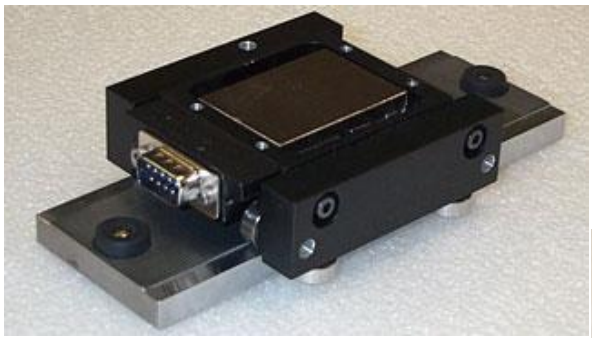
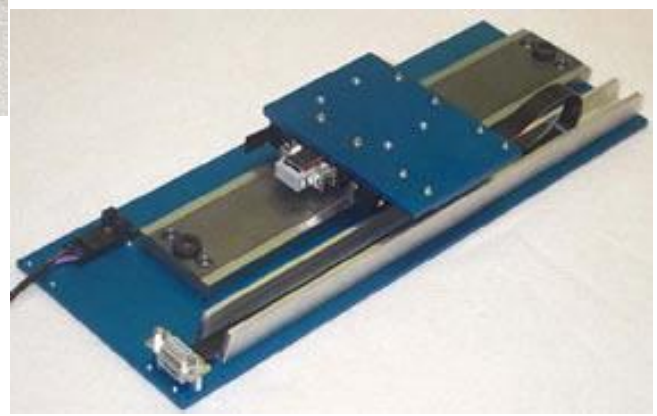
GROUP SIX





Linear Stepper Motors

- Single and Dual Axis Motors
- Great Transport Motion Systems
- Full, Half or Microstepping

Contact Us! 800-433-3434 USA
Email info@grp6.com

Linear Stepper Motor

Travel	144 inches	[3.6 m]
Velocity	80 inches / sec	[2 m/s]
Acceleration	1 G	1 G
Peak Force	65 lbs	[289 N]
Continuous Force	50 lbs	[222 N]

H2W Technologies linear stepper motors are ideal for open loop positioning applications with light payloads. They can be used at speeds up to 80 in /sec [2 m/sec] and strokes up to 144" [3.6 m]. Linear stepper motors are capable of very precise position, velocity and acceleration control when coupled with a microstepping drive and indexer.

The short moving assembly called a "forcer" is guided by either roller or air-bearings along he precision ground track called a "platen". The bearings are designed to support the customer's payload and to maintain the required .001" [0.025 mm] gap between the platen and the forcer.

The step and direction signal from a microstepping drive, to the 2 or 4 phase forcer is supplied via a power cable. The motion achieved with a full step is .010" [250 microns] and with a microstep it's .00004" [1 micron].

The linear stepper motor is a complete positioning stage with the motor, the bearings and the positioning system all built into one compact package.

Integrating a linear encoder with the stepper provides a closed loop system.

Advantages:

- Low profile and small cross section
- High Speed
- Low cost positioning stage solution
- No servo tuning required
- Multiple forcers on a single platen

Applications:

- Pick and Place
- Wire bonders
- Parts transfer
- Fiber optic

The Linear Stepper Motor consists of 2 main parts

- **Moving Forcer Assembly:** The forcer is made up of an aluminum housing that contains the motor windings, lamination stacks, and permanent magnets. The active surface of the lamination is slotted to form teeth with a pitch of .040" [1 mm]. The ends of the coil are brought out to either a "D" connector or to flying leads. Mounting holes on the top surface of the forcer are for attaching the customer's payload. The forcer comes in different widths and lengths, depending on the required force. Multiple forcers can be supplied with a single platen to allow for independent moving heads.
- **Long Stationary Platen:** The platen is a precision ground steel bar or tube that is slotted to form .020" [0.50 mm] wide teeth on the surface. The bar is hard chrome plated and filled with epoxy to provide a flat air-bearing surface for the platen. The platen is available in widths from 1.25" to 3.0 " [31.8 mm to 76.2 mm]. The length of the platen is a function of the stroke. Single piece platens are available as long as 144 inches [3.6 m]. For longer strokes the platens will be supplied in sections.

