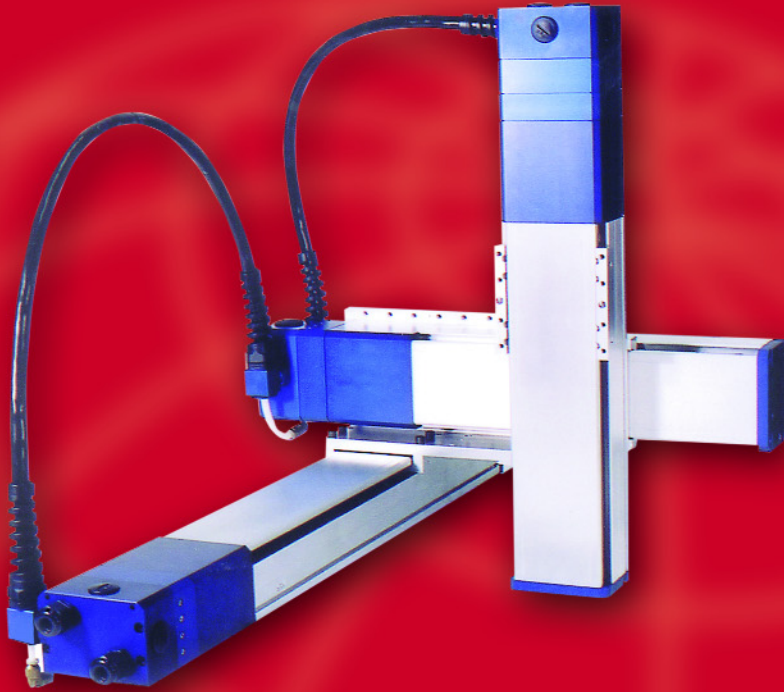




A DOVER COMPANY



SLA Integrated Automation



eCylinder™ and eRotary™

ELECTRIC PRODUCTS
APRIL 2006



www.robohandsla.com

Look for
our exclusive
DIRECTCONNECT
No Adapter Plates!



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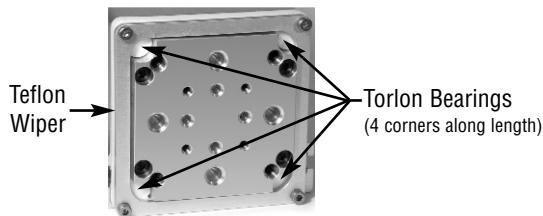
DIRECTCONNECT™

Robohand's **DIRECTCONNECT™** technology provides a standardized pattern for simplified mounting to Robohand slides and thrusters – meaning no adapter plates are required!



NEW

Precision Handling Performance for Offset Loads



- Designed for offset loads
- Low cost
- Fully servoed built-in control
- Completely integrates with SLA System for single- or multi-axis combinations

Mechanical

- Multiple speed and force ranges available
- No outriggers required to support offset loads
- Multiple mounting methods
- Smaller installation footprint than other comparable products
- DirectConnect™ mounting pattern

Controls

- Free PC programming software
- Absolute position sensor – no homing required!
- Operates over RS-232 for PC control
- Additional discrete I/O for movement to distinct positions or incremental cam action
- Ten 24VDC sourcing .3 amp outputs / Twelve 24VDC sourcing inputs
- Same output power and speed as comparably sized pneumatic units
- Uses external 24VDC for IO and control
- 48VDC at 3 amps for motor. Option allows 24VDC motor operation.

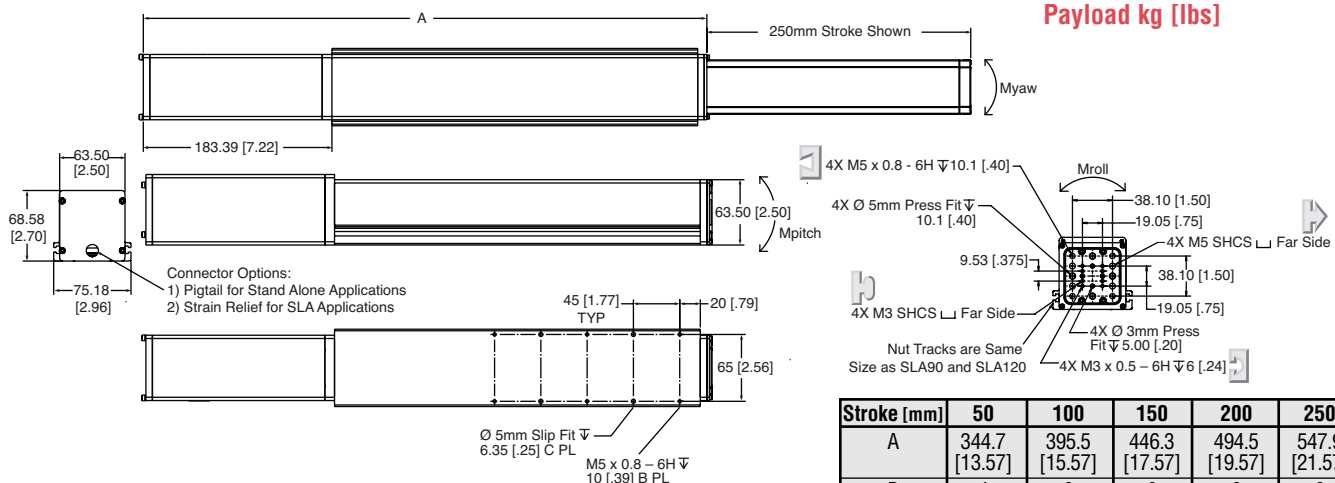


EC65 – eCylinder™

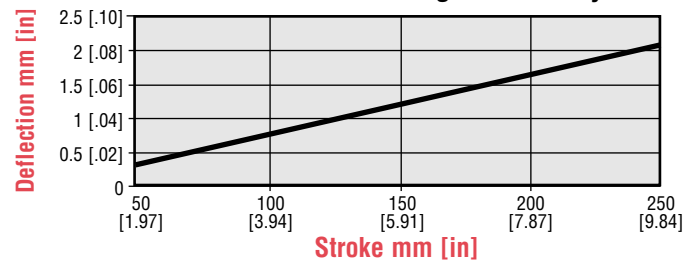
EC65 Specifications

Stroke	mm	50	100	150	200	250
Rated Motor Power	W	72				
Repeatability	mm [in]	+/- .025 [.001]				
Weight	KG [lb]	2.7 [5.9]	3 [6.6]	3.4 [7.4]	3.7 [8.1]	4 [8.8]
Motor 48VDC at 3 amps for motor. Option allows 24VDC motor operation	48V	Stepper				
Linear Position Sensor		Absolute				
		Horizontal			Vertical	
Max. Speed	mm/sec [in/sec]	85 [3.35]			83 [3.3]	
Max. Payload	KG [lb]	35 [77]			18.5 [41]	
Max. Pitch Moment	N-M [in-lb]	13 [116]			7 [62]	
Max. Yaw/Roll Moment	N-M [in-lb]	11 [96]			7 [62]	
Rated Thrust	N [lb]	343 [77]			182 [41]	
Max. Thrust	N [lb]	378 [85]			200 [45]	
Brake Holding Force	N [lb]	300 [67]			300 [67]	
Cycle Time*	Sec	1.5			1.5	
		Horizontal			Vertical	
Max. Speed	mm/sec [in/sec]	173 [6.8]			165 [6.5]	
Max. Payload	KG [lb]	28 [62]			10.1 [22.3]	
Max. Pitch Moment	N-M [in-lb]	10.5 [93]			3.8 [34]	
Max. Yaw/Roll Moment	N-M [in-lb]	8.8 [77.5]			3.8 [34]	
Rated Thrust	N [lb]	276 [62]			99 [22.3]	
Max. Thrust	N [lb]	303 [68]			116 [25]	
Brake Holding Force	N [lb]	187 [42]			187 [42]	
Cycle Time*	Sec	.9			.9	
		Horizontal			Vertical	
Max. Speed	mm/sec [in/sec]	430 [16.9]			380 [15]	
Max. Payload	KG [lb]	9.2 [20.3]			2.2 [4.9]	
Max. Pitch Moment	N-M [in-lb]	3.4 [30.5]			1 [9]	
Max. Yaw/Roll Moment	N-M [in-lb]	2.9 [25.4]			1 [9]	
Rated Thrust	N [lb]	90.2 [20.3]			22.2 [5]	
Max. Thrust	N [lb]	98 [22]			26.7 [6]	
Brake Holding Force	N [lb]	93 [21]			93 [21]	
Cycle Time*	Sec	.7			.7	

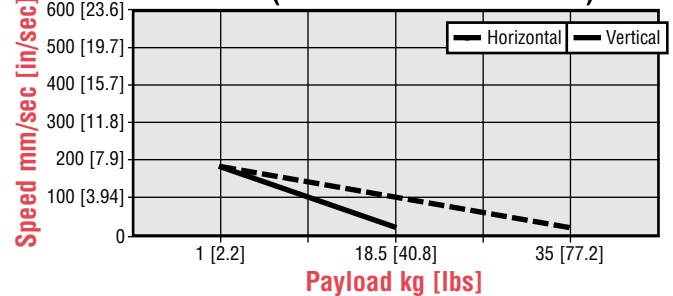
*100 mm travel @ 10% payload



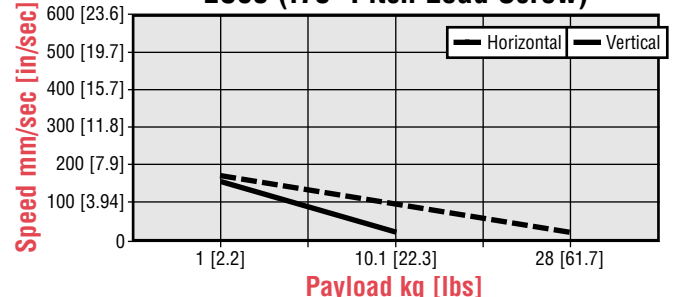
EC65 Deflection at 35 kg [77 lb] Payload



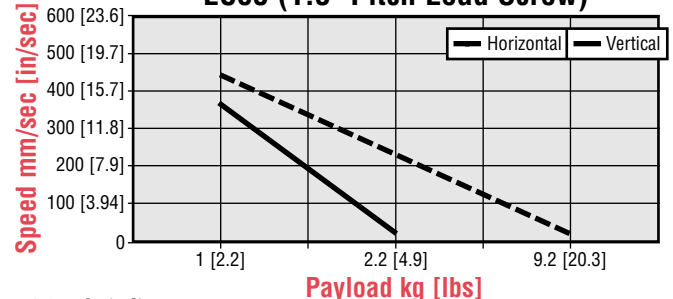
EC65 (10mm Lead Ball Screw)



EC65 (.75" Pitch Lead Screw)

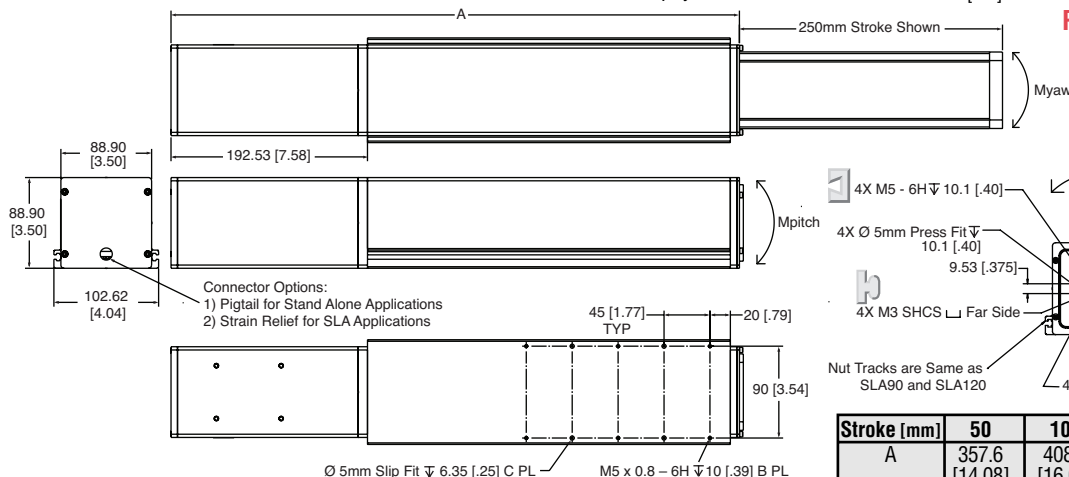


EC65 (1.5" Pitch Lead Screw)

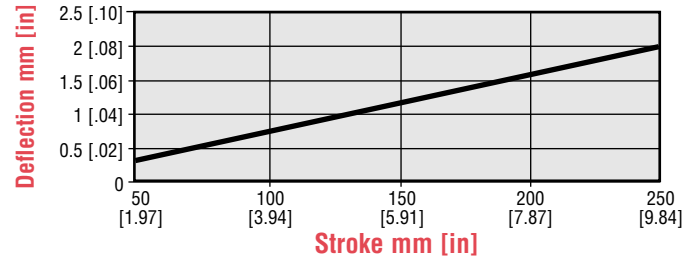


EC90 Specifications						
Stroke	mm	50	100	150	200	250
Rated Motor Power	W	120				
Repeatability	mm [in]	+/- .025 [.001]				
Weight	KG [lb]	5.9 [13]	6.4 [14.1]	7 [15.4]	7.6 [16.8]	8.2 [18.1]
Motor	48VDC at 3 amps for motor. Option allows 24VDC motor operation	48V	Stepper			
Linear Position Sensor		Absolute				
		Horizontal		Vertical		
Max. Speed	mm/sec [in/sec]	145 [5.7]		135 [5.3]		
Max. Payload	KG [lb]	50.5 [111]		25.9 [57]		
Max. Pitch Moment	N-M [in-lb]	18.9 [167]		9.7 [85.5]		
Max. Yaw/Roll Moment	N-M [in-lb]	15.6 [139]		9.7 [85.5]		
Rated Thrust	N [lb]	494 [111]		254 [57]		
Max. Thrust	N [lb]	543 [122]		280 [63]		
Brake Holding Force	N [lb]	300 [67]		300 [67]		
Cycle Time*	Sec	1.3		1.3		
		Horizontal		Vertical		
Max. Speed	mm/sec [in/sec]	240 [9.4]		220 [8.7]		
Max. Payload	KG [lb]	41 [90.4]		21 [46.3]		
Max. Pitch Moment	N-M [in-lb]	15.4 [136]		7.9 [69.5]		
Max. Yaw/Roll Moment	N-M [in-lb]	12.8 [113]		7.9 [69.5]		
Rated Thrust	N [lb]	405 [91]		209 [47]		
Max. Thrust	N [lb]	445 [100]		231 [52]		
Brake Holding Force	N [lb]	187 [42]		187 [42]		
Cycle Time*	Sec	.9		.9		
		Horizontal		Vertical		
Max. Speed	mm/sec [in/sec]	615 [24.2]		510 [20.1]		
Max. Payload	KG [lb]	14.7 [32.4]		3.2 [7.1]		
Max. Pitch Moment	N-M [in-lb]	5.5 [48.6]		1.2 [11]		
Max. Yaw/Roll Moment	N-M [in-lb]	4.6 [40.5]		1.2 [11]		
Rated Thrust	N [lb]	147 [33]		31.6 [7.1]		
Max. Thrust	N [lb]	165 [36]		35.6 [8]		
Brake Holding Force	N [lb]	93 [21]		93 [21]		
Cycle Time*	Sec	.7		.7		

