Supersonic Lapping Machine

LAPTRON ALLIII

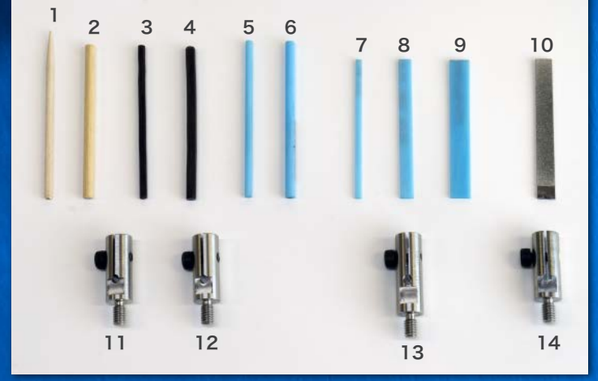
■Tip tray for temporary placement of frequently used tips

■Lightweight & easy-to-hold ϕ25 ㎜ newly designed hand tool

The newly developed ϕ25 mm small diameter hand tool features the use of aluminum with excellent heat dissipation characteristics and a rib design that works as heat dissipation fins and a finger grip.

■Configuration

■Standard tips



Tips	1.	Soft Wood Tips	SW Φ2 L50
	2.	Soft Wood Tips	SW Φ3 L50
	3.	Hard Wood Tips	HW Φ2 L50
	4.	Hard Wood Tips	HW Φ3 L50
	5.	Super Stone	#800 NSBD2 L50
	6.	Super Stone	#800 NSBD3 L50
	7.	Super Stone	#800 NSB102 L45
	8.	Super Stone	#800 NSB104 L45
	9.	Super Stone	#800 NSB106 L45
	10.	Electroplated Diamond Tips	SD205-45
Chuck	11.	SNE24	
	12.	SNE31	
	13.	STA11L(L24㎜ /For Ceramic Tips)	
	14.	STA11-18(L18㎜ /For Electroplated Diamond Tips)	

●Various types of standard tips are available to deal with versatile lapping work of aluminum molds, copper-alloy molds, and sintered alloy molds.For further details, refer to our catalog for tips.

※Be sure to use our genuine chuck and tip products.

■Specifications

Input	AC100V-240V 50/60Hz
Output	MAX 48W
Supersonic	18kHz - 26kHz
oscillation	(With automatic frequency following function)
Amplitude Range	MAX 50μm – MIN 1μm
Dimensions	Main unit:W 220㎜ x D 197㎜ x H 108㎜
	Hand tool:ϕ25㎜
Weight	Main unit:approx.2.5kg
	Hand tool:approx.205g

●The design and specifications are subject to change without prior notice for product improvement.

Registration of Designs Pending

Manufacturer And Seller

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■Please feel free to ask. Sales division:+81-3-3376-3464

SANWA

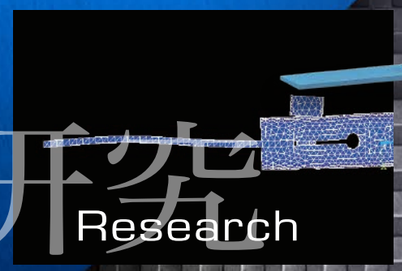
LAPTRON ALLIII

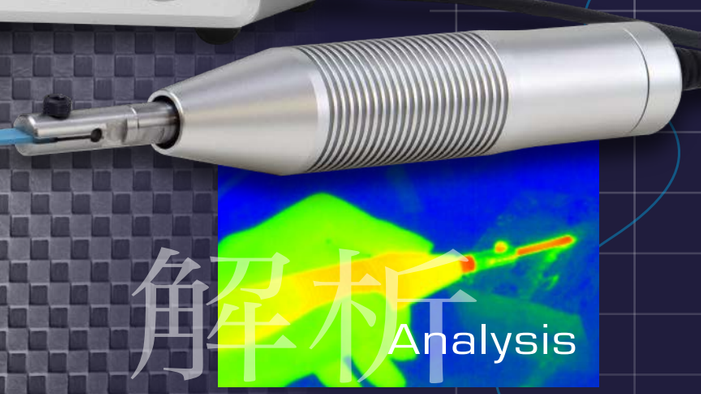
Supersonic Lapping Machine

The crowning work

in which our 50-year R&D workhas borne fruit

Development 開発





The newly developed transducer and the control circuit where heat generation is suppressed to the limit enabled stable lapping work without interruption triggered by the safety device even after many hours of use. In addition, the newly developed ϕ25 mm small diameter hand tool features the use of aluminum with excellent heat dissipation characteristics and a rib design that works as heat dissipation fins and a finger grip. The result is that the user hardly feels fatigue even after continued operation.

Furthermore, the high power of 50 μm maximum down to the extremely fine vibrations of 1μm minimum are achieved. The wider power zone enabled wide-range lapping of large molds and precision lapping of micro-machined molds. Conventional lapping operations that were executed with two or more machines can now be handled with one Laptron machine. The through high-performance operation will achieve drastic improvement in the labor effectiveness.

SANWA SHOKO CO.,LTD.

Supersonic Lapping Machine

LAPTRON ALL III

Challenging the ideal supersonic lapping machine

The outcome is “Long-term Continuous Operation” and a “Wider Power Zone.”

Long-term continuous operation without interruption.
New transducer and control circuit for suppressing heat generation

Aluminum hand tool featuring a small diameter of ϕ25 mm.
It ensures that the user will hardly feel fatigue even after many hours of use.

