



TS Precision Co.,Ltd.

PROFORMA

FORMING MACHINE

Intelligent Forming Machine makes possible efficient production.

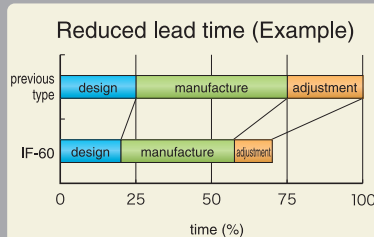
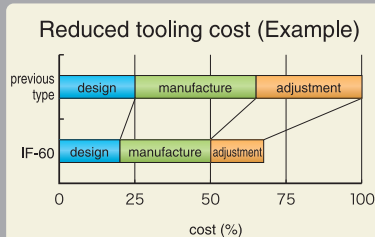
Why we recommend PROFORMA

- Reason 1** Both strip material and wire material can be processed with the same machine.
- Reason 2** Waste is decreased due to reduced material consumption.
- Reason 3** Circumferential bending position produces exquisite finished bends that add value to finished products.
- Reason 4** Complex bending processes are possible for many different applications.
- Reason 5** Can be equipped tapping and welding unit to streamline.
- Reason 6** Numerical control allows for quick product development and short tooling change over time.
- Reason 7** Common-use dies for excellent cost performance.

Reduced tooling cost and lead time (Example)

(Lower Die cost and part processing cost.)

- Cost and time to design and manufacture tooling can be reduced.
- Numerical control reduces time to adjust tooling.



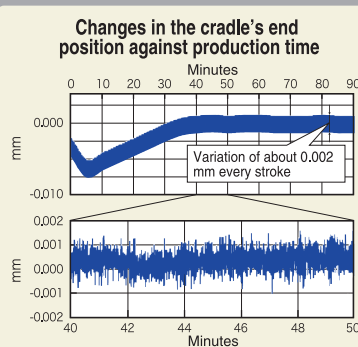
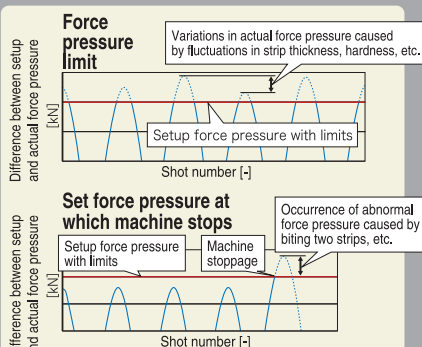
Reduced

High precision

Environmental-conscious

Processing for higher precision

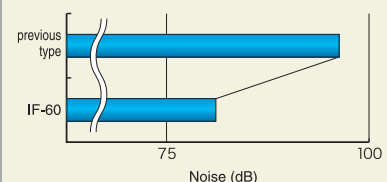
- Force pressure can be controlled.
- Abnormal pressure levels can be set individually.
- Accuracy of stopping position of feed unit's cradle 0.01 mm/h



Reduced noise (Example)

- By using the bending program to reduce the slider speed just before punching, the noise of the stamping unit is reduced.
- By eliminating the feeding end stopper in the feed unit, the impact noise has been decreased.

Noise comparison(Example)





IF-60



IF-20

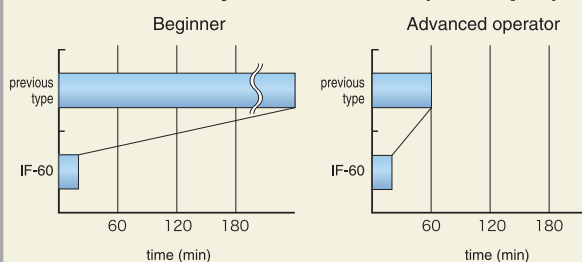


IF-80

Improved repeatability(Example)

- High repeatability independent of operator's experience level can be performed.

