

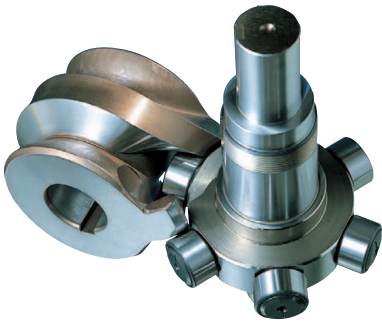
# SANDEX

- INDEXING DRIVE
- OSCILLATING HANDLER
- PARTS HANDLER
- TORQUE LIMITER



**Reliable Cam System Solutions**

# DESCRIPTION



## SANKYO's Advanced CAM Technology

As the attention shifts towards global environmental issues, "Ecology" and "Economy" have become key factors. Today's manufacturing processes is demanding precise and highly reliable cam motion.

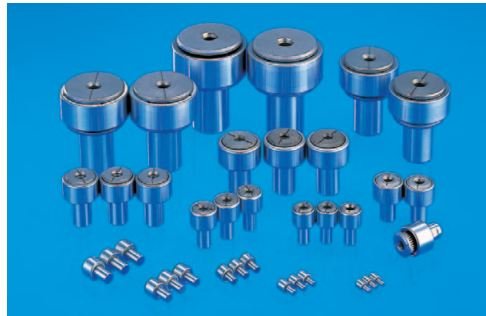
SANKYO SEISAKUSHO CO. developed the first intermittent indexing device using the roller gear cam mechanism in Japan. Sankyo currently offers a wide range of indexers from the smallest to the largest indexers available serving the world markets. SANKYO's patent cam-driven units are known as "SANDEX™". Sankyo has a large number of "SANDEX" units designed and installed in manufacturing applications around the world. Sankyo's assembly base machines incorporates the highest developed cam technology known today providing precise and complete motion to reach high speed with smooth cam motions.

SANKYO, while developing new products for the world markets, also maintains a total production system encompassing every conceivable process from production environment to precision cam followers and dedicated sub-micron tolerance cam grinding machines. The entire process is designed to ensure that Sankyo's advanced cam technology delivers the industry with the "best possible motion".

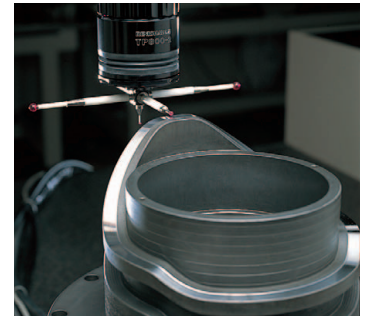
Please refer to our homepage



<http://www.sankyo-seisakusho.co.jp/english/index.html>



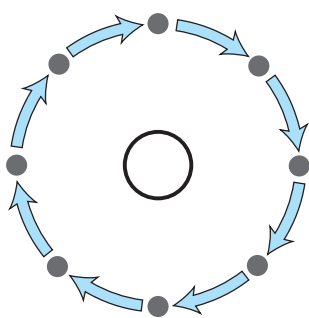
SANKYO Cam follower



High accuracy inspection

### Basic Movement

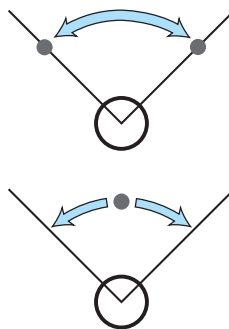
#### ●Indexing drives



- Indexing drives stop and move or "index" intermittently according to the following pattern : dwell, index, dwell, index.
- One cycle, that is one index and one dwell, usually requires one full turn of the input shaft.
- Indexing drives can be used to drive rotary type automated machinery with a turntable attached to the output shaft.
- Indexing drives can also be used to drive in-line automated machinery such as conveyer belts.



