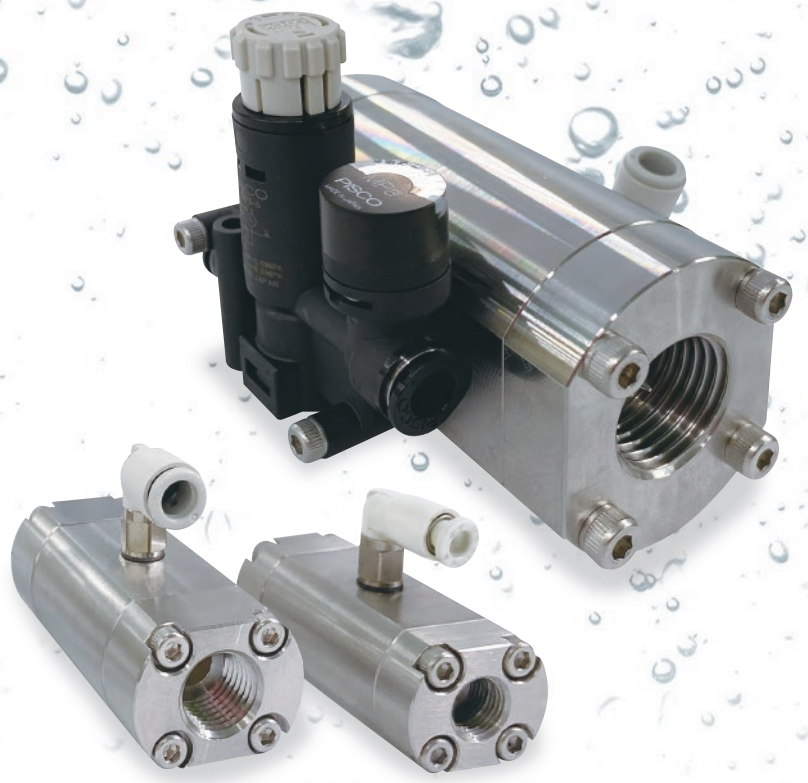
FB-ASSIST



Fine bubble generator for grinding

NIPPON TUNGSTEN CO.,LTD.

ACE
ACCUROMM CENTRAL EUROPE

Fine bubble generator for grinding

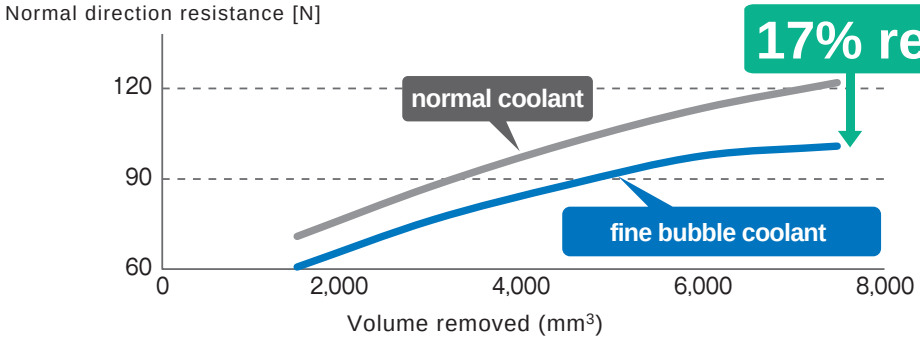
FB-ASSIST

FB-ASSIST P-series MGC205

Benefits

Benefit 1 Improved productivity and quality by reduced workpiece warping

The reduced grinding load can reduce the warping of the workpiece.



