

AFT SuperTwins motorcycles must meet the following requirements in addition to the applicable requirements in General Equipment Standards. ~~Twin-cylinder motorcycles must maintain the traditional appearance of a flat track twin-cylinder motorcycle. AMA Pro Racing will make sole determination if any machine does not meet these criteria.~~ All other modifications are unrestricted.

4.1 Engine Eligibility

- ~~a. Only 4-stroke twin-cylinder engines with prior, written approval by AMA Pro Racing are eligible for competition in AFT SuperTwins. This includes both production engines designed for street motorcycles and racing-only engines.~~
- a. Engines submitted for homologation approval in AFT SuperTwins must originate from production 4-stroke twin-cylinder street motorcycles. If an engine's displacement is outside the class displacement limits in its original production form, it can still be submitted for homologation approval. Once approved, the engine must not exceed the class displacement limits when used in competition. Modifications to the engine's bore and stroke are allowed to ensure it meets these displacement limits.
- b. AMA Pro Racing will only review applications for homologation from motorcycle manufacturers or their distributors or designated representatives.
- c. To be considered for homologation approval, production motorcycles utilizing the engine platform must have had a minimum of 400 units available through U.S. dealers.
- d. Once a motorcycle has been approved, it may be used until such time that it no longer complies with the technical rules.
- e. Compliance with homologation requirements will not guarantee AMA Pro Racing approval. Homologation may be withheld or withdrawn for any reason AMA Pro Racing deems in the best interest of Flat Track competition.

b.f. The original engine crank cases or OEM replacements must be utilized to qualify as a production engine.

e.g. All engines approved for competition will appear on the Approved Twins Engine List on the AMA Pro Racing website.

4.2 Engines

- a. Engine Displacement
 - i. Minimum 649cc ~~with the following restrictions on maximum displacement:~~
 - ~~1. Production (Street Bike) Engines~~
 - ii. Liquid-cooled engines may not exceed 800cc.
 - iii. Air-cooled engines may not exceed 900cc.
 - iv. Bore and stroke may be modified to meet the maximum displacement limits listed above.
 - ~~1. Racing-only Engines:~~
 - ~~a. Liquid-cooled racing-only engines may not exceed 750cc. There is no provision for overbore.~~
 - ~~b. Air-cooled racing-only engines may not exceed 750cc with a maximum allowable overbore of 0.045" per cylinder.~~
- b. To prohibit the practice of "twingling" a twin, any modification of engine components to alter the stock OEM firing order/spacing of cylinders is prohibited.
- c. Substitute Parts
 - i. In the case where aftermarket parts are available that represent a substantial financial saving over stock parts, substitutes may be allowed.

- ii. Allowed substitute parts must be mechanically identical to the homologated parts they replace as it pertains to fitment with associated assemblies.
- iii. Substitute parts must be readily available and approved in advance by AMA Pro Racing.
- iv. Approved substitute parts will appear on the Allowed Substitutes List posted on the AMA Pro Racing website.
- d. Cylinder Head, Valves, Springs and Retainers
 - 1. Material and castings must be the same as on the homologated model. Material may be added or removed from these components.
 - 2. Cylinder head and cylinder head gasket surface may be machined.
 - 3. Intake and exhaust ports may be modified.
 - 4. Valves and valve seats may be modified or replaced. Valve springs, valve spring retainers, guides and keepers may be modified or replaced. The original number of valves must be maintained.
 - 5. Valves must remain in the same location and at the same included angle as the homologated model.**
 - ~~5.6.~~ Production engines that have cylinder heads unsuitable for racing may petition AMA Pro Racing for acceptable alternative cylinder heads. Approved alternative cylinder heads will be published to the Approved Substitutes List on AMA Pro Racing's website.
- e. Camshafts and Sprockets
 - i. The original camshafts may be modified or replaced. Camshaft duration and lift is unrestricted.
 - ii. The original cam chain and sprockets may be modified or replaced.
 - iii. The original cam chain tensioner may be modified or replaced.
- f. Cylinders
 - i. Cylinder liners or coating may be replaced or added, provided that the original casting is utilized.
- g. Crankcase
 - i. Material and casting must be the same as on the homologated model.
 - ii. Material may be added or removed.
- h. Crankshaft
 - i. The original crankshaft may be modified or replaced.
- i. Connecting Rod/ Piston/ Piston Rings, Pins and Clips
 - i. May be modified or replaced.
- j. Oil Pump/ Water Pump
 - i. May be modified or replaced.
 - ii. Oil and water lines may be replaced. Braided steel with proper AN connections are recommended in any pressure application.
- k. Clutch Basket/ Clutch Hubs/ Clutch Plates
 - i. May be modified or replaced.
 - ii. Back torque limiting clutches (slipper style) are strongly recommended.
- l. Transmission and Primary Drive
 - i. Primary drive style must remain as homologated except that chain or belt drive may be interchanged.
 - ii. Primary drive must be completely enclosed by a cover or guard.
 - iii. A maximum of six gears is allowed in the gearbox. There is no minimum requirement for number of gears installed.
 - iv. Motorcycles must be driven by rear-wheel-transmitted power only.
- m. Flywheel

