

## RAS.1 RUNABOUT STOCK CLASS COMPETITION

Intended to promote interest in stock personal watercraft competition and to enable individuals to become active competitors with low investment and maintenance costs. The goal of Stock Class racing is to have nearly identical characteristics to the watercraft that come off of the showroom floor with a focus on provisions for safety and handling in a competition environment. Watercraft competing in these classes must conform to the specifications which follow which will be strictly interpreted. 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 (i.e. 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.

RAS.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 replacements/modifications result in 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.

RAS.1.2 Original equipment parts may be updated or backdated to 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. Models with the same designation (i.e. RXP-X, SHVO, etc.) will generally be considered the same model unless restricted in the homologation listing (See Appendix).

RAS.1.3 Sound level shall not exceed 86 dB(a) at 22.86m (75 ft.).

RAS.1.4 Engine fuel must consist of gasoline meeting the criteria defined (See Appendix).

## RAS.2 HULL

RAS.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.

RAS.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.). Drop-in type storage buckets may be modified, aftermarket or removed provided a hazard is not created.

RAS.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.) 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.

RAS.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.

RAS.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 177.80mm (7.00 in.) beyond the end of the original equipment. 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 create a hazard will not be allowed. (See diagram in Appendix.)

RAS.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.

RAS.2.7 Replacement bumpers may be used provided a hazard is not created.

RAS.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.

RAS.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.

RAS.2.10 Original equipment seat base must be used. Seat cover may be changed. The OEM seat height cannot be changed by more than +/- 12.7mm (0.5 in). Seat must remain OEM, seat cover can add no more than .5 inch in thickness in any direction.

RAS.2.11 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.

RAS.2.12 Original bilge pump may be modified or disconnected. Aftermarket bilge draining systems that do not create a hazard are allowed.

RAS.2.13 Engine compartment ventilation tubes must remain as originally equipped.

RAS.2.14 Original equipment braking devices may be disabled for safety purposes. Reverse buckets may be removed or disabled (modified to disable reverse function is acceptable so long as a hazard is not created) but trim motors must remain in place.

### RAS.3 ENGINE — FOUR-STROKE

RAS.3.1 Engines may be bored. Replacement piston assemblies may be used provided the original compression ratio, dome profile, skirt length and shape and type of material are not changed. 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.

RAS.3.2 Repairs may be made to cracked or damaged cylinders by installing a cylinder sleeve. The head gasket surface of the cylinder block may be machined only to allow for the installation of the new sleeves (see appendix for description). A thicker head gasket must be utilized to return the block deck height to within .155mm (.006in) of original height. The repair must offer no additional performance gains.

RAS.3.3 Crankshaft must remain stock. Replacement bearings or bearing shells are allowed, providing they maintain their original type and dimensions.

RAS.3.4 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.

RAS.3.5 Aftermarket valve springs and valve spring retainers may be used.

RAS.3.6 The intercooler must remain OEM. Engine 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. Engine water cooling systems may be modified or aftermarket. Additional supply from the propulsion pump is allowed. 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. 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 engine block. Any existing fitting which does not have a water supply line (i.e. anode) may be replaced with a water

supply line so long as the thread diameter is not changed. 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.

RAS.3.7 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. 4) Replacement hoses and fuel lines may not provide any other function than original equipment hoses. Changes in temperature tolerances are allowed.

RAS.3.8 Exhaust manifolds that have previously been drilled or tapped may be used so long as the holes are filled or capped. Exhaust flanges may be removed.

RAS.3.9 IJSBA Approved aftermarket valve springs and valve spring retainers may be used.

#### RAS.4 ENGINE — TWO-STROKE

RAS.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 (i.e. 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.).

RAS.4.2 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.

RAS.4.3 External modifications to the engine finish (e.g., plating, polishing and/or painting) are allowed for cosmetic purposes only.

RAS.4.4 No internal modifications of any kind, including grinding, surfacing, polishing, machining, shot peening, etc., will be allowed on any engine components.

RAS.4.5 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.

RAS.4.6 Engine 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. 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. 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.”

RAS.4.7 Replacement starter motor and bendix may be used.

RAS.4.8 Replacement engine mounts may be used.

RAS.4.9 Oil-injection system may be disconnected or removed.

RAS.4.10 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.

#### RAS.5 AIR/FUEL DELIVERY — FOUR-STROKE

RAS.5.1 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. All portions of the intake manifold must remain as originally equipped. Units where a ribbon system is employed as the OEM flame arresting device may have the ribbon removed so long as airflow passage is not increased and sufficient flame suppression is achieved by the air filter. An aftermarket part may be used to retain OEM airflow specifications. The allowance for this provision is not negated if any sales literature or product description defines the part or kit as performance enhancing. No modifications to the turbocharger and supercharger system, if applicable, are allowed.

RAS.5.2 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.

RAS.5.3 Fuel injectors and fuel pump must remain stock as furnished by the manufacturer. A fuel pressure may be installed for safety purposes.

#### RAS.6 AIR/FUEL DELIVERY — TWO-STROKE

RAS.6.1 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.

#### RAS.7 IGNITION AND ELECTRONICS — FOUR-STROKE

RAS.7.1 Replacement batteries are allowed but must fit into the original equipment battery box and be securely fastened.

RAS.7.2 The original electronic control unit may be reprogrammed 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.

RAS.7.3 Aftermarket spark plugs with a different heat rating may be used.

#### RAS.8 IGNITION AND ELECTRONICS — TWO-STROKE

RAS. 8.1 Replacement batteries are allowed but must fit into the original equipment battery box and be securely fastened.

RAS.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.

RAS.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.

RAS.8.4 Aftermarket spark plugs with a different heat rating may be used.

#### RAS.9 TURBOCHARGER/SUPERCHARGER

RAS.9.1 Modifications to any part of the turbocharger or supercharger system (i.e., housing, turbines, rotors, sensors, ducting, etc.) are not allowed unless specified.

RAS.9.2. Supercharger shafts, and other components, may be welded or reinforced for safety purposes. Supercharger clutches, belts, and internal replacement parts will not be restricted to OEM so long as the replacement parts are approved by IJSBA. OEM gear ratios must be maintained.

RAS.9.3. Blow off valves may be added for the purposes of prolonging engine longevity.

#### RAS.10 DRIVELINE

RAS.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.

RAS.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.).