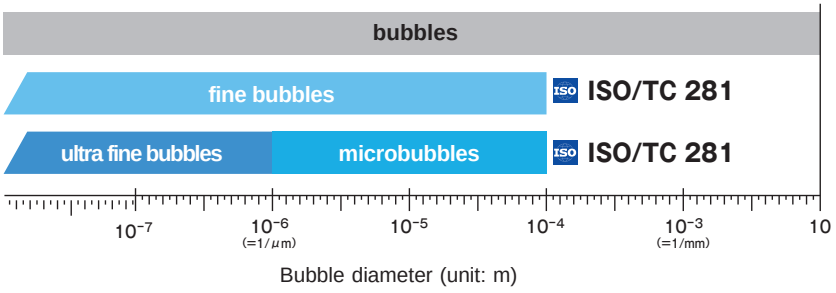
[Processing test conditions]
Machine tool: Surface grinder MSG-618CNC-HS
Grinding stone: Diamond #200φ180
Workpiece: Cemented carbide VM50
Size: L178 x W84 x T30 mm
Total depth of cut: 0.5 mm

	normal coolant		fine bubble	
cutting depth	surface	warpage	surface	warpage
2μm	○	0.05 mm	○	0.02 mm
3μm	Grinding burn	1.0 mm	○	0.05 mm

[Processing test conditions]
Machine tool: Surface grinder SP1164EB
Grinding stone: Borazon #170φ300 mm
Workpiece: SUS304 (L150 x W40 x T6 mm)
Total depth of cut: 0.15 mm

What is fine bubble?

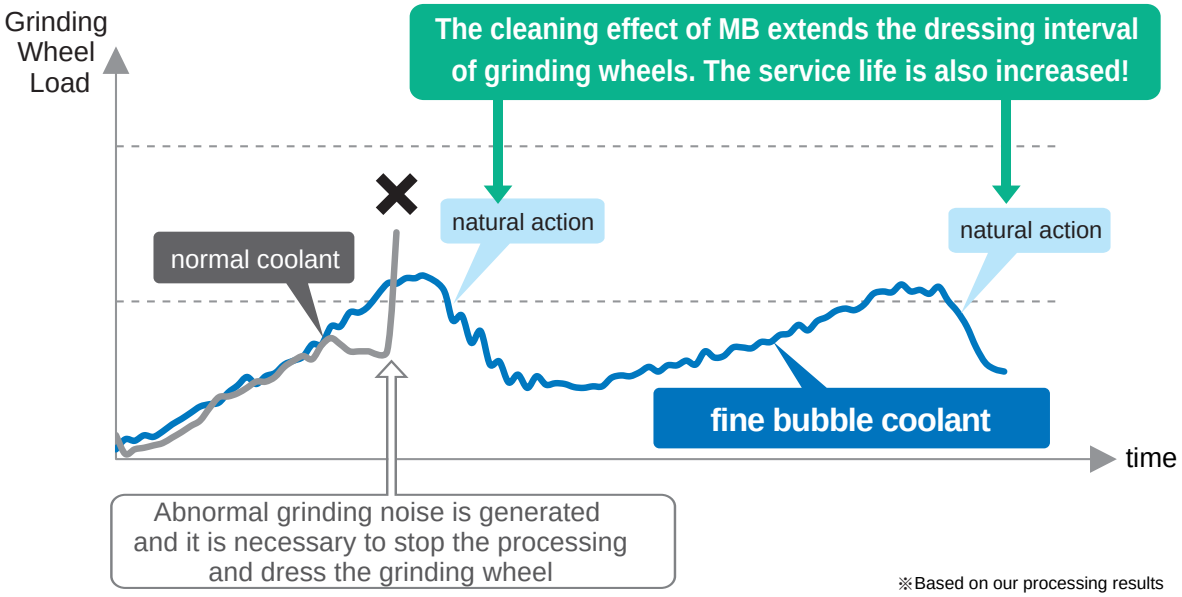
Bubbles dia <100 μm are fine bubbles (FB), bubbles dia 1-100 μm are microbubbles (MB), bubbles dia <1 μm are ultrafine bubbles (UFB).



