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26th July, 1961

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MISSION AUSTRALIENNE
S.N.E.C.M.A.

70, boulevard Kellermann
PARIS 13ème
FRANCE

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COMMONWEALTH AIRCRAFT CORPORATION Pty. Ltd.

Box 779 H
P.O. Elizabeth St.
MELBOURNE
AUSTRALIA

ATTENTION : Mr. H.H. KNIGHT

SUBJECT : Matrix Blocks for Compressor Blades - Atar 09C

Dear Sir,

We have been making a survey of the position on the above subject, with the object of making recommendations for the manufacture of matrix blocks at C.A.C. Most of the following data has been supplied by Mr. VALLOT Production Manager at the S.N.E.C.M.A. Kellermann plant, to whom we are indebted for this information.

MATRIX BLOCK 0XB.101.411.011/50

This is the most universal of the various types of matrix blocks used by S.N.E.C.M.A. It is called up on the operation sheets for stages 1, 2, 7, 8 and 9 steel rotor blades, and stage 1 steel stator blades.

MATRIX BLOCK 0XB.501.108.034/28

This block is used for stages 3 & 4 aluminium rotor blades, as per the operation sheets.

MATRIX BLOCK 0XB.501.108.035/42a

This block is used for stages 5 & 6 aluminium rotor blades, as per the operation sheets.

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COMMENTS ON STAGES NOT COVERED BY THE ABOVE MATRIX BLOCKS

- Stage 2 steel stator blades

At the present time S.N.E.C.M.A. is using a box with mechanical clamping (OXB.501.150.012/14)for this stage, although Mr. VALLOT suggests the possibility of using the stage 1 box OXB.101.411.011/50 for stage 2, provided additional cerrobend is formed on the outside of the block around the neck of the blade, to prevent endwise movement (because of relatively slight twist on the blade) and also to give additional support.

- Stages 3, 4, 5, 6, 7 & 8 alum. stator blades

S.N.E.C.M.A. has never used matrix blocks on the aluminium stator blades for two reasons :

a) Toolings already in existence, using mechanical clamping methods.

b) Blades in these stages have relatively slight twist, particularly stages 5, 6, 7 & 8. The small amount of twist on the blades would cause them to move endwise in the cerrobend when under machining stresses.

However, should we consider using the cerrobend method for the aluminium stator blades, Mr. VALLOT makes the following recommendations:

1) Build up the neck end with cerrobend, and also the pip end if necessary.

2) Matrix block OXB.501.108.034/28 should be satisfactory for stator blades 3 and 4.

3) Matrix block OXB.101.411.011/50 should be satisfactory for stator stages 5, 6, 7 & 8.

COMMENTS ON THE 09K.

Referring to the position on the 9 K, a check made by superimposing a sectional view of the 9 K rotor blades stages 1 & 2 on to the matrix block OXB.101.411.011/50 used on the 9 C, indicates that the 9 K stage 1 rotor blade will not enter this block, but there is a possibility that this block will be satisfactory for the 9 K stage 2 rotor blade. As there is no change in the shape of the remaining 9 K rotor stages, the 9 C blocks should be satisfactory. However if the 9 K titanium rotor blades, stages 5 and 6 are to be machined instead of precision forged, then of course the methods of manufacture may preclude the use of the blocks OXB.501.108.035/42a.

The 9 K stator blades stage 1 (and stage 2 if necessary) will fit into matrix block OXB.101.411.011/50.

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As we understand that no 9 K compressor blades have been made at Kellermann, there is no shop experience to draw upon in the matter of the use of matrix blocks on the 9 K, consequently the above comments are based on comparisons of the respective part drawings.

QUANTITIES OF MATRIX BLOCKS.

The quantities given below are related to the production of 15 engines per month, and for the stages as listed hereunder :

0XB.101.411.011/50

S.N.E.C.M.A. uses a total of 600 blocks to cover the production of rotor blades stages 1, 2, 7, 8 & 9 and stage 1 stator blades.

0XB.501.108.034/28

S.N.E.C.M.A. uses a total of 100 blocks to cover the production of rotor blades stages 3 & 4.

0XB.501.108.035/42a

S.N.E.C.M.A. uses a total of 100 blocks to cover the production of rotor blades stages 5 & 6.

The number of blades per stage on the 9 C engine is as follows :

Rotor Blades Stages	1	2	3	4	5	6	7	8	9
N° of Blades	29	27	37	39	53	53	61	63	89
Stator Blades Stages	1	2	3	4	5	6	7	8	
N° of blades	56	46	40	44	56	60	72	78	

DESPATCH OF PRINTS

One print of each of the matrix blocks mentioned above, and one print of the mechanical clamping box will be sent by diplomatic bag in parcel DB-7.

A list of the contents of DB-7 is attached.

Yours faithfully,

C. BELLWARD