JUDGING AEROBATIC

CONTENTS

 Überarbeitung durch Kunstflugverein Altenrhein 1.5.1999

1. BASIC PRINCIPLES OF JUDGING

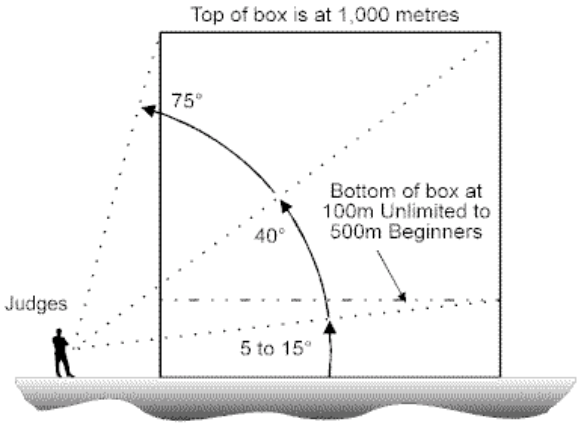
1.1 Introduction

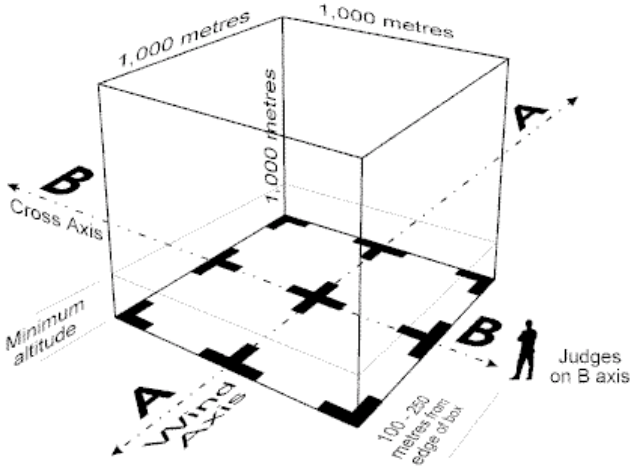
Aerobatic contests for both powered aircraft and gliders are held by the British Aerobatic Association at the following levels - Beginners, Standard, Intermediate, Advanced, Unlimited, Apprentices, Masters and Freestyle in Power, Sports, Intermediate and Unlimited in Glider. Judging an aerobatic sequence involves assessing the flight path and attitude of the competing aircraft as it flies each figure, comparing what you see with the 'ideal' requirements of the rules and then grading the figures out of ten. There are detail differences in the judging of Apprentices Masters and Freestyle which are outside the scope of these notes, but which will be fully briefed before the start of the relevant contest.

What makes a good aerobatic Judge? Well, it isn't particularly difficult - but it does take patience and practice. These BAeA notes describes the basic principles of judging both for potential Judges and interested pilots. The complete official judging procedures are detailed in the current editions of the CIVA Catalogue and the BAeA General Rules for the Conduct of Aerobatic Events. These are obtainable from the BAeA Judging Co-ordinator, price on application.

1.2 The aerobatic box

Competition aerobatic sequences are flown in a 1,000 metre (3,300 ft) cube of airspace which is normally marked-out on the ground. The minimum allowable flying height below which a pilot will be disqualified varies according to competition level from 450m (1,480 ft) for Beginners down to 100m (330 ft) for Unlimited pilots. Figures that are flown too high, outside the "box" or behind the judges are penalised either 'by the book' or under the instruction of the Chief Judge





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1.3 The Aresti 'aerobatic diagram' system

In order to write aerobatic manoeuvres, figures and sequences down on paper so that other people can read, fly and judge them a universal 'language' is essential. The system used throughout the aerobatic world was originally developed by the Spanish aerobatic ace José Louis Aresti. To help you to visualise the fundamental principles we have also included where useful in this booklet some simple pictorial representations of the aircraft flight path in addition to the appropriate Aresti symbols.

To become proficient as an aerobatic judge or pilot a good understanding of the CIVA Aresti system is a priority. It has a basic set of "rules" which govern how the symbols are used, and each manoeuvre has a numeric coefficient giving its difficulty rating that allows the user to build "K-factors" for composite figures. The CIVA catalogue lists the complete range of basic and complementary manoeuvres from which aerobatic figures may be constructed for inclusion in programme I (known), II (pilot designed) and III (unknown) sequences to meet the specific requirements of any contest.

The British Aerobatic Association has it's own rules to define and control the conduct of power and glider aerobatic competitions in the UK, these extending the international Unlimited level regulations to cover contest flying at Beginners, Standard, Intermediate and Advanced levels as well. Included also are procedures on contest and judging line administration, guidance notes on the handling of judges' score sheets and the computer results calculation process. These key BAeA and CIVA reference works are normally revised annually to embody current thinking in the sport.

