C H A P T E R ⑥

Hardware Reference

Chapter Objectives

The information in this chapter will enable you to:

- ❏ Use this chapter as a quick-reference tool for most system specifications (dimensions and performance)
- ❏ Using this chapter as a quick-reference tool for DIP switch settings

Environmental Specifications

Drive Temperature

122°F (50°C) ambient air temperature, measured at the heatsink fins. An internal thermostat will shut down the drive if the unit reaches 158°F (70°C) internally. Current settings in excess of 4A in high ambient temperature environments, above 113°F (45°C), may require fan cooling to keep drive temperature within allowable limits and to keep the drive from shutting itself down due to overtemperature. Low temperature of 32°F (0°C).

Motor Temperature

212°F (100°C) maximum allowable motor case temperature. Actual temperature rise is duty cycle dependent.

Humidity

0 - 95%, non-condensing

Drive Electrical Specifications

Input Power

90VAC to 132VAC @50/60Hz, Low voltage fault below 85VAC

Output Power

- ❏ Low power: 0.1 to 6 amps per phase at 170 VDC (PWM)
- ❏ High power: 0.2 to 8 amps per phase at 170 VDC (PWM)

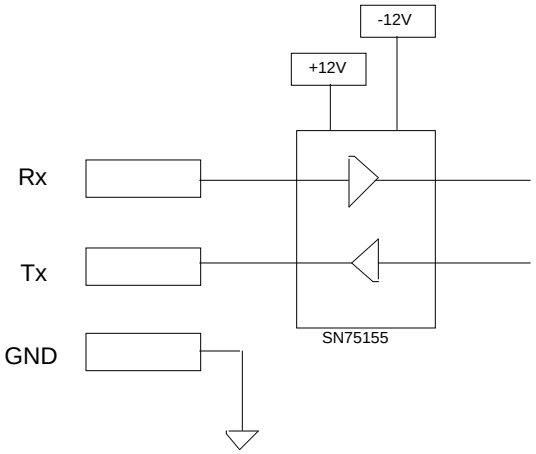
Motor Output

- ❏ Two phase Mosfet bipolar (H-bridge) switching at 20kHz (nominal), recirculating current, pulse width modulated.

I/O Electrical Specifications

Rx & Tx (RS-232C)

- ❏ Rx± 24VDC maximum input voltage
- ❏ High-level input 2VDC minimum
- ❏ Low-level input 0.8VDC maximum
- ❏ Tx± 11VDC output voltage typical
- ❏ 10 mA current limited output.



Schematic:RS-232C Input

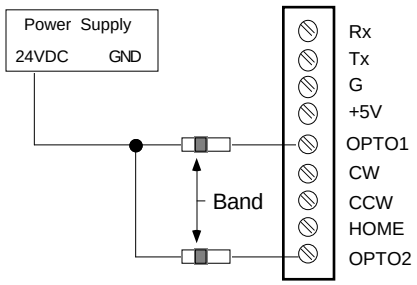
OPTO1 and OPTO2

The **OPT01** and **OPT02** terminals are the (5-12VCD) source inputs for the limit, home, registration, and general-purpose inputs. The voltage range is from +5 VDC to +12 VDC. A diode must be used for 13VDC - 24VDC voltage supplies, or OP1-HV/OP2-HV may be used without the zener diode.

☞ **Helpful Hint: Zener Diode Specifications**

If a voltage source from 13VDC - 24VDC is used, a Zener Diode must be placed in series with the voltage source. Voltages from 13VDC - 24VDC cannot be wired directly to **OPT01** or **OPT02** (this voltage would overdrive the internal components and damage the SX Indexer/Drive). The Zener Diodes limit the maximum voltage seen by the **OPT01** and **OPT02** inputs. The following Zener Diode values are recommended:

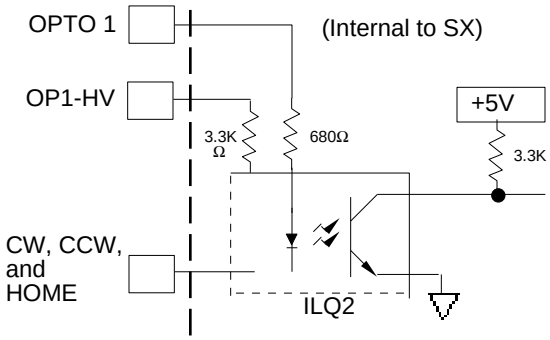
- ❏ Supply = 13VDC - 17VDC—Use a 5-watt Zener Diode with nominal Zener voltage of 6.8VDC
  - Motorola 1N5342, General Semiconductor 1N5342, Microsemi Corp., 1N5342, Diodes Inc. 1N5342, SGS Thompson 1N5342
- ❏ Supply = 17VDC - 24VDC—Use a 5-watt Zener Diode with nominal Zener voltage of 12VDC
  - Motorola 1N5349, General Semiconductor 1N5349, Microsemi Corp., 1N5349, Diodes Inc. 1N5349, SGS Thompson 1N5349



Zener Diode

CW, CCW, and HOME Inputs

The inputs are optically isolated and may be driven by providing a negative signal with respect to the **0PT01** input. The input driver must be capable of providing a minimum sink current of 2 mA to ensure proper operation. The maximum reverse voltage on these terminals is -3VDC with respect to the **0PT01** input (**0PT01** +3 VDC).

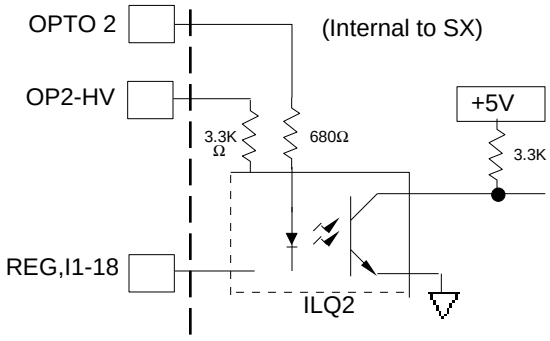


Note: OPTO1 is for use with (5-12VDC) power supplies and OP1-HV is for use with (12-24VDC) power supplies.
They should not be used together.

CW, CCW, and Home Inputs

Registration General-Purpose Inputs (I1-I8)

The inputs are optically isolated and may be driven by providing a negative signal with respect to the **0PT02** input. The input driver must be capable of providing a minimum sink current of 2 mA to ensure proper operation. The maximum reverse voltage on these terminals is -3 VDC with respect to the **0PT02** input (**0PT02** +3 VDC).



Note: OPTO2 is for use with (5-12VDC) power supplies and OP2-HV is for use with (12-24VDC) power supplies.
They should not be used together.

REG and I1 - I8 Inputs

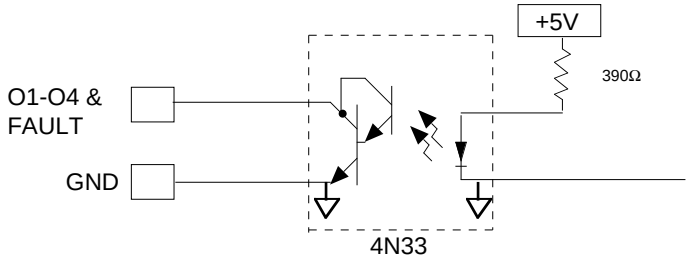
CAUTION

The maximum reverse voltage across OPTO1 and OPTO2 and their corresponding inputs is 3VDC. A zener diode or blocking diode may be required on the input as well if applying 13-24VDC to the inputs from a PLC output or other source.

