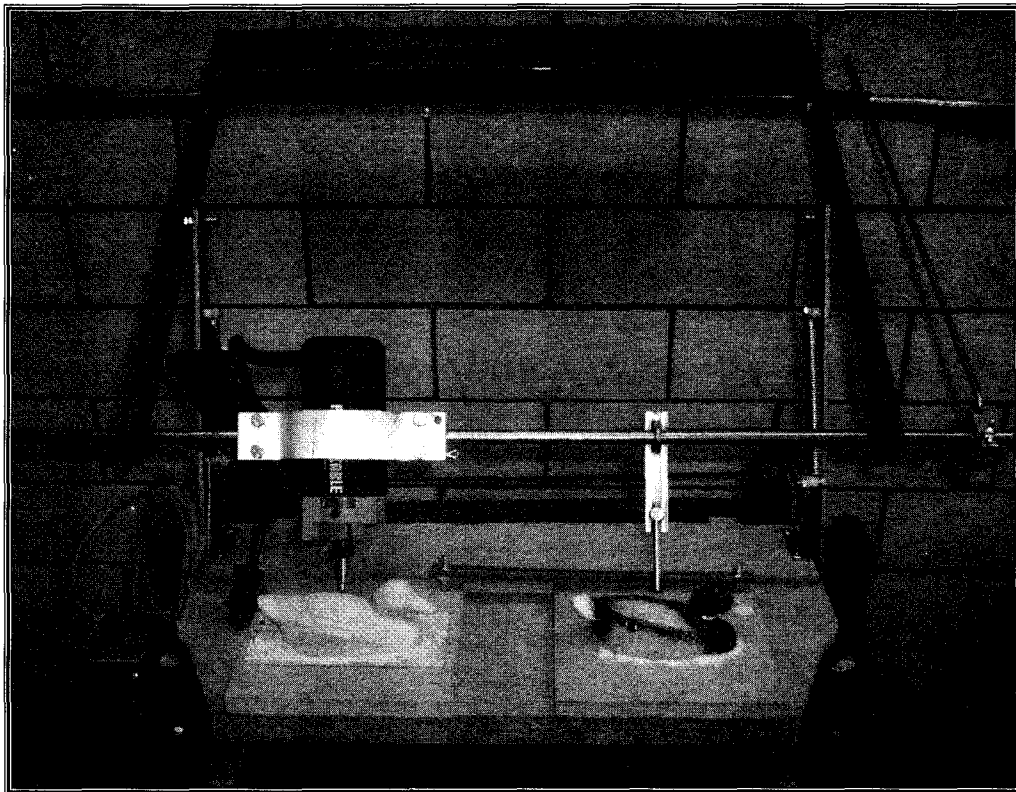
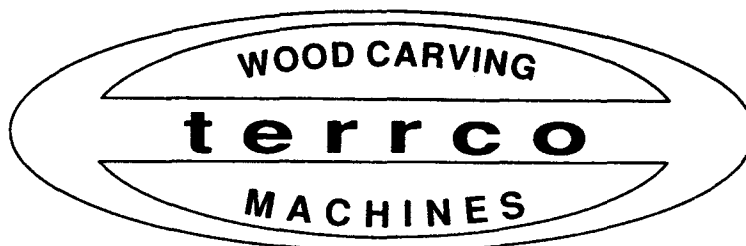


# DUPLI-CARVER<sup>®</sup>

## ASSEMBLY AND ALIGNMENT INSTRUCTIONS



**MODEL T110 PC**  
**JUNE 2002**



**terrco, inc.**

222 FIRST AVENUE N.W. • WATERTOWN, SD 57201  
PHONE: 605/882-3888 • FAX: 605/882-0778  
E-MAIL: [info@terrco.com](mailto:info@terrco.com)  
WEBSITE: [www.terrco.com](http://www.terrco.com)

MODEL T110 DUPLI-CARVER BOX AND BAG ASSEMBLY PARTS LIST

A06200 Main Box Contents:

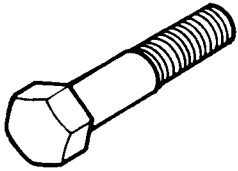
Item	Qty	Part Number	Description
1.	(1)	D06218	Aluminum Router Mount Half (Front)
2.	(1)	D06219	Aluminum Router Half (Rear)
3.	(1)	S06212	Position Arm
4.	(2)	M06214	Wooden Turntables
5.	(1)	S06209	1/2" Dia. Guide Shaft (Short)
6.	(1)	S06210	1/2" Dia. Guide Shaft (Long)
7.	(2)	P06224	Plastic U-shaped Lower Arm Retainers
8.	(1)	WW06202	Upper Arm
9.	(1)	W06206	Lower Arm
10.	(2)	M06246	Wooden Leg Brace Boards
11.	(4)	M06263	Plastic Table Legs
12.	(1)	M06213	Wooden Table Top
13.	(1)	M06219	Dupli-Carver Owner's Manual
14.	(1)	M06220	T110 Assembly and Alignment Manual
15.	(1)	M06249	L-shaped Lock Rod
16.	(1)	P06221	Plastic Router Bit Guard (Front)
17.	(1)	P06222	Plastic Router Bit Guard (Rear)
18.	(1)	A06229	Bag Assembly:
	a.	(1) W100	1/32" Fine Detail Router Bit
	b.	(1) W101	1/4" Round Router Bit
	c.	(1) W105	1/2" Flat Router Bit
	d.	(1) W109	1/8" Medium Detail Router Bit
	e.	(1) W301	1/32" & 1/4" Stylus
	g.	(1) W305	1/2" Flat Stylus
	h.	(1) W308	3/4" Flat Roughing Stylus
	i.	(1) W309	1/8" Round Stylus
	j.	(2) F05089-1	Cable Ties
	k.	(2) P06234	Guide Shaft Bearing Outer Sleeves
	l.	(2) P06233	Guide Shaft Inner Sleeves
	m.	(2) S06235	Spring Brackets
	n.	(1) P06236	Plastic Hole Plug
	o.	(2) P04060	Counter Balance Springs
	p.	(1) P06238	Bit Guard Spring (Small Spring)
	q.	(1) D06239	Aluminum Stylus Holder
	r.	(1) A06240	Aluminum Guide Shaft Clamp
	s.	(1) S06241	Lock Arm Bracket
	t.	(4) P06104	Rubber Feet
	u.	(10) P06242	1/4" Acrylic Bushings
	v.	(4) P06243	1/4" Flanged Nylon Bushings
	w.	(8) F05015-2	#8 x 5/8" Self-Tapping Screws
	x.	(1) F05004-3	#10 x 3/8" Screw
	y.	(10) F05004-4	#10-24 x 1 1/2" Truss Head Screws
	z.	(7) F05010-14	#10-24 Keps Nuts
	aa.	(4) F05010-56	#10-24 Square Nuts
	bb.	(1) S06258	Stylus Lock Eye-Bolt
	cc.	(1) F05005-10	1/4-20 U-Bolt
	dd.	(4) F05005-13	1/4 x 1 1/2 Lag Screws
	ee.	(9) F05011-11	1/4" SAE Flat Washers (2 extra to use for shims)
	ff.	(4) F05005-43	1/4-20 x 7/8" Hex Head Bolts
	gg.	(4) M06245	1/4-20 x 1 1/2" Headless Bolts
	hh.	(4) F05005-5	1/4-20 x 1 1/2" Hex Head Bolts
	ii.	(2) F05005-9	1/4-20 x 2" Carriage Head Bolts
	jj.	(1) F05011-14	1/4" Split Lock Washer
	kk.	(1) S06247	1/4" Dia. x 1 3/4" Pivot Pin
	ll.	(3) F05010-13	1/4-20 Wing Nuts
	mm.	(14) F05010-9	1/4-20 Keps Nuts
	nn.	(1) M06283	1/4-20 Extended Wing Nut
	oo.	(4) F05010-18	1/4-20 Square Nuts
	pp.	(2) P06465-1	Plastic End Cap