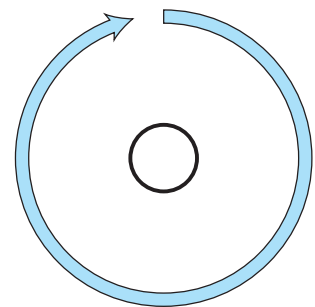
#### ●Oscillating drives



- An oscillating drive has an output shaft that reciprocates back and forth motions or "swings" when input with a continuous and consistent rotation.
- The oscillating drive can also be synchronized to swing while an indexing drive is indexing or in a dwell phase. This greatly improves the reliability and speed of existing automated machinery.
- Oscillating drives can be used to carry work in a straight line. In this case, the movement of the oscillating drive is transmitted by an oscillating arm attached to the output shaft. The end of this arm has a roller which rolls a straight guide.



#### ●Roller drives



- Roller drives are speed reducers best suited for machinery where smooth rotation and high torque output is required without any drive loss or backlash.
- Roller drives can also be used for tables requiring multiple indexes or to freely index or position the final point.



# INDEXING DRIVES

Numerous types of indexing drives have been designed to perform a variety of tasks. As the demand grows for greater precision and higher speeds, the ability to incorporate accuracy into the formula is as important as generating the intermittent motion. SANKYO's "SANDEX" incorporates rigidity and zero backlash that makes the "SANDEX" the choice of Engineers around the world.

## Alpha Series

SANKYO's Alpha Series Indexer is an all-in-one indexing drive complete with a geared motor mounted directly on the input shaft. The indexing motion comes from the same roller gear cam mechanism found in all of SANKYO's "SANDEX" products. As a result, you get a user-friendly low maintenance indexer with all qualities of a "SANDEX". Sankyo's Alpha Series comes with a frequency inverter allowing controlled starts and stops eliminating the need for a clutch/brake mechanism. The Alpha Series has fewer mechanical components for less cost and maintenance.

Model	7AD	9AD	11AD	15AD	19AD	23AD	33AD	45AD
Geared motor power (kW)	0.1 / 0.2	0.2 / 0.4	0.4 / 0.75	0.75 / 1.5	1.5 / 2.2	2.2 / 3.7	5.5 / 7.5	11 / 15
Timing cam and photo switch	Can be installed up to 3 sets on input shaft							
Optional torque limiter	7TAD	9TAD	11TAD	15TAD	19TAD	23TAD	—	—
Number of stops	2, 3, 4, 5, 6, 7, 8, 10, 12, 15, 16, 20, 24, 32							
Input shaft speed (rpm)	0~200							

Movement



Option



9AD



with Torque Limiter



with Timing Cam

## ECO Series

SANDEX ECO series is designed to be an economical and ecological index drive while surpassing all the advantageous features from current SANDEX range. While ECO series keeps its reliability, high-speed performance, and rigid structure, it also achieves a cleaner and easier to use interface. In detail, the nickel-plated housing has a flat and smooth shape, which contributes to its clean surface. The output shaft is a flange with integrated shaft that many accessories, e.g. table, arm, or sprocket, can be easily mounted on. Grease lubrication allows ECO series maintenance-free operation. Furthermore, a revised design gives economic advantage to the ECO series. In order to provide the ideal indexing drive, peripheral equipment is also available for the ECO series.

Housing size	2.8, 3.8, 4.5, 6, 7, 8, 11
Number of stops	2, 3, 4, 6, 8, 12, 16, 20, 24, 30, 32, 36, 40, 48
Input shaft speed (rpm)	0~300

Movement



Option



4.5ED

## Options

The optimum performance for an automated machine requires more than designing the drive unit. The best cam drive cannot serve the overall performance of the machine if the other elements are compromised in design.

For that reason, Sankyo also develops options for users to develop ideal input and output drive systems—clearly the best way to provide maximum performance of any "SANDEX".



with Torque Limiter



with Reducer



with Induction Motor

## D Series

SANKYO's D Series is ideal for high-speed applications due to its small output shaft inertia value during indexing. Featuring a roller gear cam and cam follower. The D Series unit can be utilized in a number of applications, such as conveyor drives and rotary automation machines. With the installation of an overload protection device "torque limiter" on the output shaft, it provides a higher degree of reliability and safety.

