VELCONIC®

TOSHIBA MACHINE

Synchronous AC Servo

Designed for V Series Servo Amplifiers

General Catalog of BS Servo

BS Servo V Series

Standard type	1500min^{-1}	500W～7.5kW
Standard type	3000min^{-1}	1kW～10kW
ZA type	3000min^{-1}	30W～750W
ZA type	1500min^{-1}	11kW, 14kW

BS Servo G Series

Standard type	2000min^{-1}	20kW, 33kW

BS Servo T Series

Standard type	1500min^{-1}	400W～5kW
Standard type	2000min^{-1}	7.5kW, 10kW
Standard type	3000min^{-1}	500W～6.5kW

TOSHIBA MACHINE CO., LTD.

Equipped with newly developed resolver multi-turn ABS system.

BS Servo Amplifier V Series

The V series servo amplifier has realized the high-speed positioning and synchronization, quick response, high accuracy and remarkable performance to help the machine operate to its full capacity. The resolver type servo has evolved further. The new type resolver multi-turn ABS sensor system is now on the worldwide market, which will not require the previous magnetic sensor unit any more.
In spite of the absolute specifications, only the standard resolver is enough for the motor.

Advantages of resolver multi-turn ABS system

- You can structure an ABS system without spoiling the environment resistance which is characteristic of the resolver.
- Reduction in full motor length.
  The full length of the V series motor is shortened by 41 mm.
- Increase in the number of motor models employing an ABS system. This resolver can also be used for the small-size motor models such as ZA motor.
- Wire-saving of the resolver cable. A standard cable (6-core) is used in lieu of the special cable (12-core).
- Low-priced. The price of the motor equipped with ABS system is the same as that of the standard motor.

Amplifier with resolver ABS + Standard motor

Evolving resolver feedback type servo system

The resolver type which is overwhelmingly superior to the encoder type in environment resistance has now the performance as good as the encoder type. The BS servo assuring quick response and high accuracy can not only withstand a hostile environment, but build up an ideal servo system.

In the machine employing a quick response servo, vibration will be caused easily. Generally, deterioration is facilitated by the vibration, and a serious trouble will occur suddenly.

The resolver has a coil structure without an electronic circuit and assures outstanding durability against vibration. Thanks to this durability, the BS servo is popularized in a diversity of machines including a loom, spring fabricating machine, transport and loading/unloading equipment, and transfer system.
Durability, quick response and high accuracy are improving continuously.

Resolver

Features of BS servo V series

● Six control modes

Speed, current, position, speed/current/position, direct feed and draw control mode.

● High speed

Speed loop frequency characteristic is 1kHz. High-speed control is realized by high-speed sampling of motor sensor and use of dual CPU.

● High performance

The new control system (TFC control) has been developed, which improves traceability to command and load fluctuation dramatically.

● Easy adjustment

- You can select either of the four auto tuning modes according the servo system condition.
- You can perform setting of various parameters, frequency analysis, profile measurement, input/output status display, alarm display, etc., on the personal computer, using VelWin, the software designed for the Windows.

● Protection function

The servo system is protected by strengthening the main circuit protection function and by various servo alarms detecting function.

● Overseas standards

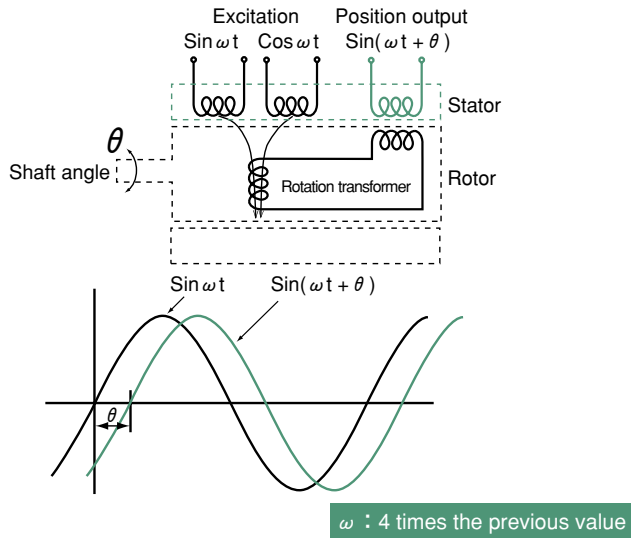
Designed for the CE-Marking and UL standard. (006P, 012P, 025P, 035P, 070P, 100P, 200P)

Table of Contents

Control and Function

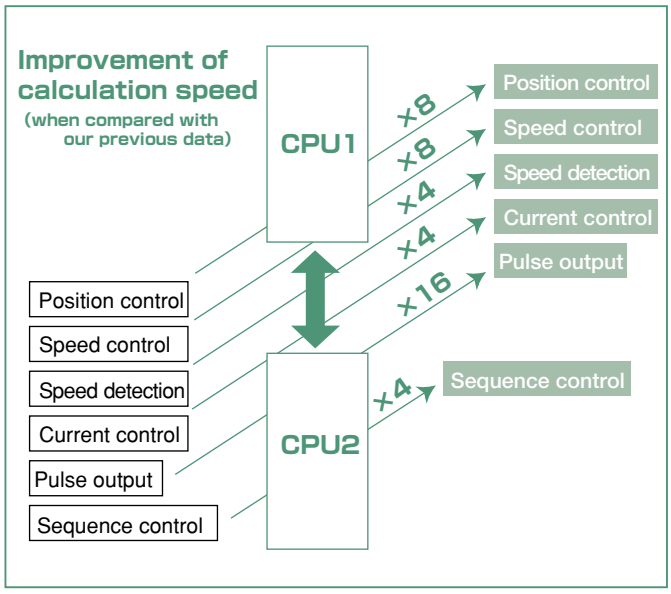
High-speed resolver

The new resolver was developed. The resolver's exciting frequency is increased. The sensing time of the motor rotating angle is reduced to 1/4 compared with the previous time, which results in improvement of frequency characteristic, and servo characteristics such as quick response and reduction in settling time.



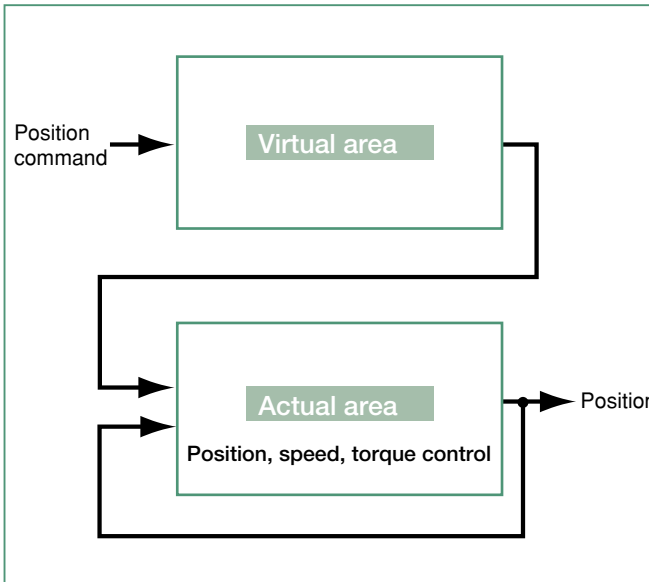
Processing of high-speed calculation

The dual CPU system is employed together with the high-speed resolver, which results in high-speed calculation, shorten the delay time and improvement of frequency characteristic and servo rigidity. Due to reduction in settling time, very frequent positioning is possible. Even if the ratio of load inertia to motor inertial is large, stable control can be assured.



TFC control

The new control system can improve the frequency characteristic in a low-rigidity machine liable to cause vibration. Vibration is controlled by estimating the machine characteristics. Thus the gain of the control system can be enhanced and the settling time can be reduced.



Motor sensor

The sensor requires accuracy, quick response and environment resistance. You can select the motor sensor best suited for your machine based on the specifications of the encoder and resolver shown below.

Item	Resolver	17-bit serial ABS encoder
Permissible speed of revolution	10000min^{-1}	6000min^{-1}
Resolution	24000 pulses/rev.	131072 pulses/rev.
Angular error	4 min.	1 min.
Vibration resistance	20G	10G
Impact resistance	100G	20G
Operating ambient temperature	-55～+155℃	-10～+85℃

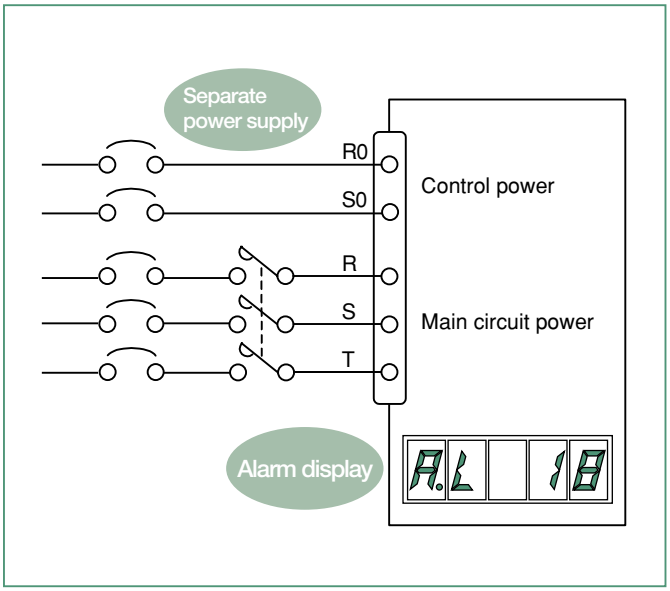
※The table above shows the performance of single motor sensor.
The BS servo performance is limited by the motor and amplifier specifications.

- Absolute accuracies of the encoder and resolver are about 1 μm and 5 μm, respectively. (When converted into the 10 mm-pitch ball screw.)
- The resolver is vibration- and heat-proof, and is superior in environment resistance.
- The resolver and encoder are the same in repeatability. (The machine can be located at the same position even after positioning is repeated many times.)
- The response characteristic of the encoder is the same as that of the resolver.

Accuracy Quick response Environment resistance

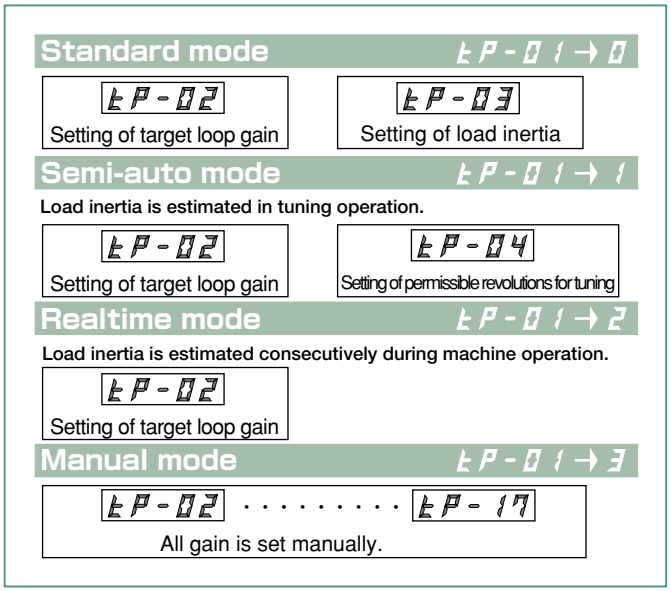
Separate control power

The main power and control power for driving the motor are separated. Thus, even if the main power has been cut off at the time of alarm generation, the monitor display will not be cleared.



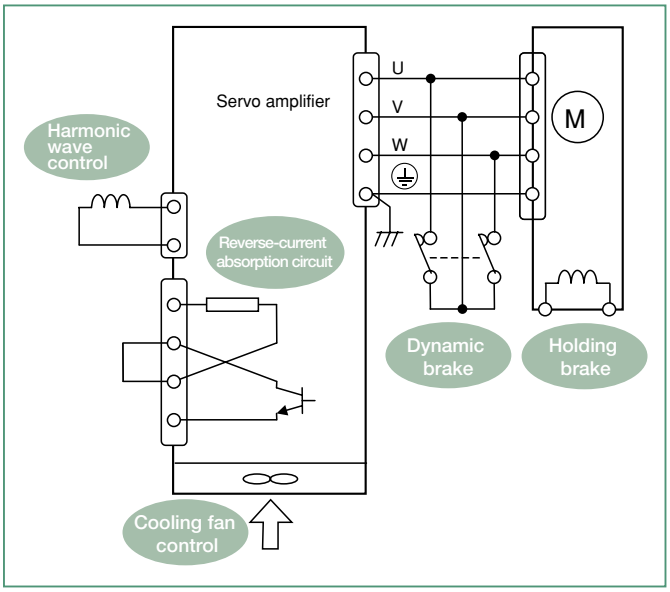
Auto tuning

The auto turning mode comes in the four modes; standard mode, semi-auto mode, realtime mode and manual mode, and complex servo adjustment is possible all the way from the design stage to real operation.



Protection function

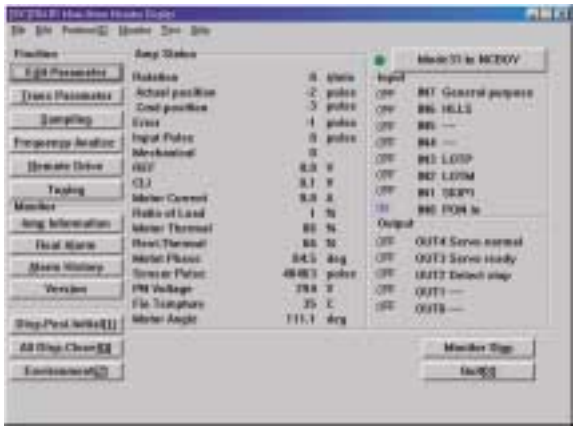
Operability is enhanced with the DCL insertion terminal for controlling harmonic wave, reverse-current absorption circuit of minus load, holding/dynamic brake auxiliary circuit, etc. Additionally, safety and power saving concept is fully considered in the main circuit element protective circuit and cooling fan control.



Personal computer (PC) tool

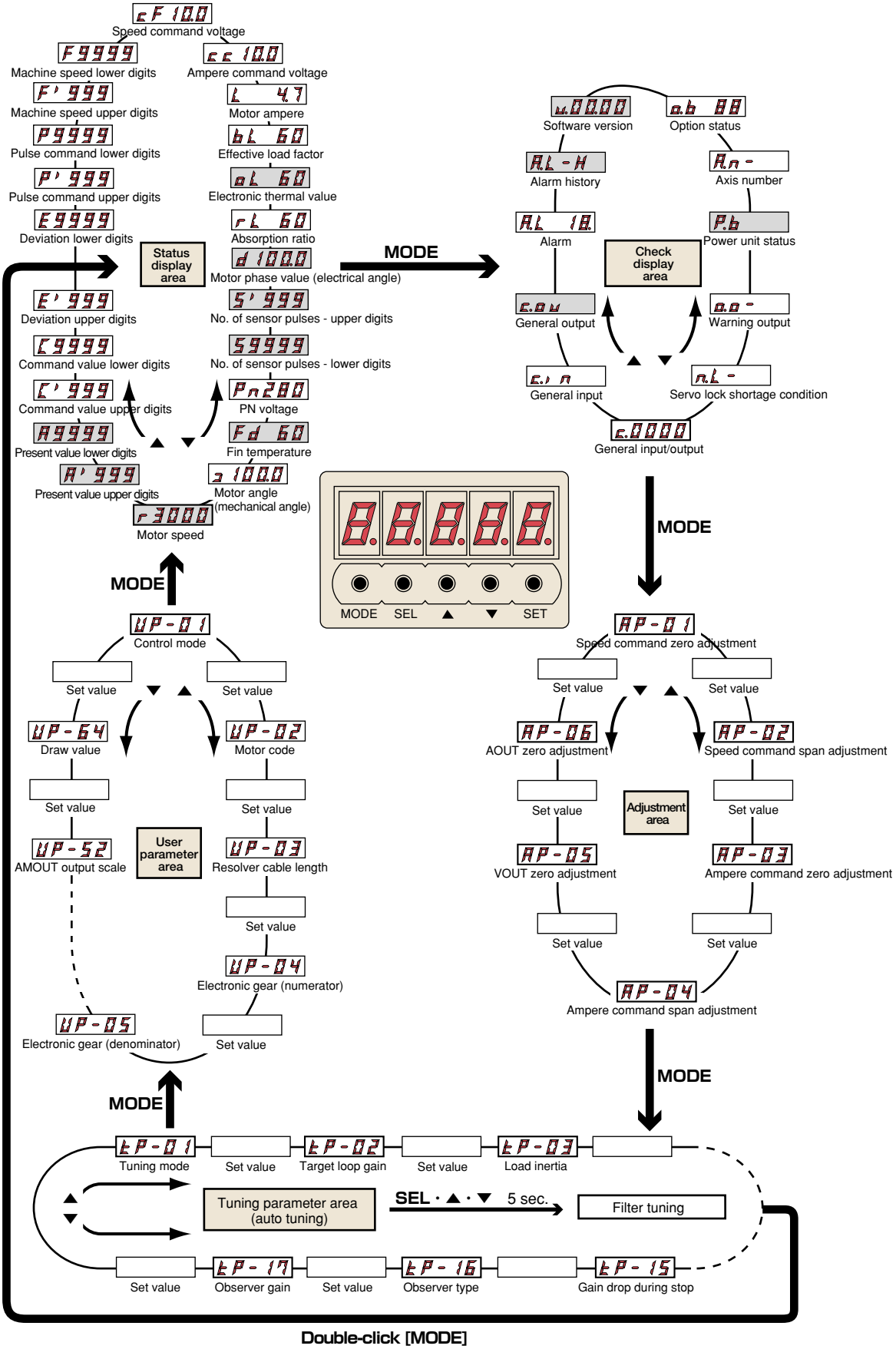
The GUI allows you to select the servo motor, perform simulation as per the predetermined operation pattern, various monitor, parameter setting, profile and frequency analysis, auto tuning, etc., through the personal computer. It is very useful when you design, start up and adjust the servo system.

PC tool SHAN5



Display and Operation

On the display & operation unit, you can perform display of servo motor operation status, check of sequence or alarm, adjustment of each control command value, selection of control mode, setting of user parameters including resolution parameter, and setting of turning parameters for servo adjustment.



Double-click [MODE]

●User parameters

Specify the servo amplifier parameters according to the operation characteristic of the machine. For the electronic gear, setting of a fraction is possible, and the acceleration/deceleration comes with two types; S-type acceleration/deceleration and linear acceleration/deceleration. Also, joint use of holding and dynamic brakes is possible.

No.	Parameter name	No.	Parameter name	No.	Parameter name
UP-01	Control mode ※1	UP-22	Capacity of external reverse-current absorption resistor	UP-44	Sequence input reversal
UP-02	Motor code	UP-23	Common power supply mode ※4	UP-45	Sequence output reversal
UP-03	Resolver cable length	UP-24	1st feedrate	UP-46	Sequence input/output selection
UP-04	Numerator of electronic gear	UP-25	2nd feedrate	UP-47	In-position timer
UP-05	Denominator of electronic gear	UP-26	3rd feedrate	UP-48	Electronic gear factor
UP-06	Home point shift value	UP-27	4th feedrate	UP-49	VMOUT output selection
UP-07	In-position length	UP-28	Stop detection speed	UP-50	VMOUT output scale
UP-08	Ampere limit value	UP-29	Coincident speed	UP-51	AMOUT output selection
UP-09	Soft start acceleration time	UP-30	Width of coincident speed detection	UP-52	AMOUT output scale
UP-10	Soft start deceleration time	UP-31	Motor test speed	UP-53	No. of divisions of position feedback pulse (upper-digit)
UP-11	S-type acceleration/deceleration time	UP-33	Load factor time constant	UP-54	No. of divisions of position feedback pulse (lower-digit)
UP-12	ABS mode	UP-34	Limit changeover type	UP-55	Setting of VLBus-V operation check
UP-13	Holding brake operation	UP-35	Speed limit value	UP-56	Setting of rotation coordinate system (upper-digit)
UP-14	Brake ON speed ※2	UP-36	CW drive current limit value	UP-57	Setting of rotation coordinate system (upper-digit)
UP-15	Analog command polarity	UP-37	CW absorption current limit value	UP-58	Selection of LS function
UP-16	Pulse command type	UP-38	CCW drive current limit value	UP-59	Selection of LS function reversal
UP-17	Pulse output type	UP-39	CCW absorption current limit value	UP-60	Home point stop method
UP-18	Differential output type ※3	UP-40	Width of drive/absorption detection	UP-61	Monitor type of analog input
UP-19	Position control polarity	UP-41	Numerator of display magnification	UP-62	Permission/prohibition of level 4 alarm detection
UP-20	Draw factor	UP-42	Denominator of display magnification	UP-63	Undefined
UP-21	External reverse-current absorption resistance	UP-43	Decimal point position of display	UP-64	Draw value

※1 Specify the speed control, current control, speed/current/position control, direct feed or draw control mode. For the VLBus-V specifications, "31" is predetermined.

※2 Specify the operation speed of the holding brake.

※3 Select the differential output function and content (i.e., pulse output, display output, ABS present value, command pulse, or draw pulse).

※4 Specify when you wish to use the main circuit DC power in common.

●Alarm code table

The self-diagnosis function is provided, and the content of a trouble is displayed by code. The alarm history function records the order of alarm generation if two or more alarms have occurred at the same time, thus the maintenance can be facilitated.

No.	Alarm message	No.	Alarm message	No.	Alarm message
AL01	Overcurrent（OC）	AL15	Overcurrent detection（OCS）	AL32	Home point no-memory error（MZE）
AL02	Overvoltage（OV）	AL16	Speed amplifier saturation（VAS）	AL33	ABS home point invalid（CLD）
AL03	PN voltage drop（PNLV）	AL17	Motor overload（MOL）	AL36	ABS battery cable breakage（ABT）
AL04	Main power input error（ACINF）	AL18	Instant thermal（POL）	AL38	Overrun（OVTR）
AL05	Charging resistor overheat（CROH）	AL19	Resolver phase error（RESERR）	AL40	Encoder breakage（EREE）
AL06	Resolver cable breakage（RELV）	AL20	Overspeed（OSPD）	AL41	Encoder communication error（ETER）
AL07	Power status error（POWFAIL）	AL21	Deviation counter over（FULL）	AL42	Encoder backup error（EBACK）
AL08	Servo amplifier overheat（SOH）	AL22	Resolver ABS phase error（ABSE）	AL43	Encoder checksum error（ECKER）
AL09	Reverse-current absorption resistor overheat（RGOH）	AL23	Resolver ABS breakage（ACN）	AL44	Encoder battery alarm（EBAL）
AL10	Reverse-current absorption error（RGST）	AL24	ABS battery alarm（BAL）	AL45	Encoder ABS phase error（EABSE）
AL11	Undefined	AL25	Option alarm（OPALM）	AL46	Encoder overspeed（EOSPD）
AL12	DSP error（DSPERR）	AL26	Parameter setting error（CERR）	AL47	Encoder interrupt error（EWER）
AL13	ABS battery voltage drop（BLV）	AL27	Resolver ABS error（AEERR）	AL48	Encoder initialize error（EINIT）
AL14	Brake error（BERR）	AL28	Link error（VERR）	AL49	Encoder sensor phase error（PHSERR）

Sequence Input/Output for Each Control Mode

●Standard sequence input/output

You can select either of the speed, current, position, speed/current/position, direct feed and draw control modes. Standard input/output signals are assigned to each control mode. Assignment of input/output signals other than the standard input/output signals is also possible.

Control mode / Assignment	01 Speed control	02 Current control	03 Position control	04 Speed, current, position control	05 Direct feed	06 Draw control
REF	Speed command	Speed limit	—	Speed command or speed limit	1st feedrate	—
CLI	Current limit	Current command	Current limit	Current limit or current command	2nd feedrate or current limit	—
VMON、AMON	Speed, current monitor (Output selection is possible by parameter.)					
FMA、FMB	—	—	Pulse command	Pulse command	—	Pulse command
AP、BP、ZP	Encoder output, display output, present value output, command pulse output, draw pulse output					
IN7	Operation	Operation	Operation	Operation	Operation	Operation
IN6	Reset	Reset	Reset	Reset	Reset	Reset
IN5	MB check	MB check	MB check	MB check	MB check	MB check
IN4	CW permit	—	CW permit	Deviation clear	Speed selection 2	DRAW3
IN3	CCW permit	Monitor changeover	CCW permit	Current control changeover	Speed selection 1	DRAW2
IN2	Present value clear	Present value clear	Deviation clear	Position control changeover	CW command	DRAW1
IN1	Home point stop	Speed limit changeover	Home point stop	Home point stop	CCW command	DRAW0
IN0	PON input	PON input	PON input	PON input	PON input	PON input
OUT4	Servo normal	Servo normal	Servo normal	Servo normal	Servo normal	Servo normal
OUT3	Servo ready	Servo ready	Servo ready	Servo ready	Servo ready	Servo ready
OUT2	Stop detection /Home point stop ON	Stop detection	In-position /Home point stop ON	In-position /Home point stop ON /Stop detection	Stop detection	Stop detection
OUT1	Warning	Warning	Warning	Warning	Warning	Warning
OUT0	MB output	MB output	MB output	MB output	MB output	MB output

●Example of special sequence input/output

When you wish to use a sequence function other than the standard sequence, you can select it within the number of I/Os. (Option)

Type / Assignment	Special 1 for mode 01	Special 2 for mode 01	Special 3 for mode 02	Special 4 for mode 03	Special 5 for mode 03	Special 6 for mode 04	Special 7 for mode 05	Special 8 for mode 06
IN5	Current limit changeover	MB check	MB check	Current limit changeover	MB check	MB check	Speed selection 2	MB check
IN4	DB check	DB check	DB check	DB check	DB check	DB check	DB check	DB check
IN3	Zero command	Monitor changeover	Monitor changeover	Monitor changeover	Present value clear	Current control changeover	Speed selection 1	Pulse prohibit
IN2	Present value clear	Present value clear	Present value clear	Present value clear	Deviation clea	Position control changeover	CW command	CW command
IN1	Home point stop	Home point stop	Speed limit changeover	Home point stop	Home point stop	Speed limit changeover	CCW command	CCW command
OUT2	Home point stop ON	Home point stop ON	Stop detection	In-position /Home point stop ON	In-position /Home point stop ON	In-position /Stop detection	Stop detection	Stop detection
OUT1	DB output	DB output	DB output	DB output	DB output	DB output	DB output	DB output
OUT0	Warning	MB output	MB output	Warning	MB output	MB output	Warning	MB output

●Input/output sequence of VLBus-V specifications

Assignment	NCBOY mode 31	割付	NCBOYモード 31
REF	Analog input A	IN7	General-purpose input
CLI	Analog input B	IN6	Home point slowdown limit
VMON	Analog output A	IN5	MB input
AMON	Analog output B	IN4	DB input
FMA、FMB	Pulse input	IN3	"+" overrun
APD、BPD、ZPD	Display output Present value output Command value output User's defined pulse output	IN2	"-" overrun
		IN1	Skip
		IN0	Main circuit ON
		OUT2～4	General-purpose output
		OUT1	DB output
		OUT0	MB output

The VLBus-V specifications allows you to insert into the servo amplifier option slot a board for optical communication with positioning unit NCBOY-200 or 3200. The baudrate is as fast as 10 Mbps.

