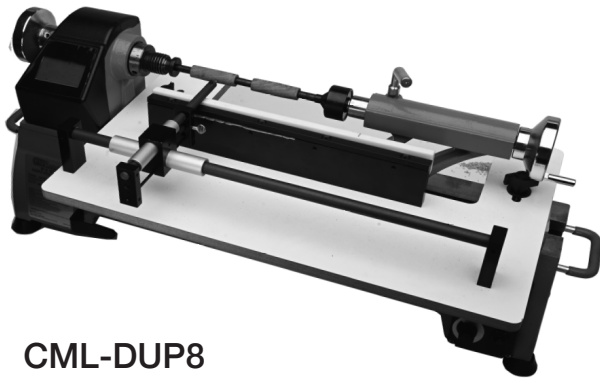
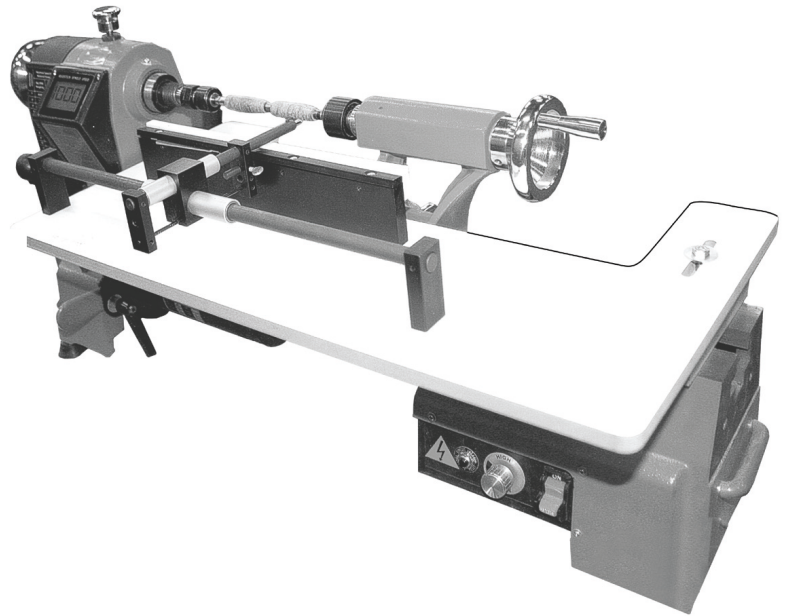


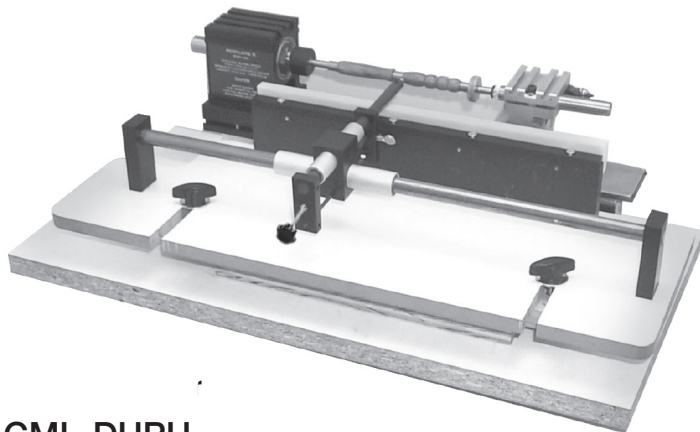
User's Manual
Mini/Midi Lathe Duplicator Attachments



CML-DUP8
Universal Duplicator



CML-DUPMAX
Mounted on a Commander Lathe



CML-DUPU
Universal Duplicator



CML-DUPJ
Compatible with Jet & Delta Mini Lathes



Scan for Video
Instructions

Warranty

This product is warranted against defects in material and workmanship for a period of two years from the date of the purchase. The warranty applies to the original purchaser of the product and is limited to the repair or replacement of the product or its components at the discretion of PSI Woodworking Products. Excluded are parts, which have been misused, abused, altered, or consumed by normal operation. Also, excluded are direct or consequential damages to persons, properties, or materials. Your invoice serves as proof of purchase and must be referenced to authorize warranty repairs. Please call your dealer for proper authorization prior to return.

