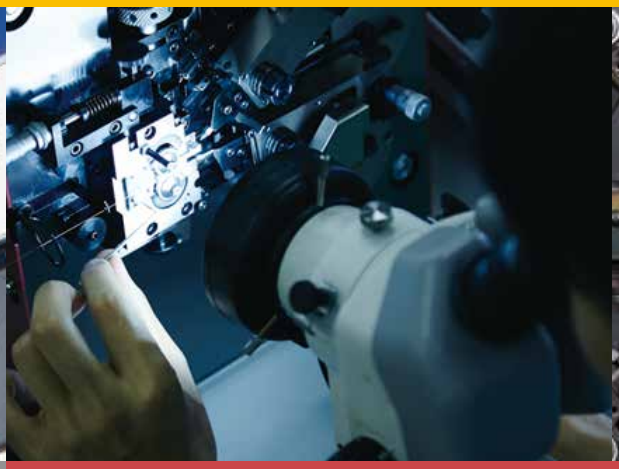
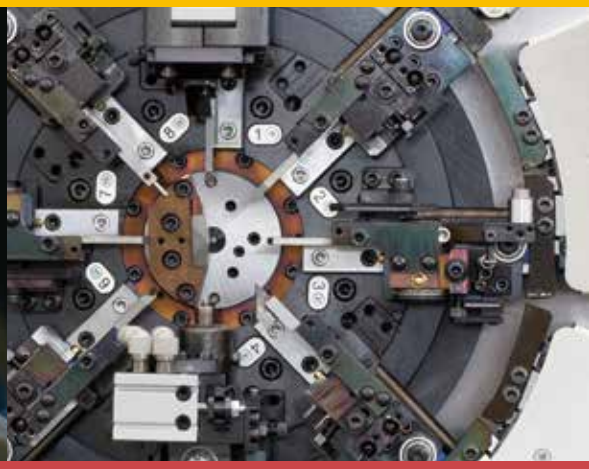
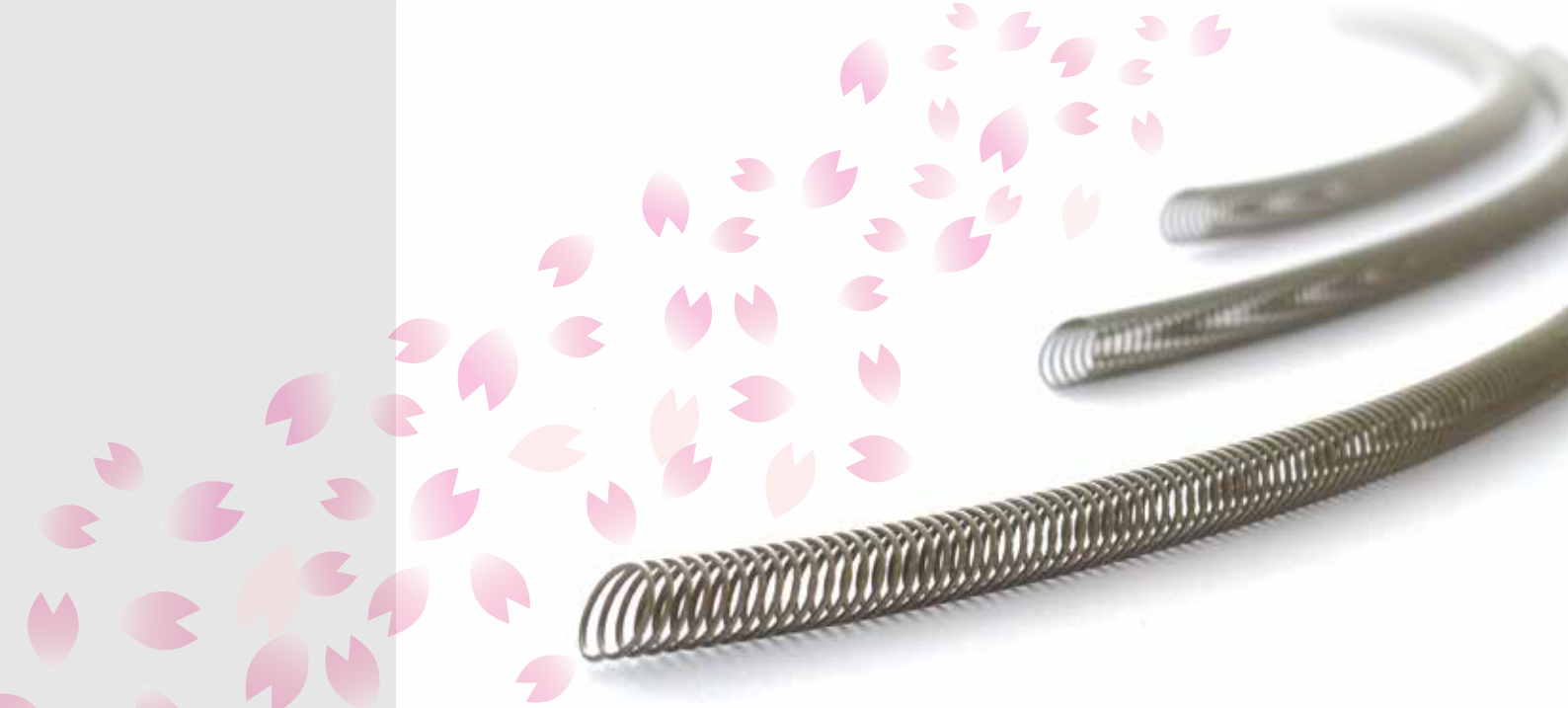
AMADA PRESS SYSTEM CO., LTD.