A06225 Small Box Contents:

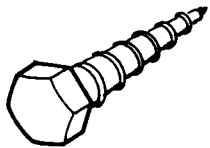
19.	(1)	P06226PC	1 HP Router
20.	(1)	T110S	Speed Control

## FASTENER IDENTIFICATION CHART

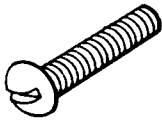
### BOLTS AND SCREWS



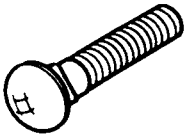
Hex Head Bolt



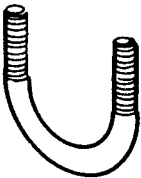
Lag Screw



Truss Head Screw



Carriage Head Bolt



U-Bolt



Self-Tapping Screw

### NUTS



Keps Nut



Wing Nut



Square Nut

### WASHERS



Flat Washer



Split Lock Washer

### SIZE GAUGE



#8



#10



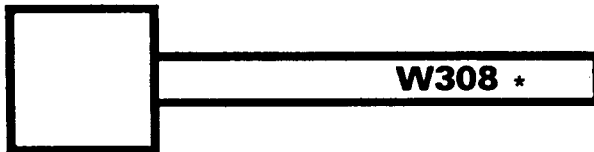
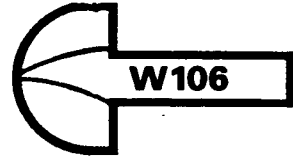
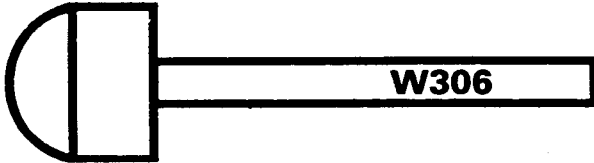
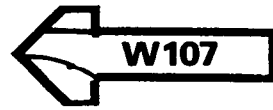
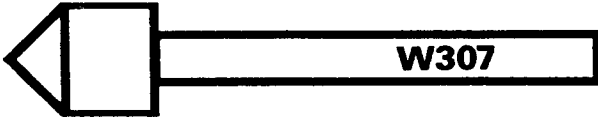
1/4

# BIT & STYLUS COMPARISON CHART

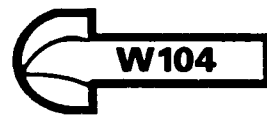
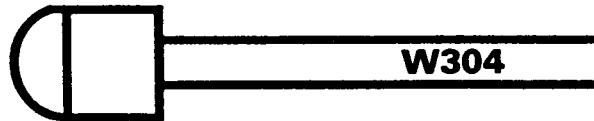
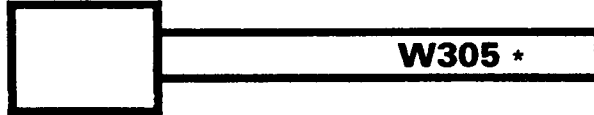
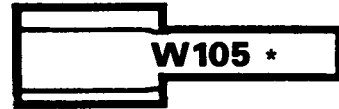
\*Included with T110

