

2021 Flathead Category Rules



We will follow WKA "4 Cycle Box Stock" Engine rules for all classes.

This class is "**NOT**" a Stock Appearing class.

- Approved Engines: Any 5hp Briggs and Stratton horizontal shaft base engine i.e. Raptor series.
- Only Classes:
Junior 3 (age 12-15) 300# Must run Gold restrictor .575" max i.d.
Senior Stock (age 15 & up) 350# No restrictor.
***Both classes must have rear bumper covering at least 1/2 of the two rear tires**
- **The use of a Raceceiver is mandatory for both classes**

* Restrictor plates found to be tampered with on the bore of the plate or over the max limit will be disqualified and the engine will be deemed illegal.

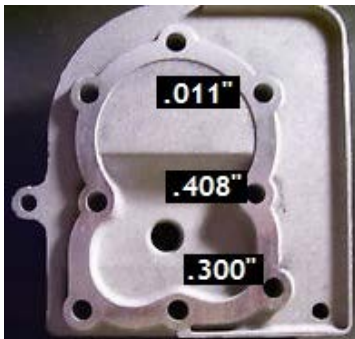
- Engine Components: OEM Briggs block and crankshaft only. Stock 5hp flywheel only! (No Billet or 3hp flywheel allowed). Aftermarket parts are permitted providing they meet WKA Box Stock Class rules. i.e. carb, camshaft, valve springs, lifters, pistons. Clarification can be seen below. All stock tins must be in place.
- Headers and Mufflers: All flathead classes MAY RUN OPEN OR MUFFLED PIPE. All pipes must meet WKA length and size requirements found in the WKA tech manual. No loop pipes or custom pipes. Exhaust pipe MAY NOT PROTRUDE inside of the exhaust port. No tech I.D. of pipe. Pipe length must extend beyond fuel tank and not extend past rear bumper of kart. No "Slippy" pipes. Mufflers must have all baffles in place and maximum baffle hole of .1285" max flange width is .312"
- Fuel: Gasoline no greater than 94 octane sold at Canadian roadside fuel stations open to the public. No E85 Flex Fuel permitted. —or— Clear Methanol Only. The addition of fuel additives is not permitted in either Gasoline or Methanol.

- Valve train: Stock or stock length billet lifters only, no modifications allowed. No extended lifters. Max length of lifter is 1.606". Lifter head diameter minimum .982" max 1.005". Stock style retainer only. (Aluminum retainers with valve locks not permitted). No double valve springs. Aftermarket OEM style valve springs are allowed. Valve springs wire diameter .088"-.093". Inside diameter of spring .625" minimum .640" maximum. Upper retainers may be used up to .058" thick. Valve seats must meet stock specs. Seats must have one angle only. 30° intake and 45° exhaust. Seats may not protrude above deck surface. Intake seat inside diameter 1.004" max. Exhaust seat inside diameter .880" max.
- Block: Briggs block only! Stock bore is 2.5625" and overbore is permitted providing it does not exceed 2.620" (approximately +.050 overbore). No nicasil or plating allowed. Machining of deck surface is permitted Piston pop-up CANNOT exceed a maximum of .005" above the block surface. Carbon buildup that cannot be wiped off will be considered part of the piston for tech measurement. Decking of block not to extend into the aluminum at rear of block (top of fin). No welding on blocks above the cooling fins. Block may be chamfered for lifters .500" max dia. Spring pockets may be cut for proper spring heights. Porting of the exhaust and intake are allowed. (no addition of material to ports, no grinding on underside of valve seat) The port gasket surfaces may not be altered / machined and must be of stock location. No holes in port. Intake port size: .880" Max diameter Exhaust port size: 1.005" Max diameter. No port reducers allowed.
- Crankshaft: Stock Briggs crankshaft required. Machining, polishing, addition of material or other alteration of crankshaft is prohibited. Stock factory timing gear mandatory and must be installed in original location. Crankshaft journal diameter is .990". Offset crankshafts are not permitted. Stroker crankshafts are not permitted. No billet crankshafts. Crankshaft stroke is 2.4370"+.007/-0.10 for wear.
- Connecting Rod: Stock connecting rod or approved billet connecting rod only. No grinding or polishing of the rod. Stock rod oil hole opening is .185" max. Stock rod length is 3.120" min., 3.1333" maximum. Measured from bottom of wrist pin to top of crankshaft journal. Approved aftermarket connecting rods listed below:

701.23.3 APPROVED RODS:

ARC Rod Part #6328, # 6330, #6348, # 6350; CKI Part #3875; Horstman Rod Part #H-498100, #H-4981401, #498105; Rix Rockets/Ebert Part #3.875; WMS Rod Part # 7070, Part # 7575 are the only approved aftermarket rods legal for stock classes. No polishing of rods allowed. Steel 0.250" rod bolts only. Minimum total rod weight 135 grams. Minimum rod weight less insert 113 grams. Minimum insert weight 22 grams.

