



Specifications of the flat and hollow shaft servo actuator
Low voltage type
SHA20

| APPD | CHKD | BY |
|------------------------|---------------------|------------------------|
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1. Application

This specification applies to the following flat and hollow shaft servo actuator designed for low voltage power supply, DC20V to 90V.

SHA20A***SG-C08*LV-10S17bA-C

SHA20A***CG-C08*LV-10S17bA-C

2. Main Specifications

The main specifications for SHA20A are shown in Table 1 and Table 2.

Table 1 Specifications of SHA20_SG

| Item | Model | SHA20A***SG | | | | |
|--|-------------------|---|------------|------------|------------|------------|
| | | 51 | 81 | 101 | 121 | 161 |
| Max. torque <small>Note 2</small> | Nm | 68 | 96 | 107 | 113 | 120 |
| Allowable continuous torque <small>Note 2</small> | Nm | 16 | 26.6 | 33.4 | 40.2 | 48.0 |
| Max. rotational speed <small>Note 3</small> | r/min | 63 | 40 | 32 | 27 | 20 |
| Torque constant | Nm/A | 6.3 | 10.1 | 12.7 | 15.2 | 20.2 |
| Max. current <small>Note 2</small> | Arms | 14.9 | 13.2 | 12.0 | 10.8 | 9.1 |
| Allowable continuous current <small>Note 2</small> | Arms | 4.7 | 4.7 | 4.7 | 4.7 | 4.4 |
| EMF constant | V/(r/min) | 0.72 | 1.14 | 1.42 | 1.70 | 2.26 |
| Phase resistance (at 20°C) | Ω | 0.222 | | | | |
| Phase inductance | mH | 0.36 | | | | |
| Moment of Inertia (without brake) | kg·m ² | 0.23 | 0.58 | 0.91 | 1.30 | 2.31 |
| Moment of Inertia (with brake) | kg·m ² | 0.26 | 0.65 | 1.00 | 1.44 | 2.55 |
| Reduction ratio | — | 1:51 | 1:81 | 1:101 | 1:121 | 1:161 |
| Permissible moment load | Nm | 187 | | | | |
| Moment stiffness | Nm/rad | 25.2×10 ⁴ | | | | |
| Uni-directional positional accuracy | Arc·Sec | 60 | 50 | 50 | 50 | 50 |
| Encoder type | — | Magnetic absolute encoder | | | | |
| Single motor revolution Encoder resolution | — | 2 ¹⁷ (131,072) | | | | |
| Motor multi revolution counter | — | 2 ¹⁶ (65,536) | | | | |
| Output resolution | Pulse/rev | 6,684,672 | 10,616,832 | 13,238,272 | 15,859,712 | 21,102,592 |
| Mass (without brake) | kg | 2.0 | | | | |
| Mass (with brake) | kg | 2.1 | | | | |
| Motor insulation | — | Insulation resistance : 100MΩ MIN (DC 500V) Dielectric strength : 1200V/1min, Insulation class : A | | | | |

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- Note1) The table shows typical output values of actuator.
 Note2) When combined with a DEP-090-36 (by Copley).
 Note3) When DC48V is supplied into servo-driver.

