

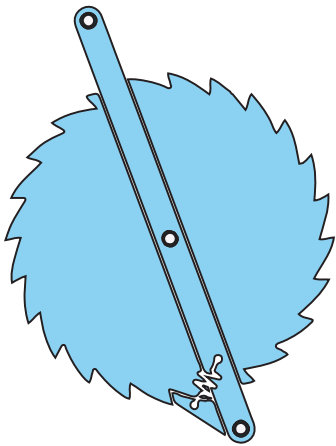
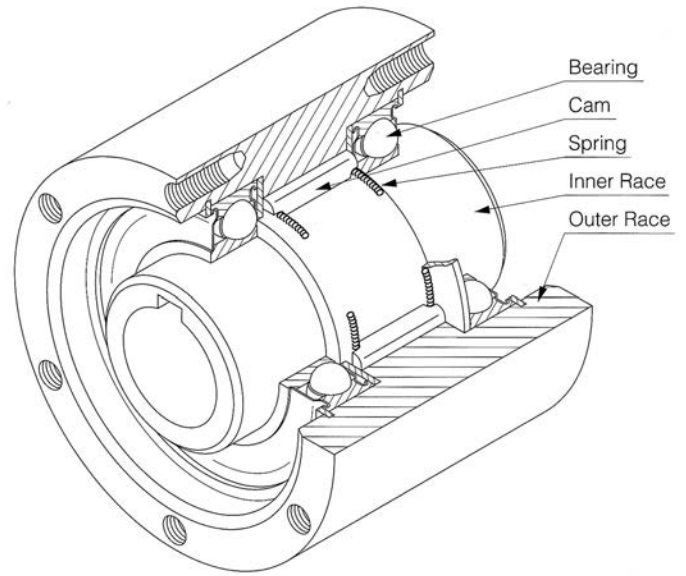


# CAM CLUTCH PRODUCTS

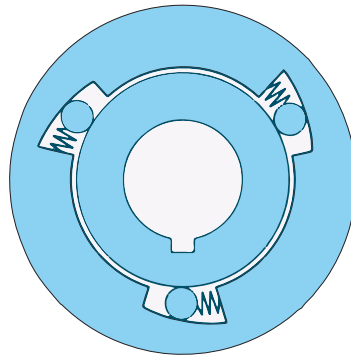
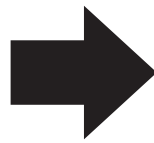
[www.ustsubaki.com](http://www.ustsubaki.com)

# Tsubaki Cam Clutch Solutions

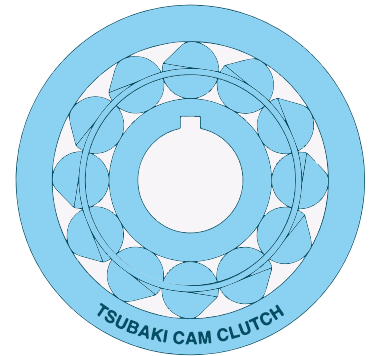
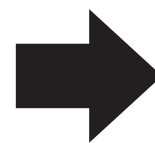
Over the last 50 years, Tsubaki engineers have spent thousands of man hours designing and improving uni-directional/mechanical clutches in an effort to improve reliability and performance. Evolution of the uni-directional clutch started with simple prop and ratchet type designs, and has progressed to the roller ramp and non-contact sensing cam type commonly used today. Innovative designs and features incorporated into our cam clutch products assure efficient and dependable operation in the harshest environments.



Ratchet Design



Roller Ramp Design



Tsubaki Sprag Design

## Typical Applications

- Air Cleaning Plants
- Agricultural Machines
- Bucket Elevators
- Compressors
- Conveyors
- Cranes and Hoists
- Dry Cleaning Machinery
- Duplicator Equipment
- Fish Net Machines

- Heat-treatment Furnaces
- Induced Draft Fans
- Multi-state Conveyors
- Packaging Machinery
- Printing Machinery
- Pumps
- Punch Presses and Feeders
- Power Plants

- Refinery Equipment
- Speed Reducers
- Standby Power Units
- Textile Looms
- Two-speed Grinders
- Two-speed Shiftovers
- Washing Machines
- Wire Winding Machines

## Backstop Cam Clutch Products



### BS

BS has designs available for low speed conveyor applications. Non-rollover design provides additional safety.