*Styli*

*Bits*



Use For  
Roughing



Use  
For Detail,  
Setup, & Alignment



# MODEL T110 DUPLI-CARVER ASSEMBLY/ALIGNMENT INSTRUCTIONS

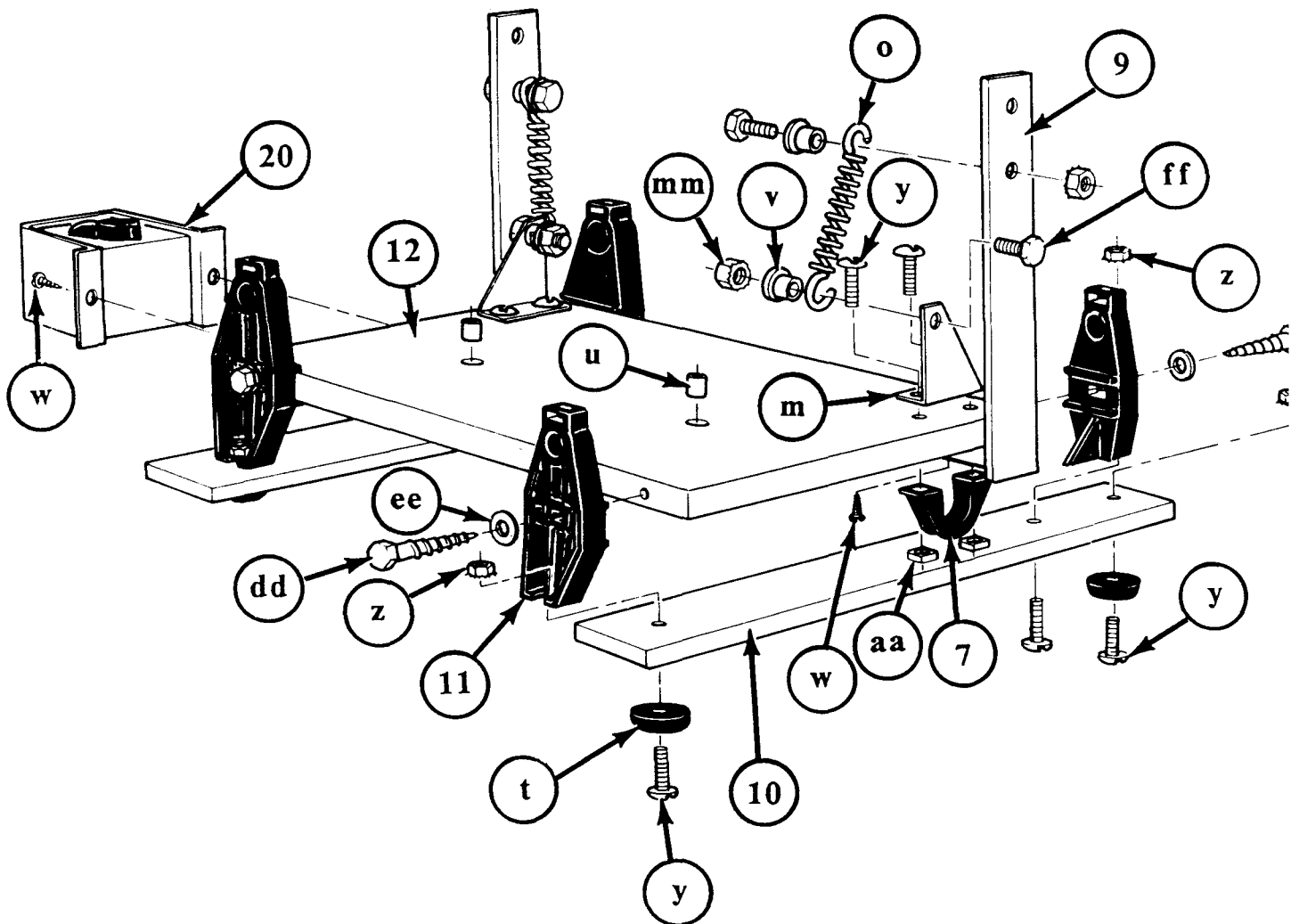
## Required tools:

1. 3/8" Wrench
2. 7/16" Wrench
3. Standard Screw Driver
4. Pliers

1. Unpack the Model T110 Dupli-Carver parts and spread them out. Do not remove the tape covering the hole in the upper arm assembly until the instructions indicate. Check and identify the parts against the parts list (use the fastener identification chart and illustrations throughout this manual for assistance in identifying the parts). Read through the entire assembly process before attempting assembly of this unit!

2. Refer to Figure 1.

a. Assemble the four plastic legs [11] to the table top [12] using four 1/4 x 1 1/2" lag screws [dd] and four 1/4" SAE flat washers [ee] into the pre-drilled holes in the sides of the table.

