

## Electric Caliper Brake - Series 7EC5

### ***The “clean” alternative to hydraulic/pneumatic caliper and shoe brakes.***

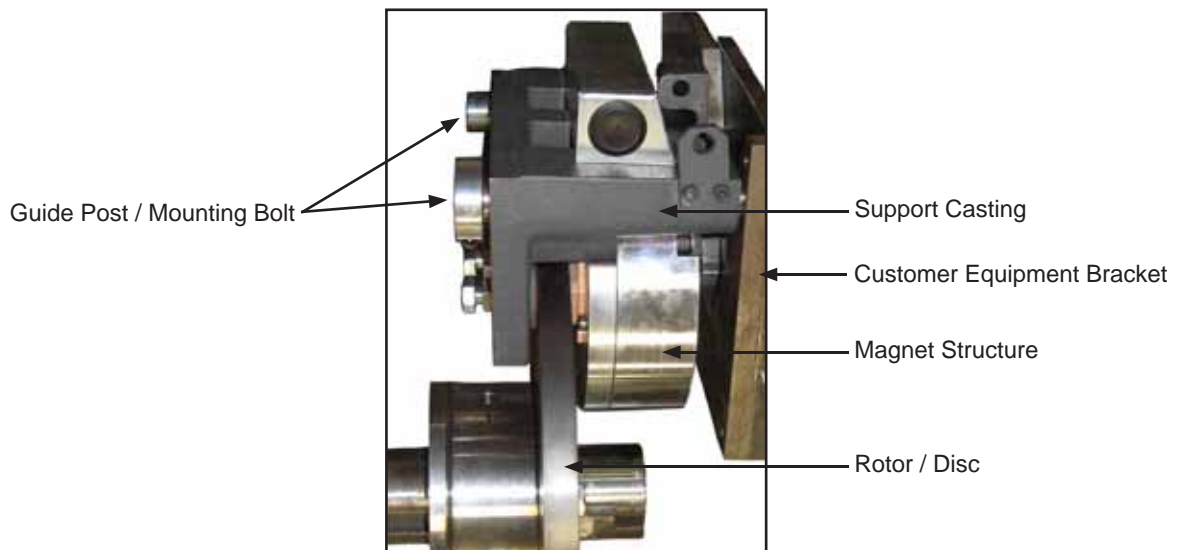
Typical Applications: high-torque (generally above 500 lb-ft) for heavy industry equipment, including:

- Material handling
  - Bulk handling conveyors
  - Cranes
  - Hoists
  - Winches
- Commercial passenger & industrial elevators
- Wind turbines
- Hillside trams
- Hydro-electric dam lock gate hoists
- Steel mill stands

### **Design**

The 7EC is a spring-set electrically-released brake, for stopping and/or holding applications. It's a “floating” caliper design - where the brake is free to float (the support casting slides on two guide posts) so that the friction pads will contact both sides of the rotor/disc, while the rotor/disc can remain in the same axial position.

The rotor/disc is typically fixed to a shaft, shaft coupling, or other drive system component (for commercial elevator drives, it is part of the rope sheave). The brake is mounted to the customer's equipment with two bolts (that fit inside the guide posts).



### **Features / Benefits:**

- High Torque Capacity — exceeds range of NEMA & IEC frame motor brakes
- Adapts easily to drive systems — the disc can be mounted in several locations:
  - Directly to a drive shaft (for example, the disc can incorporate a hub, with a QD bushing)
  - Bolted to a coupling hub (several coupling manufacturers offer brake discs as an option - i.e., Falk Steelflex® grid coupling, Addax® composite disc coupling)
  - Mounts directly to large motors — motor manufacturers can fit disc to extended shaft on accessory end of motor
- Simple, low-maintenance installation — electric operation eliminates the hydraulic/pneumatic components - and maintenance - associated with typical non-electric caliper brakes
- Low cost — in comparison to typical caliper brakes that require hydraulic or pneumatic systems

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## Specifications:

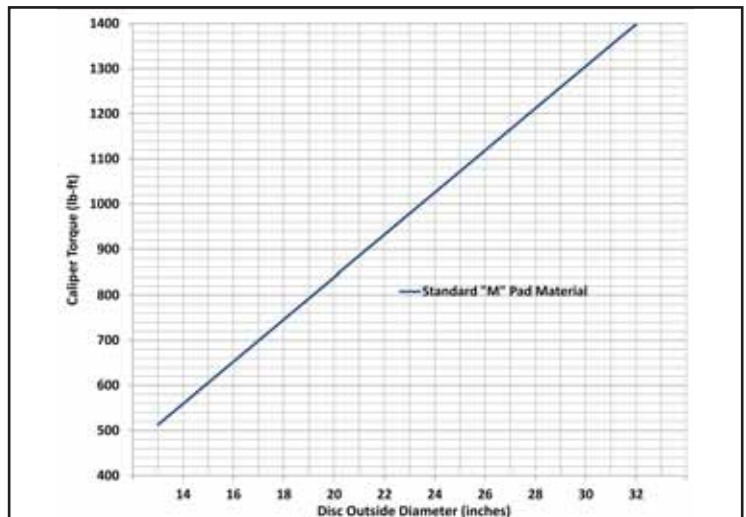
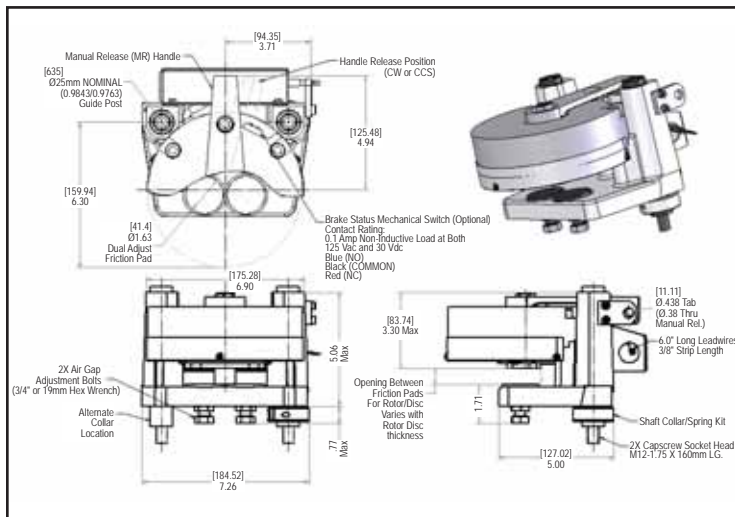
- Torque Range: **1000 lb-ft** (1 caliper, with a 23.5" dia. disc) to **5000 lb-ft** (4 calipers spaced around a 30" disc)
- For higher or lower torque - consult factory for the number of calipers and diameter of disc
- Wear Adjustment: Friction pads are adjustable for wear
- Voltage Ratings:
  - 103/51 VDC (over-excitation/holding) or,
  - 205/103 VDC
  - 410/205 VDC
- Coil Watts: 200/50 (overexcitation/holding)
- Manual release, non-maintained, bi-directional
- Weight: 31 lb
- UL Recognized Class H coil insulation system compliant to U.S. and Canadian requirements; File E125303
- Caliper mounting to be on a vertical disc only (horizontal shaft).
- Request 2D drawing (DWG or DFX), or a 3D model (SolidWorks, IGES, or STP), for complete dimensional information.
- Thermal capacity: Consult factory. Dependent on disc thickness, diameter and material. Example - 13" x 15mm ductile iron disc, with no air movement in 21°C ambient = 74 Hp-sec/min.

## Options/List Price Adders:

- Environmental protection for outdoor installations - \$803
- "Quiet" features - for commercial elevators - \$178
- Discs - can be supplied by Stearns
- Rectifiers - with overexcite voltage
  - 115 VAC input voltage - 103/51 VDC output voltage, p/n 412019611K
  - 230 VAC input voltage - 207/103 VDC output voltage, p/n 412029301K
  - 460 VAC input voltage - 410/205 VDC output voltage, p/n 412049601K
- Brake release indicator switch, NO/NC - \$196

## Pricing:

- 7EC5: \$2,085 list price
- Rectifiers (listed above): \$960 list price



Apply 140% Service Factor for selecting disc diameter for a typical application.

## Ordering and Identification Information

**7EC 5 4 0 M E 1 5 G**

**Fourth Position - Size:**  
5 - Size 5

**Fifth Position - Linear Force/Torque:**  
4 = Standard Force (Torque)  
3 = Reduced Force, step 1 (50%)  
2 = Reduced Force, step 2 (37.5% of #4)  
1 = Reduced Force, step 3 (29.3% of #4)

**Sixth Position - Features**  
Zero (0) - Quiet brake release feature (elevator brakes)  
1 - Standard (Less Quiet features)  
2 - Standard w/enhanced corrosion resistance protection (EN Plating, eCoat bracket, and stainless steel hardware)  
M - Marine Duty (IEEE 45 / Protection package, Less Quiet features)

**Seventh Position - Friction Pads**  
M = Standard-Metallic (holding & stopping duty)

**Eleventh Position - Coil Voltage**  
G - 51 VDC (& 103 VDC over-excite)  
K - 103 VDC (& 205 VDC over excite)  
M - 205 VDC (& 410 VDC over excite)

