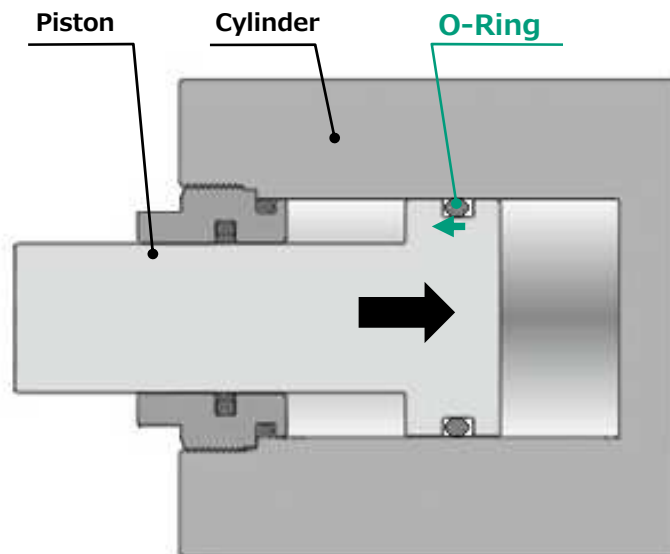


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1. Background

☆ Main Target: O-Ring groove for Cylinder Piston



☆ O-Ring used for movable part

↓
When Piston moves, O-Ring is pushed to the groove sidewall.

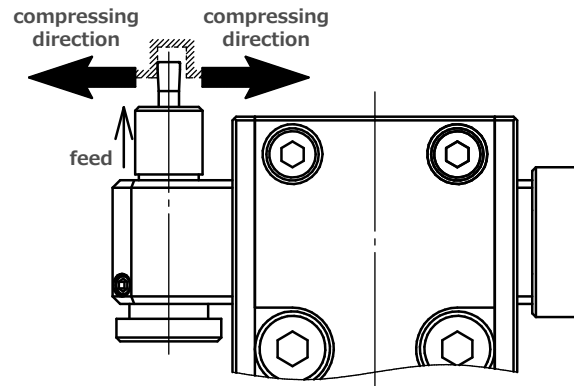
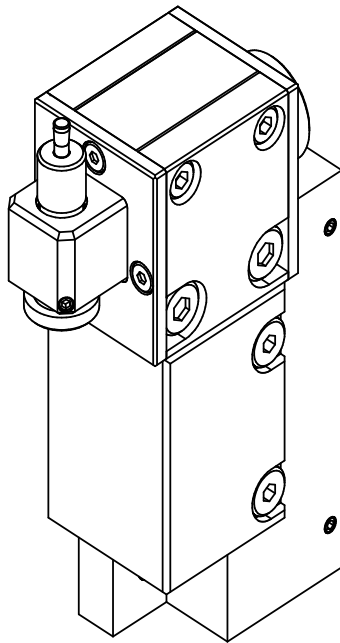
↓
Surface roughness of groove sidewall is bad.
⇒ O-ring wear is big.

↓
O-ring wear reducing.
⇒ Surface roughness improvement is required.

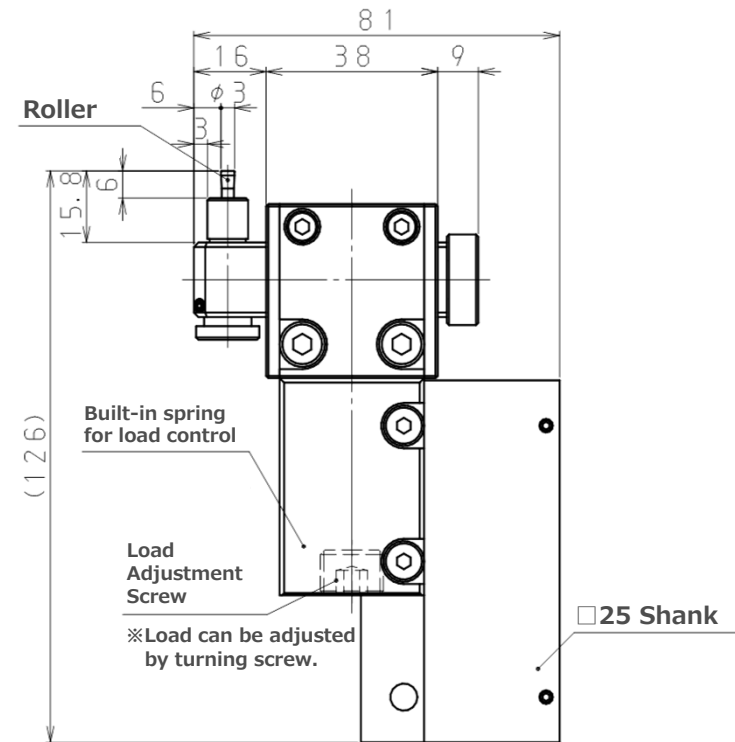
↓
Can be a Superroll used for this?

