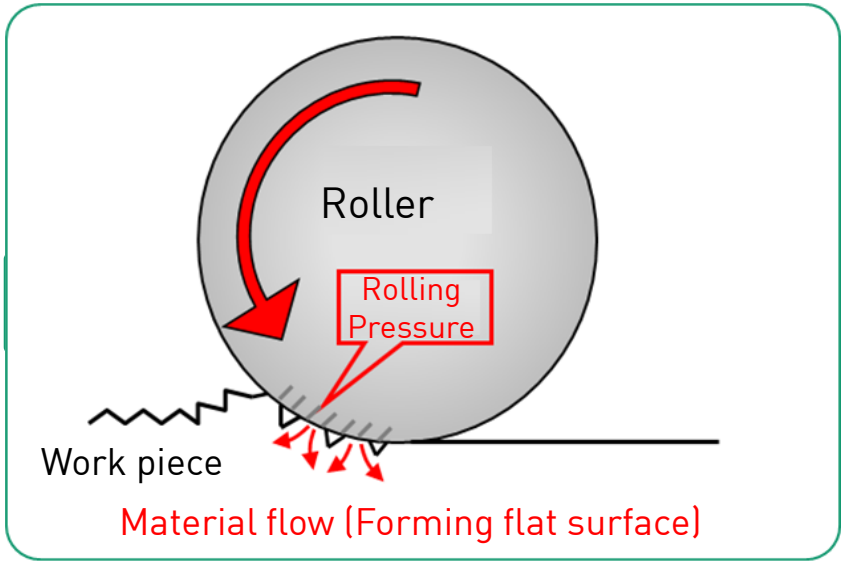
Increase metal wear resistance by Superoll

Benefits of surface compression with Superoll

Compression of uneven surfaces results in plastic deformation increasing surface hardness.

Benefits are that...

improve wear resistance, and
improve tensile strength.



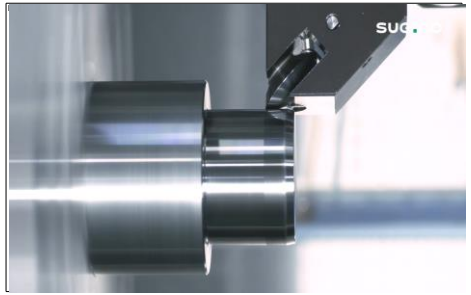
Increase Hardness

Increase metal wear resistance by Superoll

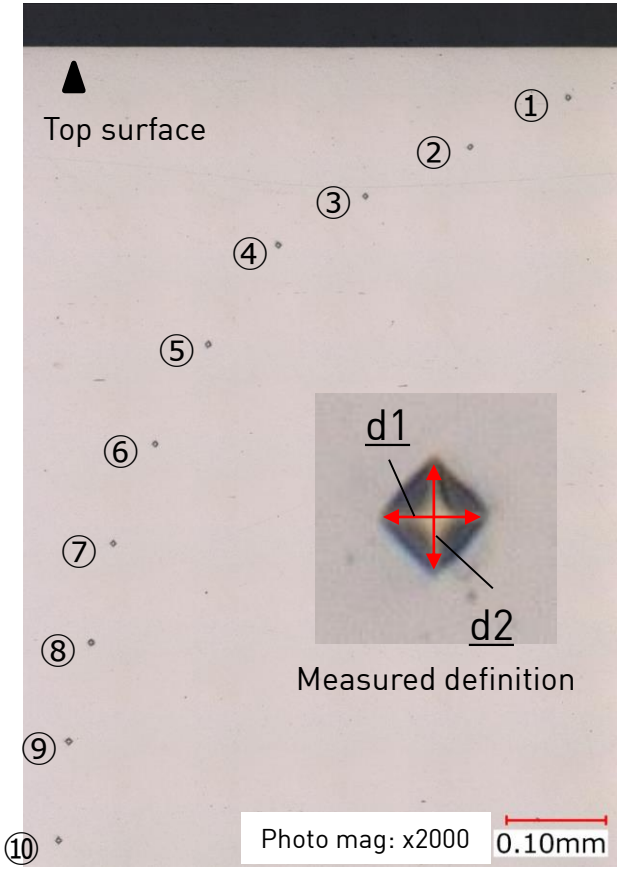
Results of Vickers hardness test

Burnishing conditions
- Tool : SR16M
- Working load : 115 N
- Material : SUS316L
- Base material : HV256 hardness

