

F4J 'SCALE JET' Class

(January 2000 revision)

<h2>F4J Rules</h2>

CONTEST CLASSES

1.0.1 Individual and Open Classes.

From the beginning of 2000 there will be two official F4J contest classes, as follows:

- (a) Individual Scale, for pilots who build & fly their own model and comply with rule 2.0.2.
- (b) Open Scale, for pilots alone - or a team of 2 (pilot and builder), where the pilot does not have to be the constructor of all, or any part of the model, and has not complied with Rule 2.0.2.
- (c) (Rule deleted)
- (d) (Rule deleted)
- (e) The same scoring system will apply to Open scale entries as to Individual competitors. Apart from rule 1.0.1, the Open event will be held to the same rules and flown at the same time as the Individual contest.

1.0.2 Number of Competitors.

In a Jet World Masters, or European Masters, each country is permitted a maximum of 6 entries in the competition. There will be complete freedom of choice for each country in respect of the distribution of the number of entries between the two classes. i.e. a country may enter six Individual and no Open classes through to no Individual and six Open or any combination falling between these two extremes.

1.0.3 Nationality of Competitors.

- (a) All competitors (including members of an Open entry) must be from the country/nation they are representing, and passports or other ID may be required as proof of this by the Contest Director, or the IJMC. If persons wish to compete for national teams other than the country of their citizenship then the following rules (b) to (e) will apply:
- (b) They must apply in writing to the IJMC Council for permission.
- (c) They must have resided for two years in the country in whose team they wish to compete and must provide the IJMC with documentary proof of the period of residence.
- (d) They must obtain the agreement of the team organisers to their membership of that country's team.
- (e) On returning to their country of citizenship an individual will immediately qualify for consideration for membership of that country's team, without the need for a period of residency. The IJMC has to be informed in writing of such changes in circumstances.

GENERAL REGULATIONS

2.0.1 Definition of 'Jet' models eligible for F4J contests.

- (a) The competitors model shall be a replica (copy) of: A heavier-than-air, fixed-wing, man carrying aircraft that was built and flew successfully, and was powered only by 'jet' propulsion. *(ie: This includes full-size ducted-fans)*
- (b) Competitors models shall be powered solely by ducted-fan and/or gas-turbine engine(s). All other forms of propulsion are forbidden.

2.0.2 Builder of Model rule.

(a) Competitors Declaration.

The competitor must have constructed, finished and detailed the model, and a signed declaration will be required by the organisers to this effect, prior to the commencement of the contest.

Competitors in the "Individual" Class will be required to declare all commercial items or finished assemblies that are incorporated in their model. Such commercial items could include, but not be limited to: moulded surface components, scale undercarriage assemblies, retracting undercarriage mechanisms, wheel braking systems, engine ducting, etc.

Competitors will not be required to declare radio control equipment, engines and fuel systems. These declarations will be published at the place of the contest, before the start of the contest.. *(There will be no additional bonus for scratch-built or own-design models.)*

(b) Competitors' Assessment of Compliance with the Builder of the Model Rule

All competitors will be required to complete a form on which they can anonymously address their belief that the entrants in "Individual" Class have or have not complied with the Builder of the Model Rule and that lists of declared commercial items are complete.

The forms will be uniquely numbered but the individual identity of the competitors completing the forms will not be known.

The forms will be submitted to the Contest Director by the end of the second day of the competition.

(c) Examination of Cases of Doubt in respect of the Builder of the Model Rule

An examining board of six IJMC members will investigate a maximum of six competitors who have attracted the most doubt in respect of compliance with the Builder of the Model Rule.

The examining board will comprise a representative from each nation that has an entrant under investigation. If there are less than six competitors under investigation the examining board numbers will be made up to six by IJMC members elected by the competitors.

(d) Transfer of Competitors to the "Open Class"

If the examining board finds that there is reasonable doubt that any competitor is not complying with the Builder of the Model Rule then the competitor will be transferred to the Open Class. The examining boards decision to transfer, or otherwise, any competitor to the Open Class will be final and not subject to the established protest procedure.

If a competitor does not agree with the examining boards' decision then the competitor will be removed from the competition.

2.0.3 General Characteristics.

Max. weight of model at takeoff (incl. fuel)	20 kg
Wing-loading	no restrictions.
Max. surface area.....	no restrictions.
Motive power	no restrictions.

