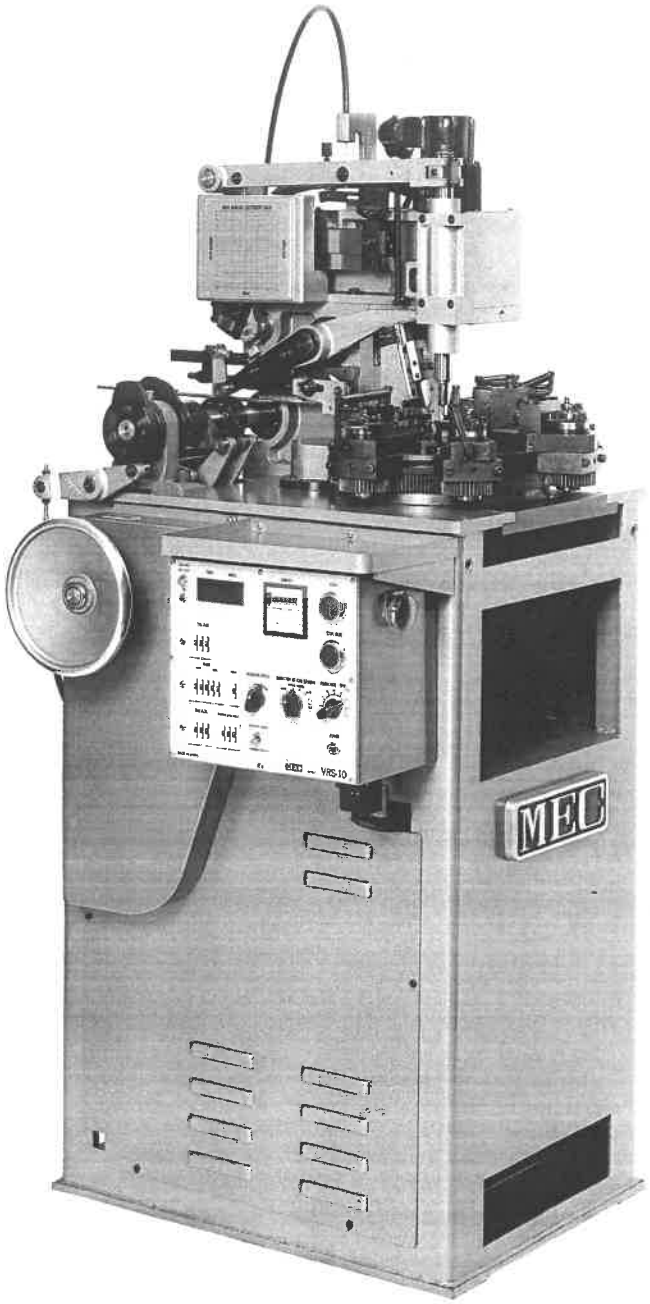


TORSION FORMING MACHINE

MODEL VRS-10

(MODEL VRS-10N)

1) **HIGH PRODUCTIVITY: A High-frequency, highspeed digital-control spindle drive-unit synchronizes with the extremely reliable mechanical forming mechanism.**

2) **ROUND FORMING TABLE and drive mechanism allows three-dimensional forming and easy layout. Various slides and standard cams are also available.**

3) **FLEXIBLE DRIVE PATTERN speeds up the various steps involved in torsion spring production.**

MEC

MEC MACHINERY CO.,LTD.

HEAD OFFICE: TEL 03 254 5871
FACTORY: TEL 0482 56 3511
FAX 0482 56 3595
TLX 2962956 MEC J

HEAD OFFICE: DAINI IIDA BLDG. 28 HIGASHIMATSUSHITA-CHO KANDA CHIYODA-KU. TOKYO JAPAN 101.
FACTORY 3 17-17 AOKI KAWAGUCHISHI. SAITAMA JAPAN 332.

MEC

DIGITAL CONTROL SERVO MOTOR SYSTEM

- The quick-response digital control servo motor drives the spindle. The newly-developed spindle-drive system synchronizes with all operational models of the forming mechanism for irregular, manual rotation at start-up to high-speed runs (at machine speed of 80 r.p.m.) and frequent intermittent runs at 160 r.p.m. (including auxiliary rotation).
- Auxiliary rotations can be performed before and after the main operation.
- The spindle rotation angle is set by a digital switch, which allows alterations during operation. The angle may be changed by as little as 1°.

