

The LCR Series

Miniature Screw Driven Designs
with Maximum Versatility

- Miniature footprint – 30 x 40 mm cross-section
- Internal square rail or glider bearing design
- 100% duty cycle
- IP30 stainless steel strip seal
- Low noise 2 and 10 mm leadscrew
- Travel lengths to 1000 mm
- Attractive black anodize finish

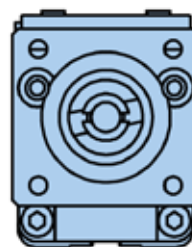


Features

- Extruded aluminum body incorporates dovetail mounting, T-slots and belt return
- Toe clamp mounting for easy installation
- Dowel pin holes in the LCR30 carriage for repeatable mounting
- Multiple motor mount options accommodate NEMA 11, 17 and 23 steppers and NEMA 16 servo motors
- Flush-mounted NPN, PNP, N.O. or N.C. fully adjustable limit sensors maximize flexibility and minimize footprint impact
- Screw-driven version has an optional parallel motor mount for space constrained applications

	LCR30
Maximum Travel (mm)	600
Maximum Payload (N)	500
Maximum Acceleration (m/s ²)	20

*Do not exceed allowable axial and moment loading.



LCR30

For OEMs looking to automate light payloads, the new LCR (Light Capacity Rodless) linear positioner family provides the smallest form factor with unmatched, easy-to-use flexibility.

With any “build-it-yourself” positioner, all the parts required to build a linear motion axis from scratch must be ordered, tracked, received, inventoried, assembled and tested. In contrast, the LCR Series is a completely pre-engineered, pre-tested, ready-to-use positioner solution,

which allows OEMs to significantly reduce their time to market with minimized design, procurement, manufacturing, assembly and qualification time or effort.

Based on the proven life science track record of Parker’s MX80 and LP28 Series, the LCR was developed specifically to provide a high-quality, easy-to-use, off-the-shelf linear actuator.

LCR solutions are ideal for Maldi-plate and micro-titer tray automation. Rated for 100%

duty cycle, the LCR offers smooth, quiet motion ideal for keeping instrument noise to a minimum. With selectable travel lengths up to 1000 mm and payloads up to 100 N (25 lbs), the ability to automate laboratory instruments has never been easier.

Bottom Line Impact

The LCR’s proven pre-engineered design will significantly reduce your instrument time to market and improve your ROI.

Tailored to Meet Every Requirement

The LCR is an easy-to-configure off-the-shelf solution with a virtually unlimited array of standard configurations available.

If your application demands a special design, Parker takes the next step and customizes the product to meet your required specification. Common modifications include:

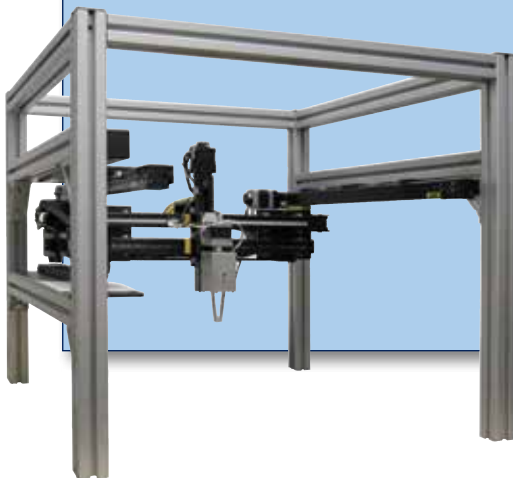
- Clean room components
- Special tool plates
- Mounts for 3rd party motors
- Single or parallel acting electric grippers
- Maximum height or length modifications for space constraints
- And much more

Whether you need blue anodize or a design with a custom carriage for larger than standard payloads, or anything else, Parker excels at application solutions and will modify the LCR to fit your specific needs.

Please call us at 800-245-6903 to discuss your requirements.



Ideal for High-Volume, Light-Capacity, Electrically-Controlled Motion



Life science applications:

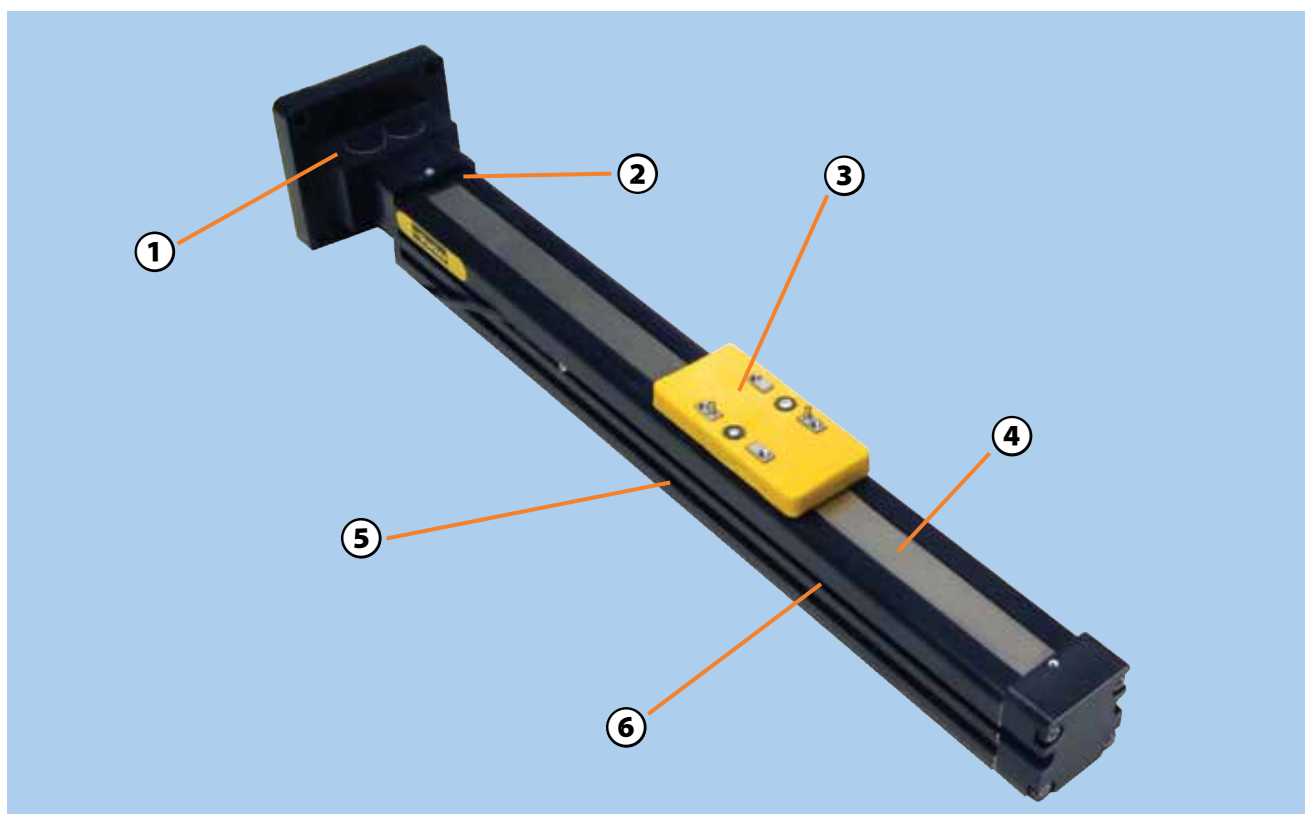
- Mass spectroscopy
- Course microscopy
- Analytical instruments
- Laboratory automation
- Micro titer automation
- MALDI plate automation
- Liquid handling
- Syringe pumps

General-purpose applications:

- Point-of-purchase kiosks
- Adjustable guide widths for conveyor lines
- Storage and retrieval
- Part shuttling
- Light payload automation conversion from rodless pneumatics to electric
- General automation for any ≤ 25 lb payload with basic repeatability requirements



All LCR series actuators are compliant to RoHS and CE directives.



① **Motor mounting options** - The most motor mounting options standard with more options easily available

② **Encoder options** for position verification and position maintenance

③ **Carriage mounting surface** - Machined aluminum carriage mounting surface with locating holes

④ **Stainless steel sealing strip** - Best in class bearing and drive train protection

⑤ **Minimal instrument/machine size** including flush mount limit sensors

⑥ **Profile size** provides high rigidity for minimal deflection along with "T" and dovetail slots

Stepper drive option - Simple and powerful plug and spin P2™ stepper drive option



Rugged internal square rail - Re-circulating bearing or quiet glider bearing for lighter payload needs



Quick and easy mounting options with toe clamps or standard multi-axis connection kits



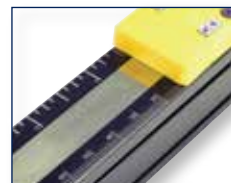
Flexible drive train options with multiple screw leads for high thrust or reinforced belt drive for highest speeds



Parallel motor mounts



Metric and Imperial graduated scales integral to the LCR body frame are among the many custom modifications available.



SPECIFICATIONS

Addressing applications which involve positioning of smaller payloads within a very small space envelope, the LCR30 is the ideal solution for OEM instrument manufacturers. The LCR30 offers a reduced overall cost of ownership and a complete solution including amplifier/drive, motor, actuator, bearings, seals, and limit sensors.



LCR Screw-Driven Performance by Profile Size

Specification	Units	LCR30	
Grade		S (Square Rail)	B (Bushing)
Bidirectional Repeatability	mm	± 0.1	± 0.2
Duty Cycle	%	100	100
Max. Acceleration*	m/s ²	20	20
Normal Load	N	90	45
Moment Load			
Roll	Nm	2.6	0.3
Yaw		6.5	0.8
Pitch		8.2	1.5
Max. Axial Load	N	70	70
Screw Efficiency			
2.0 mm Lead	%	50	50
10.0 mm Lead		70	70
Breakaway Torque	mNm	30 (2 mm lead)	40 (2 mm lead)
		45 (10 mm lead)	90 (10 mm lead)
Screw Diameter	mm	6.4	6.4
Coefficient of Friction		0.02	0.10
Carriage Weight	N	0.5	0.5
Base Moment of Inertia			
Ixx	mm ⁴	39,778	36,162
Iyy		46,273	42,066

*Do not exceed allowable axial and moment loading.

