

Technical Note:

The Rapid Adjust Prosthetic Harness

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Illustrated in the photos (Figs. 1 to 3) is a simple modification to standard Figure 8 or Figure 9 prosthetic harness systems to achieve increased flexibility in harness adjustment. This change allows a greater range of control for the upper limb amputee.

The modification employs the use of a lightweight, high strength buckle, similar in design to a seat buckle, which is added to the harness system, close to the retainer ring. The buckle allows the harness to be adjusted rapidly (approximately three inches in length), thereby varying the amount of excursion required to operate terminal devices using standard Bowden cable systems.

The primary applications for the Rapid Adjust System are the new voluntary closing GRIP¹ terminal devices, but the system is applicable to all types of terminals that use cables.

Unilateral amputees will find the most use for the Rapid Adjust System. A unilateral amputee can merely reach behind and under his shirt with his "normal" hand, release the buckle's locking clip, adjust the strap to suit the activity, and then snap the buckle's clip back into the locked position.

A rapidly adjustable harness gives the amputees greater freedom for reaching and grasping with a fully extended arm or additional security in manipulating objects in close to the body's median line. Lengthening the harness will aid in activities such as shoveling, swinging an axe, or manipulating objects above one's head or away from the body. Shortening

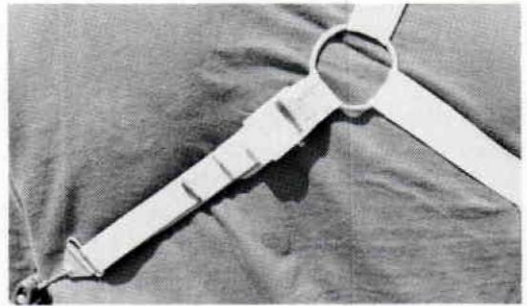


Fig. 1-A.

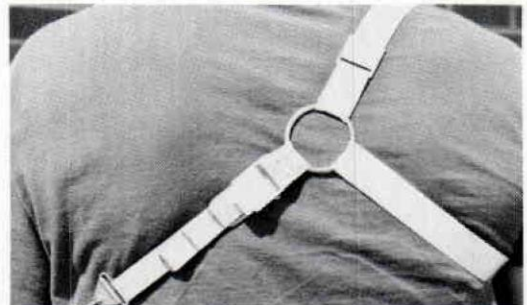


Fig. 1-B.

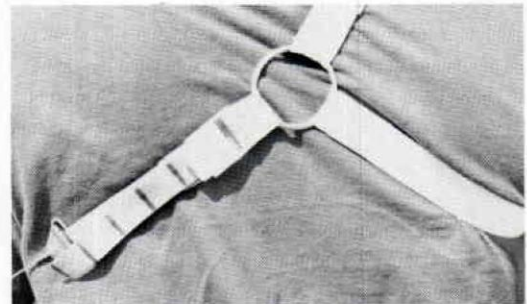


Fig. 1-C.

Figs. 1-A, 1-B, & 1-C. The Rapid Adjust System used on a figure 9 harness. A) The harness is lengthened for activities such as shoveling. B) Normal adjustment. C) Shortened for handling objects close to the body.

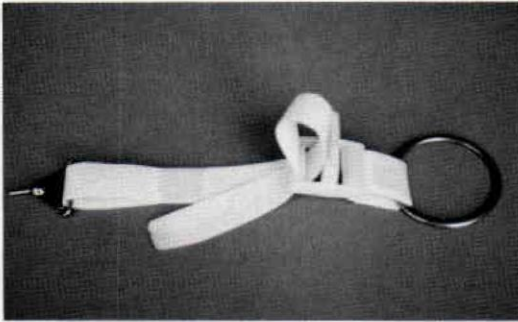


Fig. 2. A lightweight plastic buckle, similar to a seat belt, is used with $\frac{3}{4}$ " Dacron webbing.

the harness can improve dexterity during assembly tasks, handling utensils or other small objects, especially those in close to the body. Active amputees will find this buckle system useful in a variety of vocational and recreational situations where a standard harness might restrict the use of their terminal devices of movement of their residual limb and prosthesis.

The buckle is threaded using three-quarter inch strapping. Three-quarter inch strap can be used throughout the harness system or merely added at the buckle site as indicated by the model in the photos. The prosthetist will want to ensure that the length of the cable housing permits adjustability and that the cable itself does not bear upon the amputee's body during use, for comfort's sake.

Field testing on unilateral amputees indicates that it is advantageous to design the harness so that the retainer ring and

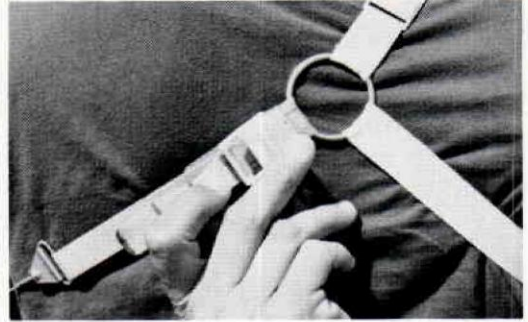


Fig. 3. The wearer can reach back with his "normal" hand and adjust the system.

buckle are located towards the middle of the back rather than higher towards the neck for easy access by the amputee.

Previously, these buckles* have been used in orthotics. The prosthetist should consider them as an easy answer to certain harness problems or purely to give the upper extremity amputee a greater range of capability in the use of his artificial limb.

REFERENCES

¹GRIP is a registered trademark of Therapeutic Recreation Systems, Inc., and refers to the GRIP prehensile action terminal devices.

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*Available from Feiner Brothers, Mineola, New York