

## NATIONAL INSIGNIA and S.A.A.F. CAMOUFLAGE

### - a brief history

*Geoff Timms*

All the aircraft supplied with the Imperial Gift bore the standard red, white and blue roundel. In December 1920 the Minister of Defence directed that a new national insignia was to be applied to SAAF aircraft viz. Orange, green, red and blue. In January 1921, an AVRO 504 K was painted for trial purposes, but found unsuitable.

In December 1921, new instructions were issued and green, red, lemon-yellow and blue roundels were used until ± 1927 when they were replaced with orange, white and blue roundels and were identical to the standard RAF markings of that era and were used until 1949.



### SPRINGBOK ROUNDEL

During 1949 the Springbok roundel was introduced, a blue ring surrounding a white disc with an orange Springbok jumping thereon.

The Springbok was placed in the centre of the roundel Jumping towards the front of the aircraft when positioned on the fuselage and jumping towards the fuselage when placed on the wings whether upper wing or lower wing, when viewed from the tail. The roundel varied in size from 18" - that was used on the Sikorsky S51 to "66" as used on the Sunderland flying boats. Sizes used were the 18", 14", 30", 36", 48", 54" and 66", this dimension being the diameter of the circle passing through the extreme points of the roundel.

2 Squadron displayed the Springbok roundel on their Mustangs when they went to Korea, so impressive was the roundel that Australia, Canada and New Zealand soon followed suit with their own symbols in the centre of their roundels, however, these symbols were all in red.

The symbols used by these countries are Australia - the Kangaroo, Canada, - the Maple Leaf and New Zealand, the Kiwi and are still used by these countries today.



## CASTLE INSIGNIA

1958 saw a change in National Insignia once again and the Castle of Good Hope in Cape Town was used as a basis on which the new National Insignia was designed. The colours to be used were a white border surrounding a blue Castle with an orange Springbok jumping thereon.

Seven sizes were used, namely 18", 24", 30", 36", 48", 54" and 66", the dimension being the diameter of the circle passing through the extreme points of the Castle.

As with the Springbok roundel the Springbok was retained jumping towards the front of an aircraft when placed on the fuselage and jumping towards the fuselage when placed on the wings, when viewed from the tail. However, various colours were used in the application of National Insignia and Springbok, this was not a result of the SAAF unable to make up it's mind but as a result of aircraft manufacturers identifying the colours as they thought best.

The last four Shackletons were delivered from the factory with an orange Springbok. The blue varied the most, the C-130 B Hercules aircraft were delivered with a very Dark Blue (U.S.A.F. National Blue) as used by the U.S.A.F., the C-160 Transalls had a lighter French blue but the fin flashes were applied back to front as is applicable to French aircraft, the blue was to the front of the aircraft. British supplied aircraft (Wasp) had their own blue which incidentally was supposed to be identical to that as used by the SAAF.

The SAAF also not to be left behind, had two blues, the first blue as used when painted on and the second blue printed on a decal sheet which was applied to aircraft, the second blue had more of a green hue to the colour.

The colour of the Springbok changed too, from the Orange as used on the Shackletons, to the Yellow used on the Canberra and Buccaneer, Gold used during the 1970's and 1980's and Old Gold (Gold with a greenish hue) as used on the decals.

The Springbok's jump also varied from paint shop to paint shop, for instance the Springbok as applied to the Harvards was more vertical than other aircraft, this phenomenon can be attributed to the interpretation of the official drawings by the various paint shops.



### LOW-VIZ CASTLE -MIRAGE F1 "203"

With the application on the "diamond" shape camouflage pattern on Mirage F1CZ 203 the Castle was once again subject to a change, the background blue was the same colour as that of the aircraft (Extra Dark Sea Grey) with a white border broken line  $\pm$  30 mm in length, the Springbok and broken line were then subject to a overspray of Extra Dark Sea Grey, the effect was so good that one couldn't see the Castle at a distance of 25 metres! Incidentally, the number 203 was white and black, black being the base colour with white stripes 30° slant from the vertical from right (top) to left (bottom).



### CHEETAH D AND CHEETAH E CASTLE

This castle used on Cheetah aircraft has only the border and Springbok in Dark Sea Grey painted over the aircraft's colour. On some aircraft a black border and Springbok was used. Cheetah D aircraft are at present painted with a Eagle Castle with a Dark Grey border/Eagle, the background colour being the same as the aircraft colour.



