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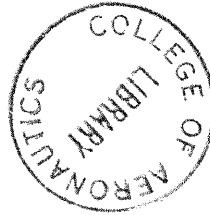


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THE COLLEGE OF AERONAUTICS
DEPARTMENT OF PRODUCTION AND INDUSTRIAL ADMINISTRATION



TEST REPORT No. PLB0/4

Wear tests on PERPRO tools grades N35/RD25 and N35/RD80
machining EN 9

S U M M A R Y

Tools of grade N35/RD25 and N35/RD80 were tested at 500 fpm cutting speed, 0.010 in/rev feed and 0.10 in. depth of cut on EN 9 to 0.030 in. flankwear. The results showed that there was no significant difference in tool life between the two grades for the cutting conditions investigated.

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Test conditions

The following cutting conditions were used during the tests:

Working material	EN 9
Cutting speed	500 fpm
Depth of cut	0.10 in.
Feed	0.010 in/rev.

and the tools used were:

N35/RD25 NT114	N35/RD80 NT111
N35/RD25 NT115	N35/RD80 NT112.

Test results

The wear of the tools was measured, as in figure 1, at intervals of 5 minute cutting time and the results are shown in Table 1 - 4.

Figure 2 shows the growth of the flankwear of the four tools tested and indicates that there is no difference in performance between the two grades.

Figure 3 shows Tallysurf readings of the crater wear of the two grades taken at the end of the test. It can be seen that the two traces are very similar.

Figure 4 and 5 show photographs of the flankwear and crater wear taken at the end of the test.

Conclusions

The results showed that for the cutting conditions investigated there was no difference between the performance of N35/RD25 and that of N35/RD80.



Table 1

Material: EN 9

Date: 17/10/63

Tool: NT114 N35/RD25

Cutting speed: 500 fpm

Feed: 0.010 in/rev.

Depth of cut: 0.10 in.

TIME MIN.	FLANKWEAR		HARDNESS vhn	REMARKS
	A	B		
5	.0055	.0075		Cratering
10	.009	.011	271	
15	.011	.016		
20	.014	.0195		
25	.016	.022		
30	.018	.026		
35	.020	.026		
40	.024	.0305		
45	.026	.0345		

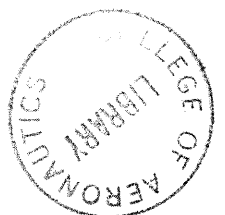


Table 2

Material: EN 9

Date: 18/10/63

Tool: NT115 N35/RD25

Cutting speed: 500 fpm

Feed: 0.010 in/rev.

Depth of cut: 0.10 in.

TIME MIN.	FLANKWEAR		HARDNESS vhn	REMARKS
	A	B		
5	.006	.006		Cratering
10	.0085	.012	271	
15	.013	.016		
20	.015	.019		
25	.0185	.019		
30	.021	.025		
35	.0225	.029		
40	.027	.030		
45	.030	.040		

Table 3

Material: EN 9

Date: 17/10/63

Tool: NT111 N35/RD80

Cutting speed: 500 fpm

Feed: 0.010 in/rev.

Depth of cut: 0.10 in.

TIME MIN.	FLANKWEAR		HARDNESS vhn	REMARKS
	A	B		
5	.0055	.007		Cratering
10	.008	.008	271	
15	.011	.014		
20	.013	.017		
25	.016	.0235		
30	.019	.026		
35	.022	.029		
40	.0255	.030		
45	.0255	.033		

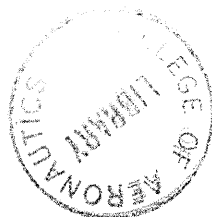


Table 4

Material: EN 9

Date: 18/10/63

Tool: NTL12 N35/RD80

Cutting speed: 500 fpm

Feed: 0.010 in/rev.

Depth of cut: 0.10 in.

TIME MIN.	FLANKWEAR		HARDNESS vhn	REMARKS
	A	B		
5	.006	.006		Cratering
10	.008	.008	271	
15	.012	.015		
20	.0135	.018		
25	.016	.021		
30	.019	.024		
35	.021	.024		
40	.025	.030		
45	.026	.031		



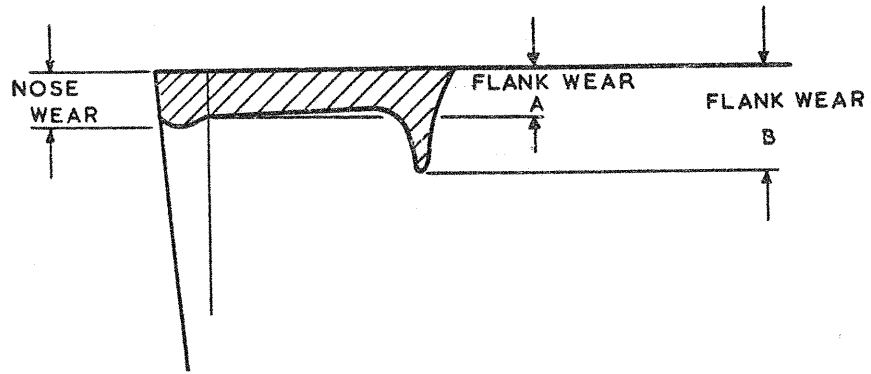


FIG. 1. TOOL WEAR MEASUREMENT.