General-Purpose Outputs (O1-O4) and Fault Output

The general-purpose outputs and the fault output are optically isolated darlington drive transistors. The maximum sink current is 35 mA with respect to the GND terminal. The maximum pull-up voltage at these terminals is 24VDC. The maximum reverse voltage at these terminals is -5VDC (GND - 5VDC). To provide a stable output signal, a maximum pull-up resistor of 1K is recommended.

$$R_L \geq \frac{V_P}{0.035} < 47k\Omega \qquad R_L = \text{Pull-up Resistor (Ohms)}, V_P = \text{Pull-up Voltage (VCD)}$$



Outputs and Fault

Refer to *Chapter 3, Installation*, for more information on the inputs, outputs, and fault output.

GND

The GND terminal is the ground reference for the general-purpose outputs, the fault output, the Rx input, and the Tx output.

+5V

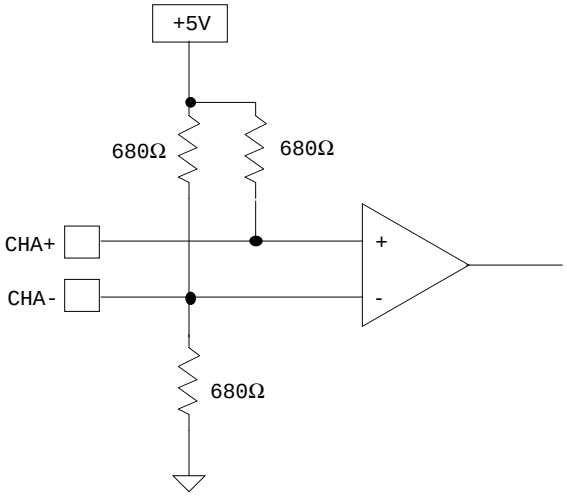
The +5V terminal is a +5VDC internal supply designed to provide +5VDC power at a maximum of 250 mA to run an optical encoder. The +5V supply may be used to power the I/O only if an encoder is not used.

Encoder Inputs CHA+, CHB+, and CHZ+

The plus inputs to the encoder are pulled up to +5 VDC with a 680 resistor . The input driver connected to this input must be capable of sinking 6.3 mA of current (minimum).

Encoder Inputs CHA-, CHB-, and CHZ-

The minus inputs to the encoder are biased at +2.5VDC with a 680 pull-up and a 680 pull-down. The input driver connected to this input must be capable of sinking and sourcing 6.3 mA of current minimum.



Incremental Encoder Schematic

The maximum encoder input frequency is 160 KHz (pre-quadrature) with a minimum pulse width of 500 nsec.

ACC

Reserved for expansion of Compumotor product features.

OP1-HV and OP2-HV

Formerly, OP1-HV and OP2-HV were labelled RSV+ and RSV-. If your unit is marked RSV+/RSV- these terminals have no function. If labeled OP1-HV/OP2-HV, these terminals can be used in place of OPT01/OPT02 when using a +12-24VDC power supply to pull up the I/O. They should not be used at the same time as OPT01/OPT02, power supply damage could occur.

Motor Electrical Specifications

Minimum Motor Winding Inductance

0.5 mH—Compumotor strongly recommends 2mH measured in series or parallel.

Maximum Motor Winding Inductance

None—Compumotor recommends 50mH measured in series or parallel. Use of motors with a winding inductance greater than 50mH may result in a significant reduction in system performance.

Minimum Motor Hipot

500VDC

Operational Specifications

Accuracy

±5 arcminutes typical (unloaded, bidirectional) with Compumotor motors.

Repeatability

±5 arcseconds typical (unloaded, unidirectional).

Hysteresis

Less than 2 arcminutes (0.0334°) unloaded, bidirectional.

Rotor Inertia

Size	**Rotor Inertia oz-in^2**	**Rotor Inertia (Kg-m^{2}X10^{-6})**
S57-51	0.546	9.998
S57-83	1.1	20.1
S57-102	1.69	30.9
Size 34	**Rotor Inertia oz-in^2**	**Rotor Inertia (Kg-m^{2}X10^{-6})**
S83-62	3.47	63.4
S83-93	6.76	124.0
S83-135	10.47	191.0
Size 42	**Rotor Inertia oz-in^2**	**Rotor Inertia Kg-cm^2**
SX106-178	44.0	8.05
SX106-205	52.0	9.51
SX106-250	63.0	12.14

Rotor Inertia (Compumotor Motors)

Speed/torque curves for the SX are provided later in this chapter.

Motor Size	Current	Static Torque (in-oz)
S57-51 **S**	1.18	65
S57-51 **P**	2.28	65
S57-83 **S**	1.52	100
S57-83 **P**	3.09	100
S57-102 **S**	1.71	125
S57-102 **P**	3.47	125
S83-62 **S**	2.19	160
S83-62 **P**	4.42	160
S83-93 **S**	2.85	300
S83-93 **P**	5.62	300
S83-135 **S**	3.47	400
S83-135 **P**	6.00	343

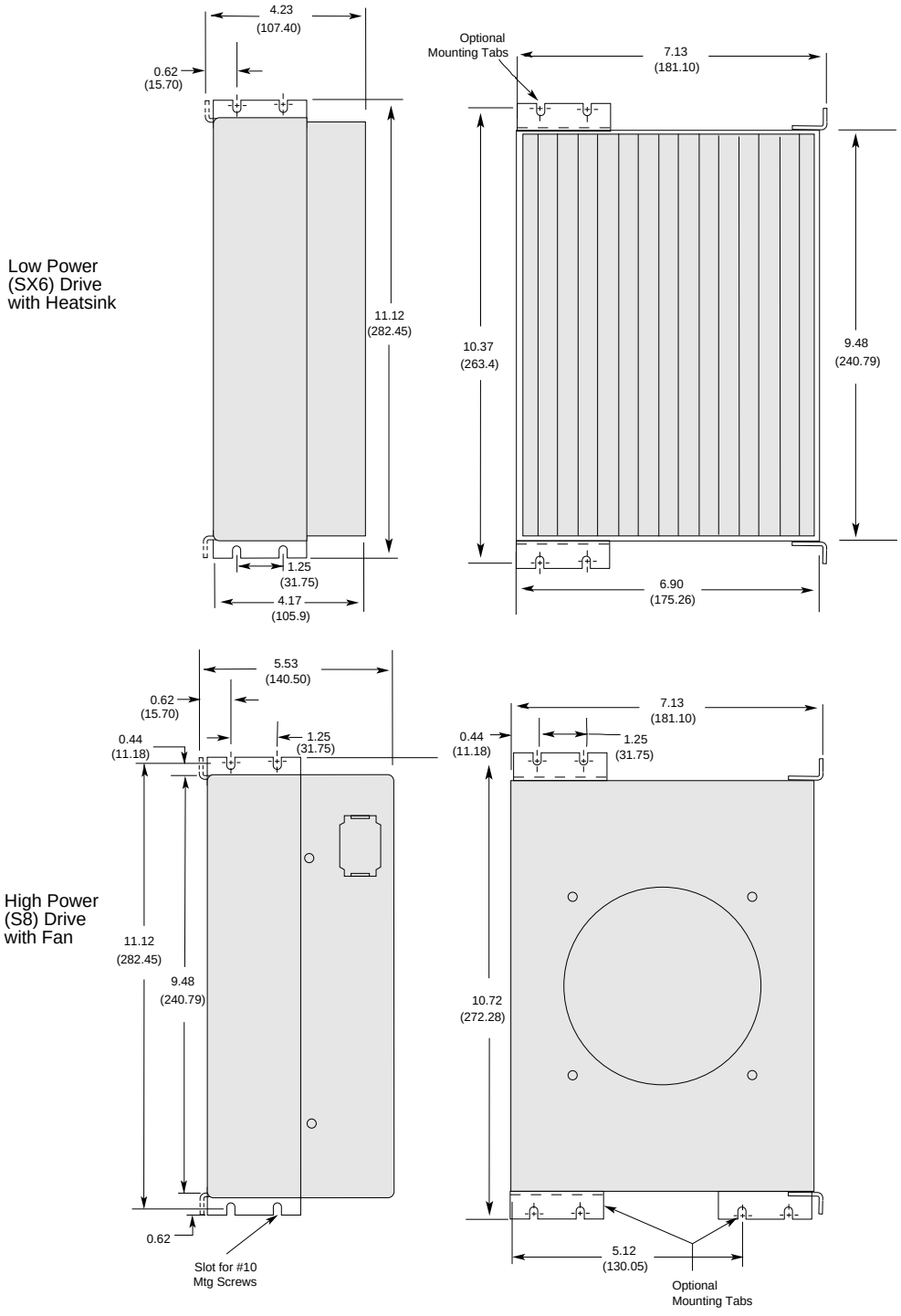
S: Series Configuration P: Parallel Configuration