MEC SPRING MACHINES





General Catalogue



AMADA

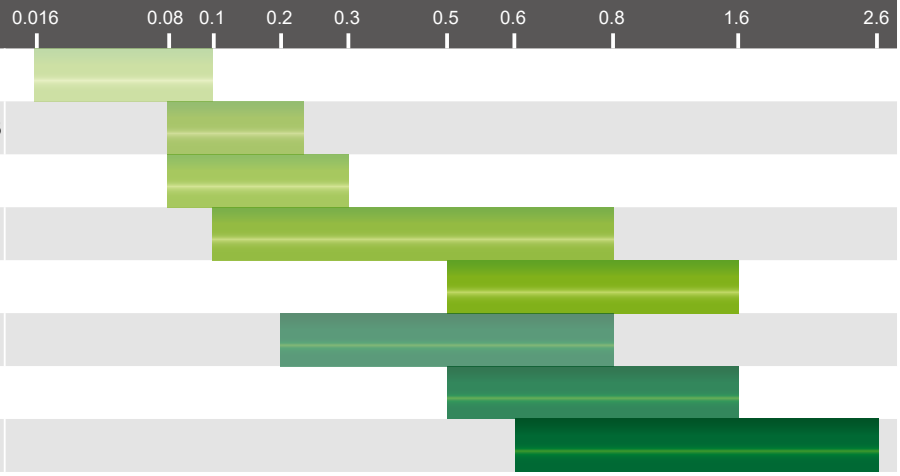
Lineup of CNC Spring Machines

In the field of precision and extension spring machines, the MEC brand is beloved worldwide as one of the top brands boasting the most unique technology in the industry.

Our machines form all types of wires such as compression, torsion, and extension springs.

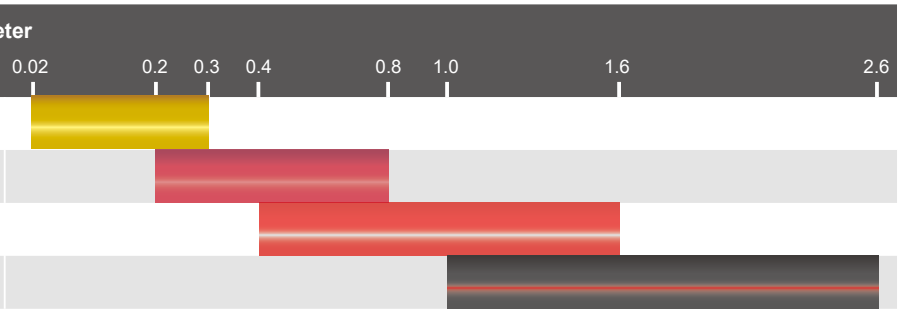
Coiling spring machines (For compression spring)

Machine name	Axes	Power source 200V	Air pressure Max MPa	Wire diameter ø mm
SF-1A	5	15A	0.5	0.016 ~ 0.1
SH-3AG	8	15A	0.5	0.08 ~ 0.23
SH-3A	8	15A	0.5	0.08 ~ 0.3
SH-8A	7	15A	0.5	0.1 ~ 0.8
SH-16A	9	15A	0.5	0.5 ~ 1.6
WH-8A	5	15A	0.5	0.2 ~ 0.8
WH-16A	8	15A	0.5	0.5 ~ 1.6
WH-26A	8	20A	0.5	0.6 ~ 2.6



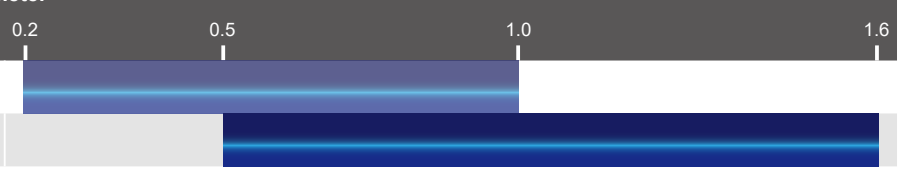
Torsion spring machines

Machine name	Axes	Power source 200V	Air pressure Max MPa	Wire diameter ø mm
DZ-3A	15	15A	0.5	0.02 ~ 0.3
TM-8A	11	15A	0.5	0.2 ~ 0.8
LM-16A	15	15A	0.5	0.4 ~ 1.6
NI-26A	26	30A	0.5	1.0 ~ 2.6



Extension spring machines

Machine name	Axes	Power source 200V	Air pressure Max MPa	Wire diameter ø mm
CLS-10A	7	15A	0.5	0.2 ~ 1.0
CLS-16A	11	20A	0.5	0.5 ~ 1.6



Original Software for Spring Machines

For coiling / Torsion spring machines

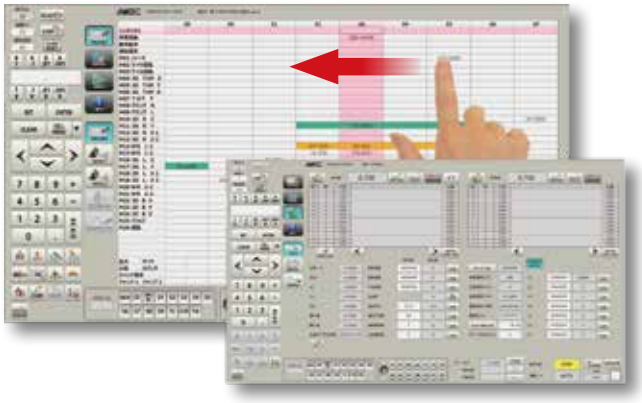
Newly developed software MNO2 with excellent operability

- The **MNO2** (MEC New Operation 2, a newly developed spring forming-dedicated program, easily organizes important statistics about the machine, including program flow, operating status of each axis, inputs/outputs, jump, etc., as with our other spring machines.

- The program editing function has greatly evolved, and the new navigation system function and touch screen make it easier to create programs and shorten the setup time.

- Both torsion and coiling machines have the same programs, making it very convenient for the user.

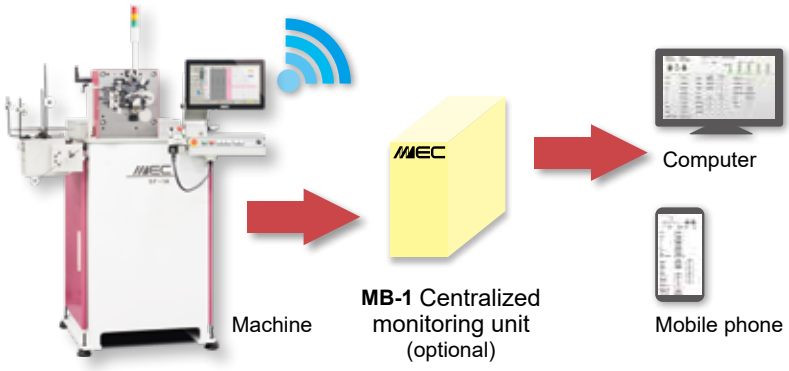
- Highly efficient production is supported by a versatile production control screen and production data collection function.