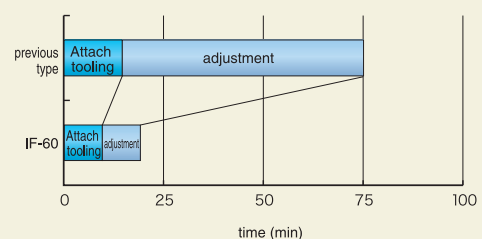
Reduced adjustment time (Example)



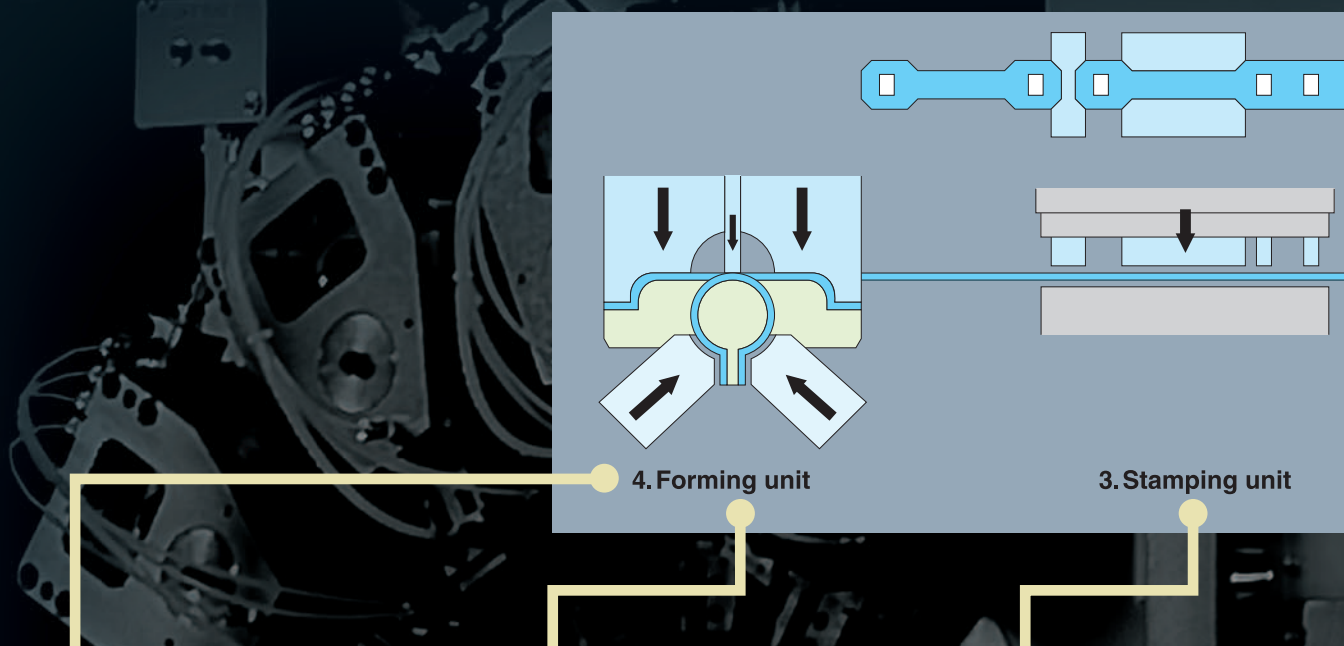
Shortened tooling-exchange time (Example)

- No need to exchange cams shorten tooling-exchange time.
- Numerical control shorten adjustment time.

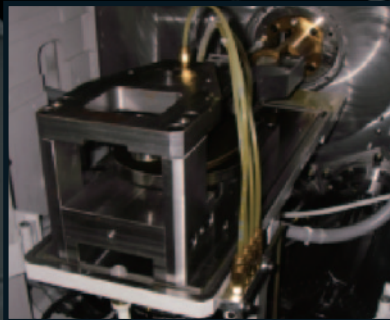
Tooling-exchange time (Example)



We created an Intelligent Forming Machine by placing priority on ease of use.



