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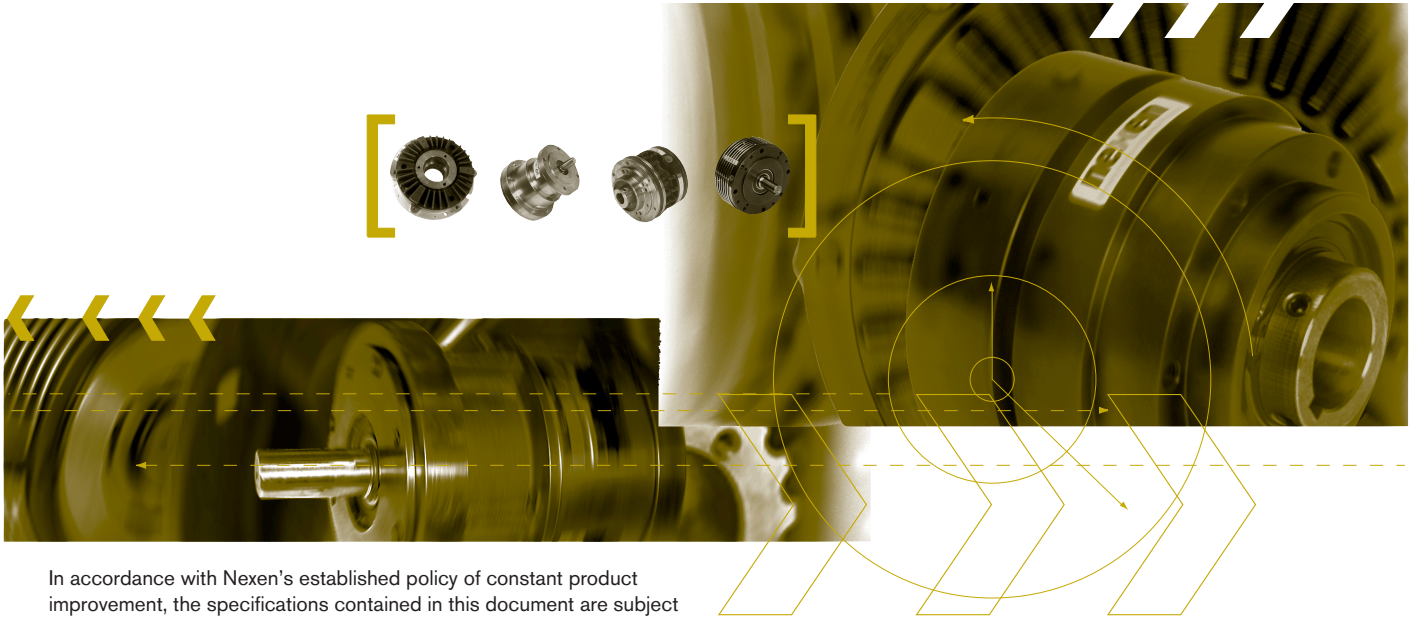
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◀ FAMILY OF PRODUCTS**▶ AIR CHAMP[®] FEATURES AND BENEFITS**

For nearly one-half century, Nexen has been designing and manufacturing Clutches, Brakes and other products to support your motion control requirements. Each product is a result of years of innovative design and engineering, precise manufacturing and most importantly - understanding the requirements of motion control applications.

Whether your application requirements are simple or extensive, you will find our Air Champ[®] product family will service your motion control needs time and time again. You will find specific product features, benefits and specifications for every Air Champ[®] product in this catalog. However, there is a common thread of features and benefits throughout the Air Champ[®] product line.

Simple design, durability, efficiency and economy make Air Champ[®] products the best choice for your motion control applications.

“Air Champ”**Simple Design**

Easy to understand • Easy to install

Air Activated

Increased efficiency and productivity • Inexpensive to operate

High Thermal Dissipation

Less torque fade • High cyclic rates • Long product life

Self Adjusting

Automatic torque maintenance • Worry-free operation

Low Maintenance

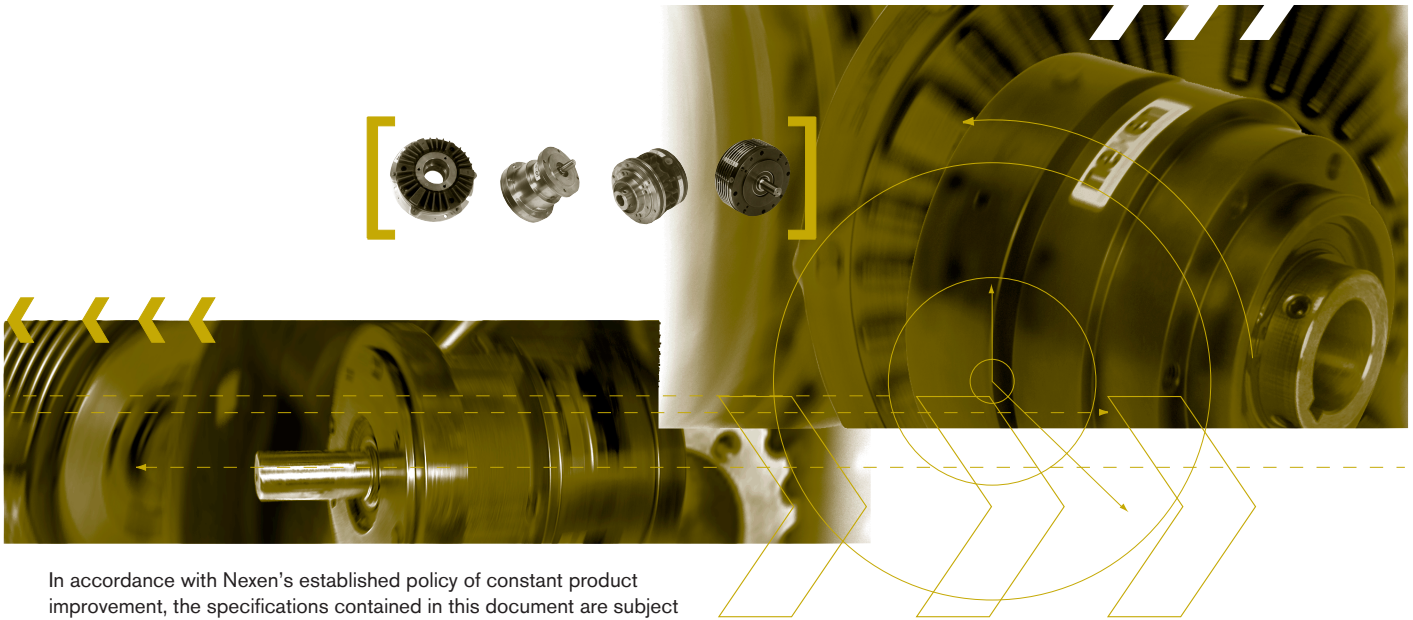
Long product life • Less down time • Easily serviced

Wide Selection

Application and Operational versatility • Mounting flexibility
Versatile product characteristics • Imperial & Metric designs

Ready to Ship

Readily available stock • Quick service



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

“AIR CHAMP” FAMILY OF PRODUCTS

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FAMILY OF PRODUCTS

“Air Champ”

Color Codes:

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

Indicates rotating in mode:

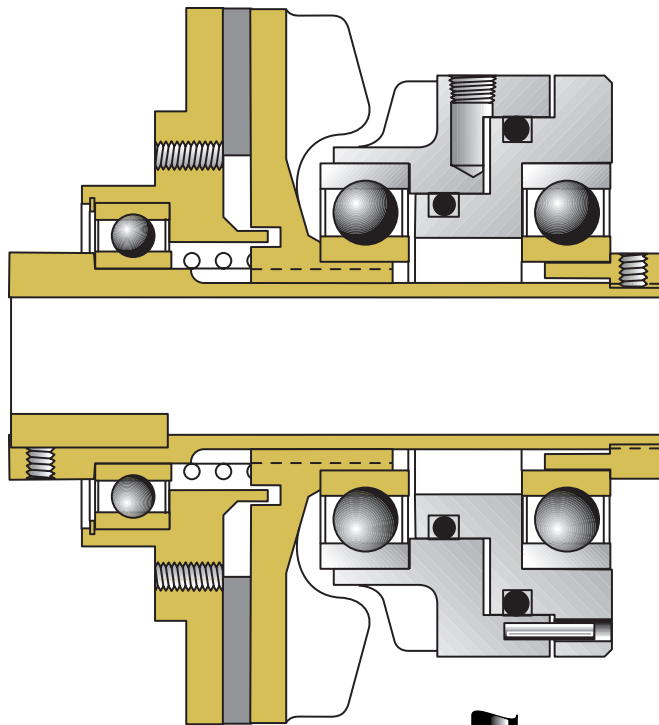
Power input through shaft, unless noted.

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

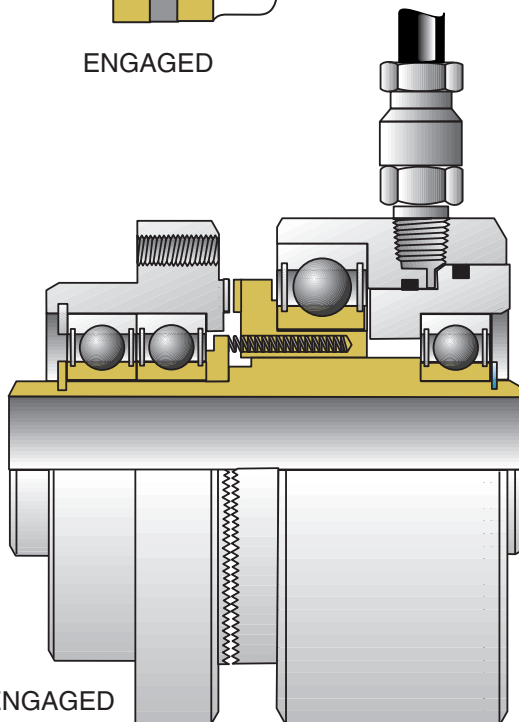
Disc:

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

► FRICTION 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.

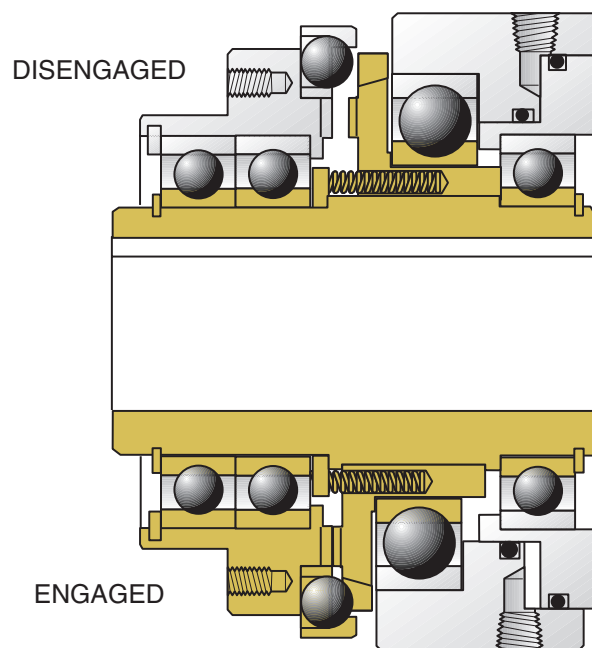
Multiple Position Clutches are available in either an Open (5H, 5HP) or Enclosed (5HP-E) design, as well as Flange (5H) or Pilot Mount (5HP, 5HP-E) options. They cover torque ratings up to 55,000 In Lb, and operational speeds up to 4000 rpm in 15 different Bore sizes. The Open-Flange Mount design is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

▶ 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:

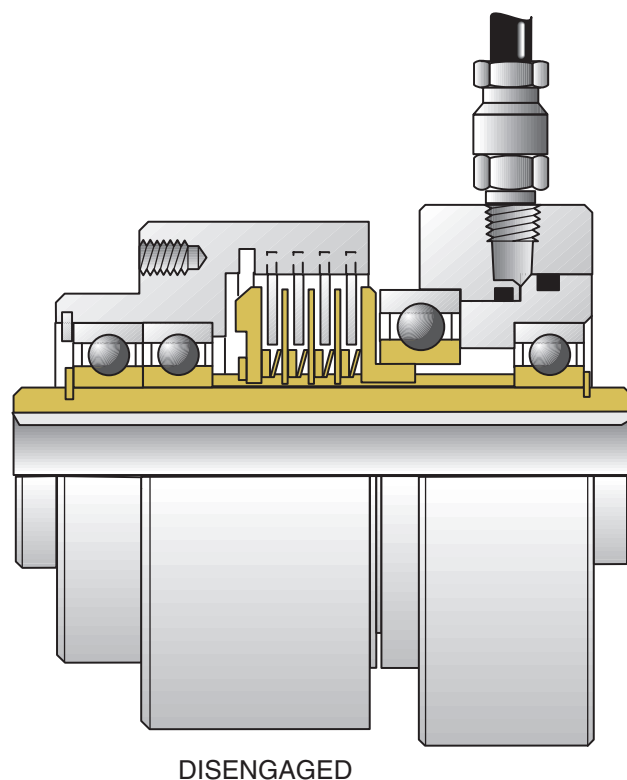
- ▶ Positioning
- ▶ Reversing/Multiple Speed
- ▶ Disconnect
- ▶ Positive Drive



▶ MULTIPLE DISC CLUTCHES

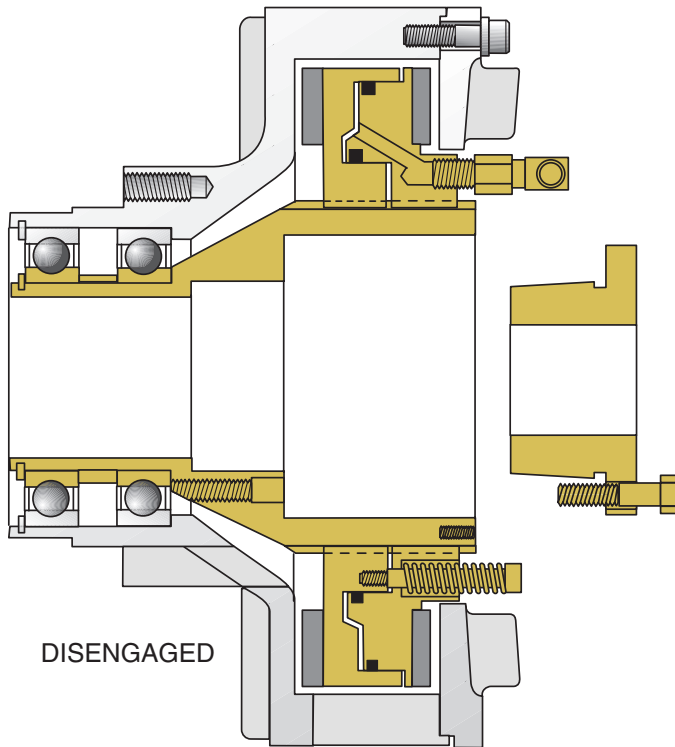
Multiple-Disc Clutches feature either 3 or 4 friction discs and facings positioned side-by-side. Static air pressure squeezes them together—the result is a small package for high torque applications. Torque capacities range from 750 to 10,000 In Lb, with operational speeds ranging from 700 to 1800 rpm 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



FAMILY OF PRODUCTS

"Air Champ"



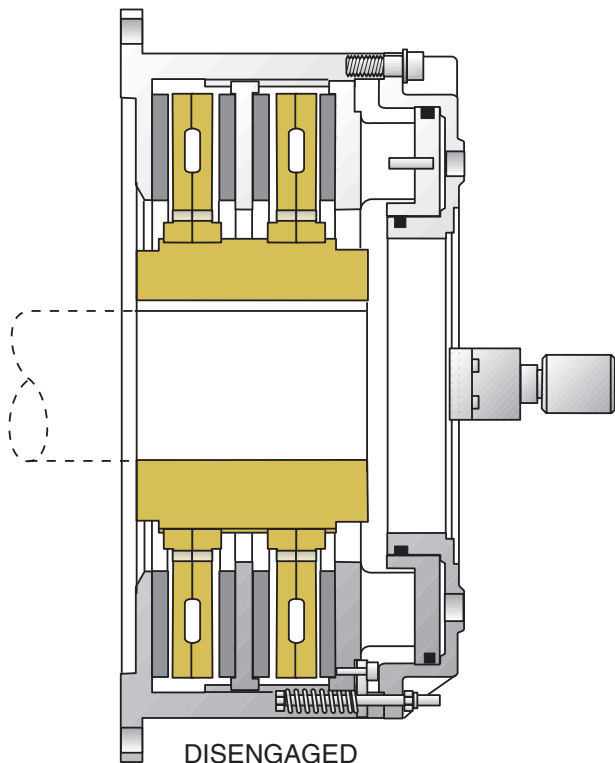
DUAL PLATE CLUTCHES & BRAKES

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

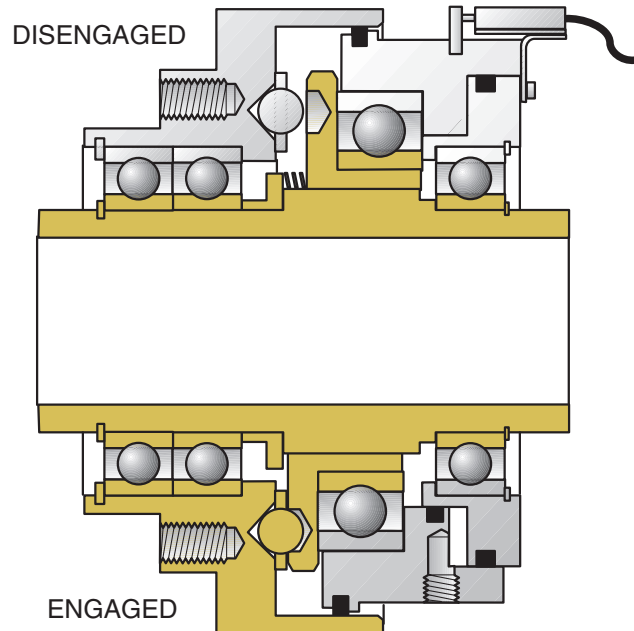
High Capacity Brakes address these functions:

- ▶ 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:

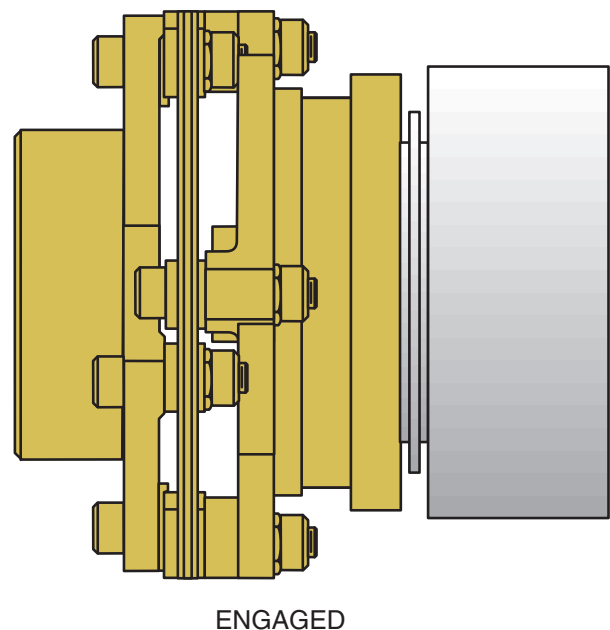
- ▶ Positioning
- ▶ Overload Protection
- ▶ Disconnect
- ▶ Positive Drive



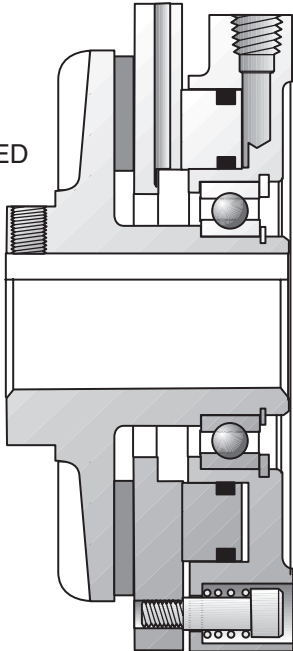
▶ FLEXIBLE COUPLINGS

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



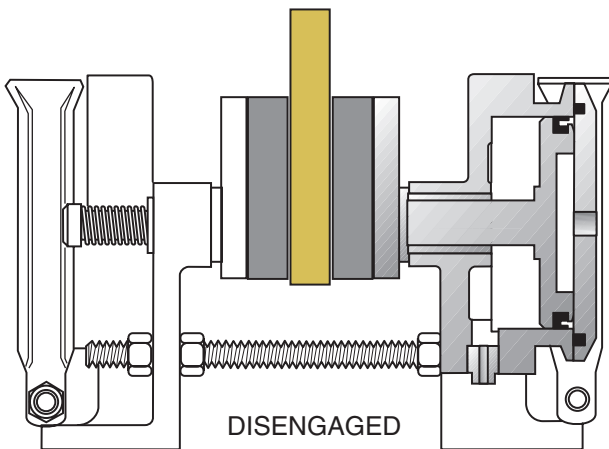
ENGAGED



► 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 10 Standard Models and 4 Metric Models from which to choose. Friction Brakes address these functions:

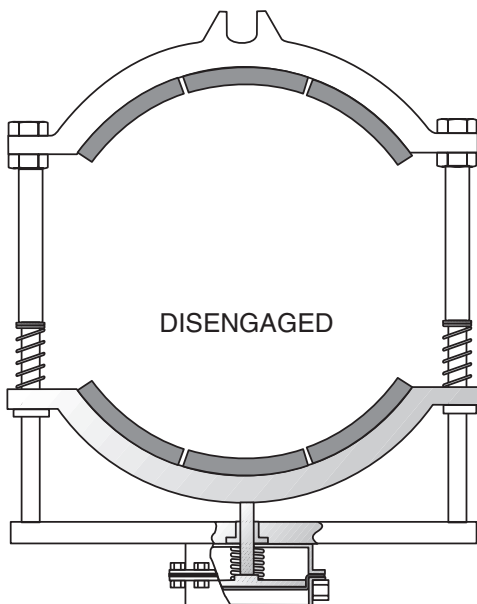
- Controlled Deceleration
- Rapid Cycling/Indexing
- Positioning
- Tension Control
- Stopping/Holding



► 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

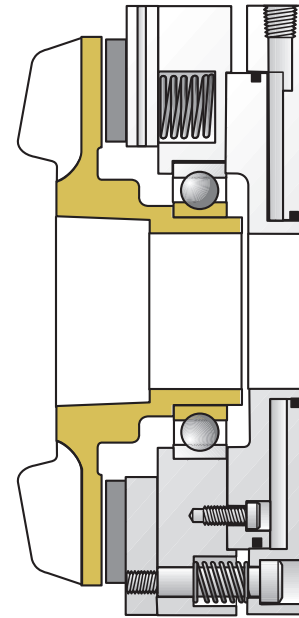
7 Standard Models offer maximum efficiency and dependability. All can mount on the shaft, a few can also bracket mount. 3 Models have a hinge top design for use with removable brake drums. Drums available in Standard Bore sizes or without bore customization. Operational specifications provide a wide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

- Controlled Deceleration
- Tension Control
- Stopping/Holding

▶ SPRING ENGAGED BRAKES

Spring Engaged Brakes are available in 11 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

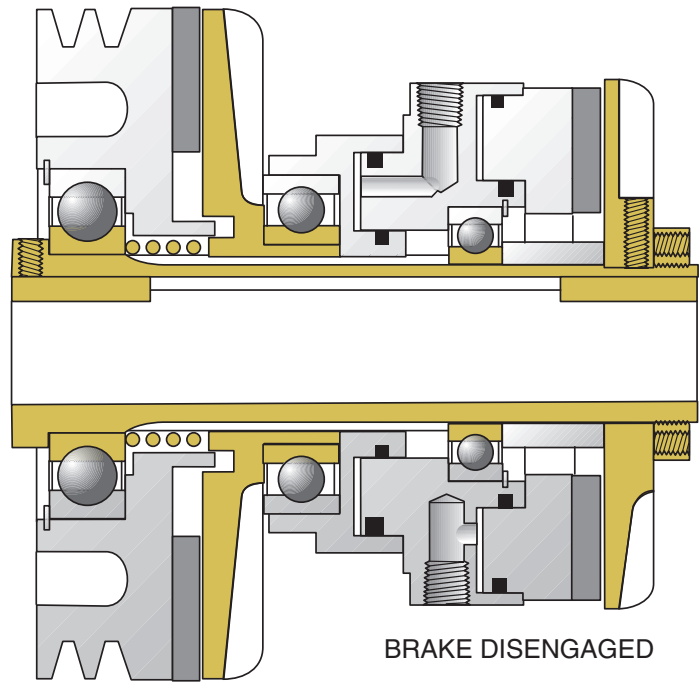


DISENGAGED

▶ 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. 5 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. 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:

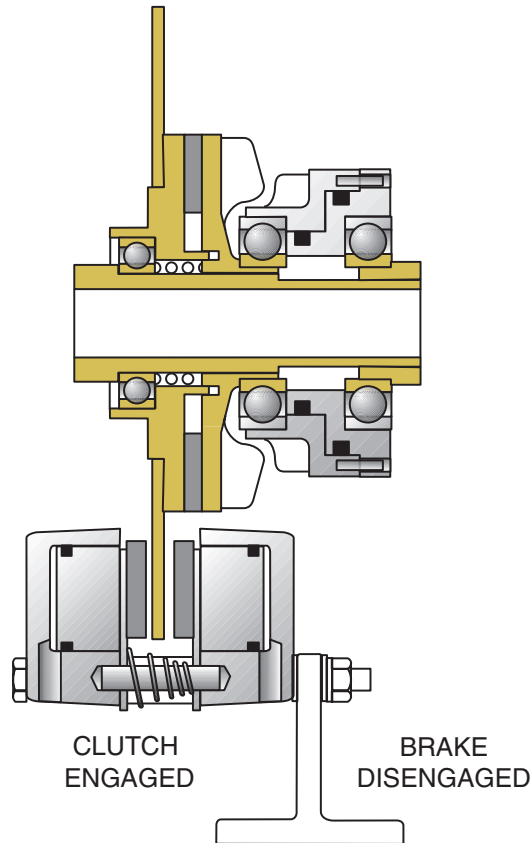
- ▶ Controlled Acceleration
- ▶ Controlled Deceleration
- ▶ Inching/Jogging
- ▶ Stopping/Holding
- ▶ Disconnect



CLUTCH DISENGAGED

BRAKE DISENGAGED

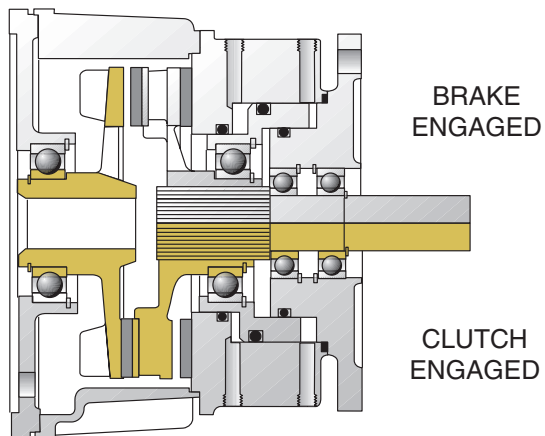
FAMILY OF PRODUCTS



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:

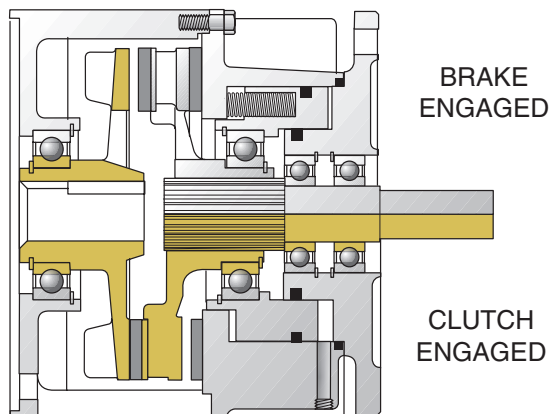
- ▶ Controlled Acceleration
- ▶ Controlled Deceleration
- ▶ Inching/Jogging
- ▶ Stopping/Holding
- ▶ Disconnect



NEMA “C ” FLANGE CLUTCH-BRAKES

Designed to mount directly to motors and reducers to provide absolute control. There are 4 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:

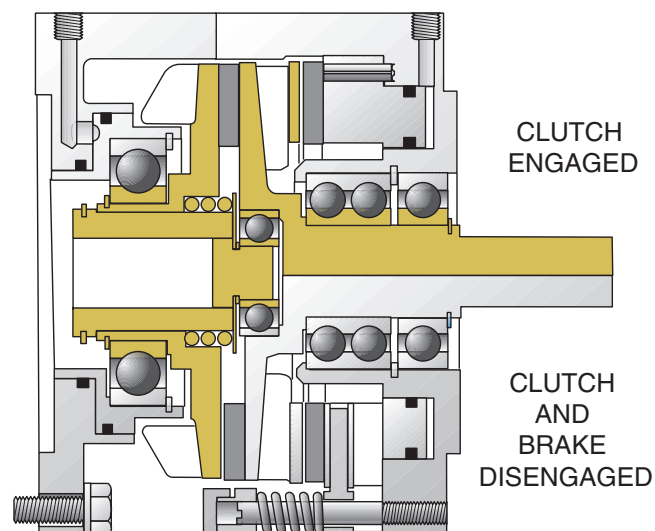
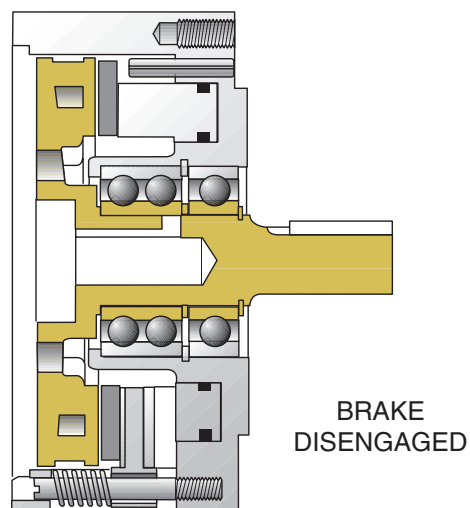
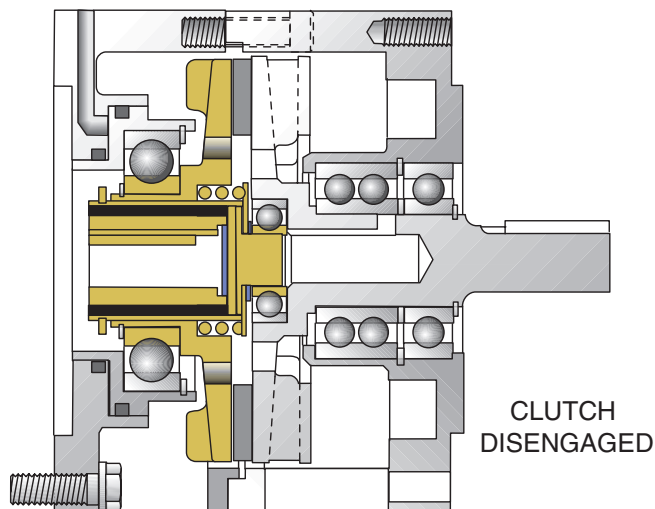
- ▶ Controlled Acceleration
- ▶ Controlled Deceleration
- ▶ Inching/Jogging
- ▶ Stopping/Holding



▸ 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

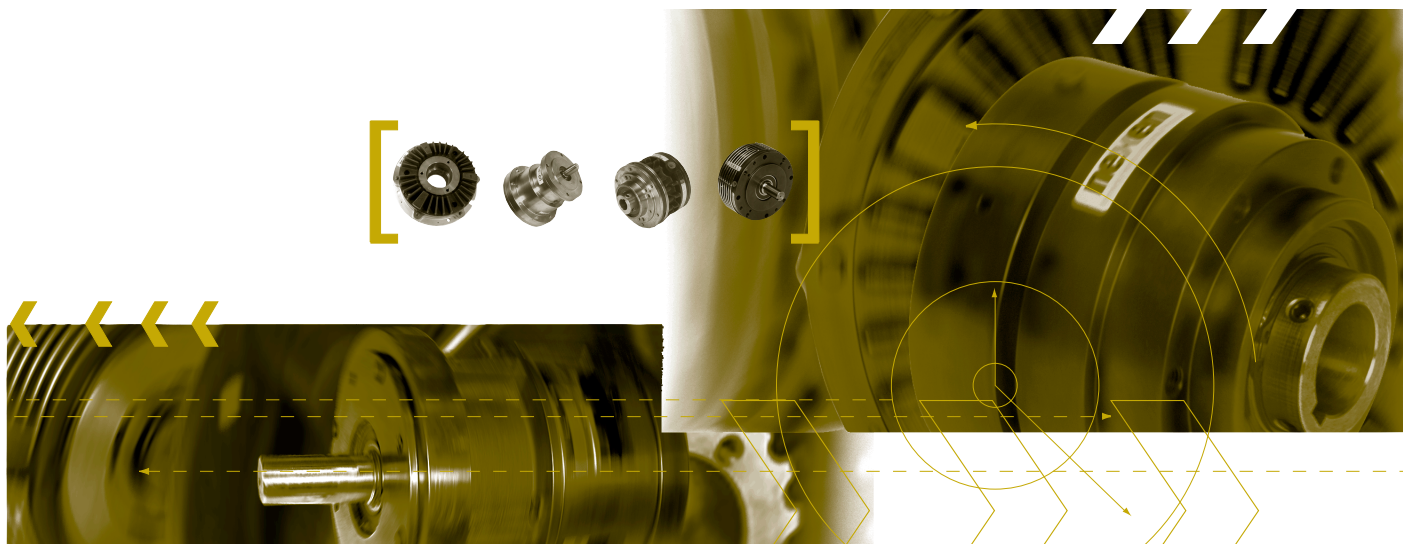


CLUTCHES

“Air Champ”

PRODUCT FUNCTION/SELECTION CHART

Product Groups	Friction Clutches	Tooth Clutches	Multi-Disc Clutches	Dual Plate Clutches	High Capacity Clutches
General Features					
Number of Model Options	9 Standard 5 Metric	40 Standard 35 Metric	7 Standard 0 Metric	4 Standard 0 Metric	16 Standard 0 Metric
Functions					
Controlled Acceleration	Yes			Yes	Yes
Inching/Jogging	Yes			Yes	Yes
Cycling/Indexing	Yes			Yes	Yes
Positioning	Yes	Yes	Yes	Yes	Yes
Reversing/Multiple Speed	Yes	Yes	Yes	Yes	Yes
Tension Control	Yes			Yes	
Overload Protection	Yes	Yes		Yes	
Disconnect/Connect	Yes	Yes	Yes	Yes	Yes
Positive Drive		Yes			



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

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Single Position	88-89

FRICTION CLUTCH SELECTION CHART

Friction clutch recommendation is based upon air pressure of 50 psi, transmitted horsepower and speed.

	RPM																					
	100	200	300	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	2200	2600	3000	3600
TRANSMITTED HORSEPOWER	1/36	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
	1/20	BW/B-275	BW/B-275	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
	1/18	BW/B-275	BW/B-275	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
	1/15		BW/B-275	BW/B-275	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
	1/12		BW/B-275	BW/B-275	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
	1/10		BW/B-275	BW/B-275	BW/B-275	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
	1/9		BW/B-275	BW/B-275	BW/B-275	BW/B-275	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
	1/8	F-450	F-450	BW/B-275	BW/B-275	BW/B-275	BW/B-275	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
	1/6	F-450	F-450	F-450	BW/B-275	BW/B-275	BW/B-275	BW/B-275	BW/B-275	M	M	M	M	M	M	M	M	M	M	M	M	M
	1/4	L-600	F-450	F-450	F-450	BW/B-275	BW/B-275	BW/B-275	BW/B-275	BW/B-275	BW/B-275	BW/B-275	BW/B-275	M	M	M	M	M	M	M	M	M
	1/3	L-600	F-450	F-450	F-450	F-450	F-450	BW/B-275	BW/B-275	BW/B-275	BW/B-275	BW/B-275	BW/B-275	BW/B-275	BW/B-275	BW/B-275	BW/B-275	BW/B-275	M	M	M	M
	1/2	M-800	L-600	L-600	F-450	F-450	F-450	F-450	F-450	BW/B-275	BW/B-275	BW/B-275	BW/B-275	BW/B-275	BW/B-275	BW/B-275	BW/B-275	BW/B-275	BW/B-275	BW/B-275	M	M
	1	H-1000	H-1000	L-600	L-600	L-600	F-450	F-450	F-450	F-450	F-450	F-450	F-450	F-450	F-450	F-450	BW/B-275	BW/B-275	BW/B-275	BW/B-275	BW/B-275	BW/B-275
	2	H-1000	H-1000	M-800	M-800	M-800	L-600	L-600	L-600	L-600	L-600	L-600	L-600	L-600	L-600	L-600	F-450	F-450	F-450	F-450	F-450	F-450
	3	H-1000	H-1000	H-1000	M-800	M-800	M-800	M-800	L-600	L-600	L-600	L-600	L-600	L-600	L-600	L-600	L-600	F-450	F-450	F-450	F-450	F-450
	5	XHW	H-1000	H-1000	H-1000	H-1000	M-800	M-800	M-800	M-800	M-800	M-800	M-800	M-800	M-800	L-600	L-600	L-600	L-600	L-600	L-600	F-450
	7 1/2		XHW	H-1000	H-1000	H-1000	H-1000	H-1000	M-800	M-800	M-800	M-800	M-800	M-800	M-800	M-800	M-800	M-800	M-800	L-600	L-600	L-600
	10		XHW	XHW	H-1000	H-1000	H-1000	H-1000	H-1000	H-1000	H-1000	M-800	M-800	M-800	M-800	M-800	M-800	M-800	REFER TO DUAL PLATE CLUTCH PRODUCTS PAGE 35			
	15			XHW	XHW	H-1000	H-1000	H-1000	H-1000	H-1000	H-1000	H-1000	H-1000	H-1000	H-1000	H-1000	H-1000	H-1000				
	20				XHW	XHW	H-1000	H-1000	H-1000	H-1000	H-1000	H-1000	H-1000	H-1000	H-1000	H-1000	H-1000	H-1000				
	25					XHW	XHW	XHW	H-1000	H-1000	H-1000	H-1000	H-1000	H-1000	H-1000	H-1000	H-1000	H-1000				
	30					XHW	XHW	XHW	XHW													
	40								XHW	XHW	XHW	XHW							REFER TO DUAL PLATE CLUTCH PRODUCTS PAGE 35			
	50											XHW	XHW									

IMPORTANT NOTES:

1. For static torque ratings at different air pressures, refer to individual models to ensure conformity.
2. For operating speeds over 1800 rpm, refer to individual models or consult Nexen to ensure conformity.
3. Limited to peak thermal input rates of .9 HP_T per square inch of interface area.
4. Bars equal PSI x 0.0689.

► MICRO FRICTION CLUTCH

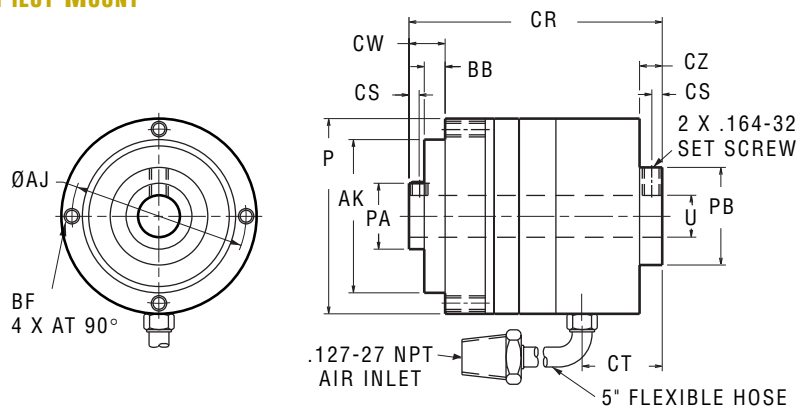
Mounting Style	Product Number	Bore (In)	Shipping Wt. (Lbs)
Pilot	856800	0.375	3

For Inertia Values of components, see page 257.

Required shaft insertion into clutch hub = minimum of 1 inch from Pilot side.

MICRO MODEL—APPROXIMATE DIMENSIONS (INCHES)

► PILOT MOUNT



PRODUCT NUMBER	AJ	AK ^{+0.000} _{-0.001}	BB	BF	CR	CS	CT	CW	CZ	P	PA	PB	U ^{+0.001} _{-0.000}
856800	1.562	1.374	0.19	.138-32	2.27	0.09	0.72	0.32	0.20	1.75	0.59	0.88	0.375

MICRO FRICTION CLUTCH

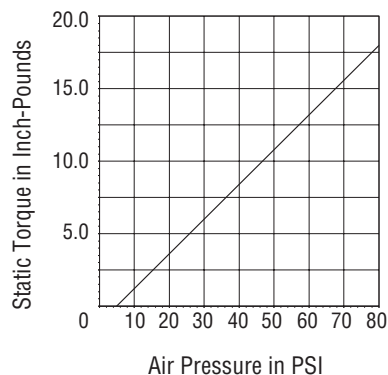
The Micro Friction Clutch provides high performance in a small package:

- Static Torque capacity up to 18 In. Lbs. @ 80 psi
- Maximum Operating Speed up to 3600 rpm
- Transmitted Horsepower values from 0.06 to 0.50
- Thermal Horsepower rating of 0.06 @ 1800 rpm
- Heat Sink capacity of 1900 Ft. Lbs.

This Pilot Mount clutch mounts easily and comes with:

- 0.375 inch **Standard Bore**
- 5 inch hose with .190-32 by .125 NPT included.

► TORQUE VS. AIR PRESSURE



NOTE: Dynamic torque is approximately 85% of static torque.

CLUTCHES

"Air Champ"

BANTAM WEIGHT MODEL BW FRICTION CLUTCH

The BW Friction Clutch provides excellent performance:

- ▶ Static Torque capacity up to 100 In. Lbs. @ 80 psi
- ▶ Maximum Operating Speed up to 3600 rpm
- ▶ Transmitted Horsepower values from 0.05 to 1.00
- ▶ Thermal Horsepower rating of 0.13 @ 1800 rpm
- ▶ Heat Sink capacity of 5650 Ft. Lbs.
- ▶ **Corrosion-Resistant** Model available for damp environments

This clutch is thru-shaft mounted to provide design versatility in **5 Models**:

- ▶ **2 Sheave Mount** units provide 1-"3V" or 1-"A" Groove options
- ▶ **4 Pilot Mount** units with different standard bore sizes
- ▶ **Standard Bore** sizes of 0.500 and 0.625 inches
- ▶ Customize the bore to your shaft diameter with a **Bushing** or **Coupling Half**
- ▶ Tapped holes provided for easy mounting in applications with pulleys, sprockets or gears
- ▶ 8.25 inch hose included
- ▶ **BW** is equipped with Thrust Bearings and a Single Key Splined Hub.
- ▶ **B-275** is equipped with Sealed, Radial Bearings and a Multi-tooth Splined Hub.

▶ BW AND B-275 MODEL CLUTCHES

Clutch Style	Product Number	Sheave Diameter	Bore (In)	Key Size (sq)	Shipping Wt. (Lbs)
Pilot Mount, BW	800100	--	0.625	0.188	4
Pilot Mount, BW	800111	--	0.500	0.125	4
Pilot Mount Corrosion-Resistant, BW	800107	--	0.625	0.188	4
Pilot Mount, B-275	802870	--	0.625	0.188	4
Sheave Mount, 1-"3V"	800000	2.750 OD	0.625	0.188	4
Sheave Mount, 1-"A"	800004	3.000 PD	0.625	0.188	4
Pilot w/Coupling Half	Select a Pilot Mount and a Coupling Half to achieve this style of mount.				

For Inertia Values of components, see page 257.

Keys are included. Required shaft insertion into clutch hub = minimum of 1.50 inches from Pilot side.

▶ BUSHING OPTIONS (FOR 0.625 BORE CLUTCHES ONLY)

Bushings fit within the bore of the clutch, reducing the bore to the amount indicated.

Product Number	Reduces Clutch Bore Size to (In)	Shipping Wt. (Lbs)
800200	0.500	1
800900	No Bore/Customer machines	1

▶ COUPLING HALF OPTIONS

A Coupling Half is used for in-line applications. To achieve a Pilot Mount with Coupling Half mounting configuration:

1. Select a Pilot Mount Clutch from above;
2. Select a Coupling Half from the chart below which fits your shaft requirements;
3. Order Clutch and Coupling Half separately.

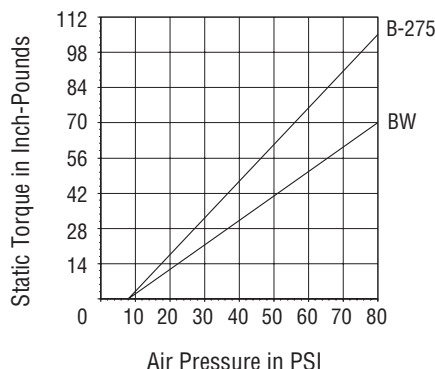
Product Number	Bore Size (In)	Key Size (sq)	Shipping Wt. (Lbs)
800300	0.500	0.125	1
800307	0.500	0.125	1 ^①
800400	0.625	0.188	1
800500	0.750	0.188	1

^①Nickle Plated

▶ PULLEYS, SPROCKETS, GEARS

Tapped holes are provided for ease of mounting. Nexen does not furnish these items. For minimum sprocket requirements, see page 267.

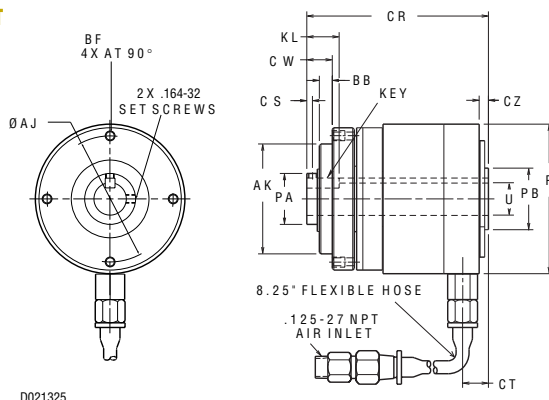
▶ TORQUE Vs. AIR PRESSURE



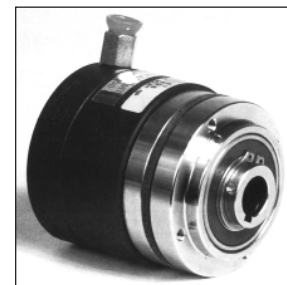
NOTE: Dynamic torque is approximately 85% of static torque.

BW AND B-275 MODEL CLUTCHES - APPROXIMATE DIMENSIONS (INCHES)

Pilot Mount

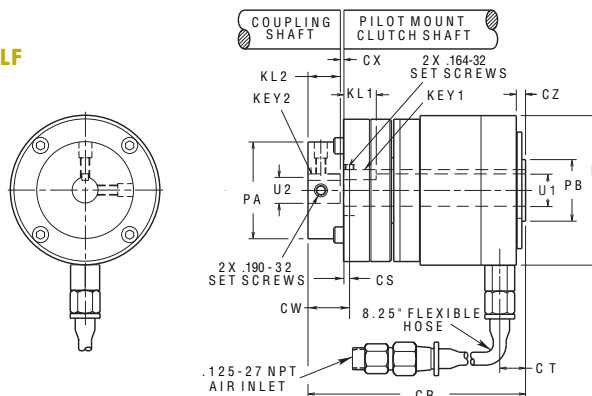


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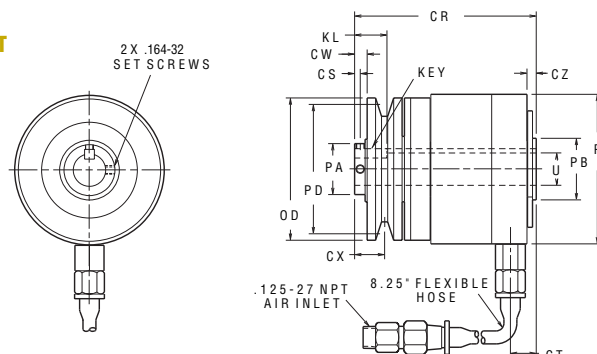
PRODUCT NUMBER	AJ	AK ±.001	BB	BF	CR	CS	CT	CW	CZ	KL	KEY (SQ)	P	PA	PB	U ^{+.001} _{-.000}
800100	2.437	2.124	0.25	.190-32	3.51	0.11	0.50	0.49	0.18	0.62	0.188	2.89	0.98	1.19	0.625
800107	2.437	2.124	0.25	.190-32	3.51	0.11	0.50	0.49	0.18	0.62	0.188	2.89	0.98	1.19	0.625
800111	2.437	2.124	0.25	.190-32	3.51	0.11	0.50	0.49	0.18	0.62	0.125	2.89	0.98	1.19	0.500
802870	2.437	2.124	0.25	.190-32	3.51	0.11	0.50	0.49	0.18	0.62	0.188	2.89	0.98	1.19	0.625

Pilot Mount w/Coupling Half



COUPLING PRODUCT NUMBER	CR	CS	CW	CX	CZ	KL1	KL2	KEY 1 (SQ)	KEY 2 (SQ)	P	PA	PB	U1 ^{+.001} _{-.000}	U2 ^{+.001} _{-.000}
800300	4.20	0.11	0.69	0.07	0.18	0.62	0.62	0.188	0.125	2.89	1.87	1.19	0.625	0.501
800307	4.20	0.11	0.69	0.07	0.18	0.62	0.62	0.188	0.125	2.89	1.87	1.19	0.625	0.501
800400	4.20	0.11	0.69	0.07	0.18	0.62	0.62	0.188	0.188	2.89	1.87	1.19	0.625	0.625
800500	4.20	0.11	0.69	0.07	0.18	0.62	0.62	0.188	0.188	2.89	1.87	1.19	0.625	0.751

Sheave Mount



PRODUCT NUMBER	SHEAVE		OD	PD	CR	CS	CT	CW	CX	CZ	KL	KEY (SQ)	P	PA	PB	U ^{+.001} _{-.000}
	BELT	GROOVE														
800000	"3V"	1	2.750	--	3.51	0.11	0.50	0.24	0.58	0.18	0.62	0.188	2.89	0.98	1.19	0.625
800004	"A"	1	3.250	3.000	3.51	0.11	0.50	0.17	0.54	0.18	0.62	0.188	2.89	0.98	1.19	0.625

CLUTCHES

"Air Champ"

FRICTION CLUTCH MODELS F-450 & L-600

- Static Torque capacity up to:
F-450/140 In. Lbs. @ 80 psi
L-600/370 In. Lbs. @ 80 psi
- Maximum Operating Speed up to
3600 rpm
- Transmitted Horsepower values from:
F-450/0.125 to 5.00
L-600/0.25 to 10.00
- Thermal Horsepower rating of:
F-450/0.30 @ 1800 rpm
L-600/0.75 @ 3600 rpm
- Heat Sink capacity of:
F-450/30,000 Ft. Lbs.
L-600/60,000 Ft. Lbs.

6 F-450 & 8 L-600 Models offer design flexibility:

Sheave Mount Units:

F-450/4 in 1-"3V" or 1-"A" Groove styles, each in 2 sizes
L-600/6, 4 sizes of 2-"3V" and 2 sizes of 2-"A"

2 Pilot Mount units with different standard bore sizes

Standard Bore Sizes:

F-450/0.750 and 0.875 inches
L-600/1.00 and 1.125 inches

Customize the bore to your shaft diameter with a **Bushing** or **Coupling Half**

Includes:

F-450/Air Inlet Adapter and 8.25 in. hose.
L-600/8.25 inch hose.

F-450 & L-600 MODEL CLUTCHES

Model	Clutch Style	Product Number	Sheave Diameter	Bore (In)	Key Size (sq)	Shipping Wt. (Lbs)
F-450	Pilot Mount	802850	--	0.875	0.188	12
F-450	Pilot Mount	802855	--	0.750	0.188	10
F-450	Sheave Mount 1-"3V"	802810	3.35 OD	0.875	0.188	10
F-450	Sheave Mount, 1-"3V"	802820	4.50 OD	0.875	0.188	11
F-450	Sheave Mount, 1-"A"	802830	3.80 PD	0.875	0.188	10
F-450	Sheave Mount, 1-"A"	802840	4.40 PD	0.875	0.188	10
L-600	Pilot Mount	805270	--	1.125	0.250	17
L-600	Pilot Mount	805275	--	1.000	0.250	17
L-600	Sheave Mount, 2-"3V"	805210	4.50 OD	1.125	0.250	18
L-600	Sheave Mount, 2-"3V"	805220	5.30 OD	1.125	0.250	19
L-600	Sheave Mount, 2-"3V"	805230	6.00 OD	1.125	0.250	21
L-600	Sheave Mount, 2-"3V"	805240	8.00 OD	1.125	0.250	25
L-600	Sheave Mount, 2-"A"	805250	4.40 PD	1.125	0.250	18
L-600	Sheave Mount, 2-"A"	805260	5.40 PD	1.125	0.250	20
Both Pilot w/Coupling Half Select a Pilot Mount and a Coupling Half to achieve this style of mount.						

For Inertia Values of components, see page 257. Keys are included. Required shaft insertion into clutch hub = minimum of F-450/2.00 inches, L-600/2.50 inches from Pilot side.

BUSHING OPTIONS

(FOR 0.875 & 1.125 BORE CLUTCHES ONLY)

Bushings fit within the bore of the existing clutch, reducing the bore to the amount indicated.

Bore Size	Product Number	Reduces Clutch Bore Size to (In)	Shipping Wt. (Lbs)
0.875	827200	0.500	1
0.875	802500	0.625	1
0.875	802600	0.750	1
0.875	803100	No Bore/Custom machines	1
1.125	805100	0.625	1
1.125	804600	0.750	1
1.125	804700	0.875	1
1.125	804800	1.000	1
1.125	805000	No Bore/Custom machines	1

PULLEYS, SPROCKETS AND GEARS

These can be attached to the clutch for offset shaft applications. Tapped holes are provided for ease of mounting. Nexen does not furnish these items. For minimum sprocket requirements, see page 267.

COUPLING HALF OPTIONS,

SEE PAGE 265 FOR COUPLING SPECIFICATIONS

A Coupling Half is used for in-line applications. To achieve a Pilot Mount with Coupling Half mounting configuration:

1. Select a Pilot Mount Clutch;
2. Order Clutch and Coupling Half separately.
3. Coupling Half is less taper lock bushing. Use Dodge Taper Lock® #1008/F-450, #1215/L-600, (0.500 to 1.000/F-450, 0.500 to 1.125/L-600, inch bore range). Customer furnished.

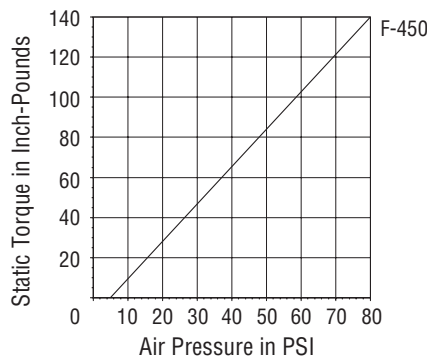
Model	Product Number	Maximum Bore Size (In)	Shipping Wt. (Lbs)
F-450	802700	1.000	3
L-600	804900	1.125	6

4. Select a Shaft Extension when the driving shaft is smaller in diameter and shorter than the length of the clutch. The Shaft Extension is the same length as the clutch and engages with the key on the pilot end. Extensions fit the driving shaft diameter.

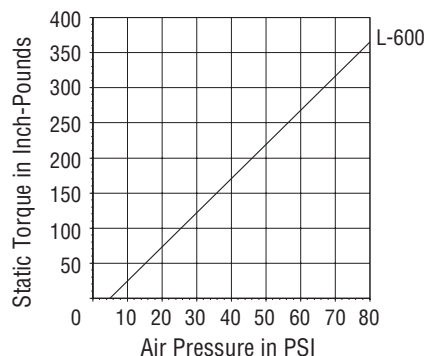
Only for Bore Size	Product Number	Driving Shaft DIA.	Shipping Wt. (Lbs)
0.875	802800	0.500	1
0.875	803000	0.625	1
1.125	805200	0.500	1.5
1.125	805300	0.625	1.5
1.125	805400	0.750	1.5
1.125	805500	0.875	1.5

TORQUE VS. AIR PRESSURE

F-450



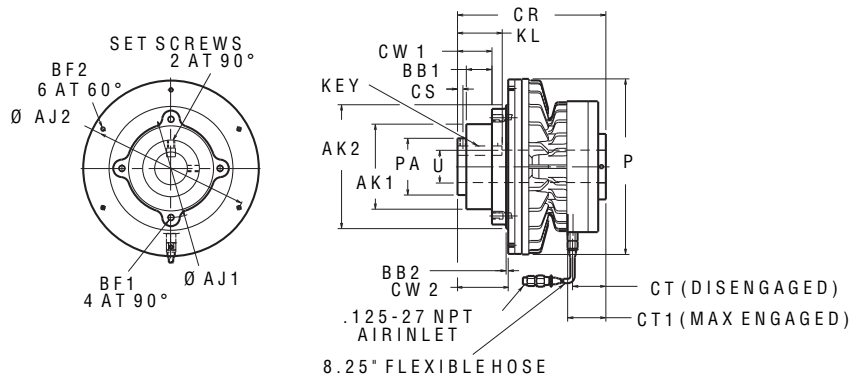
L-600



NOTE: Dynamic torque is approximately 85% of static torque.

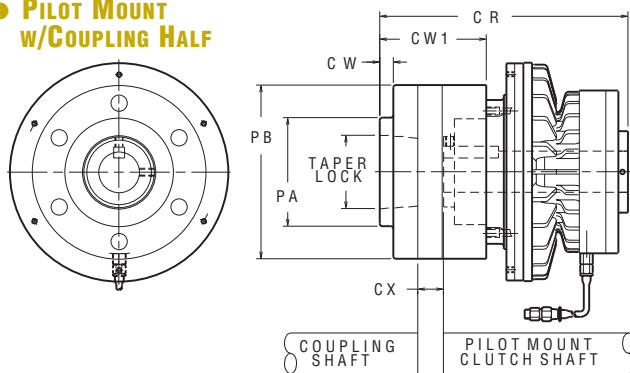
F-450 & L-600 MODEL CLUTCHES - APPROXIMATE DIMENSIONS (INCHES)

Pilot Mount



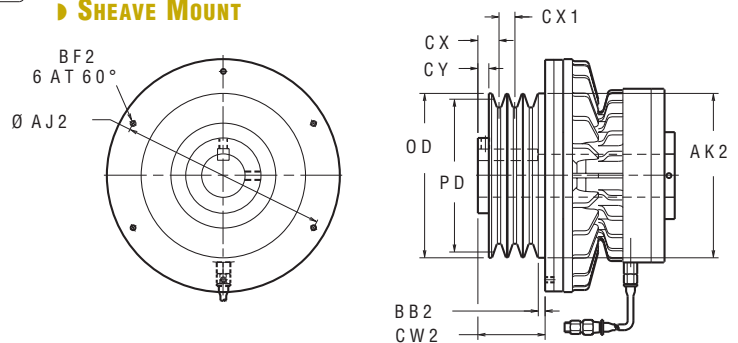
MODEL	PRODUCT NUMBER	AJ1	AJ2	AK1 ±.001	AK2 ±.001	BB1	BB2	BF1	BF2	CR	CS	CT	CT1	CW1	CW2	KL	KEY (SQ)	P	PA	SET SCREWS	U ^{+.001} _{-.000}
F-450	802850	3.000	4.000	2.498	3.498	0.60	0.19	.250-20	.190-24	4.75	0.25	1.33	1.42	1.04	1.23	1.062	0.188	4.56	1.38	.250-20	0.875
F-450	802855	3.000	4.000	2.498	3.498	0.60	0.19	.250-20	.190-24	4.75	0.25	1.33	1.42	1.04	1.23	1.062	0.188	4.56	1.38	.250-20	0.750
L-600	805270	3.500	5.500	2.998	4.498	0.62	0.07	.250-20	.190-24	5.56	0.25	1.79	1.94	1.23	1.55	1.37	0.250	6.06	1.84	.312-18	1.125
L-600	805275	3.500	5.500	2.998	4.498	0.62	0.07	.250-20	.190-24	5.56	0.25	1.79	1.94	1.23	1.55	1.37	0.250	6.06	1.84	.312-18	1.000

Pilot Mount w/Coupling Half



MODEL	COUPLING PRODUCT NUMBER	CR	CW	CW1	CX	PA	PB	DODGE TAPER LOCK®
F-450	802700	6.45	0.12	2.75	0.70	2.62	3.50	#1008
L-600	804900	7.70	0.94	3.37	0.64	2.62	4.38	#1215

Sheave Mount



MODEL	PRODUCT NUMBER	SHEAVE BELT	G'VE	OD	PD	AJ2	AK2 ±.001	BB2	BF2	CW2	CX	CX1	CY
F-450	802810	"3V"	1	3.35	--	4.000	3.498	0.06	.190-24	1.22	0.75	--	0.44
F-450	802820	"3V"	1	4.50	--	--	--	--	--	--	0.88	--	0.44
F-450	802830	"A"	1	4.05	3.80	--	--	--	--	--	0.88	--	0.44
F-450	802840	"A"	1	4.65	4.40	--	--	--	--	--	0.88	--	0.44
L-600	805210	"3V"	2	4.50	--	5.500	4.498	0.29	.190-24	1.55	0.68	0.41	0.43
L-600	805220	"3V"	2	5.30	--	--	--	--	--	--	0.86	0.41	0.55
L-600	805230	"3V"	2	6.00	--	--	--	--	--	--	0.86	0.41	0.55
L-600	805240	"3V"	2	8.00	--	--	--	--	--	--	0.86	0.41	0.55
L-600	805250	"A"	2	4.65	4.40	--	--	--	--	--	0.62	0.63	0.24
L-600	805260	"A"	2	5.65	5.40	--	--	--	--	--	0.62	0.63	0.24

CLUTCHES

"Air Champ"

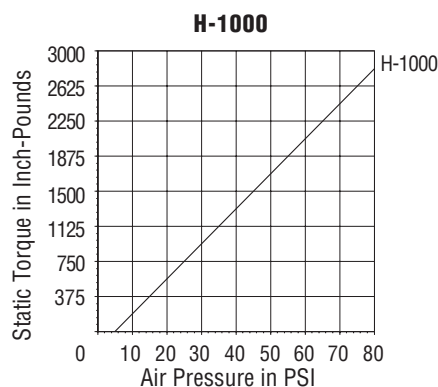
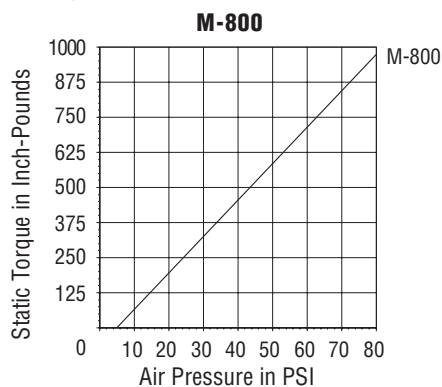
FRICTION CLUTCH MODELS M-800 & H-1000

- Static Torque capacity up to:
M-800/975 In. Lbs. @ 80 psi
H-1000/2800 In. Lbs. @ 80 psi
 - Maximum Operating Speed up to
1800 rpm
 - Transmitted Horsepower values from:
M-800/0.50 to 10.00
H-1000/1.00 to 25.00
 - Thermal Horsepower rating of:
M-800/1.00 @ 1800 rpm
H-1000/2.25 @ 1800 rpm
 - Heat Sink capacity of:
M-800/110,000 Ft. Lbs.
H-1000/230,000 Ft. Lbs.
- 6 M-800 & 6 H-1000 Models** offer design flexibility:
- Sheave Mount Units:**
M-800/2 sizes of 3-"3V" and 2 sizes of 2-"B" Groove styles.
H-1000/2 sizes of 3-"5V" and 2 sizes of 2-"B"
 - 2 Pilot Mount** units with different standard bore sizes
 - Standard Bore Sizes:**
M-800/1.438 and 1.625 inches
H-1000/1.688 and 1.875 inches
 - Customize the bore to your shaft diameter with a **Bushing** or **Coupling Half**
 - Includes:**
M-800/8.25 in. hose.
H-1000/8.25 inch hose.

PULLEYS, SPROCKETS AND GEARS

These can be attached to the clutch for offset shaft applications. Tapped holes are provided for ease of mounting. Nexen does not furnish these items. For minimum sprocket requirements, see page 267.

TORQUE VS. AIR PRESSURE



NOTE: Dynamic torque is approximately 85% of static torque.

M-800 & H-1000 Model CLUTCHES

Model	Clutch Style	Product Number	Sheave Diameter	Bore (In)	Key Size (sq)	Shipping Wt. (Lbs)
M-800	Pilot Mount	807650	--	1.625	0.375	38
M-800	Pilot Mount	807655	--	1.438	0.375	38
M-800	Sheave Mount, 3-"3V"	807610	5.30 OD	1.625	0.375	37
M-800	Sheave Mount, 3-"3V"	807620	6.00 OD	1.625	0.375	40
M-800	Sheave Mount, 2-"B"	807630	5.80 PD	1.625	0.375	39
M-800	Sheave Mount, 2-"B"	807640	6.80 PD	1.625	0.375	43
H-1000	Pilot Mount	810050	--	1.875	0.500	61
H-1000	Pilot Mount	810055	--	1.688	0.375	63
H-1000	Sheave Mount, 3-"5V"	810010	7.10 OD	1.875	0.500	69
H-1000	Sheave Mount, 3-"5V"	810020	8.00 OD	1.875	0.500	74
H-1000	Sheave Mount, 3-"B"	810030	7.40 PD	1.875	0.500	72
H-1000	Sheave Mount, 3-"B"	810040	8.60 PD	1.875	0.500	82

Both Pilot w/Coupling Half Select a Pilot Mount and a Coupling Half to achieve this style of mount.

For Inertia Values of components, see page 257. Keys are included. Required shaft insertion into clutch hub = minimum of M-800/3.75inches, H-1000/4.00 inches from Pilot side.

BUSHING OPTIONS

(FOR 1.625 & 1.875 BORE CLUTCHES ONLY)

Bushings fit within the bore of the existing clutch, reducing the bore to the amount indicated.

Bore Size	Product Number	Reduces Clutch Bore Size to (In)	Shipping Wt. (Lbs)
1.625	806700	1.000	2
1.625	806800	1.125	2
1.625	806900	1.188	2
1.625	807000	1.250	2
1.625	807100	1.375	2
1.625	807200	1.438	2
1.625	807300	1.500	2
1.625	807500	No Bore/Customer machines	2
1.875	805600	1.000	2
1.875	809200	1.375	2
1.875	809300	1.438	2
1.875	809400	1.500	2
1.875	809500	1.625	2
1.875	809600	1.750	2
1.875	809900	No Bore/Customer machines	2

COUPLING HALF OPTIONS,

SEE PAGE 265 FOR COUPLING SPECIFICATIONS

A Coupling Half is used for in-line applications. To achieve a Pilot Mount with Coupling Half mounting configuration:

1. Select a Pilot Mount Clutch;
2. Order Clutch and Coupling Half separately.
3. Coupling Half is less taper lock bushing. Use Dodge Taper Lock® #2517 (1.000 to 2.500 inch bore range). Customer furnished.

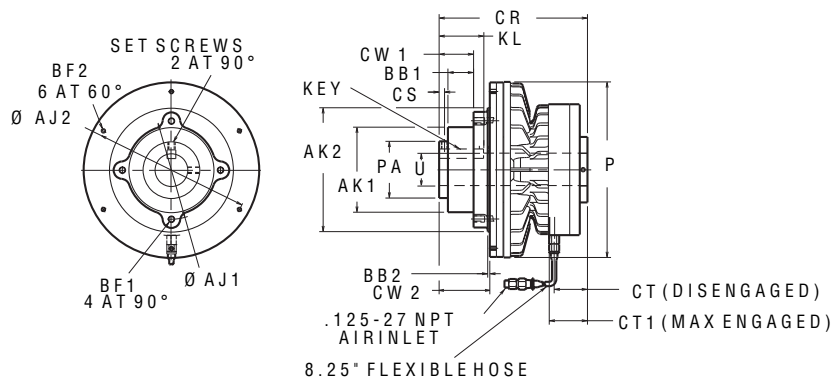
Model	Product Number	Maximum Bore Size (In)	Shipping Wt. (Lbs)
M-800	807400	2.500	25
H-1000	809700	2.500	33

4. Select a Shaft Extension when the driving shaft is smaller in diameter and shorter than the length of the clutch. The Shaft Extension is the same length as the clutch and engages with the key on the pilot end. Extensions fit the driving shaft diameter.

Only for Bore Size	Product Number	Driving Shaft DIA.	Shipping Wt. (Lbs)
1.625	807600	0.750	4
1.625	807700	0.875	4
1.625	807800	0.938	4
1.625	807900	1.000	4
1.625	808000	1.125	4
1.625	808100	1.250	4
1.875	810000	1.000	6
1.875	810300	1.125	6
1.875	810400	1.250	6
1.875	810500	1.375	6
1.875	810600	1.500	6

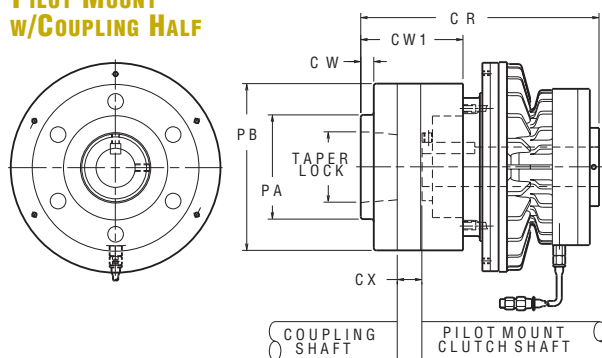
M-800 & H-1000 MODEL CLUTCHES - APPROXIMATE DIMENSIONS (INCHES)

Pilot Mount



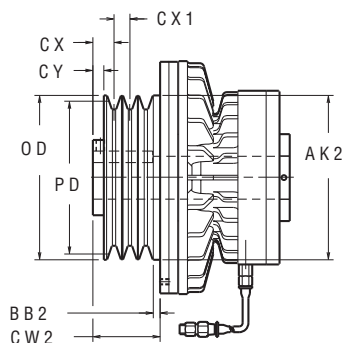
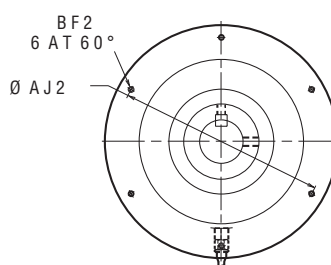
MODEL	PRODUCT NUMBER	AJ1	AJ2	AK1 ±.001	AK2 ±.001	BB1	BB2	BF1	BF2	CR	CS	CT	CT1	CW1	CW2	KL	KEY (SQ)	P	PA	SET SCREWS	U ^{+.001} _{-.000}
M-800	807650	4.750	6.500	3.999	5.498	0.77	0.67	.312-18	.250-20	7.31	0.38	1.62	1.71	1.62	2.31	1.69	0.375	8.06	2.63	.375-16	1.625
M-800	807655	4.750	6.500	3.999	5.498	0.77	0.67	.312-18	.250-20	7.31	0.38	1.62	1.71	1.62	2.31	1.69	0.375	8.06	2.63	.375-16	1.438
H-1000	810050	5.625	9.000	4.873	7.098	1.47	0.12	.375-16	.250-20	8.50	0.31	1.92	2.14	1.97	2.90	2.56	0.500	10.06	3.25	.375-16	1.875
H-1000	810055	5.625	9.000	4.873	7.098	1.47	0.12	.375-16	.250-20	8.50	0.31	1.92	2.14	1.97	2.90	2.56	0.375	10.06	3.25	.375-16	1.688

Pilot Mount w/Coupling Half



MODEL	COUPLING PRODUCT NUMBER	CR	CW	CW1	CX	PA	PB	DODGE TAPER LOCK®
M-800	807400	9.93	0.81	4.25	0.87	5.00	7.00	#2517
H-1000	809700	11.43	0.63	4.90	1.18	5.00	8.00	#2517

Sheave Mount



MODEL	PRODUCT NUMBER	SHEAVE BELT	G'VE	OD	PD	AJ2	AK2 ±.001	BB2	BF2	CW2	CX	CX1	CY
M-800	807610	"3V"	3	5.30	--	6.500	5.498	0.06	.250-20	2.30	0.96	0.41	0.68
M-800	807620	"3V"	3	6.00	--	--	--	--	--	--	0.96	0.41	0.68
M-800	807630	"B"	2	6.15	5.80	--	--	--	--	--	1.18	0.75	0.68
M-800	807640	"B"	2	7.15	6.80	--	--	--	--	--	1.18	0.75	0.68
H-1000	810010	"5V"	3	7.10	--	9.000	7.098	0.29	.250-20	2.90	0.91	0.69	0.47
H-1000	810020	"5V"	3	8.00	--	--	--	--	--	--	1.03	0.69	0.50
H-1000	810030	"B"	3	7.75	7.40	--	--	--	--	--	1.03	0.75	0.50
H-1000	810040	"B"	3	8.95	8.60	--	--	--	--	--	1.03	0.75	0.50

CLUTCHES

"Air Champ"

METRIC SERIES FRICTION CLUTCHES

The Metric Model Friction Clutch Series provides:

- ▶ Static Torque capacity up to 330 Nm
- ▶ Maximum Operating Speed up to 3600 rpm
- ▶ Heat Sink capacity of 312,000 Joules.

This clutch comes in **5 Models** for design flexibility:

- ▶ **6 Pilot Mount** units with different standard bore sizes
- ▶ **6 Standard Bore** sizes ranging from 15 to 50 millimeters
- ▶ **4 Minimum Bore** sizes ranging from 0 to 19 millimeters—you machine and assemble
- ▶ **BW** is equipped with Thrust Bearings and a Single Key Splined Hub.
- ▶ **B-275** is equipped with Sealed, Radial Bearings and a Multi-tooth, Involute Spline.

▶ METRIC SERIES FRICTION CLUTCHES, PILOT MOUNT ONLY

Standard Bore Clutch:

Model	Product Number	Speeds Up to RPM	Bore (mm)	Key Size	MIN. Shaft Insertion into Hub from Pilot Side	Heat Sink Capacity (Joules)	Shipping Wt. (kg)
BW	950700	3600	15	5 x 5	38	7660	1,8
B-275	950705	3600	15	5 x 5	38	7660	1,8
F-450	950050	3600	20	6 x 6	51	41000	4,7
L-600	950150	3600	25	7 x 8	64	81000	7,8
M-800	950250	1800	40	8 x 12	95	149000	17
H-1000	950350	1800	50	9 x 14	102	312000	28

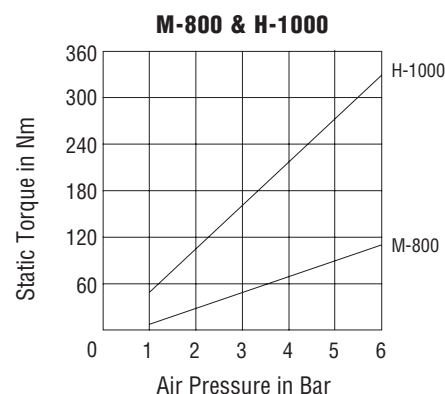
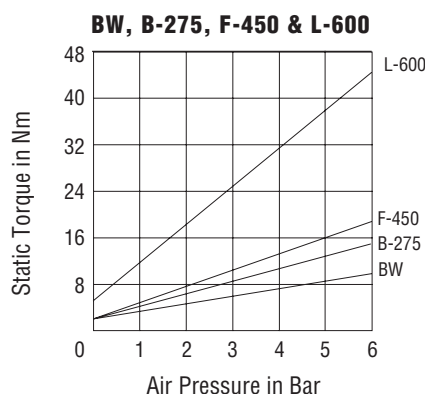
Keys are included.

Minimum Bore Clutch:

Minimum bore clutches are supplied unassembled with machinable hubs.

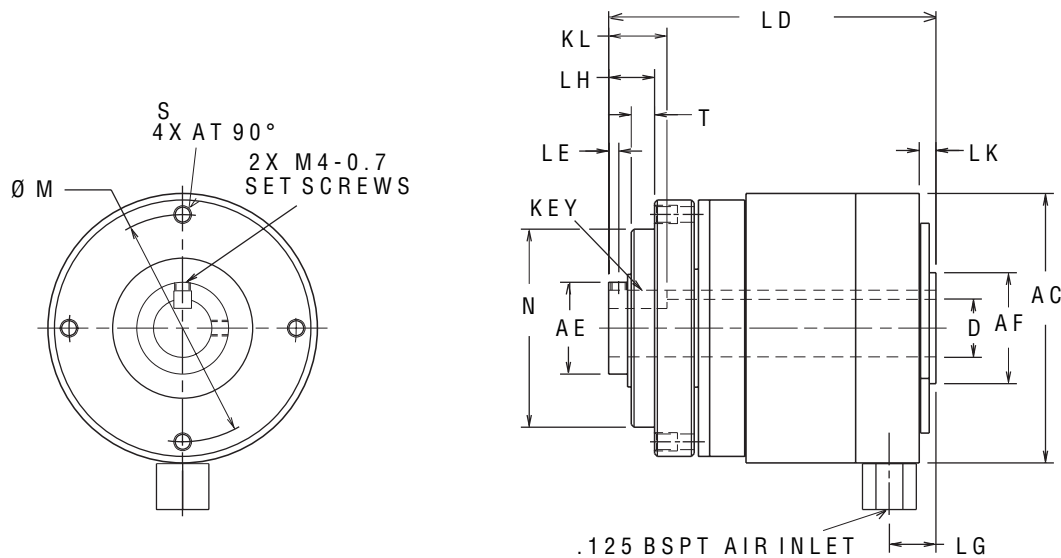
Model	Product Number	Speeds up to RPM	MIN. Bore (mm)	MIN. Shaft Insertion into Hub from Pilot Side	Heat Sink Capacity (Joules)	Shipping Wt. (kg)
F-450	950061	3600	0	51	41000	4,7
L-600	950161	3600	13	64	81000	7,8
M-800	950261	1800	18	95	149000	17
H-1000	950361	1800	19	102	312000	28

▶ TORQUE VS. AIR PRESSURE



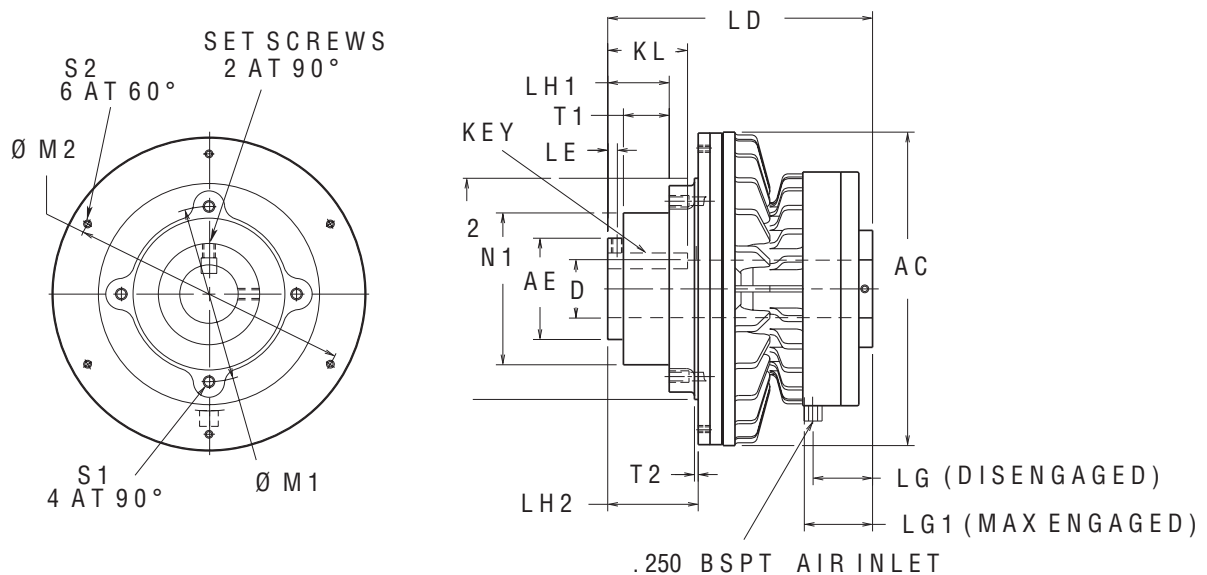
Torque (In. Lbs.) = Nm x 8.849
PSI = Bar ÷ .0689

BW, B-275 PILOT MOUNT - APPROXIMATE DIMENSIONS (MILLIMETERS)



PRODUCT NUMBER	AC	AE	AF	D H7	KEY (SQ)	KL	LD	LE	LG	LH	LK	M	S	T	N ^{h8}
950700	73	25	30	15	5	16	89	3	13	13	5	63	M5	6	54
950705	73	25	30	15	5	16	89	3	13	13	5	63	M5	6	54

F-450, L600, M-800 & H-1000 PILOT MOUNT - APPROXIMATE DIMENSIONS (MILLIMETERS)



MODEL	PRODUCT NUMBER	AC	AE	D H7	KEY	KL	LD	LE	LG	LG1	LH1	LH2	M1	M2	N1 ^{h8}	N2 ^{h8}	S1	S2	T1	T2	SET SCREWS
F-450	950050	116	35	20	6 SQ	27	121	6	34	36	26	31	78.00	101.60	62.00	88.87	M6	M5	15	5	M6
L-600	950150	154	47	25	8 x 7	35	141	6	41	43	31	39	90.00	139.70	75.00	114.27	M6	M5	16	2	M6
M-800	950250	205	67	40	12 x 8	43	186	10	46	50	42	58	120.00	165.10	100.00	139.67	M8	M6	19	16	M10
H-1000	950350	256	83	50	14 x 9	65	216	9	49	54	50	73	144.00	228.60	120.00	180.31	M10	M6	37	3	M10

NOTE: Drawings are expressed in third angle projection.

CLUTCHES

"Air Champ"

XHW, EXTRA HEAVY-WEIGHT MODEL FRICTION CLUTCH

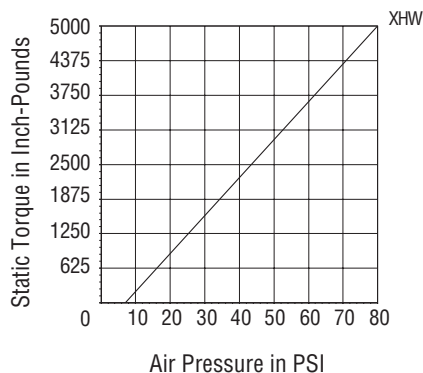
The XHW Friction Clutch provides:

- ▶ Static Torque capacity up to 5000 In. Lbs. @ 80 psi
- ▶ Maximum Operating Speed up to 1200 rpm
- ▶ Transmitted Horsepower values from 5.00 to 50.00
- ▶ Thermal Horsepower rating of 2.25 @ 1200 rpm
- ▶ Heat Sink capacity of 200,000 Ft. Lbs.

2 Models offer design flexibility:

- ▶ **1 Sheave Mount** unit in a 5-"5V" Groove design
- ▶ **1 Pilot Mount** unit
- ▶ **Standard Bore** size of 2.375 inches
- ▶ Customize the bore to your shaft diameter with a **Bushing** or **Coupling Half**
- ▶ 8.25 inch hose included.

TORQUE VS. AIR PRESSURE



NOTE: Dynamic torque is approximately 85% of static torque.

XHW MODEL CLUTCH

Clutch Style	Product Number	Sheave Diameter	Bore (In)	Key Size (sq)	Shipping Wt. (Lbs)
Pilot Mount	811100	--	2.375	0.625	110
Sheave Mount, 5-"5V"	810900	8.00 OD	2.375	0.625	110
Pilot w/Coupling Half	Select a Pilot Mount and a Coupling Half to achieve this style of mount.				

For Inertia Values of components, see page 257.

Keys are included. Required shaft insertion into clutch hub = minimum of 5.625 inches from Pilot side.

BUSHING OPTIONS (FOR 2.375 BORE CLUTCHES ONLY)

Bushings fit within the bore of the existing clutch, reducing it to the amount indicated.

Product Number	Reduces Clutch Bore Size to (In)	Shipping Wt. (Lbs)
811800	1.625	4
811900	1.688	4
811200	1.750	4
811300	1.875	4
811400	1.938	4
812200	2.125	4
811500	2.188	4
811600	2.250	4
812000	No Bore/Customer machines	4

COUPLING HALF OPTIONS, SEE PAGE 265 FOR COUPLING SPECIFICATIONS

A Coupling Half used for in-line applications. To achieve a Pilot Mount with Coupling Half mounting configuration:

1. Select a Pilot Mount Clutch from above;
2. Order Clutch and Coupling Half separately.
3. Coupling Half is less taper lock bushing. Use Dodge Taper Lock[®] #3030 (1.500–3.000 inch bore range). Customer furnished.

Product Number	Maximum Bore Size (In)	Shipping Wt. (Lbs)
811700	3.000	63

PULLEYS, SPROCKETS AND GEARS

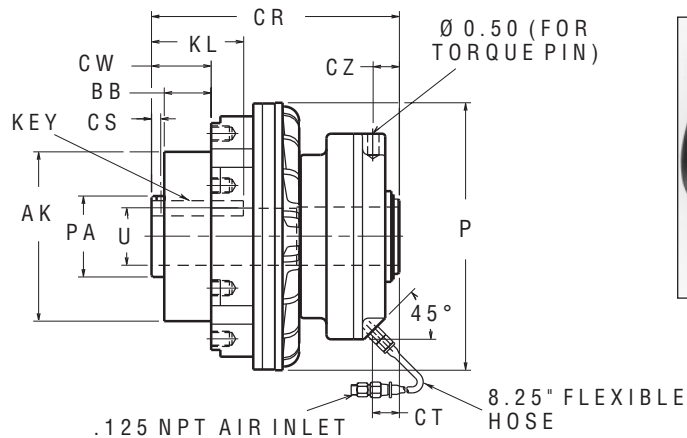
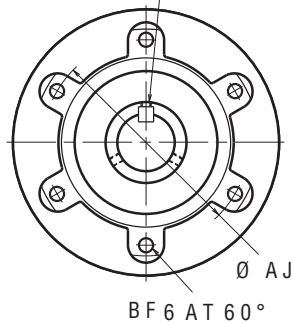
These can be attached to the clutch for offset shaft applications. Tapped holes are provided for ease of mounting. Nexen does not furnish these items.

For minimum sprocket requirements, see page 267.

XHW MODEL CLUTCH - APPROXIMATE DIMENSIONS (INCHES)

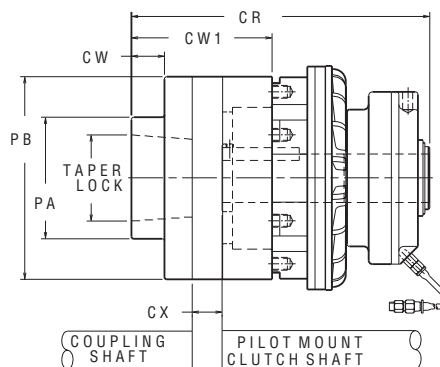
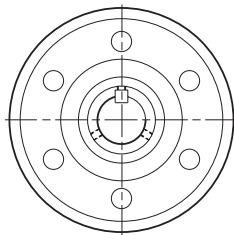
PILOT MOUNT

SET SCREWS
1 OVER KEYWAY
2 AT 120°



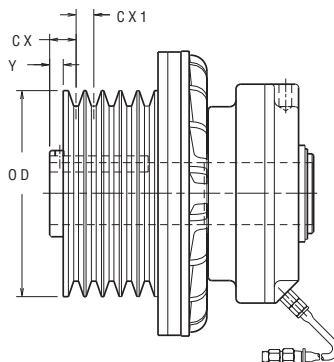
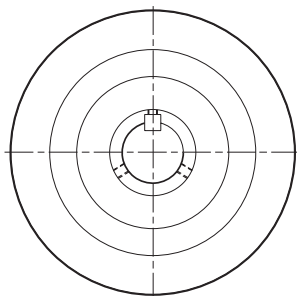
PRODUCT NUMBER	AJ	AK $\pm .001$	BB	BF	CR	CS	CT	CW	CZ	KL	KEY (SQ)	P	PA	SET SCREWS	U $\pm .001$
811100	8.500	6.997	1.94	.625-11	10.25	0.38	1.12	2.47	1.09	3.81	0.625	11.06	3.35	.375-16	2.375

PILOT MOUNT w/COUPLING HALF



COUPLING PRODUCT NUMBER	CR	CW	CW1	CX	PA	PB	DODGE TAPER LOCK®
811700	14.72	1.63	6.94	1.47	6.00	10.00	#3030

SHEAVE MOUNT



PRODUCT NUMBER	SHEAVE		OD	CX	CX1	CY
	BELT	GROOVE				
810900	"5V"	5	8.00	1.03	0.69	0.53

CLUTCHES

"Air Champ"

FW, LW, MW & HW MODEL SERIES

The design of this Series Friction Clutches has been improved:

- The comparable replacement can be found in each table
- Accessories for FW, LW, MW & HW Friction Clutches can be found on the comparable Clutch catalog page.
- Torque values are the same as the replacement clutches.

► FW, FLY-WEIGHT MODEL CLUTCH SERIES

Product Number	Clutch Style	Sheave DIA	Bore (IN)	Shipping Wt. (Lbs)	Comparable Model	Comparable Product Number
802300	Pilot Mount	--	0.875	7	F-450	802850
802311	Pilot Mount	--	0.750	7	F-450	802855
801900	Sheave Mount, 1-"3V"	3.35 OD	0.875	7	F-450	802810
802200	Sheave Mount, 1-"3V"	4.50 OD	0.875	8	F-450	802820
802100	Sheave Mount, 1-"A"	3.80 PD	0.875	8	F-450	802830
--	Sheave Mount, 1-"A"	4.40 PD	0.875	--	F-450	802840

Required shaft insertion into clutch hub = minimum of 2.00 inches from Pilot side.

► LW, LIGHT-WEIGHT MODEL CLUTCH SERIES

Product Number	Clutch Style	Sheave DIA	Bore (IN)	Shipping Wt. (Lbs)	Comparable Model	Comparable Product Number
804513	Pilot Mount	--	1.000	11	L-600	805275
804500	Pilot Mount	--	1.125	11	L-600	805270
803900	Sheave Mount, 2-"3V"	4.50 OD	1.125	13	L-600	805210
804000	Sheave Mount, 2-"3V"	5.30 OD	1.125	14	L-600	805220
--	Sheave Mount, 2-"3V"	6.00 OD	1.125	--	L-600	805230
--	Sheave Mount, 2-"3V"	8.00 OD	1.125	--	L-600	805240
804300	Sheave Mount, 2-"A"	4.40 PD	1.125	13	L-600	805250
--	Sheave Mount, 2-"A"	5.40 PD	1.125	--	L-600	805260

Required shaft insertion into clutch hub = minimum of 2.50 inches from Pilot side.

► MW, MIDDLE-WEIGHT MODEL CLUTCH SERIES

Product Number	Clutch Style	Sheave DIA	Bore (IN)	Shipping Wt. (Lbs)	Comparable Model	Comparable Product Number
806600	Pilot Mount	--	1.625	26	M-800	807650
806612	Pilot Mount	--	1.437	26	M-800	807655
806100	Sheave Mount, 3-"3V"	5.30 OD	1.625	27	M-800	807610
--	Sheave Mount, 3-"3V"	6.00 OD	1.625	--	M-800	807620
806400	Sheave Mount, 2-"B"	5.80 PD	1.625	29	M-800	807630
--	Sheave Mount, 2-"B"	6.80 PD	1.625	--	M-800	807640

Required shaft insertion into clutch hub = minimum of 3.75 inches from Pilot side.

► HW, HEAVY-WEIGHT MODEL CLUTCH SERIES

Product Number	Clutch Style	Sheave DIA	Bore (IN)	Shipping Wt. (Lbs)	Comparable Model	Comparable Product Number
809100	Pilot Mount	--	1.875	48	H-1000	810050
809111	Pilot Mount	--	1.687	48	H-1000	810055
808600	Sheave Mount, 3-"5V"	7.10 OD	1.875	55	H-1000	810010
--	Sheave Mount, 3-"5V"	8.00 OD	1.875	--	H-1000	810020
808900	Sheave Mount, 3-"B"	7.40 PD	1.875	60	H-1000	810030
--	Sheave Mount, 3-"B"	8.60 PD	1.875	--	H-1000	810040

Required shaft insertion into clutch hub = minimum of 4.00 inches from Pilot side.

DUAL PLATE FRICTION CLUTCH SELECTION CHART

Friction clutch recommendation is based upon air pressure of 50 psi, transmitted horsepower and speed.

		RPM																	
		100	200	300	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800
TRANSMITTED HORSEPOWER	5	DPC-9T																	
	7½	DPC-11T	DPC-9T																
	10	DPC-11T	DPC-9T																
	15	DPC-13T	DPC-11T	DPC-9T	DPC-9T														
	20	DPC-13T	DPC-11T	DPC-11T	DPC-9T	DPC-9T													
	25	DPC-15T	DPC-13T	DPC-11T	DPC-11T	DPC-9T	DPC-9T	DPC-9T											
	30	DPC-15T	DPC-13T	DPC-11T	DPC-11T	DPC-9T	DPC-9T	DPC-9T	DPC-9T	DPC-9T	DPC-9T	DPC-9T	DPC-9T	DPC-9T	DPC-9T	DPC-9T	DPC-9T	DPC-9T	DPC-9T
	40	DPC-15T	DPC-13T	DPC-13T	DPC-11T	DPC-11T	DPC-9T	DPC-9T	DPC-9T	DPC-9T	DPC-9T	DPC-9T	DPC-9T	DPC-9T	DPC-9T	DPC-9T	DPC-9T	DPC-9T	DPC-9T
	50		DPC-15T	DPC-13T	DPC-13T	DPC-11T	DPC-11T	DPC-11T	DPC-11T	DPC-9T	DPC-9T	DPC-9T	DPC-9T	DPC-9T	DPC-9T	DPC-9T	DPC-9T	DPC-9T	DPC-9T
	75		DPC-15T	DPC-15T	DPC-13T	DPC-13T	DPC-13T	DPC-11T	DPC-11T	DPC-11T	DPC-11T	DPC-11T	DPC-11T	DPC-9T	DPC-9T	DPC-9T	DPC-9T	DPC-9T	DPC-9T
	100			DPC-15T	DPC-15T	DPC-13T	DPC-13T	DPC-13T	DPC-11T	DPC-11T	DPC-11T	DPC-11T	DPC-11T	DPC-11T	DPC-11T	DPC-11T	DPC-11T	DPC-11T	DPC-9T
	125				DPC-15T	DPC-15T	DPC-15T	DPC-13T	DPC-13T	DPC-13T	DPC-13T	DPC-11T	DPC-11T	DPC-11T	DPC-11T	DPC-11T	DPC-11T	DPC-11T	DPC-11T
	150				DPC-15T	DPC-15T	DPC-15T	DPC-15T	DPC-13T	DPC-13T	DPC-13T	DPC-13T	DPC-13T	DPC-11T	DPC-11T	DPC-11T	DPC-11T	DPC-11T	DPC-11T

REFER TO FRICTION CLUTCH PRODUCTS ON PAGE 22 FOR SPECIFICATIONS
IN THIS AREA OR HORSEPOWER RATINGS LESS THAN 5

IMPORTANT NOTES:

1. For static torque ratings at different air pressures, refer to individual models to ensure conformity.
2. For operating speeds over 1800 rpm, refer to individual models or consult Nexen to ensure conformity.
3. Limited to peak thermal input rates of .9 HP_T per square inch of interface area.
4. Bars equal PSI x 0.0689.

CLUTCHES

"Air Champ"

DPC SERIES DUAL PLATE CLUTCHES

This Series, specified by component, allows you to custom design for specific application requirements:

- ▶ Static Torque capacity up to 36,000 In. Lbs. @ 80 psi
- ▶ Maximum Operating Speed up to 2200 rpm
- ▶ Thermal Horsepower values of 3.3 to 9.0 at rated speeds
- ▶ Components combine in a variety of options to fit almost any need
- ▶ Choose from Thru-Shaft or Shaft-End Mounting
- ▶ Choose between Sheave or Pilot style configurations
- ▶ Rotary Air Union is included with each Clutch Assembly.

With the DPC Model Series, tough applications are made easy. Each of the 4 Models and their many options are detailed on the next few pages.

The DPC Series Clutches are designed for applications involving high inertia starts and stops. The Peak Input Rate may be the limiting factor in high inertia starts or stops, even though the Heat Sink Capacity is sufficient. The Peak Input Rate capacity is the rate at which the clutch absorbs heat at the friction interface during the acceleration period, while the interfaces are slipping or until the load and clutch are operating at the same speed. See page 266 in the Engineering Data Section for information explaining how to calculate the Peak Input Rate and how to avoid potential problems.

▶ HOW TO SPECIFY AND ORDER DPC CLUTCHES:

1. Determine if you require Shaft-End Mounting or Thru-Shaft Mounting;
2. Determine if you require a Pilot Mount or Sheave Mount configuration;
3. Determine which bore size you will need;
4. Order each component individually, based upon your requirements.

▶ MOTOR FRAME, SHAFT DIAMETERS & LENGTHS

This chart can be used for quick selection of many criteria.

If you are using a standard motor frame and are within the rpm and horsepower requirements, the chart indicates a clutch and shaft to use.

If you know the rpm, horsepower and desired clutch, the chart will indicate a standard motor frame and shaft to use.

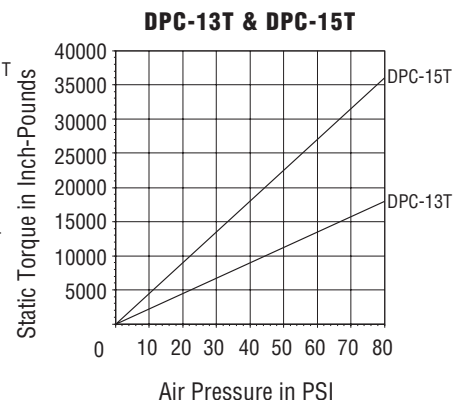
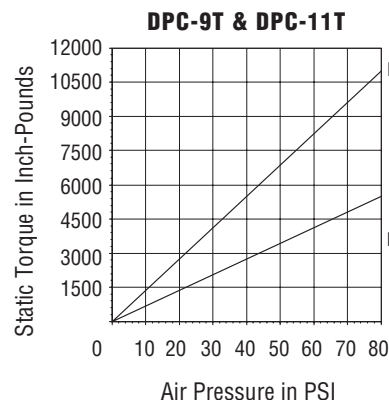
HORSEPOWER	600RPM	900RPM	1200RPM	1800RPM
50 Motor Frame Shaft DIA./LGTH	DPC13T 445T 3.375 / 8.25	DPC11T 404T 2.875 / 7.0	DPC9T 365T 2.375 / 5.625	DPC9T 326T 2.125 / 5.0
60 Motor Frame Shaft DIA./LGTH	-- -- --	DPC11T 405T 2.875 / 7.0	DPC11T 404T 2.875 / 7.0	DPC9T 364TS, 364T 2.375 / 5.625
75 Motor Frame Shaft DIA./LGTH	DPC13T D5005 3.5 / 10.25	DPC13T 444T 3.375 / 8.25	DPC11T 405T 2.875 / 7.0	DPC9T 365TS, 365T 2.375 / 5.625
100 Motor Frame Shaft DIA./LGTH	DPC15T D5008 4.0 / 11.75	DPC13T 445T 3.375 / 8.25	DPC13T 444T 3.375 / 8.25	DPC11T 405TS, 404T 2.875 / 7.0
125 Motor Frame Shaft DIA./LGTH	-- -- --	DPC13T D5005 3.5 / 10.25	DPC13T 444T 3.375 / 8.25	-- -- --
150 Motor Frame Shaft DIA./LGTH	-- -- --	DPC15T D5005 3.5 / 10.25	DPC13T 445T, D5005 3.5 / 10.25	-- -- --

▶ CLUTCH APPLICATION DATA

MODEL	DPC-9T	DPC-11T
Peak Input Rate	50 hp	84 hp
Effective Friction Areas	55 in ²	93 in ²

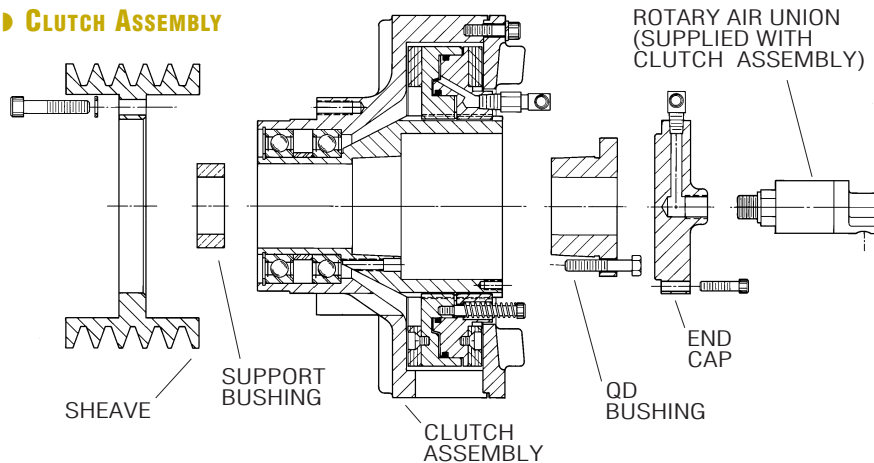
MODEL	DPC-13T	DPC-15T
Peak Input Rate	131 hp	149 hp
Effective Friction Areas	145 in ²	166 in ²

▶ TORQUE VS. AIR PRESSURE

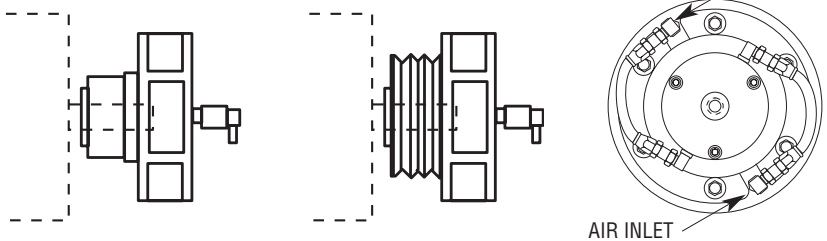


NOTE: Dynamic torque is approximately 85% of static torque.

CLUTCH ASSEMBLY



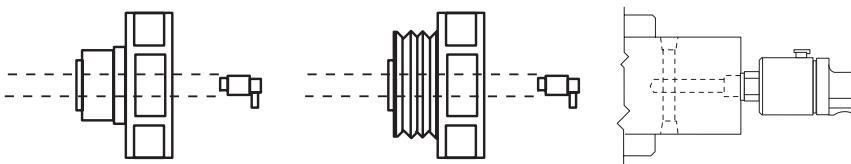
SHAFT-END MOUNTING



AIR INLET CONNECTION:

1. Attach the End Cap to the end of the Hub with three cap screws.
2. Install the Rotary Air union and elbow fittings in the End Cap.
3. Connect the cylinder hoses to the elbow fittings.
4. Use the flexible hose (supplied) to connect air supply to the Rotary Air Union (do not use rigid pipe or tubing for this connection).
5. Make sure that of these hoses do not interfere with the rotating parts of the unit.

THRU-SHAFT MOUNTING



AIR INLET CONNECTION:

1. Drill a 0.375 inch diameter hole in the center of the shaft, long enough to reach the air outlets.
2. Tap drill the air outlet holes straight through the shaft, intersecting the 0.375 diameter hole, and tap the 0.125-27 NPT on both ends.
3. The air outlet holes should be located 0.375 of an inch from the end of the Hub.
4. Tap a .625-18 inch hole, 0.625 inches deep in the end of the shaft for the Rotary Air Union.
5. Install the two elbow fittings in the air outlet holes and connect the cylinder hoses to them.
6. Install the Rotary Air Union in the end of the shaft and use the flexible hose (supplied) to connect the air supply to the shaft (do not use rigid pipe or tubing for this connection).

DPC CLUTCHES

Shown are the typical components of a DPC Clutch:

- ▶ The Clutch Assembly comes with the Rotary Air Union
- ▶ Rotary Air Union, supplied with each clutch, is required for both Shaft-End and Thru Shaft mounting
- ▶ The optional End Cap is only required for Shaft-End Mounting
- ▶ The customer supplied QD Bushing is required for both Shaft-End and Thru-Shaft Mounting
- ▶ The Support Bushing is used whenever the shaft size is less than the maximum clutch bore.

MOUNTING/AIR INLET CONNECTIONS

DPC Clutches are very flexible units because of their many mounting possibilities. Four of the more common applications are shown at left. Also refer to the Air Inlet Connection information (at left) for each mounting style.

CLUTCHES

"Air Champ"

DPC-9T MODEL DUAL PLATE CLUTCH

This **Model**, specified by component, allows you to custom design for specific application requirements:

- Static Torque capacity up to 5500 In. Lbs. @ 80 psi
- Maximum Operating Speed up to 2200 rpm
- Thermal Horsepower ratings up to 3.3 @ 2200 rpm
- Pilot Mount** clutch assembly with standard support bushing bore of 2.375 inches
- Sheave** options: 5-"5V" or 4-"C" Groove
- Support Bushings provide 6 additional bore sizes ranging from 1.87 to 2.125 inches
- Heat Sink capacity of 220,000 Ft. Lbs.
- 8.25 inch hose included
- Rotary Air Union is supplied with the clutch assembly

Review the information on this and the next page to determine the required components to build your clutch.

REQUIRED COMPONENTS:

Shaft-End Mounting	Thru-Shaft Mounting
1 Clutch Assembly	1 Clutch Assembly
1 End Cap	1 QD Bushing
1 QD Bushing	
(QD Bushing customer furnished)	

OPTIONAL COMPONENTS:

Shaft-End Mounting	Thru-Shaft Mounting
1 Support Bushing	1 Support Bushing
1 Sheave	1 Sheave

DPC-9T, DUAL PLATE CLUTCH

Clutch Component	Product Number	Support Bushing Bore (O.D.) (In)	Shaft MIN.	Insertion MAX.	Shipping Wt. (Lbs)
------------------	----------------	----------------------------------	------------	----------------	--------------------

Shaft-End Mounting (1 of each required)

Clutch Assembly	960200	2.375	4.69	6.57	64
End Cap	960700	--	--	--	3
QD Bushing Customer Supplied SK Bore Range = 0.500 - 2.375 inches					

Thru-Shaft Mounting (1 of each required)

Clutch Assembly	960200	--	--	--	64
QD Bushing Customer Supplied SK Bore Range = 0.500 - 2.375 inches					

SUPPORT BUSHING/BORE OPTIONS

Support Bushings are used to reduce the clutch bore for the driven shaft.

Clutch Component	Product Number	Reduce Bore Size to/ (In)	Shipping Wt. (Lbs)
Support Bushing	960419	1.187	1
Support Bushing	960423	1.437	1
Support Bushing	960427	1.687	1
Support Bushing	960430	1.875	1
Support Bushing	960431	1.937	1
Support Bushing	960434	2.125	1
Bushing-Blank/No Bore	960400	1.131 ID MIN.	1

SHEAVE OPTIONS

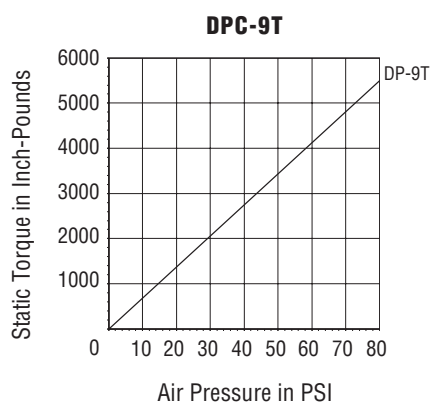
Clutch Component	Product Number	Type of Sheave Groove	Shaft MIN.	Insertion MAX.	Shipping Wt. (Lbs)
Sheave, "5V"	956700	8.0 OD, 5-"5V"	5.32	7.20	16
Sheave, "4C"	960600	9.0, OD, 4 "C"	5.51	7.39	22

PULLEYS, SPROCKETS, GEARS

These can be attached to the clutch for thru-shaft applications. Tapped holes are provided for ease of mounting. Nexen does not supply these items.

For minimum sprocket requirements, see page 267.

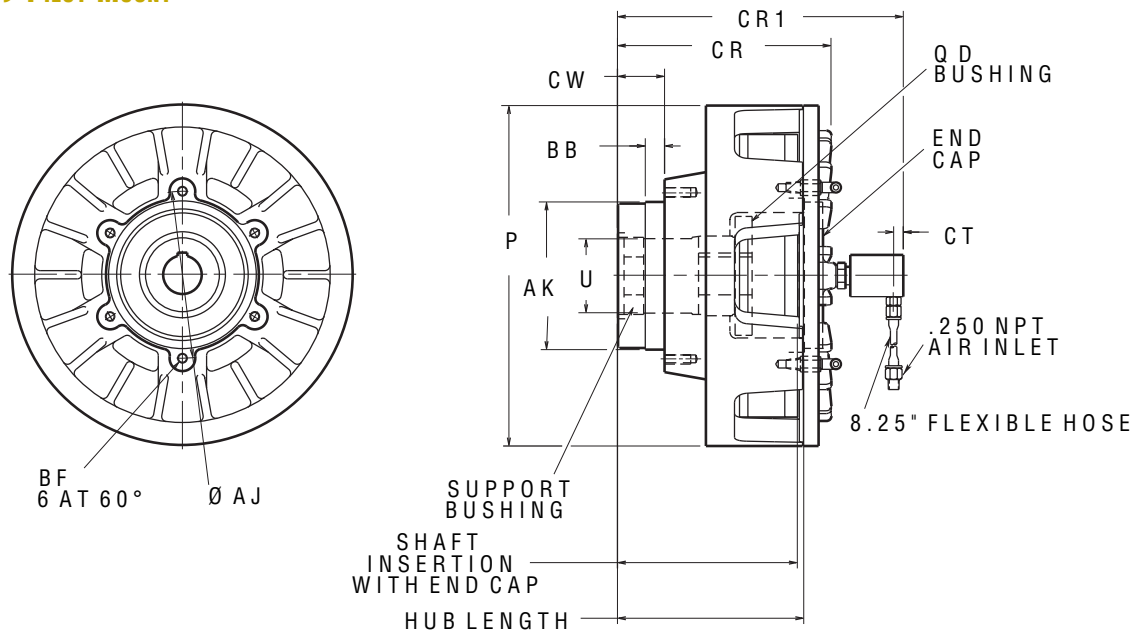
TORQUE VS. AIR PRESSURE



NOTE: Dynamic torque is approximately 85% of static torque.

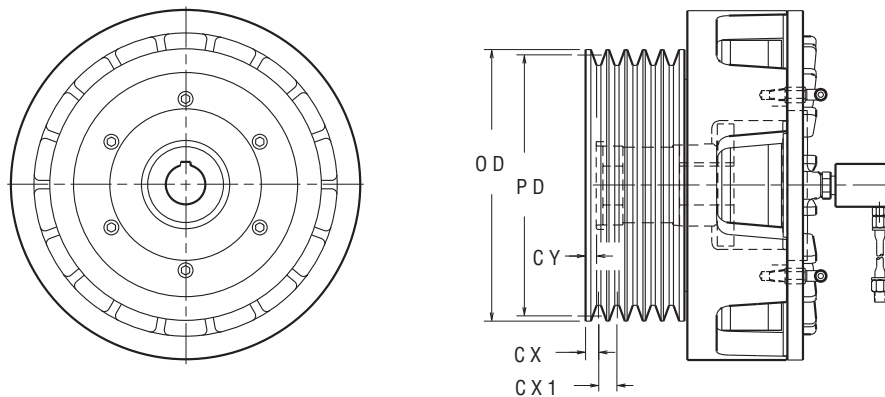
DPC-9T, DUAL PLATE CLUTCH - APPROXIMATE DIMENSIONS (INCHES)

PILOT MOUNT



CLUTCH PRODUCT NUMBER	AJ	AK $\pm .001$	BB	BF	CR	CR1	CT	CW	P	HUB LENGTH	SHAFT INSERTION MIN.	SHAFT INSERTION MAX.	U $^{+.002}_{-.000}$
960200	5.562	4.874	0.75	.375-16	7.42	10.76	0.38	1.62	10.75	6.82	4.69	6.57	2.375

SHEAVE MOUNT; CLUTCH AND SHEAVE COMBINED



SHEAVE PRODUCT NUMBER	SHEAVE BELT GROOVE	OD	PD	CX	CX1	CY
956700	"5V"	5	8.00	--	0.50	0.69
960600	"C"	4	9.00	8.60	0.56	1.00

CLUTCHES

“Air Champ”

DPC-11T MODEL DUAL PLATE CLUTCH

This **Model**, specified by component, allows you to custom design for specific application requirements:

- Static Torque capacity up to 11,000 In. Lbs. @ 80 psi
- Maximum Operating Speed up to 1800 rpm
- Thermal Horsepower ratings up to 5.5 @ 1800 rpm
- **Pilot Mount** clutch assembly with standard support bushing bore of 2.875 inches
- **Sheave Mount** option in the 5-“5V” Groove design
- Support Bushings provide 7 additional bore sizes ranging from 1.188 to 2.500 inches
- Heat Sink capacity of 360,000 Ft. Lbs.
- Rotary Air Union is supplied with the clutch assembly
- 8.25 inch hose included.

Review the information on this and the next page to determine the required components to build your clutch.

REQUIRED COMPONENTS:

Shaft-End Mounting	Thru-Shaft Mounting
1 Clutch Assembly	1 Clutch Assembly
1 End Cap	1 QD Bushing
1 QD Bushing	
<i>(QD Bushing customer furnished)</i>	

OPTIONAL COMPONENTS:

Shaft-End Mounting	Thru-Shaft Mounting
1 Support Bushing	1 Support Bushing
1 Sheave	1 Sheave

► DPC-11T, DUAL PLATE CLUTCH

Clutch Component	Product Number	Support Bushing Bore (O.D.) (In)	Shaft Insertion		Shipping Wt. (Lbs)
			MIN.	MAX.	
Shaft -End Mounting (1 of each required)					
Clutch Assembly	961200	2.875	5.16	7.00	100
End Cap	961700	--	--	--	3
QD Bushing	Customer Supplied	SF Bore Range = 1.500 - 2.875 inches			
Thru-Shaft Mounting (1 of each required)					
Clutch Assembly	961200	--	--	--	100
QD Bushing	Customer Supplied	SF Bore Range = 1.500 - 2.875 inches			

► SUPPORT BUSHING/ BORE OPTIONS

Support Bushings are used to reduce the clutch bore.

Clutch Component	Product Number	Reduce Bore Size to: (In)	Shipping Wt. (Lbs)
Support Bushing	961430	1.875	2
Support Bushing	961431	1.938	2
Support Bushing	961434	2.125	2
Support Bushing	961435	2.188	2
Support Bushing	961438	2.375	2
Support Bushing	961439	2.438	2
Support Bushing	961440	2.500	2
Bushing-Blank/No Bore	961400	1.375 ID MIN.	2

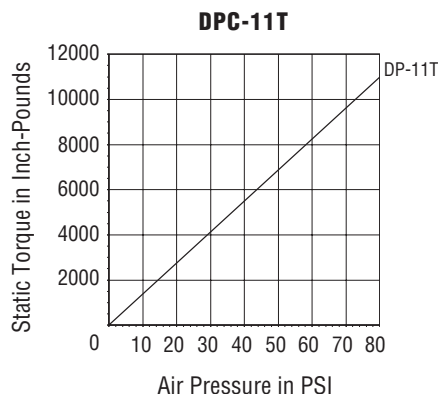
► SHEAVE OPTIONS

Clutch Component	Product Number	Type of Sheave Groove	Shaft Insertion MIN. MAX.		Shipping Wt. (Lbs)
Sheave, “5V”	961600	10.3 OD, 5-“5V”	5.58	7.42	25

► PULLEYS, SPROCKETS, GEARS

These can be attached to the clutch for thru-shaft applications. Tapped holes are provided for ease of mounting. Nexen does not supply these items. For minimum sprocket requirements, see page 267.

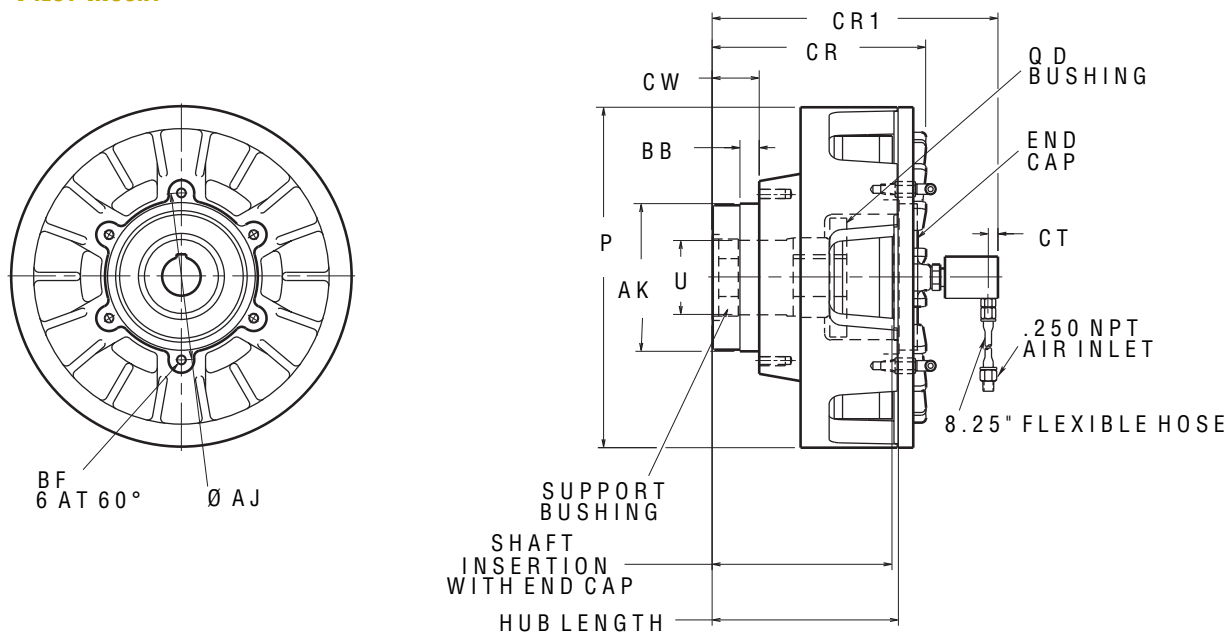
► TORQUE VS. AIR PRESSURE



NOTE: Dynamic torque is approximately 85% of static torque.

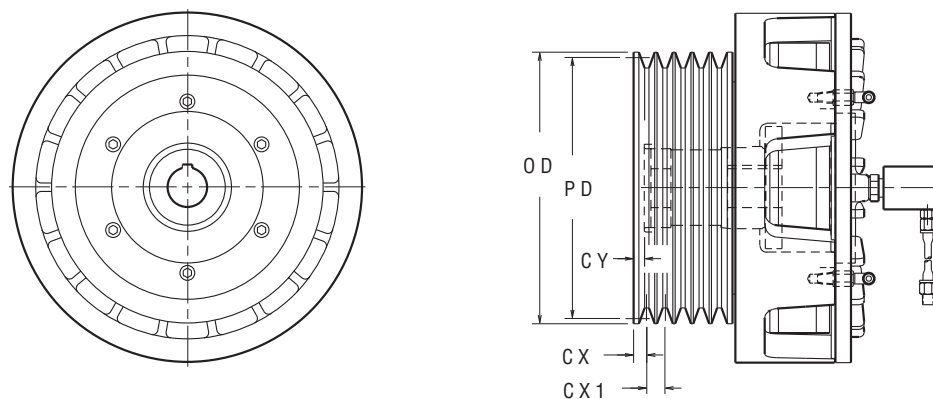
DPC-11T, DUAL PLATE CLUTCH - APPROXIMATE DIMENSIONS (INCHES)

PILOT MOUNT



CLUTCH PRODUCT NUMBER	AJ	AK $\pm .001$	BB	BF	CR	CR1	CT	CW	P	HUB LENGTH	SHAFT INSERTION MIN.	MAX.	U $\begin{smallmatrix} +.002 \\ -.000 \end{smallmatrix}$
961200	6.500	5.748	0.75	.375-16	8.31	11.12	0.38	1.83	13.25	7.25	5.16	7.00	2.875

SHEAVE MOUNT; CLUTCH AND SHEAVE COMBINED



SHEAVE PRODUCT NUMBER	SHEAVE		OD	PD	CX	CX1	CY
	BELT	GROOVE					
961600	"5V"	5	10.30	--	0.50	0.69	0.42

CLUTCHES

"Air Champ"

DPC-13T MODEL DUAL PLATE CLUTCH

This **Model**, specified by component, allows you to custom design for specific application requirements:

- ▶ Static Torque capacity up to 18,000 In. Lbs. @ 80 psi
- ▶ Maximum Operating Speed up to 1200 rpm
- ▶ Thermal Horsepower ratings up to 8.0 @ 1200 rpm
- ▶ **Pilot Mount** clutch assembly with standard support bushing bore of 3.500 inches
- ▶ **Sheave Mount** option in the 4-"8V" Groove design
- ▶ Support Bushings provide 3 additional bore sizes ranging from 2.938 to 3.438 inches
- ▶ Heat Sink capacity of 690,000 Ft. Lbs.
- ▶ Rotary Air Union is supplied with the clutch assembly
- ▶ 8.25 inch hose included.

Review the information on this and the next page to determine the required components to build your clutch.

REQUIRED COMPONENTS:

Shaft-End Mounting	Thru-Shaft Mounting
1 Clutch Assembly	1 Clutch Assembly
1 End Cap	1 QD Bushing
1 QD Bushing	
(QD Bushing customer furnished)	

OPTIONAL COMPONENTS:

Shaft-End Mounting	Thru-Shaft Mounting
1 Support Bushing	1 Support Bushing
1 Sheave	1 Sheave

▶ DPC-13T, DUAL PLATE CLUTCH

Clutch Component	Product Number	Support Bushing Bore (O.D.) (In)	Shaft Insertion		Shipping Wt. (Lbs)
			MIN.	MAX.	
Shaft-End Mounting (1 of each required)					
Clutch Assembly	962200	3.500	7.00	9.25	200
End Cap	962700	--	--	--	7
QD Bushing	Customer Supplied F Bore Range = 2.00 - 3.50 inches				
Thru-Shaft Mounting (1 of each required)					
Clutch Assembly	962200	--	--	--	200
QD Bushing	Customer Supplied F Bore Range = 2.00 - 3.50 inches				

▶ SUPPORT BUSHING/BORE OPTIONS

Support Bushings are used to reduce the clutch bore.

Clutch Component	Product Number	Reduce Bore Size to/ (In)	Shipping Wt. (Lbs)
Support Bushing	962447	2.938	2
Support Bushing	962454	3.375	2
Support Bushing	962455	3.438	2
Bushing-Blank/No Bore	962400	2.25 ID MIN.	2

▶ SHEAVE OPTIONS

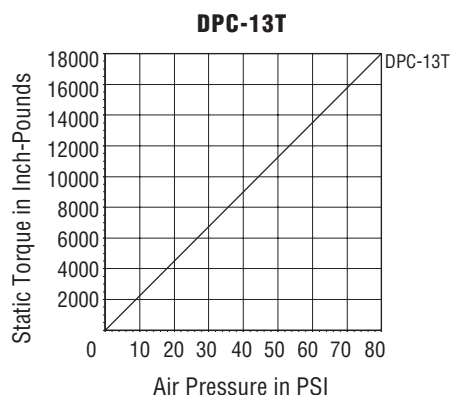
Clutch Component	Product Number	Type of Sheave Groove	Shaft Insertion		Shipping Wt. (Lbs)
			MIN.	MAX.	
Sheave, "8V"	962600	15.0 OD, 4-"8V"	7.94	9.94	75

▶ PULLEYS, SPROCKETS, GEARS

These can be attached to the clutch for thru-shaft applications. Tapped holes are provided for ease of mounting. Nexen does not supply these items.

For minimum sprocket requirements, see page 267.

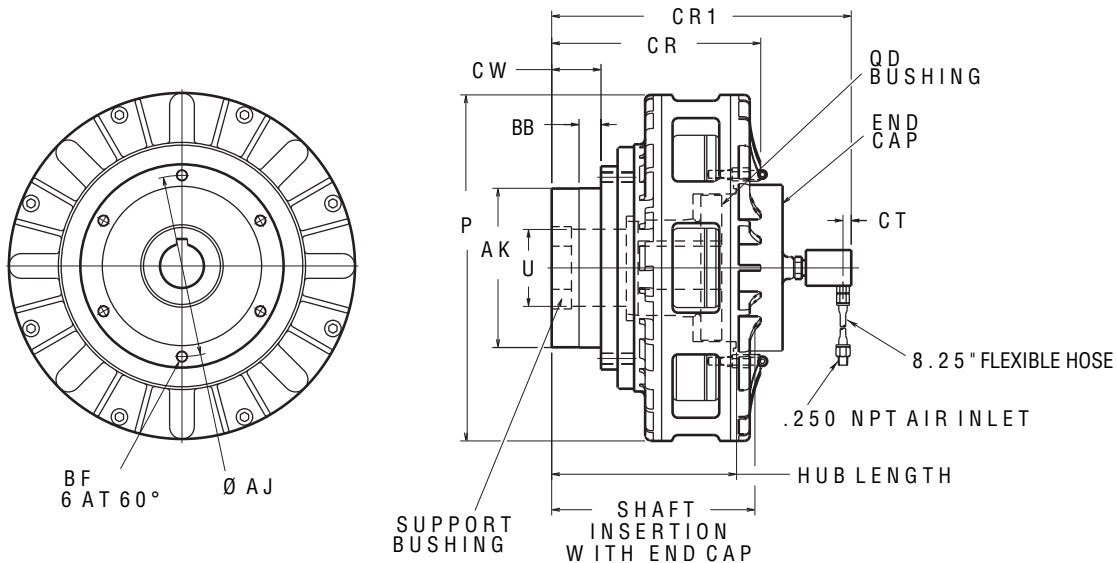
▶ TORQUE VS. AIR PRESSURE



NOTE: Dynamic torque is approximately 85% of static torque.

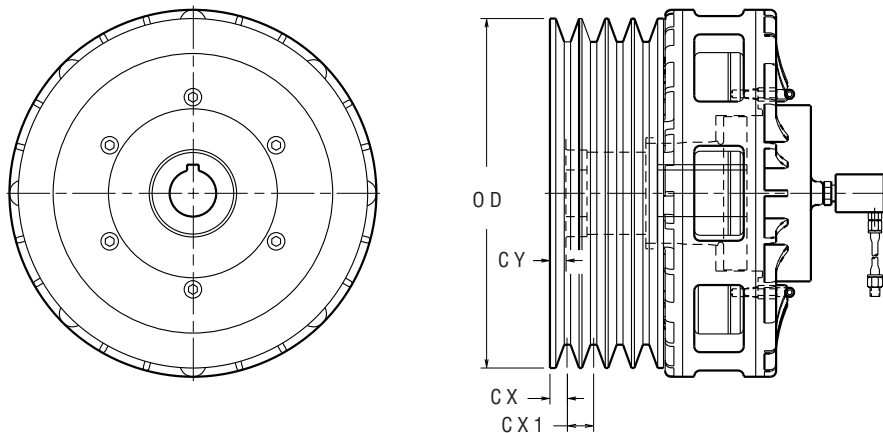
DPC-13T, DUAL PLATE CLUTCH - APPROXIMATE DIMENSIONS (INCHES)

PILOT MOUNT



CLUTCH PRODUCT NUMBER	AJ	AK $\pm .001$	BB	BF	CR	CR1	CT	CW	P	HUB LENGTH	SHAFT INSERTION MIN.	MAX.	U $\begin{smallmatrix} +.002 \\ -.000 \end{smallmatrix}$
962200	8.250	7.248	1.00	.500-13	9.52	13.63	0.38	2.24	15.75	8.42	7.25	9.25	3.500

SHEAVE MOUNT; CLUTCH AND SHEAVE COMBINED



SHEAVE PRODUCT NUMBER	SHEAVE		OD	CX	CX1	CY
	BELT	GROOVE				
962600	"8V"	4	15.00	0.75	1.13	0.69

CLUTCHES

"Air Champ"

DPC-15T MODEL DUAL PLATE CLUTCH

This **Model**, specified by component, allows you to custom design for specific application requirements:

- ▶ Static Torque capacity up to 36,000 In. Lbs. @ 80 psi
- ▶ Maximum Operating Speed up to 900 rpm
- ▶ Thermal Horsepower ratings up to 9.0 @ 900 rpm
- ▶ **Pilot Mount** clutch assembly with standard support bushing bore of 4.000 inches
- ▶ **Sheave Mount** option in the 4-"8V" Groove design
- ▶ Support Bushings provide 2 additional bore sizes ranging from 3.500 to 3.938 inches
- ▶ Heat Sink capacity of 820,000 Ft. Lbs.
- ▶ Rotary Air Union is supplied with the clutch assembly
- ▶ 8.25 inch hose included.

Review the information on this and the next page to determine the required components to build your clutch.

REQUIRED COMPONENTS:

Shaft-End Mounting

1 Clutch Assembly

1 End Cap

1 QD Bushing

(QD Bushing customer furnished)

Thru-Shaft Mounting

1 Clutch Assembly

1 QD Bushing

OPTIONAL COMPONENTS:

Shaft-End Mounting

1 Support Bushing

1 Sheave

Thru-Shaft Mounting

1 Support Bushing

1 Sheave

▶ DPC-15T, DUAL PLATE CLUTCH

Clutch Component	Product Number	Support Bushing Bore (O.D.) (In)	Shaft Insertion		Shipping Wt. (Lbs)
			MIN.	MAX.	

Shaft-End Mounting (1 of each required)

Clutch Assembly	963200	4.000	7.00	9.50	254
End Cap	963700	--	--	--	8
QD Bushing	Customer Supplied J Bore Range = 2.125- 4.000 inches				

Thru-Shaft Mounting (1 of each required)

Clutch Assembly	963200	--	--	--	254
QD Bushing	Customer Supplied J Bore Range = 2.125-4.000 inches				

▶ SUPPORT BUSHING/BORE OPTIONS

Support Bushings are used to reduce the clutch bore.

Clutch Component	Product Number	Reduce Bore Size to/ (In)	Shipping Wt. (Lbs)
Support Bushing	963456	3.500	2
Support Bushing	963463	3.938	2
Bushing-Blank/No Bore	963400	3.00 ID MIN.	2

▶ SHEAVE OPTIONS

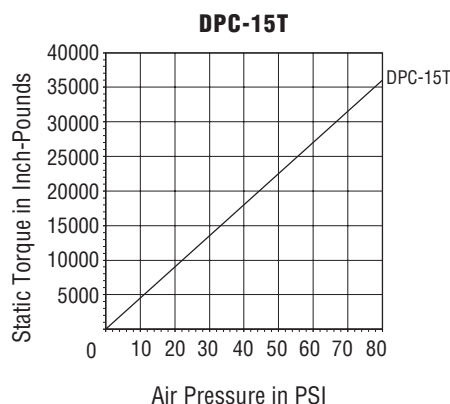
Clutch Component	Product Number	Type of Sheave Groove	Shaft Insertion		Shipping Wt. (Lbs)
			MIN.	MAX.	
Sheave, "8V"	963600	18.0 OD, 4-"8V"	8.720	10.220	100

▶ PULLEYS, SPROCKETS, GEARS

These can be attached to the clutch for thru-shaft applications. Tapped holes are provided for ease of mounting. Nexen does not supply these items.

For minimum sprocket requirements, see page 267.

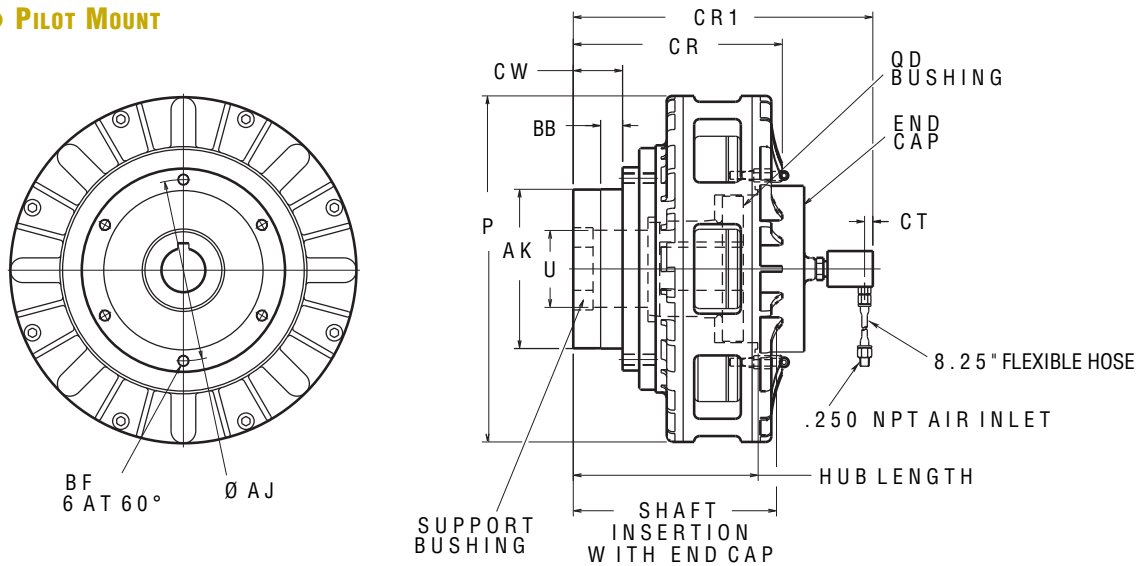
▶ TORQUE VS. AIR PRESSURE



NOTE: Dynamic torque is approximately 85% of static torque.

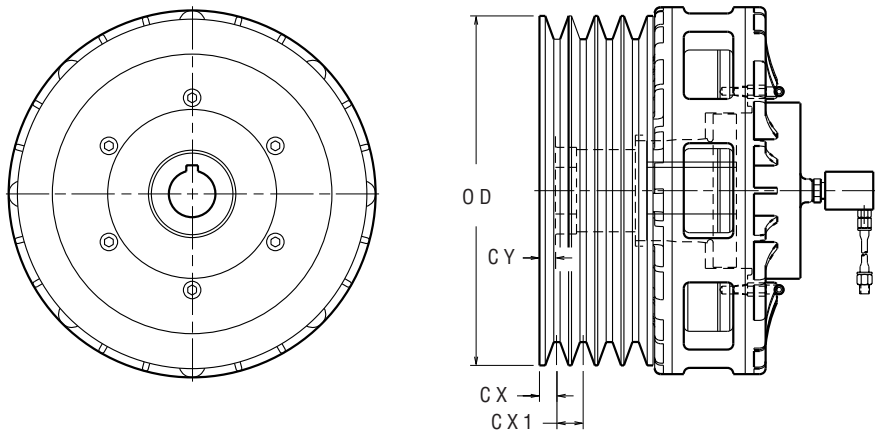
DPC-15T, DUAL PLATE CLUTCH - APPROXIMATE DIMENSIONS (INCHES)

PILOT MOUNT



CLUTCH PRODUCT NUMBER	AJ	AK ±.001	BB	BF	CR	CR1	CT	CW	P	HUB LENGTH	SHAFT INSERTION MIN.	SHAFT INSERTION MAX.	U ^{+.002} - .000
963200	9.000	7.998	1.00	.500-13	9.61	13.72	0.38	2.21	18.00	8.13	7.81	9.38	4.000

SHEAVE MOUNT; CLUTCH AND SHEAVE COMBINED



SHEAVE PRODUCT NUMBER	SHEAVE		OD	CX	CX1	CY
	BELT	GROOVE				
963600	"8V"	4	18.00	0.75	1.13	0.72

CLUTCHES

"Air Champ"

DUAL-FACED FRICTION CLUTCH MODELS DFC-1650 & DFC-2200

The DFC-1650 and DFC-2200 are two models of self contained, dual-faced, air-engaged friction clutches with a bearing mounted plate for mounting pulleys or sprockets. The two models sizes fit shafts up to 3.375", and are designed for shaft-end mounts only.

The DFC Clutches operate with an air-pressurized piston moving axially to compress the friction facing against the inside of a dual-faced rotor, which is splined to a shaft-mounted hub. The rotor is locked with the pilot plate, under friction, to transmit power from the driving shaft to the driven pulley or sprocket.

- ▶ Static Torque capacity up to 66,800 In. Lbs. @ 80 psi
- ▶ Maximum Operating Speed up to 1200 rpm
- ▶ Thermal Horsepower rating of 10.0 @ 900 rpm
- ▶ Heat Sink capacity of 1,460,000 Ft. Lbs.

This clutch is shaft-end mounted to provide design versatility in **2 Models**:

- ▶ **8 Sheaves** provide 4-"5V" or 4-"8V" Groove options
- ▶ **Standard Bore** size of 3.375 inches
- ▶ Lower cost O-ring design
- ▶ Superior friction facing life
- ▶ Excellent bearing life
- ▶ Clutch envelope is within the motor diameter
- ▶ For up to 250 horsepower drives

▶ DFC MODEL CLUTCHES

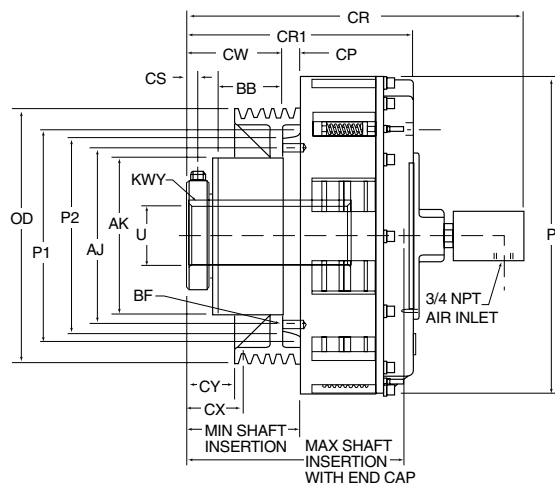
Model	Clutch Style	Product Number	Sheave Diameter	Bore (In)	Shipping Wt. (Lbs)
DFC-1650	Pilot Mount	964149	--	3.375	350
DFC-2200	Pilot Mount	964151	--	3.375	500
DFC-1650	Sheave, 6-"5V"	964152	15.00 OD		
DFC-1650	Sheave, 5-"5V"	964153	15.00 OD		
DFC-1650	Sheave, 4-"5V"	964154	14.00 OD		
DFC-2200	Sheave, 4-"8V"	964155	16.00 OD		
DFC-2200	Sheave, 6-"8V"	964156	16.00 OD		
DFC-2200	Sheave, 6-"8V"	964157	20.00 OD		
DFC-2200	Sheave, 10-"5V"	964158	14.50 OD		
DFC-2200	Sheave, 5-"8V"	964159	16.00 OD		

▶ DFC MODEL CLUTCHES

Model	Static Torque at 80 psi	Maximum RPM	Effective Facing Area	Peak Input Rate (HP)	Heat Sink Capacity (ft lbs.)	HP _t up to
DFC-1650	36,000 in. lbs.	1200	227 in ²	204 HP	870,000	8.0
DFC-2200	66,800 in.lbs.	900	330 in ²	297 HP	1,460,000	10.0

DUAL-FACED FRICTION MODEL CLUTCHES - APPROXIMATE DIMENSIONS (INCHES)

Pilot Mount



MODEL	PRODUCT NUMBER	AJ	AK ±.001	BB	BF SIZE	QTY	CP	CR	CR1	CS	KWY		DP	P	P1	P2	SHAFT INSERT		U ^{+.001} _{-.000}
DFC-1650	964149	10.375	9.248	3.848	.500-13	12	1.10	19.27	13.23	0.62	5.54	0.875	0.437	18.85	11.57	11.38	6.44	12.62	3.375
DFC-2200	964151	11.327	10.200	5.50	.500-13	8	0.40	21.21	14.79	0.62	7.19	0.875	0.437	24.50	12.45	12.45	6.94	14.21	3.375

SHEAVES (OPTIONAL)

MODEL	PRODUCT NUMBER	GROOVE	QTY	OD	CX	CY
DFC-1650	964152	5V	6	15.00	2.54	2.04
DFC-1650	964153	5V	5	15.00	3.23	2.73
DFC-1650	964154	5V	4	14.00	3.91	3.41

MODEL	PRODUCT NUMBER	GROOVE	QTY	OD	CX	CY
DFC-2200	964155	8V	4	16.00	1.31	0.56
DFC-2200	964156	8V	6	16.00	0.81	0.06
DFC-2200	964157	8V	6	20.00	0.81	0.06
DFC-2200	964158	5V	10	14.50	0.53	0.03
DFC-2200	964159	8V	5	16.00	1.31	0.56

HEAVY DUTY CLUTCH & BRAKE ELEMENTS

DFE & QFE MODEL SERIES

This **16 Model** Series of air-actuated **Dual Faced** and **Quad Faced Elements** are designed for heavy duty industrial applications requiring high torque and low inertia:

- ▶ Static Torque ratings up to 302,000 In. Lbs. @ 80 psi (see chart page 46)
- ▶ Maximum Operating Speed up to 1600 rpm
- ▶ Thermal Horsepower values up to 14.7 @ 1600 rpm
- ▶ Bore range up to 6.500 inches
- ▶ Thru-Shaft or Shaft-End Mount Brake
- ▶ Horizontal Shaft-End mounted Clutch Element mounts to a customer supplied flywheel, gear or pulley
- ▶ Dual Faced Elements have single disc assemblies, Quad Faced Elements have double disc assemblies
- ▶ Available with either Standard or High coefficient friction linings
- ▶ Single or Double Disc Assemblies available in 4 disc sizes
- ▶ Rugged design ensures long product life
- ▶ Sealed O-ring piston & cylinder design reduces maintenance costs
- ▶ Air Union Bracket Assembly includes flexible hose.