1.4 The CIVA Catalogue families

Aerobatic figures are made up by combining basic and complementary manoeuvres which are grouped into nine "families" in the CIVA catalogue. Each manoeuvre is depicted by its Aresti symbol. Glider aerobatic figures are in a separate catalogue which differs in many details from the power version.

Family 1 - Lines and Angles horizontal, 45° & vertical line variations.

Family 2 - Turns& Rolling Turns 90°-360° turns erect & inverted, with optional rolls.

Family 3 - Combinations of Lines more of family 1.

Family 4 - Spins 1-2 turns in ¼ turn steps, erect & inverted.

Family 5 - Stall Turns the four possible variations.

Family 6 - Tail Slides the eight possible variations.

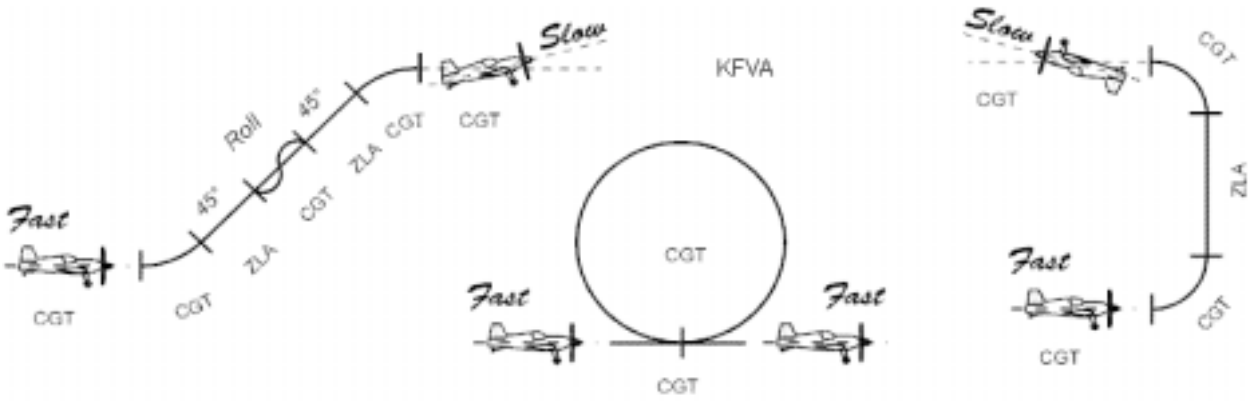
Family 7 - Loops and Eights round/square/octagonal loops, split-'S' & 8's.

Family 8 - Combinations of Lines, Angles & Loops humpty-bumps, cubans etc.

Family 9 - Rolls slow, 2-point, 4-point, 8-point & flicks.

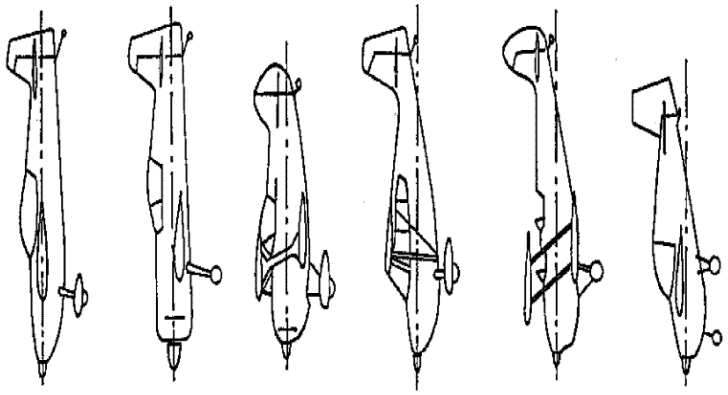
1.5 Fundamental judging criteria - lines, curves and maneouvres

When the aircraft is flying horizontal lines or curving / rotating manoeuvres you should judge the aircraft on centre of gravity track (CGT). When the aircraft is flying vertical or 45° lines up or down you should judge the aircraft zero lift axis (ZLA).