Date Purchased: _____ Invoice No.: _____

PLEASE READ AND PRACTICE SAFE TURNING TECHNIQUES

Guidelines for Safe Turning

1. Always wear safety goggles or safety glasses and a full-face shield when needed. Use a dust mask in dusty working conditions. Wear hearing protection during extended periods of operation.
2. Tie back long hair, do not wear gloves, loose clothing, jewelry or any dangling objects that may catch in rotating parts or accessories.
3. Check the owner/operator's manual for proper speed recommendations. Use slower speeds for larger diameter or rough pieces, and increased speed for smaller diameters and pieces that are "true" or cylindrical. If the lathe is shaking or vibrating, lower the speed. If the work piece vibrates, always stop the machine to check the reason.
4. Check that all clamping devices, such as on the tailstock and cutter holder are tight.
5. Rotate your work piece by hand to make sure it clears the template holder and bed before turning the lathe "on". Be sure that the work piece turns freely and is firmly mounted. Make adjustments with the lathe turned "off".
6. Use only defect-free stock, without cracks, splits, checks or knots which could chip and fly out, causing serious injury.
7. Hold the cutter holder firmly on the tool rest.
8. Always move the cutter to the side before sanding or polishing.
9. Perform periodic maintenance on your lathe and duplicator. Keep cutter sharp. Check for damaged parts, alignment, binding of moving parts, and other conditions that may affect its operation.
10. Don't use your lathe in damp or wet locations. Do not use in presence of flammable liquids or gases. Keep your work area well lit.
11. Remove chuck keys and adjusting wrenches prior to turning. Form a habit of checking for these before switching on the lathe. Never leave the lathe running unattended. Turn power off. Don't leave the lathe until it comes to a complete stop.

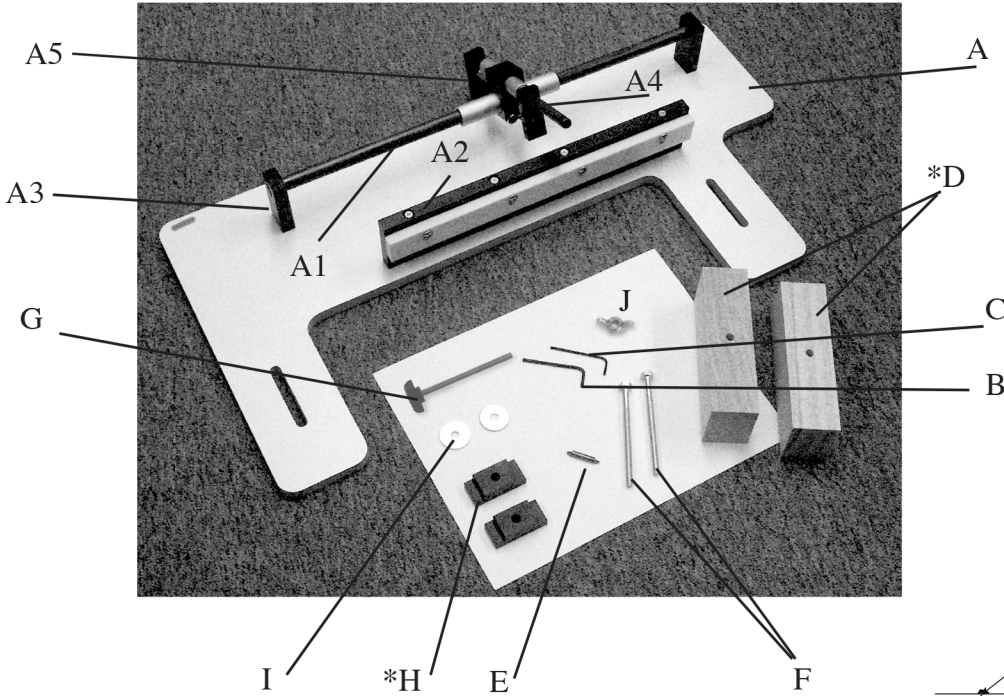
Specifications:

Max Spindle Length

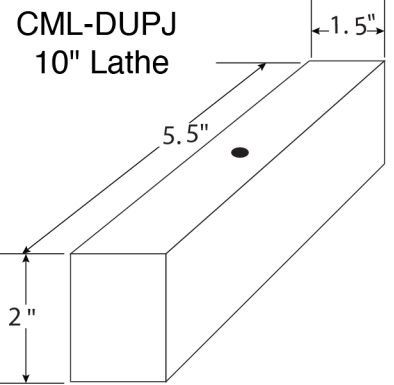
CML-DUP8, CML-DUPJ , CMLDUPU 9"

CML-DUPMAX 12"

