

Spec Classes Addendum

The IJSBA is pleased to offer information on Spec Class Racing. Spec Class in Personal Watercraft is a grass roots created category of racing which is intended to create a more equal level of performance on the race course irrespective of whatever brand watercraft a competitor chooses to utilize. Additional goals of this type of racing include cost savings and keeping some outdated models in the forefront of competitive racing. Spec Class Racing can be applied to the Runabout, Ski, and Sport divisions. The

IJSBA encourages participation in these classes and requests feedback so that the evolution of these endeavors can continue to meet the stated goals.

Runabout Stock Spec

There has been no Stock Spec racing for Runabout watercraft at the time of this publication. The IJSBA encourages promoters and affiliates to explore opportunities for new ways to extend the life of popular older brand Runabouts without overburdening the event schedules with too many additional classes. A beginning suggestion is to group former classes: Runabout 800 Superstock, Runabout 1300 Limited, and Four Stroke Stock classes together on the same line with the smaller displacements closer to the pole position.

Ski Spec

The following set of Ski Spec Rules comes from the American Power Boat Association (APBA Technical Rule 24) where this category of racing is usually used in place of the Stock Classes. Promoters who offer this class should follow these rules specifically in order to ensure compatibility among competitors who want to freely use their craft between in differing associations. Appeals to the IJSBA of penalties for rule infractions under these Stock Spec rules will first be sent to the APBA for a ruling. A second appeal may be filed to IJSBA, however, the IJSBA will give a great deal of deference to the APBA's rulings.

STOCK SPEC SKI RULES OVERVIEW:

For the Stock Spec Ski class all watercraft may conform to the IJSBA Stock Ski class rules with the following exceptions and additions:

ALL MODELS

Reeds: Reed petals may be modified or aftermarket provided the original equipment reed stop and cage assembly are used.
Girdle Kits: Engine girdle systems like one made by Pro-Tec Performance are allowed.

HYDROSPACE ONLY

Boost Pressure: Four-Stroke turbocharged watercraft may race in all Stock Ski Spec classes provided the maximum boost pressure does not exceed 5psi.

Boost Regulator Value: All four-stroke turbocharged watercraft to run an approved boost regulator valve set at 5psi of boost.

Electronic Control Unit (ECU): The original electronic control unit must be OEM. Engine temperature sensors may not be disabled. The ECU may not be programmed to alter the original function of the OEM controls and or switches.

YAMAHA SUPERJET ONLY

A Yamaha SuperJet owner has two options:

Option A - Cylinder and Head – The racer can chose to run an OEM Yamaha 760 Cylinder and 760 Head. If the racer chooses to run an aftermarket cylinder and head all other modifications allowed in the Stock Spec Ski rules for a two-stroke watercraft are allowed. The cylinder bore must not exceed the 850 cc limit. The same allowed modifications would apply if a racer chose to run the Stock OEM 701 cylinder and head.

Option B - Run a Wet Pipe. The pipe must have been manufactured, designed, and sold as a wet pipe and continue to function as a wet pipe. Converting a dry pipe to a wet pipe is not allowed. If the racer chooses to run a Wet Pipe the following Stock Spec Ski modifications are NOT allowed:

1) **Ignition:** The Ignition must remain OEM and can not be modified or altered in any way. RPM limiter function may not be bypassed or eliminated. CDI unit must be OEM and can not be modified or aftermarket. Ignition timing may NOT be changed. Modifications to the original equipment ignition pickup mount are not allowed. Original equipment charging system must be used.

2) **Gaskets:** The head and base gaskets must be OEM. Replacement gaskets that are the same thickness as OEM will be allowed.

3) **Bore:** Bore must be stock, however, an overbore allowance of 1mm over stock will be allowed.

2008-2009 Yamaha SuperJet models: Carburetors maybe machined to allow access to the circuit adjustment screws. Screws may be replaced or modified with tee handle type or other to provide easier adjustment. All fuel circuits must remain unchanged and may not be machined (i.e.: main circuit booster, low speed transfer, etc.). No other machining to carburetors is allowed.

KAWASAKI SXR ONLY

1) Kawasaki SXR may run a pump cone.

APBA STOCK SPEC COMPLETE SET OF RULES

RULE 24 - TECHNICAL RULES – STOCK SPEC SKI CLASS

24.1 OVERVIEW

24.1.1 The intent of the Spec Ski 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 IJSBA Rule 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 23.

