INTRODUCTION

Your new Rockwell Wood Lathe is a ruggedly designed machine, for turning wood, plastics and non-ferrous metals such as aluminum, brass and copper. It has unmatched versatility for extra jobs such as sanding, buffing, polishing and drilling with low-cost attachments. In order to take full advantage of these capabilities you should thoroughly understand the construction and assembly of the tool and the proper technique for operating it. Therefore, we suggest you read this manual before operating and also that you save it for future reference.

46-111 14/11 Wood Lathe includes Basic Machine, Drive Center, Cup Center, 3" Face Plate, 6" Offset Tool Rest, 4"/12" Tool Rests and Tool Rest Base. Motor and Stand Optional.
SAFETY RULES FOR ALL TOOLS

As with all power tools there is a certain amount of hazard involved with the operator and his use of the tool. Using the tool with the respect and caution demanded as far as safety precautions are concerned will considerably lessen the possibility of personal injury. However, if normal safety precautions are overlooked or completely ignored, personal injury to the operator can develop.

There are also certain applications for which this tool was designed. Rockwell strongly recommends that this tool NOT be modified and/or used for any application other than for which it was designed. If you have any questions relative to its application DO NOT use the tool until you have written Rockwell and we have advised you.

Manager of Product Safety
Power Tool Division
Rockwell International
400 North Lexington Avenue
Pittsburgh, Pennsylvania 15208

1. KNOW YOUR POWER TOOL. Read the owner’s manual carefully. Learn the tools applications and limitations, as well as the specific potential hazards peculiar to it.

2. KEEP GUARDS IN PLACE and in working order.

3. GROUND ALL TOOLS. If tool is equipped with three-prong plug, it should be plugged into a three-hole electrical receptacle. If an adapter is used to accommodate a two-prong receptacle, the adapter lug must be attached to a known ground. Never remove the third prong.

4. REMOVE ADJUSTING KEYS AND WRENCHES. Form habit of checking to see that keys and adjusting wrenches are removed from tool before turning it on.

5. KEEP WORK AREA CLEAN. Cluttered areas and benches invite accidents.

6. AVOID DANGEROUS ENVIRONMENT. Don’t use power tools in damp or wet locations. Keep your work area well illuminated.

7. KEEP VISITORS AWAY. All visitors should be kept a safe distance from work area.

8. MAKE WORKSHOP KIDPROOF - with padlocks, master switches, or by removing starter keys.

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

10. USE RIGHT TOOL. Don’t force tool or attachment to do a job it was not designed for.

11. WEAR PROPER APPAREL. No loose clothing or jewelry to get caught in moving parts. Rubber-soled footwear is recommended for best footing.

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

13. SECURE WORK. Use clamps or a vise to hold work, when practical. It’s safer than using your hand and frees both hands to operate tool.

14. DON’T OVERREACH. Keep your proper footing and balance at all times.

15. MAINTAIN TOOLS - IN TOP CONDITION. Keep tools sharp and clean for best and safest performance. Follow instructions for lubricating and changing accessories.

16. DISCONNECT TOOLS before servicing and when changing accessories such as blades, bits, cutters.

17. USE RECOMMENDED ACCESSORIES. Consult owner’s manual. Use of improper accessories may be hazardous.

18. AVOID ACCIDENTAL STARTING. Make sure switch is in “OFF” position before plugging in cord.

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

20. CHECK DAMAGED PARTS. Before further use of the tool, a guard or other part that is damaged should be checked to assure 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 its operation. A guard or other part that is damaged should be properly repaired or replaced.

ADDITIONAL SAFETY RULES FOR WOOD LATHES

1. MAKE SURE the tool rest height is adjusted properly.

2. KEEP tool rest as close to the work as possible.

3. REMOVE the tool rest before sanding or polishing.

4. EXAMINE set-up carefully before turning on power.

5. ROTATE workpiece by hand to check clearance before engaging power.

6. WHEN TURNING between centers MAKE SURE the tailstock center is snug against the workpiece and locked. Tailstock center should be lubricated if it is not a ball bearing center.

7. MAKE SURE screw fasteners do not interfere with the turning tool at the finished dimension of the workpiece when faceplate turning.

8. EXAMINE workpiece for flaws and test glue joints before placing workpiece in lathe.
9. **WHEN** roughing off, DO NOT jam tool into workpiece or take too big a cut.

10. **MAKE SURE** index pin is **DIENGAGED** before starting the lathe.

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**ASSEMBLING STAND**

If you purchased your lathe complete with the 50-516 Steel Stand, the lathe is shipped bolted to the top shelf of the stand. Assemble the stand as follows:

1. Assemble the top shelf and the two braces to the two panels of the stand, as shown in Fig. 2, using the 16 carriage bolts, flat washers, lockwashers and nuts supplied.