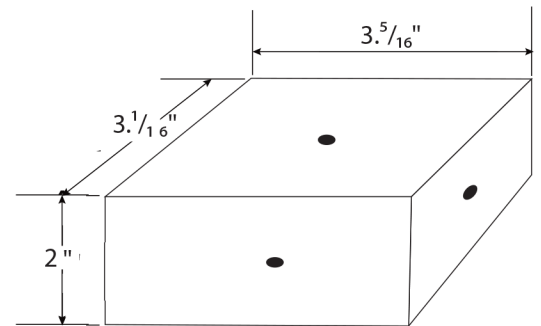
Diagram 1- Duplicator Components



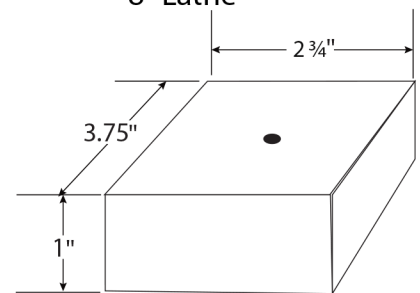
D. Mounting Supports,



CML-DUPX
10" & 12" Lathe



CML-DUP8
8" Lathe



- | | |
|--|--|
| <p>A. Duplicator platform includes: A1. Cross slide bar
A2. Template holder/tool rest A3.</p> <p>A. Mounting Platform
A4. Follower Assembly
A5. Cutter Slide Assembly</p> <p>B. 2mm Allen wrench
C. 2.5mm Allen wrench</p> | <p>D. Mounting supports *D
D1. Mounting supports for CML-DUPMAX(2 ea)</p> <p>E. SS cutter</p> <p>F. Mounting bolts
G. Depth adjustment bolt
H. Lathe ways attachment*
I. Mounting washer (2)
J. Depth adjustment nut</p> |
|--|--|

* Not included with CML-DUPU

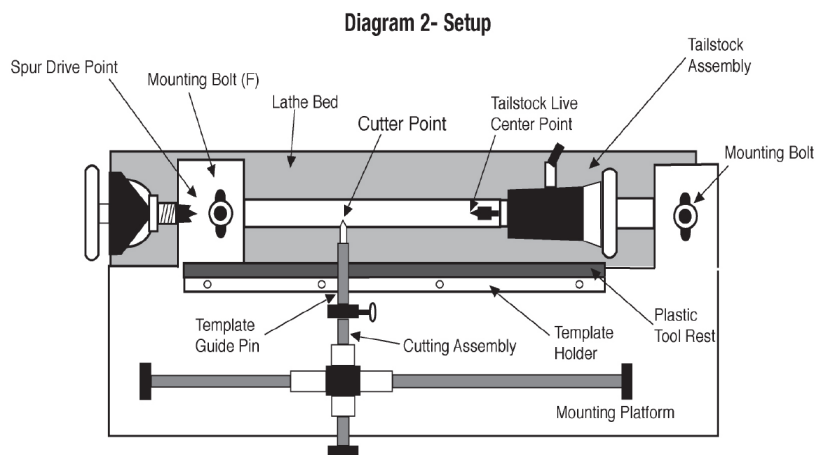
Assembly: CML-DUPMAX ; CML-DUPJ; CML-DUP8

- Slide cutter (E) into front of cutter slide assembly (A5). Tighten with Allen wrench (C)
- Screw wing nut (J) onto depth bolt (G). Then screw through rear end block of Cutter Slide assembly (A5)
- Mount the entire duplicator assembly on the lathe as shown in (Dia. 2), use riser blocks (D) for Jet/Delta
- A 3 way spacer block is provided for CML-DUPMAX series duplicator. Use the 2" riser direction for 10" lathes, 3-1/16" riser for 12" lathes and 3-5/16" riser for 12-1/2" lathes.

Lathe Mounting and Setup Instructions: CML-DUPJ; CML-DUPMAX, CML-DUPS

1. Mount duplicating attachment on your lathe as indicated in diagram 2.
2. Move tail stock assembly to the right.
3. The duplicator must be parallel to the lathe. To accomplish this: With the cutter point and the spur drive point just touching, tighten the template guide pin in place resting against the front of the template holder.
4. Slide the cutting assembly to the right, and with the template guide pin still resting against the front of the template holder, move the duplicator board forward or back to bring the point of the cutter into position so it is just touching the live center point of the tailstock. Tighten duplicator mounting bolts.
5. The height of the cutter tool tip needs to be on the exact center line of the lathe spindle. This is accomplished by adjusting the plastic tool rest of the template holder up or down. Loosen the screws on the back side and adjust the level of the cutter tip even with the spur drive on the headstock and Diagram 2- Setup Tailstock.

