

# NEX III

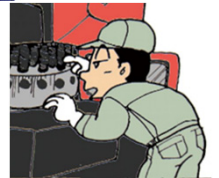
Amada Punching

ID-TOOL



## 1) Tool Maintenance

- ◇ Tool maintenance timing or grind value depends upon the operators.
  - **Unstable products quality**
- ◇ Tool maintenance is awkward task and is left to the last. This leads to poor maintenance in busy period.
  - **Extra time** for deburring



## 2) NCT Programming

- ◇ Necessary tool has been damaged.
  - **Delivery delay** due to extra time for program change
- ◇ Tool instruction by program differs from the tool in shop floor.
  - **Delivery delay** due to the programming alteration



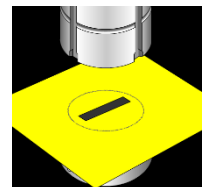
## 3) Tool Management

- ◇ Tool location is unknown when tooling manager is absent.
  - **Extra time** for tool search.
- ◇ The tools are shared on 2 or more machines and this makes tooling management difficult.
  - **Extra time** for tool search
- ◇ The tools are shared by 2 or more machine operators. This makes tooling maintenance difficult.
  - **Extra time** for tool condition check

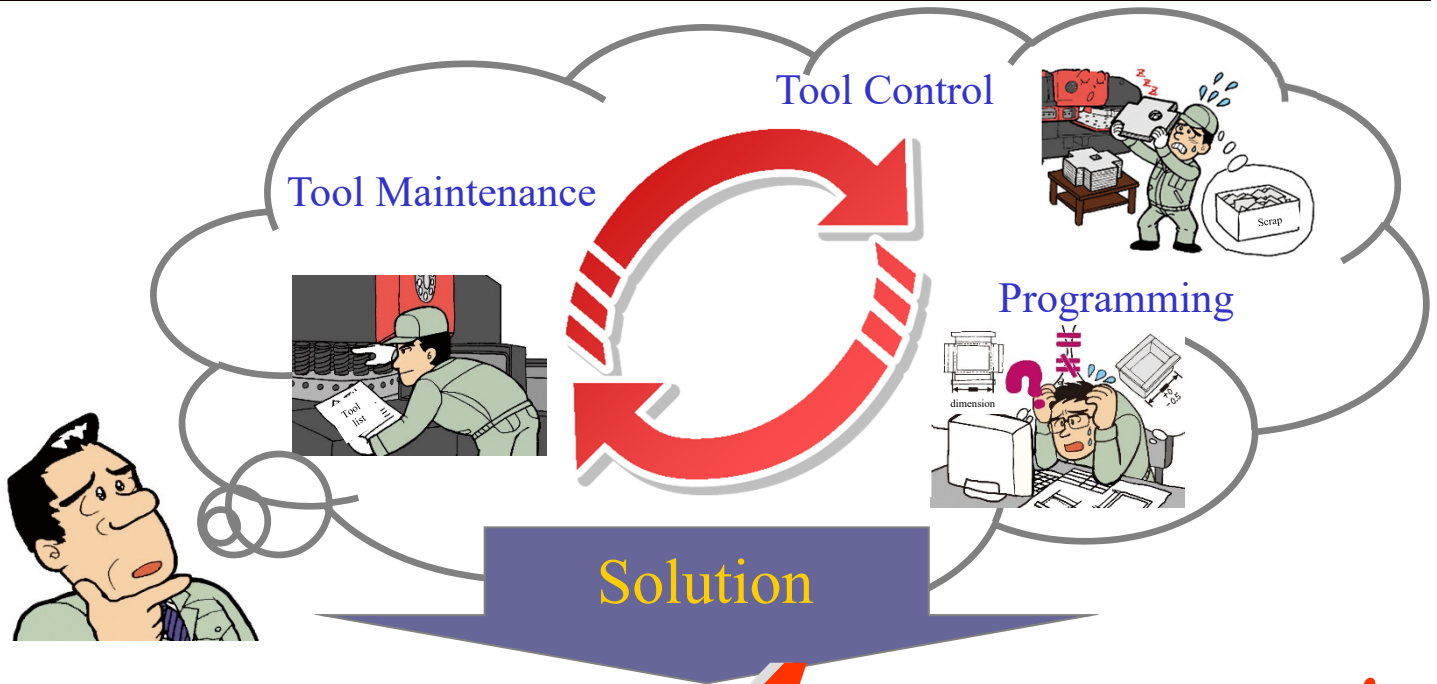


## 4) Others

- ◇ No marking appearance is required for some products.
  - **Extra work** for guide surface polishing.