2. Fasten the top shelf to the panels using the four screws and tinnerman nuts supplied, as shown in Fig. 2.

3. Fig. 3 illustrates the stand assembled and the lathe bolted to the top shelf.

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**MOTORS FOR YOUR LATHE**

The motors available for use with your lathe are:

- 62-142, 1/2 H.P. heavy duty, (ball bearing), capacitor start, 1725 RPM, 115 Volt
- 62-134, 1/3 H.P. heavy duty, (ball bearing), capacitor start, 1725 RPM, 115 Volt
- 62-153, 1/3 H.P. standard duty, (sleeve bearing), split phase, 1725 RPM, 115 Volt

These motors have been specially selected to best supply power to your machine and the relative safety of the machine is enhanced by their use. We therefore strongly suggest that only these motors be used as the use of other motors may be detrimental to the performance and safety of your lathe.
ASSEMBLING MOTOR MOUNTING HINGE BRACKET TO STAND

1. If you purchased the 50-516 Steel Stand, you received a Motor Mounting Hinge Bracket which should be assembled as shown in Fig. 4.

2. For clarity, Fig. 5, is shown with the panels of the stand removed. The hinge bracket (A) is shown assembled in Fig. 5, and should be attached to the bottom of the top shelf at holes (F), using the two screws (B), flat washers (C), and external tooth lockwashers (D). Two encapsulated nuts are located inside the holes (F) Fig. 5.

3. Fig. 6 illustrates the hinge bracket assembled to the bottom of the top shelf.

ASSEMBLING MOTOR TO HINGE BRACKET

Make sure the motor is DISCONNECTED from the power source and assemble the motor to the mounting hinge bracket using the two screws, four flat washers, four shakeproof external lockwashers and two nuts supplied, as shown in Fig. 7. CAUTION: The proper grounding of the motor, to prevent shock hazard, depends on the use of the shakeproof external lockwashers in the manner shown in Fig. 7.
ASSEMBLING SWITCH TO STAND

If you purchased one of the motors recommended for use with your lathe, you received a switch and cord set connected to the motor. Assemble the switch to the stand as follows:

1. IMPORTANT: When assembling the switch to the stand, MAKE SURE the motor power cord is NOT connected to the power source.

2. Determine which panel of the stand you wish to assemble the switch and remove the round knockout located on the panel.

3. Remove outer hex nut (A) Fig. 8, from the switch stem. Leave shakeproof lockwasher (B) and inside hex nut on switch stem. CAUTION: The proper grounding of the switch, to prevent shock hazard, depends on the use of the shakeproof lockwasher (B) Fig. 8, in the manner shown.

4. Insert switch stem through hole in panel of stand making sure the keyway in the switch stem is in the down position.

5. Place switch bracket (C) Fig. 9, on switch stem with key in switch bracket engaged with keyway in switch stem and fasten in place with hex nut (A) that was removed in STEP 2. NOTE: After the motor is assembled to the stand the excess wire from the motor to the switch should be wrapped and tied and then positioned out of the way.

6. IMPORTANT: We suggest that when the lathe is not in use, the switch be locked in the "OFF" position using a padlock, as shown in Fig. 10. Catalog No. 49-031 Padlock is available as an accessory.

ASSEMBLING LATHE TO STAND OR BENCH

If the lathe is to be used without the 50-516 Steel Stand, we suggest that it always be fastened to a supporting surface using the holes in the lathe base. Fig. 11, illustrates the size and center to center distance of the holes to be drilled in the supporting surface.

FASTENING STAND OR BENCH TO FLOOR

IF DURING OPERATION THERE IS ANY TENDENCY FOR THE TOOL TO TIP OVER, SLIDE OR WALK ON SUPPORTING SURFACE, THE STAND OR BENCH MUST BE SECURED TO THE FLOOR.
ASSEMBLING MOTOR PULLEY AND V-BELT

1. Assemble the motor pulley (A) to the motor shaft, as shown in Fig. 14. Using a straight edge, align the motor pulley (A) to the spindle pulley (B). If necessary move motor pulley in or out on motor shaft and tighten set screw in motor pulley against key in motor shaft.

2. Assemble V-Belt to the motor pulley and spindle pulley.

ASSEMBLING TOOL REST BASE AND TOOL REST

1. Assemble the tool rest clamping assembly (A) to the lathe bed, as shown in Fig. 15.

2. Assemble the tool rest base (B) Fig. 15, to the clamping assembly (A) through hole (C) in tool rest base.

3. Assemble the tool rest (D) to the tool rest base, as shown in Fig. 15.

4. Position the tool rest (D) and tool rest base (B) Fig. 15, and tighten locking nut (F) and lock knob (E).
CONNECTING LATHE TO POWER SOURCE

POWER CONNECTIONS

A separate electrical circuit should be used for your power tools. This circuit should not be less than #12 wire and should be protected with a 20 Amp time lag fuse. If an extension cord is used, use only 3-wire extension cords which have 3-prong grounding type plugs and 3-pole receptacles which accept the tools plug. For distances up to 100 feet use #12 wire. For distances up to 150 feet use #10 wire. Replace or repair damaged or worn cord immediately. Before connecting the motor to the power line, make sure the switch is in the “OFF” position and be sure that the electric current is of the same characteristics as stamped on motor nameplate. All line connections should make good contact. Running on low voltage will injure the motor.

GROUNDING INSTRUCTIONS

This tool must be grounded while in use to protect the operator from electric shock. The recommended motors are shipped wired for use for 115 Volt, single phase and are equipped with an approved 3-conductor cord and 3-prong grounding type plug to fit the proper grounding type receptacle, as shown in Fig. 17. The green conductor in the cord is the grounding wire. Never connect the green wire to a live terminal.

