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To view the complete catalog online, go to www.stearns.rexnord.com

Additional Products/Catalogs

Solenoid Actuated Brakes (SAB's)

Stearns offers the most comprehensive line of solenoid actuated brakes (SAB's) on the market today. Stearns spring-set motor brakes can be mounted directly to the electric motor or foot mounted. The compact design delivers high torque in a small size with fast, positive response and no residual drag when released. Our brakes can be mounted directly onto NEMA C-face motors without special alignment procedures. Many motor manufactures offer a brake kit which will convert a stock fan-cooled motor into a brakemotor. Stearns Solenoid Actuated brakes feature unitized construction which makes servicing friction discs easy using only a screwdriver and wrench. The Stearns SAB ensures automatic stopping and holding any time power to the brake is interrupted. And, as with ALL Stearns products, the friction material in non-asbestos. ***Ask for Brake Catalog p/n 8-178-000-12.***

Armature Actuated Brakes (AAB's)

Armature Actuated Brakes (AAB's) are spring-set, direct acting friction brakes which develop holding and dynamic torque in the absence of electrical power. Stearns now offers a wide range of AAB's which provide high torque in compact, easy-to-install units.

Series 310 is a high performance Servo brake for holding-only applications. Series 321 provides dynamic stopping or holding torque in a compact economical package. Series 333 features torque and wear adjustment capabilities and is a direct interchange with European brake manufacturers. Series 350 pressure plate mount and Series 360 magnet body mount, both for NEMA C-face or IEC mounting, are ideal for portal crane applications. Each series has its own separate brochure, or you can ask for ***Brake Catalog p/n 8-178-000-12.***

Sinpac® Switches

For over 75 years, single-phase motors have utilized a mechanical centrifugal switch to switch the start circuit. Inherent characteristics of a mechanical device have made these switches prone to various problems, including tolerances, tolerance buildups, mechanical fatigue, vibration and a host of others that can lead to switch failures and/or performance inconsistency.

Our challenge was to design a reliable solid-state switch to replace the mechanical switch and actuator mechanism that would duplicate the function of connecting and disconnecting the start circuit at particular speeds with the additional benefits of a solid-state device. After considerable research, we decided a successful electronic motor starting switch could be created by sensing the voltages present in the main and start windings. SINPAC Switches are potted and completely sealed, making them impervious to dust, dirt and moisture. The unique speed sensing circuit provides a universal design which allows a few switches to work on most standard motor designs regardless of manufacturer.

Acceptance by Motor Manufactures

US and foreign motor manufacturers have tested and retested the SINPAC Switch for reliability and quality. Today, many of these manufacturers have begun installing SINPAC Switches on their standard motor lines with more companies ready to make the changeover.

UL Recognition

Many SINPAC Switches have already been recognized under the Component Program of Underwriters Laboratories, Inc. (E-71115). In addition, all switches have internal surge protection which is tested according to IEEE C62.41 - 1991 Category A3. CSA Certification LR-6254.
Request SINPAC Catalog P/N 8-178-000-16.

All of the product catalogs are available at www.stearns.rexnord.com

Stearns® Electromagnetic Brakes, Clutches and Electronic Components Built to Put You in Control

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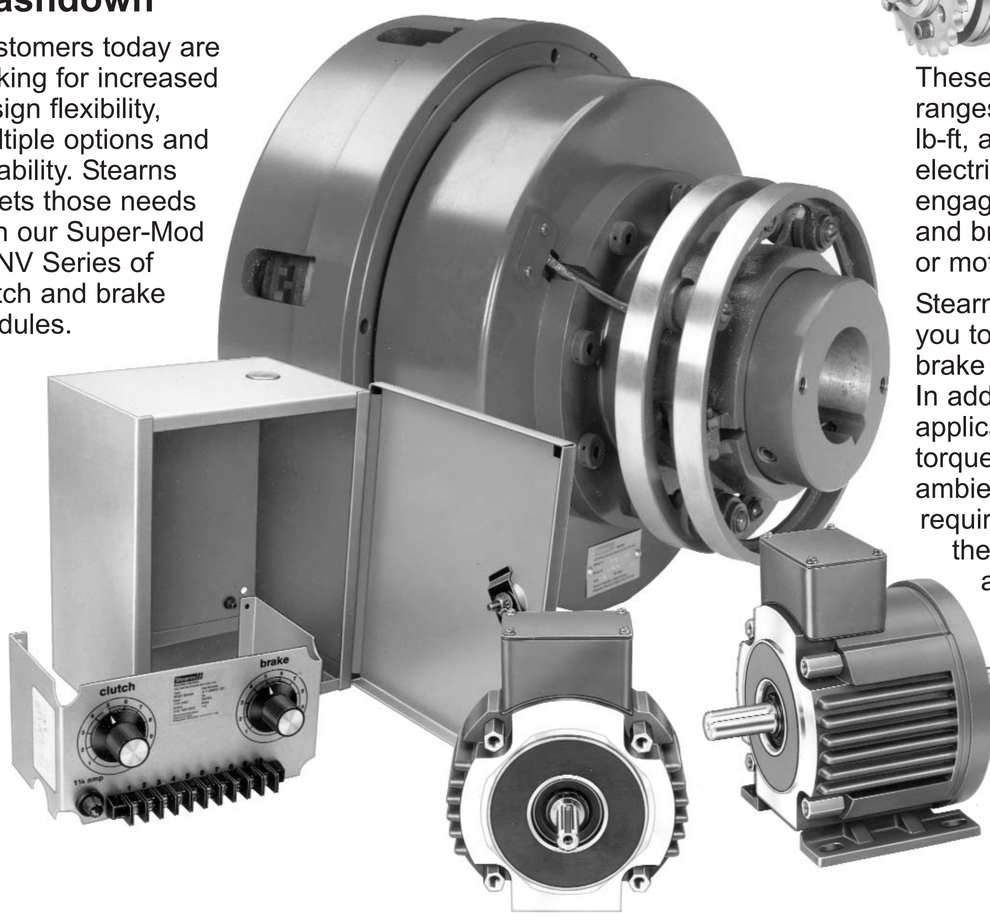
Since the 1920's, Stearns has been a leader in the manufacture of quality, industrial DC clutches and brakes. Stearns offers a complete line of electromagnetic clutches and brakes, including the compact CCC Clutch-Coupling, ideal for a wide range of coupling applications; the CRP Clutch Roto Sheave Unit, a one-piece, pre-aligned clutch with an integral sheave; the CRS Clutch Roto Sprocket Unit, for parallel shaft-drive applications with optional sprocket; and the CTS Clutch Thru-Shaft. These products come with quality ball bearing systems and non-asbestos friction linings as standard equipment. Most can be supplied with a built-in Tor-ac quick-response rectifier for easy AC power connections.

Super-Mod TENV/IP54 Clutches and Brakes Including IP55 Washdown

Customers today are looking for increased design flexibility, multiple options and reliability. Stearns meets those needs with our Super-Mod TENV Series of clutch and brake modules.

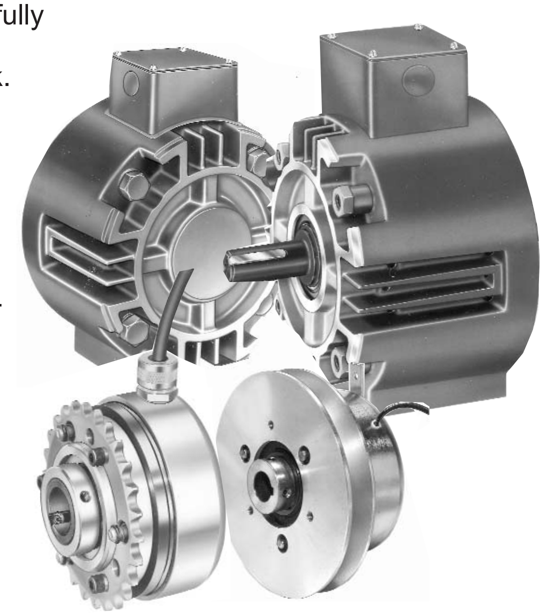


Flexibility is the key. Four sizes and six modules equal 24 basic Super-Mod combinations, giving you virtually unlimited flexibility. Super-Mod comes in clutch-brake, clutch-only or brake-only configurations. Each Super-Mod Module comes complete with a conduit box that can accommodate an optional Tor-ac rectifier. Super-Mods come fully assembled and pre-burnished; ready to drop in and go to work.

Now you can have additional flexibility with IP55 Washdown modules in direct-coupled clutch-brake, clutch-only and brake-only configurations. The TENV Super-Mod Series is priced to give you all the value-added benefits of a TENV enclosure but at "open" enclosure prices.

Heavy-Duty Clutches and Brakes

The first units manufactured by Stearns were heavy-duty clutches for paper and steel mills, and we're still custom designing quality, heavy-duty clutches and brakes for our customers.



These products come in torque ranges from 7 lb-ft through 120,000 lb-ft, and are available as electrically engaged or spring engaged. They provide clutching and braking functions in drive-shaft or motor-shaft applications.

Stearns engineers will work with you to manufacture a heavy-duty brake or clutch to your dimensions. In addition to the size, load and application, our engineers consider torque value, rotation speed, ambient temperature and other requirements when designing these products. In applications where DC power is not available, Stearns offers quality, solid-state rectifier controls.

Product Line Summary

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Brakes

SM Super-Mod TENV C-Face Brake Module, with Output Shaft

The 20 Module mounts direct to a C-face motor and can then mount to a C-face gear reducer. It can also be direct coupled or used to connect driven equipment by belt or chain. It is a power-on brake.

- 16-145 lb-ft static torque.
- 48Y/56C-256C/215TC NEMA C-face frame sizes.
- Washdown (IP55) availability for 56C-145TC NEMA frame sizes.
- See page 15 for product selection.
- See page 20 for competitive interchanges.

SM Super-Mod TENV C-Face Brake Module

The 20MB Module is a power-on brake. It is designed to be mounted on the accessory end of a double shafted C-face motor.

- 16-145 lb-ft static torque.
- 48Y/56C-256C/215TC NEMA C-face frame sizes.
- See page 15 for product selection.
- See page 20 for competitive interchanges.

Style SCEB, Class S3

Style SCEB, Class S3 Spring-Set Brake is end shaft mounted with base. Released when voltage is applied.

- 450-12,000 lb-ft static torque.
- See pages 44 and 45 for product selection.

Clutches

CTS Clutch – Thru Shaft

Thru-shaft mounted unit with bearing supported stationary field. Provides clutching function for two parallel shafts when sheave or sprocket is installed.

- 60-275 lb-in static torque.
- See page 27 for product selection.

CRP Clutch – Roto Sheave Unit

One-piece shaft mounted unit with bearing supported integral sheave and bearing supported stationary field. Provides clutching function for two parallel shafts with V-belt connection.

- 100-1740 lb-in static torque.
- See page 23 for product selection.

CRS Clutch – Roto Sprocket Unit

One-piece shaft mounted unit with bearing supported integral sprocket adapter and bearing supported stationary field. Provides clutching function for two parallel shafts with chain connection. Sprocket, separate optional item.

- 100-1740 lb-in static torque.
- See page 24 for product selection.

Clutches (continued)

SM Super-Mod TENV C-Face Clutch Module

The 1040 Module can be mounted directly to a C-face motor with the output shaft mounted into a C-face gear reducer or coupled or connected to the driven equipment by belt or chain.

- 16-145 lb-ft static torque.
- 48Y/56C-256C/215TC NEMA C-face frame sizes.
- Washdown (IP55) availability for 56C-145TC NEMA frame sizes.
- See page 14 for product selection.
- See page 19 for competitive interchanges.

SM Super-Mod TENV Base Mounted Clutch, Double Shafts

The 3040MB module is a foot or base mounted clutch only unit. It can be direct coupled in a drive system or connected through belt and/or chain equipment.

- 16-145 lb-ft static torque.
- See page 14 for product selection.
- See page 20 for competitive interchanges.

Style E, Electrically Set Clutch

Shaft mounted. Available as a clutch-coupling or CLUTCH. Primary field-coil design. Engaged when voltage is applied.

- 7-9000 lb-ft static torque.
- See page 32-33 for product selection.

Clutch-Couplings

CCC Clutch Coupling

Shaft mounted unit with bearing supported stationary field. Provides clutching action for two in-line shafts.

- 60-1740 lb-in static torque.
- See page 22 for product selection.

Clutch-Couplings (continued)

Style E, Electrically Set Clutch

Shaft mounted. Available as a CLUTCH-COUPLING or clutch. Primary field-coil design. Engaged when voltage is applied.

- 7-9000 lb-ft static torque.
- See pages 32-33 for product selection.

Style E, Class S Electrically Set Clutch

Shaft mounted clutch-coupling with lift out feature. Primary field-coil design. Engaged when voltage is applied.

- 400-9000 lb-ft static torque.
- See pages 34-37 for product selection.

Style E, Class M Electrically Set Clutch

Shaft mounted Form 6 standard clutch-coupling with lift out capability. Primary field-coil design. Engaged when voltage is applied.

- 7-9000 lb-ft static torque.
- See pages 38-39 for product selection.

Style SCE, Class S3 Spring-Set Clutch

Shaft mounted clutch-coupling with lift out feature. Primary field-coil design. Released when voltage is applied.

- 450-12,000 lb-ft static torque.
- See pages 40-43 for product selection.

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Clutch-Brakes

SM Super-Mod TENV C-Face Clutch-Brake Module

The 1020 Module mounts directly to a C-face motor and can then mount to a C-face gear reducer. It can also be direct coupled or used to connect driven equipment by belt or chain.

- 16-145 lb-ft static torque.
- 48Y/56C-256C/215TC NEMA C-face frame sizes.
- Washdown (IP55) availability for 56-145TC NEMA frame sizes.
- See page 13 for product selection.
- See page 19 for competitive interchanges.

SM Super-Mod TENV Base Mounted Clutch-Brake, Double Shafted

Base mounted. Available as a clutch-coupling or clutch. Primary field-coil design. Engaged when voltage is applied.

- 16-145 lb-ft static torque.
- See page 13 for product selection.
- See page 19 for competitive interchanges.

Rectifiers

Module PR-01

Controls one clutch and brake, or two clutches or two brakes.

Internally fused for overload protection.

Input	Output	Rating	Page
115 Vac, 50/60 Hz	100 Vdc	1.0 amp	47

Module PR-33

Controls one clutch and brake, or two clutches or two brakes.

Internally fused for overload protection.

Input	Output	Rating	Page
115 Vac, 50/60 Hz	15-100 Vdc one circuit, 100 Vdc for other	.5 amps	47

Rectifiers (continued)

Heavy Duty Rectifier(s) Series 12000

The heavy duty rectifier packages are single-phase and are for use with Stearns heavy duty (mill) clutches. They incorporate a solid-state silicon bridge circuit for high efficiency.

Available with outputs of 115 or 230 Vdc and power ratings up to 1150 watts.

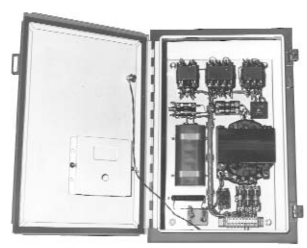
A transformer provides isolation and a dual AC input capability. Each rectifier is enclosed in a NEMA 1 steel cabinet and includes a separately housed starter/contactor with overload heaters.

Available Voltages (Vac)	Page
115/230 and 230/460	48

Heavy Duty Forcing Circuit - Rectifiers

A combination overexcitation and rectifier for use with Stearns SCE and SCEB, spring-set, electrically released products.

Provides the momentary forcing voltage necessary to release then drops the voltage to a holding level. The output of each unit is a forcing voltage of 230 Vdc, which after a delay, drops to a holding voltage of 70 Vdc. The circuitry provides a surge suppression network to protect the coil and minimizes the contactor arcing. The complete circuit is enclosed in a steel NEMA 12 cabinet.



Available Voltages (Vac)	Page
115, 208, 230 460 and 575	49

Selection

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The first step in selecting a clutch or brake is to determine the configuration required. The following guide is intended to help you recognize some of the commonly encountered applications.

Unit type is determined by the function to be accomplished.

Function	Type
When power is to be transmitted between two in-line shafts	Clutch-Coupling
When power is to be transmitted to a parallel shaft	Clutch
When stopping or positioning a load	Brake
When starting and stopping of a load are required	Clutch-Brake

After determining the type of unit to use, the next step is to determine the size. The easiest way to do this is to use the selection chart. This chart shows the size based on the horsepower and speed of the system. Note that the speed you should use is the *shaft speed at the clutch or brake,* not necessarily the speed of the motor. For example, consider the following case:

Application: Driving to a parallel shaft
Motor horsepower: 1 HP
Motor speed: 1750 RPM
Clutch shaft speed: 1750 RPM

From the selection chart it can be seen that a size 5 clutch would be required. Depending on customer requirements a Thru Shaft, Roto Sheave, or Roto Sprocket Clutch might be selected.

However, if the shaft speed at the clutch is at a 2:1 reduction, its speed would only be 875 RPM. At that speed a size 5.5 clutch would be required.

The relationship between system prime mover horsepower and speed expressed in revolutions per minute (RPM) shown in the chart can be calculated in the following equation(s) for determining the dynamic torque capability required of a clutch and/or a brake.

$$T_d = \frac{63{,}025 \times P}{N} \times SF$$

Where,

T_d = Average dynamic torque, lb-in
P = Horsepower, HP
N = Shaft speed differential at clutch and/or brake components, RPM
SF = Service factor
63,025 = Constant

Another equation that can be used expressed in different units.

$$T_d = \frac{5252 \times P}{N} \times SF$$

Where,

T_d = Average dynamic torque, lb-ft
P = Horsepower, HP
N = Shaft speed differential at clutch and/or brake components, RPM
SF = Service factor
5252 = Constant

If there is a choice of locations for the unit being selected, choose the location with the highest shaft speed differential to minimize unit size.

The service factor from the above equations is to allow for the maximum peak torque capability of the prime mover. Generally this factor is

Electrically Set Clutch Unit Size Selection Chart Series CTS, CRP, CRS, CCC

CAUTION: RPM refers to shaft speed at clutch or brake. Based on 2.75 service factor.

HP \ RPM ξ 100	2	4	6	8	10	12	15	18	20	24	30	36	40	46	50
1/20															
1/12															
1/8															
1/6							3								
1/4															
1/3							3.5								
1/2															
3/4							5								
1															
1 1/2															
2							5.5								
3															
5							8								
7 1/2															

NOTE: Do not use this chart for AAB or SM unit selection.

Super-Mod Selection Chart

Table 7-2b: Super-Mod Selection Chart
CAUTION: Rpm refers to shaft speed at clutch or brake. Static torque selection based on a typical electomechanical-friction clutch service factor of 2.75.

HP \ RPM	200	400	600	800	1000	1200	1500	1800	2100	2400
1/8										
1/4										
1/3										
1/2					SM-50					
3/4										
1					SM-100/180					
1 1/2										
2										
3							SM-210			
5										
7 1/2								SM-250		
10										

Note: Frame size and shaft diameter may affect selection and should be considered.
See manufacturer's dimensional and sizing information.

Example:

$$\frac{3 \text{ HP} \times 5252}{1750 \text{ rpm}} \times 2.75 = 24 \text{ lb-ft}$$

derived as a percentage of the full load running torque of the prime mover and expressed as given in the following table.

Application	SF
Brake only	1-2
Electric motor drive through a clutch	2-4
Gasoline or diesel engine drive through a clutch	5-10

The dynamic torque calculated from the above equation(s) can be compared to the ratings given for the various sizes in this catalog for the unit size selection, in the Performance Data Tables.

Thermal Capacity

An additional factor in clutch and/or brake selection and usage is the heat dissipation capability of the unit. When a clutch or brake is engaged to accomplish a speed change, there is some slippage between the friction surfaces resulting in heat energy being generated due to friction. The amount of heat energy generated is a function of the size of the load (inertia) and the frequency at which it is started and/or stopped and RPM. In order to insure that the thermal capacity of the clutch and/or brake is not exceeded, the following calculations should be made.

$$E = 1.7 \times WR^2 \times \left(\frac{N}{100}\right)^2 \times F$$

Where:

- E = Energy (heat) which needs to be dissipated in foot pounds per minute (ft-lb/min) for the application requirement (Thermal Capacity Requirement).
- WR^2 = Total reflected inertia at clutch-brake shaft location. This should include clutch-brake inertia (lb-ft^2).
- N = Speed differential in revolutions per minute (RPM) at the clutch-brake shaft.
- F = Number of cycles per minute (cycle rate).

The thermal capacity requirements calculated in this manner should then be compared to the thermal capacity ratings as listed in the Performance Data Tables for the size and type of unit being selected. The requirement should never exceed the rating or overheating and possible premature failure may occur.

Note that sufficient air flow should be allowed around the clutch and/or brake to provide cooling. Should additional enclosures or machine housings be required, permit a cooling air flow to move past the unit, sufficient to avoid clutch and/or brake overheating.

Special Application Considerations

Lubricants: Dry friction clutches and brakes should not be used where the friction surfaces will be subjected to oil, cutting fluid or other lubricants and contaminates as these will reduce the torque output.

Low speed: Application of clutches and brakes at speeds of 300 RPM or less may not permit sufficient burnishing or run-in to occur, the result being reduced and erratic torque output. For these applications it is suggested that a unit be used which has a static torque rating of at least two times the calculated torque requirement.

High speed: Application of clutches and brakes at speeds higher than recommended could reduce bearing life and cause fatigue failures and galling.

High cycle rates: Applications where high cycle rates are required could result in heat generated which is in excess of the unit's capability to dissipate. The thermal capacity requirement equation should be used to size the clutch and/or brake for this type of application. High cycle rates may also require special high speed controls.

Vertical applications: (CCC, CRP, CRS and CTS only) With the armature situated above the friction surface, spring release is necessary to avoid excessive heat, drag and noise.

With the armature situated below the friction surface, spring release is not desirable. Gravity should be sufficient to move the armature away, thereby providing the open running air gap.

For those situations with additional considerations, you should contact the factory; our application engineers will be more than happy to assist you with your application questions. Super-Mod can be used in vertical applications without any modification.

TENV/IP54 Super-Mod® Clutch-Brake Modules

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Imagine a totally-enclosed, non-ventilated clutch-brake ready to work right out of the box, requiring no modifications. And at a price competitive with "open" enclosure clutch-brakes.

TENV Super-Mod will give you extended cycles, enhanced operating efficiency and longer operating life. TENV Super-Mod Modules are well suited for challenging applications where water, moisture, dirt, dust and other airborne pollutants can shorten the life of traditional clutch-brakes.

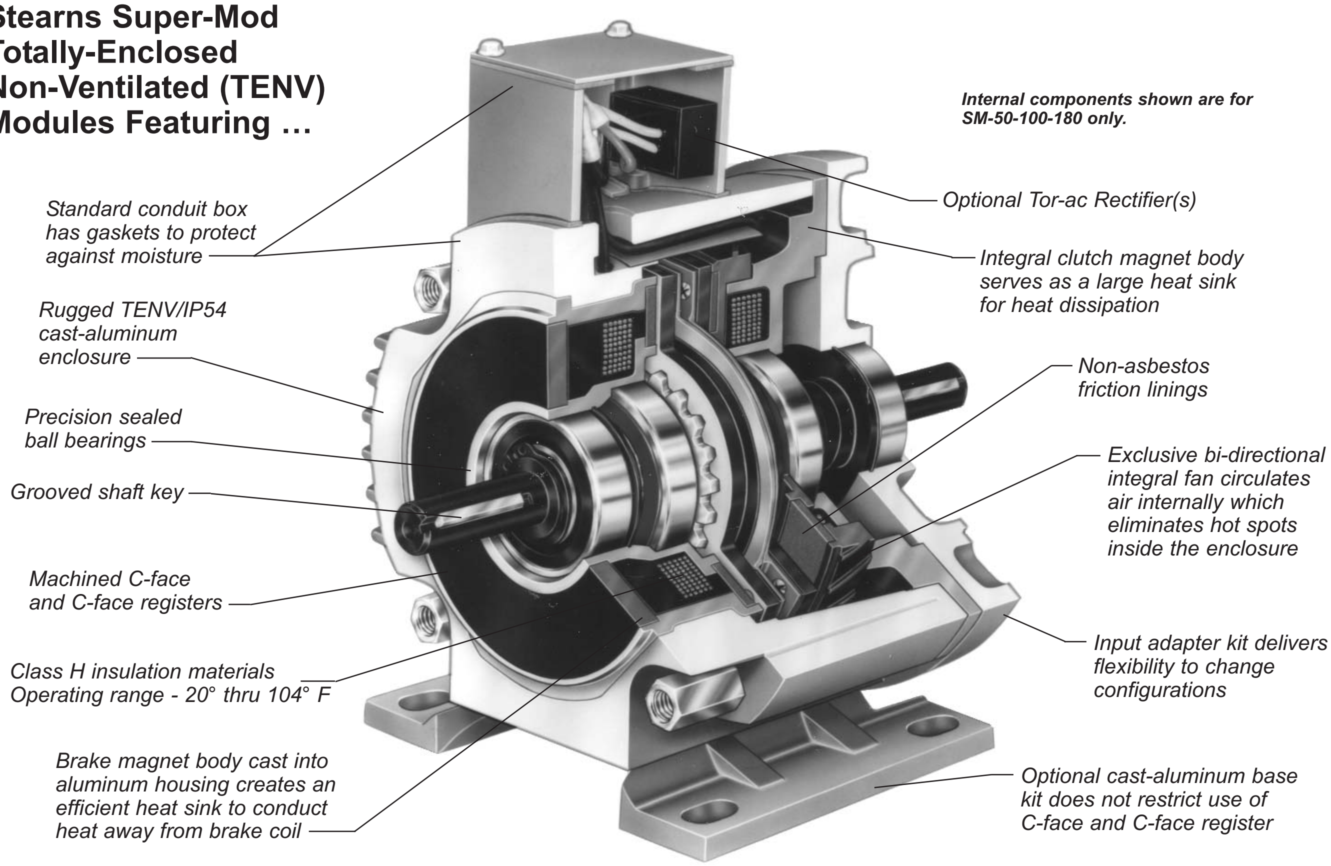
Examine these key value-added features:

- Cast-aluminum housing that meets IP54 requirements, preventing moisture and dirt from affecting operation of the unit
- Integrally cast, clutch-side magnetic body and endbell provides large heat sink that conducts heat away from coil
- Brake-side magnetic body integrated with cast housing creates a heat exchanger that keeps the brake coil cool
- Unique fan design creates bi-directional air movement within the unit. This stabilizes internal temperatures and eliminates hot spots. The fan is cast into the drive hub and is equally efficient at moving air axially through the housing during motor rotation in either direction
- Depending on the model, between 28 and 60 percent fewer parts than competitive units for enhanced reliability and service life
- Armature assembly features an automatic gap adjustment that maintains a consistent de-energized armature-to-friction-face air gap
- Completely gasketed conduit box resists moisture and spray
- Washdown (IP55) availability in select models

For even better performance, include an optional Tor-ac® rectifier for 115 or 230 Vac input. Tor-ac rectifiers connect directly to the AC power source for switching on the AC-side. This eliminates contact arcing, improving the life of associated switching components while providing you with mechanical response times comparable to DC-side switching.

The Stearns TENV Super-Mod Module comes in a wide range of popular sizes with nominal static torque ratings from 16 and 145 lb-ft. Each unit is designed as an exact drop-in replacement, so you can upgrade today or at your next regularly scheduled maintenance shutdown.

Stearns Super-Mod Totally-Enclosed Non-Ventilated (TENV) Modules Featuring …



Super-Mod Product Overview

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SM-1020 C-Face Clutch-Brake Module


See Page 13 for ordering. The 1020 Module mounts directly to a C-face motor and can then mount to a C-face gear reducer. It can also be direct coupled or used to connect driven equipment by belt or chain. Both the clutch and brake elements are power-on for activation. External dimensions are identical with most competitive brands making field replacement an exact “drop-in.” No component assembly required. Washdown models now available in select sizes.

SM-2030B Base-Mounted Clutch-Brake, Double Shafted

See Page 13 for ordering. The 2030B Module is a foot or base-mounted clutch-brake. It can be direct coupled in a drive system or connected through belt and/or chain equipment. The 2030 and 2030B models can be user built-up from 1020 Modules by adding on the input adapter kit (2030) and the base kit with the input adapter kit (2030B).

SM-1040 C-Face Clutch Module


See Page 14 for ordering. The 1040 Module can be mounted directly to a C-face motor with the output shaft mounted into a C-face gear reducer or coupled/connected to the driven equipment by belt or chain. External dimensions are identical with most competitive brands making field replacements an exact “drop-in.” No component assembly required. Washdown models now available in select sizes.

