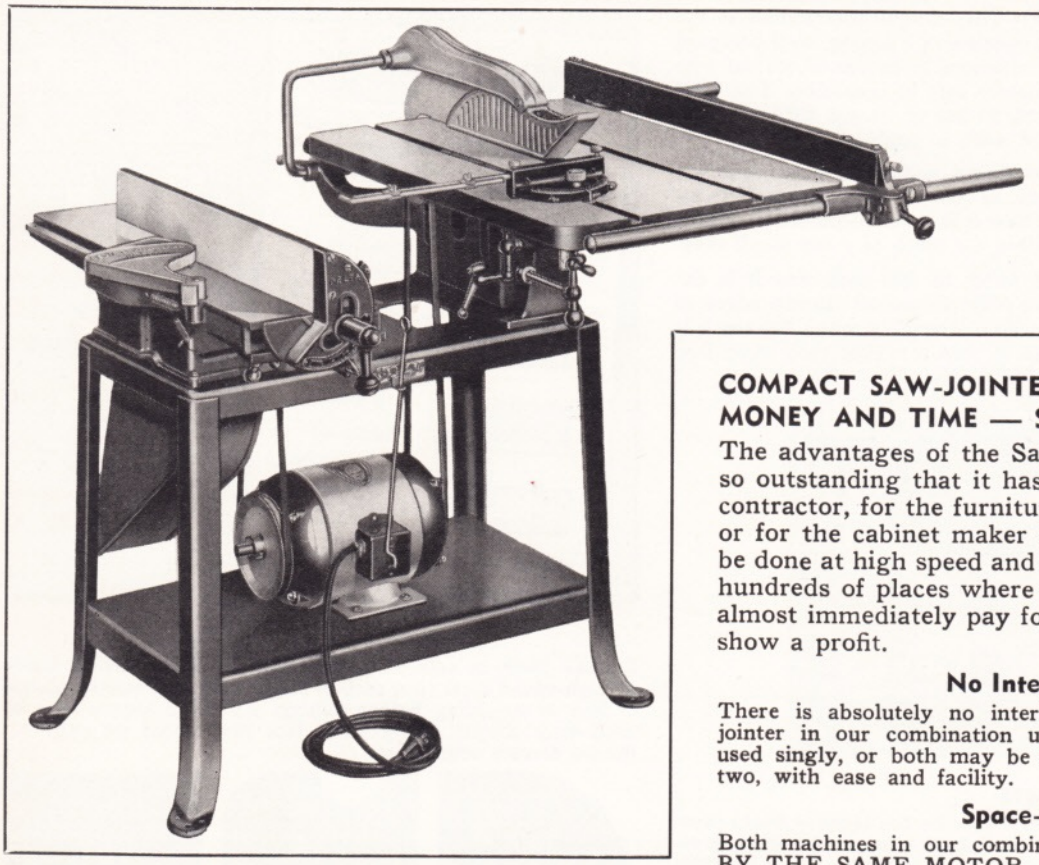
DELTA MILWAUKEE

Saw-Jointer Combination Unit Offers Many Advantages



No. 37-595—Saw-Jointer Combination consisting of 10" Circular Saw, 6" Jointer, Steel Stand, V-Belts for Saw and Jointer, Motor Pulleys for Saw and Jointer, Swing Guard and Splitter for Saw. Without Motor or Switch Rod. 364 lbs.....Code COMBC

Accessories

No. 1176—Belt Guard for Circular Saw. 12 lbs.....Code TENSV
No. 1177—Belt Guard for Jointer. 11 lbs.....Code TENSW
No. 662 —Rear Knife Guard for Jointer. 2 lbs.....Code SIXRE
No. 560 —Replacement V-Belt for Saw. 1 lb.....Code EICVB
No. 510 —Replacement V-Belt for Jointer. 1 lb.....Code JOIVB

Motors Recommended

LIGHT DUTY: No. 84-510—½ H.P. R.I. A.C. 110/220 V. 60 Cy.
No. 86-720—¾ H.P. 3 Ph. A.C. 220/440 V. 50/60 Cy.

MEDIUM DUTY: No. 84-710—¾ H.P. R.I. A.C. 110/220 V. 60 Cy.
No. 86-920—1 H.P. 3 Ph. A.C. 220/440 V. 50/60 Cy.

HEAVY DUTY: No. 84-910—1 H.P. R.I. A.C. 110/220 V. 60 Cy.
No. 86-920—1 H.P. 3 PH. A.C. 220/440 V. 50/60 Cy.

Use No. 1320 or No. 1329 3 Ph. Starters and 1322 Mounting Parts. Use No. 1334 Switch Rod for Single Phase Motors.
See Pages 18 and 19 for Motors and Switch Parts.

COMPACT SAW-JOINTER UNIT SAVES SPACE—MONEY AND TIME — SPEEDS UP PRODUCTION

The advantages of the Saw-Jointer Combination are so outstanding that it has become a favorite for the contractor, for the furniture or novelty manufacturer or for the cabinet maker where accurate work must be done at high speed and low cost. In fact, there are hundreds of places where this versatile machine will almost immediately pay for itself and will constantly show a profit.

No Interference

There is absolutely no interference between the saw and jointer in our combination units. Either machine may be used singly, or both may be used together, by one man or two, with ease and facility.

Space-Saving

Both machines in our combinations are driven from below BY THE SAME MOTOR.

Low Power Cost

Since both machines are driven from the same motor, not only is the cost of an additional motor saved, but the running cost is generally lower than with two separate motors.

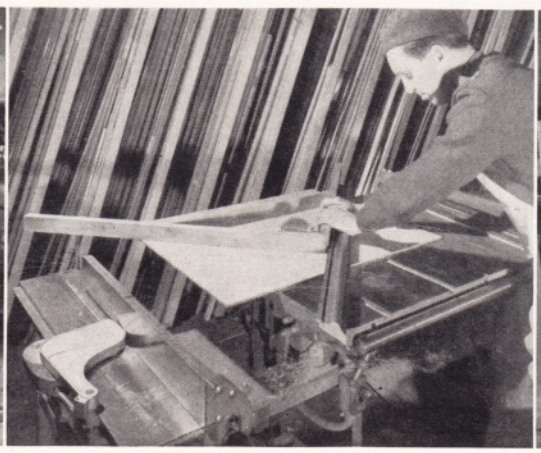
Portability

In spite of their large capacity, our combination units are so compact that they are used as portable power units for many outside jobs, as well as being used anywhere in the shop where they will best suit the job. Many contractors load them on a truck and take them right to the job.

The convenience of this Saw-Jointer Combination is immediately apparent. Hundreds of installations testify to its practicality and value.

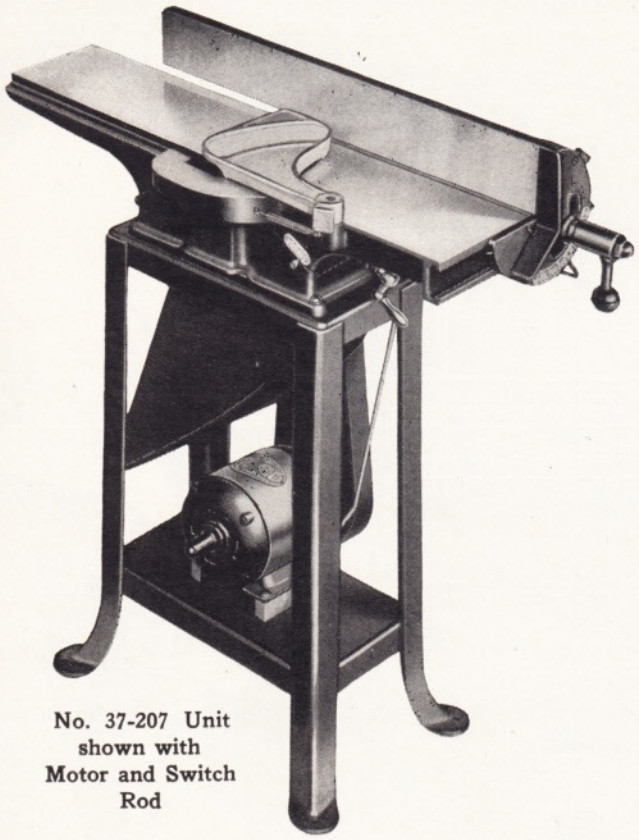
This Saw-Jointer Combination is made up of the 10" Saw described on page 34 and the 6" Jointer described on page 39.

(FOR PRICES SEE ATTACHED PRICE SHEET)

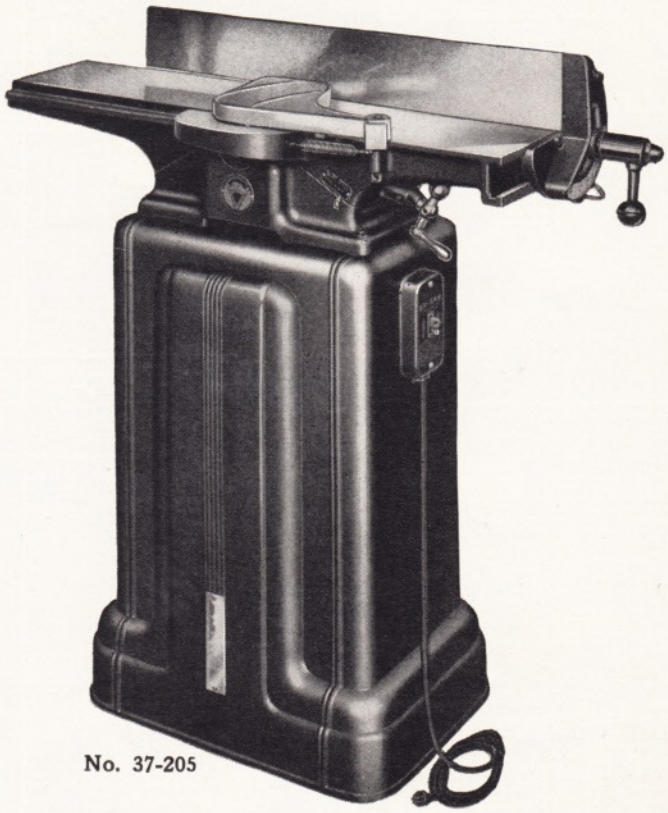


These 6-inch Jointers are Efficient and Low Cost Production Units

DELTA MILWAUKEE



No. 37-207 Unit shown with Motor and Switch Rod



No. 37-205

EVERY type of woodworking shop has use for a number of these efficient Jointers. Heavy, rugged and extremely accurate, they yet are light enough to be portable so that they can be moved to where needed at a moment's notice. Pattern shops especially have found that a Jointer for each or every two patternmakers saves waiting time and cuts costs.

The Jointer is an exceptionally heavy, rigid unit, cast of close grained iron and accurately machined to close tolerances. The tables are not only ground flat and true individually but also after being assembled on the base so that there is no chance of mis-alignment. Front and rear tables are individually controlled by readily accessible control handles and gibs are provided on the dovetailed ways to take up wear.

The fence, also ground, is rigid and its double tilting adjustable stops at 45, 90 and 135 degree angles insure the fence returned to its originally accurate setting. The dual control handle is an exceptionally convenient feature. Slid out, it engages the bracket lock nut which when loosened allows the fence to be moved across the table. Slid in, it engages the tilting lock nut allowing fence to be tilted to any angle. When not in use it swings free out of the way.

Convenient scales on the table and fence permit accurate settings. The front knife guard provides protection.

This fine Jointer is available on either a cast iron or steel stand as illustrated. Both stands have built-in chutes to carry off shavings.

Specifications

Capacity: Table width will surface boards 6" wide. Will cut rabbet ½" deep. Fence tilts 45 degrees toward knives and 45 degrees away from knives. Adjustable stops at 45, 90 and 135 degrees. Cutter head has three knives. Has sealed-for-life ball bearings which require no lubrication and assure maximum accuracy.

Dim.: On steel stand, height 39¼", width 14", length 37½". On cast iron stand, height 36½", width 15", length 37½".

No. 37-205—Complete 6" Jointer unit on Cast Iron Stand as illustrated consisting of 6" Jointer with 3 High-Speed Steel knives, 2-Way Fence and Dual Control, 2¾" Arbor Pulley, Front Safety Guard, V-Belt, 7" Motor Pulley and Cast Iron Stand. Without Motor or Switch. 238 lbs.....Code SIXJT

No. 37-207—Complete 6" Jointer Unit on Steel Stand as illustrated consisting of 6" Jointer with 3 High-Speed Steel knives, 2-Way Fence and Dual Control, 2¾" Arbor Pulley, Front Safety Guard, V-Belt, 7" Motor Pulley, Belt Guard and Steel Stand. Without Motor or Switch Rod. 190 lbs.....Code SIXJU

Accessories

No. 560—Replacement V-Belt. 1 lb.....Code EICVB

No. 659—Replacement Set of 3 High Speed Steel Knives. ½ lb.....Code SIXKI

No. 132—Switch Box, Power Cord and Plug and Motor Lead Wire for all Single Phase Motors. Used only on Cast Iron Stand. 1½ lbs.....Code SPESB

No. 1522—Double End 5/16" Open Wrench for knife screws. ⅛ lb.....Code WRENC

Motors Recommended

LIGHT DUTY: 62-110 ⅓ H.P. Cap. A.C. 110/220 V. 60 Cy.
66-110 ⅓ H.P. 3 Ph. A.C. 220 V. 50/60 Cy.

MEDIUM DUTY: 62-110 ⅓ H.P. Cap. A.C. 110/220 V. 60 Cy.
66-320 ½ H.P. 3 Ph. A.C. 220/440 V. 50/60 Cy.

HEAVY DUTY: 66-320 ½ H.P. 3 Ph. A.C. 220/440 V. 50/60 Cy.

For 3 Ph. Motors use No. 1320 or No. 1329 3 Ph. Manual Starters and 1322 Mounting Parts.

Use No. 1334 Switch Rod for Single Phase Motor and Steel Stand.

See Pages 18 and 19 for Motors and Switches.

(FOR PRICES SEE ATTACHED PRICE LIST)

P.M. No.: 1535
DATE: 9-15-43
REPLACES: NONE
INDEX: 120-9-A

DELTA MILWAUKEE

THE DELTA MFG. CO., MILWAUKEE, WIS.

SERIES 37 JOINTERS

OPERATING AND MAINTENANCE INSTRUCTIONS
For No. 37-205 and 37-207 Jointers

IMPORTANT

Our Jointers are carefully tested and inspected before shipment, and if properly used will give perfect results. However, certain adjustments are necessary in service, and if you are to receive the utmost from your machine, it is imperative that you read the following instructions carefully.

SETTING UP

If you have purchased the jointer complete with stand and motor, bolt the machine to the top of the stand, with the graduated end of the fence at the end of the stand opposite to the chute, so that the chute faces the rear. Screws are provided for bolting both machine and motor to the stand. The stand is designed so that either the No. 62 110 or No. 66 320 motors may be used. No. 62 110 and 66 320 motors come with two wooden blocks, which are used under the base of the motor to shim it up to the correct height for the belt.

Bolt the motor in place, then attach the clamp for the switch rod to the right-hand side of the stand, near the front, with the setscrew inside and the hole in alignment with the switch lever on the motor, if motor with built-in switch is used (No. 62 110). Slip the rod through the rubber bushing and attach lower end to switch lever with cotter pin.

If mounted on the bench, any ⅓ H.P. repulsion induction motor may be used to drive the machine, and it may be mounted either below or behind the jointer. The cutter head should run at 4200 r.p.m., and to attain this speed with a standard 1725 r.p.m. motor a 7 inch pulley should be used on the motor shaft. The cutter head should revolve toward the front of the machine; if the motor turns the wrong way it should either be turned around on the stand or bench, or reversed in accordance with the maker's instructions.

If the jointer is mounted on a bench with other machinery, care should be taken that there is nothing in line with the rear table that will interfere with the jointing of long pieces.

ADJUSTMENTS

Drawing shows a side and end view of the cutter head, NJ-253 being the high-speed steel knife, 254 the knife lock bar and J-23 the lock-bar screws. The knives are adjusted at the factory so that they all project equally from the head, and also so that they are parallel with the table, and they will need no further adjustments for a long period.

Crank handle BM-4 at the front of the machine, shown in the detail drawing, is used to regulate the thickness of the cut, and is the only table adjustment that is used when the machine is in operation. The rear crank handle is used to adjust the height of the rear table, and, once set, should not be touched again until further adjustment may be necessary after long wear. Tables are clamped after adjustment by means of clamp knobs NJ-220.

To adjust the fence across the table, the dual-control handle NJ-237 is slid out (toward the operator) until it engages with the acorn nut NJ-244. The nut is then loosened, and the fence may be moved across the table to any desired position. To loosen the fence for tilting, the control handle is slid in (toward the machine) to engage nut NJ-238, and when this is loosened the fence may be tilted in either direction. When the fence is to be tilted to the left, the stop link NJ-231 is flipped out of the way past the stop screw.

Although the fence is set square at the factory, it is advisable to check this setting before using the machine, in case it may have become out of adjustment during shipment. Run a piece of wood over the jointer and check with a try square. If the fence needs adjustment, loosen setscrew SP-253, screw the stop screw NJ-233 in or out against the stop link, test again, then, when the piece is square, lock the stop screw with the setscrew SP-253 to preserve the adjustment. See that the fence is always brought solidly against the stop link when setting. Set the stop screws for both 45 degree positions in the same way, and the jointer is then ready for service.

WHETTING KNIVES

After long use the knives will become dull. They may then be whetted with a fine Carborundum stone. Partly cover the stone with paper so it will not mark the table as shown in Fig. 6, and lay it on the front table as shown.

FIG. 6

Turn the cutter head and lower the table until stone lies flat on the bevel of the knife, then move it back and forth lengthwise of the knife. Do the same amount of whetting on each knife.

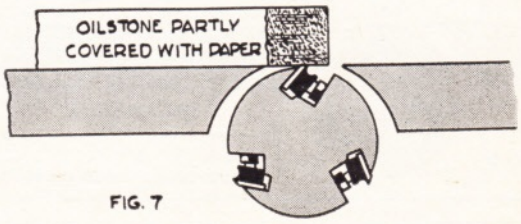


FIG. 7

Knives may also be sharpened and brought to a true cutting circle by "jointing" their edges while the head is revolving. To joint the knives, place the Carborundum stone on the rear table, and start the machine. Move the stone forward until it projects over the knives as shown, then move it sidewise so that the knives are jointed their entire length. See Fig. 7.

The stone must be held flat on the table.

If the stone does not touch the knives at all points lower the rear table a few thousandths of an inch and repeat. If this operation is carefully done the knives will cut very smoothly.

When knives require grinding, the whole head, with its bearings, should be removed and returned to the factory. The head is removed by removing bearing-housing screws SP-666.

SETTING KNIVES

If the knives are removed from the head for any reason care must be used in re-setting them. Place a knife in its groove so that the rear edge of the bevel is $\frac{1}{16}$" from the surface of the cutter head, slip the lock bar into place and tighten the lock screws lightly. Place a knife-setting bar, made of a piece of hardwood jointed perfectly straight on one edge, on the rear table as shown in Fig. 8. The knife is then set so that

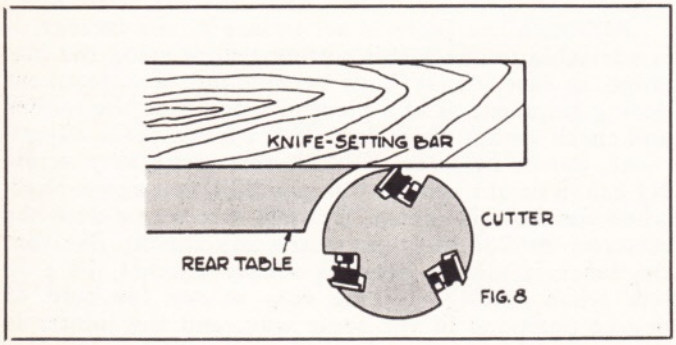


FIG. 8

when the head is revolved carefully backward, it will just touch the bar without moving it. This should be checked at each end of the knife. Tighten the screws, then set the other knives in turn. Go over the lock screws again to make sure they are tight, then joint the knives lightly as previously described. Do not hurry these operations, for upon their accuracy depends the quality of the work the machine will do.

SETTING REAR TABLE

For ordinary jointing the rear or out-feed table must be set level with the knives at their highest point of revolution. Once set, this position should not be changed, except for some special operations.

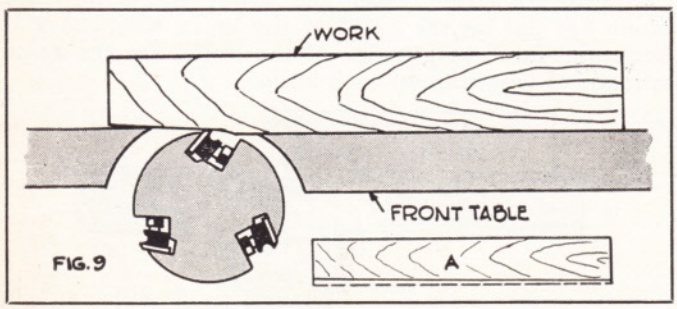


FIG. 9

To test the alignment of the rear table with the knives, run a piece of stock over the knives for a few inches, then check the position of the newly cut surface with respect to the rear table; there should be no space showing under the work.

If the rear table is too high the result will be as shown in Fig. 9.

If the rear table is too low the result will be as shown in Fig. 10. For good work the stock must rest equally on both tables. A hundredth of an inch out of adjustment will cause poor work.

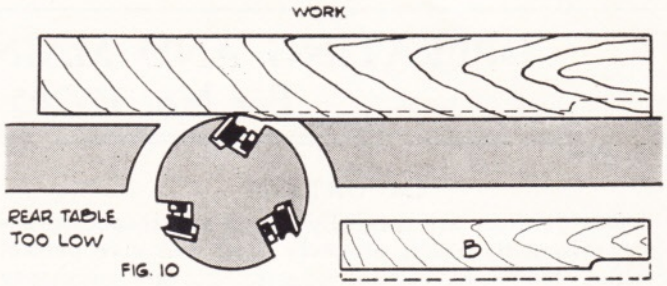


FIG. 10

OPERATION

As the work is passed over the knives, a new surface is formed, which rests on the rear table. As soon as part of the stock rests solidly on the rear table, the left hand of the operator should press down on this part, at the same time pushing the work forward with both hands. The right hand should push only at this stage of the operation, while the left hand supplies the downward pressure. As the longer portion of the work passes over to the rear table, the right hand should be transferred to this part of the stock also. Remember, keep the pressure on the part of the stock over the rear table, and do not allow the hands to pass directly over the revolving knives.

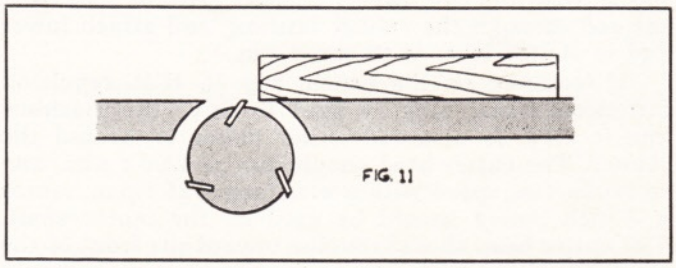


FIG. 11

Work should always be fed to the jointer with the grain, as shown in Fig. 11, and not against the grain as in Fig. 12. Failure to observe this will often result in chipped or splintered edges of the work.

