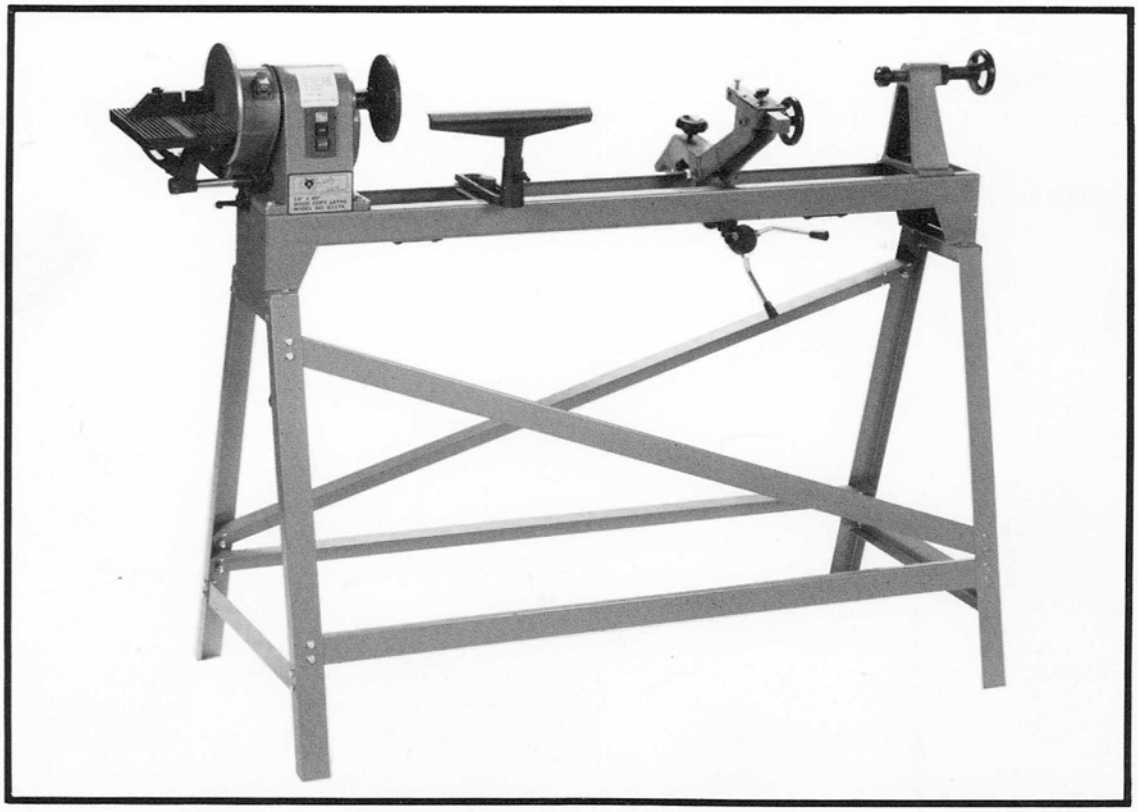
WOOD-COPY LATHE

MODEL G1174

INSTRUCTION MANUAL



GRIZZLY IMPORTS, INC.

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I. INTRODUCTION

Thank you very much for your purchase!!

Before introducing you to the equipment, there are a few things we would like to share with you:

First, we sincerely appreciate your business. For those of you who have purchased from us before, you know well of our commitment to customer service and value. If this is your first purchase from us, you can count on our very best effort to earn your future purchases of shop tools, supplies, and accessories.

Second, we want you to know that at Grizzly Imports, when we say we listen to our customers, that is not merely a slogan, we truly mean it. The manual you presently have in hand is one example of this commitment.

You see, we have observed - as have our customers - that even though our quality of merchandise was very high, the documentation frequently left something to be desired owing, of course, to language and cultural differences. Any of you who have previously purchased imported machinery before have, no doubt, been victims of this problem! At Grizzly, we have made up our minds to do something about it.

Some time ago, we set out on a five-year plan to upgrade our technical documentation. The idea was to prepare technical literature that was complete, correct, helpful, and written in "American" for ease of understanding. The goal was to cover our most popular tools and machines first, then eventually cover our entire product line. This manual is an example of this "first generation."

Thirdly, we need your help. Do you see any errors in this manual? Is there something that we could have done a better job on? The Bear tries hard to please - he really does! - but he is not perfect. He also welcomes critique on how to make this, and similar manuals, more useful and informative. If you see a place where we could do better, please contact us as follows:

Manager, Technical Documentation
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Please indicate, when you write, the manual and machine you are commenting on, the model and serial numbers of the equipment you own, and a write-up of what you have in mind. Include drawings and/or sketches if appropriate, or alternately, remove pages from this manual and mark them up. We will, of course, replace them with a new manual.

Thank you again for your business. Now let's check out your new lathe!

II. COMMENTARY

Prior to buying your new wood lathe from us, you probably observed several kinds of multi-purpose wood-working machines in the market place, and somewhat of a shortage, to put it mildly, of your basic lathe. Indeed, it was for precisely this reason that we took on an interest in importing a "basic" lathe. Starting from there, we developed a concept of what we were looking for: specifically, we were after the quality all of our customers have come to expect; and a simple, fundamental machine that would not overwhelm the novice wood-worker, yet be sufficiently versatile for the more experienced person; and the maximum value possible at a competitive price.

So, let's take just a moment, and see what we ended up with for you:

1. The frame of your new G1174 is a combination of rolled steel angles and cast iron components. Steel angle is also formed up into a main bed. To this is mounted a cast headstock, as well as a precision finished iron bar. The purpose of this bar, which is 1.50" in diameter, is to support the copy attachment. In this manner, maximum alignment and rigidity between the headstock and the cutting tool is assured.

2. The use of the steel angle members in non-critical locations allows weight savings, with corresponding ease in assembly and handling.

3. As with all our power tools, we furnish a complete electrical package with the equipment. In the case of the G1174, this is a 0.5 horsepower motor, a push-button start/stop switch, and a line cord. The motor is supplied ready to operate on 110/120 volts; should you desire, it can be easily and quickly converted to operate on 220/240 volts.

4. Your new lathe will copy round objects that either you or someone else made; i.e., antiques, legs of furniture, etc.; or, if desired, you can follow a flat pattern, rather like a template.

5. We supply the lathe so that it may be used for both copying operations and conventional turning.

6. Your G1174 comes with a drum and disc sanding capability plus a small table to support your work as you go. This table, by the way, is fully adjustable to suit the particular needs of the job at hand.

7. All bearings on this equipment are sealed and require no maintenance on your part for life. Other points of maintenance are comparatively few and simple to attend to.

8. So, the bottom line is this: given reasonable care and maintenance, we are confident that your new G1174 will provide you with many years of enjoyable, dependable service. Actually, if we were pressed to state, in a single sentence, what is the objective of this manual, it would be to help you achieve the aforementioned objective.

9. It is necessary to be thoroughly familiar with a power tool before attempting to operate it. Safe operation of any tool depends heavily on the familiarity one has for the product. Take as much time as necessary in becoming familiar with the Model G1174. The time you invest before you begin to use this machine will be time well spent.

10. The specifications, drawings, and photographs put forth in this manual represent the Model G1174, as supplied, when this manual was prepared. However, owing to GRIZZLY'S policy of continuous product improvement, changes to the Model G1174 may be made at any time with no obligation on the part of GRIZZLY.

11. The information contained in this manual has been obtained from sources believed to be reliable and as up-to-date as possible. This manual is not intended to serve as a complete guide for wood turning and operation. The focus is on proper set-up and safety concerns that are required in the use of the Model G1174. GRIZZLY also cautions that it cannot be assumed that all acceptable safety measures are listed; or that other additional measures are not needed under particular or exceptional circumstances or conditions.

12. The GRIZZLY G1174 is a stationary machine, and, amazingly versatile. While you can duplicate many kinds of turnings, there is a limit to the intricacy of the project. The more complicated the workpiece is, the more difficult it will be to duplicate it. Start simple! Get used to how the lathe and the duplicator respond. As your proficiency increases, so does the ease and quality of duplicating.

    If you are a beginning wood turner, there are many books on the subject that are available through wood working magazines and trade journals. Another good source is your local library.

III. SAFETY RULES FOR POWER TOOLS

1. KNOW YOUR POWER TOOL. Read the owner's manual carefully.

2. KEEP GUARDS IN PLACE and in working order.

3. DON'T USE IN DANGEROUS ENVIRONMENT. Don't use power tools in damp or wet locations or expose them to rain. Keep work area well lighted.

4. MAKE WORKSHOP KID PROOF with padlocks or master switches or by removing starter keys.

5. KEEP CHILDREN AWAY. All visitors should be kept a safe distance from work area.

6. DON'T FORCE TOOL. It will do the job better and safer at the rate for which it was designed.

7. USE RIGHT TOOL. Don't force tool or attachment to do a job for which it was not designed.

8. WEAR PROPER APPAREL. Do not wear loose clothing, gloves, neckties, rings, bracelets, or other jewelry which could get caught in moving parts. Nonslip footwear is recommended. Wear protective covering to contain long hair.

9. ALWAYS USE SAFETY GLASSES. Also use face or dust mask if cutting operation is dusty.

10. SECURE WORK. Use clamps or a vise to hold work when practical. This is safer than using your hand and it frees both hands to operate tool.

11. DON'T OVERREACH. Keep proper footing and balance at all times.

12. MAINTAIN TOOLS WITH CARE. Keep tools clean and in good working order for best and safest performance.

13. DISCONNECT TOOL BEFORE SERVICING and when changing accessories such as sanding belt or disc.

14. AVOID ACCIDENTAL STARTING. Make certain switch is in "OFF" position before plugging in cord.

15. USE RECOMMENDED ACCESSORIES. Consult the owner's manual for recommended accessories. The use of improper accessories may cause injury.

16. NEVER STAND ON TOOL. Serious injury could occur if the tool is tipped or if the cutting tool is unintentionally contacted.

17. CHECK DAMAGED PARTS. Before using the tool, any part that may be damaged should be carefully checked to ensure that it will operate properly and perform its intended function. Check for alignment of moving parts, binding of moving parts, breakage of parts, mounting and any other conditions that may affect the tool's operation. A guard or other part that is damaged should be properly repaired or replaced.

