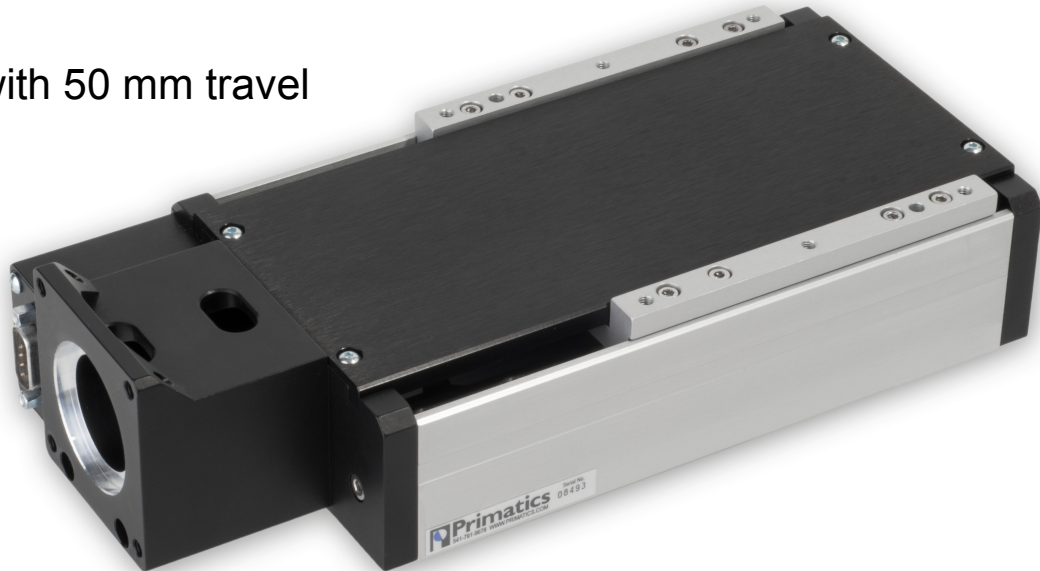


PCL50 with 50 mm travel



### Features

- Travel to 400mm
- 5mm or 10mm lead ballscrew drivetrain
- 15kg payload capacity
- NEMA23 motor mount
- Limit sensors
- Compatible with PLG110 mounting pattern
- 50mm tall single axis, 100mm tall XY stack
- Direct stacking on PCL65
- All stages tested for specification compliance

### Overview

Primatics PCL50 series are value priced, high precision linear motion stages. A backlash free precision ground ballscrew drivetrain provides precise positioning over travels of 50 to 400mm. The NEMA23 motor mount supports common servo or stepper motors.

### Applications

The PCL50 series is ideal for applications such as precision assembly, inspection and material handling. They can be used individually or directly stacked for XY configurations.