Forming unit



Rear slide unit



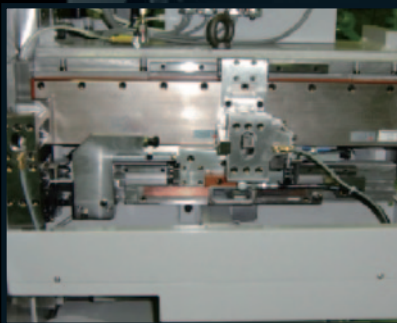
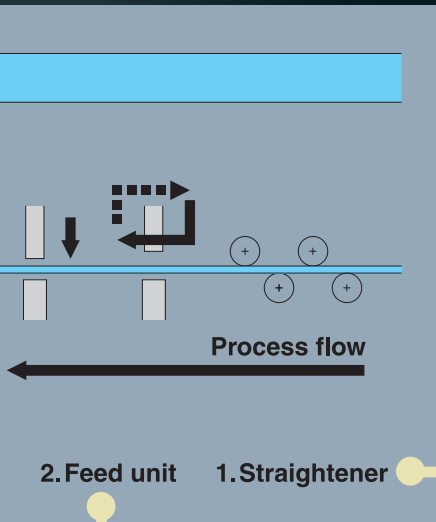
Stamping unit

The programmable motion control achieves low vibration, low noise and improved die life.

- The programmable motion control produces skilfully finished bends.
- Camless operation reduces tooling costs and lead times.

- Adopts a configuration in which it is hard for the cam to stick.

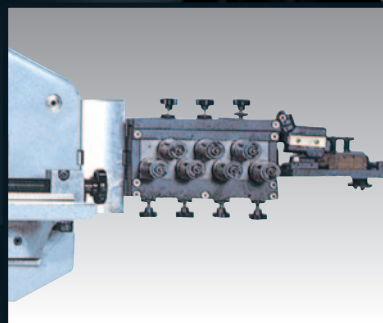
【Option】
Die life is improved by utilizing a tie rod for easy removal.



Feed unit

Accurately sends material to the processing stage.

- The NC gripper system ensures a fast and highly precise feed.
- Can process complex products with various types of motion (such as multi-stage and reverse feed).



Straightener

Straightens coiled material for more accurate feeding.

- Options available to handle strip and wire material.



Control panel

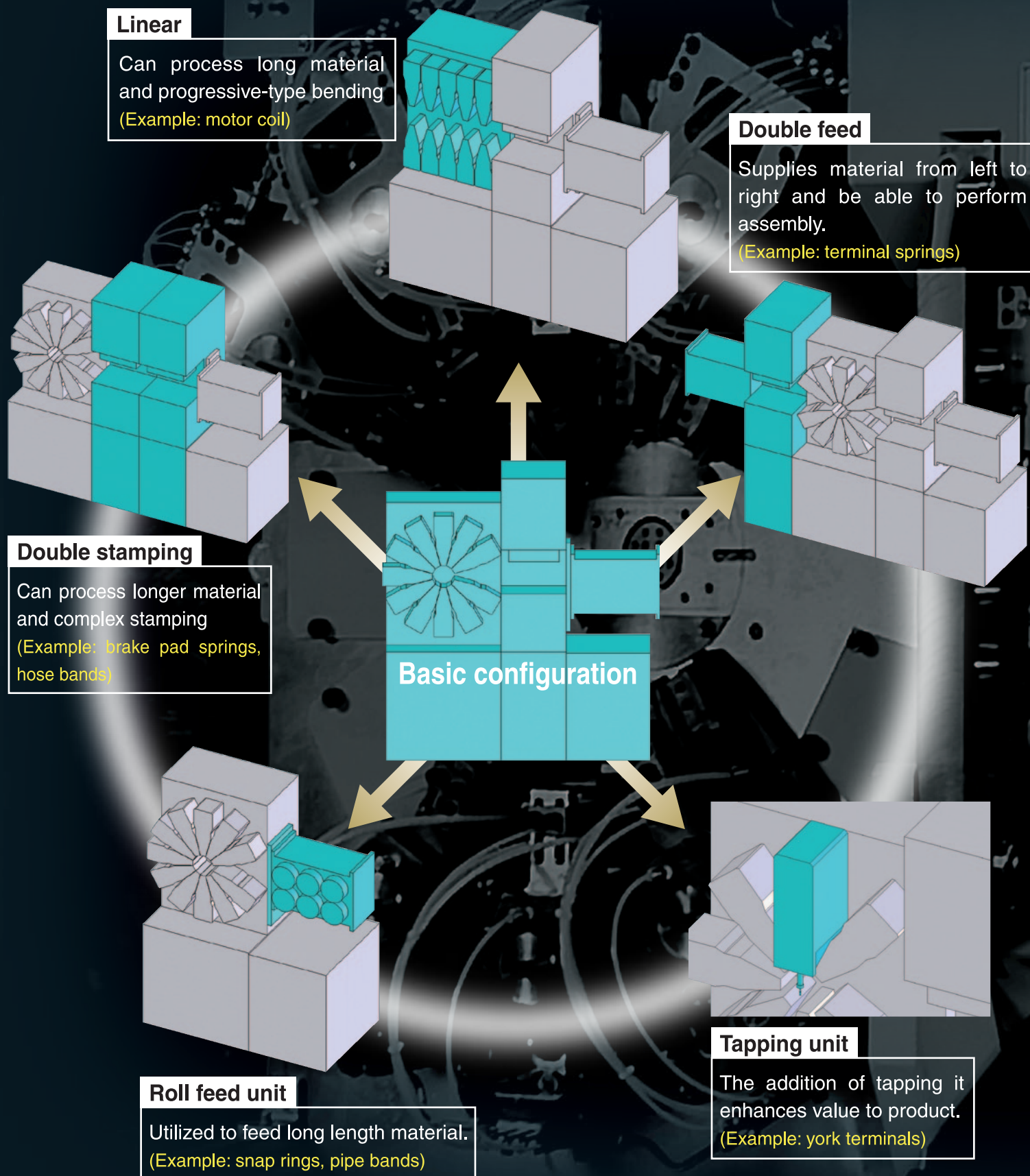
Configure the settings of each operating unit to display various types of information such as abnormal operations.

