



Scale Jet

20kg full & Unlimited

TOP GUN - Europe Master Competition Rules

Introduction

Scale Jet Competition is open to all scale jet pilots worldwide, flying any type of Scale Radio Controlled Jet Model Aircraft.

Definition of a Radio Controlled Scale Jet Model Aircraft

A model aircraft, but not a helicopter, which uses turbine jet(s), turbo prop jet(s) or ducted fan(s) as the propulsion source(s) and which is aerodynamically maneuvered by control surface(s) in attitude, direction, and altitude by a pilot on the ground using radio control.

- Variable thrust direction of the propulsion device(s) is permitted.
- Turbo prop model aircrafts are permitted (Tucano, PC21, Siai Marchetti SF260, etc).

1 - General Regulations

1.1 Competitors

- All Competitors must be member of WJA (World Jet Association)
- There is no limit's number of competitors per each country
- There will be two (2) weight classes: 20 kg and Unlimited
- The competitor does NOT have to be the builder of the model
- Pilots are allowed to enter the competition in more than one class, but flying different Jet Model Aircrafts
- Every competitor of TOP GUN Europe Master (any class) has the right to take part at the final individual freestyle round, with any type of sport or scale Radio Controlled Aerobatic Jet Model Aircraft

1.2 General Characteristics of a R/C Scale Jet Model Aircraft

The R/C Scale Jet Model Aircraft shall use as a propulsion device turbo jet/s or ducted fan/s. Ducted fans may use turbo jet engines or electric motors as a power source. Rocket or pulse jet engines may NOT be used.

Maximum overall wingspan: no restrictions

Maximum overall length: no restrictions

Maximum take-off weight with fuel (or with battery if EDF): no restrictions *

Maximum thrust of turbine: no restrictions*

Electric Motors power source max. no load voltage 72 volts *

Noise limits: no restrictions*

* limits for the competition area of the event must be followed and must be submitted to the competitors (for example: Italy or Germany have a maximum take-off weight 25 Kg)

The propulsion device(s) must automatically shut-off (EDF) or fully idle (turbo jet) at the moment an R/C signal failure occurs.

1.2.1 Scale Jet Model Aircraft classes

Two (2) official R/C Scale Jet Model Aircraft Classes have been established, determined by weight limit:

- **20 kg Class**: for jet models with a ready to fly max weight of 20 kg, with tank full or propulsion batteries for EDF models included, with 1% weight tolerance.
- **Unlimited Class**: no restriction of ready to fly take-off weight **

** models over the limits for the competition area (Italy is 25 Kg) must have a valid and official certification (for example with a German certification an L-39 XXL with 60 kg take-off weight is permitted)

An identical scoring system will be used for both classes and the competition will have two independent final results and winners.

No contestant is allowed to enter the same jet model in more than one class.

1.3 Radio Equipment

Radio equipment shall be of the open loop type.

Permitted:

1. Control rate devices that are manually switched by the pilot.
2. Any type of button or lever, switch, or dial control that is initiated or activated and terminated by the competitor.
3. Manually operated switches or programmable options to couple and mix control functions.
4. The use of electronic stability augmentation devices or gyros with or without speed related automatic gain control derived from a GPS signal.
5. The transmission of information from the model aircraft to the pilot on the ground.

Not permitted:

1. Snap roll buttons with automatic timing mode.
2. Pre-programming devices to automatically perform a series of commands, except for landing gear function.
3. Automatic flight path guidance.
4. Any type of voice recognition system.
5. Any type of learning function involving maneuver to maneuver or flight to flight analysis.

1.4 Number of helpers

During the flying part of the contest, each contestant is permitted a maximum of two (2) helpers/assistants in the 'Starting Area' and only one (1) 'caller' in front of the 'Safety line' during scoring.

No helper/assistant may touch the transmitter after the contestant has announced take-off.

2 - The competition

2.1 Number of Flights

Each competitor Team is entitled to fly three (3) preliminary rounds, plus the final flight (if placed in best 5 after preliminary flights and static score).

Competitors have the right to the same number flights. Only completed rounds will be counted. Only when all competitors in the preliminary and final rounds, have had the opportunity to complete the same number of rounds, can the results of the rain-interrupted (or other delay) competition be determined.

2.2 Definition of an Attempt

There is an attempt when the competitor is given permission to start.

If the propulsion device fails after the model aircraft becomes airborne, the attempt will be deemed complete.

2.2.1 Number of Attempts

Each competitor entitled to one attempt for each official flight.

Note: An attempt can be repeated at the contest director's discretion only when any unforeseen reason beyond the control of the competitor, causes the model aircraft to fail to start (if there is radio interference or other technical problems).

Similarly, in a flight that is interrupted by any circumstance beyond the control of the competitor, the competitor is entitled to a re-flight, with the entire schedule being flown and judged, but only the affected maneuver and the unscored maneuvers that follow will be tabulated.

2.2.2 Definition of an Official Flight

There is an official flight when an attempt is made whatever the result.