Table 2 Specifications of SHA20_CG

| Item | Model | SHA20A***CG | | | | |
|--|-------------------|---|------------|------------|------------|------------|
| | | 50 | 80 | 100 | 120 | 160 |
| Max. torque <small>Note 2</small> | Nm | 67 | 96 | 107 | 113 | 120 |
| Allowable continuous torque <small>Note 2</small> | Nm | 15.6 | 26.3 | 33.0 | 39.8 | 48.0 |
| Max. rotational speed <small>Note 3</small> | r/min | 64 | 40 | 32 | 27 | 20 |
| Torque constant | Nm/A | 6.2 | 10 | 12.5 | 15 | 20 |
| Max. current <small>Note 2</small> | Arms | 14.9 | 13.3 | 12.1 | 10.9 | 9.1 |
| Allowable continuous current <small>Note 2</small> | Arms | 4.7 | 4.7 | 4.7 | 4.7 | 4.4 |
| EMF constant | V/(r/min) | 0.70 | 1.12 | 1.40 | 1.68 | 2.25 |
| Phase resistance (at 20°C) | Ω | 0.222 | | | | |
| Phase inductance | mH | 0.36 | | | | |
| Moment of Inertia (without brake) | kg·m ² | 0.21 | 0.53 | 0.82 | 1.19 | 2.11 |
| Moment of Inertia (with brake) | kg·m ² | 0.23 | 0.60 | 0.94 | 1.35 | 2.40 |
| Reduction ratio | — | 1:50 | 1:80 | 1:100 | 1:120 | 1:160 |
| Permissible moment load | Nm | 187 | | | | |
| Moment stiffness | Nm/rad | 25.2×10 ⁴ | | | | |
| Uni-directional positional accuracy | Arc·Sec | 60 | 50 | 50 | 50 | 50 |
| Encoder type | — | Magnetic absolute encoder | | | | |
| Single motor revolution | — | 2 ¹⁷ (131,072) | | | | |
| Encoder resolution | — | 2 ¹⁶ (65,536) | | | | |
| Motor multi revolution counter | — | 2 ¹⁶ (65,536) | | | | |
| Output resolution | Pulse/rev | 6,553,600 | 10,485,760 | 13,107,200 | 15,728,640 | 20,971,520 |
| Mass (without brake) | kg | 2.6(cable rear exit)/2.7(cable side exit) | | | | |
| Mass (with brake) | kg | 2.7(cable rear exit)/2.8(cable side exit) | | | | |
| Motor insulation | — | Insulation resistance : 100MΩ MIN (DC 500V) Dielectric strength : 1200V/1min, Insulation class : A | | | | |

- Note1) The table shows typical output values of actuator.
 Note2) When combined with a DEP-090-36 (by Copley).
 Note3) When DC48V is supplied into servo-driver.

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3. Operable Range

Please refer operable range of each figures for different gear ratio at the under the following conditions. Figure 1 show SHA20A_SG and Figure 2 show SHA20A_CG for each gear ratio. For definitions please refer to the SHA technical documentation.

Conditions: DEP-090-36 Copley driver with DC48V input voltage.

