

PRECISION ADJUSTABLE FEED

Variax V Series



Cam type roller feed for high-speed and high-precision.



Variax V Series V76/127W/230W

Features

- Excellent reliability by cam drive.
- With the adjustment of the parallelism of the roll and the clamber.
- Ideal for punching the motor core, connector, lead frame.
- This is extensive experience and most established model.

This is a high-performance cam type variable roller feed that uses fan-shaped roller segment and four cams.

Its feed precision, good operability and workability are widely respected. This feed employs unique and new technologies such as a roller drive on both edges, a parallel level adjustment function between the roller and the clamber, and an absolute digital counter that displays the feed length precisely. Even though more than 30 years have passed since this model was developed, it is still in wide use with presses around the world.



Outline and Specifications

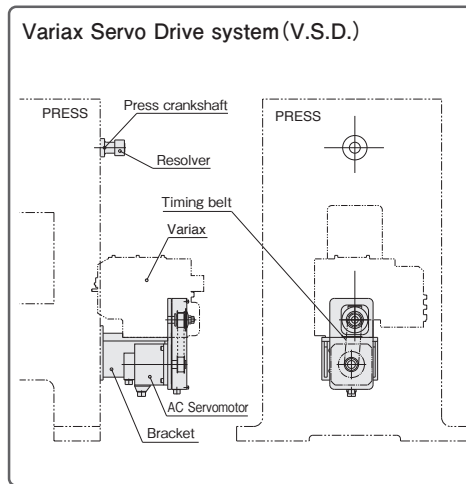
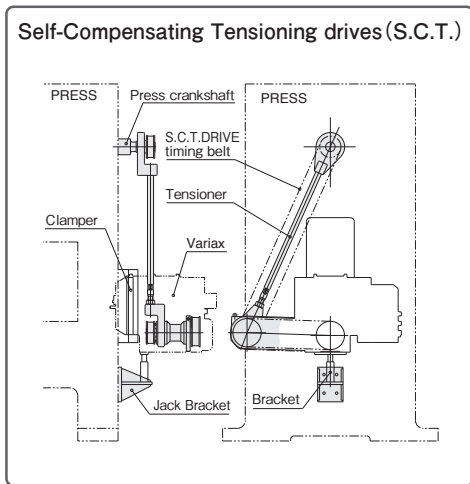
Specifications

| Size | Unit | V76 | V127W | V230W |
|----------------------------|-------------------|---|--------------------|--------------------|
| Feed length | mm | 0 to 76.2 | 0 to 127 | 18 to 230 |
| Material thickness*1 | mm | 0.3 to 3** | 0.3 to 3** | 0.3 to 2** |
| Material width | mm | 10 to 120 | 30 to 245 | 30 to 370 |
| Grip force | N | 300 to 3000 | 500 to 5000 | 1000 to 30000 |
| Maximum strokes | min ⁻¹ | 1500 | 1000 | 600 |
| Maximum feed rate | m/min | 70 | 70 | 90 |
| Feed angle | deg | 165 | 165 | 180 |
| Repeated feed accuracy*2 | mm | ±0.025 | ±0.03 | ±0.03 |
| Pilot release | (°) | Approx. 49 | Approx. 49 | Approx. 46 |
| Operating air pressure | kPa | 490 to 690 | 490 to 690 | 490 to 690 |
| Lubricating oil pressure | kPa | 290 to 490 | 290 to 490 | 290 to 490 |
| Lude flow supply | ℓ/min | 1.5 to 2.2 | 1.5 to 2.2 | 1.5 to 2.2 |
| Lubrication | | Forced lubrication | Forced lubrication | Forced lubrication |
| Operating power supply | V | 100 VAC single phase, 50/60 Hz or 115 VAC 60 Hz | | |
| Product weight | kg | 250 | 400 | 1300 |
| Product Specification Page | | P3 | P5 | P7 |

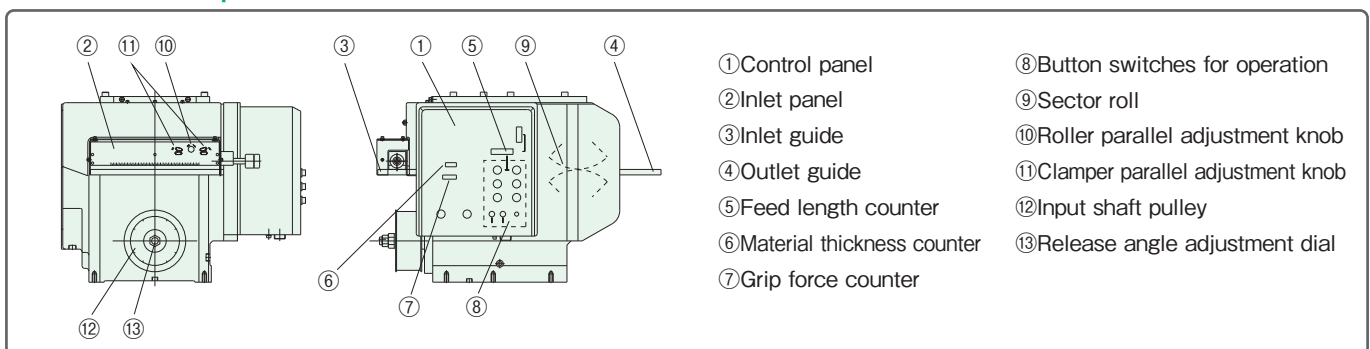
Note 1) If your material is over 1 mm thick, please contact our Sales Department.

Note 2) The feed precision depends on the operating conditions. The values given here are for reference purposes only.

Drive method



Name of each part



Dimensions

[Unit:mm]

