



Creative Design and Manufacturing



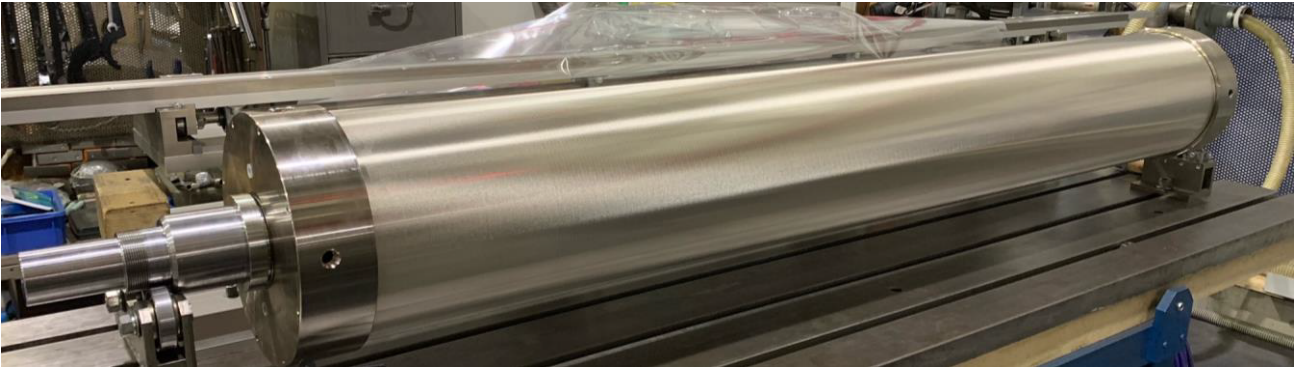
彦山精機株式会社
HIKOYAMA SEIKI CO., LTD.