An adapter, shown in Fig. 18, is available for connecting 3-prong grounding type plugs to 2-prong receptacles. THIS ADAPTER IS NOT APPLICABLE IN CANADA. The green-color rigid ear, lug, etc., extending from the adapter is the grounding means and must be connected to a permanent ground such as to properly grounded outlet box, as shown in Fig. 18.

IMPORTANT: IN ALL CASES, MAKE SURE THE RECEPTACLE IN QUESTION IS PROPERLY GROUNDED. IF YOU ARE NOT SURE HAVE A CERTIFIED ELECTRICIAN CHECK THE RECEPTACLE.

SPINDLE SPEEDS

Spindle speeds of 990, 1475, 2220 and 3250 RPM are available when your machine is equipped with a 1725 RPM motor. The highest speed is obtained when the belt is on the largest step of the motor pulley and the smallest step of the spindle pulley as shown in Fig. 18-A. NOTE: Refer to the speed chart on page 18, for Suggested Spindle Speed. CAUTION: ALWAYS DISCONNECT MACHINE FROM POWER SOURCE WHEN CHANGING SPEEDS.
OPERATION

The following directions will give the inexperienced operator a start on the common lathe operations. Use scrap material for practice to get the feel of the machine before attempting regular work.

LATHE TOOLS

The standard set of tools used in wood turning comprises five different shapes as shown in Fig. 19. Most important of these is the gouge, a roundnose, hollow chisel which is used for roughing cuts, cove cutting and other operations. Next in importance is the skew chisel, a double-ground, flat chisel, with the end ground to an angle instead of being square across. This tool is used for smoothing cylinders, for cutting shoulders, beads, vee-grooves, etc. The spear or diamond-point chisel and the round-nose chisel are scraping tools which are used where their shape fits the contour of the work. The parting tool is a double-ground chisel, and is used for cutting-off and for making straight incisions or sizing cuts to any required diameter.

![Fig. 19 Standard Set of Turning Chisels](image)

HOW TO TURN SPINDLES

Any turning which is worked between lathe centers is called a spindle turning. This is the principal type of wood turning, as typified by chair and table legs, lamp stems, etc. The turning of spindles can be done with either a scraping or cutting technique, the cutting technique by virtue of faster wood removal and a cleaner surface being almost a must for good work.

![Fig. 20 Centering the Work](image)

CENTERING THE WORK. Wood stock for any spindle turning should be approximately square, and the ends should be square with the sides. Two common methods of determining the center are shown in Figs. 20 and 21. In Fig. 20, a distance a little more or a little less than one-half the width of the stock is set off from each of the four sides. The small square thus set off in the center can then be used in marking the true center. The diagonal method, Fig. 21, consists of drawing lines from corner to corner, the intersection marking the center of the work.

![Fig. 21 Centering the Work](image)
After marking each end, the true center should be definitely marked with a punch awl or dividers, as shown in Fig. 22. If the stock is hardwood, the centers should be drilled to a depth of about 1/8", as shown in Fig. 23. The spur or live center is then placed against one end of the work and seated by striking with a mallet, as shown in Fig. 24. In hardwood, it is advisable to make a starting seat for the spur center, this being done by sawing on the diagonal lines, as shown in Fig. 25, and drilling a small hole at the intersection. After driving the center, it is best to hold center and work together and fit immediately to headstock spindle. If you are not using a ball bearing center the end of the work at tailstock center should be oiled, placing the lubricant on the wood either before or after it is put in the lathe, see Fig. 26. Many turners use beeswax, tallow, or a wax-and-oil mixture as a lubricant. The ideal method is to use a ball bearing center, which eliminates lubricating entirely. If the work is to be removed from the lathe before completion, an index mark should be made as a guide for re-centering, as shown in Fig. 27. A permanent index can be made by grinding off one corner of one of the spurs.

![Fig. 22](image1)
![Fig. 23](image2)
![Fig. 24](image3)
![Fig. 25](image4)
![Fig. 26](image5)
![Fig. 27](image6)

**Mounting.** Mounting the work is done by moving the tailstock up to a position about 1 or 1½" from the end of the stock, and locking it in this position. Advance the tailstock center by turning the feed handle until the center makes contact with the work. Continue to advance the center while slowly rotating the work by hand. After it becomes difficult to turn the work, stop off on the feed about one-quarter turn and lock the tailstock spindle.

![Fig. 28](image7)

**Tool Rest Position.** The tool rest is now mounted in place, about 1/8" away from the work and 1/8" above the work centerline, as shown in Fig. 28. This position may be varied to suit the work and the operator. A guide mark to show the most suitable working position can be placed on the tool rest shank as an aid to quick and accurate re-setting. Once some experience has been obtained, the setting of the tool rest will become almost second-nature.
ROUGHING A CYLINDER. The large gouge is used in the first turning operation of roughing-off the sharp corners of the work. Run the lathe at low speed and hold the gouge in the manner shown in Fig. 29. The cut starts about 2 inches from the tailstock end, and continues from this point towards and off the tailstock end. A second bite is then taken about 2 or 3″ to the left of the first cut, advancing again towards the tailstock to merge with the cut previously made. The procedure continues until a point about 2″ from the live center is reached where the gouge is rolled in the opposite direction to carry the final cut off the live center end of the work. The roughing cut should not be carried out with one continuous movement as this tends to tear long slivers from the corners of the work; neither should the cut be started directly at the end of the stock for the same reason. The cut can be safely carried from the center of the stock towards and off either end once the first roughing cut has been made.

