

R88M-1□

# 1S servo motor

## Simplified machine design and maintenance

- 23-bit resolution encoder
- Compact and small motor size
- Multi-turn encoder design without mechanics: 16-bit, 65536 turns
- Battery-free absolute multi-turn encoder or incremental encoder
- Pre-assembled motor cables
- Designed for easy EMC compliance

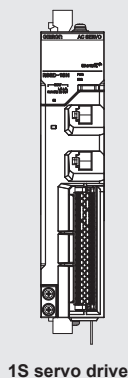
## Ratings

- 230 VAC from 50 W to 1.5 kW  
(rated torque from 0.159 to 8.59 Nm)
- 400 VAC from 400 W to 15 kW  
(rated torque from 1.91 to 95.5 Nm)



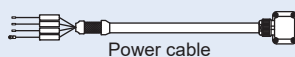
## System configuration

(Refer to servo drive chapter)

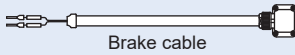


1S servo drive

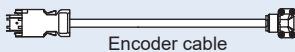
### 1S servo motor (Flange size 80 mm or less)



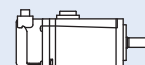
Power cable



Brake cable

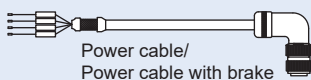


Encoder cable

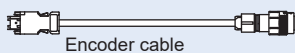


3000 rpm (50 W - 750 W)

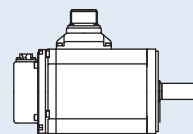
### 1S servo motor (Flange size 100 mm or more)



Power cable/  
Power cable with brake




Encoder cable



3000 rpm (1 kW - 5 kW)  
2000 rpm (400 W - 3 kW)  
1500 rpm (4 kW - 15 kW)  
1000 rpm (900 W - 3 kW)

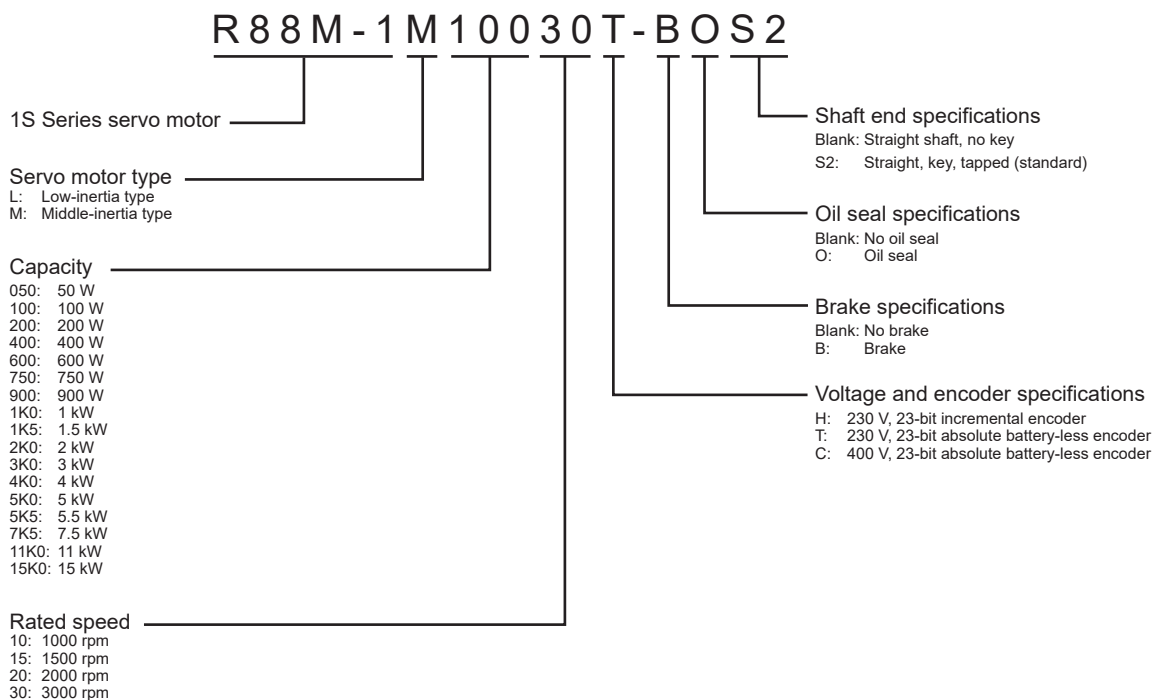
## Servo motor / Servo drive combination

| 1S servo motor  |                        |         |              |                  |                     | 1S servo drive  |
|---|------------------------|---------|--------------|------------------|---------------------|-----------------|
| Appearance  | Speed                  | Voltage | Rated torque | Capacity         | Model               |                 |
|  | 3000 min <sup>-1</sup> | 230 V   | 0.159 Nm     | 50 W             | R88M-1M05030T-□     | R88D-1SN01H-ECT |
|   |                        |         | 0.318 Nm     | 100 W            | R88M-1M10030(H/T)-□ | R88D-1SN01H-ECT |
|   |                        |         | 0.637 Nm     | 200 W            | R88M-1M20030(H/T)-□ | R88D-1SN02H-ECT |
|   |                        |         | 1.27 Nm      | 400 W            | R88M-1M40030(H/T)-□ | R88D-1SN04H-ECT |
|   |                        |         | 2.39 Nm      | 750 W            | R88M-1M75030(H/T)-□ | R88D-1SN08H-ECT |
|   |                        |         | 3.18 Nm      | 1 kW             | R88M-1L1K030(H/T)-□ | R88D-1SN15H-ECT |
|   |                        |         | 4.77 Nm      | 1.5 kW           | R88M-1L1K530(H/T)-□ | R88D-1SN15H-ECT |
|   |                        | 400 V   | 2.39 Nm      | 750 W            | R88M-1L75030C-□     | R88D-1SN10F-ECT |
|   |                        |         | 3.18 Nm      | 1 kW             | R88M-1L1K030C-□     | R88D-1SN10F-ECT |
|   |                        |         | 4.77 Nm      | 1.5 kW           | R88M-1L1K530C-□     | R88D-1SN15F-ECT |
|   |                        |         | 6.37 Nm      | 2 kW             | R88M-1L2K030C-□     | R88D-1SN20F-ECT |
|   |                        |         | 9.55 Nm      | 3 kW             | R88M-1L3K030C-□     | R88D-1SN30F-ECT |
|   |                        |         | 12.7 Nm      | 4 kW             | R88M-1L4K030C-□     | R88D-1SN55F-ECT |
|   |                        |         | 15.9 Nm      | 5 kW             | R88M-1L5K030C-□     | R88D-1SN55F-ECT |
|   | 2000 min <sup>-1</sup> | 230 V   | 4.77 Nm      | 1 kW             | R88M-1M1K020(H/T)-□ | R88D-1SN15H-ECT |
|   |                        |         | 7.16 Nm      | 1.5 kW           | R88M-1M1K520(H/T)-□ | R88D-1SN15H-ECT |
|   |                        | 400 V   | 1.91 Nm      | 400 W            | R88M-1M40020C-□     | R88D-1SN06F-ECT |
|   |                        |         | 2.86 Nm      | 600 W            | R88M-1M60020C-□     | R88D-1SN06F-ECT |
|   |                        |         | 4.77 Nm      | 1 kW             | R88M-1M1K020C-□     | R88D-1SN10F-ECT |
|   |                        |         | 7.16 Nm      | 1.5 kW           | R88M-1M1K520C-□     | R88D-1SN15F-ECT |
| 9.55 Nm   |                        |         | 2 kW         | R88M-1M2K020C-□  | R88D-1SN20F-ECT     |                 |
| 14.3 Nm   |                        |         | 3 kW         | R88M-1M3K020C-□  | R88D-1SN30F-ECT     |                 |
| 25.5 Nm   |                        |         | 4 kW         | R88M-1M4K015C-□  | R88D-1SN55F-ECT     |                 |
| 35 Nm   |                        |         | 5.5 kW       | R88M-1M5K515C-□  | R88D-1SN55F-ECT     |                 |
| 1500 min <sup>-1</sup>  | 400 V                  | 47.8 Nm | 7.5 kW       | R88M-1M7K515C-□  | R88D-1SN75F-ECT     |                 |
|   |                        | 70 Nm   | 11 kW        | R88M-1M11K015C-□ | R88D-1SN150F-ECT    |                 |
|   |                        | 95.5 Nm | 15 kW        | R88M-1M15K015C-□ | R88D-1SN150F-ECT    |                 |
|   |                        | 8.59 Nm | 900 W        | R88M-1M90010T-□  | R88D-1SN15H-ECT     |                 |
| 1000 min <sup>-1</sup>  | 230 V                  | 8.59 Nm | 900 W        | R88M-1M90010C-□  | R88D-1SN10F-ECT     |                 |
|   |                        | 19.1 Nm | 2 kW         | R88M-1M2K010C-□  | R88D-1SN20F-ECT     |                 |
|   | 400 V                  | 19.1 Nm | 2 kW         | R88M-1M2K010C-□  | R88D-1SN20F-ECT     |                 |
|   |                        | 28.7 Nm | 3 kW         | R88M-1M3K010C-□  | R88D-1SN30F-ECT     |                 |

