

ELECTRIC CYLINDERS ORDERING INFORMATION


Instructions: Select a model number from this chart.

| 2.5-Ton ACME Screw | 2.5-Ton Ball Screw | 3-Ton ACME Screw | 3-Ton Ball Screw | 5-Ton ACME Screw | 5-Ton Ball Screw | 10-Ton ACME Screw | 10-Ton Ball Screw | 20-Ton ACME Screw | 20-Ton Ball Screw |
|------------------------------------|------------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|----------------------|----------------------|----------------------|----------------------|
| ECAL242.5 | ECBL62.5 ECBL122.5 ECBL242.5 | ECAL63 ECAL123 ECAL243 | ECBL63 ECBL123 ECBL243 | ECAL65 ECAL245 | ECBL65 ECBL125 ECBL245 | ECAL810 ECAL2410 | ECBL810 ECBL2410 | ECAL820 ECAL2420 | ECBL820 ECBL2420 |
| ECAH62.5 ECAH122.5 ECAH242.5 | ECBM62.5 ECBH62.5 | | ECBH63 ECBH123 ECBH243 | ECAM65 ECAM125 ECAM245 | ECBM65 ECBM125 ECBM245 | ECAM810 ECAM2410 | ECBM810 ECBM2410 | ECAM820 ECAM2420 | |
| | | | | ECAH65 ECAH125 ECAH245 | ECBH65 ECBH125 ECBH245 | ECAH810 ECAH2410 | ECBH810 ECBH2410 | ECAH820 ECAH2420 | |


Important Note: Electric Cylinders that are $\geq 30\%$ efficient may lower under load. Brake motors or external locking systems are required. Detailed information about each electric cylinder model is available on pages 125-134.

Sample Part Number: **ECAL654C-18.5-STDX-STDX-X**


Tube End Conditions




3
(threaded end)



4
(male clevis)



5
(female clevis)



6
(female clevis with pin)

Cylinder Rise


Rise is travel expressed in inches and not the actual tube length.

The allowable travel for each unit is listed in the Quick Reference section.

Allowable lengths differ for vertical and horizontal mounting.

Left Side Shaft Code

(see below)




XXXX=Remove
STDX=Standard
CUST=Custom

For optional shaft codes, see page 121.

Right Side Shaft Code

(see below)



XXXX=Remove
STDX=Standard
CUST=Custom

For optional shaft codes, see page 121.

Additional Options*

X=Standard, no additional options

S=Additional Specification Required (comment as necessary)


Finishes p. 182
F1=Do Not Paint
F2=Epoxy Paint
F3=Outdoor Paint Process

Motor Options
M1=Less Motor
M2=Brake Motor
M3=Single Phase Motor (120VAC)
M4=50Hz Motor
M5=Special Motor


Grease/Seals
H1=High Temperature Operation
H2=Food Grade Grease

* Specify as many options as needed

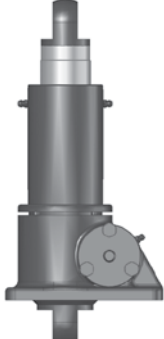
Base Designs



F=Flange Base



C=Clevis Base



R=Rotated Clevis Base

ELECTRIC CYLINDERS SHAFT CODES

Instructions: Select the appropriate shaft codes for both right and left hand shafts. One shaft code must be specified for each side of the electric cylinder.

Mechanical Counters (p. 180)

CNTO=0.001" Increments

Note: Contact Joyce for availability and options.



Hand Wheels (p. 180)

- HW04**=4" dia
- HW06**=6" dia
- HW08**=8" dia
- HW10**=10" dia
- HW12**=12" dia



Not recommended for electric cylinders that are ≥ 30% efficient.