Diagram 2 -



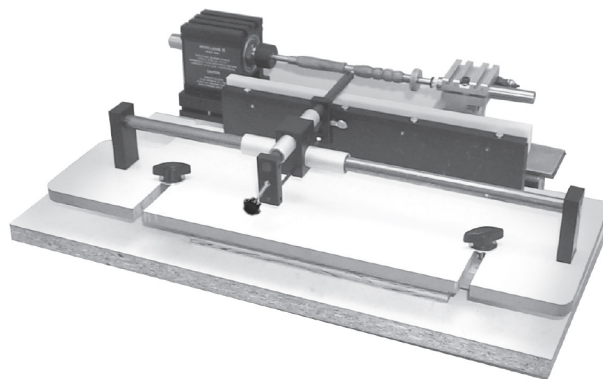
NOTE: Board configuration may vary

Lathe Mounting and Setup Instructions: CML-DUPU

This setup mounts the universal duplicator to any lathe. For alignment, you must supply spacer blocks, a suitable lower mounting base and appropriate hardware. Locate the point of the cutter to rest at a height exactly even with the center line of your lathe's spindle by mounting the lathe on a large enough base to support both the lathe and the duplicator. Fabricate a set of riser blocks or a single platform to raise the cutter to a height equal to the height of the spindle center line.

Use 1/4" lag bolts with a wood screw end or a 1/4" x 20 machine screw with a "T" handle, knob, or hex bolt head on the end. In the riser block below, glue in a threaded insert to secure the bolt.

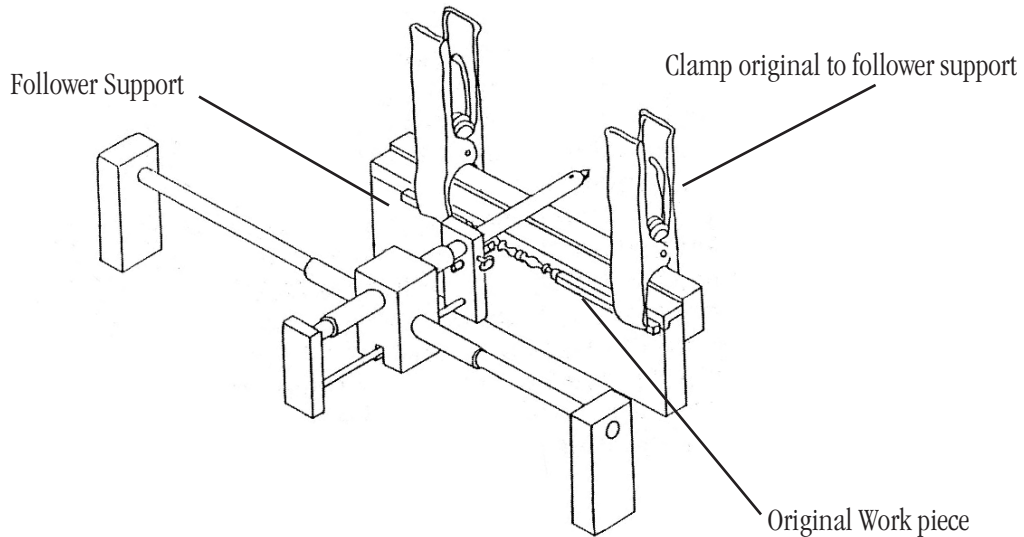
Diagram 2A - Setup for CUL-DUPU



Duplicating Using an Original Work piece

If small enough, MAXmp the work piece to the follower as shown in Diagram 3. For layer pieces, cut the piece in half lengthwise and MAXmp (or glue) to the follower for support.

Diagram 3- Copying an Original Work piece

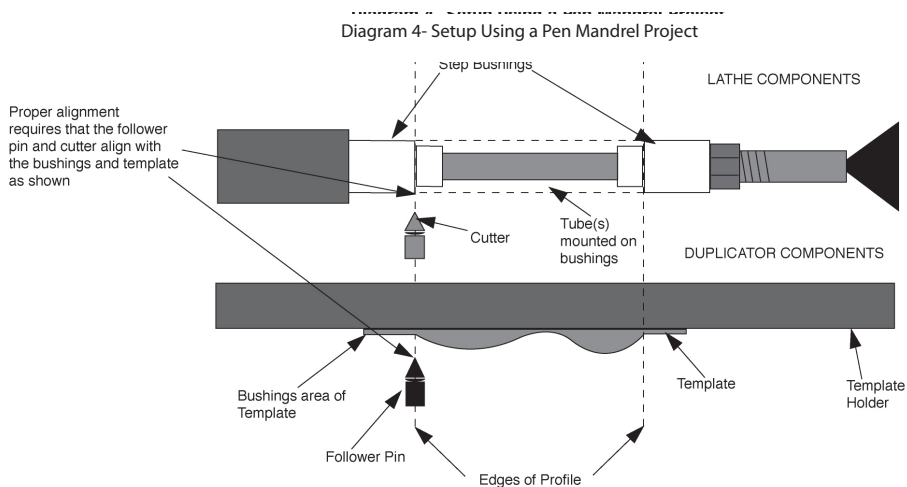


Using PSI Template Sets for Projects that Mount on a Mandrel (pen kits etc)

Preliminary Preparation

1. Select the kit you intend to make and remove the brass tubes. Mount the kit's bushings and tubes onto the mandrel without wood (see Diagram 4 below)
2. Loosen the screws on the top of the template holder. Insert the steel template under the holder bar, press the template forward into the holder as far as possible. Hand tighten down the bar to hold the template so that it slides left to right and front to back (under enough pressure not to fall out).