DETERMINING SPINDLE MAIN ROTATION TIME ①

- Standard rotation times of 120°, 90°, and 60° can be achieved by changing the main rotation cams. Use of the 60° main rotation cam extends maximum forming time to 190°.
- Various forming patterns are available by adjusting or changing the main rotation cam, or by use of auxiliary rotations.

LEVER FOR DETERMINING THE NUMBER OF MAIN ROTATION ②

The number of main rotation can easily be set by setting the slide to the desired reading on the scale. The pitch-controlling flat cam is adjusted simultaneously, thereby ensuring synchronism.
The number of main rotation thus determined is displayed on the Control Panel.

MANUAL SET-UP

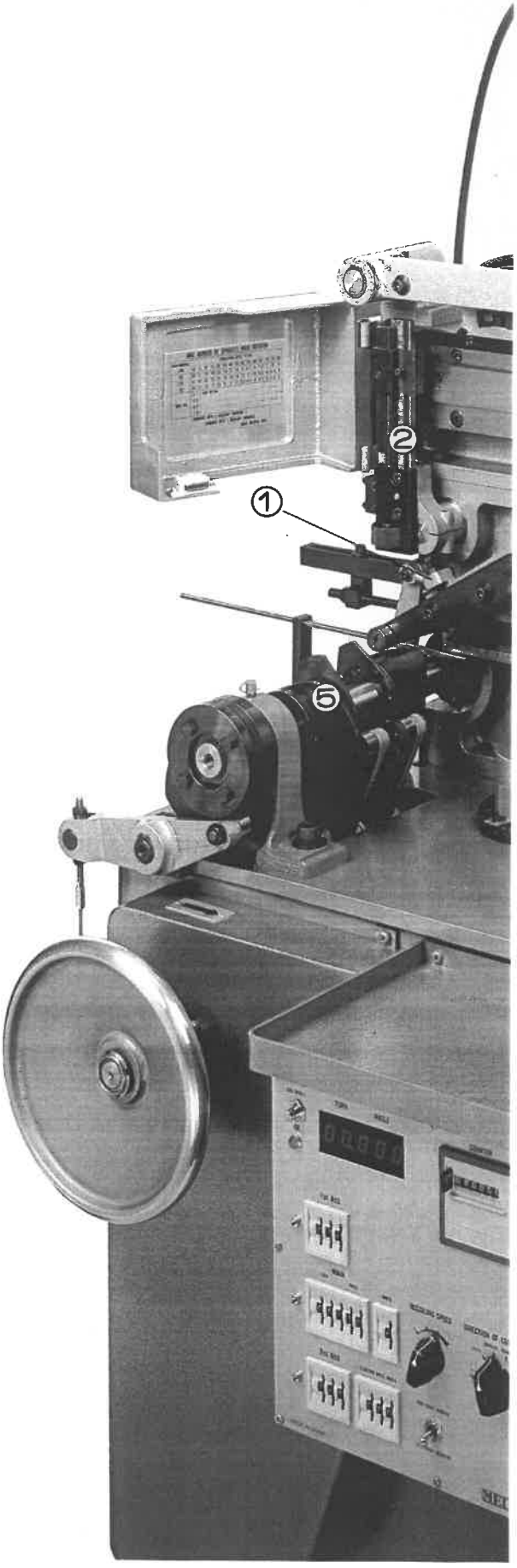
- Even at times of irregular rotation performed manually, perfect synchronism is maintained between the spindle and the mechanism drive system.
- Manual operation allows the machine to rotate in forward or reverse directions, thus facilitating fine adjustment of forming tools and slides.