Motor Specifications (57 & 83 Series Motors)

Motor Size	Current	Static Torque (in-oz)
SX106-178 **S**	6.02	1000
SX106-178 **P**	8.0	667
SX106-205 **S**	3.55	1900
SX106-205 **P**	6.99	1900
SX106-250 **S**	6.23	1450
SX106-250 **P**	8.0	967

S: Series Configuration P: Parallel Configuration

Motor Specifications (106 Series Motors)

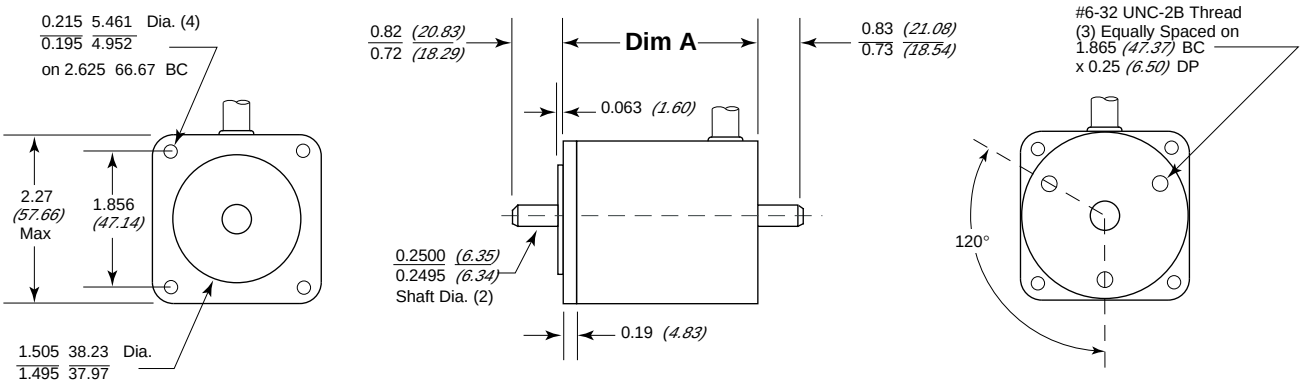


SX Dimensions

The fan kit is optional with the low-power version of the SX Drive.

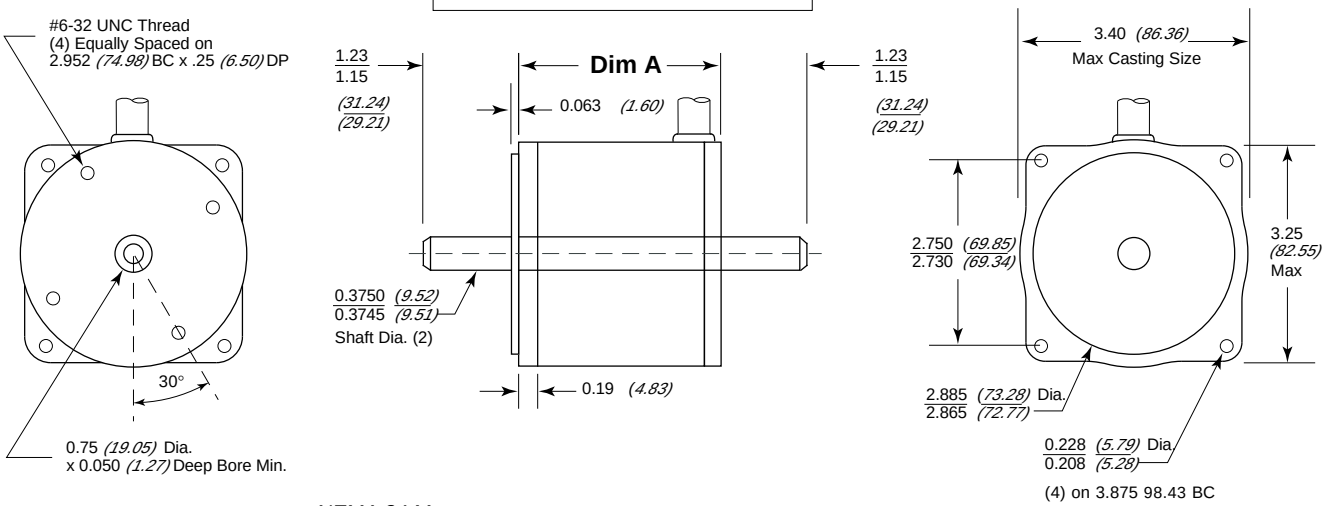
Motor Dimensions

Size 23 frame	
Model #	**Dim A**
SX57-51-MO	2.0 50.23
SX57-83-MO	3.1 75.23
SX57-102-MO	4.0 101.6



