

## SKM.1 MODIFIED CLASS COMPETITION

Competitors in this class are allowed modifications to gain maximum machine and engine performance. This category of competition is intended to encourage intense aftermarket development to all aspects of Ski PWC. Watercraft competing in this class must conform to the specifications which follow. The Ski Modified Class is intended to place the Ski GP and Ski Superstock classed in a catch all category and to allow forced induction engines to obtain a larger displacement than in Ski GP.

NOTE: Due to the speeds and precision handling capable from Modified Class Ski PWC, it is highly recommended that all competitors must possess an Expert or Pro license prior to participating.

DISPLACEMENT: The maximum displacement for Ski equipped with Two Stroke engines is 1300 CC. The maximum displacement for Ski equipped with naturally aspirated Four Stroke engines is 1500 CC. The maximum displacement for Ski equipped with Four Stroke engines, and are also equipped with a supercharger or turbocharger, is 1100CC. If an engine displacement exceeds 1100cc, an aftermarket hull may not be used.

Forced Induction Four Stroke Engines with a displacement of 900cc or less must have an IJSBA approved device to release all boost pressure above 8 psi.

Forced Induction Four Stroke Engines with a displacement above 900cc must have an IJSBA approved device to release all boost pressure above 6 psi.

SKM.1.1 All watercraft must remain strictly stock, except where rules allow or require substitutions or modifications. Creating a Modified 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. 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.

SKM.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. (Refer to Model Homologation listing on page 10-12.)

SKM.1.3 Sound level shall not exceed 86 dB(a) at 22.86m (75 ft.). See Section 19.5 (pg. 78).

SKM.1.4 Engine fuel must consist of gasoline meeting the criteria defined in Section 19.4.3 (pg. 78).

## SKM.2 HULL

SKM.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.

SKM.2.2 The top deck may be modified or aftermarket, providing the following: The top deck must resemble the generic look of existing homologated Ski watercraft. The generic look may include legal aftermarket components which are integrated into the deck (i.e., rail caps and foot holds). The 2017-

2018 Kawasaki SX-R may not utilize an aftermarket top deck. All watercraft in the Ski Modified Class, regardless of displacement, may utilize an aftermarket hood.

Bulk heads may be aftermarket on Ski where an aftermarket hull is allowed (not for 2017-2018 Kawasaki SXR). Deck repairs may be made, provided they do not alter the standard configuration by more than 2.00mm (0.08 in.). Decks 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.)

If the watercraft is equipped with footwells, the footwells must be blocked off, during competition, allowing no indentation into the footwell sides.

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.

SKM.2.3 The hull may be modified or aftermarket but cannot exceed the length or width of the upper deck component of the bond flange as measured by a plumb bob (bumpers removed). Fins, rudders, skegs and other appendages that may create a hazard will not be allowed. The 2017 Kawasaki SX-R may not utilize an aftermarket hull.

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.

SKM.2.4 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 63.00mm (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.)

Sponsons may be attached to the inside of the bond flange, but no part of the sponson may extend more than 38.00mm (1.50 in.) below the lower part of the bond flange (bumper removed). Sponsons attached to the inside of the bond flange shall not protrude outside the bond flange (bumper removed) when measured in a level horizontal plane. 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.

SKM.2.5 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.

SKM.2.6 Pump cover plate may be modified or aftermarket. An extension may be added to the rear of the pump cover plate but shall not exceed the width of the original equipment plate. Modified and aftermarket plates must not extend more than 100.00mm (3.94 in.) beyond the end of the original equipment plate. 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.

SKM.2.7 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.

SKM.2.8 Replacement bumpers may be used provided a hazard is not created.

SKM.2.9 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.

SKM.2.10 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.

SKM.2.11 Ski Handlepole (and mounting bracket) may be modified or aftermarket provided it functions as originally designed. Handlepole attaching point may be reinforced.

SKM.2.12 Padding and/or mat kits may be added and custom painting is allowed. The surface finish of any metal component outside the hull area above the bond flange may be polished, shot peened or painted.

SKM.2.13 Original bilge pump may be modified or disconnected. Aftermarket bilge draining systems that do not create a hazard are allowed.

SKM.2.14 Engine compartment foam may be removed, modified or aftermarket.

SKM.2.15 Ballast weight may be added within the normally exposed areas of the hull to alter the handling of the watercraft provided a hazard is not created. Only weight consisting of constant mass (i.e., water or other fluid is not allowed) that does not require the modification or relocation of any parts will be allowed unless such modification or relocation is specified by other rules.

### SKM.3 ENGINE — TWO-STROKE

SKM.3.1 Engines may be bored. Aftermarket piston assemblies are allowed. Engine displacement must not exceed class designation. The number, type, and placement of rings on piston may be changed.

SKM.3.2 OEM crankcases may be interchanged between homologated watercraft of any OEM manufacturer. Internal modifications to the fuel, oil and/or water exposed surfaces are allowed. Bearing and seal surfaces may not be modified. Filler material may be added to hollow pockets in the base gasket areas. 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. Crankcase drain system may be removed or plugged. 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. Repairs to cracked or punctured crankcases may be made provided only one damaged area affecting one cylinder bank has been repaired. 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.

