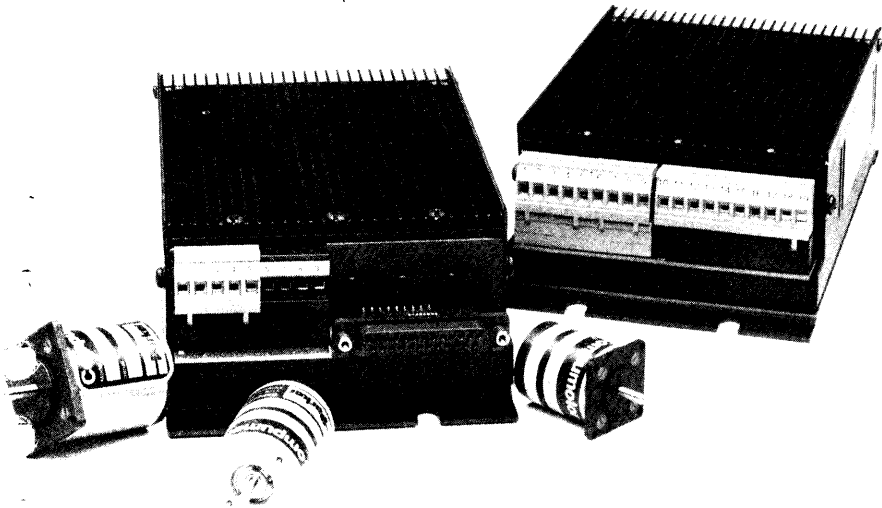


CX Series

Semi-Packaged Microstepping Motor/Drive/Indexer Systems



Miniature Step Motors

Compumotor offers the CX Drive with three unique small motors for applications where a modest torque is required in a small package size. The CX drives provide smooth motion from extremely slow speeds (a few steps/second) to over 2,000 RPM. A single 12 volt power supply should be used for both the logic and motor supply. All motors provide accuracy comparable with larger frame size motors and have internal construction superior to the "tin-can" type motor.

When ordered with the miniature motors, the CX Drives are modified for a lower output current range (0-1 amp) and for 12 volt-only operation.

Technical Data

	CXT 25-30	CXT 27-38	CXT 32-39
Static Torque oz-in	15	35	75
Rotor Inertia oz-in ² (gm-cm ²)	0.0219 (4)	0.0180 (3.3)	0.0601 (11)
Weight-oz	2.12	3.0	4.75

Technical Data

	Size 23			Size 34			Size 42	
	CX 57-51	CX 57-83	CX 57-102	CX 83-62	CX 83-93	CX 83-135	CX 106-120	CX 106-178
Static torque oz-in (N-m)	45 (0.32)	80 (0.55)	120 (0.85)	140 (1.00)	260 (1.85)	380 (2.70)	480 (3.40)	700 (4.90)
Rotor inertia oz-in ² (Kg-cm ²)	0.48 (0.088)	1.28 (0.234)	1.75 (0.320)	3.50 (0.64)	6.70 (1.23)	10.24 (1.87)	21.5 (3.92)	44.0 (8.05)
Bearing:								
Thrust load	lb (Kg)	25 (11.32)	25 (11.32)	25 (11.32)	50 (22.64)	50 (22.64)	50 (22.64)	50 (22.64)
Radial load	lb (Kg)	15 (6.79)	15 (6.79)	15 (6.79)	25 (11.32)	25 (11.32)	25 (11.32)	25 (11.32)
End play <i>Reversing load</i> <i>Equal to 1 lb</i>	in. (cm)	0.005 (0.013)	0.005 (0.013)	0.005 (0.013)	0.005 (0.013)	0.005 (0.013)	0.005 (0.013)	0.005 (0.013)
Radial play <i>Per 0.5 lbs. load</i>	in. (cm)	0.0008 (0.002)	0.0008 (0.002)	0.0008 (0.002)	0.0008 (0.002)	0.0008 (0.002)	0.0008 (0.002)	0.0008 (0.002)
Weight (Net)								
Motor	lbs (Kg)	1.6 (0.73)	2.4 (1.09)	3.2 (1.45)	3.8 (1.73)	5.12 (2.33)	8.3 (3.77)	19.11 (8.69)
Total shipping weight (Net)								
Motor/Drive + Container	lbs (kg)	7.14 (3.24)	7.94 (3.60)	8.74 (3.96)	9.34 (4.24)	10.66 (4.84)	13.84 (6.28)	24.65 (11.20)