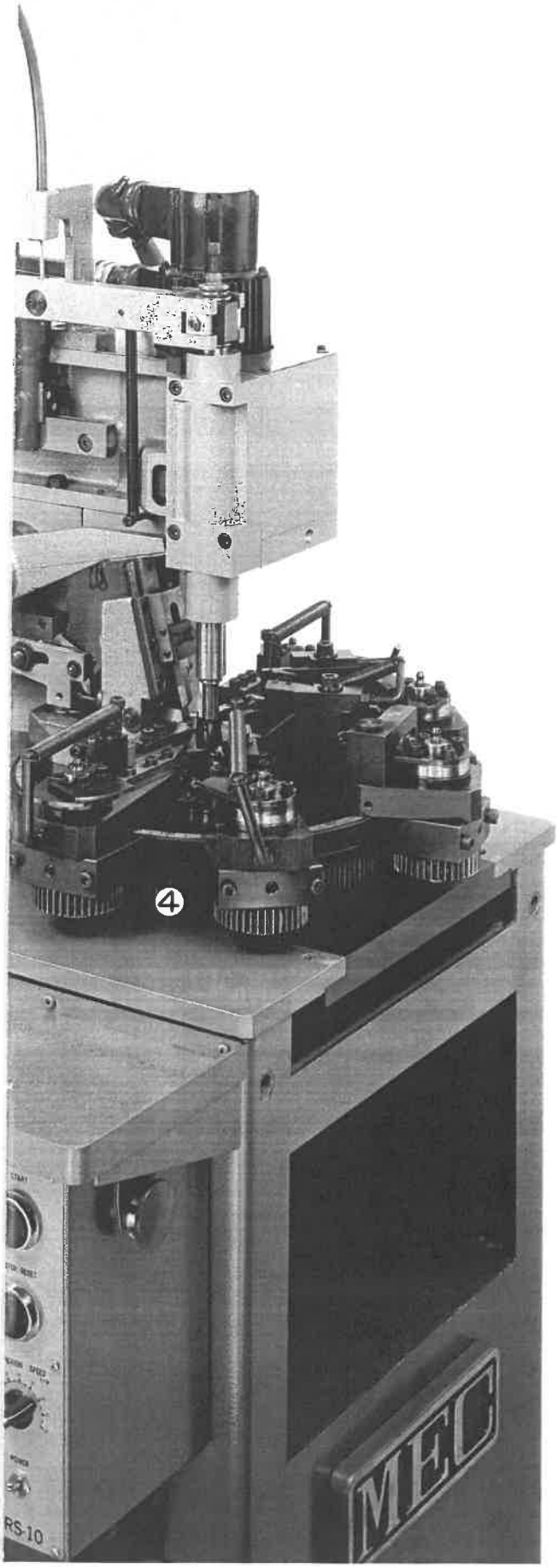
CONTROL PANEL

Operational variables are set by digital switches, enabling the operator to confirm readings easily.

ABNORMALITY DETECTOR

- A standard touch/non-touch sensor is provided. When the wire runs out or any abnormality occurs, the detector stops the machine immediately.
- Indicate Numbers as E-OO on display window of Control Panel when machine stops automatically during auto-running





PITCH CONTROL MECHANISM③

In the production of close and spaced torsion coil springs, the pitch is easily adjusted by the newly-developed flat-cam mechanism to make close or spaced coils. This mechanism does not affect the initial line even when the pitch is altered.

ROUND FORMING TABLE ALLOWS THREE-DIMENSIONAL ARRANGEMENT OF FORMING SLIDES④

Up to 10 units of various standard forming slides can be arranged, three-dimensionally, on the forming table. This results in flexible layout for torsion-spring forming regardless of the number of forming procedures.

CAM DRIVE BY A SINGLE SHAFT⑤

The position of the cam, shown by the basic angle, is displayed on the Operation Panel. This shortens the time needed to reset the machine for repeated operations.

LOW OPERATIONAL NOISE

- The AC servo motor minimizes the number of gears, resulting in minimum noise even at top running speed (3,000 r.p.m.)
- The main components of the machine are driven by a low-noise DC variable speed motor. All the mechanisms have designed to minimize operational noise.

A pneumatic pressure system is used to lock the mechanical driving system at machine set-up time. It is also used to eject products during high-speed operation.

