

Mark Jefferies and the Extra 330SC **Commentary notes.**

Introduction

Due to variables in weather conditions the sequence of manoeuvres may vary, these notes are therefore intended as a guide that will give the commentator flexibility during the show to pick and choose from comments about the pilot, the aircraft, and the figures flown, in addition to some relevant references to the sponsor.

Abarth UK sponsor Mark – and must be mentioned in the commentary.

There are notes that the commentator may use at the bottom of this document referring to the sponsor.

Notes:

Pilot

- Mark Jefferies is one of the world's most accomplished air show performers. Mark is 51 years old and has been flying aerobatics for the last 29 years. In addition to his air show performances Mark runs a busy airfield in the UK where he lives with his wife and 2 children.
- His air show career spans over 25 years where he has performed in a wide range of aircraft from jets through to vintage bi-plane aircraft.
- Marks skill as an aerobatic pilot is proven by his successful career as an unlimited aerobatics pilot. He has represented Great Britain in competitions over many years during the course of which he has won medals at several international competitions. In the UK Mark has frequently won national championships, first winning at unlimited level in 1994 in an aeroplane that he built himself.
- Winner of the National aerobatics title 2005, 6 & 7.
- The skill and experience of this pilot ensure that regardless of weather conditions, wind speed and direction that the show is well balanced for the crowd.
- Mark is flying the Extra330SC, due to his yearning for greater performance than ever.

Aeroplane – to be referred to as the 330SC

- The Extra330SC. This is a German designed and built aircraft. This single seat variant is one of only 21 manufactured to date, and has even better performance than the more common two seat variant – not least due to the consequent saving in weight – this aircraft has staggering power-to-weight performance.

- The aeroplane is built specifically for unlimited aerobatics, with a wing designed to ultimately withstand a bone-crunching +/- 25G, i.e. 25 times the force of gravity.
- The airframe is constructed from steel tubing, carbon fibre, wood and a carbon/Kevlar wing skin. The combination of these high-tech materials combined with its weight saving single seat configuration give this aeroplane stunning performance. Roll rates exceed 420 degrees per second, and speeds varying from 260MPH to, well backwards!
- Mark uses an environmentally friendly smoke oil, “baby oil” through the sequence to emphasise the flight path of the Extra through the display. I am often asked how does the smoke not get in way of the pilots view – I can assure you that it does, particularly when flying backwards, the cockpit will fill with smoke and take seconds to clear!
- The engine is the new 580 cubic inch, 6 cylinder Lycoming powerplant generating 320HP.

Manoeuvres

- Mark begins with a vertical point roll transitioning into a knife edge spin upwards which he will develop into an inverted multi turned flat spin. During this figure Mark has an excellent view of us all as he spins, but upside down, towards the ground. The spin is kept flat through a combination of gyroscopic forces from the propeller – maximised as Mark keeps full throttle through the figure – and full control deflections.
- Mark then pulls up into a unique figure, the Twister, a figure created by Mark that is a skilful combination of gyroscopic twists on a vertical upline, but recovered pointing skywards with such accuracy that Mark then flies the aeroplane backwards through his own smoke – this requires fantastic precision, and a strong head.
- Through this sequence Mark will be experiencing very high g-loadings of 8 positive g (4 g can induce black out in normal people as the blood is forced from the head) and an eye-watering -6g where all the blood is forced into the head. Under these conditions organs can move inches inside the body with dramatic changes in blood pressure and heart rate. Hence a regular training programme is essential to unlimited aerobatic performances.
- Other figures flown will include:

Tail slide, where the aircraft flies backwards

As the aeroplane flies backwards Mark is literally balancing it on its tail, and to recover he will use reverse pitch controls due to the airflow travelling backwards over the aircrafts control surfaces

Ruade, where the aeroplane tumbles off a half loop - This figure which seems to defy the laws of aerodynamics is achieved through a combination of gyroscopic forces generated by the 320HP engine and full deflection of all control inputs

Eventail, where the aircraft pirouettes in the sky, like a Catherine wheel This manoeuvre is a real feat of coordination and pilot experience overcoming disorientating visual cues, it requires Mark to develop a flat inverted spin on a horizontal plane

Flick rolls, where the aircraft rolls fast and violently

Loops, with negative and positive G

Lomcevaks, where the aircraft rotates around the engine in a cartwheel

Stall Turns, the aircraft speed drops to a stall as it turns

References to Sponsor

The partnership with **Abarth** - not surprisingly mirrors Mark's requirement for performance engineering, **style** and speed.

Sponsor – only to be referred to as Abarth (not Fiat or Fiat 500); ABARTH, making everyday products extraordinary. It's what they've been doing for over 60 years. And it's a philosophy we're extending beyond the motoring world, to computers, watches, clothing and more. Because at Abarth, we believe empowerment can be applied to anything. Founded by Carl Abarth in 1949, initially as a motorcycle tuning company, the business developed and after working closely with FIAT and the iconic 500, literally hundreds of race and rally wins followed and now ABARTH are recognised as an independent automotive brand within the FIAT Group of companies. The Abarth 500 lives up to the title coined in the 60's – "small but wicked" and the Trofeo Abarth 500 GB racing series epitomises the style, charisma and performance that the brand stands for. Visit www.abarthcarsuk.co.uk or your local Abarth dealership.

Thanks also to Mark's other supporting partners including **VIT technology** for the onboard video system relaying live pictures

Conclusion, a huge thank you to Mark and his sponsor **Abarth** for their skilful, safe, reliable and uncompromising display.

To book a show please contact Mark via his web site

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