18. DIRECTION OF FEED. Feed work into a blade or cutter against the direction or rotation of the blade or cutter only.

19. NEVER LEAVE TOOL RUNNING UNATTENDED. TURN POWER OFF. Don't leave tool until it comes to a complete stop.

FOR YOUR OWN SAFETY, READ OWNER'S MANUAL BEFORE OPERATING THIS POWER TOOL.

Thank you again for your business. Now, let's get better acquainted with that new lathe!

IV. UNPACKING

At the time you take delivery of your machine, the very first thing you should do is thoroughly inspect the carton it is packed in. Any damage anywhere on the container must be considered suspect. Make sure that you note any of this on the delivery receipt before you sign for the shipment. It will make claims processing - if you have to make one later - many times easier.

Now, let's press on with our unpacking job. Remove the banding from the carton, and open it up. The parts are packed two layers deep with sytrofoam dividers between layers. You will find that most of the accessories, as well as the sections of steel angle that will become the stand are in the top half; the main frame of the machine and the balance of the accessories are in the lower half. Unpack all these items, and inspect them for possible damage. Note that if you find damaged articles, you will have to file a claim with the carrier for concealed damage. The procedure is similar to the one you will be obliged to follow if you see visible damage on the carton; but the point you must remember in either case is that you must save the packaging and have it available for inspection by the carrier or his agent. Without this, you'll probably be out of luck on a claim.

OK? Save the carton until you've checked out all the items for any damage. It goes without saying, of course, that should you experience any trouble with any of the above, please contact us by phone or letter at once for assistance.

When you are completely satisfied with the integrity of your shipment, you are now ready to inventory the various parts. Let's review this now; when we are done counting the parts, we shall be prepared for the next step.

V. PIECE INVENTORY

Remove all material from both layers of the carton. Do not be concerned at this time with the "gooey" preservative oil (cosmolene) on some of the parts; we'll handle that situation shortly. See Figures #1 and #2 on the next page, as well as Figure #3 on page 10 to help you along with the inventory. Sound OK so far? Let's go to work.

1. Main bed sub-assembly, consisting of the headstock; the copy attachment casting; and, of course, the iron bar that supports it. By the way, incorporated into the headstock casting are the following: (a) the start-stop switch; (b) the spindle; (c) the speed change pulley; and (d) a turning arbor.

2. Four sections of steel angle, 32.50" long. These are to be used for the legs of the frame.

3. Two sections of steel angle, 19.87" long. These are to be used for horizontal bracing on the ends.

4. Two sections of steel angle, 54.00" long. These are to be used for horizontal bracing on the sides.

5. Two sections of steel angle, 56.50" long. These are to be used for diagonal bracing on the sides.

6. Two sections of steel angle, 8.00" long. These are to be used for the top railings.

7. Belt for drive: the size is M-24.

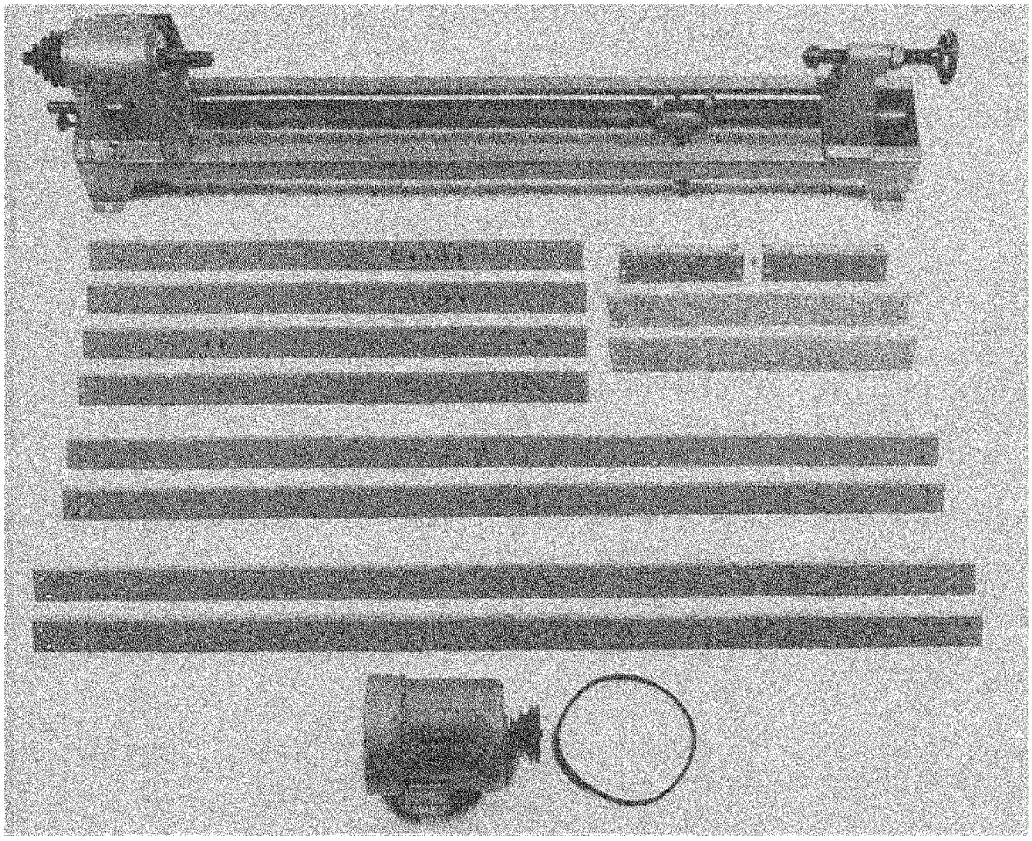


Figure 1

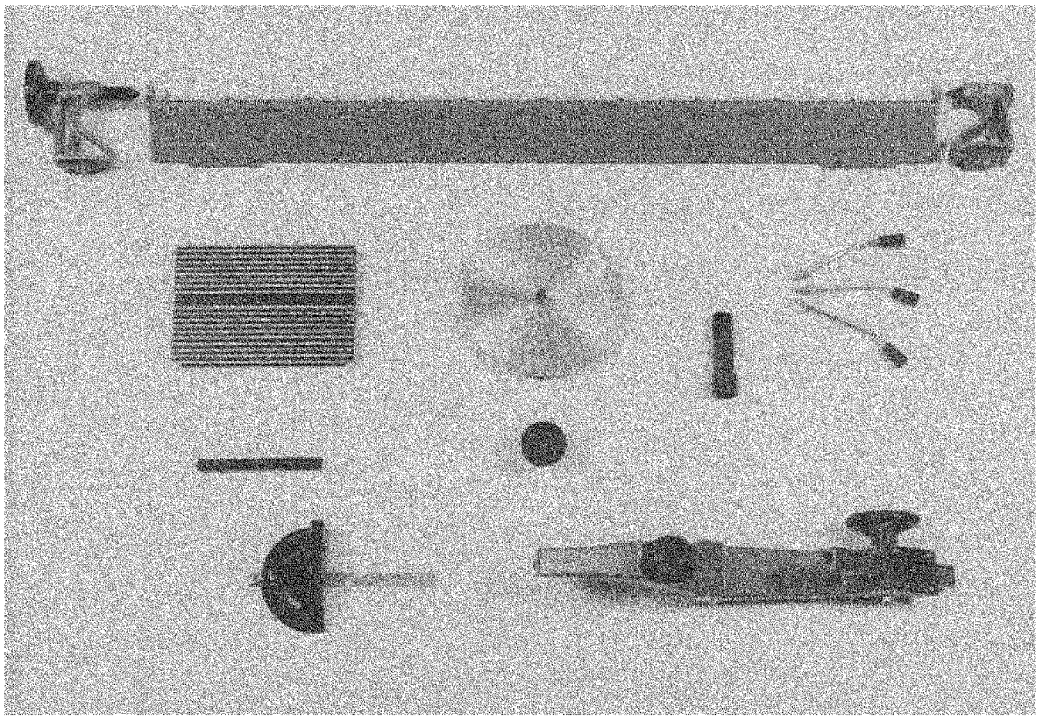


Figure 2

Figures 1 and 2 show main parts of copy lathe.

8. One-half horsepower motor with pulley attached.

9. Main tailstock with live center. Note that part of the tailstock assembly is a 5/8" hex head bolt threaded into a mounting plate.

10. Copy attachment casting with tool holder.

11. Sanding disk attachment; also see Figure 11 on page 22.

12. Arbor for sanding drum. Take note of the fact that the sanding drum arbor installs on the outboard spindle of the lathe with left-hand threads; also shown in Figure 10.

13. Hinged panel for use when the copy attachment is working off a template.

14. Front center; used on the copy attachment when working off of round objects. Note that, generally, this one, with the bolt head, is used on the front. The reason is given in the next item.

15. Rear center. This one, with the handwheel, is usually placed in the back because it is more accessible there. This makes adjustment easier.

16. Table attachment.

17. Miter attachment for use with the above.

18. Mandrel to install the table attachment.

19. Three handles to operate crank on copy attachment casting.

So far, so good? Excellent! Now, let's direct our attention to Figure #3, at the top of the next page, and see the last few small items of hardware that go into this guy:

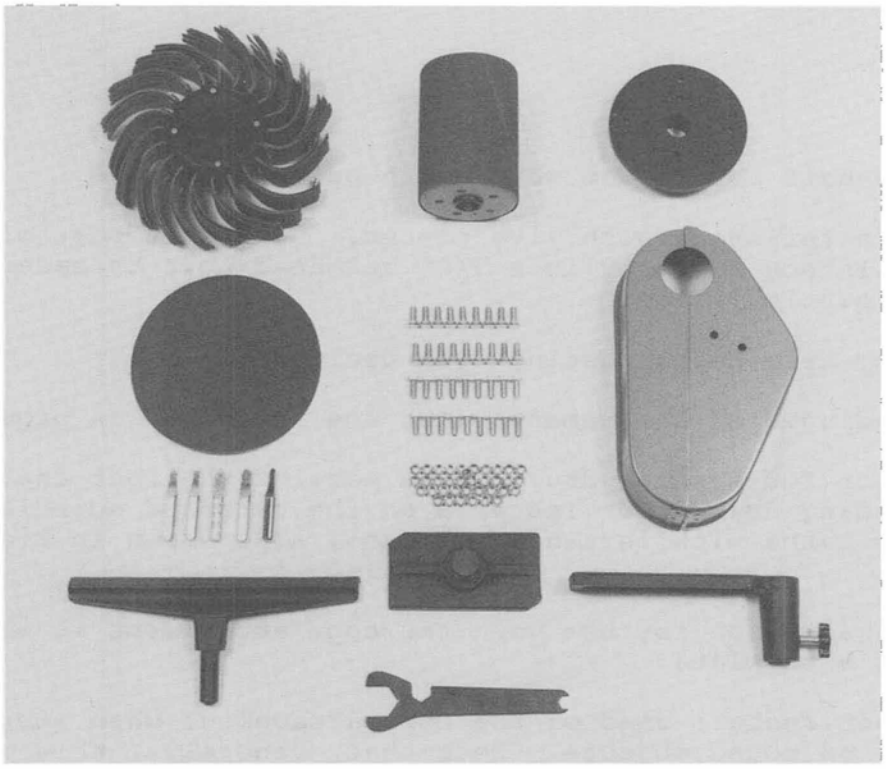


Figure 3 - Shows parts of copy lathe.