2.0.4 Competition Programme.

- (a) The competition shall be divided into **two** scoring parts: Static judging & Flying judging. The final score shall be the total points awarded in all parts, calculated as per section 6. The ratios of maximum points possible shall be made up as follows:
- Static points: **50%**. Flying points: **50%**

2.0.5 Judges.

- (a) The organiser(s) shall appoint three static judges, who shall determine the degree of fidelity to scale and craftsmanship, and at least three flight judges. (**5 or 6 judges, according to the number of Flight-lines**, for European or World Masters -see Section 5). In the case of a World Masters, the IJMC will determine who the judges will be, and will inform the organisers of the approved persons.
- If the organisers have provided two Flight-lines a total of six flying judges would be required, three on each flight-line.**
- If the organisers have provided one Flight-line a total of five flying judges would be required.**
- (b) No person(s) may act as judges at a Jet WM., or European Masters, if there are any competitors in the contest who are members of their immediate family.
- (c) As soon as practical after each contest flight, the points awarded will be made available to the competitors for inspection, allowing sufficient time for them to adjust their manoeuvre schedules for the next contest flight if they should wish to do so.
- (d) Competitors are not permitted to discuss their scores with judges during the contest (except to accept guidance on the rectification of faults), except as provided in "Protests".
- (e) During static ('fidelity to scale and craftsmanship') judging, any prior or special knowledge of the prototype possessed by a judge shall be discounted, and the model shall be assessed solely on the documentation submitted by the competitor.
- (f) During static judging the judges are to totally disregard all internal parts of the ductwork and propulsion system which are contained within the model.
- (g) The 'Flying' and 'Static' judges may not harmonise the scores awarded to competitors.

2.0.6 Coefficients.

Where a coefficient (K) is stated, the points awarded shall be multiplied by the coefficient to give the total scores for that section. Fractions, in tenths of a point, may be used in determining static points, but flying points (**reference to noise points deleted**) shall only be judged to the nearest $\frac{1}{2}$ point.

2.0.7 Remarks.

- (a) All models shall become airborne in the manner of their prototype, except as in (b).
- (b) Models of seaplanes are permitted to use wheels or wheeled dollies for take-off, in the absence of suitable water surface conditions. Deviation from scale, through inclusion of permanently attached wheels, skids or similar non-prototype devices in the model structures shall, in this case, not be taken into consideration in scoring of 'fidelity to scale' points.

- (c) No parts of a model may be exchanged, removed, added or repositioned between flying and static judging, except for fuel, receiver antennas, and forward-facing pitot tubes or other devices that the flying judges or Contest Director consider could be dangerous in the event of an accident. Bombs, drop tanks, missiles, other ordnance, external parts etc., that are presented attached to the aircraft during static judging must remain on the model for the take-off of every contest flight.
- (d) Parts of the propulsion system, or airframe, that are damaged during the contest may be repaired or replaced with similar parts, and this may result in the model being weighed again, to ensure that it still complies with rule 2.0.3. The competitor must advise the CD before any further contest flights are made if any parts of the model are replaced, repaired or exchanged during the contest, which may increase the total weight of the model, or affect other regulations.
- (e) The engines of all models must be effectively silenced. The silencing system should be engineered within the confines of the outline of the model. External silencers or engines, or parts thereof, will result in down marking in the static judging section, unless these are scale representations of those on the full-size prototype. The Contest Director retains the right to prohibit excessively noisy models from taking part in the contest.
- (f) No explosive devices may be dropped or activated, and rockets, or any other explosive devices may not be jettisoned during flight, or taxiing manoeuvres.
- (g) **Parts loss during flight.**
If any part unintentionally separates from (comes off) the aircraft during flight (that was attached to the aircraft at the start of the contest flight), then the scoring stops and the competitor must land immediately. The points awarded from previously completed manoeuvres will still be awarded. If a part separates from the aircraft during one of the 8 mandatory and optional scoring manoeuvres, then no points will be awarded for this manoeuvre. However, 'Realism in Flight' points will still be awarded, in proportion to the amount of the flight completed.

2.0.8 Number of Models.

Each competitor, (reference to Team to be deleted), may enter the contest with one model only.

