

High-performance servo feeder for stamping presses

Variax opus 1 Series

The Ultimate Servo Feeder



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PAT.PEND.

Variax opus 1 Series

The Variax OPUS1 series is a high-performance servo feeder that is optimal for use in motor core production lines for hybrid, PHEV, and EV car motors.

By integrating a high capacity servo motor and roll into one body, it achieves world-class performance. The driving servomotor is operated according to a unique cam curve. Servomotor and cam curves are also used to control vertical roll motion and the release mechanism, allowing the OPUS series to feed thin and soft materials.

The OPUS series control system is also equipped with a monitor function, diagnostic function, and a large monitor. Its communication function makes it possible to check the operation from a remote location. This combination greatly improves its operability.

Features

- High-end model combining high speed, high precision and multiple functions
- The communication function allows you to check the status of the operation from a remote location
- Excellent operability with a security system
- Various display functions
- Global support for many languages, standards, and services
- Can feed wide, thin, and soft materials

Major Features:

Rapid stroke max.







Applicable Material Shapes:

Thin plate









Wire materials

High-performance servo feeder for stamping presses

Variax opus 1 Series

OPUS 1 -200

OPUS 1 -300

OPUS 1 -450

OPUS 1 -650



Peripheral equipment

An indexing/skewing drive system for rotating the motor cores used for electric motors in automobiles.

Servo-dex EVR1 Series

EVR1-230

EVR1-310

The Servo-dex EVR1 series is an indexing or skewing drive system for rotating the motor core for production lines making motor cores for hybrid, PHEV, and EV car motors. By connecting a high-performance servo motor directly to the motor core, it can index core stacks with high-speed and high-torque, while allowing you to set the rotation angle freely.

With fusion of a servo motor and a cam motion curve, high speed and a variety rotational stacking build-ups are possible. This contributes to improved productivity of high-quality motor cores.





Features

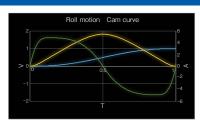
- High-end model combining high speed, high precision and multiple functions
- It also supports arbitrary rotation angle settings, and skew processing of the motor core
- The communication function allows you to check the status of the operation from a remote location
- Its high precision positioning increases mold life.
- The combination of a servo driven feeder and a servo-dex device results in maximum motor core line optimization

Performance suitable for motor core press line making electric motors for automobiles

- By adopting a high-performance servomotor and unique cam curve, high-precision material feeding (± 0.03 mm or less) is achieved at high speed (100 m / min or more)
- Contributes to productivity and improving yield







Original cam curve

The communication function allows you to check the status of the operation from a remote location

- The OPUS1 status can be checked and the feed number can be switched by installing an optional CC-Link IE for communication.
- •A safe system can be configured by combining this series with the optional press I/O device



Automatic operation screen



Motor torque waveform

Safety system with excellent operability

- Comes with a 15 inch, large touch panel giving improved operability and visibility
- Management of 5 levels of user privileges, with passwords



15 inch touch panel



User management

Exceptional quality and reliability

- Guaranteed reliable and stable operation due to our 40 years of experience with feeder development and the use of our proprietary technology
- Actual feed accuracy ± 0.03 mm
- Patented design to protect against press vibration (PAT.)
- Patented damping construction to protect the feed device (PAT.)

Safety function

- When an emergency stop signal is input, this function instantly cuts off power to the motor and stops all operation
- Support to manual operations speed limit and hold-to run control switch
- Roll release function when jamming occurs (option)
- End-of-material detection signal output (optional)



Alarm screen



JOG screen

Various display functions

- Displays the motor temperature and effective torque value
- Displays the feed length, feed angle, release angle, and gripping force
- Displays the feed range and release range of the feeder
- Displays the current angle or the speed of the press machine



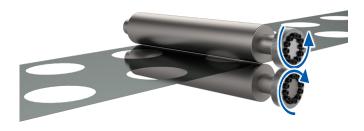




Motor torque waveform

Can feed wide, thin, and soft materials

•Due to the use of dual roll drives, it can reliably feed materials with a lower gripping force



Global support for many language, standards, and services

- •Languages: Japanese, English, Chinese, Spanish, and Korean
- IEC standard, CE standard (option), UL standard (option)
- •We have service people living in Japan, the USA, China, Korea, Thailand, and India



