YAMAWA U.S.A. TODAY

YAMAWA OFFERS A COMPLETE LINE UP OF *ROLL FORM TAPS*

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WHOLESALERS

DISTRIBUTOR;

TRY THE YAMAWA *ROLL FORM* TAPS TODAY, YOU'LL BE AMAZED. YAMAWA'S OFFERS *ROLL FORM TAPS* TO WORK IN MATERIALS FROM SOFT ALUMINUM TO HARDENED STEEELS UP TO 36Rc.

Advantages of YAMAWA Roll Form Taps

Creating Threads With Roll Form Tap vs Creating Threads With a Cutting Tap

YAMAWA'S Roll Form Taps and cutting taps produce threads that gage identically and are fully interchangeable but the way each style of tap produces a thread is completely different. Roll form taps displace metal through plastic deformation— cutting taps remove it.

***1.* THREAD WITHOUT PRODUCING CHIPS WITH YAMAWA**
The YAMAWA Roll Form Taps produce a thread that is cold formed so there are no chips to interfere with the tapping process. Chip removal problems are eliminated in though and blind holes.

***2.* YAMAWA'S ROLL FORM TAPS PRODUCE STRONGER THREADS**
The materials grain flow follows the contour of the formed threads which results in a stronger thread.This is especially true for materials that work-harden like steels and stainless steel.

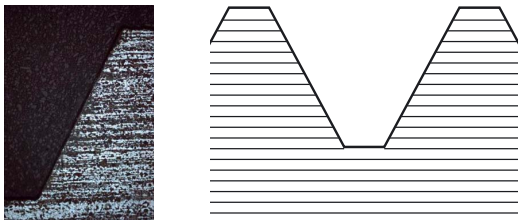
***3.* BETTER THREAD GAGING WITH YAMAWA ROLL FORM TAPS** Roll form taps displace the metal in the hole to create the thread. With no metal to cut away in roll forming a thread, the possibility of cutting an oversized thread is greatly reduced.

***4.* YAMAWA'S ROLL FORM TAPS ARE STRONGER THAN CUT TAPS**
YAMAWA Roll Form Taps do not produce chips, thus eliminating the need for flutes. This results in a solid stronger tap.

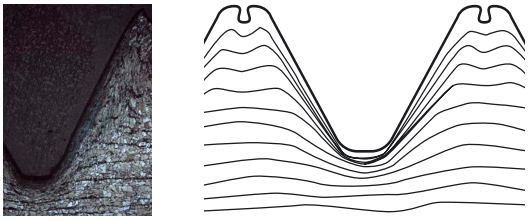
***5.* LONGER TAP LIFE WITH YAMAWA ROLL FORM TAPS *YAMAWA* Roll Form Taps** last 2 to 20 times longer than cutting taps depending on the material being threaded because they have no cutting edge to chip or wear out.

6. HIGHER PRODUCTION, MORE EFFICIENT THREADING
YAMAWA'S Roll Form Taps produce longer tap life, experience less tap breakage, and can be ran at a faster tapping speeds. All these combine to reduce cycle time and machine downtime.

***7.* IDEAL FOR MODERN MACHINES WITH ENCODERS YAMAWA'S Roll Form Taps** are for CNC machines or other machines without lead screws.



The grain structure in a cut thread.



The grain structure in a YAMAWA Roll Form thread has a strengthened root area of the major diameter. This area is especially vulnerable to crack formation in cutting threads.

Think threads with YAMAWA

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HSS | OX Oxide | 2 | 4

Roll Form Taps for Ferrous Materials

Custom Blended Vanadium High Speed Steel

For Stainless Steels, Alloy Steels and Ferrous Materials.

DIN tap lengths, ANSI shank dimensions

N-RZ for Unified and Metric Threads

Plug Style (3 to 5 thread chamfer)
Bottoming Style (2 to 2 1/2 thread chamfer)

Improved performance, new tap design
Taps have an oxide coating for improved roll tapping in steels.