SM-3040B Base-Mounted Clutch, Double Shafted

See Page 14 for ordering. The 3040B Module is a foot or base-mounted clutch-only unit. It can be direct coupled in a drive system or connected through belt and/or chain equipment. The 3040 and 3040B models can be user built-up from 1040 Modules by adding on the input adapter kit (3040) and the base kit with the input adapter kit (3040B).

SM-20 C-Face Brake Module, with Output Shaft


See Page 15 for ordering. The 20 Module mounts directly to a C-face motor and can then mount to a C-face reducer. It can also be direct coupled or used to connect driven equipment by belt or chain. It is a power-on brake. External dimensions are identical with most competitive brands making field replacements an exact “drop-in.” No component assembly required. Washdown models now available in select sizes.

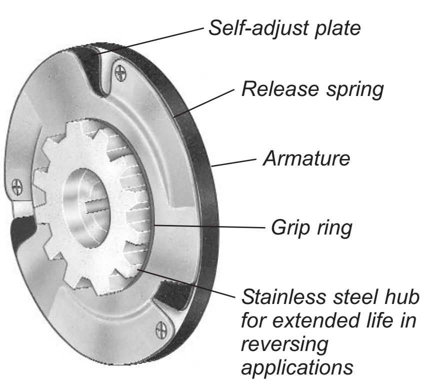
SM-20MB C-Face Brake Module

See Page 16 for ordering. The 20MB Module is a power-on brake. It is designed to be mounted on the accessory end of a double-shafted, C-face motor. External dimensions are identical with most competitive brands making field replacement an exact “drop-in.” No component assembly required.

Size	Available Models						Static Torque
SM-50	1020, 1020WD	2030B	1040, 1040WD	3040B	20, 20WD	20MB	16 lb-ft
SM-100	1020, 1020WD	2030B	1040, 1040WD	3040B	20, 20WD	20MB	35 lb-ft
SM-180	1020, 1020WD	2030B	1040, 1040WD	3040B	20, 20WD	20MB	35 lb-ft
SM-210	1020	2030B	1040	3040B	20	20MB	75 lb-ft
SM-250	1020	2030B	1040	3040B	20	20MB	145 lb-ft

Stearns Gap System

Gap system provides consistent de-energized armature-to-friction-face air gap.



Gap system maintains a consistent de-energized armature-to-friction-face air gap. This spacing is automatically adjusted with each armature engagement throughout the useful life of the product.

The grip ring is expanded over the specially-controlled outside diameter of the spline. This ring is positioned between the back side of the armature and the release spring. So positioned, the armature is free to move into engagement, restrained only by the forces of the release spring. This action or movement is further constrained by the self-adjusting plate. It allows only the proper amount of movement to take place before it bottoms out against the grip ring.

While the Stearns Gap feature is desirable in most applications, there are some situations where it should be disabled, such as very soft starts and/or stops achieved with low voltage energizing of the coil.

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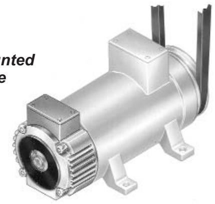
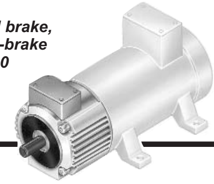
How To Select The Proper Unit For Your Application

1st

Select the appropriate configuration based on the relationship with the motor, gearbox and drive components.

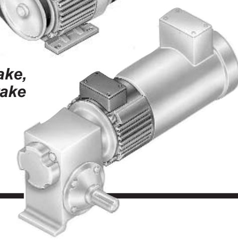


C-face mounted motor brake module (20MB)



C-face mounted brake, clutch or clutch-brake module (20, 1020 or 1040)

Foot/base mounting of clutch-brake or clutch module (2030B or 3040B)



C-face mounted brake, clutch, or clutch-brake module. Mounted between motor and gearbox (20, 1020, or 1040)

2nd

Determine if the application requires clutching only, braking only or a clutch-brake combination.

Clutch Only

Provides a start and/or continuous motion until the control logic disengages (removes the power or voltage from the unit's coil).

NOTE: The load will coast since no braking action is provided.

Brake Only

Provides a stop and hold, typically of a motor shaft, until the control logic disengages (removes the power or voltage from the unit's coil).

Clutch-Brake

Provides a start-stop motion used for cycling, intermediate or random motion and controls a load or machine element. Both the clutch and brake coils are electrically engaged (power on), however, the control logic should not signal both coils to be engaged at the same time.

Typical Super-Mod Applications

Material Handling
- Conveyors
- Stackers
- Aviation baggage/freight conveyors
- Automated storage/retrieval systems
- Carousel machinery
- Feeder machinery

Printing/Paper Handling
- Business form presses
- Sheet-fed presses
- Laminator machines

Packaging
- Stretch wrap machinery
- Palletizers
- Strapping machinery
- Carton — tape and seal machines
- Labelling equipment
- Bag and box making machines

Machine Tools
- Transfer line equipment

Food Processing
- Bakery ovens
- Bottling machinery
- Meat saws and processing equipment
- Packaging and wrap equipment
- Dough process equipment

3rd

Select the proper size/torque rating based on horsepower and RPM (speed at the clutch or brake) using the Super-Mod Selection Chart to the right. Based on 2.75 service factor.

For other service factors and speeds, use the formulas shown to the far right.

Note: Frame size and shaft diameter may affect selection and should be considered. See manufacturer's dimensional and sizing information.

Super-Mod Selection Chart

HP \ RPM	200	400	600	800	1000	1200	1500	1800	2100	2400
1/8										
1/4										
1/3										
1/2					SM-50					
3/4										
1					SM-100/180					
1 1/2										
2										
3							SM-210			
5										
7 1/2								SM-250		
10										

CAUTION: RPM refers to shaft speed at clutch or brake. Based on 2.75 service factor.

$$T_d = \frac{5252 \times P}{N} \times SF$$

Where:

T_d = Average dynamic torque, lb-ft

P = Horsepower, HP

N = Shaft speed differential at clutch and/or brake components, RPM

SF = Service factor

5252 = Constant

4th Here's Where Stearns Super-Mod Units Increase Your Capability

Ensure that the unit can properly dissipate the heat generated by the application. Thermal capacity can be calculated as follows:

$$E = 1.7 \times WR^2 \times \left(\frac{N}{100}\right)^2 \times F$$

Where:

E = Energy (heat) which needs to be dissipated in foot pounds per minute (ft-lb/min) for the application requirement.

WR^2 = Total reflected inertia at clutch-brake shaft location. This should include clutch-brake inertia.

N = Speed differential in revolutions per minute at the clutch-brake shaft.

F = Number of cycles per minute (cycle rate)

The thermal capacity requirements calculated should be compared to the thermal capacity ratings. Exceeding this rating could cause overheating and possible failure. SM 50-100-180 can accommodate 5,000 ft-lb/min; SM-210 7,000 ft-lb/min; and SM-250 5,600 ft-lb/min.

Inertia ($lbft^2$)	SM 50-100	SM 180 & 210
Clutch brake	0.063	0.144
Clutch only	0.04	0.08
Brake only	0.035	0.08

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5th

Select any other options you may require.

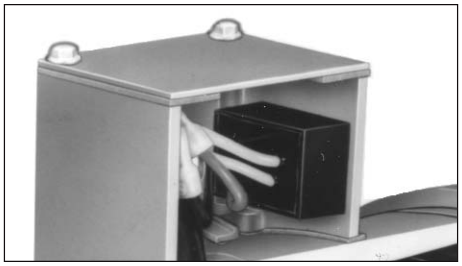
Integral Control Package

Internally mounted Tor-ac™ solid-state rectifiers to convert 115 or 230 Volt AC to DC power.

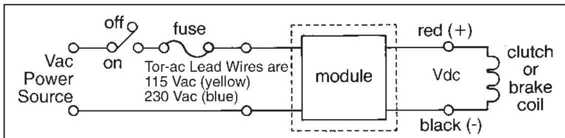
By totally eliminating the need for an external rectifier — and the size selection and mounting associated with it — Tor-ac units can:

- Reduce wiring costs — with circuits requiring fewer wires and connections
- Extend switching component life — through switching on the AC line, which eliminates arcing and prolongs contact life
- Cut switching transient noise — with circuitry that suppresses transients directly at the source, reducing the possibility of EMI noise radiation or conduction

Tor-ac™ Kit



Single-channel, solid-state, quick-response rectifier circuit can be mounted in any SM unit which allows you to switch on the AC-side with mechanical response times comparable to traditional DC-side switching.



NOTE: Panel-mounted rectifier packages (AC to DC) are also available.

Adapter Kit

An input adapter kit can be stocked which gives you immediate flexibility to modify to double shafted configurations. See page 16 for ordering and dimensional information.

Base Kit

A base kit can be added to clutch only (1040) or clutch-brake (1020) units. See page 16 for ordering and dimensional information.

6th Special Application Considerations

Be sure to analyze any special application considerations. Some of these might be:

Low Speed

Application of clutches and brakes at speeds of 300 RPM or less may not permit sufficient burnishing or run-in to occur, the result being reduced and erratic torque output. For these applications, we suggest using a unit which has a static torque rating of at least two times the calculated torque requirement.

High Cycle Rates

Applications where high cycle rates are required could result in heat being generated which is in excess of the unit's capability to dissipate. The thermal capacity requirement equation should be used to size the clutch and/or brake for this type of application. High cycle rates may also require special high-speed controls.

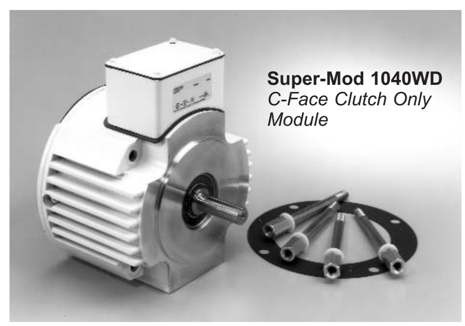
Soft Starts And/Or Stops

While the Stearns Gap feature is desirable in most applications, there are some situations where it should be disabled, such as very soft starts and/or stops achieved with low voltage energizing of the coil. For applications where the voltage will be varied to below 75% of the coil rating, request that the Stearns Gap feature be disabled.

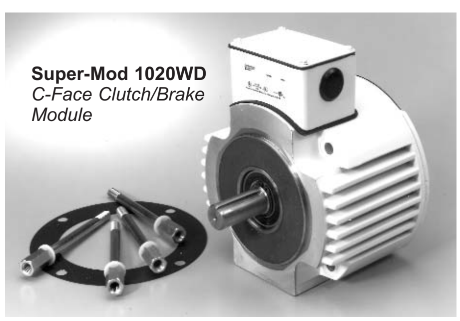
Washdown

For applications requiring regular washdown, such as food processing or other wet, high-humidity environments, *Stearns offers Super-Mod TENV Washdown Clutch-Brake Modules.*

- Available in direct coupled clutch-brake, clutch only and brake only combinations.
- Models in most popular sizes with nominal static torque ratings of 16 and 35 lb-ft.
- Fully neoprene gasketed with BISSC approved white epoxy paint.
- See pages 13-15 for ordering information.



Super-Mod 1040WD
C-Face Clutch Only Module



Super-Mod 1020WD
C-Face Clutch/Brake Module

Super-Mod 20WD
C-Face Brake Only Module

Super-Mod® Clutch-Brake Modules:
SM-1020, SM-1020WD (Washdown) and SM-2030B

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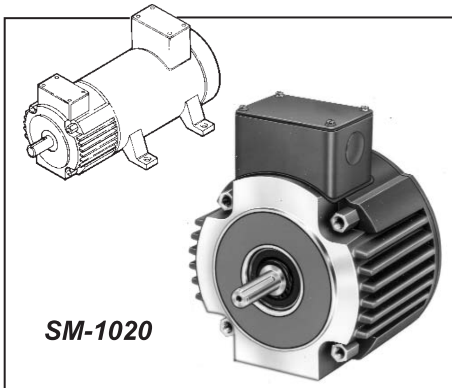
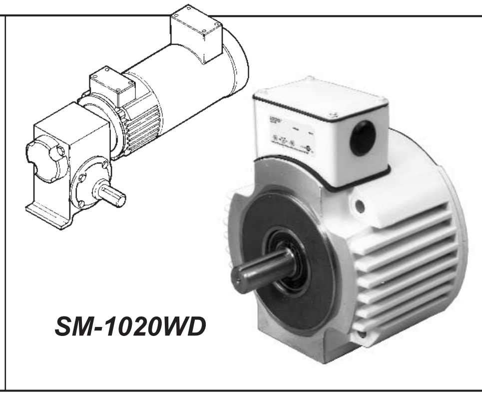
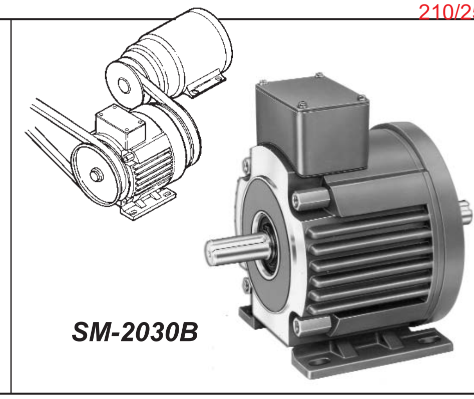
INSTALLATION & PARTS LIST BY SIZE: 50/100/180 210/250


SM-1020


SM-1020WD


SM-2030B

- 56C through 215TC NEMA Frame Sizes
- 16 through 145 lb-ft Static Torque; 2400 Maximum RPM
- TENV – Totally Enclosed (Non-Ventilated) IP-54 Enclosure Protection, (IP-55 for Washdown Units)
- Listed by Underwriters Laboratories, Inc., File E-71115 and CSA Certified, File LR-6254
- Power-On Clutch and Brake* Engagement
- Maximum Overhung load capacity is 85 lbs

*See Catalog 200 for our complete selection of power-off "fail safe" brakes including the C-face to C-face coupler units (Series 56,700 and 87,700).

Performance Data, Ordering Information and List Prices (Discount Symbol X-8)

Static Torque lb-ft	Dynamic Torque lb-ft	NEMA Frame	Hub bore and shaft diameter	Model	Part Number①	Thermal Capacity (ft-lb/min) ②	Wt. (lbs)	Maximum Electrical Power (watts)	List Price③
16	10	56C	5/8 hub bore 5/8 shaft	SM-50-1020	2-35-0561-01-A*L	5000	20	19	$1250.00
16	10	56C		SM-50-1020B	2-35-0561-01-B*L	5000	22	19	1306.00
16	10	56C		SM-50-1020WD	2-35-0562-01-A*L	5000	20	19	1526.00
16	10	56C		SM-50-2030	2-35-0561-01-C*L	5000	24	19	1426.00
16	10	56C		SM-50-2030B	2-35-0561-01-D*L	5000	24	19	1482.00
35	20	56C		SM-100-1020	2-35-0561-02-A*L	5000	20	29	1586.00
35	20	56C		SM-100-1020B	2-35-0561-02-B*L	5000	22	29	1642.00
35	20	56C		SM-100-1020WD	2-35-0562-02-A*L	5000	20	29	1834.00
35	20	56C		SM-100-2030	2-35-0561-02-C*L	5000	24	29	1876.00
35	20	56C		SM-100-2030B	2-35-0561-02-D*L	5000	24	29	1934.00
35	20	140TC	7/8 hub bore 7/8 shaft	SM-180-1020	2-35-1401-02-A*O	5000	20	29	1586.00
35	20	140TC		SM-180-1020B	2-35-1401-02-B*O	5000	22	29	1666.00
35	20	140TC		SM-180-1020WD	2-35-1402-02-AJO	5000	20	29	1934.00
35	20	140TC		SM-180-2030	2-35-1401-02-C*O	5000	24	29	1876.00
35	20	140TC		SM-180-2030B	2-35-1401-02-D*O	5000	24	29	1956.00
75	44	180TC	1-1/8 hub bore 1-1/8 shaft	SM-210-1020	2-35-1801-03-A*R	7000	31	16	2824.00
75	44	180TC		SM-210-1020B	2-35-1801-03-B*R	7000	31	16	2944.00
75	44	180TC		SM-210-2030	2-35-1801-03-C*R	7000	37	16	3362.00
75	44	180TC		SM-210-2030B	2-35-1801-03-D*R	7000	37	16	3484.00
145	86	210TC	1-3/8 hub bore 1-3/8 shaft	SM-250-1020	2-35-2101-04-A*U	5600	37	38	3072.00
145	86	210TC		SM-250-1020B	2-35-2101-04-B*U	5600	37	38	3192.00
145	86	210TC		SM-250-2030	2-35-2101-04-C*U	5600	37	38	3764.00
145	86	210TC		SM-250-2030B	2-35-2101-04-D*U	5600	37	38	3886.00

②Thermal capacity rating is based on ambient temperature of 70°F at 1750 RPM.
③List prices subject to change without notice.

SM Clutch-Brake Module Guide:
SM-1020 – Standard (direct-coupled)
SM-1020B – Standard with Base
SM-1020WD – IP-55 Washdown (available in NEMA frame sizes 56C-145TC)
SM-2030 – Standard with Clutch Input Adapter
SM-2030B – Clutch Input Adapter Plus Base

①Example of a complete part number:
2-35-0561-01-AJL
- L – 5/8 hub
- J – 90-100 Vdc
- A – Basic unit
- 01 – 0=Standard Unit, 2= Without Gap Adjust

Options - Features Table

Series	Character	Description
SM-1020	A	Basic unit
SM-1020B	B	Basic unit plus base
SM-2030	C	Basic unit plus clutch input adapter
SM-2030B	D	Basic unit plus base & clutch input adapter

Specials available upon request.
Consult factory for list price adder.

Voltage Table

Character	Voltage	List Adder
C	12 Vdc	none
E	24-28 Vdc	
J	90-100 Vdc	
N	115 Vac	$184.00
P	230 Vac	220.00

Hub Size Table for SM-1020's

Character	Bore	Keyway
L	5/8	3/16 x 3/32
O	7/8	3/16 x 3/32
R	1 1/8	1/4 x 1/8
U	1 3/8	5/16 x 5/32

Super-Mod® Clutch Only Modules:
SM-1040, SM-1040WD (Washdown) and SM-3040B

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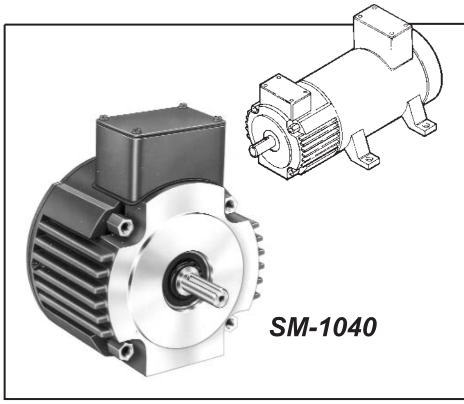
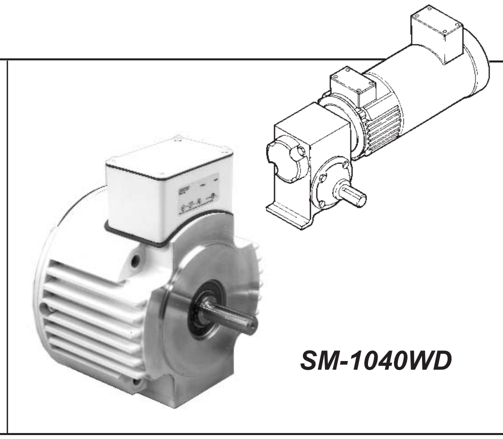
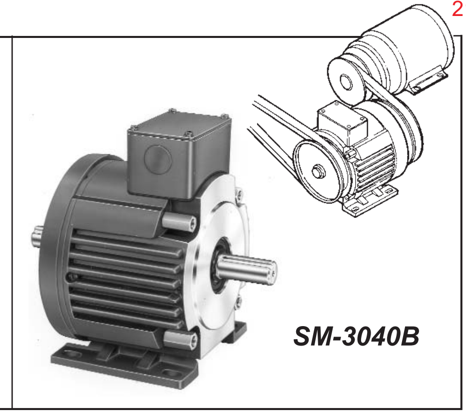
INSTALLATION & PARTS LIST BY SIZE: 50/100/180
210/250



SM-1040



SM-1040WD



SM-3040B

- 56C through 215TC NEMA Frame Sizes
- 16 through 145 lb-ft Static Torque; 2400 Maximum RPM
- TENV – Totally Enclosed (Non-Ventilated) IP-54 Enclosure Protection, (IP-55 for Washdown Units)
- Listed by Underwriters Laboratories, Inc., File E-71115 and CSA Certified, File LR-6254
- Maximum overhung load capacity is 85 lbs

Performance Data, Ordering Information and List Prices (Discount Symbol X-8)

Static Torque lb-ft	Dynamic Torque lb-ft	NEMA Frame	Hub bore and shaft diameter	Model	Part Number①	Thermal Capacity (ft-lb/min) ②	Wt. (lbs)	Maximum Electrical Power (watts)	List Price③
16	10	56C	5/8 hub bore 5/8 shaft	SM-50-1040	2-36-0561-01-A*L	5000	20	19	$1046.00
16	10	56C		SM-50-1040B	2-36-0561-01-B*L	5000	22	19	1102.00
16	10	56C		SM-50-1040WD	2-36-0562-01-A*L	5000	20	19	1276.00
16	10	56C		SM-50-3040	2-36-0561-01-C*L	5000	20	19	1222.00
16	10	56C		SM-50-3040B	2-36-0561-01-D*L	5000	24	19	1278.00
35	20	56C		SM-100-1040	2-36-0561-02-A*L	5000	20	29	1338.00
35	20	56C		SM-100-1040B	2-36-0561-02-B*L	5000	22	29	1394.00
35	20	56C		SM-100-1040WD	2-36-0562-02-A*L	5000	22	29	1632.00
35	20	56C		SM-100-3040	2-36-0561-02-C*L	5000	22	29	1626.00
35	20	56C		SM-100-3040B	2-36-0561-02-D*L	5000	24	29	1684.00
35	20	140TC	7/8 hub bore 7/8 shaft	SM-180-1040	2-36-1401-02-A*O	5000	20	29	1338.00
35	20	140TC		SM-180-1040B	2-36-1401-02-B*O	5000	22	29	1418.00
35	20	140TC		SM-180-1040WD	2-36-1402-02-A*O	5000	20	29	1632.00
35	20	140TC		SM-180-3040	2-36-1401-02-C*O	5000	22	29	1626.00
35	20	140TC		SM-180-3040B	2-36-1401-02-D*O	5000	24	29	1706.00
75	44	180TC	1-1/8 hub bore 1-1/8 shaft	SM-210-1040	2-36-1801-03-A*R	7000	31	16	2374.00
75	44	180TC		SM-210-1040B	2-36-1801-03-B*R	7000	31	16	2496.00
75	44	180TC		SM-210-3040	2-36-1801-03-C*R	7000	31	16	2916.00
75	44	180TC		SM-210-3040B	2-36-1801-03-D*R	7000	31	16	3036.00
145	86	210TC	1-3/8 hub bore 1-3/8 shaft	SM-250-1040	2-36-2101-04-A*U	5600	31	38	2600.00
145	86	210TC		SM-250-1040B	2-36-2101-04-B*U	5600	31	38	2720.00
145	86	210TC		SM-250-3040	2-36-2101-04-C*U	5600	31	38	3228.00
145	86	210TC		SM-250-3040B	2-36-2101-04-D*U	5600	31	38	3348.00

②Thermal capacity rating is based on ambient temperature of 70°F at 1750 RPM.
③ List prices subject to change without notice.

SM Clutch Module Guide:
SM-1040 – Standard (direct-coupled)
SM-1040B – Standard with Base
SM-1040WD – IP-55 Washdown (available in NEMA frame sizes 56C-145TC)
SM-3040 – Standard with Clutch Input Adapter
SM-3040B – Clutch Input Adapter Plus Base

①Example of a complete part number:
2-36-0561-01-AJL
- L — 5/8 hub
- J — 90-100 Vdc
- A — Basic unit
- 01 — 0=Standard Unit, 2= Without Gap Adjust

Options - Features Table

Series	Character	Description
SM-1040	A	Basic unit
SM-1040B	B	Basic unit plus base
SM-3040	C	Basic unit plus clutch input adapter
SM-3040B	D	Basic unit plus base & clutch input adapter

Specials available upon request.
Consult factory for list price adder.

Voltage Table

Character	Voltage	List Adder
C	12 Vdc	*none*
E	24-28 Vdc	*none*
J	90-100 Vdc	*none*
N	115 Vac	$92.00
P	230 Vac	110.00

Hub Size Table for SM-1040's

Character	Bore	Keyway
L	5/8	3/16 x 3/32
O	7/8	3/16 x 3/32
R	1 1/8	1/4 x 1/8
U	1 3/8	5/16 x 5/32

Super-Mod® Brake Only Modules:
SM-20, SM-20WD (Washdown) and SM-20MB

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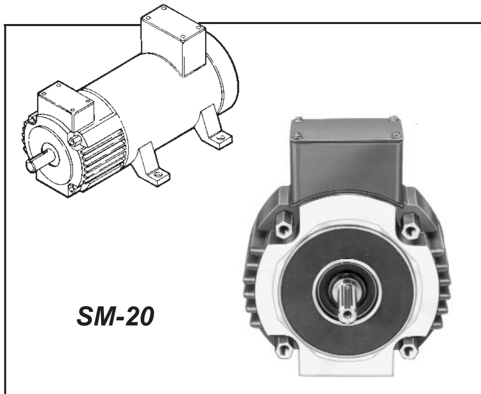
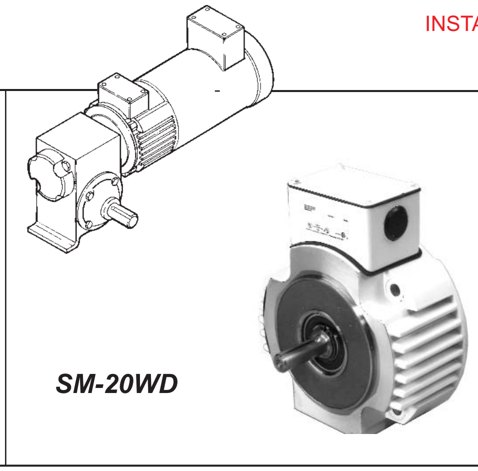
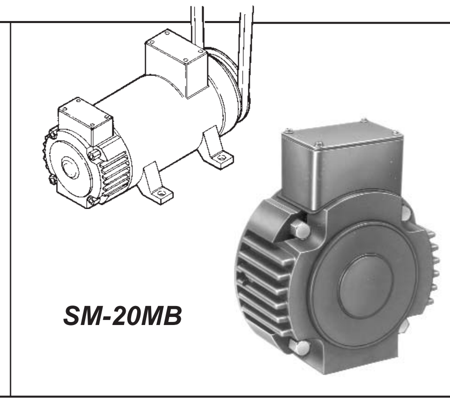
INSTALLATION & PARTS LIST BY SIZE: 50/100/180
210/250


SM-20


SM-20WD


SM-20MB

- 56C through 215TC NEMA Frame Sizes
- 16 through 145 lb-ft Static Torque; 2400 Maximum RPM
- TENV – Totally Enclosed (Non-Ventilated) IP-54 Enclosure Protection, (IP-55 for Washdown Units)
- Listed by Underwriters Laboratories, Inc., File E-71115 and CSA Certified, File LR-6254
- Power-On Brake* Engagement
- Maximum overhung load capacity is 85 lbs.

*See Catalog 200 for our complete selection of power-off "fail safe" brakes including the C-face to C-face coupler units (Series 56,700 and 87,700).

