



EXPLANATION OF MACHINE

A. Name and Model No.

MSC-15 type Motor Spring Making Machine (Coiling Style)

B. Machine Outline

MSC-15 is constructed in three(3) parts , Wire Reel Stand (Uncoiler) , Heat Device for annealing and Forming Machine.

- Wire Reel Stand (Uncoiler)

Uncoiler and feed the material automatically.

- Heat Device for annealing

Anneal the both ends of Motor Spring automatically.

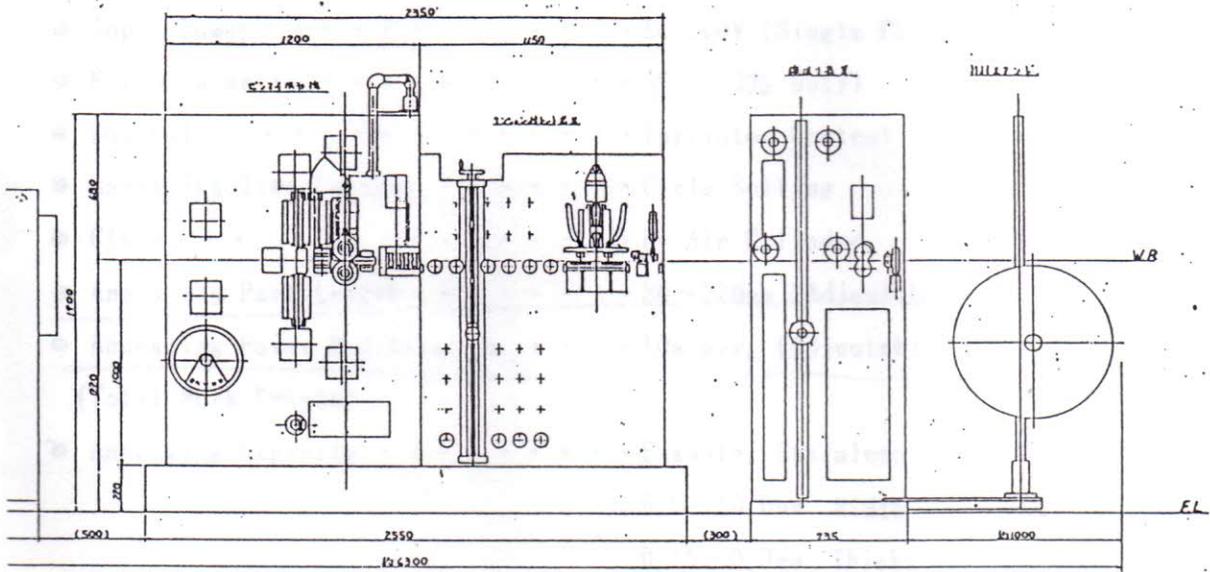
- Forming Machine

Feed the certain length of wire material by AC servo motor , and make motor spring by using coiling point. Both ends cutting and bending are done automatically.

C. Construction

1) Total

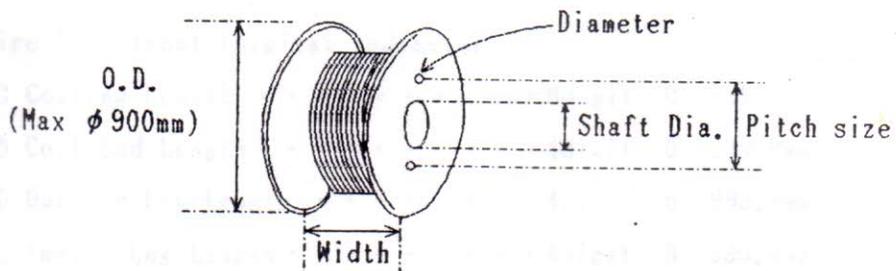
● Power Supply	Wire Reel Stand	0.4KW
	Transformer for Heat Devie	5KVA
	Servo Motor for Wire Feed	3KW
	Motor for Forming Cam Axis	2.2KW
	Air Supply	5Kg/cm ²



2) Wire Reel Stand (Uncoiler with Feed system)

This Wire Reel Stand is for bobbin material with traverse wound. Brake system for preventing over-run is installed.

