# CS Models Electromagnetic Clutches - Bearing-mounted Type

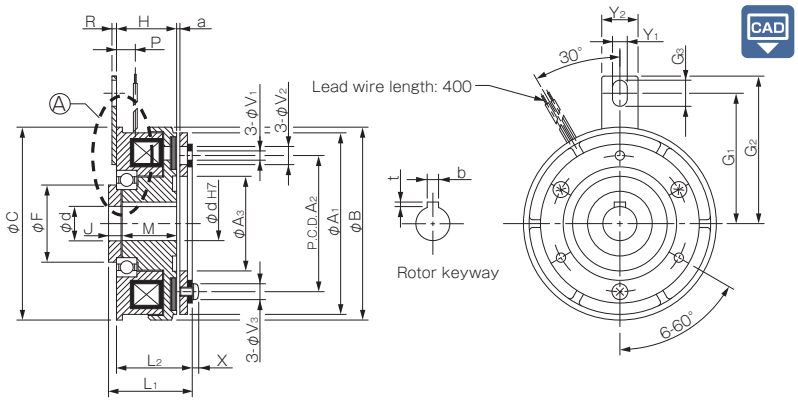
## Specifications

| Model | Size | Dynamic friction torque $T_d$ [N·m] | Static friction torque $T_s$ [N·m] | Coil (at 20°C) Voltage [V] | Wattage [W] | Current [A] | Resistance [Ω] | Heat resistance class | Lead wire UL style | Lead wire Size | Max. rotation speed [min⁻¹] | Rotating part moment of inertia J Rotor [kg·m²] | Rotating part moment of inertia J Armature [kg·m²] | Total work performed until readjustment of the air gap $E_T$ [J] | Armature pull-in time $t_a$ [s] | Torque build-up time $t_p$ [s] | Torque decaying time $t_d$ [s] | Mass [kg] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CS-06-33G | | | | | | | | | | | | | $4.23 \times 10^{-5}$ | | | | | 0.50 |
| CS-06-35G | 06 | 5 | 5.5 | DC24 | 11 | 0.46 | 52 | B | UL3398 | AWG22 | 3000 | $7.35 \times 10^{-5}$ | $1.05 \times 10^{-4}$ | $36 \times 10^{6}$ | 0.020 | 0.041 | 0.020 | 0.70 |
| CS-06-31G | | | | | | | | | | | | | $6.03 \times 10^{-5}$ | | | | | 0.54 |
| CS-08-33G | | | | | | | | | | | | | $1.18 \times 10^{-4}$ | | | | | 0.87 |
| CS-08-35G | 08 | 10 | 11 | DC24 | 15 | 0.63 | 38 | B | UL3398 | AWG18 | 3000 | $2.24 \times 10^{-4}$ | $3.00 \times 10^{-4}$ | $60 \times 10^{6}$ | 0.023 | 0.051 | 0.030 | 1.23 |
| CS-08-31G | | | | | | | | | | | | | $1.71 \times 10^{-4}$ | | | | | 0.95 |
| CS-10-33G | | | | | | | | | | | | | $4.78 \times 10^{-4}$ | | | | | 1.57 |
| CS-10-35G | 10 | 20 | 22 | DC24 | 20 | 0.83 | 29 | B | UL3398 | AWG18 | 3000 | $6.78 \times 10^{-4}$ | $9.45 \times 10^{-4}$ | $130 \times 10^{6}$ | 0.025 | 0.063 | 0.050 | 2.18 |
| CS-10-31G | | | | | | | | | | | | | $6.63 \times 10^{-4}$ | | | | | 1.73 |
| CS-12-33G | | | | | | | | | | | | | $1.31 \times 10^{-3}$ | | | | | 2.89 |
| CS-12-35G | 12 | 40 | 45 | DC24 | 25 | 1.04 | 23 | B | UL3398 | AWG18 | 2000 | $2.14 \times 10^{-3}$ | $2.75 \times 10^{-3}$ | $250 \times 10^{6}$ | 0.040 | 0.115 | 0.065 | 3.93 |
| CS-12-31G | | | | | | | | | | | | | $1.81 \times 10^{-3}$ | | | | | 3.18 |
| CS-16-33G | | | | | | | | | | | | | $4.80 \times 10^{-3}$ | | | | | 5.3 |
| CS-16-35G | 16 | 80 | 90 | DC24 | 35 | 1.46 | 16 | B | UL3398 | AWG18 | 2000 | $6.30 \times 10^{-3}$ | $9.05 \times 10^{-3}$ | $470 \times 10^{6}$ | 0.050 | 0.160 | 0.085 | 7.1 |
| CS-16-31G | | | | | | | | | | | | | $6.35 \times 10^{-3}$ | | | | | 5.6 |
| CS-20-33G | 20 | 160 | 175 | DC24 | 45 | 1.88 | 13 | B | UL3398 | AWG16 | 1500 | $1.93 \times 10^{-2}$ | $1.37 \times 10^{-2}$ | $10 \times 10^{8}$ | 0.090 | 0.250 | 0.130 | 9.8 |
| CS-25-33G | 25 | 320 | 350 | DC24 | 72 | 3.00 | 8 | B | UL3398 | AWG16 | 1500 | $4.48 \times 10^{-2}$ | $3.58 \times 10^{-2}$ | $20 \times 10^{8}$ | 0.115 | 0.335 | 0.210 | 17.5 |