HSS | NI Nitride | 2 | 4

Roll Form Taps for Non Ferrous Materials Custom

Blended Vanadium High Speed Steel

For Aluminum, Brass and Copper Alloys

DIN tap lengths, ANSI shank dimension

N-RS for Unified and Metric Threads

Plug Style (3 to 5 thread chamfer)
Bottoming Style (2 to 2 1/2 thread chamfer)

Improved performance, new tap design.
Taps have a nitride surface toughening treatment.

HSS-P | TiCN Coating | 2 | 4

High Performance Roll Form Taps

PM High Speed Steel

HP-RZ Taps have a TiCN coating for tapping with coolant.

For Stainless Steels, Low, Medium, High Carbon Steels < 35 HRC the HP-RZ.

DIN tap lengths, ANSI shank dimensions

ZELX HP-RZ

for Unified and Metric Threads

Plug Style (3 to 5 thread chamfer) Bottoming Style (2 to 2 1/2 thread chamfer)

The HP-RZ Roll taps can be run 2 times faster than the tapping speeds recommended for thread cutting taps.

HSS-P | TiCN Coating | 4

High Performance Roll Form Taps for Dry Tapping.

Cobalt, Vanadium Premium Steel with a TiCN coating for COOLANT FREE roll form tapping.

Taps can be run dry or with mist coolant.

Designed for Stainless Steels, Low Carbon Steels and Other Soft Materials.

DIN tap lengths, USCTI shank dimensions

ZELX OL-RZ

for Unified and Metric Threads

Plug Style (3 to 5 thread chamfer)

Designed for shallow hole tapping <1-1/2 diameters in depth. OL-RZ Roll taps can be run 1.5 to 2 times faster than the tapping speeds recommended for thread cutting taps.

Think threads with YAMAWA

No.005

Bag full of wisdom when you are in trouble

Roll taps

【Question】 I'm going to try roll form taps for the first time.
Can you tell me the best way to use roll taps?

【Answer】 The proper application of Roll Forming Taps is not difficult once you become familiar with the best way to select and use them.
Roll Forming Taps work better, if you follow a standard way to select and apply them. I think there is a short cut that may help you reach really good results while using roll taps.

Once you gain the experience, you will find your own unique way to use roll taps.

Here I would like to introduce you to the basic way to use roll taps.

Basic way to choose Roll Form Taps

Selection of material to be tapped

● At first, confirm if the material is suitable for tapping with roll form taps. Tapping with roll form taps is applicable to non-ferrous material like aluminum and soft steels, but not for cast irons and hard steels over 36Rc.

Initial selection of the roll tap

● Yamawa's N+RS is for roll form tapping of non-ferrous material like aluminum and the Yamawa N+RZ is for roll tapping of soft steels.
If you need longer tool life for production runs, I would recommend the Yamawa HP+RZ.
● I would recommend a Plug Chamfer for through hole tapping and a Bottoming Chamfer for blind hole tapping.
● I suggest you choose a standard "H" limit tap first for the thread class of fit.

Confirm the thread class of fit for the internal thread and those of the tap are the same

On the first thread produced, prepare the bored hole diameter slightly bigger than recommended.

● For the first tap test, I sugget you choose a bored hole diameter a little larger than standard diameter recommended.

※If the initial bored hole diameter is too small, it can cause the problem of excessive material deformation and tap breakage.

Tapping with the roll tap initially selected.

● Try tapping first with the roll tap initially selected.
① If the **No-Go** plug gauge measures too large, try tapping again with a roll tap of one "H" or "D" limit smaller.
If the **Go** plug gauge measurers tight, there is a possibility that shrinkage in the internal thread was caused by elastic features of the material.
Try tapping again with a roll form tap of one "H" or "D" limit larger .
② If the **NoGo** plug gauge measures too loose, try tapping again with the roll tap of one "H" or "D" limit smaller.
When you have the above problems, reconsider the kind

① When the **Go** plug gauge measures tight, try tapping again with a tap with a larger "H" or "D" limit.