Diagram 4- Setup Using a Pen Mandrel Project



The PSI template profiles are designed to use the kit bushings as the primary setup indicator. The following steps discuss how to align the cutter to a bushing and then position and secure the follower pin and template to ensure a precise setup. Note that this setup has to be done only one time (for a particular project).

Setting the Cutter Depth Alignment

3. Secure the bushings and tube(s) on the pen mandrel. Secure the tailstock to the mandrel and tighten the locking nut.

4. Position the point of the cutter exactly to the inside edges of the left hand bushing (if the bushings are step bushings, position the cutter exactly to the inside edges of the left-most part of the wood blank will rest.) Refer to Diagram 4.

5. Loosen the follower pin wing bolt. The follower will slide freely front to back in its holder. Slide the template along the holder until the bushing area of the template is in front of the follower's point. (Do not tighten the template in its holder yet.) Slide the follower forward until it barely touches the template (somewhere in the bushing area of the template.) You can now lock the follower pin in place. Note: you can use a plier to tighten the follower's wing screw (but don't over tighten it to avoid stripping the bolt.)

Determining the Template Left to Right Alignment

6. With the cutter still positioned at the right outside edge of the left bushing, slide the template to the left until the left side of the cutting profile touches the point tip of the follower pin. Refer to Diagram 4. (Note: some template profiles have straight edges and will not allow the point to match the left-hand template edges when the cutter is positioned up against the bushing. In this case back off the follower before sliding the template into position.)

7. With the follower and template now in position, you can now lock the template in place by tightening down the locking screws. Slide the cutter to the right hand bushing and check the depth of the follower point. You may have to adjust the template in the holder front to back to match the proper depth on both right and left bushings (this may be necessary if the duplicator was not setup to be perfectly aligned to the lathe.)

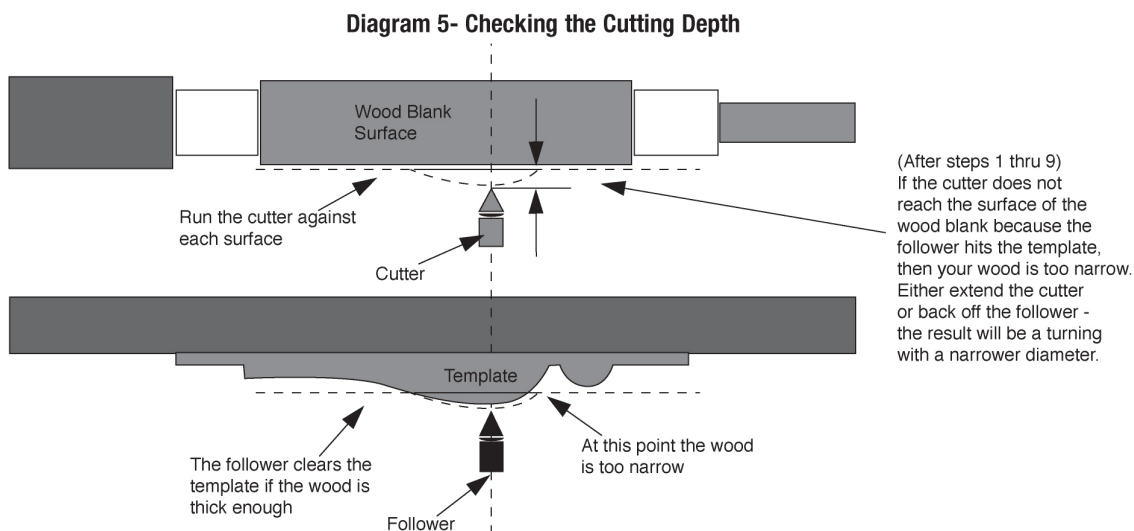
Finishing the Setup

8. When preparing your kit's wood blanks for turning a) Make sure that the blanks are exactly the same length as the brass tubes since all templates are designed to exactly match these tube lengths. b) Cut your wood blanks thick enough to make sure the template profile does not extend beyond the outer surface of the blank. (You can test your wood blank by following the procedure listed under 10b.) Note: PSI kits, bushings and templates have been designed to match every time. If the tubes or bushing do not match then it is possible that another vendor supplied your kit or bushings. Contact PSI for bushings and kits that are guaranteed to match the template profile.