MAX output of 50 μm and MIN output of 1 μm.
It ensured for large-size molds and micro-lapping.

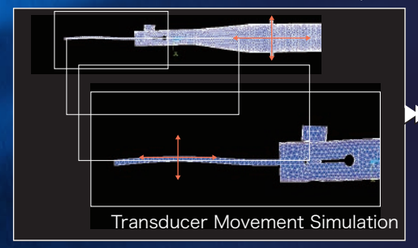
■ Comparison of Power Zones

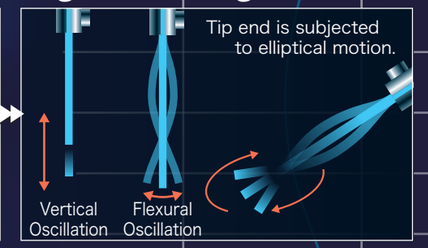
The power zones that were divided to three models in the past were integrated into one ALL III machine.The small and stable power for micro palling and the high power required for lapping of large molds can be handled with one ALL III machine.

Aiming at the highest level, we rebuilt the supersonic lapping machine for which we have been involved in R&D work, aiming for the highest level.

“What is supersonic lapping?”

Rebuilding work started there to find the answer.

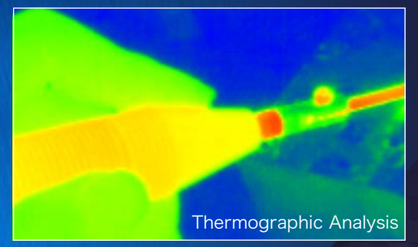


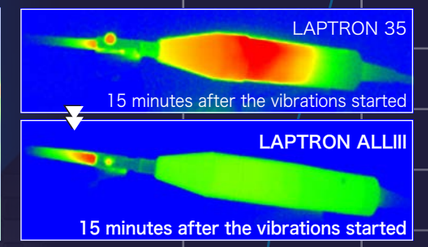


The transducer is subject to flexural oscillations and it expands and contracts in the longitudinal direction. Execution of the transducer movement simulation and analysis of behaviors of the lapping tip end reveal that flexural oscillation overlaps the vibration amplitude of vertical oscillation, thereby causing the tip end to make an elliptical motion. Supersonic lapping becomes possible by performing such motions 18,000 to 26,000 times a second.

“Keep the heat generation down to a minimum.”

Conquering uncompromising problems

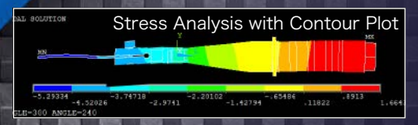


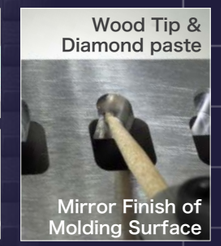


Even when a product boasts high power, improvement in efficiency would not be achieved after repeated operational shutdowns caused by heat generation. To solve this problem, we pursued complete heat dissipation. Starting from optimization of the oscillator, we repeated trial and error over reexaminations and redevelopment of the control circuit, in addition to the selection and shape of materials for the chassis. Furthermore, thermographic analysis was applied to the prototype machines, and infinite processes of trial and error were repeated before we could conquer the problems without compromise.

“Simultaneous Achievement of Stable Micro-Vibration and High Output”

Responding to Conflicting Needs

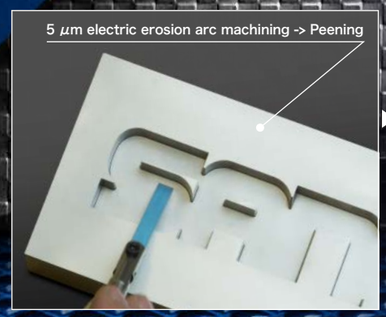




To realize a lapping machine which is capable of performing a series of operations from handling of mirror finish that needs stable micro-vibration under the loaded condition, up to erasure of flaws by using a machine tool where the speed and the high output are demanded by only one machine. For such apparently contradictory needs, we succeeded in setting up the position, shape, and size of the transducer after repeating various analyses and simulations, as well as processes of trial and error. The result is the development of the ideal transducer that is persistent to micro-vibrations and is capable of seamlessly dealing with a wide range of outputs up to high output.

■Example of lapping process

【Mold】SANWA Logotype Mold 【Steel Used】NAK80



【Coarse Lapping】Using ceramic grinding stone

【Finishing】Using wood tip and diamond paste

【Removal of hardened layer】
Whole surface: ALL III + Ceramic tip #800
【Coarse lapping】Using ceramic grinding stone
Flat surface: Hand lapping with grinding stone
+ Deep corners: Lapping with ALL III grinding stone
(1) Flat surface #600 -> (2) Flat surface #800 ->
(3) Deep corners: ALL III + Ceramic #800 ->
(4) Flat surface #1000 -> (5) Deep corners: ALL III + Ceramic #1000 ->
(6) Flat surface #1200 -> (7) Deep corners: ALL III + Ceramic #1200
【Intermediate lapping】Hand finishing with sandpaper
(1) #1000 -> (2) #1200 -> (3) #1500
【Finishing】Wood tip + Diamond paste
Flat surface: Hand finishing with paste
+ Deep corners: ALL III + Wood + Paste
(1) Flat surface #1800 -> (2) Deep corners: ALL III + Paste #1800 ->
(3) Flat surface #3000 -> (4) Deep corners: ALL III + Paste #3000 ->
(5) Flat surface #5000 -> (6) Deep corners: ALL III + Paste #5000