The Centre of Gravity Track (the CGT) is the imaginary line that the aircraft centre of gravity draws as it flies along. Note that the longitudinal neutral axis of the aircraft (that means the Zero Lift Axis) almost always points *away* from this track (in pitch and/or yaw) by an amount which depends on the control inputs of the pilot and the speed of the aeroplane - usually with larger angles at slower flying speeds

The Zero Lift Axis (or the ZLA) of an aircraft is also an imaginary line, but this one is "fixed" to the aircraft and runs through the centre of gravity from nose to tail. Imagine that an aircraft is flying a true vertical line in still air, then the ZLA will be exactly perpendicular to the ground. In different aeroplanes this axis can be similar to or very different from the line along which the fuselage *appears* to point. Early aerobatic designs with an upswept floor line behind the pilot can seem very nose-forward when flying vertical lines (Tipsy Nipper, Stampe, Pitts etc.) and markedly nose-up when inverted, while more modern symmetrically shaped monoplanes (Extra 300, Cap 231, Sukhoi 26 etc.) have been designed to appear to fly with almost the same attitude both ways up. Look at this set for examples:



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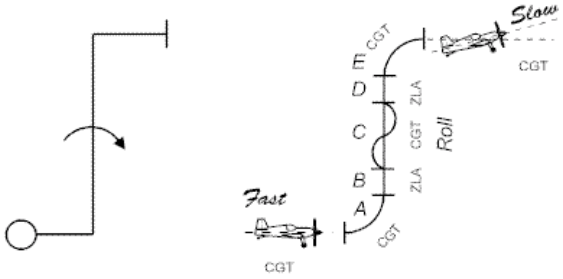
1.6 Marking the figures

1.6.1 The basic rules

a) Every figure starts with a 'perfect' 10 points. Each Judge deducts points (to the nearest ½) for errors seen, to arrive at his or her personal final mark for each figure.

b) On the "**A**" axis (into or out-of-wind) every figure MUST be flown in the correct direction relative to the officially declared wind. If the wrong direction is flown the figure MUST receive a zero mark.

c) Figures should start and end in erect or inverted level flight on the "**A**" or "**B**" axis. Powered aircraft *must* fly with a perfectly horizontal CGT, whilst gliders can fly at a consistant angle of glideslope to maintain their speed. The first figure of any sequence starts as the aircraft leaves horizontal flight. For all subsequent figures, the figure finishes as soon as the aircraft achieves horizontal flight. All flight thereafter belongs to the next figure. For every 5° of yaw, pitch or roll by which the aircraft CGT or ZLA differs from what is required when starting, at all 'key' points and at the exit from each figure, you should deduct one point. A cumulative error in any figure of more than 45° must by definition result in a zero mark.



Radii 'A' and 'E' need not be the same but 'E' is flown much more slowly.

Lines 'B' and 'D' must be the same length:

- for a 2/1 ratio - deduct 2 marks.
- for a 3/1 ratio - deduct 3 marks.
- for a 4/1 ratio - deduct 4 marks.

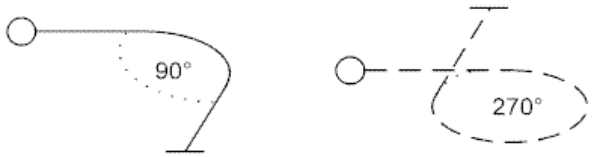
For example if the aircraft above starts the figure with 5° nose-up, no yaw and between 5° and 10° of bank during the figure it is pitched o.k. but yawed 5° and rolled 10° off axis at a key point. and it ends with 5° of yaw, between 0° and 5° nose-down and no bank angle. The result is:

- Maximum points:	10.0
- starts with CGT-Axis A 5° noise up	- 1.0
- starts with no yaw	- 0.0
- starts between 5° and 10° bank angle	- 1.5
- CGT-Axis B pitch o.k.	-0.0
- 5° yaw on CGT-Axis B	- 1.0
- rolls 10° off axis at key point	- 2.0
- ends with 5° of yaw	- 1.0
- ends with CGT-Axis between 0° and 5° noise down	- 0.5
- ends with no bank angle	- 0.0
- Result	7.0

d) Line lengths and corner radii should generally be 'balanced' in size throughout a figure, with the exception of figures from families 1 & 8, where part loop radii may be different within a figure.

However, although the top radius in our example above may be smaller than the bottom radius, it should still be flown with a constant radius and not at a sharp angle.

1.6.2 Turns



The aircraft should:

a) Bank to at least 60° and then hold the bank angle absolutely steady.

b) Pull or push around the turn with a uniform rate of heading change (NOT necessarily constant radius i.e. the effect of the prevailing wind shall not be a cause of downgrading).

c) Cease the heading change, and immediately roll the wings level on the correct "**A**" or "**B**" axis.

These three elements are assessed quite separately, and should be executed consecutively and without any hesitation between them. A PPL style 'co-ordinated' turn with smoothly rolling entry and exit phases involving obvious heading changes during the roll-in/roll-out must have marks deducted for the yaw and roll angles you see in the wrong elements. Look particularly for constant bank angle and altitude. Turns are NOT wind corrected for radius - and may therefore not actually be true circular arcs.

1.6.3 Loops and eights

Loops and '**S**'s are always wind corrected - their elements should be accurate and 'round'.