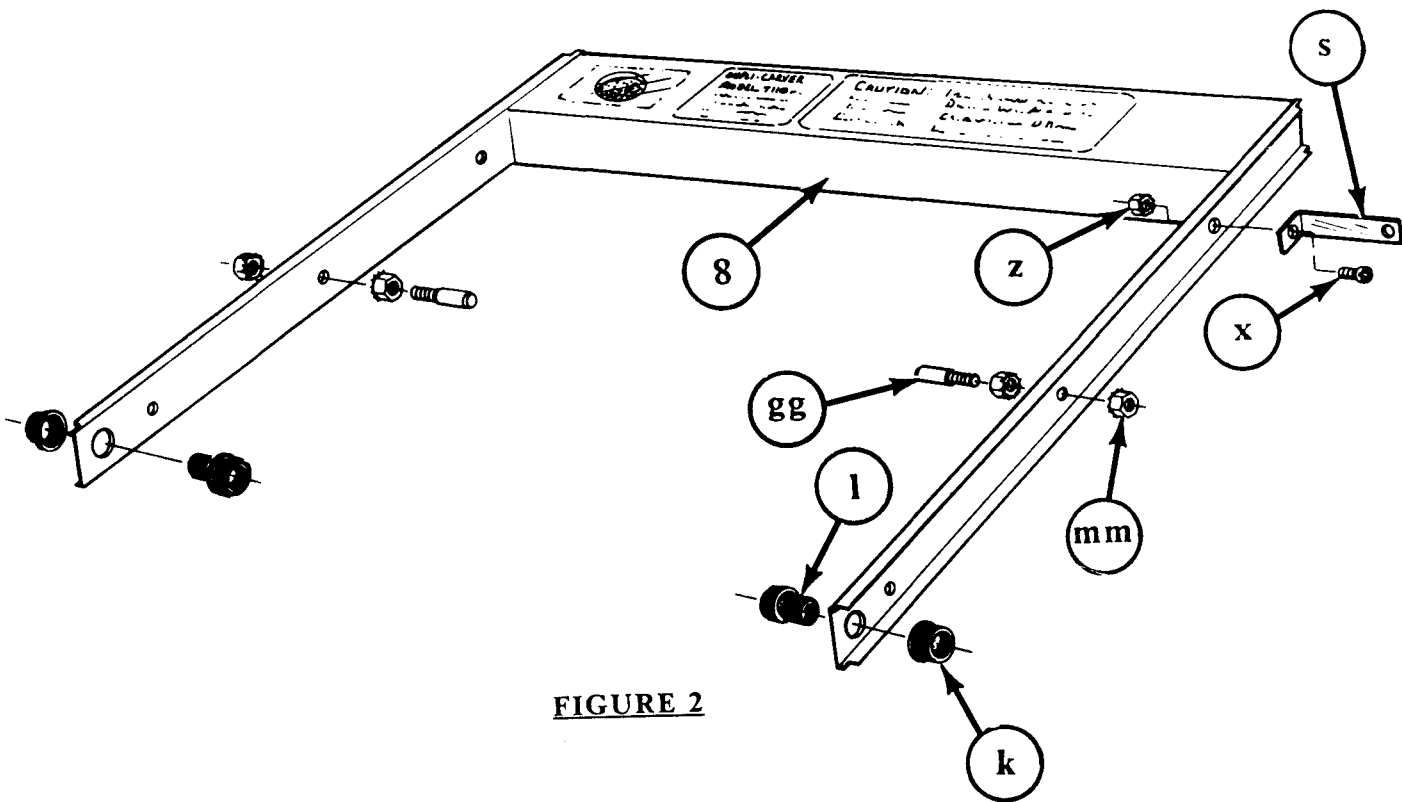


**FIGURE 1**

- b. Before attaching the lower arm [9] to the table, install two #8 x 5/8 self-tapping screws [w] in the pre-drilled holes of the lower arm tube. The screws should be inserted until the top of the head is approximately 1/4" from the tube. These screws keep the lower arm centered.
- c. Attach the lower arm to the underside of the table top using two lower arm retainers [7]. Place two #10-24 x 1 1/2" truss head screws [y] down through each spring bracket [m], through the table top, and through the holes in the lower arm retainer (make sure spring bracket feet face in toward each other). Secure with two #10-24 square nuts [aa].
- d. Attach a counter balance spring [o] to each spring bracket using a 1/4-20 x 7/8" hex head bolt [ff], a flanged nylon bushing [v], and a 1/4-20 Keps nut [mm] as shown. Wrench tighten the bolts and nuts but do not crush the bushing.
- e. In a similar manner, attach the other end of each spring to the lower hole of the lower arm, stretching the spring to install. Wrench tighten the bolts and nuts, but do not crush the bushing.
- f. The lower arm should now stand in a vertical position and, when moved front or rear, should return to a vertical position. If the lower arm interferes with either spring bracket, bend the bracket away from the interference point.
- g. Insert two 1/4" acrylic (clear) bushings [u] into the center holes of the table top until the bushing is flush with the table top.
- h. Install the two leg base boards [10]. Place a #10-24 x 1 1/2" truss head screw [y] up through a rubber foot [t] and through the leg brace board. Secure to one of the front table legs with #10-24 Keps nuts [z]. Repeat with the other front leg. Secure the rear legs with #10-24 x 1 1/2" truss head screws and #10-24 Keps nuts (no rubber feet). The two rear rubber feet mount to the rear holes of the leg braces with #10-24 x 1 1/2" truss head screws and Keps nuts.
- i. The recommended position for the speed control [20] is shown in **Figure 1**. Attach the speed control using two #8 x 5/8" self-tapping screws [w].

2. Refer to Figure 2.

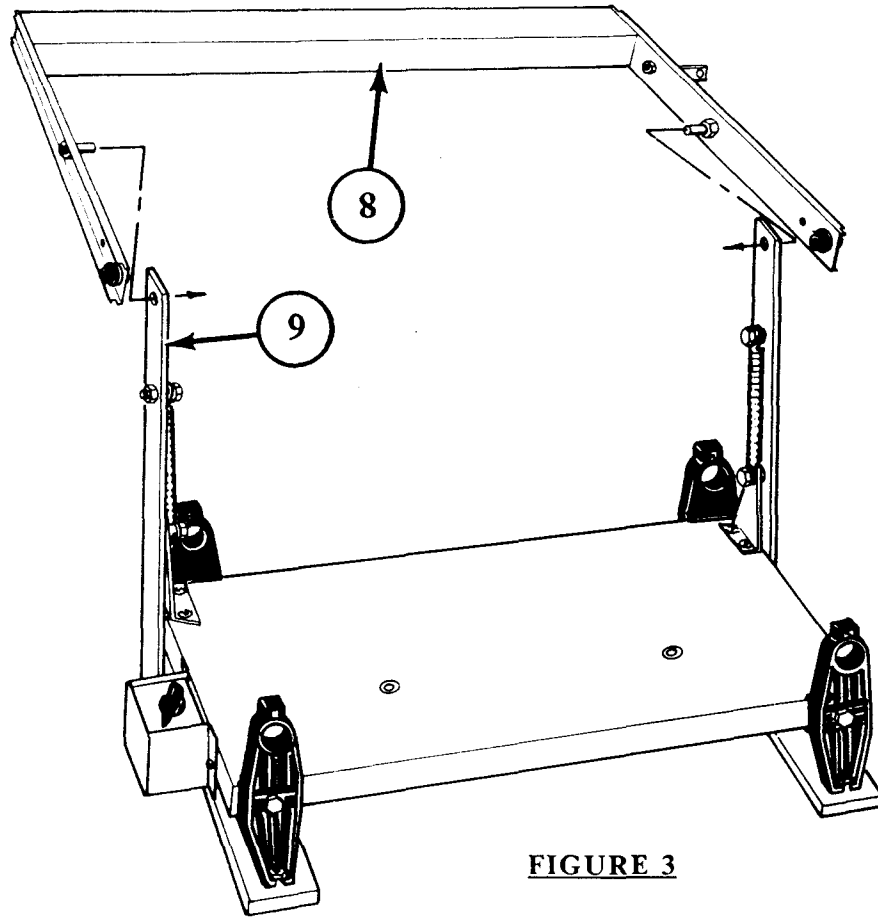
- a. Attach the lock arm bracket [s] to the right side of the upper arm assembly [8] using a #10-24 x 3/8 screw [x] and a #10-24 Keps nut [z]. Wrench tighten.
- b. Attach a headless 1/4-20 x 1 1/2" bolt [gg] to the middle hole of each side of the upper arm assembly, using two 1/4-20 Keps nuts [mm] on each bolt. The first nut is threaded onto the bolt to the bottom of the threads with the washer side toward the thread. The threaded end then goes through the upper arm hole and a second 1/4-20 Keps nut is threaded on and tightened securely against the upper arm. Headless end of the bolts should be on the inside of the arms as shown in Figure 2.
- c. Install the guide shaft bearing assemblies [k & l] into the upper arm as shown. If the bearing assemblies are difficult to push together, a bolt, washer, and nut may be used to pull each assembly together.



