IMPORTANT NOTE: The 3C LCC ships with a mounting base, however, you will need to select the proper mounting base for your needs when placing your order (see exploded view on page 4).
P/N 11520SL—Standard lathe mounting base (4000 and 4400 models)
P/N 11521CL—Chucker lathe mounting base (6600 models)

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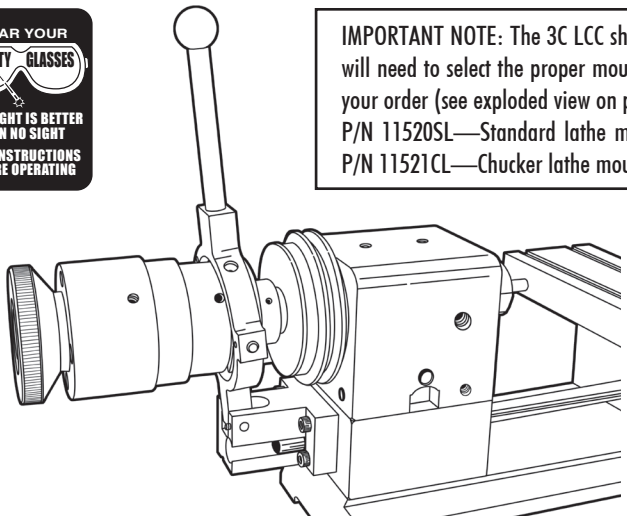


(Shown without motor and speed control)

3C Lever Collet Closer

P/N 3025

Introduction

The 3C lever collet closer was designed to work with our 3C headstock (P/N 30113), and is based on the same design as our standard lever collet closer (P/N 1150).

Anyone doing repetitive lathe operations on small parts will find this new accessory saves a lot of time when holding parts in a 3C collet.

The Sherline collet closer's locking mechanism is inside the cam and is actuated by pushing the handle away from the rear of the headstock. To unlock, you pull the lever forward. The tension mechanism is a ball detent that rides on a knurled wheel. As you turn the drawbar knob to tighten the collet, the ball moves to the next knurled tooth, giving a positive feel and holding it in place.

In order to make our collet closer durable, we made all of the wear parts out of hardened A2 tool steel and 1144 Stress-proof steel along with hardened dowel pins in the pivot joints.

This collet closer can be attached to any of standard lathes using the 3C base mounting unit, P/N 11520SL, or to our industrial chucker lathe using P/N 1521CL, each sold separately.

The lever operated collet closer makes production work and collet work easier and faster. Long stock up to 1/2" in diameter can be held through the 3C collets and spindle. Larger parts can be held in one of our 3- or 4-jaw chucks with the use of our chuck adapter (P/N 10670).

3C Lever Collet Closer Installation

BEFORE ATTACHING THE COLLET CLOSER BODY—First remove the 3C Spindle "End Cap" (P/N 30128), from the end of the 3C spindle (see Figure 1). You will be replacing this part with P/N 11512C, the 3C LCC "spindle mounting sleeve." (See the P/N 3025 3C lever collet closer exploded view on the last page.) The mounting sleeve is already assembled to the 3C collet closer. Insert the drawbar tube into the spindle, and then thread the mounting sleeve onto the end of the spindle. Once the inner shoulder of the mounting sleeve is located firmly against the end of the spindle, you can tighten the set screw.

NOTE: This set screw (P/N 30129) is designed to keep the mounting sleeve from threading off during use. Do NOT over tighten the set screw or you will damage the spindle. Just tighten it until it is snug.

3C Collet Headstock Exploded View and Part Numbers

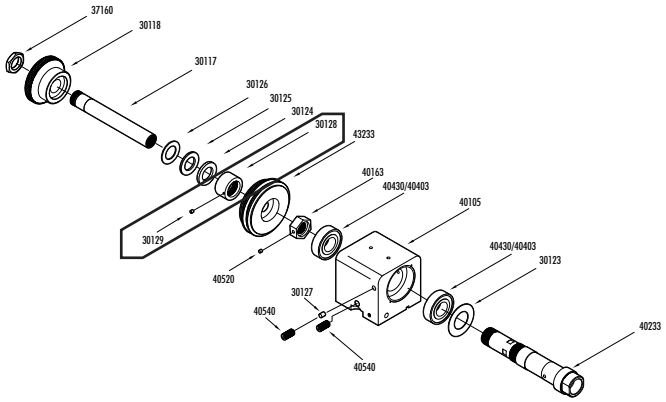


FIGURE 1—The outlined part numbers refer to 30128 3C–Spindle "End Cap" and 30129– 5-40 x 1/8" Cup Point Set Screw.