2. Tool information

☆ Development of the tool available for both sidewalls of the surface.

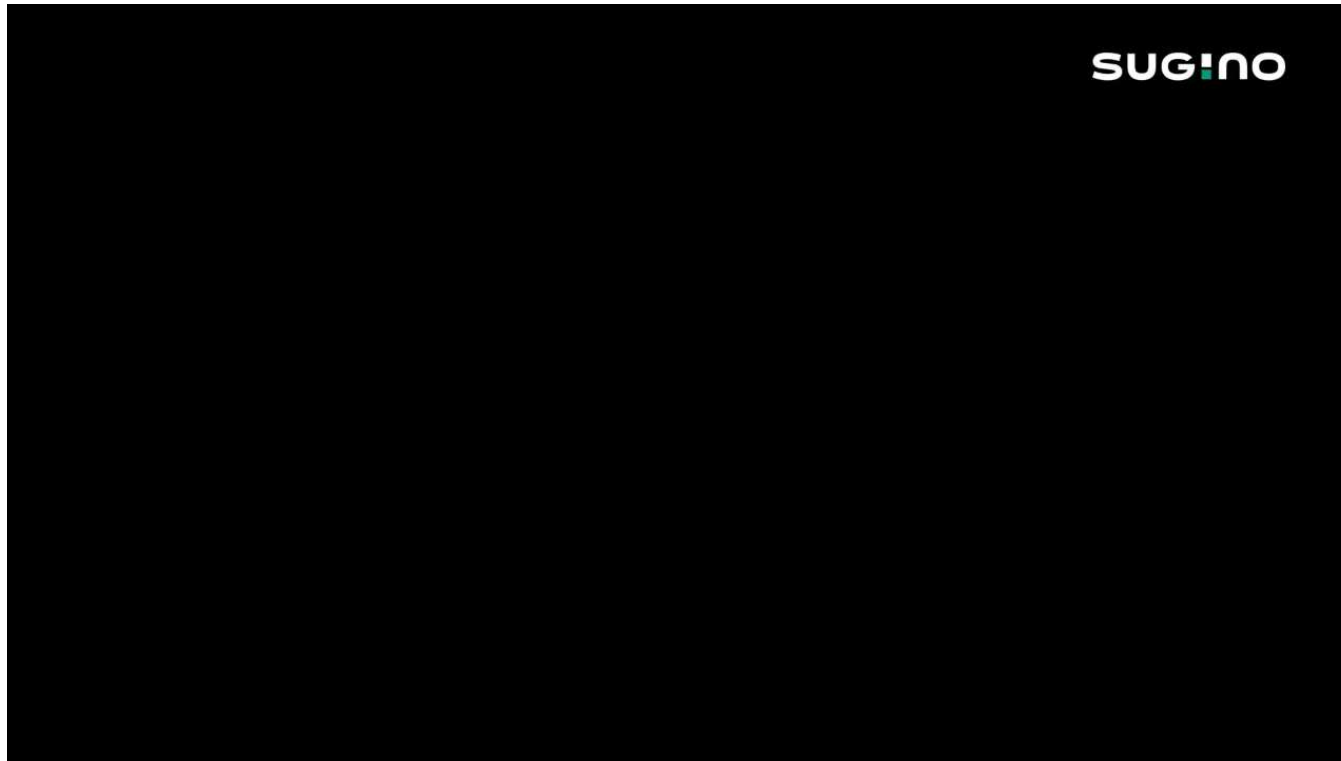


※The spring load will be transmitted at any compression direction.



