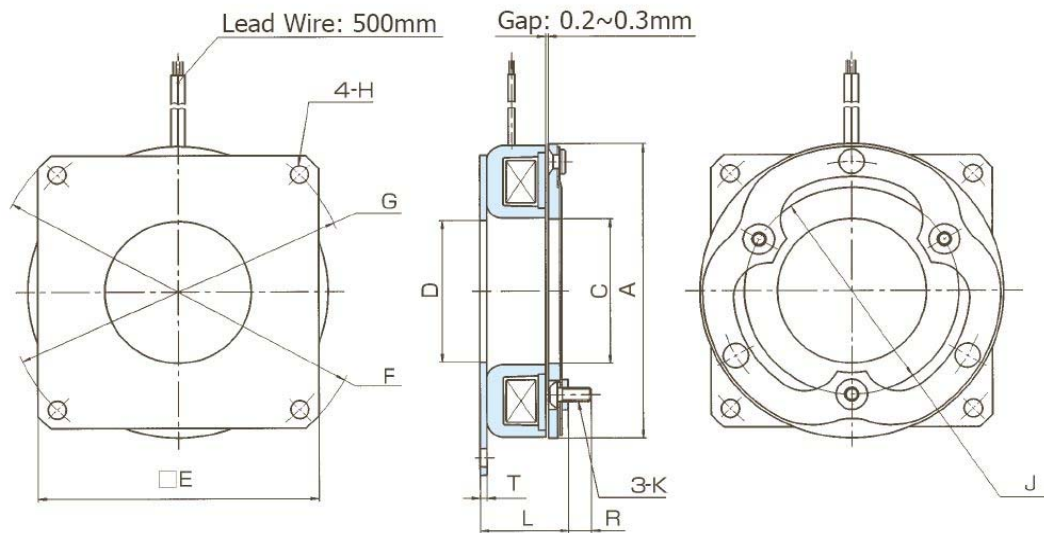


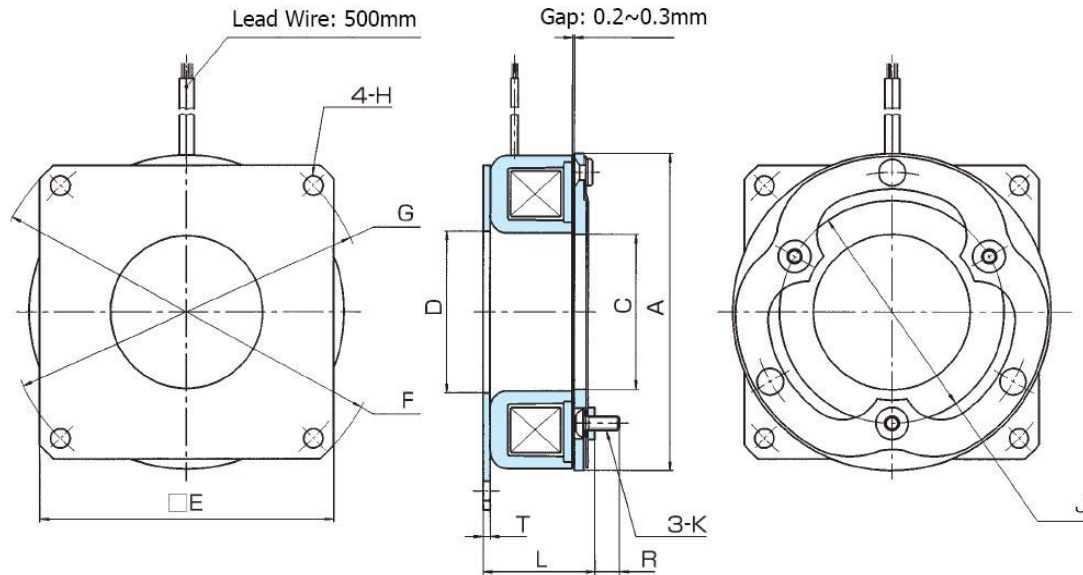


| VBE / VBS<br>Type                           |                   | [ Special ]           |                  | [ Special ]           |                  | [ Special ]          |                  | [ Special ]          |                  | [ Special ]           |                  |                       |                  |
|---------------------------------------------|-------------------|-----------------------|------------------|-----------------------|------------------|----------------------|------------------|----------------------|------------------|-----------------------|------------------|-----------------------|------------------|
|                                             |                   | 0.6                   |                  | 1.2                   |                  | 2.5                  |                  | 5                    |                  | 10                    |                  | 20                    |                  |
|                                             |                   | VBE                   | VBS <sup>1</sup> | VBE                   | VBS <sup>1</sup> | VBE                  | VBS <sup>1</sup> | VBE                  | VBS <sup>1</sup> | VBE                   | VBS <sup>1</sup> | VBE                   | VBS <sup>1</sup> |
| Static Torque [ft-lbs / N-m]                |                   | 4.4 / 6               |                  | 8.9 / 12              |                  | 18 / 25              |                  | 37 / 50              |                  | 74 / 100              |                  | 148 / 200             |                  |
| Coil<br>(20°C)                              | Voltage [DC-V]    | 24                    |                  |                       |                  |                      |                  |                      |                  |                       |                  |                       |                  |
|                                             | Current [A]       | 0.5                   |                  | 0.62                  |                  | 0.92                 |                  | 1.41                 |                  | 1.6                   |                  | 2.2                   |                  |
|                                             | Resistance [Ω]    | 48                    |                  | 39                    |                  | 26                   |                  | 17                   |                  | 15                    |                  | 11                    |                  |
|                                             | Wattage [W]       | 12                    |                  | 15                    |                  | 22                   |                  | 33                   |                  | 38                    |                  | 53                    |                  |
| Armature                                    | Pull-In Time [ms] | 10                    |                  | 15                    |                  | 20                   |                  | 25                   |                  | 40                    |                  | 55                    |                  |
|                                             | Release Time [ms] | 20                    |                  | 30                    |                  | 50                   |                  | 70                   |                  | 35                    |                  | 62                    |                  |
| Torque Build-Up Time [ms]                   |                   | 40                    |                  | 45                    |                  | 60                   |                  | 65                   |                  | 78                    |                  | 95                    |                  |
| Max Allowable Speed [rpm]                   |                   | 7000                  |                  | 6000                  |                  | 5500                 |                  | 4500                 |                  | 3600                  |                  | 3000                  |                  |
| Moment of Inertia (J) [kg-cm <sup>2</sup> ] |                   | 0.5                   | 0.5              | 1.5                   | 1.6              | 4.8                  | 5.1              | 14.3                 | 15.1             | 45                    |                  | 136                   |                  |
| Max Air Gap Until Adjustment [mm]           |                   | 0.5                   |                  | 0.6                   |                  | 0.7                  |                  | 0.8                  |                  | 1.2                   |                  | 1.5                   |                  |