9. With the left hand bushing fixed in its setup position, assemble your blanks and bushings onto the mandrel (matching the template directions). To ensure proper setup check these items:

a) With the cutter pressed against any bushing, the follower point should barely touch the template. If not, adjust the duplicator or template mounting as necessary.

b) Check that your wood is thick enough to match the widest diameter of the template's profile (see the Diagram 5 below). To do this, press the cutter point to the flat of your wood blank and slide the cutter left to right across the surface. Do this for each of the four surfaces. The follower must clear the template across all of the flats. If the follower hits the template, your wood is too narrow but all is not lost. You may be able to turn a thinner profile to match the minimum diameter of the blank.



To match the minimum diameter, push the cutter towards the point on the flat that results in largest gap between the flat and the cutter point (because the follower pin will be hitting the template). Loosen the follower pin, press the cutter forward until it hits the wood flat, back off the follower pin so that it hits the template while the cutter is still touching the wood. Tighten the follower. Follow step 10 b below to check whether or not your profile is too narrow.

Adjusting the Thickness of the Turned Profile

10. You can easily turn a thinner or thicker profile by adjusting the follower pin depth.

a) For a thinner profile (or this if your blank is not quite thick enough) you can back off the follower pin from the template. Note that the difference in your workpiece's finished diameter will be double the distance that you've backed off. You can check to make sure your profile is not too narrow as follows

b) With the profile diameter thinner there is now a chance that your cut may be too deep and hit the brass tube. Check this by mounting up a set of brass tubes onto the bushings (without wood mounted on). Run the follower pin across the template profile and watch the cutter tip. If the tip hits the tube at any point then the profile diameter is too thin and you will have to change to a set of thicker blanks or adjust the depth accordingly.

Cutting with the Duplicator (Diagram 6)

1. Pull tool holder back before turning the machine on. Never allow cutter to contact spur drive or chucks.
2. Place hands comfortably on each side of cutter assembly, with fingers guiding the cutter side to side and forward and back always keeping the tool holder down against the plastic tool rest.
3. With the lathe on start at one end, slide cutter to the other end, removing a small amount of material with each pass. Cutting may be done in either direction.
4. When the guide pin comes into contact with the template or original turning, it will start to follow the contour as you cut.
5. Continue cutting, leaving the deepest cuts until last for increased stability. If the deepest cuts are made too soon, the work piece may flex and break.
6. Move the cutter from side to side as you progress into deep cuts to provide clearance for the cutter bit and to prevent binding.
7. After completing the cutting, make a final pass to clean up the surface.
8. If there are flat areas on your completed turning, it means the cutter needs to be adjusted to cut deeper. Do this by moving the guide pin back a tiny bit ($1/64''$ or less) and turning the work piece again.
9. When your turning is complete, rest the cutter assembly off to one side, out of the way of the work piece and moving lathe parts.
10. Sand and finish your work piece on the lathe if desired.

Diagram 6- Cutting Technique

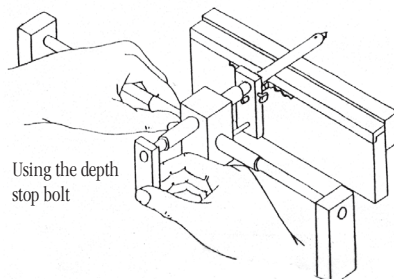
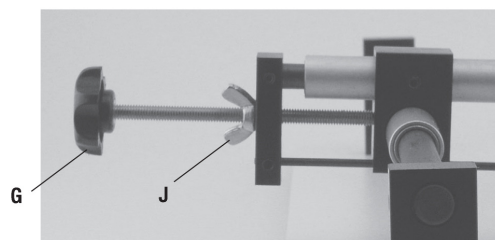


Diagram 7- Depth Stop Bolt



Use the depth stop to micro-control your cut depth. The system also guarantees a straight cut. Turn the wing nut (J) towards the knob on the depth bolt (G) to advance the follower in small increments. The end of the bolt will stop the cutting depth independent of the follower and template. As you cut, the depth stop initially will create straight cuts as the wing nut is backed off. The follower pin will hit the template and cause the cutter to follow the template pattern.