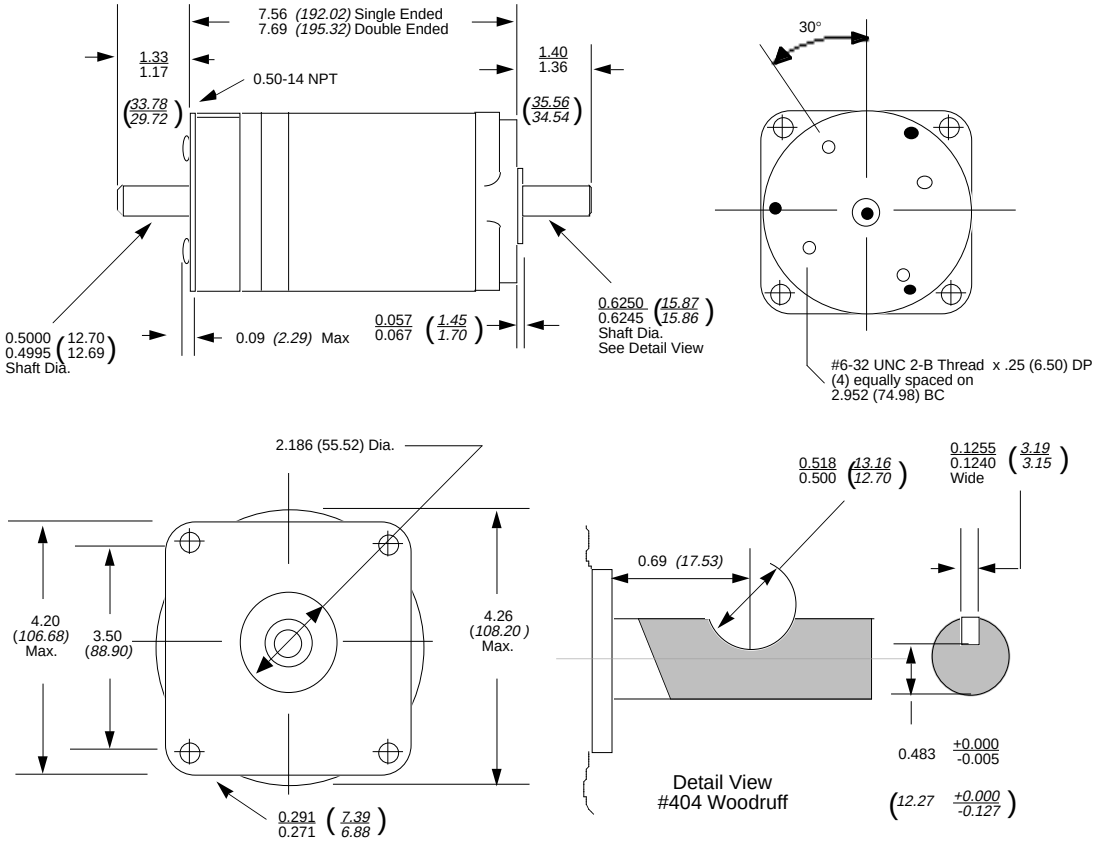
NEMA 23 Motor

Size 34 frame	
Model #	**Dim A**
SX83-62-MO	2.5 62.0
SX83-93-MO	3.7 93.98
SX83-135-MO	5.2 129.0