Housing size	4.5, 6, 7, 8, 11, 14, 17, 18
Type D Number of stops	2, 3, 4, 5, 6, 8, 10, 12, 15, 16, 20, 24, 30, 32, 36, 40, 48
Type E Oscillating angle (deg)	5, 10, 15, 30, 45, 60, 90
Type R Reduction ratio	3, 4, 5, 6, 8, 10, 12
Input shaft speed (rpm)	0~700



8D

## DF Series

SANKYO's DF Series has a very rigid output shaft. Dial tables, gears, sprockets, etc. can be mounted directly on the flange surface.

The DF Series has user-friendly features, such as

- An optional hollow-output shaft
- A fixed-shaft in the center of the output shaft
- Easy mounting of optional equipment.

Housing size	4.5, 6, 7, 8, 11, 14, 18, 25, 30, 35, 40, 45, 65
Type DF Number of stops	2, 3, 4, 5, 6, 8, 10, 12, 15, 16, 18, 20, 24, 30, 32, 36, 40, 48
Type EF Oscillating angle (deg)	5, 10, 15, 30, 45, 60, 90
Type RF Reduction ratio	3, 4, 5, 6, 8, 10, 12
Input shaft speed (rpm)	0~700 (0~200 for size bigger than 30)



8DF

## DT Series

SANKYO's large diameter table is highly rigid and has a low profile. The center of the table has a rigid hollow fixed shaft. Various attachments can be directly mounted to the side surfaces of the housing. SANKYO's DT Series provides multiple indexes. Therefore, it is best suited for base machines, such as rotary-type automated assembly machines, wrapping machines, and other applications with multiple tasks.

Housing size	8, 11, 14, 18, 25, 35, 45, 55, 65, 80
Type DT Number of stops	4, 5, 6, 8, 10, 12, 15, 16, 20, 24, 30, 32, 40, 48, 60, 64, 72, 96
Type RT Reduction ratio	4, 5, 6, 8, 10, 12, 16, 20, 24
Input shaft speed (rpm)	0~200



11DT  
with Reducer

## Miniature Series

The Miniature series became the world's smallest indexing drive to use a roller gear cam mechanism. The small diameter cam follower used in this model is an original Sankyo design. The housing construction is also reduced in weight and size.

Not everything has been miniaturized. The miniature type kept pace with the demands for performance and speed by using another Sankyo design innovation, the SMS-3 cam curve (Sankyo Modified Sine). This model is ideal for a variety of peripheral equipment such as indexing lightweight tables and work handling.

Housing size	2.8, 3.8
Type D Number of stops	2, 3, 4, 5, 6, 8, 10, 12
Type E Oscillating angle (deg)	5~90
Input shaft speed (rpm)	0~500 (400 for Type E)



2.8D



# OSCILLATING HANDLER

The oscillating parts handler, offers a two-dimensional movement of rotation and lift.

SANKYO's oscillating handler features a solid cam mechanism unsurpassed in terms of Precision, Speed, Durability, and Function.

## FN Series

Featuring a roller gear cam and face-groove cam in SANKYO's pick and place units, the FN Series guarantees high speed and accuracy. SANKYO's FN Series is a compact housing design which provides more flexibility with more choices of timing, as well as, movement over wide rotating angles. It is best suitable for conveying a work-piece from a conveyor to a worktable or a similar work area. The FN Series can also be utilized as indexing handlers where intermittent rotation and lift motions are to be combined.

Housing size	10FN	10FB	12FA	16FN	22FN
Lifting stroke(mm)	max. 30	max. 35	max. 40	max. 50	max. 80
Oscillating angle(deg)	0~90	0~180	0~90	0~90	0~90

Option



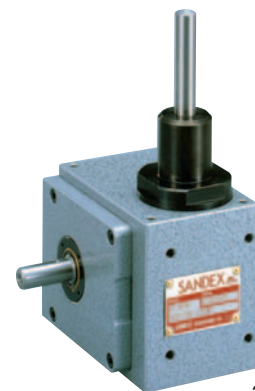
10FN  
with Reducer

## FN(Miniature) Series

The new FN (Miniature) series cam-actuated pick & place unit was developed as a small size oscillating handler unit for rotary/liner motions. It is especially suitable for space saving type production systems. It is also enhanced with a maximum oscillating angle 180° and maximum 200 rpm for both oscillating and indexing handler.