Duplicator Template Instructions for Projects Mounted between Centers

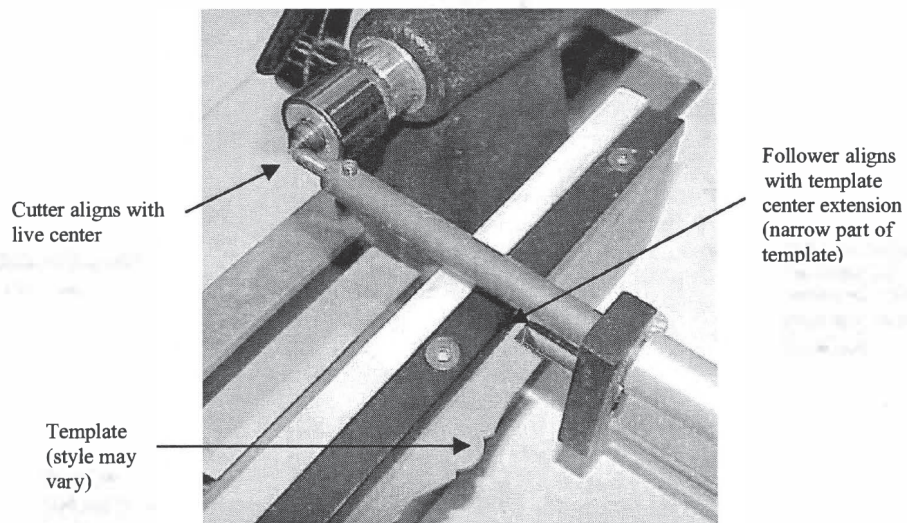
Use a spur center or a Lathe Chuck to grab the project wood at the headstock end. The wood will be pressed into the live center point at the tailstock end. Measure the total length of the finished project (between the shoulders of the template). Cut your wood about 2 1/4" longer than the finished product.

Mark the center of each end of the blank. Drill a 1/8" pilot hole into each end.

Position the template into the template holder so that the "center extension" (narrow part of the template) is slid towards the live center on the tailstock. Adjust the cutter and follower as indicated in Diagram 8. Mount the wood after positioning the cutter and followers.

When cutting, leave the deepest cuts for last since the final cuts may separate the project.

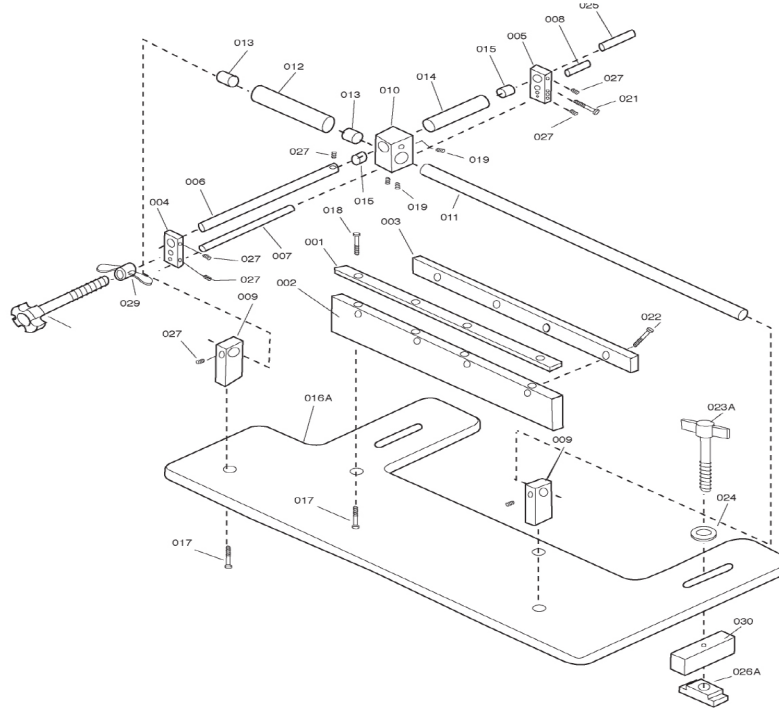
Diagram 8



General Information: Hints and Tips about Using Your Duplicator

1. The cutter bit is High Speed Steel and has a point on both ends and should extend about 5/16". Loosen set screw to remove or reverse cutter.
2. To maintain sharpness, never allow the cutter to come into contact with the spur drive or chucks while the lathe is on.
3. Cutters may be re sharpened by hand on a fine, flat stone, such as an Arkansas or India (medium. or hard). All three surfaces should be honed on the stone, bringing the cutter bit to a sharp point.
4. With proper care of the cutter, you should be able to produce several hundred small turnings before re sharpening is needed.
5. It is recommended that you wipe the steel rods of the cutter assembly with some light oil or WD-40 from time to time. Moisture from your hands could cause some rust on the rods. Always wipe on some oil before long term storage.
6. Your workpiece should not be any longer than you actually need. Excessive length increases the possibility of spindle whip.
7. When turning long, thin spindles, it may be necessary to use your fingers to provide support for the workpiece to reduce flexing during cutting.
8. In the beginning, start with turnings about 1/4"-3/8" square until you get a feel for the correct amount of pressure to be used for cutting. Usually the harder woods are more rigid and stable and easier to work, producing a nicer finished product.
9. With practice, you can free-hand your shapes and then use the original for a template. The original should be of hard wood and polished with wax to provide a smooth surface for the guide pin.
10. To make dowels, adjust the guide pin in or out to slide along the template holder (without a template) to create a dowel the desired diameter.