**FIGURE 2**

3. Refer to **Figure 3**.

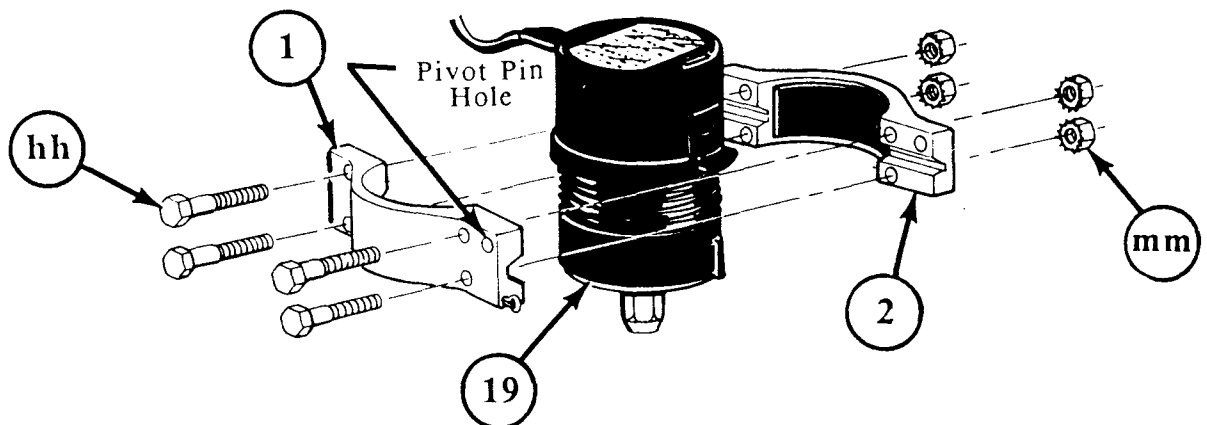
- a. The upper arm assembly [8] can now be installed onto the lower arm [9] by deflecting the lower arms in until the upper arm pins will slip into the top holes of the lower arm. Occasional light oiling of this pivot point will maintain a quiet and free-pivoting operation.



**FIGURE 3**

4. Refer to **Figure 4**.

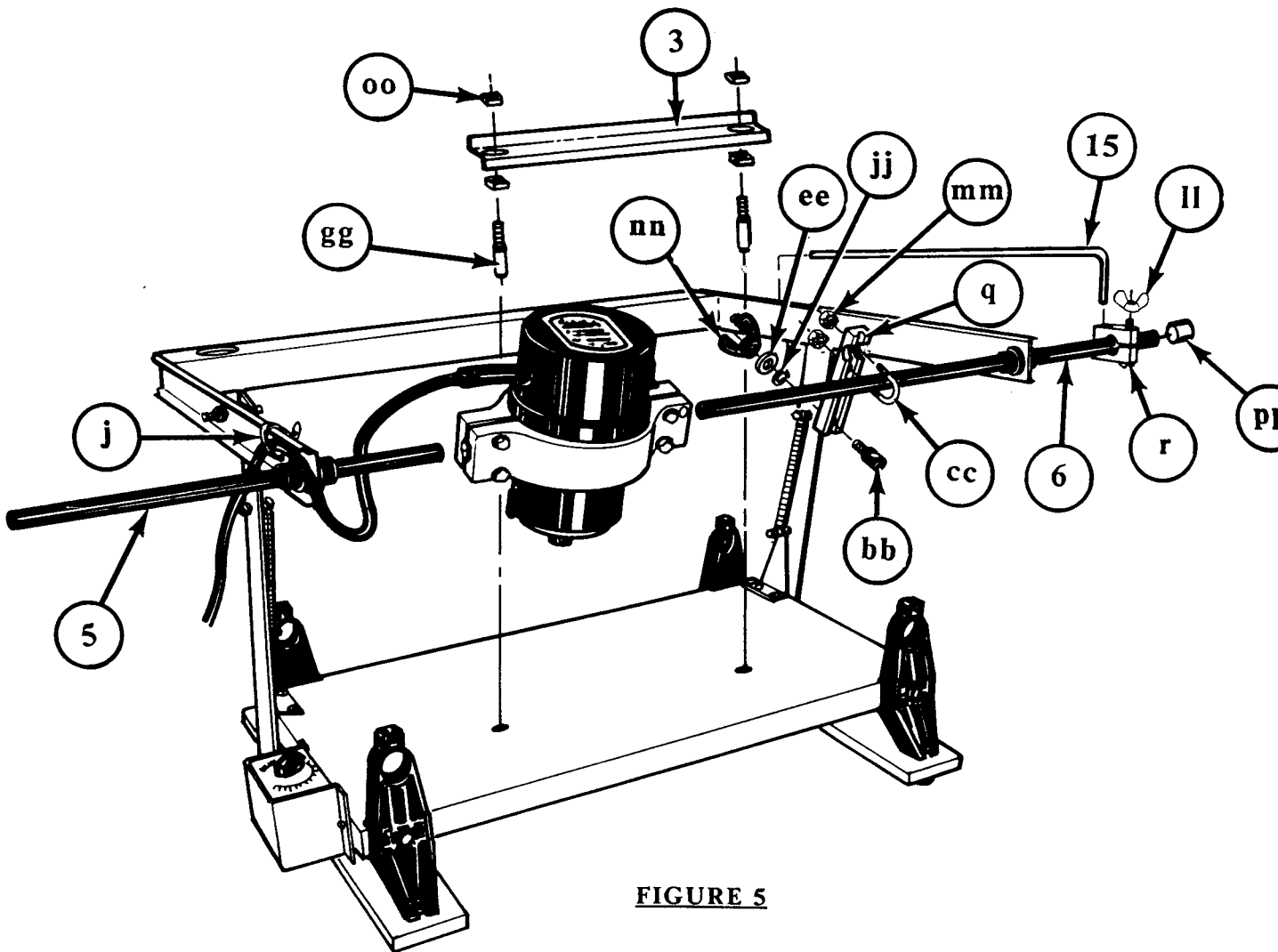
- a. Using four 1/4-20 x 1 1/2" hex head bolts [hh] and four 1/4-20 Keps nuts [mm], bolt the two aluminum router mount halves [1 & 2] around the router [19] (Be sure the bit guard pivot pin holes align and are on the right side of the router). The aluminum mount should be placed under the flange of the router. Hand tighten the four bolts to hold the router in place. **DO NOT** wrench tighten yet.