- Easily set the operating speed of each unit.
- Equipped with an environmentally conscious energy-saving mode.
- Includes user friendly touchscreen display.

[Option]
Centralized management system

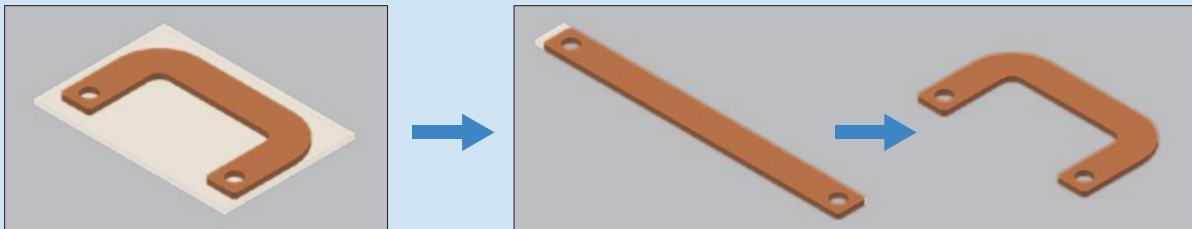
Intelligent Forming Machine

offers great support for a wide range of applications.

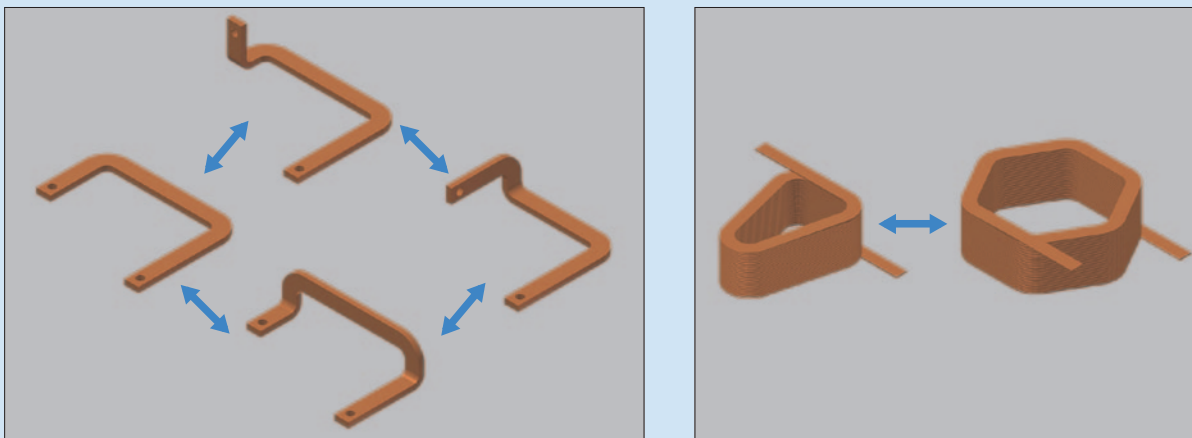


Introducing edgewise and flat wise bending

- 1 The material yield is significantly improved compared with conventional methods.