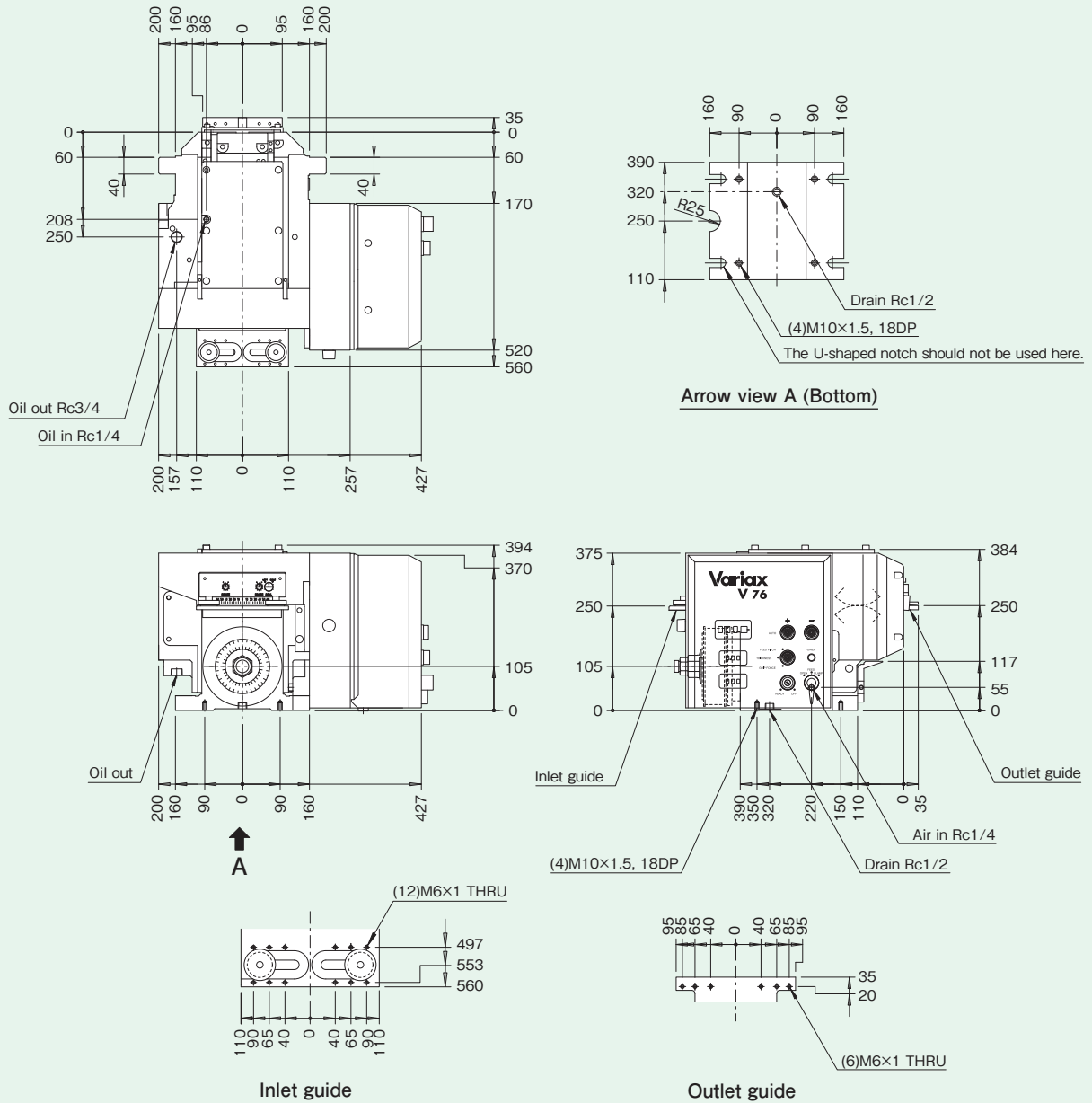


Figure V76-1

Specification table

| Characteristic | Data |
|---------------------------|---------------------------|
| Feed length | 0 to 76.2 [mm] |
| Material thickness | 0.3 to 3*1 [mm] |
| Gripping force | 300 to 3000 [N] |
| Material width | 10 to 120 [mm] |
| Maximum number of strokes | 1500 [min ⁻¹] |
| Maximum feed speed | 70 [m/min] |
| Feed Angle | 165 [deg] |
| Repeatability | ±0.025*2 [mm] |
| Pilot Release | Approx. 49 [deg] |
| Air release | Full adjustable |

| Characteristic | Data |
|-----------------------------|--------------------------|
| Operating air pressure | 490 to 690 [kPa] |
| Lubricating oil pressure | 290 to 490 [kPa] |
| Lude flow supply | 1.5 to 2.2 [ℓ/min] |
| Operating power supply | 100 VAC single phase [V] |
| Product weight | 250 [kg] |
| Recommended lubrication oil | Shell Omala S2 G 68 |
| Lubrication system | Forced lubrication |
| Housing color | 5Y7/1 |
| Operation panel color | 2.5Y9/0.2 |

*1 If your material is over 1 mm thick, please contact our Sales Department.

*2 The feed precision depends on the operating conditions. The values given here are for reference purposes only.

1[N·m] ≅ 0.102[kgf·m]

Maximum feed capability chart (Drive method:S.C.T.)

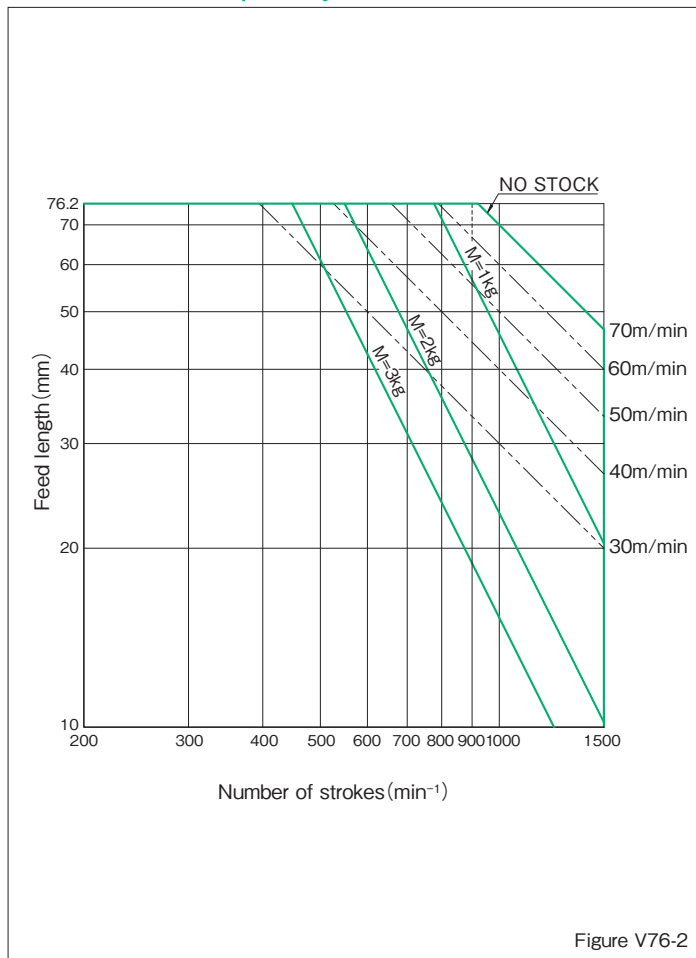


Figure V76-2

Timing chart

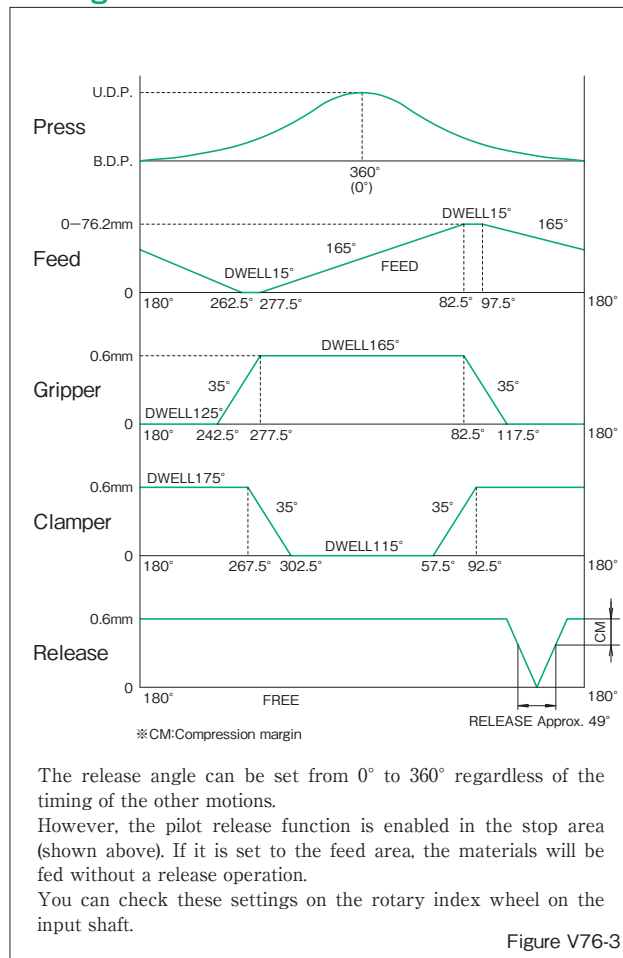


Figure V76-3

The release angle can be set from 0° to 360° regardless of the timing of the other motions. However, the pilot release function is enabled in the stop area (shown above). If it is set to the feed area, the materials will be fed without a release operation. You can check these settings on the rotary index wheel on the input shaft.