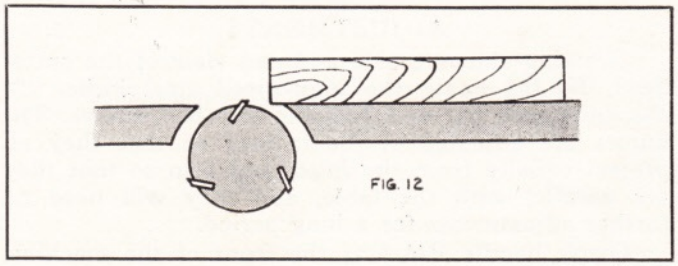


FIG. 12

If work is twisted or dished, do not force it down on the table so tightly as to force out any spring it may have. If this is done the wood will spring back after the cut and the work will not be straight. Take light cuts, without undue pressure, until the stock is jointed straight.

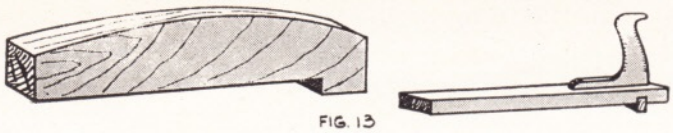


FIG. 13

When jointing short pieces, always use a push block, made as shown in Fig. 13, which shows two forms, a simple and a more elaborate one. Never joint short pieces with the fingers alone; it is dangerous.

RABBETING

The jointer is provided with a rabbeting arm and ledge by means of which rabbets can be cut up to ½" deep and 6" wide. Slide the fence across the table to the width of rabbet desired, and drop the front table to the proper depth. When taking deep cuts like this, feed the work slowly to avoid tearing and splitting of the wood. When making rabbets of a size near the maximum capacity of the machine it is well to take two cuts, although they may be cut in one pass when necessary.

BEVELING

When the edges of work are to be beveled, tilt the fence to the angle desired and lock it at that angle, then run the stock across the knives, taking care to keep it pressed firmly against the fence and table so that it does not slip.

For most slight angles cut on the edges of the stock, it makes little difference which way the fence is tilted. As the bevels become greater, however, and approach 45 degrees, it will be found increasingly difficult to hold the work firmly to the fence and the table at the same time. This is where the advantage of the double-tilting fence is appreciated.

With the fence tilted in, the fence and the tables form a sort of V-shape, into which it is only necessary for the operator to press the work in one direction. The fence, being inclined inward, holds the work down onto the knives, and all that is left for the operator to do is to guide the work.

Sometimes circumstances require that a bevel be laid out on the edge of the stock so that it would be impossible, with the fence tilted outward, to run the work with the grain. With the double-tilting fence, all that is necessary when a piece of work like this is encountered is to tilt the fence either in or out, depending upon which way the grain of the piece runs, and the work can then be done with perfect ease.

TAPER CUTS

One of the special operations that can be done on the jointer is tapering. One method of cutting a long taper on a piece of stock — a table leg, for example — is as follows:

The front table is lowered with the adjusting screw to the proper point for the taper to be cut (it is advisable for the amateur to experiment with some scrap pieces of wood before undertaking to taper a good piece, so he will learn the proper methods).

Now the front end of the work, instead of being laid on the front table and pushed into the knives, is laid on the rear table. It must be lowered carefully onto the rear table, as the revolving knives will take a slight "bite" from it just before it touches the table, and this will cause the stock to be kicked back unless the operation is carefully done.

With the extreme front end of the stock resting on the rear table the work is now pushed forward just as in ordinary jointing. The effect of this is to plane off all that part of the stock lying in front of the plane of the knives, leaving a tapered surface. The other three sides are similarly treated.

As mentioned above, the knives dig in slightly at the point where the stock first meets them, leaving a slight depression in the wood at this point. To remove this, raise the front table after all the tapering has been done and set the jointer for a light cut. Now joint all four sides of the legs in the ordinary manner, and this will remove the depressions in the surfaces.

Sometimes it is necessary to taper a piece for only part of its length, as, for example, a leg on a footstool or piano bench, which is often straight for a portion of its length, and tapered for the remainder. To do this work it is necessary to clamp a stop block to the fence of the jointer. The stop block is clamped to the fence in such a position that, when the end of the stock is butted against the block, and the front end let slowly down against the knives, the cut will start right at the point where the taper is to begin. The stop block clamped to the fence prevents all danger of a kick-back from the stock but the work should be let down slowly and carefully onto the knives, and pushed carefully forward to complete the cut.

It is quite evident that there will be a depression cut in the stock by the knives when using this method, but this can be removed by re-running the work with a light jointing cut as described previously.

CHAMFERING

Chamfering is nothing more than the beveling of the edges or corners of parts. Chamfers are usually cut at an angle of 45 degrees, although this is not essential. Set the fence at the angle required, then move the stock steadily over the cutter head, keeping it firmly pressed against the fence. Repeat the cuts until the chamfer is of the required width. Count the number of cuts taken on the first edge of a piece so as to get all of the remaining edges the same as the first edge.

REPLACEMENT PARTS

IMPORTANT: To avoid possible errors, be sure to include the serial number of the machine when ordering parts for repair or replacement.

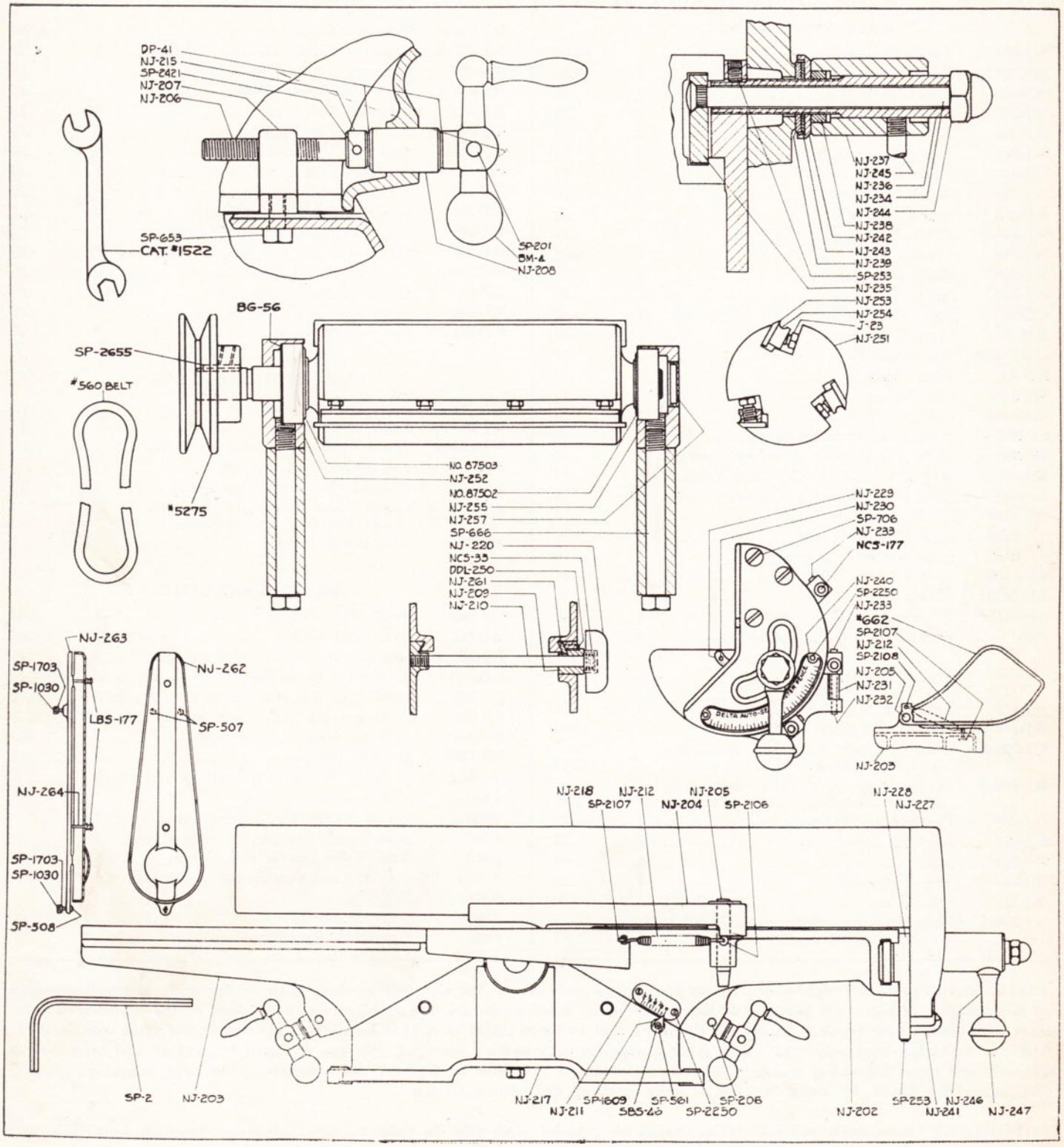
Part No.	Description	No. Req.	Price Each
	MAIN BODY PARTS		
NJ-202	Front Table, only	1	$8.00
NJ-203	Rear Table, only	1	6.80
NJ-205	Guard Pivot Pin	1	.15
NJ-207	Adjustment Screw Nut	2	.30
NJ-208	Adjustment Screw Sleeve	2	.35
NJ-209	Table Clamp Collar	2	.15
NJ-210	Table Clamp Stud	2	.20
NJ-211	Depth of Cut Scale	1	.10
NJ-212	Guard Spring	1	.20
NJ-215-S	Table Adjustment Screw with Collar	2	.25
NJ-217	Jointer Base	1	5.05
NJ-220	Hand Knob	2	.20
NJ-261	Gib	2	.20
BG-56	Shim Washer	1	.10
BM-4	Crank Handle	2	.55
DDL-250	Gib Adjustment Screw	8	.10
DP-41	Fiber Washer	4	.10
NCS-33	Coil Spring	2	.10
SBS-46	Indicator Pointer	1	.10
SP-201	5/16-18 x 5/16 Allen Setscrew	2	.10
SP-206	5/16-18 x 5/16 Cup Pt. Allen Setscrew	2	.10
SP-561	#10-32 x 3/8 R. H. Machine Screw	1	.10
SP-653	3/8-24 x 5/8 Hex. Hd. Capscrew	4	.10
SP-1609	13/64 Washer	1	.10
SP-2106	1/8 x 1 1/4 Cotter Pin	1	.10
SP-2107	1/8 x 3/4 Cotter Pin	1	.10
SP-2108	1/8 x 1 Cotter Pin	1	.10
SP-2250	Parker Rivet (No. 4 x 5/16)	2	.10
SP-2655	5/16" Sq. x 5/16" Long Key	1	.10
#657	Front Safety Guard, complete	1	
	FENCE PARTS		
NJ-218	Fence for 6" Jointer	1	4.30
NJ-218-S	Fence and Clamp Assembly	1	14.45
NJ-227-S	Fence Segment Assembly, with Scale and Stop Screws	1	3.45
NJ-228-S	Fence Socket Assembly, with Guide, Pointer and Stop Link	1	2.60
NJ-229	Fence Segment Guide	1	.20
NJ-230	Segment-Guide Dowel	2	.10
NJ-231	Stop Link	1	.40
NJ-232	Stop-Link Pin	1	.10
NJ-233	Stop Screw	3	.10
NJ-234-S	Segment Clamp Bolt with NJ-235 Plate	1	.45
NJ-236	Segment Clamp Sleeve	1	$ .60
NJ-237-S	Segment Clamp Handle, complete	1	1.50
NJ-238	Segment Clamp Nut	1	.15
NJ-239	Segment Clamp Washer	1	.10
NJ-240	Segment Tilt Scale	1	.15
NJ-241	Segment Tilt Pointer	1	.10
NJ-242	Segment Clamp Collar	1	.20
NJ-243	Segment Clamp Spring Washer	1	.10
NJ-244	Socket Clamp Nut	1	.20
NJ-245	Fence Segment Handle Stud	1	.10
NJ-246	Fence Segment Handle Spacer	1	.25
NJ-247	Clamp Handle Ball Knob	1	.20
NCS-177	1/4-28 x 1/4 Headless Setscrew	3	.10
SP-253	1/4-28 x 1/4 Allen Setscrew	3	.10
SP-706	3/8-16 x 1 1/4 Fill. Hd. Screw	3	.10
SP-2250	No. 4 x 3/16 Rivet	3	.10
	CUTTER-HEAD PARTS		
NJ-252	Rear Bearing Housing	1	.70
NJ-254	Knife Lock Bar	3	.45
NJ-255-S	Front Bearing Housing Assembly	1	.90
J-23	Knife-Bar Lock Screws	12	.10
SP-666	Bearing Housing Clamp Screw	2	.10
#663	Cutter Head Assembly, complete with Bearings and Housings	1	
#5275	V-Pulley (5/8 bore)	1	
	MISCELLANEOUS		
NJ-262	Front Belt Guard	1	4.45
NJ-263	Rear Belt Guard	1	3.55
NJ-264	Stud	2	.25
LBS-177	Knurled Thumb Nut	2	.15
SP-507	5/16-18 x 3/4 Rd. Hd. Mach. Screw	3	.10
SP-508	5/16-18 x 1 Rd. Hd. Mach. Screw	1	.10
SP-1030	5/16 Hex. Nut	3	.10
SP-1703	5/16 Std. Washer	2	.10
#194	5/16 Allen Wrench (old SP-2)	1	
#560	V-Belt	1	
#659	Set of Three High-Speed Knives	1	
#661	Belt Guard Complete	1	
#662	Rear Knife Guard, with Spring	1	
#1522	Special Lock Box Screw Wrench	1	
#5700	Pulley	1	
#656	Steel Stand	1	
#667	Cast Iron Stand	1	

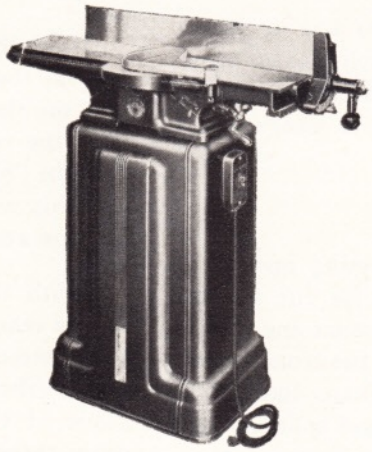
NOTE: Special tools are required to remove and replace each one of the two ball bearings used on the shaft of the cutter-head of this machine. If either the bearings or the shaft of your machine should ever need replacement, send us the cutter-head complete with bearings for repair. Charges for this work will be based on prices of $1.50 for the rear bearing, $1.90 for the front bearing, $4.85 for the cutter-head only, and a $.50 labor charge for each bearing changed. We are equipped to regrind and reset knives properly and make a nominal charge of $2.00 for this service. Be sure to send us the complete cutter-head assembly, prepaid, and insured for $14.00, for either bearing or knife grinding and setting service.

IMPORTANT: Base, front and rear tables cannot be supplied separately. In order to insure accurate alignment, both tables are finish ground while in place on the base, and a new table, or new base supplied separately, could not be guaranteed to be accurate. If a new table or base is ever required, ship the machine to us and we will fit it, charging the list price, plus $3.00 for re-grinding and assembling.

Prices in this list apply only to parts ordered for repair and replacement. They cannot be used for computing allowance values if a machine is ordered "less" certain parts. Quotations on such machines will be furnished upon request.

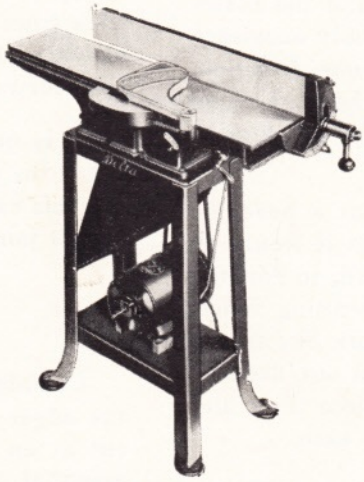
PRICES SUBJECT TO CHANGE WITHOUT NOTICE


DP-41
NJ-215
SP-2421
NJ-207
NJ-206
SP-653
CAT. #1522
SP-201
BM-4
NJ-208
NJ-237
NJ-245
NJ-236
NJ-234
NJ-244
NJ-238
NJ-242
NJ-243
NJ-239
SP-253
NJ-235
NJ-253
NJ-254
J-23
NJ-251
BG-56
SP-2655
#560 BELT
#5275
NO. 87503
NJ-252
NO. 87502
NJ-255
NJ-257
SP-666
NJ-220
NCS-33
DDL-250
NJ-261
NJ-209
NJ-210
NJ-229
NJ-230
SP-706
NJ-233
NCS-177
NJ-240
SP-2250
NJ-233
#662
SP-2107
NJ-212
SP-2108
NJ-205
NJ-231
NJ-232
NJ-203
NJ-263
SP-1703
SP-1030
LBS-177
NJ-262
SP-507
NJ-264
SP-1703
SP-1030
SP-508
NJ-218
NJ-212
NJ-205
SP-2107
NJ-204
SP-2106
NJ-228
NJ-227
SP-2
NJ-203
NJ-217
NJ-211
SP-1609
SBS-46
SP-561
SP-2250
SP-206
NJ-202
SP-253
NJ-241
NJ-246
NJ-247



No. 34-305 Jointer
With Cast Iron Stand

DELTA
MILWAUKEE



No. 34-307 Jointer
With Steel Stand

P.M. No. 1536
DATE: 12-1-43
REPLACES: NONE
INDEX: 120-9-B

THE DELTA MFG. CO., MILWAUKEE 1, WIS.

Installing No. 667 Jointer Stand

CONSTRUCTION

The No. 667 Jointer Base comes to you completely assembled and ready for mounting motor and jointer. The base is made up of four panels, the front and rear, upon which the jointer rests, and the left and right hand sides, which are fastened to the front and rear panels with heavy stamped angle brackets. The left hand side panel is fastened permanently in place; however, the right hand panel is removable for accessability to motor, belt, etc. This panel is held in place with four thumb nuts which are screwed to studs fastened to the angle brackets, thus by removing the four thumb nuts, the entire right hand panel can be removed exposing the motor, pulley, belt, etc., for inspection or adjustment.

MOTOR PLATE

The motor plate is supported on studs which are fastened to the lower angle brackets. Adjusting nuts on the studs hold the motor plate in any desired position. By raising and lowering the plate on the studs any belt tension desired can be obtained. While the adjustable motor plate is a desirable feature to have on a machine, be careful to adjust the belt properly.

BELT TENSION

A V belt does not need much tension to deliver full power. Due to the fact that the belt contact is on the side of the groove instead of the bottom, a wedging action takes place, therefore, only a slight belt tension produces sufficient belt pressure to accomplish the drive without slipping. Any additional tension merely shortens the life of both belt and pulleys.

MOTOR

The motor plate is made with holes to fit our standard line of 8½" frame motors. These motors are available in single phase, three phase and direct current.

While our standard motors are sold with built-in switches, which were operated with switch rods the new No. 667 jointer base is provided for mounting a remote control switch on the outside. This makes it necessary to change the connection of the power cord. A new switch and switch box, together with the proper cord for connecting the switch to the motor, Cat. No. 132 is required. The power cord which comes supplied with the motor is disconnected from the motor and connected to the new remote control switch.

MOTOR SWITCH

The switch which comes with the motor cannot be used due to the fact that the new remote control switch is mounted differently, being riveted to a steel bar which is mounted into the switch box. This same bar also has on it ears with a hole which permits locking the switch in the off position with a padlock.

In making the connections to the motor, if soldering is not convenient, the loops on the end of the motor wires, and those on the motor cord, can be fastened with No. 6-32 brass round head machine screws and nuts. Fasten the loops securely together with the screw and wrap securely with rubber tape and then friction tape.

SINGLE PHASE SWITCH

The new remote control switch is mounted over a rectangular hole in the front of the jointer stand, and fastened with the tapped holes provided. The holes for fastening are on the inside of the switch box, and are accessible by removing cover plate. Connect power cord leads to two bottom terminals of toggle switch, and the two motor cord leads to the two top terminals.

THREE PHASE SWITCH

When a three phase motor is used, a three pole switch is required. We recommend our No. 1320 Allen Bradley overload protected manual starter; however, other makes of switches can be used and mounted in the same way. Mount the switch box, as shown in Figure 1 in the center of the front panel with the top of the box (2¼") from the top of the jointer cabinet.

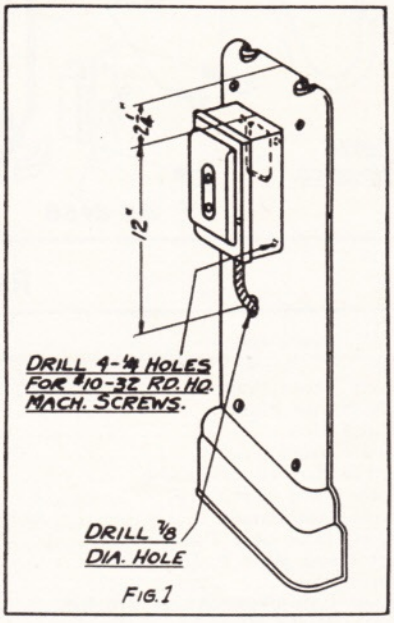
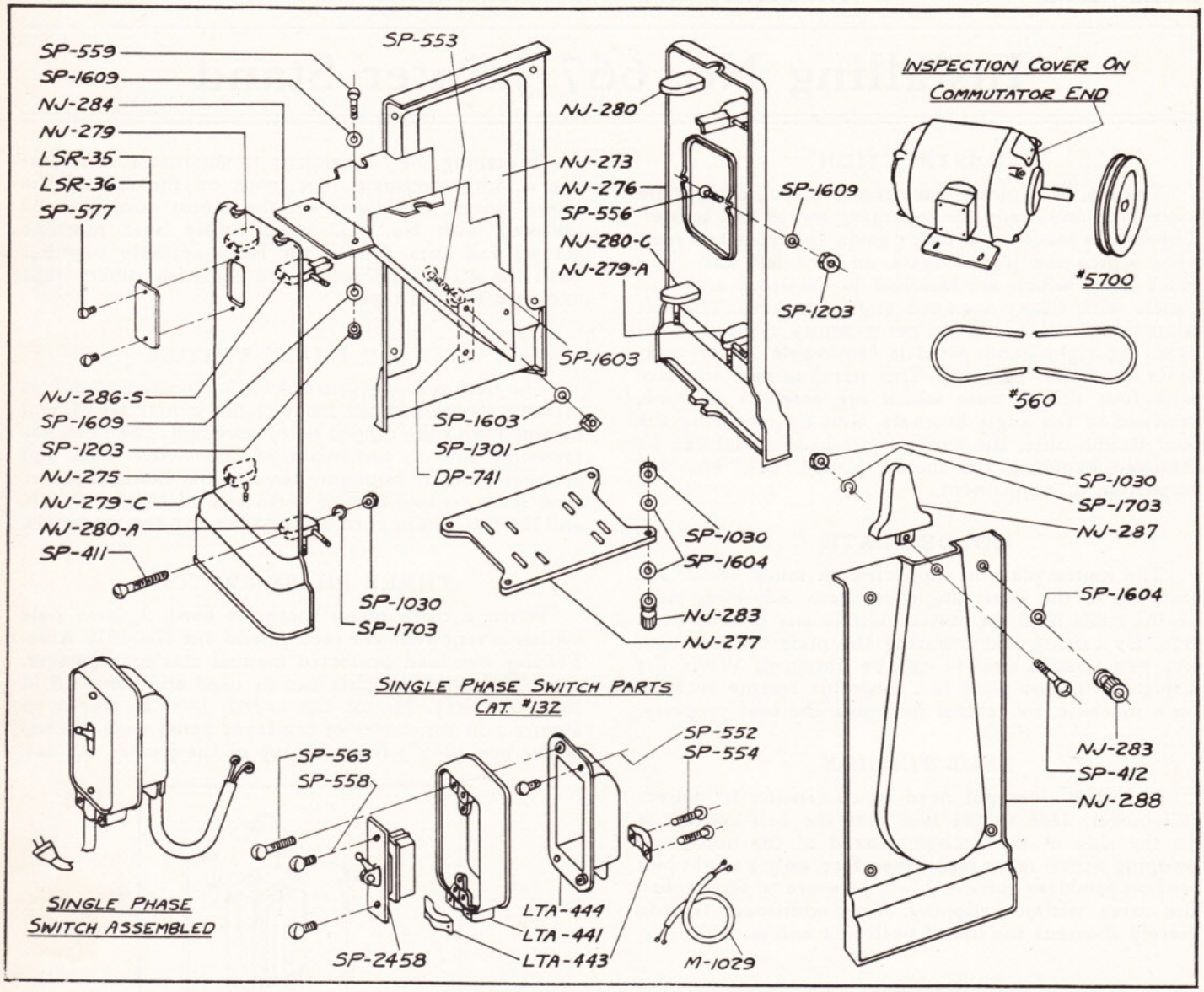


FIG. 1

This allows ample clearance for the front table adjusting ball crank handle and still covers the opening in the stand used for the single phase switch. Drill four ¼" holes as shown for fastening switch box with No. 10-32 round head machine screws, and drill 1—⅞" diameter hole in casting below the switch box to allow the flexible conduit to be run through from the switch box to the motor conduit box.