Square loops, eights and all the family-8 combinations of lines, angles and loops all combine CGT and ZLA flight. The looping elements should be true arcs, whilst the interconnecting 45° and vertical lines are all judged on aircraft attitude and so are NOT wind-corrected. Square loop corners and the halves of '**S**'s and '**8**'s require particular attention to check their similarity in size - aircraft speed and/or the pilots inverted flying ability should not affect the accuracy of the geometry.

1.6.4 Spins

The following two figures show a regular and an inverted crossover one turn spin. In competitions spins come in 1, 1¼, 1½, 1¾ and 2 turns.

For correct spins you should see:

a) A clearly visible stall that is on-heading in level (CGT) horizontal flight without roll or yaw.

b) The nose should drop, then yaw and roll should begin - leading immediately to autorotation.

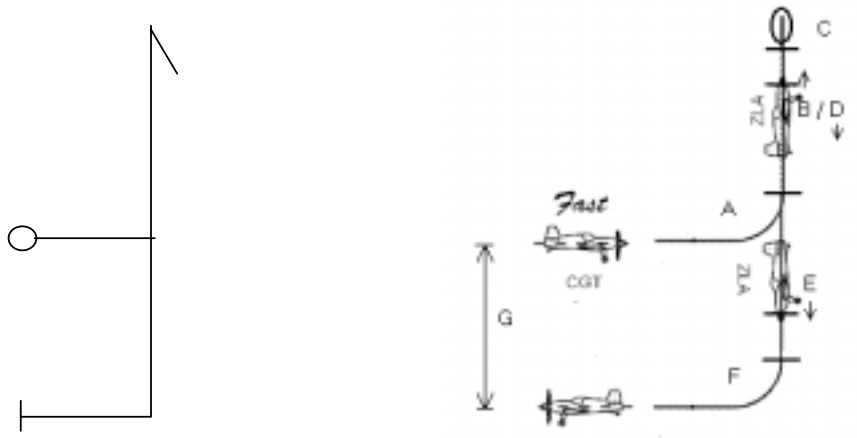
c) The rotation should stop on the right heading (no aileron correction!) and immediately the nose should drop to the vertical (ZLA), if it isn't already there.

d) The aircraft should draw a vertical line (ZLA) and then execute a constant radius pull or push through to horizontal flight on the right heading.

Look particularly for the clean initial stall. If the aircraft lifts and rolls or flicks into the autorotation (this indicates clearly that it must be flying at *above* stalling speed) then the figure deserves only a zero mark. A smooth and accurate transition from the spin into the down-line without any aileron roll is also important. A 'wrong-direction' (90°, 180° or 270° out) exit on the "**A**" or "**B**" axis of course zero's the figure, and on the "**A**" axis will be followed by further zeroes until the mistaken direction is corrected.

1.6.5 Stall Turns

The following figure shows a stall turn, also called hammerhead.



For a correct stall turn you should see:

a) The up and down-lines must be ZLA vertical. Any slow or flick rolls on them must however be judged on CGT.

b) In the turn-round you should see yaw without pitch or roll. Sideways movement up to one wingspan during the 180° rotation is acceptable, but more than that must be penalised.

c) The exit radius should be the same as the entry, but may be at a different altitude.

Be critical about the verticality of the aircraft ZLA in the up-line all the way to the top. Any pitch or roll in the turn-round is a clear error - 1 mark lost per 5° as usual. In a stall-turn with rolling elements up or down there may be several changes from CGT to ZLA judgement and vice-versa. If the exit is on the "**A**" axis check that the direction is correct, and in erect or inverted flight as is required by the sequence.

1.6.6 Slow rolls

For a correct slow roll you should look at this:

a) The start and finish of each element of the roll should be crisp and within each element at the correct angle of roll.

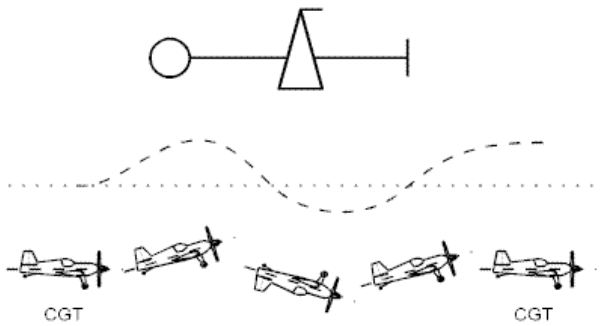
b) The rhythm and the rate of roll must be consistent throughout, and between any hesitation elements.

c) The CGT during and after a horizontal roll should be exactly in line with the CGT before it.

