

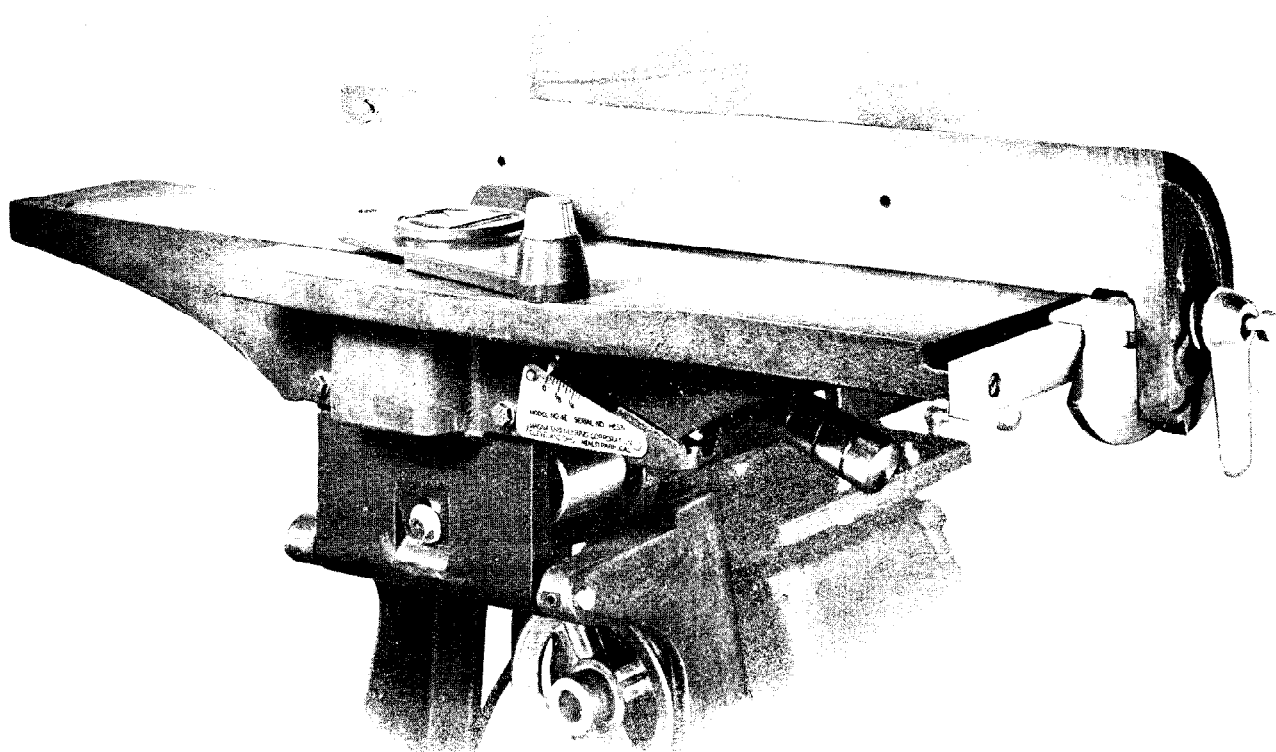


MAGNA 4" JOINTER - OWNER'S GUIDE

HOW TO OPERATE AND MAINTAIN
THE MAGNA 4" JOINTER—MODEL 4E

ACCESSORY NO. 11 510

ARTICLE NO. 84-3427



SPECIFICATIONS

CAPACITY	Width of Cut	4"
	Depth of Cut	5/16"
	Rabbet Cut	5/16"
DIMENSIONS	Infeed Table	5-1/2" x 13-1/4"
	Outfeed Table	4-1/2" x 13-1/4"
	Overall Table Length	28"
	Fence	3" high x 21-3/4" long
	Cutter Head Diameter	2-1/2"
	Rabbeting Ledge	2-1/8" wide
	Jointer (overall)	7" high x 9" wide x 32-1/2" long
FENCE TILT		45 degrees left to 45 degrees right
FENCE STOPS		adjustable auto-stops at 45, 90 and 45 degrees
KNIVES		3 (precision-ground steel)
BEARINGS		2 (lubricated for life)
SPEED		5000 rpm (recommended)
SHIPPING WEIGHT		47 lbs., 12 oz.