### C-47 TP DAKOTA (3 TONE BLUE SCHEME)

The Castle used on these aircraft is the normal Blue/Gold Castle but with an overspray on the aircraft/s colour, all aircraft will in due course have the Eagle Castle. The aircraft are painted in the following blue colours:

Light Blue AKZO Code 069529  
 Medium Blue AKZO Code 069528  
 Dark Blue AKZO Code 069527

### C-47 TP DAKOTA (V.I.P.)

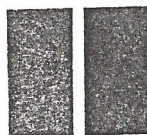
Blue/Gold Springbok Castle used at first, but has been revised to the Blue/Gold Eagle Castle, with no overspray as the aircraft is painted in V.I.P. trim.



### EAGLE CASTLE

This is the new type of Castle introduced in 1992 on Transall 337, which has the Fish Eagle in the centre of the Castle and this replaces the Springbok. The Blue used in this Castle is National Flag Blue with a Gold Eagle, for the low-viz application the colours are the same as the Cheetah Castle. The dimensions of this Castle being the standard sizes, e.g. 18", 24", 30", 36", 48", 54" and 66".

Please note that with the Springbok roundel and the Springbok Castle the buck jumps to the front of the aircraft on the fuselage and on the wings the Springbok jumps towards the fuselage, with the "Eagle Castle" the bird's head faces the front of the aircraft on the fuselage and on the wings the bird faces the fuselage. On Cheetah C aircraft only an outline of the Castle and Eagle are used and are normally a light Grey border/Eagle on a Dark Grey background and vice versa.



### FIN FLASHES

As the National Insignia changed it's shape and colours during the years so has the fin flash varied and used the same colours as the National Insignia for e.g. Orange, Green, Red and Blue, next Green, Red, Lemon-Yellow and Blue to the last colours used i.e. Orange, White and Blue. Present day usage is of the new SA Flag with the black triangle facing the front of the aircraft and the red on top of the flag. The National Flag is applied to various aircraft at present Alouette III and Oryx on the tailboom, the Hercules C-130B on the tail fin. On the Boeing B707 aircraft the flag size is 2.2 x 1,8 m.

### EAGLE INSIGNIA

One aircraft was painted with the Eagle Insignia although not strictly a S.A.A.F. aircraft yet, but an aircraft that is currently been used for S.A.A.F. acceptance trials and which is the Agusta 109KM.

The Eagle without any Castle or roundel was applied to the helicopter. The Eagle is painted in Yellow / Gold and one major discrepancy is that the Eagle faces to the rear of the helicopter on the port side of the helicopter.

### 9 POINT ROUNDEL

As part of it's new image the South African National Defence Force has adopted the 9 point roundel during 2003 for all it's Arms of Service.

The 9 point roundel signifies the nine provinces of the Republic of South Africa and for the S.A.A.F. the Fish Eagle is mounted in the centre of the roundel.

Other Arms of Service also utilise the 9 point roundel bur have their own distinctive symbol in the centre, e.g. the S.A. Army has three lion heads in the centre of the roundel.

The points of the roundel are set 40 degrees apart thus making the full 360 degrees of the roundel.

A white border surrounds the 9 point roundel with a thinner white border on the outer circle. National Flag Blue is the colour used between the two borders with S.A.A.F. Light Blue on the inner portion of the 9 point roundel with a Yellow Gold Fish Eagle. A fine black line is used to give the Fish Eagle more definition.

The S.A.A.F. flag has the National Flag in the left corner occupying half of the width of the flag as well as half of the length of the flag.

The rest of the flag besides the 9 point roundel is S.A.A.F. Light Blue.

## DEVELOPMENT OF SAAF CAMOUFLAGE

SAAF aircraft have used some form of camouflage since the formation of the Air Force. The earliest colour used was PC 10 Dark Brown which was painted on the upper surface and fuselage of aircraft, the undersides were left a clear dope or linen colour.

With the advent of the Munich Crises the R.A.F. started to camouflage aircraft and so did the SAAF. Colours that were to be used as well as the specification, etc. were issued by the R.A.F. Aircraft bought by the SAAF from Britain were already camouflaged upon delivery to the SAAF.

