Rule Book 2016 Online Part 2.1

6.1 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. Four Stroke Runabouts, competing in Rec Lites Classes , must weigh within a difference of no more than 10 lbs (4.54 kg) lighter than the OEM weight as determined by IJSBA.

REC LITES ADDENDUM: Runabout Rec Lites is a Stock Class designed for runabouts that are intended for the entry level recreation market. To be eligible for the Rec Lites division, the qualifying runabout must be powered by a naturally aspirated four stoke engine and have a base Manufacturers Suggested Retail Price, in the United States, of less than $8,500 USD. In addition, the qualifying runabout must adhere to all Runabout Stock Class Rules and conform to the following: A maximum of 950cc for a unit weighing up to 750 LBS (335.66 kg) and a maximum of 1100cc for a unit weighing 750 LBS (335.66 kg) or more. At the discretion of the organizer, two stroke units may compete with a maximum displacement of 735cc.

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 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.

6.1.2 Original equipment parts may be updated 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. Unless reoffered to as the same identical part in the OEM parts/repair manual, parts may not be backdated. (Refer to Model Homologation listing on page 10-11.)

6.1.3 Sound level shall not exceed 86 dB(a) at 22.86m (75 ft.). See Section 19.5 (pg. 78).

6.1.4 Engine fuel must consist of gasoline meeting the criteria defined in Section 19.4.3 (pg. 78).

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 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.

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.) 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 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 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 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.

6.2.11 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.

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

6.2.13 Engine compartment ventilation tubes must remain as originally equipped.

6.2.14 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.

6.3 ENGINE — FOUR-STROKE

6.3.1 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.

6.3.2 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.

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

6.3.4 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.

6.3.5 Engine, Intercooler, and Oil Cooler water cooling systems must remain as OEM. Water strainers (filters) may be modified or aftermarket. Intercooler assembly/housing must remain OEM. 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. 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. .

6.3.6 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. 6.4.6 Exhaust manifolds that have previously been drilled or tapped may be used so long as the holes are filled or capped.

6.4 ENGINE — TWO-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 (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 ±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.).

6.4.2 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.

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

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

6.4.6 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.

6.4.7 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."

6.4.8 Replacement starter motor and bendix may be used.

6.4.9 Replacement engine mounts may be used.

6.4.10 Oil-injection system may be disconnected or removed.

6.4.11 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.

6.5 AIR/FUEL DELIVERY — FOUR-STROKE

6.5.1 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 arrestor 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 arrestor 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. All portions of the intake manifold, including screens or other filtering or spark suppressing devices, must remain as originally equipped.

6.5.2 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.

6.5.3 Fuel injectors and fuel pump must remain stock as furnished by the manufacturer.

6.6 AIR/FUEL DELIVERY — TWO-STROKE

6.6.1 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.

6.7 IGNITION AND ELECTRONICS — FOUR-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 reprogramed 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 Aftermarket spark plugs with a different heat rating may be used.

6.8 IGNITION AND ELECTRONICS — TWO-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.).

RUNABOUT SPEC

7.1 SPEC CLASS COMPETITION

Intended to promote interest in near stock personal watercraft competition and to enable individuals to become active competitors, at an increased performance level, with relatively modest investment and maintenance costs. Spec Class is intended to evolve into a uniformed performance level for all eligible watercraft in the category. Watercraft competing in these classes must conform to the specifications which follow

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

7.1.1 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 Spec 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 result is 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.

7.1.2 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. Unless reoffered to as the same identical part in the OEM parts/repair manual, parts may not be backdated between normally aspirated models and models equipped with a turbocharger or supercharger. (Refer to Model Homologation listing on page 10-11.)

7.1.3 Sound level shall not exceed 86 dB(a) at 22.86m (75 ft.). See Section 19.5 (pg. 78).

7.1.4 Engine fuel must consist of gasoline meeting the criteria defined in Section 19.4.3 (pg. 78).

7.2 HULL

7.2.1 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.