Manufactured in the U.S.A. under license of Coremo Ocemea - Italy

With this Heavy Duty Model Series, tough applications are made easy. Each of the 16 Models are detailed on the next few pages.

▶ PEAK INPUT RATE

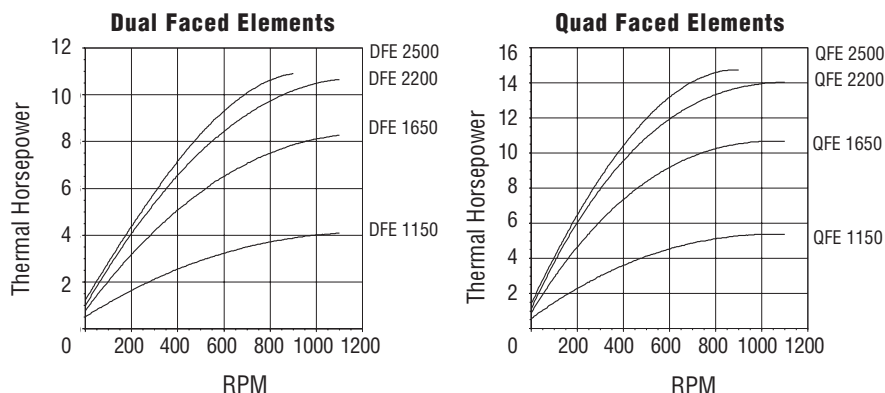
The DFE and QFE Series of Clutches and Brakes are designed for applications requiring high torque and low inertia. The peak input rate may be the limiting factor in high inertia starts or stops, even though the Heat Sink Capacity is efficient.

The peak input rate capacity is the rate at which the clutch absorbs heat at the friction interface during the acceleration period while interfaces are slipping, or until the load and the clutch are operating at the same speed. See page 266 the Engineering Data Section for information explaining how to calculate the Peak Input Rate and how to avoid potential problems.

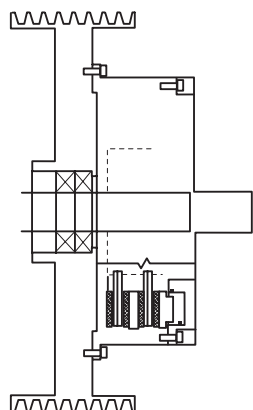
▶ HEAT SINK CAPACITIES & PEAK INPUT RATE

Model	Heat Sink Capacity (Ft Lbs)	Peak Input Rate (HP)	Effective Interface Areas
DFE 1150-S/H	390,000	105	117 in ²
DFE 1650-S/H	870,000	204	227 in ²
DFE 2200-S/H	1,187,000	297	330 in ²
DFE 2500-S/H	1,460,000	363	404 in ²
QFE 1150-S/H	780,000	210	234 in ²
QFE 1650-S/H	1,740,000	408	454 in ²
QFE 2200-S/H	2,374,000	594	660 in ²
QFE 2500-S/H	2,920,000	727	808 in ²

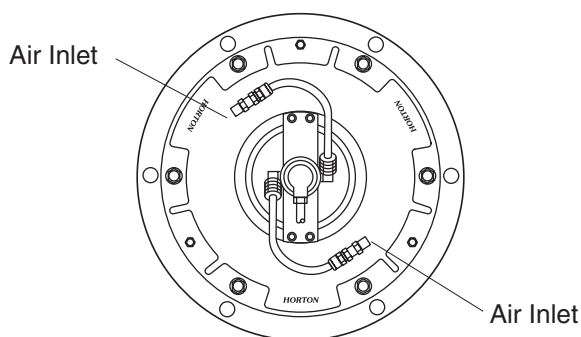
▶ CONTINUOUS RATED THERMAL HORSEPOWER DISSIPATION VS. RPM



CLUTCH ELEMENT MOUNTED TO BEARING SUPPORTED PULLEY



CLUTCH AIR CONNECTION



WHEN ELEMENT IS USED AS A CLUTCH:

Element must be Shaft-End Mounted in a horizontal position.

The housing is flange mounted to a bearing supported component (flywheel, gear, pulley).

The Hub is keyed to the shaft.

Air is supplied through a Rotary Air Union and flexible hoses.

NOTE: Not suitable for Thru-Shaft mounting.

Clutch Air Connection:

Attach the Rotary Air Union Bracket to the cylinder with four cap screws.

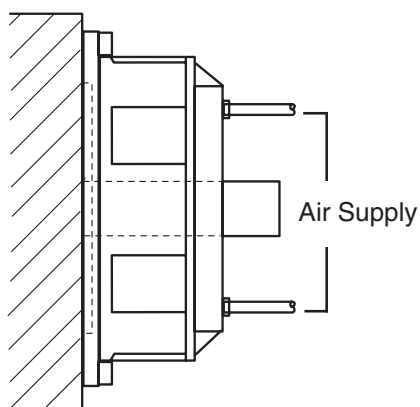
Install a flexible hose in the Rotary Air Union and in the Air Union Bracket.

Install elbow fittings in the cylinder and Air Union Bracket.

Connect the cylinder hoses to the fittings.

Do not use rigid pipe or tubing for these connections.

SHAFT-END MOUNTED BRAKE ELEMENT



WHEN ELEMENT IS USED AS A BRAKE:

Element must be Shaft-End Mounted in a horizontal position.

The housing is flange mounted to the machine frame.

The Hub is keyed to the shaft.

Air is supplied directly at the cylinder air inlets.

Brake Air Connection:

Connect the air supply directly to the two air ports, located 180 degrees apart in the cylinder.

See page 162-167 for Spring Engaged Brake.

NOTE: DFE & QFE units are intended for horizontal mounting only.

CLUTCHES

"Air Champ"

DFE MODEL CLUTCH & BRAKE ELEMENTS

This **8 Model** Series of air-actuated Dual Faced Elements are designed for heavy-duty industrial applications requiring high torque and low inertia:

- ▶ Static Torque ratings up to 151,000 In. Lbs. @ 80 psi (see chart)
- ▶ Maximum Operating Speed up to 1600 rpm
- ▶ Thermal Horsepower values up to 10.9 @ 900 rpm
- ▶ Bore range up to 6.500 inches
- ▶ Shaft-End Mount Clutch
- ▶ Thru-Shaft or Shaft-End Mount Brake
- ▶ Horizontal Shaft-End mounted Clutch Element mounts to a customer supplied flywheel, gear or pulley
- ▶ Dual Faced Elements have single disc assemblies
- ▶ Available with either Standard or High coefficient friction linings
- ▶ Single Disc Assemblies available in 4 Disc sizes
- ▶ Rugged design ensures long product life
- ▶ Sealed O-ring piston and cylinder design reduces maintenance costs
- ▶ Air Union Bracket Assembly includes flexible hose.

Manufactured in the U.S.A. under license of Coremo Ocemea - Italy

NOTE: Dynamic torque is approximately 85% of static torque.

▶ HOW TO SPECIFY AND ORDER DFE CLUTCH & BRAKE ELEMENTS:

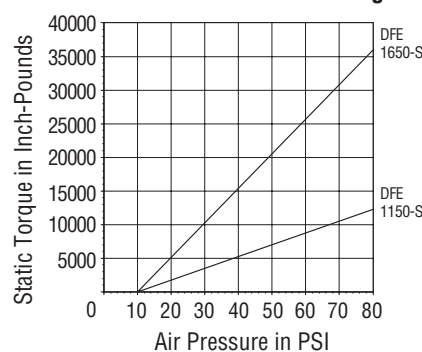
1. Determine which bore size you will need;
2. If you require a bore size other than the standard Hub bore, you can either order this special size from Nexen or machine it yourself;
3. Order the matching Air Union Bracket Assembly for Shaft-End mounting applications.

Model	Product Number	Disc Size	PILOT HUB BORE +0.001/-0.000 w/o Keyway	HUB BORE RANGE w/o Keyway (In)		Speeds Up to RPM		Shipping Wt. (Lbs)
				MIN.	MAX.	Disc	Housing	
Standard Coefficient Friction Linings								
DFE 1150-S	964000	11.50	1.000	1.000	2.500	2200	1600	143
DFE 1650-S	964003	16.50	2.000	2.000	4.000	1500	1200	252
DFE 2200-S	964006	22.00	2.500	2.500	6.000	1100	900	439
DFE 2500-S	964009	25.00	2.500	3.000	6.000	1000	800	542
High Coefficient Friction Linings								
DFE 1150-H	964001	11.50	1.000	1.000	2.500	2200	1600	143
DFE 1650-H	964004	16.50	2.000	2.000	4.000	1500	1200	252
DFE 2200-H	964007	22.00	2.500	2.500	6.000	1100	900	439
DFE 2500-H	964010	25.00	2.500	3.000	6.000	1000	800	542

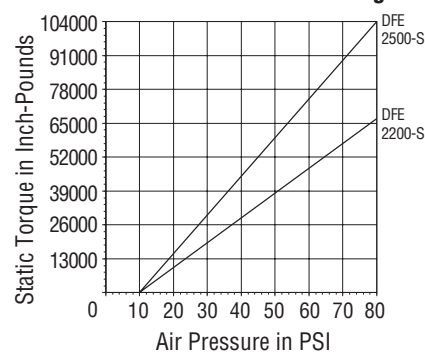
Model	Product Number	Air Union Bracket Assembly Product Number		NPT Size	Shipping Wt. (Lbs)
DFE 1150-S	964000	964012		0.250	1
DFE 1650-S	964003	964013		0.750	2
DFE 2200-S	964006	964014		0.750	3
DFE 2500-S	964009	964015		0.750	3
DFE 1150-H	964001	964012		0.250	1
DFE 1650-H	964004	964013		0.750	2
DFE 2200-H	964007	964014		0.750	3
DFE 2500-H	964010	964015		0.750	3

▶ TORQUE VS. AIR PRESSURE

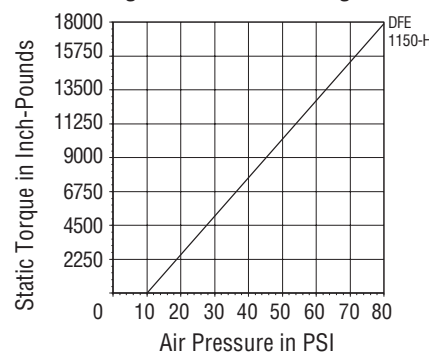
Standard Coefficient Linings



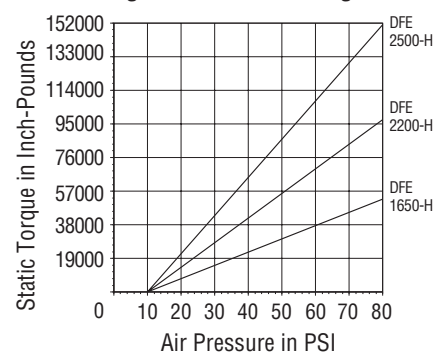
Standard Coefficient Linings



High Coefficient Linings

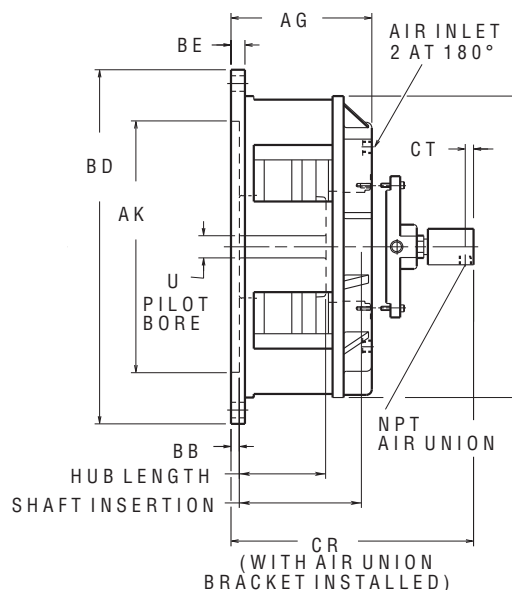
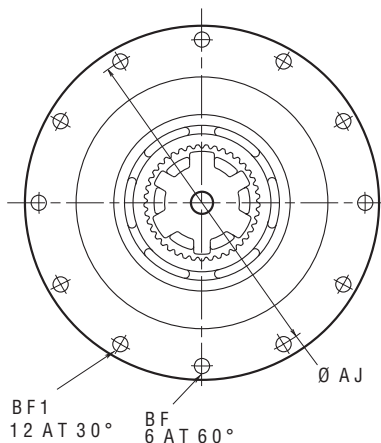


High Coefficient Linings



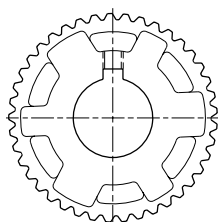
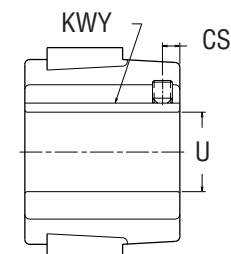
DFE MODEL CLUTCH & BRAKE ELEMENTS - APPROXIMATE DIMENSIONS (INCHES)

DFE ELEMENT WITH AIR UNION BRACKET ASSEMBLY



MODEL	PRODUCT NUMBER	AIR INLET NPT	HUB LENGTH	AG	AJ	AK ±.001	BB	BD	BE	BF	BF1	CR	CT	P	AIR UNION NPT	U +.001 / -.000	SHAFT INSERTION MIN.	SHAFT INSERTION MAX.
DFE 1150-S	964000	.250	3.90	6.36	14.750	11.376	0.38	16.00	0.63	0.69	--	10.04	0.38	13.62	.250	1.000	3.90	5.52
DFE 1150-H	964001	.250	3.90	6.36	14.750	11.376	0.38	16.00	0.63	0.69	--	10.04	0.38	13.62	.250	1.000	3.90	5.52
DFE 1650-S	964003	.500	4.70	6.74	20.000	16.251	0.38	21.25	0.62	--	0.69	12.78	0.62	18.75	.750	2.000	4.70	5.91
DFE 1650-H	964004	.500	4.70	6.74	20.000	16.251	0.38	21.25	0.62	--	0.69	12.78	0.62	18.75	.750	2.000	4.70	5.91
DFE 2200-S	964006	.500	6.00	7.19	25.500	21.376	0.31	27.00	0.75	--	0.69	13.23	0.62	24.50	.750	2.500	6.00	6.47
DFE 2200-H	964007	.500	6.00	7.19	25.500	21.376	0.31	27.00	0.75	--	0.69	13.23	0.62	24.50	.750	2.500	6.00	6.47
DFE 2500-S	964009	.500	6.00	7.22	28.750	24.376	0.25	30.00	0.75	--	0.69	13.26	0.62	27.50	.750	2.500	6.00	6.50
DFE 2500-H	964010	.500	6.00	7.22	28.750	24.376	0.25	30.00	0.75	--	0.69	13.26	0.62	27.50	.750	2.500	6.00	6.50

DFE HUB ONLY



MODEL	CS
DFE 1150	0.44
DFE 1650	0.62
DFE 2200	0.75
DFE 2500	0.75

HUB BORE INFORMATION

All standard Hubs are furnished in the bore listed in dimension “U” and without keyway or set screw. The Hub bore can be increased to a size equal to the maximum diameter indicated in the table. If you need to increase the bore size of the Hub, you have two options:

1. Nexen can supply you with a specified bore and matching keyway at your request for an extra charge.
2. You can machine your own bore and keyway, with the limits listed in the table.

The following table indicates bore sizes and corresponding key and set screw sizes.

Bore Size	Key Size (SQ)	Set Screw Size
1.000-1.250	0.250	0.312-18
1.312-1.375	0.312	0.375-16
1.437-1.750	0.375	0.375-16
1.812-2.250	0.500	0.500-13
2.312-2.750	0.625	0.500-13
2.812-3.250	0.750	0.625-11
3.312-3.750	0.875	0.750-10
3.812-4.500	1.000	0.750-10
4.562-5.500	1.250	0.875-9
5.562-6.500	1.500	1.000-8

CLUTCHES

"Air Champ"

QFE MODEL CLUTCH & BRAKE ELEMENTS

This **8 Model** Series of air-actuated Quad Faced Elements are designed for heavy-duty industrial applications requiring high torque and low inertia:

- ▶ Static Torque ratings up to 302,000 In. Lbs. @ 80 psi (see chart)
- ▶ Maximum Operating Speed up to 1600 rpm
- ▶ Thermal Horsepower values up to 14.7 @ 900 rpm
- ▶ Bore range up to 6.500 inches
- ▶ Shaft-End Mount Clutch
- ▶ Thru-Shaft or Shaft-End Mount Brake
- ▶ Horizontal Shaft-End mounted Clutch Element mounts to a customer supplied flywheel, gear or pulley
- ▶ Quad Faced Elements have single disc assemblies
- ▶ Available with either Standard or High coefficient friction linings
- ▶ Double Disc Assemblies available in 4 Disc sizes
- ▶ Rugged design ensures long product life
- ▶ Sealed O-ring piston and cylinder design reduced maintenance costs
- ▶ Air Union Bracket Assembly includes flexible hose.

Manufactured in the U.S.A. under license of Coremo Ocemea - Italy

NOTE: Dynamic torque is approximately 85% of static torque.

▶ HOW TO SPECIFY AND ORDER QFE CLUTCH & BRAKE ELEMENTS:

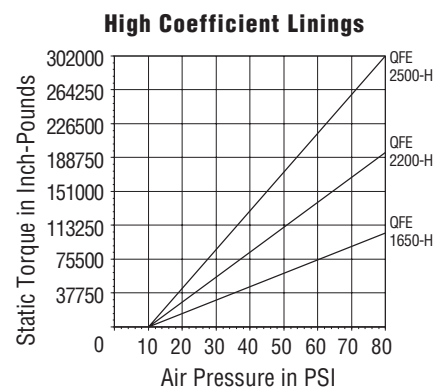
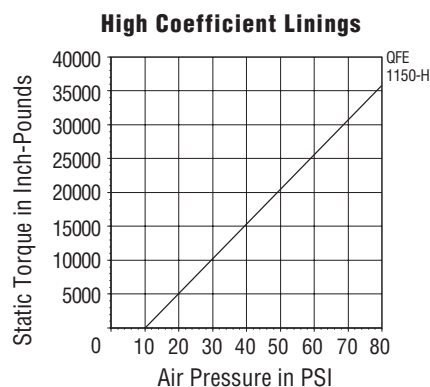
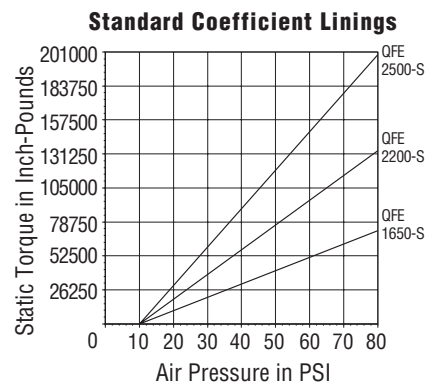
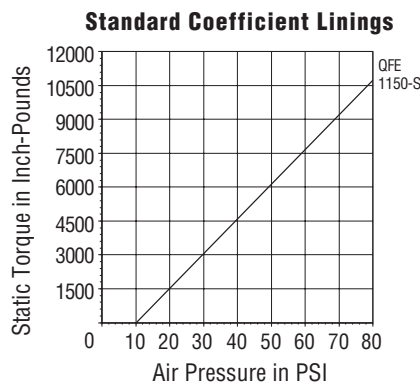
1. Determine which bore size you will need;
2. If you require a bore size other than the standard Hub bore, you can either order this special size from Nexen or machine it yourself;
3. Order the matching Air Union Bracket Assembly for Shaft-End mounting applications.

Model	Product Number	Disc Size	PILOT HUB BORE +0.01/-0.000 w/o Keyway	HUB BORE RANGE w/o Keyway (In)		Speeds Up to RPM		Shipping Wt. (Lbs)
				MIN.	MAX.	Disc	Housing	
Standard Coefficient Friction Linings								
QFE 1150-S	964060	11.50	1.500	1.500	3.250	2200	1600	202
QFE 1650-S	964063	16.50	2.000	2.000	5.000	1500	1200	358
QFE 2200-S	964066	22.00	3.000	3.000	6.500	1100	900	643
QFE 2500-S	964069	25.00	3.500	3.500	6.500	1000	800	787

High Coefficient Friction Linings								
QFE 1150-H	964061	11.50	1.500	1.500	3.250	2200	1600	202
QFE 1650-H	964064	16.50	2.000	2.000	5.000	1500	1200	358
QFE 2200-H	964067	22.00	3.000	3.000	6.500	1100	900	643
QFE 2500-H	964070	25.00	3.500	3.500	6.500	1000	800	787

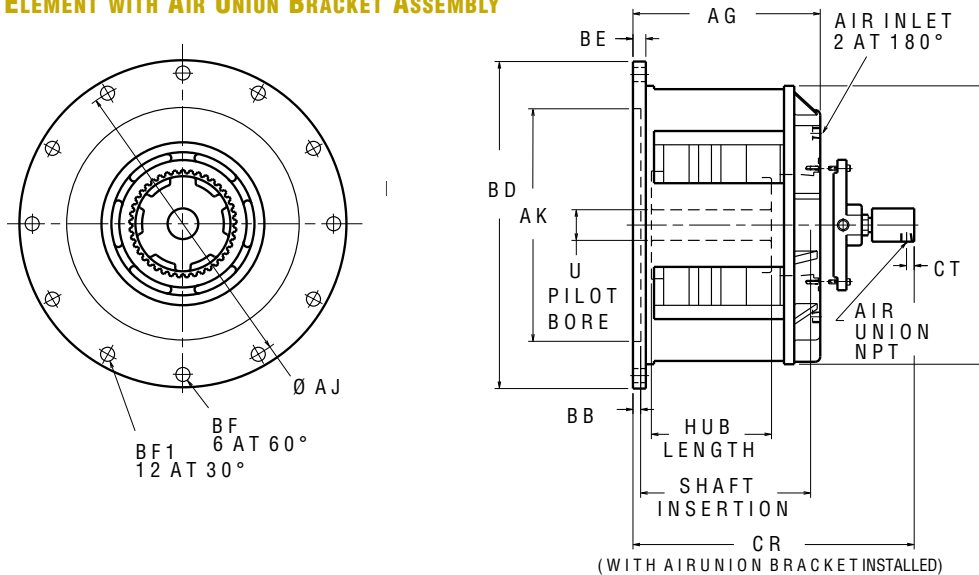
Model	Product Number	Air Union Bracket Assembly Product Number	NPT Size	Shipping Wt. (Lbs)
QFE 1150-S	964060	964012	0.250	1
QFE 1650-S	964063	964013	0.750	2
QFE 2200-S	964066	964014	0.750	3
QFE 2500-S	964069	964015	0.750	3
QFE 1150-H	964061	964012	0.250	1
QFE 1650-H	964064	964013	0.750	2
QFE 2200-H	964067	964014	0.750	3
QFE 2500-H	964070	964015	0.750	3

▶ TORQUE VS. AIR PRESSURE



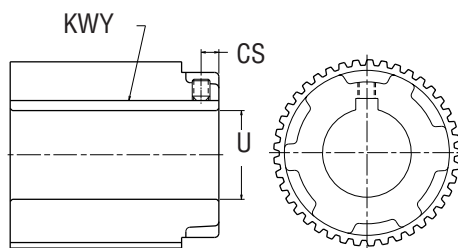
QFE MODEL CLUTCH & BRAKE ELEMENTS - APPROXIMATE DIMENSIONS (INCHES)

QFE ELEMENT WITH AIR UNION BRACKET ASSEMBLY



MODEL	PRODUCT NUMBER	AIR INLET NPT	HUB LENGTH	AG	AJ	AK ±.001	BB	BD	BE	BF	BF1	CR	CT	P	AIR UNION NPT	U +.001 -.000	SHAFT INSERTION MIN.	MAX.
QFE 1150-S	964060	.250	5.88	9.16	14.750	11.376	0.38	16.00	0.63	0.69	--	12.83	0.38	13.62	.250	1.500	5.88	7.79
QFE 1150-H	964061	.250	5.88	9.16	14.750	11.376	0.38	16.00	0.63	0.69	--	12.83	0.38	13.62	.250	1.500	5.88	7.79
QFE 1650-S	964063	.500	6.75	9.55	20.000	16.251	0.38	21.25	0.62	--	0.69	15.60	0.63	18.75	.750	2.000	6.75	8.20
QFE 1650-H	964064	.500	6.75	9.55	20.000	16.251	0.38	21.25	0.62	--	0.69	15.60	0.63	18.75	.750	2.000	6.75	8.20
QFE 2200-S	964066	.500	7.88	10.39	25.500	21.376	0.31	27.00	0.75	--	0.69	16.43	0.63	24.50	.750	3.000	7.88	8.92
QFE 2200-H	964067	.500	7.88	10.39	25.500	21.376	0.31	27.00	0.75	--	0.69	16.43	0.63	24.50	.750	3.000	7.88	8.92
QFE 2500-S	964069	.500	7.88	10.42	28.750	24.376	0.25	30.00	0.75	--	0.69	16.46	0.63	27.50	.750	3.500	7.88	8.86
QFE 2500-H	964070	.500	7.88	10.42	28.750	24.376	0.25	30.00	0.75	--	0.69	16.46	0.63	27.50	.750	3.500	7.88	8.86

QFE Hub Only



Model	CS
QFE 1150	0.50
QFE 1650	0.75
QFE 2200	0.75
QFE 2500	0.75

HUB BORE INFORMATION

All standard Hubs are furnished in the bore listed in dimension "U" and without keyway. The Hub bore can be increased to a size equal to the maximum diameter indicated in the table. If you need to increase the bore size of the Hub, you have two options:

1. Nexen can supply you with a specified bore and matching keyway at your request for an extra charge.
 2. You can machine your own bore and keyway, within the limits listed in the table.
- The following table indicates bore sizes and corresponding key and screw sizes.

Bore Size	Key Size (SQ)	Set Screw Size
1.00-1.250	0.250	0.312-18
1.312-1.375	0.312	0.375-16
1.437-1.750	0.375	0.375-16
1.812-2.250	0.500	0.500-13
2.312-2.750	0.625	0.500-13
2.812-3.250	0.750	0.625-11
3.312-3.750	0.875	0.750-10
3.812-4.500	1.000	0.750-10
4.562-5.500	1.250	0.875-9
5.562-6.500	1.500	1.000-8

CLUTCHES

"Air Champ"

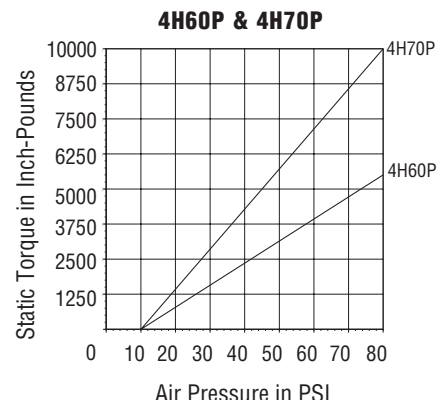
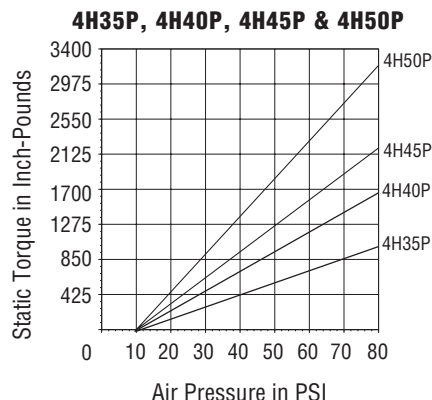
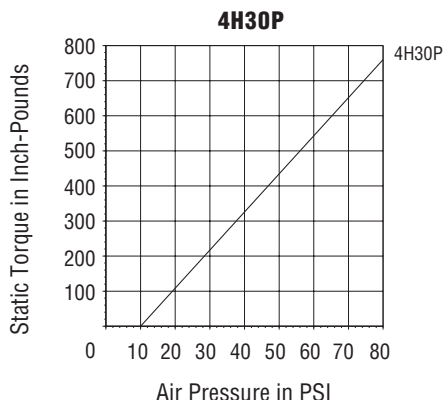
4HP SERIES, MULTIPLE DISC CLUTCHES

The 4HP Series provides:

- ▶ Static Torque up to 10,000 In. Lbs. @ 80 psi
- ▶ Maximum Operating Speed up to 1800 rpm
- ▶ **12 Bore** sizes ranging from 0.750 to 2.188 inches
- ▶ For in-line applications to accommodate misalignment, we recommend use of Nexen Single and Double Flexible Couplings
- ▶ **7 Models** offer design flexibility:
 - ▶ Clutch and Driving Shell as one unit
 - ▶ 3 or 4 Friction Disc Packs provide High Torque
 - ▶ **Pilot Mount** design with tapped mounting holes
 - ▶ Thru-shaft mounting design uses a full-length keyway
 - ▶ Ability to mount a pulley, sprocket, gear or Nexen Flexible Coupling

CAUTION! Do not use these clutches in applications where soft starts, sustained slipping or high cyclic performance is required. Such applications are best handled by standard "Air Champ" Clutches, Brakes or Clutch-Brakes.

▶ TORQUE VS. AIR PRESSURE



NOTE: Dynamic torque is approximately 85% of static torque.

▶ 4HP SERIES, MULTIPLE DISC CLUTCHES

Model	Product Number	Bore (In)	Key Size (SQ)	Shipping Wt. (Lbs)	COUPLING ASSEMBLIES	
					SINGLE FLEX Product Number	DOUBLE FLEX Product Number
4H30P	923412	0.750	0.188	6	909980	909981
4H30P	923400	0.875	0.188	6	909980	909981
4H35P	923511	1.000	0.250	9	910080	910081
4H35P	923500	1.125	0.250	9	910080	910081
4H40P	923611	1.188	0.250	12	910180	910181
4H40P	923600	1.250	0.250	12	910180	910181
4H45P	923712	1.438	0.375	16	910280	910281
4H45P	923700	1.500	0.375	16	910280	910281
4H50P	923812	1.688	0.375	19	910380	910381
4H50P	923800	1.750	0.375	19	910380	910381
4H60P	923900	1.938	0.500	32	910480	910481
4H70P	924000	2.188	0.500	49	910580	910581

Keys are customer furnished and must be full-length.

▶ BUSHINGS

Bushings fit within the bore of the existing clutch, reducing the bore to the size indicated. Keys are provided with each Bushing.

For quick selection of compatible Bushings, refer to the chart below.

Product Number	Reduces Clutch Bore Size to (In)	Fits Clutch Product Number	Shipping Wt. (Lbs.)
920400	0.750	923400	1
920500	1.000	923500	1
920600	1.125	923600	1
920700	1.375	923700	2
920800	1.625	923800	2
920900	1.750	923900	4
921000	1.938	924000	5

▶ ATTACHMENT OPTIONS

Flexible Coupling Assemblies

Flexible Coupling Assemblies are required for in-line coupling applications and are available in single or double flex designs to provide **high misalignment capabilities with high torque**. Turn to pages 56 and 57 for Flexible Coupling details.

For quick selection of Flexible Couplings, refer to the chart above.

Pulleys, Sprockets, Gears

These can be attached to the clutch for off set shaft applications. Tapped holes are provided for ease of mounting. Nexen does not furnish these items.

For minimum sprocket requirements, see pages 267.

Study the Clutch Application Data, Torque Charts and RPM/Air Pressure information for these clutches carefully to ensure you have selected the proper 4HP Model for your requirements. If not properly used, failure or poor performance can occur. Please consult Nexen if you are unsure of your applications suitability.

Shown are maximum rpm values (based on 10,000 hours of bearing life) for various air pressures at which the 4HP Clutch Models can be run. For any other rpm at any other air pressure, please consult Nexen

CLUTCH APPLICATION DATA

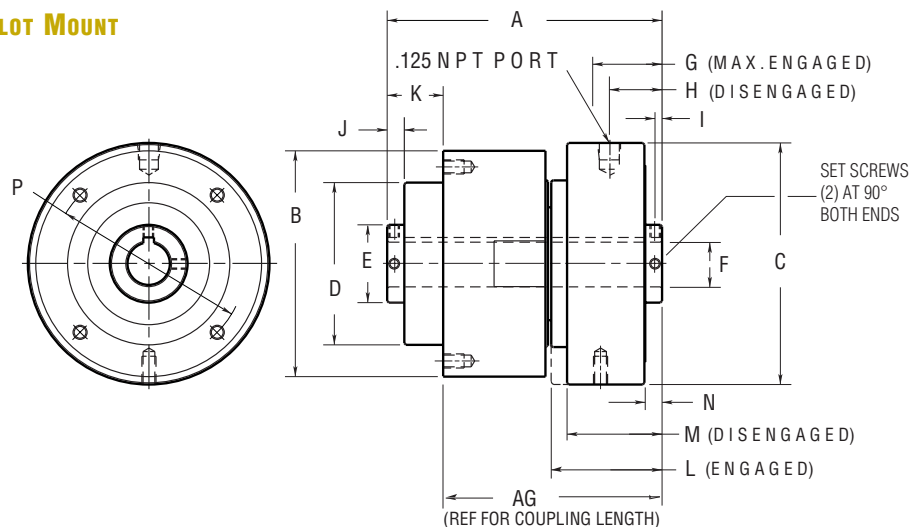
MODEL	MAX. Ft. Lbs. of Energy per Engagement	MAX. Ft. Lbs. of Energy per Minute	HP _T Up to
4H30P	5900	2950	.09
4H35P	8100	4050	.12
4H40P	9590	4795	.15
4H45P	11800	5900	.18
4H50P	12540	6270	.19
4H60P	14750	7375	.22
4H70P	18440	9220	.28

MAXIMUM RPM FOR VARIOUS AIR PRESSURES

Air Pressure PSI	Clutch Sizes						
	30	35	40	45	50	60	70
80	1400	1200	800	1000	900	700	700
70	1600	1400	1100	1400	1200	900	900
60	1800	1800	1400	1800	1800	1200	1200
50	--	--	1800	--	--	1800	1800
40	--	--	--	--	--	--	--

4HP SERIES, MULTIPLE DISC CLUTCHES - APPROXIMATE DIMENSIONS (INCHES)

PILOT MOUNT



MODEL	PRODUCT NUMBER	A	AG	B	C	D ^{+0.000 -0.001}	E	F ^{+0.001 -0.000} MAX. BORE	G	H	I	J	K	L	M	N	P	
																	TAP	B.C.
4H30P	923412	4.88	3.88	4.00	4.29	2.875	1.38	0.750	1.26	0.93	0.12	0.32	1.00	2.02	1.68	0.32	(4) .250-20	3.437
4H30P	923400	4.88	3.88	4.00	4.29	2.875	1.38	0.875	1.26	0.93	0.12	0.32	1.00	2.02	1.68	0.32	(4) .250-20	3.437
4H35P	923511	5.25	4.22	4.50	4.88	3.500	1.77	1.000	1.29	0.94	0.12	0.29	1.03	2.03	1.69	0.29	(4) .250-20	4.062
4H35P	923500	5.25	4.22	4.50	4.88	3.500	1.77	1.125	1.29	0.94	0.12	0.29	1.03	2.03	1.69	0.29	(4) .250-20	4.062
4H40P	923611	5.25	4.22	5.00	5.00	3.500	1.77	1.188	1.32	0.94	0.12	0.29	1.03	2.06	1.69	0.29	(4) .250-20	4.25
4H40P	923600	5.25	4.22	5.00	5.00	3.500	1.77	1.250	1.32	0.94	0.12	0.29	1.03	2.06	1.69	0.29	(4) .250-20	4.25
4H45P	923712	5.66	4.50	5.75	5.91	4.125	2.36	1.438	1.33	0.95	0.12	0.32	1.16	2.18	1.80	0.32	(4) .250-20	4.750
4H45P	923700	5.66	4.50	5.75	5.91	4.125	2.36	1.500	1.33	0.95	0.12	0.32	1.16	2.18	1.80	0.32	(4) .250-20	4.750
4H50P	923812	6.02	4.86	6.25	6.25	4.500	2.56	1.688	1.20	1.03	0.16	0.38	1.16	2.39	2.07	0.38	(4) .312-18	5.250
4H50P	923800	6.02	4.86	6.25	6.25	4.500	2.56	1.750	1.20	1.03	0.16	0.38	1.16	2.39	2.07	0.38	(4) .312-18	5.250
4H60P	923900	6.81	5.59	7.25	6.94	5.250	2.95	1.938	1.61	1.17	0.16	0.38	1.22	2.77	2.33	0.38	(4) .312-18	6.125
4H70P	924000	7.66	6.09	8.38	8.12	5.750	3.35	2.188	1.78	1.19	0.16	0.38	1.56	3.08	2.48	0.34	(4) .500-13	7.000

SINGLE AND DOUBLE FLEXIBLE COUPLING ASSEMBLIES

Both Single and Double Flexible Couplings are available for the 4HP Multiple Disc Clutch. See the following pages for details.

CLUTCHES

4HP CLUTCH FLEXIBLE COUPLING ASSEMBLIES

Couple your shaft to a 4HP Multiple Disc Clutch with a Flexible Coupling Assembly. There are 14 Single Flex and 14 Double Flex Couplings, each designed to fit a specific 4HP Clutch. Whatever the design style, you'll get:

- High Misalignment Capability
 - Torque ratings up to 10,000 In. Lbs. @ 80 psi
 - Nickel-plated surfaces
 - Coupling discs made from composite materials provide the benefits of both a steel disc and elastomeric coupling.
- Other benefits include:
- Corrosion resistant
 - Requires no lubrication
 - Coupling adds no backlash to the drive
 - Provides torsional stiffness
 - Dampens shock and vibration through the power train
 - Reverse Bushing Tapers for bushing installation from the inside of the coupling.

Find the Flexible Coupling which matches your clutch and your application specifications on this page.

► 4HP CLUTCH SINGLE & DOUBLE FLEXIBLE COUPLING SELECTION CHART

1. Determine the Clutch required for your application and find it on the chart below;
2. Find the matching Flexible Coupling Assembly at the top of the column;
3. Double check the Flexible Coupling specifications to ensure conformity with all mating components;
4. A Taper Lock Bushing is required, see chart below for recommended part. This is customer furnished.
5. Clutch and Flexible Coupling Assembly must be ordered separately.

Single Flex #:	909980	910080	910180	910280	910380	910480	910580
Double Flex #:	909981	910081	910181	910281	910381	910481	910581

Model Size:	4H30P	4H35P	4H40P	4H45P	4H50P	4H60P	4H70P
Clutch	923412	923511	923611	923712	923812	923900	924000
Product #:	923400	923500	923600	923700	923800		

► SINGLE & DOUBLE FLEXIBLE COUPLING PRODUCT DETAILS

Single Flex Product Number	Double Flex Product Number	Dodge Taper Lock® Bushing Number	BORE RANGE		Single Flex Shipping Wt. (Lbs)	Double Flex Shipping Wt. (Lbs)
			MIN. (In)	MAX. (In)		
909980	909981	1215	0.500	1.250	8	10
910080	910081	1615	0.500	1.625	10	13
910180	910181	2012	0.500	2.000	12	15
910280	910281	2517	0.500	2.500	14	16
910380	910381	2525	0.500	2.500	22	25
910480	910481	3030	0.938	3.000	29	34
910580	910581	3535	1.188	3.938	70	82

► SINGLE FLEXIBLE COUPLING MISALIGNMENT CAPACITY

Product Number	Angular (Degrees)	Axial (In)	Parallel (In)
909980	1.5	0.065	0.011
910080	1.5	0.070	0.012
910180	1.5	0.080	0.013
910280	1.5	0.090	0.014
910380	1.5	0.105	0.017
910480	1.5	0.120	0.019
910580	1.5	0.135	0.022

► DOUBLE FLEXIBLE COUPLING MISALIGNMENT CAPACITY

Product Number	Angular (Degrees)	Axial (In)	Parallel (In)
909981	3.0	0.130	0.063
910081	3.0	0.140	0.078
910181	3.0	0.160	0.085
910281	3.0	0.180	0.091
910381	3.0	0.210	0.104
910481	3.0	0.240	0.117
910581	3.0	0.270	0.137

NOTE: If parallel, angular and axial misalignment are all required, be certain that the combined percentage of each does not exceed 100%. For instance, if 100% of the parallel misalignment rating is required, no angular or axial misalignment is allowed. If 50% of the parallel misalignment rating is required, only 50% of the angular misalignment OR 50% of the axial rating will be available.

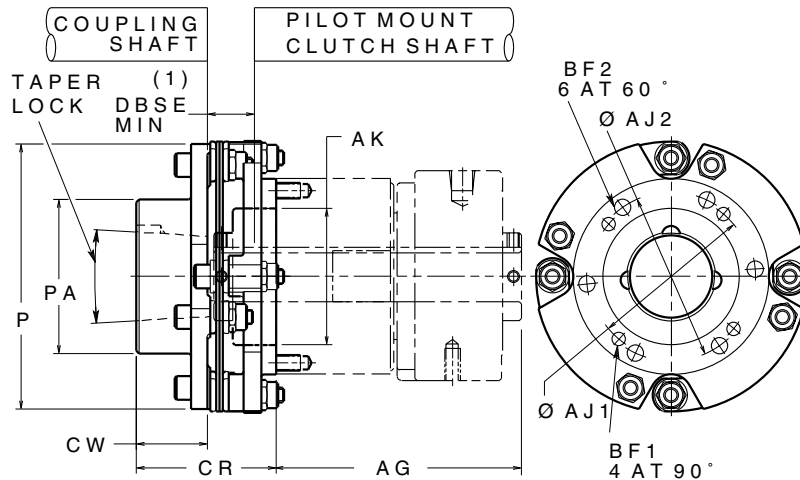
► REVERSE BUSHING TAPERED COUPLINGS

Single Flex #:	909984	910084	910184	910284	910384	910484	910584
Double Flex #:	909985	910085	910185	910285	910385	910485	910585

Model Size:	4H30P	4H35P	4H40P	4H45P	4H50P	4H60P	4H70P
Clutch	923412	923511	923611	923712	923812	923900	924000
Product #:	923400	923500	923600	923700	923800		

4HP CLUTCH FLEXIBLE COUPLING ASSEMBLIES - APPROXIMATE DIMENSIONS (INCHES)

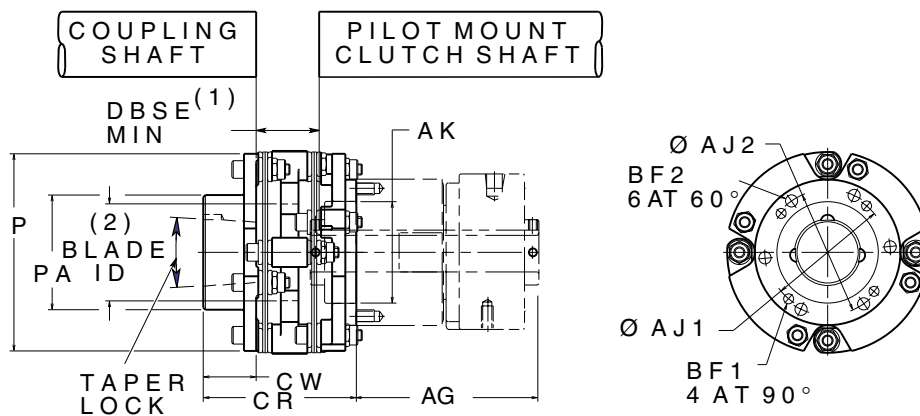
► SINGLE FLEX



DBSE (1) = Distance Between Shaft Ends. Less than MIN requires equipment removal for service; the MAX distance is dependent on the clutch.

PRODUCT NUMBER	AG	AJ1	AJ2	AK ⁺⁰⁰¹ / ₋₀₀₀	HOLE SIZE		BF1		BF2		CR	CW	P	PA	DBSE	
					BF1	BF2	BOLT SIZE	BOLT SIZE	BOLT SIZE	BOLT SIZE					MIN.	MAX.
909980	3.88	3.437	3.562	2.875	0.265	0.327	.250-20 x 1.00	.312-18 x 1.25	.250-20 x 1.00	.312-18 x 1.25	2.95	1.50	5.75	3.25	0.39	2.59
910080	4.22	4.062	4.062	3.500	0.265	0.327	.250-20 x 1.00	.312-18 x 1.25	.250-20 x 1.00	.312-18 x 1.25	3.17	1.50	6.38	3.88	0.52	2.23
910180	4.22	4.250	4.250	3.500	0.265	0.327	.250-20 x 1.25	.312-18 x 1.25	.250-20 x 1.25	.312-18 x 1.25	2.97	1.25	6.75	4.38	0.59	1.76
910280	4.50	4.750	4.750	4.125	0.265	0.390	.250-20 x 1.25	.375-16 x 1.50	.250-20 x 1.25	.375-16 x 1.50	3.70	1.75	7.25	4.88	0.59	1.75
910380	4.86	5.250	5.375	4.500	0.327	0.515	.312-18 x 1.25	.500-13 x 1.50	.312-18 x 1.25	.500-13 x 1.50	4.61	2.50	8.38	5.00	0.86	1.45
910480	5.59	6.125	6.125	5.250	0.327	0.515	.312-18 x 1.50	.500-13 x 1.75	.312-18 x 1.50	.500-13 x 1.75	5.31	3.00	9.50	5.75	0.88	1.47
910580	6.09	7.000	7.000	5.750	0.515	0.640	.500-13 x 1.75	.625-11 x 2.00	.500-13 x 1.75	.625-11 x 2.00	6.23	3.53	11.38	6.75	1.02	—

► DOUBLE FLEX



DBSE (1) = Distance Between Shaft Ends. Less than MIN requires equipment removal for service; the MAX distance is dependent on the clutch.

(2) Blade ID is the diameter of the hole in the intermediate member

PRODUCT NUMBER	AG	AJ1	AJ2	AK ⁺⁰⁰¹ / ₋₀₀₀	HOLE SIZE		BF1		BF2		CR	CW	P	PA	BLADE ID (2)	DBSE	
					BF1	BF2	BOLT SIZE	BOLT SIZE	BOLT SIZE	BOLT SIZE						MIN.	MAX.
909981	3.88	3.437	3.562	2.875	0.265	0.327	.250-20 x 1.00	.312-18 x 1.25	.250-20 x 1.00	.312-18 x 1.25	4.34	1.50	5.75	3.25	2.75	1.78	3.98
910081	4.22	4.062	4.062	3.500	0.265	0.327	.250-20 x 1.00	.312-18 x 1.25	.250-20 x 1.00	.312-18 x 1.25	4.86	1.50	6.38	3.88	3.00	2.20	3.92
910181	4.22	4.250	4.250	3.500	0.265	0.327	.250-20 x 1.25	.312-18 x 1.25	.250-20 x 1.25	.312-18 x 1.25	4.81	1.25	6.75	4.38	3.12	2.44	3.61
910281	4.50	4.750	4.750	4.125	0.265	0.390	.250-20 x 1.25	.375-16 x 1.50	.250-20 x 1.25	.375-16 x 1.50	5.70	1.75	7.25	4.88	3.38	2.59	3.75
910381	4.86	5.250	5.375	4.500	0.327	0.515	.312-18 x 1.25	.500-13 x 1.50	.312-18 x 1.25	.500-13 x 1.50	6.92	2.50	8.38	5.00	4.12	3.17	3.75
910481	5.59	6.125	6.125	5.250	0.327	0.515	.312-18 x 1.50	.500-13 x 1.75	.312-18 x 1.50	.500-13 x 1.75	7.89	3.00	9.50	5.75	4.38	3.45	4.05
910581	6.09	7.000	7.000	5.750	0.515	0.640	.500-13 x 1.75	.625-11 x 2.00	.500-13 x 1.75	.625-11 x 2.00	9.28	3.53	11.38	6.75	5.25	3.81	—

CLUTCHES

"Air Champ"

5H SERIES, FLANGE MOUNT TOOTH CLUTCHES

The 5H Series provides:

- ▶ Instantaneous Torque up to 17,500 In. Lbs. @ 80 psi
- ▶ Maximum Operating Speed up to 3,700 rpm
- ▶ **7 Bore sizes** ranging from 0.875 to 2.188 inches
- ▶ Positive engagements in multiple positions
- ▶ Immediate start-up with no slippage
- ▶ Versatile mounting capability for bearing supported pulley, sprocket or gear

7 Models offer design flexibility:

- ▶ Sealed, radial ball bearings
- ▶ **Flange Mount** design with tapped mounting holes
- ▶ Thru-shaft mounting design uses a full-length keyway
- ▶ 8.25 inch hose included.

5H SERIES, FLANGE MOUNT TOOTH CLUTCHES

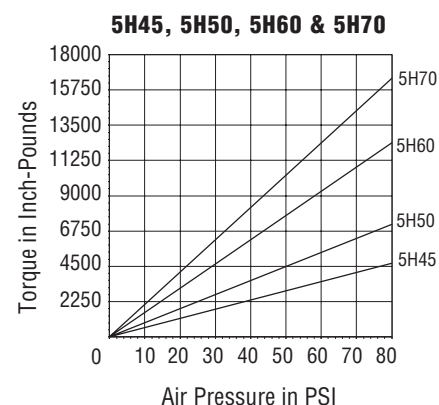
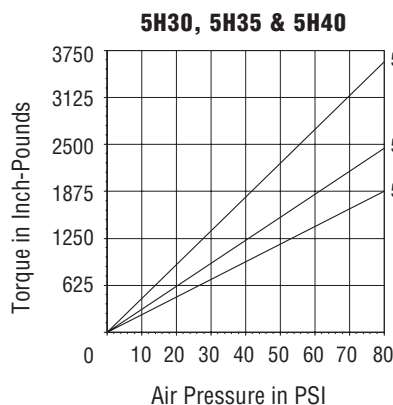
Model	Product Number	Speeds Up to RPM	Bore (In)	Key Size (Sq)	# of Teeth	Shipping Wt. (Lbs)
5H30	906700	3700	0.875	0.188	91	7
5H35	906800	3200	1.125	0.250	106	9
5H40	906900	3000	1.250	0.250	122	11
5H45	907000	3000	1.500	0.375	137	15
5H50	907100	3000	1.750	0.375	152	18
5H60	907200	2400	1.938	0.500	183	28
5H70	907300	2000	2.188	0.500	214	40

Bearing life is optimized at lower speeds and air pressure. For higher speeds consult factory. Keys are customer furnished and must be full-length.

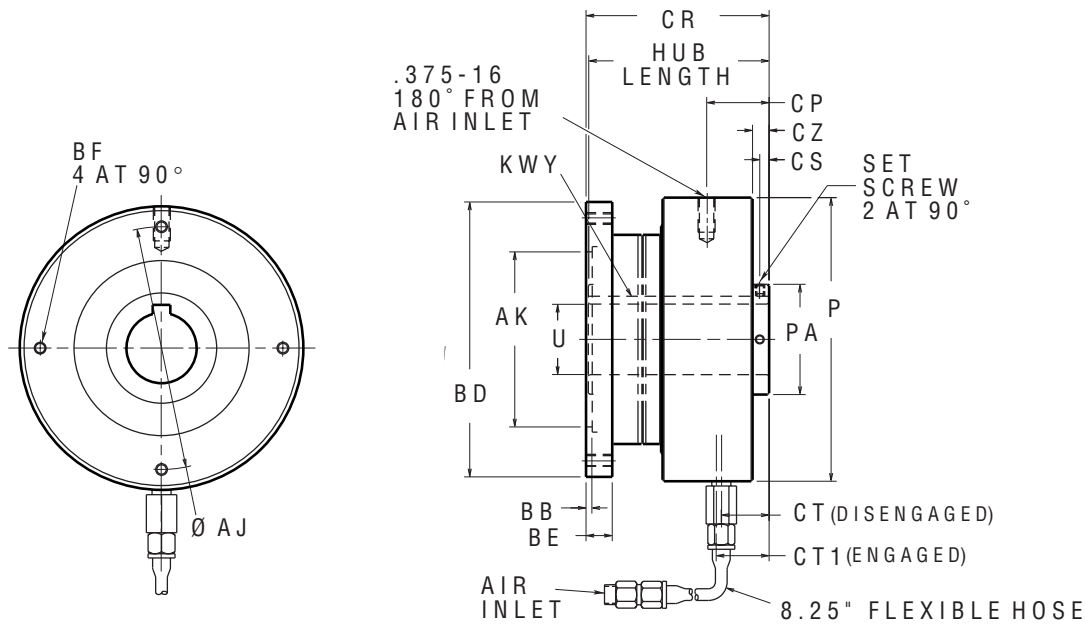
CAUTION!

Tooth clutches are normally engaged when stationary. They are not intended for use in most cyclic applications or high speed engagement. In certain circumstances, tooth clutches can be engaged at differential speeds. Please consult Nexen if you are considering an application involving engagement at differential speeds.

TORQUE VS. AIR PRESSURE



5H SERIES, FLANGE MOUNT TOOTH CLUTCHES - APPROXIMATE DIMENSIONS (INCHES)



MODEL	PRODUCT NUMBER	AIR INLET NPT	HUB LENGTH	AJ	AK ^{+0.001} _{-0.000}	BB	BD ±0.001	BE	BF	CP	CR	CS	CT	CT1	CZ	P	PA
5H30	906700	.125	3.28	3.687	2.441	0.13	4.374	0.50	.250-20	--	3.35	0.20	0.92	0.99	0.25	4.56	1.38
5H35	906800	.125	3.42	4.187	2.953	0.11	4.874	0.56	.250-20	--	3.49	0.20	0.95	1.03	0.29	5.06	1.77
5H40	906900	.125	3.51	4.687	2.953	0.13	5.374	0.56	.250-20	--	3.58	0.20	0.93	1.00	0.26	5.31	1.76
5H45	907000	.125	3.85	5.187	3.740	0.13	5.874	0.56	.250-20	--	3.91	0.20	1.02	1.09	0.35	6.06	2.36
5H50	907100	.125	3.99	5.687	3.937	0.14	6.374	0.69	.375-16	--	4.07	0.26	1.15	1.22	0.49	6.56	2.56
5H60	907200	.125	4.48	6.812	4.527	0.17	7.624	0.69	.375-16	--	4.55	0.26	1.33	1.41	0.54	7.56	2.95
5H70	907300	.250	5.11	7.687	5.118	0.37	8.374	0.81	.375-16	1.61	5.18	0.26	1.41	1.51	0.62	8.31	3.34

MODEL	PRODUCT NUMBER	SET SCREW	KEYWAY		U ^{+0.001} _{-0.000}
			WD	DP	
5H30	906700	.190-24	0.188	0.094	0.875
5H35	906800	.190-24	0.250	0.125	1.125
5H40	906900	.190-24	0.250	0.125	1.250
5H45	907000	.190-24	0.375	0.188	1.500
5H50	907100	.250-20	0.375	0.188	1.750
5H60	907200	.250-20	0.500	0.250	1.938
5H70	907300	.250-20	0.500	0.250	2.188

CLUTCHES

"Air Champ"

5HP SERIES, PILOT MOUNT TOOTH CLUTCH

The 5HP Series provides:

- ▶ Instantaneous Torque up to 55,000 In. Lbs. @ 80 psi
- ▶ Maximum Operating Speed up to 4,000 rpm
- ▶ **15 Bore** sizes ranging from 0.625 to 3.938 inches
- ▶ Positive engagement in random positions
- ▶ For in-line applications to accommodate misalignment, we recommend use of Nexen Single and Double Flexible Couplings.

10 Models offer design flexibility:

- ▶ Sealed, radial ball bearing
- ▶ **Pilot Mount** design with tapped mounting holes
- ▶ Thru-shaft mounting design uses a full-length keyway
- ▶ Ability to mount a pulley, sprocket or gear on the clutch
- ▶ Ability to use a Flexible Clutch Coupling for in-line shaft coupling applications
- ▶ 8.25 inch flexible hose included.

5HP SERIES, PILOT MOUNT TOOTH CLUTCHES

Model	Product Number	Speeds Up to RPM	Bore (In)	Key Size WD x DP	# of Teeth	Shipping Wt. (Lbs)	COUPLING ASSEMBLIES	
							SINGLE FLEX Product Number	DOUBLE FLEX Product Number
5H20P	911300	4000	0.625	0.188 x 0.188	64	6	--	--
5H30P	909900	3700	0.875	0.188 x 0.188	91	7	909980	909981
5H30P	909912	3700	0.750	0.188 x 0.188	91	7	909980	909981
5H35P	910000	3200	1.125	0.250 x 0.250	106	10	910080	910081
5H35P	910011	3200	1.000	0.250 x 0.250	106	10	910080	910081
5H40P	910100	3000	1.250	0.250 x 0.250	122	12	910180	910181
5H40P	910112	3000	1.188	0.375 x 0.375	122	12	910180	910181
5H45P	910200	3000	1.500	0.375 x 0.375	137	16	910280	910281
5H45P	910211	3000	1.438	0.375 x 0.375	137	16	910280	910281
5H50P	910300	3000	1.750	0.375 x 0.375	152	19	910380	910381
5H50P	910311	3000	1.688	0.500 x 0.500	152	19	910380	910381
5H60P	910400	2400	1.938	0.500 x 0.500	183	30	910480	910481
5H70P	910500	2000	2.188	0.500 x 0.500	214	45	910580	910581
5H80P	911700	2000	2.938	0.750 x 0.500	244	70	911780	911781
5H100P	913100	1000	3.938	1.000 x 0.750	328	170	--	--

Keys are customer furnished and must be full-length.

ATTACHMENT OPTIONS

Flexible Coupling Assemblies

Flexible Coupling Assemblies are required for in-line coupling applications and are available in single or double flex designs to provide **high misalignment capabilities with high torque**. Turn to pages 56 and 57 for Flexible Coupling details. For quick selection of Flexible Couplings, refer to the chart above.

Pulleys, Sprockets, Gears

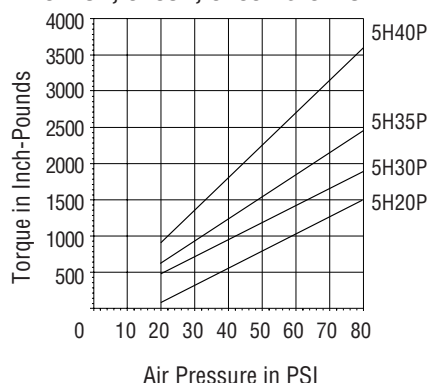
These can be attached to the clutch for offset shaft applications. Tapped holes are provided for ease of mounting. Nexen does not furnish these items. For minimum sprocket requirements, see page 267.

CAUTION!

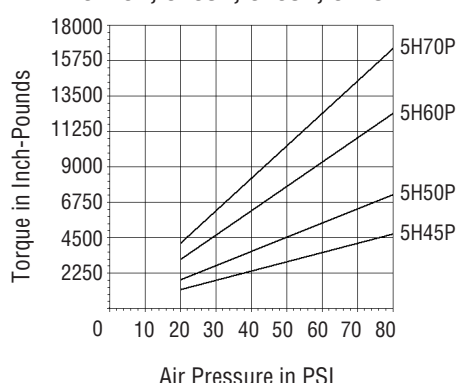
Tooth clutches are normally engaged when stationary. They are not intended for use in most cyclic applications or high speed engagement. In certain circumstances, tooth clutches can be engaged at differential speeds. Please consult Nexen if you are considering an application involving engagement at differential speeds.

TORQUE VS. AIR PRESSURE

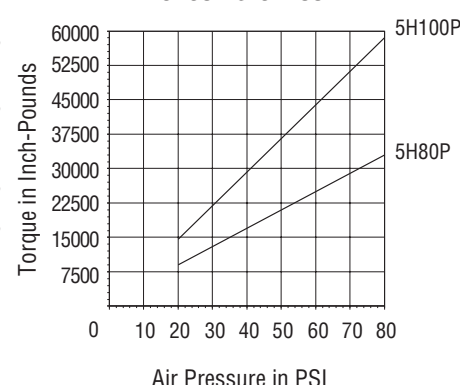
5H20P, 5H30P, 5H35P & 5H40P



5H45P, 5H50P, 5H60P, 5H70P

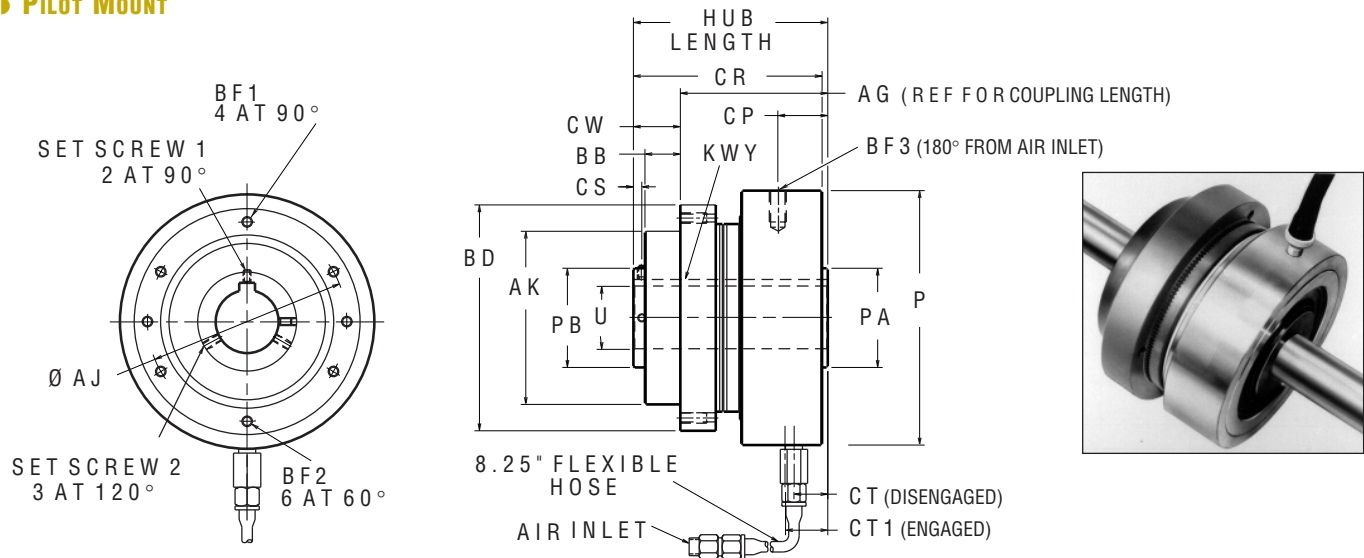


5H80P & 5H100P



5HP SERIES, PILOT MOUNT TOOTH CLUTCHES - APPROXIMATE DIMENSIONS (INCHES)

PILOT MOUNT



MODEL	PRODUCT NUMBER	AIR INLET NPT	HUB LENGTH	AG	AJ	AK ±.001	BB	BD	BF1	BF2	BF3	CP	CR	CS	CT	CT1	CW	P	PA	PB
5H20P	911300	.125	3.44	2.51	2.750	2.249	0.56	3.12	--	.190-24	--	--	3.75	0.25	0.56	0.62	0.93	3.69	0.98	1.50
5H30P	909900	.125	3.89	2.95	3.437	2.874	0.69	3.88	.250-20	--	--	--	3.85	0.20	0.71	0.78	0.94	4.56	1.38	1.38
5H35P	910000	.125	4.12	3.16	4.062	3.499	0.69	4.50	.250-20	--	--	--	4.06	0.20	0.72	0.80	0.96	5.06	1.77	1.77
5H40P	910100	.125	4.20	3.22	4.250	3.499	0.69	4.88	.250-20	--	--	--	4.17	0.20	0.70	0.76	0.98	5.31	1.76	1.76
5H45P	910200	.125	4.63	3.51	4.750	4.124	0.84	5.38	.250-20	--	--	--	4.49	0.20	0.81	0.88	1.12	6.06	2.36	2.36
5H50P	910300	.125	4.76	3.60	5.250	4.499	0.78	6.00	.312-18	--	--	--	4.61	0.26	0.81	0.88	1.16	6.56	2.56	2.56
5H60P	910400	.125	5.39	4.13	6.125	5.249	0.88	7.00	.312-18	--	--	--	5.18	0.26	1.00	1.08	1.26	7.56	2.95	2.95
5H70P	910500	.250	5.96	4.35	7.000	5.749	1.19	8.25	.500-13	--	.375-16	1.19	5.76	0.26	0.99	1.10	1.61	8.31	3.34	3.34
5H80P	911700	.250	8.62	5.69	8.500	7.374	1.88	9.50	--	.500-13	.375-16	2.26	8.33	0.62	2.27	2.37	2.93	9.25	3.74	5.00
5H100P	913100	.250	10.51	7.46	11.000	8.999	2.00	12.00	--	.500-13	.500-13	3.00	9.46	0.62	3.00	3.07	3.05	12.25	6.50	6.50

MODEL	PRODUCT NUMBER	SET SCREW 1	SET SCREW 2	KEYWAY WD	KEYWAY DP	U ^{+.001} _{-.000}
5H20P	911300	.250-20	--	0.188	0.094	0.625
5H30P	909900	.190-24	--	0.188	0.094	0.875
5H35P	910000	.190-24	--	0.250	0.125	1.125
5H40P	910100	.190-24	--	0.250	0.125	1.250
5H45P	910200	.190-24	--	0.375	0.188	1.500
5H50P	910300	.250-20	--	0.375	0.188	1.750
5H60P	910400	.250-20	--	0.500	0.250	1.937
5H70P	910500	.250-20	--	0.500	0.250	2.187
5H80P	911700	--	.625-11	0.750	0.250	2.937
5H100P	913100	--	.750-10	1.000	0.375	3.937

SINGLE AND DOUBLE FLEXIBLE COUPLING ASSEMBLIES

Both Single and Double Flexible Couplings are available for the 5HP Pilot Mount Tooth Clutch. See the following pages for details.

CLUTCHES

5HP CLUTCH FLEXIBLE COUPLING ASSEMBLIES

Couple your shaft to a 5HP Series Tooth Clutch with a Flexible Coupling Assembly. There are 16 Single Flex and 16 Double Flex Couplings, each designed to fit a specific 5HP Tooth Clutch.

Whatever the design style, you'll get:

- High Misalignment Capability
- Torque ratings up to 32,000 In. Lbs. @ 80 psi
- Nickel-plated surfaces
- Coupling discs made from composite materials provide the benefits of both a steel disc and elastomeric coupling.

Other benefits include:

- Corrosion resistant
- Requires no lubrication
- Coupling adds no backlash to the drive
- Provides torsional stiffness
- Dampens shock and vibration through the power train
- Reverse Bushing Tapers for bushing installation from the inside of the coupling.

Find the Flexible Coupling which matches your clutch and your application specifications on this page.

► 5HP SINGLE & DOUBLE FLEXIBLE COUPLING SELECTION CHART

1. Determine the Tooth Clutch required for your application and find it on the chart below;
2. Find the matching Flexible Coupling Assembly at the top of the column;
3. Double check the Flexible Coupling specifications to ensure conformity with all mating components;
4. A Taper Lock Bushing is required, see chart below for recommended part. This is customer furnished;
5. Clutch and Flexible Coupling Assembly must be ordered separately.

Single Flex #:	909980	910080	910180	910280	910380	910480	910580	911780
Double Flex #:	909981	910081	910181	910281	910381	910481	910581	911781

Model Size:	5H30P	5H35P	5H40P	5H45P	5H50P	5H60P	5H70P	5H80P
Clutch	909900	910000	910100	910200	910300	910400	910500	911700
Product #:	909912	910011	910112	910211	910311			

NOTE: There are no Flexible Couplings for the 5H20P or 5H100P Clutches.

► SINGLE & DOUBLE FLEXIBLE COUPLING PRODUCT DETAILS

Single Flex Product Number	Double Flex Product Number	Dodge Taper Lock® Bushing Number	BORE RANGE		Single Flex Shipping Wt. (Lbs)	Double Flex Shipping Wt. (Lbs)
			MIN. (In)	MAX. (In)		
909980	909981	1215	0.500	1.250	8	10
910080	910081	1615	0.500	1.625	10	13
910180	910181	2012	0.500	2.000	12	15
910280	910281	2517	0.500	2.500	14	16
910380	910381	2517	0.500	2.500	22	25
910480	910481	3030	0.938	3.000	29	34
910580	910581	3535	1.188	3.938	70	82
911780	911781	4040	1.438	4.438	110	130

► SINGLE FLEXIBLE COUPLING MISALIGNMENT CAPACITY

Product Number	Angular (Degrees)	Axial (In)	Parallel (In)
909980	1.5	0.065	0.011
910080	1.5	0.070	0.012
910180	1.5	0.080	0.013
910280	1.5	0.090	0.014
910380	1.5	0.105	0.017
910480	1.5	0.120	0.019
910580	1.5	0.135	0.022
911780	1.5	0.155	0.026

► DOUBLE FLEXIBLE COUPLING MISALIGNMENT CAPACITY

Product Number	Angular (Degrees)	Axial (In)	Parallel (In)
909981	3.0	0.130	0.063
910081	3.0	0.140	0.078
910181	3.0	0.160	0.085
910281	3.0	0.180	0.091
910381	3.0	0.210	0.104
910481	3.0	0.240	0.117
910581	3.0	0.270	0.137
911781	3.0	0.310	0.170

NOTE: If parallel, angular and axial misalignment are all required, be certain that the combined percentage of each does not exceed 100%. For instance, if 100% of the parallel misalignment rating is required, no angular or axial misalignment is allowed. If 50% of the parallel misalignment rating is required, only 50% of the angular misalignment OR 50% of the axial rating will be available.

► REVERSE BUSHING TAPERED COUPLINGS

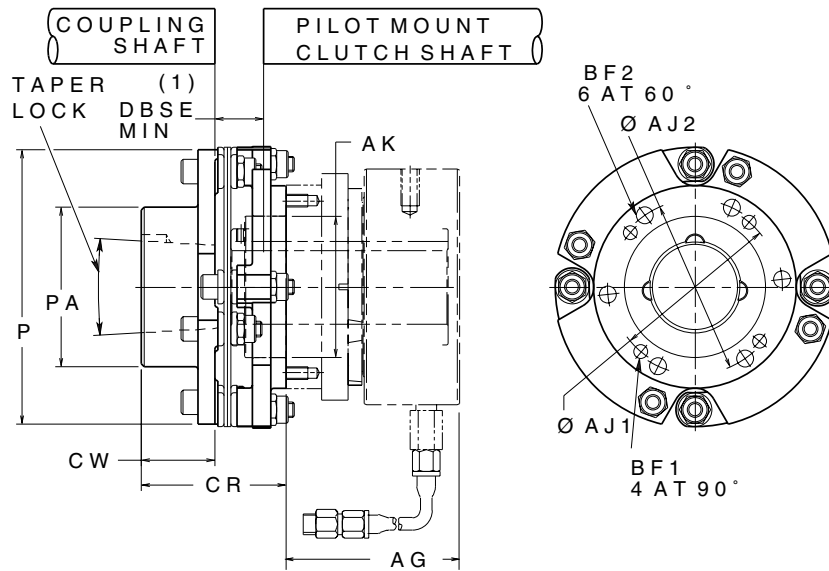
Single Flex #:	909984	910084	910184	910284	910384	910484	910584	911784
Double Flex #:	909985	910085	910185	910285	910385	910485	910585	911785

Model Size:	5H30P	5H35P	5H40P	5H45P	5H50P	5H60P	5H70P	5H80P
Clutch	909900	910000	910100	910200	910300	910400	910500	911700
Product #:	909912	910011	910112	910211	910311			

NOTE: There are no Flexible Couplings for the 5H20P or 5H100P Clutches.

5HP SERIES FLEXIBLE COUPLING ASSEMBLIES - APPROXIMATE DIMENSIONS (INCHES)

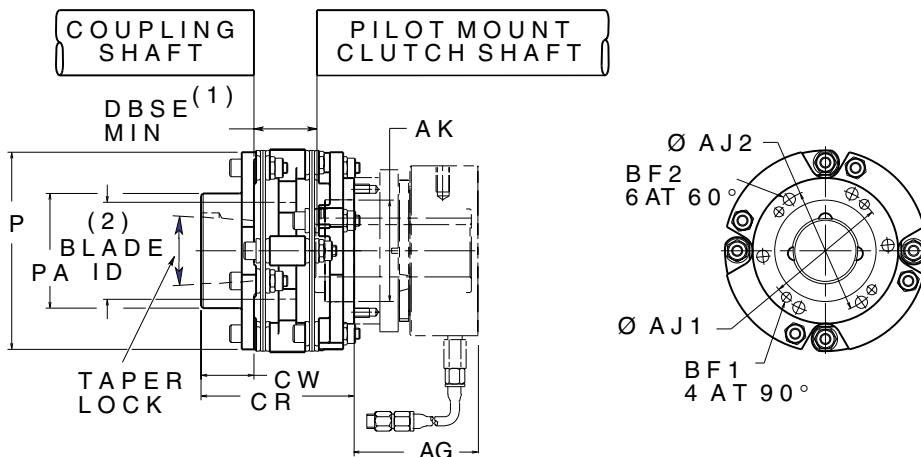
► SINGLE FLEX



DBSE (1) = Distance Between Shaft Ends. Less than MIN requires equipment removal for service; the MAX distance is dependent on the clutch.

PRODUCT NUMBER	AG	AJ1	AJ2	AK ^{+0.001} / _{-0.000}	HOLE SIZE BF1 BF2	BF1 BOLT SIZE	BF2 BOLT SIZE	CR	CW	P	PA	DBSE MIN. MAX.
909980	2.95	3.437	3.562	2.875	0.265 0.327	.250-20 x 1.00	.312-18 x 1.25	2.95	1.50	5.75	3.25	0.39 2.59
910080	3.16	4.062	4.062	3.500	0.265 0.327	.250-20 x 1.00	.312-18 x 1.25	3.17	1.50	6.38	3.88	0.52 2.23
910180	3.22	4.250	4.250	3.500	0.265 0.327	.250-20 x 1.25	.312-18 x 1.25	2.97	1.25	6.75	4.38	0.59 1.76
910280	3.51	4.750	4.750	4.125	0.265 0.390	.250-20 x 1.25	.375-16 x 1.50	3.70	1.75	7.25	4.88	0.59 1.75
910380	3.60	5.250	5.375	4.500	0.327 0.515	.312-18 x 1.25	.500-13 x 1.50	4.61	2.50	8.38	5.00	0.86 1.45
910480	4.13	6.125	6.125	5.250	0.327 0.515	.312-18 x 1.50	.500-13 x 1.75	5.31	3.00	9.50	5.75	0.88 1.47
910580	4.35	7.000	7.000	5.750	0.515 0.640	.500-13 x 1.75	.625-11 x 2.00	6.23	3.53	11.38	6.75	1.02 —
911780	5.69	8.500	8.500	7.375	0.515 0.640	.500-13 x 2.50	.625-11 x 2.75	7.95	4.12	13.12	7.50	1.06 —

► DOUBLE FLEX



DBSE (1) = Distance Between Shaft Ends. Less than MIN requires equipment removal for service; the MAX distance is dependent on the clutch.

(2) Blade ID is the diameter of the hole in the intermediate member.

PRODUCT NUMBER	AG	AJ1	AJ2	AK ^{+0.001} / _{-0.000}	HOLE SIZE BF1 BF2	BF1 BOLT SIZE	BF2 BOLT SIZE	CR	CW	P	PA	BLADE ID (2)	DBSE MIN. MAX.
909981	2.95	3.437	3.562	2.875	0.265 0.327	.250-20 x 1.00	.312-18 x 1.25	4.34	1.50	5.75	3.25	2.75	1.78 3.98
910081	3.16	4.062	4.062	3.500	0.265 0.327	.250-20 x 1.00	.312-18 x 1.25	4.86	1.50	6.38	3.88	3.00	2.20 3.92
910181	3.22	4.250	4.250	3.500	0.265 0.327	.250-20 x 1.25	.312-18 x 1.25	4.81	1.25	6.75	4.38	3.12	2.44 3.61
910281	3.51	4.750	4.750	4.125	0.265 0.390	.250-20 x 1.25	.375-16 x 1.50	5.70	1.75	7.25	4.88	3.38	2.59 3.75
910381	3.60	5.250	5.375	4.500	0.327 0.515	.312-18 x 1.25	.500-13 x 1.50	6.92	2.50	8.38	5.00	4.12	3.17 3.75
910481	4.13	6.125	6.125	5.250	0.327 0.515	.312-18 x 1.50	.500-13 x 1.75	7.89	3.00	9.50	5.75	4.38	3.45 4.05
910581	4.35	7.000	7.000	5.750	0.515 0.640	.500-13 x 1.75	.625-11 x 2.00	9.28	3.53	11.38	6.75	5.25	3.81 —
911781	5.69	8.500	8.500	7.375	0.515 0.640	.500-13 x 2.50	.625-11 x 2.75	11.72	4.12	13.12	7.50	6.00	4.69 —

CLUTCHES

5HP-E SERIES, ENCLOSED PILOT MOUNT TOOTH CLUTCH

The 5HP-E Series provides:

- Water protection per NEMA standard 1.26.5 (Water-proof machine)
- Nickel-plated exterior meets USDA standards
- Instantaneous Torque up to 12,000 In. Lbs. @ 80 psi
- Maximum Operating Speed up to 1,650 rpm
- 6 Bore** sizes ranging from 0.875 to 1.938 inches
- Positive engagements in random positions
- For in-line applications to accommodate misalignment, we recommend use of Nexen Single and Double Flexible Couplings

6 Models offer design flexibility:

- Sealed, radial ball bearings
- Pilot Mount** design with tapped mounting holes
- Thru-shaft mounting design uses a full-length keyway
- Ability to mount a pulley, sprocket or gear on the clutch
- Ability to use a Flexible Clutch Coupling for the in-line shaft coupling applications
- Operates in wet or dry environments
- 8.25 inch hose included.

5HP-E, ENCLOSED PILOT MOUNT TOOTH CLUTCHES—MULTIPOSITION

Model	Product Number	Speeds Up to RPM	Bore (In)	Key Size (Sq)	# of Teeth	Shipping Wt. (Lbs)	COUPLING ASSEMBLIES	
							SINGLE FLEX Product Number	DOUBLE FLEX Product Number
5H30P-E	913000	1650	0.875	0.188	91	13	909980	909981
5H35P-E	913010	1350	1.125	0.250	106	18	910080	910081
5H40P-E	913020	1350	1.250	0.250	122	19	910180	910181
5H45P-E	913030	1200	1.500	0.375	137	26	910280	910281
5H50P-E	913040	1100	1.750	0.375	152	34	910380	910381
5H60P-E	913050	1000	1.938	0.500	183	47	910480	910481

Keys are customer furnished and must be full-length.

ATTACHMENT OPTIONS

Flexible Coupling Assemblies

Flexible Coupling Assemblies are required for in-line coupling applications and are available in single or double flex designs to provide **high misalignment capabilities with high torque**. Turn to pages 66 and 67 for Flexible Coupling details. For quick selection of Flexible Couplings, refer to the chart above.

Pulleys, Sprockets, Gears

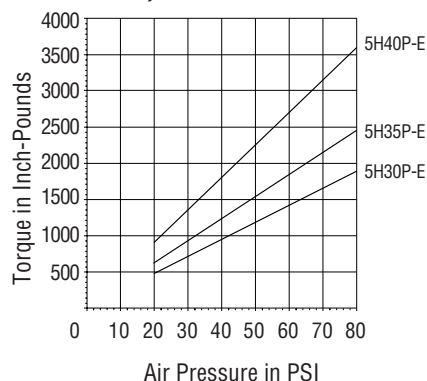
These can be attached to the clutch for offset shaft applications. Tapped holes are provided for ease of mounting. Nexen does not furnish these items. For minimum sprocket requirements, see page 267.

CAUTION!

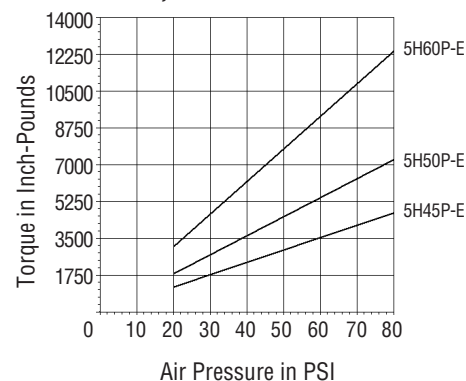
Tooth clutches are normally engaged when stationary. They are not intended for use in most cyclic applications or high speed engagement. In certain circumstances, tooth clutches can be engaged at differential speeds. Please consult Nexen if you are considering an application involving engagement at differential speeds.

TORQUE VS. AIR PRESSURE

5H30P-E, 5H35P-E & 5H40P-E

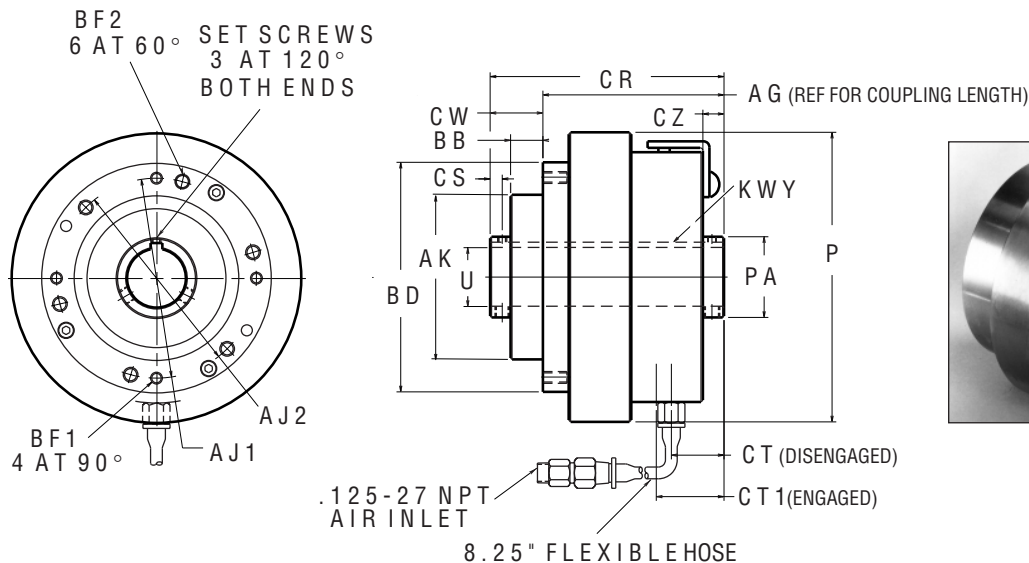


5H45P-E, 5H50P-E & 5H60P-E



5HP-E SERIES, ENCLOSED PILOT MOUNT TOOTH CLUTCHES - APPROXIMATE DIMENSIONS (INCHES)

PILOT MOUNT



MODEL	PRODUCT NUMBER	AG	AJ1	AJ2	AK ^{+.000 -.001}	BB	BD	BF1	BF2	CR	CS	CT	CT1	CW	CZ	P	PA	KEYWAY		U ^{+.001 -.000}
																		WD	DP	
5H30P-E	913000	3.80	3.437	3.562	2.875	0.69	4.12	.250-20	.312-18	4.83	0.23	1.06	1.12	1.03	0.38	5.03	1.34	0.188	0.094	0.875
5H35P-E	913010	3.97	4.062	4.062	3.500	0.69	4.50	.250-20	.312-18	5.10	0.25	1.05	1.12	1.13	0.39	6.16	1.72	0.250	0.125	1.125
5H40P-E	913020	3.85	4.250	4.250	3.500	0.69	4.88	.250-20	.312-18	4.97	0.26	1.12	1.18	1.12	0.45	6.16	1.72	0.250	0.125	1.250
5H45P-E	913030	4.35	4.750	4.750	4.125	0.84	5.40	.250-20	.375-16	5.71	0.31	1.19	1.27	1.36	0.52	6.66	2.31	0.375	0.188	1.500
5H50P-E	913040	4.72	5.250	5.375	4.500	0.78	6.12	.312-18	.500-13	5.97	0.31	1.22	1.33	1.25	0.51	7.66	2.51	0.375	0.188	1.750
5H60P-E	913050	4.92	6.125	6.125	5.250	0.87	7.00	.312-18	.500-13	6.40	0.37	1.45	1.54	1.48	0.66	8.41	2.87	0.500	0.250	1.938

MODEL	PRODUCT NUMBER	SET SCREW
5H30P-E	913000	(2) .190-24 (4) .312-24
5H35P-E	913010	(2) .190-24 (4) .312-24
5H40P-E	913020	(2) .190-24 (4) .312-24
5H45P-E	913030	(2) .190-24 (4) .312-24
5H50P-E	913040	(2) .250-20 (4) .500-13
5H60P-E	913050	(2) .250-20 (4) .500-13

SINGLE AND DOUBLE FLEXIBLE COUPLING ASSEMBLIES

Both Single and Double Flexible Couplings are available for the 5HP-E Pilot Mount Tooth Clutch. See the following pages for details.

CLUTCHES

5HP-E CLUTCH FLEXIBLE COUPLING ASSEMBLIES

Couple your shaft to a 5HP-E Series Tooth Clutch with a Flexible Coupling Assembly. There are 12 Single Flex and 12 Double Flex Couplings, each designed to fit a specific 5HP-E Tooth Clutch.

Whatever the design style, you'll get:

- ▶ High Misalignment Capability
 - ▶ Torque ratings up to 32,000 In. Lbs. @ 80 psi
 - ▶ Nickel-plated surfaces
 - ▶ Coupling discs made from composite materials provide the benefits of both a steel disc and elastomeric coupling.
- Other benefits include:
- ▶ Corrosion resistant
 - ▶ Requires no lubrication
 - ▶ Coupling adds no backlash to the drive
 - ▶ Provides torsional stiffness
 - ▶ Dampens shock and vibration through the power train
 - ▶ Reverse Bushing Tapers for bushing installation from the inside of the coupling.

Find the Flexible Coupling which matches your clutch and your application specifications on this page.

5HP-E SINGLE & DOUBLE FLEXIBLE COUPLING SELECTION CHART

1. Determine the Tooth Clutch required for your application and find it on the chart below;
2. Find the matching Flexible Coupling Assembly at the top of the column;
3. Double check the Flexible Coupling specifications to ensure conformity with all mating components;
4. A Taper Lock Bushing is required, see chart below for recommended part. This is customer furnished;
5. Clutch and Flexible Coupling Assembly must be ordered separately.

Single Flex #:	909980	910080	910180	910280	910380	910480
Double Flex #:	909981	910081	910181	910281	910381	910481

Model Size:	5H30P-E	5H35P-E	5H40P-E	5H45P-E	5H50P-E	5H60P-E
Clutch Product #:	913000	913010	913020	913030	913040	913050

SINGLE & DOUBLE FLEXIBLE COUPLING PRODUCT DETAILS

Single Flex Product Number	Double Flex Product Number	Dodge Taper Lock® Bushing Number	BORE RANGE		Single Flex Shipping Wt. (Lbs)	Double Flex Shipping Wt. (Lbs)
			MIN. (In)	MAX. (In)		
909980	909981	1215	0.500	1.250	8	10
910080	910081	1615	0.500	1.625	10	13
910180	910181	2012	0.500	2.000	12	15
910280	910281	2517	0.500	2.500	14	16
910380	910381	2517	0.500	2.500	22	25
910480	910481	3030	0.938	3.000	29	34

SINGLE FLEXIBLE COUPLING MISALIGNMENT CAPACITY

Product Number	Angular (Degrees)	Axial (In)	Parallel (In)
909980	1.5	0.065	0.011
910080	1.5	0.070	0.012
910180	1.5	0.080	0.013
910280	1.5	0.090	0.014
910380	1.5	0.105	0.017
910480	1.5	0.120	0.019

DOUBLE FLEXIBLE COUPLING MISALIGNMENT CAPACITY

Product Number	Angular (Degrees)	Axial (In)	Parallel (In)
909981	3.0	0.130	0.063
910081	3.0	0.140	0.078
910181	3.0	0.160	0.085
910281	3.0	0.180	0.091
910381	3.0	0.210	0.104
910481	3.0	0.240	0.117

NOTE: If parallel, angular and axial misalignment are all required, be certain that the combined percentage of each does not exceed 100%. For instance, if 100% of the parallel misalignment rating is required, no angular or axial misalignment is allowed. If 50% of the parallel misalignment rating is required, only 50% of the angular misalignment OR 50% of the axial rating will be available.

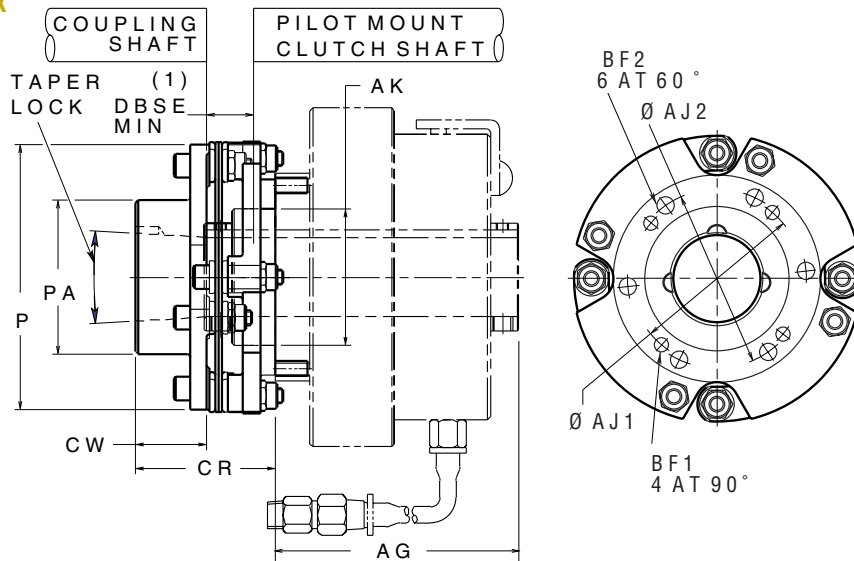
REVERSE BUSHING TAPERED COUPLINGS

Single Flex #:	909984	910084	910184	910284	910384	910484
Double Flex #:	909985	910085	910185	910285	910385	910485

Model Size:	5H30P-E	5H35P-E	5H40P-E	5H45P-E	5H50P-E	5H60P-E
Clutch Product #:	913000	913010	913020	913030	913040	913050

5HP-E SERIES FLEXIBLE COUPLING ASSEMBLIES - APPROXIMATE DIMENSIONS (INCHES)

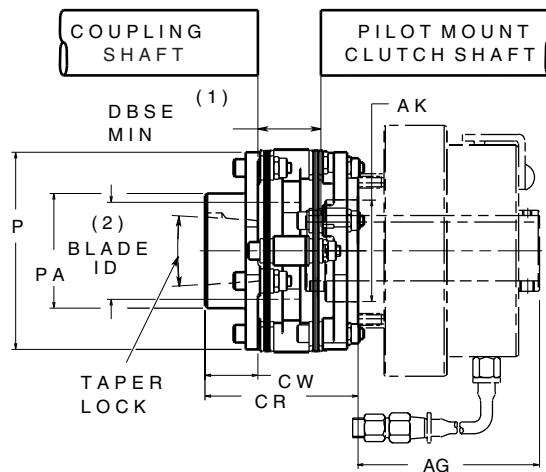
► SINGLE FLEX



DBSE (1) = Distance Between Shaft Ends. Less than MIN requires equipment removal for service; the MAX distance is dependent on the clutch.

PRODUCT NUMBER	AG	AJ1	AJ2	AK ^{+0.001} / _{-0.000}	HOLE SIZE		BF1 BOLT SIZE	BF2 BOLT SIZE	CR	CW	P	PA	DBSE	
					BF1	BF2							MIN.	MAX.
909980	3.80	3.437	3.562	2.875	0.265	0.327	.250-20 x 1.00	.312-18 x 1.25	2.95	1.50	5.75	3.25	0.39	2.59
910080	3.97	4.062	4.062	3.500	0.265	0.327	.250-20 x 1.00	.312-18 x 1.25	3.17	1.50	6.38	3.88	0.52	2.23
910180	3.85	4.250	4.250	3.500	0.265	0.327	.250-20 x 1.25	.312-18 x 1.25	2.97	1.25	6.75	4.38	0.59	1.76
910280	4.35	4.750	4.750	4.125	0.265	0.390	.250-20 x 1.25	.375-16 x 1.50	3.70	1.75	7.25	4.88	0.59	1.75
910380	4.72	5.250	5.375	4.500	0.327	0.515	.312-18 x 1.25	.500-13 x 1.50	4.61	2.50	8.38	5.00	0.86	1.45
910480	4.92	6.125	6.125	5.250	0.327	0.515	.312-18 x 1.50	.500-13 x 1.75	5.31	3.00	9.50	5.75	0.88	1.47

► DOUBLE FLEX



DBSE (1) = Distance Between Shaft Ends. Less than MIN requires equipment removal for service; the MAX distance is dependent on the clutch.

(2) Blade ID is the diameter of the hole in the intermediate member.

PRODUCT NUMBER	AG	AJ1	AJ2	AK ^{+0.001} / _{-0.000}	HOLE SIZE		BF1 BOLT SIZE	BF2 BOLT SIZE	CR	CW	P	PA	BLADE ID (2)	DBSE	
					BF1	BF2								MIN.	MAX.
909981	3.80	3.437	3.562	2.875	0.265	0.327	.250-20 x 1.00	.312-18 x 1.25	4.34	1.50	5.75	3.25	2.75	1.78	3.98
910081	3.97	4.062	4.062	3.500	0.265	0.327	.250-20 x 1.00	.312-18 x 1.25	4.86	1.50	6.38	3.88	3.00	2.20	3.92
910181	3.85	4.250	4.250	3.500	0.265	0.327	.250-20 x 1.25	.312-18 x 1.25	4.81	1.25	6.75	4.38	3.12	2.44	3.61
910281	4.35	4.750	4.750	4.125	0.265	0.390	.250-20 x 1.25	.375-16 x 1.50	5.70	1.75	7.25	4.88	3.38	2.59	3.75
910381	4.72	5.250	5.375	4.500	0.327	0.515	.312-18 x 1.25	.500-13 x 1.50	6.92	2.50	8.38	5.00	4.12	3.17	3.75
910481	4.92	6.125	6.125	5.250	0.327	0.515	.312-18 x 1.50	.500-13 x 1.75	7.89	3.00	9.50	5.75	4.38	3.45	4.05

CLUTCHES

"Air Champ"

5HP-SP SERIES, PILOT MOUNT TOOTH CLUTCH

The 5HP-SP Series provides:

- ▶ Instantaneous Torque up to 32,000 In. Lbs. @ 80 psi
- ▶ Maximum Operating Speed up to 3,700 rpm
- ▶ **13 Bore** sizes ranging from 0.875 to 2.938 inches
- ▶ Positive engagements for accurate positioning and registration
- ▶ For in-line applications to accommodate misalignment, we recommend use of Nexen Single and Double Flexible Couplings.

8 Models offer design flexibility:

- ▶ Sealed, radial ball bearings
- ▶ **Pilot Mount** design with tapped mounting holes
- ▶ Thru-Shaft mounting design uses a full-length keyway
- ▶ Ability to mount a pulley, sprocket or gear on the clutch
- ▶ Ability to use a Flexible Clutch Coupling for in-line shaft coupling applications
- ▶ 8.25 inch hose included.

5HP-SP SERIES, PILOT MOUNT TOOTH CLUTCHES—SINGLE POSITION

Model	Product Number	Speeds Up to RPM	Bore (In)	Key Size WD x DP	# of Teeth	Shipping Wt. (Lbs)	COUPLING ASSEMBLIES	
							SINGLE FLEX Product Number	DOUBLE FLEX Product Number
5H30PSP	912100	3700	0.875	0.188 x 0.188	91	7	909980	909981
5H30PSP	912112	3700	0.750	0.188 x 0.188	91	7	909980	909981
5H35PSP	912200	3200	1.125	0.250 x 0.250	106	10	910080	910081
5H35PSP	912213	3200	1.000	0.250 x 0.290	106	10	910080	910081
5H40PSP	912300	3000	1.250	0.250 x 0.250	122	12	910180	910181
5H40PSP	912312	3000	1.188	0.375 x 0.375	122	12	910180	910181
5H45PSP	912400	3000	1.500	0.375 x 0.375	137	16	910280	910281
5H45PSP	912412	3000	1.438	0.375 x 0.375	137	16	910280	910281
5H50PSP	912500	3000	1.750	0.375 x 0.375	152	20	910380	910381
5H50PSP	912512	3000	1.688	0.500 x 0.500	152	20	910380	910381
5H60PSP	912700	2400	1.938	0.500 x 0.500	183	30	910480	910481
5H70PSP	912800	2000	2.188	0.500 x 0.250	214	45	910580	910581
5H80PSP	912900	2000	2.938	0.750 x 0.500	244	70	911780	911781

Keys are customer furnished and must be full-length.

ATTACHMENT OPTIONS

Flexible Coupling Assemblies

Flexible Coupling Assemblies are required for in-line coupling applications, and are available in single or double flex designs to provide **high misalignment capabilities with high torque**. Turn to pages 70 and 71 for Flexible Coupling details. For quick selection of Flexible Couplings, refer to the chart above.

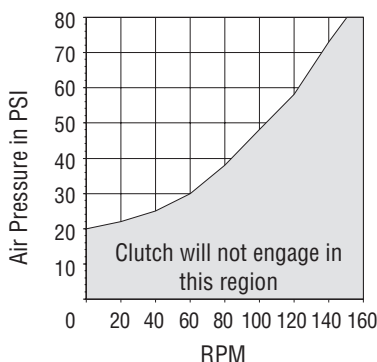
Pulleys, Sprockets, Gears

These can be attached to the clutch for offset shaft applications. Tapped holes are provided for ease of mounting. Nexen does not furnish these items. For minimum sprocket requirements, see page 267.

CAUTION!

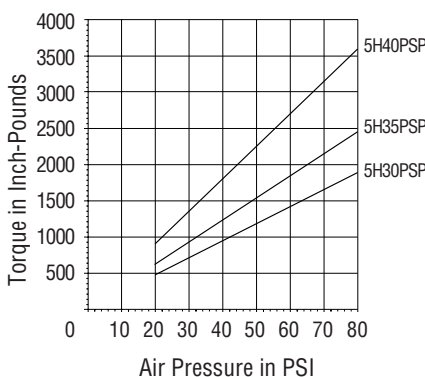
Tooth clutches are normally engaged when stationary. They are not intended for use in most cyclic applications or high speed engagement. In certain circumstances, tooth clutches can be engaged at differential speeds. Please consult Nexen if you are considering an application involving engagement at differential speeds.

MIN. STATIC AIR PRESSURE FOR ENGAGEMENT Vs. RPM

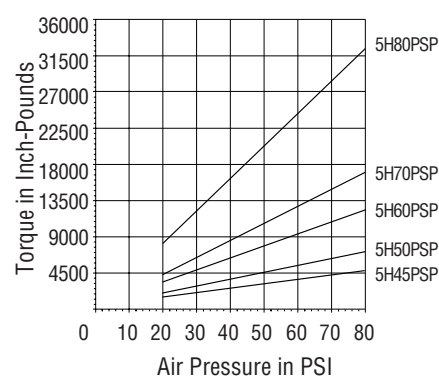


TORQUE Vs. AIR PRESSURE

5H30PSP, 5H35PSP & 5H40PSP



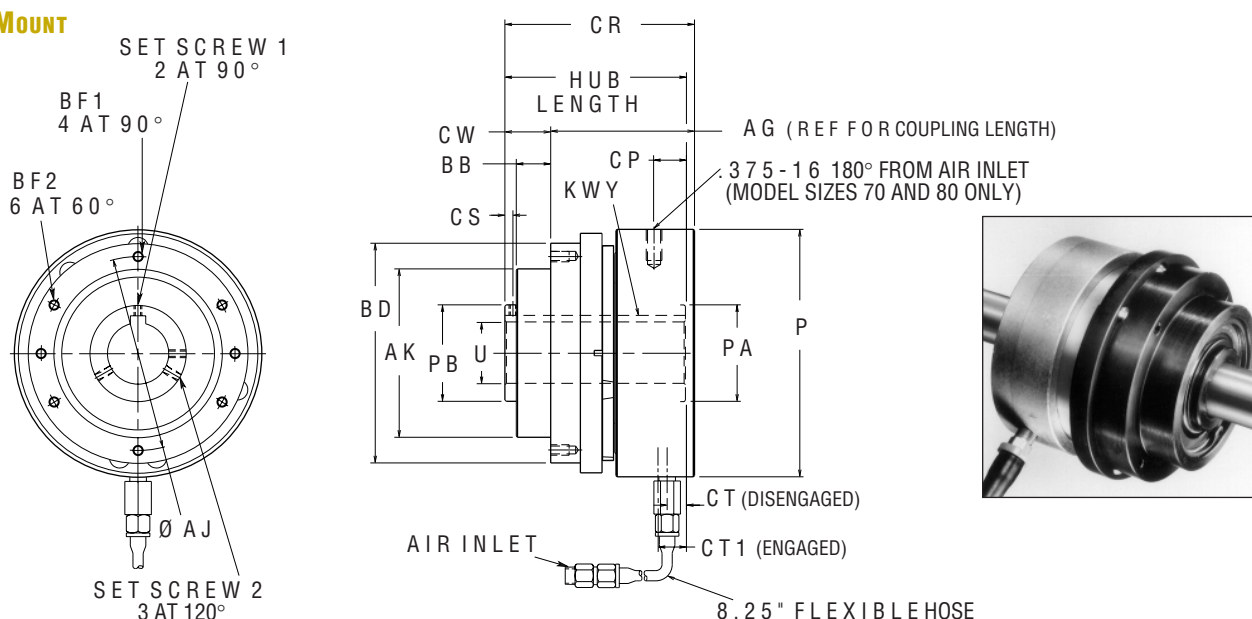
5H45PSP, 5H50PSP, 5H60PSP, 5H70PSP & 5H80PSP



NOTE: Proper Single Position Tooth Clutch engagement depends upon 1) the allowable engagement speed with specific inertia loads and air pressure, and 2) the acceptable speed and air pressure which allow the clutch to engage in one position.

5HP-SP SERIES, PILOT MOUNT TOOTH CLUTCH - APPROXIMATE DIMENSIONS (INCHES)

▶ PILOT MOUNT



MODEL	PRODUCT NUMBER	AIR INLET NPT	HUB LENGTH	AG	AJ	AK ±.001	BB	BD	BF1	BF2	CP	CR	CS	CT	CT1	CW	P	PA	PB
5H30PSP	912100	.125	3.89	3.09	3.437	2.874	0.69	3.88	.250-20	--	--	4.00	0.20	0.56	0.78	0.91	4.56	1.38	1.38
5H35PSP	912200	.125	4.12	3.25	4.062	3.499	0.69	4.50	.250-20	--	--	4.21	0.20	0.57	0.79	0.96	5.06	1.77	1.77
5H40PSP	912300	.125	4.21	3.35	4.250	3.499	0.69	4.88	.250-20	--	--	4.32	0.20	0.55	0.77	0.97	5.31	1.77	1.77
5H45PSP	912400	.125	4.63	3.52	4.750	4.124	0.84	5.38	.250-20	--	--	4.64	0.20	0.65	0.87	1.12	6.06	2.36	2.36
5H50PSP	912500	.125	4.76	3.60	5.250	4.499	0.78	6.00	.312-18	--	--	4.76	0.26	0.66	0.88	1.16	6.56	2.56	2.56
5H60PSP	912700	.125	5.39	4.08	6.125	5.249	0.87	7.00	.312-18	--	--	5.34	0.26	0.84	1.06	1.26	7.56	2.95	2.95
5H70PSP	912800	.250	5.96	4.46	7.000	5.749	1.00	8.25	.500-13	--	--	5.88	0.26	0.88	1.10	1.42	8.31	3.34	3.34
5H80PSP	912900	.250	8.60	5.74	8.500	7.374	1.88	9.50	--	.500-13	2.16	8.63	0.63	2.18	2.40	2.89	9.25	3.74	5.00

MODEL	PRODUCT NUMBER	SET SCREW 1	SET SCREW 2	KEYWAY		U ^{+0.001} _{-.000}
				WD	DP	
5H30PSP	912100	.190-24	--	0.188	0.094	0.875
5H35PSP	912200	.190-24	--	0.250	0.125	1.125
5H40PSP	912300	.190-24	--	0.250	0.125	1.250
5H45PSP	912400	.190-24	--	0.375	0.188	1.500
5H50PSP	912500	.250-20	--	0.375	0.188	1.750
5H60PSP	912700	.250-20	--	0.500	0.250	1.937
5H70PSP	912800	.250-20	--	0.500	0.250	2.187
5H80PSP	912900	--	.625-11	0.750	0.250	2.937

SINGLE AND DOUBLE FLEXIBLE COUPLING ASSEMBLIES

Both Single and Double Flexible Couplings are available for the 5HP-SP Pilot Mount Tooth Clutch. See the following pages for details.

CLUTCHES

"Air Champ"

5HP-SP CLUTCH FLEXIBLE COUPLING ASSEMBLIES

Couple your shaft to a 5HP-SP Series Tooth Clutch with a Flexible Coupling Assembly. There are 16 Single Flex and 16 Double Flex Couplings, each designed to fit a specific 5HP-SP Tooth Clutch.

Whatever the design style, you'll get:

- High Misalignment Capability
 - Torque ratings up to 32,000 In. Lbs. @ 80 psi
 - Coupling discs made from composite materials provide the benefits of both a steel disc and elastomeric coupling.
- Other benefits include:
- Corrosion resistant
 - Requires no lubrication
 - Coupling adds no backlash to the drive
 - Provides torsional stiffness
 - Dampens shock and vibration through the power train
 - Reverse Bushing Tapers for bushing installation from the inside of the coupling.

Find the Flexible Coupling which matches your clutch and your application specifications on this page.

5HP-SP SINGLE & DOUBLE FLEXIBLE COUPLING SELECTION CHART

- Determine the Tooth Clutch required for your application and find it on the chart below;
- Find the matching Flexible Coupling Assembly at the top of the column;
- Double check the Flexible Coupling specifications to ensure conformity with all mating components;
- A Taper Lock Bushing is required, see chart below for recommended part. This is customer furnished;
- Clutch and Flexible Coupling Assembly must be ordered separately.

Single Flex #:	909980	910080	910180	910280	910380	910480	910580	911780
Double Flex #:	909981	910081	910181	910281	910381	910481	910581	911781

Model Size:	5H30PSP	5H35PSP	5H40PSP	5H45PSP	5H50PSP	5H60PSP	5H70PSP	5H80PSP
Clutch	912100	912200	912300	912400	912500	912700	912800	912900
Product #:	912112	912213	912312	912412	912512			

SINGLE & DOUBLE FLEXIBLE COUPLING PRODUCT DETAILS

Single Flex Product Number	Double Flex Product Number	Dodge Taper Lock® Bushing Number	BORE RANGE		Single Flex Shipping Wt. (Lbs)	Double Flex Shipping Wt. (Lbs)
			MIN. (In)	MAX. (In)		
909980	909981	1215	0.500	1.250	8	10
910080	910081	1615	0.500	1.625	10	13
910180	910181	2012	0.500	2.000	12	15
910280	910281	2517	0.500	2.500	14	16
910380	910381	2517	0.500	2.500	22	25
910480	910481	3030	0.938	3.000	29	34
910580	910581	3535	1.188	3.938	70	82
911780	911781	4040	1.438	4.438	110	130

SINGLE FLEXIBLE COUPLING MISALIGNMENT CAPACITY

Product Number	Angular (Degrees)	Axial (In)	Parallel (In)
909980	1.5	0.065	0.011
910080	1.5	0.070	0.012
910180	1.5	0.080	0.013
910280	1.5	0.090	0.014
910380	1.5	0.105	0.017
910480	1.5	0.120	0.019
910580	1.5	0.135	0.022
911780	1.5	0.155	0.026

DOUBLE FLEXIBLE COUPLING MISALIGNMENT CAPACITY

Product Number	Angular (Degrees)	Axial (In)	Parallel (In)
909981	3.0	0.130	0.063
910081	3.0	0.140	0.078
910181	3.0	0.160	0.085
910281	3.0	0.180	0.091
910381	3.0	0.210	0.104
910481	3.0	0.240	0.117
910581	3.0	0.270	0.137
911781	3.0	0.310	0.170

NOTE: If parallel, angular and axial misalignment are all required, be certain that the combined percentage of each does not exceed 100%. For instance, if 100% of the parallel misalignment rating is required, no angular or axial misalignment is allowed. If 50% of the parallel misalignment rating is required, only 50% of the angular misalignment OR 50% of the axial rating will be available.

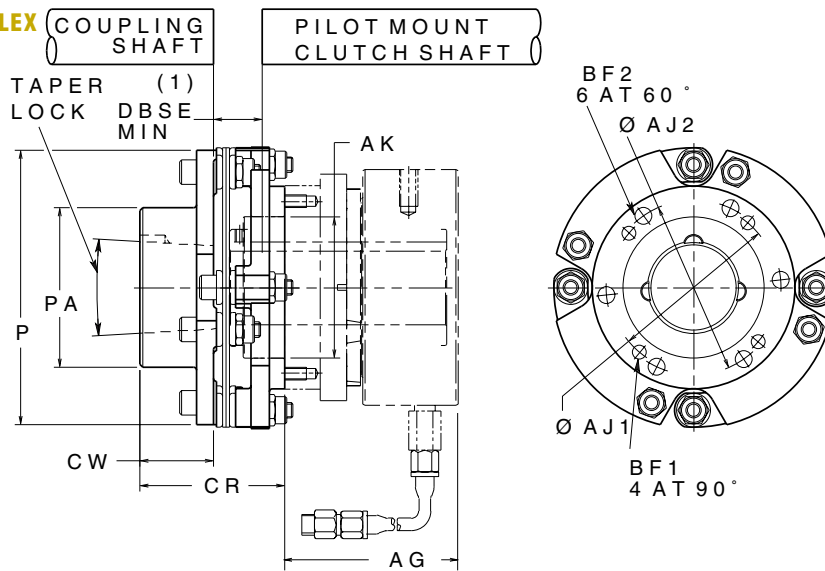
REVERSE BUSHING TAPERED COUPLINGS

Single Flex #:	909984	910084	910184	910284	910384	910484	910584	911784
Double Flex #:	909985	910085	910185	910285	910385	910485	910585	911785

Model Size:	5H30PSP	5H35PSP	5H40PSP	5H45PSP	5H50PSP	5H60PSP	5H70PSP	5H80PSP
Clutch	912100	912200	912300	912400	912500	912700	912800	912900
Product #:	912112	912213	912312	912412	912512			

5HP-SP SERIES FLEXIBLE COUPLING ASSEMBLIES - APPROXIMATE DIMENSIONS (INCHES)

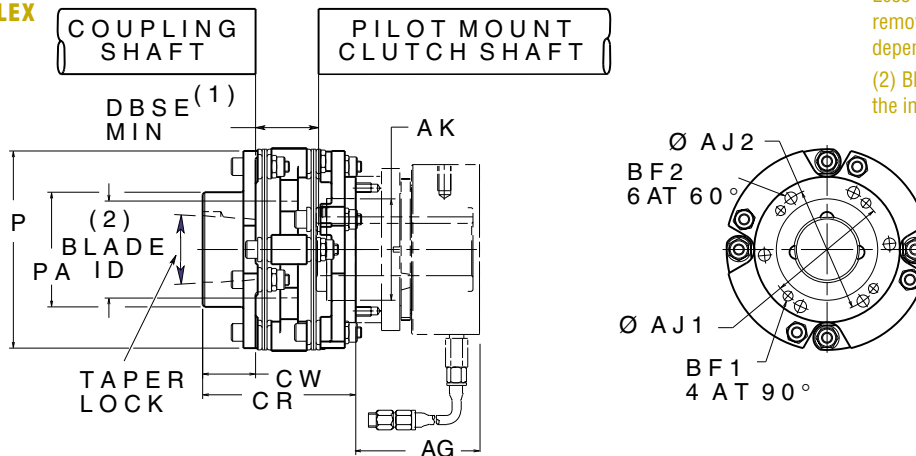
► SINGLE FLEX



DBSE (1) = Distance Between Shaft Ends.
Less than MIN requires equipment
removal for service; the MAX distance is
dependent on the clutch.

PRODUCT NUMBER	AG	AJ1	AJ2	AK ^{+0.001 -0.000}	HOLE SIZE		BF1 BOLT SIZE	BF2 BOLT SIZE	CR	CW	P	PA	DBSE	
					BF1	BF2							MIN.	MAX.
909980	3.09	3.437	3.562	2.875	0.265	0.327	.250-20 x 1.00	.312-18 x 1.25	2.95	1.50	5.75	3.25	0.39	2.59
910080	3.25	4.062	4.062	3.500	0.265	0.327	.250-20 x 1.00	.312-18 x 1.25	3.17	1.50	6.38	3.88	0.52	2.23
910180	3.35	4.250	4.250	3.500	0.265	0.327	.250-20 x 1.25	.312-18 x 1.25	2.97	1.25	6.75	4.38	0.59	1.76
910280	3.52	4.750	4.750	4.125	0.265	0.390	.250-20 x 1.25	.375-16 x 1.50	3.70	1.75	7.25	4.88	0.59	1.75
910380	3.60	5.250	5.375	4.500	0.327	0.515	.312-18 x 1.25	.500-13 x 1.50	4.61	2.50	8.38	5.00	0.86	1.45
910480	4.08	6.125	6.125	5.250	0.327	0.515	.312-18 x 1.50	.500-13 x 1.75	5.31	3.00	9.50	5.75	0.88	1.47
910580	4.46	7.000	7.000	5.750	0.515	0.640	.500-13 x 1.75	.625-11 x 2.00	6.23	3.53	11.38	6.75	1.02	—
911780	5.74	8.500	8.500	7.375	0.515	0.640	.500-13 x 2.50	.625-11 x 2.75	7.95	4.12	13.12	7.50	1.06	—

► DOUBLE FLEX



DBSE (1) = Distance Between Shaft Ends.
Less than MIN requires equipment
removal for service; the MAX distance is
dependent on the clutch.

(2) Blade ID is the diameter of the hole in
the intermediate member.

PRODUCT NUMBER	AG	AJ1	AJ2	AK ^{+0.001 -0.000}	HOLE SIZE		BF1 BOLT SIZE	BF2 BOLT SIZE	CR	CW	P	PA	BLADE ID (2)	DBSE	
					BF1	BF2								MIN.	MAX.
909981	3.09	3.437	3.562	2.875	0.265	0.327	.250-20 x 1.00	.312-18 x 1.25	4.34	1.50	5.75	3.25	2.75	1.78	3.98
910081	3.25	4.062	4.062	3.500	0.265	0.327	.250-20 x 1.00	.312-18 x 1.25	4.86	1.50	6.38	3.88	3.00	2.20	3.92
910181	3.35	4.250	4.250	3.500	0.265	0.327	.250-20 x 1.25	.312-18 x 1.25	4.81	1.25	6.75	4.38	3.12	2.44	3.61
910281	3.52	4.750	4.750	4.125	0.265	0.390	.250-20 x 1.25	.375-16 x 1.50	5.70	1.75	7.25	4.88	3.38	2.59	3.75
910381	3.60	5.250	5.375	4.500	0.327	0.515	.312-18 x 1.25	.500-13 x 1.50	6.92	2.50	8.38	5.00	4.12	3.17	3.75
910481	4.08	6.125	6.125	5.250	0.327	0.515	.312-18 x 1.50	.500-13 x 1.75	7.89	3.00	9.50	5.75	4.38	3.45	4.05
910581	4.46	7.000	7.000	5.750	.515	.640	.500-13 x 1.75	.625-11 x 2.00	9.28	3.53	11.38	6.75	5.25	3.81	—
911781	5.74	8.500	8.500	7.375	.515	.640	.500-13 x 2.50	.625-11 x 2.75	11.72	4.12	13.12	7.50	6.00	4.69	—

CLUTCHES

5HP-SP-E SERIES, ENCLOSED PILOT MOUNT TOOTH CLUTCH

The 5HP-SP-E Series provides:

- Water protection per NEMA standard 1.26.5 (Water-proof machine)
- Nickel-plated exterior meets USDA standards
- Instantaneous Torque up to 12,000 In. Lbs. @ 80 psi
- Maximum Operating Speed up to 1,650 rpm
- 6 Bore** sizes ranging from 0.875 to 1.938 inches
- Positive engagement for accurate position and registration
- For in-line applications to accommodate misalignment, we recommend use of Nexen Single and Double Flexible Couplings.

6 Models offer design flexibility:

- Sealed, radial ball bearings
- Pilot Mount** design with tapped mounting holes
- Thru-shaft mounting design uses a full-length keyway
- Ability to mount a pulley, sprocket or gear on the clutch
- Ability to use a Flexible Clutch Coupling for the in-line shaft coupling applications
- Operate in wet or dry environments
- 8.25 inch hose included.

5HP-SP-E, ENCLOSED PILOT MOUNT TOOTH CLUTCHES—SINGLE POSITION

Model	Product Number	Speeds Up to RPM	Bore (In)	Key Size (SQ)	# of Teeth	Shipping Wt. (Lbs)	COUPLING ASSEMBLIES	
							SINGLE FLEX Product Number	DOUBLE FLEX Product Number
5H30PSP-E	913002	1650	0.875	0.188	91	7	909980	909981
5H35PSP-E	913012	1350	1.125	0.250	106	10	910080	910081
5H40PSP-E	913022	1350	1.250	0.250	122	12	910180	910181
5H45PSP-E	913032	1200	1.500	0.375	137	16	910280	910281
5H50PSP-E	913042	1100	1.750	0.375	152	20	910380	910381
5H60PSP-E	913052	1000	1.938	0.500	183	30	910480	910481

Keys are customer furnished and must be full-length.

ATTACHMENT OPTIONS

Flexible Coupling Assemblies

Flexible Coupling Assemblies are required for in-line coupling applications and are available in single or double flex designs to provide **high misalignment capabilities with high torque**. Turn to pages 74 and 75 for Flexible Coupling details. For quick selection of Flexible Couplings, refer to the chart above.

Pulleys, Sprockets, Gears

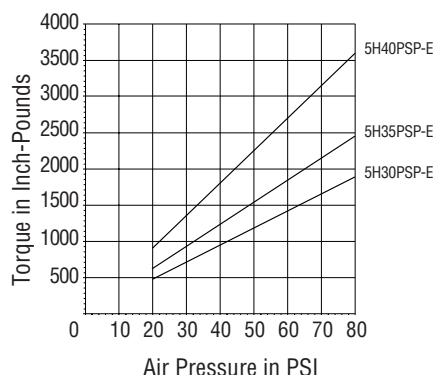
These can be attached to the clutch for off set shaft applications. Tapped holes are provided for ease of mounting. Nexen does not furnish these items. For minimum sprocket requirements, see page 267.

CAUTION!

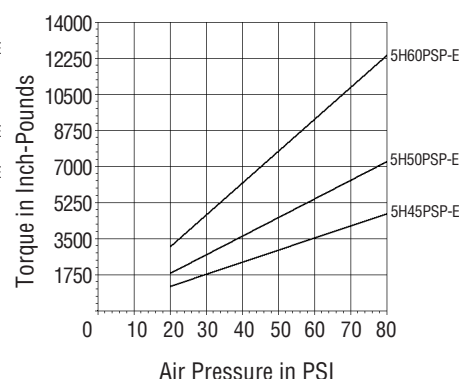
Tooth clutches are normally engaged when stationary. They are not intended for use in most cyclic applications or high speed engagement. In certain circumstances, tooth clutches can be engaged at differential speeds. Please consult Nexen if you are considering an application involving engagement at differential speeds.

TORQUE VS. AIR PRESSURE

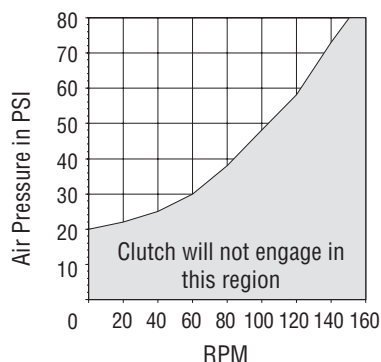
5H30PSP-E, 5H35PSP-E & 5H40PSP-E



5H45PSP-E, 5H50PSP-E & 5H60PSP-E



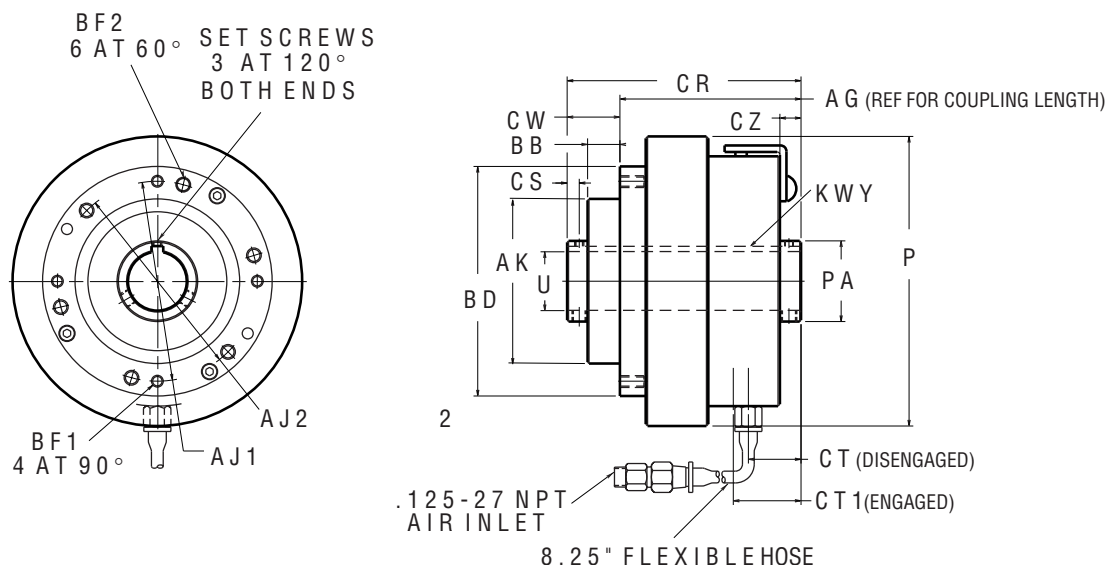
MIN. STATIC AIR PRESSURE FOR ENGAGEMENT VS. RPM



NOTE: Proper Single Position Tooth Clutch engagement depends upon 1) the allowable engagement speed with specific inertia loads and air pressure, and 2) the acceptable speed and air pressure which allow the clutch to engage in one position.

5HP-SP-E SERIES, ENCLOSED PILOT MOUNT TOOTH CLUTCHES - APPROXIMATE DIMENSIONS (INCHES)

PILOT MOUNT



MODEL	PRODUCT NUMBER	AG	AJ1	AJ2	AK ^{+0.000} _{-.001}	BB	BD	BF1	BF2	CR	CS	CT	CT1	CW	CZ	P	PA	KEYWAY		^{+0.001} _{U -.000}
5H30PSP-E	913002	3.80	3.437	3.562	2.875	0.69	4.12	.250-20	.312-18	4.83	0.23	1.06	1.27	1.03	0.38	5.03	1.34	0.188	0.094	0.875
5H35PSP-E	913012	3.97	4.062	4.062	3.500	0.69	4.50	.250-20	.312-18	5.10	0.25	1.05	1.27	1.13	0.39	6.16	1.72	0.250	0.125	1.125
5H40PSP-E	913022	3.85	4.250	4.250	3.500	0.69	4.88	.250-20	.312-18	4.97	0.26	1.12	1.34	1.12	0.45	6.16	1.72	0.250	0.125	1.250
5H45PSP-E	913032	4.35	4.750	4.750	4.125	0.84	5.40	.250-20	.375-16	5.71	0.31	1.19	1.41	1.36	0.52	6.66	2.31	0.375	0.188	1.500
5H50PSP-E	913042	4.72	5.250	5.375	4.500	0.78	6.12	.312-18	.500-13	5.97	0.31	1.22	1.48	1.25	0.51	7.66	2.51	0.375	0.188	1.750
5H60PSP-E	913052	4.92	6.125	6.125	5.250	0.87	7.00	.312-18	.500-13	6.40	0.37	1.45	1.67	1.48	0.66	8.41	2.87	0.500	0.250	1.938

MODEL	PRODUCT NUMBER	SET SCREW	
5H30PSP-E	913002	(2) .190-24	(4) .312-24
5H35PSP-E	913012	(2) .190-24	(4) .312-24
5H40PSP-E	913022	(2) .190-24	(4) .312-24
5H45PSP-E	913032	(2) .190-24	(4) .312-24
5H50PSP-E	913042	(2) .250-20	(4) .500-13
5H60PSP-E	913052	(2) .250-20	(4) .500-13

SINGLE AND DOUBLE FLEXIBLE COUPLING ASSEMBLIES

Both Single and Double Flexible Couplings are available for the 5HPSP-E Pilot Mount Tooth Clutch. See the following pages for details.

CLUTCHES

5HP-SP-E CLUTCH FLEXIBLE COUPLING ASSEMBLIES

Couple your shaft to a 5HP-SP-E Series Tooth Clutch with a Flexible Coupling Assembly. There are 12 Single Flex and 12 Double Flex Couplings, each designed to fit a specific 5HP-SP-E Tooth Clutch. Whatever the design style, you'll get:

- High Misalignment Capability
 - Torque ratings up to 12,000 In. Lbs. @ 80 psi
 - Nickel-plated surfaces
 - Coupling discs made from composite materials provide the benefits of both a steel disc and elastomeric coupling.
- Other benefits include:
- Corrosion resistant
 - Coupling adds no backlash to the drive
 - Provides torsional stiffness
 - Dampens shock and vibration through the power train
 - Reverse Bushing Tapers for bushing installation from the inside of the coupling.

Find the Flexible Coupling which matches your clutch and your application specifications on this page.

5HP-SP-E SINGLE & DOUBLE FLEXIBLE COUPLING SELECTION CHART

- Determine the Tooth Clutch required for your application and find it on the chart below;
- Find the matching Flexible Coupling Assembly at the top of the column;
- Double check the Flexible Coupling specifications to ensure conformity with all mating components;
- A Taper Lock Bushing is required, see chart below for recommended part. This is customer furnished;
- Clutch and Flexible Coupling Assembly must be ordered separately.

Single Flex #:	909980	910080	910180	910280	910380	910480
Double Flex #:	909981	910081	910181	910281	910381	910481

Model Size:	5H30PSP-E	5H35PSP-E	5H40PSP-E	5H45PSP-E	5H50PSP-E	5H60PSP-E
Clutch Product #:	913002	913012	913022	913032	913042	913052

SINGLE & DOUBLE FLEXIBLE COUPLING PRODUCT DETAILS

Single Flex Product Number	Double Flex Product Number	Dodge Taper Lock® Bushing Number	BORE RANGE		Single Flex Shipping Wt. (Lbs)	Double Flex Shipping Wt. (Lbs)
			MIN. (In)	MAX. (In)		
909980	909981	1215	0.500	1.250	8	10
910080	910081	1615	0.500	1.625	10	13
910180	910181	2012	0.500	2.000	12	15
910280	910281	2517	0.500	2.500	14	16
910380	910381	2517	0.500	2.500	22	25
910480	910481	3030	0.938	3.000	29	34

SINGLE FLEXIBLE COUPLING MISALIGNMENT CAPACITY

Product Number	Angular (Degrees)	Axial (In)	Parallel (In)
909980	1.5	0.065	0.011
910080	1.5	0.070	0.012
910180	1.5	0.080	0.013
910280	1.5	0.090	0.014
910380	1.5	0.105	0.017
910480	1.5	0.120	0.019

DOUBLE FLEXIBLE COUPLING MISALIGNMENT CAPACITY

Product Number	Angular (Degrees)	Axial (In)	Parallel (In)
909981	3.0	0.130	0.063
910081	3.0	0.140	0.078
910181	3.0	0.160	0.085
910281	3.0	0.180	0.091
910381	3.0	0.210	0.104
910481	3.0	0.240	0.117

NOTE: If parallel, angular and axial misalignment are all required, be certain that the combined percentage of each does not exceed 100%. For instance, if 100% of the parallel misalignment rating is required, no angular or axial misalignment is allowed. If 50% of the parallel misalignment rating is required, only 50% of the angular misalignment OR 50% of the axial rating will be available.

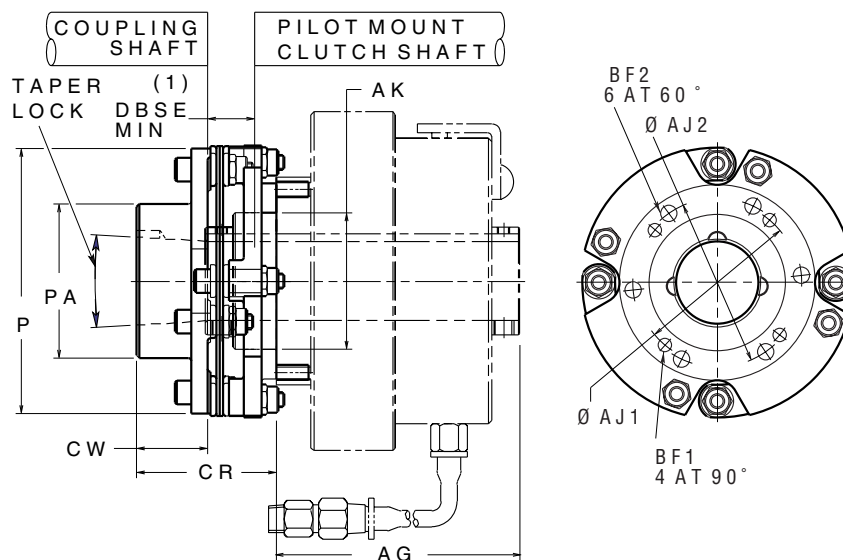
REVERSE BUSHING TAPERED COUPLINGS

Single Flex #:	909984	910084	910184	910284	910384	910484
Double Flex #:	909985	910085	910185	910285	910385	910485

Model Size:	5H30PSP-E	5H35PSP-E	5H40PSP-E	5H45PSP-E	5H50PSP-E	5H60PSP-E
Clutch Product #:	913002	913012	913022	913032	913042	913052

5HP-SP-E SERIES FLEXIBLE COUPLING ASSEMBLIES - APPROXIMATE DIMENSIONS (INCHES)

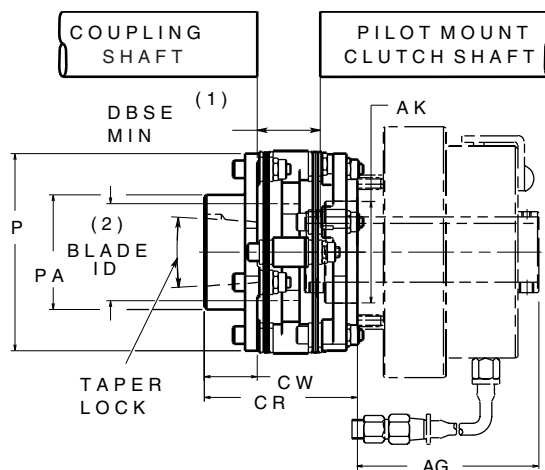
SINGLE FLEX



DBSE (1) = Distance Between Shaft Ends. Less than MIN requires equipment removal for service; the MAX distance is dependent on the clutch.

PRODUCT NUMBER	AG	AJ1	AJ2	AK ^{+0.001} / _{-0.000}	HOLE SIZE		BF1 BOLT SIZE		BF2 BOLT SIZE		CR	CW	P	PA	DBSE	
					BF1	BF2									MIN.	MAX.
909980	3.80	3.437	3.562	2.875	0.265	0.327	.250-20 x 1.00	.312-18 x 1.25	2.95	1.50	5.75	3.25	0.39	2.59		
910080	3.97	4.062	4.062	3.500	0.265	0.327	.250-20 x 1.00	.312-18 x 1.25	3.17	1.50	6.38	3.88	0.52	2.23		
910180	3.85	4.250	4.250	3.500	0.265	0.327	.250-20 x 1.25	.312-18 x 1.25	2.97	1.25	6.75	4.38	0.59	1.76		
910280	4.35	4.750	4.750	4.125	0.265	0.390	.250-20 x 1.25	.375-16 x 1.50	3.70	1.75	7.25	4.88	0.59	1.75		
910380	4.72	5.250	5.375	4.500	0.327	0.515	.312-18 x 1.25	.500-13 x 1.50	4.61	2.50	8.38	5.00	0.86	1.45		
910480	4.92	6.125	6.125	5.250	0.327	0.515	.312-18 x 1.50	.500-13 x 1.75	5.31	3.00	9.50	5.75	0.88	1.47		

DOUBLE FLEX



DBSE (1) = Distance Between Shaft Ends. Less than MIN requires equipment removal for service; the MAX distance is dependent on the clutch.

(2) Blade ID is the diameter of the hole in the inter-mediate member.

PRODUCT NUMBER	AG	AJ1	AJ2	AK ^{+0.001} / _{-0.000}	HOLE SIZE		BF1 BOLT SIZE		BF2 BOLT SIZE		CR	CW	P	PA	BLADE ID (2)	DBSE	
					BF1	BF2										MIN.	MAX.
909981	3.80	3.437	3.562	2.875	0.265	0.327	.250-20 x 1.00	.312-18 x 1.25	4.34	1.50	5.75	3.25	2.75	1.78	3.98		
910081	3.97	4.062	4.062	3.500	0.265	0.327	.250-20 x 1.00	.312-18 x 1.25	4.86	1.50	6.38	3.88	3.00	2.20	3.92		
910181	3.83	4.250	4.250	3.500	0.265	0.327	.250-20 x 1.25	.312-18 x 1.25	4.81	1.25	6.75	4.38	3.12	2.44	3.61		
910281	4.35	4.750	4.750	4.125	0.265	0.390	.250-20 x 1.25	.375-16 x 1.50	5.70	1.75	7.25	4.88	3.38	2.59	3.75		
910381	4.72	5.250	5.375	4.500	0.327	0.515	.312-18 x 1.25	.500-13 x 1.50	6.92	2.50	8.38	5.00	4.12	3.17	3.75		
910481	4.92	6.125	6.125	5.250	0.327	0.515	.312-18 x 1.50	.500-13 x 1.75	7.89	3.00	9.50	5.75	4.38	3.45	4.05		

CLUTCHES

"Air Champ"

5HS SERIES, SPROCKET TOOTH CLUTCHES

The 5HS Series Provides:

- ▶ Torque capacity up to 3500 In. Lbs. @ 80 psi
- ▶ Maximum Operating Speed up to 4000 rpm
- ▶ **3 Bore** sizes ranging from 0.625 to 1.250 inches
- ▶ Positive engagement without slippage
- ▶ Bi-directional operation
- ▶ Adjustable torque by varying air pressure
- ▶ Sprocket mount capability
- ▶ Static air pressure operation
- ▶ Small, light weight durability
- ▶ 5 inch or 8.25 inch hose included

3 Models offer design flexibility:

- ▶ 1 Integral Single Sprocket design
- ▶ 2 Integral Double/Single Sprocket designs

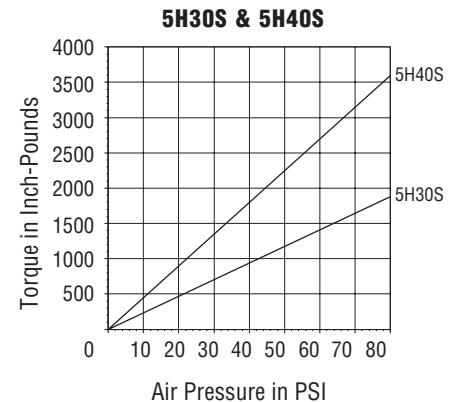
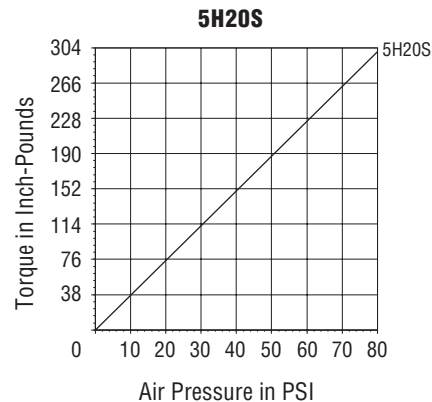
These clutches are ideal for in-line, zoned conveyor applications, as well as other applications which require bi-directional movement.

5HS SERIES, SPROCKET TOOTH CLUTCHES

Model	Product Number	Sprocket	Bore (In)	Speeds Up to RPM	Key Size (SQ)	SPROCKET SPECS		# of Teeth	Shipping Wt. (Lbs)
5H20S	911386	single	0.625	4000	0.188	40	0.500	18	10
5H30S	911310	double/single	1.000	3700	0.250	50	0.625	20	18
5H40S	911320	double/single	1.250	3000	0.250	60	0.750	21	40

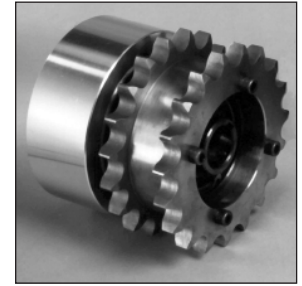
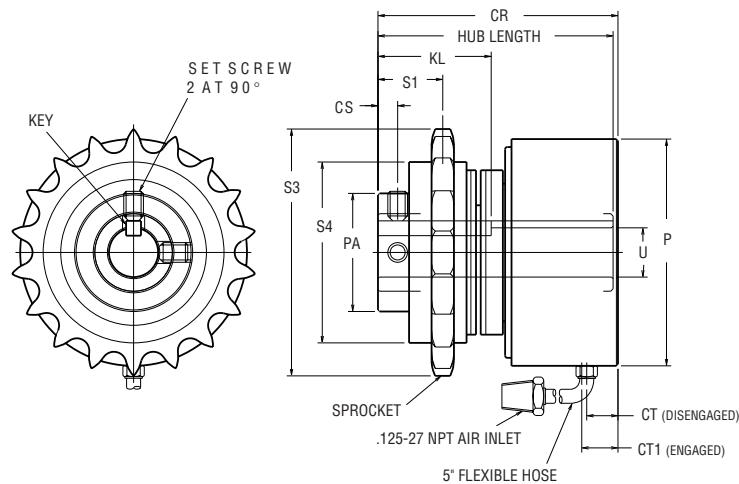
Keys are customer furnished and must be full length.

TORQUE VS. AIR PRESSURE



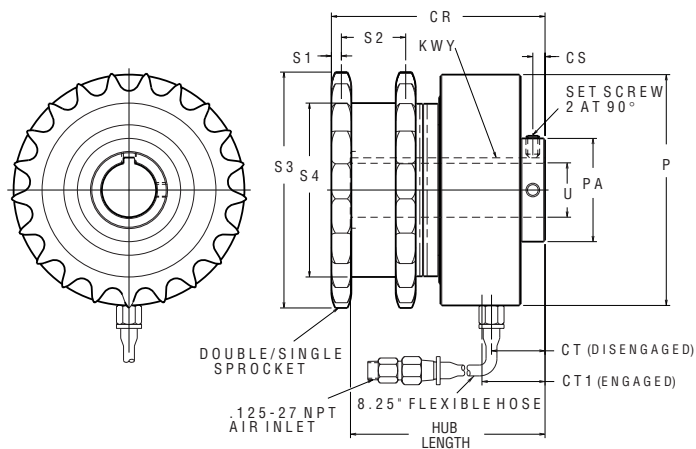
5HS SERIES, SPROCKET TOOTH CLUTCHES - APPROXIMATE DIMENSIONS (INCHES)

▸ SPROCKET MOUNT 5H20S



MODEL	PRODUCT NUMBER	HUB LENGTH	SPROCKET			SET SCREW	CR	CS	CT	CT1	KEY (SQ)	KL	P	PA	S1	S3	S4	U ^{+0.001} _{-0.000}
5H20S	911386	2.99	40	0.500	18	.250-20	3.05	0.25	0.40	0.46	0.188	1.44	2.88	1.50	0.82	3.14	2.30	0.625

▸ SPROCKET MOUNT 5H30S & 5H40S



MODEL	PRODUCT NUMBER	HUB LENGTH	SPROCKET			SET SCREW	KEYWAY		CR	CS	CT	CT1	P	PA	S1	S2	S3	S4	U ^{+0.001} _{-0.000}
5H30S	911310	4.17	50	0.625	20	.250-20	0.125	0.250	4.53	0.25	1.22	1.30	4.56	1.38	0.17	1.31	4.32	3.12	1.000
5H40S	911320	4.48	60	0.750	21	.312-18	0.125	0.250	4.91	0.28	1.23	1.31	5.31	2.38	0.23	1.48	5.43	4.00	1.250

CLUTCHES

“Air Champ”

5HP-SE SERIES, SPRING ENGAGED TOOTH CLUTCHES, PILOT & FLANGE MOUNT MODELS

The 5HP-SE Series provides:

- ▶ Spring engaged, Air released
- ▶ Instantaneous Torque up to 8,230 In. Lbs.
- ▶ Maximum Operating Speed up to 3,200 rpm, Pilot Mount and 3,700 rpm, Flange Mount

▶ Bore sizes:

Pilot Mount: 8 sizes from .875 to 1.938. Flange Mount: sizes 0.875 and 1.750 inches

- ▶ Positive engagements in multiple positions
- ▶ Immediate start-up with no slippage
- ▶ Versatile mounting capability for bearing supported pulley, sprocket or gear
- ▶ For Pilot Mount in-line applications to accommodate misalignment, we recommend use of Nexen Single and Double Flexible Couplings.

