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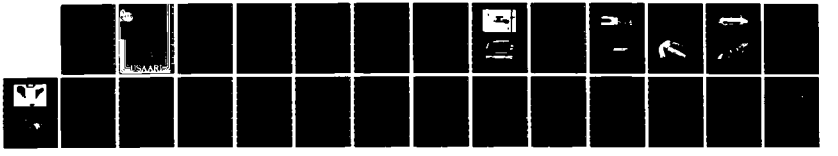

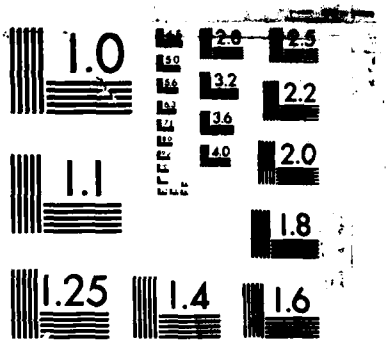


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USAARL REPORT NO. 86-1

# A CHINCHILLA RESTRAINT SYSTEM

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January 1986





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Impulse Noise
Natural Behavior

20. ABSTRACT *(Continue on reverse side if necessary and identify by block number)*

A restraint system is described that uses the chinchilla's natural behavior to accomplish positive positioning relative to the sound source for the exposure of research subjects to high intensity impulse noise. Photographs of the system in use and detailed drawings for construction are included. Using this system, 108 chinchillas were exposed without mishap.

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TABLE OF CONTENTS

## LIST OF FIGURES

## INTRODUCTION

In studies of noise-induced hearing loss in chinchillas, it is necessary to restrain the animal in a known noise field for the duration of the exposure (Figure 1). In studies of continuous noise effects, a small cage in which the subject is free to move about has been used, (Burdick et al., 1978; Burdick, 1982). The orientation of the subject in studies of continuous noise effects is not critical due to the omnidirectional nature of the exposure. In contrast, freefield impulse noise is a highly directional sound field by its essential nature. The need to restrain the research subject and fix its orientation relative to the source of the impulse is critical in impulse noise exposures, (Patterson et al., 1985). Only three references were found in the literature about chinchilla restraining devices, (Lawson, Barranco, and Sorenson, 1966; Leibrecht, 1974; and Strout, 1976). These devices were applicable more for routine clinical procedures, administering medication, detecting motion, and collecting semen for reproduction studies. None were suited for auditory research. This led us to develop the chinchilla restraint system (CRS).

The function of the CRS is to maintain a chinchilla in a stable, immobile position which can be standardized for all subjects during studies of noise-induced hearing loss. The CRS accomplishes this using the chinchilla's own natural tendencies as a burrowing creature. In the wild, they live in small caves and clefts in rock formations which provide natural protection from predators. With little means to protect themselves, remaining immobile in small places adds to the chinchilla's protection afforded by the natural camouflage (Bowen and Jenkins, 1969). The CRS provides an artificial burrow in which a chinchilla seems content to remain quiet for extended periods. This report details the design and use of the CRS.

## METHODS AND MATERIALS

The CRS consists of four major components. Each is listed with a brief description of its function.

FIGURE 1. Chinchilla in restraint system ready for exposure.