G geared Potentiometers (p. 175)

- POTA**=0-10V
- POTB**=4-20mA
- POTC**=0-10V w/2 switches
- POTD**=4-20mA w/2 switches
- IP65 rated enclosures



Encoders (pp. 176-177)

- ENCA**=Absolute Encoder 0-10 VDC, programmable
- ENCB**=Absolute Encoder 4-20mA, programmable
- ENCC**=Absolute Encoder CAN Open
- ENCD**=Absolute Encoder SSI
- ENCS**=Stainless Steel Incremental Encoder 1024 PPR
- ENCX**=Incremental Encoder 200 PPR
- ENCY**=Incremental Encoder 1024 PPR



ComDRIVE Reducers (pp. 125-134)

Ordering Example: **P2AC** — Motor code from chart at right

Mounting Positions

| Code | P1 | P2 | P3 | P4 | Ratio |
|----------------------------|----|----|----|----|-------------------------|
| Left Side Shaft Positions | | | | | 5:1 Code A |
| | | | | | 7.5:1 Code B |
| | | | | | 10:1 Code C |
| Right Side Shaft Positions | | | | | 15:1 Code D |
| | | | | | Special Ratio Code X |

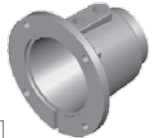
Motors

| Size | Code |
|----------|------|
| 1/4 HP | K |
| 1/3 HP | A |
| 1/2 HP | B |
| 3/4 HP | C |
| 1 HP | D |
| 1-1/2 HP | E |
| 2 HP | F |
| 3 HP | L |
| 5 HP | G |

Motor Mounts (pp. 178-179)

Ordering Example:

MMA A



- MMA**=56C
 - MMB**=140TC
 - MMC**=180TC
 - MMD**=210TC
- Motor code from chart at left
For servo motor mounts see p. 178

Standard motor adapters are aluminum.

All standard motors are 3-phase, 208-230/460 VAC or 230/460 VAC. Specify the appropriate motor size from the chart above. Refer to the "Additional Options" chart on the preceding page as needed. Brake motors are required for electric cylinders that are more than 30% efficient. Contact Joyce for options that are not listed.

Mechanical Limit Switches (p. 174)

Ordering Example: **LA13**

| Models | | Number of DPDT Switches (see p. 174) | Available Positions | | | |
|---------|------|--|-------------------------|--------------------------|---|--|
| Model | Code | | 1 | 3 | 5 | |
| LS7-402 | LI | NOTE: Will always be 0 for LS7 models | | | | |
| LS8-402 | LA | | Left Side Shaft Options | | | |
| LS8-404 | LB | | | Right Side Shaft Options | | |

• 2.5, 3, 5, 10, and 20 Ton Electric Cylinders are available with positions #1, #3, and #5

To order additional options, use these part numbers (p. 124)

- Female Clevis Bracket
- FCB-30
- FCB-100
- FCB-200

- Clevis Pin w/ retaining rings
- CP-30
- CP-100
- CP-200

- Female Rod Clevis
- FRC-30
- FRC-100
- FRC-200

ELECTRIC CYLINDERS MODELS



Standard

The Joyce standard electric cylinder is intended for applications where the customer provides their own drive mechanism. To determine capacity, input torque, and turns-per-inch use the specification chart on page 123. This design can also be used where one or more electric cylinders are being driven by one common drive motor or in combination with the motor mount (direct drive) or ComDRIVE® models listed below.

Example part number:

ECAL635C-15.00-STDX-HW08-X

Acme screw (ECA), low lead (L), 6:1 gear ratio (6), 3-ton capacity (3), female clevis (5), clevis base (C), 15 inches rise (15), standard input shaft left hand side of jack (STDX), 8" diameter hand wheel right side of jack (HW08), no additional options (X).



Motor Mount (direct drive)

Joyce motor mount electric cylinders are intended for higher speed applications. Motor mount models can be used in conjunction with one or more of the standard electric cylinders shown above. To determine lifting speed and capacity, view "direct drive" models shown on the quick reference charts (pages 125-129). Standard motors are 3-phase, 230/460 VAC, 60 Hz, and 1750 RPM. For additional motor information, see page 179.