2.3 Classification TOP GUN Europe Master – scale 20kg & Unlimited class

- a) The sum of the two (2) best preliminary scores, normalized scores to 1000 points (max 2000 points), plus the static score normalized to 1000 points (max 1000 points), to determine the preliminary ranking (max 3000 points)
- b) The top five (5) of the preliminary ranking of each class (2 best flights + static) enter the finals
- c) The finalists of each class fly one (1) more final flight
- e) The final ranking of the finalists for each scale class will be determined by:
 - best preliminary flight normalized score (max 1000 points)
 - + static normalized score (max 1000 points)
 - + final flight normalized score (max 1000 points)

2.4 Organization of the contest

Only spread spectrum 2.4 ghz radio control systems are allowed.

- a) The order of the first flight will be done by a draw.
- b) The order of the Static judging will be done by a draw.
- c) The Static judging begin after the first flight is completed.
- d) For flights two and three of the preliminary rounds the flight order will start 1/3, and 2/3 down the flight order respectively.

- e) The order of the final flight will be done by a draw.

Competitors must be called by a flight line official at least five (5) minutes before they are required to occupy the starting area.

The competitor and his helper(s) then occupy the starting area so that a radio check can be performed to verify the correct functioning of the radio control equipment.

For electric powered models, the electric power circuit(s) must not be physically connected, before the starting time is begun and must be physically disconnected immediately after landing.

The competitor may not start his model aircraft unless he has been instructed by a flight line official to do so.

During the flight, the pilots and helper/caller must stay in the designated position in front of the judges and under the supervision of the flight line director.

2.5 Official Flight judging / marking

- a) For each competition (flight and static) there must be a minimum of three (3), and a maximum of five (5) judges, plus one timer.
- b) Each judge has to assess maneuvers and any other relevant action of the competitor individually and independently from the other judges.
- c) Each maneuver may be awarded marks by each of the judges during the flight. Every maneuver starts with the mark of 10 points and will be downgraded for each defect during the execution of the maneuver in multiples of one(1) point steps, depending on the severity of the defect.
- d) The judges shall be seated not more than 10m, and not less than 7m behind the competitor's position. The judges must be seated abreast, usually separated by 2m, with scribes or score secretaries separating them.
- e) If a model aircraft is, in the opinion of the judges, unsafe or being flown in an unsafe or inappropriate manner, they may bring this to the attention of the flight line director, who may instruct the pilot to land.
- f) The individual maneuver scores given by each judge for each competitor must be made public at the end of each flight of competition.

2.6 flight & static rules

- a) No parts of a model may be exchanged, removed, added or repositioned between Static and Flying judging (except for fuel, pitot tubes).
- b) Bombs, tanks, missiles, other ordnance, external parts, that are presented attached to the aircraft during the first flight round must remain on the model during other rounds and Static judging.
- c) No parts may be dropped, and rockets may not be jettisoned during flight, or taxiing maneuvers.

- d) Parts of the propulsion system, or airframe, that are damaged during the contest may be repaired or replaced with similar parts.
- e) If any part unintentionally comes off the R/C scale jet model aircraft during flight (that was attached to the aircraft at the start of the contest flight) the scoring stops and the contestant must land immediately. The points awarded for the maneuvers that were completed before the part loss will stand. 'Overall Realism' points will still be awarded, in proportion to the amount of the flight completed.
- f) The model should be presented for static judging in normal flying configuration with landing gear in the down position.
- g) Only in the final judged part of the Static, switching ON the radio system, the following devices may demonstrated to the judges (if available):
 - control surfaces, flaps, slats, etc.
 - all other aerodynamic devices like speed brakes, spoilers, wings swept, etc.
 - opening canopies, tail hook, Ram air turbine, emergency generators, etc.
 - Lighting system

3 - Static judging

3.1 Proof of Scale

- Proof of scale is the responsibility of the contestant.
- The name and type designation of the aircraft shall be indicated on the entry form, on the Competitor declaration sheet.

3.2 Scale Documentation

Prior the Static Judging, the documentation will have preliminary check. The documentation for the static judges must have:

- (a) Three identical copies of an accurate published 3-view (minimum, though all six views are recommended) scale drawing of the full-size aero plane having a minimum scale of 1/72, and a maximum scale of 1/24. Unpublished drawings by the contestant or other draughtsman are only acceptable if they are certified in writing as accurate in advance of the contest, by an authoritative source, the builder of the original aircraft, or other competent authority.
- (b) At least three differing photographs, or published printed reproductions, of the full-size aircraft, including at least one of the actual subject aircraft being modelled. At least one of these must show the prototype aircraft on the ground to allow the landing gear assembly to be judged.
- (c) For proof of color, if one or more of the photographs in (b), of the actual subject modelled, is not in color, then a published colored drawing is acceptable, or a published printed description of the color scheme (for example those from specialist scale model publications). Alternatively, authenticated written description and/or authenticated color chips are acceptable.