10 Models offer design flexibility:

- ▶ Designed with tapped mounting holes
- ▶ Sealed, radial ball bearings
- ▶ Thru-shaft mounting design uses a full-length keyway
- ▶ Pilot Mount offers ability to mount a pulley, sprocket or gear on the clutch
- ▶ Pilot Mount offers ability to use a Flexible Clutch Coupling for in-line shaft coupling applications
- ▶ 8.25 inch hose included.

▶ 5HP-SE SERIES, PILOT MOUNT SPRING ENGAGED TOOTH CLUTCHES

Model	Product Number	Speeds		Bore (In)	Key Size		# of Teeth	Shipping		Torque (In. Lbs.)	Disengagement Pressure
		Up to RPM			WD	x DP		Wt. (Lbs)			
5H35PSE	910091	3200	1.000	0.250 x 0.250	106	10	1480	45			
5H35PSE	910093	3200	.875	0.250 x 0.250	106	10	1480	45			
5H35PSE	910094	3200	25mm	8mm x 8mm	106	10	1480	45			
5H45PSE-E	910204	3000	1.500	0.375 x 0.375	137	16	3650	70			
5H50PSE	910304	3000	1.500	0.375 x 0.375	152	19	8230	105			
5H60PSE	910404	2400	1.938	0.500 x 0.500	183	30	6790	40			
5H60PSE	910407	2400	1.625	0.500 x 0.500	183	30	6790	40			
5H60PSP-SE	912705	2400	1.938	0.500 x 0.500	183	30	6790	40			

Keys are customer furnished and must be full-length.

▶ 5H-SE SERIES, FLANGE MOUNT SPRING ENGAGED TOOTH CLUTCHES

Model	Product Number	Speeds Up to RPM	Bore (In)	Key Size		# of Teeth	Shipping Wt. (Lbs)	Torque (In. Lbs.)
				WD	x DP			
5H30SE	906701	3700	0.875	0.188 x 0.188	91	7	880	
5H50SE	907101	3000	1.750	0.375 x 0.375	152	18	8230	

Bearing life is optimized at lower speeds and air pressure. For higher speeds consult factory.

Keys are customer furnished and must be full-length.

▶ ATTACHMENT OPTIONS (PILOT MOUNT SERIES)

Flexible Coupling Assemblies

Flexible Coupling Assemblies are required for in-line coupling applications and are available in single or double flex designs to provide **high misalignment capabilities with high torque**. Turn to pages 62 and 63 for Flexible Coupling details.

For quick selection of Flexible Couplings, refer to the chart above.

Pulleys, Sprockets, Gears

These can be attached to the clutch for offset shaft applications. Tapped holes are provided for ease of mounting. Nexen does not furnish these items.

For minimum sprocket requirements, see page 267

CAUTION!

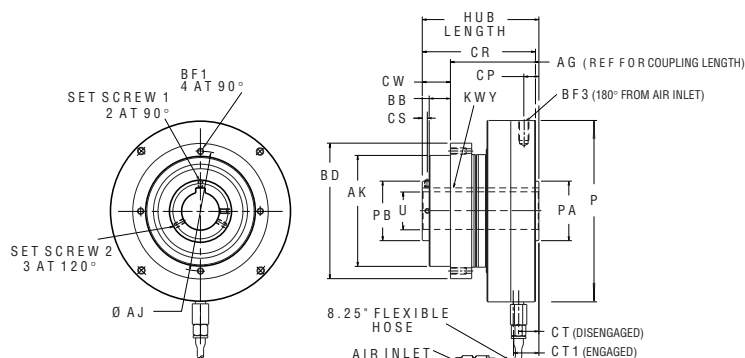
Tooth clutches are normally engaged when stationary. They are not intended for use in most cyclic applications or high speed engagement. In certain circumstances, tooth clutches can be engaged at differential speeds. Please consult Nexen if you are considering an application involving engagement at differential speeds.

SINGLE AND DOUBLE FLEXIBLE COUPLING ASSEMBLIES

Both Single and Double Flexible Couplings are available for the 5HP Pilot Mount Tooth Clutch. See the following pages for details.

5HP-SE SERIES, SPRING ENGAGED TOOTH CLUTCHES - APPROXIMATE DIMENSIONS (INCHES)

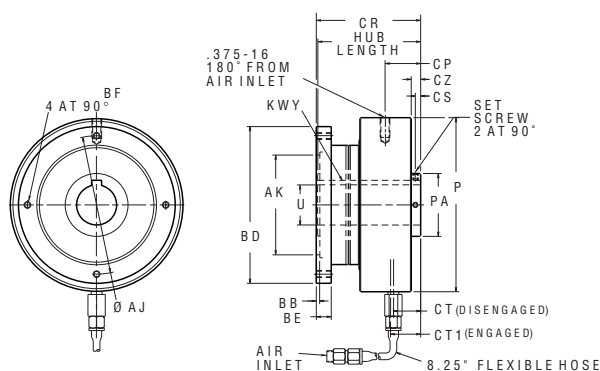
PILOT MOUNT



MODEL	PRODUCT NUMBER	AIR INLET NPT	HUB LENGTH	AG	AJ	AK ±.001	BB	BD	BF1	CR	CS	CT	CT1	CW	P	PA
5H35PSE	910091	.125	4.37	3.16	4.062	3.499	0.69	4.50	.250-20	4.06	0.20	0.72	0.80	0.96	6.13	1.77
5H35PSE	910093	.125	4.37	3.16	4.062	3.499	0.69	4.50	.250-20	4.06	0.20	0.72	0.80	0.96	6.13	1.77
5H35PSE	910094	.125	4.37	3.16	4.062	3.499	0.69	4.50	.250-20	4.06	0.20	0.72	0.80	0.96	6.13	1.77
5H45PSE-E	910204	.125	5.40	3.51	4.750	4.124	0.84	5.38	.250-20	4.49	0.20	0.81	0.88	1.12	7.25	2.36
5H50PSE	910304	.125	4.76	3.60	5.250	4.499	0.78	6.00	.312-18	4.61	0.26	0.81	0.88	1.16	7.75	2.56
5H60PSE	910404	.125	5.39	4.13	6.125	5.249	0.88	7.00	.312-18	5.18	0.26	1.00	1.08	1.26	9.31	2.95
5H60PSE	910407	.250	5.39	4.13	6.125	5.249	0.88	7.00	.312-18	5.18	0.26	1.00	1.08	1.26	9.31	2.95
5H60PSP-SE	912705	.250	5.39	4.13	6.125	5.249	0.88	7.00	.312-18	5.18	0.62	1.00	1.08	1.26	9.31	2.95

MODEL	PRODUCT NUMBER	PB	SET SCREW	KEYWAY		U ^{+ .001} - .000
				WD ±.001	DP ±.005	
5H35PSE	910091	1.77	.190-24	0.250	.125	0.875
5H35PSE	910093	1.77	.190-24	0.250	.125	1.000
5H35PSE	910094	1.77	.190-24	8mm	4mm	25mm
5H45PSE-E	910204	2.36	.190-24	0.375	.188	1.500
5H50PSE	910304	2.56	.250-20	0.375	.188	1.500
5H60PSE	910404	2.95	.250-20	0.500	.250	1.938
5H60PSE	910407	2.95	.250-20	0.500	.250	1.625
5H60PSP-SE	912705	2.95	.250-20	1.000	.250	1.938

FLANGE MOUNT



MODEL	PRODUCT NUMBER	AIR INLET NPT	HUB LENGTH	AJ	AK ^{+ .001} - .000	BB	BD ±.001	BE	BF	CR	CS	CT	CT1	CZ	P	PA
5H30SE	906701	.125	3.28	3.687	2.441	0.14	4.374	0.50	.250-20	3.35	0.20	0.92	0.99	0.25	5.31	1.38
5H50SE	907101	.125	3.99	5.687	3.937	0.14	6.374	0.69	.375-16	4.07	0.26	1.15	1.22	0.49	7.75	2.56

MODEL	PRODUCT NUMBER	SET SCREW	KEYWAY		U ^{+ .001} - .000
			WD	DP	
5H30SE	906701	.190-24	0.188	.094	0.875
5H50SE	907101	.250-20	0.375	.188	1.750

CLUTCHES

"Air Champ"

METRIC 5H SERIES, FLANGE MOUNT TOOTH CLUTCHES

The Metric 5H Series provides:

- ▶ Instantaneous Torque up to 2,000 Nm
- ▶ Maximum Operating Speed up to 3700 rpm
- ▶ **7 Standard Bore** sizes ranging from 20 to 55 millimeters
- ▶ **7 Minimum Bore** sizes ranging from 12,7 to 47,6 millimeters—you machine and assemble
- ▶ Positive engagement in multiple positions
- ▶ Immediate start-up with no slippage
- ▶ Versatile Mounting Capability for bearing supported pulley, sprocket or gear.
- 7 Models** offer design flexibility:
 - ▶ Sealed, radial ball bearings
 - ▶ **Pilot Mount** design with tapped mounting holes
 - ▶ Thru-shaft mounting design uses a full-length keyway
 - ▶ 222 millimeter hose included.

▶ METRIC 5H SERIES, FLANGE MOUNT TOOTH CLUTCHES—MULTIPOSITION Standard Bore Clutch:

Model	Product Number	Speeds Up to RPM	Bore (mm)	KEYWAY WD x DP	# of Teeth	Shipping Wt. (kg)
5H30	906703	3700	20	6 x 2,8	91	3,2
5H35	906802	3200	25	8 x 3,3	106	4,1
5H40	906902	3000	30	8 x 3,3	122	5
5H45	907002	3000	35	10 x 3,3	137	7
5H50	907103	3000	40	12 x 3,3	152	8,1
5H60	907202	2400	45	14 x 3,8	183	13
5H70	907302	2000	55	16 x 4,3	214	18

Keys are customer furnished and must be full-length.

Bearing life is optimized at lower speeds and air pressure.

Minimum Bore Clutch:

Minimum bore clutches are supplied unassembled with machinable hubs.

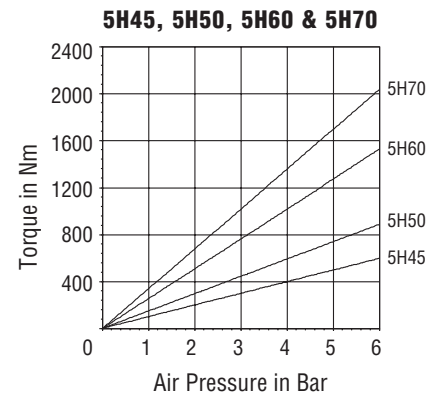
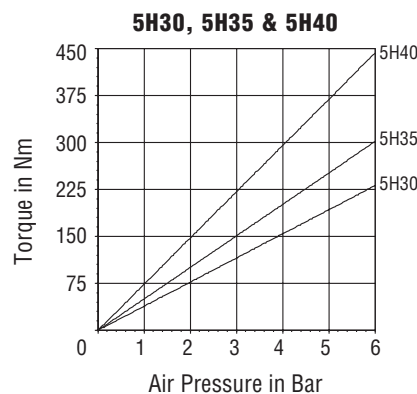
Model	Product Number	Speeds Up to RPM	Bore (mm)	# of Teeth	Shipping Wt. (kg)
5H30	906704	3700	12,7	91	3,2
5H35	906803	3200	15,9	106	4,1
5H40	906903	3000	19,1	122	5
5H45	907003	3000	22,2	137	7
5H50	907104	3000	25,4	152	8,1
5H60	907203	2400	31,8	183	13
5H70	907303	2000	47,6	214	18

Keys are customer furnished and must be full-length.

CAUTION!

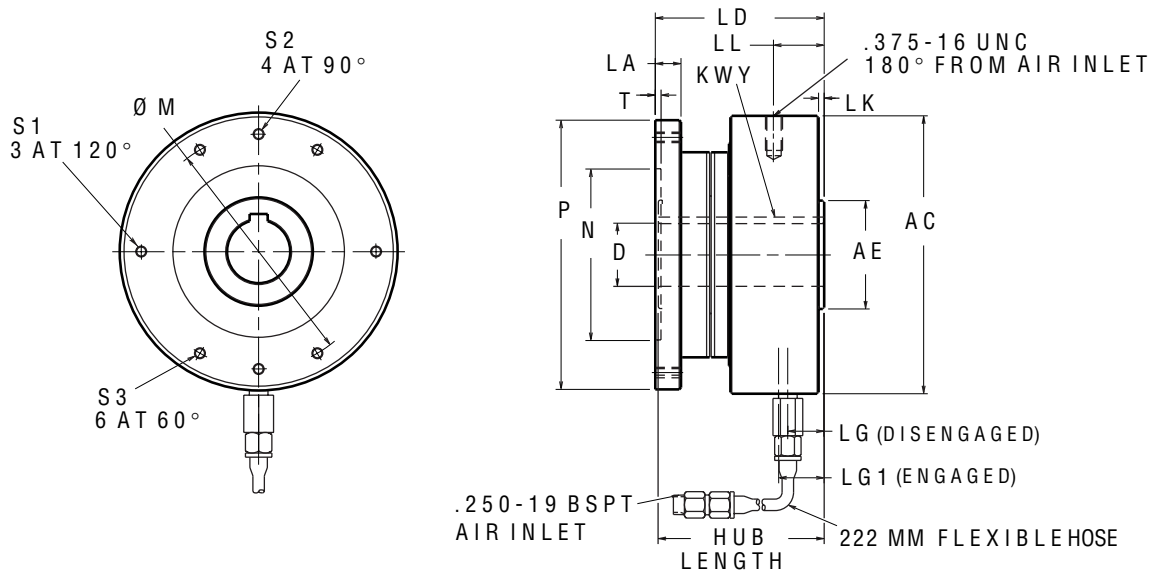
Tooth clutches are normally engaged when stationary. They are not intended for use in most cyclic applications or high speed engagement. In certain circumstances, tooth clutches can be engaged at differential speeds. Please consult Nexen if you are considering an application involving engagement at differential speeds.

▶ TORQUE VS. AIR PRESSURE



Torque (In. Lbs.) = Nm x 8.849
PSI = Bar ÷ .0689

METRIC 5H SERIES, FLANGE MOUNT CLUTCH - APPROXIMATE DIMENSIONS (MILLIMETERS)



MODEL	PRODUCT NUMBER	AC	AE	D ^{H7}	LA	LD	LG	LG1	LK	LL	M	N ^{H6}	P ^{h8}	S1	S2	S3	T	HUB LENGTH	KWY WD x DP
5H30	906703	116	35	20	13	79	17	19	0	--	90	62	111	M6	M6	--	3,4	77	6 x 2,8
5H35	906802	129	45	25	14	83	18	20	1,5	--	110	75	124	M6	M6	--	2,8	81	8 x 3,3
5H40	906902	135	45	30	14	85	17	19	0,3	--	120	75	136	M6	M6	--	3,2	83	8 x 3,3
5H45	907002	154	60	35	14	94	20	22	3,0	--	130	95	149	--	M6	M6	3,2	92	10 x 3,3
5H50	907103	167	65	40	18	96	22	24	5,0	--	140	100	162	--	M8	M8	3,5	94	12 x 3,3
5H60	907202	192	75	45	18	108	26	28	6,0	--	170	115	194	--	M8	M8	4,4	106	14 x 3,8
5H70	907302	211	85	55	21	124	28	30	8,1	28	190	130	213	--	M10	M10	9,4	122	16 x 4,3

NOTE: Drawings are expressed in third angle projection.

CLUTCHES

"Air Champ"

METRIC 5HP SERIES, PILOT MOUNT TOOTH CLUTCHES

The Metric 5HP Series provides:

- Instantaneous Torque up to 3,705 Nm
- Maximum Operating Speed up to 3700 rpm
- **8 Standard Bore** sizes ranging from 20 to 75 millimeters
- **8 Minimum Bore** sizes ranging from 12,7 to 47,6 millimeters—you machine and assemble
- Positive engagement in random positions.
- 8 Models** offer design flexibility:
 - Sealed, radial ball bearings
 - **Pilot Mount** design with tapped mounting holes
 - Thru-shaft mounting design uses a full-length keyway
 - Ability to mount a pulley, sprocket or gear on the clutch
 - 222 millimeter hose included.

CAUTION!

Tooth clutches are normally engaged when stationary. They are not intended for use in most cyclic applications or high speed engagement. In certain circumstances, tooth clutches can be engaged at differential speeds. Please consult Nexen if you are considering an application involving engagement at differential speeds.

$$\text{Torque (In. Lbs.)} = \text{Nm} \times 8.849$$

$$\text{PSI} = \text{Bar} \div .0689$$

► METRIC 5HP SERIES, PILOT MOUNT TOOTH CLUTCHES—MULTIPOSITION Standard Bore Clutch:

Model	Product Number	Speeds Up to RPM	Bore (mm)	KEYWAY WD x DP	# of Teeth	Shipping Wt. (kg)
5H30-P	909902	3700	20	6 x 2,8	91	3,2
5H35-P	910002	3200	25	8 x 3,3	106	4,5
5H40-P	910102	3000	30	8 x 3,3	122	5,6
5H45-P	910202	3000	35	10 x 3,3	137	7,1
5H50-P	910302	3000	40	12 x 3,3	152	8,8
5H60-P	910402	2400	45	14 x 3,8	183	13,5
5H70-P	910503	2000	55	16 x 4,3	214	21
5H80-P	911702	2000	75	20 x 4,9	244	32

Keys are customer furnished and must be full-length.

Minimum Bore Clutch:

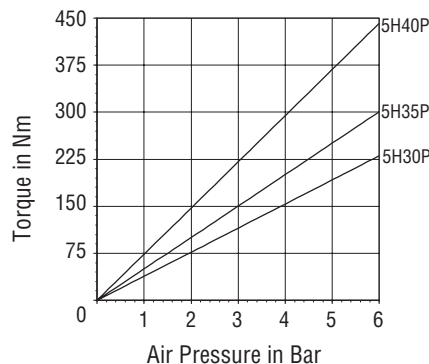
Minimum bore clutches are supplied unassembled with machinable hubs.

Model	Product Number	Speeds Up to RPM	Bore (mm)	# of Teeth	Shipping Wt. (kg)
5H30-P	909903	3700	12,7	91	3,2
5H35-P	910003	3200	15,9	106	4,5
5H40-P	910103	3000	19,1	122	5,6
5H45-P	910203	3000	22,2	137	7,1
5H50-P	910303	3000	25,4	152	8,8
5H60-P	910403	2400	31,8	183	13,5
5H70-P	910504	2000	38,1	214	21
5H80-P	911703	2000	47,6	244	32

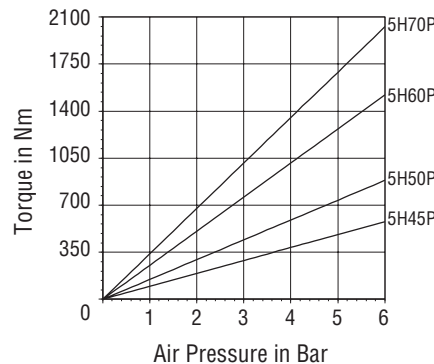
Keys are customer furnished and must be full-length.

► TORQUE VS. AIR PRESSURE

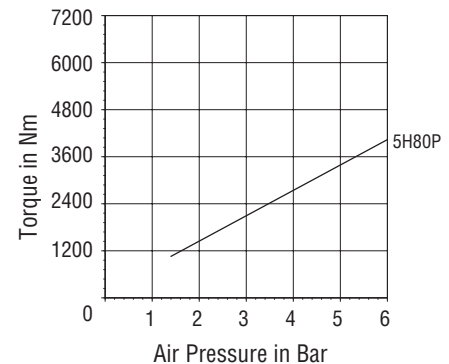
5H30P, 5H35P & 5H40P



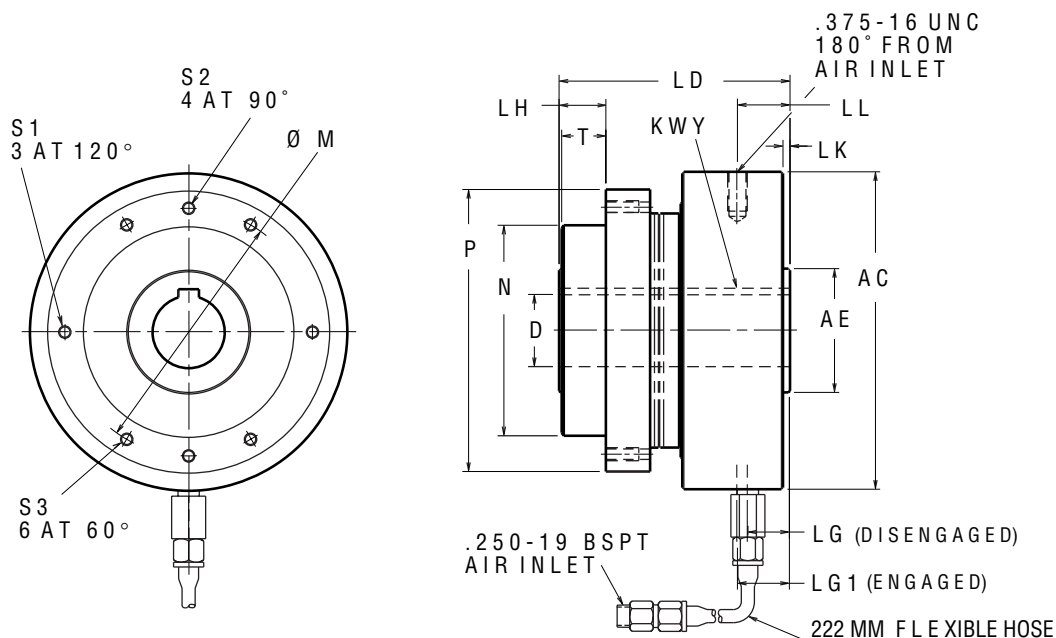
5H45P, 5H50P, 5H60P & 5H70P



5H80P



METRIC 5HP PILOT MOUNT CLUTCH - APPROXIMATE DIMENSIONS (MILLIMETERS)



MODEL	PRODUCT NUMBER	AC	AE	D ^{H7}	LD	LG	LG1	LH	LK	LL	M	N ^{h8}	P	S1	S2	S3	T	KWY WD x DP
5H30-P	909902	116	35	20	93	18	20	18	1	--	88	73	98	M6	M6	--	17,5	6 x 2,8
5H35-P	910002	129	45	25	98	18	20	18	1	--	102	88	114	M6	M6	--	17,5	8 x 3,3
5H40-P	910102	135	45	30	101	18	20	19	1	--	108	88	124	M6	M6	--	17,5	8 x 3,3
5H45-P	910202	154	60	35	112	20	22	23	3	--	120	102	137	--	M6	M6	21,4	10 x 3,3
5H50-P	910302	167	65	40	113	21	23	22	4	--	135	112	152	--	M8	M8	19,8	12 x 3,3
5H60-P	910402	192	75	45	129	25	27	24	5	--	155	132	178	--	M8	M8	22,2	14 x 3,8
5H70-P	910503	211	85	55	151	25	27	40	5	30	180	145	210	--	M10	M10	30,2	16 x 4,3
5H80-P	911702	235	95	75	191	38	61	46	8	38	216	187	241	--	--	M12	47,6	20 x 4,9

NOTE: Drawings are expressed in third angle projection.

CLUTCHES

"Air Champ"

METRIC 5HP-E SERIES, ENCLOSED PILOT MOUNT TOOTH CLUTCHES

The Metric 5HP-E Series provides:

- Water protection per NEMA standard 1.26.5 (Water-proof machine)
- Nickel plated exterior meets USDA standard
- Instantaneous Torque up to 1,300 Nm
- Maximum Operating Speed up to 1650 rpm
- 6 Standard Bore** sizes ranging from 20 to 45 millimeters
- Positive engagement in random positions.

6 Models offer design flexibility:

- Sealed, radial ball bearings
- Pilot mount design with tapped mounting holes
- Thru-shaft mounting design uses a full-length keyway
- Ability to mount a pulley, sprocket or gear on the clutch
- Operates in wet or dry environments
- 222 millimeter hose included.

► METRIC 5HP-E SERIES, ENCLOSED PILOT MOUNT TOOTH CLUTCHES—MULTIPOSITION

Standard Bore Units:

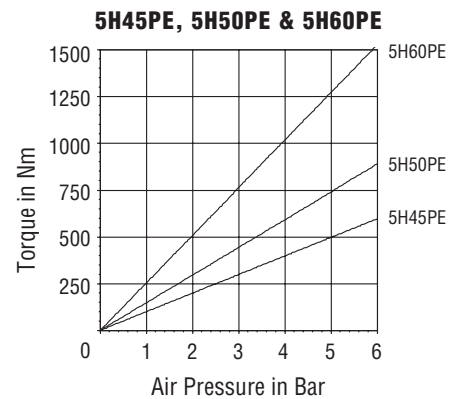
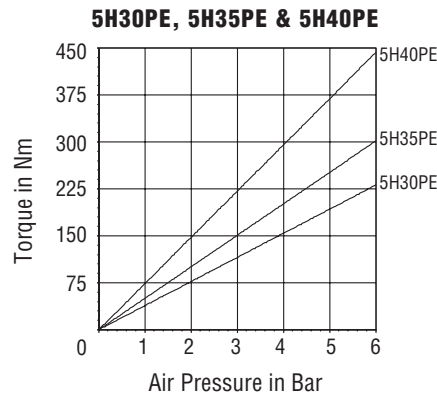
Model	Product Number	Speeds Up to RPM	Bore (mm)	KEYWAY WD x DP	# of Teeth	Shipping Wt. (kg)
5H30P-E	913005	1650	20	6 x 2,8	91	3,3
5H35P-E	913015	1350	25	8 x 3,3	106	4,6
5H40P-E	913025	1350	30	8 x 3,3	122	5,5
5H45P-E	913035	1200	35	10 x 3,3	137	7,4
5H50P-E	913045	1100	40	12 x 3,3	152	9
5H60P-E	913055	1000	45	14 x 3,8	183	13,5

Keys are customer furnished and must be full-length.

CAUTION!

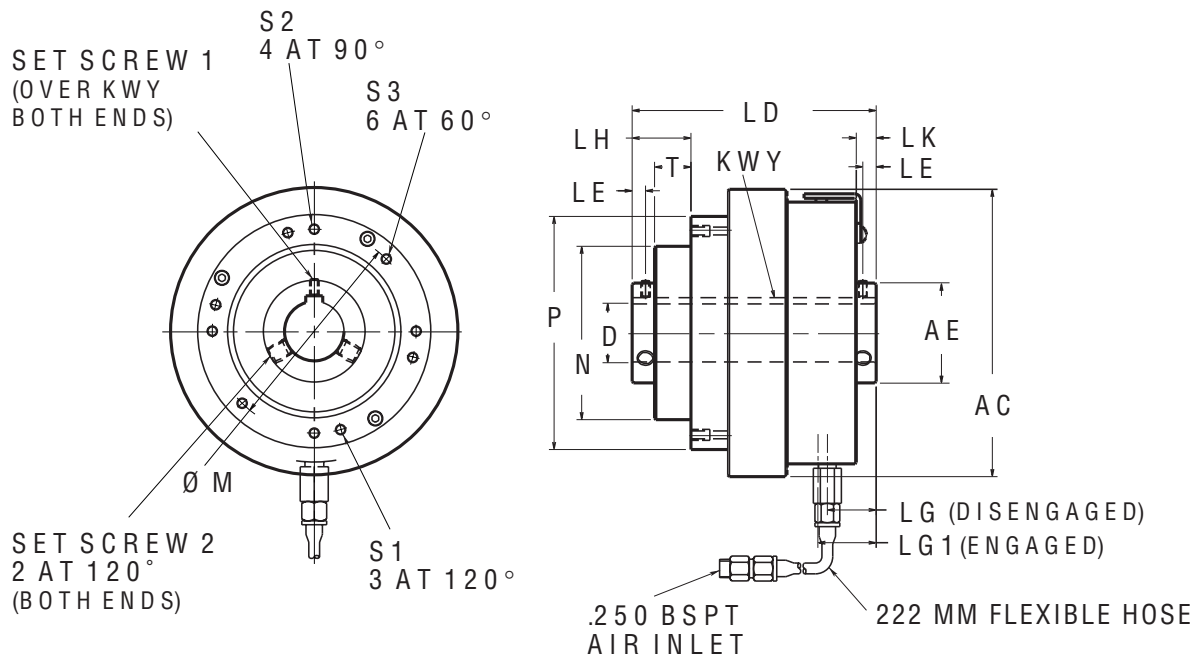
Tooth clutches are normally engaged when stationary. They are not intended for use in most cyclic applications or high speed engagement. In certain circumstances, tooth clutches can be engaged at differential speeds. Please consult Nexen if you are considering an application involving engagement at differential speeds.

► TORQUE VS. AIR PRESSURE



Torque (In. Lbs.) = Nm x 8.849
PSI = Bar ÷ .0689

METRIC 5HP-E ENCLOSED PILOT MOUNT CLUTCH - APPROXIMATE DIMENSIONS (MILLIMETERS)



MODEL	PRODUCT NUMBER	AC	AE	D ^{H7}	LD	LE	LG	LG1	LH	LK	M	N ^{h8}	P	S1	S2	S3	T	SET SCREW		KWY WD x DP
																		1	2	
5H30P-E	913005	128	34	20	123	6	27	29	26	10	88	72	105	M6	M6	--	17,5	M5	M6	6 x 2,8
5H35P-E	913015	156	44	25	129	6	27	29	29	10	102	88	114	M6	M6	--	17,5	M5	M6	8 x 3,3
5H40P-E	913025	156	44	30	126	7	28	30	29	11	108	88	124	M6	M6	--	17,5	M5	M6	8 x 3,3
5H45P-E	913035	169	59	35	144	8	29	31	35	12	120	102	137	--	M6	M6	21,4	M5	M10	10 x 3,3
5H50P-E	913045	195	64	40	152	8	31	34	32	13	135	112	155	--	M8	M8	19,8	M6	M10	12 x 3,3
5H60P-E	913055	214	73	45	163	9	37	39	37	17	155	132	178	--	M8	M8	22,2	M6	M12	14 x 3,8

NOTE: Drawings are expressed in third angle projection.

CLUTCHES

"Air Champ"

METRIC 5HP-SP SERIES, PILOT MOUNT TOOTH CLUTCHES

The Metric 5HP-SP Series provides:

- ▶ Instantaneous Torque up to 3,705 Nm
- ▶ Maximum Operating Speed up to 3700 rpm
- ▶ **8 Standard Bore** sizes ranging from 20 to 75 millimeters
- ▶ **8 Minimum Bore** sizes ranging from 12,7 to 47,6 millimeters— you machine and assemble
- ▶ Positive engagement for accurate positions and perfect registration
- ▶ Accurate timing between two shafts

8 Models offer design flexibility:

- ▶ Sealed, radial ball bearings
- ▶ **Pilot Mount** design with tapped mounting holes
- ▶ Thru-shaft mounting design uses a full-length keyway
- ▶ Ability to mount a pulley, sprocket or gear on the clutch
- ▶ 222 millimeter hose included.

CAUTION!

Tooth clutches are normally engaged when stationary. They are not intended for use in most cyclic applications or high speed engagement. In certain circumstances, tooth clutches can be engaged at differential speeds. Please consult Nexen if you are considering an application involving engagement at differential speeds.

NOTE: Proper Single Position Tooth Clutch engagement depends upon 1) the allowable engagement speed with specific inertia loads and air pressure, and 2) the acceptable speed and air pressure which allow the clutch to engage in one position.

Torque (In. Lbs.) = Nm x 8.849
PSI = Bar ÷ .0689

▶ METRIC 5HP-SP SERIES, PILOT MOUNT TOOTH CLUTCHES - SINGLE POSITION Standard Bore Clutch:

Model	Product Number	Speeds Up to RPM	Bore (mm)	KEYWAY WD x DP	# of Teeth	Shipping Wt. (kg)
5H30P-SP	912102	3700	20	6 x 2,8	91	3,2
5H35P-SP	912202	3200	25	8 x 3,3	106	4,5
5H40P-SP	912302	3000	30	8 x 3,3	122	5,6
5H45P-SP	912402	3000	35	10 x 3,3	137	7,1
5H50P-SP	912502	3000	40	12 x 3,3	152	9
5H60P-SP	912703	2400	45	14 x 3,8	183	13,5
5H70P-SP	912802	2000	55	16 x 4,3	214	21
5H80P-SP	912902	2000	75	20 x 4,9	244	32

Keys are customer furnished and must be full-length.

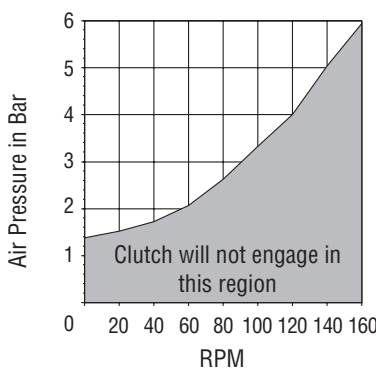
Minimum Bore Clutch:

Minimum bore clutches are supplied unassembled with machinable hubs.

Model	Product Number	Speeds Up to RPM	Bore (mm)	# of Teeth	Shipping Wt. (kg)
5H30P-SP	912103	3700	12,7	91	3,2
5H35P-SP	912203	3200	15,9	106	4,5
5H40P-SP	912303	3000	19,1	122	5,6
5H45P-SP	912403	3000	22,2	137	7,1
5H50P-SP	912503	3000	25,4	152	9
5H60P-SP	912704	2400	31,8	183	13,5
5H70P-SP	912803	2000	38,1	214	21
5H80P-SP	912903	2000	47,6	244	32

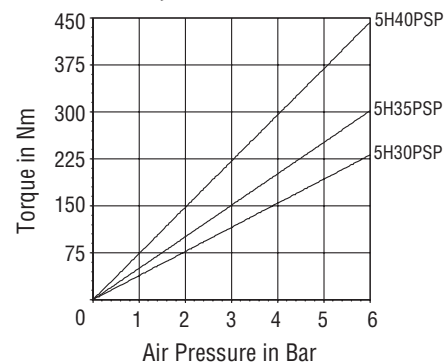
Keys are customer furnished and must be full-length.

▶ MIN. STATIC AIR PRESSURE FOR ENGAGEMENT Vs. RPM



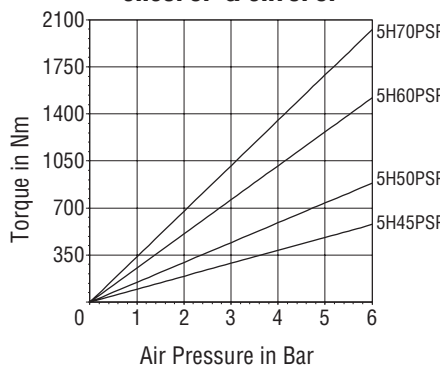
▶ TORQUE Vs. AIR PRESSURE

5H30PSP, 5H35PSP & 5H40PSP

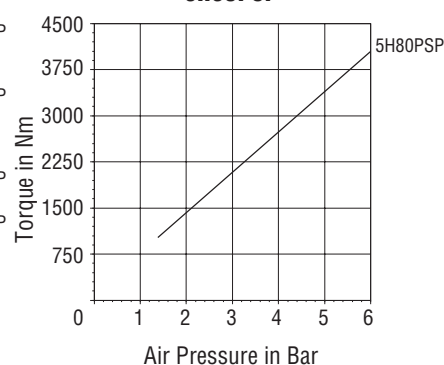


▶ TORQUE Vs. AIR PRESSURE

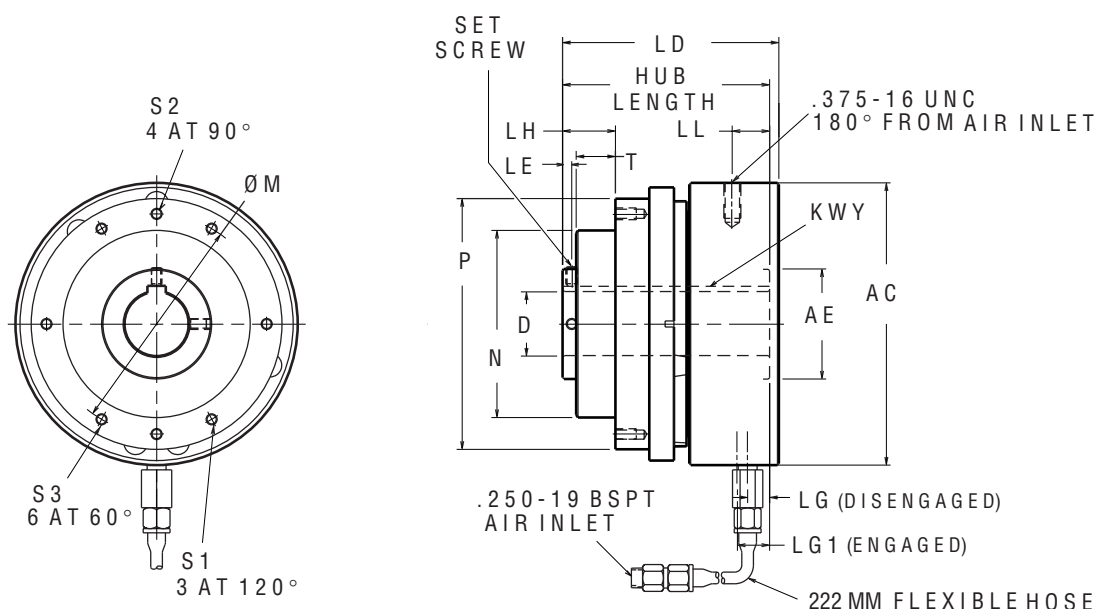
5H45PSP, 5H50PSP, 5H60PSP & 5H70PSP



5H80PSP



METRIC 5HP-SP PILOT MOUNT CLUTCH - APPROXIMATE DIMENSIONS (MILLIMETERS)



MODEL	PRODUCT NUMBER	AC	AE	D ^{H7}	LD	LE	LG	LG1	LH	LL	M	N ^{h8}	P	S1	S2	S3	T	HUB LENGTH	K W Y WD x DP
5H30P-SP	912102	116	35	20	102	5	14	20	23	--	88	72	98	M6	M6	--	17,5	99	6 x 2,8
5H35P-SP	912202	129	45	25	107	5	14	20	25	--	102	88	114	M6	M6	--	17,5	105	8 x 3,3
5H40P-SP	912302	135	45	30	110	5	14	20	25	--	108	88	124	M6	M6	--	17,5	107	8 x 3,3
5H45P-SP	912402	154	60	35	118	5	17	22	29	--	120	102	137	--	M6	M6	21,4	118	10 x 3,3
5H50P-SP	912502	167	65	40	121	6	17	22	29	--	135	112	152	--	M8	M8	19,8	121	12 x 3,3
5H60P-SP	912703	192	75	45	136	7,5	21	27	32	--	155	132	178	--	M8	M8	22,2	137	14 x 3,8
5H70P-SP	912802	211	85	55	149	10	22	28	36	30	180	145	210	--	--	M10	25,4	151	16 x 4,3
5H80P-SP	912902	235	95	75	219	16	55	61	73	55	216	187	241	--	--	M12	47,6	219	20 x 4,9

MODEL	SET SCREW
5H30P-SP	M6, 2 @ 90°
5H35P-SP	M6, 2 @ 90°
5H40P-SP	M6, 2 @ 90°
5H45P-SP	M6, 2 @ 90°
5H50P-SP	M8, 2 @ 90°
5H60P-SP	M10, 2 @ 90°
5H70P-2P	M12, 2 @ 90°
5H80P-SP	M20, 3 @ 120°

NOTE: Drawings are expressed in third angle projection.

CLUTCHES

METRIC 5HP-SP-E SERIES, ENCLOSED PILOT MOUNT TOOTH CLUTCHES

The Metric 5HP-SP-E Series provides:

- ▶ Water protection per NEMA standard 1.26.5 (Water-proof machine)
- ▶ Nickel-plated exterior meets USDA standard
- ▶ Instantaneous Torque up to 1,300 Nm
- ▶ Maximum Operating Speed up to 1650 rpm
- ▶ **6 Standard Bore** sizes ranging from 20 to 45 millimeters
- ▶ Positive engagement for accurate position and registration
- ▶ Accurate timing between two shafts.

6 Models offer design flexibility:

- ▶ Sealed, radial ball bearings
- ▶ Pilot mount design with tapped mounting holes
- ▶ Thru-shaft mounting design uses a full-length keyway
- ▶ Ability to mount a pulley, sprocket or gear on the clutch
- ▶ Operates in wet or dry environments
- ▶ 222 millimeter hose included.

▶ METRIC 5HP-SP-E SERIES, ENCLOSED PILOT MOUNT TOOTH CLUTCHES—SINGLE POSITION

Standard Bore Units:

Model	Product Number	Speeds Up to RPM	Bore (mm)	KEYWAY WD x DP	# of Teeth	Shipping Wt. (kg)
5H30P-SP-E	913004	1650	20	6 x 2,8	91	3,3
5H35P-SP-E	913014	1350	25	8 x 3,3	106	4,7
5H40P-SP-E	913024	1350	30	8 x 3,3	122	5,4
5H45P-SP-E	913034	1200	35	10 x 3,3	137	7,4
5H50P-SP-E	913044	1100	40	12 x 3,3	152	9
5H60P-SP-E	913054	1000	45	14 x 3,8	183	13,5

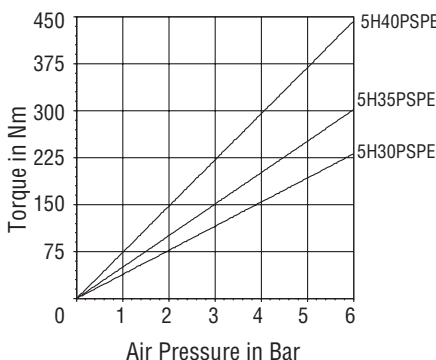
Keys are customer furnished and must be full-length.

CAUTION!

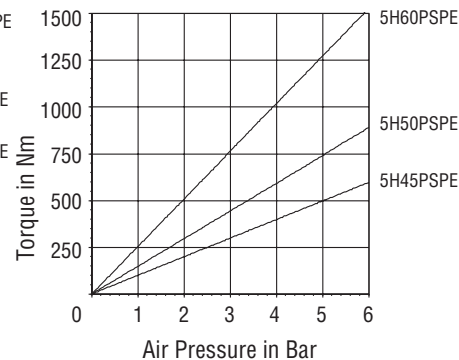
Tooth clutches are normally engaged when stationary. They are not intended for use in most cyclic applications or high speed engagement. In certain circumstances, tooth clutches can be engaged at differential speeds. Please consult Nexen if you are considering an application involving engagement at differential speeds.

▶ TORQUE VS. AIR PRESSURE

5H30PSPE, 5H35PSPE & 5H40PSPE

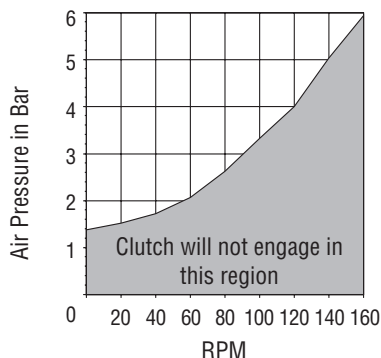


5H45PSPE, 5H50PSPE & 5H60PSPE



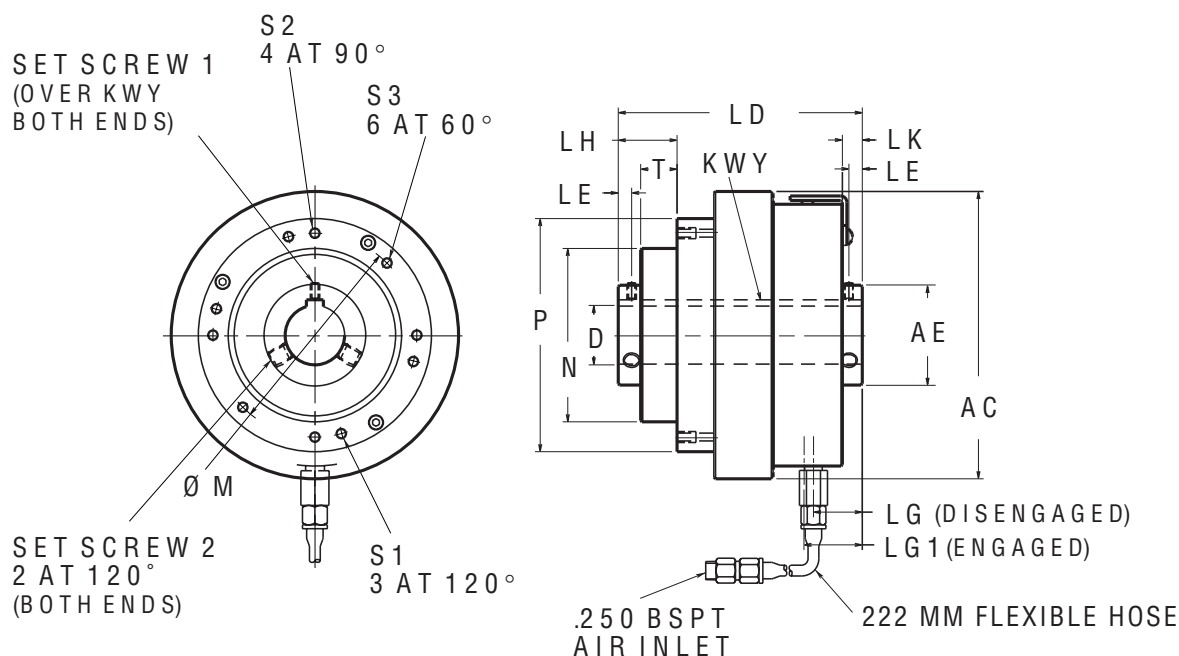
Torque (In. Lbs.) = Nm x 8.849
PSI = Bar ÷ .0689

▶ MIN. STATIC AIR PRESSURE FOR ENGAGEMENT VS. RPM



NOTE: Proper Single Position Tooth Clutch engagement depends upon 1) The allowable engagement speed with specific inertia loads and air pressure, and 2) The acceptable speed and air pressure which allow the clutch to engage in one position.

METRIC 5HPSP-E ENCLOSED PILOT MOUNT CLUTCH - APPROXIMATE DIMENSIONS (MILLIMETERS)

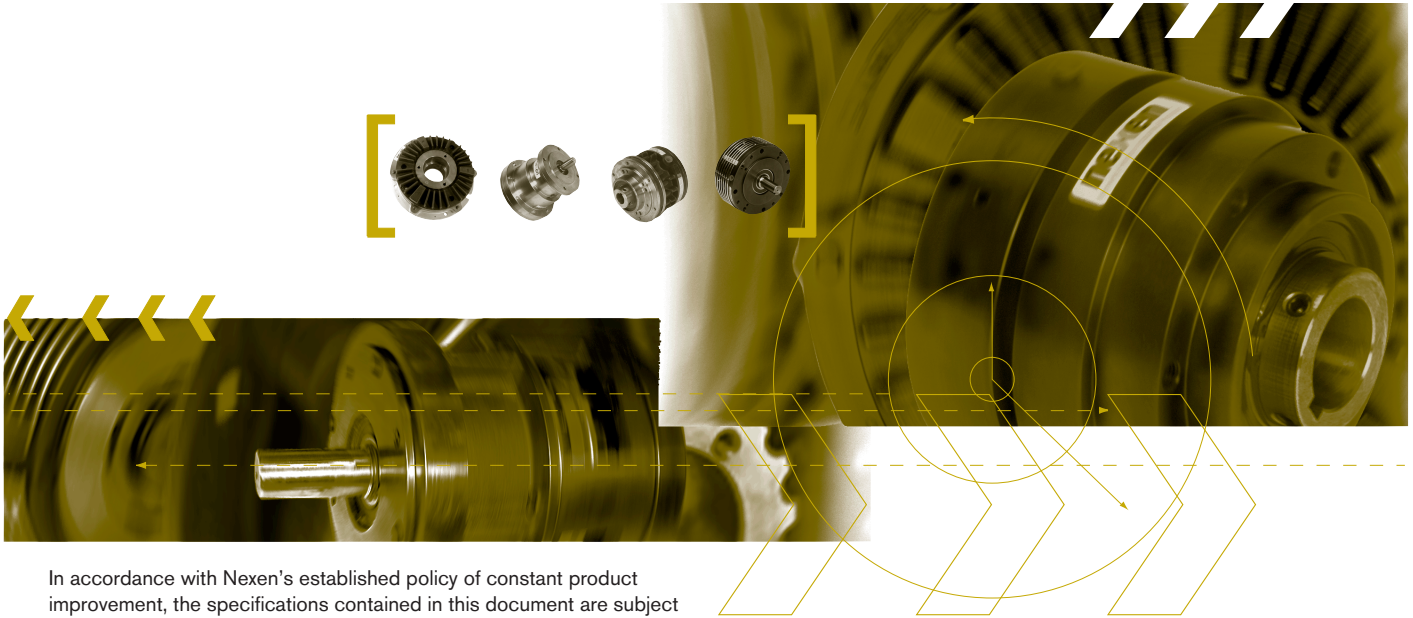


MODEL	PRODUCT NUMBER	AC	AE	D ^{H7}	LD	LE	LG	LG1	LH	LK	M	N ^{h8}	P	S1	S2	S3	T	SET SCREW		K/WY WD x DP
																		1	2	
5H30P-SP-E	913004	128	34	20	123	6	27	32	26	10	88	72	105	M6	M6	--	17,5	M5	M6	6 x 2,8
5H35P-SP-E	913014	156	44	25	129	6	27	32	29	10	102	88	114	M6	M6	--	17,5	M5	M6	8 x 3,3
5H40P-SP-E	913024	156	44	30	126	7	28	34	29	11	108	88	124	M6	M6	--	17,5	M5	M6	8 x 3,3
5H45P-SP-E	913034	169	59	35	144	8	29	34	35	12	120	102	137	--	M6	M6	21,4	M5	M10	10 x 3,3
5H50P-SP-E	913044	195	64	40	152	8	31	38	32	13	135	112	155	--	M8	M8	19,8	M6	M10	12 x 3,3
5H60P-SP-E	913054	214	73	45	163	9	37	43	37	17	155	132	178	--	M8	M8	22,2	M6	M12	14 x 3,8

NOTE: Drawings are expressed in third angle projection.

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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

OVERLOAD PROTECTION DEVICES

This Section Contains: Page

TORQUE LIMITERS

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TL-A-E Enclosed Set Screw Mount	96-97
TL-AC Set Collar Mount	98-99
TL-AC Flexible Couplings	100-101

METRIC TORQUE LIMITERS

TL-A & TL-AE Set Screw Mounts	102-103
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OVERLOAD PROTECTION SYSTEM

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TORQUE LIMITERS

Nexen's line of **Torque Limiters** is designed to protect your equipment by immediately disengaging the drive shaft when excessive torque occurs:

- ▶ Single position, ball detent design assures re-engagement of the drive from a complete stop in the same position every time, providing exact timing of both components

Nexen's **Air Pressure Circuits** complete the package for total overall protection:

- ▶ **Single Air Pressure** circuit allows for remote adjustment of the torque setting
- ▶ **Dual Air Pressure** circuit permits remote adjustment of torque while allowing a higher pressure for startup (high inertia loads) and a lower pressure for running torque requirements

When used with Torque Limiters, Nexen **Single or Double Flexible Couplings** allow:

- ▶ High shaft misalignment
- ▶ Zero backlash
- ▶ Excellent torsional stiffness

▶ **How a Torque Limiter System Works:**

1. Install Torque Limiter, Limit Switch and the Air Pressure Control System;
2. Set the air pressure for the desired overload torque;
3. If an overload occurs, the Torque Limiter interface separates, moving the cylinder to the disengaged position;
4. The Limit Switch detects the cylinder movement and interrupts electrical power. Interruption of electrical power de-energizes the 3-way N.C. solenoid valve, which exhausts air pressure from the Torque Limiter, causing it to disengage.
5. When the machinery comes to a **complete stop**, re-engage the Torque Limiter by jogging the drive, thus allowing machine operation to continue.

The following pages detail your Torque Limiter System options. You'll find information on Air Pressure Control Systems, Torque Limiter designs and Flexible Couplings. Once you have determined your total system requirements, order each item separately.

▶ **AIR PRESSURE CONTROL SYSTEMS:**

Choose from 2 Air Pressure Control Systems—Single or Dual:

The **Single Air Pressure System** provides basic protection:

- ▶ A constant bleed type Air Regulator is set to an air pressure that will allow the machine to operate, but low enough for Torque Limiter disengagement in the event of machine overload
- ▶ The Air Regulator also provides a constant bleed to eliminate back pressure in the air line while precisely maintaining pressure within .05 psi.
- ▶ Torque setting can be changed while the machine is running via the Air Regulator.

The **Dual Air Pressure System** provides ultimate protection, allowing higher startup pressure (high inertia load) and lower pressure for running with overload protection:

- ▶ Regulator #1 is set to an air pressure high enough to allow machine startup
- ▶ After a pre-set period of time, the Time Delay Control de-energizes the 3-way inline mount solenoid valve, allowing only the lower running air pressure to operate the Torque Limiter
- ▶ Regulator #2 is set to an air pressure that will allow the machine to operate, but low enough for Torque Limiter disengagement in the event of a machine overload
- ▶ Regulator #2 also provides a constant bleed to eliminate back pressure in the air line during overload

▶ **SMARTVALVE CONTROLLER**

The **Nexen SmartValve Controller** is a microprocessor based pressure controller that is ideally suited for use with Nexen torque limiters, brakes and clutches. The SmartValve replaces much of the valves, regulators, air lines and plumbing needed to provide multiple pressures to Nexen's pneumatic products.

- ▶ The SmartValve accepts pressure set points in two ways: analog and digital. A 0-10 analog signal caused the SmartValve to output a proportional 0-80 psig.
- ▶ Four digital inputs allow the SmartValve to output 16 different pressures that correspond to one of the standard or custom pressure tables stored onboard.
- ▶ Another input is used to sense a switch closure that signals the SmartValve to exhaust the air pressure, such as in the case of a torque limiter overload.
- ▶ A solid state relay output provides alarm indication during overload situations.

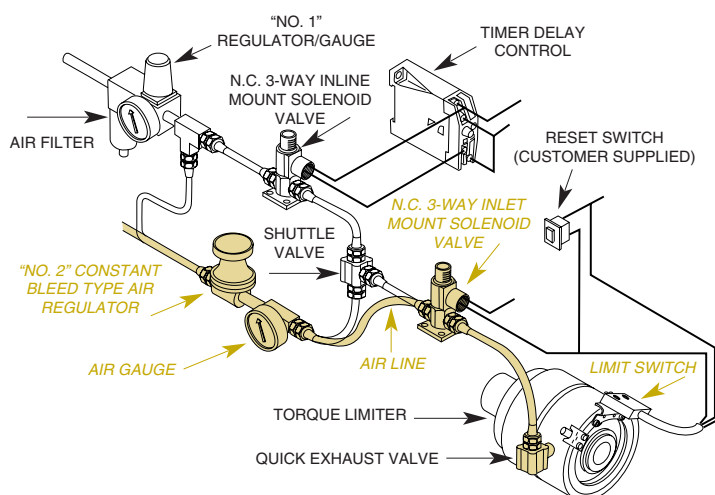
AIR PRESSURE CONTROL SYSTEMS

Control Systems Style	Product Number
Dual System	801579
Consists of:	(1) Air Regulator Air Gauge - Constant Bleed Type, 0-100 PSI, 125 NPT
NPT	(2) Quick Exhaust Valve (2) Tee Fittings, 125 NPTF (1) Air Filter, regular duty, 250 NPT (1) Air Regulator/Gauge, 0-125 PSI, 250 NPT (2) 3-Way Inline Mount Solenoid Valve, N.C. (1) Adjustable Time Delay Control
Single System	801578
Consists of:	(1) Air Regulator Air Gauge - Constant Bleed Type, 0-100 PSI, 125 NPT
NPT	(1) 3-Way Inline Mount Solenoid Valve N.C. (1) Quick Exhaust Valve (1) Tee Fitting, 125 NPTF

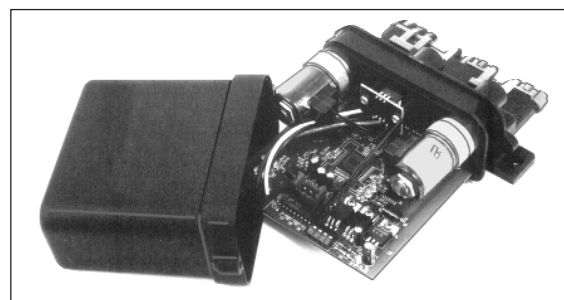
SMARTVALVE CONTROLLER

Control Systems Style	Product Number
SmartValve Controller	964508
115/230 VAC Power Supply	964509
Specifications:	DC Power, 24 VDC @ 500mA (Optional 24VDC CE, UL, CSA approved 115/230 VAC power supply available) Input Pressure Range, 85–150 PSIG (6–10 bar) Output Pressure Range, 0–80 PSIG (0–5.5 bar) Accuracy, $\pm .25\%$ full scale @ 77°F (25°C) Cable, 6.5ft. (2m) cable included

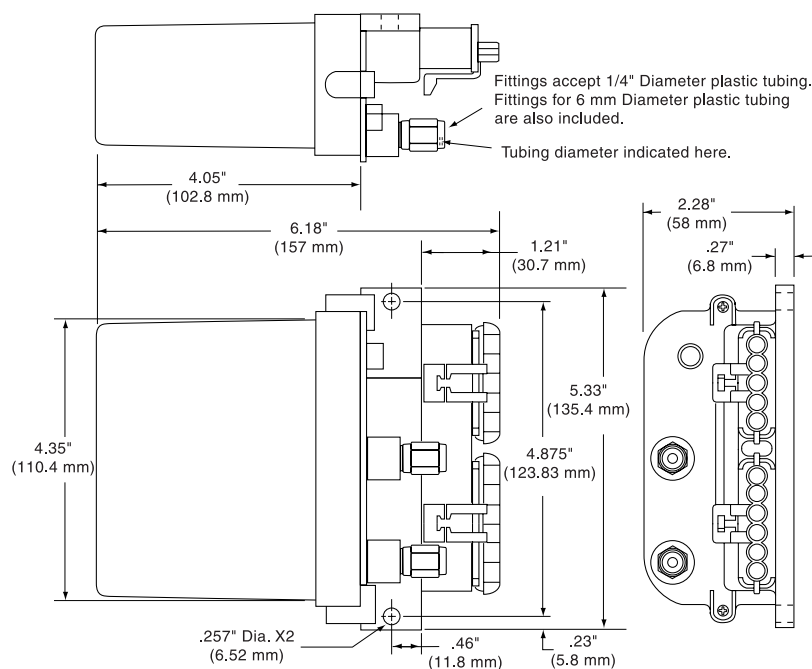
RECOMMENDED AIR LINE CONNECTIONS



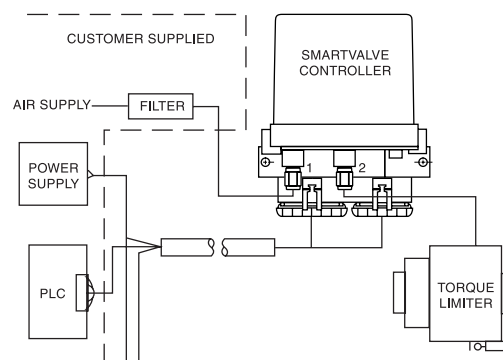
NOTE: Italicized blue type and arrows indicate “single air pressure system” installation only. “Dual air pressure system” requires all components.



APPROXIMATE DIMENSIONS



CIRCUIT DIAGRAM



TORQUE LIMITERS

"Air Champ"

TL-A SERIES TORQUE LIMITERS, SET SCREW MOUNTED

TL-A Series Set Screw Mounted, Open Design Torque Limiters provide:

- ▶ **16 Models** to choose from
- ▶ Torque up to 27,700 In. Lbs. @ 80 psi
- ▶ Operating Speed up to 2000 rpm
- ▶ Bore Sizes ranging from 0.625 to 2.938 inches
- ▶ Remote torque adjustment with Nexen's **Single** and **Double Air Pressure Circuits**
- ▶ Many Models available in either high torque or low torque versions
- ▶ Limit Switch Assembly with 3 ft. cord and hardware included on all models

TL-A SERIES TORQUE LIMITERS - SET SCREW MOUNT

Model	Product Number	Speeds Up to RPM	Torque Up to (In. Lbs.)	Bore (In)	Key Size (WD X DP)	Shipping Wt. (Lbs)
TL10-A	801802	2000	185	0.625	0.188 sq	5
TL15-A	801812	2000	365	0.625	0.188 sq	5
TL20-A	801502	1800	860	0.875	0.188 sq	16
TL20-A/2	801506	1800	400	0.875	0.188 sq	16
TL30-A	801512	1650	2150	1.125	0.250 sq	19
TL30-A/2	801516	1650	800	1.125	0.250 sq	19
TL40-A	801522	1350	4190	1.625	0.375 sq	29
TL40-A/2	801526	1350	1500	1.625	0.375 sq	29
TL50-A	801532	1200	6230	1.750	0.375 sq	38
TL50-A/2	801536	1200	2200	1.750	0.375 sq	38
TL60-A	801542	1050	10820	1.938	0.500 sq	52
TL60-A/2	801546	1050	3800	1.938	0.500 sq	52
TL70-A	801552	950	15000	2.188	0.500 sq	45
TL70-A/2	801556	950	6700	2.188	0.500 sq	45
TL80-A	801562	850	27700	2.938	0.750 x 0.500	70
TL80-A/2	801566	850	12000	2.938	0.750 x 0.500	70

Minimum Shaft insertion halfway through Hub. Keys are customer furnished.

Operating Speed: Disengaging speeds are limited to the maximum allowable feet per minute rating of the rotary seal between the drive flange and drive ring. Torque Limiters are engaged when stationary.

NOTE: For higher speeds-consult Nexen.

ATTACHMENT OPTIONS

Flexible Coupling Assemblies

Flexible Coupling Assemblies are required for in-line coupling applications, and are available in single or double flex designs to provide **high misalignment capabilities with high torque**. Turn to pages 100 and 101 for Flexible Coupling details.

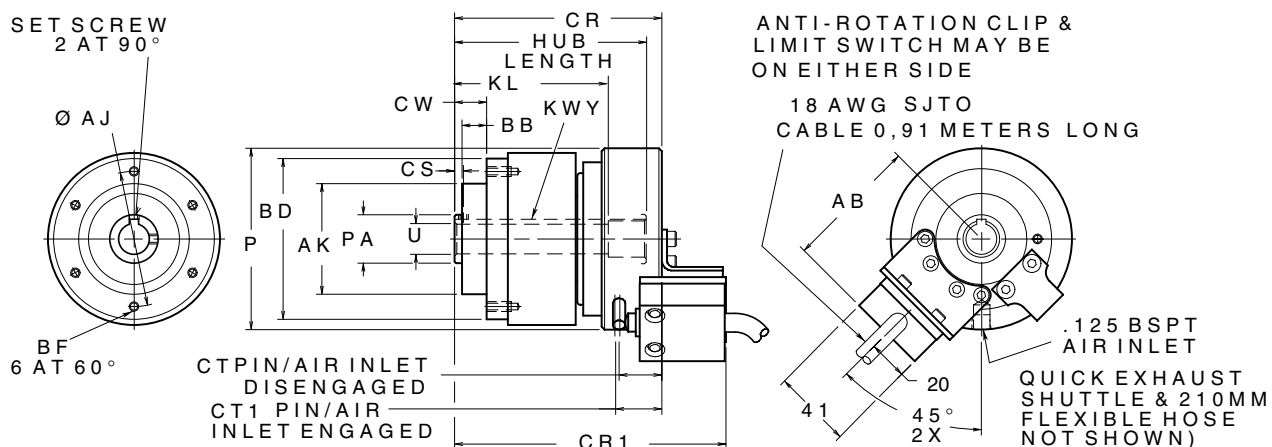
For quick selection of Flexible Couplings, refer to the chart above.

Pulleys, Sprockets, Gears

These can be attached to the clutch for offset shaft applications. Tapped holes are provided for ease of mounting. Nexen does not furnish these items. For minimum sprocket requirements, see page 267.

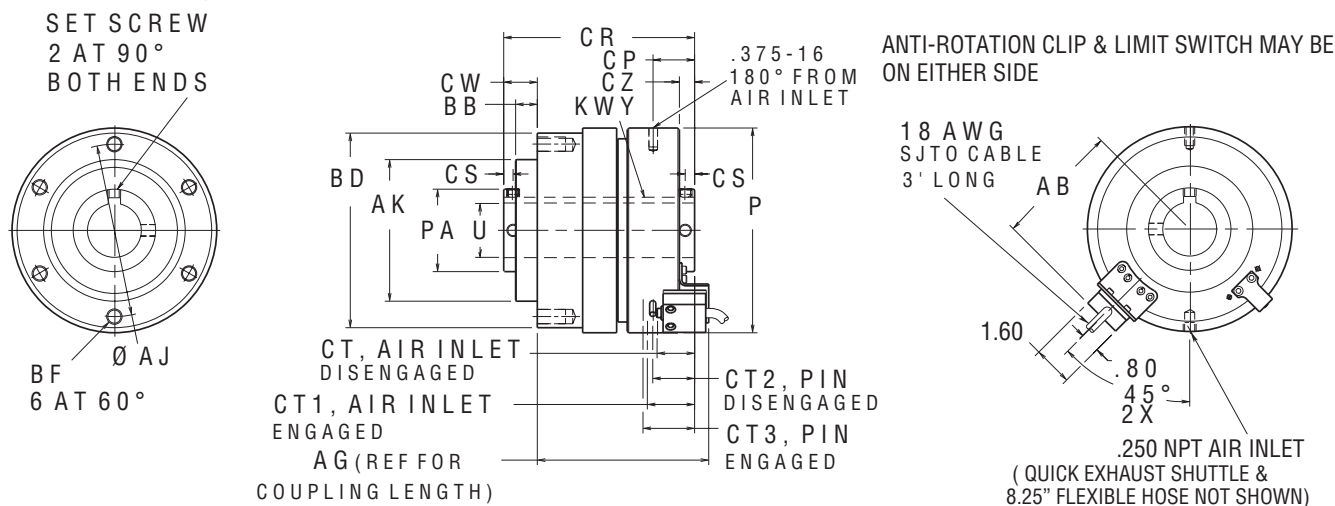
TL-A SERIES TORQUE LIMITERS - SET SCREW MOUNTED - APPROXIMATE DIMENSIONS (INCHES)

TL10-A & TL15-A



MODEL	PRODUCT NUMBER	AB	AJ	AK ±.001	BB	BD	BF	CR	CR1	CS	CT	CT1	CW	KL	KEYWAY WD	DP	P	PA	U ±.001	HUB LENGTH	SET SCREW
TL10-A	801802	2.72	2.750	2.249	0.50	3.27	.190-24	4.22	5.52	0.18	0.87	0.94	0.65	3.13	0.188	0.094	3.69	0.98	0.625	3.91	.190-24
TL15-A	801812	2.72	2.750	2.249	0.50	3.27	.190-24	4.22	5.52	0.18	0.87	0.94	0.65	3.13	0.188	0.094	3.69	0.98	0.625	3.91	.190-24

TL-A SERIES TORQUE LIMITERS - SET SCREW MOUNTED - APPROXIMATE DIMENSIONS



MODEL	PRODUCT NUMBER	AB	AG	AJ	AK ±.001	BB	BD	BF	CP	CR	CS	CT	CT1	CT2	CT3	CW	CZ	KEYWAY		P
																		WD	DP	
TL20-A	801502	3.12	5.20	3.562	2.874	0.69	4.12	.312-18	—	5.28	0.25	1.09	1.31	1.22	1.44	1.04	0.41	0.188	0.094	4.56
TL20-A/2	801506	3.12	5.20	3.562	2.874	0.69	4.12	.312-18	—	5.28	0.25	1.09	1.31	1.22	1.44	1.04	0.41	0.188	0.094	4.56
TL30-A	801512	3.43	5.12	4.062	3.499	0.74	4.50	.312-18	—	5.36	0.28	1.12	1.34	1.26	1.48	1.15	0.45	0.250	0.120	5.09
TL30-A/2	801516	3.43	5.12	4.062	3.499	0.74	4.50	.312-18	—	5.36	0.28	1.12	1.34	1.26	1.48	1.15	0.45	0.250	0.120	5.09
TL40-A	801522	3.89	5.51	4.750	4.124	0.96	5.40	.375-16	—	6.09	0.31	1.11	1.33	1.33	1.55	1.43	0.51	0.375	0.113	6.06
TL40-A/2	801526	3.89	5.51	4.750	4.124	0.96	5.40	.375-16	—	6.09	0.31	1.11	1.33	1.33	1.55	1.43	0.51	0.375	0.113	6.06
TL50-A	801532	4.18	5.94	5.375	4.499	0.82	6.12	.500-13	—	6.44	0.31	1.16	1.38	1.38	1.60	1.29	0.57	0.375	0.176	6.56
TL50-A/2	801536	4.18	5.94	5.375	4.499	0.82	6.12	.500-13	—	6.44	0.31	1.16	1.38	1.38	1.60	1.29	0.57	0.375	0.176	6.56
TL60-A	801542	4.68	6.09	6.125	5.249	0.88	6.87	.500-13	—	6.91	0.38	1.37	1.59	1.54	1.76	1.44	0.58	0.500	0.227	7.56
TL60-A/2	801546	4.68	6.09	6.125	5.249	0.88	6.87	.500-13	—	6.91	0.38	1.37	1.59	1.54	1.76	1.44	0.58	0.500	0.227	7.56
TL70-A	801552	5.06	6.96	7.000	5.749	0.88	7.90	.625-11	1.69	7.75	0.38	1.52	1.74	1.68	1.90	1.36	0.62	0.50	0.250	8.31
TL70-A/2	801556	5.06	6.96	7.000	5.749	0.88	7.90	.625-11	1.69	7.75	0.38	1.52	1.74	1.68	1.90	1.36	0.62	0.50	0.250	8.31
TL80-A	801562	5.48	6.57*	8.500	7.374	1.88	9.50	.625-11	2.76	9.42	0.38	2.75	2.97	2.75	2.97	2.26	0.59	0.75	0.250	9.25
TL80-A/2	801566	5.48	6.57*	8.500	7.374	1.88	9.50	.625-11	2.76	9.42	0.38	2.75	2.97	2.75	2.97	2.26	0.59	0.75	0.250	9.25

MODEL	PRODUCT NUMBER	PA	U ±.001	SET SCREW
TL20-A	801502	1.38	0.875	.250-20
TL20-A/2	801506	1.38	0.875	.250-20
TL30-A	801512	1.75	1.125	.312-18
TL30-A/2	801516	1.75	1.125	.312-18
TL40-A	801522	2.36	1.625	.375-16
TL40-A/2	801526	2.36	1.625	.375-16
TL50-A	801532	2.56	1.750	.375-16
TL50-A/2	801536	2.56	1.750	.375-16
TL60-A	801542	2.95	1.938	.500-13
TL60-A/2	801546	2.95	1.938	.500-13
TL70-A	801552	3.35	2.188	.500-13
TL70-A/2	801556	3.35	2.188	.500-13
TL80-A	801562	3.74	2.938	.500-13
TL80-A/2	801566	3.74	2.938	.500-13

*For Model 80 Only: Hub extends beyond Limit Switch
Add 0.60 to dimension AG to get reference dimension for coupling length

Torque Vs. Air Pressure

See page 99.

TORQUE LIMITERS

"Air Champ"

TL-A-E SERIES TORQUE LIMITERS, SET SCREW MOUNT

TL-A-E Series Set Screw Mounted, Enclosed Torque Limiters provide:

- ▶ **10 Models** to choose from
- ▶ Torque up to 10,820 In. Lbs. @ 80 psi
- ▶ Operating Speed up to 1650 rpm
- ▶ Bore Sizes ranging from 0.875 to 1.938 inches
- ▶ Remote torque adjustment with Nexen's **Single** and **Double Air Pressure Circuits**
- ▶ Many Models available in either high torque or low torque versions
- ▶ Limit Switch Assembly with 3 ft. cord and hardware included on all models
- ▶ Nickel plated exterior meets USDA standards
- ▶ Water protection per NEMA Standard 1.26.55 (waterproof machines)
- ▶ Operates in wet or dry environments

▶ TL-A-E SERIES TORQUE LIMITERS - SET SCREW MOUNT

Model	Product Number	Meets USDA & NEMA Specs	Speeds Up to RPM	Torque Up to (In. Lbs.)	Bore (In)	Key Size (SQ)	Shipping Wt. (Lbs)
TL20A-E	802902	Yes	1650	860	0.875	0.188	7
TL20A-E/2	802906	Yes	1650	400	0.875	0.188	7
TL30A-E	802912	Yes	1350	2150	1.125	0.250	10
TL30A-E/2	802916	Yes	1350	800	1.125	0.250	10
TL40A-E	802922	Yes	1200	4190	1.500	0.375	16
TL40A-E/2	802926	Yes	1200	1500	1.500	0.375	16
TL50A-E	802932	Yes	1100	6230	1.750	0.375	20
TL50A-E/2	802936	Yes	1100	2200	1.750	0.375	20
TL60A-E	802942	Yes	1000	10820	1.938	0.500	30
TL60A-E/2	802946	Yes	1000	3800	1.938	0.500	30

Minimum Shaft insertion halfway through Hub. Keys are customer furnished.

Operating Speed: Disengaging speeds are limited to the maximum allowable feet per minute rating of the rotary seal between the drive flange and drive ring. Torque Limiters are engaged when stationary.

NOTE: For higher speeds-consult Nexen.

Model	Product Number	COUPLING ASSEMBLIES	
		SINGLE FLEX Product Number	DOUBLE FLEX Product Number
TL20A-E	802902	909980	909981
TL20A-E/2	802906	909980	909981
TL30A-E	802912	910080	910081
TL30A-E/2	802916	910080	910081
TL40A-E	802922	910280	910281
TL40A-E/2	802926	910280	910281
TL50A-E	802932	910380	910381
TL50A-E/2	802936	910380	910381
TL60A-E	802942	910480	910481
TL60A-E/2	802946	910480	910481

▶ ATTACHMENT OPTIONS

Flexible Coupling Assemblies

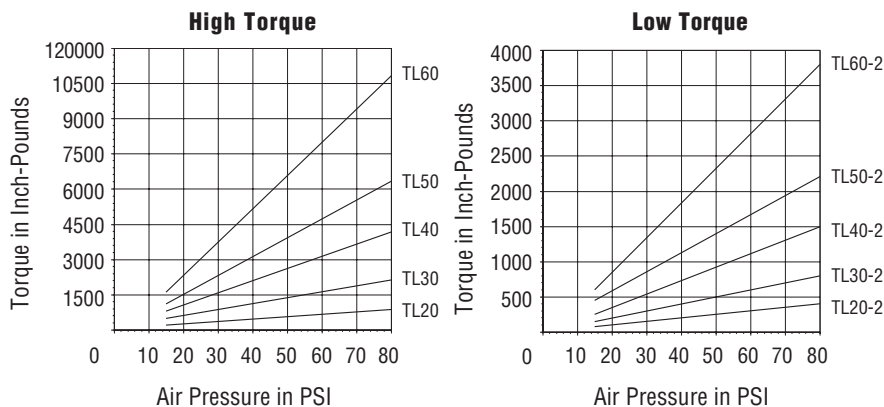
Flexible Coupling Assemblies are required for in-line coupling applications, and are available in single or double flex designs to provide **high misalignment capabilities with high torque**. Turn to pages 100 and 101 for Flexible Coupling details.

For quick selection of Flexible Couplings, refer to the chart above.

Pulleys, Sprockets, Gears

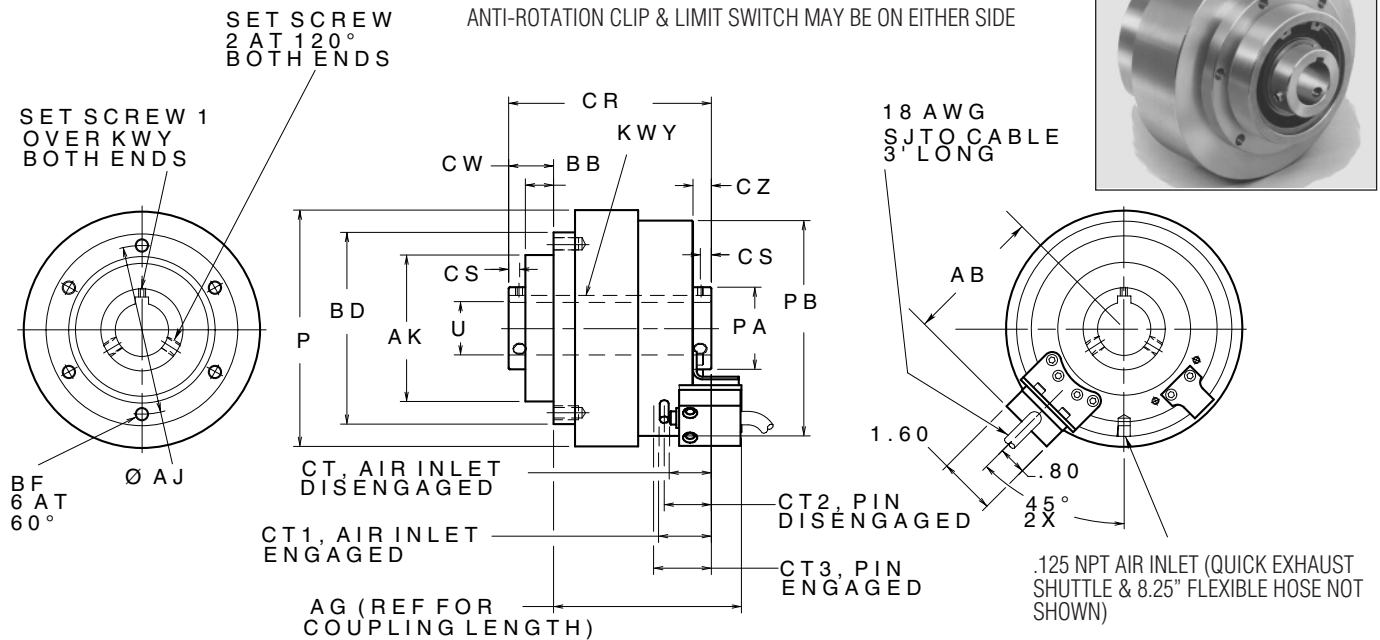
These can be attached to the clutch for offset shaft applications. Tapped holes are provided for ease of mounting. Nexen does not furnish these items. For minimum sprocket requirements, see page 267.

▶ TORQUE VS. AIR PRESSURE



TL-A-E SERIES TORQUE LIMITERS - SET SCREW MOUNT - APPROXIMATE DIMENSIONS (INCHES)

TLA-E & TLA-E/2



MODEL	PRODUCT NUMBER	AB	AG	AJ	AK ^{+0.000} _{-.001}	BB	BD	BF	CR	CS	CT	CT1	CT2	CT3	CW	CZ	KEYWAY	
																	WD	DP
TL20A-E	802902	3.12	4.80	3.562	2.875	0.69	4.12	.312-18	4.83	0.23	1.03	1.17	1.17	1.31	1.04	0.36	0.188	0.094
TL20A-E/2	802906	3.12	4.80	3.562	2.875	0.69	4.12	.312-18	4.83	0.23	1.03	1.17	1.17	1.31	1.04	0.36	0.188	0.094
TL30A-E	802912	3.43	4.95	4.062	3.500	0.74	4.50	.312-18	5.10	0.25	1.06	1.23	1.20	1.37	1.13	0.38	0.250	0.125
TL30A-E/2	802916	3.43	4.95	4.062	3.500	0.74	4.50	.312-18	5.10	0.25	1.06	1.23	1.20	1.37	1.13	0.38	0.250	0.125
TL40A-E	802922	3.89	5.29	4.750	4.125	0.79	5.40	.375-16	5.71	0.31	1.19	1.38	1.33	1.52	1.26	0.52	0.375	0.188
TL40A-E/2	802926	3.89	5.29	4.750	4.125	0.79	5.40	.375-16	5.71	0.31	1.19	1.38	1.33	1.52	1.26	0.52	0.375	0.188
TL50A-E	802932	4.18	5.44	5.375	4.500	0.86	6.12	.500-13	5.97	0.31	1.22	1.37	1.32	1.47	1.38	0.51	0.375	0.188
TL50A-E/2	802936	4.18	5.44	5.375	4.500	0.86	6.12	.500-13	5.97	0.31	1.22	1.37	1.32	1.47	1.38	0.51	0.375	0.188
TL60A-E	802942	4.68	5.51	6.125	5.250	0.77	7.00	.500-13	6.40	0.37	1.46	1.65	1.62	1.81	1.43	0.66	0.500	0.250
TL60A-E/2	802946	4.68	5.51	6.125	5.250	0.77	7.00	.500-13	6.40	0.37	1.46	1.65	1.62	1.81	1.43	0.66	0.500	0.250

MODEL	PRODUCT NUMBER	P	PA	PB	U ^{+0.001} _{-.000}	SET SCREW 1	SET SCREW 2
TL20A-E	802902	5.03	1.33	4.56	0.875	.190-24	.250-20
TL20A-E/2	802906	5.03	1.33	4.56	0.875	.190-24	.250-20
TL30A-E	802912	6.16	1.72	5.09	1.125	.190-24	.312-24
TL30A-E/2	802916	6.16	1.72	5.09	1.125	.190-24	.312-24
TL40A-E	802922	6.66	2.31	6.06	1.500	.190-24	.375-24
TL40A-E/2	802926	6.66	2.31	6.06	1.500	.190-24	.375-24
TL50A-E	802932	7.66	2.51	6.56	1.750	.250-20	.375-24
TL50A-E/2	802936	7.66	2.51	6.56	1.750	.250-20	.375-24
TL60A-E	802942	8.40	2.87	7.56	1.938	.250-20	.500-13
TL60A-E/2	802946	8.40	2.87	7.56	1.938	.250-20	.500-13

TORQUE LIMITERS

"Air Champ"

TL-AC SERIES TORQUE LIMITERS, SET COLLAR MOUNTED

TL-AC Series Torque Limiters provide:

- **14 Models** to choose from
- Torque up to 27,700 In. Lbs. @ 80 psi
- Operating Speed up to 2000 rpm
- Bore Sizes ranging from 0.875 to 2.438 inches
- Remote torque adjustment with Nexen's **Single** and **Double Air Pressure Circuits**
- Many models available in either high torque or low torque versions
- Limit Switch Assembly with 3 ft. cord and hardware included on all models

► TL-AC SERIES TORQUE LIMITERS, SET COLLAR MOUNT

Model	Product Number	Speeds Up to RPM	Torque Up to (In. Lbs.)	MAX. Bore (In)	Key Size (SQ)	Shipping Wt. (Lbs)
TL20-AC	801500	1800	860	0.875	0.188	7
TL20-AC/2	801504	1800	400	0.875	0.188	7
TL30-AC	801510	1650	2150	1.125	0.250	10
TL30-AC/2	801514	1650	800	1.125	0.250	10
TL40-AC	801520	1350	4190	1.625	0.375	16
TL40-AC/2	801524	1350	1500	1.625	0.375	16
TL50-AC	801530	1200	6230	1.750	0.375	20
TL50-AC/2	801534	1200	2200	1.750	0.375	20
TL60-AC	801540	1050	10820	1.938	0.500	30
TL60-AC/2	801544	1050	3800	1.938	0.500	30
TL70-AC	801550	950	15000	2.188	0.500	45
TL70-AC/2	801554	950	6700	2.188	0.500	45
TL80-AC	801560	800	27700	2.438	0.625	70
TL80-AC/2	801564	800	12000	2.438	0.625	70

Minimum Shaft insertion halfway through Hub. Keys are customer furnished.

Operating Speed: Disengaging speeds are limited to the maximum allowable feet per minute rating of the rotary seal between the drive flange and drive ring. Torque Limiters are engaged when stationary.

NOTE: For higher speeds-consult Nexen.

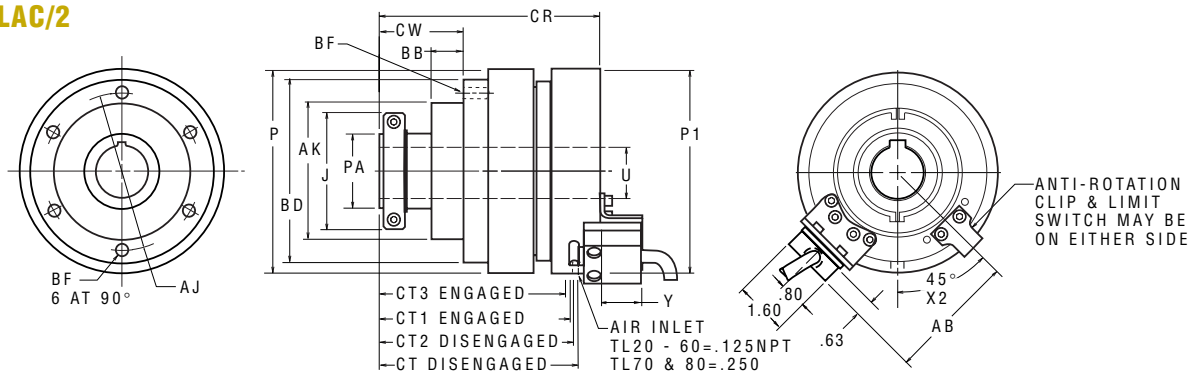
► ATTACHMENT OPTIONS

Pulleys, Sprockets, Gears

These can be attached to the clutch for offset shaft applications. Tapped holes are provided for ease of mounting. Nexen does not furnish these items. For minimum sprocket requirements, see page 267.

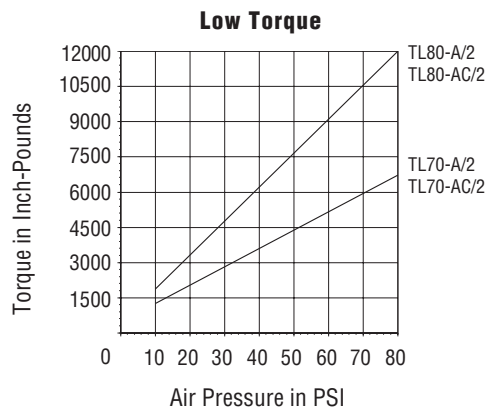
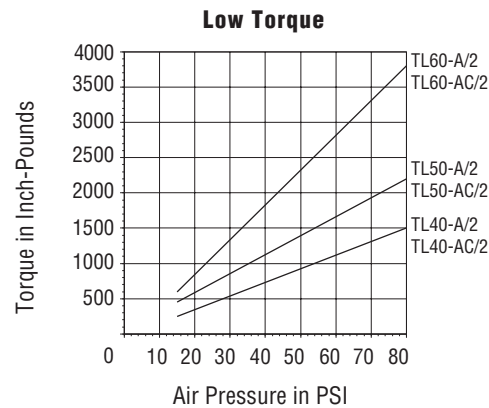
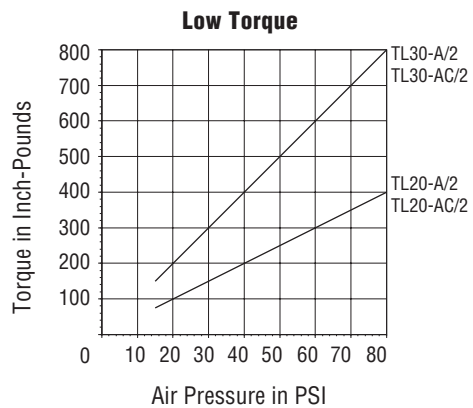
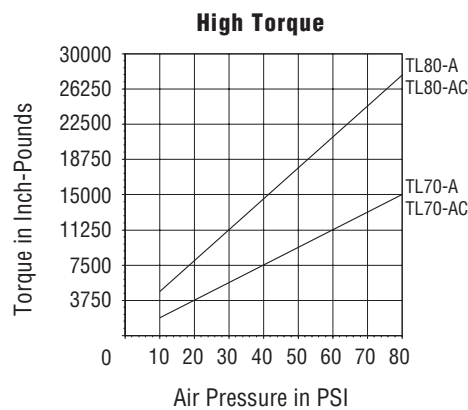
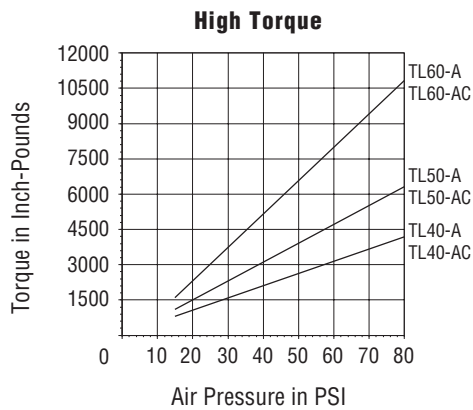
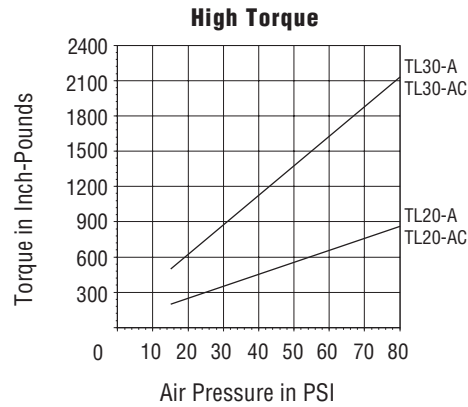
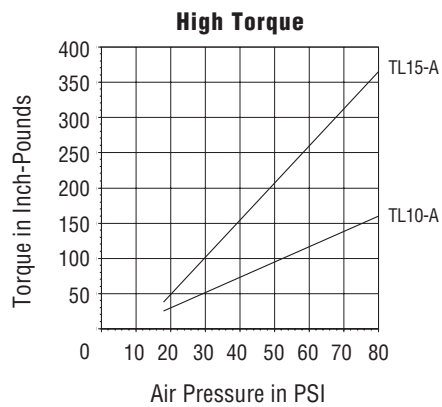
TL-AC SERIES TORQUE LIMITERS - SET COLLAR MOUNTED - APPROXIMATE DIMENSIONS (INCHES)

► TLAC & TLAC/2



MODEL	PRODUCT NUMBER	AB	AJ	AK ±.001	BB	BD	BF	CR	CT	CT1	CT2	CT3	CW	WD	DP	P	P1	PA	J	U +.000 - .001	Y
TL20-AC	801500	3.16	3.562	2.875	0.69	4.12	.312-18	5.61	4.92	4.70	5.67	5.42	1.76	0.188	0.094	4.56	4.56	1.378	2.25	.875	2.09
TL20-AC/2	801504	3.16	3.562	2.875	0.69	4.12	.312-18	5.61	4.92	4.70	5.67	5.42	1.76	0.188	0.094	4.56	4.56	1.378	2.25	.875	2.09
TL30-AC	801510	3.42	4.062	3.500	0.75	4.50	.312-18	5.72	5.03	4.81	5.81	5.59	1.99	0.250	0.125	5.09	5.09	1.772	3.00	1.125	2.09
TL30-AC/2	801514	3.42	4.062	3.500	0.75	4.50	.312-18	5.72	5.03	4.81	5.81	5.59	1.99	0.250	0.125	5.09	5.09	1.772	3.00	1.125	2.09
TL40-AC	801520	3.91	4.750	4.125	0.96	5.37	.375-16	6.67	5.83	4.76	7.19	6.83	2.51	0.375	0.125	6.06	6.06	2.362	3.50	1.625	2.09
TL40-AC/2	801524	3.91	4.750	4.125	0.96	5.37	.375-16	6.67	5.83	4.76	7.19	6.83	2.51	0.375	0.125	6.06	6.06	2.362	3.50	1.625	2.09
TL50-AC	801530	4.16	5.375	4.500	0.83	6.12	.500-13	7.00	6.25	6.03	7.33	7.11	2.36	0.375	0.187	6.56	6.56	2.559	4.00	1.750	2.09
TL50-AC/2	801534	4.16	5.375	4.500	0.83	6.12	.500-13	7.00	6.25	6.03	7.33	7.11	2.36	0.375	0.187	6.56	6.56	2.559	4.00	1.750	2.09
TL60-AC	801540	4.66	6.125	5.250	0.88	7.00	.500-13	7.47	6.70	6.48	8.26	8.05	2.53	0.500	0.250	7.56	7.56	2.953	4.50	1.938	1.89
TL60-AC/2	801544	4.66	6.125	5.250	0.88	7.00	.500-13	7.47	6.70	6.48	8.26	8.05	2.53	0.500	0.250	7.56	7.56	2.953	4.50	1.938	1.89
TL70-AC	801550	5.03	7.000	5.750	0.88	8.06	.625-11	8.58	7.69	7.47	8.97	8.75	2.70	0.500	0.250	8.31	8.31	3.347	4.75	2.188	1.78
TL70-AC/2	801554	5.03	7.000	5.750	0.88	8.06	.625-11	8.58	7.69	7.47	8.97	8.75	2.70	0.500	0.250	8.31	8.31	3.347	4.75	2.188	1.78
TL80-AC	801560	5.51	8.500	7.375	1.88	-	.625-11	10.19	8.02	7.80	9.50	9.28	3.62	0.625	0.312	9.25	9.50	3.741	5.00	2.438	1.69
TL80-AC/2	801564	5.51	8.500	7.375	1.88	-	.625-11	10.19	8.02	7.80	9.50	9.28	3.62	0.625	0.312	9.25	9.50	3.741	5.00	2.438	1.69

▶ TORQUE VS. AIR PRESSURE



◀ TORQUE LIMITERS

“Air Champ”

TORQUE LIMITER FLEXIBLE CLUTCH COUPLING ASSEMBLIES

Couple your shaft to a Torque Limiter with a Flexible Coupling Assembly. There are 14 Single Flex and 14 Double Flex Couplings, each designed to fit a specific Torque Limiter. Whatever the design style you'll get:

- ▶ High Misalignment Capability
 - ▶ Torque ratings up to 12,000 In. Lbs. @ 80 psi
 - ▶ Nickel plated surfaces
 - ▶ Coupling discs made from composite materials provide the benefits of both a steel disc and elastomeric coupling
- Other benefits include:
- ▶ Corrosion resistant
 - ▶ Requires no lubrication
 - ▶ Coupling adds no backlash to the drive
 - ▶ Provides torsional stiffness
 - ▶ Dampens shock and vibration through the power train
 - ▶ Reverse Bushing Tapers for bushing installation from the inside of the coupling.

Find the Flexible Coupling which matches your Torque Limiter and your application specifications on this page.

▶ TORQUE LIMITER SINGLE & DOUBLE FLEXIBLE COUPLING SELECTION CHART

1. Determine the Torque Limiter required for your application and find it on the chart below;
2. Find the matching Flexible Coupling Assembly at the top of the column;
3. Double check the Flexible Coupling specifications to ensure conformity with all mating components;
4. A Taper Lock Bushing is required; see chart below for recommended part. This is customer furnished.
5. Clutch and Flexible Coupling Assembly must be ordered separately.

Single Flex #:	909980	910080	910280	910380	910480	910580	911780	
Double Flex #:	909981	910081	910281	910381	910481	910581	911781	
Model Size:	TL20	TL30	TL40	TL50	TL60	TL70	TL80	Model
or Torque Limiter								Suffix:
Product #:	801502	801512	801522	801532	801542	801552	801562	-A
	801506	801516	801526	801536	801546	801556	801566	-A/2
	802902	802912	802922	802932	802942	--	--	A-E
	802906	802916	802926	802936	802946	--	--	A-E/2

▶ SINGLE & DOUBLE FLEXIBLE COUPLING PRODUCT DETAILS

Single Flex Product Number	Double Flex Product Number	Dodge Taper Lock® Bushing Number	BORE RANGE		Single Flex Shipping Wt. (Lbs)	Double Flex Shipping Wt. (Lbs)
			MIN (In)	MAX (In)		
909980	909981	1215	0.500	1.250	8	10
910080	910081	1615	0.500	1.625	10	13
910280	910281	2517	0.500	2.500	14	16
910380	910381	2517	0.500	2.500	22	25
910480	910481	3030	0.938	3.000	29	34
910580	910581	3535	1.188	3.938	70	82
911780	911781	4040	1.438	4.000	110	130

▶ SINGLE FLEXIBLE COUPLING MISALIGNMENT CAPACITY

Product Number	Angular (Degrees)	Axial (In)	Parallel (In)
909980	1.5	0.065	0.011
910080	1.5	0.070	0.012
910280	1.5	0.090	0.014
910380	1.5	0.105	0.017
910480	1.5	0.120	0.019
910580	1.5	0.135	0.022
911780	1.5	0.155	0.026

▶ DOUBLE FLEXIBLE COUPLING MISALIGNMENT CAPACITY

Product Number	Angular (Degrees)	Axial (In)	Parallel (In)
909981	3.0	0.130	0.063
910081	3.0	0.140	0.078
910281	3.0	0.180	0.091
910381	3.0	0.210	0.104
910481	3.0	0.240	0.117
910581	3.0	0.270	0.137
911781	3.0	0.310	0.170

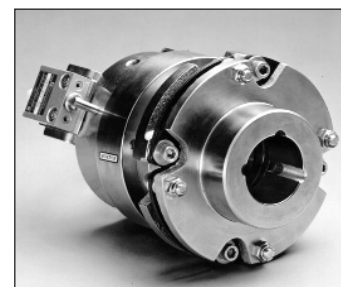
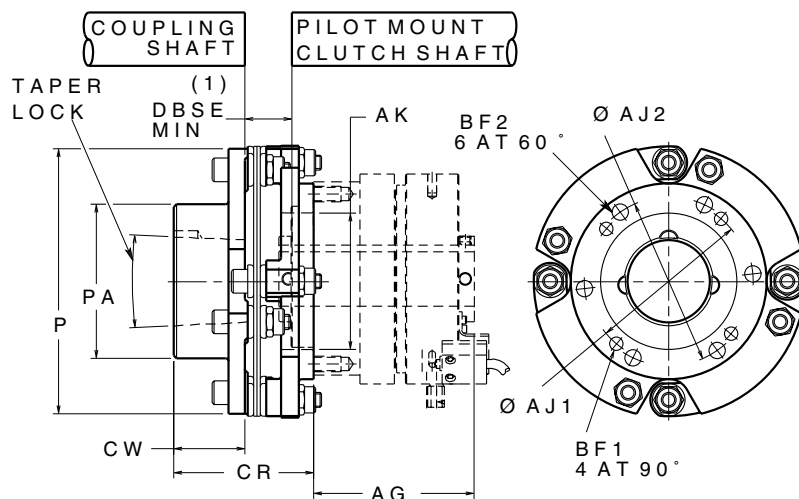
NOTE: If parallel, angular and axial misalignment are all required, be certain that the combined percentage of each does not exceed 100%. For instance, if 100% of the parallel misalignment rating is required, no angular or axial misalignment is allowed. If 50% of the parallel misalignment rating is required, only 50% of the angular misalignment OR 50% of the axial rating will be available.

▶ REVERSE BUSHING TAPERED COUPLINGS

Single Flex #:	909984	910084	910280	910384	910480	910584	911784	
Double Flex #:	909985	910085	910285	910385	910485	910585	911785	
Model Size:	TL20	TL30	TL40	TL50	TL60	TL70	TL80	Model
or Torque Limiter								Suffix:
Product #:	801502	801512	801522	801532	801542	801552	801562	-A
	801506	801516	801526	801536	801546	801556	801566	-A/2
	802902	802912	802922	802932	802942	--	--	A-E
	802906	802916	802926	802936	802946	--	--	A-E/2

TL SERIES FLEXIBLE COUPLING ASSEMBLIES - APPROXIMATE DIMENSIONS (INCHES)

► SINGLE FLEX

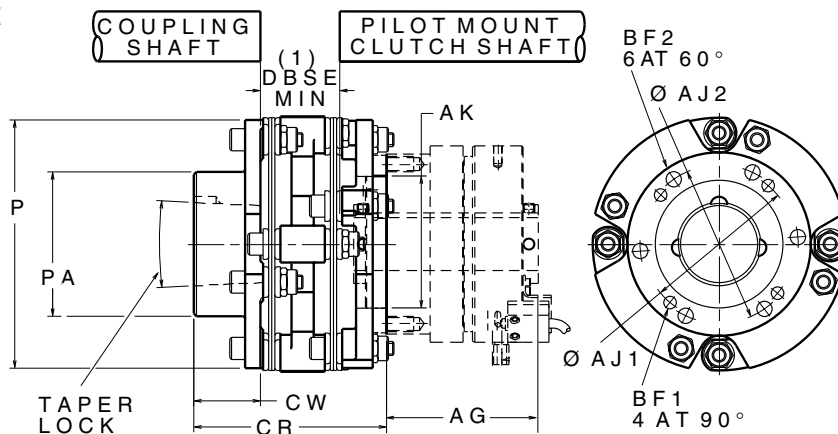


DBSE (1) = Distance Between Shaft Ends. Less than MIN requires equipment removal for service; The MAX distance is dependent on the torque limiter.

PRODUCT NUMBER	AG	AJ1	AJ2	AK ^{+0.001} / _{-0.000}	HOLE SIZE	TAPER LOCK	TAPER LOCK BORE	BF1	CR	CW	DBSE	P	PA	BF2
					BF1 BF2		MIN. MAX.	BOLT SIZE			MIN. MAX.			BOLT SIZE
909980	5.20	3.437	3.562	2.875	.265 .327	1215	0.500 1.250	.250-20 x 1.00	2.95	1.50	0.39 2.63	5.65	3.25	.312-18 x 1.25
910080	5.12	4.062	4.062	3.500	.265 .327	1615	0.500 1.625	.250-20 x 1.00	3.17	1.50	0.52 2.23	6.38	3.88	.312-18 x 1.25
910280	5.51	4.750	4.750	4.125	.265 .390	2517	0.500 2.500	.250-20 x 1.25	3.70	1.75	0.59 1.75	7.25	4.88	.375-16 x 1.50
910380	5.94	5.250	5.375	4.500	.327 .515	2517	0.500 2.500	.312-18 x 1.25	4.61	2.50	0.86 1.33	8.38	5.00	.500-13 x 1.50
910480	6.09	6.125	6.125	5.250	.327 .515	3030	0.938 3.000	.312-18 x 1.50	5.31	3.00	0.88 1.48	9.50	5.75	.500-13 x 1.75
910580	6.96	7.000	7.000	5.750	.515 .640	3535	1.188 3.938	.500-13 x 1.75	6.23	3.53	1.02 —	11.38	6.75	.625-11 x 2.00
911780	6.57*	8.500	8.500	7.375	.515 .640	4040	1.438 4.438	.500-13 x 2.50	7.95	4.12	1.06 —	13.12	7.50	

*For Model 80 Only: Hub extends beyond Limit Switch. Add 0.60 to dimension AG to get reference dimension for coupling length

► DOUBLE FLEX



DBSE (1) = Distance Between Shaft Ends. Less than MIN Requires equipment removal for service; The MAX distance is dependent on the torque limiter.

(2) Blade ID is the ID of the intermediate member.

PRODUCT NUMBER	AG	AJ1	AJ2	AK ^{+0.001} / _{-0.000}	HOLE SIZE	TAPER LOCK	TAPER LOCK BORE	BF1	CR	CW	DBSE	P	PA	BLADE SIZE
					BF1 BF2		MIN. MAX.	BOLT SIZE			MIN. MAX.			
909981	5.20	3.437	3.562	2.875	.265 .327	1215	0.500 1.250	.250-20 x 1.00	4.34	1.50	1.78 4.02	5.65	3.25	2.75
910081	5.12	4.062	4.062	3.500	.265 .327	1615	0.500 1.625	.250-20 x 1.00	4.86	1.50	2.20 3.92	6.38	3.88	3.00
910281	5.51	4.750	4.750	4.125	.265 .390	2517	0.500 2.500	.250-20 x 1.25	5.70	1.75	2.59 3.47	7.25	4.88	3.38
910381	5.94	5.250	5.375	4.500	.327 .515	2517	0.500 2.500	.312-18 x 1.25	6.92	2.50	3.17 3.64	8.38	5.00	4.12
910481	6.09	6.125	6.125	5.250	.327 .515	3030	0.938 3.000	.312-18 x 1.50	7.89	3.00	3.45 4.06	9.50	5.75	4.38
910581	6.96	7.000	7.000	5.750	.515 .640	3535	1.188 3.938	.500-13 x 1.75	9.28	3.53	3.81 —	11.38	6.75	5.25
911781	6.57*	8.500	8.500	7.375	.515 .640	4040	1.438 4.438	.500-13 x 2.50	11.72	4.12	4.69 —	13.12	7.50	6.00

*For Model 80 Only: Hub extends beyond Limit Switch. Add 0.60 to dimension AG to get reference dimension for coupling length

TORQUE LIMITERS

METRIC TL-A SERIES TORQUE LIMITERS, SET SCREW MOUNTED

Metric TL-A & TL-AE Series Torque Limiters provide:

- **12 Models** to choose from
- Torque up to 1350 Nm
- Operating Speed up to 2000 rpm
- Standard bore sizes ranging from 15 to 75 millimeters
- Minimum bore sizes ranging from 20 to 45 millimeters—you assemble and machine
- Limit Switch Assembly with 0,91 meters long cord and hardware included on all models

► TL-AE METRIC SERIES TORQUE LIMITERS, SET SCREW MOUNT

Model	Product Number	Speeds Up to RPM	Torque Up to (Nm)	Bore (mm)	Shipping Wt. Wt (kg)
TL20-AE	802904	1800	100	20	3,2
TL30-AE	802914	1650	260	25	4,5
TL40-AE	802924	1350	500	35	7,1
TL50-AE	802934	1200	750	40	9
TL60-AE	802944	1050	1300	45	13,5

Minimum Shaft insertion halfway through Hub. Keys are customer furnished.

Operating Speed: Disengaging speeds are limited to the maximum allowable feet per minute rating of the rotary seal between the drive flange and drive ring. Torque Limiters are engaged when stationary.

NOTE: For higher speeds-consult Nexen.

► MINIMUM BORED TL-A ARE NOT TOTALLY ENCLOSED

Minimum bore Models are supplied unassembled with machinable hubs.

Model	Product Number	Speeds Up to RPM	Torque Up to (Nm)	Bore (mm)	Key Size (WD X DP)	Shipping Wt. Wt (kg)
TL10-A	951302	2000	21	15	5 X 2,3	3,2
TL15-A	951312	2000	41	15	5 X 2,3	3,2
TL20-A	951203	1800	100	12,7		3,2
TL30-A	951213	1650	260	15,9		4,5
TL40-A	951223	1350	500	19,1		7,1
TL50-A	951233	1200	750	25,4		9
TL60-A	951243	1050	1300	31,8		13,5

Minimum Shaft insertion halfway through Hub. Keys are customer furnished.

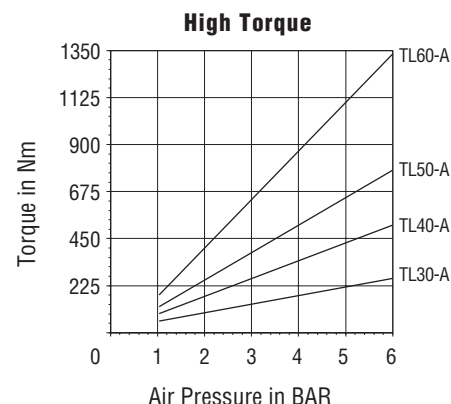
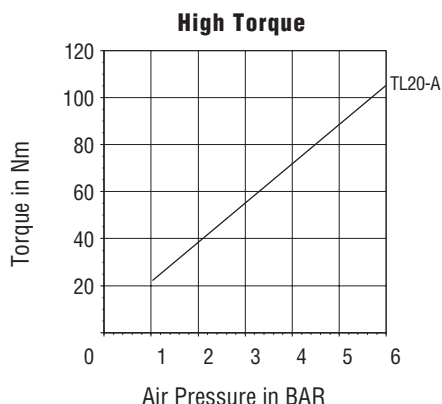
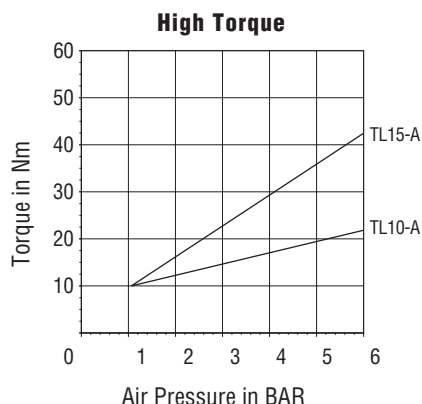
Operating Speed: Disengaging speeds are limited to the maximum allowable feet per minute rating of the rotary seal between the drive flange and drive ring. Torque Limiters are engaged when stationary.

NOTE: For higher speeds-consult Nexen.

► ATTACHMENT OPTIONS

Pulleys, Sprockets, Gears

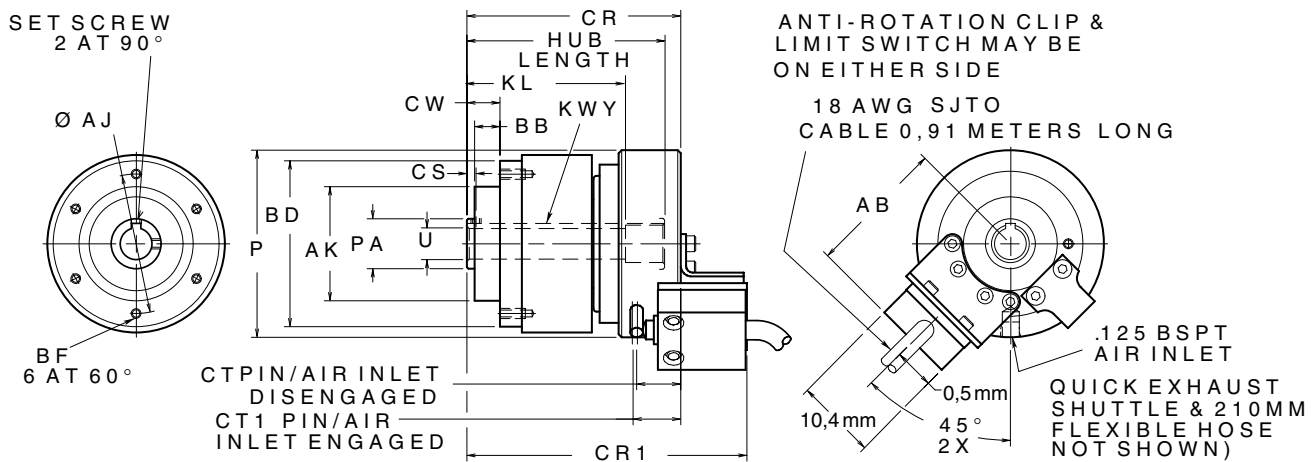
These can be attached to the clutch for offset shaft applications. Tapped holes are provided for ease of mounting. Nexen does not furnish these items. For minimum sprocket requirements, see page 267.



Torque (In. Lbs.) = Nm x 8.849
PSI = Bar ÷ .0689

TL-A & TL-AE METRIC SERIES TORQUE LIMITERS, SET SCREW MOUNTED - APPROXIMATE DIMENSIONS (MILLIMETERS)

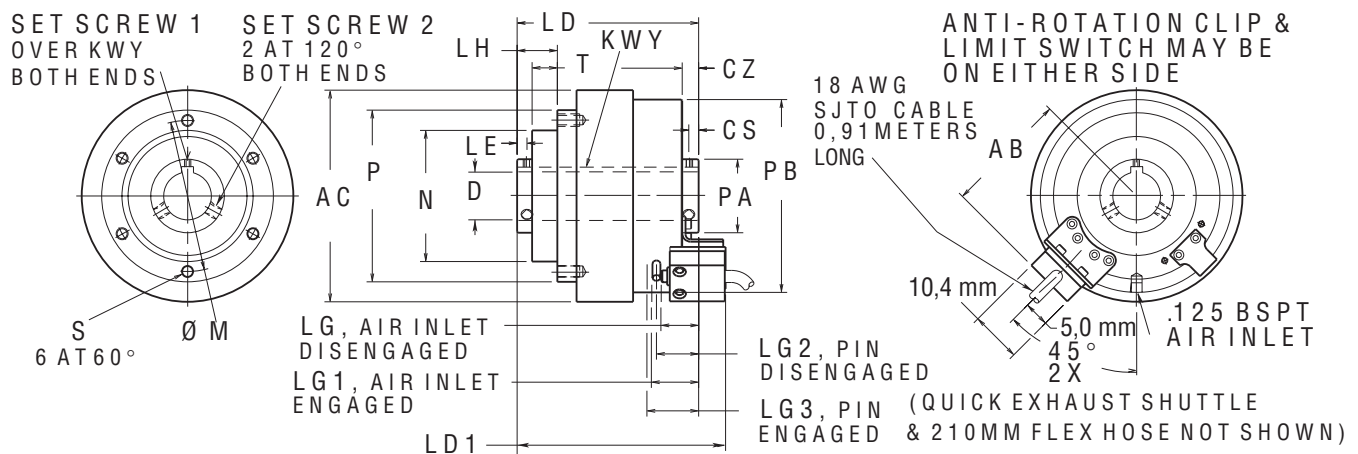
TL10-A, TL15-A, TL20-A, TL30-A, TL40-A, TL50A & TL60-A



MODEL	PRODUCT NUMBER	AB	AJ	AK ^{h8}	BB	BD	BF	CR	CR1	CS	CT	CT1	CW	KL	KEYWAY		P	PA	U ^{h7}	HUB LENGTH	SET SCREW
TL10-A	951302	69	70	57	13	83	M6	107	140	5	22	24	17	80	5	2,3	94	25	15	100	M5
TL15-A	951312	69	70	57	13	83	M6	107	140	5	22	24	17	80	5	2,3	94	25	15	100	M5
TL 20-A	951202	79	90	72	18	104	M8	124	158	6	28	34	26	80	6	2,8	116	35	20	134	M6
TL 30-A	951212	87	103	88	19	114	M8	125	160	7	29	35	29	80	8	3,3	129	45	25	136	M6
TL 40-A	951222	99	122	104	24	137	M10	145	180	8	28	34	36	80	10	3,3	154	60	35	155	M10
TL 50-A	951232	106	136	114	21	156	M12	149	184	8	29	35	33	80	12	3,3	167	65	40	164	M10
TL 60-A	951242	119	160	133	22	174	M12	160	190	10	35	41	37	80	14	3,8	192	75	45	175	M12

NOTE: Drawings are expressed in third angle projection.

TL20-AE, TL30-AE, TL40-AE, TL50AE & TL60-AE



MODEL	PRODUCT NUMBER	AC	AD	AE	D ^{h7}	CZ	LD	LD1	CS	LG	LG1	LG2	LG3	LH	M	N ^{h8}	KEYWAY		P	PB	S	T	SET SCREW 1	SET SCREW 2
TL20-AE	802904	128	79	34	20	10	123	148	6	27	31	30	34	26	90	72	6	2,8	105	116	M8	18	M5	M6
TL30-AE	802914	156	87	44	25	10	129	154	6	27	32	30	35	29	103	88	8	3,3	114	129	M8	19	M5	M6
TL40-AE	802924	169	99	59	35	13	145	167	8	30	35	34	39	32	122	104	10	3,3	137	154	M10	20	M5	M10
TL50-AE	802934	194	106	64	40	13	152	173	8	31	35	34	38	35	136	114	12	3,3	155	167	M12	22	M6	M10
TL60-AE	802944	214	119	73	45	17	163	176	9	37	42	41	46	36	160	133	14	3,8	178	192	M12	20	M6	M12

NOTE: Drawings are expressed in third angle projection.

TORQUE LIMITERS

"Air Champ"

OVERLOAD PROTECTION SYSTEM

Overload Protection System (OPS) is a combination of a flange-mounted, air engaged clutch and an electronic control that electronically detects clutch slip in torque overload conditions. Upon recognition of the overload, the system disengages the clutch, and can operate an external signalling device (i.e. warning light/alarm).

OPS includes two proximity sensors: one mounted on the clutch input, and one mounted on the clutch output. The control compares the signals from the individual sensors and determines if the clutch is slipping.

- ▶ The clutch is re-engaged at any speed, and at any position of the clutch interface
- ▶ The clutch torque is remotely adjusted with a simple air regulator
- ▶ The motor disconnects from the load when an overload occurs, so the motor runs cooler and more efficiently, without current surges and blown fuses
- ▶ The OPS also prevents the motor rotor inertia from contributing to damage caused by torque overloads
- ▶ The FMCEclutch is self-contained and protected from dirt and debris
- ▶ The controller is available in a NEMA Type 12 enclosure, or as a stand-alone board for panel mounting
- ▶ OPS operates on standard AC or DC voltages and frequencies
- ▶ Quick connect/disconnect wire connection coupling
- ▶ Soft-start capabilities provides more sensitive overload protection than ball-detent mechanisms

OVERLOAD PROTECTION SYSTEM (OPS)

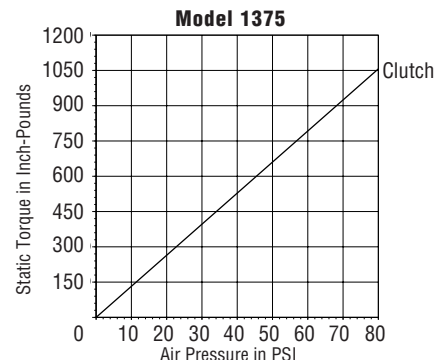
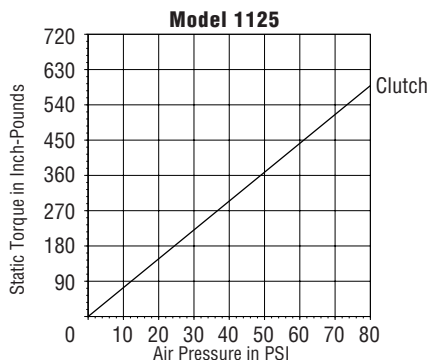
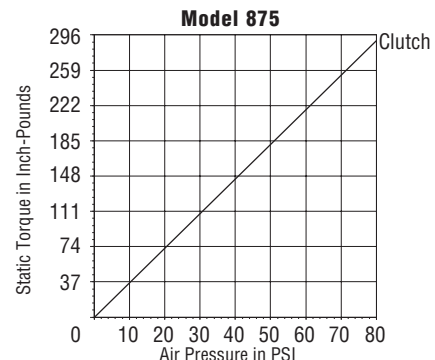
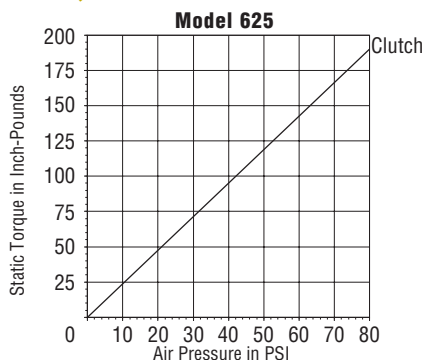
Model:	OPS - Chassis Version	OPS - Enclosed Version
Product Number:	964403	964404
Input Power	12 VDC @ 800 mA	12VDC @ 800 mA
Options:	115 VAC @ 110 mA 230 VAC @ 57 mA	115 VAC @ 110 mA 230 VAC @ 57 mA
Inputs:	Inductive proximity sensors: npn, open collector, current sinking or NAMUR	Inductive proximity sensors: npn, open collector, current sinking or NAMUR
Outputs:	Relay: 28 VDC, 115/230 VAC @ 2 Amps. K1: 12 VDC @ .6 Amps power available, used to operate clutch solenoid. K2: available for auxiliary use. No power available.	Relay: 28 VDC, 115/230 VAC @ 2 Amps. K1: 12 VDC @ .6 Amps power available, used to operate clutch solenoid. K2: available for auxiliary use. No power available.

NEMA MOTOR/FRAME SELECTION CHART

Use this chart as specification and operational criteria for your application.

HP of Motor	RPM	Frame Number	Motor Shaft (IN)	Clutch-Brake Model Number	HP of Motor	RPM	Frame Number	Motor Shaft (IN)	Clutch-Brake Model Number
1/4	1800	56C	0.625	FMCE-625	1-1/2	1800	145TC	0.875	FMCE-875
1/4	1200	56C	0.625	FMCE-625	1-1/2	1200	182TC	1.125	FMCE-1125
1/3	1800	56C	0.625	FMCE-625	1-1/2	900	184TC	1.125	FMCE-1125
1/3	1200	56C	0.625	FMCE-625	2	1800	145TC	0.875	FMCE-875
1/2	1800	56C	0.625	FMCE-625	2	1200	184TC	1.125	FMCE-1125
1/2	1200	56C	0.625	FMCE-625	2	900	213TC	1.375	FMCE-1375
1/2	900	143TC	0.875	FMCE-875	3	1800	182TC	1.125	FMCE-1125
3/4	1800	56C	0.625	FMCE-625	3	1200	213TC	1.375	FMCE-1375
3/4	1200	143TC	0.875	FMCE-875	3	900	215TC	1.375	FMCE-1375
3/4	900	145TC	0.875	FMCE-875	5	1200	215TC	1.375	FMCE-1375
1	1800	56TC	0.625	FMCE-625	5	1800	184TC	1.125	FMCE-1125
1	1800	143TC	0.875	FMCE-875	7-1/2	1800	213TC	1.375	FMCE-1375
1	1200	145TC	0.875	FMCE-875	10	1800	215TC	1.375	FMCE-1375
1	900	182TC	1.125	FMCE-1125					

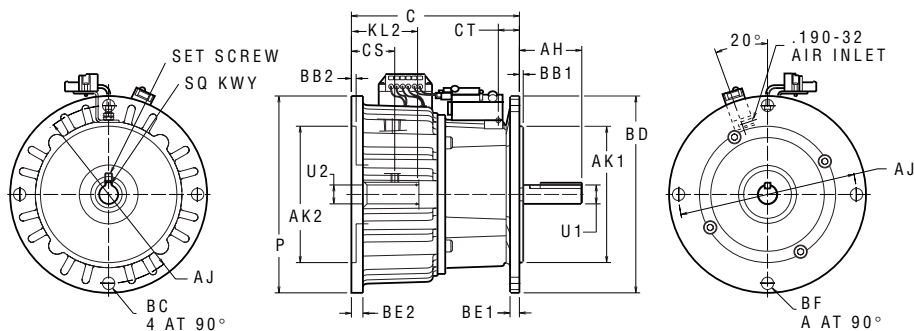
TORQUE VS. AIR PRESSURE



NOTE: Dynamic torque is approximately 85% of static torque.

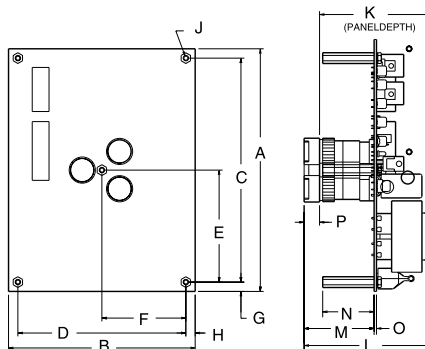
OVERLOAD PROTECTION SYSTEM - APPROXIMATE DIMENSIONS (INCHES)

► MODELS 625, 875, 1125 & 1375



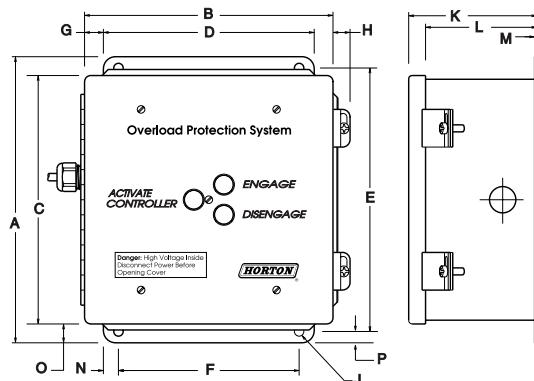
MODEL	PRODUCT NUMBER	AH	AJ	AK1 ^{+0.000 -0.002}	AK2 ^{+0.002 -0.000}	BB1	BB2	BE1	BE2	BF	C	CS	CT	KL1	KL2	P	KEY (SQ)	KEYWAY		U1 ^{+0.000 -0.001}	U2 ^{+0.001 -0.000}
625	964405	2.06	5.875	4.498	4.502	0.31	0.16	.31	.38	.406	5.55	1.43	0.75	1.38	2.13	6.30	0.188	0.188	0.094	0.625	0.625
875	964406	1.98	5.875	4.498	4.502	0.39	0.19	.39	.56	.406	5.98	1.47	0.94	1.38	2.24	7.81	0.188	0.188	0.094	0.875	0.875
1125	964407	2.58	7.250	8.498	8.502	0.54	0.19	.54	.37	.562	8.01	1.75	1.09	2.00	2.90	9.63	0.250	0.250	0.125	1.125	1.125
1375	964408	3.08	7.250	8.498	8.502	1.12	0.19	1.12	.37	.531	9.04	1.96	1.44	2.56	3.39	10.38	0.250	0.250	0.125	1.375	1.375

► OPS CONTROLLER – CHASSIS VERSION



MODEL	PRODUCT NUMBER	A	B	C	D	E	F	G	H	J	K	L	M	N	O	P
OPS Chassis	964403	6.50	5.00	6.00	4.50	3.00	2.25	0.25	0.25	#6-32UNC-2B.38DP 5X	3.03	3.44	1.88	1.38	0.06	0.41

► OPS CONTROLLER – ENCLOSED VERSION



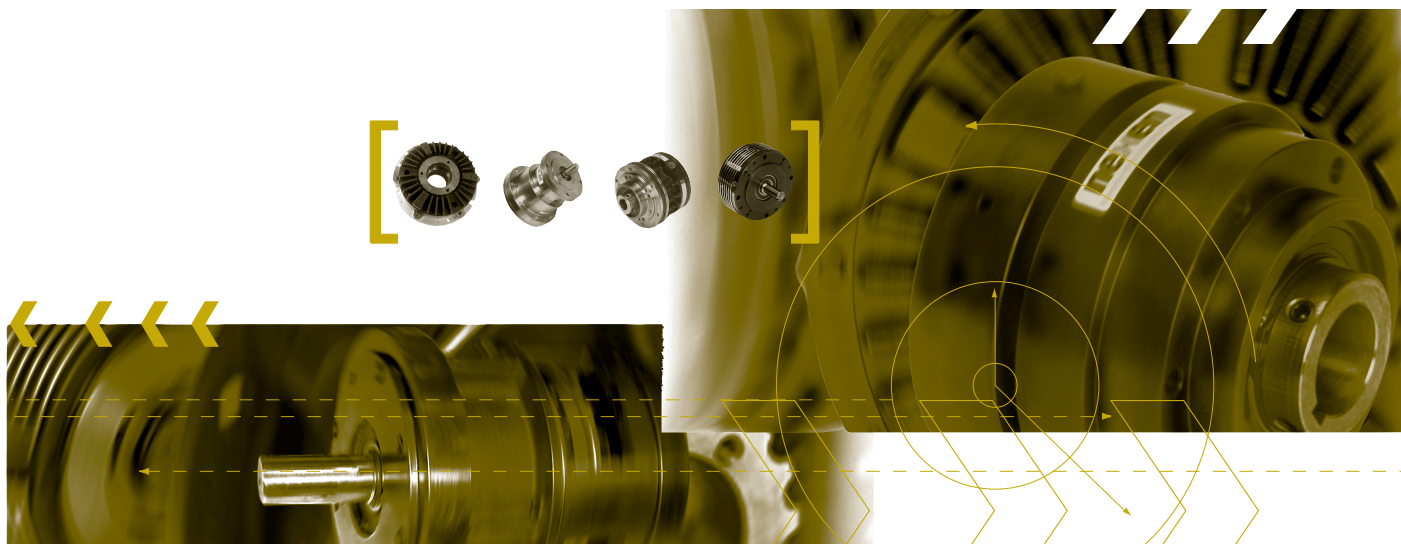
MODEL	PRODUCT NUMBER	A	B	C	D	E	F	G	H	J	K	L	M	N	O	P
OPS Enclosed	964404	9.50	8.25	8.25	7.00	8.75	6.00	0.62	0.57	0.31 HOLE 4X	4.25	3.69	0.07	0.50	0.62	0.37

┌ BRAKES

“Air Champ”

┐ PRODUCT FUNCTION/SELECTION CHART

Product Groups	Friction Brakes	Caliper Brakes	Drum Brakes	Spring Engaged Brakes	Dual Plate Brakes	High Capacity Brakes
General Features						
Number of Model Options	10 Standard 4 Metric	10 Standard 0 Metric	7 Standard 0 Metric	11 Standard 4 Metric	4 Standard 0 Metric	16 Standard 0 Metric
Functions						
Controlled Deceleration	Yes	Yes	Yes		Yes	
Cycling/Indexing	Yes	Yes			Yes	
Tension Control	Yes	Yes	Yes		Yes	
Stopping/Holding	Yes	Yes	Yes	Yes	Yes	Yes



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

BRAKES

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BRAKES

"Air Champ"

MICRO FRICTION BRAKE

The Micro Friction Clutch and a Flange Adapter combine to form a brake assembly which provides:

- Maximum Operating Speed up to 3600 rpm
- Thermal Horsepower rating of 0.06 at 3600 rpm
- Static Torque capacity up to 18 In. Lbs. @ 80 psi
- Heat Sink capacity of 1900 Ft. Lbs.
- 0.375 inch **Standard Bore**
- 5 inch hose assembly with 0.125 NPT included

The Brake and Flange Adapter must be ordered separately. Use the slot in the Flange Adapter to anchor the pilot.

Micro Friction Brake

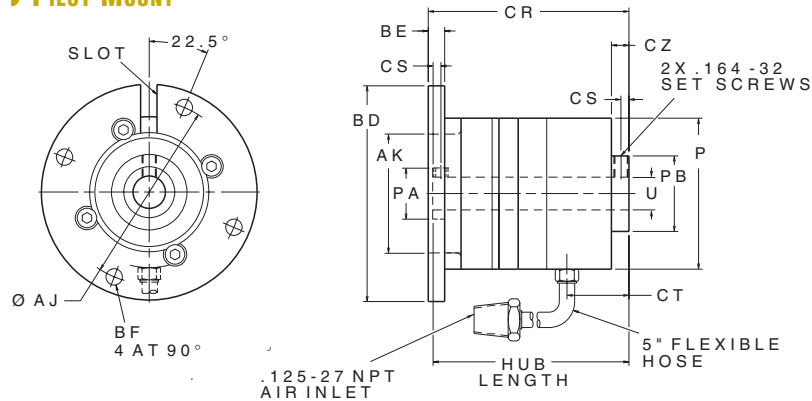
Component	Product Number	Bore (In)	Shipping Wt. (Lbs)
Micro Clutch	856800	0.375	3
Flange Adapter	856700	--	1

Set Screw for shaft included.

Required shaft insertion into clutch hub = minimum of 1 inch. From flange adapter end.

MICRO MODEL - APPROXIMATE DIMENSIONS (INCHES)

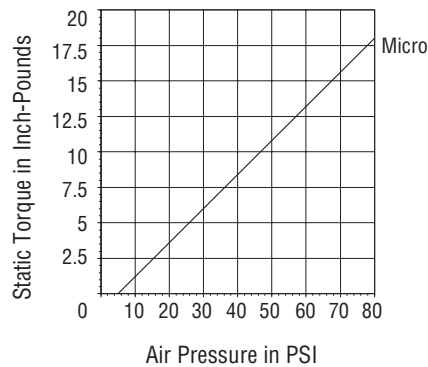
Pilot Mount



PRODUCT NUMBER	AJ	AK ±.002	BD	BE	BF	CR	CS	CT	CZ	P	PA	PB	U ^{+0.001} _{-0.000}
856800	2.125	1.382	2.50	0.19	0.190	2.33	0.09	0.72	0.20	1.75	0.59	0.88	0.375

PRODUCT NUMBER	HUB LENGTH	SLOT WD	DP
856800	2.27	0.19	0.38

Torque Vs. Air Pressure



NOTE: Dynamic torque is approximately 85% of static torque.

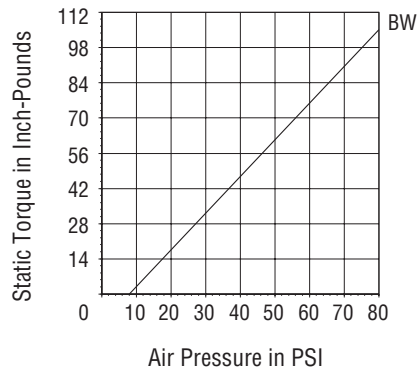
BW MODEL BRAKES

Component	Product Number	Bore (In)	Key Size (SQ)	Shipping Wt. (Lbs)
BW Clutch	800111	0.500	0.125	4
BW Clutch	800100	0.625	0.188	4
Flange Adapter	801200	--	--	1

Keys are included.

Required shaft insertion into clutch hub = minimum of 1.50 inches from Pilot side.

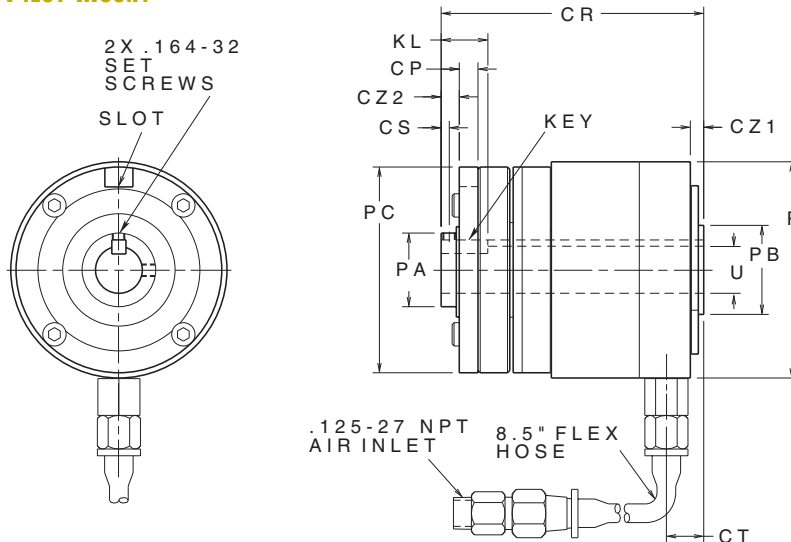
TORQUE VS. AIR PRESSURE



NOTE: Dynamic torque is approximately 85% of static torque.

BW MODEL BRAKES - APPROXIMATE DIMENSIONS (INCHES)

PILOT MOUNT



PRODUCT NUMBER	CP	CR	CS	CT	CZ1	CZ2	KL	P	PB	PC	U ^{+0.001} _{-0.000}	KEY (SQ)	SLOT WD	SLOT DP	PA
800100	0.25	3.51	0.11	0.50	0.18	0.24	0.62	2.89	1.19	2.75	0.625	0.188	0.375	0.250	.984
800111	0.25	3.51	0.11	0.50	0.18	0.24	0.62	2.89	1.19	2.75	0.500	0.125	0.375	0.250	.984

BANTAM WEIGHT MODEL BW FRICTION BRAKE

The BW Friction Brake and Flange Adapter combine to form a brake assembly which provides:

- Maximum Operating Speed up to 3600 rpm
- Thermal Horsepower rating of 0.13 @ 3600 rpm
- Static Torque capacity up to 100 In. Lbs. @ 80 psi
- Heat Sink capacity of 5,650 Ft. Lbs.
- Standard Bore** sizes of 0.500 and 0.625 inches
- 8.5 inch hose included .

The Brake and Flange Adapter must be ordered separately. Use the slot in the Flange Adapter to anchor the pilot.

BRAKES

"Air Champ"

STRAIGHT BORE FRICTION BRAKES MODELS

S-450, S-600 & S-800

- Static Torque capacity up to:
S-450/440 In. Lbs. @ 80 psi
S-600/840 In. Lbs. @ 80 psi
S-800/1600 In. Lbs. @ 80 psi
- Maximum Operating Speed up to 1800 rpm
- Thermal Horsepower rating of:
S-450/0.515 @ 1800 rpm
S-600/1.300 @ 1800 rpm
S-800/2.230 @ 1800 rpm
- Heat Sink capacity of:
S-450/30,000 Ft. Lbs.
S-600/60,000 Ft. Lbs.
S-800/125,000 Ft. Lbs.
- Standard or Low Coefficient Facings

These self-adjusting air cooled brakes mount easily and come with:

Standard Bore Sizes:

- S-450/1.125 inches
 - S-600/1.375 inches
 - S-800/1.938 inches
 - Split friction facings for easy replacement without brake removal or disassembly
 - Thru-shaft design can be **flange mounted** or **shaft mounted** with a torque pin
- Options and Accessories include:
- Bushings** That allow you to customize the bore to your shaft diameter
S-450/4 Sizes
S-600/7 Sizes
S-800/7 Sizes
 - Torque Pin Bracket allows you to anchor the housing
 - Brake Safety Guard for protection

S-450, S-600 & S-800 MODEL STRAIGHT BORE FRICTION BRAKES

Model	Brake	Product Number	Max. Bushing Bore with Standard Keyseat (In)	Key Size (SQ)	Shipping Wt. (Lbs)
S-450	Standard Facing	827800	1.125	0.250	14
S-450	Low Coefficient Facing	827801	1.125	0.250	14
S-600	Standard Facing	827900	1.375	0.312	14
S-600	Low Coefficient Facing	827901	1.375	0.312	14
S-800	Standard Facing	828000	1.938	0.500	24
S-800	Low Coefficient Facing	828001	1.938	0.500	24

Keys are included.

BUSHING OPTIONS

The purpose of Bushings is to reduce the brake bore size. Bushings fit into the bore of the existing brake, reducing it to the size indicated. Keys are provided with each Bushing.

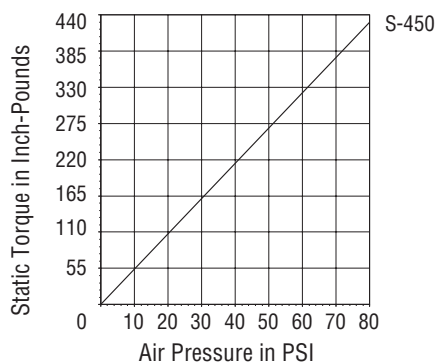
Model	Product Number	Reduces Clutch Bore Size to (In)	Shipping Wt. (Lbs)	Model	Product Number	Reduces Clutch Bore Size to (In)	Shipping Wt. (Lbs)
S-450	819200	0.750	1	S-600	821200	1.250	2
S-450	819300	0.875	1	S-600	821900	No Bore/Customer machines	2
S-450	819400	1.000	1	S-800	822700	1.000	2
S-450	820000	No Bore/Customer machines	1	S-800	822800	1.375	2
S-600	821800	0.750	2	S-800	822900	1.500	2
S-600	820800	0.875	2	S-800	823000	1.625	2
S-600	820900	1.000	2	S-800	823100	1.688	2
S-600	821000	1.125	2	S-800	823200	1.750	2
S-600	821100	1.188	2	S-800	823800	No Bore/Customer machines	5

ACCESSORIES

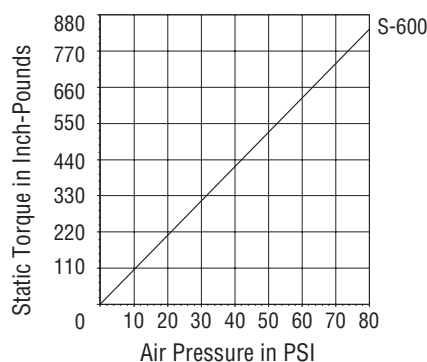
Model	Component	Product Number	Shipping Wt. (Lbs)
S-450	Torque Pin Bracket	819900	1
S-450	Brake Safety Guard	817700	2
S-600	Torque Pin Bracket	821400	2
S-600	Brake Safety Guard	818300	2
S-800	Torque Pin Bracket	823400	2
S-800	Brake Safety Guard	826300	3

TORQUE VS. AIR PRESSURE

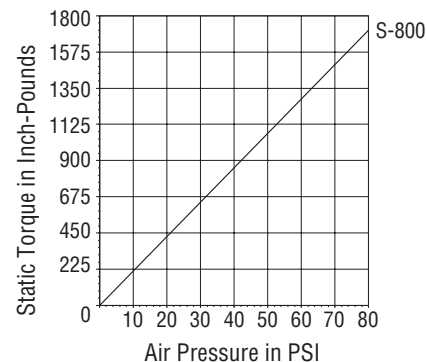
S-450



S-600

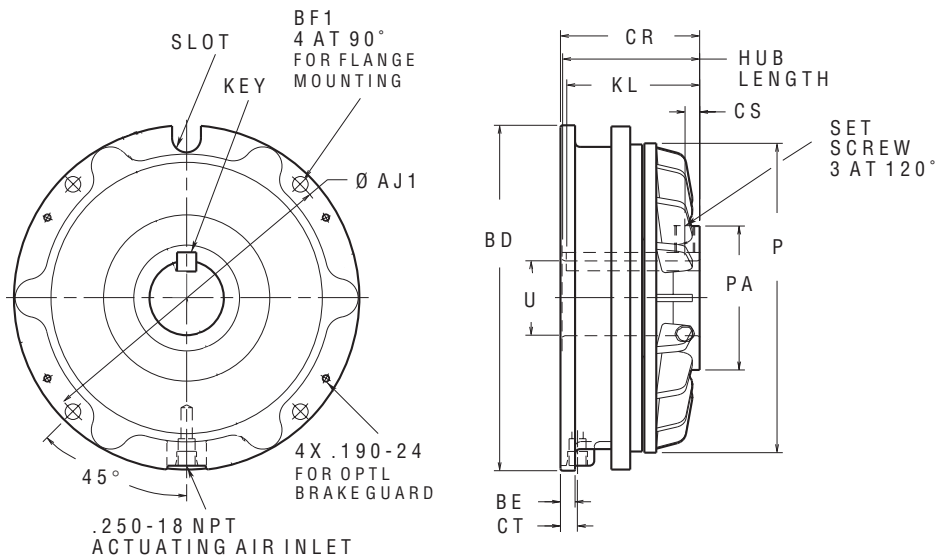


S-800



NOTE: Dynamic torque is approximately 85% of static torque.