Easy to install in a press

Standardized side mounting and bracket mounting on presses



Vertex Vertex

 The main body can be used for either left or right side mounting





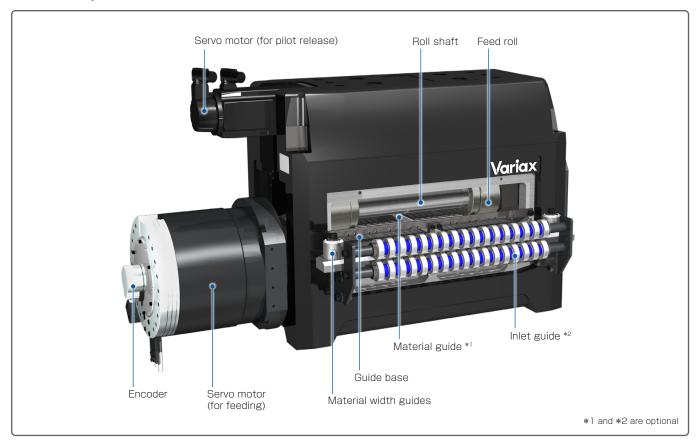
Greatly improved roll cleaning ability

Easy access to the rolls through the large opening



Feeder specification

Feed components



Specification table

Model name	Unit	OPUS 1-200	OPUS1-300	OPUS1-450	OPUS 1-650	
Feed length	mm	1 to 200(999)	1 to 300(999)	1 to 450(999)	1 to 650(999)	
Material thickness	mm		ma	ax 2		
Gripping force	Ν	min 1,500 to	max 3,000	min 3,000 to	max 5,000	
Pilot release length	mm		0	.1		
Roll opening dimension	mm	Max	2.5	Ma	x 3	
Material width	mm	max 200	max 300	max 450	max 650	
Maximum number of strokes	min ⁻¹	1,0	00	500		
Minimum pilot release angle	deg	9	0	50		
Maximum feed speed	m/min		· · · · · · · · · · · · · · · · · · ·	Standard air-cooled mo Standard water-cooled m Water-cooled high power n	otor: 100 m/min, or more	
Repeat accuracy	mm		±0.	03*3		
Air consumption	ℓ/min	200				
Operating air pressure	MPa	0.5 to 0.6				
Product weight	kg	220	240	415	480	
Paint color		N1.5(Black)				

 $[\]ensuremath{\ast}\ensuremath{\mbox{1}}$ Please check the separate feed capacity diagram.

^{*2} If the motor is water cooled, you will need to prepare your own cooling system (chiller) and hoses. Use hoses with an inner diameter of $\phi 9$ mm.

When you are making or purchasing a chiller, select a chiller with the following specifications.

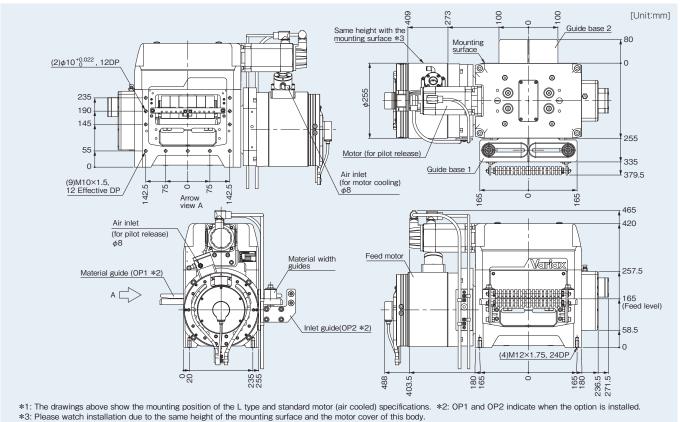
Ocooling capacity: You need a chiller for a standard 1.5 kw or higher capacity motor, and for a 4.2 kW or higher capacity motor.

[•]Minimum circulation rate: 7.0 L/min. •Preset operating temperature maximum: 35°C •Please choose a chiller and pipes that do not contain copper.

^{*3} This is the amount of air used for cooling an air-cooled motor air. (The motor capacity depends on the volume of cooling air supplied.)

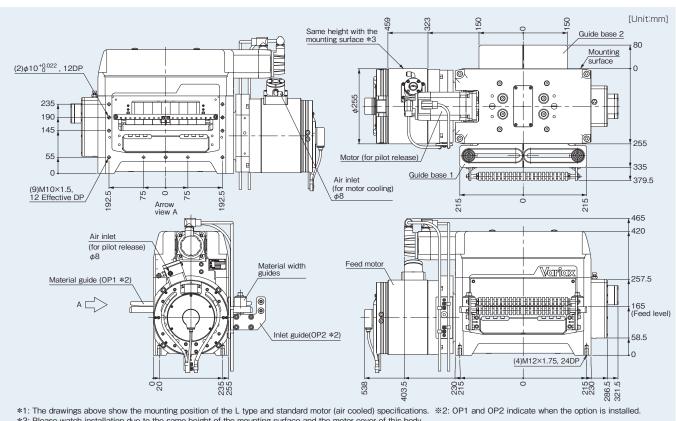
Dimensional drawing OPUS 1-200/300

OPUS1-200



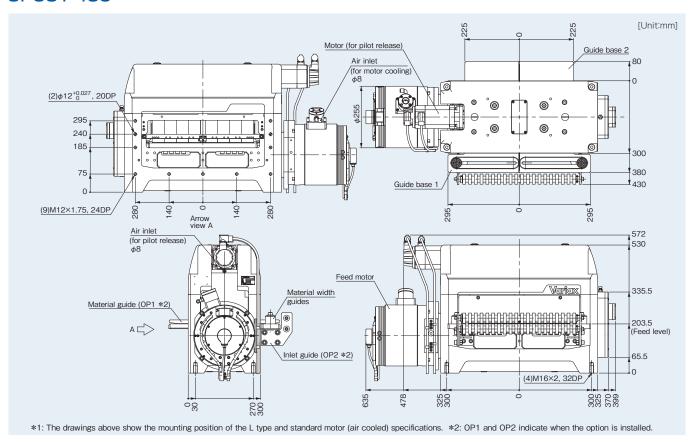
*3: Please watch installation due to the same height of the mounting surface and the motor cover of this body.