Many variations of slow rolls are used in a great variety of figures, often preceded and followed by lines which must be judged for CGT (where horizontal) or ZLA (where at 45° or in the vertical) and also for comparative length. Height gain or loss during horizontal rolls and barrelling around any angle of line are obvious errors. If the wrong type of roll is seen (a hesitation is missed or added etc.) then the whole figure is wrong, and it must be awarded a zero mark.

1.6.7 Flick rolls

The following figure shows a horizontal flick roll.



For correct flick rolls you should see:

a) The aircraft MUST pitch positive or negative (to initiate a stalled condition in both wings) and immediately yaw (to keep one wing unstalled) at the entry to the manoeuvre - this is essential.

b) The initial 'nod' and yaw should be followed immediately by rapidly accelerating auto-rotation.

c) After the correct angle of rotation the roll should cease abruptly without any aileron-roll correction, and the aircraft should continue along an axis closely parallel to the extended pre-roll axis.

If the stall is inadequate the aircraft will fly a 'barrelled' roll with both wings providing lift, and considerable sideways translation from the starting axis is likely - this MUST be given a zero mark. Don't forget also to check that the manoeuvre you see is positive or negative - whichever one the sequence calls for. It is sometimes difficult with the latest generation of aerobatic aircraft to see the pitch movement. For a given change in pitch, the tail will probably move further than the nose, so look for a tail movement *away* from the cockpit for a positive flick and *to* the cockpit for a negative figure.

1.6.8 Tail slides

For correct tail slides you should look at this:

a) Comments a) and b) from the stall turn section apply equally here.

b) In the slide the aircraft should descend straight backwards *a visible amount* without any pitch change before the swing-through starts. Look for a slide of at least half the fuselage length, during which there must be no rotation in the rolling or yawing planes.

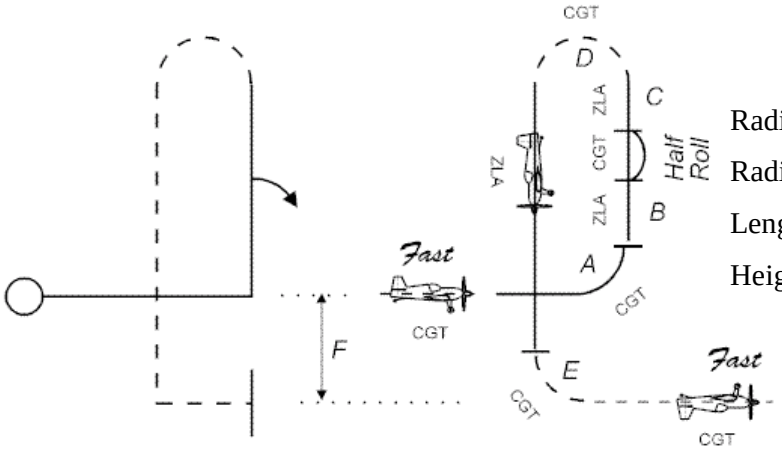
c) The nose must fall-through the right way - canopy UP (the falling element to the pitch-over drawn on the sequence diagram with a full line) or canopy DOWN (drawn with a dotted line as below).

d) Pendulum effect (swinging through in pitch afterwards) doesn't matter but should not be allowed to persist after the first swing - the vertical down-line does not begin until it has stopped.

Check the slide for length and straightness, and for look carefully to see that the aeroplane doesn't roll and yaw as the nose falls-through.

1.6.9 Humpty Bumps

Here a half positive or negative loop is used to pitch the aircraft through the 180° turn-round. In vertical humpty-bumps (as opposed to 45° skewed ones) the same rules apply as for a stall turn except at the turn-round, which may be either at the top or the bottom of the figure. Always look for a constant radius and good maintenance of heading.



Radius 'A' = radius 'E'

Radius 'D' is not the same

Length 'B' = length 'C'

Height difference 'F' is not important

1.7 Wing rocks - the sequence beginning and end, and 'breaks'

Pilots are required to dip one wing three times to indicate to the Judges the beginning and end of their sequence and any 'breaks' taken in mid-sequence to regain altitude or re-position the aircraft after mistakes. Breaks incur fixed penalties depending upon the 'level' flown - ie. Beginners or Advanced etc..

1.8 Preparing for the mental arithmetic and making your comments

Prepare for each flight by reading right through the sequence sheet to visualise the key points to look for. During the sequence you will then find it much easier to complete the arithmetic for each figure. Experienced Judges have all sorts of different ways of remembering the errors to arrive at the 'right' mark for each figure - preferably at the time but occasionally after the sequence has ended.

A really good approach is to say out loud to yourself and your assistant what you see - good *and* bad - as it happens. This will help you to identify the errors you saw the pilot make, and your assistant can easily record a sensible critique for the pilot. Say clearly how many degrees you think that the aircraft is pitched,(positively or negatively) rolled or yawed (left or right) in 5° steps and by what proportion the line-lengths are too short or too long - before or after other key elements. Whilst you are doing this, count on your fingers the accumulated marks to deduct from each figure. All you have to do then is take away your running 'digital' total from ten - and there you have the final mark.

