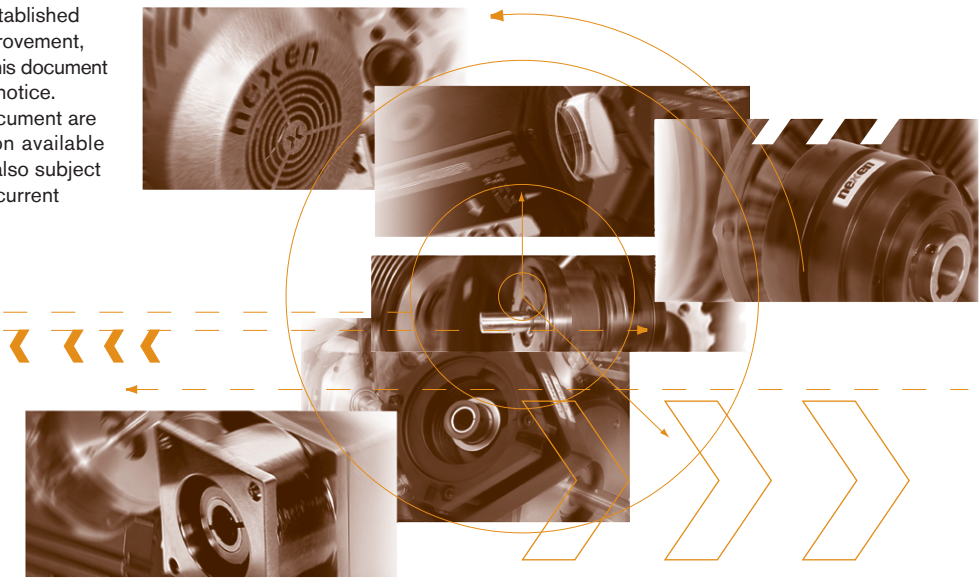


In accordance with Nexen’s established policy of constant product improvement, the specifications contained in this document are subject to change without notice. Technical data listed in this document are based on the latest information available at the time of printing and are also subject to change without notice. For current information, please consult: [www.nexengroup.com](http://www.nexengroup.com)



# NEXEN FAMILY OF PRODUCTS

**This Section Contains: . . . .Page**

**“AIR CHAMP”® FAMILY OF PRODUCTS**

Friction Clutches . . . . .	14
Tooth Clutches . . . . .	14-15
Multiple Disc Clutches . . . . .	15
Dual Plate Clutches & Brakes . . . . .	16
High Capacity Clutches & Brakes . . . . .	16
Overload Protection Devices . . . . .	17
Flexible Couplings . . . . .	17
Friction Brakes . . . . .	18
Caliper Brakes . . . . .	18
Drum Brakes . . . . .	18
Spring Engaged Brakes . . . . .	19
Thru-Shaft Mount Clutch-Brakes . . . . .	19
Clutch-Disc Caliper Brakes . . . . .	20
NEMA “C” Flange Clutch-Brakes . . . . .	20
Modular System for NEMA “C” Flange Clutch-Brakes . . . . .	21

**This Section Contains: . . . .Page**

**WEB PRODUCTS APPLICATION GUIDE**

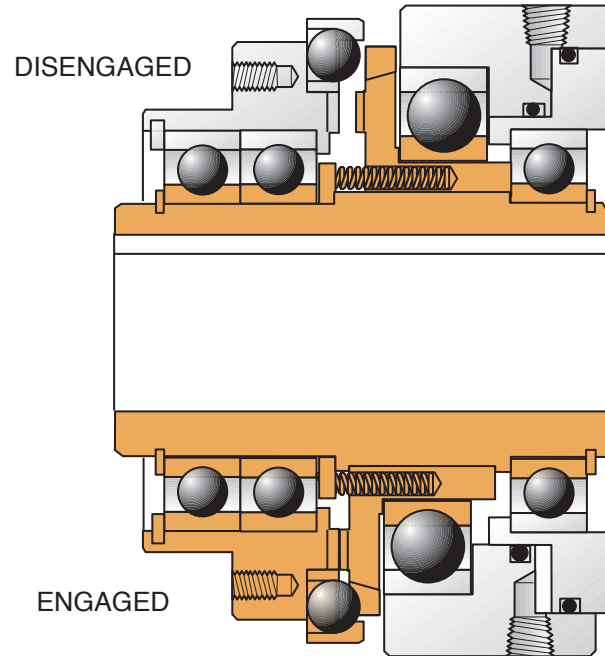
Web Products Application Guide . . . . .	22
Web Control Products, Everything you need . . . . .	23
Tension Control Systems . . . . .	24
Web Tension Systems . . . . .	25
Tension Control Brakes and Clutches . . . . .	25
Tension Meters and Amplifiers . . . . .	26
Web Guiding Systems . . . . .	26
Web Guide Sensors and Controllers . . . . .	27
Auxiliary Products . . . . .	27

### ▶ TOOTH CLUTCHES CONT.

Single Position Clutches are available in either an Open (5H-SP) or Enclosed (5HP-SP-E) Pilot Mount design. They cover torque ratings up to 32,000 In Lb, and operational speeds up to 3700 rpm in 13 different Bore sizes. The Open design is available in 8 Standard and 8 Metric Models; the Enclosed design is available in 6 Standard Models and 6 Metric Models.

Tooth Clutches address these types of functions:

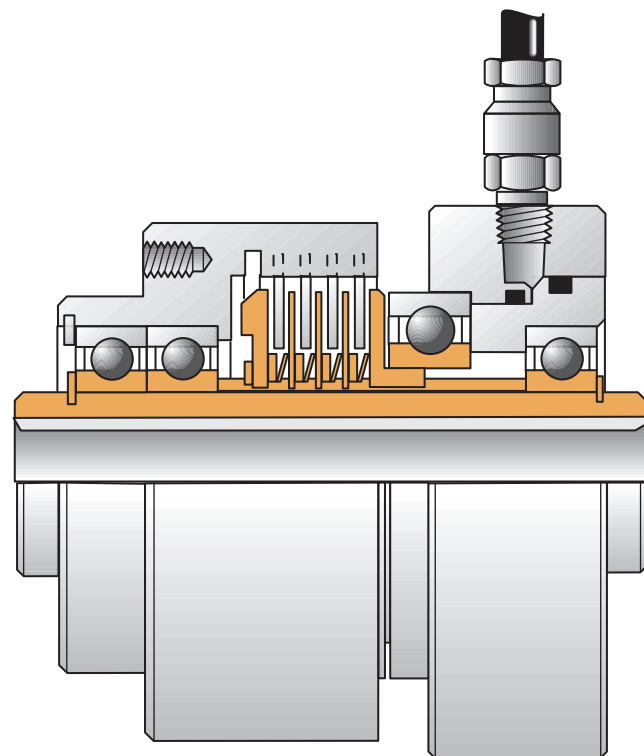
- ▶ Positioning
- ▶ Reversing/Multiple Speed
- ▶ Disconnect
- ▶ Positive Drive



### ▶ MULTIPLE DISC CLUTCHES

Multiple-Disc Clutches feature either 3 or 4 friction discs and facings positioned side-by-side. Static air pressure squeezes them together—the result is a small package for high torque applications. Torque capacities range from 750 to 10,000 In Lb, with operational speeds ranging from 700 to 1800 rpm in 12 different Bore sizes. Single or Double Flex Clutch Couplings can be added for in-line coupling applications. 7 Standard Models provide 12 different Bore sizes. Multiple-Disc Clutches address these functions:

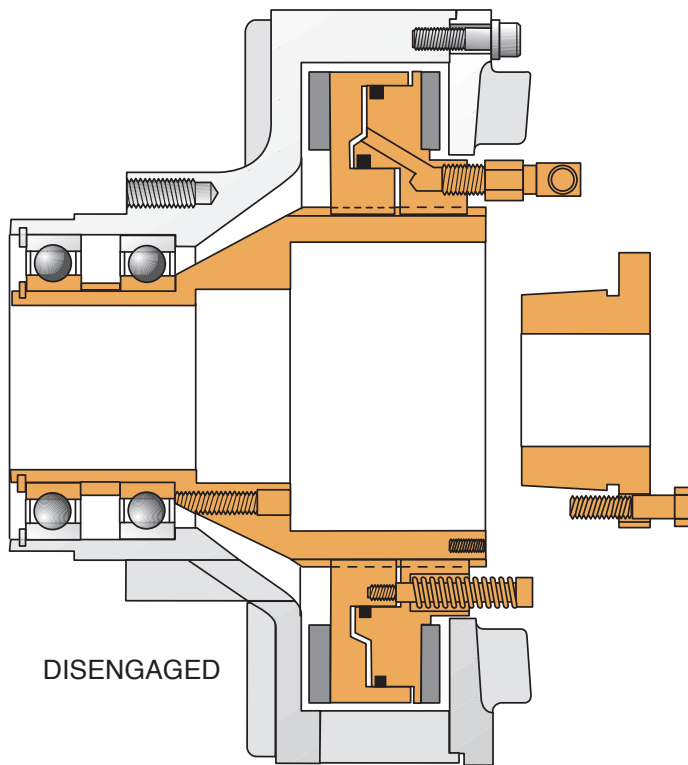
- ▶ High Torque
- ▶ Small Package



DISENGAGED

**FAMILY OF PRODUCTS**

**“Air Champ”**



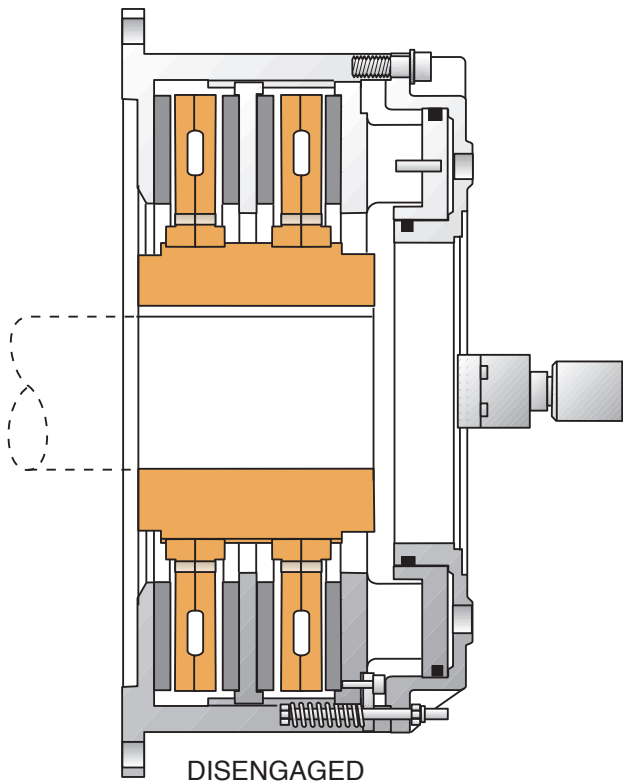
**DUAL PLATE CLUTCHES & BRAKES**

Dual Plate Clutches and Brakes each come in 4 Standard Models, whose modular design makes custom design easy and less expensive. For applications requiring up to 36,000 In Lb of torque, speeds up to 2200 rpm, thermal horsepower values up to 9.0, motor horsepower ratings from 5 hp to 150 hp. Clutches are designed for either shaft-end mounting or thru-shaft mounting. Brakes can either mount rigidly or non-rigidly. As many as 8 Bore sizes per Clutch Model, 7 Bore sizes per Brake Model with further customization possible. Sheave Mount options are also available for Clutches. Dual Plate Clutches are perfect for these functions:

- ▶ Controlled Acceleration
- ▶ Inching/Jogging
- ▶ Rapid Cycling/Indexing
- ▶ Positioning
- ▶ Reversing/Multiple Speed
- ▶ Tension Control
- ▶ Overload Protection
- ▶ Torque Limiting

Dual Plate Brakes address these functions:

- ▶ Controlled Deceleration
- ▶ Stopping/Holding



**HIGH CAPACITY CLUTCHES & BRAKES**

16 Standard Models of air-actuated Clutch & Brake Elements are designed for heavy duty industrial applications that require high torque and low inertia. Used as either Clutches or Brakes, these elements are available in disc sizes from 11.50 to 25 inches. Torque capacities for these elements range from 12,000 to 300,000 In Lb, with speeds up to 2200 rpm and thermal horsepower values up to 14.7. Elements are available in two styles: Dual Faced Models, having single disc assemblies; and Quad Faced Models, having double disc assemblies. Each style is available in an S Model (standard coefficient friction lining), and an H Model (high coefficient friction lining). Bore sizes range from 1 to 6.50 inches. High Capacity Clutches address these functions:

- ▶ Controlled Acceleration
- ▶ Inching/Jogging
- ▶ Rapid Cycling/Indexing
- ▶ Positioning
- ▶ Reversing/Multiple Speed

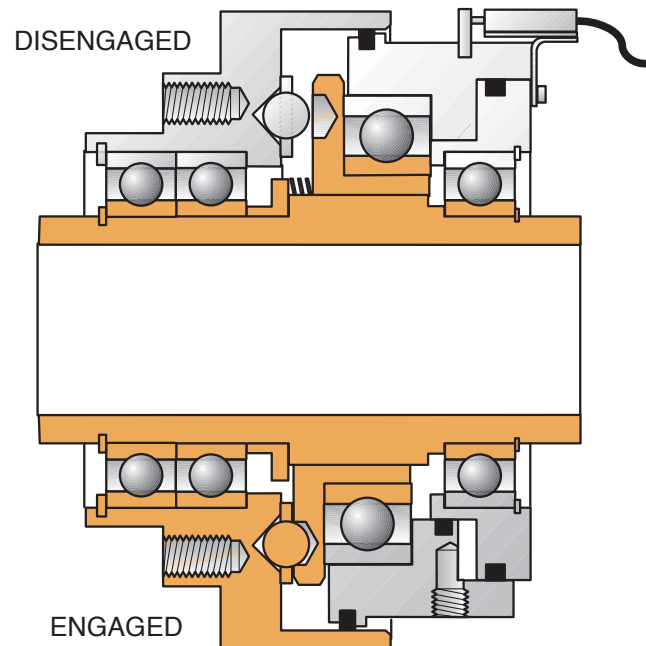
High Capacity Brakes address these functions:

- ▶ Stopping/Holding

### ▶ OVERLOAD PROTECTION DEVICES

Torque Limiters are pneumatic overload devices designed to instantly disengage at a pre-set torque level. The torque output is easily changed by adjusting the air pressure setting. The Single Position design assures re-engagement of the drive, from a complete stop, in the same position every time, thus providing exact timing of both components. A Limit Switch Assembly senses electrical problems and interrupts power prior to damage occurring. Torque limiters are available in either Open or Enclosed designs in two mounting styles—Set Collar and Set Screw. Single or Double Flex Coupling Adapters can be added for vibration and shock protection, and in-line coupling applications. Air Pressure Control Systems are available in 2 styles to provide remote adjustment of torque settings. There are 30 Standard Models and 9 Metric Models to choose from, each with a wide range of Bore sizes and operating specifications. Torque Limiters address these functions:

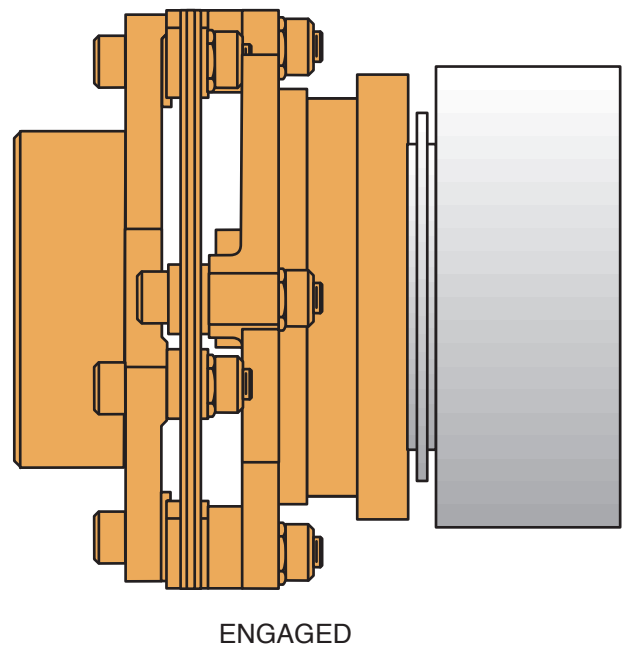
- ▶ Positioning
- ▶ Overload Protection
- ▶ Disconnect
- ▶ Positive Drive

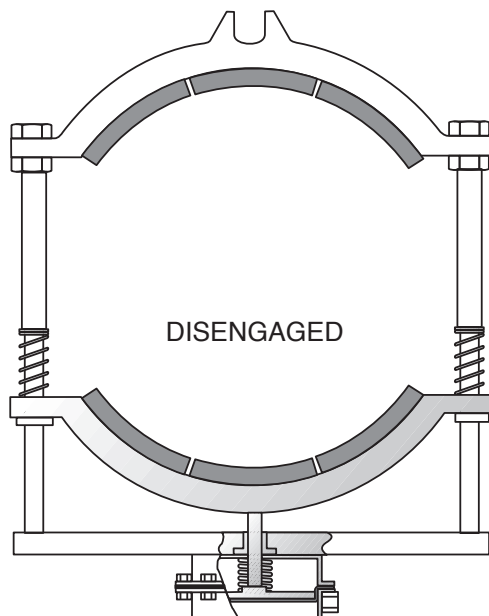
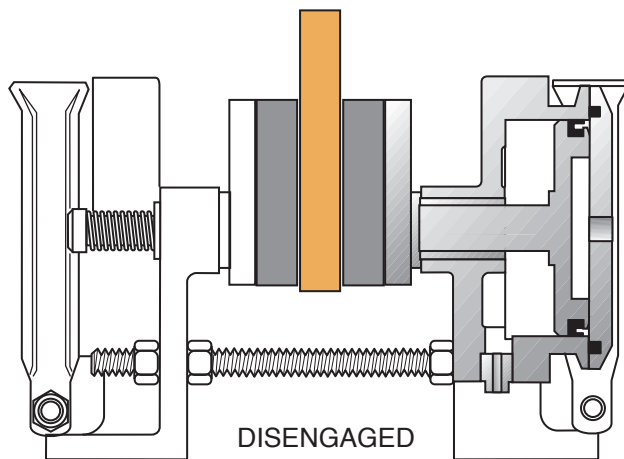
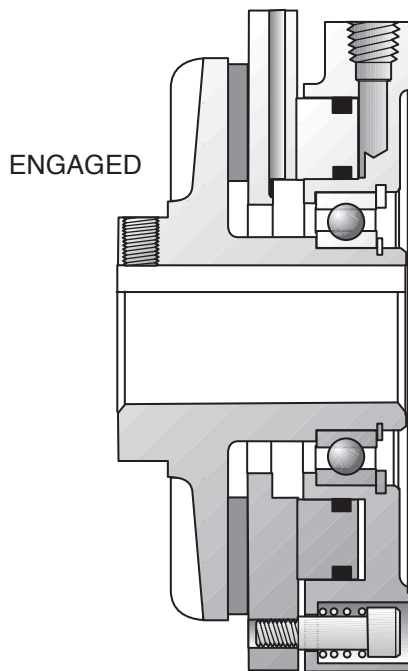


### ▶ FLEXIBLE COUPLINGS

These Flexible Couplings attach to a Tooth Clutch, Multi-Disc Clutch or Torque Limiter for non-thru shaft applications. Available in Single or Double Flex designs—8 Standard models each for Tooth Clutches, 7 Standard Models each for Multi-Disc Clutches and Torque Limiters. Their composite material construction is corrosion resistant and requires no lubrication or cleaning. you will find information on these industry leading products in the catalog section for each applicable Clutch or Torque Limiter. Flexible Couplings provide these benefits:

- ▶ High Misalignment Capability
- ▶ Multiple Shaft Synchronization/Long Line Shaft Capability
- ▶ Torsional Stiffness
- ▶ Shock/Vibration Dampening
- ▶ Corrosion Resistance





### ► FRICTION BRAKES

Low inertia, high thermal dissipation and self-adjusting facings make these ideal for many applications. Choose between Straight or Tapered Bore units in a wide range of operational specifications. Each Model comes in a Standard Bore size, with customization possible through the use of Bushings. You'll find 24 Standard Models and 4 Metric Models from which to choose. Friction Brakes address these functions:

- Controlled Deceleration
- Rapid Cycling/Indexing
- Positioning
- Tension Control
- Stopping/Holding

### ► CALIPER BRAKES

10 Standard Models address a wide range of Caliper Brake requirements. Choose between Spring or Air Actuation, 10 Disc diameters and a variety of design styles. Caliper spacing is movable and shoes are adjustable on many Models. Caliper Brakes address these functions:

- Controlled Deceleration
- Tension Control
- Stopping/Holding

### ► DRUM BRAKES

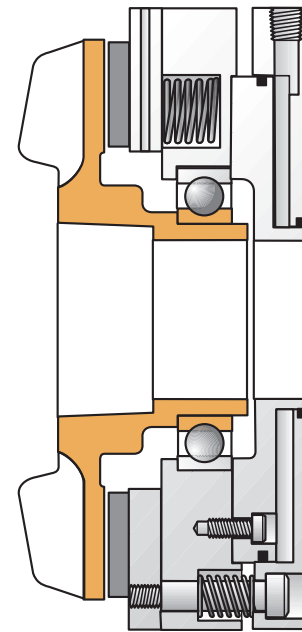
7 Standard Models offer maximum efficiency and dependability. All can mount on the shaft, a few can also bracket mount. 3 Models have a hinge top design for use with removable brake drums. Drums available in Standard Bore sizes or without bore customization. Operational specifications provide a wide range of application criteria. Drum Brakes address these functions:

- Controlled Deceleration
- Tension Control
- Stopping/Holding

### ▶ **SPRING ENGAGED BRAKES**

Spring Engaged Brakes are available in 18 Standard Models with either Straight or Tapered Bore and 4 Metric Models with a Straight Bore. A variety of Standard Bore sizes are available, some Models provide bore size customization. Product specifications cover a broad range of operational criteria. Spring Engaged Brakes address these functions:

- ▶ Stopping/Holding

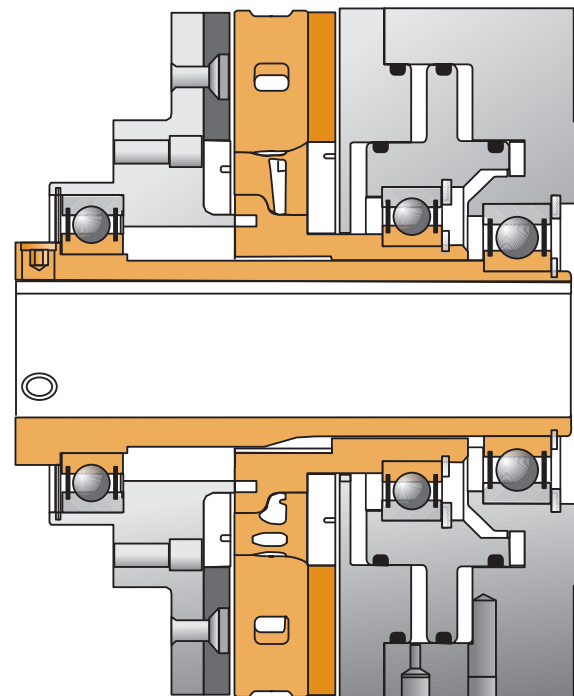


DISENGAGED

### ▶ **THRU-SHAFT MOUNT CLUTCH-BRAKES**

Thru-Shaft Mounted Clutch/Brakes combine the features of a Friction Clutch with a Friction Brake into a single unit. 9 Standard Models offer Pilot Mount, Sheave Mount and Pilot Mount with Coupling Half options. Pilot Mount units are available in 2 Standard Bores sizes with customization possible with Bushings and Couplings. Thru-Shaft Mount units come in a range of bore sizes and Sheave styles. Operation specifications throughout the category will address almost any need. Thru-Shaft Mount Clutch-Brakes address these functions:

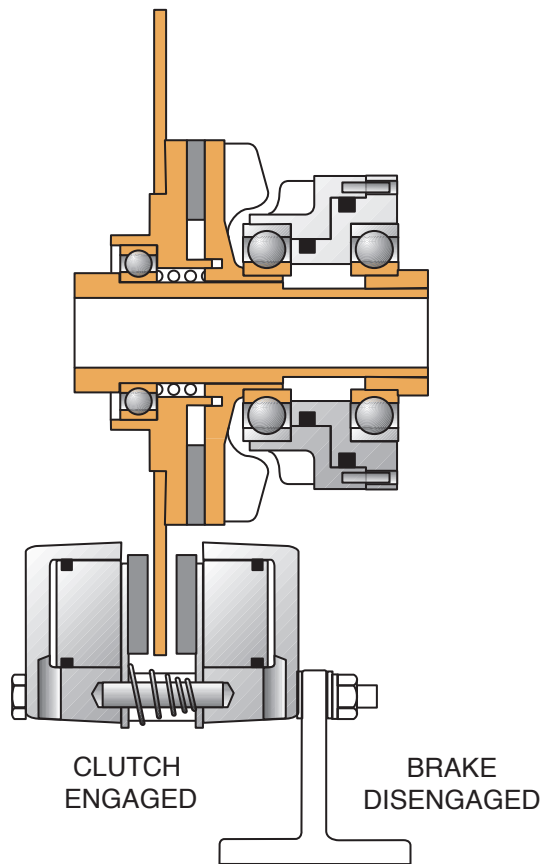
- ▶ Controlled Acceleration
- ▶ Controlled Deceleration
- ▶ Inching/Jogging
- ▶ Stopping/Holding
- ▶ Disconnect



CLUTCH DISENGAGED

BRAKE DISENGAGED

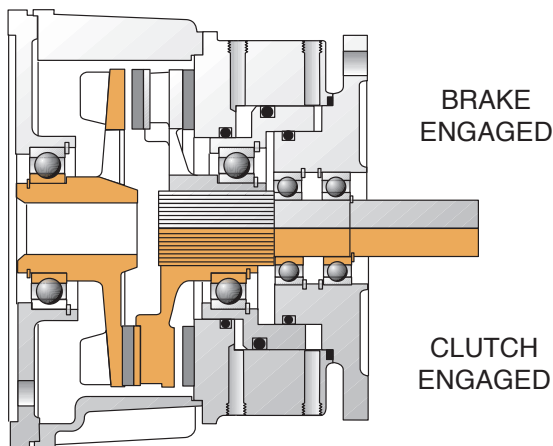
**FAMILY OF PRODUCTS**



**▶ CLUTCH-DISC CALIPER BRAKES**

Thru-Shaft Mounted Clutch-Disc Caliper Brakes combine the features of a Friction Clutch with a Disc-Caliper Brake. 4 Standard Models offer Pilot Mount, Sheave Mount and Pilot Mount with Coupling Half options. Pilot Mount units are available in 2 Standard Bore sizes, with customization possible with Bushings and Couplings. A Sheave Mount unit is available for each model. A Caliper Brake with “T” Bracket and standard Disc sizes for each model round out product line. Operation specifications throughout the category will address almost any need. Clutch-Disc Caliper Brakes address these functions:

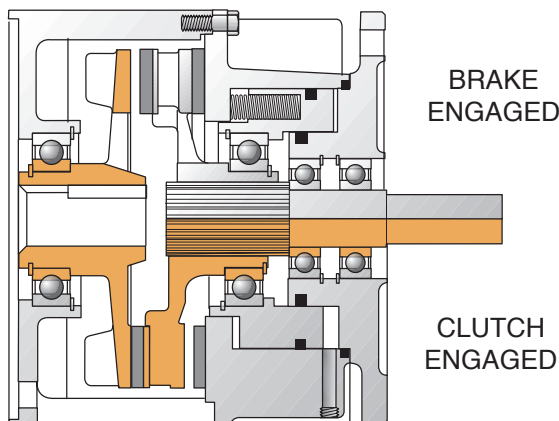
- ▶ Controlled Acceleration
- ▶ Controlled Deceleration
- ▶ Inching/Jogging
- ▶ Stopping/Holding
- ▶ Disconnect



**▶ NEMA “C” FLANGE CLUTCH-BRAKES**

Designed to mount directly to motors and reducers to provide absolute control. There are 5 Standard Models in an Enclosed design, 2 Standard Enclosed Models which are BISSC certified, 4 Standard Models in an Enclosed Spring Engaged design; and 6 Metric Models in an Open design, 7 Metric Models in an Enclosed Design, and 7 Metric Models in an Enclosed Spring Engaged design. Additional options include Mounting Feet and an Input Unit, for use in mounting a pulley. Finish options include black or electroless nickel coating for most models. 4 Standard Bore sizes are available for each model. Operational specifications guarantee performance. This Clutch-Only Enclosed Standard Model is available for “cleanroom” applications calling for only a Clutch applications (it comes only in the black finish.) BISSC certified models provide maximum protection against corrosion and bacteria build-up. NEMA “C” Flange Clutch-Brakes address these functions:

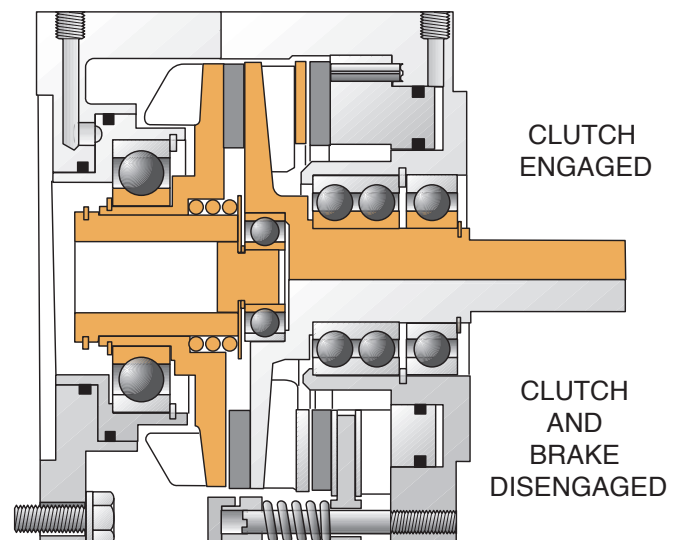
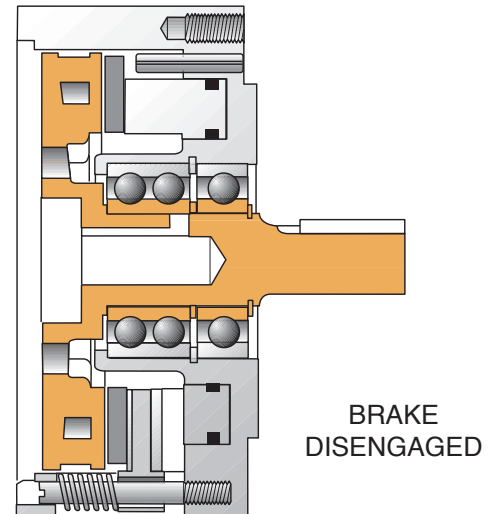
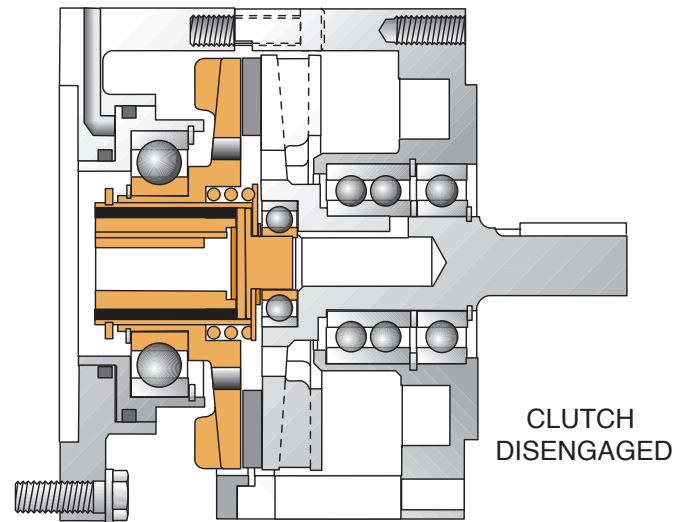
- ▶ Controlled Acceleration
- ▶ Controlled Deceleration
- ▶ Inching/Jogging
- ▶ Stopping/Holding