Benefit 2

Dress intervals tripled, reduced non-productive time

Illustration of grinding wheel load and time
at a depth of cut of 30μm



※Based on our processing results

Benefit 3

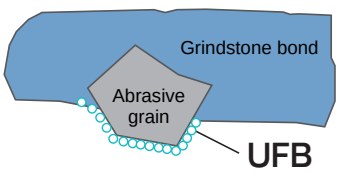
1.5 times greater depth of cut, improved production efficiency

Effective improvement of machining efficiency

(based on our data)

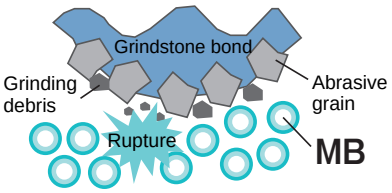
[Grinding]	Carbide (WC-Co)	Ceramic (Si3N4)	Steel (X153CrMo12)
surface grinding	200%	200%	200%
cylindrical grinding	150%	150%	—
internal grinding	150%	150%	—

UFB effect
Permeability



Coolants containing UFB have better wetting properties. This makes it easier for the coolant to penetrate into narrow gaps between workpieces and tools.

MB effect
Cleaning performance

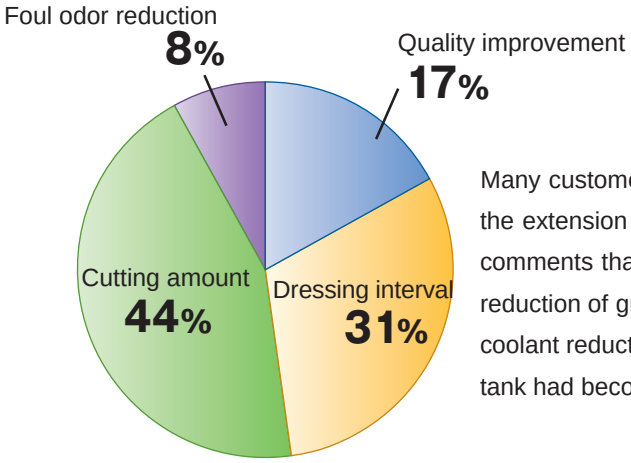


The shock wave of the bursting MB removes grinding debris from the grinding wheel and workpiece surface.

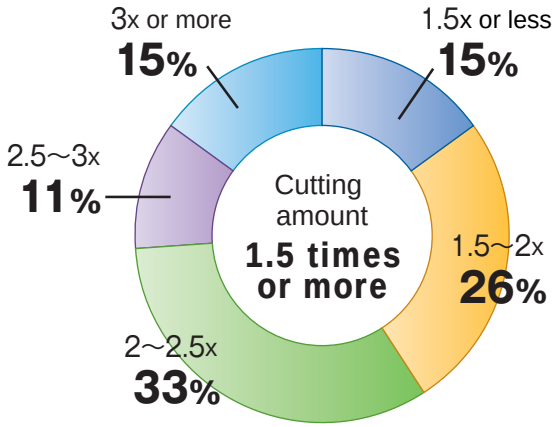
Evaluations by customers

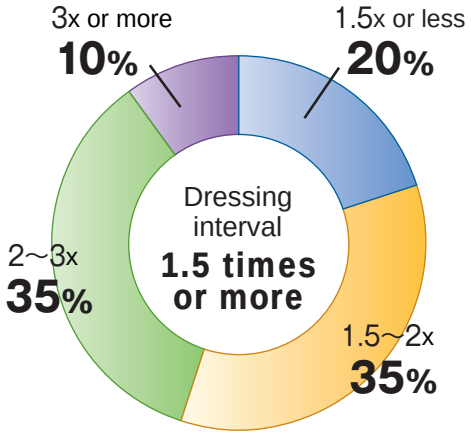
75% of the customers has recognized the※effect when conducting evaluations with grinding of carbide and hardened steel

※Based on 163 demo evaluations by users of our fine bubble related products.