OPUS 1-300

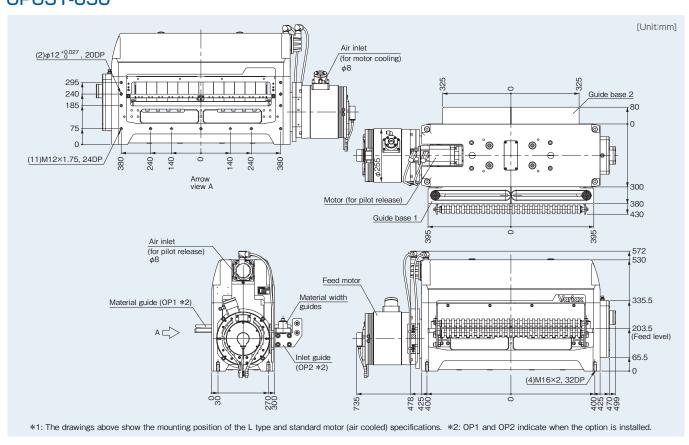


Dimensional drawing OPUS 1-450/650

OPUS 1-450

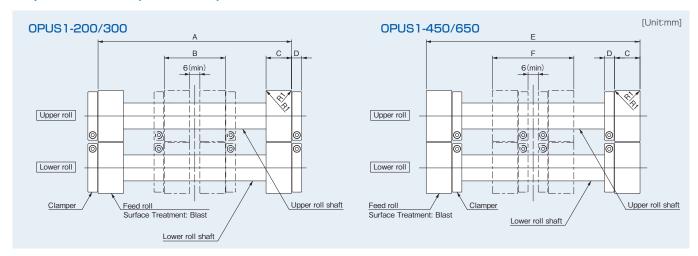


OPUS 1-650

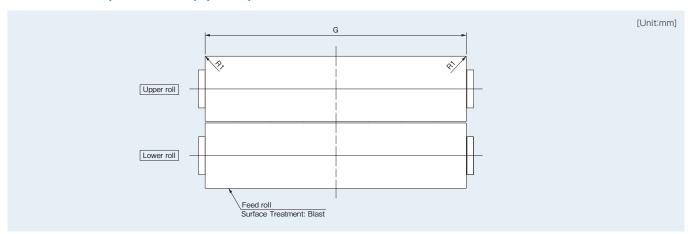


Feed roll dimensional drawings

Separate rolls (standard)



Size of One-piece roll (option)

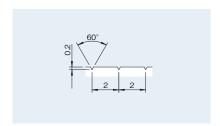


^{*1:} There are 3 types of surface specifications for a single roll (both separate and built-in rolls): sand blasted, V groove and flat rolls. For V groove roll details, please refer to the V groove detail drawings.

Dimension table

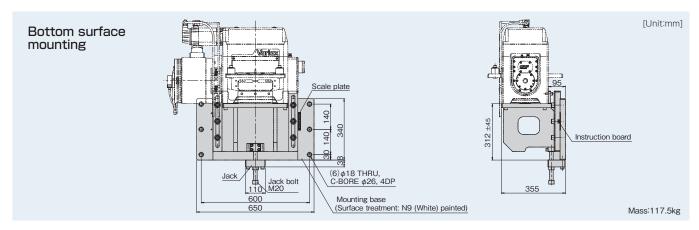
Size	Α	В	С	D	Е	F	G
OPUS1-200	159	66	30	16	_	_	180
OPUS1-300	259	66	30	16	_	_	270
OPUS1-450	_	_	50	20	420	146	420
OPUS1-650	_	_	50	20	620	146	620

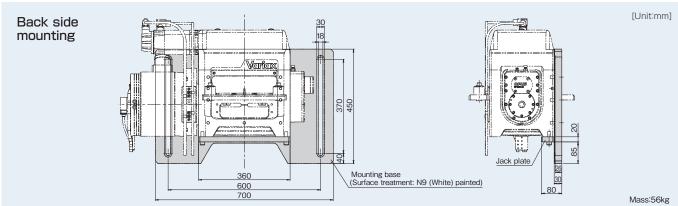
Detailed drawings of a V-groove roll



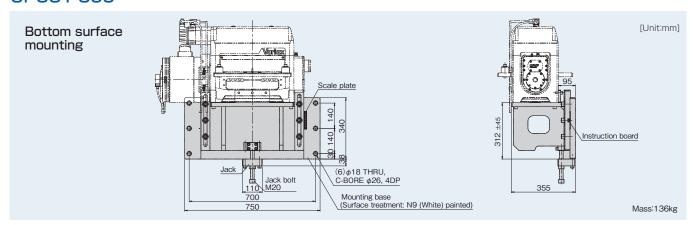
Dimensions, mounting components (optional)