2.0.9 Number of Helpers.

Each competitor (pilot) is permitted a maximum of two helpers/assistants during the flying part of the contest, both in the 'Starting Area', and in front of the 'Safety/No-Score' line. However the CD may, at his discretion, allow additional helpers/assistants, particularly in the case of multi-engined or gas-turbine powered models, for safety reasons. No helper/assistant may touch the transmitter (except during starting of the engine(s) and other preparation), after the commencement of taxiing for the start of the official flight(s). The official timekeeper is responsible for ensuring that helpers do not touch the transmitter during flight. If this occurs the whole flight is scored zero.

2.0.10 Radio Equipment.

There shall be no limitations on the radio or mechanical equipment used by the competitor (e.g. Gyros are permitted). All R/C equipment must comply with statutory regulations of the country that event is being held in, and transmit on an approved frequency in that country.

2.0.11 Safety for WM contests.

- (a) All R/C transmitters expected to be used during the contest must be checked by the organisers, prior to the contest, to ensure that they are transmitting on the stated frequency, and placed in a secure compound under constant observation and security by the organisers, or their officials.

During the contest an official steward must be in control of the transmitter compound and will issue the transmitter to the competitor only when his name is called for him to stand by to make his flight. As soon as the flight/attempt has ended, the competitor's transmitter must be returned to the transmitter compound immediately.

- (b) Any unauthorised transmission during the contest will result in automatic disqualification of the offender from the contest, and render him liable to further penalties.
- (c) During the whole time of the official flight the pilot, with his transmitter, must stay on the ground within the area reserved for this purpose. The competitor will be notified if the model is flying outside the permitted area.

2.0.12 Starting order.

- (a) The starting order of the competitors will be established by means of a draw before the contest. However, the flying will be opened (if they are taking part in the competition) by the Previous Individual Jet Worldmaster flying first, followed by the Previous Open Class Worldmaster. The rest of the starting order will be as established by the draw. The static judging and first round of contest flying will take place in ascending numerical order (1, 2, 3...etc.).
- (b) **Flying before Static Judging**
Competitors will fly the first round and on completion of the flight the model will be subjected to static judging. Sufficient time (one hour) will be allowed from the time of completing the flight to attending static judging. Models must be presented in the same condition for static judging as they were at the moment of take-off.(except as allowed under rule 2.0.7 c)
- (c) **Order of Flying**
The flying order of the second round will be the same as that of the first round. The final round will be flown according to points achieved in the pilot's best scoring round, the lowest scoring model flying first and the leading model last.

2.0.13 Protests.

- (a) Only Competitors, or Team Leaders, may submit a protest.
- (b) All protests must be made in writing, and handed to the Contest Director with a protest fee, which shall be the same amount as the competitors entry fee. This protest fee shall be held by the IJMC Chairman (or other Council member) during the term of the protest.
- (c) As soon as possible after receiving a protest the CD will organise and appoint an 'Arbitration Tribunal', which will consist of 3 persons:
 - A representative of the event organiser/host association,
 - A member of the IJMC Council (or an IJMC rep. as voted by the IJMC Council if all Council members have an 'interest' in the protest result),
 - A representative of the competitors, who will be elected by a vote of all pilots at the briefing before the contest begins.
- (d) The CD shall ensure that the Tribunal reaches a decision within 12 hours of any protest being made, and before any final results are released, or prizegiving commences.
- (e) No other person(s) shall be present at the arbitration discussions, excepting for the protester, the competitor being protested against, and any language translators required.
- (f) The Tribunal will first hear from the Protester, and afterwards may request a response from the Competitor being protested against, if necessary.

- (g) If the arbitration panel upholds the protest (in favour of the protester) then the protest fee will be returned to the protester in full. If the arbitration panel does not find in favour of the protester, then the protest fee will be retained by the IJMC.
- (h) The Arbitration Tribunal's decision is final, and cannot be appealed against.
- (i) No protests may be submitted later than 3 hours after the last competitors official flight.
- (j) In the event of any disputes or protests regarding translations of these rules into other languages, the 'English' version shall be the definitive version.

2.0.14 Weather Conditions

In the case of bad weather conditions (e.g.: rain, snow, strong winds or wind direction changes, etc.) during the flying part of a Jet WM., or European Masters, a meeting will be held which will be attended by each nation's Team Leaders and the Contest Director. A vote will be taken by all of the Team Leaders on whether flying should continue, and the decision will be carried by the majority vote. If voting is equal, then the Contest Director has the casting (deciding) vote.