1. **Standard lathes—**Loosen the two 10-32 screws (P/N 11520SL) in the collet closer base. *(See Figure 2 on next page for screw locations.)* After inserting the collet drawbar tube (P/N 11510C) into the rear of the headstock spindle shaft, slide the collet closer base onto the rear of the leadscrew support that extends from the lower left end of the lathe base. Push the base of the collet closer up tight against the lathe base. Tighten the two 10-32 screws using the 5/32" hex key provided with your collet closer to secure it to the collar.
2. **Chucker lathe—**After inserting the collet drawbar tube (P/N 11510C) into the rear of the headstock spindle shaft, secure the base (P/N 11521CL) to the headstock base using the four 10-32 x 1" screws. Make sure the base slides over the brass leadscrew cover tube.

Adjustment

With the lever handle (P/N 11501) pushed to your left away from the headstock and a collet installed in the adapter, slip a piece of appropriately sized raw stock into the collet.

Rotate the knurled drawbar knob (P/N 30118C) clockwise until the collet closes onto the part and it can't be moved by hand. Now, move the lever handle to the open position (towards the headstock). There is a spring ball connected to the draw bar knob. The spring ball will make a clicking noise each time the ball enters a knurl on the side of the draw bar knob. With the collet open, turn the draw bar knob clockwise approximately (8) clicks. This amount of closure should offer sufficient holding pressure on the part when the collet is closed. You may increase the clamping pressure a bit more if needed (10-12 clicks). However, if you increase the clamping pressure too much, the lever handle will not be able to fully engage into the closed "locked" position. With the draw bar knob tension set, pull the lever handle to the left (away from the headstock). When you pull the lever handle to the left, you should hear a slight clicking noise which is the lever collet closer clicking into the locked position. The locked position happens before the lever reaches the full travel distance. When the lever reaches the full travel distance, it will not have any load on the shoes. Both the yolk and the shoes will be in a neutral position which allows the shoes to ride free in the shoe slot (no shoe pressure on either side of the shoe slot). If there is pressure on the shoes, your adjustment is wrong and you will need to readjust the draw bar knob tension.

Lubrication

The primary wear parts of the collet closer are the shoes (P/N 11518C). We recommend that you place a few drops of light weight oil (such as 3-in-1 oil) into the oiler hole on the top front side of the Yoke (P/N 11522C) prior to each use or hourly if used constantly (see Figure 2).

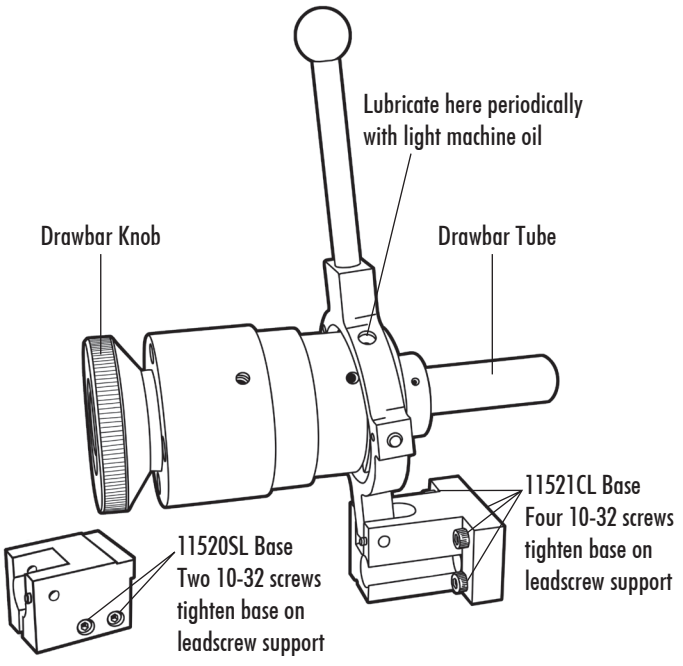


Figure 2—Lubrication and attachment points. Shown with P/N 11521CL base in place for the chucker lathe. The 3C LLC base, P/N 11520SL, is an available option for mounting to a standard Sherline lathe.