Each input/output of VLBus-V servo amplifier allows analog connection and pulse connection. You can assign a desired function to general-purpose input/output.

Specifications Table

●General specifications/Performance specifications

Type of amplifier		006P1	012P1	006P2	012P2	025P2	035P3	070P3	100P3	200P3	320P3	500P3	Planned type
Control system		PWM, 3-phase sine-wave											
Main circuit	Master power voltage	Single phase AC100V～115V -15%～+10% 50/60Hz		Single phase AC200V～230V -15%～+10% 50/60Hz			Three -phase AC200V～230V -15%～+10% 50/60Hz						
	Power capacity	250VA	500VA	250VA	1.2kVA	1.7kVA	2.6kVA	5.4kVA	8.0kVA	18kVA	35kVA	59kVA	
Control circuit	Master power voltage	Single phase AC100V～115V -15%～+10% 50/60Hz		Single phase AC200V～230V -15%～+10% 50/60Hz			Three -phase AC200V～230V -15%～+10% 50/60Hz						
	Power capacity	50VA	50VA	50VA	50VA	50VA	65VA	80VA	80VA	100VA	150VA	150VA	
Max. motor combination		100W	200W	100W	500W	1kW	1.5kW	3.4kW	5.0kW	11kW	22kW	37kW	
Continuous output current		1.4A(rms)	2.1A(rms)	1.4A(rms)	3.4A(rms)	5.7A(rms)	8.3A(rms)	18.4A(rms)	28.3A(rms)	56.6A(rms)	99A(rms)	166A(rms)	
Instantaneous max. current		4.2A(rms)	5.7A(rms)	4.2A(rms)	8.5A(rms)	17.7A(rms)	25.0A(rms)	49.5A(rms)	71.0A(rms)	141A(rms)	226A(rms)	353A(rms)	
Speed position sensor		Resolver or 17-bit serial encoder (Both resolver and encoder can have absolute specifications.)											
Range of speed control		1:5000 (Ratio of lower limit speed and rated speed, which allows output of motor rated current.)											
Speed fluctuation ratio		±0.02 % or less under load of 0 ～ 100 % or at power of -15 ～ 10 %.±0.2 % or less at temperature of 0 ～ 55° C (The specified values are obtainable at rated speed.)											
Heat loss	Main circuit	8W	12W	8W	22W	39W	58W	98W	178W	310W	720W	1200W	
	Control circuit	20W	20W	20W	20W	20W	26W	32W	32W	40W	50W	50W	
Reverse-current absorption resistor capacity		10W	10W	20W	20W	30W	60W	80W	100W	180W	Changes with resistor capacity.	Changes with external resistor.	
Mass (standard)		1.3kg	1.3kg	1.3kg	1.3kg	2.3kg	2.4kg	4.5kg	7.0kg	12kg	31kg	63kg	
Outer dimensions (W*H*D)		65*170*150	65*170*150	65*170*150	65*170*150	110*170*180	110*170*180	110*250*180	130*307*197	220*410*230	350*500*315	585*500*353	
General-purpose input		DC24V, 6 mA , 8 numbers (For speed control: Operation, reset, MB check, CW permit, CCW permit, present value clear, home point stop and PON input) Both sink ("-" common) connection and source ("+" common) connection are possible.											
General-purpose output		DC24V, 50 mA, 5 numbers (For speed control: Servo normal, servo ready, stop detection, warning and MB output) Both sink ("-" common) connection and source ("+" common) connection are possible.											
General-purpose I/O power supply		Power of DC24V, 200 mA can be used for the general-purpose I/O power supply.											
Speed, current control	Speed command	DC0～±10V; Maximum motor speed at ±10V (Setting of ratio is possible.)Input resistance 49 kΩ, AD resolution 12-bit (Speed limit in current control mode)											
	Current limit	DC0～±10V; Maximum motor torque at ±10V (Setting of ratio is possible.)Input resistance 49 kΩ, AD resolution 12-bit (Current command in current control mode)											
Position control	No. of divisions	Resolver 24,000 P/rev, encoder 131,072 P/rev (Travel distance per pulse can be set by 65535/65535.)											
	Command type	CW/CCW pulse (Phase A/phase B pulse and CW/CCW signal/feed pulse are also permitted.)DC3.5 V～5.5 V, 16 mA photo coupler input, frequency 500 kHz (max.)											
Pulse output	No. of divisions	Resolver 24,000 P/rev, encoder 131,072 P/rev (Travel distance per pulse can be set by 65535/65535.)											
	Output type	Phase A/phase B pulse (CW/CCW pulse), Vout: 3 V (typ) 20 mA (max.), output equivalent to AM26LS31, frequency 500 kHz (max.)											
Acceleration /deceleration	Soft start	Acceleration/deceleration time can be set separately for the speed command. Linear acceleration/deceleration in the range of 0.000 ～ 65.535 s in increments of 0.001 s.											
	S-type	Acceleration/deceleration time can be specified for speed command or pulse command. S-type acceleration/deceleration in the range of 0.000 ～ 65.535 s in increments of 0.001 s.											
Monitor function	Monitor output	Speed or current monitor, 0 ～ ±10 V, output resistance 330 Ω (protection against short-circuit), DA resolution 12-bit.											
	Display	LED 5-digit (Various monitor display, check, adjustment and parameter setting are possible.)											
	External display	DPA-80 (extra price) can be connected. (Monitor of speed, current, present value, electronic thermal, etc., is possible.)											
Auto tuning function		Auto gain setting by repeated tuning operation.											
Protection function		Overcurrent, overvoltage, voltage drop, motor overload (electronic thermal, instant thermal), fin overheat, reverse-current resistor overload, resolver breakage, encoder breakage, etc.											
General specifications	Operating environment	Temperature: 0 ～ 55° C (non-freezing), humidity: 35 ～ 90 %RH (non-condensing) Atmosphere: Neither dust, metal chip or corrosive gas is included. Altitude for installation: 1,000 m or less											
	Vibration resistance	10 ～ 55 Hz, 1G or less											
	Storing environment	Temperature: -10 ～ 70° C (non-freezing), humidity: 35 ～ 90 %RH (non-condensing) Atmosphere: Neither dust, metal chip or corrosive gas is included.											
	Protective structure	IP10											
	Division of overvoltage	Overvoltage category Ⅱ											
	Protective insulation	Protective insulation is done for all interfaces (CN1, CN2, CN5, CN9) from the primary power supply.											

The reverse-current absorption resistor capacity is the absorption capacity of the resistor incorporated in the servo amplifier. It is possible to increase the capacity by adding an external resistor.

Type of V series amplifier

VL AS V- □□□P□-□□

- VELCONIC family
- Name of type
- Name of series (V series)
- Maximum current[A(peak)] Ex.) 0.35: 35 A
- Power specification 1: Single phase, AC100 V 2: Single phase, AC200 V 3: 3-phase, AC200 V 4: 3-phase, AC400 V
- Option 1 H: Resolver A: Resolver multi-turn ABS E: Encoder
- Option 2 X: None V: VLBus-V

Designed for UL/CE-Marking

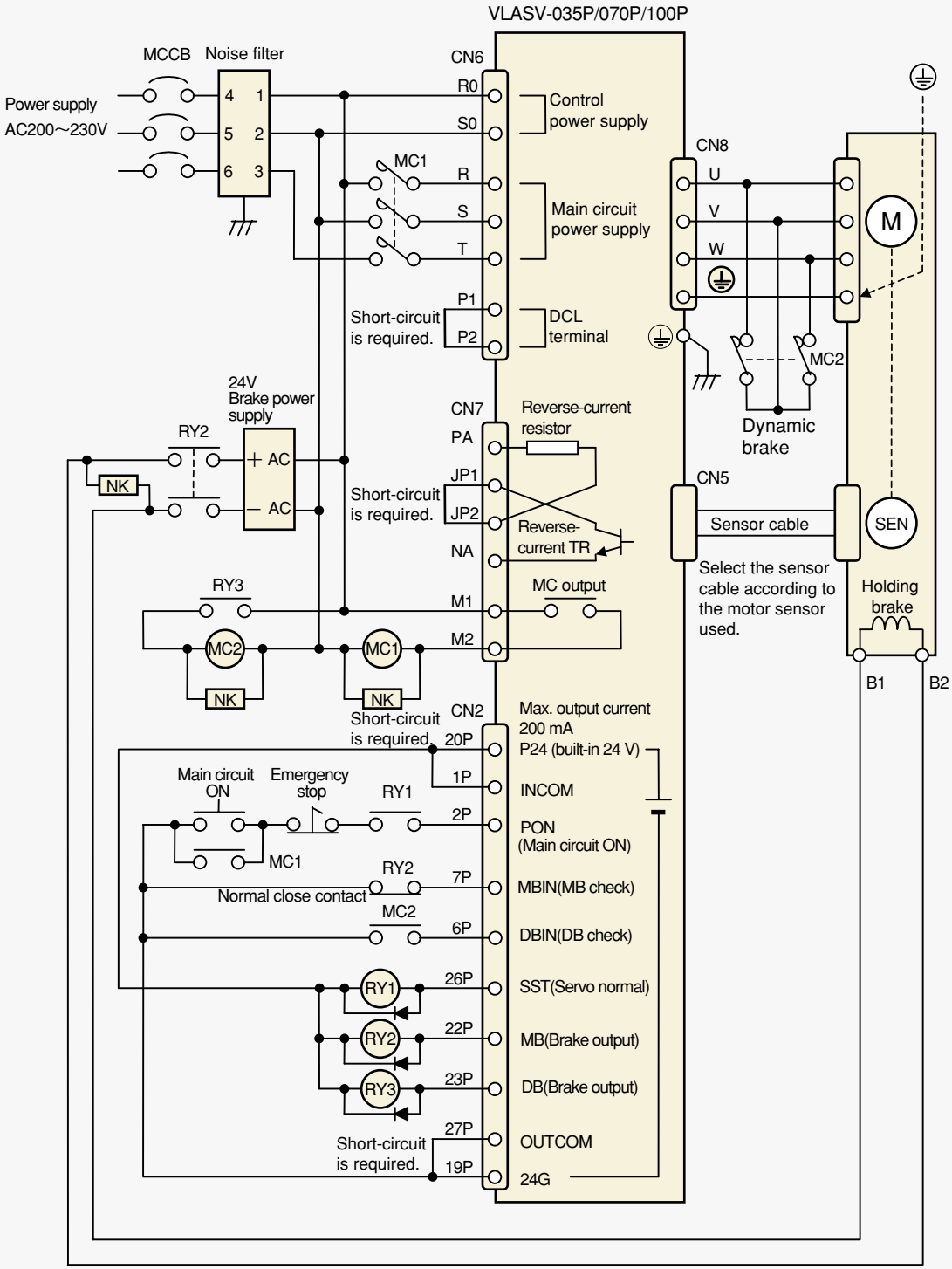
UL508C

EN50178 (European standard)

Main Circuit

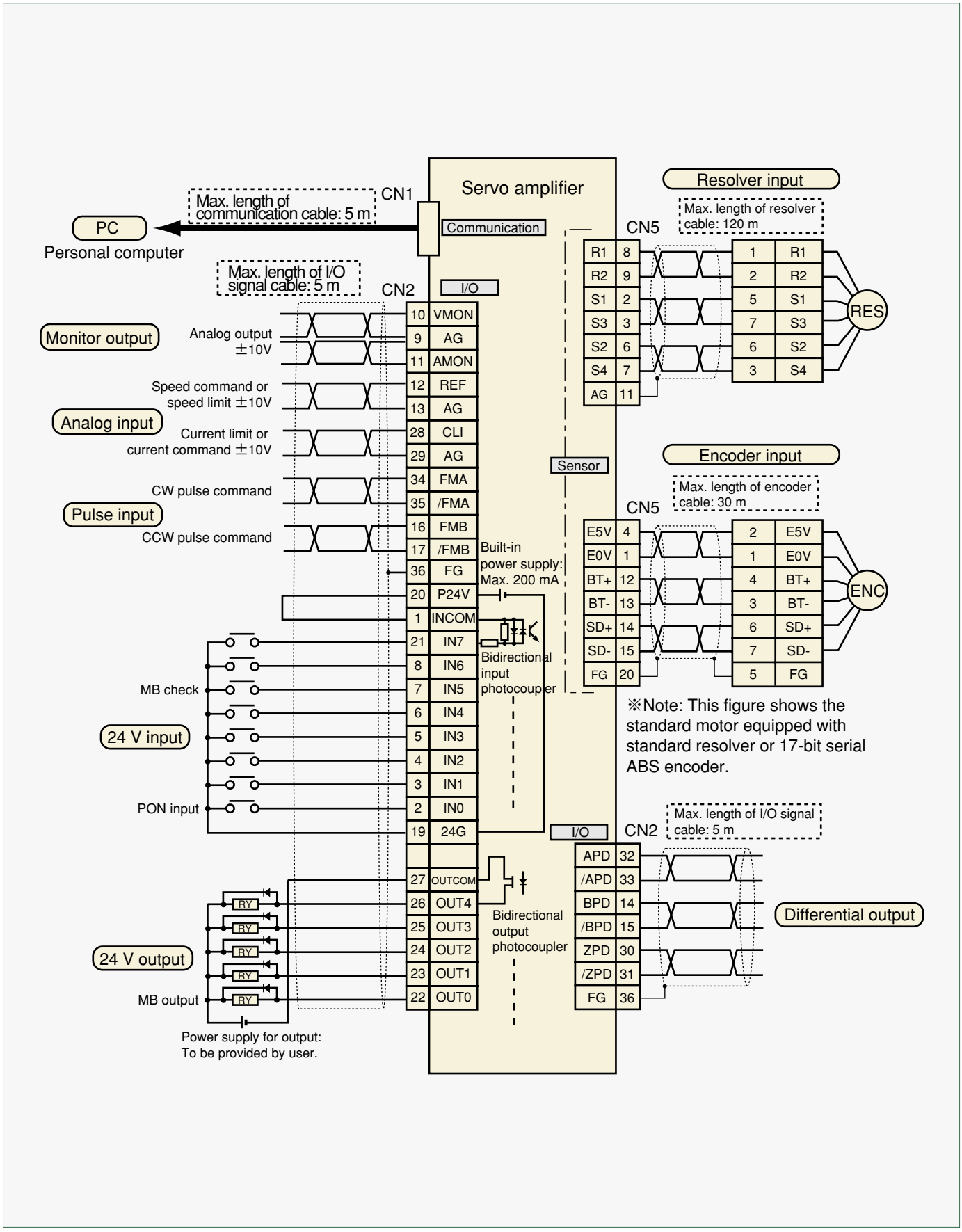
To assure the safety of the servo system, single operation sequences and joint operation sequence of holding and dynamic brakes are provided. The control power is separated from the main circuit power, and only the main circuit can be blocked by PON signal.

● Example of main circuit connection (when holding and dynamic brakes are used jointly)



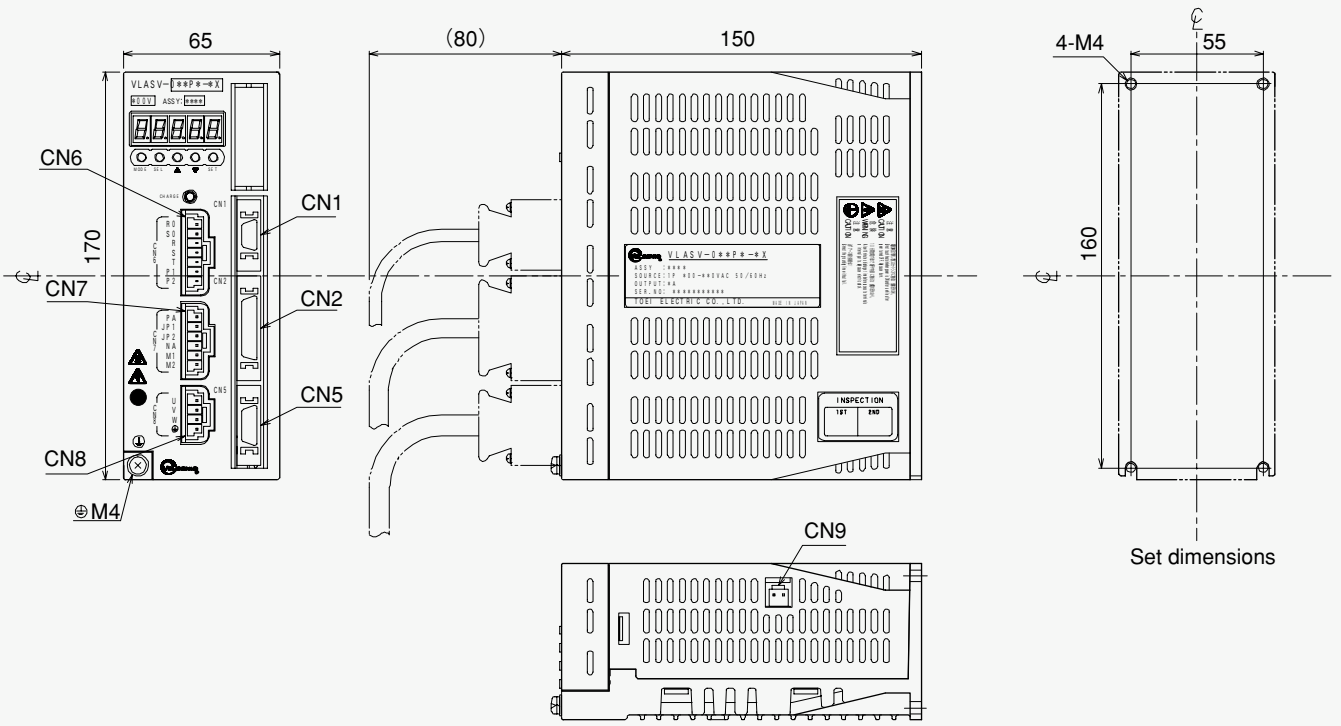
制御回路

As bidirectional photocouplers are used for the sequence I/O interface, both sink ("-" common) connection and source ("+" common) connection are possible. Analog input, pulse profile input and various networks can be supported. Connection with diversified FA controllers is possible.

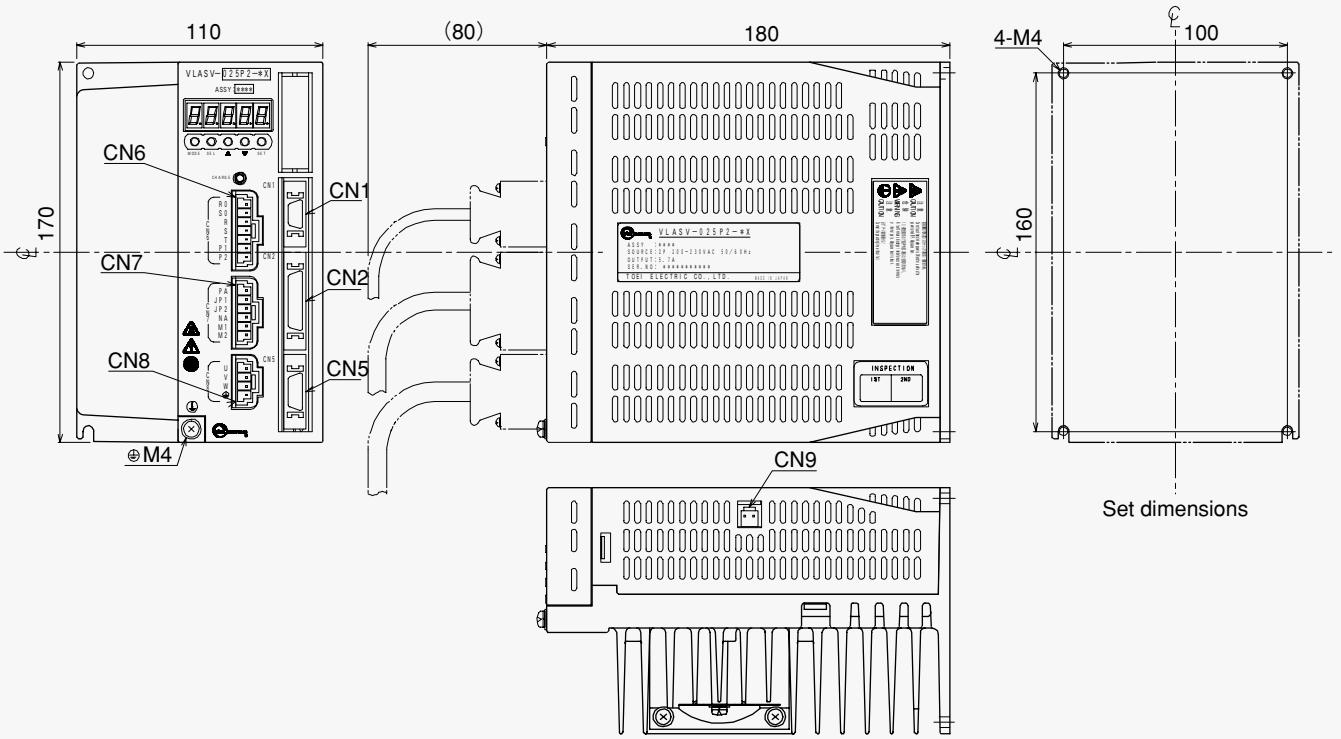


External View

■VLASV-006P1・006P2・012P1・012P2

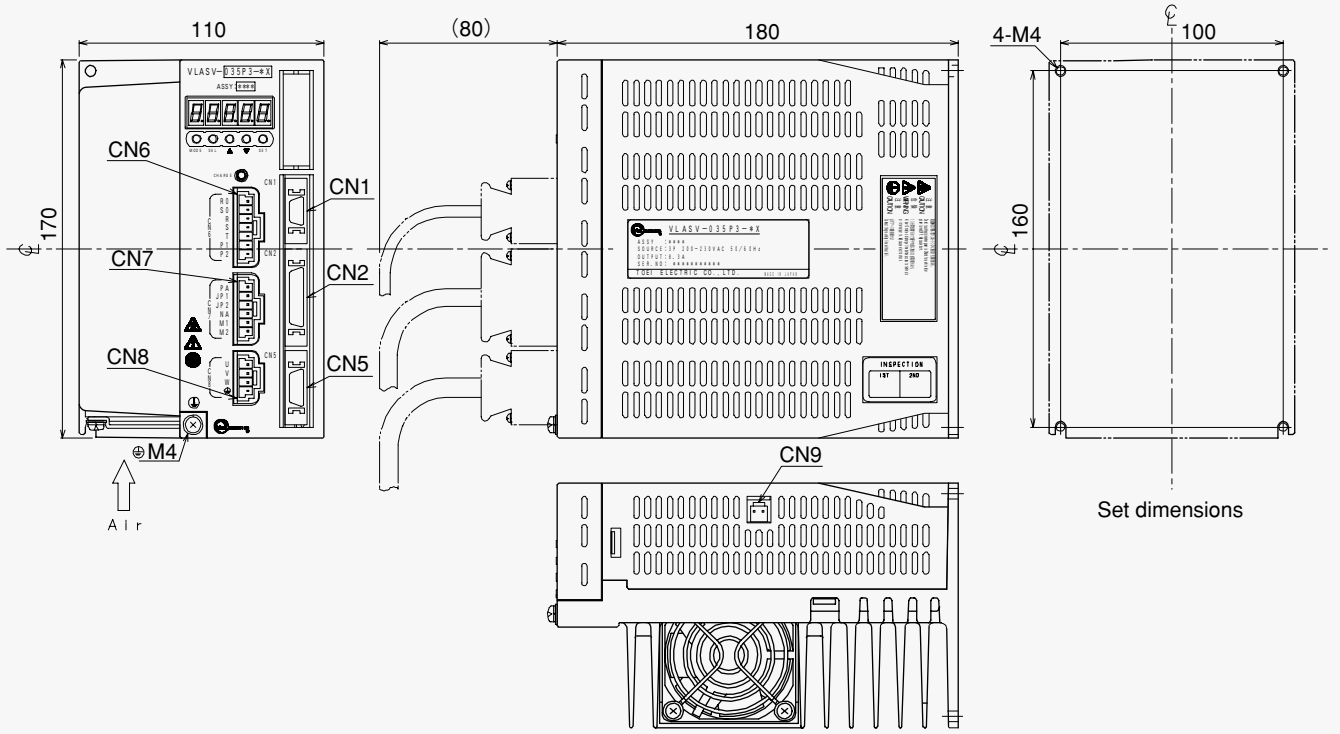


■VLASV-025P2



External View

■VLASV-035P3



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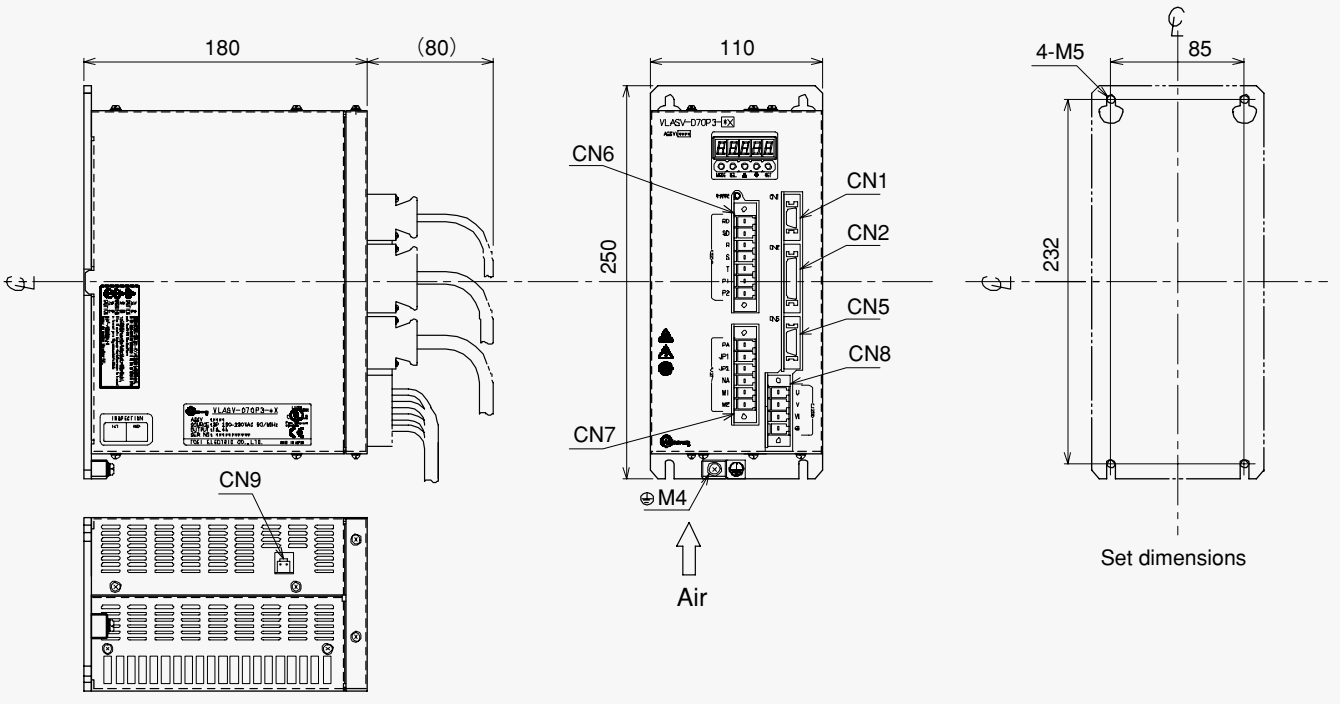
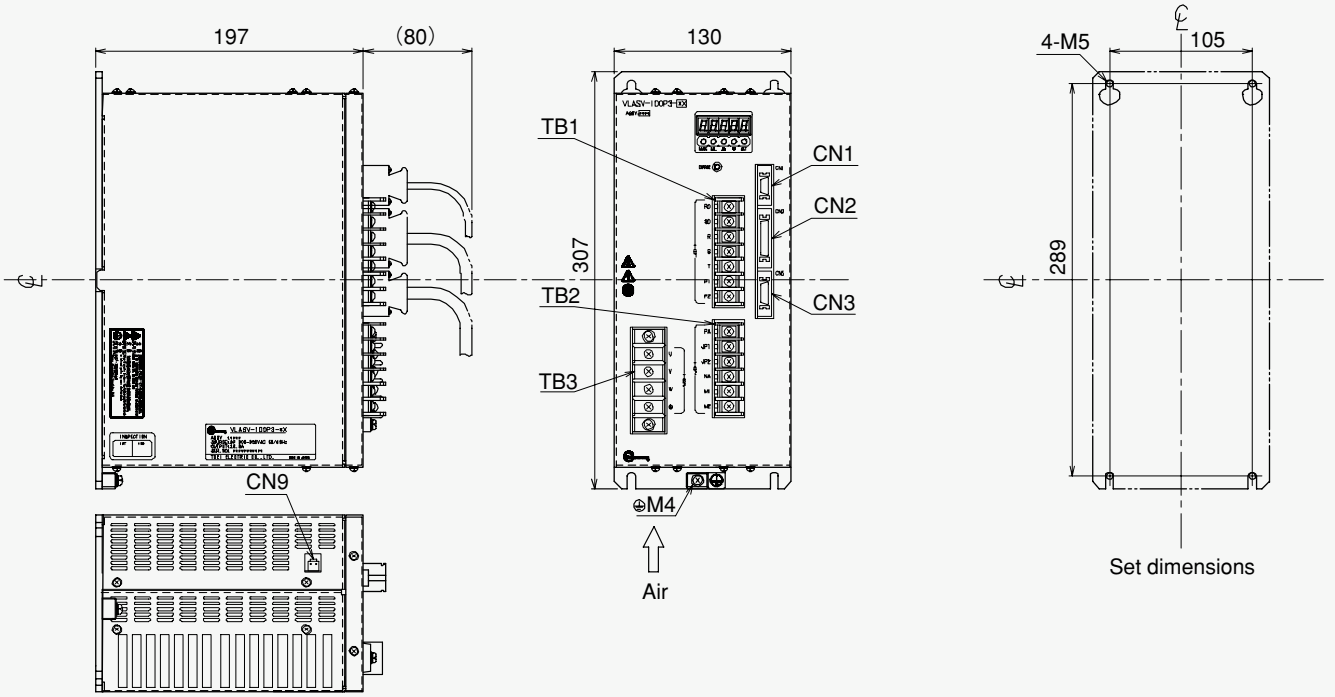