**Note:** For servo motor and cable part numbers, refer to ordering information at the end of this chapter.

**Note:** Refer to the servo drive chapter for drive options selection and detailed specifications.

## Type designation



Specifications

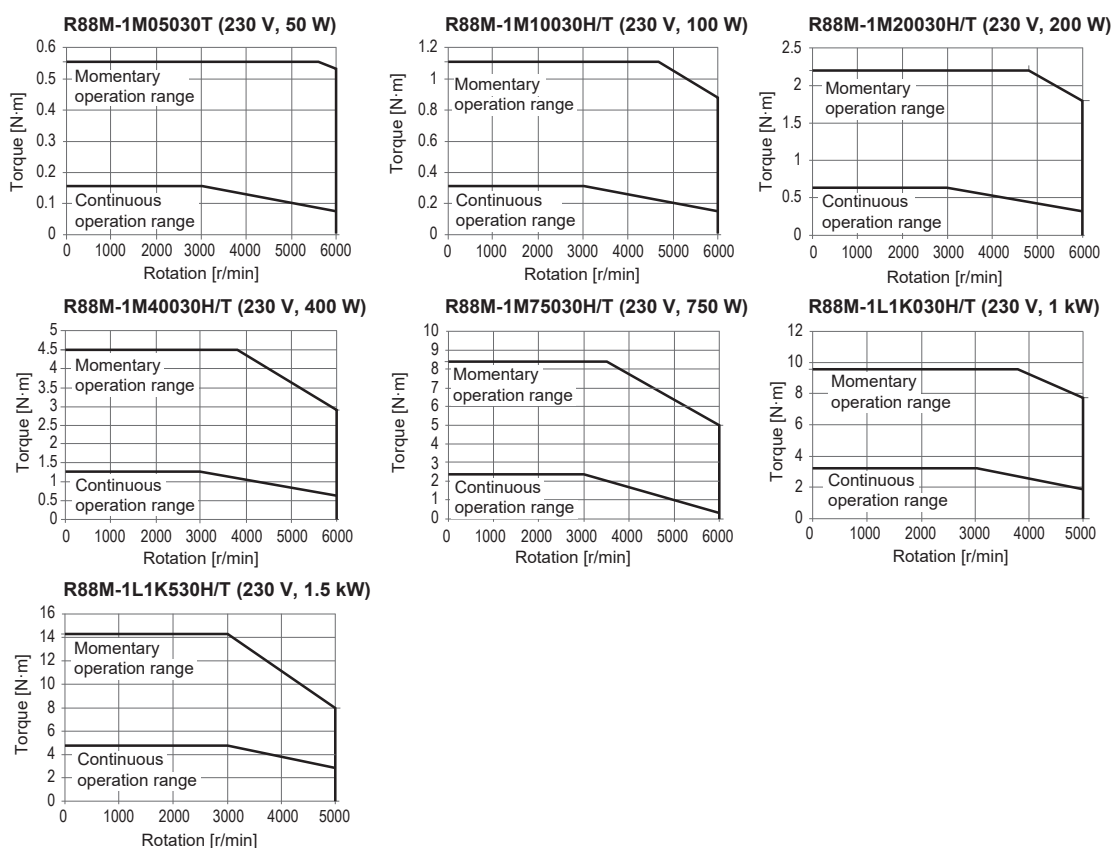
3000 r/min servo motors, 230 V

Ratings and specifications

| Voltage                    |  | 230 V  |           |           |           |           |           |           |      |
|----------------------------|--|--|-----------|-----------|-----------|-----------|-----------|-----------|------|
| Servo motor model: R88M-1□ | 23-bit incremental encoder   | –  | M10030H-□ | M20030H-□ | M40030H-□ | M75030H-□ | L1K030H-□ | L1K530H-□ |      |
|                            | 23-bit absolute encoder  | M05030T-□  | M10030T-□ | M20030T-□ | M40030T-□ | M75030T-□ | L1K030T-□ | L1K530T-□ |      |
| Rated output               | W  | 50   | 100       | 200       | 400       | 750       | 1000      | 1500      |      |
| Rated torque               | Nm   | 0.159  | 0.318     | 0.637     | 1.27      | 2.39      | 3.18      | 4.77      |      |
| Instantaneous peak torque  | Nm   | 0.56   | 1.11      | 2.2       | 4.5       | 8.4       | 9.55      | 14.3      |      |
| Rated current              | A (rms)  | 0.67   | 0.84      | 1.5       | 2.5       | 4.6       | 5.2       | 8.8       |      |
| Instantaneous max. current | A (rms)  | 2.6  | 3.1       | 5.6       | 9.1       | 16.9      | 16.9      | 28.4      |      |
| Rated speed                | min <sup>-1</sup>  | 3000   |           |           |           |           |           |           |      |
| Max. speed                 | min <sup>-1</sup>  | 6000   |           |           |           |           | 5000      |           |      |
| Torque constant            | N·m/A  | 0.25   | 0.42      | 0.48      | 0.56      | 0.59      | 0.67      | 0.58      |      |
| Rotor moment of inertia    | kg·m <sup>2</sup> ×10 <sup>-4</sup> (without brake)                | 0.0418   | 0.089     | 0.2232    | 0.4452    | 1.8242    | 2.1042    |           |      |
|                            | kg·m <sup>2</sup> ×10 <sup>-4</sup> (with brake)                   | 0.0496   | 0.0968    | 0.2832    | 0.5052    | 2.0742    | 2.5542    |           |      |
| Electrical time constant   | ms   | 0.67   | 0.83      | 2.4       | 2.6       | 3.3       | 5.9       | 6.1       |      |
| Allowable radial load      | N  | 68   |           | 245       |           | 490       |           |           |      |
| Allowable thrust load      | N  | 58   |           | 88        |           | 196       |           |           |      |
| Weight                     | kg (without brake)   | 0.35   | 0.52      | 1.0       | 1.4       | 2.9       | 5.7       |           |      |
|                            | kg (with brake)  | 0.59   | 0.77      | 1.3       | 1.9       | 3.9       | 7.4       |           |      |
| Brake specifications       | Excitation voltage* <sup>1</sup>                                   | 24 VDC ±10%  |           |           |           |           |           |           |      |
|                            | Holding brake moment of inertia J                                  | kg·m <sup>2</sup> ×10 <sup>-4</sup>  |           | 0.0078    |           | 0.06      |           | 0.25      | 0.45 |
|                            | Current consumption (at 20°C)                                      | A  |           | 0.27      |           | 0.32      |           | 0.37      | 0.70 |
|                            | Static friction torque   | Nm (minimum)   |           | 0.32      |           | 1.37      |           | 2.55      | 9.3  |
| Basic specifications       | Insulation class   | Type F   |           |           |           |           |           |           |      |
|                            | Ambient operating/storage temperature                              | 0 to 40°C/-20 to 65°C  |           |           |           |           |           |           |      |
|                            | Ambient operating/storage humidity                                 | 20 to 90% (non-condensing)   |           |           |           |           |           |           |      |
|                            | Atmosphere   | No corrosive gases   |           |           |           |           |           |           |      |
|                            | Insulation resistance  | 10 MΩ min. at 500 VDC between the power terminals and FG terminal              |           |           |           |           |           |           |      |
|                            | Vibration resistance   | Vibration acceleration of 49 m/s <sup>2</sup>                                  |           |           |           |           |           |           |      |
|                            | Impact resistance  | Acceleration of 98 m/s <sup>2</sup> max. 3 times each in X, Y and Z directions |           |           |           |           |           |           |      |
| Enclosure                  | IP67 (except for through-shaft parts when connectors are inserted) |  |           |           |           |           |           |           |      |

\*<sup>1</sup> This is a non-excitable brake (it is released when excitation voltage is applied).

Torque-speed characteristics



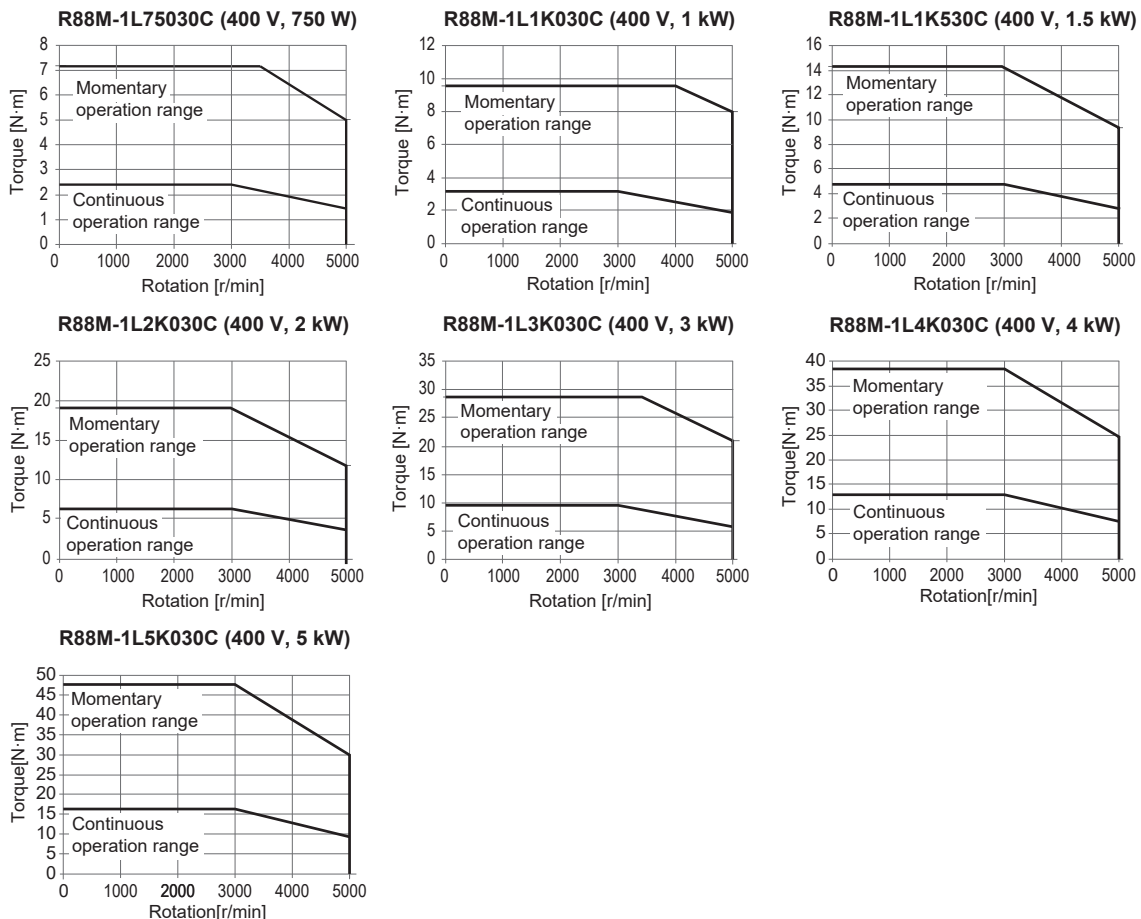
## 3000 r/min servo motors, 400 V

### Ratings and specifications

| Voltage                    |   | 400 V  |           |           |           |           |           |           |  |
|----------------------------|---|--|-----------|-----------|-----------|-----------|-----------|-----------|--|
| Servo motor model: R88M-1□ | 23-bit absolute encoder                             | L75030C-□  | L1K030C-□ | L1K530C-□ | L2K030C-□ | L3K030C-□ | L4K030C-□ | L5K030C-□ |  |
| Rated output               | W   | 750  | 1000      | 1500      | 2000      | 3000      | 4000      | 5000      |  |
| Rated torque               | Nm  | 2.39   | 3.18      | 4.77      | 6.37      | 9.55      | 12.7      | 15.9      |  |
| Instantaneous peak torque  | Nm  | 7.16   | 9.55      | 14.3      | 19.1      | 28.7      | 38.2      | 47.7      |  |
| Rated current              | A (rms)   | 3.0  | 3.0       | 4.5       | 6.3       | 8.7       | 12.8      | 13.6      |  |
| Instantaneous max. current | A (rms)   | 9.6  | 9.6       | 14.1      | 19.8      | 27.7      | 42.4      |           |  |
| Rated speed                | min <sup>-1</sup>                                   | 3000   |           |           |           |           |           |           |  |
| Max. speed                 | min <sup>-1</sup>                                   | 5000   |           |           |           |           |           |           |  |
| Torque constant            | N·m/A   | 0.91   | 1.17      | 1.17      | 1.15      | 1.23      | 1.11      | 1.32      |  |
| Rotor moment of inertia    | kg·m <sup>2</sup> ×10 <sup>-4</sup> (without brake) | 1.3042   | 2.1042    |           | 2.4042    | 6.8122    | 8.8122    | 10.6122   |  |
|                            | kg·m <sup>2</sup> ×10 <sup>-4</sup> (with brake)    | 1.7542   | 2.5542    |           | 2.8542    | 7.3122    | 11.3122   | 13.1122   |  |
| Electrical time constant   | ms  | 4.3  | 5.9       |           | 6.3       | 11.0      | 12.0      | 13.0      |  |
| Allowable radial load      | N   | 490  |           |           |           |           |           | 880       |  |
| Allowable thrust load      | N   | 196  |           |           |           |           |           | 343       |  |
| Weight                     | kg (without brake)                                  | 4.1  | 5.7       |           | 6.4       | 11.5      | 13.5      | 16.0      |  |
|                            | kg (with brake)                                     | 5.8  | 7.4       |           | 8.1       | 12.5      | 16.0      | 18.5      |  |
| Brake specifications       | Excitation voltage* <sup>1</sup>                    | 24 VDC ±10%  |           |           |           |           |           |           |  |
|                            | Holding brake moment of inertia J                   | kg·m <sup>2</sup> ×10 <sup>-4</sup> 0.45                                       |           |           |           | 0.50      |           | 2.5       |  |
|                            | Current consumption (at 20°C)                       | A 0.70   |           |           |           | 0.66      |           | 0.6       |  |
|                            | Static friction torque                              | Nm (minimum) 9.3   |           |           |           | 12.0      |           | 16.0      |  |
| Basic specifications       | Insulation class                                    | Type F   |           |           |           |           |           |           |  |
|                            | Ambient operating/storage temperature               | 0 to 40°C/-20 to 65°C  |           |           |           |           |           |           |  |
|                            | Ambient operating/storage humidity                  | 20 to 90% (non-condensing)   |           |           |           |           |           |           |  |
|                            | Atmosphere  | No corrosive gases   |           |           |           |           |           |           |  |
|                            | Insulation resistance                               | 10 MΩ min. at 500 VDC between the power terminals and FG terminal              |           |           |           |           |           |           |  |
|                            | Vibration resistance                                | Vibration acceleration of 49 m/s <sup>2</sup>                                  |           |           |           |           |           |           |  |
|                            | Impact resistance                                   | Acceleration of 98 m/s <sup>2</sup> max. 3 times each in X, Y and Z directions |           |           |           |           |           |           |  |
|                            | Enclosure   | IP67 (except for through-shaft parts when connectors are inserted)             |           |           |           |           |           |           |  |

\*<sup>1</sup> This is a non-excitabile brake (it is released when excitation voltage is applied).