MAGNA ENGINEERING CORPORATION
MENLO PARK, CALIFORNIA

HOW TO OPERATE AND MAINTAIN

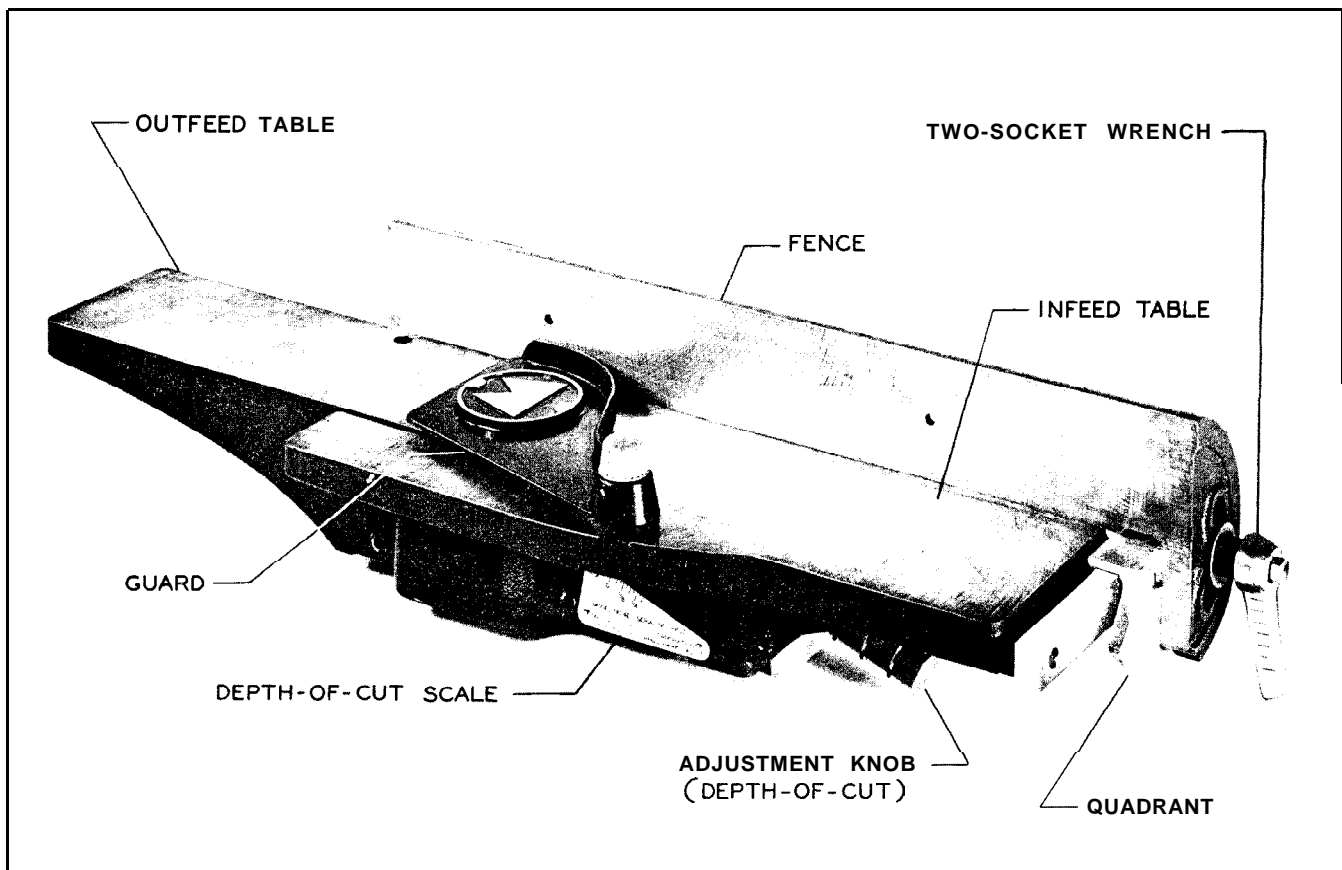
Magna 4" Jointer--Model 4E

Purchase of the MAGNA 4" JOINTER is another step toward proficient woodworking. Like SHOPSMITH, the Jointer is designed to accomplish quickly and accurately many operations requiring tedious hours of labor if done by hand. Basically, it is a rotary cutter which will plane edges smooth and square, ready for gluing or assembling. It will also do a fine job on light surfacing cuts but should not be confused with the Thickness Planer as Jointers often are. The latter is a very heavy industrial machine designed to dress stock to exact thicknesses.

The basic usefulness of the Jointer is illustrated by a quick preview of standard operational procedure on a saw-jointer combination such as you have available with SHOPSMITH. When cutting stock to width you first

establish a smooth, square "work-edge" by making a jointing cut on one edge of the stock. This edge rides the rip fence during the rip cut on the saw. Then the second edge is jointed. The rip cut is made oversize to compensate for stock removal when making the second jointer cut. Thus you have sized your stock to exact dimensions and also obtained smooth, square edges requiring no further attention.

Complete information for mounting the MAGNA 4" JOINTER on SHOPSMITH is contained in the MOUNTING KIT (accessory no. 11521) instruction sheet packed in the MOUNTING KIT carton. At this stage the Jointer should be all set, ready for simultaneous operation with the SHOPSMITH table saw to make homeworkshop activity still easier, more professional and more productive.



JOINTER nomenclature

The MAGNA 4" JOINTER (Fig. 1), has a fixed outfeed table (cast integrally with the Jointer base) and an adjustable infeed table which is controlled for depth-of-cut settings with an easy-to-grip hand knob. How far you lower the infeed table determines the amount of wood which is removed during the pass. On the MAGNA JOINTER this setting does not have to be measured; it may be taken directly from the indicator scale.

A dual purpose "two-socket" wrench is used to lock the fence in any position across the tables and at any degree of tilt.

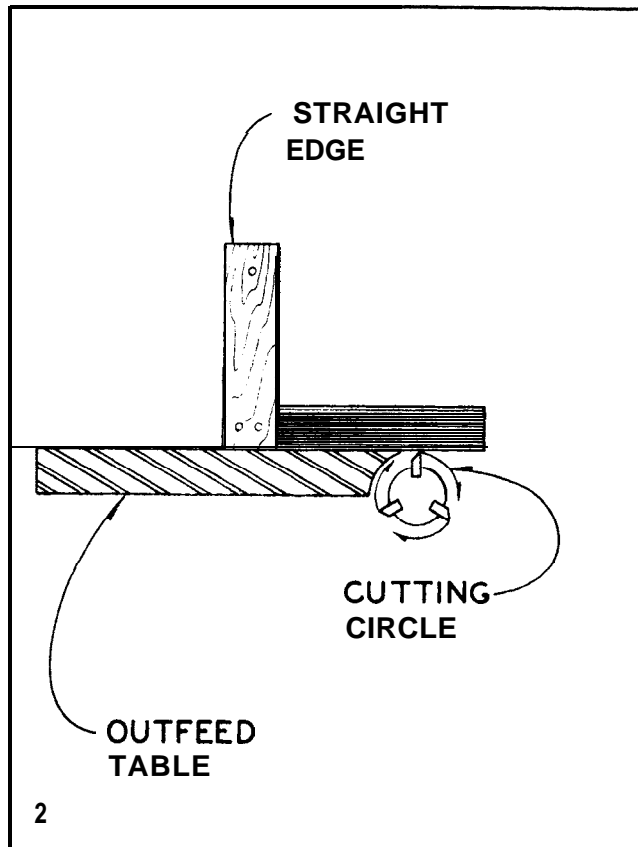
The guard, which should be positioned as shown for most operations, may also be located on the outfeed table to cover the exposed cutter head behind the fence when doing rabbeting operations. On very wide rabbets, where little of the cutter head is exposed, this is not necessary.