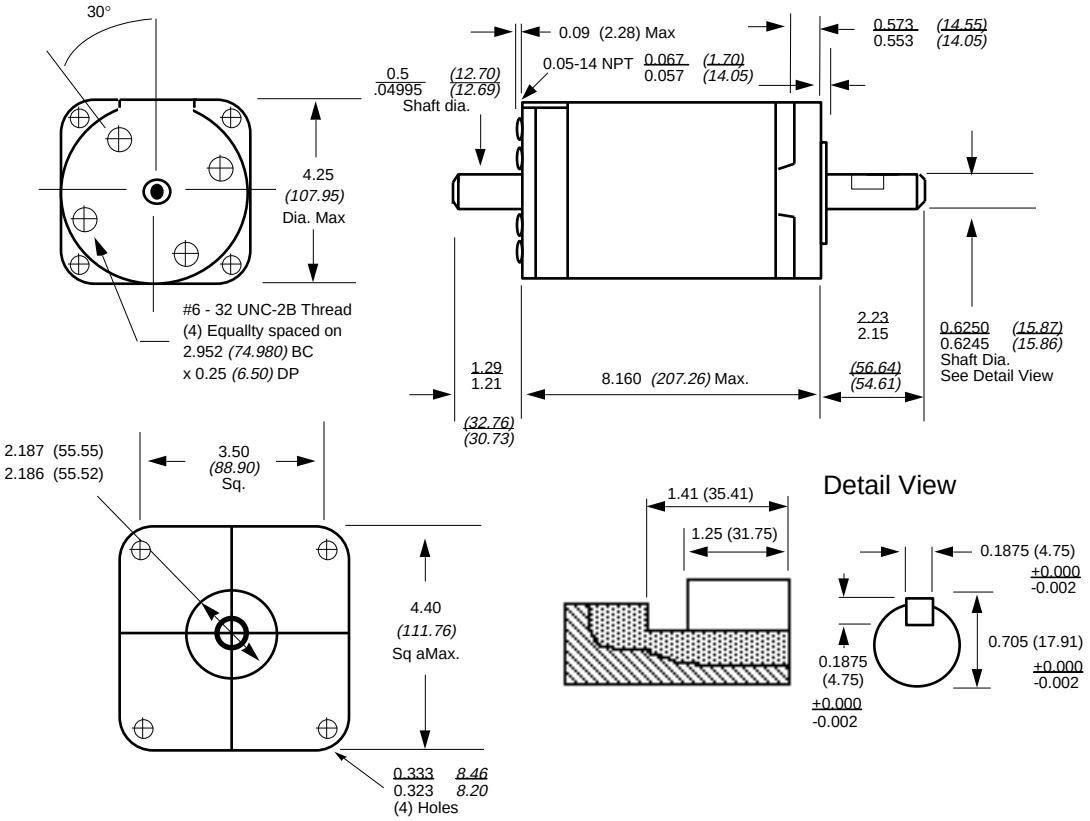


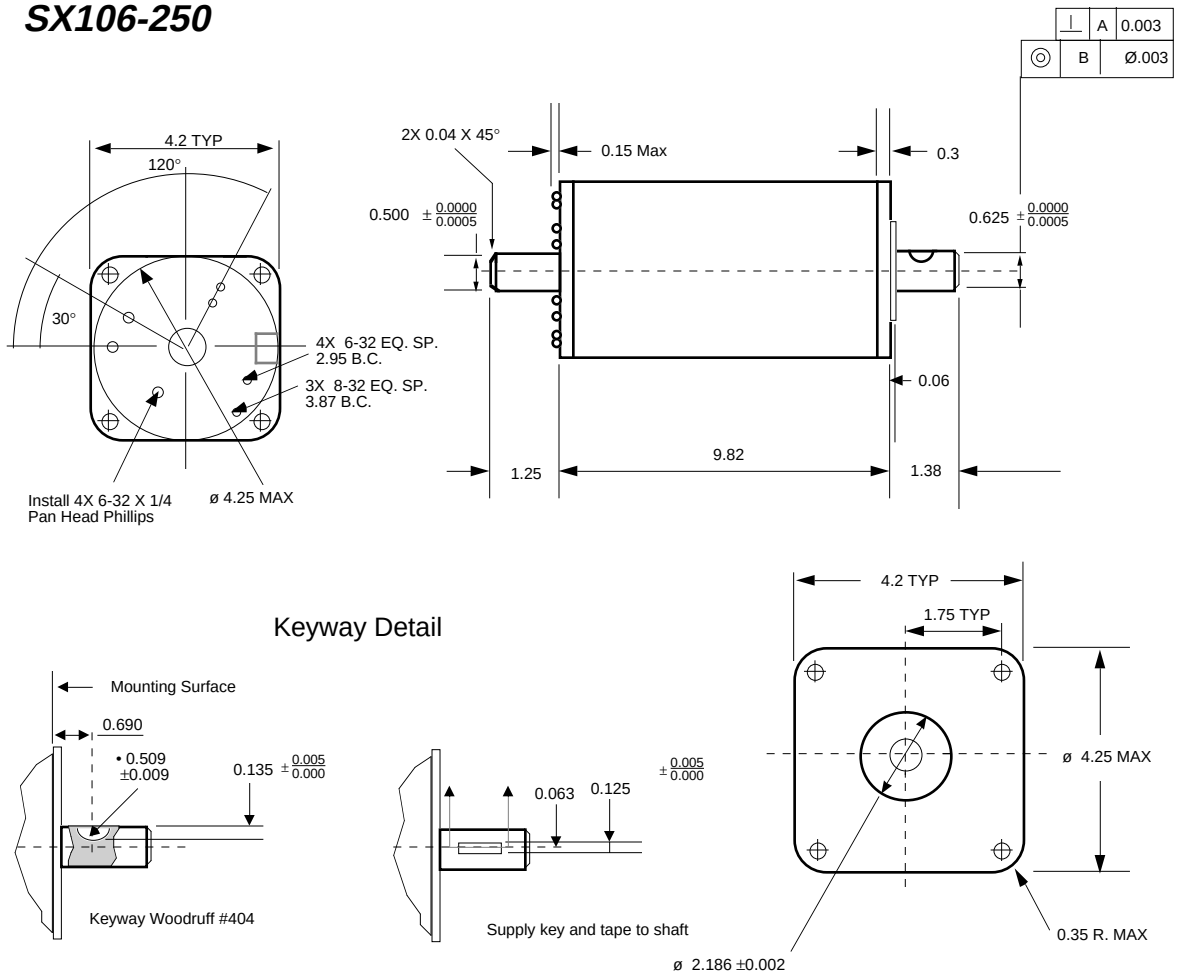
NEMA 34 Motor

SX106-178



SX106-205





DIP Switch Summary

The SX has two sets of DIP switches (refer to *Chapter 2, Getting Started*). Each set of DIP switches has eight individual switches. The first set of switches is referred to as **SW1** and the second set as **SW2**. The individual switch will be preceded by the **#** symbol. Hence, the third switch on **SW1** is referred to as **SW1-#3**, while the third switch on **SW2** is referred to as **SW2-#3.**

Switch #	Function	Default
SW1-#1	Current - most significant bit	*off
SW1-#2	Current	*off
SW1-#3	Current	*off
SW1-#4	Current	*off
SW1-#5	Current	*off
SW1-#6	Current - least significant bit	*off
SW1-#7	No function	*off
SW1-#8	No function	*off
SW2-#1	Address - least significant bit	*off
SW2-#2	Address	*off
SW2-#3	Address	*off
SW2-#4	Address - most significant bit	*off
SW2-#5	Baud Rate - least significant bit	*off
SW2-#6	Baud Rate	*off
SW2-#7	Baud Rate - most significant bit	*off
SW2-#8	Auto Test *off	

DIP Switch Summary

Motor Current

Motor Size	Current	SW1-#1	SW1-#2	SW1-#3	SW1-#4	SW1-#5	SW1-#6
S57-51**S**	1.18	off	off	on	on	off	off
S57-51**P**	2.28	off	on	on	off	off	off
S57-83**S**	1.52	off	on	off	off	off	off
S57-83**P**	3.09	on	off	off	off	off	off
S57-102**S**	1.71	off	on	off	off	on	off
S57-102**P**	3.47	on	off	off	on	off	off
S83-62**S**	2.19	off	on	off	on	on	on
S83-62**P**	4.42	on	off	on	on	on	off
S83-93**S**	2.85	off	on	on	on	on	off
S83-93**P**	5.62	on	on	on	off	on	on
S83-135**S**	3.47	on	off	off	on	off	off
S83-135**P**	6.00	on	on	on	on	on	on

S: Series Configuration P: Parallel Configuration

SX6 Drive Motor Current Settings (Compumotor Motors)

Motor Size	Current	SW1-#1	SW1-#2	SW1-#3	SW1-#4	SW1-#5	SW1-#6
S106-178**S**	6.02	on	off	on	on	on	on
S106-178**P**	8.0	on	on	on	on	on	on
S106-205**S**	3.55	off	on	on	on	off	off
S106-205**P**	6.99	on	on	off	on	on	on
S106-250**S**	6.23	on	on	off	off	off	on
S106-250**P**	8.0	on	on	on	on	on	on

S: Series Configuration P: Parallel Configuration

SX8 Drive Motor Current Settings (Compumotor Motors)

Low-Power SX6 and High Power SX8 Drives

Current	SW1 #1	SW1 #2	SW1 #3	SW1 #4	SW1 #5	SW1 #6	Current	SW1 #1	SW1 #2	SW1 #3	SW1 #4	SW1 #5	SW1 #6
0.04	off	off	off	off	off	off	**3.09**	on	off	off	off	off	off
0.13	off	off	off	off	off	on	**3.19**	on	off	off	off	off	on
0.23	off	off	off	off	on	off	**3.28**	on	off	off	off	on	off
0.32	off	off	off	off	on	on	**3.38**	on	off	off	off	on	on
0.42	off	off	off	on	off	off	**3.47**	on	off	off	on	off	off
0.51	off	off	off	on	off	on	**3.57**	on	off	off	on	off	on
0.61	off	off	off	on	on	off	**3.66**	on	off	off	on	on	off
0.70	off	off	off	on	on	on	**3.76**	on	off	off	on	on	on
0.80	off	off	on	off	off	off	**3.85**	on	off	on	off	off	off
0.89	off	off	on	off	off	on	**3.95**	on	off	on	off	off	on
0.99	off	off	on	off	on	off	**4.04**	on	off	on	off	on	off
1.08	off	off	on	off	on	on	**4.14**	on	off	on	off	on	on
1.18	off	off	on	on	off	off	**4.23**	on	off	on	on	off	off
1.27	off	off	on	on	off	on	**4.33**	on	off	on	on	off	on
1.37	off	off	on	on	on	off	**4.42**	on	off	on	on	on	off
1.46	off	off	on	on	on	on	**4.51**	on	off	on	on	on	on
1.52	off	on	off	off	off	off	**4.58**	on	on	off	off	off	off
1.62	off	on	off	off	off	on	**4.68**	on	on	off	off	off	on
1.71	off	on	off	off	on	off	**4.77**	on	on	off	off	on	off
1.81	off	on	off	off	on	on	**4.86**	on	on	off	off	on	on
1.90	off	on	off	on	off	off	**4.96**	on	on	off	on	off	off
2.00	off	on	off	on	off	on	**5.05**	on	on	off	on	off	on
2.09	off	on	off	on	on	off	**5.15**	on	on	off	on	on	off
2.19	off	on	off	on	on	on	**5.24**	on	on	off	on	on	on
2.28	off	on	on	off	off	off	**5.34**	on	on	on	off	off	off
2.38	off	on	on	off	off	on	**5.43**	on	on	on	off	off	on
2.47	off	on	on	off	on	off	**5.53**	on	on	on	off	on	off
2.57	off	on	on	off	on	on	**5.62**	on	on	on	off	on	on
2.66	off	on	on	on	off	off	**5.72**	on	on	on	on	off	off
2.76	off	on	on	on	off	on	**5.81**	on	on	on	on	off	on
2.85	off	on	on	on	on	off	**5.91**	on	on	on	on	on	off
2.95	off	on	on	on	on	on	**6.00**	on	on	on	on	on	on