### ► MODULAR SYSTEM FOR NEMA “C” FLANGE MOUNTING

Custom design a power transmission system to fit your specific requirements, using the Nexen Modular System. Interchangeable modular components provide complete flexibility for today's application and tomorrow's changing needs. 4 Modular Units in 4 different sizes enable you to create either a Clutch, Brake or Clutch-Brake configuration. Mounting capabilities are also flexible; choose between Vertical, Horizontal or Gearbox to motor or reducer. Optional Foot Mount Sets come in 2 different designs. Optional Guards allow you to enclose your system. Operation specifications address a broad range of application requirements. This is the System of choice for many customers. The Modular System addresses these functions:

- Controlled Acceleration
- Controlled Deceleration
- Inching/Jogging
- Stopping/Holding



# WEB PRODUCTS APPLICATION GUIDE

*Everything you need to control web quality and productivity  
from unwind through windup, roll after roll.*



Nexen offers you a wide range of web control systems and components, supported by our expert technical support and service team.

With Nexen, you can be assured of consistent, high-quality output from your web printing or converting process.

Nexen controls are used successfully with applications as diverse as:

- paper
- film
- rubber
- labels
- textiles
- laminates
- paperboard
- metal strip
- non-wovens
- foil
- plastics
- wire

Precise enough for the laboratory, yet rugged enough for the mill, Nexen control systems are delivered and backed by the recognized leader in web control equipment for almost 50 years.

### Everything you need to control web quality and productivity from unwind through windup, roll after roll.

#### Tension Control Systems

Nexen can help you address your tension control problems at each stage of the process – from unwind through intermediate zone to windup. Nexen systems make it easy to deal with variations in thickness, elasticity, thermal expansion, poorly wound rolls and changing roll diameter. You also get taper tension control when you need it.

Nexen tension control systems offer you cost-cutting technologies to provide:

- Ease of operation
- Accurate, close tolerance measurement
- Indication of tension within the web
- Splice-making capabilities at full line speed

#### and Clutches

Nexen's line of tension control clutches and brakes offers you the most comprehensive package of features in the industry, in a range of sizes to match your application.

Our patented designs offer you superior, precise torque control at all air pressures. In addition, a ventilated rotor creates an airflow that pulls cooler ambient air through the brake or clutch and dissipates heat away from the unit for better performance.

- Nexen clutches and brakes deliver high thermal dissipation.
- Unique patented airflow design transfers heat away from the unit for better performance.

- Lower-weight rotors mean lower rotational inertia to provide precise control right down to the core and reduced product waste.
- Simple diaphragm actuated calipers offer the widest possible torque range.
- Easy change friction facings.

#### Web Guiding Systems

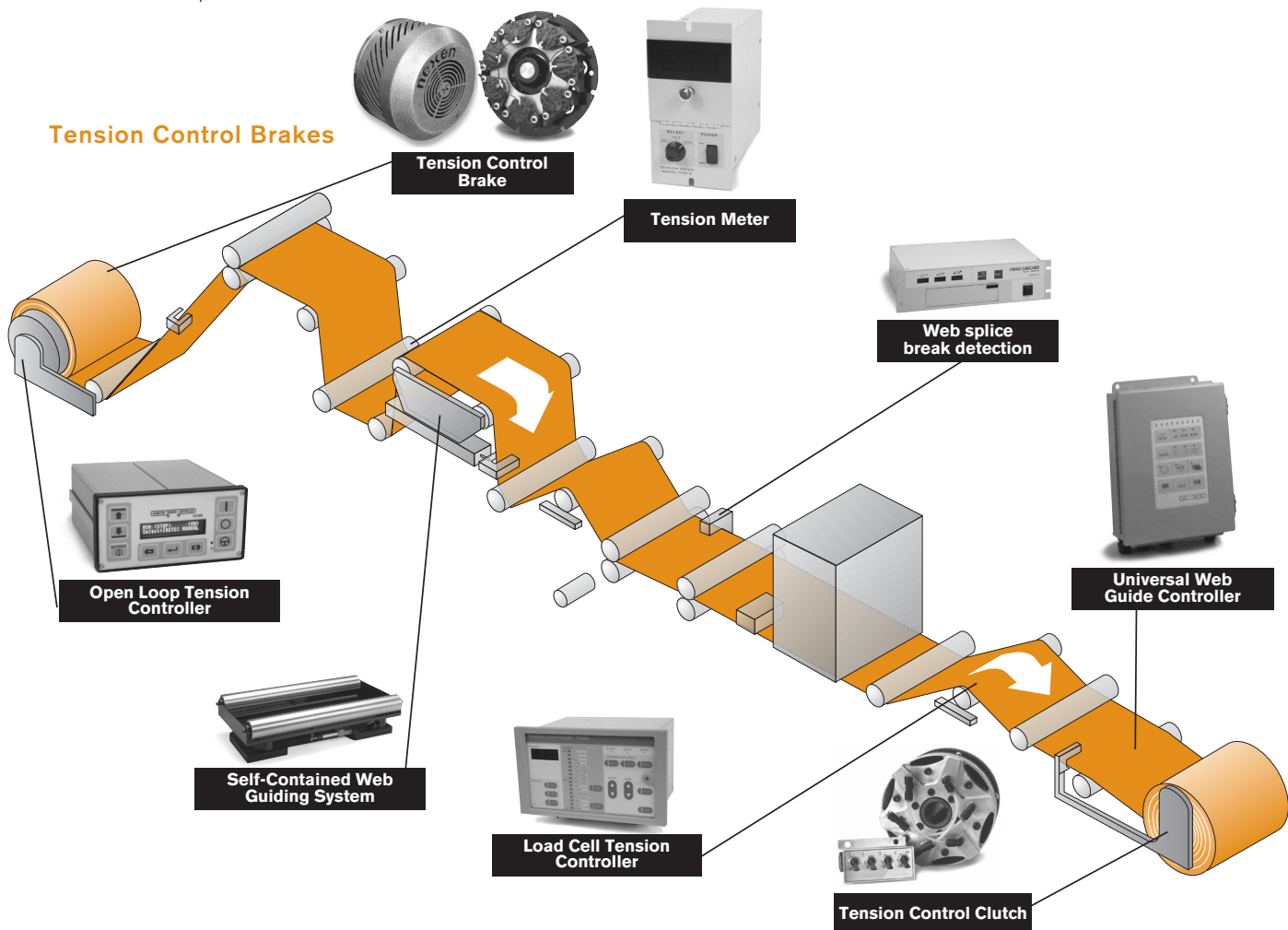
Choose from edge position, center position or line follower controls for pinpoint guiding in the unwind, intermediate or windup stage.