The position of the gouge in relation to the work involves two or three important angles. First of all, the tool may be advanced along the work either from right to left or from left to right. From left to right or from headstock towards tailstock is preferable, since this throws the chips clear of the operator. The gouge is rolled over slightly in the same direction it is advancing, as shown in Fig. 30. The tool is held well up on the work, with the bevel or grind tangent to the revolving surface, as shown in Fig. 31. In this position it will make a clean, shearing cut. When pushed straight into the work, like Fig. 32, the gouge has a scraping action, which is normally poor practice in spindle turning. The roughing cut is continued until the work approaches 1/8″ of the required diameter, stepping up to second or third speed (1475 to 2220 RPM) once a barely cylindrical form has been obtained.

POSITION OF HANDS. In all tool handling, the handle hand takes a natural position, being nearer or further from the end of chisel depending on the amount of leverage required. The position of the tool rest hand is more a matter of individual liking rather than any set or "proper" position. However, a palm-up grip, as illustrated with the gouge, is generally considered the best practice. In this position, the first finger acts as a guide, as shown in Fig. 33, sliding along the tool rest as the cut is made. The alternate position is a palm-down grip, which is shown in Fig. 34. In this position, the heel of the hand or the little finger serves as a guide. The palm-down position is solid and positive-excellent for roughing or heavy cutting. Most beginners start with the palm-down grip, switching later to the palm-up position for better manipulation of the chisel.

SMOOTHING A CYLINDER. This operation is done with the large skew chisel. It demands a little practice, but should be mastered thoroughly because it is one of the most important cuts in turning. Figs. 33 and 34 show how the chisel is held, using either grip as desired. The cutting point is near the center of chisel and high on the work, as shown in Fig. 35. The chisel must be supported by the tool rest at all times - in striving for a certain position in relation to the work, the beginner often overlooks this all-important point. Beginners often use the method shown in Fig. 35 to locate the proper tool position. To do this, you place the skew well over the work and riding-flat against it.
Pulling back slowly on the tool will eventually put it into position where it will bite into the wood. Raising the handle increases the depth of cut; lowering the handle makes the cut less. As with the gouge, the skew can be advanced in either direction. The part of the skew which does the actual cutting is the center portion and toward the heel. It is worthwhile to stop a test cut in progress and note just how the skew cuts. You will note that the back portion of the grind or bevel supports the tool, and the handle hand controls the depth of cut by rocking the chisel on this pivot point. For this reason it is important that the skew bevel be kept perfectly flat, not a double bevel nor rounded.

**USING THE PARTING TOOL.** The parting tool is perhaps the easiest turning chisel to handle. It is a scraping tool, and is simply pushed into the work, as shown in Figs. 36, 37 and 38. A somewhat better cutting action is obtained if the handle is held low, raising gradually as the work diameter decreases, as shown in Fig. 36. The tool is frequently used with one hand, the other hand holding calipers in the groove being cut. When parting tool cuts are deep, a clearance cut should be made along-side the first cut, as shown in Fig. 37, to prevent burning the tool point.

**SQUARING AN END.** This operation can be done with parting tool. However, the parting tool is a rough cutter, so that ultimately the skew must be used in cleaning the cut. The whole operation can be done with the skew, and this technique is illustrated by the drawings in Figs. 39, 40 and 41. The first movement is a nicking cut with the toe of the skew, as shown in Fig. 39. This cut cannot be made very deep without danger of burning the chisel, so a clearance cut is made by inclining the skew away from the first cut and again pushing the tool into the work. This procedure of side cut and clearance cut is continued as often as needed. The important point to note is that while the skew can be pushed into the wood in any direction, the cutting edge itself must be inclined a little away from this plane, see Fig. 41. Note that if the full cutting edge of skew bears against the cut surface, the tool will have a tendency to run. Now, observe the proper way to make the cut, as shown at left end of Fig. 41. The chisel is pushed straight into the work, but the cutting edge is inclined away from the cut surface - only the extreme toe cuts. This is the most important principle in skew handling, and you will run into it repeatedly in making shoulders, beads and vee cuts.
CUTTING A SHOULDER. The parting tool is first used to reduce the wood to within 1/16" of the required shoulder and diameter, as shown in Fig. 42. The waste stock is then cleaned out with the gouge, Fig. 43. Actual cutting of the shoulder is done with the skew, as shown in Fig. 44, and is a duplication of squaring end. The horizontal cut is also made with the skew, but in a little different manner from that used in doing plain cylinder work. If the shoulder is long, the ordinary skew position can be used for the outer portion of the cut, but at the angle between the horizontal and vertical cuts, the heel of the chisel moves into a position tangent between the skew and the cylinder, as shown in Fig. 45. In this position, the handle of the chisel is raised slightly to allow it to cut as the tool moves along the rest. A very light cut should be taken in order to produce smooth work. The heel of the skew can be used for making the entire cut, if desired, but the cut, whether in this position or any other position, should not be picked up directly at the end of the stock. It is quite evident that any horizontal cut started directly from the end of the work will have a tendency to bite into the wood, often ruining the entire piece. Always run off the end and not into it. Where a very short shoulder makes this impossible, it is best to use a skew flat in a scraping position. If the cutting technique is used, engage only with the heel of the skew in a very light cut.