External View

VLASV-100P3



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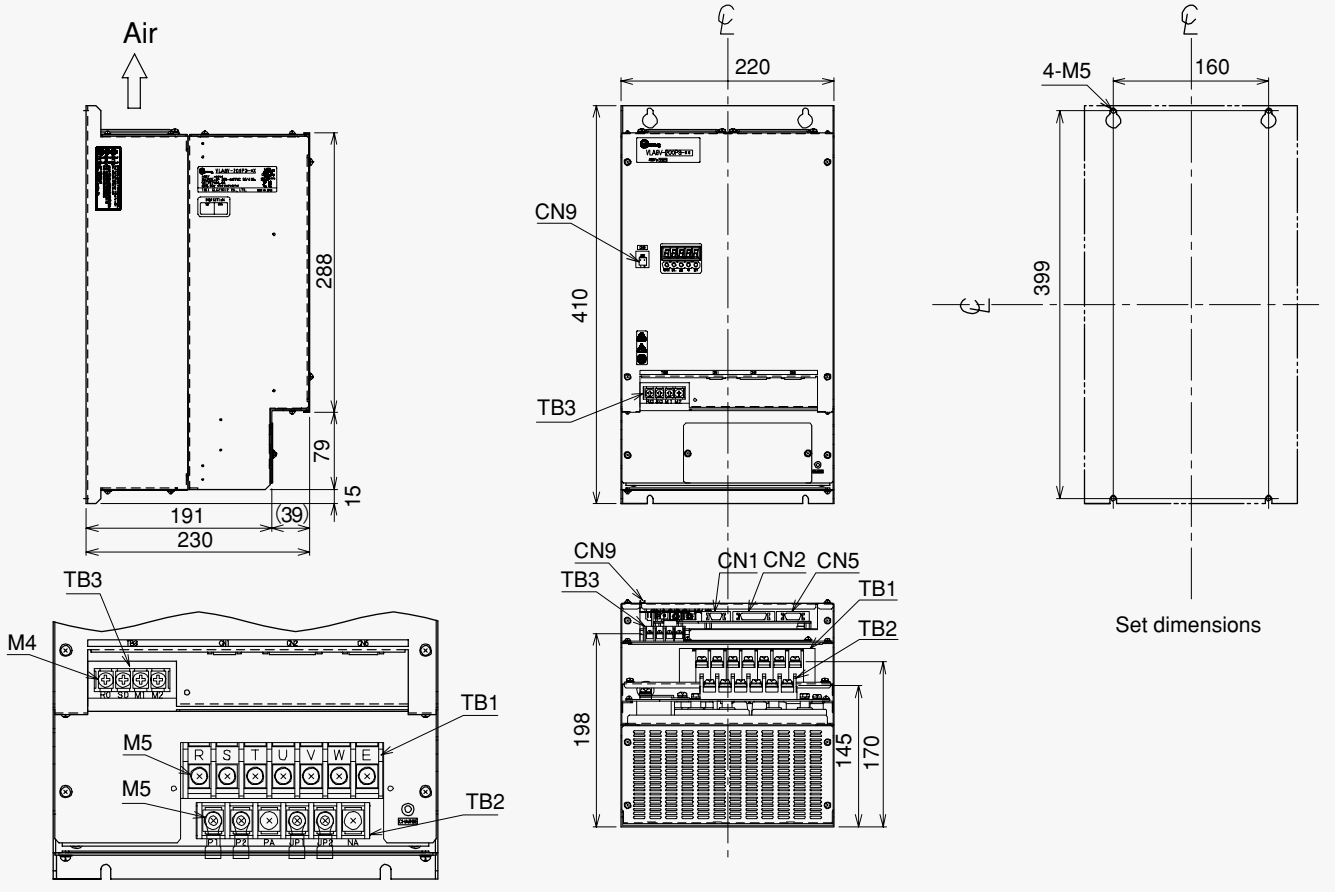
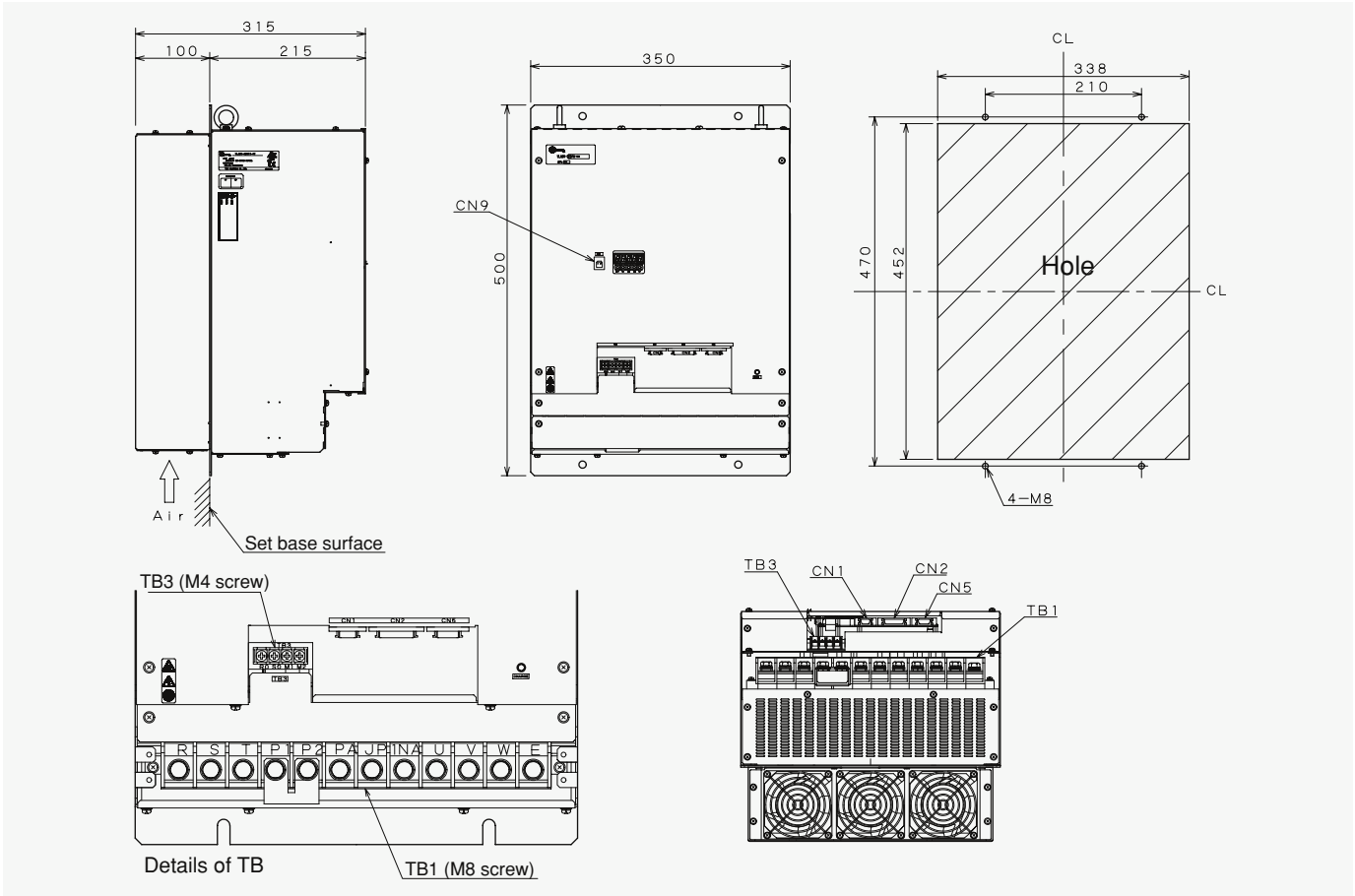
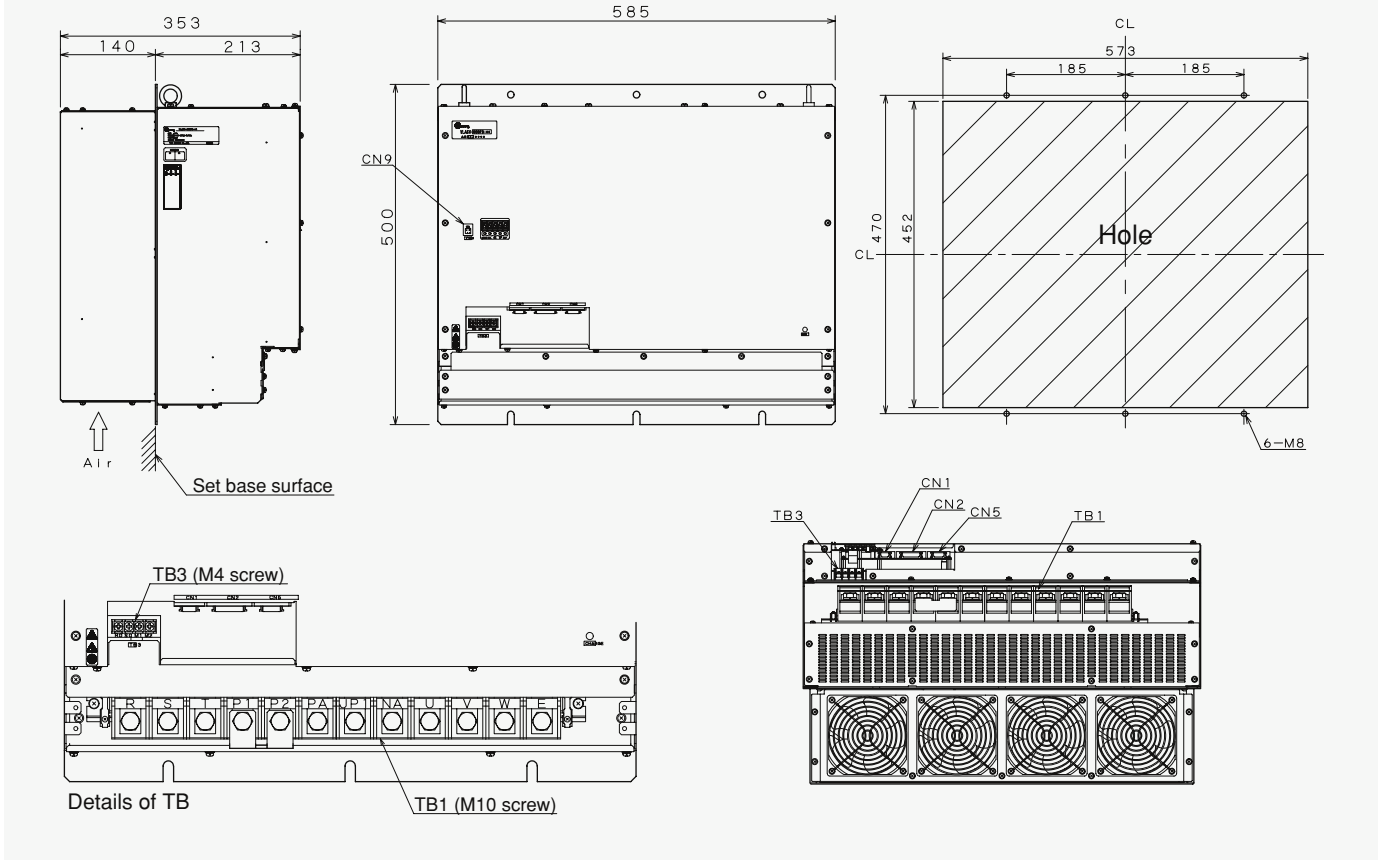


External View

VLASV-320P3



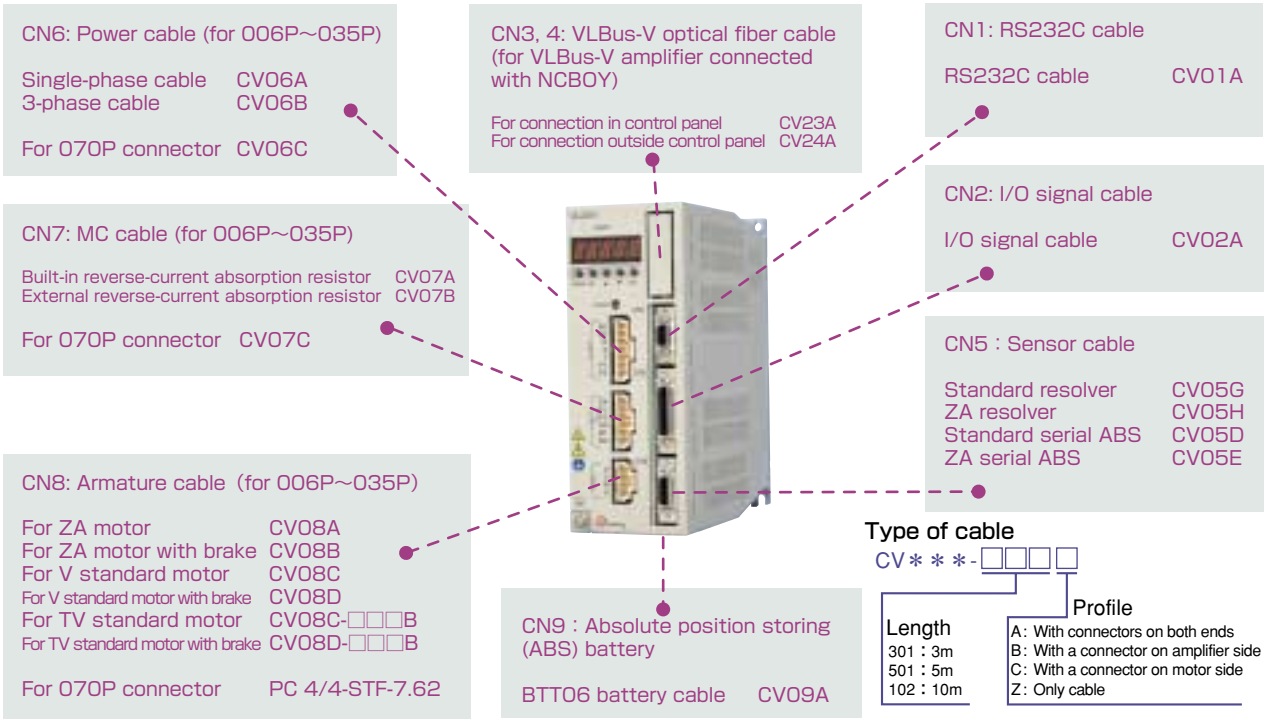
VLASV-500P3



Selecting Cables

The V series servo amplifier is not provided with cables or connectors.

For the small-capacity amplifiers of 035P or less, cables for the power circuit, brake circuit and motor main circuit are available optionally. For amplifier 070P, only connector is available for an extra price. For servo amplifier 100P or over, a terminal block is used.



Main circuit cable for 035P or less, and 070P connector

Connector	Cable name	With connectors on both ends	With a connector on amp. side alone	Type of amplifier
CN6	Single-phase power cable	CV06A-□□□A	CV06A-□□□B	006P1, 006P2, 012P1, 012P2, 025P2, 035P3
	3-phase power cable	CV06B-□□□A	CV06B-□□□B	035P3
	070P power connector	-	CV06C	070P3
CN7	MC cable(for built-in reverse-current absorption resistor)	CV07A-□□□A	CV07A-□□□B	006P1, 006P2, 012P1, 012P2, 025P2, 035P3
	MC cable(for external reverse-current absorption resistor)	CV07B-□□□A	CV07B-□□□B	006P1, 006P2, 012P1, 012P2, 025P2, 035P3
	070P MC connector	-	CV07C	070P3
CN8	V ZA motor armature cable	CV08A-□□□A	CV08A-□□□B	006P1, 006P2, 012P1, 012P2, 025P2, 035P3
	V ZA motor armature cable (with brake)	CV08B-□□□A	CV08B-□□□B	006P1, 006P2, 012P1, 012P2, 025P2, 035P3
	V standard motor armature cable	CV08C-□□□A	CV08C-□□□B	006P1, 006P2, 012P1, 012P2, 025P2, 035P3
	V standard motor armature cable (with brake)	CV08D-□□□A	CV08D-□□□B	006P1, 006P2, 012P1, 012P2, 025P2, 035P3
	T standard motor armature cable	-	CV08C-□□□B	006P1, 006P2, 012P1, 012P2, 025P2, 035P3
	T standard motor armature cable (with brake)	-	CV08D-□□□B	006P1, 006P2, 012P1, 012P2, 025P2, 035P3
	070P armature connector	-	PC 4/4-STF-7.62	070P3

Motor sensor cable

Connector	Cable name	With connectors on both ends	With a connector on amp. side alone	Type of amplifier
CN5	V standard motor resolver cable	CV05G-□□□A	CV05G-□□□B	All types
	V ZA motor resolver cable (Note)	CV05H-□□□A	CV05H-□□□B	All types
	V standard motor serial ABS cable	CV05D-□□□A	CV05D-□□□B	All types
	V ZA motor serial ABS cable (Note)	CV05E-□□□A	CV05E-□□□B	All types

Note: For ZA11K15 and ZA14K15, use the V standard motor sensor cable.

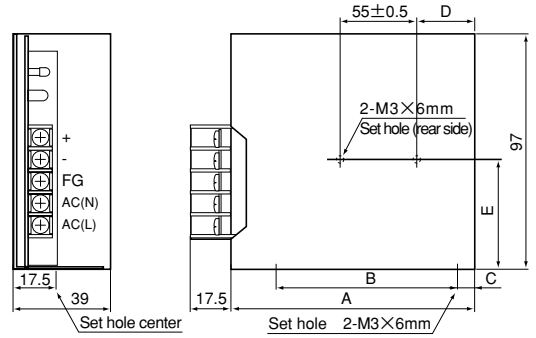
Communication cable and ABS battery cable

Connector	Cable name	With connectors on both ends	With a connector on amp. side alone	Type of amplifier
CN1	RS232C communication cable	CV01A-□□□A	-	All types
CN2	I/O signal cable	CV02A-□□□A	CV02A-□□□B	All types
CN9	BTT06 battery cable (resolver ABS spec.)	CV09A-□□□A	-	All types
CN3, CN4	VLBus-V optical fiber cable (for connection in control panel)	CV23A-□□□A	-	All types
	VLBus-V optical fiber cable (for connection outside control panel)	CV24B-□□□A	-	All types

Selecting Peripheral Equipment

As the small brake power supply, noise filter, etc., are made by other makers, only the reference specifications are given below. For detailed specifications, see the material made out by each maker.

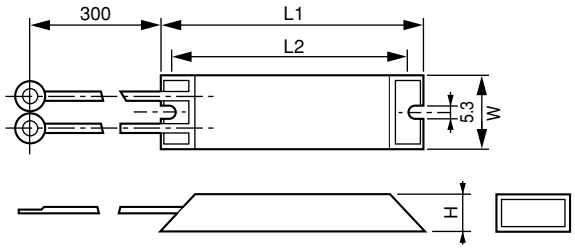
Brake power supply



Type	Input voltage	Output voltage	Output current	A	B	C	D	E
P15E-24-N	Single phase AC85 ～264V	DC24V	0.7A	99.5	74±0.5	7	23.5	45.5
P30E-24-N		DC24V	1.3A	124.5	83±0.5	15	34	42.5

External reverse-current absorption resistor

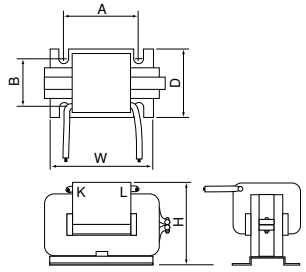
This resistor prevents increase in PN voltage caused by energy which returns to the amplifier at the time braking. If the capacity of the built-in resistor is not enough, add an external resistor.



Type	Absorption capacity	L1	L2	W	H
RGH60A 100Ω	30W	115	100	40	20
RGH200A 30Ω	100W	215	200	50	25
RGH400A 30Ω	200W	265	250	60	30

High-frequency suppress DCL

This is the DCL for suppressing high-frequency. The amplifier of AC100 V specification is called the "ACL".

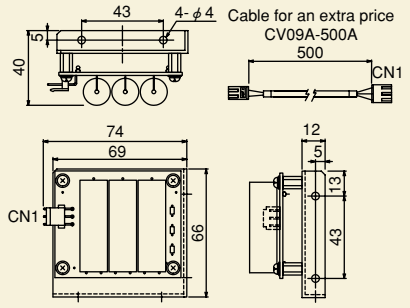


Motor capacity	Type of amp.	Amp. spec.	Reactor spec.							
			Type of reactor	Inductance	Rated current	W	H	D	A	B	4-φU
				mH	A	mm					
100W or less	VLASV-006P1	AC100V 1φ	#P0211001	6	4	90	65	60	55	35	4
200W	VLASV-012P1	AC100V 1φ									
100W or less	VLASV-006P2	AC200V 1φ	#P0210901	22	1	50	45	40	33	32	4
200W	VLASV-012P2	AC200V 1φ	#P0210902	12	2	70	55	55	40	32	4
400W	VLASV-012P2	AC200V 1φ	#P0210903	6	4.5	90	65	60	55	35	4
500W	VLASV-012P2	AC200V 1φ									
600W	VLASV-025P2	AC200V 1φ	#P0210904	5	9	115	85	90	70	55	4.5
800W	VLASV-025P2	AC200V 1φ									
1kW	VLASV-035P3	AC200V 3φ	#P0210905	2	11	115	80	75	70	35	5
1.5kW	VLASV-035P3	AC200V 3φ									
1.8kW	VLASV-070P3	AC200V 3φ									
2kW	VLASV-070P3	AC200V 3φ	#P0210906	1.5	20	135	100	90	80	47	5
2.4kW	VLASV-070P3	AC200V 3φ									
3kW	VLASV-070P3	AC200V 3φ									

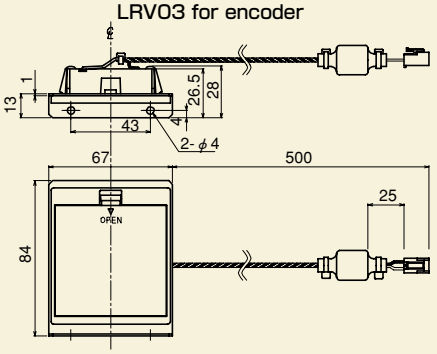
※ If the motor output power exceeds the value given in the above table, consult with us.

Absolute position storing battery

BTT06 for resolver



LRV03 for encoder



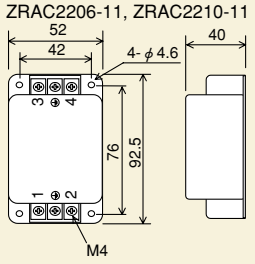
Noise filter

Applicable types

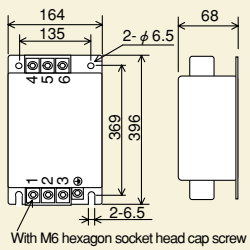
Motor output	Type
30W～500W	ZRAC2206-11
600W～800W	ZRAC2210-11
1.0kW～1.5kW	ZRWT2210-ME
1.8kW～3.0kW	ZRWT2220-ME
4.5kW～5.0kW	ZRWT2230-ME
7.0kW～10kW	ZRCT5050-MF

※If the motor output power exceeds the value given in the above table, consult with us.

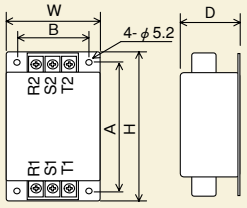
ZRAC2206-11, ZRAC2210-11



ZRCT5050-MF



ZRWT2210-ME, ZRWT2220-ME, ZRWT2230-ME



Type	H	W	D	A	B	Screw
ZRWT2210-ME	194	90	40	170	68	M4 ＋
ZRWT2220-ME	214	100	50	190	78	M4 ＋
ZRWT2230-ME	236	125	60	190	101	With M6 hexagon socket head cap screw

Case grounding (For these types, clamp the grounding wire to the set screw together.)