On monoplanes Dark Green/Dark Earth was used on the upper surfaces and fuselage, the undersides were a mixture of Black/White or Black/Silver/White. The R.A.F. did extensive studies at this stage with regard to various scenery, backgrounds, sky, etc. And believed that the combination of Dark Earth/Dark Green was suitable for the European theatre. Biplanes were delivered with a Light Green/Light Earth, lower wing (to compensate for the shadow created by the upper wing) and Dark Earth/Dark Green upper wing and fuselage. The White/Black and White/Black/Silver undersides referred to above were used solely for identification purposes, thankfully this did not last long. Mention must be made that only fighter aircraft were painted this way and not all the aircraft. Where the lower surface of a wing was painted black, a Yellow border was to surround the blue of the roundel.

As WW2 progressed the use of new colours was implemented, with Sky being applied to the undersides of aircraft.

Aircraft used over Europe had their colours changed to Dark Green/Ocean Grey with medium Sea Grey undersides.

The SAAF followed these instructions for their aircraft used over Italy and the continent but aircraft used "Up North" had a camouflage of Dark Earth/Middle Stone with Azure Blue undersides, the coastal patrol aircraft had a Dark Slate Grey/Extra Dark Sea Grey upper surfaces and fuselage with Sky Type S (Duck-egg Blue) undersides.

Training aircraft used in SA, used a variety of colour schemes one of them used initially was Dark Green/Dark Earth with trainer Yellow undersides to midway of the fuselage side.

After the war the SAAF reverted to a more peace-time markings as the only aircraft that were still camouflaged in a way were the Spitfire with extra Dark Sea Grey upper surfaces with Medium Sea Grey, the Sunderlands with either Medium Sea Grey or Dark Sea Grey upper surfaces and fuselage with Sky of PRU undersides, the Shackleton's adopted the last mentioned paint scheme.

The Auster and Dornier aircraft were also camouflaged the Auster having Dark Green/Dark Earth upper surfaces with Sky undersides, later this was changed to Dark Earth upper surfaces with PRU Blue undersides.

Incidentally the Spitfire MK8 at the National War Museum in Johannesburg was delivered in PRU Blue, this aircraft was used for photographic purposes and was extremely difficult to see at high altitude.

During 1960's the SAAF received the Mirage III CZ and placed it into service, this aircraft was delivered in a natural metal finish with a red lightning flash on fuselage and Red trim around the engine intake. The first camouflaged variant of the Mirage family was the Mirage III RZ's that were delivered with an Olive Drab/Dark Sea Grey upper surfaces with natural metal undersides.

The story goes that the Mirage III CZ were starting to show corrosion on the flying surfaces so it was decided to treat and protect the aircraft from any further damage by camouflaging the aircraft, the colours that were to be used were decided upon in a meeting of high officers in a certain room where liquid refreshments was served, so was born the camouflage of jet fighters in the SAAF. The Deep Buff was thought to camouflage the aircraft over the Highveld.

The Buccaneer was delivered from Britain with extra Dark Sea Grey upper surfaces with PRU Blue undersides.

The Canberra's were initially painted with PRU Blue undersides and Silver upper surfaces before painting the total aircraft PRU Blue.

It is of interest to note that since the introduction of PRU Blue (Photographic Reconnaissance Unit Blue) during World War II, the Blue is still one of the most important camouflage colours till today.

During 1979 I heard that the SAAF was looking for a new camouflage pattern for the Mirage F1 CZ's. I duly made a prototype camouflage pattern, built a model and went to 3 Squadron at Waterkloof. There I saw Commandant Jack Grundlingh who was the O.C. at that stage, he called all the pilots into the crew room and there we started to discuss the camouflage pattern. Captain Martin Louw who was the adjutant was assigned to liaise with me for this project. The model that I had built was borrowed by 3 Squadron and used for photo's, the model was hung by wire to simulate flying mode etc.

I subsequently built a further four models all with various camouflage patterns and colours used, my wife was not allowed to venture near the room in my house where Martin Louw and myself were busy with the development of the camouflage pattern.

The "Diamond" pattern consisting of extra Dark Sea Grey, P.E. Blue and Highveld Brown was decided on and Mirage 203 was painted in this scheme, 70 litres of paint and over 600 man hours were used to prepare the aircraft, at the roll-out ceremony Mirage 203 was flown alongside another Mirage and the result of the camouflage working by hiding Mirage 203 was a feeling of achievement never sensed before, a proper celebration was held in the Officers Mess that night. Shortly thereafter Mirage 203 shot down the first MIG 21 in Angola.