7.2.2 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. Drop-in

type buckets are defined as being able to be removed without the use of any tool. Other than for the use of fasteners and the placement of allowable relocated parts (i.e., ECU), the bulkhead may not be modified.

7.2.3 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.)

7.2.4 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.

7.2.5 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 plate. 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.)

7.2.6 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.

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

7.2.8 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.

7.2.9 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.

7.2.10 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). Seat foam to remain OEM, seat cover can add no more than .5 inch in thickness in any direction.

7.2.11 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.

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

7.2.13 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.

7.2.14 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.

7.2.15 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 reverse control cables, motors, and mechanisms must remain in place.

7.3 ENGINE — FOUR-STROKE

7.3.1 Engines may be bored. Replacement piston assemblies may be used provided the origina 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 ±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.

7.3.2 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.

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

7.3.4 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.

7.3.5 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.

7.3.6 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. Water inlet covers that are removable from the engine block may be modified or aftermarket. OEM dry fittings that tap into the water jacket may be modified or aftermarket and may accept water so long as the OEM opening is not enlarged. 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.

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

7.3.8 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.

7.3.9 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.

7.3.10 Exhaust manifolds that have previously been drilled or tapped may be used so long as the holes are filled or capped

7.4 ENGINE — TWO-STROKE

7.4.1 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 ±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 ±5.00% of original equipment. Crankpins may be welded and/or keyed to the counterweights.

7.4.3 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.

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

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

7.4.6 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.

7.4.7 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."

7.4.8 Replacement starter motor and bendix may be used.

7.4.9 Replacement engine mounts may be used.

7.4.10 Oil-injection system may be disconnected or removed.

7.4.11 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.

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.

7.5 AIR/FUEL DELIVERY — FOUR-STROKE

7.5.1 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 arrestor 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 arrestor 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.

7.5.2 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.

7.5.3 Fuel injectors and fuel pump must remain stock. Fuel pressure regulator may be aftermarket or modified to change fuel pressure. Fuel return lines must be installed in the fuel pump assembly without modification to the tank. The Race Director or Technical Director shall have final discretion as to whether a fuel return line has been installed sufficiently for safe use in competition.

7.5.4 Aftermarket Valve Spring Retainers may be used so long as OEM valve springs are used.

7.6 AIR/FUEL DELIVERY — TWO-STROKE

7.6.1 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.

7.6.2 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.

7.7 IGNITION AND ELECTRONICS — FOUR-STROKE

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

7.7.2 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.

7.7.3 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.

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

7.8 IGNITION AND ELECTRONICS — TWO-STROKE

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

7.8.2 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.

7.8.3 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.

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

7.9 TURBOCHARGER/SUPERCHARGER

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

7.10 DRIVELINE

7.10.1 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.

7.10.2 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.).

RUNABOUT LIMITED

8.1 LIMITED 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 competing in this class must conform to the specifications which follow.

8.1.1 All watercraft must remain strictly stock (all Stock Class provisions are allowed in Limited Class unless otherwise noted), 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.

8.1.2 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.)

8.1.3 Sound level shall not exceed 86 dB(a) at 22.86m (75 ft.). See Section 19.5 (pg. 78).

8.1.4 Engine fuel must consist of gasoline meeting the criteria defined in Section 19.4.3 (pg. 78).

8.2 HULL

8.2.1 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.

8.2.2 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. Drop-in type buckets are defined as being able to be removed without the use of any tool. Other than for the use of fasteners and the placement of allowable relocated parts (i.e., ECU), the bulkhead may not be modified.

8.2.3 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 (2.50 in.). 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 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.)

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

8.2.5 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 177.80mm (7.00 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.

8.2.6 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.

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

8.2.8 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.

8.2.9 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. Aftermarket steering cables will be allowed.

8.2.10 Seat assembly may be aftermarket. Seat height may be changed.

8.2.11 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.

