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M7 BAYONET HANDGRIP, REVERSIBLE HAND-
GRIP FOR BAYONET-KNIFE: M7

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20. ABSTRACT (Continue on reverse side if necessary and identify by block number) <i>ATh</i> This report contains the design of a reversible handgrip for the Bayonet-Knife: M7 (used with the M16/M16A1 Rifle). The reversible handgrip design can be used on either the right or left hand side of the bayonet handle. The present grip design for all current bayonet-knives consists of a separate design for right and left handgrips. It is recommended that bayonet-knives designed in the future consider the reversible grip design.			

M7, BAYONET HANDGRIP
REVERSIBLE HANDGRIP FOR BAYONET-KNIFE: M7

JANUARY 1974

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M7 BAYONET HANDGRIP

DESCRIPTION OF WEAPON

The Bayonet-Knife: M7, P/N 11010077, is a bayonet that can be used in two modes; (a) as a bayonet attached to the M16/M16A1 Rifle; or (b) a hand-held knife. The bayonet is 11-3/4 inches overall, 6-1/2 inches blade length and 4-7/16 inches long handgrips.

DESCRIPTION OF HANDGRIPS (STANDARD)

The existing handgrips, P/N 11010068 Grip RH (FSN 1005-051-3607) and P/N 11010069 Grip LH (FSN 1005-051-3608) are so designed that they are non-reversible. The handgrip shape is not symmetrical; one side has nut inserts, and the other side has clearance holes for the attaching screws. The existing grips are made from Phenolic Plastic per MIL-M-14F, Type CFI-20.

DESCRIPTION OF REVERSIBLE HANDGRIP

The reversible handgrip is shown on development sketch number 70D20633. The shape is symmetrical, with one clearance hole for an attaching screw and one molded-in captive nut. The material used is Plastic, Nylon, 6/6 Type I, Grade B, Class I or II, Spec L-P-395. Since this material is stronger than phenolic, liberal cavities are provided on the reverse side of the grip to reduce material volume. In this design only one type grip (one part number) is used on either the left or right side of the bayonet handle with either end being the top or the bottom.

TESTING

A comparison test between the standard grips and the reversible design prototypes was accomplished. Friction, solvent/lubricants resistance, humidity, heat and drop test results were comparable.
(See Appendix)

IMPLEMENTATION PLAN

Value Engineering Proposal (VEP) HQRE-E-1294R1, dated 23 March 1972 was presented for consideration to implement the new designed reversible grip into the engineering data package for the M7 Bayonet.

Since there was a large supply of the existing grips in the supply system as repair parts, little savings were foreseen for future procurement, and in view of the administrative expense of maintaining two bayonet grip assembly configurations in the supply system, the VEP was disapproved and the bayonet design was not changed.

RECOMMENDATION

Any future designed bayonet-knife or military hand knife should consider the advantages of a single design, reversible grip to be used on both sides of the bayonet-knife handle. Such a design will reduce the number of repair items to be manufactured and reduce support costs in the Army supply system.

APPENDIX

NOTES:

1. BREAK EXTERIOR EDGES .005 ± .010. ALL FILLET RADII .015 MAX UNLESS OTHERWISE SPECIFIED.
2. MATERIAL:
 - PLASTIC MOLDING MATERIAL, NYLON 6/6, TYPE I, GRADE B, CLASS 1 OR 2, SPEC-P-395
3. COLOR TO BE SEMI-DULL BLACK, AS DERIVED FROM MOLDING THE PART IN A CAVITY HAVING A SAND-BLASTED SURFACE. RESULTANT SURFACE GLOSS SHALL NOT EXCEED THAT OF SEMI-GLOSS COLOR CHIP 27038 OF FED. STD. 595, BY VISUAL COMPARISON.
4. FINISH UNLESS OTHERWISE SPECIFIED
 - 5. MIL-W-13855 APPLIES
 - 6. NUT 7266825 MAY BE TAPPED AFTER MOLDING. NO DAMAGE TO GRIPS IS PERMISSIBLE. THREADS MAY BE LEFT BRIGHT, NUT SHALL NOT PROTRUDE BEYOND SURFACE $\overline{E}$
 - 7. AFTER MOLDING, APPLY SUPPLEMENTARY PRESERVATIVE OIL (W-L-800) TO NUT 7266825.

SEE DETAIL $\overline{E}$ FOR ALTERNATE INSERT

.031 DEEP ± .015 DIAMOND KNURL (EITHER PROJECTED OR TRUE). PITCH OF KNURLING, 10 PER INCH

.25, BOTH ENDS

.437, BOTH ENDS

.39, BOTH ENDS

.19

.325 MAX

.96

.136

M51931-103

INSERT (MOLD IN PLACE)

.51R, FROM $\overline{E}$ TO $\overline{E}$, BOTH ENDS

.31R, TYP

.31R, BOTH ENDS

.157 ± .003, BOTH ENDS

.233 ± .007

.31R, BOTH ENDS

.31R, BOTH ENDS

.31R, BOTH ENDS

.31R, BOTH ENDS

.31R, BOTH ENDS

.31R, BOTH ENDS

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TEST SUMMARY

Comparison tests between standard grips, P/N 11010068 or P/N 11010069 and the reversible grip prototype, P/N 70D20633 were conducted on factors of: Friction, Solvents, Humidity, Heat and Drop Tests.

The standard grip material is Phenolic per MIL-M-14, Type CFI-20. The reversible grip material is Nylon per Specification L-P-395, Type I, Grade B, Class 1 or 2.

TEST DESCRIPTION

RESULTS

1. Friction Test

Compare frictional grip properties by thrusting bayonet into wooden plank.

No significant difference noted.

2. Solvent/Lubricants Test

Determine the effects of Cleaning Compound Solvent (MIL-C-372B Am 2), Dry Cleaning Solvent (F-D-680) and Lube-Oil (MIL-L-46000) on the physical condition of the grip surface wipe test with 24 hour contact time.

Little or no effect.

3. Humidity Test

Expose grips to 98-100% RH at 100°F for 120 hours. Check dimension change that could affect assembly/disassembly.

No measurable dimensional changes noted.

4. Accelerated Heat Test

Expose grips to 125°F for 6 hours. Check for detrimental physical changes.

Little or no effect.

5. Drop Test

Expose assembled bayonets to -65°F for 6 hours. Drop test bayonets 4' 9 times on bayonet grip sides and ends.

No visible structural damage.