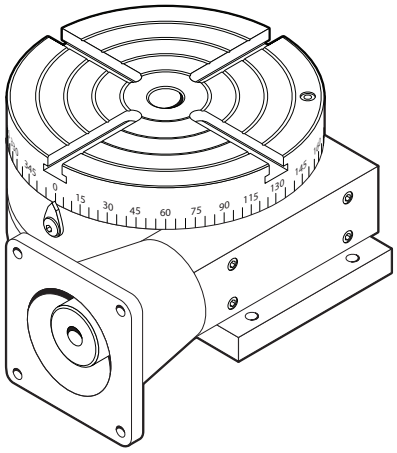


SHERLINE PRODUCTS
INCORPORATED 1974

CNC-Ready Rotary Table

P/N 3700-CNC

The Sherline 4" rotary table has been adapted for CNC use with the application of a stepper motor mount in place of the standard manual handwheel. The mount accepts a #23 frame size stepper motor. Screws are provided for attachment of the motor. Also included is a handwheel that can be used on the rear shaft of a dual-shaft stepper motor if manual control is desired for simple operations.

We have included a copy of the P/N 3700 manual rotary table instructions. These will give you a good introduction to using a rotary table.

Rotary Table Specifications

Mechanical Backlash — 0.2° or less
Repeatability — 0.2° or less
Positioning accuracy — 0.2° or less
Horizontal orientation weight limit — 50 lbs.
Vertical orientation weight limit — 30 lbs.
Vertical rotational torque — 6 foot/lbs. (meaning it can lift a 6 lb. weight when suspended 12" away from the center of the rotary table)

NOTE: We have stated the weight limits for our rotary tables when under continual use. The rotary tables can hold more weight when they are not under a continuous load.

Flats on the Motor Shafts

It is necessary to provide a flat on the shaft of the stepper motor in the proper location so that the coupler set screw tightens on the flat. If this is not done, the set screw can distort the surface of the shaft, making it impossible to remove from the coupler. The drawing below shows the proper location for the flat. (NOTE: Stepper motors purchased from Sherline for use on Sherline CNC applications have the flats already milled in place. Ask for P/N 67127.)

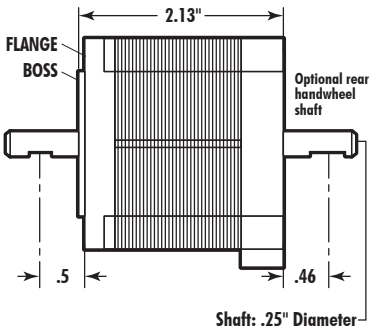


FIGURE 1—Locations for the flats on the stepper motor shaft.

Lubrication and Maintenance

Keep your rotary table oiled to prevent rust. A few drops of 3-in-1 oil, or a light sewing machine oil, in the oiler before using will eliminate table wear. If you are using the rotary table frequently, add oil once a week. The oil port has a spring loaded steel ball in the middle of the oil port. With a small screw driver or paper clip, push the ball down to open the hole in the top of the oiler. While pushing the ball down, add drops of oil to the top of the oiler. The oil will seep down past the ball into the oiler. After the oil has entered the oiler port, release the ball and it will pop back up to seal the oiler port.

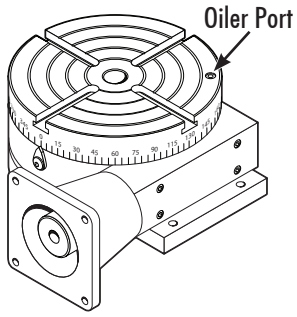


FIGURE 2—Oiler port location.

The worm gear is greased at the factory. The lubricating grease that we apply at the factory will last a lifetime for the average customer. In industrial use, where the rotary table is used 24/7, it can run for a year or more before it needs any maintenance.