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

8.2.13 Engine compartment foam may be removed, modified or aftermarket. Only floatation foam within the engine compartment may be removed. Only foam that can be removed without modification to any other part or parts, except where rules allow the parts to be modified, is allowed. Parts may not be relocated based on the removal of the foam. The hull's inner liner or deck may not be cut or modified to remove foam. Removal of foam between layers of the hull and/or deck is not allowed.

8.2.14 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 (covers and cowlings are included in this restriction).

8.2.15 Handles, drop-in type storage buckets, bolt-on type mirrors and gauges may be modified, aftermarket or removed provided a hazard is not created.

8.2.16 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.

8.2.17 Original equipment braking devices may be disabled for safety purposes. Reverse buckets may be removed or disabled.

8.3 ENGINE — FOUR-STROKE

8.3.1 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. 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 ±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.).

8.3.2 Crankshaft may be rebuilt/replaced provided by the following: Counterweights and material type must maintain the shape and dimensions as provided by the manufacturer. Stroke and rod lengths may not be changed. Counterweights may be deburred to remove only casting flaws, no other machining or knife edging of counterweights are allowed. Rod journals must maintain their OEM diameters/dimensions, Main journals must maintain their OEM diameters/dimensions. Cross drilling of crankshaft to improve oil flow or redirection is allowed. Replacement bearing shells are allowed provided the following: (max. allowable undersized bearing is .060 or 1.5mm). Total weight of the crankshaft assembly must be within +/- 5.00% of original equipment. Damaged rod or main journals may be welded and machined to their OEM dimensions or within the allowable bearing sizes.

8.3.3 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.

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

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

8.3.6 Engine, Intercooler, and Oil Cooler water cooling systems may be modified or aftermarket. Additional water cooling lines and after market 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."

8.3.7 Replacement starter motor and bendix may be used.

8.3.8 Replacement engine mounts may be used.

8.3.9 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.) and thickness as their OEM counterparts 2) Fasteners (e.g., bolts, nuts and washers) may not be substituted with titanium pieces unless originally equipped. Fasteners may integrate locking mechanisms.

8.3.10 Camshafts may be modified or aftermarket.

8.3.11 Valves may be modified or aftermarket. Valve seats may be modified. Springs may be modified or aftermarket. Pushrods may be modified or aftermarket. Replacement valves, pushrods, and seats may not be titanium unless originally equipped.

8.3.12 Blow off valves may be added to extend engine life. A vacuum line and fitting may be added to the intake manifold to accommodate a blow off valve.

8.3.13 Aftermarket valve spring retainers may be used.

8.4 ENGINE — TWO-STROKE

8.4.1 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. Replacement piston assemblies must weigh within ±25.00% of original equipment. Engine displacement must not exceed class designation (e.g., 550cc in 550 Limited, 800cc in 800 Limited, etc.). 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.

8.4.2 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 ±5.00% of original equipment. Crankpins may be welded and/or keyed to the counterweights.

8.4.3 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.

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

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

8.4.6 Cylinder head and gasket may be modified or aftermarket.

8.4.7 Exhaust manifold, head pipe, expansion chamber, gaskets and hose between expansion chamber and OEM waterbox may be modified/altered or aftermarket. Exhaust location of the exhaust gases may not be relocated. Original size opening must be maintained for exhaust exit. Original equipment waterbox must be used and may not be modified. No tuned portion of the exhaust shall protrude outside the hull. Through-hull exhaust outlet flap may be removed. Two Stroke and Four Stroke Runabout Limited classes: Removal of the plastic resonator is allowed.

8.4.8 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. 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, solenoids, etc.). 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.

8.4.9 Replacement starter motor and bendix may be used.

8.4.10 Replacement engine mounts may be used.

8.4.11 Oil-injection system may be disconnected or removed.

8.4.12 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. Base gasket cannot be thicker than 1.52mm (0.060in).

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.

8.4.13 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.