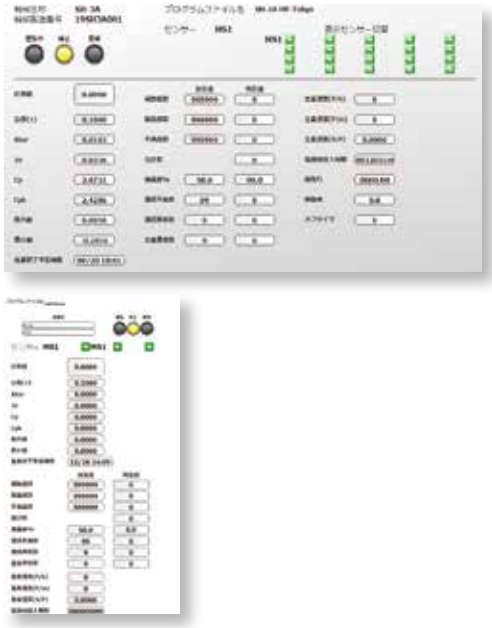


MNO2 main program and production control screen
The touch screen specifications have greatly improved operability.

Support for IOT

The Wi-Fi function, which is standard in the newly developed spring forming program **MNO2**, allows you to check the operation status of the machine from your computer or smartphone through an optional centralized monitoring unit **MB-1**.





For extension spring machines

Improved operability with software MPS for extension spring

- The **MPS** (MEC Program System) easily organizes important statistics about the machine, including program flow, operating status of each axis, inputs/outputs, jump, etc., as with our other spring machines.

- The multi-function production management system gives easy-to-control production.

- The program editing function has greatly evolved, making it easy to create programs with various hook shapes and reducing setup time.

MPS Main program screen

NI-26A

A multi-functional forming processing, which enables a wide variety of wire processing, achieves high value-added forming and high productivity.

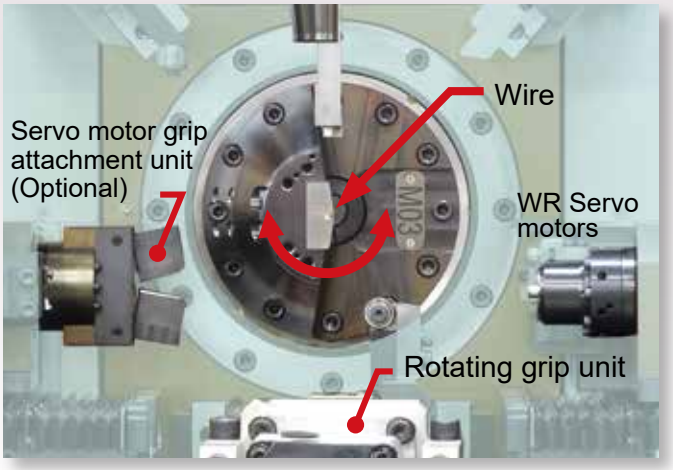
Click here for processing video

Features

Free-form processing

Intuitive operation is made viable by having high-speed 3D slides on the top and bottom and high-speed dual slides on the left and right sides.

This machine has dramatically expanded the application range of forming with the left and right double rotary (WR) servo motors, the upper rotary servo motor, the front rotating grip unit for secondary forming, and the newly developed wire rotary feed mechanism, all as standard equipment.



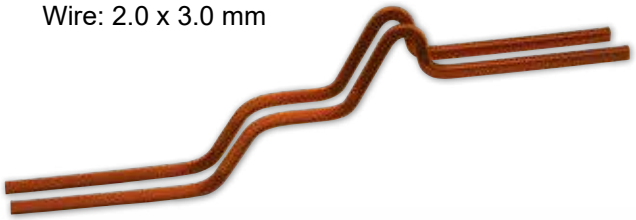
Reduced setup time due to high-repeatability

No screw adjustment is needed when installing tooling. An CNC program performs advanced adjustment, greatly reducing setup time.

Machine name	Wire diameter mm	Axes	3-phase AC 200V	Air pressure Max MPa
NI-26A	ø1.0 ~ ø2.6	26	30A	0.5

Practical examples

Parts of EV
Materials: Enamel coated copper wire
Wire: 2.0 x 3.0 mm



Torsion bar
Materials: Piano wire
Wire diameter: ø2.3 mm

Torsion spring
Materials: Piano wire
Wire diameter: ø2.3 mm

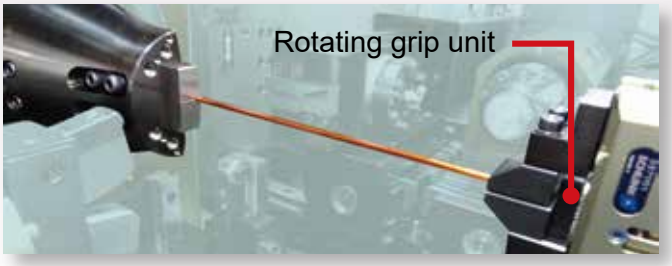
Extension spring
Materials: Piano wire
Wire diameter: ø2.6 mm (D/d 4)

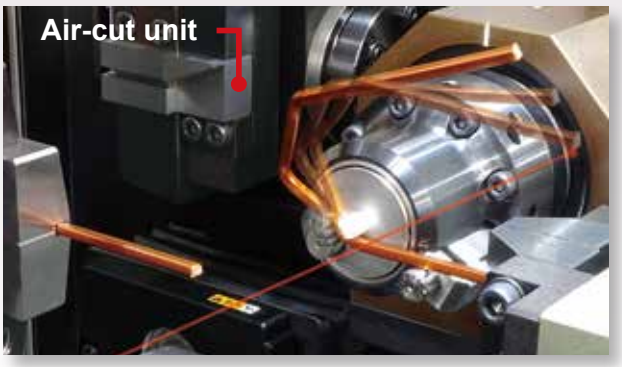
Bus bar
Materials: Enamel coated copper wire
Wire diameter: ø3.3 mm

High-precision processing

The newly developed bending sensor BS function results in high-precision bending. With the high-rigidity air-cut unit, it cuts without a quill and leaves a beautiful cross section with quiet processing. The rotating unit and the double rotary servo motors facilitate post-processing after wiring cutting and support high value-added processing.

The rotating grip unit can be also used for long length forming.