**FIGURE 4**



- a. Hold the router and mount assembly in position and slide the 1/2" diameter guide shafts [5 & 6] through the upper arm guide shaft bearing assemblies and into the router mounts until the ends of the shafts contact the router. Wrench tighten the four mount bolts in a criss-cross pattern to lock the guide shafts in place, maintaining equal gap between the mount halves.
- b. Attach the stylus holder [q] to the long guide shaft [6] using the 1/4-20 U-bolt [cc] and two 1/4-20 Keps nuts [mm]. Finger tighten (final tightening will come later). Install the 1/4-20 eye bolt [bb] to the stylus holder using a 1/4" split lock washer [jj], 1/4" SAE flat washer [ee], and 1/4-20 extended wing nut [nn] as shown.
- c. Assemble the lock arm [15] to the right guide shaft [6] by placing the long end through the hole in the previously installed lock arm bracket and sliding the clamp assembly [r] over the end of the shaft, with the pre-assembled bolt in front with the threaded portion pointed up. Slide the short 'L' section of the lock rod down into the empty hole of the clamp assembly. Place a 1/4-20 wing nut [ll] on the clamp bolt. When the wing nut is tightened, the lock grips the guide shaft and restrains its rotation during heavy roughing operations. Also, it is helpful for locking the router upside down for easier bit changing. Slide the shaft end cap [pp] on the shaft to keep the clamp from vibrating off when not in the locked position.
- d. Secure the router power cord to the left upper arm with one of the cable ties [j] provided. Leave enough cord slack to allow the router to move to its full right position.



**FIGURE 5**

- e. Assemble the position arm assembly by inserting two 1/4-20 x 1 1/2" headless bolts [gg] through 1/4-20 square nuts [oo], up through the position arm [3] and two more 1/4-20 square nuts. Adjust to proper center distance by inserting the bolts into the center hole bushings in the table top and tighten the nuts against the position arm securely. Lift the position arm out of the center holes and reinsert bolts again...this time only 1/8" deep. If the two bolts do not fit easily, make fine adjustments until the bolts slip dead-center into the center holes. (Note: This is critical for accurate indexing of the turntables!)

The unit is now assembled except for the safety bit guard which will be installed after the machine alignment is completed.

### ALIGNMENT PROCEDURES

The Dupli-Carver requires accurate alignment in three specific planes:

1. The guide shaft to which the router and stylus are mounted must be parallel to the surface of the table top.
2. The router bit and stylus must lie in a plane common to the guide shaft.
3. The guide shaft must lie in a plane common to an imaginary line drawn through the two turntable center holes in the table top.

### THE FOLLOWING STEPS ACCOMPLISH THIS ALIGNMENT

1. See Figure 6. Place two equal height objects near the front of the table top at both sides (pop or soup cans work well). The guide shaft should rest on both objects. If not, shims (extra washers provided) need to be placed on the side where the guide shaft does not touch the object. To install the shims, remove the upper arm assembly from the lower arm pivot holes and set aside. Remove the counter-balance spring on the side to be shimmed. Remove the square nuts holding the lower arm retainer and insert the shims between the retainer and the bottom of the table top. Replace the nuts and tighten securely. Replace the counter-balance spring and the upper arm assembly. Re-check to see that the guide shaft now touches both objects.

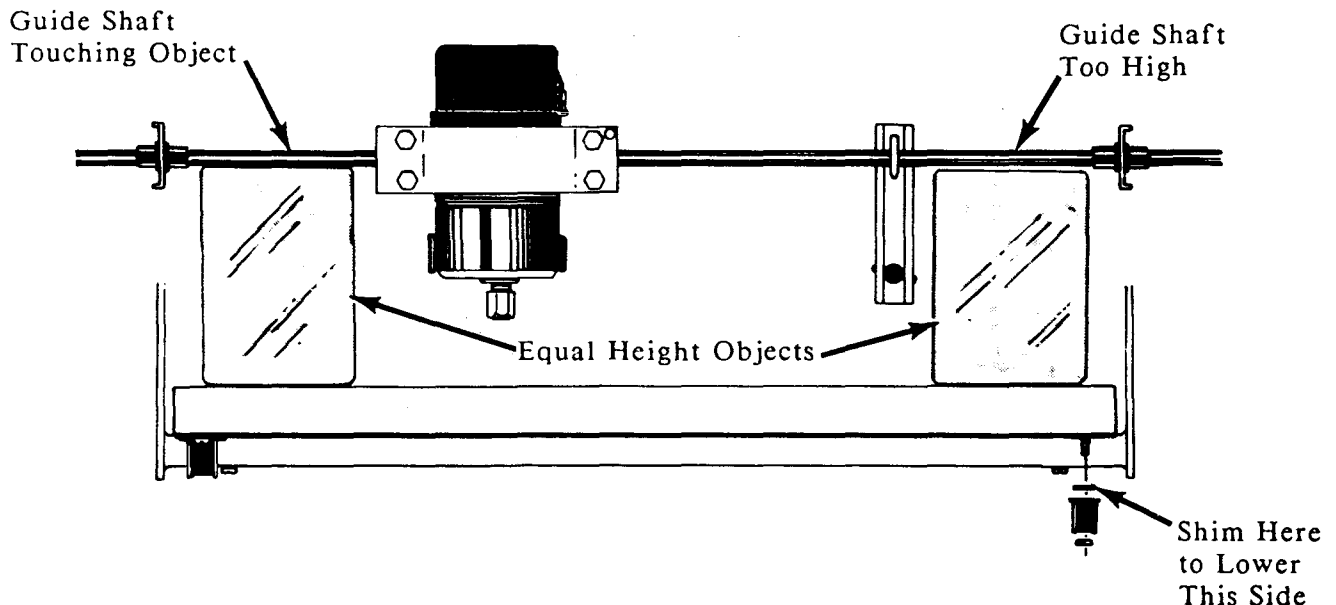
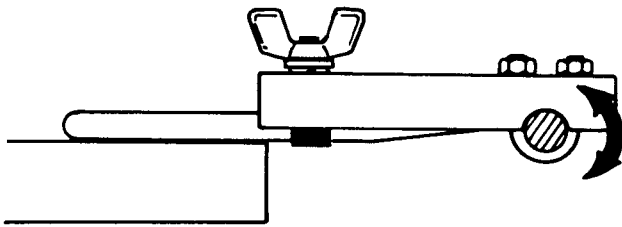


