High-speed Rotary Positioner for Welding Machines

**RollerDrive®**

**RW series**

1.5 sec/180° (2000kg)**

*With a moment of inertia of 600kg·m².*
Sankyo's Rotary Positioner for Welding Machines Offers Unsurpassed Speed and Durability

The RollerDrive RW Series is a positioner for welding machines. It holds up against shocks that are caused by high-speed positioning and emergency stopping of heavy loads. The oversized hollow output shaft simplifies wiring and plumbing to the equipment to be mounted on the output shaft. The low-profile body allows for compact equipment design.

Features of the RW Series

- Super high-speed positioning (180° indexing time) : 1.5 sec/2000 kg [RW320]
  ※ With a moment of inertia of 600 kg·m².
- Oversized hollow shaft 360 mm [RW320]
- Thin-profile body 295 mm [RW320]
- Tough against impact from emergency stops

Theory of Operation

The RollerDrive is a positioner that uses a roller gear mechanism, one of the finest motion control mechanisms available. The unit consists of an input shaft (roller gear cam) and a turret (output shaft) that are equipped with roller followers. The roller followers are preloaded by the screw on the input shaft, to eliminate backlash. Our proprietary adjustment mechanism provides the optimum preload. The roller followers in the turret use internal roller bearings to transfer torque while rotating. This mechanism ensures zero backlash, precision, and efficiency while preventing wear. It also provides long-term, consistent accuracy. The servomotor drive delivers unparalleled, ultimate motion control.
**Model Code**

**RW 240 - 120 R 1 T A R**

<table>
<thead>
<tr>
<th>Model</th>
<th>Size</th>
<th>Gear ratio</th>
<th>Position of input reducer access hole</th>
<th>Mounting position</th>
<th>Servomotor position</th>
<th>Type of servomotor</th>
<th>Connector position on servomotor</th>
</tr>
</thead>
<tbody>
<tr>
<td>RW</td>
<td>170</td>
<td>72</td>
<td>R</td>
<td>1</td>
<td>T: Standard</td>
<td>A</td>
<td>R: Special order</td>
</tr>
<tr>
<td></td>
<td>240</td>
<td>216 (High gear ratio)</td>
<td>S</td>
<td>5</td>
<td>U: Mounts on left side</td>
<td>B</td>
<td>S: Special order</td>
</tr>
<tr>
<td></td>
<td>320</td>
<td>120 (High gear ratio)</td>
<td>W</td>
<td>9: Special order</td>
<td>T: Standard</td>
<td>C</td>
<td>V: Special order</td>
</tr>
<tr>
<td></td>
<td></td>
<td>360</td>
<td>Z: For gear ratios 72 and 120</td>
<td></td>
<td></td>
<td>D</td>
<td>W: Special order</td>
</tr>
</tbody>
</table>

*Input gear reducer is mounted on models with high gear ratios.*

### Input Reducer

<table>
<thead>
<tr>
<th>Manufacture</th>
<th>Model No.</th>
<th>Gear ratio</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>NIDEC-SHMPO CORPORATION</td>
<td>VRS-100C-3-S3-38KA35</td>
<td>1/3</td>
<td>8.1 kg</td>
</tr>
<tr>
<td></td>
<td>VRS-140C-3-S3-48KA42</td>
<td>1/3</td>
<td>17 kg</td>
</tr>
</tbody>
</table>

### Position of Input Reducer Access Hole

- **R**
  - On side R
  - W surface on bottom
- **S**
  - On side S
  - R surface on bottom
- **V**
  - On side V
- **W**
  - On side W
- **Z**
  - For gear ratios 72 and 120

### Mounting Position

- **1**
  - Special order
  - Ask Sankyo.
- **5**
  - Special order
  - Motor not listed for options A, B, C, D, or E.
- **9**
  - Special order
  - Motor not listed for options A, B, C, D, or E.