All Team Leaders, and the Contest Director, have the right to activate (call) this meeting to discuss weather conditions.

The Contest Director also has the right to award any competitor a 're-flight', if weather conditions should become dramatically worse, or change, during a contest flight.
(see 5.0.1(b))

NOISE ASSESSMENT

Rules 3.0.1, 3.0.2 & 3.0.3 have been entirely deleted.

STATIC JUDGING

4.0.1 Proof of Scale.

- (a) Proof of scale is the responsibility of the competitor.
- (b) Name of entry - the exact name and type designation of the subject aircraft shall be indicated on the entry form, and in 'proof of scale' documentation.
- (b) The scale to which the model is built is optional, but must be stated in the documentation.
- (c) All models may be required to be weighed immediately before their official flight(s), to ensure that they comply with rule 2.0.3.

4.0.2 Scale Documentation.

To be eligible for static points the following minimum documentation must be submitted to the judges by the competitor:

- (a) Three identical copies of an accurate published 3-view (minimum) scale drawing of the full-size aeroplane having a minimum scale of 1/72, and a maximum scale of 1/24. Unpublished drawings by the competitor or other draughtsman are only acceptable if they are certified in writing as accurate in advance of the contest, by an authoritative source (such as the respective National Scale Committee or equivalent), 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 colour, if at least one of the photographs in (b), of the actual subject modelled, is not in colour, then a published coloured drawing is acceptable, or a published printed description of the colour scheme (for example those from specialist scale model publications). Alternatively, authenticated written description and/or authenticated colour chips are acceptable.

4.0.3 Static judging of 'Fidelity to Scale and Craftsmanship'.

4.0.3.1 Scale Accuracy - side view	K = 15
4.0.3.2 Scale Accuracy - front/end view	K = 15
4.0.3.3 Scale Accuracy - top/plan view	K = 15
4.0.3.4 Colour	K = 5
4.0.3.5 Markings	K = 10
4.0.3.6 Surface Texture and Realism	K = 15
4.0.3.7 Craftsmanship	K = 15
4.0.3.8 Scale Detail	K = 10

Items 4.0.3.1 to 4.0.3.5 (inclusive) are to be judged first at a minimum distance of three metres from the nearest part of the model.

Items 4.0.3.6 to 4.0.3.8 (inclusive) are to be judged afterwards at a distance of approximately one metre. The judges are not permitted to measure, or touch, any part of the model. A maximum of 20 minutes is to be spent on the static judging of every model.

4.0.4 Static points and Coefficient.

- (a) Each section in 4.0.3 shall be awarded points from 0 - 10 by each judge. These points shall then be multiplied by the appropriate K factor (shown in 4.0.3) and added together to give the total static points.
- (b) The static points can only be used in the final classification of the contest after the model has commenced at least one official flight. (ie: after the model leaves the ground and engages in free flight)
- (c) The maximum number of points possible, after applying the K factors, is 3000 points.

4.0.5 Static Score.

The final static score is calculated by multiplying the total static points awarded by 50%. Therefore the maximum static score achievable is 1500.

FLYING JUDGING

5.0.1 Official Flights.

- (a) Each competitor will be called to fly three or four rounds, depending on the number of flight-lines employed, organisers having the option of one or two flight-lines, with the choice of the two flight-line option being dependent on the availability of suitable runways (see e and f below). Each competitor must execute an official flight within the required time limit (see 5.0.2) on each occasion to be eligible for flight points for that flight. The best two (or three) flight scores will count towards the final classification, the lowest scoring flight being discarded. In the event that less than the total number of rounds are flown, all rounds flown will be assessed.
- (b) If a competitor is unable to start or complete a flight and, in the opinion of the Contest Director, the cause is outside the competitors control (eg: act of God, bad weather or safety reasons) the C.D. may, at his discretion, allow the competitor a re-flight. The C.D. shall decide when the re-flight shall take place.
- (c) An official flight commences at the earliest of the following:
 - (i) The competitor signals to the timekeeper that he is commencing to start his engine(s).
 - (ii) Two minutes after the competitor is instructed to start his flight by the Timekeeper. (See 5.0.2.(b))
- (d) In each flight, only one attempt is allowed for each manoeuvre after it has been called.
- (e) If the organisers are able to provide two flight-lines the competition will entail four flying rounds.
- (f) If the organisers can only provide one flight-line the competition will entail three flying rounds.
- (g) Organisers must make the airfield available for local familiarisation flying for two days before the start of the competition.