### Torque-speed characteristics



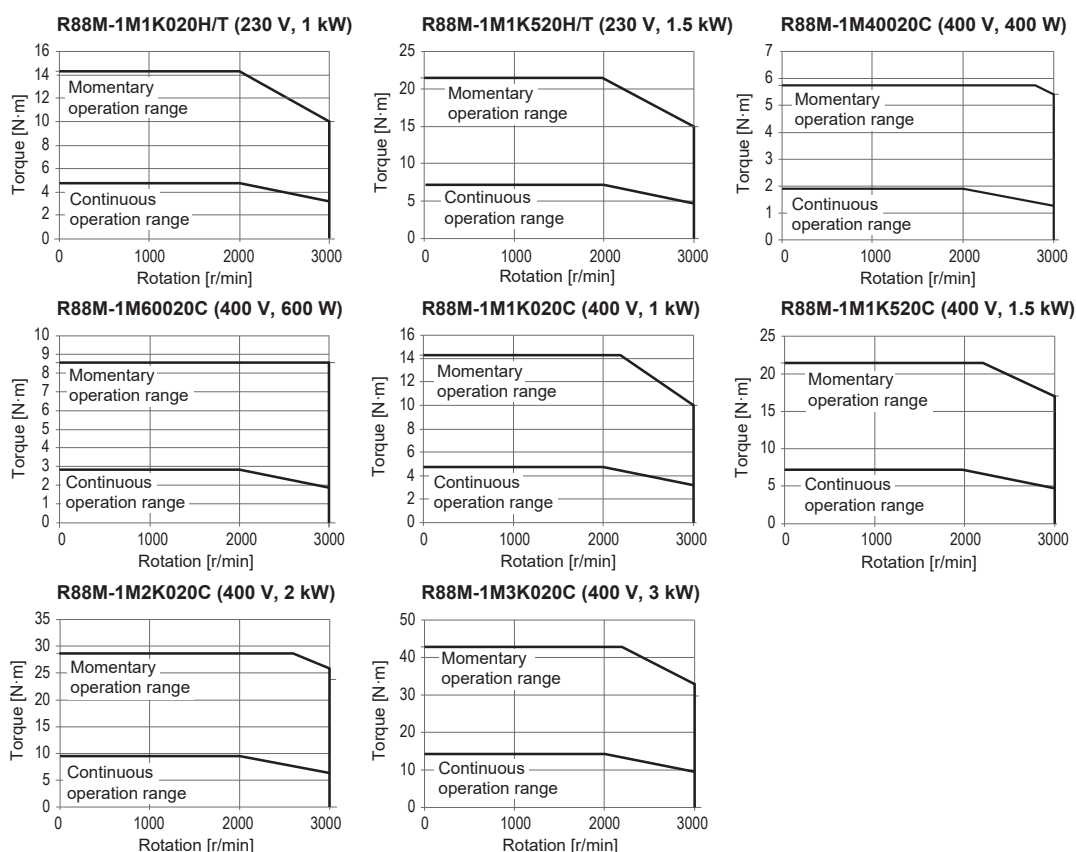
2000 r/min servo motors, 230 V/400 V

Ratings and specifications

| Voltage                    |  | 230 V  |           | 400 V     |           |           |           |           |           |  |
|----------------------------|--|--|-----------|-----------|-----------|-----------|-----------|-----------|-----------|--|
| Servo motor model: R88M-1□ | 23-bit incremental encoder   | M1K020H-□  | M1K520H-□ |           |           |           |           |           |           |  |
|                            | 23-bit absolute encoder  | M1K020T-□  | M1K520T-□ | M40020C-□ | M60020C-□ | M1K020C-□ | M1K520C-□ | M2K020C-□ | M3K020C-□ |  |
| Rated output               | W  | 1000   | 1500      | 400       | 600       | 1000      | 1500      | 2000      | 3000      |  |
| Rated torque               | Nm   | 4.77   | 7.16      | 1.91      | 2.86      | 4.77      | 7.16      | 9.55      | 14.3      |  |
| Instantaneous peak torque  | Nm   | 14.3   | 21.5      | 5.73      | 8.59      | 14.3      | 21.5      | 28.7      | 43.0      |  |
| Rated current              | A (rms)  | 5.2  | 8.6       | 1.1       | 1.6       | 2.9       | 4.1       | 5.7       | 8.6       |  |
| Instantaneous max. current | A (rms)  | 16.9   | 28.4      | 3.9       | 5.5       | 9.4       | 13.5      | 19.8      | 28.3      |  |
| Rated speed                | min <sup>-1</sup>  | 2000   |           |           |           |           |           |           |           |  |
| Max. speed                 | min <sup>-1</sup>  | 3000   |           |           |           |           |           |           |           |  |
| Torque constant            | N·m/A  | 0.93   | 0.83      | 1.75      | 1.84      | 1.69      | 1.75      |           | 1.74      |  |
| Rotor moment of inertia    | kg·m <sup>2</sup> ×10 <sup>-4</sup> (without brake)                | 6.0042   | 9.0042    | 2.5042    | 3.9042    | 6.0042    | 9.0042    | 12.2042   | 15.3122   |  |
|                            | kg·m <sup>2</sup> ×10 <sup>-4</sup> (with brake)                   | 6.5042   | 9.5042    | 2.8472    | 4.2472    | 6.5042    | 9.5042    | 12.7042   | 17.4122   |  |
| Electrical time constant   | ms   | 13.0   | 15.0      | 6.8       | 7.8       | 13.0      | 13.0      | 14.0      | 20.0      |  |
| Allowable radial load      | N  | 490  |           |           |           |           |           |           | 784       |  |
| Allowable thrust load      | N  | 196  |           |           |           |           |           |           | 343       |  |
| Weight                     | kg (without brake)   | 6.6  | 8.5       | 3.9       | 4.7       | 6.6       | 8.5       | 10.0      | 12.0      |  |
|                            | kg (with brake)  | 8.6  | 10.5      | 4.8       | 5.8       | 8.6       | 10.5      | 12.0      | 15.0      |  |
| Brake specifications       | Excitation voltage <sup>*1</sup>                                   | 24 VDC ±10%  |           |           |           |           |           |           |           |  |
|                            | Holding brake moment of inertia J                                  | kg·m <sup>2</sup> ×10 <sup>-4</sup>  |           | 0.5       |           |           | 0.343     |           | 0.5       |  |
|                            | Current consumption (at 20°C)                                      | A  |           | 0.51      |           |           | 0.3       |           | 0.51      |  |
|                            | Static friction torque   | Nm (minimum)   |           | 9.0       |           |           | 3.92      |           | 9.0       |  |
| Basic specifications       | Insulation class   | Type F   |           |           |           |           |           |           |           |  |
|                            | Ambient operating/storage temperature                              | 0 to 40°C/-20 to 65°C  |           |           |           |           |           |           |           |  |
|                            | Ambient operating/storage humidity                                 | 20 to 90% (non-condensing)   |           |           |           |           |           |           |           |  |
|                            | Atmosphere   | No corrosive gases   |           |           |           |           |           |           |           |  |
|                            | Insulation resistance  | 10 MΩ min. at 500 VDC between the power terminals and FG terminal              |           |           |           |           |           |           |           |  |
|                            | Vibration resistance   | Vibration acceleration of 49 m/s <sup>2</sup>                                  |           |           |           |           |           |           |           |  |
|                            | Impact resistance  | Acceleration of 98 m/s <sup>2</sup> max. 3 times each in X, Y and Z directions |           |           |           |           |           |           |           |  |
| Enclosure                  | IP67 (except for through-shaft parts when connectors are inserted) |  |           |           |           |           |           |           |           |  |

\*1 This is a non-excitabile brake (it is released when excitation voltage is applied).

Torque-speed characteristics



## 1500 r/min servo motors, 400 V

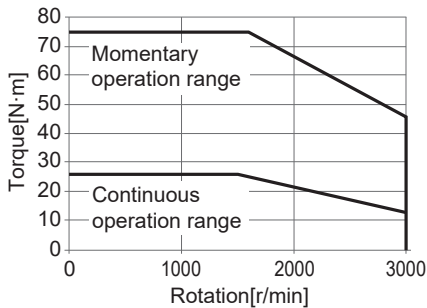
### Ratings and specifications

| Voltage                    |   | 400 V  |           |           |            |            |          |
|----------------------------|---|--|-----------|-----------|------------|------------|----------|
| Servo motor model: R88M-1□ | 23-bit absolute encoder                             | M4K015C-□  | M5K515C-□ | M7K515C-□ | M11K015C-□ | M15K015C-□ |          |
| Rated output               | W   | 4,000  | 5,500     | 7,500     | 11,000     | 15,000     |          |
| Rated torque               | Nm  | 25.5   | 35.0      | 47.8      | 70         | 95.5       |          |
| Instantaneous peak torque  | Nm  | 75   | 95        | 119       | 175        | 224        |          |
| Rated current              | A (rms)   | 12.8   | 14.0      | 22.0      | 31.4       | 33.3       |          |
| Instantaneous max. current | A (rms)   | 42.4   |           | 56.5      | 80.7       | 81.2       |          |
| Rated speed                | min <sup>-1</sup>                                   | 1,500  |           |           |            |            |          |
| Max. speed                 | min <sup>-1</sup>                                   | 3,000  |           |           | 2,000      |            |          |
| Torque constant            | N·m/A (rms)   | 2.07   | 2.68      | 2.49      | 2.6        | 3.27       |          |
| Rotor moment of inertia    | kg·m <sup>2</sup> ×10 <sup>-4</sup> (without brake) | 54.0122  | 77.0122   | 113.0122  | 229.0122   | 340.0122   |          |
|                            | kg·m <sup>2</sup> ×10 <sup>-4</sup> (with brake)    | 60.0122  | 83.0122   | 118.0122  | 253.0122   | 365.0122   |          |
| Electrical time constant   | ms  | 18   | 19        | 23        | 29         |            |          |
| Allowable radial load      | N   | 1,200  | 1,470     |           | 2,500      |            |          |
| Allowable thrust load      | N   | 343  | 490       | 686       |            |            |          |
| Weight                     | kg (without brake)                                  | 21   | 29        | 39        | 63         | 85         |          |
|                            | kg (with brake)                                     | 26   | 34        | 45        | 73         | 99         |          |
| Brake specifications       | Excitation voltage <sup>*1</sup>                    | 24 VDC ±10%  |           |           |            |            |          |
|                            | Holding brake moment of inertia J                   | 6.0  |           | 5.0       | 24.0       | 25.0       |          |
|                            | Current consumption (at 20°C)                       | 1.0  |           | 1.4       | 1.7        | 0.92       |          |
|                            | Static friction torque                              | Nm (minimum)   | 32 min.   | 42 min.   | 54.9 min.  | 90 min.    | 100 min. |
| Basic specifications       | Insulation class                                    | Class F  |           |           |            |            |          |
|                            | Ambient operating/storage temperature               | 0 to 40°C/-20 to 65°C  |           |           |            |            |          |
|                            | Ambient operating/storage humidity                  | 20 to 90% (non-condensing)   |           |           |            |            |          |
|                            | Atmosphere  | No corrosive gases   |           |           |            |            |          |
|                            | Insulation resistance                               | 10 MΩ min. at 500 VDC between the power terminals and FG terminal              |           |           |            |            |          |
|                            | Vibration resistance                                | Vibration acceleration of 49 m/s <sup>2</sup>                                  |           |           |            |            |          |
|                            | Impact resistance                                   | Acceleration of 98 m/s <sup>2</sup> max. 3 times each in X, Y and Z directions |           |           |            |            |          |
|                            | Enclosure   | IP67 (except for through-shaft parts when connectors are inserted)             |           |           |            |            |          |

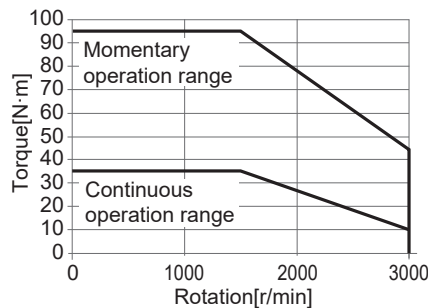
\*1 This is a non-excitable brake (it is released when excitation voltage is applied).

### Torque-speed characteristics

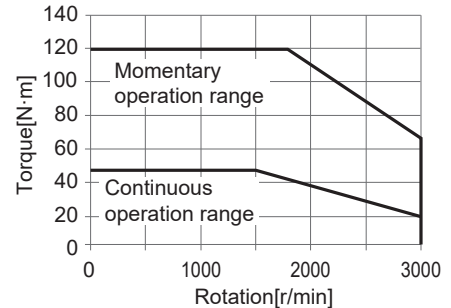
R88M-1M4K015C (400 V, 4 kW)



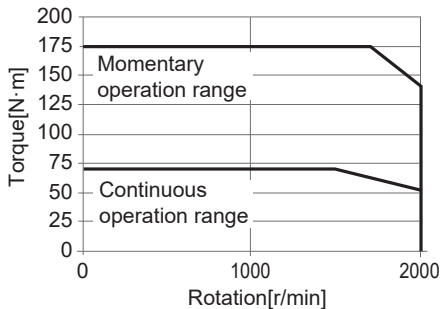
R88M-1M5K515C (400 V, 5.5 kW)



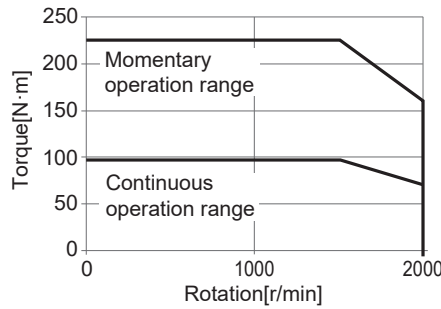
R88M-1M7K515C (400 V, 7.5 kW)



R88M-1M11K015C (400 V, 11 kW)



R88M-1M15K015C (400 V, 15 kW)



