

A Specialist in Ultra-High Precision Machining

Ohori Grinding Company is a process manufacturer specializing in ultra-high precision grinding of components made of metal and other materials. For more than 50 years we have refined our techniques in machining for a broad range of fields including aerospace, automotive and F1 racing-related industries, medicine, and machine tools. We can meet customer requests, from working with extremely small components requiring grinding in millimeters to large objects several meters in size. Our highly skilled technicians finish off the products using their delicate senses and ensure quality with a top-of-the-line inspection system.

One of our strengths is our ability to grind delicate materials that other manufacturers cannot machine such as aluminum—which is soft and difficult to grind—as well as stainless steel, and Inconel. We often receive requests for parts that other manufacturers cannot machine, particularly in external and internal grinding as well as taper grinding, which is extremely difficult. Our customers have placed significant trust in our work.

In this pamphlet we will introduce details of our equipment and technical information as well as our top-of-the-line inspection system. We can provide estimates on processing orders starting from only one part, so please feel free to consult us about any job requests.

Ohori Grinding Company

Headquarters/Factory: 1-9 Sohara-Terajimacho, Kakamigahara City, Gifu Prefecture 504-0842 Japan

Tel: 058-389-1811 **Fax:** 058-389-1812

No. 2 Factory: 1-1-1 Sohara-Terajimacho, Kakamigahara City, Gifu Prefecture 504-0842 Japan

Managing Director: Ken Ohori

Founded: August 1, 1967 **Established:** April 1, 1981 **Capital:** 8 million yen

Business description: Grinding and processing of various mechanical precision components

Employees: 50 **EMIDAS Member Number:** 87912

Bank accounts: Juroku Bank, Sohara Branch; Ogaki Kyoritsu Bank,
Sohara Branch; Gifu Shinkin Bank, Sohara Branch