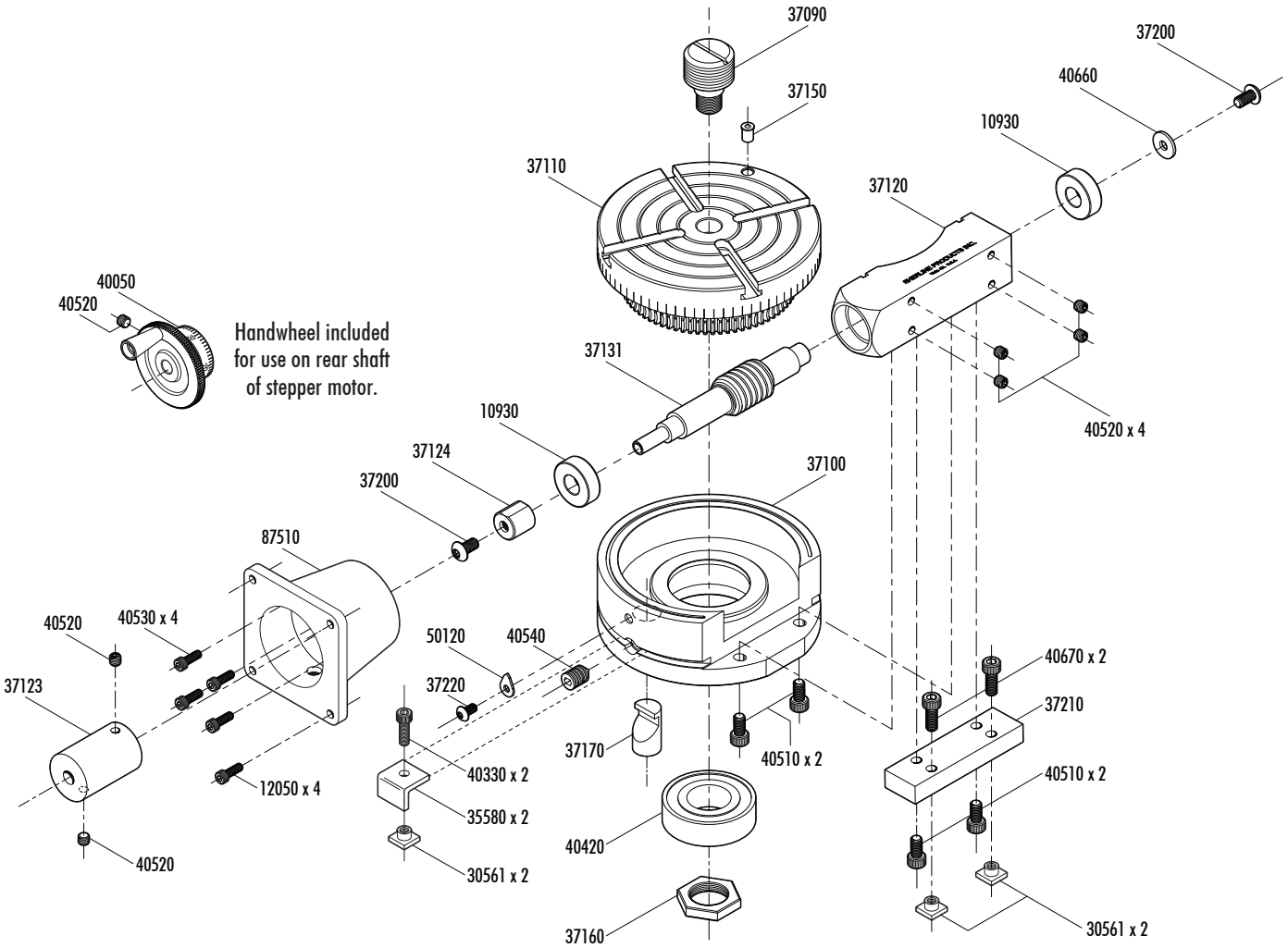
Moving the worm housing to compensate for wear can eliminate worm backlash. From the bottom of the rotary table, loosen one of the two socket head cap screws holding the worm housing to the table base. Lightly tap the housing toward the table with a plastic mallet to push the worm a little tighter into the gear teeth on the table. When backlash is less than .2°, retighten the screw.