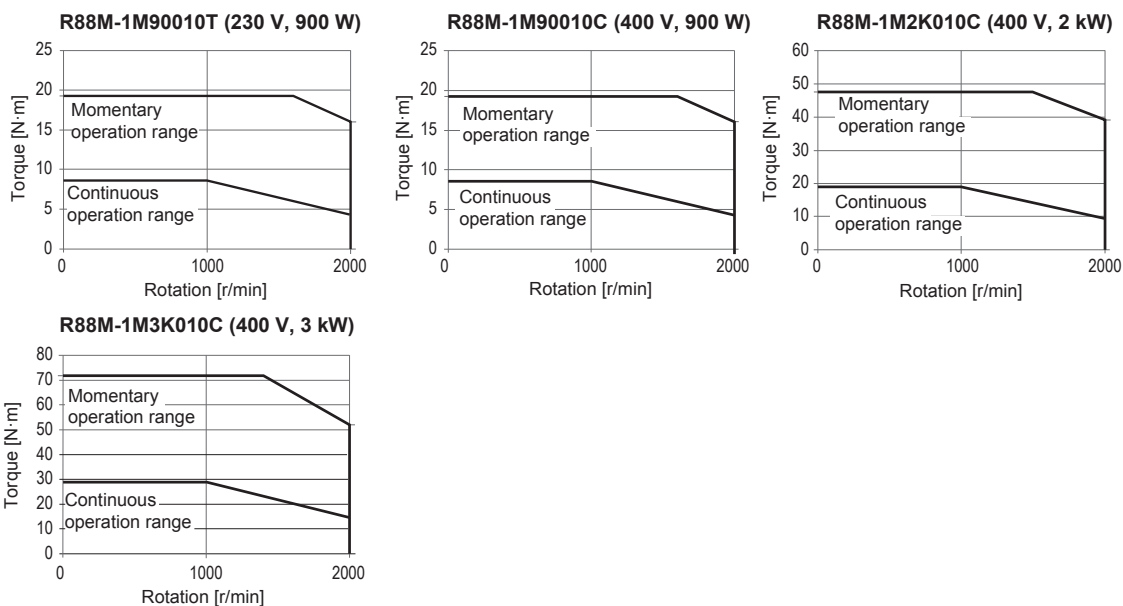
1000 r/min servo motors, 230 V/400 V

Ratings and specifications

| Voltage                    |  | 230 V  | 400 V     |           |           |
|----------------------------|--|--|-----------|-----------|-----------|
| Servo motor model: R88M-1□ | 23-bit absolute encoder  | M90010T-□  | M90010C-□ | M2K010C-□ | M3K010C-□ |
| Rated output               | W  | 900  |           | 2000      | 3000      |
| Rated torque               | Nm   | 8.59   |           | 19.1      | 28.7      |
| Instantaneous peak torque  | Nm   | 19.3   |           | 47.7      | 71.7      |
| Rated current              | A (rms)  | 6.7  | 3.6       | 7.1       | 10.6      |
| Instantaneous max. current | A (rms)  | 16.9   | 9.0       | 19.5      | 27.7      |
| Rated speed                | min <sup>-1</sup>  | 1000   |           |           |           |
| Max. speed                 | min <sup>-1</sup>  | 2000   |           |           |           |
| Torque constant            | N·m/A  | 1.28   | 2.41      | 3.00      | 2.97      |
| Rotor moment of inertia    | kg·m <sup>2</sup> ×10 <sup>-4</sup> (without brake)                | 9.0042   |           | 40.0122   | 68.0122   |
|                            | kg·m <sup>2</sup> ×10 <sup>-4</sup> (with brake)                   | 9.5042   |           | 45.1122   | 73.1122   |
| Electrical time constant   | ms   | 15.0   | 13.0      | 16.0      | 19.0      |
| Allowable radial load      | N  | 686  |           | 1176      | 1470      |
| Allowable thrust load      | N  | 196  |           | 490       |           |
| Weight                     | kg (without brake)   | 8.5  |           | 18.0      | 28.0      |
|                            | kg (with brake)  | 10.5   |           | 22.0      | 33.0      |
| Brake specifications       | Excitation voltage <sup>*1</sup>                                   | 24 VDC ±10%  |           |           |           |
|                            | Holding brake moment of inertia J                                  | kg·m <sup>2</sup> ×10 <sup>-4</sup>  | 0.5       |           | 5.1       |
|                            | Current consumption (at 20°C)                                      | A  | 0.51      | 1.2       | 1.0       |
|                            | Static friction torque   | Nm (minimum)   | 9.0       |           | 22.0      |
| Basic specifications       | Insulation class   | Type F   |           |           |           |
|                            | Ambient operating/storage temperature                              | 0 to 40°C/-20 to 65°C  |           |           |           |
|                            | Ambient operating/storage humidity                                 | 20 to 90% (non-condensing)   |           |           |           |
|                            | Atmosphere   | No corrosive gases   |           |           |           |
|                            | Insulation resistance  | 10 MΩ min. at 500 VDC between the power terminals and FG terminal              |           |           |           |
|                            | Vibration resistance   | Vibration acceleration of 49 m/s <sup>2</sup>                                  |           |           |           |
|                            | Impact resistance  | Acceleration of 98 m/s <sup>2</sup> max. 3 times each in X, Y and Z directions |           |           |           |
| Enclosure                  | IP67 (except for through-shaft parts when connectors are inserted) |  |           |           |           |

\*1 This is a non-excitabile brake (it is released when excitation voltage is applied).

Torque-speed characteristics



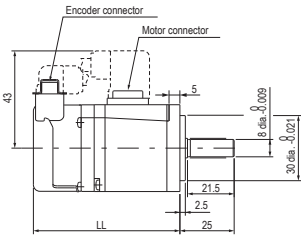
## Dimensions

### Servo motors

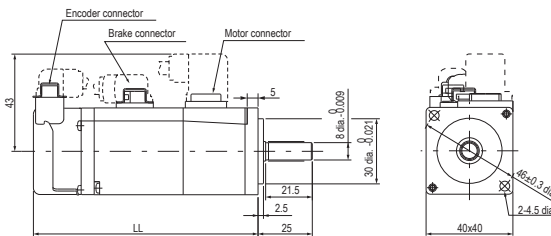
#### Type 3000 r/min motors (230 V, 50 W)

| Dimensions (mm) | Without brake | With brake | Approx. mass (kg) |            |
|-----------------|---------------|------------|-------------------|------------|
| Model: R88M-1□  | LL            | LL         | Without brake     | With brake |
| M05030T-□S2     | 67.5          | 103.5      | 0.35              | 0.59       |

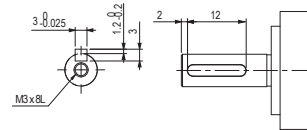
Models without brake



Models with brake



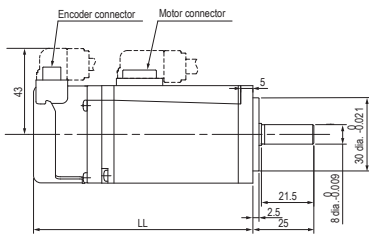
Shaft end



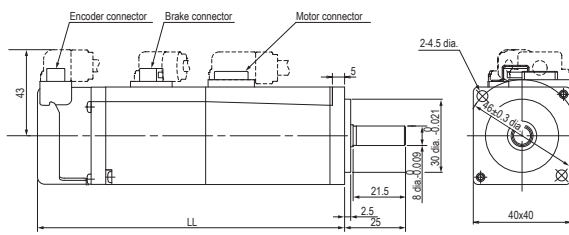
#### Type 3000 r/min motors (230 V, 100 W)

| Dimensions (mm) | Without brake | With brake | Approx. mass (kg) |            |
|-----------------|---------------|------------|-------------------|------------|
| Model: R88M-1□  | LL            | LL         | Without brake     | With brake |
| M10030(H/T)-□S2 | 90            | 126        | 0.52              | 0.77       |

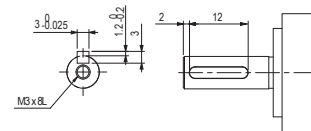
Models without brake



Models with brake



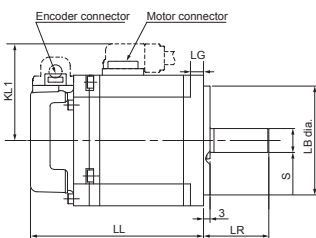
Shaft end



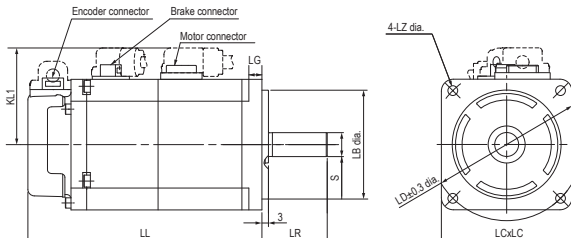
#### Type 3000 r/min motors (230 V, 200 W to 750 W)

| Dimensions (mm) | Without brake |      | With brake |      | LR | Flange surface              |    |    |    |     | Shaft end                   |    |    |                      |                       |   | Approx. mass (kg) |               |            |
|-----------------|---------------|------|------------|------|----|-----------------------------|----|----|----|-----|-----------------------------|----|----|----------------------|-----------------------|---|-------------------|---------------|------------|
|                 | LL            | KL1  | LL         | KL1  |    | LB                          | LC | LD | LG | LZ  | S                           | QA | QK | W                    | U                     | T | Tap x depth       | Without brake | With brake |
| M20030(H/T)-□S2 | 79.5          | 52.6 | 107.5      | 52.6 | 30 | 50 dia. <sup>0</sup> -0.025 | 60 | 70 | 6  | 4.5 | 11 dia. <sup>0</sup> -0.011 | 2  | 20 | 4 <sup>0</sup> -0.03 | 1.5 <sup>0</sup> -0.2 | 4 | M4 x 10L          | 1.0           | 1.3        |
| M40030(H/T)-□S2 | 105.5         |      | 133.5      |      |    |                             |    |    |    |     | 14 dia. <sup>0</sup> -0.011 |    |    | 5 <sup>0</sup> -0.03 | 2 <sup>0</sup> -0.2   | 5 | M5 x 12L          | 1.4           | 1.9        |
| M75030(H/T)-□S2 | 117.3         | 63.2 | 153        | 63.2 | 35 | 70 dia. <sup>0</sup> -0.03  | 80 | 90 | 8  | 6   | 19 dia. <sup>0</sup> -0.013 | 3  | 24 | 6 <sup>0</sup> -0.03 | 2.5 <sup>0</sup> -0.2 | 6 |                   | 2.9           | 3.9        |

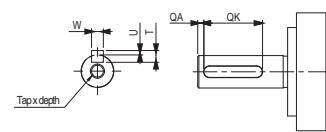
Models without brake



Models with brake



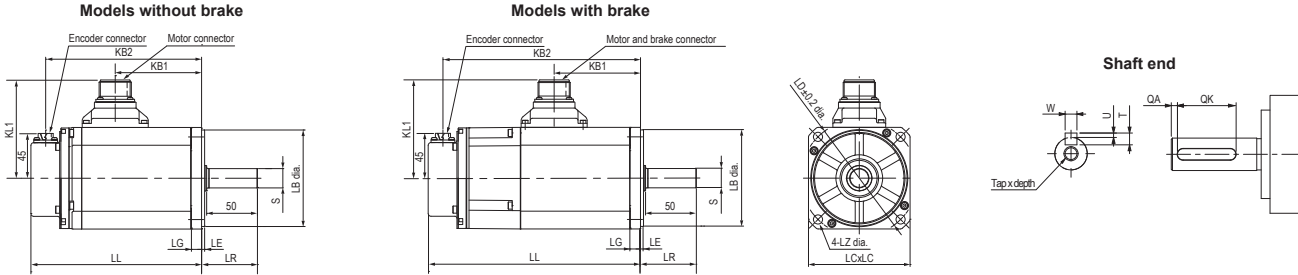
Shaft end





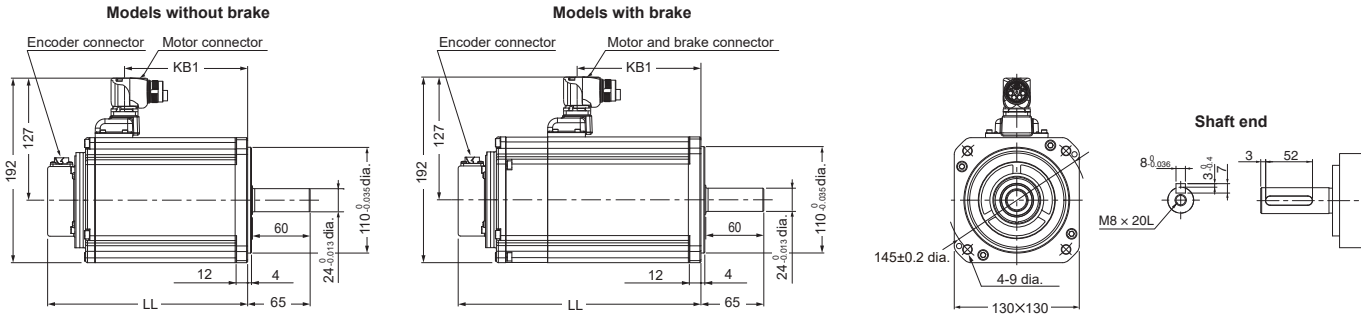
Type 3000 r/min motors (230 V, 1 kW to 1.5 kW / 400 V, 750 W to 3 kW)

| Dimensions (mm) | Without brake  |     |     |     | With brake |     |     |     | LR | Flange surface        |     |     |    |    |    | Shaft end            |   |    |                |                | Approx. mass (kg) |          |             |               |
|-----------------|----------------|-----|-----|-----|------------|-----|-----|-----|----|-----------------------|-----|-----|----|----|----|----------------------|---|----|----------------|----------------|-------------------|----------|-------------|---------------|
|                 | Model: R88M-1□ | LL  | KB1 | KB2 | KL1        | LL  | KB1 | KB2 |    | KL1                   | LB  | LC  | LD | LE | LG | LZ                   | S | QA | QK             | W              | U                 | T        | Tap x depth | Without brake |
| L1K030(H/T)-□S2 | 168            | 85  | 153 | 97  | 209        | 85  | 194 | 97  | 55 | 95 dia. $0_{-0.035}$  | 100 | 115 | 3  | 10 | 9  | 19 dia. $0_{-0.013}$ | 3 | 42 | 6 $0_{-0.03}$  | 2.5 $0_{-0.2}$ | 6                 | M5 x 12L | 5.7         | 7.4           |
| L1K530(H/T)-□S2 |                |     |     |     | 180        | 56  | 165 | 104 |    |                       |     |     |    |    |    |                      |   |    |                |                |                   | 4.1      | 5.8         |               |
| L75030C-□S2     | 139            | 56  | 124 |     | 209        | 85  | 194 |     |    |                       |     |     |    |    |    |                      |   |    |                |                |                   | 5.7      | 7.4         |               |
| L1K030C-□S2     | 168            | 85  | 153 |     | 220        | 96  | 205 |     |    |                       |     |     |    |    |    |                      |   |    |                |                |                   | 6.4      | 8.1         |               |
| L2K030C-□S2     | 179            | 96  | 164 |     | 230        | 112 | 215 | 119 |    |                       |     |     |    |    |    |                      |   |    |                |                |                   | 6.4      | 8.1         |               |
| L3K030C-□S2     | 184            | 112 | 169 | 116 | 230        | 112 | 215 | 119 |    | 110 dia. $0_{-0.035}$ | 130 | 145 | 4  | 12 | 9  | 22 dia. $0_{-0.013}$ |   |    | 8 $0_{-0.036}$ | 3 $0_{-0.4}$   | 7                 | 11.5     | 12.5        |               |