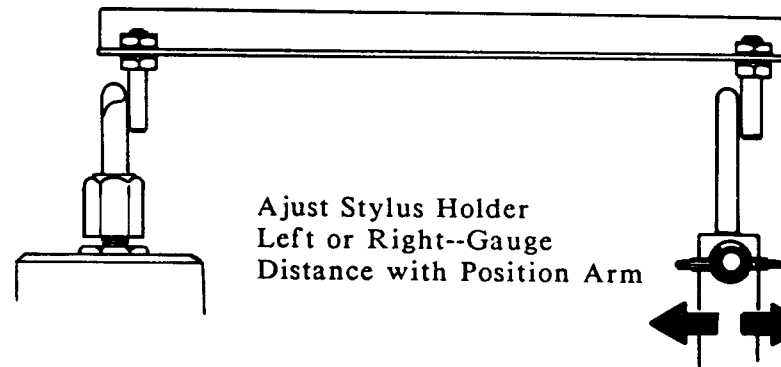
FIGURE 6

- Place the 1/4" round bottom bit in the router and the matching stylus in the stylus holder (see bit and stylus chart for proper stylus to use with 1/4" bit during set-up and alignment). Adjust the bit and stylus to the same length, using the table top as a gauge. This will be an approximation at this time, since the stylus holder is snug but not yet tightened to the guide shaft.
- See Figure 7. Rotate the router to horizontal with the bit forward and pull the guide shaft back and down until the bit is lying flat on the table surface. If necessary, rotate the stylus holder around the shaft until the stylus also lies flat on the table surface. Using the position arm as a gauge, slide the stylus holder sideways to the same span as the position arm pins and tighten the stylus holder to the guide shaft. This set-up is easiest if the sides of the positioning arm pins are placed at the sides of the bit and stylus, as shown in Figure 8.



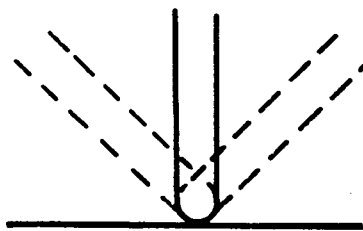
Rotate Stylus Holder  
Until Stylus Lies  
Flat on Table Surface

**FIGURE 7**



Ajust Stylus Holder  
Left or Right--Gauge  
Distance with Position Arm

**FIGURE 8**

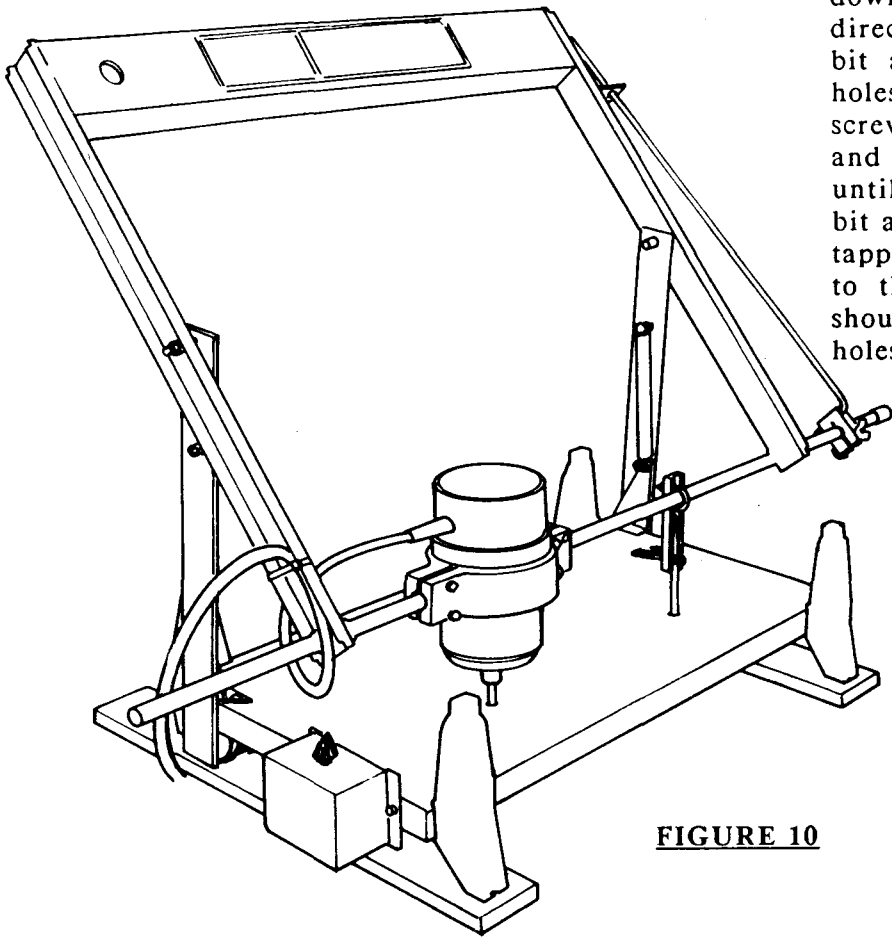


Stylus & Bit Should  
Stay in Contact with  
Table Top Throughout  
Front to Back Roll

**FIGURE 9**

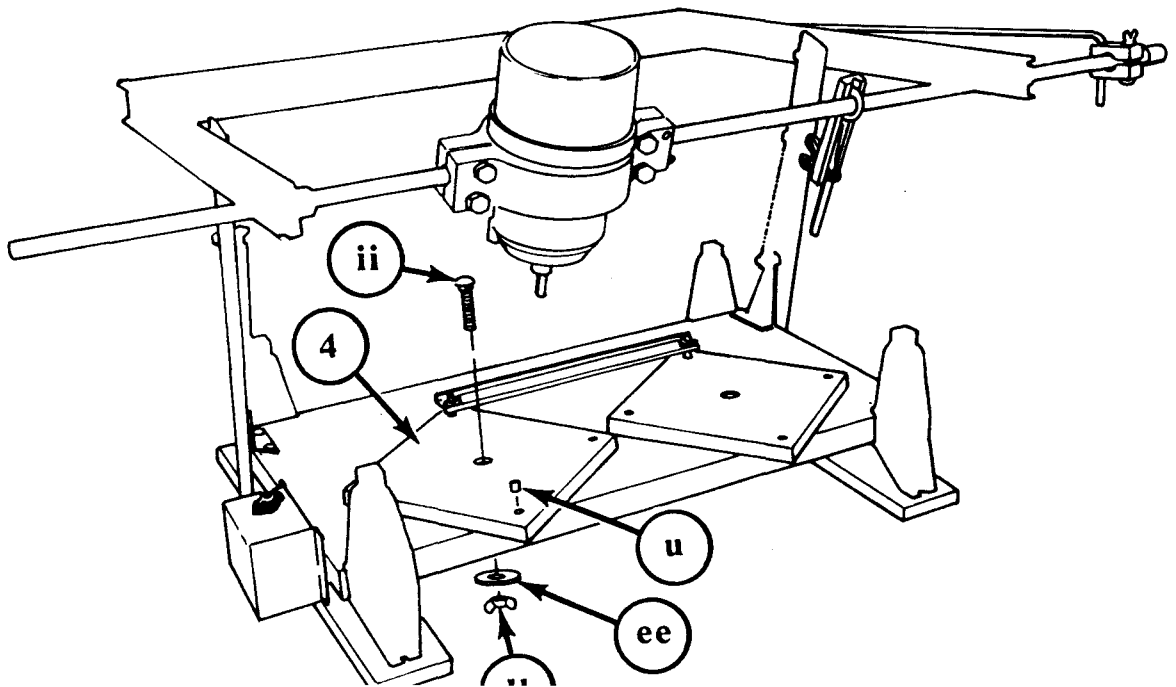
- See Figure 9. Again check for equal length of the bit and stylus using the table surface. With bit and stylus tip each touching the table surface, rock the router to the rear and to the front. In all three positions, both the router bit tip and stylus tip should touch the table surface. The stylus holder must be readjusted (rotated) if the tip does not touch the table surface in the rear or front positions. Once stylus and bit alignment is attained, tighten the stylus holder nuts securely.

