


7. HG-SN SERIES

7.4 Electromagnetic brake characteristics



CAUTION

- The electromagnetic brake is provided to prevent a drop at a power failure or alarm occurrence during vertical drive or to hold a shaft at a stop. Do not use it for normal braking (including braking at servo-lock).
- Before operating the servo motor, be sure to confirm that the electromagnetic brake operates properly.
- The operation time of the electromagnetic brake varies depending on the power supply circuit you use. Be sure to check the operation delay time with a real machine.

The characteristics of the electromagnetic brake provided for the servo motor with an electromagnetic brake are indicated below.

Item	Servo motor	HG-SN series	
		52BJ/102BJ/152BJ	202BJ/302BJ
Type (Note 1)		Spring actuated type safety brake	
Rated voltage (Note 4)		24 V DC ⁰ / _{-10%}	
Power consumption	[W] at 20 °C	20	34
Coil resistance (Note 6)	[Ω]	29.0	16.8
Inductance (Note 6)	[H]	0.80	1.10
Brake static friction torque	[N·m]	8.5	44
Release delay time (Note 2)	[s]	0.04	0.1
Braking delay time (Note 2)	[s] DC off	0.03	0.03
Permissible braking work	Per braking [J]	400	4500
	Per hour [J]	4000	45000
Brake looseness at servo motor shaft (Note 5)	[degrees]	0.2 to 0.6	0.2 to 0.6
Brake life (Note 3)	Number of braking cycles [times]	20000	20000
	Work per braking [J]	200	1000
Selection example of surge absorbers to be used (Note 7, 8)	For the suppressed voltage 125 V	TND20V-680KB	
	For the suppressed voltage 350 V	TND10V-221KB	

- Note 1. It does not have a manual release mechanism. When it is necessary to hand-turn the servo motor shaft for machine centering, etc., use a separate 24 V DC power supply to release the brake electrically.
2. The value for initial on gap at 20 °C.
3. The brake gap will increase as the brake lining wears, but the gap is not adjustable.
The brake life indicated is the number of braking cycles after which adjustment will be required.
4. Always prepare a power supply exclusively used for the electromagnetic brake.
5. These are design values. These are not guaranteed values.
6. These are measured values. These are not guaranteed values.
7. Select the electromagnetic brake control relay properly, considering the characteristics of the electromagnetic brake and surge absorber. When you use a diode for a surge absorber, the electromagnetic braking time will be longer.
8. Manufactured by Nippon Chemi-Con Corporation.

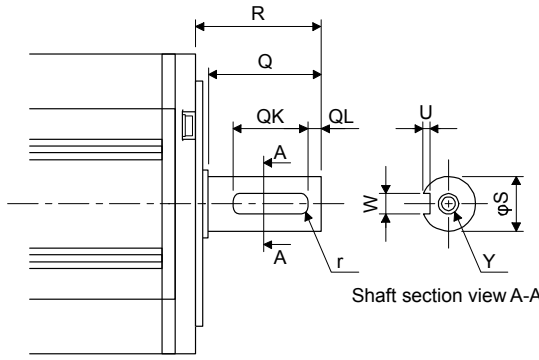
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7.5 Servo motors with special shafts

The servo motors with special shafts indicated by the symbol (K) in the table are available. K is the symbol attached to the servo motor model names.

Servo motor	Shaft shape
	Key shaft (without key)
HG-SN_(B)JK	K

[Unit: mm]



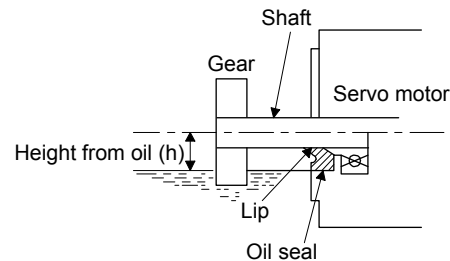
Servo motor	Variable dimensions								
	S	R	Q	W	QK	QL	U	r	Y
HG-SN52(B)JK HG-SN102(B)JK HG-SN152(B)JK	24h6	55	50	$8 \begin{smallmatrix} 0 \\ -0.036 \end{smallmatrix}$	36	5	$4 \begin{smallmatrix} +0.2 \\ 0 \end{smallmatrix}$	4	M8 Screw hole depth 20
HG-SN202(B)JK HG-SN302(B)JK	$35 \begin{smallmatrix} +0.010 \\ 0 \end{smallmatrix}$	79	75	$10 \begin{smallmatrix} 0 \\ -0.036 \end{smallmatrix}$	55	5	$5 \begin{smallmatrix} +0.2 \\ 0 \end{smallmatrix}$	5	M8 Screw hole depth 20