Model : SR3ZR-S25

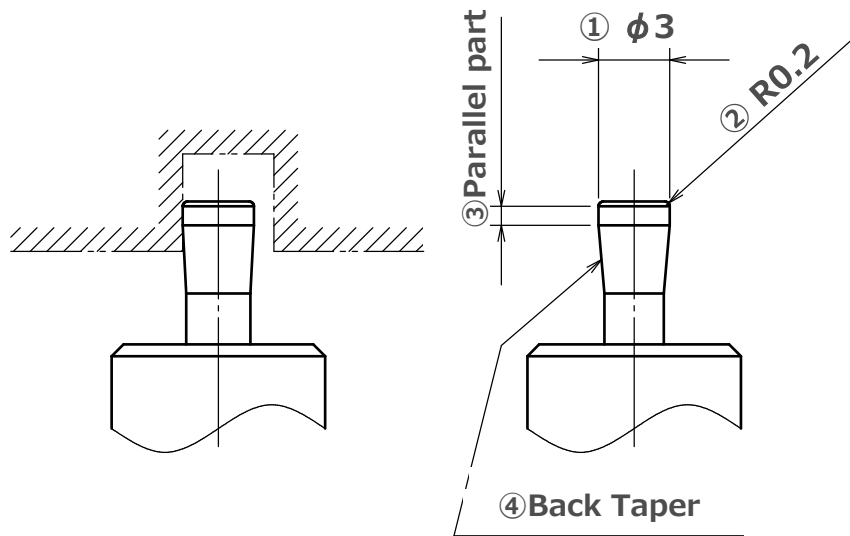
3. SR3Z burnishing video presentation



Link : <https://www.youtube.com/watch?v=HOHt46EtO2c>

4. Features

☆ Features of the Roller



① Roller diameter $\phi 3\text{mm}$

(considering about groove width)

※Smaller diameter Roller is currently being developed.

② Corner R0.2 (small un-burnishing area)

③ Parallel part (speeding up Feed)

④ Back Taper (better finish)

5. Notes when using tool (1/2)

☆ About un-burnished area

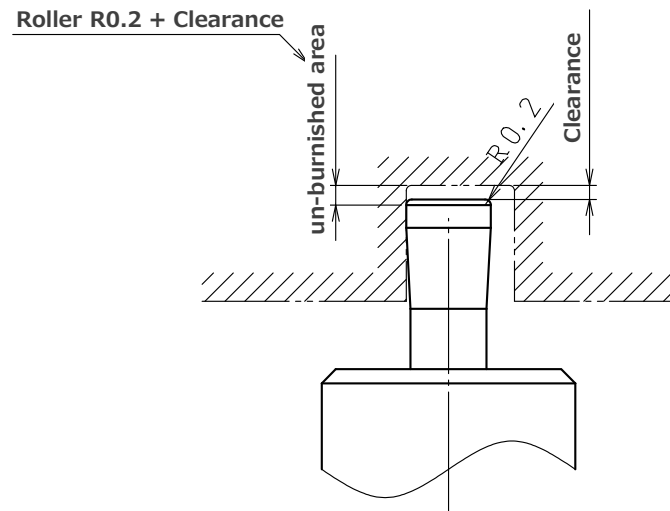
un-burnished area =
Roller R0.2 + the clearance between Roller and workpiece

Example)

If the clearance is 0.2mm, un-burnished area is 0.4mm.

※ Be sure not to hit the bottom surface.

※ When the bottom corner is bigger than R0.2,
be careful not to get on the corner R.



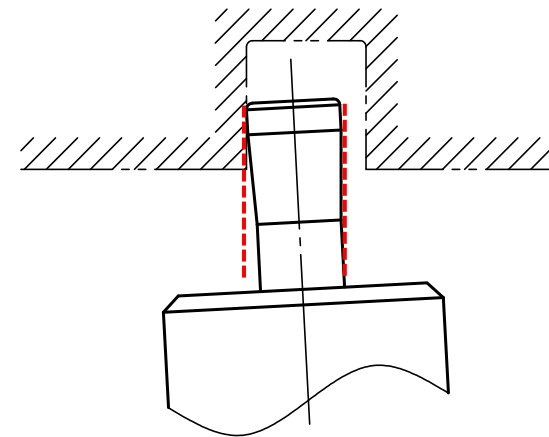
☆ In case the finished surface roughness

is different between right and left surface.

If the finished surface roughness is different between right and left surface, one of the possible cases is the inclination of Roller.

This tool has the function of inclination adjustment, so it is able to adjust the inclination a little.