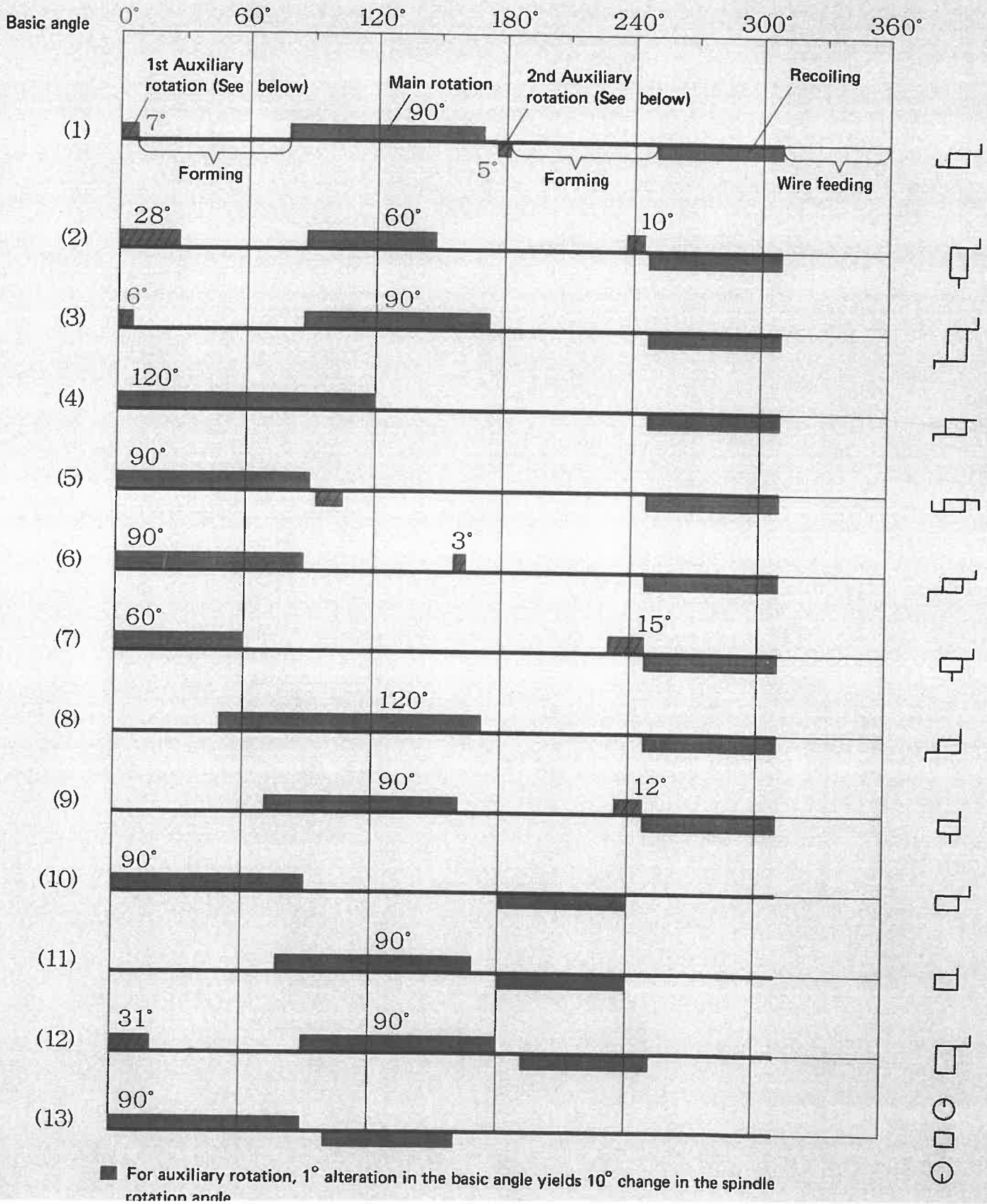
COMBINATION OF STANDARD CAMS ALLOWS LAYOUT OF HIGH-SPEED MULTI-STEP FORMING PATTERNS

A wide variety of products can be formed by selective use of the 15 standard cams.

ARBOR & FORMING TOOL MATERIALS OF VARIOUS STANDARD SIZES ARE ALWAYS AVAILABLE

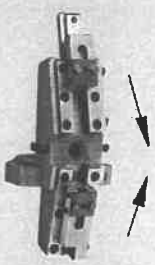
SPINDLE ROTATION CONTROL & FORMING PATTERNS

13 Basic forming patterns are available by selective use of main rotation cam, timing adjustment, and setting or cancelling auxiliary rotations before and after the main rotation.



■ For auxiliary rotation, 1° alteration in the basic angle yields 10° change in the spindle rotation angle