- 2 Changing the program makes it possible to produce multiple products.



Detailed attention to customer needs

TS Precision has well established service and engineering support system and conducts regular technical seminars for customers and provides advice regarding die design.



● Technical seminar



● Training

IF series

Main specifications of IF series

Items			IF-20	IF-60	IF-80
Material	Strip material (Max.)	mm	50W×1.6t	60W×1.6t	80W×1.6t
	Wire material (Max.)	mm	φ3	φ6	φ8
Feed unit	Feeding length (Max.)	mm	150	150	250
	Feed force	kN	0.5	0.5	0.7
	Feeding speed	m/s	0.65	0.65	0.55
	Vertical adjustment range	mm	± 35	± 35	± 35
	Feeding accuracy	mm	0.01	0.01	0.01
Stamping unit	Stamping force	kN	80	250	350
	Ram stroke	mm	30	35	49
	Die height	mm	155	230	335.5
	Ram adjustment range	mm	20	20	31
	Bolster vertical adjustment range	mm	55	Fixed	Fixed
	Bolster size	mm	240×115	420×267	590×320
	Slide speed	m/s	0.09	0.1	0.09
Bending slide	Bending force	kN	10 (20)	30	40 (80)
	Bending stroke (standard)	mm	35 (35)	40	70 (60)
	Number of sets installable (standard/max.)	—	7/9	7/11	7/11
	Slide speed (standard)	m/s	0.43 (0.30)	0.33	0.3 (0.21)
Rear slide unit	Bending force	kN	20	30	40
	Bending stroke (standard)	mm	50	60	80
	Number of sets installable (standard/max.)	—	1/2	1/2	1/2
	Slide speed (standard)	m/s	0.43	0.33	0.3
Main body	Power consumption	V	200	200	200
	Power capacity	kVA	約13	約28	約36
	Compressed air supply	MPa	0.5	0.5	0.5
	Machine dimensions (mm)	mm	1970L×1170W×1980H	2100L×1150W×2000H	2910L×1520W×2260H
	Machine weight	kg	2200	3600	7000
	Paint color	—	Munsell N7	Munsell N7	Munsell N7

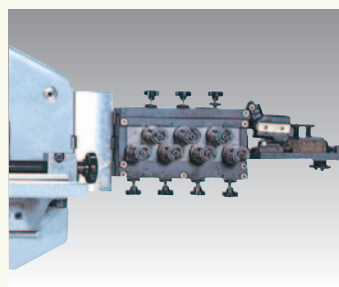
※The above specifications are for machines with seven bending slide units.

※Production rate varies depending on the machining process.

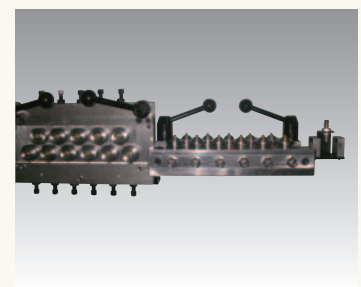
※Number and position of bending slide and number of rear slide can be chosen as option.