5.0.2 Flying Time.

- (a) All competitors will be given at least 10 minutes warning before they are instructed to start their flight.
- (b) The competitor will then be instructed to start his flight.
- (c) Timing of the flight will start when the official flight commences (see 5.0.1 (c)).
- (d) Competitors with single-engined models will be allowed 10 minutes to complete the flight, plus 1 additional minute for each extra engine.
- (e) No points will be awarded for any manoeuvre which is not completed at the end of the time allowed.

5.0.3 Starting Time.

- (a) If the model is not airborne within 6 minutes (plus one additional minute for each extra engine) after the official flight and timing commence, the flight will end and no points will be awarded for the flight.
- (b) If the engine(s) stops after the taxi has commenced but before the model is airborne, the engine(s) may be restarted. Each competitor may only affect two 'restarts' per official flight. In this case, rule 5.0.3(a) still applies.

5.0.4 Flight Schedule.

Each contest flight will consist of 3 mandatory manoeuvres and 5 optional manoeuvres, and will also be awarded points for 'Realism in Flight'.

Take-off	K = 10
Straight flight	K = 5
Option 1	K = 10
Option 2	K = 10
Option 3	K = 10
Option 4	K = 10
Option 5	K = 10
Circuit, approach and landing	K = 15
Realism in flight	K = 20

Note 1: The five options may include only one 'Technical' option, which must be chosen from those listed in 5.0.6.

5.0.5 Mandatory manoeuvres.

- (a) **Take-off** - The model shall take-off from the ground, engage in free flight, and climb away on a constant heading and climb angle for minimum 5 seconds.
- (b) **Straight flight** - The model shall make a low fly-by along the runway of duration of 5 - 10 seconds, at a height of between 3 - 10 metres.
- (c) **Circuit, Approach and Landing** - The model shall commence upwind and execute a circuit and landing approach in the manner of the prototype, and land on the runway in front of the judges. Retractable undercarriage (where fitted) is to be extended during the downwind leg of the circuit, and flaps, spoilers, speedbrakes are to be extended as per the full-size prototype. (Reference to altitude has been deleted)

5.0.6 Optional Manoeuvres.

(5.0.6.1) The competitor shall give evidence, if required by the flight judges, that his subject normally performed, or was capable of performing, each selected option. The competitor may chose different optional manoeuvres for each official flight. The selection of all options must be supplied to the judges in writing before each take-off. The options may be flown in any order, but the order must be marked on the scoresheet before the official flight commences, and any manoeuvre flown out of order will be scored zero. The technical option may be carried out during normal flight, or during 'Take-off' or 'Circuit, Approach & Landing', if the full-size prototype normally performed it during these manoeuvres.

(5.0.6.2) Taxying manoeuvres will not be regarded as an option, but will be marked in the 'Overall Flight Realism' section.

(5.0.6.3) Non-aerobatic type aircraft are not permitted to carry out the aerobatic options listed below. Aerobatic type aircraft are not permitted to carry out the non-aerobatic type manoeuvres listed below.

(5.0.6.4) Each manoeuvre may only be nominated once for each contest flight.
The 5 optional manoeuvres shall be chosen from the following list:

NB: SEE 'JUDGES GUIDELINES' FOR DIAGRAMS & FULL DETAILS OF ALL MANOEUVRES.

- (a) **Chandelle** - From straight and level flight the model passes the judges centreline, and performs a 180° turn in a direction away from the judges, the first half climbing, and the second half descending, resuming straight and level flight on the opposite heading. The rate of climb and descent should be constant, and commensurate with the prototype. (Reference to altitude has been deleted)

(non-aerobatic option).