Housing size	3.8FN	4.5FN	6FN
Lifting stroke(mm)	max. 16	max. 20	max. 25
Oscillating angle(deg)	0~180	0~180	0~180
Number of stops	2, 3, 4, 6, 8	2, 3, 4, 6, 8	2, 3, 4, 6, 8
Input shaft speed(rpm)	max. 200	max. 200	max. 200

Option



3.8FN

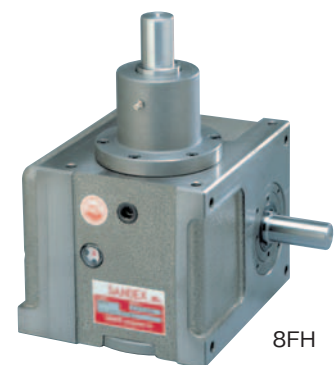
## FH Series

The FH series cam-actuated pick & place unit was developed as a high-speed indexing handler unit for rotary/liner motions. It is especially suitable for the production system requiring fast cycle times.

It is possible for the FH series to rotate up to 600rpm, which is the highest speed ever for a pick & place unit. High accuracy and reliability are also excellent characteristics of the FH series.

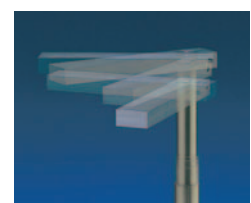
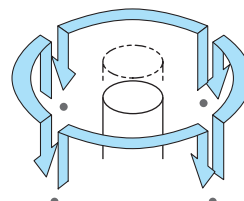
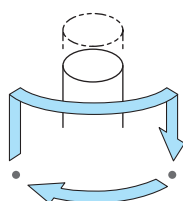
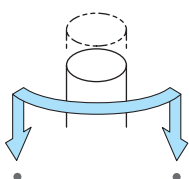
Housing size	6FH	8FH
Lifting stroke(mm)	max. 10	max. 10
Number of stops	8, 12, 16	8, 12, 16
Input shaft speed(rpm)	max. 600	max. 600

Option



8FH

## Basic Movement



Rotary/Linear motion

# PARTS HANDLER

The parts handler is a pick and place unit that offers a two-dimensional linear movement. SANKYO's Parts Handler consists of two sets of roller gear cam mechanisms that can be timed independently to produce separate movements over the same two-dimensional planes. It can also be synchronized with external equipment for advanced handling operations, such as synchronized operation to the moving speed of a conveyor or carrying work to a rotating table.

## GY Series

SANKYO's GY Series is a thinner type of linear motion pick & place unit. It has a long stroke and high positioning accuracy. In addition, the housing can hold a motor and timing cam, making this model ideal for automated lines and light duty work.

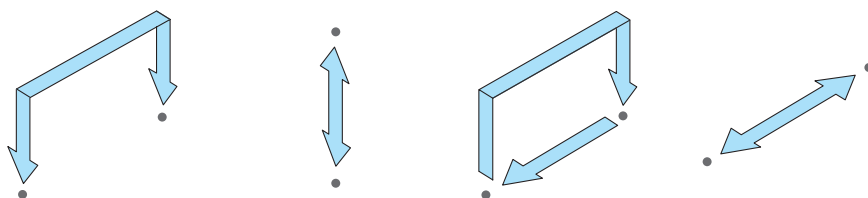
Housing size	4GY	5GY	6GY	8GY	8GYII
Lifting stroke (mm)	max. 30	max. 40	max. 50	max. 65	max. 100
Forward stroke (mm)	max. 70	max. 100	max. 150	max. 200	max. 300

Option



5GY  
with Motor

## Basic Movement



Linear/Linear motion

# TORQUE LIMITER

SANKYO's torque limiter utilizes a highly reliable separated ball & ball pocket (roller & roller pocket) mechanism. This mechanism offers high tripping torque accuracy and easy-to-adjust torque setting. It also features optimum characteristics to protect machines against excessive torque loads without losing efficiency.