20. A set of stub chisels for the copy attachment.

21. A pneumatic sanding drum attachment.

22. A face plate.

23. The belt guard; this is shown installed in Figure 8.

24. A universal wrench.

25. Tool rest, with mounting arbor, mounting bolt (5/8") and threaded mounting plate.

26. A package of nuts and bolts.

The next item of business we need to verify is how we are doing on fasteners. Let's check out our hardware kit now.

A. Nuts and Bolts

Since we are "counting parts" anyway, now is a good time to inventory the fasteners we will be needing to assemble the machine. Note that the quantities given here are the minimum required to get the job done; it is possible that there will be some extra parts. On the other hand, it is also possible that you will be short an item or two. If this is the case, you may wish to consider replacement at the local hardware store. It is not that we are trying to cheat you, but if you are short two bolts, for example,

that costs 10 cents apiece, it is cheaper to buy them locally than writing to us with a 25 cent stamp, to say nothing of the time saved. Of course, if you are short many items, we want to know about this condition, because this is likely to be indicative of a problem somewhere. So, with that in mind, let us press on. All fasteners, by the way, are USA standard coarse (N.C.) threads. We have detailed the minimum quantity, the size and the place(s) used for convenience:

Quantity	Description	Where Used
36	5/16" x 3/4" hex hd. bolts	Stand erection
36	5/16" nuts	Stand erection
4	5/16" x 3/5" hex hd. bolts	Motor mounting
4	5/16" flat washers	Motor mounting
2	5/16" x 1" hed hd. bolts	Copy attachment
1	5/16" x 1" hex hd. bolt	Belt tensioner
2	1/4" x 1/2" hex hd. bolts	Belt guard
4	1/4" x 1/2" hex hd. bolts	Copy attachment

If you are all right up to here, put your parts off to the side for the present, and store your fasteners in a suitable place until you are ready to assembly the lathe. (An old muffin tin is ideal for this job.)

The next task on our agenda is equipment clean-up, so, with no further adieu, let us get started.

VI. CLEAN-UP BEFORE ASSEMBLY

All of the unpainted surfaces on tihs lathe, as well as a few of the painted ones, are coated with a preservative oil - cosmolene - to protect them from rust and corrosion during shipment. The best way to remove this is with common paint thinner (mineral spirits) and a lot of paper towels. Do not use gasoline, lacquer thinner, or kindred products because of the extreme danger of flash fire and/or explosion; besides, these products do not work that much faster anyway. Do not use chlorinated solvents such as perchlorethylene; they will lift the paint and ruin the finish. Be careful while you are working around drive line parts where the belt will go, because invariably, any kind of cleaner that will cut grease will, in the long run, be harmful to rubber. As you are doing this, please pay attention to the following safety rules.

1. Work only in a well ventilated area.

2. Make certain that there are no sources of ignition anywhere in the area; pilot lights in water heaters, clothes dryers, and the like.

3. No smoking while you are working.

4. The waste towels from the cleaning operation, while not explosive, are still quite combustible. You must dispose of them properly so they do not constitute a fire hazard to a building, adjoining property - or you!

When the cleaning is done, we would like to suggest that you give the unpainted parts, such as the round bar that the copy attachment rides on, a "shot" of a rust preservative oil. This is particularly true if you will be "taking a break" from the work for awhile.

That sums up our ideas on machine clean-up. Next, let's give a thought to where our new lathe will be set up.

A. Site Planning

In the site preparation exercise for any machine such as the G1174 lathe, three parameters come to mind: floor loading, working clearances; and electrical supply. Let's review the first two of these now, and in the electrical service section, we shall look at the electrical side of things.

B. Floor Loading

Your new G1174 can be set up on most any kind of a floor, owing to its comparatively light weight. Be aware, though, particularly in older buildings, that the floor the machine is going on will probably be strong enough, but it may not be level enough. You must check this out and insure that all four of the legs are firmly "on the ground". If this is not the case, blocking or shimming up will be necessary.

C. Working Clearances

Working clearances, suffice it to say, will vary considerably from one customer to the next. What are your present needs? Future needs? Will auxiliary stands or work tables be needed later on? Do you have room for them? As you go about planning your shop, give a thought to these matters. Be sure to allow yourself sufficient room for a safe work area.

VII. ELECTRIC SERVICE REQUIREMENTS

Your new G1174 lathe will operate on either 110/120 or 220/240 volts, single phase. As you know, we supply the lathe with a 1/2 horsepower motor. A motor of this size does not create any unusual problems from the standpoint of installation planning; however, do be aware that if you operate at the lower voltage

off a circuit that is already close to "maxed" out, you may experience problems with blowing fuses. Examples of the above are circuits that provide power to other motor loads, such as domestic laundry equipment; and circuits that go to kitchens that have a substantial appliance load connected to them. If you experience problems with fuse blowing for no apparent reason, check this out first. Other than that, on "normal" circuits, this equipment should run perfectly satisfactorily with no further work or concern on your part.

In addition to the above concerns, your equipment must be grounded. There is absolutely no exception to this requirement whatsoever. We furnish the lathe with a cord and plug set suitable for use on domestic 110/120 volt outlets, utilizing the so-called "U-ground" pin in the plug. This grounding pin is never to be cut off. Should you choose to remove the plug and substitute another style (which, incidentally, will be necessary if you want to operate at 220/240 volts) make sure that the type selected is suitable for use as an equipment grounding method, as not all kinds are.

Show below in Figure #4, we have illustrated a receptacle (and plug) style suitable for use on 220/240 volts that does qualify as an equipment grounding method. This is classed as a NEMA style 6-15, and is the same regardless of the brand purchased. We do not supply electrical hardware such as this, because you can get faster service from a local electrical distributor or industrial hardware store.

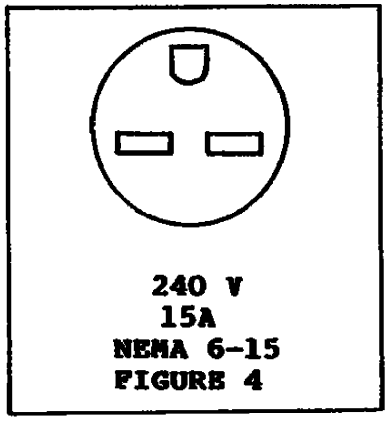


FIGURE 4

Finally, please verify that the receptacle you will be plugging the machine into is "really" grounded. If it is not, it will be necessary to run a separate grounding wire - which must be #12 copper or larger - from the machine frame to a suitable grounding media. By suitable media, we mean a cold water pipe or a grounding stud in or on an electric service panel.

At this juncture, let's take a moment and review some of the differences of 110/120 and 220/240 volt operations:

A. 110/120 volts

Fusing: this machine should perform satisfactorily on a 15 or 20 ampere standard domestic 110/120 volt circuit.

Use of extension cords: If used, extension cords must be rated hard service - grade SJO - or better. Conductor size must be #14 or larger, and they must contain a grounding wire, which will be colored green.

B. 220/240 volts

Fusing: Fuse to 10 amperes. Do not go higher than this, as this will not suitably protect a motor of this size. If it is not possible at your site to get a 10 ampere 220/240 volt line - recognizing that this is not a common size - then operation at low voltage must be considered. You are cautioned that equipment that is returned to us for service that shows evidence of being run over-fused will be repaired or replaced totally at the customer's expense, regardless of the present warranty status.

Extension cords: Same requirements as above, except the conductor size may be decreased to three #16 wires.

That completes the preparatory material we wanted to share with you. Let's move on now, and put our lathe together.

VIII. ASSEMBLY

Now that everything is cleaned up and ready to go, and we have a site picked out, we are well prepared to begin assembly. You will find that assembly of your new G1174 is quite straight-forward, and, except for the part where you mount the main frame on the stand, you can do the entire job yourself quite easily.

Basically, in our discussion here, we have organized the work into steps. Please follow along in the order in which we have presented them here. We do not claim that our way is the only "right" way; but it is a fact that our objective here was to maximize the ease of the assembly process and minimize frustration. Try it! You might like it!

Before we get started, though, please be aware of a few things:

A lot of the parts on this lathe are made from steel sheet metal which, as some of you may know, is subject to "springback" in the manufacturing process. For this reason, do not be overly concerned if one or more of the parts need to be "tweaked" to get the holes to line up, say, to insert a bolt. On the other hand, do not be brutal in forcing the parts together. Chances are that if the parts in question really do not want to go together, they're not supposed to. Common sense is your best guide here, and, of course, it goes without saying, that if you think you've got a problem, please call us before you get in "over your head".

All metal parts made from stampings have a sharp burr edge on them after they are formed. The manufacturer's job, of course, is to remove these. Generally, our supplier does an excellent job of doing exactly that. Nonetheless, occasionally, one or two "slivers" will sneak through. Please check out the edges before running your fingers or the palm of your hand down them, OK?

That's about all we can tell you on an introductory note. Let's now review the tools and equipment needed.

A. Tools Required

Common hand tools are all that are needed to successfully assemble this equipment. Specifically, a set of combination open-end/box-end wrenches, a set of metric allen wrenches, large and medium flat-tip screwdrivers, a brass hammer, a tape measure, and a 6" or 8" crescent wrench will do fine. A socket wrench set may be more convenient and/or preferred by some, but it is not mandatory. The threads on the fasteners, as previously explained, are USA standard coarse (NC); the heads, however, are metric.

