11. Threads

When swelling or alternating tension and compression, bending or torsion act on screw threads, they evoke a strong notch effect. In thread root area, a high tension stresses are concentrated. Fatigue cracks therefore originate from the screw thread root.

For example, the screw thread roots of tie bars for presses and mold injection **machines**, hydraulic Pistons and thread connections of oil field equipment or threads in words of mechanical presses are deep rolled with EF90 (Fig. 11-1 and 11-2) at

The rolling process is concentrated on the root radius of the screw thread profile. The profile roles are held in the tool so that they can adjust automatically to the lead angle. Therefore, also cone screw threads with variable lead angle can be deep rolled with these tools. Furthermore, the rollers float in axial direction sufficiently in order to compensate for deviations between the machine feed and lead of the screw thread.

The process is finished in one path. The time therefore is low. Typical parameters are:

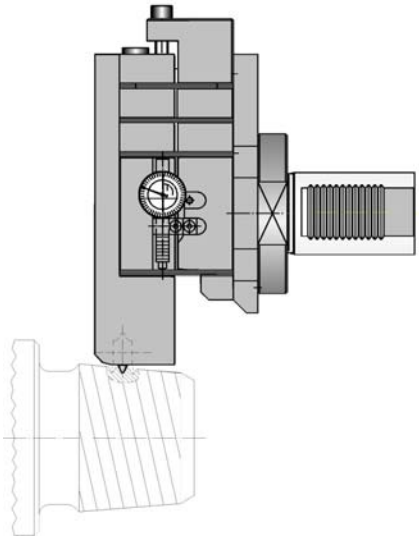

Fig. 11-1: deep rolling of threats

Fig. 11-2:deep rolling tool EF90

Circumferential speed	Up to 50 m/min	With machines with larger feed rate deviation, slower speeds are necessary.
Feed rate	identical with thread lead	Only 1 path necessary.
Rolling force	3 - 20 kN / 700 to 4500 lbf	according to material and radius

Table 11-1: parameters for deep rolling of screw threads

In the applications known until now, the deep rolled screw threads proved to be durable. At least, the low cycle fatigue was essentially increased.