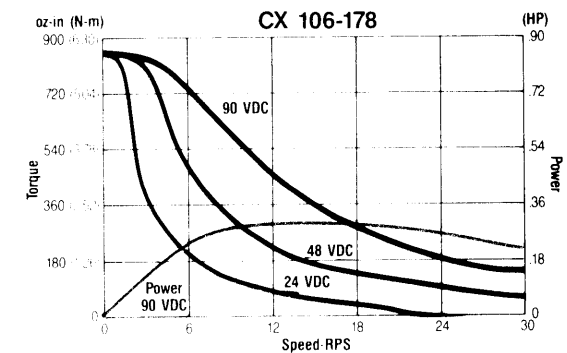
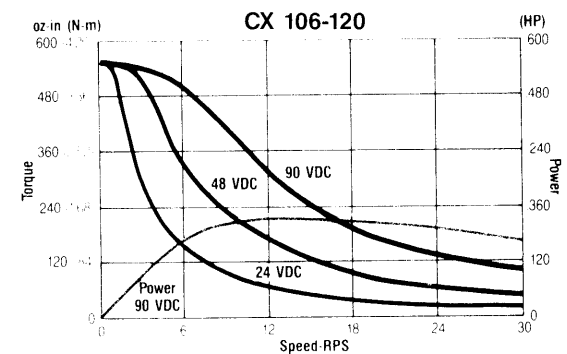
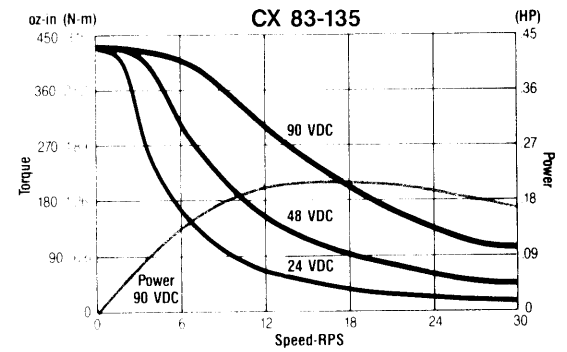
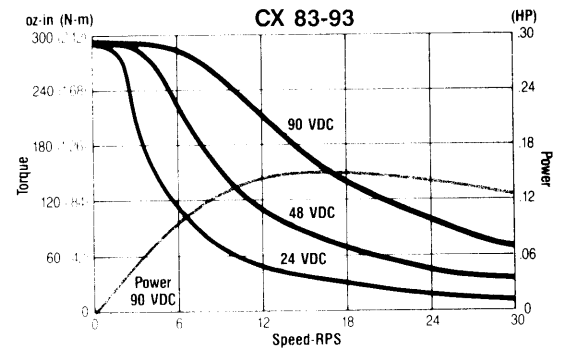
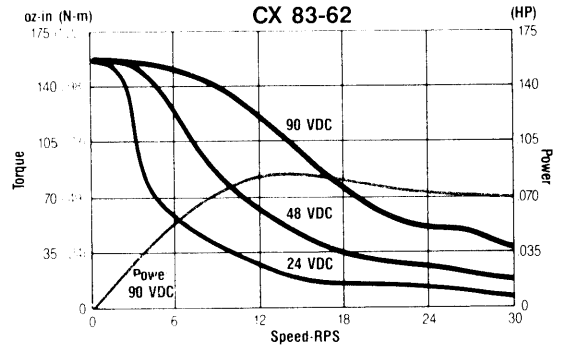
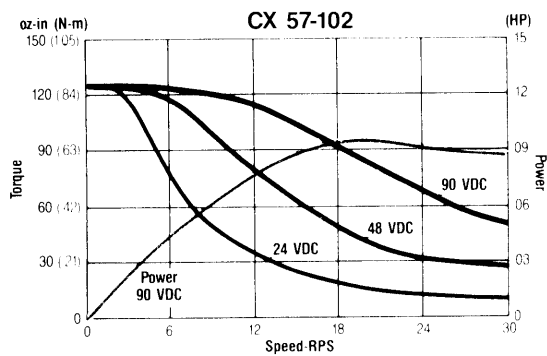
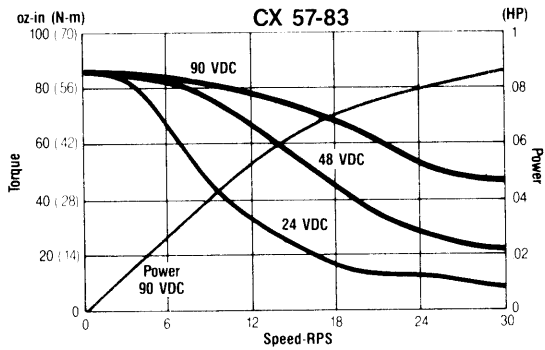
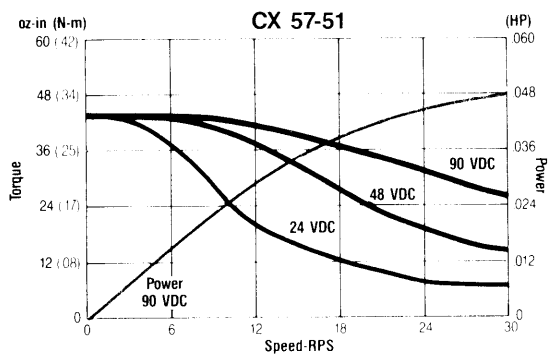
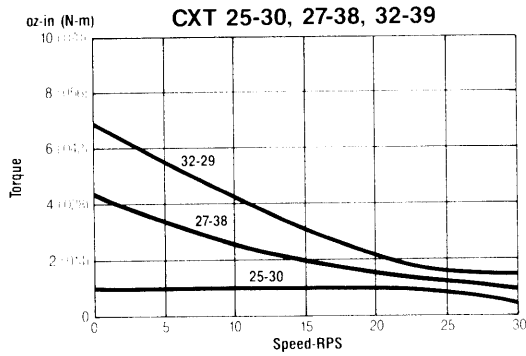