Model	LCR30
Width x Height (mm)	30 x 40
Repeatability (±mm)	0.1
Max. Speed² (mm/s)	150
Max. Travel Length (mm)	600
Screw Lead Options (mm/rev)	2, 10

¹ Specifications for square rail design, bushing version reduces normal load to 50% value.

² Specifications for fast screw lead, the fine screw lead will reduce maximum speed.

Performance by Travel Length

LCR30 Screw-Driven Performance by Travel Length

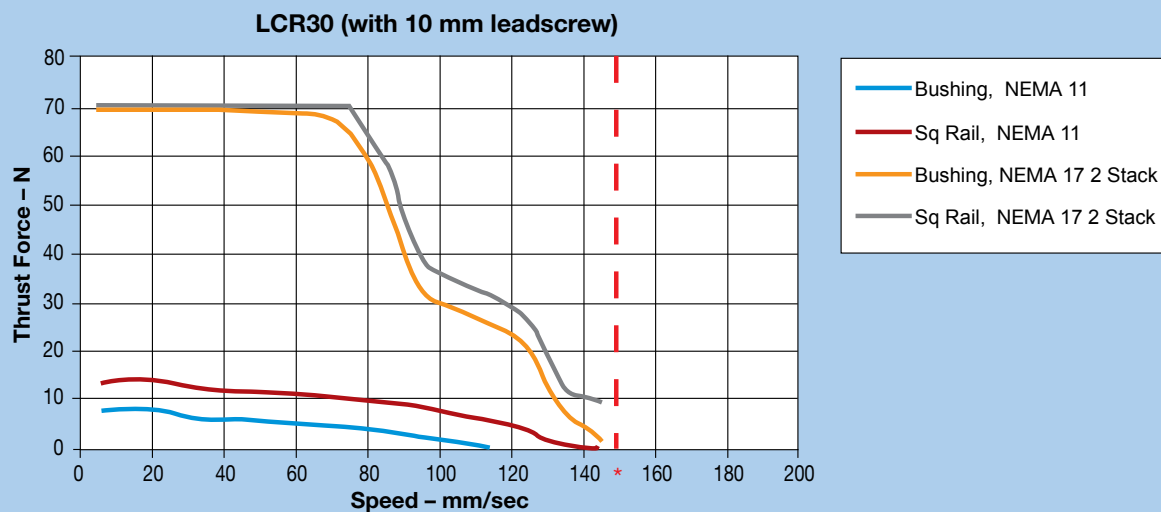
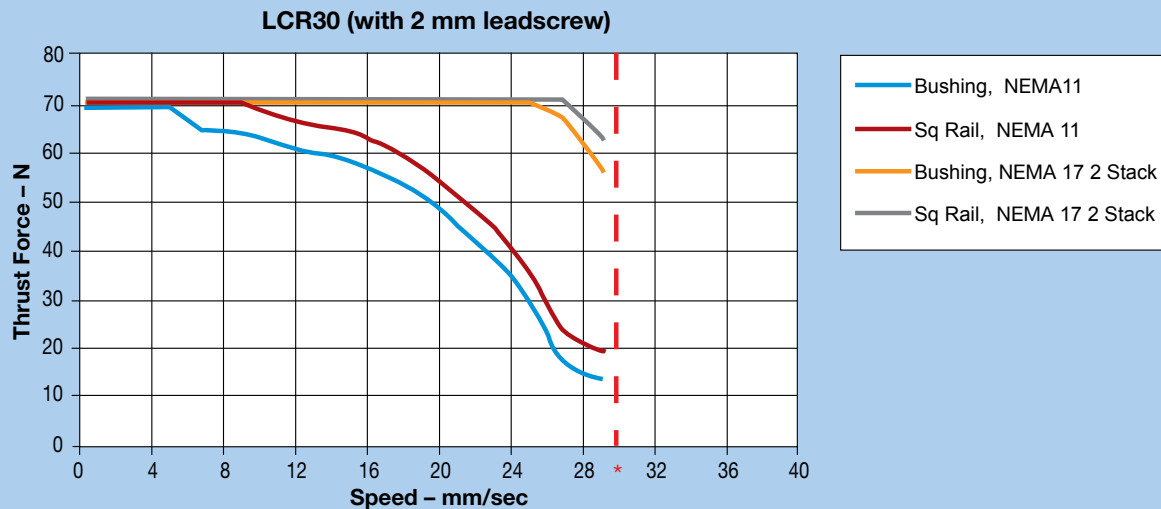
Travel	Max. Screw Speed*	Max. Linear Speed (mm/s)		Table Weight **		Input Inertia 10 ⁻⁷ kg-m ² ***	
	(RPS)	2.0 mm	10.0 mm	M11 (kg)	M17 (kg)	2.0 mm	10.0 mm
25	15	30	150	0.70	0.80	4.11	5.26
50	15	30	150	0.74	0.84	4.42	5.57
75	15	30	150	0.78	0.88	4.8	5.88
100	15	30	150	0.83	0.93	5.1	6.19
125	15	30	150	0.87	0.97	5.36	6.50
150	15	30	150	0.91	1.01	5.67	6.82
175	15	30	150	0.95	1.05	5.99	7.13
200	15	30	150	0.99	1.09	6.3	7.44
225	15	30	150	1.03	1.13	6.61	7.75
250	15	30	150	1.07	1.17	6.92	8.06
275	15	30	150	1.12	1.21	7.23	8.37
300	15	30	150	1.16	1.26	7.54	8.68
325	15	30	150	1.20	1.30	7.85	8.99
350	15	30	150	1.24	1.34	8.16	9.31
375	14	28	140	1.28	1.38	8.47	9.62
400	12	24	120	1.32	1.42	8.79	9.93
425	11	22	110	1.36	1.46	9.11	10.24
450	10	20	100	1.40	1.50	9.41	10.56
475	9	18	90	1.45	1.54	9.72	10.86
500	9	18	90	1.49	1.59	10.03	11.17
525	8	16	80	1.53	1.63	10.33	11.49
550	7	14	70	1.57	1.67	10.65	11.80
575	7	14	70	1.61	1.71	10.97	12.11
600	6	12	60	1.65	1.75	11.28	12.42

