



**FPVWRA**  
FPV WING RACING ASSOCIATION

2018 FPVWRA Rulebook

[www.FPVWRA.net](http://www.FPVWRA.net)

## The “Spirit of Racing” Clause

We are just a show. We’re here to have fun. Rules may get bent, wings will break, so just relax and enjoy yourself. If you’re reading line by line and searching for a 1/10th of a second lap time improvement, you’re going to have a bad time. Safety is our number one priority, safety violations because something looks “fun” will ruin your day.

This rulebook is broken up into 2 main sections. Classes and Regulations.

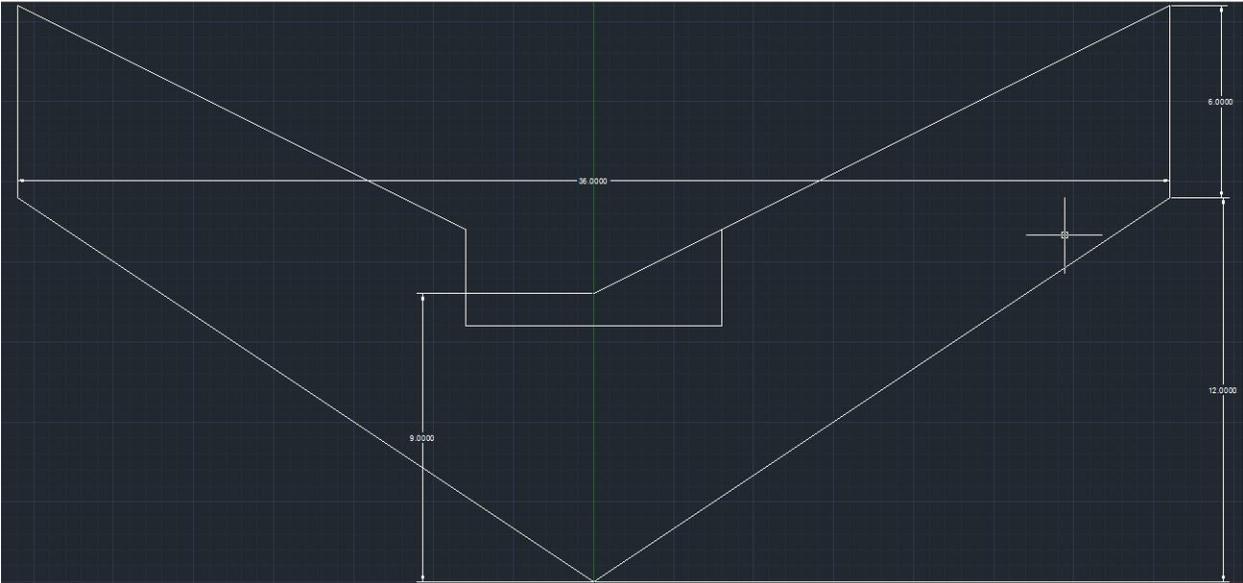
\*\*\*The FPVWRA reserves the right to randomly tech inspect any and all aircraft involved in competition.

\*\*\*Additions or modifications to this rulebook are at the discretion of FPWRA rule making Officials and will be modified by Annex when changes are made during a race season.

\*\*\*VTX power and RC control frequencies stated may not be legal in your country. Chapter Organizers and Race Directors outside the United States should place power limits and control frequency restrictions based on their Country's Communications Regulations.

# Wing Classes

## SPEC WING CLASS



**Wingspan:** 36" +/- 1/2" **Does not include winglets**

**Airfoil:** NACA 0014

**Wing sweep:** 12" +/- 1/2"

**Chord:** central-9", tip - 6" +/- 1/2" (includes elevons)

**Root Cord Thickness:** 1.5" +/- 1/4"

**Tip Cord Thickness:** 1" +/- 1/4"

**Elevons:** balsa or foam

**Material:** EPP, EPS, EPO, fan fold foam, or foam board (Foam board should be formed to airfoil requirements)

**Motor:** Cobra CP-2210 2200kv Motor or Turnigy D2826-6 2200kv Motor (*temporary addition until more suitable addition is found or pilots vote in October to keep in the line up*)

**Battery:** 3s 2200 (Max Charge 4.2V per Cell)

**VTX:** 200 mW 5.8GHz w/ Raceband

**Vertical stabilizers:** Winglets ONLY (new for 2018 season)

**Winglets:** ABS, Coroplast, or foam

**Servos and ESC:** pilot's choice

**Prop:** APC 6X4

**Spars:** manufacturers choice not less than 1/2" behind leading edge.

**Flight Controller:** FC/gyros are not permitted

**Spirit of Spec-Wing Racing:** All airframes will be competitively equal in order to provide an even competition base for all Pilots.