Oil pump

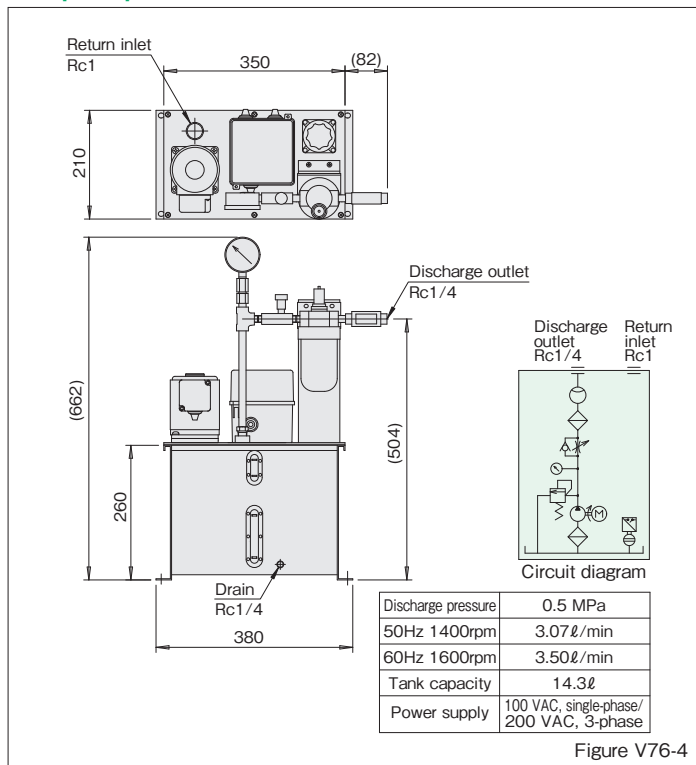


Figure V76-4

Sector roll

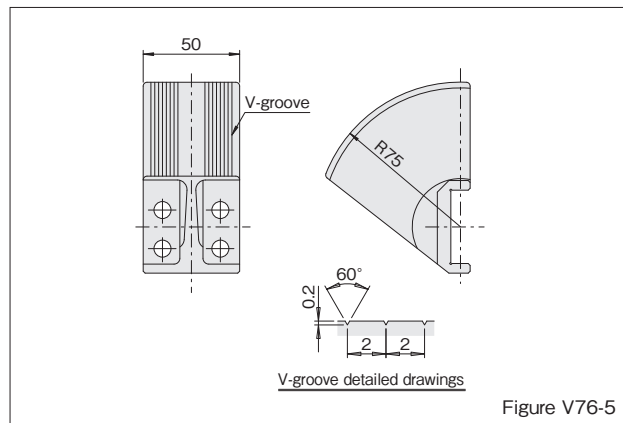


Figure V76-5

Dimensions

[Unit:mm]

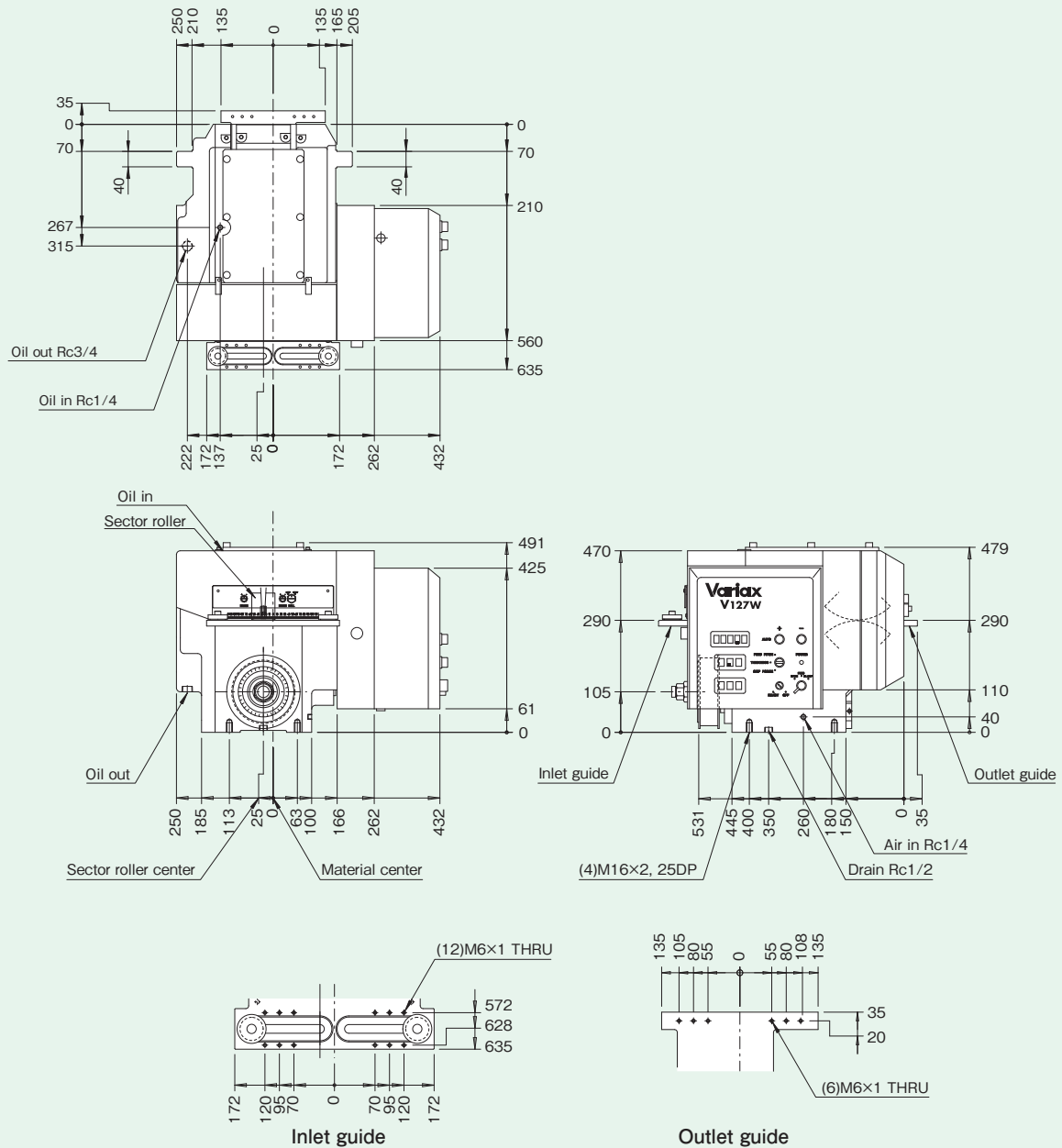


Figure V127W-1

Specification table

| Characteristic | Data |
|---------------------------|---------------------------|
| Feed length | 0 to 127 [mm] |
| Material thickness | 0.3 to 3*1 [mm] |
| Gripping force | 500 to 5000 [N] |
| Material width | 30 to 245 [mm] |
| Maximum number of strokes | 1000 [min ⁻¹] |
| Maximum feed speed | 70 [m/min] |
| Feed Angle | 165 [deg] |
| Repeatability | ±0.03*2 [mm] |
| Pilot Release | Approx. 49 [deg] |
| Air release | Full adjustable |

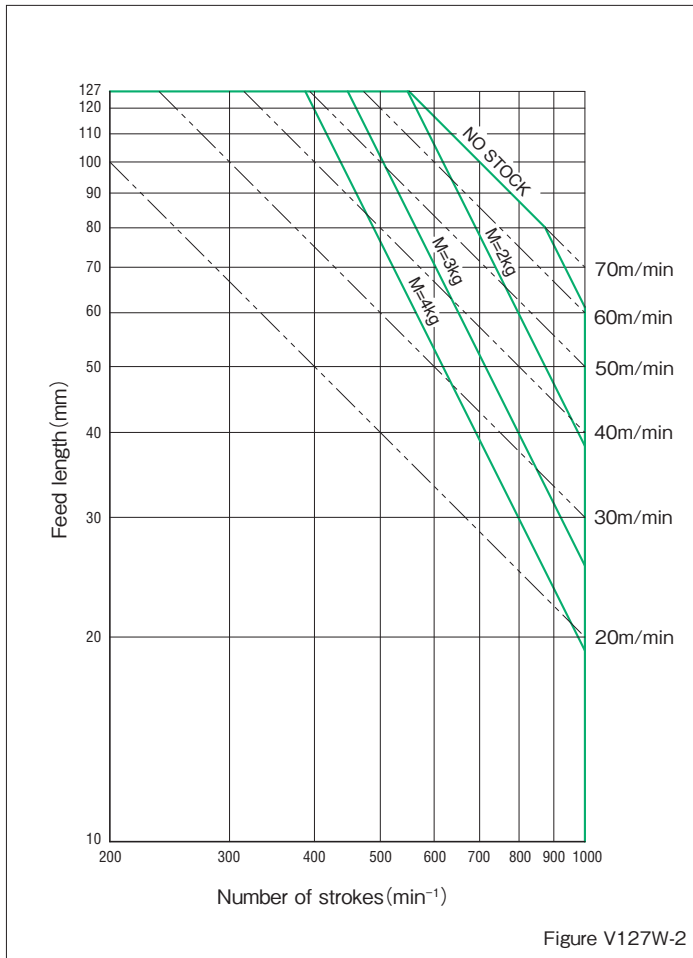
| Characteristic | Data |
|-----------------------------|--------------------------|
| Operating air pressure | 490 to 690 [kPa] |
| Lubricating oil pressure | 290 to 490 [kPa] |
| Lude flow supply | 1.5 to 2.2 [ℓ/min] |
| Operating power supply | 100 VAC single phase [V] |
| Product weight | 400 [kg] |
| Recommended lubrication oil | Shell Omala S2 G 68 |
| Lubrication system | Forced lubrication |
| Housing color | 5Y7/1 |
| Operation panel color | 2.5Y9/0.2 |

*1 If your material is over 1 mm thick, please contact our Sales Department.