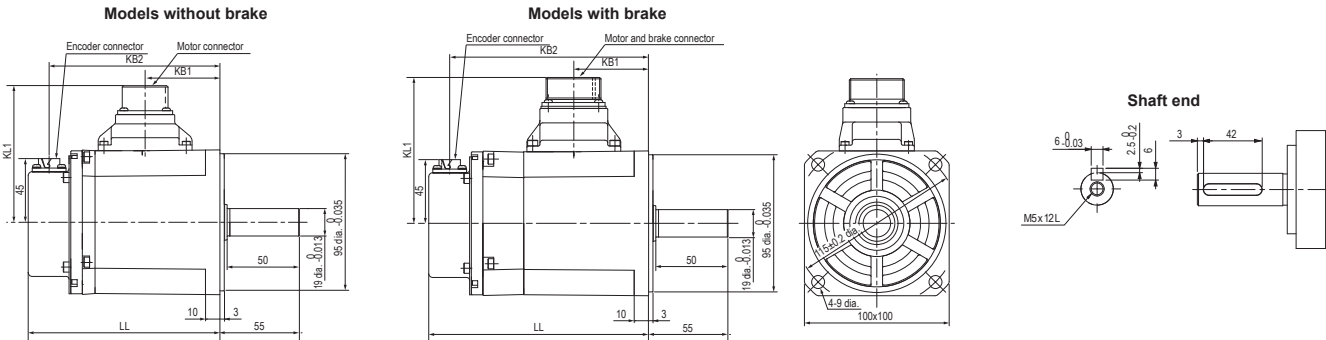
Type 3000 r/min motors (400 V, 4 kW to 5 kW)

| Dimensions (mm) | Without brake  |     | With brake |     | Approx. mass (kg) |               |            |
|-----------------|----------------|-----|------------|-----|-------------------|---------------|------------|
|                 | Model: R88M-1□ | LL  | KB1        | LL  | KB1               | Without brake | With brake |
| L4K030C-□S2     |                | 208 | 128        | 251 | 128               | 13.5          | 16.0       |
| L5K030C-□S2     |                | 232 | 152        | 275 | 152               | 16.0          | 18.5       |



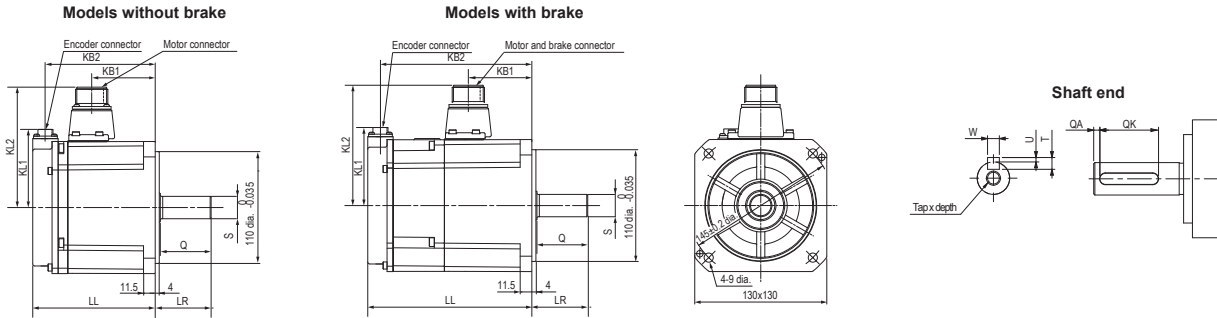
Type 2000 r/min motors (400 V, 400 W to 600 W)

| Dimensions (mm) | Without brake  |    |       |     | With brake |    |     |     | Approx. mass (kg) |               |
|-----------------|----------------|----|-------|-----|------------|----|-----|-----|-------------------|---------------|
|                 | Model: R88M-1□ | LL | KB1   | KB2 | KL1        | LL | KB1 | KB2 | KL1               | Without brake |
| M40020C-□S2     | 134.8          | 52 | 120.5 | 97  | 152.3      | 52 | 138 | 104 | 3.9               | 4.8           |
| M60020C-□S2     | 151.8          | 69 | 137.5 |     | 169.3      | 69 | 155 |     | 4.7               | 5.8           |



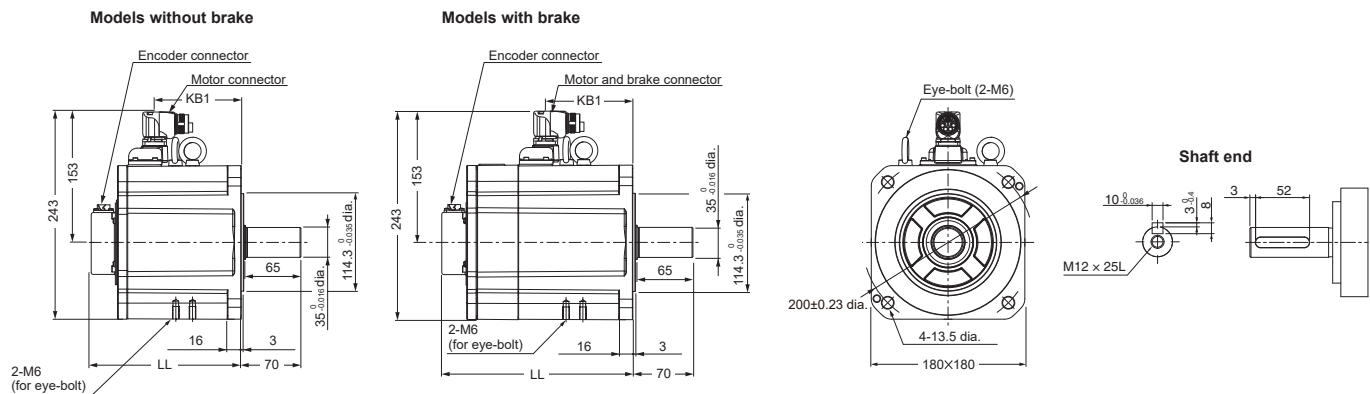
## Type 2000 r/min motors (230 V, 1 kW to 1.5 kW / 400 V, 1 kW to 3 kW)

| Dimensions (mm) | Without brake |     |     |     |     | With brake |     |     |     |     | LR | Shaft end             |    |    |    |                 |               |   | Approx. mass (kg) |               |            |
|-----------------|---------------|-----|-----|-----|-----|------------|-----|-----|-----|-----|----|-----------------------|----|----|----|-----------------|---------------|---|-------------------|---------------|------------|
|                 | LL            | KB1 | KB2 | KL1 | KL2 | LL         | KB1 | KB2 | KL1 | KL2 |    | S                     | Q  | QA | QK | W               | U             | T | Tap x depth       | Without brake | With brake |
| M1K020(H/T)-□S2 | 120.5         | 63  | 109 | 76  | 118 | 162        | 63  | 149 | 76  | 118 | 55 | 22 dia. $^0_{-0.013}$ | 50 | 3  | 42 | 8 $^0_{-0.036}$ | 3 $^0_{-0.4}$ | 7 | M5 x 12L          | 6.6           | 8.6        |
| M1K520(H/T)-□S2 | 138           | 79  | 125 |     |     | 179        | 79  | 166 |     |     |    |                       |    |    |    |                 |               |   |                   | 8.5           | 10.5       |
| M1K020C-□S2     | 120.5         | 63  | 109 |     |     | 162        | 64  | 150 |     | 119 |    |                       |    |    |    |                 |               |   |                   | 6.6           | 8.6        |
| M1K520C-□S2     | 138           | 79  | 125 |     |     | 179        | 81  | 167 |     |     |    |                       |    |    |    |                 |               |   |                   | 8.5           | 10.5       |
| M2K020C-□S2     | 160           | 98  | 148 |     |     | 201        | 99  | 189 |     |     |    |                       |    |    |    |                 |               |   |                   | 10.0          | 12.0       |
| M3K020C-□S2     | 191           | 119 | 176 | 45  | 116 | 234        | 118 | 219 | 45  | 119 | 65 | 24 dia. $^0_{-0.013}$ | 60 |    | 52 |                 |               |   | M8 x 20L          | 12.0          | 15.0       |



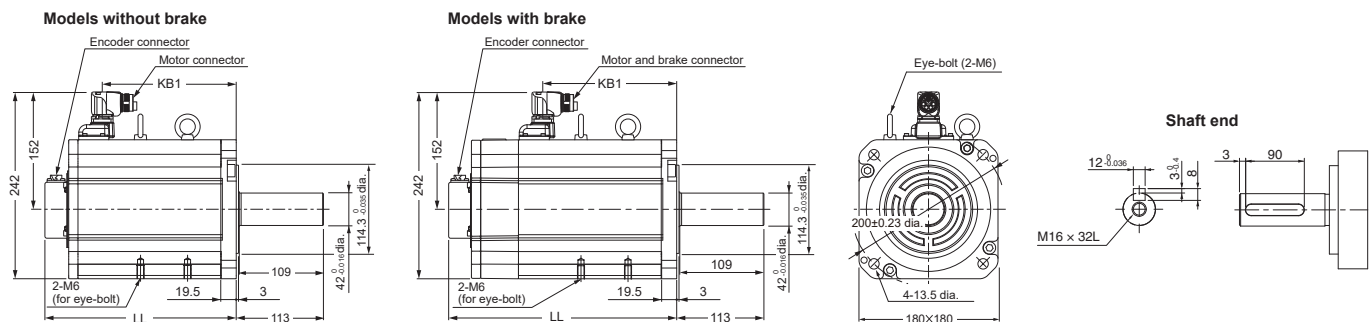
## Type 1500 r/min motors (400 V, 4 kW)

| Dimensions (mm) | Without brake |     | With brake |     | Approx. mass (kg) |            |
|-----------------|---------------|-----|------------|-----|-------------------|------------|
|                 | LL            | KB1 | LL         | KB1 | Without brake     | With brake |
| M4K015C-□S2     | 176           | 102 | 223        | 102 | 21.0              | 26.0       |



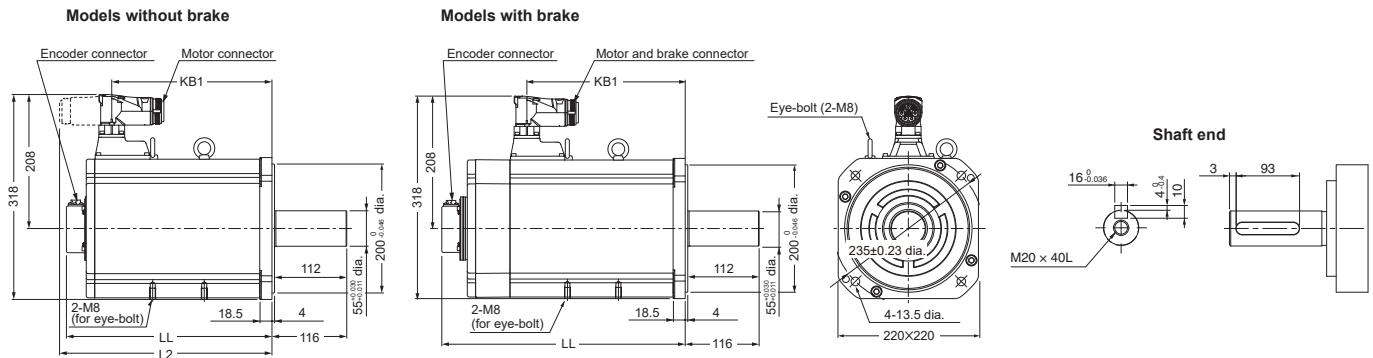
## Type 1500 r/min motors (400 V, 5.5 kW to 7.5 kW)

| Dimensions (mm) | Without brake |     | With brake |     | Approx. mass (kg) |            |
|-----------------|---------------|-----|------------|-----|-------------------|------------|
|                 | LL            | KB1 | LL         | KB1 | Without brake     | With brake |
| M5K515C-□S2     | 248           | 174 | 295        | 174 | 29.0              | 34.0       |
| M7K515C-□S2     | 295           | 221 | 352        | 221 | 39.0              | 45.0       |



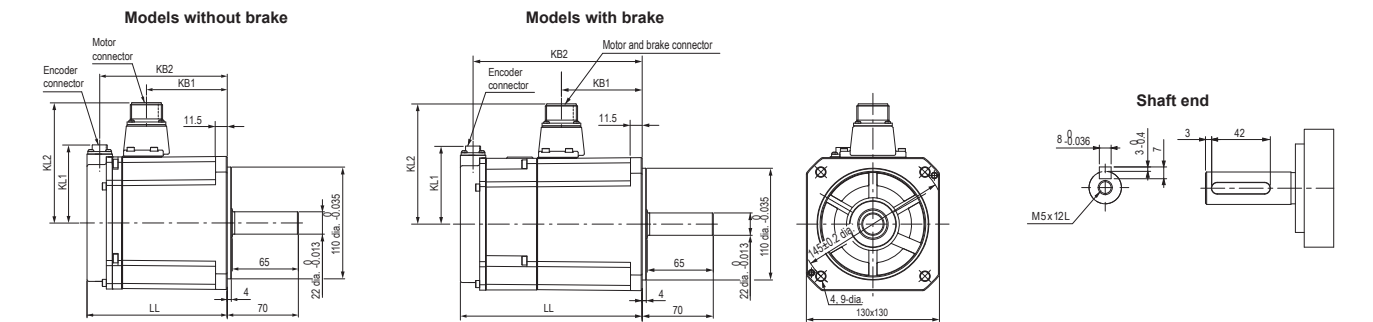
Type 1500 r/min motors (400 V, 11 kW to 15 kW)

| Dimensions (mm) | Without brake  |     |     | With brake |     | Approx. mass (kg) |               |
|-----------------|----------------|-----|-----|------------|-----|-------------------|---------------|
|                 | Model: R88M-1□ | LL  | L2  | KB1        | LL  | KB1               | Without brake |
| M11K015C-□S2    | 319            | 330 | 249 | 382        | 249 | 63.0              | 73.0          |
| M15K015C-□S2    | 397            | 408 | 327 | 493        | 327 | 85.0              | 99.0          |



