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Attention : the MANAGER

Subject : Notes on Tool manufacturing Practice at SNECMA.

Dear Sir,

Certain phases of tool manufacture at the Kellermann plant of SNECMA have been investigated and are detailed below as a record.

Manufacture of Blade Profile Cams.

(a) When a sample blade is available.

SNECMA use a cam marking-out fixture CH 2580, prints of which have been requested, and will be sent to C.A.C. when available. This device consists of a disc follower and scribing disc set on a pivoted arm so as to simulate the SNECMA turn-milling machine used for the 3rd stage rotor blades. The follower is traversed around a section of the sample blade profile, and the scribing disc is used to scribe a series of arcs on a steel plate 1 mm thick. The plate is then milled and filed to the scribed line. This is repeated for each section of the blade. The 1 mm steel plates are then mounted on a mandrel through a central locating hole, and aligning hole, and separated by aluminium discs each 9 mm thick. The aluminium discs are then faired to the steel plates by filing, and the whole unit is then used as a soft master from which an all-steel master is reproduced on a direct-copying lathe. A blade produced from the all-steel master is then carefully inspected and the master touched up where necessary by hand. After this the master is case-hardened.

...

(b) When a sample blade is not available.

The method adopted when a blade is not available is similar to that used by Rolls-Royce and C.A.C. i.e. the tool design office calculates ordinates which are then milled with a spherical end mill on the jig-borer, and finished by filing to just remove the resultant spherical depressions on the cam surface.

Special PRATT & WHITNEY machines for reproducing blade profiles.

These are described under the heading "Photo nº 15" in letter P 244. In the second machine there is an additional shim at the back of the machine which contacts the edges of a series of plates representing the twist at each section. It will be noted that the twist is not built in to the set of profiles shown in the photograph. In effect the profile shape and twist are two separate functions.

Reducing the diameter of standard drills.

When small quantities of drills of a non-standard size are required, i.e. quantities which could not be ordered commercially, then the SNECMA toolroom undertakes this work itself. The method used is exactly the same as used in the C.A.C. toolroom, i.e. brazing a false centre on the tip of the drill, and grinding between the Morse taper and the centre.

Surface Broach Resharpening.

Methods and machines are very similar to C.A.C. practices, SNECMA's broach re-sharpening machines are made by FORST.

Yours faithfully,

G.H. Foster

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