Key shaft (without key)

7.6 Servo motor with oil seal

The oil seal prevents the entry of oil into the servo motor.

Install the servo motor horizontally, and set the oil level in the gear box to be lower than the oil seal lip always.



Servo motor	Height (h) from the surface of the oil [mm]
HG-SN52(B)J HG-SN102(B)J HG-SN152(B)J	23
HG-SN202(B)J HG-SN302(B)J	31

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7.7 Dimensions

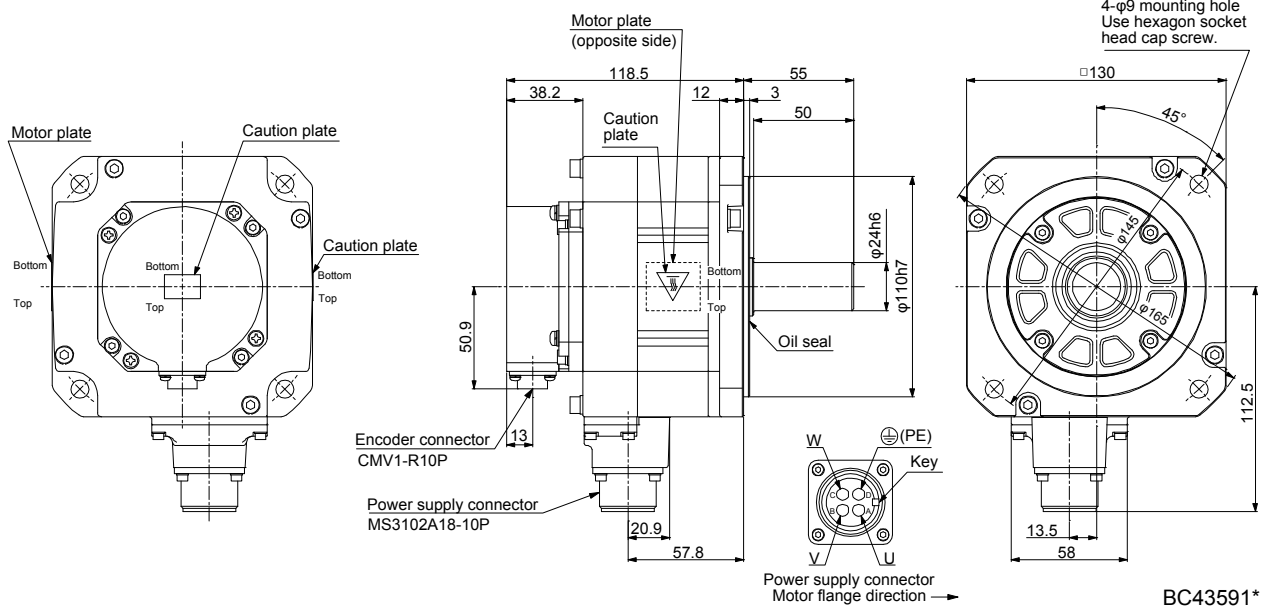
Moment of inertia on the table is the value calculated by converting the total value of moment of inertia for servo motor and electromagnetic brake with servo motor shaft.

The dimensions without tolerances are general tolerance.