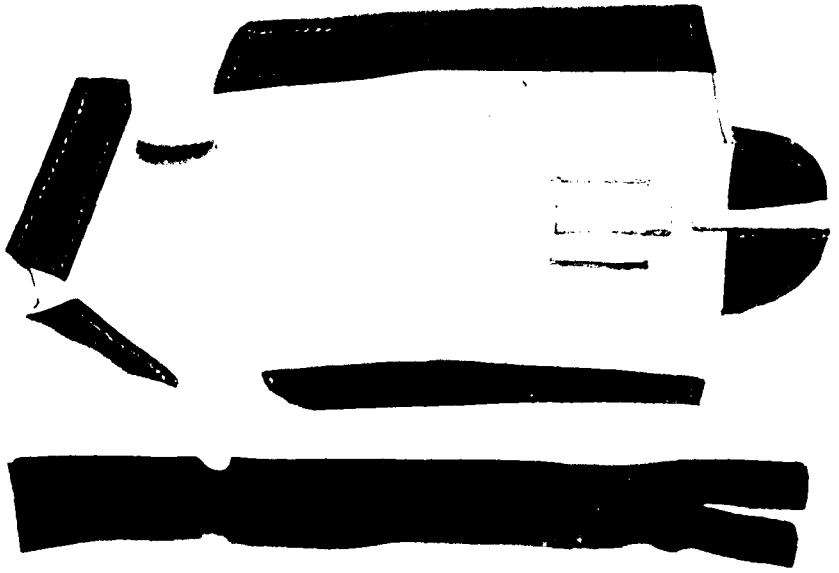

FIGURE 2. Body wrap with fastener.

The body wrap (Figure 2) is a piece of 2.4-2.8 mm thick leather with Velcro* closures that encases the subject. The wrap has holes cut out for both pinnae and both rear legs to protrude (Appendix A).

The body wrap support (Figure 3) is a 1.2-1.6 mm thick leather piece with Velcro closures that encases the body wrap and attaches it to the system hanger (Appendix A).

The pinna position stabilizer (Figure 4) is a 2.0 mm single strand of copper wire mounted in a plastic base and shaped to the approximate natural contour of a chinchilla pinna. The pinna position stabilizer lies between the body wrap support and the body wrap. The flexible wire allows the contour to vary with individual subjects (Appendix A).

The chinchilla restraint system hanger (Figure 5) is a metal device fabricated in the USAARL machine shop. It attaches the twin parallel loops of the body wrap support to the support base. Thus, the hanger positions the entire system and its enclosed subject correctly in the sound field (Appendix A).

As can be seen in Figure 6, which shows the body wrap partially closed, the tube being formed encloses the chinchilla snugly with only pinnae, rear legs, and tail exposed. Figure 7 shows a completely enclosed subject.

Figure 8 shows, for clarity, the complete assembly without subject in place. Once secure around the chinchilla, the body wrap is placed in the body wrap support and the pinna position stabilizer is inserted between the body wrap and the body wrap support and held in place by friction. The wire end is the outermost portion. This is shaped beforehand to a normal chinchilla pinna and using last minute observations adjusted to the individual subject's pinna shape.

The importance of this cannot be overemphasized. The chinchilla has been observed to cause its pinnae to fold and droop over its auditory canal opening, thus partially blocking noise. The pinna of the exposed ear is taped to the pinna position stabilizer with Minnesota Mining and Manufacturing Company Micropore surgical tape* using the natural shape of the nonexposed pinna as a guide. The ear is cleaned by utilizing common masking tape as one would delint a garment using masking tape. This allows the

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*See Appendix B

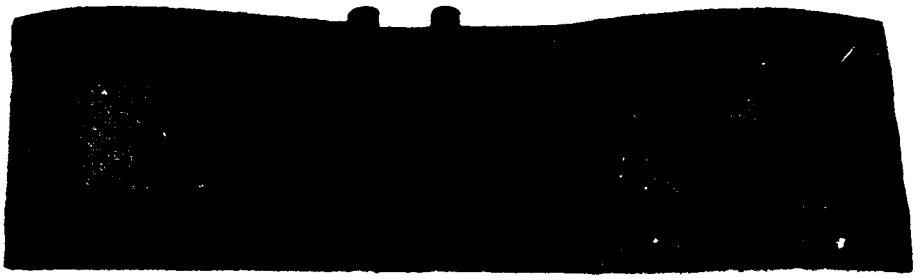


FIGURE 3. Body wrap support.

