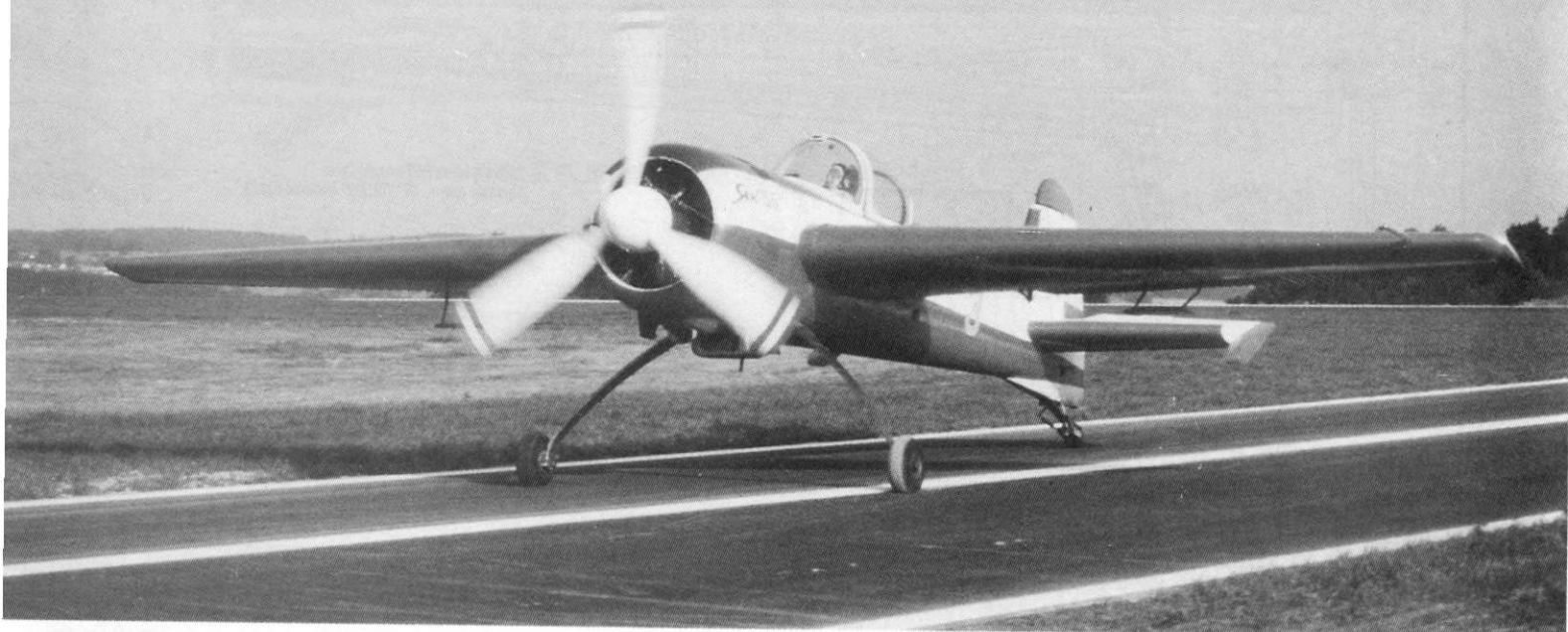


YAK 55



No.268: Pat Lloyd's superb drawings of this Soviet aerobatic challenger for your delight

THE Yakovlev Design Bureau have for many years produced training aircraft for the Soviet Union, and in many seasons of Aerobatic competitions these aircraft have consistently placed highly. Successes were gained with the tri-gear YAK 18 and also with its lightened tailwheel variant, the 18 PMS. Then in 1974 came the improved YAK 50, and the 1976 52; these last two remarkably similar to their predecessors. In spite of the continued competitiveness of these dated designs, the Design Bureau obviously sought the ultimate; in this case, our subject - the YAK 55.