B. Stand

As we get into stand erection, please review Figures #5 and #6 shown below and the bill of material for the stand as detailed previously on page 7. This is important, because some of the angle iron structural members "look" alike. You will, however, experience real frustration, when you go to fab them up and find out that they are "not quite" alike. Words to the wise!

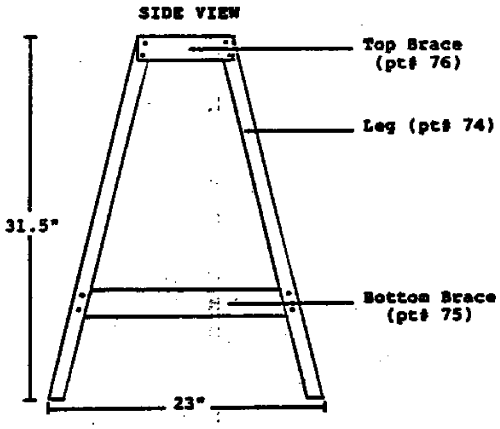


Figure 5

Figure shows assembled parts for A-Frame

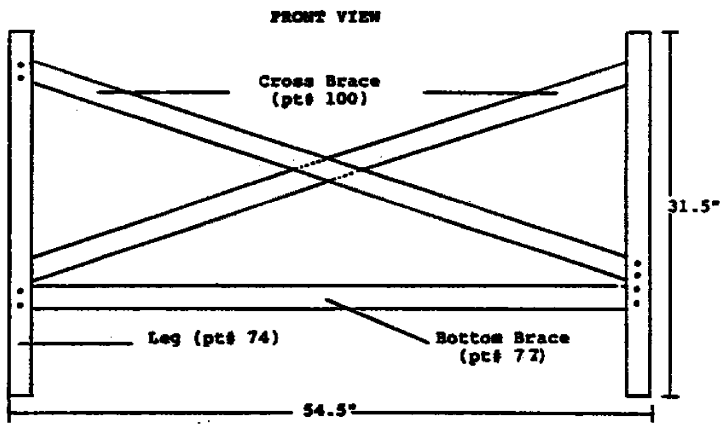


Figure 6

Figure shows complete stand assembly.

1. Begin with the ends. Using a 12 mm wrench, assemble the two legs (part #74), which are 32.50" long, to the top piece (part #76) which is 8.00" long and the bottom brace (part #75), which is 19.87" long. Make two of these sections up. Leave the fasteners only snug for now.

2. Next, attach the two horizontal sections and two diagonal braces to the two completed ends from the previous paragraph. The horizontal members (part #77) are 54.00" long; the diagonal bracing sections (part #100) are 56.50" long. As before, leave the fasteners only snug for now. You will find that when the work in this paragraph and the preceding one is completed, 32 of the 5/16" bolts will be used.

3. This completes the stand assembly. Next, we shall place the bed on the stand. At this point, place the machine proper on the stand. The combined machine frame and headstock weighs over 100 pounds, so, for this reason, and the fact that two 5/16" bolts must be placed in each end, we strongly recommend that you have a helper for this lift. Please! If you are unsure at all of your lifting capabilities, get assistance!

4. When you get the frame situated, install the bolts and screw on the nuts.

5. At this point, go through and final tighten all your nuts and bolts. Make sure that the lathe is level and the stand is symetrical.

C. Tool Rest & Tailstock

1. The next step consists of getting the two threaded plates (part #68) under the top of the machine frame for installation of the main tailstock and the tool rest. To do this, stand in front of the machine. Do you see the bolt in the right hand frame end (this would be part #82)? Review Figure #7 on page 18 for reference. Now, remove this bolt, and carefully push the gear tooth bar, part #16, off to the side (this is the bar the that supports the copy attachment casting). Then, position the two threaded plates under the frame. Place both the tool rest casting, part #69, and the main tailstock, part #9, over their respective plates, and insert the 5/8" bolts through these parts so as to fasten the plates in place. Loose is good enough for now.

2. When this is done, reposition the round bar and re-install the bolt that was removed earlier. Note that you could also grind a little material off the alternate corners and twist the plates into position.

D. Template Holder

We then mount the template holder on the rear of the machine, so let's attend to this now. Once again, take a peek at figure #2; we will be placing the two small tailstocks, part #54, as shown, and a hinged panel, which, by the way, is used if the pattern you are working off of is flat; i.e., a template.

1. The two tailstocks should go on first. Use your two 5/16" x 1" bolts to mount them as shown. You should place the mounting plates, part #58, so that the cut out side is positioned towards the headstock.

2. The hinged panel, part #60, goes on next. Use four of your 1/4" bolts for this purpose; a 10 mm wrench will be required. Note here that it is <u>much</u> easier to do it this way than vice-a-versa. See Figure 7.

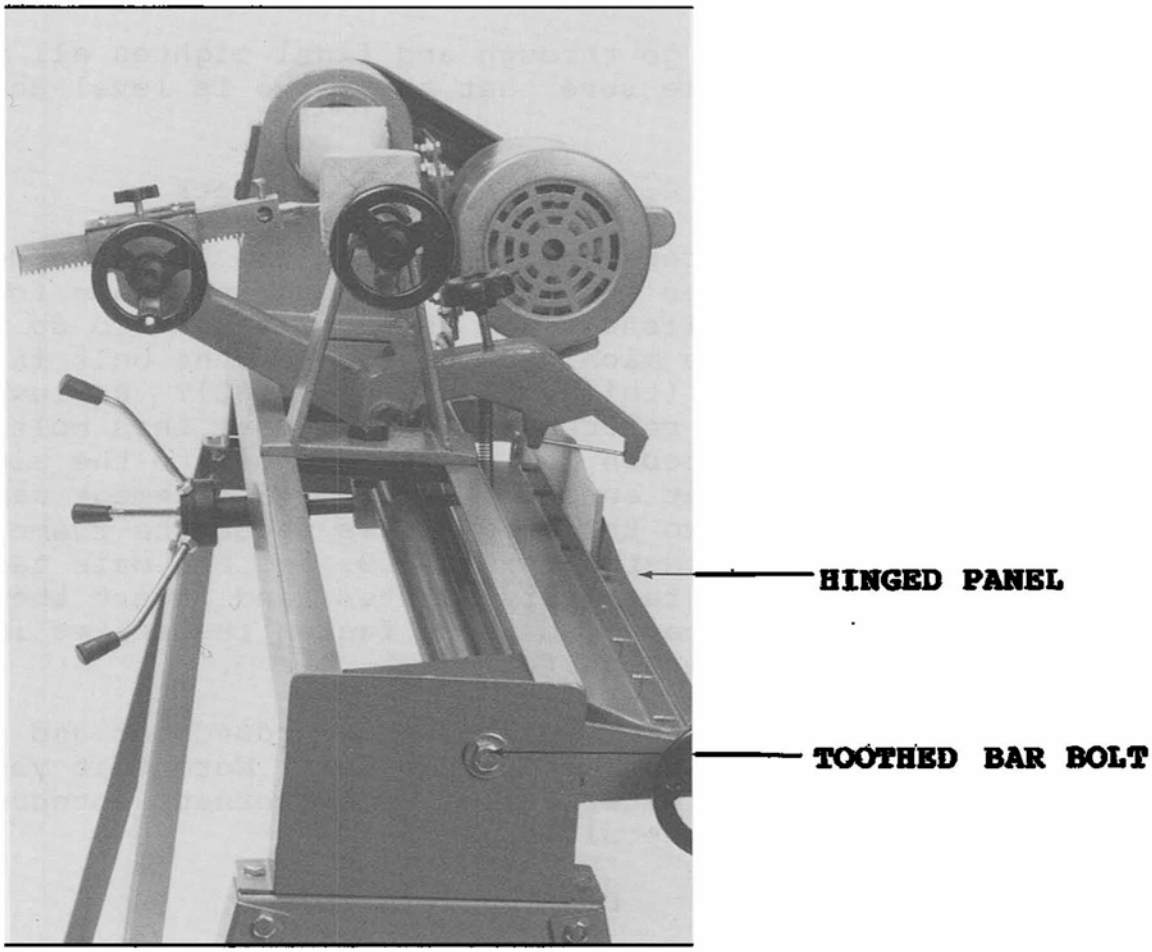


Figure 7 - shows location of rear center and hinged panel.

E. Motor & V-Belt

1. Your next step is to mount the motor. Position it as shown and mount it to its plate. Use your 5/16" x 3/4" bolts and nuts and washers here. You will need a 12 mm wrench for this job. See Figure 8.

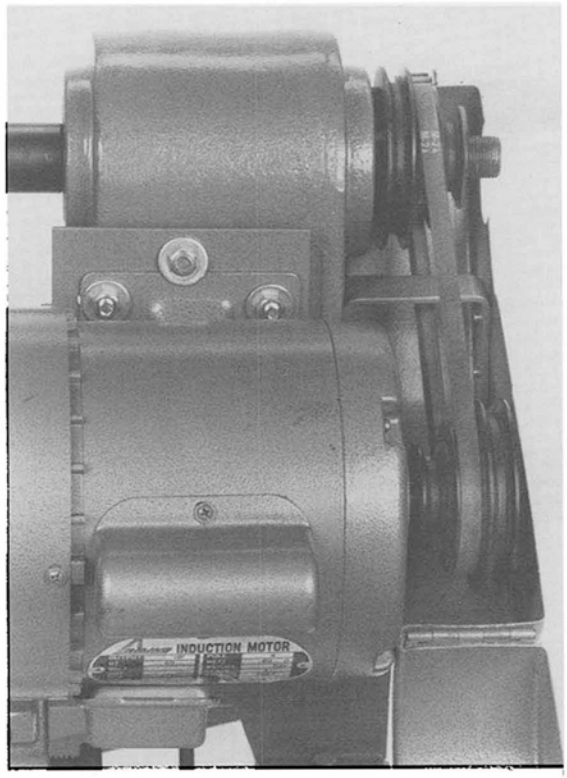


Figure 8 - shows correct motor position and pulley alignment.

2. Now, take the belt and mount it on the machine. Make necessary adjustments to the motor pulley and/or the spindle pulley. The belt must track straight; if it doesn't, you might well be frustrated. For set-up purposes, we suggest you make your initial set-up on slow speed.