**Ninth and Tenth Position - rotor/disc thickness**  
15 mm (standard), 16, 17, 18, 19 or 20mm  
QJ - zero "J" - for 1/2"

**Eighth Position - for Brake Release Monitoring Status:**  
0 = none, no switch  
E = Standard NO-/NC mechanical brake release indicator switch

A 12th digit may be added for a special design

## Caliper Discs

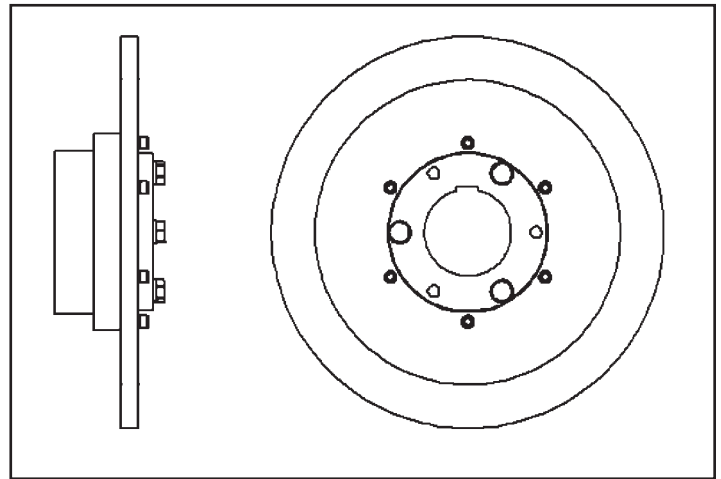
The discs used with the 7EC5 caliper brake can be supplied by Stearns, the customer, or the customer's coupling supplier (if there is a coupling in the drive system for which optional caliper discs are available - ie: Falk Steelflex®, Addax® composite disc coupling).

## Disc Requirements/Specifications

- Diameter: 330mm (13") minimum
- Thickness: 15mm standard - optional 16, 17, 18, 19, 20 mm & 1/2".
- Runout: Maintain within .005" FIM (0,127mm FIM)
- Material: Cast iron (medium carbon steel, consult factory)
- Disc Speed: Maximum 10,000 SFM

## Stearns® Discs

Stearns offers a full range of disc sizes, as an assembly (disc, hub, and QD bushing) to fit shafts up to 5" diameter.



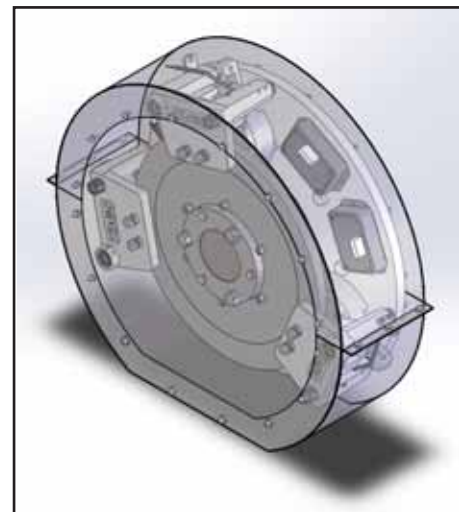
## Ordering and Identification Information (Consult factory for prices)

### Rotor Disc and Hub Bushing Logic 7EC Caliper Brakes

1	2 & 3	4th Position	5th & 6th Positions	7th Position	8th & 9th Position	10th & 11th Positions	12 Position	Bushing Style Tables					
5	30	Plating on Rotor	Rotor Dia. Whole Inches	Rotor Dia. Decimal Inches (rounded up to nearest 10th)	Rotor Thickness mm	QD Bushing Size	Bore Suffix, see listings for Bushing style	"SK" thru "F" Bushing Bore Size (inches)	"J" Bushing Bore Size (inches)	"M" Bushing Bore Size (inches)			
		4 = Zinc 3 = EN	13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31	A = 0 B = 0.1 C = 0.2 D = 0.3 E = 0.4 F = 0.5 G = 0.6 H = 0.7 J = 0.8 K = 0.9 <u>other sizes</u> 0 (zero) thru 9 can be used to designate other fractional sizes as needed	12 13 14 15 (std) 16 17 18 19 20 OJ (1/2")	13 = SK (1-1/8 thru 2-1/4 dia) 14 = SF (1-1/8 thru 2-1/2 dia) 15 = E (1-1/8 thru 2-7/8 dia) 16 = F (1-1/8 thru 3" dia) 17 = J (2 thru 3-3/4 dia) 18 = M (2-3/4 thru 4-3/4 dia)	A B C D E F G H I J K L M N O P Q R S T U V W X Y Z	1-1/8 1-1/4 1-3/8 1-1/2 1-9/16 1-5/8 1-11/16 1-3/4 1-13/16 1-7/8 1-15/16 2 2-1/16 2-1/8 2-3/16 2-1/4 2-5/16 2-3/8 2-7/16 2-1/2 2-5/8 2-3/4 Pilot dia. - Not Used for these bushings. 2-7/8 2-15/16 3	2 2-1/4 2-1/8 2-3/16 2-1/4 3-1/8 3-1/4 3-3/8 3-7/16 2-5/8 2-11/16 2-3/4 3-1/8 3-1/4 3-5/16 3-3/8 3-1/2 3-5/8 3-11/16 3-3/4	2-3/4 2-7/8 2-15/16 3-7/8 3-15/16 4 4-1/8 4-3/16 4-1/4 4-3/8 4-7/16 4-1/2 4-5/8 4-3/4			
		Example: 5-30-422C-17-15J Zinc Plated 22.2 inch dia. disc 17mm thick E style QD bushing 1-7/8" dia. bore											

