LCR Series Quick Start Guide

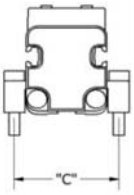
Part Number 102-4339-01
Rev 1 June 15, 2011

This document contains minimum information to install and run LCR positioners. Download the complete LCR series product manual no. 102-4109-01 from www.parkermotion.com/LCR .

Warning: To avoid damage to nut-carriage assembly, DO NOT BACK DRIVE (push by hand) the carriage. Carriage should only be moved by input shaft coupled to the screw.

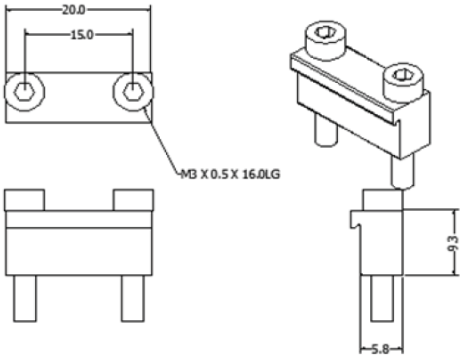
Step 1 Installation/Mounting:

The LCR22/30 are mounted via accessory toe clamps part number 002-3233-XX. They engage the bottom t-slot in the base profile and utilize qty 2 M3 x 0.5 x 16 mm long socket head cap screws. Position the toe clamps no further than 12" apart along the side of the extrusion.



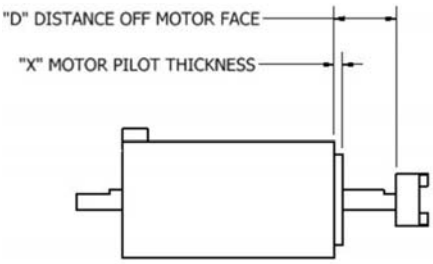
C = 28.5mm for LCR22
C = 36.5mm for LCR30
Minimum Suggested tap depth = 7.0mm

Part Number	Qty	Fits
002-3233-01	1	LCR22 & LCR30
002-3233-02	2	LCR22 & LCR31
002-3233-04	4	LCR22 & LCR32



Step 2 Motor Mounting information (Skip this step if your unit arrived with an assembled motor) :

Screw driven actuators : To provide proper engagement on non factory mounted motors and avoid preloading motor bearing, the coupling half must be accurately placed on motor shaft. The set screw should be aligned to flat on motor shaft and torque to 0.5 N-m.

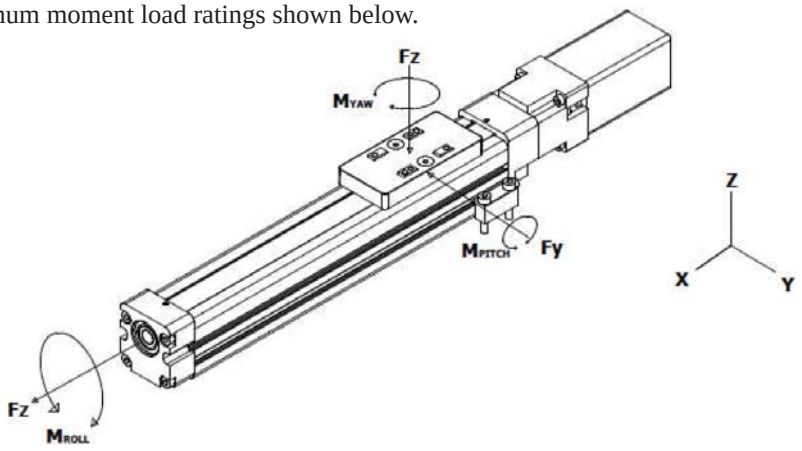


Motor Coupling Location			
Table Part Number	**Nema Size**	**"D" mm (in)**	**"X" mm (in)**
LCR22-LN02xxxxN11E0...	Nema 11	14.7 (0.58)	2.0 (0.08)
LCR30-LNxxxxxxN11E0...	Nema 11	14.2 (0.56)	2.0 (0.08)
LCR30-LNxxxxxxN17E0...	Nema 17	14.8 (0.58)	2.0 (0.08)

Step 3 Payload mounting to LCR:

Using the M3 x 0.5 (LCR30) -or- M2.0 x 0.4 (LCR22) in the load plate. When fastening to load take precaution in using screws with no more than 5.5mm of thread engagement, to prevent damage to positioner from penetration rhrough the mounting plate. It is also important to verify the final mounted load does not exceed maximum moment load ratings shown below.

Moment	LCR22 Square Rail Bearing	LCR22 Glider Bushing Bearing	LCR30 Square Rail Bearing	LCR30 Glider Bushing Bearing
M_{roll} (Nm)	0.9	0.1	2.6	0.3
M_{pitch} (Nm)	2.5	0.8	8.2	1.5
M_{yaw} (Nm)	2	0.3	6.5	0.8



Moment Factor:

Take each actual moment load and divide by the corresponding maximum allowable moment = moment factor. Then sum all the moment factors and the result must be less than 1.8.

Example: $M_{roll} = 0.5/2.6 + M_{pitch} = 2.5/8.2 + M_{yaw} = 1.0 / 6.5 \Sigma = 0.7$ which is less than 1.8 so the load is acceptable.