# Proposal for Issue-solution



Realizing ultimate energy-saving tool with

Digital control punching tool was born!

## 4 concepts!

### 1

## Visualized Tooling Condition

Manage tools digitally by ID mark!



### 2

## Simple Maintenance

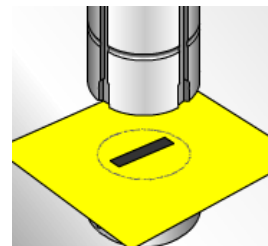
Disassembles / assembles / adjusts

NEX3 tooling by single button!

### 3

## Upgrade Quality

Tool mark-less improves product quality!

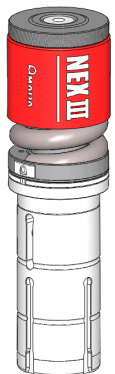


### 4

## Running Cost Reduction

Punch grind value increased from 5mm to 6mm.

\*Applicable to B(1 1/4"). Max.5mm for A(1/2").

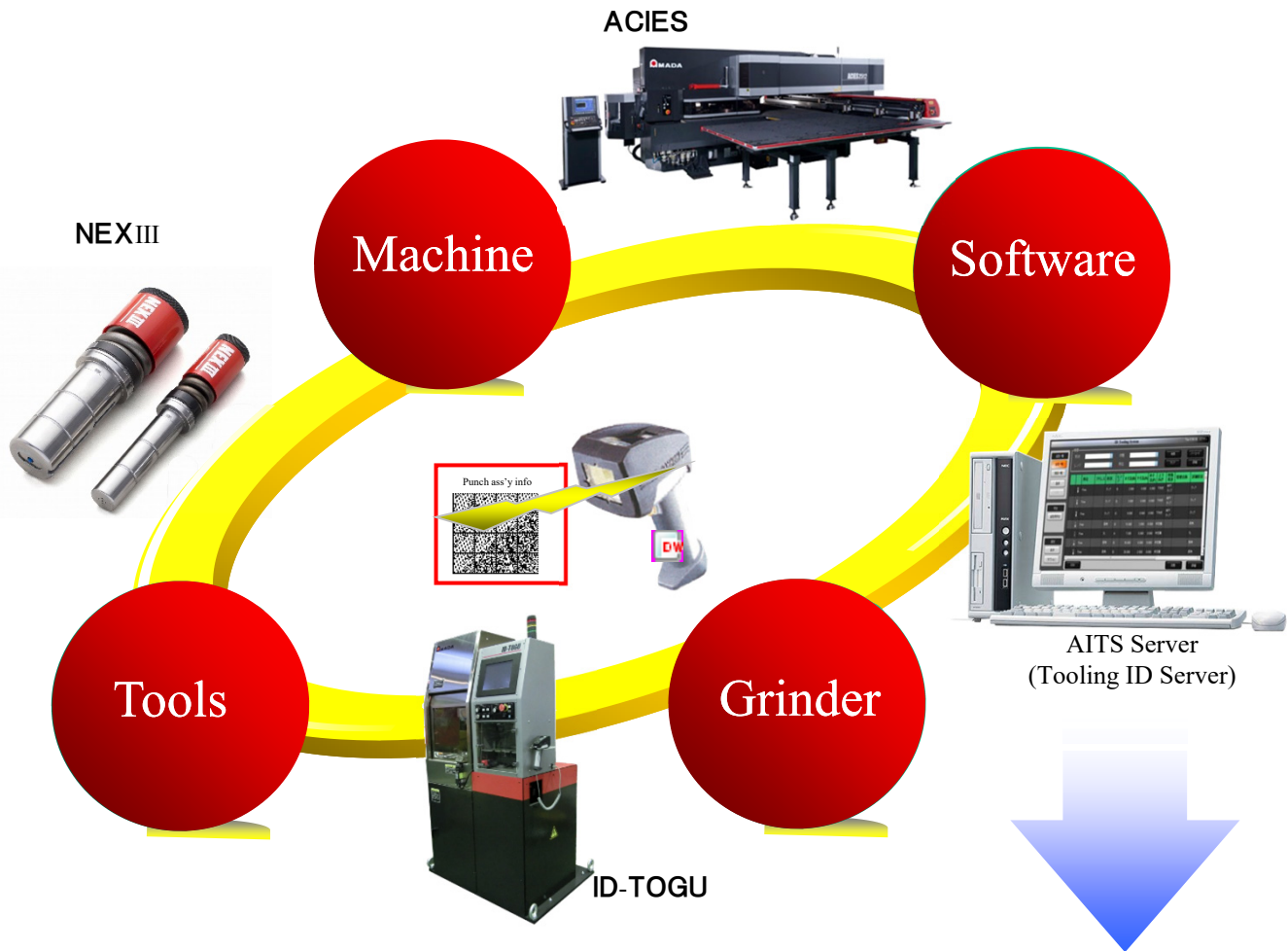


# 1 Visualizing Tool Condition



## Digital control tool improves the environment of working site!

All of NEX3 tools have ID marking and this realizes the digitalized tooling management by network between ID applicable machine and AITS server. Also the digital environment can be established for the future ID applicable machine investment by purchasing NEX3 tool.



### Tool Location Management

- Tool location can be found on AITS server at a glance!

### Product Quality Management

- Stable product quality by optimal tool condition maintenance!





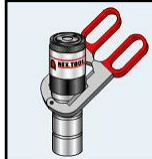

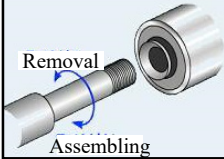
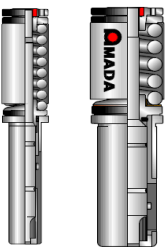



### Usable Tool List Display

- Available tool list can be monitored in real time!

# 2 Simple Tool Maintenance

**Maintenance time is greatly reduced !**

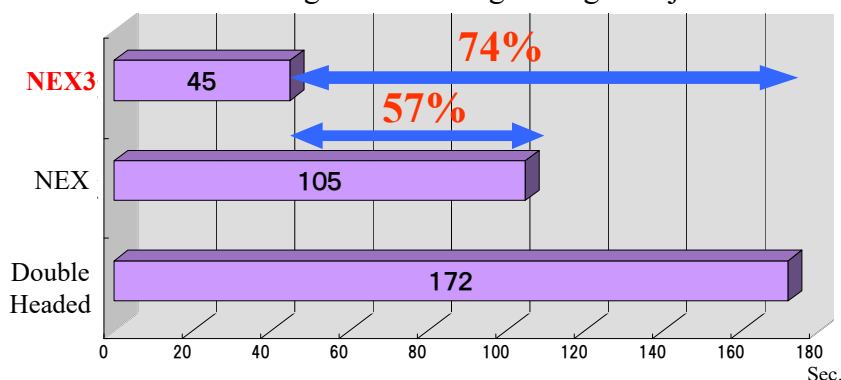
NEX3 can be disassembled /assembled / /adjusted without any tools.  
Inexperienced operators can handle this user-friendly tool.

