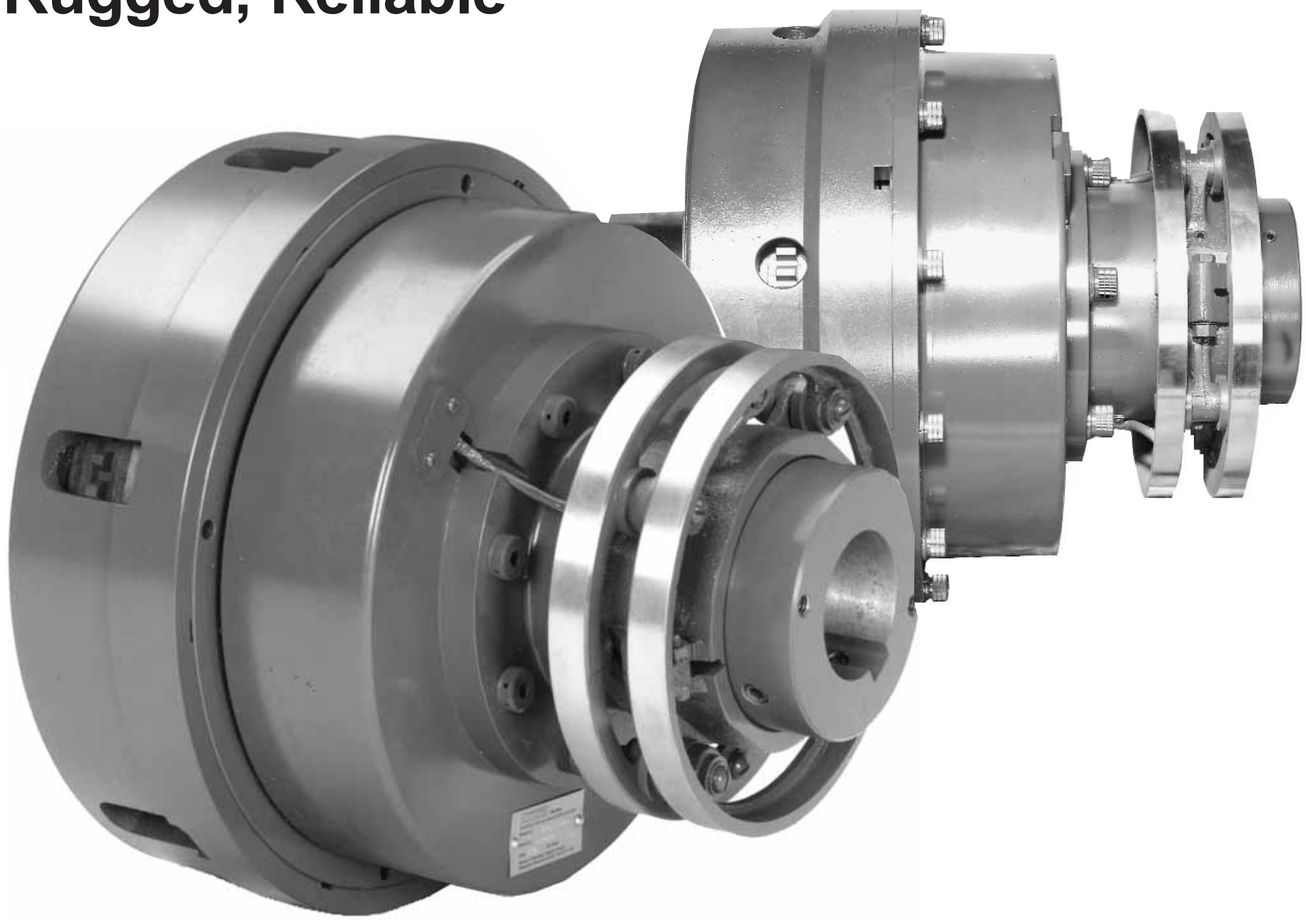
Stearns® Heavy Duty Clutches & Brakes… Rugged, Reliable



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.

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.