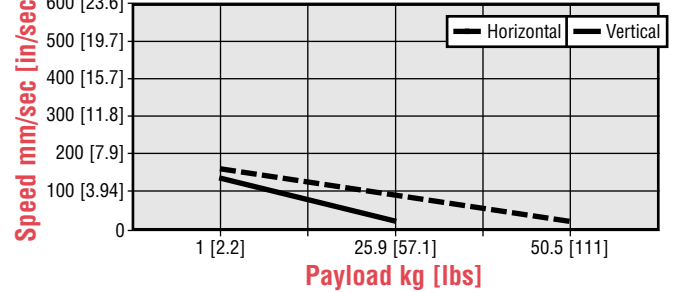
*100 mm travel @ 10% payload



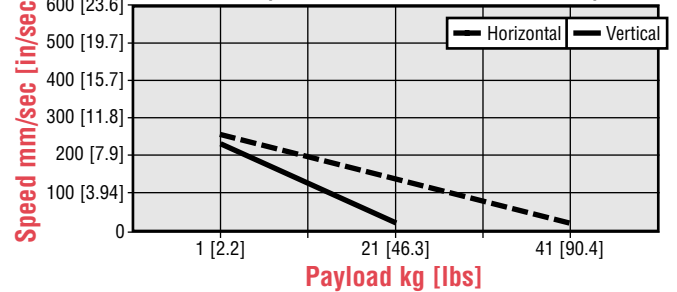
EC90 Deflection at 50 kg [111 lb] Payload



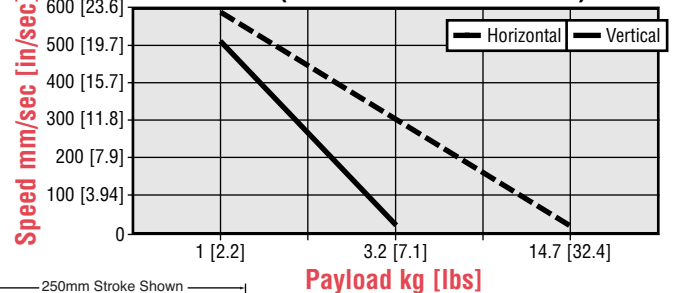
EC90 (10mm Lead Ball Screw)



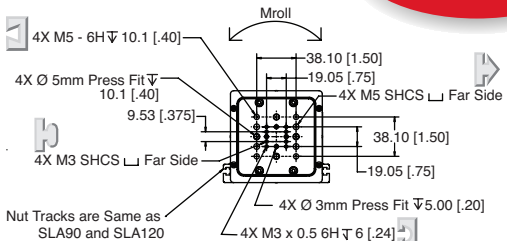
EC90 (16mm Pitch Lead Screw)



EC90 (1.5" Pitch Lead Screw)



See Pages 25 - 27 for Ordering Instructions

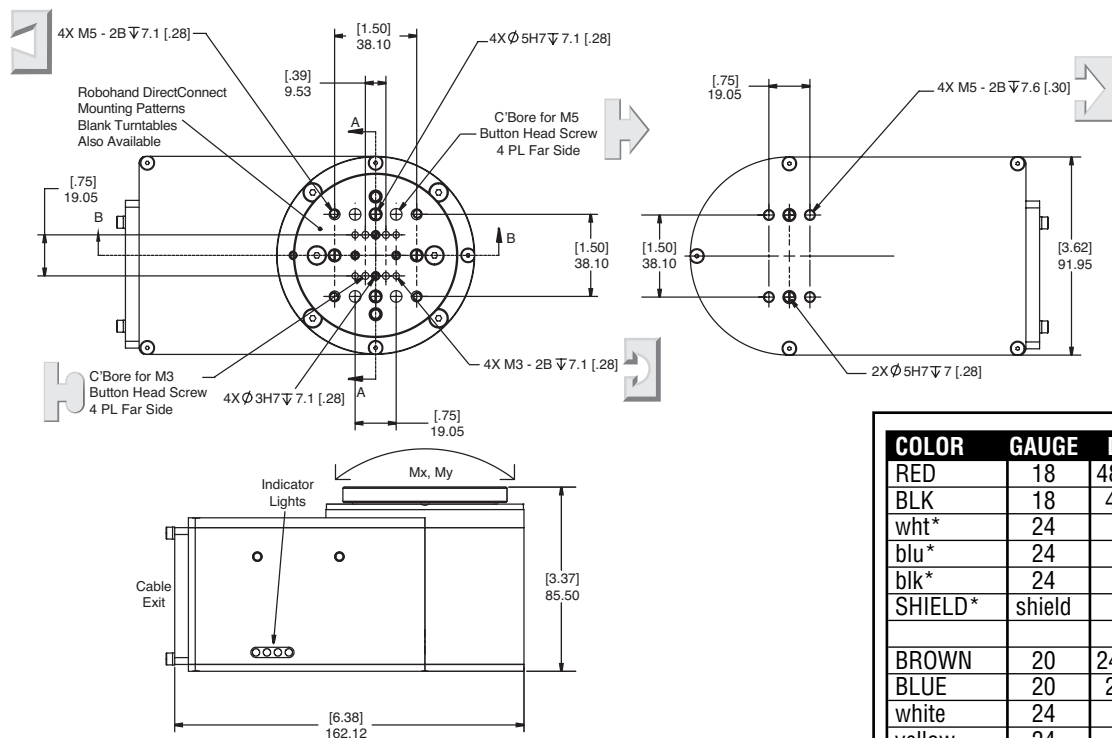
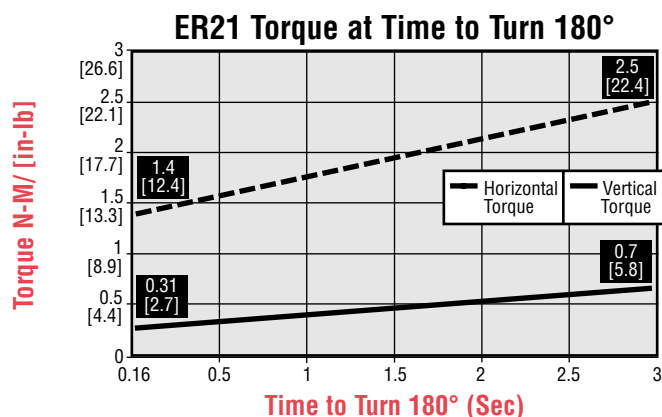


Stroke [mm]	50	100	150	200	250
A	357.6 [14.08]	408.4 [16.08]	459.2 [18.08]	510.0 [20.08]	560.8 [22.08]
B	4	6	6	6	6
C	2	4	4	4	4



ER21 – eRotary™

ER21 Specifications		Horizontal	Vertical
Max. Speed	RPM	183	151
Max. 180° Move Time	SEC	0.17	0.17
Torque at Max. RPM	N-M [in-lb]	1.4 [12.4]	.31 [2.7]
Torque at Min. RPM	N-M [in-lb]	2.5 [22.4]	.7 [5.8]
Payload	KG [lb]	11.3 [25]	6.8 [15]
Mx, My	N-M [in-lb]	8.5 [75]	6.8 [60]
Weight	KG [lb]	1.7 [3.7]	1.7 [3.7]
Rated Motor Power	W	72	
Motor (5:1 belt drive)	48V	Stepper	
Repeatability	DEG	+/- .02	
Rotary Position Sensor		Absolute	
Brake Holding Torque	N-M [in-lb]	.45 [4]	
12 Input 24 VDC – Source			
10 Output 24 VDC – Source .2A			



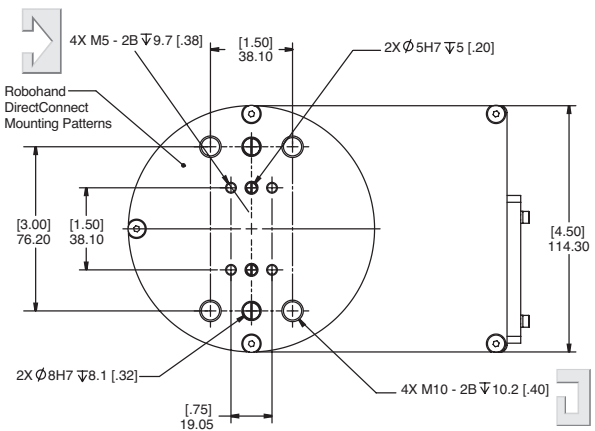
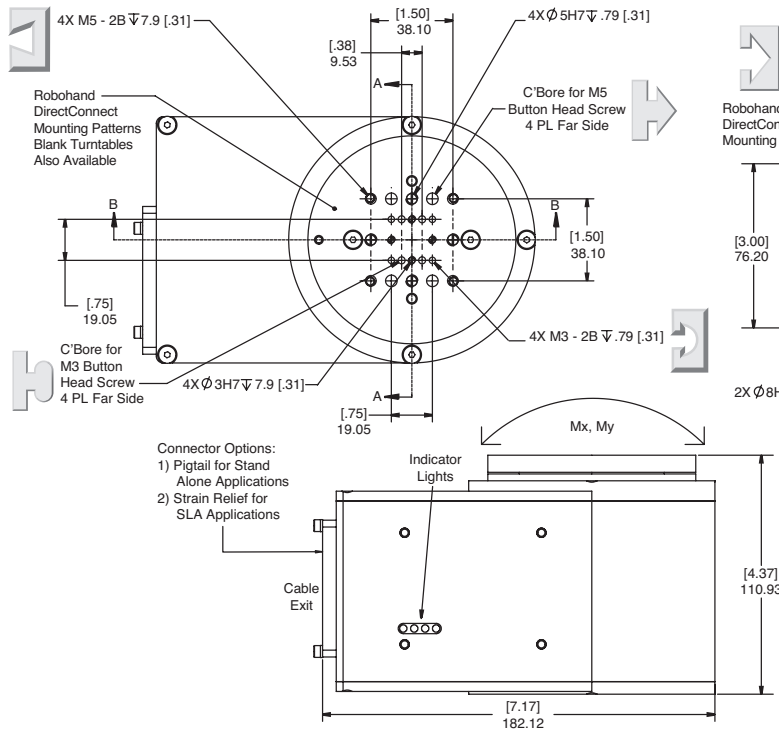
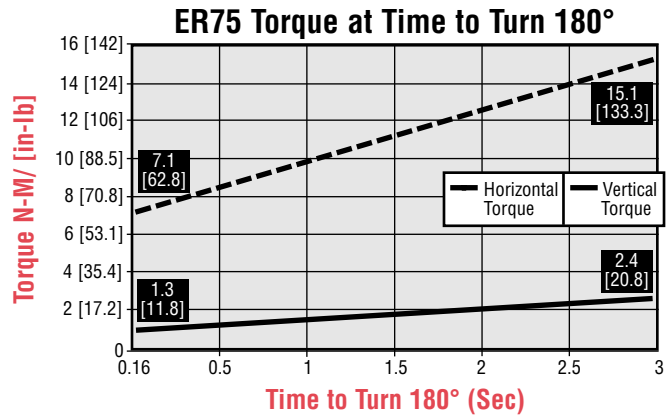
See Pages
25 - 27 for Ordering
Instructions

**eCYLINDER™
eROTARY™
Cable Assembly
Details**

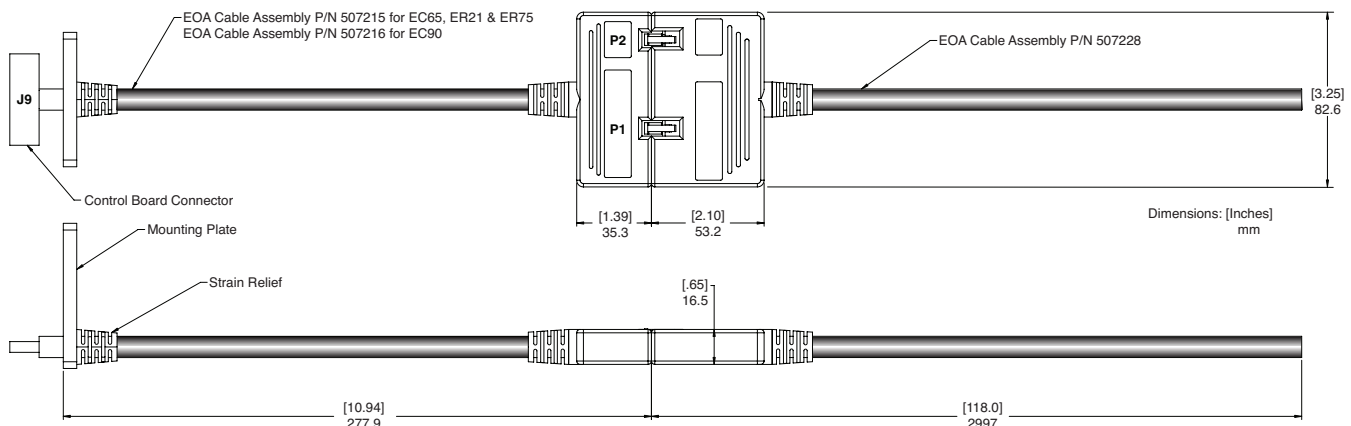


COLOR	GAUGE	DESCR	J9	P2
RED	18	48 power	30.31	P2-1 P2-2
BLK	18	48 com	28.29	P2-3 P2-4
wht*	24	Tx	25	P2-5
blu*	24	Rx	26	P2-6
blk*	24	Com	27	P2-7
SHIELD*	shield	shield	34	P2-8
P1				
BROWN	20	24 power	1	P1-1
BLUE	20	24 com	2	P1-2
white	24	IN 1	3	P1-3
yellow	24	IN 2	4	P1-4
green	24	IN 3	5	P1-5
blue	24	IN 4	6	P1-6
orange	24	IN 5	7	P1-7
red	24	IN 6	8	P1-8
brown	24	IN 7	9	P1-9
violet	24	IN 8	10	P1-10
gray	24	IN 9	11	P1-11
black	24	IN 10	12	P1-12
white/blk	24	IN 11	13	P1-13
yellow/blk	24	IN 12	14	P1-14
orange/blk	24	OUT 1	15	P1-15
red/blk	24	OUT 2	16	P1-16
gray/blk	24	OUT 3	17	P1-17
green/wht	24	OUT 4	18	P1-18
blue/wht	24	OUT 5	19	P1-19
orange/wht	24	OUT 6	20	P1-20
red/wht	24	OUT 7	21	P1-21
brown/wht	24	OUT 8	22	P1-22
violet/wht	24	OUT 9	23	P1-23
black/wht	24	OUT 10	24	P1-24