Straightener specifications

Applicable material	Number of rollers	Roller dimensions
13w×1.5t	13×1	φ10×12L
30w×1.5t	7×1	φ24×30L
40w×1.5t	7×1	φ26×42L
60w×1.6t	5×1	φ45×62L
80w×1.6t	5×1	φ50×82L
105w×1.6t	5×1	φ50×110L
φ1.5	11×2	φ16
φ3	7×2	φ19
φ8	11×2	φ36
φ1.0	11×2	φ10



For strip



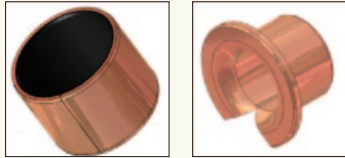
For wire

Specialized forming machine

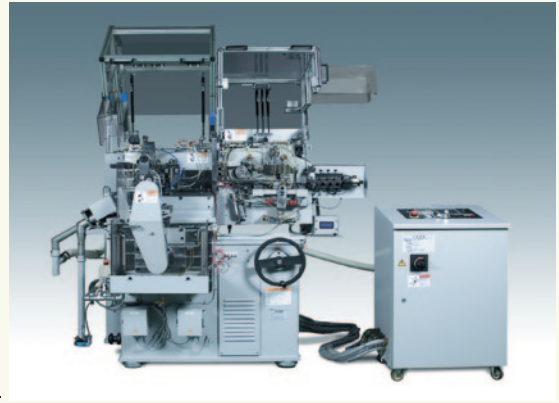
Bush forming machine

Circular bend type products (Straight Bush and Flanged Bush) are formed quickly and with high precision.

- Tooling-exchange time of 15 minutes or less is achievable utilizing a die-set type of circular bending tool.
- Employs index-style sizing die to achieve high precision.
- High-speed production is achieved by means of a parallel index cam and lightweight cradle (feed unit).



Appearance without the protective cover.



Main specifications of Bush forming series.

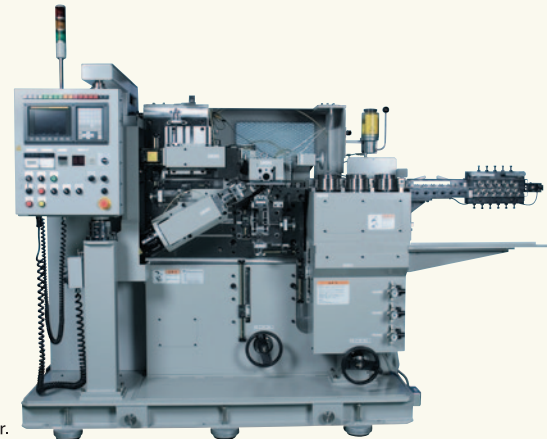
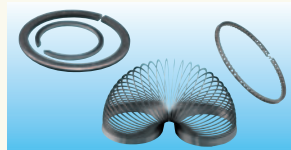
Items			Flanged bush forming machine	Straight bush forming machine
Material	Strip material	mm	30W×1.0t	30W×1.0t
Product dimensions	Range of products handled (inside diameter)	mm	φ6~18	φ9~18
	Product accuracy (roundness)	mm	0.03	0.015
Main body	Power consumption	V	200	200
	Power capacity	kVA	Approximately 14	Approximately 14
	Electric motor	KW	7.5/6P	7.5/6P
	Compressed air supply	MPa	0.5	0.5
	Machine dimensions	mm	1500L×1400W×1650H	1950L×1500W×1800H
	Machine weight	kg	3000	3300
	Paint color	—	Munsell N7	Munsell N7
Speed		min ⁻¹	35~200	35~100

※The machine weight does not include the die.

Ring Coiling Machine (NFR series)

Accurately forming rings of a round or oval shape.

- Utilizes vertical rolling for trouble free discharging of parts, tooling-exchange and operation of work piece.
- Standard preparation with a digital scale makes shape adjustment clear.
- Numerical control attains high precision of feeding, cutting and tension pin position.

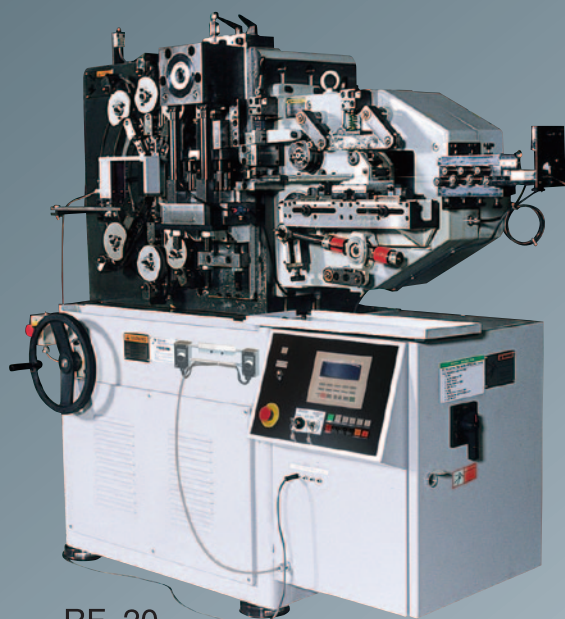


Appearance without the protective cover.