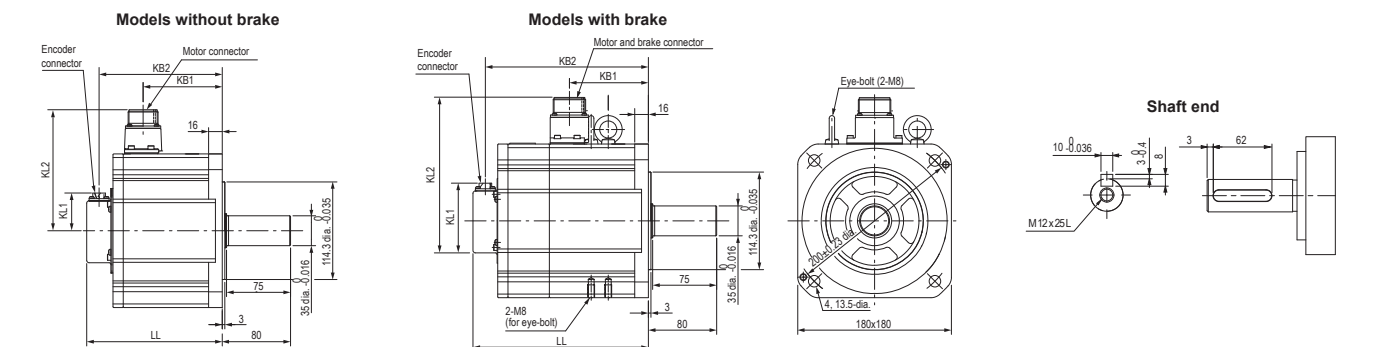
Type 1000 r/min motors (230 V, 900 W / 400 V, 900 W)

| Dimensions (mm) | Without brake  |    |     |     |     | With brake |    |     |     |     | Approx. mass (kg) |               |
|-----------------|----------------|----|-----|-----|-----|------------|----|-----|-----|-----|-------------------|---------------|
|                 | Model: R88M-1□ | LL | KB1 | KB2 | KL1 | KL2        | LL | KB1 | KB2 | KL1 | KL2               | Without brake |
| M90010T-□S2     | 138            | 79 | 125 | 76  | 118 | 179        | 79 | 166 | 76  | 118 | 8.5               | 10.5          |
| M90010C-□S2     |                |    |     |     |     |            | 81 | 167 |     | 117 |                   |               |



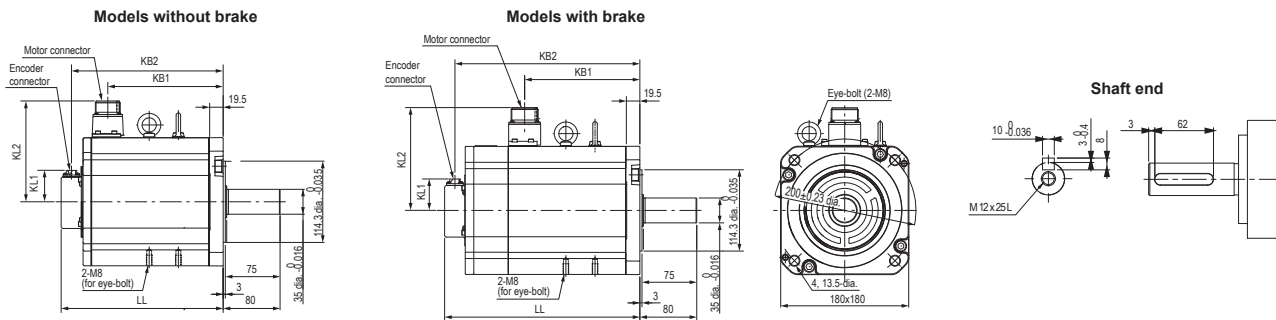
Type 1000 r/min motors (400 V, 2 kW)

| Dimensions (mm) | Without brake  |    |     |     |     | With brake |    |     |     |     | Approx. mass (kg) |               |
|-----------------|----------------|----|-----|-----|-----|------------|----|-----|-----|-----|-------------------|---------------|
|                 | Model: R88M-1□ | LL | KB1 | KB2 | KL1 | KL2        | LL | KB1 | KB2 | KL1 | KL2               | Without brake |
| M2K010C-□S2     | 159            | 93 | 145 | 45  | 141 | 206        | 92 | 191 | 45  | 144 | 18.0              | 22.0          |

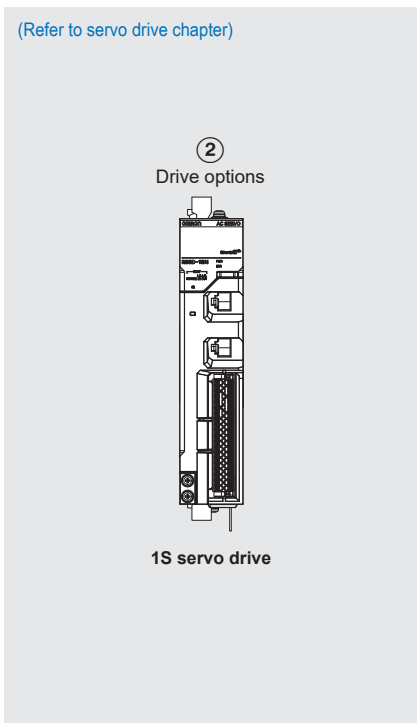


## Type 1000 r/min motors (400 V, 3 kW)

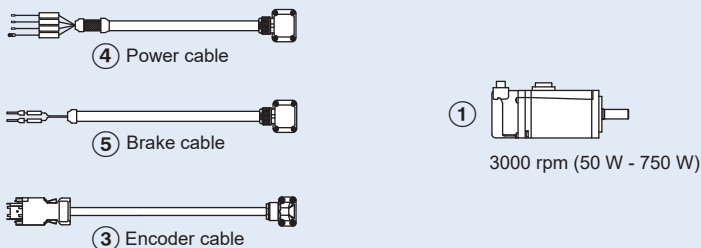
| Dimensions (mm) | Without brake |     |     |     |     | With brake |     |     |     |     | Approx. mass (kg) |            |
|-----------------|---------------|-----|-----|-----|-----|------------|-----|-----|-----|-----|-------------------|------------|
|                 | LL            | KB1 | KB2 | KL1 | KL2 | LL         | KB1 | KB2 | KL1 | KL2 | Without brake     | With brake |
| Model: R88M-1□  |               |     |     |     |     |            |     |     |     |     |                   |            |
| M3K010C-□S2     | 228           | 162 | 213 | 45  | 141 | 274        | 162 | 260 | 45  | 144 | 28.0              | 33.0       |



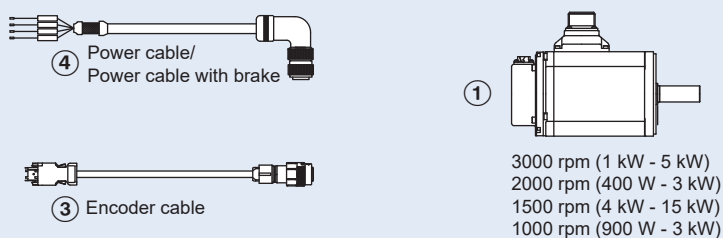
Ordering information



1S servo motor (Flange size 80 mm or less)



1S servo motor (Flange size 100 mm or more)



Servo motors

① Select motor from R88M-1□ family using motor tables in next pages.

Servo drives

② Refer to the 1S servo drive chapter for detailed drive specifications and selection of drive accessories.

Servo motors

Servo motors 3000 r/min (100 W to 5 kW)

| Symbol | Specifications |                              |               |                   |                 |             | Model             | Compatible 1S servo drive |
|--------|----------------|------------------------------|---------------|-------------------|-----------------|-------------|-------------------|---------------------------|
|        | Voltage        | Encoder and design           |               | Rated torque      | Capacity        | Flange size |                   |                           |
| ①      | 230 V          | Incremental encoder (23-bit) | Without brake | 0.318 Nm          | 100 W           | 40 mm       | R88M-1M10030H-S2  | R88D-1SN01H-ECT           |
|        |                |                              |               | 0.637 Nm          | 200 W           | 60 mm       | R88M-1M20030H-S2  | R88D-1SN02H-ECT           |
|        |                |                              |               | 1.27 Nm           | 400 W           |             | R88M-1M40030H-S2  | R88D-1SN04H-ECT           |
|        |                |                              |               | 2.39 Nm           | 750 W           | 80 mm       | R88M-1M75030H-S2  | R88D-1SN08H-ECT           |
|        |                |                              |               | 3.18 Nm           | 1 kW            | 100 mm      | R88M-1L1K030H-S2  | R88D-1SN15H-ECT           |
|        |                |                              |               | 4.77 Nm           | 1.5 kW          |             | R88M-1L1K530H-S2  | R88D-1SN15H-ECT           |
|        |                |                              | With brake    | 0.318 Nm          | 100 W           | 40 mm       | R88M-1M10030H-BS2 | R88D-1SN01H-ECT           |
|        |                |                              |               | 0.637 Nm          | 200 W           | 60 mm       | R88M-1M20030H-BS2 | R88D-1SN02H-ECT           |
|        |                |                              |               | 1.27 Nm           | 400 W           |             | R88M-1M40030H-BS2 | R88D-1SN04H-ECT           |
|        |                |                              |               | 2.39 Nm           | 750 W           | 80 mm       | R88M-1M75030H-BS2 | R88D-1SN08H-ECT           |
|        |                |                              |               | 3.18 Nm           | 1 kW            | 100 mm      | R88M-1L1K030H-BS2 | R88D-1SN15H-ECT           |
|        |                |                              |               | 4.77 Nm           | 1.5 kW          |             | R88M-1L1K530H-BS2 | R88D-1SN15H-ECT           |
|        |                | Absolute encoder (23-bit)    | Without brake | 0.159 Nm          | 50 W            | 40 mm       | R88M-1M05030T-S2  | R88D-1SN01H-ECT           |
|        |                |                              |               | 0.318 Nm          | 100 W           |             | R88M-1M10030T-S2  | R88D-1SN01H-ECT           |
|        |                |                              |               | 0.637 Nm          | 200 W           | 60 mm       | R88M-1M20030T-S2  | R88D-1SN02H-ECT           |
|        |                |                              |               | 1.27 Nm           | 400 W           |             | R88M-1M40030T-S2  | R88D-1SN04H-ECT           |
|        |                |                              |               | 2.39 Nm           | 750 W           | 80 mm       | R88M-1M75030T-S2  | R88D-1SN08H-ECT           |
|        |                |                              |               | 3.18 Nm           | 1 kW            | 100 mm      | R88M-1L1K030T-S2  | R88D-1SN15H-ECT           |
|        |                |                              | With brake    | 0.159 Nm          | 50 W            | 40 mm       | R88M-1M05030T-BS2 | R88D-1SN01H-ECT           |
|        |                |                              |               | 0.318 Nm          | 100 W           |             | R88M-1M10030T-BS2 | R88D-1SN01H-ECT           |
|        |                |                              |               | 0.637 Nm          | 200 W           | 60 mm       | R88M-1M20030T-BS2 | R88D-1SN02H-ECT           |
|        |                |                              |               | 1.27 Nm           | 400 W           |             | R88M-1M40030T-BS2 | R88D-1SN04H-ECT           |
|        |                |                              |               | 2.39 Nm           | 750 W           | 80 mm       | R88M-1M75030T-BS2 | R88D-1SN08H-ECT           |
|        |                |                              |               | 3.18 Nm           | 1 kW            | 100 mm      | R88M-1L1K030T-BS2 | R88D-1SN15H-ECT           |
|        | 4.77 Nm        | 1.5 kW                       |               | R88M-1L1K530T-BS2 | R88D-1SN15H-ECT |             |                   |                           |

| Symbol | Specifications |                                 |               |              |          | Model             | Compatible 1S servo drive |                  |                 |
|--------|----------------|---------------------------------|---------------|--------------|----------|-------------------|---------------------------|------------------|-----------------|
|        | Voltage        | Encoder and design              |               | Rated torque | Capacity |                   |                           | Flange size      |                 |
| ①      | 400 V          | Absolute encoder (23-bit)       | Without brake | 2.39 Nm      | 750 W    | 100 mm            | R88M-1L75030C-S2          | R88D-1SN10F-ECT  |                 |
|        |                |                                 |               | 3.18 Nm      | 1 kW     |                   | R88M-1L1K030C-S2          | R88D-1SN10F-ECT  |                 |
|        |                | Straight shaft with key and tap |               | 4.77 Nm      | 1.5 kW   |                   | 130 mm                    | R88M-1L1K530C-S2 | R88D-1SN15F-ECT |
|        |                |                                 |               | 6.37 Nm      | 2 kW     |                   |                           | R88M-1L2K030C-S2 | R88D-1SN20F-ECT |
|        |                |                                 |               | 9.55 Nm      | 3 kW     |                   |                           | R88M-1L3K030C-S2 | R88D-1SN30F-ECT |
|        |                |                                 |               | 12.7 Nm      | 4 kW     |                   |                           | R88M-1L4K030C-S2 | R88D-1SN55F-ECT |
|        |                | With brake                      | 15.9 Nm       | 5 kW         | 100 mm   | R88M-1L5K030C-S2  | R88D-1SN55F-ECT           |                  |                 |
|        |                |                                 | 2.39 Nm       | 750 W        |          | R88M-1L75030C-BS2 | R88D-1SN10F-ECT           |                  |                 |
|        |                |                                 | 3.18 Nm       | 1 kW         |          | R88M-1L1K030C-BS2 | R88D-1SN10F-ECT           |                  |                 |
|        |                |                                 | 4.77 Nm       | 1.5 kW       |          | R88M-1L1K530C-BS2 | R88D-1SN15F-ECT           |                  |                 |
|        |                |                                 | 6.37 Nm       | 2 kW         |          | R88M-1L2K030C-BS2 | R88D-1SN20F-ECT           |                  |                 |
|        |                |                                 | 9.55 Nm       | 3 kW         |          | R88M-1L3K030C-BS2 | R88D-1SN30F-ECT           |                  |                 |
|        |                |                                 | 12.7 Nm       | 4 kW         |          | R88M-1L4K030C-BS2 | R88D-1SN55F-ECT           |                  |                 |
|        |                |                                 | 15.9 Nm       | 5 kW         |          | R88M-1L5K030C-BS2 | R88D-1SN55F-ECT           |                  |                 |