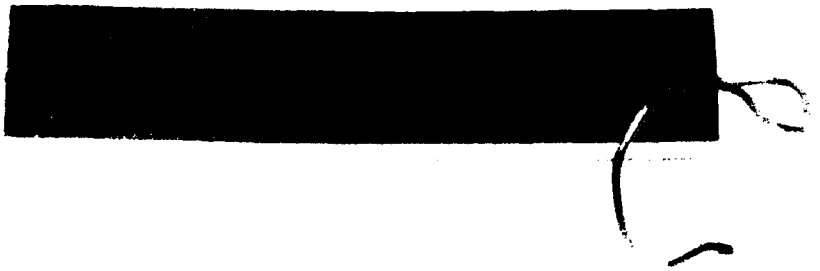


FIGURE 4. Pinna position stabilizer.

FIGURE 5. Chinchilla restraint system hanger.

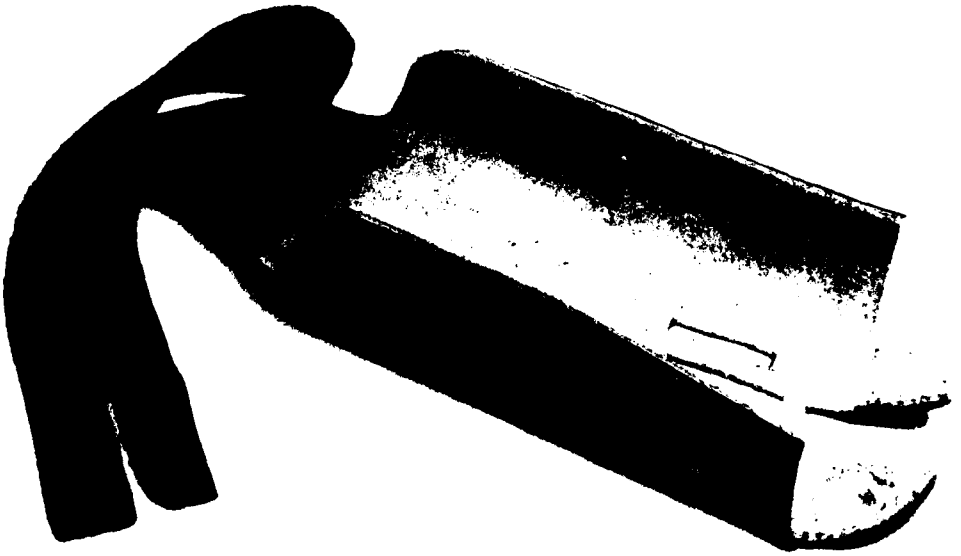


FIGURE 6. Body wrap partially closed.

FIGURE 7. Completely enclosed subject.