ROTATION

The rotation of the cutter should be so the top side of the cutter travels toward the front of the jointer. If the motor runs in the wrong direction reverse the rotation according to instructions in the motor instruction sheet.



REPLACEMENT PARTS

Part No.	Description	No. Req.	Price Each
DP-741	Front Name Plate	1	$ .15
LSR-35	Side Name Plate	1	.15
LTA-441	Switch Box	1	.50
LTA-443	Cord Clamp	1	.10
LTA-444	Switch Box Inner Casing	1	.35
M-1029	Motor Cord (3 ft.)	1	.60
NJ-273	Front Base Panel	1	4.50
NJ-275	Right Hand Base Panel	1	4.25
NJ-276	Left Hand Base Panel	1	4.25
NJ-277	Motor Plate	1	1.60
NJ-279	Upper Left Front Angle Bracket	1	.15
NJ-279-A	Lower Right Rear Angle Bracket	1	.30
NJ-279-C	Lower Left Front Angle Bracket	1	.25
NJ-280	Upper Left Rear Angle Bracket	1	.15
NJ-280-A	Lower Right Front Angle Bracket	1	.30
NJ-280-C	Lower Left Rear Angle Bracket	1	.25
NJ-283	5/16-18 Knurled Nut	8	.10
NJ-284	Shaving Chute	1	1.25
NJ-286-S	Upper Right Angle Bracket Assem.	1	.50
NJ-287	Pulley Guard	1	1.00
NJ-288	Rear Base Panel	1	5.25

Part No.	Description	No. Req.	Price Each
SP-411	5/16-18x7/8" French Head Mach. Sc.	12	$ .10
SP-412	5/16-18x1 1/8" French Head Mach. Sc.	1	.10
SP-552	No. 10-32x5/16" Rd. Hd. Mach. Screw	2	.10
SP-553	No. 6-32x1/2" Rd. Head Mach. Screw	2	.10
SP-554	No. 8-32x1/2" Rd. Head Mach. Screw	4	.10
SP-556	No. 10-32x3/4" Rd. Hd. Mach. Screw	2	.10
SP-558	No. 8-32x1/4" Rd. Hd. Mach. Screw	2	.10
SP-559	No. 10-32x1/2" Rd. Hd. Mach. Screw	2	.10
SP-563	No. 8-32x3/4" Rd. Hd. Mach. Screw	2	.10
SP-577	No. 10-32x5/8" Rd. Hd. Mach. Screw	2	.10
SP-1030	5/16x18 Hexagon Nut	16	.10
SP-1203	No. 10-32 Hexagon Nut	4	.10
SP-1301	No. 6-32 Square Nut	2	.10
SP-1603	1/4" Steel Washer	4	.10
SP-1604	5/8" Steel Washer	8	.10
SP-1609	7/16" Steel Washer	6	.10
SP-1703	5/16" Lock Washer	12	.10
SP-2458	Two Pole Toggle Switch	1	1.00
#560	V-Belt	1	
#5700	7" Diameter Pulley	1	

Prices in this list apply only to parts ordered for repair and replacement. They cannot be used for computing allowance values if a machine is ordered "less" certain parts.

P.M. No. 1538
DATE 6-1-43
REPLACES NONE
INDEX:

DELTA MILWAUKEE

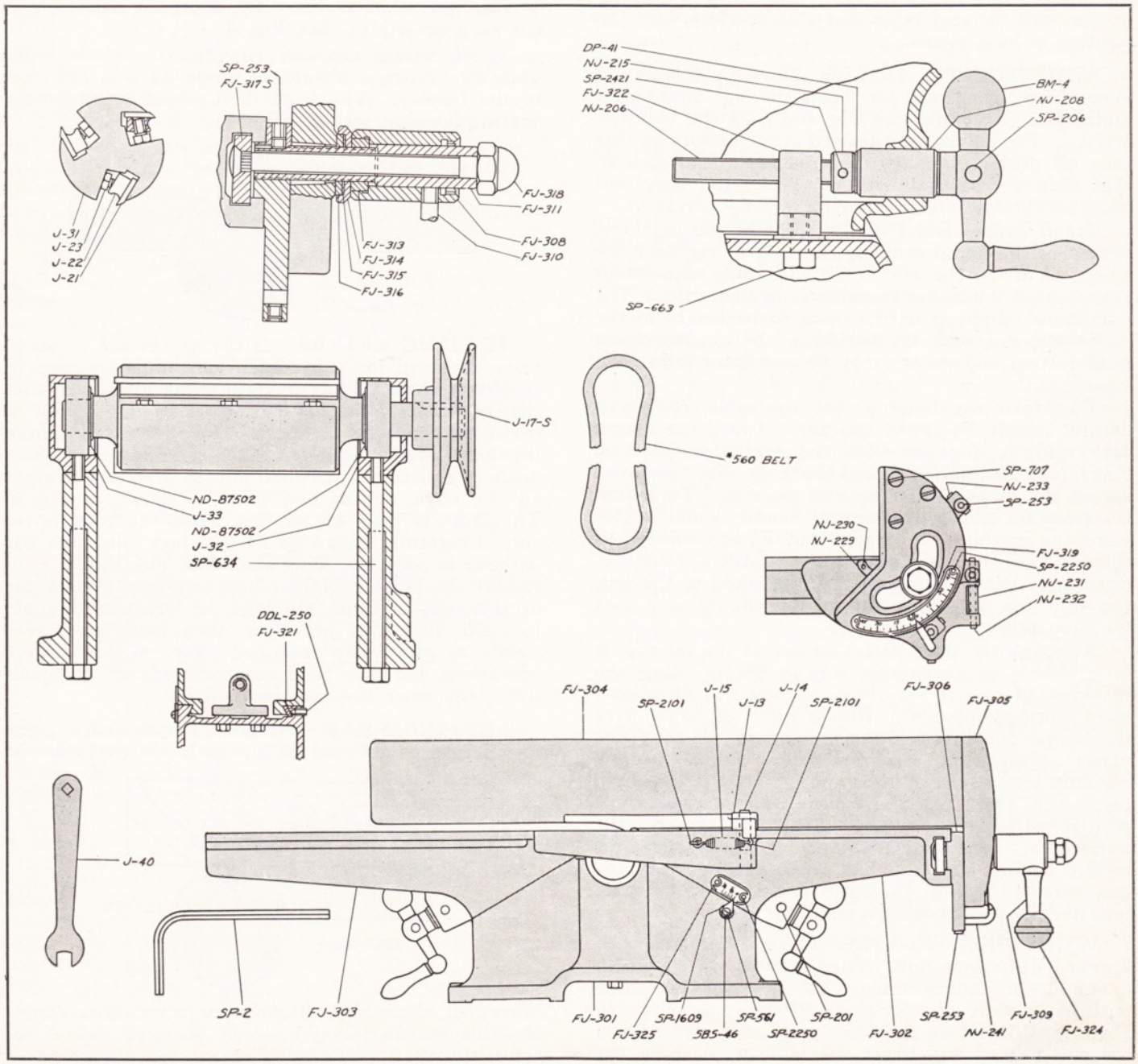
THE DELTA MFG. CO., MILWAUKEE, WIS.

SERIES 37 JOINTERS

OPERATING AND MAINTENANCE INSTRUCTIONS
For Part No. 290 4" Jointer

IMPORTANT. Our jointers are carefully tested and inspected before shipment and if properly used will give perfect results. However, certain adjustments are necessary in service, and if you are to receive the utmost from your machine, it is imperative that you read the following instructions carefully.

SETTING UP. If you have purchased the jointer complete with No. 304 stand and motor, bolt the machine to the top of the stand with the graduated end of the fence at the end of the stand opposite to the chute, so that the chute faces the rear. Screws are provided for bolting both machine and motor to the stand. The stand is designed so that either the 6" frame or 8½" frame motors can be used. *6" frame motors come with two wooden blocks, which are used under the base of the motor to shim it up to the cor-



rect height for the belt. These blocks are unnecessary when the 8½" frame motors are used.

Bolt the motor in place, then attach the clamp for the switch rod to the right-hand side of the stand, near the front, with the setscrew inside and the hole in alignment with the switch lever on the motor, if motor with built-in switch is used. Slip the rod through the rubber bushing and attach lower end to switch lever with cotter pin.

If mounted on the bench, any ⅓ H.P. repulsion-induction motor may be used to drive the machine, and it may be mounted either below or behind the jointer. The cutter head should run at 3600 r.p.m., and to attain this speed with a standard 1750 r.p.m. motor a 6-inch pulley should be used on the motor shaft. The cutter head should revolve toward the front of the machine; if the motor turns the wrong way it should either be turned around on the stand or bench, or reversed in accordance with the maker's instructions.

If the jointer is mounted on a bench with other machinery, care should be taken that there is nothing in line with the rear table that will interfere with the jointing of long pieces.

ADUSTMENTS. Drawing shows a side and end view of the cutter head J-21 being the high-speed steel knife, J-22 the knife lock bar and J-23 the lock-bar screws. The knives are adjusted at the factory so that they all project equally from the head, and also so that they are parallel with the table, and they will need no further adjustments for a long period.

Crank handle BM-4 at the front of the machine, shown in the detail drawing, is used to regulate the thickness of the cut, and is the only table adjustment that is used when the machine is in operation. The rear crank handle is used to adjust the height of the rear table, and, once set, should not be touched again until further adjustment may be necessary after long wear.

To adjust the fence across the table, the dual-control handle FJ-324 is slid ***out*** (toward the operator) until it engages with the acorn nut FJ-318. The nut is then loosened, and the fence may be moved across the table to any desired position. To loosen the fence for tilting, the control handle is slid ***in*** (toward the machine) to engage nut FJ-313, and when this is loosened the fence may be tilted in either direction. When the fence is to be tilted to the left, the stop link NJ-231 is flipped out of the way past the stop screw.

Although the fence is set square at the factory, it is advisable to check this setting before using the machine, in case it may have become out of adjustment during shipment. Run a piece of wood over the jointer and check with a try square. If the fence needs adjustments, loosen setscrew SP-253, screw the stop screw NJ-233 in or out against the stop link, test again, then, when the piece is square, lock the stop screw with the setscrew SP-253 to preserve the adjustment. See that the fence is always brought solidly against the stop link when setting. Set the stop screws for both 45 degree positions in the same way and the jointer is then ready for service.

WHETTING KNIVES. After long use the knives will become dull. They may be whetted with a fine Carborundum stone. Partly cover the stone with paper so it will not mark the table as shown in Fig. 6, and lay it on the front table as shown. Turn the cutter head and lower the table until stone lies

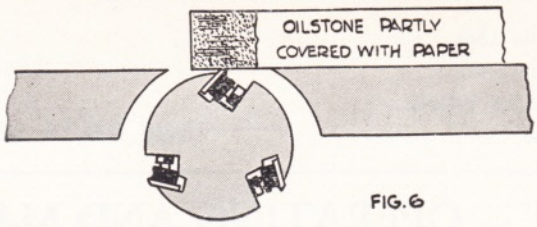


FIG. 6

flat on the bevel of the knife, then move it back and forth lengthwise of the knife. Do the same amount of whetting on each knife.

Knives may also be sharpened and brought to a true cutting circle by "jointing" their edges while the head is revolving. To joint the knives, place the Carborundum stone on the rear table and start the machine. Move the stone forward until it projects over the knives as shown, then move it sidewise so that the knives are jointed their entire length. The stone must be held flat on the table. If the stone does not touch the knives at all points lower the rear table a few thousandths of an inch and repeat. If this operation is carefully done the knives will cut very smoothly. See Fig. 7.

When knives require grinding, the whole head, with its bearings, should be removed and returned to the factory. The head is removed by removing bearing-housing screws SP-634.

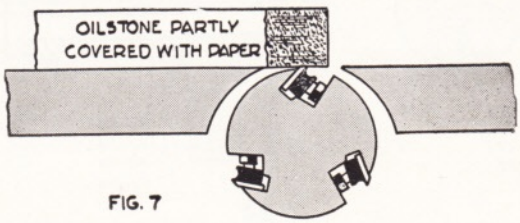


FIG. 7

SETTING KNIVES. If the knives are removed from the head for any reason care must be used in re-setting them. Place a knife in its groove so that the rear edge of the bevel is $\frac{1}{16}$" from the surface of the cutter head, slip the lock bar into place and tighten the lock screws lightly. Place a knife-setting bar, made of a piece of hardwood jointed perfectly straight on one edge, on the rear table as shown in Fig. 8. The knife is then set so that when the head is revolved carefully backward, it will just touch the bar without moving it. This should be checked at each end of the knife. Tighten the screws, then set the other knives in turn. Go over the lock screws again to make sure they are tight, then joint the knives lightly as previously described. Do not hurry these operations, for upon their accuracy depends the quality of the work the machine will do.

SETTING REAR TABLE. For ordinary jointing the rear or out-feed table must be set level with the

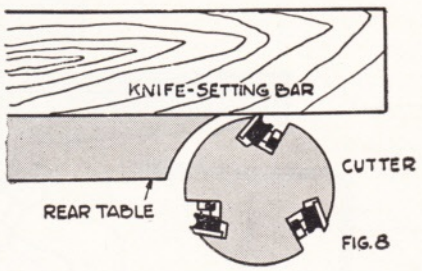


FIG. 8

knives at their highest point of revolution. Once set, this position should not be changed, except for some special operations. To test the alignment of

the rear table with the knives, run a piece of stock over the knives for a few inches, then check the position of the newly cut surface with respect to the rear table; there should be no space showing under the work. If the rear table is too high the result will be as shown in Fig. 9, and if it is too low the result will be shown in Fig. 10. For good work the stock must rest equally on both tables. A hundreth of an inch out of adjustment will cause poor work.

OPERATION. As the work is passed over the knives, a new surface is formed, which rests on the rear table. As soon as part of the stock rests solidly on the rear table, the left hand of the operator should press down on this part, at the same time pushing the work forward with both hands. The right hand should push only at this stage of the operation, while the left hand supplies the downward pressure. As the longer portion of the work passes over to the rear table, the right hand should be transferred to this part of the stock also. Remember, keep the pressure on the part of the stock over the rear table, and do not allow the hands to pass directly over the revolving knives.

Work should always be fed to the jointer with the grain, as shown in Fig. 11, and not against the grain as in Fig. 12. Failure to observe this will often result in chipped and spiintered edges on the work.

If work is twisted or dished, do not force it down on the table so tightly as to force out any spring it may have. If this is done the wood will spring back after the cut and the work will not be straight. Take light cuts, without undue pressure, until the stock is jointed straight.

When jointing short pieces, always use a push block, made as shown in Fig. 13, which shows two forms, a simple and a more elaborate one. Never joint short pieces with the fingers alone; it is dangerous.

RABBETTING. The jointer is provided with a rabbetting arm and ledge by means of which rabbets can be cut up to ¼" deep and 4" wide. Slide the fence across the table to the width of rabbet desired, and

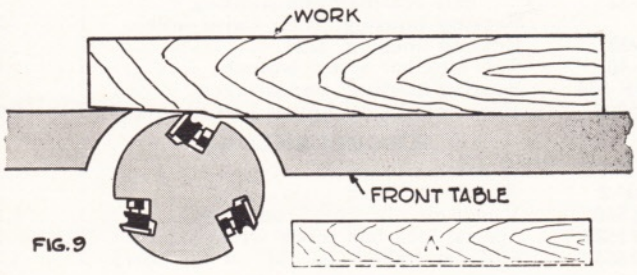


FIG. 9

drop the front table to the proper depth. When taking deep cuts like this, feed the work slowly to avoid tearing and splitting the wood. When making rabbets of a size near the maximum capacity of the machine it is well to take two cuts, although they may be cut in one pass when necessary.

BEVELING. When the edges of work are to be beveled tilt the fence to the angle desired and lock it at that angle, then run the stock across the knives, taking care to keep it pressed firmly against the fence and table so that it does not slip.

For most slight angles cut on edges of the stock, it makes little difference which way the fence is tilted. As the bevels become greater, however, and approach 45 degrees, it will be found increasingly difficult to hold the work firmly to the fence and the table at the same time. This is where the advantage of the double-tilting fence is appreciated.

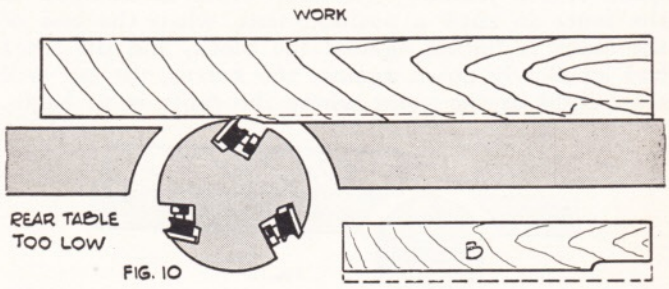


FIG. 10

With the fence tilted in, the fence and the tables form a sort of V-shape, into which it is only necessary for the operator to press the work in one direction. The fence, being inclined inward, holds the work down onto the knives, and all that is left for the operator to do is to guide the work.

Sometimes circumstances require that a bevel be laid out on the edge of the stock so that it would be impossible, with the fence tilted outward, to run the work with the grain. With the double-tilting fence, all that is necessary when a piece of work like this is encountered is to tilt the fence either in or out, depending upon which way the grain of the piece runs, and the work can then be done with perfect ease.

TAPER CUTS. One of the special operations that can be done on the jointer is tapering. One method of cutting a long taper on a piece of stock—a table leg, for example—follows:

The front table is lowered with the adjusting screw to the proper point for the taper to be cut (it is advisable for the amateur to experiment with some scrap pieces of wood before undertaking to taper a good piece, so he will learn the proper methods). Now the front end af the work, instead of being laid on the front table and pushed into the knives, is laid on the ***rear*** table. It must be lowered carefully onto the rear table, as the revolving knives will take a slight "bite" from it just before it touches the table, and this will cause the stock to be kicked back unless the operation is carefully done.

With the extreme front end of the stock resting on the rear of the table the work is now pushed forward just as in ordinary jointing. The effect of this is to plane off all that part of the stock lying in front of the plane of the knives, leaving a tapered surface. The other three sides are similarly treated.

As mentioned above, the knives dig in slightly at the point where the stock first meets them, leaving a slight depression in the wood at this point. To remove this, raise the front table after all the tapering has been done and set the jointer for a light cut. Now joint all four sides of the legs in the ordinary manner, and this will remove the depressions in the surfaces.

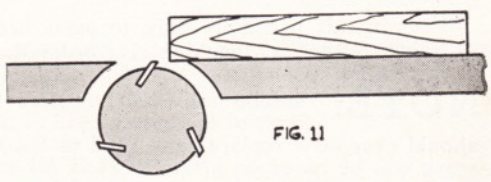


FIG. 11

Sometimes it is necessary to taper a piece for only part of its length, as, for example, a leg on a footstool

or piano bench, which is often straight for a portion of its length, and tapered for the remainder. To do this work it is necessary to clamp a stop block to the fence of the jointer. The stop block is clamped to the fence in such a position that, when the end of the stock is butted against the block, and the front end let slowly down against the knives, the cut will start right at the point where the taper is to begin.

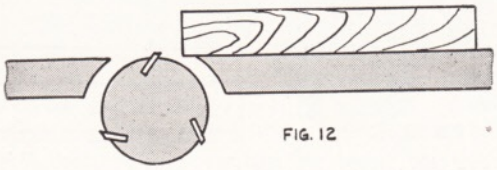


FIG. 12

The stop block clamped to the fence prevents all danger of a kick-back from the stock, but the work should be let down slowly and carefully onto the knives, and pushed carefully forward to complete the cut.

It is quite evident that there will be a depression cut in the stock by the knives when using this method, but this can be removed by re-running the work with a light jointing cut as described previously.

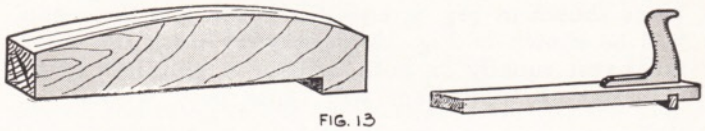


FIG. 13

CHAMFERING. Chamfering is nothing more than the beveling of the edges or corners of parts. Chamfers are usually cut at an angle of 45 degrees, although this is not essential. Set the fence at the angle required, then move the stock steadily over the cutter head, keeping it firmly pressed against the fence. Repeat the cuts until the chamfer is of the required width. Count the number of cuts taken on the first edge of a piece so as to get all of the remaining edges the same as the first edge.

REPLACEMENT PARTS

IMPORTANT: To avoid possible errors, be sure to include the serial number of the machine when ordering parts for repair or replacement.