Required Electronics:

The linear stepper motor requires a full step or microstepping driver with power supply that is rated with sufficient current and voltage to meet the motion requirements. With full stepping, the forcer will move .010" [.25 mm] for each step. With microstepping the forcer will divide the full step by the number of microsteps. With 256 microsteps / full step, the microstep will be .010" [.25 mm] / 256 = 0.00004" [1 micron]

Environmental Considerations:

The linear stepper motor is a precision device and should not be mounted in an environment that is wet or excessively dirty. Debris should not be allowed to accumulate on the platen.

Mounting:

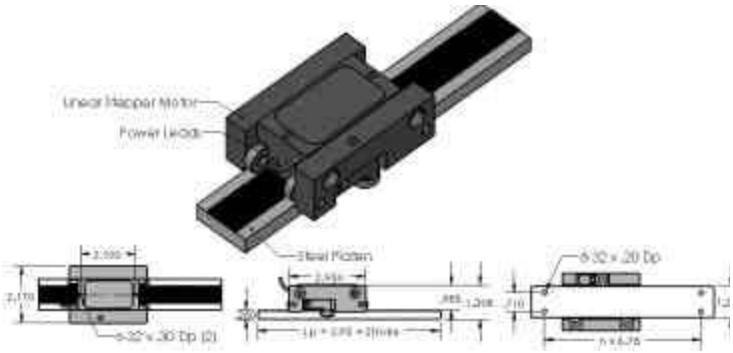
The platen should be mounted to a flat (better than .003"/ ft [246 microns / m]) and stiff surface. Threaded holes on the bottom of the platen are present for mounting to the customers system. The forcer has threaded holes on the top surface for attaching the payload. The linear stepper motor may be mounted in any orientation. When mounting the platen with the forcer moving vertical, it should be noted that the forcer will be required to generate additional force due to gravity and that the ball bearing forcer will slide down to the bottom when power fails. Turning off the air to an air bearing forcer will lock the forcer in place.

Ordering Info:

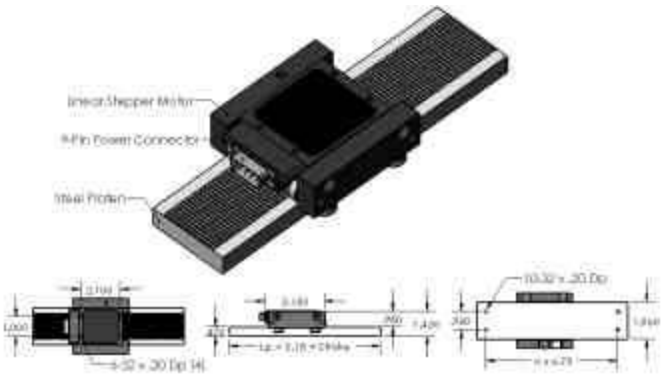
Linear stepper motors can be ordered for any stroke up to 144inches and continuous forces up to 50 lbs [222 N]. Platens are available as bars, single piece tubes or welded tube assemblies

Model # STS-AABB-CX
where: AA is for the continuous force in lbs (06 is 6 lbs)
BB is the platen width (15 is 1.5 inch)
C is for the bearing type (R for roller bearing, A for air bearing)
X is for special options
(i.e. STS-0213-R is a 2.0 lbs continuous force stepper, designed for a 1.25" wide platen and no special options)