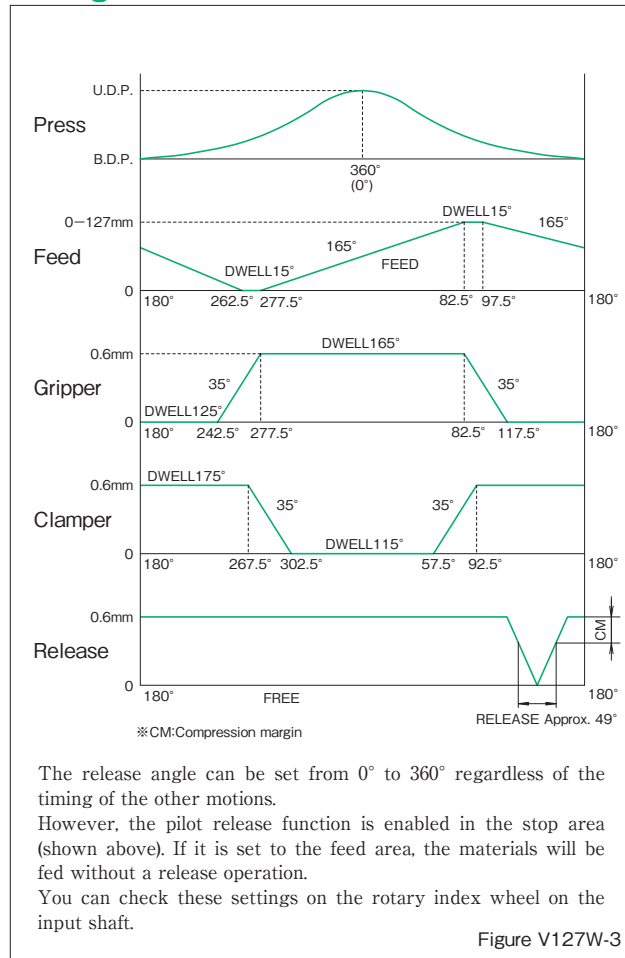
*2 The feed precision depends on the operating conditions. The values given here are for reference purposes only.

1[N·m] ≒ 0.102[kgf·m]

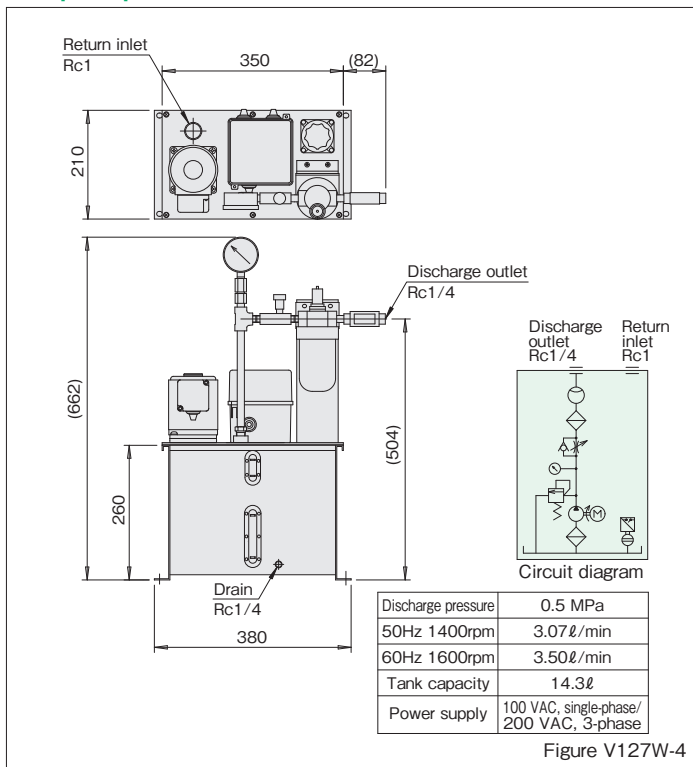
Maximum feed capability chart (Drive method:S.C.T.)



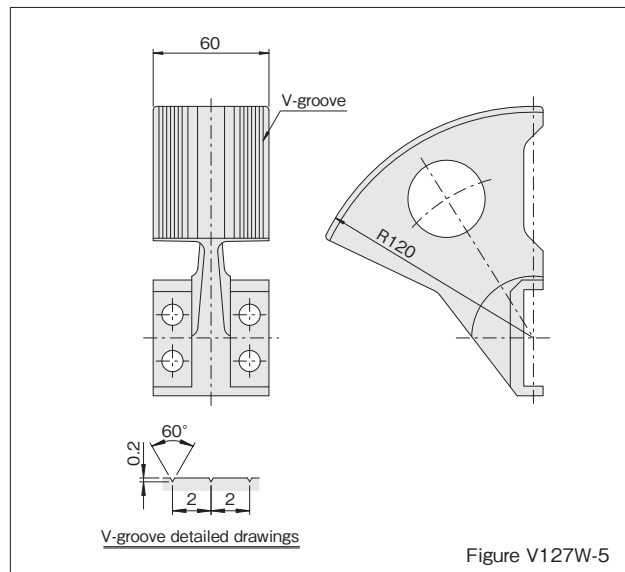
Timing chart



Oil pump



Sector roll



Dimensions

[Unit:mm]