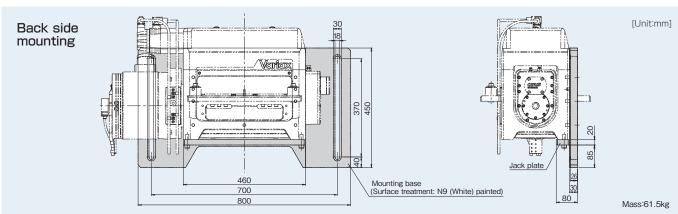
OPUS1-200





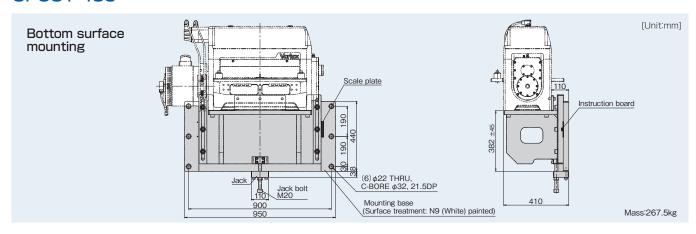
OPUS 1-300

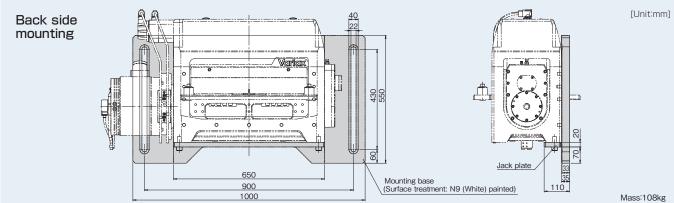




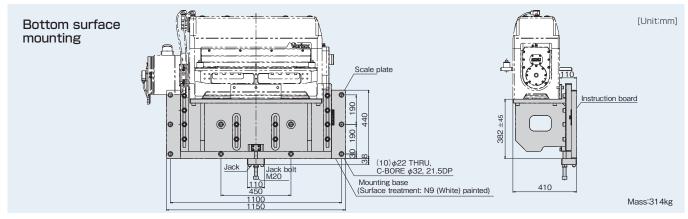
^{*}Please prepare your own jack parts

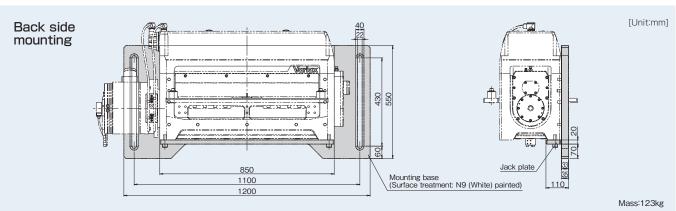
OPUS1-450





OPUS1-650

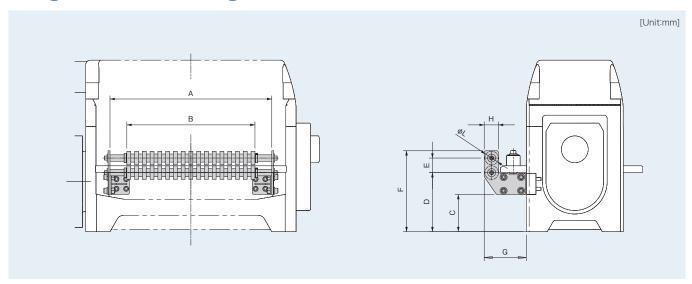




^{*}Please prepare your own jack parts

Dimensional drawings, inlet guide (optional)

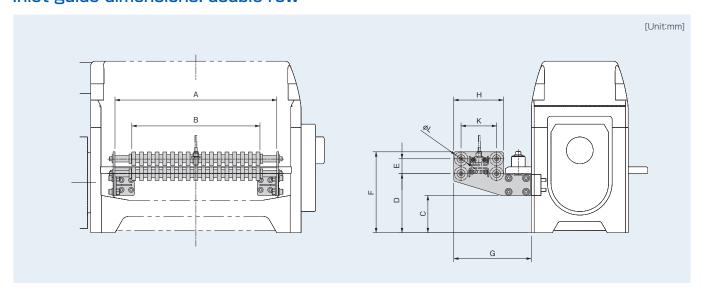
Inlet guide dimensions: single row



Dimension table

Size	Α	В	С	D	Е	F	G	Н	L
OPUS1-200	255	224	86	151	31±2	198	124.5	29	28
OPUS1-300	355	302	86	151	31±2	198	124.5	29	28
OPUS1-450	500	468	115	182.5	45±2	250	130	44	42
OPUS1-650	700	660	115	182.5	45±2	250	130	44	42

Inlet guide dimensions: double row

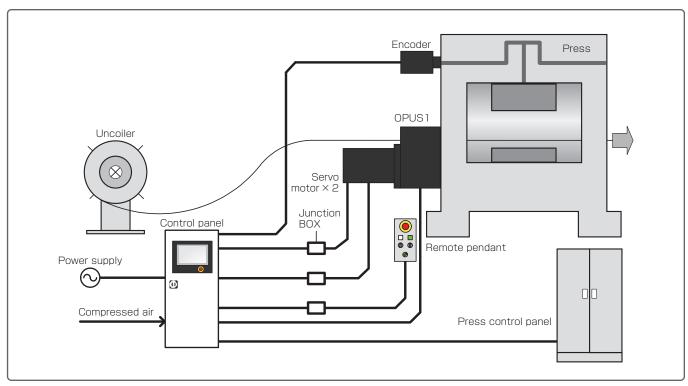


Dimension table

Size	Α	В	С	D	Е	F	G	Н	K	L
OPUS1-200	255	224	86	151	31±2	198	219.5	124	95	28
OPUS1-300	355	302	86	151	31±2	198	219.5	124	95	28
OPUS1-450	500	468	115	182.5	45±2	250	239.5	153.5	110	42
OPUS1-650	700	660	115	182.5	45±2	250	239.5	153.5	110	42