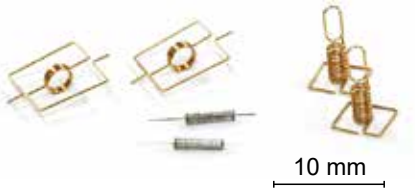


DZ-3A

The DZ-3A's fusion of high-precision, high-speed coiling, and freely formed torsion processing expands into new application ranges within the ultra-fine wire area.

Machine name	Wire diameter mm	Max outer coil diameter mm	Axes	3-phase AC 200V	Air pressure Max MPa
DZ-3A	ø0.02 ~ ø0.3	ø8	15	15A	0.5

Practical examples



Click here for processing video

Features

Free modular design system to change loaded with function

This system can hold three different 3D functional units. You may choose whatever functional unit you want to utilize. You can achieve the freedom of bending by three different 3D slides, and assign needed movements, such as tool changer or rotary servo, to the 3D movement slides.

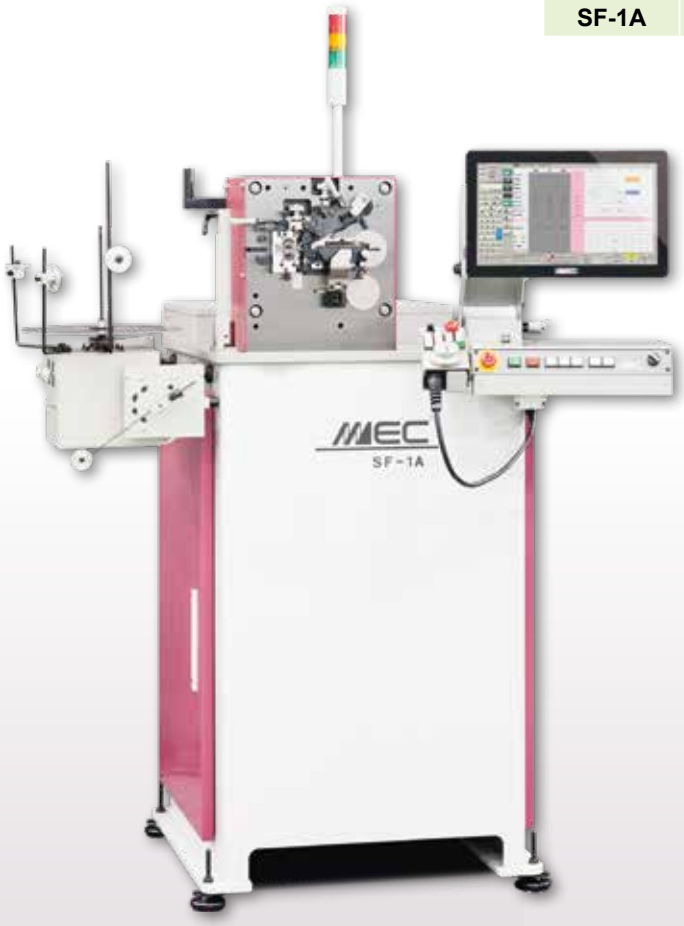
Attractive optional unit

The feed pressure servo motor unit adjusts the feed pressure according to the spring index.

SF-1A

One of the world's best ultra-fine wire coiling machines,
with the ability to process ultra-fine wire under ø20 μm.

Machine name	Wire diameter mm	Max outer coil diameter mm	Axes	3-phase AC 200V	Air pressure Max MPa
SF-1A	ø0.016 ~ ø0.1	ø1.5	5	15A	0.5



Practical examples

Features

Optimal sensors MSD for Ultra-fine spring

The SF-1A with **MSD** (ultra-high precision contact type sensors) for the measurement of ultra-fine springs, can automatically adjust several points of its program based on those measurements.

Ideal design for ultra-fine wire coiling

Designed for precision springs with a feed roller diameter of ø16 mm and a wire guide length of 6 mm, stable coiling with a wire diameter of ø20 μm or less is possible. High-precision coiling is achieved by a mechanism that supports fine adjustment and an input setting of 1/1000 mm or less required for a setting with a wire diameter of ø0.1 mm or less.

SH Series

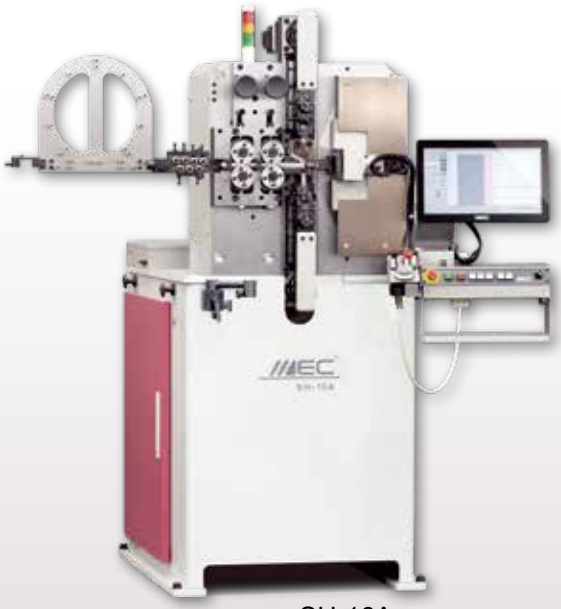
Ideal for the creation of deformed coiling shapes in addition to normal coiling.

Machine name	Wire diameter mm	Max outer coil diameter mm	Axes	3-phase AC 200V	Air pressure Max MPa
SH-3A	ø0.08 ~ ø0.30	ø10	8	15A	0.5
SH-8A	ø0.10 ~ ø0.80	ø20	7	15A	0.5
SH-16A	ø0.50 ~ ø1.60	ø50	9	15A	0.5

Practical examples

SH-3A

SH-8A

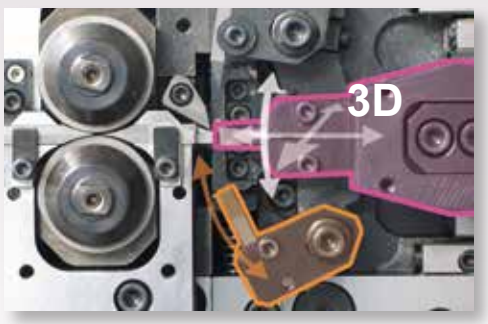


SH-16A

Features

Torsion attachment

Numerically controlled coiling points in three dimensions, which are normally used for winding a coil, allow for an operating accuracy input of 1/1000 mm.