English

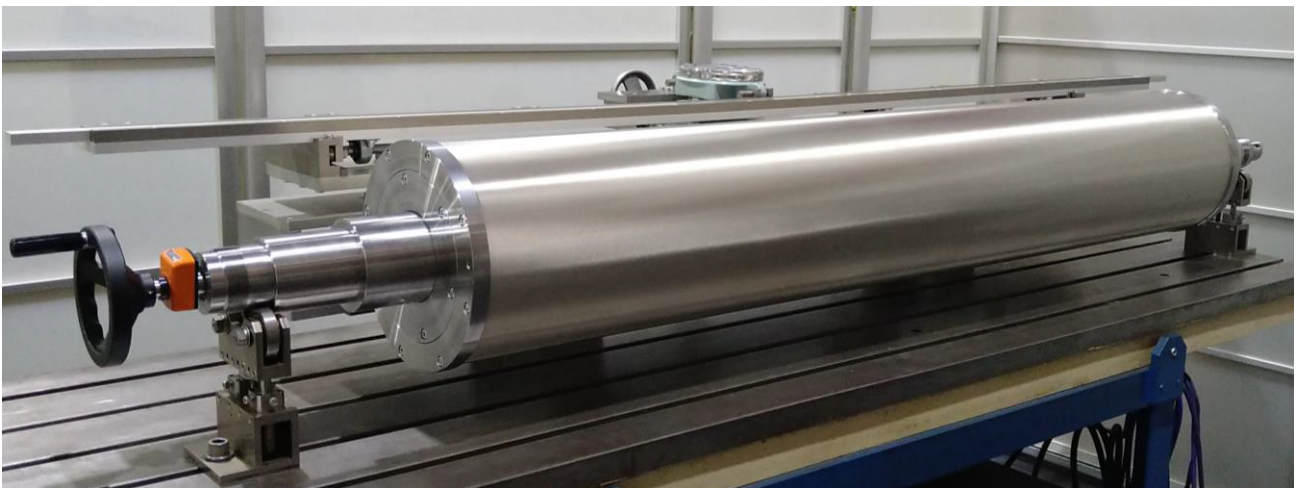
Main Products

Suction Roll

Various sizes can be accommodated



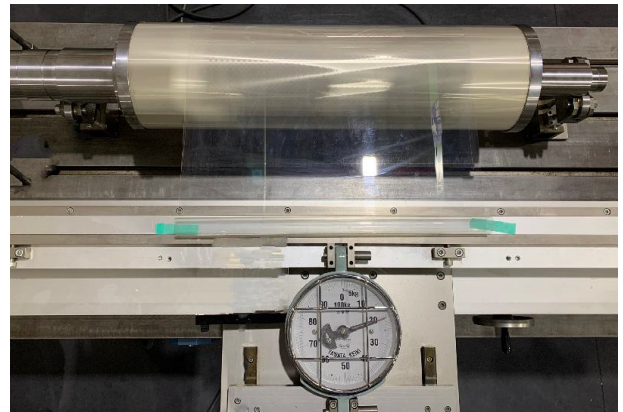
Single-pipe type (for long, high tensile strength)
Φ 250x1700 Suction width: 1280mm Suction angle: 90°



Variable width type
Φ 300x1800 Suction width: 720-1540mm Suction angle: 50°

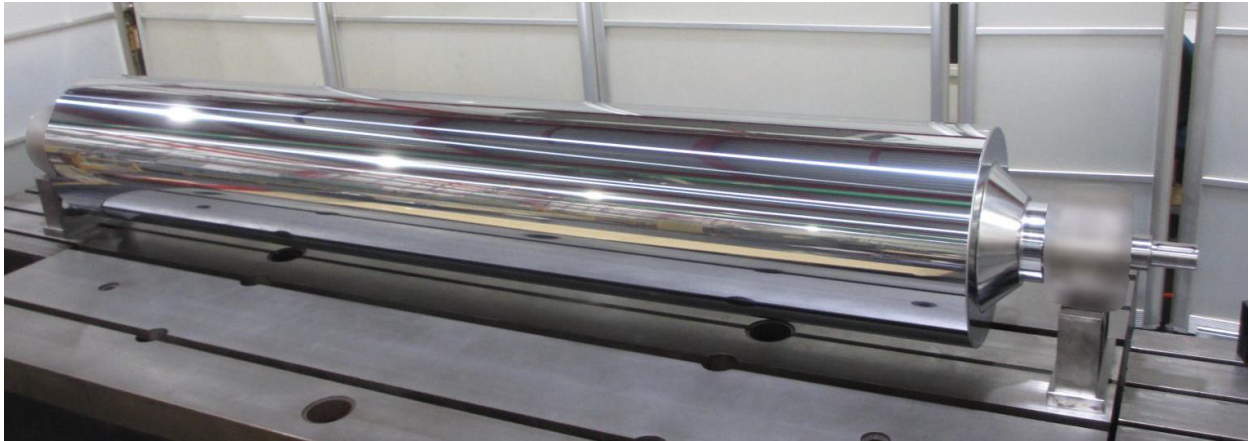


Double pipe type
φ 204x700
Suction width: 650mm Suction angle: 50°



Tension test

High Precision Rolls



ϕ 450x2700

Runout accuracy 1.0 μ Cylindricity (radius method): 1.3 μ Surface roughness: Rmax 0.20 μ m



Non-contact automatic measurement
on cylindrical grinder

Perthometer M2	
Object Name #	
Date	17.01.2022
Time	15:42
Lt (AUTO)	1.750 mm
Ls Standard	2.5 μ m
Lc	0.250 mm
Ra	0.021 μ m
Rz	0.16 μ m
Rmax	0.19 μ m
R Profile	
Lc	0.250 mm
VER	0.50 μ m

Surface roughness

(Cylindrical grinding only): Rmax 0.19 μ m

Runout accuracy	Cylindricity																								
<table border="0"> <tr> <td>Items</td> <td>Measured value</td> </tr> <tr> <td>Measurement Time</td> <td></td> </tr> <tr> <td>Vibration</td> <td></td> </tr> <tr> <td>Deviation error (+)position</td> <td></td> </tr> <tr> <td>Deviation error (-)position</td> <td></td> </tr> <tr> <td>Z-coordinate</td> <td></td> </tr> <tr> <td>Diameter value</td> <td></td> </tr> </table>	Items	Measured value	Measurement Time		Vibration		Deviation error (+)position		Deviation error (-)position		Z-coordinate		Diameter value		<table border="0"> <tr> <td>Items</td> <td>Measured value</td> </tr> <tr> <td>Cylindricity</td> <td></td> </tr> <tr> <td>Cylindricity</td> <td></td> </tr> <tr> <td>Cylindricity error (+) Z position</td> <td></td> </tr> <tr> <td>Cylindricity error (-) Z position</td> <td></td> </tr> </table>	Items	Measured value	Cylindricity		Cylindricity		Cylindricity error (+) Z position		Cylindricity error (-) Z position	
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ϕ 350x1700