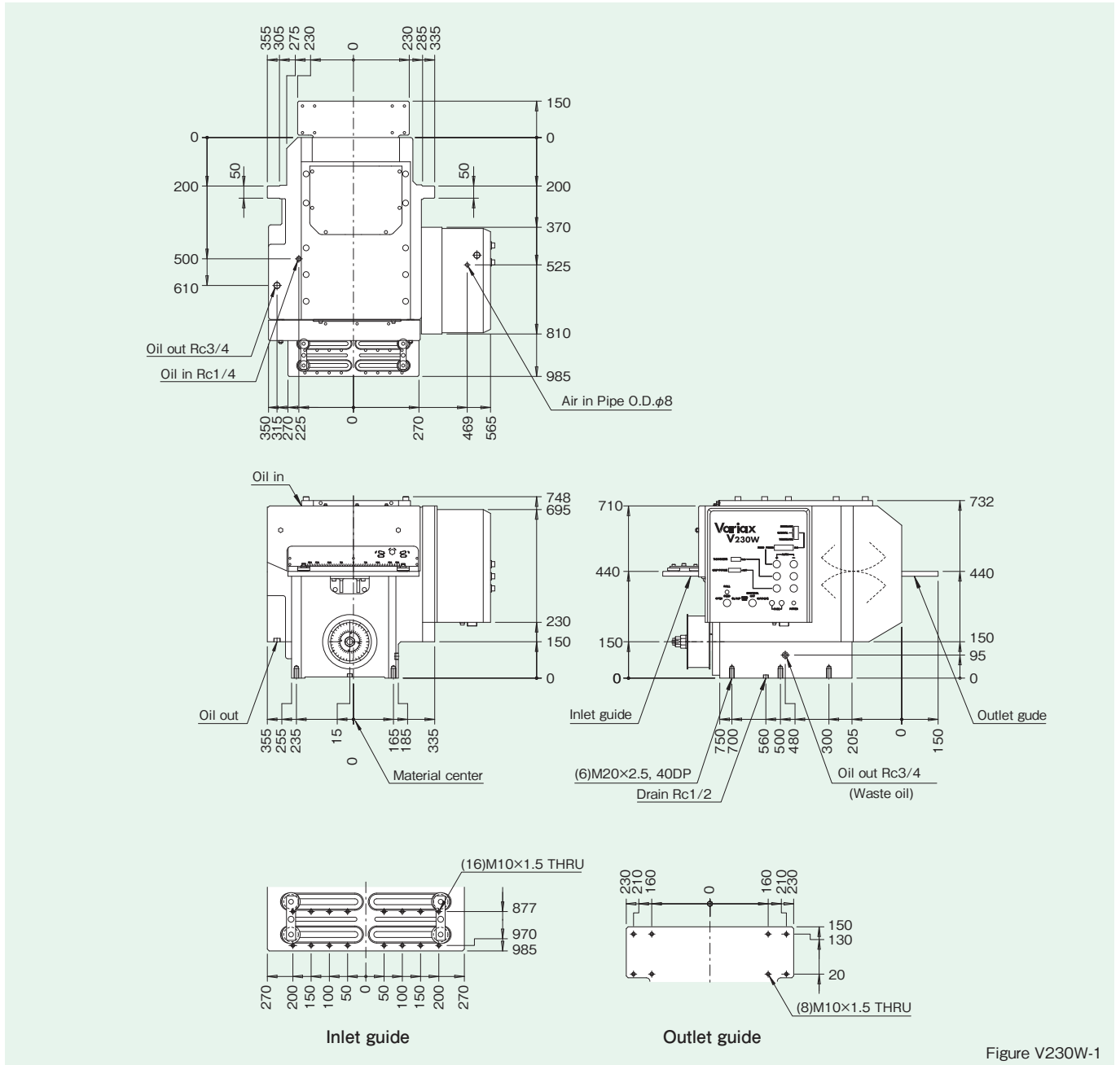


Figure V230W-1

Specification table

| Characteristic | Data |
|---------------------------|--------------------------|
| Feed length | 18 to 230 [mm] |
| Material thickness | 0.3 to 2*1 [mm] |
| Gripping force | 1000 to 3000 [N] |
| Material width | 30 to 370 [mm] |
| Maximum number of strokes | 600 [min ⁻¹] |
| Maximum feed speed | 90 [m/min] |
| Feed Angle | 180 [deg] |
| Repeatability | ±0.03*2 [mm] |
| Pilot Release | Approx. 46 [deg] |
| Air release | Full adjustable |

| Characteristic | Data |
|-----------------------------|--------------------------|
| Operating air pressure | 490 to 690 [kPa] |
| Lubricating oil pressure | 290 to 490 [kPa] |
| Lude flow supply | 1.5 to 2.2 [ℓ/min] |
| Operating power supply | 100 VAC single phase [V] |
| Product weight | 1300 [kg] |
| Recommended lubrication oil | Shell Omala S2 G 68 |
| Lubrication system | Forced lubrication |
| Housing color | 5Y7/1 |
| Operation panel color | 2.5Y9/0.2 |

*1 If your material is over 1 mm thick, please contact our Sales Department.

*2 The feed precision depends on the operating conditions. The values given here are for reference purposes only.

1[N·m] ≒ 0.102[kgf·m]

Maximum feed capability chart (駆動方法:S.C.T.)

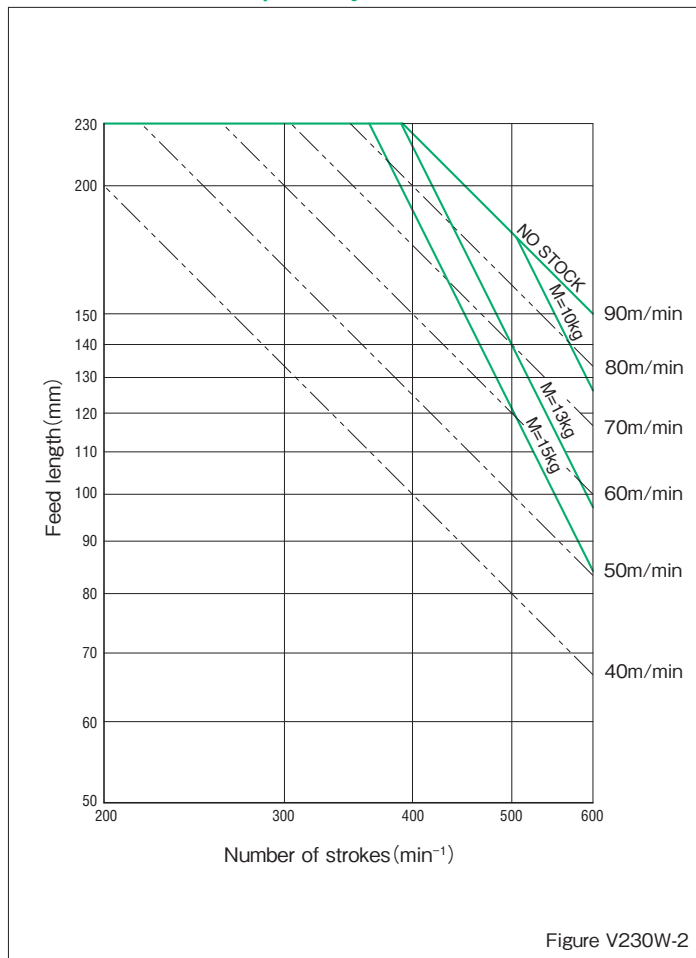
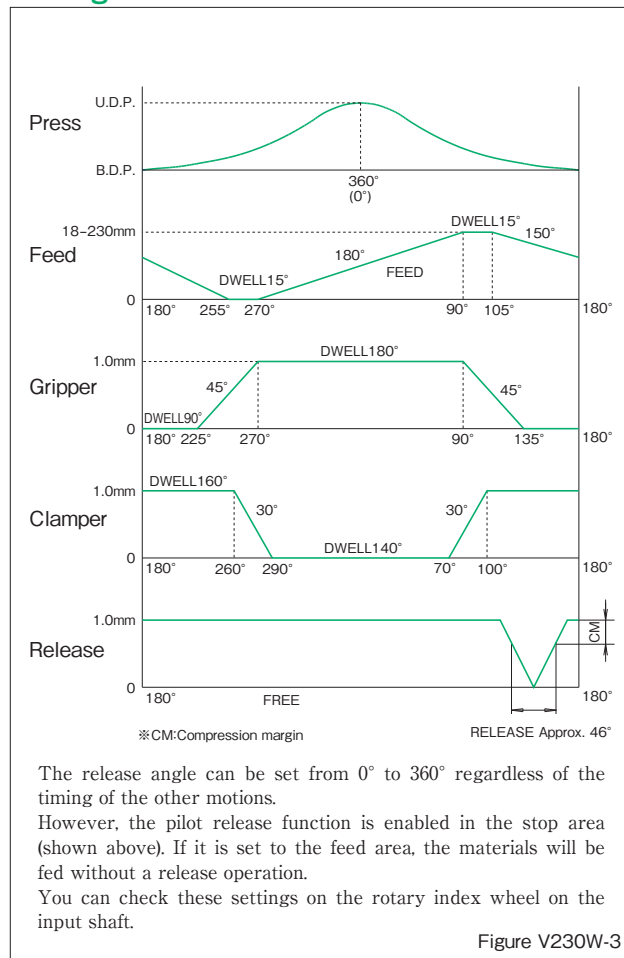


Figure V230W-2

Timing chart



The release angle can be set from 0° to 360° regardless of the timing of the other motions. However, the pilot release function is enabled in the stop area (shown above). If it is set to the feed area, the materials will be fed without a release operation. You can check these settings on the rotary index wheel on the input shaft.