The transport and light aircraft were painted in a Dark Earth/Olive Drab upper surface and fuselage with the same pattern applied undersides on light aircraft, transport such as the Hercules and Transall have Olive Drab/Dark Earth under the wings with PRU Blue under the fuselage, this PRU Blue replaced the Dark Sea Grey first used, the Hercules had a white patch above the cockpit at first, this was to help prevent the cockpit from heating up, this patch is no longer in use as it somehow caused the opposite effect to the cockpit area.

The Hercules C-130B fleet are at present undergoing a repaint after their mid-life upgrade, the aircraft will be painted Medium Grey overall.

The Impala MK2 were initially delivered with Deep Buff/Olive Drab/Light Green upper surfaces with Light Admiralty Grey undersides, these were changed to Dark Earth/Olive Drab upper surfaces, colours which are more effective for the Impala's ground attack role. Rooivalk attack helicopters are painted with a Dark Earth/Olive Drab/Light Brown camouflage pattern.

Alouette II's, Alouette III's, Puma's and Frelons were at first delivered with all over Olive Drab, this was also changed to the present Olive Drab/Dark Earth scheme which is very effective for the terrain found in South Africa. The present day Oryx has a camouflage pattern similar to that of the Puma, but has an extra patch of Olive Drab on the lower tail boom. The leading edge of the ventral fin in Dark Earth, some Oryx's have an Olive Drab leading edge although the official drawing stipulates a Dark Earth leading edge.

Two Oryx helicopters are deployed to the Antarctic SANAE base and are painted in a high visibility Post Office Red BS 381 C - 538 panels/bands over White BAC 7067.

The Wasp helicopter has used an overall extra Dark Sea Grey camouflage to help conceal the aircraft whilst on patrol over the sea.

Training aircraft like the Harvard first used Yellow bands on the wings and fuselage, this was later changed to Fire Orange bands, the purpose of this was to make the aircraft more conspicuous so that other aircraft on circuit could keep a look-out for the training aircraft. The Astra is an example of this as it has a Red underside fuselage, Red tail and Red wing bands from midway of the wing to the tip.



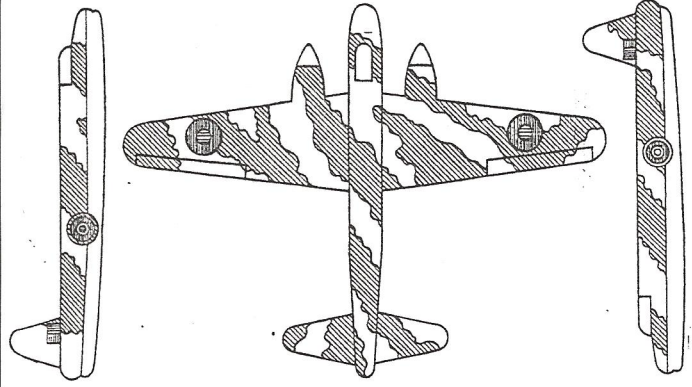
The Alouette II and Sikorsky S 55 also used dayglo bands/panels for training purposes, the Alouette III uses dayglo panels on the rear cabin and upper tailboom in the search and rescue role.

Cheetah C aircraft have adopted the air superiority scheme from the start and the latest model of the Cheetah makes use of a dummy cockpit on the underside of the aircraft. The diamond pattern was chosen because when viewed from another aircraft in a dog-fighting situation, the "other" pilot will focus on the "Diamond" shape and this will confuse him for a second or two in which way the aircraft is travelling and by doing this giving the upper hand to the "Diamond" pattern aircraft. Two camouflage paint schemes are applied to Cheetah C aircraft, they are namely the interceptor scheme and the ground attack scheme. Cheetah C aircraft up to and including No. 354 are painted with the first colour of Light Grey FS 36270 with a second colour of Medium Grey FS 36173. Cheetah C No. 355 onwards are painted with a Medium Grey FS 36173 as first colour and Dark Grey FS 36119 second colour.

