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CHARACTERISTICS AND DEVELOPMENT REPORT FOR THE H-972 ANGLE BRACKET (Title is Unclassified)

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ABSTRACT

This document contains a complete and authoritative record of the design and development program for the H-972 angle bracket.

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CHARACTERISTICS AND DEVELOPMENT REPORT FOR THE H-972 ANGLE BRACKET

1. INTRODUCTION

The purpose of this document is to provide a current, authoritative record of the design intent, product characteristics, and development history for the H-972. The product definition drawings and specifications which are the basis for production contracts for the H-972 are listed on NX 320334.

2. DESCRIPTION

The H-972 is an aluminum angle bracket which is fabricated by welding a 5/16-inch plate with a "D-hole" to the top and a 3/4-inch plate with 5/16-inch captive bolts to the bottom of a 1-1/2-inch round tube (Figure 1). The assembly is painted olive drab.

3. DESIGN INTENT

The H-972, which is used during training and retrofit operations, appears on the Special Equipment List under category 4. The purpose of the H-972 is to prevent damage to the stainless steel tube connecting the 1E reservoir valve to the W-52-X1 center case structure when opening the warhead for replacing certain components. When the rear case (Section "C") is removed, the valve end of the tube is not supported for a length of twelve inches, because it was not feasible to incorporate a bracket supporting the valve as part of the warhead design. The valve is vulnerable to accidental bumping, and thereby the stainless steel tube could be damaged.

Two functional samples will be evaluated from the first production units.

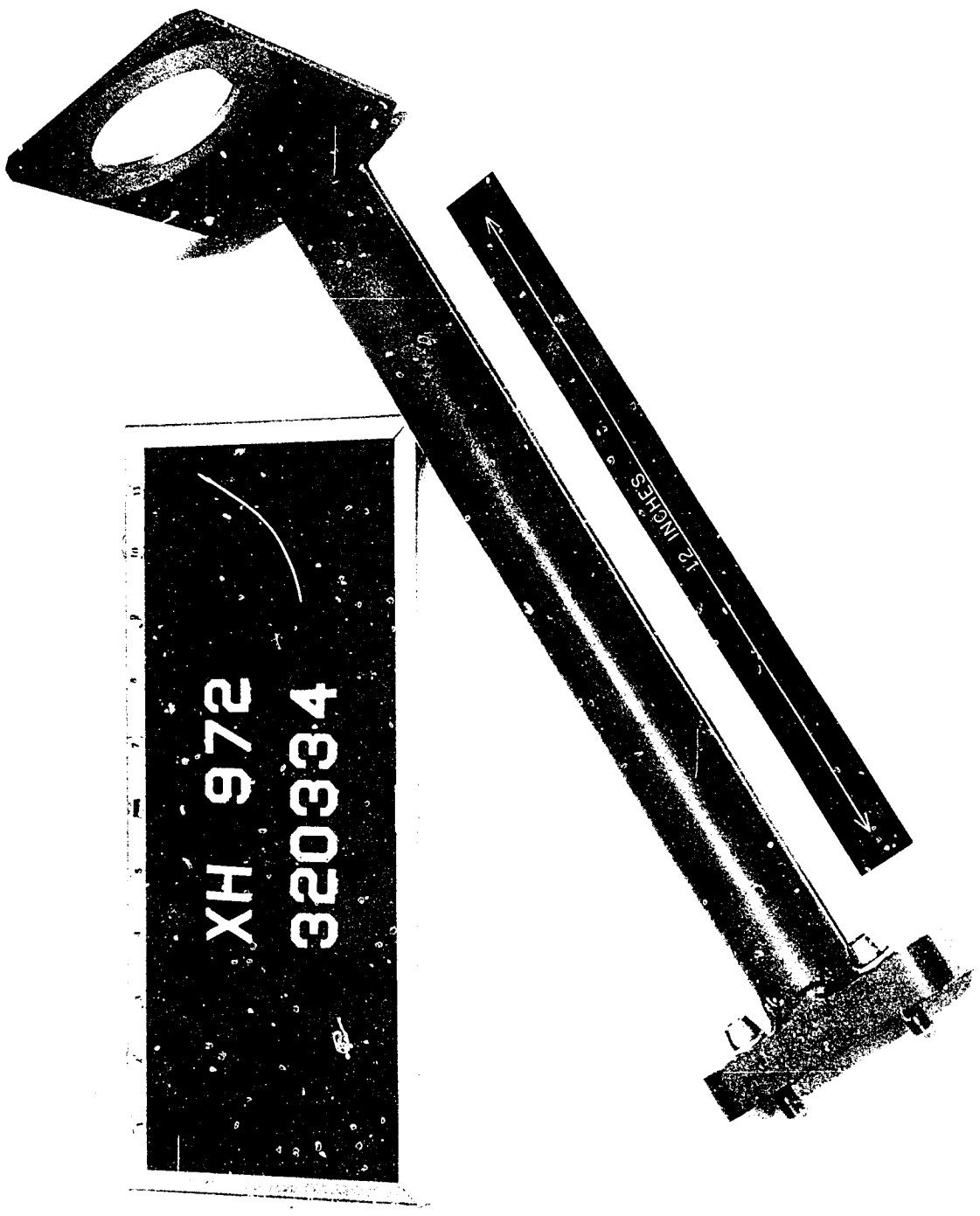

Figure 1

4. PRODUCT CHARACTERISTICS

The H-972 is fabricated from aluminum for ease in handling. The 5/16-24 bolts are captive for ease of installation and to minimize bolt loss.

The length of the H-972 was determined so that the valve is positioned in the H-972 at the same location with respect to the main case section as when secured to case Section "C". Because of the tolerance buildup, the valve interface is located 15.45±0.10 above the spacer ring.

The 3/4-inch bottom plate of the H-972 bears on the center case (Section "A"). Two 5/16-24 captive bolts thread into Helicoil inserts in the case. The spacer ring is left in place to support the installed H-972 to prevent damaging the flange surface of case section "A".

The threaded throat of the valve has a flat area on one side, and this throat is guided through the "D-hole" in the 5/16-inch top plate of the H-972. The valve is attached to the top plate by means of the valve locking ring in the same manner as the valve is attached to the warhead case (Section "C"). This "D-hole" orients and prevents rotation of the valve. The close tolerances on the "D-hole" make fabrication of a one-piece top plate difficult. An alternate method of fabricating the top plate is that of drilling and reaming a hole in the 5/16-inch plate and then welding a bar to the plate to shape the "D-hole." After welding, additional operations will be required to machine the flat area to the close tolerance dimensions. To aid in removing the MC-1088, sufficient clearance was provided below the valve by holding the valve interface 15.50 above the spacer ring. This necessitated holding the interface dimensions on the H-972 to 15.53±0.03.

5. DEVELOPMENT HISTORY

A design requirement was established by Division 7115 to support the 1E reservoir valve by an H-item during training and retrofit.

For structural adequacy, the H-972 was designed to withstand, without yielding, a 50-pound load applied singly through the center of the "D-hole" in the N_x, N_y, and N_z planes. This arbitrary 50-pound load was used as an assumed design criterion in lieu of a defined accidental load.

The first design was discarded because the bolts in the MC-1088 could not be removed during retrofit.

The "D-hole" was too large in the early prototype, which allowed excessive rotation of the valve. This induced stresses in the tube attaching the valve to the warhead, necessitating a close tolerance "D-hole" on the final design.

Design of the H-972 was delayed on numerous occasions because of changes in the valve design. The H-972 has been designed using preliminary valve drawings because officially released valve drawings were not available.