Alliance Partner Products

Alliance Partner Products are expressly selected by IKO from the industrial marketplace in Japan because of their originality, unique features, advanced technology and high standards. IKO will strive to introduce such outstanding products from Japan along with IKO linear and bearing products to the worldwide marketplace through our global sales network.

Type of Alliance Partner Products

1. Ball Transfers
2. Couplings
3. Linear Bushings
4. Linear Clampers
5. Spherical Rolling Joints
What is a Ball Transfers?
Ball transfer units consist of a large load-ball that sits upon small balls encapsulated in a hemispherical cup. Ball transfers fall into two categories, Ball-up type and Ball-down type, like a caster. Also, in some applications, they are used to support from the side as a guide. Their design creates a multi-directional, material-handling system that enables heavy loads to be moved smoothly along with minimal effort and friction.

They are designed to assist in transferring, directing, or facilitating loading of products in workplaces such as warehouses, production lines, port cargo handling facilities, semiconductor production systems, FPD production systems, PV solar glass handling production lines, medical equipment, research laboratories, under-floor facilities of buildings and offices manufacturing or freight transfer. Similar to a roller systems, the balls are installed within the table or work surface and the product rolls over the balls and allows for turning, lifting, directing or transferring from one conveyor line to another.

People with lifting or carrying restrictions resulting from back, neck, shoulder, heart, and various repetitive strain injuries may benefit from the use of ball transfers technology if there is a need for lifting or handling products on a repetitive basis within the workplace.

1.1. Heavy-Load Ball Transfers

What is an Air Ball Lifter?
Pneumatic Air Ball Lifters have a unique construction – a combination of a high precision-machined ball transfer with an air cylinder. This unique device uses compressed air to lift a load/tool from the table surface position and rotate it in any 360 degree direction in a horizontal plane; an economical labor saving unit. Roll on-Roll off facility dramatically reduces changeover times.

1.2. Air Ball Lifter

Application Examples
Clean room Ball Transfers are used extensively in FPD (Flat Panel Display), PV (Photovoltaic) production lines all over the world due to its innovative technology for alignment and positioning of glass substrates.

Ball Transfers have been evolving continuously with a new added-value to satisfy panel makers to improve products yield potential. After it was successfully proven in LCD post-processing, the application expanded to a variety of new applications. Especially in recent years, the demand for pre-processing has increased. At present, we have cleared the fundamental demand for clean room applications and, to meet our customer specific requirements, we developed a low-cost molded type with superior performance, in addition to machine cut Ball Transfers.

**1-3. Cleanroom Type Ball Transfers**

These unique, original, compact and durable Special Wheels are used underneath car turn tables as a guide, as well as under extreme loads and environments.

Head options: material, painting, quenching and redesigning available upon request.

**1-4. SW Type Special Wheel**

These unique, original, compact and durable Special Wheels are used underneath car turn tables as a guide, as well as under extreme loads and environments.

Head options: material, painting, quenching and redesigning available upon request.
High-Gain Rubber Type Coupling

Recent high Using the latest FEM analysis techniques, the construction of the anti-vibration rubber is designed to yield high torsional stiffness and torque.

1. Reduction of Stabilization Time
   - Increased motor gain results in a reduction in stabilization time.
   - **Productivity can be improved**

   ![Bode plot](image1)

   **Gain and stabilization time**

   ![Gain and stabilization time](image2)

   **Measurement of stabilization time, positioning accuracy and overshoot**

<table>
<thead>
<tr>
<th>Gain*</th>
<th>XG2 series</th>
<th>XG series</th>
<th>Disc type</th>
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<tbody>
<tr>
<td>25</td>
<td>12</td>
<td>12</td>
<td>12</td>
</tr>
<tr>
<td>Stabilization time (ms)</td>
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<td>12</td>
<td>12</td>
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<td>Overshoot (µm)</td>
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<td>Stabilization time (ms)</td>
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<tr>
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<tr>
<td>Stabilization time (ms)</td>
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<tr>
<td>Overshoot (µm)</td>
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</tr>
</tbody>
</table>

   *Values (1-32) are after adjustment of all gains including Position Control Gain and Speed Control Gain

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2. Supressing Speed Unevenness
   - Suppressing speed and torque unevenness without occurring by misalignment.

   ![Comparison of rated torque](image3)

3. Suppression of Vibration
   - Damping ratio of XG2 series is high, enabling rapid absorption of vibration.

4. Lower Sound
   - Able to reduce actuator drive sound.

5. High Torque
   - Usage under the condition of higher torque than disc type and Slit type is allowed.
Linear Bushings

High grade engineering plastic is used in the construction of the flange to achieve strength whilst offering a more cost effective option than steel type Linear Bushings. Since the internal structure is comparable to that of a conventional linear bushing minimal design changes are needed to incorporate this product.

Linear Clamps

Linear clamps are used for static holding applications. Contact surfaces are adapted perfectly to each Linear Guide manufacturer’s profile.

Spherical Rolling Joints

Provide high precision and rigidity with zero clearance rolling guideways. Although the integration of spherical rolling joints provide 2 or 3 degrees of freedom, a requirement for use in parallel mechanism, the result is complex and bulky.

Sliding spherical rolling joints having multiple degrees of freedom are also available but have negative characteristics that include frictional resistance and internal clearance problems.