Performance Data, Ordering Information and List Prices (Discount Symbol X-8)

Static Torque lb-ft	Dynamic Torque lb-ft	NEMA Frame	Hub bore and shaft diameter	Model	Part Number①	Thermal Capacity (ft-lb/min) ②	Wt. (lbs)	Maximum Electrical Power (watts)	List Price③
16	10	56C	5/8 hub bore 5/8 shaft	SM-50-20	2-37-0561-01-A*L	5000	11	19	$ 720.00
16	10	56C		SM-50-20WD	2-37-0562-01-A*L	5000	11	19	878.00
16	10	56C		SM-50-20MB	2-37-0561-01-X*L	5000	10	19	660.00
35	20	56C		SM-100-20	2-37-0561-02-A*L	5000	11	29	916.00
35	20	56C		SM-100-20WD	2-37-0562-02-A*L	5000	11	29	1118.00
35	20	56C		SM-100-20MB	2-37-0561-02-X*L	5000	10	29	892.00
35	20	140TC	7/8 hub bore 7/8 shaft	SM-180-20	2-37-1401-02-A*O	5000	12	29	916.00
35	20	140TC		SM-180-20WD	2-37-1402-02-A*O	5000	12	29	1118.00
35	20	140TC		SM-180-20MB	2-37-1401-02-X*O	5000	11	29	892.00
75	44	180TC	1-1/8 hub bore 1-1/8 shaft	SM-210-20	2-37-1801-03-A*R	7000	15	16	1784.00
75	44	180TC		SM-210-20MB	2-37-1801-03-X*R	7000	15	16	1714.00
145	86	210TC	1-3/8 hub bore 1-3/8 shaft	SM-250-20	2-37-2101-04-A*U	5600	18	38	1986.00
145	86	210TC		SM-250-20MB	2-37-2101-04-X*U	5600	18	38	1906.00

②Thermal capacity rating is based on ambient temperature of 70°F at 1750 RPM.
③List prices subject to change without notice.

SM Brake Module Guide:
SM-20 – Standard (direct-coupled)
SM-20WD – IP-55 Washdown (available in NEMA frame sizes 56C-145TC)
SM-20MB – No Shaft (end mounted)

①Example of a complete part number:
2-37-0561-01-AJL — 5/8 hub
90-100 Vdc
Basic unit
0=Standard Unit
2= Without Gap Adjust

Options - Features Table

Series	Character	Description
SM-20	A	Basic unit (coupler)
SM-20	C	Basic unit plus clutch input adapter
SM-20MB	X	No shaft (end mount motor brake)

Specials available upon request.
Consult factory for list price adder.

Voltage Table

Character	Voltage	List Adder
C E J	12 Vdc 24-28 Vdc 90-100 Vdc	*none*
N	115 Vac	$92.00
P	230 Vac	110.00

Hub Size Table for SM-20's

Character	Bore	Keyway
L	5/8	3/16 x 3/32
O	7/8	3/16 x 3/32
R	1 1/8	1/4 x 1/8
U	1 3/8	5/16 x 5/32

Super-Mod® Conversion Kits

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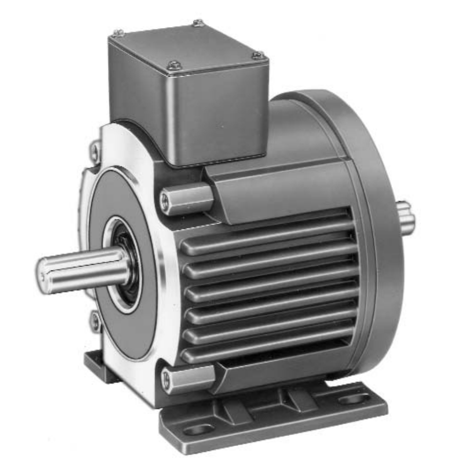
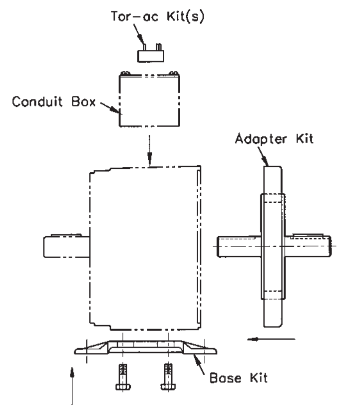




Mechanical Flexibility through Conversion Kits

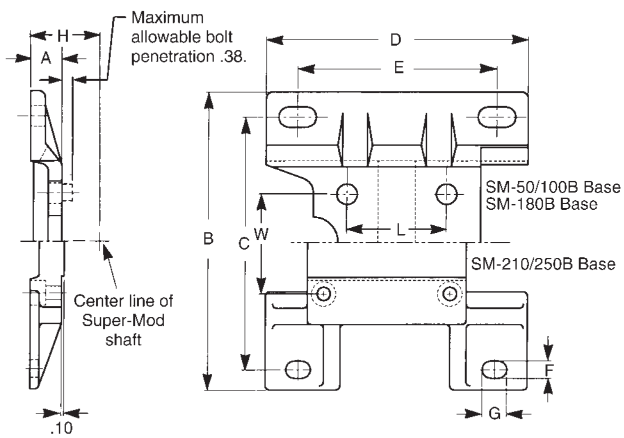
Super-Mod units are stocked in a wide range of configurations and voltages. Additionally, to keep your inventory down and provide quick shipments, Super-Mod provides the answer with inexpensive, easy to use, stock conversion kits. Stock either the base kit, adapter kit, Tor-ac kit or all of them and you can quickly modify your standard clutch (1040), brake (20) or clutch-brake (1020) into almost any configuration (2030TB, 3040B for example).

Super-Mod is an innovative product. When combined with your equipment, it provides added value through increased reliability and reduced inventory.

Base Kit Dimensional Data (In Inches)

Base Kits Cannot Be Used On Brake Only (20 and 20MB)

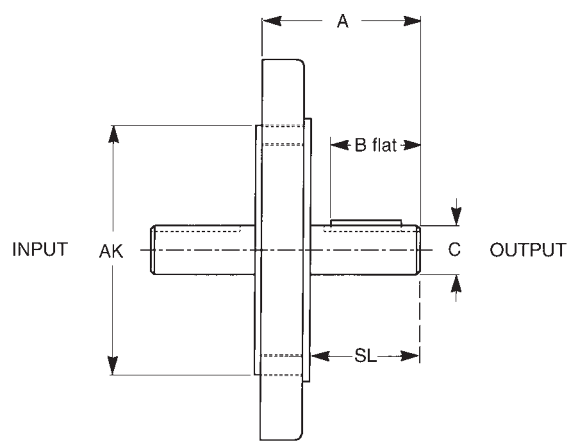
Series	A	B	C	D	E	F	G	H	L	W	Bolt Size
SM-50/100B	.54	6.00	5.00	5.25	4.00	.41	.78	3.50	2.02 1.98	1.914 1.910	3/8" - 16×3/4" hex head
SM-180B	1.54	6.00	5.00	5.25	4.00	.41	.78	4.50	2.02 1.98	1.914 1.910	3/8" - 16×3/4" hex head
SM-210/250B	.80	9.00	7.75	8.00	6.00	.54	.78	5.26	3.13 3.12	3.865 3.855	3/8" - 16×1" socket head



Input Adapter Kit (For use with Super-Mod only)

Dimensional Data (In Inches)

Series	AK	A	B	C	Keyway	SL
SM-50/100A	4.50	2.78	1.41	.625/.624	3/16 x 3/32	1.785-2.014
SM-180A	4.50	2.84	1.41	.875/.874	3/16 × 3/16	1.792-2.022
SM-210A	8.50	3.33	1.78	1.125/1.124	1/4 × 1/4	2.439-2.489
SM-250A	8.50	3.87	2.41	1.375/1.374	5/16 × 5/16	2.929-2.979

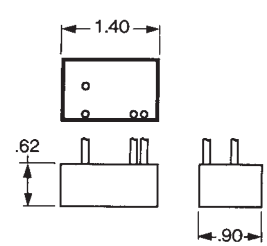


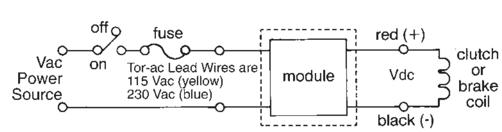
Ordering Information and List Prices

Catalog Number	Part Number	Option	List Price Adder	Discount Symbol
Base Kits ***(Base Kits Cannot Be Used On Brake Only - 20 and 20MB)***				
SM-50/100B	5-78-1101-01	SM-50 and SM-100 Series	$ 56.00	X-8
SM-180B	5-78-1101-02	SM-180 Series	79.00	X-8
SM-210B	5-78-0001-30	SM-210 and SM-250 Series	120.00	X-8
Input Adapter Kits				
SM-50/100A	5-78-6100-31	SM-50 and SM-100 Series	174.00	X-8
SM-180A	5-78-6100-32	SM-180 Series	290.00	X-8
SM-210A	5-78-0000-23	SM-210 Series	548.00	X-8
SM-256A	5-78-0000-24	SM-250 Series	692.00	X-8

Tor-ac Kit

Single channel, solid-state, quick response rectifier circuit can be mounted in any SM unit. Lets you switch on the AC-side, with mechanical response times equal to traditional DC-side switching.





Rectifiers Performance/List Price Data

	Catalog Number	Part Number	AC Input Voltage	Nominal DC Output			List Price ③	Dis-count Symbol
				Volts	Max. Amps②	Max. Watts		
Tor-ac①	SBC-100-1	4-1-20194-00K	115 50-60 Hz	100	.4	40	$92.00	X-8
Tor-ac①	SBC-200-1	4-1-20290-00K	230 50-60 Hz	100	.4	80	110.00	X-8

①Use with 90-100 Vdc "J" coils only.
②Based on ambient temperature of 149°F.
③List prices subject to change without notice.

Super-Mod® Dimensional Data

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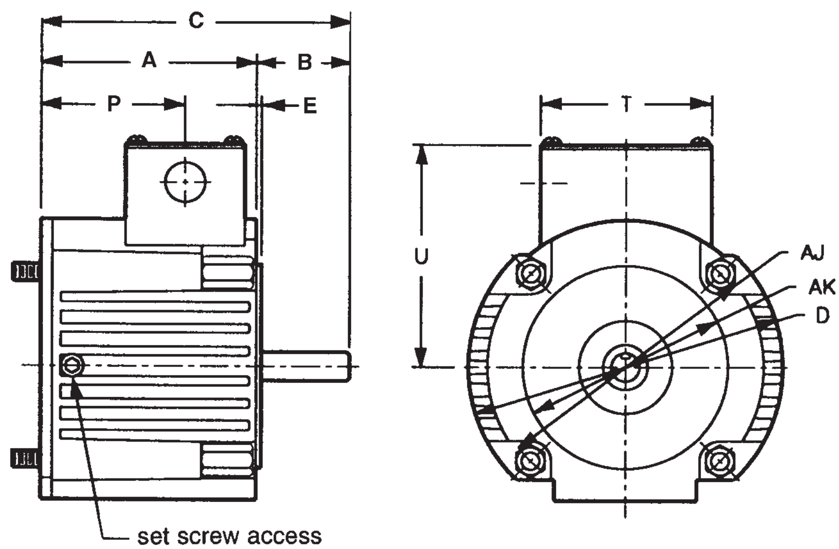
SM-1020, SM-1040, SM-20 and SM-20MB



<table>
<tr><th>NEMA C-Face Frame Size</th><th>Configuration</th><th>Basic Module Style</th><th>Basic Model Number</th><th>AJ</th><th>AK</th><th>Hub bore and shaft ø</th><th>Keyway</th><th>A</th><th>B</th><th>C</th><th>D</th><th>E</th><th>P</th><th>T</th><th>U</th></tr>
<tr><td rowspan="4">SM-50
SM-100
56C
5/8 hub bore
5/8 shaft</td><td>C-face Clutch/Brake</td><td>1020</td><td>2-35-056X-0X-A*L</td><td rowspan="4">5.875</td><td rowspan="4">4.5</td><td rowspan="4">5/8</td><td rowspan="4">3/16 x 3/32</td><td rowspan="2">4.71</td><td rowspan="3">2.06</td><td rowspan="2">6.77</td><td rowspan="4">6.9</td><td rowspan="3">.16</td><td rowspan="2">3.15</td><td rowspan="4">2.8</td><td rowspan="4">4.9</td></tr>
<tr><td>C-Face Clutch Only</td><td>1040</td><td>2-36-056X-0X-A*L</td></tr>
<tr><td>C-Face Brake Only</td><td>20</td><td>2-37-056X-0X-A*L</td><td rowspan="2">3.14</td><td>5.2</td><td rowspan="2">2.92</td></tr>
<tr><td>C-Face Brake Only without Shaft</td><td>20MB</td><td>2-37-056X-0X-X*L</td><td>-</td><td>-</td><td>-</td></tr>
<tr><td rowspan="4">SM-180
145TC
7/8 hub bore
7/8 shaft</td><td>C-face Clutch/Brake</td><td>1020</td><td>2-35-140X-02-A*O</td><td rowspan="4">5.875</td><td rowspan="4">4.5</td><td rowspan="4">7/8</td><td rowspan="4">3/16 x 3/32</td><td rowspan="2">4.71</td><td rowspan="3">2.12</td><td rowspan="2">6.83</td><td rowspan="4">6.9</td><td rowspan="3">.16</td><td rowspan="2">3.15</td><td rowspan="4">3.8</td><td rowspan="4">4.9</td></tr>
<tr><td>C-Face Clutch Only</td><td>1040</td><td>2-36-140X-02-A*O</td></tr>
<tr><td>C-Face Brake Only</td><td>20</td><td>2-37-140X-02-A*O</td><td rowspan="2">3.14</td><td>5.25</td><td rowspan="2">1.58</td></tr>
<tr><td>C-Face Brake Only without Shaft</td><td>20MB</td><td>2-37-140X-02-X*O</td><td>-</td><td>-</td><td>-</td></tr>
<tr><td rowspan="4">SM-210
182TC
184TC
1-1/8 hub bore
1-1/8 shaft</td><td>C-face Clutch/Brake</td><td>1020</td><td>2-35-1801-03-A*R</td><td rowspan="4">7.25</td><td rowspan="4">8.5</td><td rowspan="4">1-1/8</td><td rowspan="4">1/4 x 1/8</td><td rowspan="2">6.11</td><td rowspan="3">2.59</td><td rowspan="2">8.7</td><td rowspan="4">9</td><td rowspan="3">.25</td><td rowspan="2">2.83</td><td rowspan="4">4</td><td rowspan="4">7.4</td></tr>
<tr><td>C-Face Clutch Only</td><td>1040</td><td>2-36-1801-03-A*R</td></tr>
<tr><td>C-Face Brake Only</td><td>20</td><td>2-37-1801-03-A*R</td><td rowspan="2">4.61</td><td>7.2</td><td rowspan="2">2.17</td></tr>
<tr><td>C-Face Brake Only without Shaft</td><td>20MB</td><td>2-37-1801-03-X*R</td><td>-</td><td>-</td><td>-</td></tr>
<tr><td rowspan="4">SM-250
213TC
215TC
1-3/8 hub bore
1-3/8 shaft</td><td>C-face Clutch/Brake</td><td>1020</td><td>2-35-2101-04-A*U</td><td rowspan="4">7.25</td><td rowspan="4">8.5</td><td rowspan="4">1-3/8</td><td rowspan="4">5/16 x 5/32</td><td rowspan="2">6.11</td><td rowspan="3">3.03</td><td rowspan="2">9.14</td><td rowspan="4">9</td><td rowspan="3">.25</td><td rowspan="2">2.83</td><td rowspan="4">4</td><td rowspan="4">7.4</td></tr>
<tr><td>C-Face Clutch Only</td><td>1040</td><td>2-36-2101-04-A*U</td></tr>
<tr><td>C-Face Brake Only</td><td>20</td><td>2-37-2101-04-A*U</td><td rowspan="2">4.61</td><td>7.64</td><td rowspan="2">2.17</td></tr>
<tr><td>C-Face Brake Only without Shaft</td><td>20MB</td><td>2-37-2101-04-X*U</td><td>-</td><td>-</td><td>-</td></tr>
</table>

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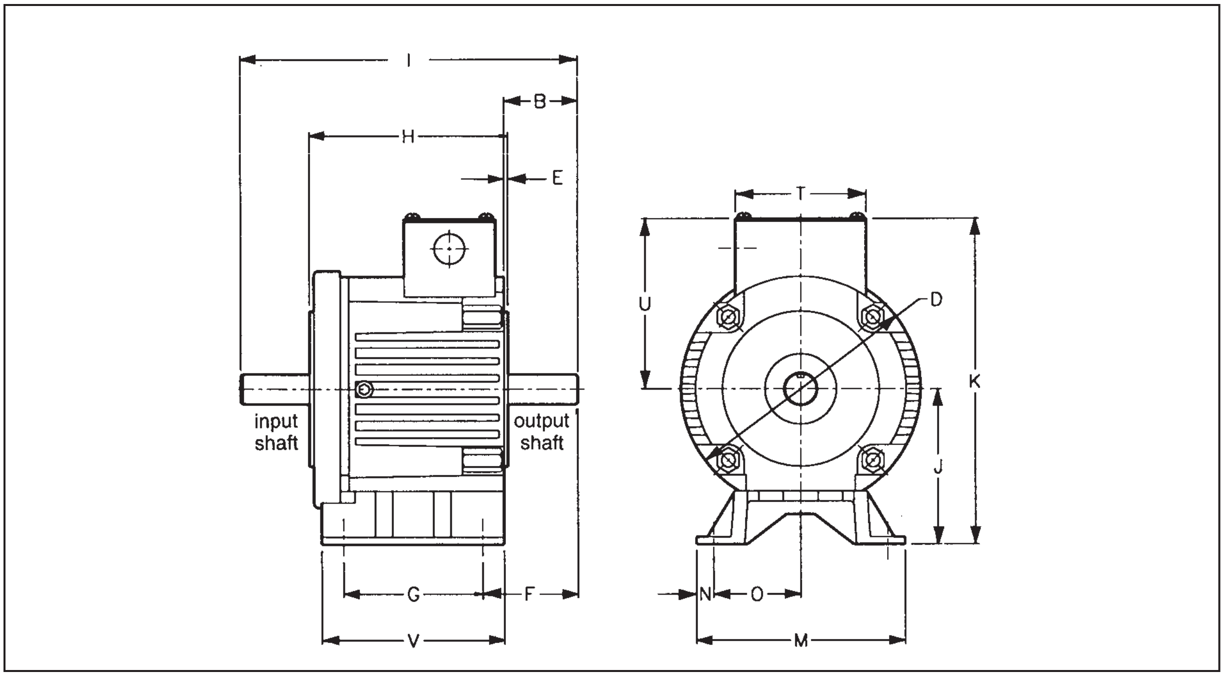
SM-2030B and SM-3040B



NEMA C-Face Frame Size	**Configuration**	**Basic Module Style**	**Basic Model Number**	**Shaft ø**	**Keyway**	**B**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**	**M**	**N**	**O**	**T**	**U**	**V**
SM50 SM100 56C 5/8 shaft	Base Mount Clutch/Brake-Double Shaft	2030B	2-35-056X-0X-D*L	5/8	3/16 x 3/32	2.06	6.9	.16	2.76	4	5.9	9.55	3.5	8.4	6	0.5	2.5	3.8	4.9	5.25
	Base Mount Clutch Only-Double Shaft	3040B	2-36-056X-0X-D*L	5/8	3/16 x 3/32															
SM-180 143TC 145TC 7/8 shaft	Base Mount Clutch/Brake-Double Shaft	2030B	2-35-140X-0X-D*O	7/8	3/16 x 3/32	2.12	6.9	.16	2.82	4	5.9	9.61	4.5	9.4	6	0.5	2.5	3.8	4.9	5.25
	Base Mount Clutch Only-Double Shaft	3040B	2-36-140X-0X-D*O	7/8	3/16 x 3/32															
SM-210 182TC 184TC 1-1/8 shaft	Base Mount Clutch/Brake-Double Shaft	2030B	2-35-1801-03-D*R	1-1/8	1/4 x 1/8	2.59	9	.25	3.41	6	6.91	12.09	5.25	12.65	9	0.63	3.87	4	7.4	8
	Base Mount Clutch Only-Double Shaft	3040B	2-36-1801-03-D*R	1-1/8	1/4 x 1/8															
SM-250 213TC 215TC 1-3/8 shaft	Base Mount Clutch/Brake-Double Shaft	2030B	2-35-2101-04-D*U	1-3/8	5/16 x 5/32	3.03	9	.25	3.88	6	6.91	12.97	5.25	12.65	9	0.63	3.87	4	7.4	8
	Base Mount Clutch Only-Double Shaft	3040B	2-36-2101-04-D*U	1-3/8	5/16 x 5/32															

Interchange Listing for Super-Mod® TENV Clutch and Brake Modules

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Module Type	NEMA Motor Frame Size	Torque lb-ft	Module Interchange: Stearns® TENV Catalog No.	Warner® EUM (TENV) Catalog No.	Warner® UM (Open) Catalog No.	Dodge® (Open) Catalog No.	Inertia Dynamics/ Dynacorp® (Open) Catalog No.
C-Face Clutch/Brake	56	16	SM-50-1020	EUM-50-1020	UM-50-1020	—	—
		22	use SM-100-1020	—	—	DMCCB-50	CBP-56-22
		30		EUM-100-1020	UM-100-1020	—	—
		32		—	—	—	CBP-56-32
		34		—	—	DMCCB-100	—
		35	SM-100-1020	—	—	—	—
	140	30	use SM-180-1020	EUM-180-1020	UM-180-1020	—	—
		32		—	—	—	CBP-145-32
		34		—	—	DMCCB-180	—
		35	SM-180-1020	—	—	—	—
	180	75	SM-210-1020	—	—	—	—
		95	use SM-210-1020 *(Unit is a direct interchange when used on motors rated 5 hp or less.)*	EUM-210-1020	UM-210-1020	—	—
		100		—	—	DMCCB-210	—
		125		—	—	—	CBP-184-125
	210	95	use SM-250-1020	EUM-215-1020	UM-215-1020	—	—
		100		—	—	DMCCB-256	—
		125		—	—	—	CBP-215-125
		145	SM-250-1020	—	—	—	—
Clutch/Brake Double Shaft	56	16	SM-50-2030	EUM-50-2030	UM-50-2030	—	—
		22	use SM-100-2030	—	—	DMSCB-50	CBP-56-22
		30		EUM-100-2030	UM-100-2030	—	—
		32		—	—	—	CBP-56-32
		35	SM-100-2030	—	—	—	—
	140	30	use SM-180-2030	EUM-180-2030	UM-180-2030	—	—
		32		—	—	—	CBP-145-32
		34		—	—	DMSCB-180	—
		35	SM-180-2030	—	—	—	—
	180	75	SM-210-2030	—	—	—	—
		95	use SM-210-2030 *(Unit is a direct interchange when used on motors rated 5 hp or less.)*	EUM-210-2030	UM-210-2030	—	—
		100		—	—	DMSCB-210	—
		125		—	—	—	CBP-184-125
	210	95	use SM-250-2030	—	UM-215-2030	—	—
		100		—	—	DMSCB-256	—
		125		—	—	—	CBP-215-125
		145	SM-250-2030	—	—	—	—
C-Face Clutch Only	56	16	SM-50-1040	EUM-50-1040	UM-50-1040	—	—
		22	use SM-100-1040	—	—	DMCCO-50	CP-56-22
		30		—	UM-100-1040	—	—
		32		—	—	—	CP-56-32
		34		—	—	DMCCO-100	—
		35	SM-100-1040	—	—	—	—
	140	30	use SM-180-1040	EUM-180-1040	UM-180-1040	—	—
		32		—	—	—	CP-145-32
		34		—	—	DMCCO-180	—
		35	SM-180-1040	—	—	—	—
	180	75	SM-210-1040	—	—	—	—
		95	use SM-210-1040 *(Unit is a direct interchange when used on motors rated 5 hp or less.)*	—	UM-210-1040	—	—
		100		—	—	DMCCO-210	—
		125		—	—	—	CP-184-125
	210	95	use SM-250-1040	—	UM-215-1040	—	—
		100		—	—	DMCCO-256	—
		125		—	—	—	CP-215-125
		145	SM-250-1040	—	—	—	—

Super-Mod® Interchange Listing

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Module Type	NEMA Motor Frame Size	Torque lb-ft	Module Interchange				
			Stearns® TENV	Warner® EUM (TENV)	Warner® UM (Open)	Dodge® (Open)	Inertia Dynamics/ Dynacorp® (Open)
			Catalog No.	Catalog No.	Catalog No.	Catalog No.	Catalog No.
Clutch Only Double Shaft	56	16	SM-50-3040	—	UM-50-3040	—	—
		22	use SM-100-3040	—	—	DMSCO-50	CP-56-22
		30		—	UM-100-3040	—	—
		32		—	—	—	CP-56-32
		35	SM-100-3040	—	—	—	—
	140	30	use SM-180-3040	—	UM-180-3040	—	—
		32		—	—	—	CP-145-32
		34		—	—	DMSCO-180	—
		35	SM-180-3040	—	—	—	—
	180	75	SM-210-3040	—	—	—	—
		95	use SM-210-3040 *(Unit is a direct interchange when used on motors rated 5 hp or less.)*	—	UM-210-3040	—	—
		100		—	—	DMSCO-210	—
		125		—	—	—	CP-180-125
	210	95	use SM-250-3040	—	UM-215-3040	—	—
		100		—	—	DMSCO-256	—
		125		—	—	—	CP-210-125
		145	SM-250-3040	—	—	—	—
C-Face Brake Only	56	16	SM-50-20	—	EM-50-20	—	—
		22	use SM-100-20	—	—	DMCBO-50	BP-56-22
		30		—	EM-100-20	—	—
		32		—	—	—	BP-56-32
		34		—	—	DMCBO-100	—
		35	SM-100-20	—	—	—	—
	140	30	use SM-180-20	—	EM-180-20	—	—
		32		—	—	—	BP-145-32
		34		—	—	DMCBO-180	—
		35	SM-180-20	—	—	—	—
	180	75	SM-210-20	—	—	—	—
		95	use SM-210-20 *(Unit is a direct interchange when used on motors rated 5 hp or less.)*	—	EM-210-20	—	—
		100		—	—	DMCBO-210	—
		125		—	—	—	BP-184-125
	210	95	use SM-250-20	—	EM-215-20	—	—
		100		—	—	DMCBO-256	—
		125		—	—	—	BP-215-125
		145	SM-250-20	—	—	—	—
C-Face Brake Only (no shaft)	56	16	SM-50-20MB	—	EM-50-20MB	—	—
		22	—	—	—	DMCBX-50	MBP-56-22
	140	22	use SM-180-20MB	—	—	—	MBP-145-22
		30		—	EM-180-20MB	—	—
		34		—	—	DMCBX-180	—
		35	SM-180-20MB	—	—	—	—
		57	—	—	—	—	305
	180	75	SM-210-20MB	—	—	—	—
		95	use SM-210-20MB *(Unit is a direct interchange when used on motors rated 5 hp or less.)*	—	EM-210-20MB	—	—
		100		—	—	DMCBX-210	—
		175	—	—	—	—	308
	210	80	use SM-250-20MB	—	MB-825	—	—
		100		—	—	DMCBX-256	—
		145	SM-250-20MB	—	—	—	—
		175	—	—	—	—	308

Application Note: Stearns shaft sizes are to NEMA standards. Please verify shaft length and diameter requirements when making interchanges.

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Dynacorp® is a Registered Trademark of Inertia Dynamics® or its affiliates.

Shaft-Mounted Clutches Product Overview

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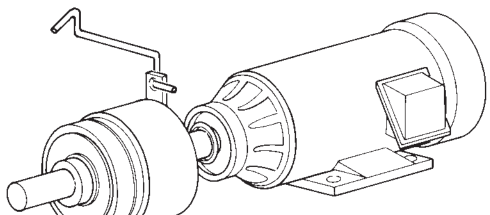
CCC Clutch Coupling

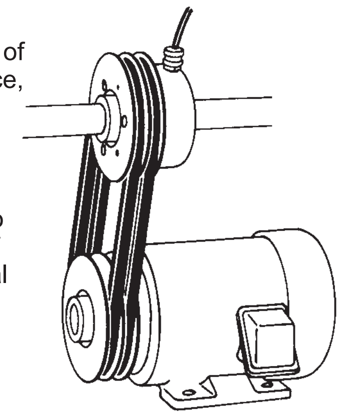
The compact CCC Clutch-Coupling offers a high torque-to-size ratio meeting a broad range of applications. Available in five sizes. CCC Clutch-Couplings can be used in almost any coupling application where on-off control of rotary motion is required. Available for 90-100, 24-28, or 12 Vdc operation.



In-Line Shaft-To-Shaft Coupling (Restrain Device Shown on Clutch Tab)

CRP Roto Sheave Clutches

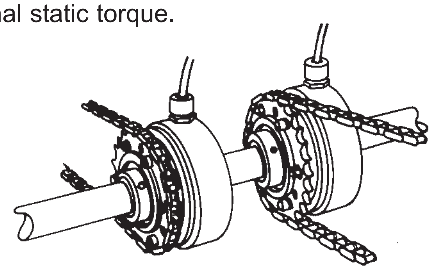
The performance, quality, and life of this unit have been proven in thousands of applications. This one-piece, pre-aligned unit has an integral sheave for quick, convenient installation and maintenance. Available in four sizes from 100 lb-in to 1740 lb-in with a variety of standard sheaves. An ideal solution for almost any parallel shaft drive application. Available for 90-100, 24-28, or 12 Vdc operation.