HOW TO ADJUST THE JOINTER

The Jointer has been factory adjusted and tested for accuracy. It will operate to high standards if used and maintained correctly. Correct procedures for adjustment and periodical checking are described in the following paragraphs. **READ THE INSTRUCTIONS CAREFULLY.** The MAGNA 4" JOINTER is a valuable, precision machine which deserves the best of care.

Knife adjustment

The combination of fixed outfeed table and easily adjusted knives in the MAGNA 4" JOINTER make the one critical Jointer adjustment a very simple matter. The horizontal plane of the outfeed table must be tangent to the cutting circle of the knives. Check this by placing a straight edge on the outfeed table so that it juts out over the cutter head. Turn the cutter head by hand **CAUTION** -use hands on the belt, not the cutter head) until one knife is at the top-most point of the cutting circle. The knife should barely scrape the straight edge. If it lifts the straight edge, the knife is set too high. If it does not touch at all, the knife is set too low (Fig. 2).



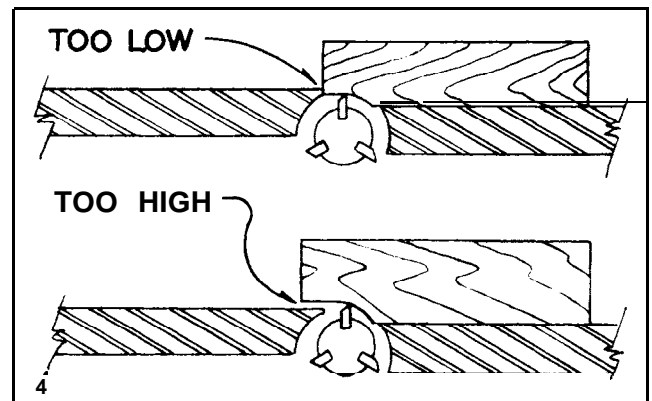
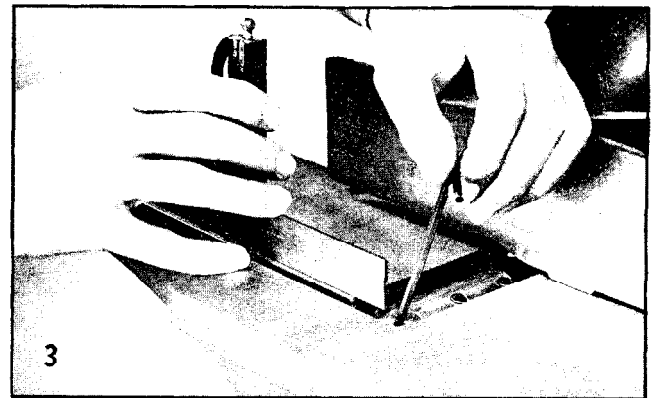
Make this check at both ends of the knife. If adjustment is required, loosen the three Allen screws which lock the knife-retaining wedge. Adjust the two Allen screws on which the knife rests (Fig. 3). If the knife is too high the screws should be lowered-if the knife is too low the screws should be raised.

After the knife is adjusted for height, check it for position in the cutter head. The forward edge of the knife (edge nearest the rabbeting ledge), should extend about $1/32$ " beyond the front edge of the out-feed table. If it

does not the work will not clear the outfeed table during a rabbet cut.

Lock the wedge in place with the three Allen screws. The check on blade height and blade position in the cutter head should be made on all three knives.

Operational danger signals which will indicate misalignment are these (Fig. 4): If, after passing over the cutter head, the edge of the work hits the edge of the outfeed table and must be forced across, the knives are set too low. If the work drops slightly at the very end of the pass resulting in a knicked end, the knives are set too high.



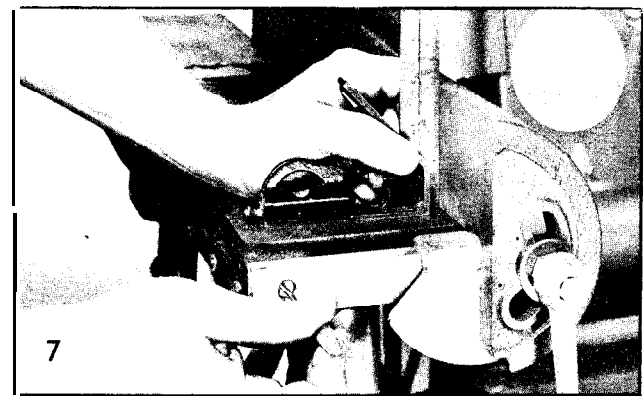
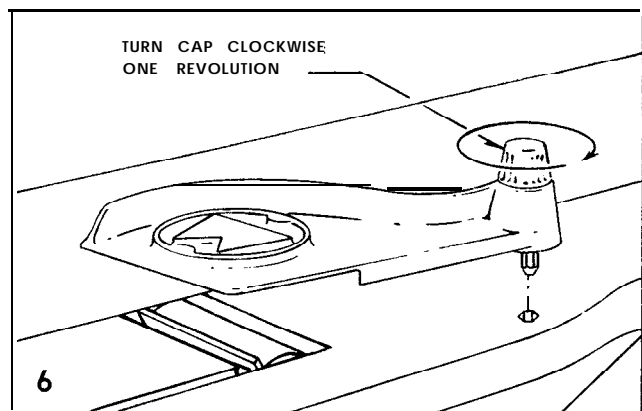
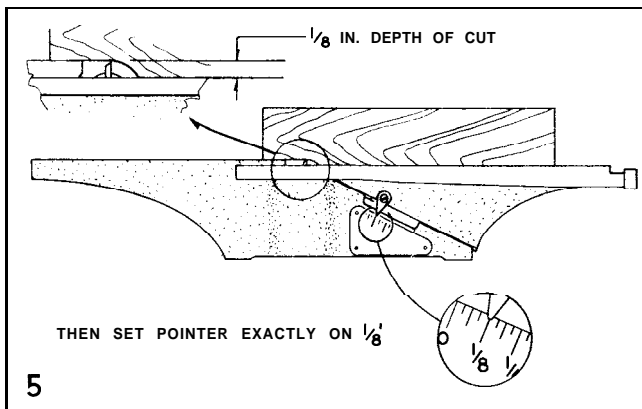
Adjusting for depth-of-cut

Turning the hand knob clockwise lowers the infeed table for depth-of-cut adjustments. To check the accuracy of the pointer, make a $1/8$ " trial cut in a piece of stock. Measure the cut in the wood and, if necessary, adjust the infeed table until the cut is exactly $1/8$ ". Set the pointer exactly on the $1/8$ " mark (Fig. 5). After this adjustment, which should be made periodically consistent with proper machine maintenance, all other pointer settings will be correct.