### Features

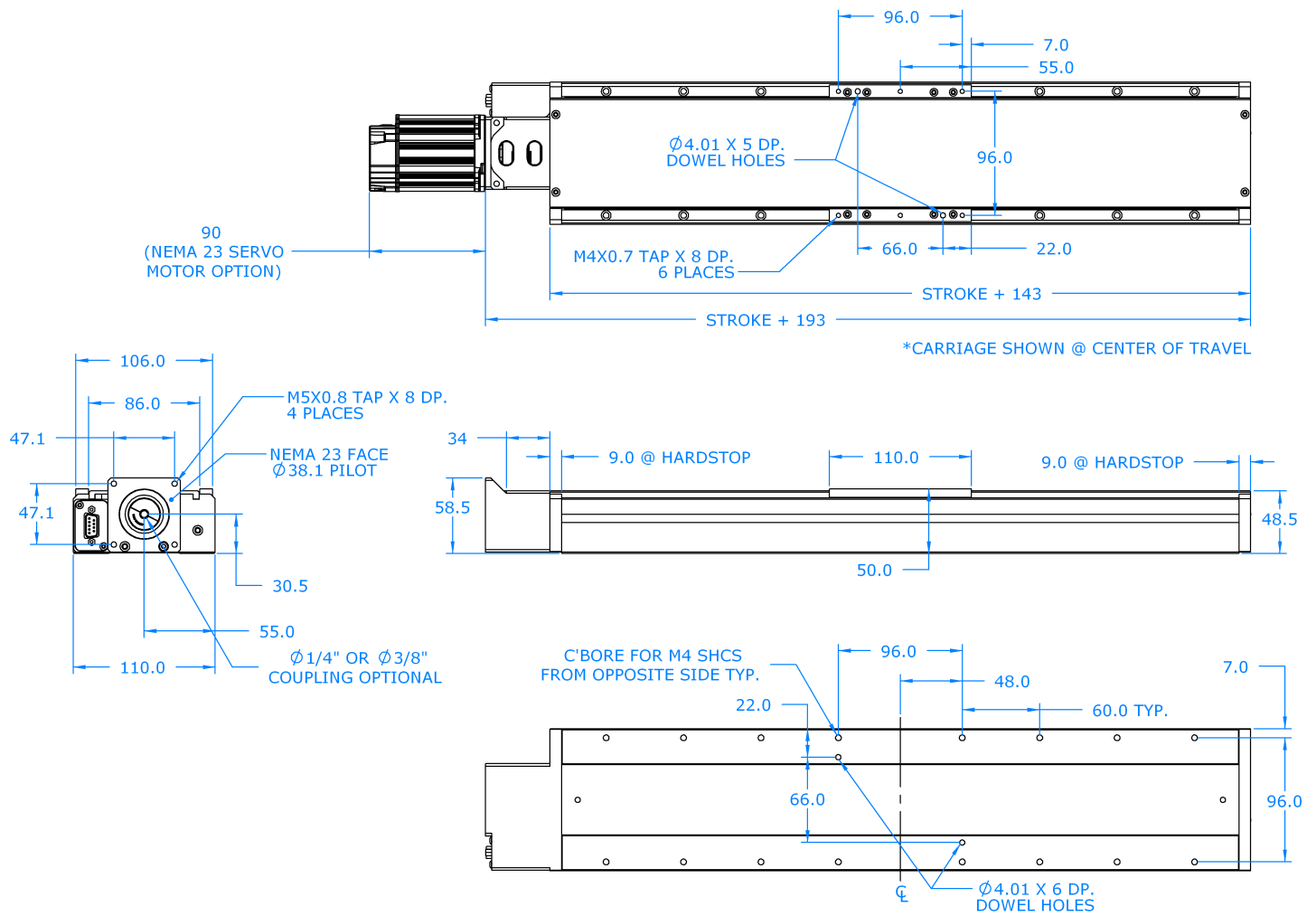
Standard features include forward and reverse limit sensors, standard NEMA23 motor mount, and a protective hard cover. The mounting patterns are compatible with the Primatics PLG110 linear stages and the PDR110 rotary stages. A PCL50 can be directly stacked to a PCL65 for XY configurations

### Options

The ballscrew drivetrain has a 5mm lead. A 10mm lead ballscrew is optional. A high performance brushless servo motor with 4000 line encoder is a standard option or the user can supply their own NEMA23 motor and/or coupler.