Hardness measurement conditions
- Applied load : 10gf
- Load time : 15sec



No.	Depth from surface (mm)	Hardness (HV)	Measured length (μm)	
			d1	d2
①	0.05	401.0	6.9	6.7
②	0.10	401.0	6.9	6.7
③	0.15	373.1	7.1	7.0
④	0.20	357.7	7.2	7.2
⑤	0.30	321.0	7.6	7.6
⑥	0.40	352.8	7.3	7.2
⑦	0.50	334.1	7.5	7.4
⑧	0.60	312.8	7.7	7.7
⑨	0.70	256.7	8.4	8.6
⑩	0.80	297.1	7.9	7.9



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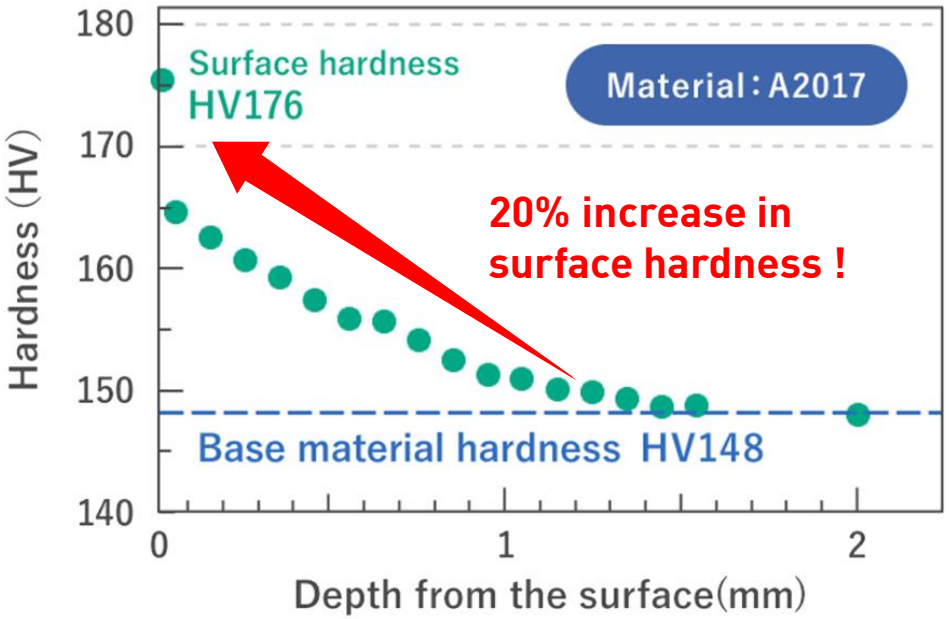
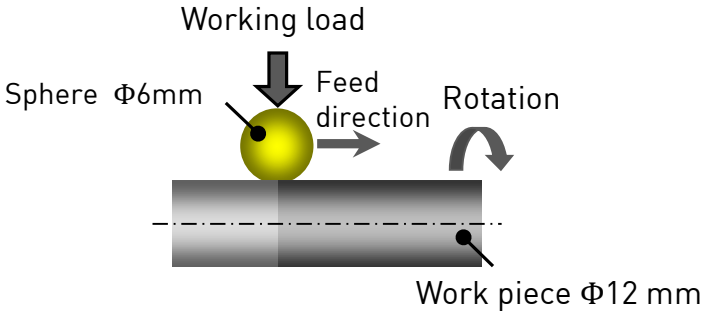
Hardening ex1: Material A2017-T4

*The ratio and range of hardening varies depending on burnishing conditions, etc.