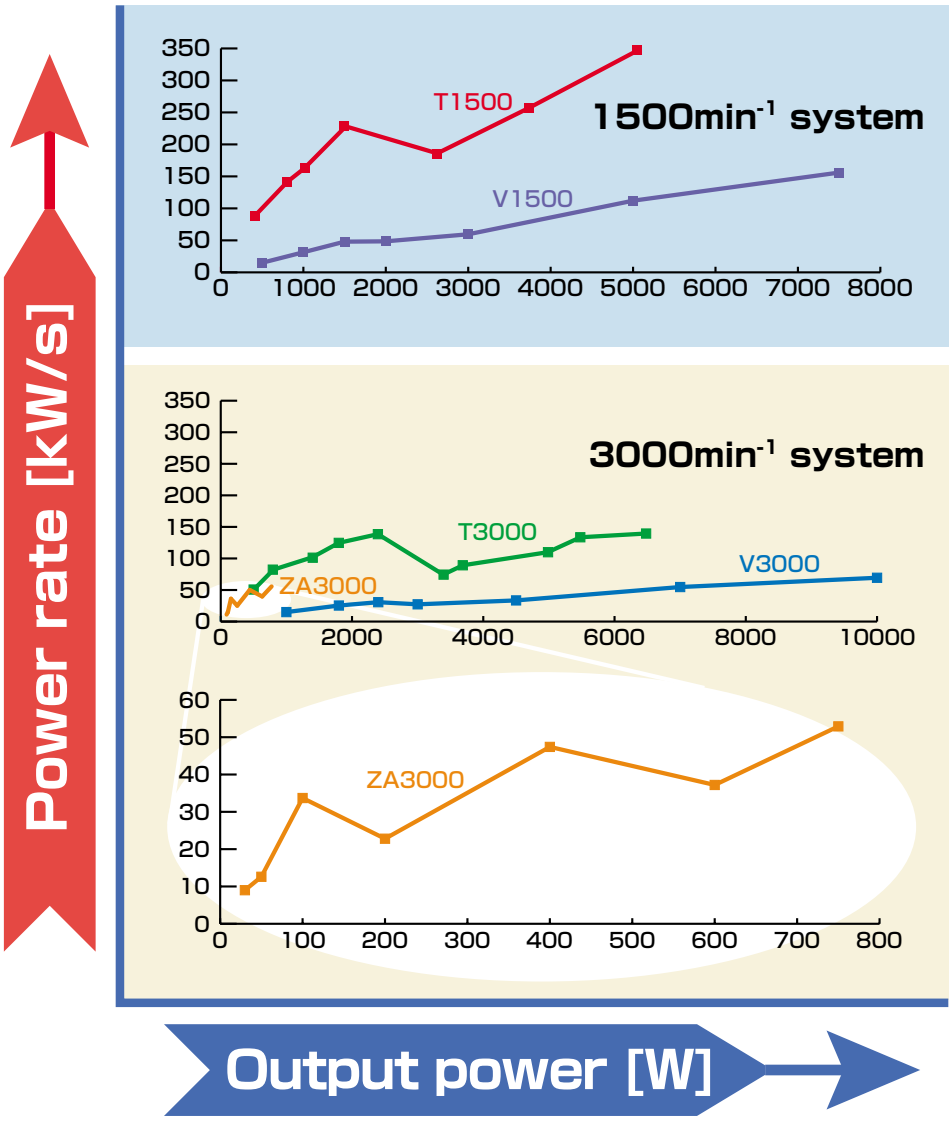
Assures high performance when used together with V series amplifier.

BS Servo Motor

When used together with the V series servo amplifier, the V series servo motor as well as the previous T-series motor can improve the control ability. Additionally, the ZA type motor, the evolved Z type motor, assures high output power and high rigidity though it is miniature-sized. The ZA type 11 kW, 14 kw, and G series 20 kW and 33 kW are added to the lineup of large-sized servo motors.

Class	Series	Type	Rated output [W]	Rated/Max. speed [min^{-1}]	Method of protection
LOW inertia	V	ZA	30	3000/5000	IP65
			50		
			100		
			200		
			400		
			600		
			750		
	T	Std.	400	1500/2000	IP44
			800		
			1.0k		
			1.5k		
			2.6k		
			3.3k		
			3.7k		
			5.0k		
			7.5k	2000/2500	
			10k		
			500	3000/4000	IP54 (Designed for CE-Marking)
			800		
			1.4k		
			1.8k		
			2.4k		
			3.4k		
			3.7k		
			5.0k		
			5.5k		
			6.5k		
Middle inertia	V	Std.	500	1500/2000	IP65
			1.0k		
			1.5k		
			2.0k		
			3.0k		
			5.0k		
			7.5k		
			1.0k	3000/4000	
			1.8k		
			2.4k		
			3.0k		
			4.5k		
			7.0k		
			10k		
Large-sized		ZA	11k	1500/2000	
			14k	1500/1800	
	G	Std.	20k	2000/2200	IP44
			33k		

Power rate setting according to machine characteristics



The T series standard type has low inertia and large torque. It is suited for the machine requiring quick response and acceleration/deceleration repeated very frequently.

The V series standard type has large inertia, thus stable rotation and high rigidity can be assured.

The V series ZA type is the small-capacity motor whose power rate succeeds the power rate characteristic of the T series 3000 min^{-1} system.

How to identify motor model number

VL BS □-□□□□□15□□-□ □□□

- VELCONIC family
- Name of model
- シリーズ Name of series: V: V-series, G: G series, T: T series
- タイプ Type: Blank: Standard type, ZA: ZA type
- 容量 Capacity: Rated output power (Ex. 050: 500 W, 370: 3.7 kW, 11 K: 11 kW)
- Motor speed: 15 : 1500min^{-1} 20 : 2000min^{-1} 30 : 3000min^{-1}
- Motor sensor Blank: Resolver V: Resolver for T series V amplifier S1: 17-bit ABS encoder
- Options B : Brake, G : Reduction gear, K : Straight shaft without key, O : Oil seal, T : Taper shaft (Indication of two or more options is possible. Ex.: BKO) ※The contents of options differ with the series.
- Special spec. number

※For details, see the descriptions on each motor model.

V Series Standard Type 1500 min^{-1}: Characteristics (Middle Inertia)

●Time rating: Continuous ●Class of insulation: F ●Ambient temperature:-10～+40℃ ●Class of vibration:V15
●Method of excitation: Permanent magnet ●Method of protection: Totally-enclosed foam-proof (excluding shaft through area) IP65 ●Mounting method: Flange mounted type

Item \ Model		VLBSV-						
		05015	10015	15015	20015	30015	50015	75015
Rated output	W	500	1000	1500	2000	3000	5000	7500
Rated torque	N・m	3.18	6.37	9.55	12.7	19.1	31.8	47.8
Rated speed	min^{-1}	1500						
Max. speed	min^{-1}	2000						
Power rate	kW/s	15	31.4	48	48.5	59.5	112	156
Moment of inertia	X10^{-4} kg-m^2	6.76	12.9	19.0	33.4	61.3	90.8	146
Momentary max. torque	N・m	9.55	19.1	28.6	38	48	80	140
Momentary max. current	A(rms)	7.9	15.8	24.7	41	49.5	71	141
Rated voltage	V(rms)	130	126	120	127	112	122	116
Rated current	A(rms)	2.6	5.2	8.1	11.7	17.9	27.8	42.5
Torque constant	N・m/A(rms)	1.23	1.23	1.18	1.09	1.07	1.15	1.12
Heat time constant	min	15	17	20	34	40	45	55
Coil resistance	Ω	4.75	1.72	0.96	0.55	0.21	0.13	0.071
Coil inductance	mH	23.4	10.2	6.4	10.9	4.66	3.54	2.01
Induced voltage constant	V(rms)/min^{-1}	0.0767	0.0767	0.0733	0.0673	0.066	0.0707	0.0693
Permissible thrust load	N	127	127	127	323	323	323	323
Permissible radial load	N	510	578	637	1333	1480	1470	1617
Mass	kg	5.5	7.5	9.8	15.5	22	29.5	42.5
Applicable servo amplifier VLASV-	012P2	○						
	035P3		○	○				
	070P3				○	○		
	100P3						○	
	200P3							○

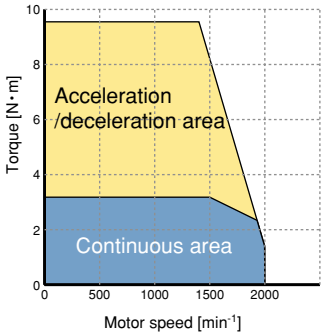
The maximum torque is obtained when the motor is used in combination with the standard BS servo amplifier. (For any combination other than the standard one, consult with us.)

Designed for UL/CE-Marking

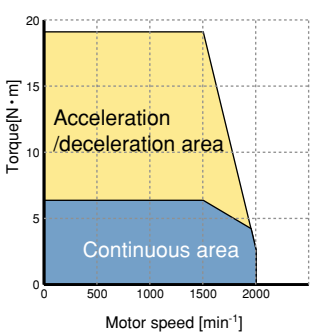
UL508C

IEC34-1/EN60034-1
Standard relating to general motors
(International standard/EU)

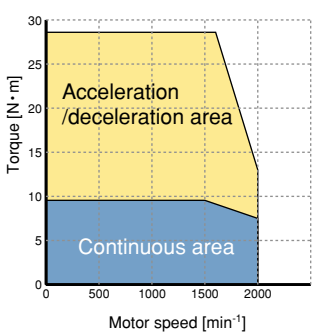
VLBSV-05015



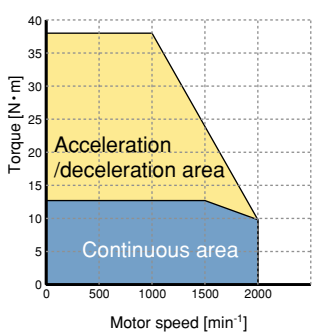
VLBSV-10015



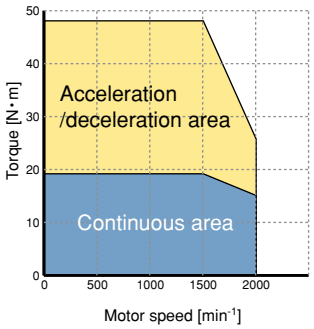
VLBSV-15015



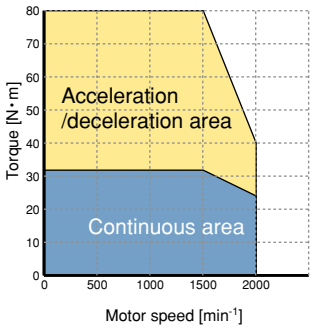
VLBSV-20015



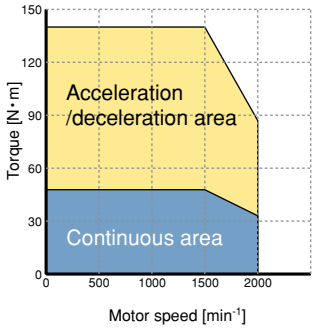
VLBSV-30015



VLBSV-50015



VLBSV-75015



B B Brake (holding brake)

The brake of the servo motor is a slim type dry non-excited electromagnetic brake. Use it for preventing the vertical shaft from falling and for holding the horizontal shaft at power OFF.

G Reduction gear

The V series servo motor uses an Able reduction gear, HPG series reduction gear or Coronet reduction gear. For detailed specifications, consult with us.

O Oil seal

If oil of the output shaft will splash from the machine side, use of an oil seal is recommended.

T Taper shaft

The servo motor is standardly provided with straight shaft with key. A taper shaft is available optionally.

K Straight shaft without key

This shaft does not have any keyway and is the same as the standard shaft in diameter and length.

V series motor model (standard 1500 min-1)

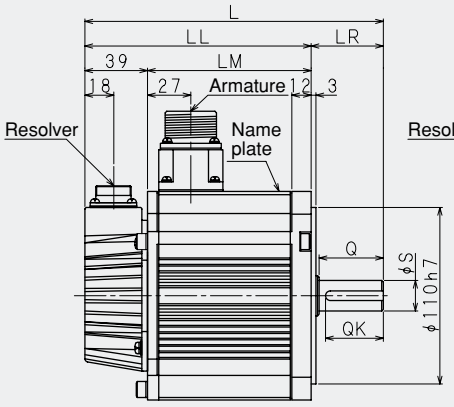
VL BS V-□□□ 1 5 □□-□ □□□

- VELCONIC family
- Name of model
- Name of series V-series
- Capacity: Indicated value × 10 = Rated output power (W) (Ex. 050: 500 W)
- Motor speed: 15: 1500 min-1
- Motor sensor: Blank: Resolver; S1: 17-bit ABS encoder
- Options: (Indication of two or more options is possible. Ex.: BKO)
  - B : Brake
  - G : Reduction gear
  - K : Straight shaft without key
  - O : Oil seal
  - T : Taper shaft
- Special spec. number

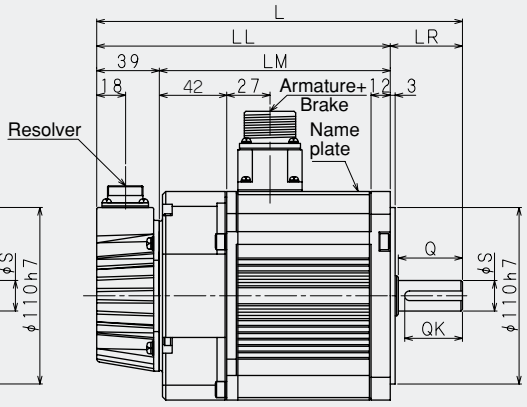
V Series Standard Type 1500 min^{-1}: Outer Dimensions (Resolver Specifications)

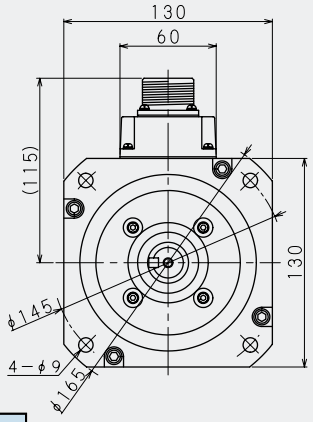
VLBSV-05015 • 10015 • 15015

Standard type

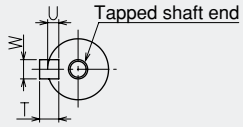


With brake





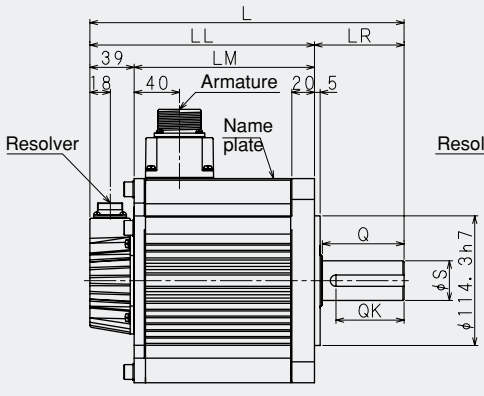
Type	L	LL	LM	LR	φS	Q	QK	W	T	U	Shaft end tap	Hook bolt
05015	186	141	102	45	19h6	40	36	6h9	6	3.5	M6 P1.0 depth 16	Not provided
10015	211	166	127	45	19h6	40	36	6h9	6	3.5	M6 P1.0 depth 16	Not provided
15015	246	191	152	55	24h6	50	45	8h9	7	4	M8 P1.25 depth 20	Not provided
05015-B	228	183	144	45	19h6	40	36	6h9	6	3.5	M6 P1.0 depth 16	Not provided
10015-B	253	208	169	45	19h6	40	36	6h9	6	3.5	M6 P1.0 depth 16	Not provided
15015-B	288	233	194	55	24h6	50	45	8h9	7	4	M8 P1.25 depth 20	Not provided



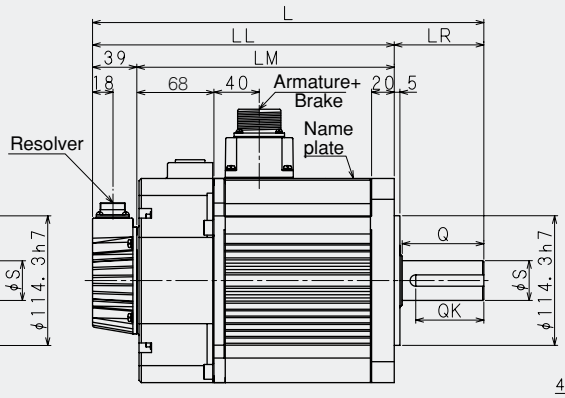
Details of shaft end

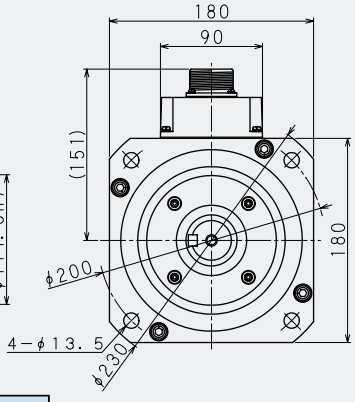
VLBSV-20015 • 30015

Standard type

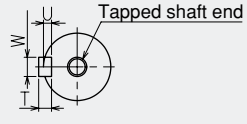


With brake





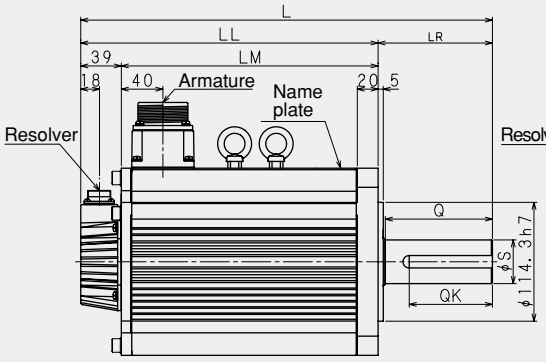
Type	L	LL	LM	LR	φS	Q	QK	W	T	U	Shaft end tap	Hook bolt
20015	277	198	159	79	$35^{+0.01}_{0}$	72	60	10h9	8	5	M10 P1.5 depth 20	Not provided
30015	321	242	203	79	$35^{+0.01}_{0}$	72	60	10h9	8	5	M10 P1.5 depth 20	Not provided
20015-B	345	266	227	79	$35^{+0.01}_{0}$	72	60	10h9	8	5	M10 P1.5 depth 20	Not provided
30015-B	389	310	271	79	$35^{+0.01}_{0}$	72	60	10h9	8	5	M10 P1.5 depth 20	Not provided



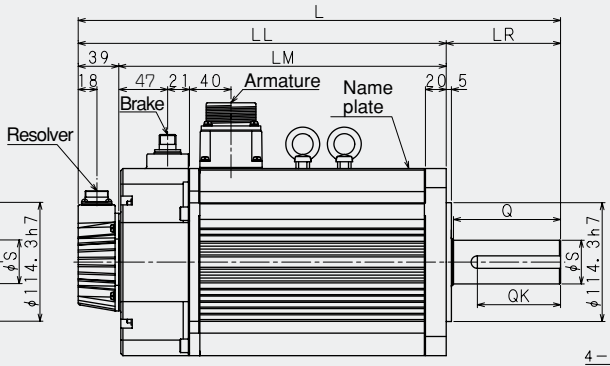
Details of shaft end

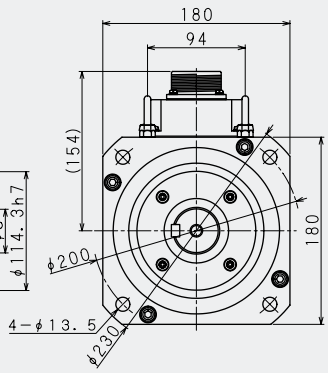
VLBSV-50015 • 75015

Standard type

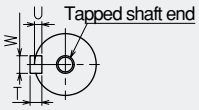


With brake





Type	L	LL	LM	LR	φS	Q	QK	W	T	U	Shaft end tap	Hook bolt
50015	396	286	247	110	42h6	103	80	12h9	8	5	M12 P1.75 depth 24	Provided
75015	480	370	331	110	42h6	103	80	12h9	8	5	M12 P1.75 depth 24	Provided
50015-B	464	354	315	110	42h6	103	80	12h9	8	5	M12 P1.75 depth 24	Provided
75015-B	548	438	399	110	42h6	103	80	12h9	8	5	M12 P1.75 depth 24	Provided



Details of shaft end

Armature plug selection table

Neither plug nor cable clamp is attached, which are available for extra prices.

Type of motor	Receptacle	Straight plug	Cable clamp	Recommended cabtyre cable dia.
VLBSV−05015	JL04V-2E20-15PE-B	JL04V-6A20-15SE-EB	JL04-2022CK(09)	φ6.5～φ9.5
VLBSV−10015	JL04V-2E20-15PE-B	JL04V-6A20-15SE-EB	JL04-2022CK(09)	φ6.5～φ9.5
VLBSV−15015	JL04V-2E20-15PE-B	JL04V-6A20-15SE-EB	JL04-2022CK(09)	φ6.5～φ9.5
VLBSV−20015	JL04V-2E24-10PE-B	JL04V-6A24-10SE-EB	JL04-2428CK(14)	φ12～φ15
VLBSV−30015	JL04V-2E24-10PE-B	JL04V-6A24-10SE-EB	JL04-2428CK(14)	φ12～φ15
VLBSV−50015	JL04V-2E32-17PE-B	JL04V-6A32-17SE	ACS-20RL-MS32F	φ16～φ20
VLBSV−75015	JL04V-2E32-17PE-B	JL04V-6A32-17SE	ACS-20RL-MS32F	φ16～φ20
For brake only	JL04V-2E10SL-3PE-B	JL04V-6A10SL-3SE-EB	ACS-08RL-MS10F	φ4～φ8

Brake performance table

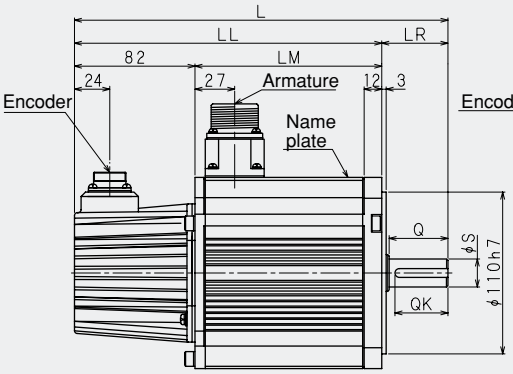
The rotor inertia and mass are the values of a single brake, excluding those of the motor.

Applicable motor	Static friction torque	Rotor inertia ×10⁻⁴	Coil (20℃)				Suction time	Release time	Mass
			Voltage	Current	Resistance	Capacity			
	N·m	kg·m²	DC V	A	Ω	W	ms	ms	kg
05015	7.84	0.675	24	0.63	38	15	55	15	2.0
10015									
15015									
20015	15.7	2.85	24	0.76	32	18	70	25	2.7
30015									
50015	29.4	3.0	24	0.96	25	23	100	35	4.4
75015	49	5.75	24	1.13	21	27	120	50	7.0

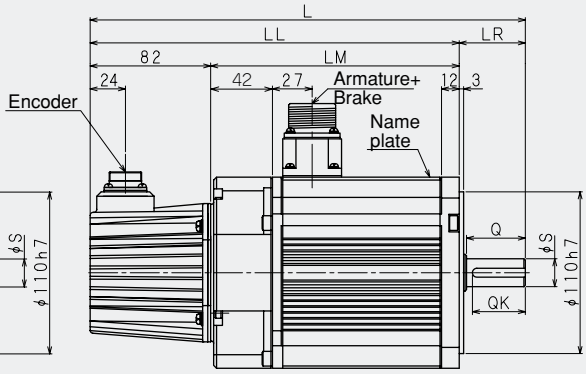
V Series Standard Type 1500 min^{-1}: Outer Dimensions (Encoder Specifications)

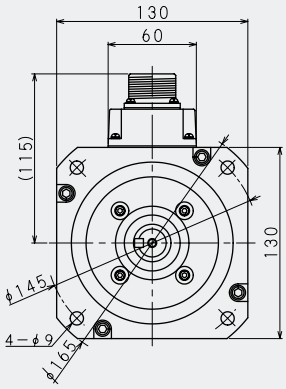
■VLBSV-05015S1 • 10015S1 • 15015S1

Standard type

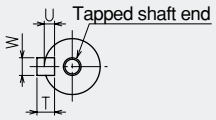


With brake





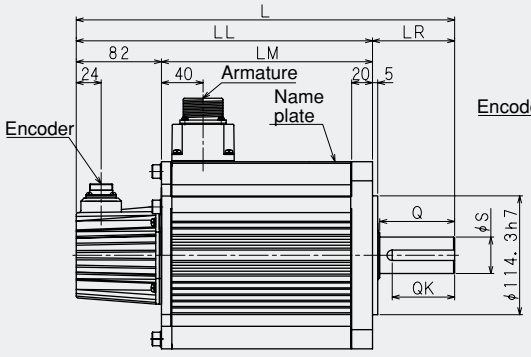
Type	L	LL	LM	LR	φS	Q	QK	W	T	U	Shaft end tap	Hook bolt
05015S1	229	184	102	45	19h6	40	36	6h9	6	3.5	M6 P1.0 depth 16	Not provided
10015S1	254	209	127	45	19h6	40	36	6h9	6	3.5	M6 P1.0 depth 16	Not provided
15015S1	289	234	152	55	24h6	50	45	8h9	7	4	M8 P1.25 depth 20	Not provided
05015S1-B	271	226	144	45	19h6	40	36	6h9	6	3.5	M6 P1.0 depth 16	Not provided
10015S1-B	296	251	169	45	19h6	40	36	6h9	6	3.5	M6 P1.0 depth 16	Not provided
15015S1-B	331	276	194	55	24h6	50	45	8h9	7	4	M8 P1.25 depth 20	Not provided



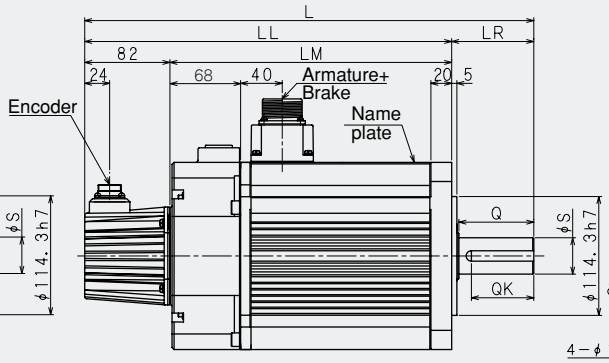
Details of shaft end

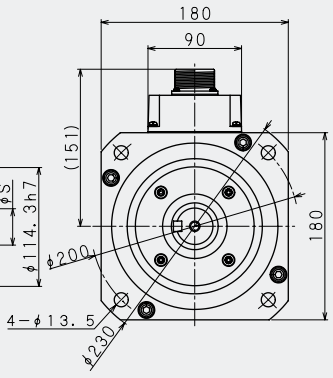
■VLBSV-20015S1 • 30015S1

Standard type

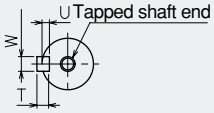


With brake





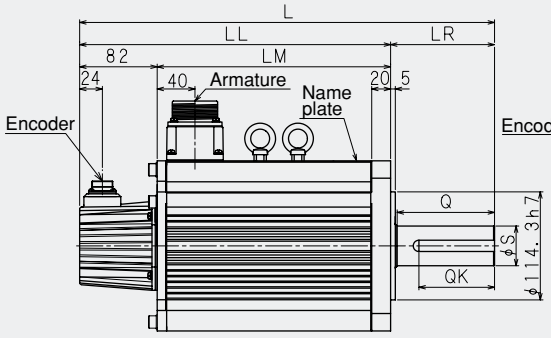
Type	L	LL	LM	LR	φS	Q	QK	W	T	U	Shaft end tap	Hook bolt
20015S1	320	241	159	79	$35^{+0.01}_{0}$	72	60	10h9	8	5	M10 P1.5 depth 20	Not provided
30015S1	364	285	203	79	$35^{+0.01}_{0}$	72	60	10h9	8	5	M10 P1.5 depth 20	Not provided
20015S1-B	388	309	227	79	$35^{+0.01}_{0}$	72	60	10h9	8	5	M10 P1.5 depth 20	Not provided
30015S1-B	432	353	271	79	$35^{+0.01}_{0}$	72	60	10h9	8	5	M10 P1.5 depth 20	Not provided



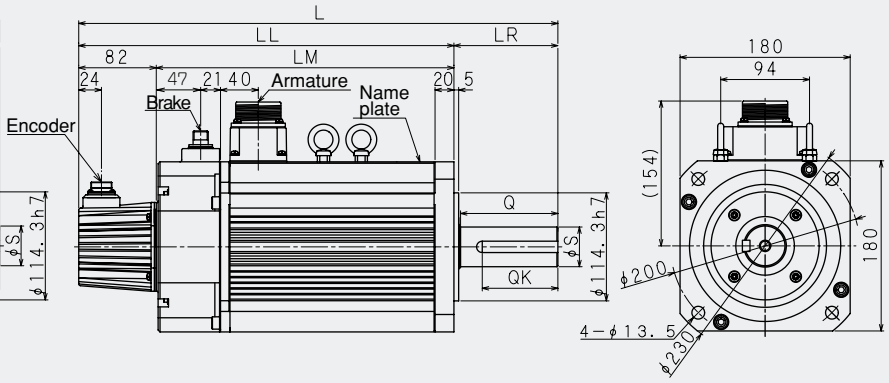
Details of shaft end

VLBSV-50015S1 • 75015S1

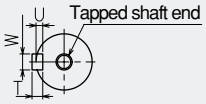
Standard type



With brake



Type	L	LL	LM	LR	φS	Q	QK	W	T	U	Shaft end tap	Hook bolt
50015S1	439	329	247	110	42h6	103	80	12h9	8	5	M12 P1.75 depth 24	Provided
75015S1	523	413	331	110	42h6	103	80	12h9	8	5	M12 P1.75 depth 24	Provided
50015S1-B	507	397	315	110	42h6	103	80	12h9	8	5	M12 P1.75 depth 24	Provided
75015S1-B	591	481	399	110	42h6	103	80	12h9	8	5	M12 P1.75 depth 24	Provided



Details of shaft end

Armature plug selection table

Neither plug nor cable clamp is attached, which are available for extra prices.

