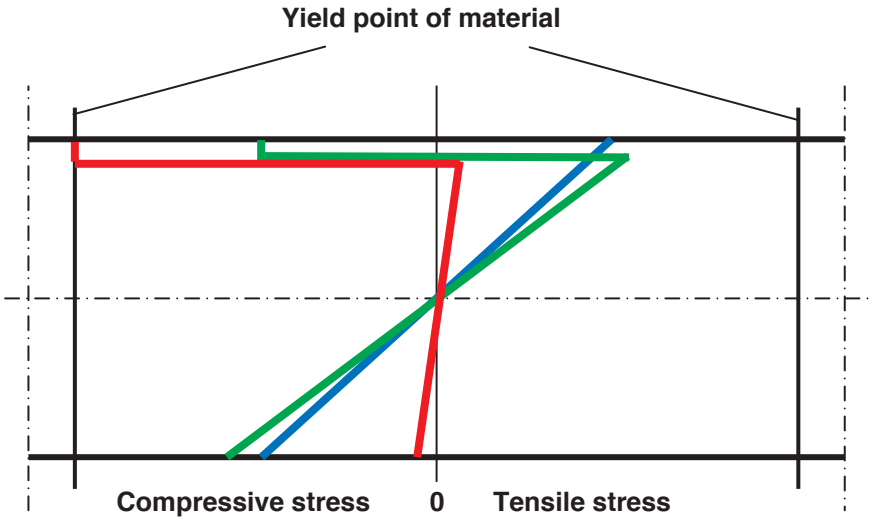
Stress-peening



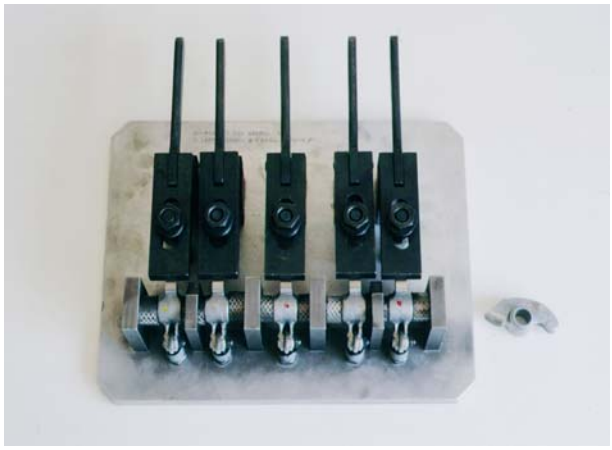
= stress by applied bending load

= resultant stress after shot peening in the stressed condition

= resultant stress after stress-peening in the relieved condition

Shot peening induces compressive residual stress in a surface layer. The distribution and level of this residual compressive stress depends only on the material, depth and intensity of the plastically deformed surface layer.
Already existing stress, produced by machining or external load, has no influence on this fact.
Stress peening can be applied if parts are only loaded in one direction.

In the stress peening process, a part is shot peened in a externally loaded or stressed condition by using a fixture or weight to simulate the operating tensile stress.
After shot peening the parts will be relieved of the applied load, which produces an even higher compressive residual stress up to the yield stress of the material.
The fatigue strength and endurance limit are modified accordingly.



Rocker arm in a toggle lever prestress fixture

Stress-peening