



**WAC – The World Aerobatic Championships** are held every two years and bring together the best aerobatic pilots in the world. The Championships last 10 days as pilots compete for the top titles in air sport.

The Championships include two separate competitions, the Technical Championship and the Freestyle Championship.

**Technical Championship**

The 'Technical' contest involves flying a series of aerobatic figures as accurately as possible, the emphasis is on precision and to win this contest a pilot has to fly very complex aerobatic manoeuvres - In each sequence the individual figures flown are geometrically defined and drawn from the internationally agreed Aresti Catalogue system.

**Qualification Round: Known Programme**

All pilots fly the same sequence and will have practiced before the contest. Pilots have to fly the sequence of figures accurately, in the correct order, in the specified direction, in a small area of sky (the box) and without stopping! A safe flight in this round qualifies the pilot to participate in the remainder of the competition, but does not count towards the final result.



**Round 1: Free Programme**

In the 'Free' programme each pilot flies a sequence that (s)he has composed him/herself. The manoeuvres flown must demonstrate a high level of technical difficulty and a wide variety of flying techniques.

**Round 2 and 3: Unknown Programmes**

Each pilot will then fly two 'Unknown' sequences. These 'unknowns' are composed from figures submitted by the competing countries and are flown without practice. Each nation will try to fox the others' pilots by choosing figures difficult to fly well at the first attempt. The Unknowns are a severe test of pilot skill and the Championship can easily be lost if a pilot executes just one figure incorrectly.

Pilots can win individual medals, or team medals. Countries need three pilots in the competition to be counted towards the team results. Aerobatics is unusual in the world of sport, because men and women compete equally in the battle to win the world title the overall winner of the Technical Championship is called the World Aerobatic Champion.

**The Freestyle Championship**

This flight is much more like airshow flying, each flight is very different and flown with smoke and music. The pilots invent their own display sequences that last between 3½ and 4 minutes, using any combination of manoeuvres - anything goes! It's a tremendously exciting programme to watch, with aircraft gyrating and tumbling in ways that seem quite impossible to the spectator.

**Pilots & Teams**

The pilots that form the teams for the World Aerobatic Championships are amongst the best in the world and indeed are equal to the elite competitors or athletes you will find in any sport. The rare blend of skills – both physical and mental – are required to be a top aerobatic pilot.

The Silverstone event will see 50 of the world's finest aerobatic pilots competing to be World Champion.

Information about the competing pilots and teams will be added to the website once registration for the event is underway. [www.wac2009.com](http://www.wac2009.com)

**Provisional WAC Schedule**

**20th-27th August**  
Qualifying & Hospitality

**Friday 28th August**  
World Technical Championship Final

**Saturday 29th August**  
World Freestyle Championship

World Freestyle Championship

Airshow & Closing Ceremony



The World Aerobatic Championships are held every two years and bring together the best aerobatic pilots in the world. The Championships last 10 days as pilots battle it out for the top titles in air sport. Silverstone Circuit in Britain will host the 25th FAI World Aerobatic Championship in 2009. The Championships include two separate competitions, the Technical Championship and the Freestyle Championship. [www.wac2009.com](http://www.wac2009.com)

Flying Aces Limited, based in London, UK, owns, manages and creates global media rights connected to top level aviation sport. Most of the Flying Aces property rights are fully developed in-house while others are managed on behalf of other rights holders. Flying Aces is also the organiser of the internationally-televised Aero GP air racing series and the new TV series 'Breitling Airsports World' which covers the range of official FAI Championships (broadcast on Sky Sports in the UK).

The British Aerobatic Association, an affiliate of the Royal Aero Club, is the official governing body for British powered and gliding aerobatics. It is responsible for organising national and international sports competitions on behalf of the FAI. It is also responsible for the promotion of aerobatic sports, safety and training within Britain.

The Fédération Aéronautique Internationale (FAI), the world's air sports federation, was founded in 1905. It is a non-governmental and non-profit making international organisation with the basic aim of furthering aeronautical and astronautical activities worldwide. Ever growing, FAI is now an organisation of some 100 member countries.



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<http://airsports.tv/worldaerobaticchampionshiplive.asp>

**For ticket information please visit the Silverstone website at [www.silverstone.co.uk](http://www.silverstone.co.uk)**

**For all general enquiries, please contact the Flying Aces team:**

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If you have a question exclusively related to your, or your National Aero Club's participation in the WAC 2009, please visit the Participants' Area at [www.wac2009.com](http://www.wac2009.com)



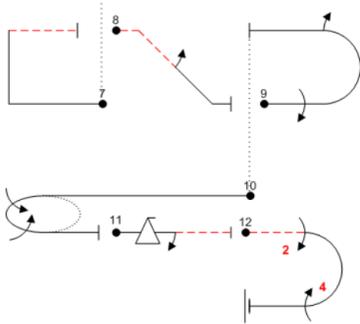
**25TH FAI WORLD AEROBATIC CHAMPIONSHIPS**

Silverstone | United Kingdom  
28th & 29th August 2009



[www.wac2009.com](http://www.wac2009.com)





### THE ARESTI SYSTEM™

The first postwar, modern-format World Championships (and the first to be sanctioned by the FAI) was held in Czechoslovakia in 1960.