Servo motors 2000 r/min (400 W to 3 kW)

| Symbol | Specifications |                                 |                           |                  |                 | Model             | Compatible 1S servo drive |                  |                  |                 |
|--------|----------------|---------------------------------|---------------------------|------------------|-----------------|-------------------|---------------------------|------------------|------------------|-----------------|
|        | Voltage        | Encoder and design              |                           | Rated torque     | Capacity        |                   |                           | Flange size      |                  |                 |
| ①      | 230 V          | Incremental encoder (23-bit)    | Without brake             | 4.77 Nm          | 1 kW            | 130 mm            | R88M-1M1K020H-S2          | R88D-1SN15H-ECT  |                  |                 |
|        |                |                                 |                           | 7.16 Nm          | 1.5 kW          |                   | R88M-1M1K520H-S2          | R88D-1SN15H-ECT  |                  |                 |
|        |                | Straight shaft with key and tap | With brake                | 4.77 Nm          | 1 kW            |                   | R88M-1M1K020H-BS2         | R88D-1SN15H-ECT  |                  |                 |
|        |                |                                 |                           | 7.16 Nm          | 1.5 kW          |                   | R88M-1M1K520H-BS2         | R88D-1SN15H-ECT  |                  |                 |
|        |                |                                 | Absolute encoder (23-bit) | Without brake    | 4.77 Nm         |                   | 1 kW                      | R88M-1M1K020T-S2 | R88D-1SN15H-ECT  |                 |
|        |                |                                 |                           |                  | 7.16 Nm         |                   | 1.5 kW                    | R88M-1M1K520T-S2 | R88D-1SN15H-ECT  |                 |
|        |                | Straight shaft with key and tap | With brake                | 4.77 Nm          | 1 kW            |                   | R88M-1M1K020T-BS2         | R88D-1SN15H-ECT  |                  |                 |
|        |                |                                 |                           | 7.16 Nm          | 1.5 kW          |                   | R88M-1M1K520T-BS2         | R88D-1SN15H-ECT  |                  |                 |
|        |                |                                 | 400 V                     | Without brake    | 100 mm          |                   | 1.91 Nm                   | 400 W            | R88M-1M40020C-S2 | R88D-1SN06F-ECT |
|        |                |                                 |                           |                  |                 |                   | 2.86 Nm                   | 600 W            | R88M-1M60020C-S2 | R88D-1SN06F-ECT |
|        | 4.77 Nm        |                                 |                           |                  |                 | 1 kW              | 130 mm                    | R88M-1M1K020C-S2 | R88D-1SN10F-ECT  |                 |
|        | 7.16 Nm        |                                 |                           |                  |                 | 1.5 kW            |                           | R88M-1M1K520C-S2 | R88D-1SN15F-ECT  |                 |
|        | 9.55 Nm        | 2 kW                            |                           |                  |                 | R88M-1M2K020C-S2  |                           | R88D-1SN20F-ECT  |                  |                 |
|        | 14.3 Nm        | 3 kW                            |                           | R88M-1M3K020C-S2 | R88D-1SN30F-ECT |                   |                           |                  |                  |                 |
|        | With brake     | 100 mm                          |                           | 1.91 Nm          | 400 W           | R88M-1M40020C-BS2 | R88D-1SN06F-ECT           |                  |                  |                 |
|        |                |                                 |                           | 2.86 Nm          | 600 W           | R88M-1M60020C-BS2 | R88D-1SN06F-ECT           |                  |                  |                 |
|        |                |                                 |                           | 130 mm           | 4.77 Nm         | 1 kW              | R88M-1M1K020C-BS2         | R88D-1SN10F-ECT  |                  |                 |
|        |                |                                 |                           |                  | 7.16 Nm         | 1.5 kW            | R88M-1M1K520C-BS2         | R88D-1SN15F-ECT  |                  |                 |
|        |                |                                 | 9.55 Nm                   |                  | 2 kW            | R88M-1M2K020C-BS2 | R88D-1SN20F-ECT           |                  |                  |                 |
|        | 14.3 Nm        | 3 kW                            | R88M-1M3K020C-BS2         |                  | R88D-1SN30F-ECT |                   |                           |                  |                  |                 |

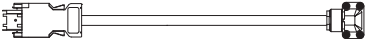

Servo motors 1500 r/min (4 kW to 15 kW)

| Symbol | Specifications |                                 |               |              |                  | Model  | Compatible 1S servo drive |                    |                  |
|--------|----------------|---------------------------------|---------------|--------------|------------------|--------|---------------------------|--------------------|------------------|
|        | Voltage        | Encoder and design              |               | Rated torque | Capacity         |        |                           | Flange size        |                  |
| ①      | 400 V          | Absolute encoder (23-bit)       | Without brake | 25.5 Nm      | 4 kW             | 180 mm | R88M-1M4K015C-S2          | R88D-1SN55F-ECT    |                  |
|        |                |                                 |               | 35 Nm        | 5.5 kW           |        | R88M-1M5K515C-S2          | R88D-1SN55F-ECT    |                  |
|        |                | 47.8 Nm                         |               | 7.5 kW       | R88M-1M7K515C-S2 |        | R88D-1SN75F-ECT           |                    |                  |
|        |                | 70 Nm                           |               | 11 kW        | 220 mm           |        | R88M-1M11K015C-S2         | R88D-1SN150F-ECT   |                  |
|        |                | 95.5 Nm                         |               | 15 kW        |                  |        | R88M-1M15K015C-S2         | R88D-1SN150F-ECT   |                  |
|        |                | Straight shaft with key and tap | With brake    | 180 mm       | 25.5 Nm          | 4 kW   | R88M-1M4K015C-BS2         | R88D-1SN55F-ECT    |                  |
|        |                |                                 |               |              | 35 Nm            | 5.5 kW | R88M-1M5K515C-BS2         | R88D-1SN55F-ECT    |                  |
|        |                |                                 |               |              | 47.8 Nm          | 7.5 kW | R88M-1M7K515C-BS2         | R88D-1SN75F-ECT    |                  |
|        |                |                                 |               |              | 70 Nm            | 11 kW  | 220 mm                    | R88M-1M11K015C-BS2 | R88D-1SN150F-ECT |
|        |                |                                 |               |              | 95.5 Nm          | 15 kW  |                           | R88M-1M15K015C-BS2 | R88D-1SN150F-ECT |

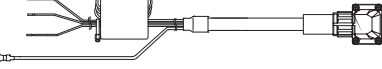
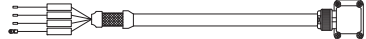
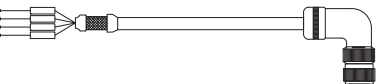
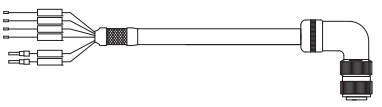
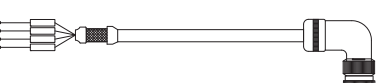
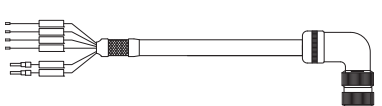
Servo motors 1000 r/min (900 W to 3 kW)

| Symbol | Specifications |                                 |               |              |          | Model  | Compatible 1S servo drive |                   |                 |
|--------|----------------|---------------------------------|---------------|--------------|----------|--------|---------------------------|-------------------|-----------------|
|        | Voltage        | Encoder and design              |               | Rated torque | Capacity |        |                           | Flange size       |                 |
| ①      | 230 V          | Absolute encoder (23-bit)       | Without brake | 8.59 Nm      | 900 W    | 130 mm | R88M-1M90010T-S2          | R88D-1SN15H-ECT   |                 |
|        |                |                                 | With brake    | 8.59 Nm      | 900 W    |        | R88M-1M90010T-BS2         | R88D-1SN15H-ECT   |                 |
|        | 400 V          | Straight shaft with key and tap | Without brake | 8.59 Nm      | 900 W    | 180 mm | R88M-1M90010C-S2          | R88D-1SN10F-ECT   |                 |
|        |                |                                 |               | 19.1 Nm      | 2 kW     |        | R88M-1M2K010C-S2          | R88D-1SN20F-ECT   |                 |
|        |                |                                 |               | 28.7 Nm      | 3 kW     |        | R88M-1M3K010C-S2          | R88D-1SN30F-ECT   |                 |
|        |                |                                 | With brake    | 8.59 Nm      | 900 W    | 130 mm | R88M-1M90010C-BS2         | R88D-1SN10F-ECT   |                 |
|        |                |                                 |               | 19.1 Nm      | 2 kW     |        | 180 mm                    | R88M-1M2K010C-BS2 | R88D-1SN20F-ECT |
|        |                |                                 |               | 28.7 Nm      | 3 kW     |        |                           | R88M-1M3K010C-BS2 | R88D-1SN30F-ECT |

Encoder cables

| Symbol | Specifications  | Model | Appearance         |   |
|--------|---|-------|--------------------|---|
| ③      | Encoder cable for servo motors<br>R88M-1M05030T-□<br>R88M-1M(100/200/400/750)30(H/T)-□  | 1.5 m | R88A-CR1A001-5CF-E |  |
|        |   | 3 m   | R88A-CR1A003CF-E   |   |
|        |   | 5 m   | R88A-CR1A005CF-E   |   |
|        |   | 10 m  | R88A-CR1A010CF-E   |   |
|        |   | 15 m  | R88A-CR1A015CF-E   |   |
|        |   | 20 m  | R88A-CR1A020CF-E   |   |
|        | Encoder cable for servo motors<br>R88M-1L(1K0/1K5)30(H/T)-□<br>R88M-1L(750/1K0/1K5/2K0/3K0/4K0/5K0)30C-□<br>R88M-1M(1K0/1K5)20(H/T)-□<br>R88M-1M(400/600/1K0/1K5/2K0/3K0)20C-□<br>R88M-1M(4K0/5K5/7K5/11K0/15K0)15C-□<br>R88M-1M90010T-□<br>R88M-1M(900/2K0/3K0)10C-□ | 1.5 m | R88A-CR1B001-5NF-E |  |
|        |   | 3 m   | R88A-CR1B003NF-E   |   |
|        |   | 5 m   | R88A-CR1B005NF-E   |   |
|        |   | 10 m  | R88A-CR1B010NF-E   |   |
|        |   | 15 m  | R88A-CR1B015NF-E   |   |
|        |   | 20 m  | R88A-CR1B020NF-E   |   |