7.7.1 Standard (without an electromagnetic brake)

Model	Output [kW]	Moment of inertia J [$\times 10^{-4}$ kg·m ²]	Mass [kg]
HG-SN52J	0.5	7.26	4.8

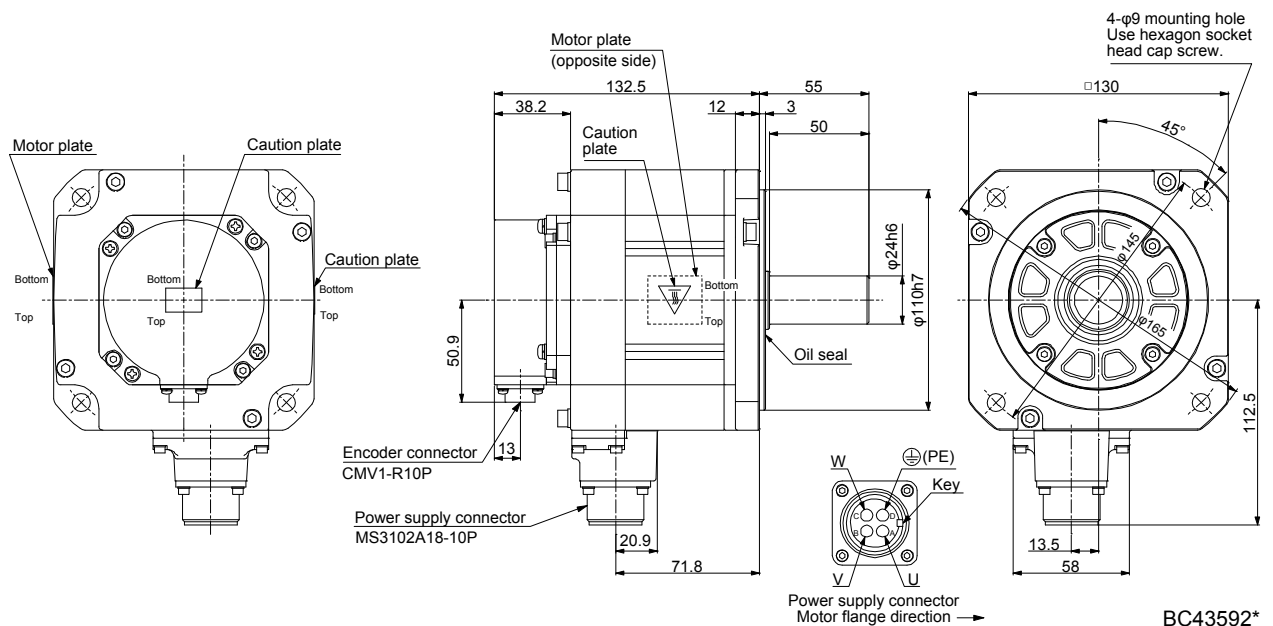
[Unit: mm]



BC43591*

Model	Output [kW]	Moment of inertia J [$\times 10^{-4}$ kg·m ²]	Mass [kg]
HG-SN102J	1.0	11.6	6.2

[Unit: mm]

