

ACTION COPY SENT
TO ENGINE SUPT.

20th, November 1961

Our reference : P. 213 EFS/AQ

TO : The Secretary

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Attention : The Manager

Subject : Machining operations - Compressor Rotor
Assembly - ATAR 9C

Dear Sir,

In our P.135 dealing with the ATAR 9C rotor compressor Group I, we mentioned that the front and rear bearing locating diameters are ground to final size at the sub-assembly N° 50I-110-800-0.

We have now received the operation sheets for sub-assembly 50I-108-805-0 which is basically the same as 50I-110-800-0 but to an earlier design standard. Planning for 50I-110-800-0 is not yet available.

We note that there is considerably more machining carried out on this assembly than we had understood previously, and these are as follows :-

Oper. 180 Facing and boring of Inner Conical Spacers N° 1-2 and 8-9 before assembly of Rotor Wheels N° 1 and 9. This operation is carried out on a large centre lathe using a roller steady fixture which is indexed 180° to avoid end-for-ending the assembly with the associated trueing-up difficulties.

For this operation, large diameter plates with roller tracks are attached to the outer faces of the outer spacers 1-2 and 8-9, and the whole assembly runs on the roller Steady fixture mentioned. Since the purpose of this operation is to correct the end face and eccentricity errors to be expected from the rotor build-up, this would appear to be the only satisfactory method to be used, and it is

proposed to purchase the roller steady fixture from S.N.E.C.M.A. for fitment to one of our Swift lathes, which have the necessary capacity for this.

Previously to using the present method, S.N.E.C.M.A. carried out this operation on a vertical turret, but this was not a satisfactory method.

Oper. 190 Facing of the end faces on the outer spacers N^oI-2 and 8-9 whilst running on centred plugs located in the bores machined at oper 180.

<u>Oper. 200</u> Fitting of N ^o I Rotor Wheel)	
<u>Oper. 210</u> Fitting of N ^o 9 Rotor Wheel)	For reference
<u>Oper. 230-240</u> Fitting of Rear shaft)	

Oper. 250 Drill, tap & fit (9) screws to N^oI wheel and Spacer.

Oper 260 Whilst running on centred plugs located in the front and rear shafts, facing and boring of N^o9 wheel. This is a new operation found to be necessary, and expected to be first used here in about one month's time.

Oper. 270 Fitting of Rear Lab Seal.

Oper. 300 Final grinding of the front and rear bearing locating diameters on the large Landis grinder.

Oper. 320 Finish boring of the various seal diameters of the front and rear labyrinths whilst mounted in the same centred plugs used for previous operations.

We are enclosing (I) print of E 50I.II0.000.0, Rotor Compressor to the latest change indice 10 ; which we have marked in red to identify the operations listed above.

Possibly, one of the Swift lathes may be required for Avon compressor casings, which would imply that all of the Atar Compressor rotor operations plus the blade boring operations on the Atar compressor casing would have to be carried out on the second Swift lathe.

As a guide in this eventuality , the following are the S.N.E.C.M.A. unit times, including unit set-up times, for each of the operations on the assemblies in question.

ASSEMBLY ROTOR COMPRESSOR

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Oper.	Description	Roller steady fixture	Boring	Centres.
180.	Face & Bore.	316. mins.	-	-
190.	Face outer Spacers	-	-	106. mins
260.	Turn *9 wheel	-	-	III.
320.	Bore Lab Seals.	-	-	65I.
<u>COMPRESSOR CASING ASSY</u>				
260.	Bore tips of blades	-	419	-
	- Totals	= 316mins	419 mins	868 mins.
	- In hours = 5.3	5.3 ✓	7.0.	14.5.

This would amount to a total of 26.8 hours per week per engine, leaving approximately 13.0 hours per week for machine set up.

Although S.N.E.C.M.A. use permanent machine set-ups for Compressor Rotor oper 180 and Compressor casing oper 260, there appears to be no reason why all of the subject operations could not be done on the one Swift at C.A.C. if desired.

It should be mentioned that a tailstock is required to support a setting arbor when setting up the Roller Steady fixture at oper. 180 - Rotor so that, unless a tailstock is provided for the other machine, all of the Compressor Rotor operations must be carried out on Swift E I466, which is equipped with the adapted Atlas tailstock.

Regarding the technical aspects, these matters have been discussed with the Methods Dept and the Overhaul dept.

There are no category sizes for the bearing bores ie, the shaft journals must be ground to a fixed size, as follows :-

Front	100	+ .013 + .003	min mm	i.e. .00039" per tol.
Rear	130	+ .015 + .003	min mm	i.e. .00047" per tol.

The S.N.E.C.M.A. overhaul experience on this type of rotor is limited. However, the same principle has been used on earlier engines. If necessary the shaft female spigot is chrome plated and reground to give the correct fit and the shaft journals also chrome plated and reground.

If in grinding the shaft journals after assembly, the front journal is ground undersize, S.N.E.C.M.A. chrome plate and regrind the front

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journal, without dismantling the stage I ^{wheel} where and shaft from the assembly.

The whole rotor assembly is suspended over the chrome plating bath, with only the journal immersed, for the plating operation.

Yours faithfully,



C. BELLWARD

Enclosed :-

(1) Copy B/P for E 50I-II0-000-0 Indice IO.