Shaft Mounting of Roto Sheave Clutch (CRP)

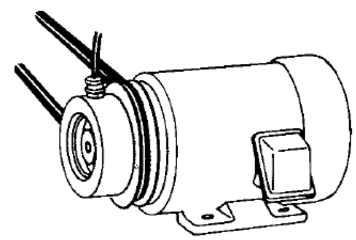
CRS Roto-Sprocket Clutch

An ideal solution for almost any parallel shaft drive application, this unit has been proven in thousands of applications. This one-piece, pre-aligned unit has a special adapter hub that accepts a plate-type sprocket. Installation and maintenance are quick and convenient. Available in four sizes, from 100 lb-in through 1740 lb-in nominal static torque.



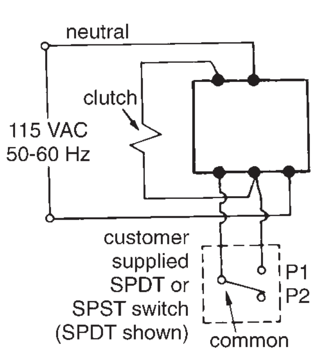
CTS Through-Shaft Clutch

The compact CTS Clutch offers a high torque-to-size ratio in an economical unit that meets a broad range of applications. Available in three sizes. Extended thru-shaft driven hub is adaptable for mounting pulleys, gears, or sprockets. CTS Clutches can be used in almost any parallel shaft application where on-off control of rotary motion is required. Available for 90-100, 24-28, or 12 Vdc operation.

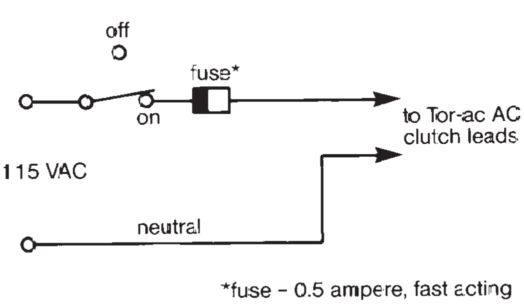


Stearns Shaft-mounted clutches can be ordered as a standard dc unit, with the option of a separate rectifier (see page 47 for information on rectifier packages), or as a Tor-ac unit which has a built-in rectifier.

Wiring of standard dc unit with optional ac rectifier



Wiring of Tor-ac unit with built-in rectifier



*fuse – 0.5 ampere, fast acting

CCC Clutch-Clutch Coupling

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BACK TO CLUTCH OVERVIEW

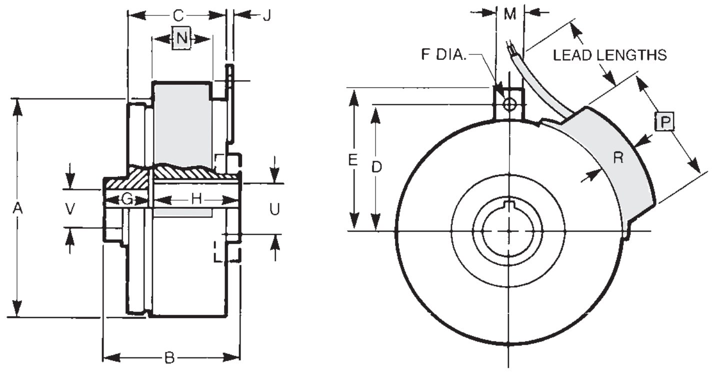
- CSA certified
- Ball-bearing mounted stationary field for long trouble-free operation
- Spline drive for long life under heavy loads
- Available with spring release
- Zinc plated magnet body for corrosion resistance
- Epoxy encapsulated coil construction for uniform heat transfer and moisture resistance
- Class H magnet wire and potting material

Installation and Service Instructions Sheet 8-078-800-00

Standard DC Clutch

Dimensions are for estimating only and subject to change without notice. For installation purposes, request certified prints.

IMPORTANT NOTE: *Information and dimensioning relating to Tor-ac units shown in shaded area.*



Tor-ac Clutch with Built-In Rectifier

Dimensional Data (In Inches)

Size	A	B	C	D	E	F	G	H	J	M	N	P	R	U Bore (Drive Hub)	V Bore (Driven Hub)
3	2.67	2.04	1.40	1.56	1.75	.13	.63	1.35	.06	.50	–	–	–	1/4, 5/16, 3/8	1/4, 5/16, 3/8
3.5	3.19	2.14	1.49	1.81	2.00	.19	.63	1.44	.06	.66	1.00	2.74	.80	3/8, 1/2, 5/8	3/8, 1/2, 5/8, 3/4
5	4.31	2.66	1.78	2.50	2.84	.19	.81	1.71	.09	.50	1.00	2.81	.69	1/2, 5/8, 3/4, 7/8, 1	1/2, 5/8, 3/4, 7/8, 1
5.5	5.63	3.45	2.20	3.25	3.50	.25	1.16	2.17	.09	.75	1.00	2.93	.81	3/4, 7/8, 1, 1 1/8, 1 1/4	3/4, 7/8, 1, 1 1/8, 1 1/4
8	8.38	3.39	2.38	4.63	5.00	.34	1.50	1.50	.13	1.00	–	–	–	5/8, 7/8, 1, 1 1/4, 1 1/2, 1 5/8**	5/8, 7/8, 1, 1 1/4, 1 1/2, 1 5/8**

Lead Lengths: All Tor-ac units have 32" leads. Standard DC unit, sizes 3 through 5 have 18" leads. Sizes 5.5 and 8 have 24" leads*
*Sizes 5.5 and 8 have cable grip fitting and 2 conductor cable. **Size 8 has taper lock bushings.

Performance/List Price Data (Discount Symbol X-1)

Catalog Number	Size	Type	Part Number	Nominal Static Torque (lb-in)	Nominal Dynamic Torque at 1800 RPM (lb-in)	Max. RPM	Inertia Driven Side (lb-ft²)	Inertia Drive Side (lb-ft²)	Thermal Capacity (ft-lb/min)①	Approx. Weight (lbs)	Max Power (watts)	List Price
CCC-30	3	standard	2-11-2502-00	60	40	7000	24×10^{-4}	1.67×10^{-3}	1650	2.5	9	$1068.00
CCC-30S		spring rel.	2-11-2502-01									
CCC-35	3.5	standard	2-11-3141-00	100	65	5000	47×10^{-4}	2.96×10^{-3}	2750	3.5	11	1380.00
CCC-35S		spring rel.	2-11-3141-01									
CCC-35T	3.5	standard	2-11-3170-00	100	65	5000	47×10^{-4}	2.96×10^{-3}	2750	3.5	11	1564.00
CCC-35ST		spring rel.	2-11-3170-01									
CCC-50	5	standard	2-11-4266-00	275	160	5000	57×10^{-4}	1.47×10^{-2}	4400	5.4	14	1500.00
CCC-50S		spring rel.	2-11-4266-01									
CCC-50T	5	standard	2-11-4270-00	275	160	5000	57×10^{-4}	1.47×10^{-2}	4400	5.4	14	1686.00
CCC-50ST		spring rel.	2-11-4270-01									
CCC-55	5.5	standard	2-11-5501-01	720	400	3600	57×10^{-3}	6.09×10^{-2}	8250	12	26	2116.00
CCC-55S		spring rel.	2-11-5501-04									
CCC-55T	5.5	standard	2-11-5570-00	720	400	3600	57×10^{-3}	6.09×10^{-2}	8250	12	26	2302.00
CCC-55ST		spring rel.	2-11-5570-01									
CCC-80	8	standard	2-11-8333-01	1740	1160	3600	59×10^{-2}	46.2×10^{-2}	16500	32	35	3310.00
CCC-80S		spring rel.	2-11-8301-01									

①Thermal capacity rating is based on ambient temperature of 70°F at 1750 RPM. *List prices subject to change without notice.*

Ordering Information

Example of a complete part number:
2-11-2502-00-H J N– 3/4 bore 3/16 x 3/32 keyway
90-100 Vdc
3/8 bore 3/32 x 3/64 keyway

Bore and Keyway Table*

	Sizes 3, 3.5, 5, 5.5														Size 8 (bushings)						
Character	D	F	H	I	J	K	L	N	O	Q	R	T	U	V	B	D	E	F	H	K	L
Bore/Shaft Dia. (in.)	1/4	5/16	3/8	1/2	1/2	5/8	5/8	3/4	7/8	1	1 1/8	1 1/4	1 3/8	1 1/2	5/8	7/8	1	1 1/8	1 1/4	1 1/2	1 5/8
Keyway (inches)	1/16 ξ 1/32	1/16 ξ 1/32	3/32 ξ 3/64	none	1/8 ξ 1/16	none	3/16 ξ 3/32	3/16 ξ 3/32	3/16 ξ 3/32	1/4 ξ 1/8	1/4 ξ 1/8	1/4 ξ 1/8	5/16 ξ 5/32	3/8 ξ 3/16	3/16 ξ 3/32	3/16 ξ 3/32	1/4 ξ 1/8	1/4 ξ 1/8	1/4 ξ 1/8	3/8 ξ 3/16	3/8 ξ 3/16

*Special or metric bores available, consult factory.

Voltage Table

Character	Voltage
C	12 Vdc
E	24-28 Vdc
J	90-100 Vdc
N*	115 **Vac***

*Includes rectifier.
Not available on sizes 3 and 8.

CRP Clutch-Roto Sheave® Units

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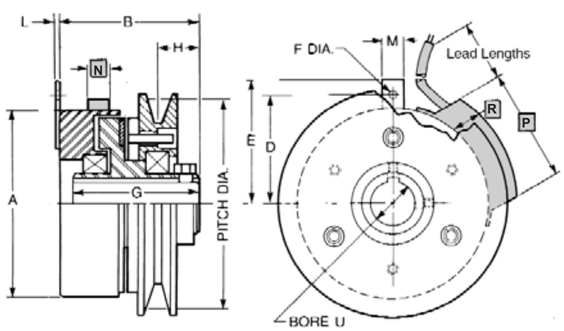
- CSA certified.
- Pre-aligned, one-piece package can be mounted almost anywhere: line shaft, motor shaft, or stub shaft.
- Mounts in any position without special modifications.
- Spring release for positive disengagement.
- Precision sealed ball bearings for long trouble-free life.
- Zinc plated magnet body for corrosion resistance.
- Epoxy encapsulated coil construction for uniform heat transfer and moisture resistance.
- Class H magnet wire and potting material.

Installation and Service Instructions Sheet 8-078-800-02 and Parts List Sheets:
8-078-802-01 (Size 3.5) 8-078-802-02 (Size 5)
8-078-802-03 (Size 5.5) 8-078-802-04 (Size 8)

Standard DC Clutch

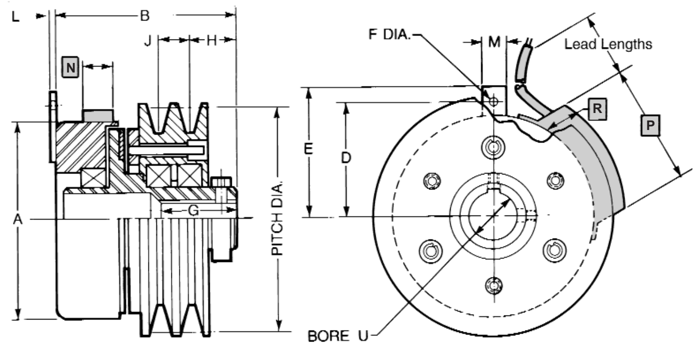
Tor-ac Clutch with Built-In Rectifier

Size 3.5 and 5



Dimensions are for estimating only and subject to change without notice.
For installation purposes, request certified prints.

Size 5.5 and 8



Lead Lengths: All Tor-ac units have 32" leads.
Standard DC unit has 24" leads.

Dimensional Data (In Inches)

Size	A	B	D	E	F	G	H	J	L	M	N	P	R	U Bore
3.5	3.19	2.75	1.81	2.00	.19	2.50	.86	–	.06	.66	1.00	2.74	.80	3/8, 1/2, 5/8
5	4.31	3.10	2.50	2.84	.19	1.35	.89	–	.09	.50	1.00	2.81	.69	1/2, 5/8, 3/4, 7/8, 1
5.5	5.63	4.38	3.25	3.50	.25	2.49	.94	.75	.09	.75	1.00	2.93	.81	3/4, 7/8, 1, 1 1/8, 1 1/4
8	8.38	4.81	4.63	5.00	.34	4.56	1.00	.75	.13	1.00	–	–	–	1 1/8, 1 1/4, 1 3/8, 1 1/2, 1 5/8, 1 3/4

IMPORTANT NOTE: *Information and dimensioning relating to Tor-ac units shown in shaded area.*

Performance/List Price Data (Discount Symbol X-1)

Catalog Number	Size	Part Number	Nominal Static Torque (lb-in)	Nominal Dynamic Torque at 1800 RPM (lb-in)	Max. RPM	Drive Hub Inertia (lb-ft²)	Thermal Capacity (ft-lb/min)①	Approx. Weight (lbs)	Maximum Electrical Power (watts)	List Price ②
CRP-35P	3.5	2-11-3161-00	100	65	5000	.00317	2750	4	11	$ 2172.00
CRP-35PT	3.5	2-11-3181-00	100	65	5000	.00317	2750	4	11	2356.00
CRP-50P	5	2-11-4268-00	275	160	5000	.0164	4400	6	15	2584.00
CRP-50PT	5	2-11-4281-00	275	160	5000	.0164	4400	6	15	2644.00
CRP-55P	5.5	2-11-5522-02	720	400	3600	.0689	8250	12 3/4	26	3880.00
CRP-55PT	5.5	2-11-5581-00	720	400	3600	.0689	8250	12 3/4	26	4064.00
CRP-80P	8	2-11-8321-01	1740	1160	1800	.6640	16500	34	35	7160.00

①Thermal capacity rating is based on ambient temperature of 70°F at 1750 RPM.
②List prices subject to change without notice. List price is the same for unit with or without sheave.

Ordering Information

Example of a complete part number:
2-11-3161-00-J J A — 3.6A-4.0B section sheave
90-100 Vdc
1/2 bore 1/8 x 1/16 keyway

Voltage Table

Character	Voltage
C	12 Vdc
E	24-28 Vdc
J	90-100 Vdc
N*	115 **Vac***

*Includes rectifier. Not available on size 8.

Bore and Keyway Table*

Character	H	J	L	N	O	Q	R	T	U	V	X	Y
Bore/Shaft Dia. (in.)	3/8	1/2	5/8	3/4	7/8	1	1 1/8	1 1/4	1 3/8	1 1/2	1 5/8	1 3/4
Keyway (inches)	3/32 x 3/64	1/8 x 1/16	3/16 x 3/32	3/16 x 3/32	3/16 x 3/32	1/4 x 1/8	1/4 x 1/8	1/4 x 1/8	5/16 x 5/32	3/8 x 3/16	3/8 x 3/16	3/8 x 3/16

*Special or metric bores available, consult factory.

Sheave Table

Clutch Size		3.5		5				5.5			8			ALL
Character		A	B	C	D	E	F	K	L	M	A	B	C	W
Pitch Dia. (in.)	A	3.6	3.8	4.2	4.4	4.8	5.0	5.2	5.4	5.8	7.0	8.2	9.0	without sheave
	B	4.0	4.2	4.6	4.8	5.2	5.4	5.6	5.8	6.2	7.4	8.6	9.4	
Number of Grooves		1	1	1	1	1	1	2	2	2	2	2	2	

CRS Clutch-Roto Sprocket® Unit

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- CSA certified.
- Ball bearing-mounted adapter hub and magnet body for long, trouble-free life.
- Pre-aligned, one-piece package can be mounted almost anywhere: line shaft, motor shaft, or stub shaft.
- Mounts in any position without special modifications.
- Spring release for positive disengagement.
- Non-asbestos friction linings provide smooth, shock-free operation.
- Zinc plated magnet body for corrosion resistance.
- Epoxy encapsulated coil construction for uniform heat transfer and moisture resistance.
- Class H magnet wire and potting material.
- Other sprocket configurations available, contact factory.

Standard DC Clutch

Refer to Installation and Service Instructions Sht. 8-078-800-02 and Parts List Sheets:
8-078-802-01 (Size 3.5) 8-078-802-02 (Size 5)
8-078-802-03 (Size 5.5) 8-078-802-04 (Size 8)

Tor-ac Clutch with built-in rectifier

Minimum Usable Plate Sprockets, Type A

Clutch Size	Roller Chain Number										
	35	40	41	50	60	80	100	120	140	180	
3.5	35	27	26	-	-	-	-	-	-	-	No. of teeth
5	35	27	27	22	19	-	-	-	-	-	
5.5	42	32	32	26	22	18	15	-	-	-	
8A Hub	40	28	28	23	20	-	-	-	-	-	
8B* Hub	54	40	40	32	28	21	18	15	14	11	

*Maximum usable plate sprocket for Size 8A Hub.

***IMPORTANT NOTE:** Information and dimensioning relating to Tor-ac units shown in shaded area.*

Performance/List Price Data (Discount Symbol X-1)

Catalog Number	Size	Basic Model Number	Nominal Static Torque (lb-in)	Nominal Dynamic Torque at 1800 RPM (lb-in)	Max. RPM	Drive Hub Inertia (lb-ft²)	Thermal Capacity (ft-lb/min)①	Approx. Weight (lbs)	Maximum Electrical Power (watts)	Bore	List Price②
CRS-35	3.5	2-11-3162-00	100	65	5000	.00317	2750	4	11	3/8, 1/2, 5/8	$2204.00
CRS-35T	3.5	2-11-3180-00	100	65	5000	.00317	2750	4	11	3/8, 1/2, 5/8	2208.00
CRS-50	5	2-11-4269-00	275	160	5000	.0164	4400	6	15	1/2, 5/8, 3/4, 7/8, 1	2468.00
CRS-50T	5	2-11-4280-00	275	160	5000	.0164	4400	6	15	1/2, 5/8, 3/4, 7/8, 1	2652.00
CRS-55	5.5	2-11-5525-00	720	400	3600	.0689	8250	12 3/4	26	3/4, 7/8, 1, 1 1/8, 1 1/4	3480.00
CRS-55T	5.5	2-11-5580-00	720	400	3600	.0689	8250	12 3/4	26	3/4, 7/8, 1, 1 1/8, 1 1/4	3664.00
CRS-80A	8A	2-11-8322-00	1740	1160	1800	.6640	16500	34	35	1 1/8, 1 1/4, 1 3/8, 1 1/2, 1 5/8, 1 3/4	6720.00
CRS-80B	8B	2-11-8323-00	1740	1160	1800	.6640	16500	34	35	1 1/8, 1 1/4, 1 3/8, 1 1/2, 1 5/8, 1 3/4	6720.00

①Thermal capacity rating is based on ambient temperature of 70°F at 1750 RPM. ② Sprocket available at additional cost. Consult factory.
List prices subject to change without notice.

Ordering Information

Example of a complete part number:
2-11-3162-00-L J —
90-100 Vdc
5/8 bore 3/16 x 3/32 keyway

Bore and Keyway Table*

Character	Bore/Shaft Dia. (in.)	Keyway (inches)
H	3/8	3/32 x 3/64
J	1/2	1/8 x 1/16
L	5/8	3/16 x 3/32
N	3/4	3/16 x 3/32
O	7/8	3/16 x 3/32
Q	1	1/4 x 1/8
R	1 1/8	1/4 x 1/8
T	1 1/4	1/4 x 1/8
U	1 3/8	5/16 x 5/32
V	1 1/2	3/8 x 3/16
X	1 5/8	3/8 x 3/16
Y	1 3/4	3/8 x 3/16

*Special or metric bores available, consult factory.

Voltage Table

Character	Voltage
C	12 Vdc
E	24-28 Vdc
J	90-100 Vdc
N*	115 **Vac***

*Includes rectifier.
Not available on size 8.

CRS Clutch – Roto Sprocket® Unit (continued)

Dimensional Data (In Inches)

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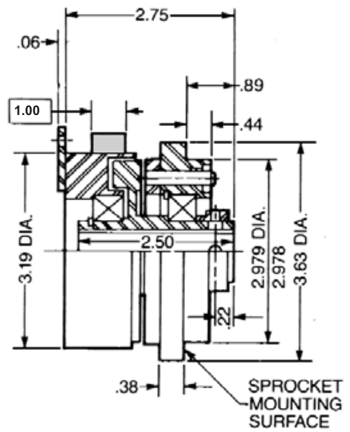
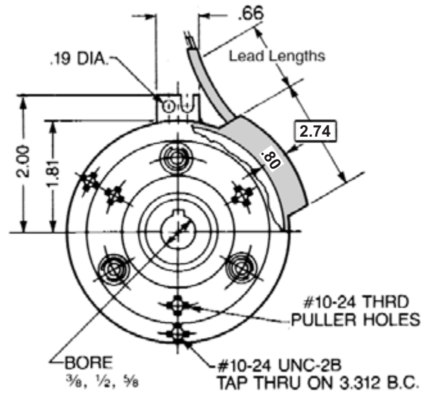
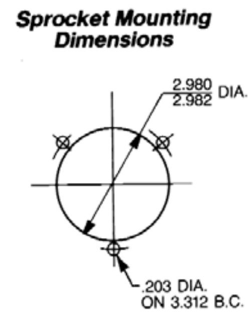
Size 3.5

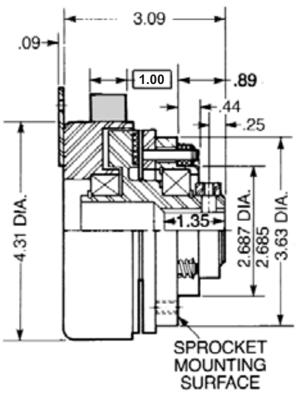


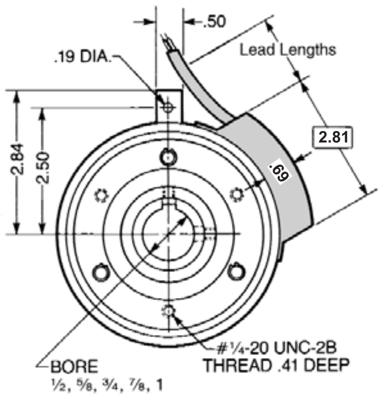


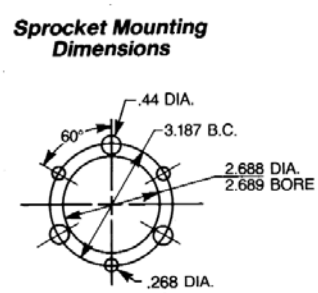


Lead Lengths: All Tor-ac units have 32” leads. Standard DC unit has 18” leads.

Size 5

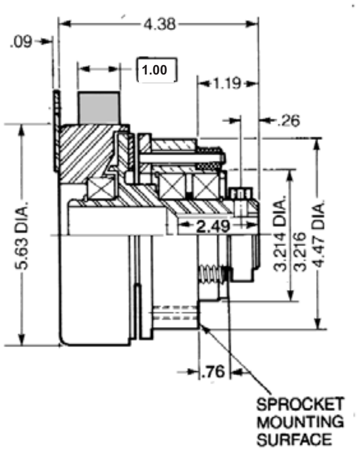


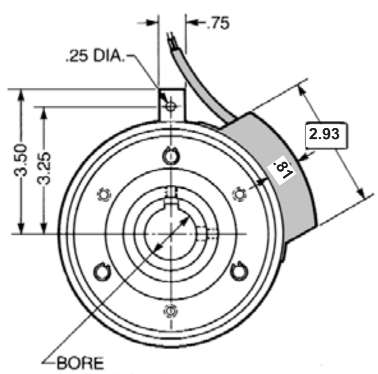


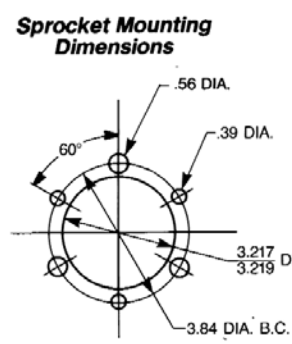


Lead Lengths: All Tor-ac units have 32” leads. Standard DC unit has 18” leads.

Size 5.5







Lead Lengths: All Tor-ac units have 32” leads. Standard DC unit has 24” leads.

Dimensions are for estimating only and subject to change without notice. For installation purposes, request certified prints.

CRS Clutch – Roto Sprocket® Unit (continued)

Dimensional Data (In Inches)

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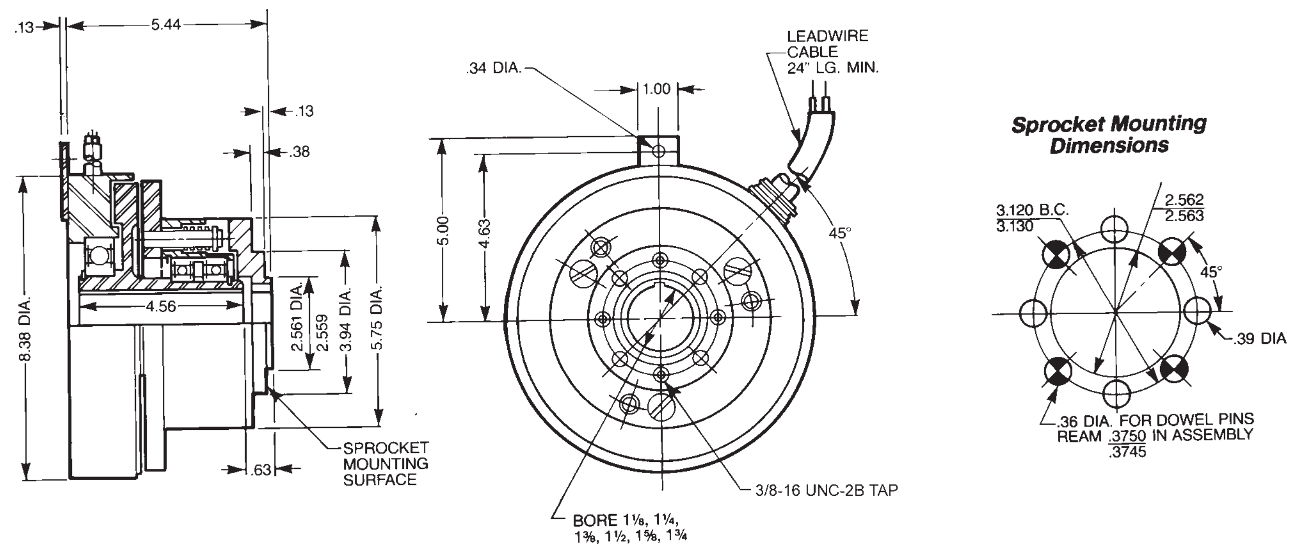
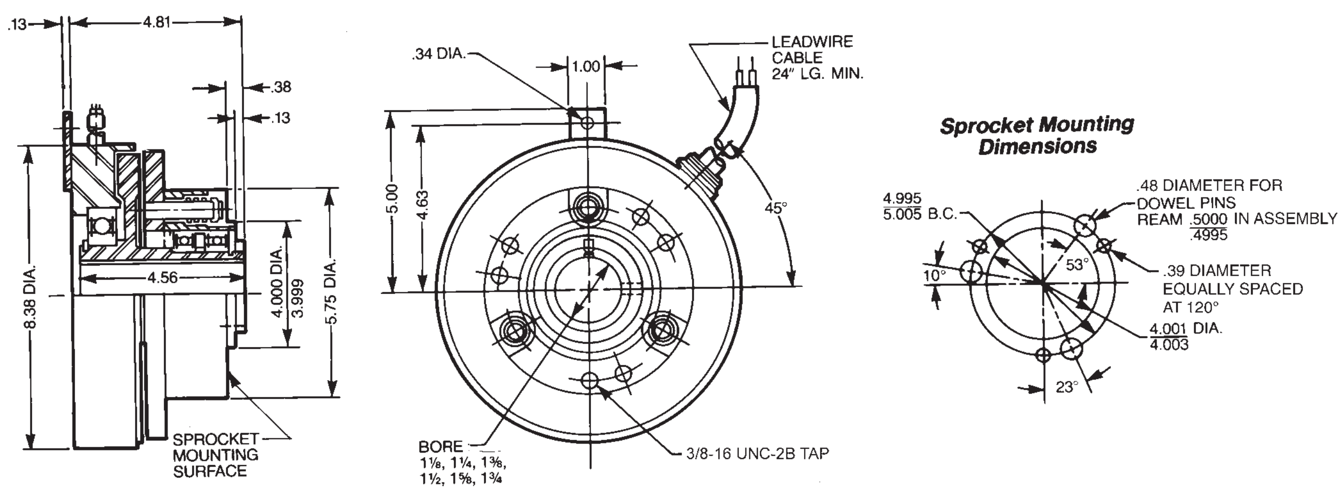
Size 8A



Size 8B



Dimensions are for estimating only and subject to change without notice. For installation purposes, request certified prints.