CUTTING SMALL BEADS. Beads can be scraped or cut. The easy method of scraping is done with the spear chisel, and works to best advantage on beads separated by parting tool cuts, as shown in Fig. 46. Scraping is slower and less productive of clean work than cutting, but it has the advantage of perfect safety - you won't spoil the work with long gash runs.

Cutting beads quickly and accurately with the small skew is one of the most difficult lathe operations. Various working methods can be used, the usual system being as shown in Figs. 47, 48 and 49. The first cut is a vertical incision at the point where the two curved surfaces will eventually come together. This cut can be made with either heel or toe of skew, Fig. 50, showing the toe being used. Now, place the skew at right angles to the work and well up on the cylinder, as shown in Fig. 47. The chisel is flat on its side at the start, and is evenly rotated through the successive stages of the cut, as shown in Figs. 47, 48 and 49. At the same time, the chisel is pulled slightly backwards to maintain the cutting point. The entire cut is made with the heel of chisel. The opposite side of the bead is cut in the same manner, one cut serving to produce the full shape in each instance. Beads cut in this manner are beautifully smooth and polished, and the technique is well worth mastering.
VEE GROOSES. Cutting the vee groove demands much the same technique as the bead, except the skew is hinged straight into the work without rotation, as shown in Fig. 51. Only one-half of the vee is made at a time, and one, two or more cuts may be needed on each side to obtain the desired shape. As in all cutting with the skew, the bevel next to the cut must be used as a fulcrum, without at the same time allowing the full edge of the chisel to catch and cause a run. Vee grooves can also be made with the toe of the skew, in the manner already described for squaring an end.

LONG CUTS. Long cuts are usually either convex or straight-tapered surfaces. With a convex surface, the method used in making the finishing cut is shown in Figs. 52 and 53. The gouge is turned on the tool rest so that it will be inclined considerably in the direction in which it is about to move. The grind is tangent to the work, and the center point of the cutting edge is the contact point with the wood. As the cut progresses towards and around the end of the curve, the handle is gradually raised and swung to the right, as shown in Fig. 53, in order to maintain the tangency between the grind and the surface being cut, as shown in Fig. 54.

Figs. 55 and 56 show the cutting of a long taper. The skew is used, and the operation differs from smoothing a cylinder only as regards the start of the cut. The starting cut should be made with the heel, as shown in Fig. 56, to prevent the tool from digging into the work. As the tool runs down the work, the chisel can be pulled back to allow the center point of the cutting edge to cut. However, the full taper can be made with the heel. There will be a tendency to cut too deeply at the center of the taper which should be guarded against. The direction of cutting is always downhill.

COVE CUTS. Second to forming a perfect bead, the cove or concave cut is the most difficult to master. This cut is made with the gouge, the size of the tool depending upon the size of the cut. The size of the intended cove is first laid out, and the gouge is pushed directly into the work to remove the surplus stock, as pictured in Fig. 57. The cove cut can now be made.
The gauge is placed on edge on the tool rest in such a position that the grind of the chisel forms an approximate right angle with the work, as shown in Figs. 58 and 59. The chisel contacts the work at the center of the cutting edge, the tool being held so that the centerline of the gauge is pointing directly towards the center of the revolving stock, as shown in Fig. 60. This starting position is important; otherwise the gauge will have a tendency to run along the surface of the work.

From the starting position, the gauge is pushed into the revolving stock, and the tool is rolled on the rest. A triple action takes place here: First, the chisel is rolled to follow the shape of the cut; second, the handle is dropped slightly so that the portion already cut will force the lip of the chisel sidewise; third, the chisel is pushed forward so that at the end of the cut, Fig. 61, it will be well up on the work and tangent with the cut surface. Only one-half of the cut is made at one time, then the chisel is reversed to cut the other half. The occasional turner is advised to make cove cuts with a scraping technique, using either the small gouge or round nose chisel.

**Fig 58**

**Fig 59**

**Fig 60**

**Fig 61**

**Fig 62**

**Fig 63**

**Fig 64**

**Fig 65**

**SQUARE SECTIONS.** When the turning has a square section, the stock should be jointed before turning. Good centering is essential since any error will show at the shoulder where the round meets the square. Turning of the shoulder from square to round can be done in various ways, one method being pictured in Figs. 62, 63, 64 and 65. If the parting tool is sharp, the nicking cut with skew, Fig. 62, can be omitted. The final trimming operation Fig. 65, can be done with either the skew or spear chisels. This is a scraping operation. While the shoulder can be cut with the same technique used for cutting a bead, the simpler scraping method pictured does clean work and is easier to do.
FACEPLATE TURNING

Turnings which cannot be worked between centers must be mounted on a faceplate or other work-holding device. The greater part of this type of turning is done with the faceplate mounting, although there are a number of jobs which require special chucks. All cutting in faceplate work is done by scraping; any attempt to use a cutting technique on the edge grain of large work will result in a hogging, gouging cut which may tear the chisel out of your hands. All work should be roughly band sawed a little oversize to eliminate heavy roughing cuts in turning.