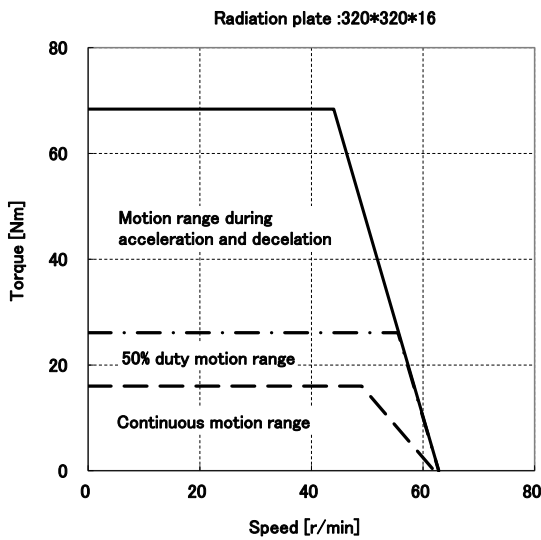


Fig.1-1 SHA20A51SG

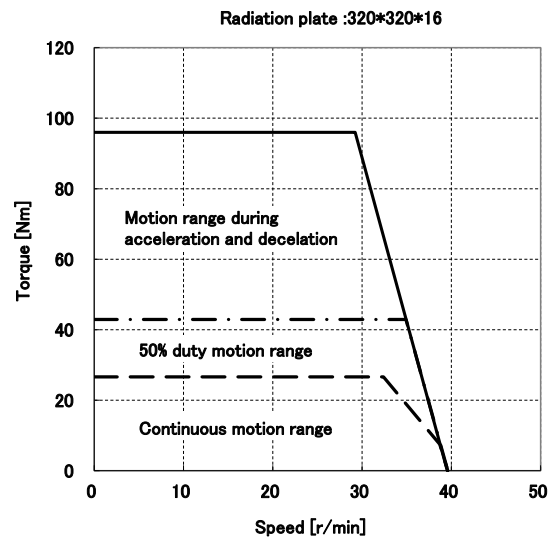


Fig.1-2 SHA20A81SG

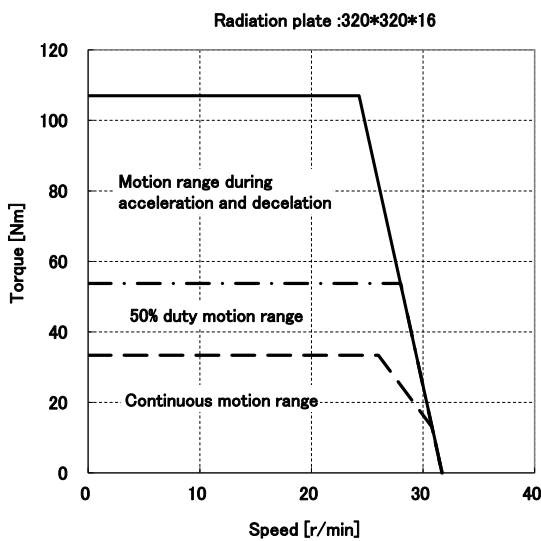


Fig.1-3 SHA20A101SG

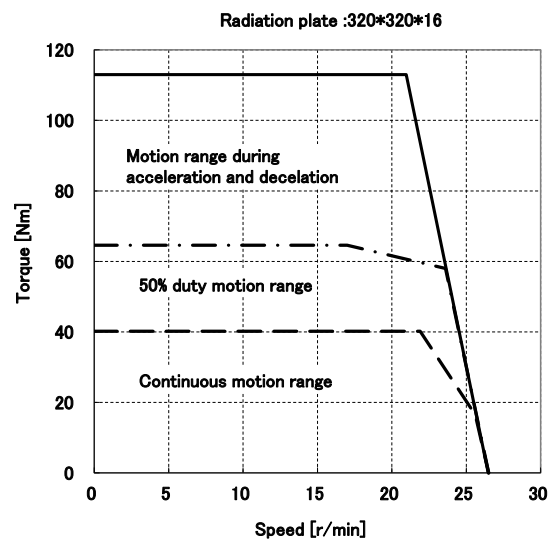


Fig.1-4 SHA20A121SG

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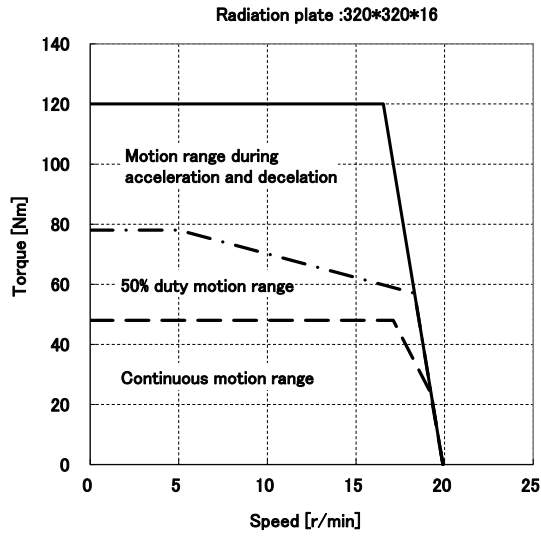