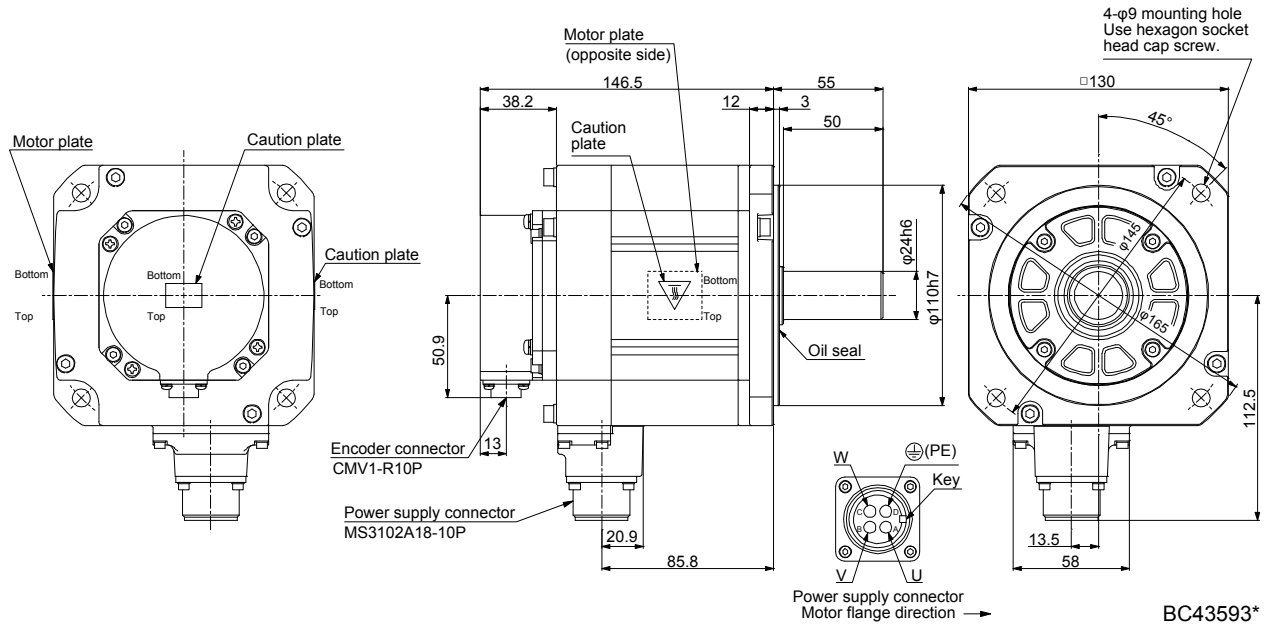


BC43592*

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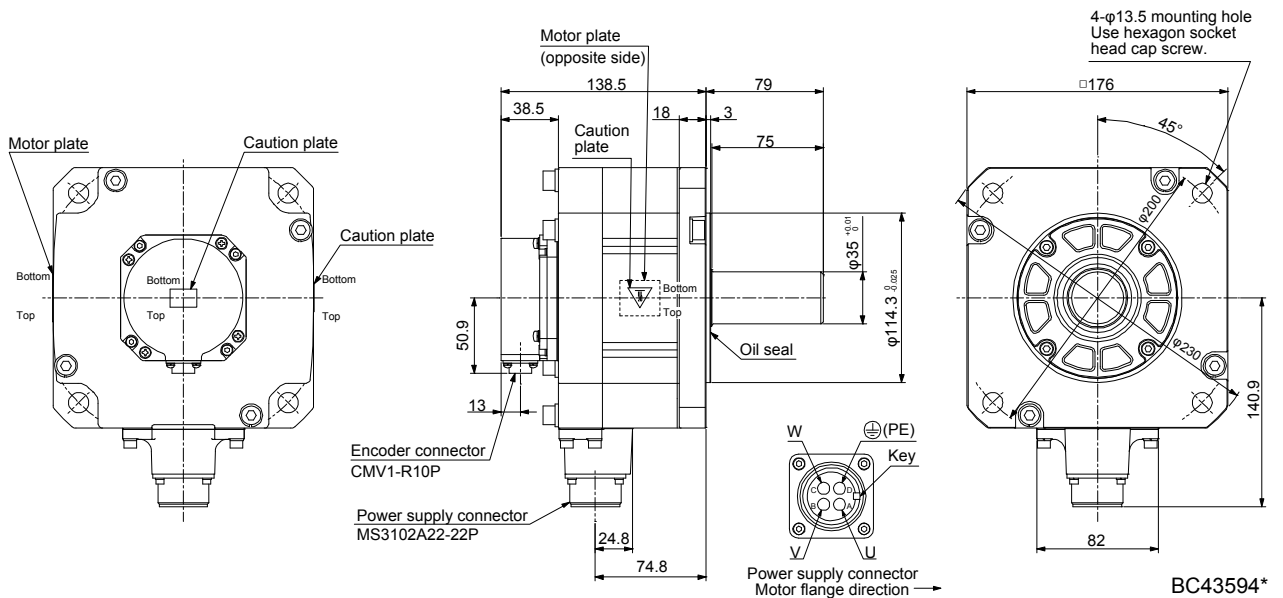
Model	Output [kW]	Moment of inertia J [$\times 10^{-4}$ kg·m ²]	Mass [kg]
HG-SN152J	1.5	16.0	7.3

[Unit: mm]



Model	Output [kW]	Moment of inertia J [$\times 10^{-4}$ kg·m ²]	Mass [kg]
HG-SN202J	2.0	46.8	11