\*\*\*\* ALL Spec-Wing airframes should conform to the Spirit of Spec-Wing Racing.  
\*\*\*\* ALL Spec-Wings are subject to prerace and postrace inspections. (See Spec inspection process)

## SPORT WING CLASS

**Airframe:** Flying wing or delta wing (pods allowed)

**Wingspan:** 33.5-43.5inch from tip to tip (850-1105mm)

**Construction:** Foam construction only ie: EPP (or similar), EPS, EPO, Fan Fold Foam, or Foam board. Fiberglass and carbon spars permitted not less than one half inch behind leading edge. Vinyl/laminate are the only materials allowed for wrapping/cover the airframe, Fiberglass, Carbon Fiber or similar materials are not permitted.

Pods, blunt sections, and fuselages may be foam or solid plastic construction.

**Power systems:**

**Battery:** 4 cell Lipo, Lipo HV, or Graphine (maximum 4.25 volts per cell max)

**Motor:** Pusher configuration only, Multiple motors allowed

**Control System:**

**Control Surfaces:** 2 movable control surfaces

**Radio Control Frequency:** 72MHz, 2.4GHz, 433MHz, and 900MHz control systems allowed

**Flight Controller:** FC/gyros are not permitted

**VTX:** 200 mW 5.8GHz w/ Raceband

**Must be able to race for a minimum of 4 minutes.**

## MINI CLASS

**Airframe:** Any fixed wing configuration allowed, including canards and tractor props

**Wingspan:** 31.5inch (800mm) or less

**Maximum power:** 300 Watts

**Maximum cell count:** 4 cell

**Flight controller/stabilizer:** Permitted

**VTX:** 200 mW 5.8GHz w/ Raceband

**Must be able to race for a minimum of 4 minutes.**

## UNLIMITED CLASS

**Wingspan:** Up to 72inch (1830mm)

**Maximum weight:** 7.5lbs (3.4Kg)

**Construction:** Foam construction only ie: EPP (or similar), EPS, EPO, Fan Fold Foam, or Foam board, Fiberglass and carbon spars permitted not less than one half inch behind leading edge.

Vinyl/laminate are the only materials allowed for wrapping/covering the airframe, Fiberglass, Carbon Fiber or similar materials are not permitted. Pods, blunt sections, and fuselages may be foam or solid plastic construction.

**Battery:** No Maximum cell count

**Motor/power system:** No Limitations on power

**VTX:** 200 mW 5.8GHz w/ Raceband

**Must be able to race for a minimum of 4 minutes.**

## Novice Class

**Airframe:** Any fixed wing configuration allowed, including canards and tractor props

**Wingspan:** No Limit

**Construction:** Foam construction only ie: EPP (or similar), EPS, EPO, Fan Fold Foam, or Foam board. Fiberglass and carbon spars permitted not less than one half inch behind leading edge. Vinyl/laminate are the only materials allowed for wrapping/cover the airframe, Fiberglass, Carbon Fiber or similar materials are not permitted. Pods, blunt sections, and fuselages may be foam or solid plastic construction.

**Maximum power:** No Limit

**Maximum cell count:** 4 cell (LIPO only)

**Maximum Weight:** 4lbs

**Radio Control Frequency:** 72MHz, 2.4GHz, 433MHz, and 900MHz control systems allowed

**Flight controller/stabilizer:** Permitted

**VTX:** 200 mW 5.8GHz w/ Raceband

\*Novice Class is intended to be a beginner only class. The Class' intent is to allow anyone who has never raced in an FPVWRA event the opportunity to get try racing without building an aircraft that fits into any specific class. It is up to the Event/Race Director to manage the pilots in this class. Our Recommendation is anyone who participates in any of the Regulated Classes on a regular basis should not race in the Novice class. Event/Race directors have discretion to allow anyone to participate in an effort to place as many pilots in the Novice class races as possible.