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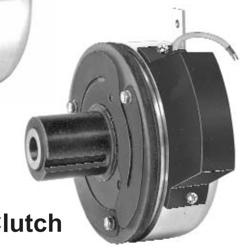
CTS Clutch – Thru Shaft

Standard DC Clutch



Tor-ac Clutch

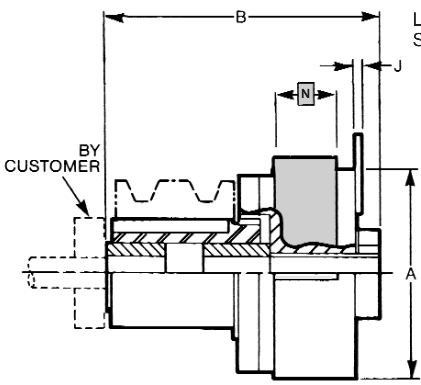
- CSA certified.
- Ball-bearing mounted stationary field for long trouble-free operation.
- Sleeve bearing in driven hub supports customer-supplied pulley, gear, or sprocket.
- Spline drive for long life under heavy loads.
- Available with spring release.
- Zinc plated magnet body for corrosion resistance.
- Epoxy encapsulated coil construction for uniform heat transfer and moisture resistance.
- Class H magnet wire and potting material.

Refer to Installation and Service Instructions Sheet 8-078-862-00.

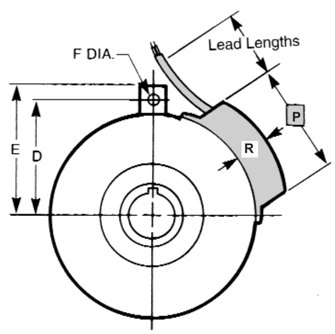
Dimensional Data (In Inches)

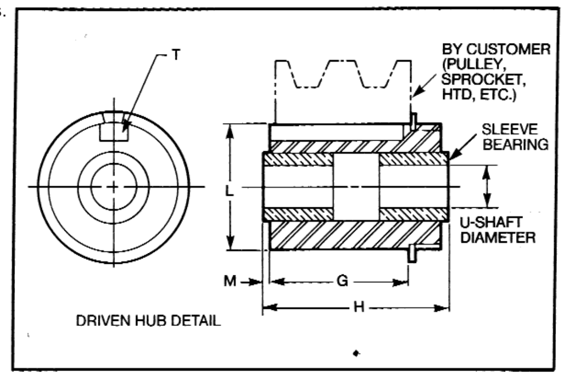
Size	A	B	D	E	F	G	H	J	L	M	N	P	R	T	U (through bore)
3	2.67	3.32	1.56	1.75	.13	1.44	1.93	.06	1.374 / 1.375	.06	–	–	–	5/16 x 5/32	3/8, 1/2
3.5	3.19	3.39	1.81	2.00	.19	1.50	1.95	.06	1.374 / 1.375	.06	1.00	2.74	.80	5/16 x 5/32	3/8, 1/2, 5/8
5	4.31	3.91	2.50	2.84	.19	1.50	2.14	.09	1.374 / 1.375	.06	1.00	2.81	.69	5/16 x 5/32	1/2, 5/8, 3/4,

IMPORTANT NOTE: *Information and dimensioning relating to Tor-ac units shown in shaded area.*



Lead Lengths: All Tor-ac units have 32" leads.
Standard DC unit has 24" leads.





Dimensions are for estimating only and subject to change without notice. For installation purposes, request certified prints.

Performance/List Price Data

Catalog Number	Size	Type	Basic Model Number	Nominal Static Torque (lb-in)	Nominal Dynamic Torque at 1800 RPM (lb-in)	Max. RPM②	Inertia: Driven Side (lb-ft²)	Inertia: Drive Side (lb-ft²)	Thermal Capacity (ft-lb/min)①	Approx. Weight (lbs)	Max Power (watts)	List Price ③
CTS-30	3	standard	2-11-2502-05	60	40	7000	2.4 x 10^{-3}	1.67 x 10^{-3}	1650	2.5	9	$952.00
CTS-30S		spring rel.	2-11-2502-09									
CTS-35	3.5	standard	2-11-3141-06	100	65	5000	4.7 x 10^{-3}	2.96 x 10^{-3}	2750	3.5	11	1200.00
CTS-35S		spring rel.	2-11-3141-07									
CTS-35T	3.5	standard	2-11-3190-00	100	65	5000	4.7 x 10^{-3}	2.96 x 10^{-3}	2750	3.5	11	1384.00
CTS-35ST		spring rel.	2-11-3190-01									
CTS-50	5	standard	2-11-4267-00	275	160	5000	5.7 x 10^{-3}	1.47 x 10^{-2}	4400	5.4	14	1368.00
CTS-50S		spring rel.	2-11-4267-01									
CTS-50T	5	standard	2-11-4290-00	275	160	5000	5.7 x 10^{-3}	1.47 x 10^{-2}	4400	5.4	14	1552.00
CTS-50ST		spring rel.	2-11-4290-01									

①Thermal capacity rating is based on ambient temperature of 70°F at 1750 RPM.
②RPM value stated is for ball bearing mount magnet body. See ASTM B 438 for further information on copper based sleeve bearings used in the driven hubs.
③List prices subject to change without notice.

Ordering Information

Example of a complete part number:
2-11-2502-05-H J G — 3/8 bore
90-100 Vdc
5/8 bore 3/16 x 3/32 keyway

Bore and Keyway Table*

Character	D	F	G	H	I	J	K	L	M	N
Bore/Shaft Dia. (in.)	1/4	5/16	3/8	3/8	1/2	1/2	5/8	5/8	3/4	3/4
Keyway (inches)	1/16 ξ 1/32	1/16 ξ 1/32	none	3/32 ξ 3/64	none	1/8 ξ 1/16	none	3/16 ξ 3/32	none	3/16 ξ 3/32

*Special or metric bores available, consult factory.

Voltage Table

Character	Voltage
C	12 Vdc
E	24-28 Vdc
J	90-100 Vdc
N*	115 **Vac***

*Includes rectifier.
Not available on size 3.

Stearns® Heavy Duty Clutches & Brakes… Rugged, Reliable

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Stearns heavy duty clutches and brakes represent over 75 years of design, engineering and on-the-job experience. Stearns products are backed by a reputation for quality and integrity.

Stearns will customize heavy duty clutches and brakes to most customer requirements.

For your heavy duty power transmission control needs, there's a Stearns clutch or brake for the job.

Stearns heavy duty clutches are large, rotating field/magnetic devices with torque ranges from 7 lb-ft through 120,000 lb-ft. These clutches are available as electrically engaged and as spring engaged - electrically released clutches.

Stearns heavy duty brakes are foot mounted, stationary field, spring engaged - electrically released devices. These brakes provide a stopping and holding function on a drive or motor shaft.

Stearns heavy duty rectifiers and combination forcing circuit/rectifiers are available to provide the necessary direct current power to operate spring-engaged clutches or brakes.

Typical applications of these heavy duty products:

- Steel Mills, Screw-Downs
- Standby Engine/Motor Generator Sets
- Kiln Drive Systems and Backup Drives
- Rubber Mills
- Oil Field Equipment
- Dock and Pier Handling Equipment
- Emergency Drive for Large Fans, Blowers and Pumps
- Metal Forming Machinery
- Dynamometers
- Pulp Processing Equipment
- Large Textile Machines
- Cranes and Hoists, as a Coupling between Motors

The heavy duty clutches and brakes are made-to-order. This catalog information is provided to assist selection and basic fit for Stearns heavy duty products. The dimensions are for estimating only and are subject to change based on the application requirements.

An approval drawing process with new applications provides Stearns manufacturing with customer selection and dimensional requirements.
For replacement units and repair parts, the serial number from the nameplate is extremely important.

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With the part number and serial number, our customer service personnel can assist you in securing the correct parts or replacement clutch.The serial number on the nameplate is also stamped into the magnet body. It is critical information. The heavy duty products are made-to-order, and can differ from other units of the same style and size.

Selection

For the heavy duty products, we suggest the following equation be used.

$$T = \frac{5252 \times P}{N} \times SF$$

Where,

T = Torque, lb-ft

P = Horsepower, hp

N = Shaft Speed Differential at Clutch or Brake, RPM

SF = Service Factor

5252 = Constant

The service factors for the preceding equation can be selected from the following table:

The torque value calculated from the above equation can be compared to the ratings given for the individual products, as shown in the performance data tables.

Application	SF
Brake (Non-Overhauling Load)	1.5
NEMA Design A, B and C AC Motors	2.8
NEMA Design D AC Motors	3.5
Shunt Wound DC Motors	4.5
Compound Wound DC Motors	5.0
Series Wound DC Motors	8.0
Internal Combustion Engines	5.0

Application Considerations

Lubricants: Dry friction clutches and brakes should not be used where the friction surfaces will be subjected to oil, cutting fluid or other lubricants and contaminates as these will reduce the torque output.

High Speed: Recommended balance rpm and maximum rpm are listed by size in the catalog section.

High Temperature Environments: Environments where the ambient temperature exceeds 40°C (104°F) could cause early coil failure. Class H coil insulation is available.

Vertical Application: The heavy duty products are not intended for vertical applications.

Outline of Heavy Duty Products

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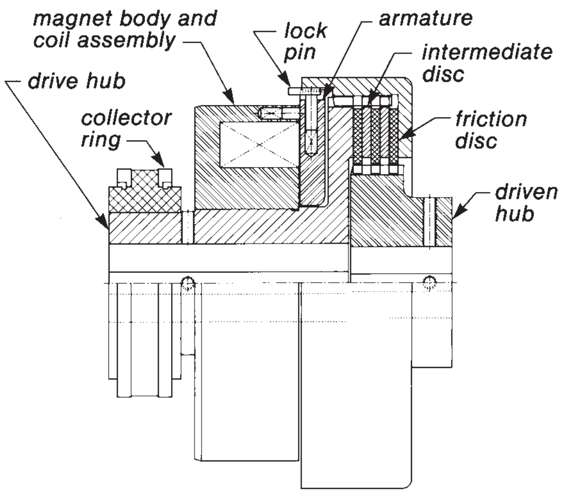
Think of the Stearns *Heavy Duty Clutches and Brakes* for any application requiring rugged, high torque, low inertia clutches and brakes

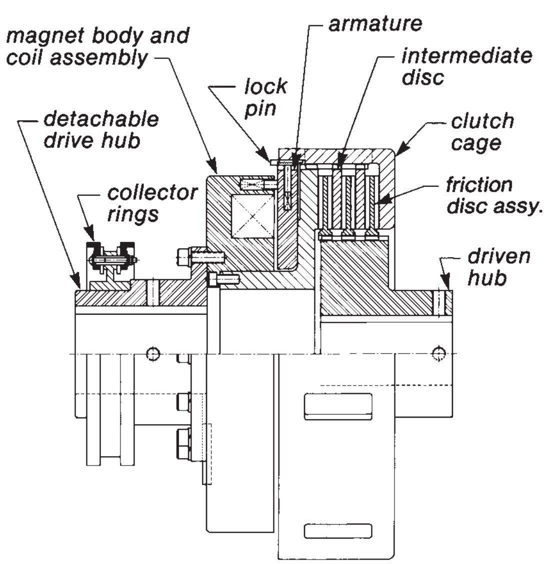
Style E Electrically Set Clutch



- Torque 7 to 9000 lb-ft
- Basic Unit (as shown) Form 1 Clutch Coupling
- Collector Rings on One-Piece Drive Hub
- Straight Bores
- 115 or 230 Volts DC Operation
- Class B Insulation Standard

OPTIONS: Metric Bores ▪ Collector Ring on Magnet Body (shorter overall length) ▪ Three-Piece Housing ▪ Through Shaft (bronze bushed or ball bearing, driven hub for mounting sprockets, gears, etc.) ▪ Other Voltages ▪ Dynamic Balancing (as required) ▪ Pilot Bearing in Driven Hub (for long unsupported shafts)

Style E, Class S Electrically Set Clutch



- Torque 600 to 9000 lb-ft
- Basic Unit (as shown) Form 1 Clutch Coupling
- Two-Piece Split Collector Rings on Drive Hub
- Detachable Drive Hub (vertical removal of clutch without disturbing shafts)
- Straight Bores
- 115 or 230 Volts DC Operation
- Class B Insulation Standard
- Carrier Ring Type Friction Disc

OPTIONS: Taper Bores ▪ Metric Bores ▪ Three-Piece Housings ▪ Other Voltages ▪ Dynamic Balancing (as required) ▪ Spindle Shafts ▪ Floating Shaft Arrangements ▪ Detachable Driven Hub

Style E, Class M Electrically Set Clutch

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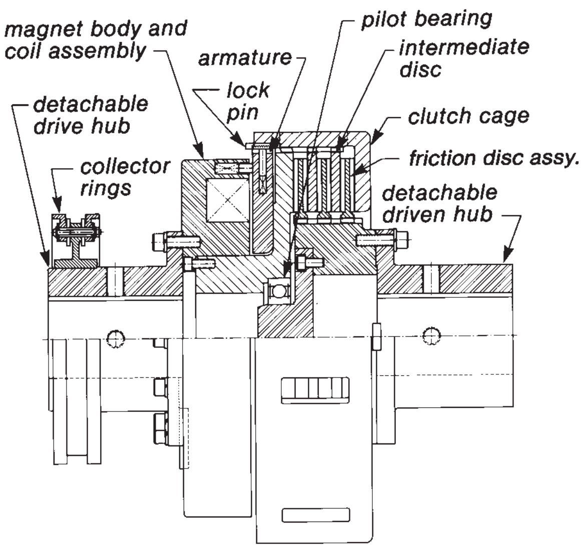


Torque 3,000 to120,000 lb-ft

Basic Unit (as shown) Form 6 (pilot bearing) for Long Unsupported Shafts

Two-Piece Split Collector Rings on Drive Hub

Straight Bores

Detachable Drive and Driven Hubs (vertical removal of clutch without disturbing shafts)

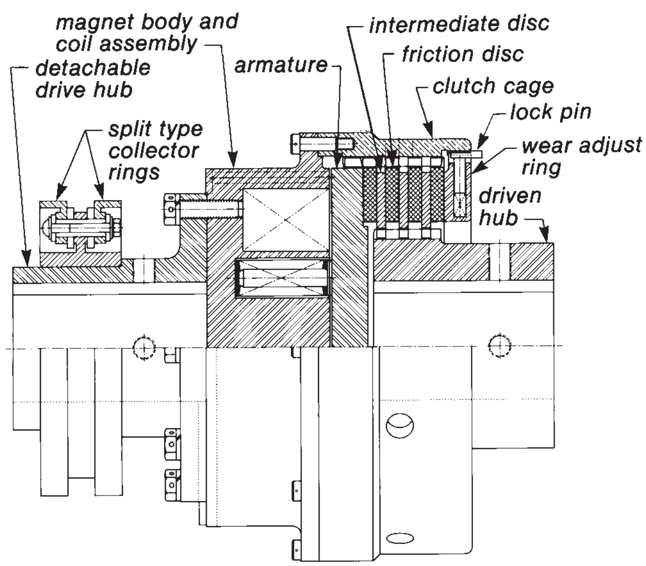
115 or 230 Volts DC Operation

Class B Insulation Standard

Carrier Ring Type Friction Disc

OPTIONS:
- *Dynamic Balancing (as required)*
- *Collector Ring Cover*
- *Housing for Most Smaller Sizes*
- *Spindle Shafts*
- *Floating Shaft Arrangements*

Style SCE, Class S3 Spring-Set Clutch



Torque 450 to12,000 lb-ft

Basic Unit (as shown) Form 1 Clutch Coupling

Two-Piece Split Collector Rings on Drive Hub

Detachable Drive Hub (vertical removal of clutch without disturbing shafts)

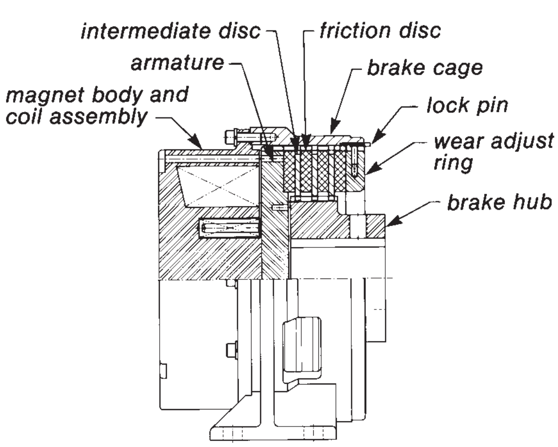
Straight Bores

115 or 230 Volts DC Operation for Forcing

Class B Insulation Standard

OPTIONS:
- *Taper Bores*
- *Metric Bores*
- *Three-Piece Housings*
- *Through Shaft (some sizes)*
- *Pilot Bearing in Driven Hub (for wider spaced shafts)*
- *Detachable Driven Hub*
- *Dynamic Balancing (as required)*
- *Combination Forcing Circuit Voltage and Holding Voltage Circuits Required (forcing-rectifier control available from Stearns Division)*

Style SCEB, Class S3 Spring-Set Brake



Torque 450 to12,000 lb-ft

Foot Mounted

Straight Bore

115 or 230 Volts DC Operation for Forcing

Class B Insulation Standard

OPTIONS:
- *Taper Bores*
- *Metric Bores*
- *Detachable Hub*
- *Combination Forcing Circuit Voltage and Holding Voltage Circuits Required (forcing-rectifier control available from Stearns Division)*
- *Limited Through-Shaft Capability*

Style E

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Electrically Engaged Clutch or Clutch Coupling

Stearns Style E Clutches are a time-tested and proven design.

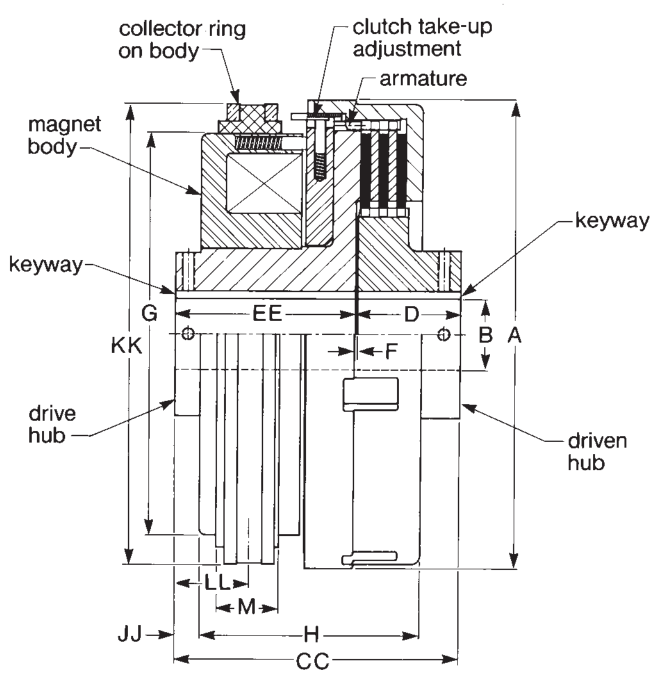
The Style E Clutch is electrically engaged. The driven end carries the friction linings.

A spring loaded lock pin simplifies threaded adjustment of the air gap. The clutch operates on direct current. If DC voltage is not available, a suitable rectifier can be supplied (see Page 48).

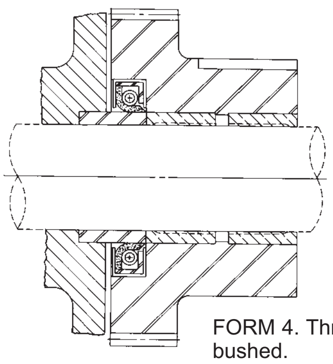
Dynamic balancing is available and required above the specified RPM. Generally, 4” through 14” Style E Clutches should be balanced above 1000 RPM, 16” and 20” above 800 RPM.

Forms 1 and 6 are clutch-couplings and Forms 4 and 5 are thru-shaft clutches.

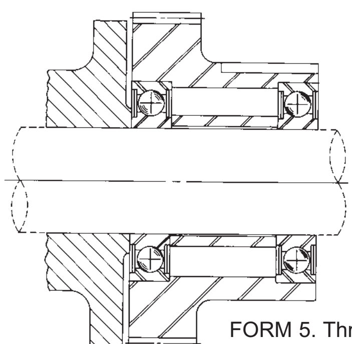
Coil electrical information on Page 34.
Class B coil insulation is standard.



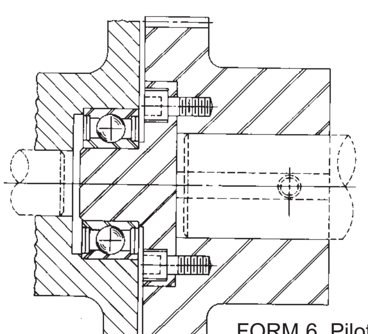
Style E Clutch with collector ring on magnet body. Driven hub Form 1.



FORM 4. Thru shaft, bronze bushed.
PV less than 50,000



FORM 5. Thru shaft, ball bearing.
PV greater than 50,000
P more than 8,000 psi
V more than 1,200 surface feet per minute



FORM 6. Pilot bearing arrangement for driven hub.

Dimensional Data (In Inches)

Size	Nominal Static Torque (lb-ft)	hp at 100 RPM	Lining Area (sq-in)	230 Vdc Watts	WR^2 (lbs-ft^2) Drive End	WR^2 (lbs-ft^2) Driven End	Max. RPM	Approx. Shipping Weight
402	7	.13	8	24	.14	.002	2300	21
404	14	.26	16	24	.16	.005	2300	22
406	21	.39	24	24	.18	.008	2300	24
502	13.5	.25	15	29	.33	.007	2300	28
504	27.0	.50	30	29	.35	.013	2300	30
506	40.5	.75	45	29	.37	.020	2300	33
602	35	.66	25	40	1.01	.08	2300	40
604	70	1.3	50	40	1.11	.11	2300	44
606	105	1.9	75	40	1.21	.15	2300	48
802	140	2.6	44	80	4.3	.27	2300	73
804	280	5.2	88	80	4.6	.52	2300	82
806	420	7.8	132	80	4.6	.76	2300	91
1002	400	7.6	72	104	11.9	.667	2300	130
1004	800	15.0	144	104	12.3	1.20	2300	142
1006	1200	22.0	216	104	12.7	1.74	2300	154
1202	600	11.0	125	155	27.5	1.70	1900	250
1204	1200	22.0	250	155	28.9	3.00	1900	265
1206	1800	33.0	375	155	30.3	4.31	1900	280
1402	900	17.0	166	205	55	3.36	1700	300
1404	1800	34.0	332	205	63	6.45	1700	345
1406	2700	51.0	498	205	71	9.55	1700	390
1602	1500	28	212	146	99	6.26	1500	480
1604	3000	57	424	146	112	11.1	1500	545
1606	4500	85	636	146	125	16.0	1500	610
2002	3000	57	300	265	315	18.6	1200	630
2004	6000	114	600	265	341	33.6	1200	715
2006	9000	171	900	265	367	48.5	1200	800

Note: Consult factory for modifications and approval drawings.

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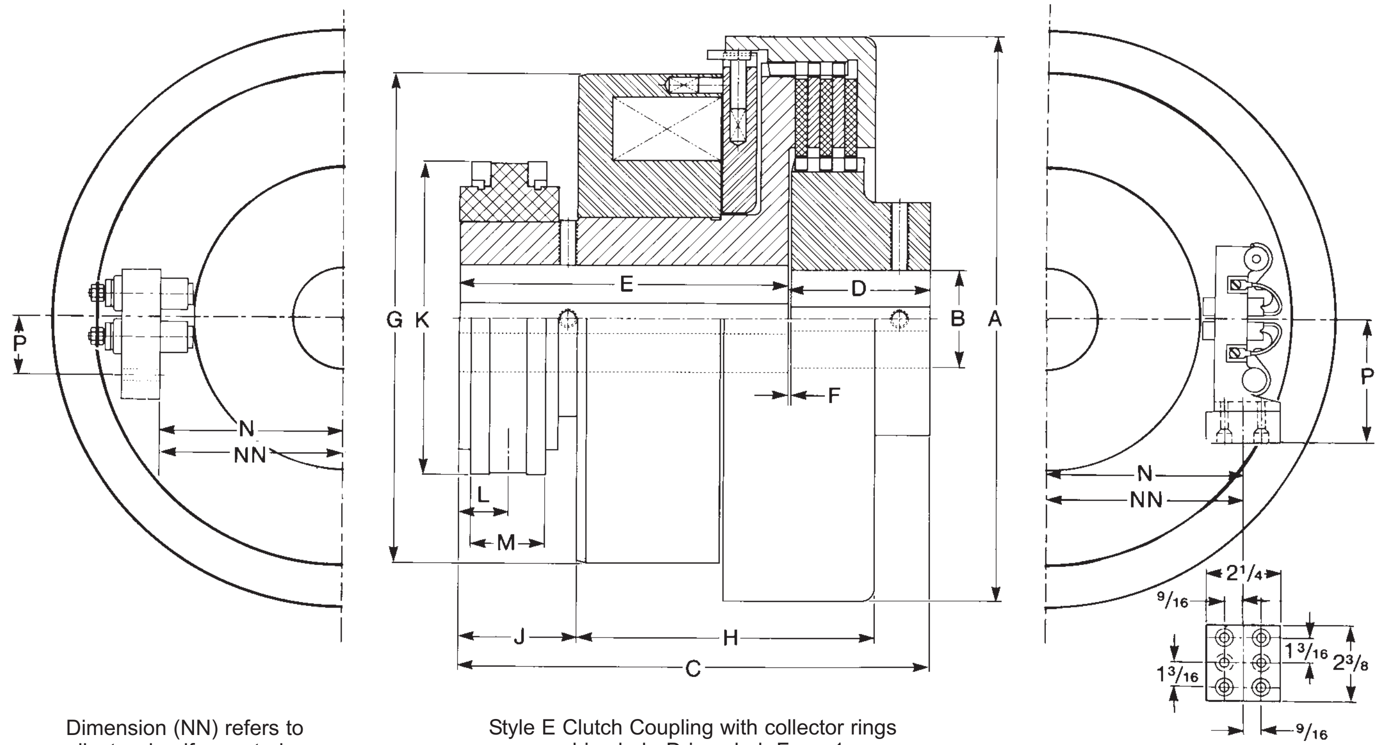

Dimension (NN) refers to collector ring if mounted on outside diameter of magnet body.

Style E Clutch Coupling with collector rings on drive hub. Driven hub Form 1.

Standard brush holder for sizes 1402 to 2006. Shown above, right.

Dimensions are for estimating only and subject to change without notice. For installation purposes, request certified prints.