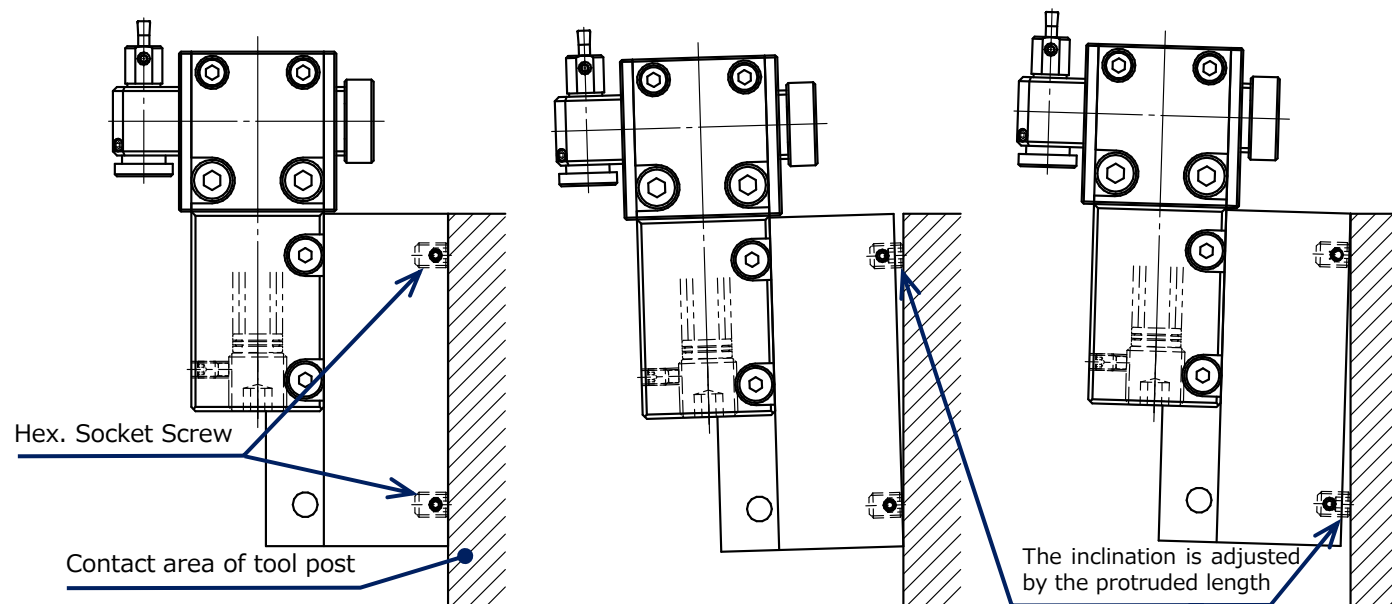
(Refer to the next page.)



5. Notes when using tool (2/2)

☆ About the function of inclination adjustment

The inclination of Tool (Roller) can be adjusted by changing the protruded length of the Hex. Socket Screw on the Shank.



6. Capacity

Finished surface roughness: **Ra0.2 μm or less**

(General surface roughness of the O-Ring groove sidewalls: Ra0.4 -1.6 μm)

Material	Surface Roughness	
	before	after
S45C	<p>Ra 1.0μm 0.2mm</p>	<p>Ra 0.1μm 0.2mm</p>
SUS303	<p>Ra 0.4μm 0.2mm</p>	<p>Ra 0.1μm 0.2mm</p>
A5056	<p>Ra 1.6μm 0.2mm</p>	<p>Ra 0.2μm 0.2mm</p>