- Piston: Stock Briggs and Stratton or aftermarket piston meeting stock Briggs specifications are allowed. Wrist pin may not be relocated and stock wrist pin only. From top of piston to wrist pin bore .937" min. Must run all piston rings. Maximum oversize +.050"
- Flywheel and Ignition: Briggs and Stratton factory stock coils are mandatory and must be used in unaltered form. No slotting of mounting bores permitted. Only stock 5HP flywheel is permitted. Painting or coating of flywheel is not allowed. No machining or lightening of flywheel is allowed. Flywheel washer must be stock.
- Carburetor: Cast Briggs Pulsa-Jet carb only. No bowl carbs, fun carbs or stock appearing. Blueprinted carbs are permitted providing they are blueprinted for box stock class. Max carb bore inside dimension is 0.695" NO-GO for entire length of carb bore. Diaphragm side CANNOT be used to create a pressure fuel feed diaphragm side of carb parts are to remain as factory. Diaphragm cover may be surfaced for a proper seal. Jets must have the stock recess on backside, jet size is non tech. No flat back Jets allowed. No recessing, funneling or oblonging any holes permitted from front or back of the jet. No dimpling or swirl cutting venturi or carb bore. No drilling of any holes anywhere in carburetor to enhance extra flow. Main metering hole max .062" idle metering hole .028" checked with NO-GO. Where butterfly meets with throttle shaft it shall not exceed a minimum dimension .059". Butterfly screw cannot be altered. Offset throttle shafts are allowed providing they meet WKA requirements. Throttle shaft and hole location may not be moved in the body. Diameter of carb recess from flange to throttle bore is .726" maximum for its entire length and must remain stock as cast. Maximum air horn dimension is 1.011". Max I.D. of short pickup tube is .066". Aftermarket filter and filter adapter are permitted. Carburetor dimensions to be checked with go/no go gauge.
- Cylinder Head: Stock head bolts only. Stock Briggs single or 3 tab heads allowed as well as Burriss Racing BSF-301-00. Machining gasket surface as well as top bosses are allowed. No machining of any other portion of the head allowed. No relocation of spark plug hole, must remain in stock location. Three planes of the cylinder head are subject to check by depth gauge. See picture for minimum depths and their locations. Cylinder head bolt holes .3480" max. OEM and aftermarket head gaskets of general stock design and pattern are acceptable. No aluminum or copper gaskets and no sealer. Minimum thickness on head gasket is .043"



- **Camshaft:** Stock or aftermarket camshafts are allowed providing they meet the following WKA box stock profile requirements shown below taken with zero lash.

701.16.1 CAMSHAFT PROFILE LIMITS

Intake Lift	Degrees
0.050"	7° BTDC to 0° TDC
0.100"	10° ATDC to 17° ATDC
0.150"	29° ATDC to 36° ATDC
0.200"	55° ATDC to 64° ATDC
MAX	Max. lift is 0.233"
0.200"	43° BBDC to 36° BBDC
0.150"	13° BBDC to 6° BBDC

Exhaust Lift	Degrees
0.050"	38°BBDC to 33° BBDC
0.100"	21° BBDC to 16° BBDC
0.150"	2° BBDC to 3° ABDC
0.200"	21° ABDC to 31°ABDC
MAX	Max. lift is 0.233"
0.200"	76° BTDC to 65° BTDC
0.150"	48° BTDC to 40° BTDC
0.100"	28° BTDC to 21° BTDC
0.050"	10° BTDC to 4° BTDC

EZ-SPIN START: 45° to 60° ABDC

EZ-SPIN LIFT BASE: 0.013" minimum, 0.019" maximum width, 0.001" maximum drop during the 30" duration time.

Example: If EZ-Spin starts at 0.015", it may drop to 0.014" and move around between 0.014" and 0.015", but not go above 0.015". **Second example:** if EZ-Spin starts at 0.015" and rises to 0.016", it may move around between 0.015" and 0.016" but not fall below 0.015". AT NO TIME CAN THE EZ-SPIN OR THE 0.001" TRAVEL GO ABOVE 0.019" OR BELOW 0.013".

NOTE: All cam profile readings must be taken with zero (0) valve lash. When checking cam profile, rotate engine in the normal running direction only. Valves should have no clearance and no spring tension when checked.

- **Starter:** Old or New style pull starter may be used. Electric Starter also permitted. Must have starter nut and factory starter cup or starter clutch removed.
- **Clutch:** Open to any centrifugal drum or dry disc clutch.

Please note that these rules are general guidelines. If you are chosen for tech, please do so without confrontation. Refusing tech will result in you being suspended for the next 2 complete race events (rain outs do not count toward the suspension). If any confrontation is given you will forfeit your finish and point for the day. If chosen, please take kart directly to the designated tech area where there will be a track official to watch your equipment. No work may be performed on kart at this time. Driver/owner of kart being teched and tech official only permitted in the tech area during tech sessions. It is not the responsibility of the tech inspector to reassemble engine post tech. If you are deemed illegal you will be given "one week" to correct any illegal findings. First offence you will forfeit your finish and points for the day. Second offence forfeits finish and points and will not be permitted to race next scheduled race day (rain outs do not count towards the suspension). Third offence to be determined by track owner. Any issues that are questionable will be discussed by the tech inspector and track owner and decision will be made in the best interest of both parties.