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Business Fields



Machine Tools



F1 Racecar Components
& Automotive Component
Prototyping



Medical



Aerospace

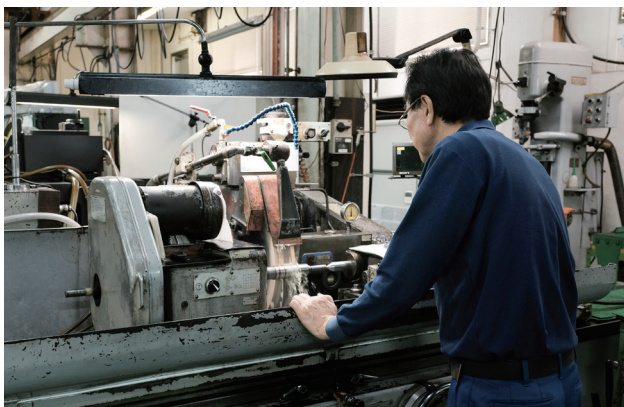
Equipment List

Processing Equipment	Type	Manufacturer	Number	Usage Characteristics
Cylindrical grinder	GP 55×215	Okuma	1 unit	φ 550×2000
	GP33	Okuma	1 unit	φ 300×1000
	GU 40×165	Okuma	2 units	φ 400×1650
	GU 40×135	Okuma	1 unit	φ 400×1350
	GOP32×150	Toyoda Koki	2 units	φ 300×1500
	GOP32×100	Toyoda Koki	4 units	φ 300×1000
	GOP32×50	Toyoda Koki	4 units	φ 300×500
	GS 15×100	Toyoda Koki	1 unit	φ 300×1000
CNC cylindrical grinder	GE6P-250	Toyoda Koki	1 unit	φ 600×2500
Inner surface grinder	T-1253	Toyo Advanced Tech	2 units	φ 430×1000
	T-1254	Toyo Advanced Tech	3 units	φ 430×1000
	T-1334	Toyo Advanced Tech	1 unit	φ 560×650
	GIS200SH	Kagaku Keiki Research Institute	1 unit	φ 200×200
	GIS200SHL	Kagaku Keiki Research Institute	3 units	φ 200×800
	YIG15SAS	Yamada Koki	1 unit	φ 150×200
	YIG20MF	Yamada Koki	4 units	φ 200×200
	VM-55	Taiyo Koki	1 unit	φ 550×270
CNC vertical grinding machine	VM-55	Taiyo Koki	1 unit	φ 550×270
Universal cylindrical grinding machine	S30-1	Studer	1 unit	φ 300×650
Surface grinder	GHL-B409	Hitachi Seiko	1 unit	X400×Y900×Z260
	GHL-B409N	Hitachi Seiko	3 units	X400×Y600×Z260
	GHL-B516	Hitachi Seiko	1 unit	X500×Y1600×Z350
	GHL-B616P	Hitachi Seiko	1 unit	X600×Y1600×Z425
	GHL-B620	Hitachi Seiko	1 unit	X600×Y2000×Z400
	GHL-B840N	Hitachi Seiko	1 unit	X400×Y900×Z260
	SGC-94 E2	Nagase Integrex	1 unit	X400×Y900×Z250
Rotary grinder	YSG-10	Yoshikawa Iron Works	1 unit	
CNC rotary surface grinder	PRG6DXNC	Okamoto Seisakusho	1 unit	φ 600×250
Jig grinder	JG-35CNC	Waida Mfg.	2 units	X300×Y500×Z90
	UJG-35	Waida Mfg.	1 unit	X300×Y500×Z110
Profile grinder	PGX-2500N	Waida Mfg.	2 units	φ 200×200 , Z100×X200
	SPG-R	Waida Mfg.	1 unit	φ 200×200 , Z100×X200
	SPG-WIL	Waida Mfg.	1 unit	φ 260×380 , Z150×X200
Machining center	S 500 X 1	Brother	1 unit	X500×Y400×Z300
Center hole grinder	GC12-130	Toyoda Koki	1 unit	φ 280×1300
	—	Shining Eye	1 unit	φ 30×140
Bench drill	—	Kira Sangyo	1 unit	
Straightening machine	—	Ikeyama Seisakusho	1 unit	
Lathe	LR-50A	Washino Kikai	1 unit	

Measuring Equipment	Type	Manufacturer	Number	Usage Characteristics
Surface roughness measuring instrument	SE-2300	Kosaka Laboratory	1 unit	
Height gauge	V302+	Trimos	1 unit	Z0 ~ 300
	V602+	Trimos	2 units	Z0 ~ 600
	TVA-600	Trimos	3 units	Z0 ~ 600
	QMH-350B	Mitutoyo	1 unit	Z0 ~ 350
Coordinate measuring machine	SVA fusion	Tokyo Seimitsu	1 unit	X900×Y600×Z600
Roundness measuring instrument	RONDCOM 65A	Tokyo Seimitsu	1 unit	φ 600×900

Skilled Grinding Technicians and Machining Factory

At Ohori Grinding Company we have approximately 40 skilled grinding technicians engaged in processing parts requested by clients. The most difficult part of the grinding process is controlling the quantity of heat. For external grinding of cylindrical-shaped components as well as internal grinding—areas in which we excel—long metal shapes are particularly challenging as deflection and curvature can occur. This sort of processing is difficult even when using an NC program controlled by a computer, so this grinding can be done only through the delicate operation of a skilled technician's hands.



The company uses mainly general-purpose machines, but relies on the senses of its craftsmen for precision.



A technician grinds while fine tuning using a handle.



Parts are machined to the degree of 0.001 mm.

Our philosophy is that “anything less than 1/100 mm is the realm of a skilled technician,” and each day our grinding technicians are improving their processing techniques. Our staff includes a broad range of technicians, from a veteran employee with 40 years of experience to many young outstanding technicians. Processing is carried out using a combination of each employee's area of expertise. Technicians able to handle grinding are now becoming fewer, yet the ability to train such skilled workers and engage them in processing is one of our company's strengths.



The company keeps the environment clean in order to make high-precision machining possible.

Inspection/Measurement System

We have installed the very latest inspection equipment as well as a thermostatic chamber inside the factory where inspection can be done reliably. This chamber has a co-ordinate measuring machine that handles a maximum size of 600×600×900 mm, as well as a custom-built roundness measuring machine that can measure a diameter of up to 600 mm and a length of 900 mm. Dedicated inspectors within the company are engaged each day in taking accurate measurements. Always attached to our finished products is a detailed data sheet, which has been well received by our clients.



The accuracy assurance system uses high-precision measuring devices.

The temperature-controlled room is set at 20°C for 24 hours.



The accuracy assurance system uses high-precision measuring devices.

Products are delivered with measurement data attached.

Precise machining of components is especially sought after in our fields of grinding expertise including aerospace, F1 racing-related components, and medicine. Components that have been refined by our proficient technicians are thoroughly inspected by our digitized system, which is comprised of the latest equipment and has earned not only the trust of companies in Japan but of manufacturers in Germany and other nations.