② When the **NoGo** plug gauge measures too large of a thread size, try tapping again with a smaller "H" or "D" limit tap.

③ If the Go and **NoGo** gauges are OK, it means the selected "H" limit for the tap is appropriate.

③ If both the internal threads Go and NoGo are OK after tapping, it means the thread limit of the tap is appropriate..

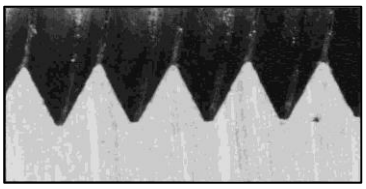
For setting the bored hole diameter, the basic procedure is small adjustments while checking the minor diameter with the plug gauge.

In the test tapping shown on the front page, for safety reasons, the bored hole diameter is set a little bit larger by decreasing the diameter incrementally.

（Basic procedure to find the bored hole diameter）

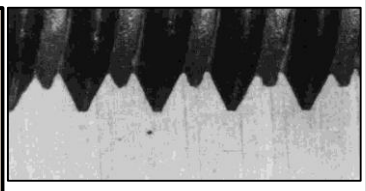
Measure the minor diameter of the internal thread that was accepted through both the GO and NOT-GO inspection guages shown in ③ shown in front page.

④
If the GO pin gauge for the minor diameter is No Good, try tapping again by making the bored hole diameter larger.



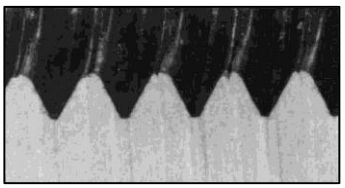
If bored hole diameter is smaller, material deformation becomes excessive.

⑤
If the NOT-GO pin gage for minor diameter is No Good, try tapping again by making the bored hole diameter smaller.



If the bored hole diameter is larger, material deformation becomes too small.

⑥
If both the GO and NOT-GO pin gage inspection is OK, it means the bored hole diameter is appropriate. We have reached the goal.



If the bored hole diameter needs to be larger or smaller.
Then how much should we adjust ?

Let's assume the target of the minor diameter as A.
And let's assume the minor diameter after tapping is B.
Guideline of adjusting value C :
You can roughly get the value from formula (A-B)/2=C

＜Adjusting example of bored hole diameter＞
M6x1 Target minor diameter is set to be 5.0 (rate of thread engagement 93%)

We assume when we set the bored hole diameter at 5.4, the completed the minor diameter has become 4.8 (rate of engagement 111%).
This looks like ④ shown in above picture.
In this case the formula is (5.0-4.8)/2=0.1. If you make the bored hole diameter 0.1 larger than 5.4, then, completed minor diameter will become close to 5.0.

On the other hand, we assume when the minor diameter is set as 5.6mm, the completed the minor diameter has become 5.2mm (rate of engagement 74%).
In this case formula is (5.0-5.2)/2=—0.1. If you make the bored hole diameter to 5.5mm, 0.1 smaller than 5.6, then, completed minor diameter will become close to 5.0.

In the above picture ⑥、when the bored hole diameter is 5.5mm, the minor diameter is completed the most appropriate diameter, 5.0mm.

The actual situation may not be the same with this calculation, but the above calculation will give us a guideline for adjusting the bored hole diameter.

As a tool for checking minor diameter use the YAMAWA CPC-S (Minor diameter checkpin for cutting tap) and you will find it useful.

Check Pins for Bored Hole： CPC-S

By using the CPC-S (minor diameter checkpin for a cutting tap), we can check the minor diameter in the range of engagement rate 100%-70% with 5% increments.
By using CPC-S, we can check the minor diameter of internal threads completed by roll taps as well by 5% increments.