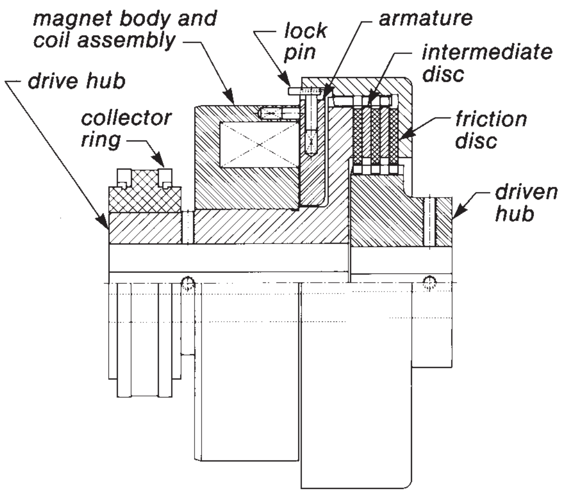
High Temperature Environments: Environments where the ambient temperature exceeds 40°C (104°F) could cause early coil failure. Class H coil insulation is available.

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

Outline of Heavy Duty Products

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

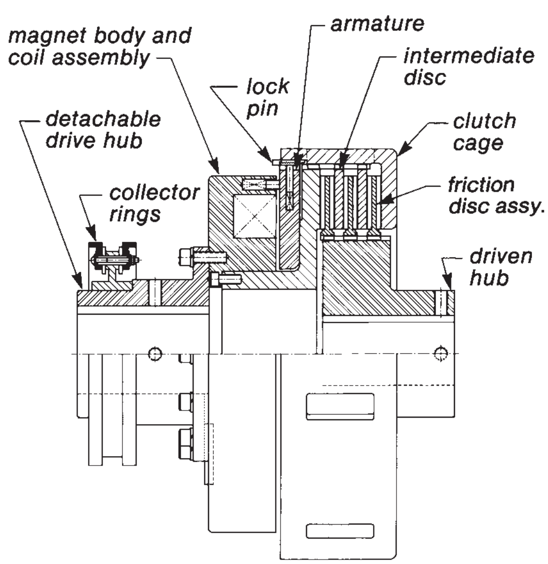
Straight Bores

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

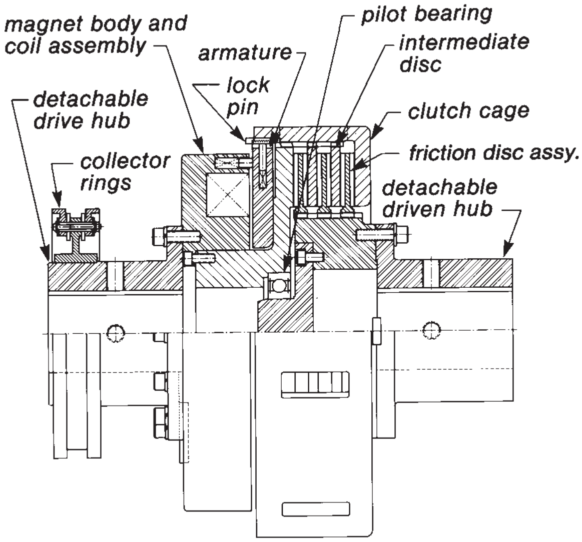
115 or 230 Volts DC Operation

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



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)

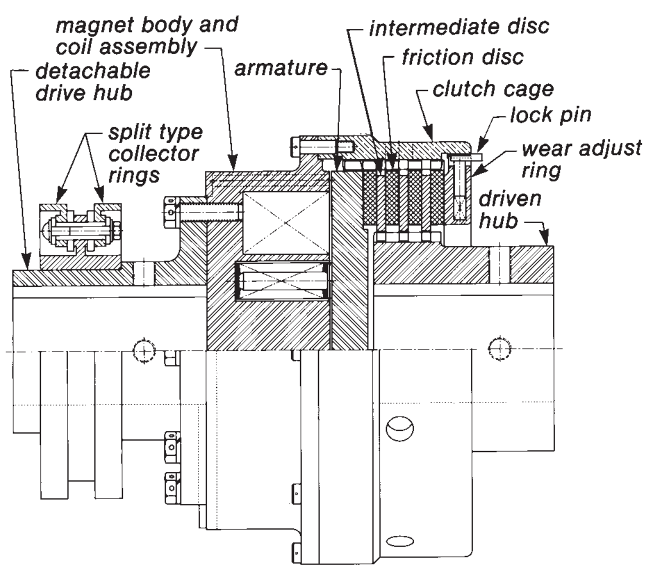
115 or 230 Volts DC Operation

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)