8.5 AIR/FUEL DELIVERY — FOUR-STROKE

8.5.1 Turbocharger or Supercharger impeller housing must remain stock as furnished by the manufacturer. All internal supercharger or turbocharger parts may be modified or aftermarket. Pulleys and tensioners may be modified or aftermarket. Where an OEM turbocharger or supercharger housing may be spaced to accommodate a larger impeller, the spacer shall be allowed providing no other modifications are necessary to accommodate the spacer. An oil line fitting may be added to the supercharger shaft. Intercoolers may be modified or aftermarket.

8.5.2 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 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 aftermarket 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.

8.5.3 Throttle bodies must remain stock as supplied by the manufacturer. No changing of throttle plate angles and/or modifications to the throttle body housing. No phenolic or aluminum spacers are allowed behind the throttle body.

8.5.4 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 arrestor 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 arrestor 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.

8.5.5 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.

8.5.6. Fuel pumps may be modified or aftermarket provided a hazard is not created. Fuel pressure regulators may be modified or aftermarket for safety purposes. Fuel return lines must be installed in the fuel pump assembly without modification to the tank. The Race Director or Technical Director shall have final discretion as to whether a fuel return line has been installed sufficiently for safe use in competition.

8.5.7 Fuel injectors may be modified or aftermarket

8.5.8 Aftermarket Valve Spring Retainers may be used so long as OEM valve springs are used.

8.6 AIR/FUEL DELIVERY — TWO-STROKE

8.6.1 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. Aftermarket primer may be used. Intake manifold assembly may be modified or aftermarket. Aftermarket crankcase-pressure-operated fuel pumps may be used. Additional carburetor pulse line fittings may be installed on the crankcase.

8.6.2 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/offtype fuel pumps are allowed.

8.6.3 Aftermarket fuel-injection systems and components are allowed provided the following regulations are adhered to: High pressure fuel hose meeting SAE J30R9 must be used; A.N. threaded-type fittings or equivalent and non-removable, crimped- type clamps must be used on the high-pressure portion of the system (i.e., hose clamps, tie wraps, etc. are not allowed); only metal-type fuel filters may be used on the high-pressure portion of the system; all other in-line filters must be installed on the low-pressure portion of the system. When the engine is shut off or stops, the fuel pump must automatically stop. No manually operated on/off-type fuel pumps are allowed.

8.6.4 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.

8.6.5 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.

8.6.6 Reed valve assemblies may be modified or aftermarket. Rotary valve may be modified or aftermarket.

8.7 IGNITION AND ELECTRONICS — FOUR-STROKE

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

8.7.2 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.

8.7.3 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.

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

8.8.4 AFR gauges may be affixed to the exhaust system providing the AFR gauge is not attached to, or can communicate with, the ECU or any automatic tuning device on the watercraft.

8.8 IGNITION AND ELECTRONICS — TWO-STROKE

8.8.1 RPM limiter function may be bypassed or eliminated. CDI unit may be modified or aftermarket. Ignition timing may be changed. Modifications to the original equipment ignition pickup mount will be allowed. Original equipment charging system must be used. No other ignition system modifications will be allowed.

8.8.2 Flywheel cover may be modified to accept a crankshaft-end bearing support.

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

8.8.4 Engine temperature sensor may be disconnected and/or removed.

8.8.5 Relocation of electrical components (e.g., battery, box or housing) is allowed in order to fit an aftermarket exhaust system (only the strict minimum needed). Modification will be subject to Race/Tech Directors' approval.

8.9 DRIVELINE

8.9.1 Impeller housing, stator vane assembly, pump mounting plate and/or pump shoe may be modified or aftermarket. No titanium driveshaft, impeller housing or stator vane assemblies. 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. Aftermarket nozzle-trim systems may be used. Additional cooling fittings may be installed. Visibility spout must be removed or plugged. Silicone adhesive sealant 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.