3. When the above is done, re-insert the 5/16" bolt used to tension the belt. We consider that the belt is correctly tensioned when a moderate pressure in the middle of the belt, obtained by pressing it with your index finger, produces a deflection of about 3/16". See Figure 9.

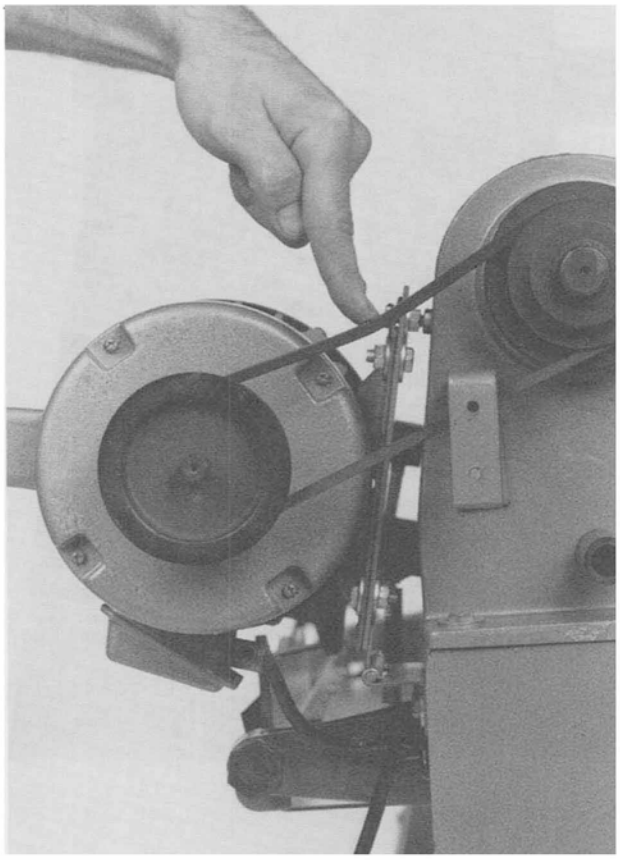


Figure 9 - Shows proper belt tension.

4. We're now ready to wrap up the belt business by installing the guard. Use your last two 1/4" x 1/2" bolts for this purpose. One final word before leaving this topic: Right now, why not mount your faceplate on the spindle nose, and turn it over by hand. Any funny noises? Anything rubbing anywhere? It's easy to make a fix now, if you have to. We're on the home stretch! Mount your copy attachment casting now on the trunnion bolt and yoke provided on the round bar. See Figure 7.

F. Sanding Accessories

Almost there! Let's get the sanding attachment buttoned up, and we'll have it made.

1. Your sanding attachment actually has three component parts to it: the table with miter gauge; the disk sander; and a pneumatic drum sander. As a matter of interest, the sanding hardware goes on with left-hand threads (which are 7/8" - 16 TPI LH); the disk mounts directly on the spindle end; and the drum mounts by means of auxiliary mandrel. Screwing on the disk or the drum is self-explanatory, so we will just discuss table installation here.

2. A pin, part #99, is provided that is used to couple the base of the table to the fitting on the frame of the machine. Install this pin into the appropriate hole in the table base. Two locknuts secure the pin; draw these up just snug for now.

3. Now, install the pin into the fitting on the machine frame. See figure #11 at the top of the next page. The purpose of this kind of set-up is that it allows you to quickly reset the angularity of your work table and be able to keep the adjustment lever free to move. To explain: you can see that it could be possible for the adjustment lever to hit the headstock casting, and, in so doing, it would not be possible to tighten the lever sufficiently.

4. The lever we use on our machines solves this problem by being, in essence, a two-part adjustment. As shown in Figure 10, 11, the operator pulls out on the shank of the lever, and simultaneously draws in on the adjustment screw within the lever. This screw is drawn in so that it is just starting to tighten up. Now, with the lever positioned in a convenient manner, as shown, table adjustment can be performed quickly and securely.

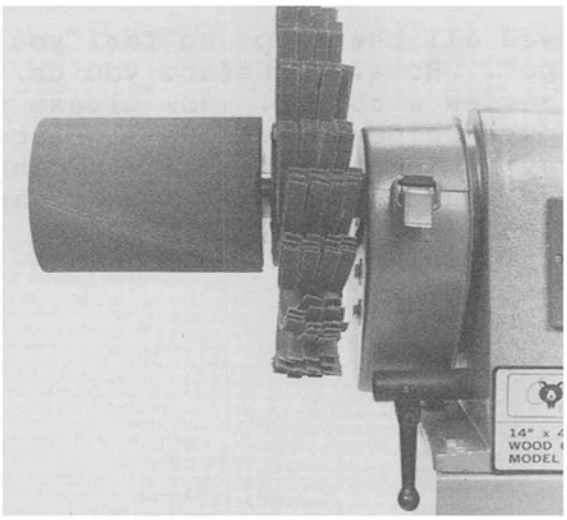


Figure 10 - shows sanding drum and flap sander in position.

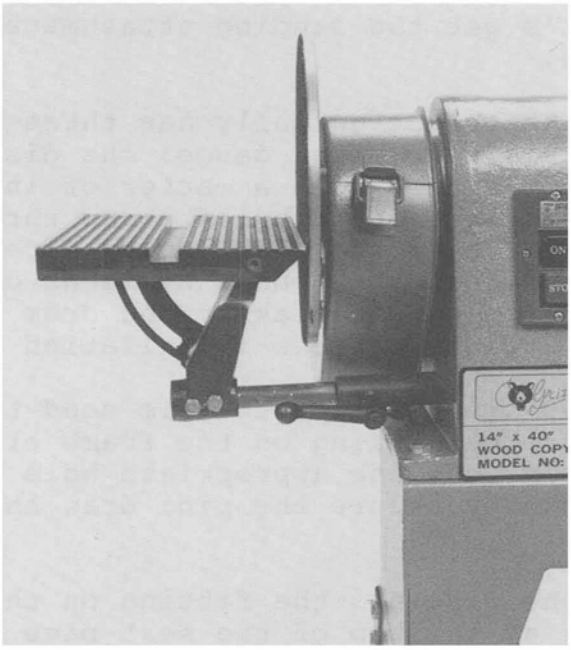


Figure 11 - shows pin and table positions.

Good job!! You're all done. However, before we get too carried away with delight, let's check our work:

5. All the nuts and bolts tight? Don't forget to check the ones the factory assembled, such as the ones that hold the head-stock to the frame. Sometimes they do work loose in shipping.

6. Turn the spindle through by hand one more time. Any rubs or squeaks? If so, they must be investigated and corrected now.

If you have followed all the steps so far, you're just about ready to "make some chips". However, before you do, we have a couple of more items to review with you. So, please try to resist the urge for just a few more pages, and we'll share these thoughts with you right away in Section IX, which begins on the next page. We honestly believe your patience will be rewarded with greater operating satisfaction and safety.

IX. SAFETY PROCEDURES

We empathize with your keen interest in watching some wood chips fly, and you are just about ready. We do, however, want to review some procedural items with you first. When this is done, you will be well prepared to derive maximum value and utility from your new equipment. So, with no further delay, let us carry on.

It is not the most pleasant thing in the world to say, but it is true, and it needs to be said: this equipment is capable of injuring you very severely if used in a reckless manner. This does not mean that you should be afraid of the machine; it <u>does</u> mean that you must <u>always</u> respect it.

This is the fundamental "problem statement" of this part of the manual. Back in the Introductory Section of this manual, we shared some "broad brush" safety procedure with you. At this point, we would like to develop this subject in a more rigorous manner.

A.

We have already addressed the business of correctly grounding the equipment electrically, before placing it in service, back on page 12. The only thing that we could add here would be: "make sure that it gets done."

Be sure to observe the rest of the electrical requirements as to fuse sizing, wire sizing, and so forth.

Insure that the machine sits firmly on the floor or on the ground before use. Any "wobbles" must be corrected by shimming or blocking <u>before</u> operation.

While operating this machine, do not wear jewelry, necklaces, loose-fitting clothes, or neckties. Long sleeves on shirts should be either rolled up or buttoned securely at the cuff.

Persons with beards and/or long hair should consider the use of a hat, a hairnet, or similar protective gear.

Always utilize eye/face protection while operating the lathe. The most ideal situation is a full face shield that wraps around the face. Almost as good are safety glasses that are fitted with side screens to block out flying material from that direction. If made of glass, so-called heat-treated safety glass must be used.

B.

Any adjustments and/or maintenance are to be done with the power off and the plug pulled from the outlet.

Never attempt to operate with tools that are in poor condition. Cutting tools that are dull require more effort to use and are difficult to control. Tools that are cracked, broken, or damaged in any way are impossible to control and may, very possibly, surprise you very unpleasantly. Indeed, it can be said that, in general, the cutting tools used on a machine such as this, are the cheapest parts you will ever buy for it. Let's keep them in good shape, OK?

Always be aware of the condition of the wood you are turning. Pay particular attention to knots, splitting, and other potential areas where the grain may be getting ready to separate.

This equipment is not capable of cutting metal or other materials. It is strictly a wood-working lathe. We know, and we are sure that you too have heard, that folks use lathes like this to turn plastics, soft metals, and so forth, because "they all cut like wood"; or possibly a similar explanation is offered. To all this, we would like to say "nonsense!" The fact of the matter is, this machine turns at a proper speed range to do a good job on wood; and, unfortunately, this speed range is entirely too fast for other kinds of materials. Please! Nothing but wood in the wood lathe. Now, if you must turn metal, please contact us. If you're not aware of this already, we do sell a broad line of metal lathes, and, the chances are, one of these would be just right for you. So, please allow us to get you off on the right foot, OK?

Be aware at all times that wood waste is combustible, and that wood dust can be explosive! Persons operating this equipment should not smoke while doing so; you should have full use of both of your hands, for best control, anyway. Smoking and/or open fires should not be tolerated in the surrounding area, either.

C.

Practice good housekeeping by thoroughly cleaning the machine and the surrounding area at the conclusion of each use.

Perform machine inspection and maintenance services promptly when called for. We will go into this topic in greater detail in Section X, which begins on page 27.

If you are taking any kind of a drug or medication, whether medically prescribed or not; or if you have consumed any alcoholic beverage, take a moment to honestly assess your alertness. If you have any doubts about how "awake" you are, do not operate this lathe.