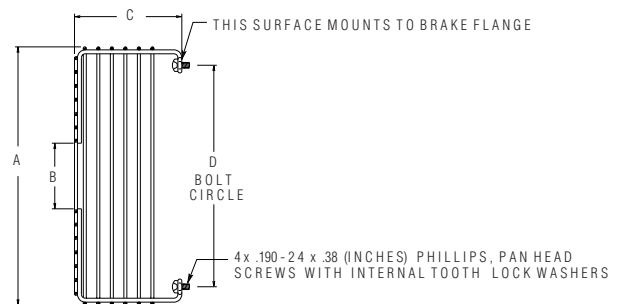
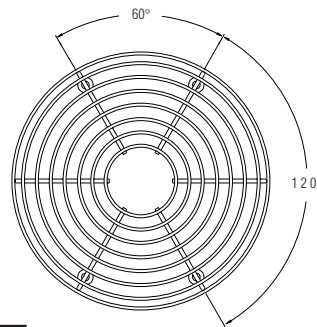
S-450, S-600 & S-800 MODEL STRAIGHT BORE FRICTION BRAKES - APPROXIMATE DIMENSIONS (INCHES)



MODEL	PRODUCT NUMBER	AJ1	BD	BE	BF1	BF2	CR	CS	CT	KEY (SQ)	KL	P	PA	SET SCREWS	U ^{+0.001} _{-0.000}	SLOT WD	HUB DP	HUB LENGTH
S-450	827800	5.310	5.94	0.25	0.28	--	2.51	0.18	0.44	.250	0.88	4.56	1.88	.250-20	1.125	0.38	0.65	2.50
S-450	827801	5.310	5.94	0.25	0.28	--	2.51	0.18	0.44	.250	0.88	4.56	1.88	.250-20	1.125	0.38	0.65	2.50
S-600	827900	6.500	7.19	0.38	0.359	--	3.20	0.25	0.41	.312	3.12	6.06	2.63	.375-16	1.375	0.63	0.66	3.13
S-600	827901	6.500	7.19	0.38	0.359	--	3.20	0.25	0.41	.312	3.12	6.06	2.63	.375-16	1.375	0.63	0.66	3.13
S-800	828000	8.380	9.00	0.38	.406	--	3.63	0.38	0.44	.500	3.56	8.06	3.75	.500-13	1.938	0.75	0.69	3.57
S-800	828001	8.380	9.00	0.38	.406	--	3.63	0.38	0.44	.500	3.56	8.06	3.75	.500-13	1.938	0.75	0.69	3.57

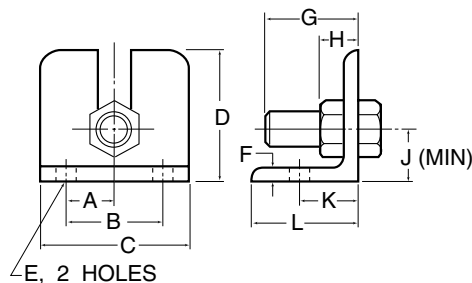
NOTE: Mating surface must be perpendicular to shaft within .010

► BRAKE SAFETY GUARD



MODEL	PRODUCT NUMBER	A	B	C	D
S-450	817700	6.56	1.652	2.69	5.25
S-600	818300	7.87	2.00	3.28	6.75
S-800	826300	9.69	2.75	3.66	8.37

► TORQUE PIN BRACKET



MODEL	PRODUCT NUMBER	A	B	C	D	E	F	G	H	J	K	L
S-450	819900	0.75	1.50	2.25	2.00	0.406	0.25	1.50	0.50	0.75	1.00	2.00
S-600	821400	1.00	2.00	3.00	2.50	0.406	0.25	1.625	.625	1.12	1.00	2.00
S-800	823400	1.12	2.25	3.50	3.00	0.469	0.31	2.00	0.75	1.19	1.38	2.50

BRAKES

"Air Champ"

STRAIGHT BORE FRICTION BRAKES MODELS

S-1000, S-1200 & S-1400

- Static Torque capacity up to:
 - S-1000/3450 In. Lbs. @ 80 psi
 - S-1200/ 5500 In. Lbs. @ 80 psi
 - S-1400/ 10,000 In. Lbs. @ 80 psi
 - Maximum Operating Speed up to 1800 rpm
 - Thermal Horsepower rating of:
 - S-1000/ 3.0 @ 1800 rpm
 - S-1200/ 6.3 @ 1800 rpm
 - S-1400/ 12.5 @ 1800 rpm
 - Heat Sink capacity of:
 - S-1000/200,000 Ft. Lbs.
 - S-1200/ 555,000 Ft. Lbs.
 - S-1400/ 650,000 Ft. Lbs.
 - Standard or Low Coefficient Facings
- These self-adjusting air cooled brakes mount easily and come with:
- Standard Bore Sizes:**
 - S-1000/ 2.938 inches
 - S-1200/ 3.375 inches
 - S-1400/3.750 inches
 - Split friction facings for easy replacement without brake removal or disassembly
 - Thru-shaft design can be **flange mounted** or **shaft mounted** with a torque pin

Options and Accessories include:

- Bushings** That allow you to customize the bore to your shaft diameter
 - S-1000/9 Sizes
- Torque Pin Bracket allows you to anchor the housing
- Brake Safety Guard for protection

S-1000, S-1200 & S-1400 MODEL STRAIGHT BORE FRICTION BRAKES

Model	Brake	Product Number	Max. Bore with Standard Keyseat (In)	Key Size (SQ)	Shipping Wt. (Lbs)
S-1000	Standard Facing	828100	2.938	0.750	44
S-1000	Low Coefficient Facing	828101	2.938	0.750	44
S-1200	Standard Facing	822514	3.375	0.875	95
S-1200	Low Coefficient Facing	822517	3.375	0.875	95
S-1400	Standard Facing	822519	3.750	0.875	110
S-1400	Low Coefficient Facing	822524	3.750	0.875	110

Keys are included.

BUSHING OPTIONS FOR S-1000 BRAKE

The purpose of Bushings is to reduce the brake bore size. Bushings fit into the bore of the existing brake, reducing it to the size indicated. Keys are provided with each Bushing.

Model	Product Number	Reduces Clutch Bore Size to (In)	Shipping Wt.(Lbs)
S-1000	825800	1.250	4
S-1000	824700	1.938	4
S-1000	824800	2.000	4
S-1000	824900	2.188	4
S-1000	825000	2.250	4
S-1000	825100	2.438	4
S-1000	825200	2.500	4
S-1000	825300	2.750	4
S-1000	825900	No Bore/Customer machines	4

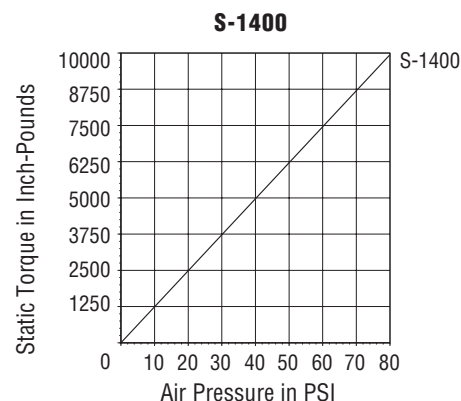
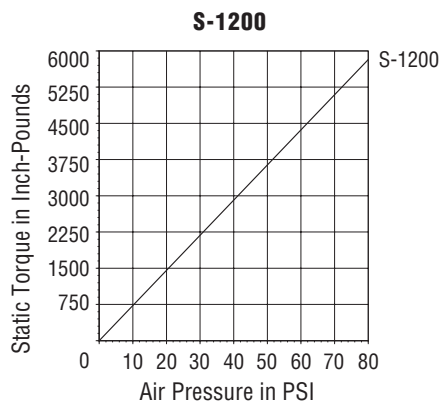
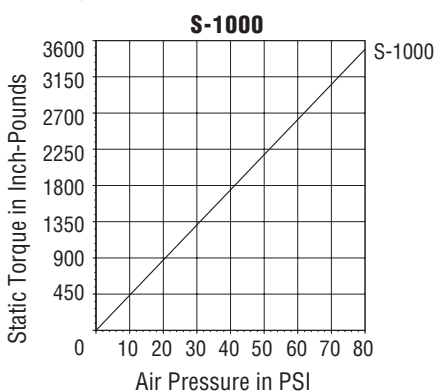
S-1200 AND S-1400

Bore diameters smaller than standard are bored-to-order.

ACCESSORIES

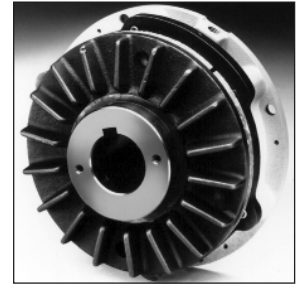
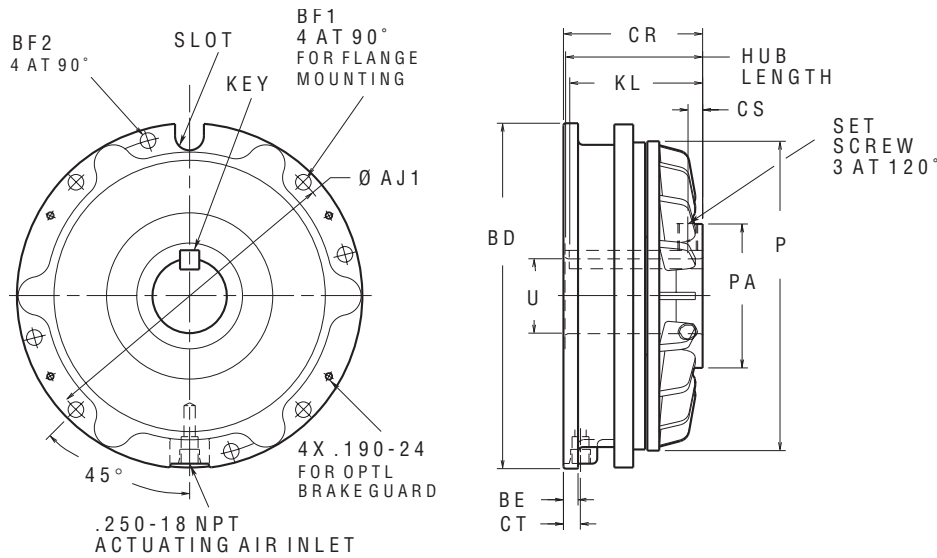
Model	Component	Product Number	Shipping Wt. (Lbs)
S-1000	Torque Pin Bracket	825500	4
S-1000	Brake Safety Guard	828200	4
S-1200	Torque Pin Bracket	822515	6
S-1200	Brake Safety Guard	822516	7
S-1400	Torque Pin Bracket	822525	6
S-1400	Brake Safety Guard	822526	7

TORQUE VS. AIR PRESSURE



NOTE: Dynamic torque is approximately 85% of static torque.

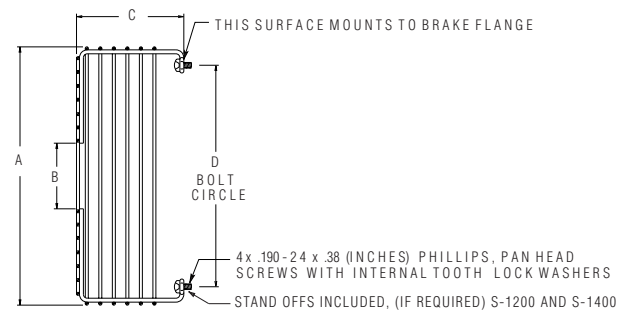
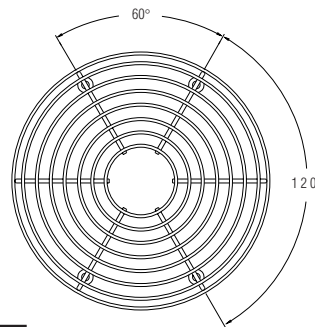
S-1000, S-1200 & S-1400 MODEL STRAIGHT BORE FRICTION BRAKES - APPROXIMATE DIMENSIONS (INCHES)



MODEL	PRODUCT NUMBER	AJ1	BD	BE	BF1	BF2	CR	CS	CT	KEY (SQ)	KL	P	PA	SET SCREWS U ^{+.001} _{-.000}	SLOT WD	HUB DP	HUB LENGTH
S-1000	828100	10.937	11.88	0.50	0.531	0.531	4.03	0.38	0.72	0.75	3.94	10.06	5.00	.500-13 2.938	0.88	0.91	3.97
S-1000	828101	10.937	11.88	0.50	0.531	0.531	4.03	0.38	0.72	0.75	3.94	10.06	5.00	.500-13 2.938	0.88	0.91	3.97
S-1200	822514	12.500	13.76	.70	.562	—	4.52	0.50	0.85	0.875	3.94	11.55	5.50	.500-13 3.375	1.00	1.10	4.95
S-1200	822517	12.500	13.76	.70	.562	—	4.52	0.50	0.85	0.875	3.94	11.55	5.50	.500-13 3.375	1.00	1.10	4.95
S-1400	822519	15.000	16.48	.82	.656	—	4.81	0.50	1.35	0.875	5.50	13.55	6.50	.500-13 3.750	1.13	1.31	5.50
S-1400	822523	15.000	16.48	.82	.656	—	4.81	0.50	1.35	0.875	5.50	13.55	6.50	.500-13 3.750	1.13	1.31	5.50

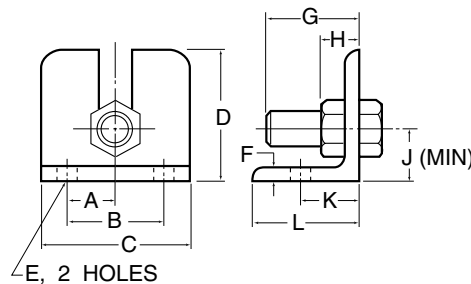
NOTE: Mating surface must be perpendicular to shaft within .010

▯ BRAKE SAFETY GUARD



MODEL	PRODUCT NUMBER	A	B	C	D
T-1000	828200	12.44	3.75	5.09	11.12
T-1200	822516	14.18	3.75	4.73	12.75
T-1400	822526	16.77	4.30	4.77	15.00

▯ TORQUE PIN BRACKET



MODEL	PRODUCT NUMBER	A	B	C	D	E	F	G	H	J	K	L
T-1000	825500	1.25	2.50	4.00	4.00	0.53	0.375	2.50	.875	1.375	1.625	3.00
T-1200	822515	1.50	3.00	4.50	4.60	0.67	0.375	3.84	.920	1.750	1.910	3.45
T-1000	822525	1.50	3.00	4.50	4.60	0.67	0.375	3.84	.980	1.750	1.910	3.45

BRAKES

TAPERED BORE FRICTION BRAKES MODELS

T-450, T-600 & T-800

- Static Torque capacity up to:
T-450/440 In. Lbs. @ 80 psi
T-600/840 In. Lbs. @ 80 psi
T-800/1600 In. Lbs. @ 80 psi
 - Maximum Operating Speed up to 1800 rpm
 - Thermal Horsepower rating of:
T-450/0.515 @ 1800 rpm
T-600/1.300 @ 1800 rpm
T-800/2.230 @ 1800 rpm
 - Heat Sink capacity of:
T-450/30,000 Ft. Lbs.
T-600/60,000 Ft. Lbs.
T-800/125,000 Ft. Lbs.
 - Standard or Low Coefficient Facings
- These self-adjusting air cooled brakes mount easily and come with:
- Tapered bore to accept QD Bushings for mounting flexibility
 - Single plate finned friction discs provide high heat dissipation
 - High dynamic torque capacity ensures fast load response
 - Split friction facing for easy replacement without brake removal or disassembly

Options and Accessories include:

- Torque Pin Bracket allows you to anchor the housing
- Brake Safety Guard for protection
- Tapered Bore** accepts **standard QD Bushings**;
T-450/Size JA, T-600/Size SH & T-800/Size SK

—NOT SUITABLE FOR FLANGE MOUNTING

T-450, T-600 & T-800 MODEL TAPERED BORE FRICTION BRAKES

Model	Brake	Product Number	Shipping Wt. (Lbs)
T-450	Standard Facing	819000	14
T-450	Low Coefficient Facing	819001	14
T-600	Standard Facing	820600	14
T-600	Low Coefficient Facing	820601	14
T-800	Standard Facing	824200	24
T-800	Low Coefficient Facing	824201	24

QD MOUNTING BUSHINGS

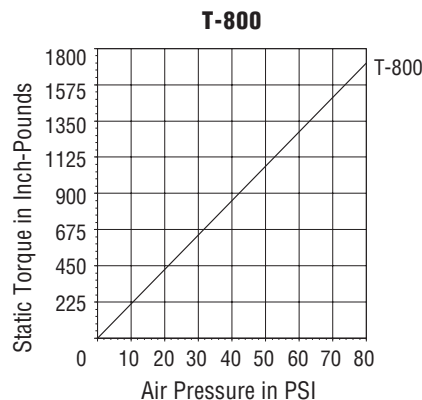
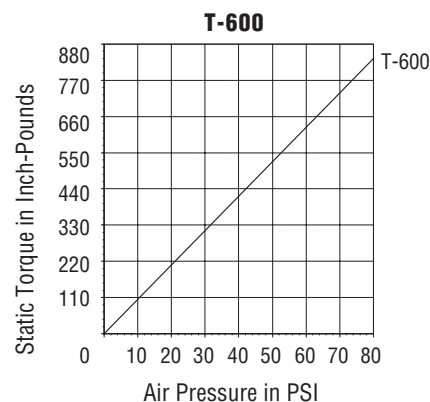
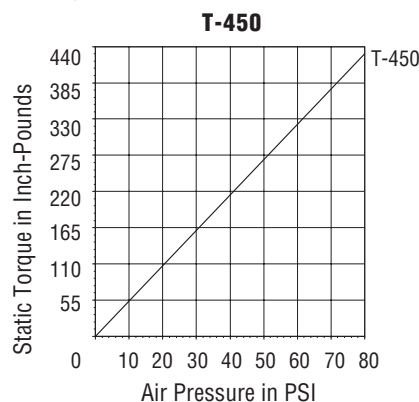
Quick Detachable "QD" Bushings are customer furnished. Bushings fit into the tapered bore of the brake, changing the bore to the size selected.

CAUTION: QD Bushings must be capable of carrying the torque produced by the brake. Check with the QD Bushing manufacturer for bushing torque ratings.

ACCESSORIES

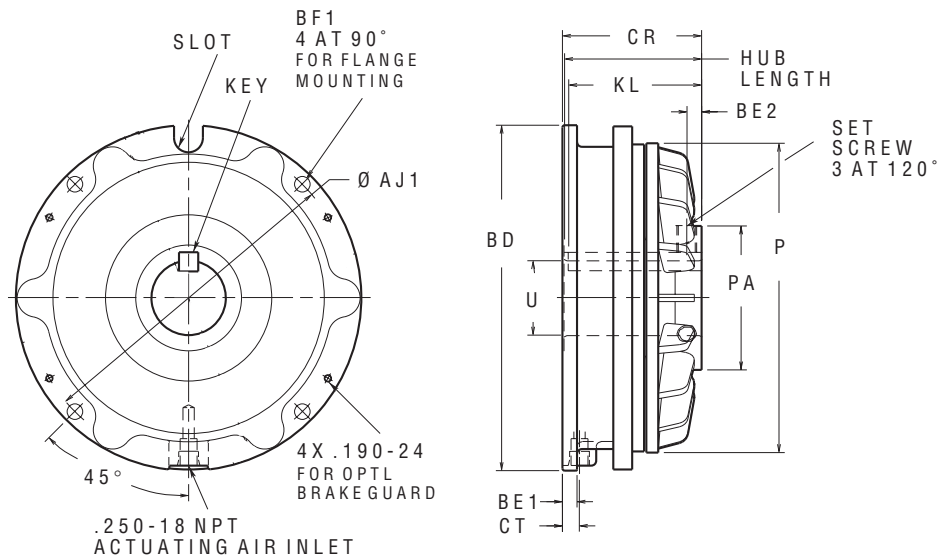
Model	Component	Product Number	Shipping Wt. (Lbs)
T-450	Torque Pin Bracket	819900	1
T-450	Brake Safety Guard	817700	2
T-600	Torque Pin Bracket	821400	2
T-600	Brake Safety Guard	818300	2
T-800	Torque Pin Bracket	823400	2
T-800	Brake Safety Guard	826300	3

TORQUE VS. AIR PRESSURE



NOTE: Dynamic torque is approximately 85% of static torque.

T-450, T-600 & T-800 MODEL TAPERED BORE FRICTION BRAKES - APPROXIMATE DIMENSIONS (INCHES)

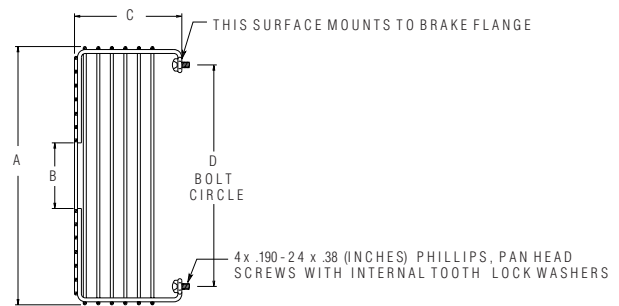
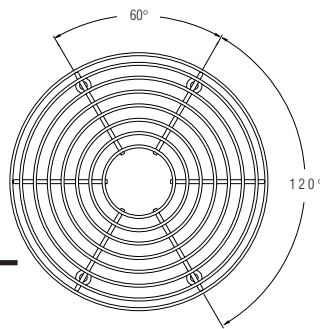


MODEL	PRODUCT NUMBER	AG	AJ1	BD	BE1	BE2	BF1	CR	CT	CZ	P	PA	QD BUSHING	U*	SLOT WD	DP
T-450	819000	2.51	5.310	5.94	0.25	0.31	0.281	2.07	0.44	0.03	4.56	2.00	JA	1.000	0.38	0.65
T-450	819001	2.51	5.310	5.94	0.25	0.31	0.281	2.07	0.44	0.03	4.56	2.00	JA	1.000	0.38	0.65
T-600	820600	3.01	6.500	7.19	0.38	0.44	0.359	2.42	0.41	0.07	6.06	2.62	SH	1.375	0.63	0.66
T-600	820601	3.01	6.500	7.19	0.38	0.44	0.359	2.42	0.41	0.07	6.06	2.62	SH	1.375	0.63	0.66
T-800	824200	3.42	8.380	9.00	0.38	0.56	0.406	2.87	0.44	0.14	8.06	3.88	SK	2.125	0.75	0.69
T-800	824201	3.42	8.380	9.00	0.38	0.56	0.406	2.87	0.44	0.14	8.06	3.88	SK	2.125	0.75	0.69

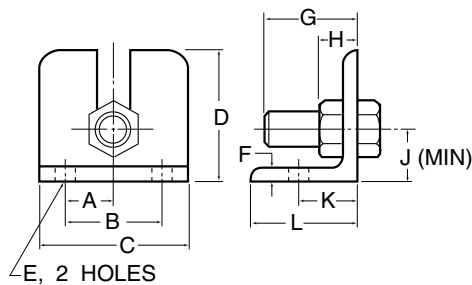
* Maximum Bushing bore with standard keyway.

Brake Safety Guard

MODEL	PRODUCT NUMBER	A	B	C	D
T-450	817700	6.56	1.62	2.69	5.25
T-600	818300	7.875	2.00	3.281	6.75
T-800	826300	9.69	2.75	3.66	8.37



Torque Pin Bracket



MODEL	PRODUCT NUMBER	A	B	C	D	E	F	G	H	J	K	L
T-450	819900	0.75	1.50	2.25	2.00	0.406	0.25	1.50	0.50	0.75	1.00	2.00
T-600	821400	1.00	2.00	3.00	2.50	0.406	0.25	1.625	0.625	1.125	1.00	2.00
T-800	823400	1.12	2.25	3.50	3.00	0.469	0.31	2.00	0.75	1.19	1.38	2.50

BRAKES

"Air Champ"

TAPERED BORE FRICTION BRAKES MODELS

T-1000, T-1200 & T-1400

- Static Torque capacity up to:
 - T-1000/3450 In. Lbs. @ 80 psi
 - T-1200/5500 In. Lbs. @ 80 psi
 - T-1400/10,000 In. Lbs. @ 80 psi
 - Maximum Operating Speed up to 1800 rpm
 - Thermal Horsepower rating of:
 - T-1000/3.0 @ 1800 rpm
 - T-1200/6.3 @ 1800 rpm
 - T-1400/12.5 @ 1800 rpm
 - Heat Sink capacity of:
 - T-1000/200,000 Ft. Lbs.
 - T-1200/ 555,000 Ft. Lbs.
 - T-1400/ 650,000 Ft. Lbs.
 - Standard or Low Coefficient Facings
- These self-adjusting air cooled brakes mount easily and come with:
- Tapered bore to accept QD Bushings for mounting flexibility
 - Single plate finned friction discs provide high heat dissipation
 - High dynamic torque capacity ensures fast load response
 - Split friction facing for easy replacement without brake removal or disassembly

Options and Accessories include:

- Torque Pin Bracket allows you to anchor the housing
- Brake Safety Guard for protection
- Tapered Bore** accepts **standard QD Bushings;**
- T-1000/Size E, T-1200/Size E & T-1400/Size F**

—NOT SUITABLE FOR FLANGE MOUNTING

T-1000, T-1200 & T-1400 MODEL TAPERED BORE FRICTION BRAKES

Model	Brake	Product Number	Shipping Wt. (Lbs)
T-1000	Standard Facing	824300	44
T-1000	Low Coefficient Facing	824301	44
T-1200	Standard Facing	822510	95
T-1200	Low Coefficient Facing	822518	95
T-1400	Standard Facing	822520	110
T-1400	Low Coefficient Facing	822523	110

QD MOUNTING BUSHINGS

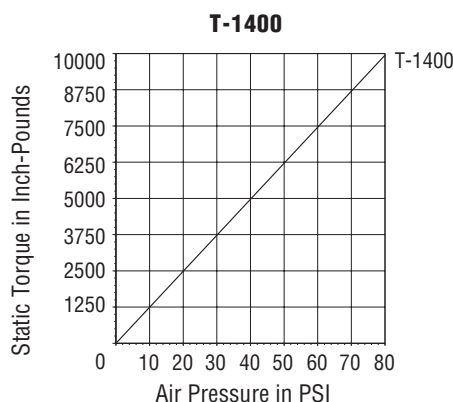
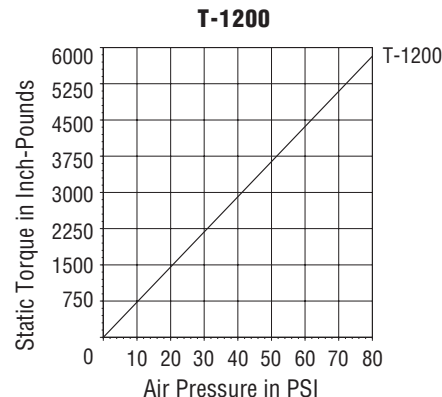
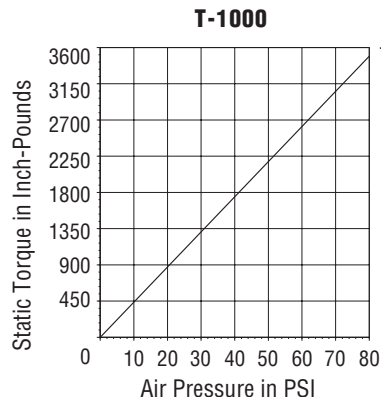
Quick Detachable "QD" Bushings are customer furnished. Bushings fit into the tapered bore of the brake, changing the bore to the size selected.

CAUTION: QD Bushings must be capable of carrying the torque produced by the brake. Check with the QD Bushing manufacturer for bushing torque ratings.

ACCESSORIES

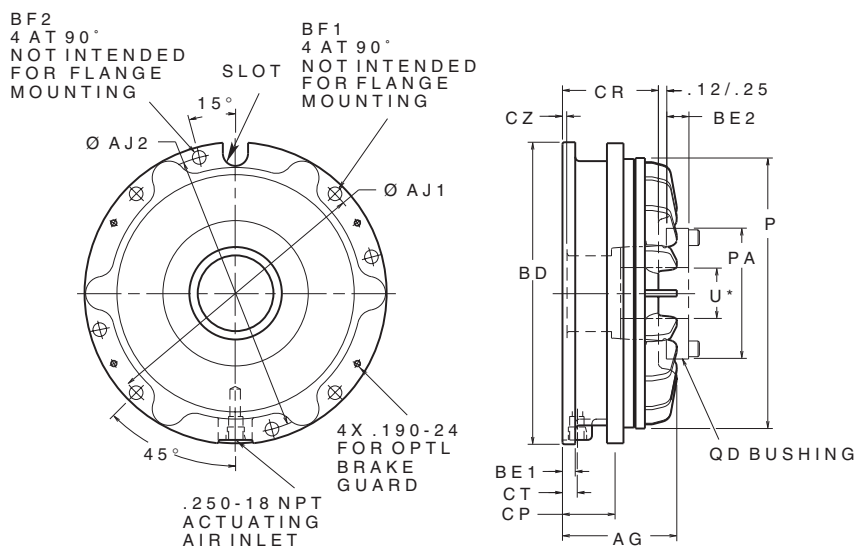
Model	Component	Product Number	Shipping Wt. (Lbs)
T-1000	Torque Pin Bracket	825500	4
T-1000	Brake Safety Guard	828200	4
T-1200	Torque Pin Bracket	822515	6
T-1200	Brake Safety Guard	822516	7
T-1400	Torque Pin Bracket	822525	6
T-1400	Brake Safety Guard	822526	7

TORQUE VS. AIR PRESSURE



NOTE: Dynamic torque is approximately 85% of static torque.

T-1000, T-1200 & T-1400 MODEL TAPERED BORE FRICTION BRAKES - APPROXIMATE DIMENSIONS (INCHES)

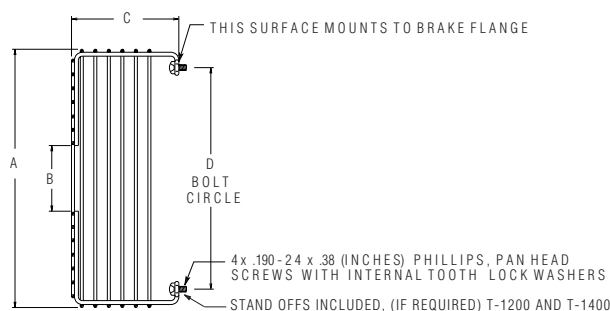
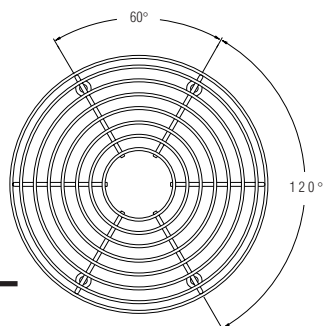


MODEL	PRODUCT NUMBERS	AG	AJ1	AJ2	BD	BE1	BE2	BF1	CR	CT	CZ	P	PA	QD BUSHING	U*	SLOT WD	DP
T-1000	824300 & 824301	4.00	10.937	11.000	11.88	0.50	0.88	0.531	3.44	0.72	0.09	10.06	6.00	E	2.875	0.88	0.91
T-1200	822510 & 822518	4.70	12.500	12.500	13.76	0.70	0.88	0.562	4.10	0.85	-	11.55	6.00	E	2.875	1.00	1.10
T-1400	822520 & 822523	5.59	15.000	15.000	16.48	0.82	1.00	0.656	4.81	1.35	-	13.55	6.62	F	3.250	1.125	1.31

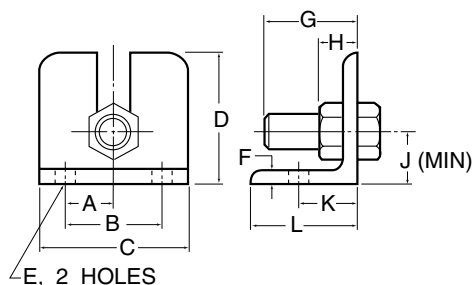
Maximum Bushing bore with standard keyway.

► BRAKE SAFETY GUARD

MODEL	PRODUCT NUMBER	A	B	C	D
T-1000	828200	12.44	3.75	5.09	11.12
T-1200	822516	14.18	3.75	4.73	12.75
T-1400	822526	16.77	4.30	4.77	15.00



► TORQUE PIN BRACKET



MODEL	PRODUCT NUMBER	A	B	C	D	E	F	G	H	J	K	L
T-1000	825500	1.25	2.50	4.00	4.00	0.53	0.375	2.50	.875	1.375	1.625	3.00
T-1200	822515	1.50	3.00	4.50	4.60	0.67	0.375	3.84	.920	1.750	1.910	3.45
T-1000	822525	1.50	3.00	4.50	4.60	0.67	0.375	3.84	.980	1.750	1.910	3.45

TAPERED BORE SPRING ENGAGED BRAKES MODELS TSE-450, TSE-600 & TSE-800

- Static Torque capacity up to:
TSE-450/450 In. Lbs.
TSE-600/985 In. Lbs.
TSE-800/2500 In. Lbs.
- Maximum Operating Speed up to 1800 rpm
- Thermal Horsepower rating of:
TSE-450/0.515 @ 1800 rpm
TSE-600/1.300 @ 1800 rpm
TSE-800/2.230 @ 1800 rpm
- Heat Sink capacity of:
TSE-450/30,000 Ft. Lbs.
TSE-600/60,000 Ft. Lbs.
TSE-800/125,000 Ft. Lbs.

These spring engaged, air disengaged brakes mount easily and come with:

- Open spring sockets that allow you to add or remove springs to fit your torque needs
- Tapered bore to accept QD Bushings for mounting flexibility
- Single plate finned friction discs provide high heat dissipation
- High dynamic torque capacity ensures fast load response
- Split friction facing for easy replacement without brake removal or disassembly
- Flow restrictor valve controls disengagement air to prevent shock load on brake components

Options and Accessories include:

- Torque Pin Bracket allows you to anchor the housing
- Brake Safety Guard for protection
- Tapered Bore** accepts **standard QD Bushings**;
TSE-450/Size JA, TSE-600/Size SH & TSE-800/Size SK
—NOT SUITABLE FOR FLANGE MOUNTING

TSE-450, TSE-600 & TSE-800 MODEL TAPERED BORE SPRING ENGAGED BRAKES

Model	Component	Product Number	Number	Torque Rating (In Lb ± 10%)	MIN	Shipping Wt. (Lbs)
			of Springs		Disengagement Air Pressure ± 10%	
TSE-450	Brake	818862	6	240	50 PSI	13
TSE-450	Brake	818800	8	360	72 PSI	13
TSE-450	Brake	818861	10	450	90 PSI	13
TSE-600	Brake	820362	6	520	50 PSI	19
TSE-600	Brake	820300	8	785	72 PSI	19
TSE-600	Brake	820361	10	985	90 PSI	19
TSE-800	Brake	822495	6	1300	50 PSI	31
TSE-800	Brake	822494	8	2000	72 PSI	31
TSE-800	Brake	822496	10	2500	90 PSI	31

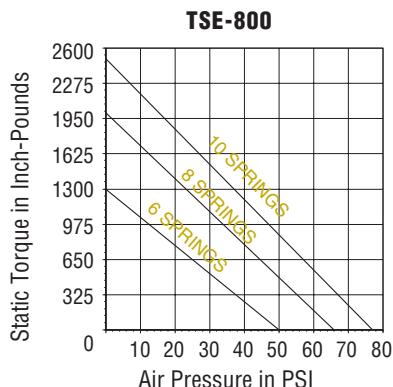
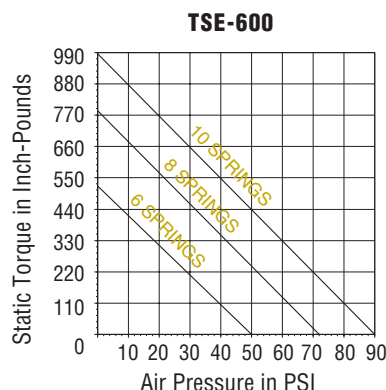
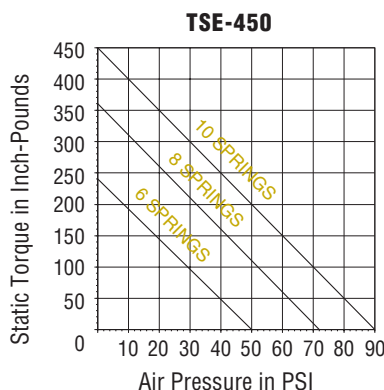
QD MOUNTING BUSHINGS

Quick detachable "QD" Bushings are customer furnished. The brake bore is easily adapted to many shaft sizes with use of QD Bushing and the proper key. Bushings fit into the bore of the brake, changing the bore to the size selected.

ACCESSORIES

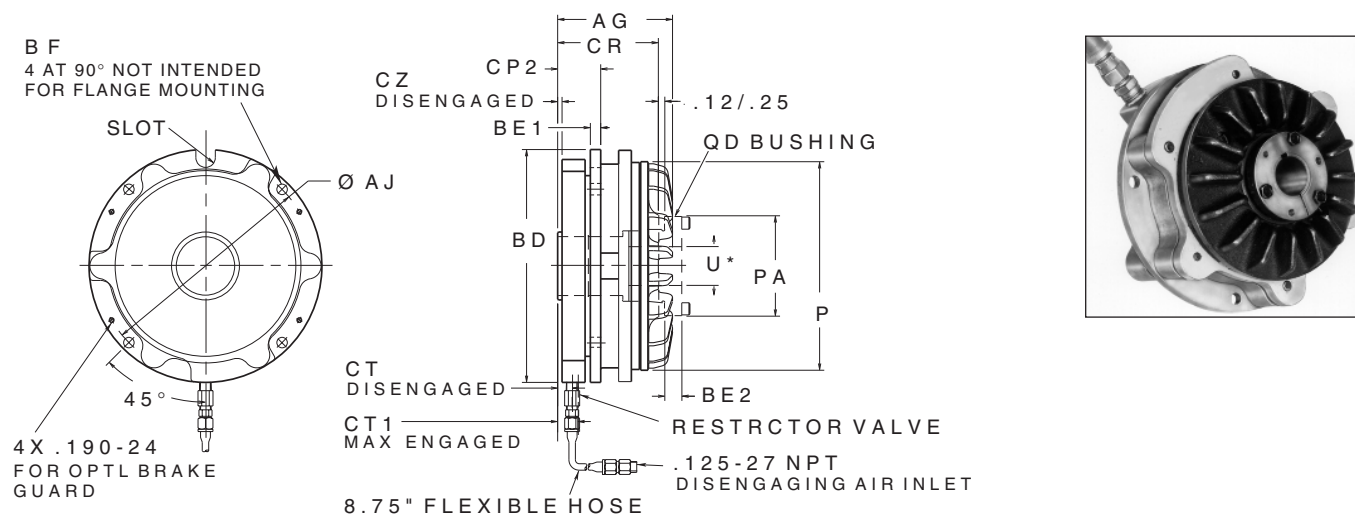
Model	Component	Product Number	Shipping Wt. (Lbs)
TSE-450	Torque Pin Bracket	819900	1
TSE-450	Brake Safety Guard	817700	2
TSE-600	Torque Pin Bracket	821400	2
TSE-600	Brake Safety Guard	818300	2
TSE-800	Torque Pin Bracket	823400	2
TSE-800	Brake Safety Guard	826300	3

TORQUE VS. AIR PRESSURE



NOTE: Torque values for spring applied brakes will vary over the life of the brake as a function of spring force and the burnishing process of the lining. Over the life of the linings, torque values may exceed published values by up to 40%.

TSE-450, TSE-600 & TSE-800 MODEL TAPERED BORE SPRING ENGAGED BRAKES - APPROXIMATE DIMENSIONS (INCHES)

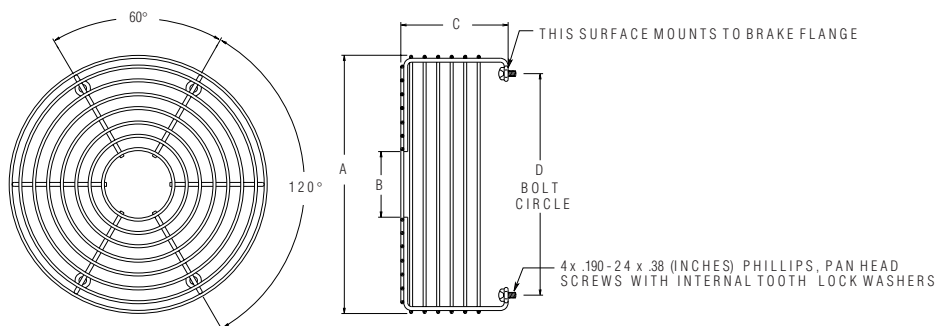


MODEL	PRODUCT NUMBER	AG	AJ	BD	BE1	BE2	BF	CP2	CR	CT	CT1	CZ	P	PA	U*	SLOT WD	QD DP	BUSHING
TSE-450	818862	3.57	5.312	5.94	0.27	0.31	0.281	1.32	3.12	0.35	0.49	0.01	4.56	2.00	1.000	0.375	0.66	JA
TSE-450	818880	3.57	5.312	5.94	0.27	0.31	0.281	1.32	3.12	0.35	0.49	0.01	4.56	2.00	1.000	0.375	0.66	JA
TSE-450	818861	3.57	5.312	5.94	0.27	0.31	0.281	1.32	3.12	0.35	0.49	0.01	4.56	2.00	1.000	0.375	0.66	JA
TSE-600	820362	4.06	6.500	7.19	0.40	0.44	0.359	1.45	3.47	0.33	0.47	-0.01	6.06	2.62	1.375	0.625	0.69	SH
TSE-600	820300	4.06	6.500	7.19	0.40	0.44	0.359	1.45	3.47	0.33	0.47	-0.01	6.06	2.62	1.375	0.625	0.69	SH
TSE-600	820361	4.06	6.500	7.19	0.40	0.44	0.359	1.45	3.47	0.33	0.47	-0.01	6.06	2.62	1.375	0.625	0.69	SH
TSE-800	822495	4.44	8.375	9.00	0.40	0.56	0.406	1.66	3.89	0.51	0.72	0.12	8.06	3.88	2.125	0.750	0.69	SK
TSE-800	822494	4.44	8.375	9.00	0.40	0.56	0.406	1.66	3.89	0.51	0.72	0.12	8.06	3.88	2.125	0.750	0.69	SK
TSE-800	822496	4.44	8.375	9.00	0.40	0.56	0.406	1.66	3.89	0.51	0.72	0.12	8.06	3.88	2.125	0.750	0.69	SK

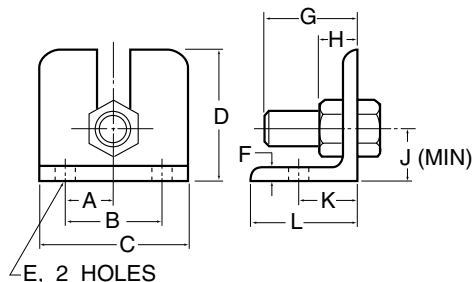
*Maximum Bushing bore with standard keyway.

▶ BRAKE SAFETY GUARD

MODEL	PRODUCT NUMBER	A	B	C	D
TSE-450	817700	6.56	1.62	2.69	5.25
TSE-600	818300	7.88	2.00	3.28	6.75
TSE-800	826300	9.69	2.75	3.66	8.38



▶ TORQUE PIN BRACKET



MODEL	PRODUCT NUMBER	A	B	C	D	E	F	G	H	J	K	L
TSE-450	819900	0.75	1.50	2.25	2.00	0.406	0.25	1.50	0.50	0.75	1.00	2.00
TSE-600	821400	1.00	2.00	3.00	2.50	0.406	0.25	1.625	0.625	1.125	1.00	2.00
TSE-800	823400	1.125	2.25	3.50	3.00	0.469	0.31	2.00	0.75	1.188	1.375	2.50

TAPERED BORE SPRING ENGAGED BRAKES MODELS TSE-1000, TSE-1200 & TSE-1400

- Static Torque capacity up to:
TSE-1000/3700 In. Lbs.
TSE-1200/5500 In. Lbs.
TSE-1400/8000 In. Lbs.
- Maximum Operating Speed up to
1800 rpm
- Thermal Horsepower rating of:
TSE-1000/3.0 @ 1800 rpm
TSE-1200/6.3 @ 1800 rpm
TSE-1400/ 12.5 @ 1800 rpm
- Heat Sink capacity of:
TSE-1000/200,000 Ft. Lbs.
TSE-1200/ 555,000 Ft. Lbs.
TSE-1400/ 650,000 Ft. Lbs.

These spring engaged, air disengaged brakes mount easily and come with:

- Open spring sockets that allow you to add or remove springs to fit your torque needs
- Tapered bore to accept QD Bushings for mounting flexibility
- Single plate finned friction discs provide high heat dissipation
- High dynamic torque capacity ensures fast load response
- Split friction facing for easy replacement without brake removal or disassembly
- Flow restrictor valve controls disengagement air to prevent shock load on brake components

Options and Accessories include:

- Torque Pin Bracket allows you to anchor the housing
- Brake Safety Guard for protection
- Tapered Bore** accepts **standard QD Bushings;**
TSE-1000/Size E, TSE-1200/Size E, & TSE-1400/Size F
—NOT SUITABLE FOR FLANGE MOUNTING

TSE-1000, TSE-1200 & TSE-1400 MODEL TAPERED BORE SPRING ENGAGED BRAKES

Model	Component	Product Number	Number of Springs	Torque Rating (In Lb ± 10%)	MIN Disengagement Air Pressure ± 10%	Shipping Wt. (Lbs)
TSE-1000 Brake		822562	6	2200	50 PSI	68
TSE-1000 Brake		822500	8	3000	72 PSI	68
TSE-1000 Brake		822561	10	3700	90 PSI	68
TSE-1200 Brake		822713	12	3750	70 PSI	113
TSE-1200 Brake		822714	14	4375	80 PS	113
TSE-1200 Brake		822710	16	5000	90 PSI	113
TSE-1400 Brake		822723	12	6000	70 PSI	131
TSE-1400 Brake		822724	14	7000	80 PSI	131
TSE-1400 Brake		822720	16	8000	90 PSI	131

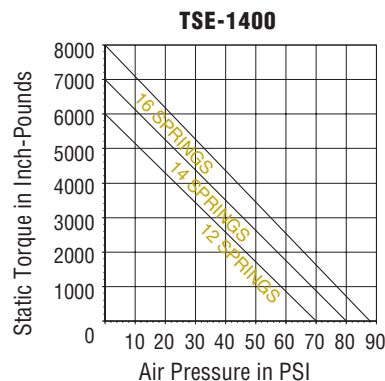
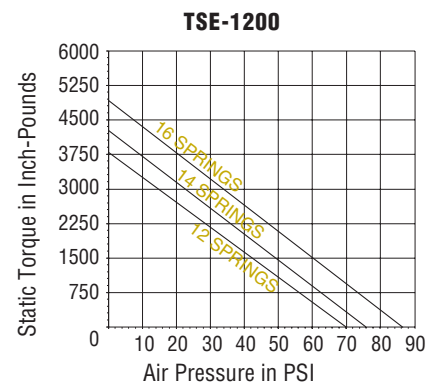
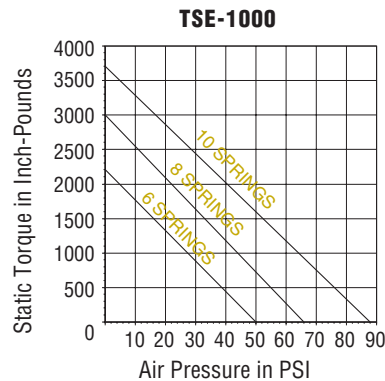
QD MOUNTING BUSHINGS

Quick detachable "QD" Bushings are customer furnished. The brake bore is easily adapted to many shaft sizes with use of QD Bushing and the proper key. Bushings fit into the bore of the brake, changing the bore to the size selected.

ACCESSORIES

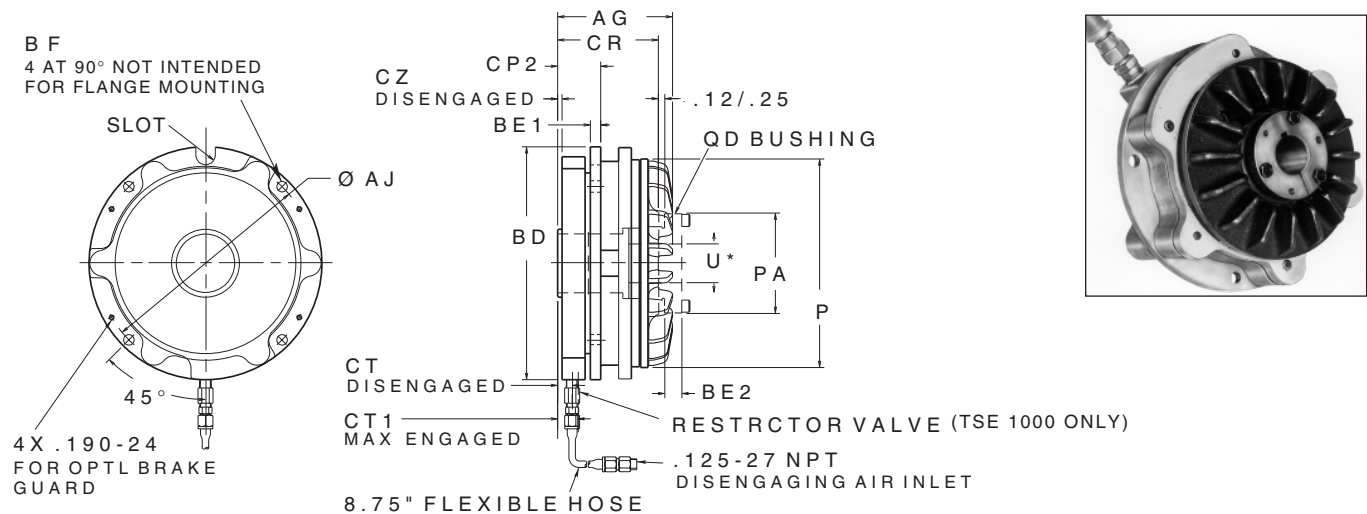
Model	Component	Product Number	Shipping Wt. (Lbs)
TSE-1000 Torque Pin Bracket		825500	4
TSE-1000 Brake Safety Guard		828200	4
TSE-1200 Torque Pin Bracket		822515	6
TSE-1200 Brake Safety Guard		822516	7
TSE-1400 Torque Pin Bracket		822525	6
TSE-1400 Brake Safety Guard		822526	7

TORQUE VS. AIR PRESSURE



NOTE: Torque values for spring applied brakes will vary over the life of the brake as a function of spring force and the burnishing process of the lining. Over the life of the linings, torque values may exceed published values by up to 40%.

TSE-1000, TSE-1200 & TSE-1400 MODEL TAPERED BORE SPRING ENGAGED BRAKES - APPROXIMATE DIMENSIONS (INCHES)

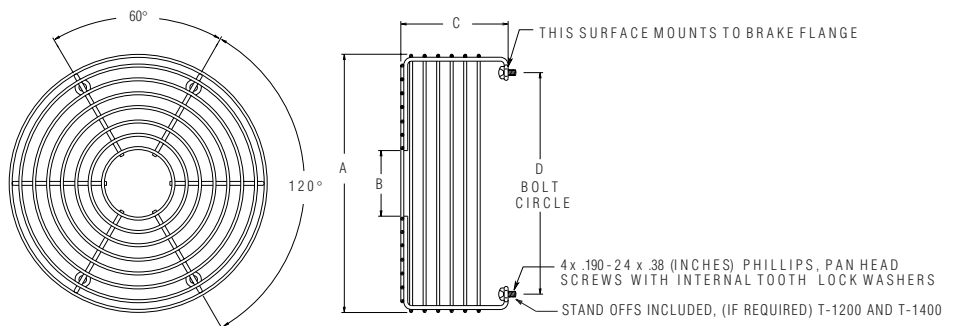


MODEL	PRODUCT NUMBER	AG	AJ	BD	BE1	BE2	BF	CP2	CR	CT	CT1	CZ	P	PA	U*	SLOT		QD BUSHING
																WD	DP	
TSE-1000	822562	5.42	10.937	11.88	0.52	0.88	.531	1.71	4.61	0.39	0.60	-0.18	10.06	6.00	2.875	0.88	0.91	E
TSE-1000	822500	5.42	10.937	11.88	0.52	0.88	.531	1.71	4.61	0.39	0.60	-0.18	10.06	6.00	2.875	0.88	0.91	E
TSE-1000	822561	5.42	10.937	11.88	0.52	0.88	.531	1.71	4.61	0.39	0.60	-0.18	10.06	6.00	2.875	0.88	0.91	E
TSE-1200	822710	6.04	12.500	13.76	0.70	0.88	.562	2.54	5.44	1.71	2.02	-0.99	11.55	6.00	2.875	1.00	1.10	E
TSE-1200	822713	6.04	12.500	13.76	0.70	0.88	.562	2.54	5.44	1.71	2.02	-0.99	11.55	6.00	2.875	1.00	1.10	E
TSE-1200	822714	6.04	12.500	13.76	0.70	0.88	.562	2.54	5.44	1.71	2.02	-0.99	11.55	6.00	2.875	1.00	1.10	E
TSE-1400	822720	6.93	15.000	16.48	0.82	1.00	.656	2.94	6.15	1.71	2.02	-1.01	13.55	6.63	3.25	1.125	1.31	F
TSE-1400	822723	6.93	15.000	16.48	0.82	1.00	.656	2.94	6.15	1.71	2.02	-1.01	13.55	6.63	3.25	1.125	1.31	F
TSE-1400	822724	6.93	15.000	16.48	0.82	1.00	.656	2.94	6.15	1.71	2.02	-1.01	13.55	6.63	3.25	1.125	1.31	F

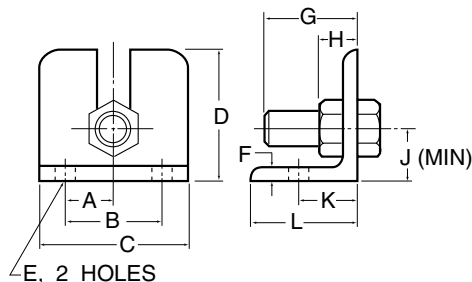
*Maximum Bushing bore with standard keyway.

▸ BRAKE SAFETY GUARD

MODEL	PRODUCT NUMBER	A	B	C	D
TSE-1000	828200	12.44	3.75	5.09	11.12
TSE-1200	822516	14.18	3.75	4.73	12.75
TSE-1400	822526	16.77	4.30	4.77	15.00



▸ TORQUE PIN BRACKET



MODEL	PRODUCT NUMBER	A	B	C	D	E	F	G	H	J	K	L
TSE-1000	825500	1.25	2.50	4.00	4.00	0.53	0.375	2.50	.875	1.375	1.625	3.00
TSE-1200	822515	1.50	3.00	4.50	4.60	0.67	0.375	3.84	.920	1.750	1.910	3.45
TSE-1400	822525	1.50	3.00	4.50	4.60	0.67	0.375	3.84	.980	1.750	1.910	3.45

BRAKES

"Air Champ"

FMBES MOTOR BRAKE MODELS 625, 875, 1125 & 1375

The FMBES is a NEMA C-Flange mounted, spring-engaged, nickel-plated motor brake that combines spring-on and air-release actuation with other performance-enhancing features to provide optimal reliability and application flexibility. Mountable on single shaft electric motors with 56C to 215TC frame sizes, the FMBES uses spring-actuation and designed-in greater heat-sink capacity to eliminate the heat-related brake inefficiencies and failure commonly associated with electric motor brakes. Additionally, the FMBES' dual friction interface provides a large volume of useable friction material for longer facing life.

- **Bore Sizes** of 0.625, 0.875, 1.125 and 1.375 in.
- Static Torque capacity up to 900 inch lbs.
- Covers fractional hp through 10 hp
- Maximum Operating Speed up to 3600 rpm

FMBES Features and Benefits:

- Spring-engaged for holding in power-off conditions
- Self-adjustment for friction material wear a standard feature. Totally eliminates the necessity to shut down for periodic adjustments
- No special requirements or additional parts for vertical-mounted applications
- Air-released, greater heat-sink capacity for cooler, more reliable performance
- Ideal for high-cycle applications
- Water protection per NEMA standard 1.26.55 (Waterproof machines).
- Torque from 17 to 75 ft. lbs. for varied applications, streamlined product selection
- Bearing arrangement designed for excellent overhung load capacity and bearing life
- Mounts on single shaft motors
- Side-mounted manual brake release
- Set screw to securely hold motor shaft key

► FMBES DOUBLE C-FACED MOTOR BRAKES

FMBES is a NEMA C-Flange Mounted, Spring-engaged, Nickel-plated Motor Brake.

Model Number	Product Number	Bore (In)	Static Torque (In. Lbs)	HP _T Up To	Inertia lb. ft ²	MAX RPM	MIN Diseng. Air Pressure	Overhung Load Capacity (Lbs)	Shipping Wt. (Lbs)
FMBES-625-CC	827320	0.625	200	0.30	.024	3600	30	170	20
FMBES-625-CC	827323	0.625	100	0.30	.024	3600	30	170	20
FMBES-875-CC	827340	0.875	300	0.30	.024	3600	40	170	20
FMBES-875-CC	827343	0.875	100	0.30	.024	3600	40	170	20
FMBES-875-CC	827344	0.875	200	0.30	.024	3600	40	170	20
FMBES-1125-CC	827360	1.125	420	0.44	.104	1800	60	290	40
FMBES-1375-CC	827380	1.375	900	0.44	.104	1800	60	290	50

► MOTOR BRAKE CONTROLS

3-Way Air Controls, Normally Closed, Inline Mount

Volts	Product Number	Operating Range (PSI)	Effective Orifice (In)	Port Size (NPT)	Power Consumption (Watts)
24 VDC	948805	0 – 150	.0468	.125	6
90 VDC	948806	0 – 150	.0468	.125	6
120 VAC	948802	0 – 150	.0468	.125	6
240 VAC	948807	0 – 150	.0468	.125	6

3-Way Air Controls, Normally Closed, Air Inlet Mount

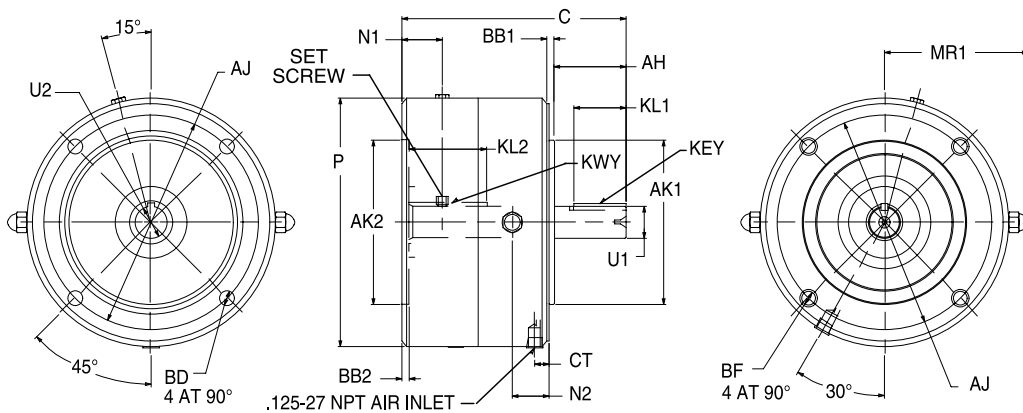
Volts	Product Number	Operating Range (PSI)	Effective Orifice (In)	Port Size (NPT)	Power Consumption (Watts)
24 VDC	948808	0 – 150	.0468	.125	6
90 VDC	948809	0 – 150	.0468	.125	6
120 VAC	948804	0 – 150	.0468	.125	6
240 VAC	948810	0 – 150	.0468	.125	6

► NEMA MOTOR/FRAME SELECTION CHART

Use this chart as specification and operational criteria for your application.

HP of Motor	RPM	Frame Number	Motor Shaft (In)	Clutch-Brake Model Number
1/4	1800	56C	0.625	FMBES-625
1/4	1200	56C	0.625	FMBES-625
1/3	1800	56C	0.625	FMBES-625
1/3	1200	56C	0.625	FMBES-625
1/2	1800	56C	0.625	FMBES-625
1/2	1200	56C	0.625	FMBES-625
1/2	900	143TC	0.875	FMBES-875
3/4	1800	56C	0.625	FMBES-625
3/4	1200	143TC	0.875	FMBES-875
3/4	900	145TC	0.875	FMBES-875
1	1800	56TC	0.625	FMBES-625
1	1800	143TC	0.875	FMBES-875
1	1200	145TC	0.875	FMBES-875
1-1/2	1800	145TC	0.875	FMBES-875
2	1800	145TC	0.875	FMBES-875

FMBES DOUBLE C-FACED MOTOR BRAKES - APPROXIMATE DIMENSIONS (INCHES)



MODEL	PRODUCT NUMBER	AH	AJ	AK1 ^{+0.000 -0.002}	AK2 ^{+0.002 -0.000}	BB1	BB2	BD	BF	C	CT	KEY (SQ)	KL1	KWY WD OP		KL2	P	MR1	N1	N2	U1 ^{+0.000 -0.001}	U2 ^{+0.001 -0.000}
FMBES-625-CC	827320	2.12	5.875	4.500	4.500	0.06	0.20	0.41	.375-16	6.14	0.40	.188	1.43	.188	.094	2.12	6.81	3.93	1.10	1.06	.625	.625
FMBES-625-CC	827323	2.12	5.875	4.500	4.500	0.06	0.20	0.41	.375-16	6.14	0.40	.188	1.43	.188	.094	2.12	6.81	3.93	1.10	1.06	.625	.625
FMBES-875-CC	827340	2.12	5.875	4.500	4.500	0.06	0.20	0.41	.375-16	6.14	0.40	.188	1.43	.188	.094	2.12	6.81	3.93	1.10	1.06	.875	.875
FMBES-875-CC	827343	2.12	5.875	4.500	4.500	0.06	0.20	0.41	.375-16	6.14	0.40	.188	1.43	.188	.094	2.12	6.81	3.93	1.10	1.06	.875	.875
FMBES-875-CC	827344	2.12	5.875	4.500	4.500	0.06	0.20	0.41	.375-16	6.14	0.40	.188	1.43	.188	.094	2.12	6.81	3.93	1.10	1.06	.875	.875
FMBES-1125-CC	827360	2.63	7.250	8.500	8.500	0.25	0.20	0.53	.500-13	7.47	.542	.251	1.78	.251	.125	2.75	9.00	5.05	1.54	1.38	1.125	1.125
FMBES-1375-CC	827380	3.13	7.250	8.500	8.500	0.25	0.20	0.53	.500-13	7.85	.542	.314	1.78	.314	.156	2.75	9.00	5.05	1.54	1.38	1.375	1.375

BRAKES

“Air Champ”

SE MODEL SPRING ENGAGED BRAKES

These Spring Engaged Brakes provide protection to equipment when fast, dependable stops are required for non-cyclic applications:

- ▶ Static Torque capacity up to 1150 In. Lbs.
- ▶ Maximum Operating Speed up to 1800 rpm
- ▶ **4 bore sizes** up to 1.375 inches
- ▶ Thermal Horsepower rating up to 0.200

These air disengaged, spring engaged brakes are simply designed, yet are loaded with features:

- ▶ Restrictor Valve controls exhausted air during engagement, ensuring a smooth stop
- ▶ Only 3 moving parts insure durability and dependability
- ▶ Mounting flexibility—NEMA C **Flange mount** or **Shaft mount** capability. Not intended for vertical mount.
- ▶ No dynamic thrust load on bearings when unit is engaged
- ▶ No thrust load, or virtually no radial load, when unit is disengaged and motor is running
- ▶ Manual release mechanism allows ease of maintenance
- ▶ Optional Torque Arm anchors brake housing
- ▶ Optional Adapter Shaft for mounting between motor and reducer
- ▶ Additional options include Output Drive Unit and Mounting Foot for application flexibility

Order Brake, Output Unit, Adapter Shaft, Torque Arm and Mounting Foot separately

▶ MODEL SE, SPRING ENGAGED BRAKES

Brake Model	Product Number	MAX Speed (RPM)	Bore (In)	HPt	Inertia Lb • In ²	MIN Disengagement Air Pressure	Shipping Wt. (Lbs)
SE-100	805900	1800	0.625	0.1	1.320	40 PSI	14
SE-200	806000	1800	0.875	0.1	1.280	50 PSI	14
SE-500	808200	1800	1.125	0.2	7.410	30 PSI	28
SE-1000	808300	1800	1.375	0.2	6.820	40 PSI	28

▶ OUTPUT DRIVE UNITS

For Brake Model	Product Number	Shaft Diameter	Inertia Lb • In ²	Shipping Wt. (Lbs)
SE-100	932600	0.625	0.043	8
SE-200	932700	0.875	0.086	8
SE-500	933000	1.125	0.600	14
SE-1000	933100	1.375	0.907	15

▶ ADAPTER SHAFT

For Brake Model	Product Number	Shaft Diameter	Inertia Lb • In ²	Shipping Wt. (Lbs)
SE-100	805700	0.625	0.012	1
SE-200	805800	0.875	0.048	1
SE-500	812500	1.125	0.234	2
SE-1000	812600	1.375	0.542	2

▶ TORQUE ARM

For Brake Model	Product Number	Shipping Wt. (Lbs)	NEMA MOTOR FRAME SELECTION CHART: Brake Model Fits Motor Frame Size	
SE-100	932900	1	SE-100	56C
SE-200	932900	1	SE-200	143TC, 145TC, 182C, 184C
SE-500	933200	2	SE-500	213C, 214C, 182TC, 184TC
SE-1000	933200	2	SE-1000	213TC, 215TC, 254UC, 256U

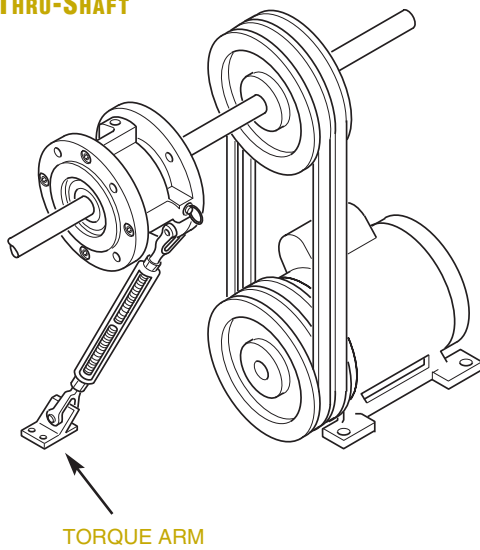
▶ MOUNTING FOOT

For Brake Model	Product Number	Shipping Wt. (Lbs)
SE-100	883000	8
SE-200	883000	8

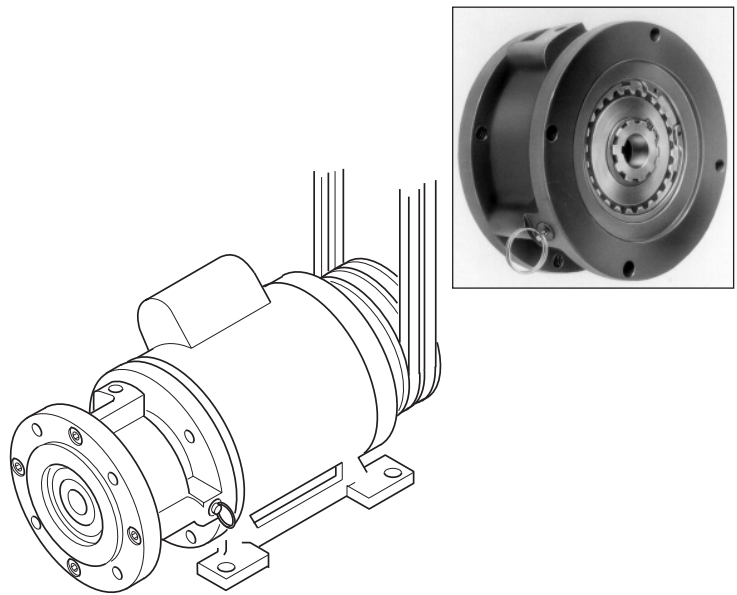
▶ OPERATING SPECIFICATIONS

For Brake Model	Torque (In Lbs)
SE-100	100
SE-200	225
SE-500	575
SE-1000	1150

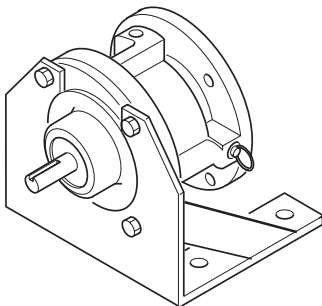
▶ SE SPRING ENGAGED BRAKE ON THRU-SHAFT



▶ SE SPRING ENGAGED BRAKE ON DOUBLE SHAFT MOTOR

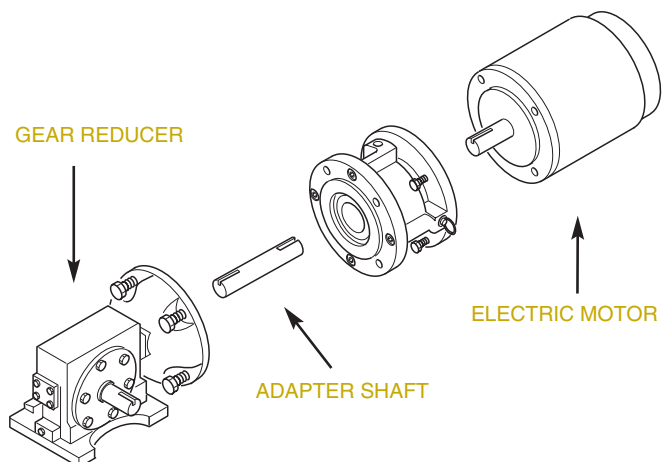


▶ SE SPRING ENGAGED BRAKE WITH OUTPUT DRIVE UNIT & “L” MOUNTING FOOT



“L” mounting foot Product Number 883000 for Models SE-100 & SE-200 only. For component dimensions, see page 125.

▶ SE SPRING ENGAGED BRAKE WITH GEAR REDUCER AND SINGLE SHAFT MOTOR

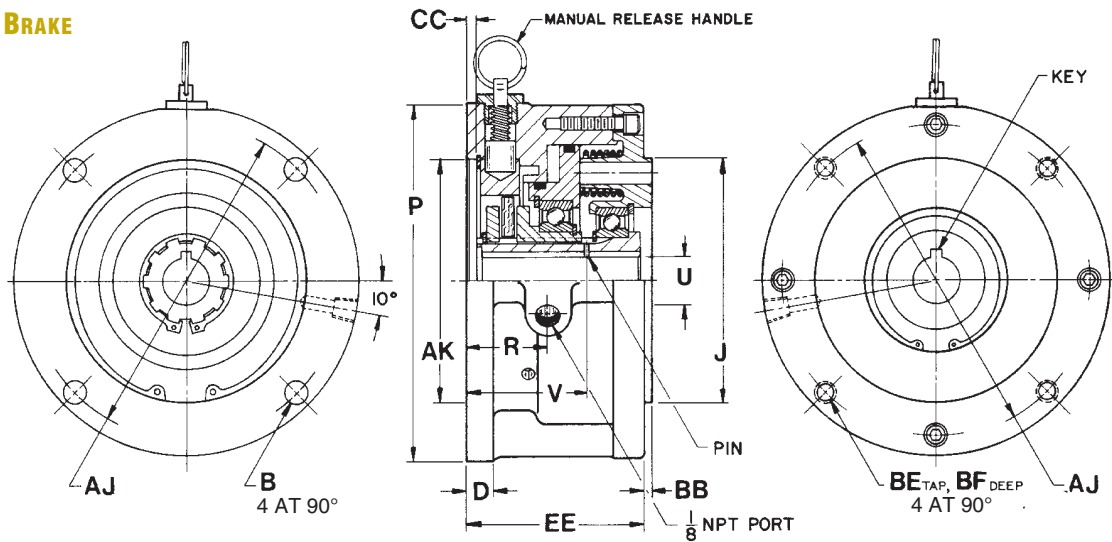


BRAKES

"Air Champ"

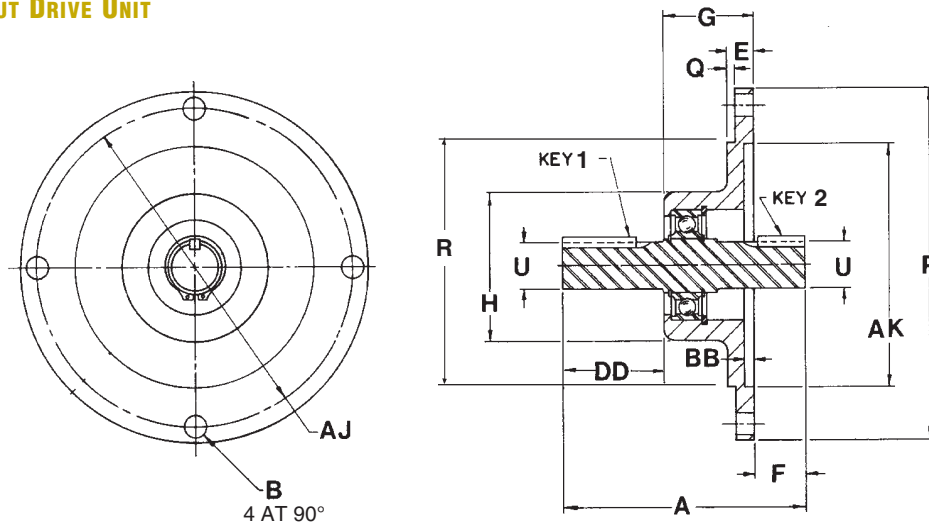
SE MODEL SPRING ENGAGED BRAKES- APPROXIMATE DIMENSIONS (INCHES)

BRAKE



MODEL	PRODUCT NUMBER	AJ	AK ^{+0.001 -0.000}	B	BB	BE	BF	CC	D	EE	J ^{+0.001 -0.000}	P	R	V	KEY	PIN	U ^{+0.001 -0.000}
SE-100	805900	5.875	4.501	0.406	0.156	0.375-16	0.56	0.18	0.50	3.28	4.499	6.50	1.47	2.25	0.188 x 1.375	0.063	0.625
SE-200	806000	5.875	4.501	0.406	0.156	0.375-16	0.56	0.18	0.50	3.28	4.499	6.50	1.47	2.25	0.188 x 1.375	0.063	0.875
SE-500	808200	7.250	8.502	0.531	--	0.500-13	0.75	0.22	0.62	5.97	8.498	9.00	3.75	3.00	1.750 x 0.250	0.125	1.125
SE-1000	808300	7.250	8.502	0.531	--	0.500-13	0.75	0.22	0.62	5.97	8.498	9.00	3.75	3.50	0.312 x 2.250	0.125	1.375

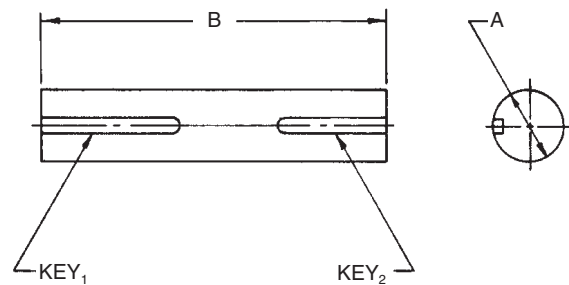
OUTPUT DRIVE UNIT



MODEL	PRODUCT NUMBER	A	AJ	AK ^{+0.001 -0.000}	B	BB	DD	E	F	G	H	P	Q	R ^{+0.001 -0.000}	U ^{+0.001 -0.000}	KEY1	KEY2
SE-100	932600	4.53	5.875	4.50	0.406	0.19	1.875	0.50	0.97	1.69	2.75	6.50	0.156	4.499	0.625	0.188 x 1.375	0.188 x 0.875
SE-200	932700	4.53	5.875	4.50	0.406	0.19	1.875	0.50	0.97	1.69	2.75	6.50	0.156	4.499	0.875	0.188 x 1.375	0.188 x 0.875
SE-500	933000	7.41	7.250	8.50	0.53	0.22	2.625	0.69	2.44	2.38	3.75	9.00	--	--	1.125	1.750 x 0.250	1.750 x 0.250
SE-1000	933100	7.62	7.250	8.50	0.53	0.22	3.125	0.69	2.12	2.38	3.75	9.00	--	--	1.375	0.312 x 2.00	0.312 x 2.00

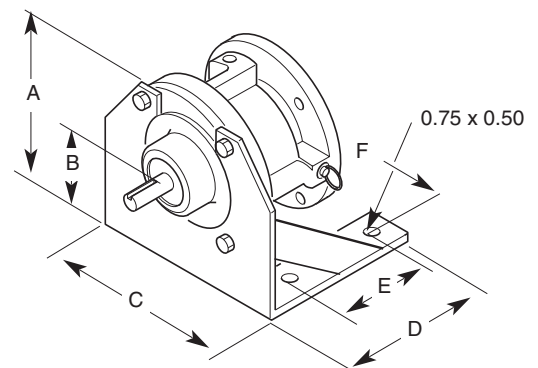
SE MODEL SPRING ENGAGED BRAKES- APPROXIMATE DIMENSIONS (INCHES)

▸ ADAPTER SHAFT



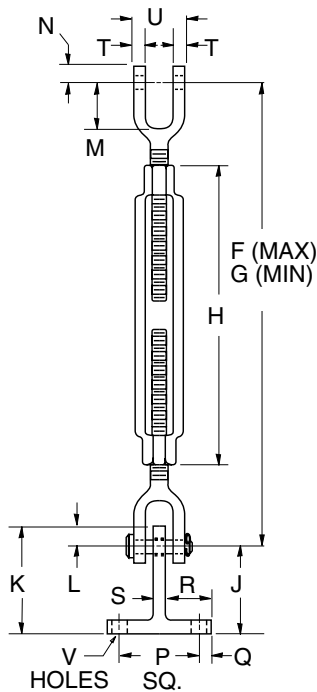
MODEL	PRODUCT NUMBER	A ^{+0.001 +0.000}	B	Key 1	Key 2
SE-100	805700	0.625	3.00	0.188 sq x 1.375	0.188 sq x 0.875
SE-200	805800	0.875	3.00	0.188 sq x 1.375	0.188 sq x 0.875
SE-500	812500	1.125	5.25	0.250 sq x 1.750	0.250 sq x 1.750
SE-1000	812600	1.375	5.47	0.313 sq x 2.000	0.313 sq x 2.000

▸ SE SPRING ENGAGED BRAKE WITH OUTPUT DRIVE UNIT & "L" MOUNTING FOOT

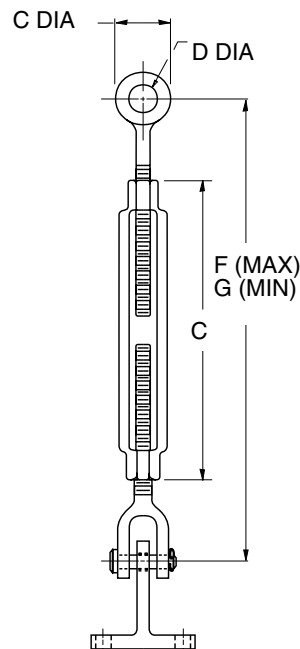


MODEL	PRODUCT NUMBER	A	B	C	D	E	F
SE-100	883000	7.00	4.50	8.19	7.00	5.25	6.50
SE-200	883000	7.00	4.50	8.19	7.00	5.25	6.50

▸ TORQUE ARM



For Models SE-100 & SE-200



For Models SE-500 & SE-1000

MODEL	PRODUCT NUMBER	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	T	U	V
SE-100	932900	--	--	--	--	--	12.62	8.62	5.56	1.62	2.00	0.38	0.88	0.31	1.50	0.25	0.88	0.25	0.22	0.50	0.313
SE-200	932900	--	--	--	--	--	12.62	8.62	5.56	1.62	2.00	0.38	0.88	0.31	1.50	0.25	0.88	0.25	0.22	0.50	0.313
SE-500	933200	14.38	10.38	7.12	0.531	1.25	14.38	10.38	--	1.62	2.00	0.38	--	--	1.50	0.25	0.88	0.25	--	--	0.313
SE-1000	933200	14.38	10.38	7.12	0.531	1.25	14.38	10.38	--	1.62	2.00	0.38	--	--	1.50	0.25	0.88	0.25	--	--	0.313

BRAKES

"Air Champ"

MB MODEL SPRING SET BRAKES

These Spring Set Brakes provide high torque in a compact unit:

- ▶ Static Torque capacity up to 1800 In. Lbs.
- ▶ Maximum Operating Speed up to 3600 rpm
- ▶ **Bore sizes** up to 1.875 inches
- ▶ Thermal Horsepower rating up to 0.450
- ▶ Designed to mount directly to NEMA "C" faced double shafted electric motors

CANNOT BE VERTICALLY MOUNTED

Order Brake and Hub separately

▶ MODEL MB, SPRING SET BRAKES

Brake Model	Product Number	MAX Speed (RPM)	HPt	Inertia Lb • In ²	Disengagement Air Pressure	MIN Shipping Wt. (Lbs)
MB450S	801300	3600	0.18	0.039	65 PSI	15
MB600S	801305	3600	0.33	0.216	65 PSI	27
MB800S	801310	1800	0.45	0.677	65 PSI	30

▶ MB450S Hub OPTIONS

Product Number	Bore (In)	Key Size (SQ)	Set Screw 3 AT 120°	Shipping Wt. (Lbs)
801320	0.500	None	None	2
801321	0.500	0.125	.190-32	2
801322	0.625	0.188	.190-32	2
801323	0.750	0.188	.190-32	2
801324	0.875	0.188	.190-32	2

▶ MB600S Hub OPTIONS

Product Number	Bore (In)	Key Size (SQ)	Set Screw 3 AT 120°	Shipping Wt. (Lbs)
801330	0.875	None	None	4
801331	0.875	0.188	.190-32	4
801332	1.000	0.250	.312-18	4
801333	1.125	0.250	.312-18	4
801334	1.250	0.250	.312-18	4
801335	1.375	0.312	.375-24	4
801336	1.500	0.375	.375-24	4
801337	1.625	0.375	.375-24	3

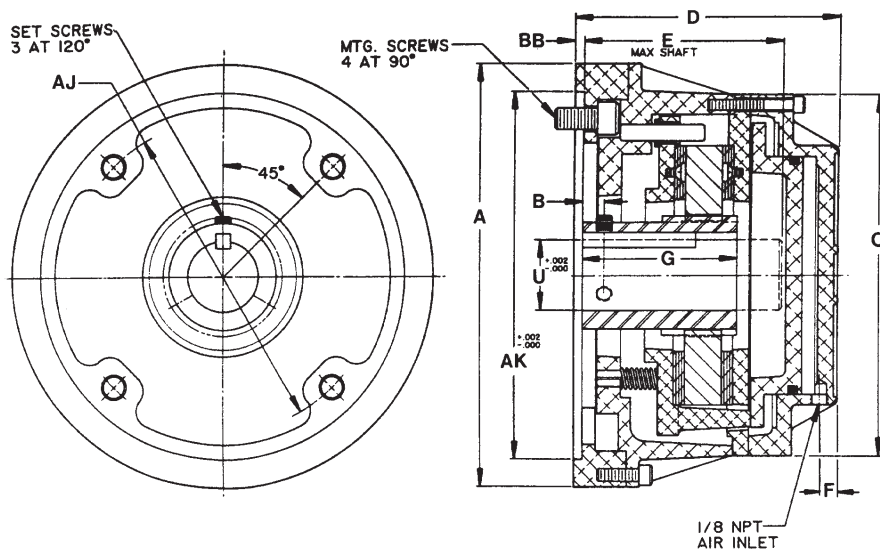
▶ MB800S Hub OPTIONS

Product Number	Bore (In)	Key Size (SQ)	Set Screw 3 Req'd	Shipping Wt. (Lbs)
801340	1.375	None	None	3
801341	1.375	0.312	.375-16	6
801342	1.500	0.375	.375-16	6
801343	1.625	0.375	.375-16	6
801344	1.750	0.375	.375-16	5
801345	1.875	0.500	.375-16	5

▶ TORQUE

Model	TORQUE (In Lbs)	
	New Lining	Worn Lining
MB450S	450	300
MB600S	1600	1100
MB800S	2600	1800

MB MODEL SPRING SET BRAKES - APPROXIMATE DIMENSIONS (INCHES)



MODEL	PRODUCT NUMBER	A	AJ	AK ^{+0.002 -0.000}	B	BB	C	D	E	F	G	MTG. SCREWS	U ^{+0.002 -0.000}
MB450S	801300	7.75	5.875	4.501	0.25	0.156	6.50	5.23	3.75	0.39	2.69	.375-16	See Hub Option
MB600S	801305	9.81	7.250	8.501	0.50	0.218	8.38	6.18	4.62	0.42	3.63	.500-13	opposite page
MB800S	801310	12.25	9.000	10.501	0.50	0.218	10.81	6.88	5.19	0.43	3.88	.500-13	

► NEMA Frame Selection Chart

Model	Frame Size
MB450S	56, 143T, 145T,
MB600S	182T, 184T, 213, 215, 213T, 215T, 254U, 256T, 256U, 254
MB800S	284U, 284T, 286U, 286T

BRAKES

“Air Champ”

SINGLE PUCK BRAKES

These light duty drag brakes are perfect for custom applications where space is limited and which do not require a full caliper:

Models 625 & 1000

- ▶ **2 Piston** sizes
- ▶ “O” ring sealed, simple design for light duty tension control applications
- TC Models**
- ▶ **3 coefficients** of friction facings
- ▶ Diaphragm actuated, spring returned brake for tension control or low cyclic duty applications

▶ SINGLE PUCK BRAKES

Model	Product Number	Torque Factor (f) 80 PSI	Shipping WT. (oz.)
625 Brake*	837100	7	4
1000 Brake	837000	17	7
TC-L (LOCO)	835131	40	28
TC-S (Standard)	835132	70	28
TC-H (HICO)	835133	90	28

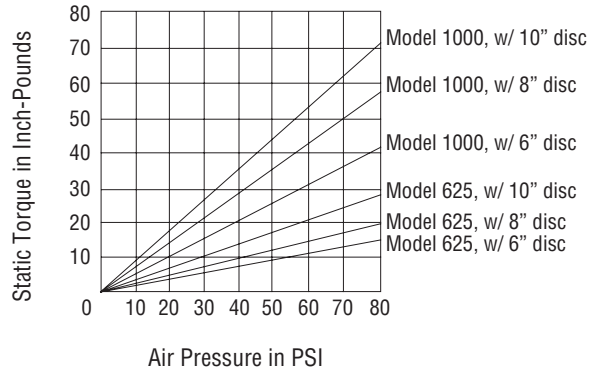
*625 Air Hose must be ordered separately; Product Number 857000

▶ DISC DIAMETER/WORKING RADIUS

Calculated Torque (T) = fR (Working Radius)

Disc Diameter	6	8	10	12	14	16
Working Radius (R)	2.500	3.500	4.000	4.500	5.500	6.500

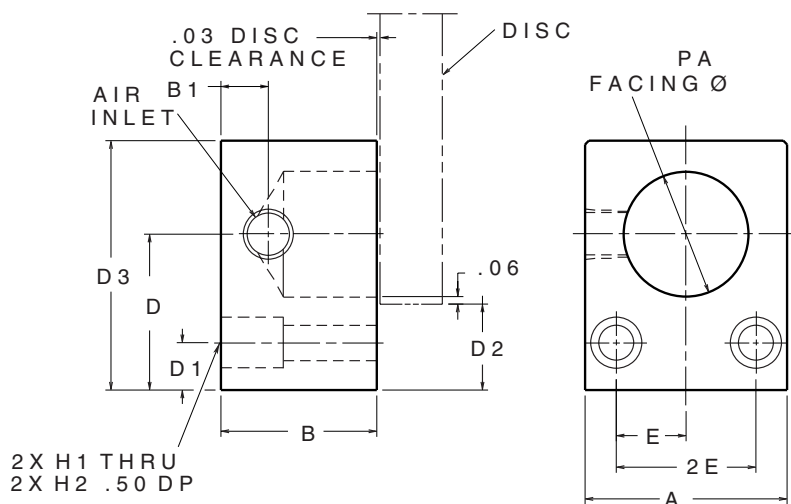
▶ TORQUE VS. AIR PRESSURE



NOTE: Dynamic torque is approximately 85% of static torque.

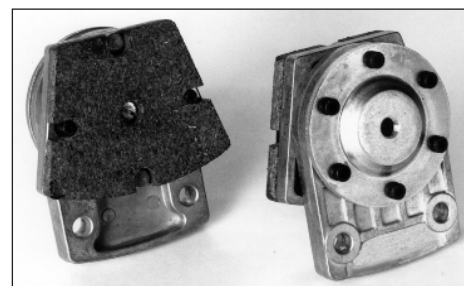
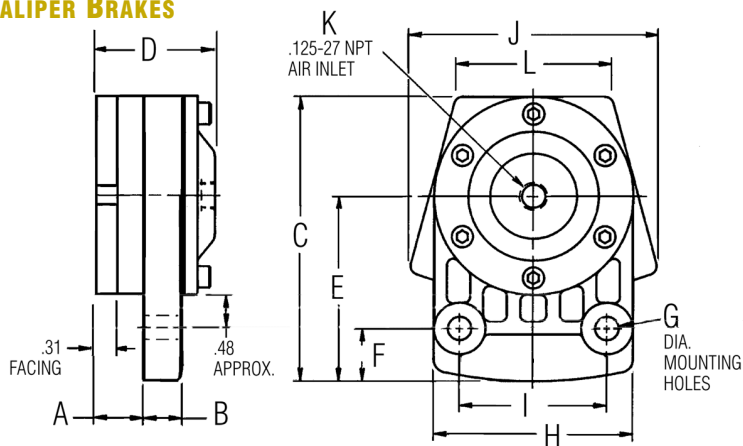
SINGLE PUCK BRAKES - APPROXIMATE DIMENSIONS (INCHES)

► SINGLE PUCK CALIPER BRAKES



MODEL	PRODUCT NUMBER	A	B	B1	D	D1	D2	D3	E	2E	H1	H2	PA	AIR INLET
625	837100	1.25	1.00	0.25	1.00	0.31	0.63	1.50	0.31	0.62	0.22	0.34	0.62	.190-32 UNC
1000	837000	1.62	1.25	0.38	1.25	0.38	0.69	2.00	0.56	1.12	0.28	0.41	1.00	.125-27 NPT

► TC CALIPER BRAKES



PRODUCT NUMBER	A	B	C	D	E	F	G	H	I	J	K	L
835131	.56	.69	4.13	1.70	1.92	.77	.34	2.88	2.13	3.63	.13 NPT	2.25
835132	.56	.69	4.13	1.70	1.92	.77	.34	2.88	2.13	3.63	.13 NPT	2.25
835133	.56	.69	4.13	1.70	1.92	.77	.34	2.88	2.13	3.63	.13 NPT	2.25

BRAKES

"Air Champ"

DB MODEL DISC CALIPER BRAKES

The design of this brake offers many features not found in other brakes of this type:

- ▶ Static Torque capacity up to 825 In. Lbs. @ 80 psi w/16" Disk
- ▶ Brake Torque may be doubled or tripled by adding brake calipers
- ▶ Air Actuated
- ▶ Arc contoured shoe provides large friction area, for greater facing life and stability
- ▶ Easily mounted in any position with T Bracket
- ▶ Disc Speeds up to 4500 rpm
- ▶ Disc Hubs use **QD Bushing** "SK" for shaft sizes from 0.5 to 2.125 inches/Standard Keyway.
- ▶ Spring return eliminates disc drag when disengaged
- ▶ Optional Air Hose Assembly comes with required fittings and hose for both air inlets

The Disc, Hub and Air Hose must be ordered separately. QD Bushing is customer furnished. Optional discs available from 10" to 16" diameter.

▶ DB MODEL, DISC CALIPER BRAKES

Component	Product Number	MAX Bore (In)	Torque Factor (f)	Shipping Wt. (Lbs)
Brake w/ T Bracket	835000	2.500	144	8
Brake w/o T Bracket	835071	2.500	144	8
Air Hose Assembly	835400	—	—	1

Air Hose must be ordered separately.

Calculated torque (T) = fR (Working Radius)

▶ DISC & HUB OPTIONS

The matching Hub is listed below each Disc.

Component	Product Number	Speed Up to (RPM)	Inertia Value (Lbs • in ²)	*Thermal Horsepower	Shipping Wt. (Lbs)	Working Radius (R)
Disc, 10 Inch	855500	4500	50.00	0.650	3	4.25
Hub, 10 Inch	856100		16.70		4	4.25
Disc, 12 Inch	855600	3800	104.00	0.950	5	5.25
Hub, 12 Inch	856200		27.90		5	5.25
Disc, 14 Inch	855700	3200	191.00	1.430	7	6.25
Hub, 14 Inch	856200		27.90		5	6.25
Disc, 16 Inch	855800	2800	316.00	2.930	9	7.25
Hub, 16 inch	856300		88.40		10	7.25

Discs and Hubs must be ordered separately.

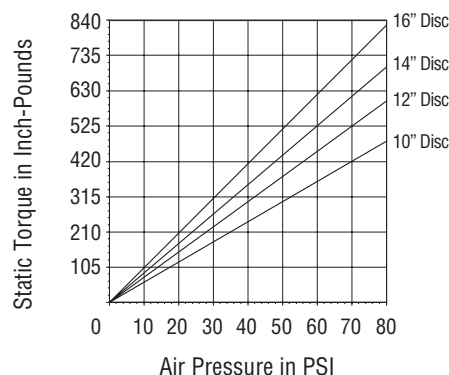
* Continuous thermal dissipation at 450 RPM and ambient temperature 80°F. Minimize operation above 450°F for maximum friction facing wear life.

▶ QD MOUNTING BUSHINGS

Quick Detachable "QD" Bushings are customer furnished. Bushings fit into the bore of the disc, changing the bore to the size indicated.

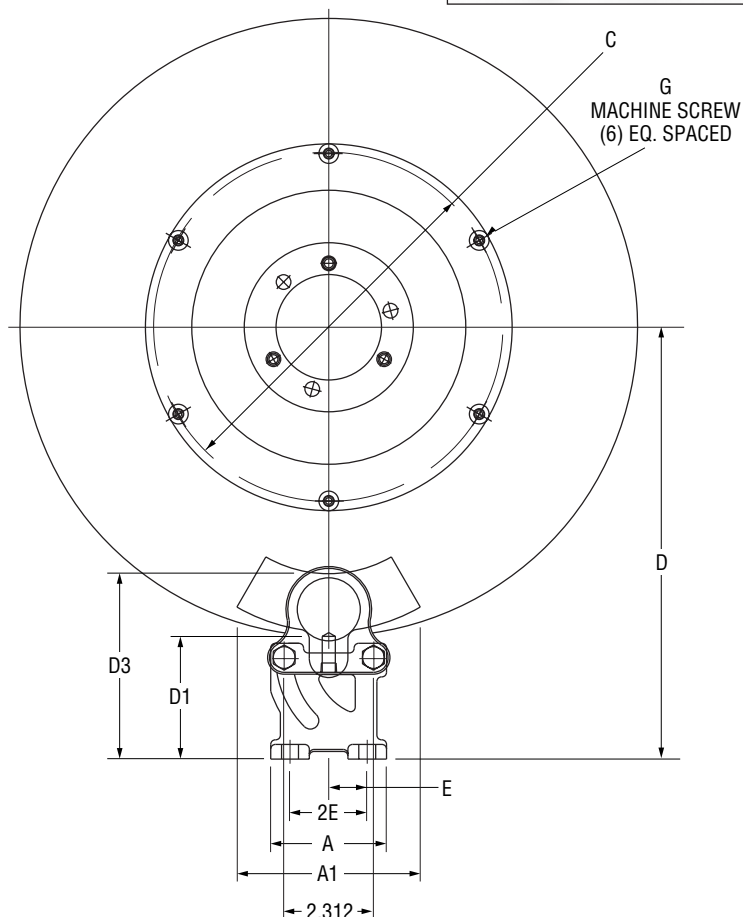
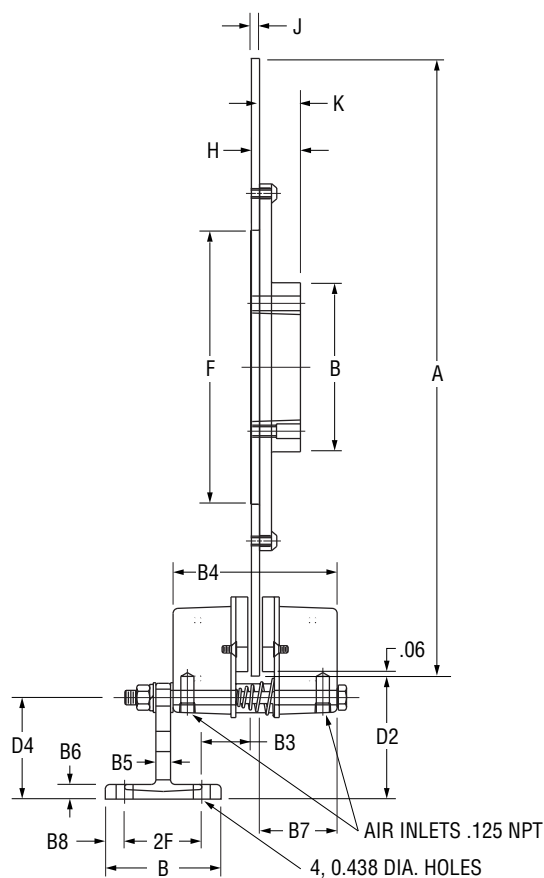
Caution: QD Bushings must be capable of carrying the torque produced by the brake. Check with the QD Bushing manufacturer for bushing for torque ratings.

▶ TORQUE VS. AIR PRESSURE



NOTE: Dynamic torque is approximately 85% of static torque.

► DB MODEL DISC CALIPER BRAKES - APPROXIMATE DIMENSIONS (INCHES)



DISC (INCHES)	A	B	C	D	F	G	H	J	K
10	10.00	4.50	5.50	8.188	4.500	.150-24 x .38	2.03	.23	.75
12	12.00	3.48	6.50	9.188	5.500	.250-20 x .50	1.25	.23	.75
14	14.00	3.48	6.50	10.188	5.500	.250-20 x .50	1.25	.23	.75
16	16.00	7.10	9.00	11.188	7.093	.250-20 x .50	2.03	.23	.75

BRAKE (INCHES)	A	2E	E	D1	D2	D3	D4	B	2F	B3	A1	B4	B5	B6	B7	B8
10	3.00	2.00	1.00	3.30	3.24	4.80	2.62	3.00	2.00	1.27	4.75	4.25	0.38	.38	1.93	0.50
12	3.00	2.00	1.00	3.30	3.24	4.80	2.62	3.00	2.00	1.27	4.75	4.25	0.38	.38	1.93	0.50
14	3.00	2.00	1.00	3.30	3.24	4.80	2.62	3.00	2.00	1.27	4.75	4.25	0.38	.38	1.93	0.50
16	3.00	2.00	1.00	3.30	3.24	4.80	2.62	3.00	2.00	1.27	4.75	4.25	0.38	.38	1.93	0.50

BC MODEL AIR ACTUATED CALIPER BRAKES

BC Model Caliper Brakes provide:

- Static Torque capacity up to 8800 In. Lbs. @ 80 psi with 24 inch disc
- Air Actuated
- Caliper spacing is adjustable to fit .188 to 1.500 inch wide rotating discs and linear traveling devices
- Optional discs available from 16 to 24 inch diameter
- Disc Speeds up to 2800 rpm
- QD Bushing** compatible, for shaft sizes up to 3.875 inches

The Disc must be ordered separately. QD Bushing is customer furnished.

BC MODEL, AIR ACTUATED CALIPER BRAKES

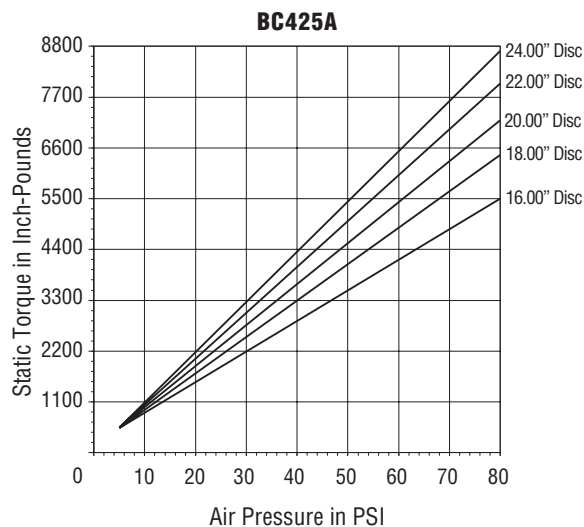
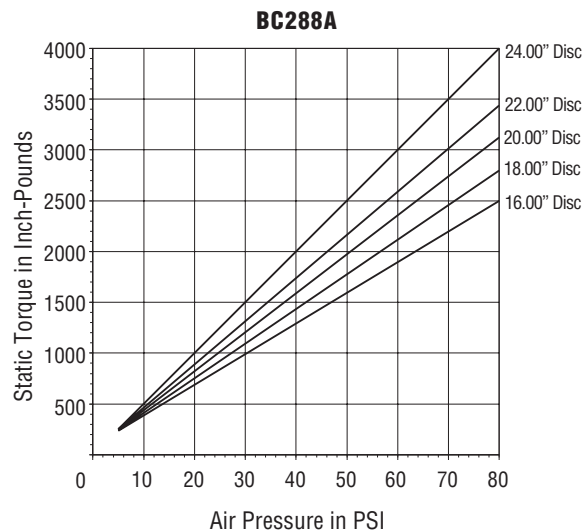
Model	Product Number	Shipping Wt. (Lbs)
BC288A	835200	18
BC425A	835210	18

DISC & QD BUSHING OPTIONS

Discs must be ordered separately. QD Bushings are customer furnished. For additional Disc details, see pages 146 and 147. Bushings fit into the bore of the brake disc hub, changing the bore to the size needed.

Caution: QD Bushings must be capable of carrying the torque produced by the caliper brake and disc selected. Check with the QD Bushing manufacturer for bushing torque ratings.

TORQUE VS. AIR PRESSURE



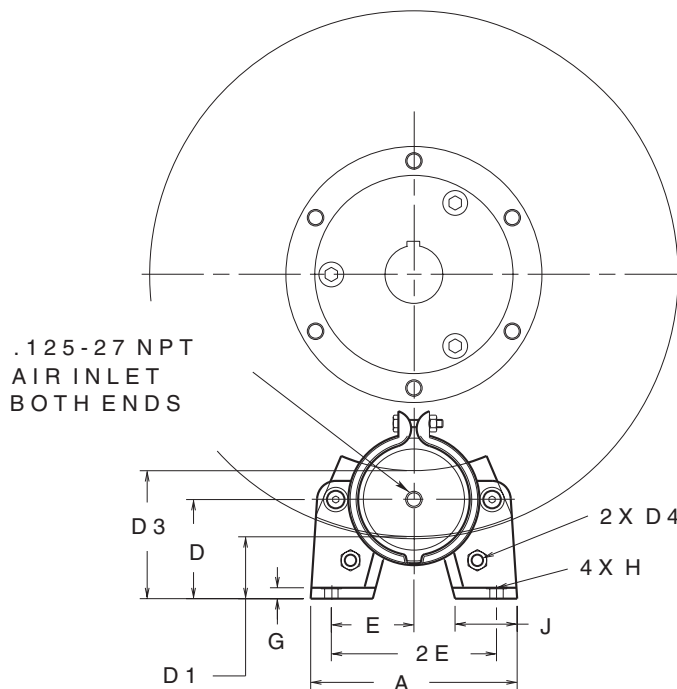
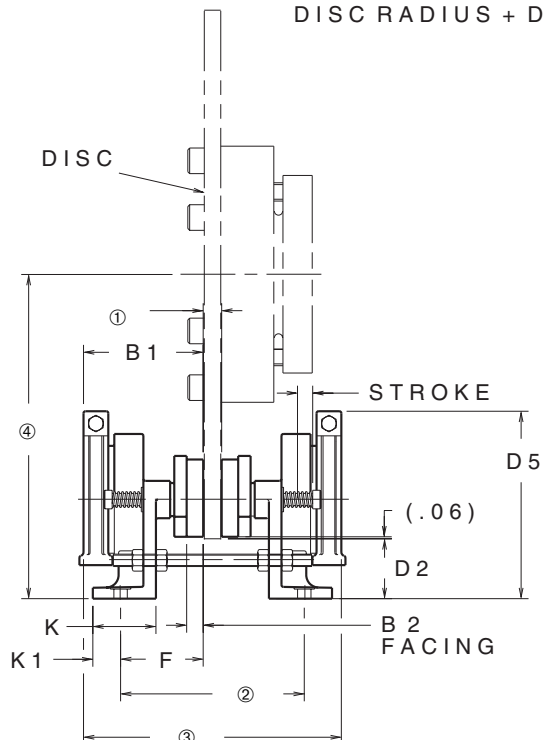
NOTE: Dynamic torque is approximately 85% of static torque.

BC MODEL AIR ACTUATED CALIPER BRAKES - APPROXIMATE DIMENSIONS (INCHES)

► BC288A & BC425A



- ① = DISC THICKNESS + .06 (.03 GAP EA SIDE)
- ② HOLE LOCATION = 2 (F) + ①
- ③ OVERALL LENGTH = 2 (B1) + ①
- ④ MOUNTING SURFACE TO DISC CENTER = DISC RADIUS + D2



MODEL	PRODUCT NUMBER	A	B1	B2	D	D1	D2	D3	D4	D5	E	2E	F	G	H	J	K	K1	STROKE
BC288A	835200	6.25	3.62	0.50	3.00	1.87	1.81	3.87	.375-16 x 6.00	5.75	2.50	5.00	2.56	0.33	.406	1.88	1.91	0.84	0.44
BC425A	835210	8.00	3.93	0.50	3.81	2.56	2.50	4.56	.500-13 x 6.00	7.31	3.25	6.50	2.90	0.44	.531	2.03	2.32	0.94	0.38

BC MODEL SPRING ACTUATED CALIPER BRAKES

BC Model Caliper Brakes provide:

- Static Torque capacity up to 5300 In. Lbs. with 24 inch disc
- Spring Actuated
- Caliper spacing is adjustable to fit .188 to 1.500 inch wide rotating discs and linear traveling devices
- Optional discs available from 16 to 24 inch diameter
- Disc Speeds up to 2800 rpm
- QD Bushing** compatible, for shaft sizes up to 3.875 inches
- Adjustable shoe provides greater facing life
- Spring engaged with manual release
- Facing adjustment allows full torque capacity throughout facing use

The Disc must be ordered separately. QD Bushing is customer furnished.

NOTE: Torque values for spring applied brakes will vary over the life of the brake as a function of spring force and the burnishing process of the lining. Over the life of the linings, torque values may exceed published values by up to 40%.

BC MODEL, SPRING ACTUATED CALIPER BRAKE

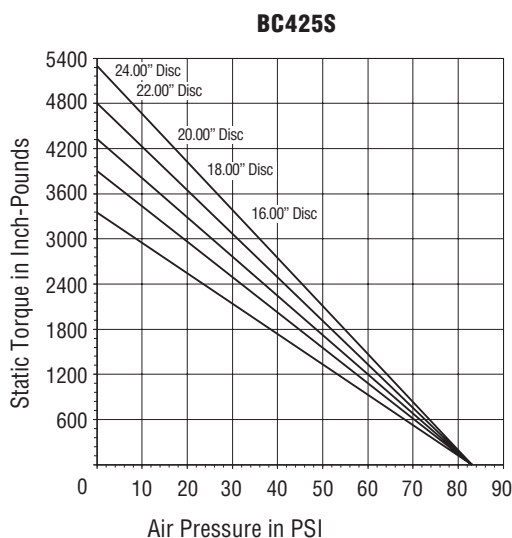
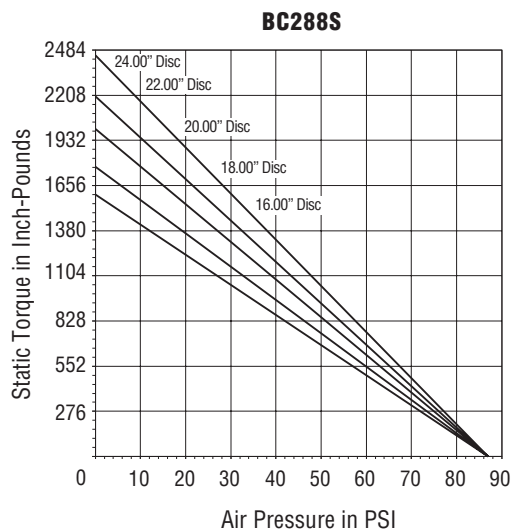
Model	Product Number	MIN Disengage Air Pressure	Shipping Wt. (Lbs)
BC288S	835220	87 PSI	19
BC425S	835230	83 PSI	34

DISC & QD BUSHING OPTIONS

Discs must be ordered separately. QD Bushings are customer furnished. For additional Disc details, see pages 146 and 147. Bushings fit into the bore of the brake disc hub, changing the bore to the size needed.

Caution: QD Bushings must be capable of carrying the torque produced by the caliper brake and disc selected. Check with the QD Bushing manufacturer for bushing torque ratings.

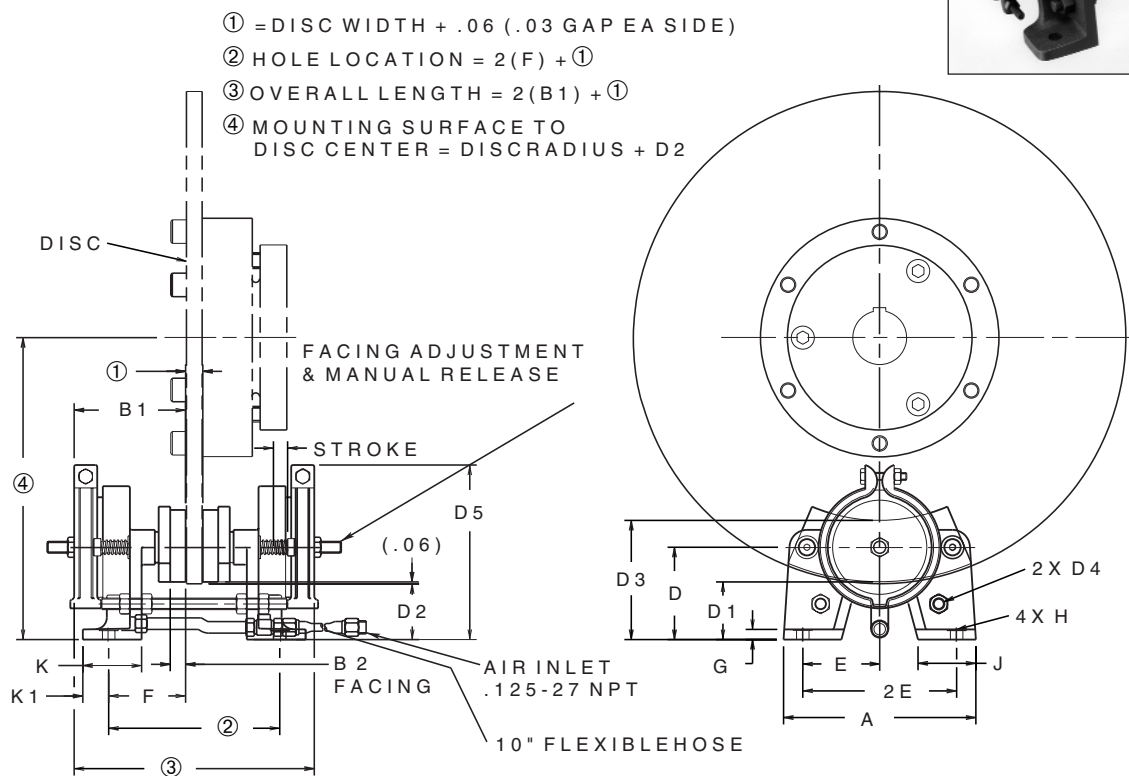
TORQUE VS. AIR PRESSURE



NOTE: Dynamic torque is approximately 85% of static torque.

BC MODEL SPRING ACTUATED CALIPER BRAKES - APPROXIMATE DIMENSIONS (INCHES)

► BC288S & BC425S



MODEL	PRODUCT NUMBER	A	B1	B2	D	D1	D2	D3	D4	D5	E	2E	F	G	H	J	K	K1	STROKE
BC288S	835220	6.25	4.50	0.50	3.00	1.87	1.81	3.87	.375-16 x 6.00	5.75	2.50	5.00	2.56	0.33	.406	1.88	1.91	0.84	0.44
BC425S	835230	8.00	5.12	0.50	3.81	2.56	2.50	4.56	.500-13 x 6.00	7.31	3.25	6.50	2.90	0.44	.531	2.03	2.32	0.94	0.38

BRAKES

"Air Champ"

BD MODEL AIR ACTUATED CALIPER BRAKES

BD Model Air Actuated Caliper Brakes provide:

- ▶ Static Torque capacity up to 19,000 In. Lbs. psi with 24 inch disc
- ▶ Air Actuated
- ▶ Actuators mount on either side of the brake
- ▶ Air connections can be rotated 360 degrees around actuator axis
- ▶ Multiply stopping power by installing more than one caliper brake per disc
- ▶ Shoes are mounted with detent pins for quick replacement
- ▶ Caliper spacing fits 0.500 inch wide discs
- ▶ SPC shoes fit on BD Model Caliper Brakes for longer life and higher peak input rate
- ▶ All pivot points have life-lubricated bearings
- ▶ Optional discs from 12 to 24 inch diameters
- ▶ Disc Speeds up to 3200 rpm with 14 inch discs
- ▶ **QD Bushing** compatible, for shaft sizes up to 3.875 inches

The Disc, Air Regulator and Valve must be ordered separately. QD Bushing is customer furnished.

BD MODEL, AIR ACTUATED CALIPER BRAKES

Model	Product Number	Torque Factor	Shipping Wt. (Lbs)
BD, Air Actuated	933600	See Torque Chart for Values by Disc Size	35

Air Hose must be customer furnished.

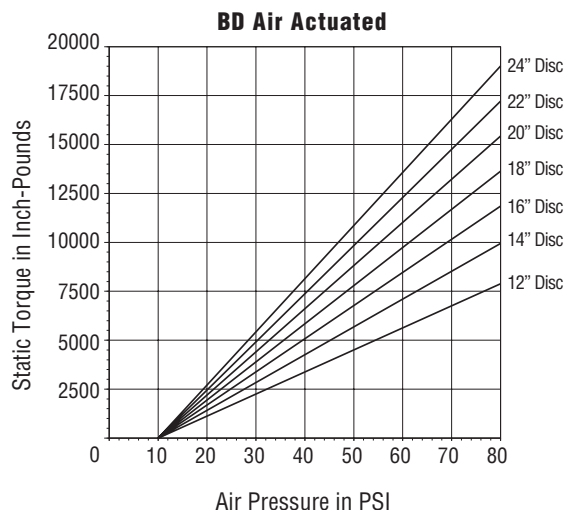
DISC & QD BUSHING OPTIONS

Discs must be ordered separately. QD Bushings are customer furnished. For additional Disc details, see pages 146 and 147. Bushings fit into the bore of the brake disc hub, changing the bore to the size needed.

Caution: QD Bushings must be capable of carrying the torque produced by the caliper brake and disc selected. Check with the QD Bushing manufacturer for bushing torque ratings.

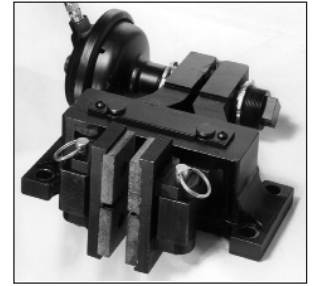
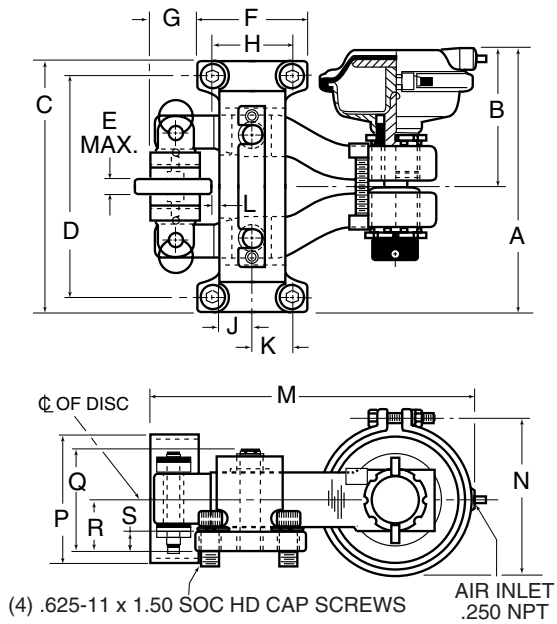
NOTE: Air Regulator and Valve requirements will depend upon your application. Consult Nexen for proper specifications.

TORQUE VS. AIR PRESSURE



NOTE: Dynamic torque is approximately 85% of static torque.

BD MODEL AIR ACTUATED CALIPER BRAKES - APPROXIMATE DIMENSIONS (INCHES)



PRODUCT NUMBER

	A	B*	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S
933600	9.81	5.75	9.31	8.188	0.75	4.12	1.75	3.00	1.25	1.50	0.25	12.62	5.69	4.81	3.75	1.875	0.75

*with fully worn facings. Please consult Nexen's website for current dimension information.

BRAKES

“Air Champ”

BD MODEL SPRING ACTUATED CALIPER BRAKES

BD Model Spring Actuated Caliper Brakes provide:

- ▶ Static Torque capacity up to 19,000 In. Lbs.
- ▶ Spring Actuated
- ▶ Actuators mount on either side of the brake
- ▶ Air connections can be rotated 360 degrees around actuator axis
- ▶ Multiply stopping power by installing more than one caliper brake per disc
- ▶ Shoes are mounted with detent pins for quick replacement
- ▶ Caliper spacing fits 0.500 inch wide discs
- ▶ SPC shoes fit on BD Model Caliper Brakes for longer life and higher peak input rate
- ▶ All pivot points have life-lubricated bearings
- ▶ Optional discs from 12 to 24 inch diameters
- ▶ Disc Speeds up to 3200 rpm with 14 inch discs
- ▶ **QD Bushing** compatible, for shaft sizes up to 3.875 inches

The Disc, Air Regulator and Valve must be ordered separately. QD Bushing is customer furnished.

BD MODEL, SPRING ACTUATED CALIPER BRAKES

Model	Product Number	MIN Disengage Air Pressure	Shipping Wt. (Lbs)
BD, Spring Actuated	933500	75 PSI	41

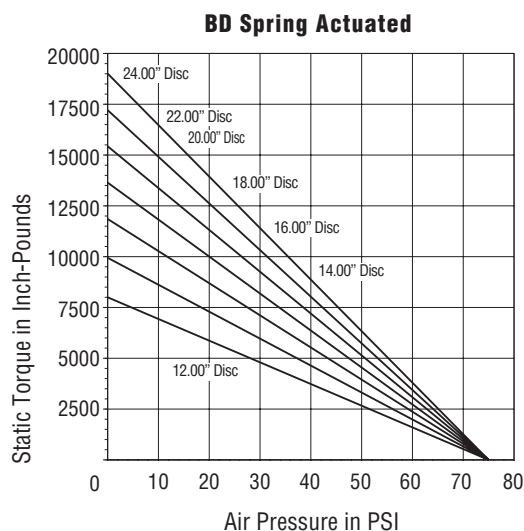
Disc & QD BUSHING OPTIONS

Discs must be ordered separately. QD Bushings are customer furnished. For additional Disc details, see pages 146 and 147. Bushings fit into the bore of the brake disc hub, changing the bore to the size needed.

Caution: QD Bushings must be capable of carrying the torque produced by the caliper brake and disc selected. Check with the QD Bushing manufacturer for bushing torque ratings.

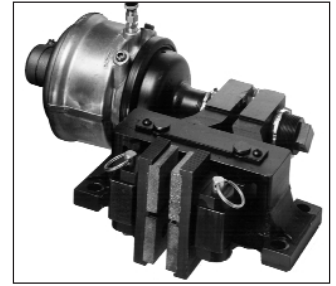
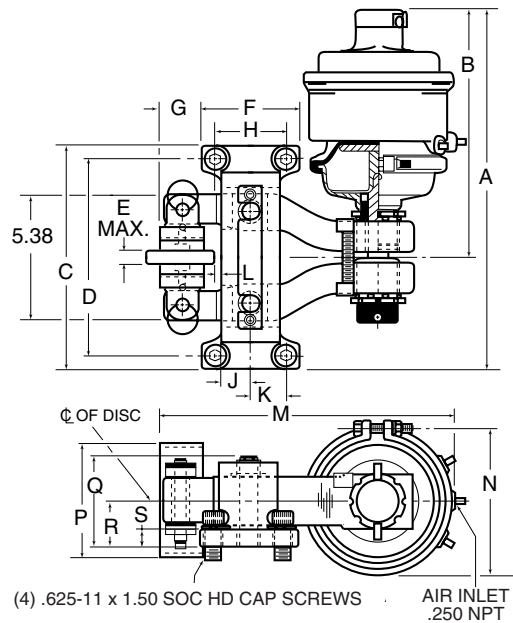
NOTE: Air Regulator and Valve requirements will depend upon your application. Consult Nexen for proper specifications.

TORQUE VS. AIR PRESSURE



NOTE: Dynamic torque is approximately 85% of static torque.

BD MODEL SPRING ACTUATED CALIPER BRAKES - APPROXIMATE DIMENSIONS (INCHES)



PRODUCT NUMBER	A	B*	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S
933500	15.00	11.00	9.31	8.188	0.75	4.12	1.75	3.00	1.25	1.50	0.25	12.94	6.31	4.81	3.75	1.875	0.75

*with fully worn facings. Please consult Nexen's website for current dimension information.

BRAKES

SPC MODEL AIR ACTUATED CALIPER BRAKES

SPC Single Post Caliper, Air Actuated Brake provides:

- ▶ Air Actuation
- ▶ Static Torque capability up to 50,000 In. Lbs.
- ▶ Brake actuator is moveable to permit a change in mechanical advantage which varies the torque range
- ▶ All models may be quickly and easily converted from one actuating system to another
- ▶ Arced brake shoes with quick removable pin mounting
- ▶ Pedestal style base is easily mounted in a small area
- ▶ Optional discs available from 16 to 24 inch diameter
- ▶ Disc Speeds up to 2800 rpm with 16 inch disc
- ▶ **QD Bushing** compatible, for shaft sizes up to 3.875 inches

The Brake, Actuator and Disc must be ordered separately. QD Bushing and Air Hose are customer furnished.

▶ SPC MODEL, SINGLE POST CALIPER BRAKE

Ordering Information:

To achieve a complete brake assembly, you must order a Brake, the required number of Actuators and desired Disc. Performance values are dependent upon Actuator location, number of Actuators and Disc diameter. Determine performance required from the charts.

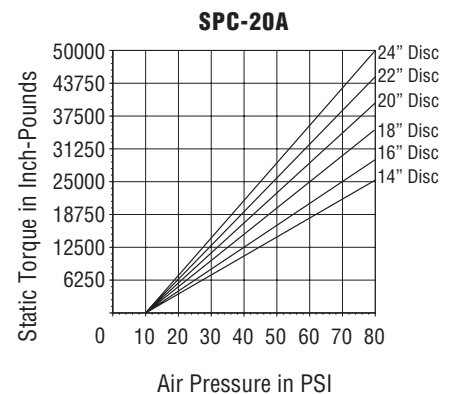
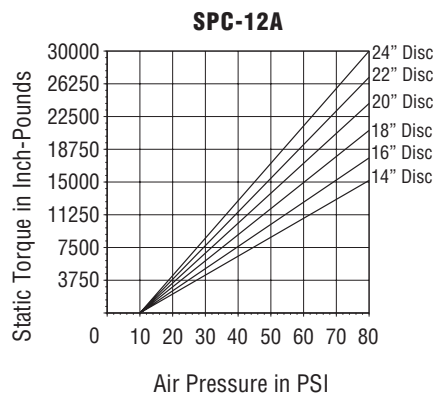
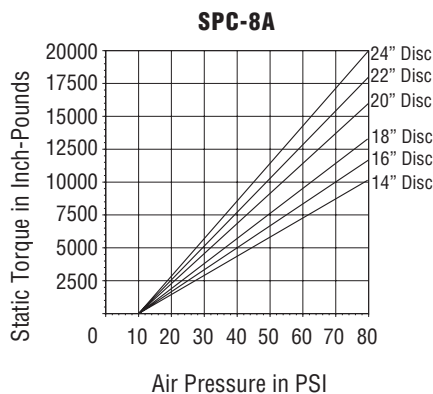
Model	Brake Product Number	# of Actuators Required	Actuator Product Number	Shipping Wt. (Lbs)
SPC-8A	837400	1	837500	77
SPC-12A	837400	1	837500	77
SPC-20A	837400	2	837500	83

▶ Disc & QD BUSHING OPTIONS

Discs must be ordered separately. QD Bushings are customer furnished. For additional Disc details, see pages 146 and 147. Bushings fit into the bore of the brake disc hub, changing the bore to the size needed.

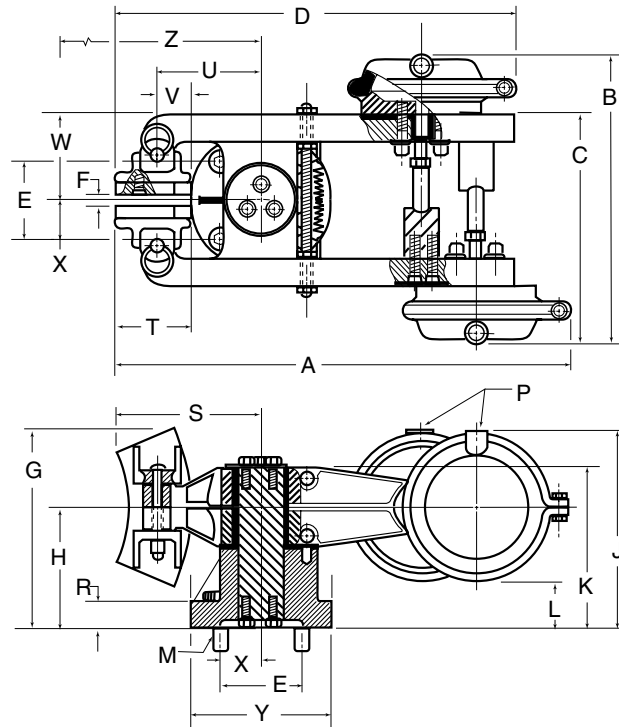
Caution: QD Bushings must be capable of carrying the torque produced by the caliper brake and disc selected. Check with the QD Bushing manufacturer for bushing torque ratings.

▶ TORQUE VS. AIR PRESSURE



SPC MODEL AIR ACTUATED CALIPER BRAKES - APPROXIMATE DIMENSIONS (INCHES)

► AIR ACTUATED



BRAKE PRODUCT NUMBER	ACTUATOR PRODUCT NUMBER	A	B ^①	C	D	E	F	G	H	J	K	L
837400	837500	19.69	13.81	11.31	17.31	3.53	0.56	8.44	5.19	8.50	6.88	1.94
M	P	R	S	T	U	V	W	X	Y	Z*		
(4).625-11x 2.50	.375 NPT	1.12	6.31	3.17	4.50	1.38	3.62	1.77	6.12	3.00**		

* disc center location **+ disc radius ^①With fully worn linings

BRAKES

SPC MODEL SPRING ACTUATED CALIPER BRAKES

SPC Single Post Caliper Spring Actuated Caliper Brake provides:

- ▶ Spring Actuation
- ▶ Static Torque capability up to 50,000 In. Lbs.
- ▶ Brake actuator is moveable to permit a change in mechanical advantage which varies the torque range
- ▶ All Models may be quickly and easily converted from one actuating system to another
- ▶ Arced brake shoes with quick removable pin mounting
- ▶ Pedestal style base is easily mounted in a small area
- ▶ Optional discs available from 16 to 24 inch diameter
- ▶ Disc Speeds up to 2800 rpm with 16 inch disc
- ▶ **QD Bushing** compatible, for shaft sizes up to 3.875 inches

The Brake, Actuator and Disc must be ordered separately. QD Bushing and Air Hose are customer furnished.

▶ SPC MODEL, SINGLE POST CALIPER BRAKE

Ordering Information:

To achieve a complete brake assembly, you must order a Brake, the required number of Actuators and desired Disc. Performance values are dependent upon Actuator location, number of Actuators and Disc diameter. Determine performance required from the charts.

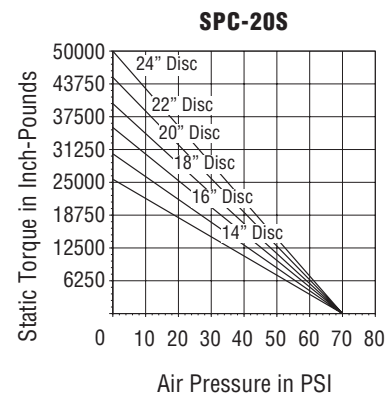
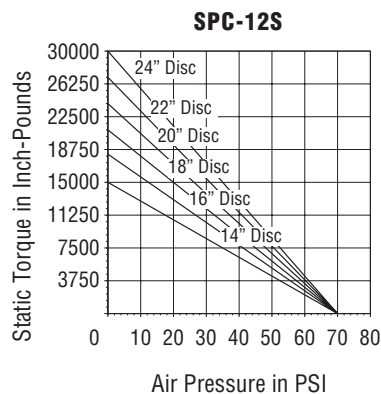
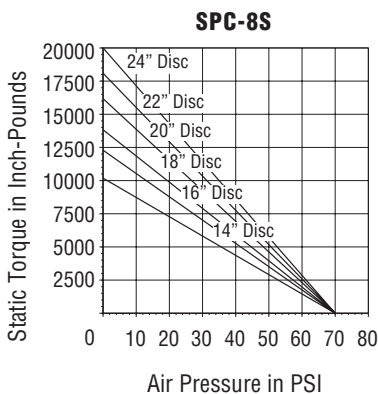
Model	Brake Product Number	# of Actuators Required	Actuator Product Number	Shipping Wt. (Lbs)
SPC-8S	837400	1	837600	77
SPC-12S	837400	1	837600	77
SPC-20S	837400	2	837600	83

▶ Disc & QD BUSHING OPTIONS

Discs must be ordered separately. QD Bushings are customer furnished. For additional Disc details, see pages 146 and 147. Bushings fit into the bore of the brake disc hub, changing the bore to the size needed.

Caution: QD Bushings must be capable of carrying the torque produced by the caliper brake and disc selected. Check with the QD Bushing manufacturer for bushing torque ratings.

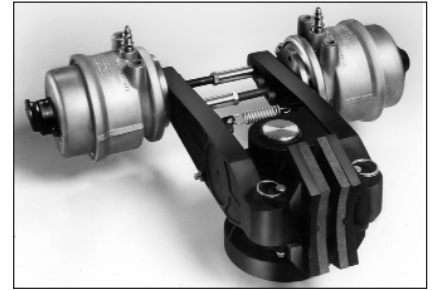
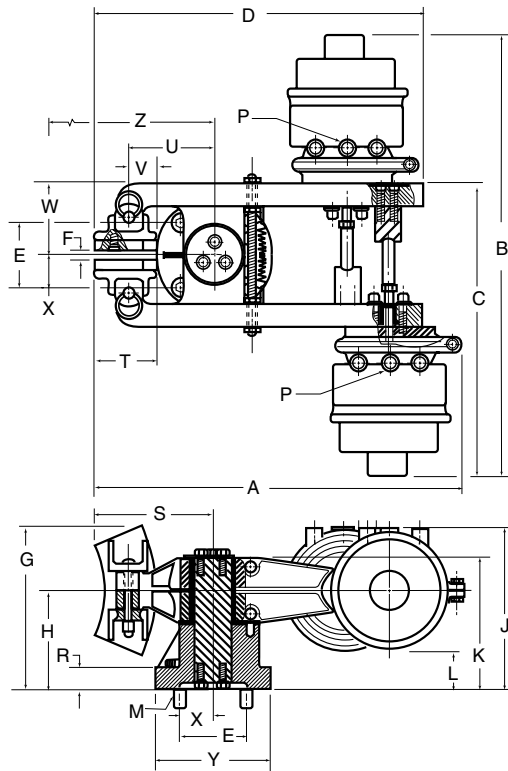
▶ TORQUE VS. AIR PRESSURE



NOTE: Torque values for spring applied brakes will vary over the life of the brake as a function of spring force and the burnishing process of the lining. Over the life of the linings, torque values may exceed published values by up to 40%.

SPC MODEL SPRING ACTUATED CALIPER BRAKES - APPROXIMATE DIMENSIONS (INCHES)

► SPRING ACTUATED



BRAKE PRODUCT NUMBER	ACTUATOR PRODUCT NUMBER	A	B ^①	C	D	E	F	G	H	J	K	L
837400	837600	19.19	24.06	16.44	17.31	3.53	0.56	8.44	5.19	8.50	6.88	2.03
M	P	R	S	T	U	V	W	X	Y	Z*		
(4).625-11x 2.50	.375 NPT	1.12	6.41	3.29	4.50	1.38	3.62	1.77	6.12	3.00**		

* disc center location **+ disc radius ^① With fully worn linings

BRAKES

CALIPER BRAKE DISCS

► CALIPER BRAKE DISCS, NON-VENTILATED

- 12 to 24 inch diameter non-ventilated discs
- Discs fit shaft sizes to 3.875 inches
- Disc torque factors and working radius vary by type of brake used (see chart at right for specifics)
- Customer supplied QD Bushings are used for shaft attachment and vary by disc (see chart at right)
- Discs must be ordered separately from the Caliper Brake

► CALIPER BRAKE DISCS, VENTILATED

- 18.25 to 24 inch diameter ventilated discs
- Design forces air across disc surfaces before heat sinks in
- Discs fit shaft sizes to 3.875 inches
- Thermal rating 2 to 12 Horsepower
- Disc torque factors and working radius vary by type of brake used (see chart at right for specifics)
- Customer supplied QD Bushings are used for shaft attachment and vary by disc (see charts at right)
- Discs must be ordered separately from the Caliper Brake

► QD BUSHINGS

- Quick Detach “QD” Bushings are customer furnished
- Bushings should be used with specific disc (see charts at right)

CAUTION: QD Bushings must be capable of carrying the torque produced by the brake. Check with the QD Bushing manufacturer for bushing torque ratings.

► CALIPER BRAKE DISCS, NON-VENTILATED

Disc Diameter	Product Number	Speed Up to (RPM)	Heat Sink Capacity (Ft. Lbs)	Inertia-WK ² (Lbs • Ft ²)	Shipping Wt. (Lbs)
12.00 Inch	934201	3800	265,000	1.91	24
14.00 Inch	934202	3200	320,800	3.51	45
16.00 Inch	934203	2800	376,600	5.96	59
18.00 Inch	934204	2500	432,400	9.96	81
20.00 Inch	934205	2200	529,400	14.93	93
22.00 Inch	934206	2000	636,100	22.06	106
24.00 Inch	934207	1900	703,000	30.86	122

► CALIPER BRAKE DISCS, VENTILATED

Disc Diameter	Product Number	Speed Up to (RPM)	Heat Sink Capacity (Ft. Lbs)	Inertia-WK ² (Lbs • Ft ²)	Shipping Wt. (Lbs)
18.25 Inch	934200	1500	1,500,000	15.97	75
21.00 Inch	934300	1300	2,100,000	24.28	90
24.00 Inch	934400	1100	2,700,000	42.79	110

► CALIPER BRAKE DISCS, NON-VENTILATED

Disc Diameter Type	Compatible QD Bushing	QD Bushing Bore Range	Keyway
12.00 Inch	SF	0.500 - 2.312	Standard
14.00 Inch	E	0.875 - 2.875	Standard
16.00 Inch	E	0.875 - 2.875	Standard
18.00 Inch	J	1.500 - 3.875	Standard
20.00 Inch	J	1.500 - 3.875	Standard
22.00 Inch	J	1.500 - 3.875	Standard
24.00 Inch	J	1.500 - 3.875	Standard

► CALIPER BRAKE DISCS, VENTILATED

Disc Diameter Type	Compatible QD Bushing	QD Bushing Bore Range	Keyway
18.25 Inch	J	1.500 - 3.875	Standard
21.00 Inch	J	1.500 - 3.875	Standard
24.00 Inch	J	1.500 - 3.875	Standard

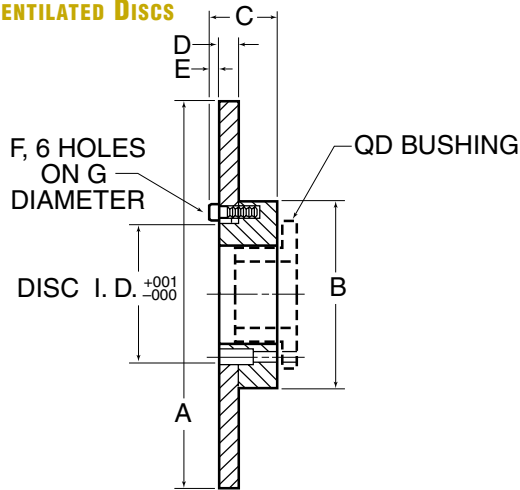
▶ DISC TORQUE CAPACITY & WORKING RADIUS BY BRAKE STYLE

Brake Model	Torque Factor (f)	Disc Diameter:	12"	14"	16"	18"	20"	22"	24"
			Working Radius of Disc in Inches (R)						
BC288 (Air)	365		--	--	6.938	7.938	8.938	9.938	10.938
BC425 (Air)	800		--	--	6.938	7.938	8.938	9.938	10.938
BC288 (Spring)	224		--	--	6.938	7.938	8.938	9.938	10.938
BC425 (Spring)	485		--	--	6.938	7.938	8.938	9.938	10.938
BD	1790		4.475	5.562	6.625	7.625	8.625	9.625	10.625
SPC8	1900		4.203	5.375	6.500	7.563	8.563	9.563	10.563
SPC12	2800		4.203	5.375	6.500	7.563	8.563	9.563	10.563
SPC20	4700		4.203	5.375	6.500	7.563	8.563	9.563	10.563

Calculated torque = fR

CALIPER BRAKE DISCS - APPROXIMATE DIMENSIONS (INCHES)

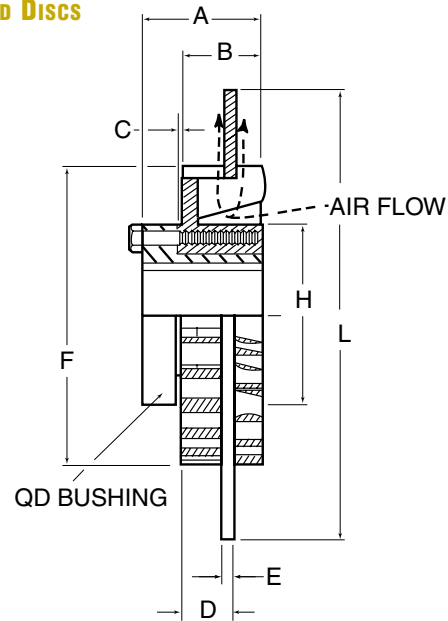
▶ NON-VENTILATED DISCS



DISC WITH HUB PRODUCT NUMBER	A DISC DIA	B	C	D	E	QD BUSHING	MAX* BORE	DISC W/O HUB PRODUCT NUMBER	I.D.	F	G
934201	12.00	5.70	2.12	0.50	0.38	SF	2.312	934219	4.438	.34	5.094
934202	14.00	7.75	2.62	0.50	0.50	E	2.875	934220	5.750	.56	6.875
934203	16.00	7.75	2.62	0.50	0.50	E	2.875	934221	5.750	.56	6.875
934204	18.00	9.75	4.31	0.50	0.62	J	3.875	934222	7.250	.69	8.500
934205	20.00	9.75	4.31	0.50	0.62	J	3.875	934223	7.250	.69	8.500
934206	22.00	9.75	4.31	0.50	0.62	J	3.875	934224	7.250	.69	8.500
934207	24.00	9.75	4.31	0.50	0.62	J	3.875	934225	7.250	.69	8.500

*With std. keyway

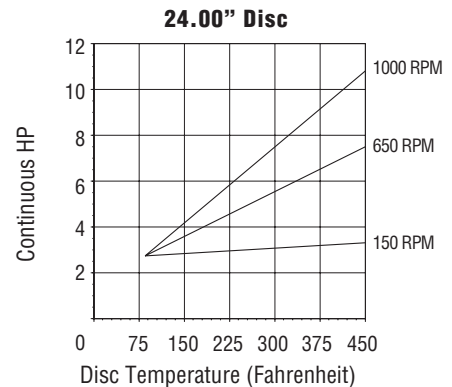
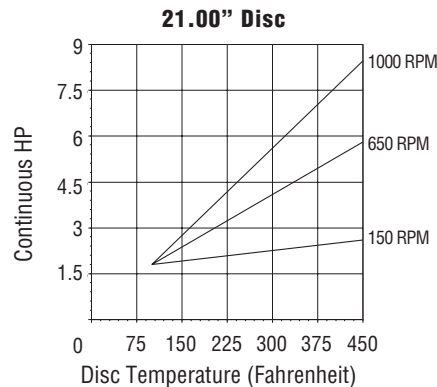
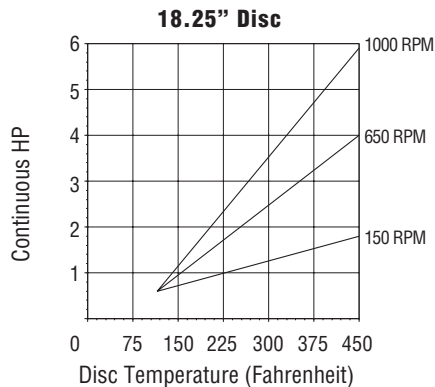
▶ VENTILATED DISCS



PRODUCT NUMBER	DISC DIA	A	B	C	D	E	F	H	QD BUSHING	MAX* BORE
934200	18.25	4.75	3.19	0.19	2.25	0.50	12.00	7.50	J	3.875
934300	21.00	4.75	3.19	0.19	2.25	0.50	12.00	7.50	J	3.875
934400	24.00	4.75	3.19	0.19	2.25	0.50	12.00	7.50	J	3.875

*With std. keyway

▶ HEAT DISSIPATION - VENTILATED DISCS



Note: For maximum wear life of friction facings, operation above 450° F with standard facings should be minimized.

