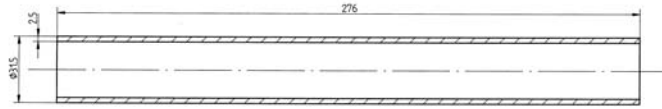
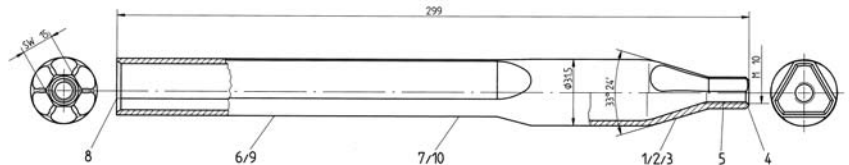


**Components produced by Precision Rotary Swaging:  
Tubular Steering Shaft,  
Upper Part**



Finished part



91 0365/M

**Workpiece:**

Material: similar to St 52 K

Blank: tube section  
O.D. 31.5 mm,  
wall thickness 2.5 mm  
and length 276 mm

**Manufacturing requirement:**

- Complete manufacture of component; hex on one side with transition angle 33° 24'
- Manufacture triangle inner contour with inscribed circle  $\varnothing 18.0 \pm 0.03$  mm

**Previous technique:**

Drawing and machining operation

**Operation sequence:**

1. Recess Swaging  $\varnothing 23$  mm
2. Recess Swaging  $\varnothing 19$  mm
3. Recess Swaging hex. across flats 15 mm
4. Facing and chamfering
5. Forming internal thread M10
- 6.+7. Feed swaging in two steps
8. Facing and chamfering
- 9.+10 Feed swaging triangle in two steps

**Advantages:**

- Good dimensional accuracy
- Excellent surface finish especially at the internal surface of the triangle
- Considerable material savings
- Minimal chip production
- Favourable grain structure
- Work hardening of material
- Complete manufacture of part in only one machine pass

**Machine description:**

Fully automatic Precision Rotary Swaging Transfer Line consisting of:

- 7 swaging stations
- 2 turning stations
- 1 thread forming station

**Production rate:**

Cycle time: 15 sec.  
(= 4 pieces/min.)

**Machine:**

Model: HA 40-10 SUE

Required floor space without sound enclosure: (L x W x H)  
approx. 13000 x 3600 x 3400 mm

Weight: approx. 44,000 kg

Required power: approx. 120 kW