Figure V230W-3

Oil pump

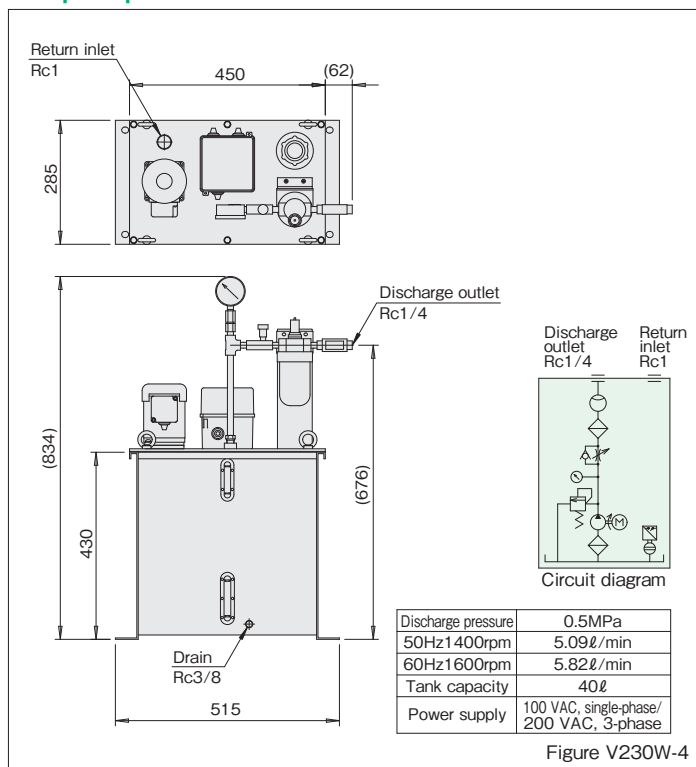


Figure V230W-4

Sector roll

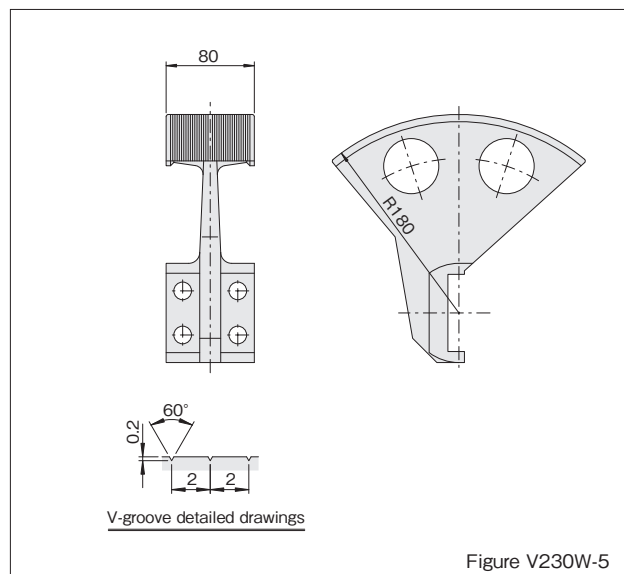
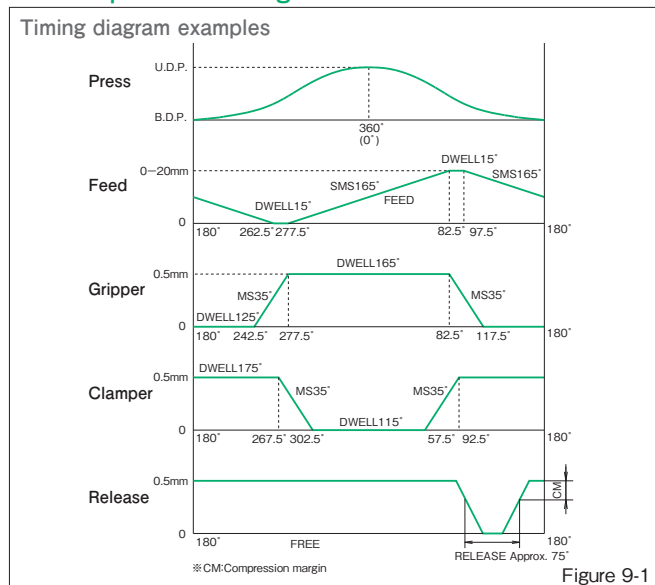


Figure V230W-5

Variax operation timing



In the Variax, a total of four cams (the roller gear cam for feeding, the plate cams for gripping, the clamper, and for release) perform feed operations according to the timing shown in the example timing diagram above.

There is a DWELL area at both ends of the feed and the return areas of the feed cam. When in this DWELL area, the material can be transferred by the gripper and clamper.

The cam for release can be set to operate in any area, regardless of the timing of other cams.

However, if it is set to operate in the feed area of the feed cam, the Variax will operate without any other release occurring.

You can check these settings on the rotary index wheel on the input shaft.

Feed Angle

The standard feed angle of Variax is set to provide the best balance between feeding and returning in the oscillating motion of the roller and gripper, which makes it well suited for high-speed feeding.

Be especially careful when using a press that has a link motion with the Variax or when using a die that has a long pilot pin.

Release angle

When using a die with a pilot pin it is necessary to match the pilot timing with the Variax's release timing.

The release timing can be adjusted arbitrarily up to 360° using the release timing adjustment device on each model.

No-release feeding is also possible by setting the release timing to occur within the feed angle.

The release angles shown in the characteristics table for each model are guidelines for a standard compression margin.

Please note that the actual release angle will change, depending on the compression margin.

(See the "Compression Margin" section.)

In a production process in which the standard feed angle and release angle may not offer the best feed operation, the feed angle and release angle of the Variax can be changed to custom specifications for you. However, to convert a Variax to custom specifications, we will need to disassemble a standard Variax. Therefore, if you desire custom specifications, please contact us before placing your order.

Compression margin (C.M.)

Generally, when feeding material with a feeder, the material is gripped between the upper and lower rollers, or grippers, to be fed. When gripping material, if the dimension between the upper and lower rollers (or grippers) is set smaller than the thickness dimension of the material to be feed, the material may become warped or curved, due to the gripping force between the rollers or grippers. Therefore, the distance between these rollers or grippers must be adjusted appropriately.

The compression margin (CM) is a numerical value of how small the distance between the rollers or grippers can be, with respect to the material thickness being fed. It is calculated using the formula: "compression margin (CM) = plate thickness (t) - gap (T)".

By using this method of setting the compression margin, no matter how much the gripping force is used, the material will not be gripped with a higher force than the CM.

If the CM is within the longitudinal elastic modulus range of the material, it will not be distorted, and sufficient grip can be applied to enable high-speed feeding.

The compression margin setting affects the pilot release angle during press work.

The release angle is shown in the specifications table of each model. However, these are only guidelines for the standard compression margin. The actual release angle may change, depending on the compression margin used.

(The larger the compression margin, the smaller the pilot release angle.

See the figure below.)

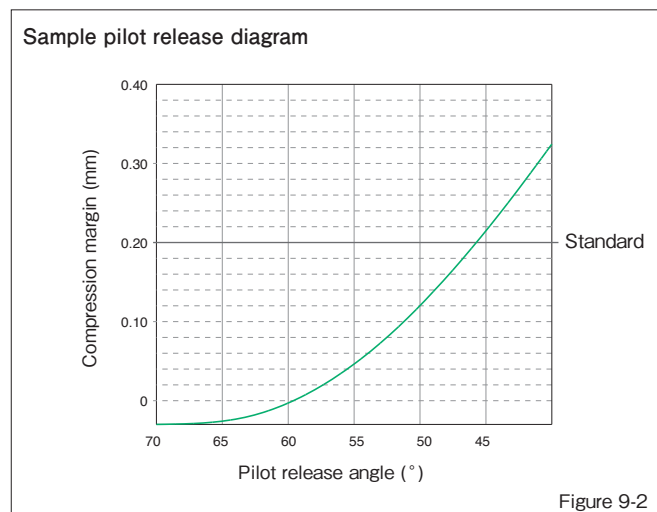
The table below shows the standard compression margin for each model and the guidelines for the thickness tolerance of material that can be fed using these margins. However, the CM can be adjusted.

If you are using a material that is not covered by this table, please contact our sales staff before using it in your Variax.

Standard compression margin

Table 9-1

| | Size 127 or less | Size 200 or more |
|--------------------------|------------------|------------------|
| Compression margin (mm) | 0.08 | 0.20 |
| Material tolerances (mm) | +0.05 -0.02 | +0.10 -0.10 |



*The pilot release diagram for each model will be shown in the specifications we will send you separately.

How to read the feeding capacity diagram.