CX Series

Semi-Packaged Microstepping
Motor/Drive/Indexer Systems

Speed/Torque Curves

Power curve is shown in blue



**Motor and Power Selection
A Designer's Guide**

The speed/torque curves indicate the values obtained with a CX drive at supply voltage of 24, 48, and 90 volts (The DC3 power supply provides 90 volts). These curves are valid for Compumotor supplied motors, which all have an inductance of 8-10 millihenries (mH) when each phase is measured between the center tap and the end. This

is often referred to as the "unipolar" or "center-to-end" inductance. Most motor manufacturers specify phase inductance in this manner. Motors other than those supplied by Compumotor with similar inductance (and phase current) specifications will produce similar speed/torque performance.

**Torque, Speed, Inductance,
and Supply Voltage**

If the user requires a different speed/torque relationship or wants to use another power supply or motor, a few simple factors must be taken into account. There is a relationship between speed/torque, motor inductance, supply voltage, and motor heat that makes each parameter dependent on the other. In general:

1. For a given motor, the higher the supply voltage, the better the high speed performance (top speed and torque at high speed) will be. Refer to the speed/torque curves to the right. Torque at low speeds is generally independent of motor supply voltage.
2. For a given motor, the higher the supply voltage the hotter the motor will run. In other words, applications that do not require high speed operation and that are run at lower supply voltages will run cooler. Also, motors constructed from M19 (or H18) lamination material run significantly cooler than motors built from other materials. Solid (non laminated) rotor motors or motors with riveted rotors should not be used.
3. For a given supply voltage, lower inductance motors provide better high speed performance (top speed and high speed torque) but more motor heating than high inductance motors. This is because lower inductance motors require more current to provide rated torque than higher inductance motors. The graphs show the relationship between speed/torque and inductance.
4. High inductance motors provide more torque with less current than low inductance motors. They run cooler, but their top speed is limited; the torque falls off more quickly.

Low inductance motors (3-7 mH/phase) will run very well at low supply voltages (12-48 volts). They typically produce a fairly flat speed/torque curve. High inductance motors (20 mH and up) provide a lot of torque at fairly low currents, but their torque falls off rapidly and they typically require high supply voltages (48-90 volts) to run at high speeds (above 1800 RPM). For any given supply voltage, the high inductance motor will run cooler than the low inductance motor.

Compumotor supplied motors are designed to fall between the two extremes and should provide good performance for most applications.

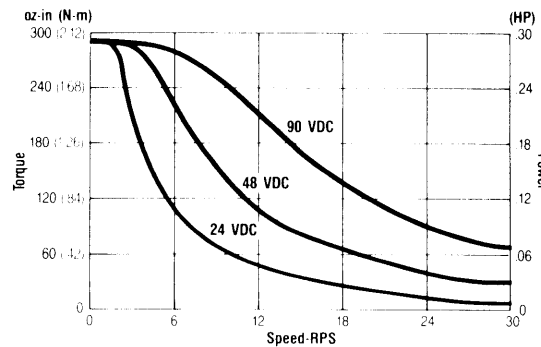
C Power Supply Requirements

The C requires an unregulated linear power supply to allow the drive to provide the necessary peak currents required by the motor. The voltage output must be 12-90 VDC with less than 10% ripple. The power supply must be capable of continuously delivering 2 amps for each drive.

When operating two or more C drives from one power supply, a "star" connection configuration should be implemented. Power cables should be connected directly at the power supply not chained from C drive to C drive. With power chained from drive to drive, cross-static is possible resulting in erratic noise related problems. To ensure against power problems, a .1 microfarad capacitor rated for a minimum of 150 volts should be installed across the power inputs at each drive.

All power and signal lines should be shielded twisted pairs with all shields connected to chassis ground at one end only. Signal lines and 90 volt power lines should be kept separate from each other.

Speed/Torque vs. Supply Voltage



Speed/Torque vs. Inductance