# Rules and Regulations

## OFFICIALS

Judges will utilize FPV Goggles or video screens

The pilot may opt to have the official call out missed gates/flags during the race

Judges say is FINAL. No arguing with the judge, but a DVR review may be requested.

## RACE SAFETY

At NO TIME are pilots permitted to fly beyond the designated flight boundary

Pilots MAY NOT power up their aircraft at any time during a race unless it has the strict approval of the race director. Powering up without approval will result in disqualification.

Reckless or dangerous flying is not permitted. A damaged aircraft may be forced to land at the option of the race director.

In the event of a video loss, the pilot must reduce throttle to zero and attempt to keep the aircraft away from event boundaries

Aircraft may be powered up ONLY between races, with a proper dummy load in the designated area.

## RACE METHOD

A flight boundary (not necessarily a flight line) shall be established in which no pilot shall cross during the race.

The track shall be designed so that pilots racing will not make turns toward the flight boundary area without a significant safe distance.

All racers must have control of their aircraft at all times.

In the event of a video or control failure, the pilot will do their best to navigate the airplane to a safe landing zone away from pilots and spectators.

The race director may at his or her discretion force an unsafe pilot to land their aircraft. Landing shall be done in the specified landing area which shall be away from the pilot ground stations and spectators.

When the race is over, the pilots will land in the designated landing area.

In the event of a fire, the race shall be cancelled immediately. All pilots shall either land or fly safely away from the fire so that emergency crews can put out the fire.

Races shall be started from a 10 second count down with all wings flying. At the end of the countdown, the race begins.

Pilots may launch their own airplane or have a designated launcher. You are permitted one failed launch per race provided your airplane needs no repairs and can be re-launched immediately.

At NO time are pilots permitted to fly past the flight boundary

At the end of the race pilots must land quickly in the designated landing area only

A 3 second penalty will be assessed for each flagged turn missed

A 10 second penalty will be assessed for pilots missing a flight gate

Maneuvers such as split-S and Immelmann maneuvers are MANDATORY. Missing one of these maneuvers constitutes a 10 second penalty or a lap disqualification.

Each pilot is expected to present themselves in a respectful manner toward other pilots and spectators. Failure to do so may result in disqualification.

Start/Finish gates are MANDATORY.

**Points:**

Qualifying points shall be assigned as follows:

1st – 10pts

2nd – 7pts

3rd – 5 pts

4th – 3pts

5th – 2pts

6th – 1 pt

The accumulation of points will determine the final races.

## TECH PROCEDURE

**XT-60 IS NOW THE MANDATED POWER CONNECTOR FOR SPEC AND MINI. All other classes the pilot must provide an adapter.**

Aircraft is measured against known wingspan specifications.

Power on radio at throttle full

Power on aircraft

Bring throttle to zero (calibrating ESC)

Check that battery is 4v per cell or more

Bring motor speed to idle Turn off radio.

If prop stops then failsafe is set and pilot will be cleared to fly.

## SPEC WING INSPECTION

Tech Procedure for battery and failsafe will be applied.

Prop will be visually verified to be the specified 6x4 APC Style propeller.

Motor will be visually verified to be the specified Cobra CP-2210 2200kv Motor.

Battery will be visually verified as the required 2200mah 3 Cell Lipo and also verified to be charged to a maximum of 4.2V via a cell checking device or battery charger. FPVWRA "SPEC APPROVED" Decal must be applied to all airframes, and will be visually identified. (Aircraft purchased prior to December 1, 2017, any DIY airframe or airframes not displaying the "SPEC APPROVED" Decal will be verified to be within FPVWRA Spec-Wing specifications by use of Official FPVWRA Spec-Wing templates/gauges. This process is meant to be ran quickly and is expected to take not more than 2 minutes per aircraft). "SPEC APPROVED" Decal will be included in all FPVWRA approved kits shipped after December 1, 2017, Kits approved at FPVWRA officiated events will receive the "SPEC APPROVED" Decal at that time. Airframes inspected at Chapter officiated events will not receive "SPEC APPROVED" Decals and will be required to clear inspection when competing in event where FPVWRA Officials are present. Chapters will have the same gauges on hand and there should be no reason for an Airframe to fail inspection when passing through the FPVWRA inspection station. This provides the FPVWRA positive control and distribution of the "SPEC APPROVED" Decal.