Part No.	Description	No. Req.	Price Each
	BODY PARTS		
FJ-301	Main Body	1	$3.50
FJ-302	Front Table	1	4.65
FJ-303	Rear Table	1	3.45
FJ-321	Gib	2	.10
FJ-322	Table-adjustment nut	2	.25
FJ-325	Depth of cut scale	1	.10
BM-4-CS	Ball crank handle	2	.70
CBL-431	Name Plate	1	.10
DDL-250	Gib adjustment screw	6	.10
DP-41	Fiber washer	4	.10
J-13-S	Guard assembly	1	1.00
J-15	Guard spring	1	.15
NJ-208	Adjustment-screw sleeve	2	.25
NJ-215-S	Adjustment screw with collar	2	.25
SBS-46	Indicator pointer	1	.10
SP-201	5/16-18 x 5/16 Allen setscrew	2	.10
SP-561	#10-32 x 3/8 rd. hd. mach. screw	1	.10
SP-663	5/16"-24 x 3/4 hex. hd. cap screw	4	.10
SP-1609	13/64 washer	1	.10
SP-2101	Cotter pin 3/32" x 5/8"	2	.10
SP-2250	#4 x 3/16 Parker rivet	2	.10
SP-2252	#2 x 3/16 drive screw	2	.10
SP-2421	#0 x 3/4" taper pin	2	.10
	FENCE PARTS		
FJ-304	Fence body only	1	2.20
FJ-304-S	Fence assembly complete	1	7.60
FJ-305	Fence-segment	1	1.35
FJ-305-S	Fence-segment assembly, with stop screws	1	1 80
FJ-306-S	Fence socket assembly	1	2.00
FJ-308-S	Fence-segment clamp handle	1	1.10
FJ-310	Fence-segment handle stud	1	.10
FJ-311	Fence-segment clamp sleeve	1	.30
FJ-312-S	Fence-segment clamp bolt and plate	1	.40
FJ-313	Fence-segment clamp nut	1	.10
FJ-314	Fence-segment Clamp collar	1	.10
FJ-315	Fence-segment spring washer	1	.10
FJ-316	Fence-segment clamp washer	1	.10
FJ-317-S	Fence-segment clamp plate assembly	1	$ .30
FJ-318	Fence socket clamp nut	1	.10
FJ-319	Tilting scale	1	.10
FJ-324	Fence-segment handle ball	1	.15
NCS-177	1/4-28 x 1/4 headless set screw	3	.10
NJ-229	Fence-segment guide	1	.20
NJ-230	Guide dowel	2	.10
NJ-231	Stop link	1	.25
NJ-232	Stop link pin	1	.10
NJ-233	Stop screw	3	.10
NJ-241	Tilting scale pointer	1	.10
SP-253	1/4-28 x 1/4 Allen setscrew	2	.10
SP-707	5/16-18 x 1 fill. hd. screw	3	.10
SP-2250	No. 4 x 3/16 Parker rivet	3	.10
	CUTTER-HEAD PARTS		
J-17-S	Arbor pulley (3/16" bore)	1	.50
J-22	Knife lock bar	3	.30
J-23	Lock-bar screw	9	.10
J-31-S	Cutter head, complete with knives,		10.75
J-32	ball bearings and housing	1	
	Bearing housing, R.H. (with hole)	1	.35
J-33	Bearing housing, L.H.	1	.35
J-40	Std. lock bar screw wrench	1	.10
SP-634	Bearing-housing clamp screw	2	.10
#302	High-speed steel knives (set of three)	1	2.95
	MISCELLANEOUS		
SP-1	1/4 Allen wrench	1	.10
SP-2	1/8 Allen wrench	1	.10
#560	V-belt cir.: in. 56 5/16", out. 58 1/8"	1	1.15
#1522	Special lock-bar screw wrench	1	.25
#5650	6 1/2" dia. pulley (1/2", 5/8" or 3/4" bore)	1	1.20

IMPORTANT. Front and rear tables cannot be supplied separately. In order to insure accurate alignment, both tables are finish ground while in place on the body, and a new table, supplied separately, could not be guaranteed to be accurate. If a new table is ever required, ship the machine to us and we will fit a new table, charging the list price of the table plus $3.00 for re-grinding and assembling.

NOTE: .Prices in this list apply only to parts ordered for repair and replacement. They cannot be used for computing allowance value when a machine is ordered "less" certain parts. Ask for quotations on such special machines.

NOTE: Special tools are required to remove and replace each one of the two ball bearings used on the shaft of the cutter-head of this machine. If either the bearings or the shaft of your machine should ever need replacement, send us the cutter-head complete with bearings for repair. Charges for this work will be based on prices of $1.65 for each bearing, $2.00 for the cutter-head only, and a $ .50 labor charge for each bearing changed. We are equipped to regrind and reset knives properly and make a nominal charge of $2.00 for this service. Be sure to send us the complete cutter-head assembly, prepaid, and insured for $10.75, for either bearing or knife grinding and setting service.

The No. 301 4-inch Ball-Bearing Jointer

IMPORTANT. Jointers are carefully tested and inspected before shipment and if properly used will give perfect results. However, certain adjustments are necessary in service, and if you are to receive the utmost from your machine it is imperative that you read the following instructions:

SETTING UP. If you have purchased the jointer complete with stand and motor, bolt the machine to the top of the stand, with the graduated end of the fence at the end of the stand opposite to the chute, so that the chute is at the rear of the machine. Screws are provided for bolting motor and machine to the stand. The stand is designed so that either the No. 6300 1/3 H. P. motor or the No. 9000 ½ H. P. motor may be used. The 1/3 H.P. motor comes with two wooden blocks, and these are to be used under the motor to shim it up for the proper height for the belt. The blocks are unnecessary for use with the ½ H. P. motor. Bolt the motor in place, then attach the clamp for the switch rod to the right-hand lower edge of the stand top, with the setscrew inside, and the hole in alignment with the switch lever on the motor. Slip the rod through the rubber bushing, and attach its lower end to the switch lever with the cotter pin. Slip on the belt and the machine is ready to run.

Any ⅓ H. P. motor may be used to drive the jointer, if mounted on a bench, and the motor may be mounted below the machine or to its rear. The cutter head should run at approximately 3,400 r. p. m., and to attain this speed with a 1,750 r. p. m. motor a 5" pulley should be used on the motor shaft. The cutter head should revolve toward the front of the machine, and if the motor turns the wrong way, it should either be turned around, or else the motor manufacturer's directions for reversal of rotation should be followed to insure correct operation.

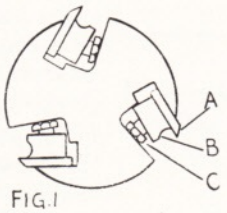


FIG. 1

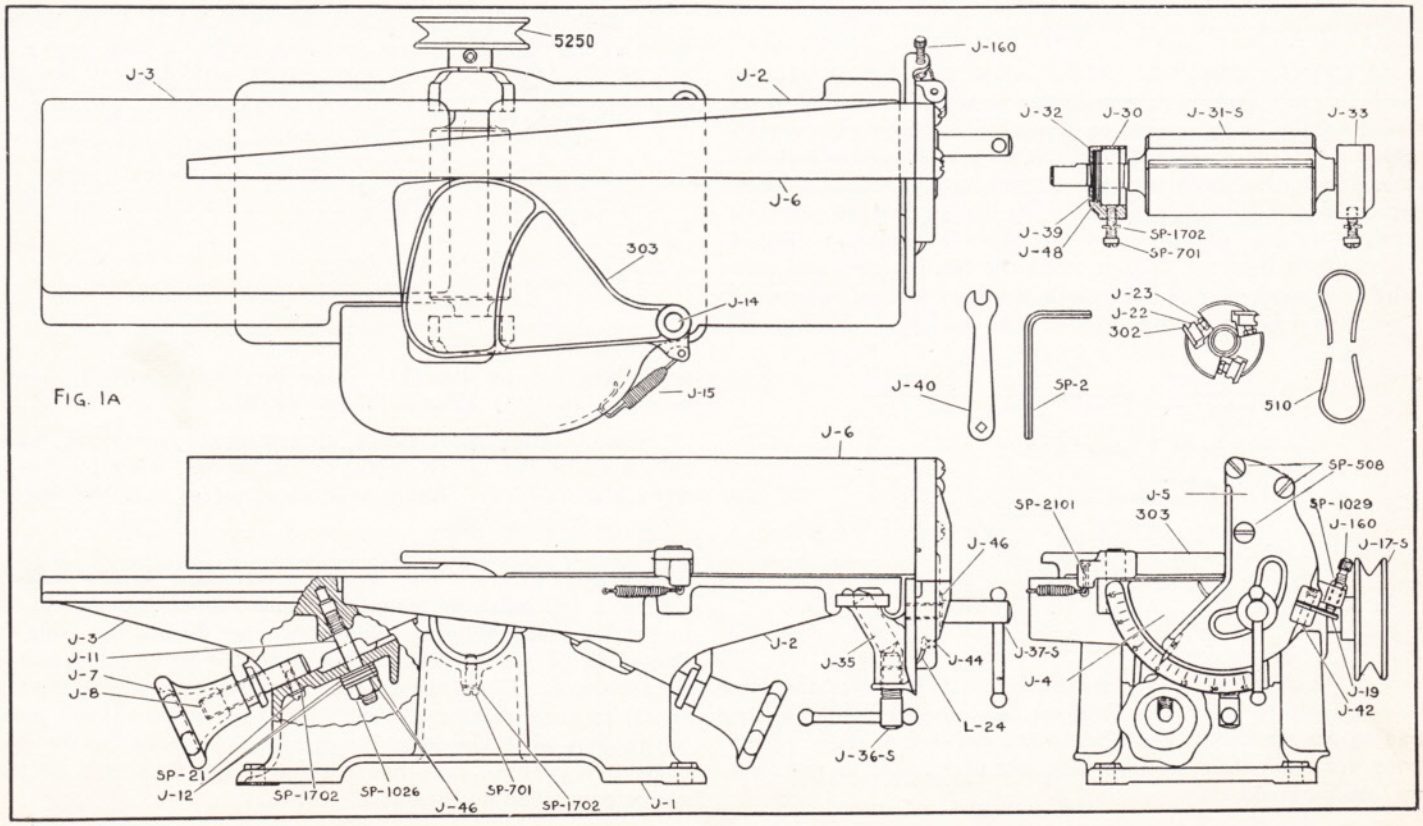
If the jointer is mounted on a bench with other machinery, care should be taken that there is nothing in line with the rear table that will interfere with the jointing of long pieces.

ADJUSTMENTS. Fig. 1 shows an end view of the cutter head, **A** being the high-speed steel knife, **B** the knife lock bar and **C** the lock-bar screw. These knives are adjusted at the factory so that they all project equally from the head, and also so that they are parallel with the table, and will need no further adjustment for a long period.

The adjustment knob at the front of the machine regulates the thickness of the cut, and is the only knob that need be used when the machine is in operation. The rear knob is used only to adjust the height of the rear table, and, once set, should not be touched again until further adjustment is necessary after long wear.

To adjust the fence across the table, the lower lock bolt (J-36-S) is loosened, when the fence may be moved to any desired position. To tilt the fence to the right, the front clamp bolt is loosened, and the fence tilted to the desired degree, then the bolt is tightened again. To tilt the fence to the left, the stop link (J-19) is flipped out of the way, past the stop screw, when the fence can be tilted to the left and locked at any degree desired.

The fence is set square with the table at the factory, and the index pin adjusted to the zero mark on the scale. If this has become out of adjustment in shipment, check by running a piece of wood over the jointer and then test with the square. Adjust by screwing the stop screw against the link, or backing it away, until the work is square, then lock the stop screw with its locknut, and readjust the index pin. This adjustment is permanent



WHETTING KNIVES. After long use the knives will become dull. They may then be whetted with a fine Carborundum stone. Partly cover the stone with paper so it will not mark the table as shown in Fig. 2, and lay it on the front table as shown. Turn the cutter head and lower the table until stone lies flat on the bevel of the knife, then move it back and forth

FIG. 2

lengthwise of the knife. Do the same amount of whetting on each knife..

Knives may also be sharpened and brought to a true cutting circle by "jointing" their edges while the head is revolving. To joint the knives, place the carborundum stone on the rear table, and start the machine. Move the stone forward until it projects over the knives as shown, then move it sidewise so that the knives are jointed their entire length. The stone must be held flat on the table. If the stone does not touch the knives at all points lower the rear table a few thousandths of an inch and repeat. If this operation is carefully done the knives will cut very smoothly. See Fig. 3.

When knives require grinding, the whole head, with its bearings, should be removed and returned to the factory. The

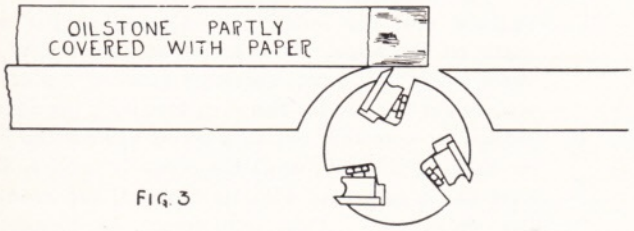


FIG. 3

head is removed by turning the machine upside down and removing bearing-housing screws.

SETTING KNIVES. If the knives are removed from the head for any reason care must be used in re-setting them. Place a knife in its groove so that the rear edge of the bevel is $\frac{1}{16}$" from the surface of the cutter head, slip the lock bar into place and tighten the lock screws lightly. Place a knife-setting bar, made of a piece of hardwood jointed perfectly straight on one edge, on the rear table as shown in Fig. 4. The knife is then set so that when the head is revolved carefully backward, it will just touch the bar without moving it. This should be checked at each end of the knife. Tighten the

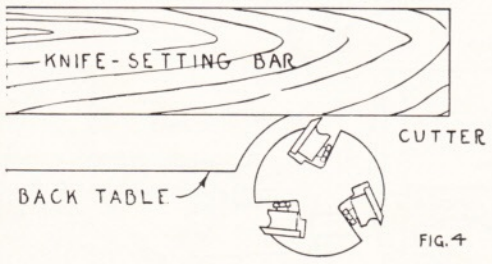


FIG. 4

screws, then set the other knives in turn. Go over the lock screws again to make sure they are tight, then joint the knives lightly as previously described. Do not hurry these operations, for upon their accuracy depends the quality of the work the machine will do.

SETTING REAR TABLE. For ordinary jointing the rear or out-feed table must be set level with the knives at their highest point of revolution. Once set, this position should not be changed, except for some special operations. To test the alignment of the rear table with the knives, run a piece of stock over the knives for a few inches, then check the position of the newly cut surface with respect to the rear table; there should be no space showing under the work. If the rear table is too high the result will be as shown in Fig. 5, and if it is too low the result will be as shown in Fig. 6. For good work the stock must rest equally on both tables. A hundredth of an inch out of adjustment will cause poor work.

OPERATION. As the work is passed over the knives, a new surface is formed, which rests on the rear table. As soon as part of the stock rests solidly on the rear table, the left hand of the operator should press down on this part, at the

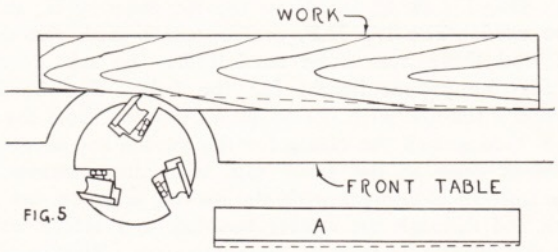


FIG. 5

same time pushing the work forward with both hands. The right hand should push only at this stage of the operation, while the left hand supplies the downward pressure. As the longer portion of the work passes over to the rear table, the right hand should be transferred to this part of the stock also. Remember, keep the pressure on the part of the stock over the rear table, and do not allow the hands to pass directly over the revolving knives.

Work should always be fed to the jointer with the grain, as shown in Fig. 8, and not against the grain as in Fig. 7. Failure to observe this will often result in chipped and splintered edges on the work.

If work is twisted or dished, do not force it down on the table so tightly as to force out any spring it may have. If this is done the wood will spring back after the cut and the

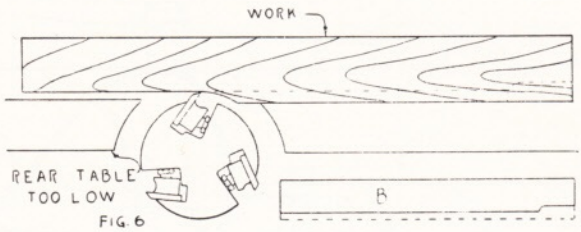


FIG. 6

work will not be straight. Take light cuts, without undue pressure, until the stock is jointed straight.

When jointing short pieces, always use a push block, made as shown in Fig. 9, which shows two forms, a simple and a more elaborate one. Never joint short pieces with the fingers alone; it is dangerous.

RABBETTING. The jointer is provided with a rabbetting arm and ledge by means of which rabbets can be cut up to $\frac{1}{4}$" deep and 4" wide. Slide the fence across the table to the width of rabbet desired, and drop the front table to the proper depth. When taking deep cuts like this, feed the work slowly to avoid tearing and splitting of the wood. When making rabbets of a size near the maximum capacity of the machine it is well to take two cuts, although they may be cut in one pass when necessary.

BEVELING. When the edges or work are to be beveled, tilt the fence to the angle desired and lock it at that angle, then run the stock across the knives, taking care to keep it pressed firmly against the fence and table so that it does not slip.

For most slight angles cut on the edges of the stock, it makes little difference which way the fence is tilted. As the bevels become greater, however, and approach 45 degrees, it will be found increasingly difficult to hold the work firmly to the fence and the table at the same time. This is where the advantage of the double-tilting fence is appreciated.

With the fence tilted in, the fence and the tables form a sort of V-shape, into which it is only necessary for the operator to press the work in one direction. The fence, being inclined inward, holds the work down onto the knives, and all that is left for the operator to do is to guide the work.

Sometimes circumstances require that a bevel be laid out on the edge of the stock so that it would be impossible, with the fence tilted outward, to run the work with the grain. With the double-tilting fence, all that is necessary when a piece of work like this is encountered is to tilt the fence either in or out, depending upon which way the grain of the piece runs, and the work can then be done with perfect ease.

TAPER CUTS. One of the special operations that can be done on the jointer is tapering. One method of cutting a

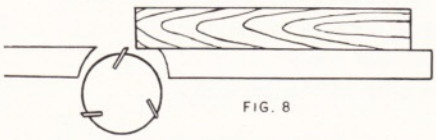


FIG. 8

long taper on a piece of stock—a table leg, for example—is as follows:

The front table is lowered with the adjusting screw to the proper point for the taper to be cut (it is advisable for the amateur to experiment with some scrap pieces of wood before undertaking to taper a good piece, so he will learn the proper methods). Now the front end of the work, instead of being laid on the front table and pushed into the knives, is laid on the REAR table. It must be lowered carefully onto the rear table, as the revolving knives will take a slight "bite" from it just before it touches the table, and this will cause the stock to be kicked back unless the operation is carefully done.

With the extreme front end of the stock resting on the rear table the work is now pushed forward just as in ordinary jointing. The effect of this is to plane off all that part of the stock lying in front of the plane of the knives, leaving a tapered surface. The other four sides are similarly treated.

As mentioned above, the knives dig in slightly at the point where the stock first meets them, leaving a slight depression in the wood at this point. To remove this, raise the front table after all the tapering has been done and set the jointer for a light cut. Now joint all four sides of the legs in the ordinary manner, and this will remove the depressions in the surfaces.

Sometimes it is necessary to taper a piece for only part of its length, as, for example, a leg on a footstool or piano bench, which is often straight for a portion of its length, and tapered for the remainder. To do this work it is necessary to clamp

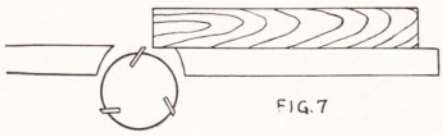


FIG. 7

a stop block to the fence of the jointer. The stop block is clamped to the fence in such a position that, when the end of the stock is butted against the block, and the front end let slowly down against the knives, the cut will start right at the point where the taper is to begin. The stop block clamped to the fence prevents all danger of a kick-back from the stock, but the work should be let down slowly and carefully onto the knives, and pushed carefully forward to complete the cut,

It is quite evident that there will be a depression cut in the stock by the knives when using this method, but this can be removed by re-running the work with a light jointing cut as described previously.

CHAMFERING. Chamfering is nothing more than the beveling of the edges or corners of parts. Chamfers are usually cut at an angle of 45 degrees, although this is not essen-

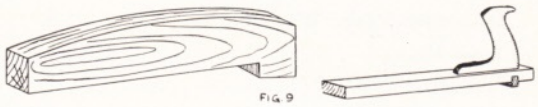


FIG. 9

tial. Set the fence at the angle required, then move the stock steadily over the cutter head, keeping it firmly pressed against the fence. Repeat the cuts until the chamfer is of the required width. Count the number of cuts taken on the first edge of a piece so as to get all of the remaining edges the same.

How to Order Replacement Parts

If you should ever need replacement parts for your Jointer, refer to Fig. 1-A. Find the location of the part you need in the illustration, then refer to the list below, which gives you the name and number of the part, its price, and the number of parts required. In your order be sure to give the name and number exactly as given in the parts list, as the clearer you make your order the better service we can give you. Prices quoted are for single parts, unless otherwise noted.

MAIN BODY PARTS

Part No.	Name	No. Req.	Each
J-1	Main Body	1	
J-7	Hand Knob	2	.30
J-8	Hand Knob Stud	2	.10
SP-21	¼"x⅝" R. H. Screw	2	.10
SP-1702	Lock Washer	2	.10

TABLE PARTS

J-2	Front Table	1	
J-3	Rear Table	1	
J-11	Table Stud	2	.10
J-12	Spring Washer	4	.10
J-46	Hardened Plain Washer	4	.10
SP-1026	⅜"-16 Hex. Nut	2	.10

FENCE PARTS

J-4	Fence Socket	1	$1.85
J-5	Fence Segment	1	1.00
J-6	Fence	1	1.75
J-37-S	Segment Lock Bolt	1	.25
J-36-S	Socket Lock Bolt	1	.30
J-46	Hardened Plain Washer	1	.10
J-35	Lock Plunger	1	.10
L-24	Indicator Pin	1	.10
J-44	Ind. Pin Setscrew	1	.10
J-160	Knurled Stop Screw	1	.10
SP-1029	Stop-Screw Lock Nut	1	.10
J-19	Stop Link	1	.10
J-42	Stop-Link Pivot Pin	1	.10
SP-508	R. H. Machine Screw	3	.10

GUARD PARTS

J-13-S	Guard, with Pin and Spring	1	
J-14	Guard Pivot Pin	1	.10
J-15	Guard Spring	1	.15
SP-2101	Cotter Pin	1	.10

CUTTER-HEAD PARTS

J-31-S	Cutter Head, complete with knives, ball bearings and housings	1	$10.75
#302	High-Speed Steel Knives, per set of 3	1	
J-22	Knife Lock Bar	3	.30
J-23	Lock-Bar Screw	9	.10
J-40	Lock-Bar Screw Wrench	1	.10

BEARING PARTS

J-48	Steel Washer	1	$0.10
J-32	Bearing Housing, with hole	1	.35
J-33	Bearing Housing	1	.35
SP-701	¼"-20x¾", Fillister-Head Screw	2	.10
SP-1702	¼" Lock Washer	2	.10

MISCELLANEOUS

#194	5/16" Allen Wrench (old SP-2)	1	
#510	V-Belt	1	
#5250	V-Pulley (Specify 5/16 in. Bore)	1	

PRICES SUBJECT TO CHANGE WITHOUT NOTICE

NOTE: *Special tools are required to remove and replace each one of the two ball bearings used on the shaft of the cutter-head of this machine. If either the bearings or the shaft of your machine should ever need replacement, send us the cutter-head complete with bearings for repair. Charges for this work will be based on prices of $1.65 for each bearing, $3.75 for the cutter-head only, and a $ .50 labor charge for each bearing changed. We are equipped to regrind and reset knives properly and make a nominal charge of $2.00 for this service. Be sure to send us the complete cutter-head assembly, prepaid, and insured for $10.75, for either bearing or knife grinding and setting service.*

DELTA
MILWAUKEE

The Delta Manufacturing Company

600-634 E. Vienna Ave. Milwaukee, Wisconsin

Form I.S. 129—3-41

Printed in U. S. A.