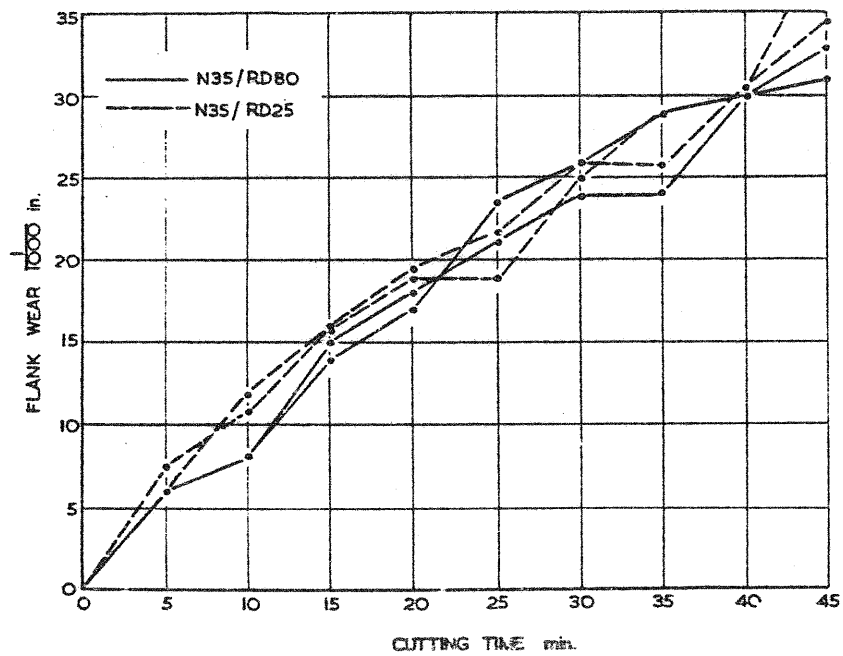


FIG. 2.

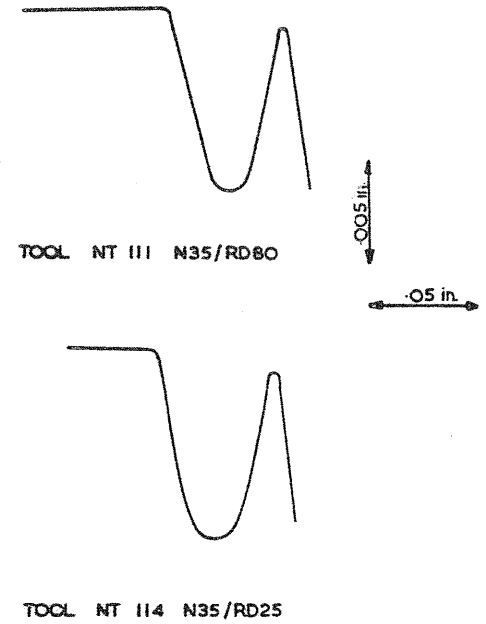
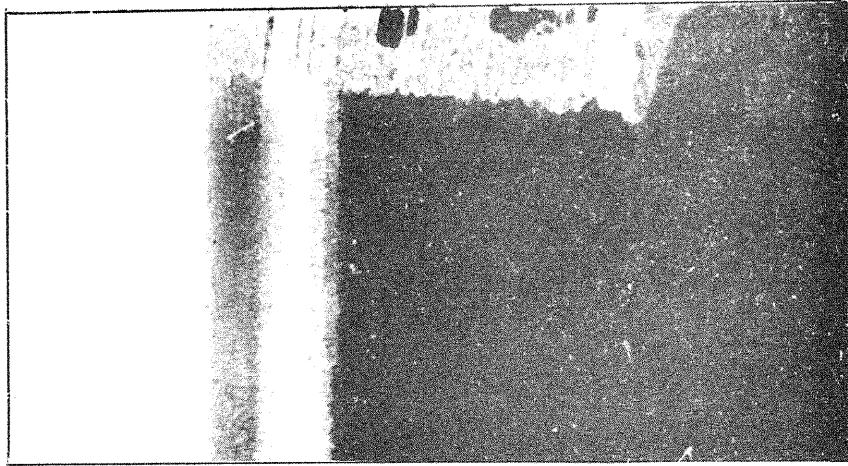
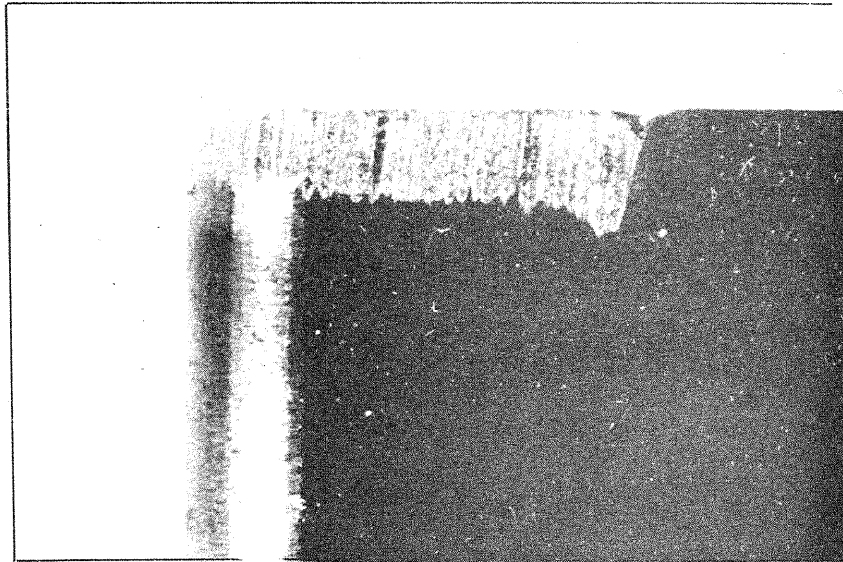