<p><b>NEX3</b></p> 	<div> <ol style="list-style-type: none"> <li>1. Guide Removal</li> <li>2. Spring Unit Removal</li> <li>3. Punch Regrinding</li> <li>4. Spring Unit Assembling</li> <li>5. Guide Installation</li> <li>6. Height Adjustment</li> </ol> </div> <div> <p>6 steps</p>   </div> <div> <p>Tool-less</p> </div> <div> <ol style="list-style-type: none"> <li>1. Depress adjust-button and the lock is released</li> <li>2. Rotate guide ⇒ Match the height adjust marks ⇒ Remove guide</li> </ol> </div>
<p><b>NEX</b></p> 	<div> <ol style="list-style-type: none"> <li>1. Guide Removal (QS pliers)</li> <li>2. Spring-lock Release (Allen-key)</li> <li>3. Spring Unit Removal</li> <li>4. Punch Regrinding</li> <li>5. Spring Unit Assembling</li> <li>6. Height Adjustment</li> <li>7. Spring Locking (Allen-key)</li> <li>8. Guide Assembling</li> </ol> </div> <div> <p>8 steps</p>    </div> <div> <p>Remove guide    Adjust height    Remove punch body</p> </div> <p>* Items in the parenthesis indicate required tools.</p>
<p><b>Double Headed</b></p> 	<div> <ol style="list-style-type: none"> <li>1. Guide Removal (QS pliers)</li> <li>2. Tool Lock (Fix jig)</li> <li>3. Cap Screw Tightening (Bolt+Allen-key)</li> <li>4. Spring Unit Disassembling (Bolt+Allen-key)</li> <li>5. punch Regrinding</li> <li>6. Tool Lock (Fix jig)</li> <li>7. Spring Unit Assembling</li> <li>8. Height Adjustment (Bolt + Brass bar)</li> <li>9. Cap Screw Loosening (Bolt + Allen-key)</li> <li>10. Guide Assembling</li> </ol> </div> <div> <p>10 steps</p>    </div> <div> <p>Lock tool    Tighten bolt    Adjust height</p> </div> <p>* Items in the parenthesis indicate required tools.</p>