Dimensions in Inches

A	B①	C	CC	D	E	EE	F	G	H	J	JJ	K	KK	L	LL	M	N	NN	P	U②
5 1/8	7/8	5 3/8	3 9/16	1	4 3/8	2 9/16	1/32	4 1/4	3 1/4	1 13/16		3	5 1/4	13/16	7/8	1 1/8	2 1/8	3 1/4	1 1/4	5/8
5 1/8	7/8	5 3/4	3 15/16	1 3/8	4 3/8	2 9/16	1/32	4 1/4	3 5/8	1 13/16		3	5 1/4	13/16	7/8	1 1/8	2 1/8	3 1/4	1 1/4	5/8
5 1/8	7/8	6 1/8	4 5/16	1 3/4	4 3/8	2 9/16	1/32	4 1/4	4	1 13/16		3	5 1/4	13/16	7/8	1 1/8	2 1/8	3 1/4	1 1/4	5/8
5 7/8	1 1/8	5 1/4	4	1	4 1/4	3	1/32	5	3 1/4	1 5/8	3/8	3	6 1/2	11/16	1 1/8	1 1/8	2 1/8	3 7/8	1 1/4	7/8
5 5/8	1 1/8	5 5/8	4 3/8	1 3/8	4 1/4	3	1/32	5	3 5/8	1 5/8	3/8	3	6 1/2	11/16	1 1/8	1 1/8	2 1/8	3 7/8	1 1/4	7/8
5 7/8	1 1/8	6	4 3/4	1 3/4	4 1/4	3	1/32	5	4	1 5/8	3/8	3	6 1/2	11/16	1 1/8	1 1/8	2 1/8	3 7/8	1 1/4	7/8
7 1/4	1 5/8	7 1/16	5 3/4	1 3/4	5 5/16	4	1/16	6	4 3/16	1 7/8	9/16	4 1/2	7 3/4	3/4	1 9/16	1 3/8	2 7/8	4 3/8	1 1/4	1 1/2
7 1/4	1 5/8	7 1/2	6 3/16	2 3/16	5 5/16	4	1/16	6	4 5/8	1 7/8	9/16	4 1/2	7 3/4	3/4	1 9/16	1 3/8	2 7/8	4 3/8	1 1/4	1 1/2
7 1/4	1 5/8	7 15/16	6 5/8	2 5/8	5 5/16	4	1/16	6	5 1/16	1 7/8	9/16	4 1/2	7 3/4	3/4	1 9/16	1 3/8	2 7/8	4 3/8	1 1/4	1 1/2
9 1/4	2	7 7/8	6	1 13/16	6	4 5/16	1/16	8	4 1/2	2 3/8	9/16	5	9 3/4	1	1 5/8	1 3/4	3 1/4	5 5/8	1 9/16	
9 1/4	2	8 1/4	6 7/16	2 1/4	6	4 5/16	1/16	8	4 15/16	2 3/8	9/16	5	9 3/4	1	1 5/8	1 3/4	3 1/4	5 5/8	1 9/16	
9 1/4	2	8 11/16	6 7/8	2 5/8	6	4 5/16	1/16	8	5 3/8	2 3/8	9/16	5	9 3/4	1	1 5/8	1 3/4	3 1/4	5 5/8	1 9/16	
11 1/2	2 7/16	8 1/2	6 7/8	1 7/8	6 5/8	5	1/16	10	5 1/16	2 3/8	3/4	6 3/8	12	1	2	2	3 15/16	6 13/16	1 9/16	
11 1/2	2 7/16	9	7 3/8	2 3/8	6 5/8	5	1/16	10	5 9/16	2 3/8	3/4	6 3/8	12	1	2	2	3 15/16	6 13/16	1 9/16	
11 1/2	2 7/16	9 1/2	7 7/8	2 7/8	6 5/8	5	1/16	10	6 1/16	2 3/8	3/4	6 3/8	12	1	2	2	3 15/16	6 13/16	1 9/16	
14	3 1/4	9 1/4	7 1/2	2 1/8	7 1/8	5 3/8	1/16	12	5 5/8	2 1/2	3/4	7	13 3/4	1 1/8	2 1/4	2	4 1/4	7 3/4	1 9/16	
14	3 1/4	9 3/4	8	2 5/8	7 1/8	5 3/8	1/16	12	6 1/8	2 1/2	3/4	7	13 3/4	1 1/8	2 1/4	2	4 1/4	7 3/4	1 9/16	
14	3 1/4	10 1/4	8 1/2	3 1/8	7 1/8	5 3/8	1/16	12	6 5/8	2 1/2	3/4	7	13 3/4	1 1/8	2 1/4	2	4 1/4	7 3/4	1 9/16	
16	3 3/4	11 5/8	8 5/8	2 1/2	9 1/8	6 1/8	1/8	14	6 7/8	4	1	9	16	1 3/8	2 1/2	2 1/4	5 3/4	9 1/4	3 7/8	
16	3 3/4	12 7/8	9 7/8	3 3/4	9 1/8	6 1/8	1/8	14	8 1/8	4	1	9	16	1 3/8	2 1/2	2 1/4	5 3/4	9 1/4	3 7/8	
16	3 3/4	14 1/8	11 1/8	5	9 1/8	6 1/8	1/8	14	9 3/8	4	1	9	16	1 3/8	2 1/2	2 1/4	5 3/4	9 1/4	3 7/8	
18	4 1/2	13	10	3 5/16	9 11/16	6 11/16	1/8	16	7 9/16	4	1	10	18	1 1/2	2 1/2	2 1/2	6 1/4	10 1/4	3 7/8	
18	4 1/2	14 3/16	11 3/16	4 1/2	9 11/16	6 11/16	1/8	16	8 3/4	4	1	10	18	1 1/2	2 1/2	2 1/2	6 1/4	10 1/4	3 7/8	
18	4 1/2	15 3/8	12 3/8	5 11/16	9 11/16	6 11/16	1/8	16	9 15/16	4	1	10	18	1 1/2	2 1/2	2 1/2	6 1/4	10 1/4	3 7/8	
23	5	12 3/4	10	2 3/4	10	7 1/4	1/8	20	8 1/8	4	1 1/4	12	23	1 1/2	2 3/4	2 1/2	7 1/4	12 3/4	3 7/8	
23	5	14	11 1/4	4	10	7 1/4	1/8	20	9 3/8	4	1 1/4	12	23	1 1/2	2 3/4	2 1/2	7 1/4	12 3/4	3 7/8	
23	5	15 1/4	12 1/2	5 1/4	10	7 1/4	1/8	20	10 5/8	4	1 1/4	12	23	1 1/2	2 3/4	2 1/2	7 1/4	12 3/4	3 7/8	

① Maximum bore standard keyway
② Maximum bore for Form 5.

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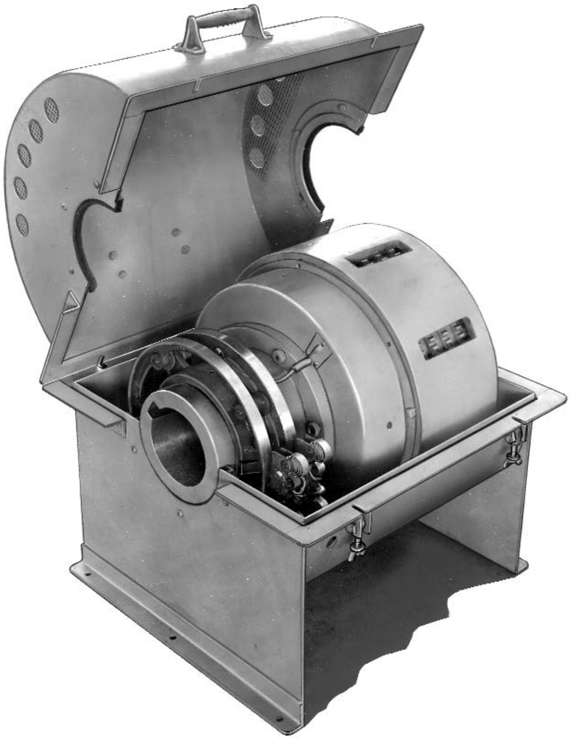

Style E, Class S

Electrically Engaged Clutch with Straight Bores

Stearns Style E, Class S Clutch is a high torque, low inertia, electromagnetic clutch for steel mill screw-downs, ball mills, rod mills, compeg mills, kilns and similar equipment. The basic design of this clutch has been time-tested and proven by over 50 years of successful application.

The Style E, Class S Clutch is electrically engaged. The driven end carries the friction linings.

A spring loaded lock pin simplifies threaded adjustment of air gap. To adjust, lock pin is depressed and armature rotated until lock pin snaps into next slot in cage.

Friction linings can be replaced without disturbing related equipment on either side of the clutch.

This clutch operates on direct current. If your plant does not have direct current, a suitable rectifier can be supplied (see Page 48).

Class B coil insulation is standard.

Performance Data

MECHANICAL

Clutch Size	Nominal Static Torque (lb-ft)	Wk^2 ($lb\text{-}ft^2$)		Lining Area (sq-in)	hp @ 100 RPM	Approx. Shipping (wt-lb)	Max. RPM	Dynamic Balancing Suggested above, RPM
		Drive End	Driven End					
1002	400	11.8	1.4	72	7.6	146	2300	1000
1004	800	13.5	2.1	144	15.0	163	2300	
1006	1200	15.3	2.8	216	22.0	179	2300	
1202	600	27.2	3.2	125	11.0	231	1900	1000
1204	1200	30.4	4.8	250	23.0	254	1900	
1206	1800	33.5	6.3	375	34.0	277	1900	
1402	900	56.3	6.9	166	17.0	354	1700	1000
1404	1800	64.5	10.0	332	34.0	395	1700	
1406	2700	72.7	13.1	498	51.0	436	1700	
1602	1500	103.0	10.3	212	28.0	488	1500	800
1604	3000	115.0	16.0	424	57.0	540	1500	
1606	4500	127.0	22.1	636	85.0	594	1500	
2002	3000	270.0	21.0	320	57.0	752	1200	800
2004	6000	305.0	37.2	640	114.0	853	1200	
2006	9000	340.0	53.1	960	171.0	954	1200	

Consult factory for modifications and/or approval drawing.

ELECTRICAL - Class B

Clutch Size Series	Voltage	Coil Resistance ohms	DC Amps Coil	DC Watts Coil
600	115	336	.342	40
	230	1291	.178	40
800	115	170	.676	80
	230	666	.345	80
1000	115	127	.905	104
	230	509	.452	104
1200	115	86	1.340	155
	230	342	.672	155
1400	115	67	1.720	198
	230	259	.888	205
1600	115	93	1.230	142
	230	364	.630	146
2000	115	52	2.230	256
	230	200	1.150	265

ENGAGEMENT TIME

Clutch Size Series	Engagement Time in Seconds (without controls)
1000	.21
1200	.26
1400	.31
1600	.50
2000	1.08

If faster time is required, special coils may be supplied for use with a forcing circuit. Consult factory for details.

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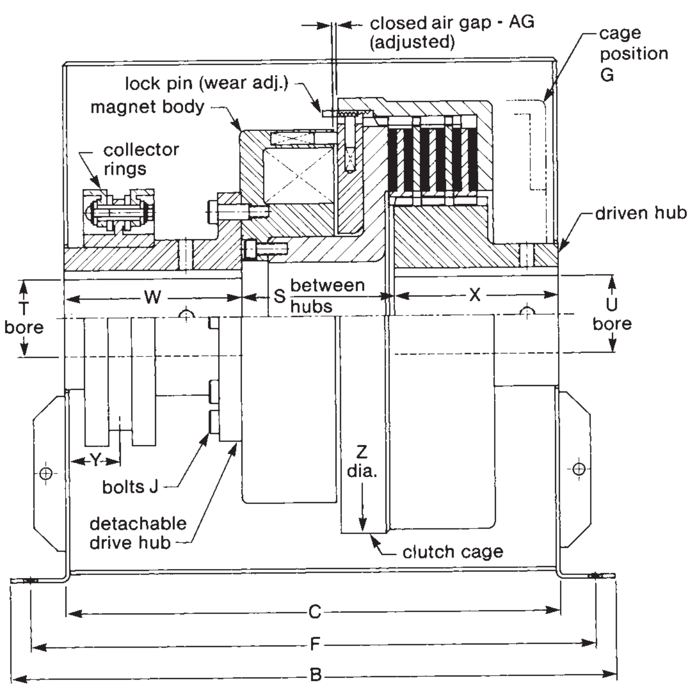
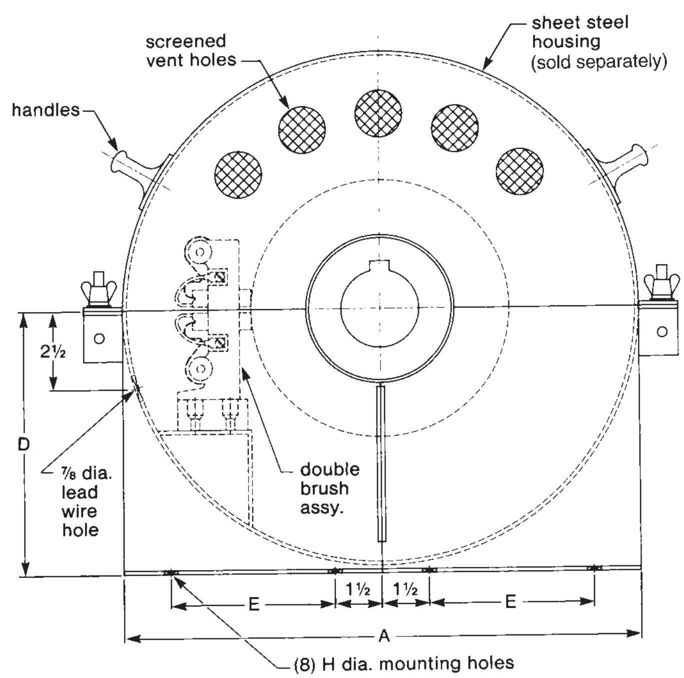
Dimensional Data (In Inches)

Size	A	B	C	D	E	F	H	S①	T (max.)	U (max.)	W	X	Y	Z	AG
1002	16	$15\frac{3}{8}$	$12\frac{3}{8}$	$8\frac{1}{2}$	5	$14\frac{1}{8}$	$\frac{7}{16}$	$4\frac{13}{32}$ min. $4\frac{19}{32}$ max.	$2\frac{7}{8}$ (flat key)	$1\frac{7}{8}$	$5\frac{1}{8}$	$2\frac{3}{4}$	$1\frac{13}{16}$	$11\frac{1}{2}$	.031
1004		$16\frac{3}{8}$	$13\frac{3}{8}$			$15\frac{1}{8}$				$2\frac{1}{2}$		$3\frac{3}{4}$			
1006		$17\frac{3}{8}$	$14\frac{3}{8}$			$16\frac{1}{8}$				$3\frac{1}{8}$		$4\frac{3}{4}$			
1202	$16\frac{1}{2}$	$16\frac{7}{8}$	$13\frac{7}{8}$	$8\frac{3}{4}$	$5\frac{1}{4}$	$15\frac{5}{8}$	$\frac{7}{16}$	$4\frac{25}{32}$ min. $4\frac{31}{32}$ max.	$3\frac{1}{4}$	$2\frac{1}{4}$	$5\frac{3}{4}$	$3\frac{1}{4}$	$1\frac{3}{4}$	14	.031
1204		$17\frac{7}{8}$	$14\frac{7}{8}$			$16\frac{5}{8}$				$2\frac{7}{8}$		$4\frac{1}{4}$			
1206		$18\frac{7}{8}$	$15\frac{7}{8}$			$17\frac{5}{8}$				$3\frac{1}{2}$		$5\frac{1}{4}$			
1402	19	$18\frac{11}{16}$	$15\frac{11}{16}$	10	$6\frac{1}{2}$	$17\frac{7}{16}$	$\frac{7}{16}$	$5\frac{11}{32}$ min. $5\frac{17}{32}$ max.	$3\frac{3}{4}$	$2\frac{1}{2}$	$6\frac{1}{2}$	$3\frac{3}{4}$	$1\frac{15}{16}$	$16\frac{1}{4}$	.040
1404		$19\frac{15}{16}$	$16\frac{15}{16}$			$18\frac{11}{16}$				$3\frac{1}{4}$		5			
1406		$21\frac{3}{16}$	$18\frac{3}{16}$			$19\frac{15}{16}$				$4\frac{1}{4}$		$6\frac{1}{4}$			
1602	21	$19\frac{5}{8}$	$16\frac{5}{8}$	11	$7\frac{1}{2}$	$18\frac{3}{8}$	$\frac{7}{16}$	$5\frac{29}{32}$ min. $6\frac{3}{32}$ max.	$4\frac{1}{2}$	$2\frac{3}{4}$	$6\frac{5}{8}$	4	$1\frac{15}{16}$	18	.040
1604		$20\frac{7}{8}$	$17\frac{7}{8}$			$19\frac{5}{8}$				$3\frac{1}{2}$		$5\frac{1}{4}$			
1606		$22\frac{1}{8}$	$19\frac{1}{8}$			$20\frac{7}{8}$				$4\frac{1}{2}$		$6\frac{1}{2}$			
2002	25	$21\frac{1}{16}$	$18\frac{1}{16}$	13	$9\frac{1}{2}$	$19\frac{13}{16}$	$\frac{9}{16}$	$6\frac{7}{32}$ min. $5\frac{13}{32}$ max.	5	$2\frac{7}{8}$	$7\frac{1}{2}$	$4\frac{1}{4}$	$1\frac{15}{16}$	23	.040
2004		$22\frac{5}{16}$	$19\frac{5}{16}$			$21\frac{1}{16}$				$3\frac{3}{4}$		$5\frac{1}{2}$			
2006		$23\frac{9}{16}$	$20\frac{9}{16}$			$22\frac{5}{16}$				$4\frac{1}{2}$		$6\frac{3}{4}$			

① Dimension "S" gives limits on allowable end float.





Dimensions are for estimating only and subject to change without notice. For installation purposes, request certified prints.

Note: Consult factory for modifications and approval drawings.

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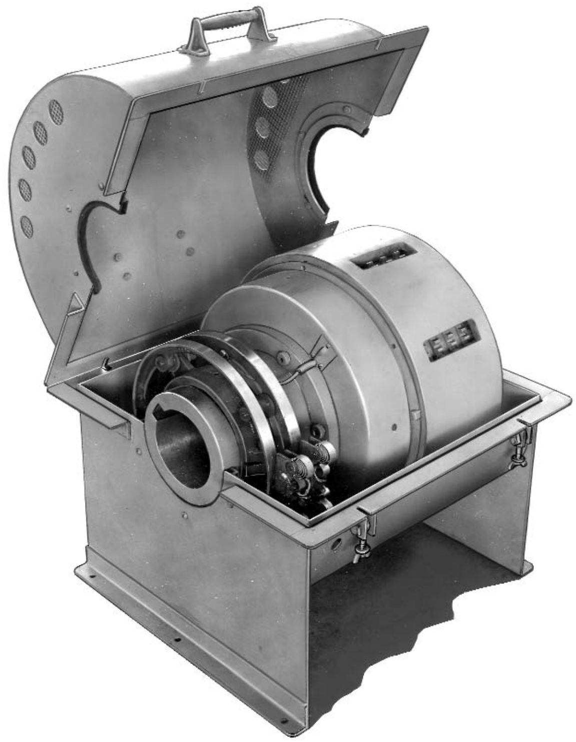

Style E, Class S

Electrically Engaged Clutch with Tapered Bores

Stearns Style E, Class S Clutch is a high torque, low inertia, electromagnetic clutch for steel mill screw-downs, ball mills, rod mills, compeg mills, kilns and similar equipment. The basic design of this clutch has been time-tested and proven by over 50 years of successful application.

The Style E, Class S Clutch is electrically engaged. The driven end carries the friction linings.

A spring loaded lock pin simplifies threaded adjustment of air gap. To adjust, lock pin is depressed and armature rotated until lock pin snaps into next slot in cage.

Friction linings can be replaced without disturbing related equipment on either side of the clutch.

This clutch operates on direct current. If your plant does not have direct current, a suitable rectifier can be supplied (see Page 48).

Class B coil insulation is standard.

Performance Data

MECHANICAL

Clutch Size	Nominal Static Torque (lb-ft)	Wk^2 (lb-ft^2)		Lining Area (sq-in)	hp @ 100 RPM	Approx. Shipping (wt-lb)	Max. RPM	Dynamic Balancing Suggested above, RPM
		Drive End	Driven End					
1002	400	11.8	1.4	72	7.6	146	2300	1000
1004	800	13.5	2.1	144	15.0	163	2300	
1006	1200	15.3	2.8	216	22.0	179	2300	
1202	600	27.2	3.2	125	11.0	231	1900	1000
1204	1200	30.4	4.8	250	23.0	254	1900	
1206	1800	33.5	6.3	375	34.0	277	1900	
1402	900	56.3	6.9	166	17.0	354	1700	1000
1404	1800	64.5	10.0	332	34.0	395	1700	
1406	2700	72.7	13.1	498	51.0	436	1700	
1602	1500	103.0	10.3	212	28.0	488	1500	800
1604	3000	115.0	16.0	424	57.0	540	1500	
1606	4500	127.0	22.1	636	85.0	594	1500	
2002	3000	270.0	21.0	320	57.0	752	1200	800
2004	6000	305.0	37.2	640	114.0	853	1200	
2006	9000	340.0	53.1	960	171.0	954	1200	

ELECTRICAL - Class B

Clutch Size Series	Voltage	Coil Resistance ohms	DC Amps Coil	DC Watts Coil
1000	115	127	.905	104
	230	509	.452	104
1200	115	86	1.340	155
	230	342	.672	155
1400	115	67	1.720	198
	230	259	.888	205
1600	115	93	1.230	142
	230	364	.630	146
2000	115	52	2.230	256
	230	200	1.150	265

ENGAGEMENT TIME

Clutch Size Series	Engagement Time in Seconds (without controls)
1000	.21
1200	.26
1400	.31
1600	.50
2000	1.08

If faster time is required, special coils may be supplied for use with a forcing circuit. Consult factory for details.

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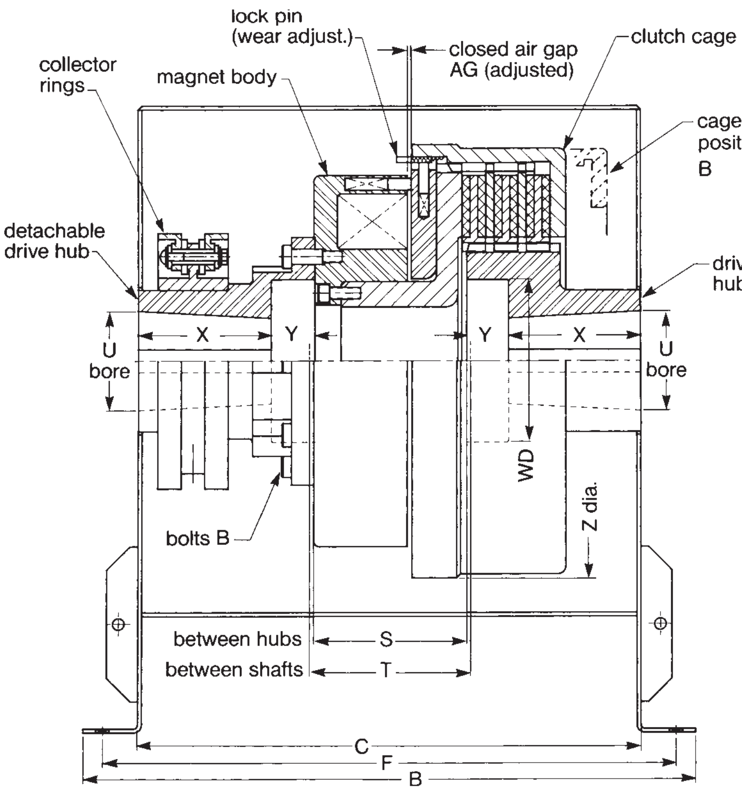
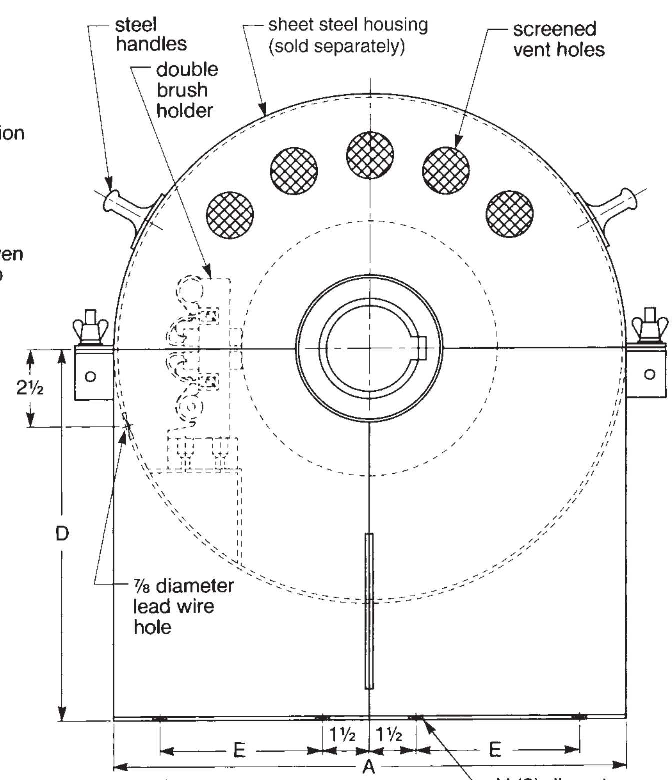
Dimensional Data (In Inches)

Size	Mill Motor Frame Size		A	B	C	D	E	F	H	S①	T② (± 1/32)	U③	WD	X	Y	Z	AG	Keyway
1002	602	802	16	15 3/4	12 3/4	8 1/2	5	14 1/2	7/16	4 13/32 min. 4 19/32 max.	4 7/8	1 3/4	3 1/4	3	1 1/8	11 1/2	.031	1/2 ξ 1/4
1004	603	803		19 3/8	16 3/8	9		18 1/8			4 5/8	2	3 1/2	3 1/2	1 1/16			1/2 ξ 1/4
	604	804																
1006	606	806		19 5/8	16 5/8	9 3/4		18 3/8				2 1/2	4	4	1 3/16			1/2 ξ 1/4
1202	603	803	16 1/2	16 7/8	13 7/8	9	5 1/4	15 5/8	7/16	4 25/32 min. 4 31/32 max.	4 7/8	2	3 1/2	3 1/2	1	14	.032	1/2 ξ 1/4
	604	804																
1204	608	808		19 3/8	16 3/8	11		18 1/8				3	5	4 1/2	1 1/4			3/4 ξ 1/4
1206	610	810		19 5/8	16 5/8	12		18 3/8				3 1/4	5 1/4	4 1/2	1 3/8			3/4 ξ 1/4
1402	606	806	19	18 11/16	15 11/16	9 3/4	6 1/2	17 7/16	7/16	5 11/32 min. 5 17/32 max.	5 7/16	2 1/2	4	4	1 1/8	16 1/4	.040	1/2 ξ 1/4
1404	610	810		20 3/16	17 3/16	12		18 15/16				3 1/4	5 1/4	4 1/2	1 3/8			3/4 ξ 1/4
1406	612	812		21 7/16	18 7/16	13 1/8		20 3/16				3 5/8	5 5/8	5	1 1/2			3/4 ξ 1/4
1602	608	808	21	20 1/2	17 1/2	11	7 1/2	19 1/4	7/16	5 29/32 min. 6 3/32 max.	6	3	5	4 1/2	1 1/4	18	.040	3/4 ξ 1/4
1604	612	812		22	19	13 1/8		20 3/4				3 5/8	5 5/8	5	1 1/2			3/4 ξ 1/4
1606	614	814		22 1/4	19 1/4	14 1/2		21				4 1/4	6 1/2	5	1 5/8			3/4 ξ 1/4
2002	612	812	25	22 5/16	19 5/16	13 1/8	9 1/2	21 1/16	9/16	6 7/32 min. 6 13/32 max.	6 5/16	3 5/8	5 5/8	5	1 1/2	23	.040	3/4 ξ 1/4
2004	616	816		23 13/16	20 13/16	15 3/4		22 9/16				4 5/8	7	5 1/2	1 3/4			1 1/4 ξ 3/8
2006	618	818		23 15/16	20 15/16	17 1/2		22 11/16				5	7 1/2	6	1 5/16			1 1/4 ξ 1/2

① Dimension “S” gives limits on allowable end float.
② Dimension “T” is minimum - if to be greater, add to driven hub “Y” dimension only.
③ Note - if bore is to be larger than “U”, consult factory.





Note: Housing sold separately.

Dimensions are for estimating only and subject to change without notice. For installation purposes, request certified prints.

Note: Consult factory for modifications and approval drawings.

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Style E, Class M

Electrically Engaged Clutch

Stearns Style E, Class M Clutch is a high torque, low inertia, electromagnetic clutch for steel mill screw-downs, ball mills, rod mills, compeg mills, kilns and similar equipment. The basic design of this clutch has been time-tested and proven by over 50 years of successful application.

The Style E, Class M Clutch is electrically engaged. The driven end carries the friction linings.

A spring loaded lock pin simplifies threaded adjustment of air gap. To adjust, lock pin is depressed and armature rotated until lock pin snaps into next slot in cage.

Friction linings can be replaced without disturbing related equipment on either side of the clutch.

This clutch operates on direct current. If your plant does not have direct current, a suitable rectifier can be supplied (see Page 48).

Class B coil insulation is standard.