Controller specifications

Control configuration diagram



Control specification table

Electrical specifications	Standard motor specifications	High power motor specification			
Power supply *1	Three-phase four-wire system, 380 to 480 VAC \pm 10%, 50/60 Hz				
Power capacity	20.78kVA 30A	48.5kVA 70A			
Servomotor capacity	Feed motor: 14.5kW equivalent,	Feed motor: 30kW equivalent,			
	release motor 1.4kW equivalent	release motor 1.4kW equivalent			

^{*1} If the power supply is 200 VAC, or there is no N connector (Neutral), an optional external transformer is required. (Three-phase three-wire 200AC -> three-phase four-wire 400AC)

Control panel specifications	Standard motor specifications	High power motor specification		
Size / Weight	H:1800mm W:700mm D:500mm / 150kg	H:1800mm W:900mm D:550mm / 220kg		
Paint color	N9 (White)	N9 (White)		
Standards	IEC / CE / UL	IEC / UL		

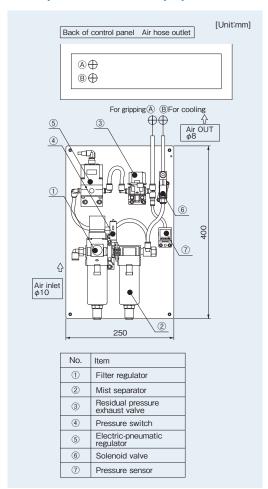
		Main functions		
User interf	ace	Touch panel (15 inch), Remote pendant		
Touch pane	el language	Japanese / English / Chinese / Spanish / Korean		
Number of	saved job	200		
Driving	Automatic operation	You can start automatic operation by entering a job number.		
operation	Manual operation	You can JOG and process feed at set speeds, as well as open or close the rolls.		
mode	Parameters	Various parameters can be set.		
Safety fund	ction	When an emergency stop signal is input, this function instantly cuts off power to the motor and stops all operation. The system provides safety integrity level 2 (SIL 2) safety category according to IEC 61508 and safety category 3 appropriate for sudden motor stops.		
Security functions		5 user levels (password management)		
Crankshaft encoder		1:1 installation (with vibration isolation mounting kit)		
Linking spe	ecification	Up to 5 presses (OPUS1:2+EVR1:2+SCR1:1)		

Control panel dimensional drawings

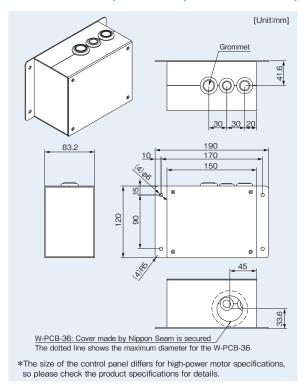
Control panel dimensional drawings

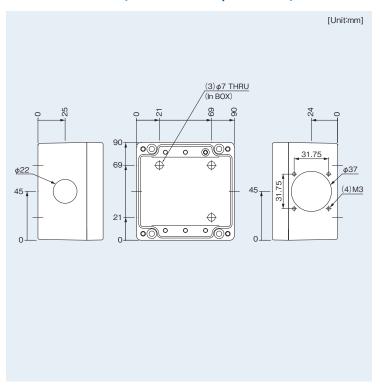
[Unit:mm] 700 500 (Q) (Q) (Q) Air OUT Air OUT Emergency stop switch (130) Power switch Air in # # # # # # 770 405 (30) (4)φ20 THRU Mass:150kg *The size of the control panel differs for high-power motor specifications, so please check the product specifications for details.

Compressed air equipment



Junction BOX(for motor, encoder cable) Junction BOX(for remote pendant)

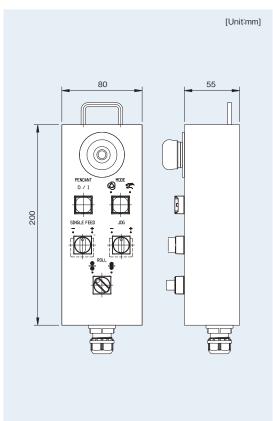




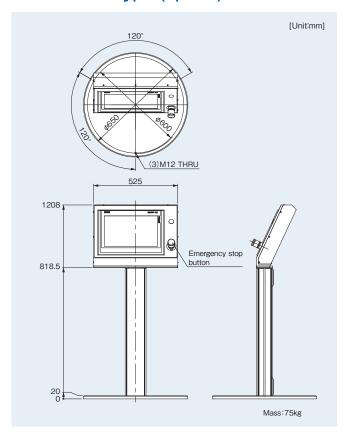
Encoder unit (for press mounting)

Mounting hole dimensional drawings (4) M8 (8 Effective DP) Mass:3kg (148) (

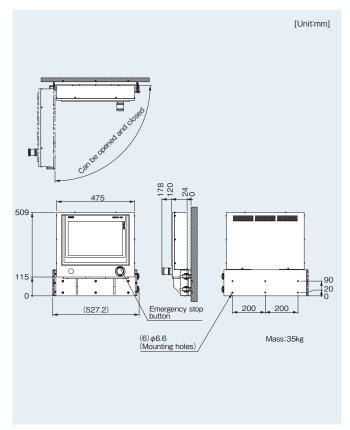
Remote pendant



Panel stand type (option)