Modifications beyond those required as normal for installing batteries, servos, ESC or radio and video gear are not permitted and any questionable airframe will be subject to full inspection regardless of display of "SPEC APPROVED" Decal.

## STARTING THE RACE

Races shall be started either by bungee assisted launch (when available), teammate launch or by timed start (also known as "Sail Boat Start"). A re-launch for a failed launch will be granted ONLY in the timed start races so long as the airplane can be re-launched immediately after a brief inspection. Launching shall be done away from the pilots and away from the flight line except in a bungee assisted start. In the timed start, a loud verbal countdown shall begin after all planes are up and flying. The clock starts and the race begins when the countdown reaches zero. False starts shall be assessed a 3 second penalty when timing systems are used, if no timing system is available either a 1 lap penalty is assessed or pilot must turn around and pass through the start/finish gate a second time; the race director may use their discretion as to which of the two penalty options is used but must make it clear during pilot briefing which option they will use.

## FLYING THE COURSE

### **DVR recording:**

DVR recordings shall be made for EACH heat. It shall be up to the event organizer to record DVR footage. If the organizer is not capable of providing DVR recordings, DVR recording shall fall on the pilots. Pilots may opt to have a spotter or a separate ground station DVR their heat. PLEASE CHECK WITH THE EVENT ORGANIZER TO SEE IF THEY WILL PROVIDE DVR RECORDING For qualifying races, DVR petition for review shall be submitted no later than 30 minutes after the heat has ended.

For championship races, no standings will be made official until DVR is reviewed and verified.

### **Spotters**

Pilots shall be required to be spotters of the race immediately following their race (eg, Heat 1 spots for Heat 2, Last Heat spots for Heat 1 etc). This requires all pilots to be present once racing commences.

Spotters shall watch in FPV form, either under goggles or a monitor.

Racing pilots are required to have gear available for spotters if standard 5.8GHz channels are not used. It is the duty of the spotter to tell the pilot when a flag or a gate is missed and to call out laps LOUDLY.

### **Timing System**

For any points race, a timing system shall be used. This system should be provided by the event organizer.

- FPVWRA will provide both DVR and Timing Systems when present as the Officiating Crew.

## WTT WING RACING QUALIFIERS

One of the ways to qualify for the championship race is to have a top competitive time on the WTC racetrack. Times are recorded as the fastest completion of 3 consecutive laps. DVR or HD footage must be submitted to the FPVWRA for review to qualify. In your recording, it must be clearly visible that all flags, gates, and turns were made properly. Missing a flag or a gate disqualifies that lap. Any

airplane can be used to qualify via WTC track. This includes but is not limited to: flying wings, dual boom pushers, tractor propellers, and canards.

To qualify for WTC standings it is required that an un-edited video of the 3 fastest laps as well as the results from a timing system be submitted to the WRA.

## REGIONAL QUALIFIERS

Another way to qualify is to win a regional qualifying race sanctioned by the FPVWRA. In these races, the top ranked pilots will be qualified for the National championship. In the event that a race is won by an individual whom is already qualified, that person's position will not count against the other pilots and the position will be handed to the next ranked pilot in line.

## PENALTIES

In the regional qualifiers penalties are assessed for missing flags and gates. The standard penalty for missing a flag is 3 seconds. The standard penalty for missing a gate is 10 seconds. False Starts will be assessed a 20 second penalty. With the exception of the False Start, these penalties are subject to change at the discretion of the race director.

\*\*\*This rule book is a guide and does not and cannot cover all possible scenarios. It is up to the race officials and directors to apply common sense and fair practices for scenarios that present themselves but are not covered under any specific rule herein. When in doubt the Spirit of Competition should be applied. ie. Did the competitor gain an unfair advantage? Apply appropriate level of penalty.

# **Rule Changes Voted by FPVWRA Registered Pilots:**

**For the 2018 competition season, the following changes were put to vote and FPVWRA Members decided the following:**

- 1. Watt Limit- Result: Watt limit is removed from Sport Class**
- 2. Flight Controllers/Gyros- Result: Banned from Sport Class 3. Spec Class Battery Type- Graphine and High Voltage (HV) packs banned from Spec Class**

**Spec Airframe Vertical Surfaces- Result: Winglets only**

**ANNEX:**

Mid-Season rule changes should be annotated here.

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