**Also available - 7EC5 High-Torque Assembly -  
for close-coupled mounting to large NEMA motors**

- For 500 frame motors (444 and 445TC on non-drive end)
  - 16.0" AK, 14" AJ
  - Static torque: 1,600 and 2,400 lb-ft
- 7EC assembly includes:
  - Multiple 7EC5 calipers, rectifiers, motor adapter, disc, & enclosure
- Standard brake for holding duty only
  - Consult factory for dynamic duty applications
- Special sizes for larger frame motors
  - Static torque up to 5,000 lb-ft

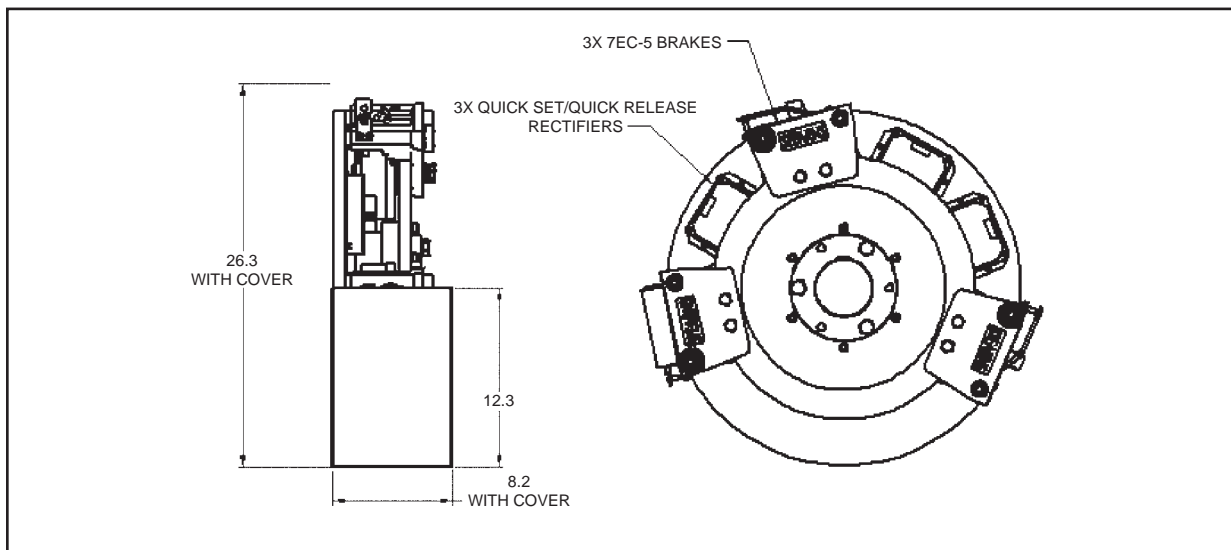


*Enclosure Material:* Sheet Metal housing

*Release Type:* Internal, non-maintained

*Enclosure Protection:* IP 23 & 54

*Mounting:* Close-coupled (directly to the motor end bell - horizontal only)



**Dimensional Data**

Nominal Static Torque lb-ft (Nm)	Enclosure	Type	Basic Model Number	Number of Individual Calipers	Disc Diameter Inches (mm)	QD Bushing Size	Weight lbs (kg)
1500 (1106)	IP 23	AC	7EC-021-XXX-XXX	2	18 (458)	J	290 (132)
1500 (1106)	IP 54	AC	7EC-022-XXX-XXX	2	18 (458)	J	290 (132)
2250 (1660)	IP 23	AC	7EC-031-XXX-XXX	3	18 (458)	J	325 (148)
2250 (1660)	IP 54	AC	7EC-032-XXX-XXX	3	18 (458)	J	325 (148)



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