The next major development to come in formal aerobatics was the introduction of the Aresti aerobatic shorthand and scoring system, which was the contribution of a flamboyant Spanish aerobatic aristocrat,

Count Jose Louis Aresti.

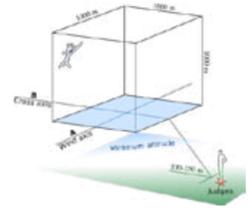


Count Jose Louis Aresti

Reportedly, the Count started out by merely scribbling line diagrams of his sequence and taping them to his instrument panel as reminders he could actually read while pulling six or seven Gs. Known merely as the

Sistema Aresti, the notation was first used formally at the FAI World Championships in 1964. Aresti notation eventually evolved into the FAI Aerobatic Catalog.

The Aresti System™ has remained in use ever since, growing from an initial 3,000 or so manoeuvres to a maximum of some 15,000, all with their own symbols and difficulty coefficients. Aresti himself received many awards for his work, including Gold and Bronze Medals from the FAI and he served as President of CIVA in 1968-69.



### THE BOX

The aerobatic box is a 1000 meter cube of airspace in which the airplane must remain while performing the sequence. White ground markers at each corner of the box make it visible to the pilot from the air. A centre line is also marked (parallel to the judges, the A-Axis) and it is along this line that most figures are flown.

The B-Axis (perpendicular to the A-Axis, and intersecting the judges) is used for "cross box correction." The official wind direction (according to the judges)

always blows parallel to the A-Axis. This, however, does not always reflect reality, and generally during the course of a sequence the flyer will drift either toward or away from the judging line. Manoeuvres flown along the B-Axis can be either extended or shortened to obtain the best positioning.

The box floor is 1480 ft (450 m) above ground level (AGL) for beginners which is reduced to 330 ft (100 m) AGL for unlimited competitors. The ceiling is 1000 m above the floor (thus forming the cube.) Before the competition starts, one of the contestants will mark the box by flying along the boundaries (both perimeter and floor levels for each category.) This allows the judges to visualize it in the sky.

At 300 km/h the pilot has 12 seconds from entering the box on the one side before exiting the box on the other. When wind drift (maybe an extra 40 km/h) and a "no out" margin (there are penalties for flying outside the box) are considered, pilots are down to approximately 10 seconds. Typically every 2nd or 3rd figure reverses direction so the pilot exits the figure flying to the other side of the box. The timing for "level flight" between figures is therefore minimal and in many cases pilots have at most 2-3 seconds of "rest" before starting the next figure. Some aircraft fly even faster (up to 400km/h).

### The Sponsor: Mazda UK

Mazda UK is proud to be a major sponsor of the World Aerobatic Championships (WAC), which brings together top pilots from around the world.

The Mazda sponsorship of WAC 2009 reflects its Zoom-Zoom culture and is a broadening of its involvement in the sport. Through its partnership with WAC 2009, Mazda is able to mirror its brand values: the emotion of motion, excitement and fun

that can be experienced when driving a Mazda. It is about the journey rather than the destination and this is perfectly complemented by aerobatic flying.

This year Mazda is also supporting the British Aerobatic Association (BAeA). Through this sponsorship Mazda is helping fund two pilots in the BAeA Scholarship scheme which provides these budding young pilots with the aerobatic training required to prepare them for competing in the European and World Aerobatics in 2012. It also

funds the BAeA bursary and "Team Mazda UK" in their training for the National, European and World Championships. The national championships will become the Mazda national championships.

Mazda UK looks forward to working with the British Aerobatic Association to make the 2009 World Aerobatic Championships a celebration of world class flying and a truly spectacular event. Look out for Team Mazda UK and the Mazda branded Extra300 at the event. See you there!

"We are delighted to be involved at the pinnacle of aerobatics. Mazda wishes WAC2009 every success."