Checking for deflection in a long, thin object. In-house machining of Inconel that is $\phi 5 \text{ mm} \times 400 \text{ mm}$. Pursuing a deflection range of 0.002 mm.

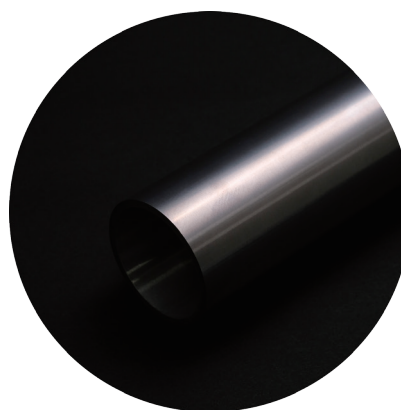


Machining of 1–100 parts per month is possible.
The company can maintain the same quality for each part.

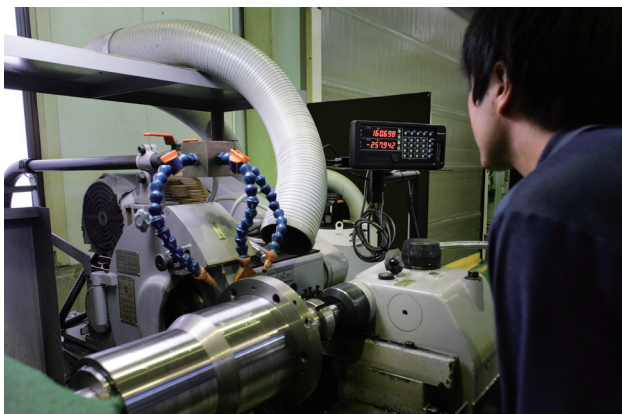
External Grinding

We excel in external grinding of cylindrical parts. External grinding is especially difficult when the parts are long and narrow as deflection and curvature can occur, so delicate control is needed.

We have a wealth of experience in grinding both thin and long objects, and we receive many such requests from customers. Using a brace, straightener, or center-hole grinding machine, we can support a maximum size of up to 2,000 mm. We receive many requests for a required accuracy of 0.001 mm–0.010 mm in roundness, concentricity, or cylindricity. Furthermore, depending on the customer's wishes, we can attach a warranty using a roundness measuring machine. Please feel free to consult us for details.



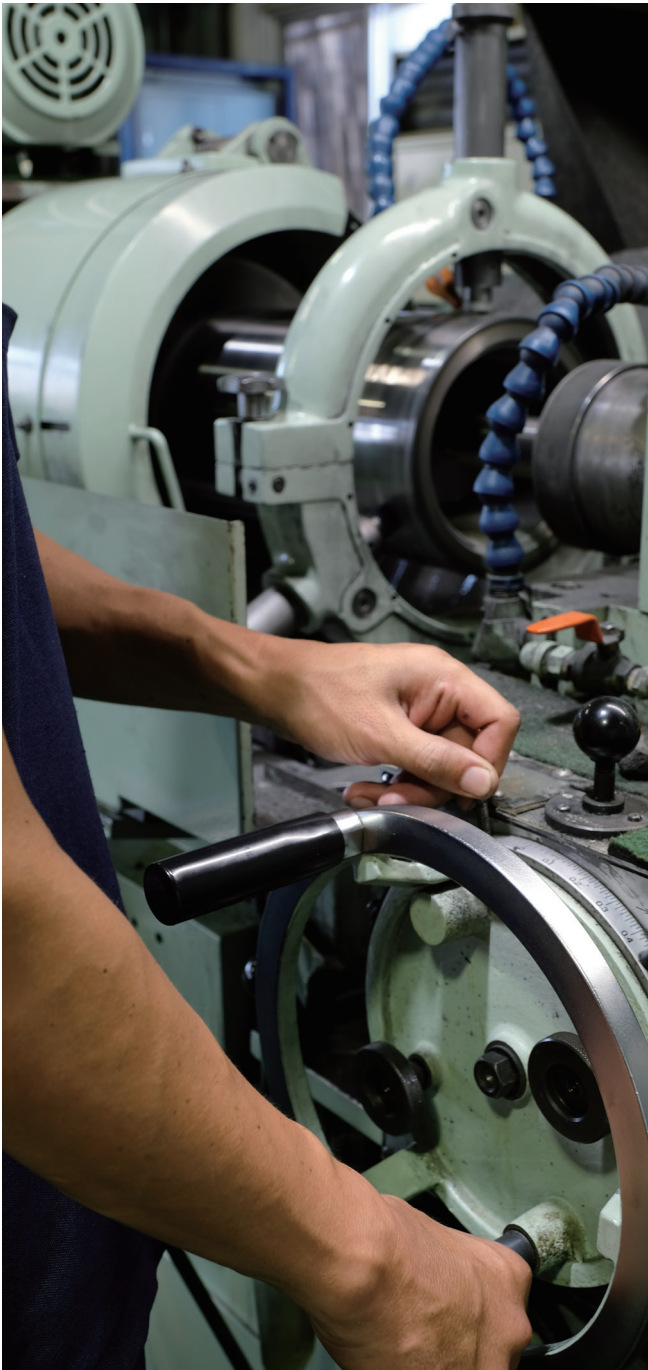
Difficult-to-machine materials
such as aluminum, stainless steels,
and titanium can be grinded.