## Time Comparison in Tool Maintenance

Operation:

Tool Disassembling→Assembling→Height Adjustment



### Reduction Ratio

Double Headed → NEX3 **74%**

NEX → NEX3 **57%**

(Amada data)

## Minimize tool mark appearance at low cost

Special surface treatment enables to reduce the tool mark when holding down the sheet metals.

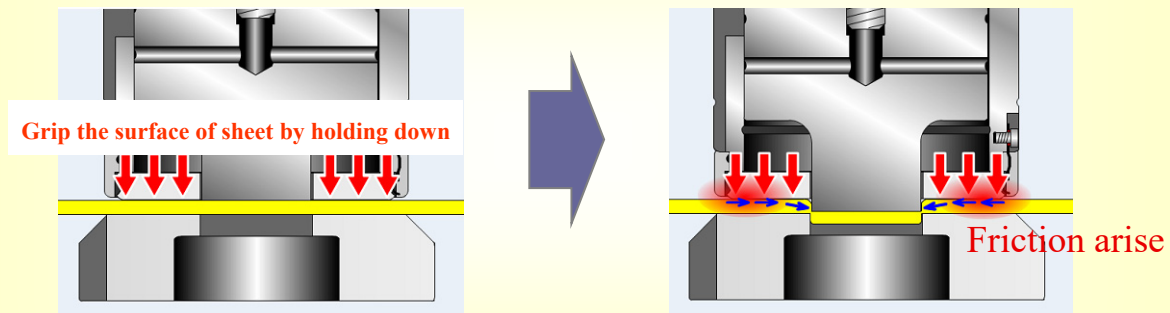
It is recommended for post process reduction and high quality process.

If the tool mark disappeared...

- ◇ **Cost Reduction** → Reduce post-process and cost of protection vinyl sheet
- ◇ **High grade performance of laser-punch combination process:**  
Realize laser process without protection vinyl sheet

## Why does the tool mark appears?

When punching the sheet metal, it is pulled inward. Therefore, friction arises between hold-down surface and sheet. As a result, friction mark remains.

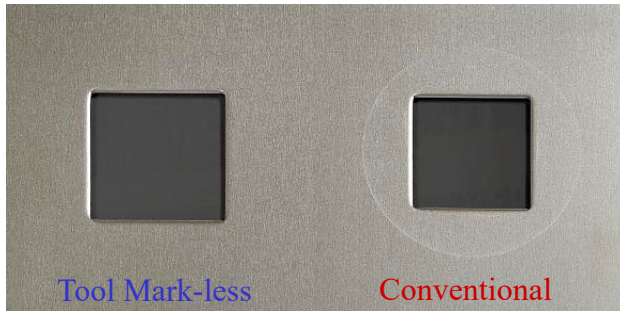


\*This function does not effect on the backside of the component.