* The dynamic friction torque, $T_d$, is measured at a relative speed of 100 min⁻¹. Depending on the initial torque characteristics, break-in to condition the engaging surfaces may also be required.
* The moment of inertia of a rotating body and mass are measured for the maximum bore diameter.

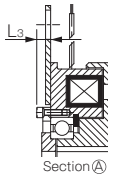
## Dimensions (CS-□-33G)

(For direct mounting)




Unit [mm]

| Size | Shaft bore dimensions d H7 | Models compliant with JIS standards b P9 | t | Models compliant with the old JIS standards b E9 | t |
|---|---|---|---|---|---|
| 06 | 12 | $4^{-0.012}_{-0.042}$ | $1.5^{+0.5}_{0}$ | $4^{+0.050}_{+0.020}$ | $1.5^{+0.5}_{0}$ |
| 08 | 15 | $5^{-0.012}_{-0.042}$ | $2^{+0.5}_{0}$ | $5^{+0.050}_{+0.020}$ | $2^{+0.5}_{0}$ |
| 10 | 20 | $6^{-0.012}_{-0.042}$ | $2.5^{+0.5}_{0}$ | $5^{+0.050}_{+0.020}$ | $2^{+0.5}_{0}$ |
| 12 | 25 | $8^{-0.015}_{-0.051}$ | $3^{+0.5}_{0}$ | $7^{+0.061}_{+0.025}$ | $3^{+0.5}_{0}$ |
| 16 | 30 | $8^{-0.015}_{-0.051}$ | $3^{+0.5}_{0}$ | $7^{+0.061}_{+0.025}$ | $3^{+0.5}_{0}$ |
| 20 | 40 | $12^{-0.018}_{-0.061}$ | $3^{+0.5}_{0}$ | $10^{+0.061}_{+0.025}$ | $3.5^{+0.5}_{0}$ |
| 25 | 50 | $14^{-0.018}_{-0.061}$ | $3.5^{+0.5}_{0}$ | $12^{+0.075}_{+0.032}$ | $3.5^{+0.5}_{0}$ |




| Size | $L_3$ |
|---|---|
| 20 | 9 |
| 25 | 6 |

* On sizes 20 and 25, the head of the bolt for pressing down the bearing will stick out. See the above dimensions.

Unit [mm]

