

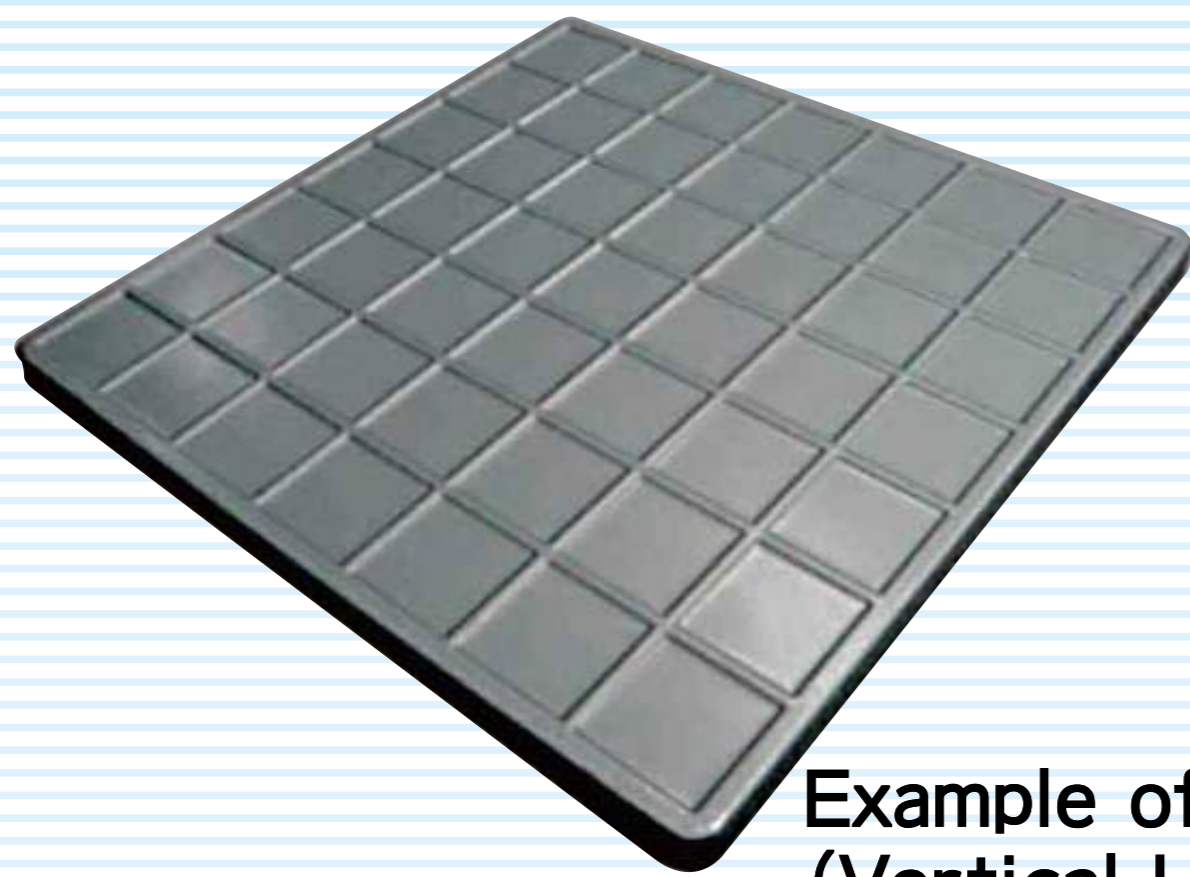
Structural Technology for Down Gauging of the Steel Sheet

Effect Down Gauging by Rigidity Improvement and Strength Improvement (Cost Reduction)