Adjusting the guard

The cap on the guard of the MAGNA 4" JOINTER contains a spring which supplies the pressure that automatically keeps the guard over the cutter head. During the pass, the guard covers the unused section of the cutter head while the work itself covers that area which is cutting. The side pressure of the guard also helps to keep the work against the fence. **NEVER WORK WITHOUT THE GUARD UNLESS IT IS ABSOLUTELY NECESSARY.** It was designed for your safety.

To put the guard in place merely turn the cap clockwise (Fig. 6), and slip the hex shaft in the hex hole at the front of the rabbeting ledge while you hold the cap. It is never necessary to apply excessive spring pressure on the guard—one full revolution of the cap is sufficient for virtually all operations.

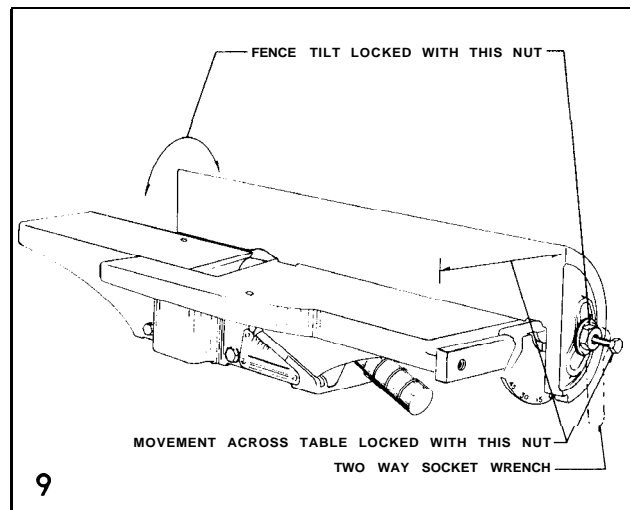
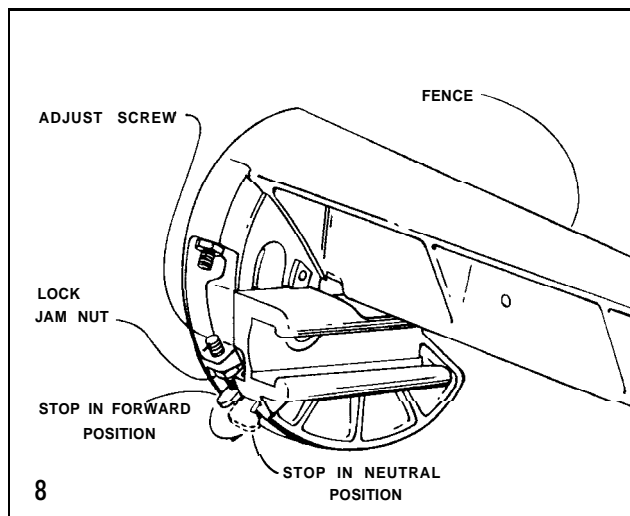


Fence adjustments

In normal operating position the fence should be perpendicular to the horizontal plane of the tables. To check, follow this procedure. Use the two-socket wrench to loosen the nut which secures fence tilt. Set the fence on the quadrant "zero" mark and lock it. Check with a square (Fig. 7). If the fence should require a slight adjustment loosen the two slotted screws which hold the fence bar to the Jointer. Adjust the bar until the fence checks out exactly square to the tables. Lock the slotted screws.

The auto-stop for the 90 degree position may be adjusted now (Fig. 8). Bring the stop forward and thread the screw down until its end bears against the stop. Lock the screw setting with the nut. Now, when the fence has been tilted and you want it back to the 90 degree setting, simply bring the stop forward and tilt the fence up until the adjustment screw hits the stop. Follow this same procedure with the fence tilted forward 45 degrees and again with the fence tilted back 45 degrees. Thus you have accurate, automatic stops at the three most used fence positions.

To move the fence across the table loosen the locking nut (Fig. 9), set the fence where needed and lock the nut.