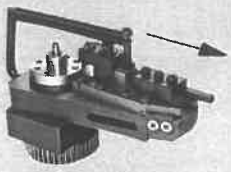
AVAILABLE FORMING SLIDES



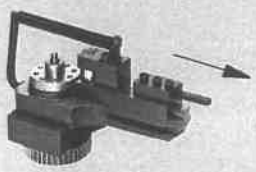
Vertical Slide
15° – 15°

Vertical Slide
15° – 0°

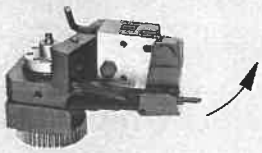
Vertical Slide
0° – 0°

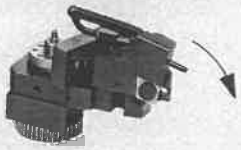


Horizontal Slide



Slim Horizontal Slide



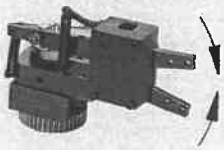


Right-hand Snap Slide

Left-hand Snap Slide

Underfree Slide 0°

Underfree Slide 15°



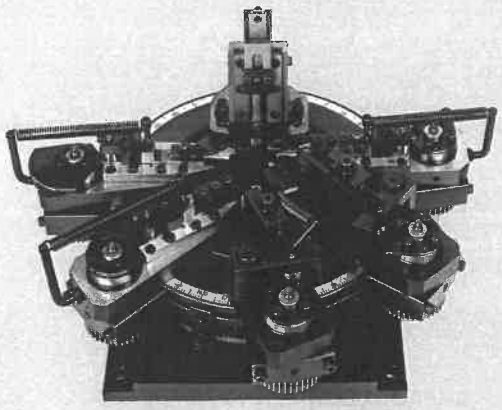
Right-hand Pliers Slide

Left-hand Pliers Slide

Cam-driver Unit

CASSETTE 10 (Round Forming Table with Forming Slides Driving)

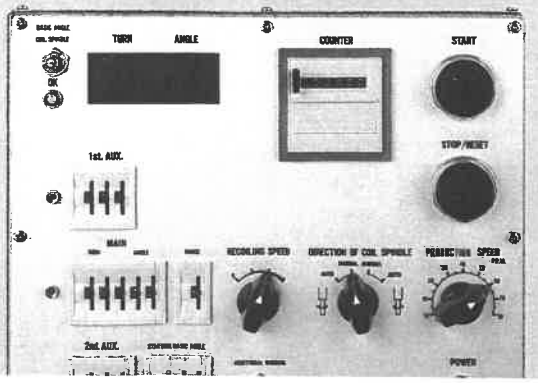
Use of the cassette 10 allows forming slides to be retained continuously, on the forming table, in the positions batch required for the production of complicated torsion springs. The cassette system shortens the time needed to reset.