BRAKES

“Air Champ”

MODEL J & K DRUM BRAKES

These Drum Brakes provide accurate tension control, light duty stopping, holding or continuous braking:

- ▶ Static Torque capacity up to 1200 In. Lbs. @ 80 psi
- ▶ Thermal Horsepower rating up to 0.500
- ▶ Air Actuated for accurate, economical operation
- ▶ Long wearing friction linings
- ▶ **2 Drums** for each Model, either with standard bore or no bore for customization
- ▶ Mounts directly on **shaft** or on a **self-centering mounting bracket**

Order Brake, Drum and Bracket separately for application convenience.

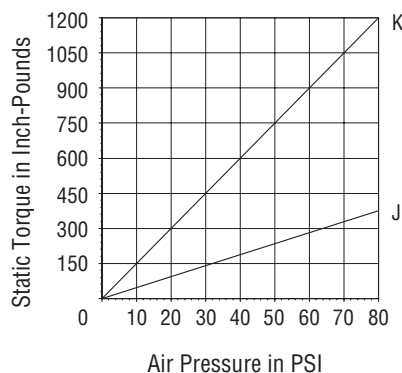
▶ MODEL J DRUM BRAKES

Component	Product Number	HP _t	Inertia Lb • In ²	Shipping Wt. (Lbs)	Speeds up to RPM
Model J Brake only	841600	0.200		3	
Drum, No Bore	842000		2.160	2	5500
Drum, Bored	842300		2.160	2	5500
Bracket, Self-centering	842100			2	

▶ MODEL K DRUM BRAKES

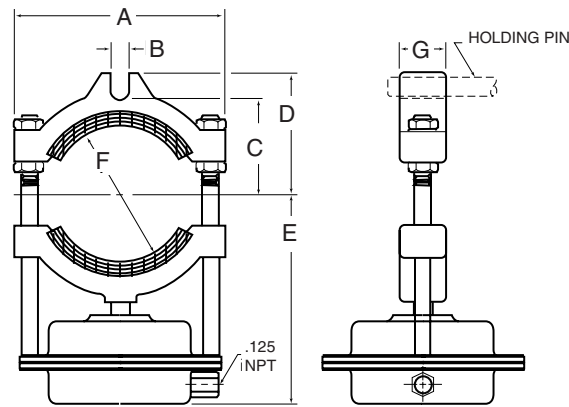
Component	Product Number	HP _t	Inertia Lb • In ²	Shipping Wt. (Lbs)	Speeds up to RPM
Model K Brake only	843200	0.500		6	
Drum, No Bore	843600		9.790	6	5500
Drum, Bored	844000		9.790	6	5500
Bracket, Self-centering	843700			4	

▶ TORQUE VS. AIR PRESSURE



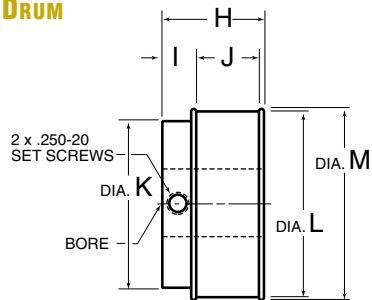
NOTE: Dynamic torque is approximately 85% of static torque.

MODEL J & K DRUM BRAKES - APPROXIMATE DIMENSIONS (INCHES)



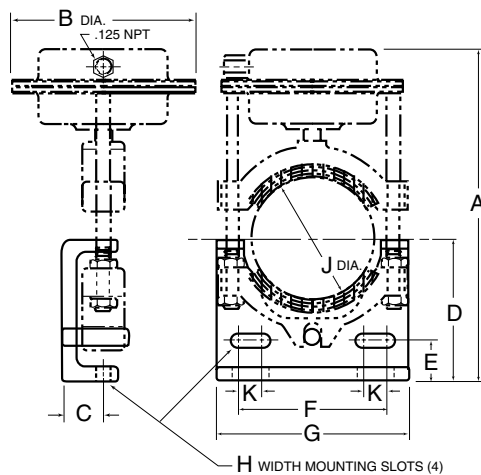
MODEL	PRODUCT NUMBER	A	B	C	D	E	F	G
J	841600	4.00	0.38	1.88	2.38	4.12	2.75	0.88
K	843200	5.25	0.62	2.62	3.38	5.71	4.00	1.25

► BRAKE DRUM



MODEL	PRODUCT NUMBER	H	I	J	K	L	M	BORE ⁺⁰⁰¹ / ₋₀₀₀
J	842000	1.50	0.50	0.94	2.50	2.75	2.88	NONE, 2.000 MAX
J	842300	1.50	0.50	0.94	2.50	2.75	2.88	1.000
K	844000	2.12	0.62	1.38	2.62	4.00	4.12	1.000
K	843600	2.12	0.62	1.38	2.62	4.00	4.12	NONE, 2.000 MAX

► SELF-CENTERING BRACKET



MODEL	PRODUCT NUMBER	A	B	C	D	E	F	G	H	J	K
J	842100	7.50	3.88	0.81	3.00	0.88	3.75	4.25	0.344	2.75	0.50
K	843700	9.62	5.00	1.25	3.88	1.25	5.12	5.75	0.406	4.00	0.62

BRAKES

“Air Champ”

MODEL 8K & 12K STANDARD DRUM BRAKES

These Drum Brakes are ideal for high torque and slow speed tension control applications:

- ▶ 8 inch or 12 inch Drum size
 - ▶ Thermal Horsepower rating up to 3.000 HPt
 - ▶ Static Torque capacity up to 3750 In. Lbs. @ 80 psi
 - ▶ Each Model allows you to customize your drum bore
 - ▶ **Shaft mounted** design
 - ▶ Air Actuated for accurate, economical operation
 - ▶ Long wearing friction linings
- Order Brake and Drum separately.

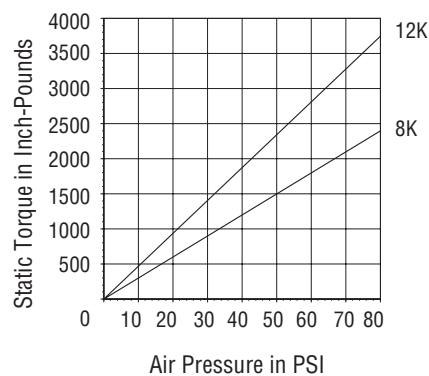
▶ MODEL 8K DRUM BRAKES

Component	Product Number	HP _t	Inertia Lb • In ²	Shipping Wt. (Lbs)	Speeds up to RPM
Model 8K Brake only	845200	1.500		12	
Drum, No Bore	845300		103.700	22	2700

▶ MODEL 12K DRUM BRAKES

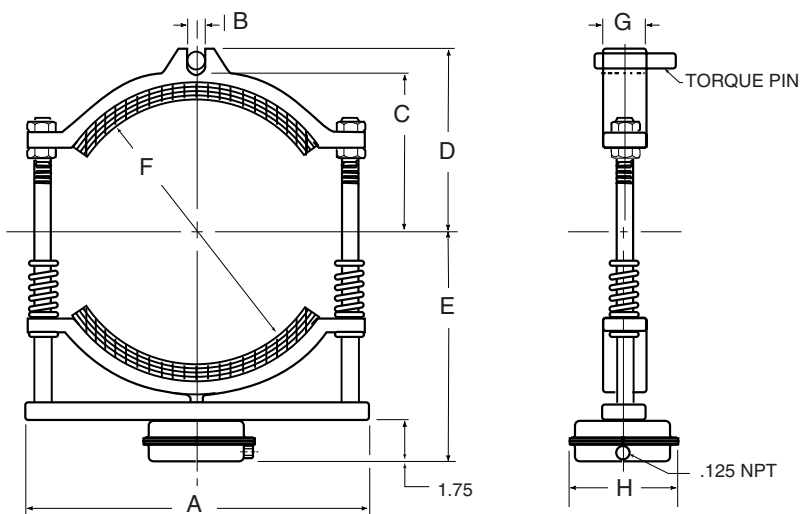
Component	Product Number	HP _t	Inertia Lb • In ²	Shipping Wt. (Lbs)	Speeds up to RPM
Model 12K Brake only	845500	3.000		18	
Drum, No Bore	845600		465.100	32	1800

▶ TORQUE VS. AIR PRESSURE



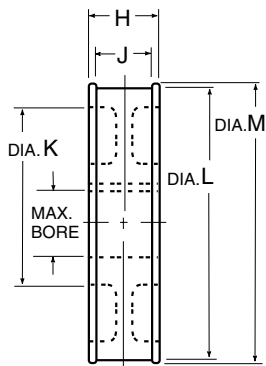
NOTE: Dynamic torque is approximately 85% of static torque.

MODEL 8K & 12K STANDARD DRUM BRAKES - APPROXIMATE DIMENSIONS (INCHES)



MODEL	PRODUCT NUMBER	A	B	C	D	E	F	G	H
8K	845200	10.75	0.75	4.88	6.00	7.88	8.00	2.00	5.00
12K	845500	15.00	0.88	7.19	8.19	10.25	12.00	2.00	5.00

▶ BRAKE DRUM



MODEL	PRODUCT NUMBER	H	J	K	L	M	MAX BORE ⁺⁰⁰¹ / ₋₀₀₀
8K	845300	2.75	2.25	4.75	8.00	8.50	3.000
12K	845600	2.75	2.25	4.75	12.00	12.50	4.000

BRAKES

"Air Champ"

MODEL 4K, 8K & 12K HINGE TOP DRUM BRAKES

These Drum Brakes are ideal for high torque slow speed control applications:

- ▶ Hinged design for use with removable brake drums
 - ▶ 4, 8 and 12 inch Drum sizes available
 - ▶ Thermal Horsepower rating up to 3.000 HPt
 - ▶ Static Torque capacity up to 3750 In. Lbs. @ 80 psi
 - ▶ Each Model allows you to customize your drum bore
 - ▶ **Shaft mounted** design
 - ▶ Air Actuated for accurate, economical operation
 - ▶ Long wearing friction linings
- Order Brake and Drum separately.

▶ MODEL 4K HINGE TOP DRUM BRAKES

Component	Product Number	HP _t	Inertia Lb • In ²	Shipping Wt. (Lbs).	Speeds up to RPM
Model 4K Brake only	845100	0.500		8	
Drum, No Bore	843600		9.790	6	5500
Drum, Bored	844000		9.790	6	5500

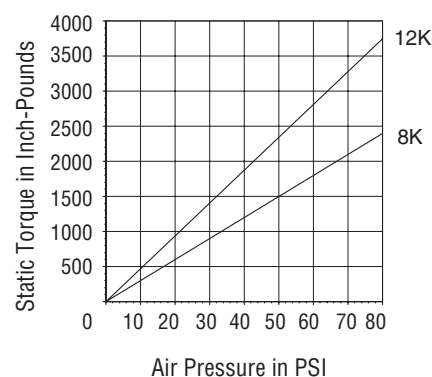
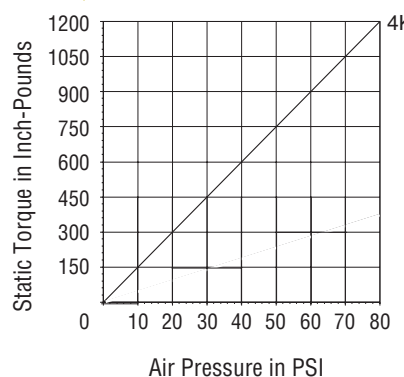
▶ MODEL 8K HINGE TOP DRUM BRAKES

Component	Product Number	HP _t	Inertia Lb • In ²	Shipping Wt. (Lbs).	Speeds up to RPM
Model 8K Brake only	845400	1.500		18	
Drum, No Bore	845300		103.700	22	2700

▶ MODEL 12K HINGE TOP DRUM BRAKES

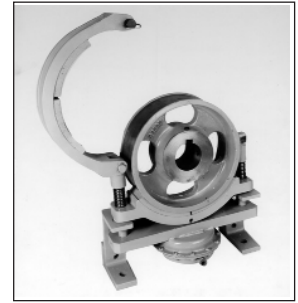
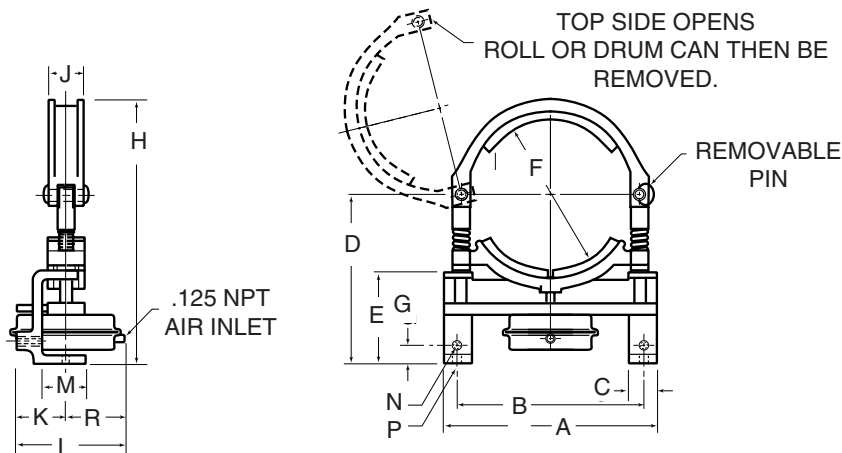
Component	Product Number	HP _t	Inertia Lb • In ²	Shipping Wt. (Lbs).	Speeds up to RPM
Model 12K Brake only	845700	3.000		29	
Drum, No Bore	845600		465.100	32	1800

▶ TORQUE VS. AIR PRESSURE



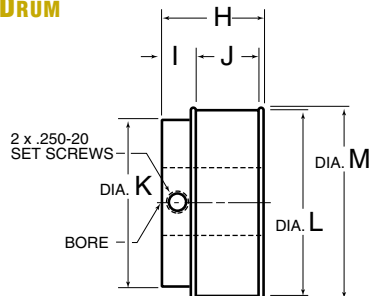
NOTE: Dynamic torque is approximately 85% of static torque.

MODEL 4K, 8K & 12K HINGE TOP DRUM BRAKES - APPROXIMATE DIMENSIONS (INCHES)



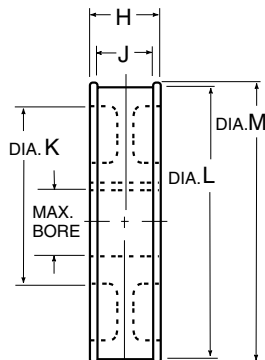
MODEL	PRODUCT NUMBER	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R
4K	845100	5.88	5.25	1.12	5.81	3.31	4.00	1.00	8.56	1.25	2.25	4.75	2.12	.375-16	0.44	1.69	2.50
8K	845400	11.25	9.75	1.50	9.09	4.88	8.00	1.00	14.06	2.00	2.62	5.12	2.06	.500-13	0.56	1.06	2.50
12K	845700	16.25	14.25	2.00	11.22	5.88	12.00	1.31	18.50	2.00	2.62	5.12	2.44	.750-10	0.78	1.31	2.50

▶ BRAKE DRUM



MODEL	PRODUCT NUMBER	H	I	J	K	L	M	BORE ^{+0.001 -0.000}
4K	843600	2.12	0.62	1.38	2.62	4.00	4.12	NONE, 2.000 MAX
4K	844000	2.12	0.62	1.38	2.62	4.00	4.12	1.000

▶ BRAKE DRUM



MODEL	PRODUCT NUMBER	H	J	K	L	M	MAX BORE ^{+0.001 -0.000}
8K	845300	2.75	2.25	4.75	8.00	8.50	3.000
12K	845600	2.75	2.25	4.75	12.00	12.50	4.000

BRAKES

"Air Champ"

DUAL PLATE BRAKE MODELS DPB-9T & DPB-11T

- Static Torque capacity up to:
DPB-9T/5500 In. Lbs. @ 80 psi
DPB-11T/11,000 In. Lbs. @ 80 psi
- Maximum Operating Speed up to
DPB-9T/2200 rpm
DPB-11T/1800 rpm
- Thermal Horsepower rating of:
DPB-9T/3.3 @ 2200 rpm
DPB-11T/5.5 @ 1800 rpm
- Torque Arm assembly allows you to anchor the housing
- Standard bore sizes:**
DPB-9T/6 sizes; 1.187 to 2.375 inches
DPB-11T/7 sizes; 1.187 to 2.875 inches
- Accepts QD Bushings** for mounting flexibility;
DPB-9T/Size SK, DPB-11T/Size SF
Order Brake, Support Bushing and Torque Arm separately. QD Bushing is customer supplied.

DPB-9T & DPB-11T DUAL PLATE BRAKES

Model	Brake Component	Product Number	MAX Speed (RPM)	HP _t	Shipping Wt. (Lbs)
DPB-9T	Brake	960000	2200	3.3	58
DPB-9T	Torque Arm	960100		--	11
DPB-11T	Brake	961000	1800	5.5	98
DPB-11T	Torque Arm	961100		--	13

SUPPORT BUSHING/BORE OPTIONS

A Support Bushing is used in conjunction with a QD Bushing to reduce the brake bore. Bushings fit into the bore of the brake, reducing it to the size indicated.

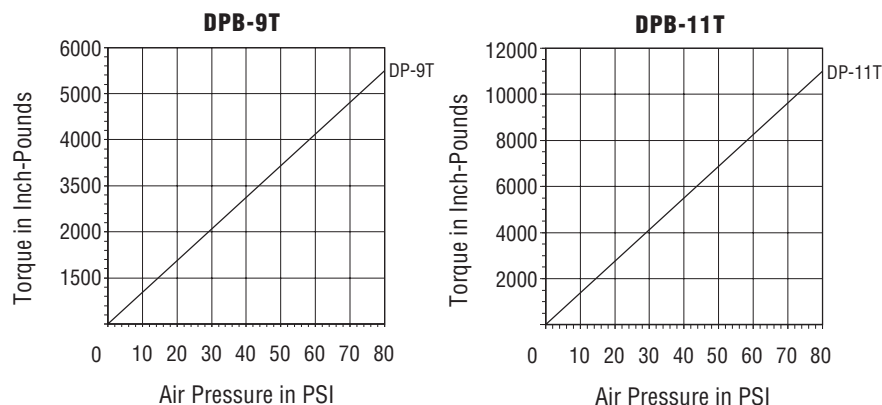
Model	Brake Component	Product Number	Reduce Bore Size to: (In)	Shipping Wt. (Lbs)
DPB-9T	Support Bushing	960419	1.187	1
DPB-9T	Support Bushing	960423	1.437	1
DPB-9T	Support Bushing	960427	1.687	1
DPB-9T	Support Bushing	960430	1.875	1
DPB-9T	Support Bushing	960431	1.937	1
DPB-9T	Support Bushing	960434	2.125	1
DPB-9T	Bushing-Unfinished Bore	960400	0/1.130 ID MIN.	1
DPB-11T	Support Bushing	961430	1.875	2
DPB-11T	Support Bushing	961431	1.938	2
DPB-11T	Support Bushing	961434	2.125	2
DPB-11T	Support Bushing	961435	2.188	2
DPB-11T	Support Bushing	961438	2.375	2
DPB-11T	Support Bushing	961439	2.438	2
DPB-11T	Support Bushing	961440	2.500	2
DPB-11T	Bushing-Unfinished Bore	961400	0/1.375 ID MIN.	2

QD MOUNTING BUSHINGS

Quick Detachable "QD" Bushings are customer furnished. Bushings fit into the bore of the brake, changing the bore to the size indicated.

CAUTION: QD Bushings must be capable of carrying the torque produced by the brake. Check with the QD Bushing manufacturer for bushing torque ratings.

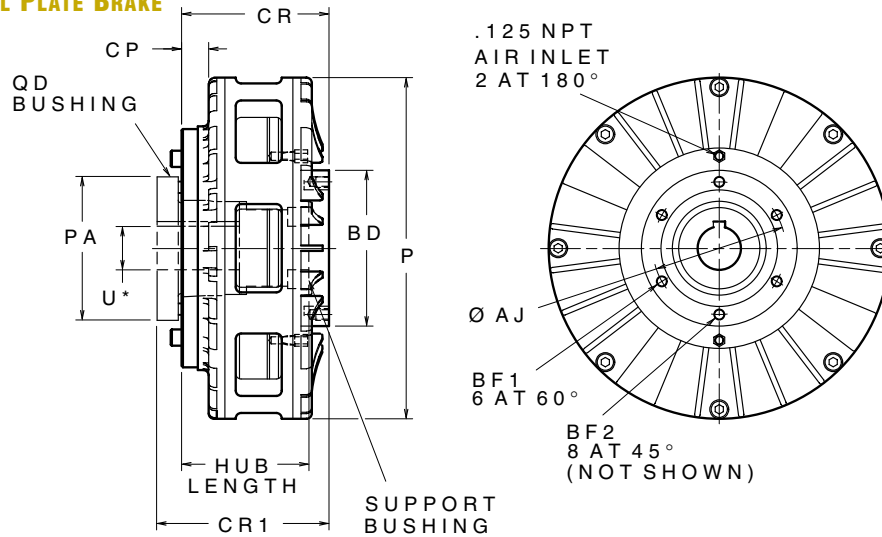
TORQUE VS. AIR PRESSURE



NOTE: Dynamic torque is approximately 85% of static torque.

DPB-9T& DPB-11 DUAL PLATE BRAKES - APPROXIMATE DIMENSIONS (INCHES)

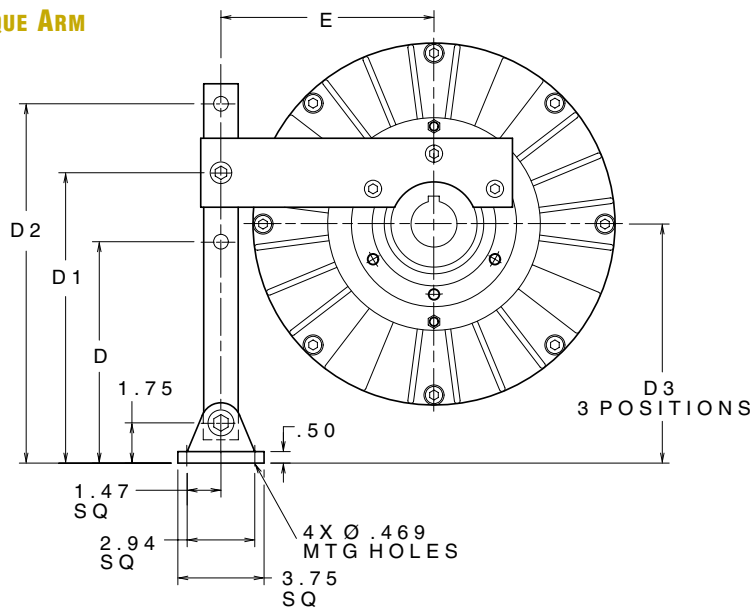
▸ DUAL PLATE BRAKE



MODEL	PRODUCT NUMBER	AJ	BD	BF1	BF2	CP	CR	CR1	P	PA	HUB LENGTH	QD BUSHING	U*
DPB-9T	960000	4.250	4.83	.375-16	--	1.00	5.27	5.43	10.75	3.88	4.07	SK	2.375
DPB-11T	961000	4.750	5.50	.500-13	--	1.00	6.18	6.14	13.25	4.62	4.45	SF	2.875

*Maximum Bore without support bushings.

▸ TORQUE ARM



MODEL	PRODUCT NUMBER	D	D1	D2	D3 (3 POSITIONS)			E
DPB-9T	960100	7.25	10.25	13.25	5.63	8.63	11.63	6.23
DPB-11T	961100	8.37	11.37	14.37	6.49	9.49	12.49	7.70

BRAKES

"Air Champ"

DUAL PLATE BRAKE MODELS DPB-13T & DPB-15T

- Static Torque capacity up to:
DPB-13T/18,000 In. Lbs. @ 80 psi
DPB-15T/36,000 In. Lbs. @ 80 psi
- Maximum Operating Speed up to
DPB-13T/1200 rpm
DPB-15T/900 rpm
- Thermal Horsepower rating of:
DPB-13T/8.0 @ 1200 rpm
DPB-15T/9.0 @ 900 rpm
- Torque Arm assembly allows you to anchor the housing
- Standard bore sizes:**
DPB-13T/3 sizes; 2.938 to 3.438 inches
DPB-15T/2 sizes; 3.500 and 4.000 inches
- Accepts QD Bushings** for mounting flexibility;
DPB-13T/Size F, DPB-15T/Size J
Order Brake, Support Bushing and Torque Arm separately. QD Bushing is customer supplied.

DPB-13T & DPB-15T DUAL PLATE BRAKES

Model	Brake Component	Product Number	MAX Speed (RPM)	HP _t	Shipping Wt. (Lbs)
DPB-13T	Brake	962000	1200	8.0	200
DPB-13T	Torque Arm	962100	--	--	17
DPB-15T	Brake	963000	900	9.0	250
DPB-15T	Torque Arm	963100	--	--	21

SUPPORT BUSHING/BORE OPTIONS

A Support Bushing is used in conjunction with a QD Bushing to reduce the brake bore. Bushings fit into the bore of the brake, reducing it to the size indicated.

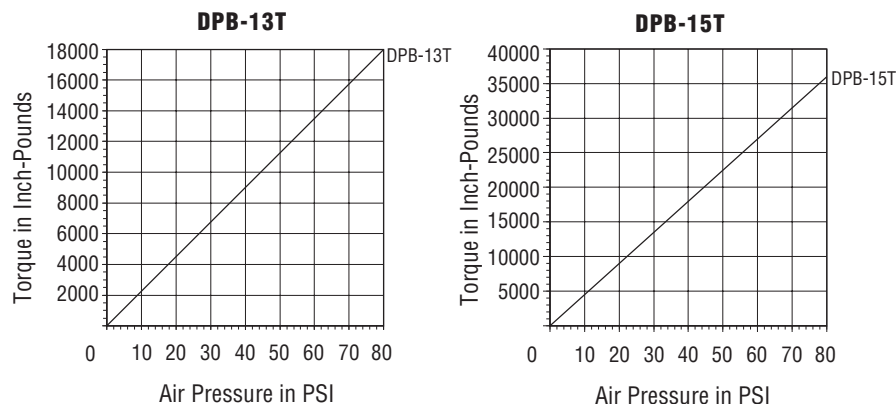
Model	Brake Component	Product Number	Reduce Bore Size to: (In)	Shipping Wt. (Lbs)
DPB-13T	Support Bushing	962447	2.938	2
DPB-13T	Support Bushing	962454	3.375	2
DPB-13T	Support Bushing	962455	3.438	2
DPB-13T	Bushing-Unfinished Bore	962400	0/2.25 ID MIN.	2DPB-11T
DPB-15T	Support Bushing	963456	3.500	2
DPB-15T	Support Bushing	963463	3.938	2
DPB-15T	Bushing-Unfinished Bore	963400	0/3.00 ID MIN.	2

QD MOUNTING BUSHINGS

Quick Detachable "QD" Bushings are customer furnished. Bushings fit into the bore of the brake, changing the bore to the size indicated.

CAUTION: QD Bushings must be capable of carrying the torque produced by the brake. Check with the QD Bushing manufacturer for bushing torque ratings.

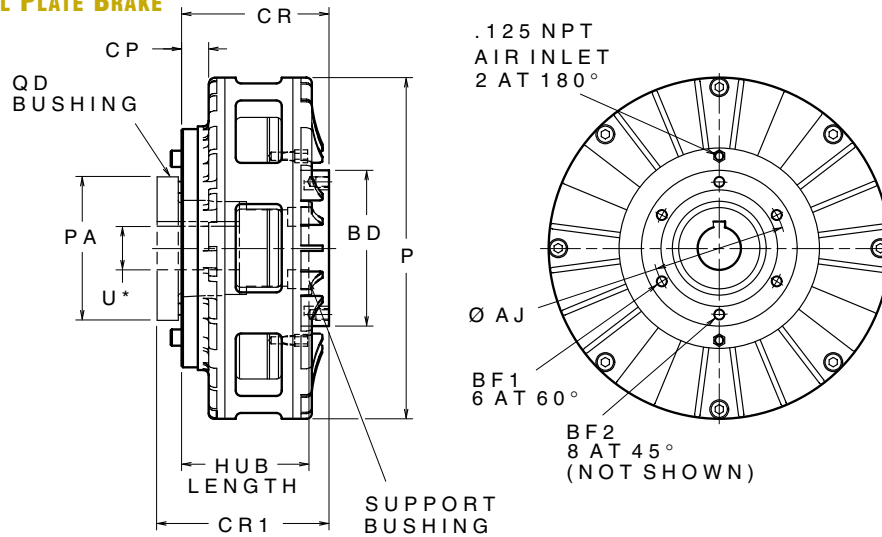
TORQUE VS. AIR PRESSURE



NOTE: Dynamic torque is approximately 85% of static torque.

DPB-13T& DPB-15 DUAL PLATE BRAKES - APPROXIMATE DIMENSIONS (INCHES)

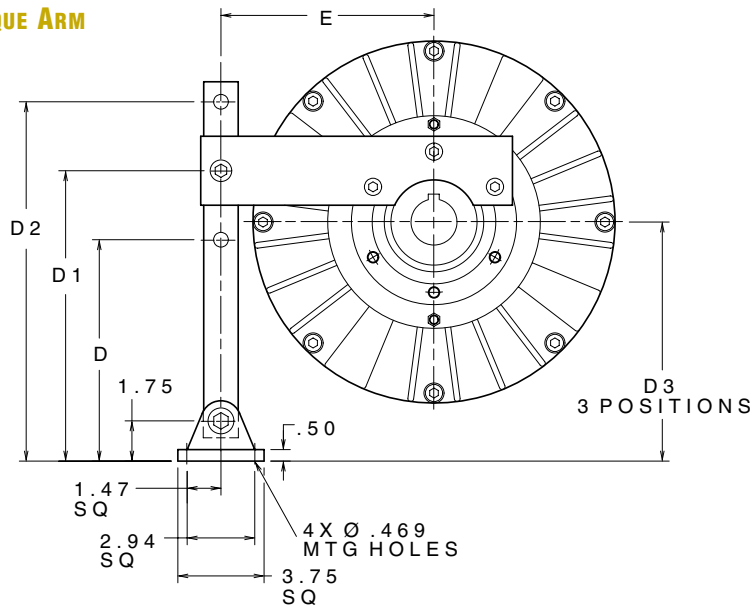
▶ DUAL PLATE BRAKE



MODEL	PRODUCT NUMBER	AJ	BD	BF1	BF2	CP	CR	CR1	P	PA	HUB LENGTH	QD BUSHING	U*
DPB-13T	962000	6.125	7.19	.500-13	--	1.25	6.80	7.96	15.75	6.62	5.88	F	3.500
DPB-15T	963000	7.000	7.88	--	.500-13	1.13	7.28	8.65	18.00	7.25	6.63	J	4.000

*Maximum Bore without support bushings.

▶ TORQUE ARM



MODEL	PRODUCT NUMBER	D	D1	D2	D3 (3 POSITIONS)			E
DPB-13T	962100	9.63	12.63	15.63	7.40	10.40	13.40	9.27
DPB-15T	963100	10.75	13.75	16.75	8.47	11.47	14.47	10.00

HEAVY DUTY SPRING ENGAGED BRAKE ELEMENTS DFB & QFB SERIES

This **16 Model** Series of spring engaged, air released **Dual Faced** and **Quad Faced Elements** are designed for heavy duty industrial applications requiring high torque and low inertia:

- ▶ Static Torque ratings up to 164,800 In. Lbs.
- ▶ Speeds up to 2200 rpm
- ▶ Thermal Horsepower values up to 14.7
- ▶ **Bore range** of 6.500 inches
- ▶ Brake can be **Thru-Shaft** or **Shaft-End** mounted. Units are intended for horizontal shaft mounting only
- ▶ Dual Faced Elements have two interface surfaces, Quad Faced Elements have four interface surfaces
- ▶ Available with either Standard or High coefficient friction Facings
- ▶ Single or Double Disc Assemblies available in disc sizes from 11.500 to 25.000 inches
- ▶ Rugged design ensures long product life
- ▶ O-ring sealed piston & cylinder design reduces maintenance costs
- ▶ Air is supplied directly at the cylinder air inlets

With this Heavy Duty Series, tough applications are made easy. Each of the 16 Models are detailed on the next few pages.

▶ PEAK INPUT RATE

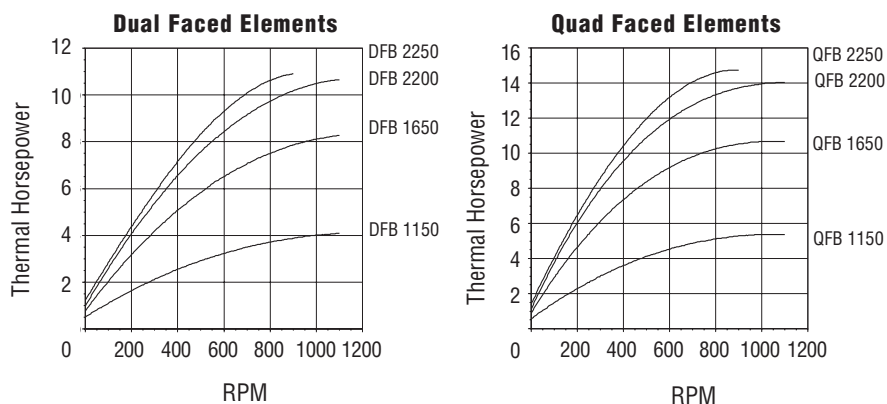
The DFB and QFB Series of Brakes are designed for applications requiring high torque and low inertia. The peak input rate may be the limiting factor in high inertia starts or stops, even though the Heat Sink Capacity is efficient.

The peak input rate capacity is the rate at which the brake absorbs heat at the friction interface during the deceleration period while interfaces are slipping, or until the load and the clutch are operating at the same speed. See page 266 in the Engineering Data Section for information explaining how to calculate the Peak Input Rate and how to avoid potential problems.

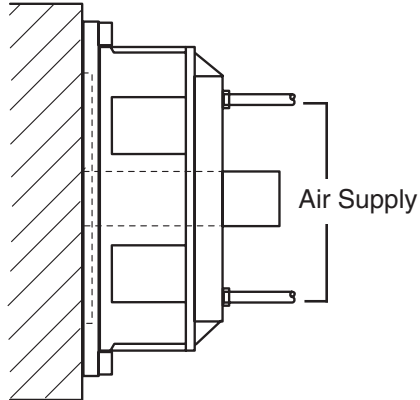
▶ HEAT SINK CAPACITIES & PEAK INPUT RATE

Model	Heat Sink Capacity (Ft Lbs)	Peak Input Rate(HP)	Effective Interface Areas
DFB 1150-S/H	390,000	105	117 in ²
DFB 1650-S/H	870,000	204	227 in ²
DFB 2200-S/H	1,187,000	297	330 in ²
DFB 2500-S/H	1,146,000	363	404 in ²
QFB 1150-S/H	780,000	210	234 in ²
QFB 1650-S/H	1,740,000	408	454 in ²
QFB 2200-S/H	2,374,000	594	660 in ²
QFB 2500-S/H	2,920,000	727	808 in ²

▶ CONTINUOUS RATED THERMAL HORSEPOWER DISSIPATION VS RPM



► SHAFT-END MOUNTED BRAKE ELEMENT



► To APPLY DFB & QFB BRAKES

Element can be Shaft-End or Thru-Shaft Mounted, but must be in a horizontal position.

The housing is flange mounted to the machine frame.

The Hub is keyed to the shaft.

Air is supplied directly at the cylinder air inlets.

Brake Air Connection:

Connect the air supply directly to the two air ports, located 180 degrees apart in the cylinder.

DFB MODEL SERIES, SPRING ENGAGED BRAKE ELEMENTS

This **8 Model** Series of spring engaged, air released Dual Faced Elements are designed for heavy duty industrial applications requiring high torque and low inertia:

- Available with either Standard or High coefficient friction linings
- Available in disc sizes from 11.500 to 25.000 inches
- Bore sizes** range up to 6.000 inches
- Static Torque ratings up to 82,400 In. Lbs.
- "O"-ring sealed piston and cylinder design reduces maintenance costs
- Speeds up to 2200 rpm
- Thermal Horsepower values up to 10.9
- Rugged design insures long product life
- Air is supplied directly at the cylinder air inlets
- Brake can be **Thru-Shaft** or **Shaft-End** mounted
- Units are intended for horizontal shaft mounting only

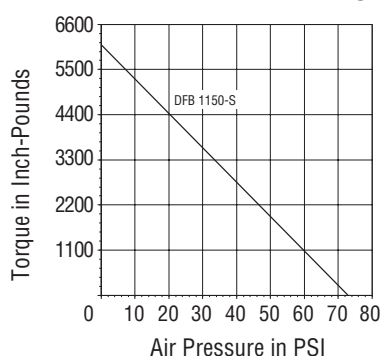
► HOW TO ORDER DFB BRAKE ELEMENTS:

- Determine which bore size you will need;
- If you require a bore size other than the standard Hub bore, you can either order this special size from Nexen or machine it yourself.

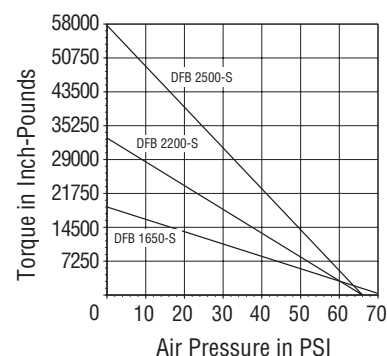
Model	Product Number	Pilot Bore +.001/-0.000	Max Bore	Torque Rating In. Lbs	Disc Inertia Lb. Ft ²	MAX Speed RPM	MIN Diseng. Air Pressure	Shipping Wt. (Lbs)
Standard Coefficient Friction Linings:								
DFB 1150-S	964072	1.000	2.500	6,100	2.800	2200	73 PSI	161
DFB 1650-S	964074	2.000	4.000	19,100	13.900	1500	70 PSI	286
DFB 2200-S	964076	2.500	6.000	33,600	45.100	1100	66 PSI	478
DFB 2500-S	964078	2.500	6.000	57,700	70.000	1000	66 PSI	603
High Coefficient Friction Linings:								
DFB 1150-H	964073	1.000	2.500	8,700	2.800	2200	73 PSI	161
DFB 1650-H	964075	2.000	4.000	27,200	13.,900	1500	70 PSI	286
DFB 2200-H	964077	2.500	6.000	48,000	45.100	1100	66 PSI	478
DFB 2500-H	964079	2.500	6.000	82,400	70.000	1000	66 PSI	603

► TORQUE CAPACITIES

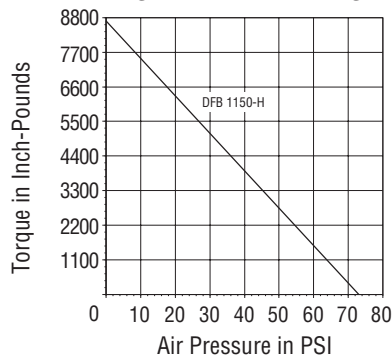
Standard Coefficient Linings



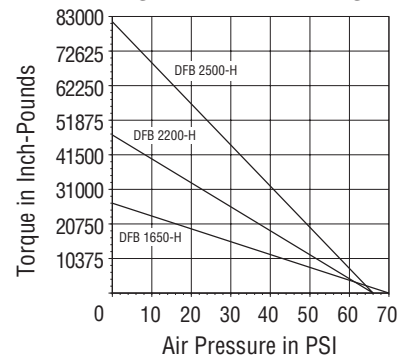
Standard Coefficient Linings



High Coefficient Linings



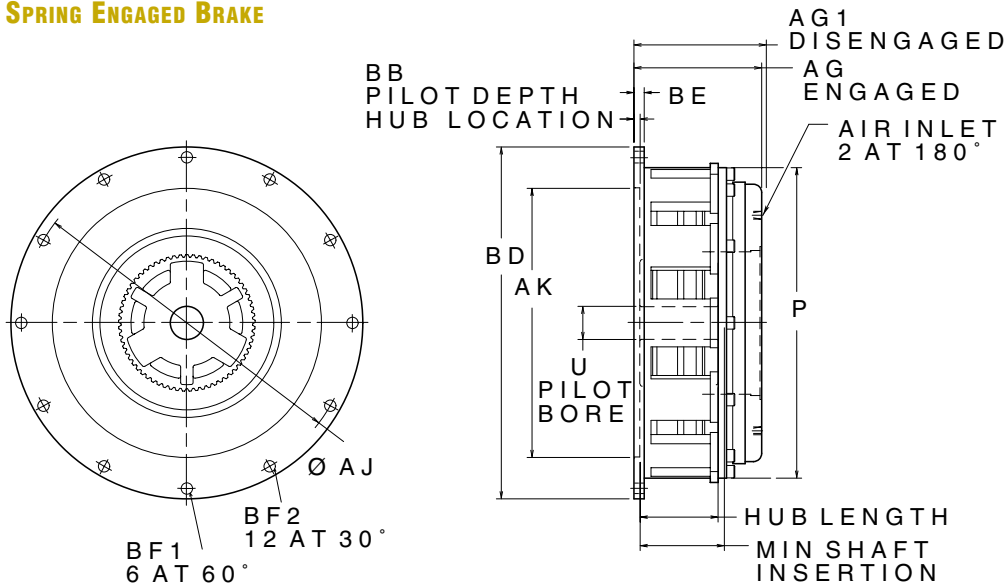
High Coefficient Linings



NOTE: Torque values for spring applied brakes will vary over the life of the brake as a function of spring force and the burnishing process of the lining. Published torque ratings are minimum values. Over the life of the linings, torque values may exceed published values by up to 40%.

DFB MODEL SPRING ENGAGED BRAKE ELEMENTS - APPROXIMATE DIMENSIONS (INCHES)

▸ DFB SPRING ENGAGED BRAKE



MODEL	PRODUCT NUMBER	AIR INLET NPT	HUB LENGTH	AG	AG1	AJ	AK ^{+0.001}	BB	BD	BE	BF1	BF2	P	U ^{+0.001}	MIN SHAFT INSERTION
DFB 1150-S	964072	.250	3.90	7.74	7.88	14.750	11.376	0.38	16.00	0.62	0.687	--	13.62	1.000	4.38
DFB 1150-H	964073	.250	3.90	7.74	7.88	14.750	11.376	0.38	16.00	0.62	0.687	--	13.62	1.000	4.38
DFB 1650-S	964074	.500	4.70	7.71	7.85	20.000	16.251	0.38	21.25	0.62	--	0.687	18.75	2.000	5.08
DFB 1650-H	964075	.500	4.70	7.71	7.85	20.000	16.251	0.38	21.25	0.62	--	0.687	18.75	2.000	5.08
DFB 2200-S	964076	.500	6.00	8.46	8.74	25.500	21.376	0.31	27.00	0.75	--	0.687	24.50	2.500	6.31
DFB 2200-H	964077	.500	6.00	8.46	8.74	25.500	21.376	0.31	27.00	0.75	--	0.687	24.50	2.500	6.31
DFB 2500-S	964078	.500	6.00	8.53	8.81	28.750	24.376	0.25	30.00	0.75	--	0.687	27.50	2.500	6.25
DFB 2500-H	964079	.500	6.00	8.53	8.81	28.750	24.376	0.25	30.00	0.75	--	0.687	27.50	2.500	6.25

▸ HUB BORE INFORMATION

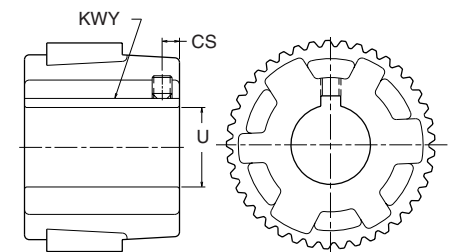
All standard Hubs are furnished in the bore listed in dimension "U" and without keyway or set screw. The Hub bore can be increased to a size equal to the maximum diameter indicated in the table. If you need to increase the bore size of the Hub, you have two options:

1. Nexen can supply you with a specified bore and matching keyway at your request for an extra charge;
2. You can machine your own bore and keyway, with the limits listed in the table.

The following table indicates bore sizes and corresponding key and set screw sizes.

Bore Size	Key Size (sq)	Set Screw Dia.
1.000-1.250	0.250	0.312
1.312-1.375	0.312	0.375
1.437-1.750	0.375	0.375
1.812-2.250	0.500	0.500
2.312-2.750	0.625	0.500
2.812-3.250	0.750	0.625
3.312-3.750	0.875	0.750
3.812-4.500	1.000	0.750
4.562-5.500	1.250	0.875
5.562-6.000	1.500	1.000

▸ DFB Hub



MODEL	CS
DFB 1150	0.44
DFB 1650	0.62
DFB 2200	0.75
DFB 2500	0.75

QFB MODEL SERIES, SPRING ENGAGED BRAKE ELEMENTS

This **8 Model** Series of spring engaged, air released Quad Faced Elements are designed for heavy duty industrial applications requiring high torque and low inertia:

- ▶ Available with either Standard or High coefficient friction linings
- ▶ Available in disc sizes from 11.500 to 25.000 inches
- ▶ **Bore sizes** range up to 6.000 inches
- ▶ Static Torque ratings up to 164,800 In. Lbs.
- ▶ "O"-ring sealed piston and cylinder design reduces maintenance costs
- ▶ Speeds up to 2200 rpm
- ▶ Thermal Horsepower values up to 14.7
- ▶ Rugged design insures long product life
- ▶ Air is supplied directly at the cylinder air inlets
- ▶ Brake can be **Thru-Shaft** or **Shaft-End** mounted
- ▶ Units are intended for horizontal shaft mounting only

Each of the 8 Models are detailed on the next 2 pages. Before looking at the details, first acquaint yourself with the important 'how to order' information.

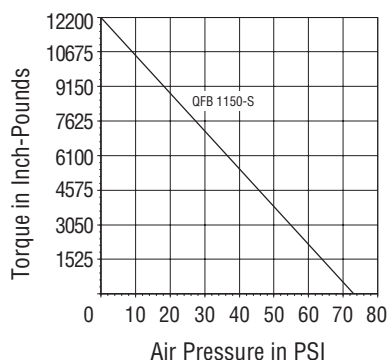
▶ HOW TO ORDER QFB BRAKE ELEMENTS:

1. Determine which bore size you will need;
2. If you require a bore size other than the standard Hub bore, you can either order this special size from Nexen or machine it yourself.

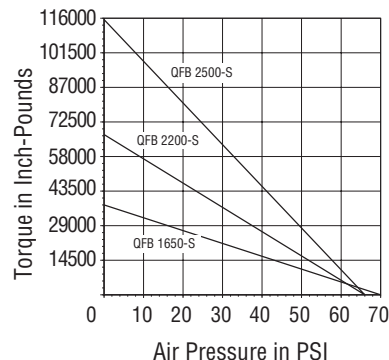
Model	Product Number	Pilot Bore +0.001/-0.000	Max Bore	Torque Rating In. Lbs	Disc Inertia Lb. Ft ²	MAX Speed RPM	MIN Diseng. Air Pressure	Shipping Wt. (Lbs)
Standard Coefficient Friction Linings:								
QFB 1150-S	964080	1.500	3.250	12,200	5.600	2200	73 PSI	220
QFB 1650-S	964082	2.000	5.000	38,200	24.600	1500	70 PSI	392
QFB 2200-S	964084	3.000	6.500	67,200	90.000	1100	66 PSI	682
QFB 2500-S	964086	3.500	6.500	115,400	139.300	1000	66 PSI	848
High Coefficient Friction Linings:								
QFB 1150-H	964081	1.500	3.250	17,400	5.600	2200	73 PSI	220
QFB 1650-H	964083	2.000	5.000	54,400	24.600	1500	70 PSI	392
QFB 2200-H	964085	3.000	6.500	96,000	90.000	1100	66 PSI	682
QFB 2500-H	964087	3.500	6.500	164,800	139.300	1000	66 PSI	848

▶ TORQUE CAPACITIES

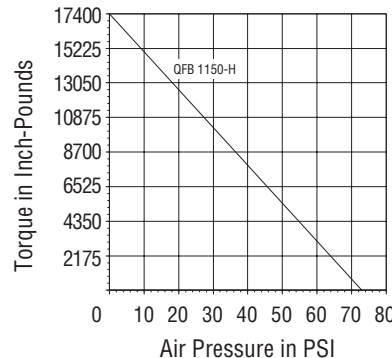
Standard Coefficient Linings



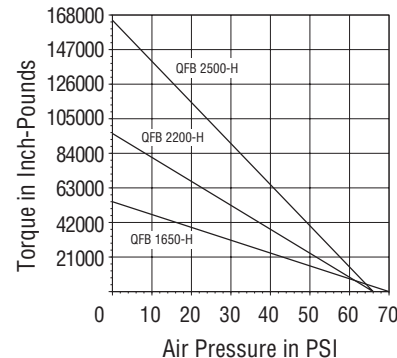
Standard Coefficient Linings



High Coefficient Linings



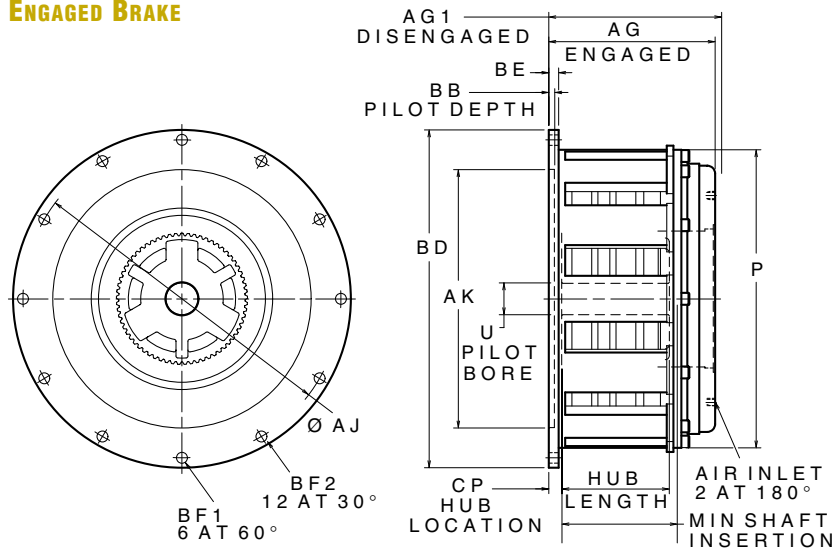
High Coefficient Linings



NOTE: Torque values for spring applied brakes will vary over the life of the brake as a function of spring force and the burnishing process of the lining. Published torque ratings are minimum values. Over the life of the linings, torque values may exceed published values by up to 40%.

QFB MODEL SPRING ENGAGED BRAKE ELEMENTS - APPROXIMATE DIMENSIONS (INCHES)

QFB SPRING ENGAGED BRAKE



MODEL	PRODUCT NUMBER	AIR INLET NPT	HUB LENGTH	AG	AG1	AJ	AK $\pm$.001	BB	BD	BE	BF1	BF2	CP	P	U $\begin{smallmatrix} +.001 \\ -.000 \end{smallmatrix}$	MIN SHAFT INSERTION
QFB 1150-S	964080	.250	5.88	10.48	10.62	14.750	11.376	0.38	16.00	0.62	0.687	--	0.90	13.62	1.500	6.78
QFB 1150-H	964081	.250	5.88	10.48	10.62	14.750	11.376	0.38	16.00	0.62	0.687	--	0.90	13.62	1.500	6.78
QFB 1650-S	964082	.500	6.75	10.45	10.59	20.000	16.251	0.38	21.25	0.62	--	0.687	0.83	18.75	2.000	7.62
QFB 1650-H	964083	.500	6.75	10.45	10.59	20.000	16.251	0.38	21.25	0.62	--	0.687	0.83	18.75	2.000	7.62
QFB 2200-S	964084	.500	7.88	11.58	11.86	25.500	21.376	0.31	27.00	0.75	--	0.687	1.06	24.50	3.000	8.94
QFB 2200-H	964085	.500	7.88	11.58	11.86	25.500	21.376	0.31	27.00	0.75	--	0.687	1.06	24.50	3.000	8.94
QFB 2500-S	964086	.500	7.88	11.67	11.95	28.750	24.376	0.25	30.00	0.75	--	0.687	1.09	27.50	3.500	8.97
QFB 2500-H	964087	.500	7.88	11.67	11.95	28.750	24.376	0.25	30.00	0.75	--	0.687	1.09	27.50	3.500	8.97

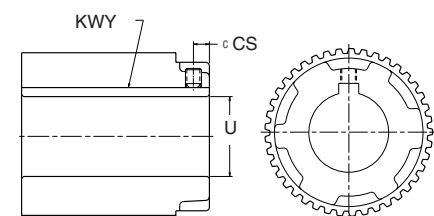
Hub Bore Information

All standard Hubs are furnished in the bore listed in dimension “U” and without keyway. The Hub bore can be increased to a size equal to the maximum diameter indicated in the table. If you need to increase the bore size of the Hub, you have two options:

1. Nexen can supply you with a specified bore and matching keyway at your request for an extra charge;
 2. You can machine your own bore and keyway, within the limits listed in the table.
- The following table indicates bore sizes and corresponding key & set screw sizes.

Bore Size	Key Size (sq)	Set Screw Dia.
1.000-1.250	0.250	0.312
1.312-1.375	0.312	0.375
1.437-1.750	0.375	0.375
1.812-2.250	0.500	0.500
2.312-2.750	0.625	0.500
2.812-3.250	0.750	0.625
3.312-3.750	0.875	0.750
3.812-4.500	1.000	0.750
4.562-5.500	1.250	0.875
5.562-6.000	1.500	1.000

QFB Hub Only



Model	CS
QFB 1150	0.50
QFB 1650	0.75
QFB 2200	0.75
QFB 2500	0.75

BRAKES

METRIC S SERIES STRAIGHT BORE FRICTION BRAKES, S-450, S-600, S-800 & S-1000

► Static Torque capacity up to:

S-450 & S-600/105 Nm

S-800 & S-1000/420 Nm

► Maximum Operating Speed up to 1800 rpm

► Thermal capacity rating of:

S-450/380W @ 1800 rpm

S-600/970W @ 1800 rpm

S-800/1660W @ 1800 rpm

S-1000/2230W @ 1800 rpm

► Heat Sink capacity up to:

S-450 & 600/81,000 joules

S-800 & S-1000/271,000 joules

These self-adjusting air cooled brakes mount easily and come with:

► Standard Bore Sizes:

S-450/25 millimeters

S-600/35 millimeters

S-800/50 millimeters

S-1000/75 millimeters

► 4 Minimum Bore Sizes for custom machining

► Split friction facings for easy replacement without brake removal or disassembly

► Aluminum piston minimizes inertia for smoother response

► Thru-shaft design can be **flange mounted** or **shaft mounted** with a torque pin

Options and Accessories include:

► Torque Pin Bracket allows you to anchor the housing

► Brake Safety Guard for protection

► METRIC S-450, S-600, S-800 & S-1000 MODEL FRICTION BRAKES

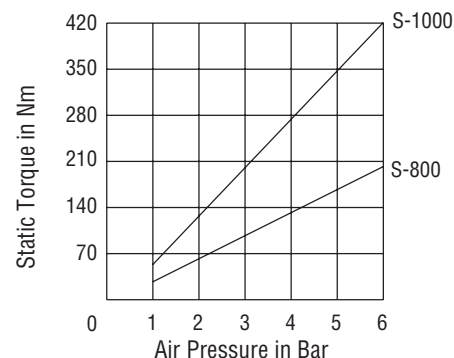
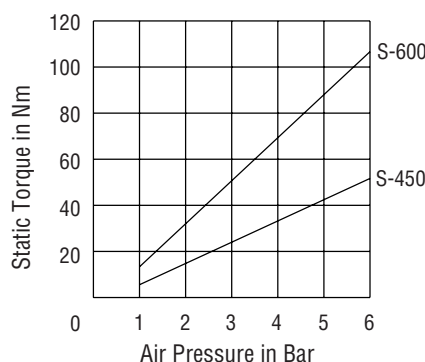
Model	Component	Product Number	Bore (mm)	Key Size	Shipping Wt. (kg)
S-450	Brake, Standard Bore	827810	25	8 x 7	6,2
S-450	Brake, Minimum Bore	827811	13	--	6,2
S-600	Brake, Standard Bore	827910	35	10 x 8	6,2
S-600	Brake, Minimum Bore	827911	17	--	6,2
S-800	Brake, Standard Bore	828010	50	14 x 9	11
S-800	Brake, Minimum Bore	828012	21	--	11
S-1000	Brake, Standard Bore	828110	75	20 x 12	20
S-1000	Brake, Minimum Bore	828111	25	--	20

Minimum bore units are supplied unassembled with machinable hub.

► ACCESSORIES

Model	Component	Product Number	Shipping Wt. (kg)
S-450	Torque Pin Bracket	819900	.45
S-450	Brake Safety Guard	817700	.90
S-600	Torque Pin Bracket	821400	.90
S-600	Brake Safety Guard	818300	.90
S-800	Torque Pin Bracket	823400	1.81
S-800	Brake Safety Guard	826300	1.36
S-1000	Torque Pin Bracket	825500	1.81
S-1000	Brake Safety Guard	828200	1.81

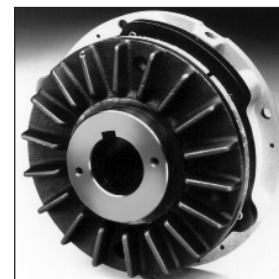
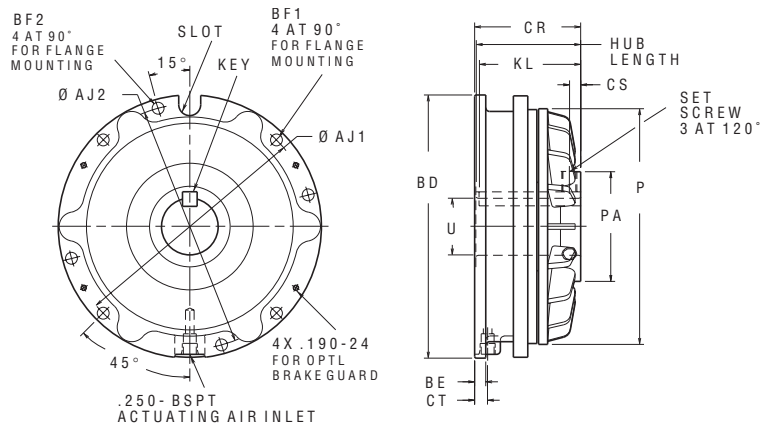
► TORQUE VS. AIR PRESSURE



NOTE: Dynamic torque is approximately 85% of static torque.

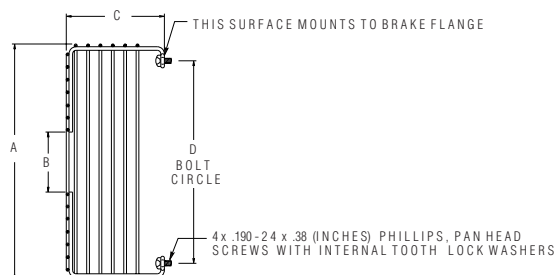
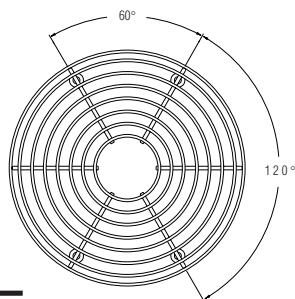
Torque (In. Lbs.) = Nm x 8.849
PSI = Bar ÷ .0689

METRIC SERIES STRAIGHT BORE FRICTION BRAKES - APPROXIMATE DIMENSIONS (MILLIMETERS)



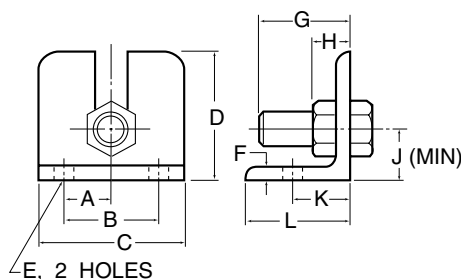
MODEL	PRODUCT NUMBER	P	PA	U ^{H7}	KL	BE	CR	CS	CT	AJ1	AJ2	BD	BF1	BF2	KEY	SET SCREWS	SLOT WD	DP	HUB LENGTH
S-450	827810	116	48	25	22	6	64	5	11	135	--	151	7	--	8 x 7	M5	10	16	64
S-600	827910	154	67	35	79	10	81	6	10	165	--	183	9	--	10 x 8	M6	16	17	79
S-800	828010	205	95	50	90	10	92	10	11	40	--	229	10	--	14 x 9	M6	20	18	91
S-1000	828110	256	127	75	100	13	103	10	18	278	279	302	13	13	20 x 12	M10	24	23	101

▶ BRAKE SAFETY GUARD



MODEL	PRODUCT NUMBER	A	B	C	D
S-450	817700	167	41	68	133
S-600	818300	200	51	83	171
S-800	826300	246	70	93	213
S-1000	828200	316	95	129	282

▶ TORQUE PIN BRACKET



MODEL	PRODUCT NUMBER	A	B	C	D	E	F	G	H	J	K	L
S-450	819900	19	38,1	57	51	10,3	6	38	13	19	25,4	51
S-600	821400	25	50,8	76	64	10,3	6	41	16	28	25,4	51
S-800	823400	28	57,2	89	76	11,9	8	51	19	30	35,1	64
S-1000	825500	32	63,5	102	102	13,5	10	64	22	35	41,1	76

NOTE: Drawings are expressed in third angle projection.

BRAKES

METRIC SSE SERIES STRAIGHT BORE SPRING ENGAGED BRAKES, MODELS SSE-450 & SSE-600

- Static Torque capacity up to:
SSE-450/50 Nm
SSE-600/110 Nm
- Maximum Operating Speed up to 1800 rpm
- Standard Bore Sizes:**
S-450/25 millimeters
S-600/35 millimeters
- Thermal capacity rating of:
S-450/380W @ 1800 rpm
S-600/970W @ 1800 rpm
- Heat Sink capacity up to:
S-450/40,670 joules
S-600/81,000 joules

These spring engaged, air disengaged brakes mount easily and come with:

- Open spring sockets that allow you to add or remove springs to fit your torque needs
- Split friction facings for easy replacement without brake removal or disassembly
- Single plate, finned friction discs provide high heat dissipation
- High dynamic torque capacity insures fast load response
- Flow restrictor valve controls disengagement air to prevent shock load on brake components

Options include:

- Torque Pin Bracket Allows you to keep the housing from spinning
- Brake Safety Guard for protection

METRIC SSE-450 & SSE-600 MODEL SPRING ENGAGED BRAKES

Model	Component	Product Number	Number of Springs	Torque Rating Nm $\pm$ -10%	MIN Disengagement Air Pressure $\pm$ 10% (Bar)	Bore (mm)	Shipping Wt. (kg)
SSE-450	Brake	818830	6	27	4	25	6
SSE-450	Brake	818865	8	40	5	25	6
SSE-450	Brake	818866	10	50	6	25	6
SSE-600	Brake	820330	6	60	4	35	9
SSE-600	Brake	820365	8	90	5	35	9
SSE-600	Brake	820366	10	110	6	35	9

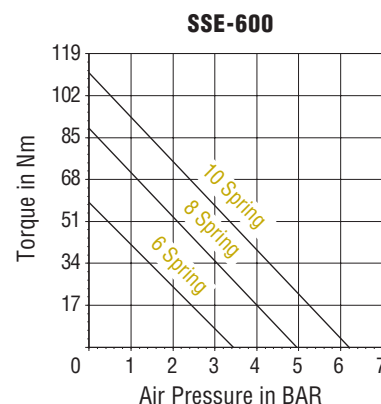
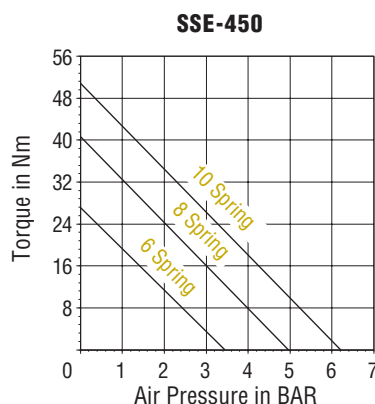
Torque values will exceed those shown after the brake has been burnished in.

Torque values for spring applied brakes will vary over the life of the brake as a function of spring force and the burnishing process of the lining. Over the life of the linings, torque values may exceed published values by up to 40%.

ACCESSORIES

Model	Component	Product Number	Shipping Wt. (kg)
SSE-450	Torque Pin Bracket	819900	.45
SSE-450	Brake Safety Guard	817700	.90
SSE-600	Torque Pin Bracket	821400	.90
SSE-600	Brake Safety Guard	818300	.90

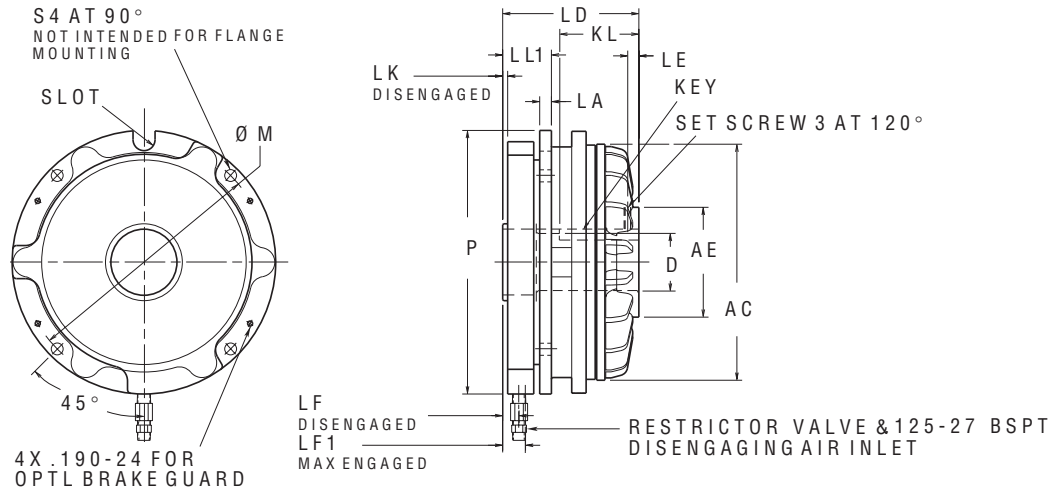
TORQUE VS. AIR PRESSURE



NOTE: Dynamic torque is approximately 85% of static torque.

Torque (In. Lbs.) = Nm x 8.849
PSI = Bar $\div$.0689

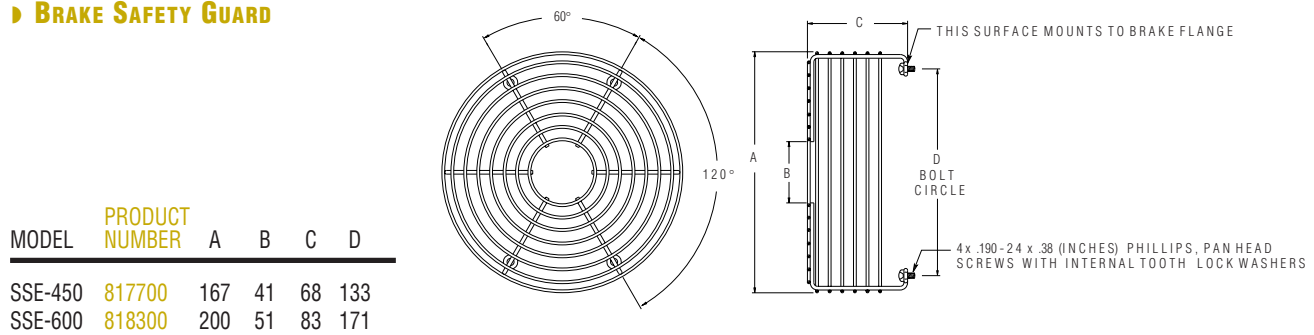
SSE-450 & SSE-600 MODEL STRAIGHT BORE SPRING ENGAGED BRAKES- APPROXIMATE DIMENSIONS (MILLIMETERS)



MODEL	PRODUCT NUMBER	AC	AE	D ^{H7}	KEY	KL	LA	LD	LE	LF	LF1	LK	LL1	M	P	S	SLOT		SET SCREW
																	WD	DP	
SSE-450	818830	116	48	25	7 x 8	22	7	90	5	9	12	0,3	34	135	151	7	10	17	M5
SSE-450	818865	116	48	25	7 x 8	22	7	90	5	9	12	0,3	34	135	151	7	10	17	M5
SSE-450	818866	116	48	25	7 x 8	22	7	90	5	9	12	0,3	34	135	151	7	10	17	M5
SSE-600	820330	154	67	35	8 x 10	79	10	108	6	8	12	-0,3	37	165	183	9	16	17	M6
SSE-600	820365	154	67	35	8 x 10	79	10	108	6	8	12	-0,3	37	165	183	9	16	17	M6
SSE-600	820366	154	67	35	8 x 10	79	10	108	6	8	12	-0,3	37	165	183	9	16	17	M6

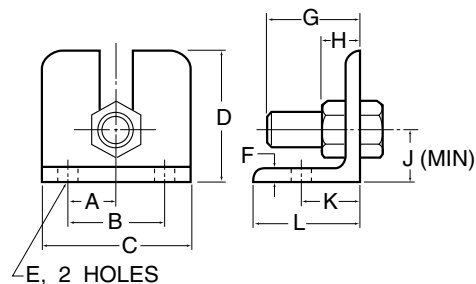
NOTE: Drawings are expressed in third angle projection.

BRAKE SAFETY GUARD



MODEL	PRODUCT NUMBER	A	B	C	D
SSE-450	817700	167	41	68	133
SSE-600	818300	200	51	83	171

TORQUE PIN BRACKET



MODEL	PRODUCT NUMBER	A	B	C	D	E	F	G	H	J	K	L
SSE-450	819900	19	38,1	57	51	10	6	38	13	19	25	51
SSE-600	821400	25	50,8	76	64	10,3	6	41	16	28	25,4	51

BRAKES

"Air Champ"

METRIC SSE SERIES STRAIGHT BORE SPRING ENGAGED BRAKES, MODELS SSE-800 & SSE-1000

- Static Torque capacity up to:
SSE-800/280 Nm
SSE-1000/418 Nm
- Maximum Operating Speed up to
1800 rpm
- Standard Bore Sizes:**
S-800/50 millimeters
S-1000/75 millimeters
- Thermal capacity rating of:
S-800/1660W @ 1800 rpm
S-1000/2230W @ 1800 rpm
- Heat Sink capacity up to:
S-800/169,000 joules
S-1000/271,000 joules

These spring engaged, air disengaged brakes mount easily and come with:

- Open spring sockets that allow you to add or remove springs to fit your torque needs
- Split friction facings for easy replacement without brake removal or disassembly
- Single plate, finned friction discs provide high heat dissipation
- High dynamic torque capacity insures fast load response
- Flow restrictor valve controls disengagement air to prevent shock load on brake components

Options include:

- Torque Pin Bracket Allows you to keep the housing from spinning
- Brake Safety Guard for protection

METRIC SSE-800 & SSE-1000 MODEL SPRING ENGAGED BRAKES

Model	Component	Product Number	Number of Springs	Torque Rating Nm $\pm$ -10%	MIN Disengagement Air Pressure $\pm$ 10% (Bar)	Bore (mm)	Shipping Wt. (kg)
SSE-800	Brake	822430	6	147	4	50	14
SSE-800	Brake	822465	8	226	5	50	14
SSE-800	Brake	822466	10	280	6	50	14
SSE-1000	Brake	822530	6	248	4	75	31
SSE-1000	Brake	822565	8	340	5	75	31
SSE-1000	Brake	822566	10	418	6	75	31

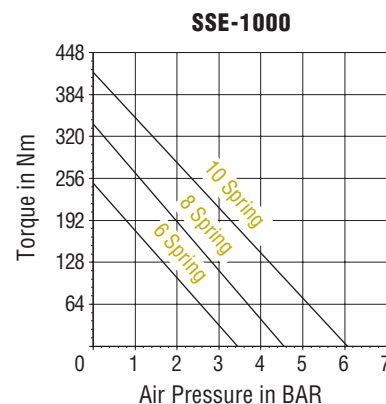
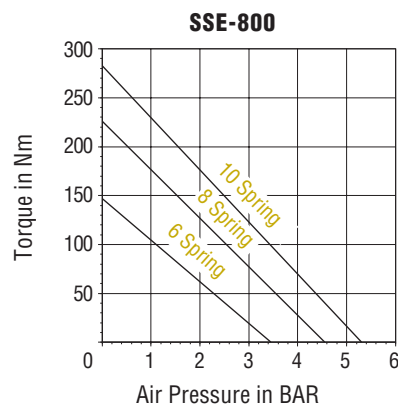
Torque values will exceed those shown after the brake has been burnished in.

Torque values for spring applied brakes will vary over the life of the brake as a function of spring force and the burnishing process of the lining. Over the life of the linings, torque values may exceed published values by up to 40%.

ACCESSORIES

Model	Component	Product Number	Shipping Wt. (kg)
SSE-800	Torque Pin Bracket	823400	.90
SSE-800	Brake Safety Guard	826300	1.36
SSE-1000	Torque Pin Bracket	825500	1.81
SSE-1000	Brake Safety Guard	828200	1.81

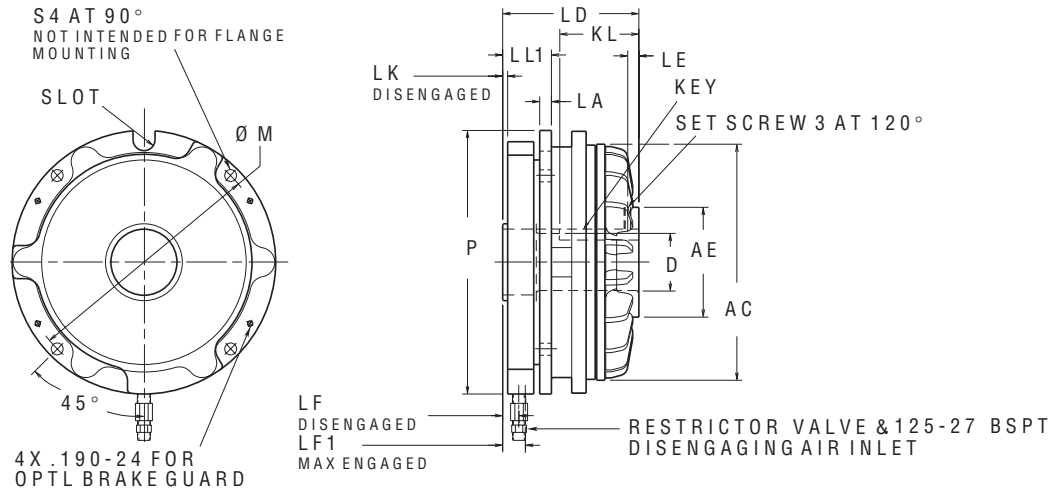
TORQUE VS. AIR PRESSURE



NOTE: Dynamic torque is approximately 85% of static torque.

Torque (In. Lbs.) = Nm x 8.849
PSI = Bar $\div$.0689

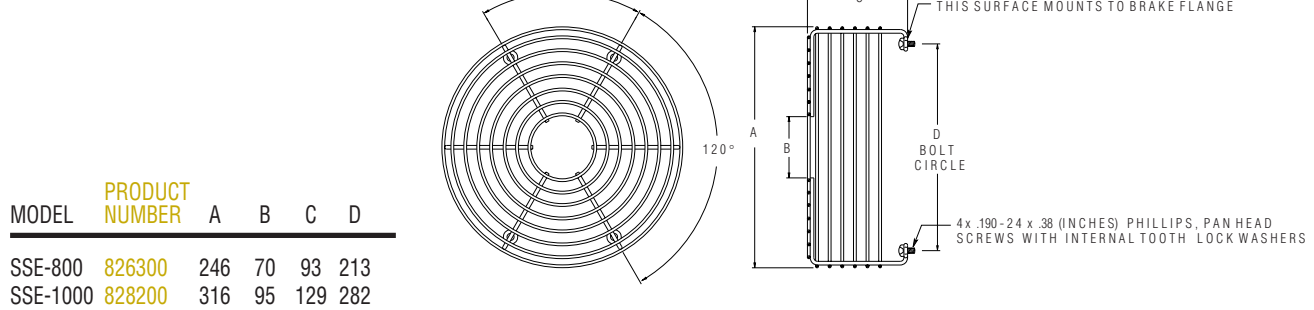
SSE-800 & SSE-1000 MODEL STRAIGHT BORE SPRING ENGAGED BRAKES- APPROXIMATE DIMENSIONS (MILLIMETERS)



MODEL	PRODUCT NUMBER	AC	AE	D ^{H7}	KEY	KL	LA	LD	LE	LF	LF1	LK	LL1	M	P	S	SLOT		SET SCREW
																	WD	DP	
SSE-800	822430	205	95	50	10 x 14	90	10	118	10	15	20	5	42	213	229	10	19	18	M6
SSE-800	822465	205	95	50	10 x 14	90	10	118	10	15	20	5	42	213	229	10	19	18	M6
SSE-800	822466	205	95	50	10 x 14	90	10	118	10	15	20	5	42	213	229	10	19	18	M6
SSE-1000	822530	256	127	75	12 x 20	100	13	138	10	10	15	-5	43	278	302	13	22	23	M10
SSE-1000	822565	256	127	75	12 x 20	100	13	138	10	10	15	-5	43	278	302	13	22	23	M10
SSE-1000	822566	256	127	75	12 x 20	100	13	138	10	10	15	-5	43	278	302	13	2	23	M10

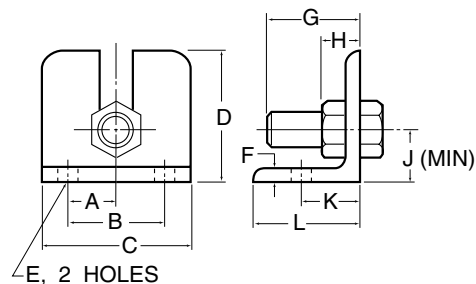
NOTE: Drawings are expressed in third angle projection.

BRAKE SAFETY GUARD



MODEL	PRODUCT NUMBER	A	B	C	D
SSE-800	826300	246	70	93	213
SSE-1000	828200	316	95	129	282

TORQUE PIN BRACKET



MODEL	PRODUCT NUMBER	A	B	C	D	E	F	G	H	J	K	L
SSE-800	823400	28	57,2	89	76	11,9	8	51	19	30	35,1	64
SSE-1000	825500	32	63,5	102	102	13,5	10	64	22	35	41,1	76

CLUTCH-BRAKES

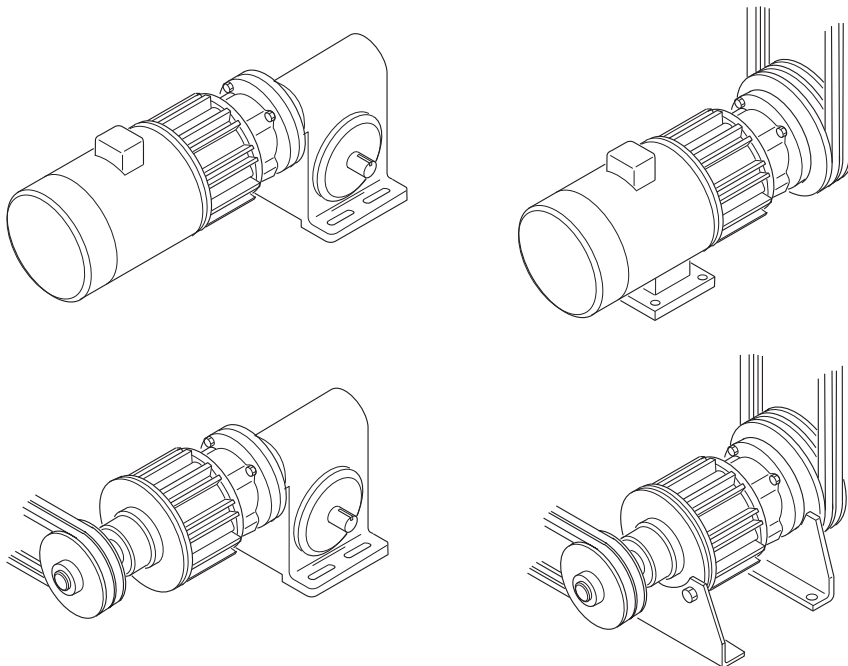
“Air Champ”

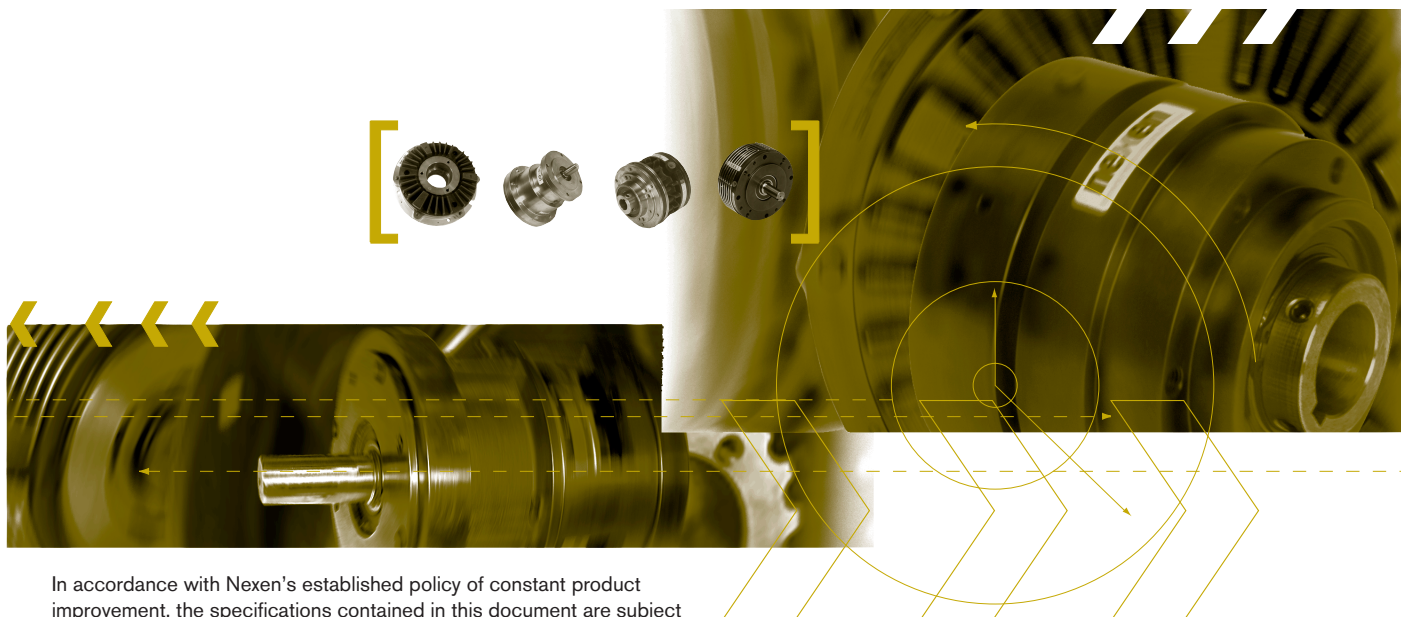
PRODUCT FUNCTION/SELECTION CHART

Product Group	Thru-Shaft Mounted Clutch-Brake	NEMA “C” Flange Open Design Clutch-Brake	NEMA “C” Flange Enclosed Design Clutch-Brake	NEMA “C” Flange Enclosed Design Clutch	NEMA “C” Flange Enclosed Design BISSC Approved	NEMA “C” Flange Modular System Clutch Brakes
General Features						
Number of Model Options	9 Standard 0 Metric	0 Standard 6 Metric	8 Standard 14 Metric	1 Standard 0 Metric	4 Standard 0 Metric	4 Standard 0 Metric
Functions						
Controlled Acceleration	Yes	Yes	Yes	Yes	Yes	Yes
Controlled Deceleration	Yes	Yes	Yes		Yes	Yes
Inching/Jogging	Yes	Yes	Yes	Yes	Yes	Yes
Rapid Cycling	Yes	Yes	Yes	Yes	Yes	Yes
Stopping/Holding	Yes	Yes	Yes		Yes	Yes
Overload Protection	Yes	Yes	Yes	Yes	Yes	Yes
Disconnect	Yes	Yes	Yes	Yes	Yes	Yes

TYPICAL APPLICATIONS

Shown below are four typical mounting applications for these clutch-brakes. Any of the three design options (FMCBE, FMCBES or FMCE) can be mounted in any one of these configurations. You will find the specific product requirements listed on the catalog page for each design style.





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

CLUTCH/BRAKES

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FMCBE FLANGE MOUNTED CLUTCH-BRAKES

- Available in either aluminum, electroless nickel plating or black oxide coating
- Flange or Foot mount capability
- Optional Input Unit available
- Double acting piston design prevents overlap of clutch and brake functions

Choose from **3 design options:**
FMCBE basic enclosed clutch-brake:

- Bore/Shaft** sizes from 0.500 to 1.375 inches
- BISSC (Baking Industry) certified models, in 0.625 and 0.875 bores, available for use in "cleanroom" applications

FMCBES enclosed, spring engaged clutch-brake:

- Spring engaged brake combined with air engaged clutch

FMCE enclosed clutch:

- For clutch only applications
- Available in black oxide and nickle coating
- Bore sizes** of 0.625 and 0.875 inches

FMCBE FLANGE MOUNTED CLUTCH-BRAKES, TOTALLY ENCLOSED

All FMCBE clutch-brakes are totally enclosed for operation in environments where dirt, dust, moisture or other contaminants could cause power transmission components to fail. Enclosed design also prohibits worn friction material from escaping the clutch-brake and entering the process area.

FMCBEs mount directly to C-Face motors and reducers, and provide absolute control. These units fit NEMA frame sizes 48Y to 215TC.

FMCBE CLUTCH-BRAKE, DESIGN STYLE COMPARISONS

The tables below show performance comparisons between the design styles. This is an overview, to aid in selection. Please refer to the product specific catalog pages prior to final determination, to ensure all features and benefits match your application.

► THERMAL CAPACITIES

Thermal capacity is based upon 50% clutch and 50% brake usage. Operating speed is 1800 rpm for all data.

Model/Design Style	HP _T rating by Model Size				
	500	625	875	1125	1375
FMCBE	0.10	0.14	0.18	0.33	0.44
FMCBES	—	0.14	0.18	0.33	0.44
FMCE	—	0.14	0.18	0.33	0.44

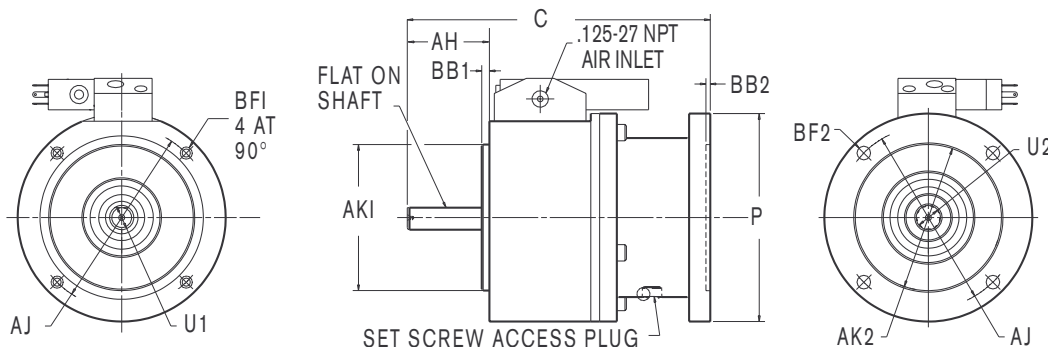
► OVERHUNG LOAD DATA

Data is based upon 50% clutch and 50% brake usage. Operating speed is 1800 rpm for all data.

Model/Design Style	Weight (Lbs) rating by Model Size				
	500	625	875	1125	1375
FMCBE	70	92	195	240	350
FMCBES	—	92	195	240	350
FMCE	—	92	195	240	350

FMCBE 500 MODEL CLUTCH-BRAKES - APPROXIMATE DIMENSIONS (INCHES)

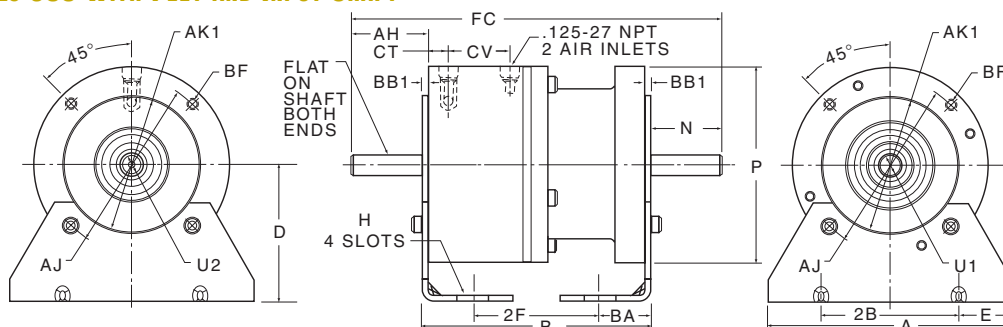
► MODEL 500 AND 500 WITH INTEGRAL VALVE



MODEL	PRODUCT NUMBER	AH	AJ	AK1 ^{+0.000 -0.002}	AK2 ^{+0.002 -0.000}	BB1	BB2	BF1	BF2	C	P	(SQ)	WD	DP	U1 ^{+0.000 -0.001}	U2 ^{+0.001 -0.000}
500	801364	1.69	3.750	3000	3.000	0.16	0.087	.54	.280	6.22	4.27	0.19	.188	.093	.500	.500
500 with Integral Valve	801365	1.69	3.750	3000	3.000	0.16	0.087	.54	.280	6.22	4.27	0.19	.188	.093	.500	.500

FMCBE 500 MODEL CLUTCH-BRAKES - APPROXIMATE DIMENSIONS (INCHES)

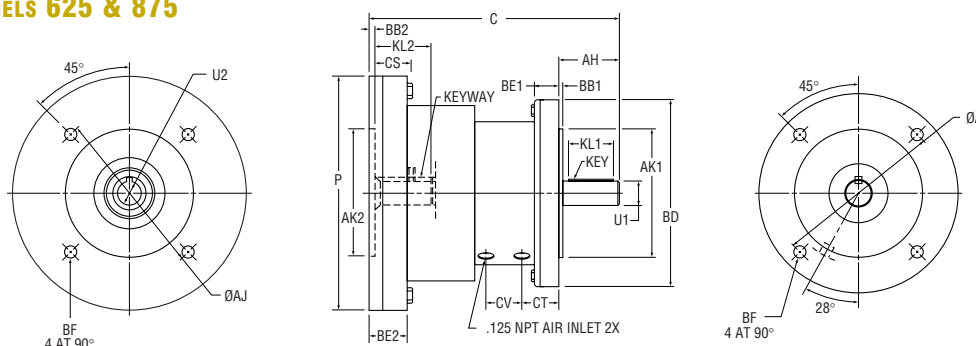
Models 500 With Feet and Input Shaft



MODEL	PRODUCT NUMBER	A	AH	AJ	AK1	B	BA	BB1	2B	BF	CT	CV	D	E	FC	2F	H	N	U1	U2
500 with Feet & Input Shaft	801368	5.36	1.69	3.75	3.000	5.00	1.28	0.16	4.24	0.25	0.45	1.33	3.00	0.56	8.13	2.52	0.34 X 0.35	1.53	.500	.500

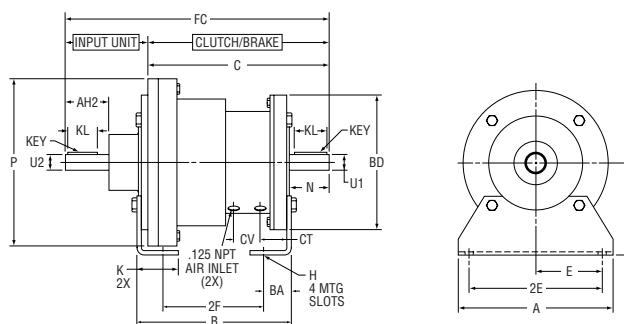
FMCBE BISSC MODEL CLUTCH-BRAKES - APPROXIMATE DIMENSIONS (INCHES)

Models 625 & 875



MODEL	PRODUCT NUMBER	AH	AJ	AK1 ^{+0.000} _{-0.002}	AK2 ^{+0.002} _{-0.000}	BB1	BB2	BD	BE1	BE2	BF	C	CS	CT	CV	KL1	KL2	P	KEY (SQ)	KWY		U1 ^{+0.000} _{-0.001}	U2 ^{+0.001} _{-0.000}
625	827250	2.06	5.875	4.499	4.501	0.12	0.16	6.50	0.83	1.12	.406	7.61	1.28	0.91	1.19	1.50	1.97	6.50	0.19	.188	.093	.625	.625
875	827260	2.12	5.875	4.499	4.501	0.12	0.19	6.60	0.85	1.34	.406	8.82	1.28	1.10	1.47	1.50	2.02	8.20	0.19	.188	.093	.875	.875

Models 625 & 875 WITH INPUT & FOOT



MODEL	PRODUCT NUMBER	N	FC	BD	C	CT	CV	KL	KEY (SQ)	P	U1	INPUT NUMBER	U2	AH2	FC
625	827250	1.93	11.62	6.50	7.61	0.91	1.19	1.50	.188	6.50	.625	827270	.625	2.12	11.09
875	827260	1.99	12.84	6.60	8.82	1.30	1.27	1.50	.188	8.20	.875	827280	.875	2.12	12.30

MODEL	FOOT NUMBER	A	B	BA	D	E	2E	2F	H	K
625	827251	7.50	6.21	1.25	4.51	3.19	6.38	3.71	.41 x .88	2.00
875	827261	7.50	7.37	1.25	4.51	3.19	6.38	4.87	.41 x .88	2.00

See next page for more information.

CLUTCH-BRAKES

"Air Champ"

FMCBE WITH INTEGRAL VALVE CLUTCH-BRAKES – MODELS FMCBE 625 & 875

The FMCBE with Integral Valve combines a Nexen Flange mounted, totally-enclosed clutch/brake with a single solenoid 4-way spool valve mounted directly to the clutch/brake air chamber. Air pressure is directed to the piston to perform either clutch or brake functions. The FMCBE/I.V. is equipped with Nexen's Locking Key feature. Choose from **2 Models**:

- **Bore sizes** of 0.625 and 0.875 in.
- Black oxide coating, Cooling fins
- Simplified; one product number for a clutch-brake combination, control valve and locking key feature
- Reduced number of air line connections for quicker install
- Shorter air lines for better air pressure
- Eliminates need for quick exhaust valves.
- 115 Volt is standard on FMCBE.
- The Integral Valve is available for 12, 24 and 115 volt systems
- Static Torque up to 325 In. Lbs. (brake) and 290 In. Lbs. (clutch)
- Overhung Load Cap. up to 292 Lbs.
- Design Speed up to 1800 rpm. Consult factory for higher speed
- Flange mounts directly to motors and reducers
- Compatible with C-face motors up to 2 HP
- Optional Foot Mount is available for belt drive applications
- Optional Input Unit allows you to incorporate pulleys or couplings into your application
- Single, double acting piston makes overlap impossible

FMCBE FLANGE MOUNTED CLUTCH-BRAKES, TOTALLY ENCLOSED, INTEGRAL VALVE

Standard Clutch-Brake is Flange Mounted. Order Foot Mount set separately for belt drive applications. Order Input Unit to incorporate pulleys into your application.

Model Number	Product Number	Valve Voltage	Bore (In)	HP _T Up To	OVERHUNG LOAD CAPACITY (LBS)		Shipping Wt. (Lbs)
					1200 RPM	1800 RPM	
FMCBE -625	801705	115V	0.625	0.14	138	92	24
FMCBE -875	801706	115V	0.875	0.18	292	195	40

NOTE: Thermal Capacity (HP_T) and Overhung Load data is based upon 50% clutch and 50% brake usage.

Model Number	Clutch/Brake Product Number	Foot Mount		Input Unit			Shipping Wt. (Lbs)
		Set of 2 Product Number	Shipping Wt. (Lbs)	OVERHUNG LOAD CAPACITY (LBS)			
				Product Number	1200 RPM	1800 RPM	
FMCBE -625	801705	801431	4	929600	279	244	7
FMCBE -875	801706	801431	4	928400	279	244	7

VALVE ELECTRICAL SPECIFICATIONS

Valves are "normally open" to engage the brake element of the clutch/brake when the solenoid is de-energized.

* The valve solenoid voltage is DC.

All voltages can be used on AC or DC service. Use the lead wire supplied with the clutch/brake.

Voltage* (volts)	Power (watts)	Resistance (ohms)	Current (amps)	Product Number
24	.6	1100	.027	4961
115 ^①	2.5	5500	.021	4919

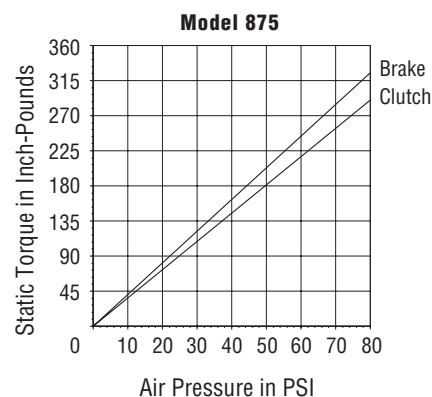
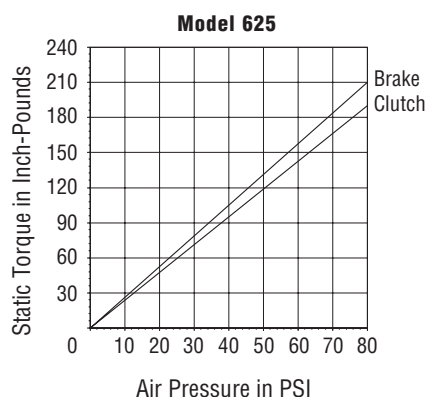
① Standard Coil - Contact Nexen for other coil options

NEMA MOTOR/FRAME SELECTION CHART

Use this chart as specification and operational criteria for your application.

HP of Motor	RPM	Frame Number	Motor Shaft (IN)	Clutch Brake Model Number
1/4	1800	56C	0.625	FMCBE I.V.-625
1/4	1200	56C	0.625	FMCBE I.V.-625
1/3	1800	56C	0.625	FMCBE I.V.-625
1/3	1200	56C	0.625	FMCBE I.V.-625
1/2	1800	56C	0.625	FMCBE I.V.-625
1/2	1200	56C	0.625	FMCBE I.V.-625
1/2	900	143TC	0.875	FMCBE I.V.-875
3/4	1800	56C	0.625	FMCBE I.V.-625
3/4	1200	143TC	0.875	FMCBE I.V.-875
3/4	900	145TC	0.875	FMCBE I.V.-875
1	1800	56TC	0.625	FMCBE I.V.-625
1	1800	143TC	0.875	FMCBE I.V.-875
1	1200	145TC	0.875	FMCBE I.V.-875
1-1/2	1800	145TC	0.875	FMCBE I.V.-875
2	1800	145TC	0.875	FMCBE I.V.-875

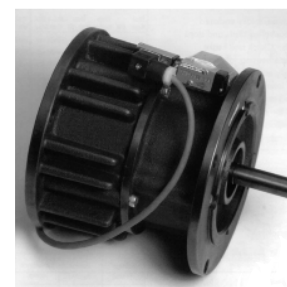
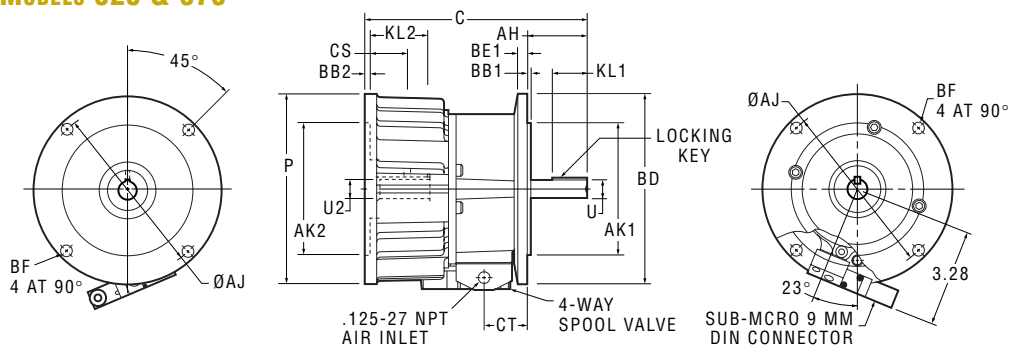
TORQUE VS. AIR PRESSURE



NOTE: Dynamic torque is approximately 85% of static torque.

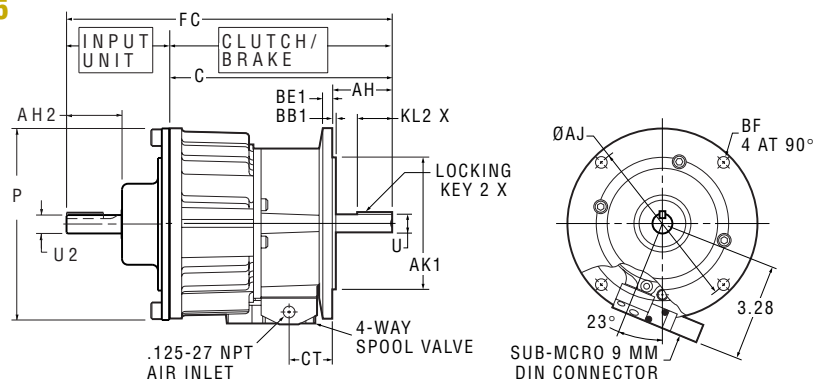
FMCBE INTEGRAL VALVE MODEL CLUTCH-BRAKES - APPROXIMATE DIMENSIONS (INCHES)

► MODELS 625 & 875



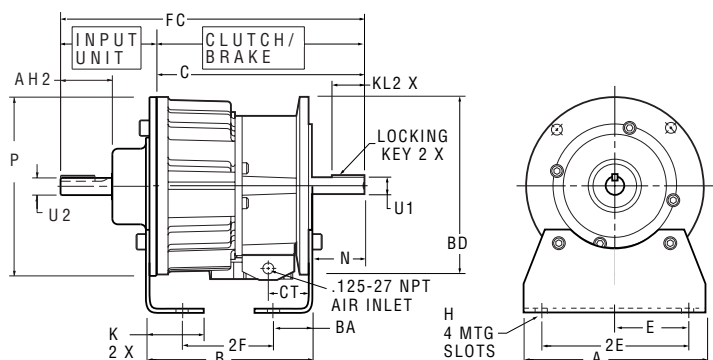
MODEL	PRODUCT NUMBER	AH	AJ	AK1 ^{+0.000} _{-0.002}	AK2 ^{+0.002} _{-0.000}	BB1	BB2	BD	BE1	BE2	BF	C	CS	CT	KL1	KL2	P	KEY (SQ)	KWY WD	DP	U1 ^{+0.000} _{-0.001}	U2 ^{+0.001} _{-0.000}
625	801705	2.06	5.875	4.499	4.501	0.12	0.16	6.50	0.31	0.38	.406	7.61	1.28	1.50	1.21	1.97	6.50	0.188	0.188	0.094	.625	.625
875	801706	2.11	5.875	4.499	4.501	0.12	0.19	7.00	0.39	0.56	.406	8.81	1.25	1.83	1.31	2.02	7.81	0.188	0.188	0.094	.875	.875

► MODELS 625 & 875 WITH INPUT



MODEL	PRODUCT NUMBER	AH	AJ	AK1 ^{+0.000} _{-0.002}	BB1	BE1	C	CT	KL	KEY (SQ)	P	U1 ^{+0.000} _{-0.001}	INPUT NUMBER	U2 ^{+0.000} _{-0.001}	AH2	FC
625	801705	2.06	5.875	4.499	0.12	0.31	7.60	1.50	1.38	0.188	6.50	.625	929600	.875	1.89	11.09
875	801706	2.11	5.875	4.499	0.12	0.39	8.81	1.83	1.38	0.188	7.81	.875	928400	.875	1.89	12.30

► MODELS 625 & 875 WITH INPUT & FOOT



MODEL	PRODUCT NUMBER	BD	C	CT	CV	KL	KEY (SQ)	P	U1 ^{+0.000} _{-0.001}	INPUT NUMBER	U2 ^{+0.000} _{-0.001}	AH2	FC
625	801705	6.50	7.60	0.91	1.19	1.38	0.188	6.50	.625	929600	.875	1.89	11.09
875	801706	7.00	8.81	1.10	1.47	1.38	0.188	7.81	.875	928400	.875	1.89	12.30

MODEL	FOOT NUMBER	A	B	BA	D	E	2E	2F	H	K	N
625	801431	7.50	6.10	1.25	4.51	3.19	6.38	3.60	.41 x .88	2.00	1.87
875	801431	7.50	7.25	1.25	4.51	3.19	6.38	4.25	.41 x .88	2.00	1.96

CLUTCH-BRAKES

"Air Champ"

FMCBE WITH INTEGRAL VALVE CLUTCH-BRAKES – MODELS FMCBE 1125 & 1375

The FMCBE with Integral Valve combines a Nexen Flange mounted, totally-enclosed clutch/brake with a single solenoid 4-way spool valve mounted directly to the clutch/brake air chamber. Air pressure is directed to the piston to perform either clutch or brake functions. The FMCBE/I.V. is equipped with Nexen's Locking Key feature. Choose from **2 Models**:

- **Bore sizes** of 1.125 and 1.375 in.
- Black oxide coating, Cooling fins
- Simplified; one product number for a clutch-brake combination, control valve and locking key feature
- Reduced number of air line connections for quicker install
- Shorter air lines for better air pressure
- Eliminates need for quick exhaust valves.
- 115 Volt is standard on FMCBE.
- The Integral Valve is available for 12, 24 and 115 volt systems
- Static Torque up to 1200 In. Lbs. (brake) and 1050 In. Lbs. (clutch)
- Overhung Load Cap. up to 535 Lbs.
- Design Speed up to 1800 rpm. Consult factory for higher speed
- Flange mounts directly to motors and reducers
- Compatible with C-face motors up to 10 HP
- Optional Foot Mount is available for belt drive applications
- Optional Input Unit allows you to incorporate pulleys or couplings into your application
- Single, double acting piston makes overlap impossible

► FMCBE FLANGE MOUNTED CLUTCH-BRAKES WITH INTEGRAL VALVE, TOTALLY ENCLOSED

Standard Clutch-Brake is Flange Mounted. Order Foot Mount set separately for belt drive applications. Order Input Unit to incorporate pulleys into your application.

Model Number	Product Number	Valve Voltage	Bore (In)	HP _T Up To	OVERHUNG LOAD CAPACITY (LBS)		Shipping Wt. (Lbs)
					1200 RPM	1800 RPM	
FMCBE -1125	801709	115V	1.125	0.33	360	240	68
FMCBE -1375	801711	115V	1.375	0.44	525	350	89

NOTE: Thermal Capacity (HP_T) and Overhung Load data is based upon 50% clutch and 50% brake usage.

Model Number	Product Number	Clutch/Brake		Foot Mount		Input Unit		Shipping Wt. (Lbs)
		Product Number	Set of 2 Shipping Wt. (Lbs)	Product Number	Set of 2 Shipping Wt. (Lbs)	OVERHUNG LOAD CAPACITY (LBS)	Shipping Wt. (Lbs)	
FMCBE -1125	801709	801603	6	935000	655	570	12	
FMCBE -1375	801711	801603	6	936000	655	570	13	

► VALVE ELECTRICAL SPECIFICATIONS

Valves are "normally open" to engage the brake element of the clutch/brake when the solenoid is de-energized.

* The valve solenoid voltage is DC. All voltages can be used on AC or DC service. Use the lead wire supplied with the clutch/brake.

Voltage* (volts)	Power (watts)	Resistance (ohms)	Current (amps)
12	.6	260	.050
24	.6	1100	.027
115 ^①	2.5	5500	.021

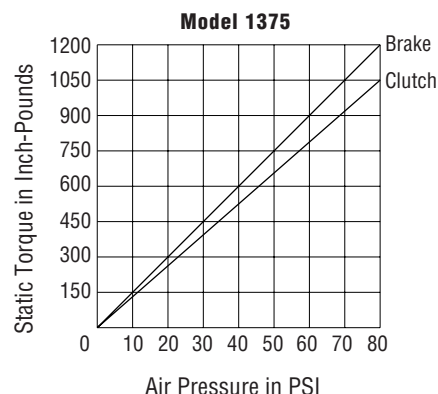
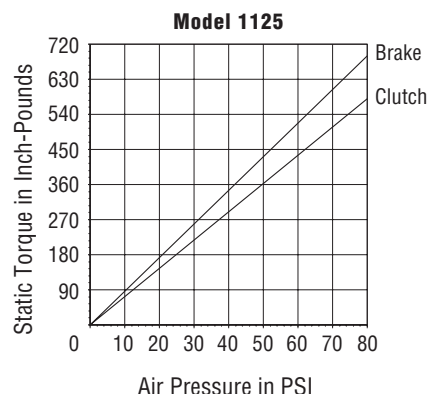
① Standard Coil - Contact Nexen for other coil options

► NEMA MOTOR/FRAME SELECTION CHART

Use this chart as specification and operational criteria for your application.

HP of Motor	RPM	Frame Number	Motor Shaft (In)	Clutch Brake Model Number
1	900	182TC	1.125	FMCBE I.V.-1125
1-1/2	1200	182TC	1.125	FMCBE I.V.-1125
1-1/2	900	184TC	1.125	FMCBE I.V.-1125
2	1200	184TC	1.125	FMCBE I.V.-1125
2	900	213TC	1.375	FMCBE I.V.-1375
3	1800	182TC	1.125	FMCBE I.V.-1125
3	1200	213TC	1.375	FMCBE I.V.-1375
3	900	215TC	1.375	FMCBE I.V.-1375
5	1800	184TC	1.125	FMCBE I.V.-1125
5	1200	215TC	1.375	FMCBE I.V.-1375
7-1/2	1800	213TC	1.375	FMCBE I.V.-1375
10	1800	215TC	1.375	FMCBE I.V.-1375

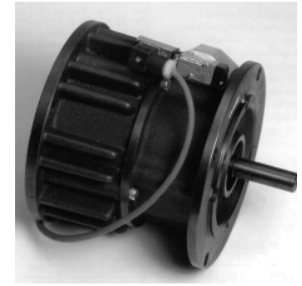
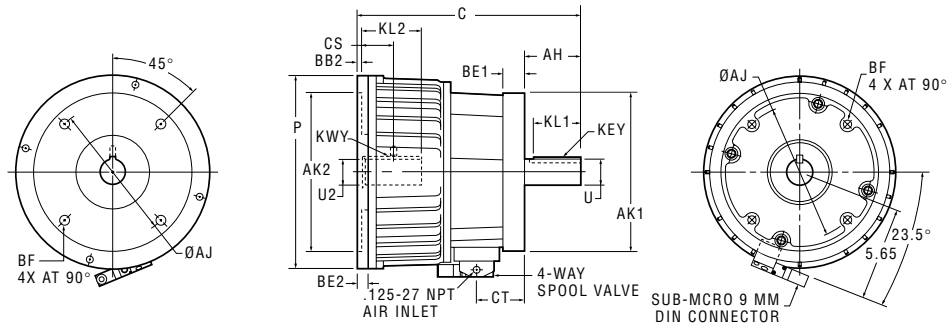
► TORQUE VS. AIR PRESSURE



NOTE: Dynamic torque is approximately 85% of static torque.

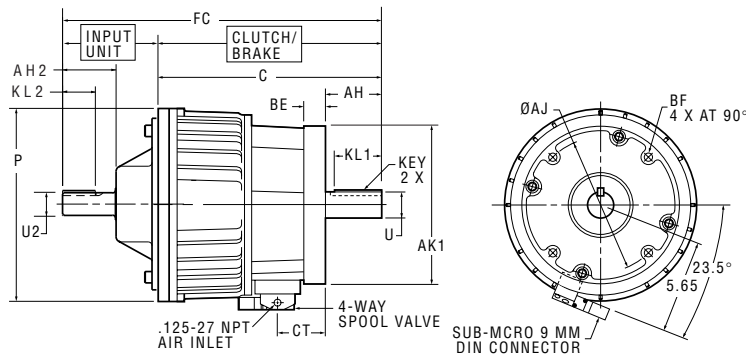
FMCBE INTEGRAL VALVE MODEL CLUTCH-BRAKES - APPROXIMATE DIMENSIONS (INCHES)

► MODELS 1125 & 1375



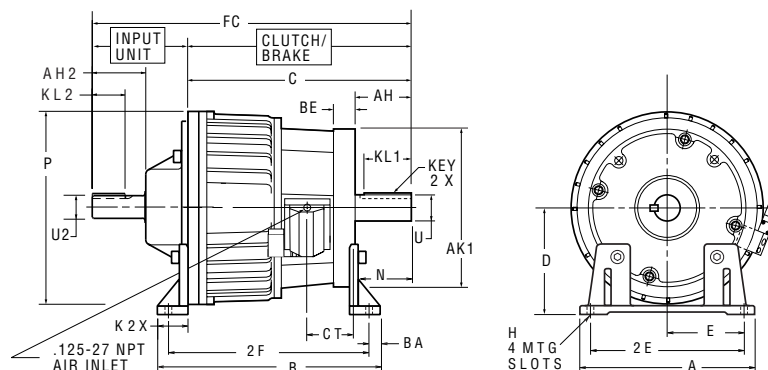
MODEL	PRODUCT NUMBER	AH	AJ	AK1 ^{+0.000/-0.002}	AK2 ^{+0.002/-0.000}	BB2	BE1	BE2	BF	C	CS	CT	KL1	KL2	P	KEY (SQ)	KWY WD	KWY DP	U1 ^{+0.000/-0.001}	U2 ^{+0.001/-0.000}
1125	801709	2.58	7.250	8.499	8.501	0.19	0.54	0.37	.531	10.59	1.75	2.15	1.97	2.90	9.62	0.250	0.250	0.125	1.125	1.125
1375	801711	3.08	7.250	8.499	8.501	0.19	1.12	0.37	.500-13	12.12	1.96	2.58	2.56	3.37	10.38	0.312	0.312	0.156	1.375	1.375

► MODELS 1125 & 1375 WITH INPUT



MODEL	PRODUCT NUMBER	AH	AJ	AK1 ^{+0.000/-0.002}	BE	C	CT	KL1	KEY (SQ)	P	U1 ^{+0.000/-0.001}	INPUT NUMBER	U2 ^{+0.000/-0.001}	AH2	FC	KL2
1125	801709	2.58	7.250	8.499	0.54	10.59	2.15	1.97	0.250	9.62	1.125	935000	1.125	2.62	15.22	1.62
1375	801711	3.08	7.250	8.499	1.12	12.12	2.58	2.58	0.312	10.38	1.375	936000	1.375	3.14	17.26	2.25

► MODELS 1125 & 1375 WITH INPUT & FOOT



MODEL	PRODUCT NUMBER	AK ^{+0.000/-0.002}	C	CT	CV	KL1	KEY (SQ)	P	U ^{+0.000/-0.001}	INPUT NUMBER	AH2	FC	KL2
1125	801709	8.499	10.59	1.24	1.65	2.00	0.250	9.62	1.125	935000	2.62	15.22	1.62
1375	801711	8.499	12.12	1.60	1.91	2.56	0.312	10.38	1.375	936000	3.14	17.26	2.25

MODEL	FOOT NUMBER	A	B	BA	D	E	2E	2F	H	K	N
1125	801603	9.50	11.48	.62	5.25	4.00	8.00	10.23	.56 x 1.00	1.75	2.21
1375	801603	9.50	12.51	.62	5.25	4.00	8.00	11.26	.56 x 1.00	1.75	2.71

CLUTCH-BRAKES

"Air Champ"

FMCBE CLUTCH-BRAKES – MODELS FMCBE 625 & 875

FMCBE Flange Mounted Clutch-Brakes are designed for controlled starts and stops in hostile, dirty environments. Totally enclosed design prevents contaminants from interfering with operation of the units while keeping worn friction material from escaping into the environment. Choose from **2**

Models:

- **Bore sizes** of 0.625 and 0.875 in.
- Static Torque up to 325 In. Lbs. (brake) and 290 In. Lbs. (clutch)
- Overhung Load Cap. up to 292 Lbs.
- Design Speed up to 1800 rpm. Consult factory for higher speed
- Flange mounts directly to motors and reducers
- Compatible with C-face motors up to 2 HP
- Optional Foot Mount is available for belt drive applications
- Optional Input Unit allows you to incorporate pulleys or couplings into your application
- Single, double acting piston makes overlap impossible

► FMCBE FLANGE MOUNTED CLUTCH-BRAKES, TOTALLY ENCLOSED

Standard Clutch-Brake is Flange Mounted. Order Foot Mount set separately for belt drive applications. Order Input Unit to incorporate pulleys into your application.

Model Number	Product Number	Bore (In)	HP _T Up To	OVERHUNG LOAD CAPACITY (LBS)		Shipping Wt. (Lbs)
				1200 RPM	1800 RPM	
Black Coating:						
FMCBE-625	801440	0.625	0.14	138	92	24
FMCBE-875	801480	0.875	0.18	292	195	40

NOTE: Thermal Capacity (HP_T) and Overhung Load data is based upon 50% clutch and 50% brake usage.

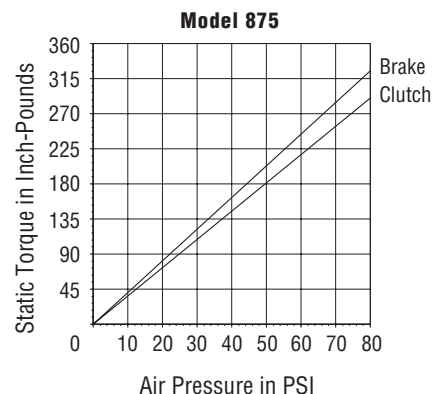
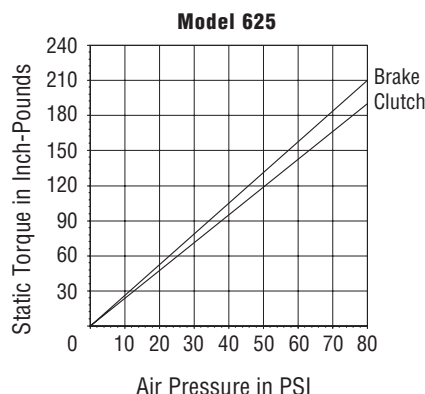
Model Number	Product Number	Foot Mount Set	Shipping Wt.	Input Unit	Shipping Wt.
		(2 Mounts)			
		Product Number	(Lbs)	Product Number	(Lbs)
Black Coating:					
FMCBE-625	801440	801431	4	929600	7
FMCBE-875	801480	801431	4	928400	7

► NEMA MOTOR/FRAME SELECTION CHART

Use this chart as specification and operational criteria for your application.

HP of Motor	RPM	Frame Number	Motor Shaft (IN)	Clutch Brake Model Number
1/4	1800	56C	0.625	FMCBE-625 Black & BISSC
1/4	1200	56C	0.625	FMCBE-625 Black & BISSC
1/3	1800	56C	0.625	FMCBE-625 Black & BISSC
1/3	1200	56C	0.625	FMCBE-625 Black & BISSC
1/2	1800	56C	0.625	FMCBE-625 Black & BISSC
1/2	1200	56C	0.625	FMCBE-625 Black & BISSC
1/2	900	143TC	0.875	FMCBE-875 Black & BISSC
3/4	1800	56C	0.625	FMCBE-625 Black & BISSC
3/4	1200	143TC	0.875	FMCBE-875 Black & BISSC
3/4	900	145TC	0.875	FMCBE-875 Black & BISSC
1	1800	56TC	0.625	FMCBE-625 Black & BISSC
1	1800	143TC	0.875	FMCBE-875 Black & BISSC
1	1200	145TC	0.875	FMCBE-875 Black & BISSC
1-1/2	1800	145TC	0.875	FMCBE-875 Black & BISSC
2	1800	145TC	0.875	FMCBE-875 Black & BISSC

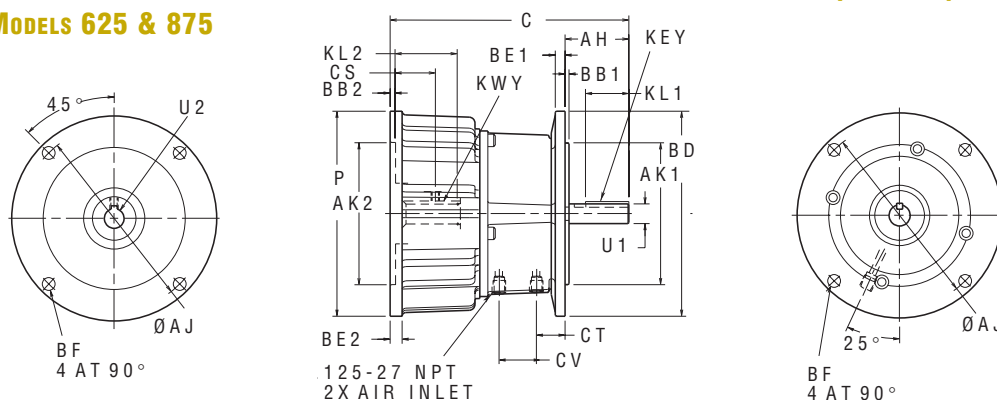
► TORQUE VS. AIR PRESSURE



NOTE: Dynamic torque is approximately 85% of static torque.

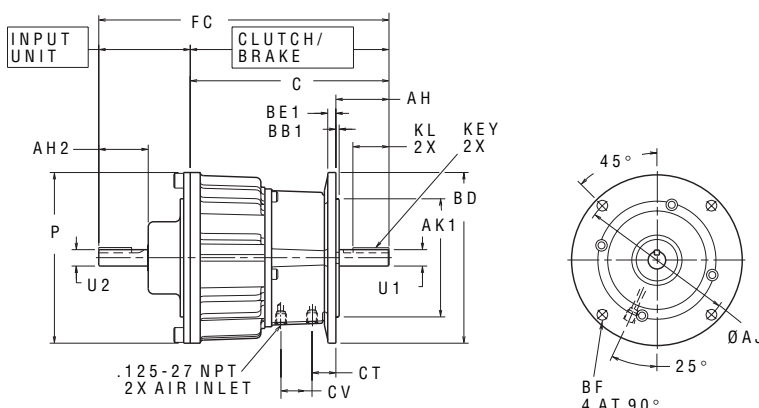
FMCBE MODEL CLUTCH-BRAKES - APPROXIMATE DIMENSIONS (INCHES)

► MODELS 625 & 875



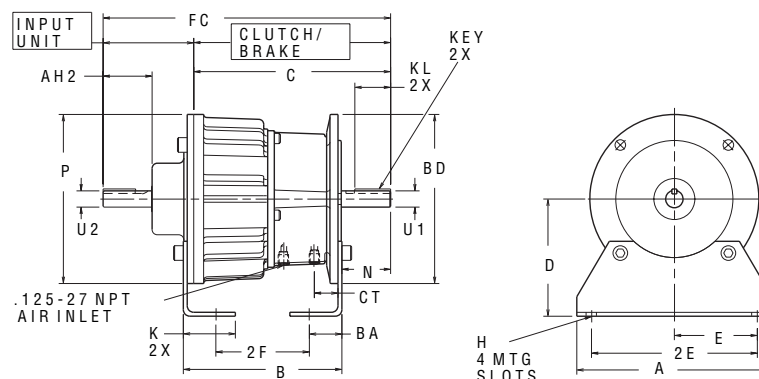
MODEL	PRODUCT NUMBER	AH	AJ	AK1 ^{+0.000} _{-0.002}	AK2 ^{+0.002} _{-0.000}	BB1	BB2	BD	BE1	BE2	BF	C	CS	CT	CV	KL1	KL2	P	KEY (SQ)	KWY		U1 ^{+0.000} _{-0.001}	U2 ^{+0.001} _{-0.000}
625	801440	2.06	5.875	4.499	4.501	0.12	0.16	6.50	0.31	0.38	.406	7.60	1.28	0.91	1.19	1.38	2.05	6.50	0.188	0.188	0.094	.625	.625
875	801480	2.11	5.875	4.499	4.501	0.12	0.19	7.00	0.39	0.56	.406	8.81	1.28	1.10	1.47	1.38	2.04	7.81	0.188	0.188	0.094	.875	.875

► MODELS 625 & 875 WITH INPUT



MODEL	PRODUCT NUMBER	AH	AJ	AK1 ^{+0.000} _{-0.002}	BB1	BE1	C	CT	CV	KL	KEY (SQ)	P	U1 ^{+0.000} _{-0.001}	INPUT NUMBER	U2 ^{+0.000} _{-0.001}	AH2	FC
625	801440	2.06	5.875	4.499	0.12	0.31	7.60	0.91	1.19	1.38	0.188	6.50	.625	929600	.875	1.89	11.09
875	801480	2.11	5.875	4.499	0.12	0.39	8.81	1.10	1.47	1.38	0.188	7.81	.875	928400	.875	1.89	12.30

► MODELS 625 & 875 WITH INPUT & FOOT



MODEL	PRODUCT NUMBER	BD	C	CT	CV	KL	KEY (SQ)	P	U1 ^{+0.000} _{-0.001}	INPUT NUMBER	U2 ^{+0.000} _{-0.001}	AH2	FC
625	801440	6.50	7.60	0.91	1.19	1.38	0.188	6.50	.625	929600	.875	1.89	11.09
875	801480	7.00	8.81	1.10	1.47	1.38	0.188	7.81	.875	928400	.875	1.89	12.30

MODEL	FOOT NUMBER	A	B	BA	D	E	2E	2F	H	K	N
625	801431	7.50	6.10	1.25	4.51	3.19	6.38	3.60	.41 x .88	2.00	1.87
875	801431	7.50	7.25	1.25	4.51	3.19	6.38	4.25	.41 x .88	2.00	1.96

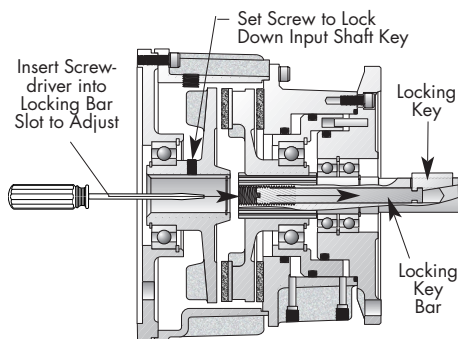
CLUTCH-BRAKES

"Air Champ"

FMCBE CLUTCH-BRAKES WITH LOCKING KEY FEATURE – MODELS FMCBE 625 & 875

FMCBE Flange Mounted Clutch-Brakes are designed for controlled starts and stops in hostile, dirty environments. Totally enclosed design prevents contaminants from interfering with operation of the units while keeping worn friction material from escaping into the environment. Fitted with a locking key system designed to eliminate keyway damage while providing positive connection for maximum torque in blind bore applications. The Locking Key system is an integral part of the Clutch/Brake output shaft. There is no extra installation required. Choose from **4 Models**:

- **Bore sizes** of 0.625 and 0.875 in.
 - Both units available in either electroless nickel plating or black oxide coating
 - Electroless Nickel plating meets NEMA standard 1.26.5 for waterproof machines
 - BISSC (Baking Industry) certified
 - Static Torque up to 325 In. Lbs. (brake) and 290 In. Lbs. (clutch)
 - Flange mounts directly to motors and reducers
 - Compatible with C-face motors up to 2 HP
 - Design Speed up to 1800 rpm. Consult factory for higher speed
 - Optional Input Unit allows you to incorporate pulleys or couplings into your application
- Special BISSC certified unit features:
- Stainless steel hex head fasteners with enclosed nuts
 - Smooth surface design prohibits bacteria buildup
 - Meets BISSC, National Dairy 3-A and USDA standards and specs.
 - Single, double acting piston makes overlap impossible



The Locking Key Bar is easily adjusted with a screwdriver. The bar screws into the output shaft, forcing the key tightly and securely into the mating keyway. Tipping of the key is prevented.

LOCKING KEY FEATURE FMCBE

FLANGE MOUNTED CLUTCH-BRAKES, TOTALLY ENCLOSED

Standard Clutch-Brake is Flange Mounted. Order Foot Mount set separately for belt drive applications. Order Input Unit to incorporate pulleys into your application.

Model Number	Product Number	Bore (In)	HP _T Up To	OVERHUNG LOAD CAPACITY (LBS)		Shipping Wt. (Lbs)
				1200 RPM	1800 RPM	
Black Coating:						
FMCBE-625	801677	0.625	0.14	138	92	24
FMCBE-875	801680	0.875	0.18	292	195	40
Nickel Coating:						
FMCBE-625, BISSC*	827272	0.625	0.14	138	92	24
FMCBE-875, BISSC*	827282	0.875	0.18	292	195	40

NOTE: Thermal Capacity (HP_T) and Overhung Load data is based upon 50% clutch and 50% brake usage.

Model Number	Product Number	Foot Mount Set (2 Mounts)	Shipping Wt. (Lbs)	Input Unit	Shipping Wt. (Lbs)
		Product Number		Product Number	
Black Coating:					
FMCBE-625	801677	801431	4	929600	7
FMCBE-875	801680	801431	4	928400	7
Nickel Coating:					
FMCBE-625, BISSC*	827272	827251	4	827270	7
FMCBE-875, BISSC*	827282	827261	4	827280	7

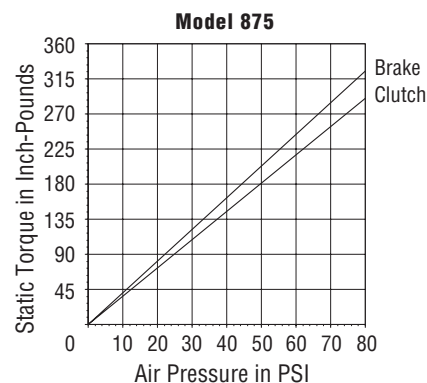
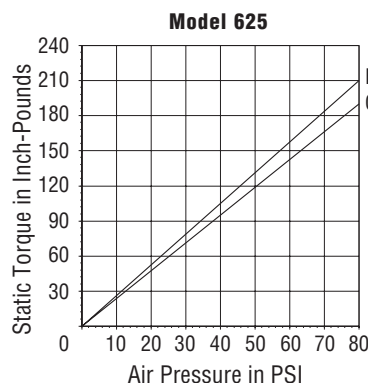
*See approximate dimensions, page 173

NEMA MOTOR/FRAME SELECTION CHART

Use this chart as specification and operational criteria for your application.

HP of Motor	RPM	Frame Number	Motor Shaft (IN)	Clutch Brake Model Number
1/4	1800	56C	0.625	FMCBE-625 Black & BISSC
1/4	1200	56C	0.625	FMCBE-625 Black & BISSC
1/3	1800	56C	0.625	FMCBE-625 Black & BISSC
1/3	1200	56C	0.625	FMCBE-625 Black & BISSC
1/2	1800	56C	0.625	FMCBE-625 Black & BISSC
1/2	1200	56C	0.625	FMCBE-625 Black & BISSC
1/2	900	143TC	0.875	FMCBE-875 Black & BISSC
3/4	1800	56C	0.625	FMCBE-625 Black & BISSC
3/4	1200	143TC	0.875	FMCBE-875 Black & BISSC
3/4	900	145TC	0.875	FMCBE-875 Black & BISSC
1	1800	56TC	0.625	FMCBE-625 Black & BISSC
1	1800	143TC	0.875	FMCBE-875 Black & BISSC
1	1200	145TC	0.875	FMCBE-875 Black & BISSC
1-1/2	1800	145TC	0.875	FMCBE-875 Black & BISSC
2	1800	145TC	0.875	FMCBE-875 Black & BISSC

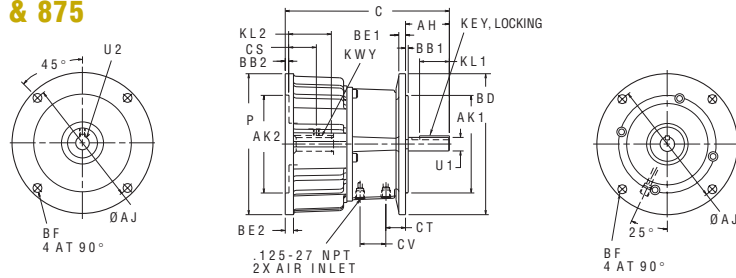
TORQUE VS. AIR PRESSURE



NOTE: Dynamic torque is approximately 85% of static torque.

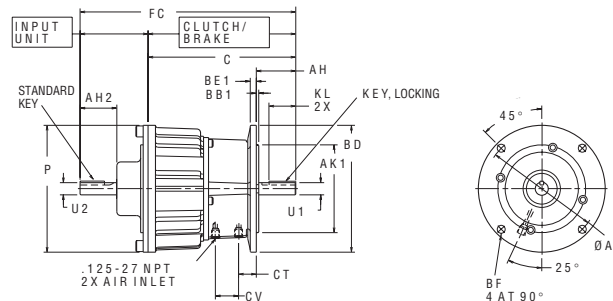
FMCBE MODEL CLUTCH-BRAKES WITH LOCKING KEY- APPROXIMATE DIMENSIONS (INCHES)

▶ MODELS 625 & 875



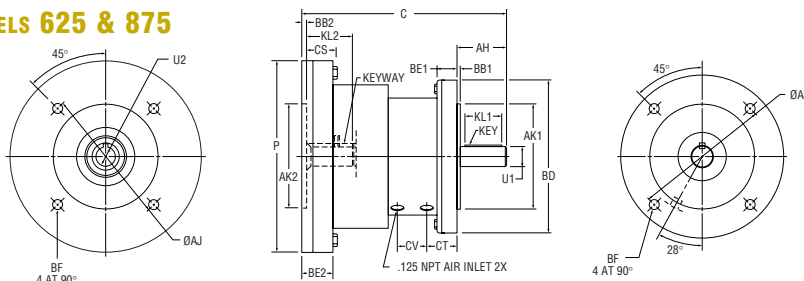
MODEL	PRODUCT NUMBER	AH	AJ	AK1 ^{+0.000} -0.002	AK2 ^{+0.002} -0.000	BB1	BB2	BD	BE1	BE2	BF	C	CS	CT	CV	KL1	KL2	P	KEY (SQ)	KWY WD	DP	U1 ^{+0.000} -0.001	U2 ^{+0.001} -0.000
625	801677	2.06	5.875	4.499	4.501	0.12	0.16	6.50	0.31	0.38	.406	7.60	1.28	0.91	1.19	1.38	2.05	6.50	0.188	0.188	0.094	.625	.625
875	801680	2.11	5.875	4.499	4.501	0.12	0.19	7.00	0.39	0.56	.406	8.81	1.28	1.10	1.47	1.38	2.04	7.81	0.188	0.188	0.094	.875	.875

▶ MODELS 625 & 875 WITH INPUT



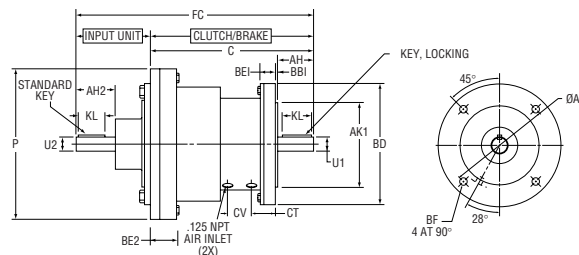
MODEL	PRODUCT NUMBER	AH	AJ	AK1 ^{+0.000} -0.002	BB1	BE1	C	CT	CV	KL	KEY (SQ)	P	U1 ^{+0.000} -0.001	INPUT NUMBER	U2 ^{+0.000} -0.001	AH2	FC
625	801677	2.06	5.875	4.499	0.12	0.31	7.60	0.91	1.19	1.38	0.188	6.50	.625	929600	.875	1.89	11.09
875	801680	2.11	5.875	4.499	0.12	0.39	8.81	1.10	1.47	1.38	0.188	7.81	.875	928400	.875	1.89	12.30

▶ BISSC MODELS 625 & 875



MODEL	PRODUCT NUMBER	AH	AJ	AK1 ^{+0.000} -0.002	AK2 ^{+0.002} -0.000	BB1	BB2	BD	BE1	BE2	BF	C	CS	CT	CV	KL1	KL2	P	KEY (SQ)	KWY WD	DP	U1 ^{+0.000} -0.001	U2 ^{+0.001} -0.000
625	827272	2.06	5.875	4.499	4.501	0.12	0.16	6.50	0.83	1.12	.406	7.61	1.28	0.91	1.19	1.50	1.74	6.50	0.19	0.188	.093	.625	.625
875	827282	2.12	5.875	4.499	4.501	0.12	0.19	6.60	0.85	1.34	.406	8.82	1.28	1.10	1.47	1.50	2.02	8.20	0.19	0.188	.093	.875	.875

▶ BISSC MODELS 625 & 875 WITH INPUT



MODEL	PRODUCT NUMBER	AH	AJ	AK1 ^{+0.000} -0.002	BB1	BD	BE1	BE2	C	CT	CV	FC	KL	KEY (SQ)	P	U1 ^{+0.000} -0.001	INPUT NUMBER	U2 ^{+0.000} -0.001	AH2
625	827272	2.06	5.875	4.499	.125	6.50	0.83	1.12	7.61	0.91	1.19	11.62	1.50	0.188	6.50	.625	929600	.875	1.89
875	827282	2.11	5.875	4.499	.125	6.50	0.85	1.34	8.82	1.30	1.27	12.84	1.50	0.188	7.81	.875	928400	.875	1.89

FMCBE CLUTCH-BRAKES – MODELS 1125 & 1375

FMCBE Flange Mounted Clutch-Brakes are designed for controlled starts and stops in hostile, dirty environments. Models 1125 and 1375 enclosed design prevents contaminants from interfering with operation of the units while keeping worn friction material from escaping into the environment. Model 1625 has an open housing. Choose from **3 Models**:

- **Bore sizes** of 1.125, 1.375 and 1.625 inches
- Units available in either electroless nickel plating or black oxide coating
- Electroless Nickel plating meets NEMA standard 1.26.5 for waterproof machines
- Static Torque up to 2400 In. Lbs. (brake) and 2000 In. Lbs. (clutch)
- Overhung Load Capacity up to 600 lbs.
- Design Speed up to 1800 rpm. Consult factory for higher speed
- Flange mounts directly to motors and reducers
- Compatible with C-face motors up to 20 HP
- Optional Foot Mount is available for belt drive applications
- Optional Input Unit allows you to incorporate pulleys or couplings into your application
- Single, double acting piston makes overlap impossible

FMCB & FMCBE (TOTALLY ENCLOSED) FLANGE MOUNTED CLUTCH-BRAKES

Standard Clutch-Brake is Flange Mounted. Order Foot Mount set separately for belt drive applications. Order Input Unit to incorporate pulleys into your application.