Max. Weight of material 100kg(including bobbin weight)



Please let us know your bobbin shape and size.

This device is for continuous material feeding.

- Drive Motor 0.4KW(4P) Inverter Control

3) Heat Device (Direct Electric Heating Style)

This device is for high speed annealing on both ends of Motor Spring, and this device is synchronized with Forming Machine.

- Input Power AC 200V (Single Phase)
- Rated Capacity 5KVA(50% Duty)
- Control Thyristor Control
- Annealing Time Control Cycle Setting
- Clamp By Air Cylinder
- Annealing Part Length 30~220mm (Adjustable)
- Annealing Point Modification 10mm max. (Adjustable)
(Total Work Length)
- Annealing Capacity Example. Stainless Steel
6.5~10.0mm Width
0.15~0.3mm Thickness
- Secondary Voltage 0~12V

4) Forming Machine (Winding Style)

a) Wire Feed System

Certain length of wire is fed to winding part by AC servo motor.
Wire Feed length can be adjusted by digital indicator.

- AC servo motor 3KW 1000rpm
- Wire Feed Speed 99.9m/min. Max. (Adjustable)
- Wire Feed Input (Digital Indicator)
 - ① Coiling Length 6digit 0~99999.9mm
 - ② Coil End Length 4digit 0~999.9mm
 - ③ Outside Leg Length 4digit 0~999.9mm
 - ④ Inside Leg Length 4digit 0~999.9mm

※ Above four feed speed can be set independently.

b) End Part Cutting & Bending

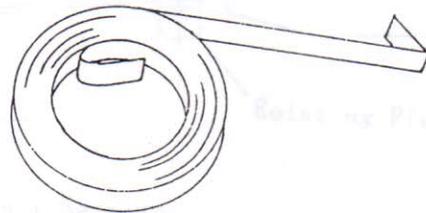
Cutting and bending operation are done on both end parts of Motor Spring by one cycle rotation of cam.

- Drive Motor 2.2KW(4P) with No Step Variable Gear.
(AHM-22-8085 MIKI PULLEY)
- Clutch & Brake EPS-650 (SHINKO)
(cam axis stopping at original position)

c) Lubrication System (Standard)

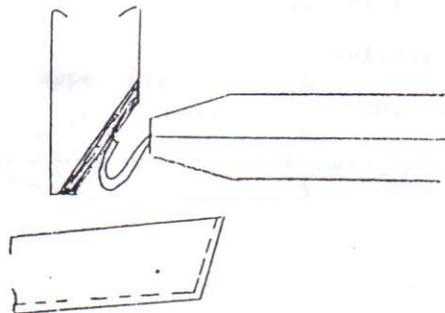
Automatic lubrication system (MMX type by LUBE CO.) is installed on.

D. Manufacturing Process (Coiling Point)

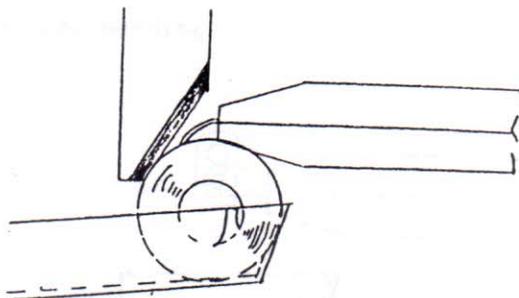


Both Ends Annealed

a) Manufacturing Process
<Original Position>

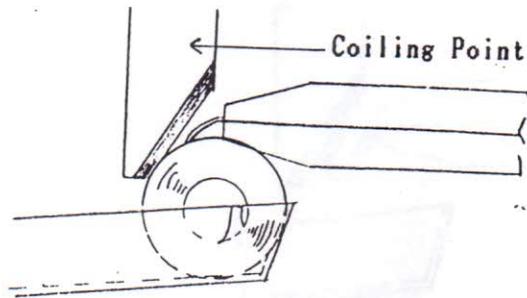


NO.1 Feed the wire for coiling part.