24.3 STOCK SKI SPEC CLASS

24.3.1 **Overview:** The goal for of the Stock Spec Ski class is integrate two and four stroke watercraft from several different brands into competitive racing classes.

24.3.2 **Boost Pressure:** Four-Stroke turbocharged watercraft may race in all Stock Ski Spec classes provided the maximum boost pressure does not exceed 5psi.

24.3.3 **Boost Regulator Value:** All four-stroke turbocharged watercraft to run an approved boost regulator valve set at 5psi of boost.

24.3.4 **Data Recorder:** The IJSBA 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.

24.3.5 **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. [Kawasaki SXR may run a pump cone.](#)

24.5 HULL

24.5.1 **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.

24.5.2 **Hull Extensions – 1990-2007 Yamaha SuperJet Only:** Yamaha SuperJets (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.

24.5.3 **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.

24.6 ENGINE - TWO-STROKE

24.6.1 **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 but such approval must be obtained in writing. Replacement piston assemblies must weigh within $\pm 25.00\%$ of the 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. [Engine girdle systems like one made by Pro-Tec Performance are allowed.](#)

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

24.6.3 **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.

24.6.4 **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.

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

24.6.6 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.

24.6.7 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.

24.6.8 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.

24.6.9 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.

24.6.10 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.

24.6.11 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.).

24.6.12 Yamaha SuperJet Only: To create parity in the Stock Spec class a Yamaha SuperJet owner has two options:

24.6.13 Option A - Cylinder and Head – The racer can choose to run a OEM Yamaha 760 Cylinder and 760 Head. If the racer chooses to run an aftermarket cylinder and head all other modifications allowed in the Stock Spec rules for a two-stroke watercraft are allowed. The cylinder bore must not exceed the 803 cc limit. The same allowed modifications would apply if a racer chose to run the Stock OEM 701 cylinder and head.

24.6.14 Option B - Run a Wet Pipe. The pipe must have been manufactured, designed, and sold as a wet pipe and continue to function as a wet pipe. Converting a dry pipe to a wet pipe is not allowed. If the racer chooses to run a Wet Pipe the following Stock Spec Ski modifications are NOT allowed:

24.6.15 1) Ignition: The Ignition must remain OEM and can not be modified or altered in any way. RPM limiter function may not be bypassed or eliminated. CDI unit must be OEM and can not be modified or aftermarket. Ignition timing may NOT be changed. Modifications to the original equipment ignition pickup mount are not allowed. Original equipment charging system must be used.

24.6.16 2) The head and base gaskets must be OEM. Replacement gaskets that are the same thickness as OEM will be allowed.

24.6.17 3) Bore must be stock, however, an overbore allowance of 1mm over stock will be allowed.

24.7 ENGINE - FOUR-STROKE

24.7.1 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.

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

24.7.3 Camshafts: Camshaft(s) must remain stock. Replacement bearings or bearing shells are allowed, providing that they maintain their original type and dimensions.

24.7.4 Intake and Exhaust Valves: Intake and exhaust valves may be shimmed with OEM or aftermarket shims.

24.7.6 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.

24.7.7 Valve Cover: Valve cover may be modified or replaced for cosmetic purposes and/or weight reduction only.

24.7.8 Stripped Threads: Stripped threads must be repaired to the original size.

24.7.9 Fuel System: Fuel injectors and fuel pump must remain stock. Fuel pressure regulator may be modified to change fuel pressure.

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

24.7.11 Actuator Arm - Hydrospace S4 owners may use an aftermarket waste gate actuating arm.

24.7.12 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.

24.8 IGNITION AND ELECTRONICS - TWO-STROKE

24.8.1 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.

24.8.2 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.

24.9 IGNITION AND ELECTRONICS - FOUR-STROKE

24.9.2 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.

Electronic Control Unit (ECU): The original electronic control unit must be OEM. Engine temperature sensors may not be disabled. The ECU may not be programmed to alter the original function of the OEM controls and or switches.

24.10 AIR/FUEL DELIVERY - TWO-STROKE

24.10.1 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.

24.10.2 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.