Model Number	Product Number	Bore (In)	HP _T Up To	OVERHUNG LOAD CAPACITY (LBS)		Shipping Wt. Wt (Lbs)
				1200 RPM	1800 RPM	
Black Coating:						
FMCBE-1125	801600	1.125	0.33	360	240	68
FMCBE-1375	801622	1.375	0.44	525	350	89
FMCB-1625	801731	1.625	1.19	660	600	143
Nickel Coating:						
FMCBE-1125	801631	1.125	0.33	360	240	68
FMCBE-1375	801655	1.375	0.44	525	350	89

NOTE: Thermal Capacity (HP_T) and Overhung Load data is based upon 50% clutch and 50% brake usage.

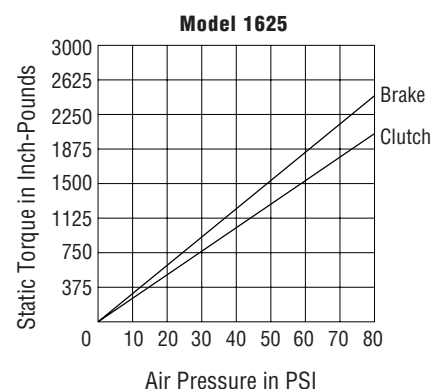
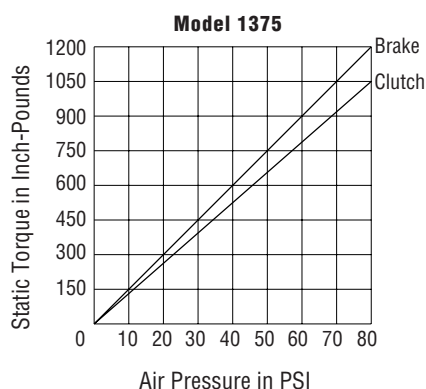
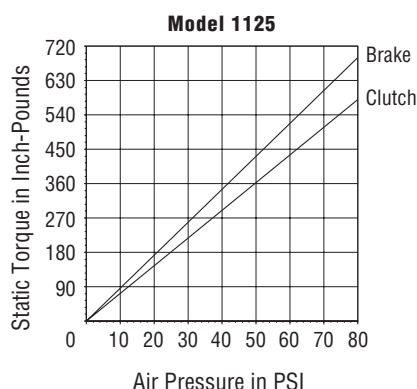
Model Number	Product Number	Foot Mount Set	Shipping Wt.	Input Unit	Shipping Wt.
		(2 Mounts)			
		Product Number	(Lbs)	Product Number	(Lbs)
Black Coating:					
FMCBE-1125	801600	801603	6	935000	12
FMCBE-1375	801622	801603	6	936000	13
FMCB-1625	801731	801734	12	936001	14
Nickel Coating:					
FMCBE-1125	801631	801606	6	935041	12
FMCBE-1375	801655	801606	6	936041	13

NEMA MOTOR/FRAME SELECTION CHART

Use this chart as specification and operational criteria for your application.

HP of Motor	RPM	Frame Number	Motor Shaft (In)	Clutch Brake Model Number
1	900	182TC	1.125	FMCBE-1125 Black & Nickel
1-1/2	1200	182TC	1.125	FMCBE-1125 Black & Nickel
1-1/2	900	184TC	1.125	FMCBE-1125 Black & Nickel
2	1200	184TC	1.125	FMCBE-1125 Black & Nickel
2	900	213TC	1.375	FMCBE-1375 Black & Nickel
3	1800	182TC	1.125	FMCBE-1125 Black & Nickel
3	1200	213TC	1.375	FMCBE-1375 Black & Nickel
3	900	215TC	1.375	FMCBE-1375 Black & Nickel
5	1800	184TC	1.125	FMCBE-1125 Black & Nickel
5	1200	215TC	1.375	FMCBE-1375 Black & Nickel
7-1/2	1800	213TC	1.375	FMCBE-1375 Black & Nickel
10	1800	215TC	1.375	FMCBE-1375 Black & Nickel
15	1800	254TC	1.625	FMCB-1625 Black
20	1800	254TC	1.625	FMCB-1625 Black

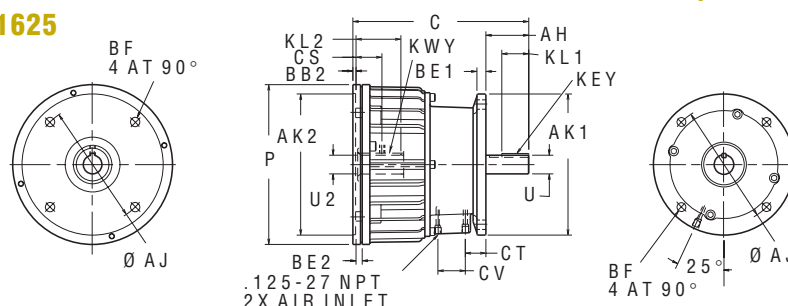
TORQUE VS. AIR PRESSURE



NOTE: Dynamic torque is approximately 85% of static torque.

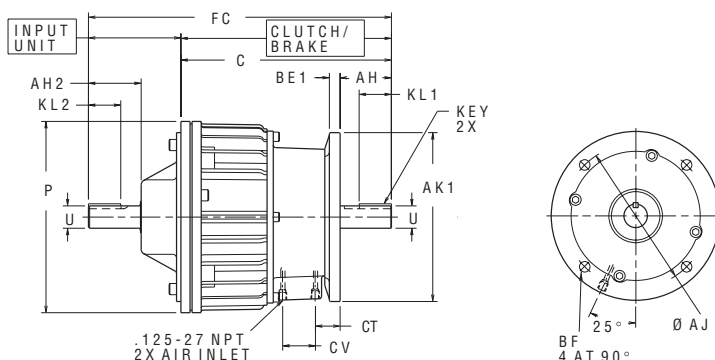
FMCBE & FMCB MODEL CLUTCH-BRAKES - APPROXIMATE DIMENSIONS (INCHES)

► MODELS 1125, 1375 & 1625



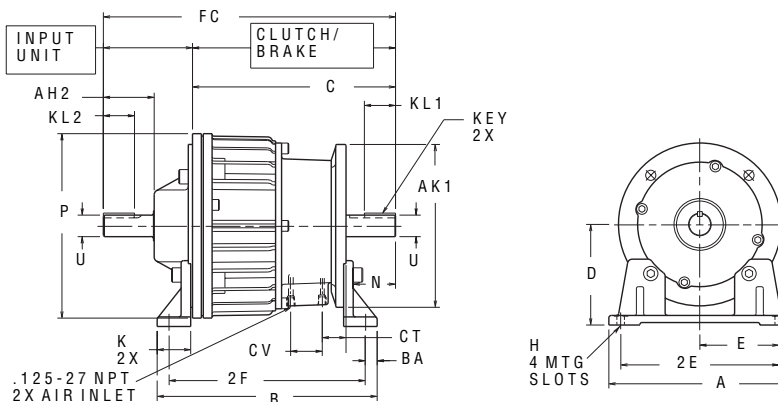
MODEL	PRODUCT NUMBER	AH	AJ	AK1 ^{+0.000/-0.002}	AK2 ^{+0.002/-0.000}	BB2	BE1	BE2	BF	C	CS	CT	CV	KL1	KL2	P	KEY (SQ)	KWY WD	KWY DP	U1 ^{+0.000/-0.001}	U2 ^{+0.001/-0.000}
1125	801600	2.58	7.250	8.499	8.501	0.19	0.54	0.37	.531	10.59	1.56	1.24	1.65	2.00	2.70	9.62	0.250	0.250	0.125	1.125	1.125
1375	801622	3.08	7.250	8.499	8.501	0.19	1.12	0.37	.500-13	12.12	1.77	1.60	1.91	2.56	3.18	10.38	0.312	0.312	0.156	1.375	1.375
1625	801731	3.75	7.250	8.499	8.501	0.30	1.35	0.31	.500-13	13.52	-	1.82	1.91	2.63	4.04	10.00	0.375	0.375	0.157	1.625	1.625

► MODELS 1125, 1375 & 1625 WITH INPUT



MODEL	PRODUCT NUMBER	AH	AJ	AK1 ^{+0.000/-0.002}	BE	C	CT	CV	KL1	KEY (SQ)	P	U1 ^{+0.000/-0.001}	INPUT NUMBER	U2 ^{+0.000/-0.001}	AH2	FC	KL2
1125	801600	2.58	7.250	8.499	0.54	10.59	1.24	1.65	2.00	0.250	9.62	1.125	935000	1.125	2.62	15.22	1.62
1375	801622	3.08	7.250	8.499	1.12	12.12	1.60	1.91	2.56	0.312	10.38	1.375	936000	1.375	3.14	17.26	2.25
1625	801731	3.75	7.250	8.499	1.35	13.52	1.82	1.91	2.63	0.375	10.00	1.625	936001	1.625	3.75	19.76	2.63

► MODELS 1125, 1375 & 1625 WITH INPUT & FOOT



MODEL	PRODUCT NUMBER	AK ^{+0.000/-0.002}	C	CT	CV	KL1	KEY (SQ)	P	U ^{+0.000/-0.001}	INPUT NUMBER	AH2	FC	KL2
1125	801600	8.499	10.59	1.24	1.65	2.00	0.250	9.62	1.125	935000	2.62	15.22	1.62
1375	801622	8.499	12.12	1.60	1.91	2.56	0.312	10.38	1.375	936000	3.14	17.26	2.25
1625	801731	8.499	13.52	1.82	1.91	2.63	0.375	10.00	1.625	936001	3.75	19.71	2.63

MODEL	FOOT NUMBER	A	B	BA	D	E	2E	2F	H	K	N
1125	801603	9.50	11.48	.62	5.25	4.00	8.00	10.23	.56 x 1.00	1.75	2.21
1375	801603	9.50	12.51	.62	5.25	4.00	8.00	11.26	.56 x 1.00	1.75	2.71
1625	801734	9.50	13.39	.75	5.25	4.00	8.00	12.15	.56 x 1.00	1.75	3.38

CLUTCH-BRAKES

"Air Champ"

FMCBES CLUTCH-BRAKES – MODELS 625 & 875

FMCBES Flange Mounted Clutch-Brakes come with a spring engaged brake and air engaged clutch. For applications where safety is a concern, this unit will engage the brake in the event of air pressure loss. Choose from **2 Models**:

- **Bore sizes** of 0.625 and .875 inches
- All units available in either electroless nickel plating or black oxide coating
- Electroless Nickel plating meets NEMA standard 1.26.5 for waterproof machines
- Static Torque up to 142 In. Lbs. (brake) and 232 In. Lbs. (clutch)
- Overhung Load Capacity up to 292 pounds
- Design Speed up to 1800 rpm. Consult factory for higher speed
- Flange mounts directly to motors and reducers
- Compatible with C-face motors up to 1.5 HP
- Optional Foot Mount is available for belt drive applications
- Optional Input Unit allows you to incorporate pulleys or coupling into your application
- Single, double acting piston makes overlap impossible

► FMCBES CLUTCH-BRAKES/SPRING ENGAGED BRAKE

Standard Clutch-Brake is Flange Mounted. Order Foot Mount set separately for belt drive applications. Order Input Unit to incorporate pulleys into your application.

Model Number	Product Number	Bore (In)	HP _T Up To	OVERHUNG LOAD CAPACITY (LBS)		Shipping Wt. Wt (Lbs)
				1200 RPM	1800 RPM	
Black Coating:						
FMCBES-625	801623	0.625	0.14	138	92	24
FMCBES-875	801624	0.875	0.18	292	195	40
Nickel Coating:						
FMCBES-625	801656	0.625	0.14	138	92	24
FMCBES-875	801657	0.875	0.18	292	195	40

NOTE: Thermal Capacity (HP_T) and Overhung Load data is based upon 50% clutch and 50% brake usage.

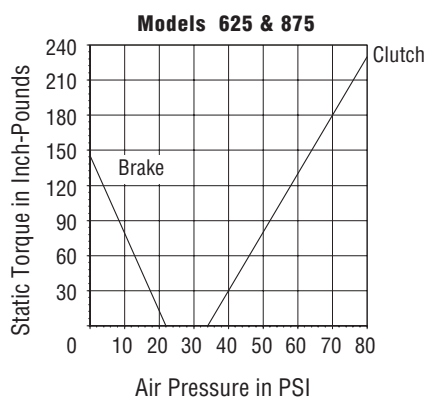
Model Number	Product Number	Foot Mount Set (2 Mounts)	Shipping Wt. (Lbs)	Input Unit	Shipping Wt. Wt (Lbs)
		Product Number		Product Number	
Black Coating:					
FMCBES-625	801623	801431	4	929600	7
FMCBES-875	801624	801431	4	928400	7
Nickel Coating:					
FMCBES-625	801656	827251	4	827270	7
FMCBES-875	801657	827261	4	827280	7

► NEMA MOTOR/FRAME SELECTION CHART

Use this chart as specification and operational criteria for your application.

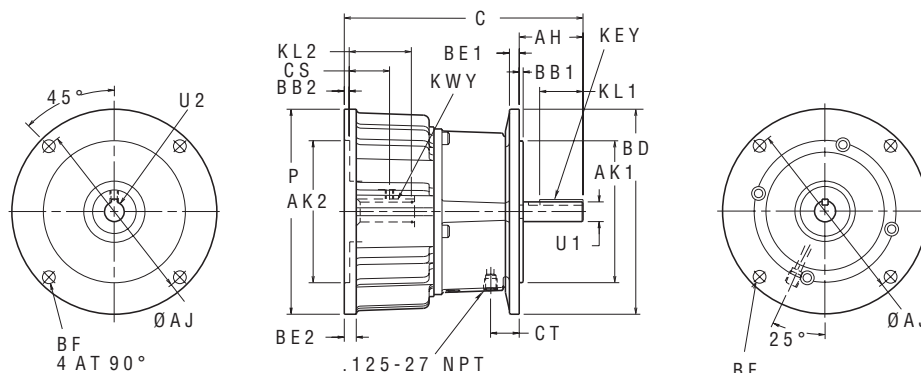
HP of Motor	RPM	Frame Number	Motor Shaft (In)	Clutch-Brake Model Number
1/4	1800	56C	0.625	FMCBES-625
1/4	1200	56C	0.625	FMCBES-625
1/3	1800	56C	0.625	FMCBES-625
1/3	1200	56C	0.625	FMCBES-625
1/2	1800	56C	0.625	FMCBES-625
1/2	1200	56C	0.625	FMCBES-625
1/2	900	143TC	0.875	FMCBES-875
3/4	1800	56C	0.625	FMCBES-625
3/4	1200	143TC	0.875	FMCBES-875
3/4	900	145TC	0.875	FMCBES-875
1	1800	56TC	0.625	FMCBES-625
1	1800	143TC	0.875	FMCBES-875
1	1200	145TC	0.875	FMCBES-875
1-1/2	1800	145TC	0.875	FMCBES-875
2	1800	145TC	0.875	FMCBES-875

► TORQUE VS. AIR PRESSURE



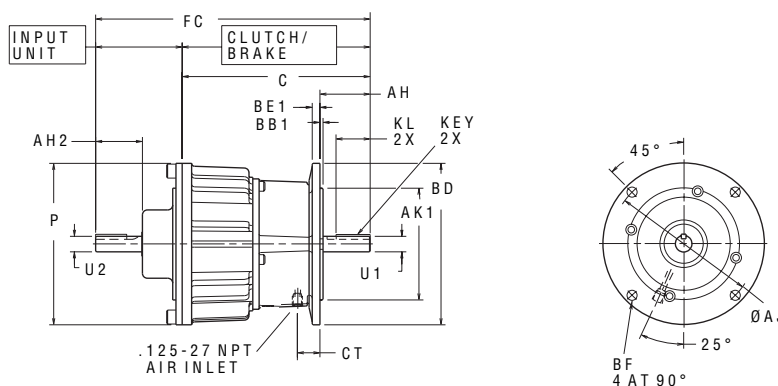
FMCBES MODEL CLUTCH-BRAKES/SPRING ENGAGED BRAKE - APPROXIMATE DIMENSIONS (INCHES)

Models 625 & 875



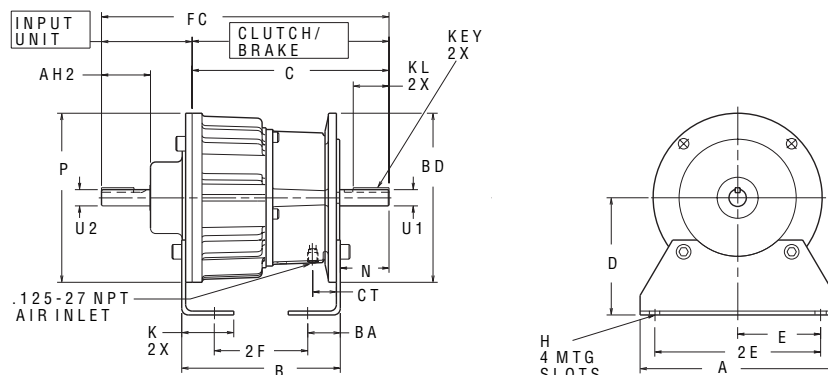
MODEL	PRODUCT NUMBER	AIR INLET														4 AT 90°			KEY (SQ)	KWY		U1 ^{+0.000 -0.001}	U2 ^{+0.001 -0.000}
		AH	AJ	AK1 ^{+0.000 -0.002}	AK2 ^{+0.002 -0.000}	BB1	BB2	BD	BE1	BE2	BF	C	CS	CT	KL1	KL2	P	WD		DP			
625	801623	2.06	5.88	4.499	4.501	0.14	0.19	7.00	0.38	0.56	.406	8.74	1.28	1.08	1.38	2.05	7.81	0.188	0.188	0.094	.625	.625	
875	801624	2.12	5.88	4.499	4.501	0.14	0.19	7.00	0.38	0.56	.406	8.81	1.28	1.08	1.38	2.05	7.81	0.188	0.188	0.094	.875	.875	

Models 625 & 875 WITH INPUT



MODEL	PRODUCT NUMBER	AH	AJ	AK1 ^{+0.000 -0.002}	BB1	BE1	C	CT	KL	KEY (SQ)	P	U1 ^{+0.000 -0.001}	INPUT NUMBER	U2 ^{+0.000 -0.001}	AH2	FC
625	801623	2.06	5.875	4.499	0.14	0.38	8.74	1.08	1.38	0.188	7.81	.625	929600	.875	1.883	12.227
875	801624	2.12	5.875	4.499	0.14	0.38	8.81	1.08	1.38	0.188	7.81	.875	928400	.875	1.893	12.300

Models 625 & 875 WITH INPUT & FOOT



MODEL	PRODUCT NUMBER	BD	C	CT	KL	KEY (SQ)	P	U1 ^{+0.000 -0.001}	INPUT NUMBER	U2 ^{+0.000 -0.001}	AH2	FC
625	801623	7.00	8.74	1.08	1.38	0.188	7.81	.625	929600	.875	1.88	12.23
875	801524	7.00	8.81	1.08	1.38	0.188	7.81	.875	928400	.875	1.89	12.30

MODEL	FOOT NUMBER	A	B	BA	D	E	2E	2F	H	K	N
625	801431	7.50	7.25	1.25	4.51	3.19	6.38	4.74	.41 x .88	2.00	1.90
875	801431	7.50	7.25	1.25	4.51	3.19	6.38	4.74	.41 x .88	2.00	1.96

CLUTCH-BRAKES

"Air Champ"

FMCBES CLUTCH-BRAKES – MODELS 1125 & 1375

FMCBES Flange Mounted Clutch-Brakes come with a spring engaged brake and air engaged clutch. For applications where safety is a concern, this unit will engage the brake in the event of air pressure loss. Choose from **2 Models**:

- **Bore sizes** of 1.125 and 1.375 inches
- All units available in either electroless nickel plating or black oxide coating
- Electroless Nickel plating meets NEMA standard 1.26.5 for waterproof machines
- Static Torque up to 495 In. Lbs. (brake) and 680 In. Lbs. (clutch)
- Overhung Load Capacity up to 525 pounds
- Design Speed up to 1800 rpm. Consult factory for higher speed
- Flange mounts directly to motors and reducers
- Compatible with C-face motors up to 10 HP
- Optional Foot Mount is available for belt drive applications
- Optional Input Unit allows you to incorporate pulleys or coupling into your application
- Single, double acting piston makes overlap impossible

► FMCBES CLUTCH-BRAKES/SPRING ENGAGED BRAKE

Standard Clutch-Brake is Flange Mounted. Order Foot Mount set separately for belt drive applications. Order Input Unit to incorporate pulleys into your application.

Model Number	Product Number	Bore (In)	HP _T Up To	OVERHUNG LOAD CAPACITY (LBS)		Shipping Wt. (Lbs)
				1200 RPM	1800 RPM	
Black Coating:						
FMCBES-1125	801625	1.125	0.33	360	240	68
FMCBES-1375	801626	1.375	0.44	525	350	89
Nickel Coating:						
FMCBES-1125	801658	1.125	0.33	360	240	68
FMCBES-1375	801659	1.375	0.44	525	350	89

NOTE: Thermal Capacity (HP_T) and Overhung Load data is based upon 50% clutch and 50% brake usage.

Model Number	Product Number	Foot Mount Set (2 Mounts) Product Number	Shipping Wt. (Lbs)	Input Unit Product Number	Shipping Wt. (Lbs)
Black Coating:					
FMCBES-1125	801625	801603	6	935000	12
FMCBES-1375	801626	801603	6	936000	13
Nickel Coating:					
FMCBES-1125	801658	801606	6	935041	12
FMCBES-1375	801659	801606	6	936041	13

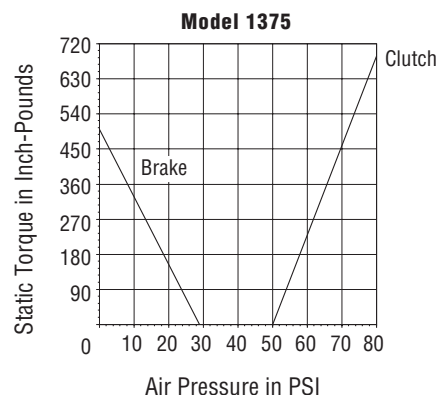
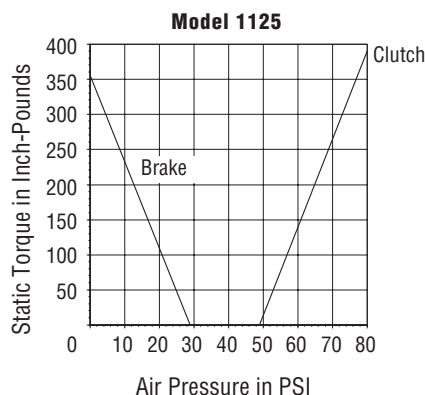
► NEMA MOTOR/FRAME SELECTION CHART

Use this chart as specification and operational criteria for your application.

HP of Motor RPM Frame Number Motor Shaft (IN) Clutch-Brake Model Number

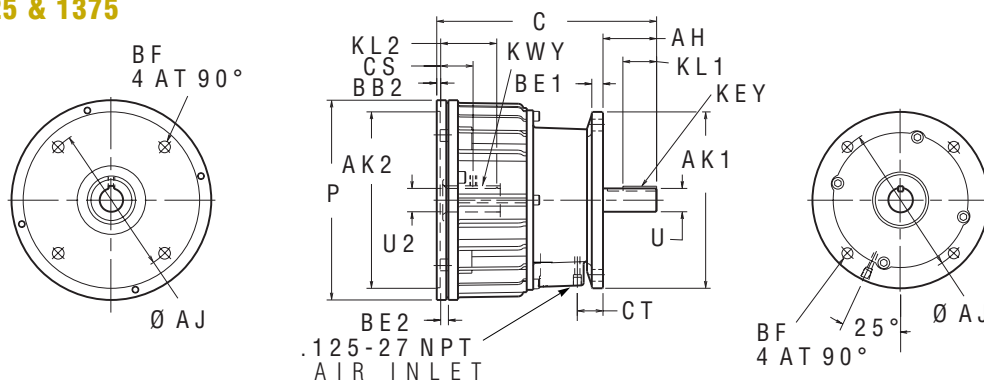
1	900	182TC	1.125	FMCBES-1125
1-1/2	1200	182TC	1.125	FMCBES-1125
1-1/2	900	184TC	1.125	FMCBES-1125
2	1200	184TC	1.125	FMCBES-1125
2	900	213TC	1.375	FMCBES-1375
3	1800	182TC	1.125	FMCBES-1125
3	1200	213TC	1.375	FMCBES-1375
3	900	215TC	1.375	FMCBES-1375
5	1800	184TC	1.125	FMCBES-1125
5	1200	215TC	1.375	FMCBES-1375
7-1/2	1800	213TC	1.375	FMCBES-1375
10	1800	215TC	1.375	FMCBES-1375

► TORQUE VS. AIR PRESSURE



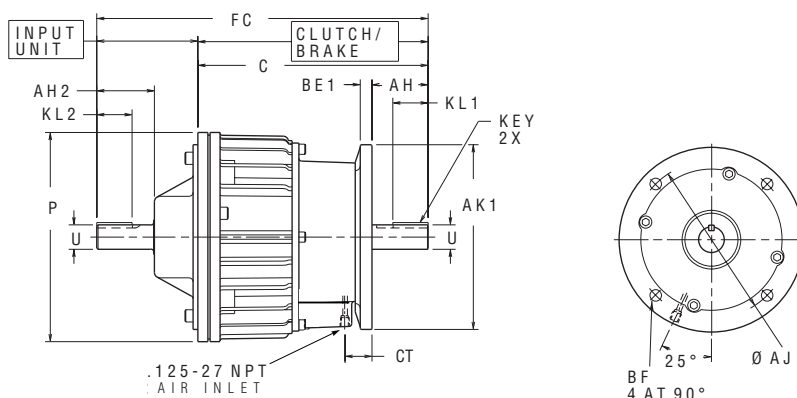
FMCBES MODEL CLUTCH-BRAKES/SPRING ENGAGED BRAKE - APPROXIMATE DIMENSIONS (INCHES)

► MODELS 1125 & 1375



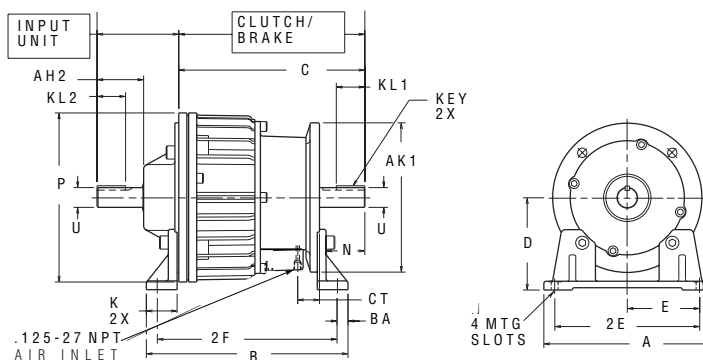
MODEL	PRODUCT NUMBER	AH	AJ	AK1 ^{+0.000/-0.002}	AK2 ^{+0.002/-0.000}	BB2	BE1	BE2	BF	C	CS	CT	KL1	KL2	P	KEY (SQ)	KUY WD	KUY DP	U1 ^{+0.000/-0.001}	U2 ^{+0.001/-0.000}
1125	801625	2.58	7.250	8.499	8.501	0.19	0.54	0.37	.531	10.59	1.56	1.24	2.00	2.70	9.62	0.250	0.250	0.125	1.125	1.125
1375	801626	3.08	7.250	8.499	8.501	0.19	1.12	0.37	.500-13	12.12	1.77	1.60	2.56	3.18	10.38	0.312	0.312	0.156	1.375	1.375

► MODELS 1125 & 1375 WITH INPUT



MODEL	PRODUCT NUMBER	AH	AJ	AK1 ^{+0.000/-0.002}	BE1	BF	C	CT	KL1	KEY (SQ)	P	U ^{+0.000/-0.001}	INPUT NUMBER	AH2	FC	KL2
1125	801625	2.58	7.250	8.499	0.54	.531	10.59	1.24	2.00	0.250	9.62	1.125	935000	2.62	15.22	1.62
1375	801626	3.08	7.250	8.499	1.12	.500-13	12.12	1.60	2.56	0.312	10.38	1.375	936000	3.14	17.26	2.25

► MODELS 1125 & 1375 WITH INPUT & FOOT



MODEL	PRODUCT NUMBER	AK ^{+0.000/-0.002}	C	CT	KL1	KEY (SQ)	P	U ^{+0.000/-0.001}	INPUT NUMBER	AH2	FC	KL2
1125	801625	8.499	10.59	1.24	2.00	0.250	9.62	1.125	935000	2.62	15.22	1.62
1375	801626	8.499	12.12	1.60	2.56	0.312	10.38	1.375	936000	3.14	17.26	2.25

MODEL	FOOT NUMBER	A	B	BA	D	E	2E	2F	H	K	N
1125	801603	9.50	11.48	0.62	5.250	4.12	8.06	10.23	.56 x 1.00	1.75	2.21
1375	801603	9.50	12.51	0.62	5.250	4.12	8.06	11.26	.56 x 1.00	1.75	2.71

CLUTCH-BRAKES

"Air Champ"

FMCE CLUTCHES

FMCE Flange Mounted Clutches are excellent in hostile, dirty environments where only a clutch is required. The totally enclosed design functions perfectly in areas where dirt, dust, moisture or other contaminants interfere. Choose from **4 Models**:

- ▶ Static Torque up to 1050 In. Lbs.
- ▶ Thermal Horsepower rating up to 0.18 @ 1800 rpm
- ▶ **Bore sizes** of 0.625 to 1.375 inches
- ▶ Available in black oxide coating
- ▶ Overhung Load Capacity up to 525 pounds
- ▶ Design Speed up to 1800 rpm. Consult factory for higher speed
- ▶ Mounts either vertically or horizontally
- ▶ Operates on static air pressure, requiring no expensive control system
- ▶ Optional Foot Mount is available for offset drive applications
- ▶ Optional Input Unit allows you to incorporate pulleys or coupling into your application

FMCE CLUTCH, TOTALLY ENCLOSED

Standard Clutch-Brake is Flange Mounted. Order Foot Mount set separately for offset drive applications. Order Input Unit to incorporate pulleys into your application.

Model Number	Product Number	Bore (In)	HP _T Up To	OVERHUNG LOAD CAPACITY (LBS)		Shipping Wt. (Lbs)
				1200 RPM	1800 RPM	
FMCE-625	801489	0.625	0.14	138	92	24
FMCE-875	801493	0.875	0.18	292	195	40
FMCE-1125	964409	1.125	0.33	360	240	68
FMCE-1375	964410	1.375	0.44	525	350	89

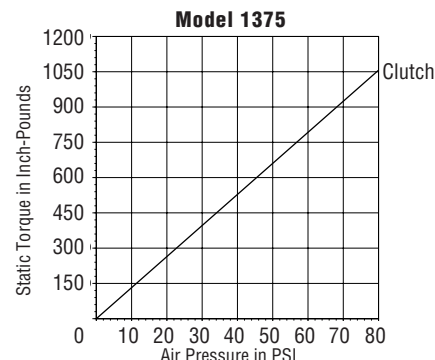
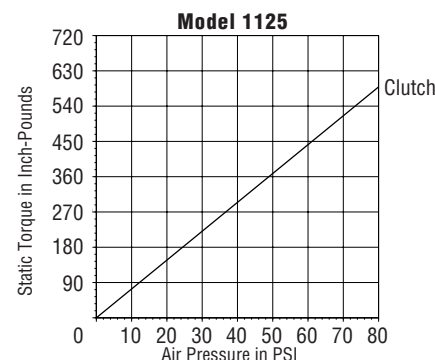
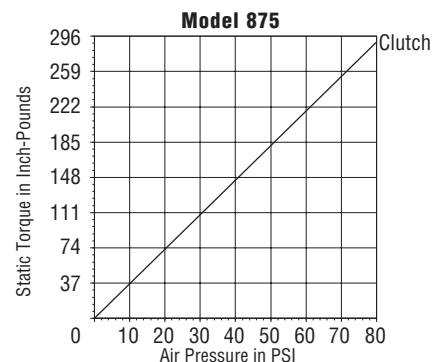
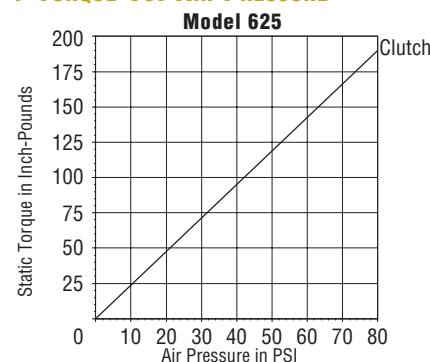
Model Number	Product Number	Foot Mount Set (2 Mounts) Product Number	Shipping Wt. (Lbs)	Input Unit Product Number	Shipping Wt. (Lbs)
FMCE-625,	801489	801431	4	929600	7
FMCE-875	801493	801431	4	928400	7
FMCE-1125	964409	801603	6	935000	12
FMCE-1375	964410	801603	6	936000	13

NEMA MOTOR/FRAME SELECTION CHART

Use this chart as specification and operational criteria for your application.

HP of Motor	RPM	Frame Number	Motor Shaft (IN)	Clutch-Brake Model Number	HP of Motor	RPM	Frame Number	Motor Shaft (IN)	Clutch-Brake Model Number
1/4	1800	56C	0.625	FMCE-625	1-1/2	1800	145TC	0.875	FMCE-875
1/4	1200	56C	0.625	FMCE-625	1-1/2	1200	182TC	1.125	FMCE-1125
1/3	1800	56C	0.625	FMCE-625	1-1/2	900	184TC	1.125	FMCE-1125
1/3	1200	56C	0.625	FMCE-625	2	1800	145TC	0.875	FMCE-875
1/2	1800	56C	0.625	FMCE-625	2	1200	184TC	1.125	FMCE-1125
1/2	1200	56C	0.625	FMCE-625	2	900	213TC	1.375	FMCE-1375
1/2	900	143TC	0.875	FMCE-875	3	1800	182TC	1.125	FMCE-1125
3/4	1800	56C	0.625	FMCE-625	3	1200	213TC	1.375	FMCE-1375
3/4	1200	143TC	0.875	FMCE-875	3	900	215TC	1.375	FMCE-1375
3/4	900	145TC	0.875	FMCE-875	5	1200	215TC	1.375	FMCE-1375
1	1800	56TC	0.625	FMCE-625	5	1800	184TC	1.125	FMCE-1125
1	1800	143TC	0.875	FMCE-875	7-1/2	1800	213TC	1.375	FMCE-1375
1	1200	145TC	0.875	FMCE-875	10	1800	215TC	1.375	FMCE-1375
1	900	182TC	1.125	FMCE-1125					

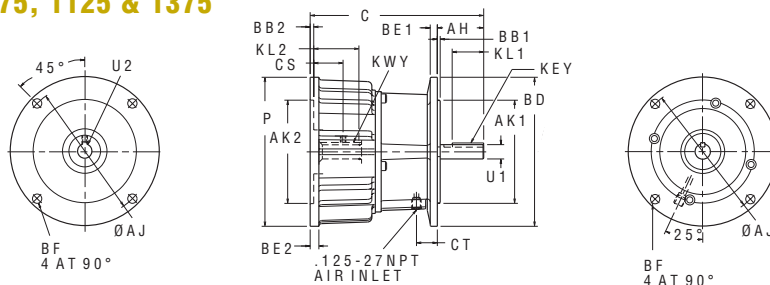
TORQUE VS. AIR PRESSURE



NOTE: Dynamic torque is approximately 85% of static torque.

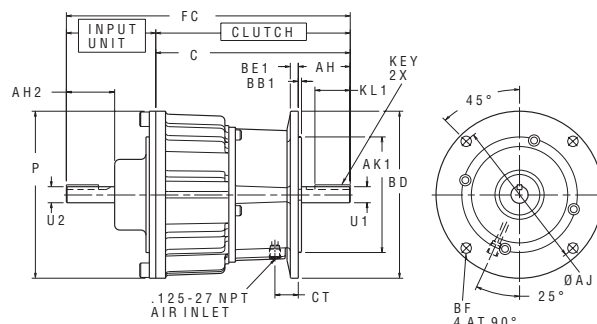
FMCE MODEL CLUTCH - APPROXIMATE DIMENSIONS (INCHES)

► MODELS 625, 875, 1125 & 1375



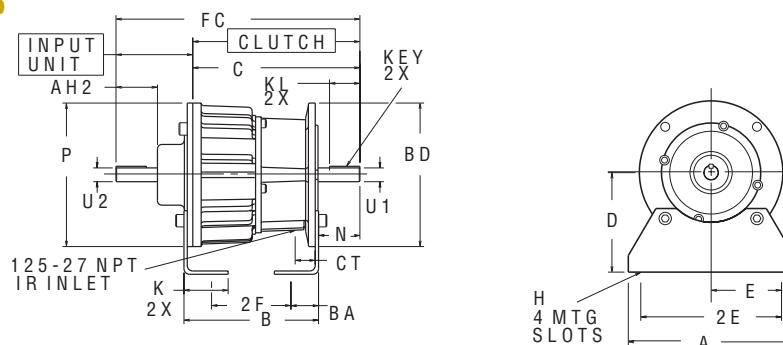
MODEL	PRODUCT NUMBER	AH	AJ	AK1 ^{+0.000/-0.002}	AK2 ^{+0.002/-0.000}	BB1	BB2	BD	BE1	BE2	BF	C	CS	CT	KL1	KL2	P	KEY (SQ)	KWY		U1 ^{+0.000/-0.001}	U2 ^{+0.001/-0.000}
625	801489	2.06	5.88	4.499	4.501	0.12	0.16	6.50	0.31	0.56	.406	7.61	1.28	0.91	1.38	1.97	6.50	.188	.188	.094	.625	.625
875	801493	2.11	5.88	4.499	4.501	0.12	0.19	7.00	0.39	0.56	.406	7.97	1.28	1.10	1.38	2.04	7.81	.188	.188	.094	.875	.875
1125	964409	2.58	7.25	8.498	8.501	—	0.19	8.498	0.54	0.37	.562	10.59	1.75	1.30	2.00	2.90	9.63	.250	.250	.125	1.125	1.125
1375	964410	3.08	7.25	8.498	8.501	—	0.19	8.498	1.12	0.37	.531	12.12	1.96	1.60	2.56	3.39	10.38	.312	.312	.156	1.375	1.375

► MODELS 625 & 875 WITH INPUT



MODEL	PRODUCT NUMBER	AH	AJ	AK1 ^{+0.000/-0.002}	BB1	BD	BE1	C	CT	KL	KEY (SQ)	P	U1 ^{+0.000/-0.001}	INPUT NUMBER	U2 ^{+0.000/-0.001}	AH2	FC
625	801489	2.06	5.88	4.499	0.12	6.50	0.31	7.61	0.91	1.38	0.188	6.50	.625	929600	.875	1.89	11.10
875	801493	2.11	5.88	4.499	0.12	7.00	0.39	7.97	1.10	1.38	0.188	7.81	.875	928400	.875	1.89	11.46

► MODELS 625 & 875 WITH INPUT & FOOT



MODEL	PRODUCT NUMBER	BD	C	CT	KL	KEY (SQ)	P	U1 ^{+0.000/-0.001}	INPUT NUMBER	U2 ^{+0.000/-0.001}	AH2	FC
625	801489	6.50	7.61	0.91	1.38	0.188	6.50	.625	929600	.875	1.89	11.10
875	801493	7.00	7.97	1.10	1.38	0.188	7.81	.875	928400	.875	1.89	11.46

MODEL	FOOT NUMBER	A	B	BA	D	E	2E	2F	H	K	N
625	801431	7.50	6.10	1.25	4.50	3.19	6.38	3.60	.41 x .88	2.00	1.91
875	801431	7.50	6.41	1.25	4.50	3.19	6.38	3.91	.41 x .88	2.00	1.96

MODULAR CLUTCH-BRAKE SYSTEM

Custom design a power transmission system to fit your specific requirements using the Nexen Modular Clutch-Brake “Building Block” System. Interchangeable modular components provide you with complete flexibility both for today’s requirements and for tomorrow’s changing needs.

Construct your own Clutch, Brake or Clutch-Brake system to meet your application needs, selecting only those modules required for today’s job. Whenever plans change, you can easily add or subtract modules to construct a new application configuration. Customization through the use of standard interchangeable components saves you both time and money.

The Modular Clutch-Brake System allows you almost limitless design control, provides time and cost savings, while providing you with the efficiency of air operation.

MODULAR APPLICATION CONFIGURATIONS

Four Modular Units (Brake, Drive, Input and Output) are the cornerstone of the System. Used either alone or in combination, they allow you to construct a variety of modular application configurations.

- ▶ Clutches (Input or Output)
- ▶ Brakes (Input or Output)
- ▶ Clutch-Brakes (Input or Output)

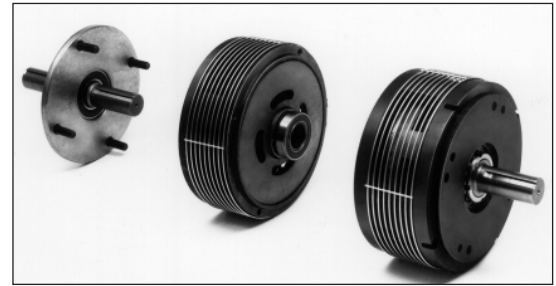
Once you’ve determined a configuration, you are provided these additional choices:

- ▶ Static Torque capacity up to 1150 In. Lbs. (Clutch) and 1550 In. Lbs. (Brake)
- ▶ Design Speed up to 1800 rpm. Consult factory for higher speed
- ▶ Thermal Horsepower rating up to 0.77 @ 1800 rpm
- ▶ 4 Standard Bore/Shaft sizes ranging from 0.625 to 1.375 inches
- ▶ Overhung Load Capacity up to 700 pounds
- ▶ Mounting flexibility: Vertically, Horizontally, Gearbox to C-Faced Motor or reducer
- ▶ Optional Foot Mount is available in 2 different designs

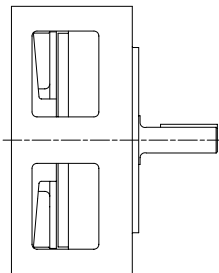
ADVANTAGES OF THE MODULAR SYSTEM

- ▶ Compatible with C-face motors up to 10 HP
- ▶ Operates on static air pressure for fast, dependable response, soft starts and positive stops, while eliminating the need for expensive control systems
- ▶ Less heat build-up. Special fin designed friction discs cool the interior, dissipate heat and decrease torque fade
- ▶ Longer Life through forced air cooling
- ▶ Self-adjusting clutch and brake modules get the most out of friction material; torque output is constant
- ▶ Interchangeability with electric modular units is easy, due to conformity with standard NEMA specifications

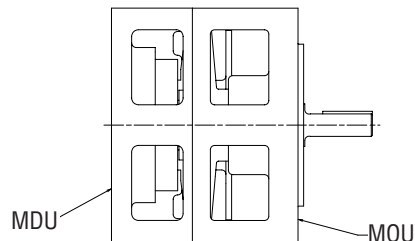
▶ **MODULAR CLUTCHES, BRAKES AND CLUTCH-BRAKES**



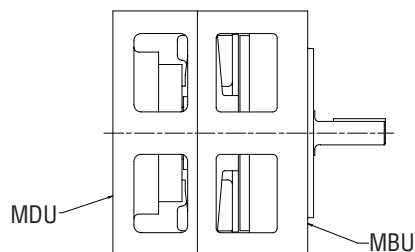
▶ **MBU BRAKE**



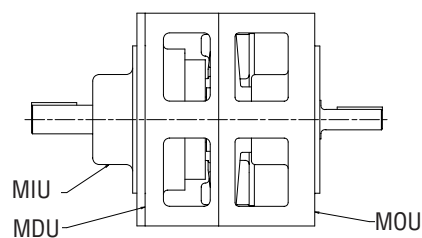
▶ **MDO CLUTCH**



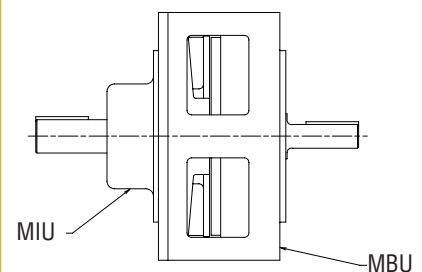
▶ **MDB CLUTCH-BRAKE**



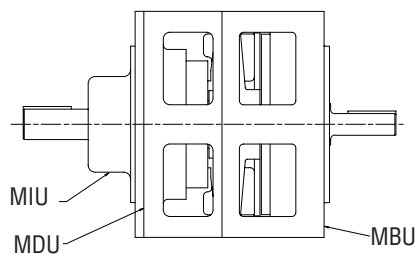
▶ **MIDO INPUT CLUTCH**



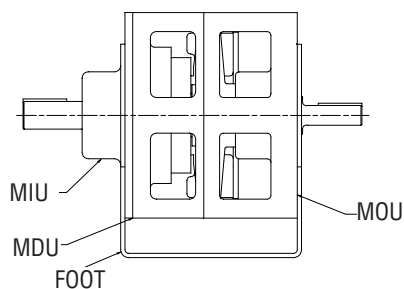
▶ **MIB INPUT BRAKE**



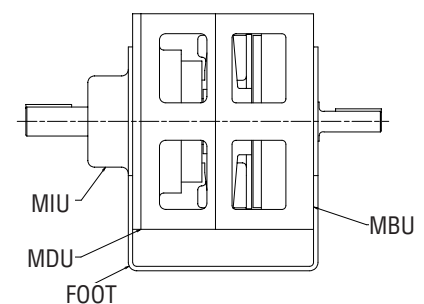
▶ **MIDB INPUT CLUTCH-BRAKE**



▶ **MIDO FOOT MOUNTED INPUT CLUTCH**



▶ **MIDB FOOT MOUNTED INPUT CLUTCH-BRAKE**



CLUTCH-BRAKES

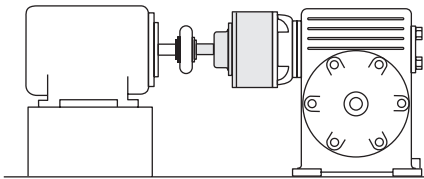
DESIGNING YOUR MODULAR SYSTEM

Designing your system is easily accomplished in 5 steps:

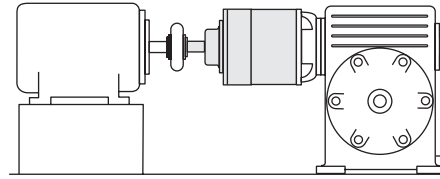
1. Determine the functions your system must perform -
 - Starting (Clutch configuration)
 - Stopping (Brake configuration)
 - Starting & Stopping (Clutch-Brake configuration)
2. Determine your application configuration using the Typical Application drawings on below.
3. A Modular Assembly is designated for each Application (i.e. MIB, MIDO, etc.) Modular Assemblies consist of one or more Module Units. The various Module Assemblies and the Units which comprise them are shown on page 191.

TYPICAL APPLICATIONS

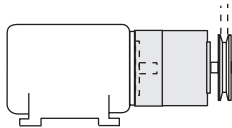
INPUT BRAKE MOUNTED TO A REDUCER AND COUPLED TO A MOTOR (MIB)



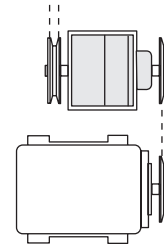
INPUT CLUTCH OR INPUT CLUTCH-BRAKE MOUNTED TO A REDUCER AND COUPLED TO A MOTOR (MIDO OR MIDB)



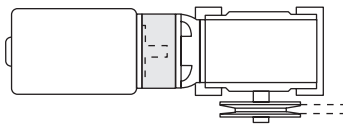
CLUTCH-BRAKE ON C-FACED MOTOR (MDB)



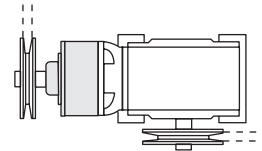
INPUT CLUTCH OR INPUT CLUTCH-BRAKE WITH FOOT MOUNT (MIDO OR MIDB W/FOOT)



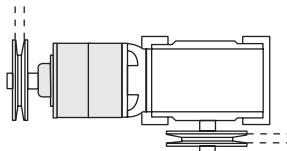
BRAKE MOUNTED BETWEEN MOTOR AND REDUCER (MBU)



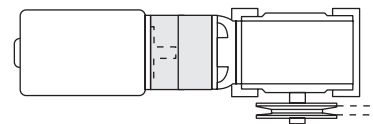
INPUT BRAKE UNIT MOUNTED DIRECTLY TO A REDUCER (MIB)



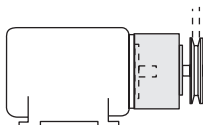
INPUT CLUTCH OR INPUT CLUTCH-BRAKE MOUNTED DIRECTLY TO A REDUCER (MIDO OR MIDB)



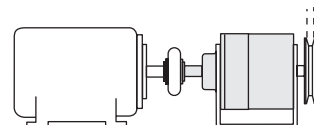
CLUTCH OR CLUTCH-BRAKE UNIT MOUNTED TO A MOTOR AND REDUCER (MDO OR MDB)



BRAKE UNIT MOUNTED ON A C-FACE MOTOR (MBU)



INPUT CLUTCH OR INPUT CLUTCH-BRAKE WITH FOOT COUPLED TO A FOOT MOUNTED MOTOR (MIDO OR MIDB W/FOOT)



► NEMA MOTOR/FRAME SELECTION CHART

Use this chart as specification and operational criteria for your application.

HP of Motor	RPM	Frame Number	Motor Shaft (IN)	Modular System
1/2	1800	56C	0.625	625
1/2	1200	56C	0.625	625
1/2	900	143TC	0.875	875
3/4	1800	56C	0.625	625
3/4	1200	143TC	0.875	875
3/4	900	145TC	0.875	875
1	1800	56C	0.625	625
1	1800	143TC	0.875	875
1	1200	145TC	0.875	875
1	900	182TC	1.125	1125
1-1/2	1800	145TC	0.875	875
1-1/2	1200	182TC	1.125	1125
1-1/2	900	184TC	1.125	1125
2	1800	145TC	0.875	875
2	1200	184TC	1.125	1125
2	900	213TC	1.375	1375
3	1800	182TC	1.125	1125
3	1200	213TC	1.375	1375
3	900	215TC	1.375	1375
5	1800	184TC	1.125	1125
5	1200	215TC	1.375	1375
7-1/2	1800	213TC	1.375	1375
10	1800	215TC	1.375	1375

► OVERHUNG LOAD DATA

Values are based upon 10,000 hours of bearing life with the load one inch from pilot face.

Modular System	Module	Lbs. @ 1200 RPM	Lbs. @ 1800 RPM
625	Brake, MBU	321	281
	Output, MOU	321	281
	Input, MIU	279	244
875	Brake, MBU	321	281
	Output, MOU	321	281
	Input, MIU	279	244
1125	Brake, MBU	636	554
	Output, MOU	636	554
	Input, MIU	655	570
1375	Brake, MBU	700	610
	Output, MOU	700	610
	Input, MIU	655	570

► THERMAL CAPACITY DATA (HP_T)

Standard Modular Systems (Open Design)

Modular Assembly	RPM	625	875	1125	1375
Brake MBU	1800	0.23	0.23	0.33	0.50
	1200	0.20	0.20	0.30	0.46
Clutch MDO	1800	0.44	0.44	0.53	0.77
	1200	0.40	0.40	0.50	0.71
Clutch-Brake MDB	1800	0.40	0.40	0.50	0.75
	1200	0.35	0.35	0.45	0.70
Input Brake MIB	1800	0.23	0.23	0.33	0.50
	1200	0.20	0.20	0.30	0.46
Input Clutch MIDO	1800	0.44	0.44	0.53	0.77
	1200	0.40	0.40	0.50	0.71
Input Clutch-Brake MIDB	1800	0.40	0.40	0.50	0.75
	1200	0.35	0.35	0.45	0.70

► DESIGNING YOUR MODULAR SYSTEM, CONT.

4. Select the correct Modular Assembly System size.

- Using the NEMA Motor/Frame Selection Chart, find the frame size, horsepower and output rpm of the motor you will be using. The size of the compatible Modular System is shown in the right hand column. Make a note of this number.
- If your chosen Modular Assembly calls for a Brake (B), an Output Unit (O), an Input Unit (I) or a combination of these, consult the Overhung Load Data chart to know the limits of the Modular System Size chosen.
- Review the Thermal Capacity chart to familiarize yourself with the rating of your chosen Modular Assembly by Size.
- Review the Torque charts to ensure your selected System Size falls within your guidelines.

NOTE: Whenever Modular System Product values are less than your operational values, move up to a System Size to meet your specifications. Moving to a higher System Size may affect motor and frame size requirements.

CLUTCH-BRAKES

“Air Champ”

DESIGNING YOUR MODULAR SYSTEM, CONT.

- Find your chosen System Size on the following pages. Locate your chosen Modular Assembly on the right hand column. The Product Numbers listed in the column are those components required to construct your Modular System. Order each separately.

Dimensional characteristics of each Modular Assembly can be found on the following pages.

625 MODULAR SYSTEM COMPONENTS (0.625 INCH BORE/SHAFT):

To achieve the Modular Assemblies shown for the Typical Applications:

- Find the applicable component Model designation in the table below;
- Order one of each of the product numbers shown in the column.

Module Component	Model Number	Product Number	Module Shipping Wt. (Lbs)	Model MBU Brake Only	Model MDO Clutch Only	Model MDB Clutch-Brake	Model MIB Input Brake	Model MIDO Input Clutch	Model MIDO-WF Input Clutch w/Foot	Model MIDB Input Clutch-Brake	Model MIDB-WF Input Clutch-Brake w/Foot
Brake Unit	MBU625	928500	18	928500	--	928500	928500	--	--	928500	928500
Drive Unit	MDU625	928600	13	--	928600	928600	--	928600	928600	928600	928600
Input Unit	MIU625	929600	7	--	--	--	929600	929600	929600	929600	929600
Output Unit	MOU625	928800	12	--	928800	--	--	928800	928800	--	--
Foot, U Shape		929300	3	--	--	--	--	--	929300	--	929300

OPTIONS FOR 625 MODULAR SYSTEM:

Optional Component	Model Number	Product Number	Shipping Wt. (Lbs)	Comments
Foot, L Shape	MDU-625	931000	3	Use in place of “U” Shaped Foot Mount.
Stainless Steel Guard	MDU-625	929501	1	Thermal Capacity .20 HP _t
Stainless Steel Guard	MBU-625	929502	1	Thermal Capacity .20 HP _t

875 MODULAR SYSTEM COMPONENTS (0.875 INCH BORE/SHAFT):

To achieve the Modular Assemblies shown for the Typical Applications:

- Find the applicable component Model designation in the table below;
- Order one of each of the product numbers shown in the column.

Module Component	Model Number	Product Number	Module Shipping Wt. (Lbs)	Model MBU Brake Only	Model MDO Clutch Only	Model MDB Clutch-Brake	Model MIB Input Brake	Model MIDO Input Clutch	Model MIDO-WF Input Clutch w/Foot	Model MIDB Input Clutch-Brake	Model MIDB-WF Input Clutch-Brake w/Foot
Brake Unit	MBU875	928000	18	928000	--	928000	928000	--	--	928000	928000
Drive Unit	MDU875	928100	13	--	928100	928100	--	928100	928100	928100	928100
Input Unit	MIU875	928400	7	--	--	--	928400	928400	928400	928400	928400
Output Unit	MOU875	928700	12	--	928700	--	--	928700	928700	--	--
Foot, U Shape		929300	3	--	--	--	--	--	929300	--	929300

OPTIONS FOR 875 MODULAR SYSTEM:

Optional Component	Model Number	Product Number	Shipping Wt. (Lbs)	Comments
Foot, L Shape	MDU-875	931000	3	Use in place of “U” Shaped Foot Mount.
Stainless Steel Guard	MDU-875	929501	1	Thermal Capacity .20 HP _t
Stainless Steel Guard	MBU-875	929502	1	Thermal Capacity .20 HP _t

► 1125 MODULAR SYSTEM COMPONENTS (1.125 INCH BORE/SHAFT):

To achieve the Modular Assemblies shown for the Typical Applications:

1. Find the applicable component Model designation in the table below;
2. Order one of each of the product numbers shown in the column.

Module Component	Model Number	Product Number	Module Shipping Wt. (Lbs)	Model MBU Brake Only	Model MDO Clutch Only	Model MDB Clutch-Brake	Model MIB Input Brake	Model MIDO Input Clutch	Model MIDO-WF Input Clutch w/Foot	Model MIDB Input Clutch-Brake	Model MIDB-WF Input Clutch-Brake w/Foot
Brake Unit	MBU1125	935200	38	935200	--	935200	935200	--	--	935200	935200
Drive Unit	MDU1125	935100	21	--	935100	935100	--	935100	935100	935100	935100
Input Unit	MIU1125	935000	12	--	--	--	935000	935000	935000	935000	935000
Output Unit	MOU1125	935300	35	--	935300	--	--	935300	935300	--	--
Foot		936900	4	--	--	--	--	--	936900	--	936900
Motor Adapter	MBU1125	937000	1	937000	--	937000	--	--	--	--	--

► OPTIONS FOR 1125 MODULAR SYSTEM:

Optional Component	Model Number	Product Number	Shipping Wt. (Lbs)	Comments
Motor Adapter	MBU-1125	937000	1	Use when MBU Model configuration is mounted on a C Face motor alone.
Stainless Steel Guard	MDU-1125	935901	1.5	Thermal Capacity .23 HP _t
Stainless Steel Guard	MBU-1125	935902	1.5	Thermal Capacity .30 HP _t

► 1375 MODULAR SYSTEM COMPONENTS (1.375 INCH BORE/SHAFT):

To achieve the Modular Assemblies shown for the Typical Applications:

1. Find the applicable component Model designation in the table below;
2. Order one of each of the product numbers shown in the column.

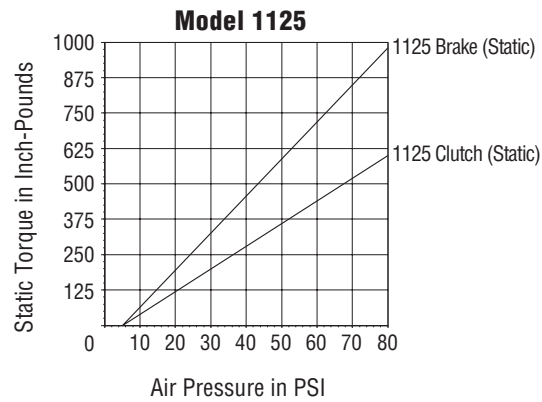
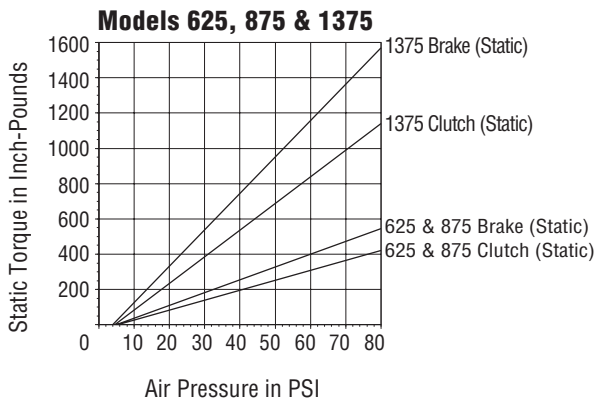
Module Component	Model Number	Product Number	Module Shipping Wt. (Lbs)	Model MBU Brake Only	Model MDO Clutch Only	Model MDB Clutch-Brake	Model MIB Input Brake	Model MIDO Input Clutch	Model MIDO-WF Input Clutch w/Foot	Model MIDB Input Clutch-Brake	Model MIDB-WF Input Clutch-Brake w/Foot
Brake Unit	MBU1375	936200	45	936200	--	936200	936200	--	--	936200	936200
Drive Unit	MDU1375	936100	30	--	936100	936100	--	936100	936100	936100	936100
Input Unit	MIU1375	936000	13	--	--	--	936000	936000	936000	936000	936000
Output Unit	MOU1375	936300	35	--	936300	--	--	936300	936300	--	--
Foot		936900	4	--	--	--	--	--	936900	--	936900
Motor Adapter	MBU1125	937000	1	937000	--	--	937000	--	--	--	--

► OPTIONS FOR 1375 MODULAR SYSTEM:

Optional Component	Model Number	Product Number	Shipping Wt. (Lbs)	Comments
Motor Adapter	MBU-1375	937000	1	Use when MBU Model configuration is mounted on a C Face motor alone.
Stainless Steel Guard	MDU-1375	935901	1.5	Thermal Capacity .23 HP _t
Stainless Steel Guard	MBU-1375	935902	1.5	Thermal Capacity .30 HP _t

CLUTCH-BRAKES

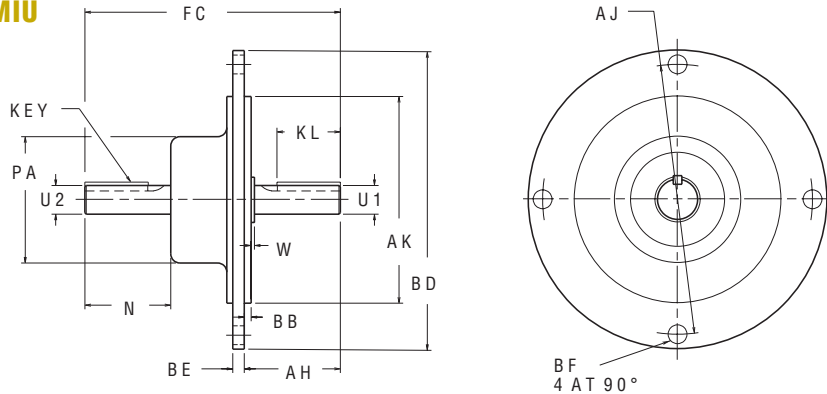
TORQUE Vs. AIR PRESSURE



NOTE: Dynamic torque is approximately 85% of static torque.

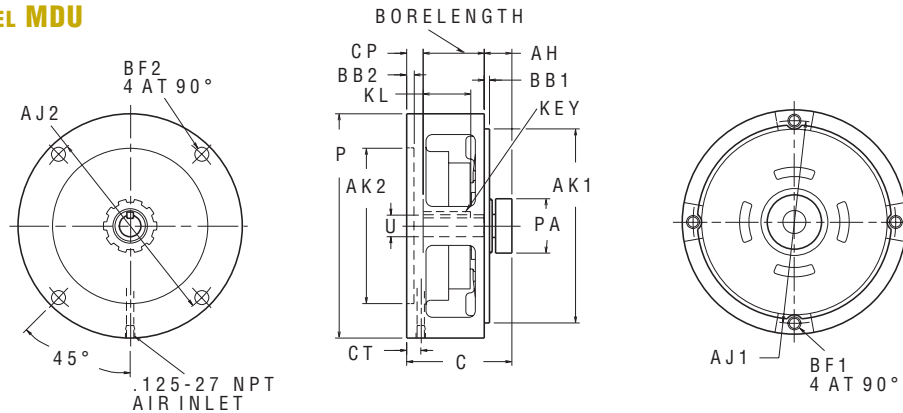
MODULAR CLUTCH-BRAKES - APPROXIMATE DIMENSIONS (INCHES)

MODEL MIU



MODEL	PRODUCT NUMBER	AH	AJ	AK ^{±.001}	BB	BD	BE	BF	FC	KEY (SQ)	KL	N	PA	U1 ^{+.000/-0.001}	U2 ^{+.000/-0.001}	W
625	929600	2.09	5.875	4.499	0.15	6.50	0.25	.410	5.56	0.188	1.38	1.87	2.75	0.625	0.875	0.07
875	928400	2.09	5.875	4.499	0.15	6.50	0.25	.410	5.56	0.188	1.38	1.87	2.75	0.875	0.875	0.06
1125	935000	2.66	7.250	--	--	8.500 ^{±.001}	0.41	.530	7.50	0.250	1.62	2.62	3.75	1.125	1.125	0.03
1375	936000	3.15	7.250	--	--	8.500 ^{±.001}	0.41	.530	8.50	0.250	2.25	3.13	3.75	1.375	1.375	0.03

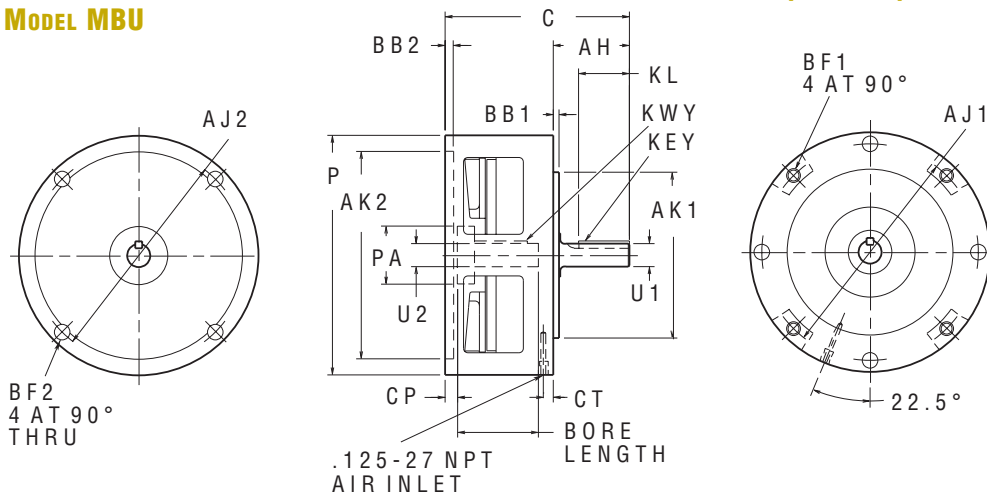
MODEL MDU



MODEL	PRODUCT NUMBER	AH	AJ1	AJ2	AK ^{±.001}	AK ^{±.001}	BB1	BB2	BF1	BF2	C	CP	CT	KEY (SQ)	KL	P	PA	U1 ^{+.000/-0.001}	BORE LENGTH
625	928600	0.80	5.875	5.875	5.624	4.502	0.15	0.22	.375-16	0.406	3.05	0.48	0.41	0.188	1.38	6.50	1.58	0.625	1.75
875	928100	0.80	5.875	5.875	5.624	4.502	0.15	0.22	.375-16	0.406	3.05	0.48	0.41	0.188	1.38	6.50	1.58	0.875	1.75
1125	935100	0.82	9.000	7.250	8.499	8.502	0.25	0.21	.375-16	0.530	4.03	0.45	0.53	0.250	1.62	9.56	1.58	1.125	2.74
1375	936100	0.93	9.000	7.250	8.499	8.502	0.25	0.21	.375-16	0.530	4.14	0.39	0.53	0.312	2.25	9.56	2.68	1.375	3.75

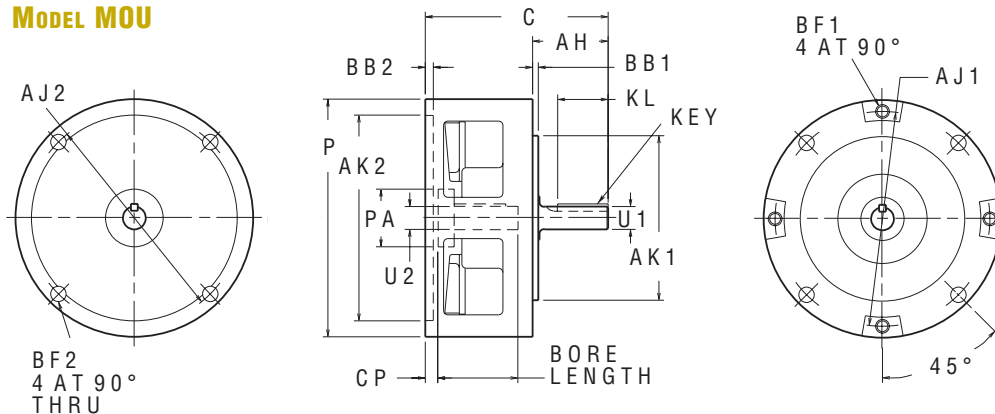
MODULAR CLUTCH-BRAKES - APPROXIMATE DIMENSIONS (INCHES)

► MODEL MBU



MODEL	PRODUCT NUMBER	AH	AJ1	AJ2	AK ₁ ^{±.001}	AK ₂ ^{±.001}	BB1	BB2	BF1	BF2	C	CP	CT	KEY (SQ)	KL	P	PA	U1 ^{+0.000 -0.001}	U2 ^{+0.001 -0.000}	BORE LENGTH
625	928500	2.06	5.875	5.875	4.499	5.627	0.16	0.22	.375-16	0.422	5.00	0.34	0.25	0.188	1.38	6.50	1.58	0.625	0.625	2.19
875	928000	2.13	5.875	5.875	4.499	5.627	0.16	0.22	.375-16	0.422	5.06	0.34	0.25	0.188	1.38	6.50	1.58	0.875	0.875	2.19
1125	935200	2.90	7.250	9.000	8.499	8.502	0.25	0.31	.500-13	0.422	7.02	0.36	0.62	0.250	1.62	9.56	1.58	1.125	1.125	2.50
1375	936200	3.34	7.250	9.000	8.499	8.502	0.25	0.31	.500-13	0.422	7.46	0.35	0.25	0.312	2.25	9.56	2.68	1.375	1.375	2.75

► MODEL MOU



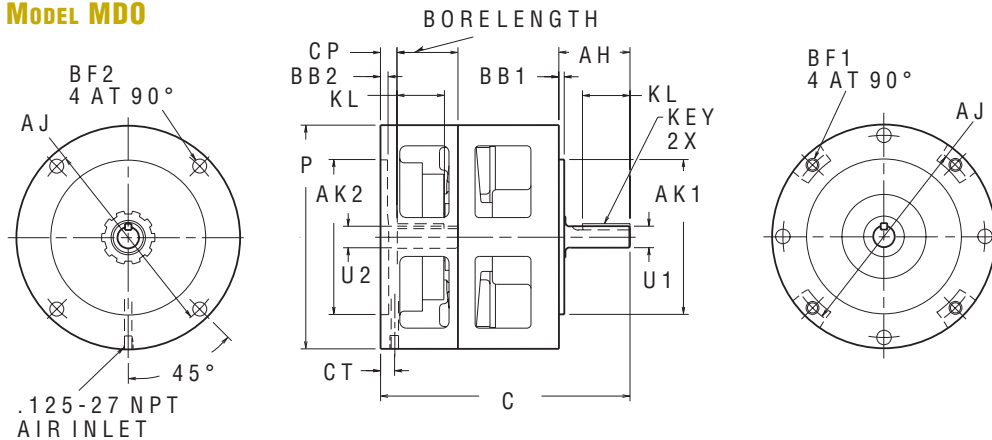
MODEL	PRODUCT NUMBER	AH	AJ1	AJ2	AK ₁ ^{±.001}	AK ₂ ^{±.001}	BB1	BB2	BF1	BF2	C	CP	KEY (SQ)	KL	P	PA	U1 ^{+0.000 -0.001}	U2 ^{+0.001 -0.000}	BORE LENGTH
625	928800	2.07	5.875	5.875	4.499	5.627	0.16	0.22	.375-16	0.422	5.00	0.34	0.188	1.38	6.50	1.58	0.625	0.625	2.19
875	928700	2.13	5.875	5.875	4.499	5.627	0.16	0.22	.375-16	0.422	5.06	0.34	0.188	1.38	6.50	1.58	0.875	0.875	2.19
1125	935300	2.90	7.250	9.000	8.499	8.502	0.25	0.31	.500-13	0.422	7.02	0.36	0.250	1.62	9.56	1.58	1.125	1.125	2.50
1375	936300	3.34	7.250	9.000	8.499	8.502	0.25	0.31	.500-13	0.422	7.46	0.35	0.312	2.25	9.56	2.68	1.375	1.375	2.75

CLUTCH-BRAKES

"Air Champ"

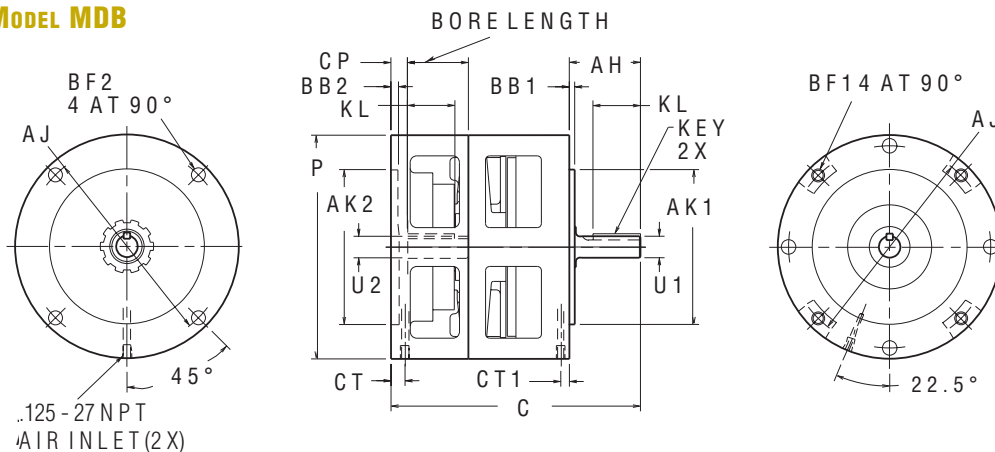
MODULAR CLUTCH-BRAKES - APPROXIMATE DIMENSIONS (INCHES)

MODEL MDO



MODEL	PRODUCT NUMBER	AH	AJ1	AK1 ^{±.001}	AK2 ^{±.001}	BB1	BB2	BF1	BF2	C	CP	CT	KEY (SQ)	KL	P	U1 ^{+0.000/-0.001}	U2 ^{+0.001/-0.000}	BORE LENGTH
625	see tables	2.07	5.875	4.499	4.502	0.16	0.22	.375-16	0.406	7.25	0.43	0.41	0.188	1.38	6.50	0.625	0.625	1.75
875	p. 194	2.13	5.875	4.499	4.502	0.16	0.22	.375-16	0.406	7.31	0.43	0.41	0.188	1.38	6.50	0.875	0.875	1.75
1125	and	2.90	7.250	8.499	8.502	0.25	0.21	.500-13	0.530	10.24	0.45	0.53	0.250	1.62	9.56	1.125	1.125	2.74
1375	p. 195	3.34	7.250	8.499	8.502	0.25	0.21	.500-13	0.530	10.68	0.39	0.53	0.312	2.25	9.56	1.375	1.375	3.75

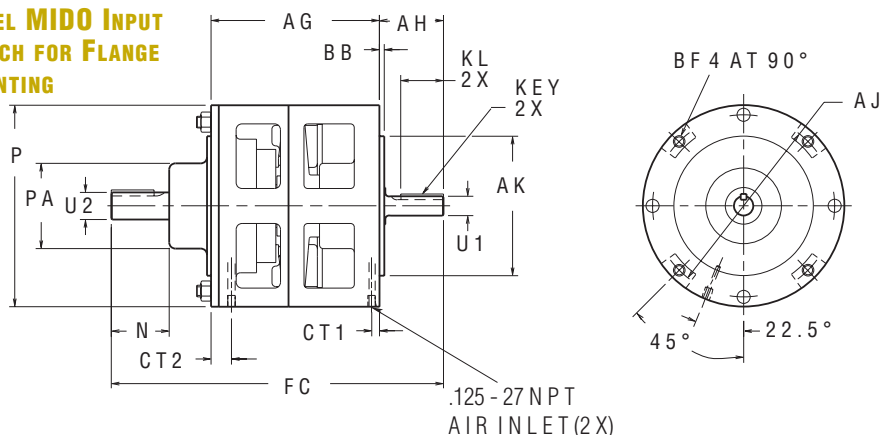
MODEL MDB



MODEL	PRODUCT NUMBER	AH	AJ1	AK1 ^{±.001}	AK2 ^{±.001}	BB1	BB2	BF1	BF2	C	CP	CT1	CT2	KEY (SQ)	KL	P	U1 ^{+0.000/-0.001}	U2 ^{+0.001/-0.000}	BORE LENGTH
625	see tables	2.06	5.875	4.499	4.502	0.16	0.22	.375-16	0.406	7.25	0.48	0.25	0.41	0.188	1.38	6.50	0.625	0.625	1.75
875	p. 194	2.13	5.875	4.499	4.502	0.16	0.22	.375-16	0.406	7.31	0.48	0.25	0.41	0.188	1.38	6.50	0.875	0.875	1.75
1125	and	2.90	7.250	8.499	8.502	0.25	0.21	.500-13	0.530	10.24	0.45	0.62	0.53	0.250	1.62	9.56	1.125	1.125	2.74
1375	p. 195	3.34	7.250	8.499	8.502	0.25	0.21	.500-13	0.530	10.68	0.39	0.25	0.53	0.312	2.25	9.56	1.375	1.375	3.75

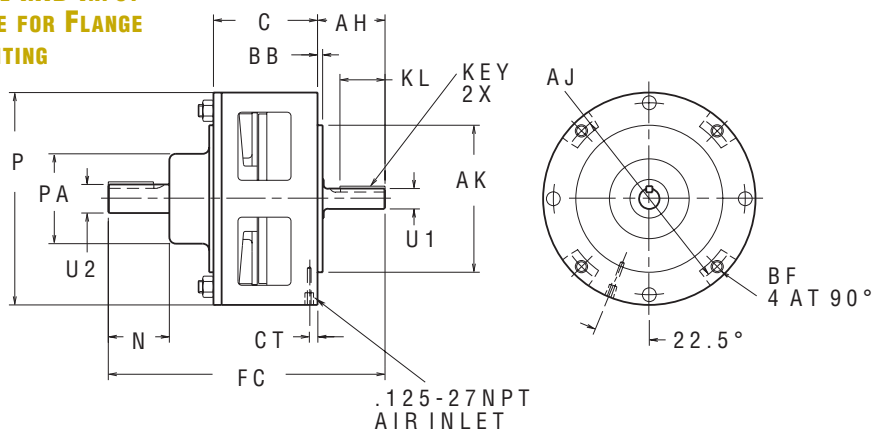
MODULAR CLUTCH-BRAKES - APPROXIMATE DIMENSIONS (INCHES)

▮ MODEL MIDO INPUT CLUTCH FOR FLANGE MOUNTING



MODEL	PRODUCT NUMBER	AG	AH	AJ	AK	BB	BF	CT1	CT2	FC	KEY (SQ)	KL	N	P	PA	U1 ^{+0.000 -0.001}	U2 ^{+0.000 -0.001}
625	see tables	5.43	2.07	5.875	4.499	0.16	.375-16	0.25	0.66	10.72	0.188	1.38	1.87	6.50	2.75	0.625	0.875
875	p. 194	5.43	2.13	5.875	4.499	0.16	.375-16	0.25	0.66	10.78	0.188	1.38	1.87	6.50	2.75	0.875	0.875
1125	and	7.54	2.90	7.250	8.499	0.25	.500-13	0.62	0.73	14.87	0.250	1.62	2.62	9.56	3.75	1.125	1.125
1375	p. 195	7.54	3.34	7.250	8.499	0.25	.500-13	0.25	0.73	15.82	0.312	2.25	3.13	9.56	3.75	1.375	1.375

▮ MODEL MIB INPUT BRAKE FOR FLANGE MOUNTING



MODEL	PRODUCT NUMBER	AH	AJ	AK	BB	BF	C	CT	FC	KEY (SQ)	KL	N	P	PA	U1 ^{+0.000 -0.001}	U2 ^{+0.000 -0.001}
625	see tables	2.06	5.875	4.499	0.16	.375-16	3.18	0.25	8.47	0.188	1.38	1.87	6.50	2.75	0.625	0.875
875	p. 194	2.13	5.875	4.499	0.16	.375-16	3.18	0.25	8.53	0.188	1.38	1.87	6.50	2.75	0.875	0.875
1125	and	2.90	7.250	8.499	0.25	.500-13	4.90	0.62	12.23	0.250	1.62	2.62	9.56	3.75	1.125	1.125
1375	p. 195	3.34	7.250	8.499	0.25	.500-13	4.90	0.25	13.18	0.312	2.25	3.13	9.56	3.75	1.375	1.375

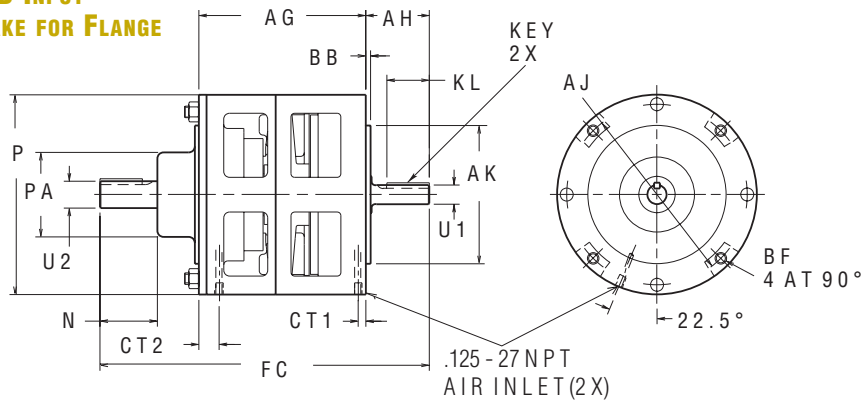
NOTE: Models 1125 and 1375 use Motor Adapter, Product Number 937000.

CLUTCH-BRAKES

"Air Champ"

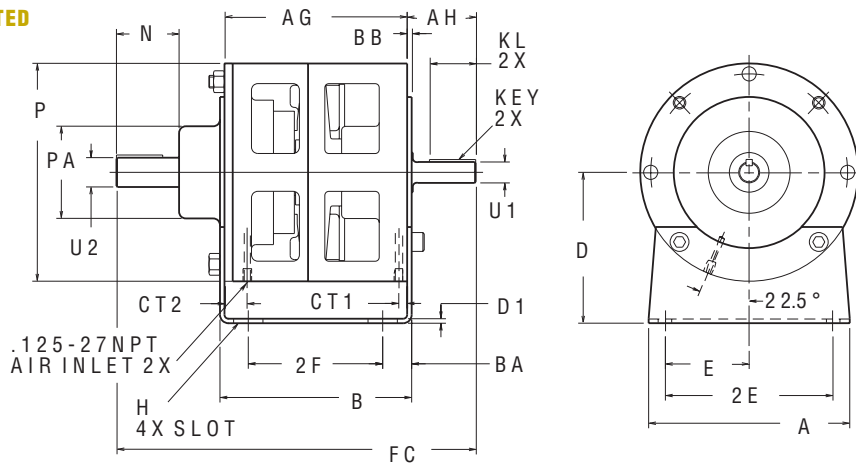
MODULAR CLUTCH-BRAKES - APPROXIMATE DIMENSIONS (INCHES)

MODEL MIDB INPUT CLUTCH-BRAKE FOR FLANGE MOUNTING



MODEL	PRODUCT NUMBER	AG	AH	AJ	AK ^{±.001}	BB	BF	CT1	CT2	FC	KEY (SQ)	KL	N	P	PA	U1 ^{+.000 -0.001}	U2 ^{+.000 -0.001}
625	see tables	5.43	2.06	5.875	4.499	0.16	.375-16	0.25	0.66	10.72	0.188	1.38	1.87	6.50	2.75	0.625	0.875
875	p. 194	5.43	2.13	5.875	4.499	0.16	.375-16	0.25	0.66	10.78	0.188	1.38	1.87	6.50	2.75	0.875	0.875
1125	and	7.54	2.90	7.250	8.499	0.25	.500-13	0.62	0.73	14.87	0.250	1.62	2.62	9.56	3.75	1.125	1.125
1375	p. 195	7.54	3.34	7.250	8.499	0.25	.500-13	0.25	0.73	15.82	0.312	2.25	3.13	9.56	3.75	1.375	1.375

MODEL MIDO-WF INPUT CLUTCH FOOT MOUNTED

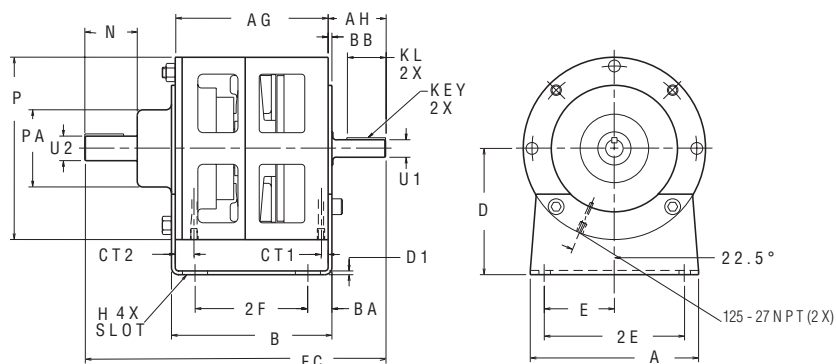


MODEL	PRODUCT NUMBER	A	AG	AH	B	BA	BB	CT1	CT2	D	D1	E	FC	H	KEY (SQ)	KL	N	P	PA	U1 ^{+.000 -0.001}
625	see tables	6.00	5.43	2.07	5.74	0.87	0.16	0.25	0.66	4.50	0.13	2.50	10.72	.88 x .41	0.188	1.38	1.87	6.50	2.75	0.625
875	p. 194	6.00	5.43	2.13	5.74	0.87	0.16	0.25	0.66	4.50	0.13	2.50	10.78	.88 x .41	0.188	1.38	1.87	6.50	2.75	0.875
1125	and	9.00	7.54	2.90	8.02	1.01	0.25	0.62	0.73	5.25	0.12	3.88	14.87	1.00 x .56	0.250	1.62	2.62	9.56	3.75	1.125
1375	p. 195	9.00	7.54	3.34	8.02	1.01	0.25	0.25	0.73	5.25	0.12	3.88	15.82	1.00 x .56	0.312	2.25	3.13	9.56	3.75	1.375

MODEL	PRODUCT NUMBER	U2 ^{+.000 -0.001}	2E	2F
625	see tables	0.875	5.00	4.00
875	p. 194	0.875	5.00	4.00
1125	and	1.125	7.75	6.00
1375	p. 195	1.375	7.75	6.00

MODULAR CLUTCH-BRAKES - APPROXIMATE DIMENSIONS (INCHES)

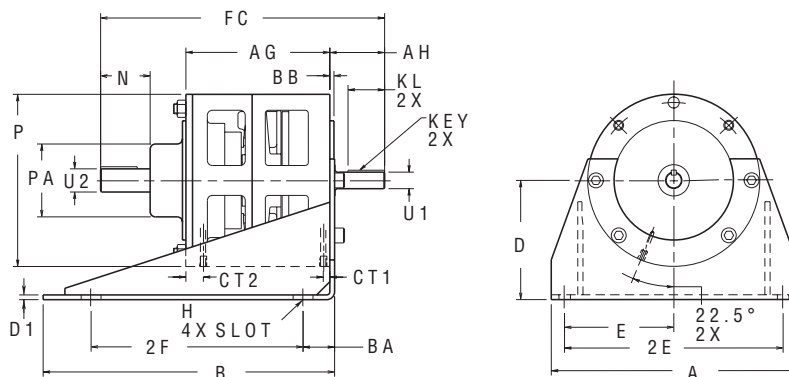
► MIDB-WF INPUT CLUTCH-BRAKE FOOT MOUNTED



MODEL	PRODUCT NUMBER	A	AG	AH	B	BA	BB	CT1	CT2	D	D1	E	FC	H	KEY (SQ)	KL	N	P	PA	U1 ^{+0.000} _{-0.001}
625	see tables	6.00	5.43	2.06	5.74	0.87	0.16	0.25	0.66	4.50	0.13	2.50	10.72	.88 x .41	0.188	1.38	1.87	6.50	2.75	0.625
875	p. 194	6.00	5.43	2.13	5.74	0.87	0.16	0.25	0.66	4.50	0.13	2.50	10.78	.88 x .41	0.188	1.38	1.87	6.50	2.75	0.875
1125	and	9.00	7.54	2.90	8.02	1.01	0.25	0.62	0.73	5.25	0.12	3.88	14.87	1.00 x .56	0.252	1.62	2.62	9.56	3.75	1.125
1375	p. 195	9.00	7.54	3.34	8.02	1.01	0.25	0.25	0.73	5.25	0.12	3.88	15.82	1.00 x .56	0.312	2.25	3.13	9.56	3.75	1.375

MODEL	PRODUCT NUMBER	U2 ^{+0.000} _{-0.001}	2E	2F
625	see tables	0.875	5.00	4.00
875	p. 194	0.875	5.00	4.00
1125	and	1.125	7.75	6.00
1375	p. 195	1.375	7.75	6.00

► MIDB/MIDO-W/L FOOT MOUNTED

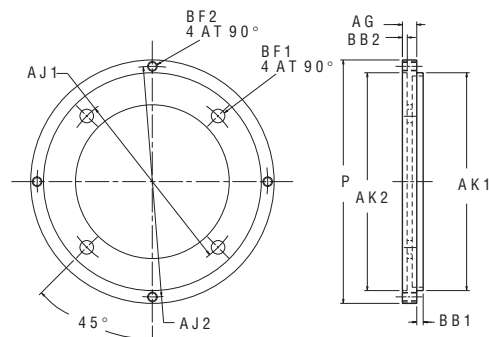


MODEL	PRODUCT NUMBER	A	AG	AH	B	BA	BB	CT1	CT2	D	D1	E	FC	H	KEY (SQ)	KL	N	P	PA	U1 ^{+0.000} _{-0.001}
625	See tables	9.25	5.43	2.07	11.00	1.19	0.16	0.25	0.66	4.50	0.18	4.12	10.72	0.75 x 0.50	0.188	1.38	1.87	6.50	2.75	0.625
875	p. 194 & 195	9.25	5.43	2.13	11.00	1.19	0.16	0.25	0.66	4.50	0.18	4.12	10.78	0.75 x 0.50	0.188	1.38	1.87	6.50	2.75	0.875

MODEL	PRODUCT NUMBER	U2 ^{+0.000} _{-0.001}	2E	2F
625	See tables	0.875	8.25	8.00
875	p. 194 & 195	0.875	8.25	8.00

► MOTOR ADAPTER

PRODUCT NUMBER	AG	AJ1	AJ2	AK1 ^{±0.001}	AK2 ^{±0.001}	BB1	BB2	BF1	BF2	P
937000	0.56	7.25	9.00	8.501	8.502	0.25	0.19	.531	.375-16	9.50



CLUTCH/BRAKES

“Air Champ”

MODEL BWCB CLUTCH-BRAKE

The BWCB is an “Air Champ” clutch and an “Air Champ” brake combined into a single unit, forming a combination clutch-brake. The BWCB provides:

- ▶ Static Torque capacity up to 80 In. Lbs. @ 80 psi
- ▶ Maximum Operating Speed up to 3600 rpm
- ▶ Thermal Horsepower ratings of 0.13 for both the clutch and the brake

THIS CLUTCH-BRAKE MUST BE MOUNTED ON THE DRIVEN SHAFT. Choose from **3 Models**:

- ▶ **Sheave Mount** unit comes with 1-“3V” Groove sheave
- ▶ **2 Pilot Mount** units offer **Standard bore sizes** of 0.500 and 0.625 inches
- ▶ For in-line applications, select the optional coupling half

MODEL BWCB CLUTCH-BRAKE

Clutch-Brake Style	Product Number	Sheave Diameter	Bore (In)	Key Size (SQ)	Shipping Wt. (Lbs)
Pilot Mount	826050	--	0.625	0.188	5
Pilot Mount	826051	--	0.500	0.125	5
Sheave Mount, 1-“3V”	826000	2.750 OD	0.625	0.188	5

Keys are included.

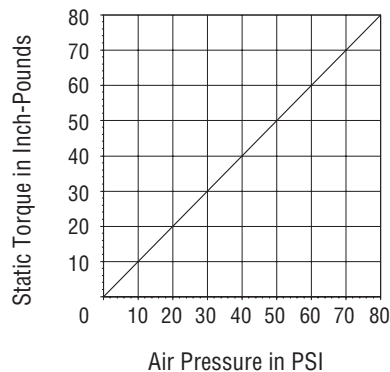
COUPLING HALF OPTIONS

A Coupling Half is used for in-line applications. To achieve a Pilot Mount with Coupling Half mounting configuration:

1. Select a Pilot Mount Clutch from above;
2. Select a Coupling Half from the chart below which fits your shaft requirements;
3. Order Clutch and Coupling Half separately.

Product Number	Bore Size (In)	Key Size (sq)	Shipping Wt. (Lbs)
826030	0.500	0.125	1
826031	0.625	0.188	1
826032	0.750	0.188	1

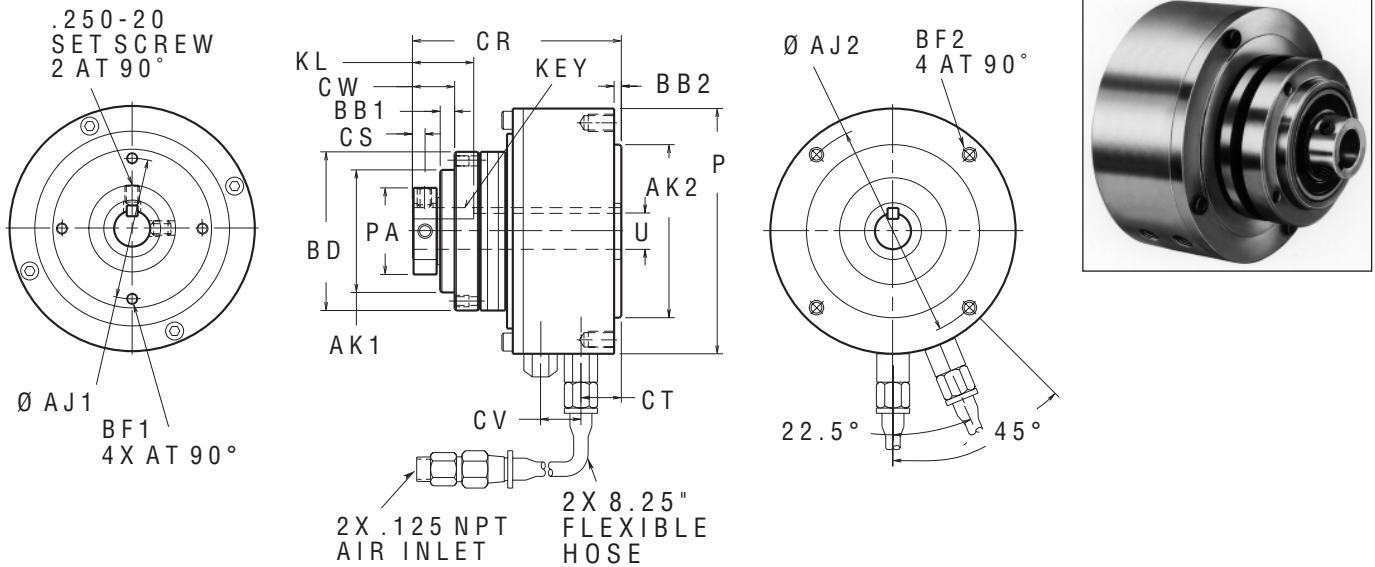
TORQUE VS. AIR PRESSURE



NOTE: Dynamic torque is approximately 85% of static torque.

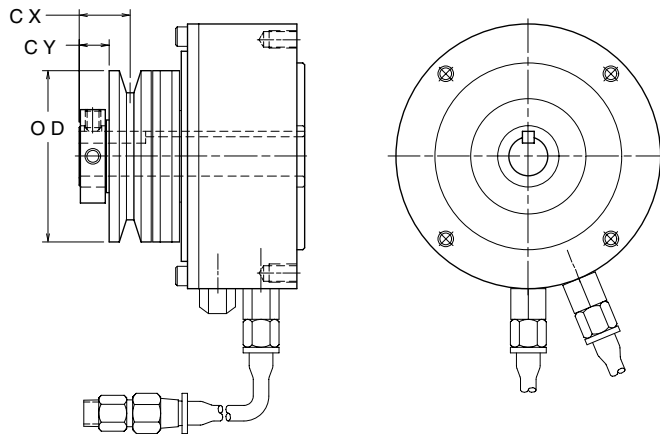
BWCB MODEL CLUTCH-BRAKES - APPROXIMATE DIMENSIONS (INCHES)

PILOT MOUNT



PRODUCT NUMBER	AJ1	AJ2	AK1 $\pm$.001	AK2 $\pm$.001	BB1	BB2	BD	BF1	BF2	CR	CS	CT	CV	CW	KL	KEY (SQ)	P	PA	U $\begin{smallmatrix} +.001 \\ -.000 \end{smallmatrix}$
826050	2.437	3.750	2.124	2.999	0.25	0.12	2.75	0.190-32	.250-20	3.62	0.22	0.70	0.70	0.73	1.06	0.188	4.25	1.50	0.625
826051	2.437	3.750	2.124	2.999	0.25	0.12	2.75	0.190-32	.250-20	3.62	0.22	0.70	0.70	0.73	1.38	0.125	4.25	1.50	0.500

SHEAVE MOUNT



PRODUCT NUMBER	SHEAVE		CX	CY	OD
	BELT	GROOVE			
826000	"3V"	1	0.82	0.48	2.75

CLUTCH/BRAKES

"Air Champ"

CLUTCH-BRAKE MODELS FWCB & LWCB

The FWCB and LWCB are each an "Air Champ" clutch and an "Air Champ" brake combined into a single unit, forming a combination clutch-brake. They provide:

- Static Torque capacity up to:
FWCB/400 In. Lbs. @ 80 psi (brake)
FWCB/100 In. Lbs. @ 80 psi (clutch)
LWCB/400 In. Lbs. @ 80 psi (brake)
LWCB/350 In. Lbs. @ 80 psi (clutch)
- Maximum Operating Speed up to 1800 rpm
- Thermal Horsepower ratings of:
FWCB/0.25 (clutch) @ 1800 rpm
FWCB/ 0.52 (brake) @ 1800 rpm
LWCB/0.40 (clutch) @ 1800 rpm
LWCB/ 0.52 (brake) @ 1800 rpm

THESE CLUTCH-BRAKES MUST BE MOUNTED ON THE DRIVEN SHAFT. Brake housing must not be mounted rigidly.

Choice of Models:

- FWCB/5 Models, LWCB/7 Models
- Sheave Mount** units are available:
FWCB/1-"3V" or 1-"A" Groove sheave
LWCB/2-"3V" or 2-"A" Groove sheave
- Pilot Mount** units offer **Standard bore** sizes of:
FWCB/0.750 and 0.875 inches
LWCB/1.000 inches
- For in-line applications, select the optional coupling half

MODEL FWCB & LWCB CLUTCH-BRAKES

Model	Clutch-Brake Style	Product Number	Sheave Diameter	Bore (In)	Key Size (SQ)	Shipping Wt. (Lbs)
FWCB	Pilot Mount	827100	--	0.875	0.188	14
FWCB	Pilot Mount	827111	--	0.750	0.188	14
FWCB	Sheave Mount 1-"3V"	826700	3.35 OD	0.875	0.188	15
FWCB	Sheave Mount, 1-"3V"	826800	4.50 OD	0.875	0.188	16
FWCB	Sheave Mount, 1-"A"	826900	3.80 PD	0.875	0.188	15
LWCB	Pilot Mount	828900	--	1.000	0.250 x .188	17
LWCB	Sheave Mount, 2-"3V"	828300	4.50 OD	1.000	0.250 x .188	18
LWCB	Sheave Mount, 2-"3V"	828400	5.30 OD	1.000	0.250 x .188	20
LWCB	Sheave Mount, 2-"3V"	828500	6.00 OD	1.000	0.250 x .188	20
LWCB	Sheave Mount, 2-"3V"	828600	8.00 OD	1.000	0.250 x .188	25
LWCB	Sheave Mount, 2-"A"	828700	4.40 PD	1.000	0.250 x .188	21
LWCB	Sheave Mount, 2-"A"	828800	5.40 PD	1.000	0.250 x .188	20

Keys are included.

BUSHING OPTIONS

(FOR 0.875 & 1.000 BORE CLUTCH-BRAKES ONLY)

Bushings fit into the clutch-brake, reducing the bore to the size indicated.

Bore Size	Product Number	Reduces Clutch Bore Size to (In)	Number Required	Shipping Wt.(Lbs)
0.875	827200	0.500	2	1
0.875	802500	0.625	2	1
0.875	802600	0.750	2	1
0.875	803100	No Bore/Customer machines	2	1
1.000	829000	0.625	2	2
1.000	829100	0.750	2	2
1.000	829200	0.875	2	2

COUPLING HALF OPTIONS,

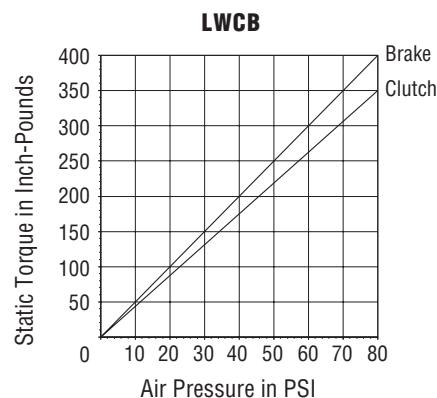
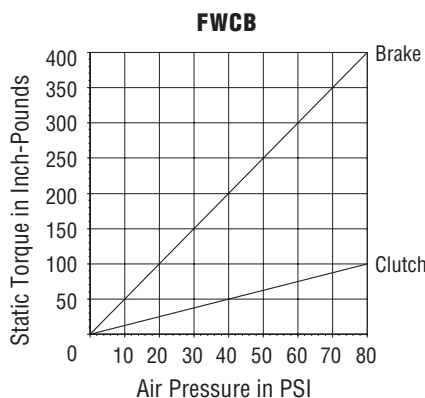
SEE PAGE 265 FOR COUPLING SPECIFICATIONS

A Coupling Half is used for in-line applications. It is important to review the Maximum Misalignment allowable before specifying. To achieve a Pilot Mount with Coupling Half mounting configuration:

- Select a Pilot Mount Clutch-Brake;
- Order Clutch-Brake and Coupling Half separately.
- Coupling Half is less taper lock bushing. Use Dodge Taper Lock® #1008/FWCB, #1215/LWCB, (0.500 to 1.000/FWCB, 0.500 to 1.125/LWCB, inch bore range). Customer furnished.

Model	Product Number	Maximum Bore Size (In)	Shipping Wt. (Lbs)
FWCB	802700	1.000	3
LWCB	804900	1.125	6

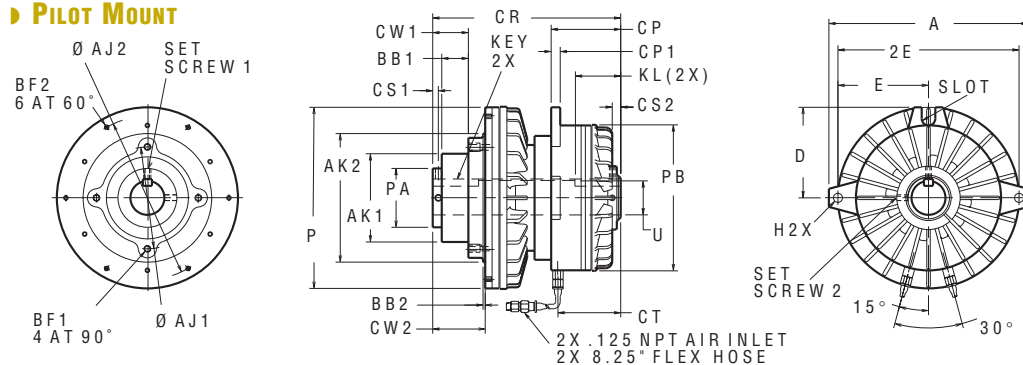
TORQUE VS. AIR PRESSURE



NOTE: Dynamic torque is approximately 85% of static torque.

FWCB & LWCB MODEL CLUTCH-BRAKES - APPROXIMATE DIMENSIONS (INCHES)

PILOT MOUNT

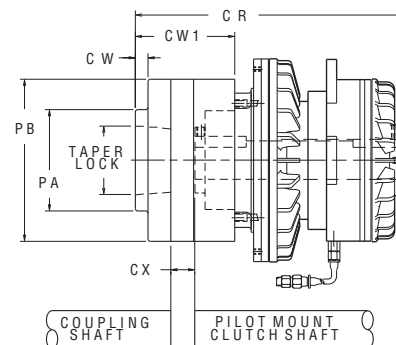
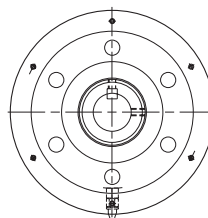


MODEL	PRODUCT NUMBER	A	AJ1	AJ2	AK1 $\pm$.001	AK2 $\pm$.001	BB1	BB2	BF1	BF2	CP	CP1	CR	CS1	CS2	CT	CW1	CW2	D	E
FWCB	827100	6.50	3.000	4.000	2.498	3.498	0.60	0.19	.250-20	.190-24	2.39	0.38	6.28	0.19	0.60	2.57	1.02	1.21	3.00	2.88
FWCB	827111	6.50	3.000	4.000	2.498	3.498	0.60	0.19	.250-20	.190-24	2.39	0.38	6.28	0.19	0.60	2.57	1.02	1.21	3.00	2.88
LWCB	828900	6.50	3.500	5.500	2.998	4.498	0.62	0.07	.250-20	.190-24	2.26	0.38	6.19	0.19	0.53	2.33	0.88	1.20	3.00	2.88

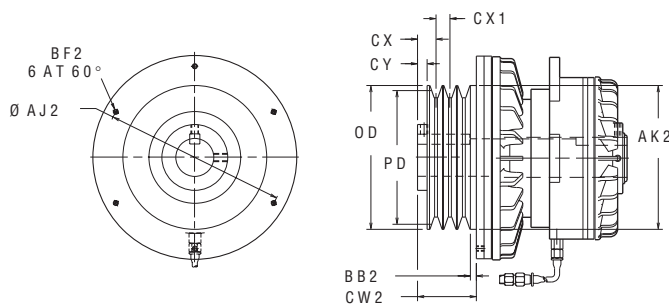
MODEL	PRODUCT NUMBER	2E	H	KEY	KL	P	PA	PB	SLOT	SET SCREW 1	SET SCREW 2	U $\pm$.001
FWCB	827100	5.76	.406	0.19 sq	1.06	4.50	1.56	4.56	0.38 x 0.69	(3).190-24	(3).164-32	.875
FWCB	827111	5.76	.406	0.19 sq	1.06	4.50	1.56	4.56	0.38 x 0.69	(3).190-24	(3).164-32	.750
LWCB	828900	5.76	.406	0.18 x 0.250	1.25	6.00	1.88	4.56	0.38 X 0.69	(2).250-20	(3).164-32	1.000

PILOT MOUNT w/COUPLING HALF

MODEL	PRODUCT NUMBER	CR	CW	CW1	CX	PA	PB	DODGE TAPER LOCK® BUSHING
FWCB	802700	8.01	0.12	2.75	0.70	2.62	3.50	#1008
LWCB	804900	8.68	0.94	3.37	0.64	2.62	4.38	#1215



SHEAVE MOUNT



MODEL	PRODUCT NUMBER	SHEAVE		OD	PD	AJ2	AK2±.001	BB2	BF2	CW2	CX	CX1	CY
		BELT GROOVE											
FWCB	826700	“3V”	1	3.35	--	4.000	3.498	0.06	.190-24	1.20	0.72	--	0.42
FWCB	826800	“3V”	1	4.50	--	--	--	--	--	--	0.85	--	0.41
FWCB	826900	“A”	1	--	3.80	--	--	--	--	--	0.85	--	0.41
LWCB	828300	“3V”	2	4.50	--	5.500	4.498	0.29	.190-24	1.20	0.33	0.41	0.08
LWCB	828400	“3V”	2	5.30	--	--	--	--	--	--	0.51	0.41	0.20
LWCB	828500	“3V”	2	6.00	--	--	--	--	--	--	0.51	0.41	0.20
LWCB	828600	“3V”	2	8.00	--	--	--	--	--	--	0.51	0.41	0.20
LWCB	828700	“A”	2	--	4.40	--	--	--	--	--	0.38	0.62	0.11*
LWCB	828800	“A”	2	--	5.40	--	--	--	--	--	0.38	0.62	0.11*

* Sheave Extends Beyond Hub

CLUTCH/BRAKES

"Air Champ"

CLUTCH-BRAKE MODELS MWCB & HWCB

The MWCB and HWCB are each an "Air Champ" clutch and an "Air Champ" brake combined into a single unit, forming a combination clutch-brake. They provide:

- Static Torque capacity up to:
MWCB/900 In. Lbs. @ 80 psi (brake)
MWCB/600 In. Lbs. @ 80 psi (clutch)
HWCB/2800 In. Lbs. @ 80 psi (brake)
HWCB/2600 In. Lbs. @ 80 psi (clutch)
- Maximum Operating Speed up to 1800 rpm
- Thermal Horsepower ratings of:
MWCB/0.75 (clutch) @ 1800 rpm
MWCB/ 1.30 (brake) @ 1800 rpm
HWCB/1.25 (clutch) @ 1800 rpm
HWCB/ 2.23 (brake) @ 1800 rpm

THESE CLUTCH-BRAKES MUST BE MOUNTED ON THE DRIVEN SHAFT. Brake housing must not be mounted rigidly.

Choice of Models:

- MWCB/3 Models, HWCB/3 Models
- Sheave Mount** units are available:
MWCB/3-"3V" or 2-"B" Groove sheave
HWCB/3-"5V" or 3-"B" Groove sheave
- Pilot Mount** units offer **Standard bore** sizes of:
MWCB/1.437 and 1.500 inches
HWCB/1.688 and 1.875 inches
- For in-line applications, select the optional coupling half

MODEL MWCB & HWCB CLUTCH-BRAKES

Model	Clutch-Brake Style	Product Number	Sheave Diameter	Bore (In)	Key Size (SQ)	Shipping Wt. (Lbs)
MWCB	Pilot Mount	830811	--	1.437	0.375	36
MWCB	Pilot Mount	830800	--	1.500	0.375	36
MWCB	Sheave Mount, 3-"3V"	830300	5.30 OD	1.500	0.375	36
MWCB	Sheave Mount, 3-"3V"	830400	6.00 OD	1.500	0.375	38
MWCB	Sheave Mount, 3-"3V"	830500	10.00 OD	1.500	0.375	55
MWCB	Sheave Mount, 2-"B"	830600	5.80 PD	1.500	0.375	38
MWCB	Sheave Mount, 2-"B"	830700	6.80 PD	1.500	0.375	41
HWCB	Pilot Mount	832913	--	1.688	0.375	95
HWCB	Pilot Mount	832900	--	1.875	0.500	95
HWCB	Sheave Mount, 3-"5V"	832400	7.10 OD	1.875	0.500	102
HWCB	Sheave Mount, 3-"5V"	832500	8.00 OD	1.875	0.500	107
HWCB	Sheave Mount, 3-"5V"	832600	16.00 OD	1.875	0.500	142
HWCB	Sheave Mount, 3-"B"	832700	7.40 PD	1.875	0.500	107

Keys are included.

BUSHING OPTIONS

(FOR 1.500 & 1.875 BORE CLUTCH-BRAKES ONLY)

Bushings fit into the clutch-brake, reducing the bore to the size indicated.

Bore Size	Product Number	Reduces Clutch Bore Size to (In)	Number Required	Shipping Wt.(Lbs)
1.500	830900	1.125	2	4
1.500	831000	1.188	2	4
1.500	831100	1.250	2	4
1.500	831200	1.375	2	4
1.500	831300	1.438	2	4
1.875	833000	1.375	2	4
1.875	833100	1.438	2	4
1.875	833200	1.500	2	4
1.875	833300	1.625	2	4
1.875	833400	1.750	2	4

COUPLING HALF OPTIONS,

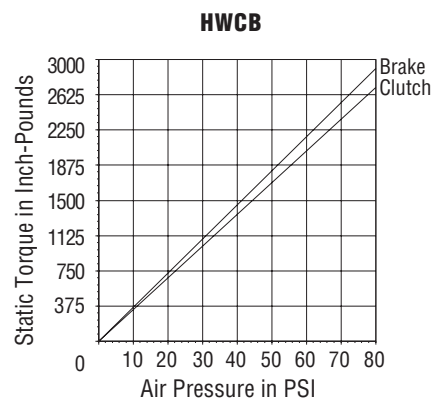
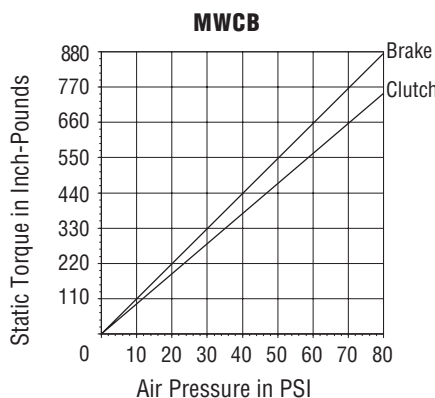
SEE PAGE 265 FOR COUPLING SPECIFICATIONS

A Coupling Half is used for in-line applications. It is important to review the Maximum Misalignment allowable before specifying. To achieve a Pilot Mount with Coupling Half mounting configuration:

- Select a Pilot Mount Clutch-Brake;
- Order Clutch-Brake and Coupling Half separately.
- Coupling Half is less taper lock bushing. Use Dodge Taper Lock® #2517 for MWCB & HWCB, (1.000 to 2.500 inch bore range). Customer furnished.

Model	Product Number	Maximum Bore Size (In)	Shipping Wt. (Lbs)
MWCB	807400	2.500	23
HWCB	809700	2.500	33

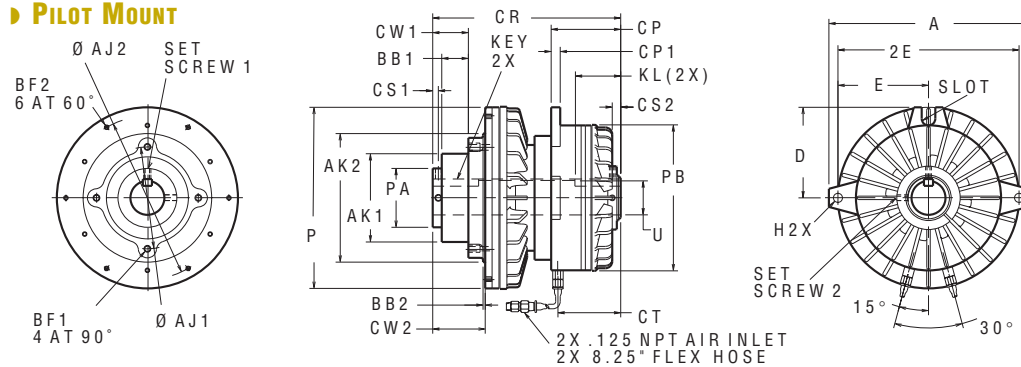
TORQUE VS. AIR PRESSURE



NOTE: Dynamic torque is approximately 85% of static torque.

MWCB & HWCB MODEL CLUTCH-BRAKES - APPROXIMATE DIMENSIONS (INCHES)

► PILOT MOUNT

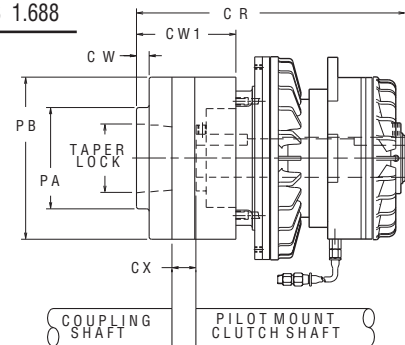
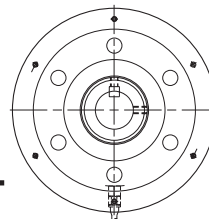


MODEL	PRODUCT NUMBER	A	AJ1	AJ2	AK1±.001	AK2±.001	BB1	BB2	BF1	BF2	CP	CP1	CR	CS1	CS2	CT	CW1	CW2	D	E
MWCB	830800	8.12	4.750	6.500	3.998	5.498	0.77	0.67	.312-18	.250-20	3.07	0.56	7.88	0.22	0.72	2.78	1.14	1.82	4.06	3.68
MWCB	830811	8.12	4.750	6.500	3.998	5.498	0.77	0.67	.312-18	.250-20	3.07	0.56	7.88	0.22	0.72	2.78	1.14	1.82	4.06	3.68
HWCB	832900	11.00	5.625	9.000	4.873	7.098	1.47	0.12	.375-16	.250-20	3.84	0.50	10.38	0.31	0.46	3.46	1.97	2.90	5.00	5.00
HWCB	832913	11.00	5.625	9.000	4.873	7.098	1.47	0.12	.375-16	.250-20	3.84	0.50	10.38	0.31	0.46	3.46	1.97	2.90	5.00	5.00

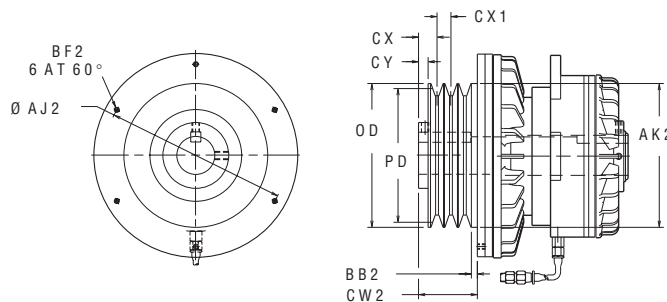
MODEL	PRODUCT NUMBER	2E	H	KEY	KL	P	PA	PB	SLOT	SET SCREW 1	SET SCREW 2	U ^{+.001} -.000
MWCB	830800	7.36	.406	0.31 x 0.38	1.50	8.00	2.62	6.06	0.63 X 1.00	(2).250-20	(3).250-20	1.500
MWCB	830811	7.36	.406	0.38 x 0.38	1.69	8.00	2.62	6.06	0.63 X 1.00	(2).250-20	(3).250-20	1.438
HWCB	832900	10.00	.500	0.38 x 0.50	2.00	10.00	3.25	8.06	0.75 x 1.00	(2).375-16	(2).312-18	1.875
HWCB	832913	10.00	.500	0.38 x 0.38	2.25	10.00	3.25	8.06	0.75 x 1.00	(2).375-16	(2).312-18	1.688

► PILOT MOUNT w/COUPLING HALF

MODEL	PRODUCT NUMBER	CR	CW	CW1	CX	PA	PB	DODGE TAPER LOCK® BUSHING
MWCB	807400	10.99	0.81	4.25	0.87	5.00	7.00	#2517
HWCB	809700	13.32	0.63	4.90	1.18	5.00	8.00	#2517



► SHEAVE MOUNT



MODEL	PRODUCT NUMBER	SHEAVE BELT GROOVE	OD	PD	AJ2	AK2±.001	BB2	BF2	CW2	CX	CX1	CY	
MWCB	830300	“3V”	3	5.30	--	6.50	5.498	0.06	.250-20	1.80	0.46	.041	0.18
MWCB	830400	“3V”	3	6.00	--	--	--	--	--	--	0.46	0.41	0.18
MWCB	830500	“3V”	3	10.60	--	--	--	--	--	--	0.52	0.41	0.18
MWCB	830600	“B”	2	--	5.80	--	--	--	--	--	0.68	0.75	0.18
MWCB	830700	“B”	2	--	6.80	--	--	--	--	--	0.68	0.75	0.18
HWCB	832400	“5V”	3	7.10	--	9.000	7.098	0.32	.250-20	2.90	0.90	0.69	0.46
HWCB	832500	“5V”	3	8.00	--	--	--	--	--	--	1.03	0.69	0.50
HWCB	832600	“5V”	3	16.00	--	--	--	--	--	--	1.00	0.69	0.50
HWCB	832700	“B”	3	--	7.40	--	--	--	--	--	1.02	0.69	0.50

* Sheave Extends Beyond Hub

CLUTCH/BRAKES

"Air Champ"

MODEL FCDB CLUTCH-DISC CALIPER BRAKES

Easily combine an F-450 "Air Champ" clutch with a DB Model Caliper Disc brake to create a clutch-disc caliper brake. THIS COMBINATION MOUNTS ON THE DRIVING SHAFT.

Clutch features:

- ▶ Static Torque capacity up to 140 In. Lbs. @ 80 psi
- ▶ Maximum Operating Speed up to 3600 rpm
- ▶ Thermal Horsepower rating of 0.30 @ 3600 rpm
- ▶ Heat Sink capacity of 30,000 Ft. Lbs.
- ▶ Choose from either **Pilot Mount** or **Sheave Mount** styles with **Standard Bore sizes** of 0.750 and 0.875

Caliper Brake features:

- ▶ Static Torque capacity up to 600 In. Lbs. @ 80 psi
- ▶ Additional Calipers may be added to increase the brake torque
- ▶ Arc contoured shoe provides large facing area, for greater facing life and stability
- ▶ Mounts easily in any position with T-Bracket
- ▶ Available with 10 inch disc
- ▶ Disc Speed up to 3600 rpm
- ▶ Spring return eliminates disc drag when disengaged

All components must be ordered separately.

▶ MODEL FCDB CLUTCH-DISC-CALIPER BRAKES

1. Determine the Clutch style desired;
2. Order Clutch, Brake, Brake Hose and Disc separately to complete your assembly;
3. Additional Calipers can be added to increase brake torque .

Clutch Style	Product Number	Sheave Diameter	Bore (In)	Key Size (SQ)	Shipping Wt. (Lbs)
Clutch, Pilot Mount	802855	--	0.750	0.188	10
Clutch, Pilot Mount	802850	--	0.875	0.188	12
Clutch, Sheave Mount 1-"3V"	802810	3.35 OD	0.875	0.188	10
Clutch, Pilot w/Coupling Half	<i>Select a Pilot Mount and a Coupling Half to achieve this style of mount.</i>				
Caliper Brake w/T Bracket	835000				8
Brake Air Hose Assembly	835400				2
Disc, 10" OD	855900				3

Keys are included.

▶ BUSHING OPTIONS (FOR 0.875 BORE CLUTCHES ONLY)

Bushings fit within the bore of the existing clutch, reducing the bore to the amount indicated.

Product Number	Reduces Clutch Bore Size to (In)	Shipping Wt. (Lbs)
827200	0.500	1
802500	0.625	1
802600	0.750	1
803100	No Bore/Customer machines	1

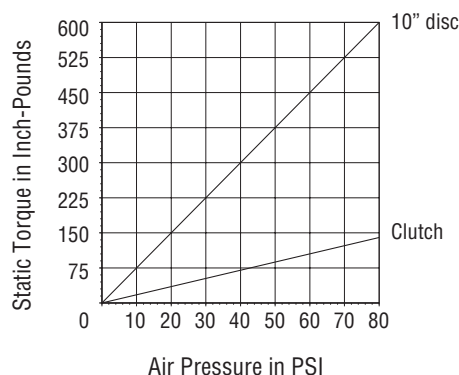
▶ COUPLING HALF OPTIONS, SEE PAGE 265 FOR COUPLING SPECIFICATIONS

A Coupling Half is used for in-line applications. It is important to review the Maximum Misalignment allowable before specifying. To achieve a Pilot Mount with Coupling Half mounting configuration:

1. Select a Pilot Mount Clutch-Brake from above;
2. Order Clutch, Brake and Coupling Half separately.
3. Coupling Half is less taper lock bushing. Use Dodge Taper Lock® #1008 (0.500 to 1.000 inch bore range). Customer furnished.

Product Number	Maximum Bore Size (In)	Shipping Wt. (Lbs)
802700	1.000	3

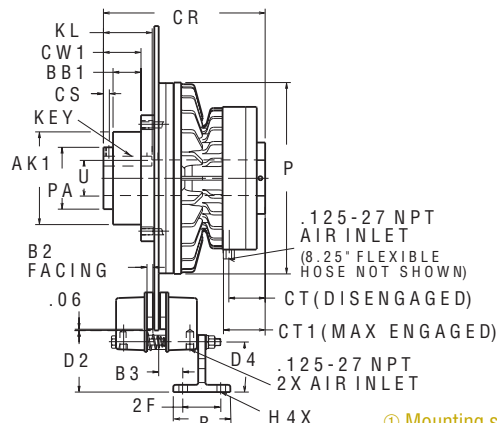
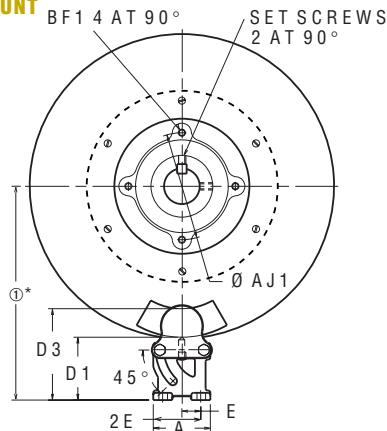
▶ TORQUE VS. AIR PRESSURE



NOTE: Dynamic torque is approximately 85% of static torque.

FCDB MODEL CLUTCH-DISC CALIPER BRAKES - APPROXIMATE DIMENSIONS (INCHES)

Pilot Mount

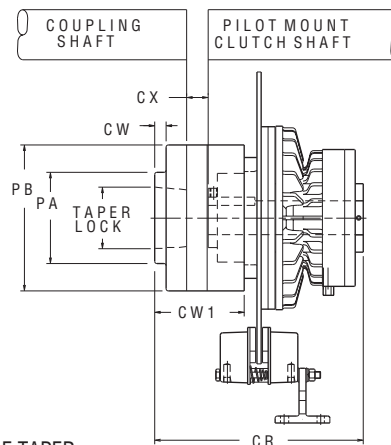
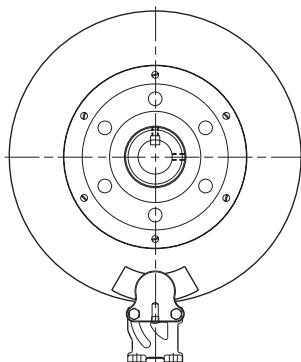


① Mounting surface to disc center = Disc Radius + D2

PRODUCT NUMBER	AJ1	AK1 ^{±.001}	BB1	BF1	CR	CS	CT	CT1	CW1	KL	KEY (SQ)	P	PA	SET SCREWS	U ^{+.001} _{-.000}
802850	3.000	2.498	0.60	.250-20	4.75	0.25	1.33	1.42	1.04	0.62	0.188	4.56	1.38	.250-20	0.875
802855	3.000	2.498	0.60	.250-20	4.75	0.25	1.33	1.42	1.04	0.62	0.188	4.56	1.38	.250-20	0.750

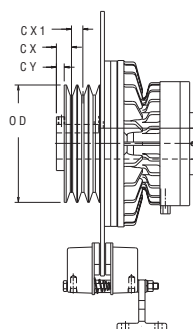
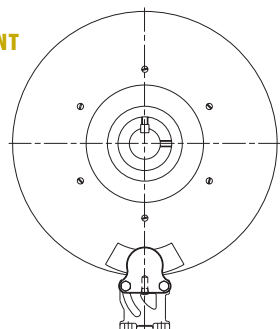
PRODUCT NUMBER	OD (IN.)	A	B	B3	D1	D2	D3	D4	E	2E	2F
855900	10	3.00	3.00	1.27	3.30	3.24	4.80	2.62	1.00	2.00	2.00
835000	10	3.00	3.00	1.27	3.30	3.24	4.80	2.62	1.00	2.00	2.00

Pilot Mount w/Coupling Half



COUPLING PRODUCT NUMBER	CR	CW	CW1	CX	PA	PB	DODGE TAPER LOCK® BUSHING
802700	6.45	0.12	2.75	0.70	2.62	3.50	#1008

Sheave Mount



PRODUCT NUMBER	SHEAVE BELT GROOVE	OD	CX	CX1	CY
802810	"3V"	1	3.35	0.75	-- 0.44

CLUTCH/BRAKES

"Air Champ"

MODEL LCDB CLUTCH-DISC CALIPER BRAKES

Easily combine an L-600 "Air Champ" clutch with a DB Model Caliper Disc brake to create a clutch-disc caliper brake. THIS COMBINATION MOUNTS ON THE DRIVING SHAFT.

Clutch features:

- ▶ Static Torque capacity up to 370 In. Lbs. @ 80 psi
- ▶ Maximum Operating Speed up to 3600 rpm
- ▶ Thermal Horsepower rating of 0.75 @ 3600 rpm
- ▶ Heat Sink capacity of 60,000 Ft. Lbs.
- ▶ Choose from either **Pilot Mount** or **Sheave Mount** styles with **standard bore** sizes of 1.000 and 1.125 inches

Caliper Brake features:

- ▶ Static Torque capacity up to 750 In. Lbs. @ 80 psi
- ▶ Additional calipers may be added to increase the brake torque
- ▶ Arc contoured shoe provides large facing area, for greater facing life and stability
- ▶ Mounts easily in any position with T-Bracket
- ▶ Available with 10 or 12 inch disc
- ▶ Disc Speed up to 3600 rpm
- ▶ Spring return eliminates disc drag when disengaged

All components must be ordered separately.

▶ MODEL LCDB CLUTCH-DISC-CALIPER BRAKES

1. Determine the Clutch style desired;
2. Order Clutch, Brake, Brake Hose and Disc separately to complete your assembly;
3. Additional Calipers can be added to increase brake torque .

Clutch Style	Product Number	Sheave Diameter	Bore (In)	Key Size (SQ)	Shipping Wt. (Lbs)
Clutch, Pilot Mount	805275	--	1.000	0.025	17
Clutch, Pilot Mount	805270	--	1.125	0.025	17
Clutch, Sheave Mount , 2-"3V"	805210	4.50 OD	1.125	0.025	18
Clutch, Pilot w/Coupling Half	Select a Pilot Mount and a Coupling Half to achieve this style of mount.				
Caliper Brake w/T Bracket	835000				8
Brake Air Hose Assembly	835400				2
Disc, 10" OD	855500				3
Disc, 12" OD	856000				5

Keys are included.

▶ BUSHING OPTIONS (FOR 1.125 BORE CLUTCHES ONLY)

Bushings fit within the bore of the existing clutch, reducing the bore to the amount indicated.

Product Number	Reduces Clutch Bore Size to (In)	Shipping Wt. (Lbs)
805100	0.625	1
804600	0.750	1
804700	0.875	1
804800	1.000	1
805000	No Bore/Customer machines	1

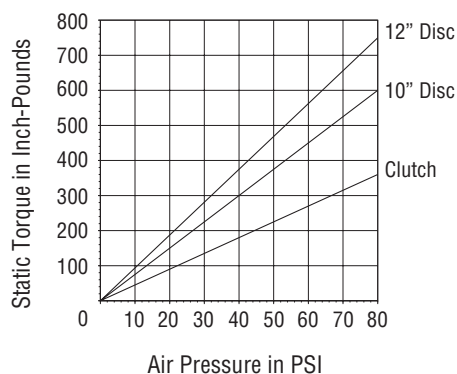
▶ COUPLING HALF OPTIONS, SEE PAGE 265 FOR COUPLING SPECIFICATIONS

A Coupling Half is used for in-line applications. It is important to review the Maximum Misalignment allowable before specifying. To achieve a Pilot Mount with Coupling Half mounting configuration:

1. Select a Pilot Mount Clutch-Brake from above;
2. Order Clutch-Brake and Coupling Half separately.
3. Coupling Half is less taper lock bushing. Use Dodge Taper Lock® #1215 (0.500 to 1.125 inch bore range). Customer furnished.

Product Number	Maximum Bore Size (In)	Shipping Wt. (Lbs)
804900	1.125	6

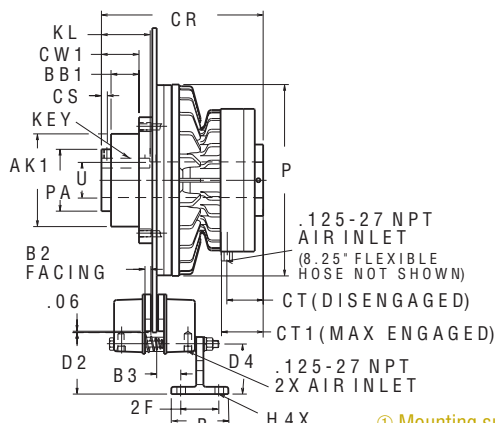
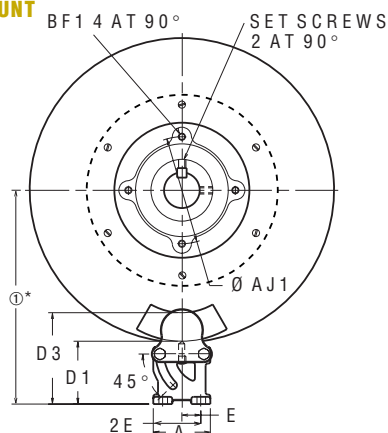
▶ TORQUE VS. AIR PRESSURE



NOTE: Dynamic torque is approximately 85% of static torque.

LCDB MODEL CLUTCH-DISC CALIPER BRAKES - APPROXIMATE DIMENSIONS (INCHES)

Pilot Mount

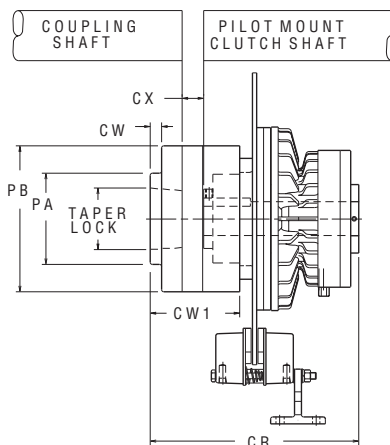
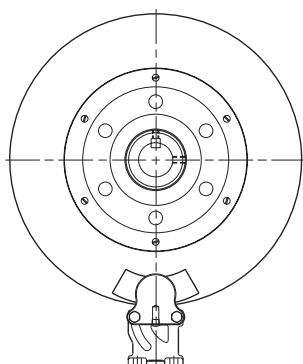


① Mounting surface to disc center = Disc Radius + D2

PRODUCT NUMBER	AJ1	AK1 ^{+0.001}	BB1	BF1	CR	CS	CT	CT1	CW1	KL	KEY (SQ)	P	PA	SET SCREWS	U ^{+0.001}
805270	3.500	2.998	0.62	.250-20	5.56	0.25	1.79	1.94	1.23	1.37	0.250	6.06	1.84	.312-18	1.125
805275	3.500	2.998	0.62	.250-20	5.56	0.25	1.79	1.94	1.23	1.37	0.250	6.06	1.84	.312-18	1.000

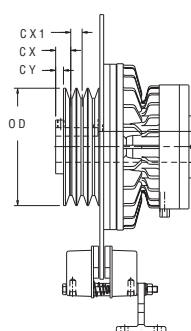
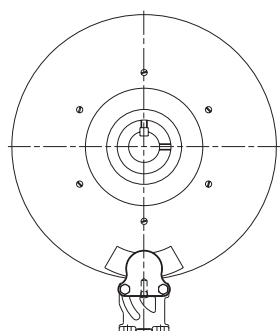
PRODUCT NUMBER	OD (IN.)	A	B	B3	D1	D2	D3	D4	E	2E	2F	PRODUCT NUMBER	OD (IN.)	A	B	B3	D1	D2	D3	D4	E	2E	2F
855500	10	3.00	3.00	1.27	3.30	3.24	4.80	2.62	1.00	2.00	2.00	856000	12	3.00	3.00	1.27	3.30	3.24	4.80	2.62	1.00	2.00	2.00
835000	10	3.00	3.00	1.27	3.30	3.24	4.80	2.62	1.00	2.00	2.00	835000	10	3.00	3.00	1.27	3.30	3.24	4.80	2.62	1.00	2.00	2.00

Pilot Mount w/Coupling Half



PRODUCT NUMBER	CR	CW	CW1	CX	PA	PB	DODGE TAPER LOCK® BUSHING
804900	7.70	0.94	3.37	0.64	2.62	4.38	#1215

Sheave Mount



PRODUCT NUMBER	SHEAVE BELT GROOVE	OD	CX	CX1	CY
805210	"3V"	2	4.50	0.68	0.41 0.43

CLUTCH/BRAKES

"Air Champ"

MODEL MCDB CLUTCH-DISC CALIPER BRAKES

Easily combine an M-800 "Air Champ" clutch with a DB Model Caliper Disc brake to create a clutch-disc caliper brake. THIS COMBINATION MOUNTS ON THE DRIVING SHAFT.

Clutch features:

- ▶ Static Torque capacity up to 960 In. Lbs. @ 80 psi
- ▶ Maximum Operating Speed up to 1800 rpm
- ▶ Thermal Horsepower rating of 1.00 @ 1800 rpm
- ▶ Heat Sink capacity of 110,000 Ft. Lbs.
- ▶ Choose from either **Pilot Mount** or **Sheave Mount** styles with **standard bore** sizes of 1.438 and 1.625 inches

Caliper Brake features:

- ▶ Static Torque capacity up to 875 In. Lbs. @ 80 psi
- ▶ Additional calipers may be added to increase the brake torque
- ▶ Arc contoured shoe provides large facing area, for greater facing life and stability
- ▶ Mounts easily in any position with T-Bracket
- ▶ Available with 12 or 14 inch disc
- ▶ Disc Speed up to 1800 rpm
- ▶ Spring return eliminates disc drag when disengaged

All components must be ordered separately.

▶ MODEL MCDB CLUTCH-DISC-CALIPER BRAKES

1. Determine the Clutch style desired;
2. Order Clutch, Brake, Brake Hose and Disc separately to complete your assembly;
3. Additional Calipers can be added to increase brake torque .

Clutch Style	Product Number	Sheave Diameter	Bore (In)	Key Size (SQ)	Shipping Wt. (Lbs)
Clutch, Pilot Mount	807655	--	1.438	0.375	38
Clutch, Pilot Mount	807650	--	1.625	0.375	37
Clutch, Sheave Mount , 3-"3V"	807610	5.30 OD	1.625	0.375	37
Clutch, Pilot w/Coupling Half	Select a Pilot Mount and a Coupling Half to achieve this style of mount.				
Caliper Brake w/T Bracket	835000				8
Brake Air Hose Assembly	835400				2
Disc, 12" OD	855600				5
Disc, 14" OD	855700				7

Keys are included.

▶ BUSHING OPTIONS (FOR 1.625 BORE CLUTCHES ONLY)

Bushings fit within the bore of the existing clutch, reducing the bore to the amount indicated.

Product Number	Reduces Clutch Bore Size to (In)	Shipping Wt. (Lbs)
806700	1.000	2
806800	1.125	2
806900	1.188	2
807000	1.250	2
807100	1.375	2
807200	1.438	2
807300	1.500	2
807500	No Bore/Customer machines	2

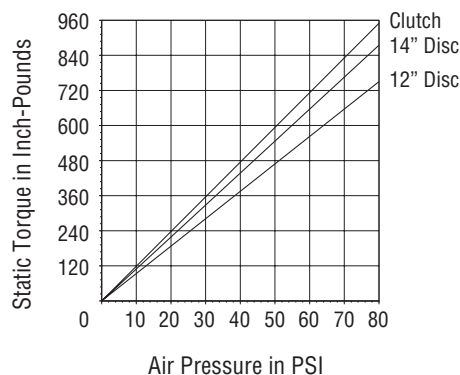
▶ COUPLING HALF OPTIONS, SEE PAGE 265 FOR COUPLING SPECIFICATIONS

A Coupling Half is used for in-line applications. It is important to review the Maximum Misalignment allowable before specifying. To achieve a Pilot Mount with Coupling Half mounting configuration:

1. Select a Pilot Mount Clutch-Brake from above;
2. Order Clutch-Brake and Coupling Half separately.
3. Coupling Half is less taper lock bushing. Use Dodge Taper Lock® #2517 (1.000 to 2.500 inch bore range). Customer furnished.