If the lathe is to be set up in a location where it is likely that children will see it and/or have access to it, we strongly recommend that the electrical supply be set up using a "hard-wire" method that terminates in a lockable master switch. Any electrician can do this for a nominal price. The peace of mind that this will buy, particularly if the lathe must share an area with other family activity, is priceless.

If there is something you do not know - or don't quite understand - don't do it! Ask for help first. Ask a person who works in the trade. People use equipment of this kind daily with complete safety, because - basically - they know how to. If you do not know anyone else, please ask us - we have several wood-workers on our staff.

A lot of people get hurt - sometimes painfully, and, always, unnecessarily - by picking at the wood waste that sometimes clings to the tips of the chisels while the machine is running and/or while the chisel is in the cut. Please don't attempt this ever! Any problem that is concerned at all with any moving parts - or the work - must be investigated and corrected with the power off and after everything has come a full stop.

D. Lathe Safety Rules

Hold tools firmly in your grasp.

Keep the tool rest as close as possible to the work.

Use the correct spindle speed.

The tool rest and the tailstock must always be clamped securely.

Remove the tool rest before sanding or polishing.

Any glued-up stock must be completely set up and dry before turning.

Never leave the lathe running unattended.

Do not turn any unbalanced stock.

Adjust tool rest to correct height. Tool rest should never be set below center line of the work.

Remove copier when doing freehand work.

Make sure work is securely fastened when doing faceplate work.

Never forget that habit can be dangerous. Frequently review these safety procedures.

Work safely and enjoy your new equipment.

That sums up the material pertinent to product safety that we wanted to review with you. At this point, let's spend a moment or two discussing lathe operations.

X. OPERATIONS

A. General Characteristics

Your new G1174 Lathe is a simple and straight-forward piece of equipment to set up and run. In this part, we'd like to touch on a few things that weren't covered elsewhere in this manual:

1. You have, in essence, three different ways to turn material. First, you have the tool-rest, which is mounted on the machine frame. Use this if you want to free-lance a part. Secondly, your copy attachment casting can follow the contour of round work that is supported on the two tail-stocks mounted on the rear of the machine. Finally, you can make a pattern off a circular section you wish to turn, and mount this pattern on the hinged panel behind the machine. The copy attachment will likewise copy this.

2. Most of you "old-timers" out there who are reading this material know what we are going to say next is very true: to do a good job turning wood, you must have cutting tools that are in good shape and are SHARP! "Kind of" is not good enough here; we want them "right on the money", OK? For this job, our G1036 slow speed grinder works great!

3. Generally, unless you need to do sanding while turning is in process, we recommend that the sanding attachment be dismounted from the machine while turning is going on. The fact is, that while you're turning, the machine is going to vibrate, even if only a little bit; and when it vibrates, some of the adjustments on the sanding attachment, by virtue of its proximity to the spindle, will loosen. So, that is the reason for the recommendation.

4. The lead-screw on the main tail-stock has a locking collar on it. This is simply a back-up system to keep the lead-screw from backing off while turning work. Please do not fail to use it. If you observe the direction of things, when the work is turning normally, which would be downwards from the front of the main tool-rest, the tendency is for the tail-stock lead-screw to open; i.e., unscrew itself. You will promise to do that, right?

5. That concludes matters of a general nature. Let's now take a look at some of the more "detail" items pertaining to set-up and tool geometry.

B. Set-up and Tool Geometry Details

1. Generally, an RPM of 1120 is recommended for turning spindles 2" in diameter and under. Because peripheral speed increases as diameter increases, we recommend using a lower RPM when turning larger diameter stock. When turning on the faceplate, an RPM of 860 is recommended.

   Sanding and polishing can be done using an RPM of 1720 or 3096, again depending on the diameter.

   The actual machine operation is simple; yet, to achieve a level of expertise, considerable practice and experience is required. We cannot, within the pages of this manual, demonstrate all of the procedures, methods, and tricks necessary to be an accomplished wood turner. We highly recommend obtaining a book on wood lathe turning and techniques; or perhaps talking with a vocational instructor.

   When doing free-hand work, you must remove the copy attachment. Remove the trunnion bolt (Part #36) from the duplicator (Part #23) and crank the yoke (Part #17) away from your work.

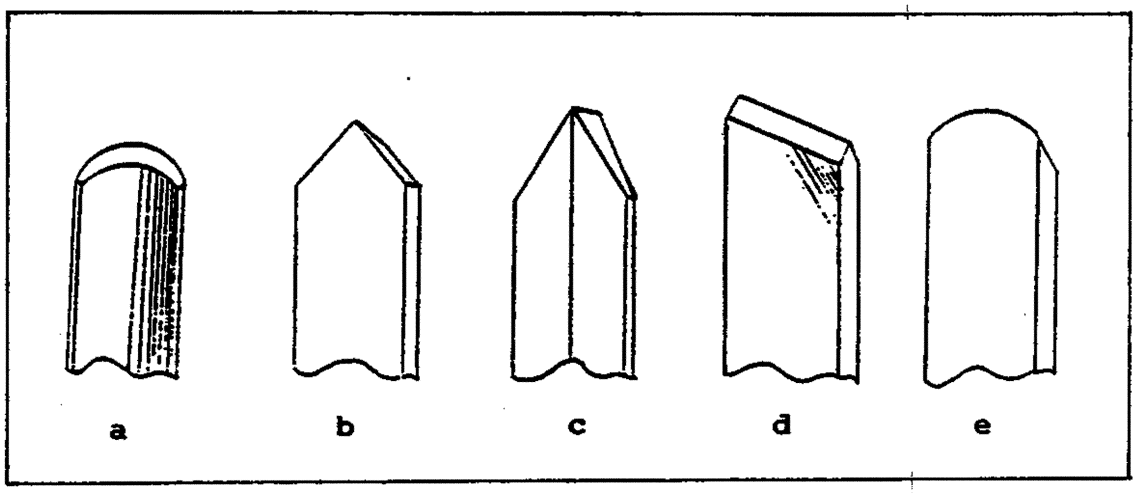
2. Spindle turning is when the work piece is held in place between centers. Turning a spindle can be a very simple or intricate operation. In either case, chisels must be used correctly. Different kinds of chisels were developed for different types of cutting and procedures. Listed here are the general types of chisels and their applications. We realize that there are numerous kinds of chisels and specialized techniques throughout the woodworking community. To list them all here would require a book!

   Use these examples as a starting point. They are generally recognized as the correct method.

   There are five general kinds of lathe chisels. They are as follows:

   a. Gouge
   b. Spear Point
   c. Parting Tool
   d. Skew
   e. Rounding Tool

Figure #12 illustrates these styles below:



3.

a. The gouge chisel is used to rough out stock and form a different radii. There are many different sizes. A gouge can scrape or cut. Generally used for roughing out concave and corner surfaces.

b. Next, we have the spear point. This style is used to form "V"'s and finish work. It is found in various sizes and shapes from a 30° - 45°. Generally used for finishing corners and inside work.

c. A parting chisel is used for cutting grooves to a specific diameter. It is also used for cutting off stock. Generally used for cutting grooves and finishing flat bottom recesses.

d. The skew chisel is found in different widths and is used for either scraping or cutting. It can be used for smoothing, cutting shoulders, squaring edges, and forming "V"'s and beads. Generally used in turning cylinders and finish work.

e. The round nose chisel is used in forming concave surfaces by scraping. It is found in many different sizes and radii. Generally used in forming any concave recess, cove, or groove.

C. Copy Attachment

When using the copy attachment to "rough out", the first tool bit to use is the round nose in most applications. However, in order to duplicate as exactly as possible, some adjustment needs to be made. See figure #13.

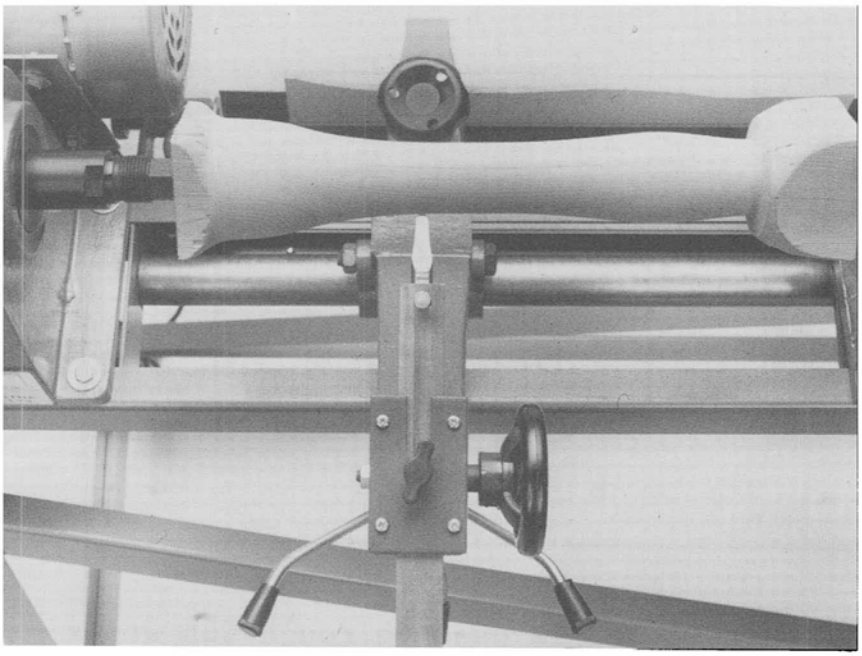


Figure 13 - Shows a round nose bit being used for primary duplication.

1. The main item to be concerned with here is the diameter of the duplicate piece. Start with stock of sufficient size to do the job.

2. Bear in mind that any adjustment of the rack (that is, the straight gear, part #34) will change the diameter of the duplicate piece. When using a template, any relocation or change in height in the template will affect the diameter of the duplicate. This is important! Any changes of these two items will reposition the tool bit. In essence, the tool bit will take a lesser or deeper cut.

3. Pieces of simplistic design can be duplicated in a couple of passes. By the same token, the more intricate the piece is to duplicate, the more passes and types of bits used will be needed. Do not try to take a deep cut on a complicated piece; use a multiple pass method.

4. After the work piece has been roughed out in a cylindrical shape, adjust the copier so that you are only going to remove an 1/8" of material off of the deepest profile. Keep adjusting tool bit so that after multiple passes, the work piece is copied. See Figure #15. Finish the duplicate with the appropriate tool and finish sand before removal from machine. Figure #13 shows the completed roughed out duplicate.