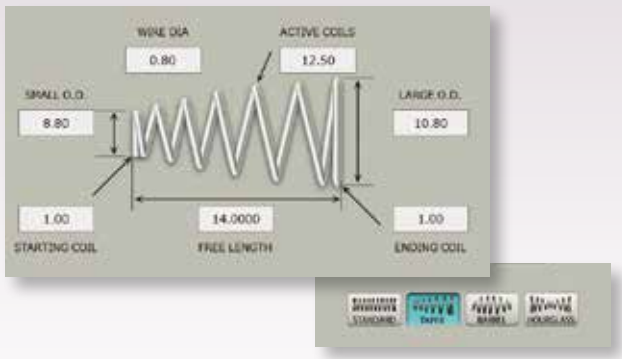


3D bending attachment

The 3D bending attachment, which bends toward you, allows you to raise one hook in the coiling section. This is provided as a standard feature with an attachment, which serves as a bend receiver when bending.

Auto compression spring program*

By entering spring dimensions, the machine will automatically program cylindrical-, tapered-, barrel-, or hourglass-shaped springs. This feature can calculate fine tuning as well.



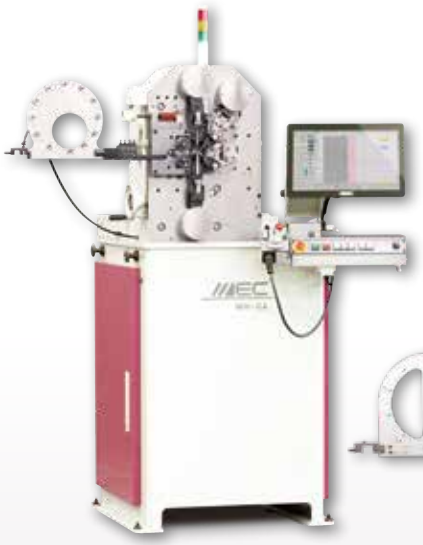
*Both **SH** Series and **WH** Series are applicable.

WH Series

Supports high-efficiency production with high-speed, high-precision coiling, and shortened setup time.

Machine name	Wire diameter mm	Max outer coil diameter mm	Axes	3-phase AC 200V	Air pressure Max MPa
WH-8A	ø0.2 ~ ø0.8	ø28	5	15A	0.5
WH-16A	ø0.5 ~ ø1.6	ø50	8	15A	0.5
WH-26A	ø0.6 ~ ø2.6	ø70	8	20A	0.5

Practical examples



WH-8A

WH-16A

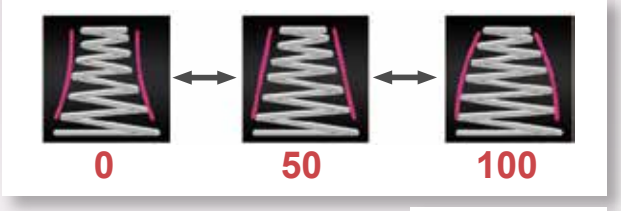
WH-26A

Click here for processing video

Features

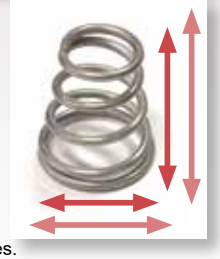
Taper synchronization coefficient control*

For tapered springs, you control the rate of taper change with a numerical value between 0 and 100. In addition, you can perform load adjustment by slightly adjusting the value.



Calibration function*

If you input an error for a required dimension, this function will automatically correct that dimension generated by the automatic program so that it will create the appropriate shape.



*This function is available on both **SH** and **WH** Series.

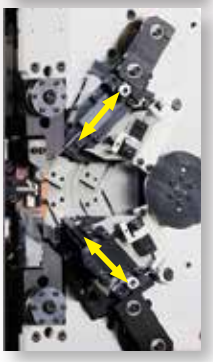
Rotary cut slide**

This promotes cleaner cuts and cross-sectional adjustment, and still has the ability to create straight cuts for both right- and left-hand coiling.

Standard for **WH-16A and **WH-26A**, optional for **WH-8A**

Switching from right- to left-hand is automatic***

Switching from right- to left-hand is done in minutes-switching coiling plates is no longer necessary. The programming runs the changeover, making it simple and smooth.



***Left-handed slides are standard for **WH-16A** and **WH-26A**, optional for **WH-8A**.

TM-8A

Suitable for processing a variety of shapes, such as torsion springs, tension springs, and working forming, using the 8 slides on the tool table rotating mechanism.

Machine name	Wire diameter mm	Axes	3-phase AC 200V	Air pressure Max MPa	Software
TM-8A	ø0.2 ~ ø0.8	11	15A	0.5	MNO2

Multi-arm RR servo motors are available as an option.
Up to 1 to 4 units can be installed.

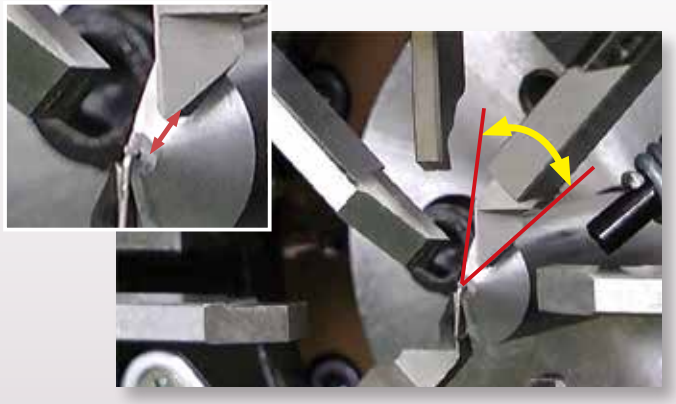
TM-8A

The above picture is an image equipped with an optional multi-arm RR servo motors.