- (b) **Retract and extend landing gear** - The model approaches on the centreline of the runway, from downwind, at reduced speed in straight and level flight at an altitude of approx. 10 - 15 metres and the landing gear is lowered in front of the judges. The model then turns away from the judges and completes a circuit at constant height, retracting the landing gear again when in front of the judges, and climbs away with increased power at a constant heading and climb angle for approx. 5 seconds, on the runway centreline. *(all types)*
- (c) **Retract and extend flaps** (incl's airbrakes, spoilers, etc.) - The model approaches on the centreline of the runway, from downwind, at reduced power in straight and level flight at an altitude of approx. 10 - 15 metres and extends the flaps/spoilers in front of the judges. The model then turns away from the judges and completes a circuit at constant height, retracting the flaps/spoilers again when in front of the judges, and climbs away with increased power at a constant heading and climb angle for approx. 5 seconds, on the runway centreline. *(all types)*
- (d) **Dropping of bombs, fuel tanks or other stores** - The model approaches the judges' centreline in level flight at reduced speed. The bombs or tanks are to be dropped on the centreline between the far side of the runway, and the centre mark. After release the model should accelerate noticeably. *(Reference to altitude has been deleted)*

Alternatively bombs or fuel tanks may be dropped during a parabolic approach, with reduced power, parallel to the runway centreline. Afterwards the jet model climbs parabolically, with increased power. In both cases the bombs or fuel tanks should touch down near the centreline. *(technical option)*

- (e) **Immelman turn** - The model commences the manoeuvre parallel to the runway and performs a half inside loop upwards, starting at the judges centreline, and then executes a half roll at the top to resume normal level flight, on a reciprocal heading to that at the start. *(Reference to altitude has been deleted) (aerobatic option)*
- (f) **One Inside Loop** - From straight and level flight, parallel to the runway, the model executes a 360° circle in a vertical plane, and resumes level flight at the same altitude, and on the same heading as it started. *(aerobatic option)*
- (g) **Split S (Reversal)** - The model commences the manoeuvre parallel to the runway, performs a half roll on the judges centreline, and then a half inside loop downwards, and resumes normal level flight on a reciprocal heading to that at the start. *(aerobatic option)*
- (h) **Cuban Eight** - The model approaches parallel to the runway straight and level, pulls up into a circular inside loop until 45° nose down attitude is reached. The 45° inverted flight attitude is held until a half roll is executed when abeam the judges. The 45° nose down upright attitude is then held until entry height is achieved, when a similar circular inside loop is flown to repeat the manoeuvre in the opposite direction. Straight and level recovery is to be at the same height as original entry. *(aerobatic option)*
- (i) **Victory Roll** - The model commences parallel to the runway, in level flight, and before the judges centreline it climbs at approx. 45° for 2 - 3 seconds, followed by a complete roll on the judges centreline. *(Reference to altitude has been deleted)*
After another 2 - 3 seconds to model resumes level flight on the same heading as entry. Alternatively, the model may perform a turn of 90° at the end of the manoeuvre. It is necessary to inform the judges how you will finish the manoeuvre before the start of your flight. *(aerobatic option)*

- (j) **Normal (Axial) Roll** - From straight flight the model rolls at a constant rate through one complete rotation, and resumes straight and level flight on the same heading. This manoeuvre may be performed horizontally, or vertically if the prototype was capable of it. If performed horizontally the model should approach in straight flight, parallel to the runway. If performed vertically this manoeuvre should be on the judges centreline. *The judges must be told, before the start of the flight, which type of roll is to be executed. (aerobatic option)*
- (k) **Slow Roll** - The model approaches in straight and level flight, parallel to the runway, and rolls slowly at a constant rate through one complete roll and resumes straight and level flight on the same heading and altitude, taking 3 - 5 seconds *to execute the slow roll*. This manoeuvre should be performed horizontally. *(aerobatic option)*
- (l) **4-Point Roll** - The model approaches in straight and level flight, parallel to the runway, and rolls at a constant rate through three complete quarter rotations, hesitating at each of four equally spaced intervals, and resumes straight and level flight on the same heading and altitude. This manoeuvre should be performed horizontally. *(aerobatic option)*
- (m) **Positive 'G' Roll** - This is a special form of the normal roll. The model approaches in level flight, parallel to the runway and performs a roll with constant positive 'G', describing a gentle parabolic curve (see diagram in Judges Guidelines), and resumes level flight on the same heading and altitude as the start. *(Reference to altitude has been deleted)*
(aerobatic option)
- (n) **Touch and Go** - The model approaches on the centreline of the runway, from downwind, at reduced power in straight and level flight. *(Reference to altitude has been deleted)* Flaps should be extended, if fitted. After passing the judges the model turns away, with either a single 180° turn, or two 90° turns, and extends the landing gear on the downwind leg of the circuit. The model makes a final 180° turn (or two 90° turns) onto the runway centreline, descending smoothly at reduced power and speed, and touches down in front of the judges. The model then accelerates and, after a short distance, takes off again, followed by a climb on a constant heading and climb angle of approx. 5 seconds, during which time the landing gear is retracted. *(all types)*
- (o) **Overshoot** - The model approaches on the centreline of the runway, from downwind, at reduced power in straight and level flight. *(Reference to altitude has been deleted)* Flaps should be extended, if fitted. After passing the judges the model turns away, with either a single 180° turn or two 90° turns, and extends the landing gear on the downwind leg of the circuit. The model makes a final 180° turn (or two 90° turns) onto the runway centreline, descending smoothly at reduced power and speed and, in front of the judges at a height of approx. 3 metres, aborts the landing and applies full power, climbing at a constant heading and climb angle for approx. 5 seconds, during which time the landing gear is retracted. *(all types)*
- (p) **Special Option** - The competitor may demonstrate one flight manoeuvre, function or technical option of their own choice, included in the maximum of 5 options. The competitor must supply evidence to the flight judges, at least one hour before their official flight, that this function was performed by the subject aircraft, if required, and explain how it will be demonstrated. *(all types)*
- (q) **Half Cuban Eight** -
The model approaches parallel to the runway straight and level, pulls up into a circular inside loop until 45° nose down attitude is reached. The 45° inverted flight attitude is held until a half roll is executed when abeam the judges. The 45° nose down upright attitude is then held until straight and level recovery is made at the same height as original entry.
(aerobatic types)