9.1 OPEN CLASS COMPETITION

Intended to promote interest in personal watercraft competition with a high degree of modification. Watercraft competing in this class must conform to the specifications which follow. Note: Where Open Classes allow Turbocharged or Supercharged Runabout PWC: All competitors must possess an Expert or Pro license prior to participating.

SUPERSTOCK ADDENDUM: If a class is designated as Superstock then Open Class rules shall apply with the exception of 8.2.2 (aftermarket hulls) and 8.3.5.a (aftermarket cylinders).

Runabout 1000 Superstock allows normally aspirated Two Stroke Runabouts up to 800cc and Four Stroke Runabouts up to 1000cc; Four Stroke powered Runabouts may add a supercharger or turbocharger.

9.1.1 All watercraft must remain strictly stock, except where rules allow or require substitutions or modifications. Creating an Open Class watercraft begins with a stock OEM watercraft even where the hull, top deck, and engine may come from other sources; these are changes made to an original OEM starter unit. Changes or modifications not listed here are not permitted. 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.

9.1.2 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.

9.1.3 Sound level shall not exceed 100 dB (a) at 22.86m (75 ft.). See Section 19.5 (pg. 78). A sound level of 86 dB may be enforced so long as the promoter notifies participants at least 14 days prior to the event.

9.1.4 Engine fuel must consist of gasoline meeting the criteria defined in Section 19.4.3 (pg. 78).

9.2 Weight

9.2.1 At all times, Four Stroke Runabouts, equipped with a supercharger or turbocharger, must weigh a minimum of 550 LBS.

9.3 HULL

9.3.1 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.

9.3.2 Aftermarket hulls may be used, on watercraft homologated in numbers of 500 or higher. Hulls must be approved and homologated by IJSBA. The upper deck will not be restricted to OEM to the extent that the upper deck is an exact replica of the Original equipment deck with no change in dimensions or scale. Slight changes to angles and radiuses may be approved in the top deck

homologation. Alterations of dimensions may be allowed where a legal aftermarket part has been integrated into the deck (i.e., rail caps and foot holds). Bulk heads may be aftermarket Deck repairs may be made, provided they do not alter the standard configuration by more than 2.00mm (0.08 in.). The deck's bond flange may not be modified. Deck may be internally reinforced. Fasteners may be installed through the hull and deck for the purpose of securing components to interior surfaces, provided a hazard is not created. If upper and lower components of the original equipment bond flange are separated and rejoined, they must be rejoined by the same method as original equipment (i.e., bonded together with a high-strength adhesive). (See bond flange diagram in Appendix).

The upper deck is required to appear to be an original OEM deck from a homologated watercraft. Disputes as the compliance in appearance will be subjected to a silhouette test to compare the aftermarket upper deck to the OEM upper deck. This test refers to the upper deck, itself, and does not apply to parts that are aftermarket (i.e. hoods) or parts subject to relocation (i.e. fuel filler), or removal.

Footwells may be lowered so long as a hazard is not created. The appearance alongside the watercraft must maintain the OEM look.

9.3.3 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 (2.50 in.). 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 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.).

9.3.4 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.

9.3.5 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 177.80mm (7.00 in.). The sides of 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.

9.3.6 Aftermarket trim tabs, either fixed, automatic and/or rider controlled, 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 100mm (3.94 in.) beyond the end of the original planing surface. 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.

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

9.3.8 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.

9.3.9 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. Aftermarket steering cables are allowed.

9.3.10 Seat assembly may be modified or aftermarket. Seat height may be changed.

9.3.11 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.

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

9.3.13 Engine compartment foam may be removed, modified or aftermarket. Adequate foam, or flotation media, must be maintained in the watercraft. The race director, or technical director shall have the ultimate determination whether flotation media is adequate.

9.3.14 Storage covers, hatches, instrument cowlings and engine covers may be modified or aftermarket provided a hazard is not created and the OEM appearance is maintained. Additional engine compartment ventilation is allowed. Original equipment vents may be shielded or plugged. Handles, drop-in type storage buckets and bolt-on type mirrors may be modified, aftermarket or removed provided a hazard is not created.