**Bore Range:** 0.750" to 17.625"  
(20 to 450 mm)

**Torque Range:** 217 to 505,966 lbs. ft.

**Competitor Models:**  
Formsprag LLH  
Falk NRTH



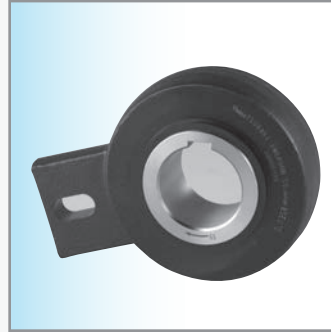
### BS-HS

BS-HS offers a higher strength/higher rpm option. Non-rollover cams are flanked by individual bearings on both sides.

**Bore Range:** 3.937" to 17.625"  
(100 to 450 mm)

**Torque Range:** 28,912 to 722,809 lbs. ft.

**Competitor Models:**  
Morse CB  
Falk NRT  
Marland MA



### BSEU

BSEU Cam Clutches are a European variation popular on many bucket elevators in North and South America.

**Bore Range:** 0.787" to 3.543"  
(20 to 90 mm)

**Torque Range:** 159 to 3,467 lbs. ft.

**Competitor Models:**  
Formsprag RSBW  
Morse CR/BW  
Stieber RSBW

## Indexing, Overrun



### MZEU

MZEU Series is designed for overrunning applications. These units come pre-lubricated, and can be adapted with flanges and torque arms to suit a wide variety of applications.

**Bore Range:** 0.472" to 5.906"  
(12 to 150 mm)

**Torque Range:** 44 to 24,930 lbs. ft.

**Competitor Models:**  
Formsprag GFR/GFRN  
Stieber GFR



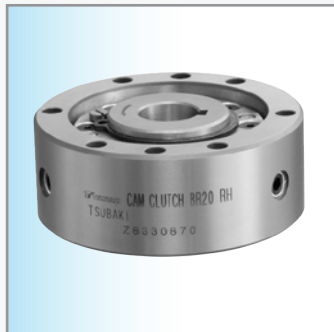
### BREU

BREU Series is designed for backstop applications where bearing support and modular construction is desirable.

**Bore Range:** 1.181" to 5.906"  
(30 to 150 mm)

**Torque Range:** 447 to 25,009 lbs. ft.

**Competitor Models:**  
Formsprag RIZ  
Stieber RIZ



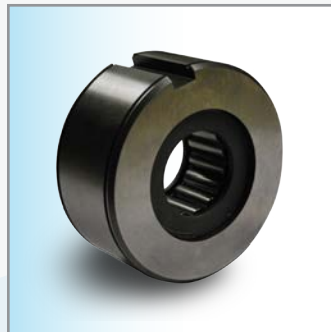
### BR-HT

BR-HT Series is designed for backstop applications where high-speed overrunning is required. Lift off cam design assures minimal heat generation and longest life.

**Bore Range:** 0.787" to 5.118"  
(20 to 320 mm)

**Torque Range:** 77 to 269,950 lbs. ft.

**Competitor Models:**  
Formsprag RSCI  
Ringspann FXM



### CA

CA line of backstops are an integral part of the reducer. The unique non-rollover cam design is key and prevents damage to the gears, shafts and drive train. This is a drop-in replacement for Dodge® reducers.

**Bore Range:** 0.738" to 1.750"  
(18.75 to 44.45 mm)

**Torque Range:** 45 to 901 lbs. ft.

**Competitor Models:**  
Dodge 24 Series



### TFS

TFS Series has two vertical keyways on the outer race to assist with positioning. Outside dimensions are the same as series 63 ball bearings. Ideal for general overrunning applications.