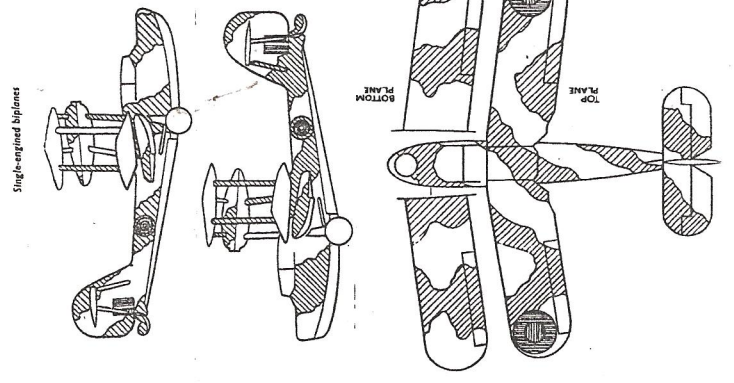
One aircraft No. 342 was selected to be painted as a Cheetah to help the public identify the good guys from the bad guys at airshows when the good guys intercept a bogey. Another aircraft Cheetah C No. 370 was painted in the colours of the National Flag for the inauguration of President Mbeki.

The Rooivalk helicopter was the first of a new generation to use the three tone camouflage pattern adopted for ground support helicopters. The disruptive pattern comprises of Dark Earth/Olive Drab/Light Sand, these colours are most effective for camouflage purposes in all areas of Southern Africa.

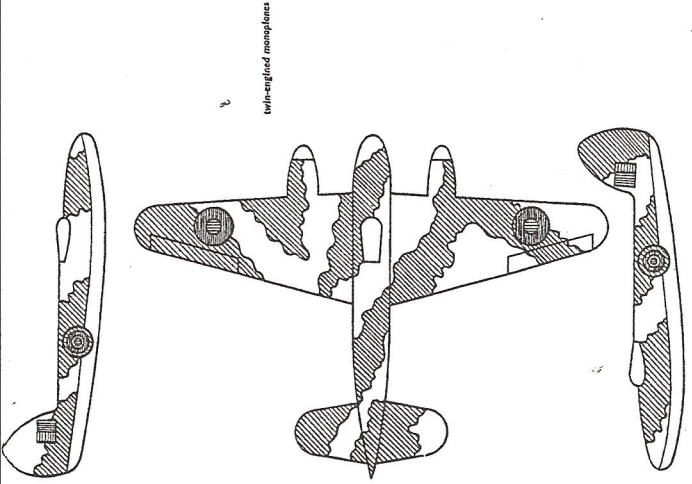
The Agusta 109KM helicopter that will be entering service with the S.A.A.F. later on in 2003 will also be camouflaged in the new three tone disruptive camouflage..



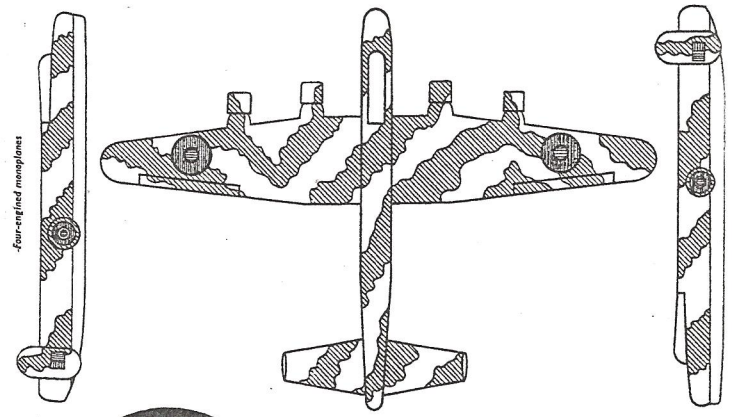
THE DISRUPTIVE PATTERN APPLICABLE WHEN THE WING SPAN IS MORE THAN 75 FEET.