ER75 Specifications		Horizontal	Vertical
Max. Speed	RPM	190	178
Max. 180° Move Time	SEC	0.17	0.17
Torque at Max. RPM	N-M [in-lb]	7.1 [62.8]	1.3 [11.8]
Torque at Min. RPM	N-M [in-lb]	15.1 [133.3]	2.4 [20.8]
Payload	KG [lb]	22.7 [50]	13.6 [30]
Mx, My	N-M [in-lb]	11.3 [100]	8.5 [75]
Weight	KG [lb]	3.2 [7.1]	3.2 [7.1]
Rated Motor Power	W	120	
Motor (5:1 belt drive)	48V	Stepper	
Repeatability	DEG	+/- .02	
Rotary Position Sensor		Absolute	
Brake Holding Torque	N-M [in-lb]	.45 [4]	
12 Input 24 VDC – Source			
10 Output 24 VDC – Source .2A			



See Pages
25 - 27 for Ordering
Instructions



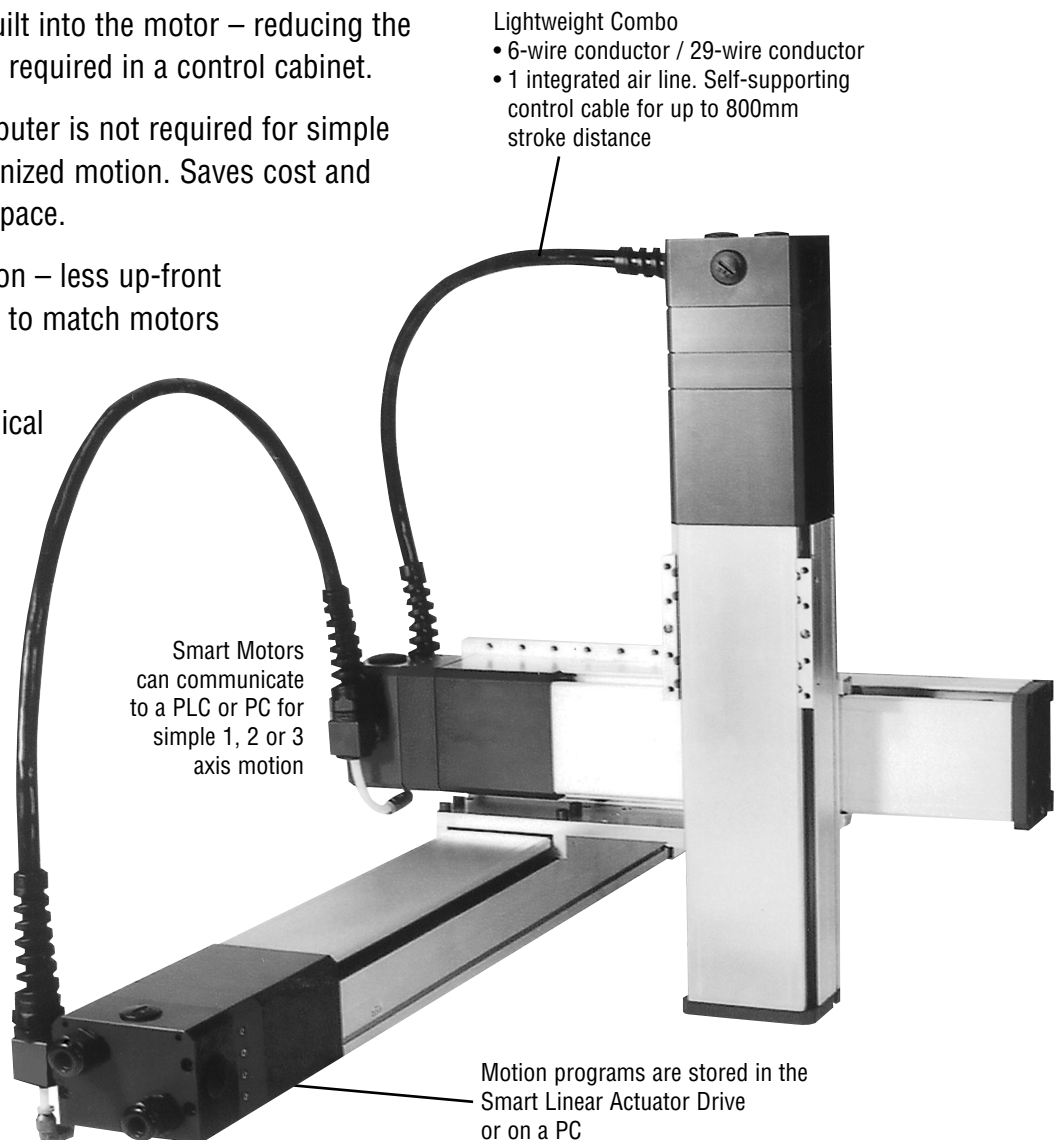


Smart Linear Actuator – SLA

Overview

Handle many typical point-to-point applications without an external control unit

- NEW** ■ Position data import for DXF, XLS and CSV files
 - NEW** ■ Vision commands
 - NEW** ■ HMI commands
 - NEW** ■ Unit conversion calculator
-
- Smart linear actuators are controlled by only 6 conductors – resulting in a lighter cable bundle for improved life cycle.
 - Motor drive is built into the motor – reducing the amount of space required in a control cabinet.
 - An external computer is not required for simple 2-3 axis synchronized motion. Saves cost and control cabinet space.
 - Integrated solution – less up-front engineering time to match motors with drives
 - Optional mechanical brake
 - Networking capability via Ethernet



The SLA Series of programmable servo slides is one of the first in the industry to utilize **Smart Motor Technology**

- Drive is located on the actuator – no external controller required in most cases
- Smart linear actuators are controlled by only 6 conductors – resulting in a lighter cable bundle for improved life cycle
- Motor drive is built onto the motor which, in many cases, eliminates the need for an external controller – reducing the amount of space required in a control cabinet
- Ball screw is integrated to the motor – no coupling
- An external computer is not required for simple 2-3 axis synchronized motion. Saves cost and control cabinet space
- 48V DC brushless servo motor
- T-Slot for toe clamp

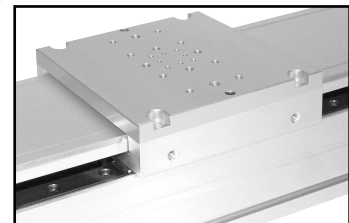
± .02mm
(.0008")
repeatability

.5 G Max.
Acceleration

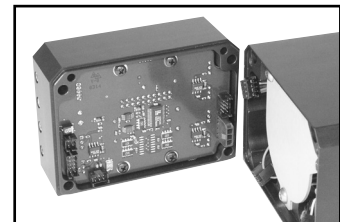
12 inputs
and 6 outputs

Model	Rated Thrust (N[lbf])
SLA-90	150 [33.72]
SLA-120	165 [37.09]
SLA-150	330 [74.19]

**Weld field immune electronics
and weld spark resistant
cover available on all sizes.**



Robohand's DirectConnect pattern allows easy integration of Robohand pneumatic slides

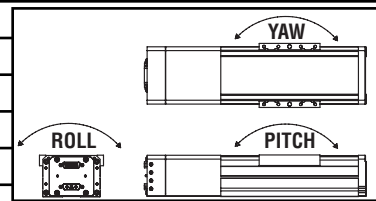


Smart Motor – Integral drive and motor built-in for space savings and, in many cases, the elimination of an external controller



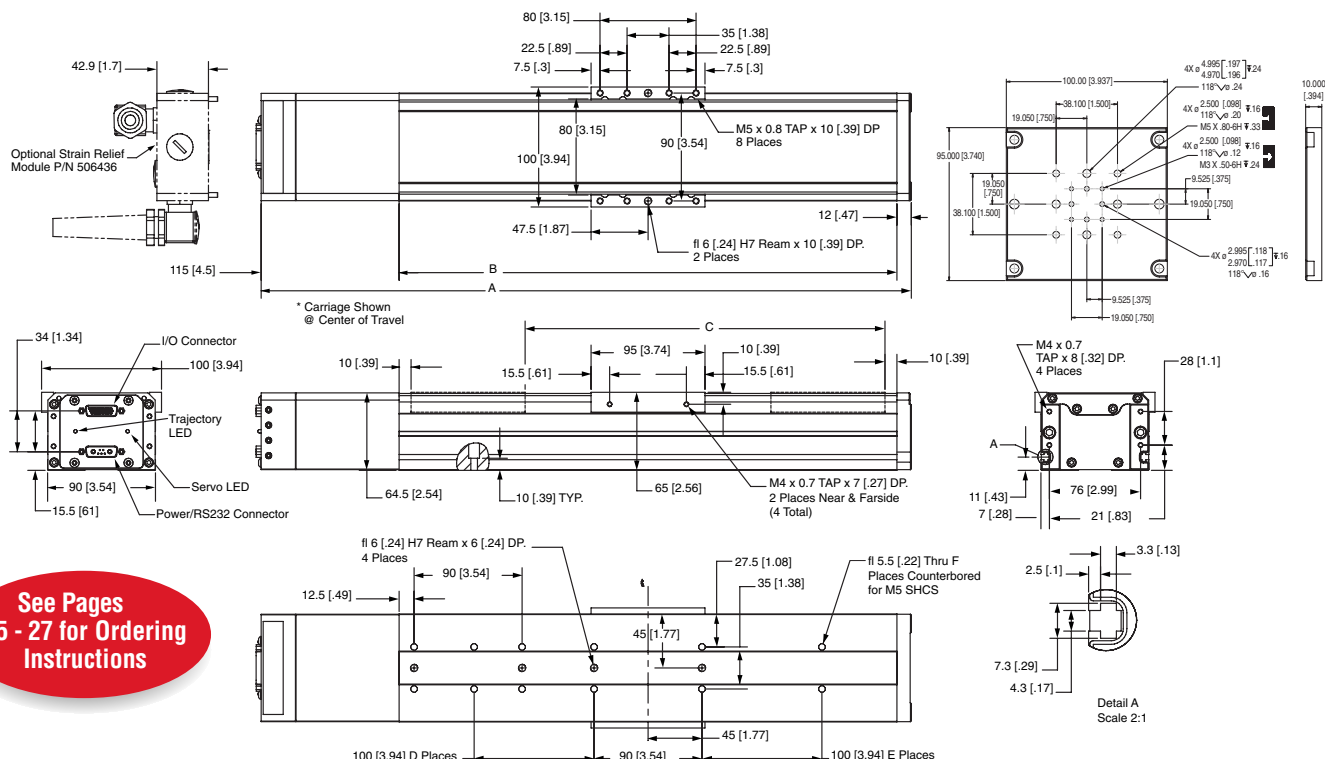
Model SLA90

Stroke	mm [in]	100 [3.94]	200 [7.87]	300 [11.81]	400 [15.75]	500 [19.68]	600 [23.62]
Rated Power ¹	W [hp]	175 [0.235]					
Max. Speed ^{2,4}	mm/sec [in/sec]	700 [27.56]	800 [31.50]	800 [31.50]	800 [31.50]	700 [27.56]	600 [23.62]
Max. Acceleration	G	0.5					
Rated Thrust	N [lbf]	150 [33.72]					
Repeatability (bi-directional)	mm [in]	±.02 [0.0008]					
Unit Weight	kg [lbs]	3.1 [6.83]	3.6 [7.94]	5.4 [11.90]	5.9 [13.01]	7.3 [16.09]	8.3 [18.30]
Ball screw Inertia	kg-m ² in-lbf sec ²	1.74E-05 [1.54E-04]	1.91E-05 [1.69E-04]	2.08E-05 [1.84E-04]	2.25E-05 [1.99E-04]	2.42E-05 [2.14E-04]	2.59E-05 [2.29E-04]
Carriage Weight	kg [lbs]	.8 [1.76]					
Motor		DC Servo					
Table Top	kg [lbs]	0.24 [0.52]					
Encoder		Incremental. Attached to ball screw, 1000 lines/rev (0.0025 mm [0.84 E-04 in] resolution @ 10mm [0.39 in] lead)					
Limit Sensors		Forward & Reverse					
Ball screw		10 mm [0.39 in] lead					
Max. Thrust ³	N [lbf]	300 [67.44]					
Payload Capacity ^{2,4}	Kg [lbs]	23 [50.70]					
Moment Capacity ^{5,6}	Nm [lbf-ft]	M _{pitch} 40 [29.50], M _{yaw} 28 [20.65], M _{roll} 40 [29.50]					
Motor Torque Constant	Nm/amp [lbf-ft/amp]	0.061 [0.045]					
Motor Back EMF Constant	V/Krpm	7.1					
Motor Resistance	Ohms	0.64					
Motor Inductance	mH	0.71					
Brake Holding Force	N [lbf]	80 [17.98]					



- Notes:**
- 1 - At 48 volts & 5.6 amps.
 - 2 - At max payload rating & acceleration of 0.5G over full travel of a single axis in a horizontal orientation. Actual maximum speed governed by maximum acceleration, travel distance, and ball screw critical speed.
 - 3 - At speed of 50mm/sec for 1 second.
 - 4 - For uniformly distributed load on carriage with CG no more than 220mm above carriage & base affixed to a flat, rigid frame.
 - 5 - Payload capacity not to be exceeded. Combined moment loads due to acceleration/deceleration of offset loads & static moment loads must be less than the rated moment capacity. Moment directions (Diagram)
 - 6 - Refer to Loading Specification on Page 12