SKM.3.3 Cylinder and cylinder head may be modified or aftermarket.

SKM.3.4 Crankshaft assembly may be modified or aftermarket. Stroke and rod length may be changed.

SKM.3.5 Engine bed and motor mounts may be modified or aftermarket. Engine may be repositioned in the hull.

SKM.3.6 Engine gaskets may be modified or aftermarket.

SKM.3.7 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.

SKM.3.8 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.

SKM.3.9 Replacement starter motor and bendix may be used.

SKM.3.10 Oil-injection system may be disconnected or removed.

SKM.3.11 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.

#### SKM.4 AIR/FUEL DELIVERY — TWO-STROKE

SKM.4.1 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. Fuel fillers may be relocated internally.

SKM.4.2 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/off-type fuel pumps are allowed.

SKM.4.3 Aftermarket fuel-injection systems 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.

SKM.4.4 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.

SKM.4.5 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.

SKM.4.6 Reed valve assemblies may be modified or aftermarket. Rotary valve may be modified or aftermarket.

#### SKM.5 IGNITION AND ELECTRONICS — TWO-STROKE/FOUR-STROKE

SKM.5.1 Ignition system, electrical box, flywheel and flywheel cover may be modified or aftermarket. Battery charging circuit may be disabled and/or removed.

SKM.5.2 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.

SKM.5.3 Engine temperature sensor assembly may be disconnected and/or removed.

## SKM.6 ENGINE — FOUR-STROKE 1101 CC AND ABOVE

SKM.6.1 Engine blocks may be interchanged between homologated watercraft of any OEM manufacturer except in the case of the 2017 Kawasaki SX-R which must use the engine block furnished by the manufacturer. Original OEM engine blocks 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.

SKM.6.2 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.

SKM.6.3 Aftermarket valve train components are allowed, providing the original method of activation is maintained (e.g., if originally activated by a camshaft, they may not be 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.

SKM.6.4 Engines may be bored. Aftermarket piston assemblies are allowed. Engine displacement must not exceed class designation.

SKM.6.5 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.

SKM.6.6 Engine balancing assemblies may be modified, aftermarket, or removed.

SKM.6.7 Aftermarket connecting rods made of ferrous materials are allowed. Rod length may be changed.

SKM.6.8 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.

SKM.6.9 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.

SKM.6.10 Baffles in oil reservoir may be modified. The addition of baffles in oil reservoir is allowed. Oil pump may be modified or aftermarket.

SKM.6.11 Valve cover may be replaced for cosmetic purposes and/or weight reduction only.

SKM.6.12 Replacement starter motor and bendix may be used.

SKM.6.13 Replacement engine mounts may be used.

SKM.6.14 External modifications to the engine finish (e.g., plating, polishing and/or painting) are allowed for cosmetic purposes only.

SKM.6.15 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.

#### SKM.7 ENGINE — FOUR-STROKE 1100 CC AND LESS

SKM.7.1 Engine blocks may be interchanged between homologated watercraft of any OEM manufacturer so long as the displacement of the donor engine was 1100 or less as furnished by the manufacturer. Original OEM engine blocks 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.

SKM.7.2 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.

SKM.7.3 Aftermarket valve train components are allowed, providing the original method of activation is maintained (e.g., if originally activated by a camshaft, they may not be 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.

SKM.7.4 Engines may be bored. Aftermarket piston assemblies are allowed. Engine displacement must not exceed class designation

SKM.7.5 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.

SKM.7.6 Engine balancing assemblies may be modified, aftermarket, or removed.

SKM.7.7 Aftermarket connecting rods made of ferrous materials are allowed. Rod length may be changed.

SKM.7.8 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

SKM.7.9 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.

SKM.7.10 Baffles in oil reservoir may be modified. The addition of baffles in oil reservoir is allowed. Oil pump may be modified or aftermarket.

SKM.7.11 Valve cover may be replaced for cosmetic purposes and/or weight reduction only.

SKM.7.12 Replacement starter motor and bendix may be used.

SKM.7.13 Replacement engine mounts may be used.

SKM.7.14 External modifications to the engine finish (e.g., plating, polishing and/or painting) are allowed for cosmetic purposes only.

SKM.7.15 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.

#### SKM.8 AIR/FUEL DELIVERY — FOUR-STROKE

SKM.8.1 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. High-pressure 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.

SKM.8.2 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.

SKM.8.3 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.



SKM.8.4 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.

SKM.8.5 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. 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.

#### SKM.9 TURBOCHARGER/SUPERCHARGER

In the Ski Modified Class, a turbocharger or Supercharger may only be affixed to a Ski Watercraft with a displacement of 1100cc or less.

SKM.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 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.

SKM.9.2 Intercooler may be modified or aftermarket.

SKM.9.3 An IJSBA approved boost pressure-relief valve must be set to release all pressure above 8.00 PSI for engines with displacements 900cc or less and 6.00 PSI for engines with displacements above 900cc.

SKM.9.4 Boost sensor may be modified or aftermarket.

#### SKM.10 DRIVELINE

SKM.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.

SKM.10.2 Couplers, bearing housing and driveshaft may be modified or aftermarket provided they maintain a 1:1 drive ratio between the engine and the pump