

# Stateline Karts 2019 Flathead Class Rules

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

This class is "NOT" a Stock Appearing class.

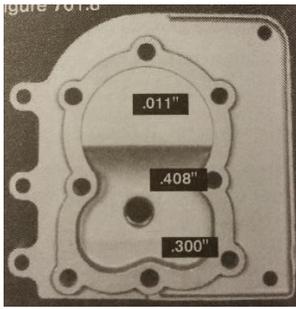
- Approved Engines: Any 5hp Briggs and Stratton horizontal shaft base engine i.e. Raptor series.
- Classes:  
Purple Flathead (age 6-10) 225# Must run purple restrictor .425" max i.d. (Full rear bumper mandatory)  
Blue Flathead (age 10-12) 275# Must run blue restrictor .500" max i.d. (Full rear bumper mandatory)  
Gold Flathead (age 12-15) 300# Must run gold restrictor .575" max i.d. (Full rear bumper mandatory)  
Sr. Flathead Light (age 15 & up) 350# No restrictor.  
Sr. Flathead Heavy (age 15 & up) 400# No restrictor.

\*Note that the track has the right to make changes to weights and class structure as needed to keep the classes competitive and kart count up. Also for restricted classes and 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 flywheels allowed). Aftermarket parts are permitted providing they meet WKA Box Stock Class rules. I.e. carb, camshaft, valve springs, lifters, pistons. Clarifications can be seen below. All Stock tins must be in place.
- Headers and mufflers: All Flathead classes are required to run a muffled pipe. All pipes must meet WKA length and size requirements found in the WKA tech manual. Exhaust pipe MAY NOT PROTRUDE inside of the exhaust port. No tech on 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: Clear Methanol only!! No additives or top lube.
- Carburetor: Cast Briggs Pulsa-Jet carb only. No bowl carbs or 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 and 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.

- **Head:** Stock head bolts only. Stock Briggs single or 3 tab heads allowed as well as Burris 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 of head gasket is .043"



- **Camshafts:** 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 33° BBDC |
| 0.150"      | 13° BBDC TO 8° BBDC  |
| 0.100"      | 6° ABDC TO 13° ABDC  |
| 0.050"      | 23° ABDC TO 31° ABDC |

| EXHAUST LIFT  | DEGREES              |
|---------------|----------------------|
| 0.050"        | 38° BBDC TO 33° BBDC |
| 0.100"        | 21° BBDC TO 18° BBDC |
| 0.150"        | 21° 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.

**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"  $\pm .007/-0.010$  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-498101, #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 holes 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.
- 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 disk clutch.

Please note that these rules are general guidelines to our box stock Flathead class structure and all other WKA box stock engine rules will apply. If you are chosen for tech please do so without confrontation. If any confrontation is given you will forfeit your finish and points for the day. All tech sessions will be held at end of the race 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. It is asked that you drain your engine oil at this location and remove engine from kart if it passes visual inspection of

clutch/pipe firsthand. Proper tech will resume from this point. Driver/owner of kart being teched and tech official only permitted in the tech area during tech sessions. It is not the responsibility of 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 offense forfeits finish and points and will not be permitted to race next scheduled race day. Third offense 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. If you have any questions or concerns about the above rules please contact Matt Field 814-490-4465 after 6:00pm or Mark Matthews 814-664-3760.