## Dimensions



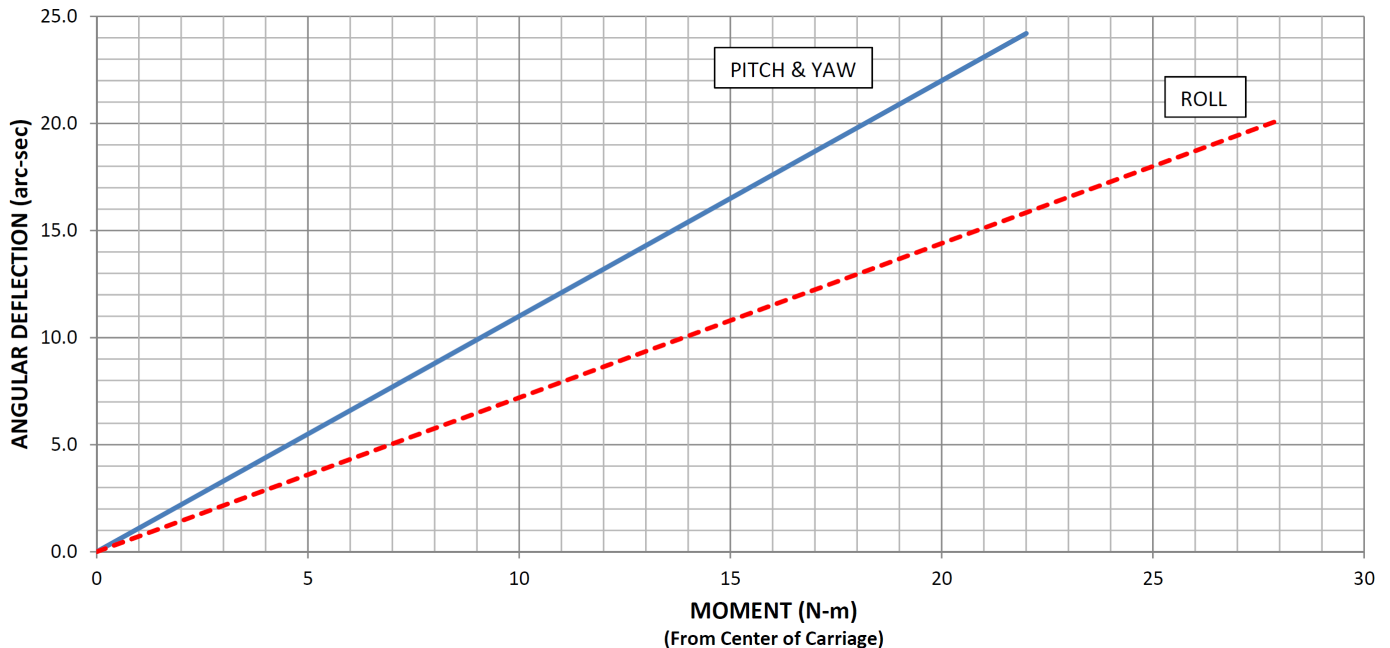
## Specifications

Specifications	Notes	PCL50-050	PCL50-100	PCL50-200	PCL50-300	PCL50-400
Travel (mm)		50	100	200	300	400
Positional Accuracy Over Total Travel ( $\mu\text{m}$ )	1, 2, 3, 5	+/- 5	+/- 6	+/- 7	+/- 8	+/- 9
Bi-directional Repeatability ( $\mu\text{m}$ )	1, 2	5mm lead : +/- 1 ; 10mm lead : +/- 1.5				
Straightness of Travel Over Total Travel ( $\mu\text{m}$ )	2, 5	+/- 4	+/- 4	+/- 6	+/- 7	+/- 8.5
Flatness of Travel Over Total Travel ( $\mu\text{m}$ )	2, 5	+/- 4	+/- 4	+/- 6	+/- 7	+/- 8.5
Max Speed (mm/sec)		300 with 5mm lead, 600 with 10mm lead				
Direct Loading Capacity (kg)		25				
Rotational Inertia ( $\text{kg}\cdot\text{m}^2$ )	4	6.17E-06	7.00E-06	8.67E-06	1.03E-05	1.20E-05
Pitch Moment Capacity (N-m)	5	22				
Roll Moment Capacity (N-m)	5	27				
Yaw Moment Capacity (N-m)	5	18				
Stage weight (kg)	4	2.6	3	3.8	4.6	5.4

Notes: 1 - Measured with NEMA23 servo motor with 16000 cts/rev; 2 - Measured 50mm above center of carriage; 3 - Slope corrected; 4 - With coupling and without motor; 5 - Stage affixed to flat continuous surface. All specifications subject to change without notice.

Stage Information	PCL50
Maximum Acceleration (G's, unloaded)	0.6
Maximum Allowable Drivetrain Torque (N-m)	0.9
Breakaway Torque (N-m)	0.05
Running Torque (N-m)	0.04
Life at Listed Specifications (Km)	5000