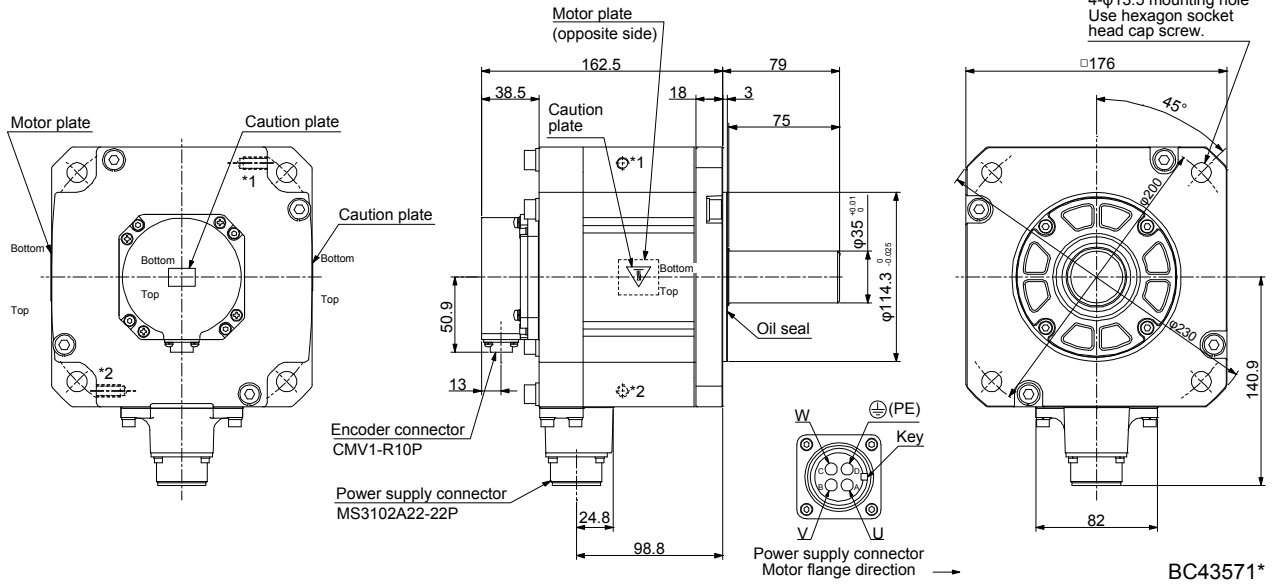
[Unit: mm]



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Model	Output [kW]	Moment of inertia J [$\times 10^{-4}$ kg·m ²]	Mass [kg]
HG-SN302J	3.0	78.6	16