The No. 22 110 Four-Inch Ball Bearing Jointer

Delta-Milwaukee Jointers are carefully tested and inspected before shipment and if properly used will give perfect results. However, certain adjustments are necessary in service, and if you are to receive the utmost from your machine, it is imperative that you read the following instructions carefully.

Setting Up

To assemble to the No. 304 steel stand, first bolt the Jointer to the top of the stand with the graduated end of the fence at the end of the stand opposite to the chute, so that the chute faces the rear. Screws are provided for bolting both machine and motor to the stand. The stand is designed so that either the No. 62 110, No. 66 320 or No. 64 510 motor may be used. No. 62 110 and No. 66 320 motors come with two wooden blocks, which are used under the base of the motor to shim it up to the correct height for the belt. These blocks are unnecessary when No. 64 510 motor is used. A No. 5500 Motor Pulley and a No. 510 Belt is used when Jointer is mounted on the No. 304 Steel Stand.

Bolt the motor in place, then attach the clamp for the switch rod to the right hand side of the stand, near the front, with the setscrew inside and the hole in alignment with the switch lever on the motor, if a motor with a built-in switch is used (No. 62 110 or No. 64 510). Slip the rod through the rubber bushing and attach the lower end to the switch lever with the cotter pin.

If mounted on a bench, any standard speed ⅓-H.P. motor may be used to drive the machine, and it may be mounted either below or behind the jointer. The cutter head should run at 3200 r.p.m., and to attain this speed with a standard 1725 r.p.m. motor a 5-inch pulley should be used on the motor shaft. The cutter head should revolve toward the front of the machine; if the motor turns the wrong way it should either be turned around on the stand or bench, or reversed in accordance with the maker's instructions.

If the jointer is mounted on a bench with other machinery, care should be taken that there is nothing in line with the rear table that will interfere with the jointing of long pieces.

Adjustments

The cutterhead consists of three steel knives, a knife lock bar J-22 and the lock bar screws J-23. The knives are adjusted at the factory so that they project equally from the head, and also so that they are parallel with the table, and will need no further adjustments for a long period.

Hand knob J-7 at the front of the table is used to regulate the depth or thickness of the cut. and is the only table adjustment that is used when the machine is in operation. The rear Hand knob is used to adjust the height of the rear table, and, once set, should not be touched again until further adjustment may be necessary, after long wear.

To adjust the fence across the table the lock bolt J-36-S is loosened and the fence may be moved across the table to any position desired. To tilt the fence loosen the serrated handle SR-217. When the fence is to be tilted to the left the stop link J-19 is flipped out of the way past the stop screw. The fence now can be tilted to any position desired and locked into place.

Although the fence is set square at the factory, it is advisable to check this setting before using the machine, in case it may have become out of adjustment during shipment. Run a piece of wood over the jointer and check with a tri-square. If the fence needs adjustments, they can be made by screwing the stop screw SP-108 against the link J-19, or backing away, until the work is square, then lock the stop screw with its locknut SP-1029 and re-adjust the index pin.

WHETTING KNIVES. After long use the knives will become dull. They may then be whetted with a fine Carborundum stone. Partly cover the stone with paper so it will not mark the table as shown in Fig. 6, and lay it on the front table as shown. Turn the cutter head and lower the table until stone lies flat on the bevel of the knife, then move it back and forth lengthwise of the knife. Do the same amount of whetting on each knife.

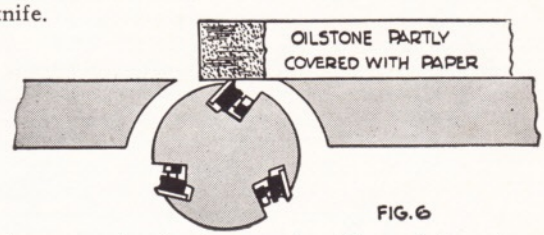


FIG. 6

Knives may also be sharpened and brought to a true cutting circle by "jointing" their edges while the head is revolving. To joint the knives, place the Carborundum stone on the rear table, and start the machine. Move the stone forward until it projects over the knives as shown, then move it sidewise so that the knives are jointed their entire length. The stone must be held flat on the table. If the stone does not touch the knives at all points lower the rear table a few thousandths of an inch and repeat. If this operation is carefully done the knives will cut very smoothly. Fig. 7.

When knives require grinding, the whole head, with its bearings, should be removed and returned to the factory. The head is removed by removing bearing-housing screws SP-701.

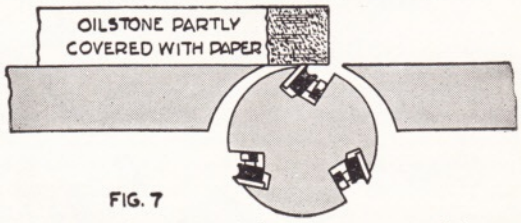


FIG. 7

SETTING KNIVES. If the knives are removed from the head for any reason care must be used in re-setting them. Place a knife in its groove so that the rear edge of the bevel is $\frac{1}{16}$" from the surface of the cutter head, slip the lock bar into place and tighten the lock screws lightly. Place a knife-setting bar, made of a piece of hardwood jointed perfectly straight on one edge, on the rear table as shown in Fig. 8. The knife is then set so that when the head is revolved carefully backward, it will just touch the bar without moving it. This should be checked at each end of the knife. Tighten the screws, then set the other knives in turn. Go over the lock screws again to make sure they are tight, then joint the knives lightly as previously described. Do not hurry these operations, for upon their accuracy depends the quality of the work the machines will do.

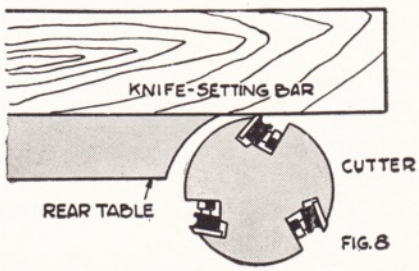
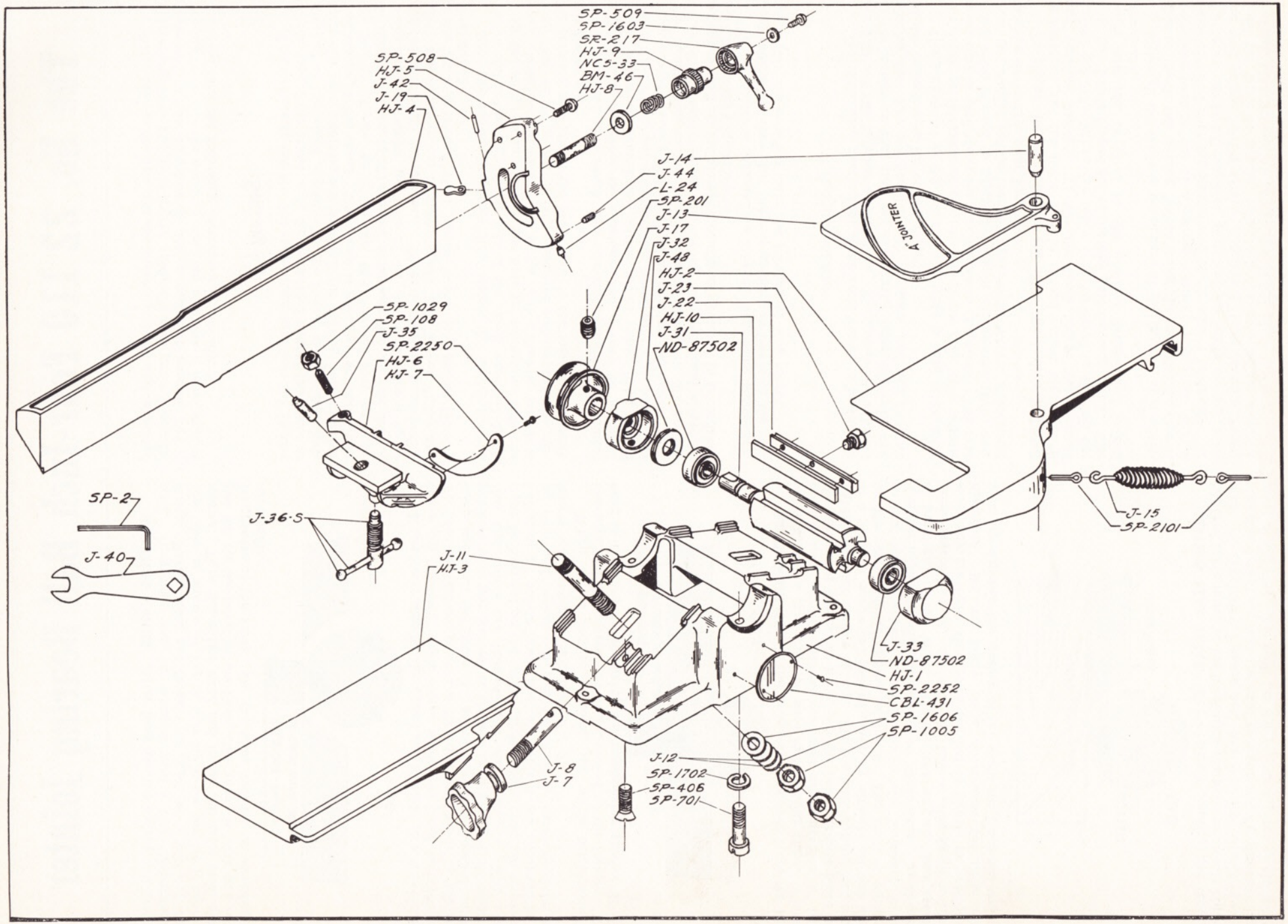


FIG. 8

SETTING REAR TABLE. For ordinary jointing the rear or out-feed table must be set level with the knives at their highest point of revolution. Once set, this position should not be changed, except for some special operations. To test the alignment of the rear table with the knives, run a piece of stock over


SP-509
SP-1603
SR-217
HJ-9
NC5-33
BM-46
HJ-8
SP-508
HJ-5
J-42
J-19
HJ-4
J-14
J-44
L-24
SP-201
J-13
J-17
J-32
J-48
HJ-2
J-23
J-22
HJ-10
J-31
ND-87502
A JOINTER
SP-1029
SP-108
J-35
SP-2250
HJ-6
HJ-7
J-15
SP-2101
SP-2
J-40
J-36-S
J-11
HJ-3
J-33
ND-87502
HJ-1
SP-2252
CBL-431
SP-1606
SP-1005
J-12
SP-1702
SP-406
SP-701
J-8
J-7

the knives for a few inches, then check the position of the newly cut surface with respect to the rear table; there should be no space showing under the work. If the rear table is too high the result will be as shown in Fig. 9, and if it is too low the result will be as shown in Fig. 10. For good work the stock must rest equally on both tables. A hundredth of an inch out of adjustment will cause poor work.

OPERATION. As the work is passed over the knives, a new surface is formed, which rests on the rear table. As soon as part of the stock rests solidly on the rear table, the left hand of the operator should press down on this part, at the same time pushing the work forward with both hands. The right hand should push only at this stage of the operation, while the left hand supplies the downward pressure. As the longer portion of the work passes over to the rear table, the right hand should be transferred to this part of the stock also. Remember, keep the pressure on the part of the stock over the rear table, and do not allow the hands to pass directly over the revolving knives.

Work should always be fed to the jointer with the grain, as shown in Fig. 11, and not against the grain as in Fig. 12. Failure to observe this will often result in chipped and splintered edges on the work.

If work is twisted or dished, do not force it down on the table so tightly as to force out any spring it may have. If this is done the wood will spring back after the cut and the work will not be straight. Take light cuts, without undue pressure, until the stock is jointed straight.

When jointing short pieces, always use a push block, made as shown in Fig. 13, which shows two forms, a simple and a more elaborate one. Never joint short pieces with the fingers alone; it is dangerous.

RABBETING. The jointer is provided with a rabbetting arm and ledge by means of which rabbets can be cut up to ¼" deep and 4" wide. Slide the fence across the table to the width of

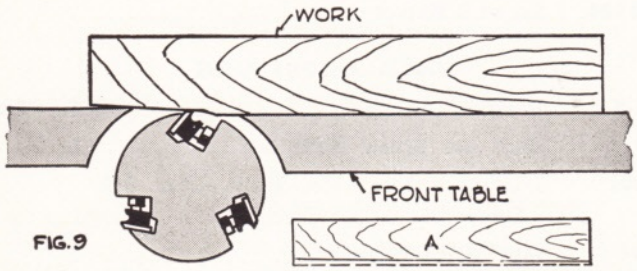


FIG. 9

rabbet desired, and drop the front table to the proper depth. When taking deep cuts like this, feed the work slowly to avoid tearing and splitting of the wood. When making rabbets of a size near the maximum capacity of the machine it is well to take two cuts, although they may be cut in one pass when necessary.

BEVELLING. When the edges of work are to be beveled tilt the fence to the angle desired and lock it at that angle, then run the stock across the knives, taking care to keep it pressed firmly against the fence and table so that it does not slip.

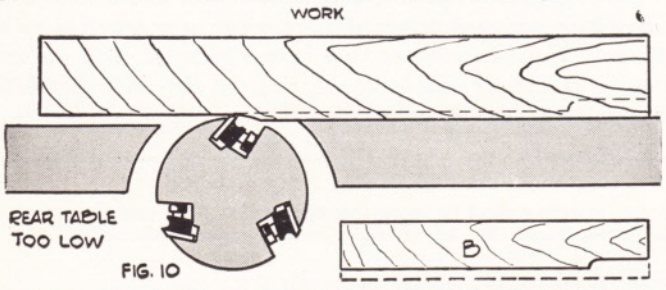


FIG. 10

For most slight angles cut on the edges of the stock, it makes little difference which way the fence is tilted. As the bevels become greater, however, and approach 45 degrees, it will be found increasingly difficult to hold the work firmly to the fence and the table at the same time. This is where the advantage of the double-tilting fence is appreciated.

With the fence tilted in, the fence and the tables form a sort of V-shape, into which it is only necessary for the operator to press the work in one direction. The fence, being inclined inward, holds the work down onto the knives, and all that is left for the operator to do is to guide the work.

Sometimes circumstances require that a bevel be laid out on the edge of the stock so that it would be impossible, with the fence tilted outward, to run the work with the grain. With the double-tilting fence, all that is necessary when a piece of work like this is encountered is to tilt the fence either in or out, depending upon which way the grain of the piece runs, and the work can then be done with perfect ease.

TAPER CUTS. One of the special operations that can be done on the jointer is tapering. One method of cutting a long taper on a piece of stock—a table leg, for example—follows:

The front table is lowered with the adjusting screw to the proper point for the taper to be cut (it is advisable for the amateur to experiment with some scrap pieces of wood before undertaking to taper a good piece, so he will learn the proper methods). Now the front end of the work, instead of being laid on the front table and pushed into the knives, is laid on the ***rear*** table. It must be lowered carefully onto the rear table, as the revolving knives will take a slight "bite" from it just before it touches the table, and this will cause the stock to be kicked back unless the operation is carefully done.

With the extreme front end of the stock resting on the rear table the work is now pushed forward just as in ordinary jointing. The effect of this is to plane off all that part of the stock lying in front of the plane of the knives, leaving a tapered surface. The other three sides are similarly treated.

As mentioned above, the knives dig in slightly at the point where the stock first meets them, leaving a slight depression in the wood at this point. To remove this, raise the front table after all the tapering has been done and set the jointer for a light cut. Now joint all four sides of the legs in the ordinary manner, and this will remove the depressions in the surfaces.

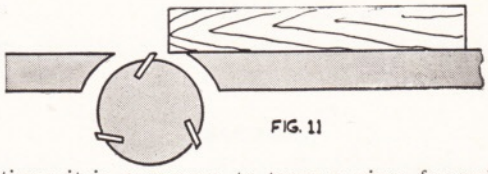


FIG. 11

Sometimes it is necessary to taper a piece for only part of its length, as for example, a leg on a footstool or piano bench, which is often straight for a portion of its length, and tapered for the remainder. To do this work it is necessary to clamp a stop block to the fence of the jointer. The stop block is clamped to the fence in such a position that, when the end of the stock is butted against the block, and the front end let slowly down against the knives, the cut will start right at the

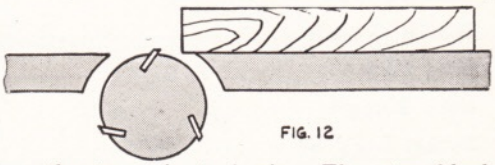


FIG. 12

point where the taper is to begin. The stop block clamped to the fence prevents all danger of a kick-back from the stock, but the work should be let down slowly and carefully onto the knives, and pushed carefully forward to complete the cut.

It is quite evident that there will be a depression cut in the stock by the knives when using this method, but this can be removed by re-running the work with a light jointing cut as described previously.

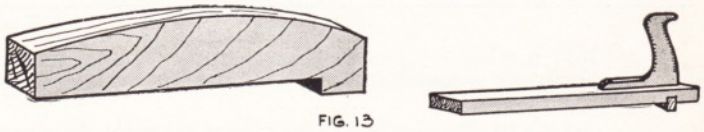


FIG. 13

CHAMFERING. Chamfering is nothing more than the beveling of the edges or corners of parts. Chamfers are usually cut at an angle of 45 degrees, although this is not essential. Set the fence at the angle required, then move the stock steadily over the cutter head, keeping it firmly pressed against the fence. Repeat the cuts until the chamfer is of the required width. Count the number of cuts taken on the first edge of a piece so as to get all of the remaining edges the same as the first edge.

Replacement Parts

IMPORTANT: To avoid possible errors, be sure to include the serial number of the machine when ordering parts for repair or replacement.

No.	Name of Part	No. Req.	Each
	BODY PARTS		
HJ-1	Base	1	$2.25
HJ-2	Front Table	1	2.75
HJ-3	Rear Table	1	2.50
CBL-431	Nameplate	1	.10
J-7	Table Adjustment Knob	2	.30
J-8	Adjusting Stud	2	.10
J-11	Stud	2	.10
J-12	Special Spring Washer	4	.10
J-13	Swing Guard	1	.90
J-14	Pivot Pin	1	.10
J-15	Guard Spring	1	.15
SP-401	1/4"-20x1/2" Flat Head Mach. Screw	2	.10
SP-1005	3/8"-16 Hex. Nut	4	.10
SP-1606	1" O.D. x 7/16" I.D. x 1/16" Thk. Washer	4	.10
SP-2101	3/32" x 5/8" Cotter Pin	2	.10
SP-2252	#2 x 3/16" Drive Screw	2	.10
	FENCE PARTS		
HJ-4	Fence	1	$1.85
HJ-5	Fence Segment	1	.75
HJ-6	Fence Socket	1	2.10
HJ-7	Tilting Scale	1	.15
HJ-8	Stud	1	.20
HJ-9	Serrated Nut	1	.20
BM-46	Special Washer	1	.10
J-19	Stop Link	1	.10
J-35	Lock Plunger	1	.10
J-36-S	Socket Lock Bolt	1	.30
J-42	Pin	1	.10
J-44	#8-32 Headless Set Screw	1	.10
L-24	Indicator Pin	1	.10
NCS-33	Coil Spring	1	.10
SR-217	Serrated Handle	1	.20

No.	Name of Part	No. Req.	Each
SP-108	1/4"-20 x 3/4" Headless Set Screw	1	.10
SP-508	5/16"-18 x 1" Round Head Mach. Screw	3	.10
SP-509	1/4"-20 x 1/2" Round Head Mach. Screw	1	.10
SP-1029	1/4"-20 Hex. Nut	1	.10
SP-1603	1/4" Washer	1	.10
SP-2250	#4 x 3/16" Drive Screw	2	.10
	CUTTER HEAD PARTS		
J-22	Knife Lock Bar	3	$ .30
J-23	Lock Bar Screw	9	.10
J-31-T	Cutterhead complete with Knives, Ball Bearings and Housings	1	9.65
J-32	Bearing Housing (with hole)	1	.35
J-33	Bearing Housing	1	.35
J-48	Steel Washer	3	.10
ND-87502	New Departure Ball Brg.	2	1.50
SP-701	1/4"-20 x 3/4" Fillister Head Screw	2	.10
SP-1702	1/4" Lock Washer	2	.10
#22 805	Set of 3 Knives	1	
	MISCELLANEOUS PARTS		
J-17-S	V-Pulley Assembly	1	$ .50
J-40	Lock Bar Screw Wrench	1	.10
SP-201	5/16"-18 x 5/16" Flat Point Allen Set Screw	1	.10
#194	5/16" Allen Wrench	1	
#304	Steel Stand with Chute	1	
#510	V-Belt Cir. In. 50 7/8", Out. 52 3/4"	1	
#5500	Motor Pulley (Specify bore)	1	

IMPORTANT. Base, front and rear tables cannot be supplied separately. In order to insure accurate alignment, both tables are finish ground while in place on the base, and a new table or new base, supplied separately, could not be guaranteed to be accurate. If a new table or base is ever required, ship the machine to us and we will fit it, charging the list price plus $3.00 for re-grinding and assembling.

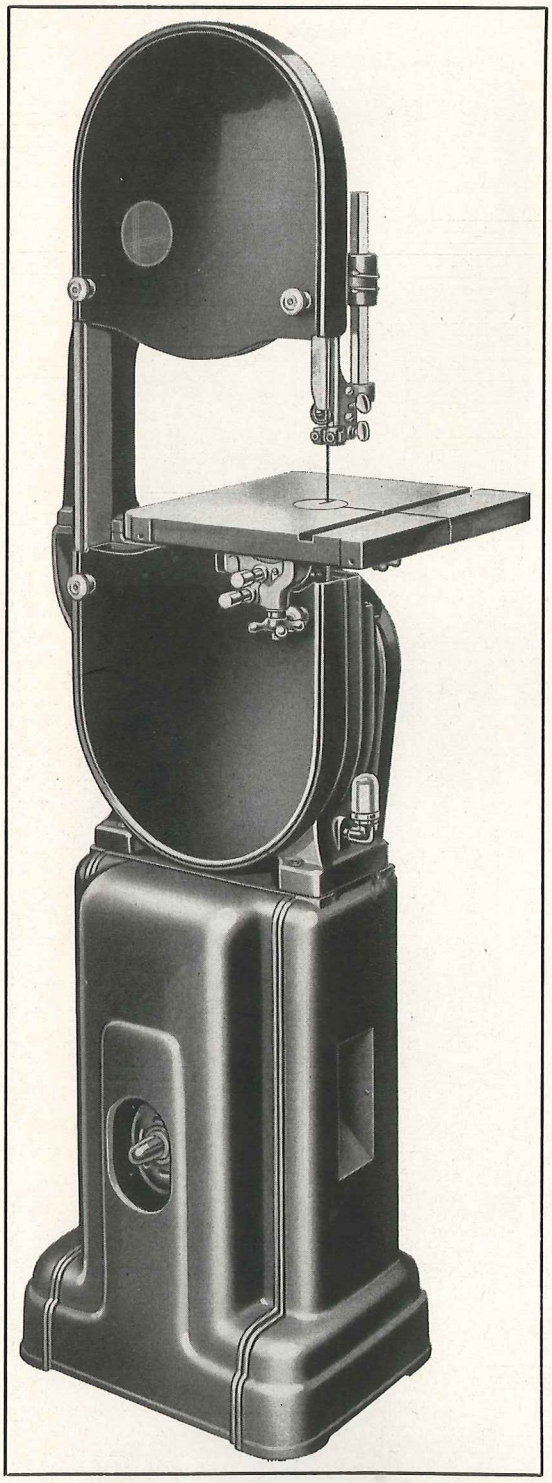
NOTE: Prices subject to change without notice. Prices in this list apply only to parts ordered for repair and replacement. They cannot be used for computing allowance value when a machine is ordered "less" certain parts. Ask for quotations on such special machines.