| Total Energy Until Adjustment [J]           |                   | 2.9 x 10 <sup>7</sup> |                  | 6.6 x 10 <sup>7</sup> |                  | 13 x 10 <sup>7</sup> |                  | 26 x 10 <sup>7</sup> |                  | 62 x 10 <sup>7</sup>  |                  | 120 x 10 <sup>7</sup> |                  |
| Total Energy Until Life [J]                 |                   | 13 x 10 <sup>7</sup>  |                  | 25 x 10 <sup>7</sup>  |                  | 49 x 10 <sup>7</sup> |                  | 88 x 10 <sup>7</sup> |                  | 170 x 10 <sup>7</sup> |                  | 320 x 10 <sup>7</sup> |                  |
| Dimensions<br>[mm]                          | A                 | 67                    |                  | 86                    |                  | 108                  |                  | 136                  |                  | 170                   |                  | 215                   |                  |
|                                             | C                 | 35                    |                  | 45                    |                  | 53                   |                  | 66                   |                  | 83                    |                  | 107                   |                  |
|                                             | D+0.2/-0          | 35                    |                  | 45                    |                  | 52                   |                  | 65                   |                  | 80                    |                  | 107                   |                  |
|                                             | E                 | 62                    |                  | 82                    |                  | 100                  |                  | 125                  |                  | 156                   |                  | 200                   |                  |
|                                             | F+0/-0.2          | 85                    |                  | 110                   |                  | 135                  |                  | 165                  |                  | 210                   |                  | 265                   |                  |
|                                             | G                 | 75                    |                  | 98                    |                  | 122                  |                  | 150                  |                  | 190                   |                  | 240                   |                  |
|                                             | H                 | 4.5                   |                  | 5.5                   |                  | 6.5                  |                  | 6.5                  |                  | 8.5                   |                  | 11                    |                  |
|                                             | J                 | 46                    |                  | 60                    |                  | 76                   |                  | 95                   |                  | 120                   |                  | 158                   |                  |
|                                             | K                 | M3                    |                  | M4                    |                  | M5                   |                  | M6                   |                  | M8                    |                  | M10                   |                  |
|                                             | L                 | 24.5                  | 25               | 27.5                  | 28               | 31.5                 | 32.4             | 35                   | 36               | 40                    |                  | 47.5                  |                  |
|                                             | R                 | 5.8                   | 5.4              | 7                     | 6.6              | 8.2                  | 7.6              | 10.4                 | 9.6              | 14                    |                  | 17.5                  |                  |
|                                             | T                 | 1.8                   |                  | 2.1                   |                  | 2.4                  |                  | 2.4                  |                  | 2.7                   |                  | 3                     |                  |
| Weight [lbs / kg]                           |                   | 0.71 / 0.32           |                  | 1.3 / 0.6             |                  | 2.4 / 1.1            |                  | 4.4 / 2.0            |                  | 8.2 / 3.7             |                  | 15.4 / 7.0            |                  |

[ Included parts & accessories : bolts, washers, spacers, surge protector ]

[ 1 inch = 25.4 mm ]

[ Note 1 : Silent type ]



[ Special Order ]