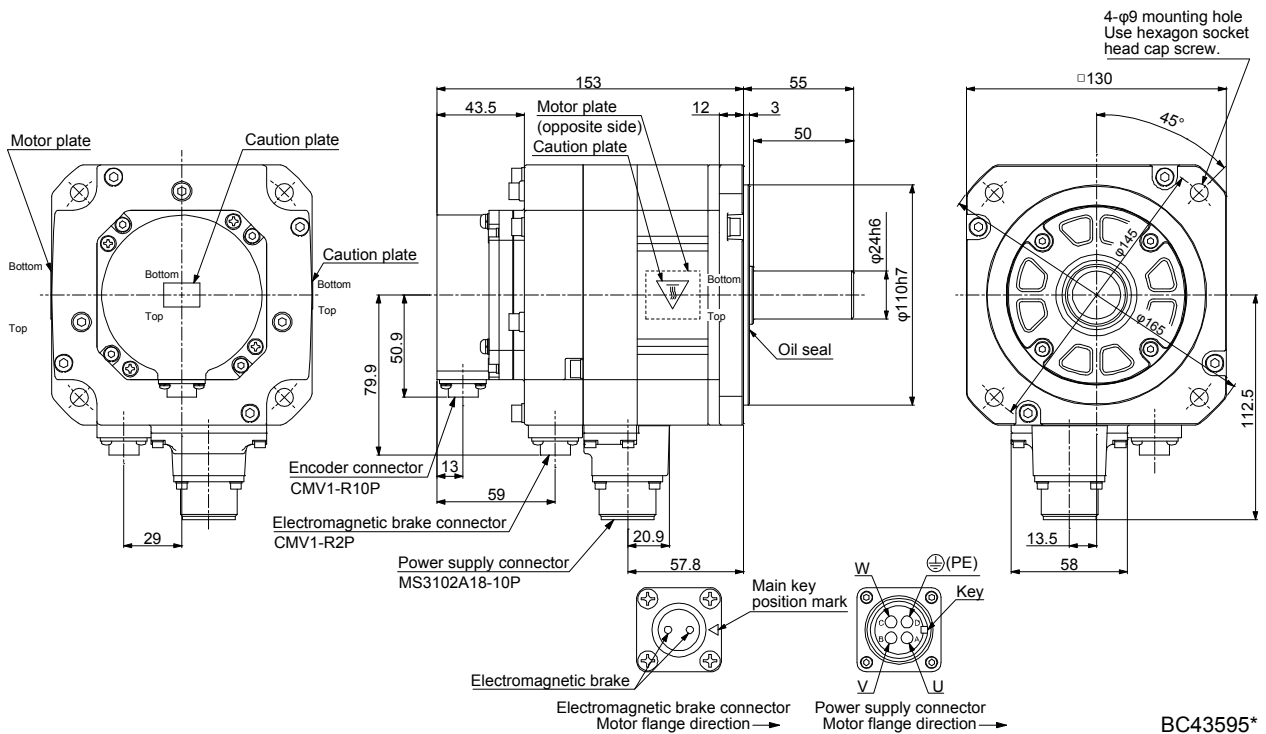
[Unit: mm]



7.7.2 With an electromagnetic brake

Model	Output [kW]	Brake static friction torque [N·m]	Moment of inertia J [$\times 10^{-4}$ kg·m ²]	Mass [kg]
HG-SN52BJ	0.5	8.5	9.48	6.7

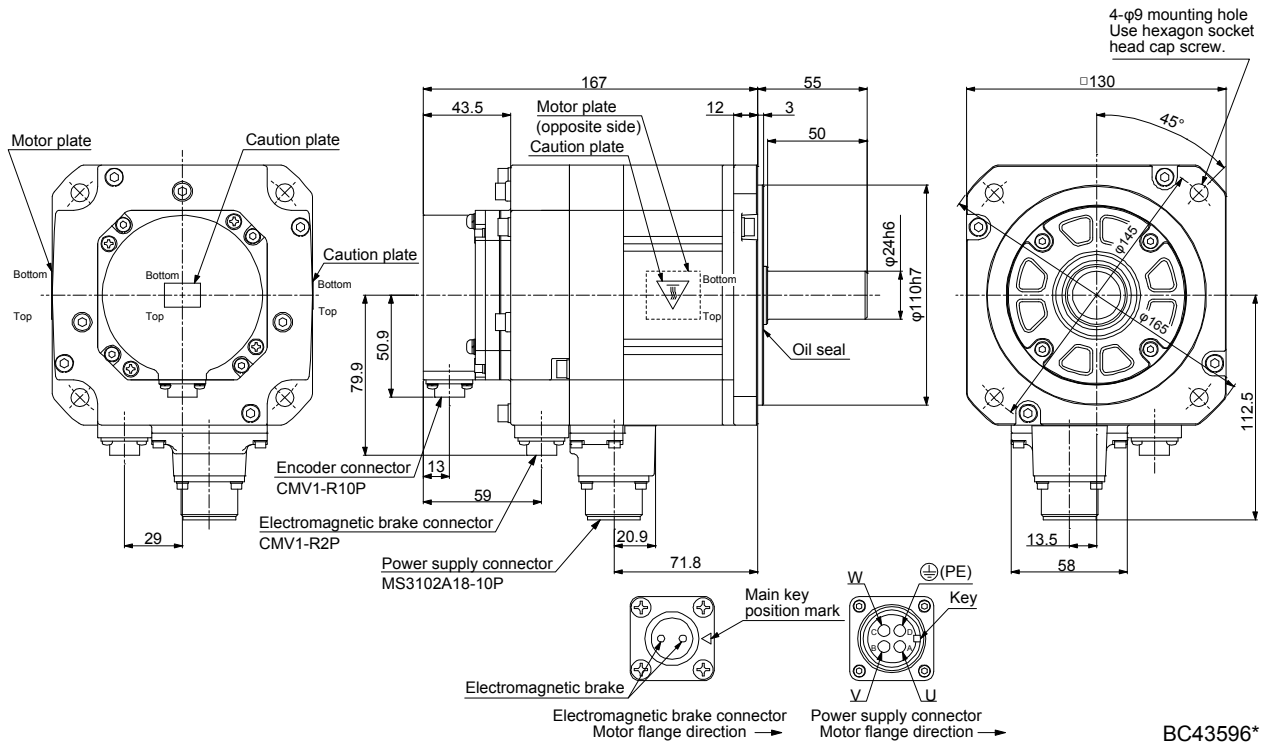
[Unit: mm]