The feeding capacity of the Variax is set according to the individual feeding device, and the speed and mass of the material to be fed. In the case of the press layout shown below, the material mass M that is intermittently transferred is calculated as M (kg) = material thickness (m) \times material width (m) \times length l (m) \times density (kg/m³). Find the maximum press speed by locating the material mass and feed length on the maximum feed capacity diagram for each model. The press rotation speed shown does not include friction between the material and the guides, or any other loads such as resistance caused by flapping material. As a general guide, set the production speed to about 80% of this speed.

(See Figure 10-2)

If the rotation speed shown is not possible in actual operation due to various conditions such as friction between the rollers and the material, friction between the material and the guides, the actual load, or to resistance due to flapping material, reduce the rotation speed.

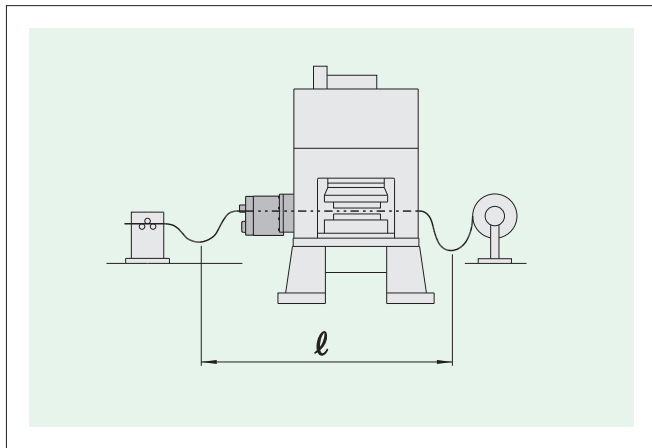


Figure 10-1

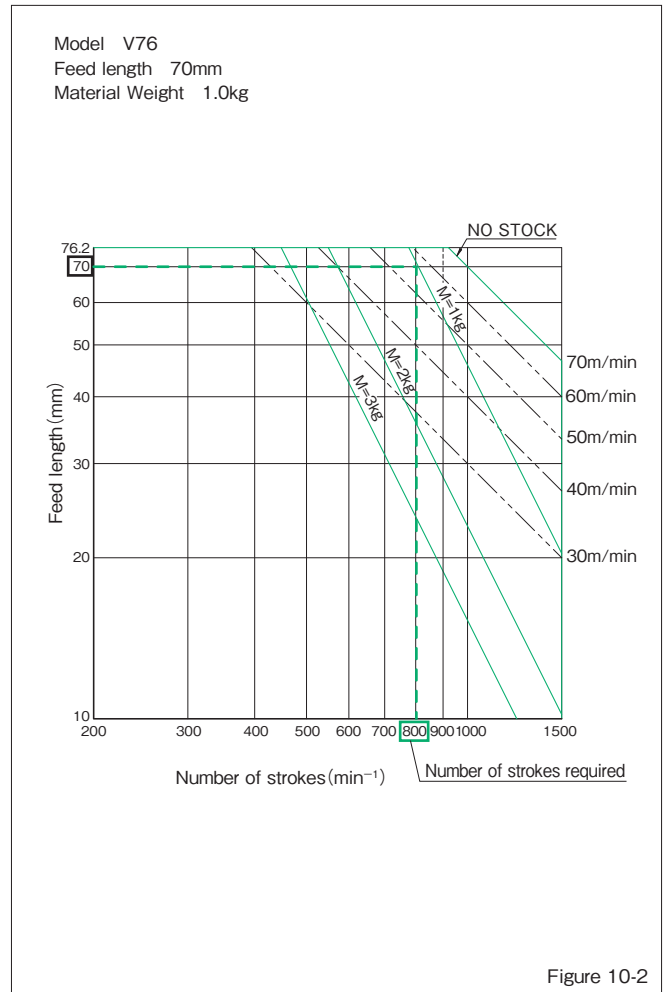
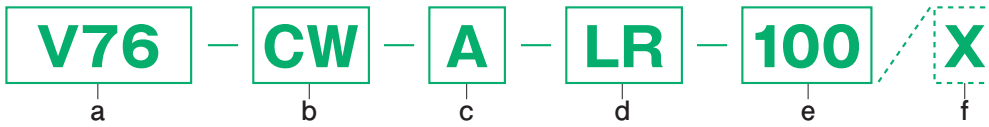