Example part number:

ECAM24104R-9.50-STDX-MMBE-F2

Acme screw (ECA), medium lead (M), 24:1 gear ratio (24), 10-ton capacity (10), male clevis (4), rotated clevis base (R), 9 1/2 inches rise (9.50), standard input shaft left hand side of jack (STDX), 145TC motor mount (MMB) with 1 1/2 HP motor (E) on right hand side, epoxy paint (F2).



ComDRIVE®

Joyce ComDRIVE® models include a right angle gearmotor mounted to the right or left side of the standard model. ComDRIVES are intended for applications requiring heavy lifting capacities at speeds up to 34 inches per minute (acme screw) and 104 inches per minute (ball screw). ComDRIVE models can be used in conjunction with one or more of the standard electric cylinders shown above. To determine lifting speeds and capacity, refer to the charts on pages 125-129.

Example part number:

ECAH8206F-52.25-P1CL-ENCX-M3

Acme screw (ECA), high lead (H), 8:1 gear ratio (8), 20-ton capacity (20), female clevis with pin (6), flange base (F), 52 1/4 inches rise (52.25), 10:1 reducer with a 3 horsepower motor mounted to left hand side of jack (P1CL), encoder on right side of jack (ENCX), single phase motor (M3).

ELECTRIC CYLINDERS SPECIFICATIONS

| Model | Static Capacity | Screw Diameter | Thread Pitch/Lead | Wormgear Ratio | Worm Shaft Turns for 1" Travel | Tare Torque (Inch Lbs.) | Starting Torque (Inch Lbs.) | Operating Torque (Inch Lbs.) | Translating Tube Torque (Inch Lbs.) | Base Weight | Weight per Inch Travel | | |
|-----------|------------------------------|-----------------------------|---------------------------|----------------|--------------------------------|-------------------------|-----------------------------|------------------------------|-------------------------------------|-----------------|------------------------|-----------------|--------|
| ECAL242.5 | 2.5 ton | 1 | .25 pitch ACME 2C | 24:1 | 96 | 6 | .018W* | .010W* @500 RPM | .098W* | 24 | 1.5 | | |
| ECAH62.5 | | | | 6:1 | 12 | 8 | .056W* | .040W* @500 RPM | .140W* | | | | |
| ECAH122.5 | | | .25 pitch .5 lead ACME 2C | 12:1 | 24 | 7 | .035W* | .023W* @500 RPM | | | | | |
| ECAH242.5 | | | | 24:1 | 48 | 6 | .025W* | .014W* @500 RPM | | | | | |
| ECBL62.5 | | | 0.25 lead ball | 6:1 | 24 | 8 | .017W* | .013W* @500 RPM | .045W* | | | | |
| ECBL122.5 | | | | 12:1 | 48 | 7 | .010W* | .008W* @500 RPM | | | | | |
| ECBL242.5 | | | | 24:1 | 96 | 6 | .008W* | .005W* @500 RPM | | | | | |
| ECBM62.5 | | | | .5 lead ball | 6:1 | 12 | 8 | .033W* | | .026W* @500 RPM | .089W* | | |
| ECBH62.5 | | | | | 1.0 lead ball | 6:1 | 6 | 8 | | .065W* | | .051W* @500 RPM | .177W* |
| ECAL63 | | | | 3 ton | 1 1/4 | .25 pitch ACME 2C | 6:1 | 24 | | 9 | .048W* | .033W* @500 RPM | .114W* |
| ECAL123 | 12:1 | 48 | 8 | | | | .030W* | .018W* @500 RPM | | | | | |
| ECAL243 | 24:1 | 96 | 7 | | | | .021W* | .011W* @500 RPM | | | | | |
| ECBL63 | 1 3/20 | .2 lead ball | 6:1 | | | 30 | 9 | .013W* | .011W* @500 RPM | .036W* | 32 | 1.9 | |
| ECBL123 | | | 12:1 | | | 60 | 8 | .008W* | .006W* @500 RPM | | | | |
| ECBL243 | | | 24:1 | | | 120 | 7 | .006W* | .004W* @500 RPM | | | | |
| ECBH63 | 1 1/16 | .625 lead ball | 6:1 | | | 9.6 | 9 | .041W* | .032W* @500 RPM | .111W* | 1.8 | | |