New ground

The power plant remained the usual M14 seven cylinder radial, reliability and power at low rpm being primary reasons for its retention. Design of aerobatic single seaters can never be really radical, but nevertheless the resultant formula reached by the design team A A Yakovlev, B P Condratev, Y N Briachev and B N Frolichev obviously broke new ground because a Patent, No 2440872 was filed in a number of countries, possibly to help with negotiating future licence production.

Eventually the prototypes appeared with very low-aspect-ratio wings of symmetrical airfoil, and of eighteen per cent chord thickness. Incidences were all set at zero degrees; and as far as possible, emphasis was placed in symmetry to assist with inverted performance.

The YAK 55 is of metal construction, with fabric covered control surfaces. Fuel tanks are integral with the wing roots. Landing gear is a single leaf spring of titanium alloy, carrying small wheels with hydraulic disc

brakes, initially intended to be faired with small spats - but these are rarely seen fitted. The previously mentioned M14 radial is fitted complete with a constant speed V530 TA-D35 two bladed propeller, and an inverted fuel and oil system.

First flight was by Oleg Bulegin in May 1981 but even after 'working up', the aircraft seemed to compare unfavourably with the then current Zlin 50L and CAP +20.

Improvements

Roll rate was improved by shortening the span, and, in turn, the speed and wing loading increased. All this improved handling,

leading to the production of some machines intended to equip the USSR aerobatic team for the 1982 World Championships. This is the wing illustrated in the main views of our drawing. The machines in this competition at Spitzerberg, Austria did not compete very successfully with the western machines, such as the Pace Spirit and Lasers. Michael Molchanink managed sixteenth place.

Apparently the Soviets showed a great deal of interest in the wing of the Pace Spirit, even to the extent of taking measurements. In the next World Championships in 1984 at Bekescsaba, Hungary, the YAK 55 appeared with a 'new' wing (see the scrap views on the drawing) which had a modified aspect ratio, and looks more streamlined. The most noticeable feature is the almost full-span, one-piece ailerons, with prominent external stiffening ribs. A new modification was the fitting of an aileron 'spade' beneath each wing; these assist with stick loadings to make the pilot's job less tiring.

Heading and photo below show aircraft '3' at the 1985 European Championships.





Top: '07' at Bekescaba, Hungary, in August 1984. Above left: '55' at Hosin, a year later. Above: '3', also at Bekescaba in '84. Left: '3', with original wing, at Spitzernberg, Austria, in August 1982. All differences between craft fully detailed on drawings. All photos: Tony Lloyd.

In the 1984 competition Viktor Smolin and Nicolai Nikitiuk took fifth and seventh places respectively, whilst ladies Khalide Makagonova and Lintor Nemkova took the top two places in their category. Unexpectedly, 1984 saw the debut of the Sukhoi 26 prototypes, although they did not acquit themselves very well, possibly because the development pilots were not very 'competition-wise'.

Eclipse

The last real competition for the YAK 55 was the European Championship in 1985, where it featured yet another wing, with interconnected aileron and elevator - similar to the system pioneered by the Hirth Akrostar. Vicktor Smolin took fourth place, up

against Zlin 50Ls and the new Extra 230. Obviously the Sukhoi 26 was offering more promise, and from 1986 the very best male and female pilots have flown the Sukhoi, as explained in the May 1987 issue of *Aeromodeller*.

Strangely, this eclipse of the YAK 55 was accomplished by an aerodynamically very similar machine. Beyond doubt, this type of layout has now become established as the 'norm' for championship machines. Nevertheless, the fate of an aircraft design does not dictate whether or not it should be recorded, so to continue our collection of aerobatic aircraft we present the YAK 55. We may not yet have seen the last of this aircraft, as rumours exist of a further variant, not

powered by the trusty Ivchenko radial.

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YAK 55 data

Span: 9m. 64cm.
Length: 7m. 52cm

Reprints of this feature plus a 1/24 scale dye line print of the YAK 55 drawing are available from ASP Plans Service, Argus House, Boundary Way, Hemel Hempstead, Herts HP2 7ST. Price £3.10 (inc. p&p). Ref. 3087.