<Processing Parameter>

Circumference Speed
: 50 m/min

Feed rate : 0.05 mm/rev

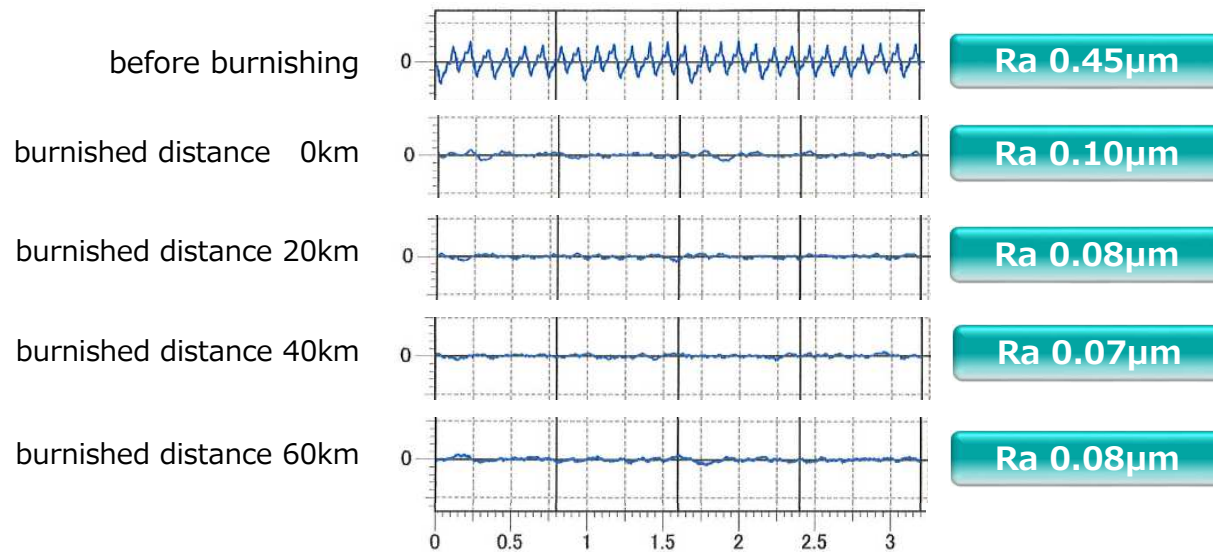
Compression amount

: 0.2 mm

Load : 80 N

7. Consumable Lifetime (burnished distance)

Reference Lifetime: burnished distance 50km

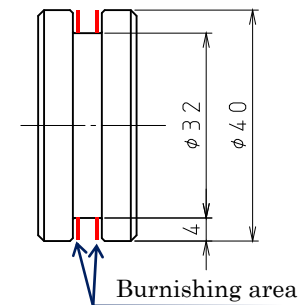


<Processing parameter during the examination>

workpiece material : carbon steel
 Circumference Speed : 50 m/min
 Feed rate : 0.05 mm/rev
 Compression amount : 0.2 mm
 Load : 80 N

Example for below workpiece)
 Processable Q'ty when the lifetime is 50km.
 (both sidewalls are burnished.)

In case of Feed rate
 0.05mm/rev. : approx. 2700 pieces
 0.1mm/rev. : approx. 5400 pieces



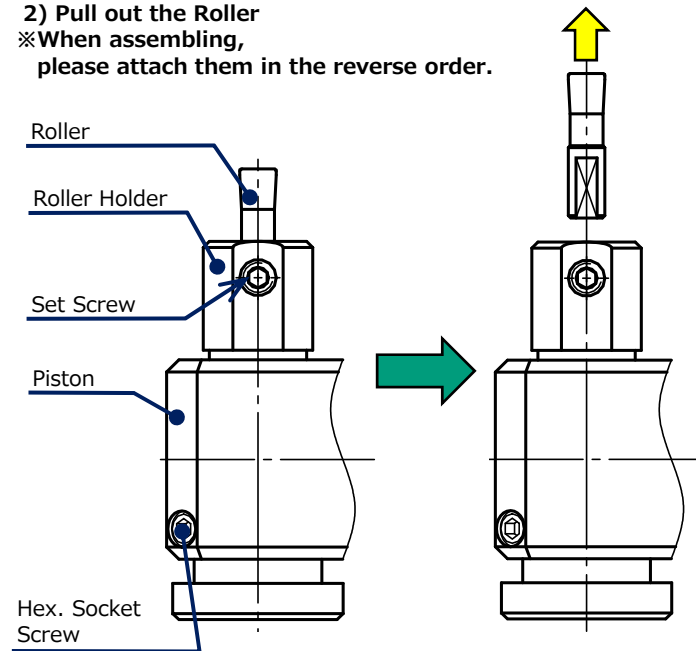
★Based on the examination result, the reference of consumable lifetime is 50km.
 However, the lifetime is changed easily by processing parameter, workpiece material, etc.
 So this lifetime is not guaranteed.

8. Replacement of Consumables

☆ Replacement of Roller

Procedure

- 1) Loosen the Set Screw of the Roller Holder.
 - 2) Pull out the Roller
- ※When assembling, please attach them in the reverse order.



☆ Replacement of Roller Holder Ass'y

Procedure

- 1) Loosen Hex. Socket Screw of the Piston.
 - 2) Remove the Bearing Nut.
 - 3) Detach the Roller Holder Ass'y from the lower side of the Piston.
- ※When assembling, please attach them in reverse order.