Product Number	Maximum Bore Size (In)	Shipping Wt. (Lbs)
807400	2.500	25

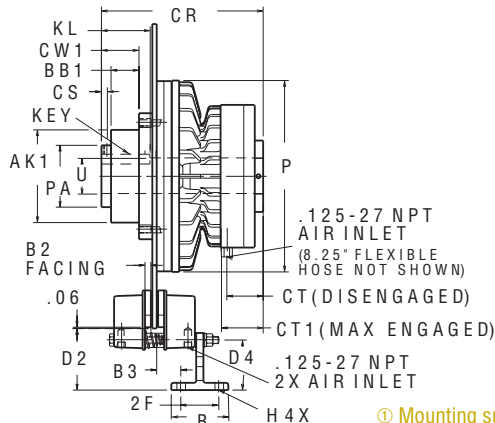
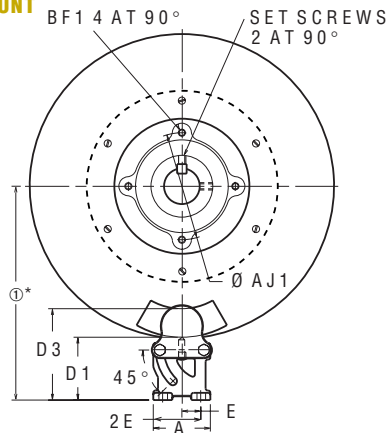
▶ TORQUE VS. AIR PRESSURE



NOTE: Dynamic torque is approximately 85% of static torque.

MCDB MODEL CLUTCH-DISC CALIPER BRAKES - APPROXIMATE DIMENSIONS (INCHES)

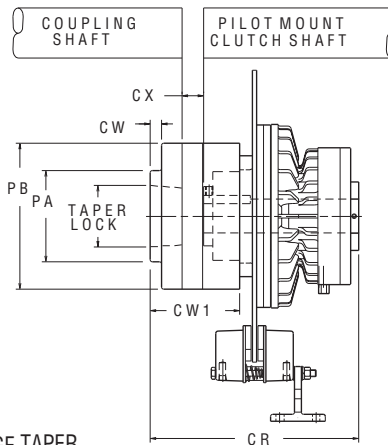
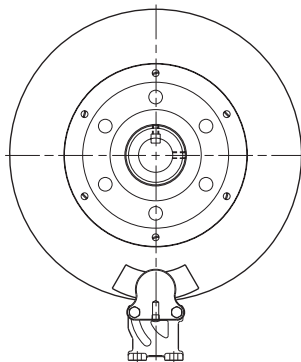
Pilot Mount



PRODUCT NUMBER	AJ1	AK1 ^{±.001}	BB1	BF1	CR	CS	CT	CT1	CW1	KL	KEY (SQ)	P	PA	SET SCREWS	U ^{+.001} _{-.000}
807650	4.750	3.998	0.77	.312-18	7.31	0.38	1.62	1.71	1.62	1.69	0.375	8.06	2.63	.375-16	1.625
807655	4.750	3.998	0.77	.312-18	7.31	0.38	1.62	1.71	1.62	1.69	0.375	8.06	2.63	.375-16	1.438

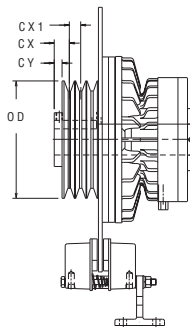
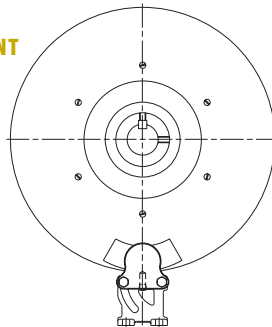
PRODUCT NUMBER	OD (IN.)	A	B	B3	D1	D2	D3	D4	E	2E	2F	PRODUCT NUMBER	OD (IN.)	A	B	B3	D1	D2	D3	D4	E	2E	2F
855600	12	3.00	3.00	1.27	3.30	3.24	4.80	2.62	1.00	2.00	2.00	855700	14	3.00	3.00	1.27	3.30	3.24	4.80	2.62	1.00	2.00	2.00
835000	10	3.00	3.00	1.27	3.30	3.24	4.80	2.62	1.00	2.00	2.00	835000	10	3.00	3.00	1.27	3.30	3.24	4.80	2.62	1.00	2.00	2.00

Pilot Mount w/Coupling Half



PRODUCT NUMBER	CR	CW	CW1	CX	PA	PB	DODGE TAPER LOCK® BUSHING
807400	9.93	0.81	4.25	0.87	5.00	7.00	#2517

Sheave Mount



PRODUCT NUMBER	SHEAVE		OD	CX	CX1	CY
	BELT	GROOVE				
807610	"3V"	3	5.30	0.96	0.41	0.68

CLUTCH/BRAKES

“Air Champ”

MODEL HCDB CLUTCH-DISC CALIPER BRAKES

Easily combine an H-1000 “Air Champ” clutch with a DB Model Caliper Disc brake to create a clutch-disc caliper brake. THIS COMBINATION MOUNTS ON THE DRIVING SHAFT.

Clutch features:

- ▶ Static Torque capacity up to 2800 In. Lbs. @ 80 psi
- ▶ Maximum Operating Speed up to 1800 rpm
- ▶ Thermal Horsepower rating of 2.25 @ 1800 rpm
- ▶ Heat Sink capacity of 230,000 Ft. Lbs.
- ▶ Choose from either **Pilot Mount** or **Sheave Mount** styles with **standard bore** sizes of 1.688 and 1.875 inches

Caliper Brake features:

- ▶ Static Torque capacity up to 1025 In. Lbs. @ 80 psi
- ▶ Additional calipers may be added to increase the brake torque
- ▶ Arc contoured shoe provides large facing area, for greater facing life and stability
- ▶ Mounts easily in any position with T-Bracket
- ▶ Available with 16 inch disc
- ▶ Disc Speed up to 1800 rpm
- ▶ Spring return eliminates disc drag when disengaged

All components must be ordered separately.

▶ MODEL HCDB CLUTCH-DISC-CALIPER BRAKES

1. Determine the Clutch style desired;
2. Order Clutch, Brake, Brake Hose and Disc separately to complete your assembly;
3. Additional Calipers can be added to increase brake torque .

Clutch Style	Product Number	Sheave Diameter	Bore (In)	Key Size (SQ)	Shipping Wt. (Lbs)
Clutch, Pilot Mount	810055	--	1.688	0.375	63
Clutch, Pilot Mount	810050	--	1.875	0.500	61
Clutch, Sheave Mount , 3-“5V”	810010	7.10 OD	1.875	0.500	69
Clutch, Pilot w/Coupling Half	Select a Pilot Mount and a Coupling Half to achieve this style of mount.				
Caliper Brake w/T Bracket	835000				8
Brake Air Hose Assembly	835400				2
Disc, 16" OD	855800				9

Keys are included.

▶ BUSHING OPTIONS (FOR 1.875 BORE CLUTCHES ONLY)

Bushings fit within the bore of the existing clutch, reducing the bore to the amount indicated.

Product Number	Reduces Clutch Bore Size to (In)	Shipping Wt. (Lbs)
805600	1.000	2
809200	1.375	2
809300	1.438	2
809400	1.500	2
809500	1.625	2
809600	1.750	2
809900	No Bore/Customer machines	2

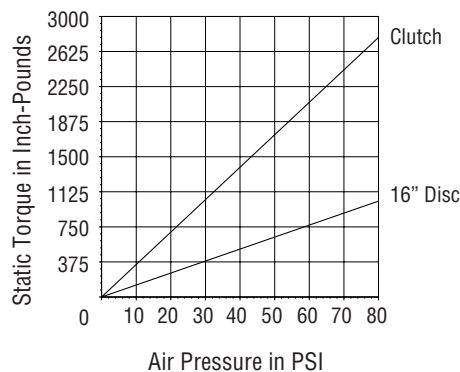
▶ COUPLING HALF OPTIONS, SEE PAGE 265 FOR COUPLING SPECIFICATIONS

A Coupling Half is used for in-line applications. It is important to review the Maximum Misalignment allowable before specifying. To achieve a Pilot Mount with Coupling Half mounting configuration:

1. Select a Pilot Mount Clutch-Brake from above;
2. Order Clutch-Brake and Coupling Half separately.
3. Coupling Half is less taper lock bushing. Use Dodge Taper Lock® #2517 (1.000 to 2.500 inch bore range). Customer furnished.

Product Number	Maximum Bore Size (In)	Shipping Wt. (Lbs)
809700	2.500	33

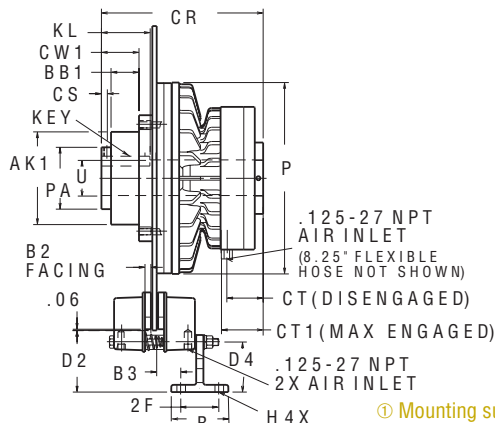
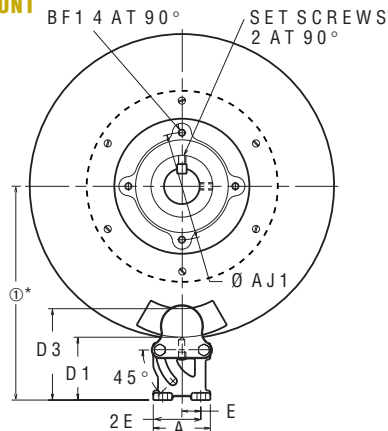
▶ TORQUE VS. AIR PRESSURE



NOTE: Dynamic torque is approximately 85% of static torque.

HCDB MODEL CLUTCH-DISC CALIPER BRAKES - APPROXIMATE DIMENSIONS (INCHES)

Pilot Mount

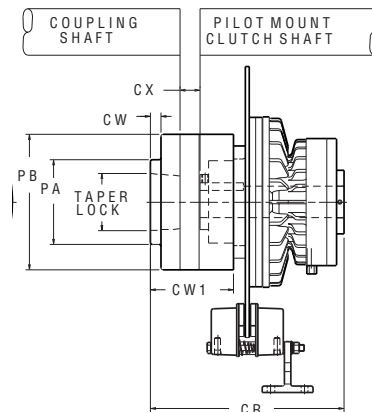
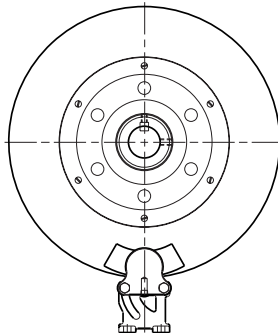


① Mounting surface to disc center = Disc Radius + D2

PRODUCT NUMBER	AJ1	AK1±.001	BB1	BF1	CR	CS	CT	CT1	CW1	KL	KEY (SQ)	P	PA	SET SCREWS	U ^{+.001} _{-.000}
810050	5.625	4.873	1.47	.375-16	8.50	0.31	1.92	2.14	1.97	2.56	0.500	10.06	3.25	.375-16	1.875
810055	5.625	4.873	1.47	.375-16	8.50	0.31	1.92	2.14	1.97	2.56	0.500	10.06	3.25	.375-16	1.688

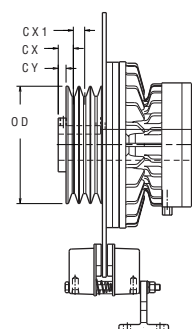
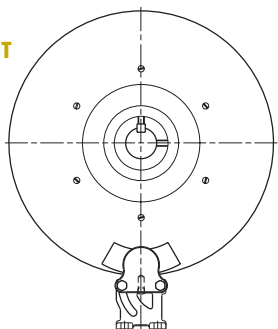
PRODUCT NUMBER	OD (IN.)	A	B	B3	D1	D2	D3	D4	E	2E	2F
855800	16	3.00	3.00	1.27	3.30	3.24	4.80	2.62	1.00	2.00	2.00
835000	10	3.00	3.00	1.27	3.30	3.24	4.80	2.62	1.00	2.00	2.00

Pilot Mount w/Coupling Half



PRODUCT NUMBER	CR	CW	CW1	CX	PA	PB	DODGE TAPER LOCK® BUSHING
809700	11.43	0.63	4.90	1.18	5.00	7.00	#2517

Sheave Mount



PRODUCT NUMBER	SHEAVE		OD	CX	CX1	CY
	BELT	GROOVE				
810010	"5V"	3	7.10	0.91	0.69	0.47

CLUTCH-BRAKES

METRIC FLANGE MOUNTED CLUTCH-BRAKES

Choose from **3 design options:**

FMCB basic open clutch-brake:

- Available in black oxide coating
- Bore/Shaft** sizes from 19 to 42 millimeters
- Flange or Foot mount capability
- Optional Input Unit for use with pulleys and couplings

FMCBE basic enclosed clutch-brake:

- Available in either electroless nickel plating or black oxide coating
- Bore/Shaft** sizes from 14 to 42 millimeters
- Flange or Foot mount capability
- Optional Input Unit for use with pulleys or couplings

FMCBES enclosed, spring engaged clutch-brake:

- Spring engaged brake combined with air engaged clutch
- Double acting piston design prevents overlap of clutch and brake functions
- Available in either electroless nickel plating or black oxide coating
- Bore/shaft sizes** from 14 to 42 millimeters
- Flange or Foot mount capability
- Optional Input Unit for use with pulleys or couplings

METRIC FLANGE MOUNTED CLUTCH-BRAKES

Metric Flange Mounted Clutch-Brakes are available in both an Open and an Enclosed design. The Open Design promotes improved air circulation for longer life and greater operating efficiency. The Enclosed design keeps dirt, dust, moisture and other contaminants out and worn friction material from escaping

These clutch-brakes mount directly to IEC-Face motors and reducers and provide absolute control. These units fit IEC frame sizes 71A to 160M.

DESIGN STYLE COMPARISONS

The tables below show performance comparisons between the design styles. This is an overview, to aid in selection. Please refer to the specific product catalog pages prior to final determination, to insure all features and benefits match your application.

THERMAL CAPACITIES

Thermal capacity is based upon 50% clutch and 50% brake usage. Operating speed is 1500 rpm for all data.

Model/Design Style	Watts rating by Model Size					
	14	19	24	28	38	42
FMCBE	104	134	134	246	328	328
FMCBES	104	134	134	246	328	328
FMCB	--	370	370	670	670	850

OVERHUNG LOAD DATA

Data is based upon 50% clutch and 50% brake usage. Operating speed is 1500 rpm for all data.

Model/Design Style	Weight (Kg) rating by Model Size					
	14	19	24	28	38	42
FMCBE	35	100	95	95	120	135
FMCBES	35	100	95	95	120	135
FMCB	--	100	95	95	120	135

STATIC TORQUE CAPACITY

Data is based upon maximum achieved at 6 Bars at psi.

Model/Design Style	Torque (Nm) rating by Model Size						
	14	19	24	28	7-38	8-38	42
FMCBE	25	33	33	85	125	167	270
FMCBES	10	18	18	32	46	74	107
FMCB	--	33	33	85	125	167	270
Clutch:							
FMCBE	22	33	33	77	110	151	240
FMCBES	18	27	27	44	64	72	105
FMCB	--	33	33	77	110	151	240

TYPICAL APPLICATIONS

Four typical mounting applications for these Clutch-Brakes are shown on page 236.

METRIC FMCBE CLUTCH-BRAKES – MODELS 70-14

FMCBE Flange Mounted Clutch-Brakes are designed for controlled starts and stops in hostile, dirty environments. Totally enclosed design prevents contaminants from interfering with operation of the units while keeping worn friction material from escaping into the environment.

- Compatible with IEC-B14 face motors up to kW-56
- Static Torque up to 10 Nm (brake) and 10 Nm (clutch)
- Overhung Load Capacity up to 32 kilograms
- Design Operating Speed up to 3600 R.P.M.
- Flange mounts directly to motors and reducers
- FMCBE with Integral Valve combines a Flange mounted, totally-enclosed clutch/brake with a single solenoid 4-way spool valve mounted directly to the clutch/brake air chamber. Air pressure is directed to the piston to perform either clutch or brake functions.
- Eliminates need for quick exhaust valves
- 115 Volt is standard on FMCBE
- The Integral Valve is available for 12, 24 and 115 volt systems
- Available in black oxide coating
- Simplified; one product number for a clutch-brake combination control valve
- Reduced number of air line connections for quicker install

METRIC FMCBE CLUTCH-BRAKES, TOTALLY ENCLOSED

Model Number	Product Number	Valve Voltage	Shaft/Bore (mm)	Thermal Capacity Up To	OVERHUNG LOAD CAPACITY (kg) 1500 RPM	Shipping Wt. (kg)
FMCBE-70-14	801360	N/A	14	75W	32	5
FMCBE-70-14/IV	801361	115V	14	75W	32	5.4

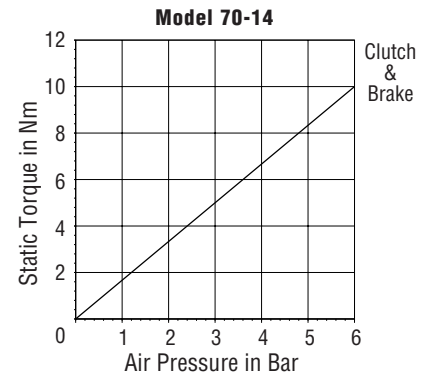
NOTE: Thermal Capacity (HP_t) and Overhung Load data is based upon 50% clutch and 50% brake usage.

IEC MOTOR/FRAME SELECTION CHART

Use this chart as specification and operational criteria for your application.

HP/KW of Motor	RPM	Frame Number	Motor Shaft (mm)
.25/.33	3450	D71C	14
.25/.33	1725	D71C	14
.37/.50	3450	D71C	14
.37/.50	1725	D71C	14
.56/.75	3450	D71C	14

TORQUE VS. AIR PRESSURE

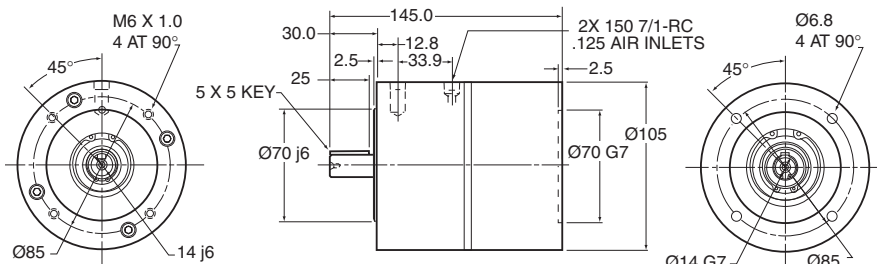


NOTE: Dynamic torque is approximately 85% of static torque.

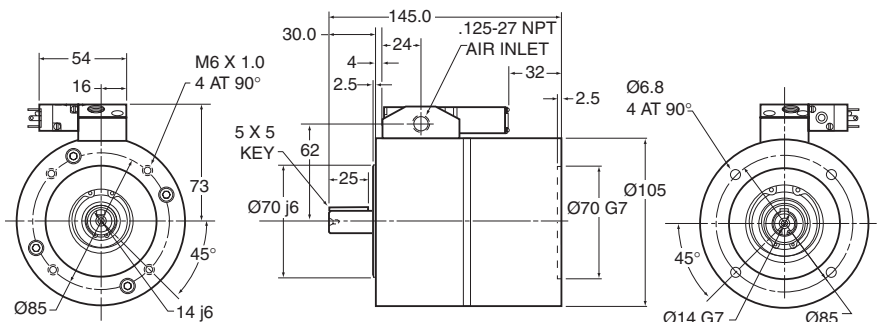
Torque (In. Lbs.) = Nm x 8.849

PSI = Bar ÷ .0689

METRIC FMCBE CLUTCH-BRAKES, APPROXIMATE DIMENSIONS



METRIC FMCBE INTEGRAL VALVE CLUTCH-BRAKES, APPROXIMATE DIMENSIONS



CLUTCH-BRAKES

"Air Champ"

METRIC FMCB CLUTCH-BRAKES – MODELS 130-19 & 130-24

FMCB Flange Mounted Clutch-Brakes with their open design, promote improved air circulation. Heat build-up and torque fade is reduced, providing longer life and greater operating efficiency. Choose from

2 Models:

- **Bore sizes** range from 19 to 24 millimeters
- Available in black oxide coating
- Static Torque up to 33 Nm (brake) and 33 Nm (clutch)
- Overhung Load Capacity up to 150 kilograms
- Design Speed up to 1500 rpm. Consult factory for higher speed
- Flange mounts directly to motors and reducers
- Compatible with IEC-B5 face motors up to 1,5 KW
- Optional Foot Mount is available for belt drive applications
- Optional Input Unit allows you to incorporate pulleys or coupling into your application

► METRIC FMCB CLUTCH-BRAKES, OPEN DESIGN

Standard Clutch-Brake is Flange Mounted. Order Foot Mount separately for belt drive applications. Order Input Unit to incorporate pulleys into your application.

Model Number	Product Number	Shaft/Bore (mm)	Thermal Capacity Up To	OVERHUNG LOAD CAPACITY (kg)		Shipping Wt. (kg)
				1000 RPM	1500 RPM	
Black Coating:						
FMCB-130-19	801400	19	370 W	150	100	18
FMCB-130-24	801403	24	370 W	143	95	18

NOTE: Thermal Capacity and Overhung Load data is based upon 50% clutch and 50% brake usage.

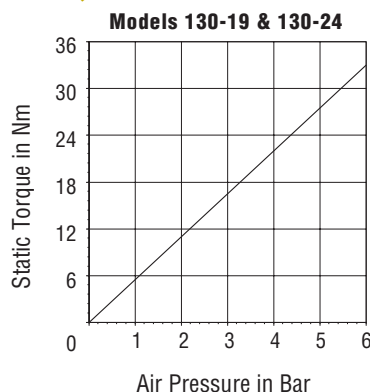
Model Number	Product Number	Foot Mount Set Product Number	Shipping Wt. (kg)	Input Unit Product Number	Shipping Wt. (kg)
Black Coating:					
FMCB-130-19	801400	801427	2,2	801424	3
FMCB-130-24	801403	801427	2,2	801425	3

► IEC MOTOR/FRAME SELECTION CHART

Use this chart as specification and operational criteria for your application.

KW of Motor	RPM	Frame Number	Motor Shaft (mm)	Clutch-Brake Model Number
0,37	1000	80	19	FMCB-130-19
0,55	1000	80	19	FMCB-130-19
0,75	1000	90S	24	FMCB-130-24
0,75	1500	80	19	FMCB-130-19
1,1	1000	90L	24	FMCB-130-24
1,1	1500	90S	24	FMCB-130-24
1,5	1500	90L	24	FMCB-130-24

► TORQUE VS. AIR PRESSURE



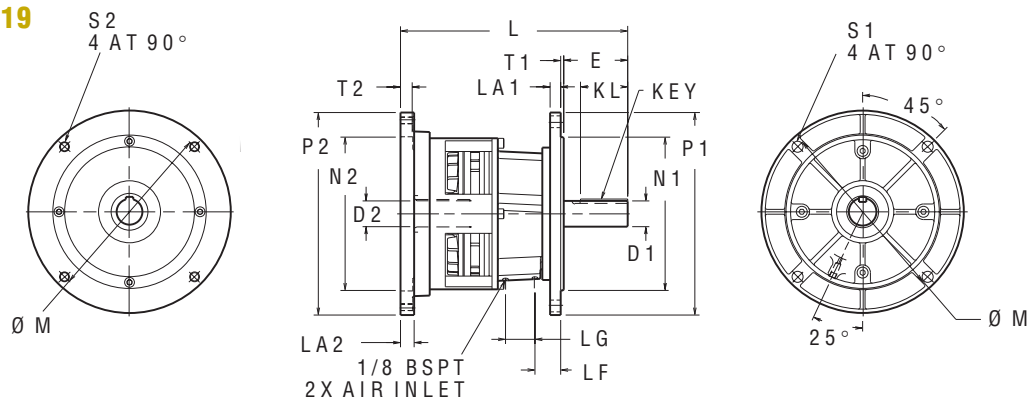
NOTE: Dynamic torque is approximately 85% of static torque.

Torque (In. Lbs.) = Nm x 8.849

PSI = Bar ÷ .0689

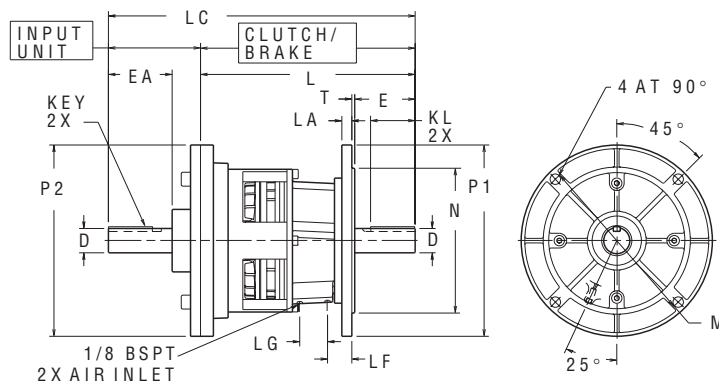
METRIC FMCB MODEL CLUTCH-BRAKES - APPROXIMATE DIMENSIONS (MILLIMETERS)

► MODELS 130-19 & 130-24



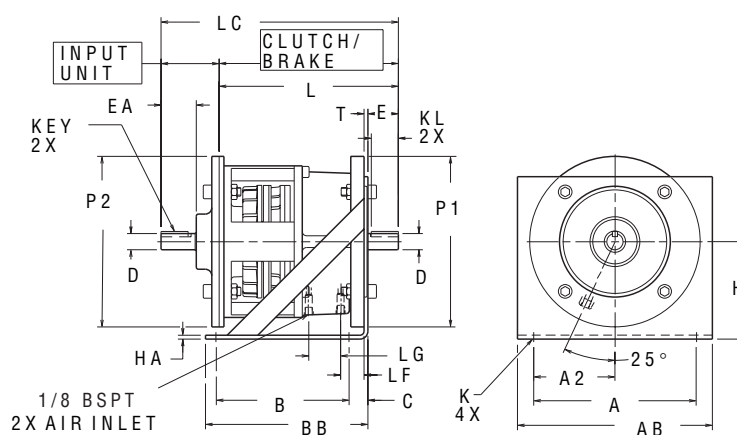
MODEL	PRODUCT NUMBER	D1	D2	E	KEY	KL	L	LA1	LA2	LF	LG	M	N1 ^{j6}	N2 ^{G7}	P1	P2	S1	S2	T1	T2
130-19	801400	19 ^{j6}	19 ^{G7}	37	6sq	32	210,5	13	6	27	37	165	130	130	200	200	12	11	3,5	5
130-24	801403	24 ^{j6}	24 ^{G7}	47	7X8	35	220,5	14	6	27	37	165	130	130	200	200	12	11	3,5	5

► MODELS 130-19 & 130-24 WITH INPUT



MODEL	PRODUCT NUMBER	INPUT NUMBER	D	E	EA	KEY	KL	L	LA	LC	LF	LG	M	N1 ^{j6}	P1	P2	S	T
130-19	801400	801424	19 ^{j6}	37	43	6 SQ	32	210,5	10	280,5	27	37	165	130	200	200	11	3,5
130-24	801403	801425	24 ^{j6}	47	55	7X8	35	220,5	10	302,5	27	37	165	130	200	200	11	3,5

► MODELS 130-19 & 130-24 WITH INPUT & FOOT



MODEL	PRODUCT NUMBER	INPUT NUMBER	FOOT NUMBER	A	AB	AZ	B	BB	C	D ^{j6}	E	EA	H	HA	K	KEY	KL	L	LC	LF	LG	P1	P2	T
130-19	801400	801424	801427	191	220	95	146	191	32	19 ^{j6}	37	43	114	5	11	6 sq	32	210,5	280,5	27	37	200	200	3,5
130-24	801403	801425	801427	191	220	95	146	191	32	24 ^{j6}	47	55	114	5	11	7X8	35	220,5	302,5	27	37	200	200	3,5

NOTE: Drawings are expressed in third angle projection.

CLUTCH-BRAKES

"Air Champ"

METRIC FMCB CLUTCH-BRAKES – MODELS 7-28 & 7-38

FMCB Flange Mounted Clutch-Brakes with their open design, promote improved air circulation. Heat build-up and torque fade is reduced, providing longer life and greater operating efficiency. Choose from

2 Models:

- **Bore sizes** range from 28 to 38 millimeters
- Available in black oxide coating
- Static Torque up to 125 Nm (brake) and 110 Nm (clutch)
- Overhung Load Capacity up to 180 kilograms
- Design Speed up to 1500 rpm. Consult factory for higher speed
- Flange mounts directly to motors and reducers
- Compatible with IEC-B5 face motors up to 5,5 KW
- Optional Foot Mount is available for belt drive applications
- Optional Input Unit allows you to incorporate pulleys or coupling into your application

► METRIC FMCB CLUTCH-BRAKES, OPEN DESIGN

Standard Clutch-Brake is Flange Mounted. Order Foot Mount separately for belt drive applications. Order Input Unit to incorporate pulleys into your application.

Model Number	Product Number	Shaft/Bore (mm)	Thermal Capacity Up To	OVERHUNG LOAD CAPACITY (kg)		Shipping Wt. (kg)
				1000 RPM	1500 RPM	
Black Coating:						
FMCB-7-28	801610	28	670 W	143	95	27
FMCB-7-38	801613	38	670 W	180	120	27

NOTE: Thermal Capacity and Overhung Load data is based upon 50% clutch and 50% brake usage.

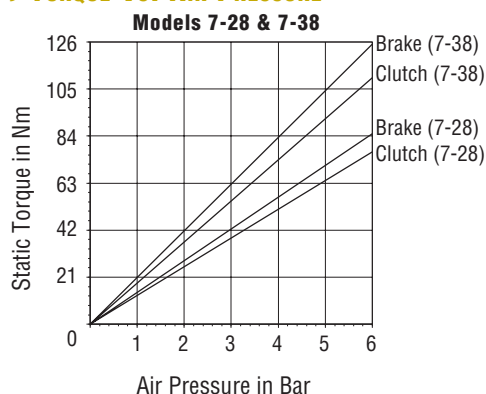
Model Number	Product Number	Foot Mount Set (2 Mounts) Product Number	Shipping Wt. (kg)	Input Unit Product Number	Shipping Wt. (kg)
Black Coating:					
FMCB-7-28	801610	801632	5	801627	5
FMCB-7-38	801613	801633	5	801628	5

► IEC MOTOR/FRAME SELECTION CHART

Use this chart as specification and operational criteria for your application.

KW of Motor	RPM	Frame Number	Motor Shaft (mm)	Clutch-Brake Model Number
1,5	1000	100L	28	FMCB-7-28
2,2	1000	112M	28	FMCB-7-28
2,2	1500	100L	28	FMCB-7-28
3,0	1000	132S	38	FMCB-7-38
3,0	1500	100L	28	FMCB-7-28
4,0	1500	112M	28	FMCB-7-28
5,5	1500	132S	38	FMCB-7-38

► TORQUE VS. AIR PRESSURE

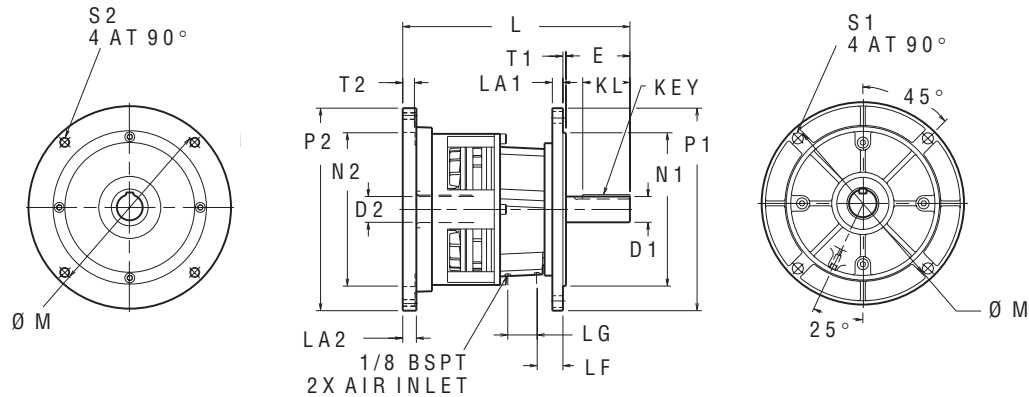


NOTE: Dynamic torque is approximately 85% of static torque.

Torque (In. Lbs.) = Nm x 8.849
PSI = Bar ÷ .0689

METRIC FMCB MODEL CLUTCH-BRAKES - APPROXIMATE DIMENSIONS (MILLIMETERS)

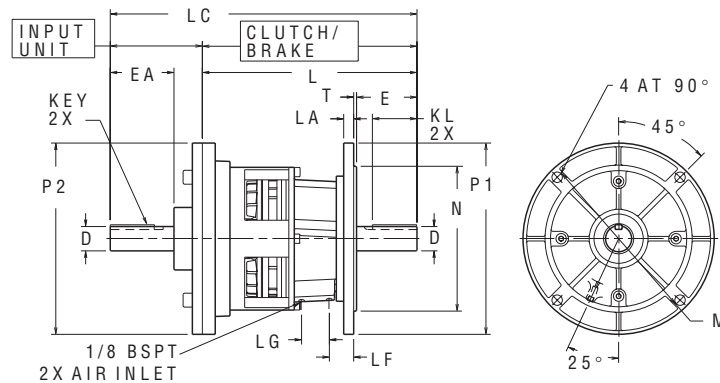
▶ MODELS 7-28 & 7-38



MODEL	PRODUCT NUMBER	D1	D2	E	KEY	KL	L	LA1	LA2	LF	LG*	M	N1 ⁶	N2 ⁶⁷	P1	P2	S1	S2	T1	T2
7-28	801610	28 ⁶	28 ⁶⁷	57	7X8	44	269	12	16	36	42	215	180	180	300	250	14	M12	4	4,8
7-38	801613	38 ⁶	38 ⁶⁷	76	8X10	51	294	17	18	37	42	265	230	230	330	300	14	M12	4	4,8

*Second pipe thread on FMCBE models only.

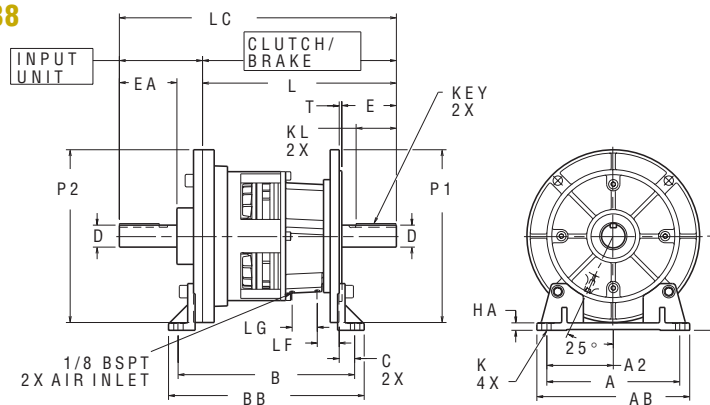
▶ MODELS 7-28 & 7-38 WITH INPUT



MODEL	PRODUCT NUMBER	INPUT NUMBER	D	E	EA	KEY	KL	L	LA	LC	LF	LG*	M	N ⁶	P1	P2	S	T
7-28	801610	801627	28 ⁶	57	59	7X8	44	269	13	371	36	42	215	180	250	250	14	4
7-38	801613	801628	38 ⁶	76	79	8X10	51	294	14	409	37	42	265	230	300	300	14	4

*Second pipe thread on FMCBE models only.

▶ MODELS 7-28 & 7-38 WITH INPUT & FOOT



MODEL	PRODUCT NUMBER	INPUT NUMBER	FOOT NUMBER	A	AB	AZ	B	BB	C	D	E	EA	H	HA	K	KEY	KL	L	LC	LF	LG*	P1	P2	T
7-28	801610	801627	801632	254	292	127	271	303	26	28 ⁶	57	59	130	14	14	7X8	44	269	371	36	42	250	250	4
7-38	801613	801628	801633	254	292	127	280	312	26	38 ⁶	76	79	155	14	14	8X10	51	294	409	37	42	300	300	4

NOTE: Drawings are expressed in third angle projection.

CLUTCH-BRAKES

“Air Champ”

METRIC FMCB CLUTCH-BRAKES – MODELS 8-38 & 8-42

FMCB Flange Mounted Clutch-Brakes with their open design, promote improved air circulation. Heat build-up and torque fade is reduced, providing longer life and greater operating efficiency. Choose from

2 Models:

- **Bore sizes** range from 38 to 42 millimeters
- Available in black oxide coating
- Static Torque up to 240 Nm (brake) and 220 Nm (clutch)
- Overhung Load Capacity up to 200 kilograms
- Design Speed up to 1500 rpm. Consult factory for higher speed
- Flange mounts directly to motors and reducers
- Compatible with IEC-B5 face motors up to 11 KW
- Optional Foot Mount is available for belt drive applications
- Optional Input Unit allows you to incorporate pulleys or coupling into your application

► METRIC FMCB CLUTCH-BRAKES, OPEN DESIGN

Standard Clutch-Brake is Flange Mounted. Order Foot Mount separately for belt drive applications. Order Input Unit to incorporate pulleys into your application.

Model Number	Product Number	Shaft/Bore (mm)	Thermal Capacity Up To	OVERHUNG LOAD CAPACITY (kg)		Shipping Wt. (kg)
				1000 RPM	1500 RPM	
Black Coating:						
FMCB-8-38	801616	38	850 W	195	130	46
FMCB-8-42	801619	42	850 W	200	135	68

NOTE: Thermal Capacity and Overhung Load data is based upon 50% clutch and 50% brake usage.

Model Number	Product Number	Foot Mount Set (2 Mounts) Product Number	Shipping Wt. (kg)	Input Unit Product Number	Shipping Wt. (kg)
Black Coating:					
FMCB-8-38	801616	801633	5	801629	6
FMCB-8-42	801619	801634	5	801630	6

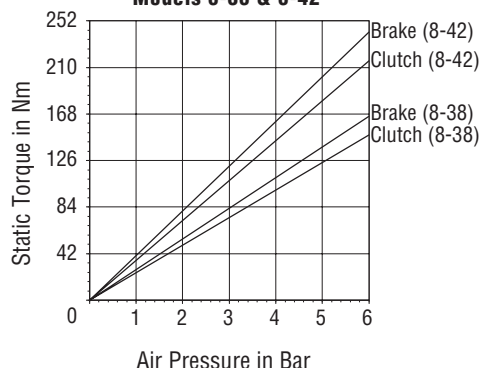
► IEC MOTOR/FRAME SELECTION CHART

Use this chart as specification and operational criteria for your application.

KW of Motor	RPM	Frame Number	Motor Shaft (mm)	Clutch-Brake Model Number
4,0	1000	132M	38	FMCB-8-38
5,5	1000	132M	38	FMCB-8-38
7,5	1000	160M	42	FMCB-8-42
7,5	1500	132M	38	FMCB-8-38
11	1500	160M	42	FMCB-8-42

► TORQUE VS. AIR PRESSURE

Models 8-38 & 8-42

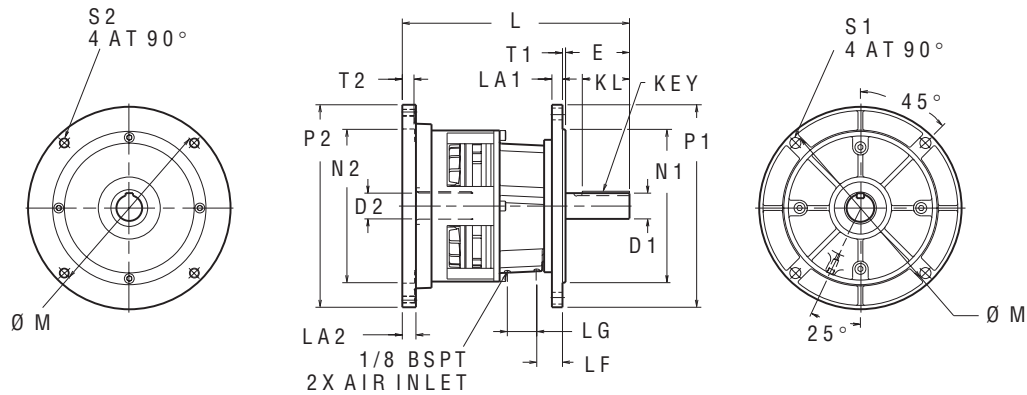


NOTE: Dynamic torque is approximately 85% of static torque.

Torque (In. Lbs.) = Nm x 8.849
PSI = Bar ÷ .0689

METRIC FMCB MODEL CLUTCH-BRAKES - APPROXIMATE DIMENSIONS (MILLIMETERS)

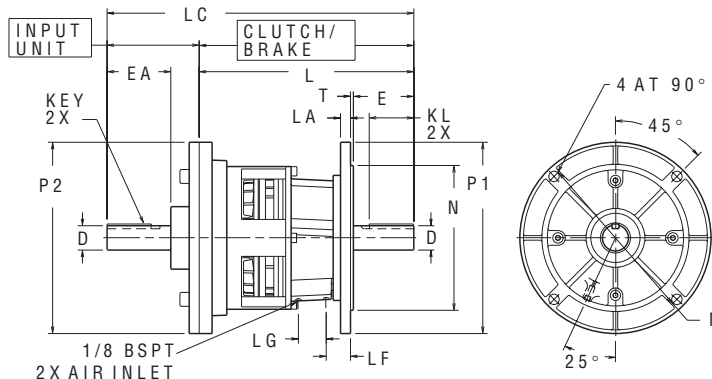
▶ MODELS 8-38 & 8-42



MODEL	PRODUCT NUMBER	D1	D2	E	KEY	KL	L	LA1	LA2	LF	LG*	M	N1 ¹⁶	N2 ¹⁷	P1	P2	S1	S2	T1	T2
8-38	801616	38 ^{K6}	38 ^{F7}	76	8X10	51	306	10	18	37	48	265	230	230	200	300	14	M12	4	4,8
8-42	801619	42 ^{K6}	42 ^{F7}	104	8X12	76	370	10	22	42	48	300	250	250	200	330	18	M16	5	19

*Second pipe thread on FMCBE models only.

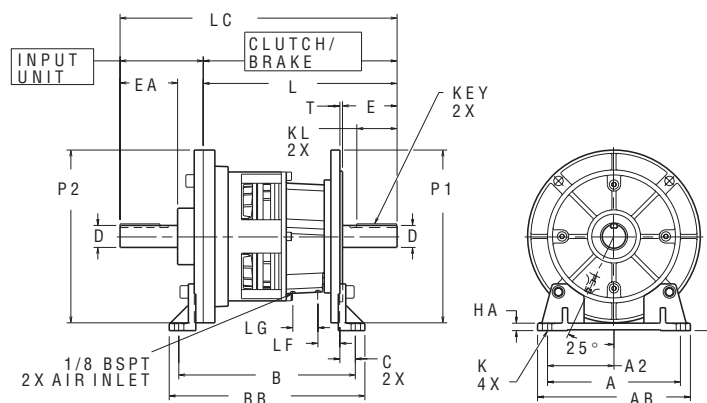
▶ MODELS 8-38 & 8-42 WITH INPUT



MODEL	PRODUCT NUMBER	INPUT NUMBER	D	E	EA	KEY	KL	L	LA	LC	LF	LG*	M	N1 ¹⁶	P1	P2	S	T
8-38	801616	801629	38 ^{K6}	76	79	8X10	51	306	12	435	37	48	265	230	300	300	14	4
8-42	801619	801630	42 ^{K6}	104	110	8X12	76	370	17	529	42	48	300	250	330	330	18	5

*Second pipe thread on FMCBE models only.

▶ MODELS 8-38 & 8-42 WITH INPUT & FOOT



MODEL	PRODUCT NUMBER	INPUT NUMBER	FOOT NUMBER	A	AB	AZ	B	BB	C	D	E	EA	H	HA	K	KEY	KL	L	LC	LF	LG*	P1	P2	T
8-38	801616	801629	801633	254	292	127	289	320	26	38 ^{K6}	76	79	155	14	14	8X10	51	306	435	37	48	300	300	4
8-42	801619	801630	801634	254	292	127	337	374	29	42 ^{K6}	104	110	180	14	18	8X12	76	370	529	42	48	330	330	5

NOTE: Drawings are expressed in third angle projection.

CLUTCH-BRAKES

"Air Champ"

METRIC FMCBE CLUTCH-BRAKES – MODELS 110-14, & 130-19 & 130-24

FMCBE Flange Mounted Clutch-Brakes are designed for controlled starts and stops in hostile, dirty environments. Totally enclosed design prevents contaminants from interfering with operation of the units while keeping worn friction material from escaping into the environment. Choose from **2 Models:**

- **Bore sizes** range from 14 to 24 millimeters
- All units available in either electroless nickel plating or black oxide coating
- Electroless Nickel plating meets NEMA standard 1.26.5 for waterproof machines
- Static Torque up to 33 Nm (brake) and 33 Nm (clutch)
- Overhung Load Capacity up to 150 kilograms
- Design Speed up to 1500 rpm. Consult factory for higher speed
- Flange mounts directly to motors and reducers
- Compatible with IEC-B5 face motors up to 1,5 KW
- Optional Foot Mount is available for belt drive applications
- Optional Input Unit allows you to incorporate pulleys or coupling into your application

► METRIC FMCBE CLUTCH-BRAKES, TOTALLY ENCLOSED

Standard Clutch-Brake is Flange Mounted. Order Foot Mount separately for belt drive applications. Order Input Unit to incorporate pulleys into your application.

Model Number	Product Number	Shaft/Bore (mm)	Thermal Capacity Up To	OVERHUNG LOAD CAPACITY (kg)		Shipping Wt. (kg)
				1000 RPM	1500 RPM	
Black Coating:						
FMCBE-110-14	801433	14	104 W	45	35	11
FMCBE-130-19	801660	19	134 W	150	100	18
FMCBE-130-24	801663	24	134 W	143	95	18
Nickel Plating:						
FMCBE-110-14	801444	14	104 W	45	35	12
FMCBE-130-19	801464	19	134 W	150	100	18
FMCBE-130-24	801484	24	134 W	150	95	18

NOTE: Thermal Capacity and Overhung Load data is based upon 50% clutch and 50% brake usage.

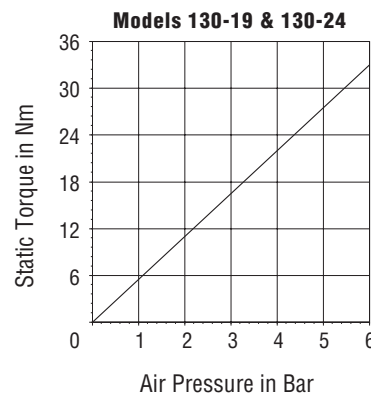
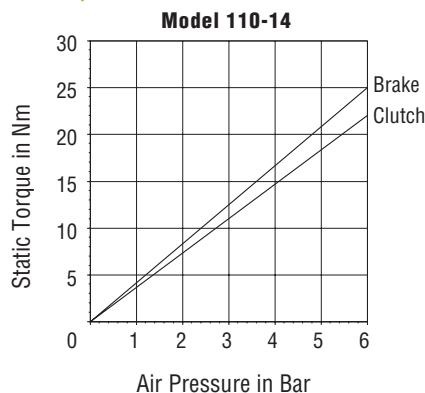
Model Number	Product Number	Foot Mount Set	Shipping Wt.	Input Unit	Shipping Wt.
		(2 Mounts)		(kg)	
Black Coating:					
FMCBE-110-14	801433	801435	2,2	801434	3
FMCBE-130-19	801660	801427	2,2	801424	3
FMCBE-130-24	801663	801427	2,2	801425	3
Nickel Plating:					
FMCBE-110-14	801444	801454	2,2	801445	3
FMCBE-130-19	801464	801455	2,2	801498	2,2
FMCBE-130-24	801484	801455	2,2	801499	2,2

► IEC MOTOR/FRAME SELECTION CHART

Use this chart as specification and operational criteria for your application.

KW of Motor	RPM	Frame Number	Motor Shaft (mm)	Clutch-Brake Model Number
0,25	1500	71A	14	FMCBE-110-14
0,37	1000	80	19	FMCBE-130-19
0,37	1500	71B	14	FMCBE-110-14
0,55	1000	80	19	FMCBE-130-19
0,75	1000	90S	24	FMCBE-130-24
0,75	1500	80	19	FMCBE-130-19
1,1	1000	90L	24	FMCBE-130-24
1,1	1500	90S	24	FMCBE-130-24
1,5	1500	90L	24	FMCBE-130-24

► TORQUE VS. AIR PRESSURE

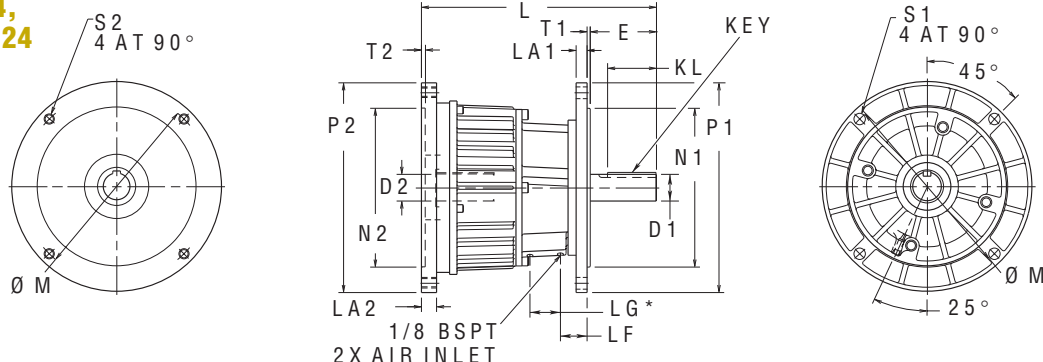


NOTE: Dynamic torque is approximately 85% of static torque.

Torque (In. Lbs.) = Nm x 8.849
PSI = Bar ÷ .0689

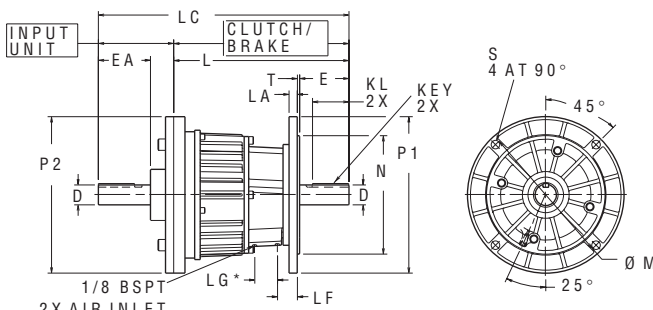
METRIC FMCBE MODEL CLUTCH-BRAKES - APPROXIMATE DIMENSIONS (MILLIMETERS)

▶ MODELS 110-14, 130-19 & 130-24



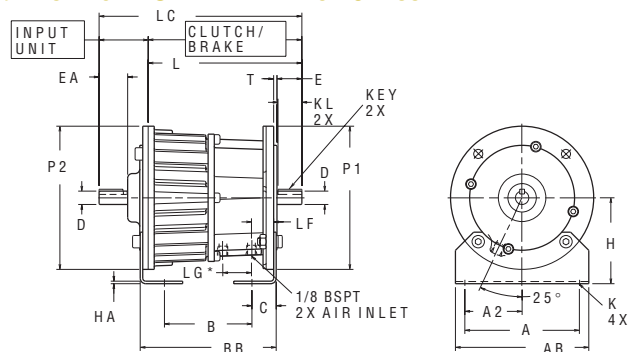
MODEL	FMCBE	FMCBE(NICKEL)	D1	D2	E	KEY	KL	L	LA1	LA2	LF	LG	M	N1 ¹⁶	N2 ⁶⁷	P1	P2	S1	S2	T1	T2
110-14	801433	801444	14 ¹⁶	14 ⁶⁷	27	5sq	25	161,5	8	6	23	30	130	110	110	150	150	10	M8	3,5	4
130-19	801660	801464	19 ¹⁶	19 ⁶⁷	37	6sq	27	210,5	10	11	27	37	165	130	130	200	198	12	M10	3,5	5
130-24	801663	801484	24 ¹⁶	24 ⁶⁷	47	7x8	35	220,5	10	11	27	37	165	130	130	200	198	12	M10	3,5	5

▶ MODELS 110-14, 130-19 & 130-24 WITH INPUT



MODEL	FMCBE	FMCBE(NICKEL)	D1	E	EA	KEY	KL	L	LA	LC	LF	LG	M	N1 ¹⁶	P1	P2	S1	T
110-14	801433	801444	14 ¹⁶	27	29	5sq	25	161,5	8	211,5	23	30	130	110	150	150	10	3,5
130-19	801660	801464	19 ¹⁶	37	43	6sq	27	210,5	10	280,5	27	37	165	130	200	198	12	3,5
130-24	801663	801484	24 ¹⁶	47	55	7x8	35	220,5	10	302,5	27	37	165	130	200	198	12	3,5

▶ MODELS 110-14 WITH INPUT & FOOT



MODEL	FMCBE	FMCBE(NICKEL)	INPUT(BLK)	INPUT(NICKEL)	FOOT(BLK)	FOOT(NICKEL)	A	AB	AZ	B	BB	C	D ¹⁶	E	EA	H
110-14	801433	801444	801434	801445	801435	801454	120	140	60	92	142	25	14	27	29	90
130-19	801660	801464	801424	801498	801427	801455	191	229	95	146	191	32	19	37	43	114
130-24	801663	801485	801425	801499	801427	801455	191	229	95	146	191	32	24	47	55	114

MODEL	HA	K	KEY	KL	L	LC	LF	LG	P1	P2	T
110-14	3	9X19	5sq	25	161,5	221,5	23	30	150	150	3,5
130-19	5	11	6sq	27	210,5	280,5	27	37	200	198	3,5
130-24	5	11	7x8	35	220,5	302,5	27	37	200	198	3,5

NOTE: Drawings are expressed in third angle projection.

CLUTCH-BRAKES

"Air Champ"

METRIC FMCBE CLUTCH-BRAKES – MODELS 7-28 & 7-38

FMCBE Flange Mounted Clutch-Brakes are designed for controlled starts and stops in hostile, dirty environments. Totally enclosed design prevents contaminants from interfering with operation of the units while keeping worn friction material from escaping into the environment. Choose from **2 Models**:

- **Bore sizes** range from 28 to 38 millimeters
- All units available in either electroless nickel plating or black oxide coating
- Electroless Nickel plating meets NEMA standard 1.26.5 for waterproof machines
- Static Torque up to 125 Nm (brake) and 110 Nm (clutch)
- Overhung Load Capacity up to 180 kilograms
- Design Speed up to 1500 rpm. Consult factory for higher speed
- Flange mounts directly to motors and reducers
- Compatible with IEC-B5 face motors up to 5,5 KW
- Optional Foot Mount is available for belt drive applications
- Optional Input Unit allows you to incorporate pulleys or coupling into your application

► METRIC FMCBE CLUTCH-BRAKES, TOTALLY ENCLOSED

Standard Clutch-Brake is Flange Mounted. Order Foot Mount separately for belt drive applications. Order Input Unit to incorporate pulleys into your application.

Model Number	Product Number	Shaft/Bore (mm)	Thermal Capacity Up To	OVERHUNG LOAD CAPACITY (kg)		Shipping Wt. (kg)
				1000 RPM	1500 RPM	
Black Coating:						
FMCBE-7-28	801666	28	246 W	143	95	28
FMCBE-7-38	801669	38	246 W	180	120	28
Nickel Plating:						
FMCBE-7-28	801485	28	246 W	143	95	28
FMCBE-7-38	801495	38	246 W	180	120	28

NOTE: Thermal Capacity and Overhung Load data is based upon 50% clutch and 50% brake usage.

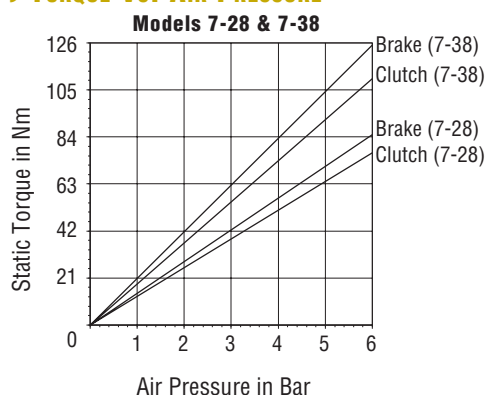
Model Number	Product Number	Foot Mount Set (2 Mounts)	Shipping Wt. (kg)	Input Unit	Shipping Wt. (kg)
		Product Number		Product Number	
Black Coating:					
FMCBE-7-28	801666	801632	1,6	801627	2,2
FMCBE-7-38	801669	801633	1,6	801628	2,2
Nickel Plating:					
FMCBE-7-28	801485	801458	1,6	801575	2,2
FMCBE-7-38	801495	801460	1,6	801608	2,2

► IEC MOTOR/FRAME SELECTION CHART

Use this chart as specification and operational criteria for your application.

KW of Motor	RPM	Frame Number	Motor Shaft (mm)	Clutch-Brake Model Number
1,5	1000	100L	28	FMCBE-7-28
2,2	1000	112M	28	FMCBE-7-28
2,2	1500	100L	28	FMCBE-7-28
3,0	1000	132S	38	FMCBE-7-38
3,0	1500	100L	28	FMCBE-7-28
4,0	1500	112M	28	FMCBE-7-28
5,5	1500	132S	38	FMCBE-7-38

► TORQUE VS. AIR PRESSURE

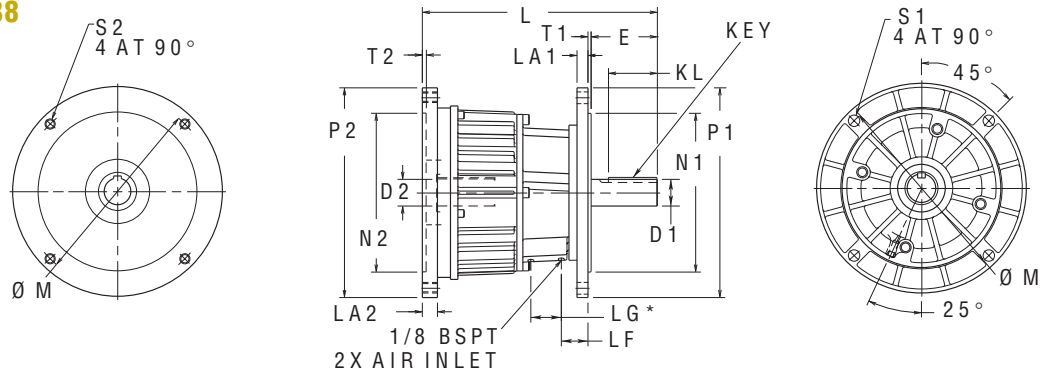


NOTE: Dynamic torque is approximately 85% of static torque.

Torque (In. Lbs.) = Nm x 8.849
PSI = Bar ÷ .0689

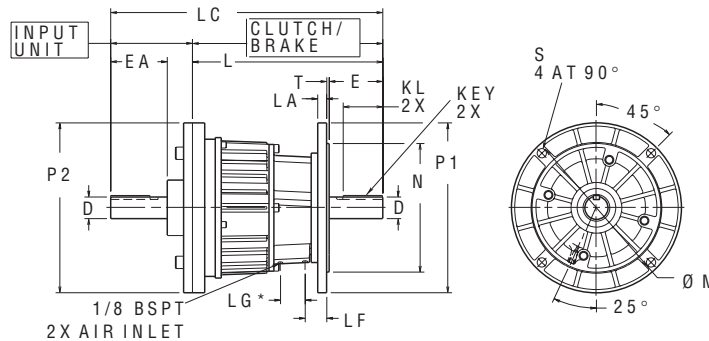
METRIC FMCBE MODEL CLUTCH-BRAKES - APPROXIMATE DIMENSIONS (MILLIMETERS)

▶ MODELS 7-28 & 7-38



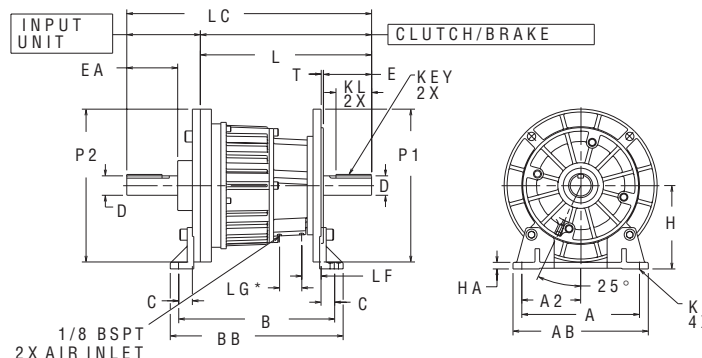
MODEL	FMCBE	FMCBE(NICKEL)	D1	D2	E	KEY	KL	L	LA1	LA2	LF	LG	M	N1 ¹⁶	N2 ⁶⁷	P1	P2	S1	S2	T1	T2
7-28	801666	801485	28 ⁱ⁶	28 ^{G7}	57	7X8	44	273	13	16	36	42	215	180	180	250	244	14,5	M12	4	6
7-38	801669	801495	38 ^{k6}	38 ^{F7}	77	8X10	51	300	14	21	36	42	265	230	230	300	300	14,5	M12	4	5

▶ MODELS 7-28 & 7-38 WITH INPUT



MODEL	FMCBE	FMCBE(NICKEL)	D1	E	EA	KEY	KL	L	LA	LC	LF	LG	M	N1 ¹⁶	P1	P2	S1	T
7-28	801666	801485	28 ⁱ⁶	57	60	7X8	44	273	13	375	36	42	215	180	200	198	12	4
7-38	801669	801495	38 ^{k6}	77	80	8X10	51	300	14	416	36	42	265	230	250	244	14,5	4

▶ MODELS 7-28 & 7-38 WITH INPUT & FOOT



MODEL	FMCBE	FMCBE(NICKEL)	INPUT(BLK)	INPUT(NICKEL)	FOOT(BLK)	FOOT(NICKEL)	A	AB	AZ	B	BB	C	D1 ¹⁶	E	EA	H
7-28	801666	801485	801627	801575	801632	801458	254	292	127	275	301	25	28	57	60	130
7-38	801669	801495	801628	801608	801633	801460	254	292	127	283	315	25	38	77	80	155

MODEL	HA	K	KEY	KL	L	LC	LF	LG	P1	P2	T
7-28	14	14	7X8	44	273	375	36	42	250	244	4
7-38	14	18	8X10	51	300	416	36	42	300	300	4

NOTE: Drawings are expressed in third angle projection.

CLUTCH-BRAKES

"Air Champ"

METRIC FMCBE CLUTCH-BRAKES – MODELS 8-38 & 8-42

FMCBE Flange Mounted Clutch-Brakes are designed for controlled starts and stops in hostile, dirty environments. Totally enclosed design prevents contaminants from interfering with operation of the units while keeping worn friction material from escaping into the environment. Choose from **2 Models**:

- **Bore sizes** range from 38 to 42 millimeters
- All units available in either electroless nickel plating or black oxide coating
- Electroless Nickel plating meets NEMA standard 1.26.5 for waterproof machines
- Static Torque up to 240 Nm (brake) and 220 Nm (clutch)
- Overhung Load Capacity up to 200 kilograms
- Design Speed up to 1500 rpm. Consult factory for higher speed
- Flange mounts directly to motors and reducers
- Compatible with IEC-B5 face motors up to 11 KW
- Optional Foot Mount is available for belt drive applications
- Optional Input Unit allows you to incorporate pulleys or coupling into your application

► METRIC FMCBE CLUTCH-BRAKES, TOTALLY ENCLOSED

Standard Clutch-Brake is Flange Mounted. Order Foot Mount separately for belt drive applications. Order Input Unit to incorporate pulleys into your application.

Model Number	Product Number	Shaft/Bore (mm)	Thermal Capacity Up To	OVERHUNG LOAD CAPACITY (kg)		Shipping Wt. (kg)
				1000 RPM	1500 RPM	
Black Coating:						
FMCBE-8-38	801672	38	328 W	195	130	70
FMCBE-8-42	801675	42	328 W	200	135	70
Nickel Plating:						
FMCBE-8-38	801496	38	328 W	195	130	70
FMCBE-8-42	801497	42	328 W	200	135	70

NOTE: Thermal Capacity and Overhung Load data is based upon 50% clutch and 50% brake usage.

Model Number	Product Number	Foot Mount Set (2 Mounts)	Shipping Wt. (kg)	Input Unit	Shipping Wt. (kg)
		Product Number		Product Number	
Black Coating:					
FMCBE-8-38	801672	801633	5	801629	5
FMCBE-8-42	801675	801634	5	801630	5
Nickel Plating:					
FMCBE-8-38	801496	801460	5	801601	5
FMCBE-8-42	801497	801463	5	801602	5

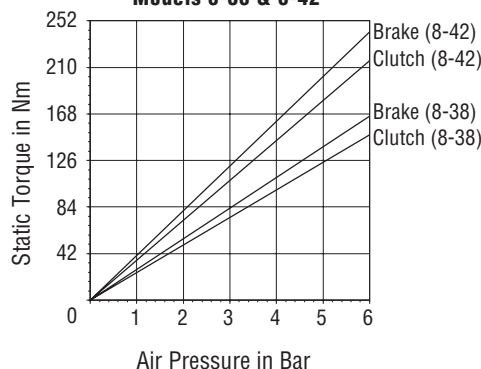
► IEC MOTOR/FRAME SELECTION CHART

Use this chart as specification and operational criteria for your application.

KW of Motor	RPM	Frame Number	Motor Shaft (mm)	Clutch-Brake Model Number
4,0	1000	132M	38	FMCBE-8-38
5,5	1000	132M	38	FMCBE-8-38
7,5	1000	160M	42	FMCBE-8-42
7,5	1500	132M	38	FMCBE-8-38
11	1500	160M	42	FMCBE-8-42

► TORQUE VS. AIR PRESSURE

Models 8-38 & 8-42

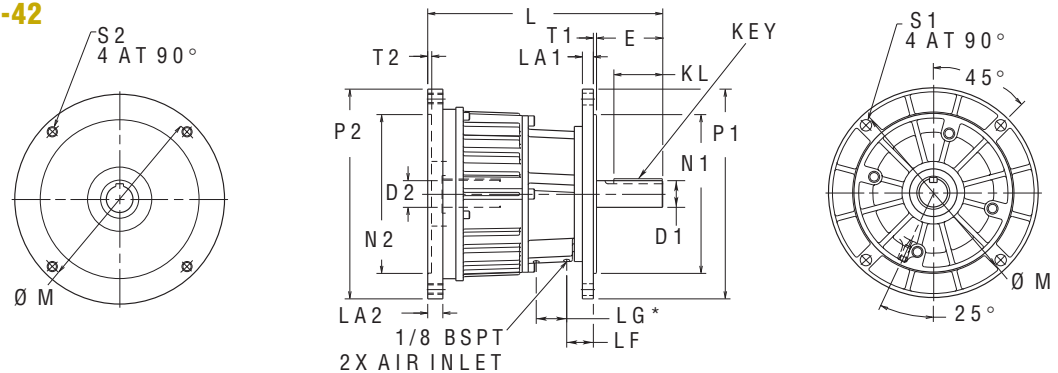


NOTE: Dynamic torque is approximately 85% of static torque.

Torque (In. Lbs.) = Nm x 8.849
PSI = Bar ÷ .0689

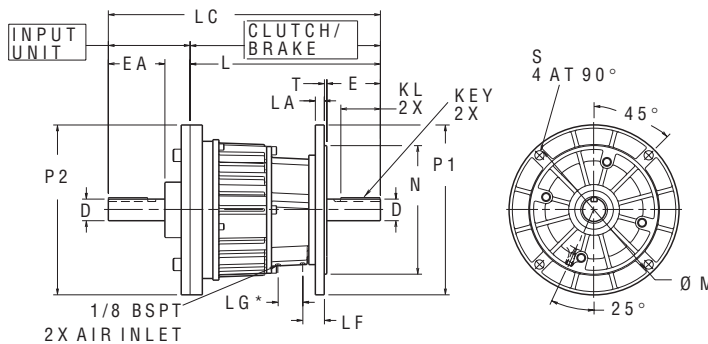
METRIC FMCBE MODEL CLUTCH-BRAKES - APPROXIMATE DIMENSIONS (MILLIMETERS)

▶ MODELS 8-38 & 8-42



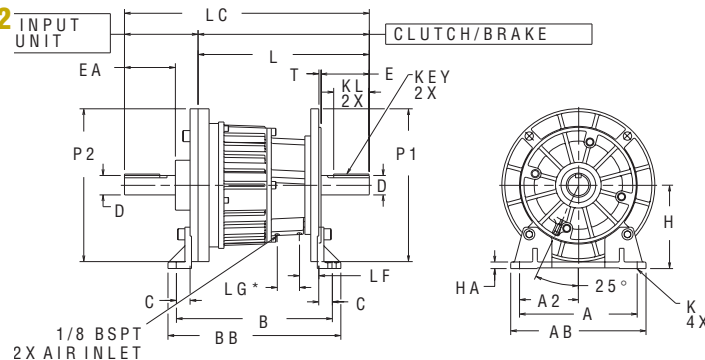
MODEL	FMCBE	FMCBE(NICKEL)	D1	D2	E	KEY	KL	L	LA1	LA2	LF	LG	M	N1 ¹⁶	N2 ⁶⁷	P1	P2	S1	S2	T1	T2
8-38	801672	801496	11 ^{k6}	38 ^{F7}	77	8X10	51	314	12	21	36	48	265	230	230	300	300	14,5	M12	4	5
8-42	801675	801497	42 ^{k6}	42 ^{F7}	105	8X12	76	375	17	28	42	48	300	250	250	330	330	18,5	M16	5	5

▶ MODELS 8-38 & 8-42 WITH INPUT



MODEL	FMCBE	FMCBE(NICKEL)	D1	E	EA	KEY	KL	L	LA	LC	LF	LG	M	N1 ¹⁶	P1	P2	S1	T
8-38	801672	801496	11 ^{k6}	77	80	8X10	51	314	12	444	36	48	265	230	300	300	14,5	4
8-42	801675	801497	42 ^{k6}	105	110	8X12	76	375	17	534	42	48	300	250	330	330	18,5	5

▶ MODELS 8-38 & 8-42 WITH INPUT & FOOT



MODEL	FMCBE	FMCBE(NICKEL)	INPUT(BLK)	INPUT(NICKEL)	FOOT(BLK)	FOOT(NICKEL)	A	AB	AZ	B	BB	C	D ¹⁶	E	EA	H
8-38	801672	801496	801629	801601	801633	801460	254	292	127	296	327	25	38	77	80	40
8-42	801675	801497	801630	801602	801634	801463	254	292	127	341	378	29	42	105	55	110

MODEL	HA	K	KEY	KL	L	LC	LF	LG	P1	P2	T
8-38	14	14	8X10	51	314	444	36	48	300	300	4
8-42	14	18	8X12	75	375	534	42	48	330	330	5

NOTE: Drawings are expressed in third angle projection.

CLUTCH-BRAKES

"Air Champ"

METRIC FMCBES CLUTCH-BRAKES – MODELS 110-14, 130-19 & 130-24

FMCBES Flange Mounted Clutch-Brakes come with a spring engaged brake and air engaged clutch, making overlap of functions impossible. For applications where safety is a concern, this unit will engage the brake in the event of air pressure loss. Choose from **3 Models:**

- **Bore sizes** range from 14 to 24 millimeters
- All units available in either electroless nickel plating or black oxide coating
- Electroless Nickel plating meets NEMA standard 1.26.5 for waterproof machines
- Static Torque up to 18 Nm (brake) and 27 Nm (clutch)
- Overhung Load Capacity up to 150 kilograms
- Design Speed up to 1500 rpm. Consult factory for higher speed
- Flange mounts directly to motors and reducers
- Compatible with IEC-B5 face motors up to 1,5 KW
- Optional Foot Mount is available for belt drive applications
- Optional Input Unit allows you to incorporate pulleys or coupling into your application

► METRIC FMCBES CLUTCH-BRAKES, ENCLOSED DESIGN - SPRING ENGAGED BRAKE

Standard Clutch-Brake is Flange Mounted. Order Foot Mount separately for belt drive applications. Order Input Unit to incorporate pulleys into your application.

Model Number	Product Number	Shaft/Bore (mm)	Thermal Capacity Up To	OVERHUNG LOAD CAPACITY (kg)		Shipping Wt. (kg)
				1000 RPM	1500 RPM	
Black Coating:						
FMCBES-110-14	801451	14	104 W	45	35	11
FMCBES-130-19	801466	19	134 W	150	100	18
FMCBES-130-24	801469	24	134 W	143	95	18
Nickel Plating:						
FMCBES-110-14	801452	14	134 W	45	35	12
FMCBES-130-19	801467	19	134 W	150	100	18
FMCBES-130-24	801470	24	134 W	143	95	18

NOTE: Thermal Capacity and Overhung Load data is based upon 50% clutch and 50% brake usage.

Model Number	Product Number	Foot Mount Set (2 Mounts) Product Number	Shipping Wt. (kg)	Input Unit Product Number	Shipping Wt. (kg)
Black Coating:					
FMCBES-110-14	801451	801435	2,2	801434	3
FMCBES-130-19	801466	801427	2,2	801424	3
FMCBES-130-24	801469	801427	2,2	801425	3
Nickel Plating:					
FMCBES-110-14	801452	801454	2,2	801445	3
FMCBES-130-19	801467	801455	2,2	801498	3
FMCBES-130-24	801470	801455	2,2	801499	3

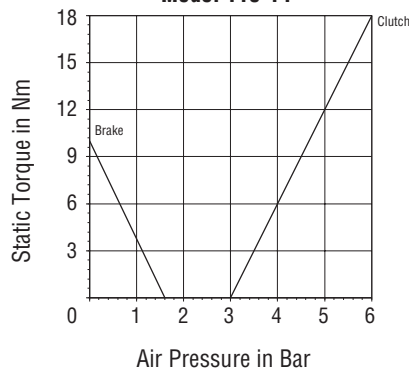
► IEC MOTOR/FRAME SELECTION CHART

Use this chart as specification and operational criteria for your application.

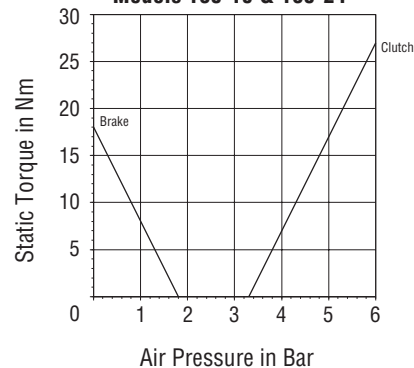
KW of Motor	RPM	Frame Number	Motor Shaft (mm)	Clutch-Brake Model Number
0,25	1500	71A	14	FMCBES-110-14
0,37	1000	80	19	FMCBES-130-19
0,37	1500	71B	14	FMCBES-110-14
0,55	1000	80	19	FMCBES-130-19
0,75	1000	90S	24	FMCBES-130-24
0,75	1500	80	19	FMCBES-130-19
1,1	1000	90L	24	FMCBES-130-24
1,1	1500	90S	24	FMCBES-130-24
1,5	1500	90L	24	FMCBES-130-24

► TORQUE VS. AIR PRESSURE

Model 110-14



Models 130-19 & 130-24



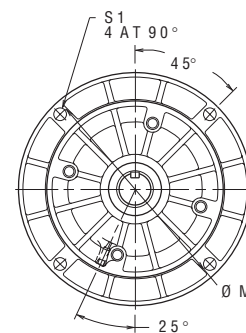
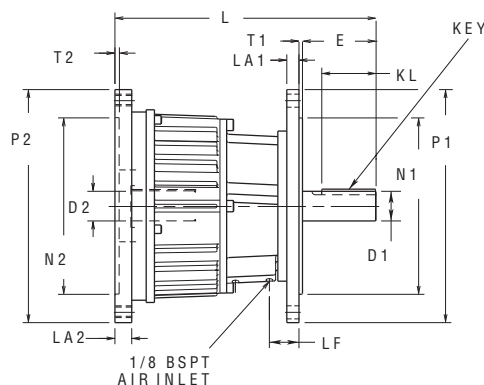
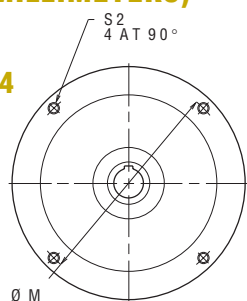
NOTE: Dynamic torque is approximately 85% of static torque.

Torque (In. Lbs.) = Nm x 8.849

PSI = Bar ÷ .0689

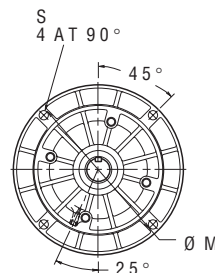
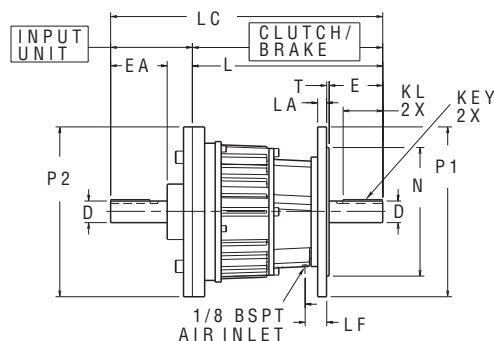
METRIC FMCBES MODEL CLUTCH-BRAKES/SPRING ENGAGED BRAKE - APPROXIMATE DIMENSIONS (MILLIMETERS)

▶ MODELS 110-14, 130-19 & 130-24



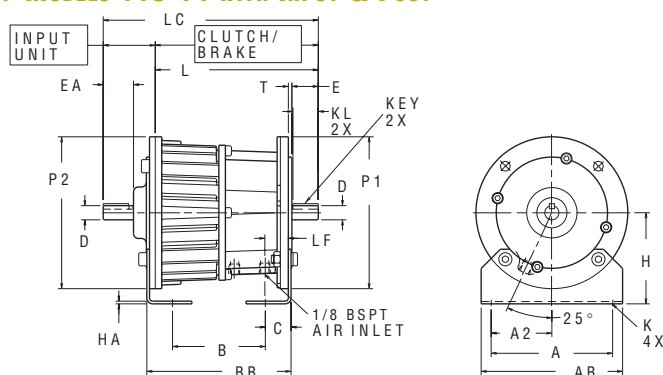
MODEL	FMCBES	FMCBES(NICKEL)	D1	D2	E	KEY	KL	L	LA1	LA2	LF	M	N1 ¹⁶	N2 ⁶⁷	P1	P2	S1	S2	T1	T2
110-14	801451	801452	14 ¹⁶	14 ⁶⁷	27	5sq	25	161,5	8	6	23	130	110	110	150	150	10	M8	3,5	4
130-19	801466	801467	19 ¹⁶	19 ⁶⁷	37	6sq	27	210,5	10	11	27	165	130	130	200	198	12	M10	3,5	5
130-24	801469	801470	24 ¹⁶	24 ⁶⁷	47	7x8	35	220,5	10	11	27	165	130	130	200	198	12	M10	3,5	5

▶ MODELS 110-14, 130-19 & 130-24 WITH INPUT

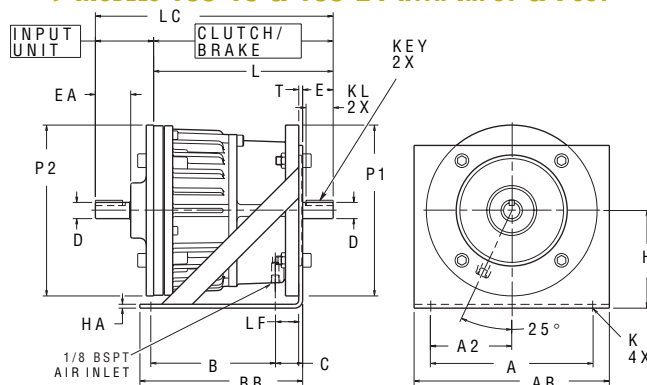


MODEL	FMCBES	FMCBES(NICKEL)	D1	E	EA	KEY	KL	L	LA	LC	LF	M	N1 ¹⁶	P1	P2	S1	T
110-14	801451	801452	14 ¹⁶	27	29	5sq	25	161,5	8	211,5	23	130	110	150	150	10	3,5
130-19	801466	801467	19 ¹⁶	37	43	6sq	27	210,5	10	280,5	27	165	130	200	198	12	3,5
130-24	801469	801470	24 ¹⁶	47	55	7x8	35	220,5	10	302,5	27	165	130	200	198	12	3,5

▶ MODELS 110-14 WITH INPUT & FOOT



▶ MODELS 130-19 & 130-24 WITH INPUT & FOOT



MODEL	FMCBES	FMCBES(NICKEL)	INPUT(BLK)	INPUT(NICKEL)	FOOT(BLK)	FOOT(NICKEL)	A	AB	AZ	B	BB	C	D ¹⁶	E	EA	H
110-14	801451	801452	801434	801445	801435	801454	120	140	60	92	142	25	14	27	29	90
130-19	801466	801467	801424	801498	801427	801455	191	229	95	146	191	32	19	37	43	114
130-24	801469	801470	801425	801499	801427	801455	191	229	95	146	191	32	24	47	55	114

MODEL	HA	K	KEY	KL	L	LC	LF	P1	P2	T
110-14	3	9X19	5sq	25	161,5	221,5	23	150	150	3,5
130-19	5	11	6sq	27	210,5	280,5	27	200	198	3,5
130-24	5	11	7x8	35	220,5	302,5	27	200	198	3,5

NOTE: Drawings are expressed in third angle projection.

CLUTCH-BRAKES

"Air Champ"

METRIC FMCBES CLUTCH-BRAKES – MODELS 7-28 & 7-38

FMCBE Flange Mounted Clutch-Brakes are designed for controlled starts and stops in hostile, dirty environments. Totally enclosed design prevents contaminants from interfering with operation of the units while keeping worn friction material from escaping into the environment. Choose from **2 Models**:

- **Bore sizes** range from 28 to 38 millimeters
- All units available in either electroless nickel plating or black oxide coating
- Electroless Nickel plating meets NEMA standard 1.26.5 for waterproof machines
- Static Torque up to 46 Nm (brake) and 64 Nm (clutch)
- Overhung Load Capacity up to 180 kilograms
- Design Speed up to 1500 rpm. Consult factory for higher speed
- Flange mounts directly to motors and reducers
- Compatible with IEC-B5 face motors up to 5,5 KW
- Optional Foot Mount is available for belt drive applications
- Optional Input Unit allows you to incorporate pulleys or coupling into your application

► METRIC FMCBES CLUTCH-BRAKES, ENCLOSED DESIGN - SPRING ENGAGED BRAKE

Standard Clutch-Brake is Flange Mounted. Order Foot Mount separately for belt drive applications. Order Input Unit to incorporate pulleys into your application.

Model Number	Product Number	Shaft/Bore (mm)	Thermal Capacity Up To	OVERHUNG LOAD CAPACITY (kg)		Shipping Wt. (kg)
				1000 RPM	1500 RPM	
Black Coating:						
FMCBES-7-28	801472	28	246 W	143	95	28
FMCBES-7-38	801475	38	246 W	180	120	28
Nickel Plating:						
FMCBES-7-28	801473	28	246 W	143	95	28
FMCBES-7-38	801476	38	246 W	180	120	28

NOTE: Thermal Capacity and Overhung Load data is based upon 50% clutch and 50% brake usage.

Model Number	Product Number	Foot Mount Set	Shipping Wt.	Input Unit	Shipping Wt.
		(2 Mounts) Product Number			
Black Coating:					
FMCBES-7-28	801472	801432	1,5	801627	5
FMCBES-7-38	801475	801433	1,5	801628	5
Nickel Plating:					
FMCBES-7-28	801473	801458	1,5	801575	5
FMCBES-7-38	801476	801460	1.5	801608	5

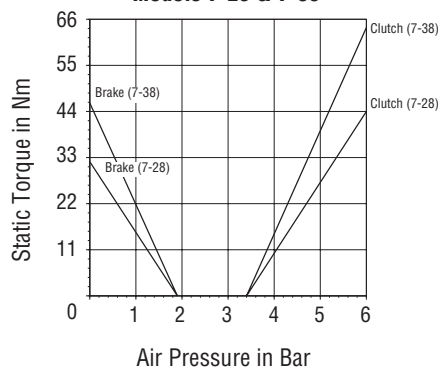
► IEC MOTOR/FRAME SELECTION CHART

Use this chart as specification and operational criteria for your application.

KW of Motor	RPM	Frame Number	Motor Shaft (mm)	Clutch-Brake Model Number
1,5	1000	100L	28	FMCBES-7-28
2,2	1000	112M	28	FMCBES-7-28
2,2	1500	100L	28	FMCBES-7-28
3,0	1000	132S	38	FMCBES-7-38
3,0	1500	100L	28	FMCBES-7-28
4,0	1500	112M	28	FMCBES-7-28
5,5	1500	132S	38	FMCBES-7-38

► TORQUE VS. AIR PRESSURE

Models 7-28 & 7-38

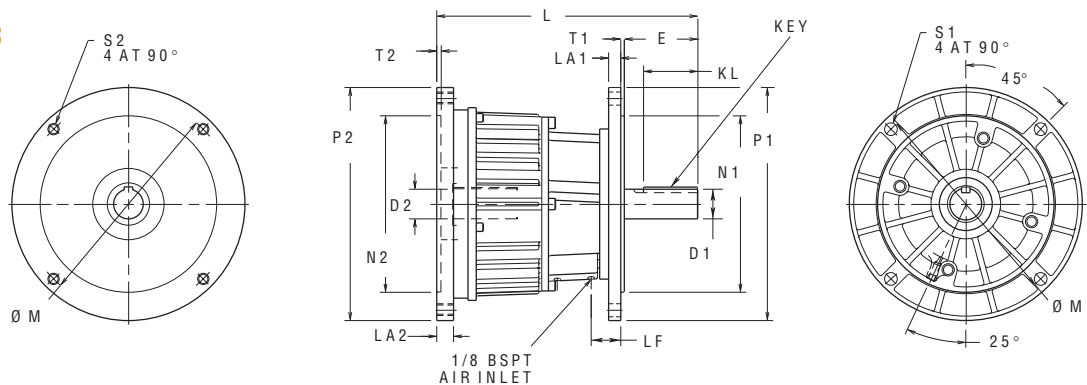


NOTE: Dynamic torque is approximately 85% of static torque.

Torque (In. Lbs.) = Nm x 8.849
PSI = Bar ÷ .0689

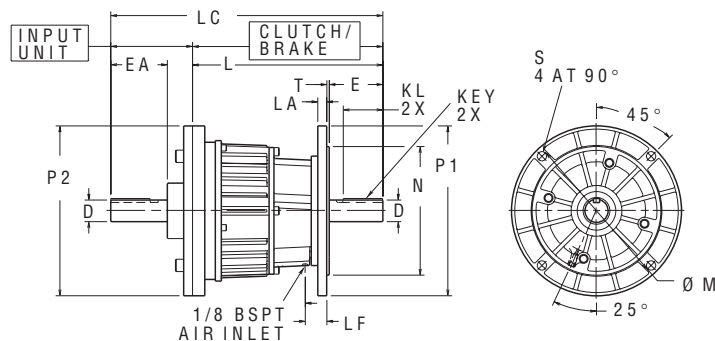
METRIC FMCBES MODEL CLUTCH-BRAKES/SPRING ENGAGED BRAKE - APPROXIMATE DIMENSIONS (MILLIMETERS)

▶ MODELS 7-28 & 7-38



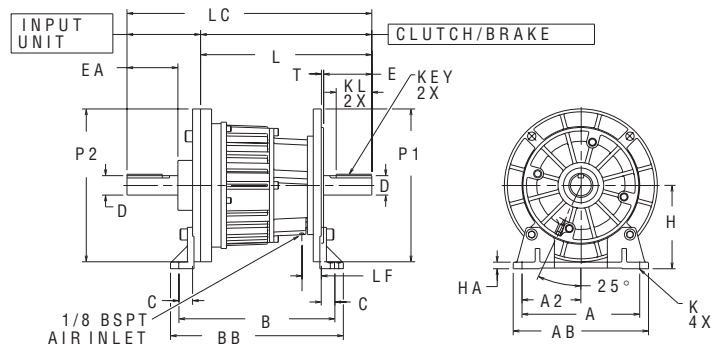
MODEL	FMCBES	FMCBES(NICKEL)	D1	D2	E	KEY	KL	L	LA1	LA2	LF	M	N1 ^{j6}	N2 ^{G7}	P1	P2	S1	S2	T1	T2
7-28	801472	801473	28 ^{j6}	28 ^{G7}	57	7X8	44	273	13	16	36	215	180	180	250	244	14,5	M12	4	6
7-38	801475	801476	38 ^{k6}	38 ^{F7}	77	8X10	51	300	14	21	36	265	230	230	300	300	14,5	M12	4	5

▶ MODELS 7-28 & 7-38 WITH INPUT



MODEL	FMCBES	FMCBES(NICKEL)	D1	E	EA	KEY	KL	L	LA	LC	LF	M	N1 ^{j6}	P1	P2	S1	T
7-28	801472	801473	28 ^{j6}	57	60	7X8	44	273	13	375	36	215	180	200	244	14,5	4
7-38	801475	801476	38 ^{k6}	77	80	8X10	51	300	14	416	36	265	230	250	300	14,5	4

▶ MODELS 7-28 & 7-38 WITH INPUT & FOOT



MODEL	FMCBES	FMCBES(NICKEL)	INPUT(BLK)	INPUT(NICKEL)	FOOT(BLK)	FOOT(NICKEL)	A	AB	AZ	B	BB	C	D1 ^{j6}	E	EA	H
7-28	801472	801473	801627	801575	801632	801458	254	292	127	275	301	25	28	57	60	130
7-38	801475	801476	801628	801608	801633	801460	254	292	127	283	315	25	38	77	80	155

MODEL	HA	K	KEY	KL	L	LC	LF	P1	P2	T
7-28	14	14	7X8	44	273	375	36	250	244	4
7-38	14	18	8X10	51	300	416	36	300	300	4

NOTE: Drawings are expressed in third angle projection.

CLUTCH-BRAKES

METRIC FMCBES CLUTCH-BRAKES – MODELS 8-38 & 8-42

FMCBE Flange Mounted Clutch-Brakes are designed for controlled starts and stops in hostile, dirty environments. Totally enclosed design prevents contaminants from interfering with operation of the units while keeping worn friction material from escaping into the environment. Choose from **2 Models**:

- **Bore sizes** range from 38 to 42 millimeters
- All units available in either electroless nickel plating or black oxide coating
- Electroless Nickel plating meets NEMA standard 1.26.5 for waterproof machines
- Static Torque up to 103 Nm (brake) and 104 Nm (clutch)
- Overhung Load Capacity up to 200 kilograms
- Design Speed up to 1500 rpm. Consult factory for higher speed
- Flange mounts directly to motors and reducers
- Compatible with IEC-B5 face motors up to 11 KW
- Optional Foot Mount is available for belt drive applications
- Optional Input Unit allows you to incorporate pulleys or coupling into your application

► METRIC FMCBES CLUTCH-BRAKES, ENCLOSED DESIGN - SPRING ENGAGED BRAKE

Standard Clutch-Brake is Flange Mounted. Order Foot Mount separately for belt drive applications. Order Input Unit to incorporate pulleys into your application.

Model Number	Product Number	Shaft/Bore (mm)	Thermal Capacity Up To	OVERHUNG LOAD CAPACITY (kg)		Shipping Wt. (kg)
				1000 RPM	1500 RPM	
Black Coating:						
FMCBES-8-38	801478	38	328 W	195	130	70
FMCBES-8-42	801481	42	328 W	200	135	70
Nickel Plating:						
FMCBES-8-38	801479	38	328 W	195	130	70
FMCBES-8-42	801482	42	328 W	200	135	70

NOTE: Thermal Capacity and Overhung Load data is based upon 50% clutch and 50% brake usage.

Model Number	Product Number	Foot Mount Set (2 Mounts)	Shipping Wt. (kg)	Input Unit	Shipping Wt. (kg)
		Product Number		Product Number	
Black Coating:					
FMCBES-8-38	801478	801633	5	801629	6
FMCBES-8-42	801481	801634	5	801630	6
Nickel Plating:					
FMCBES-8-38	801479	801460	5	801601	6
FMCBES-8-42	801482	801463	5	801602	6

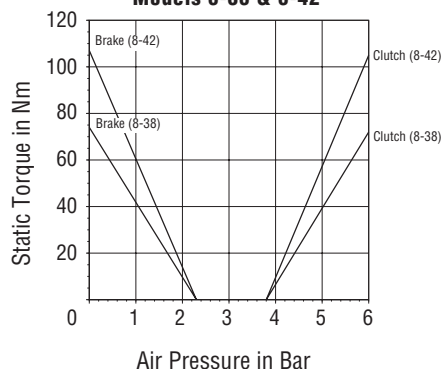
► IEC MOTOR/FRAME SELECTION CHART

Use this chart as specification and operational criteria for your application.

KW of Motor	RPM	Frame Number	Motor Shaft (mm)	Clutch-Brake Model Number
4,0	1000	132M	38	FMCBES-8-38
5,5	1000	132M	38	FMCBES-8-38
7,5	1000	160M	42	FMCBES-8-42
7,5	1500	132M	38	FMCBES-8-38
11	1500	160M	42	FMCBES-8-42

► TORQUE VS. AIR PRESSURE

Models 8-38 & 8-42

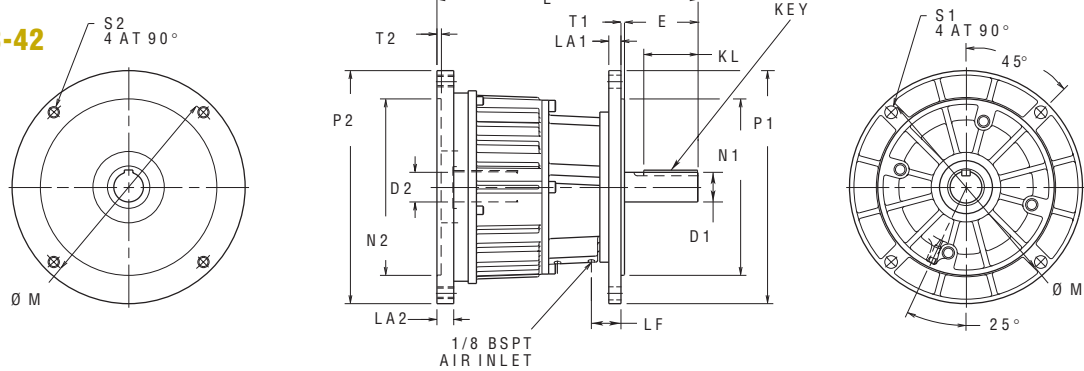


NOTE: Dynamic torque is approximately 85% of static torque.

Torque (In. Lbs.) = Nm x 8.849
PSI = Bar ÷ .0689

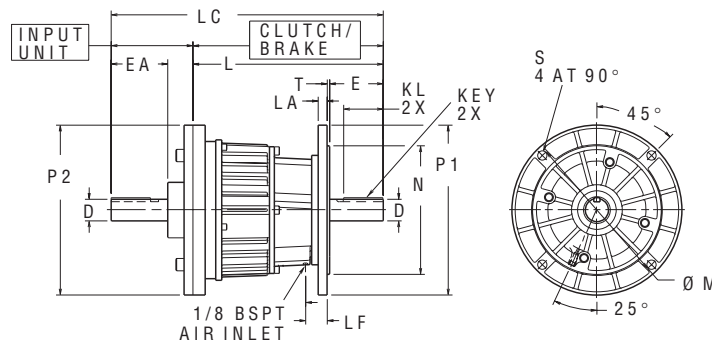
METRIC FMCBES MODEL CLUTCH-BRAKES/SPRING ENGAGED BRAKE - APPROXIMATE DIMENSIONS (MILLIMETERS)

▶ MODELS 8-38 & 8-42



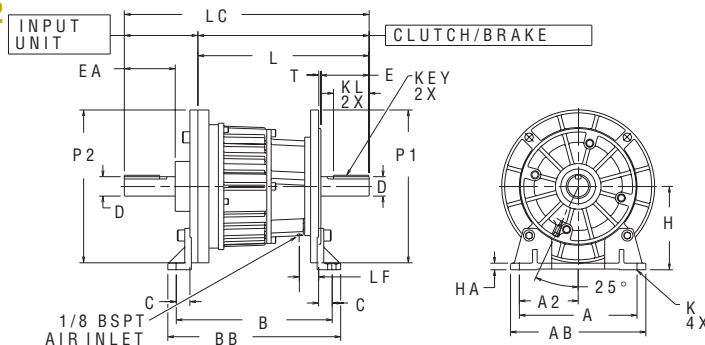
MODEL	FMCBES	FMCBES(NICKEL)	D1	D2	E	KEY	KL	L	LA1	LA2	LF	M	N1 ^{1/6}	N2 ^{6/7}	P1	P2	S1	S2	T1	T2
8-38	801478	801479	38 ^{k6}	38 ^{F7}	77	8X10	51	314	12	21	36	265	230	230	300	300	14,5	M12	4	5
8-42	801481	801482	42 ^{k6}	42 ^{F7}	105	8X12	76	375	17	28	42	300	250	250	330	330	18,5	M16	5	5

▶ MODELS 8-38 & 8-42 WITH INPUT



MODEL	FMCBES	FMCBES(NICKEL)	D1	E	EA	KEY	KL	L	LA	LC	LF	M	N1 ^{1/6}	P1	P2	S1	T
8-38	801478	801479	11 ^{k6}	77	80	8X10	51	314	12	444	36	265	230	300	300	14,5	4
8-42	801481	801482	42 ^{k6}	105	110	8X12	76	375	17	534	42	300	250	330	330	18,5	5

▶ MODELS 8-38 & 8-42 WITH INPUT & FOOT



MODEL	FMCBES	FMCBES(NICKEL)	INPUT(BLK)	INPUT(NICKEL)	FOOT(BLK)	FOOT(NICKEL)	A	AB	AZ	B	BB	C	D ^{1/6}	E	EA	H
8-38	801478	801479	801629	801601	801633	801460	254	292	127	296	327	25	38	77	80	40
8-42	801481	801482	801630	801602	801634	801463	254	292	127	341	378	29	42	105	55	110

MODEL	HA	K	KEY	KL	L	LC	LF	P1	P2	T
8-38	14	14	8X10	51	314	444	36	300	300	4
8-42	14	18	8X12	75	375	534	42	330	330	5

NOTE: Drawings are expressed in third angle projection.

CLUTCH-BRAKES

METRIC FLANGE MOUNTED CLUTCH-BRAKES

Choose from **3 design options**:

FMCB basic open clutch-brake:

- ▶ Available in black oxide coating
- ▶ **Bore/Shaft** sizes from 19 to 42 millimeters
- ▶ Flange or Foot mount capability
- ▶ Optional Input Unit for use with pulleys and couplings

FMCBE basic enclosed clutch-brake:

- ▶ Available in either electroless nickel plating or black oxide coating
- ▶ **Bore/Shaft** sizes from 14 to 42 millimeters
- ▶ Flange or Foot mount capability
- ▶ Optional Input Unit for use with pulleys or couplings

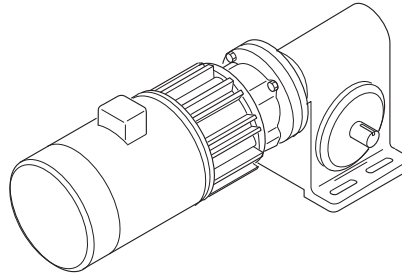
FMCES enclosed, spring engaged clutch-brake:

- ▶ Spring engaged brake combined with air engaged clutch
- ▶ Double acting piston design prevents overlap of clutch and brake functions
- ▶ Available in either electroless nickel plating or black oxide coating
- ▶ **Bore/shaft sizes** from 14 to 42 millimeters
- ▶ Flange or Foot mount capability
- ▶ Optional Input Unit for use with pulleys or couplings

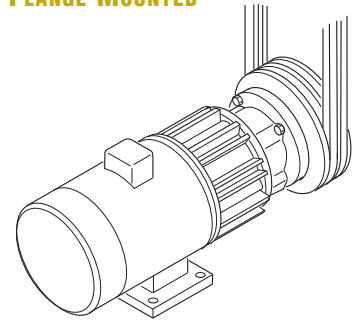
▶ TYPICAL APPLICATIONS

Shown below are four typical mounting applications for these Clutch-Brakes. Any of the three design options (FMCBE, FMCBES or FMCB) can be mounted in any one of these configurations. You will find the specific product requirements listed on the catalog page for each design style.

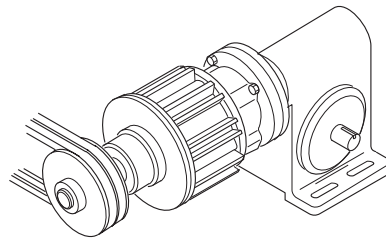
▶ FLANGE MOUNTED



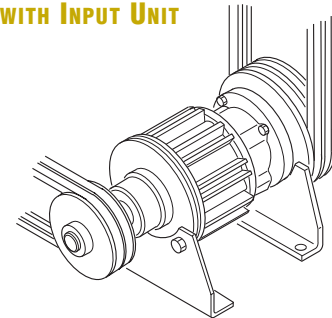
▶ FLANGE MOUNTED

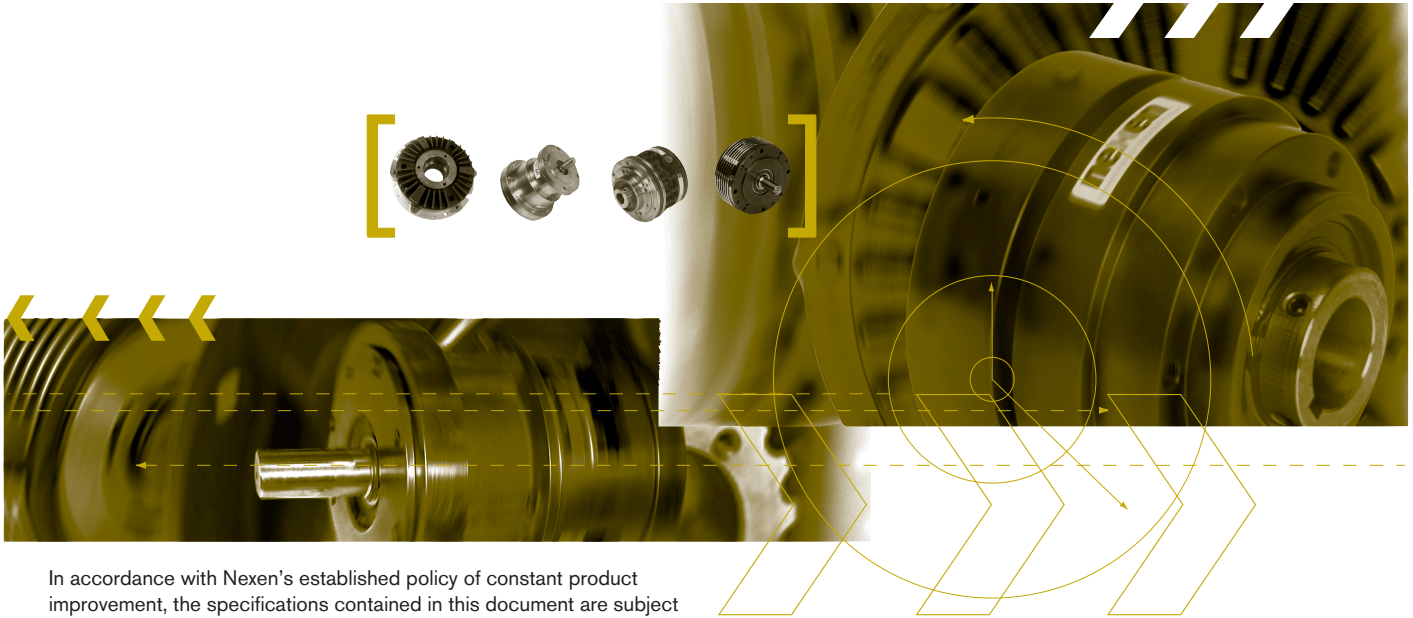


▶ FLANGE MOUNTED WITH INPUT UNIT



▶ FOOT MOUNTED WITH INPUT UNIT





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

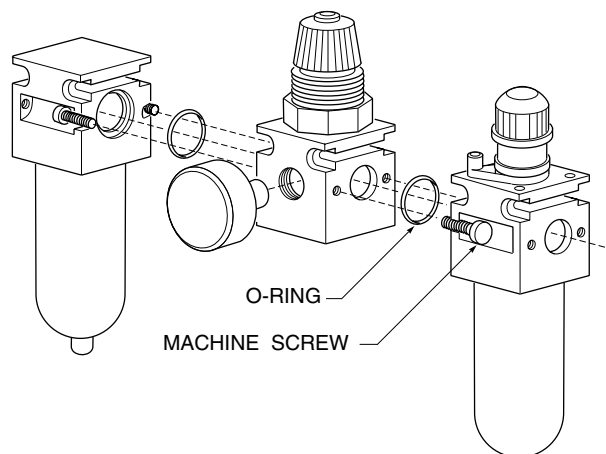
CONTROLS

This Section Contains:	Page
Overview	238
Filter, Regulator, Lubricator.....	238-239
3-Way Clutch or Brake Controls.....	240
Clutch or Brake Control Panel	240
Spool Controls	241
Clutch or Brake Flow Controls.....	242
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3-Way Manual Control	243
Quick Exhaust/Shuttle Valve	243
Combination Overlap Eliminator	243
Typical Circuit Diagrams.....	244-247

CONTROLS

THE NEXEN FRL SYSTEM

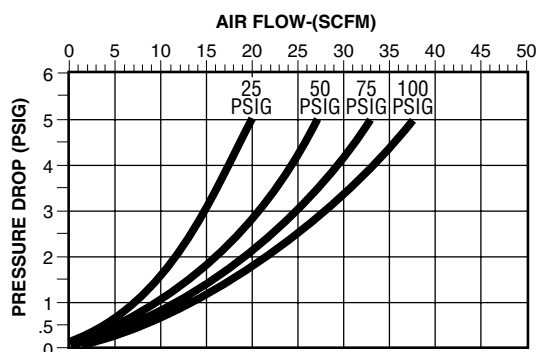
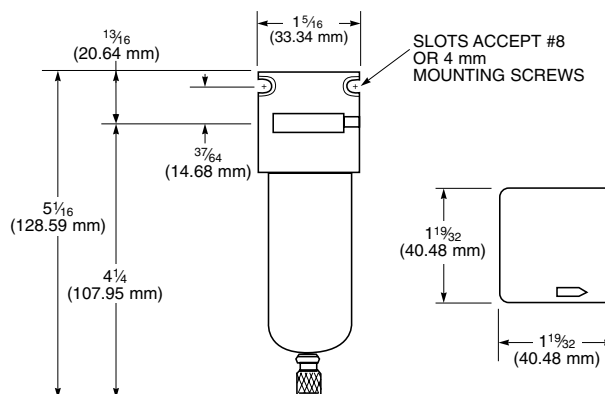
- ▶ Modular.
- ▶ Simple, compact design.
- ▶ Easily serviced — no special tools required.
- ▶ Body shape allows regular mounting in any of four positions, at the 90° increments, relative to the filter and lubricator.
- ▶ Solid porting, .250" sizes.
- ▶ Threaded bowl attachment.
- ▶ Simple joining method uses standard machine screws.
- ▶ Designed to meet or exceed NFPA standards, and other international specifications.
- ▶ Regulator features non-rising, tamper-resistant adjusting knob.
- ▶ Metal bowls — standard.



FILTER

Self-sealing, plastic deflector — no gasket. One-piece molded element-retainer and baffle.

- ▶ Flow: 39.5 SCFM
- ▶ Port Size: .25" NPTF
- ▶ Temperature Range: 40°-180° F (4.4°-82.2°C)
- ▶ Pressure Range: 300 Psig Max. (20.4 Bars)
- ▶ Bowl Capacity: 1.5 oz. Std.
- ▶ Body: Zinc
- ▶ Bowl: Metal
- ▶ Drain: Manual Drain
- ▶ Filter Rating: 5 Micron
- ▶ Weight. per Unit: .91 lbs.



Product No. 939101

NOTE — All flows taken at 100 Psig inlet pressure, and 5 Psig pressure drop.

REGULATOR

Features non-rising adjustment knob. Aspirator for performance. Dual in-line gauge ports. Alignment system allows four different orientations. at 90° increments, relative to the filter and lubricator.

- Flow: 39.4 SCFM
- Port Size: .25" NPTF
- Supply Pressure: 300 Psig Max. (20.4 Bars)
- Pressure Range: 0-125 Psig (0-8.5 Bars) std.
- Temperature Range: 40°-120° F (4.4°-48.9°C)
- Piston Operated
- Relieving
- Body: Zinc
- Spring Cage: Celcon
- Bottom Plug: Celcon
- Adjustment Mech.: Locking Knob
- Weight per Unit: .824 lbs.

Product No. 940001

NOTE: Flows taken at 100 Psig inlet pressure, and 25, 50 and 75 Psig reduced pressures.

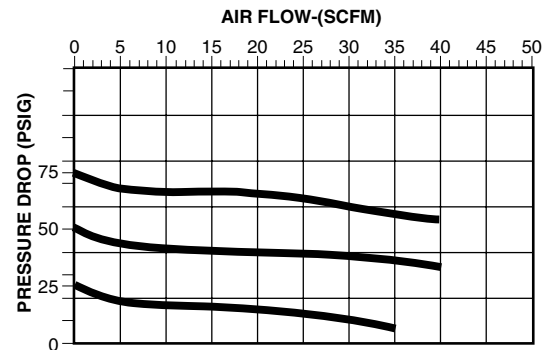
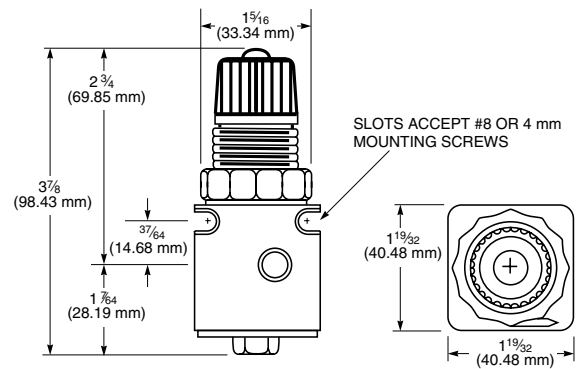
LUBRICATOR

Proven fog-type design. Has anti-vibration, tamper-proof adjustment.

- Flow: 53.4 SCFM
- Port Size: .25" NPTF
- Temperature Range: 40°-180° F (4.4°-82.2°C)
- Pressure Range: 300 Psig Max. (20.4 Bars)
- Bowl Capacity: 1.5 oz. Std.
- Body: Zinc
- Bowl: Metal
- Weight. per Unit: .94 lbs.

Product No. 939201

NOTE — All flows taken at 100 Psig inlet pressure, and 5 Psig pressure drop.



LUBRICATOR DRIP RATE SETTING

A. Determine the average internal air volume of the clutch or brake. See clutch and brake air volume/rate data pages 263 and 264.

Example: Nexen Brake Model T-1000
Average Volume = $V_n + V_o/2 = 1.739 + 8.656/2 = 6.067$ cubic inches.

B. Multiply the result in step A by the maximum cycle rate per minute.
Example: At 20 cycles per minute;
Cubic Inches per Minute = $20 \times 6.067 = 121.34$

C. Determine the CF factor for the air pressure setting from the graph on page 264.
Example: The CF factor for 80 psi = 6.5

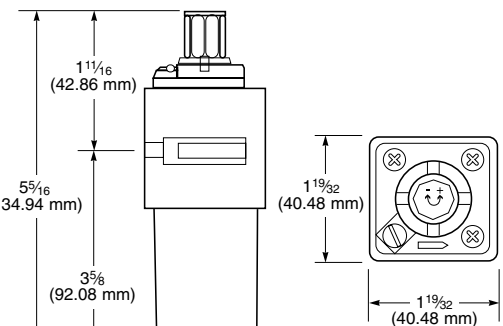
D. Multiply the result in Step B by the CF factor to determine the cubic inches of free air;
Example: $6.5 \times 121.34 = 788.7$ cubic inches per minute of free air.

E. Divide the result in step D by 1728 to convert to cubic feet per minute.
Example: $788.7/1728 = 788.7/1728 = .456$ cubic feet per minute.

NOTE: Nexen recommends one drop of oil for every 20 cubic feet of air.

F. To determine the amount of time between drops, divide 20 by the flow rate.

Example: Divide 20 by the result of step E; $20/.456 = 44$ minutes between drops of oil.



WARNING

The polycarbonate plastic material used to manufacture the sight dome may be attacked by certain chemicals. Do not use this lubricator on systems with air supplied by a compressor lubricated with synthetic oils or oils containing phosphate esters or chlorinated hydrocarbons. These oils can carry over into the air lines and chemically attack and possibly rupture the sight dome. Also, do not expose the sight dome to materials such as carbon tetrachloride, trichlorethylene, acetone, paint thinner, cleaning fluids, or other harmful materials, for they too will cause the plastic to craze and/or rupture. For use in environments where these, or any, chemicals may be present, consult the factory for approval.

CONTROLS

"Air Champ"

3-WAY CLUTCH OR BRAKE CONTROLS

.125" or .250" NPT, 3-Way Controls feature 6 watt coils. Available in three mounting configurations, normally open and normally closed. For explosion proof or encapsulated coils, consult factory. 0-150 psi operating range standard.

3-Way Controls, In-Line Mount

Valve	Operating Range (PSI)	Effective Orifice	Port Size ^①	Volts ^②	Power Consumption	Product Number
Normally Open	0 - 125	.0469	.125 NPT	120 AC	6 Watts	948801
Normally Open	0 - 125	.0469	.25 NPT	120 AC	6 Watts	949001
Normally Closed	0 - 150	.0469	.125 NPT	120 AC	6 Watts	948802
Normally Closed	0 - 150	.0469	.25 NPT	120 AC	6 Watts	949002

3-Way Controls, Air Inlet Mount

Valve	Operating Range (PSI)	Effective Orifice	Port Size ^①	Volts ^②	Power Consumption	Product Number
Normally Open	0 - 125	.0469	.125 NPT	120 AC	6 Watts	948803
Normally Open	0 - 125	.0469	.25 NPT	120 AC	6 Watts	949003
Normally Closed	0 - 150	.0469	.125 NPT	120 AC	6 Watts	948804
Normally Closed	0 - 150	.0469	.25 NPT	120 AC	6 Watts	949004

① Top port, .125 NPT, Normally Open; 10-32, Normally Closed.
See air flow rate, page 264

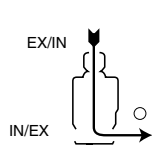
② See page 122 for 24 VDC, 90 VDC and 240 VAC
3-way Controls

Optional Coils

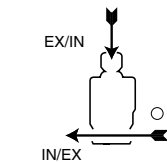
Style of Coil	Product Number	Voltage	Power Consumption
Standard	1876	12 VDC	7 Watts
Standard	1877	24 VDC	7 Watts
Standard	1878	90 VDC	7 Watts
Standard	1879	120 VAC	6 Watts
Standard	1880	240 VAC	6 Watts
Standard	1881	480 VAC	6 Watts
Explosion Proof	1882	6 VDC	7 Watts
Explosion Proof	1883	12 VAC	7 Watts
Explosion Proof	1885	24 VDC	7 Watts
Explosion Proof	1887	240 VAC	6 Watts

NORMALLY OPEN (N.O.)

DE-ENERGIZED
Allows air supply to flow to a clutch or brake.

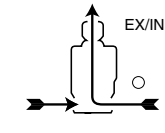


ENERGIZED
Blocks the air supply and allows the air in the clutch or brake to exhaust.

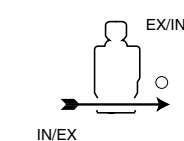


NORMALLY CLOSED (N.C.)

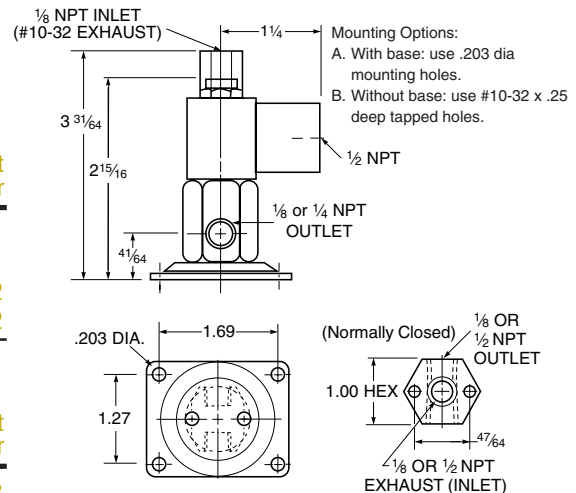
DE-ENERGIZED
Blocks the air supply to a clutch or brake.



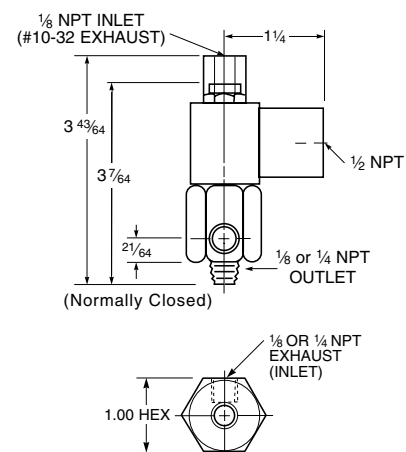
ENERGIZED
Allows air supply to flow to a clutch or brake.



APPROXIMATE DIMENSIONS



APPROXIMATE DIMENSIONS



CLUTCH OR BRAKE CONTROL PANEL

Compact Regulator, 3-way toggle switch and gauge fitted into attractive contoured case. Ideal for wall mounting. Simply connect inlet and outlet. Regulator hand wheel lock discourages unwanted adjustment.

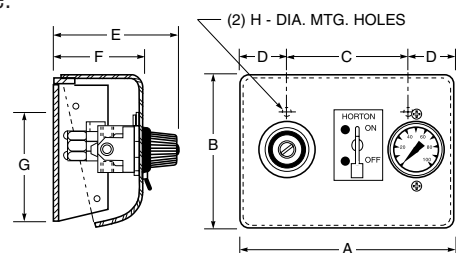
- 5-125 psi range
- .09375" internal flow passages, Flow rate: 150 SCFM at 100 psi.
- 300 psi max. inlet pressure.
- 180° F max. operating temp.
- .125" NPT Air line connections

Product No. 854000

Control Panel

Dim	A	B	C	D	E	F	G	H
Inches	6.125	4.875	3.875	1.125	4.5	2.875	3.5	.25

APPROXIMATE DIMENSIONS



▯ SPOOL CONTROLS - 4 AND 5 WAY CLUTCH-BRAKE CONTROLS

A 4 way control directs a common air supply to the clutch or brake providing the same outlet pressure to each cylinder.

A 5 way control directs a separate pressure air supply to the clutch and brake providing different pressures to each cylinder. Each cylinder exhausts through the port marked “IN”.

SPOOL CONTROLS

▯ Single Solenoid Models

Style	Product Number	Operating Range(PSI)
-------	----------------	----------------------

4-Way, Internally Piloted	170012	20 - 150
4/5-Way, Externally piloted	170013	0 - 150

Product Number	Effective Orifice	Port Size	Voltage	Power Consumption
170012	.188 in	.25 NPT	120 AC	6.3 VA
170013	.188 in	.25 NPT	120 AC	6.3 VA

Single Solenoid Models are not suitable for non-lubricated air applications

▯ Double Solenoid Models

Style	Product Number	Operating Range(PSI)
-------	----------------	----------------------

4-Way, Internally Piloted	170014	20 - 150
4/5-Way, Externally piloted	170017	0 - 150

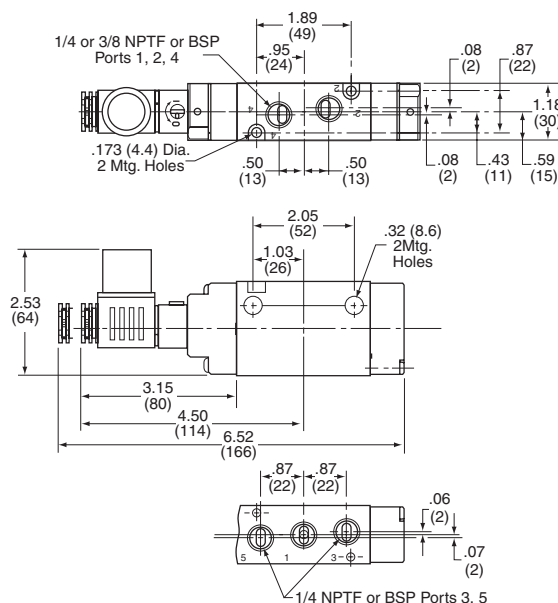
Product Number	Effective Orifice	Port Size	Voltage	Power Consumption
170014	.188 in	.25 NPT	120 AC	6.3 VA
170017	.188 in	.25 NPT	120 AC	6.3 VA

▯ Optional Coils

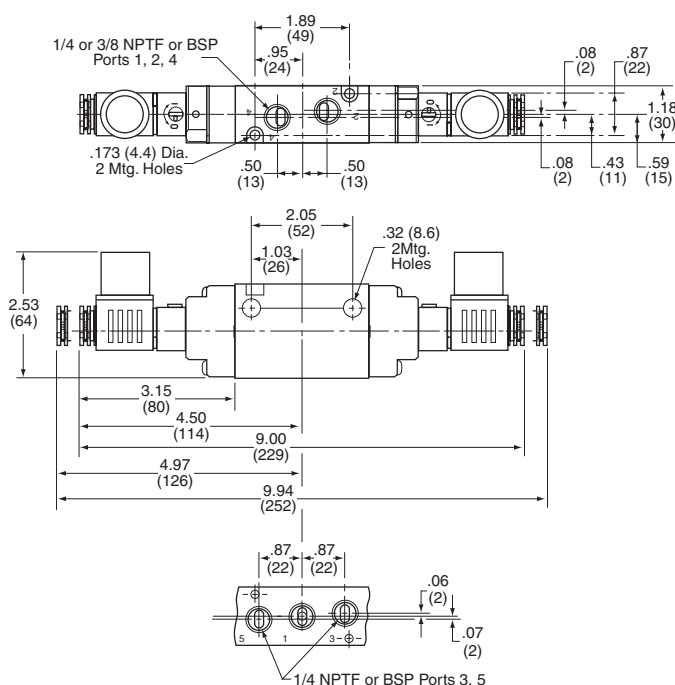
Style of Coil	Product Number	Voltage	Power Consumption
Standard	170020	12 VDC	4.6 Watts
Standard	170021	24 VDC	4.8 Watts
Standard	170023	120 VAC	6.3 VA
Standard	170024	240 VAC	6.4VA



APPROXIMATE DIMENSIONS - SINGLE SOLENOID MODELS



APPROXIMATE DIMENSIONS - DOUBLE SOLENOID MODELS



CONTROLS

"Air Champ"



ADJUSTABLE PRESSURE CLUTCH OR BRAKE FLOW CONTROL

A spring biased ball or optional poppet check provides full flow in one direction. A stainless steel, tapered needle provides a wide range of adjustment of flow in the controlled direction. A locknut prevents unwanted changes in adjustment.

This control allows higher air pressure for maximum torque capacity while achieving a "soft" start or stop through a gradual pressure build-up in the clutch or brake air chamber.

Controlled acceleration or deceleration ("soft" start or stop) can also be incorporated into a clutch/brake circuit similar to the 3 way circuit diagram shown on page 247, by adding a flow control, quick exhaust valve and accumulator between the control valve and the clutch/brake unit.

Pipe Size	C_v Maximum open Needle	C_v Flow Check	Product Number
.125 NPT	.20	.23	940412
.250 NPT	.43	.54	940425

SPECIFICATIONS

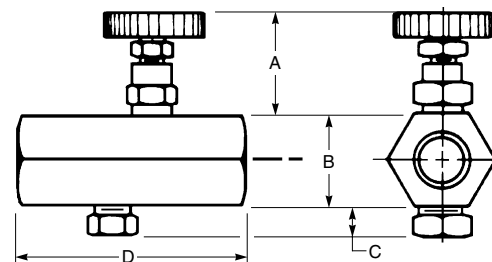
scfm = 22.67 (C_v)

Where: P1- P2 = Pressure Drop Across Flow Control

G = Specific Gravity of the Liquid at
Flowing Temperature (G = 1 for air)

Operating Temperature Range = -40°F to +212°F

APPROXIMATE DIMENSIONS



Flow Control

Pipe Size	Dim.	A OPEN	B HEX	C	D
.125 NPT	Inches	.875	.688	.203	1.75
.250 NPT	Inches	1	.875	.359	2.375

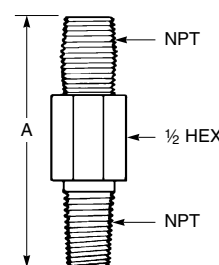
RESTRICTOR-FIXED PRESSURE CLUTCH OR BRAKE FLOW CONTROL

Fixed orifice restrictor slows down flow rate in one direction, yet allows free flow the other way. Used to retard clutch or brake engagement until another function is complete. Ideal when alternately pressurizing two systems with one control switch. Standard pipe threads allow in-line plumbing.

.125 NPT Product No. 932800

.250 NPT Product No. 933800

APPROXIMATE DIMENSIONS



Restrictor Dim	NPT	A	NPT	A
Inches	.125	1.75	.25	1.75

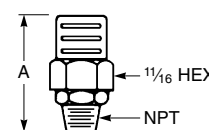
EXHAUST MUFFLER

Mufflers truly silence noisy air exhaust. Extremely low air resistance in the unit means no interference with system operation difficulties due to back pressure.

.125 NPT Product No. 939300

.250 NPT Product No. 939400

APPROXIMATE DIMENSIONS



Exhaust Muffler Dim	NPT	A	NPT	A
Inches	.125	1.438	.25	1.625

▯ 3-WAY MANUAL CLUTCH OR BRAKE CONTROL

3-way manual control comes complete with escutcheon plate and mounting screws. Use to override automatic controls in emergencies or pilot a 4 or 5 way control. 3/32" internal orifice.

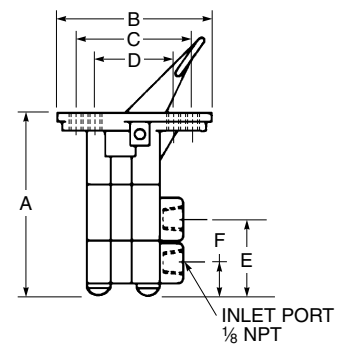
Product No. 944900

Flow rate: 15 SCFM at 100 psi.

3-WAY MANUAL CONTROL

Dim	A	B	C	D	E	F
Inches	2.438	2	1.5	1	1.031	.5

APPROXIMATE DIMENSIONS



▯ CLUTCH OR BRAKE - QUICK EXHAUST/SHUTTLE VALVE

Mounts directly to the clutch or brake air chamber inlet where air and airline impurities are exhausted directly to the atmosphere by a 3-5 psi drop in the supply pressure. Increases clutch and brake response times because air need not travel thru long lines back to the control. Can also eliminate overlap in clutch-brake combinations. Use also as a shuttle valve when alternating supplying cylinder with two pressures.

1/8 NPT Product No. 945100

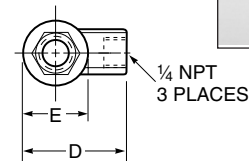
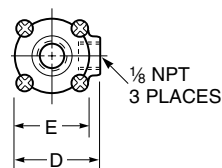
1/4 NPT Product No. 945125

1/8 NPT

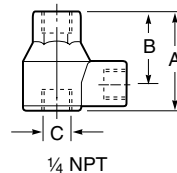
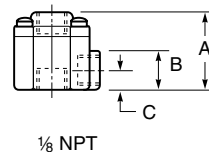
Dim	A	B	C	D	E
Inches	1.125	.563	.281	1.188	1.031

1/4 NPT

Dim	A	B	C	D	E
Inches	1.672	1.219	.547	1.359	1.094



APPROXIMATE DIMENSIONS

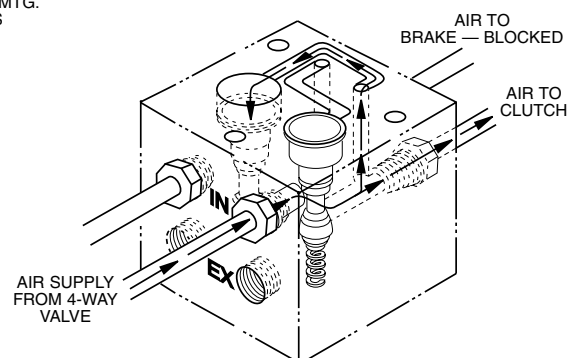
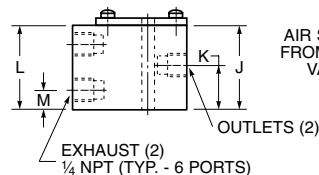
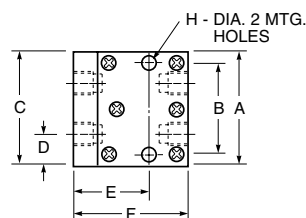


▯ CLUTCH/BRAKE COMBINATION OVERLAP ELIMINATOR

An Overlap Eliminator between a 4-way control and a clutch-brake system prevents a torque rise in either the clutch or brake until the alternate unit torque has dropped to an ineffective level.

Product No 944400

APPROXIMATE DIMENSIONS



OVERLAP ELIMINATOR

Dim	A	B	C	D	E	F	G	H	J	K	L	M
Inches	2.5	2	1.813	.688	1.656	2.5	.25	.266	2.188	.969	1.406	.406

CONTROLS

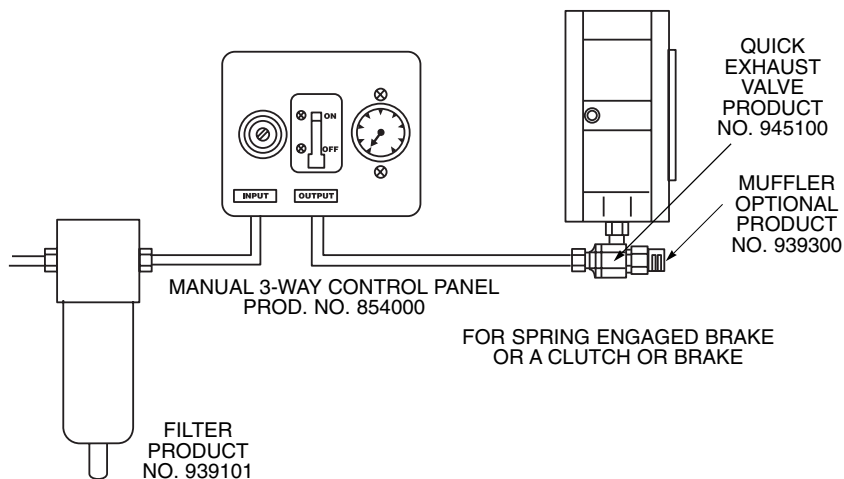
TYPICAL CIRCUIT DIAGRAMS

MANUAL CONTROL PANEL

Product Number	Description
940021	Control Kit N.O.

This Kit Contains:

- 1 each, Filter (.250 NPT.)
- 1 each, Control Panel
- 1 each, Quick Exhaust Valve (.125 NPT.)
- 1 each, Muffler (.125 NPT.)
- 1 each, Adapter (.125 NPT. to .250 NPT.)



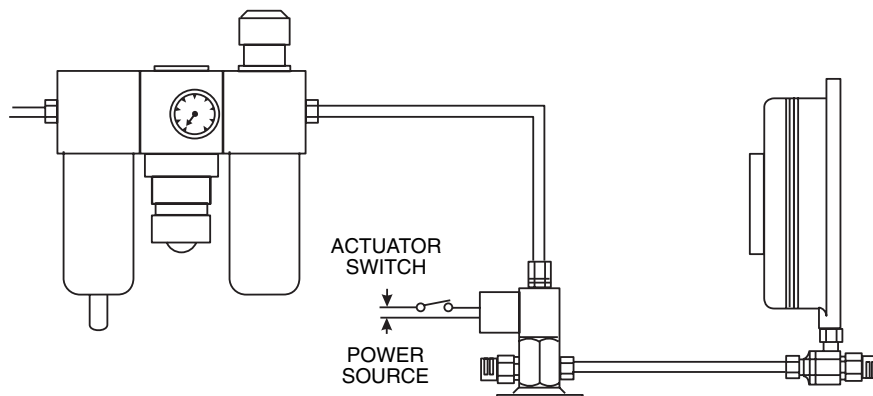
3-WAY CONTROL — N.O. — DISENGAGES CLUTCH OR BRAKE WHEN ACTUATOR SWITCH IS CLOSED

CONTROL KIT - SINGLE UNIT

Product Number	Description
940011	Control Kit N.O.

This Kit Contains:

- 1 each, 3-Way Valve (.25 NPT.), Inline Mount
- 1 each, Filter (.250 NPT.)
- 1 each, Regulator (.250 NPT.)
- 1 each, Lubricator (.250 NPT.)
- 1 each, Quick Exhaust Valve (.125 NPT.)
- 1 each, Muffler (.125 NPT.)
- 1 each, Adapter (.125 NPT. to .250 NPT.)



▯ TYPICAL CIRCUIT DIAGRAMS

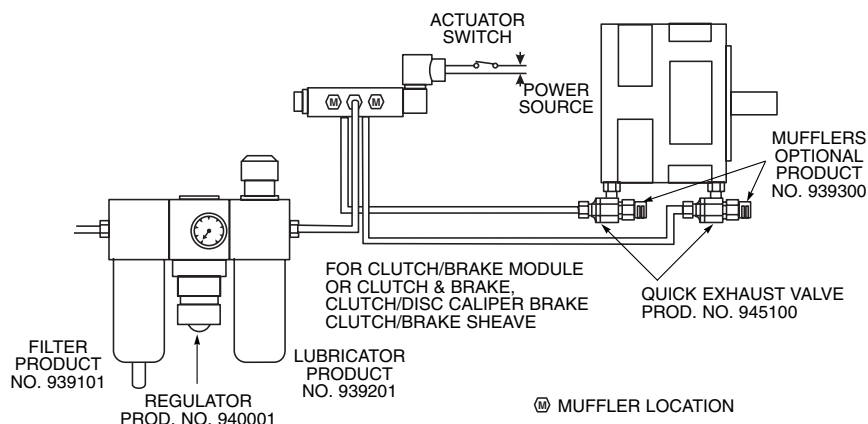
4-WAY SINGLE SOLENOID SPOOL CONTROL — INTERNALLY PILOTED — N.C. FOR OPERATING CLUTCH AND BRAKE AT PRESSURES 20 TO 100 PSI

CONTROL KIT - 4-Way

Product Number	Description
940019	Control Kit, 4-Way

This Kit Contains:

- 1 each, Filter (.250 NPT.)
- 1 each, Regulator (.250 NPT.)
- 1 each, Lubricator (.250 NPT.)
- 1 each, 4-Way Valve, Single Solenoid
- 2 each, Quick Exhaust Valve (.125 NPT.)
- 2 each, Muffler (.125 NPT.)
- 2 each, Adapter (.125 NPT. to .250 NPT.)



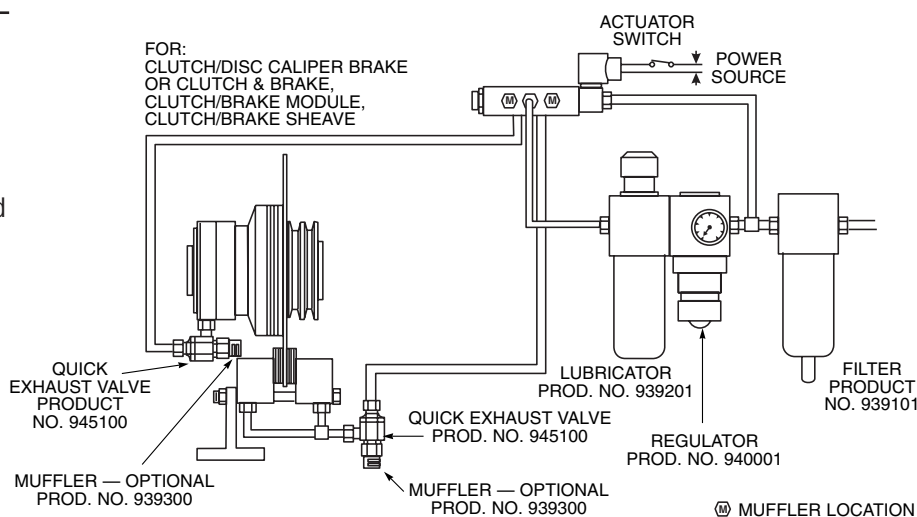
4-WAY SINGLE SOLENOID SPOOL CONTROL — EXTERNALLY PILOTED — N.C. FOR OPERATING CLUTCH AND BRAKE AT PRESSURES 20 TO 100 PSI

CONTROL KIT - 4 or 5-Way

Product Number	Description
940018	Control Kit, 4 or 5-Way

This Kit Contains:

- 1 each, Filter (.250 NPT.)
- 1 each, Regulator (.250 NPT.)
- 1 each, Lubricator (.250 NPT.)
- 1 each, 4 or 5-Way Valve, Single Solenoid
- 2 each, Quick Exhaust Valve (.125 NPT.)
- 2 each, Muffler (.125 NPT.)
- 2 each, Adapter (.125 NPT. to .250 NPT.)



CONTROLS

TYPICAL CIRCUIT DIAGRAMS

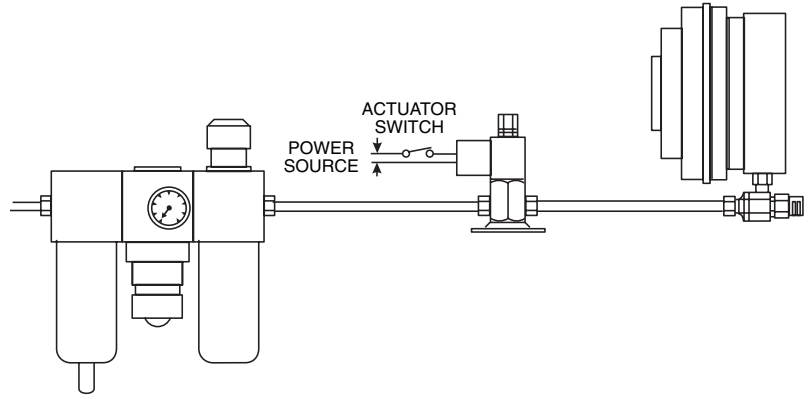
3-WAY CONTROL — N.C. — ENGAGES CLUTCH OR BRAKE WHEN ACTUATOR SWITCH IS CLOSED

CONTROL KIT - SINGLE UNIT

Product Number	Description
940012	Control Kit N.C.

This Kit Contains:

- 1 each, 3-Way Valve (.250 NPT.), Inline Mount
- 1 each, Filter (.250 NPT.)
- 1 each, Regulator (.250 NPT.)
- 1 each, Lubricator (.250 NPT.)
- 1 each, Quick Exhaust Valve (.125 NPT.)
- 1 each, Muffler (.125 NPT.)
- 1 each, Adapter (.125 NPT. to .250 NPT.)



5-WAY DOUBLE SOLENOID SPOOL CONTROL — EXTERNALLY PILOTED FOR OPERATING CLUTCH AND BRAKE AT DIFFERENT AIR PRESSURES USING ONE CONTROL — FROM 20 TO 100 PSI

CONTROL KIT - TWO UNITS

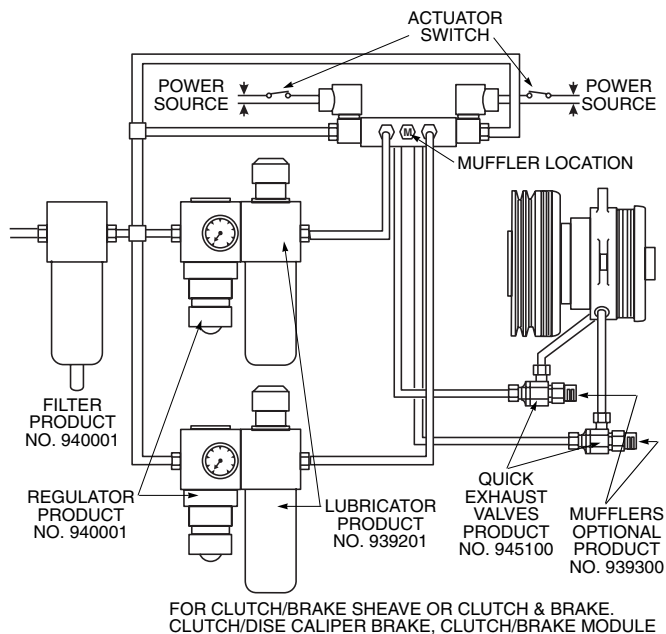
For controlling air to two units or to a combination clutch/brake, select from the following:

Product Number	Description
940013	Control Kit. 4/5 Way (.125" NPT Quick Exhaust Valves & Mufflers)
940014	Control Kit. 4/5 Way (.25" NPT Quick Exhaust Valves & Mufflers)

These kits Contain:

- 1 each, Double Solenoid 4/5 Way Externally Piloted Spool Valve (.125 NPT.)
- 1 each, Filter (.250 NPT.)
- 2 each, Regulator (.250 NPT.)
- 2 each, Lubricator (.250 NPT.)
- 2 each, Quick Exhaust Valve (.125 or .250 NPT.)
- 2 each, Mufflers (.125 or .250 NPT.)