### Type of Servomotor

<table>
<thead>
<tr>
<th>Code</th>
<th>Model</th>
<th>Manufacture</th>
<th>Model No.</th>
<th>Capacity (kw)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>RW170</td>
<td>Yaskawa Electric (Σ-V)</td>
<td>SGMGV-30A3A2E</td>
<td>2.9</td>
</tr>
<tr>
<td></td>
<td>RW240</td>
<td>Yaskawa Electric (Σ-7)</td>
<td>SGMGV-44A3A2E</td>
<td>4.4</td>
</tr>
<tr>
<td></td>
<td>RW320</td>
<td>Yaskawa Electric (Σ-7)</td>
<td>SGMGV-75A3A2E</td>
<td>7.5</td>
</tr>
<tr>
<td>B</td>
<td>RW170</td>
<td>Yaskawa Electric (Σ-7)</td>
<td>SGM7G-30A7A2E</td>
<td>2.9</td>
</tr>
<tr>
<td></td>
<td>RW240</td>
<td>Yaskawa Electric (Σ-7)</td>
<td>SGM7G-44A7A2E</td>
<td>4.4</td>
</tr>
<tr>
<td></td>
<td>RW320</td>
<td>Yaskawa Electric (Σ-7)</td>
<td>SGM7G-75A7A2E</td>
<td>7.5</td>
</tr>
<tr>
<td>C</td>
<td>RW170</td>
<td>Mitsubishi Electric (J3)</td>
<td>HP-SF3528J</td>
<td>3.5</td>
</tr>
<tr>
<td></td>
<td>RW240</td>
<td>Mitsubishi Electric (J4)</td>
<td>HP-SF5028J</td>
<td>5.0</td>
</tr>
<tr>
<td></td>
<td>RW320</td>
<td>Mitsubishi Electric (J4)</td>
<td>HP-SF7028J</td>
<td>7.0</td>
</tr>
<tr>
<td>D</td>
<td>RW170</td>
<td>Mitsubishi Electric (J4)</td>
<td>HG-SR3528J</td>
<td>3.5</td>
</tr>
<tr>
<td></td>
<td>RW240</td>
<td>Mitsubishi Electric (J4)</td>
<td>HG-SR5028J</td>
<td>5.0</td>
</tr>
<tr>
<td></td>
<td>RW320</td>
<td>Mitsubishi Electric (J4)</td>
<td>HG-SR7028J</td>
<td>7.0</td>
</tr>
<tr>
<td>E</td>
<td>RW170</td>
<td>FANUC</td>
<td>arF12/4000B(A06B-2243-B400)</td>
<td>3.0</td>
</tr>
<tr>
<td></td>
<td>RW240</td>
<td>FANUC</td>
<td>arF22/4000B(A06B-2248-B400)</td>
<td>4.0</td>
</tr>
<tr>
<td></td>
<td>RW320</td>
<td>FANUC</td>
<td>arF30/4000B(A06B-2253-B400)</td>
<td>7.0</td>
</tr>
<tr>
<td>X</td>
<td></td>
<td>Same for all sizes</td>
<td>Motor not listed for options A, B, C, D, or E.</td>
<td></td>
</tr>
</tbody>
</table>

### Connector Position on Servomotor

*The motor listed above comes with a brake.*
# RollerDrive Specifications

## Sizes

<table>
<thead>
<tr>
<th></th>
<th>RW170</th>
<th>RW240</th>
<th>RW320</th>
</tr>
</thead>
<tbody>
<tr>
<td>Allowable loading capacity (kg)</td>
<td>2000</td>
<td>5000</td>
<td>9000</td>
</tr>
<tr>
<td>Allowable moment load output shaft (N·m)</td>
<td>5500</td>
<td>8800</td>
<td>10700</td>
</tr>
<tr>
<td>Output shaft runout (axial/radial) (μm or less)</td>
<td>10</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Angular repeatability accuracy (mm)</td>
<td>±0.05(R=1000mm)</td>
<td>±0.05(R=1000mm)</td>
<td>±0.05(R=1000mm)</td>
</tr>
<tr>
<td>Rotating Angle (deg)</td>
<td>0~360</td>
<td>0~360</td>
<td>0~360</td>
</tr>
<tr>
<td>Gear ratio</td>
<td>72</td>
<td>216</td>
<td>120</td>
</tr>
<tr>
<td>Maximum Speed (min⁻¹)</td>
<td>35(210°/sec)</td>
<td>13.8(33.3°/sec)</td>
<td>8.3(50°/sec)</td>
</tr>
<tr>
<td>Internal moment of inertia on motor shaft (kg·m²)</td>
<td>0.00388</td>
<td>0.00173</td>
<td>0.00614</td>
</tr>
<tr>
<td>Weight (Motor not included) (kg)</td>
<td>120</td>
<td>128.1</td>
<td>650</td>
</tr>
</tbody>
</table>

*Weight for RW320 (high gear ratio) Yaskawa Motor.