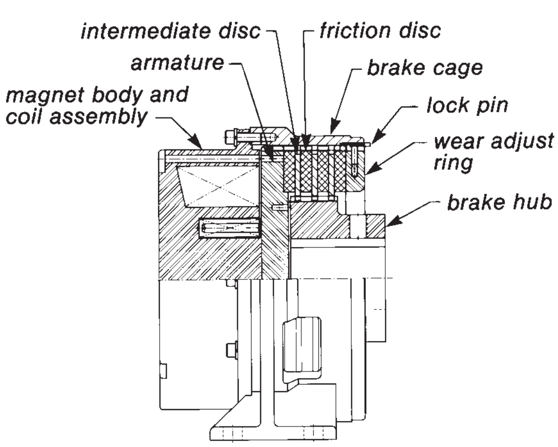
Straight Bores

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, 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

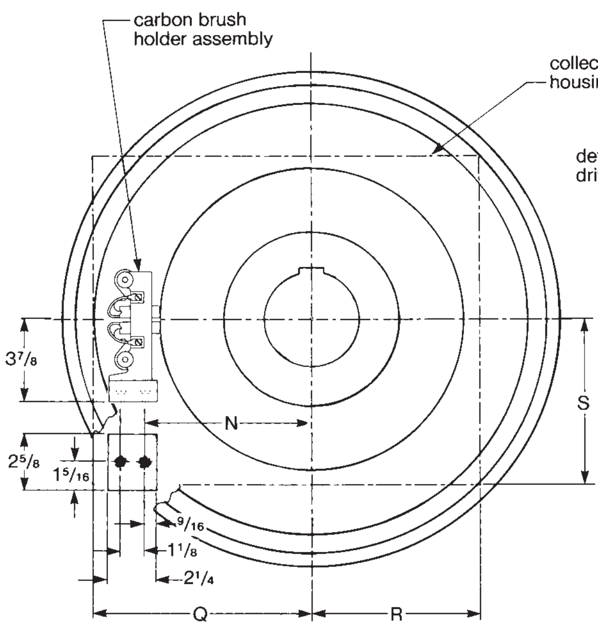
Clutch Size	Nominal Static Torque (lb-ft)	Wk^2 (lb-ft^2)		Lining Area (sq-in)	Approx. Shipping Weight	Max. RPM
		Drive End	Driven End			
2002	3000	333	36	320	990	900
2004	6000	359	51	640	1100	900
2006	9000	385	66	960	1210	900
2402	6400	682	70	425	1660	800
2404	12800	762	109	850	1840	800
2406	19200	842	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
3602	20000	4840	493	1130	4840	500
3604	40000	5515	800	2260	5520	500
3606	60000	6190	1107	3390	6200	500
4202	40000	8300	709	1626	8400	400
4204	80000	9150	1200	3252	9300	400
4206	120000	10000	1700	4878	10200	400

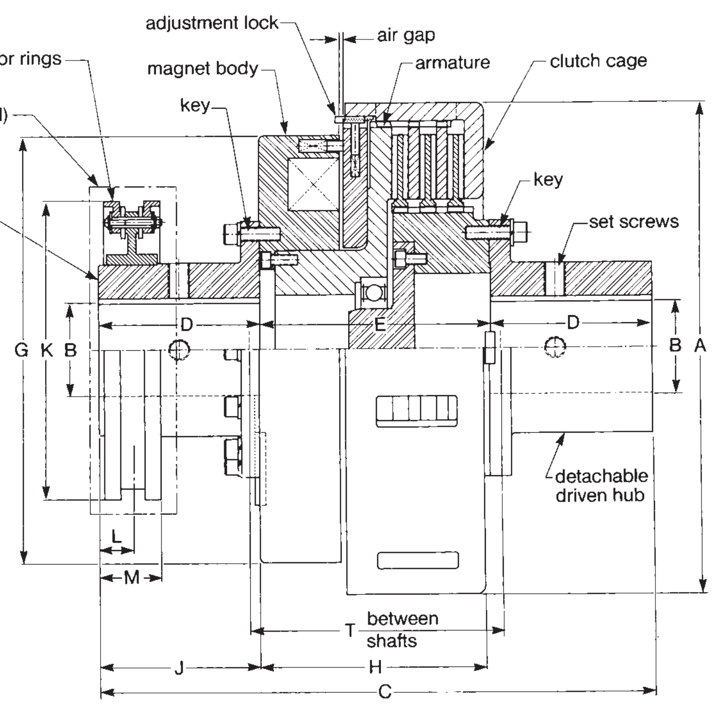
ELECTRICAL - Class B

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	39.0	2.94	338
	230	162	1.42	327
2800	115	41.1	2.80	322
	230	136	1.68	390
3200	115	35.3	3.25	374
	230	138	1.66	382
3600	115	27.7	4.15	477
	230	108	2.12	487
4200	115	24.7	4.66	536
	230	96.0	2.39	551