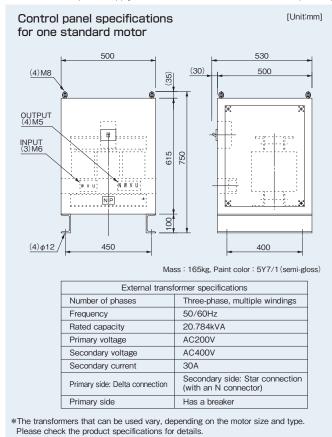
Wall hung panel (option)

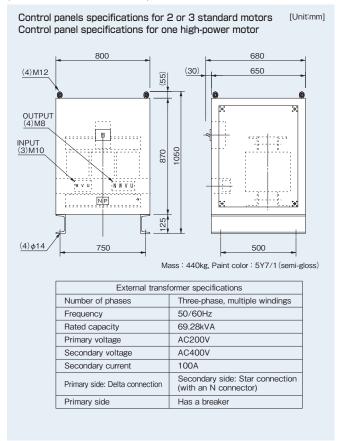


Controller dimensional drawings

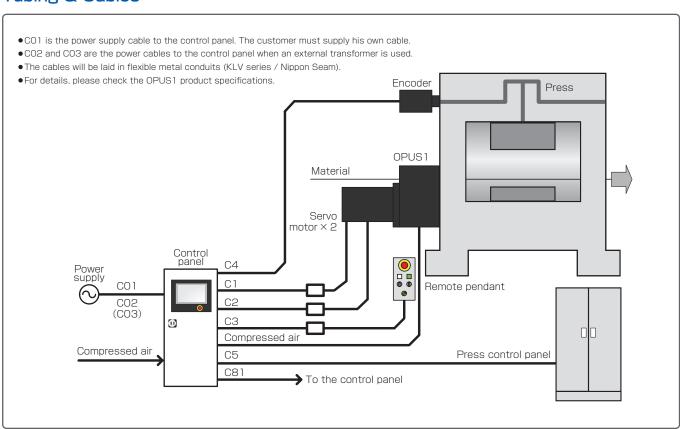
External transformer (optional)

If the customer's power supply is 200 VAC or there is no N connector (Neutral), an optional external transformer is required.





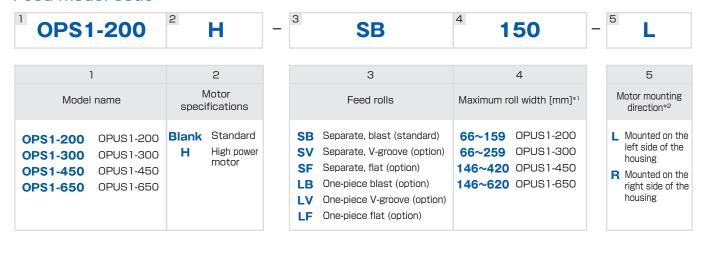
Tubing & Cables



Model code for feed

Feed model code

6



A	FW	_	A	G	/X
6	7		8	9	10
Motor cooling method*4	Guide base		Standards	Version*3	Standard / custom order
A Air cooled W Water cooled	FW Flat (with a material width guide) GW Vertical slot (with a material width guide) FF Flat GF Vertical slot		A None (standard) C CE standard (option) U UL standard (option)	G Design version code	Blank Standard /X Custom order

9

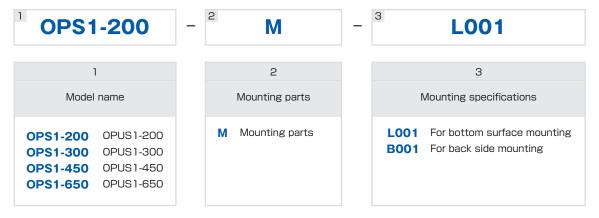
10

8

- *1: Specify the setting width only for the separate roll specifications.(In units of 1 mm) If not specified, the minimum value will be used.
 If you select an optional, one-piece roll, you do not need to specify the roll width.
- *2: The motor mounting directions mentioned above are when viewing the feeder housing from its front side.
- *3: The final number in the version code increases with each design change and may change without prior notice.
- *4: If a high-power motor is used, the motor will be water cooled.

7

Optional codes for Feed (for mounting parts)



Optional codes for Feed (Material guide)