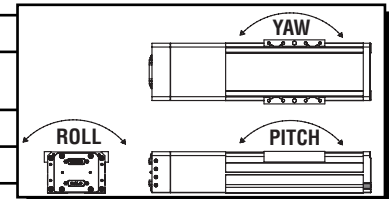
Stroke	100mm	200mm	300mm	400mm	500mm	600mm
A	342 [13.46]	442 [17.40]	542 [21.34]	642 [25.28]	742 [29.21]	842 [33.15]
B	215 [8.46]	315 [12.40]	415 [16.34]	515 [20.28]	615 [24.21]	715 [28.15]
C	100 [3.94]	200 [7.87]	300 [11.81]	400 [15.75]	500 [19.69]	600 [23.62]
D	0	0	1	1	2	2
E	0	1	1	2	2	3
F	8	10	2	14	16	18



Model SLA 120



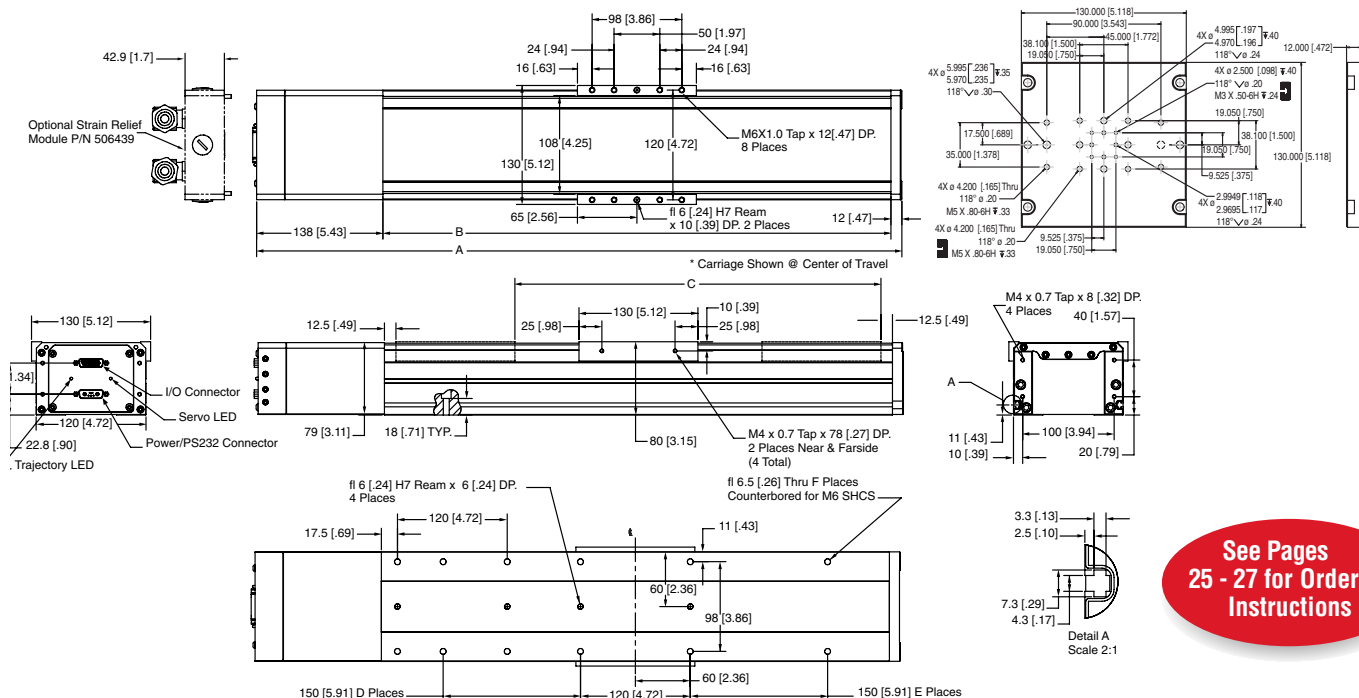
Stroke	mm [in]	100 [3.94]	200 [7.87]	300 [11.81]	400 [15.75]	600 [23.62]	800 [31.49]	1000 [39.37]
Rated Power ¹	W [hp]	225 [0.30]						
Max. Speed ^{2,4}	mm/sec [in/sec]	700 [27.56]	950 [37.40]	1000 [39.37]	1000 [39.37]	800 [31.50]	600 [23.62]	500 [19.68]
Max. Acceleration	G	0.5						
Rated Thrust	N [lbf]	165 [37.09]						
Repeatability (bi-directional)	mm [in]	±.02 [0.0008]						
Unit Weight	kg [lbs]	8.3 [18.30]	9.7 [21.38]	11.2 [24.52]	12.7 [28.00]	15.6 [34.39]	18.5 [40.78]	21.4 [47.18]
Ball screw Inertia	kg-m ² in-lbf sec ²	3.63E-05 [3.21E-04]	4.17E-05 [3.69E-04]	4.71E-05 [4.17E-04]	5.24E-05 [4.64E-04]	6.33E-05 [5.60E-04]	7.41E-05 [6.56E-04]	8.49E-05 [7.51E-04]
Carriage Weight	kg [lbs]	1.7 [3.75]						
Motor		DC Servo						
Table Top	kg [lbs]	0.51 [1.13]						
Encoder		Incremental, Attached to ball screw, 1000 lines/rev (0.004mm [1.57E-04 in] resolution @ 16mm [0.63 in] lead)						
Limit Sensors		Forward & Reverse						
Ball screw		16 mm [0.63 in] lead						
Max. Thrust ³	N [lbf]	330 [74.19]						
Payload Capacity ^{2,4}	Kg [lbs]	40 [88.18]						
Moment Capacity ^{5,6}	Nm [lbf-ft]	M _{pitch} 128 [94.41], M _{yaw} 80 [59.00], M _{roll} 128 [94.41]						
Motor Torque Constant	Nm/amp [lbf-ft/amp]	0.081 [0.060]						
Motor Back EMF Constant	V/Krpm	9.5						
Motor Resistance	Ohms	0.47						
Motor Inductance	mH	0.61						



- Notes:**
- 1 - At 48 volts & 6.9 amps.
 - 2 - At max payload rating & acceleration of 0.5G over full travel of a single axis in a horizontal orientation. Actual maximum speed governed by maximum acceleration, travel distance, and ball screw critical speed.
 - 3 - At speed of 50mm/sec for 1 second.

- 4 - For uniformly distributed load on carriage with CG no more than 220mm above carriage & base affixed to a flat, rigid frame.
- 5 - Payload capacity not to be exceeded. Combined moment loads due to acceleration/deceleration of offset loads & static moment loads must be less than the rated moment capacity. Moment directions (Diagram)
- 6 - Refer to Loading Specification on Page 12

Stroke	100mm	200mm	300mm	400mm	600mm	800mm	1000mm
A	405 [15.94]	505 [19.80]	605 [23.82]	705 [27.76]	905 [35.63]	1105 [43.50]	1305 [51.38]
B	255 [10.04]	355 [13.98]	455 [17.91]	555 [21.85]	755 [29.72]	955 [37.60]	1155 [45.47]
C	100 [3.94]	200 [7.87]	300 [11.81]	400 [15.75]	600 [23.62]	800 [31.50]	1000 [39.37]
D	0	0	0	1	1	2	3
E	0	0	1	1	2	2	3
F	8	8	10	12	14	16	20

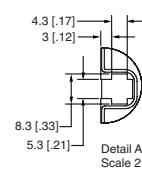
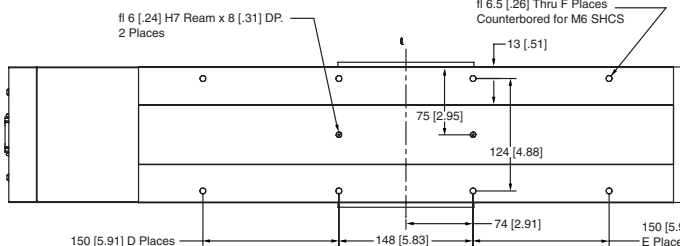
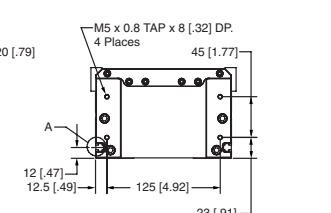
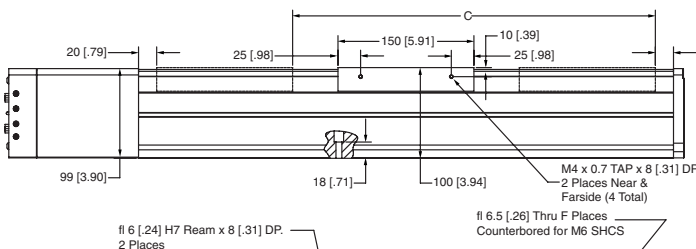
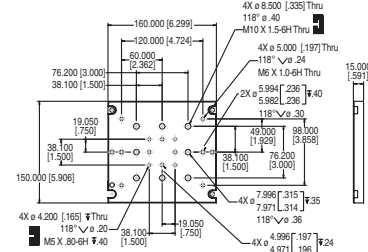
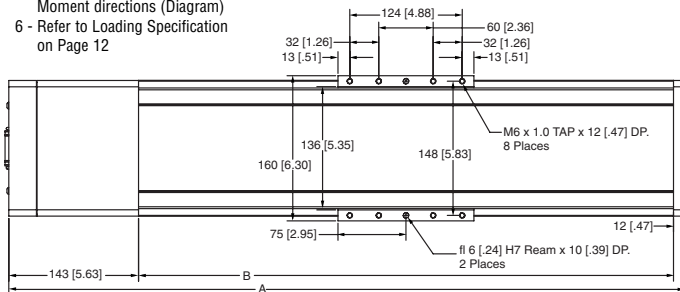


See Pages
25 - 27 for Ordering
Instructions



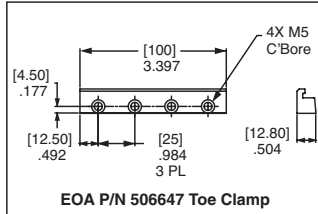
Notes:

- 1 - At 48 volts & 6.9 amps.
- 2 - At max payload rating & acceleration of 0.5G over full travel of a single axis in a horizontal orientation. Actual maximum speed governed by maximum acceleration, travel distance, and ball screw critical speed.
- 3 - At speed of 50mm/sec for 1 second.
- 4 - For uniformly distributed load on carriage with CG no more than 220mm above carriage & base affixed to a flat, rigid frame.
- 5 - Payload capacity not to be exceeded. Combined moment loads due to acceleration/ deceleration of offset loads & static moment loads must be less than the rated moment capacity. Moment directions (Diagram)



10 For more information call us at: 800-259-9890 or 972-726-7300 Fax: 972-726-9034 Email: tech-sla@robohand.com www.robohandsla.com

eCYLINDER™

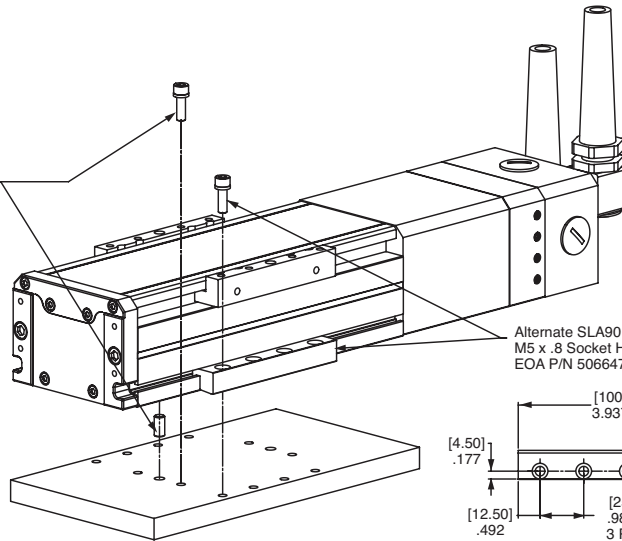
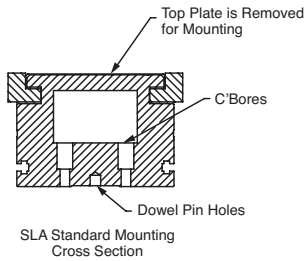


Alternate eCylinder Mounting
M5 x .8 Socket Head Cap Screw &
EOA P/N 506647 Toe Clamp

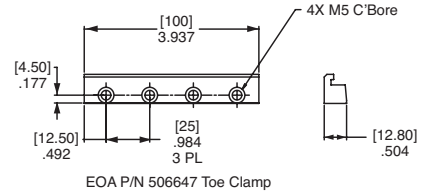
Standard eCylinder Mounting
M5 x .8 Socket Head Cap Screw &
5mm Diameter Dowel Pin

SLA

- Standard SLA Mounting**
- M5 x .8 Socket Head Cap Screws for SLA90 & SLA120
 - M6 x 1.0 & Socket Head Cap Screws for SLA150
 - 6mm Dowel Pins for SLA90, SLA120 & SLA150



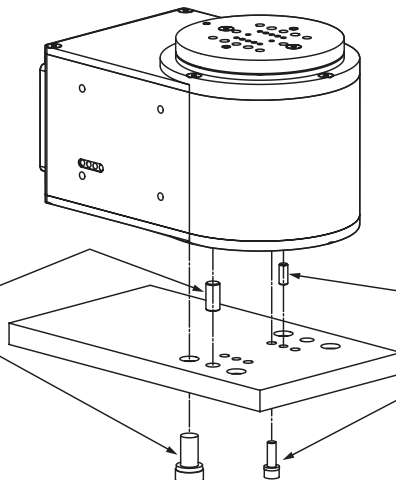
Alternate SLA90 & SLA120 Mounting
M5 x .8 Socket Head Cap Screw &
EOA P/N 506647 Toe Clamp



eROTARY™

M10 x 1.5 Socket Head Cap Screw
& 8mm Diameter Dowel Pin
ER75 Only

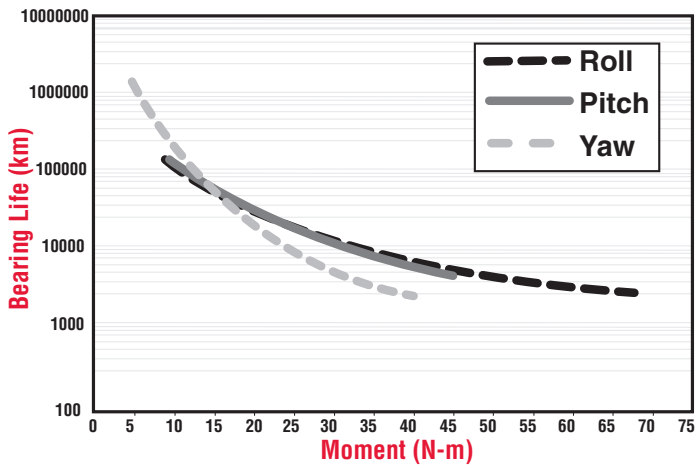
M5 x .8 Socket Head Cap Screw
& 5mm Diameter Dowel Pin
ER21 or ER75