Dimensional Data (In Inches)

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
3602	41	11	38 3/8	12	14 3/8	36	14 3/16	11 15/16	21	4	5 3/8	11 3/16	14	11 1/2	11 1/2	15 5/8
3604	41	11	40 7/8	12	16 7/8	36	16 11/16	11 15/16	21	4	5 3/8	11 3/16	14	11 1/2	11 1/2	18 1/8
3606	41	11	43 3/8	12	19 3/8	36	19 3/16	11 15/16	21	4	5 3/8	11 3/16	14	11 1/2	11 1/2	20 5/8
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.

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

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.

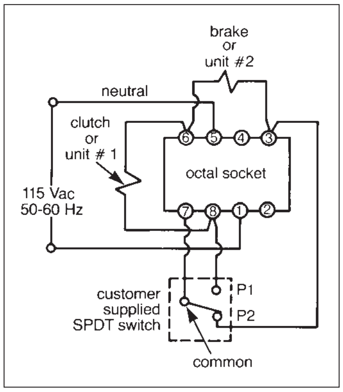
Stearns rectifier controls are available in fixed or adjustable output models with compact housings to simplify installation.

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.

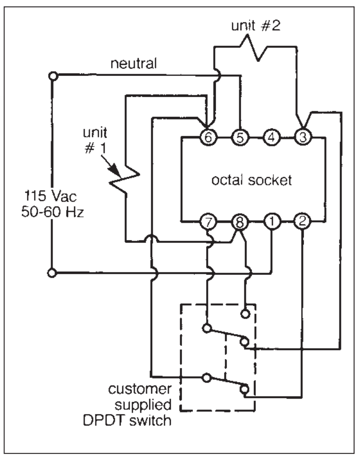


Rectifier Controls

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.

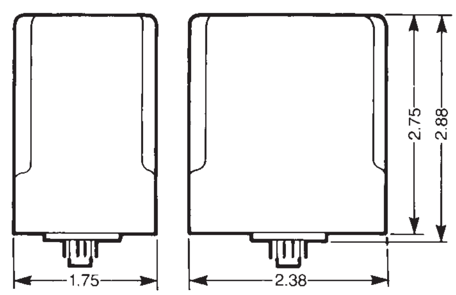


Model PR-33

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.



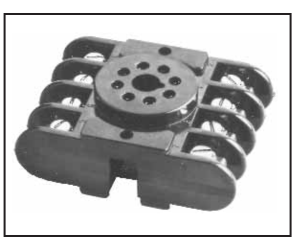
Performance/List Price Data

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

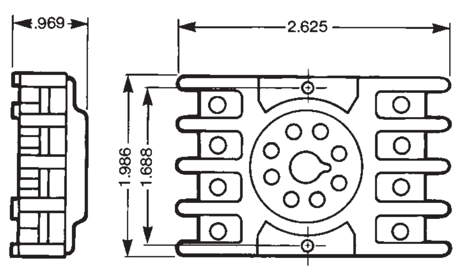
① Based on ambient temperature of 104°F.
②List prices subject to change without notice.