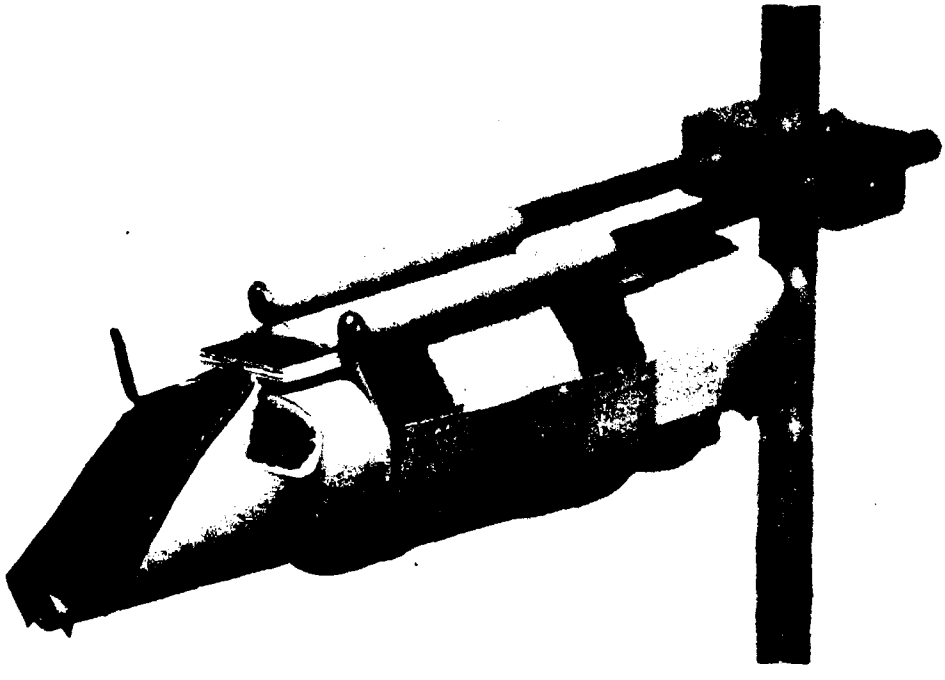


FIGURE 8. Complete chinchilla restraint system (CRS) without subject in place for clarity.

Micropore tape to hold the pinna firmly (Figure 9) for the entire duration of the exposure without risk of the pinna breaking free, thus ruining the exposure condition.

The sequence of steps necessary, and the approximate time to complete each step to place a chinchilla in the CRS is: (a) place the body wrap support on the CRS hanger's twin steel rods (approximately 1 minute); (b) attach the CRS hanger to its stand (approximately 1 minute); (c) place the chinchilla into the body wrap head first, pulling both legs all the way down from the underside and closing the Velcro, being careful to have a snug, but not too tight, fit (takes two people approximately 3 minutes); (d) clean ear with masking tape (approximately 1 minute); (e) place body wrap containing chinchilla into the body wrap support, inserting pinna position stablizer (approximately 1 minute); and, (f) tape pinna to pinna position stabilizer (approximately 1 minute). The whole operation takes two people only 7-8 minutes to complete. A chinchilla thus restrained is ready for exposure (Figure 10).

## RESULTS AND CONCLUSIONS

Once inside the body wrap portion of the CRS, the chinchilla's behavior becomes calm. Occasional kicks with the feet and flicks of the tail replace the hectic scramble of an animal being held by hand. The subject's behavior change is rapid once the head is in position and the Velcro closure is complete. Although the most desirable temperature for chinchillas is between 60-75 degrees Fahrenheit (Bowen and Jenkins, 1969), the CRS has not proven to cause overheating. Experience has shown chinchillas may be restrained using this system for up to 1 hour with no adverse effects. Caution would be indicated when using the device in hot and humid conditions.

As a result of using the CRS in our impulse noise experiments, we have achieved totally stable, repeatable, and safe positioning of our research subjects relative to the sound source. The CRS has been used to expose 108 chinchillas to impulse noise. There have been no mishaps or deaths attributable to the use of this system. Capitalizing on the research subject's natural behavior to accomplish restraint, using the CRS is less traumatic to the research subject and more acceptable in terms of project needs.