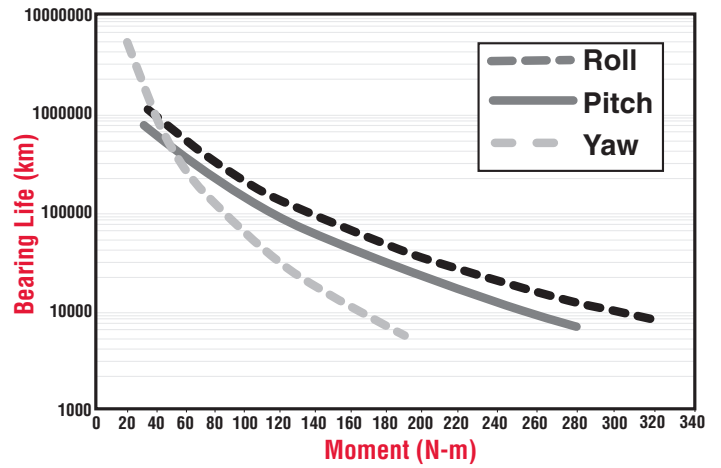


Loading Specifications

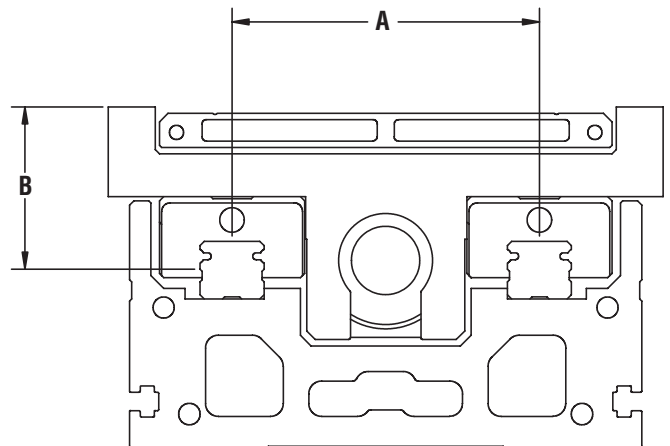
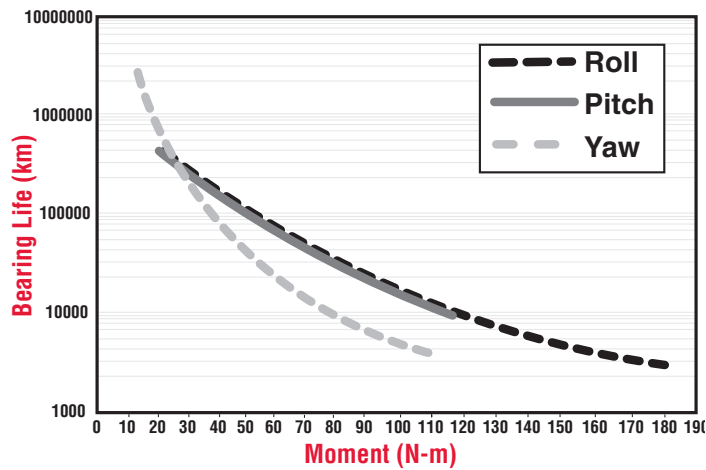
SLA90 Moment vs. Bearing Life



SLA150 Moment vs. Bearing Life



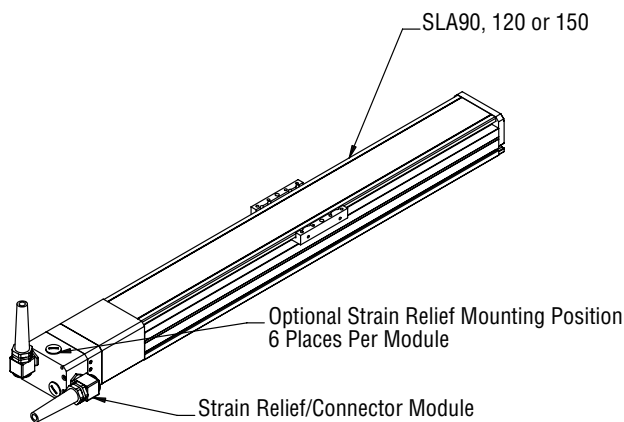
SLA120 Moment vs. Bearing Life



	SLA90 (mm[in])	SLA120 (mm[in])	SLA150 (mm[in])
A = Bearing rail center lateral spacing	58 [2.28]	72 [2.83]	92 [3.62]
B = Rail center-to-carriage mounting surface	25 [0.98]	38 [1.50]	43 [1.69]
Bearing block center-to-center longitudinal spacing (not shown)	50 [1.97]	70 [2.76]	78 [3.07]

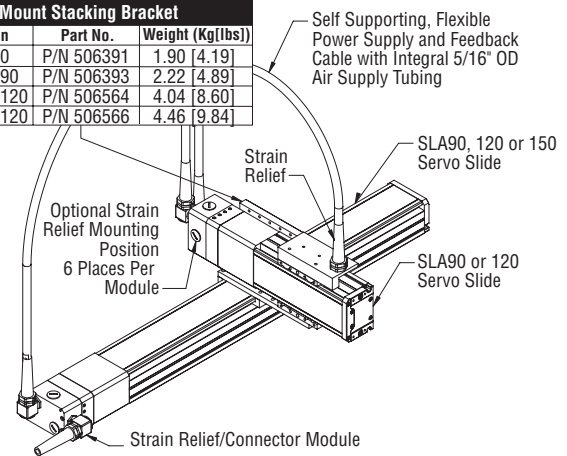
SLA Modular Automation System Configurations

Stand-Alone SLA Servo Slide



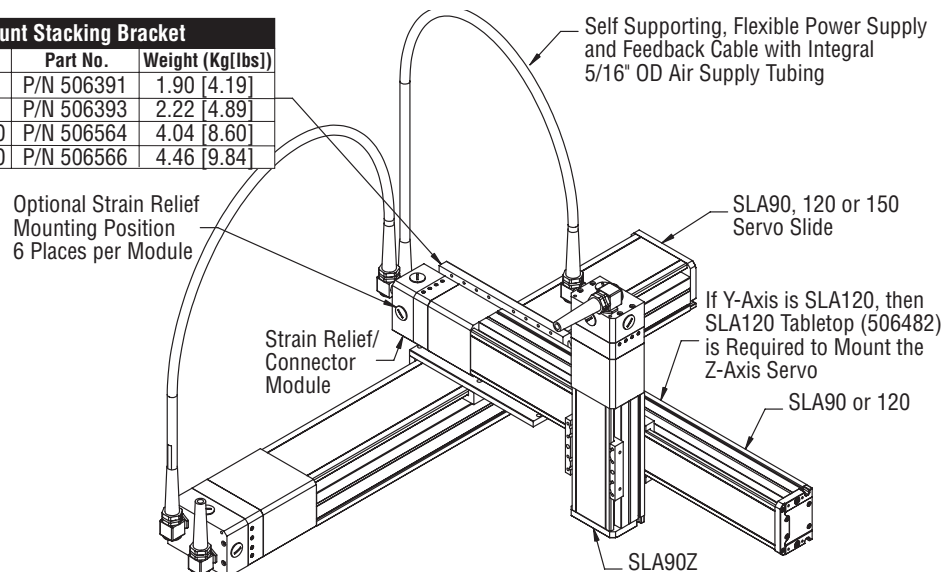
XY Servo, Y Base Affixed No End Effector

Base Mount Stacking Bracket		
Description	Part No.	Weight (Kg[lbs])
SLA90 to 90	P/N 506391	1.90 [4.19]
SLA120 to 90	P/N 506393	2.22 [4.89]
SLA120 to 120	P/N 506564	4.04 [8.60]
SLA150 to 120	P/N 506566	4.46 [9.84]



XYZ Servo, Y and Z Base Affixed No End Effector

Base Mount Stacking Bracket		
Description	Part No.	Weight (Kg[lbs])
SLA90 to 90	P/N 506391	1.90 [4.19]
SLA120 to 90	P/N 506393	2.22 [4.89]
SLA120 to 120	P/N 506564	4.04 [8.60]
SLA150 to 120	P/N 506566	4.46 [9.84]

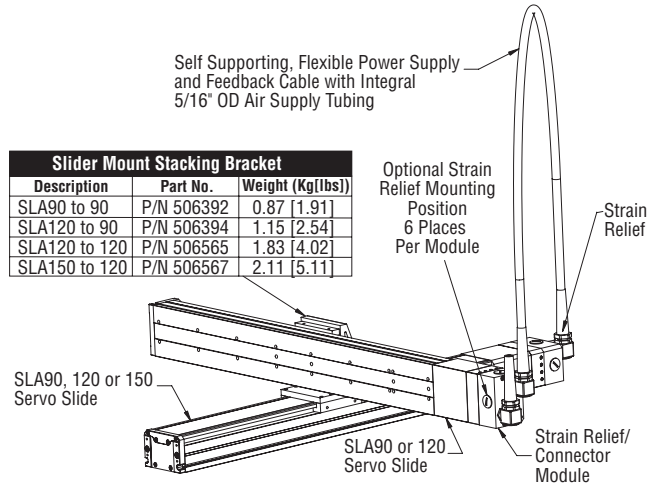




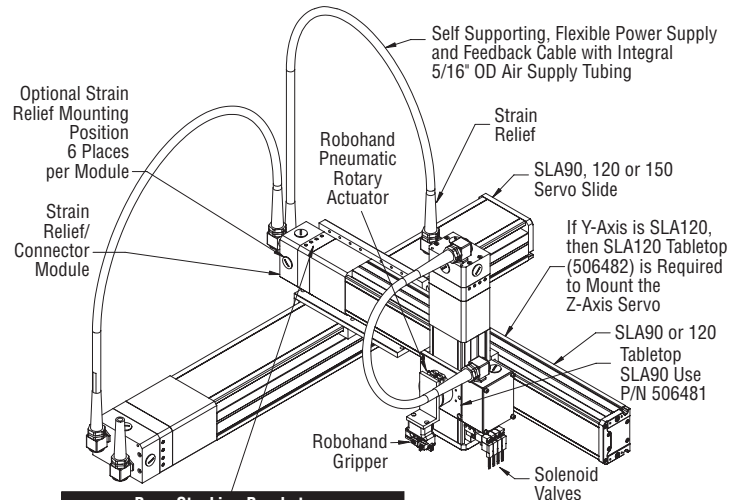
System Configurations

XY Servo, Slider Affixed No End Effector

Slider Mount Stacking Bracket		
Description	Part No.	Weight (Kg[lbs])
SLA90 to 90	P/N 506392	0.87 [1.91]
SLA120 to 90	P/N 506394	1.15 [2.54]
SLA120 to 120	P/N 506565	1.83 [4.02]
SLA150 to 120	P/N 506567	2.11 [5.11]