* Maximum Screw Speed of 15 rps is based upon stepper motor resonance zones, for higher speeds please consult product maintenance manual.

** For parallel motor configurations: table weight increases by 0.081 kg for NEMA 11, 0.101 kg for NEMA 17, 0.090 kg for SM 16.

*** Input inertia increases by 2.05 10⁻⁷ kg-m² with parallel motor mounts.

LCR30 Linear Speed-Force Performance



* Maximum speed with Parker P2™ stepper drive at 24VDC. To achieve faster speeds, motor must be connected to a drive with active damping, electronic viscosity, or other advanced anti-resonance zone features.

Refer to critical speed limitations for specific stroke length maximum speeds.

DIMENSIONS

Download 2D & 3D files from
www.parker.com/emn

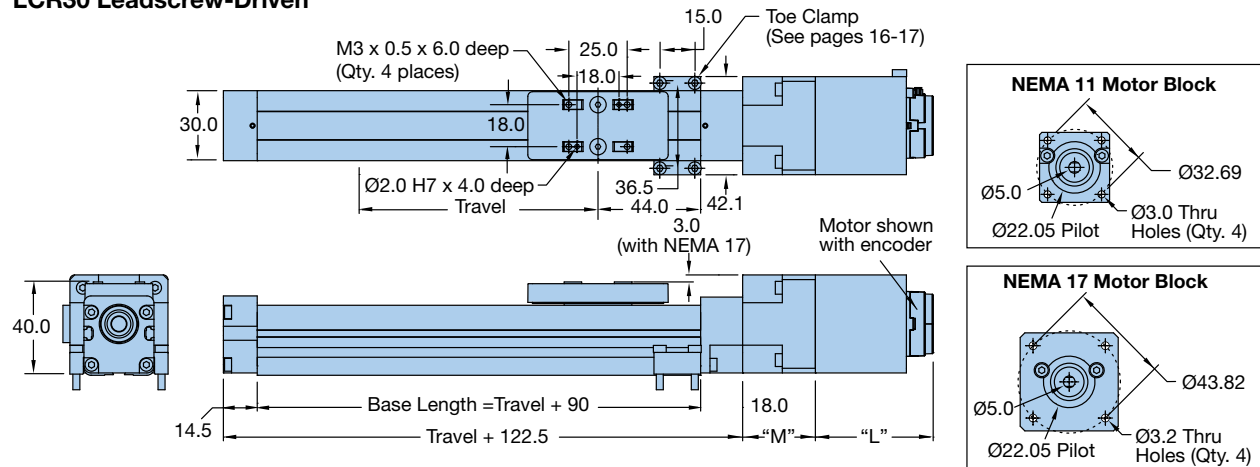


DIMENSIONS

LCR Series Leadscrew-Driven

Screw Driven
Tables

LCR30 Leadscrew-Driven



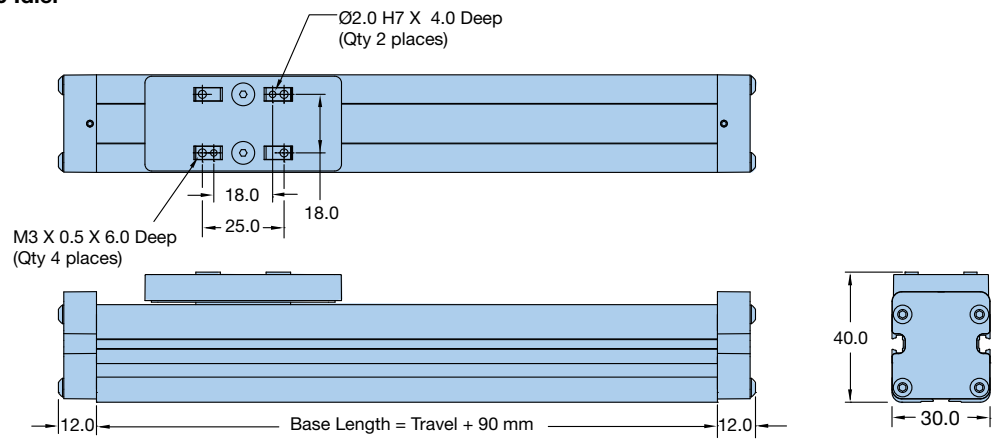
Motor Option	Encoder Option	M	L	Description
N11	E0	30.6	0	NEMA 11 Motor Mount
M11	E0	30.6	62.5	NEMA 11 Stepper Motor
M11	E2	30.6	62.5	NEMA 11 Stepper Motor with Encoder
N17	E0	31.2	0	NEMA 17 Motor Mount
M17	E0	31.2	51.0	NEMA 17 Stepper Motor
M17	E2	31.2	51.0	NEMA 17 Stepper Motor with Encoder