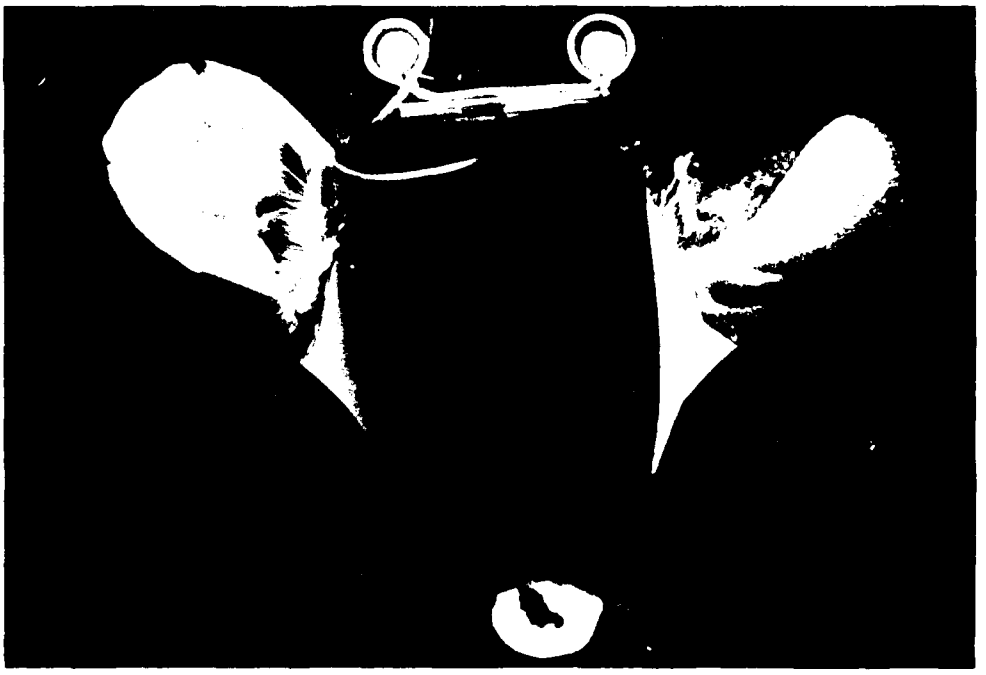


FIGURE 9. Chinchilla with taped pinna.

FIGURE 10. Chinchilla ready for exposure.

## REFERENCES


Bowen, E.G. and Jenkins, R.W. 1969. Chinchilla: History, Husbandry, Marketing. Alder Printing Co., Hackensack, NJ.

Burdick, C.K. 1982. Hearing loss from low-frequency noise. New Perspectives on Noise-Induced Hearing Loss, eds., R.P. Hamernik, R. Henderson, R. Salvi, Raven Press, NY.

Burdick, C.K., Patterson, J.H., Jr., Mozo, B.T., and Camp, R.T. 1978. Threshold shifts in chinchillas exposed to octave bands of noise centered at 63 and 1000 Hz for three days. The Journal of the Acoustical Society of America, 64:458-466.

Lawson, R.L., Barranco, S. and Sorenson, A.M., Jr. 1966. A device to restrain the mouse, rat, hamster, and chinchilla to facilitate semen collection and other reproductive studies. Laboratory Animal Care, 16:72-79.

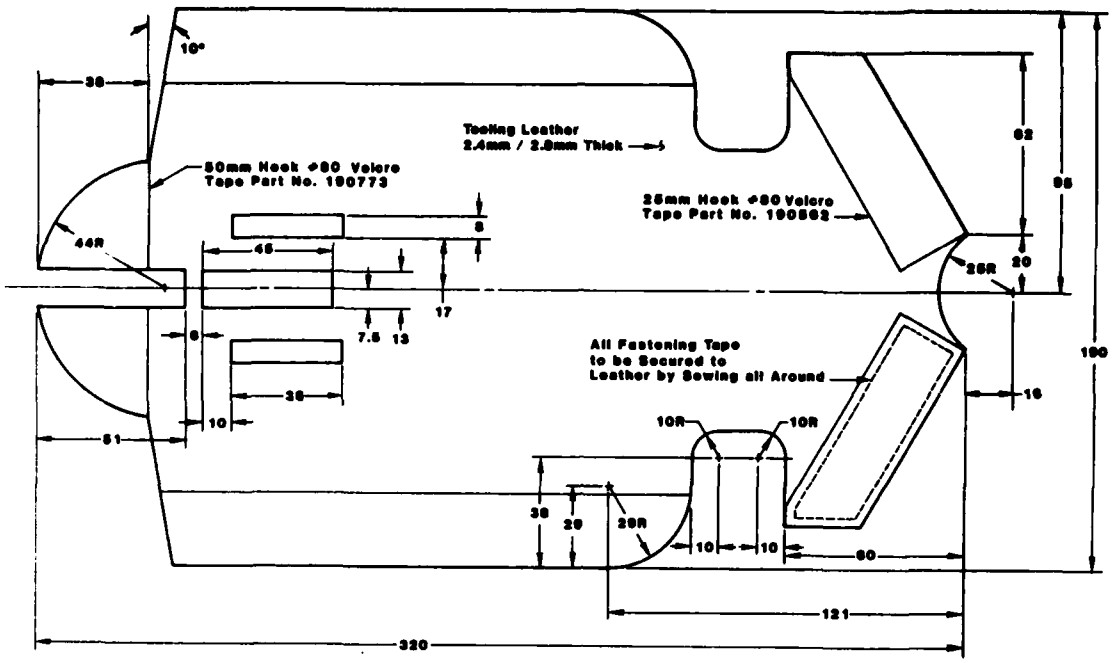
Leibrecht, B.C. 1974. Small animal restraint and movement detection apparatus. Physiology and Behavior, 13:455-459.