There are two very good things about this particular technique. Not only will you soon and with remarkably little effort be weighing the pro's and con's of the errors you see, but it is tailor-made for your assistant to keep a good audit-trail of the flight in the comments column - both for the pilot and for you later on. Sometimes you simply can't make up your mind in time, so just leave the mark for that figure until the end of the sequence and then you can back-track - re-read your comments and re-compose your answer - or confess to a 'don't know' (annotate this "Not Seen" in the comments column) and later on get an average of everyone elses' marks. All the best Judges do this sometimes, so don't worry!

1.9 The Framing Mark

During the sequence you should develop a view as to how well the pilot is using the full scope of the aerobatic box to present his figures to the Judges. A perfectly balanced flight would rate a ten, whilst a noticeably upwind or downwind sequence or one clearly exceeding the box '**A**' or '**B**' boundaries perhaps a four to a seven. Figures flown too far away or behind the judging line should already be zeroed.

1.10 Handling major flying errors and zeroes

Besides flying a figure so badly that is almost unrecognisable, for which the usual deduction of 1 mark per 5° error is all that is necessary, the three most common major errors by pilots are -

- Missing out part of a figure. Give a zero because in effect the wrong figure has been flown.
- Missing out a whole figure. You can only give a zero here - the figure was not flown.
- Flying in the wrong direction on the "**A**" axis. Until the pilot recognises his mistake all figures get a zero mark as they will all start with a 180° direction error. *Continue with your comments* and put the marks the pilot **would** have got in brackets - then he still benefits by seeing what he threw away.

2. JUDGING SUMMARY

Here is a précis of the principal "faults" that you should look for and the number of marks to deduct whilst you are applying standard CIVA rules of critique to programme I, II & III sequences at all levels. Alway***s*** however refer to the current CIVA Catalogue for the 'official' solution in all matters of judging detail.

a) Start and finish lines

At the entry to and exit from EVERY figure element deduct horizontal start & finish lines:

• Off axis left or right	minus 1 point/5 deg
• Climbing or diving	minus 1 point/5 deg
• One wing low	minus 1 point/5 deg
• No distinct line drawn	minus 1 point each
• Flying in wrong direction on the "A" axis	Score = zero

b) Family 1 - lines and angles

The following judgment is applicable to horizontal 45's & verticals:

• Climbing or diving n-deg {before or after roll}	minus 1 point/5 deg
• Steep or shallow n-deg {before or after roll}	minus 1 point/5 deg
• Positive or negative n-deg {before or after roll}	minus1 point/5 deg
• No line drawn before or after roll	minus 1 point each
• Longer or shorter line before or after roll	minus 1 to 3 points

c) Family 2 - turns and rolling turns

Turns

• Rolling entry or exit (Ie. a "co-ordinated" turn)	minus 1 to 2 points
• Bank angle too shallow (less than 60 deg)	minus 1 point/5 deg
• Bank angle varied	minus 1 point/variation

Rolling Turns

• Roll rate varied	minus 1 point/variation
• Roll stopped and then restarted	minus 2 points
• Not an even integration of rolls at end	minus 1 point/5 deg
• Not enough or too many rolls (give number done)	minus Score = zero

Both Types

• Turn rate or radius varied	minus 1 point/variation
• Climbing or diving in turn	minus 1 point/5 deg

Exit

• was n-deg early or late	minus 1 point/5 deg

d) Family 3 - combinations of lines

All Figures

• Smaller or larger 2'nd etc. corner	minus 1 to 3 points
• Longer or shorter 2'nd etc. line	minus 1 to 3 points

e) Family 4 - spins

Spin Entry

• Entry not stalled, and/or "rolled" in	Score = zero
• Flicked entry (too fast)	Score = zero

Spin Exit

• Spin rotation short or too far	minus 1 point/5 deg
• Short or no line drawn after	minus 1 to 2 points
• Line after was positive or negative	minus 1 point/5 deg

f) Family 5 - stall turns

Up/down Lines

• Up/down-line pos/neg/left/right (before or after roll)	minus 1 point/5 deg
• Short, long or no line drawn up/down (before or after)	minus 1 to 3 points

The Turn

- Turn-around too wide (pivot beyond wingtip) minus 1 point/wing length
- Rolled or pitched in turn-around minus 1 point/5 deg
- Exit pull or push radius smaller or larger minus 1 to 3 points

g) Family 6 - Tail Slides

Up/Down Lines

- Up/down-line pos/neg/left/right (before or after roll) minus 1 point/5 deg
- Short, long or no line drawn up/down (before or after) minus 1-3 points