| Size | Radial direction dimensions $A_1$ | $A_2$ | $A_3$ | B | C | F | $G_1$ | $G_2$ | $G_3$ | $V_1$ | $V_2$ | $V_3$ | $Y_1$ | $Y_2$ | Axial direction dimensions H | $L_1$ | $L_2$ | M | J | P | R | X | a |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 06 | 63 | 46 | 34.5 | 67.5 | 67.5 | 24 | 42.5 | 50 | 9.5 | 3-3.1 | 3-6.3 | 3-5.5 | 4.5 | 14 | 24 | 31 | 28 | 22 | 5 | 7.3 | 2 | 2.5 | 0.2 ±0.05 |
| 08 | 80 | 60 | 41.7 | 85 | 85 | 34 | 57.5 | 65 | 11.5 | 3-4.1 | 3-8 | 3-7 | 6.5 | 16 | 26.5 | 34.5 | 31 | 24 | 6 | 8.3 | 2 | 2.85 | 0.2 ±0.05 |
| 10 | 100 | 76 | 51.5 | 106 | 106 | 40 | 62.5 | 70 | 11.5 | 3-5.1 | 3-11 | 3-9 | 6.5 | 16 | 30 | 39.6 | 36.1 | 27 | 6.5 | 9 | 2 | 3.3 | 0.2 ±0.05 |
| 12 | 125 | 95 | 61.5 | 133 | 133 | 45 | 77.5 | 85 | 11.5 | 3-6.1 | 3-12 | 3-11 | 6.5 | 16 | 33.5 | 44.5 | 40.5 | 30 | 7.5 | 9.3 | 2 | 3.3 | $0.3^{+0.05}_{-0.1}$ |
| 16 | 160 | 120 | 79.5 | 169 | 169 | 58 | 100 | 112 | 18.5 | 3-8.2 | 3-15 | 3-14 | 8.5 | 25 | 37.5 | 50.5 | 46.5 | 34 | 7.5 | 11.7 | 3.2 | 3.5 | $0.3^{+0.05}_{-0.1}$ |
| 20 | 200 | 158 | 99.5 | 212.5 | 212 | 75 | 125 | 138 | 18.5 | 3-10.2 | 3-18 | 3-16.2 | 8.5 | 25 | 44 | 60.4 | 55.4 | 40 | 9 | 13.4 | 3 | 4.9 | $0.5^{0}_{-0.2}$ |
| 25 | 250 | 210 | 124.5 | 264 | 250 | 100 | 155 | 173 | 24 | 4-12.2 | 4-22 | 4-20 | 12 | 30 | 53 | 68.9 | 65.9 | 47 | 9 | 18 | 6 | 5.5 | $0.5^{0}_{-0.2}$ |

* For details on mounting method, see "Items Checked for Design Purposes".

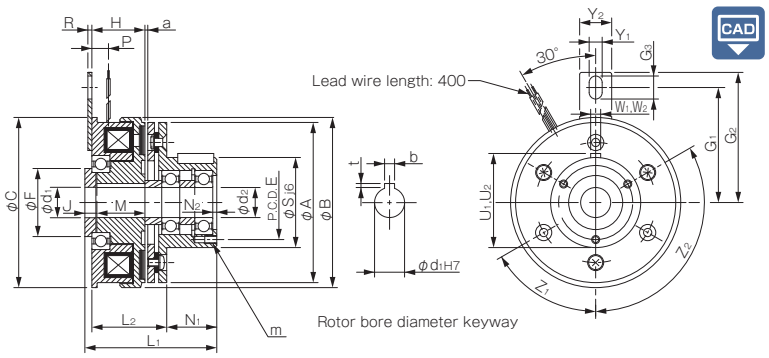
## How to Place an Order

CS-06-33G 24V 12DIN

- Size / Rotor bore diameter (dimensional symbol d)
- Keyway standards: DIN: Compliant with JIS standards P9; JIS: Compliant with the old JIS standards (class 2) E9

## Dimensions (CS-□-35G)

(For through-shafts)




Unit [mm]

| Size | Shaft bore dimensions | | | | | |
|---|---|---|---|---|---|---|
| | $d_1$ H7 | $d_2$ | Models compliant with JIS standards | | Models compliant with the old JIS standards | |
| | | | b P9 | t | b E9 | t |
| 06 | 12 | 12 | 4 $^{-0.012}_{-0.042}$ | 1.5 $^{+0.5}_{0}$ | 4 $^{+0.050}_{+0.020}$ | 1.5 $^{+0.5}_{0}$ |
| 08 | 15 | 15 | 5 $^{-0.012}_{-0.042}$ | 2 $^{+0.5}_{0}$ | 5 $^{+0.050}_{+0.020}$ | 2 $^{+0.5}_{0}$ |
| 10 | 20 | 20 | 6 $^{-0.012}_{-0.042}$ | 2.5 $^{+0.5}_{0}$ | 5 $^{+0.050}_{+0.020}$ | 2 $^{+0.5}_{0}$ |
| 12 | 25 | 25 | 8 $^{-0.015}_{-0.051}$ | 3 $^{+0.5}_{0}$ | 7 $^{+0.061}_{+0.025}$ | 3 $^{+0.5}_{0}$ |
| 16 | 30 | 30 | 8 $^{-0.015}_{-0.051}$ | 3 $^{+0.5}_{0}$ | 7 $^{+0.061}_{+0.025}$ | 3 $^{+0.5}_{0}$ |