- (d) Photographs must be considered to be more important than 3-views, and will take precedence over three-view drawings for verifying scale outlines.
- (e) If the contestant presents only partial documentation, the static score points will be awarded in proportion to the documentation supplied.
- (f) If the contestant presents no documentation at all, the static judging cannot be performed, and the static score will be zero.
- (g) Documentation format: A4 size, landscape with hinge on long side (calendar format)

Scale Accuracy - side views: 1 side view drawing minimum (left and right hand side drawings preferred), 1 photograph of each side minimum (*)

Scale Accuracy - front and rear view: 1 end view drawing minimum (front and rear view drawings preferred), 1 photograph of front and 1 photograph of rear minimum (*)

Scale Accuracy - top and bottom view: 1 plan view drawing minimum (top and bottom view drawings preferred), 1 photograph of top and 1 photograph of bottom minimum (*)

Color: should be proved by as direct a method as is feasible for the subject modelled. A maximum of 8 colors may be presented for judging consisting of one color chip or one photograph per color. This may be by 8 color chips or 8 color photographs or by a combination of color chips and photographs totaling 8 items.

Markings: A maximum of 8 photographs (**) may be included

Surface Texture: A maximum of 8 photographs (**) may be included

Scale Details: A maximum of 10 photographs (**) may be included

(*) These photographs should show the full size aircraft as close as possible to the required view. As long as they are close to right angles, they will be acceptable.

(**) Maximum size 10 x 15 cm (4 x 6 inches)

3.3 Static judging of 'Fidelity to Scale and Craftsmanship'

- | | |
|---|--------|
| a) Scale Accuracy - side views | K = 10 |
| b) Scale Accuracy - front and rear view | K = 10 |
| c) Scale Accuracy - top and bottom view | K = 10 |
| d) Colors Accuracy | K = 5 |
| e) Markings Accuracy & complexity | K = 5 |
| f) Surface Texture & complexity | K = 5 |
| g) Scale Detail Accuracy & complexity | K = 5 |
| h) Devices operation demonstration | K = 10 |

Important notes:

- The model should be placed on a turntable that is adjustable in height and there should be a matte white background.
- A maximum of 3 people belonging to the team of the contestant (and including the contestant) are allowed in front of each of the judging tables.
- A maximum of 25 minutes is to be spent on the static judging of every model.
- Part a), b) and c) must be judged at a minimum distance of five (5) meters. Judging time is approximately 10 minutes.
- Part d), e), f) and g) are to be judged afterwards as close as the judges desire (including touching). Judging time is approximately 10 minutes.
- **Part h) the competitor can switch ON the radio system and demonstrate to static judges all remote working devices, as per rule 2.5 g). Judging time is approximately 5 minutes, that is part of the 25 minutes of the total static judging time.**
- The Judges may ask the contestants questions about the model and the full-size original.
- Each part shall be awarded points from 0-10 in half (0,5) points increments by each judge and these points shall then be multiplied by the K factor. The scores of all static judges will be added together to give the total static points.

3.3.1 Normalization of Static and Flight Scores

After static judging is completed, the points are normalized to 1000 as follow:

$$P_x = (S_x / S_w) \times 1000$$

P_x: score awarded by judges

S_x: score of competitor X

S_w: top score (winner)

Same for each flight round, if completed.

4 - Flying judging**4.1 Official Flights**

The official flight commences at the earliest of the following:

- a) The contestant signals to the timekeeper that he is commencing to start his engine(s).
- b) Maximum five (5) minutes after the contestant has been given permission to start.
- c) An official flight is scored and will count towards the final classification at the moment the model leaves the ground.
- d) In each flight, only one attempt is allowed for each maneuver after the start of the maneuver has been called.
- e) The total maximum flight time is 10 minutes. It starts from take-off start and a stop it stops at completion of maneuver 'Circuit, Approach and Landing' and the model comes to a complete stop.

- f) No points will be awarded for any maneuver that is not completed at the end of the time allowed. 'Overall Realism' points will be awarded, in proportion to the amount of the flight completed.

4.2 Flight Schedule

Each flight round must include two (2) mandatory maneuvers and six (6) optional maneuvers.

Take-off (mandatory)	K= 10
Option 1	K= 10
Option 2	K= 10
Option 3	K= 20
Option 4	K= 20
Option 5	K= 30
Option 6	K= 30
Circuit, approach and landing (mandatory)	K= 20
Overall Realism	K= 10

Important notes:

- The competitor must prepare the scoring sheets with the selected flight schedule for all the rounds and for all the judges before the start of the first round
- No change of the selected maneuvers is allowed after the start of the first round
- The selected flight schedule of the competitor must be the same for the whole competition (preliminary rounds and finals)
- The optional maneuvers must be selected from the WJA maneuvers list*
- WJA maneuvers list* contains 3 groups of maneuvers (K factor 1, K factor 2, K factor 3)
- Competitors may select any combination of optional maneuvers, and will be rewarded for performing maneuvers of higher K factor.
- All mandatory and optional maneuvers are to be judged independently by each judge
- All flying maneuvers must be judged while having in mind the performance of the full size prototype
- At end of the flight the judges will award points for Overall Realism
- **Overall realism: it considers smoothness, speed, flight presentation and if the selected maneuvers are matching the original prototype flight.**
- Taxiing to the runway is considered to be a maneuver and is included in the judgement of Overall Realism
- Taxiing back from landing is not judged.

*See the WJA separate rule book for full maneuvers diagrams and judging details.