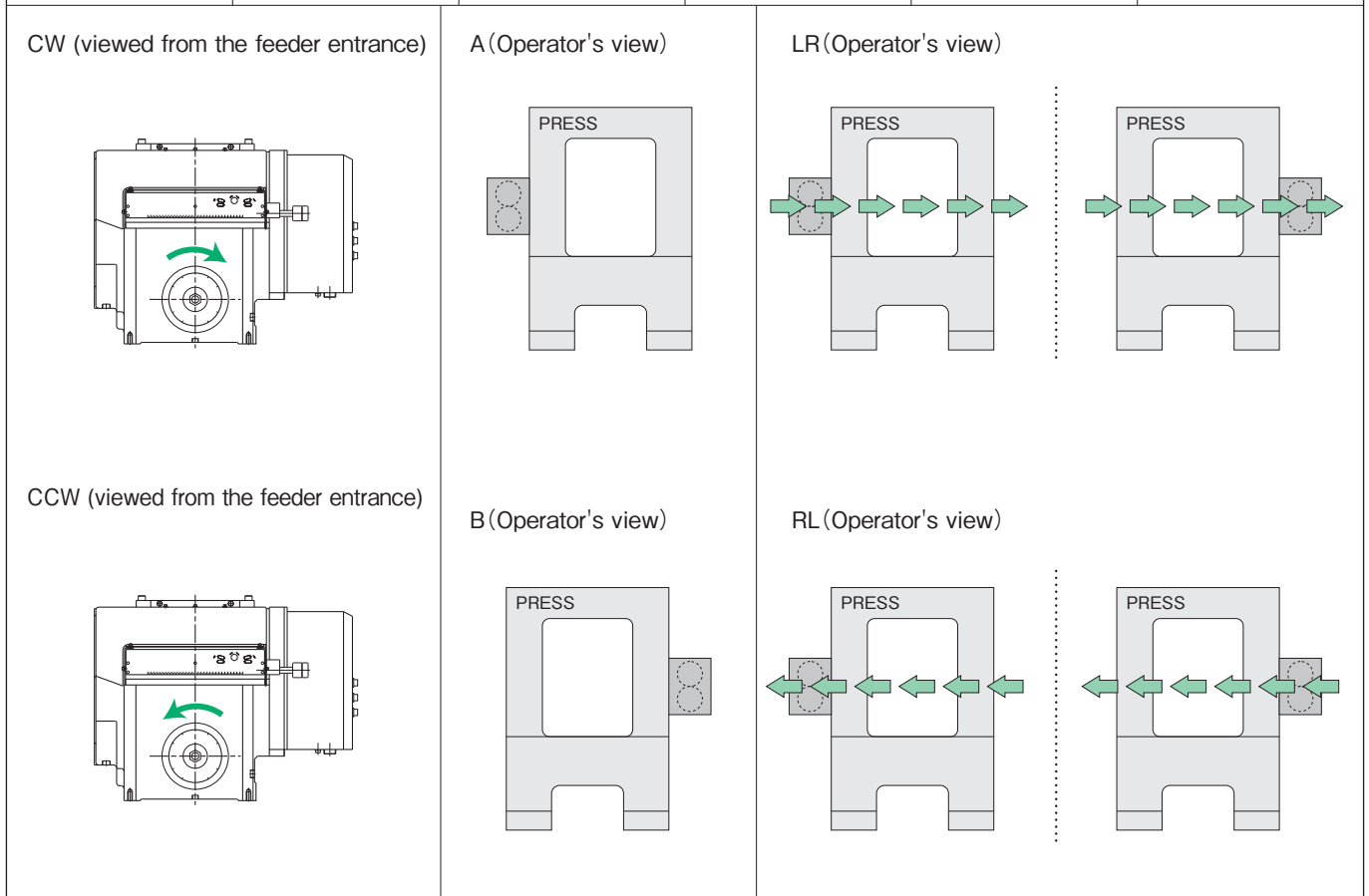
Figure 10-2

Model code

Feed model code

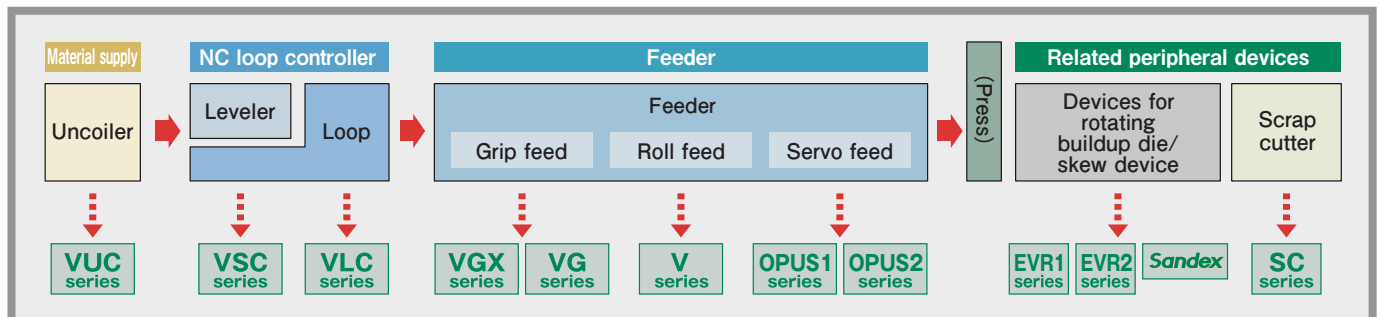
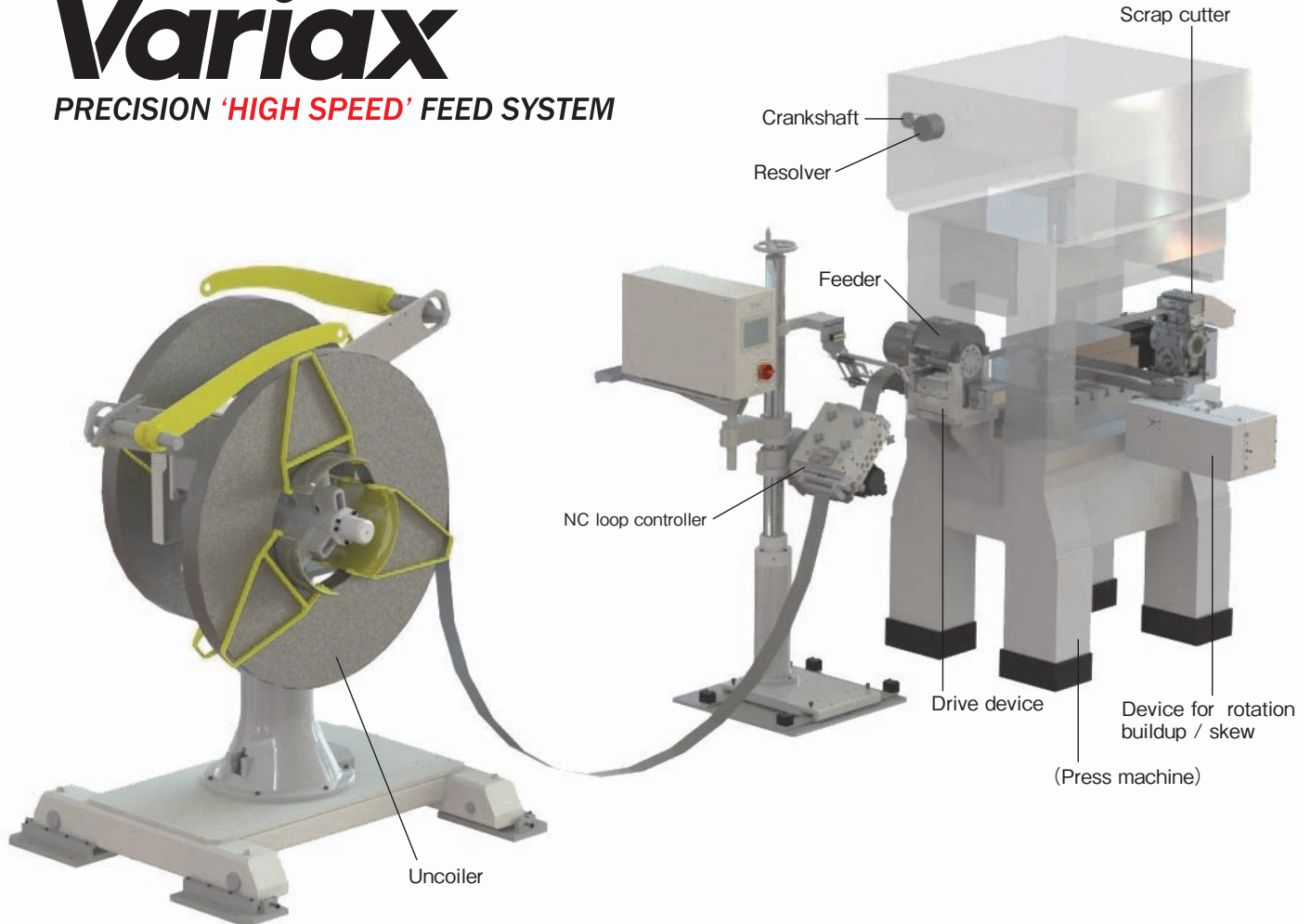


| a | b | c | d | e | f |
|---|---|---|--|--|---|
| Series and size | Direction of rotation | Mounting position | Feed direction | Input power supply | Custom order |
| Example V76 Maximum feed length: 76.2mm | Example CW Input shaft rotation: clockwise | Example A On the left when viewed from the operator side | Example LR Feed is from left to right when viewed from the operator side | Example 100 Input power supply AC100V | Example X Custom order |
| Maximum feed lengths for each model are as follows: V76 76.2mm V127W 127mm V230W 230mm | Clockwise CW or counterclockwise CCW input shaft rotation direction are both available. | The mounting direction can be A : left side, or B : right side. | The feed direction can be specified: LR , feed from left to right, or RL , from right to left. | Select 100 :100VAC or 115 :115VAC input power. | Check the Custom order box below only if there are special specifications. <input type="checkbox"/> Standard <input checked="" type="checkbox"/> Custom order |



Variax

PRECISION 'HIGH SPEED' FEED SYSTEM



VSC/VLC series

A loop controller that can create stable, well-formed loops, even at high speeds, to speed up press lines.



VGX series

A cam type gripper feeder that makes work easy and reduces setup time by enhancing various adjustment functions.



OPUS1 series

High-performance servo feeder for upper and lower roll drive with IoT compatibility.

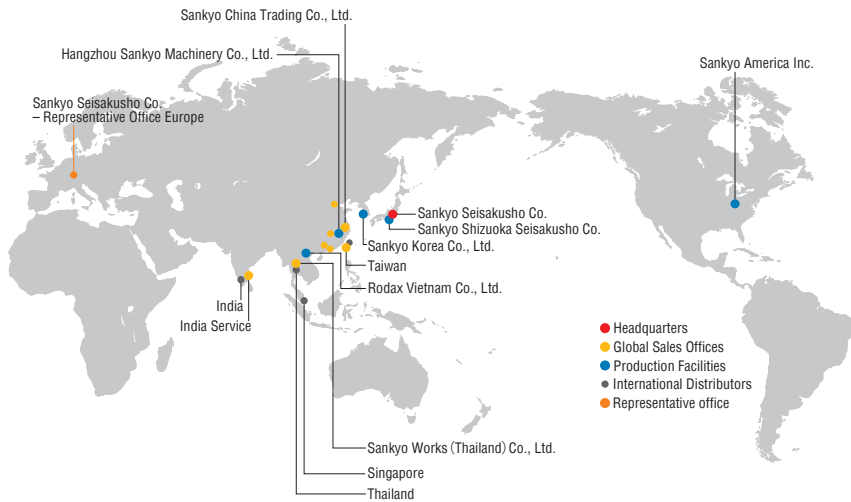


VG series

A cam type gripper feeder that achieves high productivity with a variation that can handle any type of operation and a feed mechanism that does not mar materials.

MEMO

A series of horizontal dashed lines for writing.



Group Companies

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