24.10.3 2008-2009 Yamaha SuperJet models: Carburetors maybe machined to allow access to the circuit adjustment screws. Screws may be replaced or modified with tee handle type or other to provide easier adjustment. All fuel circuits must remain unchanged and may not be machined (i.e.: main circuit booster, low speed transfer, etc.). No other machining to carburetors is allowed.

24.10.3 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.

24.11 AIR/FUEL DELIVERY - FOUR-STROKE

24.11.1 Flame Arrestor: Flame arrestors that meet USCG, UL-1 111 or SAE J-1928 Marine backfire flame arrester test standards must be installed. Flame arrestor mesh can not be removed or modified. Pre-filter flame arrestor covers are allowed.

24.11.2 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.

24.11.3 **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.

24.11.4 **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.

24.12 TURBOCHARGER/SUPERCHARGER

24.12.1 **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.

24.12.2 **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.

24.13 STOCK SPEC CLASS SUMMARY

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

- 1) Starter Motor
- 2) Engine Gaskets
- 3) Flywheel Key
- 4) Engine Mounts
- 5) Fuel Filter, Fuel Hose
- 6) Control Cables and Housings
- 7) Carburetor Pivot Arm
- 8) Throttle Lever, Handlebars, Grips
- 9) Handlepole, Handlepole Bushings, Spring or Spring Helper
- 10) Coupler Dampers and Coupler Shroud
- 11) Pump Bearings
- 12) Engine and Pump Seals
- 13) Battery
- 14) Mats, Decals, Hood Seal
- 15) Bond Rails
- 16) Flame Arrestors
- 17) Impeller
- 18) Rideplate and Intake grate
- 19) Pistons

24.14 COMMON REASONS FOR DISQUALIFICATION – STOCK SPEC 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 arrester mesh has been removed or modified.
- 5) Cylinder head has been milled down.
- 6) Boost is over 5 psi on a four stroke model.
- 7) Cylinder has been decked or milled beyond factory specs.
- 8) Aftermarket or lightened flywheel.
- 9) Exhaust system or waterbox modifications.
- 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

SPORT SPEC CLASS COMPETITION Intended to promote interest in personal watercraft competition with a limited number of modifications, and to enable individuals to become active competitors with a relatively modest investment. Watercraft that are eligible to compete in this class are: Kawasaki X2 (Pre 05); Kawasaki X2 (05-07); Polaris Hurricane; Sea Doo HX and Yamaha Waveblaster 701. Watercraft competing in this class must conform to the specifications which follow. These rules are specifically outlined for each individual model to promote close competition.

****For 2011, the Kawasaki Gen 1 - X2 (pre 2005) will have two options**

Option 1) Kawasaki Gen 1 - X2 (old style, pre 2005) are allowed to update to 750 or 800 Kawasaki engines and electronics; and are to follow IJSBA Open class rules. (810cc limit)

OR

Option 2) Kawasaki Gen 1 - X2 (old style, pre 2005) may upgrade to a Kawasaki 900 or 1100 motor, exhaust, electronics and carbs. Carburetors jets, needles/seats may be replace. Aftermarket flame arrestors and adaptors are allowed. REMAINING motor and electronics must remain OEM as from factory. All other modifications are to follow IJSBA Open Class rules.

All watercraft must remain strictly stock, except where rules allow or require substitutions or modifications. Changes or modifications not listed here are not permitted. Some original equipment components may not comply with IJSBA rules.

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.

Original equipment parts may be updated or backdated with 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 10-11.)

Sound level shall not exceed 86 dB(a) at 22.86m (75 ft.). See Section 19.5 (pg. 73). Engine fuel must consist of gasoline meeting the criteria defined in Section 19.4.3 (pg. 73).

HULL: 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. Hull and deck repairs may be made. However, these repairs must not alter the standard configuration by more than 2.00mm (0.08 in.). Hull, bulkhead and deck may be internally reinforced.

Fasteners may be installed through the hull, bulkhead and deck for the purposes of securing components to interior surfaces, provided a hazard is not created. Bulkhead may be cut for exhaust or electrical routing. Fire extinguisher, fuel petcock and choke holes may be filled or capped.

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 (2.50 in.). No part of the sponsons shall extend downward below the point at which the side of the hull intersects the bottom surface of the hull by more than 63.5mm (2.50 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.)

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.

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 of the hull. All leading edges must be radiused so as not to create a hazard.