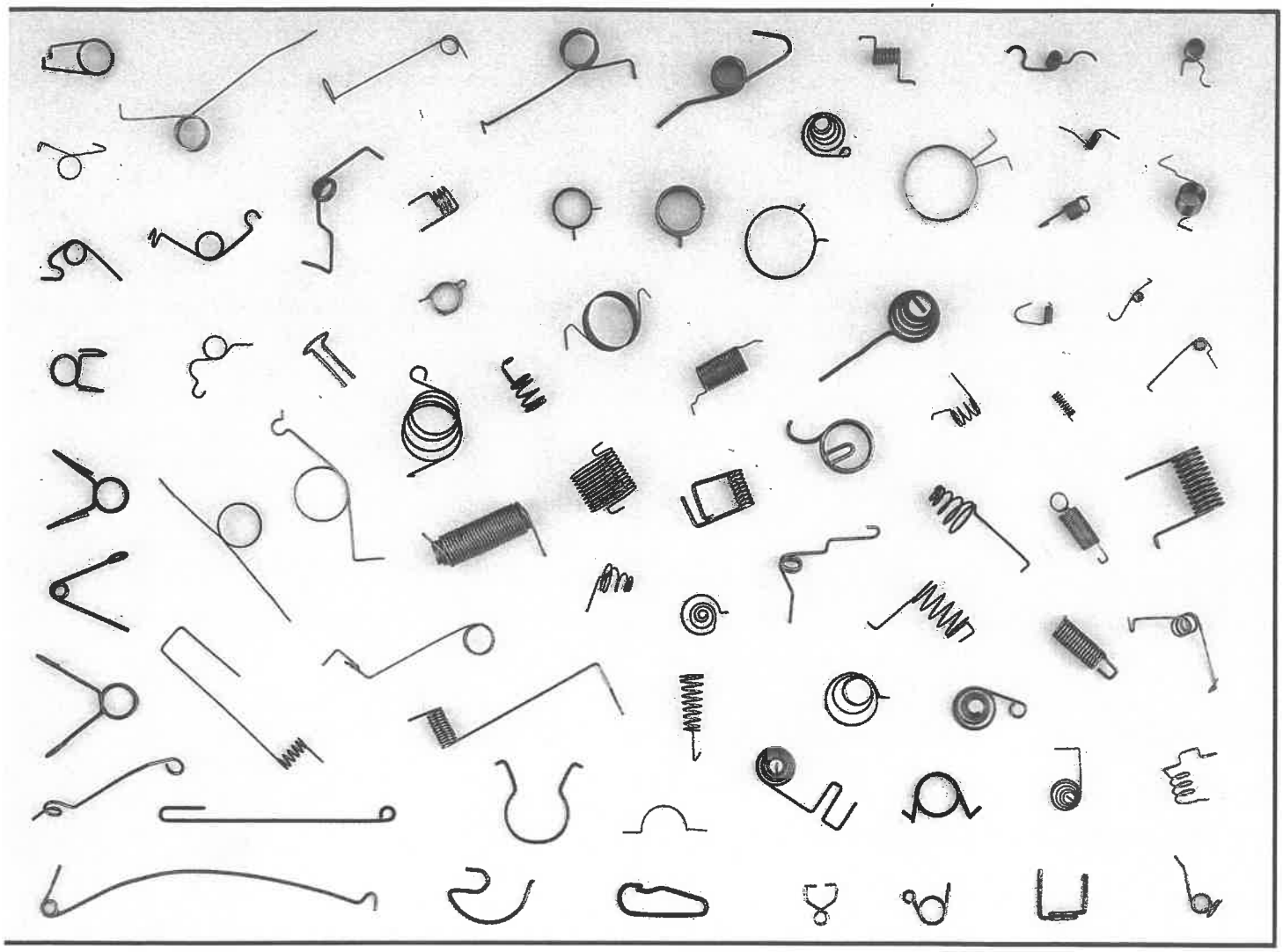
VRS-10N

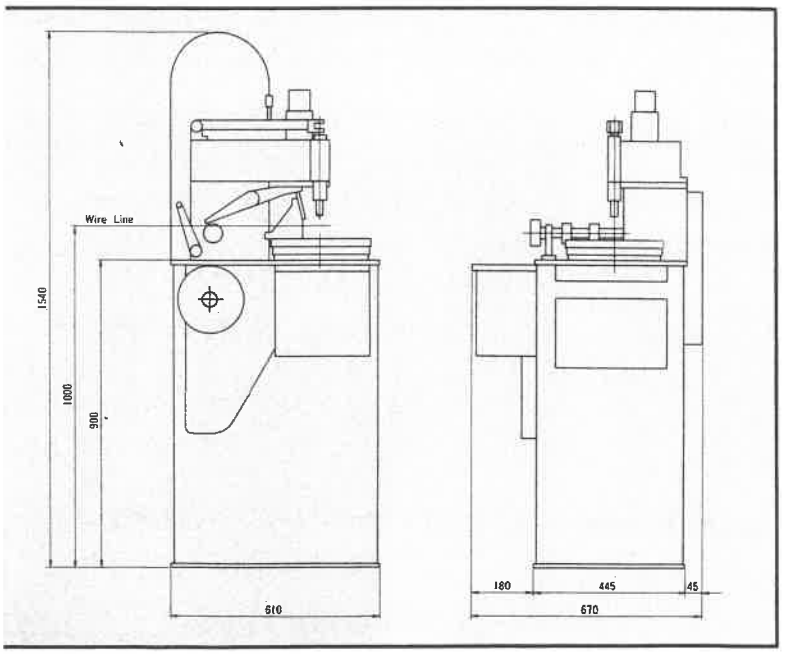
A cassette system is not used. All other specifications conform to those of the VRS-10 model. Either model can be selected to suit your production schedule.

CONTROL PANEL



EXAMPLES OF END PRODUCTS





MODEL VRS-10

SPECIFICATIONS

Wire Diameter:	0.15 ~ 1.0 mm
Coil Diameter (Arbor Diameter):	Max. 16 mm
Wire Feed Length:	Max. 100 mm
Spindle Vertical Stroke:	Max. 40 mm
Spindle Main Rotation:	Max. 50 Turns
Spindle Auxiliary Rotation	
(a) 1st. Aux. (Before Main):	Up to 360°
(b) 2nd. Aux. (Before Main):	Up to 360°
Spindle Min. Setting Angle:	1°
Servo Motor for Spindle:	300W AC Motor
Main Driving Motor:	400W DC Motor
Production Rate:	10 ~ 80 P.P.M
Weight:	340kgs
Power Voltage:	3 P 200V. Rated Current 15A.
Pneumatic Pressure: (for locking up mechanical drive system & ejection of products)	2 ~ 5kg/cm² G

MEC