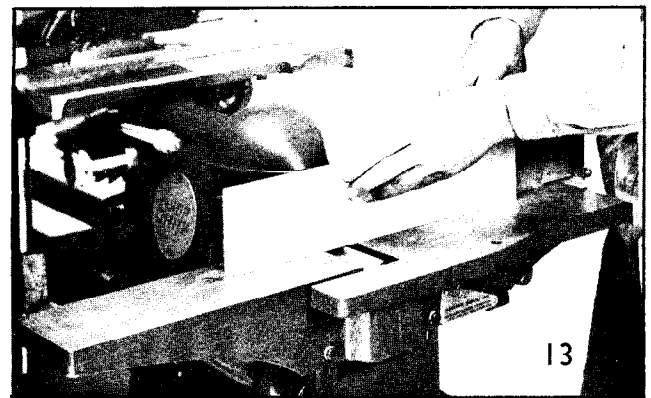
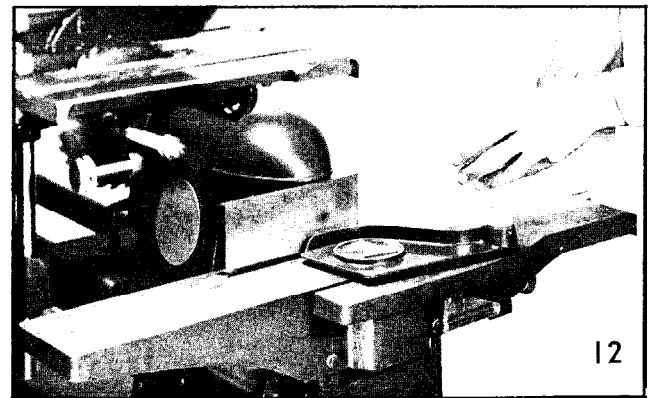
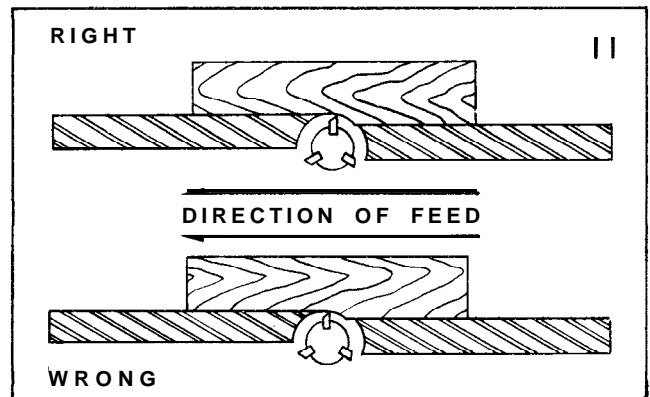
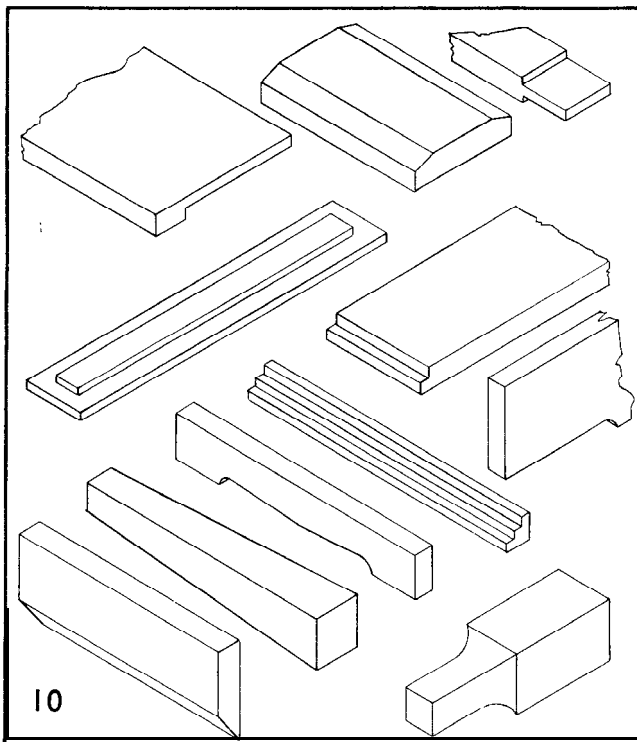


OPERATION

The Jointer is used to plane edges square and smooth and to accomplish other cuts such as those shown in Fig. 10. Jointing-planing the edge of a board should always be done with the grain of the wood. Working against the grain seldom produces a satisfactory surface and also increases the danger of kickback (Fig. 11).

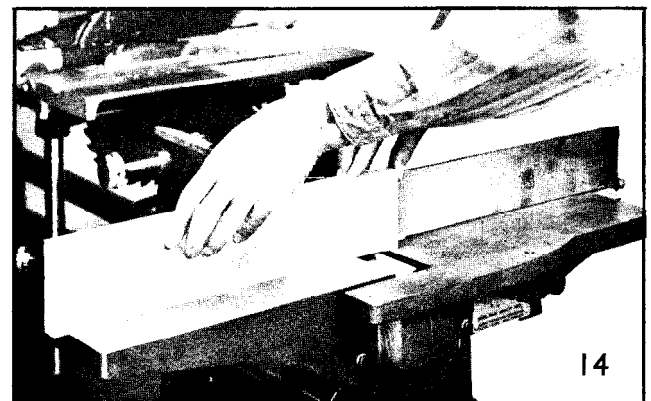
Depth-of-cut settings on jointing operations should never exceed $\frac{1}{8}$ ". Normally, a setting of from $\frac{1}{32}$ " to $\frac{1}{16}$ " does a good job and wastes less wood.

Although the jointing operation is a smooth movement from start to finish it is best shown in three steps. The best side of the stock is placed against the fence with the work edge down on the infeed table (Fig. 12). Hands should be placed as shown to hold the work down on the table and snug against the fence. THE GUARD SHOULD BE IN PLACE AT ALL TIMES AS SHOWN. The guard is removed in some of the photos but this is only to show the operation more clearly.



As the work advances over the cutter head the guard moves aside to permit its passage. The left hand does most of the work of keeping the stock snug against the fence and down on the tables (Fig. 13), while the right hand moves it forward. Some operators object to passing either hand over the cutter head but if the work is wide enough and the guard is used, there is little danger if the hands are positioned as shown. It also eliminates the need for repositioning the hands during the pass-a procedure which could be more dangerous.

