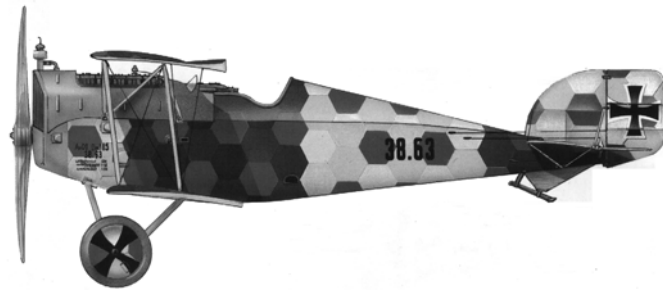


K.u.K Luftfahrtruppe Tarnstoff 1917-1918



By Dr. Glen K. Merrill

Multicoloured hexagonal camouflage represented the third step in the evolution of colour and camouflage within the Austro-Hungarian *Kaiserliche und Königliche Luftfahrtruppe* (K.u.K - Army Air Service). As with most Austro-Hungarian camouflage, the hexagons, or “lozenges”, were hand painted.

Hexagonal camouflage was applied at the factory by several of the Austro-Hungarian aircraft manufacturers during the approximate time period November 1917 to September 1918. This type of camouflage was seen on many aircraft types, but especially on the various series of the Aviatik D.I, the so-called “Berg” fighter. There was considerable variation in hexagonal pattern among manufacturers. In addition, at times there were marked differences in the same factory between aircraft of the same production batch. The patterns shown here are those which were, by far, the most common. Three basic arrangements of hexagons were used on each aircraft. Two of these had three colours, one set being darker (seen on wings and fuselages) and the other lighter (seen on fuselages only). The third arrangement had four colours, was relatively light in colour and was seen on wings only. The first of these was a darker camouflage used on both fuselage and wings, the second was a lighter camouflage used on wings alone, and the third was an even lighter camouflage pattern used on fuselages alone. All three are illustrated below.

1. Austro-Hungarian darker hexagonal camouflage, used on wings and fuselage.



2. Austro-Hungarian lighter hexagonal camouflage, used on the wings only.



3. Austro-Hungarian lighter hexagonal camouflage, used on fuselages only.



Hexagonal camouflage was usually applied to top and side surfaces and rarely, if ever, to bottom surfaces. The use of the three basic patterns varied in these two main ways:

BAND WIDTH – The darker and lighter hexagon groupings, or bands, varied in width from three to seven hexagons.

ORIENTATION – Each of the three patterns could be applied in neutral orientation or could be rotated 30 degrees clockwise or counter-clockwise from this neutral position. Since people tend to “read” the pattern on a given aircraft either straight vertically or straight horizontally, this can cause great confusion. On the three patterns shown overleaf, the neutral, or starting positions were:

- 1) Dark fuselage and wing pattern – the right edge would be at the top.
- 2) Light wing pattern – the left edge would be at the top.
- 3) Light fuselage pattern – the right edge would be at the top.

INTERFACES – The interfaces between the bands of lozenges consisted of straight lines of necessarily serrated character because, of course, they represented a line of interlocking hexagons. On the fuselage, these interfaces could be orientated vertically or slanted 30 degrees to the left or right of vertical. On the wings, the interfaces could either parallel the chord or be slanted thirty degrees to the right or left of the chord. It must be kept in mind that the interfaces merely represented the *boundaries between* lozenge bands and had nothing to do with the *orientation* of the hexagons *within* each band.

APPLICATION

Fuselage – For this area the reference positions for lozenge *orientation* were the top and bottom edges of the fuselage. There were three possible orientations:

Neutral – The light and dark bands were in their neutral orientations as described above. The flat sides of the hexagons were seen to parallel the top and bottom edges of the fuselage. Examples of this application include: Aviatik D.I 38.63, 138.116, 238.41 and 338.02.

Rotation I – On the port side of the fuselage, the hexagons of the light and dark fuselage bands were rotated 30 degrees counter-clockwise from the neutral starting position. The “points” of the hexagons then pointed toward the top and bottom edges of the fuselage. Examples of this application include: Aviatik D.I 138.55 “Mizzi”, 138. “skull”, 138. “Gretl”, and also Knoller C.II 119.05 and 119.15.

Rotation II – The rotations of the light and dark fuselage bands were opposite of those described in *Rotation I*. The hexagons will again be noted “on point”. Examples include: Aviatik D.I 138.54, 101.14, 101.16, 101.17 and 115. “P”. Also Aviatik C.I 214.07 and Hansa-Brandenburg C.I 169.119.

Wings – On the wings the reference positions for lozenge orientation were the leading and trailing edges. The three possible lozenge orientations were:

Neutral – The light and dark bands were in their neutral orientations as described above. This resulted in the flat sides of the hexagons lying parallel to the leading and trailing edges of the wings. Examples include: Aviatik D.I 138. “Gretl”, 338.02 and Aviatik D.II 39.08.

Rotation I – The hexagons of the light and dark fuselage bands were rotated 30 degrees counter-clockwise from the neutral starting position. This caused the flats of the hexagons to parallel the wing chord and the points of the hexagons to face toward the leading and trailing edges of the wings. Examples include: Aviatik D.I 138.55 “Mizzi”, 138. “skull” and 238.41. Also Hansa-Brandenburg C.I 169.112 and 369.61.