5. See Figure 10. Rotate the router and stylus to a vertical position with bit and stylus down. Position so that the bit and stylus are directly over the table center holes. If the bit and stylus are not directly above the holes, loosen the #10-24 x 1 1/2" truss head screws in one of the lower arm retainers and move that assembly forward or back until the center holes are directly under the bit and stylus. The assembly may have to be tapped lightly with a hammer to move due to the spring tension. The bit and stylus should now easily slip into the two center holes. Retighten any loose screws.

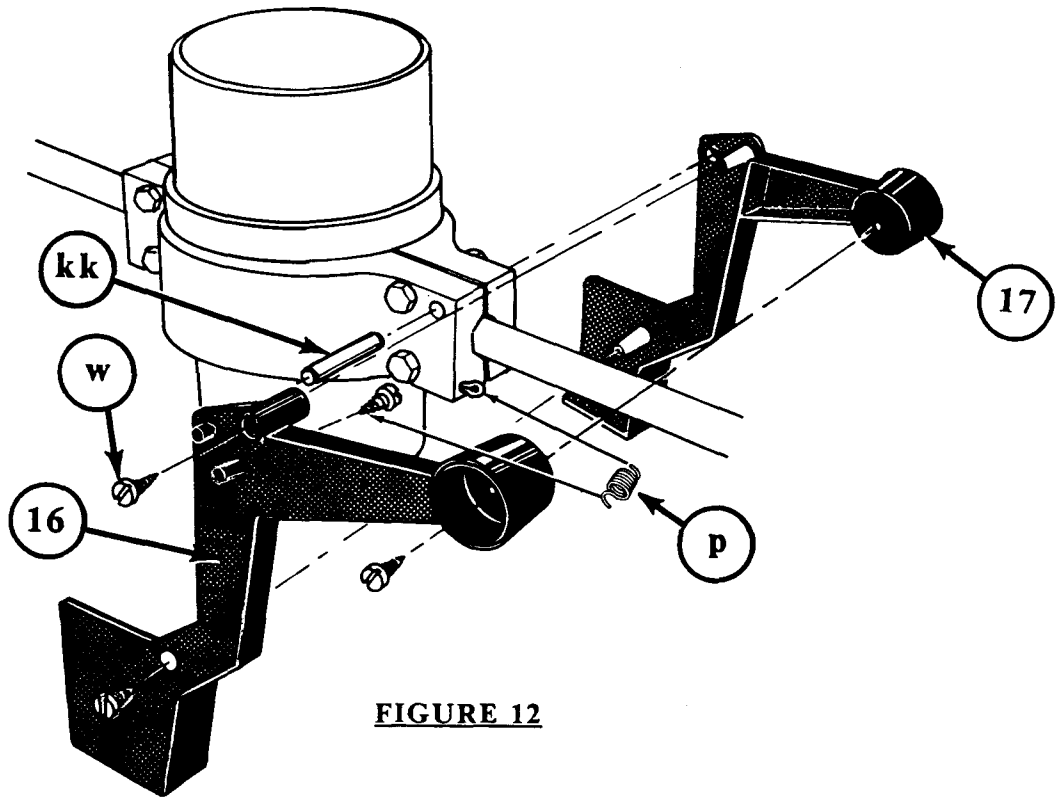


**FIGURE 10**

6. See Figure 11. Insert four 1/4" acrylic bushings [u] into the four corner holes of both turntables [4]. Place a 1/4-20 x 2" carriage bolt [ii] into the recessed center holes of each turntable. Install the turntables into the center holes of the table and secure with a 1/4" SAE washer [ee] and a 1/4-20 wing nut [iii]. Tighten to seat the head of the carriage bolt. Loosen the wing nuts slightly and place the position arm in a rear set of turntable holes. The bit and stylus should freely enter the bushed holes at the front of the turntable. If not, repeat steps 1-5 until they fit freely.



7. See Figure 12. Fasten one end of the return spring [p] to the post on the inside of the front guard half [16] using a #8 x 5/8" self-tapping screw [w]. Attach the other end of the spring to the return spring retainer on the router mount. Insert the 1/4" x 1 3/4" pivot pin [kk] into the router mount hole. Mate the two guard halves [16 & 17], trapping the pivot pin and secure with three #8 x 5/8" self-tapping screws [w].



**FIGURE 12**

8. Remove the tape covering the hole in the upper arm weight chamber. The upper arm is full of sand, some of which will need to be removed to balance the machine. Remove the upper arm and drain out sand (drain into something you can retrieve it from in case you need to add sand later). Replace the upper arm and check balance. The router should float with the upper arm in a near horizontal position. Remove or add sand until desired balance is achieved. Snap plastic plug into hole.

This completes the assembly and alignment of your unit. You are ready for hours of enjoyment and productive woodcarving.

**See Operator's Manual for Carving Instructions.**



**terrco, inc.**

**One Year Warranty**

**terrco, inc.**, warrants its CM or Dupli-Carver® Series Carving Machines for a period of one year from the date of purchase. We will repair or replace, at our option, any part or parts of the product covered under this warranty, when examination proves it to be defective in workmanship or material during the warranty period. For repair or replacement, return the part, transportation prepaid, to **terrco, inc.** This warranty does not apply to repair or replacement due to misuse, abuse, normal wear and tear and or repairs attempted or made by unauthorized personnel. All equipment such as router motors, sold by, but not manufactured by **terrco, inc.** is warranted by their respective manufacturers. All blades or bits are specifically excluded from this warranty.