Points

1 Improving the Rigidity of Shallow Drawing Panels

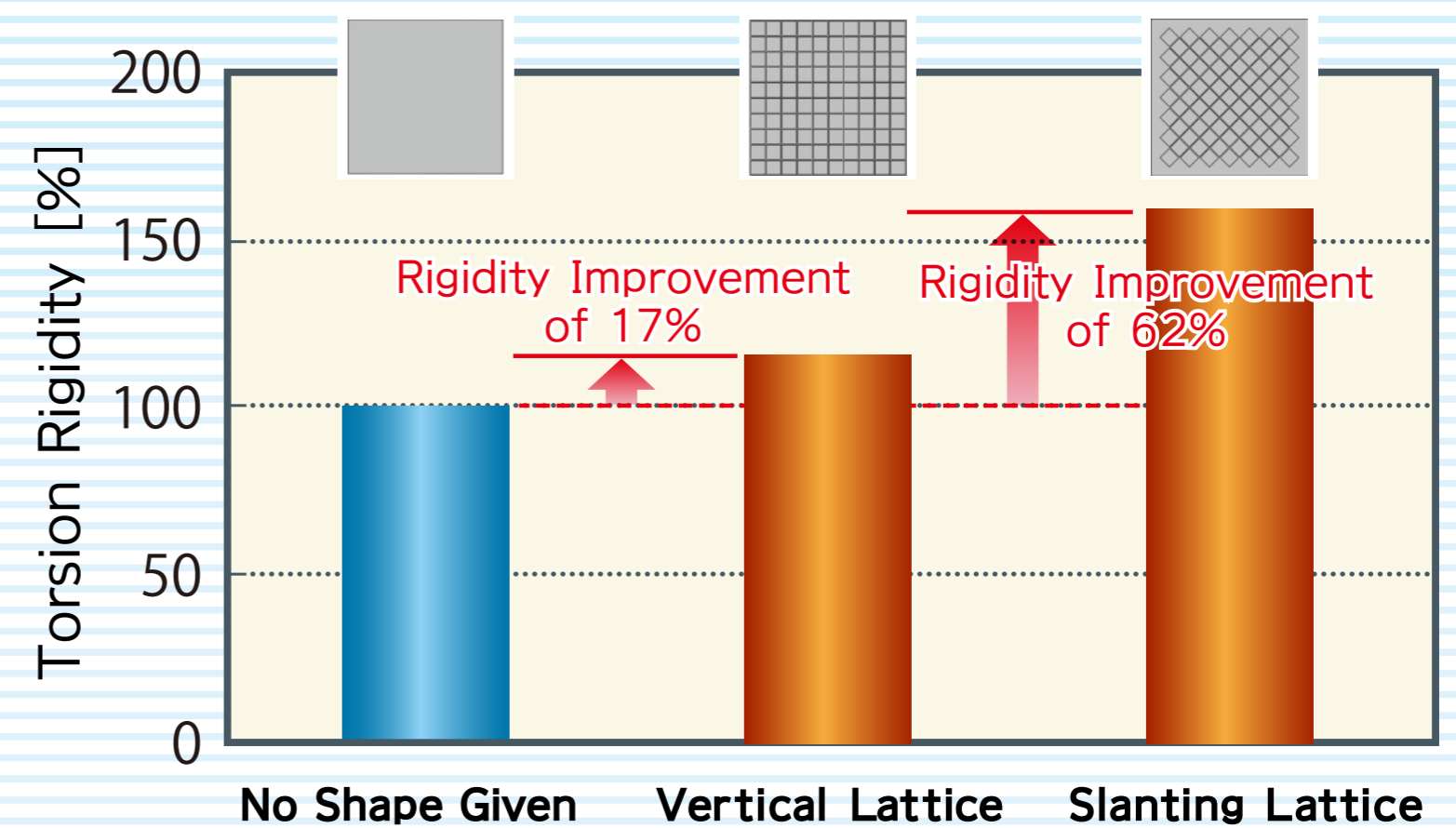
Example of Improving Torsional Rigidity by Adding Roughness to the Surface



Example of Giving Shape (Vertical Lattice)