Free sizing and selection support
from Virtual Engineer at
virtualengineer.com

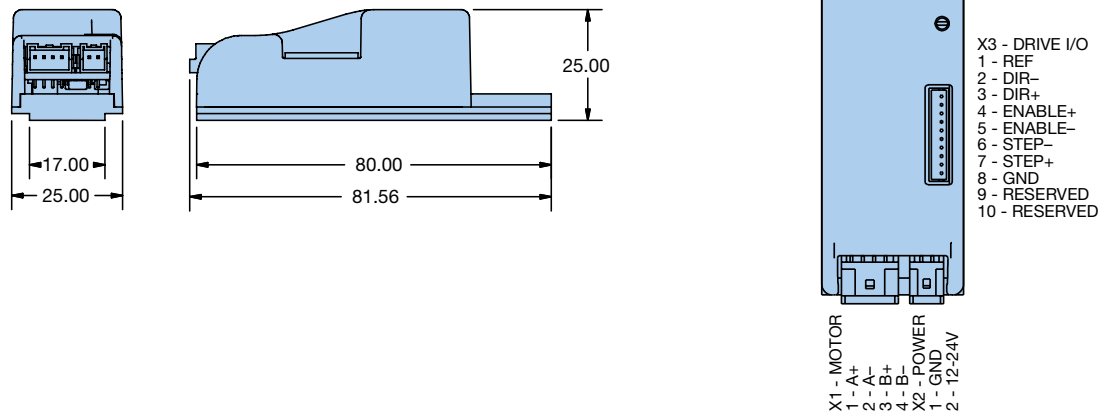


Idler Unit – Square Rail Models only

LCR30 Idler



P2™ Stepper Drive



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Parallel Motor Mounts

Tight on machine space?

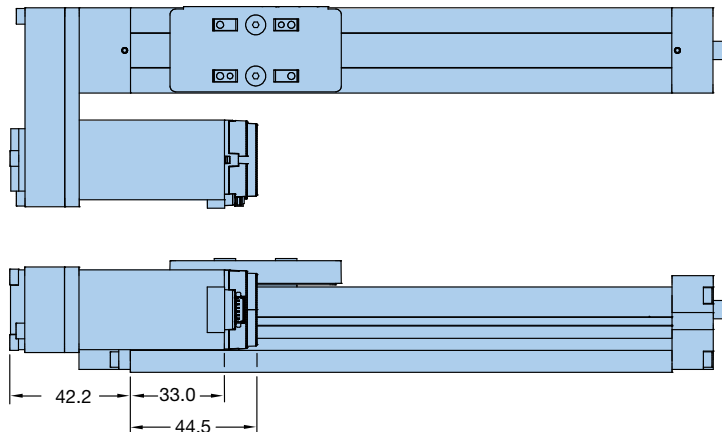
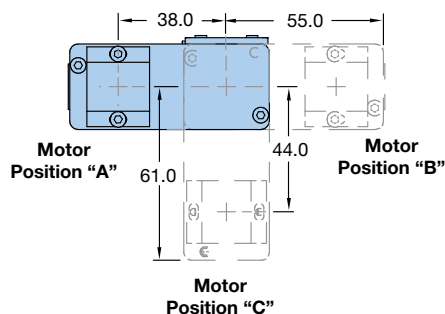
Select a parallel motor mount to shorten the overall length of the LCR 30 per a given stroke. In using this motor mount option the motor is positioned along side the positioner in location's A, B, or C as denoted below.