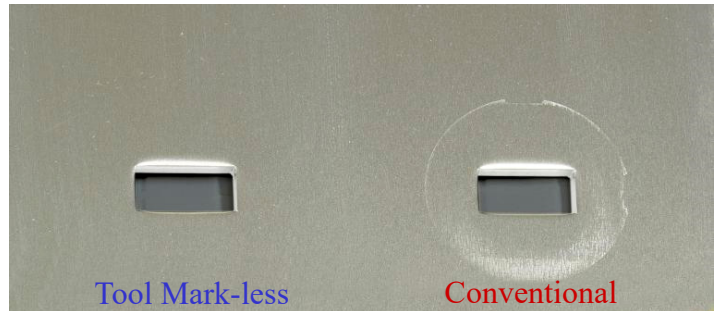
## Process Comparison Pictures for each materials

Left : Tool Mark-less Right : Conventional

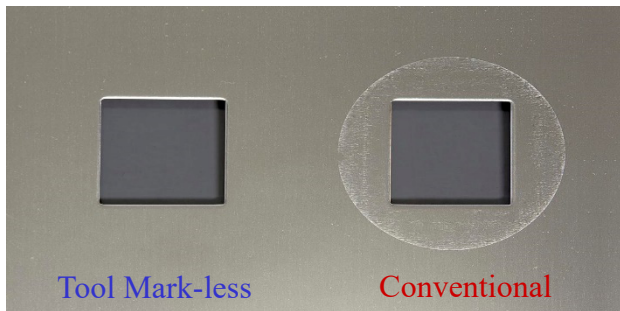
◎SUS430 2.0mm



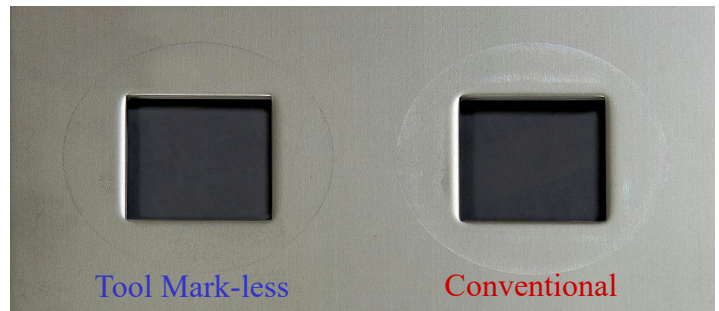
◎A5052 3.0mm



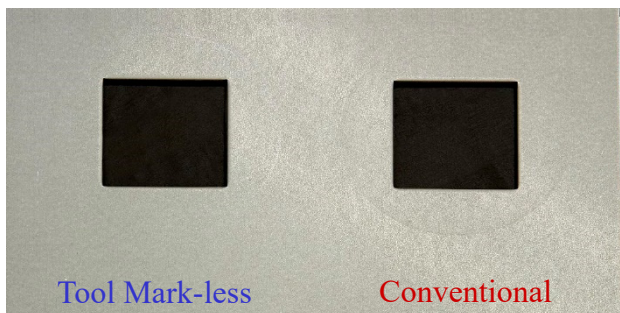
◎SUS430 1.5mm



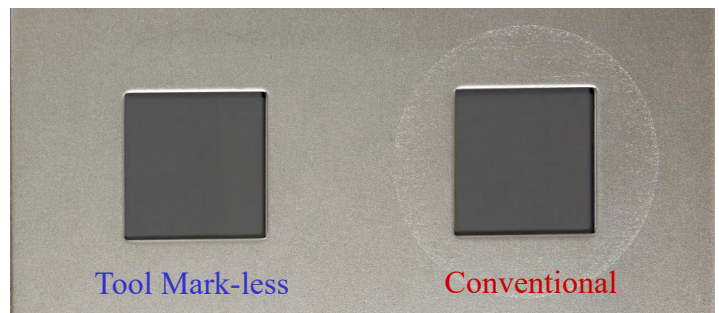
◎SUS304 3.0mm



◎SECC 1.6mm



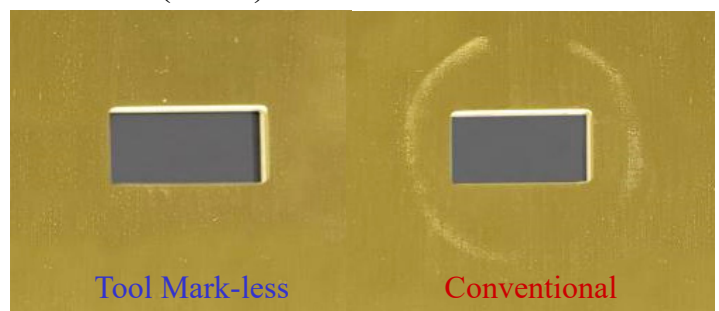
◎SPC 1.6mm



◎C1100 P1/4H (Copper) 3.0mm



◎C2801 (Brass) 0.8mm



# 4 Running Cost Reduction



## Maximizing regrinding value

B(11/4") Punch regrind value expanded from 5mm to 6.5mm in comparison with NEX. NEXIII is designed for running cost reduction and eco-friendly tool