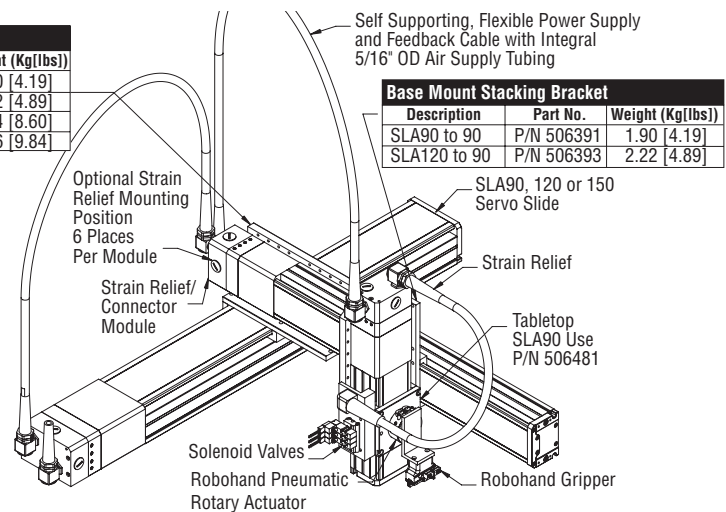


XYZ Servo, Y and Z Base Affixed With End Effector and Rotary

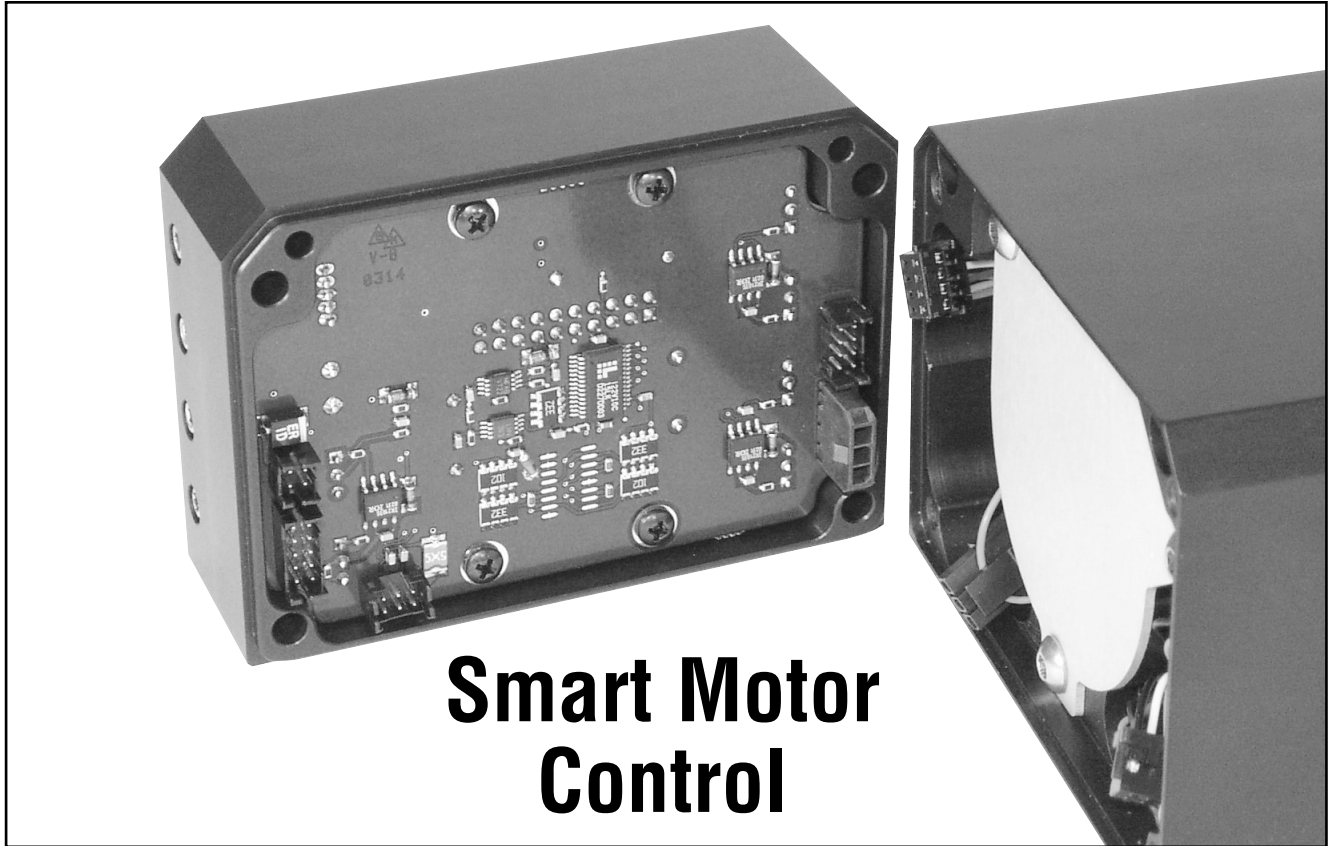


Base Stacking Bracket		
Description	Part No.	Weight (Kg[lbs])
SLA90 to 90	P/N 506391	1.90 [4.19]
SLA120 to 90	P/N 506393	2.22 [4.89]
SLA120 to 120	P/N 506564	4.04 [8.60]
SLA150 to 120	P/N 506566	4.46 [9.84]

Base Mount Stacking Bracket		
Description	Part No.	Weight (Kg[lbs])
SLA90 to 90	P/N 506391	1.90 [4.19]
SLA120 to 90	P/N 506393	2.22 [4.89]
SLA120 to 120	P/N 506564	4.04 [8.60]
SLA150 to 120	P/N 506566	4.46 [9.84]



XYZ Servo, Y and Z Base Affixed With End Effector and Rotary



Smart Motor Control

Outputs: 6 24V @ .3 A sourcing

Inputs: 12 24V sourcing

Brushless DC Motor Control

- SLA-90: 48VDC, 10A peak, 5A cont
- SLA-120: 48VDC, 20A peak, 10A cont
- SLA-150: 48VDC, 20A peak, 10A cont

Minimum System Requirements

(If supplying your own PC controller)

- Windows 2000 or XP
- 500 mhz
- One (1) RS-232 Port
(USB to Serial Adapter Recommended)

Control is integral to the slides

- Full Servo Control: Position, velocity and torque modes
- Program Flow: Run, goto, while, if then else switch, wait
- System State: Motor off, temperature, position error, index, communication, limits, math error
- Variables: Arrays, EEPROM, integers, characters (25 variables total)
- PID Filter Control: KP, KI, KD, KL, F, E, KG, KV, KA, KS, KGON, KG OFF, AMPS
- Monitor Motor Status: Position, velocity, acceleration, index, position error, overhead, error, limit switches
- Report Status: All variables, all buffered values, position, acceleration, program, counters, limit switch, trajectory, errors, overheat, history, index, overflow, amps
- Download programs to the motors from Robohand software
- Tune motors using a tuning utility. Run the tuner.
Upload/download values

SLA Servo Slide “Smart Motor” Technology eliminates the need for an external controller in many applications

Application	External PC Control Unit Required?
One-axis motion	No
2- or 3-axis “Point-to-Point” synchronized motion	No
2- or 3-axis “Precision” synchronized motion	Yes

SLA PC Control Unit

For Coordinated Motion Applications

Features

- PC on a card controller
- Multi-tasking programming capability
- Networking capability via ethernet
- Arcs, tangents, circular interpolated motion, and position are unaffected by changes in velocity
- Industrial PC designed for use in a panel
- Rack mount enclosure



Specifications

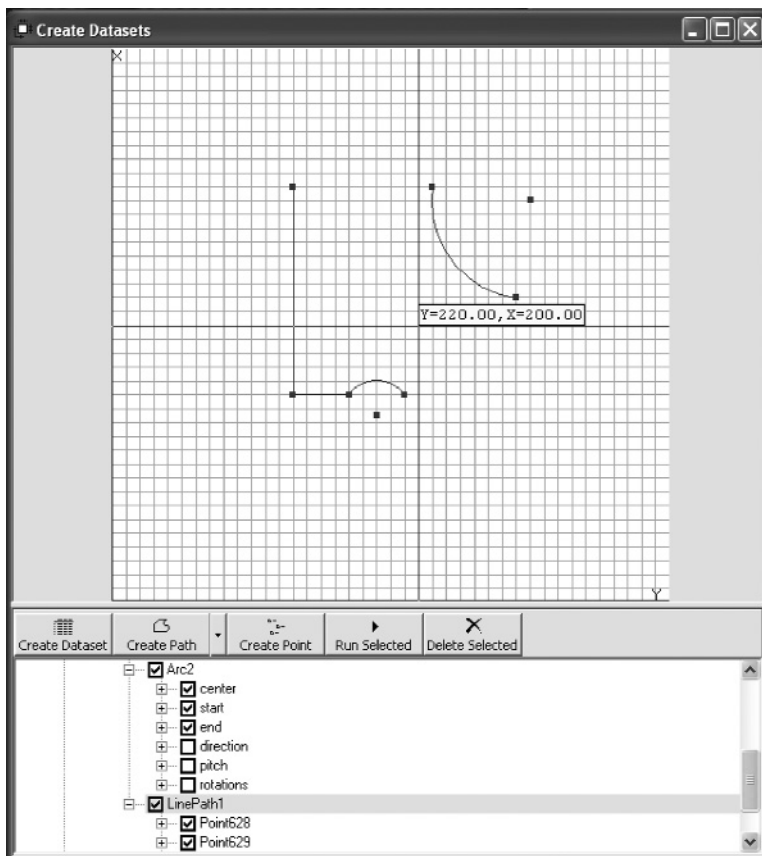
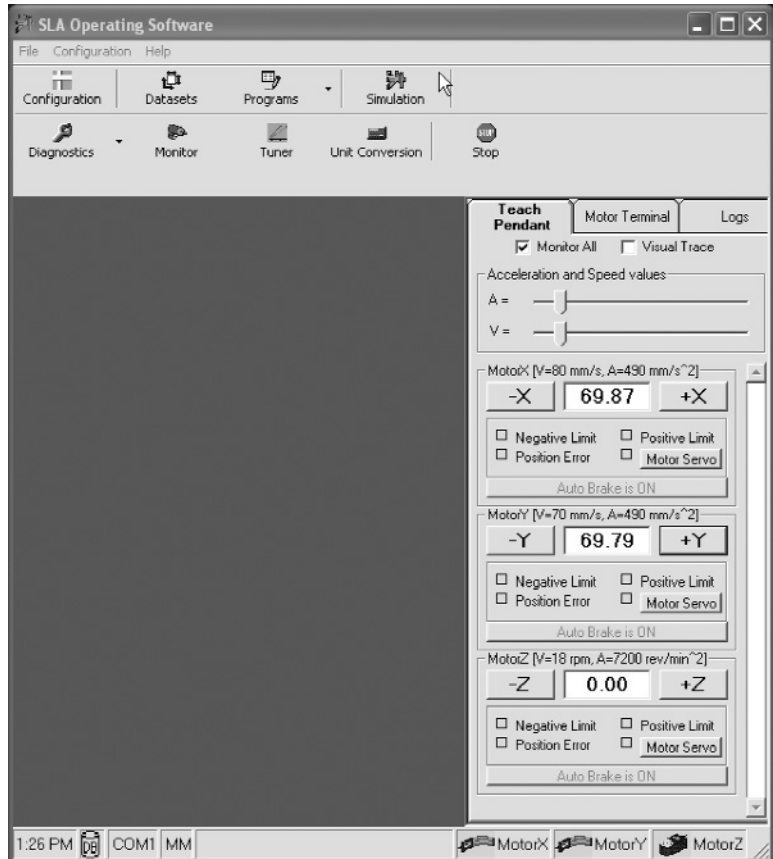
- Runs on Windows 98, NT, 2000 or XP
- 800 Mhz CPU, 128k cache memory
- 40 GB hard drive
- 128 MB RAM
- Mouse and keyboard jacks
- Floppy connector
- 10/100 Mbs Ethernet
- Two RS-232 ports
- Parallel printer port
- 2 USB ports
- Power Requirements: 2.3 A @ +5V;
0.8 A @ 12V
- Temperature: 0 - 60°C (32 - 140°F)
- Dimensions: 7.5" W x 4.5" D x 3.875" H



How to Program

SLA is easy to program through a wide range of popular methods. PC-based programming software is included with each purchase.

Teach Pendant Programming

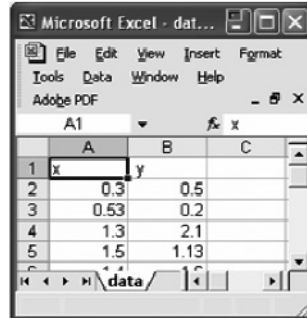


Program by Graphically Drawing the Path or Points

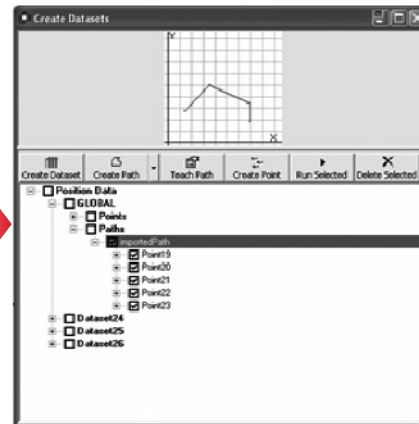
Import Data Files

Spreadsheet Programming

XLS



	A	B	C
1	x	y	
2	0.3	0.5	
3	0.53	0.2	
4	1.3	2.1	
5	1.5	1.13	



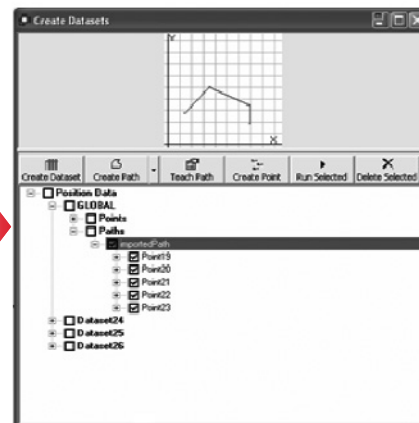
Program by Importing a DXF File

DXF



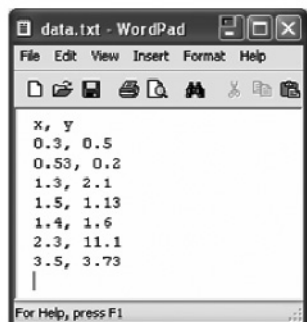
```

0
SECTION
2
HEADER
9
$ACADVER
1
AC1012
9
For Help, press F1
    
```



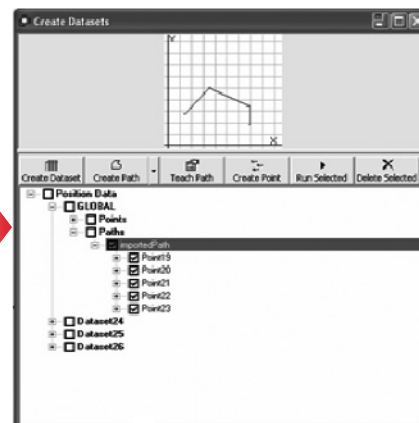
Program in CSV Format

CSV



```

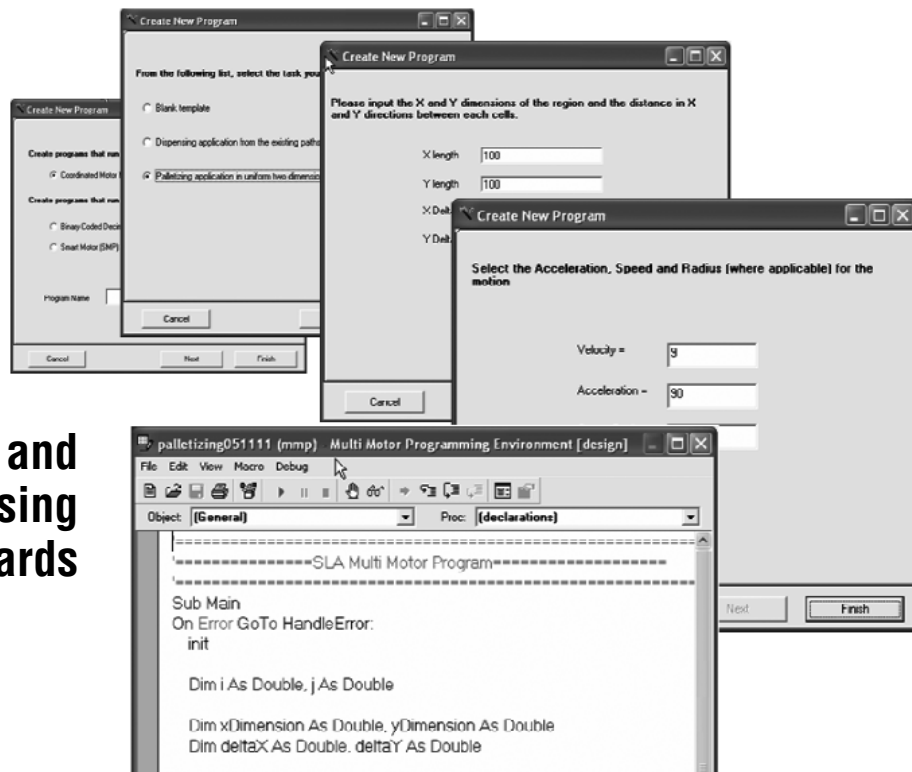
x, y
0.3, 0.5
0.53, 0.2
1.3, 2.1
1.5, 1.13
1.4, 1.6
2.3, 11.1
3.5, 3.73
For Help, press F1
    
```