Performance Data

MECHANICAL

Clutch Size	Nominal Static Torque (lb-ft)	Wk^2 ($lb\text{-}ft^2$)		Lining Area (sq-in)	Approx. Shipping Weight	Max. RPM
		Drive End	Driven End			
2002	3000	333	36	320	990	900
2004	6000	359	51	640	1100	900
2006	9000	385	66	960	1210	900
2402	6400	682	70	425	1660	800
2404	12800	762	109	850	1840	800
2406	19200	842	149	1275	2020	800
2802	10000	1332	131	540	2280	700
2804	20000	1508	213	1080	2565	700
2806	30000	1684	295	1620	2850	700
3202	15000	2820	345	848	3620	600
3204	30000	3315	535	1696	4160	600
3206	45000	3810	725	2544	4700	600
4202	40000	8300	709	1626	8400	400
4204	80000	9150	1200	3252	9300	400
4206	120000	10000	1700	4878	10200	400

ELECTRICAL - Class B

Clutch Size Series	Voltage	Coil Resistance ohms	DC Amps Coil	DC Watts Coil
2000	115	52.5	2.20	253
	230	200	1.15	265
2400	115	46.9	2.45	281
	230	95	2.4	550
2800	115	41.1	2.80	322
	230	136	1.68	390
3200	115	35.3	3.25	374
	230	138	1.66	382
4200	115	24.7	4.66	536
	230	96.0	2.39	551

Dimensional Data (In Inches)

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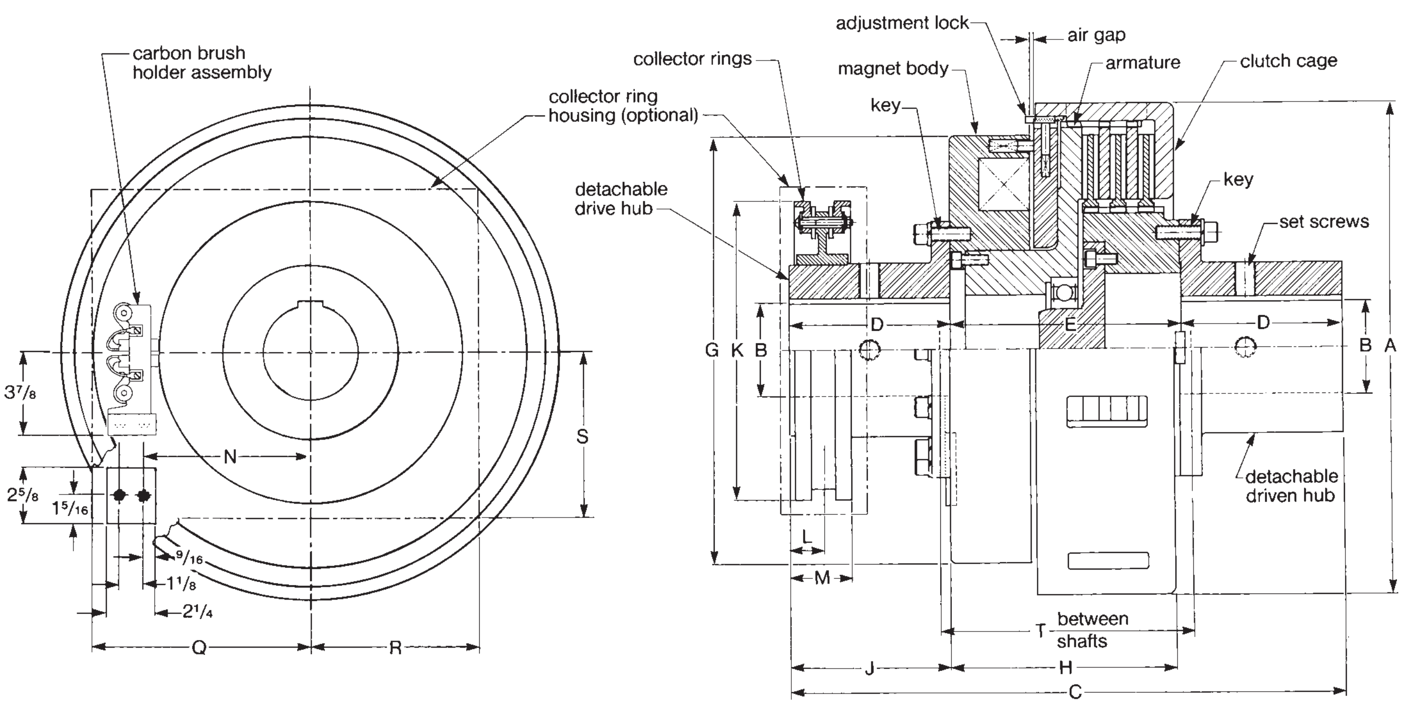
Size	A	B (max)	C	D	E	G	H	J	K	L	M	N	Q	R	S	T
2002	23	5	23 1/4	7 1/2	8 1/4	20	7 15/16	7 15/32	14	2 3/4	4	7 11/16	10 1/2	8	8	9 1/4
2004	23	5	24 1/2	7 1/2	9 1/2	20	9 3/16	7 15/32	14	2 3/4	4	7 11/16	10 1/2	8	8	10 1/2
2006	23	5	25 3/4	7 1/2	10 3/4	20	10 7/16	7 15/32	14	2 3/4	4	7 11/16	10 1/2	8	8	11 3/4
2402	28 3/4	6 3/4	28 1/8	9	10 1/8	24	9 29/32	8 15/16	14	3 15/16	5 3/16	7 11/16	10 1/2	8	8	11 1/8
2404	28 3/4	6 3/4	29 1/2	9	11 1/2	24	11 9/32	8 15/16	14	3 15/16	5 3/16	7 11/16	10 1/2	8	8	12 1/2
2406	28 3/4	6 3/4	30 7/8	9	12 7/8	24	12 21/32	8 15/16	14	3 15/16	5 3/16	7 11/16	10 1/2	8	8	13 7/8
2802	32 3/4	7 1/2	30 1/8	9 1/2	11 1/8	28	10 3/4	9 7/16	14	3 5/8	4 7/8	7 11/16	10 1/2	8	8	12 3/8
2804	32 3/4	7 1/2	31 5/8	9 1/2	12 5/8	28	12 1/4	9 7/16	14	3 5/8	4 7/8	7 11/16	10 1/2	8	8	13 7/8
2806	32 3/4	7 1/2	33 1/8	9 1/2	14 1/8	28	13 3/4	9 7/16	14	3 5/8	4 7/8	7 11/16	10 1/2	8	8	15 3/8
3202	37	9	34 3/4	11	12 3/16	32	12	10 15/16	19	4	5 3/8	10 3/16	13	10 1/2	10 1/2	13 7/16
3204	37	9	36 11/16	11	14 11/16	32	14 1/2	10 15/16	19	4	5 3/8	10 3/16	13	10 1/2	10 1/2	15 15/16
3206	37	9	39 3/16	11	17 3/16	32	17	10 15/16	19	4	5 3/8	10 3/16	13	10 1/2	10 1/2	18 7/16
4202	47	14	46 7/8	15	16 7/8	42	16 5/8	14 15/16	24	4	5 3/8	12 11/16	15 1/2	13	13	18 1/8
4204	47	14	49 3/8	15	19 3/8	42	19 1/8	14 15/16	24	4	5 3/8	12 11/16	15 1/2	13	13	20 5/8
4206	47	14	51 7/8	15	21 7/8	42	21 5/8	14 15/16	24	4	5 3/8	12 11/16	15 1/2	13	13	23 1/8



Dimensions are for estimating only and subject to change without notice. For installation purposes, request certified prints.

Note: Consult factory for modifications and approval drawings.

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Style SCE, Class S3

Spring Engaged Clutch with Straight Bores

Stearns Style SCE, Class S3 Clutch is a high torque, low inertia, electromagnetic clutch for steel mill screw-downs, and similar equipment. The basic design of this clutch has been time-tested and proven by over 50 years of successful application.

Stearns S3 Clutch is designed to provide extremely high capacity in a relatively small package.

The Style SCE, Class S3 Clutch is spring engaged, electromagnetically released. A spring loaded lock pin simplifies adjustment of air gap. When adjustment is required, lock pin is depressed and wear adjustment ring rotated until lock pin snaps into next slot in cage.

Friction linings can be quickly replaced without disturbing related equipment on either side of the clutch.

This clutch operates on direct current and requires forcing circuit (see Page 49 or Wiring Diagram). If your plant does not have direct current, a suitable combination forcing circuit/rectifier can be supplied.

Class B coil insulation is standard.

Performance Data

MECHANICAL

Clutch Size	Nominal Static Torque (lb-ft)	Wk^2 ($lb\text{-}ft^2$)		RPM at which Dynamic Balancing is Required	Approx. Shipping (wt-lbs)	Max. RPM
		Drive End	Driven End			
802	450	6.90	.60	1200	115	3600
804	900	7.20	.80	1200	130	3600
1004	1400	17.25	1.45	1200	200	3300
1006	2100	18.20	1.90	1200	210	3300
1204	3500	46.75	3.50	1000	330	2000
1206	5000	49.20	4.65	1000	350	2000
1406	7800	100.70	11.40	1000	550	1800
1606	12000	187.30	20.80	800	700	1600

ELECTRICAL

Clutch Size	Source Line Voltage	Series Resistor		Coil Resistance ohms	DC Watts Circuit	
		ohms	watt		Inrush	Holding
800	230	275	125	130	407W-1.77A	130W-.567A
1000	230	155	200	82	643W-2.8A	223W-.97A
1200	230	125	250	58.4	910W-3.95A	288W-1.25A
1400	230	135	250	60.8	870W-3.78A	269W-1.17A
1600	230	135	200	59.4	890W-3.87A	272W-1.18A

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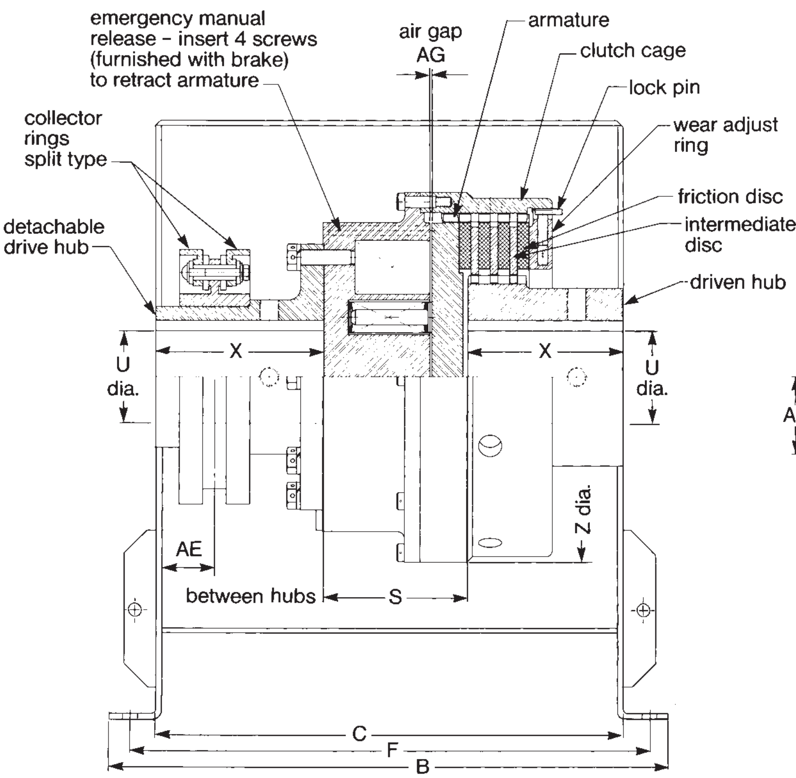
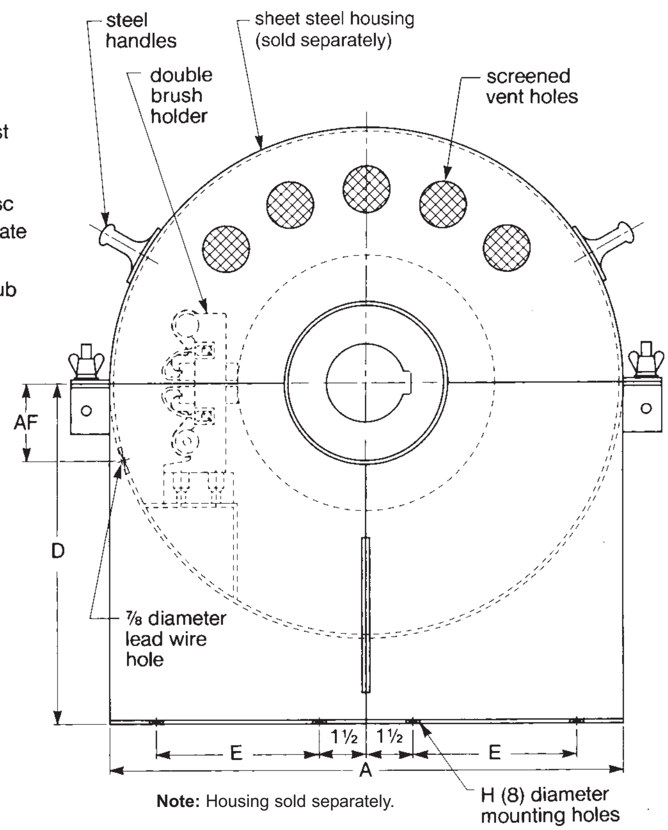
Dimensional Data (In Inches)

Size	A	B	C	D①	E	F	H	S	Z	AE	AF	AG	Drive Hub			Driven Hub		
													U②	X	Keyway	U②	X	Keyway
802	15 1/2	14 1/2	11 1/2	8 1/4	4 3/4	13 1/4	7/16	4 1/8	10 1/8	1 3/4	2 1/2	.050	2 1/2	4 1/4	5/8 x 5/16	2 3/4	3 1/8	5/8 ξ 5/16
804		15	12			13 3/4											3 5/8	
1004	16 1/2	17 3/8	14 3/8	8 3/4	5 1/4	16 1/8	7/16	4 5/8	12	1 7/8	2 1/2	.060	3	5 3/8	3/4 x 3/8	3 1/4	4 3/8	3/4 ξ 3/8
1006		18	15			16 3/4											5	
1204	19	19 9/16	16 1/16	10	6 1/2	18 5/16	9/16	5 7/16	14 1/2	2 1/16	2 1/2	.060	4	5 7/8	1 x 1/2	3 3/4	4 3/4	7/8 ξ 7/16
1206		20 3/16	16 11/16			18 15/16											5 3/8	
1406	20	23 7/8	20 3/8	10 1/2	7	22 5/8	9/16	7 1/4	16 3/4	2 1/16	2 1/2	.060	4	6 1/8	1 x 1/2	4 3/4	7	1 1/4 ξ 5/8
1606	22	24 3/8	20 7/8	11 1/2	8	23 1/8	9/16	6 3/4	19	2 1/16	2 1/2	.060	4 3/4	7 1/8	1 1/4 x 5/8	5 1/2	7 3/4	1 1/4 ξ 5/8

① "D" is minimum - larger size to suit customer.
② If bore is to be larger than "U", consult factory.
Note: Wk^2 on drive and driven end are calculated for maximum "U" bore (as shown in Table).



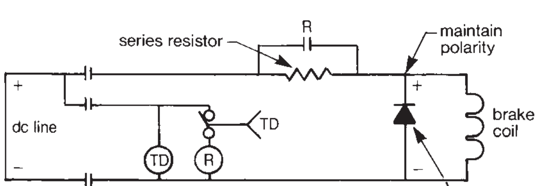


Note: Housing sold separately.

Dimensions are for estimating only and subject to change without notice. For installation purposes, request certified prints.

Note: Consult factory for modifications and approval drawings.

Wiring Diagram



Surge suppressing rectifier to be selected on basis of line voltage and inrush current. *OR:* Alternate capacitor (if capacitor is to be used, consult factory for details).

(R) is a normally open, single pole, DC contactor.
(TD) is a normally closed time delay relay.

To release the clutch, the three pole contactor is closed. This closes (R) contacts and applies full line voltage to clutch coil. After a few seconds interval, time delay relay opens contactor (R) and places resistor in series with the clutch coil, reducing voltage imposed on coil from line voltage to lower holding voltage.

To engage the clutch, the contactor is opened. The back (EMF) generated in the clutch coil is dissipated through the surge suppressing rectifier, protecting the coil and lead wire insulation and minimizing arcing at the contacts.

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Style SCE, Class S3

Spring Engaged Clutch with Tapered Bores

Stearns Style SCE, Class S3 Clutch is a high torque, low inertia, electromagnetic clutch for steel mill screw-downs, and similar equipment. The basic design of this clutch has been time-tested and proven by over 50 years of successful application.

Stearns S3 Clutch is designed to provide extremely high capacity in a relatively small package.

The Style SCE, Class S3 Clutch is spring engaged, magnetically released. A spring loaded lock pin simplifies adjustment of air gap. When adjustment is required, lock pin is depressed and wear adjustment ring rotated until lock pin snaps into next slot in cage.

Friction linings can be quickly replaced without disturbing related equipment on either side of the clutch.

This clutch operates on direct current and requires forcing circuit (see Page 49 or Wiring Diagram). If your plant does not have direct current, a suitable combination forcing circuit/rectifier can be supplied.

Class B coil insulation is standard.

Performance Data

MECHANICAL

Clutch Size	Nominal Static Torque (lb-ft)	Wk^2 (lb-ft^2)		RPM at which Dynamic Balancing is Required	Approx. Shipping (wt-lbs)	Max. RPM
		Drive End	Driven End			
802	450	6.90	.65	1200	115	3600
804	900	7.20	.85	1200	130	3600
1004	1400	17.25	1.80	1200	200	3300
1006	2100	18.20	2.20	1200	210	3300
1204	3500	46.75	3.70	1000	330	2000
1206	5000	49.20	4.60	1000	350	2000
1406	7800	100.70	9.75	1000	550	1800
1606	12000	187.30	18.20	800	700	1600

ELECTRICAL

Clutch Size	Source Line Voltage	Series Resistor		Coil Resistance ohms	DC Watts Circuit	
		ohms	watt		Inrush	Holding
800	230	275	125	130	407W-1.77A	130W-.567A
1000	230	155	200	82	643W-2.8A	223W-.97A
1200	230	125	250	58.4	910W-3.95A	288W-1.25A
1400	230	135	250	60.8	870W-3.78A	269W-1.17A
1600	230	135	200	59.4	890W-3.87A	272W-1.18A

Dimensional Data (In Inches)

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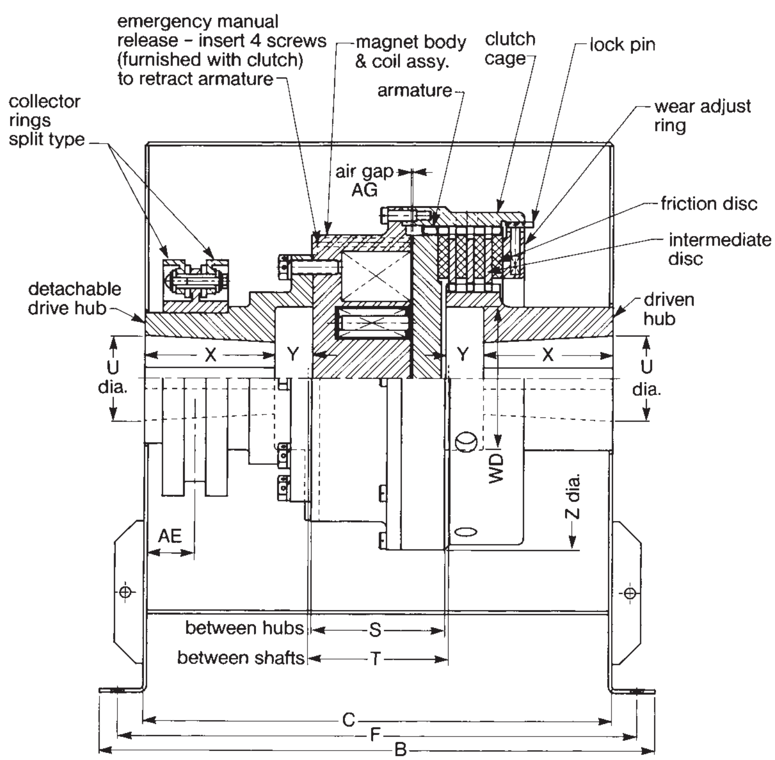
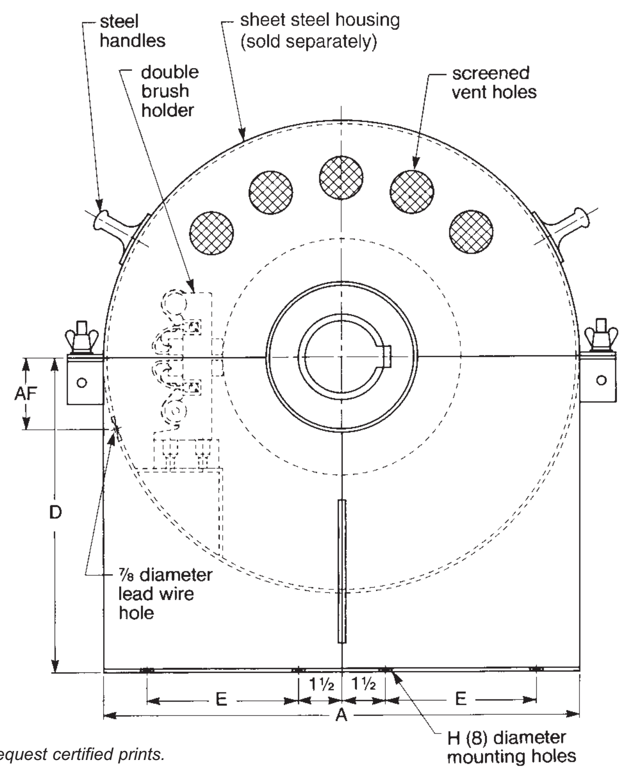
Size	Mill Motor Frame Size①		A	B	C	D	E	F	H	S	T②	Z	AE	AF	AG	U③	X	Y	WD	Keyway
802	602	802	15 1/2	15 3/8	12 3/8	7 3/8	4 3/4	14 1/8	7/16	4 1/8	4 1/2	10 1/8	1 3/4	2 1/2	.050	1 3/4	3	④	3 1/4	1/2 ξ 1/4
	603	803		16 1/4	13 1/4	8 1/4		15			4 1/4					2	3 1/2	1 1/16	3 1/2	
	604	804				8 3/4														
804	602	802		15 3/8	12 3/8	7 3/8		14 1/8			4 1/2					1 3/4	3	④	3 1/4	
	603	803		16 1/4	13 1/4	8 1/4		15			4 1/4					2	3 1/2	1 1/16	3 1/2	
	604	804				8 3/4														
1004	606	806	16 1/2	18	15	9 3/4	5 1/4	16 3/4	7/16	4 5/8	4 3/4	12	1 3/4		.060	2 1/2	4	1 3/16	4	1/2 ξ 1/4
	608	808		19 1/4	16 1/4	11		18								3	4 1/2	1 5/16	5	3/4 ξ 1/4
1006	606	806		18	15	9 3/4		16 3/4								2 1/2	4	1 3/16	4	1/2 ξ 1/4
	608	808		19 1/4	16 1/4	11		18								3	4 1/2	1 5/16	5	3/4 ξ 1/4
1204	610	810	19	20 13/16	17 5/16	12	6 1/2	19 9/16	9/16	5 7/16	5 9/16	14 1/2	2		.060	3 1/4	4 1/2	1 7/16	5 1/4	3/4 ξ 1/4
	612	812		22 1/16	18 9/16	13 1/8		20 13/16								3 5/8	5	1 9/16	5 5/8	
1206	610	810		20 13/16	17 5/16	12		19 9/16								3 1/4	4 1/2	1 7/16	5 1/4	
	612	812		22 1/16	18 9/16	13 1/8		20 13/16								3 5/8	5	1 9/16	5 5/8	
1406	614	814	20	24 1/8	20 5/8	14 1/2	7	22 7/8	9/16	7 1/4	7 3/8	16 3/4	2 1/8		.060	4 1/4	5	1 11/16	6 1/2	1 ξ 3/8
1606	616	816	22	24 7/8	21 3/8	15 3/4	8	23 5/8	9/16	6 3/4	6 7/8	19	2 1/8		.060	4 5/8	5 1/2	1 13/16	7	1 1/4 ξ 3/8
	618	818		25	21 1/2	17 1/2		23 3/4								5	6	1 3/8	7 1/2	1 1/4 ξ 1/2

① Indicates motor shaft size which clutch will accommodate. Clutch selection should be based on application requirements, not motor frame size.
② Dimension "T" is minimum - if to be greater, add to driven hub.
③ Note - if bore is to be larger than "U", consult factory.
④ Dimension "Y" drive end (1 1/4"), dimension "Y" driven end (1").

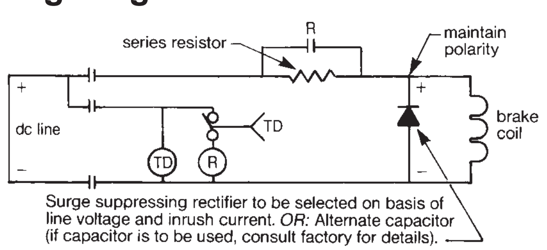




Dimensions are for estimating only and subject to change without notice. For installation purposes, request certified prints.

Note: Consult factory for modifications and approval drawings.

Wiring Diagram



(R) is a normally open, single pole, DC contactor.
(TD) is a normally closed time delay relay.

To release the clutch, the three pole contactor is closed. This closes (R) contacts and applies full line voltage to clutch coil. After a few seconds interval, time delay relay opens contactor (R) and places resistor in series with the clutch coil, reducing voltage imposed on coil from line voltage to lower holding voltage.

To engage the clutch, the contactor is opened. The back (EMF) generated in the clutch coil is dissipated through the surge suppressing rectifier, protecting the coil and lead wire insulation and minimizing arcing at the contacts.

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Style SCEB, Class S3

Spring Engaged Brake

Stearns Style SCEB, Class S3 Brake is a high torque, low inertia, electromagnetic brake for steel mill screw-downs, and similar equipment. The basic design of this brake has been time-tested and proven by over 50 years of successful application.

Stearns SCEB Brake is designed to provide extremely high capacity in a relatively small package for end shaft mounting.

The Style SCEB, Class S3 Brake is spring engaged, magnetically released. A spring loaded lock pin simplifies adjustment of air gap. When adjustment is required, lock pin is depressed and wear adjustment ring rotated until lock pin snaps into next slot in cage.

Friction linings can be quickly replaced without disturbing related equipment.

This brake operates on direct current and requires forcing circuit (see Page 49 or Wiring Diagram). If your plant does not have direct current, a suitable rectifier can be supplied.

Class B coil insulation is standard.