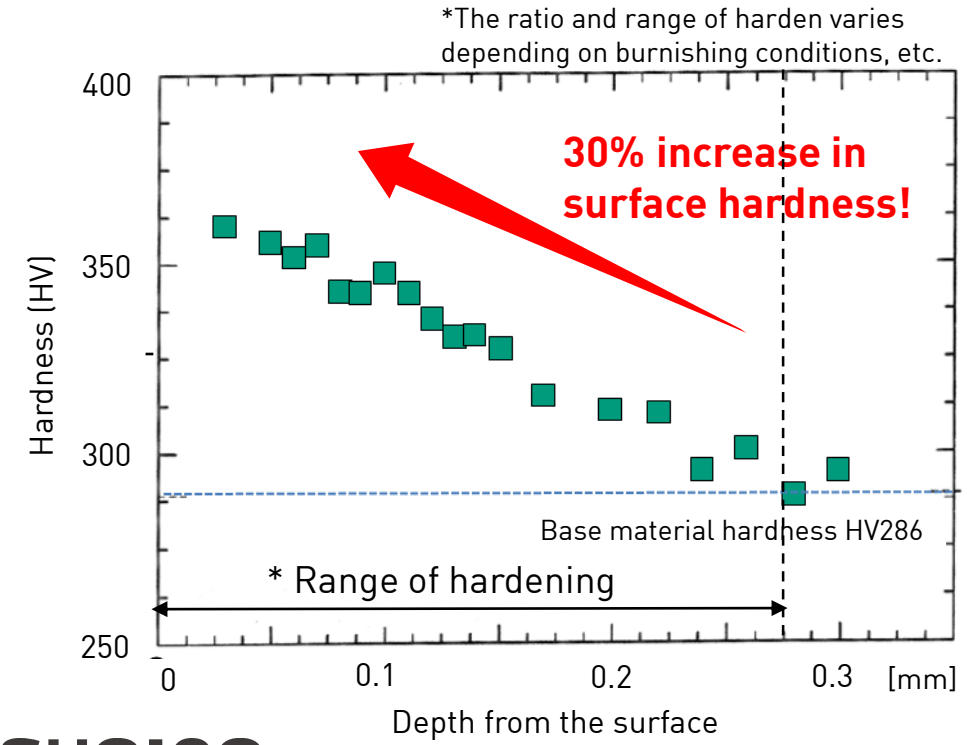


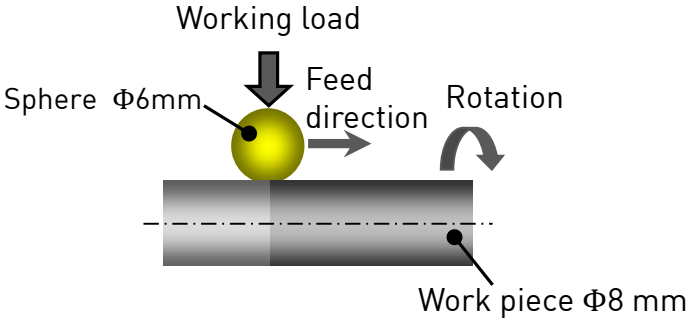
Burnishing conditions

Workpiece shape: Shaft (Φ12mm)
Working load : 190 N
Feed rate : 0.05 mm/rev
Rotation speed : 1600 min^{-1}

Increase metal wear resistance by Superoll

Hardening ex2: Material SCM435





Burnishing conditions

Workpiece shape: Shaft (Φ8 mm)