Using a Riser Plate on Sherline Mills

On page 4, we provide a drawing of a riser plate that will lift the rotary table enough to clear the mill handwheel on Sherline mills. Four mounting holes marked "A" are used to mount it to the mill table T-slots. If used on a non-Sherline machine, you may eliminate these holes. You may make the plate yourself from the drawing. Sherline offers the plate as an accessory should you wish to order one ready-made (P/N 8710).

Thank you,
Sherline Products Inc.

Exploded View
Sherline 4" Rotary Table, P/N 3700-CNC



Parts List

NO. REQ.	PART NO.	DESCRIPTION	NO. REQ.	PART NO.	DESCRIPTION
2	10930	3/8" Bearing	1	37210	Hold-down tab
4	30561	10-32 T-nut	1	37220	6-32 x 1/4" button head screw
2	35580	Hold-down clamp	1	40050	1-5/8" handwheel assembly
1	37090	Chuck adapter	2	40330	10-32 x 5/8" SHCS (socket head cap screw)
1	37100	Rotary table base	1	40420	Headstock bearing
1	37110	Rotary table top	4	40510	10-32 x 3/8" SHCS
1	37121	CNC rotary table worm housing (*Not sold sep.)	7	40520	10-32 x 3/16" cup point set screw
1	37131	CNC rotary table worm shaft	4	40530	5-40 x 3/8" SHCS
1	37123	CNC rotary table coupling	1	40540	5/16-18 x 3/4" cone point set screw
1	37124	CNC rotary table coupling adapter	1	40660	3/16" I.D. washer
1	37150	Oiler	2	40670	10-32 x 1/2" SHCS
1	37160	Preload nut	1	50120	Pointer
1	37170	Lock pin	4	12050	8-32 x 3/8" SHCS
2	37200	10-32 x 3/8" button head screw	1	87510	CNC rotary table stepper motor mount

PRECAUTIONS

- 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 before powering up.
- Do not pull on wires to disconnect motor. Always grasp the plastic connector or the plug itself.
- In manual mode, crank handwheel no faster than 1 rev/second to avoid back-current.

SHERLINE PRODUCTS
INCORPORATED 1974

Installing the Stepper Motor

Stepper Motor Installation Instructions

Install the stepper motor using the following procedure:

1. If not already installed, carefully plug the white cable connector into the slot in the motor. Orient the motor so the plug is either on the right side or on the bottom to keep chips and coolant from causing a possible electrical short at the connection. If you wish, a small amount of silicon sealant or hot melt glue can be used to secure the white plug to the motor and seal the joint.
2. Note the location of the flats on the stepper motor shaft. Always assure that the coupling and handwheel set screws are tightened against the flat on the shaft. Tightening the set screw against the round part of the shaft can gall the shaft and make it impossible to remove from the coupling later.
3. Align the coupler set screw with the access hole in the side of the stepper motor mount and assure that the set screw is sufficiently released so that the motor shaft can be inserted.
4. Insert the motor shaft into the coupling, making sure the set screw is aligned with the flat. Keep the motor square to the mount so as not to flex the coupling during insertion. Loosely tighten the set screw.
5. Install three 8-32 x 3/8" socket head cap screws (SHCS) through the holes in the motor flange and into the stepper motor mount holes. Instead of a 4th screw in the four o'clock position use a tie wrap through that hole to secure the wire bundle from the motor. This will help relieve strain on the motor plug connection.
6. Assure that the flat on the motor shaft is still aligned with the coupling set screw (observe the position of the rear flat or handwheel set screw—the two flats are parallel) and tighten the coupling set screw. Install and turn the handwheel and observe the movement of the rotary table to make sure everything is turning smoothly.

Using Handwheels on the Stepper Motors

When turning an unpowered stepper motor by hand, you may notice a slightly "notchy" feel because of the permanent magnets in the motor; this is normal. When the motors are powered up they lock in position, and it will be very difficult to move them with the handwheels. Therefore, if you wish to use manual mode, you should first turn off the power to the motors using the ON/OFF switch on the external driver box or on the side of the computer if the driver box is built in. Turning a DC motor by hand causes it to act as a generator, sending current backward through the circuit. However, low amounts of current will not damage the board, so avoid cranking faster than about 1 rev/sec to be safe. For longer travels, use LinuxCNC's (formerly EMC) jog mode for approximate positioning, then turn off driver box power and use the handwheel for fine tuning.