- i. External flywheel / crank position trigger wheel may be limited to specific dimensions. In such a case, model specific requirements will be posted via Technical Bulletin.
- ~~ii. Standard Indian flywheel (p.n. 1205794) must be fitted to all FTR750 machines with optional weight ring and associated mounting bolts removed. No additional mass may be added or removed. The standard flywheel cannot be modified in any way.~~

4.3 Engine Control System/Electronics/Traction Control

- a. The Engine Control Unit (ECU) that comes on the homologated motorcycle or engine may be used.
- b. The use of non-standard/aftermarket ECUs must be approved in writing by AMA Pro Racing. Approved non-standard/aftermarket ECUs will be listed on the Approved Engine Controller List on the AMA Pro Racing website.

c. ~~Wheel speed sensors are prohibited.~~

d. ~~Original equipment transmission or countershaft speed sensors are permitted.~~

e. ~~Suspension stroke sensors are prohibited.~~

e.f. The software in ECUs may only be modified to affect spark and fuel table control, as well as data logging.

d.g. AMA Pro Racing reserves the right to download and inspect ECU information from any competitor at any time. Teams are required to provide ~~any and all~~ available~~necessary~~ download cables and operating software upon request.

~~e. Production (Street Bike) Engines:~~

~~i. Wheel, transmission or countershaft speed, chassis attitude or location sensors that provide information to the ECU are permitted.~~

~~f. Race-Only Engines:~~

~~i. Vehicle speed, chassis dynamic or location sensors to include but not limited to wheel, transmission, countershaft speeds, GPS or other sensors that provide information to the ECU to facilitate any means of electronic control of engine output or brake systems are prohibited.~~

~~ii. Race-Only Engines will be limited to a maximum of 11,500 R.P.M. Multiple methods can be utilized to gather and confirm compliance with R.P.M. limitations, including but not limited to downloading and analyzing a machine's on-board ECM data, downloading and analyzing a machine's on-board data logger's recorded data or distributing an event-specific standalone data logger to be installed by the respective teams and returned at the conclusion of the event. In the event of AFT issued logger, model specific requirements will be posted via Technical Bulletin.~~

4.4 Intake Manifolds, Carburetors, Fuel Injection and Restrictors

a. Intake Manifolds

- i. Engines may be equipped with a maximum of one carburetor per cylinder.
- ii. Manifolding between cylinder intakes is not allowed unless equipped on the original engine.
- iii. In the case of restrictors being mandated, no manifolding will be allowed.

b. Throttle Body Specifications:

i. Carb/Throttle Body Maximum Inner Diameter: 40mm

~~1. Production Engines: 40mm~~

~~2. Race-only engines: 38mm*~~

~~ii. *Race-only engines will be required to utilize AMA Pro Racing issued intake restrictors with a circular I.D. of 34mm at all events.~~

iii.ii. Issued restrictors or their location cannot be modified in any way. Model-specific information will be posted via Technical Bulletin to illustrate restrictor dimensions, location and any additional requirements.