The Slide

- Yawed or rolled n-deg in slide minus 1 point/5 deg
- Exit pull/push radius smaller or larger minus 1 to 3 points
- Pitched the wrong way (wheels up or down) Score = zero

h) Family 7 - Loops and Eights

Half & Full Loops

- Large or small radius at top or in any quarter minus 1 to 3 points
- Line drawn between roll and looping segment minus 2 points
- Roll not central in looping segment minus 1 to 3 points
- Off axis during looping segment minus 1 point/5 deg
- Higher or lower exit minus 1 to 3 points

Eights

- Smaller or larger 2'nd half minus 1 to 3 points
- Lower or higher 2'nd half (horizontal) minus 1 to 3 points

With Corners

- Longer or shorter 2'nd etc. line length minus 1 to 3 points
- Larger or smaller 2'nd etc. corner minus 1 to 3 points
- Up/down-line pos/neg/left/right (before or after roll) minus 1 point/5 deg
- 1'st/2'nd etc. 45 steep or shallow minus 1 point/5 deg
- Horizontal segment off axis left/right/up/down minus 1 point/5 deg

i) Family 8 - Combinations of Lines, Angles and Loops

Humpty Bumps

- Up/down-line pos/neg/left/right (before or after roll) minus 1 point/5 deg
- Rolled or yawed in half-loop minus 1 point/5 deg
- Larger or smaller 2'nd quarter loop in half-loop minus 1 to 3 points
- Push instead of pull, or pull instead of push Score = zero

k) Family 9 - Rolls

Slow Rolls

• Rolled n-deg short or too far	minus 1 point/5 deg
• Roll barrelled (pitched and/or yawed whilst rolling)	minus 1 point/5 deg
• Roll rate varied	minus 1 point/variation
• Axis changed left/right/up/down (during/after roll)	minus 1 point/5deg
• Hesitation at random point	minus 2 points
• Wrong type of roll substituted	Score = zero

Hesitation

• Climbed or sank in knife	minus 1 to 2 points
• Slower or faster 2'nd etc. half/quarter/eighth	minus 1 to 3 points

Rolls

• Under/over rotated 1'st/2'nd etc. half/quarter/eighth	minus 1 point/5 deg
• Hesitation missed (wrong type of roll substituted)	Score = zero

Flick Rolls

• Part flicked and part aileron'd roll	minus 2 to 5 points
• Not flicked (no stall seen)	Score = zero
• Positive instead of negative, or neg. instead of pos.	Score = zero

l) General points to all sequences

- Two half-rolls and one inside/outside horizontal eight are allowed prior to the start of the sequence.
- The sequence start, end and any intermediate breaks must be signified by three wing rocks.
- Every figure must begin and end on the "**A**" or "**B**" axis in erect or inverted level flight.
- The mark for each figure is 10 points ***minus*** the sum of the deductions that you judge appropriate.
- Figures missed-out, obstructed by cloud or flown behind the Judges must be marked zero.
- The framing mark (out of 10) is judged on the symmetrical and good use of the whole 'box'.

Zeros are a thorny subject, and often the Chief Judge will call the Judging panel members together after a sequence to discuss contentious points. Debates at these occasions can become quite heated, but a common settlement of any disputed points is essential and it is the Chief Judge's job to ensure that this is reached as quickly as possible.

3. RESULTS PROCESSING AND 'TBL'

When any group of people get together to judge other people's performances the range of opinions expressed is usually diverse. In aerobatics as in any other contest one Judges downgradings may be harsher or more lenient than the next (think of this as differences of "style"), personal

feelings toward individual competitors or aircraft types may incline toward favour or dislike (this will lead to "bias"), and some Judges will probably miss or see things that others do not. How then can we judge the Judges and so reach a conclusion which has a good probability of acceptance by all the concerned parties?

To minimise the effect of any 'odd' opinions it is common practise to average the raw results to balance all the different views. Unfortunately this approach can achieve just the opposite of what we really want, which is to identify and where needed remove any "way-out opinions" - they are the ones most likely to be ill-judged and therefore should actually be discarded, leaving the rest of the 'good' scores to determine a more appropriate result. In the TBL process statistical probability theory is applied to the Judges scores to resolve contrasts of style and bias, and then to kick out potentially faulty judgements.

The key word is probability. To succeed we must be confident that opinions pitched outside some pre-defined level of reasonable acceptability will be identified and not used. This is the daily bread-and-butter of statistical probability theory, which can produce a suitably clear-cut analysis of numerically expressed opinions provided that the appropriate criteria have been carefully established beforehand. What has been developed through several previous editions addresses the Judges raw scores in such a way that any which are assessed to be unfair are discarded with an established level of confidence.

