SHERLINE PRODUCTS

INCORPORATED 1974

Tilting Angle Table with Stepper Motor
P/N 6597

About the Tilting Angle Table with Stepper Motor

We designed this tilting angle table with a stepper motor at the request of one of our customers. The basic idea was to offer a cheaper and quicker rotary axis for laser engraving. We have drilled and tapped the table top plate P/N 37511LAZ to accept one of our NEMA 23 stepper motors. You can mount any NEMA 23 frame stepper motor or servo motor to the table. (For an additional fee, we can custom machine the table top to fit other size motors. Call and ask for a quote.) In addition to the stepper motor, we designed a chuck adapter P/N 37512LAZ for our 3- and 4-jaw self-centering chucks (**https://sherline.com/product-category/chucks-collets/scroll-chucks/**). This combination offers you a way to hold and rotate your parts (See Figure 1).

We offer the wiring information for our stepper motors for you to use when you are hooking them up to your machine (See page 3). However, since each laser manufacturer has different controls, wiring, and command methods, you will need to contact your laser manufacturer to get wiring and control information for your machine.

Maintenance

The angle graduations are laser engraved into the stainless steel side plates so you don't have to worry about rust or solvents. Do not try to polish around the engraving. Though quite easily readable, it is not very deep and could be removed in the polishing process.
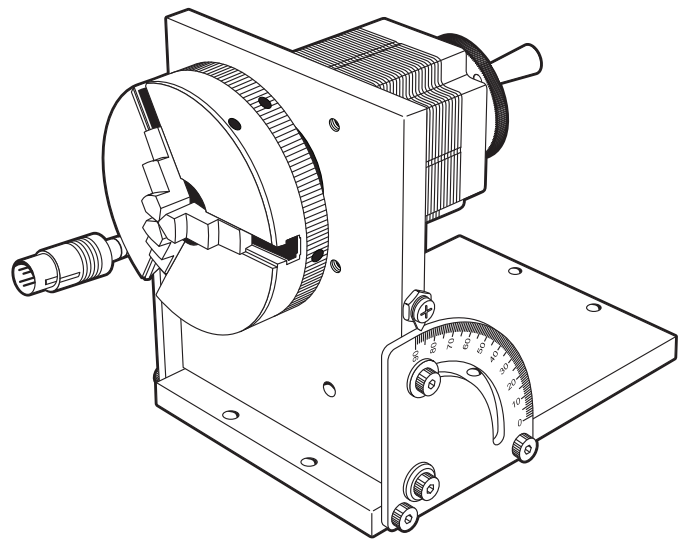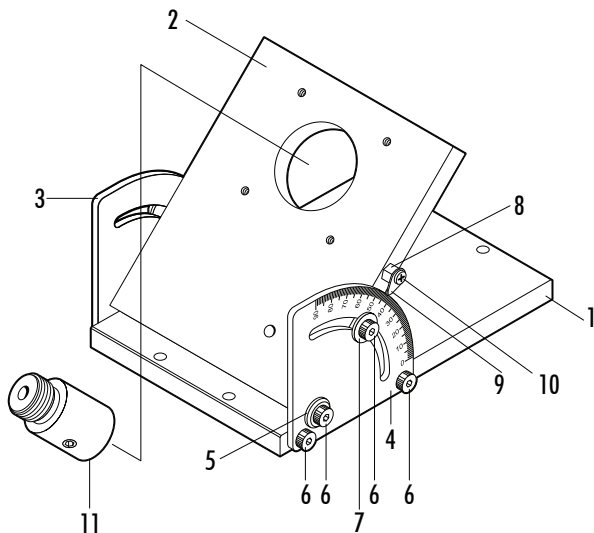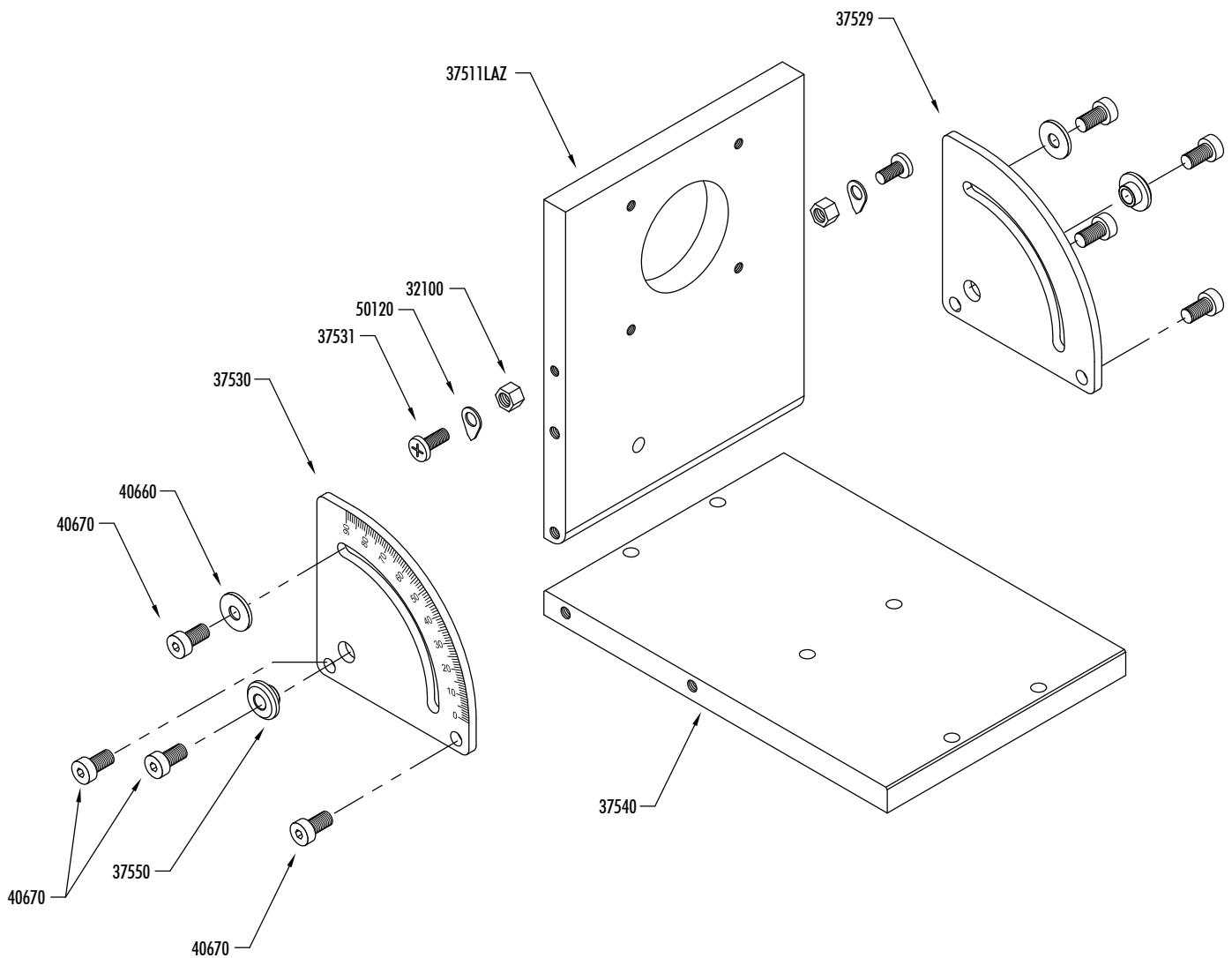
Thank you,
Sherline Products Inc.