~~iv-iii. Production (Street Bike) Engines:~~ Any type of electronic throttle control or fly-by-wire, secondary throttle plates or other such induction controlling devices are permitted.

~~v. Race-Only Engines: in all cases, any type of electronic throttle control or fly-by-wire, secondary throttle plates or other such induction controlling devices are prohibited. The rider must have uninterrupted mechanical connection via traditional cables from handlebar to the induction components.~~

vi-iv. Throttle body assemblies include all attached parts with the exception of fasteners, cables, cable actuating pulleys and associated linkages, flexible fuel lines, vacuum lines, airbox tube connections, velocity stacks and sensors.

vii-v. For enforcement purposes, a measurable max bore diameter choke point must be located within the throttle body itself. Other than an injector relief located within a choke point, no part of this continual cross section can exceed the maximum inner diameter. This measuring area can be located anywhere within the throttle body.

c. Fuel Injection

- i. OEM fuel-injected engines may be changed to carburetion.
- ii. OEM carbureted bikes may be changed to fuel injection.
- iii. Fuel injector type, number and location may be changed.

d. Restrictors

- i. AMA Pro Racing reserves the right to mandate restrictors as needed to maintain competitive balance. Restrictors can be mandated at any time.
- ii. Failure to run a restrictor when requested by AMA Pro Racing may result in fines, starting on the back of the grid, loss of championship points, etc.
- iii. In the case where AMA Pro Racing imposes restrictors for competitive balancing and the throttle body and/or manifold diameter is inadequately configured to accommodate a traditional restrictor, AMA Pro Racing will consult with the manufacture and / or team to determine a suitable configuration for an approved restrictor between the cylinder head and throttle body.

4.5 Exhaust System

- a. Exhaust pipes and mufflers must be used and be securely attached together and bolted to the frame. Mufflers must have sound absorption mechanisms or packed baffling.
- b. The discharge end of the exhaust pipe may not extend beyond the rear edge of the rear tire. For safety reasons, the exposed edge(s) of the exhaust pipe outlet(s) must be rounded to eliminate any sharp edges.
- c. The inside of the exhaust discharge end must be a maximum of five inches from the outside edge of the tire or frame in order to prevent another rider's wheel or leg from becoming trapped.

4.6 Frame and Swingarm

- a. Cracked or broken frames are not permitted.
- b. All stands must be removed.
- c. Frames must be constructed of steel or aluminum.
- d. Engine mount location, steering head, swingarm pivot point and rear suspension pick up points are not regulated.
- e. Fork stops must be installed of sufficient size and strength to prevent fork tubes or other components from contacting the fuel tank in a crash.
- f. Swingarms may be constructed of aluminum or steel.

- g. Frames should be constructed to allow ballast to be secured in a positive fashion as needed to meet weight limits.
- h. Frames and swingarms must be constructed with safety as the overriding concern. AMA Pro Racing reserves the right to make the final determination in that regard.

4.7 Forks and Shocks

- a. Any commercially available inner and outer fork tubes and axle lugs may be used. Modifications are permitted. All other fork parts may be modified.
- b. A steering damper may be installed; however, it may not be used as a steering lock limiting device.
- c. Steering stems should preferably be made of a ferrous material (i.e. steel) or stainless steel. It is the responsibility of the team and rider to fit a steering stem of adequate design and strength for the intended usage.
- d. Any rear damper may be used:
 - i. Single or dual shocks are permitted
 - ii. Linkages are permitted.

4.8 Brakes

- a. Aluminum or titanium rear brake discs are prohibited.
- b. In Mile, Half Mile, and Short Track races, all motorcycles must be equipped with adequate and operating rear wheel brakes. Operating front wheel brakes are not allowed.
- c. In TT races, all motorcycles must be equipped with adequate and operating front and rear wheel brakes.
- d. Foot-operated, solid, non-folding brake levers must be rubber-covered.