A variety of sensors, roll lengths and controllers are available in freestanding web guide models, along with

electrical linear actuators for positioning your unwind and windup stands. Self-contained units offer everything you need in a single package.

You receive Nexen's state-of-the-art electronics for the precise alignment you need for unwind, intermediate and windup control. Now you can produce a quality product at higher line speeds without wrinkling or distortion, while you reduce scrap.

- Displacement guiding
- Accurate roll stand positioning
- Edge, center or line following position control.



## APPLICATION GUIDE

Precise tension control is vital to any web- or strip-fed operation, the product – whether paper, plastics, metal strip, rubber sheet or wire – must be fed under tension, processed under tension and wound up again under tension.

Factors such as poorly wound rolls, elasticity, roll diameter change and irregularities in web thickness cause significant variations in web tension.

Some applications require taper tension on windup. Winding begins at relatively high tension, with a gradual reduction, or tapering, in tension as the roll builds in diameter.

At the very least, your tension control system must compensate for the change in roll diameter. For precise control and high line speeds, it must also be capable of measuring and controlling tension within very close tolerances.

Nexen systems are available to control variable speed motors and pneumatic and electric brakes and clutches.

### Load Cell Based Tension Control

Nexen's load cell based tension control system is a closed loop system which senses tension in a web and compares it to a set point, or desired tension level and automatically adjusts air pressure to a pneumatic clutch or brake to maintain appropriate web tension. The load cell based system can also control electric clutches and brakes.

The load cell based systems also can be used with variable speed drives to maintain proper tension in internal tension zones or at the windup stand.

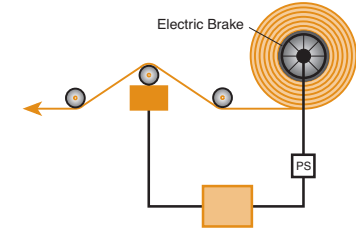
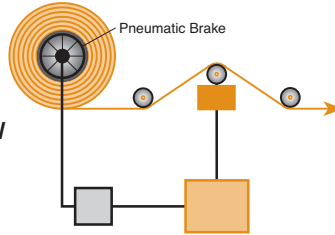
- Control accuracy of 1-2 percent – highest of any web control systems
- Ideal for use with brakes, drives and clutches
- Simple to operate – set the tension level and let the controller do the rest
- Allows remote computer to determine the tension and set points for each job

### Open Loop Tension Control

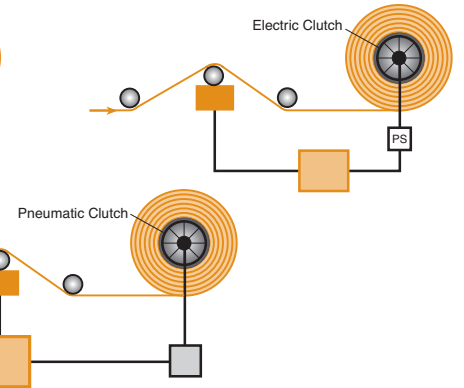
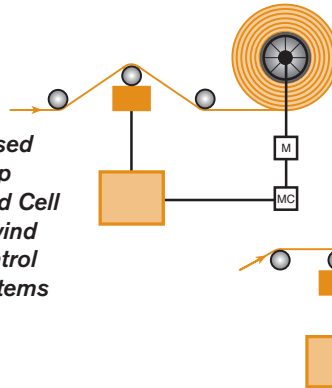
The open loop tension control system electronically measures or estimates the diameter of the unwind or windup roll. It then modulates a brake to control the unwind, or a clutch or variable speed drive for windup applications to maintain tension as the diameter varies. Accuracy is typically about 8-10 percent.

## TENSION CONTROL SYSTEMS

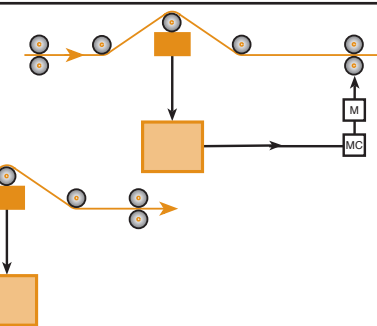
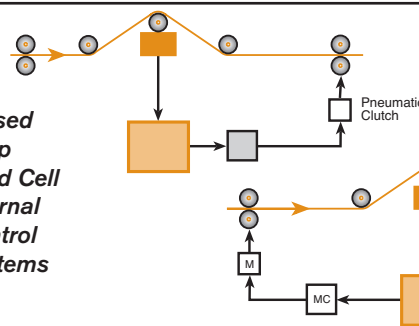
**Closed Loop Load Cell Brake Control Systems**



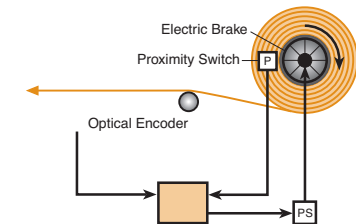
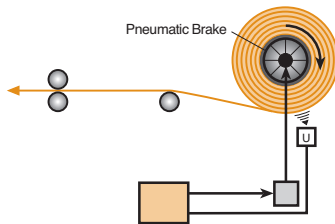
**Closed Loop Load Cell Rewind Control Systems**



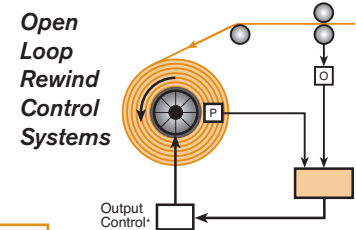
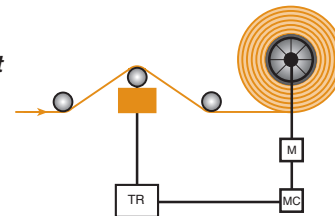
**Closed Loop Load Cell Internal Control Systems**



**Open Loop Unwind Brake Control Systems**



**Tension Read Out Rewind Control Systems**



TR	Tension Read Out	MC	Motor Controller
O	Optical Encoder		Tension Sensor
P	Proximity Switch		Closed Loop Load Cell Based Controller
PS	Power Supply		I to P Transducer
	Open Loop Controls		Dancer Position Sensor
M	Motor		

\*For pneumatic clutch: I to D  
For electric clutch: power supply  
For variable-speed motor: motor control

## TENSION SENSORS

Tension sensors are the input devices used with load cell based tension systems, both closed loop control systems and tension measuring systems. Tension sensors measure the force applied to the sensor roller and translate this measurement into an electrical signal which can be read by the system.

### Nexen offers two types of web tension sensors:

- **Under pillow block (UPB),**
- **Sidewall**

The Nexen UPB-type MB Series is based on linear variable differential transformer (LVDT)



MB Series under Pillow Block Sensors

technology, which provides excellent sensitivity, linearity and accuracy combined with a rugged mechanical design for best resistance to mechanical overload.

Nexen strain gauge type sensors also deliver excellent sensitivity and accuracy, while providing added mounting flexibility for applications with significant mounting restrictions.

Nexen strain gauge sensors are available in shaft-end mount styles for machine sidewall flange-mounting or sidewall through-mounting.



Sidewall Mount Strain Gauge Tension Sensors

The force applied to the sensor roll has two components: the tare weight of the sensor roll and bearings, and the force generated by the web tension at

the specific angle of wrap around the sensor roll.

The following data are required in order to identify the correct sensor for a given application:

- Maximum web tension
- Sensor roll weight
- Sensor roll diameter
- Web angle
- Sensor mounting angle for UPB sensors
- Pillow block center line height – UPB sensors only

For assistance in selecting the appropriate tension sensor for your application, contact Nexen or your local Nexen representative.

## TENSION CONTROL BRAKES AND CLUTCHES

### Broad Range Torque Control

Nexen brakes and clutches offer you precise control over the full operating range – from the high torque needed to manage a large roll, to the lower torque requirements for more delicate materials and demanding applications.