Step 4 Wiring the motor to the drive (Skip this step if your LCR came with ion drive mounted):

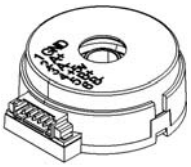
The following charts provide the needed information for wiring the motor to your stepper drive.

Specifications for configured part numbers		LCR22-LN02xxxxN11E0... LCR30-LNxxxxxN11E0...	LCR30-LNxxxxxN17E0...	LCR22-BLTxxxxxN17E0... LCR30-BLTxxxxxN17E0...	LCR30-BLTxxxxN23E0...	LCR30-LN10xxxxN16Ex... LCR30-BLTxxxxxN16Ex...
Rated Torque	mN-m	100	360	440	990	330/990 (Peak)
Rated Current (Continuous)	Amps (Peak of Sine)/Phase	0.67	1.67	1.67	2.33	2.6 (Peak of Sine)
Max Current (peak)	Amps/Phase	0.94	2.36	2.36	3.26	7.8 (Peak of Sine)
Rated Resistance	Ohms/Phase	8.6	8.6	1.6	0.88	6.5
Rated Inductance	mH	6.7	3.2	3.2	2.7	1.39
Rotor Inertia	g-cm^2	18	61	68	275	180
Phases	#	2	2	2	2	4 pole
Step Angle	Degrees	1.8	1.8	1.8	1.8	NA
Wire Color (Motor Connector Pin #)	A+ (Pin 1)	Red	Red	Red	Black	See chart below
Wire Color (Motor Connector Pin #)	A- (Pin 2)	Blue or Yellow	Blue	Blue	Red	
Wire Color (Motor Connector Pin #)	B+ (Pin 3)	Green or Gray	Green	Green	White	
Wire Color (Motor Connector Pin #)	B- (Pin 4)	Black or Green	Black	Black	Green	

M16E1 Power Connector		M16E0 Feedback Connector									
Pin #	Function	Pin #	Wire Color	Function	Pin #	Wire Color	Function	Pin #	Wire Color	Function
1	Phase A	1	Orange	Index +	6	Green/White	Temp -	11	Blue/White	Ch B-
2	Phase B	2	Orange/White	Index -	7	Yellow/White	Cha A-	12	Blue	Ch B+
3	Phase C	3	Black & Black/White	Enc. Return / Hall Return	8	Yellow	Cha A+	13	Green	Hall Ch 2
4	Ground	4			9	Brown	Hall Ch 1	14	Violet	Hall Ch 3
		5	Red & Brown/White	+5 & -5 Hall	10	Violet/White	Temp +			

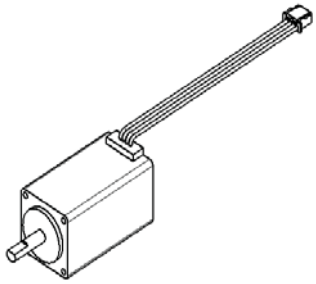
Step 5 Wiring the encoder to the drive (Skip this step if your LCR has "E0" or "M16" motor options):

The following charts provide the needed information for wiring the encoder to your stepper drive.



Encoder Cable Pin Out		
Pin	Color	Function
1	White	Ground
2	Green	A
3	Yellow	A-
4	Brown	+5 VDC
5	Blue	B
6	Red	B-

Specifications	Units	Min.	Typ.	Max.
Supply Current	mA	-	22	30
Supply Voltage	V	4.5	-	5.5
High Level Voltage	V	2.4	3.4	-
Low Level Voltage	V	-	0.2	0.4
Rise Time	ns	-	500	-
Fall Time	ns	-	100	-
Frequency Response	kHz	-	-	44

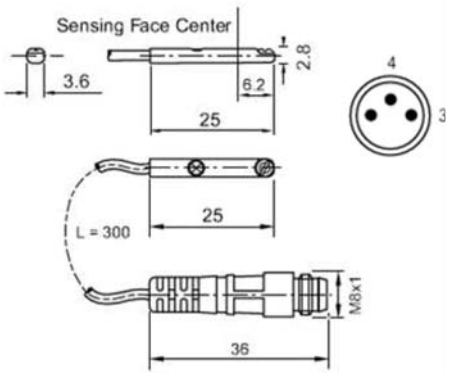


Stepper Motor Switching Sequence (viewed from front shaft end)				
CCW	A+	A-	B+	B-
Step 1	+	-	+	-
Step 2	+	-	-	+
Step 3	-	+	-	+
Step 4	-	+	+	-

Step 6 Wiring the limit sensors to the drive (Skip this step if your LCR has "L0" options):

The following charts provide the needed information for wiring the sensors to your stepper drive.

Specification	Model Configurable Options			
	L3, L7, L8	L1, L5, L6	L3, L4, L7	L1, L2, L5
Switch Type	Norm. Closed	Norm. Closed	Norm. Open	Norm. Open
Logic	PNP	NPN	PNP	NPN
Type	Electronic			
Operating Voltage	10 - 30 VDC			
Voltage Drop	≤ 2.5 VDC			
Continuous Current	≤ 70 mA			
Switching Frequency	1000 Hz			
Operating Temperature Range	- 25 C to +75 C (-13 F to 167 F)			
Connector	PUR Cable with 8 mm connector			
Cabling	0.3 with M8			
Extension Cable Part Number	006-2918-01 (5 m long cable)			



Wiring Connection		
Pin	Wire Color	Function
1	Brown	+VDC
4	Black	N.O.
3	Blue	-VDC