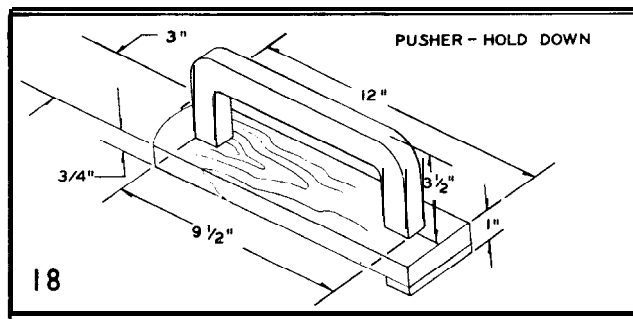
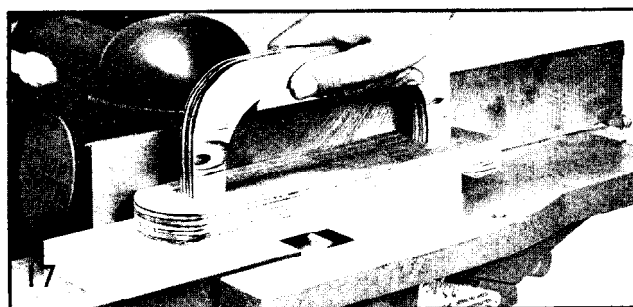
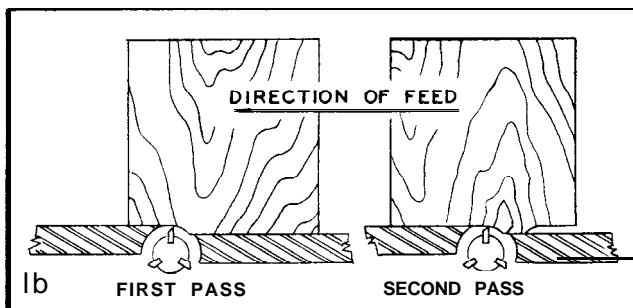
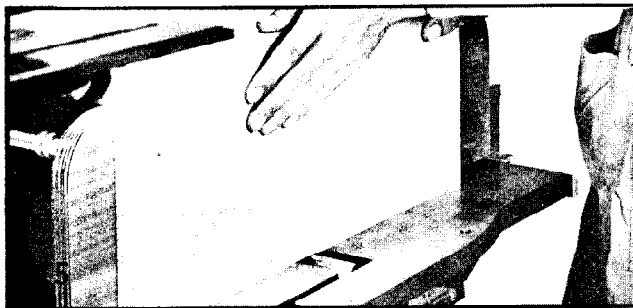
At the end of the cut (Fig. 14), the hands are still in about the same position. Avoid heavy downward pressure at the end of the cut since this might tilt the work into the cutter which would result in a gouged end.



The two holes in the Jointer fence permit mounting a $\frac{3}{4}$ " plywood auxiliary fence when a quantity of extra wide boards must be jointed. Attach it with two 1" F. H. screws inserted from the back side of the Jointer fence (Fig. 15).

Jointing end grain requires two passes (Fig. 16). Make the first pass to the point where the work has passed about 1" across the cutter head. Then turn the work around and complete the pass as shown.

The Jointer may also be used to do light surfacing operations. Depth-of-cut should never exceed $\frac{1}{16}$ ". The work is placed flat on the infeed table and advanced over the cutter head as in jointing (Fig. 17). Notice the use of the combination pusher-hold down. This tool, which you can easily make yourself (Fig. 18), should be used on all surfacing operations.

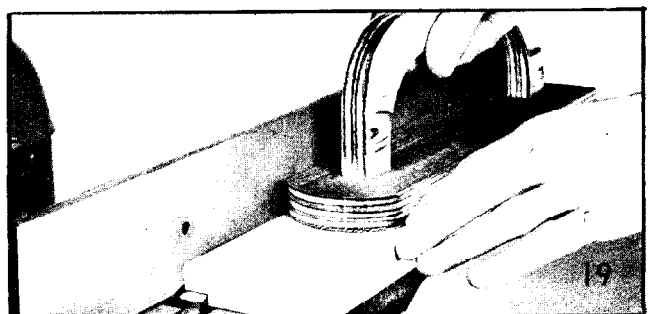


Rabbeting

Rabbeting is done by bringing the fence across the table and locking it a distance away from the ends of the knives equal to the width of the rabbet required. Depth-of-cut for the rabbet is gauged by lowering the infeed table. The pass is made by advancing the work over the cutter head as in jointing. Rabbet cuts may be made up to $5\frac{1}{16}$ " deep and 4" wide. When the rabbet is extra wide (over 1"), the action is similar to a surfacing operation so that the same maximum depth-of-cut adjustment should be observed. However, the full depth-of-cut can be achieved by making successive passes lowering the table after each pass until the cut is complete.

For rabbets that are $\frac{1}{2}$ " to 1" wide the full depth-of-cut can be attained in two passes. Full depth-of-cut on rabbets under $\frac{1}{2}$ " can be accomplished in a single pass.

Support for the work is provided by the infeed table and rabbeting ledge regardless of whether the work is held flat on the table (Fig. 19), or on edge (Fig. 20).



Bevel cuts

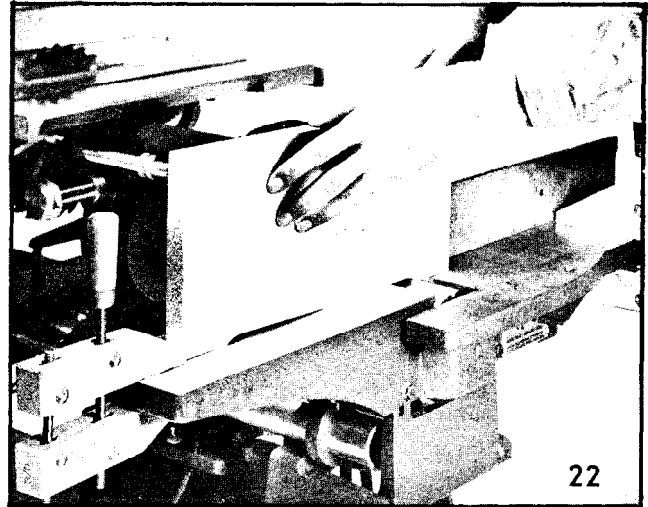
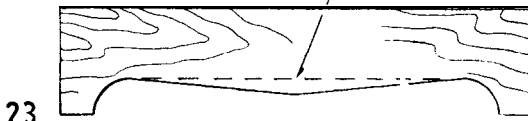
To make bevel cuts, tilt the fence to the angle desired (Fig. 21), and pass the work across the cutter head while maintaining full contact with the fence. It is usually necessary to make more than one pass before the bevel is complete.



Recessing

A recess cut (often called stopped chamfering) is used most often in base members and the bottoms of table and stand legs. It is formed by using stop blocks to gauge the ends of the cut. The work is placed against the forward block and advanced until it hits the rear block (Fig. 22). Then it is turned and a second pass made. The result is shown in Fig. 23.