Tension Brakes

Nexen XTB brakes feature multiple calipers, each composed of a pair of pistons. The calipers can be configured individually or as separately controlled groups – each with its own torque-to-air pressure range to control a separate tension range.

### Cooler Operation for Longer Life

Insufficient cooling of the roll shaft and bearings can lead to shaft crystallization and seal meltdown. The recommended maximum shaft bearing temperature is typically 170°F (76,6°C).

The Nexen XTB has a demonstrated bearing temperature of approximately 140°F (60°C) operating at full torque, compared to 240°F (115,5°C) for competitive models.

The rotor, hub and calipers on Nexen clutches and brakes feature a unique airflow design that draws cooler ambient air over and through the rotor and dissipates heat away from the shaft, bearings and diaphragms of the clutch or brake.

The rotor and the fins on the back of the hub draw cool air into the unit, over the air hoses and toward the caliper. The caliper fins direct the heated air out and away from the unit. The air hoses are located along the inner circumference of the calipers to ensure maximum cooling air flow and protection.



STC Clutch/STB Brake

### Lower Rotational Inertia for Greater Control

Nexen brakes and clutches are up to 60-percent lower weight than competition, resulting in up to two-thirds less rotational inertia.

Lower rotational inertia means that you can maintain more precise tension control at low torque levels. This is especially critical when running delicate materials such as tissue and nylon. It can also prevent web breakage as the web nears the end of the roll.

A lower weight brake also contributes to overall system performance by putting less strain on shafts, bearings and stands.

### Precise Control at Low Pressure

Nexen STB/STC tension clutches and brakes are pneumatically actuated using a piston /diaphragm combination and are designed for lighter duty than the XTBs.

- No o-rings to stick, no seals to drag.
- Nothing to hinder precise control of torque at low operating pressures – fine control of torque to the end of roll

- 500:1 torque control range for precise control of web processes
- Three piston sets, each with different thrust, for even greater torque range flexibility
- Through-shaft mounting for easy installation
- Compact size
- No rotary air unions required – eliminates “gun drilling” shafts

### Easy to Service

The lower weight of Nexen tension brakes and clutches make them easier to install and maintain. You don't need to adjust pad overhang or shim the pads.

Caliper friction pads are quickly replaced by simply releasing a spring-loaded retaining pin. There are no screws or cotter keys to remove. You change the friction pad without removing the caliper from the brake. The pads are completely interchangeable, one size fits all.

The Nexen XTB disc is also easily replaceable without removing the entire brake, simply pull the disc from the shaft. The hub remains locked on the shaft, so the new disc can be reinstalled in precisely the same position.

# TENSION METERS AND AMPLIFIERS



Tension Meter

Often you need to only measure the tension in a web, not control it. Nexen has a variety of solutions to meet these needs.

## Tension Meter

Nexen tension meters precisely measure web tensions with a digital tension display on the front panel. Their 0-10 VDC or 4-20 mA analog output is also well suited as a proportional tension data signal to process controllers, data loggers and variable-speed motor controls.

You can also use one of the sensors for narrow webs, single strands of wire, or any other narrow material where tension will not vary from one side to the other.

Nexen tension meters are also

useful as a tension readout-only device to measure intermediate-zone tension.

## Tension Amplifiers

Nexen tension amplifiers interface with load cell or strain gauge sensors. They provide an excitation signal to the sensors and separately amplify the return signal from each sensor before combining them to provide a signal proportional to the total tension.

Tension amplifiers are ideal for accurate, low-cost tension measurement of a web process

interfaced with machine controls such as data loggers, process controllers, drive controls, host computers and other applications requiring a precise tension interface.

## Tension Amplifiers Offer:

- Low cost signal conditioning for LVDT or strain gauge tension sensors
- Wide tension range for flexible installation
- Ideal for use with machine controls where local readout is not required
- Includes both 0-10 VDC and 4-20 mA outputs

# WEB GUIDING SYSTEMS

Controlled lateral alignment of the web is absolutely essential to providing high quality product and reducing scrap and waste. Nexen web guiding systems are designed, tested and proven to give you that alignment

## Web Guiding Applications

### Unwind Guiding (See Figure 1)

As material is unwound and fed into a machine, it must be properly aligned with the process to be performed upon it.

Unwind guiding is accomplished by sensing

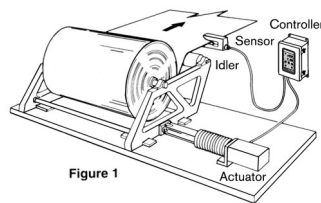


Figure 1

the web as it enters the machine. The sensor is mounted as part of the main machine frame and placed so that its center is located at the desired position of the web. The controller directs movement of the actuator, which moves the roll stand laterally across the machine to bring the edge of the roll into the center of the sensor.

### Intermediate Guiding

This method is normally used in the intermediate zone to make minor corrections in position. The steering rolls pivot, directing the web to the left or right to bring it into center position within the sensor.

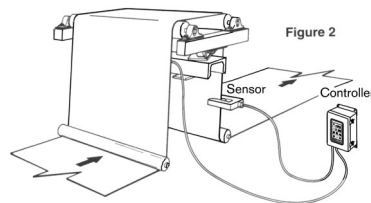


Figure 2

### Displacement Guides (See Figure 2)

Displacement guides consist of a pair of pivoting rollers with a pair of stationary idle rollers, one lead-in roller before the guide and a lead-out roller after the guide. This type of guide induces pure, out-of-plane twisting of the web, which is gentler on a web than a steering guide. Much shorter free spans are required before and after guiding when compared to a steering guide. Displacement guides are often used on printing presses and other applications where space is at a premium.

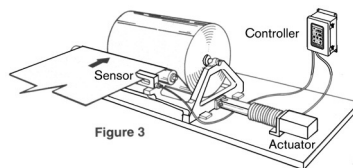


Figure 3

### Windup Guiding (See Figure 3)

The position of the web is monitored by a sensor mounted on the moveable windup roll stand, positioned before the last roll on the machine. As the web shifts laterally, the controller signals the actuator to move the windup roll into line with the web edge.

### Chase Guiding

Chase guiding is a technique used to align the edge of two or more webs or to align a process to a web. The sensor is moved by the actuator to "chase" the edge of the web.

In the case of aligning several web edges, the sensors for the second and subsequent webs are aligned with the chase sensor and move in tandem with it. This moves the target or center of the sensor for all subsequent webs, which in turn causes the guides to align their webs to the target.

To align the process to the web, the sensor is mounted to the moveable process component. The actuator then moves the component, causing the sensor to chase the web edge or printed line.

## FAMILY OF PRODUCTS

### "Air Champ"

#### Color Codes:

Clutches, Brakes, & Clutch/Brakes:  
Indicates not rotating in mode:

Indicates rotating in mode:

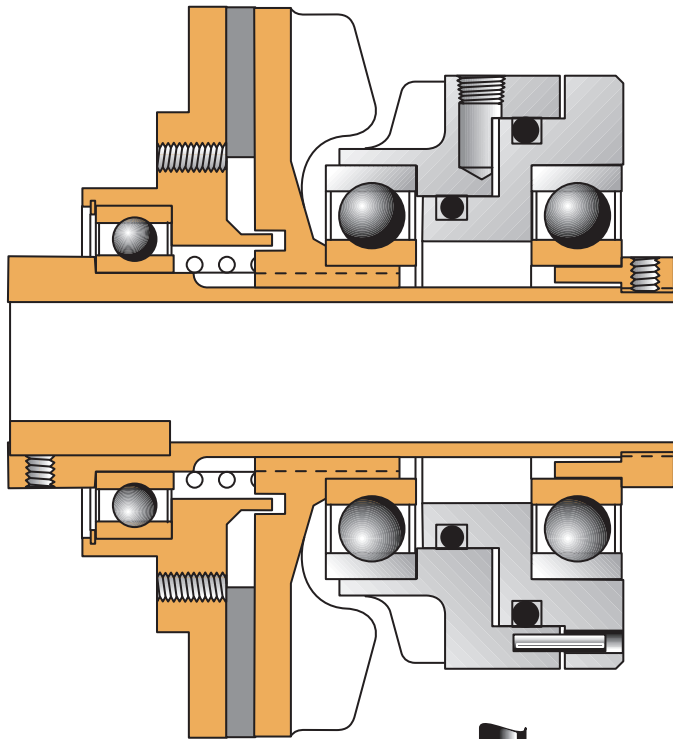
*Power input through shaft, unless noted.*