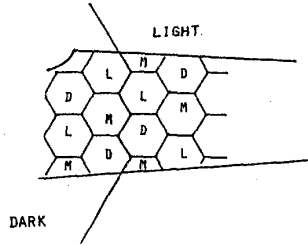
Rotation II – With the neutral starting position towards the leading edge of the wing as in *Rotation I*, the bands were rotated 30 degrees clockwise. Again, the hexagon flats paralleled the wing chord. Examples include: Aviatik D.I 101.14, 101.16, 101.17 and 115.32. Also Aviatik C.I 214.07, Hansa-Brandenburg C.I 169.119 and Knoller C.II 119.05.

Exception: Knoller C.II 119.15 – Light wing bands rotated 90 degrees counter-clockwise from neutral, and the dark wing bands rotated 30 degrees clockwise from neutral (i.e., Rotation II).

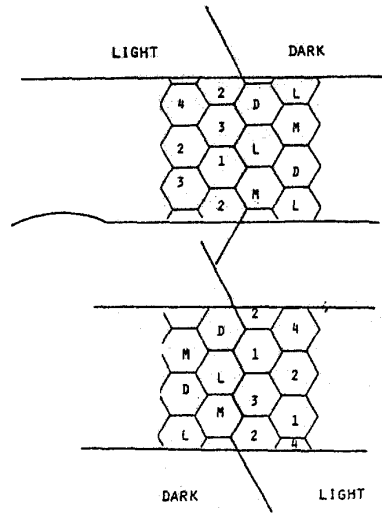
Vertical Tail Surfaces – The pattern and orientation of lozenge on the fin and rudder tended to follow the practice outlined for the fuselage. Exceptions, however, were not uncommon and photo study is recommended in each case.

NEUTRAL

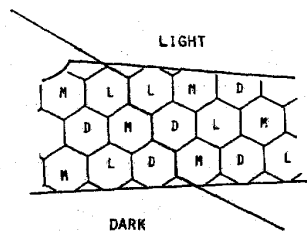
FUSELAGE



WINGS

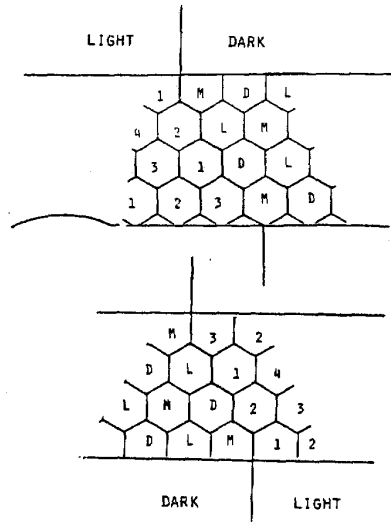


FUSELAGE

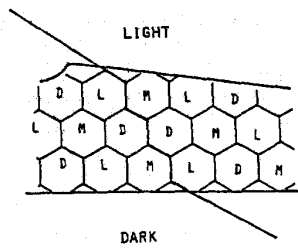


ROTATION I

WINGS

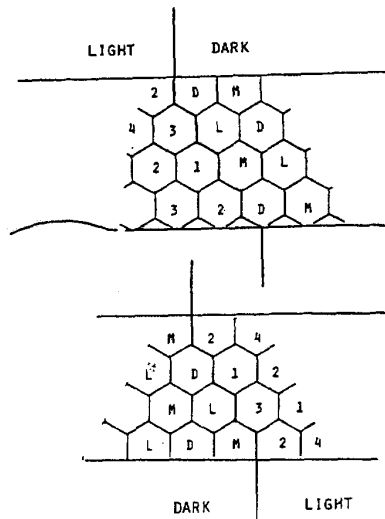


FUSELAGE



ROTATION II

WINGS



Horizontal tail surfaces – Lozenge application on the horizontal stabilisers and elevators tended to follow the practice outlined on the wings. Here also, exceptions were not uncommon. For example, Aviatik D.II 39.08 had its wing lozenges oriented in neutral with its elevators and horizontal stabilisers oriented in the wing *Rotation II* pattern.

Under surfaces – As far as is known, no hexagon patterns were applied to aircraft under surfaces. Most commonly, aircraft with lozenges on the top and side surfaces had plain wood and linen under surfaces. Occasionally, the under surfaces were light blue or light green. Knoller C.II 119.15, in the Technical Museum in Prague, has plain under surfaces except the fuselage belly, which is painted pale green.

In closing, it should be noted that the Austro-Hungarians did on occasion add individual or “wild card” hexagons in mid-blue and turquoise at random places into the pattern when painting. These have not been shown here.

ACKNOWLEDGEMENT

Nearly all the conclusions expressed are based on the research of the late Dr. Martin O'Connor, whose assistance is most gratefully acknowledged.

ILLUSTRATION NOTES

1. L-M-D stand for Light, Medium and Dark.
2. 1 = tan, 2 = terracotta, 3 = blue, 4 = olive.
3. Darkest colour in the light fuselage band is the same colour (terracotta) as the lightest colour in the dark fuselage and wing bands.
4. Vertically stacked colour bands on the upper and lower wings of biplanes were commonly reversed as shown.
5. Separations of colour bands across the fuselage were commonly diagonal to length of fuselage rather than perpendicular.



Austro-Hungarian Aviatik 'Berg' D.1 scouts on an assembly line at an unidentified factory in late 1918. Note that almost all the of the as yet incomplete aircraft have had some hexagonal Tarnstoff camouflage pattern applied to their fuselages already.