VXM® Calculation of Steps, Direction and Speed

(with standard 1.8º (200 step) motor)

Lead Screw Code for Velmex Linear Products				Advance per turn	Advance per Step*	Speed for the VXM 1000 SPS (steps / sec)*	
BiSlide®	UniSlide®		XSlide™	Lead Screw Pitch >		2.5 RPS (rev / sec)	
E04	W4		E04	0.400"	0.0010000”	1 in/sec	2.54 cm/sec
E02	W2	P5	E02	0.200"	0.0005000”	0.5 in/sec	1.27 cm/sec
E01	W1	P10	E01	0.100"	0.0002500”	0.25 in/sec	0.635 cm/sec
	B	P20	E50	0.050"	0.0001250”	0.125 in/sec	0.3175 cm/sec
	C	P40	E25	0.025"	0.0000625”	0.0625 in/sec	0.1588 cm/sec
M01	K1	Q1	M01	1 mm	0.0025 mm	0.0985 in/sec	0.25 cm/sec
M02	K2	Q2	M02	2 mm	0.0050 mm	0.1968 in/sec	0.5 cm/sec

Velmex Rotary Tables

Model	Gear Ratio	Advance per turn	Advance per Step*	Speed for the VXM
B4872	72:1	5 degree	0.0125 degree	12.5 degree/sec
B4836	36:1	10 degree	0.0250 degree	25 degree/sec
B4818	18:1	20 degree	0.0500 degree	50 degree/sec
B5990	90:1	4 degree	0.0100 degree	10 degree/sec

*Calculated with a VXM half step control and a 1.8° (200 step) motor

VXM® Calculation of Steps, Direction and Speed

(with .9º (400 step) motor)

Lead Screw Code for Velmex Linear Products				Advance per turn	Advance per Step**	Speed for the VXM 1000 SPS (steps / sec)**	
BiSlide®	UniSlide®		XSlide™	Lead Screw Pitch >		2.5 RPS (rev / sec)	
E04	W4		E04	0.400"	0.00050000”	0.5 in/sec	
E02	W2	P5	E02	0.200"	0.00025000”	0.25 in/sec	
E01	W1	P10	E01	0.100"	0.00012500”	0.125 in/sec	
	B	P20	E50	0.050"	0.00006250”	0.0625 in/sec	
	C	P40	E25	0.025"	0.00003125”	0.03125 in/sec	
M01	K1	Q1	M01	1 mm	0.00125 mm		1.25 mm/sec
M02	K2	Q2	M02	2 mm	0.00250 mm		2.5 mm/sec

Velmex Rotary Tables

Model	Gear Ratio	Advance per turn	Advance per Step*	Speed for the VXM
B4872	72:1	5 degree	0.00625 degree	6.25 degree/sec
B4836	36:1	10 degree	0.01250 degree	12.5 degree/sec
B4818	18:1	20 degree	0.02500 degree	25 degree/sec
B5990	90:1	4 degree	0.00500 degree	5 degree/sec

**Calculated with a VXM half step control and a .9° (400 step) motor

VXM® Calculation of Steps, Direction and Speed

- Direction is relative to the device the motor is on. On screw drive actuators like UniSlides®, BiSlides® and XSlides™, positive is the direction moving away from the motor.
- On worm gear type Rotary Tables like the Velmex B4800 or B5990, positive is normally counter clockwise (CCW.)

To convert from “real” units to steps when using a 1.8°, divide the distanced desired to move by the Advance Per Step.
(Distance / Advance per Step = Steps for the VXM)

Example #1: To move 3 inches with the BiSlide E04 lead screw (3 ÷ 0.001 = 3,000) requires a 3,000 step index
Example #2: To move 90 degrees with the B5990 rotary table (90 ÷ 0.01 = 9,000) requires a 9,000 step index.
Example #3: To move 4 inches with the UniSlide W1 lead screw (4 ÷ 0.00025 = 16,000) requires a 16,000 step index

Other Formulas

1 Motor (1.8°) rev = 400 half-steps on the VXM
1 Motor (.9°) rev = 800 half-steps on the VXM
Linear Speed = Advance per step x steps per second
Rotary Speed = Advance per step x steps per second
Pulses per second ÷ 400 = rev/sec of the motor (if using a .9° motor divide by 800)