Type of motor	Receptacle	Straight plug	Cable clamp	Recommended cabtyre cable dia.
VLBSV−05015S1	JL04V-2E20-15PE-B	JL04V-6A20-15SE-EB	JL04-2022CK(09)	φ6.5～φ9.5
VLBSV−10015S1	JL04V-2E20-15PE-B	JL04V-6A20-15SE-EB	JL04-2022CK(09)	φ6.5～φ9.5
VLBSV−15015S1	JL04V-2E20-15PE-B	JL04V-6A20-15SE-EB	JL04-2022CK(09)	φ6.5～φ9.5
VLBSV−20015S1	JL04V-2E24-10PE-B	JL04V-6A24-10SE-EB	JL04-2428CK(14)	φ12～φ15
VLBSV−30015S1	JL04V-2E24-10PE-B	JL04V-6A24-10SE-EB	JL04-2428CK(14)	φ12～φ15
VLBSV−50015S1	JL04V-2E32-17PE-B	JL04V-6A32-17SE	ACS-20RL-MS32F	φ16～φ20
VLBSV−75015S1	JL04V-2E32-17PE-B	JL04V-6A32-17SE	ACS-20RL-MS32F	φ16～φ20
For brake only	JL04V-2E10SL-3PE-B	JL04V-6A10SL-3SE-EB	ACS-08RL-MS10F	φ4～φ8

Brake performance table

The rotor inertia and mass are the values of a single brake, excluding those of the motor.

Applicable motor	Static friction torque	Rotor inertia ×10⁻⁴	Coil (20℃)				Suction time	Release time	Mass
			Voltage	Current	Resistance	Capacity			
	N·m	kg·m²	DC V	A	Ω	W	ms	ms	kg
05015S1	7.84	0.675	24	0.63	38	15	55	15	2.0
10015S1									
15015S1									
20015S1	15.7	2.85	24	0.76	32	18	70	25	2.7
30015S1									
50015S1	29.4	3.0	24	0.96	25	23	100	35	4.4
75015S1	49	5.75	24	1.13	21	27	120	50	7.0

V Series Standard Type 3000 min^{-1}: Characteristics (Middle Inertia)

●Time rating: Continuous ●Class of insulation: F ●Ambient temperature: -10～+40℃ ●Class of vibration: V15
●Method of excitation: Permanent magnet ●Method of protection: Totally-enclosed foam-proof (excluding shaft through area) IP65 ●Mounting method: Flange mounted type

Item \ Model		VLBSV-						
		10030	18030	24030	30030	45030	70030	10K30
Rated output	W	1000	1800	2400	3000	4500	7000	10000
Rated torque	N・m	3.18	5.73	7.64	9.55	14.3	22.3	31.8
Rated speed	min^{-1}	3000						
Max. speed	min^{-1}	4000						
Power rate	kW/s	15	25.4	30.7	27.3	33.5	54.7	69.4
Moment of inertia	X10^{-4} kg-m^2	6.76	12.9	19.0	33.4	61.3	90.8	146
Momentary max. torque	N・m	9.55	17.2	22.9	29	40	66	77
Momentary max. current	A(rms)	16.2	29.6	40.6	49.5	71	122	141
Rated voltage	V(rms)	125	119	115	131	118	110	109
Rated current	A(rms)	5.3	9.7	13.3	15.2	24.1	40	56.6
Torque constant	N・m/A(rms)	0.6	0.593	0.576	0.627	0.594	0.557	0.562
Heat time constant	min	15	17	20	34	40	45	55
Coil resistance	Ω	1.22	0.41	0.24	0.19	0.075	0.04	0.018
Coil inductance	mH	5.8	2.5	1.5	3.36	1.46	0.83	0.505
Induced voltage constant	V(rms)/min^{-1}	0.0383	0.0377	0.0367	0.0387	0.0367	0.0343	0.0347
Permissible thrust load	N	108	108	108	274	274	274	274
Permissible radial load	N	402	461	500	1058	1176	1166	1284
Mass	kg	5.5	7.5	9.8	15.5	22	29.5	42.5
Applicable servo amplifier VLASV-	012P2							
	035P3	○						
	070P3		○	○	○			
	100P3					○		
	200P3						○	○

The maximum torque is obtained when the motor is used in combination with the standard BS servo amplifier. (For any combination other than the standard one, consult with us.)

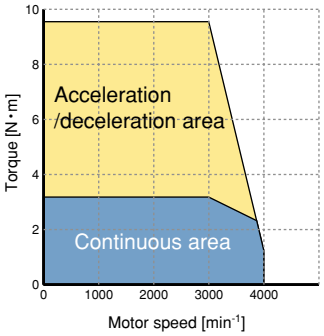
Designed for UL/CE-Marking

c UL us CE

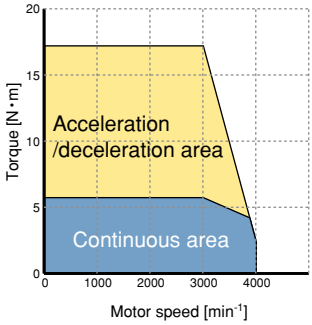
UL508C

IEC34-1/EN60034-1
Standard relating to general motors
(International standard/EU)

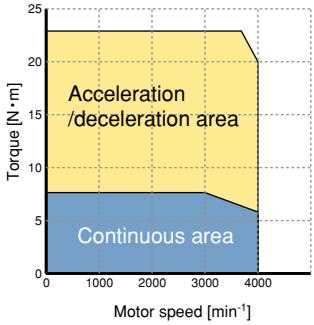
VLBSV-10030



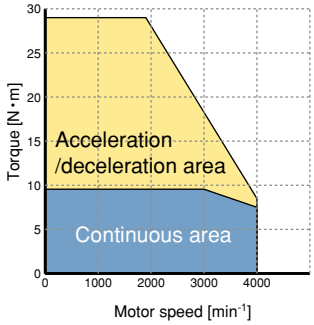
VLBSV-18030



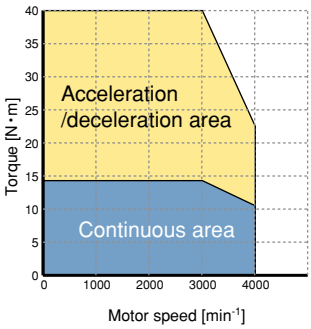
VLBSV-24030



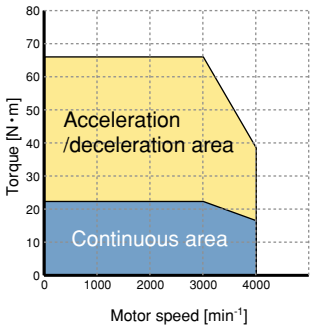
VLBSV-30030



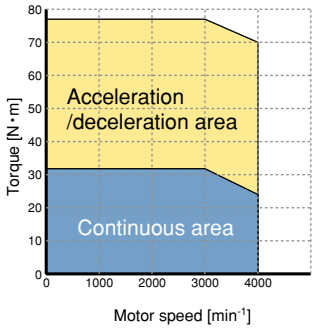
VLBSV-45030



VLBSV-70030



VLBSV-10K30



B Brake (holding brake)

The brake of the servo motor is a slim type dry non-excited electromagnetic brake. Use it for preventing the vertical shaft from falling and for holding the horizontal shaft at power OFF.

G Reduction gear

The V series servo motor uses an Able reduction gear or HPG series reduction gear. For detailed specifications, consult with us.

O Oil seal

If oil of the output shaft will splash from the machine side, use of an oil seal is recommended.

T Taper shaft

The servo motor is standardly provided with straight shaft with key. A taper shaft is available optionally.

K Straight shaft without key

This shaft does not have any keyway and is the same as the standard shaft in diameter and length.

V series motor model (standard 3000 min-1)

VL BS V-□□□ 30 □□-□ □□□

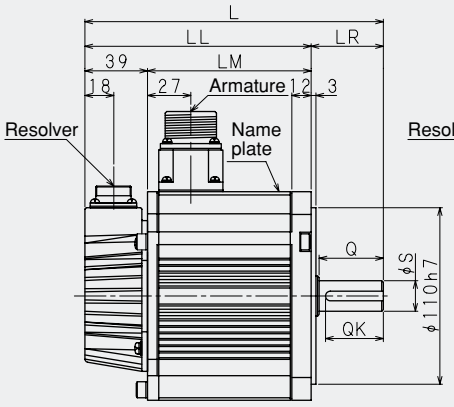
- VELCONIC family
- Name of model
- Name of series V-series
- Capacity Indicated value × 10 = Rated output power (W) (Ex. 100: 1000 W)
- Motor speed 30: 3000min-1
- Motor sensor Blank: Resolver; S1: 17-bit ABS encoder
- Options (Indication of two or more options is possible. Ex.: BKO)
- Special spec. number

B : Brake
G : Reduction gear
K : Straight shaft without key
O : Oil seal
T : Taper shaft

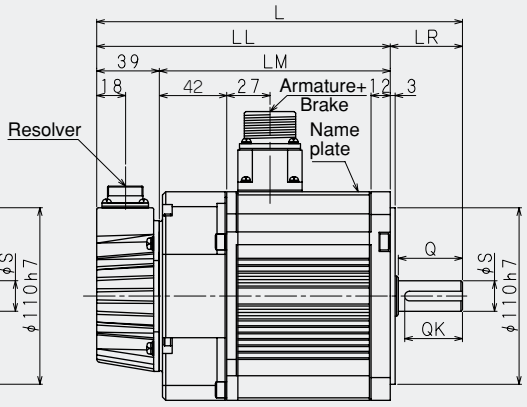
V Series Standard Type 3000 min^{-1}: Outer Dimensions (Resolver Specifications)

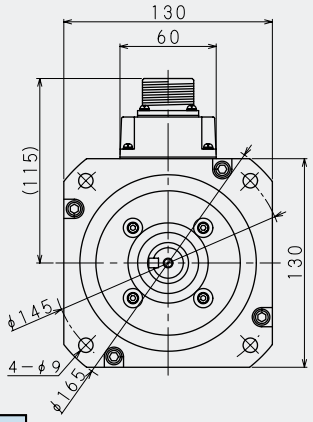
VLBSV-10030 • 18030 • 24030

Standard type

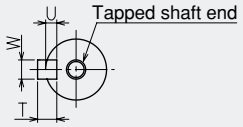


With brake





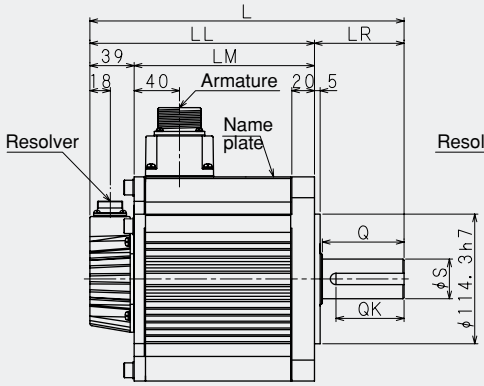
Type	L	LL	LM	LR	φS	Q	QK	W	T	U	Shaft end tap	Hook bolt
10030	186	141	102	45	19h6	40	36	6h9	6	3.5	M6 P1.0 depth 16	Not provided
18030	211	166	127	45	19h6	40	36	6h9	6	3.5	M6 P1.0 depth 16	Not provided
24030	246	191	152	55	24h6	50	45	8h9	7	4	M8 P1.25 depth 20	Not provided
10030-B	228	183	144	45	19h6	40	36	6h9	6	3.5	M6 P1.0 depth 16	Not provided
18030-B	253	208	169	45	19h6	40	36	6h9	6	3.5	M6 P1.0 depth 16	Not provided
24030-B	288	233	194	55	24h6	50	45	8h9	7	4	M8 P1.25 depth 20	Not provided



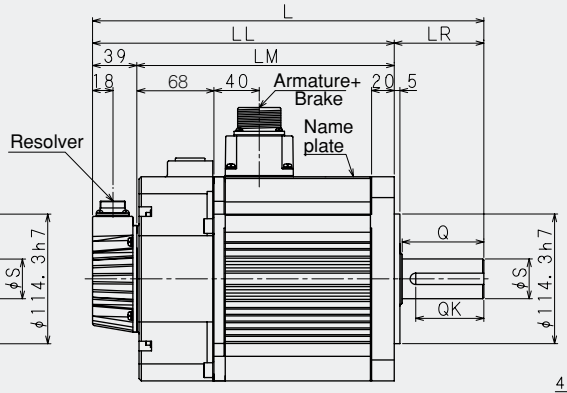
Details of shaft end

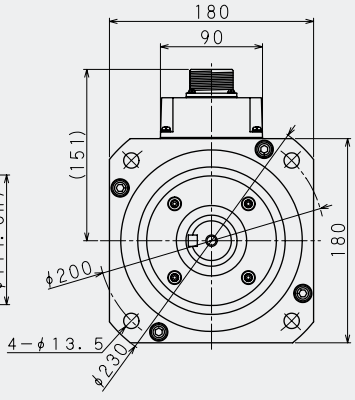
VLBSV-30030 • 45030

Standard type

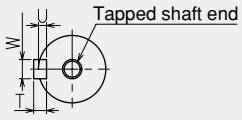


With brake





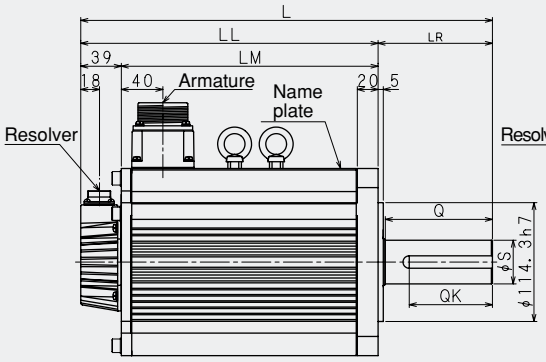
Type	L	LL	LM	LR	φS	Q	QK	W	T	U	Shaft end tap	Hook bolt
30030	277	198	159	79	$35^{+0.01}_{0}$	72	60	10h9	8	5	M10 P1.5 depth 20	Not provided
45030	321	242	203	79	$35^{+0.01}_{0}$	72	60	10h9	8	5	M10 P1.5 depth 20	Not provided
30030-B	345	266	227	79	$35^{+0.01}_{0}$	72	60	10h9	8	5	M10 P1.5 depth 20	Not provided
45030-B	389	310	271	79	$35^{+0.01}_{0}$	72	60	10h9	8	5	M10 P1.5 depth 20	Not provided



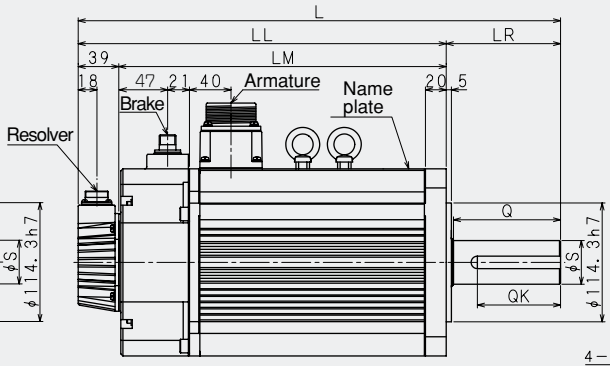
Details of shaft end

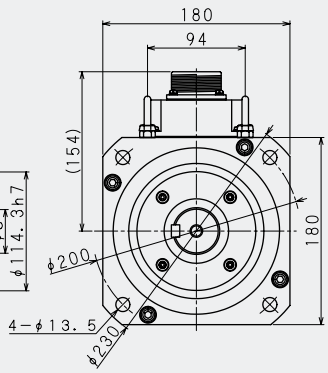
VLBSV-70030 • 10K30

Standard type

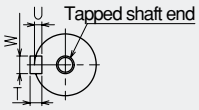


With brake





Type	L	LL	LM	LR	φS	Q	QK	W	T	U	Shaft end tap	Hook bolt
70030	396	286	247	110	42h6	103	80	12h9	8	5	M12 P1.75 depth 24	Provided
10K30	480	370	331	110	42h6	103	80	12h9	8	5	M12 P1.75 depth 24	Provided
70030-B	464	354	315	110	42h6	103	80	12h9	8	5	M12 P1.75 depth 24	Provided
10K30-B	548	438	399	110	42h6	103	80	12h9	8	5	M12 P1.75 depth 24	Provided



Details of shaft end

Armature plug selection table

Neither plug nor cable clamp is attached, which are available for extra prices.

Type of motor	Receptacle	Straight plug	Cable clamp	Recommended cabtyre cable dia.
VLBSV−10030	JL04V-2E20-15PE-B	JL04V-6A20-15SE-EB	JL04-2022CK(09)	φ6.5～φ9.5
VLBSV−18030	JL04V-2E20-15PE-B	JL04V-6A20-15SE-EB	JL04-2022CK(09)	φ6.5～φ9.5
VLBSV−24030	JL04V-2E20-15PE-B	JL04V-6A20-15SE-EB	JL04-2022CK(09)	φ6.5～φ9.5
VLBSV−30030	JL04V-2E24-10PE-B	JL04V-6A24-10SE-EB	JL04-2428CK(14)	φ12～φ15
VLBSV−45030	JL04V-2E24-10PE-B	JL04V-6A24-10SE-EB	JL04-2428CK(14)	φ12～φ15
VLBSV−70030	JL04V-2E32-17PE-B	JL04V-6A32-17SE	ACS-20RL-MS32F	φ16～φ20
VLBSV−10K30	JL04V-2E32-17PE-B	JL04V-6A32-17SE	ACS-20RL-MS32F	φ16～φ20
For brake only	JL04V-2E10SL-3PE-B	JL04V-6A10SL-3SE-EB	ACS-08RL-MS10F	φ4～φ8

Brake performance table

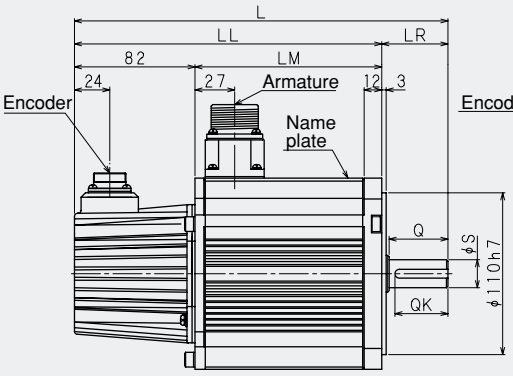
The rotor inertia and mass are the values of a single brake, excluding those of the motor.

Applicable motor	Static friction torque	Rotor inertia ×10⁻⁴	Coil (20℃)				Suction time	Release time	Mass
			Voltage	Current	Resistance	Capacity			
	N·m	kg·m²	DC V	A	Ω	W	ms	ms	kg
10030	7.84	0.675	24	0.63	38	15	55	15	2.0
18030									
24030									
30030	15.7	2.85	24	0.76	32	18	70	25	2.7
45030									
70030	29.4	3.0	24	0.96	25	23	100	35	4.4
10K30	49	5.75	24	1.13	21	27	120	50	7.0

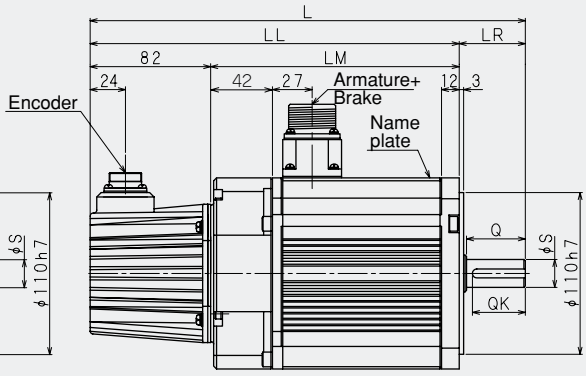
V Series Standard Type 3000 min^{-1}: Outer Dimensions (Encoder Specifications)

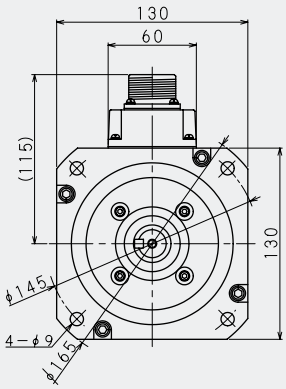
■VLBSV-10030S1 • 18030S1 • 24030S1

Standard type

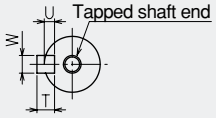


With brake





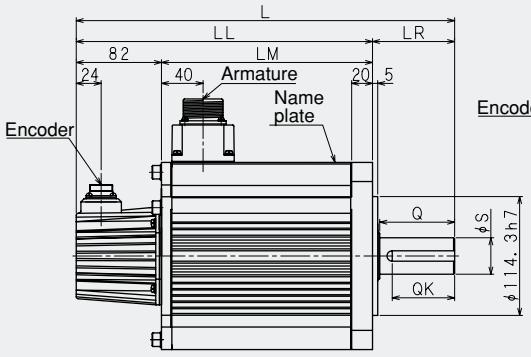
Type	L	LL	LM	LR	φS	Q	QK	W	T	U	Shaft end tap	Hook bolt
10030S1	229	184	102	45	19h6	40	36	6h9	6	3.5	M6 P1.0 depth 16	Not provided
18030S1	254	209	127	45	19h6	40	36	6h9	6	3.5	M6 P1.0 depth 16	Not provided
24030S1	289	234	152	55	24h6	50	45	8h9	7	4	M8 P1.25 depth 20	Not provided
10030S1-B	271	226	144	45	19h6	40	36	6h9	6	3.5	M6 P1.0 depth 16	Not provided
18030S1-B	296	251	169	45	19h6	40	36	6h9	6	3.5	M6 P1.0 depth 16	Not provided
24030S1-B	331	276	194	55	24h6	50	45	8h9	7	4	M8 P1.25 depth 20	Not provided



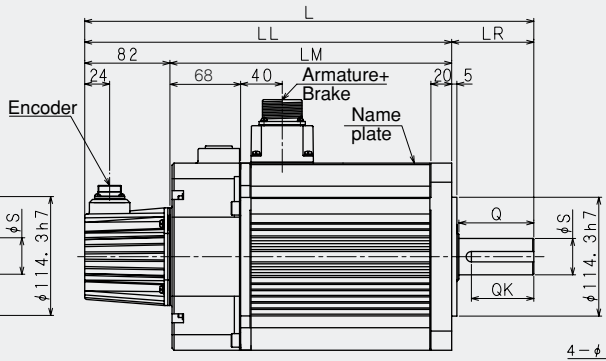
Details of shaft end

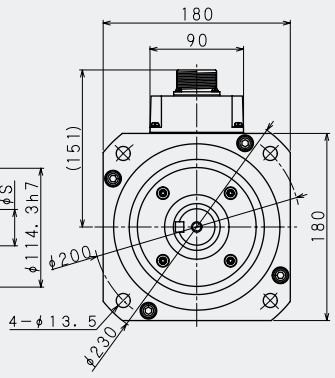
■VLBSV-30030S1 • 45030S1

Standard type

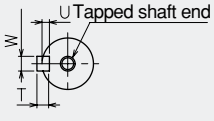


With brake





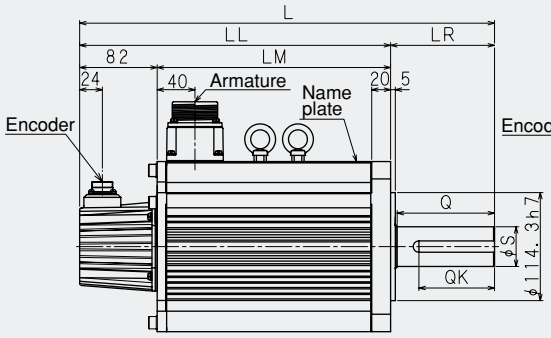
Type	L	LL	LM	LR	φS	Q	QK	W	T	U	Shaft end tap	Hook bolt
30030S1	320	241	159	79	$35^{+0.01}_{0}$	72	60	10h9	8	5	M10 P1.5 depth 20	Not provided
45030S1	364	285	203	79	$35^{+0.01}_{0}$	72	60	10h9	8	5	M10 P1.5 depth 20	Not provided
30030S1-B	388	309	227	79	$35^{+0.01}_{0}$	72	60	10h9	8	5	M10 P1.5 depth 20	Not provided
45030S1-B	432	353	271	79	$35^{+0.01}_{0}$	72	60	10h9	8	5	M10 P1.5 depth 20	Not provided



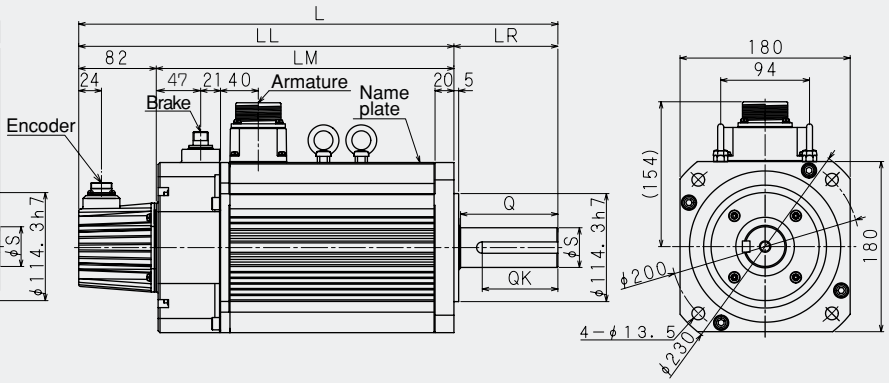
Details of shaft end

VLBSV-70030S1 • 10K30S1

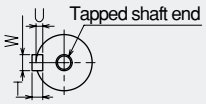
Standard type



With brake



Type	L	LL	LM	LR	φS	Q	QK	W	T	U	Shaft end tap	Hook bolt
70030S1	439	329	247	110	42h6	103	80	12h9	8	5	M12 P1.75 depth 24	Provided
10K30S1	523	413	331	110	42h6	103	80	12h9	8	5	M12 P1.75 depth 24	Provided
70030S1-B	507	397	315	110	42h6	103	80	12h9	8	5	M12 P1.75 depth 24	Provided
10K30S1-B	591	481	399	110	42h6	103	80	12h9	8	5	M12 P1.75 depth 24	Provided



Details of shaft end

Armature plug selection table

Neither plug nor cable clamp is attached, which are available for extra prices.