## TF Series

SANKYO's TF Series is the overload protection device that operates only in the rotating direction. It incorporates many features such as a very compact design, accurate torque transmission, superior motion characteristics and no backlash. The flange surface makes it possible to directly mount to tables, gears, sprockets, etc. SANKYO's TF Series overload protection device has a long life with little maintenance.

Model	4TF	5TF	6TF	7TF	8TF	11TF	14TF	18TF
Tripping torque (N·m)	0.3~4.5	0.8~18	2~50	22~400	50~600	80~1200	110~1800	400~5000
Allowable speed (rpm)	2000	1600	800	600	400	300	250	180



7TF

## TC Series

SANKYO's TC Series overload protection device uses the interval of two axes and operates only in the rotating direction. The radial direction of the pre-load of the ball bearing for transmitting rotation ensures sufficient rigidity in the rotating direction. The TC Series also functions as a coupling to absorb misalignment between two shafts.

Model	4TC	5TC	6TC	7TC	8TC	11TC	14TC	18TC
Tripping torque (N·m)	0.3~4.5	0.8~18	2~50	20~350	40~450	70~1000	100~2000	700~5000
Allowable speed (rpm)	2000	1600	1000	700	500	400	300	200

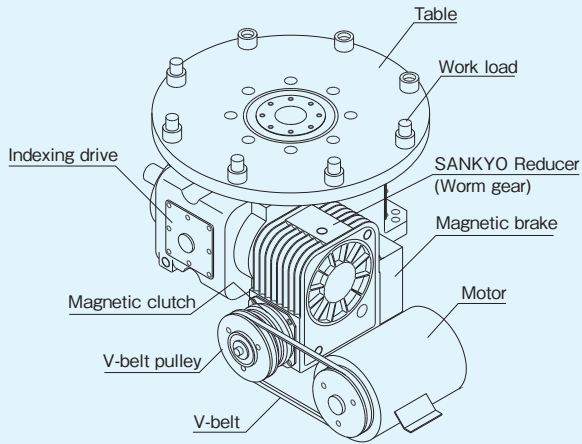


7TC

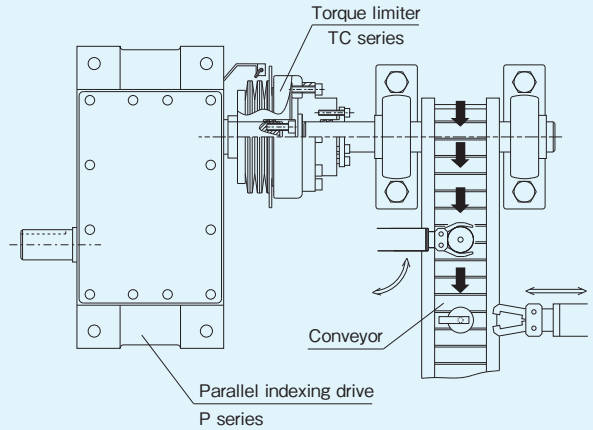
# APPLICATIONS

The "SANDEX" is used in various industries throughout the world, such as the Machine Tool industry, general purpose machines, mechanical parts, and electrical component industry. The application of SANKYO's patented cam drives has been accepted in manufacturing, inspection, and assembly applications.