### 【Customer Application Example】

#### Operation Condition

Machine :EM-ZRT

Material : SECC, ZAM 1.0 to 1.6mm

Tool Type : SKH



#### Reground Value

Reground value after 300,000 hits→ 0.4mm

We got max. regrind value from the above case study.

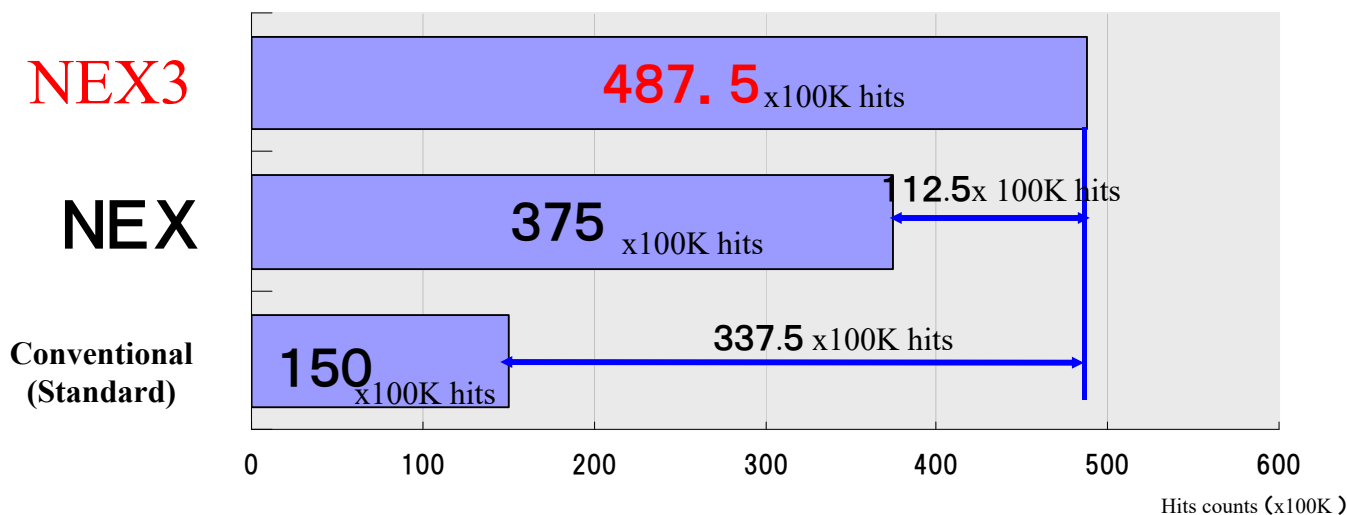


### Max. Regrind Value Comparison

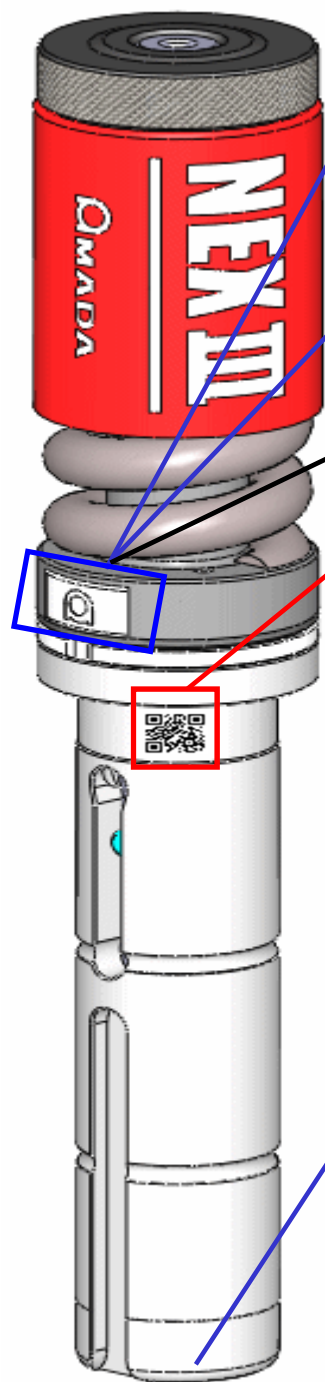
Conventional → NEXIII (Standard) **About 3.3 times**