Main specifications of NFR series

Items		NFR-250-3	NFR-600-4	NFR-600-10
Material dimensions	mm	2.0×4.0	3.0×5.0	4.0×7.0
Ring diameter (In-dia)	mm	φ20~60	φ40~200	φ100~300
Cut force	kN	30	40	100
Data memory capacity	—	150 Patterns	99 patterns (by outer memory card)	99 patterns (by outer memory card)
Power consumption	V	200	200	200
Power capacity	kVA	Approximately 15	Approximately 10	Approximately 12
Compressed air supply	MPa	0.5	0.5	0.5
Machine dimensions	mm	1680L×1115W×1580H	2700L×1100W×2000H	2700L×1100W×2000H
Machine weight	kg	1500	2000	2700
Paint color	—	Munsell N7	Munsell N7	Munsell N7
Speed	min ⁻¹	200 (at φ20mm)	70 (at φ40mm)	40 (at φ100mm)

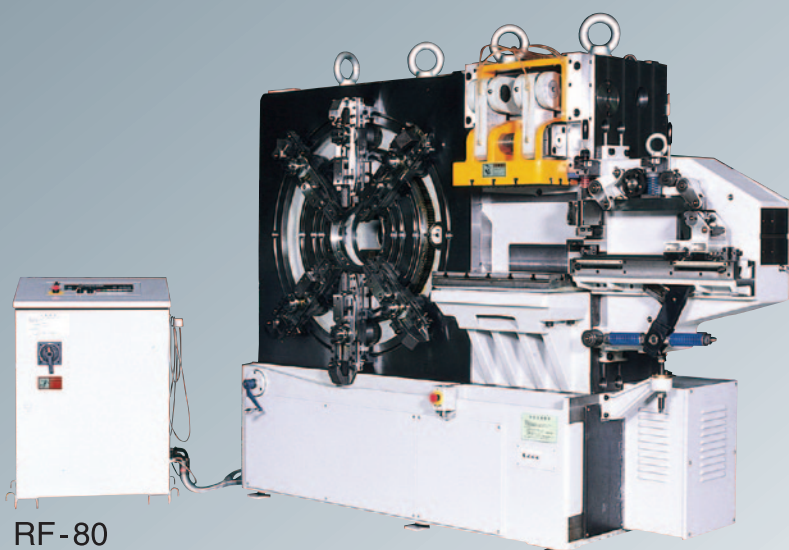
PROFORMA-RF series



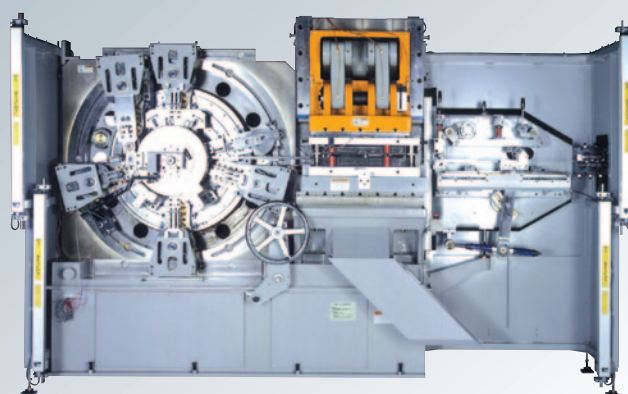
RF-20



RF-60



RF-80



RF-150

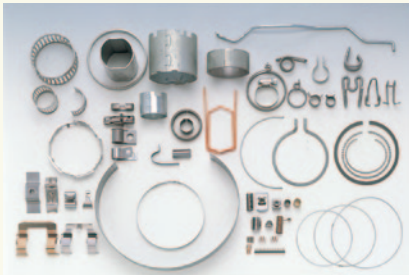
Appearance without the protective cover.