Practical examples

Function for tool tip position correction

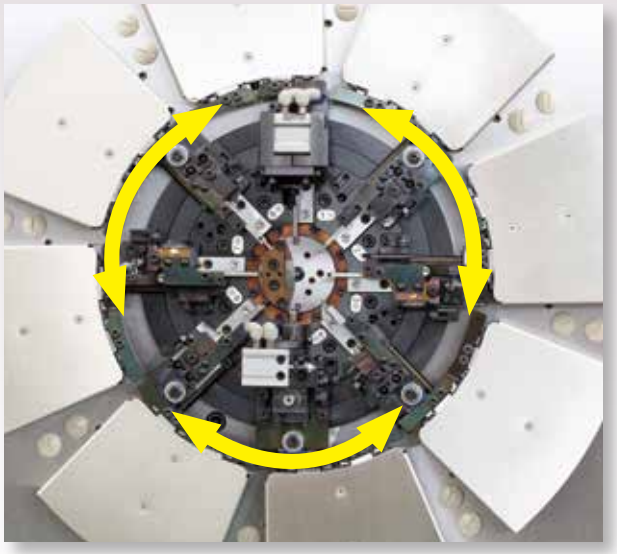
The table can rotate with the slides in advanced position within certain range. No program adjustment is needed.



Features

Tool table rotating mechanism

The working table has 8 slides, which are arranged around the wire line, giving it the ability to rotate 360°. This promotes stable processing by not putting twist stress on the wire.



360° work angle

Slides can enter freely at any angle, allowing for complete 360° access of the tooling.

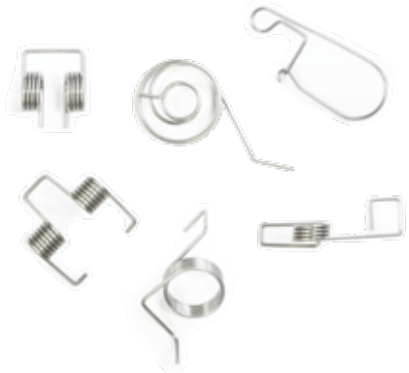
LM-16A

LM-16A accomplished an intuitive operation with the wire rotation mechanism and a double-swing axis that divides the eight processing sides into upper and lower.

Machine name	Wire diameter mm	Axes	3-phase AC 200V	Air pressure Max MPa	Software
LM-16A	ø0.4 ~ ø1.6	15	15A	0.5	MNO2

LM-16A

Practical examples



Main options

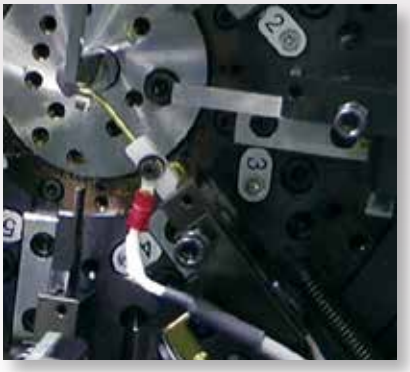
We have a wide range of optional units to meet the varied needs of the user in the areas of post-processing and measurement:

- Outer coil diameter servo unit--adjusts diameter with a servo motor
- Air nipper unit--prevents wear and breakage of the quill
- Air grip--enables post-processing
- Reverse bending slide--bends in direction of the machine front
- Grip head unit--enables wire grip with R-servo
- Capacitance sensor--measures free coil length
- Camera sensor--measures free coil length, outer coil diameter, angle, etc.

Features

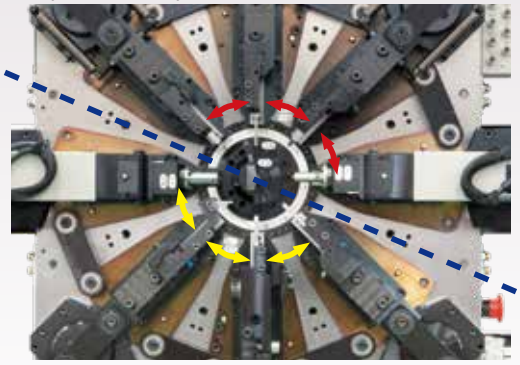
All slides monitored by sensor system

A sensor system with touch and angel sensors can adjust all slides, change the resolution by 1/1000 mm, and measure within increments of 1/100 mm.



Improved productivity with shortening setup time and reducing work

The doubles swing axis divided into upper and lower parts numerically controls the left-right movement of the slide. The program achieves high repeatability and contributes to shortening the setup time. It can also be fixed or unsynced to any slide.



CLS Series

Produce high-speed and precision tension springs,
as the CLS Series pulls both ends at a time after coiling.

CLS-10A

CLS-16A

Features

Realized high-speed production for torsion springs

CLS Series can produce much faster than previous torsion machines.

Reduced setup with automatic extension spring program

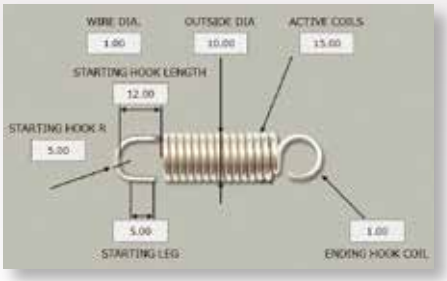
After inputting some data, the machine will automatically program English, German, U, or different-diameter hook extension springs.

Easy mechanical adjustments for German and U hook

Mechanical adjustments have become easier, since now you can produce German and U hooks, along with English hook springs.

Automated processing with automated outer coil diameter correction

Outer coil diameter is corrected by the coil end alignment sensor measurement, leaving a stable, continuous operation.



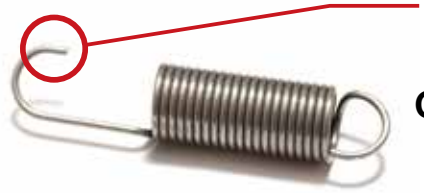
Machine name	Wire diameter mm	Max outer coil diameter mm	Axes	3-phase AC 200V	Air pressure Max MPa
CLS-10A	ø0.2 ~ ø1.0	ø12	7	15A	0.5
CLS-16A	ø0.5 ~ ø1.6	ø20	11	20A	0.5

Practical examples

The automatic program facilitates a variety of wire forming.

U Hook

End of spring does not extend outside of the shape of the spring



German Hook

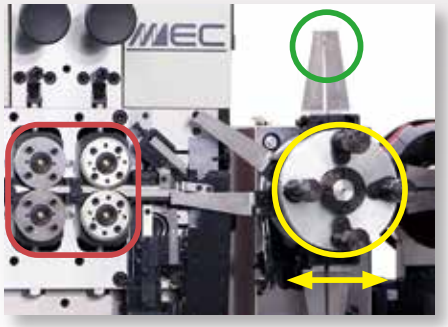
English Hook

Spring end does not change shape after cut-off

At each spring end, a double-ringed hook with tight coil will be created.