Duplicator Attachment for Lathe



Ref No.	Part No.	Description	Qty	Spec
001	ZCMLDUP-01	Template clamp	1	
002	ZCMLDUP-02	Template support bar	1	
003	ZCMLDUP-03	Plastic tool rest	1	
004	ZCMLDUP-04	Rear cutter assy support	1	
005	ZCMLDUP-05	Front cutter assy support	1	
006	ZCMLDUP-06	Cutter holder	1	
007	ZCMLDUP-07	Cross guide rod	1	
008	ZCMLDUP-08	Follower pin	1	
009	ZCMLDUP-09	Guide rod support	2	
010	ZCMLDUP-010	Slides support block	2	
011	ZCMLDUP-011	Guide rod	1	
012	ZCMLDUP-012	Guide rod support sleeve	1	
013	ZCMLDUP-013	Brass bushing	2	
014	ZCMLDUP-014	Cross slide support sleeve	1	
015	ZCMLDUP-015	Brass bushing	2	
016	ZCMLDUP-016	Base(CML-DUP)	1	
016A	ZCMLDUP-016A	Base(CML-DUPJ)	1	
016B	ZCMLDUP-016B	Base(CML-DUPCLA)	1	
017	ZCMLDUP-017	PLP head screw	4	M5*0.8P*20L
018	ZCMLDUP-018	PLP head screw	4	M5*0.7P*10L
019	ZCMLDUP-019	SET screw	3	M5*0.8P*5L
021	ZCMLDUP-021	Thumb screw	1	M4*0.8P*12L
022	ZCMLDUP-022	RNR head screw	4	M4*0.7P*20L
023	ZCMLDUP-023	HEX screw	2	1/4"x3-1/2"L*62L
024	ZCMLDUP-024	Washer	2	Ø7.2*D25.4*1.5t
025	ZCMLDUP-025	Cutter	1	
026	ZCMLDUP-026	Fix plate	2	
027	ZCMLDUP-027	SET screw	8	M4*0.7P*5L
028	ZCMLDUP-028	Depth screw	1	M4*0.7P*5L
029	ZCMLDUP-029	Wing nut	1	M6*1.0P
030	ZCMLDUP-030	Riser Block(CML-DUPJ)	2	
030A	ZCMLDUP-030A	Riser Block(CML-DUPMAX)	2	
030B	ZCMLDUP-030B	Riser Block(CML-DUPB)	2	

Steel Profile Template Sets for Duplicating Attachment



The Chessmen Duplicator Project

Turn identical elegant chess pieces with our Chessmen Duplicator Template set. Compatible with **#CML-DUP** style manual duplicator. The set includes instructions and 2-up reusable steel templates. We recommend the 1-1/2" x 60" (total running length) wood spindles for each species. Requires a bandsaw for finishing of rook, knight, and the bishop.

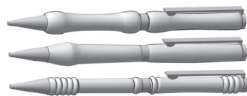
#CHESSTMP

Chessmen Premium Wood Spindle Kit

Includes six pieces of walnut and six pieces of maple spindle blanks: 1 ea.- 1/2" x 1-1/2"x12" – more than enough wood to make a complete 32-piece chess set.

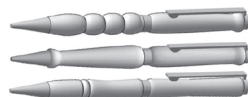


PSI Templates are laser cut from 1/16" steel and fit into all PSI duplicators. Templates enable the illustrated profiles to be cut on a duplicator, exactly the same every time. *Template above from #TPL7MM1 set.*



"Slimline"™ Pen Set 1. *Set of 3.*
For all "Slimline" styles.

#TPL7MM1



"Slimline"™ Pen Set 2. *Set of 3.*
All "Slimline" styles.

#TPL7MM2

#TPL7MMX

Combo of PL7MM1 + TPL7MM2



For all "Comfort" pen and pencil Styles.

#TPLCFPEN



For all "Designer" and "Premium Designer" pens & pencils.

#TPLMONT



1-1/2"

Keychains. *Set of 5.*
For kit #PKKEY.

#TPL01



2"

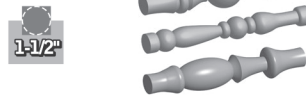
turned between centers

Wine Bottle Stoppers *Set of 3.*

For: #BS1.

Length 1-1/2" 2-1/4" 2"

#TPL14



1-1/2"

turned between centers

Candle Holder Spindles *Set of 3.*

For: #PKCANKIT1, 2, & 3.

Height 5-1/2"

#TPL15



© 2023 PSI Woodworking Products, Philadelphia PA 19115