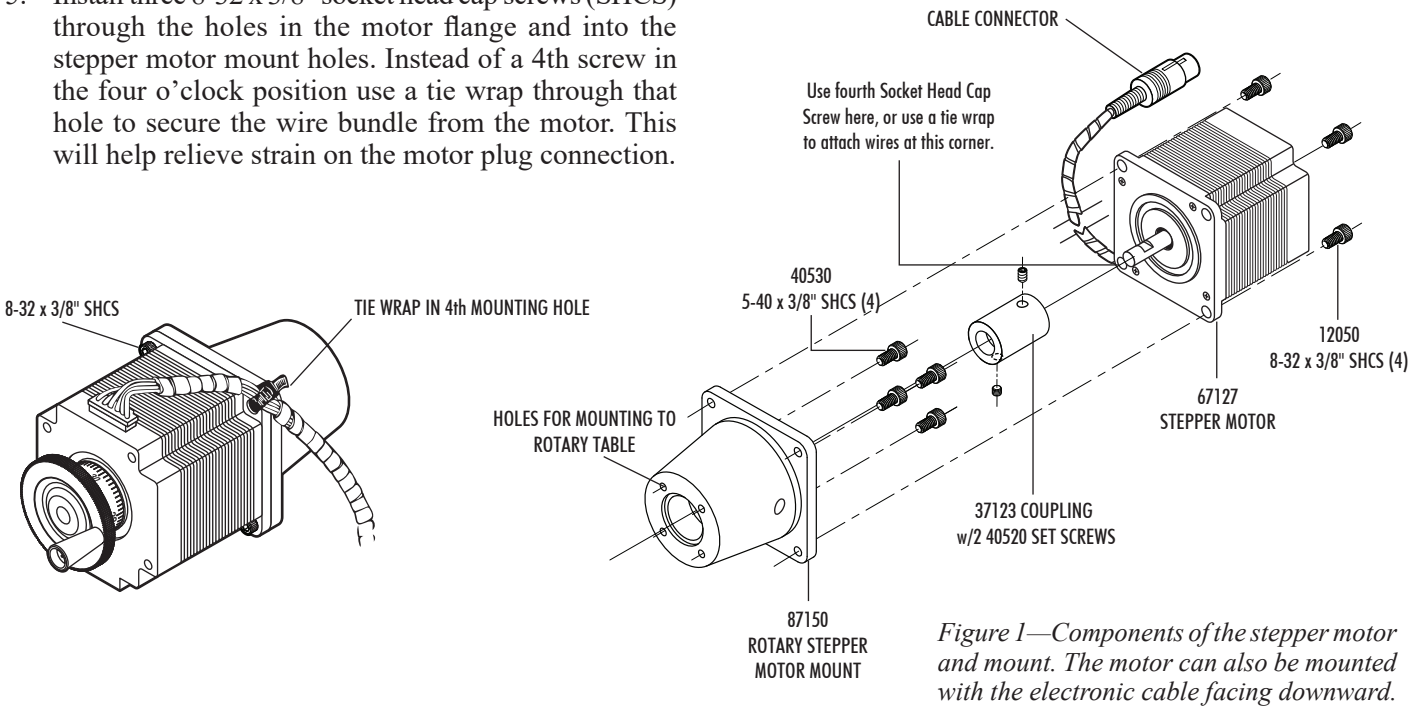
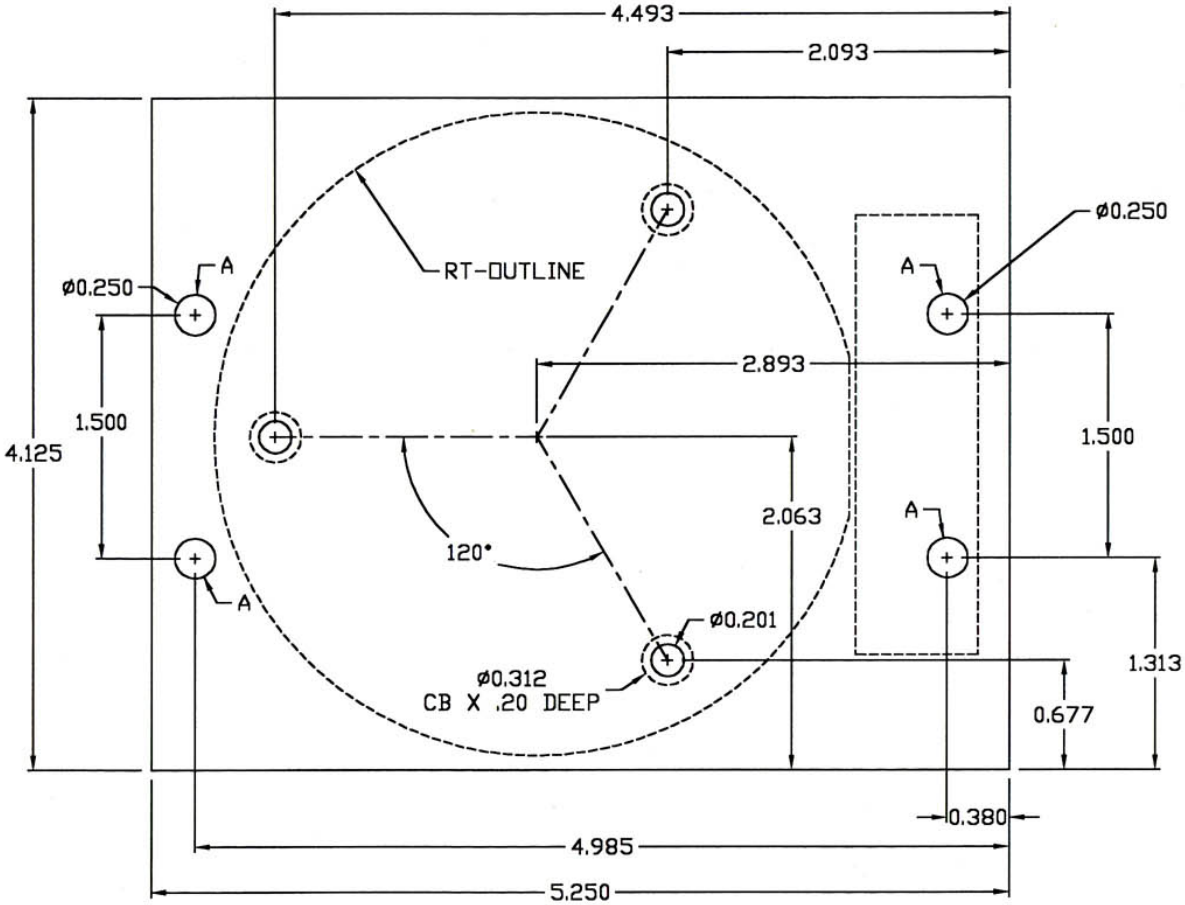


Figure 1—Components of the stepper motor and mount. The motor can also be mounted with the electronic cable facing downward.



TOP VIEW

NOTES:

1. MATERIAL - 4.75 x 5.325 x 1/2" CAST ALUMINUM TOOLING PLATE
2. CHAMFER ALL HOLES 0.010x45°
3. ELIMINATE "A" HOLES IF NOT USED WITH SHERLINE MILL

   LOCATE HOLES AND SIZE PLATE

   FOR YOUR PARTICULAR APPLICATION

DRAWING NOT TO SCALE

DO NOT SCALE DRAWING !!! UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES. TOLERANCES ARE: DECIMALS .00 . . . . . ±0.006 DECIMALS .000 . . . .±0.003 ANGLES . . . . . 1° DEBURR . . . . . .HAND HEAT TREAT . . . . . NONE	SHERLINE PRODUCTS, INC.
FINISH SANDED	TITLE: RT RISER PLATE
DRAWN JOE MARTIN	SCALE · SIZE A · PART NUMBER 8710 · REV. 2000-01
CHECKED JOE MARTIN	
DESIGNER JOE MARTIN	MATERIAL SEE DRAWING · SHEET 1 of 1