MOUNTING THE WORK. Fig. 66 shows direct mounting to the 3" faceplate. Because it is easy to set up, this mounting should be used whenever the work permits. Larger pieces can be held in the same way by using the 6" faceplate. When normal screw-fastenings interfere, the work can often be mounted on a backing block, as shown in Fig. 67. When screws are not permissible at all, the work is glued to the backing block, fitting a sheet of paper at the joint to allow later separation without damaging the wood. Some work can be screwed or nailed from the face side into backing block. Work less than 3" diameter can be mounted on the single screw center, as shown in Fig. 68.

INDEXING MECHANISM

The indexing mechanism consists of two rows of holes, accurately spaced around the rim of the drive pulley, as can be seen in Fig. 69. There are 60 holes in the inside row, spaced 6 degrees apart, and 8 holes in the outer row, spaced 45 degrees. The sliding pin (A) Fig. 69, can be turned to engage any hole in either inner or outer row. The indexing mechanism is used for dividing faceplate work, and for spacing cuts in fluting and reeding. The indexing head and table is shown in Fig. 70.
### INDEXING TABLE

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<td>14</td>
<td>14</td>
<td>8</td>
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<td>15</td>
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<td>7.5</td>
</tr>
<tr>
<td>16</td>
<td>16</td>
<td>7</td>
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</table>

**Figure 70**

Length of arc at various radii: use these lines to determine spacing of cuts for fluting or reeding.
### Suggested Spindle Speeds

#### Wood-Turning Speeds

<table>
<thead>
<tr>
<th>Diameter Of Work</th>
<th>Suggested Spindle Speed - RPM</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>Rough Cutting</td>
</tr>
<tr>
<td>Under 2&quot;</td>
<td>1475</td>
</tr>
<tr>
<td>2&quot; to 4&quot;</td>
<td>990</td>
</tr>
<tr>
<td>4&quot; to 6&quot;</td>
<td>990</td>
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<tr>
<td>6&quot; to 8&quot;</td>
<td>990</td>
</tr>
<tr>
<td>Over 8&quot;</td>
<td>990</td>
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</tbody>
</table>

#### Free-Hand Turning Speeds with Tungsten-Alloy-Tipped Chisels

<table>
<thead>
<tr>
<th>Diameter Of Work - Inch</th>
<th>Thermoset Plastics (Bakelite, Micarta, Etc.)</th>
<th>Thermoplastics* (Plexiglas, Lucite, Etc.)</th>
<th>Aluminum, Brass, Bronze, Mild Steel</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/4</td>
<td>3250</td>
<td>2220</td>
<td>3250</td>
</tr>
<tr>
<td>1/2</td>
<td>3250</td>
<td>1475</td>
<td>2220</td>
</tr>
<tr>
<td>3/4</td>
<td>2220</td>
<td>990</td>
<td>1475</td>
</tr>
<tr>
<td>1</td>
<td>1475</td>
<td></td>
<td>1475</td>
</tr>
<tr>
<td>1-1/4</td>
<td>1475</td>
<td></td>
<td>990</td>
</tr>
<tr>
<td>1-1/2</td>
<td>990</td>
<td></td>
<td>990</td>
</tr>
<tr>
<td>2</td>
<td>990</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Thermoplastics may also be turned with conventional wood-turning chisels, or with a compound slide rest, at the speeds shown in this chart.

#### Metal-Turning Speeds with Compound Slide Rest and High-Speed Steel Tool Bits

<table>
<thead>
<tr>
<th>Diameter Of Work - Inch</th>
<th>Suggested Spindle Speed - RPM</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Aluminum</td>
</tr>
<tr>
<td>1/4</td>
<td>3250</td>
</tr>
<tr>
<td>1/2</td>
<td>2220</td>
</tr>
<tr>
<td>3/4</td>
<td>1475</td>
</tr>
<tr>
<td>1</td>
<td>990</td>
</tr>
<tr>
<td>1-1/4</td>
<td>990</td>
</tr>
</tbody>
</table>

#### Wood-Boring Speeds (With Rockwell Machine Spur Bits)

- 1/4", 5/16", 3/8", and 7/16" - 1475 RPM
- 1/2", 9/16", 5/8", and 3/4" - 990 RPM

#### Drum-Sanding Speeds

For long abrasive life, 1475 RPM is recommended for all sanding drums up to 3-Inch diameter, for sanding either wood or metal. Drums may be operated at 2220 RPM to produce a finer finish, but the higher speed will shorten abrasive life. Garnet abrasive is recommended for wood, aluminum oxide for metal.

#### Disc-Sanding Speed

1475 RPM is recommended for the 8-1/2" sanding disc available as an accessory for this lathe.

#### Wire, Fiber, and Buffing Wheel Speed

The highest spindle speed, 3250 RPM, is recommended for wire, fiber, and buffing wheels up to 6" diameter with 1/2" center holes. Wheels must be properly mounted on the screw-on arbor accessory available for this lathe.