NEX → NEXIII **1.3 times**

(Amada data)



# NEXIII Functions List



## ① Tool-free Height Adjustment

- Adjust punch height without guide removal by single button
- Adjust Value: 0.15mm

## ② Simple Disassemble by Adjust Button

- Assembling / disassembling without tools

## Adjust Button

## ③ ID Marking

## ④ High Speed Punching (M696)

## ⑤ Max. Thickness 6.35mm

## ⑥ Max. grind value (t 3.2mm less)

A(1/2") ⇒ 5mm  
B(1 1/4") ⇒ 6.5mm

## ⑦ Air blow Tool

## ⑧ Tool Mark-less Guide(optional)

## ⑨ Interchangeable Solid Shape Punch

※ ID mark is required for digital management.

※ Round punch body has a pin for anti-rotation

## ⑩ Available for auto-tool changer equipped models:

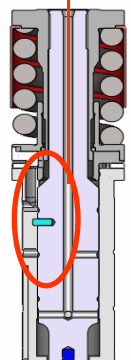
ACIES、EM-ZR、EM-ZPDC etc



<Optional Function>  
Tool Mark-less



Tool Mark-less tool has  
★ mark.



## VOC (Voice Of the Customer) on NEX3

### ○Very easy adjustment and replacement

Double-headed type tool took **6 minutes** for tool-disassembling and height adjustment except grinding time.

But NEX3 shortened same operation to **1 minute**.

### ○Easy handling

Everyone can use this tool very easily without know-how of the tooling.

### ○Easy operation of height adjustment

We used to use vernier calipers for height adjustment.

But the punch height of NEX3 can be adjusted while checking the gap between the guide end and the punch end. It is very simple operation and avoids adjustment mistake.

### ○Tool polishing is not required

We had to polish the brand-new guide every purchase because tool mark is not acceptable for some products.

But optional function "Tool Mark-less" saved this operation.