Patterson, J.H., Jr., Lomba Gautier, I.M., Curd, D.L., Hamernik, R.P., Salvi, R.J., Hargett, C.E., Jr., Turrentine, G. 1985. The effect of impulse intensity and the number of impulses on hearing and cochlear pathology in the chinchilla. Fort Rucker, AL: U.S. Army Aeromedical Research Laboratory. USAARL Report No. 85-3.

Strout, H.C. 1976. A restraining device and oral dosing technique for the chinchilla (chinchilla laniger). Laboratory Animal Science, 26(4):610-612.

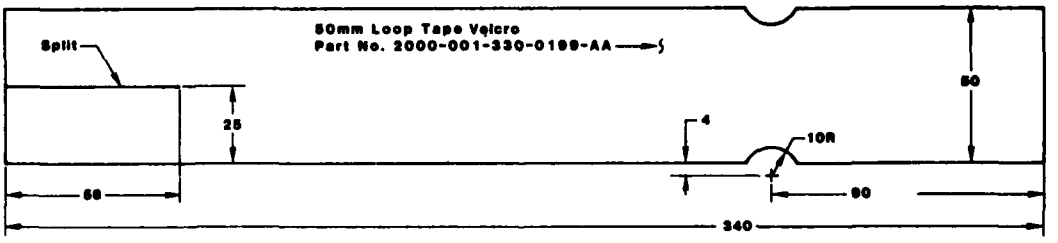
# APPENDIX A

Figures A-1 through A-6 are detailed drawings for construction of the chinchilla restraint system.