NOTE: Special tools are required to remove and replace each one of the two ball bearings used on the shaft of the cutter-head of this machine. If either the bearings or the shaft of your machine should ever need replacement, send us the cutter-head complete with bearings for repair. Charges for this work will be based on prices of $1.65 for each bearing, $2.00 for the cutter-head only, and a $ .50 labor charge for each bearing changed. We are equipped to regrind and reset knives properly and make a nominal charge of $2.00 for this service. Be sure to send us the complete cutterhead assembly, prepaid, and insured for $9.65 for either bearing or knife grinding and setting service.

THE DELTA MANUFACTURING CO. DELTA MILWAUKEE **600-634 E. Vienna Ave., Milwaukee, Wis.**

Form I.S.-193—1-42 Printed in the United States of America P.M.-1600

14" Metal Cutting Band Saw Ideal for Cutting Wide Range of Materials



There seems to be no limit for the uses of this economical, low-cost, high-quality band saw around the general tool and machine shop. It is used for cutting everything from carbon tool steel to asbestos with hundreds of other applications. It has four metal-cutting speeds and one wood-cutting speed which makes it ideal for the pattern shop.

BEARINGS: All wheels and shafts in this machine are carried on New Departure self-sealed ball bearings. The use of ten of these bearings insures trouble-free performance for the entire life of the bearings.

GEAR UNIT: Gear unit self-contained. Spiral drive pinion and intermediate gear, final drive spur gear and pinion.

Back gear engaged or disengaged by half-turn of lever. A flip of a lever changes it from a slow-speed metal saw to a high-speed wood saw. Gear drive is simple, foolproof and substantial, and with its helical drive gears and self-sealed ball bearings, is engineered for long, trouble-free service.

TABLE: Massive table, 14"x 14", swinging smoothly on double trunnions. Makes very rigid table mounting, and permits removal of blade without disturbing rip-gage bars. Table tilts 45 degrees to right and 10 degrees to left with positive stops. ⅜"x ¾" groove for miter-gage.

GUIDES: Finest type of guide ever offered. Each adjustment independent of others, and each made with micrometer accuracy. Guide pins can be set to blade teeth without disturbing the setting of the blade support, and blade support can be set without altering adjustment of guide pins. High-grade reversible double-seal ball bearing blade supports. Lower guide of same construction as upper one, with added safety feature that all controls are brought out to front of table. Guide comes within ¾" of table top.

WHEELS: Heavy cast iron safety type wheels rimmed to make tire renewal easy; no cement required.

Upper wheel completely enclosed, having rear guard as well as removable front guard complying with school and industrial requirements.
Lower wheel completely guarded front and rear.

Catalog Listing of 14" Metal Cutting Band Saw

No. 28-305—Complete 14" Metal Cutting Band Saw unit as illustrated on cast iron stand consisting of 14" Metal Cutting Band Saw with wheel guard, 8" arbor pulley for wood, 4-step arbor pulley for metal, No. 1062 metal cutting blade; cast iron stand, belt guard; V-belt for metal drive; V-belt for wood drive; 4-step motor pulley (specify bore). Without motor or switch. 440 lbs.....Code LABMH

No. 28-307—Complete 14" Metal Cutting Band Saw unit (not illustrated) on steel stand consisting of one 14" metal cutting band saw with wheel guard, 8" arbor pulley for wood, 4-step arbor pulley for metal, No. 1062 metal cutting blade; steel stand; belt guard; V-belt for metal drive; V-belt for wood drive; 4-step motor pulley (specify bore). Without motor or switch. 250 lbs.....Code LABMI

ACCESSORIES

No. 882—Lamp attachment. 1½ lbs.....Code LAMPA
No. 387—Replacement V-belt for metal drive. 1 lb.....Code FORDP
No. 568—Replacement V-belt for wood drive. 1 lb.....Code FORVD

MOTORS RECOMMENDED

No. 84-510—½ H.P. R.I. A.C. 110/220 V. 60 Cy.
No. 86-720—¾ H.P. 3 Ph. A.C. 220/440 V. 50/60 Cy.
No. 88-510—½ H.P. D.C. 115 V.

The slowest rate of travel of the saw blade using a 1725 R.P.M. motor is 120 feet per minute.

Use No. 1320 Manual or No. 1329 Magnetic 3 Phase Starter for 3 Phase Motors. This Starter can be bolted direct to the cast iron stand but when the steel stand is used No. 1322 mounting parts must also be used.

With Single Phase Motors the No. 132 switch box can be mounted dircet to the cast iron stand, but when the steel stand is used the No. 1334 switch rod is recommended.

See Pages 18 and 19 for Motors and Switch Parts.

Specifications

CAPACITY: Blade to frame is 14". Capacity under guide is 6"; with No. 894 Height Attachment it is 12¼". SPEEDS: With 1725 R.P.M. motor, 125, 175, 250 and 340 feet per min. With 1140 R.P.M. motor, 80, 114, 160 and 220 feet per min. For Woodworking there is one speed only of 2200 feet per min. using a 1725 R.P.M. motor. TABLE: 14"x 14", tilts 45° to right and 10° to left. Table from floor is 42¾". OVERALL HEIGHT: 65½", Width 16¼", front to back 24¾". Blades 93" long are used.

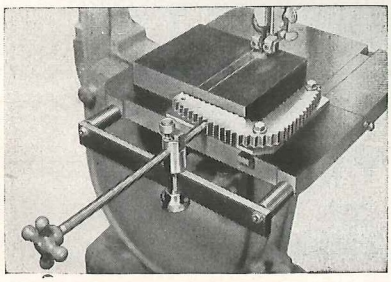
Metal Cutting Band Saw Blades

93½ INCHES LONG

Made of high grade electric furnace steel, accurately set, spaced and jointed. These blades will stand up under hard work. These are hard-edge blades for cutting all metals.

Cat. No.	Width	Teeth Per Inch	Ship. Wt. Lbs.	Code Word
1060	½"	14	1	BLMET
1062	½"	18	1	BLMEU
1064	½"	24	1	BLMEX

(FOR PRICES SEE ATTACHED PRICE LIST)



NEW SCREW FEED ATTACHMENT FOR METAL CUTTING BAND SAW

An added convenience for the tool room is this new Screw Feed attachment for the 14" Metal Cutting Band Saw. The toothed segment clamps to the guide bar by means of two screws as illustrated or it may be inverted so that long bars may be cut. Removing it entirely from the guide bar permits the cutting of round or oval shapes. The threaded clamping post holding the feed screw may be clamped at various positions along the front extension bar so that the proper leverage can always be applied to the segment when cutting. The top screw in the clamping screw allows the feed screw to be disengaged for rapid adjustment. A labor saver which helps produce accurate work.

No. 28-852—Complete Screw Feed Attachment as shown for 14" Band Saw. 12 lbs.....Code LABML

14" Wood Cutting Band Saw for All-'Round Adaptability

DELTA MILWAUKEE

The constant use of thousands of these 14" Band Saws in Woodworking Shops of all types is proof of the quality and all-around adaptability of this unit for production work. Cabinet shops, furniture factories, pattern shops, in fact any shop where accurate cutting must be done easily and economically find this saw doing a remarkable job.

Maintenance departments, too, make good use of this tool. Then there are countless other installations for special duty such as cutting paper, slicing corrugated boards and dozens of other applications.

A few of the outstanding features of this unit are: Castings are heavy and solid and accurately machined, table is heavy, accurately ground, has slot for 3/8"x 3/4" miter gage bar, table swings smoothly on double trunnions, tilts 45° to right, 10° to left, wheels heavy cast iron carried on sealed-for-life ball bearings which require no lubrication, upper wheel adjustable for blade tension and blade travel, guides provide perfect adjustment, each adjustment is independent of the others. Guide pins can be set without disturbing blade support; all controls for guides brought to front of table.

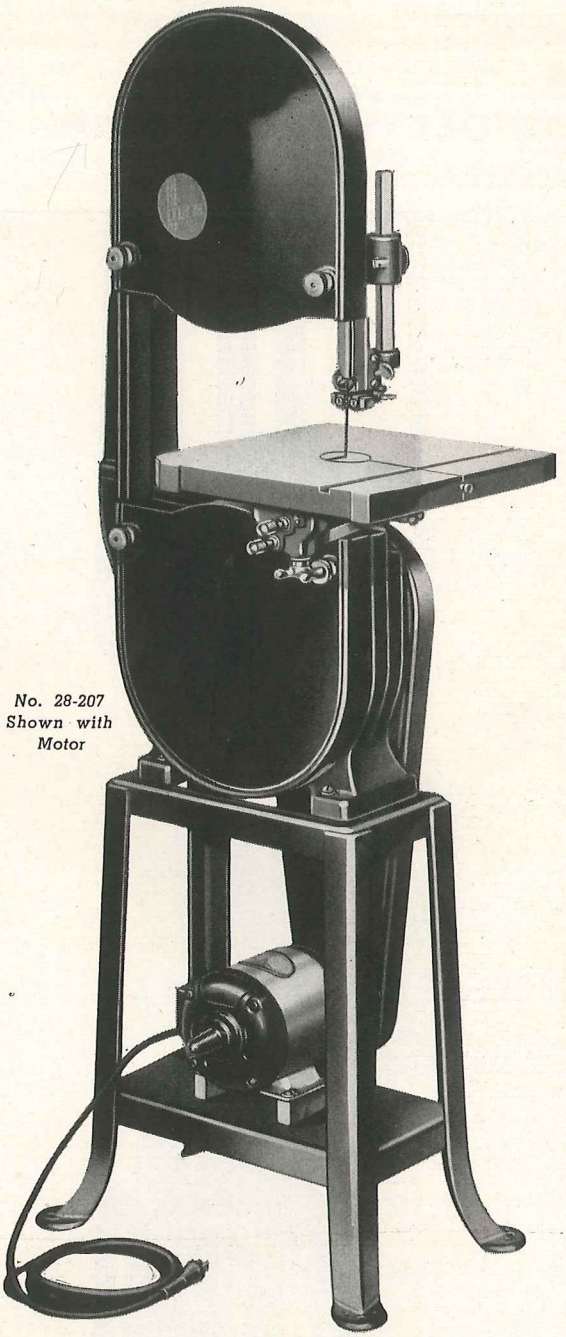
These are but a few of the more important and more obvious points of superiority of these 14" Wood Cutting Band Saws. For safety, accuracy, dependability and convenience you cannot find a better Band Saw.

No. 28-205—Complete 14" Woodworking Band Saw on Cast Iron Stand consisting of: 14" Band Saw with Wheel Guards, 8" Arbor Pulley and one No. 1034 1/4" Wood Cutting Blade; Cast Iron Stand; Cast Iron Belt Guard; V-Belt and Motor Pulley. Without Motor or Switch. 223 lbs. ..... Code LABMJ

No. 28-207—Complete 14" Woodworking Band Saw as illustrated on Steel Stand consisting of: 14" Band Saw with Wheel Guards, 8" Arbor Pulley and one No. 1034 1/4" Wood Cutting Blade; Steel Stand; Cast Iron Belt Guard; V-Belt and Motor Pulley. Without Motor or Switch. 293 lbs. ..... Code LABMK

No. 882 —Lamp Attachment. 1 1/2 lbs. ..... Code LAMPA

No. 568 —Replacement V-Belt. 1 lb. ..... Code FORVD



No. 28-207 Shown with Motor

Motors Recommended

LIGHT DUTY: No. 60-310—1/3 H.P. Sp. Ph. 110 V. 60 Cy. A.C.

MEDIUM DUTY: No. 62-110—1/3 H.P. Cap. 110/220 V. 60 Cy. A.C.
No. 66-110—1/3 H.P. 3 Ph. 220 V. 50/60 Cy. A.C.

HEAVY DUTY: No. 66-320—1/2 H.P. 3 Ph. 220/440 V. 50/60 Cy. A.C.

Use No. 1320 or No. 1329 3 phase manual starter for 3 phase motors. These starters can be bolted direct to the cast iron stand but when the steel stand is used No. 1322 mounting parts must also be used.

With single phase motors the No. 132 switch box can be mounted direct to the cast iron stand, but when the steel stand is used the No. 1334 switch rod is recommended.

See Pages 18 and 19 for Motors and Switch Parts.

Band Saw Blades for 14" Band Saws

93 1/2 INCHES LONG

Cat. No.	Width	Cut Radius	Code
1032	1/8"	1/4"	BLABA
1033	3/16"	1/2"	BLABB
1034	1/4"	3/4"	BLABC
1036	3/8"	1"	BLABD
1038	1/2"	1 1/4"	BLABE
1040	3/4"	1 3/4"	BLABF

Shipping Weight 15 oz. Each.

***105 INCHES LONG**

Cat. No.	Width	Cut Radius	Code
1045	1/8"	1/4"	BLABJ
1046	3/16"	1/2"	BLABK
1047	1/4"	3/4"	BLABL
1048	3/8"	1"	BLABM
1050	1/2"	1 1/4"	BLABO
1052	3/4"	1 3/4"	BLABP

Shipping Weight 18 oz. Each.
*Used with No. 894 Height Attachment

Height Attachment Increases Capacity of Saw

This simple attachment increases the capacity of the 14" band saw from 6" under the guide to 12 1/4". Can be added any time—105" blades are used.

No. 894—Height Attachment on all 14" Band Saws, with Cast Block, Dowels, Bolt, Extension Front Blade Guard and Wood Back Blade Guard. 14 lbs. ..... Code LABHA

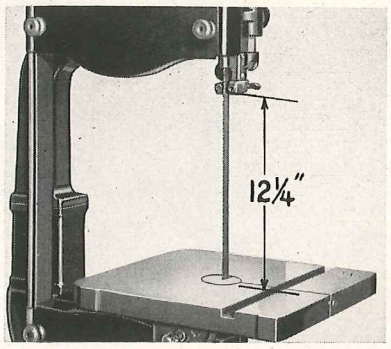


Photo to right shows how height attachment increases capacity of saw to 12 1/4" below the guide.

Band Saw Blades

Width	Rad.	78" Long for 12" Saw No.	78" Long for 12" Saw Code	66" Long for No. 785 Saw No.	66" Long for No. 785 Saw Code	74" Long for No. 768 Saw No.	74" Long for No. 768 Saw Code
1/8	1/4	532	BABLA	732	BABLK	770	BANDC
3/16	1/2	533	BABLB	733	BABLL	771	BANDE
1/4	3/4	534	BABLC	734	BABLM	772	BANDG
3/8	1	536	BABLE	736	BABLP	773	BANDH
1/4	3/4	*381	BAMET	*781	BAMEU	*774	BANDI

*For cutting soft metals.

(FOR PRICES SEE ATTACHED PRICE LIST)

P.M. No. 1517
DATE: 8-1-43
REPLACES: NONE
INDEX: 120 6-A

DELTA MILWAUKEE

THE DELTA MFG. CO., MILWAUKEE 1, WIS.

SERIES 28 BAND SAWS

OPERATING AND MAINTENANCE INSTRUCTIONS
For 14" Wood-Cutting and Metal-Cutting Band Saws

GENERAL

A band saw requires a reasonable amount of care and attention in order to insure perfect performance and accurate work. No matter how good a machine a manufacturer may make, it will not do its best work unless the user takes the trouble to familiarize himself with the proper method of using the machine and setting the adjustments, and to learn what is necessary for best results. It takes but a few minutes to read these instructions, and it may save hours of trouble or delay later.

SETTING UP

The band saw is ready for operation as received, except that the table has been tilted for easier packing. Remove the side boards carefully from the crate, unbolt the base of the machine from the crate bottom, remove the weatherproof covering and the machine is ready for installation on stand or bench.

The table insert and the tapered pin for the table-alignment hole at the end of the table slot, together with the Allen wrench for the guides, will be found in the envelope attached to the saw. The table pin should be tapped into place with a hammer, striking lightly until the miter-gage bar will slide easily in the table groove. ***Do not drive the pin in any further than necessary for this, or the table may be broken.*** The pin is very easily removed when changing blades simply by turning it backwards with a wrench on the hexagon head in the same manner as when removing a screw.

POWER REQUIRED

For most work around the small shop or home work-shop a good ⅓-H. P. motor will be found to furnish ample power for this machine. It is recommended that the No. 62-110 Capacitor Motor, or a motor of equivalent power, be used. For steady production work, using wide blades, or whenever the Raising Block Attachment is used for cutting thick and heavy stock, a good ½-H.P. Repulsion-Induction Motor, like the no. 84-510, should be used. Only a constant-speed motor should be selected.

SPEED

On standard motors running at 1725 R.P.M. a 2¾-inch V-pulley should be used, and this will give the band saw the correct speed of 600 R.P.M. This speed will be found ample for all requirements, and nothing is gained by increasing it; in fact, blade life will be considerably shortened if this speed is greatly increased except for wide blades.

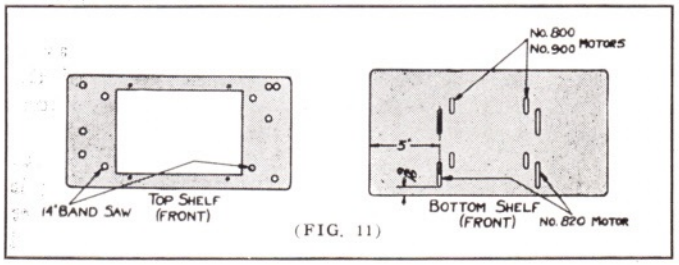
Be sure the motor turns in the right direction. The wheels of the band saw should rotate in a clockwise direction when viewed from the guard side of the machine, the teeth of the blade moving downward toward the table. If the motor turns the wrong way, turn it around if it is a double shaft motor, or reverse it in accordance with the maker's instructions.

STAND

There are two stands available with these Band Saws—No. 886 Cast Iron Stand, and No. 891 Steel Stand.

The No. 886 Cast Iron Stand is completely enclosed, accommodating motors up to ¾ H.P. for all types of Band Saw work. When assembling—bolt the machine to the top of the stand with the SP-516 bolts provided, so that the belt guard is facing the rear. Screws are provided to fasten the motor to the stand and a No. 132 switch is required.

The No. 891 Steel Stand for the band saw is slotted for both ⅓ and ½ H.P. motors with standard bases.



(FIG. 11)

See Fig. 11 for the proper holes and slots to use when setting up the band saw. When the switch rod (No. 1334) is used, the clamp with the rubber bushings, through which the switch passes, is attached to the right hand side of the steel stand, near the rear of the top shelf.

TILTING TABLE ADJUSTMENTS

The table of these band saws may be tilted 45 degrees to the right and 10 degrees to the left. To tilt, loosen star wheel NCS-32, under each trunnion seat, and retighten after table has been tilted to the desired angle. To tilt the table to the left, first tilt is slightly to the right, remove the sleeve LBS-4 from stop screw SP-105, when the table may be tilted 10 degrees to the left. Stop screw SP-105 is set at the factory to bring the table square with the blade, but this should be checked before the machine is used to insure that the setting has not been disturbed in shipping. Screwing the screw up or down enables the table to be set square; when set, it is locked with the lock nut. Always set the table square with the sleeve in place on the screw. When the table is set, adjust the movable pointer SBS-46 to the zero mark on the graduated segment on the front trunnion, and it will then indicate the correct tilt in degrees.

BLADE AND GUIDE ADJUSTMENTS

When it is desired to change the blade on this saw remove upper and lower wheel guards by unscrewing the knurled knobs. Lower the upper wheel by turning the ball-crank handle of the adjustment screw in a counter-clockwise direction until the blade is

loose. Remove the table alignment pin and the table insert, then slip the blade off the wheel and guide it out through the slot in the table. This can be done without removing the sliding guard with blades up to 3/8 in wide. For 1/2 inch and 3/4 inch blades it is better to remove the sliding guard; as the screw holes are slotted for quick removal and installation of this guard, this operation takes but a second to perform.

To install a new blade merely reverse the above procedure. Before attempting to set the guides on the new blade, loosen the Allen screw (NCS-37) that hold the square guide pins, and pull the pins back entirely clear of the blade, so that they will not affect the centering of the blade on the wheel. Loosen all the thumbscrews that lock the blade-support and guide pin brackets, and run the ball-bearing blade supports and guide pins as far back as they will go, so that the blade is completely free of all interference.

TENSION

On the back of the upper-wheel slide bracket there is a series of graduations. These indicate the proper tension for various widths of blades. With the blade on the wheel, the ball-crank handle is turned so as to raise or lower the wheel until the red-fiber washer under the tension-screw nut comes to the proper graduation for the size of blade being used.

These graduations will be found correct for average work, and are not affected by re-brazing of the saw blade. It is urged that you use these graduations until you have become familiar enough with the operation of the band saw to vary the tension a trifle for varying kinds of blades or works. Over-straining is the commonest cause of blade breakage and other unsatisfactory blade performance, and it will be found that the tension gage will eliminate many of the commoner blade trouble if it is intelligently used.

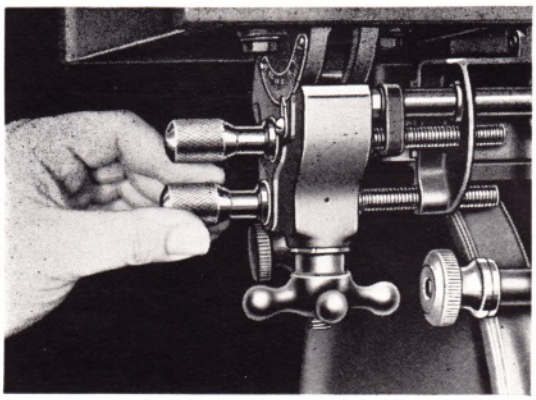
CENTERING BLADE

After the tension has been adjusted, revolve the wheels slowly ***forward*** by hand, and watch the blade to see that it travels in the center of the tires. There is a thumb-nut and wing screw on the rear of the upper-wheel bracket (LBS-106 and SL-1403), which are used to alter the tilt of the upper wheel in order to make the blade "track." If, when turning the wheels by hand, the blade begins to creep toward the front edge, loosen the wing screw and tighten the thumbscrew a little. This will tilt the top of the wheel toward the back of the machine and will draw the blade toward the center of the wheel rim. If the blade creeps toward the back of the rim, turn the thumbscrew in the opposite direction. Adjust the thumbscrew only a fraction of a turn at a time, as it does not take much to draw the blade one way or the other, and ***never adjust the blade while the machine is running.*** After the blade has been "tracked" in the center of the wheel rims, tighten the wing nut that locks the adjusting thumbscrew.