Setting SX6 Drive Motor Current (Non-Compumotor Motors)

Current	SW1 #1	SW1 #2	SW1 #3	SW1 #4	SW1 #5	SW1 #6	Current	SW1 #1	SW1 #2	SW1 #3	SW1 #4	SW1 #5	SW1 #6
0.05	off	off	off	off	off	off	**4.12**	on	off	off	off	off	off
0.18	off	off	off	off	off	on	**4.25**	on	off	off	off	off	on
0.30	off	off	off	off	on	off	**4.38**	on	off	off	off	on	off
0.43	off	off	off	off	on	on	**4.50**	on	off	off	off	on	on
0.56	off	off	off	on	off	off	**4.63**	on	off	off	on	off	off
0.69	off	off	off	on	off	on	**4.75**	on	off	off	on	off	on
0.81	off	off	off	on	on	off	**4.89**	on	off	off	on	on	off
0.93	off	off	off	on	on	on	**5.01**	on	off	off	on	on	on
1.06	off	off	on	off	off	off	**5.14**	on	off	on	off	off	off
1.19	off	off	on	off	off	on	**5.26**	on	off	on	off	off	on
1.31	off	off	on	off	on	off	**5.39**	on	off	on	off	on	off
1.44	off	off	on	off	on	on	**5.51**	on	off	on	off	on	on
1.59	off	off	on	on	off	off	**5.64**	on	off	on	on	off	off
1.69	off	off	on	on	off	on	**5.77**	on	off	on	on	off	on
1.82	off	off	on	on	on	off	**5.90**	on	off	on	on	on	off
1.94	off	off	on	on	on	on	**6.02**	on	off	on	on	on	on
2.03	off	on	off	off	off	off	**6.11**	on	on	off	off	off	off
2.16	off	on	off	off	off	on	**6.23**	on	on	off	off	off	on
2.28	off	on	off	off	on	off	**6.36**	on	on	off	off	on	off
2.41	off	on	off	off	on	on	**6.48**	on	on	off	off	on	on
2.54	off	on	off	on	off	off	**6.61**	on	on	off	on	off	off
2.66	off	on	off	on	off	on	**6.73**	on	on	off	on	off	on
2.79	off	on	off	on	on	off	**6.87**	on	on	off	on	on	off
2.91	off	on	off	on	on	on	**6.99**	on	on	off	on	on	on
3.04	off	on	on	off	off	off	**7.12**	on	on	on	off	off	off
3.17	off	on	on	off	off	on	**7.24**	on	on	on	off	off	on
3.297	off	on	on	off	on	off	**7.37**	on	on	on	off	on	off
3.42	off	on	on	off	on	on	**7.49**	on	on	on	off	on	on
3.55	off	on	on	on	off	off	**7.62**	on	on	on	on	off	off
3.67	off	on	on	on	off	on	**7.75**	on	on	on	on	off	on
3.80	off	on	on	on	on	off	**7.87**	on	on	on	on	on	off
3.93	off	on	on	on	on	on	**8.00**	on	on	on	on	on	on

Setting SX8 Drive Motor Current (Non-Compumotor Motors)

Address Settings

Address	SW2-1	SW2-2	SW2-3	SW2-4
***** 1	off	off	off	off
2	on	off	off	off
3	off	on	off	off
4	on	on	off	off
5	off	off	on	off
6	on	off	on	off
7	off	on	on	off
8	on	on	on	off
9	off	off	off	on
10	on	off	off	on
11	off	on	off	on
12	on	on	off	on
13	off	off	on	on
14	on	off	on	on
15	off	on	on	on
16	on	on	on	on

* Default Setting

Address Settings

RS-232C Baud Rate

Baud Rate	SW2-5	SW2-6	SW2-7
***** 9600	off	off	off
Reserved	on	off	off
9600	off	on	off
4800	on	on	off
2400	off	off	on
1200	on	off	on
600	off	on	on
300	on	on	on

* Default Setting

RS-232C Baud Rate

Automatic Test

*** SW2-#8 OFF Disables Auto Test**
SW2-#8 ON Enables Auto Test

* Default Setting

Non-Compumotor—Drive/Motor Connection

Compumotor does not recommend that you use non-Compumotor motors with the SX. If you do use a non-Compumotor motor, it must meet the following requirements:

① A minimum inductance of 0.5 mH, series or parallel, may be used (Compumotor strongly recommends a minimum inductance of 2 mH).

② A minimum of 500VDC high-pot insulation rating from phase-to-phase and phase-to-ground.

③ The motor must not have riveted rotors or stators.

④ Do not use solid rotor motors.

⑤ Test all motors carefully. Verify that the motor temperature in your application is within the system limitations. *The motor manufacturer's maximum allowable motor case temperature must not be exceeded*. You should test the motor over a 2- to 3-hour period. Motors tend to have a long thermal time constant, but can still overheat, which results in motor damage.

CAUTION

Consult a Compumotor Applications Engineer if you have any questions regarding the use of a non-Compumotor motor.

Wiring Configurations

You can determine the motor's wiring configuration by referencing the manufacturer's motor specification document supplied with the motor. You can also determine the wiring configuration with an ohmmeter using the procedures below (*4-Lead Motor, 6-Lead Motor, 8 Lead Motor*). Once you determine the correct motor wiring configuration, use the terminal connection diagram that applies to your configuration (refer to the following figure).

4-Lead Motor

① Label one motor lead **A+**.

② Connect one lead of an ohmmeter to the **A+** lead and touch the other lead of the ohmmeter to the three remaining motor leads until you find the lead that creates continuity. Label this lead **A-**.

③ Label the two remaining leads **B+** and **B-**. *Verify that there is continuity between the B+ and B- leads.*

④ Proceed to the *Terminal Connections* section.

6-Lead Motor

① Determine, with an ohmmeter, which three of the six motor leads are common (one phase).

② Label each one of these three motor leads **A**.

③ Using the ohmmeter, verify that the remaining three leads are common.

④ Label the other three leads **B**.

⑤ Set the ohmmeter range to approximately the 100 ohm scale.

⑥ Connect the ohmmeter's negative lead to one of the motor leads labeled **A**. Alternately measure the resistance to the two remaining motor leads also labeled **A**. The resistance measurements will reflect one of the following scenarios.

Scenario #1

The resistance measurements to the two remaining motor leads are virtually identical. Label the two remaining motor leads **A+** and **A-**. Label the motor lead connected to the negative lead of the ohmmeter **A-CT** (this is the center tap lead for Phase A of the motor).

Scenario #2

The resistance measurement to the second of the three motor leads measures 50% of the resistance measurement to the third of the three motor leads. Label the second motor lead **A-CT** (this is the center tap lead for Phase A of the motor). Label the third motor lead **A-**. Label the motor lead connected to the ohmmeter **A+**.

⑦ Repeat the procedure as outlined in step 6 for the three leads labeled **B** (**B-CT** is the center tap lead for Phase B of the motor).

⑧ Connect the **A-CT** motor lead to the **A-CT** pin on the **MOTOR** connector. Connect the **B-CT** motor lead to the **B-CT** pin on the **MOTOR** connector.

⑨ Proceed to the *Terminal Connections* section.

8-Lead Motor

Because of the complexity involved in phasing an 8-lead motor, you must refer to the manufacturer's motor specification document. You can configure the 8-lead motor in parallel or series. Using the manufacturer's specifications, label the motor leads, as shown in chapter 3, on page 12.

