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A Detailed Guide to Cam Indexers

The cam indexer, also known as an intermittent cam indexer, is one of the essential components in automated machinery. Through precise cam design, it achieves specific intermittent motion, making it widely used in various industrial automation equipment. Due to its high precision and durability, the cam indexer plays a crucial role in improving production efficiency and product quality.

Today's article will delve into the working principle, power source, operational characteristics, lifespan, precision performance, advantages and disadvantages, application range, and usage precautions of cam indexers, helping you better understand the function and value of this core component.

Working Principle

The cam indexer primarily operates through cam rotation, which drives the output shaft (roller turret assembly) to achieve intermittent motion. When an external motor drives the cam, the output shaft exhibits equally spaced rotational motion or a fixed cyclic rotation and vertical movement. Depending on the operating mode, it can perform indirect rotational movements, lifting movements, or a combination of both. The swing operation uses a high-reliability roller cam for high-speed positioning and durability.

Power Source

Cam indexers are usually driven by an external motor and controlled through a reducer or servo motor to ensure smooth and precise operation.

Characteristics

The cam indexer has a purely mechanical structure made from high-grade alloy steel with precise carburizing and heat treatment, giving it robust construction. The output shaft and cam bearings operate immersed in oil, effectively reducing wear during high-speed operation, thereby extending the service life, which generally lasts up to 10 years. The rotational precision typically reaches $\pm 20 \sim \pm 40$ seconds, and the repeatability accuracy with lifting functionality can be controlled within 0.1mm.

Advantages of Cam Indexers

1. High Indexing Accuracy: The mechanical structure design ensures high precision indexing.
2. Simple and Easy to Maintain: Compared to electronically controlled indexing methods, the mechanical transmission mechanism is easier to maintain.
3. Reliable Structure and Long Lifespan: The roller gear cam indexing mechanism has a simple structure, high reliability, and a nearly zero failure rate.
4. Smooth Operation, Environmentally Friendly, No Noise: It operates without vibration and noise, providing environmental benefits.
5. Stable Operation: More stable and reliable than pneumatic transmission mechanisms.
6. Flexible Installation: Can be assembled and installed in any direction, providing convenience.

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Disadvantages of Cam Indexers

1. Fixed Positions: The cam indexer has fixed positions and cannot provide flexible indexing; typically, the number of positions is limited to 12 or fewer.
2. High Processing Precision Required: The cam profile requires high precision, which must be processed using CNC machines.
3. Limited Follower Stroke: The stroke of the follower cannot be too large; otherwise, the cam design becomes cumbersome.

Application Range of Cam Indexers

Cam indexers are widely used in various automated equipment, including automatic machine tools, light industrial machinery, textile machinery, printing machinery, food machinery, packaging machinery, and various electromechanical integrated products.

Precautions for Use

1. The standard method involves connecting an induction motor with a reducer or directly applying a servo motor, driven by belts and pulleys. The belt should not be too tight.
2. During installation, a torque limiter must be added, and the slip torque should be adjusted appropriately to prevent damage from collisions.
3. It is not recommended to connect the motor directly to the input shaft to avoid input shaft breakage or motor damage due to improper adjustments.
4. During operation, hands or other objects should be kept away from the rotating radius of the cam indexer to prevent accidents.

Conclusion

As a key component in automation equipment, cam indexers provide stable performance and high-precision motion control, making them crucial in industrial automation. Choosing the right cam indexer can significantly improve the operational efficiency and precision of equipment. If you wish to learn more about how our Hollow Rotary Platforms can enhance the performance of your equipment, please feel free to [contact us](#).