Main specifications of RF series

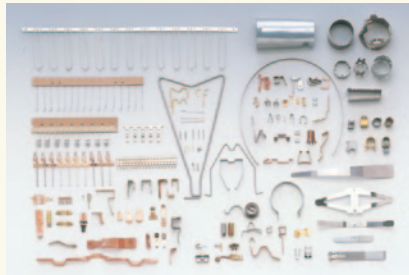
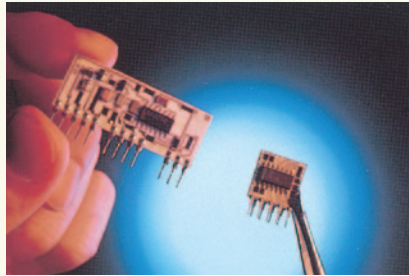
Items			RF-20	RF-60	RF-80	RF-150
Material	Strip material (Max)	mm	50W×1.5t	60W×1.6t	80W×1.6t	100W×2.5t
	Wire material (Max)	mm	ø3	ø6	ø8	ø10
Feed unit	Feeding length (Max)	mm	150	220	360	500
	Feed force	kN	0.5	0.5	0.7	0.7
	Vertical adjustment range	mm	±35	±35	±35	±70
	Feeding accuracy	mm	0.01	0.01	0.01	0.01
Stamping unit	Stamping force	kN	80	250	350	600
	Ram stroke	mm	10	15	18	30
	Die height	mm	155	230	335.5	355
	Ram adjustment range	mm	20	20	31	31
	Bolster vertical adjustment range	mm	55	Fixed	Fixed	Fixed
	Bolster size	mm	240×115	420×267	590×320	800×450
Bending slide	Bending force	kN	11 (20)	30	40 (80)	100
	Bending stroke (Max.)	mm	45	50	65	65 (MAX.90)
	Number of sets installable (Max. sets)	—	9	11	11	11
Rear slide unit	Bending force	kN	20	30	40	50
	Bending stroke (standard)	mm	50	60	80	125
	Number of sets installable	—	3	3	3	3
Main body	Power consumption	V	200	200	200	200
	Power capacity	kVA	Approximately 7	Approximately 14	Approximately 14	Approximately 22
	Power equipment	KW	3.7/4P	7.5/4P	7.5/4P	11/4P
	Compressed air supply	MPa	0.5	0.5	0.5	0.5
	Machine dimensions	mm	1510L×910W×1780H	2000L×875W×1950H	2655L×1100W×2155H	3345L×1520W×2350H
	Machine weight	kg	1400	2700	5000	11000
	Paint color	—	Munsell N7	Munsell N7	Munsell N7	Munsell N7
Speed		min ⁻¹	35~350	45~260	35~170	15~100

※The machine weight does not include the bending slide and die.

● Part for Automotive



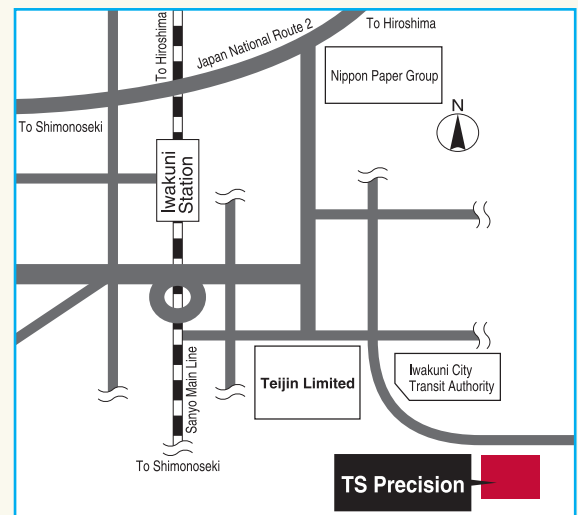
● Electrical parts



● Parts for construction, stationary and others



● Parts for medical, energy saving others



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<http://www.tsprecision.co.jp/>

Notes:

1. Specifications are subject to change without notice.
2. For your safety, be certain to read the instruction manual that comes with the equipment before operating it.