Pump cover plate may be modified or aftermarket. An extension may be added to the rear of the plate but shall not exceed the width of the original equipment plate. Modified and aftermarket plates must not extend more than 100.0mm (3.94 in.) beyond the end of the original equipment plate. The extension must be connected to the radiused portion of the pump plate so as not to create a hazard. (See diagram in Appendix.)

Fins, rudders, skegs and other appendages that may create a hazard will not be allowed. Pump shoe may be aftermarket but may not extend more than 12.00mm (0.47 in.) below the flat plane of the pump intake area of the hull.

Aftermarket fixed-position trim tabs may be used. Original equipment trim plates that are detachable from the hull may be removed or replaced when installing aftermarket trim tabs. Trim tabs 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. Manual or automatic trim tabs attached to the hull or ride plate are not allowed. All hull extensions mounted on the hull's transom will be considered as a trim tab. All edges must be radiused so as not to create a hazard. Fins, skegs, rudders and other appendages that may create a hazard are not allowed.

Kawasaki Generation 1 X2 (pre 2005) may add front hull fills providing these fills do not exceed 36 inches in length measured from the front most surface of the hull towards the rear of the hull.

Replacement bumpers may be used provided a hazard is not created.

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.

Battery box may be relocated.

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. Aftermarket steering cables will be allowed.

Seat height may be changed and/or covered but must utilize OEM stock base. Base may have holes providing they do not add additional airflow to engine compartment. Padding and/or mat kits may be added and custom painting is allowed. The surface finish of any metal component outside the area above the hull bond flange may be polished, shot peened or painted.

Original bilge pump may be modified or disconnected. Aftermarket bilge draining systems that do not create a hazard are allowed. Floation Foam may be removed, modified or aftermarket.

Engine compartment ventilation tubes may be modified, aftermarket, relocated on the original equipment ducting, 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. Polaris Hurricane hood/mirror cowling may be replace providing it does not create additional airflow to engine compartment.

ENGINE : All spec eligible Engines may be bored a MAX of 1mm. Yamaha Waveblaster may upgrade to 701 62T style cylinders. Pre-1996 Yamaha Waveblaster may update to 1996 and newer engine components.

Replacement piston assemblies may be used provided the original port timing, dome profile, skirt length and shape and type of material are not changed. Replacement piston assemblies must weigh within $\pm 5.00\%$ of original equipment. Chamfering of cylinder ports must not exceed 1.00mm (0.04 in.) at a 30 degree maximum angle. (See diagram in Appendix.) Cylinders may be machined to accept girdle system cylinder heads.

Replacement starter motor and bendix may be used. Replacement engine mounts may be used.

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 crank- shaft assembly must be within $\pm 5.00\%$ of original equipment. Crankpins may be welded and/or keyed to the counterweights.

Repairs to cracked or punctured crankcases may be made provided only one damaged area affecting one cylinder bank has been repaired. Crankcase drain and cable may be removed and plugged. No other modifications or repairs are allowed. External modifications to the engine finish (e.g., plating, polishing and/or painting) are allowed for cosmetic purposes only.

No internal modifications of any kind, including grinding, surfacing, polishing, machining, shot peening, etc.,

will be allowed on any engine components.

Kawasaki, Polaris and Yamaha Cylinder heads and gasket may be modified or aftermarket providing they do NOT exceed 190lbs of compression. Kawasaki, Polaris and Yamaha aftermarket or OEM head domes must not go below .040 head squish clearance at any point. Sea Doo HX heads may be modified but may not go below .051 head squish clearance and may not exceed 175lbs of compression. Drop down style domes are not allowed on any model.

Kawasaki, Polaris and Yamaha Exhaust manifold, head pipe, expansion chamber, gaskets and all hoses between expansion chamber and exhaust exit may be modified/altered or aftermarket. Only exhausts originally manufactured as a wet style systems will be allowed. Exhausts originally intended as dry type systems may NOT be used. No water jacked chambers are allowed. Exhaust exit may be relocated to the rear of the hull. Kawasaki, Yamaha and Polaris waterbox may be relocated and aftermarket. SeaDoo HX may update /backdate to either year OEM factory HX waterbox. SeaDoo HX may plug water fittings on OEM waterbox. No spray bars may be added to HX waterbox.