Type of motor	Receptacle	Straight plug	Cable clamp	Recommended cabtyre cable dia.
VLBSV−10030S1	JL04V-2E20-15PE-B	JL04V-6A20-15SE-EB	JL04-2022CK(09)	φ6.5～φ9.5
VLBSV−18030S1	JL04V-2E20-15PE-B	JL04V-6A20-15SE-EB	JL04-2022CK(09)	φ6.5～φ9.5
VLBSV−24030S1	JL04V-2E20-15PE-B	JL04V-6A20-15SE-EB	JL04-2022CK(09)	φ6.5～φ9.5
VLBSV−30030S1	JL04V-2E24-10PE-B	JL04V-6A24-10SE-EB	JL04-2428CK(14)	φ12～φ15
VLBSV−45030S1	JL04V-2E24-10PE-B	JL04V-6A24-10SE-EB	JL04-2428CK(14)	φ12～φ15
VLBSV−70030S1	JL04V-2E32-17PE-B	JL04V-6A32-17SE	ACS-20RL-MS32F	φ16～φ20
VLBSV−10K30S1	JL04V-2E32-17PE-B	JL04V-6A32-17SE	ACS-20RL-MS32F	φ16～φ20
For brake only	JL04V-2E10SL-3PE-B	JL04V-6A10SL-3SE-EB	ACS-08RL-MS10F	φ4～φ8

Brake performance table

The rotor inertia and mass are the values of a single brake, excluding those of the motor.

Applicable motor	Static friction torque	Rotor inertia ×10⁻⁴	Coil (20℃)				Suction time	Release time	Mass
			Voltage	Current	Resistance	Capacity			
	N·m	kg·m²	DC V	A	Ω	W	ms	ms	kg
10030S1	7.84	0.675	24	0.63	38	15	55	15	2.0
18030S1									
24030S1									
30030S1	15.7	2.85	24	0.76	32	18	70	25	2.7
45030S1									
70030S1	29.4	3.0	24	0.96	25	23	100	35	4.4
10K30S1	49	5.75	24	1.13	21	27	120	50	7.0

V Series ZA Type 3000 min^{-1}: Characteristics (Low Inertia)

◆ Time rating: Continuous ◆ Class of insulation: F ◆ Ambient temperature : 0～+40℃ ◆ Class of vibration : V15
◆ Method of excitation: Permanent magnet ◆ Method of protection: Totally-enclosed foam-proof (excluding shaft through area and connector) IP65 ◆ Mounting method: Flange mounted type

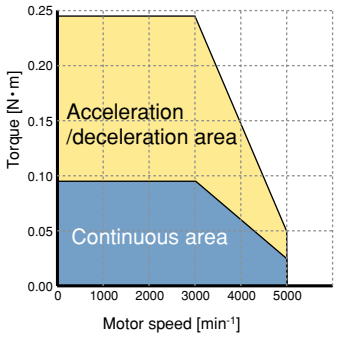
Item \ Model		VLBSV-						
		ZA00330	ZA00530	ZA01030	ZA02030	ZA04030	ZA06030	ZA07530
Rated output	W	30	50	100	200	400	600	750
Rated torque	N・m	0.095	0.159	0.318	0.64	1.27	1.91	2.39
Rated speed	min^{-1}	3000						
Max. speed	min^{-1}	5000						
Power rate	kW/s	9.0	12.6	33.7	22.8	47.4	37.2	52.9
Moment of inertia	X10^{-4} kg-m^2	0.01	0.02	0.03	0.18	0.34	0.98	1.08
Momentary max. torque	N・m	0.25	0.4	0.86	1.52	2.99	5.07	6.27
Momentary max. current	A(rms)	0.9	1.5	3	4.5	8.5	12.6	14.1
Rated voltage	V(rms)	97	77	75	85	84	89	99
Rated current	A(rms)	0.31	0.65	1.1	1.84	3.4	4.7	5.5
Torque constant	N・m/A(rms)	0.318	0.29	0.314	0.366	0.373	0.436	0.489
Heat time constant	min	5	7	10	12	15	18	20
Coil resistance	Ω	91.4	31.3	12.7	4.8	1.94	0.92	0.84
Coil inductance	mH	98.5	40.7	21.7	17.9	8.23	6.52	6.29
Induced voltage constant	V(rms)/min^{-1}	0.0192	0.0175	0.019	0.0222	0.0226	0.0264	0.0296
Permissible thrust load	N	39.2	39.2	39.2	68.6	68.6	98	98
Permissible radial load	N	78.4	78.4	78.4	196	196	343	343
Mass	kg	0.3	0.4	0.5	0.9	1.3	2.2	2.5
Applicable servo amplifier VLASV-	006P1	○	○	○				
	006P2	○	○	○				
	012P1				○			
	012P2				○	○		
	025P2						○	○

* The maximum torque is obtained when the motor is used in combination with the V series servo amplifier. (For any combination other than the standard one, consult with us.)
◆ The power supply unit for the brake is available from us.
◆ The values in the table above are obtainable when the armature coil temperature is 20℃

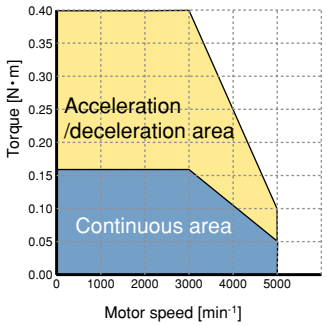
Designed for CE-Marking

CE IEC34-1/EN60034-1
Standard relating to general motors
(International standard/EU)

VLBSV-ZA00330



VLBSV-ZA00530



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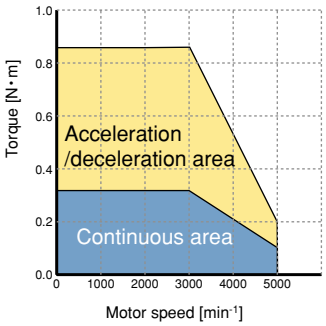
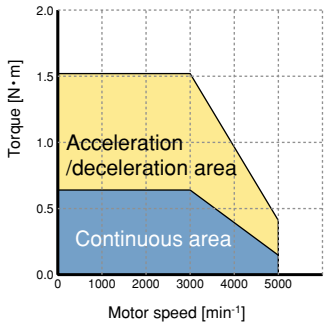
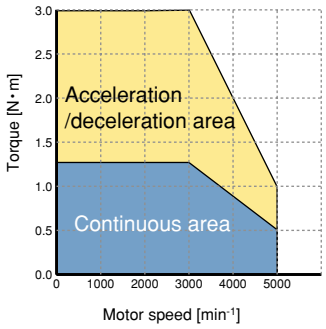


VLBSV-ZA02030



VLBSV-ZA04030



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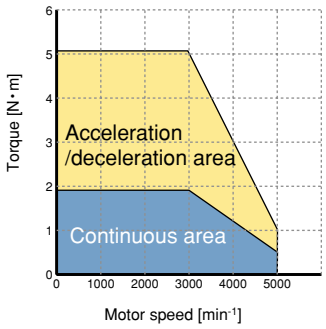
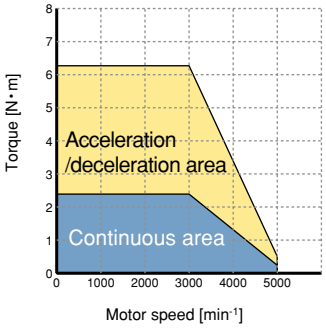


VLBSV-ZA07530



B Brake (holding brake)

The brake of the servo motor is a slim type dry non-excited electromagnetic brake. Use it for preventing the vertical shaft from falling and for holding the horizontal shaft at power OFF.

K Straight shaft without key

This shaft does not have any keyway and is the same as the standard shaft in diameter and length.

G Reduction gear

The small-capacity ZA type servo motor uses an Able reduction gear or HPG series reduction gear. For detailed specifications, consult with us.

O Oil seal

If oil of the output shaft will splash from the machine side, use of an oil seal is recommended.

V series motor model(ZA3000min-1)

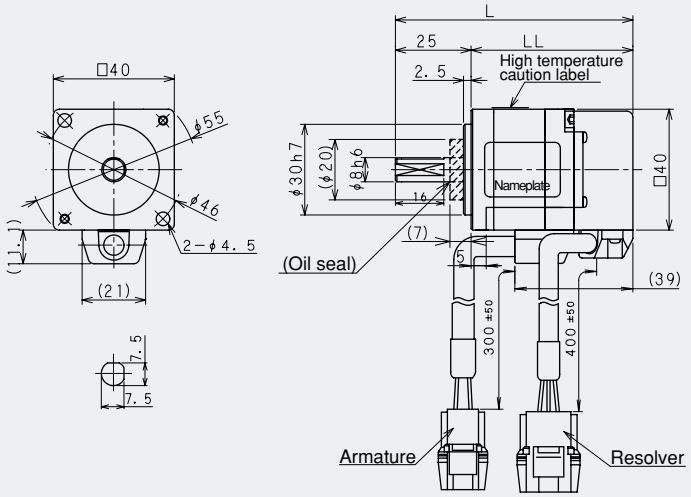
VL BS V-ZA□□□ 30 □□-□ □□□

- Special spec. number
- Options (Indication of two or more options is possible. Ex.: BKO)
  - B : Brake
  - G : Reduction gear
  - K : Straight shaft without key
  - O : Oil seal
- Motor sensor: Blank: Resolver; S1: 17-bit ABS encoder
- Motor speed: 30 : 3000min-1
- Capacity: Indicated value × 10 =Rated output power (W) (Ex. 050: 500 W)
- Name of series: V-series
- Name of model
- VELCONIC family

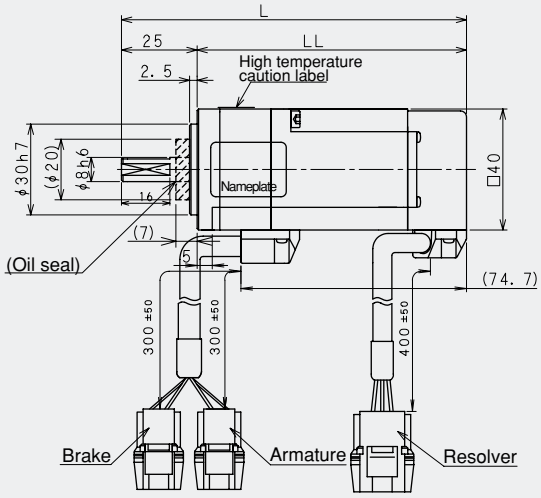
V Series ZA Type 3000 min^{-1}: Outer Dimensions (Resolver Specifications)

VLBSV-ZA00330 • ZA00530 • ZA01030

Standard type



With brake

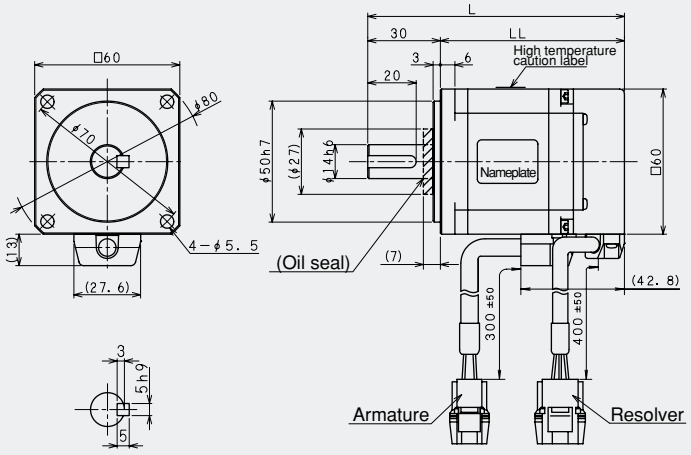


Type	L	LL
ZA00330	78.5	53.5
ZA00530	84.5	59.5
ZA01030	98.5	73.5

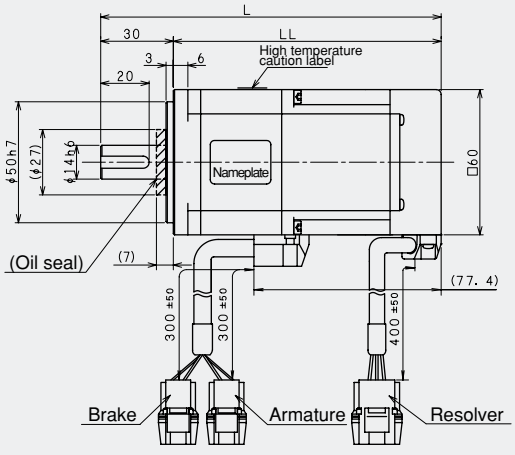
Type	L	LL
ZA00330-B	114.1	89.1
ZA00530-B	120.1	95.1
ZA01030-B	134.1	109.1

VLBSV-ZA02030 • ZA04030

Standard type



With brake

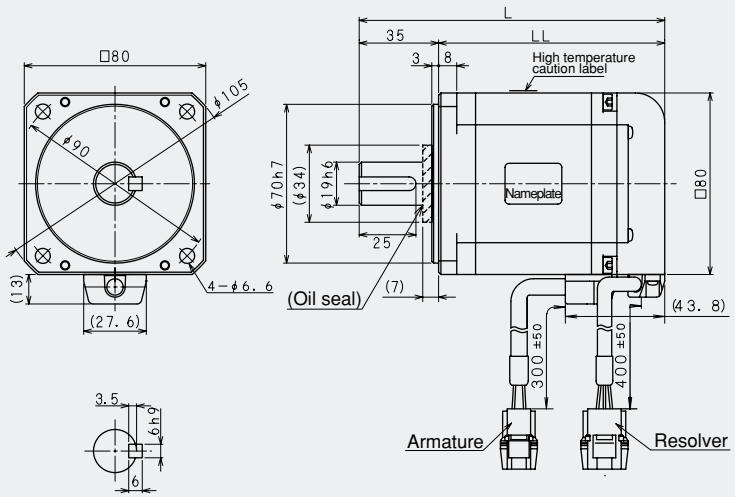


Type	L	LL
ZA02030	106.1	76.1
ZA04030	128.1	98.1

Type	L	LL
ZA02030-B	140.7	110.7
ZA04030-B	162.7	132.7

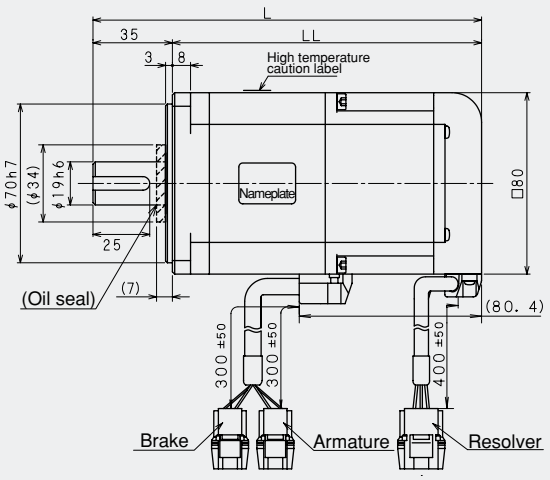
VLBSV-ZA06030・ZA07530

Standard type



Type	L	LL
ZA06030	134.7	99.7
ZA07530	143.7	108.7

With brake



Type	L	LL
ZA06030-B	171.3	136.3
ZA07530-B	180.3	145.3

Details of connector

A cable attached with connector or connectors is available for an extra price.

Type of motor	Part name	Receptacle	Contact (pin)	Plug	Contact (socket)
Common to all types	Armature	YLR-04V	BYM-41T-P0.5A	YLP-04V	BYF-41T-P0.5A
Common to all types	Brake	YLR-02V	BYM-01T-P0.5A	YLP-02V	BYF-01T-P0.5A

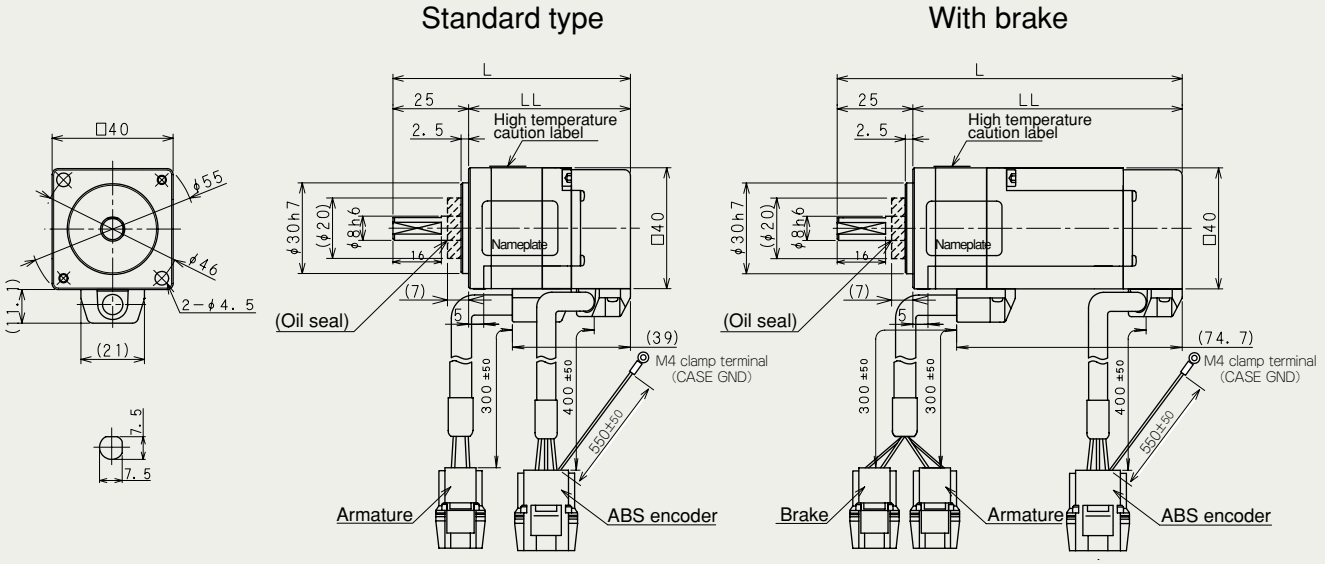
Brake performance table

The rotor inertia and mass are the values of a single brake, excluding those of the motor.

Applicable motor	Static friction torque	Rotor inertia ×10^{-4}	Coil (20℃)				Suction time	Release time	Mass
			Voltage	Current	Resistance	Capacity			
	N・m	kg・m^2	DC V	A	Ω	W	ms	ms	kg
ZA00330	0.32	0.03	24	0.2	115	5	40	20	0.2
ZA00530									
ZA01030									
ZA02030	1.27	0.1	24	0.38	64	9	50	20	0.5
ZA04030									
ZA06030	2.55	0.24	24	0.4	61	10	80	50	0.9
ZA07530									

V Series ZA Type 3000 min^{-1}: Outer Dimensions (Encoder Specifications)

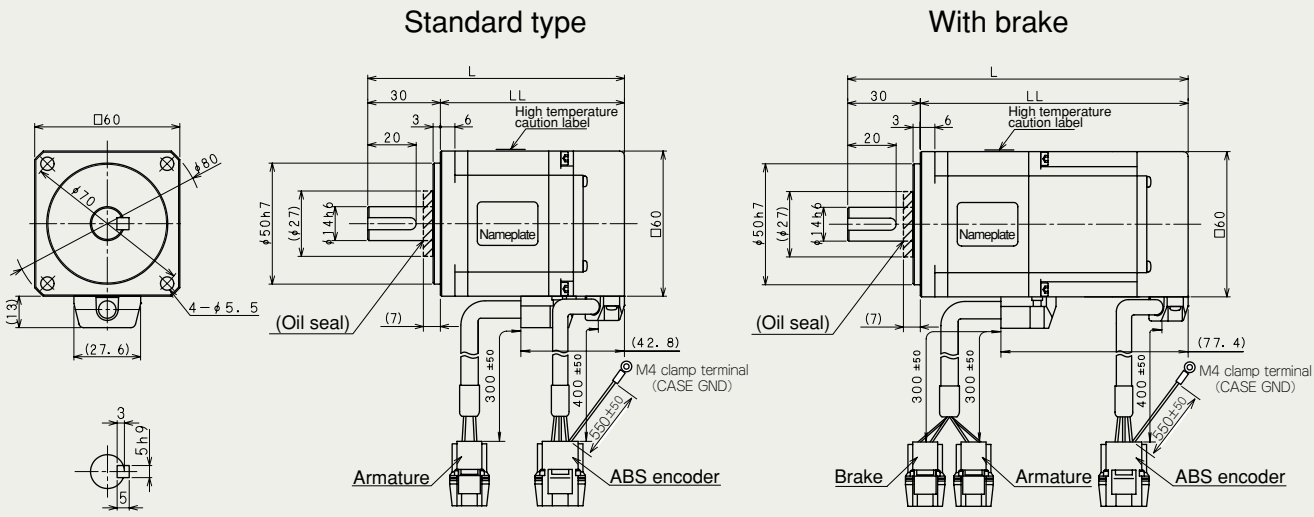
■VLBSV-ZA00330S1 • ZA00530S1 • ZA01030S1



Type	L	LL
ZA00330S1	78.5	53.5
ZA00530S1	84.5	59.5
ZA01030S1	98.5	73.5

Type	L	LL
ZA00330S1-B	114.1	89.1
ZA00530S1-B	120.1	95.1
ZA01030S1-B	134.1	109.1

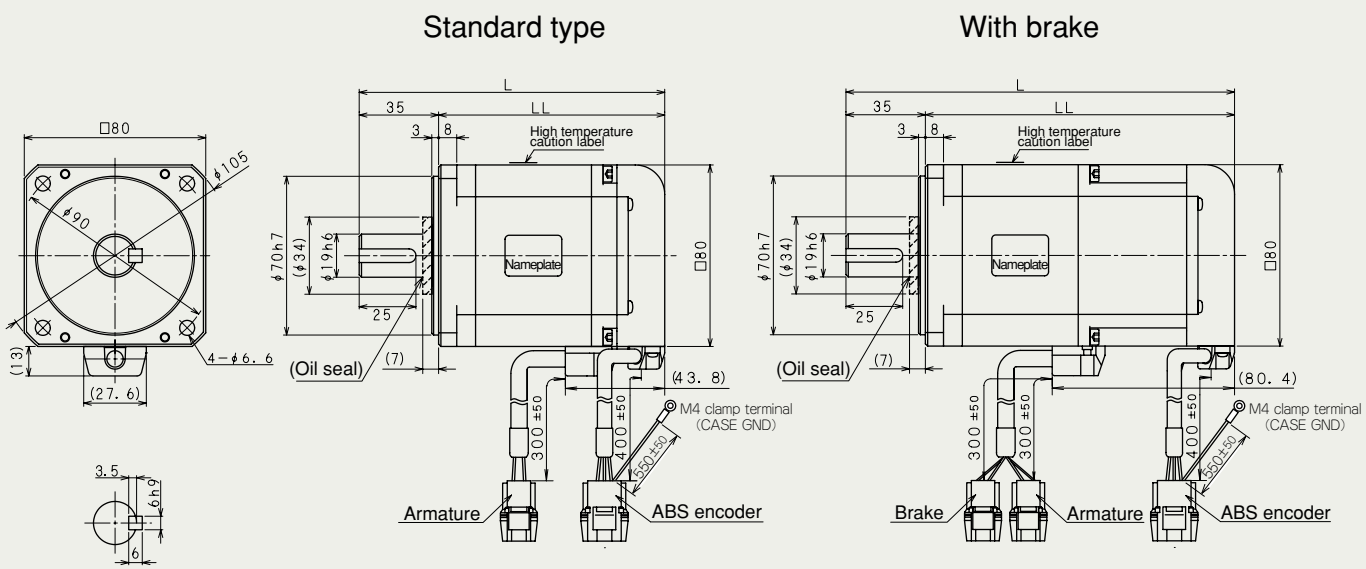
■VLBSV-ZA02030S1 • ZA04030S1



Type	L	LL
ZA02030S1	106.1	76.1
ZA04030S1	128.1	98.1

Type	L	LL
ZA02030S1-B	140.7	110.7
ZA04030S1-B	162.7	132.7

VLBSV-ZA06030S1 • ZA07530S1



Type	L	LL
ZA06030S1	134.7	99.7
ZA07530S1	143.7	108.7

Type	L	LL
ZA06030S1-B	171.3	136.3
ZA07530S1-B	180.3	145.3

Details of connector

A cable attached with connector or connectors is available for an extra price.

Type of motor	Part name	Receptacle	Contact (pin)	Plug	Contact (socket)
Common to all types	Armature	YLR-04V	BYM-41T-P0.5A	YLP-04V	BYF-41T-P0.5A
Common to all types	Brake	YLR-02V	BYM-01T-P0.5A	YLP-02V	BYF-01T-P0.5A

Brake performance table

The rotor inertia and mass are the values of a single brake, excluding those of the motor.

