHARGER/SUPERCHARGER

- 23.12.1 **Turbocharger/Supercharger:** Modifications to any part of the turbocharger or supercharger system (i.e., housing, turbines, rotors, sensors, ducting, etc.) are not allowed. On Sea-Doo supercharged models the OEM ceramic clutch washer may be aftermarket.
- 23.12.2 **Intercooler:** **Hydrospace S4 owners will be allowed to reinforce their stock Intercooler or update to the updated Intercooler available from Hydrospace that is being installed on current S4 models.**

23.14 STOCK CLASS SUMMARY

The items listed below need not be OEM for participation in the Stock classes. See specific class rules for more details and specifications.

- 1) Starter Motor
- 2) Engine Gaskets
- 3) Flywheel Key
- 4) Engine Mounts
- 5) Ignition or ECU
- 6) Fuel Filter, Fuel Hose
- 7) Control Cables and Housings
- 8) Carburetor Pivot Arm

- 9) Throttle Lever, Handlebars, Grips
- 10) Handlepole, Handlepole Bushings, spring or spring helper
- 11) Coupler Dampers and Coupler Shroud
- 13) Pump Bearings
- 14) Engine and Pump Seals
- 15) Battery
- 16) Mats, Decals, Hood Seal
- 17) Bond Rails
- 18) Flame Arrestors
- 19) Impeller
- 20) Rideplate and Intake grate
- 22) Pistons

23.15 COMMON REASONS FOR DISQUALIFICATION – STOCK CLASS

The following is a list of common reasons for disqualification in the Stock class; this listing is not necessary a complete one.

- 1) Missing tow strap on watercraft.
- 2) Cylinder ports have been modified beyond tolerable limits listed in the rulebook.
- 3) Carburetors have been modified past factory specs.
- 4) Flame arrestor mesh has been removed or modified.
- 5) Cylinder head has been milled down.
- 6) Cylinder has been decked or milled beyond factory specs.
- 7) Aftermarket or lightened flywheel.
- 8) Exhaust system or waterbox modifications.
- 9) Pump modifications or nozzle boring in Runabout classes.
- 10) No rubber nose bumper.
- 11) Additional hull or hood ventilation for increased airflow to engine.
- 12) Engine gaskets beyond tolerable limits as specified in rulebook.
- 13) Aftermarket or modified supercharger impeller.
- 14) Sponson length/depth exceeds specifications in rulebook.
- 15) Intake grate depth has been exceeded beyond rulebook specs.
- 16) Rideplate length exceeds rulebook specs.
- 17) Crankcases have been decked/modified.
- 18) Pump stuffer/modifications to pump shoe or inlet duct.
- 19) Improper backdating of pipe/exhaust system.
- 20) Aftermarket or modified ECU on four-stroke turbo/supercharged boats in Stock Ski and Runabout classes.