Octal Socket(s)

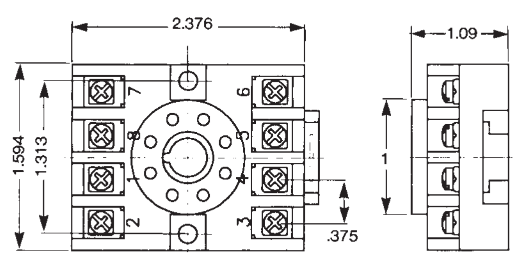
Supplied with terminal screws and clips



Part Number: 9-61-0153-00
Dimensions



Part Number: 9-61-0153-01
Dimensions



List Price Data

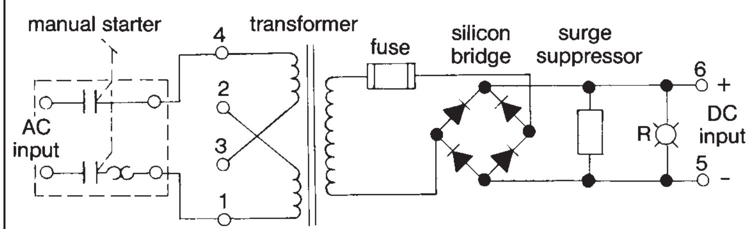
Octal Socket Part Number	List Price	Discount Symbol
9-61-0153-00	$128.00	X-1
9-61-0153-01	48.00	X-1

Rectifier Controls

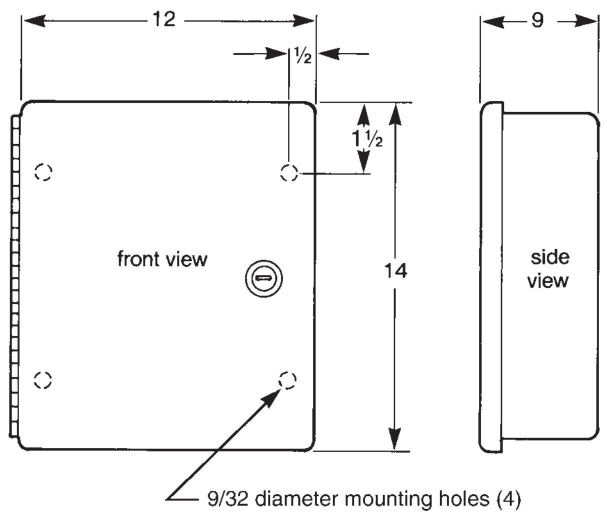
Series 12000 Silicon Rectifiers

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



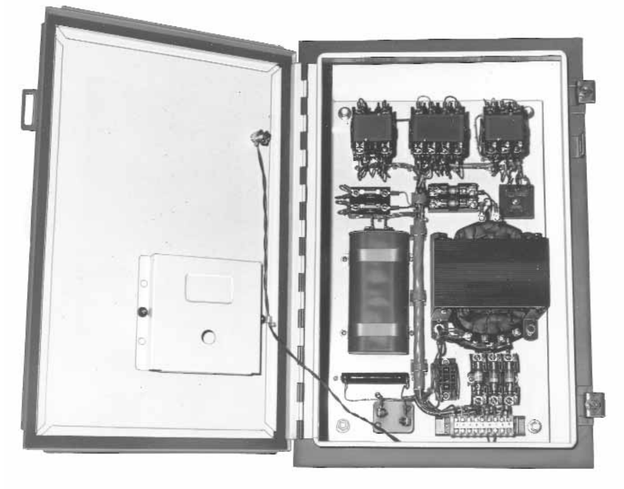
Dimensional Data



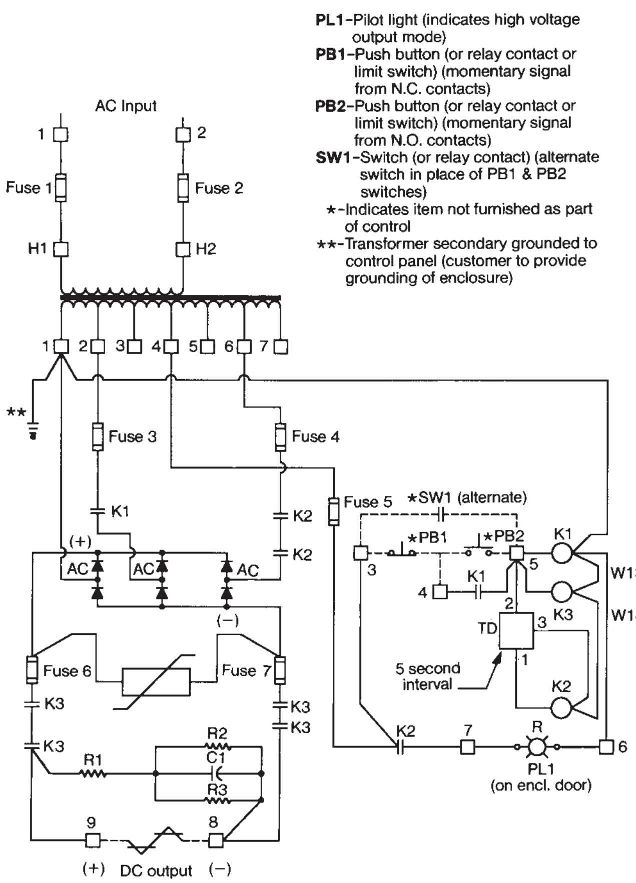
Performance Data

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.