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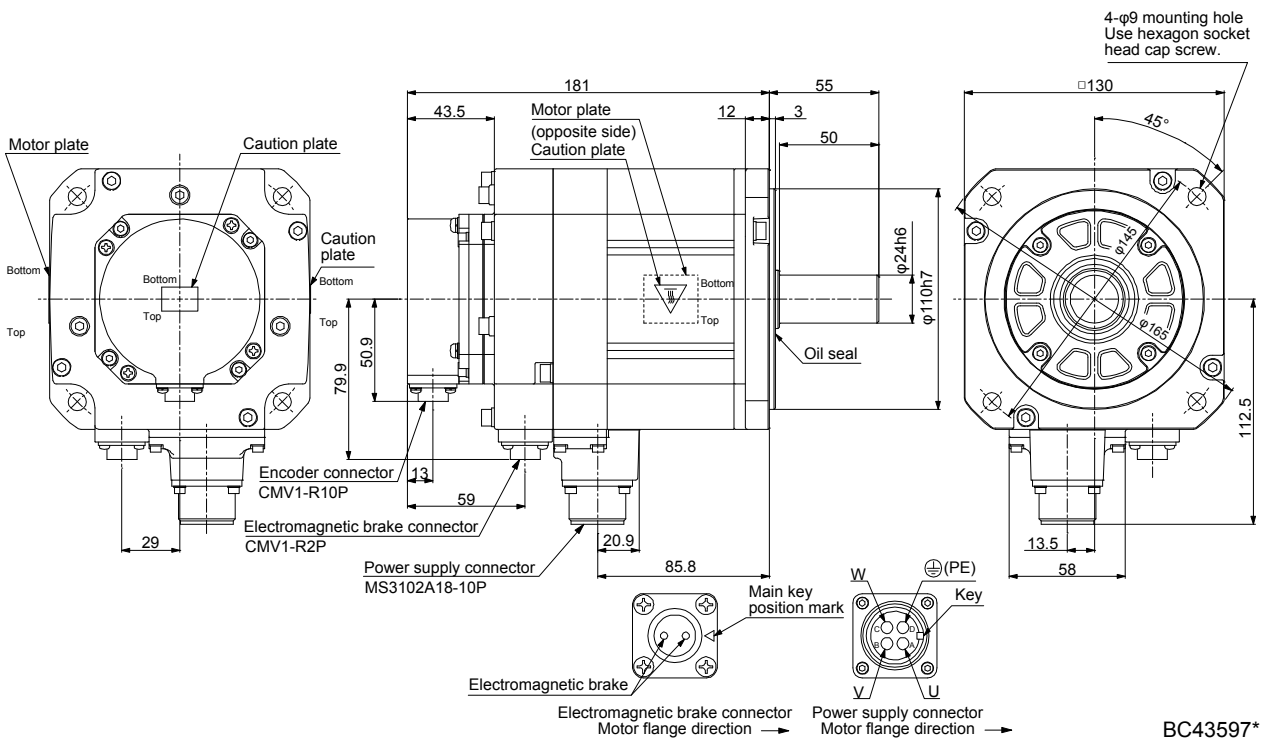
Model	Output [kW]	Brake static friction torque [N·m]	Moment of inertia J [$\times 10^{-4}$ kg·m ²]	Mass [kg]
HG-SN102BJ	1.0	8.5	13.8	8.2