| VBEH / VBSH                                 |                   | 0.6                  |                   | 1.2                  |                   | 2.5                  |                   | 5                    |                   |
|---------------------------------------------|-------------------|----------------------|-------------------|----------------------|-------------------|----------------------|-------------------|----------------------|-------------------|
| Type                                        |                   | VBEH                 | VBSH <sup>1</sup> | VBEH                 | VBSH <sup>1</sup> | VBEH                 | VBSH <sup>1</sup> | VBEH                 | VBSH <sup>1</sup> |
| Static Torque [ft-lbs / N-m]                |                   | 5.2 / 7              |                   | 11 / 15              |                   | 22 / 30              |                   | 44 / 60              |                   |
| Coil<br>(20°C)                              | Voltage [DC-V]    | 24                   |                   |                      |                   |                      |                   |                      |                   |
|                                             | Current [A]       | 0.5                  |                   | 0.75                 |                   | 0.92                 |                   | 1.41                 |                   |
|                                             | Resistance [Ω]    | 48                   |                   | 32                   |                   | 26                   |                   | 17                   |                   |
|                                             | Wattage [W]       | 12                   |                   | 18                   |                   | 22                   |                   | 33                   |                   |
| Armature                                    | Pull-In Time [ms] | 10                   |                   | 10                   |                   | 15                   |                   | 20                   |                   |
|                                             | Release Time [ms] | 25                   |                   | 35                   |                   | 55                   |                   | 75                   |                   |
| Torque Build-Up Time [ms]                   |                   | 40                   |                   | 40                   |                   | 55                   |                   | 60                   |                   |
| Max Allowable Speed [rpm]                   |                   | 7000                 |                   | 6000                 |                   | 5500                 |                   | 4500                 |                   |
| Moment of Inertia (J) [kg-cm <sup>2</sup> ] |                   | 0.5                  | 0.5               | 1.5                  | 1.6               | 4.8                  | 5.1               | 14.3                 | 15.1              |
| Total Energy Until Life [J]                 |                   | 13 x 10 <sup>7</sup> |                   | 25 x 10 <sup>7</sup> |                   | 49 x 10 <sup>7</sup> |                   | 88 x 10 <sup>7</sup> |                   |
| Dimensions<br>[mm]                          | A                 | 67                   |                   | 86                   |                   | 108                  |                   | 136                  |                   |
|                                             | C                 | 35                   |                   | 45                   |                   | 53                   |                   | 66                   |                   |
|                                             | D+0.2/-0          | 35                   |                   | 45                   |                   | 52                   |                   | 65                   |                   |
|                                             | E                 | 62                   |                   | 82                   |                   | 100                  |                   | 125                  |                   |
|                                             | F+0/-0.2          | 85                   |                   | 110                  |                   | 135                  |                   | 165                  |                   |
|                                             | G                 | 75                   |                   | 98                   |                   | 122                  |                   | 150                  |                   |
|                                             | H                 | 4.5                  |                   | 5.5                  |                   | 6.5                  |                   | 6.5                  |                   |
|                                             | J                 | 46                   |                   | 60                   |                   | 76                   |                   | 95                   |                   |
|                                             | K                 | M3                   |                   | M4                   |                   | M5                   |                   | M6                   |                   |
|                                             | L                 | 30                   | 30.5              | 33.6                 | 34.1              | 38                   | 38.9              | 41.5                 | 42.5              |
|                                             | R                 | 5.8                  | 5.4               | 7                    | 6.6               | 8.2                  | 7.6               | 10.4                 | 9.6               |
|                                             | T                 | 1.8                  |                   | 2.1                  |                   | 2.4                  |                   | 2.4                  |                   |
| Weight [lbs / kg]                           |                   | 0.82 / 0.37          |                   | 1.4 / 0.6            |                   | 2.6 / 1.2            |                   | 4.9 / 2.2            |                   |

[ Included parts & accessories : bolts, washers, spacers, surge protector ]

[ 1 inch = 25.4 mm ]

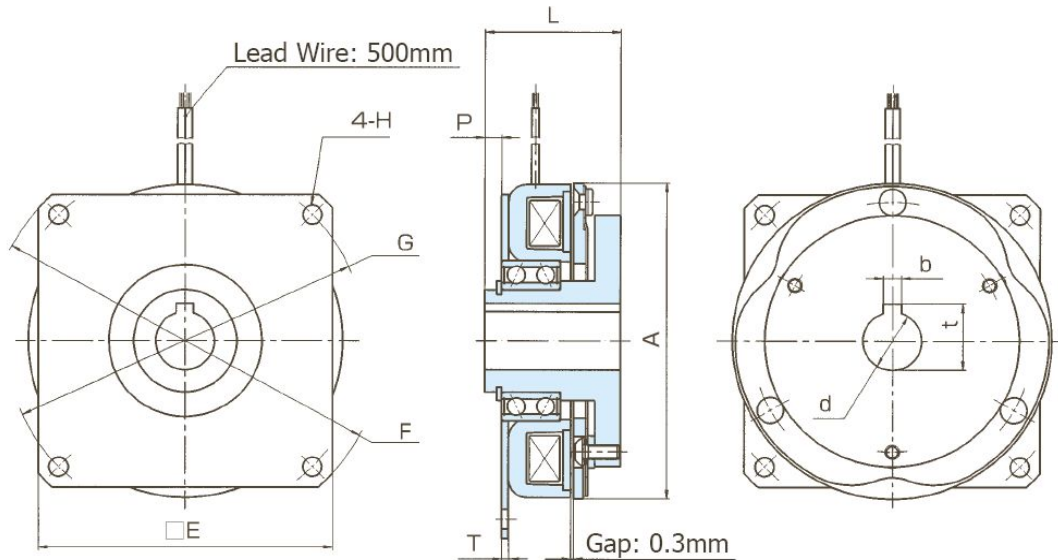
[ Note 1 : Silent type ]

# VBE-P / VBS-P

## EM Brake (one piece design)

Types: 1.2, 2.5, 5

[ EM: Electromagnet ]



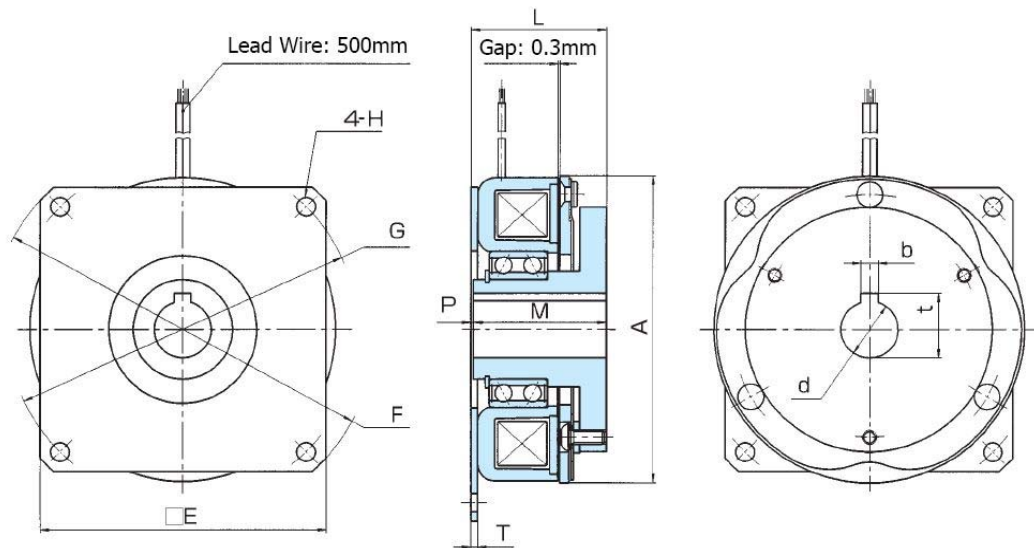
[ Special Order ]