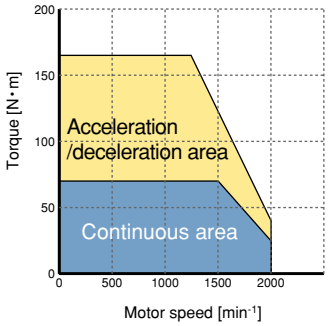
Applicable motor	Static friction torque	Rotor inertia ×10⁻⁴	Coil (20℃)				Suction time	Release time	Mass
			Voltage	Current	Resistance	Capacity			
	N·m	kg·m²	DC V	A	Ω	W	ms	ms	kg
ZA00330S1	0.32	0.03	24	0.2	115	5	40	20	0.2
ZA00530S1									
ZA01030S1									
ZA02030S1	1.27	0.1	24	0.38	64	9	50	20	0.5
ZA04030S1									
ZA06030S1	2.55	0.24	24	0.4	61	9.5	80	50	0.9
ZA07530S1									

V Series ZA Type 1500 min^{-1}: Characteristics (Large-Sized)

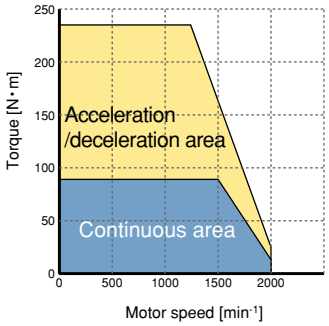
◆ Time rating: Continuous ◆ Class of insulation: F ◆ Ambient temperature: 0～+40℃ ◆ Class of vibration: V15
◆ Method of excitation: Permanent magnet ◆ Method of protection: Totally-enclosed foam-proof (excluding shaft through area and connector) IP65 ◆ Mounting method: Flange mounted type

Item	Model	VLBSV-	
		ZA11K15	ZA14K15
Rated output	W	11000	14000
Rated torque	N・m	70	89.1
Rated speed	min^{-1}	1500	1500
Max. speed	min^{-1}	2000	1800
Power rate	kW/s	297	342
Moment of inertia	X10^{-4} kg-m^2	215	311
Momentary max. torque	N・m	165	235
Momentary max. current	A(rms)	134	157
Rated voltage	V(rms)	129	148
Rated current	A(rms)	54.2	60.0
Torque constant	N・m/A(rms)	1.30	1.51
Heat time constant	min	30	40
Coil resistance	Ω	0.05	0.04
Coil inductance	mH	1.42	1.3
Induced voltage constant	V(rms)/min^{-1}	0.08	0.0935
Permissible thrust load	N	392	392
Permissible radial load	N	784	784
Mass	kg	49	64
Applicable servo amplifier VLASV-	200P3	○	
	320P3		○

VLBSV-ZA11K15



VLBSV-ZA14K15



＊The maximum torque is obtained when the motor is used in combination with the V series servo amplifier. (For any combination other than the standard one, consult with us.)
◆ The power supply unit for the brake is available from us.
◆ The values in the table above are obtainable when the armature coil temperature is 20℃.

B Brake (holding brake)

The brake of the servo motor is a slim type dry non-excited electromagnetic brake. Use it for preventing the vertical shaft from falling and for holding the horizontal shaft at power OFF.

G Reduction gear

The mid-capacity ZA type servo motor uses a Coronet reduction gear. For detailed specifications, consult with us.

K Straight shaft without key

This shaft does not have any keyway and is the same as the standard shaft in diameter and length.

O Oil seal

If oil of the output shaft will splash from the machine side, use of an oil seal is recommended.

T Taper shaft

The servo motor is standardly provided with straight shaft with key. A taper shaft is available optionally.

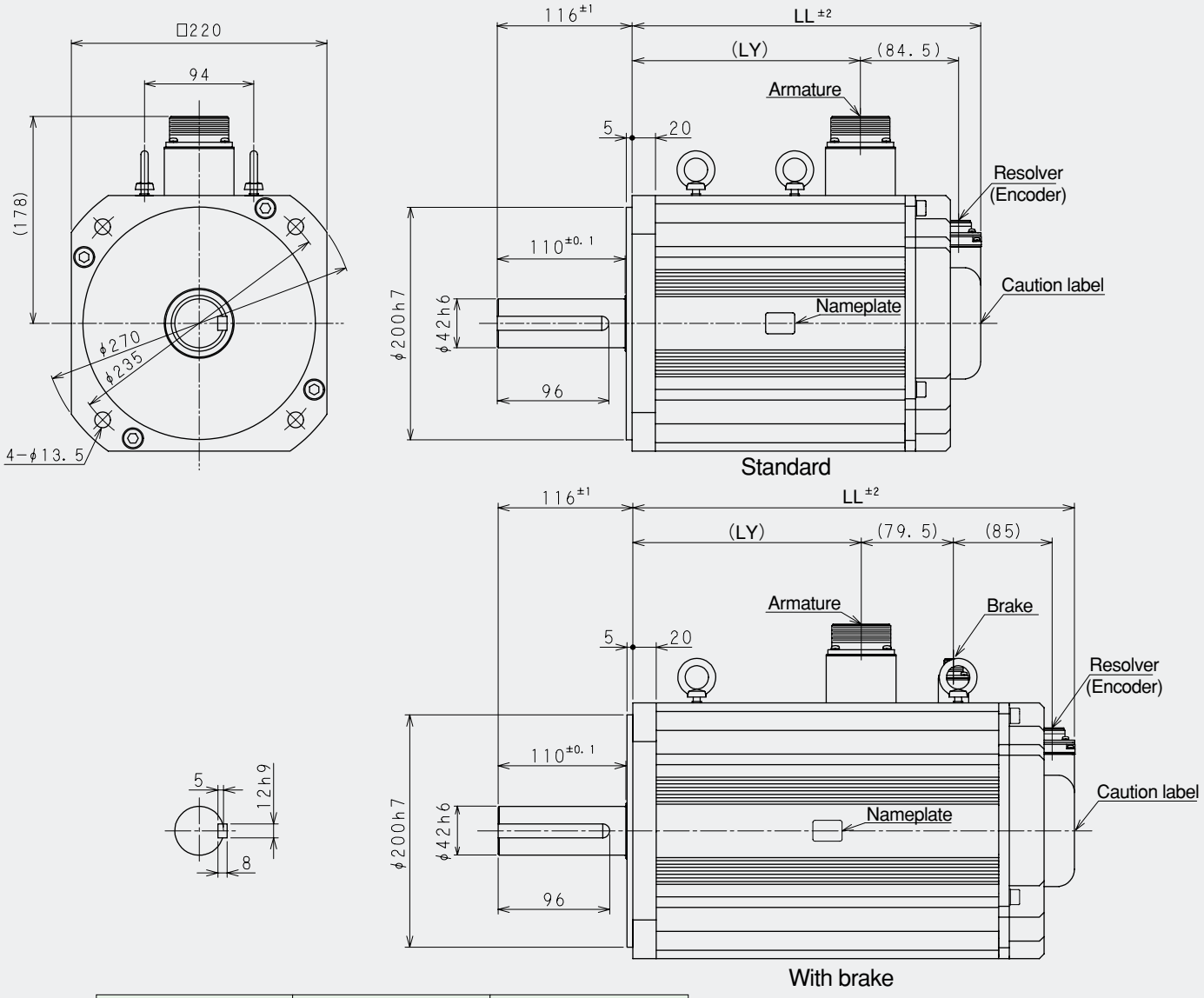
V series motor model (ZA1500min^{-1})

VL BS V-ZA□□□ 1 5 □□-□ □□□

- Special spec. number
- Options (Indication of two or more options is possible. Ex.: BKO)
  - B : Brake
  - G : Reduction gear
  - K : Straight shaft without key
  - O : Oil seal
  - T : Taper shaft
- Motor sensor
  - Blank: Resolver
  - S1: 17-bit ABS encoder
- Motor speed 15: 1500min^{-1}
- Capacity Rated output power (W) (Ex. 11K: 11000 W)
- Name of series V-series
- Name of model
- VELCONIC family

Outer Dimensions

■VLBSV-ZA11K15 (S1) • VLBSV-ZA14K15 (S1)



Type	LL	LY
ZA11K15	300	196.5
ZA14K15	360	256.5
ZA11K15-B	380	196.5
ZA14K15-B	440	256.5

■Plug selection table

Neither plug nor cable clamp is attached, which are available for extra prices.

Part name	Receptacle	Straight plug	Cable clamp
Armature	MS3102A32-17P	MS3106B32-17S	MS3057-20A
Brake	MS3102A10SL-4P	MS3106B10SL-4S	MS3057-4A

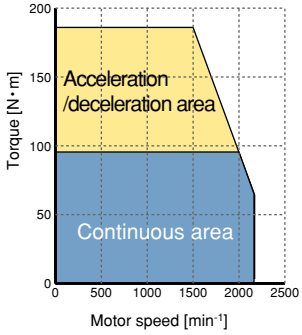
For the resolver type, the V series standard motor resolver cable is used. For the encoder type, the V series standard motor serial ABS cable is used.
(For details, see the descriptions on "Selecting Cables" carried in this manual.)

G Series Standard Type 2000 min^{-1}: Characteristics (Large-Sized)

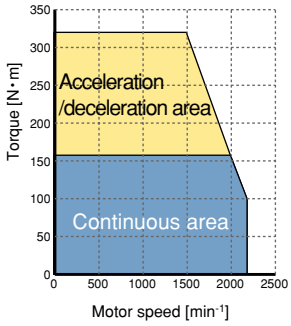
◆ Time rating: Continuous ◆ Class of insulation: F ◆ Ambient temperature: 0～+40℃ ◆ Class of vibration: V15
◆ Method of excitation: Permanent magnet ◆ Method of protection: Totally-enclosed foam-proof (excluding shaft through area) IP44 ◆ Mounting method: Flange mounted type

Item	Model	VLBSG-	
		A20K20	A33K20
Rated output	W	20000	33000
Rated torque	N・m	95.5	157.5
Rated speed	min^{-1}	2000	2000
Max. speed	min^{-1}	2200	2200
Power rate	kW/s	222	191
Moment of inertia	X10^{-4} kg-m^2	410	1300
Momentary max. torque	N・m	186	320
Momentary max. current	A(rms)	212	353
Rated voltage	V(rms)	146	149
Rated current	A(rms)	96	157
Torque constant	N・m/A(rms)	1.0	1.0
Heat time constant	min	25	30
Coil resistance	Ω	0.032	0.0165
Coil inductance	mH	0.94	0.63
Induced voltage constant	V(rms)/min^{-1}	0.064	0.064
Permissible thrust load	N	670	1800
Permissible radial load	N	2700	4500
Mass	kg	74	129
Applicable servo amplifier VLASV-	320P3	○	
	500P3		○

VLBSG-A20K20



VLBSG-A33K20



∗ The maximum torque is obtained when the motor is used in combination with the V series servo amplifier. (For any combination other than the standard one, consult with us.)
◆ The power supply unit for the brake is available from us.
◆ The values in the table above are obtainable when the armature coil temperature is 20℃.

B Brake (holding brake)

The brake of the servo motor is a slim type dry non-excited electromagnetic brake. Use it for preventing the vertical shaft from falling and for holding the horizontal shaft at power OFF.

G Reduction gear

It is recommended to install a separate reduction gear. For detailed specifications, consult with us.

K Straight shaft without key

This shaft does not have any keyway and is the same as the standard shaft in diameter and length.

O Oil seal

If oil of the output shaft will splash from the machine side, use of an oil seal is recommended.

T Taper shaft

The servo motor is standardly provided with straight shaft with key. A taper shaft is available optionally.

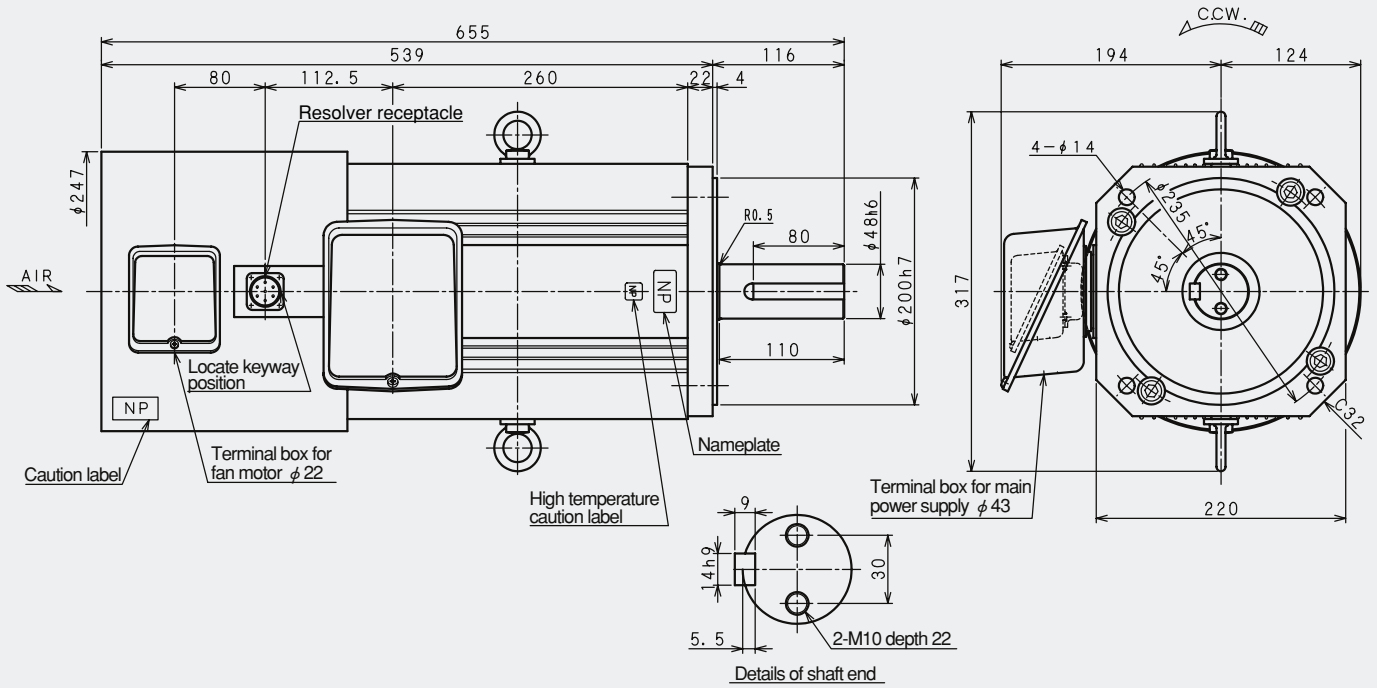
G series motor model (2000min^{-1})

VL BS G-A □□□ 20 □□-□ □□□

- Special spec. number
- Options (Indication of two or more options is possible. Ex.: BKO)
  - B : Brake
  - K : Straight shaft without key
  - O : Oil seal
  - T : Taper shaft
- Motor sensor Blank: Resolver
- Motor speed 20 : 2000min^{-1}
- Capacity Rated output power (W) (Ex. 20K: 20000 W)
- Name of series G-series
- Name of model
- VELCONIC family

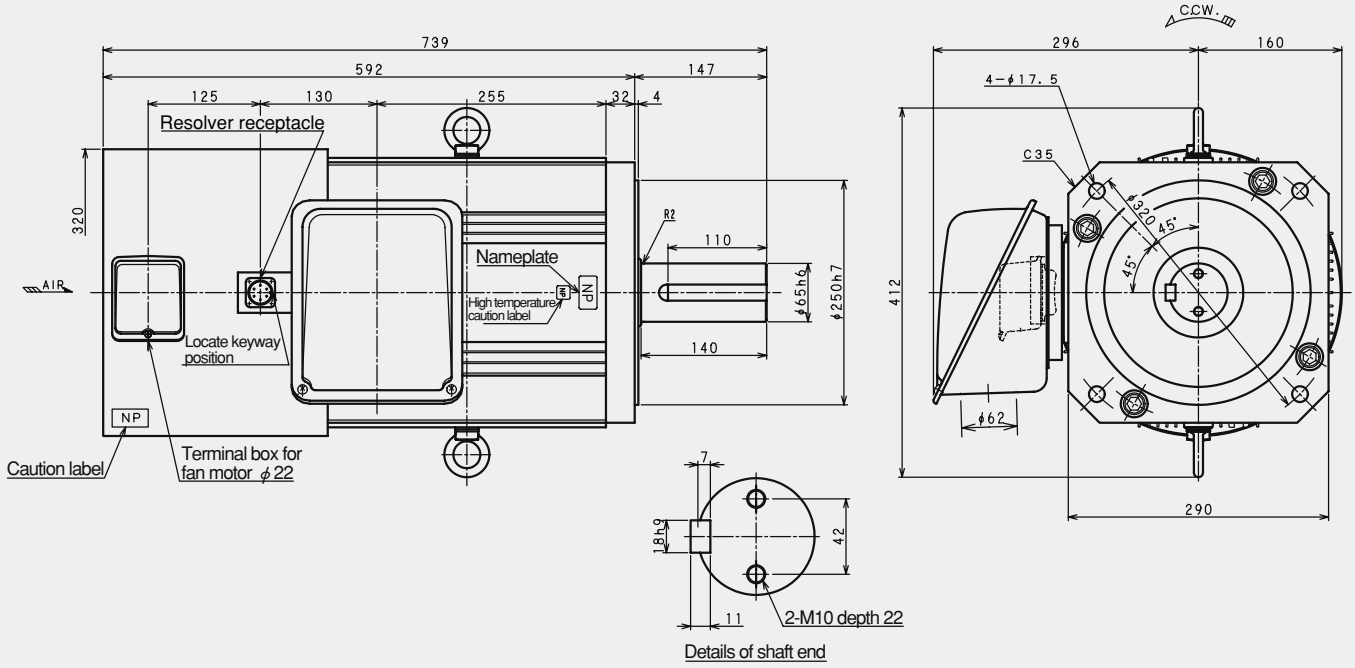
Outer Dimensions

VLBSG-A20K20



For the motor sensor cable, use the V standard resolver cable. (For details, see the descriptions on "Selecting Cables" carried in this manual.)

VLBSG-A33K20



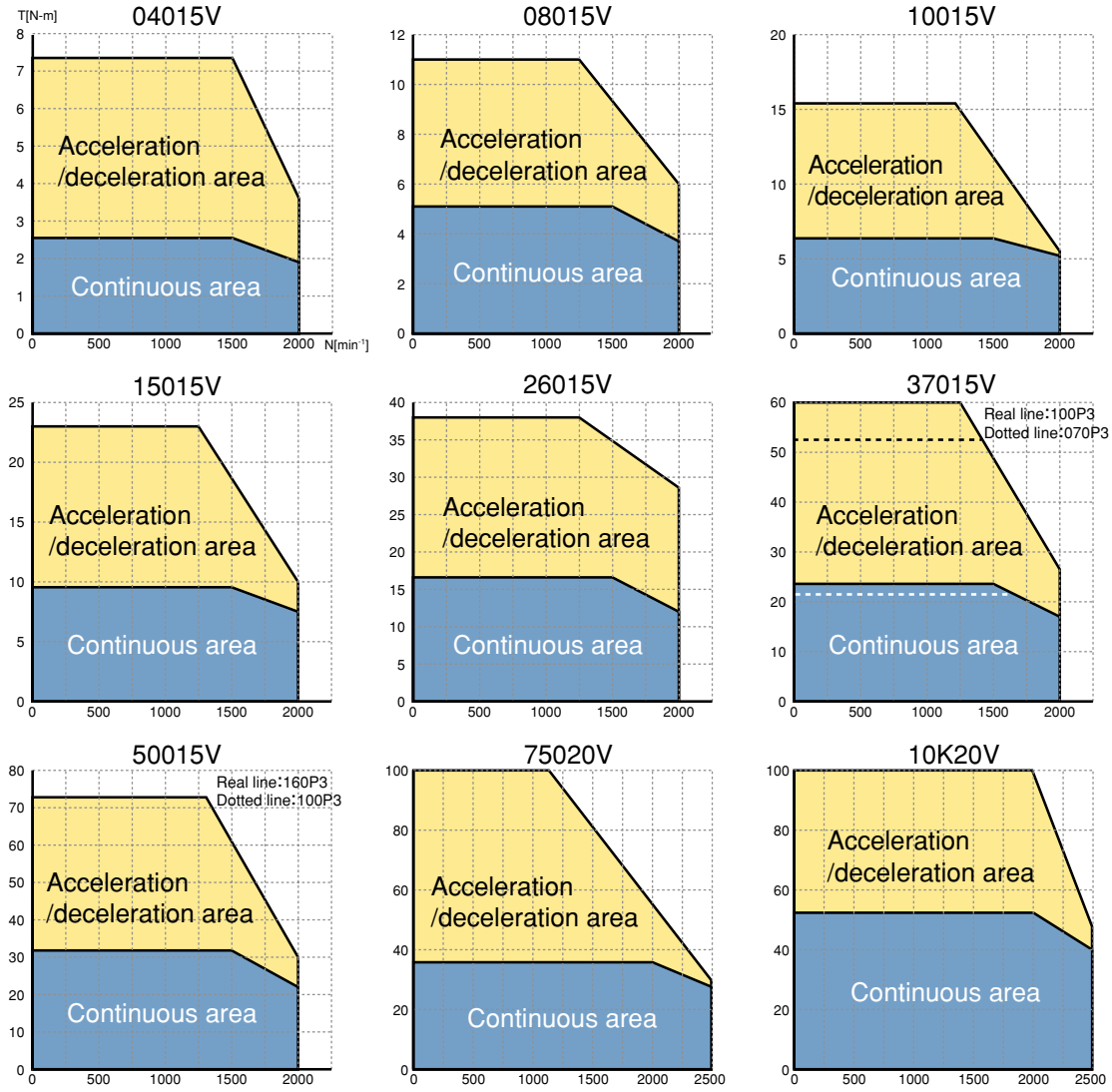
For the motor sensor cable, use the V standard resolver cable. (For details, see the descriptions on "Selecting Cables" carried in this manual.)

T Series Standard Type 1500/2000 min^{-1}: Characteristics (Low Inertia)

◆Time rating: Continuous ◆Class of insulation: F ◆Ambient temperature: -10～+40℃ ◆Class of vibration: V15
◆Method of excitation: Permanent magnet ◆Method of protection: Totally-enclosed foam-proof (excluding shaft through area) IP44 ◆Mounting method: Flange mounted type

Item \ Model		VLBST-□□□□□V									
		04015	08015	10015	15015	26015	37015		50015	75020	10K20
Rated output	W	400	800	1000	1500	2600	3300	3700	5000	7500	10000
Rated torque	N・m	2.55	5.10	6.37	9.55	16.6	21.0	23.6	31.8	35.8	47.7
Rated speed	min^{-1}	1500								2000	
Max. speed	min^{-1}	2000								2500	
Power rate	kW/s	85	138	158	222	181	197	250	337	233	271
Moment of inertia	X10^{-4} kg-m^2	0.76	1.89	2.57	4.10	15.2	22.3		30.0	55	84
Momentary max. torque	N・m	7.35	11	15.4	23	38	52	60	73	100	100
Momentary max. current	A(rms)	8.5	17.7	17.7	25	42	50	64	71	113	113
Rated voltage	V(rms)	108	118	128	122	133	117	121	127	139	124
Rated current	A(rms)	2.7	5.3	5.7	8.3	14.1	18.4	21	28	36	51
Torque constant	N・m/A(rms)	0.96	0.96	1.12	1.15	1.17	1.15		1.17	1.00	0.95
Heat time constant	min	15	17	22	26	30	42		53	55	60
Coil resistance	Ω	6.43	2.7	2.2	1.11	0.48	0.24		0.175	0.090	0.038
Coil inductance	mH	57	20	19	12.9	8.3	4.9		3.9	2.4	1.2
Induced voltage constant	V(rms)/min^{-1}	0.058	0.059	0.069	0.070	0.074	0.071		0.071	0.061	0.057
Permissible thrust load	N	98	118	118	118	284	284		284	294	294
Permissible radial load	N	559	647	676	706	1350	1450		1520	1372	1470
Mass	kg	4.5	6.2	7.8	11	20	27		34	44	62
Applicable servo amplifier VLASV-	012P1										
	012P2	○									
	025P2		○	○							
	035P3				○						
	070P3					○	○				
	100P3							○	○		
	200P3									○	○

∗ The maximum torque is obtained when the motor is used in combination with the V series servo amplifier. (For any combination other than the standard one, consult with us.)
◆ The power supply unit for the brake is available from us.
◆ The values in the table above are obtainable when the armature coil temperature is 20℃ and the motor is used in combination with the V series servo amplifier.