| ECBH123 | | | 12:1 | | | 19.2 | 8 | .025W* | .018W* @500 RPM | | | | |
| ECBH243 | | | 24:1 | | | 38.4 | 7 | .018W* | .011W* @500 RPM | | | | |
| ECAL65 | | | 5 ton | | | 1 1/2 | .25 pitch ACME 2C | 6:1 | 24 | | | 15 | .057W* |
| ECAL245 | 24:1 | 96 | | 12 | .026W* | | | .014W* @300 RPM | | | | | |
| ECAM65 | .375 pitch STUB ACME | 6:1 | | 16 | 15 | | | .065W* | .045W* @300 RPM | | | | |
| ECAM125 | | 12:1 | | 32 | 13 | | | .041W* | .025W* @300 RPM | .151W* | | | |
| ECAM245 | .25 pitch .5 lead ACME 2C | 24:1 | | 64 | 12 | | .030W* | .016W* @300 RPM | .171W* | | | | |
| ECAH65 | | 6:1 | | 12 | 15 | | .073W* | .051W* @300 RPM | | | | | |
| ECAH125 | | 12:1 | | 24 | 13 | | .046W* | .029W* @300 RPM | | | | | |
| ECAH245 | | 24:1 | | 48 | 12 | | .033W* | .018W* @300 RPM | | | | | |
| ECBL65 | .474 lead ball | 6:1 | | 12.66 | 15 | | .032W* | .025W* @300 RPM | .084W* | | | | |
| ECBL125 | | 12:1 | | 25.33 | 13 | | .020W* | .014W* @300 RPM | | | | | |
| ECBL245 | | 24:1 | | 50.66 | 12 | | .015W* | .009W* @300 RPM | | | | | |
| ECBM65 | | 1.0 lead ball | | 6:1 | 6 | | 15 | .067W* | | .052W* @300 RPM | .177W* | | |
| ECBM125 | | | | 12:1 | 12 | | 13 | .042W* | | .030W* @300 RPM | | | |
| ECBM245 | | 24:1 | | 24 | 12 | | .031W* | .018W* @300 RPM | | .332W* | | | |
| ECBH65 | 1.875 lead ball | 6:1 | | 3.2 | 15 | | .125W* | .098W* @300 RPM | | | | | |
| ECBH125 | | 12:1 | | 6.4 | 13 | | .079W* | .055W* @300 RPM | | | | | |
| ECBH245 | | 24:1 | | 12.8 | 12 | | .057W* | .034W* @300 RPM | | | | | |
| ECAL810 | | 10 ton | | 2 | .25 pitch ACME 2C | | 8:1 | 32 | 30 | .052W* | .036W* @200 RPM | .162W* | 64 |
| ECAL2410 | 24:1 | | | | | | 96 | 25 | .026W* | .016W* @200 RPM | | | |
| ECAM810 | .5 pitch ACME 2C | | | | | | 8:1 | 16 | 30 | .061W* | .044W* @200 RPM | | |
| ECAM2410 | | | 24:1 | | 48 | 25 | .031W* | .019W* @200 RPM | | | | | |
| ECAH810 | .333 pitch .666 lead ACME 2C | | 8:1 | | 12 | 30 | .070W* | .051W* @200 RPM | .228W* | | | | |
| ECAH2410 | | | 24:1 | | 36 | 25 | .035W* | .022W* @200 RPM | | | | | |
| ECBL810 | .474 lead ball | | 8:1 | | 16.88 | 30 | .023W* | .019W* @200 RPM | .084W* | | | | |
| ECBL2410 | | | 24:1 | | 50.66 | 25 | .012W* | .008W* @200 RPM | | | | | |
| ECBM810 | 1 1/2 | | 1.0 lead ball | | 8:1 | 8 | 30 | .049W* | .040W* @200 RPM | .172W* | | | |
| ECBM2410 | | | | | 24:1 | 24 | 25 | .024W* | .017W* @200 RPM | | | | |
| ECBH810 | | | | | 1.875 lead ball | 8:1 | 4.27 | 30 | .091W* | | .074W* @200 RPM | .332W* | |
| ECBH2410 | | | | | | 24:1 | 12.8 | 25 | .045W* | | .031W* @200 RPM | | |
| ECAL820 | 20 ton | | 2 1/2 | | .25 pitch ACME 2C | 8:1 | 32 | 60 | .066W* | .044W* @200 RPM | .194W* | 124 | 4.9 |
| ECAL2420 | | | | | | 24:1 | 96 | 40 | .035W* | .019W* @200 RPM | | | |
| ECAM820 | | .5 pitch ACME 2C | | 8:1 | 16 | 60 | .075W* | .052W* @200 RPM | .227W* | | | | |
| ECAM2420 | | | | 24:1 | 48 | 40 | .039W* | .022W* @200 RPM | | | | | |
| ECAH820 | | .375 pitch .75 lead ACME 2C | | 8:1 | 10.67 | 60 | .088W* | .062W* @200 RPM | .273W* | | | | |
| ECAH2420 | | | | 24:1 | 32 | 40 | .046W* | .027W* @200 RPM | | | | | |
| ECBL820 | | .5 lead ball | | 8:1 | 16 | 60 | .026W* | .020W* @200 RPM | .089W* | | | | |
| ECBL2420 | | | | 24:1 | 48 | 40 | .014W* | .009W* @200 RPM | | | | | |