| VBE / VBS                                   |                   | 1.2P                 |                  | 2.5P                 |                  | 5P                   |                  |
|---------------------------------------------|-------------------|----------------------|------------------|----------------------|------------------|----------------------|------------------|
| Type                                        |                   | VBE                  | VBS <sup>1</sup> | VBE                  | VBS <sup>1</sup> | VBE                  | VBS <sup>1</sup> |
| Static Torque [ft-lbs / N-m]                |                   | 8.9 / 12             |                  | 18 / 25              |                  | 37 / 50              |                  |
| Coil<br>(20°C)                              | Voltage [DC-V]    | 24                   |                  |                      |                  |                      |                  |
|                                             | Current [A]       | 0.62                 |                  | 0.92                 |                  | 1.41                 |                  |
|                                             | Resistance [Ω]    | 39                   |                  | 26                   |                  | 17                   |                  |
|                                             | Wattage [W]       | 15                   |                  | 22                   |                  | 33                   |                  |
| Armature                                    | Pull-In Time [ms] | 15                   |                  | 20                   |                  | 25                   |                  |
|                                             | Release Time [ms] | 30                   |                  | 50                   |                  | 70                   |                  |
| Torque Build-Up Time [ms]                   |                   | 45                   |                  | 60                   |                  | 65                   |                  |
| Max Allowable Speed [rpm]                   |                   | 6000                 |                  | 5500                 |                  | 4500                 |                  |
| Moment of Inertia (J) [kg-cm <sup>2</sup> ] |                   | 3.3                  | 3.3              | 9.6                  | 9.9              | 26.8                 | 27.5             |
| Total Energy Until Life [J]                 |                   | 13 x 10 <sup>7</sup> |                  | 25 x 10 <sup>7</sup> |                  | 49 x 10 <sup>7</sup> |                  |
| Bore [mm]                                   | dH7               | 15                   |                  | 20                   |                  | 25                   |                  |
| Key Way [mm]                                | bJs9              | 5                    |                  | 6                    |                  | 8                    |                  |
|                                             | t                 | 17.3+0.15/-0         |                  | 22.8+0.15/-0         |                  | 28.3+0.2/-0          |                  |
| Dimensions<br>[mm]                          | A                 | 86                   |                  | 108                  |                  | 136                  |                  |
|                                             | E                 | 82                   |                  | 100                  |                  | 125                  |                  |
|                                             | F                 | 110                  |                  | 135                  |                  | 165                  |                  |
|                                             | G                 | 98                   |                  | 122                  |                  | 150                  |                  |
|                                             | H                 | 5.5                  |                  | 6.5                  |                  | 6.5                  |                  |
|                                             | L                 | 40                   |                  | 46                   |                  | 49                   |                  |
|                                             | P                 | 4.5                  | 4                | 5.5                  | 4.6              | 3                    | 2                |
|                                             | T                 | 2.1                  |                  | 2.4                  |                  | 2.4                  |                  |
| Weight [lbs / kg]                           |                   | 2.4 / 1.1            |                  | 4.4 / 2.0            |                  | 7.7 / 3.5            |                  |

[ Included parts & accessories : surge protector ]

[ 1 inch = 25.4 mm ]

[ Note 1 : Silent type ]



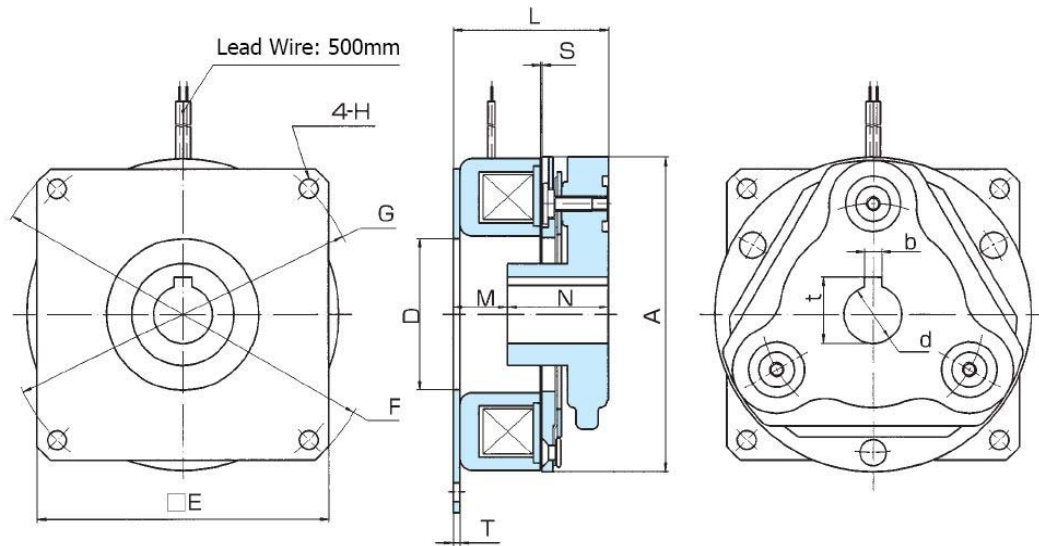
[ Special Order ]