Flow control valves may be used. No tuned portion of the exhaust shall protrude outside the hull. Through-hull exhaust outlet flap may be removed. Electronic water injection is NOT allowed on any model. **Sea Doo HX must retain unmodified stock HX exhaust system and waterbox. Sea Doo HX may not use stinger sprayers or water injectors. Sea Doo HX must use stock from factory water routing, no additional water bypasses will be allowed.**

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. Base gasket must remain OEM thickness for each individual model or as outlined in service manual.
- 2) Fasteners (e.g., bolts, nuts and washers) may not be substituted with titanium pieces unless originally equipped. Fasteners may integrate locking mechanisms.
- 3) Sea Doo HX may upgrade to larger bolts or studs for the exhaust system.

AIR/FUEL DELIVERY : Polaris Hurricane and Yamaha Waveblaster Carburetor(s) may be modified or aftermarket provided they do not vent or spill fuel at any attitude with or without the engine running. The number of venturis cannot exceed the number of cylinders. No slide-type carburetors. Sea Doo HX must retain stock carbs from that model; but may be rejettted and de-choked. Aftermarket primer may be used.

Polaris Hurricane, Kawasaki X2 (05-07) and Yamaha Blaster Intake manifold assembly may be modified or aftermarket. SeaDoo HX must retain OEM intake manifold from factory. SeaDoo HX may not adjust timing by rotating stator plate.factory; lines must line up as from factory. Aftermarket crankcase-pressure-operated fuel pumps may be used. Additional carburetor pulse line fittings may be installed on the crankcase.

Modified or aftermarket vapor/air separators must not exceed 2 in. x 6 in., and must have a return line to the fuel tank open at all times. Additional fuel reservoirs may not be used. Aftermarket or modified electric fuel pumps, not exceeding 4 psi, may be used. When the engine is shut off or stops, the fuel pump must automatically stop. No manually operated on/off-type fuel pumps are allowed.

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 filler and relief valve must be used and cannot be modified. The fuel pickup, fuel filter and fuel petcock assembly may be removed and/or after-market parts may be used. Additional fuel filters may be used and fuel cell foam may be added to the original equipment fuel tank. Fuel tank filler cap may be modified or aftermarket provided a hazard is not created.

Flame arrester(s) which satisfy United States Coast Guard, SAE-J1928 Marine or UL-1111 Marine backfire flame arrester test standards must be installed. Aftermarket flame arresters satisfying one of these test standards will be allowed. Intake silencer may be removed. Reed valve assemblies may be modified or aftermarket. Reed spacers may be added. Sea Doo HX Rotary valve must remain OEM stock from factory and retain the factory rotary timing.

IGNITION AND ELECTRONICS: RPM limiter function may be modified. Polaris and Yamaha model CDI units may be modified or aftermarket provided ignition timing is not manually adjustable. Kawasaki Gen 2 (2005-2007) model CDI may be modified or aftermarket AND programmable. ALL original equipment charging systems must be used. Timing may not be advanced at the stator plate - ALL models must line up stator with factory set mark on cases. Kawasaki X2 may use ignition jumper for heat sensor. Flywheels must be OEM stock and unmodified as provided from the factory. Coils, plug wires and plug caps may be aftermarket. No other ignition system modifications will be allowed.

Replacement batteries are allowed but must fit into the original equipment battery box and securely fastened.

Engine temperature sensor may be disconnected and/or removed.

DRIVELINE: Stator vane assembly must remain OEM stock from factory. SeaDoo HX may use OEM plastic pump housing provided it retains the small diameter hub and the same amount of veins. Polaris Hurricane may update to the factory superseded Polaris 6 vein pump. Pump mounting plate and/or pump shoe may be modified or aftermarket. Titanium driveshafts are not allowed. Impeller may be modified or aftermarket. 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, whether using spacers or extended nozzles. Aftermarket nozzle-trim systems may be used. Kawasaki, Polaris and Yamaha models may add additional cooling fitting. Visibility spout must be removed or plugged. Silicone adhesive sealant or alike may be used in addition to original equipment seal to seal pump inlet. Couplers, bearing housing and driveshaft may be modified or aftermarket provided they maintain a 1:1 drive ratio between the engine and the pump. SeaDoo HX must retain OEM unmodified 720 flywheel. Kawasaki X2 may use aftermarket pump cones.

SeaDoo HX may use older style carrier assembly with grease fitting.