5. When copying a piece where there is great changes of diameter, care should be taken not to "plunge" the bit into the work piece or force the duplicator "up-hill":

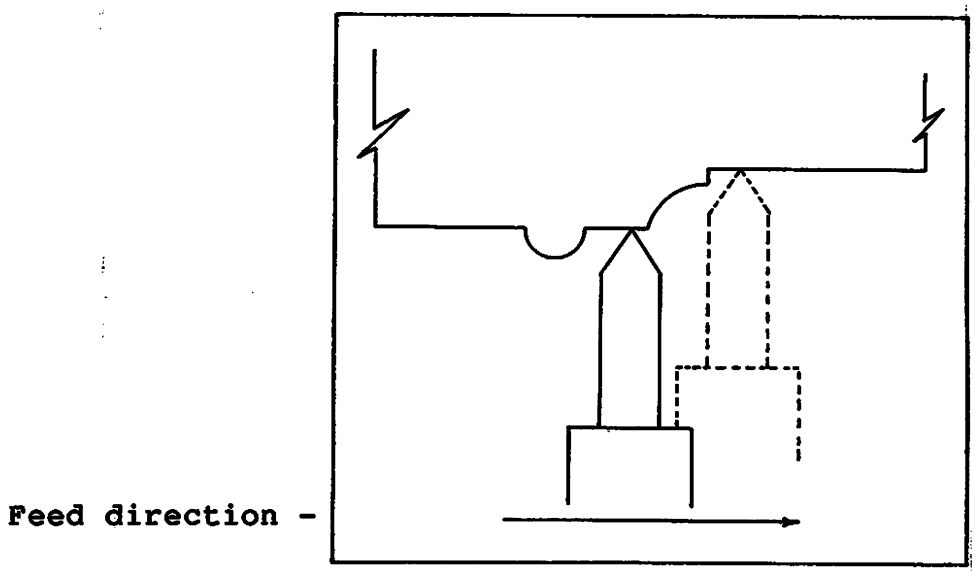


Figure 14

6. Figure #14, above, shows a tool bit about to remove too much wood off the duplicate. Move the bit to a lower position.

Now, look at Figure #15, below. In this figure the tool bit is about to contact a steep uphill profile. In this case, duplicate downhill and reverse feed direction.

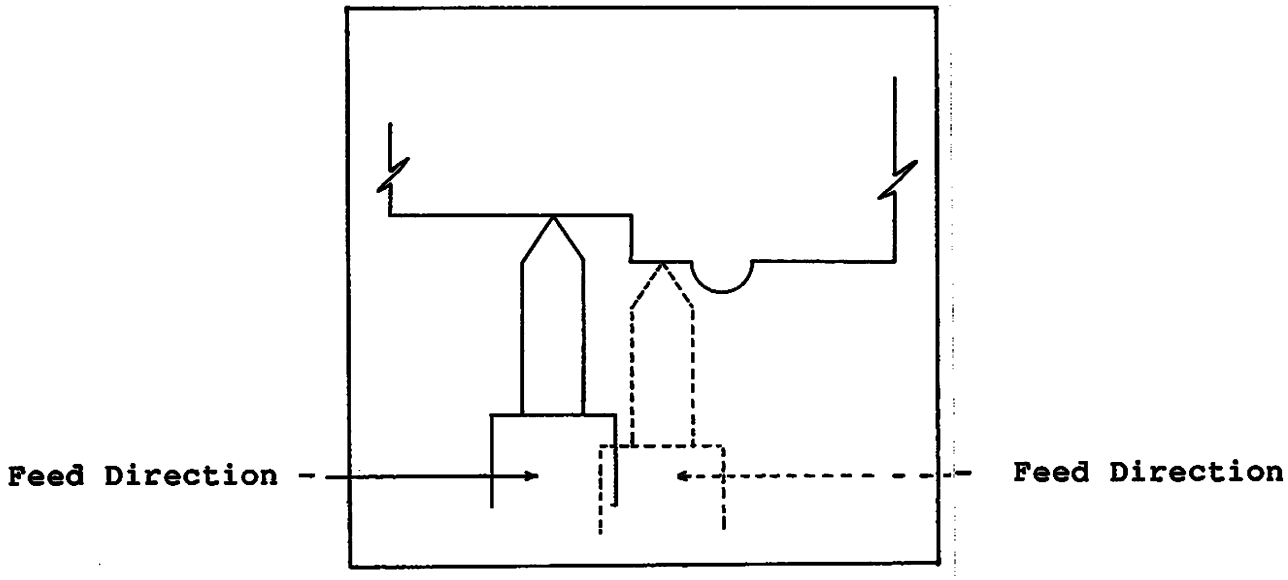


Figure 15

7. Turning wood can create an excessive amount of heat at the tool bit. This dulls the tool bit quickly. If you find that the bit is dulling for your particular application, use H.S.S. 1/2" drill bit stock (drill rod) and grind to shape. Many of our customers have custom made tooling with various rake angles that perform remarkably well.

8. Copy Turning on the faceplate can be accomplished in much the same manner as spindle turning.

   Secure work as in "Faceplate Turning" and mount template on hinged panel. Determine size (diameter) of turning as in "Spindle Turning". Stock must be roughed-out round before duplicating.

   Use roundnose tool bit first to get general shape, then select further bits according to desired profile.

XI. MAINTENANCE ITEMS

Owing to the fact that most all of the rotating parts of this machine run on sealed ball bearings, you will find that this machine requires very little in the line of routine maintenance. However, a word to the wise: a little maintenance does not mean no maintenance! We will review machine maintenance here from the perspectives of both repairs and preventative techniques. Please see to it that this work gets done. A little effort here will richly reward you in terms of equipment dependability and accuracy, as well as lowest possible total cost of operation.

A. Lubrication

1. As previously explained, sealed and pre-lubricated ball bearings are utilized on this machine. Lubrication is not required on your part for the life of the bearings. As a very approximate yardstick for bearing life: in a commercial environment, the bearings should reasonably last 4 to 5 years. The home shop craftsman can reasonably expect bearing life to be twice this value, or 8 to 10 years.

2. As for other items on the machine, such as screw-thread adjustments, an occasional 'shot" of light oil, is just about all that is necessary here. Before applying lubricant, wipe off sawdust and wood waste with a clean cloth or towel, spray on lubricant, and you have it made.

3. It's appropriate to point out that we're kind of hunting for a happy medium here: any kind of lubricant attracts dirt and - you guessed it - sawdust. What we want is just enough lube to make things easy to work for us, and not so much that "gobs" of waste stick to the parts. Sound OK?

B. Belt Tension

1. The single belt drive used on your G1174 uses an M-24 belt that is adjusted by means of a 5/16" hex head tensioner bolt.

2. Also see Figure #9 on page 20. By way of review, recall that correct tension is achieved when a moderate force, i.e., 6 to 8 pounds, is applied to the belt in the center between sheaves, and a deflection of about 3/16" results. Please check to see that this is so every 4 to 6 months, depending on frequency of usage.

C. Tool Maintenance

1. About the only thing that needs to be emphasized here is: keep them sharp and in good condition! Dull, unserviceable tools are frustrating to use, cut poorly, make for sloppy finishes, run hot, require more operator effort, and, as we've said before, can be actually quite unsafe! To get that mouth-watering appearance so characteristic of fine wood-work, you must have serviceable cutting tools and they must be sharp!

D. Equipment Adjustments

Figure #16, below, shows correct headstock and tailstock alignment of center points. To accomplish this operation:

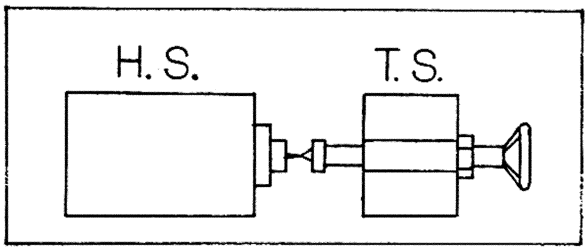


Figure 16

1. Loosen the headstock bolts using a 12 mm wrench and move headstock into position. Use shims, as needed, to raise or lower.

2. The next thing we need to verify is that the copy attachment runs true with the center line of the machine. To check this out, proceed as follows. See Figure #17.

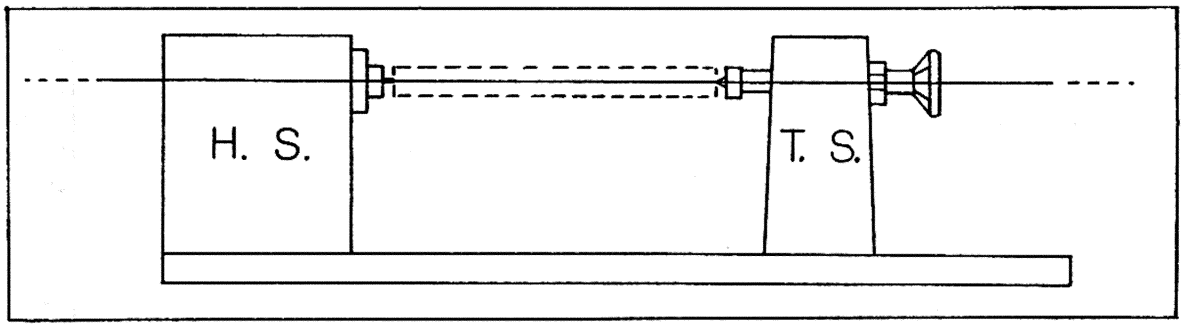


Figure 17

3. Place a straight bar between the headstock center and the tailstock center. Now, move the copy attachment back and forth. Start this procedure with the tool bit just almost touching the work piece. If the tool bit falls away, or comes in contact with the work piece, loosen the bolt (part #82) on each end of the gear toothed bar (part #16) with a 14 mm wrench. Then, move the bar into position. Also, see Figure #7 on page 18.

4. Next, we shall discuss the adjustments pertaining to the drive mechanism. This would be necessary if the copy attachment does not travel on the gear toothed bar smoothly. Make sure that the bar is properly lubricated. Look at the underside of the bar and inspect for burrs or wood waste clogging the teeth. If appropriate, file off any burrs. Move handles back and forth if guide block (part #39) hangs up, adjust collar (part #38) closer.