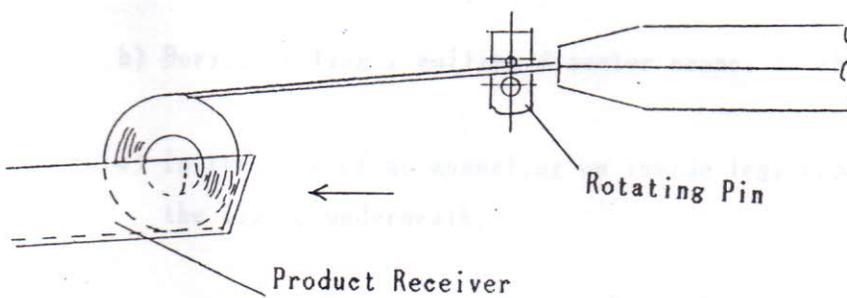
☆ Certain length of wire, it is set by digital indicator ①, is fed and coiled. Soon after wire feed finish, cam axis starts.

NO.2 Coil End Feeding



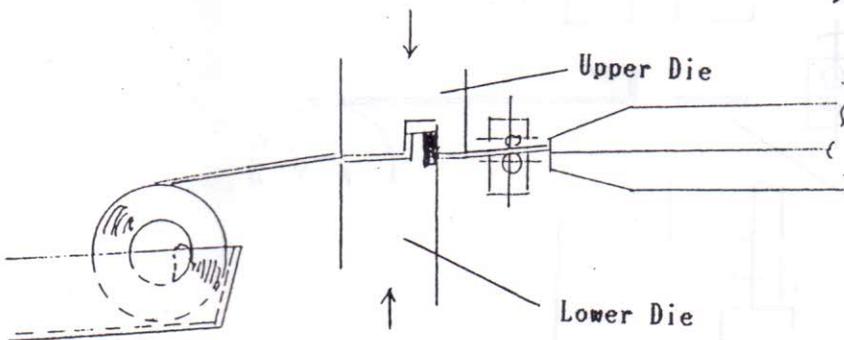
☆ Certain length of wire, it is set by digital indicator ②, is fed with coiling point going back. This effects that radius is changed.

No.3 Outside Leg Feeding



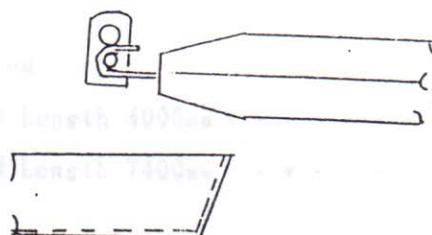
☆ Certain length of wire, it is set by digital indicator ③, is fed with product receiver moving. Then, rotating pin comes out.

NO.4 Cutting & Bending



☆ Upper and lower dies move for cutting and bending. Then, both dies go back, product is ejected.

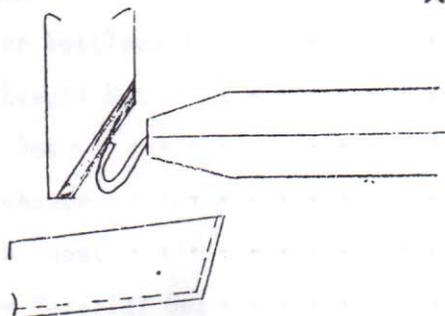
No.5 Inside Leg Bending



☆ Inside leg bending is done by rotating pin rotation. Then, this pin goes back.