Setup time is short compared to that of NC.



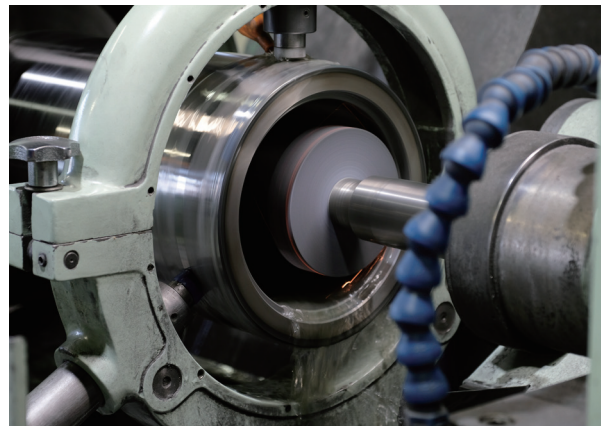
Machining long, large objects up to $\phi 540 \times 2500$



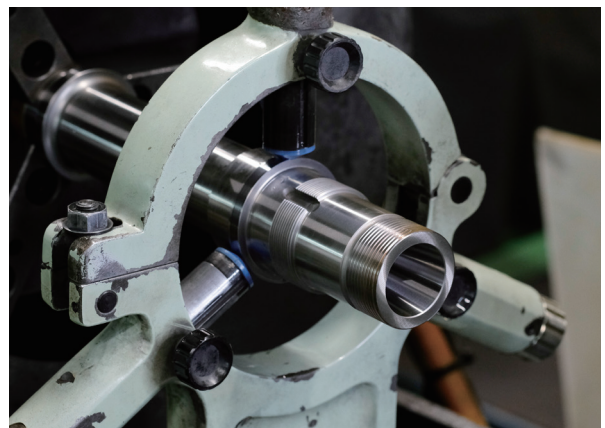
Machining by a technician Multi-product support is possible because processing is done mainly using general-purpose machines.



Inner diameter machining from $\phi 1$ to small diameters is possible.



Using a brace for long-length processing
We can achieve precision of less than 0.002 mm.



We deal with deep, narrow holes.

Inner Grinding

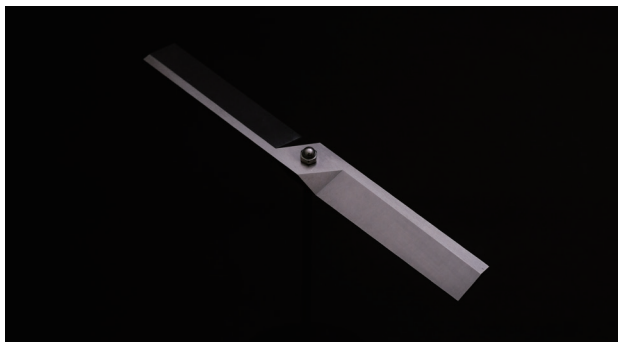
Internal grinding is also one of our strengths, and we can do grinding on objects with an internal diameter as small as 1 mm. We also excel at internal grinding using a brace. We can achieve the same precision for concentricity as with objects of an external diameter less than 0.002 mm. Although we can offer grinding of objects with a length up to 1,500 mm, the length of the whetstone axis will change depending on the internal depth of the part to be ground. Please consult us for details. As with outer diameter grinding, we can provide a warranty using our roundness measuring machine depending on the customer's wishes.