P/N STS-0213-R Linear Stepper

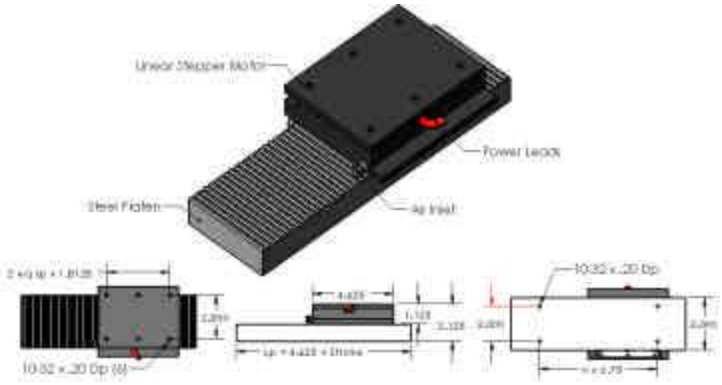


P/N STS-0620-R Linear Stepper



P/N STS-1220-A Linear Stepper

P/N STS-2030-A Linear Stepper

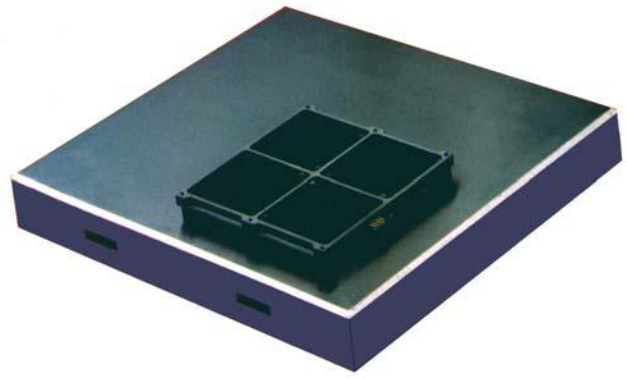


Lp = Platen Length

Model #	Force cont lbs [N]	Force peak lbs [N]	Current rms amps	Current peak amps	# of Phases	Bearing Type
STS-0213-R	2 [9]	2.3 [10]	2	3	2	Roller
STS-0620-R	6 [27]	8 [36]	1.6	3.5	2	Roller
STS-0830-A	8 [36]	10.6 [47]	1.6	3.5	2	Air
STS-1220-A	12 [53]	16 [71]	3.2	7	2	Air
STS-2030-A	20 [89]	26 [115]	3.2	7	2	Air

Note: This is a partial listing; other models with different forces and strokes are available. H2W Technologies single axis linear

Dual Axis Linear Stepper Motor



Travel	40" x 60" inches	[1 m x 1.5 m]
Velocity	80 inches / sec	[2 m/s]
Acceleration	1 G	1 G
Peak Force	38 lbs	[169 N]
Continuous Force	30 lbs	[133 N]

H2W Technologies Dual Axis Linear Stepper Motors are ideal for open loop positioning applications with light payloads. They can be used at speeds up to 80 in /sec [2 m/sec] and strokes up to 40" x 60" [1 m x 1.5 m]. Linear stepper motors are capable of very precise position, velocity and acceleration control when coupled with a microstepping drive and indexer.

The moving assembly called the "forcer" is supported by magnetically preloaded air-bearings imbedded in the active surface of the forcer between the forcer and platen. The bearings are designed to support the customer's payload and to maintain the required .001" [0.025 mm] gap between the platen and the forcer.

The two axis step and direction signal from a microstepping drive, to the 2 or 4 phase forcer is supplied via a power cable. The motion achieved with a full step is .010" [250 microns] and with a microstep it's .00004" [1 micron].

The Dual Axis linear stepper motor is a complete positioning stage with the motor, the bearings and the positioning system all built into one compact package.

Integrating a linear encoder with the stepper motor provides a closed loop system.

Advantages:

- Low profile and small cross section
- High Speed
- Low cost positioning stage solution
- No servo tuning required
- Multiple forcers on a single platen

Application examples:

- Pick and Place
- Wire bonders
- Parts transfer
- Fiber optic

The Dual Axis Linear Stepper Motor consists of 2 main parts

- **Moving Forcer Assembly:** The forcer is made up of an aluminum housing that contains the motor windings, lamination stacks, and permanent magnets. The active surface of the lamination is slotted to form teeth with a pitch of .040" [1 mm]. The ends of the coil are brought out to either a "D" connector or to flying leads. Mounting holes on the top surface of the forcer are for attaching the customer's payload. The forcer comes in sizes, depending on the required force. Multiple forcers can be supplied with a single platen to allow for independent moving heads.
- **Platen:** The platen is a precision ground steel plate that is slotted to form 0.02" x 0.02" [0.50x 0.50 mm] square teeth on the surface. The spaces between the platen teeth are filled with epoxy to provide a flat air-bearing surface for the forcer. The stroke of the forcer is a function of the length and width of the platen. Platens can be manufactured in different shapes with a multitude of mounting configurations.

Required Electronics:

The linear stepper motor requires a full step or dual axis microstepping driver with power supply that is rated with sufficient current and voltage to meet the motion requirements. With full stepping, the forcer will move .010" [.25 mm] for each step. With microstepping the forcer will divide the full step by the number of microsteps. With 256 microsteps / full step, the microstep will be .010" [.25 mm] / 256 = 0.00004" [1 micron]

Environmental Considerations:

The linear stepper motor is a precision device and should not be mounted in an environment that is wet or excessively dirty. Debris should not be allowed to accumulate on the platen.