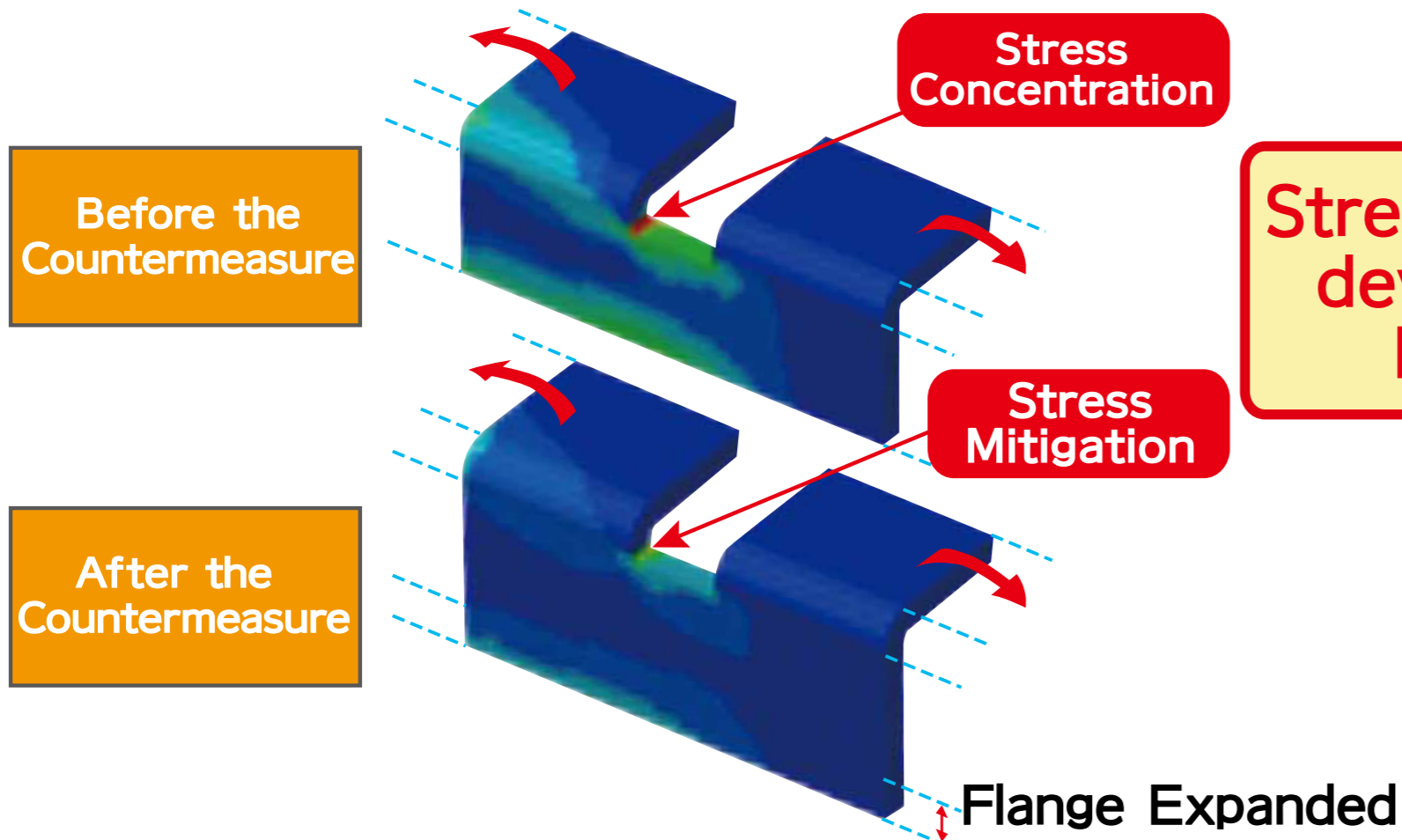
Rigidity is improved by giving shape

Down Gauging



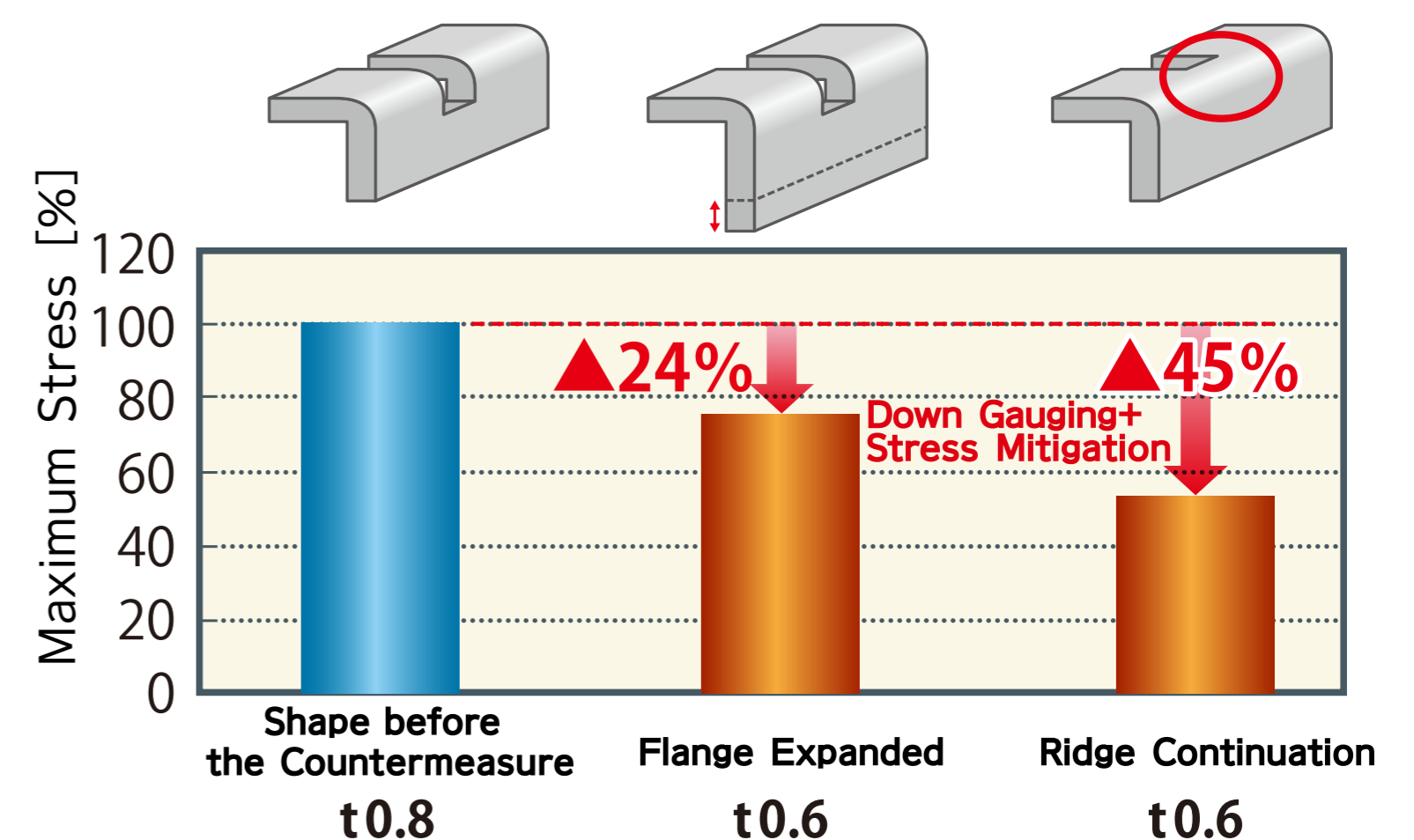
2 Stress concentration on the notch is mitigated

Study example of notch shapes



Stress is mitigated by devising the shape Down Gauging

Down Gauging

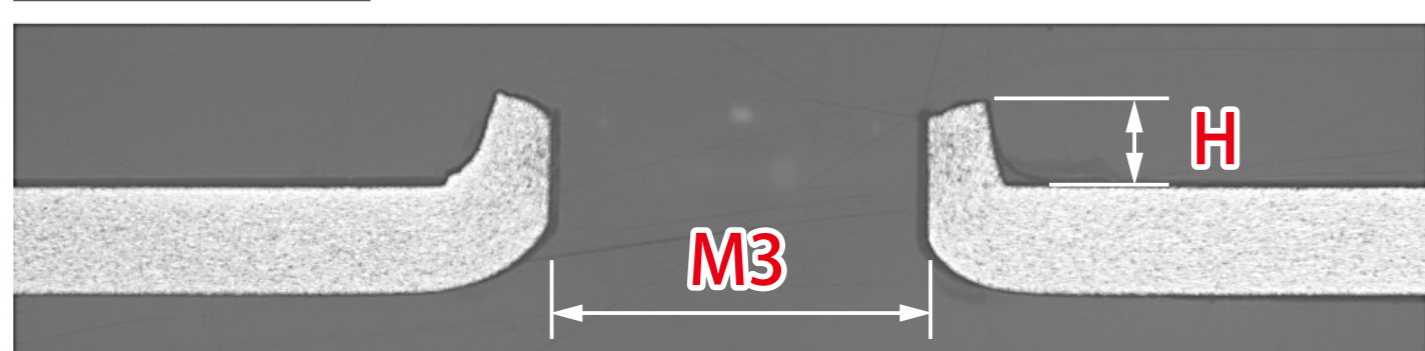


3 Improving Pushing Strength of Tap Screw

Example of down gauging by increasing the burring height and raising the tension

$$\text{Maximum Pushing Strength} \propto H * TS * t$$

Conventional



Burring Height H : 0.7mm
Strength of Material TS : 270MPa
Thickness t : 0.8mm

Improvement of Burring Height + Increasing Tensile



Burring Height H : 1.1mm
Strength of Material TS : 440MPa
Thickness t : 0.6mm

Improving Push Strength + Down Gauging