Improved quality with dual feed rollers

Even when high-feed pressure is required, a dual feed roller unit will help you realize a stable line feed, making it possible to produce higher quality products.



Accurate position repeatability with reinforced clamp unit

By strengthening the clamp pressure compared to the conventional model, the machine prevents coil runout during cutting. This enables stable coil supply and ensures the correct position during the raising process.

Reducing setup time with transfer unit for left and right adjustment (CLS-16A only)

The transfer section can now be easily adjusted. Compared to the conventional model, you need to adjust only once and setup time is reduced by 75%.

3D bending attachment (CLS-16A only)

The 3D bending attachment, which bends toward you, allows you to raise one hook in the coiling section. This is provided as a standard feature with an attachment, which serves as a bend receiver when bending.

SH-3AG

A high-speed, high-quality production system specializing in the processing of guide wires for medical catheters

Machine name	Wire diameter mm	Max outer coil diameter mm	Axes	3-phase AC 200V	Air pressure Max MPa
SH-3AG	ø0.08 ~ ø0.23	ø10	8	15A	0.5

TY-10A SH-3AG

Practical examples

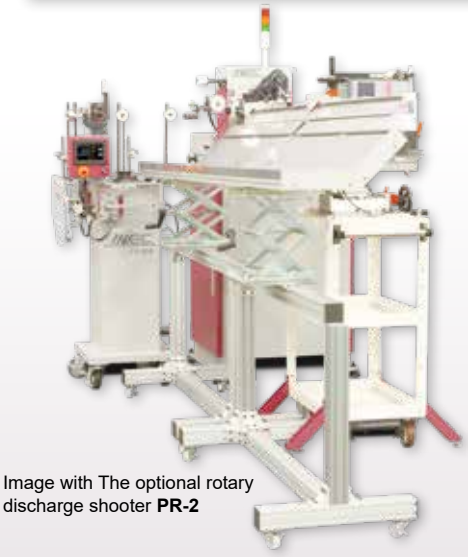


Image with The optional rotary discharge shooter **PR-2**

Click here for processing video

Features

Achieving required quality for guide wires

The newly developed 2-point coiling unit disperses friction during coiling and contributes to stabilization of the initial coil tension. Furthermore, compared to the 1-point method, the trace of the coil inner diameter is greatly reduced without an arbor.

The optional rotary discharge shooter **PR-2**, which receives the long coil wire, suppresses runout when manufacturing long coils, eliminates the problem of discharge methods, and supports high-precision coiling.

Supports automated production

Compared with the conventional coiling production method, the automatic cutting ability structure after coiling enables continuous production of coils.
This saves about 90% of labor in one day's work.
In addition, the yield is improved because there is no extra waste material generated during production.

Supports high-speed production

This machine automatically adjusts the amount of wire drawn out and feeds it into the machine. As a result, in additional to stable high-quality processing, the production speed increases about 3 times* compared to conventional coiling with the core production method.

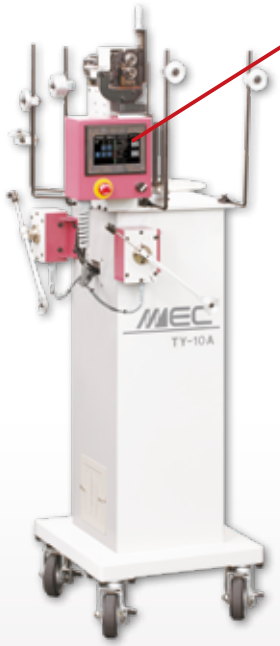
* According to our research

TY-10A

An automatic wire stand for achieving stable wire supply and maximizing the performance of the spring forming machine

Machine name	Wire diameter mm	Diameter of turn table mm
TY-10A	ø0.016 ~ ø0.3	ø280

The maximum load weight is 10 kg.
Compatible with spring machine models **SF-1A**, **DZ-3A**, **SH-3A**, **SH-8A**, and **WH-8A**.



Easy to set up with 5" wide touch screen

Features

Achieves stable coiling with a high-speed follow-up line stand

It is possible to keep the feed pressure to the minimum without the tension fluctuating, even when the material is suddenly accelerated or decelerated. Therefore, stable spring processing is achieved without crushing the material.

The wire stand supports a maximum feed speed of 283 m/min. Even with long length feed at high speed, troubles such as adjustment of the wire base and material entanglement can be reduced, and tact time and wire payoff are improved.

The wire stand maintains a stable wire supply by utilizing high-speed arithmetic processing and 2-axis servo motors, such as turntable and feed axis.

Image Measurement System

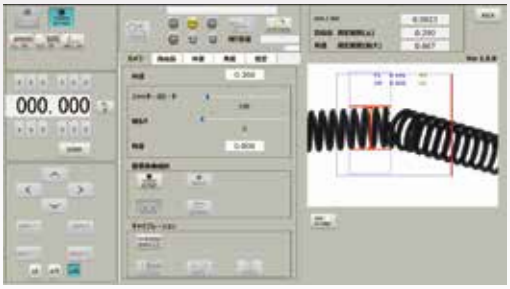
ZN-1 / IS-1X

An automatic measurement system by image processing with cameras

Features

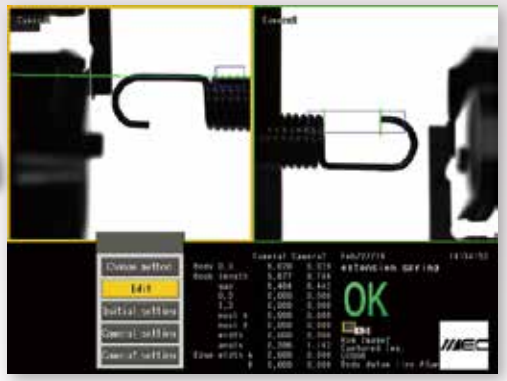
ZN-1 Measurement system for torsion and coiling spring

The **ZN-1** is compatible with the **MNO2** software, instantly measuring the spring free length, outer coil diameter and angle, and sorting non-defective product. Correction control is made possible with feedback from the measurement results. The **ZN-1** is designed for ease of use and setup and can even capture images of defective springs for future reference.