**Bore Range:** 0.472" to 3.150"  
(12 to 80 mm)

**Torque Range:** 13 to 2,894 lbs. ft.

**Competitor Models:**  
Formsprag ASNU  
Morse NFS  
Ringspann FC/FDN

# Timing and General Cam Clutch Products



## MIUS

MIUS Series is for mid-speed indexing applications up to 300 cycles a minute.

**Bore Range:** 0.500" to 6.250"  
(12.7 to 160 mm)

**Torque Range:** 280 to 27,290 lbs. ft.

### Competitor Models:

Formsprag HPI

Morse MI

Marland RMS



## MZ

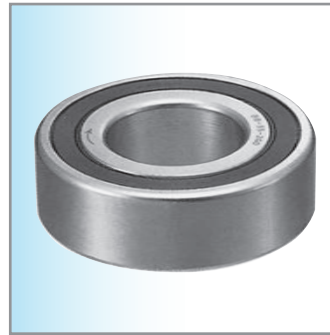
MZ Series is designed for overrunning applications. These units come pre-lubricated for easy installation and long service life.

**Bore Range:** 0.591" to 2.756"  
(15 to 70 mm)

**Torque Range:** 137 to 2,242 lbs. ft.

### Competitor Models:

Stieber SMZ



## BB

BB Series has the bearing dimensions and characteristics of a 62 Series type ball bearing. This design provides easy installation and is ideal for general overrunning applications.

**Bore Range:** 0.590" to 1.575"  
(15 to 40 mm)

**Torque Range:** 21 to 192 lbs. ft.

### Competitor Models:

Formsprag CSK

Morse KK

Ringspann ZZ



## TSS

TSS Series is designed for press fit installation. Outside dimensions are the same as series 62 ball bearings.

**Bore Range:** 0.314" to 2.362"  
(8 to 60 mm)

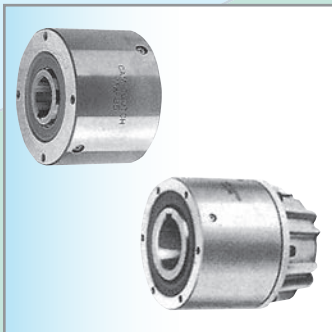
**Torque Range:** 4 to 479 lbs. ft.

### Competitor Models:

Formsprag AS

Morse NSS

Ringspann FCN



## MGUS/MGUS-R

MGUS is suitable for applications which require low to high speed overrunning. MGUS-R series contains a built in oil reservoir and can be used for backstop applications.

**Bore Range:** 0.500" to 6.250"  
(12.7 to 160 mm)

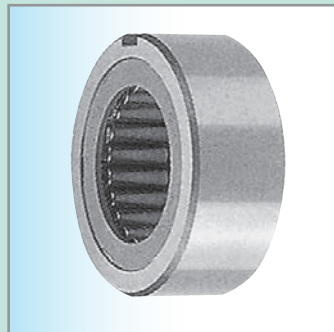
**Torque Range:** 280 to 27,290 lbs. ft.

### Competitor Models:

Formsprag FSO

Morse MG

Ringspann FB



## BUS200

BUS Series is specifically designed for shaft mounting applications that require high speed inner race overrunning or low to mid speed outer race overrunning.

**Bore Range:** 0.650" to 3.122"  
(16.5 to 79.3 mm)

**Torque Range:** 39 to 1,025 lbs. ft.

### Competitor Models:

Formsprag FS50

Morse B200

Renold SD



## PBUS

PBUS Series clutch is packed with a special grease for general applications. The outer race has provisions for mounting gears, pulleys, and sprockets.