LCR30 with NEMA 11 Motor

N11 Option: Mount only

M11 Option: Mounted NEMA 11 stepper



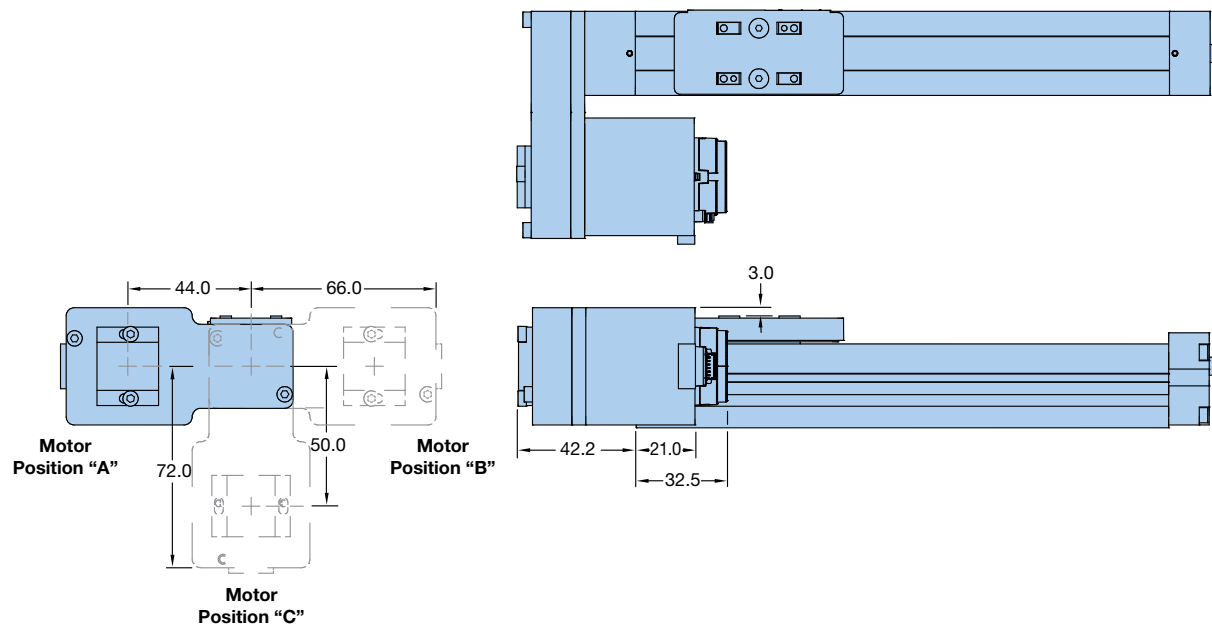
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LCR30 with NEMA 17 Motor

N17 Option: Mount only

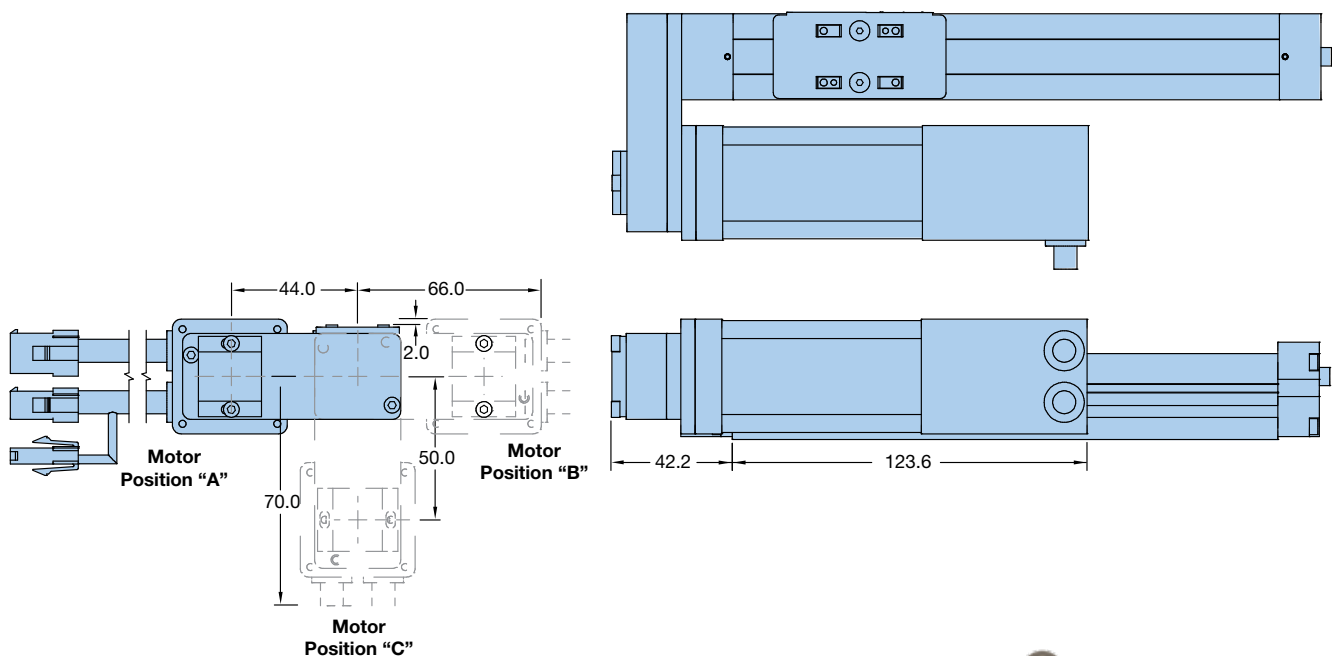
M17 Option: Mounted NEMA 17 stepper



LCR30 with SM16 Motor

N16 Option: Mount only

M16 Option: Mounted SM16 servo motor



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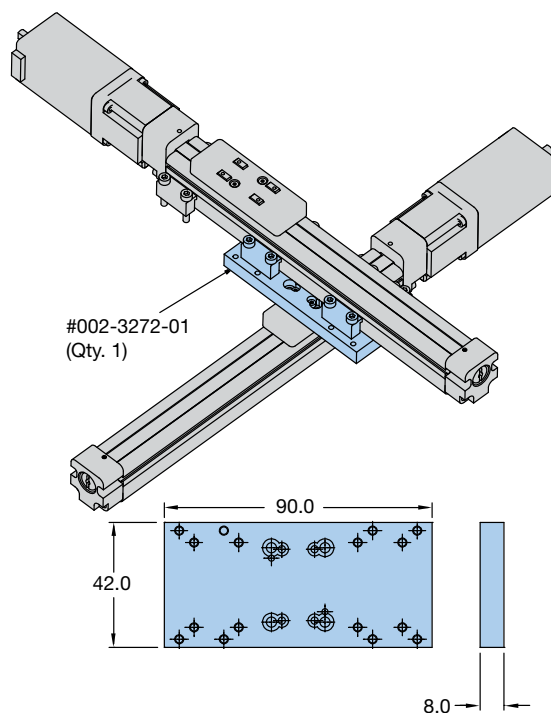
X-Y and X-Z Brackets