9.3.15 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.

9.3.16 Hood assemblies may be modified, or aftermarket, provided a hazard is not created.

9.4 ENGINE — FOUR-STROKE

9.4.1 Original engine block must be used. Internal modifications to the oil and/or water-exposed surfaces will be allowed. The head gasket surface of the cylinder block may be machined.

9.4.2 The original cylinder head casting must be used. Intake and exhaust runners may be modified. Material may be added to the runners. Intake and exhaust ports may be modified. Port diameters and shapes may be changed. Combustion chambers may be modified. Material may be added to the combustion chamber. The original number of intake and exhaust valves must be the same as original. Repairs to the cylinder head affecting one cylinder bank are allowed. The head gasket surface may be machined.

9.4.3 Aftermarket valvetrain components are allowed, providing the original method of activation is maintained (e.g., if originally activated by a camshaft, they may not converted to solenoid activation). Valves may be shimmed with OEM or aftermarket shims. Valve springs may be modified or aftermarket. Camshaft(s) may be aftermarket. The number of camshafts must be the same as original. Original bearing type and dimensions must be used. Cam timing may be changed. Cam gears, tensioners, chain or belt may be modified or aftermarket.

9.4.4 Engines may be bored. Aftermarket piston assemblies are allowed. Engine displacement must not exceed class designation (e.g., 1100cc in Runabout 1100 Superstock, 1600cc in Runabout Superstock Turbo, etc.).

9.4.5 Crankshaft may be modified or aftermarket. Total weight of the crankshaft must be within +/- 5.00% of original equipment. Replacement bearings or bearing shells are allowed, providing they maintain their original type and dimensions. PWC homologated above 1600cc must maintain original stoke.

9.4.6 Engine balancing assemblies may be modified, aftermarket, or removed.

9.4.7 Aftermarket connecting rods made of ferrous materials are allowed. Rod length may be changed.

9.4.8 Exhaust system (i.e., manifold, connecting pipes, hoses, muffler(s), etc.) may be modified or aftermarket. Through-hull exhaust may be modified or aftermarket, providing a hazard is not created. No tuned portion of the exhaust system may protrude outside of the hull. Exit location of the exhaust gases may be relocated to the transom below the bond flange

9.4.9 Cooling system may be modified or aftermarket. Additional cooling lines may be added. Aftermarket water bypass systems may be used. Cooling system bypass fittings may be modified or 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, solenoids, etc.). Manually controlled devices (by means of actuation) that alter the flow of cooling water during operation are not allowed. Original cooling system thermostat may be removed, modified or aftermarket. Cooling system flush kits are allowed.

9.4.10 Baffles in oil reservoir may be modified. The addition of baffles in oil reservoir is allowed. Oil pump may be modified or aftermarket.

9.4.11 Valve cover may be replaced for cosmetic purposes and/or weight reduction only.

9.4.12 Replacement starter motor and bendix may be used.

9.4.13 Replacement engine mounts may be used.

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

9.4.15 Replacement of general maintenance parts (e.g., gaskets, seals, spark plug wires, spark plug caps, wiring, water hoses, fuel lines, fuel filters, oil filters, clamps and fasteners) shall not be restricted to original equipment. Stripped threads may be repaired. Fasteners may integrate locking mechanisms.

9.5 ENGINE — TWO-STROKE

9.5.1 Engines may be bored. Aftermarket piston assemblies are allowed. Engine displacement must not exceed class designation (e.g., 800cc in 800 Superstock, 1600 Open, etc.). The number, type, and placement of rings on piston may be changed.