Unit [mm]

| Size | Radial direction dimensions | | | | | | | | | | | | | Axial direction dimensions | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | A | B | C | E | F | $G_1$ | $G_2$ | $G_3$ | S | $Y_1$ | $Y_2$ | $Z_1$ | $Z_2$ | H | $L_1$ | $L_2$ | M | J | $N_1$ | $N_2$ | P | R | $U_1$ | $W_1$ | $U_2$ | $W_2$ | a | m |
| 06 | 63 | 67.5 | 67.5 | 33 | 24 | 42.5 | 50 | 9.5 | 38 | 4.5 | 14 | 3-120° | 0° | 24 | 54.5 | 31.5 | 22 | 5 | 20 | 2 | 7.3 | 2 | 39.5 | 4 | 39.5 | 4 | 0.2 ±0.05 | 3-M4 × 0.7, length: 4 |
| 08 | 80 | 85 | 85 | 37 | 34 | 57.5 | 65 | 11.5 | 45 | 6.5 | 16 | 3-120° | 0° | 26.5 | 63.5 | 35 | 24 | 6 | 25 | 2 | 8.3 | 2 | 47 | 5 | 47 | 5 | 0.2 ±0.05 | 3-M4 × 0.7, length: 6 |
| 10 | 100 | 106 | 106 | 47 | 40 | 62.5 | 70 | 11.5 | 55 | 6.5 | 16 | 4-90° | 45° | 30 | 74.6 | 41.1 | 27 | 6.5 | 30 | 3 | 9 | 2 | 57 | 5 | 57.5 | 6 | 0.2 ±0.05 | 4-M4 × 0.7, length: 8 |
| 12 | 125 | 133 | 133 | 52 | 45 | 77.5 | 85 | 11.5 | 64 | 6.5 | 16 | 4-90° | 45° | 33.5 | 90.5 | 46.5 | 30 | 7.5 | 40 | 2.2 | 9.3 | 2 | 67 | 7 | 67 | 8 | 0.3 $^{+0.05}_{-0.1}$ | 4-M4 × 0.7, length: 8 |
| 16 | 160 | 169 | 169 | 62 | 58 | 100 | 112 | 18.5 | 75 | 8.5 | 25 | 6-60° | 30° | 37.5 | 107.5 | 53.5 | 34 | 7.5 | 50 | 3 | 11.7 | 3.2 | 78 | 7 | 78 | 8 | 0.3 $^{+0.05}_{-0.1}$ | 6-M5 × 0.8, length: 8 |

* For details on mounting method, see "Items Checked for Design Purposes".

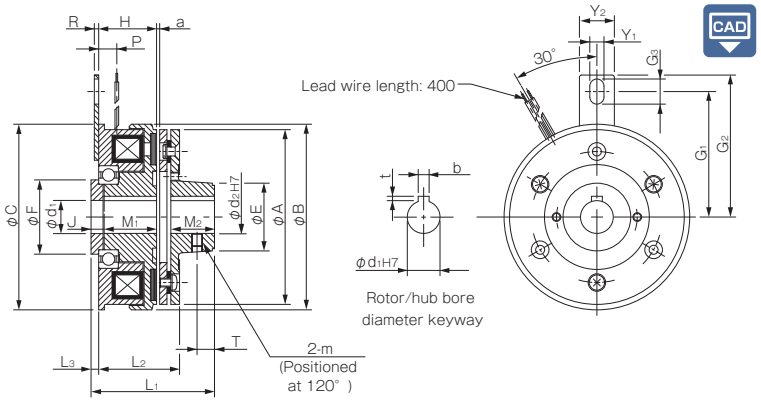
### How to Place an Order

CS-06-35G 24V R12DIN A12JIS

- Size
- Rotor bore diameter (dimensional symbol)
- Keyway standards DIN: Compliant with JIS standards P9
  JIS: Compliant with the old JIS standards (class 2) E9
- Armature bore diameter (dimensional symbol d2)
- Armature type-5 keyway standards
  Dimensional symbol $U_2$, $W_2$: DIN: Compliant with JIS standards P9
  Dimensional symbol $U_1$, $W_1$: JIS: Compliant with the old JIS standards (class 2) E9