**CAUTION:** To avoid injury, do not use grinding wheels on the lathe.
Rockwell Lathe accessories give your work the professional touch

Turning Tools
Made of special high alloy steel with precision ground cutting edges and fitted with 1/4" dia. by 10" extra-long hardwood handles.
No. 46-121 2-pc. Skew
No. 46-124 1-pc. Skew
No. 46-125 3/8" Gouge
No. 46-126 1/2" Gouge
No. 46-127 5/8" Gouge
No. 46-128 3/4" Parting
No. 46-129 1" Gouge
No. 46-130 1½" Gouge
No. 46-131 1¼" Gouge
No. 46-132 1½" Gouge
No. 46-133 2" Gouge
No. 46-134 2½" Gouge
No. 46-135 3" Gouge
No. 46-136 3½" Gouge
No. 46-137 4" Gouge
No. 46-138 4½" Gouge
No. 46-139 5" Gouge
No. 46-140 5½" Gouge
No. 46-141 6" Gouge
No. 46-142 6½" Gouge
No. 46-143 7" Gouge
No. 46-144 7½" Gouge
No. 46-145 8" Gouge
No. 46-146 8½" Gouge
No. 46-147 9" Gouge
No. 46-148 9½" Gouge
No. 46-149 10" Gouge
No. 46-150 10½" Gouge
No. 46-151 11" Gouge
No. 46-152 11½" Gouge
No. 46-153 12" Gouge
No. 46-154 12½" Gouge
No. 46-155 13" Gouge
No. 46-156 13½" Gouge
No. 46-157 14" Gouge

Tungsten Alloy Tipped Turning Chisels
For free-hand turning of woods and plastics, plus aluminum, brass, bronze, copper, mild steel and similar materials. Tungsten alloy tipped and diamond lapped, these chisels have an extremely long cutting life and require little or no sharpening. Choose from two sets: 1/4" round and square nose for small fine work or 1/2" round and square nose for large heavy work.
No. 46-801 1/8" sq. Nose Chisel
No. 46-802 1/16" Rd. Nose Chisel
No. 46-803 5/32" sq. Nose Chisel
No. 46-804 3/32" Rd. Nose Chisel

Centers
All with No. 2 Morse Taper Shank.
No. 46-633 Drive Center. For headstock
No. 46-634 Ball Bearing Center. For tailstock
No. 46-640 Ball Bearing Center. For tailstock. With three interchangeable centers

Kneehead Bar
No. 46-935. For removing headstock centers

Face Plates
No. 46-955, 3" Diameter. For inboard face plate turning. With 1 1/4" RH thread
No. 46-956, 4" Diameter. For inboard or outboard face plate turning. With 1 1/4" RH and 1 1/2" LH threads

Screw-on Arbors
With 1 1/4" thread. For mounting wire, fiber and buffing wheels.
No. 46-144. For Inboard Use. (H1)
No. 46-145. For Outboard Use. (L1)

Tool Rests
All with 1/4" dia. shank.
No. 46-698, 4" Tool Rest
No. 46-699, 4½" Tool Rest
No. 46-700, 5" Tool Rest
No. 46-701, 5½" Tool Rest
No. 46-702, 6" Tool Rest
No. 46-703, 6½" Tool Rest
No. 46-704, 7" Tool Rest
No. 46-705, 7½" Tool Rest
No. 46-706, 8" Tool Rest
No. 46-707, 8½" Tool Rest
No. 46-708, 9" Tool Rest
No. 46-709, 9½" Tool Rest
No. 46-710, 10" Tool Rest
No. 46-711, 10½" Tool Rest
No. 46-712, 11" Tool Rest
No. 46-713, 11½" Tool Rest
No. 46-714, 12" Tool Rest
No. 46-715, 12½" Tool Rest
No. 46-716, 13" Tool Rest
No. 46-717, 13½" Tool Rest
No. 46-718, 14" Tool Rest
No. 46-719, 14½" Tool Rest
No. 46-720, 15" Tool Rest
No. 46-721, 15½" Tool Rest
No. 46-722, 16" Tool Rest
No. 46-723, 16½" Tool Rest
No. 46-724, 17" Tool Rest
No. 46-725, 17½" Tool Rest
No. 46-726, 18" Tool Rest
No. 46-727, 18½" Tool Rest
No. 46-728, 19" Tool Rest
No. 46-729, 19½" Tool Rest
No. 46-730, 20" Tool Rest
No. 46-731, 20½" Tool Rest
No. 46-732, 21" Tool Rest
No. 46-733, 21½" Tool Rest
No. 46-734, 22" Tool Rest
No. 46-735, 22½" Tool Rest
No. 46-736, 23" Tool Rest
No. 46-737, 23½" Tool Rest
No. 46-738, 24" Tool Rest
No. 46-739, 24½" Tool Rest
No. 46-740, 25" Tool Rest
No. 46-741, 25½" Tool Rest
No. 46-742, 26" Tool Rest
No. 46-743, 26½" Tool Rest
No. 46-744, 27" Tool Rest
No. 46-745, 27½" Tool Rest
No. 46-746, 28" Tool Rest
No. 46-747, 28½" Tool Rest
No. 46-748, 29" Tool Rest
No. 46-749, 29½" Tool Rest
No. 46-750, 30" Tool Rest
No. 46-751, 30½" Tool Rest

Tool Rest Base
No. 46-850, Standard Type. Handles 1/2" dia. shank tool rest
No. 46-851, Offset Type. Handles 1/2" dia. shank tool rest for face plate turning. For large work.