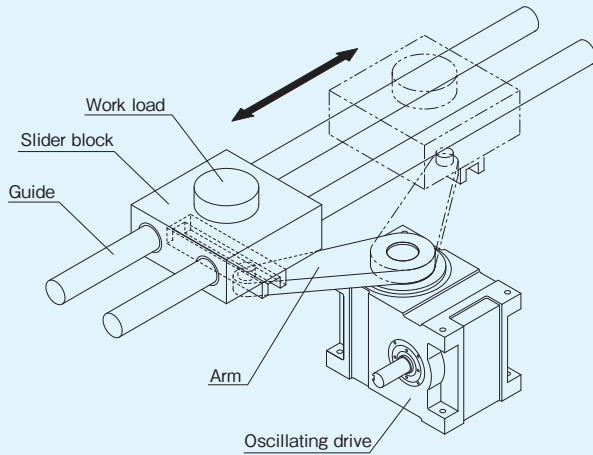
Table drive



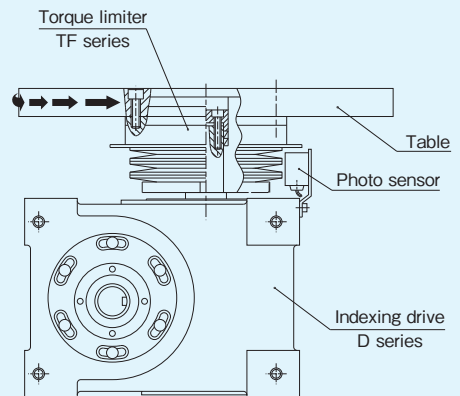
Conveyor drive



Reciprocating motion



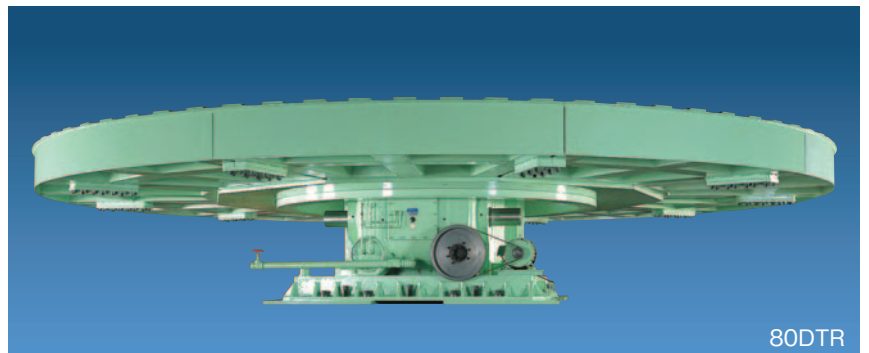
Torque limiter(TF series)



## Extra Large Model

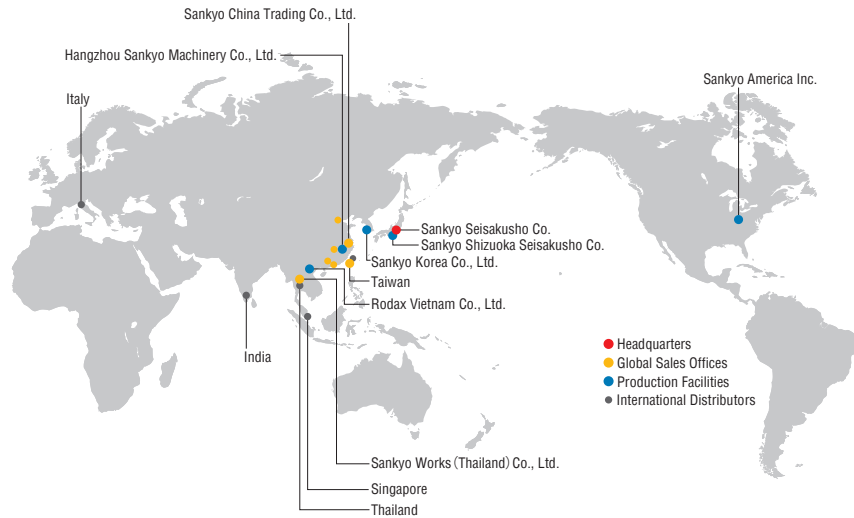


Extra large indexing drive (Table type)



This is an example installing 8m-diameter table with shaft-to-shaft distance 800mm extra large indexing drive unit. Total weight of this application is approx. 30 ton.

## Global network



## Group Companies

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