SERVOMETER®

Electroforms

unusual shapes, close tolerances, light weight,
great strength, and highly reflective surfaces

SERVOMETER...

The Ideal Electroform when unusual shapes,

INTRODUCTION

The technique of making parts by electrodeposition is over 150 years old, yet it is only recently that this method has been used successfully to make extremely intricate parts with deep crevices or odd shapes.

Parts made by electrodeposition are manufactured by forming a mandrel to the shape of the required part,depositing the proper thickness of spring quality metal onto this, trimming the end(s) and then dissolving out the mandrel, leaving behind the hollow electrodeposited metal shell which becomes the electroform.

Over 40 years ago, Servometer Corporation pioneered the manufacture of miniature metal bellows by electrodeposition, and today we are the leading supplier of bellows made by this method. The specialized knowledge that our engineers and production people have gained from this experience has now been applied to the manufacture of electroforms, particularly those which function as intricate parts, with extremely close tolerances and fine surface finishes.

SERVOMETER ELECTROFORMS

The advantages that Servometer electroforms offer are:

- extremely light weight, yet tremendously rugged
- unusual shapes, even parts with varying cross sections
- very small size, when required
- a surface finish as fine as 4 R.M.S.
- extremely close tolerances
- varying wall thicknesses on a single part, if required
- they can be made an integral unit with a flexible bellows, eliminating welding or soldering
- they can be used between great temperature extremes, even as low as 423˚F below zero
- set-up costs are low and reasonable
- deliveries can be made in only a few short weeks

BASIC CHARACTERISTICS:

DESIGN & PRODUCTION ADVANTAGES

Now let us take a close look at the basic characteristics of Servometer electroforms in respect to the major advantages they offer to design and production engineers.

Weight and Strength

Most Servometer parts are electroformed of pure nickel with wall thickness varying from 0.0003” to 0.025”. These parts have a weight of less than 0.1 #/sq. ft. and tensile strength of 125,000 psi minimum. Elongation is 1.0% minimum, hardness runs 270 Vickers minimum, and Young’s modulus is 23,350,000.

Size, Shape, and Finish

Engineers who utilize Servometer’s electroforming capabilities will find their most significant advantage in our ability to create small and unusually odd shaped parts. Diameters as small as 0.030” are not uncommon, and dimensional tolerances, if necessary, can be held to tenths. Complex miniature parts, with differently shaped cross sections and varying wall thicknesses in different areas, can also be produced. Larger parts are also practical in certain instances. The finish on these parts can be optically fine to 4 R.M.S. when necessary, but this finish is relatively expensive and is very seldom required. A finish to 32 R.M.S. is more than adequate for most applications, and will be supplied unless otherwise specified.

close tolerances and high strength are required.

Temperature Extremes

The electroformed nickel parts produced by Servometer are highly ductile and can be used where temperatures are as low as -423˚F or as high as 1,000˚F. The coefficient of thermal expansion is low and for this reason more and more aerospace applications are using parts made by this process.

SIZE LIMITATIONS

Servometer can supply electroforms which normally range from 0.030” in diameter to 8”x8”x6”. Larger parts are also practical in certain instances. Submit drawings and specifications to Servometer.

MATERIALS AND PROPERTIES

Basic material is nickel. Copper, silver and gold are also available either as a complete part or as a surface finish.

Servometer Nickel

Ultimate tensile strength	125,000 psi min.
Yield strength	110,000 psi
Elongation (in 2 inches)	1% min.
Hardness, Vickers (100gm. test)	270 min.

Chemical Composition

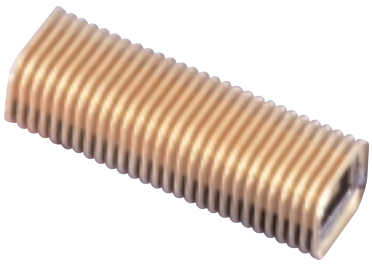
Nickel	99.85%
Sulfur	0.040% max.

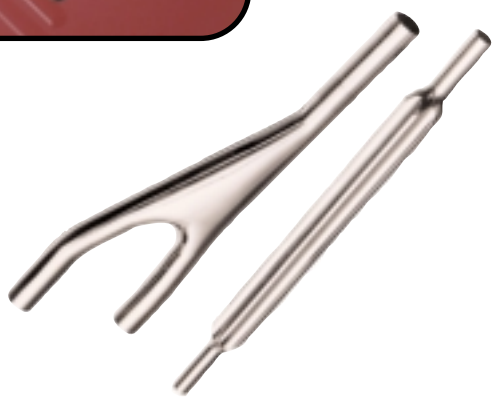
DESIGN ASSISTANCE

Our engineers will gladly assist you in determining the properties and specifications necessary for your electroform application. Inquiries are welcome.

COST AND DELIVERY

Due to the custom nature of electroforms, prices will vary depending on the complexity of the part as well as the specific requirements such as surface finish, tolerances, etc. Deliveries are usually made just a few weeks after final design.





Other precision products available, include...

Flexible Shaft Couplings

Servometer precision flexible shaft couplings are used in applications requiring extreme precision, flexibility, sensitivity, and high reliability. A must for critical positioning applications.

Contacts

Servometer bellows contacts are widely used as electrical spring contacts in radio transmitters and receivers, radar systems and microwave applications, where negligible inductance and insertion loss are necessary.

Miniature Metal Bellows and Assemblies

Servometer manufactures custom electrodeposited nickel bellows ranging from 1 mm (.039") to 76 mm (3") O.D. Exceptional qualities are high flexibility and extreme sensitivity.

Corporate

Servometer Corporation designs and manufactures precision electrodeposited nickel bellows, bellows assemblies, flexible shaft couplings, electrical contacts and lightweight structural electroforms.

SERVOMETER®

"Precision Products From A Tradition Of Excellence"
Since 1957

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