5. If you are still having difficulty, remove the yoke (part #17) from the bar (part #16) and inspect the gear (part #21). In most cases, this procedure is not necessary; however, in case adjustment is needed, proceed as follows:

   a. Remove the duplicator (part #23).

   b. Now remove the bar (part #16) from the bed by loosening the two bolts (part #82) on either end of the lathe bed. Notice that the duplicator yoke will not slide off the bar. The drive shaft (part #20) must be pressed out for inspection. Important! You must press the shaft out by the small end. Examine the gear (part #21) for any damaged teeth. File out or replace, as required. Important! The gear is set into position by a set screw. The end of the gear must face the large end of the shaft for the gear to line up properly on the bar.

E. Copying

Finally, we would like to share a few parting comments with you about the copy attachment.

1. As we have stated before, start simple when first using the copy attachment.

2. Stock must be "roughed out" round before it can be copied. Use the gouge to cut to shape. Note that the minimum duplicating diameter is 1".

3. Variations of this limiting diameter occur because of length; the larger the piece, the greater is the chance that the work will chatter. Also, different species of wood will flex at different thicknesses.

4. Many of our customers have made follow rests to support the work as the duplicator travels. You are warned to be very careful in performing any modification of any type to this equipment, as anything of this nature is solely the responsibility of the owner and/or the operator of this equipment.

5. All of the five insert tool bits should be sharp at all times. When sharpening, make sure that there is enough relief on the underside of the tool bit so that the bit does not rub on the stock.

6. Bits can be ground to any shape desired. Turning chisels and bits have an optimal cutting angle. As you gain experience, you will have the tendency to sharpen the tooling to suit your particular method of operation.

XII. CLOSURE

This concludes matters from the viewpoint of operations and maintainability that we wanted to share with you. The directory of spare parts and the machine data follow in the next section.

1. You are always welcome to write or call whenever you need assistance with parts or are requesting information about current prices of them. When you inquire, please tell us the machine model and serial number that you have. This way, if there has been a product improvement made since you purchased your lathe, we can see to it that you get the most up-to-date item(s).

2. At this time, we would like to thank you again for your business and continued support. We hope to be able to serve you again soon.

XIII. MACHINE DATA

GRIZZLY MODEL G1174 WOOD COPY LATHE

Overall Dimensions:	
Including Stand	48"H X 23"W X 55"L
Swing Over Bed	14"
Distance Between Centers	40"
Shipping Weight	210 lbs.
Weight In Place	200 lbs.
Construction:	
Bed	Rolled Steel Angles
Headstock	Cast Iron
Sanding Table	Cast Aluminum
Stand	Rolled Steel Angles
Spindle	Lubricated-for-life Ball Bearings
Specifications:	
Spindle Size	1 1/8" X 12 TPI RH
Outboard Spindle Size	7/8" X 16 TPI LH
Tailstock Taper	M.T. 2 Live Center
Sanding Table Size	6" X 9"
Number & Range of Speeds	3 - 860, 1720, 3096
Motor/Electrics:	
Type	TEFC Capacitor Start Induction
Horsepower	½ H.P.
Phase/Cycle	Single Phase/60 HZ
Voltage	110V/220V
Amps	8/4
RPMs	1720
Bearings	Sealed & Lubricated-for-life/Ball
Switch	On/Off
Features:	
9" Sanding Disc	Standard Equipment
6" Face Plate	Standard Equipment
Pneumatic Drum	Standard Equipment
5 Tool Bits	Standard Equipment
Flap Sander	Standard Equipment
Stand	Standard Equipment
Spur Center	Standard Equipment
Live Center	Standard Equipment

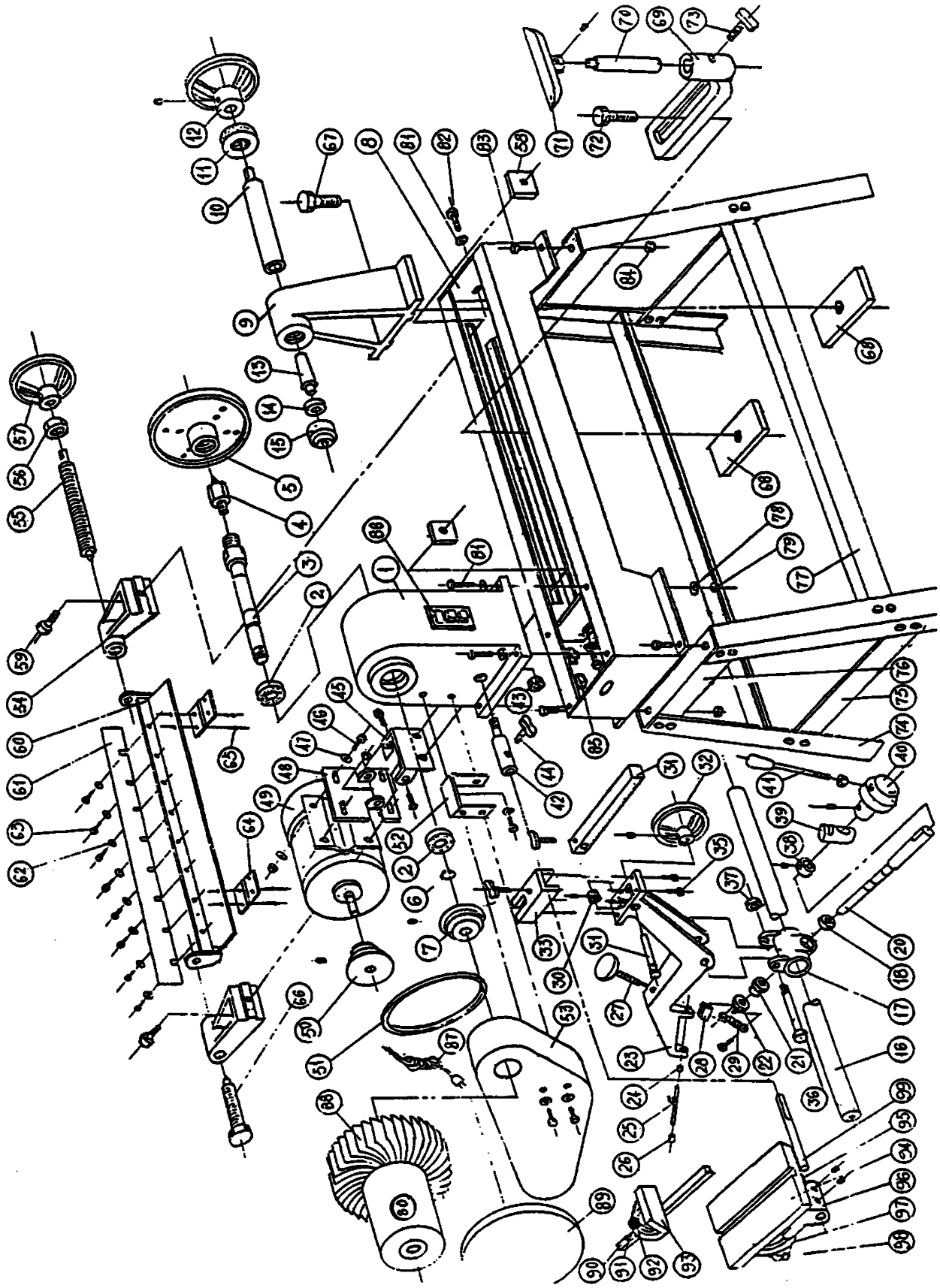
A. PARTS LIST

PART #	DESCRIPTION	PART #	DESCRIPTION
1	Headstock	28	Block
2	Bearings (2) 6305 2z	29	Spring
3	Spindle	30	Gear
4	Spur Center	31	Slot
5	Face Plate	32	Hand Wheel
6	Snap Ring	33	Top Plate
7	3 Step Pulley	34	Rack
8	Lathe	35	Screw
9	Tailstock Housing (Lathe)	36	Trunnion Bolt
10	Threaded Spindle	37	Nut
11	Check Nut	38	Collar
12	Hand Wheel	39	Guide Block
13	Live Center Taper (M.T.2)	40	Handle Holder
14	Bearings 6201RU (Sealed)	41	Duplicator Handles
15	Cup Center	42	Table Holder
16	Geared Tooth Bar	43	Nut
17	Duplicator Yoke	44	Lock Bolt
18	Bearing 6201 2Z	45	Motor Mount Bracket
19		46	Bolt
20	Duplicator Drive Shaft	47	Flat Washer
21	Gear	48	Motor Plate
22	Bearing 6200 2Z	49	Motor
23	Duplicator Housing	50	3 Step Pulley
24	Bushing	51	Belt
25	Pin	52	Brace
26	Bushing	53	Pulley Cover
27	Hand Knob	54	Tailstock Housing for Pt.#60

PART #	DESCRIPTION
55	Threaded Nose Center
56	Nut
57	Hand Wheel
58	Plate
59	Bolt 5/16 x 1
60	Hinged Panel
61	Template
62	Washer
63	Bolt
64	Hinge
65	Bolt
66	Threaded Nose Center
67	Tailstock Bolt
68	Threaded Plates (2)
69	Tool Rest Support
70	Tool Rest Shaft
71	Tool Rest
72	Tool Rest Bolt
73	Lock Knob
74	Leg
75	Bottom Brace A-Frame
76	Top Brace A-Frame
77	Bottom Brace
78	Washer
79	Nut
80	Drum Sander
81	Washer
82	Bolt
83	Bolt
84	Nut
85	Holes for Wire
86	Switch
87	Cord Set
88	Flap Sander
89	Disc
90	Mitre Bar
91	Pointer (Mitre)
92	Lock Knob (Mitre)
93	Mitre Head
94	Set Screw
95	Table
96	Table Support
97	Degree Slide
98	Lock Knob
99	Rod (Pin)
100	Cross Brace

Note: As you are facing the machine, refer to this as the front. When referring to the Legs (Pt.#74), make sure you differentiate between the two types. One leg has different hole positions for the Cross Brace (Pt.#100).

B. Exploded View



XIV. WARRANTY & RETURNS

FOR THE RETURN OF ANY PART OR PARTS, PLEASE REFER TO THE MOST CURRENT GRIZZLY CATALOG AVAILABLE.

THE CATALOG WILL STATE THE WARRANTY STATUS AND THE STEPS TO TAKE FOR ANY RETURN YOU MIGHT HAVE.

NOTES