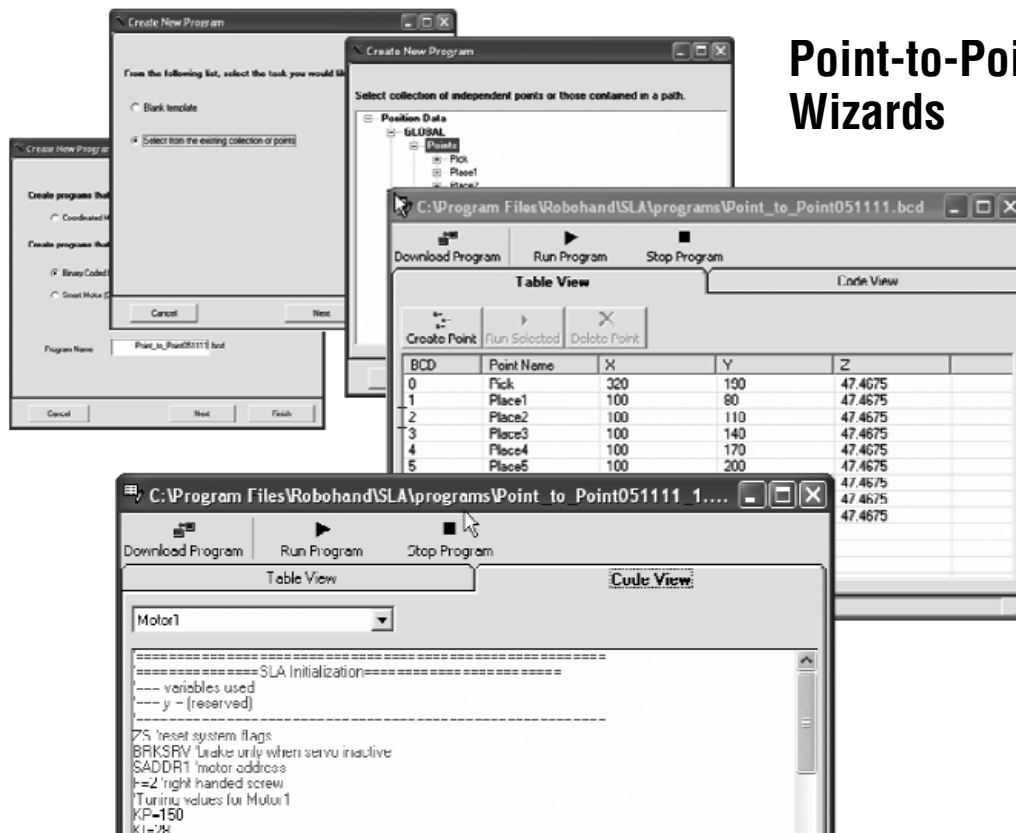
Note: SLA's modular architecture supports adding other formats in the future

Wizards to Automate Programming

Palletizing and Dispensing Wizards



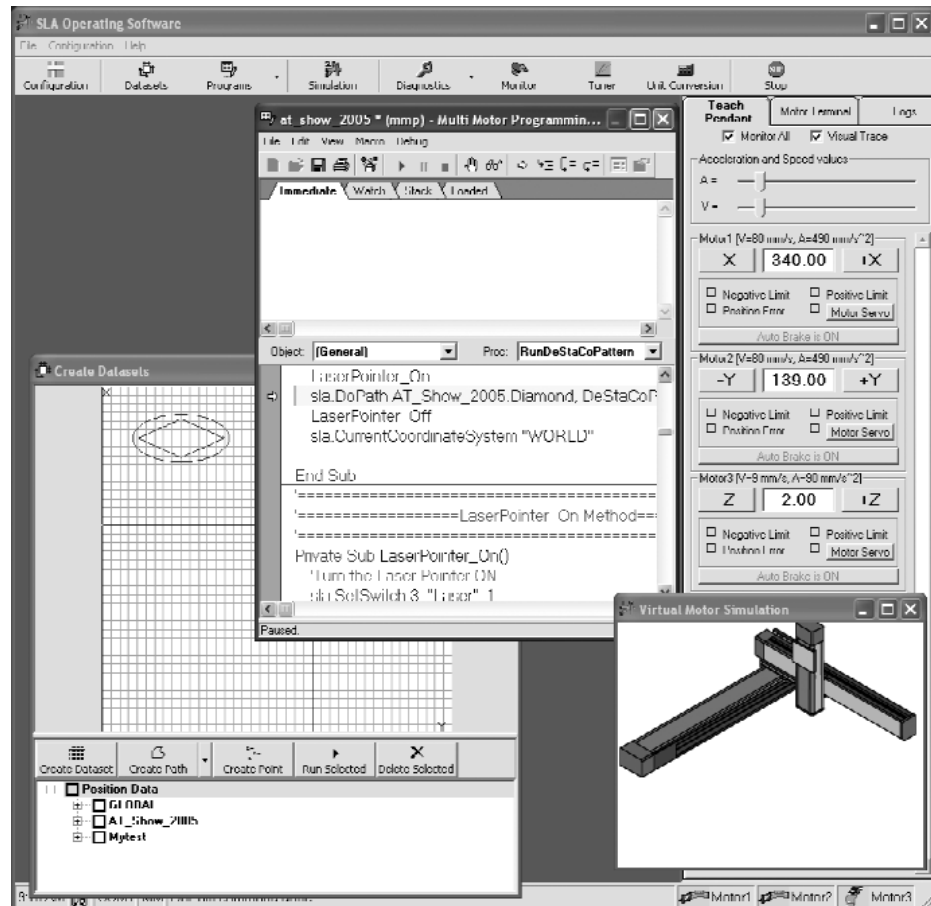
Point-to-Point Wizards



SLA Simulation Feature

Virtual Motor Simulation

- Write, test and simulate an SLA program without the SLA slide
- Allows faster integration of the SLA System because programs can be written and tested prior to arrival of the SLA System

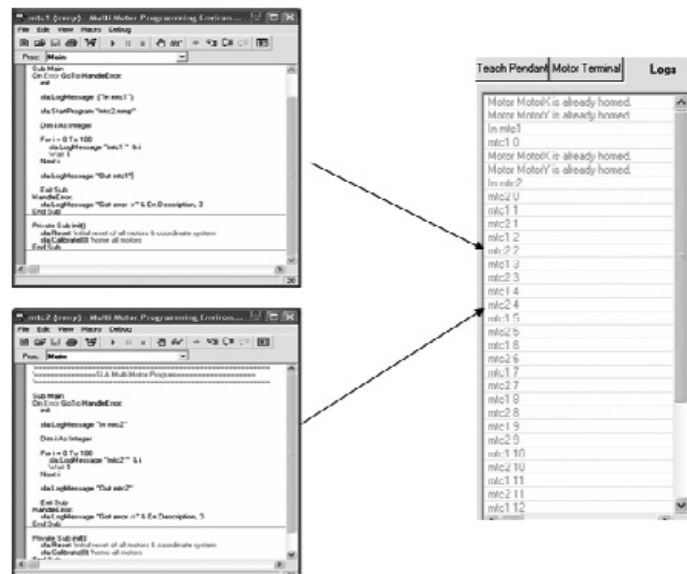


Multi-Task to Communicate with Peripheral Devices

- Allows multiple programs to run concurrently
- Allows synchronizing other devices to work simultaneously with SLA
- Allows efficient usage of resources with parallel processing

Program 1

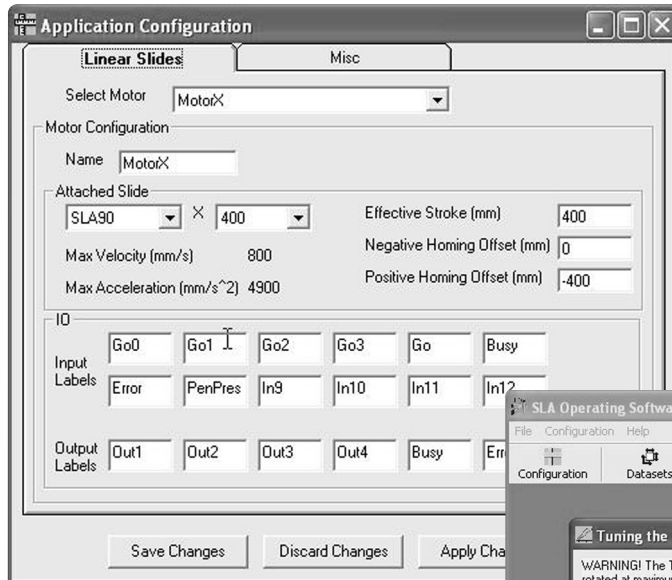
Program 2





How to Program

Monitoring, I/O Status and Error Reporting

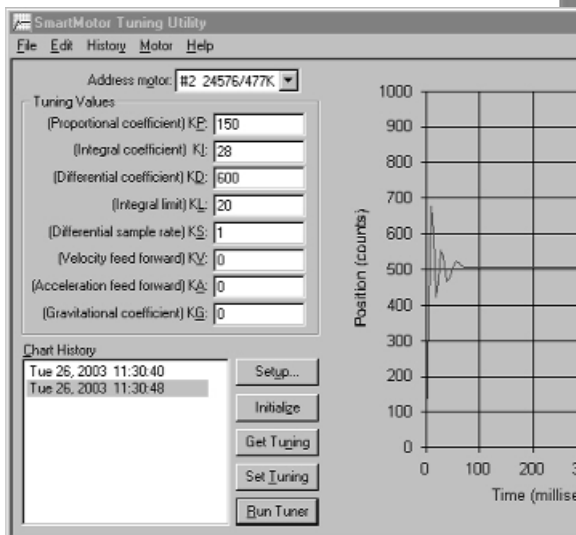
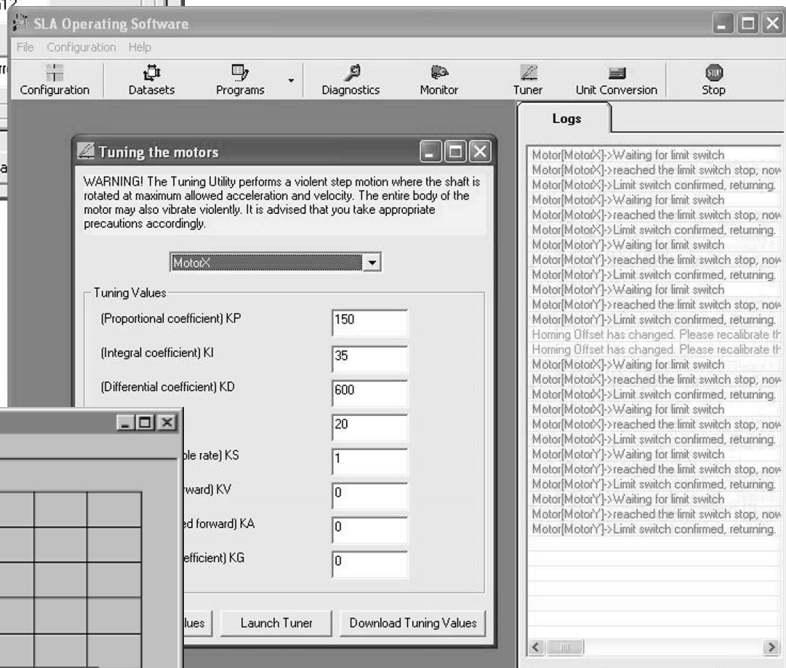


Each motor can be configured for:

- Model and stroke length
- Default acceleration
- Positive and negative homing offsets
- Assign names to inputs and outputs
- Up to 12 inputs and 6 outputs available for each motor
- I/O names are editable

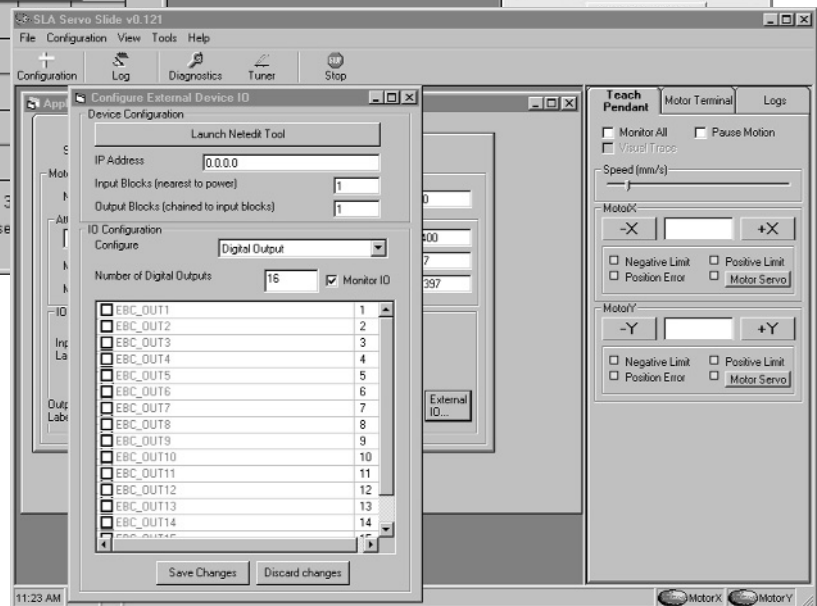
Tune Motor

Motor control parameters for each motor can be viewed, modified and tested

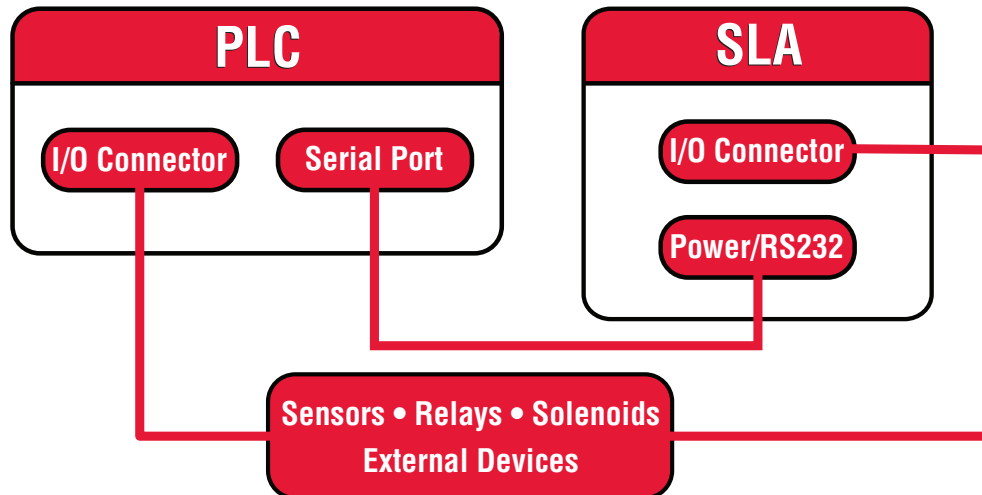


Optional External I/O Module:

- Ethernet connection
- I/O controlled directly from SLA PC control unit
- Available in both NPN and PNP types
- I/O blocks are expandable
- Comes in groups of 16 I/O



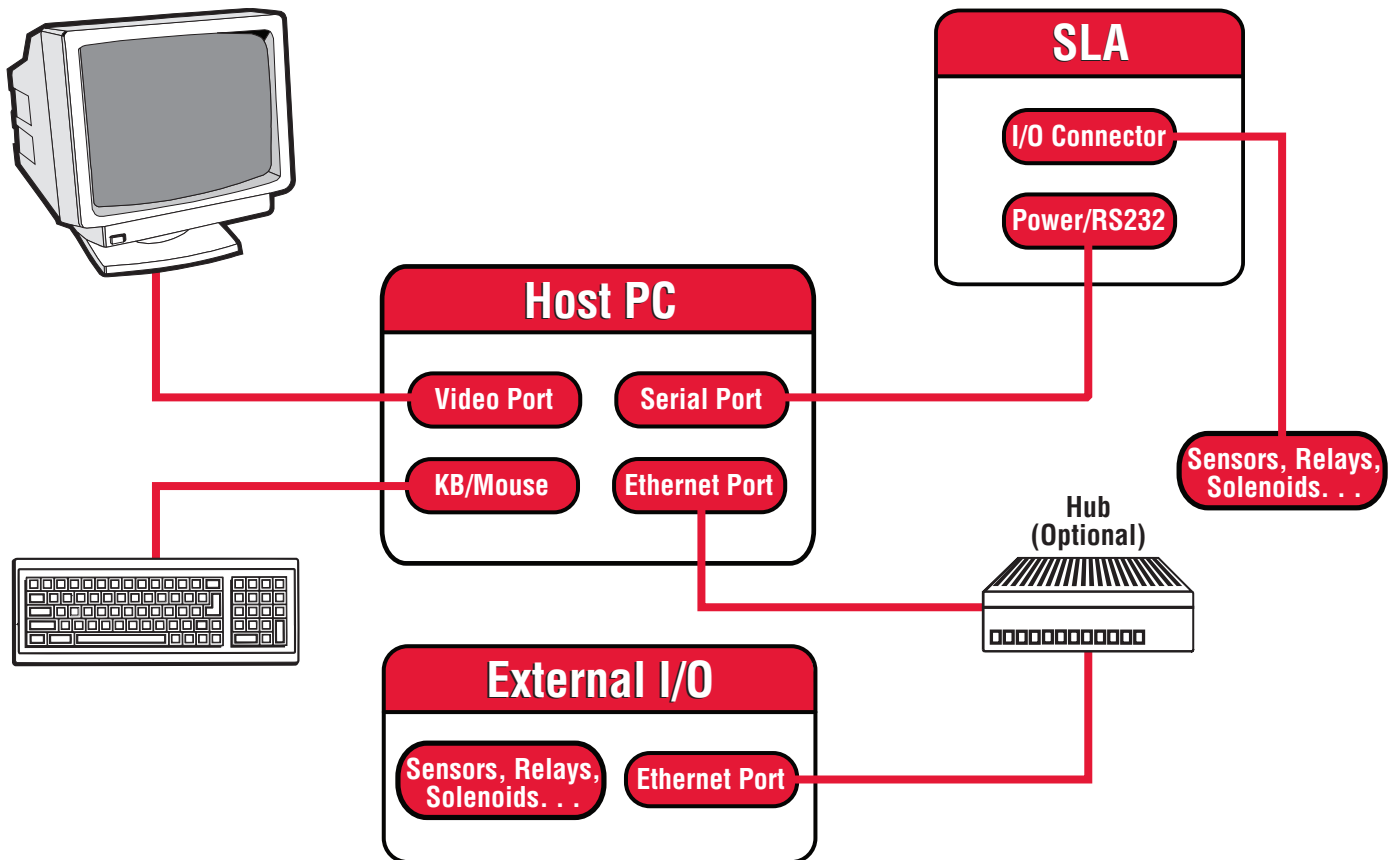
Applications Running Under PLC Control (BCD/SMP Mode)



- Programs are developed with SLA Servo Slide software and downloaded to smart motors
- Program resides only in smart motors. Up to 32k of memory is available for user programs (approximately 2,000 lines of code)
- Synchronized lines, synchronized paths. Smart motors monitor discrete signals from a PLC and act when discrete I/O changes occur
- Run user-written programs using on-board smart motor programs and I/O
- PLC Control: Point-to-Point, use PLC I/O to control slides and grippers
- Move to a position taught by leading the slide to the point by hand
- Move to one of 100 user-defined positions available for point-to-point applications

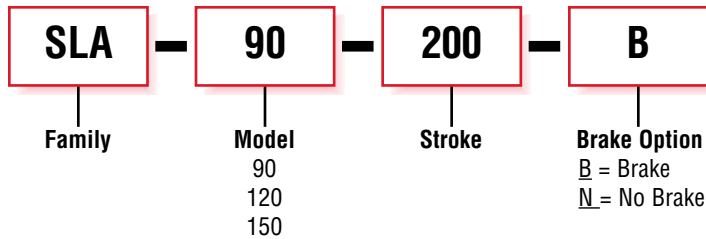
Software upgrades
are available for downloading at
www.Robohandsla.com

Applications Running Under Host PC

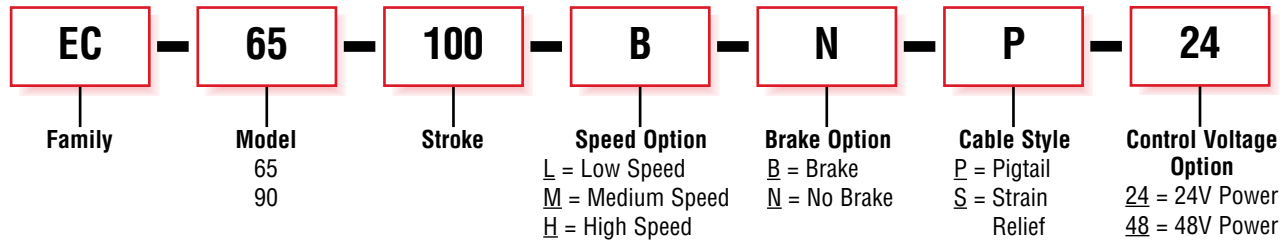


- Uses Basic Language for full programmability of program flow and slide motion
- Coordinated Motion: lines, arcs, circles, path following
- Path following via lead-through points
- Move to positions taught by entering numbers or lead-through
- Lead-through teaching of paths and points
- Manually drag robot through paths. Recall these paths or points by name in the Basic program
- Communicate to HMI, Vision System or other user-control devices

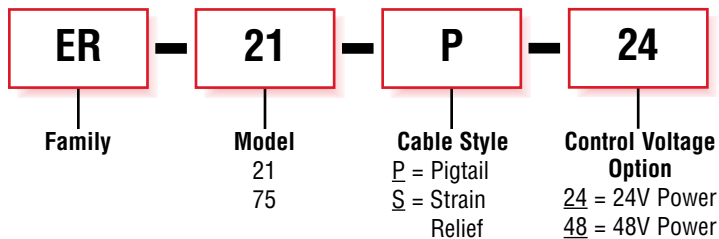
SLA Servo Slide



eCylinder™



eRotary™





Order Process

1

Visit our On-line Web Configurator (www.robohandsla.com).

Enter a minimum amount of application specific data, then output a budgetary quote (in U.S. dollars) and proposal drawing. (See page 27 for details)

2

Complete an Application Data Sheet, then e-mail it to us at tech-sla@robohand.com or fax to (972) 726-7523. A review of your data sheet will occur within 24 hours of receipt. A firm price, models and BOM will be generated for your order. (See inside back cover)

3

Your customized SLA System will be assembled and shipped to you. Included with your order will be the following electronic documentation:

- Complete BOM and electrical schematics on system components
- CAD models of the system
- Dedicated Web page URL for each customer system order

■ **Easy to order, simple to program.**

■ **Precision engineered for easy fit, function and durability.**

■ **Web Configurator saves you time and allows for quick budgeting.**

■ **Digital documentation with each System for easy parts matching on reorders.**

■ **Immediate productivity upgrade using our complete integrated flexible system.**

■ **Superior customer service commitment and ongoing support.**

The Robohand SLA On-line Web Configurator allows YOU to enter a minimum amount of application specific data and output a budgetary quote and proposal drawing!

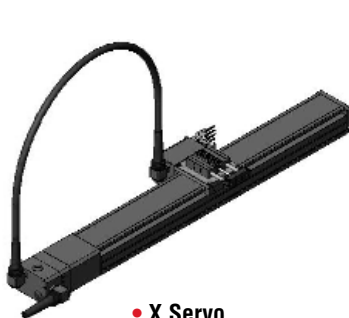
The 3D model is output in the CAD software of your choice – SolidWorks, Pro-E, Catia, AutoCad and more!



What information do you need to input? Not a lot, just a few simple selections from our easy to use on-line GUI and that's it! Below are the following questions you will be answering.

- Input your payload.
- Select number of axis.
- Select cycle speed.
- Select axis configuration type.
- Select axis slide type.
- Select slide stroke length.
- Do you want an end effector?

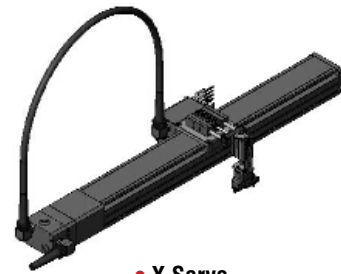
With the Robohand SLA On-line Web Configurator, getting a proposal drawing and budgetary price is quick, easy, and done when you need it. Below are some of the applications our On-line Web Configurator has built.



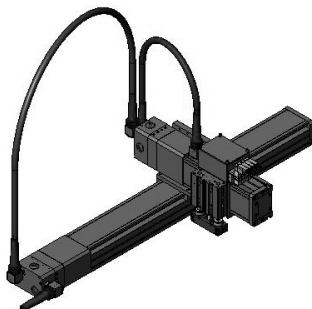
- X Servo
- Y Pneumatic



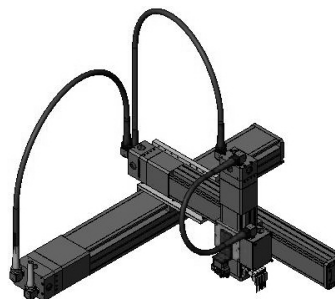
- XY Servo



- X Servo
- YZ Pneumatic
- Gripper



- XY Servo
- Z Pneumatic



- X Servo
- Y Servo
- Z Servo
- Gripper



Customer Support

Technical Support

- Speak directly to an Engineer by calling (972) 726-7301
- Support by:
 - Phone: (800) 259-9890
(972) 726-7300
 - Web: robohandsla.com
 - E-mail: tech-sla@robohand.com
- Robohand provides all part numbers and documents for future orders –
not available elsewhere!

Optional and Personalized Customer Service Feature!

- Access your own secure Web section where order information will be maintained (BOM, electronic schematics, 3D CAD models, and more!)
- You will be given a unique ID and password for 24/7 access

Product Warranty

All DE-STA-CO Products are thoroughly inspected and tested. We fully guarantee all materials and workmanship to be free of defects. Any product that is found to be defective in design, material or workmanship in the course of its normal use will be promptly replaced.

This Warranty does not apply to any product where the failure is a result of misapplication or abuse, nor is there any Warranty expressed or implied as to the merchantability or fitness for a particular purpose of the product and any warranty is limited to the above express warranty.

This Warranty is null and void if the product is repaired, modified or altered in any way. DE-STA-CO is not liable for labor, special, direct, incidental, or consequential damages and under no circumstances any charges in excess of the invoice amount of the product proven to be defective.

Application Data Sheet

Please send this page to factory for a system quotation.

Project Information

Date:				Revision:			
Contact Person:				Phone:			
E-Mail:				Fax:			
Company:				Project Name:			
Address:							
City:							
State:				Zip Code:			
CAD Preference:							
Application Description:							

Application Input Data

Total Payload (in kg including tooling):				Maximum Speed (mm/sec):			
Cycle Time:				Number of Axis (1, 2 or 3):			
Axis Configuration Type (base or slide affixed)				X-Y:	Y-Z:		
				X-Axis	Y-Axis	Z-Axis	
Control Type (Servo or Pneumatic):							
Stroke Length (in mm):							
Do you want an End Effector?				Yes ☐ No ☐			
If yes, enter Robohand Part Numbers:				Pneumatic Slide	Gripper	Rotary	
Remote Controller Type (PLC/PC)?							
Provided By:							
Motion Control Type:							
I/O types and number of inputs and outputs:							
Assembly Instructions and/or Sequence of Operation:							

Factory Recommended Configuration

X-Axis:	Y-Axis:	Z-Axis:	Brake Required for Z-Axis	
Assembly Style (1=normal):				
Motor Power Supply Required:				
Required power to run all motors in VA				
Robohand Part Numbers:	Pneumatic Slide	Gripper	Rotary	
External IO?	IO Type:	Input Module(s):	Output Module(s):	
Link to Customer Model:				
Customer Approval Name:				
Approval Date:				

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