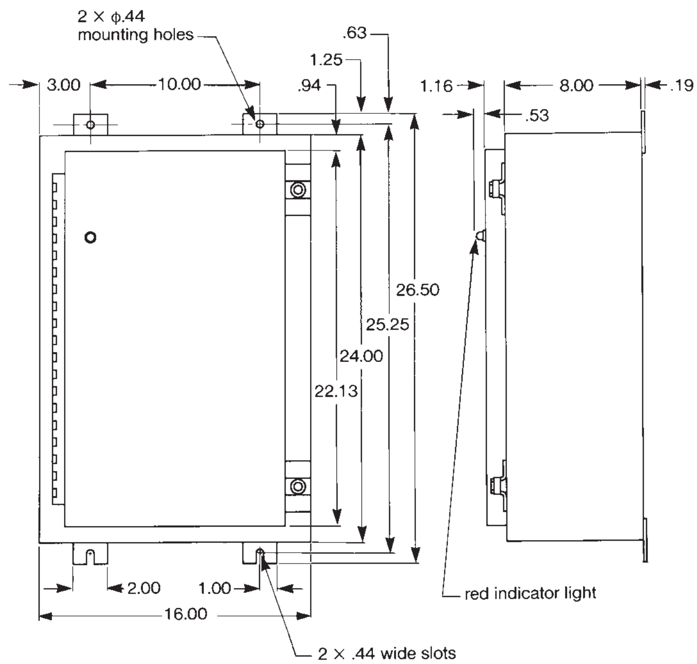
Wiring Diagram



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.

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

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:

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

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

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	$4.53\ \xi\ 10^{-8}$	4	.0491	9 3/4	1.735	25	75.00	48	1019.2
1/4	$7.47\ \xi\ 10^{-7}$	4 1/4	.0626	10	1.920	26	87.74	49	1106.8
3/8	$3.83\ \xi\ 10^{-6}$	4 1/2	.0787	10 1/2	2.334	27	102.0	50	1200.0
1/2	$1.21\ \xi\ 10^{-5}$	4 3/4	.0977	11	2.811	28	118.0	51	1298.9
5/8	$2.93\ \xi\ 10^{-5}$	5	.1200	11 1/2	3.358	29	135.8	52	1403.8
3/4	$6.07\ \xi\ 10^{-5}$	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.

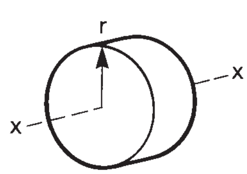
Material Factors

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

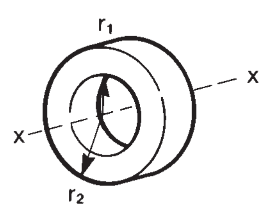


Solid

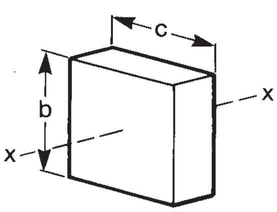
$K^2 = \frac{1}{2} r^2$

Hollow

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



Axis through Center x-x

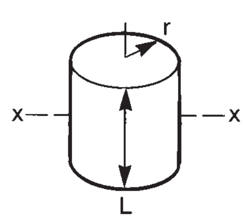


Prism

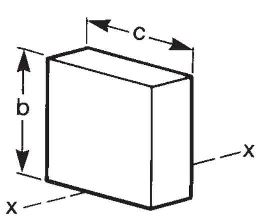
$K^2 = \frac{1}{12} (b^2 + c^2)$

Cylinder

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



Axis at One End x-x

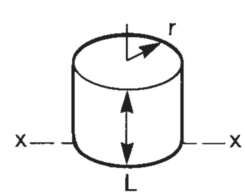


Prism

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

Cylinder

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



English-Metric Conversion Factors

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