The other wear parts are the steel balls (P/N 11530C), the thrust washers (P/N 11509C) and the cam (P/N 11509C). All of these parts are hardened steel. They are assembled at the factory using Super-Lube PTFE (Teflon-based) grease available from Sherline as P/N 7550. If you use your collet closer frequently, we suggest that you disassemble the cam periodically and add fresh grease to the balls and inner face of the thrust washers.

CAUTION!

1. **Do not over-tighten the collet before engaging the cam lever**—Because of the cam lever action of this collet closer, you can exert a very high closing force on the collet if it is over-tightened prior to final closing with the lever handle. Do not pre-tighten the collet on the part to a point where the collet is in the full clamp position prior to clamping with the lever. This will put excessive force on the collet threads and result in premature wear and failure of your collets and your collet closer.
2. **Do not allow long stock to protrude too far from the left end of the spindle**—An inherent danger when running long stock through the spindle on all lathes is the possibility of an excessive whipping action. Just as there is a rule of thumb for how far unsupported stock should be sticking out of a collet when machining (1.5 times the diameter of the stock), a similar rule also applies to how far your stock should be sticking out of the rear end of the spindle without support. Since 1/2" is the largest diameter of stock that can feed through the spindle, we recommend that your stock does not protrude more than 3.5"-5.0" past the end of the spindle. This distance could be increased if the spindle speed is reduced or decreased if the spindle speed is increased.

   The inherent danger caused by the whipping action is this: As your stock begins to whip, the centrifugal force on the end of the stock increases. If the forces on the end of the stock exceed the stress level of the material, which can happen very quickly, your stock will bend at a 90 degree angle to the spindle and become the equivalent of an airplane propeller, damaging everything it hits while rotating. Excess stock longer than noted above must be supported.

Troubleshooting the Lever Collet Closer (LCC)

There are a limited number of things that can go wrong with our collet closer. If yours is not functioning correctly, here are a couple items to check.

First, the easy things:

1. Is the Spindle Mount Sleeve (P/N 11512C) attached securely to the Headstock Spindle with the 5-40 1/8" 3C Set Screw (P/N 30129) ?
2. Is the 3C LCC Base pressed all the way up to the end of the lathe bed? There will be a space between the Base and the casting, but there shouldn't be any space between the Base and the lathe Bed. Are the clamping screws tightened securely so the base cannot move?

Now the more serious topics: Collet clamping and unclamping problems.

3. Does the spindle turn freely inside the yoke with the collet unclamped? If not, there is a problem with the Shoes (P/N 11518C) binding in the groove in the Cam (P/N 11514C). See fix below in instruction 4 a-c below.
4. Does the spindle turn freely inside the Yoke with the collet clamped? If not, there is a problem with the Shoes (P/N 11518C) binding in the groove in the Cam (P/N 11514C). See fix below in sections a-c.
   a. If the spindle turns freely when the collet is open and locks up when you close the lever, there is either something wrong with the Shoes or the 3/16" pins (P/N 11526C) are rubbing on the Cam groove.
   b. First loosen the two set screws (P/N 11528) that hold the 1/8" pins in place. Then pull the 3/16" pins out a little. Clamp the collet and see if the spindle turns freely. If it frees up, the problem was the 3/16" pins were in too far, and they were rubbing on the Cam. Retighten the two set screws and try again.
   c. If the spindle is still binding, you may need to flip the Shoes 180 degrees in the Yoke, or replace them. Flip one Shoe at a time first to see if that frees up the spindle.
5. Does your collet lever move forward to the open position when you are running the spindle?
   a. One of the Thrust Washers (P/N 11509C) was assembled incorrectly. The thrust washers are flat on one side and have a taper cut on the other side. When assembled correctly the taper side of both washers should be facing the Ball Carrier (P/N 11507C, see Figure 3). If the Thrust Washers are not assembled correctly, the lever will close the collet, but it will slowly work its way back open during use.
   b. To fix this, you will need to partially disassemble the collet closer. You will need a 1/16" Allen Wrench and a small slotted screw driver.
6. The Lever Collet Closer (P/N 1150) and 3C Lever Collet Closer (P/N 3025) were designed to be used with our standard pulley set, which has a maximum RPM of 2800. It will work with the 10,000 RPM pulley set (P/N 4335); however, the parts are going to wear faster, and any vibration that is in the yoke is going to be increased.