Runout accuracy 0.7 μ Cylindricity 1.1 μ

Large Roll



ϕ 2000x2560

Runout accuracy 25 μ Cylindricity 10 μ



ϕ 1200x1200

Runout accuracy 5 μ Cylindricity 10 μ

Long Roll



ϕ 250x6000

Runout accuracy 30 μ Cylindricity 30 μ

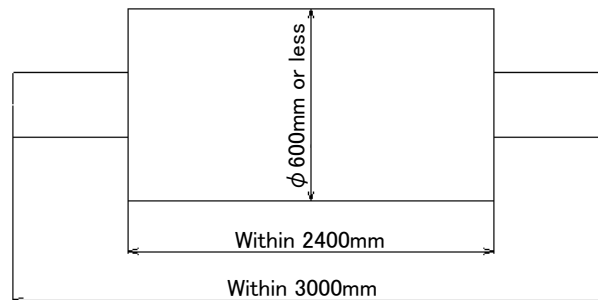
Ultra-precision Machining Field

We perform ultra-precision processing in a constant-temperature processing room with $\pm 0.1^{\circ}\text{C}$ control (actual value $\pm 0.05^{\circ}\text{C}$). We have newly built a factory with a constant-temperature room and equipped it with ultra-precision processing machines, mainly for processing V-groove prismatic molds or lenticular molds on the outside diameter of cylindrical workpieces.

Ultra-precision Machine – Machining Capability

Machining accuracy: Machining depth accuracy: $\pm 0.3 \mu\text{m}$ (accuracy of flat V groove)
 Depth of continuous V is calculated by groove pitch and bite angle
 Byte wear before and after machining: $0.5 \mu\text{m}$ or less

Processable size: $\phi 600\text{mm}$ or less, shaft length 3000mm or less, weight less than 1 ton



Detailed discussion is necessary regarding shaft installation.

ϕ machining type: circular cutting, single thread, multiple thread, horizontal drawing

Machining pattern: Continuous V-groove, flat V-groove, gradual angle change

Pitch, depth, and angle can be changed gradually

Machine Specifications: Minimum Resolution

X, Z axis: $0.001 \mu\text{m}$

B-axis (bite rotation axis): 0.00001°

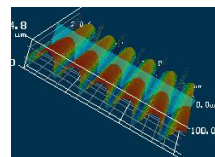
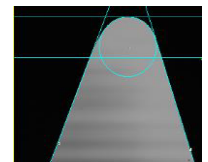
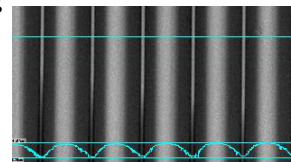
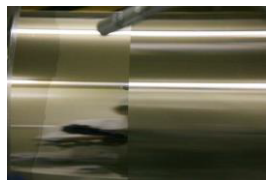
C-axis (workpiece rotation axis): 0.000007°

Process air, mist, etc.: $\pm 0.01^{\circ}\text{C}$ control

Holding bite angle control accuracy: $\pm 0.1^{\circ}$ (actual value $\pm 0.05^{\circ}$)
 Controlled by laser microscope

Both spindles are hydrostatic spindles and mirror machining is possible.

Roll surface micro-grooving sample material: Processed on Ni-P plating



classification	distance	angle
1	4 point angle	39.67°
2	3 point circle radius	$18.32\mu\text{m}$
3	parallel lines	$24.76\mu\text{m}$

<Processed sample details>

Replica laser microscope image and bite observation image

Each NC axis is driven by linear motors, which as a feature of linear motor drive, enables positioning accuracy with zero backlash and stable accuracy.

In the future, roll molds with even finer and higher precision will be required to improve the output efficiency and uniformity of luminance distribution for film prisms and lenticular molds for naked-eye 3D displays.



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