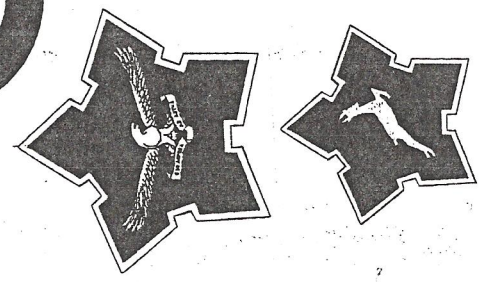
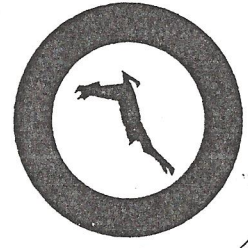
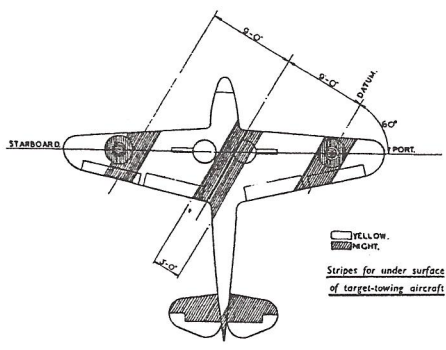
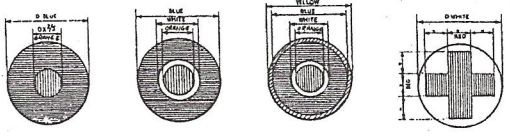
Single-engine biplanes



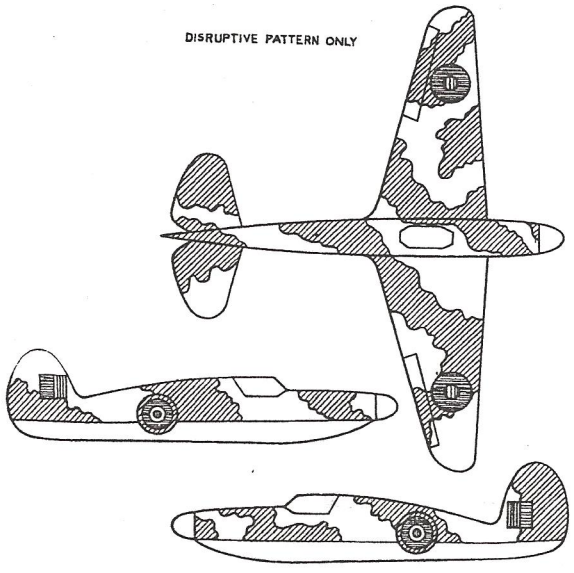
THE DISRUPTIVE PATTERN APPLICABLE WHEN THE WING SPAN IS LESS THAN 75 FEET.



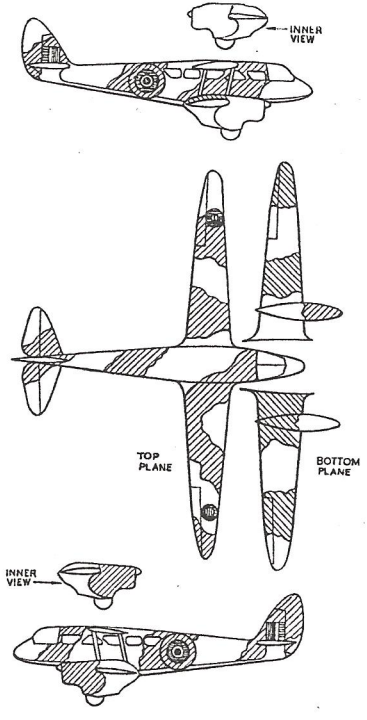
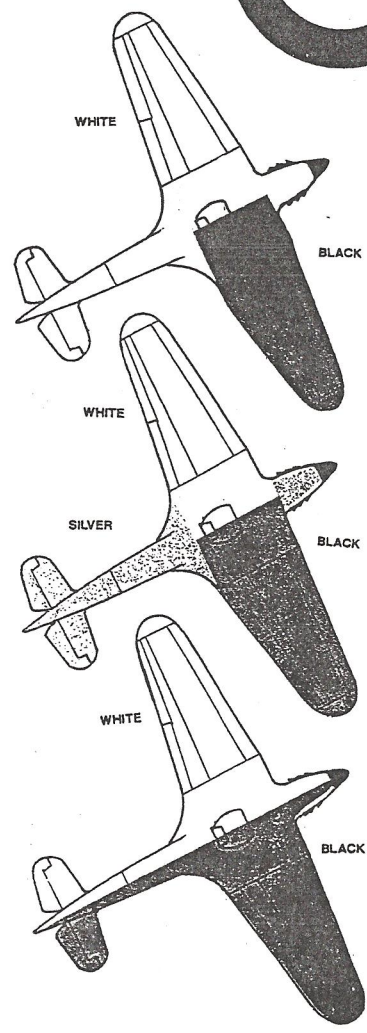
Four-engine monoplane