| VBEH / VBSH                                 |                   | 1.2P                 |                   | 2.5P                 |                   | 5P                   |                   |
|---------------------------------------------|-------------------|----------------------|-------------------|----------------------|-------------------|----------------------|-------------------|
| Type                                        |                   | VBEH                 | VBSH <sup>1</sup> | VBEH                 | VBSH <sup>1</sup> | VBEH                 | VBSH <sup>1</sup> |
| Static Torque [ft-lbs / N-m]                |                   | 11 / 15              |                   | 22 / 30              |                   | 44 / 60              |                   |
| Coil<br>(20°C)                              | Voltage [DC-V]    | 24                   |                   |                      |                   |                      |                   |
|                                             | Current [A]       | 0.75                 |                   | 0.92                 |                   | 1.41                 |                   |
|                                             | Resistance [Ω]    | 32                   |                   | 26                   |                   | 17                   |                   |
|                                             | Wattage [W]       | 18                   |                   | 22                   |                   | 33                   |                   |
| Armature                                    | Pull-In Time [ms] | 10                   |                   | 15                   |                   | 20                   |                   |
|                                             | Release Time [ms] | 35                   |                   | 55                   |                   | 75                   |                   |
| Torque Build-Up Time [ms]                   |                   | 40                   |                   | 55                   |                   | 60                   |                   |
| Max Allowable Speed [rpm]                   |                   | 6000                 |                   | 5500                 |                   | 4500                 |                   |
| Moment of Inertia (J) [kg-cm <sup>2</sup> ] |                   | 3.3                  | 3.3               | 9.6                  | 9.9               | 26.8                 | 27.5              |
| Total Energy Until Life [J]                 |                   | 13 x 10 <sup>7</sup> |                   | 25 x 10 <sup>7</sup> |                   | 49 x 10 <sup>7</sup> |                   |
| Bore [mm]                                   | dH7               | 15                   |                   | 20                   |                   | 25                   |                   |
| Key Way [mm]                                | bJs9              | 5                    |                   | 6                    |                   | 8                    |                   |
|                                             | t                 | 17.3+0.15/-0         |                   | 22.8+0.15/-0         |                   | 28.3+0.2/-0          |                   |
| Dimensions<br>[mm]                          | A                 | 86                   |                   | 108                  |                   | 136                  |                   |
|                                             | E                 | 82                   |                   | 100                  |                   | 125                  |                   |
|                                             | F                 | 110                  |                   | 135                  |                   | 165                  |                   |
|                                             | G                 | 98                   |                   | 122                  |                   | 150                  |                   |
|                                             | H                 | 5.5                  |                   | 6.5                  |                   | 6.5                  |                   |
|                                             | L                 | 41.6                 | 42.1              | 47                   | 47.9              | 52.5                 | 53.5              |
|                                             | M                 | 40                   |                   | 46                   |                   | 49                   |                   |
|                                             | P                 | 1.6                  | 2.1               | 1                    | 1.9               | 3.5                  | 4.5               |
|                                             | T                 | 2.1                  |                   | 2.4                  |                   | 2.4                  |                   |
| Weight [lbs / kg]                           |                   | 2.6 / 1.2            |                   | 4.6 / 2.1            |                   | 8.2 / 3.7            |                   |

[ Included parts &amp; accessories : surge protector ]

[ 1 inch = 25.4 mm ]

[ Note 1 : Silent type ]



| VBEHA / VBSHA                               |                   | 1.2                  |                    | 2.5                  |                    | 5                    |                    |
|---------------------------------------------|-------------------|----------------------|--------------------|----------------------|--------------------|----------------------|--------------------|
| Type                                        |                   | VBEHA                | VBSHA <sup>1</sup> | VBEHA                | VBSHA <sup>1</sup> | VBEHA                | VBSHA <sup>1</sup> |
| Static Torque [ft-lbs / N-m]                |                   | 8.9 / 12             |                    | 18 / 25              |                    | 37 / 50              |                    |
| Coil<br>(20°C)                              | Voltage [DC-V]    | 24                   |                    |                      |                    |                      |                    |
|                                             | Current [A]       | 0.75                 |                    | 0.92                 |                    | 1.41                 |                    |
|                                             | Resistance [Ω]    | 32                   |                    | 26                   |                    | 17                   |                    |
|                                             | Wattage [W]       | 18                   |                    | 22                   |                    | 33                   |                    |
| Armature                                    | Pull-In Time [ms] | 20                   |                    | 30                   |                    | 50                   |                    |
|                                             | Release Time [ms] | 40                   |                    | 40                   |                    | 50                   |                    |
| Torque Build-Up Time [ms]                   |                   | 50                   |                    | 70                   |                    | 100                  |                    |
| Max Allowable Speed [rpm]                   |                   | 5500                 |                    | 5000                 |                    | 4000                 |                    |
| Moment of Inertia (J) [kg-cm <sup>2</sup> ] |                   | 4.7                  |                    | 12                   |                    | 36                   |                    |
| Total Energy Until Life [J]                 |                   | 13 x 10 <sup>7</sup> |                    | 25 x 10 <sup>7</sup> |                    | 49 x 10 <sup>7</sup> |                    |
| Bore [mm]                                   | dH7               | 15                   |                    | 20                   |                    | 25                   |                    |
| Key Way [mm]                                | bJs9              | 5                    |                    | 6                    |                    | 8                    |                    |
|                                             | t                 | 17.3+0.15/-0         |                    | 22.8+0.15/-0         |                    | 28.3+0.2/-0          |                    |
| Dimensions<br>[mm]                          | A                 | 86                   |                    | 108                  |                    | 136                  |                    |
|                                             | D+0.2/-0          | 45                   |                    | 52                   |                    | 65                   |                    |
|                                             | E                 | 82                   |                    | 100                  |                    | 125                  |                    |
|                                             | F+0/-0.2          | 110                  |                    | 135                  |                    | 165                  |                    |
|                                             | G                 | 98                   |                    | 122                  |                    | 150                  |                    |
|                                             | H                 | 5.5                  |                    | 6.5                  |                    | 6.5                  |                    |
|                                             | L                 | 49.5                 | 50.5               | 53.5                 | 54.5               | 63.5                 | 64.5               |
|                                             | M                 | 23.5                 | 24.5               | 18.5                 | 19.5               | 21.5                 | 22.5               |
|                                             | N                 | 26                   |                    | 35                   |                    | 42                   |                    |
|                                             | S                 | 0.4                  |                    | 0.4                  |                    | 0.5                  |                    |
|                                             | T                 | 2.1                  |                    | 2.4                  |                    | 2.4                  |                    |
| Weight [lbs / kg]                           |                   | 2.2 / 1.0            |                    | 4.2 / 1.9            |                    | 8.2 / 3.7            |                    |