NOTE : Externally piloted, double solenoid spool valves can be connected for 4 or 5-Way operation.



TYPICAL CIRCUIT DIAGRAMS

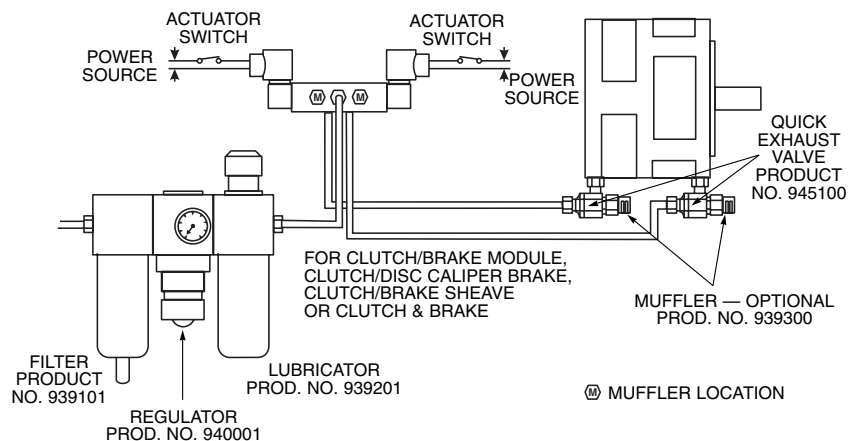
4-WAY DOUBLE SOLENOID CONTROL — INTERNALLY PILOTED FOR CLUTCH AND BRAKE OPERATING ABOVE 30 CPM — FROM 20 TO 100 PSI

CONTROL KIT - 4-Way

Product Number	Description
940020	Control Kit, 4-Way

This Kit Contains:

- 1 each, Filter (.250 NPT.)
- 1 each, Regulator (.250 NPT.)
- 1 each, Lubricator (.250 NPT.)
- 1 each, 4-Way Valve, Double Solenoid
- 2 each, Quick Exhaust Valve (.125 NPT.)
- 2 each, Muffler (.125 NPT.)
- 2 each, Adapter (.125 NPT. to .250 NPT.)



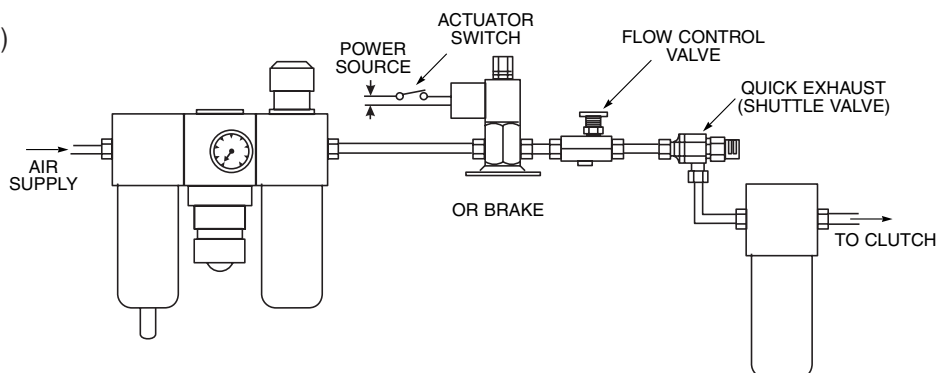
SOFT START OR STOP CIRCUIT

CONTROL KIT - 3-Way

Product Number	Description
940017	Control Kit, 3-Way

This Kit Contains:

- 1 each, 3-Way Valve, N.C.
- 1 each, Flow Control Valve
- 1 each, Quick Exhaust Valve (.125 NPT.)
- 1 each, Muffler (.125 NPT.)
- 2 each, Filter (.250 NPT.)
- 1 each, Regulator (.250 NPT.)
- 1 each, Lubricator (.250 NPT.)

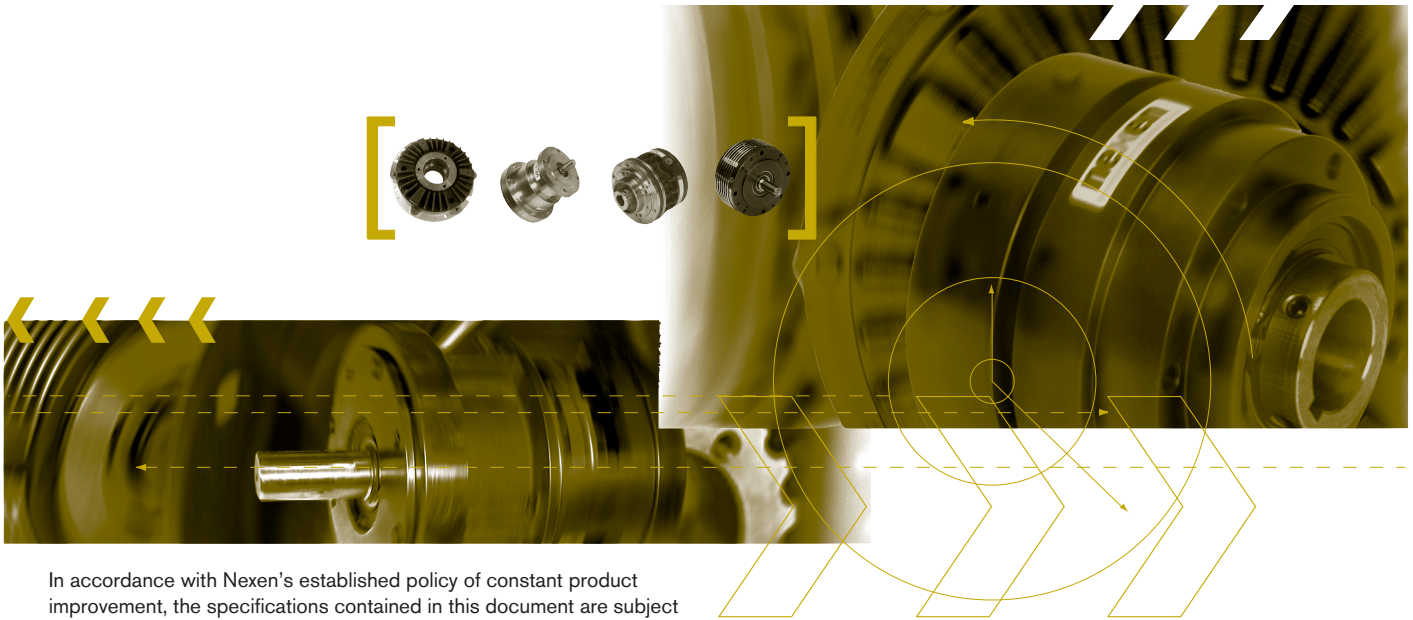


REPAIR KITS

“Air Champ”

PRODUCT SELECTION CHART

Product Groups	Repair Kits Open Design	Repair Kits Enlosed Design	Facing Kits	Bearing Kits	Seal Kits	Disc Packs
Friction Clutch Models BW, B-275, F-450, L-600, M-800, H-1000, XHW, FW, LW, MW, HW	Yes		Yes			
DPC Series Dual Plate Clutches & Brakes	Yes			Yes		
4H Series Multi-Disc Clutches	Yes					Yes
5H Series Tooth Clutches	Yes	Yes				
DFC & QFE Series High Capacity Clutches	Yes		Yes			
TL Series Torque Limiters	Yes	Yes				
Friction Brake Models S-450, S-600, S-800, S-1000, T-450, T-600, T-800, T-1000	Yes		Yes			
Caliper Brakes Models DB, BC, BD, SPC	Yes		Yes			
Drum Brakes			Yes			
Spring Engaged Brake Models TSE, SE, MB, SSE	Yes		Yes			
DFB & QFB Series High Capacity Brakes			Yes		Yes	
Modular NEMA “C” Flange Clutch-Brake Models MBU, MOU, MDU, MIU	Yes		Yes			
Clutch-Brake Modular Units MBU, MDU, MIU, MOU	Yes		Yes			
Clutch-Brake Models FWCB, LWCB, MWCB, HWCB	Yes					
Clutch-Brake Flange Mounted Models FMC, FMCB, FMCBE, FMCBS	Yes	Yes	Yes			



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

REPAIR KITS

This Section Contains: Page

Models BW, B-275, F-450, L-600, M-800, H-1000, XHW, FW, LW, MW, & HW . . .	.250
DPC Series Dual Plate Clutches & Brakes . . .	.250
4H Series Multi-Disc Clutches	.250
5H Series Tooth Clutches	.251
DPC & QFE High Capacity Clutches	.251
TL Series Torque Limiters	.251
Friction Brake S-450, S-600, S-800, S-1000, T-450, T-600, T-800, T-1000	.252
Caliper Brake Models DB, BC, BD, SPC . . .	.252
Facing Kits for Drum Brakes	.252
Spring Engaged Brakes TSE, SE, MB, SSE . .	.253
Metric Spring Engaged Straight Bore Brakes	.253
DFB & QFB Series High Capacity Brakes . .	.253
Modular NEMA "C" Flange Clutch Brake Models MBU, MOU, MDU, MIU	.254
Thru-Shaft Clutch-Brakes	.254
Clutch-Brake Models FMCBE, FMCBES, FMCB, FMCE	.254

REPAIR KITS

“Air Champ”

REPAIR KITS & FACING KITS FOR FRICTION CLUTCHES

REPAIR KITS & BEARING KITS FOR DPC SERIES DUAL PLATE CLUTCHES & BRAKES

REPAIR KITS FOR 5H SERIES TOOTH CLUTCHES

REPAIR KITS & DISC PACKS FOR 4H SERIES MULTI-DISC CLUTCHES

REPAIR KITS & FACING KITS FOR DFE & QFE SERIES HIGH CAPACITY CLUTCHES

REPAIR KITS FOR TL SERIES TORQUE LIMITERS

► REPAIR KITS & FACING KITS FOR FRICTION CLUTCH MODELS BW, B-275, F-450, L-600, M-800, H-1000, XHW, FW, LW, MW, HW

Repair Kits contain: Bearings, O-Rings and Return Springs.

Order Pilot or Sheave Bearings separately.

Kits for BW, FW, LW, MW, HW & XHW also contain Standard Facings.

Facing Kits contain: Facings and Screws.

Standard Models	Repair Kit Product Number	Standard Facing	Loco Facing	Hico Facing	Thrust Bearing Grease (6) 14.5 oz tubes)
BW	846800	846871	---	---	853900
F-450 Models	802880	846971	846972	846974	---
L-600 Models	805280	847071	847072	847074	---
M-800 Models	807680	847171	847172	847174	---
H-1000 Models	810080	847271	847272	847274	---
XHW Models	848200	848271	848272	---	---
FW Models	846900	846971	846972	846974	853900
LW Models	847000	847071	847072	847074	853900
MW Models	847100	847171	847172	847174	853900
HW Models	847200	847271	847272	847274	853900

Metric Models	Repair Kit Product Number	Standard Facing	Loco Facing	Hico Facing
B-275 Model	802874	846871	---	---
F-450 Model	802880	950070	950071	950072
L-600 Model	805280	950170	950171	950172
M-800 Model	807680	950270	950271	950272
H-1000 Model	810080	950370	950371	950372

► REPAIR KITS & BEARING KITS FOR DPC SERIES DUAL PLATE CLUTCHES & BRAKES

Repair Kits contain: O-Rings, Facings, Screws and Retaining Rings

Bearing Kits contain: Bearings and Retaining Rings

Models	Repair Kit Product Number	Bearing Kit Product Number
DPC-9T / DPB-9T	960800	960900
DPC-11T / DPB-11T	961800	961900
DPC-13T / DPB-13T	962800	962900
DPC-15T / DPB-15T	963800	963900

► REPAIR KITS & DISC PACKS FOR 4H SERIES MULTI-DISC CLUTCHES

Repair Kits contain: Outer Plates, Inner Plates, Waved Springs, Bearings and O-Rings

Disc Packs contain: Outer Plates, Inner Plates and Waved Springs

Models	Repair Kit Product Number	Disc Pack Product Number
4H30P	919000	921100
4H35P	919100	921200
4H40P	919200	921300
4H45P	919300	921400
4H50P	919400	921500
4H60P	919500	921600
4H70P	919600	921700

▶ REPAIR KITS FOR 5H SERIES TOOTH CLUTCHES

Open Design Repair Kits contain: Bearings, O-Rings and Springs

Enclosed Design Repair Kits contain: Bearings, O-Rings, Springs and Back-up Rings

Metric Models use same Repair Kits.

Open Design Flange Mount Models	Repair Kit Product Number	Open Design Single Position Pilot Mount Models	Repair Kit Product Number	Open Design Pilot Mount Models	Repair Kit Product Number	Enclosed Design Single Position Pilot Mount Models	Repair Kit Product Number	Enclosed Design Pilot Mount Models	Repair Kit Product Number
5H30	916200	5H30P-SP	913300	5H30P	916900	5H30PSP-E	913009	5H30P-E	913008
5H35	916300	5H35P-SP	913400	5H35P	917000	5H35PSP-E	913019	5H35P-E	913018
5H40	916400	5H40P-SP	913500	5H40P	917100	5H40PSP-E	913029	5H40P-E	913028
5H45	916500	5H45P-SP	913600	5H45P	917200	5H45PSP-E	913039	5H45P-E	913038
5H50	916600	5H50P-SP	913700	5H50P	917300	5H50PSP-E	913049	5H50P-E	913048
5H60	916700	5H60P-SP	913800	5H60P	917400	5H60PSP-E	913059	5H60P-E	913058
5H70	916800	5H70P-SP	914000	5H70P	917500				
		5H80P-SP	913900	5H80P	916100				
				5H100P	916710				

▶ REPAIR KITS & FACING KITS FOR DFC & QFE SERIES HIGH CAPACITY CLUTCHES

Repair Kits contain: O-Rings, O-Ring Lubricant and Return Springs

Facing Kits contain: Facings and Screws

Model	Repair Kit Product Number	Standard Facing Kit Product Number	HICO Facing Kit Product Number
DFE-1150	964016	964028	964029
DFE-1650	964019	964031	964032
DFE-2200	964022	964034	964035
DFE-2500	964025	964037	964038
QFE-1150	964088	964028	964029
QFE-1650	964091	964031	964032
QFE-2200	964094	964034	964035
QFE-2500	964097	964037	964038

▶ REPAIR KITS FOR SINGLE-FLEX COUPLINGS

Repair Kits contain: Disc-Pack,
Cap Screw and Hex Nuts

Models	Repair Kit Product Number
4/5H30/TL20	909982
4/5H35/TL30	910082
4/5H40	910182
4/5H45/TL40	910282
4/5H50/TL50	910382
4/5H60/TL60	910482
4/5H70/TL70	910582
5H80/TL80	911782

▶ REPAIR KITS FOR TL SERIES TORQUE LIMITERS

Repair Kits contain: Bearings, O-Rings, Springs and Back-up Rings

Metric Models use same Repair Kits

Set Screw Mount Models	Repair Kit Product Number	Set Screw Mount Models	Repair Kit Product Number	Set Collar Mount Models	Repair Kit Product Number
TL-10A	801808	TL-60A	801548	TL-20-AC	801508
TL-15A	801808	TL-60A-E	802948	TL-20-AC/2	801508
TL-20A	801508	TL-60A-E/2	802948	TL-30-AC	801518
TL-20A-E	802908	TL-70A	801558	TL-30-AC/2	801518
TL-20A-E/2	802908	TL-70A/2	801558	TL-40-AC	801528
TL-30A	801518	TL-80A	801568	TL-40-AC/2	801528
TL-30A-E	802918	TL-80A/2	801568	TL-50-AC	801538
TL-30A-E/2	802918			TL-50-AC/2	801538
TL-40A	801528			TL-60-AC	801548
TL-40A-E	802928			TL-60-AC/2	801548
TL-40A-E/2	802928			TL-70-AC	801558
TL-50A	801538			TL-70-AC/2	801558
TL-50A-E	802938			TL-80-AC	801568
TL-50A-E/2	802938			TL-80-AC/2	801568

▶ REPAIR KITS FOR DOUBLE-FLEX COUPLINGS

Repair Kits contain: Disc-Pack,
Cap Screw and Hex Nuts

Models	Repair Kit Product Number
4/5H30/TL20	909983
4/5H35/TL30	910083
4/5H40	910183
4/5H45/TL40	910283
4/5H50/TL50	910383
4/5H60/TL60	910483
4/5H70/TL70	910583
5H80/TL80	911783

REPAIR KITS

"Air Champ"

REPAIR KITS & FACING KITS FOR FRICTION BRAKES

REPAIR KITS & FACING KITS FOR SPRING ENGAGED BRAKES

REPAIR KITS & FACING KITS FOR CALIPER BRAKES

REPAIR KITS & FACING KITS FOR DRUM BRAKES

SEAL KITS & FACING KITS FOR DFB & QFB SERIES HIGH CAPACITY BRAKES

► REPAIR KITS & FACING KITS FOR FRICTION BRAKE MODELS S-450, S-600, S-800, S-1000, T-450, T-600, T-800, T-1000

Repair Kits contain: Bearings, O-Rings and Return Springs.

Facing Kits contain: Facings and Screws.

Standard Models	Repair Kit Product Number	Standard Facing Kit Product Number	Loco Facing Kit Product Number	Hico Facing Kit Product Number
BWB	846800	846871	----	----
S-450 Models	818910	818971	818972	818974
S-600 Models	820510	820571	820572	820574
S-800 Models	827410	827471	827472	827474
S-1000 Models	827510	827571	827572	827574
T-450 Models	818910	818971	818972	818974
T-600 Models	820510	820571	820572	820574
T-800 Models	827410	827471	827472	827474
T-1000 Models	827510	827571	827572	827574
T-1200 Models	822512	822511	827572	827574
T-1400 Models	822522	822521	827572	827574

Metric Models	Repair Kit Product Number	Standard Facing Kit Product Number	Loco Facing Kit Product Number	Hico Facing Kit Product Number
S-450 Models	818910	818975	818976	818977
S-600 Models	820510	820575	820576	820577
S-800 Models	827410	827475	827476	827477
S-1000 Models	827510	827575	827576	827577

► REPAIR KITS & FACING KITS FOR CALIPER BRAKE MODELS DB, BC, BD, SPC

Repair Kits contain: Sleeve Bearings, Return Springs, Seals, Facings and Screws

Facing Kits contain: Facings and Screws.

Standard Models	Repair Kit Product Number	Standard Facing Kit Product Number	Loco Facing Kit Product Number	Hico Facing Kit Product Number
DB	---	835600	835601	835602
BC288A	835272	---	---	835271 (2 required)
BC425A	835274	---	---	835271 (3 required)
BC288S	835273	---	---	835271 (2 required)
BC425S	835275	---	---	835271 (3 required)
BD	933900	934000	934001	---
SPC-8A	837472	837471	837473	---
SPC-12A	837472	837471	837473	---
SPC-20A	837472	837471	837473	---
SPC-8S	837472	837471	837473	---
SPC-12S	837472	837471	837473	---
SPC-20S	837472	837471	837473	---

► FACING KITS FOR DRUM BRAKES

Facing Kits contain: Facings and Screws. 845175 includes upper sliding shoes w/bonded facing

Standard Models	Standard Facing Kit Product Number	Loco Facing Kit Product Number	Standard Models	Standard Facing Kit Product Number	Loco Facing Kit Product Number
J Standard	845175	--	4K Hinge Top	845171	845172
K Standard	845171	845172	8K Hinge Top	845271	845272
8K Standard	845271	845272	12K Hinge Top	845571	845572
12K Standard	845571	845572			

▶ REPAIR KITS & FACING KITS FOR SPRING ENGAGED BRAKE MODELS TSE, SE, MB, SSE

Spring Engaged Tapered Bore Brakes

Repair Kits contain: Bearings, Shoulder Screws & O-Rings.

Facing Kits contain: Facings and Screws.

Standard Models	Repair Kit Product Number	Hico Facing Kit Product Number
TSE-450 Models	818870	818974
TSE-600 Models	820370	820574
TSE-800 Models	822470	827474
TSE-1000 Models	822570	827574
TSE-1200 Models	—	822711
TSE-1400 Models	—	822722

Spring Engaged Brakes

Repair Kits contain: Bearings, O-Rings,

Standard Facings and Return Spring

Facing Kits contain: Facings and Screws.

Standard Models	Repair Kit Product Number	Standard Facing Kit Product Number
SE-100	808400	808471
SE-200	808500	808471
SE-500	812700	812771
SE-1000	812800	812771

Spring Set Brakes

Repair Kits contain: Sleeve Bearing, O-Rings, Facings and Screws

Standard Models	Repair Kit Product Number
MB450S	801350
MB600S	801351
MB800S	801352

Metric Spring Engaged Straight Bore Brakes

Repair Kits contain: Bearings, O-Rings.

Facing Kits contain: Facings and Screws.

Standard Models	Repair Kit Product Number	Hico Facing Kit Product Number
SSE-450 Models	818870	818974
SSE-600 Models	820370	820574
SSE-800 Models	822470	827474
SSE-1000 Models	822570	827574

FMBES

Repair Kits contain: Friction Facing, Ball

Bearings, Facing Screws and O-Rings

Facing Kits contain: Facings and Screws

Standard Models	Repair Kit Product Number	Facing Kit Product Number
FMBES-625	827301	827302
FMBES-875	827301	827302
FMBES-425	827303	827304
FMBES-1375	827303	827304

▶ SEAL KITS & FACING KITS FOR DFB & QFB SERIES HIGH CAPACITY BRAKES

Seal Kits contain: O-Rings and O-Ring Lubricant

Facing Kits contain: Facings and Screws

Standard Models	Seal Kit Product Number	Standard Facing Kit Product Number	Hico Facing Kit Product Number
DFB-1150	964017	964028	964029
DFB-1650	964020	964031	964032
DFB-2200	964023	964034	964035
DFB-2500	964026	964037	964038
QFB-1150	964017	964028	964029
QFB-1650	964020	964031	964032
QFB-2200	964023	964034	964035
QFB-2500	964026	964037	964038

REPAIR KITS

"Air Champ"

REPAIR KITS & FACING KITS FOR MODULAR NEMA "C" FLANGE CLUTCH-BRAKE MODELS MBU, MOU, MDU, MIU

Brake Modules

Repair Kits contain: Bearings, O-Rings, Return Springs, Facings and Screws
Facing Kits contain: Facings and Screws

Standard Models	Repair Kit Product Number	Standard Facing Kit Product Number	Loco ① Facing Kit Product Number
MBU-625	930200	930276	930272
MBU-875	930200	930276	930272
MBU-1125	937300	930277	847072
MBU-1375	937600	930278	847172

Output Modules

Repair Kits contain: Bearings, Facings and Screws
Facing Kits contain: Facings and Screws

Standard Models	Repair Kit Product Number	Standard Facing Kit Product Number	Loco ① Facing Kit Product Number
MOU-625	930300	930276	930272
MOU-875	930300	930276	930272
MOU-1125	937400	930277	847072
MOU-1375	937700	930278	847172

Drive Modules

Repair Kits contain: Bearings, O-Rings, and Return Springs

Input Modules

Repair Kits contain: Bearings

Standard Models	Repair Kit Product Number	Standard Models	Repair Kit Product Number
MDU-625	930100	MIU-625	930000
MDU-875	930100	MIU-875	930000
MDU-1125	937200	MIU-1125	937100
MDU-1375	937500	MIU-1375	937100

REPAIR KITS FOR THRU-SHAFT CLUTCH-BRAKES

Clutch Brake-Sheaves

Repair Kits contain: Bearings, O-Rings, Return Springs, Facings and Screws

Standard Models	Repair Kit Product Number	Standard Models	Repair Kit Product Number
BWCB	826070	MWCB	848000
FWCB	847800	HWCB	848100
LWCB	847900		

REPAIR KITS & FACING KITS FOR CLUTCH-BRAKE MODELS FMCBE, FMCBES, FMCB, FMCE

FMCBE, Air Engaged

Repair Kits contain: Bearings and O-Rings
Facing Kits contain: Facings and Screws

Standard Models	Repair Kit Product Number	Standard ① Facing Kit Product Number
FMCBE-625	801447	801448
FMCBE-875	801428	801430
FMCBE-1125	801604	801605
FMCBE-1375	801651	801647

FMCBE, Air Engaged (Metric)

Repair Kits contain: Bearings and O-Rings
Facing Kits contain: Facings and Screws

Standard Models	Repair Kit Product Number	Standard ① Facing Kit Product Number
FMCBE-110-14	801436	801448
FMCBE-130-19	801428	801430
FMCBE-130-24	801428	801430
FMCBE-7-28	801637	801605
FMCBE-7-38	801638	801645
FMCBE-8-38	801639	801647
FMCBE-8-42	801640	801649

FMCB, Air Engaged

Repair Kits contain: Bearings and O-Rings
Facing Kits contain: Facings and Screws

Standard Models	Repair Kit Product Number	Clutch Facing Kit Product Number	Brake Facing Kit Product Number
FMCB-130-19	801428	801477	801430
FMCB-130-24	801428	801477	801430
FMCB-7-28	801637	801644	801605
FMCB-7-38	801638	801646	801645
FMCB-8-38	801639	801648	801647
FMCB-8-42	801640	801650	801649
FMCB-1625	801742	—	—

FMCBES, Spring Engaged

Repair Kits contain: Bearings and O-Rings
Facing Kits contain: Facings and Screws

Standard Models	Repair Kit Product Number	Standard ① Facing Kit Product Number
FMCBES-625	801652	801399
FMCBES-875	801652	801399
FMCBES-1125	801653	801605
FMCBES-1375	801654	801647

FMCBES, Spring Engaged (Metric)

Repair Kits contain: Bearings and O-Rings
Facing Kits contain: Facings and Screws

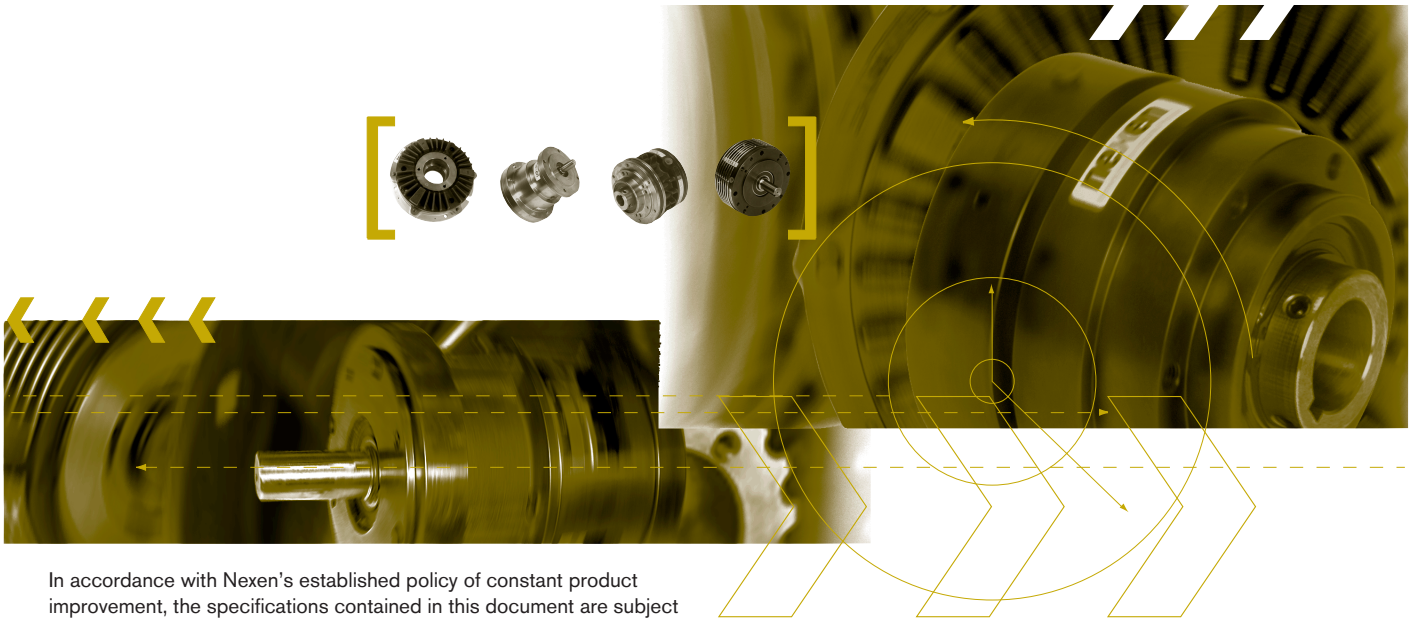
Standard Models	Repair Kit Product Number	Standard ① Facing Kit Product Number
FMCBES-110-14	801401	801448
FMCBES-130-19	801402	801430
FMCBES-130-24	801402	801430
FMCBES-7-28	801662	801605
FMCBES-7-38	801661	801645
FMCBES-8-38	801664	801647
FMCBES-8-42	801405	801649

① Two Facing Kits are required for each Clutch-Brake

FMCE, Clutches

Repair Kits contain: Bearings and O-Rings
Facing Kits contain: Facings and Screws

Standard Models	Repair Kit Product Number	Standard Facing Kit Product Number
FMCE-625	801487	801448
FMCE-875	801474	801477
FMCE-1125	918378	—
FMCE-1375	918379	—



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

ENGINEERING DATA

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CLUTCH AND BRAKE SELECTION

Clutch and brake selection is rather simple when the functions of the machine are clearly defined. Make sure that the location, shaft size, heat dissipation capacity and speed specifications are compatible with the clutch or brake selected. Match the machine requirements to a clutch or brake that is large enough to handle the load.

First, classify the application.

Occasional start or stop:

Applications where a clutch disconnects the prime mover (usually an electric motor) from the machine at cycle rates of less than four or five times a minute..

Torque and transmitted horsepower are important considerations of applications of this type.

Cyclic start and stop:

Applications where the clutch or brake cycles more than five per minute, fall into this classification. Inertia, torque, energy per cycle, heat sink capacity and response time all may require evaluation.

High inertia start or stop:

Applications of this type are identified by a requirement to start or stop heavy rotating rolls or flywheels in a specific length of time. Start or stop periods of more than 1.0 second are typical of this application type. Thermal characteristics and torque are very important considerations when high inertia loads are present.

Continuous slip or constant tensioning:

Applications of this type appear frequently in the paper or textile industries where material is pulled from a roll. A clutch or brake is connected to the shaft supporting the rolls to provided tension in the material. Heat dissipation is the primary concern for the clutch or brake.

Many clutch and brake selections are successfully made on the basis of transmitted horsepower and speed only.

For these applications it is a simple matter of solving the basic torque formulas and selecting a unit from the torque vs. air pressure graphs in the Air Champ catalog or various other product brochures.

Nexen also provides selection charts that suggest specific models at various transmitted horsepower and speeds. These charts include an appropriate service factor for the selected model.

Motor frame charts showing models which fit the motor shaft and/or NEMA "C" flanges are provided for some models. A general rule-of-thumb for motor mounted applications is: if the unit fits the motor, it will do the job. Nexen units have adequate torque to handle what the motors deliver.

Applications where the clutch or brake do not fit the motor require an evaluation of inertia, torque and thermal characteristics. Thermal characteristics are very important for high inertia or high cyclic applications. Do not select a unit from the catalog selection charts if high inertia loads are present.

Location is one of the most important things to consider when making a clutch or brake selection. Since torque (in. lbs) equals $\frac{63000 \times \text{HP}}{\text{RPM}}$, the

clutch or brake should be located on the highest speed shaft in the drive train.

An ideal location is directly on the motor shaft. Mounting is easier and more convenient. Lower torque requirements mean smaller diameter units, which result in **considerable** cost savings.

Because "Air Champ" Clutches and Brakes are rugged and designed with high thermal horsepower ratings, we can use the following rule-of-thumb for selecting the proper size unit for your application:

Ninety percent of the time you can make your clutch/brake selection based on the torque requirement alone. It's that simple. Sure it's important to use a service factor, but for the most part the torque requirement is your prime consideration when choosing which size clutch to use.

For severe applications with high inertia loads and high cycle rates, you also need to consider the thermal horsepower requirement.

CLUTCH & BRAKE SERVICE FACTOR

A service factor of 1.2 to 2 should always be used when operating at any air pressure. The service factor is dependent on the severity of the application. It is not recommended that a clutch or brake be used in an application at its maximum designed torque.

INERTIA VALUES OF VARIOUS COMPONENTS

All values unless specified are in Lb In². To convert to Lb Ft² use the following formula:

$$\frac{\text{LB IN}^2}{144} = \text{LB FT}^2$$

Friction Clutches

MODEL	COMPONENTS	ROTATES WITH SHAFT	ROTATES WITH DRIVE
M, Micro	Housing, Facing, Bearing Friction Disc, Hub	---- 0.193	0.050 ----
BW, Bantam Weight	Pilot Mount w/Bearing 2.750 Sheave w/Bearing Friction Disc, Hub	---- ---- 0.979	0.854 0.854 ----
F-450 / FW	Pilot Mount w/Bearing & Lining 3.350 Sheave w/Bearing & Lining Friction Disc, Hub	---- ---- 4.787	4.700 5.404 ----
L-600 / LW	Pilot Mount w/Bearing & Lining 4.500 Sheave w/Bearing & Lining 5.300 Sheave w/Bearing & Lining Friction Disc, Hub	---- ---- ---- 16.126	27.470 27.830 36.740 ----
M-800 / MW	Pilot Mount w/Bearing & Lining 5.300 Sheave w/Bearing & Lining Friction Disc, Hub	---- ---- 63.273	127.300 127.830 ----
H-1000 / HW	Pilot Mount w/Bearing & Lining 7.100 Sheave w/Bearing & Lining Friction Disc, Hub	---- ---- 180.440	428.770 504.350 ----
XHW	Pilot Mount w/Bearing & Lining 8.000 Sheave w/Bearing & Lining Friction Disc, Hub	---- ---- 272.980	1263.040 966.520 ----

Tooth Clutches

MODEL	COMPONENTS	ROTATES WITH DRIVE	ROTATES WITH SHAFT
5H30	Ring, Plate, Hub, Flange	6.000	1.260
5H35	Ring, Plate, Hub, Flange	10.680	2.710
5H40	Ring, Plate, Hub, Flange	16.860	3.760
5H45	Ring, Plate, Hub, Flange	26.090	8.350
5H50	Ring, Plate, Hub, Flange	41.780	11.480
5H60	Ring, Plate, Hub, Flange	92.660	25.800
5H70	Ring, Plate, Hub, Flange	176.060	50.460
5H20P	Ring, Plate, Hub, Flange	2.160	0.350
5H30P	Ring, Plate, Hub, Flange	5.140	1.310
5H35P	Ring, Plate, Hub, Flange	11.280	2.880
5H40P	Ring, Plate, Hub, Flange	15.770	3.900
5H45P	Ring, Plate, Hub, Flange	25.970	8.920
5H50P	Ring, Plate, Hub, Flange	42.830	12.190
5H60P	Ring, Plate, Hub, Flange	94.400	27.370
5H70P	Ring, Plate, Hub, Flange	186.030	52.850
5H80P	Ring, Plate, Hub, Flange	347.600	73.450
5H100P	Ring, Plate, Hub, Flange	1241.080	372.970
5H30P-E	Ring, Plate, Hub, Flange	6.990	1.510
5H35P-E	Ring, Plate, Hub, Flange	12.700	3.200
5H40P-E	Ring, Plate, Hub, Flange	14.890	4.890
5H45P-E	Ring, Plate, Hub, Flange	29.030	10.010
5H50P-E	Ring, Plate, Hub, Flange	55.660	13.700
5H60P-E	Ring, Plate, Hub, Flange	100.940	30.550
5H30P-SP	Ring, Plate, Hub, Flange, Ball Carrier	8.380	2.120
5H35P-SP	Ring, Plate, Hub, Flange, Ball Carrier	16.030	4.340
5H40P-SP	Ring, Plate, Hub, Flange, Ball Carrier	22.630	6.080
5H45P-SP	Ring, Plate, Hub, Flange, Ball Carrier	35.590	12.430
5H50P-SP	Ring, Plate, Hub, Flange, Ball Carrier	55.160	16.620
5H60P-SP	Ring, Plate, Hub, Flange, Ball Carrier	115.880	36.620
5H70P-SP	Ring, Plate, Hub, Flange, Ball Carrier	231.640	48.100
5H80P-SP	Ring, Plate, Hub, Flange, Ball Carrier	394.010	73.450
5H30PSP-E	Ring, Plate, Hub, Flange, Ball Carrier	10.560	2.220
5H35PSP-E	Ring, Plate, Hub, Flange, Ball Carrier	18.110	4.600
5H40PSP-E	Ring, Plate, Hub, Flange, Ball Carrier	22.710	7.160
5H45PSP-E	Ring, Plate, Hub, Flange, Ball Carrier	39.860	13.400
5H50PSP-E	Ring, Plate, Hub, Flange, Ball Carrier	69.710	18.020
5H60PSP-E	Ring, Plate, Hub, Flange, Ball Carrier	125.150	39.390

Multi-Disc Clutches

MODEL	COMPONENTS	ROTATES WITH SHAFT	ROTATES WITH DRIVE
4H30P	Thrust Plate, Inner Plates, Flange, Hub Outer Plates, Driving Shell	1.610 ----	---- 8.070
4H35P	Thrust Plate, Inner Plates, Flange, Hub Outer Plates, Driving Shell	3.490 ----	---- 13.340
4H40P	Thrust Plate, Inner Plates, Flange, Hub Outer Plates, Driving Shell	4.870 ----	---- 14.460
4H45P	Thrust Plate, Inner Plates, Flange, Hub Outer Plates, Driving Shell	10.740 ----	---- 36.700
4H50P	Thrust Plate, Inner Plates, Flange, Hub Outer Plates, Driving Shell	17.590 ----	---- 60.400
4H60P	Thrust Plate, Inner Plates, Flange, Hub Outer Plates, Driving Shell	42.480 ----	---- 115.700
4H70P	Thrust Plate, Inner Plates, Flange, Hub Outer Plates, Driving Shell	70.370 ----	---- 211.100

Dual Plate Clutches

MODEL	COMPONENTS	ROTATES WITH SHAFT	ROTATES WITH DRIVE
DPC-9T	Cylinder, Piston, Facing, Hub Friction Discs, Housings, Pilot 8.000 Sheave 9.000 Sheave	460.800 ---- ---- ----	---- 460.800 161.300 270.700
DPC-11T	Cylinder, Piston, Facing, Hub Friction Discs, Housings, Pilot Sheave	907.200 ---- ----	---- 1022.400 440.600
DPC-13T	Cylinder, Piston, Facing, Hub Friction Discs, Housings, Pilot 8.000 Sheave	2001.600 ---- ----	---- 2635.200 2757.600
DPC-15T	Cylinder, Piston, Facing, Hub Friction Discs, Housings, Pilot 8.000 Sheave	3470.400 ---- ----	---- 4176.000 5781.600

High Capacity Clutches

MODEL	COMPONENTS	ROTATES WITH SHAFT	ROTATES WITH DRIVE
DFE 1150-S or H	Disc	403.200	----
Housing		----	3283.200
DFE 1650-S or H	Disc	2001.600	----
Housing		----	10900.600
DFE 2200-S or H	Disc	6494.400	----
Housing		----	31536.000
DFE 2500-S or H	Disc	10080.000	----
Housing		----	50299.200
QFE 1150-S or H	Disc	806.400	----
Housing		----	3902.400
QFE 1650-S or H	Disc	3542.400	----
Housing		----	13032.000
QFE 2200-S or H	Disc	12960.000	----
Housing		----	38044.600
QFE 2500-S or H	Disc	20059.200	----
Housing		----	60393.600

APPLICATION ENGINEERING DATA

INERTIA VALUES OF VARIOUS COMPONENTS CONTINUED

Metric Friction Clutches

Metric Clutches—All values are expressed in (kg - cm²).

MODEL	COMPONENTS	ROTATES WITH SHAFT	ROTATES WITH DRIVE
B-275	Pilot Mount w/Bearing Friction Disc, Hub	---- 2.864	2.500 ----
F-450	Pilot Mount w/Bearing & Lining Friction Disc, Hub	---- 14.000	15.807 ----
L-600	Pilot Mount w/Bearing & Lining Friction Disc, Hub	---- 47.168	80.350 ----
M-800	Pilot Mount w/Bearing & Lining Friction Disc, Hub	---- 185.070	372.350 ----
H-1000	Pilot Mount w/Bearing & Lining Friction Disc, Hub	---- 527.790	1254.150 ----

Metric Tooth Clutches

MODEL	COMPONENTS	ROTATES WITH DRIVE	ROTATES WITH SHAFT
5H30	Ring, Plate, Hub, Flange	17.550	3.690
5H35	Ring, Plate, Hub, Flange	31.240	7.930
5H40	Ring, Plate, Hub, Flange	49.320	11.000
5H45	Ring, Plate, Hub, Flange	76.310	24.420
5H50	Ring, Plate, Hub, Flange	122.210	33.580
5H60	Ring, Plate, Hub, Flange	271.030	75.470
5H70	Ring, Plate, Hub, Flange	514.980	147.600
5H30P	Ring, Plate, Hub, Flange	15.030	3.830
5H35P	Ring, Plate, Hub, Flange	32.990	8.420
5H40P	Ring, Plate, Hub, Flange	46.130	11.410
5H45P	Ring, Plate, Hub, Flange	75.960	26.090
5H50P	Ring, Plate, Hub, Flange	125.280	35.660
5H60P	Ring, Plate, Hub, Flange	276.120	80.060
5H70P	Ring, Plate, Hub, Flange	544.140	154.590
5H80P	Ring, Plate, Hub, Flange	1016.730	214.840
5H30P-E	Ring, Plate, Hub, Flange	20.446	4.420
5H35P-E	Ring, Plate, Hub, Flange	37.148	9.360
5H40P-E	Ring, Plate, Hub, Flange	43.553	14.300
5H45P-E	Ring, Plate, Hub, Flange	84.913	29.280
5H50P-E	Ring, Plate, Hub, Flange	162.810	40.070
5H60P-E	Ring, Plate, Hub, Flange	295.250	89.360
5H30P-SP	Ring, Plate, Hub, Flange, Ball Carrier	24.510	6.200
5H35P-SP	Ring, Plate, Hub, Flange, Ball Carrier	46.890	12.690
5H40P-SP	Ring, Plate, Hub, Flange, Ball Carrier	66.190	17.780
5H45P-SP	Ring, Plate, Hub, Flange, Ball Carrier	104.100	36.360
5H50P-SP	Ring, Plate, Hub, Flange, Ball Carrier	161.340	48.610
5H60P-SP	Ring, Plate, Hub, Flange, Ball Carrier	338.950	107.110
5H70P-SP	Ring, Plate, Hub, Flange, Ball Carrier	677.550	140.690
5H80P-SP	Ring, Plate, Hub, Flange, Ball Carrier	1152.480	214.840
5H30PSP-E	Ring, Plate, Hub, Flange, Ball Carrier	30.890	6.493
5H35PSP-E	Ring, Plate, Hub, Flange, Ball Carrier	52.970	13.455
5H40PSP-E	Ring, Plate, Hub, Flange, Ball Carrier	66.430	20.943
5H45PSP-E	Ring, Plate, Hub, Flange, Ball Carrier	116.590	39.530
5H50PSP-E	Ring, Plate, Hub, Flange, Ball Carrier	203.900	52.710
5H60PSP-E	Ring, Plate, Hub, Flange, Ball Carrier	366.064	115.220

Clutch-Brakes

MODEL	COMPONENTS	ROTATES WITH DRIVE	ROTATES WITH SHAFT
BWCB	Pilot Mount & Bearing Friction Disc, Lining & Hub	---- .850	.854 ----
FWCB	Pilot Mount, Lining & Bearing Disc & Hub	---- 7.8	4.7 ----
LWCB	Pilot Mount, Lining & Bearing Disc & Hub	---- 19.0	14.2 ----
MWCB	Pilot Mount, Lining & Bearing Disc & Hub	---- 77.3	57.2 ----
HWCB	Pilot Mount, Lining & Bearing Disc & Hub	---- 232.0	144.0 ----

"Air Champ"

MDU-625 & 875	Drive Disc, Hub, Bearing Race, Pilot Shaft & Washer	7.81	
MBU-625 & 875	Disc-Journal with Facing & Bearing Race		9.06
MIU-625 & 875	Input Shaft & Bearing Race	.12	
MDU-1125	Drive Disc, Hub, Bearing Race, Pilot Shaft & Washer	17.4	
MBU-1125	Disc-Journal with Facing & Bearing Race		20.5
MIU-1125	Input Shaft & Bearing Race	.34	
MDU-1375	Drive Disc, Hub, Bearing Race, Pilot Shaft & Washer	59.4	
MBU-1375	Disc-Journal with Facing & Bearing Race		65.0
MIU-1375	Input Shaft & Bearing Race	.85	
FMCBE-625	Drive Disc Drv. Disc, Fric. Lng., Out. Shaft	1.49	1.18
FMCBE-875	Drive Disc Drv. Disc, Fric. Lng., Out. Shaft	6.20	7.10
FMCBE-1125	Drive Disc Drv. Disc, Fric. Lng., Out. Shaft	24.20	30.30
FMCBE-1375	Drive Disc Drv. Disc, Fric. Lng., Out. Shaft	61.60	70.00
FMCBES-625	Drive Disc Drv. Disc, Fric. Lng., Out. Shaft	6.20	7.10
FMCBES-875	Drive Disc Drv. Disc, Fric. Lng., Out. Shaft	6.20	7.10
FMCBES-1125	Drive Disc Drv. Disc, Fric. Lng., Out. Shaft	24.20	30.30
FMCBES-1375	Drive Disc Drv. Disc, Fric. Lng., Out. Shaft	61.60	70.00
FMCE-625	Drive Disc Drv. Disc, Fric. Lng., Out. Shaft	1.49	1.18
FMCB-130 19 AND 24	Drive Disc Drv. Disc, Fric. Lng., Out. Shaft	6.20	7.10
FMCB-7 28 AND 38	Drive Disc Drv. Disc, Fric. Lng., Out. Shaft	24.20	30.30
FMCB-8 38 AND 42	Drive Disc Drv. Disc, Fric. Lng., Out. Shaft	61.60	70.00

Torque Limiters

MODEL	COMPONENTS	ROTATES WITH SHAFT	ROTATES WITH DRIVE
TL 10	Drive Ring, Backing Plate & Hub Drive Flange	1.48 ----	---- 6.76
TL 15	Drive Ring, Backing Plate & Hub Drive Flange	1.48 ----	---- 6.76
TL 20	Drive Ring, Backing Plate & Hub Drive Flange	6.05 ----	---- 13.54
TL 30	Drive Ring, Backing Plate & Hub Drive Flange	9.94 ----	---- 31.39
TL 40	Drive Ring, Backing Plate & Hub Drive Flange	25.20 ----	---- 54.72
TL 50	Drive Ring, Backing Plate & Hub Drive Flange	35.00 ----	---- 94.75
TL 60	Drive Ring, Backing Plate & Hub Drive Flange	71.00 ----	---- 165.89
TL 70	Drive Ring, Backing Plate & Hub Drive Flange	129.89 ----	---- 364.46
TL 80	Drive Ring, Backing Plate & Hub Drive Flange	175.25 ----	---- 507.31

Dual Plate Brakes

MODEL	COMPONENTS	ROTATES WITH SHAFT	ROTATES WITH DRIVE
DPB-9T	Friction Discs, Housing & Hub	443.0	----
DPB-11T	Friction Discs, Housing & Hub	1036.0	----
DPB-13T	Friction Discs, Housing & Hub	2694.0	----
DPB-15T	Friction Discs, Housing & Hub	4259.0	----

INERTIA (WK²)

The value of WK² is important for applications involving time, cyclic duty or when starting or stopping heavy loads. Use one or all of the three methods as shown here to estimate the inertia.

1. The inertia of solid steel shafting is given in the following table. The values shown are for one inch of shaft length.

Dia. (In.)	WK ² (Lb. Ft. ²)	Dia. (In.)	WK ² (Lb. Ft. ²)	Dia. (In.)	WK ² (Lb. Ft. ²)
0.750	0.00006	7.500	0.6110	13.250	5.9600
1.000	0.0002	7.750	0.6990	13.500	6.4200
1.250	0.0005	8.000	0.7910	13.750	6.9100
1.500	0.0010	8.250	0.8950	14.000	7.4200
1.750	0.0020	8.500	1.0000	14.250	7.9700
2.000	0.0030	8.750	1.1300	14.500	8.5400
2.250	0.0050	9.000	1.2700	14.750	9.1500
2.500	0.0080	9.250	1.4100	15.000	9.7500
2.750	0.0110	9.500	1.5500	16.000	12.6100
3.000	0.0160	9.750	1.7500	17.000	16.0700
3.500	0.0290	10.000	1.9300	18.000	20.2100
3.750	0.0380	10.250	2.1300	19.000	25.0800
4.000	0.0490	10.500	2.3500	20.000	30.7900
4.250	0.0630	10.750	2.5800	21.000	37.4300
4.500	0.0790	11.000	2.8300	22.000	45.0900
5.000	0.1200	11.250	3.0900	23.000	53.8700
5.500	0.1770	11.500	3.3800	24.000	63.8600
6.000	0.2500	11.750	3.6800	25.000	75.1900
6.250	0.2960	12.000	4.0000	26.000	87.9600
6.500	0.3450	12.250	4.3500	27.000	102.3000
6.750	0.4020	12.500	4.7200	28.000	118.3100
7.000	0.4640	12.750	5.1100	29.000	136.1400
7.250	0.5350	13.000	5.5800	30.000	155.9200

To determine WK² of a given shaft or disc, multiply the WK² given in the chart by the length of shaft, or thickness of disc, in inches.

NOTE: For hollow shafts, subtract WK² of the I.D. from WK² of the O.D. and multiply by length.

2. For solid cylinders of a given weight, WK² is estimated from the formula:

$$WK^2 = W \left(\frac{R^2}{2} \right)$$

Where: WK² = inertia in lb. ft.²
R = cylinder radius in ft.
W = weight in lbs.

3. For solid or hollow cylinders, the inertia is calculated by the following equations:

Solid Cylinder

$$WK^2 = .000681 \rho L D^4$$

Hollow Cylinder

$$WK^2 = .000681 \rho L (D_2^4 - D_1^4)$$

$$WK^2 = \text{lb ft}^2$$

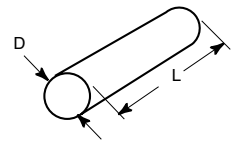
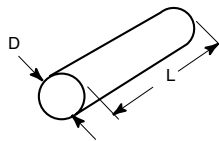
Where: D, D₁, D₂, L = Inches

$$\rho = \text{lb/in}^3$$

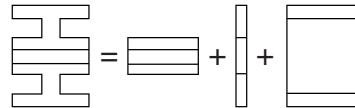
Where: P (Aluminum) = .0924

P (Cast Iron) = .260

P (Steel) = .282



Calculate the inertia of complex, concentric, rotating parts by breaking the part into simple cylinders, calculating their inertia and summing the values of each.



In applications where the speed of the load is different from the speed at the clutch or brake, the value of WK² is referred to as reflected inertia.

TORQUE

English

Calculate the required torque. Estimate the torque requirements based on the rated horsepower of the prime mover.

$$T = \frac{63000(\text{HP})K}{\text{RPM}}$$

T = torque in in. lbs.

HP = horsepower

RPM = Speed at clutch or brake

If the driven load has heavy rotating parts that must be started or stopped in a specific time, evaluate the torque from the formula:

$$T = \frac{.039 (WK^2) \Delta \text{RPM}}{t}$$

T = average torque in in. lbs.

WK² = total inertia load in lb. ft.²

RPM = initial RPM – final RPM

t = time in seconds for ΔRPM

The time (t) in seconds required to accelerate or decelerate a rotating mechanism is estimated as follows:

$$t = \frac{.039 (WK^2) \text{RPM}}{T}$$

t = required starting or stopping time

WK² = total inertia load in lb. ft.²

PRPM = speed at the clutch or brake

T = rated clutch or brake torque

Metric

$$T = \frac{P(9545)K}{n}$$

T = torque in Newton meters (Nm)

P = transmitted power in kilowatts (kW)

n = speed at clutch or brake

If the driven load has heavy rotating parts that must be started or stopped in a specific time, evaluate the torque from the formula.

$$T = \frac{(J) \Delta n}{t(9.55)}$$

T = average torque in Newton meters (Nm)

J = total inertia load in kgm²

Δn = initial RPM – final RPM

t = time in seconds for Δn

The time (t) in seconds required to accelerate or decelerate a rotating mechanism is estimated as follows:

$$t = \frac{(J) n}{(9.55)}$$

t = required starting or stopping time in seconds

J = total inertia load in kgm²

Δn = speed at the clutch or brake

T = rated clutch or brake torque

NOTE — A service factor (K) is required to determine the actual torque that the clutch must deliver. For example, some electric motors will deliver three times their rated horsepower for a short period of time. The clutch or brake must be capable of handling the maximum possible output.

NOTE — Torque increases as the speed decreases. Mount the clutch on the highest speed shaft available.

APPLICATION ENGINEERING DATA

"Air Champ"

► THERMAL CHARACTERISTICS

Check the clutch or brake heat sink capacity for high inertia starts or stops and the continuous thermal horsepower dissipation requirement for cyclic starts and stops.

English

1. Calculate the energy per cycle (E_C) absorbed by the clutch or brake each start or stop by the formula.

$$E_C = .00017 (WK^2) (N_2 - N_1)^2$$

E_C = rotational energy in ft. lbs. N_1 = Initial RPM

WK^2 = total inertia load in lb. ft.² N_2 = Final RPM

Select a clutch or brake that has a heat sink capacity which exceeds the energy in ft. lbs. produced during each start or stop.

2. Determine the continuous thermal horsepower (HP_t) requirement.

$$HP_t = \frac{(E_C)CPM}{33000}$$

E_C = rotational energy in ft. lbs. when the clutch or brake is applied.

CPM = the number of starts or stops per minute.

Select a clutch or brake that has a continuous thermal horsepower rating at operating speed that exceeds the thermal horsepower requirement. Refer to the charts on page 261.

Permissible cycles per minute are estimated using the formula:

$$CPM = \frac{HP_t(33,000)}{E_C}$$

HP_t = rated clutch or brake continuous thermal HP dissipation

E_C = rotational energy in ft. lb. when the clutch or brake is applied

Cycle duty theoretically can be as much as 100 CPM or more. However, the practical limit depends upon the ability of the clutch or brake to dissipate heat rather clutch or brake response time. Each time a machine starts or stops, heat is generated at the clutch or brake interface. This heat energy is equal to energy per cycle (E_C) of the rotational inertia at operating speed.

Metric

1. Calculate the energy per cycle (E_C) absorbed by the clutch or brake each start or stop by the formula:

$$E_C = \frac{J (\Delta n)^2}{182.4}$$

E_C = rotational energy in Joules when the clutch or brake is applied

J = total inertia load in kgm²

Δn = initial RPM – final RPM

Select a clutch or brake that has a heat sink capacity which exceeds the energy in Joules produced during each start or stop.

2. Determine the required continuous thermal in kw (P_{th})

$$P_{th} = \frac{E_C/60 (CPM)}{1000}$$

E_C = rotational energy in Joules when the clutch or brake is applied.

CPM = the number of starts or stops per minute.

Select a clutch or brake that a continuous thermal dissipation rating at operation speed that exceeds the thermal dissipation requirement.

Permissible cycles per minute are estimated using the formula:

$$CPM = \frac{P_{th} 60}{E_C}$$

P_{th} = Rated clutch or brake continuous thermal dissipation

E_C = Rotational energy in Joules when the clutch is applied

► HEAT SINK CAPACITIES

Friction Clutches	
Model	Heat Sink Capacity (ft. lbs.)
M	1,900
BW	5,650
F-450/FW	30,000
L-600/LW	60,000
M-800/MW	110,000
H-1000/HW	230,000
XHW	200,000

Dual Plate Clutches	
Model	Heat Sink Capacity (ft. lbs.)
DPC-9T	220,000
DPC-11T	360,000
DPC-13T	690,000
DPC-15T	820,000

High Capacity Clutches	
Model	Heat Sink Capacity (ft. lbs.)
DFE-1150	390,000
DFE-1650	870,000
DFE-2200	1,187,000
DFE-2500	1,460,000
QFE-1150	780,000
QFE-1650	1,740,000
QFE-2200	2,374,000
QFE-2500	2,920,000

Metric Clutches	
Model	Heat Sink Capacity
B-275	10,000 Joules
F-450	41,000 Joules
L-600	81,000 Joules
M-800	149,000 Joules
H-1000	312,000 Joules

Friction Brakes	
Model	Heat Sink Capacity (ft. lbs.)
M	1,900
BW	5,650
S-450	30,000
S-600	60,000
S-800	125,000
S-1000	200,000
T-450	35,000
T-600	60,000
T-800	125,000
T-1000	170,000

Spring Engaged Brakes	
Model	Heat Sink Capacity (ft. lbs.)
TSE-450	35,000
TSE-600	60,000
TSE-800	125,000
TSE-1000	170,000

Brake Disc's for Caliper Brakes	
Model	Heat Sink Capacity (ft. lbs.)
12 Standard	265,000
14 Standard	320,800
16 Standard	376,600
18 Standard	432,400
20 Standard	529,400
22 Standard	636,100
24 Standard	703,000
18 Ventilated	1,500,000
21 Ventilated	2,100,000
24 Ventilated	2,700,000

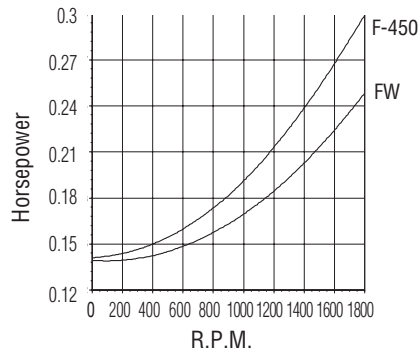
High Capacity Brakes	
Model	Heat Sink Capacity (ft. lbs.)
DFB-1150	390,000
DFB-1650	870,000
DFB-2200	1,187,000
DFB-2500	1,460,000
QFB-1150	780,000
QFB-1650	1,740,000
QFB-2200	2,374,000
QFB-2500	2,920,000

Metric Brakes	
Model	Heat Sink Capacity
S-450	41,000 Joules
S-600	81,000 Joules
S-800	170,000 Joules
S-1000	271,000 Joules

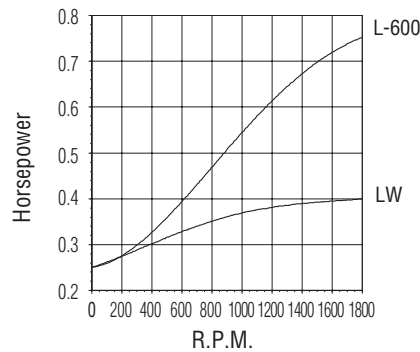
Thru-Shaft Clutch Brakes	
Model	Heat Sink Capacity (ft. lbs.) Clutch / Brake
FWCB	25,000 / 25,000
LWCB	45,000 / 25,000
MWCB	90,000 / 45,000
HWCB	125,000 / 120,000

► THERMAL HORSEPOWER VS. RPM

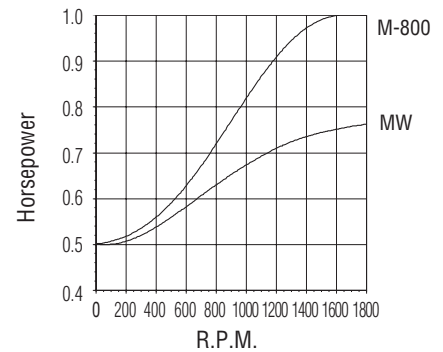
► F-450 & FW CLUTCHES



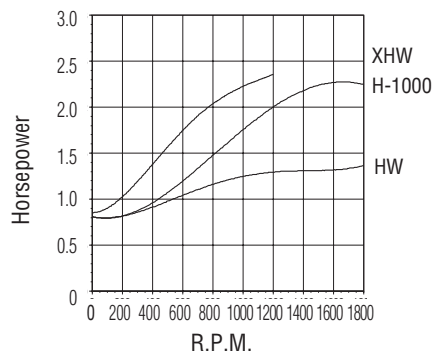
► L-600 & LW CLUTCHES



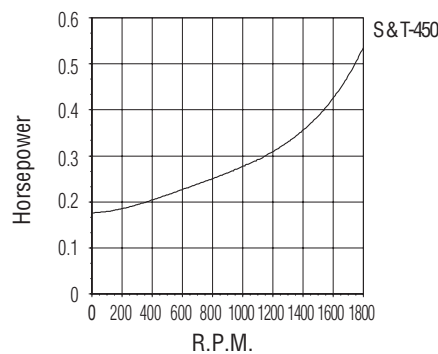
► M-800 & MW CLUTCHES



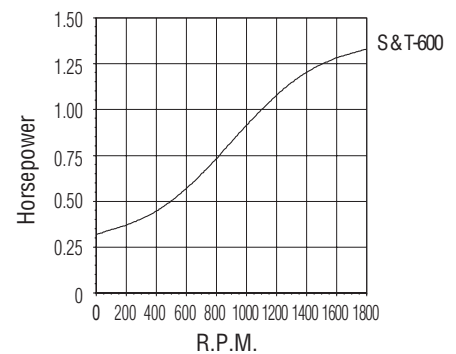
► H-1000, HW & XHW CLUTCHES



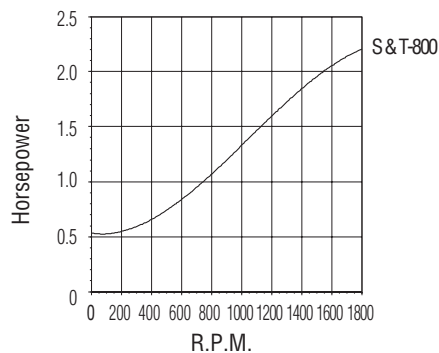
► S & T-450 BRAKES



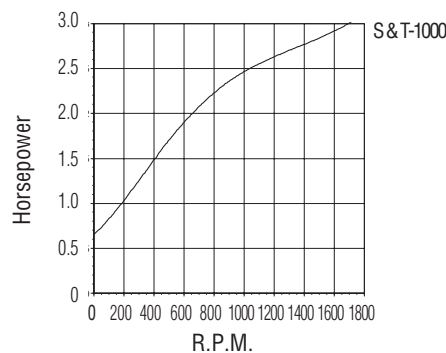
► S & T-600 BRAKES



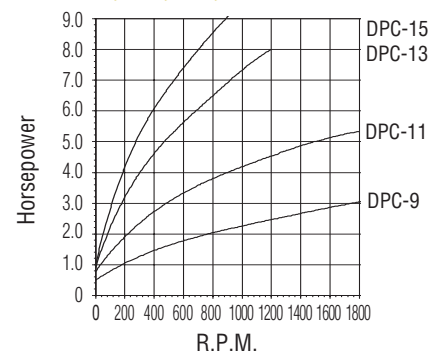
► S & T-800 BRAKES



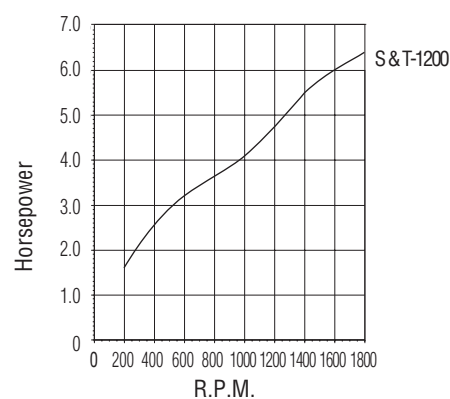
► S & T-1000 BRAKES



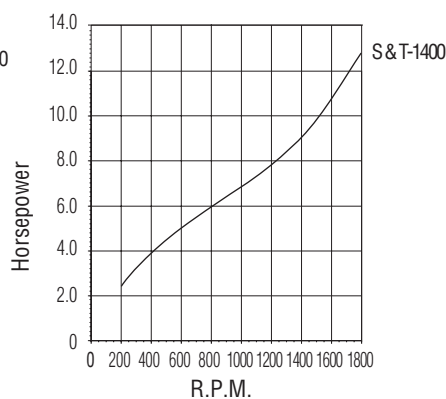
► DPC-9, 11, 13, 15 CLUTCHES



► S & T-1200 BRAKES



► S & T-1400 BRAKES



APPLICATION ENGINEERING DATA

"Air Champ"

RESPONSE TIME DATA For Clutches and Brakes using "Air Champ" Valves

All data obtained by using 8 inch long 1/4 inch diameter hose, 1/8 inch NPT fittings and quick exhaust valves.

t_v = Valve delay time
 t_v = 5 msec for .062, 3 way valve
 t_v = 8 msec for 4 way valve, pilot operated
 t_v = 70 msec for 4 way valve, spring operated

t_1 = Time from start of valve open to start of torque rise

$t_{2^{90}}$ = Time from start of torque rise to 90% value of torque

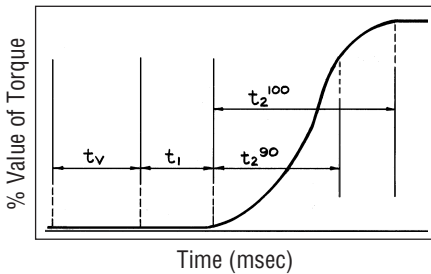
$t_{2^{100}}$ = Time from start of torque rise to 100% value of torque

t_3 = Time from start of valve exhaust to start of torque decay

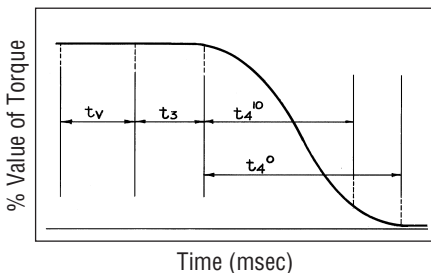
$t_{4^{10}}$ = Time from start of torque decay to 10% value of torque

t_{4^0} = Time from start of torque decay to 0% value of torque

TORQUE RISE RESPONSE

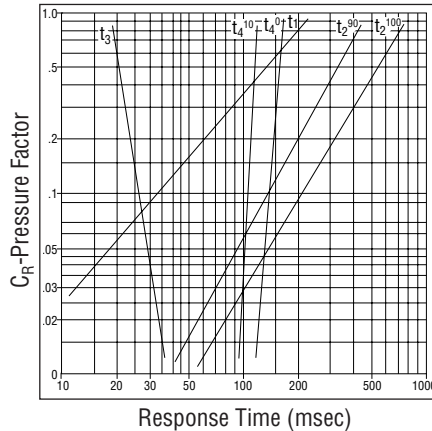


TORQUE DECAY RESPONSE

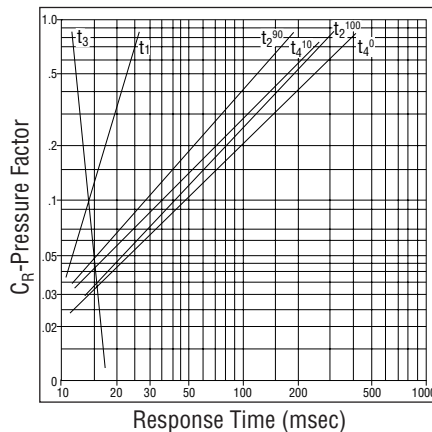


Obtain CR values for units from table page 263 and 264. Read times at 100 PSIG directly from CR vs Response Time graphs below

3-WAY VALVE RESPONSE TIMES



4-WAY VALVE RESPONSE TIMES



Correction factor for operating pressures less than 100 PSIG

Use formula $t_p = C_p (t)_{100}$

t_p = Response time at pressure P

C_p = Response pressure factor at pressure P from graph.

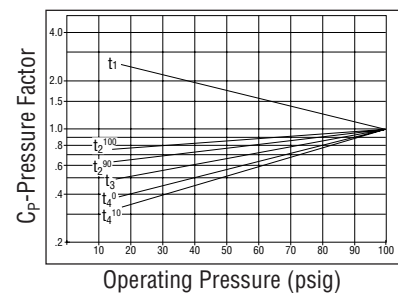
t_{100} = Response time at 100 PSIG

Correction factor for hose lengths greater than 8 inches (1-10 FT)
 Multiply all response times by C_L

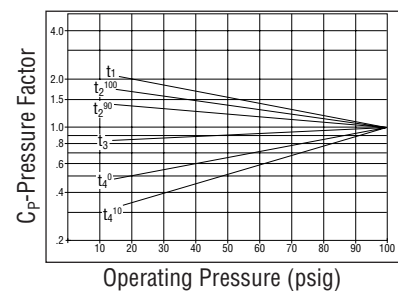
where $C_L = \frac{t_1 + .7 (L - .66)}{t_1}$

t_1 Found below at operating pressure
 L Length of hose in feet

3-WAY CORRECTION FACTOR GRAPH



4-WAY CORRECTION FACTOR GRAPH



EXAMPLE: Determine the various response times, defined above, for a 625 Modular Brake operating at 75 PSIG using a Nexen 4-way valve.

SOLUTION: I. Determine the response times at 100 PSIG.

1.) Obtain the response factor, C_R , from the Clutch and Brake Data Table page 263 and 264 $C_R = .096$.

2.) Read the response times at 100 PSIG directly off the 4-way C_R vs. Response Time graph; $t_1 = 14$ msec, $t_{2^{90}} = 27$ msec, $t_3 = 14$ msec, $t_{4^{10}} = 34$ msec, $t_{4^0} = 46$ msec.

II. Correct the response times for 75 PSIG.

1.) Obtain the C_p factor from the 4-way Correction Factor Graph.

2.) Calculate the corrected response times using the formula $(t)_{75} = C_p (t)_{100}$.

i.e. $(t_1)_{75} = (1.25) (14 \text{ msec}) = 17.5 \text{ msec}$

$(t_{2^{90}})_{75} = (1.08) (27 \text{ msec}) = 29.2 \text{ msec}$

likewise the following are obtained: $(t_{2^{100}})_{75} = 46 \text{ msec}$, $(t_3)_{75} = 13.3 \text{ msec}$

$(t_{4^{10}})_{75} = 24 \text{ msec}$, $(t_{4^0})_{75} = 36.8 \text{ msec}$

CLUTCH AND BRAKE AIR VOLUME/RATE DATA

Friction Clutches, inch and metric models

Model	Air Chamber Volume (Vn) New Facings	Air Chamber Volume (Vo) Old Facings	Response Factor (Cr)	Thermal Dissipation (HPt)
M	0.050	0.104	0.009	0.060
BW	0.201	0.630	0.038	0.130
F-450	0.266	0.695	0.049	0.250
L-600	0.327	0.855	0.060	0.400
M-800	0.644	2.000	0.119	0.750
H-1000	1.246	5.248	0.230	1.250
XHW	2.152	9.856	0.397	2.500

Tooth Clutches, inch and metric models

5H30	0.439	N/A	0.060	N/A
5H35	0.492	N/A	0.067	N/A
5H40	0.639	N/A	0.087	N/A
5H45	0.763	N/A	0.104	N/A
5H50	0.994	N/A	0.136	N/A
5H60	1.450	N/A	0.198	N/A
5H70	1.731	N/A	0.237	N/A
5H20P	0.250	N/A	0.034	N/A
5H30P/P-E	0.439	N/A	0.060	N/A
5H35P/P-E	0.492	N/A	0.067	N/A
5H40P/P-E	0.639	N/A	0.087	N/A
5H45P/P-E	0.763	N/A	0.104	N/A
5H50P/P-E	0.994	N/A	0.136	N/A
5H60P/P-E	1.450	N/A	0.198	N/A
5H70P	1.731	N/A	0.237	N/A
5H80P	2.647	N/A	0.362	N/A
5H100P	3.380	N/A	0.460	N/A
5H30P-E	.439	N/A	0.060	N/A
5H35P-E	.492	N/A	0.067	N/A
5H40P-E	.639	N/A	0.087	N/A
5H45P-E	.763	N/A	0.104	N/A
5H50P-E	.994	N/A	0.136	N/A
5H60P-E	1.450	N/A	0.198	N/A
5H30P-SP/SP-E	1.103	N/A	Dependent Upon Engagement RPM	N/A
5H35P-SP/SP-E	1.236	N/A		N/A
5H40P-SP/SP-E	1.605	N/A		N/A
5H45P-SP/SP-E	1.917	N/A		N/A
5H50P-SP/SP-E	2.496	N/A		N/A
5H60P-SP/SP-E	3.641	N/A		N/A
5H70P-SP/SP-E	4.348	N/A		N/A
5H80P-SP/SP-E	6.649	N/A		N/A

Multi-Disc Clutches

4H30P	0.206		0.041	0.090
4H35P	0.284	When	0.056	0.120
4H40P	0.330	Properly	0.066	0.150
4H45P	0.450	Applied	0.089	0.180
4H50P	0.477	Wear Is	0.095	0.190
4H60P	0.854	Minimal	0.140	0.220
4H70P	1.035		0.160	0.280

Dual Plate Clutches

DPC-9T	2.163	11.651	0.309	3.300
DPC-11T	4.803	23.288	0.500	5.500
DPC-13T	7.326	35.525	0.702	8.000
DPC-15T	10.818	52.455	1.133	9.000

Friction Brakes, inch and metric models

Model	Air Chamber Volume (Vn) New Facings	Air Chamber Volume (Vo) Old Facings	Response Factor (Cr)	Thermal Dissipation (HPt)
M	0.050	0.104	0.009	0.060
BW	0.201	0.630	0.038	0.130
S-450	0.629	1.422	0.090	0.520
S-600	1.024	2.108	0.124	1.300
S-800	1.039	3.307	0.199	2.230
S-1000	1.739	8.656	0.398	3.000
T-450	0.629	1.422	0.090	0.520
T-600	1.024	2.108	0.124	1.300
T-800	1.039	3.307	0.199	2.230
T-1000	1.739	8.656	0.398	3.000

Caliper Brakes

625	0.019	0.095	0.003	See Disc
1000	0.049	0.245	0.008	See Disc
DB	0.400	0.750	0.022	See Disc
BC288A	2.120	6.520	0.072	See Disc
BC425A	3.620	13.260	0.158	See Disc
BC288S	3.760	N/A	0.072	See Disc
BC425S	6.240	N/A	0.158	See Disc
BD, Air	2.000	16.000	0.159	See Disc
BD, Spring	41.600	N/A	0.317	See Disc
SPC, Air	2.000	16.000	0.159	See Disc
SPC, Spring	41.600	N/A	0.312	See Disc

Brake Disc's for Caliper Brakes

DB, 10" Disc	—	—	—	0.650
DB, 12" Disc	—	—	—	0.950
DB, 14" Disc	—	—	—	1.430
DB, 16" Disc	—	—	—	2.930

Dual Plate Brakes

DPB-9T	2.163	11.651	0.309	3.300
DPB-11T	4.803	23.288	0.500	5.500
DPB-13T	7.326	35.525	0.702	8.000
DPB-15T	10.818	52.455	1.133	9.000

Modular NEMA C Flange Clutch

Size 625	0.245	0.835	0.075	0.400
Size 875	0.245	0.835	0.075	0.400
Size 1125	0.397	1.058	0.095	0.500
Size 1375	0.413	1.895	0.137	0.750

Modular NEMA C Flange Brake

Size 625	0.550	1.392	0.096	0.230
Size 875	0.550	1.392	0.096	0.230
Size 1125	1.276	2.610	0.153	0.330
Size 1375	1.600	3.781	0.191	0.500

Note: Vn = Air chamber volume, in cubic inches, with new facings
Vo = Air chamber volume, in cubic inches, with old facings
HPt = Continuous Thermal dissipation at 1800 RPM except Model XHW at 1200 RPM

Cr = Response Factor; Cr = Air Chamber area ÷ by 100 psi minus pressure to overcome the return springs.

CLUTCH AND BRAKE AIR VOLUME/RATE DATA (CONTINUED NEXT PAGE)

APPLICATION ENGINEERING DATA

"Air Champ"

CLUTCH AND BRAKE AIR VOLUME/RATE DATA (CONTINUED)

Model	Air Chamber Volume (Vn) New Facings	Air Chamber Volume (Vo) Old Facings	Response Factor (Cr)	Thermal Dissipation (HPT)
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Thru-Shaft Clutch Brakes

FWCB	0.264 / 0.638	0.698 / 1.431	0.049 / 0.090	0.250 / 0.520
LWCB	0.327 / 0.629	0.864 / 1.422	0.060 / 0.090	0.400 / 0.520
MWCB	0.633 / 0.771	1.988 / 2.394	0.119 / 0.142	0.750 / 1.300
HWCB	1.268 / 1.013	5.269 / 5.533	0.230 / 0.260	1.250 / 2.230
FCDB, 10" Disc	0.266 / 0.400	0.695 / 0.750	0.049 / 0.022	0.250 / 0.650
LCDB, 10" Disc	0.327 / 0.400	0.855 / 0.750	0.060 / 0.022	0.400 / 0.650
LCDB, 12" Disc	0.327 / 0.400	0.855 / 0.750	0.060 / 0.022	0.400 / 0.950
MCDB, 12" Disc	0.644 / 0.400	2.000 / 0.750	0.119 / 0.022	0.750 / 0.950
MCDB, 14" Disc	0.644 / 0.400	2.000 / 0.750	0.119 / 0.022	0.750 / 1.430
HCDB, 16" Disc	1.246 / 0.400	5.248 / 0.750	0.230 / 0.022	1.250 / 2.930

FMCB Clutches

FMCB-130	0.500	1.410	0.065	0.180
FMCB-7	0.770	2.300	0.106	0.330
FMCB-8	1.290	3.880	0.179	0.440

FMCB Brakes

FMCB-130	0.550	1.570	0.072	0.180
FMCB-7	0.890	2.680	0.124	0.330
FMCB-8	1.440	4.330	0.201	0.440

FMCBE Clutches

FMCBE-625	0.398	1.080	0.055	0.140
FMCBE-875	0.498	1.410	0.065	0.180
FMCBE-1125	0.712	2.040	0.094	0.330
FMCBE-1375	1.140	3.250	0.151	0.440

FMCBE Brakes

FMCBE-625	0.438	1.190	0.060	0.140
FMCBE-875	0.548	1.570	0.072	0.180
FMCBE-1125	0.849	2.430	0.112	0.330
FMCBE-1375	1.300	3.710	0.172	0.440

FMCBES Clutches

FMCBES-625	0.660	1.980	0.092	0.140
FMCBES-875	0.660	1.980	0.092	0.180
FMCBES-1125	0.990	2.970	0.137	0.330
FMCBES-1375	1.710	5.130	0.238	0.440

TORQUE LIMITERS

TL10 & 15	0.450		0.032	
TL20	0.780		0.057	
TL30	1.390		0.067	
TL40	1.560	Not	0.104	Not
TL50	1.800	Applicable	0.136	Applicable
TL60	2.620		0.198	
TL70	3.120		0.227	
TL80	4.700		0.342	

NEW UNIT TORQUE

The initial torque on new units can be 30% to 40% less than the catalog value until the friction facing and friction disc are lapped or worn in.

FRICTION FACINGS

The torque ratings expressed in this catalog are the products equipped with standard friction facings. Friction facings are identified with two color code stripes on the outside edge.

Two red stripes indicate standard facings.

Two green stripes indicate LOCO facings.

Two purple stripes indicate HICO facings

LOCO FRICTION FACINGS

"Air Champ®" has special low coefficient (LOCO) friction facings available for a number of clutches, brakes and clutch/brakes. With LOCO friction facing, the units static torque capacity is approximately 60% of the catalog rating.

Typical uses for LOCO friction facings include soft start or stop applications where more slippage is desired. Soft starts increase engagement time which reduces peak input thermal spikes. LOCO friction facings are used in constant slip applications where a large unit is required for high continuous thermal dissipation. Contact your local Nexen Distributor for availability.

HICO FRICTION FACINGS

"Air Champ's" high coefficient (HICO) friction facings are available for applications where higher torque is required. With HICO friction facings the unit's static torque capacity is approximately 40% higher than catalog rated torque.

Typical uses for HICO friction facings include emergency stops and starts.

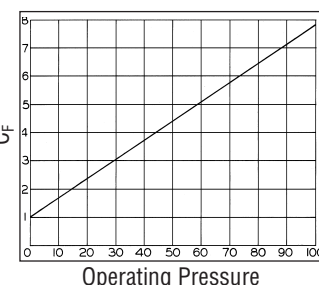
HICO friction facings are used to increase a clutch or brake's torque output when a large, standard unit will not fit a particular envelope dimension.

Contact your local Nexen Distributor for availability.

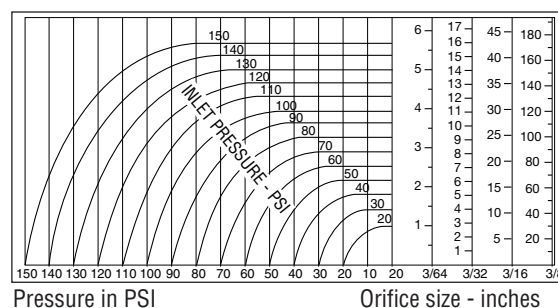
FREE AIR VOLUME CONSUMPTION

Compression Factor (C_F) Vs. Operating Pressure

Cubic inches of free air consumed per cycle = C_F multiplied by the air chamber volume obtained from the Clutch and Brake Data tables.



AIR FLOW RATE IN CFM AT 70°F



MISALIGNMENT TABLES

Friction Clutches

The following table and drawing represents misalignment capabilities for Dodge Taper-Lock Poly Disc Couplings. The values are based upon the coupling maximum capability for individual misalignment.

These tabulated values may not be combined. Review the drawing and the table for information regarding the Clutch and application.

Dodge Taper-Lock Poly Disc Couplings

Measured Variation at Points 180 degrees Apart

Clutch Model	Coupling Size (In)	Parallel Maximum (In)	Angular Maximum (In)	Axial Float Maximum Value from recommended Initial Spacing (In)
F-450	2.625	0.015	0.040	± 0.125
L-600	4.000	0.015	0.064	± 0.125
M-800	7.000	0.015	0.112	± 0.125
H-1000	8.000	0.015	0.128	± 0.125
XHW	10.000	0.015	0.160	± 0.188

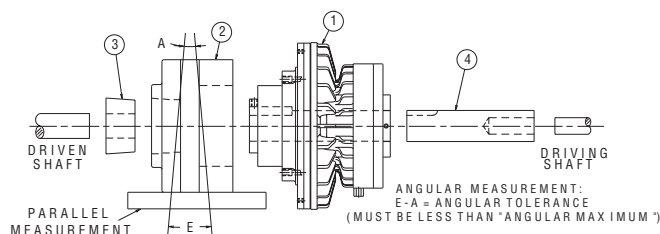
Clutch-Brakes, Thru-Shaft Mounted

The following table and drawing represents misalignment capabilities for Dodge Taper-Lock Poly Disc Couplings. The values are based upon the coupling maximum capability for individual misalignment. These tabulated values may not be combined. Review the drawing and the table for information regarding the Clutch-Brake and application.

Dodge Taper-Lock Poly Disc Couplings

Measured Variation at Points 180 degrees Apart

Clutch Model	Coupling Size (In)	Parallel Maximum (In)	Angular Maximum (In)	Axial Float Maximum Value from recommended Initial Spacing (In)
BWCB	N/A	N/A	N/A	N/A
FWCB	2.625	0.015	0.040	± 0.125
LWCB	4.000	0.015	0.064	± 0.125
MWCB	7.000	0.015	0.112	± 0.125
HWCB	8.000	0.015	0.128	± 0.125
FCDB	2.625	0.015	0.040	± 0.125
LCDB	4.000	0.015	0.064	± 0.125
MCDB	7.000	0.015	0.112	± 0.125
HCDB	8.000	0.015	0.128	± 0.125



To Order Coupling Type Clutch — Specify

1. Product Number of Pilot Mount Unit
2. Coupling Half (includes Dodge coupling half, Poly-Disc & adapter)
3. Taper Lock Bushing
4. Shaft Extension/Sleeve Bushing(if needed)*

*Same length as clutch.

Tooth Clutches (5H), Torque Limiters (TL) and Multiplate Clutches (4H)

Flexible Couplings

Use these tables if you are attaching a Flexible Coupling to a Tooth Clutch (5HP, 5HP-E, 5HP-SP, 5HPSP-E), Multi-Disc Clutch (4HP) or Torque Limiter (TL-A, TL-AE, TL-AC).

The following tables represent misalignment capabilities for Single & Double Flex Coupling Assemblies. The values are based upon the maximum capability for individual misalignment.

If parallel, angular and axial misalignment are all required, be certain that the combined percentage of each does not exceed 100%. For instance, if 100% of the parallel misalignment rating is required, no angular or axial misalignment is allowed. If 50% of the parallel misalignment is required, only 50% of the angular misalignment OR 50% of the axial rating will be available.

Find the Product Number of the Flexible Coupling you are using in your application and take note of the misalignment values allowed.

Single Flexible Couplings

Product Number	Angular (Degrees)	Axial (In)	Parallel (In)
909980	1.5	0.065	0.011
910080	1.5	0.070	0.012
910180	1.5	0.080	0.013
910280	1.5	0.090	0.014
910380	1.5	0.105	0.017
910480	1.5	0.120	0.019
910580	1.5	0.135	0.022
911780	1.5	0.155	0.026

Double Flexible Couplings

Product Number	Angular (Degrees)	Axial (In)	Parallel (In)
909981	3.0	0.130	0.063
910081	3.0	0.140	0.078
910181	3.0	0.160	0.085
910281	3.0	0.180	0.091
910381	3.0	0.210	0.104
910481	3.0	0.240	0.117
910581	3.0	0.270	0.137
911781	3.0	0.310	0.170

STANDARD KEY SIZES

Shaft Size (In) Key Size			Shaft Size (In) Key Size		
Min	Max		Min	Max	
.500	.562	.125 x .125	2.312	2.75	.625 x .625
.625	.875	.187 x .187	2.812	3.25	.750 x .750
.937	1.25	.250 x .250	3.187	3.75	.875 x .875
1.312	1.375	.312 x .312	3.812	4.50	1.00 x 1.00
1.437	1.75	.375 x .375	4.562	5.50	1.25 x 1.25
1.812	2.25	.500 x .500	5.562	6.50	1.50 x 1.50

PEAK INPUT RATE

The Peak Input Rate Capacity is the limiting factor in high inertia starts and stops. It is the rate at which the clutch or brake absorbs heat (at friction interface) during the acceleration period, while the interfaces are slipping or until the load and the clutch are operating at the same speed. This heat will generally not or exceed the Peak Input Capacity unless the acceleration time exceeds clutch or brake transient time.

Transient time is the time required to reach the air pressure setting. The correct Input Rate occurs when the start-up time is greater than the response time of the clutch or the stopping time is greater than the response time of the brake. Increasing the response time (by using a control valve with a small orifice, or adding an air cavity between the valve and the unit) increases the start-up time. This reduces the thermal peaks that create damaging thermal gradients with the friction plate.

The Peak Input Rate during such a start is evaluated from an estimate of the speed difference between the facing and the friction disc at the end of the transient period and the torque value expected at the air pressure setting. The safe Peak Input Rate of a clutch or brake with cast iron plates and organic friction linings is approximately 0.9 horsepower per square inch of interface area.

Refer to the Function Example for High Inertia Starts or Stops on page 279 for a working example of this product selection consideration.

Calculating Peak Input Rate Capacity:

Calculate the speed change (ΔN_1) during the transient period. Assume 50% torque and a transient time of 0.1 second for most applications.

Formula: $\Delta N_1 = \frac{T(t)}{0.039 (WK^2)}$

T = rated clutch or brake torque
 t = required transient time in seconds
 WK^2 = total inertia load in pound-feet²
 ΔN_1 = speed change as measured in RPM

The speed difference (N_d) between the facing and friction disc at the end of the transient period is the difference between full speed (RPM) and the speed change (ΔN_1).

Formula: $N_d = \text{RPM} - \Delta N_1$

N_d = speed difference in RPM
 RPM = rating of the clutch or brake
 ΔN_1 = speed change in RPM

Calculate the Peak Thermal Input in horsepower (HP) for your application.

Formula: $HP = \frac{N_d (T)}{63000}$

HP = peak thermal input of application
 N_d = speed difference in RPM
 T = torque at the set air pressure

Calculate the Peak Thermal Input of a clutch or brake.

Formula: $P_{th} = I_a (0.9)$

P_{th} = clutch or brake thermal input
 I_a = effective interface area (see catalog table for product)

Compare your applications Peak Thermal Input requirement with that of the clutch or brake. If the clutch or brake has a higher Peak Thermal Input calculation than your applications requirement, you are using the correct product.

SPROCKET TABLES

The tables below indicate compatible Sprocket options for the applicable Clutch.

1. Find your specific Clutch Model Number.
2. Determine a Chain Size and minimum T Configuration from the table.

Refer to the Clutch drawing to obtain pilot diameter, bolt circle, hole size and location information. Some minimum sprockets may not provide sufficient load carrying capacity, due to the application. If in doubt, consult Nexen to insure suitability.

Friction Clutches

Chain Size	25	35	41/40	50	60	80	100
M							
BW	40 T.....	28 T.....	22 T				
F-450	48 T.....	32 T.....	25 T.....	21 T			
L-600	40 T.....	30 T.....	25 T.....	21 T			
M-800		38 T.....	31 T.....	26 T.....	21 T		
H-1000		45 T.....	37 T.....	31 T.....	24 T.....	20 T	
XHW					35 T.....	27 T	

Depending on the application, some of the minimum sprockets will not provide load carrying capacity.

Tooth Clutches

Chain Size	25	35	40	50	60	80	100	120	140	160	200
5H20		36 T.....	28 T.....	22 T.....	20 T						
5H30		40 T.....	32 T.....	26 T.....	22 T.....	17 T					
5H35		40 T.....	32 T.....	26 T.....	22 T.....	17 T					
5H40		45 T.....	34 T.....	28 T.....	24 T.....	18 T					
5H45			36 T.....	30 T.....	26 T.....	20 T					
5H50			40 T.....	34 T.....	28 T.....	22 T.....	19 T				
5H60				38 T.....	32 T.....	25 T.....	21 T.....	19 T			
5H70					38 T.....	29 T.....	24 T.....	21 T.....	19 T		
5H80						33 T.....	27 T.....	23 T.....	21 T.....	19 T	
5H100							30 T.....	25 T.....	23 T.....	19 T	

Depending on the application, some of the minimum sprockets will not provide load carrying capacity.

Multi-Disc Clutches

Chain Size	25	35	40	50	60	80	100	120
4H30		36 T.....	28 T.....	24 T.....	20 T			
4H35		40 T.....	32 T.....	26 T.....	22 T.....	17 T		
4H40		45 T.....	34 T.....	28 T.....	24 T.....	19 T		
4H45			40 T.....	32 T.....	28 T.....	21 T		
4H50			42 T.....	34 T.....	29 T.....	23 T.....	19 T	
4H60				40 T.....	34 T.....	26 T.....	21 T	
4H70					38 T.....	30 T.....	24 T.....	21 T

Depending on the application, some of the minimum sprockets will not provide load carrying capacity.

Dual Plate Clutches

Chain Size	50	60	80	100	120	140	160	200
DPC-9T	34 T.....	28 T.....	22 T.....	19 T				
DPC-11T		33 T.....	25 T.....	21 T.....	19 T			
DPC-13T			33 T.....	27 T.....	23 T.....	21 T.....	19 T	
DPC-15T				29 T.....	25 T.....	21 T.....	20 T.....	19 T

Depending on the application, some of the minimum sprockets will not provide load carrying capacity.

Torque Limiters

Chain Size	25	35	40	50	60	80	100	120
TL10/15	45 T.....	30 T.....	24 T.....	20 T.....				
TL20		40 T.....	30 T.....	24 T.....	21 T			
TL30		42 T.....	32 T.....	26 T.....	22 T.....	18 T		
TL40			40 T.....	30 T.....	26 T.....	20 T		
TL50			42 T.....	34 T.....	29 T.....	23 T.....	19 T	
TL60			48 T.....	38 T.....	32 T.....	25 T.....	21 T	
TL70					37 T.....	29 T.....	23 T.....	21 T
TL80						33 T.....	27 T.....	23 T

Depending on the application, some of the minimum sprockets will not provide load carrying capacity.

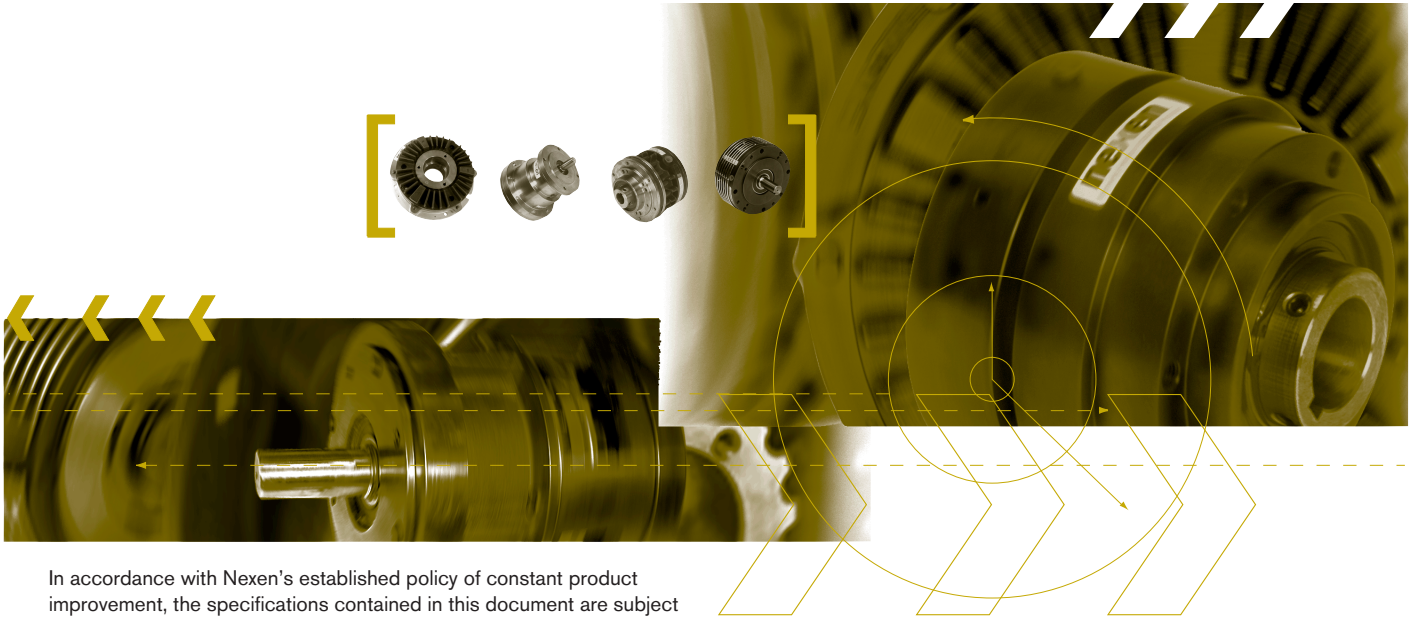
This table applies to the TL/2 series also.

FUNCTION EXAMPLES

“Air Champ”

PRODUCT FUNCTION/SELECTION CHART

Functions	Disconnect	Holding	Reversing and Multiple Speed	Inching and Jogging	Accurate Positioning	Overload Protection	Controlled Acceleration (Soft Start)	Emergency Stopping	Cycling or Indexing	High Inertia Start or Stop
Products										
Friction Clutch Models										
BW,	Yes		Yes	Yes	Yes	Yes	Yes			
B-275,	Yes		Yes	Yes	Yes	Yes	Yes		Yes	
F-450,	Yes		Yes	Yes	Yes	Yes	Yes		Yes	
L-600,	Yes		Yes	Yes	Yes	Yes	Yes		Yes	
M-800,	Yes		Yes	Yes	Yes	Yes	Yes		Yes	
H-1000,	Yes		Yes	Yes	Yes	Yes	Yes		Yes	
XHW,	Yes		Yes	Yes	Yes	Yes	Yes		Yes	
FW,	Yes		Yes	Yes	Yes	Yes	Yes		Yes	
LW,	Yes		Yes	Yes	Yes	Yes	Yes		Yes	
MW,	Yes		Yes	Yes	Yes	Yes	Yes		Yes	
HW	Yes		Yes	Yes	Yes	Yes	Yes		Yes	
DPC Series Dual Plate Clutches & Brakes	Yes		Yes	Yes	Yes	Yes	Yes		Yes	Yes
4H Series Multi-Disc Clutches	Yes		Yes		Yes	Yes	Yes			
5H Series Tooth Clutches	Yes		Yes		Yes	Yes				Yes
DFC & QFE Series High Capacity Clutches	Yes			Yes	Yes	Yes	Yes			Yes
TL Series Torque Limiters	Yes				Yes	Yes				
Friction Brake Models										
S-450,		Yes							Yes	
S-600,		Yes							Yes	
S-800,		Yes							Yes	
S-1000,		Yes							Yes	
T-450,		Yes							Yes	
T-600,		Yes							Yes	
T-800,		Yes							Yes	
T-1000		Yes							Yes	
Caliper Brakes Models										
DB,		Yes							Yes	
BC,		Yes						Yes	Yes	
BD,		Yes						Yes	Yes	Yes
SPC		Yes						Yes	Yes	Yes
Drum Brakes		Yes								
Spring Engaged Brake Models										
TSE,		Yes						Yes		
SE,		Yes						Yes		
MB,		Yes						Yes		
SSE		Yes						Yes		
DFB & QFB Series High Capacity Brakes		Yes						Yes	Yes	Yes
Modular NEMA “C” Flange Clutch-Brake Models										
MBU,				Yes		Yes	Yes		Yes	
MOU,				Yes		Yes	Yes		Yes	
MDU,				Yes		Yes	Yes		Yes	
MIU				Yes		Yes	Yes		Yes	
Clutch-Brake Modular Units										
MBU,				Yes		Yes	Yes		Yes	
MDU,				Yes		Yes	Yes		Yes	
MIU,				Yes		Yes	Yes		Yes	
MOU				Yes		Yes	Yes		Yes	
Clutch-Brake Models										
FWCB,				Yes		Yes	Yes		Yes	
LWCB,				Yes		Yes	Yes		Yes	
MWCB,				Yes		Yes	Yes		Yes	
HWCB				Yes		Yes	Yes		Yes	
Clutch-Brake Flange Mounted Models										
FMC,				Yes		Yes	Yes		Yes	
FMCB,				Yes		Yes	Yes		Yes	
FMCBE,				Yes		Yes	Yes		Yes	
FMCBES				Yes		Yes	Yes		Yes	



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

FUNCTION EXAMPLES

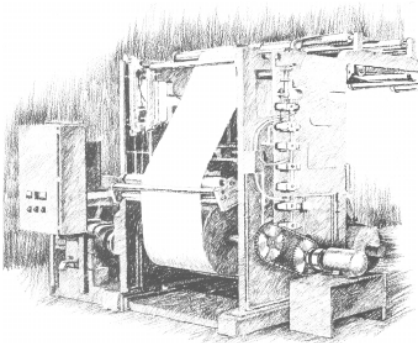
This Section Contains:	Page
Product Function/Selection Chart	268
Disconnect	270
Holding	271
Reversing & Multiple Speed	272
Inching & Jogging	273
Accurate Positioning	274
Overload Protection	275
Controlled Acceleration (Soft Start)	276
Emergency Stopping	277
Cycling (or Indexing)	278
High Inertia Start or Stop	279

FUNCTION EXAMPLES

"Air Champ"

DISCONNECT:

A simple clutch function that produces remote, automatic, occasional disconnection of one operation from the rest of the machine — or one machine from another. A 5HP-SP single position clutch is often used where exact registration or timing is required.



SELECTION CONSIDERATIONS:

**Transmitted horsepower
Torque
RPM**

EXAMPLE

A clutch is required to disconnect the power of a 10 horsepower, 1750 RPM motor from the drive shaft of a printing press. Exact registry of the printing rolls is required when the clutch is engaged. The clutch is mounted on the driven shaft and is connected with a chain and sprockets at a speed ratio of 1:1.

This application is classified as an occasional start. Select a clutch based on the transmitted horsepower and RPM. Use a service factor of 2.

TORQUE CALCULATION:

$$\begin{aligned} \text{Torque} &= \frac{63,000(\text{HP})K}{\text{RPM}} \\ &= \frac{63,000(10)2}{1750} = 720 \text{ in. lbs.} \end{aligned}$$

UNIT SELECTED:

A 5H30P-SP, Single Position Tooth Clutch **Product Number 912100**.

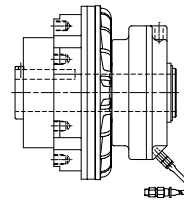
CONTROL CIRCUIT

A cam switch, used for timing, energizes the clutch control circuit.

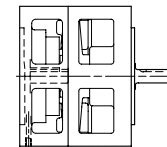
*3-WAY CONTROL — N.C. —
ENGAGES CLUTCH OR BRAKE WHEN
ACTUATOR SWITCH IS CLOSED*

"AIR CHAMP"

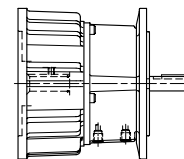
PRODUCT CONSIDERATIONS:



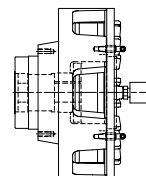
**BW-XHW
F-450
L-600
M-800
H-1000**



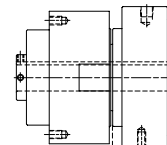
**MODULAR
CLUTCH
MD0625-1375**



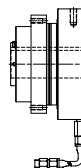
FMCE



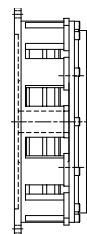
**DPC
9T-15T**



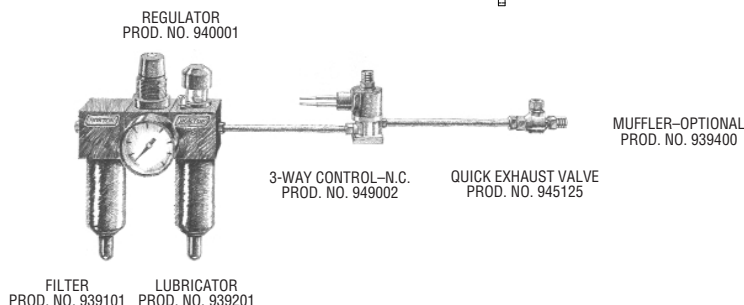
4H30P-4H70P



**5H30-5H70
5H30P-5H80P
5H30SP-5H80SP**

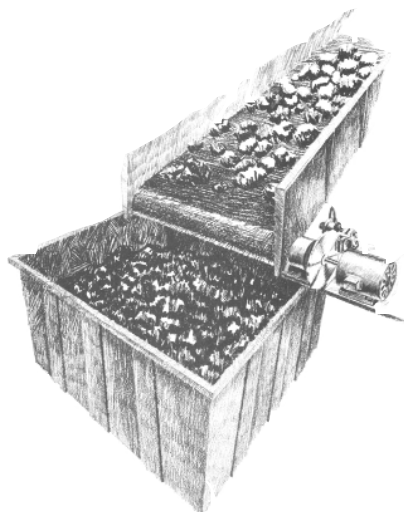


**DFE
QFE
1150-2500**



HOLDING:

A brake function to clamp (hold) a machine or mechanism in place. Often it's desirable to use a spring-engaged brake.



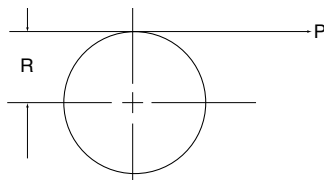
▸ SELECTION CONSIDERATIONS: Torque

▸ EXAMPLE

In the event of a power or air loss to the system, the spring set caliper brake engages and holds the incline conveyor at rest preventing it from "freewheeling" due to gravitational forces. This application is classified as an occasional stop.

▸ TORQUE CALCULATION:

Measure the required torque directly using the torque lever method:



$$\text{Torque} = P(R) \text{ SF}$$

Where:

P = Pounds of pull to turn the load

R = Radius of the conveyor drum in inches

SF = Service factor

▸ EXAMPLE

The measured pounds of pull it takes to start and keep turning the 12 inch radius drum is 500 pounds.

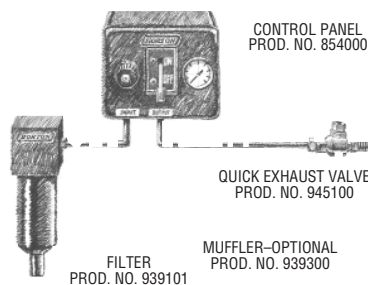
$$\text{Torque} = 500(12)2 = 12000 \text{ in. lbs}$$

▸ UNIT SELECTED:

A Spring Actuated BD Caliper Brake, Product Number **933500** with an 18 1/4 inch diameter disc, Product Number **934200**.

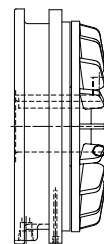
▸ CONTROL CIRCUIT

The brake is activated when the switch on the control panel is moved to the off position allowing air to be removed from the spring hold-off air canister.

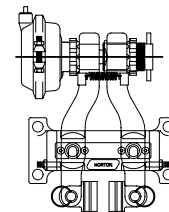


▸ "AIR CHAMP"

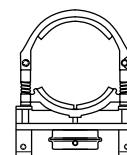
PRODUCT CONSIDERATIONS:



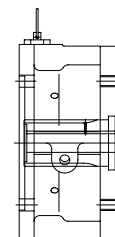
S, T, TSE
450-1000



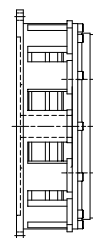
CALIPER BRAKES
DB, BC, BD & SPC



DIAPHRAGM
BRAKES
J, K, 4K, 8K, & 12K



SE BRAKES
100-1000

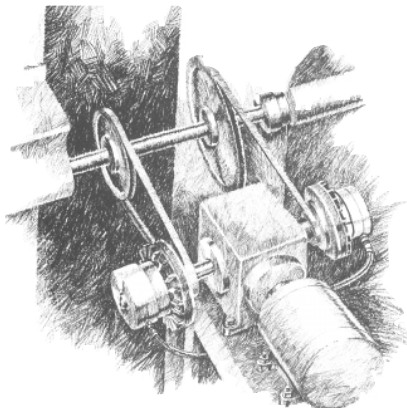


DFB, QFB
1150-2500

FUNCTION EXAMPLES

REVERSING AND MULTIPLE SPEED:

Multiple clutches can change speed and/or direction — providing a reduced load on the motor and starter (the motor never stops), faster changes and higher cycling capabilities.



SELECTION CONSIDERATIONS: Transmitted horsepower Torque RPM

EXAMPLE

Two clutches are used a reversing drive. By alternating engagement from one clutch to the other, the line shaft reverses direction. Because the sprocket diameters vary from drive A to B, the speed of the drive changes each time it reverses direction. The clutches are mounted on the output shafts of a bevel gear box which are rotating at 383 RPM. The gear box is driven by a 1/2 horsepower motor.

TORQUE CALCULATION:

$$\text{Torque} = \frac{63000(\text{HP})K}{\text{RPM}} = \frac{63000(.5)2}{383} = 165 \text{ in. lbs}$$

UNIT SELECTED:

Two L-600, Pilot Mount clutches,
Product Number **805270**.

CONTROL CIRCUIT

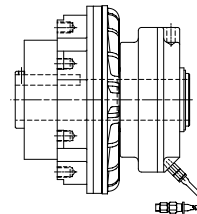
Each clutch is cycled six times per minute. For this reason, a double solenoid, 4-way spool valve is selected.

The double solenoid feature provides quick response in both spool shift directions.

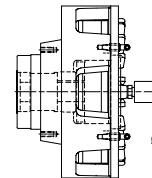
*4-WAY DOUBLE SOLENOID SPOOL
CONTROL INTERNALLY OPERATED FOR
CLUTCH AND BRAKE OPERATING FROM
30 TO 100 PSI*

"AIR CHAMP"

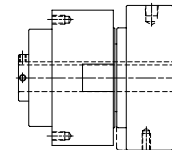
PRODUCT CONSIDERATIONS:



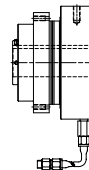
BW-XHW
F-450
L-600
M-800
H-1000



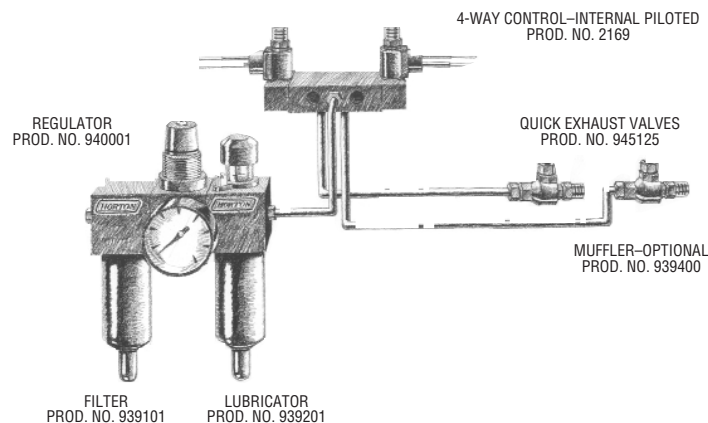
DPC
9T-15T



4H30P-4H70P



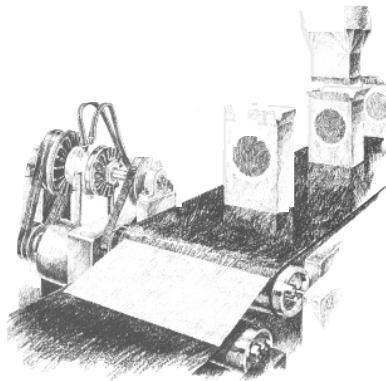
5H30P-5H80P



INCHING AND JOGGING:

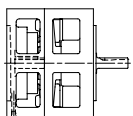
To position, set-up, thread or check out a machine. This motion is usually sudden and uncontrollable; hard on motors and starters.

A clutch or clutch/brake provides gentle inch/jog function that is independent of the drive motor.

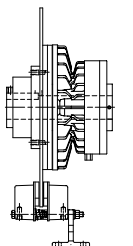


▸ “AIR CHAMP”

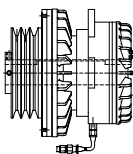
PRODUCT CONSIDERATIONS:



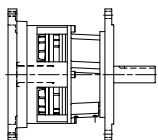
MODULAR CLUTCHES & CLUTCH BRAKES
625-1375



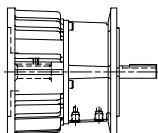
FWCDB-HWCDB



BWCB-HWCB



FMCB-130-19 AND 24
FMCB-7-28 AND 38
FMCB-8-38 AND 42



FMCBE
625, 875, 1125, 1375

▸ SELECTION CONSIDERATIONS:

Linear inertia
Rotational inertia
Transmitted horsepower
RPM
Torque
Cycle rate
Continuous thermal horsepower rating

▸ EXAMPLE

A clutch-brake is placed in the drive system to position boxes, carried on a conveyor, under a hopper which fills the boxes with a product. A box is positioned under the hopper every second. This application is classified as a cyclic start-stop.

▸ CONVEYOR REFLECTED INERTIA:

$$WK_r^2 = W \left(\frac{V}{2\pi N} \right)^2$$

$$= 120 \left(\frac{189}{2\pi 180} \right)^2 = 3.35 \text{ lb. ft}^2$$

Where:

W = 120 lbs. (Conveyor load including belt)

V = 189 FPM

N = 180 RPM at the clutch brake

▸ DRUM AND PULLEY REFLECTED

INERTIA:

$$WK_r^2 = WK^2 \left(\frac{N_1}{N_{cb}} \right)^2$$

$$= 25 \left(\frac{60}{180} \right)^2 = 2.78 \text{ lb. ft}^2$$

Where: $WK^2 = 25 \text{ lb. ft}^2$

N_1 = Speed of the load

N_{cb} = Speed at the clutch brake

Inertia of the pulley, shaft and clutch-brake = .87 lb. ft²

Total inertia =

$$3.35 + 2.78 + .87 = 7 \text{ lb. ft}^2$$

▸ TORQUE CALCULATION:

$$T = \frac{.039(WK^2)RPM}{t} = \frac{.039(7)180}{1} = 49 \text{ in. lbs.}$$

Where:

WK² = Total inertia in lb. ft²

RPM = Speed at the clutch-brake

t = Time in seconds

T = Torque in inch pounds

▸ UNIT SELECTED:

An FWCB Clutch-Brake-Sheave with a 3.35 O.D. sheave, **Product Number 826700**.

▸ THERMAL CHARACTERISTICS:

Check the continuous thermal horsepower (HP_T) requirement based on the Total Inertia, RPM and cycle rate.

▸ ENERGY PER CYCLE:

$$E_c = .00017(WK^2)(RPM^2) =$$

$$.00017(7)(180^2) = 38.56 \text{ ft. lbs.}$$

Where: E_c = Energy per cycle in ft. lbs.

WK² = Total inertia

RPM = Speed at the clutch-brake

▸ THERMAL HORSEPOWER DISSIPATION REQUIREMENT:

$$HP_T = \frac{E_c(CPM)}{33000} =$$

$$\frac{38.56(60)}{33000} = .07 \text{ horsepower}$$

Where:

HP_T = Thermal horsepower requirement

E_c = Energy per cycle

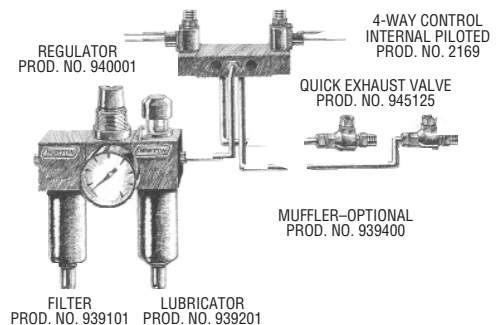
CPM = Cycles per minute

From the Thermal Horsepower vs. RPM graphs the FWCB will dissipate .07 horsepower at 180 RPM.

▸ CONTROL CIRCUIT

A 4-way, double solenoid (with quick exhaust valves), control circuit is used because of the rapid cycle rate.

4-WAY DOUBLE SOLENOID
SPOOL CONTROL INTERNALLY
PILOTED FOR CLUTCH AND
BRAKE OPERATING ABOVE 30
CPM — FROM 30 TO 100 PSI.



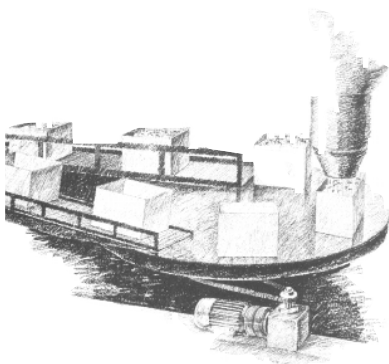
FUNCTION EXAMPLES

"Air Champ"

ACCURATE POSITIONING:

A brake or clutch/brake provides very precise and repeatable stopping.

Tight tolerances are held in cut-to-length systems, filling operations, and machining cycles, with limit switches, photo electric cells or proximity switches accurately sense position.



SELECTION CONSIDERATIONS:

Transmitted horsepower
RPM
Torque

EXAMPLE

A clutch-brake is necessary to accurately position a turntable carrying bins which rotate under a feeder head. The feeder head dumps a predetermined amount of material into the bins at regular, timed intervals.

The motor is a 5 horsepower, 1800 RPM, 184TC frame.

UNIT SELECTED:

A modular MDB-1125 based on the motor frame size only. The MDB-1125 consists of an MBU=1125, Product Number 935200 and an MDU-1125, Product Number 935100.

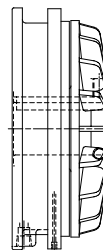
CONTROL CIRCUIT

A proximity switch energizes the 4-way clutch-brake control circuit.

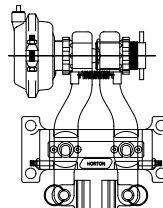
4-WAY SINGLE SOLENOID SPOOL CONTROL INTERNAL PILOTED — N.C. FOR OPERATING CLUTCH AND BRAKE AT PRESSURES 50 TO 100 PSI.

"AIR CHAMP"

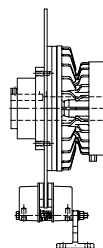
PRODUCT CONSIDERATIONS:



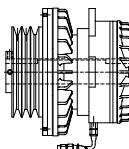
S, T, TSE
450-1000



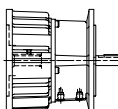
CALIPER BRAKES
DB, BC, BD, SPC



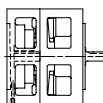
FCDB-HCDB



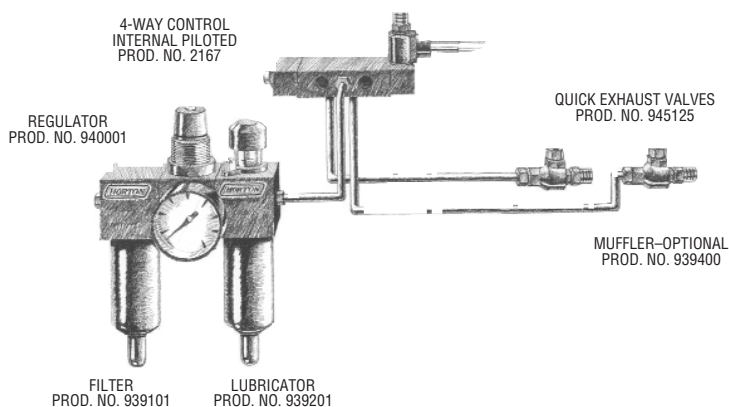
BWCB-HWCB



FMCBE
625, 875, 1125, 1375



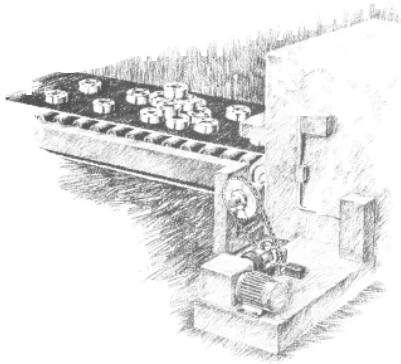
MODULAR CLUTCH/BRAKES
MDB625-1375



OVERLOAD PROTECTION:

Protects expensive machinery or products from jam-ups and overloading.

Air clutches excel at this function because (1) torque level is easily and accurately set by air pressure, and (2) torque to start the load (often two to three times the desired protective torque) is compensated for a dual pressure control circuit.



▸ SELECTION CONSIDERATIONS: Transmitted horsepower RPM at the clutch Torque

▸ EXAMPLE

A device is required to provide overload protection for the drive components which include a 1/2 horsepower, 900 RPM motor and a 100:1 reducer. This drive is powering a continually running conveyor which is feeding parts onto a heat treating oven.

The unit is mounted on the reducer output shaft which rotates at 9 RPM.

This application is classified as an occasional start. Select a Torque Limiter based on the transmitted horsepower and RPM.

$$\text{Torque} = \frac{63000(.5)}{9} = 3500 \text{ in. lbs.}$$

▸ UNIT SELECTED:

A TL40-A, Torque Limiter,
Product Number **801522**.

▸ CONTROL CIRCUIT

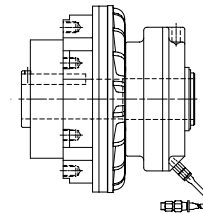
A dual pressure circuit is used to provide 65 PSI for starting the conveyor and 30 PSI running pressure. See diagram page 93.

If an overload occurs, the Torque Limiter Interfaces separate, moving the cylinder to the outer position. This movement is detected by the limit Switch, which de-energizes the 3-way Air Inlet Mount Solenoid Valve, thus exhausting air to the Torque Limiter. Internal springs provide assistance for total Torque Limiter release.

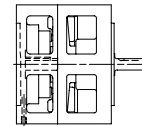
All of the drive components down to the motor are protected from an overload.

▸ “AIR CHAMP”

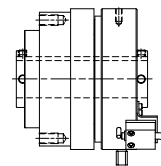
PRODUCT CONSIDERATIONS:



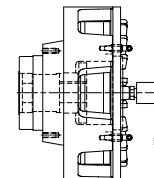
BW-XHW
F-450
L-600
M-800
H-1000



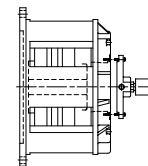
MODULAR CLUTCH
MD0625-1375



TORQUE LIMITER



DPC
9T-15T



DFE, QFE
1150-2500

FUNCTION EXAMPLES

"Air Champ"

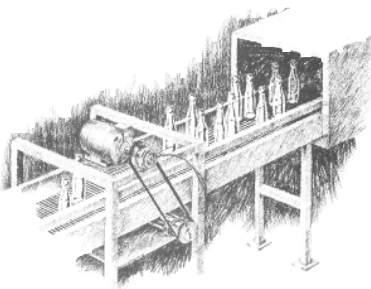
CONTROLLED ACCELERATION ("SOFT START"):

A clutch function that gently accelerates delicate loads or starts very heavy loads — eliminating shock from "across-the-line" starts.

A clutch reduces the load on the motor by letting it run continuously (often permitting use of smaller drive motors). Completely adjustable — from fast engagement to slow gradual acceleration.

Control is achieved by control of air pressure or air flow — or both.

An air brake is used for controlled deceleration.



SELECTION CONSIDERATIONS:

Transmitted horsepower
RPM
Torque

EXAMPLE

A clutch is needed to drive a bottle conveyor. A "soft start" is required to prevent the bottles from tipping and jamming on the conveyor. The clutch is mounted on a 7 1/2 horsepower, 1750 RPM motor.

$$\text{Torque} = \frac{63000(\text{HP})K}{\text{RPM}}$$

$$= \frac{63000(7.5)2}{1750} = 540 \text{ in. lbs.}$$

UNIT SELECTED:

An M-800 from the torque charts or from the Transmitted Horsepower vs. Speed chart on page 261.

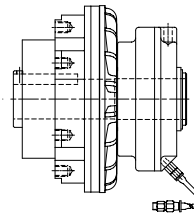
Product Number **807650**.

CONTROL CIRCUIT

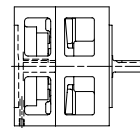
The control circuit includes a Flow Control valve which causes the air pressure to the clutch to build up slowly, giving a soft start every time.

"AIR CHAMP"

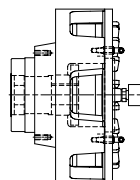
PRODUCT CONSIDERATIONS:



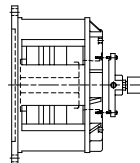
BW-XHW
F-450
L-600
M-800
H-1000



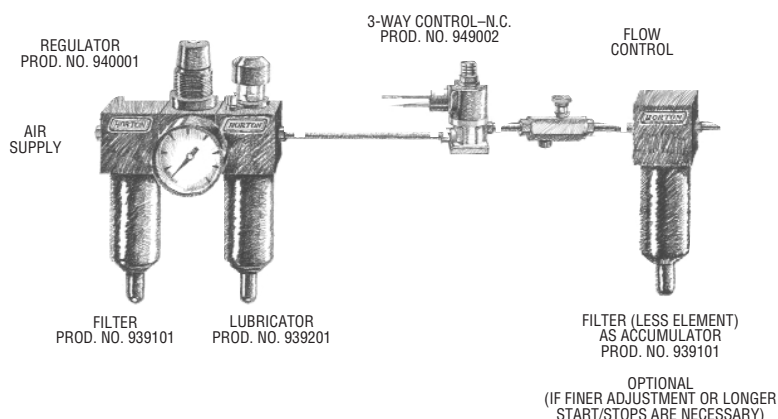
MODULAR CLUTCH
MD0625-1375



DPC
9T-15T



DFE, QFE
1150-2500

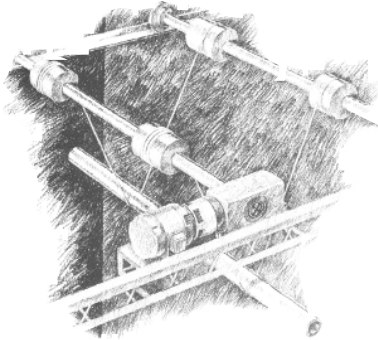


"Air Champ"

FUNCTION EXAMPLES ▸

EMERGENCY STOPPING:

A brake (usually spring-engaged) used to instantly stop a machine in the event of a jam, malfunction, tripped safety or power loss — typically where operator safety, or vertical motion is involved.



▸ SELECTION CONSIDERATIONS:

Transmitted horsepower
RPM
Torque

▸ EXAMPLE

A clutch-brake is required on a drive which is used to lift heavy pipe. The pipe is to be lifted across wire ropes and the clutch is engaged to lift it. A spring-engaged brake is required to prevent the pipe from falling in the event of a power or air pressure loss.

The motor is a 3/4 horsepower, 1750 RPM, 56C frame.

▸ UNIT SELECTED:

A FMCBES-625,
Product Number **801623**.

Selection is based on the motor frame size only. The FMCBES-625 is an air engaged clutch combined with a spring engaged brake.

▸ CONTROL CIRCUIT

Controlled by a single 3-way valve. One air supply operates the combined clutch-brake.

The clutch begins to deliver torque at approximately 40 PSI. Below 30 PSI, the spring force of the brake overcomes the air cylinder thrust keeping the brake engaged.

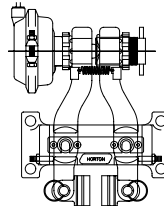
*3-WAY CONTROL — N.C. —
ENGAGES CLUTCH OR BRAKE WHEN
THE ACTUATOR SWITCH IS CLOSED.*

▸ "AIR CHAMP"

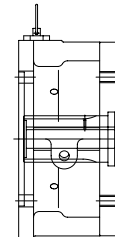
PRODUCT CONSIDERATIONS:



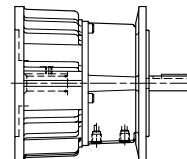
TSE
450-1000



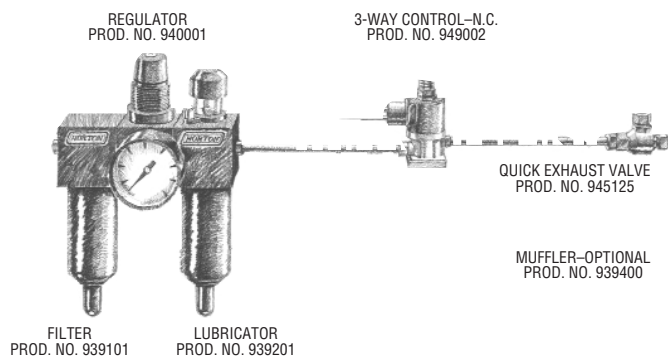
CALIPER BRAKES
BC, BD, SPC



SE BRAKES
100-1000



FMCBES
625, 875, 1125, 1375



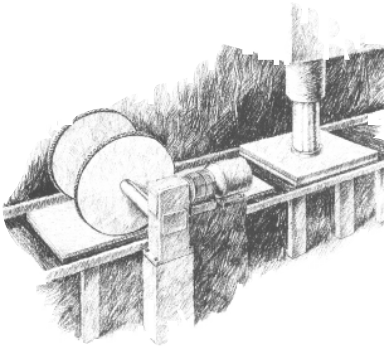
FUNCTION EXAMPLES

"Air Champ"

CYCLING (OR INDEXING):

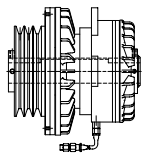
Continual starting and stopping is very hard on motors and starters. Motors must then be oversized and even then, they have limited cycling capability.

A clutch/brake reduces the load by letting the motor run continuously, permitting much faster cycling rates ... (often more than 100 times per minute) with only fractional power.

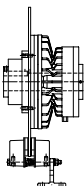


► "AIR CHAMP"

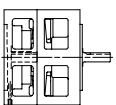
PRODUCT CONSIDERATIONS:



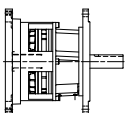
BWC-B-HWCB



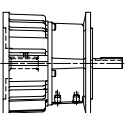
FCDB-HCDB



MODULAR
CLUTCH/BRAKES
MDB625-1375



FMCB-130-19 AND 24
FMCB-7-28 AND 38
FMCB-8-38 AND 42



FMCBE AND
FMCBES
625, 875, 1125, 1375

► SELECTION CONSIDERATIONS:

Rotational inertial
Cycle rate
Transmitted horsepower
RPM
Torque
Continuous Thermal Horsepower
Rating

► EXAMPLE

Select a clutch-brake for a drive in a machine that die cuts paper board into cartons. The clutch is used to drive rolls that feed lengths of paper board to the die cutting head at rates up to 46 times per minute. The brake stops the feed rolls every cycle.

► UNIT SELECTED:

The drive consists of a 1 horsepower, 1800 RPM motor going into a 10:1 worm gear reducer. A Modular clutch-brake, MDB-625, is selected from the NEMA Frame Selection chart in the catalog.

MBU-625 Product Number **928500**
MDU-625 Product Number **928600**

This application is classified as a cycle start-stop and requires an evaluation of the continuous thermal dissipation capacity.

► ROTATIONAL INERTIA:

The value of WK^2 of the two 15 inch diameter, one inch wide feed rolls is taken from the Inertial of Steel Discs and Shafts chart on page 259.

$$WK^2 = 9.75 \times 2 = 19.5 \text{ lb. ft}^2$$

► REFLECTED INERTIA (WK^2_r):

$$WK^2_r = WK^2 \left(\frac{N_1}{N_{cb}} \right)^2 =$$

$$19.5 \left(\frac{180}{1800} \right)^2 = .195$$

Where:

WK^2 = Feed roll inertia
 N_1 = Speed of the load
 N_{cb} = Speed of the clutch-brake

► THERMAL CHARACTERISTICS:

Calculate the continuous thermal horsepower (HP_T) requirement based on the reflected inertia, speed at the clutch-brake and the cycle rate.

► ENERGY PER CYCLE:

$$E_c = .00017(WK^2)(RPM)^2 =$$

$$.00017(.195)(1800)^2 = 107.4 \text{ ft. lb.}$$

Where: E_c = Energy per cycle in ft. lbs.

WK^2 = Reflected inertia

RPM = Speed at the clutch-brake

► THERMAL HORSEPOWER REQUIREMENTS:

$$HP_T = \frac{E_c(CPM)}{33,000} = \frac{107.4 (46)}{33,000} = .16$$

Where:

HP_T = Thermal horsepower
dissipation requirement

E_c = Energy per cycle

CPM = Cycles per minute

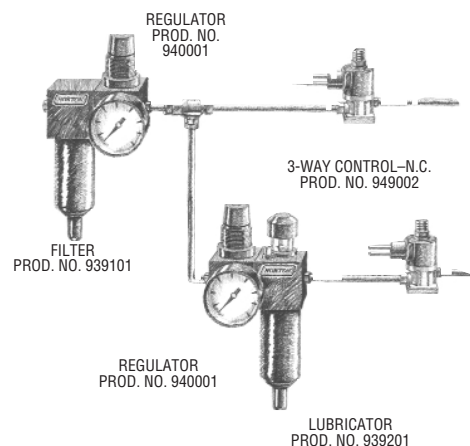
Refer to the Thermal Capacity of Modular Units on page 193.

An MDB-625 dissipates .40 thermal horsepower continuously at 1800 RPM.

► CONTROL CIRCUIT

This application utilizes two 3-way normally closed valves.

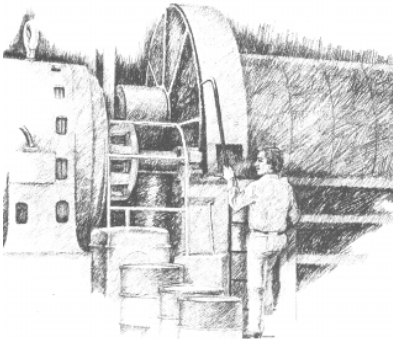
One valve is used to cycle the clutch for the feed operation. The other 3-way valve is energized to apply the brake.



HIGH INERTIA START OR STOP:

A clutch or brake used to start or stop heavy, rotating drums, rolls or flywheels in a specific length of time.

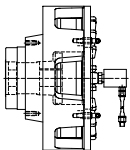
Units selected should have sufficient heat sink capacity to absorb the energy produced in each start or stop.



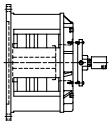
▶ "AIR CHAMP"

PRODUCT CONSIDERATIONS:

▶ Starts:

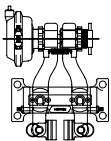


DPC
9T-15T

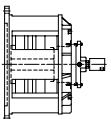


DFE, QFE
1150-2500

▶ Stops:



CALIPER BRAKES
BD, SPC



DFE, QFE
1150-2500

▶ SELECTION CONSIDERATIONS:

Rotational inertia
Torque
Heat sink capacity
Peak input rate capacity*

**The peak input rate capacity may be the limiting factor in high inertia starts or stops even though the Heat Sink Capacity is sufficient. The peak input rate capacity is the rate at which a clutch or brake absorbs heat at the friction interface. The generation of heat results from slip at the interfaces during an acceleration period. This heat generally will not reach or exceed the Peak Input Capacity unless the acceleration time exceeds clutch or brake transient time (time to reach the air pressure setting).*

Problems only occur when the start-up time is greater than the response time of the clutch or brake. The peak input generation rate during such a start is evaluated from an estimate of the speed difference between the facing and the friction disc at the the end of the transient period and the torque value expected at the air pressure setting.

The safe Peak Input Rate Capacity of a clutch or brake with cast iron plates and organic friction linings is approximately .9 horsepower per square inch of interface area.

▶ EXAMPLE

Select a clutch to bring a roll with an inertia load (WK²) of 1800 lb. ft² from stop to 490 RPM within 2 seconds. The selected clutch must have a Heat Sink Capacity which exceeds the energy in ft. lbs. produced at each start.

▶ TORQUE:

$$T = \frac{.039 (WK^2) RPM}{t} = \frac{.039 (1800) 490}{2} = 17,199 \text{ in. lbs.}$$

Where: T = Torque in inch pounds
WK² = Inertia load in lb ft²
RPM = Speed at the clutch
t = Time in seconds

With a service factor of 1.5 the required torque is:

$$T = 1.5 \times 17,199 = 25,799 \text{ in. lbs.}$$

▶ ENERGY PER CYCLE:

$$E_c = .00017 (WK^2)(\Delta RPM)^2 = .00017 (1800) (490)^2 = 73,470 \text{ ft. lbs.}$$

Where: E_c = Energy absorbed each start in ft. lbs.
WK² = Inertia load in lb. ft²
RPM = Speed at the clutch

▶ UNIT SELECTED:

A DFE 1650-S, **Product Number 964003**.
Torque capacity = 27,000 in. lbs. at 60 PSI.
Heat Sink capacity = 870,000 ft. lbs.

▶ PEAK INPUT RATE CAPACITY:

Calculate the speed change (ΔN₁) during the transient period. (Assume 50% torque and a transient time of .1 second.)

$$\Delta N_1 = \frac{T(t)}{.039 (WK^2)} = \frac{13500 (.1)}{.039 (1800)} = 19 \text{ RPM}$$

The speed difference (N_d) between the facing and friction disc at the end of the transient period is the difference between full speed (RPM) and the speed change (ΔN₁).

$$N_d = \text{RPM} - N_1 = 490 - 19 = 471 \text{ RPM}$$

The peak thermal input in HP is calculated from the formula:

$$HP = \frac{N_d(T)}{63000} = \frac{471 (27000)}{63000} = 202 \text{ HP}$$

Where: T = Torque at the set air pressure

The effective interface area of a DFE 1650-S is 227 square inches. (Data from the catalog tables.)

The DFE 1650-S peak input capacity is:
227 x .9 = 204 HP

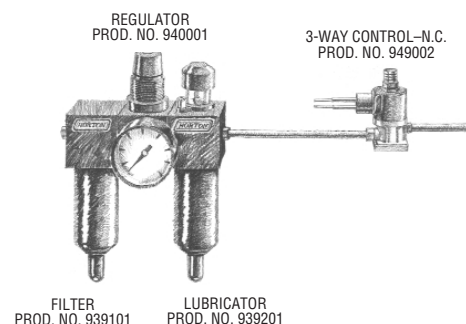
The DFE 1650-S has sufficient capacity to absorb the heat generated during the acceleration period. If the peak thermal input had exceeded the peak input capacity, the start time (t) would have to increase.

Increasing the response time, by using a control valve with a small orifice, or adding an air cavity between the control valve and the clutch, increases the transient time. This reduces the thermal peaks that create damaging thermal gradients within the friction plates.

▶ CONTROL CIRCUIT:

A 3-way valve control circuit is used to affect a relatively slow start.

3-WAY CONTROL-N.C.-ENGAGES CLUTCH OR BRAKE WHEN ACTUATOR SWITCH IS CLOSED.



The Benefits of Air Power

The air-actuated clutch or brake is the most popular means of industrial control. Compared to their electrical counterparts, pneumatic clutches and brakes provide the following benefits:

• Efficiency

Air does not generate heat during extended clutch or brake engagement. As a result, air clutches and brakes provide greater torque transmission and thermal capacity.

• Productivity

Because of greater thermal capacity, air clutches and brakes have a longer operating life. Also, there is less chance of performance problems because of their simple design.

• Cost Savings

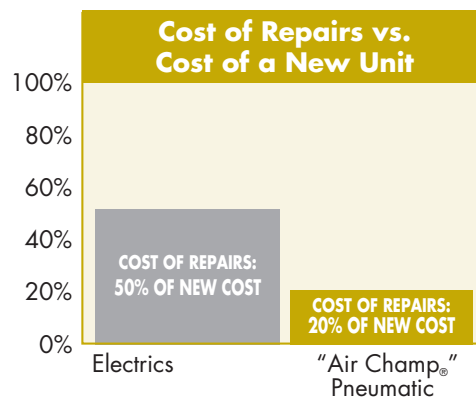
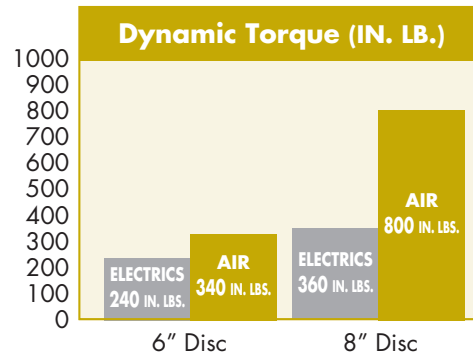
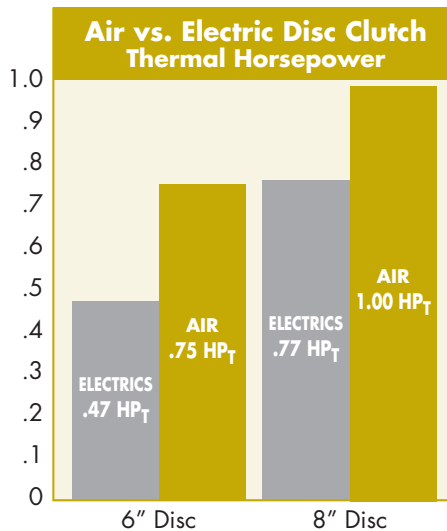
Air clutches and brakes are more cost-efficient because it takes less energy to run an air compressor. Air-powered components last longer, resulting in fewer repairs and replacements.

• Environmental Safety

All friction materials used in our "Air Champ®" line are non-asbestos. Ozone-depleting chemicals are NOT used in the manufacturing of "Air Champ®" products. All packaging materials are non-hazardous.

SAFETY FIRST!

All Power Transmission Products are potentially dangerous and should be guarded in accordance with applicable OSHA regulations. Photographs in this catalog show guards removed *only* for illustration and clarity purposes.



Size for size, "Air Champ®" clutches and brakes can provide higher torque and thermal horsepower capacity than electrics. This means better efficiency, higher productivity and lower maintenance costs for your business.

Clutches for

- Controlled Acceleration
- Positive Drive
- Cycling
- Indexing
- Jogging
- Inching
- Disconnecting/Connecting
- Positioning
- Overload Protection
- Torque Limiting
- Tension Control
- Reversing/Multiple Speed

Brakes for

- Stopping
- Holding
- Cycling
- Indexing
- Controlled Deceleration
- Emergency Stops
- Positioning
- Tension Control

Overload Protection Devices for

- Disconnecting
- Positive Drive
- Positioning
- Overload Protection

Clutch/Brakes for

- Stopping
- Holding
- Cycling
- Indexing
- Jogging
- Inching
- Disconnecting
- Positioning
- Controlled Acceleration
- Controlled Deceleration



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NOTE: This catalog contains brief descriptions, ratings, applications and approximate dimensions of the products, plus ordering information and selection tables designed to simplify product selection. For pricing, additional technical details, certified dimensional drawings or assistance in determining the most efficient model for your application, contact any of our representatives, or you may also call our Application Hotline at 1-800-843-7445 or +32 2 461 04 60 from outside the USA.

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