SETTING THE GUIDES

The brackets carrying the guide pins should now be adjusted forward by means of their knurled thumb nuts until the front edges of the guide pins will be just behind the roots of the teeth.

If the guide pins are too far forward, the teeth of the blade will be worn against the pins; if they are too far back, the blade will not be correctly supported for curve cutting. The micrometer adjustment on your guides makes it easy for you to set your guides precisely to the bottom of the teeth. In Fig. 8 is shown how the guide bracket on the lower guide is adjusted.



(FIG. 8)

Turning the lower adjustment knob as above adjusts the guide pins to the teeth of the blade. The upper knob adjusts the blade support.

When the brackets have been properly adjusted, then set the guide pins inward until they are as close as possible to the blade, but without binding it, then tighten the setscrews that hold the pins and adjust the ball-bearing blade supports in toward the back of the blade. The supports should be adjusted so they will be about 1/64 inch clear of the back of the blade whenever the blade is running free—without cutting. The blade should bear against the support ***only when it is actually cutting.*** If the blade is allowed to run hard against the supports at all times the back will become case-hardened, and this will cause eventual breakage of the saw. The proper adjustment of the blade and saw is very important for the correct operation of the band saw.

Be sure to readjust the guides every time you change a blade, especially if you use blades of varying widths.

BLADES

A band saw blade is a delicate piece of steel that is subjected to tremendous strain. However, you can obtain long use from a band-saw blade if you give it fair treatment. Be sure you have blades of the proper thickness and temper for 14-inch wheels. It is insurance against trouble to purchase your blades from us, for our blades are made especially for this machine.

Always use the widest blade possible, using the narrow blades for sawing small, abrupt curves and for fine delicate work only. Change blades and use a wider blade whenever the work will permit its use. This policy will not only save blades but will produce better work. Band saw blades may be purchased welded, set and sharpened ready for use. For cutting wood and similar materials we can supply them in widths of 1/8 inch, 3/16 inch, 1/4 inch, 3/8 inch, 1/2 inch and 3/4 inch.

File and set the blades whenever you find it requires pressure to make them cut. If a blade is broken it can be brazed; however, if it has become badly case-hardened it is not economical to have it brazed because it will soon break in another place. If you are not equipped to file, set and braze or weld blades ask us for prices.

Blades for the standard 14-inch model band saw are 93 1/2 inches long; for the saw equipped with No. 894 Height Attachment they are 105 inches long.

OPERATING THE BAND SAW

Before starting the machine, see that all adjustments are properly made and that the guards are in place. Turn the pulley by hand to make sure that everything is correct before turning on the power.

Keep the top guide down close to the work at all times. When using a band saw, do not force the material against the blade too hard. Light contact with the blade will permit easier following of the line and prevent undue friction, heating and case-hardening of the blade at its back edge.

Keep the saw sharp and you will find that very little forward pressure is required for average cutting. Move the stock against the blade steadily and no faster than will give an easy cutting movement.

Avoid twisting the blade by trying to turn sharp corners. Remember you must saw around corners; use a narrow blade if you want to saw a very small radius.

CUTTING CURVES

When cutting curves turn the stock carefully so that the blade may follow without being twisted. If a curve is so abrupt that it is necessary to repeatedly back up and cut a new kerf, either a narrow blade is needed or a blade with more set is required. The more set a blade has, the easier it will allow the stock to be turned, but the cut is usually rougher than where a medium amount of set is used.

In withdrawing the piece being cut, in order to change the cut, or for any other reason, the operator must be careful that he does not accidentally draw the blade off the wheels. In most cases it is easier and safer to turn the stock and saw out through the waste material, rather than to try to withdraw the stock from the blade.

BLADE BREAKAGE

Any one of a number of conditions may cause a band saw blade to break. Blade breakage is in some cases unavoidable, being the natural result of the peculiar stresses to which such saws are subjected. It is, however, often due to avoidable causes, most often to lack of care or judgment on the part of the operator in mounting or adjusting the blade or guides. The most common causes of blade breakage are: (1) faulty alignments and adjustments of the guides, (2) forcing or twisting a wide blade around a curve of short radius, (3) feeding too fast, (4) dullness of the teeth or absence of sufficient set, (5) excessive tightening of the blade, (6) top guide set too high above the work being cut and, (7) using a blade with a lumpy or improperly finished braze or weld.

LUBRICATION

The wheels of the band saw are carried on self-sealed ball bearings, which require no lubrication for the life of the bearing; in fact, they require no attention whatever. Ball-bearing blade supports are of the same type. Oil of every kind should be kept away from the blade supports, and any traces of grease that may be apparent due to slight leakage of lubricant after running for some time should be wiped away before starting to work.

HEIGHT ATTACHMENT

The capacity of the band saw may be increased up to 12 inches at any time by the addition of the No. 894 height attachment, shown in Fig. 12. Bolt SP-2352 is loosened and removed, and the upper arm of the saw may then be lifted, and height block LBS-28 placed on top of the base, with the dowels fitting into the dowel holes in both arms and base.

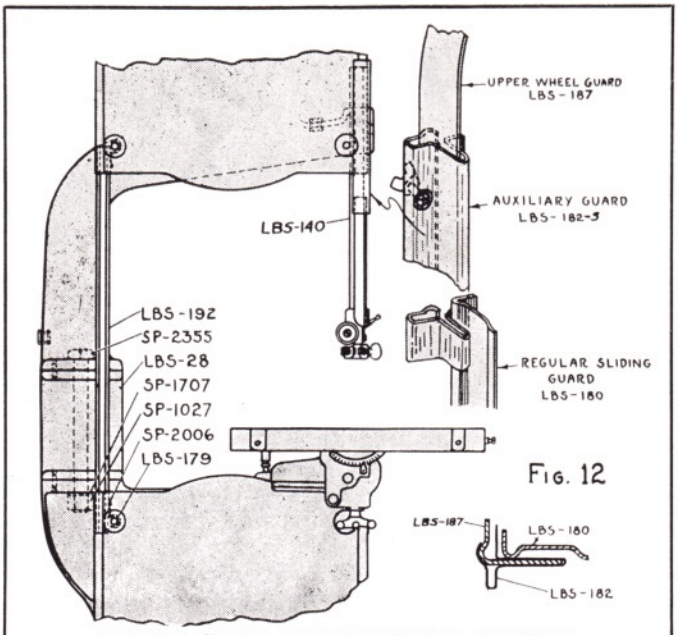


Fig. 12

BAND SAW EXTENSION PARTS

Long bolt SP-2355 is then inserted and tightened. Since the regular guard, when the guide is now lowered for small work, leaves a portion of the blade exposed, an auxiliary guard, LBS-182, is supplied to cover the exposed portion. This auxiliary guard snaps onto the upper wheel guard as shown in the detail drawing, and can be pushed up or down as desired. A longer hexagon guide support bar, LBS-140, is also furnished in place of the regular one, and a longer wood guard, LBS-190, which is attached to the same stamped brackets as the regular guard.

RIP-GAGE ATTACHMENT

Due to the short distance between guides on the saw, ripping is done very successfully with the addition of No. 893 Rip-Gage Attachment, Fig. 13. To attach this, the shoulder screws that come with the attachment are screwed into the tapped holes provided on front and rear edges of the table, the guide bars are slipped over screws and tightened in place.

The rip gage may be used on either side of the blade, as it can be slipped onto the guide bars from either end. The guide bars need never be removed from the table unless it is desired to do so. Attachment No. 893 has 18-inch guide bars, and permits ripping up to the limits of the table. Attachment No. 895 has 32-inch guide bars, for cuts up to 23 inches.

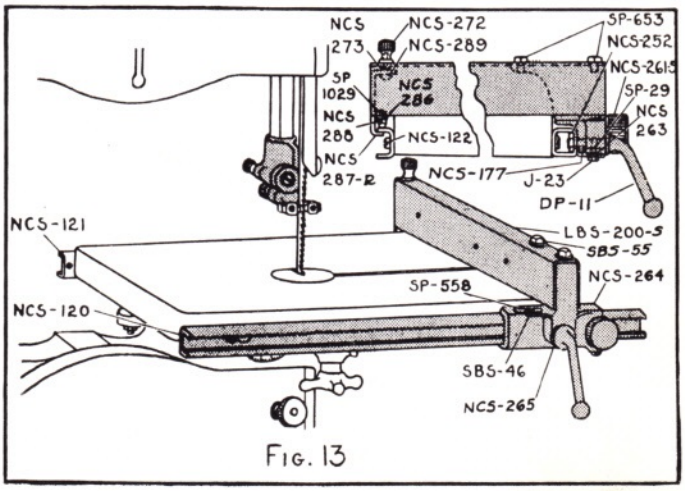
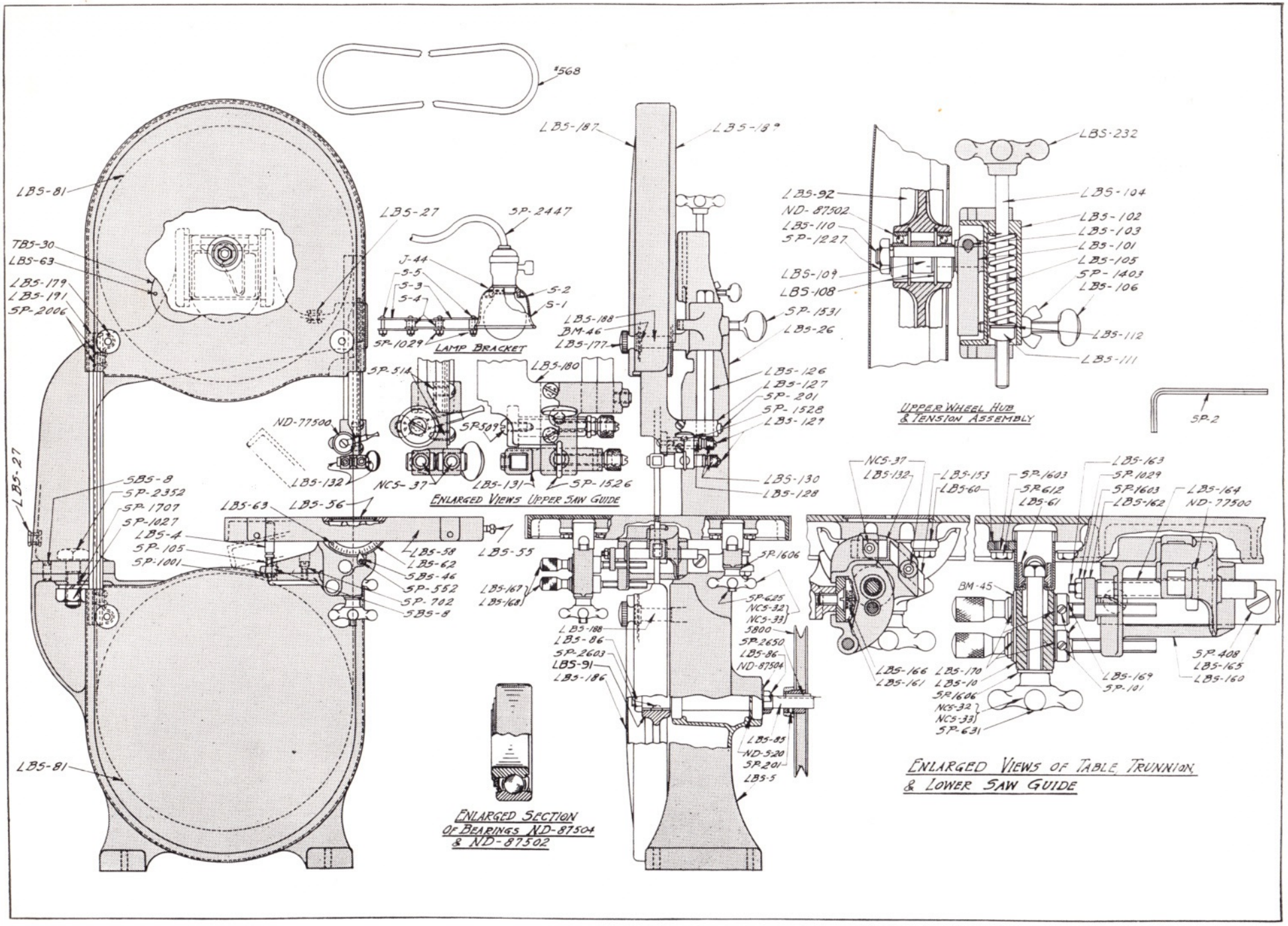


Fig. 13


#568
LBS-187
LBS-189
LBS-81
LBS-27
SP-2447
J-44
S-5
S-3
S-4
S-2
S-1
SP-1029
LAMP BRACKET
TBS-30
LBS-63
LBS-179
LBS-191
SP-2006
LBS-188
BM-46
LBS-177
SP-1531
LBS-26
LBS-126
LBS-127
SP-201
SP-1528
LBS-129
LBS-130
LBS-128
SP-514
LBS-180
SP-507
ND-77500
LBS-132
NCS-37
LBS-131
SP-1526
ENLARGED VIEWS UPPER SAW GUIDE
LBS-92
ND-87502
LBS-110
SP-1227
LBS-109
LBS-108
LBS-232
LBS-104
LBS-102
LBS-103
LBS-101
LBS-105
SP-1403
LBS-106
LBS-112
LBS-111
UPPER WHEEL HUB & TENSION ASSEMBLY
SP-2
LBS-27
SBS-8
SP-2352
SP-1707
SP-1027
LBS-4
SP-105
SP-1001
LBS-63
LBS-56
LBS-58
LBS-62
SBS-46
SP-552
SP-702
SBS-8
LBS-55
LBS-167
LBS-168
SP-1606
SP-625
NCS-32
NCS-33
5800
SP-2650
LBS-86
ND-87504
LBS-188
LBS-86
SP-2603
LBS-91
LBS-186
LBS-85
ND-5120
SP-201
LBS-5
LBS-81
ENLARGED SECTION OF BEARINGS ND-87504 & ND-87502
NCS-37
LBS-132
LBS-153
LBS-60
SP-1603
SP-612
LBS-61
LBS-163
SP-1029
SP-1603
LBS-162
LBS-164
ND-77500
BM-45
LBS-166
LBS-161
LBS-170
LBS-10
SP-1606
NCS-32
NCS-33
SP-631
LBS-169
SP-101
SP-408
LBS-165
LBS-160
ENLARGED VIEWS OF TABLE TRUNNION & LOWER SAW GUIDE

REPLACEMENT PARTS FOR 14" WOOD-CUTTING BAND SAW

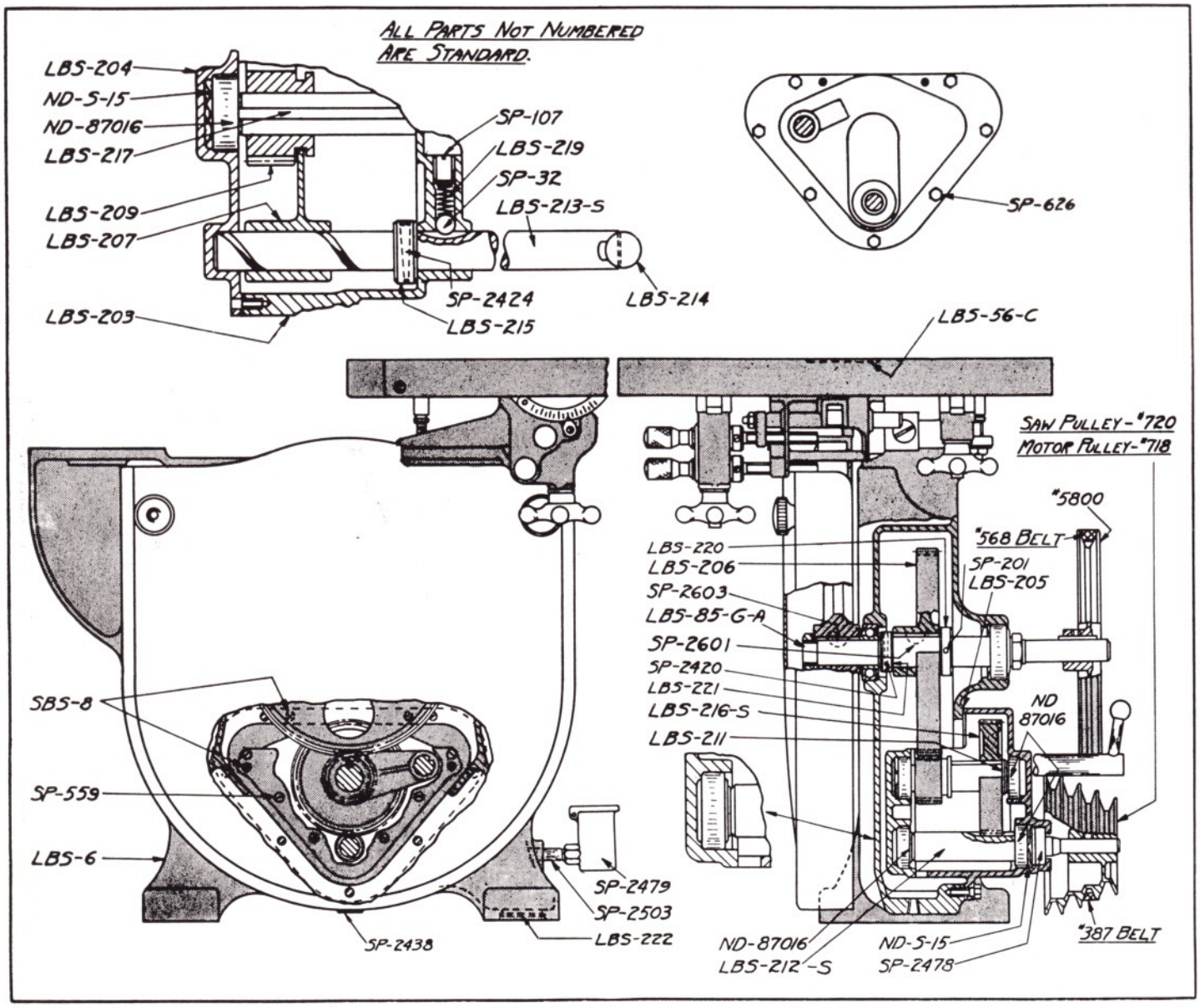
IMPORTANT: To avoid possible errors, be sure to include the serial number of the machine when ordering parts for repair or replacement.

Part No.	Description	No. Req.	Price Each
	BASE PARTS		
LBS-4	Table Stop Spacer	1	$ .10
LBS-5	Base	1	7.75
LBS-10	Trunnion Support Bracket	1	1.65
LBS-188	Wheel Guard Stud	2	.15
SBS-8	¼x¾ Dowel Pin	2	.10
SBS-46	Indicator Pointer	1	.10
NDS-20	Pre-Load Spring	1	.10
ND-87504	Greaseal Bearing	2	2 00
SP-105	5/16-18x2 Table Stop Screw	1	.10
SP-552	10-32x5/16 Indicator Screw	1	.10
SP-702	5/16-18x¾ Fillister Head Cap Screw	2	.10
SP-1001	5/16-18 Stop Screw Nut	1	.10
SP-1027	¾-10 Frame Bolt Nut	1	.10
SP-1707	¾ Frame Bolt Lock Washer	1	.10
SP-2352	¾-10x2" Frame Bolt	1	.10
	UPPER ARM PARTS		
LBS-26	Upper Arm	1	5.25
LBS-27	Rubber Bushing	2	.10
LBS-188	Wheel Guard Stud	2	.15
SP-1531	7/16-14x1¼ Thumb Screw	1	.10
	TABLE PARTS		
LBS-55	Table Alignment Pin	1	.10
LBS-56	Table Insert	1	.10
LBS-58	Table	1	4.75
LBS-58-R	Table Assembly	1	6.65
LBS-60	Table Trunnion	2	.40
LBS-61	Table Clamp Shoe	2	.20
LBS-62	Tilting Scale for Trunnion	1	.10
LBS-63	Hollow Rivet for Band Saw Trunnion	2	.10
BM-45	7/8" O.D. x 13/32" I.D. x 1/32 Thk. Hardened Spring Washer	1	.10
NCS-32	Star Wheel	2	.25
NCS-33	Star Wheel Spring	2	.10
SP-612	¼-20x5/8 Hex. Head Cap Screw	6	.10
SP-625	7/16-14x2¼ Rear Trunnion Clamp Screw	1	.10
SP-631	7/16-14x4 Front Trunnion Clamp Screw	1	.15
SP-1603	¼" Washer	6	.10
SP-1606	7/16" Steel Washer	2	.10
	DRIVE SHAFT AND WHEEL PARTS		
LBS-81	Rubber Tire	1	.75
LBS-85	Drive Shaft	1	1.10
LBS-86	Drive Shaft Nut .802-28 Thread	2	.15
LBS-91-S	Lower Wheel Assembly, with tire, less bearings	1	3.35
SP-2603	No. 705 Hi-Pro Key	1	.10
SP-2650	Straight Key for Pulley	1	.10
	UPPER SHAFT AND WHEEL PARTS		
LBS-81	Rubber Tire	1	.75
LBS-92-R	Upper Wheel Assembly, with tire, less bearings	1	3.40
LBS-101	Upper Wheel Hinge	1	.30
LBS-102	Upper Wheel Slide	1	.90
LBS-103	Hinge Pin	1	.10
LBS-104-S	Tension Screw with Star Wheel	1	.40
LBS-105	Tension Spring	1	.10
LBS-106	5/16-18x2¼ Tilting Screw	1	.10
LBS-109	Bearing Spacer	1	.15
LBS-110	Upper Wheel Shaft	1	.20
LBS-111	3/8-16 Tension Screw Nut	1	.10
LBS-112	Indicator Washer (Fiber)	1	.10
ND-87502	Special Greaseal Bearing	2	1.50
SP-1227	Upper Shaft Nut	1	.10
SP-1403	Wing Lock Nut	1	.10
	SAW GUARD PARTS		
LBS-177	Wheel Guard Nut	4	.15
LBS-179	Wood Guard Bracket	2	.10
LBS-180	Sliding Saw Guard	1	.15
LBS-186	Lower Wheel Guard	1	1.50
LBS-187	Upper Wheel Front Guard	1	1.40
LBS-189	Upper Wheel Rear Guard	1	1.25
LBS-191	Wood Guard	1	.35
LBS-191-S	Wood Guard Ass. with Brackets	1	.50
BM-46	25/64" Steel Washer	4	.10
SP-514	¼-20x3/8 Round Head Mach. Screw	2	.10
SP-2006	½" No. 5 Round Head Wood Screw	4	.10

