CAM CLUTCH PRODUCTS

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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.

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
SpeedReducers
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.

**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.

**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 LLH
- Morse CB
- Falk NRT
- Marland MA
- Formsprag RSBW
- Morse CR/BW
- Stieber RSBW

**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
- Formsprag RSCI
- Ringspann FXM

**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.

**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
- Formsprag ASNU
- Morse NFS
- Ringspann FC/FDN

Indexing, Overrunning and General Cam Clutch Products

**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
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 clutch 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.