OPS1-200 - U1

Model name

OP\$1-200 OPU\$1-200

OP\$1-300 OPU\$1-300

OP\$1-450 OPU\$1-450

OP\$1-650 OPU\$1-650

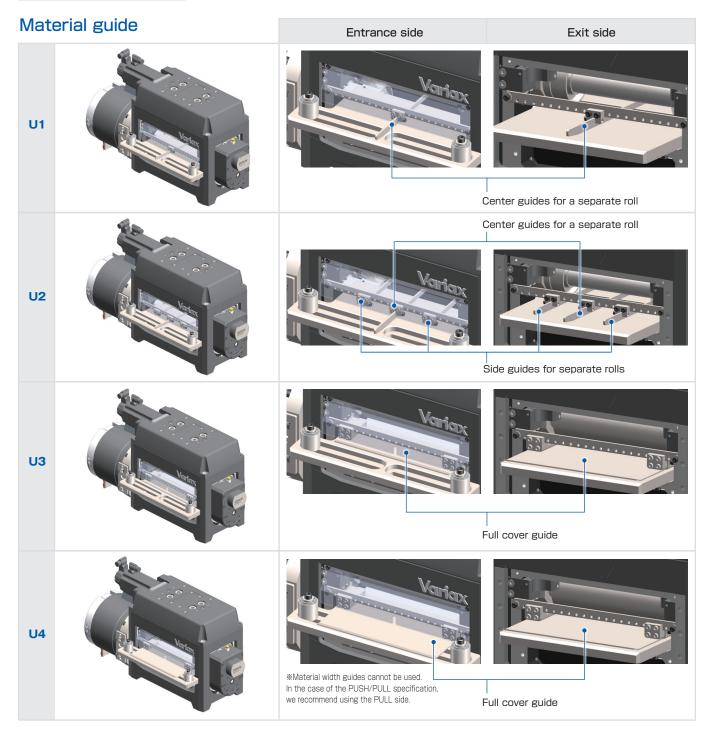
Material guide

U1 For separate feed rolls (1 piece)

U2 For separate feed rolls (1 in the center, 2 on the sides)

U3 Full cover type

U4 Fully covered to the end of the guide base



Model code for feed

Optional codes for Feed(inlet guide)

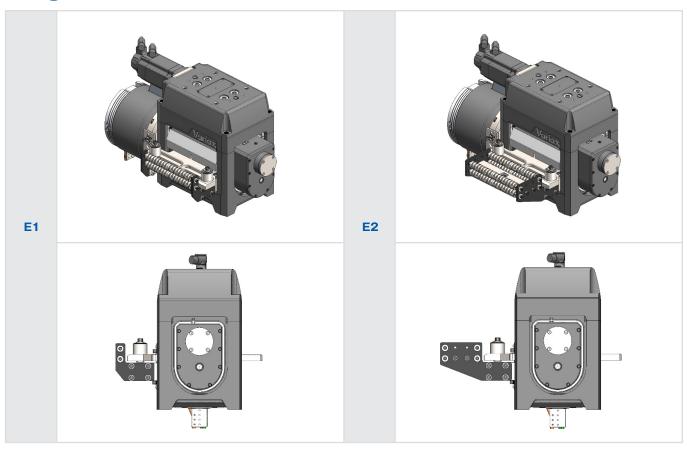


- 4	A					
	4	5				
Sensor	Sensor type*2					
Sensor specifications: A (proximity sensor)	Sensor specifications: B (photoelectric sensor)					
A E2E-X5B1D18(OMRON·PNP) B E2E-X5C118 (OMRON·NPN)	A HP7-A14(azbil·PNP) B HP7-A13(azbil·NPN)	Blank Standard /X Custom order				

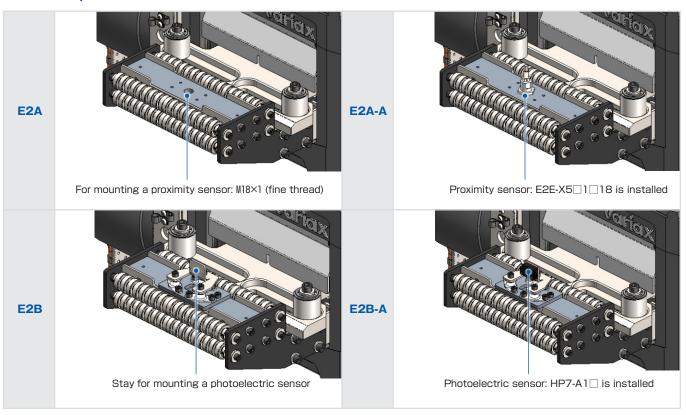
 $[\]ensuremath{ \star 1} \xspace$: A sensor cannot be installed on a machine equipped with a single roller.

^{*2:} To use sensors on other models, please tell us the name of the sensor model you want to use when ordering a Variax.

Inlet guide



Sensor specifications



Model code for controller

Control code

1	OPS14020E	_	2	A	3	A

1						
Mc	Model name					
OPS14020E	OPUS1-200 AC400V					
OPS14030E	OPUS1-300 AC400V					
OPS14045E	OPUS1-450 AC400V					
OPS14065E	OPUS1-650 AC400V					
OPS14420E	OPUS1-200 AC440V					
OPS14430E	OPUS1-300 AC440V					
OPS14445E	OPUS1-450 AC440V					
OPS14465E	OPUS1-650 AC440V					

2	3
Operation panel position	Control panel cooling method
A Control panel (standard) B Panel stand (option) C Wall hung panel (option) Z Without a panel (option)*1	A Fan cooled (standard)B Cooled by an air conditioner (option)

4	В	A	A	⁷ A	8 /X
	4	5	6	7	8
	Cable exit position	Standards	Pneumatic equipment mounting position	Version	Standard / custom order
	B Back(standard) R Right(option) L Left(option) U Under(option)	A IEC specification(standard) C CE specification(option) U UL specification(option) X Custom order	A On the side of the control panel B On the front of the control panel	A Design version code	Blank Standard /X Custom order

- *1: Select this alternative when the control board does not have an integrated operation panel.
- The housing paint color is N9 (semi-glossy), and the plate for mounting electrical parts is galvanized.
- The mass (weight) of the standard motor control panel with FAN cooling specifications is 150 kg and it is 200 kg with air conditioner cooling specifications.
- The mass (weight) of the high-power motor control panel with FAN cooling specifications is 220 kg and it is 265 kg with air conditioner cooling specifications.
- •When installing control panels side by side, leave a gap 500 mm or more between the panels.