**Bore Range:** 0.375" to 1.750"  
(10 to 45 mm)

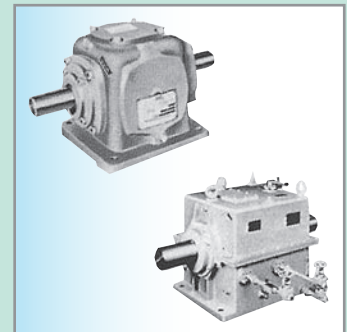
**Torque Range:** 41 to 1,623 lbs. ft.

### Competitor Models:

Formsprag FSR

Morse PB-A

Renold SB



## OB-ON/OF & OB-SF

OB-OB/OF Series is an enclosed unit housing cam clutch units and a common shaft. These units are used for high speed overrunning applications.

OB-SF Series is an enclosed unit housing cam clutch units that allow for continuous high speed overrunning and engagement and high torque capacities.

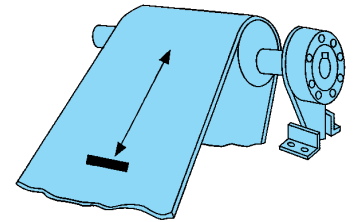
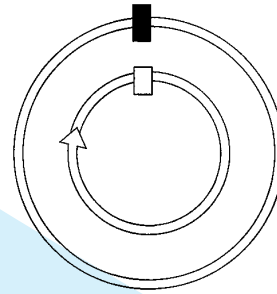
**OB-ON/OF Torque Range:** 231 to 4,337 lbs. ft.

**OB-SF Torque Range:** 2,318 to 59,270 lbs. ft.

Tsubaki Cam Clutch Products are designed to transmit torque in one direction of rotation and overrun (freewheel) in the opposite direction of rotation. All Tsubaki cam clutch products utilize the same principles of operation. Tsubaki offers various series of products to address the many types of applications where cam clutch products are most often used. The three most common types of applications are listed below:

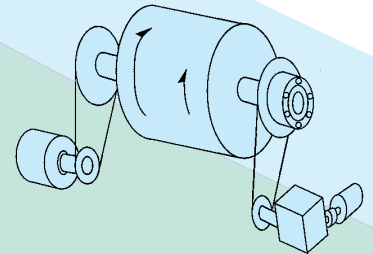
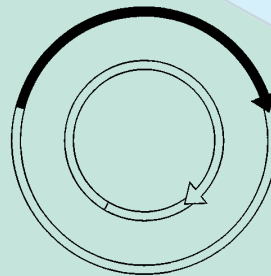
## **Backstopping**

Clutches are used to prevent reverse rotation of drive shafts which may cause damage to machinery and expensive equipment. The inner race can overrun freely in one direction of rotation. Reverse rotation is instantaneously prevented by the automatic engagement of the clutch. Typical backstop applications are in conveyor systems and gear reducers. Tsubaki has pioneered the non-rollover design.



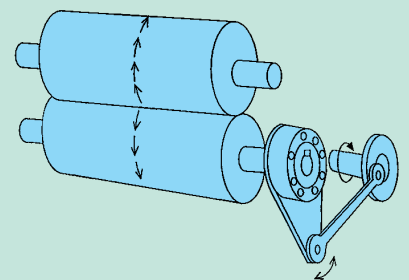
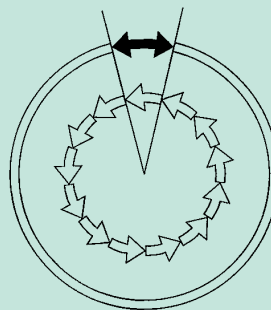
## **Overrunning**

These clutches spin freely the majority of the time, occasionally being called upon to lock up and drive. Typical is a two-speed drive, where the machine is driven by either an electric motor or geared motor. When the gearmotor drives at low speed the clutch engages. When the faster electric motor drives, the clutch overruns, automatically switching between low speed and high speed.



## **Indexing**

Reciprocating motion applied to the clutch transforms into one-direction motion. A crank mechanism provides reciprocating motion to drive the cam clutch. The clutch drives in the forward stroke (index) and overruns on the return stroke, indexing the feeding roller forward.





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