Working load : 1,000 N
Feed rate : 0.05 mm/rev
Rotation speed : 1600 min^{-1}

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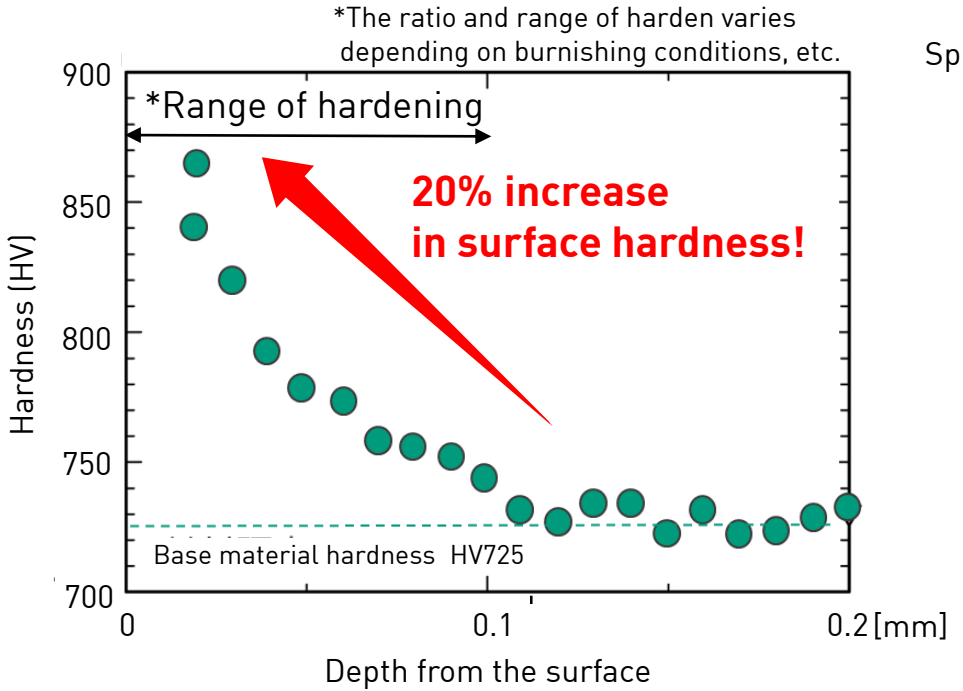
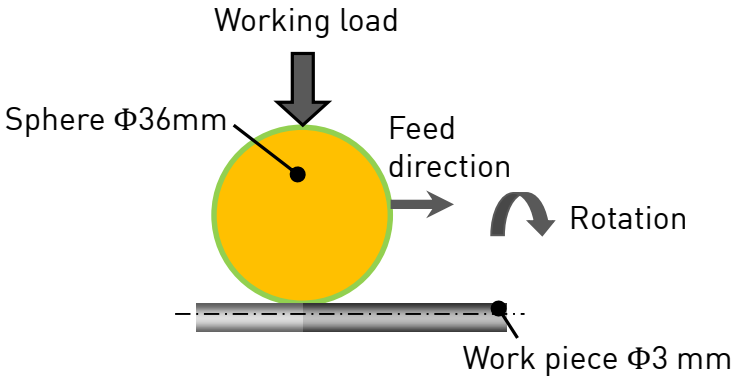
Increase metal wear resistance by Superoll

Hardening ex3: Material SUJ2



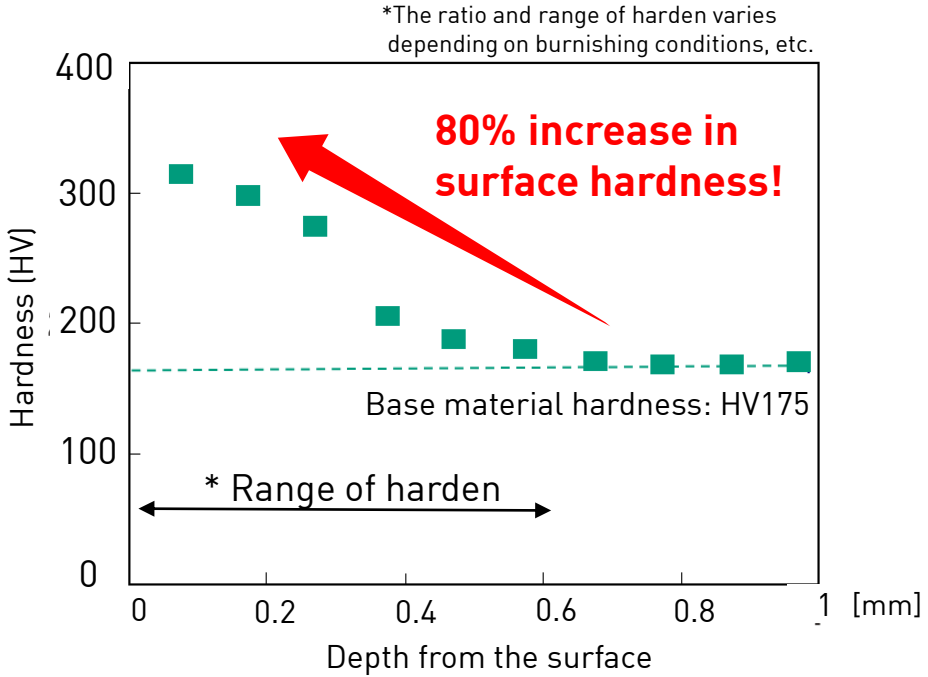


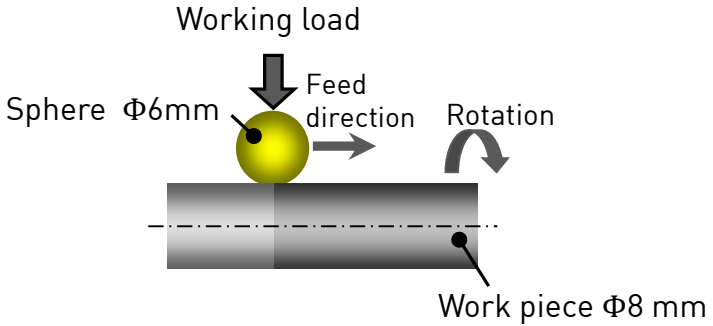
Burnishing conditions

Workpiece shape: Shaft (Φ3mm)
Working load : 215 N
Feed rate : 0.05 mm/rev
Rotation speed : 1600 min^{-1}