Disassembly

IMPORTANT NOTE: We use blue removable Loctite® on the screws that you will need to loosen to do this partial disassembly.

1. Loosen the two Dog Point Set Screws (P/N 11532C) about three turns.
2. Loosen the set screw (P/N 11535C) with ball detent three turns.
3. Remove the collet if necessary.
4. Now you should be able to pull the entire drawbar assembly out from the back side.

NOTE: Place a rag or towel under the back side of the collet closer. There are eight 3/16" steel balls in the carrier that are only held into the carrier with grease. If they fall out, they will be hard to find.

5. Once the drawbar assembly has been removed, push the two Thrust Washers away from the Ball Carrier (P/N 11507C) and see if the side with the taper is facing the ball carrier on both of them. If not, pull them off, turn them around, and reassemble them.

This is how they should be assembled:

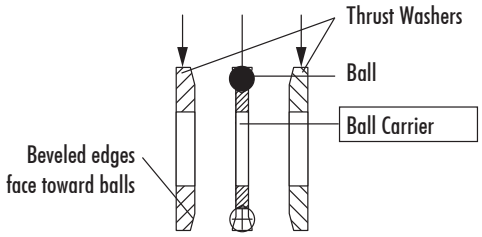


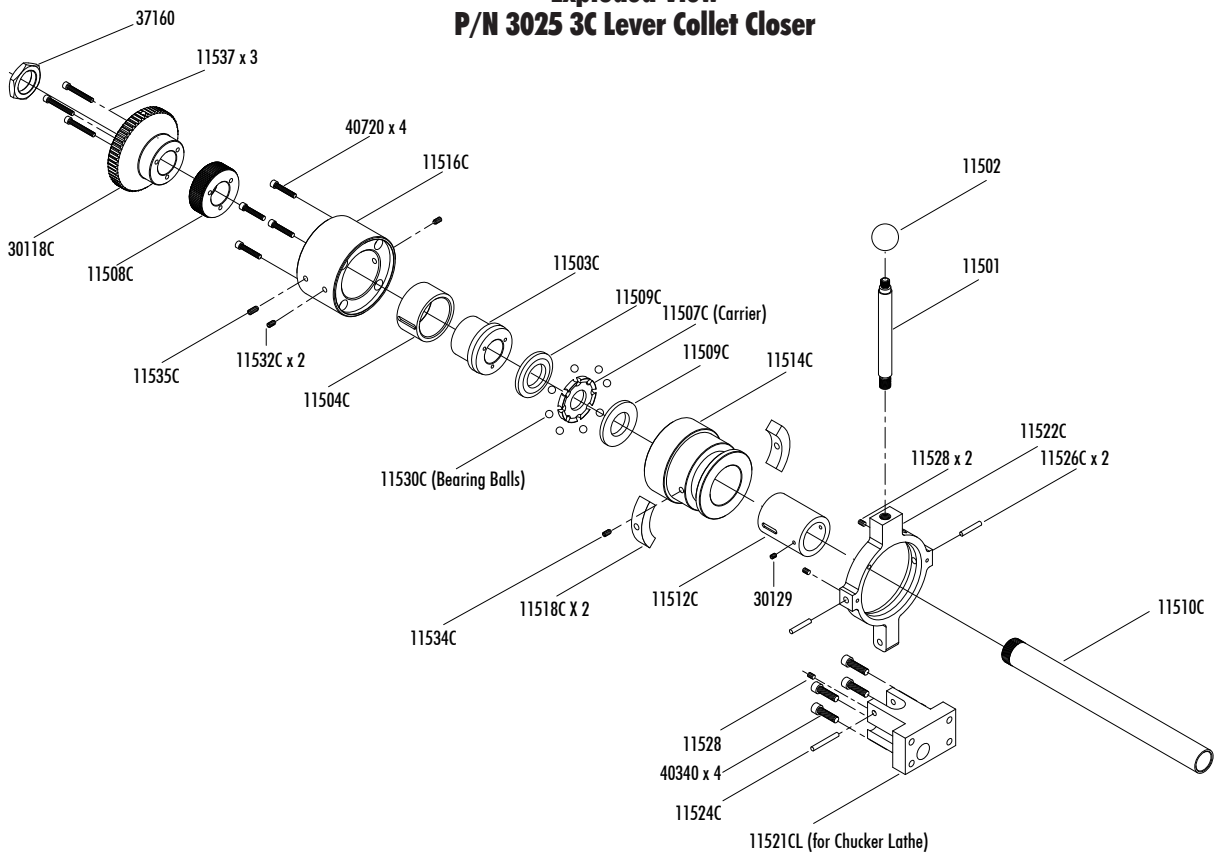
Figure 3—Washers and Ball Carrier

6. To reassemble, carefully insert the drawbar shaft assembly back into the Cam body (taking care not to lose any balls).
7. Align the slots in Guide Ring (P/N 11504C) with the Dog Point Set Screws (P/N 11532C). Turn one set screw in at a time until it bottoms out in the groove. Then back it out 1/2 turn. There must be clearance between the set screw and the groove so the parts can move back and fourth.
8. Turn the ball detent set screw in until it bottoms out on the Knob Adapter Plate (P/N 11508C). Then back it out 1/2 turn. If the screw is adjusted correctly, you should be able to turn the drawbar assembly with ease and feel the Ball click into each knurled groove on the Adapter Plate.