Taper Grinding

Taper grinding, involving the processing of conical shapes, is the field in which we receive the most inquiries. This is demonstrated by the large number of customers who come to us with requests for projects involving taper grinding that other companies could not handle. Along with internal and external grinding, this type of grinding entails a high degree of difficulty. We provide all types of taper model masters. The sense of our skilled technicians clearly yields higher precision than grinding using a computer. We also handle machining to fit other components and can achieve a taper match of more than 90%. Moreover, if the customer has a preferred method for matching, we can use that as the confirmation method.



Grinding after processing anodized aluminum.
Supporting outer and inner diameter grinding,
surface grinding, and taper machining.



Machining of multi-faceted objects and
angles (tapers) is possible.
Photo taken after all sides were grinded.



Taper confirmation by fitting.
The company aims for more than a 90% match.



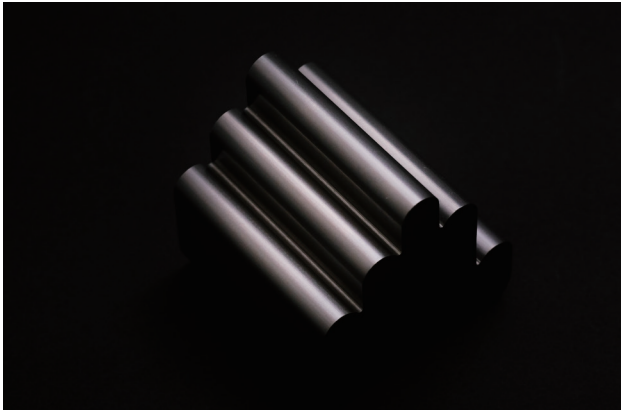
Photograph of surface grinding
We handle dovetail groove processing.



Large diameter $\phi 70$ 70° taper machining.
The company has experience machining large objects of more than $\phi 200$.

Profile Grinding

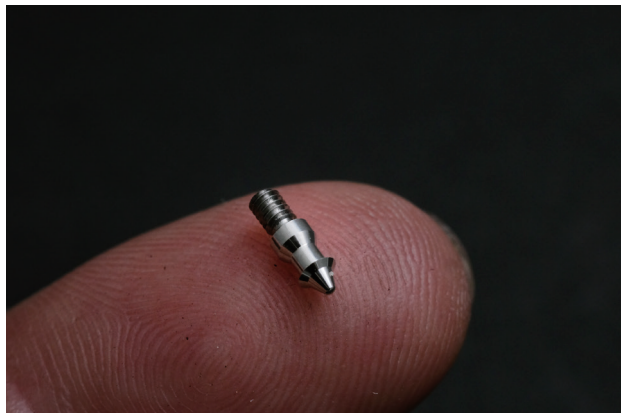
For profile grinding, we have installed the latest profile and plotter made by Waida Mfg. Co., Ltd. We use a projector for external grinding and flat plane grinding, and perform grinding using the profile in areas where a human's skill is essential. We can support groove width of 0.2 mm and above. Copper electrodes and refurbishing of bits cannot be supported with a cylindrical or surface grinding machine, so we grind the connecting R portion, the R portion in the groove, and the spherical surface. From prototype to electrodes, special bits, special chips, and additional grinding of procured components, we support all types of grinding needs, from single part orders. We also measure samples and can grind their shape.



Machining the level surface R shape.
V grooves/R grooves and polyhedral angles are also possible.



Grinding a sphere (SR, S ϕ)
and arc (R)



ϕ 2.6 \times 8 mm
The company processes rare metals such as iridium.



Machining by magnifying 20x or 50x with a projector.
The company pursues complex and detailed machining.

Jig Grinding

We have three jig grinders at our company, and we perform grinding of pitch holes. The size of the table is about 400mm \times 400mm. For items where a high degree of precision is required, we perform machining of the holes after achieving flatness and straightness with surface grinding. If there are not holes for reference, we create the reference plane using surface grinding and internal grinding, and ensure the pitch accuracy. For airplane-related parts, we also do grinding of aluminum, magnesium, and carbon fiber reinforced polymer (CFRP). Dry grinding (dry type) is also possible. To compensate for the threads of knock holes in metal molds, we can produce a bushing with eccentricity that has an external and internal diameter in units of 0.001 mm. Support for ellipses and key grooves is also possible. Please feel free to consult us for details.