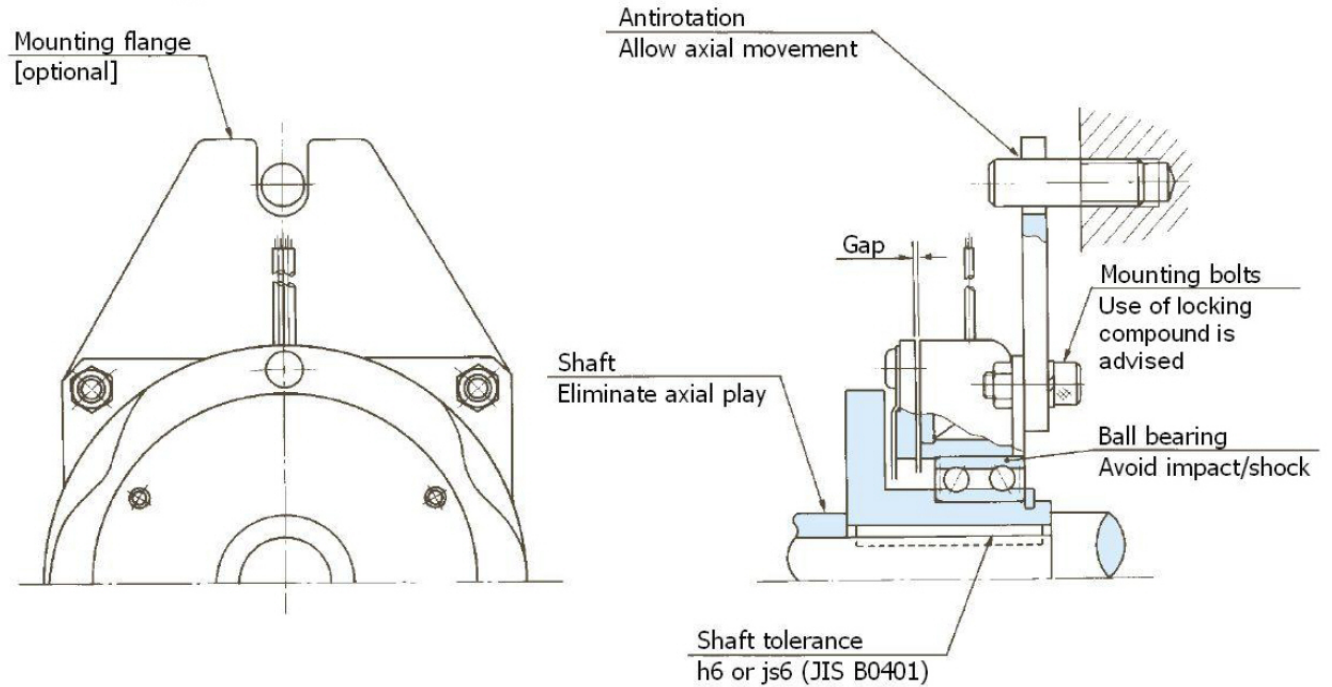
[ Included parts & accessories : surge protector ]

[ 1 inch = 25.4 mm ]

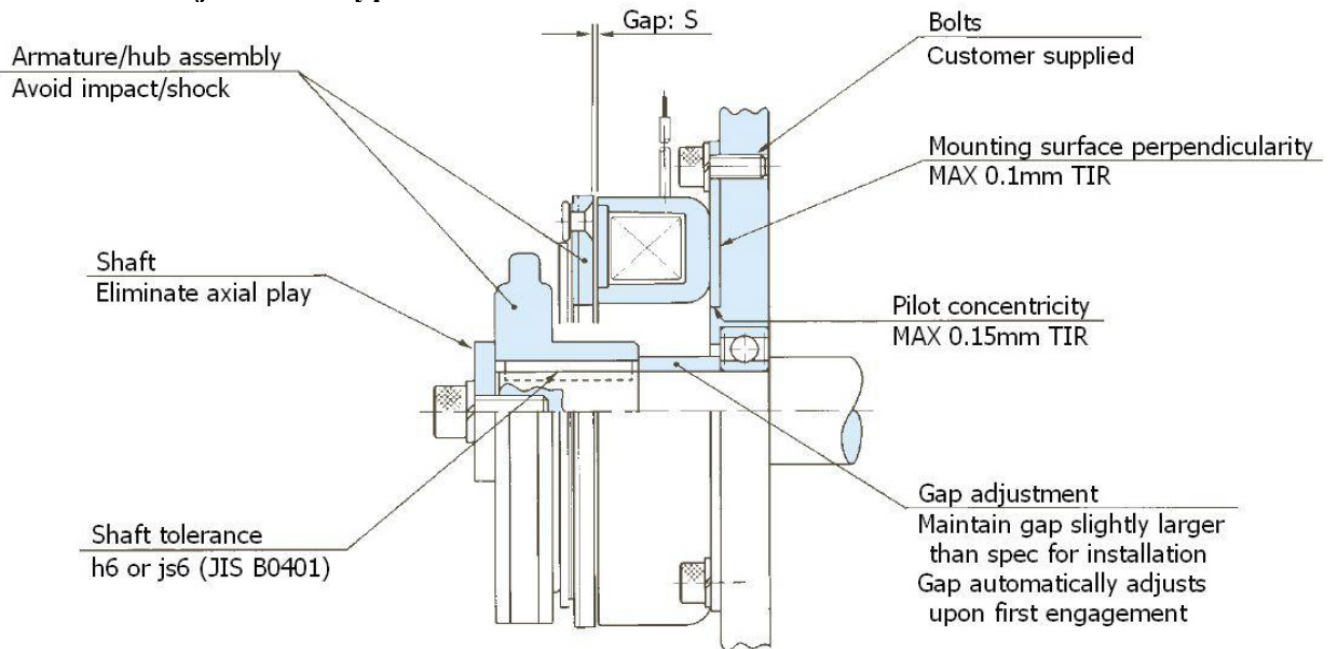
[ Note 1 : Silent type ]