9.5.2 Original equipment crankcase must be used. Internal modifications to the fuel, oil and/or water-exposed surfaces are allowed. Filler material may be added to hollow pockets in the base gasket areas. Base gasket and intake surfaces may be machined. Additional carburetor pulse line fittings may be installed. Bearing and seal surfaces may not be modified. Crankcase drain system may be removed and plugged. Repairs to cracked or punctured crankcases may be made provided only one damaged area affecting one cylinder bank has been repaired. No other external modifications or external repairs are allowed.

Ignition/stator mounting area modifications are limited to spot facing, drilling and tapping threads for the purpose of mounting an aftermarket or modified ignition system. Additional carburetor pulse line fittings may be installed.

Additional mounting holes, not to exceed 10.00mm (0.40 in.) diameter, are allowed provided they do not penetrate the internal surface of the cases. Base gasket and intake surfaces may be machined.

External modifications to the crankcase finish (e.g., plating, polishing and/or painting) are allowed for cosmetic purposes only. No other external modifications or external repairs will be allowed.

9.5.3 Crankshaft assembly may be modified or aftermarket. Stroke and rod length may be changed.

9.5.4 Engine balancing assemblies may be modified, aftermarket, or removed.

9.5.5 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. Base gasket, head gasket and exhaust manifold gasket surfaces may be machined. Port heights, widths and shapes may be changed. Ports may be added or deleted from cylinder. Cylinders may be machined to accept aftermarket cylinder liners. Epoxy-type filler material may be added to hollow pockets in the base gasket areas and in the port area. Repairs to cracked or damaged cylinders may be made provided only one damaged area affecting one cylinder bank has been repaired. Cylinders may be machined to accept girdle-system cylinder heads. Water-cooling fittings may be added to cylinder. Exhaust power valve components and means of actuation may be modified or aftermarket.

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

9.5.7 Cylinder head may be modified or aftermarket.

9.5.8 Engine gaskets may be modified or aftermarket.

9.5.9 Exhaust system (i.e., manifold, head pipe, expansion chamber, waterbox, muffler(s), etc.) may be modified or aftermarket. Through-hull exhaust may be modified or aftermarket, providing a hazard is not created. Exit location of the exhaust gases may be relocated to the transom below the bond flange. No tuned portion of the exhaust system shall protrude outside the hull.

9.5.10 Cooling system may be modified or aftermarket. Aftermarket cooling lines and water bypass systems may be used. 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, solenoids, etc.). 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.

9.5.11 Replacement starter motor and bendix may be used.

9.5.12 Replacement engine mounts may be used.

9.5.13 Oil-injection system may be disconnected or removed.

9.5.14 Replacement of general maintenance parts (e.g., spark plugs, spark plug wires, spark plug caps, wiring, water hoses, fuel lines, clamps and fasteners) shall not be restricted to original equipment. Stripped threads can be repaired.

9.6 AIR/FUEL DELIVERY — FOUR-STROKE

9.6.1 The original fuel injectors may be modified to increase fuel-flow rate. Aftermarket fuel injectors that increase fuel flow are allowed provided they must not increase airflow into the combustion chamber. Fuel rail and fuel regulator may be modified or aftermarket. Additional fuel injectors may be added. Aftermarket fuel pumps are allowed provided that when the engine is shut off or stops, the fuel pump must automatically stop. No manually operated on/off fuel pumps are allowed. Highpressure fuel hose meeting SAE J30R9 must be used; only metal-type fuel filters may be used on the high-pressure portion of the system; all other in-line filters must be installed on the low-pressure portion of the system.

9.6.2 Flame arresters that meet USCG, UL-1111 or SAE J-1928 Marine standards must be used. Airflow sensor may be modified, aftermarket or removed. Ducting between the flame arrestor and throttle body may be modified or aftermarket.

9.6.3 Throttle body may be modified or aftermarket. The number of butterflies may be increased but may not exceed the number of cylinders. Intake manifold assembly may be modified or aftermarket.