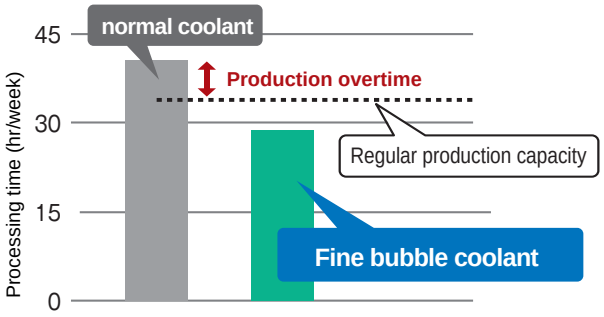
Many customers have realized the increase in the depth of cut and the extension of the dress interval. In addition, we have received comments that there were quality improvement effects such as reduction of grinding burn, warp, and scratches, that the foul odor of coolant reduction was reduced and that the cleaning of the coolant tank had become easier.





Improved production efficiency on existing equipment can be expected

By increasing the depth of cut and extending the dressing interval, you can expect to improve the production efficiency of your existing equipment.
In our machining example, where the depth of cut was improved by 40% compared to conventional machines, we were able to reduce the production time by 29% per grinding machine.

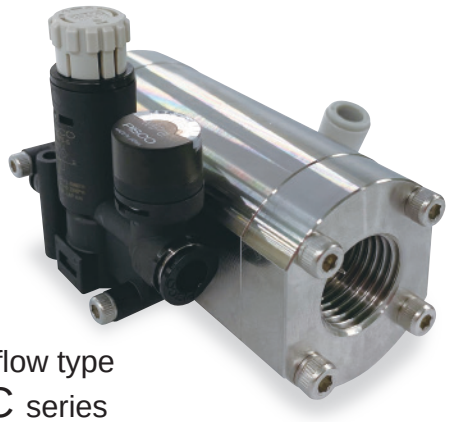


Introduction of product line-up

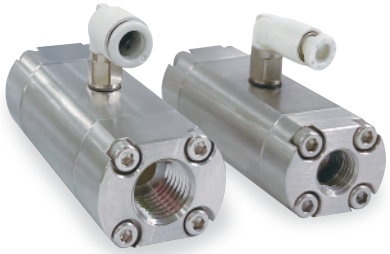
Fine bubble generator for grinding

FB-ASSIST P-series

Patent no. 7133575
Trademark no. 3226479



Large flow type
MGC series

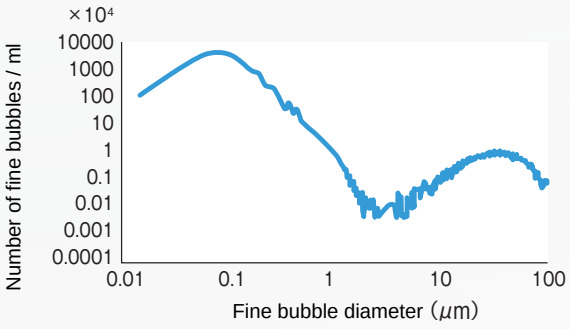


Small flow type
MGL series

Small but powerful

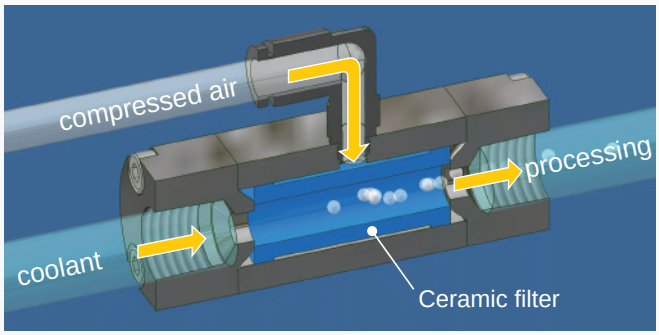
Generates both UFB and MB

Generates 100 million UFBs/ml and 1 million MBs/ml (the minimum value for all 3 fine bubble generators)



※ This graph shows the number of fine bubbles generated with water-soluble coolant. If the type of solution is different, the number of generated bubbles will change.