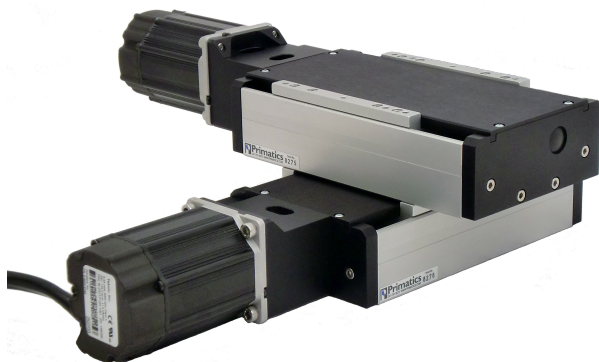
## Carriage Stiffness



## Motor / Encoder, Limit Data

Parameter	Notes	Value
<b>Servo Motor (option M2)</b>		
Motor Type		Brushless Servo
Continuous Torque (N-m)	1	0.46
Continuous Current (Arms)	1	3.9
Peak Torque (N-m)	2	0.9
Peak Current (Arms)	2	7.5
Torque Constant (N-m/Arms)		0.12
Back EMF Constant (V/Krpm)		11.7
Winding Resistance (ohms)		0.62
Winding Inductance (mH)		0.92
Thermal Resistance (C/W)		1.7
Poles		8
Rotor Inertia (kg-m <sup>2</sup> )		1.41 E-5
Hall Sensor Power		5 to 24VDC, 50mA
Hall Outputs		Open collector, current sinking, 20mA max
Weight (kg)		0.93
<b>Encoder (option M2)</b>		
Encoder power		5VDC +/- 5%, 150mA
Output		Square wave differential line driver
Index		Synchronized pulse, duration equal to one resolution bit
<b>Limit Sensors</b>		
Limit Power		5 to 24VDC, 50mA
Output - L1 and L2 options		Current sinking, 100mA max
<b>Brake Option</b>		
		Apply 24VDC, 200mA to release brake

Notes: 1 - At 25°C maximum temperature rise; 2 - At 10% duty cycle and 1 second maximum. All specifications subject to change without notice.

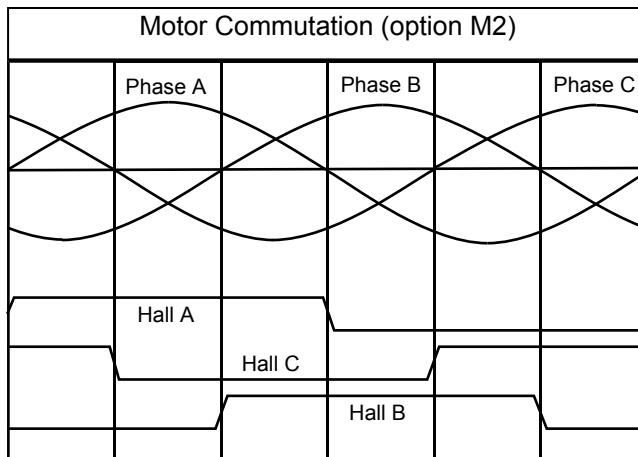


XY stack of two PCL50's with 50mm travel

## Connectors

Limits	
Connector Type: Dsub, 9 pins Mates with Dsub, 9 sockets	
Pin	Function
1	Limit Power
2	Limit Power Return and Signal Common
3	Forward Limit - Activates at Full Forward Travel
4	Reverse Limit - Activates at Full Reverse Travel
5	No connection
6	No connection
7	No connection
8	No connection
9	No connection