Dimensions — mm

X-Y Bracket for LCR30 Screw-Driven Units

#002-3272-01

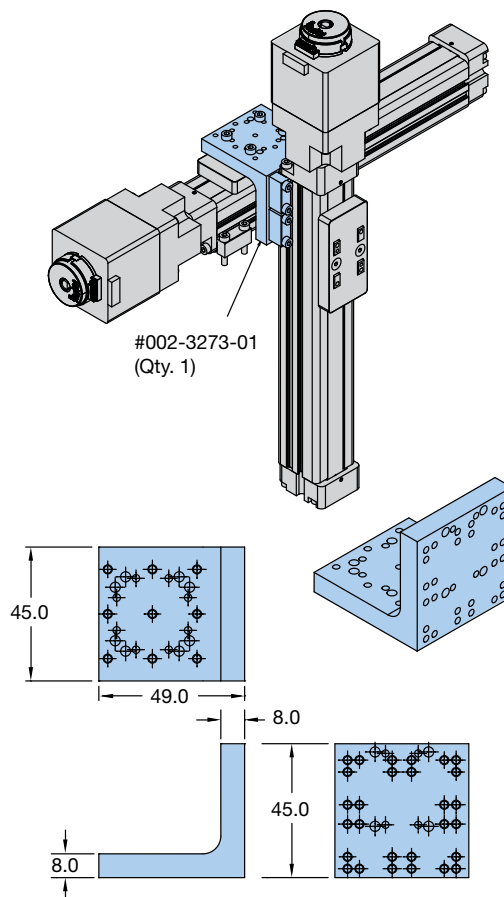
(includes four toe clamps with fasteners)



X-Z Bracket for LCR30 (All Units)

#002-3273-01

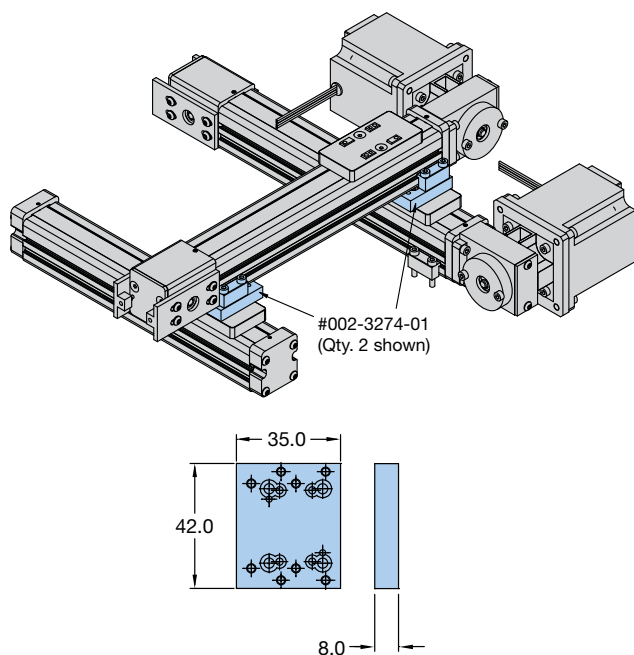
(includes four toe clamps with fasteners)



X-Y Bracket for LCR30 Belt-Driven Units

#002-3274-01

(includes two toe clamps with fasteners)



Toe Clamps



Toe clamp kits include socket head fasteners to mount clamp.

Part Number	Quantity
002-3233-01	1
002-3233-04	4
002-3233-100	100

Encoder

When using stepper motors, positional feedback is readily available with the optional rotary encoder. The robust magnetic encoder withstands vibration and provides easy in-position confirmation.



Encoder

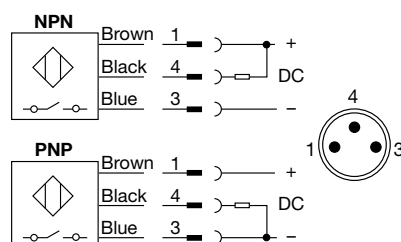
Part Number	Counts/rev	Bore
003-4590-01	400	4 mm
003-4590-02	400	5 mm
003-4590-03	500	4 mm
003-4590-04	500	5 mm
003-4590-05	400	6.35 mm
003-4590-06	500	6.35 mm

Encoder Cable (6-pin differential)

006-2398-1.0	1m high flex with flying leads
006-2398-3.0	3m high flex with flying leads

End-of-Travel Limit Sensors

Limit sensors offer home and end of travel protection in a flush mount design that minimizes the overall width of the LCR series. The limit sensors are available standard as NPN or PNP with normally open or normally closed designs.