NOTE: CENTER MAY BE CUT OR SANDED OFF - OR RETAINED AS DECORATIVE DETAIL.



CARE OF JOINTER KNIVES

With proper care and occasional honing the Jointer knives will function for a long time without regrinding. Occasionally the knives should be cleansed of the gum and pitch which will adhere to them. If this accumulates it will reduce the efficiency of the knives. A good way to clean them is to spray them with SHOPSMITH RUST PREVENTIVE (accessory no. I2 049). Let this soak in for a few minutes and then wipe off with a rag.

To hone them, wrap an oilstone in paper leaving about 1" of it exposed. Lower the infeed table about $\frac{1}{8}$ " and rest the paper-covered end of the stone on the table so that the exposed end juts out over the cutter head (Fig. 24). The cutter head should be turned to allow the stone to rest flat on the bevel of the knife. Hold the cutter head in this position (by gripping the drive belt) and move the stone back and forth across the knife. Hone an equal amount on each knife.

When knives are chipped or otherwise dulled beyond sharpening by honing they must be removed from the cutter head and refinished on a grinding wheel. Through the use of special homemade jigs this can be accomplished on the table saw (Fig. 25), or by using SHOPSMITH as a tool sharpener (Fig. 26). (Note-Figs. 25 and 26 are from the new book POWER TOOL WOODWORKING FOR EVERYONE.)

Knives that have been reground enough to bring the knife width down to less than $\frac{11}{16}$ " should be discarded. Further use is not recommended.

GENERAL MAINTENANCE AND LUBRICATION

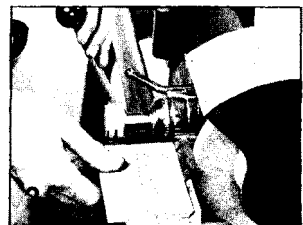
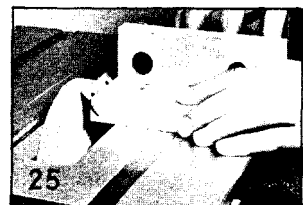
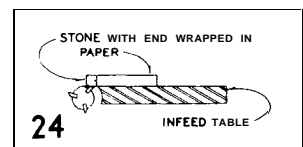
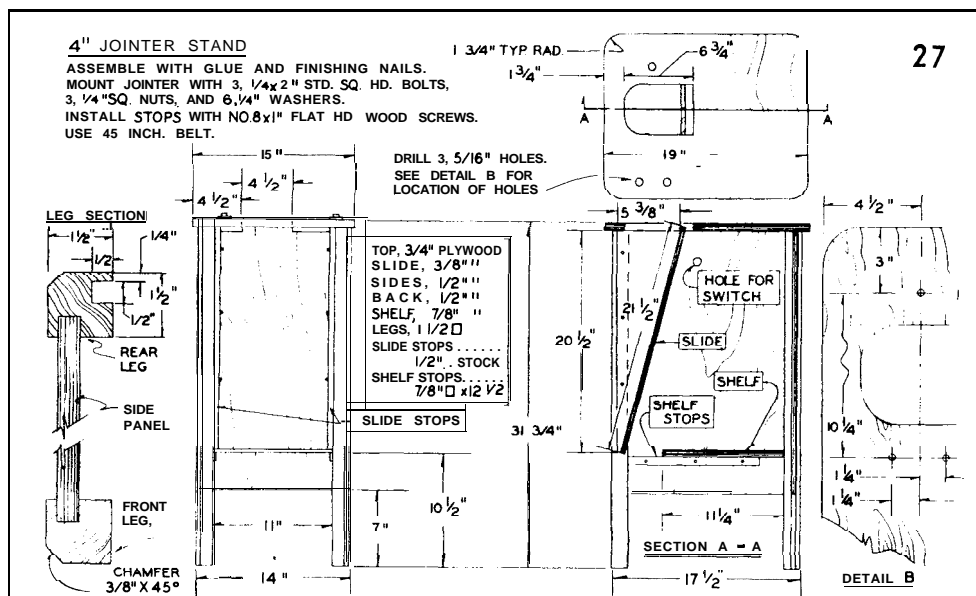
The two grease-sealed bearings on which the cutter head revolves do not require lubrication. They will function without further attention for the life of the Jointer.

The ground surfaces of the fence, infeed table and outfeed table should be protected to insure clean, smooth operation. An occasional coating of hard paste wax will do a good job.

