

Components produced by Precision Rotary Swaging:

## Heating Elements / Heating Rods / Tubular Heaters



93-0417/M

### Workpiece:

Material: Stainless steel, filled with centralised heat conductor and magnesium powder

Blank: Tube dia. 4 to 22 mm with wall thickness 0.7 to 1.5 mm

### Manufacturing requirement:

Reduction in one to two operations

### Previous technique:

Rolling, hydrostatic compressing

### Operation sequence:

1. Start reducing from the connecting side, using feed swaging in order to prevent loss of magnesium powder
2. Complete reduction over the entire length from the bottom end by feed swaging

### Advantages:

- Outstandingly good surface quality ( $R_a \sim 0,3 \mu\text{m}$ )
- Work hardening of material
- Very good accuracy on diameter ( $\pm 0,02 \text{ mm}$ )
- Excellent straightness
- Low tool costs
- Short changeover times
- Complete manufacture of part on one machine

### Production rate:

Cycle time is depending on the skill of the operator and the length to be reduced.

### Example:

with dia. 10 mm, length 700 mm

Cycle time: approx. 5 pcs./min.

### Machine:

Model: FR 32-1 VU

Required floor space without sound enclosure: (L x W x H) approx. 1,580 x 800 x 1,970 mm

Weight: approx. 1,400 kg

Required power: approx. 7 kW