## VB: TYPICAL INSTALLATION

### One Piece Type



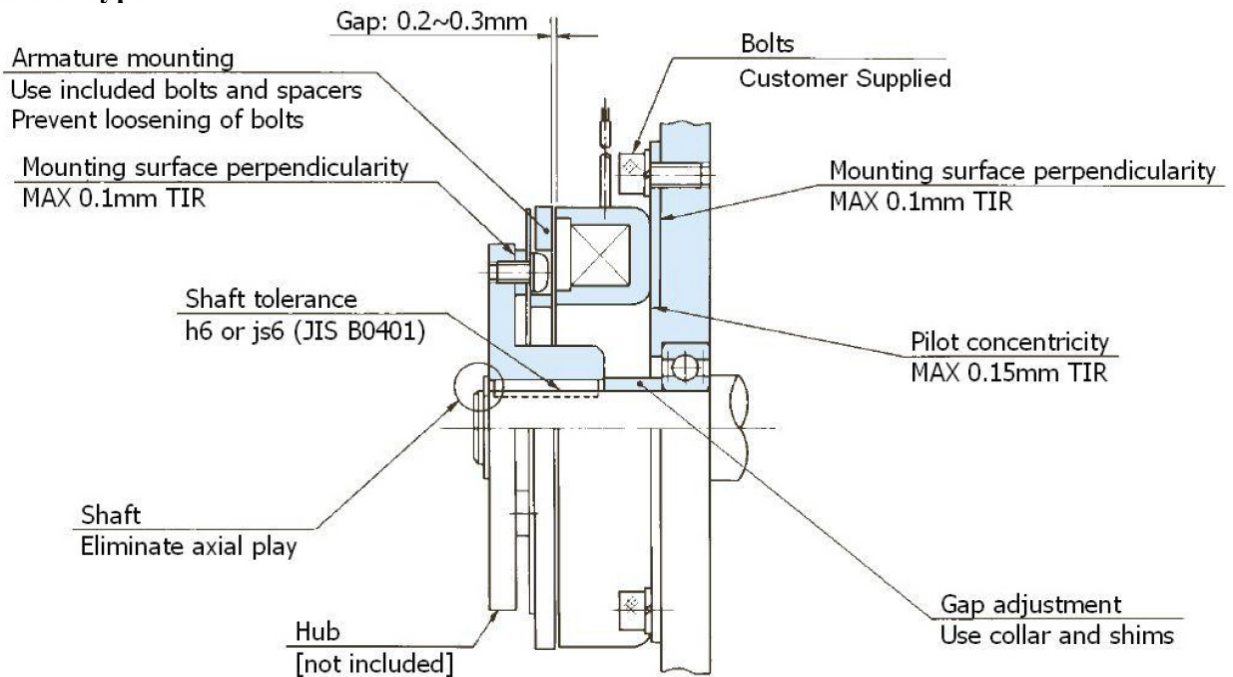
### Automatic Adjustment Type



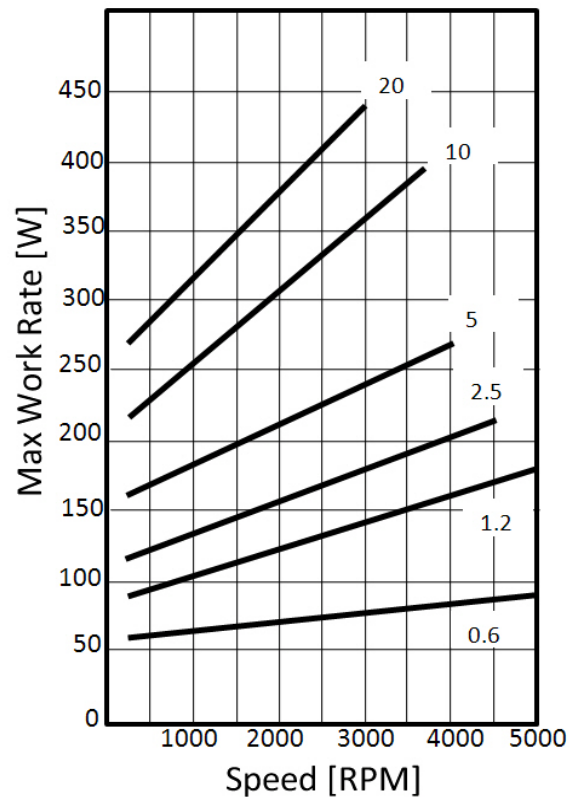
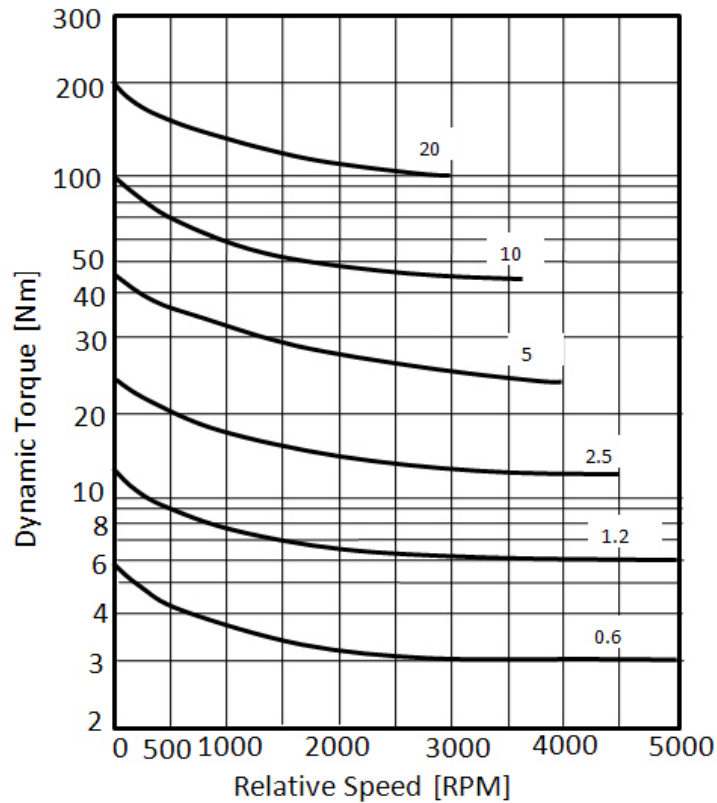


## VB: TYPICAL INSTALLATION

### Silent Type



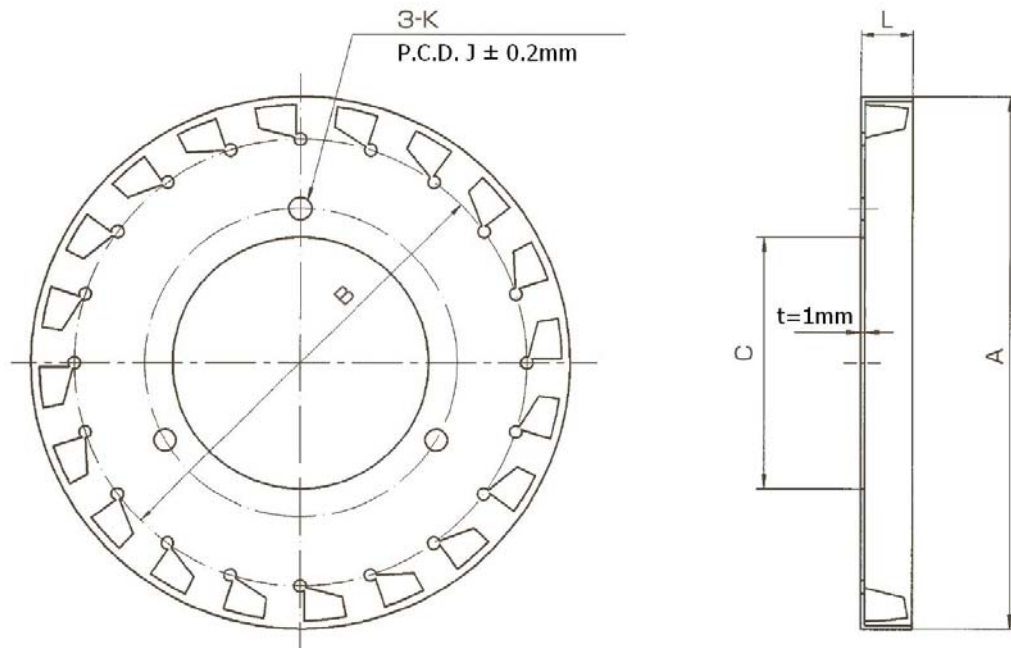
## VB: TORQUE CHARACTERISTIC & MAX WORK RATE



# VF

## Cooling Fan for V-Series Units

Types: 1.2, 2.5, 5



| VF                          |   | 1.2      |  | 2.5      |  | 5      |  |        |  |
|-----------------------------|---|----------|--|----------|--|--------|--|--------|--|
| Max Allowable Speed [rpm]   |   | 2000     |  | 2000     |  | 2000   |  |        |  |
| Dimensions<br>[mm]          | A | 108      |  | 131      |  | 164    |  |        |  |
|                             | B | 88       |  | 110      |  | 138    |  |        |  |
|                             | C | 50       |  | 62       |  | 76     |  |        |  |
|                             | K | 4.5      |  | 5.5      |  | 6.5    |  |        |  |
|                             | J | 60       |  | 76       |  | 95     |  |        |  |
|                             | L | 11       |  | 13       |  | 16     |  |        |  |
| Applicable Units            |   | VCE(H)   |  | VCS(H)   |  | VBE(H) |  | VBS(H) |  |
| Optional Units <sup>1</sup> |   | VCE(H)-P |  | VCS(H)-P |  | VCEHA  |  | VCSHA  |  |
|                             |   | VBE(H)-P |  | VBS(H)-P |  | VBEHA  |  | VBSHA  |  |

[ Note 1 : Available as factory-mounted only ]

[ 1 inch = 25.4 mm ]