FIGURE 1—Shows a chuck mounted to the stepper motor using the Stepper Motor to Chuck Adapter. (Chuck not included, shown for reference only.)

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2/7/18

P/N 6597 Tilting Angle Table for Laser Engraving

Exploded View and Parts Listing

37529

37511LAZ

32100

50120

37531

37530

40660

40670

40670

37550

40670

37540

Laser Tilting Angle Table Parts List

REF. NO.	NO. REQ.	PART NO.	DESCRIPTION
1	1	37540	Tilting Angle Table Bottom Plate
2	1	37511LAZ	Tilting Angle Table Top Plate
3	1	37529	Tilting Angle Table Side Plate, Engraved (lt)
4	1	37530	Tilting Angle Table Side Plate, Engraved (rt)
5	2	37550	Tilting Angle Table Bushing
6	12	40670	10-32 x 1/2" SHC Screw
7	2	40660	3/16" I.D. Washer
8	2	32100	10-32 Hex nut
9	2	50120	Pointer
10	2	37531	8-32 X 3/8" Pan Head Phillips Screw
11	1	37512LAZ	Stepper Motor to Chuck Adapter
—	1	67127	Stepper Motor (not shown)

SHERLINE STEPPER MOTOR SPECIFICATIONS—NMB MOTORS

Sherline P/N:	67127 (w/ DIN plug and flats on shaft)
	67130 (no plug, flats on shaft)
Manufacturer:	NMB (Minebea Co. Ltd.)
Mfg. P/N (Type):	23KM-K035-62V (double shaft)
Frame size:	NEMA #23
Step angle:	1.8°
Voltage:	3.2 V DC
Current:	2.0 A/Φ
Resistance:	1.6 Ω/Φ
Inductance:	3.6 mH/Φ
Holding torque:	.775 N.m (Newton meters)
	7.9 kg-cm
	109.71 oz/in (ounce inch)
	6.856 in/lb (inch pound)
Rotor inertia:	250 g-cm^2
Number of wire leads:	6 (See color code diagram FIG. 2)
Weight:	1.32 lb (0.6 Kg.)
Length:	2.13" (54 mm)
Shaft:	Double ended, 1/4" diameter