## RW170

<table>
<thead>
<tr>
<th>180° Indexing time</th>
<th>Weight of load</th>
<th>Moment of inertia</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.5sec</td>
<td>700kg</td>
<td>86.9kg·m²</td>
</tr>
<tr>
<td>2.0sec</td>
<td>1000kg</td>
<td>124.2kg·m²</td>
</tr>
<tr>
<td>3.0sec</td>
<td>2000kg</td>
<td>248.3kg·m²</td>
</tr>
</tbody>
</table>

## RW240

<table>
<thead>
<tr>
<th>180° Indexing time</th>
<th>Weight of load</th>
<th>Moment of inertia</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.5sec</td>
<td>1200kg</td>
<td>325kg·m²</td>
</tr>
<tr>
<td>2.0sec</td>
<td>2000kg</td>
<td>541.7kg·m²</td>
</tr>
<tr>
<td>3.0sec</td>
<td>5000kg</td>
<td>1354.2kg·m²</td>
</tr>
</tbody>
</table>

## RW320

<table>
<thead>
<tr>
<th>180° Indexing time</th>
<th>Weight of load</th>
<th>Moment of inertia</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.0sec</td>
<td>2000kg</td>
<td>993.3kg·m²</td>
</tr>
<tr>
<td>3.0sec</td>
<td>4000kg</td>
<td>1986.7kg·m²</td>
</tr>
<tr>
<td>4.5sec</td>
<td>9000kg</td>
<td>4470kg·m²</td>
</tr>
</tbody>
</table>

### Oil lubrication

These units use high-performance lubrication oil. The lubrication oil will remain chemically and thermally stable, but should be replaced every 3,000 hours of operation to prolong the life of the unit. Use the oil level gauge to check the condition of the lubrication. Check lubrication when the unit has stopped. If the oil appears low or discolored, change it with fresh oil regardless of the hours of operation. Occasionally, air bubbles may form in the oil during operation but this is natural and not a quality concern.

*Use the following lubricant for refill.

**Standard lubricant**: Mobil SHC629 (VG150)

Use of different oil can cause wearing or other problems.

## Oil Volume by Mounting Positions

<table>
<thead>
<tr>
<th>Mounting position</th>
<th>1</th>
<th>5</th>
<th>9</th>
</tr>
</thead>
<tbody>
<tr>
<td>RW170</td>
<td>3ℓ</td>
<td>3ℓ</td>
<td></td>
</tr>
<tr>
<td>RW240</td>
<td>6ℓ</td>
<td>7ℓ</td>
<td></td>
</tr>
<tr>
<td>RW320</td>
<td>15ℓ</td>
<td>14ℓ</td>
<td></td>
</tr>
</tbody>
</table>

Special order: Ask Sankyo.
**RW240 Standard Gear Ratio Model [Gear ratio=120]**

Unit: mm

- Motor base access holes are not provided on side R.
- The customer must supply their own servo motor.

**RW240 High Gear Ratio Model [Gear ratio=360]**

Unit: mm

- Motor base access holes are not provided on side R.
- The customer must supply their own servo motor.
- Use the product code to specify the position of the access hole for the input reducer. (Refer to P.2)
**RW320 Standard Gear Ratio Model [Gear ratio=120]**

- Motor base access holes are not provided on side R.
- The customer must supply their own servo motor.

**RW320 High Gear Ratio Model [Gear ratio=360]**

- Motor base access holes are not provided on side R.
- The customer must supply their own servo motor.
- Use the product code to specify the position of the access hole for the input reducer. (Refer to P.2)
- The model number and dimensions of the input reducer depend on the manufacturer of the motor. (Refer to P.2)
## Model Sizing Form for the **RollerDrive® RW** series

### Customer's Company, Department TEL

### Address FAX

### Name Email

#### A ) Application

<table>
<thead>
<tr>
<th>Table diameter</th>
<th>C ) Motion pattern</th>
</tr>
</thead>
<tbody>
<tr>
<td>[mm]</td>
<td>Index period (angle of rotation per cycle) [deg]</td>
</tr>
<tr>
<td>Table mass</td>
<td>Indexing time (time to move the indexing angle) [sec]</td>
</tr>
<tr>
<td>P.C.D of fixtures</td>
<td>Dwell time [sec]</td>
</tr>
<tr>
<td>Mass per fixture</td>
<td>Cycle time (indexing time + dwell time) [sec]</td>
</tr>
<tr>
<td>Number of fixtures</td>
<td>Allowable e-stop time or angle [sec]</td>
</tr>
<tr>
<td>P.C.D of workpieces</td>
<td>D ) Specified servomotor</td>
</tr>
<tr>
<td>Mass per workpiece</td>
<td>[mm]</td>
</tr>
<tr>
<td>Number of workpieces</td>
<td>[kg]</td>
</tr>
<tr>
<td>Total payload</td>
<td>[kg]</td>
</tr>
<tr>
<td>Total moment of inertia</td>
<td>[kg-mm]</td>
</tr>
</tbody>
</table>

### Service Network

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