Floor Stand for Tool Rests
No. 46-697. Handles 1/2" dia. shank tool rests. For outboard turning

Adapters
No. 46-935. With 1/2" dia. x 1¼" plain shank. #2 Morse Taper shank to fit lathe spindle. For mounting sanding drums. Use drawbars to hold taper safely engaged in lathe spindle

Sanding Drums
With 1/2" dia. mounting hole including one abrasive sleeve. Use with 46-935 adapters.
No. 46-538, 1½" dia. x 3" long
No. 46-539, 1½" dia. x 4" long

Draw Bolt
No. 46-816. For holding No. 2 M.T. attachments with internal thread in lathe spindle

Geared Chuck
No. 46-956. With capacity. With No. 2 M.T. shank. For horizontal drilling operations

8½" Sanding Disc

Stand
No. 50-536. For lathe

Wood Turning Duplicator
For safe, accurate duplication of complex wood turnings. Takes only a few minutes to install on your Rockwell Lathe. Enables you to reproduce complicated turnings perfectly—patterns, balusters, lamps, table and chair legs—up to 1¼" diameter. 20½" long, saves valuable time, eliminates costly mistakes.
No. 46-860

Metal Turning accessories
When equipped with metal-turning accessories, your lathe can turn nonferrous metals, do drilling and boring operations, etc.

Compound Slide Rest
Accurately built with dovetail ways and graduated compound base that rotates 360°. Feed screw is covered to protect it from dirt and chips—fitted with micrometer screws, accurately graduated. With tool post, rocker, washer and wrench.

Holder, boring bars, tool bits
For use with No. 46-965 Slide Rest. Holds both boring bars and 1/2" square bits. Holder has two holes to facilitate holding tool. Made of case harden steel.

Holder
No. 46-953. For Boring Bar and Tool Bits

Boring Bars
No. 46-956. Set of three, 5/16", 3/8" and 1/2" square

Tool Bits
No. 46-974. Set of four. High-speed steel, 1/4" x 1/2" x 1¼". Includes roughing, finishing, right corner and left corner.

60" Plain Center
No. 46-929. For metal turning, hardened and ground.

Checks
No. 46-950, 6", 3-Jaw Universal Type. Threaded 1½" RH. Has three internal and three external jaws.
No. 46-951, 6", 4-Jaw Independent Type. Threaded 1½" RH. Has four sets of jaws, reversible for internal and external work.
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Rockwell International
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RIO PIEDRAS, 00923
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Calle Valverde
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CANADA
QUEBEC, 6M7
Rockwell International
40 Wellington Street
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Rockwell International
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## Replacement Parts

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<th>Ref. No.</th>
<th>Part No.</th>
<th>Description</th>
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<td>12&quot; Tool Rest</td>
<td>44</td>
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<td>8&quot; Face Plate</td>
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<td>301-06-480-14-1716</td>
<td>7/16&quot; Spring Locowasher</td>
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<td>Spindle (Current Model, See A), Inc.</td>
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<td>904-15-013-1071</td>
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<td>58</td>
<td>46-949</td>
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<td>61</td>
<td>301-01-040-0611</td>
<td>1/4-20 X 1/2&quot; Hex Hd, Scr.</td>
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<td>18</td>
<td>392-09-040-5914</td>
<td>Spindle (Early Model, See A)</td>
<td>62</td>
<td>301-04-100-1903</td>
<td>Washer</td>
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<tr>
<td>19</td>
<td>434-01-071-0012</td>
<td>Inducing Pin</td>
<td>63</td>
<td>301-04-150-0217</td>
<td>Handle</td>
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<td>20</td>
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<td>64</td>
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<td>66</td>
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<td>68</td>
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<td>28</td>
<td>1087869</td>
<td>Tailstock Ass'y., Constr. Of:</td>
<td></td>
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<td>Early models manufact. prior to 12/75, had bearings with slightly extended inner races. Early spindles had machined bearing support shoulders.</td>
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<tr>
<td>29</td>
<td>434-01-378-0001</td>
<td>Tailstock Ass'y.</td>
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<td>Intermediate models had bearings with flush inner races. Intermediate spindles had machined bearing support shoulders.</td>
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<tr>
<td>30</td>
<td>1086590</td>
<td>Ram Adj. Scr. Ass'y.</td>
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<td>Current models have bearings that are identical to intermediate bearings. Current spindles are assemblies using two retaining rings as bearing support shoulders.</td>
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<td>31</td>
<td>301-01-111-9333</td>
<td>1/8 X 11/16&quot; Roll Pin</td>
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<td>Early bearing and spindles are not individually interchangeable with current parts unless replaced as a set. Intermediate and current bearings and spindles are individually interchangeable.</td>
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<td>Tailstock</td>
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<td>Bkld Nut</td>
<td></td>
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</table>

**OLD STYLE TAILSTOCK ASSEMBLY**

**SERVICE NOTES:**

- Early models manufactured prior to 12/75, had bearings with slightly extended inner races. Early spindles had machined bearing support shoulders.
- Intermediate models had bearings with flush inner races. Intermediate spindles had machined bearing support shoulders.
- Current models have bearings that are identical to intermediate bearings. Current spindles are assemblies using two retaining rings as bearing support shoulders.

Litho U.S.A.