- (r) **Flight in Triangular Circuit** - The model approaches in straight and level flight, parallel to the runway and, after passing the judges centreline, turns through 120° (away from the judges), flies straight and level for approximately 200 metres, turns 120° in the same direction as before, continues straight and level for a further 200 metres approx., makes another 120° turn in the same direction as before, and flies straight and level (parallel to the runway), completing an equilateral and equi-angular triangle, recovering with the model at the same altitude and heading as entry (*non-aerobatic option*).
- (s) **Flight in Rectangular Circuit** - The model approaches in straight and level flight to a point approx. 150 metres past the judges centreline, turns 90° away from the judges, flies straight and level for approx. 150 metres, then turns 90° in the same direction as before, flies straight and level for approx. 300 metres, turns 90° in the same direction as before, flies straight and level for approx. 150 metres, makes a final 90° turn in the same direction as before, and completes the manoeuvre by resuming straight and level flight on the same heading and at the same altitude as entry. Opposite sides of the rectangle should be of equal length. (*non-aerobatic option*).
- (t) **Horizontal Figure of Eight** - The model approaches in straight and level flight, then makes a one-quarter circle turn in a direction away from the judges, followed by a 360° circle turn in the opposite direction, followed by a three-quarter circle turn in the same direction as the first turn, completing a figure-of-eight, parallel to the runway centreline and at a constant altitude. The manoeuvre ends on the same altitude and heading as the start, and should be centred on the judges centreline. (*non-aerobatic option*)
- (u) **Inverted Flight** - The model approaches in straight and level flight parallel to the runway and rolls at a constant rate through a half rotation and resumes straight and level inverted flight at the same heading for 5 - 8 seconds. (Reference to altitude has been deleted) Above the centreline the jet model should be in inverted flight. Then the jet model rolls at a constant rate through another half rotation, in the same direction as the first half roll, and recovers on the same altitude and heading as the start. (*aerobatic option*)
- (v) **Cobra Roll** - The model starts in straight and level flight, pulls up into a 45° climb, executes a half roll to inverted, completes a $1/4$ inside loop into a 45° dive, executes a half roll to normal attitude, and recovers to level flight at the same altitude and heading as the start. (Reference to altitude has been deleted) The highest point of the $1/4$ inside loop should be on the judges centreline. (*aerobatic option*)
- (w) **Combination Immelman/Reversal** - This manoeuvre is a combination of an Immelman and a split-S. The model approaches in straight and level flight, and after it has passed the judges centreline it pulls up into a half inside loop, and then immediately executes a half roll to normal attitude. After straight and level flight of approx. 150 metres, the model performs a half roll to inverted, and then a half inside loop downwards to recover into level flight on the same heading and altitude as the start. (*aerobatic option*)
- (x) **360° Horizontal Circle** - The model approaches in straight and level flight, and executes a 360° circle, commencing by turning away from the judges on the centreline, at a constant rate of bank (approx. 60°) and at a constant altitude, recovering to straight and level flight on the same heading and altitude as the start. The rate of turn should be commensurate with the prototype, and is intended to demonstrate the maximum rate-of-turn. (*all types*)
- (y) **Knife-Edge Flight** - The model approaches in straight and level flight at a minimum height of 15 metres, parallel to the runway, then rolls through 90° to show the top of the model towards the judges. The model continues in this attitude, straight and level, for 5 - 8 seconds, and then executes another 90° roll (in the opposite direction) to recover into level flight on the same heading and altitude as the start. The distance between the first $1/4$ roll and the judges