NO.6 Coiling Point Coming Down

<Original Position>



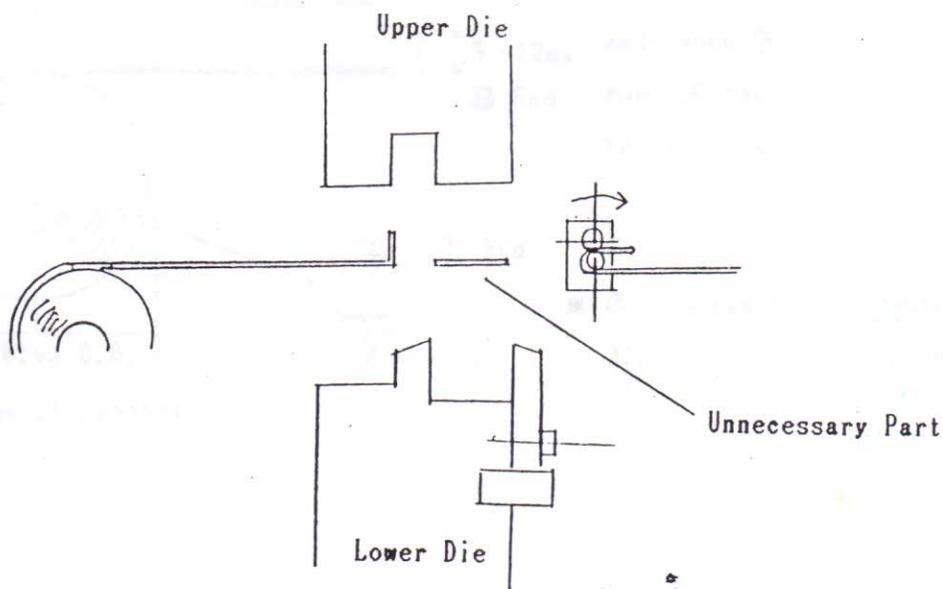
☆ Coiling point comes down for coiling. When coiling point slide reaches to bottom dead center, cam axis stops at the original position.

NO.7 Going back to NO.1

NO.1~NO.7 are the outline of manufacturing process of MSC-15.

b) During coiling , coiling diameter cannot be changed.

c) In the case of no annealing on inside leg, upper and lower dies are like the figure underneath.



E. Production Speed

- Wire Feed Length 4000mm 7sec./pce. (Approx.)
- Wire Feed Length 7400mm 11sec./pce. (Approx.)

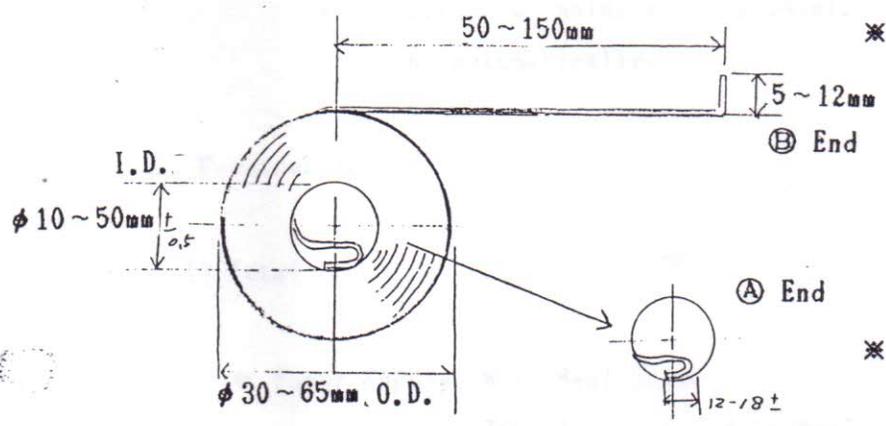
F. Reset Up Time (Material exchange time is not included.)

- 1) Wire Guide Roller Set(7pcs.) 10min.
- 2) Annealing Part Length Set 2min.
- 3) Annealing Point Set 4min.
- 4) Forming Dies Exchange 5min.
- 5) Wire Feed Length Input 1min.
- 6) Wire Feed Roller Parallel Set 5min.
- 7) Rotating Pin Position Set 5min.

Total 32min.(Approx.)

G. Capacity

- Material Thickness 0.15~0.3mm
- Material Width 5.0~15.0mm
- Max. Wire Feed Length 10m ±5mm



* The smallest I.D. $\phi 10\text{mm}$ can be made when (A) end is not bent. When (A) end is bent, I.D. will be different.

* (A) end can be bent both direction, inside or outside.

Shape of product