(For maintenance of the cooling air equipment, and to ensure adequate air intake and exhaust for cooling the control panel)

- The "40" and "44" in the product names OPS14020E and OPS14420E refer to the power supply voltage.
 - "40" means 380 to 439VAC, and "44" refers to the 440 to 480VAC specification.

If the voltage actually supplied is different from the product specification, the controller may not be able to start the motor properly.

•An example of a high-power motor specification is OPS14065HE.

(This indicates that the OPUS1-650 will have 400VAC high-power motor). The control panel size will be specific for that for the high-power motor model.

This product can combine multiple products in a single system. (See below for details.)

Example: Two OPUS1 and two EVR units can be combined

Example: Two OPUS1 units and one EVR1 unit can be combined.

Example: Two OPUS1 units can be combined

Example: Two EVR1 units cannot be combined

Example: Three or four OPUS1 units cannot be combined.

Example: Three or four EVR1 units cannot be combined.

However, one operation panel and one crankshaft encoder is always required for each system.

Model code for controller

Control option code

OPS14020E AOF1 00 2 Model name **Function** Version*4 AOF1 Equipment installation front OP\$14020E OPUS1-200 AC400V 00 Version side (push) (standard) OPS14030E OPUS1-300 AC400V AOM ... Equipment installation center front: 1 or 2 **OPS14045E** OPUS1-450 AC400V AOD1 Equipment installation rear **OPS14065E** OPUS1-650 AC400V side (pull) **OPS14420E** OPUS1-200 AC440V B001-JOG speed upper limit in **OPS14430E** OPUS1-300 AC440V manual operation B002-Step feed speed upper limit **OPS14445E** OPUS1-450 AC440V in manual operation **OPS14465E** OPUS1-650 AC440V **B003** Manual operation within the feed angle range **B005** Hold-to-run **B006** CC-Link IE communication with upstream devices **B007** Roll release for clearing jammed material **B008** End-of-material detection

signal output

Feed partial pitch after press

stoppage (manual mode)

B009

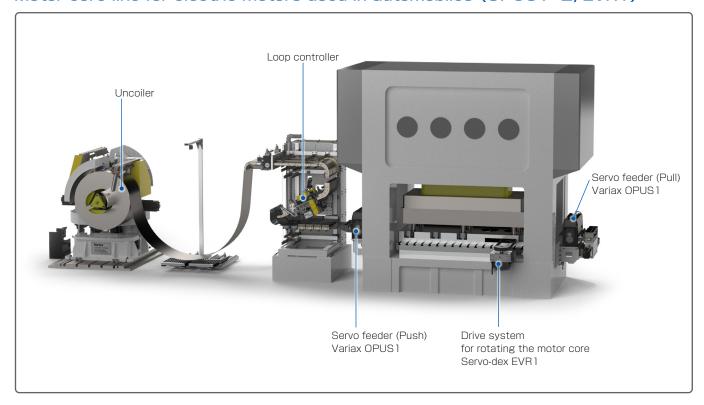
^{*1:} Please choose function AOF1, AOM □, or AOD1.

^{*2:} Starting at BOO1, please select the functions you need. (You can select as many as you like)

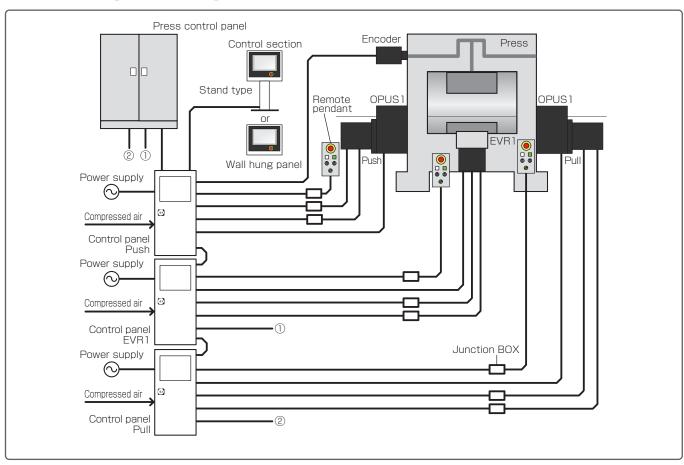
^{*3:} For control option details, refer to the product specifications.

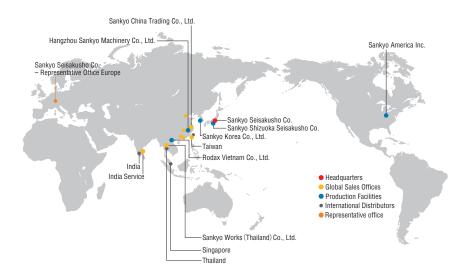
^{*4:} The final number in the version code increases with each design change and may change without prior notice.

Motor core line for electric motors used in automobiles (OPUS1×2, EVR1)



Control configuration diagram(OPUS1×2, EVR1)





Group Companies

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