centreline, and the second 1/4 roll and the judges centrelines, should be equal. (*aerobatic option*)

- (z) **Slow Flight** - The model approaches straight and level, parallel to the runway at a height of 10 - 15 metres, with landing gear (and flaps, spoilers, etc., if fitted) extended, just above landing speed, and continues for a duration of minimum 10 seconds, centred on the judges centreline. (*all types*)

5.0.7 Realism in flight. (Overall impression).

- (a) The judges will award points for overall realism, flight speed, authenticity of **sound (but not taking any account of noise levels)**, smoothness and accuracy throughout the whole flight, including taxiing. **They will** also take into consideration such things as use of the permitted air space and the extent to which the flight style of the model is in keeping with that of the prototype aircraft. The judges will also take into consideration the varied reversing and turning manoeuvres between 'scoring' manoeuvres.
- (b) Competitors may release external stores, etc., between scoring manoeuvres (for instance releasing drop tanks before 'air combat manoeuvring' or aerobatics), even if not nominated as a technical option, and the judges will take this into consideration when awarding the 'Realism in Flight' points. However the competitor must inform the judges, before the flight commences, that external stores will be released, otherwise rule 2.0.7 (g) will be applied.

5.0.8 Position of Manoeuvres.

The manoeuvres must be performed in a position, and at a height, which will allow them to be seen clearly by the judges. If, at any time during a flight, the model passes behind the imaginary Safety/No-Score line then a zero mark will be awarded for that manoeuvre. If this occurs on one, or more, occasions during a flight the judges or the Contest Director may request that the pilot lands immediately, and the whole flight will be scored zero.

5.0.9 Flight points and Coefficient.

- (a) Each mandatory and optional manoeuvre will be awarded points from 0 - 10 by each of the judges during every official flight. The points awarded for each manoeuvre shall then be multiplied by the appropriate K- factor (as in 5.0.4). In the case of 5 judges, then the lowest and highest points awarded for each manoeuvre shall be discarded.
- (b) In the case of 3 flights the points awarded for the lowest scoring flight will be discarded.
- (c) The total flight points shall be the aggregate sum (added together & divided by 2) of the points awarded by the judges in 5.0.4 for the two highest scoring flights.
- (d) The maximum possible flying points, after applying the K factors and aggregating the two best flights, **(or the three best flights, if four rounds are flown)** is 3000 points.

5.0.10 Flight Score.

The final flight score is calculated by multiplying the total flight points awarded by **50%**. Therefore the maximum flying score achievable is **1500**.

FINAL SCORING AND CLASSIFICATION

6.0.1 Final Placing

Final scores, classification and places for **Individual** and **Open** scale shall be determined as follows:

- (a) Add together the static points scored in section 4 (x 50%) and the flying points scored in section 5 (x 50%).
The total maximum score achievable is 3000.

$$\text{Static score: } 3000 \text{ max.} \times 50\% = 1500 \text{ max.}$$

$$\text{Flying score: } \frac{3000 \text{ max.} + 3000 \text{ max.}}{2} \times 50\% = 1500 \text{ max.}$$

$$\begin{array}{lcl} \text{Or} & \text{Flying score: } \frac{3000 \text{ max} + 3000 \text{ max} + 3000 \text{ max.}}{3} \times 50\% = & 1500 \text{ max} \\ & \text{Maximum points available} & = \underline{\underline{3000 \text{ total}}} \end{array}$$

(Reference to noise assesment has been deleted)

6.0.2 Nations Trophy

In all Jet WM contests there will be a 'Nations Trophy'. This is awarded to the nation/country that has the biggest number of points achieved by adding together the 3 total scores from the 3 highest scoring competitors from each country. (Reference to Team Scale score has been deleted)