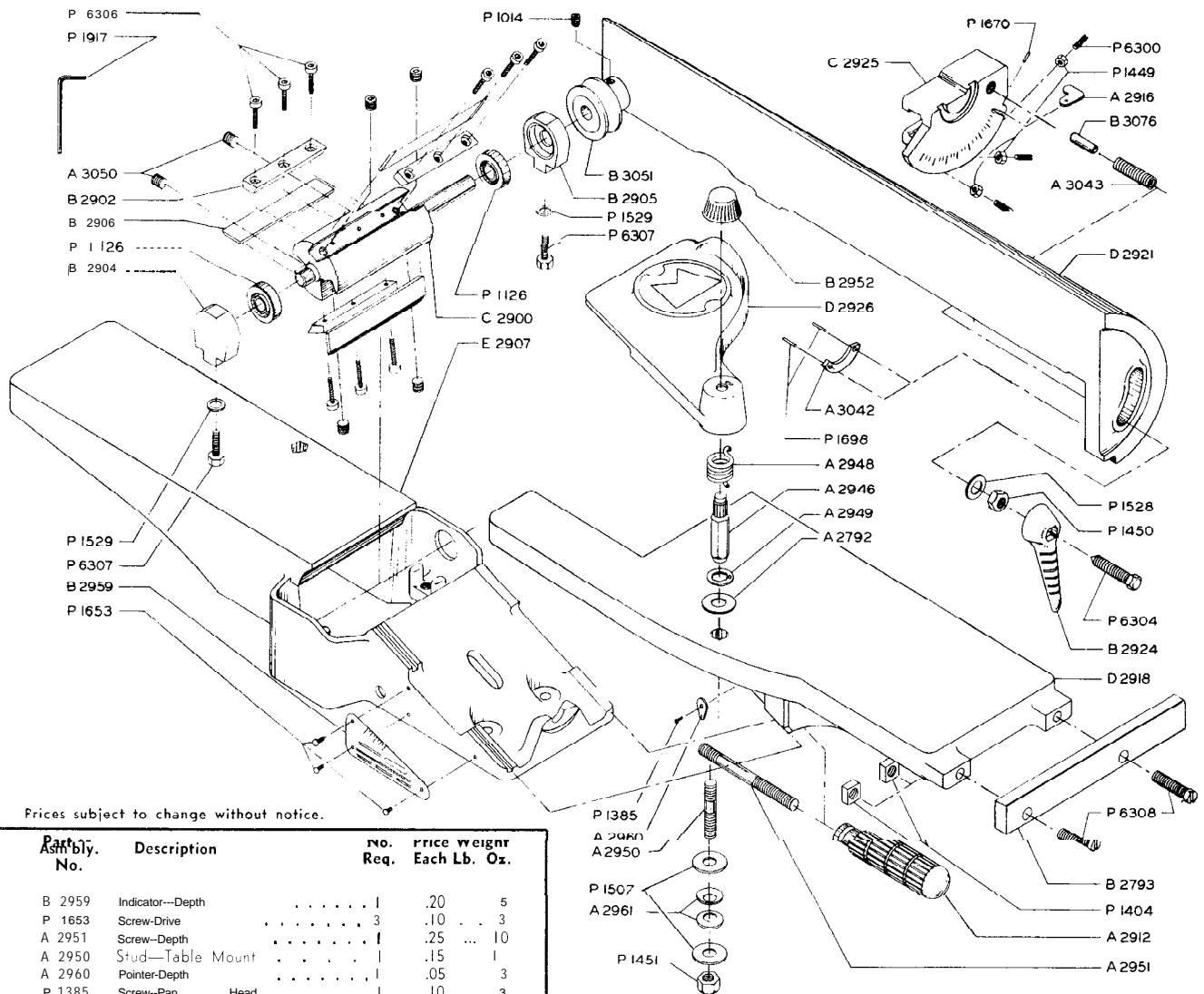
If the Jointer is idle for long periods of time the surfaces should be coated with SHOPSMITH RUST PREVENTIVE SPRAY.

Occasionally, place a few drops of light machine oil on the fence bar, in the semi-circular groove in the quadrant, and on the infeed table inclined ways.

The MAGNA JOINTER has exceptionally long tables for a 4" Jointer. For this and other reasons which mark it a superior machine, many people who still do not own a SHOPSMITH have requested information for mounting it as a single-purpose tool. This information is given in Fig. 27.



MAGNA 4" JOINTER PARTS LIST



Prices subject to change without notice.

Asbly. No.	Description	no. Req.	price Each	weight Lb.	oz.
B 2959	Indicator---Depth	1	.20	5	
P 1653	Screw-Drive	3	.10	3	
A 2951	Screw---Depth	1	.25	10	
A 2950	Stud---Table Mount	1	.15	1	
A 2960	Pointer-Depth	1	.05	3	
P 1385	Screw---Pan Head	1	.10	3	
B 2793	Bar-Fence	1	1.00	10	
P 6308	Screw---Machine	2	.10	3	
P 1404	Nut---Square	2	.05	3	
A 2912	Knob-Adjusting	1	1.00	1	
P 1507	Washer	2	.05	3	
P 1451	Nut-Hex.	1	.05	3	
A 2961	Washer-Spring	2	.05	3	
P 1917	Key-Allen	1	.15	3	
115140	CUTTER HEAD ASSEMBLY	1	15.95	7	
B 2906	Blade	3	1.50	10	
B 2902	Wedge	3	.25	5	
P 6306	Screw-Sot. Set	9	.10	3	
A 3050	Screw-Set	6	.10	3	
P 6307	Screw-Hex. Cap	2	.10	3	
P 1529	Washer-Lock	2	.05	3	
B 3051	Pulley	1	.60	6	
P 1014	Screw---Sot. Set	1	.10	3	
115130	FENCE ASSEMBLY	1	7.95	10	
D 2921	Fence	1	4.95	8	
P 6300	Screw---Set	3	.10	3	
P 1449	Nut-Jam	3	.05	3	
P 6304	Screw-Hex. Cap	1	.10	5	
B 2924	Wrench-Fence Lock	1	.50	5	
P 1450	Nut-Hex.	1	.05	3	
P 1528	Washer	1	.05	3	
B 3076	Pin-dowel	1	.10	6	
115131	Quadrant Assembly	1	1.95	2	
115150	GUARD ASSEMBLY	1	1.95	1	

NOTE:

When ordering parts from the above list be sure to supply part number and description for each item plus the model and serial number of your machine. This information should be provided to the dealer from whom you purchased the Joiner.

Because the infeed table and outfeed table must be perfectly aligned it is not advisable to supply them separately. Should it ever become necessary to replace either of the tables, ship the entire machine, less mounting kit, guard and fence to the factory nearest you.

MAGNA ENGINEERING CORP.	MAGNA CORPORATION
2550 Ninth Street	12819 Coit Road
Berkeley, California	Cleveland, Ohio

The cost will be the list price of the parts plus a standard fee for labor.

Replacement of ball bearings on the cutter head shaft is a factory job. If the bearings on the cutter head ever need replacing, order a new cutter head assembly (#115140), or return the old one to us for rebuilding.

When it is necessary to return parts directly to the factory be sure to package securely, insure sufficiently and ship prepaid.

Parts which are shown in the exploded views but which are not called out in the parts list are either permanently assembled or require factory trained help for replacement-therefore they cannot be supplied as replacement parts.

Should you desire further information on Jointer techniques and procedures as well as detailed instructions for all power tool applications, see the new book, **POWER TOOL WOODWORKING FOR EVERYONE** by R. J. DeCristoforo, which is available through your local **SHOPSMITH** dealer.

Magna Engineering Corporation

MENLO PARK - CALIFORNIA

PLANTS IN BERKELEY AND CLEVELAND