Mounting:

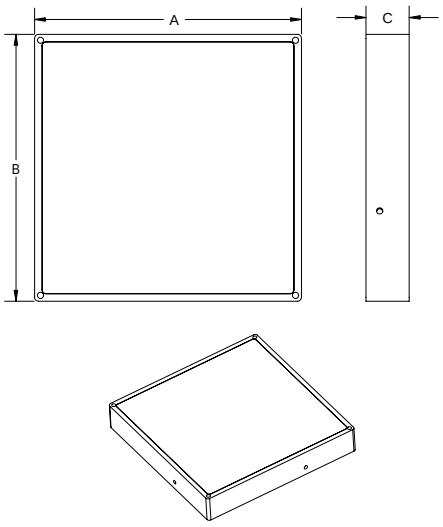
The platen should be mounted to a flat (better than .003"/ ft [246 microns / m]) and stiff surface. Self-supporting platens can be manufactured allowing the designer to suspend the platen from multiple points. Threaded holes on the bottom of the platen can be provided for mounting to the customer's machine base. The forcer has threaded holes on the top surface for attaching the payload. The linear stepper motor may be mounted either face up or face down. Turning off the air to an air bearing forcer will lock the forcer in place.

Ordering Info:

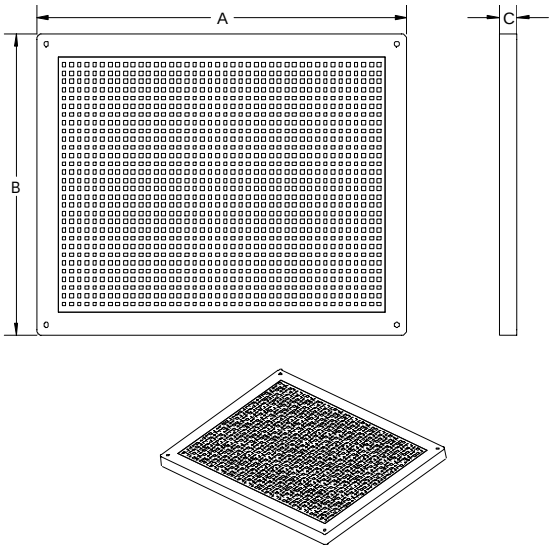
Dual Axis Linear Stepper Motors can be ordered for any stroke up to 40 " x 60" (1 m x 1.5 m) and continuous forces up to 30 lbs [133 N]. Platens are available as solid steel or cast iron plates.

Model # DST-AAB-CX
Where: AA is for the continuous force in lbs (06 is 6 lbs)
B is for the number of phases (2 or 4 phase)
C is for the bearing type (A for air bearing) – standard for this model
X is for special options (lead termination and connectors)
(i.e. DST-022-A is a 2.0 lbs continuous force dual axis linear stepper motor, two phase, air bearing and no special options)

Please consult with the factory regarding platen ordering information



P/N DST-AAB-CX Linear Stepper Forcer



P/N DSP-XXX Linear Stepper Platen

Model #	Force cont lbs [N]	Force peak lbs [N]	Current rms amps	Current peak amps	# of Phases	Bearing Type	Forcer Dimensions A, B & C
DST-022-A	2 [9]	2.3 [10	2	3	2	Air	3.2" x 3.2" x 1.2"
DST-062-A	6 [27]	8 [36]	1.6	3.5	2	Air	3.8" x 3.8" x 1.2"
DST-082-A	8 [36]	10.6 [47]	1.6	3.5	2	Air	4.75" x 4.75" x 1.2"
DST-122-A	12 [53]	16 [71]	3.2	7	2*	Air	5.9" x 5.9" x 1.2"
DST-202-A	20 [89]	26 [115]	3.6	8	2*	Air	6.5" x 6.5" x 1.2"
DST-302-A	30 [89]	39 [115]	4.0	8.8	2*	Air	7.0" x 7.0" x 1.2"

* Available in 4-phase configuration

Note: H2W Technologies Dual Axis Linear Stepper Motors can be custom designed to meet your specifications. For further details please contact H2W Technologies at the numbers listed below.