Power cables

| Symbol     | Specifications   | Model         | Appearance         |   |   |
|------------|--|---------------|--------------------|---|---|
| ④          | For 230 V servo motors<br>R88M-1M05030T-□S2<br><br>Note: For servo motors with brake R88M-1M05030T-BS2, the separate brake cable R88A-CA1A□□□BFR is needed.                                      | Without brake | 3 m                | R88A-CA1A003SFR   |    |
|            |  |               | 5 m                | R88A-CA1A005SFR   |   |
|            |  |               | 10 m               | R88A-CA1A010SFR   |   |
|            |  |               | 15 m               | R88A-CA1A015SFR   |   |
|            |  |               | 20 m               | R88A-CA1A020SFR   |   |
|            | For 230 V servo motors<br>R88M-1M(100/200/400/750)30(H/T)-□S2<br><br>Note: For servo motors with brake R88M-1M(100/200/400/750)30(H/T)-BS2, the separate brake cable R88A-CA1A□□□BF-E is needed. | Without brake | 1.5 m              | R88A-CA1A001-5SF-E  |    |
|            |  |               | 3 m                | R88A-CA1A003SF-E  |   |
|            |  |               | 5 m                | R88A-CA1A005SF-E  |   |
|            |  |               | 10 m               | R88A-CA1A010SF-E  |   |
|            |  |               | 15 m               | R88A-CA1A015SF-E  |   |
|            |  |               | 20 m               | R88A-CA1A020SF-E  |   |
|            | For 230 V servo motors<br>R88M-1L(1K0/1K5)30(H/T)-□S2<br>R88M-1M(1K0/1K5)20(H/T)-□S2<br>R88M-1M90010T-□S2  | Without brake | 1.5 m              | R88A-CA1C001-5SF-E  |  |
|            |  |               | 3 m                | R88A-CA1C003SF-E  |   |
|            |  |               | 5 m                | R88A-CA1C005SF-E  |   |
|            |  |               | 10 m               | R88A-CA1C010SF-E  |   |
|            |  |               | 15 m               | R88A-CA1C015SF-E  |   |
|            |  |               | 20 m               | R88A-CA1C020SF-E  |   |
|            |  | With brake    | 1.5 m              | R88A-CA1C001-5BF-E  |  |
|            |  |               | 3 m                | R88A-CA1C003BF-E  |   |
|            |  |               | 5 m                | R88A-CA1C005BF-E  |   |
|            |  |               | 10 m               | R88A-CA1C010BF-E  |   |
|            |  |               | 15 m               | R88A-CA1C015BF-E  |   |
|            |  |               | 20 m               | R88A-CA1C020BF-E  |   |
|            | For 400 V servo motors<br>R88M-1L(750/1K0/1K5/2K0)30C-□S2<br>R88M-1M(400/600/1K0/1K5/2K0)20C-□S2<br>R88M-1M90010C-□S2  | Without brake | 1.5 m              | R88A-CA1C001-5SF-E  |  |
|            |  |               | 3 m                | R88A-CA1C003SF-E  |   |
|            |  |               | 5 m                | R88A-CA1C005SF-E  |   |
|            |  |               | 10 m               | R88A-CA1C010SF-E  |   |
|            |  |               | 15 m               | R88A-CA1C015SF-E  |   |
| 20 m       |  |               | R88A-CA1C020SF-E   |   |   |
| With brake |  | 1.5 m         | R88A-CA1E001-5BF-E |  |   |
|            |  | 3 m           | R88A-CA1E003BF-E   |   |   |
|            |  | 5 m           | R88A-CA1E005BF-E   |   |   |
|            |  | 10 m          | R88A-CA1E010BF-E   |   |   |
|            |  | 15 m          | R88A-CA1E015BF-E   |   |   |
|            |  | 20 m          | R88A-CA1E020BF-E   |   |   |

| Symbol  | Specifications  |               | Model          | Appearance         |  |
|---|---|---------------|----------------|--------------------|--|
| ④   | For 400 V servo motors<br>R88M-1L3K030C-□S2<br>R88M-1M3K020C-□S2<br>R88M-1M(2K0/3K0)10C-□S2 | Without brake | 1.5 m          | R88A-CA1E001-5SF-E |  |
|   |   |               | 3 m            | R88A-CA1E003SF-E   |  |
|   |   |               | 5 m            | R88A-CA1E005SF-E   |  |
|   |   |               | 10 m           | R88A-CA1E010SF-E   |  |
|   |   |               | 15 m           | R88A-CA1E015SF-E   |  |
|   |   |               | 20 m           | R88A-CA1E020SF-E   |  |
|   |   | With brake    | 1.5 m          | R88A-CA1E001-5BF-E |  |
|   |   |               | 3 m            | R88A-CA1E003BF-E   |  |
|   |   |               | 5 m            | R88A-CA1E005BF-E   |  |
|   |   |               | 10 m           | R88A-CA1E010BF-E   |  |
|   |   |               | 15 m           | R88A-CA1E015BF-E   |  |
|   |   |               | 20 m           | R88A-CA1E020BF-E   |  |
|   | For 400 V servo motors*1<br>R88M-1L(4K0/5K0)30C-□S2<br>R88M-1M(4K0/5K5)15C-□S2              | Without brake | 3 m            | R88A-CA1G003SF     |  |
|   |   |               | 5 m            | R88A-CA1G005SF     |  |
|   |   |               | 10 m           | R88A-CA1G010SF     |  |
|   |   |               | 15 m           | R88A-CA1G015SF     |  |
|   |   |               | 20 m           | R88A-CA1G020SF     |  |
|   |   | With brake    | 3 m            | R88A-CA1G003BF     |  |
|   |   |               | 5 m            | R88A-CA1G005BF     |  |
|   |   |               | 10 m           | R88A-CA1G010BF     |  |
| 15 m  |   |               | R88A-CA1G015BF |                    |  |
| 20 m  |   |               | R88A-CA1G020BF |                    |  |
| For 400 V servo motors<br>R88M-1M7K515C-□S2         | Without brake   | 3 m           | R88A-CA1H003SF |                    |  |
|   |   | 5 m           | R88A-CA1H005SF |                    |  |
|   |   | 10 m          | R88A-CA1H010SF |                    |  |
|   |   | 15 m          | R88A-CA1H015SF |                    |  |
|   |   | 20 m          | R88A-CA1H020SF |                    |  |
|   | With brake  | 3 m           | R88A-CA1H003BF |                    |  |
|   |   | 5 m           | R88A-CA1H005BF |                    |  |
|   |   | 10 m          | R88A-CA1H010BF |                    |  |
|   |   | 15 m          | R88A-CA1H015BF |                    |  |
|   |   | 20 m          | R88A-CA1H020BF |                    |  |
| For 400 V servo motors<br>R88M-1M(11K0/15K0)15C-□S2 | Without brake   | 3 m           | R88A-CA1J003SF |                    |  |
|   |   | 5 m           | R88A-CA1J005SF |                    |  |
|   |   | 10 m          | R88A-CA1J010SF |                    |  |
|   |   | 15 m          | R88A-CA1J015SF |                    |  |
|   |   | 20 m          | R88A-CA1J020SF |                    |  |
|   | With brake  | 3 m           | R88A-CA1J003BF |                    |  |
|   |   | 5 m           | R88A-CA1J005BF |                    |  |
|   |   | 10 m          | R88A-CA1J010BF |                    |  |
|   |   | 15 m          | R88A-CA1J015BF |                    |  |
|   |   | 20 m          | R88A-CA1J020BF |                    |  |

\*1 Refer to the "Using R88A-CA1G power cables" technical note when using multiple cables in the same duct.

### Extension power cables (for 400 V, 4 kW to 15 kW servo motors)

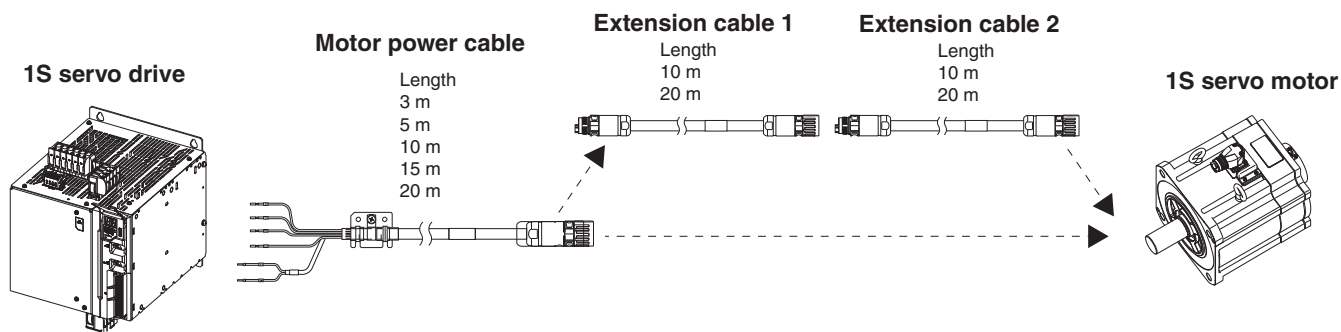
| Symbol | Specifications                                     |      | Model          | Appearance |
|--------|--|------|----------------|------------|
| ④      | R88M-1L(4K0/5K0)30C-□S2<br>R88M-1M(4K0/5K5)15C-□S2 | 10 m | R88A-CA1GE10BF |            |
|        |  | 20 m | R88A-CA1GE20BF |            |
|        | R88M-1M7K515C-□S2                                  | 10 m | R88A-CA1HE10BF |            |
|        |  | 20 m | R88A-CA1HE20BF |            |
|        | R88M-1M(11K0/15K0)15C-□S2                          | 10 m | R88A-CA1JE10BF |            |
|        |  | 20 m | R88A-CA1JE20BF |            |



### Combinations of Motor power cables and Extension power cables

The table below lists the combinations of cables that can be used to extend the motor power cable for a servomotor of 4 kW or more to more than 20 m.

Use the motor power cable and extension power cable in a specified combination. Not doing so may cause fire, equipment damage, or operation failure.



| Length |                   |                   |                   | Combination   |
|--------|-------------------|-------------------|-------------------|---|
| Total  | Motor power cable | Extension cable 1 | Extension cable 2 |   |
| 3      | 3                 | -                 | -                 | Motor power cable only  |
| 5      | 5                 | -                 | -                 | Motor power cable only  |
| 10     | 10                | -                 | -                 | Motor power cable only  |
| 15     | 15                | -                 | -                 | Motor power cable only  |
| 20     | 20                | -                 | -                 | Motor power cable only  |
| 30     | 20                | 10                | -                 | Motor power cable + extension cable 1                                   |
| 40     | 20                | 20                | -                 | Motor power cable + extension cable 1                                   |
| 50     | 20                | 10                | 20                | Motor power cable + extension cable 1 + extension cable 2 <sup>*1</sup> |

<sup>\*1</sup> A 20 m extension cable 1 and a 10 m extension cable 2 can also be used.

### Brake cables (for 230 V, 50 W to 750 W servo motors)

| Symbol | Specifications   | Model | Appearance         |  |
|--------|--|-------|--------------------|--|
| ⑤      | Brake cable only<br>For 230 V servo motors with brake<br>R88M-1M05030T-BS2                   | 3 m   | R88A-CA1A003BFR    |  |
|        |  | 5 m   | R88A-CA1A005BFR    |  |
|        |  | 10 m  | R88A-CA1A010BFR    |  |
|        |  | 15 m  | R88A-CA1A015BFR    |  |
|        |  | 20 m  | R88A-CA1A020BFR    |  |
| ⑤      | Brake cable only<br>For 230 V servo motors with brake<br>R88M-1M(100/200/400/750)30(H/T)-BS2 | 1.5 m | R88A-CA1A001-5BF-E |  |
|        |  | 3 m   | R88A-CA1A003BF-E   |  |
|        |  | 5 m   | R88A-CA1A005BF-E   |  |
|        |  | 10 m  | R88A-CA1A010BF-E   |  |
|        |  | 15 m  | R88A-CA1A015BF-E   |  |
|        |  | 20 m  | R88A-CA1A020BF-E   |  |

## Connectors for encoder, power and brake cables

| Specifications                |                  | Applicable servo motor  | Model                          |
|-------------------------------|------------------|---|--------------------------------|
| Connectors for encoder cables | Drive side (CN2) | All models  | R88A-CN101R                    |
|                               | Motor side       | R88M-1M05030T-□<br>R88M-1M(100/200/400/750)30(H/T)-□<br>R88M-1L(1K0/1K5)30(H/T)-□<br>R88M-1L(750/1K0/1K5/2K0/3K0/4K0/5K0)30C-□<br>R88M-1M(1K0/1K5)20(H/T)-□<br>R88M-1M(400/600/1K0/1K5/2K0/3K0)20C-□<br>R88M-1M(4K0/5K5/7K5/11K0/15K0)15C-□<br>R88M-1M90010T-□<br>R88M-1M(900/2K0/3K0)10C-□ | R88A-CNK02R<br><br>R88A-CN104R |
| Connectors for power cables   | Motor side       | R88M-1M(100/200/400/750)30(H/T)-_S2   | R88A-CN111A                    |
|                               |                  | R88M-1L(1K0/1K5)30(H/T)-S2<br>R88M-1M(1K0/1K5)20(H/T)-S2<br>R88M-1M90010T-S2<br>R88M-1L(750/1K0/1K5/2K0)30C-S2<br>R88M-1M(400/600/1K0/1K5/2K0)20C-S2<br>R88M-1M90010C-S2  | MS3108E20-4S                   |
|                               |                  | R88M-1L(1K0/1K5)30(H/T)-BS2<br>R88M-1M(1K0/1K5)20(H/T)-BS2<br>R88M-1M90010T-BS2   | MS3108E20-18S                  |
|                               |                  | R88M-1L3K030C-S2<br>R88M-1M3K020C-S2<br>R88M-1M(2K0/3K0)10C-S2  | MS3108E22-22S                  |
|                               |                  | R88M-1L(750/1K0/1K5/2K0/3K0)30C-BS2<br>R88M-1M(400/600/1K0/1K5/2K0/3K0)20C-BS2<br>R88M-1M(900/2K0/3K0)10C-BS2   | MS3108E24-11S                  |
|                               |                  | R88M-1M(100/200/400/750)30(H/T)-BS2   | R88A-CN111B                    |
| Connectors for brake cables   | Motor side       | R88M-1M(100/200/400/750)30(H/T)-BS2   | R88A-CN111B                    |

### Cable shield clamp (spare parts)

| Applicable 1S power cable                          | Model          |
|--|----------------|
| 230 V, 100 W to 750 W models                       | R88A-SC011S-E  |
| 230 V, 1.5 kW model<br>400 V, 600 W to 3 kW models | R88A-SC021S-E  |
| 400 V, 5.5 kW to 15 kW models                      | R88A-SC10CA-PE |

ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.  
To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.