The TBL system in effect does the following:

Phase 1 - 'Commonise' the judging styles.

Initially the process re-models the scores to bring all the judging styles to a common format and remove any natural bias between Judges. Each Judges scores are squeezed or stretched so that the sets all show the same overall spread (this regularises 'style') and are moved en-bloc up or down so they all have identical averages (this equalises any 'bias'). Within each set the pilot order and score progression will still remain unaltered, but now valid score comparisons are possible between all the panel Judges on behalf of each pilot.

Phase 2 - the TBL statistical processing.

Now TBL looks at the high and low judges totals in each pilots' commonised scores, and throws out any that are too "far out" to be fair. This is a statistical calculation based on an offset limit of 1.645 standard deviations from the average score, and from it we can be at least 90% confident that during this process any "unfair" scores are discarded. The process is repeated until the remaining scores all satisfy the essential 90% confidence criteria

Phase 3 - Review of penalties and production of the final results.

Any penalty marks which need to be applied (for box or minimum height infringements etc.) are now added to the averaged surviving judges totals to derive the pilots final scores, which as usual are sorted in order of descent to rank the competitors first to last.

What is the real advantage of TBL?

Most importantly, the process ensures that every Judges opinion has equal weight (style and bias are all equalised) and that each Judges sequence score is accepted only if it lies within a statistically acceptable margin from the average of all the other accepted scores. This average of the remaining acceptable scores is thus presented by TBL as the "correct" score. The process can NOT ensure that wrong scores are put right, but it does remove individual Judges' totals that are unacceptably out of line with the rest of the panel's views, and you really can't ask for much more than that.

4. SOME PLAIN COMMON SENSE

4.1 Things to do

Plan the day carefully, the benefits are considerable. For instance:

- Bring a pad to write on, a couple of pens, a little set-square, your reference notes, sun-glasses, a folding chair, some suntan oil or maybe a warm coat and gloves.
- Re-read the books .... everybody forgets some of it from time to time, why should you be different? Very occasionally the rules change too, just to keep you on your toes.
- Bring an assistant if possible and share the enjoyment with a friend. Their main qualification is to be able to write quickly and legibly. You never know what you might be starting!
- Get to the contest on time. A late arrival is no good to anyone.
- Put your Judge's number and your name on every Judging Sheet - this is VERY important to the computer operator, who must get *your* results into the computer in *your* slot *every time*.
- Ask questions about anything in doubt! Your Chief Judge will respect you for asking and will be able to offer a wealth of experience and comment. If you don't ask you may never know.
- Keep the comments flowing during the figures, and impress your assistant with the importance of writing them down. These gems are life itself to pilots - a silent Judge is no help at all.
- Be a nit-picker - it's your job! But be positive too - if you think that the figure you just saw was flown completely without error then you owe it to the pilot to GIVE IT A TEN.
- Talk to the pilots - and the less fortunate non-aerobatic ones back at your local club - about how the judging process works. Sometimes even competitors are less well informed than you might think. Exactly where and why marks are lost is your stock in trade, so spread the word.
- Enjoy yourself! We all know that judging is quite hard work, but the rewards are there for the taking. How else could you get involved in so much aerobatic flying for next to nothing?

4.2 Things not to do

- Judge "emotionally" - by this we mean don't let the figure happen and then just give it an overall guessed mark based on jumbled thoughts. ***1*** - Look for the actual errors, ***2*** - add up the appropriate deductions, and ***3*** - give an honest opinion. Anything else is passing the buck.
- Wait until you can hear the other Judges give their marks and then make up a similar one to be "in line" with the rest. It takes time to develop your own style so that you can get to the right mark on your own, but it will take you longer still if you borrow your colleagues material. Be assertive and believe in yourself - it's important. Why *should* they be right and you wrong?
- Be persuaded that your interpretation of the pilots execution of a figure is wrong unless it can be explained to you so you believe it. If you think you saw some errors, stick to your guns.
- Mark a figure down to less than ten simply because although you didn't see anything wrong with it the pilot hasn't been that good so far. If it was well flown and you saw nothing out of order then GIVE IT A TEN - the pilot deserves it. Conversely - if you are sure that you see a well respected pilot make some mistakes then it is your clear duty to deduct all the appropriate marks and tell him why. Beware of 'halo effect' from the heros - they're just pilots too!

- If you're flying as well as judging, don't try to judge and then go flying (or vice-versa) without a natural break - your performance and safety will suffer, and it just isn't worth it.
- Allow pilots to sit around the judging line and listen-in to your pearls of wisdom - especially if they're from the same level you are judging. Whilst you are "doing the business" you need total concentration and solitude, so just ask them to leave. They will. You're in charge.