4.9 Wheels

- a. All Flat Track motorcycles must use 19-inch diameter wheels, front and rear.
- b. Maximum wheel rim width is 3.5 inches, as measured at the inside, bead to bead.
- c. AFT SuperTwins may use wheels constructed of carbon fiber. Carbon fiber wheels must be approved by AMA Pro Racing prior to use.
- d. Wheel axles must be ferrous metal (i.e. steel) or stainless steel. Titanium or aluminum is not permitted.
- e. Maximum rear wheel weight must not exceed: 43 lbs.
 - ~~i. Race-only engines (Rim & Tire Only, see g.):~~
 - ~~1. ST, HM & Miles: 28 lbs.~~
 - ~~2. TTs: 31 lbs. when an inner tube is utilized.~~
 - ~~ii. All other machines (Wheel Assembly, see h.): 43 lbs.~~
- f. Wheels will be weighed as they come off the racetrack. Removal of dirt and track debris is permitted.
- ~~g. Race-only machines: Rim and tire only will be weighed. Rear wheels will be weighed after removing the rear rotor, sprocket, rotor and sprocket nuts and axle spacers. The maximum diameter of the rear rotor is 11.75 inches. Rear brake rotors must be designed to mount to the central hub. Perimeter or rim mounted rotors are not permitted. The rear braking system must be designed and function solely as a rear brake. AMA Pro Racing will make final determination if the rear brake design and function meets these criteria.~~
- ~~h.g. Production-based machines:~~ Rear wheel assemblies will be weighed. A wheel assembly consists of a tire, a single standard inner tube, approved rim tape or tube protector (located between rim and tube), rim, spokes, hub, wheel spacers, rotor, sprocket (and associated fasteners), and whatever minimum weight is required to balance the wheel assembly.

i-h. The minimum amount of balancing wheel weights must be located in a single radial position for the sole purpose of legitimate static wheel balancing. AMA Pro Racing will make the final determination if any component or affixed balancing weights meet these criteria.

j-i. Wheel designs that offer securely mounted weight options may be submitted to AMA Pro Racing for evaluation and pre-approval. Unapproved ballasted wheels used at any AFT event may be subject to penalty. A list of approved wheels can be found at amaproracing.com.

k-j. Wheels may not be solid (spokeless) in design or have any material attached to closeout spokes when viewed from the side of the motorcycle.

4.10 Footrests

- a. Both footrests must fold backward to a 45-degree angle.
- b. The top of the right footrest may be serrated.
- c. A rubber encased foot peg must be fitted on the left side of the motorcycle.
- d. The edge of both footrests must be covered with at least 0.25-inch of rubber or soft plastic (not tape) and must present no cutting hazard.
- e. The maximum length of the footrest from the pivot point is five inches.
- f. Shift lever ends must be rubber covered.

4.11 Handlebar and Controls

- a. Cracked or broken handlebars are prohibited.
- b. Handlebars, hand controls and cables are unrestricted.
- c. Handlebar crossbars and / or exposed top triple clamp components must be covered with a safety pad.
- d. Control levers must have minimum 0.25-inch diameter ball ends.
- e. At TT events, front brake lever guards are mandatory.
- f. Bar ends must be covered with a grip or fitted with a plug so as not to present a cutting hazard.
- g. Motorcycles must be equipped with a functional ignition cut-off switch or button, mounted on the handlebar and within reach of the rider's hand when placed on the grip. Momentary-off style switches are recommended and preferred.
- h. Additional original equipment or aftermarket switches are permitted to be located on the handlebar.
- i. Throttles must be self-closing. If the original throttle bodies or carburetors came with a push/pull dual cable arrangement, it must be utilized.

4.12 Fuel Tanks

- a. The use of a secondary fuel cell is strictly prohibited.
- b. Fuel tank vent lines must have a device which prevents the escape of gasoline, i.e. a one-way valve.
- c. On carbureted machines, fuel shut off valves must be installed between the tank and carbs.
- d. Tip over switches are highly recommended on fuel injected machines.
- e. Shut-off valves are required on all fuel lines coming from the fuel tank, except for fuel-injected models not originally equipped with shut-off valves.

4.13 Weight Limit

- e-a. Minimum bike weight: 310 lbs.