SPECIAL NOTE: This is the same procedure that we use to check the Balls and Thrust Washers for wear. We also use this procedure to apply grease to the Balls and the Ball Carrier during general maintenance.

Thank you,
Sherline Products Inc.

Exploded View
P/N 3025 3C Lever Collet Closer

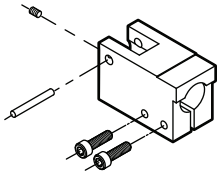


Parts List

NO. REQ.	PART NO.	DESCRIPTION	NO. REQ.	PART NO.	DESCRIPTION
1	11501	LCC Handle Shaft	2	11526C	3C 3/16" X 3/4" Harden Steel Dowel Pin
1	11502	LCC Handle Knob	3	11528	5-40 x 3/16" Cone Point Set Screw
1	11503C	3C LCC Hub	8	11530C	3C 3/16" Steel Bearing Balls
1	11504C	3C LCC Guide Ring	2	11532C	3C 10-32 x 1/4" Dog Point Set Screw
1	11507C	3C LCC Ball Carrier	1	11534C	3C 10-32 x 3/8" Half Dog Point Set Screw
1	11508C	3C LCC Knob Adapter Plate	1	11535C	3C 10-32 x .513" Set Screw w/ Spring Loaded Ball
2	11509C	3C LCC Thrust Collar	3	11537	5-40 x 1-1/2" SHC Screw
1	11510C	3C LCC Drawbar Tube	1	30118C	3C LCC Drawbar Knob
1	11512C	3C LCC Spindle Mount sleeve	1	30129	5-40 1/8" 3C Set Screw
2	11514C	3C LCC Cam	1	37160	Locking Nut
1	11516C	3C LCC Cam Cap	4	40340	10-32 x 1" SHC Screw (for Chucker Lathe Base)
2	11518C	3C LCC Cam Shoe	1	40550	5/32" hex key (not shown)
1	11521CL	3C LCC Base (for Chucker Lathe)	1	40570	3/32" hex key (not shown)
1	11520SL	3C LCC Base (for Standard Lathe)	2	40690	10-32 x 3/4" SHC Screw (for Standard Lathe Base)
1	11522C	3C LCC Yoke	4	40720	10-32 x 1-1/2" SHC Screw
1	11524C	3C 3/16" X 1" Harden Steel Dowel Pin			

Accessories for the 3C Lever Collet Closer

- 3C LCC Standard Lathe Base P/N 11520 SL
- Adjustable 3C Collet Stop P/N 3024



LEFT: Optional standard lathe base P/N 11520 SL

RIGHT: Optional adjustable 3C collet closer work stop kit P/N 3024