Fig.1-5 SHA20A161SG

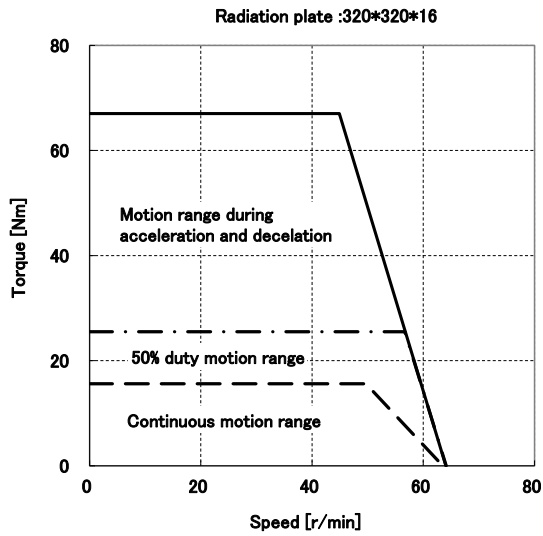


Fig.2-1 SHA20A50CG

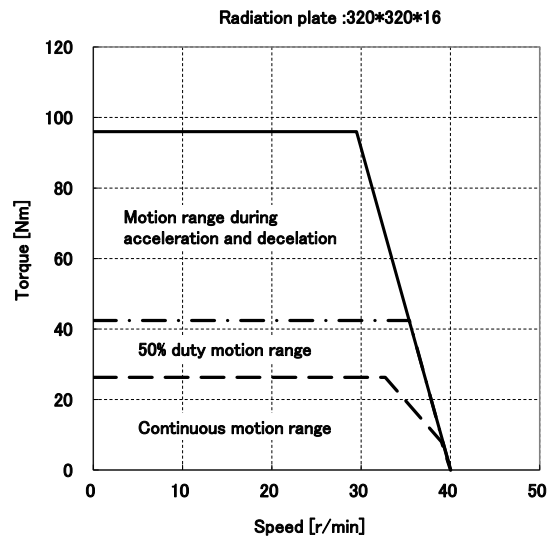


Fig.2-2 SHA20A80CG

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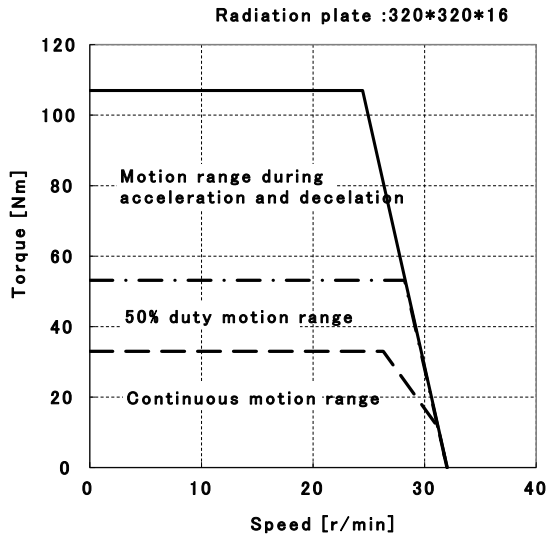


Fig.2-3 SHA20A100CG

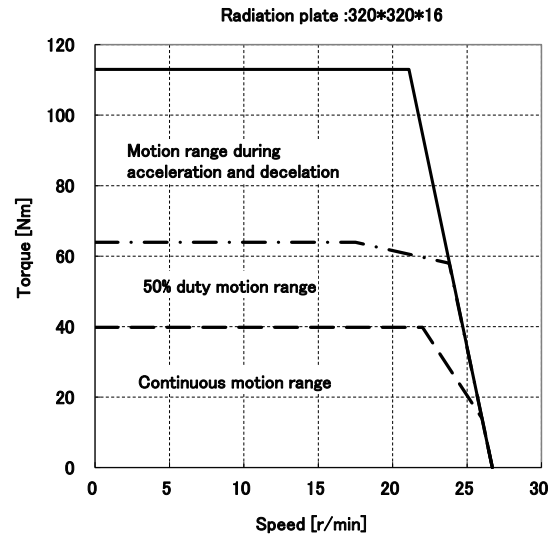


Fig.2-4 SHA25A120CG

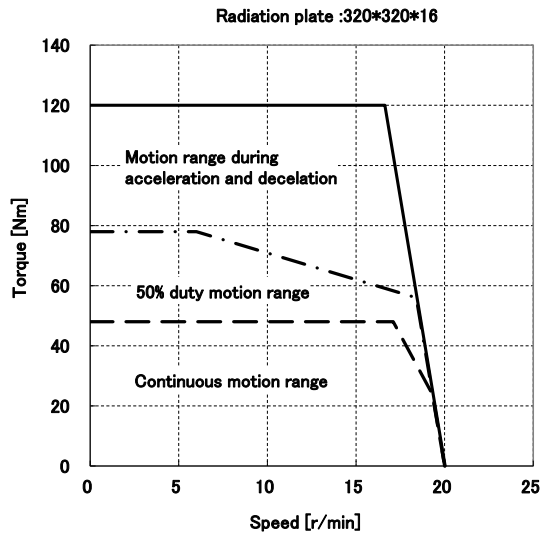


Fig.2-5 SHA20A160CG

4. Others

Please refer to the SHA technical documentation for further information.