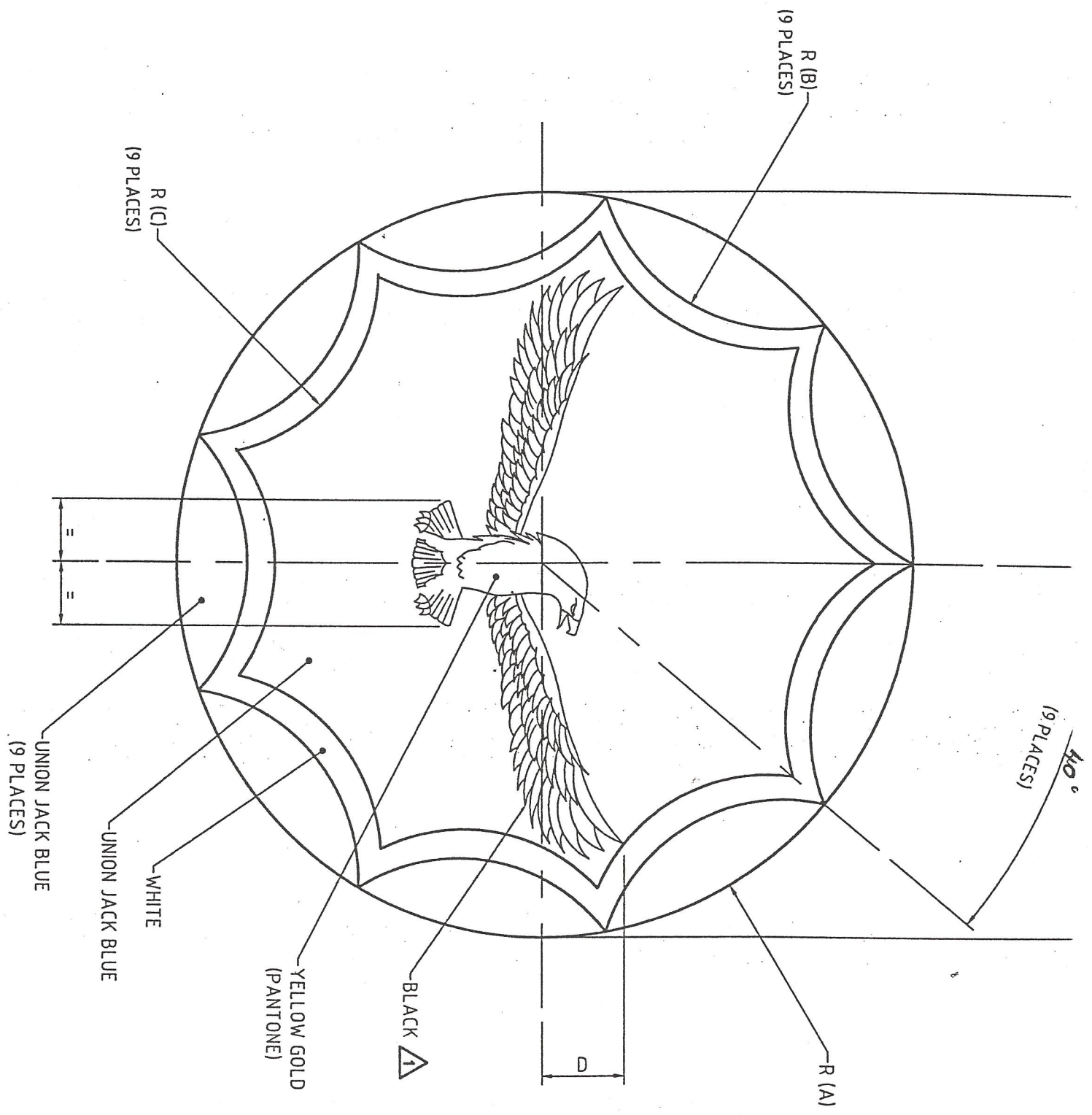


Twin-engine biplanes

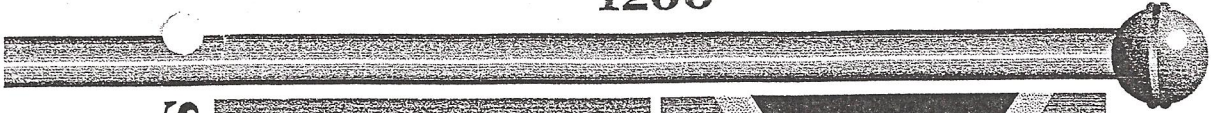