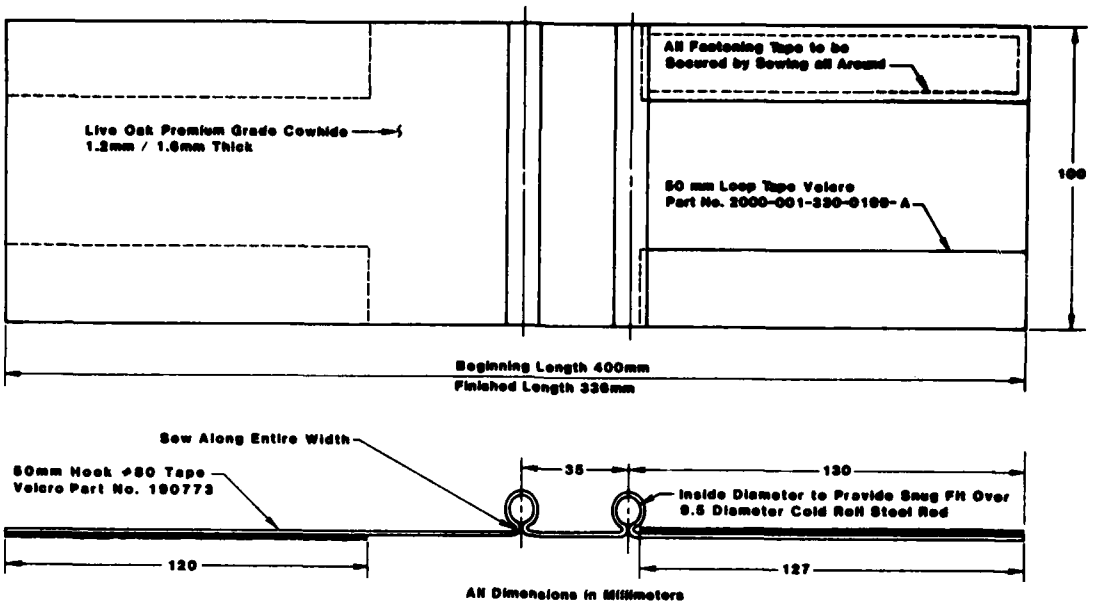

All Dimensions in Millimeters

BODY WRAP




All Dimensions in Millimeters

BODY WRAP FASTENER

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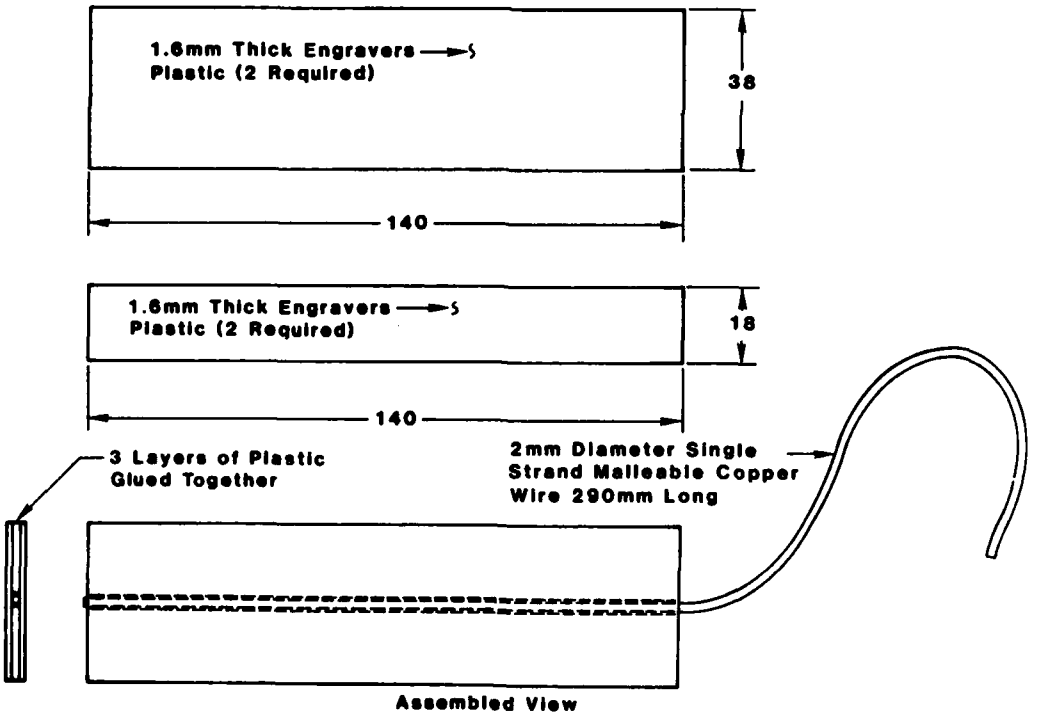
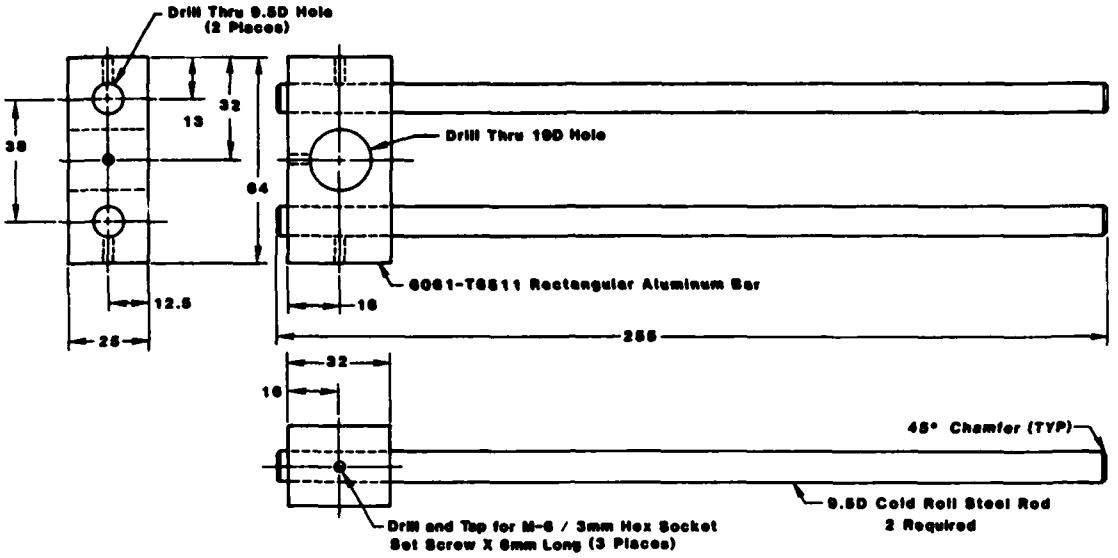
BODY WRAP SUPPORT