Graeme Fudge, PR Director



### Mazda to Sponsor World Aerobatic Championships - 2009 Silverstone



### PAST FAI WORLD AEROBATIC CHAMPIONS

2007 Armilla (Granada) Ramon Alonso (Spain)	<b>Spain</b>
2005 Burgos Sergei Rakhmanin (Russia)	<b>Spain</b>
2003 Lakeland, Florida Sergei Rakhmanin (Russia)	<b>USA</b>
2001 Burgos Mikhail Mamistov (Russia)	<b>Spain</b>
2000 Muret Eric Vazeille (France)	<b>France</b>
1998 Trencin Patrick Paris (France)	<b>Slovakia</b>
1996 Oklahoma City Viktor Chmal (Russia)	<b>USA</b>
1994 Debrecen Xavier De Lapparent (France)	<b>Hungary</b>
1990 Yverdon-les-Bains Claude Bessiere (France)	<b>Switzerland</b>
1988 Alberta Henry Haigh (USA)	<b>Canada</b>
1986 South Cerney Lyubov Nemkova (USSR)	<b>UK</b>
1984 Bekescsaba Khalide Makaganova (USSR)	<b>Hungary</b>
1982 Spitzerberg Betty Stewart (USA)	<b>Austria</b>
1980 Oshkosh, Wisconsin Betty Stewart (USA)	<b>USA</b>
1978 Ceske Budejovice Valentina Yaikova (USSR)	<b>Czech</b>
1976 Kiev Lidia Leonova (USSR)	<b>USSR</b>
1972 Salon de Provence Mary Gaffaney (USA)	<b>France</b>
1970 Hullavington (RAF) Svetlana Savitskaya (USSR)	<b>UK</b>
1966 Moscow-Tushino G. Kortschuganova (USSR)	<b>Russia</b>
1964 Bilbao Tomas Castano (Spain)	<b>Spain</b>
1962 Budapest Jozeph Toth (Hungary)	<b>Hungary</b>
1960 Bratislava Ladislav Bezak (Czechoslovakia)	<b>Czech</b>

### What is G Force?

#### How many G's will an athlete 'pull' during an aerobatic flight?

The "G Force" is the force resulting from acceleration; 1G (pronounced gee) is defined as acceleration of the same magnitude as the value of the acceleration due to gravity on Earth at sea level. In layman's terms positive G makes you feel heavier. Negative G makes you feel lighter. At zero G you are weightless. In aerobatics, when an aircraft is doing a loop it creates positive G, which would push you into your seat. If the aircraft does a manoeuvre like an outside loop – ie. the cockpit is facing out of the circle – negative G is generated, pulling you away from the seat. WAC competitive aircraft are rated to over +9 and -9G.

However, G not only stresses the aircraft, it also stresses the human. Modern jet fighter aircraft routinely pull +7.5G, while Unlimited competition aerobatic aircraft are capable of very high G levels, such as +12G, but cannot sustain these G levels for long.

The cardiovascular system is most affected by pulling G. The more G you pull, the more blood is forced into the lower part of your body at the expense of your brain. Even when you are standing there is proportionately more blood in your legs than in your head, simply due to the force of the Earth's gravity. The number of G you pull magnifies this effect.

At around +3 to +4G, most people in a relaxed state will begin to partially lose their vision (often their peripheral vision). At +4.5 to +5.5G a 'normal' person will lose consciousness – WAC athletes have trained their bodies to tolerate, albeit briefly, +/-10G! To put this level of fitness and conditioning into perspective an F1 driver will typically experience sideways forces of 4G when cornering, and about 5G on braking. As they accelerate out of the corners, they'll feel a 1.5-2G pull. The WAC pilots really are extreme athletes.

"The World Aerobatic Championships are a further example of the elite events that demonstrate Silverstone's leadership in the world of sport and entertainment."

Richard Phillips - Managing Director of Silverstone Circuits Limited



## A venue steeped in aviation history



Silverstone circuit has come a long way since it turned from a wartime airfield into a motor racing circuit. It is now one of the world's most famous motor sport venues.

Silverstone was opened as a World War Two airfield in 1943, near the leafy village of the same name. During the war years Silverstone was home to 17 Operational Training Unit of the Royal Air Force; flying the Wellington Bomber similar to the aircraft pictured here. Once

the war had ended Britain was left with a number of redundant airfields but without a major race track!

The Royal Automobile Club was interested in Silverstone as a potential site and approached the Air Ministry in 1948 and a lease was arranged. At this time the centre of Silverstone Circuit was a farm producing cereal crops and also a piggery so the RAC employed farmer James Wilson Brown to create the first Grand Prix circuit at the site and gave him just two months to build it; this he did, marking the track with straw bales and rope!

On October 2nd, 1948, Silverstone's first event took place, the RAC Grand Prix. The winner was Luigi Villorosi in a Maserati, who recorded an average speed of 72 mph to claim the first prize of £500. How times change!



### Flying in to the World Championships

Only participants and official WAC aircraft will be able to fly in to Silverstone during the Championships. However, aviation visitors may land at Turweston aerodrome, which is just 4 miles to the West, from where they will be able to arrange ground transport direct to Silverstone, just as happens every year for the Formula 1 Grand Prix. For details of this service please visit the Turweston aerodrome website.