Parallel Configuration

Use the following procedures for parallel configurations.

① Connect motor leads A1 & A3 together and relabel this common point **A+**.

② Connect motor leads A2 & A4 together and relabel this common point **A-**.

③ Connect motor leads B1 & B3 together and relabel this common point **B+**.

④ Connect motor leads B2 & B4 together and relabel this common point **B-**.

Series Configuration

Use the following procedures for series configurations.

① Connect A2 & A3 to **A-CT**. You may also connect B2 & B3 to **B-CT**.

② Relabel the A1 lead to **A+**.

③ Relabel the A4 lead to **A-**.

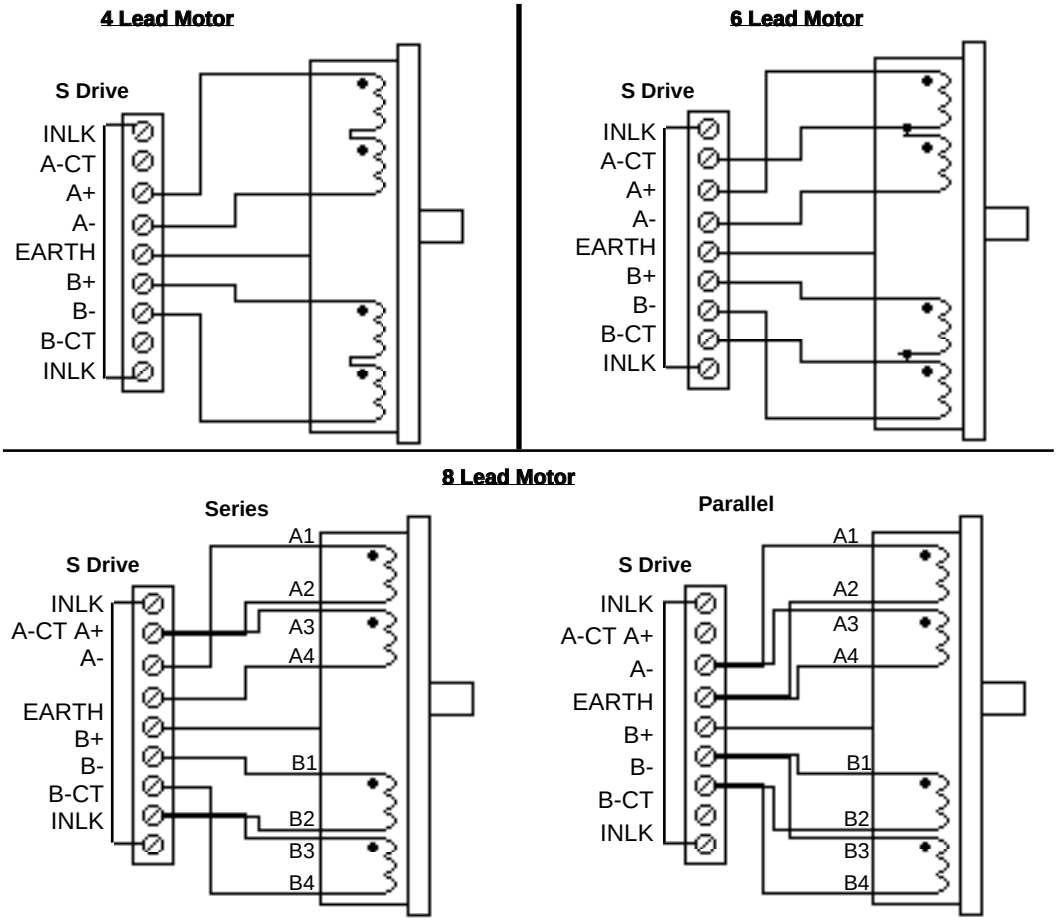
④ Relabel the B1 lead to **B+**.

⑤ Relabel the B4 lead to **B-**.

⑥ Proceed to the Terminal Connections section below.

Terminal Connections

After you determine the motor's wiring configuration, connect the motor leads to the 9-pin **MOTOR** connector according to the figure below.



9-Pin Motor Connector (Non-Compumotor Motors)

CAUTION

Do not connect or disconnect the motor with the power on. This will damage the contacts of the motor connector and may cause personal injury.

Extended Motor Cables

The following table contains the recommended motor cables for various motor types and the minimum recommended motor/driver wire size (AWG).

Maximum Current Per Winding (Amps)	Less than100 ft. (20.5M)	100 - 200 ft.(30.5M - 71M)
3	22 AWG	20 AWG
6	20 AWG	18 AWG
8	16 AWG	14 AWG

Recommended Motor Cables

Cable runs of more than 200 feet (71M) are not recommended. Cable runs greater than 50 feet may degrade system performance.

Non-Compumotor Motors—Setting Motor Current

Compumotor does not recommend that you use non-Compumotor motors with the SX. If you do, refer to the formulas below that correspond to your motor (4-lead, 6-lead, or 8-lead) and use the previous tables titled *Setting SX6 Drive Motor Current* and *Setting SX8 Drive Motor Current* to set the motor's current. **Never increase current more than 10% above the specified rating**.

4-Lead Motors

If you use a 4-lead motor, the manufacturer's current setting will translate directly to the values shown in the previous tables titled *Setting SX6 Drive Motor Current* and *Setting SX8 Drive Motor Current*.

6-Lead Motors

If you use a 6-lead motor, and the manufacturer specifies the motor current as a unipolar rating, you must use the following formula to convert the unipolar current rating to the correct bipolar rating.

Unipolar Current X .707 = Bipolar Current

After you make the conversion, use the Motor Current tables to set the motor current. If the manufacturer specifies the motor current as a bipolar rating, you can use the Motor Current tables directly (no conversion) to set motor current.

8-Lead Motors

If you are using an 8-lead motor, manufacturers generally rate the motor current in one of two ways:

- If the motor current is listed as a unipolar rating, use the following formula to convert the unipolar current rating to the correct bipolar current rating.

  Unipolar Current X .707 = Bipolar Series Current

  If you are wiring the motor in ***series***, use the table *Setting SX6 Drive Motor Current (Non-Compumotor motors)*, previously in this chapter, the converted value to set the motor current.

  If you wire the motor in ***parallel***, you must **double** the converted value and use the tables titled *Setting SX6 and SX8 Drive Motor Current (Non-Compumotor motors)*, previously in this chapter, to set the motor current.

- If the motor current is listed as a bipolar series rating, you can wire the motor in ***series*** and use the tables titled *Setting SX6 Drive Motor Current (Non-Compumotor motors)*, previously in this chapter, and *Setting SX8 Drive Motor Current (Non-Compumotor motors)*, previously in this chapter, directly (no conversion) to set motor current.

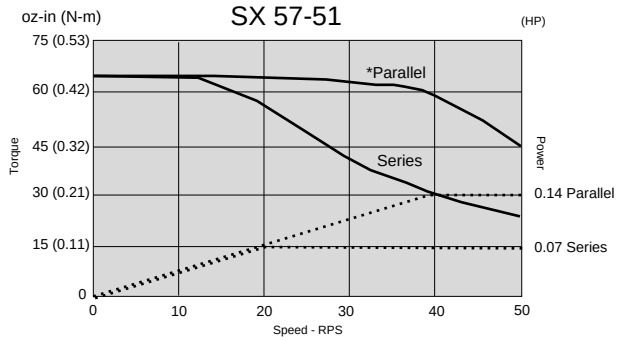
- If the motor current is listed as a bipolar series rating and you wire the motor in ***parallel***, you must **double** the manufacturer's rating and then use table *Setting SX6 Drive Motor Current (Non-Compumotor motors)*, previously in this chapter, to set the motor current.