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Appendix

1. Comparison of SHA20 Operable range – Low voltage winding type V.S. 200V winding -

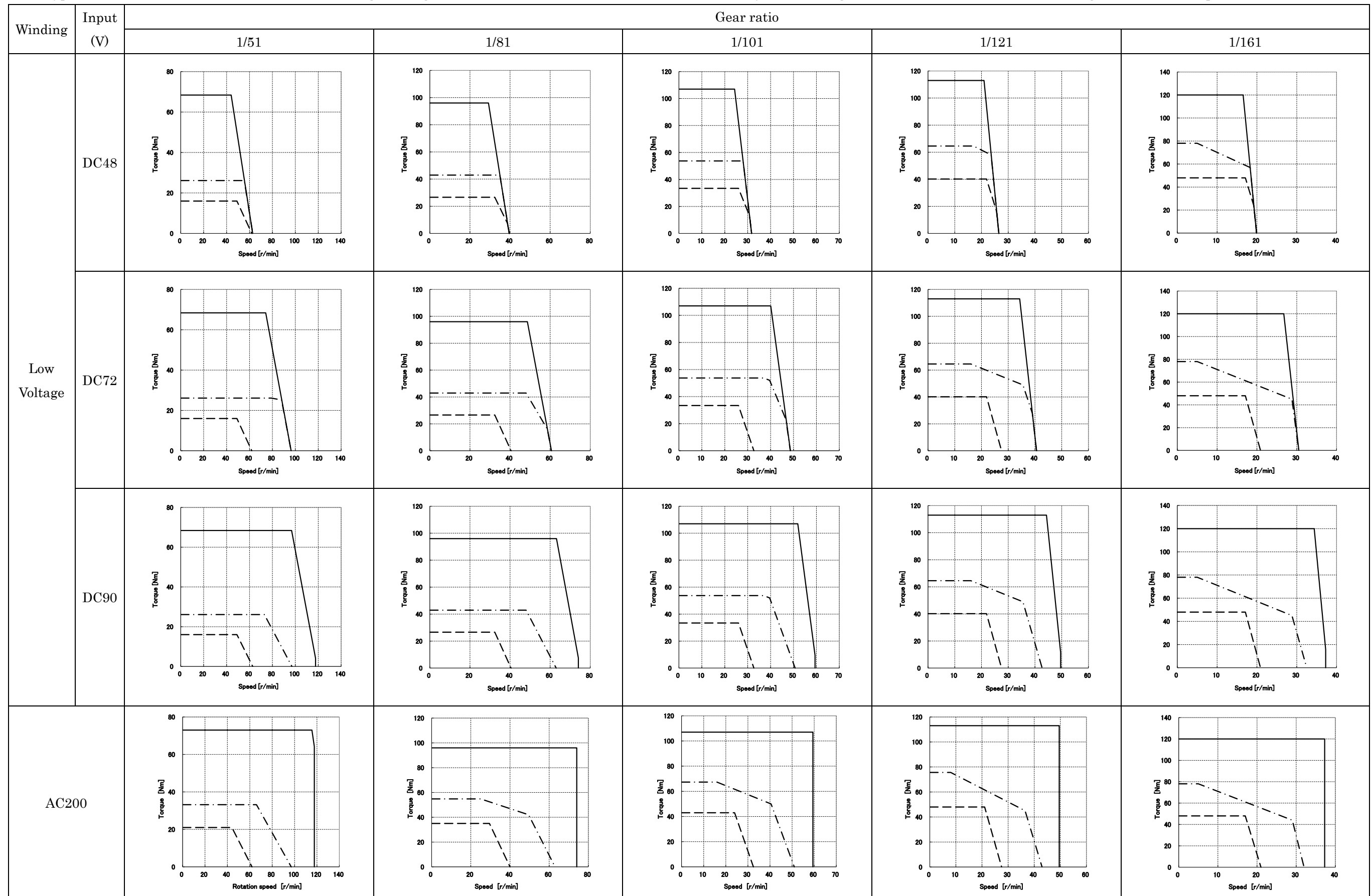
<SG type>

— : Motion range during acceleration and deceleration

- - - : 50% duty motion range

· · · · : Continuous motion range

Radiation plate: 320*320*16



Appendix

<CG type>

—— : Motion range during acceleration and deceleration

- - - - : 50% duty motion range

· · · · · : Continuous motion range

Radiation plate: 320*320*16