Increase metal wear resistance by Superoll

Hardening ex4: Material SUS316





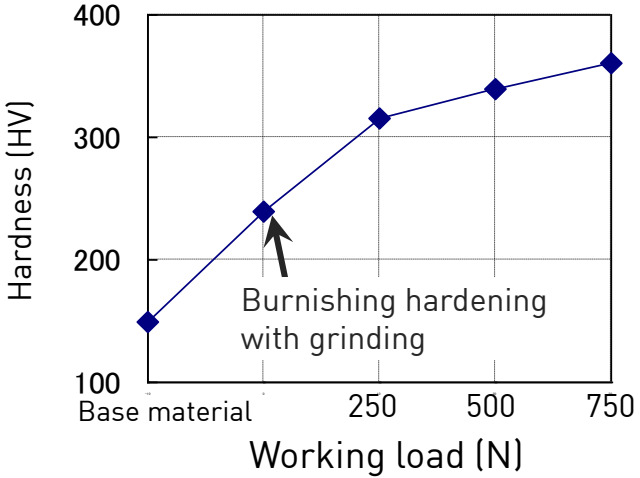
Burnishing conditions

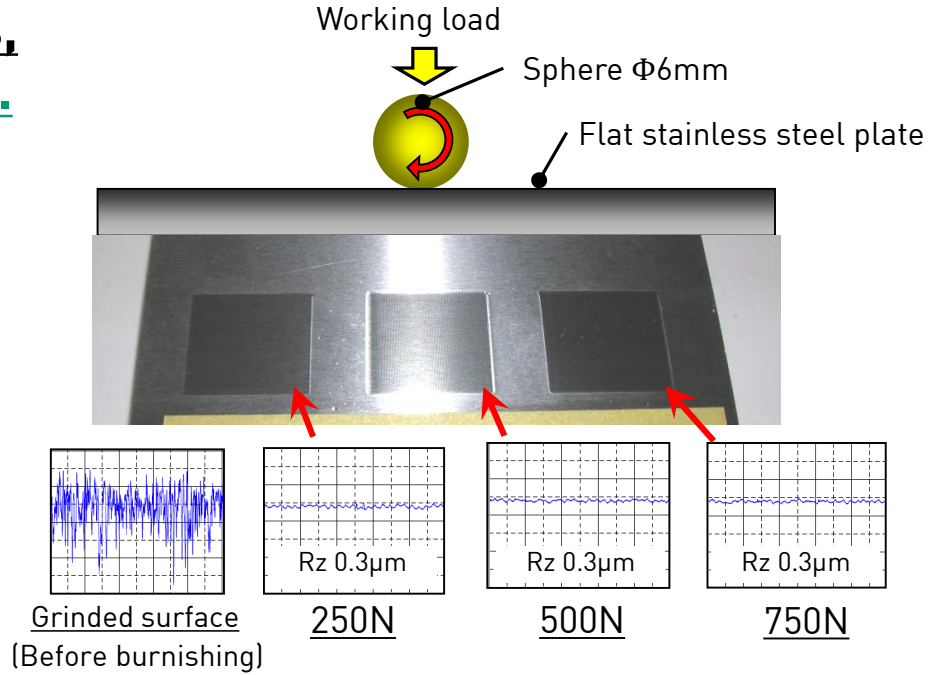
Workpiece shape: Shaft (Φ8mm)
Working load : 360 N
Feed rate : 0.05 mm/rev
Rotation speed : 1600 min^{-1}

Increase metal wear resistance by Superoll

As Superoll working load increases,
workpiece hardness also increases.

Ex: Material SUS316L





Roughness doesn't change by changing a working load.

Caution:
If the working load is too high for the strength of the base material, it may result in worse roughness or surface flaking.