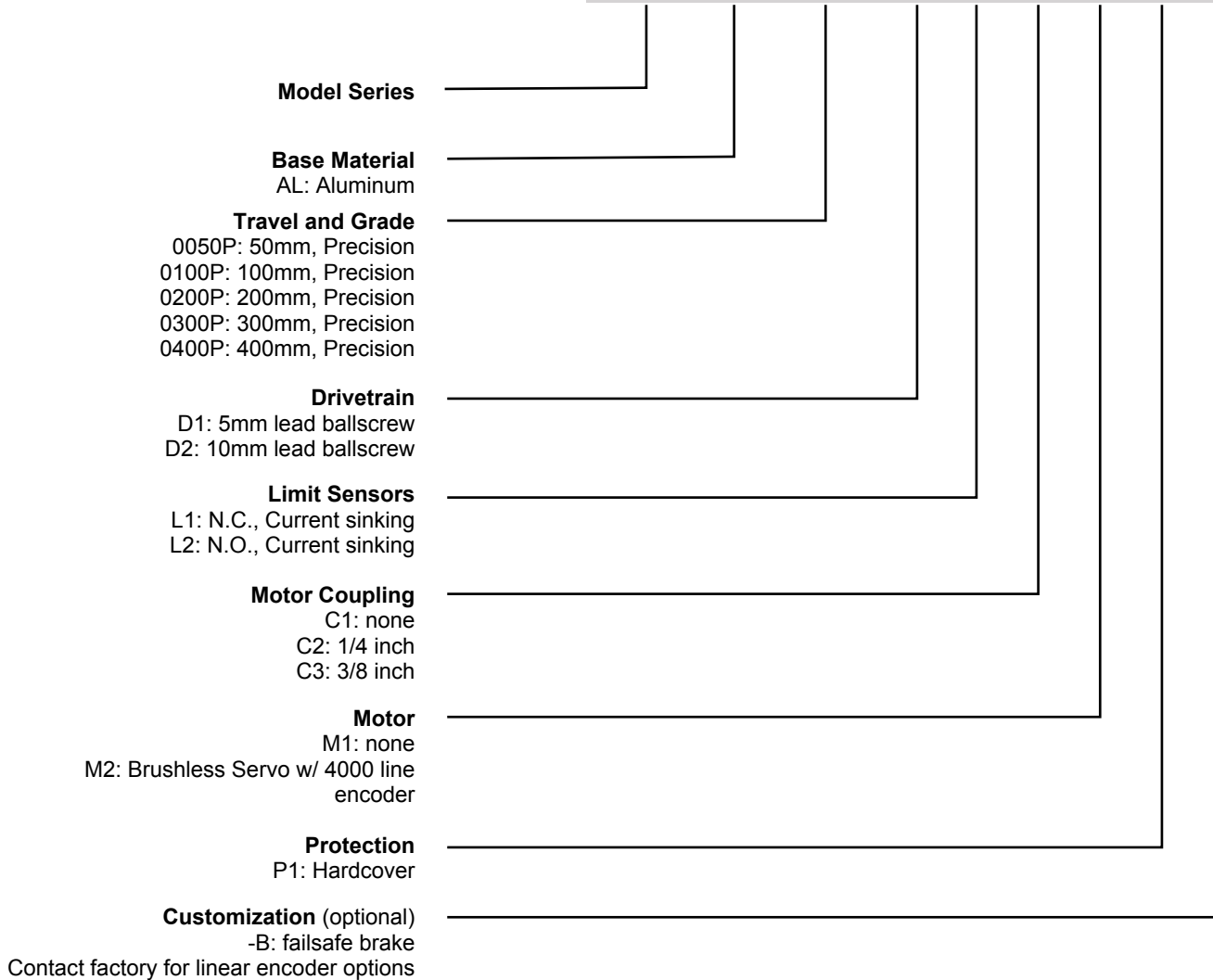
Brake	
Connector Type: Molex Mini-Fit Jr. Mates with Molex 39-01-2021 housing Cable length: 12 inches	
Pin	Function
1	Brake +
2	Brake -



Servo Motor (option M2)	
Connector: Cannon 192926-0480 Size 20, 28 pins	
Pin	Function
A	Motor Phase A
B	Motor Phase B
C	Motor Phase C
D	Motor Shield
E	Encoder 5V
F	Encoder Ch A+
G	Encoder Ch A-
H	Encoder Ch B+
J	Encoder Ch B-
K	Encoder Shield
L	Limit Power
M	Limit Return and Signal Common
N	Not Used
P	(Optional Brake+ output)
R	(Optional Brake- output)
S	Signal Shield
T	Hall V+
U	Hall V-
V	Encoder Power Return
W	Encoder Ch I+
X	Encoder Ch I-
Y	Forward Limit - Activates at Full Forward Travel
Z	Reverse Limit - Activates at Full Reverse Travel
a	KEY
b	Hall A
c	Hall B
d	Not used
e	Hall C

## PCL50 Model Configuration

Example: **PCL50 AL 0200P D1 L1 C2 M2 P1**



Not all configurations are valid - consult factory for assistance

## Accessories

Model	Description
CABLE-SENSORS-PIGTAIL	Cable assembly for Limit connector. Un-terminated at user end. 12 ft standard.
CABLE-SERVO-STAGE-PIGTAIL	Cable assembly for M2 option. Un-terminated at user end. 12 ft standard
CABLE-SERVO-STAGE-DMC40X0-I200	Cable assembly for M2 option for use with Galil DMC-40x0-I200 with trap servo drives. 12 ft standard.
CABLE-SERVO-STAGE-DMC40X0-I200-SINE	Cable assembly for M2 option for use with Galil DMC-40x0-I200 with sine servo drives. 12 ft standard.
CABLE SERVO STAGE MC4U W/ HALLS	Cable assembly for M2 option for use with ACS MC4U. 12 ft standard.
CABLE-SERVO-ACS-CMNT-DIG	Cable assembly for M2 option for use with ACS MC4U. 12 ft standard.