Performance Data

MECHANICAL

Brake Size	Nominal Static Torque (lb-ft)	Wk^2 (lb-ft^2)	Approx. Shipping (wt-lbs)	Max. RPM
802	450	.36	86	3600
804	900	.53	97	3600
1004	1400	1.35	170	3600
1006	2100	1.85	180	3600
1204	3500	2.10	270	2400
1206	5000	4.35	280	2400
1406	7800	10.70	370	2000
1606	12000	19.00	660	1800

ELECTRICAL

Brake Size	Source Line Voltage	Series Resistor		Coil Resistance ohms	DC Watts Circuit	
		ohms	watt		Inrush	Holding
800	230	275	125	130	407W-1.77A	130W-.567A
1000	230	155	200	82	643W-2.8A	223W-.97A
1200	230	125	250	58.4	910W-3.95A	288W-1.25A
1400	230	135	250	60.8	870W-3.78A	269W-1.17A
1600	230	135	200	59.4	890W-3.87A	272W-1.18A

Dimensional Data (In Inches)

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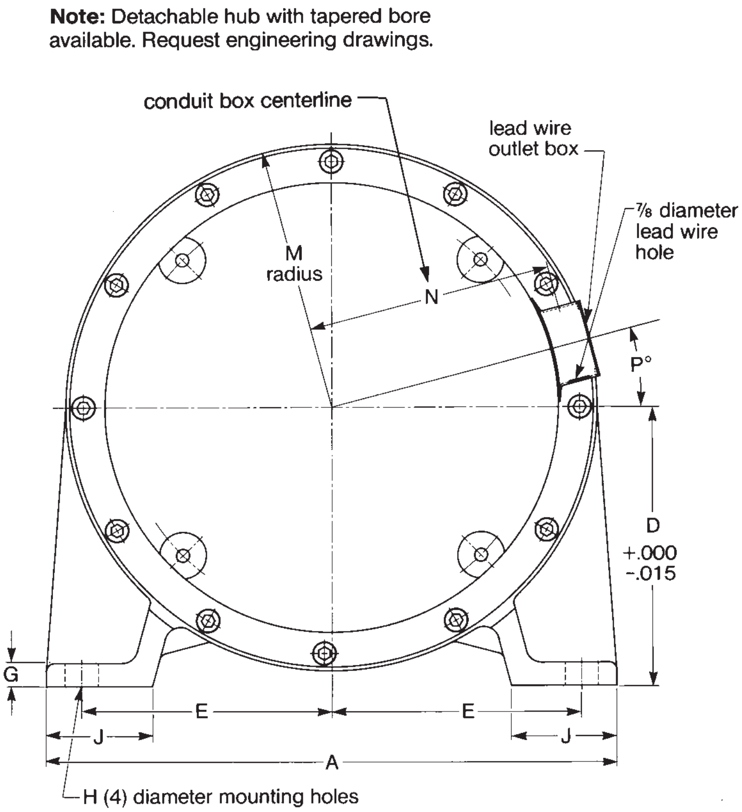
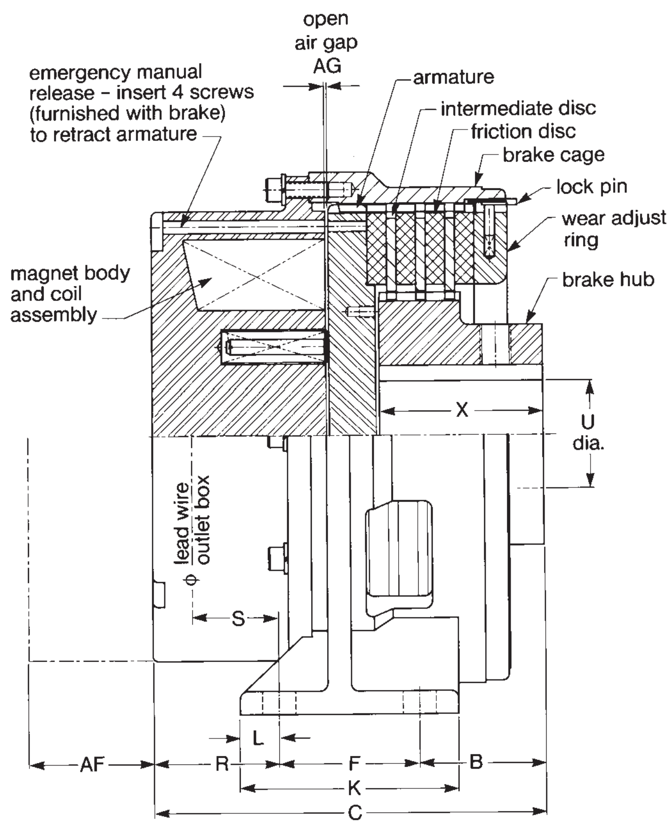
Size	A	B	C	D	E	F	G	H	J	K	L	M	N	P	R	S	AG	AF	U①	X	Keyway
802	11 1/2	1 29/32	6 7/16	5 1/2	5	2 1/2	3/8	9/16	2	3 5/8	9/16	5 1/16	4 7/16	30°	2 1/32	1 1/16	.050	4	2 3/4	2 1/4	5/8 ξ 5/16
804		2 13/32	6 15/16																	2 3/4	
1004	14	2 3/4	7 7/8	6 3/4	6	3	1/2	11/16	2 1/2	4 3/8	11/16	6 1/16	5 1/2	22 1/2°	2 1/8	7/8	.060	4 1/4	3 1/4	3 1/4	3/4 ξ 3/8
1006		3 3/8	8 1/2																	3 7/8	
1204	16	2 13/16	8 15/16	8	7	3 1/2	3/4	13/16	3	5 1/2	1	7 1/4	6 1/2	45°	2 5/8	1 1/2	.060	4 7/8	3 3/4	3 1/2	7/8 ξ 7/16
1206		3 7/16	9 9/16																	4 1/8	
1406	18 1/4	4 1/32	12 9/16	9	8	4 1/2	3/4	1 1/16	3 3/8	7	1 1/4	8 1/2	7 3/4	15°	4 1/32	2 3/4	.060	6 3/8	4 3/4	5 1/4	1 1/4 ξ 5/8
1606	21	3 25/32	12 3/8	10	9	5 1/2	1	1 5/16	4	8 1/4	1 3/8	9 5/8	8 5/8	45°	3 3/32	1 3/32	.060	6 1/2	5 1/2	5 1/2	1 1/4 ξ 5/8

① Dimension "U" is maximum with standard key. If "U" bore is to be larger, consult factory.

Note: Detachable hub with tapered bore available. Request engineering drawings.

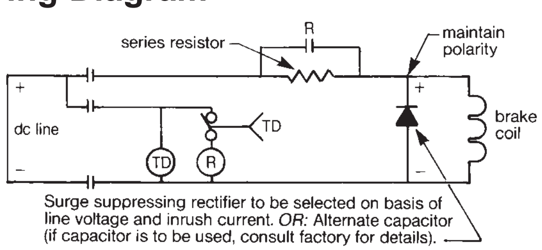




Dimensions are for estimating only and subject to change without notice. For installation purposes, request certified prints.

804, 1004 flange mount SCEB specification print available. Consult Stearns Division

Wiring Diagram



(R) is a normally open, single pole, DC contactor.
(TD) is a normally closed time delay relay.

To release the brake, the three pole contactor is closed. This closes (R) contacts and applies full line voltage to brake coil. After a few seconds interval, time delay relay opens contactor (R) and places resistor in series with the brake coil, reducing voltage imposed on coil from line voltage to lower holding voltage.

To engage the brake, the contactor is opened. The back (EMF) generated in the brake coil is dissipated through the surge suppressing rectifier, protecting the coil and lead wire insulation and minimizing arcing at the contacts.

For Convenience, Safety and Energy Savings, Look to Stearns® Rectifier Controls.

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Perfectly matched to Stearns DC actuated clutches, brakes or combination units, Stearns rectifier controls offer solid-state reliability that also takes into account important human use factors, making them easy to utilize and maintain.

Stearns rectifier controls are available in fixed or adjustable output models with compact housings to simplify installation.

For ultimate convenience, all wiring connections are readily accessible. The PR Series even goes one step further, offering the ease of modular plug-in designs connecting directly to octal sockets.

For safety, all models offered are fused to provide protection against overload and feature an arc suppression circuit, minimizing arcing and extending contact life. In the PR Series, the internal fuse can be changed only by removing the rectifier from its socket - eliminating a potential shock hazard.

For energy savings, efficiency is built into Stearns rectifiers. The adjustable voltage output on the PR-33, for example, uses thyristor control for a low 4-watt power loss-87% less than some competitive units.

When you need reliable performance and more, look to Stearns rectifier controls.

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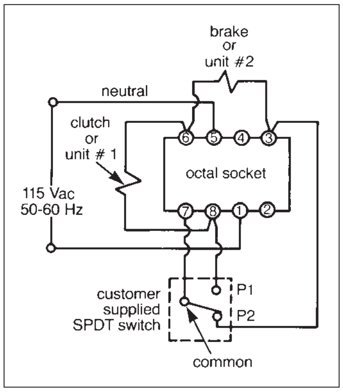
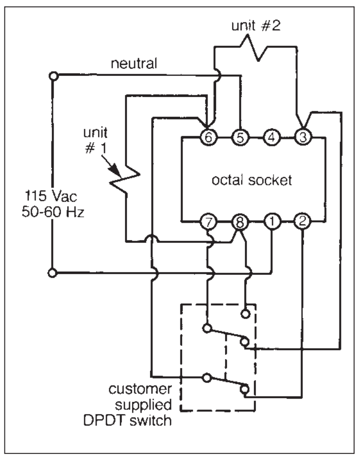
Rectifier Controls



Model PR-01

Two fixed 100 volt outputs.

- Modular plug-in design uses octal socket for easy mounting and wiring connection.
- Internally fused for overload protection.
- Operates one clutch or one brake, or both, one on at a time.

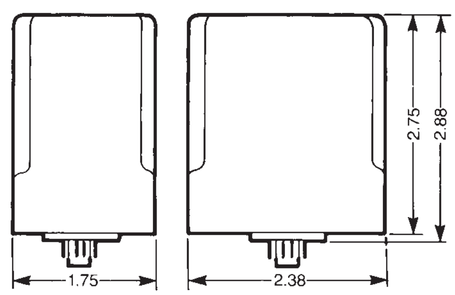


Model PR-33

One fixed 100 volt output and one adjustable 15-100 volt output to allow reduced torque starts or stops for "soft" cushioned engagement.

- Adjustable control on top of housing for easy accessibility.
- Modular plug-in design uses octal socket for each mounting and wiring connection.
- Internally fused for overload protection.
- Operates one clutch or one brake, or both, one on at a time.

Enclosure dimensions apply to both PR-01 and PR-33.



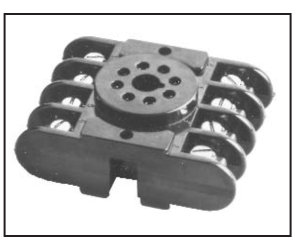
Performance/List Price Data

Rectifier Part Number	AC Input Voltage	Nominal DC Output			Control Circuits		Switching Relay	List Price ②	Discount Symbol
		Volts	Max. Amp①	Max. Watts	#1	#2			
PR-01 4-1-20001-00	115 50-60 Hz	100	1.0	100	Fixed	Fixed	No	$266.00	X-1
PR-33 4-1-20033-00	115 50-60 Hz	15-100	0.5	50	Fixed	Variable	No	642.00	X-1

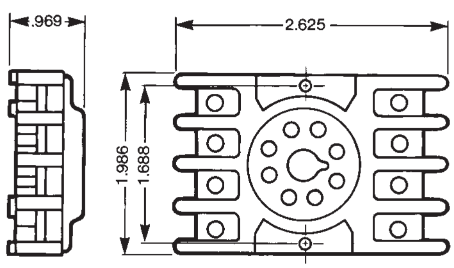
① Based on ambient temperature of 104°F.
②List prices subject to change without notice.

Octal Socket(s)

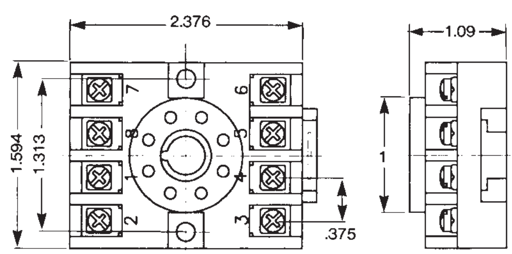
Supplied with terminal screws and clips



Part Number: 9-61-0153-00
Dimensions



Part Number: 9-61-0153-01
Dimensions



List Price Data

Octal Socket Part Number	List Price	Discount Symbol
9-61-0153-00	$128.00	X-1
9-61-0153-01	48.00	X-1

Rectifier Controls

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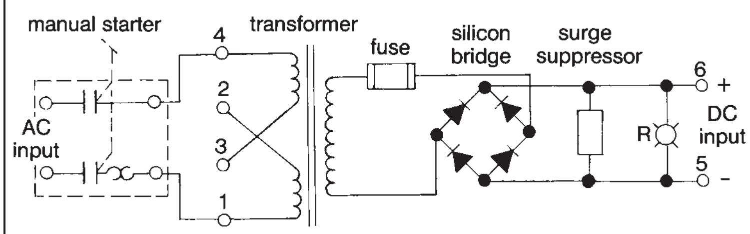
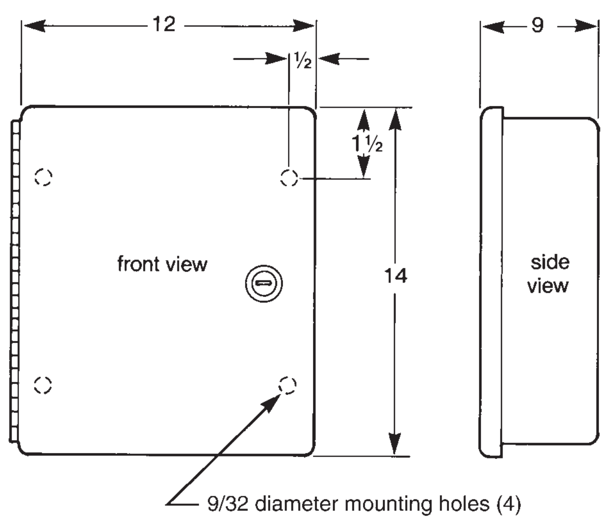
Series 12000 Silicon Rectifiers

Heavy duty single-phase rectifier for use with Stearns heavy duty clutches and brakes. Incorporates a solid-state silicon bridge circuit for high efficiency and excellent voltage regulation. Available with outputs of 115 or 230 Vdc; power ratings of up to 1150 watts. A transformer provides isolation and dual AC input capability… 115/230 or 230/460 Vac. Each rectifier is housed in a NEMA 1 steel cabinet and includes a separately housed manual starter with overload heaters.

Wiring Diagram



Dimensional Data

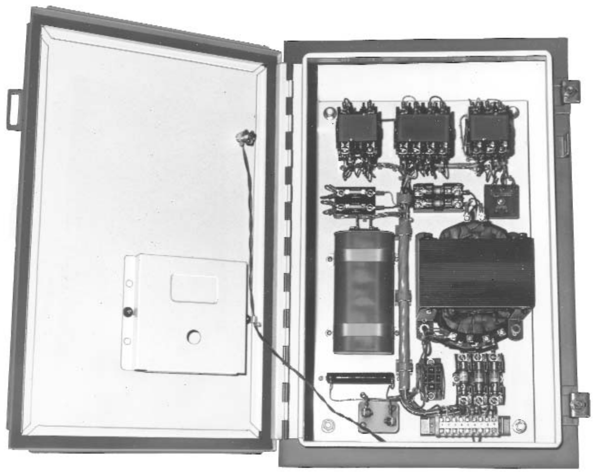


Performance Data

Stock Number	AC Input (50/60 Hz Single-Phase)		DC Output		
	Volts	Amps	Volts	Amps①	Watts
4-1-12102-00	115/230	2.5/1.3	115	2.0	230
4-1-12104-00	115/230	6.4/3.2	115	5.0	575
4-1-12202-00	230/460	1.3/0.7	115	2.0	230
4-1-12205-00	230/460	3.2/1.6	115	5.0	575
4-1-12302-00	115/230	5.2/2.6	230	2.0	460
4-1-12305-00	115/230	13.0/6.5	230	5.0	1150
4-1-12402-00	230/460	2.6/1.3	230	2.0	460
4-1-12405-00	230/460	6.4/3.2	230	5.0	1150

① Based on ambient temperature of 104°F.

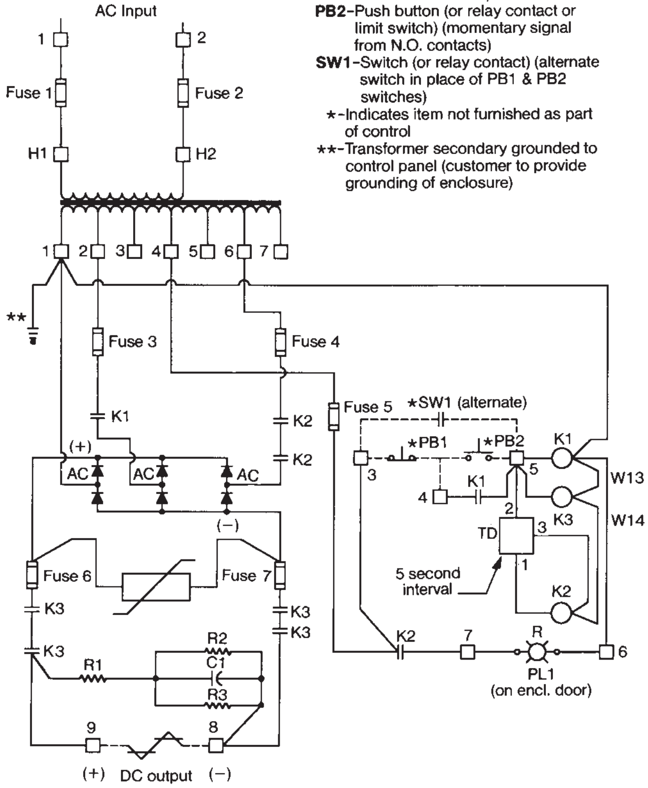
Forcing Circuits



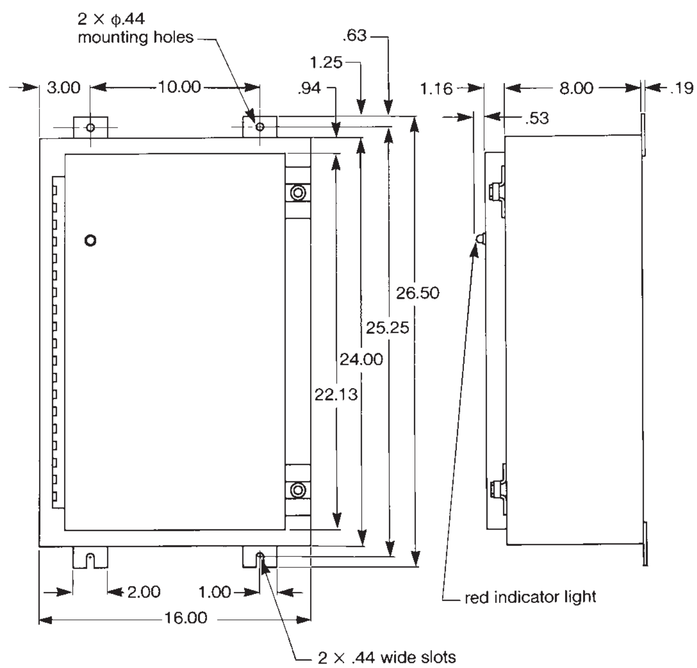
Combination forcing circuit and rectifier for use with Stearns SCE spring-set clutches and SCEB spring-set brakes. Suitable for use with all sizes from 800 through 1600. Provides the momentary forcing voltage necessary to release a clutch or brake. Units are available for 115, 208, 230, 460 and 575 Vac, 50/60 Hz input. The output of each unit is a forcing voltage of 230 Vdc which, after a 5 second delay, drops to a holding voltage of 70 Vdc. Circuitry includes surge suppression network to protect coil and minimize contact arcing. Complete circuit is housed in a NEMA 12 enclosure.

Wiring Diagram

PL1–Pilot light (indicates high voltage output mode)
PB1–Push button (or relay contact or limit switch) (momentary signal from N.C. contacts)
PB2–Push button (or relay contact or limit switch) (momentary signal from N.O. contacts)
SW1–Switch (or relay contact) (alternate switch in place of PB1 & PB2 switches)
*–Indicates item not furnished as part of control
**–Transformer secondary grounded to control panel (customer to provide grounding of enclosure)



Dimensional Data



Performance Data

Stock Number	AC Input Voltage 50/60 Hz	DC Input			Approx. Shipping Wt. (lbs.)
		Forcing Volts	Holding Volts	Watts	
4-3-00115-12	115 Vac	230	70	1000	60
4-3-00208-12	208 Vac	230	70	1000	60
4-3-00230-12	230 Vac	230	70	1000	60
4-3-00460-12	460 Vac	230	70	1000	60
4-3-00575-12	575 Vac	230	70	1000	60

Application Engineering Data

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Basic Torque Formula:

$$T = \frac{hp \times 5{,}252}{N_{cb}} \times SF$$

Where:

T = Average dynamic torque, lb-ft

hp = Motor horsepower

SF = Service factor

N_{cb} = rpm of the clutch/brake shaft

5,252 = Constant

Inertia:

$$I = W \times K^2$$

Where:

W = Weight of the object

K^2 = The square of the radius of gyration

Velocity, Linear:

$$V = \pi DN$$

Where:

π = 3.142

D = Diameter of drive head pulley

N = rpm

Reflected Inertia - Linear:

$$Wk_L^2 = W\left(\frac{V}{2\pi N_{cb}}\right)^2$$

Where

W = The weight of the component, lb

V = The velocity of the component in feet per minute

N_{cb} = The rpm of the clutch/brake shaft

Reflected Inertia - Rotational:

$$Wk_r^2 = Wk_C^2 \times \left(\frac{N}{N_{cb}}\right)^2$$

Where:

Wk_r^2 = Inertia reflected to the clutch or brake

Wk_C^2 = Inertia of the component

N = rpm of the component

N_{cb} = rpm of the clutch or brake shaft

Dynamic Torque:

$$T_d = \frac{Wk^2 \times N}{308 \times t}$$

Where:

T_d = Dynamic torque, lb-ft

Wk^2 = Total inertia seen by the clutch/brake (including the clutch/brake inertia and motor inertia if applicable), lb-ft^2

N = rpm of the clutch/brake

t = Stopping time in seconds (or starting time)

308 = Constant

Thermal Capacity:

$$E = 1.7 \times WR^2 \left(\frac{N}{100}\right)^2 \times F$$

Where:

E = Energy (heat) which needs to be dissipated, (ft-lb/min) for the application requirement

WR^2 = Total reflected inertia at clutch/brake shaft location. This should include clutch/brake inertia. (lb-ft^2)

N = Speed differential in revolutions per minute (rpm) at the clutch/brake shaft.

F = Number of cycles per minute (cycle rate).

Ohms Law:

Ohms = Volts/Amperes

$$\left(R = \frac{E}{I}\right)$$

Amperes = Volts/Ohms

$$\left(I = \frac{E}{R}\right)$$

Volts = Amperes × Ohms

$(E = IR)$

Power - DC Circuits:

Watts = Volts × Amperes

$(W = EI)$

$$\text{Amperes} = \frac{\text{Watts}}{\text{Volts}} \quad \left(I = \frac{W}{E}\right)$$

Inertia Table

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Wk^2 of Steel Shafting or Disc per Inch of Length

Dia. (inch)	Wk^2 ($lb\text{-}ft^2$)	Dia. (inch)	Wk^2 ($lb\text{-}ft^2$)	Dia. (inch)	Wk^2 ($lb\text{-}ft^2$)	Dia. (inch)	Wk^2 ($lb\text{-}ft^2$)	Dia. (inch)	Wk^2 ($lb\text{-}ft^2$)
1/8	4.53 ξ 10^{-8}	4	.0491	9 3/4	1.735	25	75.00	48	1019.2
1/4	7.47 ξ 10^{-7}	4 1/4	.0626	10	1.920	26	87.74	49	1106.8
3/8	3.83 ξ 10^{-6}	4 1/2	.0787	10 1/2	2.334	27	102.0	50	1200.0
1/2	1.21 ξ 10^{-5}	4 3/4	.0977	11	2.811	28	118.0	51	1298.9
5/8	2.93 ξ 10^{-5}	5	.1200	11 1/2	3.358	29	135.8	52	1403.8
3/4	6.07 ξ 10^{-5}	5 1/4	.1458	12	3.981	30	155.5	53	1514.9
7/8	.0001	5 1/2	.1757	12 1/2	4.687	31	177.3	54	1632.5
1	.0002	5 3/4	.2099	13	5.484	32	201.3	55	1756.9
1 1/8	.0003	6	.2488	13 1/2	6.377	33	227.7	56	1888.2
1 1/4	.0005	6 1/4	.2930	14	7.376	34	256.6	57	2026.7
1 3/8	.0007	6 1/2	.3427	14 1/2	8.487	35	288.1	58	2172.7
1 1/2	.0010	6 3/4	.3986	15	9.720	36	322.5	59	2326.5
1 5/8	.0013	7	.4610	15 1/2	11.08	37	359.8	60	2488.3
1 3/4	.0018	7 1/4	.5304	16	12.58	38	400.3	66	3643.1
1 7/8	.0024	7 1/2	.6075	16 1/2	14.23	39	444.2	72	5159.6
2	.0031	7 3/4	.6926	17	16.04	40	491.5	78	7166.7
2 1/4	.005	8	.7864	18	20.15	41	542.5	84	9558.9
2 1/2	.0075	8 1/4	.8894	19	25.02	42	597.4	90	12597
2 3/4	.0110	8 1/2	1.002	20	30.72	43	656.4	96	16307
3	.0156	8 3/4	1.125	21	37.34	44	719.6	102	20782
3 1/4	.0214	9	1.260	22	44.98	45	787.3		
3 1/2	.0288	9 1/4	1.405	23	53.73	46	859.6		
3 3/4	.0380	9 1/2	1.564	24	63.70	47	936.9		

To determine Wk^2 of a given shaft length or disc shape thickness, multiply the table value given above by the length, or thickness, in inches.

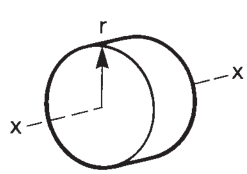
Material Factors

Multiply the inertia of the steel diameter by the selected material.

Bronze 1.1	Nylon .18
Aluminum .35	Cast iron .92

Radius of Gyration, Squared

Cylinder about Its Own Axis x-x

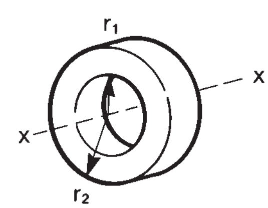


Solid

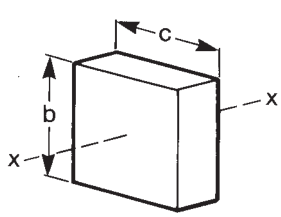
$K^2 = \frac{1}{2}r^2$

Hollow

$K^2 = \frac{1}{2}(r_1^2 + r_2^2)$



Axis through Center x-x

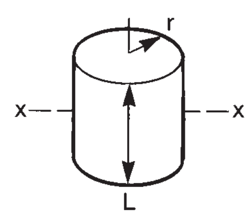


Prism

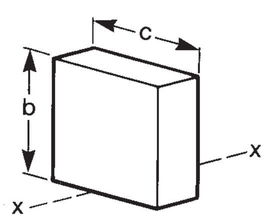
$K^2 = \frac{1}{12}(b^2 + c^2)$

Cylinder

$$K^2 = \frac{L^2 + 3r^2}{12}$$



Axis at One End x-x

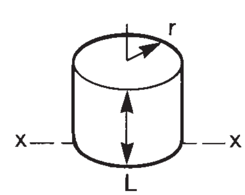


Prism

$K^2 = \frac{1}{12}(4b^2 + c^2)$

Cylinder

$$K^2 = \frac{4L^2 + 3r^2}{12}$$



English-Metric Conversion Factors

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Multiply the base unit by the factor shown to obtain the desired conversion

Measurement	Base Unit	Factor	Conversion
Length	inch, in *millimeter, mm*	25.4 .03937	*millimeter, mm* inch, in
Torque	pound-inch, lb-in *newton-meter, Nm* pound-feet, lb-ft *newton-meter, Nm* ounce-inch, oz-in *newton-meter, Nm*	.112985 8.8507 1.355818 .73756 .007062 141.612	*newton-meter, Nm* pound-inch, lb-in *newton-meter, Nm* pound-feet, lb-ft *newton-meter, Nm* ounce-inch, oz-in
Moment of Inertia	pound-feet squared, lb-ft^2 *kilogram-meter squared, kgm^2*	.042 23.81	*kilogram-meter squared, kgm^2* pound-feet squared, lb-ft^2
Kinetic energy	foot-pound, ft-lb *joule, J*	1.355818 .73756	*joule, J* foot-pound, ft-lb
Weight	pound, lb *kilogram, kg*	.453592 2.20462	*kilogram, kg* pound, lb
Horsepower (English)	horsepower, hp *kilowatt, Kw*	.7457 1.341	*kilowatt, kW* horsepower, hp
Thermal capacity	horsepower-seconds per minute, hp-sec/min	12.42833	*watts, W*
	watts, W	.08046	horsepower-seconds per minute hp-sec/min
Temperature	degrees Fahrenheit, °F *degrees Celcius, °C*	(°F - 32) × 5/9 (°C × 9/5) + 32	*degrees Celcius, °C* degrees Fahrenheit, °F

Conversion Factors for Thermal Capacity

Base Unit	Multiply by	To Obtain
horsepower	33,000	ft-lb/min
hp-sec/min	550	ft-lb/min
BTU/min	777.385	ft-lb/min
watts	44.254	ft-lb/min

Metric Bore and Keyways

Bore (millimeter) + .25 mm - .000 mm	Keyway (millimeter) Nominal
6	2 ξ 2
8	2 ξ 2
10	3 ξ 3
12	4 ξ 4
14	5 ξ 5
15	5 ξ 5
16	5 ξ 5
18	6 ξ 6
19	6 ξ 6
20	6 ξ 6
22	6 ξ 6
24	8 ξ 7
25	8 ξ 7
26	8 ξ 7
28	8 ξ 7
30	8 ξ 7

Contact factory for specific application information