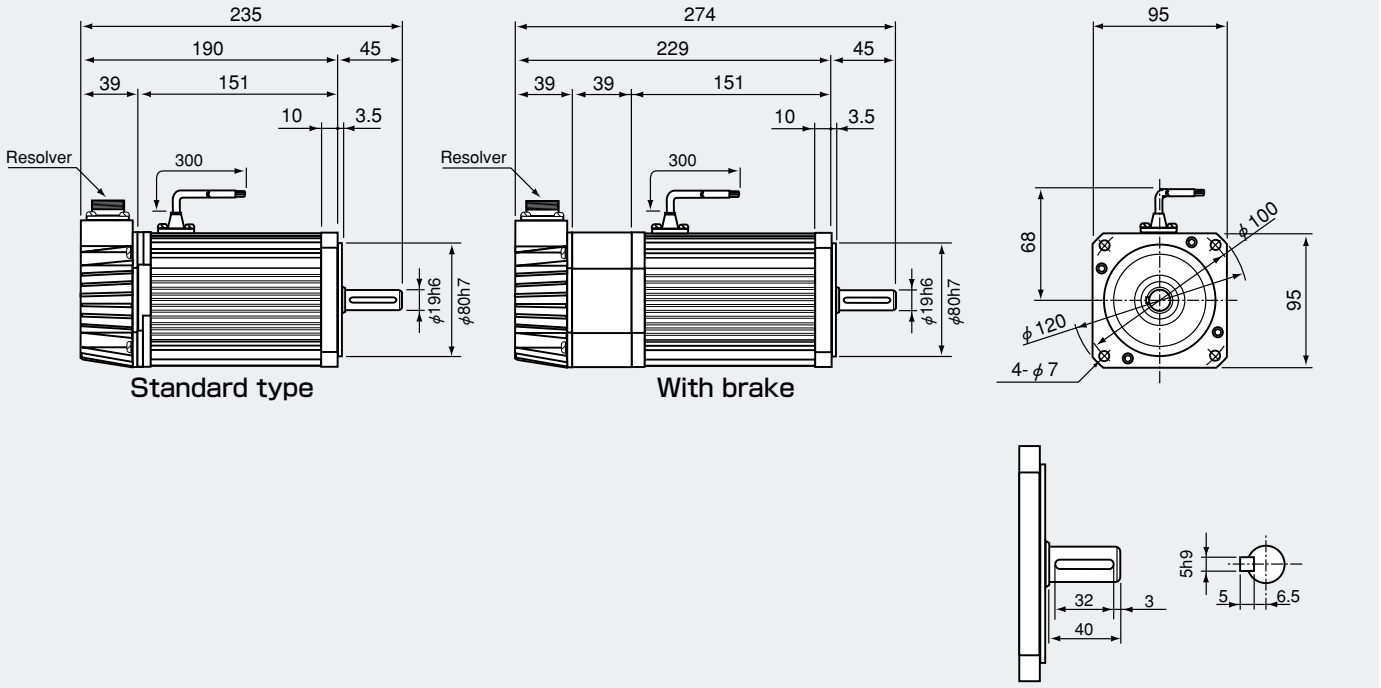


VLBST-□□□ □□V-□ □□□

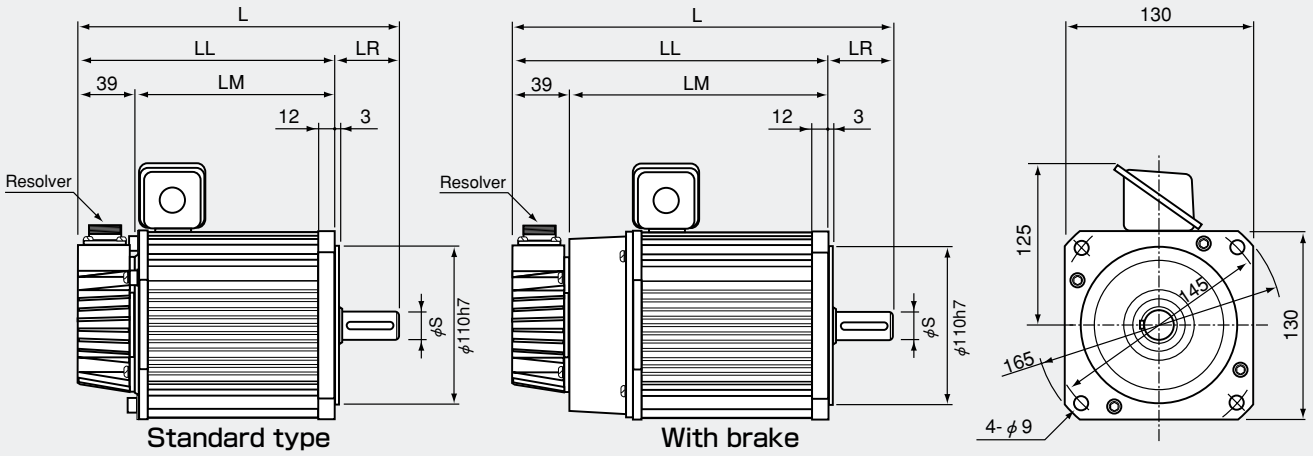
- Special spec. number
- Options (Indication of two or more options is possible. Ex.: BKO)
  - B : Brake
  - C : Connector
  - G : Reduction gear
  - K : Straight shaft without key
  - O : Oil seal
  - T : Taper shaft
  - U : Designed for CE-Marking
- Motor sensor V : 20 kHz resolver
- Motor speed Indicated value × 100 = Rated speed (min^{-1}) (Ex. 15: 1500 min^{-1})
- Capacity Indicated value × 10 = Rated output power (W) (Ex. 370: 3700 W (3.7 kW))

T Series Standard Type 1500/2000 min^{-1}: Outer Dimensions

VLBST-04015V

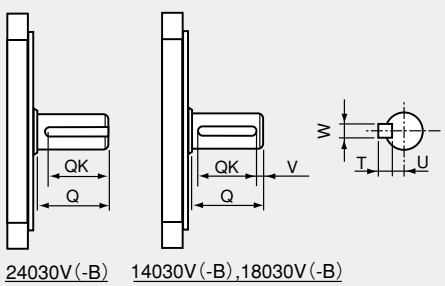


VLBST-08015V・10015V・15015V

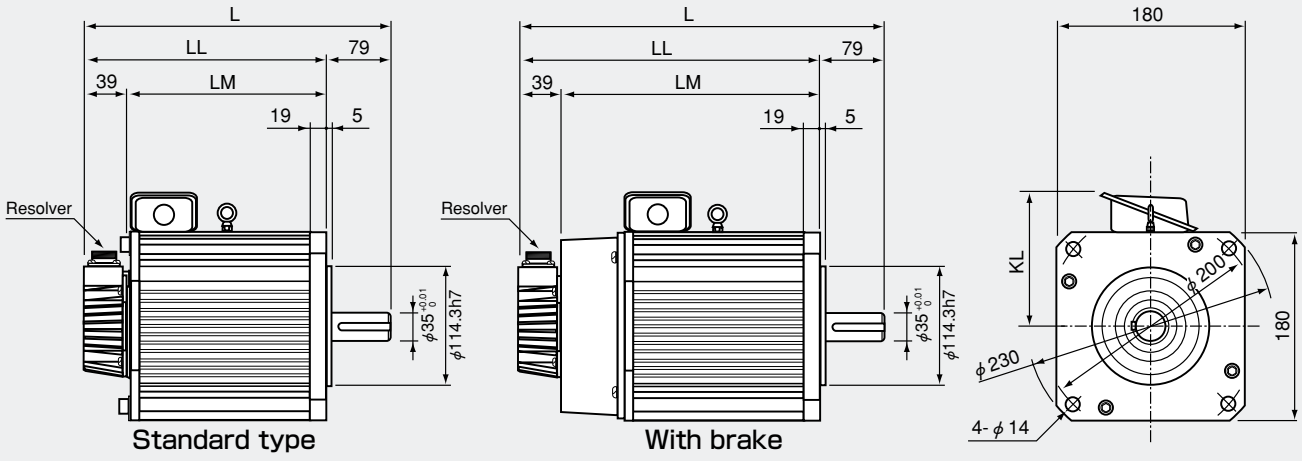


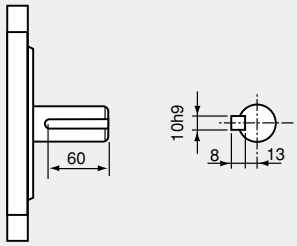
Type	L	LL	LM	LR	φS	Q	QK	V	W	T	U
08015V	223	178	139	45	19h6	40	32	3	5h9	5	6.5
10015V	241	196	157	45	19h6	40	32	3	5h9	5	6.5
15015V	291	236	197	55	24h6	50	45	-	8h9	7	8
08015V-B	265	220	181	45	19h6	40	32	3	5h9	5	6.5
10015V-B	283	238	199	45	19h6	40	32	3	5h9	5	6.5
15015V-B	333	278	239	55	24h6	50	45	-	8h9	7	8

※ B: With brake



VLBST-26015V • 37015V • 50015V

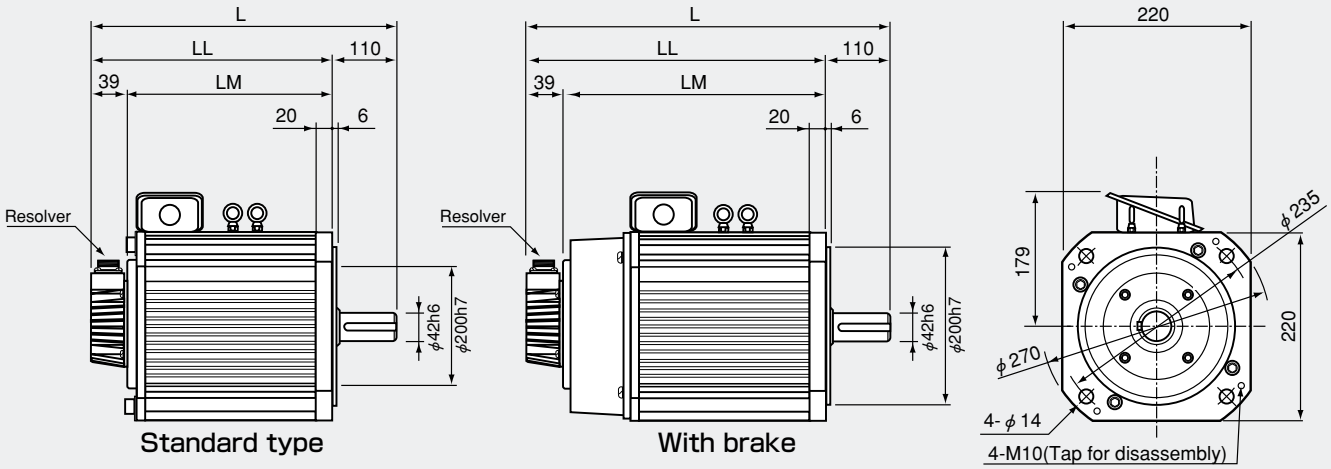


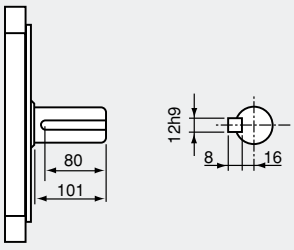


Type	L	LL	LM	KL	Hook bolt
26015V	317	238	199	145	Not provided
37015V	367	288	249	145	Provided
50015V	417	338	299	150	Provided
26015V-B	386	307	268	145	Not provided
37015V-B	436	357	318	145	Provided
50015V-B	486	407	368	150	Provided

※ B: With brake

VLBST-75020V • 10K20V





Type	L	LL	LM
75020V	424	314	275
10K20V	504	394	355
75020V-B	509	399	360
10K20V-B	589	479	440

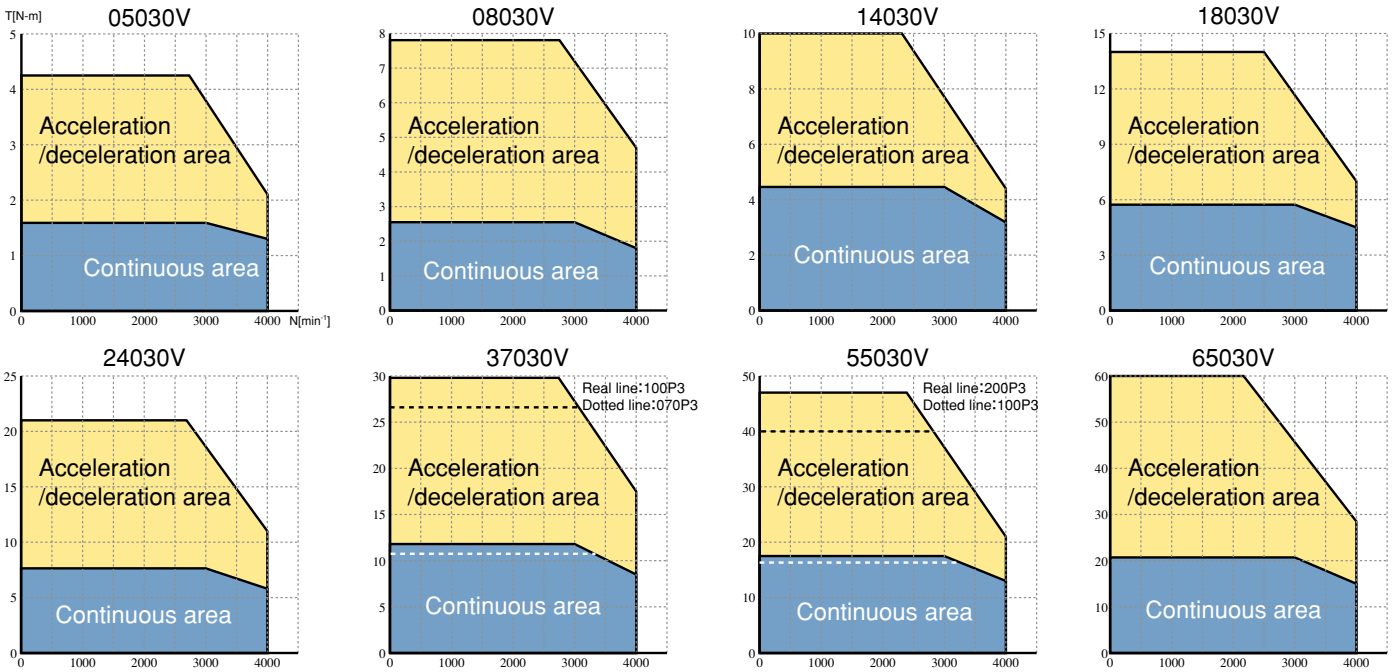
※ B: With brake

T Series Standard Type 3000 min^{-1}: Characteristics (Low Inertia)

◆ Time rating: Continuous ◆ Class of insulation: F ◆ Ambient temperature: -10～+40℃ ◆ Class of vibration : V15
◆ Method of excitation: Permanent magnet ◆ Method of protection: Totally-enclosed foam-proof (excluding shaft through area) IP44 ◆ Mounting method: Flange mounted type

Item \ Model		VLBST-□□□□□V									
		05030	08030	14030	18030	24030	37030		55030		65030
Rated output	W	500	800	1400	1800	2400	3400	3700	5000	5500	6500
Rated torque	N·m	1.59	2.55	4.46	5.73	7.64	10.8	11.8	15.9	17.5	20.7
Rated speed	min^{-1}	3000									
Max. speed	min^{-1}	4000									
Power rate	kW/s	53	85	105	128	142	77	92	113	137	143
Moment of inertia	X10^{-4} kg-m^2	0.47	0.76	1.89	2.57	4.1	15.2		22.3		30
Momentary max. torque	N·m	4.2	7.8	10	14	21	27	29.8	40	47	60
Momentary max. current	A(rms)	8.5	17.7	25	30	42	49	64	71	92	113
Rated voltage	V(rms)	117	100	124	116	109	111	113	112	115	115
Rated current	A(rms)	2.9	5.4	8.1	10.4	13.8	18.4	21	28	31	38
Torque constant	N·m/A(rms)	0.55	0.47	0.57	0.57	0.55	0.59		0.57		0.57
Heat time constant	min	10	15	17	23	30	30		36		48
Coil resistance	Ω	4.66	1.63	1.0	0.54	0.28	0.12		0.07		0.046
Coil inductance	mH	25	11.9	8.3	5.0	3.3	2.0		1.5		1.1
Induced voltage constant	V(rms)/min^{-1}	0.033	0.028	0.035	0.035	0.035	0.036		0.035		0.035
Permissible thrust load	N	49	88	98	98	98	235		235		235
Permissible radial load	N	284	441	510	539	559	1068		1147		1205
Mass	kg	3.2	4.5	6.2	7.8	11	20		27		34
Applicable servo amplifier VLASV-	012P1										
	012P2	○									
	025P2		○								
	035P3			○							
	070P3				○	○	○				
	100P3							○	○		
	200P3									○	○

* The maximum torque is obtained when the motor is used in combination with the V series servo amplifier. (For any combination other than the standard one, consult with us.)
◆ The power supply unit for the brake is available from us.
◆ The values in the table above are obtainable when the armature coil temperature is 20℃ and the motor is used in combination with the V series servo amplifier.

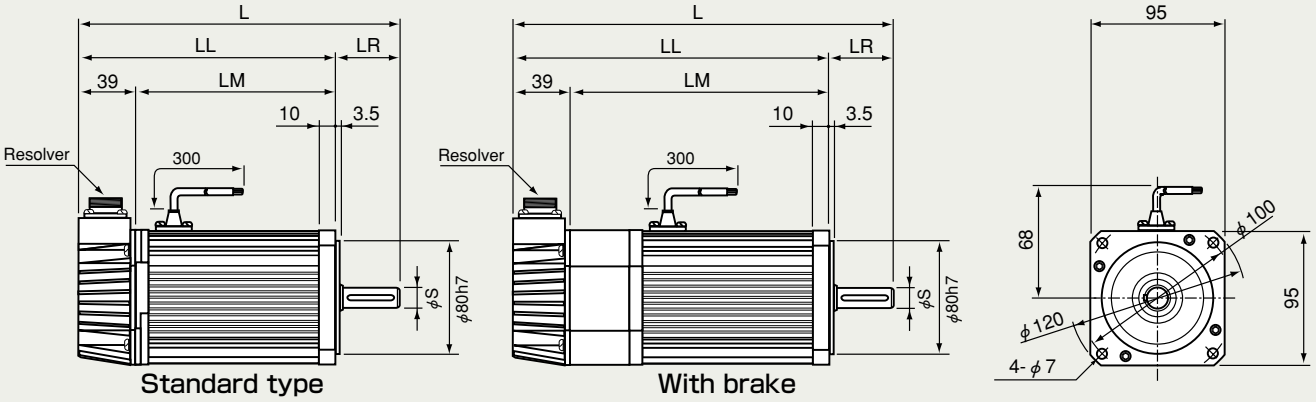


VLBST-□□□ □□V-□ □□□

- Special spec. number
- Options (Indication of two or more options is possible. Ex.: BKO)
  - B : Brake
  - C : Connector
  - G : Reduction gear
  - K : Straight shaft without key
  - O : Oil seal
  - T : Taper shaft
  - U : Designed for CE-Marking
- Motor sensor V : 20 kHz resolver
- Motor speed Indicated value × 100 = Rated speed (min^{-1}) (Ex. 30: 3000 min^{-1})
- Capacity Indicated value × 10 = Rated output power(W) Ex: 370: 3700W(3.7 kW)

T Series Standard Type 3000 min^{-1}: Outer Dimensions

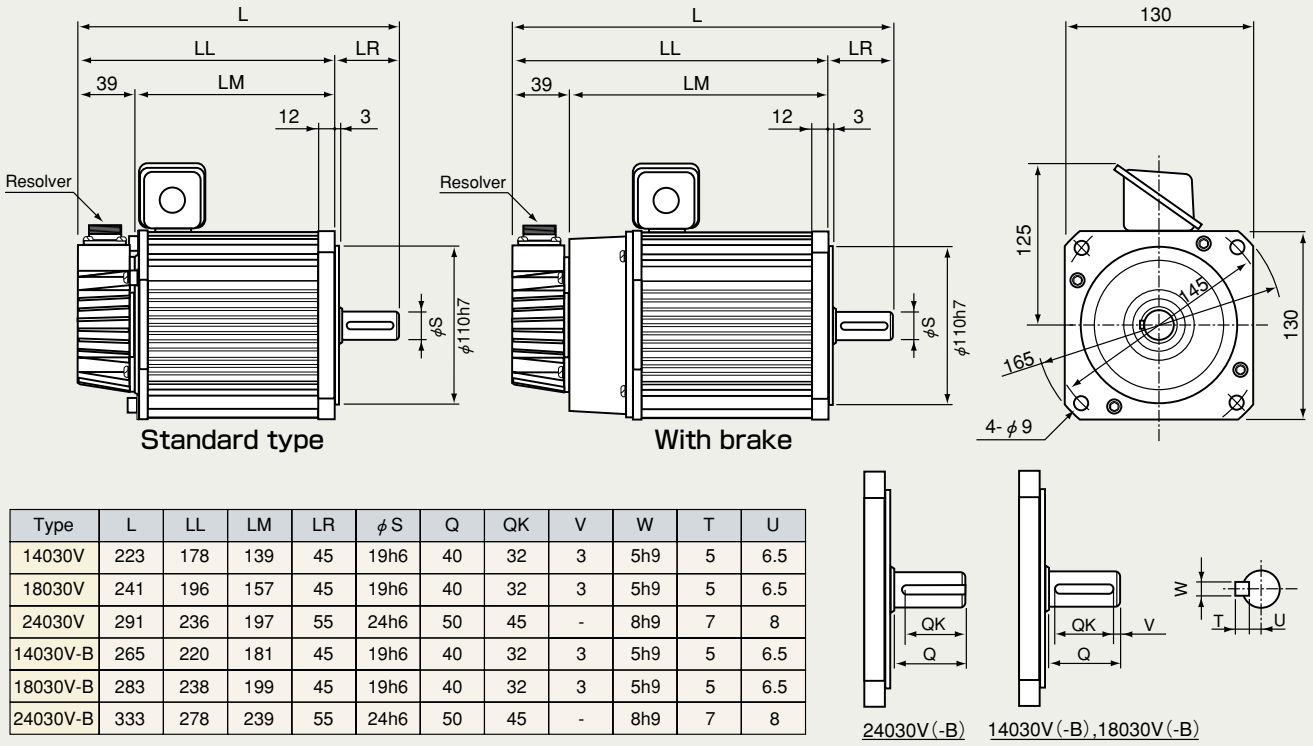
■VLBST-05030V・08030V



Type	L	LL	LM	LR	φS	Q	QK	V	U
05030V	193	158	119	35	14h6	30	25	2	4
08030V	235	190	151	45	19h6	40	32	3	6.5
05030V-B	232	197	158	35	14h6	30	25	2	4
08030V-B	274	229	190	45	19h6	40	32	3	6.5

※ B: With brake

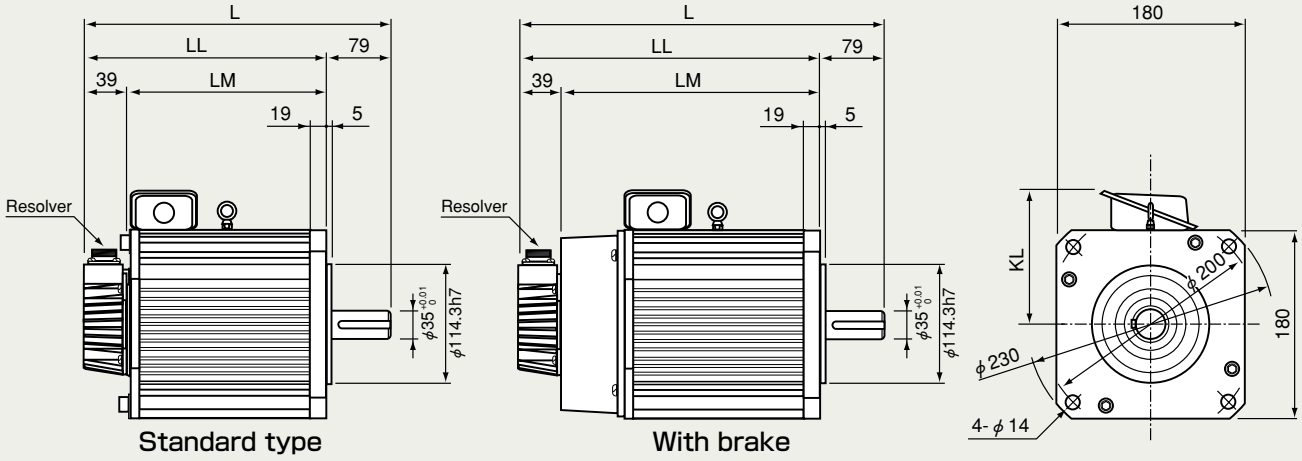
■VLBST-14030V・18030V・24030V



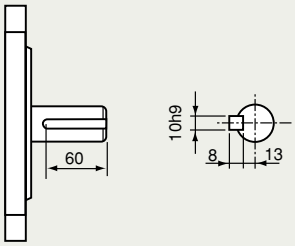
Type	L	LL	LM	LR	φS	Q	QK	V	W	T	U
14030V	223	178	139	45	19h6	40	32	3	5h9	5	6.5
18030V	241	196	157	45	19h6	40	32	3	5h9	5	6.5
24030V	291	236	197	55	24h6	50	45	-	8h9	7	8
14030V-B	265	220	181	45	19h6	40	32	3	5h9	5	6.5
18030V-B	283	238	199	45	19h6	40	32	3	5h9	5	6.5
24030V-B	333	278	239	55	24h6	50	45	-	8h9	7	8

※ B: With brake

VLBST-37030V • 55030V • 65030V



Type	L	LL	LM	KL	Hook bolt
37030V	317	238	199	145	Not provided
55030V	367	288	249	150	Provided
65030V	417	338	299	150	Provided
37030V-B	386	307	268	145	Not provided
55030V-B	436	357	318	150	Provided
65030V-B	486	407	368	150	Provided



※ B: With brake

T series Standard Type: Options

B Brake (holding brake)

The brake of the servo motor is a slim type dry non-excited electromagnetic brake. Use it for preventing the vertical shaft from falling and for holding the horizontal shaft at power OFF.

C Connector

For the T-series mid-capacity motor, the terminal box is replaced by connector.
For the small-capacity motor, a relay connector is attached to the lead wire.

G Reduction gear

A variety of reduction gears are available to utilize the full characteristics of the T-series servo motor.
For the small-capacity motor, an Able reduction gear or HPG series reduction gear is employed. For the motor of mid-capacity or more, a Coronet reduction gear is used. For detailed specifications, consult with us.

K Straight shaft without key

This shaft does not have any keyway and is the same as the standard shaft in diameter and length.

O Oil seal

If oil of the output shaft will splash from the machine side, use of an oil seal is recommended.

T Taper shaft

The T series servo motor is standardly provided with straight shaft with key. A taper shaft is available optionally.

U Designed for CE-Marking

CE

IEC34-1/EN60034-1
Standard relating to general motors
(International standard/EU)

Brake specifications

Applicable motor		Static friction torque	Rotor inertia $\times 10^{-4}$	Coil (20℃)				Suction time	Release time	Mass
				Voltage	Current	Resistance	Capacity			
		N·m	kg·m^2	DC V	A	Ω	W	ms	ms	kg
	01230	1.27	0.07	24	0.33	72	8	50	30	0.5
	02030									
	04030									
04015	05030	1.96	0.19	24	0.41	59	10	25	15	0.8
	08030									
08015	14030	7.84	0.68	24	0.63	38	15	40	20	2
10015	18030									
15015	24030									
26015	37030	29.4	3.0	24	0.92	26	22	90	35	4
37015	55030									
50015	65030									
75020		98	13	24	1.37	18	33	180	65	7.9
10K20										

Correspondence table of options

Each option is set for each type of the T-series motors.
For the special specifications, consult with us.

● : Can be supported. ▲ : Consult with us.

Type	Type of motor	B	C	G	K	O	T	U
T-series standard 1500/2000	04015V	●	●	▲	●	●	●	●
	08015V	●	●	▲	●	●	●	●
	10015V	●	●	▲	●	●	●	●
	15015V	●	●	▲	●	●	●	●
	26015V	●	●	▲	●	●	●	●
	37015V	●	●	▲	●	●	●	●
	50015V	●	▲	▲	●	●	●	●
	75020V	●	▲	▲	●	●	●	●
	10K20V	●	▲	▲	●	●	●	●
T-series standard 3000	01230V	●	●	▲	●	●	●	●
	02030V	●	●	▲	●	●	●	●
	04030V	●	●	▲	●	●	●	●
	05030V	●	●	▲	●	●	●	●
	08030V	●	●	▲	●	●	●	●
	14030V	●	●	▲	●	●	●	●
	18030V	●	●	▲	●	●	●	●
	24030V	●	●	▲	●	●	●	●
	37030V	●	●	▲	●	●	●	●
	55030V	●	●	▲	●	●	●	●
	65030V	●	▲	▲	●	●	●	●

Note: The armature, brake and motor sensor cables are 300 mm-long and the connector is not water-proof.

Details of armature exclusive connector

Wiring of the T-series motor armature is standardly performed, using the terminal box. To use the connector, you have to select the optional connector specifications (-C) or CE-Marking specifications (-U). The type of connector differs with each option, as tabled below.
The CE-Marking specifications are pursuant to IP54 with an oil seal attached to the shaft.

1500min^{-1}	2000min^{-1}	3000min^{-1}	Option	Receptacle	Straight plug	Cable clamp
VLBST-04015V	-	05030V 08030V	C	MS3102A16S-1P	MS3106B16S-1S	MS3057-8A
			U	JL04V-2E18-12PE-B	JL04V-6A18-12SE-EB	JL04-18CK(13)
VLBST-08015V VLBST-10015V VLBST-15015V	-	14030V 18030V 24030V	C	JA3102A20-15PC-F0	MS3106B20-15S	MS3057-12A
			U	JL04V-2E20-15PE-B	JL04V-6A20-15SE-EB	JL04-2022CK(14)
VLBST-26015V VLBST-37015V	-	37030V	C	MS3102A24-10P	MS3106B24-10S	MS3057-16A
			U	JL04V-2E24-10PE-B	JL04V-6A24-10SE-EB	JL04-2428CK(17)
VLBST-50015V	75020V 10K20V	55030V 65030V	C	For this type, consult with us.		
			U	JL04V-2E32-17PE-B	※Plug block JL04V-6A32-17SE	
				Connector exclusively used for brake		
				JL04V-2E10SL-3PE-B	JL04V-6A10SL-3SE-EB	JL04-1012CK(05)

※To select the plug block, a conduit should be incorporated.

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⚠ Cautions on safety

- Before using, read through and completely understand the appropriate instruction manual provided separately.
- The contents carried in this catalog may be subject to change without prior notice to effect improvements.

Export of the products listed on this catalog

1. The final user or final application of these products may be subject to export restriction as defined by the Foreign Exchange and Foreign Trade Control Law of Japan. If they are to be exported, they shall undergo full screening and pass the required export procedures.
2. When these products are incorporated in another equipment, the customer may be required to apply for the export permission, depending on the application of the another equipment.

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