DRIVER : TYPE B(Vs=24V)
CURRENT=2.0A/Phase
EXCITING MODE=2Phase
INERTIAL LOAD : 100g-cm^2

FIGURE 1—Motor torque curve

Lead Wire Connection and Color Code

RED (+A)
BLACK (COM A)
YELLOW (-A)
BLUE (+B)
ORANGE (-B)
WHITE (COM B)
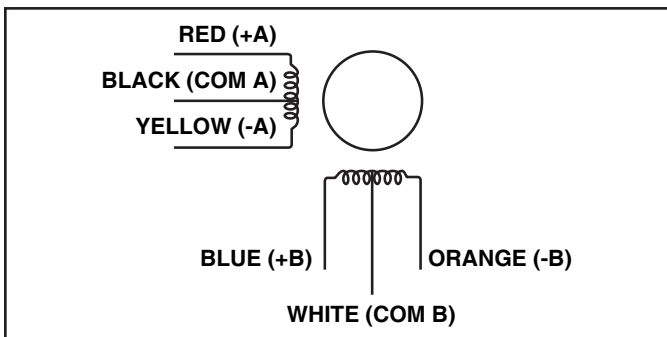
FIGURE 2— Color of internal wiring for NMB motors

See figure 3 for the pin diagram and wire color layout of the stepper motor connector cables we supply with our stepper motors. Since there is no industry standard for wire colors in this field, if using a connector not supplied by Sherline each pin and color should be confirmed with a continuity tester before applying power.
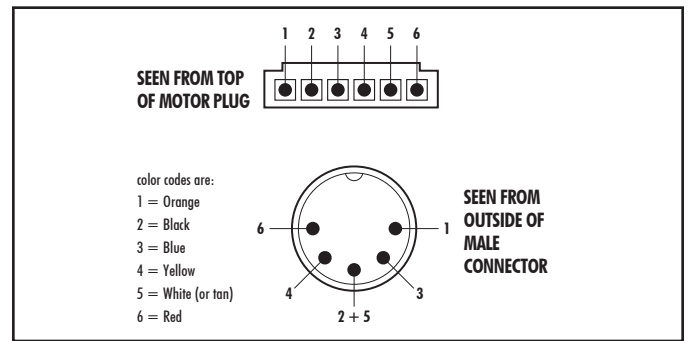

SEEN FROM TOP OF MOTOR PLUG

color codes are:
1 = Orange
2 = Black
3 = Blue
4 = Yellow
5 = White (or tan)
6 = Red

SEEN FROM OUTSIDE OF MALE CONNECTOR

FIGURE 3: diagram shows which pin in the DIN connector is wired to which position in the motor connector.

NOTE: Motors can be wired in either unipolar or bipolar configuration depending on how the leads are connected. Sherline motors with plugs are wired for unipolar operation.
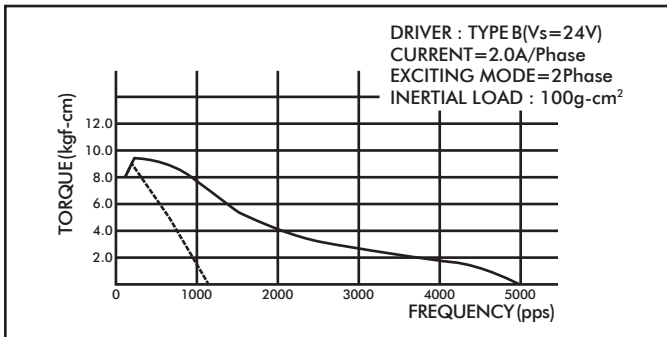
PRECAUTIONS

- Make sure the ends of raw wires are not touching each other when turning the handwheel by hand to drive the stepper motor and leadscrew. It can cause the motor to feel rough and hard to turn.

- DC motors generate current when hand cranked that can damage the control unit. When positioning a stepper motor by hand using the handwheel, do not crank faster than about 1 rev/second. For long travels, use the jog mode of your CNC control software.

- Poor connections can cause arcing, which can burn out motors or control chips. Always make sure plugs and connections are fully engaged and making good contact.

- Always turn off driver box power before plugging in or unplugging a stepper motor.