Important Note: Electric cylinders that are ≥ 30% are not self-locking. Brake motors or external locking systems are required.

*W: Load in pounds.

Tare Torque: Initial torque to overcome seal and normal assembly drag. This value must be added to starting torque or operating torque values.

Starting Torque: Torque value required to start moving a given load (dissipates to operating torque values once the load begins moving).

Operating Torque: Torque required to continuously raise a given load at the input RPM listed.

Translating Tube Torque: Torque required to resist tube rotation.

Lead: The distance traveled axially in one rotation of the lifting screw.

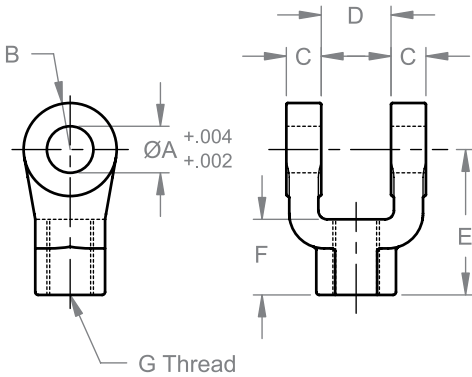
Pitch: The distance from a point on a screw thread to a corresponding point on the next thread, measured axially.

Note: This chart is provided for reference only. For specific information such as allowable continuous travel or ball nut life and other performance factors refer to JAX® Online software or contact Joyce.

ELECTRIC CYLINDERS CLEVIS AND BRACKET

Female Rod Clevis

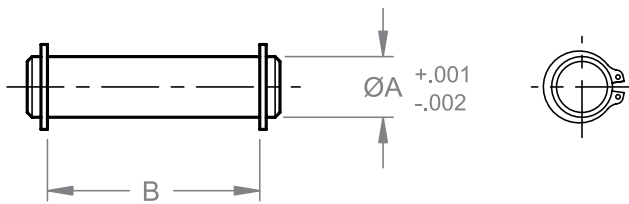
A female rod clevis end is included for type 5 and type 6 end conditions. They are also available as options.