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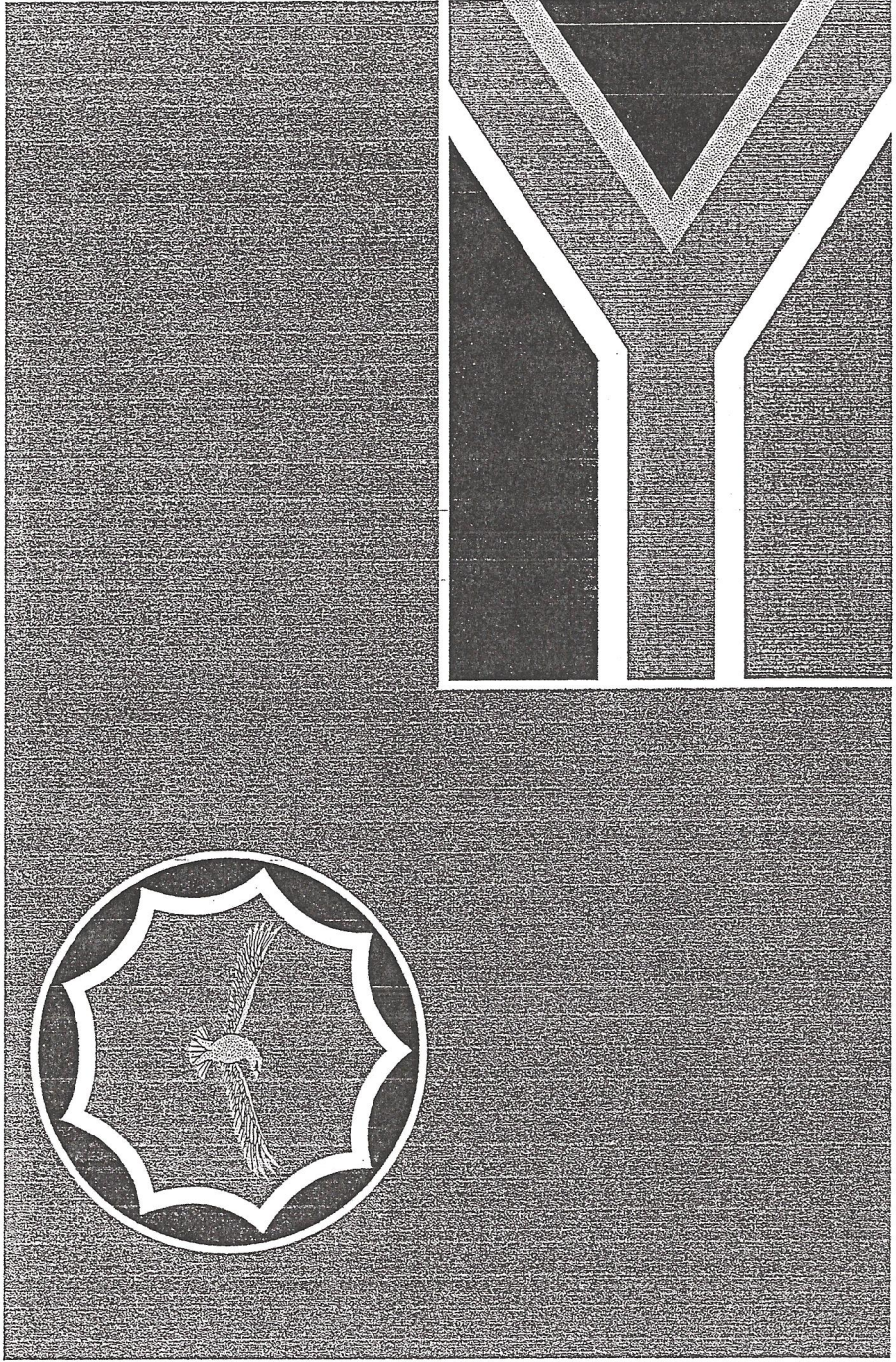




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