▼Mechanism of Fine Bubble Generation



※ To maintain performance, replace inner ceramic filter at least once a year.
※ Please select the model according to the coolant flow rate you are using.

[Regarding the particle size and number of fine bubbles in the coolant]
The UFB number density is 100 million/cm3 and the average particle size is 0.1 μm.
The MB number density is 1 million/cm3 and the average particle size is 13.6 μm.

[Measurement method and model]
The UFB was measured using Microtrack Bell's Zeta View (measurement range 0.02 μm or more and less than 1 μm), which applies the nano-particle tracking method.
The MB was measured using Particle Insight manufactured by Shimadzu Corporation (measurement range of 1 μm or more and less than 100 μm), which applies the dynamic image analysis method.

Easy installation

Compact, can be placed anywhere, and connects with a screw

All you have to do is connect it with a screw in the middle of the piping route and take in factory air (compressed air of 0.4 MPa). No special construction required.

[Specifications]

	MGC205	MGL073	MGL053
Thread dia	Rc1/2	Rc1/4	Rc1/8
Coolant flow L/min	10-40	3-10	1-7
Air flow L/min	7.0	4.0	4.0
Weight	660g	202g	140g

※ Rc: BSPT Whitworth inch sealed tapered pipe thread

Replacement porous ceramic filters

The ultra-fine porous ceramic filter is easily replaceable. You can maintain the same quality as new while keeping costs down just by replacing the filter.

Maintains quality like new

You can maintain the same quality as new by replacing the filter.

Easy replacement

Filters can be easily replaced with the included special jig.

Reliable maintenance

Almost maintenance free. Just replace the filter once every 1 to 1.5 years.

Comments from our customers

"There is no warping and processing time has also reduced"

Mr I, president, mold processing industry

We are aiming for high precision manufacturing and installed the product to improve quality. We used it in SKD (tool steel) grinding and found that there was no warping and the machining time was shortened. This paid for the cost of the FB-ASSIST bubble generator in two months. Machining staff's comment: there is no more fear of failures occurring, so I can perform the machining with a peace of mind. I couldn't do the machining without FB-ASSIST.

"Dressing interval tripled"

Mr O, section manager, automotive parts processing manufacturer

We conducted an evaluation for the purpose of cost reduction and the results showed that the dressing interval was extended by three times, so we purchased FB-ASSIST.

"Improved capacity on outdated equipment"

Mr I, section Manager, high speed steel die processing manufacturer

We are using FB-ASSIST in the grinding of hardened high speed steel and die steel. The feeling of the operator was that the chattering and deep scratches on the surface being ground were eliminated, while the capacity of an outdated equipment has been improved.

"Up to 102% improvement in machining efficiency"

Mr I, section manager, carbide tool manufacturer

In superfine cemented carbide and SKD (tool steel) surface grinding, the cutting amount was increased by between 43% and 102%, contributing to the improvement of machining capacity.

Frequently asked questions

Q. What kind of conditions are necessary for the performance to be demonstrated?

A. If the coolant has deteriorated, the product may not be able to demonstrate its full performance. It is recommended to replace the coolant and clean the tank.

Q. Can I use any type of coolant?

A. Can only be used with water-soluble coolants. Oil-based coolant cannot generate a sufficient number of fine bubbles, so it is ineffective.

Q. Is the fine bubble generator effective for cutting?

A. We do not recommend using fine bubble generators for cutting applications, as experimental results indicate that microbubbles may adversely affect cutting tool wear.

Q. How long is the warranty period after delivery?

A. 1 year after delivery. Details are as described in the instruction manual. If you use it for a long time, the internal filter will become clogged, so we recommend replacing the parts once a year.

Q. How long is the delivery time?

A. After receiving the order form, we can ship in two weeks.
※ Please note, depending on the stock status, we may have to wait until next shipment.

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