9.6.4 Carburetor(s) may be modified or aftermarket provided they do not vent or spill fuel at any attitude with or without the engine running. Carburetors may be used in addition to or in place of the fuel-injection system. The number of venturis cannot exceed the number of cylinders. No slide-type carburetors. Aftermarket primer may be used. Intake manifold assembly may be modified or aftermarket. Aftermarket air-pulse-pressure operated fuel pumps may be used.

9.6.5 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 fuel tank shall not be restricted to the original equipment, as

supplied by the manufacturer, so long as the replacement is an unmodified tank from another homologated PWC and the tank fits securely in the watercraft without causing a hazard. Original equipment fuel filler and relief valve must be used and cannot be modified. The fuel pickup, fuel filter and fuel petcock may be removed and/or aftermarket 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.

9.7 AIR/FUEL DELIVERY — TWO-STROKE

9.7.1 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. Aftermarket primer may be used. Intake manifold assembly may be modified or aftermarket. Aftermarket crankcase pressure operated fuel pumps may be used.

9.7.2 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/offtype fuel pumps are allowed.

9.7.3 Aftermarket fuel-injection systems and components are allowed provided the following regulations are adhered to: Highpressure fuel hose meeting SAE J30R9 must be used; A.N. threaded-type fittings or equivalent and non-removable, crimped- type clamps must be used on the high-pressure portion of the system (i.e., hose clamps, tie wraps, etc. are not allowed); only metal-type fuel filters may be used on the high-pressure portion of the system; all other in-line filters must be installed on the low-pressure portion of the system. When the engine is shut off or stops, the fuel pump must automatically stop. No manually operated on/off-type fuel pumps are allowed.

9.7.4 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 fuel tank shall not be restricted to the original equipment, as supplied by the manufacturer, so long as the replacement is an unmodified tank from another homologated PWC and the tank fits securely in the watercraft without causing a hazard. Original equipment fuel filler and relief valve must be used and cannot be modified. The fuel pickup, fuel filter and fuel petcock may be removed and/or aftermarket 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. Aftermarket fuel tanks not coming from another homologated PWC may be allowed by the race director so long as it is demonstrated that the aftermarket fuel tanks meet or exceed the strengths and safety standards of an OEM fuel tank.

9.7.5 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 are allowed. Intake silencer may be removed. 8.5.6 Reed valve assemblies may be modified or aftermarket. Rotary valve may be modified or aftermarket.

9.8 IGNITION AND ELECTRONICS

9.8.1 Ignition system, electrical box, flywheel and flywheel cover may be modified or aftermarket. Battery charging circuit may be disabled and/or removed.

9.8.2 An additional battery and battery box may be used. Batteries must fit into a proper battery box and be securely fastened. Batteries may be relocated. 8.7.3 Engine temperature sensor assembly may be disconnected and/or removed.

9.9 TURBOCHARGER/SUPERCHARGER

9.9.1 Turbocharger housing must be of the full circulating, water-jacket type at all times when the engine is running. Aftermarket turbochargers and superchargers may be used provided a hazard is not created. Original turbocharger or supercharger may be modified. Aftermarket turbochargers and superchargers may be added to originally normally aspirated, four stroke, watercraft. All hoses and pipes may be modified or aftermarket. Where the Race Director, or Technical Inspector, cannot determine if a turbocharger is sufficiently water-jacketed then a heat wrap and/or additional cooling mechanisms may be added to ensure safety.

9.9.2 Intercooler may be modified or aftermarket.

9.9.3 Boost pressure-relief valve may be modified or aftermarket

9.9.4 Boost sensor may be modified or aftermarket.

9.10 DRIVELINE

9.10.1 Impeller, impeller housing, stator vane assembly, pump mounting plate and/or pump shoe 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. Aftermarket nozzle trim systems may be used. Additional cooling fittings may be installed. Visibility spout must be removed or plugged. Silicone adhesive sealant may be used in addition to original equipment seal to seal pump inlet.

9.11.2 Couplers, bearing housing and driveshaft may be modified or aftermarket provided they maintain a 1:1 drive ratio between the engine and the pump.