[Unit: mm]



Model	Output [kW]	Brake static friction torque [N·m]	Moment of inertia J [$\times 10^{-4}$ kg·m ²]	Mass [kg]
HG-SN152BJ	1.5	8.5	18.2	9.3

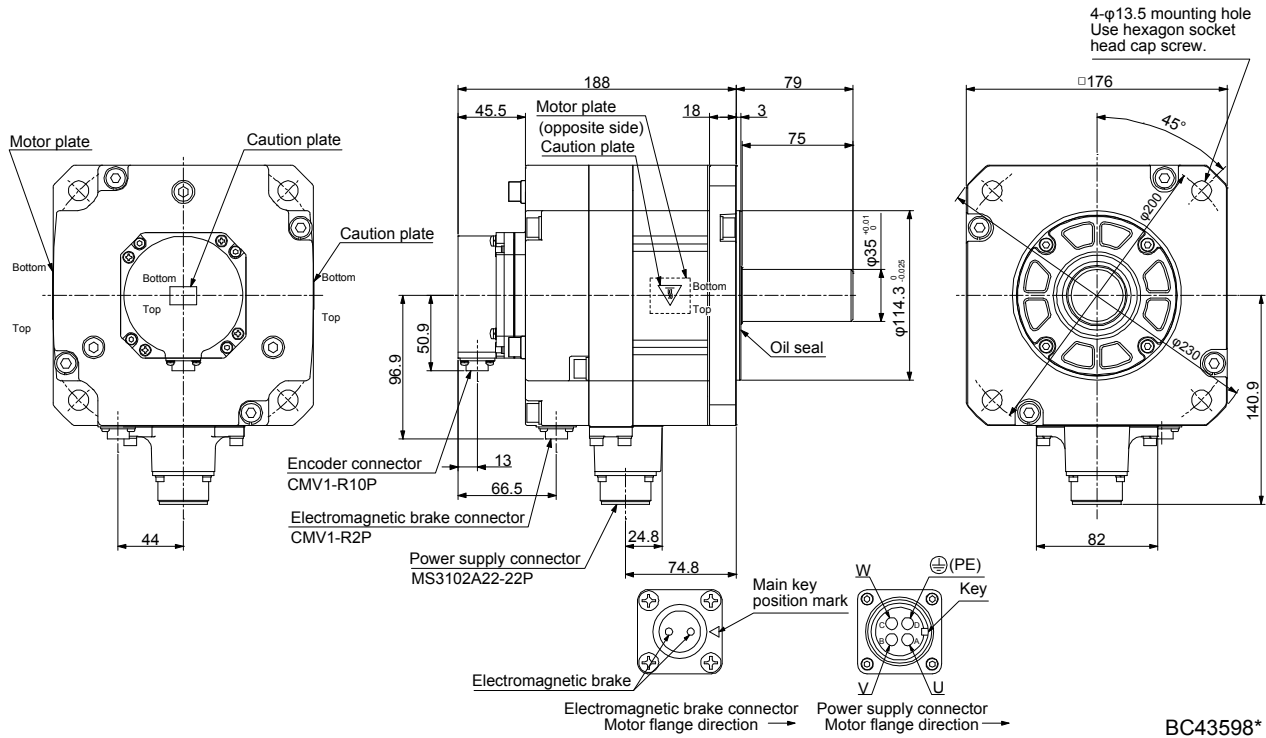
[Unit: mm]



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Model	Output [kW]	Brake static friction torque [N·m]	Moment of inertia J [$\times 10^{-4}$ kg·m ²]	Mass [kg]
HG-SN202BJ	2.0	44	56.5	17

[Unit: mm]



Model	Output [kW]	Brake static friction torque [N·m]	Moment of inertia J [$\times 10^{-4}$ kg·m ²]	Mass [kg]
HG-SN302BJ	3.0	44	88.2	22

[Unit: mm]