NEX3 on EM3510ZRT



## Q&A

**Q1.** NEX3 with Non-air blow available?

**A1.** Yes, it's special order tool.

**Q2.** We have NEX spring pack. Can we use NEX on NEX3 tool?

**A2.** Yes, you can use NEX on shape tool, but forming tool is not applicable with NEX.

**Q3.** Is there any interchangeability between NEX and NEX3?

**A3.** NEX shape punch body has an interchangeability with NEX3. But the round tool has no interchangeability.

**Q4.** Is NEX3 spring unit (spring and head) repairable?

**A4.** No! New set of NEX3 is required.

**Q5.** Is the round punch body without pin available for NEX3?

**A5.** No. Punch height changes during processing because NEX3 can not lock the round punch body without pin.

**Q6.** We do not need ID marking. Can it be cheaper?

**A6.** ID marking is standard spec. So the price is not change.

**Q7.** Is there any different color on spring cover available? We want to differentiate shape and round tools.

**A7.** Different color is not available. But you can write the characters on it with felt-tip-pen.

**Q8.** Can we order "over-sized" punch body?

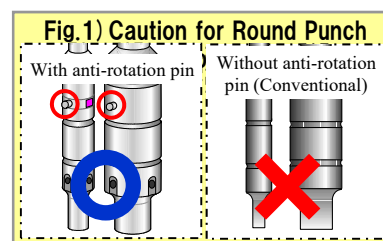
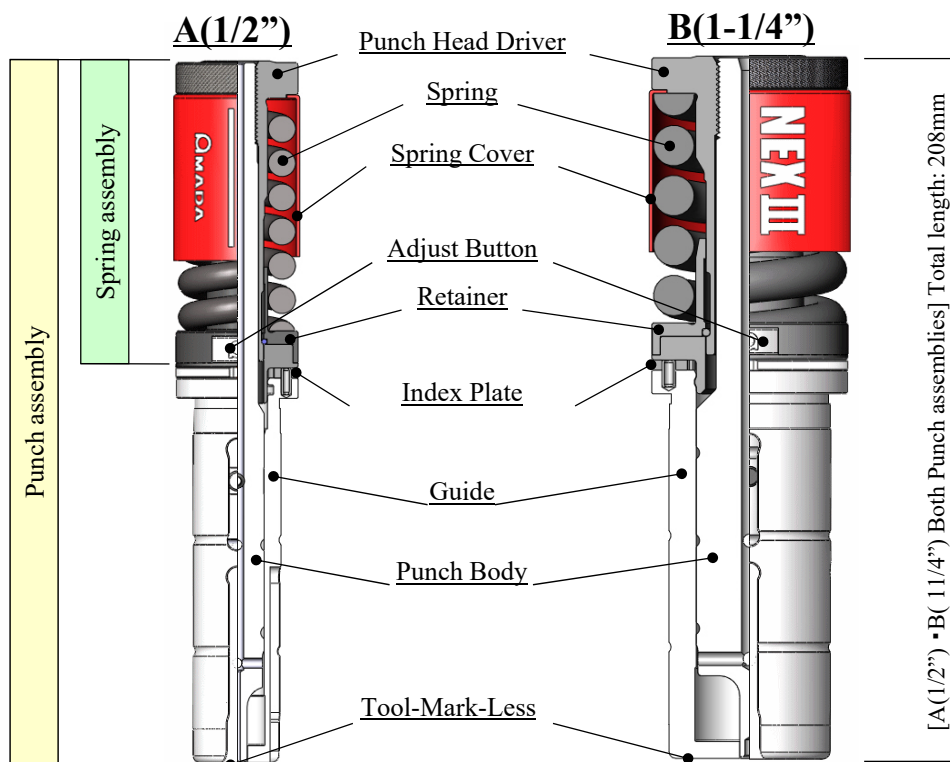
**A8.** No. We can not supply bigger punch body than punch diameter.

**Q9.** Are there any contouring tool, heavy-duty tool or high-speed marking tool with NEX3?

**A9.** At the moment, only NEX spring pack type is available. But dedicated spring unit may be developed in future.

# Tool Structure and Specification

## 1. Structure



## 2. Specification

Items		Contents	
Tool Type		NCT Long Type	
Applicable Punch Body		Air blow Punch Body ※ <sup>1</sup>	
Applicable Guide		Air blow NEX3 Dedicated Closed Guide (Tool Mark-less) ※ <sup>2</sup>	
Tool Size		A(1/2'')	B(1 1/4'')
Max. Punching Tonnage kN		45	160
Max. Thickness	Mild Steel / Aluminum	6.35mm ※ <sup>3</sup>	
	Stainless Steel	3.0mm	
Max. Grid Value ※ <sup>4</sup> for each thickness (Recommendation:2mm)	3.2mm or less	5.0mm	6.5mm
	4.5mm	3.5mm	5.0mm
	6.35mm	2.0mm	3.5mm
Min. Adjustable Dimension		0.15mm	0.15mm
Tool Info. Parameter	Punch Height	207.5	
	Assembly Height	208.0	

- ※<sup>1</sup> Round punch body is dedicated to NEXIII.  
Please use 1/2'' & 1-1/4'' Round Punch Body with anti-rotation pin. Punch height changes on its own during processing if it has no pin. In that case, there is a danger of tooling or machine being broken. (See Fig.1)
- ※<sup>2</sup> Tool Mark-less is optional.
- ※<sup>3</sup> In order to prevent trouble due to the fatigue of the spring when 6.0mm or more thick sheets are processed, the spring assembly should be changed to the brand-new assembly every about 500,000 strikes.
- ※<sup>4</sup> The grinding allowances shown here are applicable, except when the narrow type is used or the lower end is 2.5 mm or more.  
Under size type of B(1 1/4'') tooling is same max.punch grinding allowance as A(1/2'').  
If grinding over the recommended grinding allowance 2 mm is performed, the accuracy of the cutting edge dimension may not be maintained.  
If grinding over the recommended grinding allowance 2 mm is performed, additional processing for slug ejector hole is necessary.