Drum Brake & Caliper Brakes:  
Parts that cause clamping action:

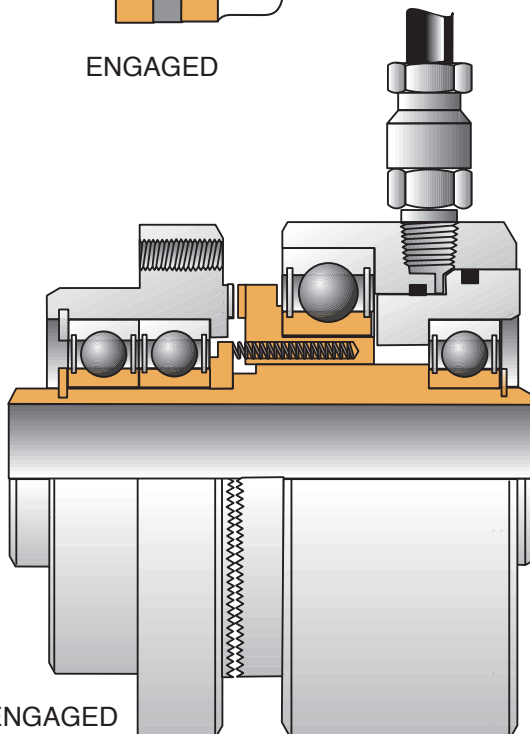
Disc:

Nexen manufactures and markets over twenty different types of clutches, brakes and clutch/brakes for both standard and metric applications—with many model sizes of each. Nexen also provides many accessories and controls to fit your needs. All are of the highest quality, simply designed, well engineered and ruggedly built. Nexen has a standard clutch or brake to solve every motion control need you can imagine.

The illustrations of the "Air Champ" Family of Products on the following pages are intended to show a representation of the product line and to express only their basic function using typical cross sections. Please refer to specific product pages for application, specification and product information. Designs shown are subject to change without notice.



ENGAGED



DISENGAGED

#### FRICITION CLUTCHES

Single-disc, self-adjusting Clutches mount on a driving or driven shaft. They cover transmitted horsepower ratings from fractional to 25 hp, torque ratings to 5000 In Lb with thermal capacities to 2.5 thermal horsepower and maximum operating speeds to 3600 rpm. Most are available in Sheave, Pilot or Coupling Mount versions. 9 Standard Models, 5 Metric Models address these product functions:

- ▶ Controlled Acceleration
- ▶ Inching/Jogging
- ▶ Rapid Cycling/Indexing
- ▶ Positioning
- ▶ Reversing/Multiple Speed
- ▶ Tension Control
- ▶ Overload Protection
- ▶ Disconnect
- ▶ Torque Limiting

#### TOOTH CLUTCHES

Available in a variety of Single or Multiple Position Models, as well as a Sprocket Tooth design, there are 40 Standard and 35 Metric Models in all. Most can be used with a Single or Double Flex Coupling Assembly for in-line coupling applications.

Sprocket Tooth Clutches (5HS) are ideal for in-line, zoned conveyor applications, as well as other applications requiring bi-directional movement. They cover torque ratings up to 3,140 In Lb, and operational speeds up to 4000 rpm in 3 different Bore sizes. Choose between Single strand or Integral double/single sprocket mount designs. There are 3 Standard Models.

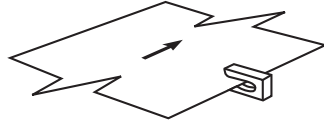
Multiple Position Clutches are available in either an Open (5H, 5HP) or Enclosed (5HP-E) design, as well as Flange (5H) or Pilot Mount (5HP, 5HP-E) options. They cover torque ratings up to 55,000 In Lb, and operational speeds up to 4000 rpm in 15 different Bore sizes. The Open-Flange Mount design is available in 7 Standard and 7 Metric Models; the Open-Pilot Mount design is available in 10 Standard and 8 Metric Models; the Enclosed-Pilot Mount design is available in 6 Standard Models and 6 Metric Models.

# GUIDE SENSING OPTIONS

## WEB GUIDE SENSORS AND CONTROLLERS

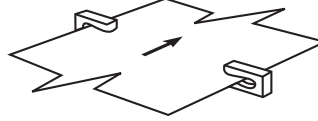


### Position Control Configurations



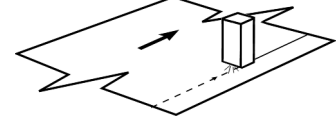
#### Edge Position Control

One edge of the material is aligned with the process at all times. The position of this edge remains constant throughout all processes. The opposite edge is permitted to run free and is eventually edge-trimmed to meet the final specified web width.



#### Center Position Control

This technique requires one sensor on each side of the web. The objective is to maintain the center of the web on the mean centerline of the machine. If the web varies in width, center position control will maintain an equal edge trim on each side of the web, to be removed later in the processing.



#### Line Follower Control

Line follower control is always employed for previously processed materials, using a sensor to follow a line or the edge of a pattern of print or coating material previously laid down on the web.

### Ultrasonic Sensors

Ultrasonic sensors are used particularly for edge or center control of photosensitive materials such as photographic film and print paper, and with transparent or translucent films bearing a coating, printing or an opaque surface near the edge. A high frequency sound is transmitted across an air gap to a receiving unit. Interruption of the signal is interpreted as a change in position of the web material. They can also be used with opaque materials.

### Infrared Sensors

A pulsed LED transmits an infrared signal across the web edge to a light sensitive sensor; edge position of the material is

determined from the amount of light sensed at the receiving unit. Infrared sensors can also be configured in pairs for center position control. The infrared signal is not affected by ambient light and is useful for processing of certain photosensitive materials. Infrared sensors are used for opaque materials only.

### Line Follower Sensors

A line following sensor bounces light off a web as it passes around a transport roll in the machine. It is received by a sensing element contained in the same housing. This type of sensor is normally used to follow a printed line or the edge of a printed pattern on the web.



Web Guide Controller  
Self Contained



Web Guide Controller

### Web Guide Controllers

A Nexen web guide controller receives signals from a web position sensor and translates them into control signals for web position drive motors. With the appropriate sensor, they offer control accuracy to within  $\pm 0.004$  inches ( $\pm 0.1$  mm) of an edge or centerline position.

The purpose of the controller is to provide automatic positioning of the web in relation to the sensor. Web position information from the sensor is fed to the web guide controller. The controller's motor control drives an electrical linear actuator to correct the web position by adjusting the roll stand or guide roll mechanism.

## AUXILIARY PRODUCTS

### Splice Detector System



The Splice Detector System is a visible light system used to sense splices or double thicknesses in translucent materials. It provides both a visual indication and a relay signal at each splice.

This system is ideally suited for use where high nipping pressure in a machine must be momentarily relaxed to allow a splice to pass through without damaging the web, printing blanket or other components.

This system typically does not require operator intervention. A change in web thickness of more than three seconds duration will cause the system's controller to recalibrate to the new web thickness.

### Paper Checker System



The Paper Checker System detects web breaks and splices on web machines.

This system makes use of an ultrasonic sensor to prevent the false triggering that can result from the presence of print or

other patterns on the web material and for use with photo sensitive materials. Each break or splice is indicated by a separate relay signal and front panel indicator lights.

This Nexen Paper Checker System can be used on transparent to fully opaque webs and with laminates of paper, film and foil. It handles web speeds from 30 to more than 3000 feet per minute, (10 to 1000 meters per minute).