Assembled View

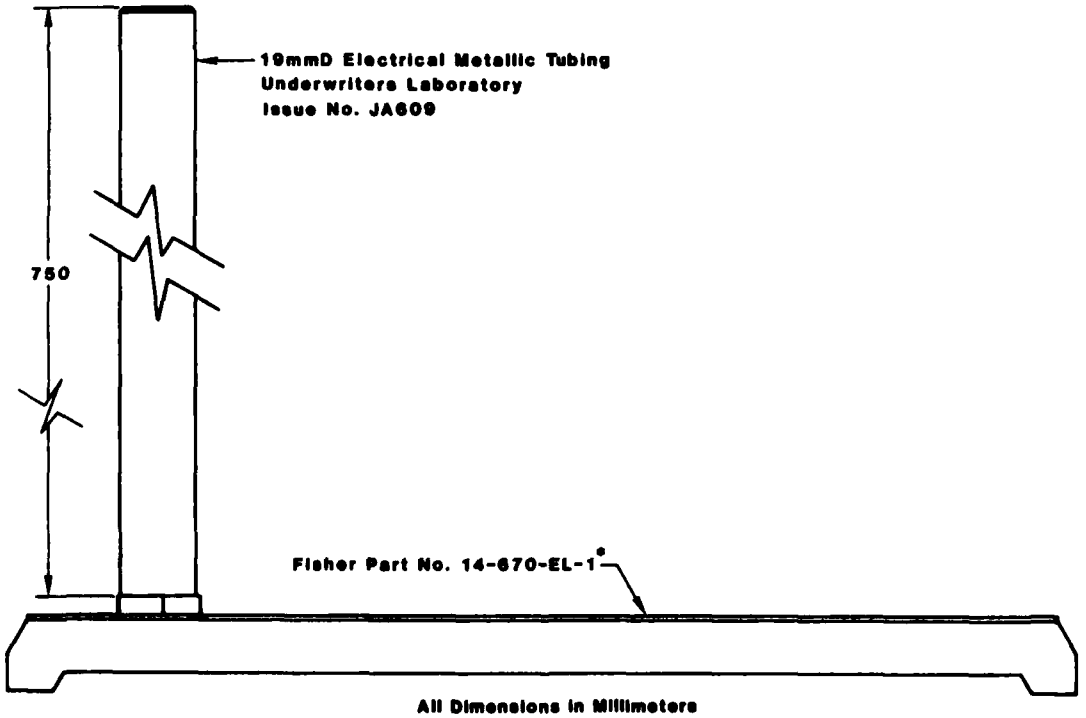
All Dimensions in Millimeters

PINNA POSITION STABLIZER




All Dimensions in Millimeters

**CHINCHILLA RESTRAINT SYSTEM HANGER**




All Dimensions in Millimeters

**CHINCHILLA RESTRAINT SYSTEM BASE**

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