IS-1X Measurement system for extension spring

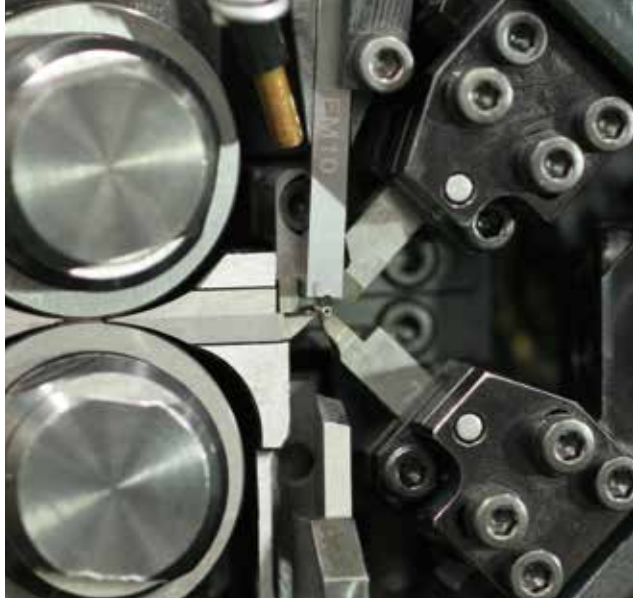
The **IS-1X** system is equipped with 2 camera units for the **CLS-10A**, **CLS-16A**, and **CLS-16II** extension spring machines. With it you can measure outer diameter, hook shape, clearance, etc.

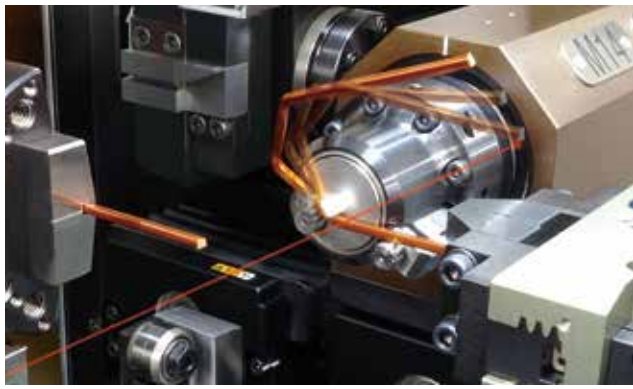


Rich lens variation (optional)

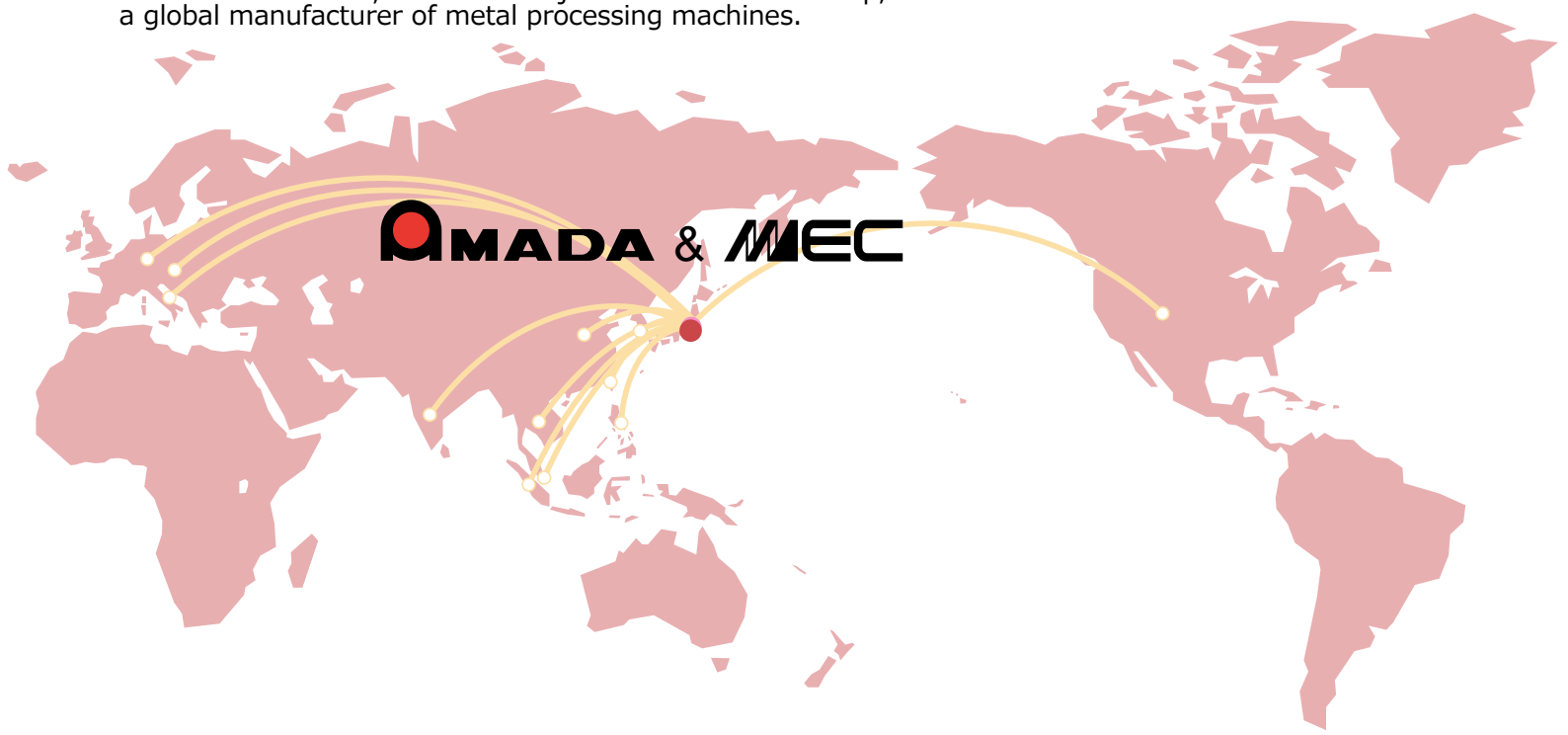
With rich lens variation to select the optimal zoom, it can measure a variety of spring sizes.







Since October 2018, MEC has joined the AMADA Group,
a global manufacturer of metal processing machines.



⚠ Before using those products, please read the operator's manual carefully and follow all applicable instructions.

- Options are included in the photos.
- Specifications, appearance, and equipment are subject to change without notice for improvement and other purposes.

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