## Dimensions (CS-□-31G)

(For butt shafts)




Unit [mm]

| Size | Shaft bore dimensions | | | | | |
|---|---|---|---|---|---|---|
| | $d_1$ H7 | $d_2$ H7 | Models compliant with JIS standards | | Models compliant with the old JIS standards | |
| | | | b P9 | t | b E9 | t |
| 06 | 12 | 12 | 4 $^{-0.012}_{-0.042}$ | 1.5 $^{+0.5}_{0}$ | 4 $^{+0.050}_{+0.020}$ | 1.5 $^{+0.5}_{0}$ |
| 08 | 15 | 15 | 5 $^{-0.012}_{-0.042}$ | 2 $^{+0.5}_{0}$ | 5 $^{+0.050}_{+0.020}$ | 2 $^{+0.5}_{0}$ |
| 10 | 20 | 20 | 6 $^{-0.012}_{-0.042}$ | 2.5 $^{+0.5}_{0}$ | 5 $^{+0.050}_{+0.020}$ | 2 $^{+0.5}_{0}$ |
| 12 | 25 | 25 | 8 $^{-0.015}_{-0.051}$ | 3 $^{+0.5}_{0}$ | 7 $^{+0.061}_{+0.025}$ | 3 $^{+0.5}_{0}$ |
| 16 | 30 | 30 | 8 $^{-0.015}_{-0.051}$ | 3 $^{+0.5}_{0}$ | 7 $^{+0.061}_{+0.025}$ | 3 $^{+0.5}_{0}$ |

Unit [mm]

| Size | Radial direction dimensions | | | | | | | | | | | Axial direction dimensions | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | A | B | C | E | F | $G_1$ | $G_2$ | $G_3$ | $Y_1$ | $Y_2$ | m | H | $L_1$ | $L_2$ | $L_3$ | $M_1$ | $M_2$ | J | P | R | T | a |
| 06 | 63 | 67.5 | 67.5 | 26 | 24 | 42.5 | 50 | 9.5 | 4.5 | 14 | M4 | 24 | 46 | 31.5 | 3 | 22 | 15 | 5 | 7.3 | 2 | 6 | 0.2 ±0.05 |
| 08 | 80 | 85 | 85 | 31 | 34 | 57.5 | 65 | 11.5 | 6.5 | 16 | M5 | 26.5 | 54.5 | 35 | 3.5 | 24 | 20 | 6 | 8.3 | 2 | 8 | 0.2 ±0.05 |
| 10 | 100 | 106 | 106 | 41 | 40 | 62.5 | 70 | 11.5 | 6.5 | 16 | M5 | 30 | 64.6 | 41.1 | 3.5 | 27 | 25 | 6.5 | 9 | 2 | 10 | 0.2 ±0.05 |
| 12 | 125 | 133 | 133 | 49 | 45 | 77.5 | 85 | 11.5 | 6.5 | 16 | M6 | 33.5 | 74.5 | 46.5 | 4 | 30 | 30 | 7.5 | 9.3 | 2 | 12 | 0.3 $^{+0.05}_{-0.1}$ |
| 16 | 160 | 169 | 169 | 65 | 58 | 100 | 112 | 18.5 | 8.5 | 25 | M8 | 37.5 | 88.5 | 53.5 | 4 | 34 | 38 | 7.5 | 11.7 | 3.2 | 15 | 0.3 $^{+0.05}_{-0.1}$ |

* For details on mounting method, see "Items Checked for Design Purposes".

### How to Place an Order

CS-06-31G 24V R12DIN A12DIN

- Size
- Rotor bore diameter (dimensional symbol d1)
- Keyway standards DIN: Compliant with JIS standards P9
  JIS: Compliant with the old JIS standards (class 2) E9
- Armature bore diameter (dimensional symbol d2)
- Keyway standards DIN: Compliant with JIS standards P9
  JIS: Compliant with the old JIS standards (class 2) E9