If you have any questions with regard to the configurations, please call Compumotor's Applications Engineering Department at 800-358-9070.

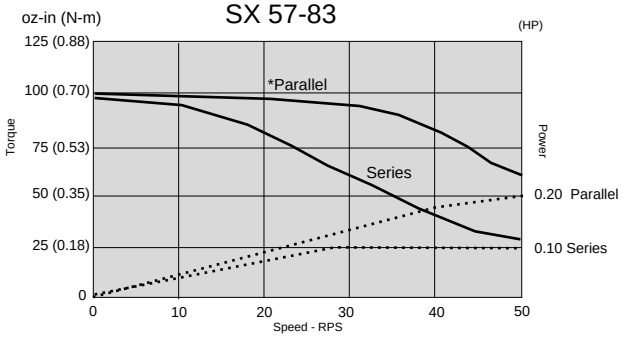
Motor Performance Specifications

SX Series motors are designed to allow you to change the motor winding configuration easily. The performance curves shown below indicate that different levels of performance can be obtained by connecting the step motor windings in series or in parallel. You must exercise caution when you run motors in a parallel configuration. ***Sustained operation at high speeds may cause the motor to overheat due to electrical pole heating.***

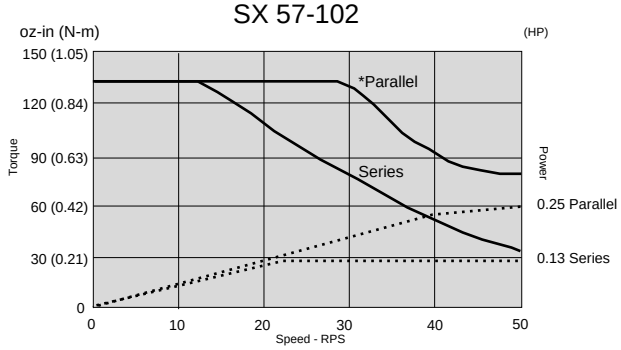
SX 57-51



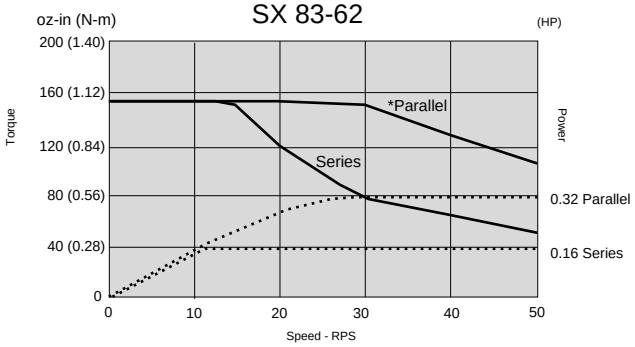
SX 57-83



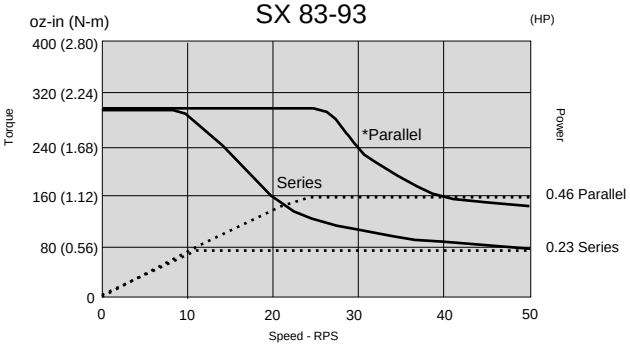
SX 57-102



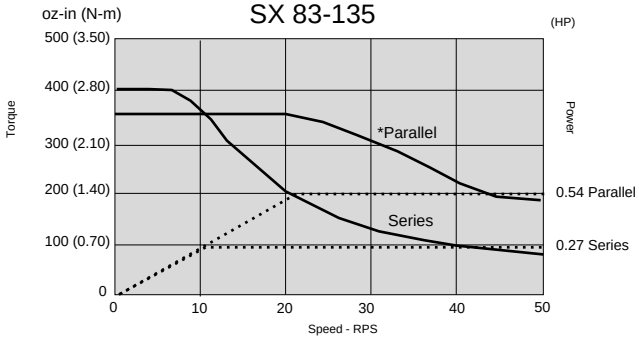
SX 83-62



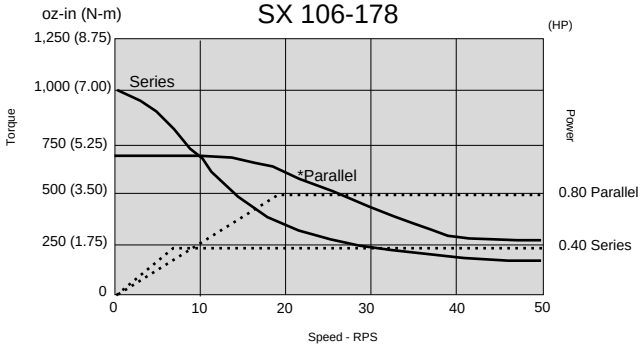
SX 83-93



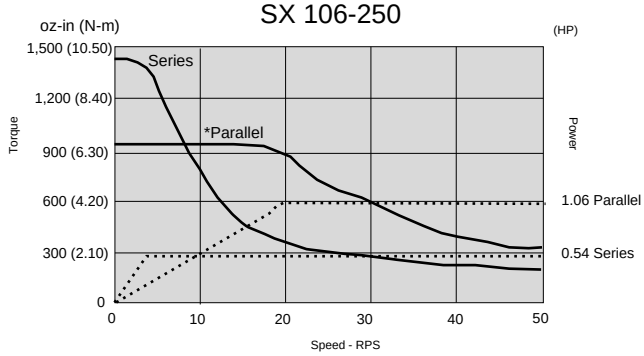
SX 83-135



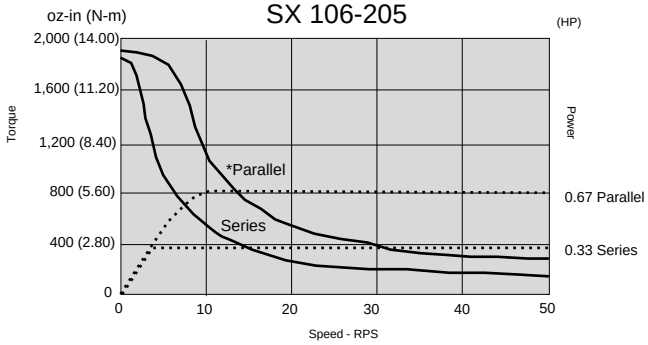
SX 106-178



SX 106-250



SX 106-205



*Parallel connected motors are limited to 50% duty cycle when operated above 5 rps.
For greater than 50% duty cycle above 5 rps, you must connect the motor in series.
Fan cooling the motor will increase duty cycles above 5 rps.