FIG. 3. CRATER WEAR.

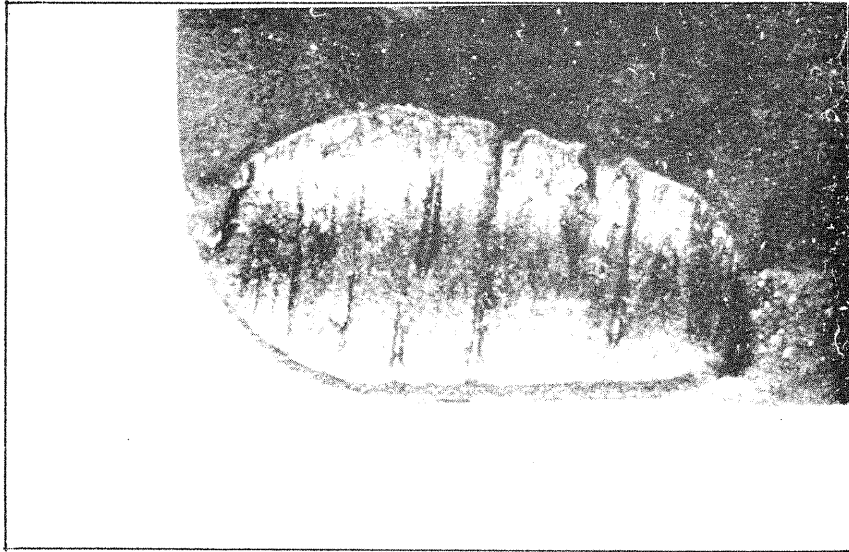


NT 111 135/RD 80

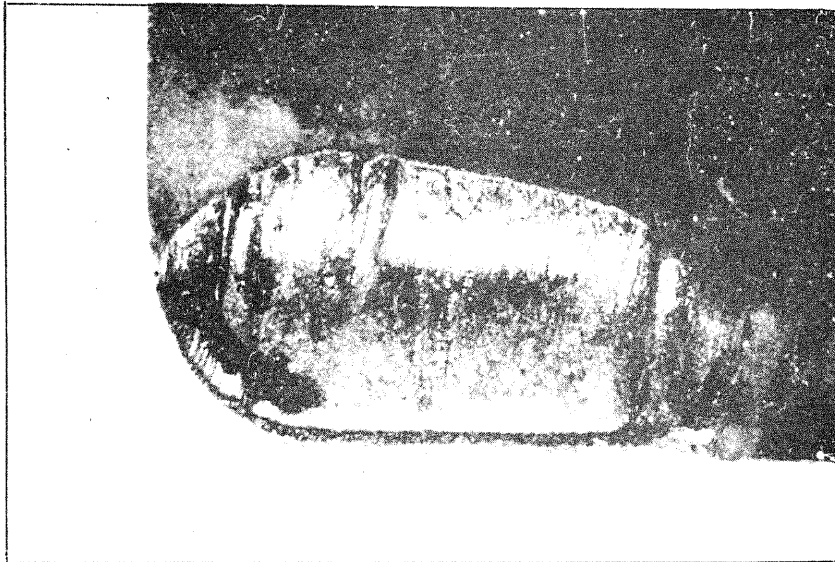


NT 114 135/RD 25

Fig 4. FLANK WEAR



NT 111 N35/RD 80



NT 114 N35/RD 25

Fig 5. CRATER WEAR