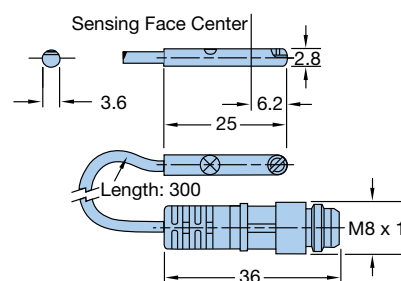
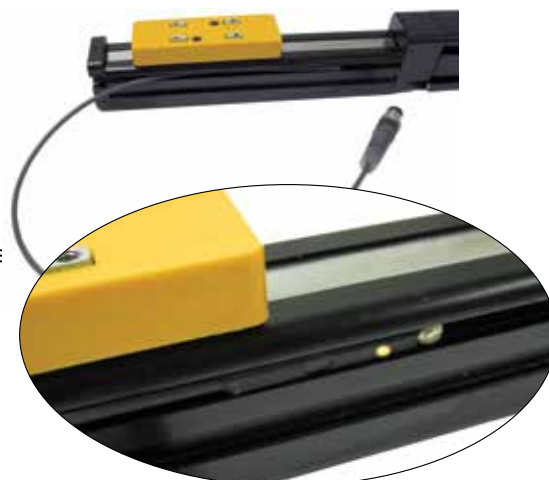


Specifications

Operating Voltage: 10-30 VDC
Repeatability: $\leq \pm 0.1$ mm
EMC: EN 60 947-5-2
Short circuit protections: Yes
Reverse Polarity Protection: Yes
Enclosure Rating: IP 67
Operating Temperature Range: -25° to 75° C (-13° to 167° F)

Wiring Connection

Pin	Wire	Function
1	Brown	+ VDC
4	Black	NO
3	Blue	- VDC



Part Number	Logic	Cabling
P8S-P8SAMQFAZ	PNP N.C.	3 meter flying leads
P8S-P8SAMQCHZ	PNP N.C.	0.3 meter with M8
P8S-P8SAMMFAZ	NPN N.C.	3 meter flying leads
P8S-P8SAMMCHZ	NPN N.C.	0.3 meter with M8
P8S-P8SAMPFAZ	PNP N.O.	3 meter flying leads
P8S-P8SAMPCHZ	PNP N.O.	0.3 meter with M8
P8S-P8SAMNFAZ	NPN N.O.	3 meter flying leads
P8S-P8SAMNCHZ	NPN N.O.	0.3 meter with M8
003-2918-01	All cabling	5 meter extension cable for M8 connections

ORDERING INFORMATION

LCR Series

ORDERING INFORMATION

Fill in an order code from each of the numbered fields to create a complete part number.

	①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩	⑪
Order Example:	LCR	22	LN10	0075	S	S	A	N08	E0	L1	A1

① Series LCR Series	⑦ Motor Mount Position I Inline A Parallel mount, Position "A"* B Parallel mount, Position "B"* C Parallel mount, Position "C"* R Belt drive, motor right L Belt drive, motor left — No motor *Not available with size BLT0 drive train options.	⑩ Home & End-of-Travel L0 No home or limit sensors L1 3 NPN sensors (1 N.O.; 2 N.C.) L2 1 NPN sensor (N.O.) L3 3 PNP sensors (1 N.O.; 2 N.C.) L4 1 PNP sensor (N.O.) L5 3 NPN sensors (2 N.O.; 1 N.C.) L6 1 NPN sensor (N.C.) L7 3 PNP sensors (2 N.O.; 1 N.C.) L8 1 PNP sensor (N.C.)
② Size (width in mm) 30 30 mm wide profile	⑧ Motor N00 No motor N11 NEMA 11 motor mount ²⁾ N16 SM16 motor mount ³⁾ N17 NEMA 17 motor mount ³⁾ N23 NEMA 23 motor mount ³⁾ M11 NEMA 11 stepper motor ²⁾ M16 SM162AE-N10N servo motor ³⁾ M17 NEMA 17 stepper motor ³⁾ M23 NEMA 23 stepper motor ⁴⁾ ²⁾ Not available on BLT0 belt drive version ⁴⁾ Only available on BLT0 belt drive version	⑪ Stepper Drive/Amplifier A0 No P2 Drive A1 P2 Stepper Drive/Amplifier A2 P2 Stepper Drive/Amplifier with 1 meter cable set* (flying leads) A3 P2 Stepper Drive/Amplifier with 1 meter cable set* to ACR A4 P2 Stepper Drive/Amplifier with 1 meter cable set* to 6K *For longer cable needs please order the A1 option and order cables separately
③ Drive Train IDLR Idler unit; no drive mechanism LN02 2 mm leadscrew with in-line motor mount LN10 10 mm leadscrew with in-line motor mount (available with LCR30 size only) BLT0 Single axis belt drive	④ Travel Length (mm) xxxx 25 mm increments of travel LCR30 Screw-Driven: 25 to 600 mm LCR30 Belt-Driven: 25 to 1000 mm	
⑤ Bearing Type S Square rail bearing B Glider bushing bearing	⑥ Environmental Protection S Strip seal protection (standard)	
	⑨ Motor Encoder Option E0 No encoder E2 500 line encoder* *Only available with M11, M17, and M23 motor options	

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