| Cylinder Capacity | Part Number | Dimensions (Inches) | | | | | | | Load Capacity (Lbs.) |
|-------------------|-------------|---------------------|-------|-----|-------|-------|-------|----------|----------------------|
| | | ØA | B | C | D | E | F | G | |
| 2.5 & 3 | FRC-30 | 3/4 | 3/4 | 5/8 | 1 1/4 | 2 3/8 | 1 1/8 | 3/4-16 | 11,200 |
| 5 & 10 | FRC-100 | 1 | 1 | 3/4 | 1 1/2 | 3 1/8 | 1 5/8 | 1-14 | 19,500 |
| 20 | FRC-200 | 1 3/8 | 1 3/8 | 1 | 2 | 4 1/8 | 2 | 1 1/4-12 | 33,500 |

Clevis Pin with Retaining Rings

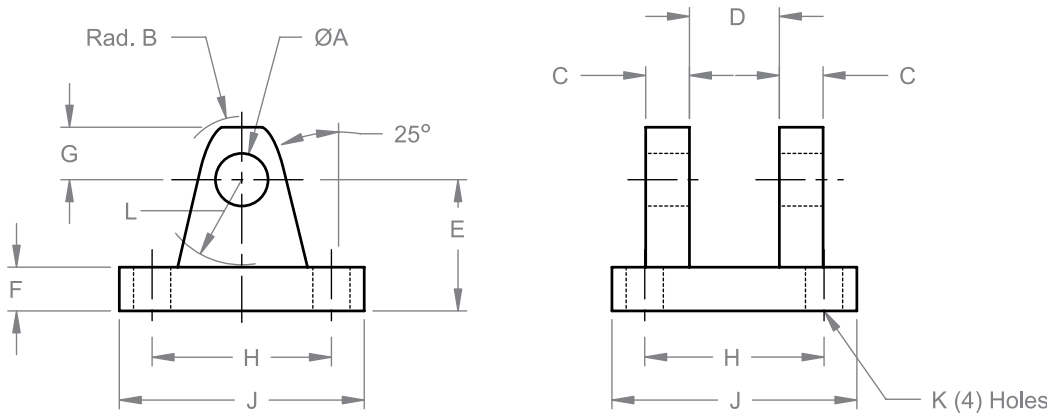
A clevis pin with retaining rings is included on type 6 end conditions. They are also available as options.



| Cylinder Capacity | Part Number | Dimensions (Inches) | | Load Capacity (Lbs.) |
|-------------------|-------------|---------------------|-------|----------------------|
| | | ØA | B | |
| 2.5 & 3 | CP-30 | 3/4 | 2 5/8 | 19,300 |
| 5 & 10 | CP-100 | 1 | 3 1/8 | 34,300 |
| 20 | CP-200 | 1 3/8 | 4 1/8 | 65,000 |

Female Clevis Bracket

Female clevis brackets are available as options.



| Cylinder Capacity | Part Number | Dimensions (Inches) | | | | | | | | | | | Load Capacity (Lbs.) |
|-------------------|-------------|---------------------|---------|-----|-------|-------|-----|-------|------|-------|-------|--------|----------------------|
| | | ØA | B | C | D | E | F | G | H | J | K | L | |
| 2.5 & 3 | FCB-30 | 3/4 | 29/32 | 5/8 | 1 1/4 | 1 7/8 | 5/8 | 3/4 | 3.82 | 5 | 17/32 | 1 3/16 | 14,000 |
| 5 & 10 | FCB-100 | 1 | 1 1/4 | 3/4 | 1 1/2 | 2 1/4 | 3/4 | 1 | 4.95 | 6 1/2 | 21/32 | 1 1/2 | 19,200 |
| 20 | FCB-200 | 1 3/8 | 1 21/32 | 1 | 2 | 3 | 7/8 | 1 3/8 | 5.73 | 7 1/2 | 21/32 | 2 | 33,500 |

Note: Drawings are artist's conception — not for certification; dimensions are subject to change without notice.