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## N/T Mill Flingers

R. E. Deso

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MORGAN CONSTRUCTION CO.  
MEMORANDUM

TO: As Noted  
FROM: R. E. Deso

DATE: 19 Oct. 1971

SUBJECT: N/T Mill Flingers  
Re Memo Dated 12 Oct. 71 from S. Ordog

	ACT	INF
ALEXANDER		
BAGDONOVICH		
BONNELL		
COMTOIS		
Deso		X
DUNCAN		
FONTAINE R.		X
GILVAR		X
GLASIER		
HAINES		
HERMES		X
HILL		X
HOWARD		X
HUTCHINGS		
KINNICUTT		
KNIGHT		
LESLIK		
Knott		X
MACNUTT		
MARSTERS		X
McMILLEN		
MERCER		X
MORGAN, M.		
MORGAN, P. B.		
MORGAN, PA. S.		X
MORGAN, PE. S.		
MORGAN, W.		
Reardon		X
Smola		X
NEELY		
NEILSON		
Woodrow		X
OESTERLING		
ORDOS		X
POOLH		X
PRENTICE		X
PRESCOTT		
PROCTOR		
RANDALL		X
RECEPTION		
RICKLEY		
RINALDI		
ROBERTSON		
SARGENT		
SCOTT		
XENNAITER		
SEURIN		
TAPPIN		
WEBBER		
WHITTINGTON		
WIGHTON		
WILSON		X
WINTERS		
WOOD		X
WYKES, R.		X
YOUNG		
GEN. FILE		X
Purchasing		X

The above memo is of particular interest to Manufacturing, as it is one item that has undergone many cost studies, many design requirements and drawing changes. Manufacturing has tried to establish a parts family routing on flingers with cost in mind and, due to the many variations in flinger types and requirements, have obviously had a trying time.

History: The initial nitrided flingers presented many problems, especially in the flatness called for. Special handling, prior to heat treat, required additional operations in order to satisfy tolerances and flatness. At this time, customers were not satisfied with the life of the flingers. The cost was secondary. Nickel plated flingers were tried and then a heat treated nickel plate - Kanegen was tried. Increased speed and seal failure lead to a ceramic faced flinger (Noroc).

This coating cost close to and over \$100 each. Being a Norton process, we had to manufacture flingers as directed by our Design Dept. until Norton did not want to do this any more and recommended three companies that had licensee rights with them. Manufacturing then asked these companies for quotes to ceramic coat to print specs.

The varying flinger costs stated were very true. MCCo. had little chance to cope with coating cost until Norton released their process. The following is as quoted and charged by Norton vs. the coating costs by RTG of Conn. today. Notice cost differences for various size flingers.

Part No.		Norton		RTG	
183394A	(16)	85.65	(16)	30.10	each
183394B	(24)	43.60	(24)	14.10	"
182967A	(16)	21.00	(16)	11.50	"
181799	(32)	64.40 (quote)	(32)	14.55	"
177961	(32)	64.40	" (32)	14.55	"
177475	(80)	49.75	" (80)	9.60	"
181732	(80)	49.75	" (80)	9.60	"

Communications from our Spare Order Dept. as to the high cost for flingers prompted Manufacturing, six months ago, to study existing flinger design and manufacturing process.

A meeting was held at Engineering with R. Smola, M. Gilvar, R. Wykes, H. Woodrow, and R. Deso to standardize flinger design for ease in ordering and from a manufacturing cost.

Harold Woodrow made a complete study of ferrous and non-ferrous flingers, and tolerancing and need were reviewed with Engineering and Manufacturing Engineering Liaison. Several changes were made by R. Smola in Drafting and reviewed by Manufacturing.

Manufacturing Cost: The six-inch flingers discussed in memo at a total cost to Bethlehem of \$24.00 was compared with our new routed flinger based on design, drafting and manufacturing efforts.

On order 125735 (Belgo), the routed time for 80 pieces, dwg. M177475A, was 56.5 hours. The actual time for machining was 49.7 hours, which included 8.2 hours for tape proveout.

Material cost per piece	\$1.40
Cinc. Lathe - .7 per piece	9.90
Chrome Oxide - 9.60 each	9.60
Cost per flinger	<u>\$20.90</u>

The flinger study for Belgo points out that our best cost is based on volume. Material costs are less for tubing; normal machining setup is amortized; the tape proveout will not reoccur and coating costs are based on lot sizes as prior listing shows.

Based on the aforementioned studies, I would recommend consideration of flingers as a manufactured part inventory item, with minimum quantities of 25-50 pieces.

A good example would be order 146566, part no. B177475A - material costs alone were \$20.00 for two pieces and the coating cost between \$16.50 and \$20.00 each, and machined prior to new manufacturing procedure.

R. E. Deso  
Manufacturing Engineering  
Liaison

RED:cm