Part No.	Description	No. Req.	Price Each
	UPPER SAW GUIDE PARTS		
LBS-126	Hexagon Saw Guide Post	1	$ .50
LBS-127	Guide Support	1	.75
LBS-127-S	Upper Saw Guide Assembly	1	4.50
LBS-128	Blade Support Shaft	1	.10
LBS-129	Blade Support Adjusting Screw	2	.10
LBS-130	Blade Support Adjusting Nut	2	.10
LBS-131	Guide Pin Bracket	1	.20
LBS-132	Straight Guide Pin	2	.15
NCS-37	Guide Pin Set Screw	2	.10
ND-77500	Ball Bearing Blade Support	1	1.45
SP-201	Guide Support Set Screw	1	.10
SP-509	Blade Support Screw	1	.10
SP-1502	Blade Support Thumb Screw	1	.10
SP-1526	Guide Bracket Thumb Screw	1	.10
SP-1528	5/16-18x1" Thumb Screw (iron)	1	.10
	LOWER SAW GUIDE PARTS		
LBS-132	Straight Guide Pin	1	.15
LBS-153	Angular Guide Pin	1	.20
LBS-160	Lower Guide Pin Bracket	1	.75
LBS-160-S	Lower Guide Bracket Assembly	1	3.50
LBS-161	Wedge for Lower Guide Pin Bracket	4	.10
LBS-162	Link for Lower Saw Guide Bearing	1	.10
LBS-163	Shaft for Lower Guide Bearing	1	.25
LBS-164	Spacer for Lower Guide Bearing	1	.15
LBS-165	Rail for Lower Guide Pin Bracket	1	.30
LBS-166	Spring for Wedge	2	.10
LBS-167	Adjusting Screw for Lower Guide	2	.10
LBS-168	Knob for Adjusting Screw	2	.10
LBS-169	Stop Collar	2	.10
LBS-170	Fibre Washer	4	.10
NCS-37	5/16-18x17/64 Allen Set Screw	2	.10
ND-77500	Thrust Bearing	1	1.45
SP-101	Set Screw for Stop Collar	2	.10
SP-408	5/16-18x¾ Flat Head Machine Screw	2	.10
SP-1029	¼-20x5/16 Thick Hexagon Nut	1	.10
SP-1603	¼" Washer	1	.10
	*** HEIGHT ATTACHMENT PARTS**		
LBS-28	Extension Raising Block	1	3.50
LBS-140	Extension Hex. Saw Guide Post	1	1.00
LBS-179	Bracket for Wood Guard	1	.10
LBS-180	Sliding Saw Guard	1	.15
LBS-182	Auxiliary Extension Guard	1	1.00
LBS-192	Extension Wood Guard	1	.75
LBS-187	Upper Wheel Front Guard	1	1.40
SP-2006	½" No. 5 Round Head Wood Screw	2	.10
SP-2355	¾" Square Head Machine Bolt	1	.25
	*** RIP GAGE ATTACHMENT PARTS**		
NCS-120	18" Front Guide Bar	1	1.15
NCS-121	18" Rear Guide Bar	1	.55
NCS-122	Special Shoulder Screw	1	.10
NCS-177	¼"-28x¼" Headless Set Screw	1	.10
NCS-252	Rip Gage Lock Plate	1	.15
NCS-261-S	Knurled Micro-Set Knob and Pinion	1	.35
NCS-263	Ball Snap Spring	1	.10
NCS-264	Rip Gage Front Block	1	1.25
NCS-265	Clamp Adjustment Sleeve	1	.10
NCS-272	¼"-20 Knurled Nut	1	.10
NCS-273	Coil Spring	1	.10
NCS-287-R	Rear Clamp Complete	1	.35
NCS-288	Support Button	1	.10
DP-11	Crank Clamp Handle	1	.25
J-23	Lock Screw	1	.10
LBS-200-W	Rip Gage Bar Assembly only	1	1.75
SBS-46	Indicator Pointer	1	.10
SBS-55	11/16x25/64"x1/16" Steel Washer	1	.10
SP-29	5/16" Steel Ball	1	.10
SP-558	#8-32x¼" Round Head Mach. Screw	1	.10
SP-653	3/8"-24x5/8" Hex. Head Cap Screw	1	.10
SP-1029	¼"-20 Hex. Nut	1	.10
	MISCELLANEOUS PARTS		
#194	Plain 5/32 Allen Wrench (old SP-2)	1	
#568	V-Belt	1	
#883	Belt Guard	1	
#886	Cast Iron Stand	1	
#889	Special Steel Insert for Metal Sawing	1	
#891	Steel Stand	1	
#5275	V-Pulley (for Motor, ½" Bore)	1	
#5800	V-Pulley (for Lower Wheel Shaft, ¾" Bore)	1	

*** Height Gage and Rip Gage not included with saw.**

INSTRUCTIONS FOR 14" METAL-CUTTING BAND SAW



The general instructions for setting up, adjustments of the blade guides and supports, etc., previously given for the operation of the 14-inch Wood-Cutting Band Saw, apply also to the Metal-Cutting Saw. Read these carefully, and follow them exactly for best results.

POWER REQUIRED

For average work in the toolroom or general machine shop, a 1/3-H.P. Repulsion-Induction motor will furnish ample power. For heavier, steady production work, such as trimming gates in foundries, or for use with the height attachment in pattern shops, a 1/2-H.P. three-phase motor is recommended. Only a constant-speed motor should be used.

CHANGING SPEEDS

One of the advantages of this saw lies in the fact that it can be changed over almost instantly from a slow-speed metal-cutting band saw to a standard high-speed band saw for wood. This makes it specially adaptable for work on both wood and metal pattern work.

To use the slow speeds, place the No. 387 V-belt on the cone pulleys. Facing the rear (pulley) side of the machine, turn the gear-shift lever LBS-214 one-half turn to the right, so that the lever points ***up.*** This engages the back gear, and the machine will then operate at 125, 175, 250 or 340 feet per minute, depending upon which step of the cone pulleys the belt is placed. Use the higher speeds for softer metals and the lower speeds for harder ones. For still slower speeds, as for alloy steels, etc. use a 1140 r.p.m. motor.

To disengage the back gear, turn the gear-shift lever one-half turn to the left, so that it points down. Remove the No. 387 belt from the cone pulleys, and run the No. 568 belt on the single 8-inch arbor pulley and the ***second largest*** step on the motor cone pulley. This will provide a direct-drive speed of 2200 feet per minute for woodworking. ***Be sure the back gear is disengaged before running on direct drive.***

LUBRICATION

Fill the base to the level of the oiler with a good grade of heavy oil (S.A.E. 40), then fill the sight-feed oil cup and let it snap back. Keep the oil cup full.

BLADES

Blades for metal-cutting should be selected for the particular job they are to do. Blades for cutting thin metal, for example, should be selected so that there will always be at least two teeth in contact with the edge of the work. If the teeth are allowed to straddle the work they will be torn off and the blade ruined. A good selection of blades for the small or general shop would be 14, 18 and 24 teeth to the inch; the 18-tooth "wavy-set" blade being best for all-around work. These blades correspond to our Nos. 1060, 1062 and 1064 blades, which are carried in stock. For special work of any kind it is recommended that blades be purchased direct from the blade makers, in accordance with the general specifications shown in the accompanying table.

TABLE OF SUGGESTED BLADES AND SPEEDS

Material	Speed Ft. per min.	Teeth	Set
Aluminum-alloy gates	125	8-10	ETS
Aluminum sheets	2200	8-10	ETS
Asbestos sheets	125	8-10	ETS
Babbitt	340	10-14	Reg.
Bakelite	340	5-10	ETS
Brass; cast, soft	340	12-14	ETS
Brass; cast, hard	125	18	Wavy
Brass sheets and tubing	340	14-18	ETS
Bronze; manganese, etc.	125	10-14	Reg.
Bronze mouldings	175	18-24	ETS
Builders board	2200	12-14	ETS
Brake lining	125	8-12	ETS
Carbon tool steel	80	14	Reg.
Cast iron	125	14	Reg.
Cold-rolled steel	175	14	Reg.
Copper	175	10-12	ETS
Drill rod	80	14	Reg.
Fiber	340	8-10	ETS
High-speed steel	80	14	Reg.
Hose; canvas and rubber	2200	8-10	Wavy
Hose; metallic	250	18-22	Wavy
Iron bars; machine steel	175	10-14	Reg.
Iron sheets	175	18-22	Wavy
Malleable iron	175	12-14	Reg.
Plymetal	175	14	ETS
Mica	175	10-14	ETS
Monel metal	125	10-12	Reg.
Nickel steel	80	12-14	Reg.
Pipe	125	18-22	Wavy
Radiator cores	340	18-22	Wavy
Rubber; hard	340	10-14	ETS
Slate	80	10-14	ETS
Steel mouldings; special shapes	125	18-24	Wavy
Steel tubing	125	18-24	Wavy
Transite	175	14-18	Reg.

ETS—Every Tooth Set; Reg.—Regular Set; Wavy—Group Set

NOTE: The information in above table is intended as an approximate guide only, and is based on average conditions. Users operating under special conditions may find that variations from above speeds or blade specifications may increase cutting efficiency or blade life.

REPLACEMENT PARTS FOR 14" METAL-CUTTING BAND SAW

IMPORTANT—To avoid possible errors, be sure to include the serial number of the machine when ordering parts for repair or replacement.

Part No.	Description	No. Req.	Price Each
LBS-6	Back Gear Base	1	$9.50
LBS-85 G-S	Drive Shaft with Collar and Taper Pin but without keys	1	2.35
LBS-203	Back Gear Housing	1	2.75
LBS-204	Back Gear Housing Cover	1	.75
LBS-205	Back Gear Housing Gasket	1	.10
LBS-206	Drive Shaft Gear	1	1.75
LBS-207	Shift Yoke	1	.35
LBS-212-S	Spiral Pinion complete with 2 Bearings	1	4.75
LBS-213-S	Shift Yoke Shaft complete with Collar, Taper Pin and Handle	1	1.50
LBS-216-S	Sliding Gear Shaft complete, including Sliding Gear, Spiral Gear, Keys, Thrust Washer, and two Bearings	1	6.00
LBS-219	Spring for Ball	1	.10
LBS-220	Gear Retaining Collar	1	
J-48	Oil Deflector	1	.10
ND-87016	Greaseal Ball Bearing	4	2.20
ND-S-15	Loading Spring	2	$ .10
SBS-8	Dowel Pin	4	.10
SP-32	Ball for Shift Yoke Shaft	1	.10
SP-107	5/8-16x1/2 Headless Set Screw	1	.10
SP-201	5/16-18x5/16 Allen Set Screw	1	.10
SP-559	No. 10-32x1/2 Rd. Hd. Machine Screw	6	.10
SP-626	1/4"-20x3/4 Hexagon Head Cap Screw	7	.10
SP-2438	Allen Pipe Plug	1	.10
SP-2478	Oil Seal	1	.30
SP-2479	Constant Level Oiler	1	.40
SP-2502	Pipe Nipple	1	.15
SP-2601	No. 9 Standard Woodruff Key	1	.10
SP-2603	No. 705 Hi-Pro Key	1	.10
#387	V-Belt for Cone Pulley Drive	1	
#568	V-Belt for High Speed Drive	1	
#718	Cone Pulley for Motor 1/2" Bore	1	
#720	Cone Pulley for Saw 1/2" Bore	1	
#883	Belt Guard	1	
#886	Cast Iron Stand	1	
#889	Special Steel Insert forMetal Sawing	1	
#891	Steel Stand	1	
#1535	Allen Wrench, 5/16 Hex. (old SP-3)	1	

See Parts List of Wood Cutting Band Saw for all Parts Not Listed above.

Prices subject to change without notice.

Prices in this list apply only to parts ordered for repair and replacement. They cannot be used for computing allowance values if a machine is ordered "less" certain parts.


DELTA
MILWAUKEE

P.M. No. 1593
DATE 12-1-43 REVISE
REPLACES: 5-1-43
INDEX: 120-6-B

OPERATING AND MAINTENANCE INSTRUCTIONS
Part No. 886 Cast Iron Band Saw Stand

CONSTRUCTION

The No. 886 Cast Iron Stand for the 14" Band Saw and 10" Circular Saw, comes to you completely assembled and ready for mounting the machine and motor. The base is made up of four panels, two end panels LBS-227 and LBS-228, upon which the machine is mounted and two side panels LBS-225 and LBS-226 which are fastened to the end panels with heavy stamped angle brackets.

The side panels may be removed for quick access to the motor, belt, etc. These panels are held in place with four thumb nuts NJ-283 which are screwed to studs fastened to the angle brackets. By removing these thumb nuts the entire panel can be removed, exposing the motor, pulley, belt, etc. for inspection or adjustment.

BELT TENSION

A V-belt does not need much tension to deliver full power. Due to the fact that the belt contact is on the side of the groove instead of the bottom, a wedging action takes place, therefore, only a slight belt tension produces sufficient belt pressure to accomplish the drive without slipping. Any additional tension merely shortens the life of the belt, pulleys, and bearings.

MOTOR AND MOTOR PLATE

The motor plate is supported by the lower angle brackets to which it is fastened with studs, and is made with holes, to fit our standard 6" dia. frame and 8½" dia. frame motors. Both sizes of motors are available in single phase, three phase and direct current.

While our standard motors are sold with built-in switches, and are operated with switch rods, the No. 886 Cast Iron Stand is provided for mounting a remote control switch on the outside. This makes it necessary to change the connection of the power cord. A new switch and switch box, catalog No. 132, together with the proper cord for connecting the switch to the motor, is required. The power cord which comes supplied with the motor is disconnected from the motor and connected to the new remote control switch.

All of our standard motors are furnished with double shafts, one of which is covered with a safety shield. Due to the design and construction of the No. 886 stand there is no necessity of cutting off this second shaft.

MOTOR SWITCH

The switch that comes with the motor cannot be used due to the fact that the new remote control switch is mounted differently, being riveted to a steel bar which is mounted into the switch box. This same bar also has on it ears with a hole which permits locking the switch in the take off position with a padlock.

In making the connections to the motor, if soldering is not convenient, the loops on the end of the motor wires, and those on the motor cord, can be fastened with No. 6-32 brass round head machine screws and nuts. Fasten the loops securely together with the screw and wrap securely with rubber tape and then friction tape.

SINGLE PHASE SWITCH

The remote control switch is mounted over a rectangular hole in the front of the stand and fastened with the SP-563 screws provided. The holes for fastening are on the inside of the switch box. Connect the power cord leads to the two bottom terminals of the toggle switch, and the two motor cord leads to the two top terminals.

THREE PHASE SWITCH

When a three phase motor is used, a three pole switch is required. We recommend the No. 1320 Manual Starter with overload protection or the No. 1329 Magnetic starter with overload and under voltage protection. Mount the switch box in the center of the front panel (Fig. 1) with the top of the box about 1¾" from the top. Drill four ¼" holes as shown, for fastening the switch box with No. 10-32 round head machine screws, and drill one ⅞" diameter hole in the casting below the switch box to allow the flexible conduit to be run through from the switch box to the motor conduit box.

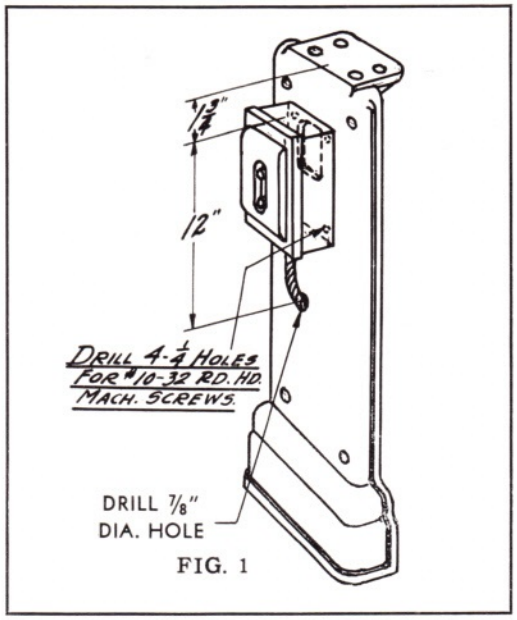
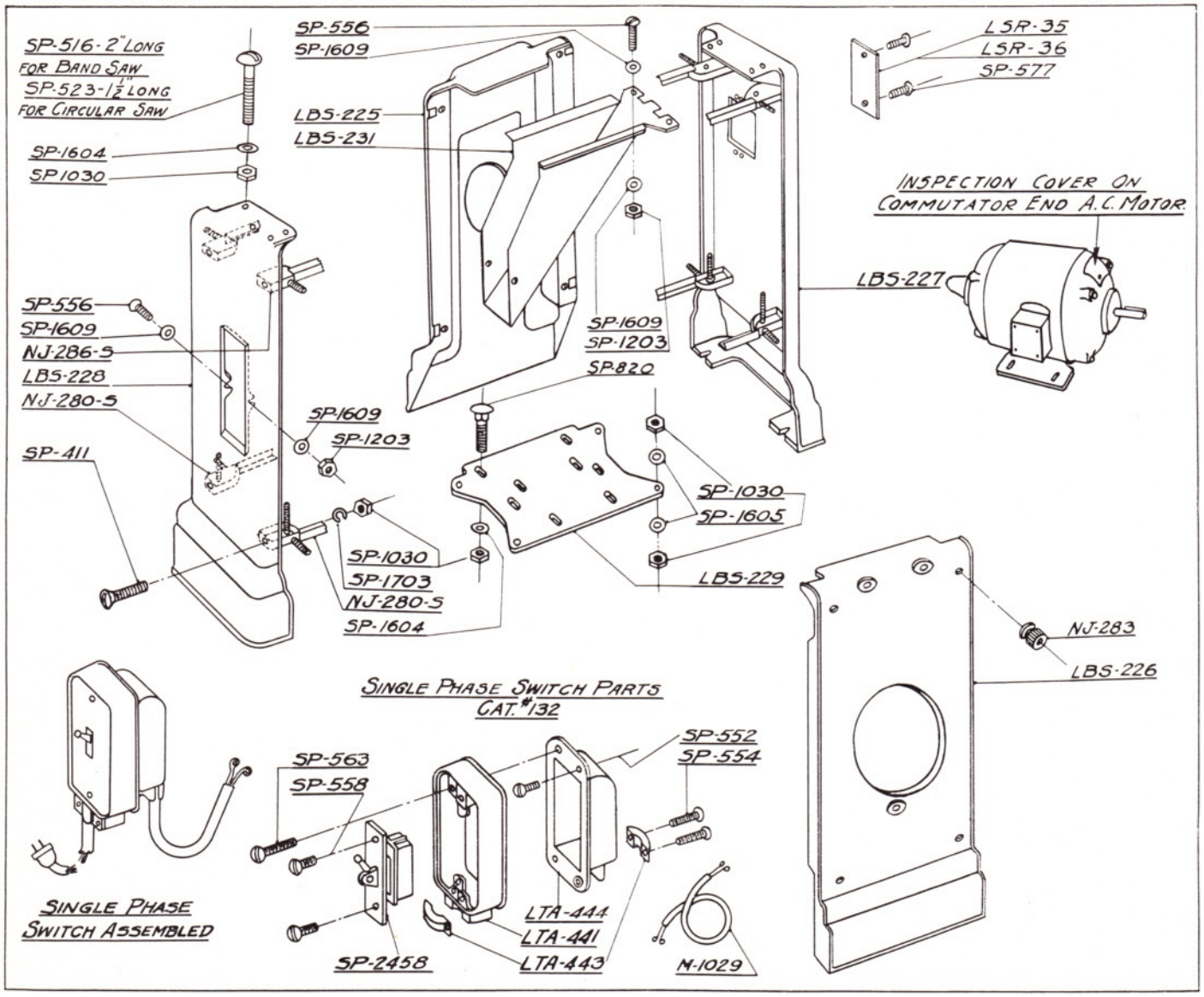


FIG. 1

ROTATION

The rotation of the blade should be toward the front of the machine. If the motor runs in the wrong direction, turn it around or reverse the rotation according to instructions in the motor instruction sheet.



REPLACEMENT PARTS

Part No.	Description	No. Req.	Price each
LBS-225	Front Panel	1	$4.80
LBS-226	Rear Panel	1	4.05
LBS-227	Left Hand End Panel	1	4.35
LBS-228	Right Hand End Panel	1	4.20
LBS-229	Motor Plate	1	.90
LBS-231	Dust Chute	1	2 20
LSR-35	Nameplate	1	.15
LTA-441	Switch Box only for Single Phase Motor	1	.50
LTA-443	Cord Clamp	2	.10
LTA-444	Switch Box Inner Casting	1	.35
M-1029	No. 14 Rubber Covered Two Wire Cord, 3 ft. long for 1 Phase Motors	1	.60
NJ-280-S	Bottom Corner Plate Assembly	2	.60
NJ-283	5/16"-18 Knurled Nut	8	.10
NJ-286-S	Upper Right Angle Bracket Assembly	2	.50
SP-411	5/16"-18 x 7/8" Oval Head Mach. Screw	8	.10
SP-516	5/16"-18 x 2" Rd. Head. Mach. Screw	4	.10
SP-523	5/16"-18 x 1½" Rd. Head Mach. Screw	4	.10
SP-552	#10-32 x 1/16" Round Head Mach. Screw	2	.10
SP-554	#8-32 x ½" Round Head Mach .Screw	4	.10
SP-556	#10-32 x ¾" Round Head Mach. Screw	4	.10

Part No.	Description	No. Req.	Price each
SP-558	#8-32 x ¼" Round Head Mach. Screw	2	.10
SP-563	#8-32 x ¾" Round Head Mach. Screw	2	.10
SP-577	#10-32 x 3/16" Round Head Mach. Screw	2	.10
SP-820	5/16" x 2¼" Carriage Bolt	4	.10
SP-1030	5/16"-18 Hex. Nut	20	.10
SP-1203	#10-32 Hex. Nut	4	.10
SP-1604	St. Washer ¾" O.D.x5/16" I.D.x1/16" thick	4	.10
SP-1605	St. Washer 7/8" O.D.x3/8" I.D.x1/16" thick	8	.10
SP-1609	St. Washer 7/16" O.D.x13/64" I.D.x1/16" th.	8	.10
SP-1703	Lk. Washer 9/16" O.D.x5/16" I.D.x1/16" thick	8	.10
SP-2458	10 Amp. 2 Pole Toggle Switch with Mounting Plate	1	1.00
#132	Switch Box and motor lead wire without cover plate for all single phase motors	1	
#1320	3 Phase Manual Starter with Overload protection for all 3 Phase Motors up to 2 H. P.	1	
#1329	Three Phase Magnetic Starter with overload and Under Voltage Protection, rating 2 H. P.	1	

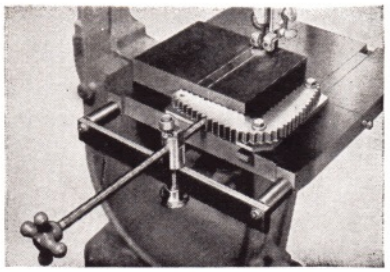
Prices in this list apply only to parts ordered for repair and replacement. They cannot be used for computing allowance values when a machine is ordered "less" certain parts Ask for quotations on such special machines.

P.M. No. 1631
DATE: 10-1-43
REPLACES: NONE
INDEX: 120-6-C

DELTA MILWAUKEE

THE DELTA MFG. CO., MILWAUKEE 1, WIS.

NO. 28-852 SCREW FEED ATTACHMENT
For 14 Inch Band Saw



An added convenience for the tool room is this new Screw Feed attachment for the 14″ Metal Cutting Band Saw.

The toothed segment clamps to the guide bar by means of two screws as illustrated or it may be inverted so that long bars may be cut.

Removing it entirely from the guide bar permits the cutting of round or oval shapes.

The threaded clamping post holding the feed screw may be clamped at various positions along the front extension bar so that the proper leverage can always be applied to the segment when cutting. The top screw in the clamping screw allows the feed screw to be disengaged for rapid adjustment. A labor saver which helps produce accurate work.

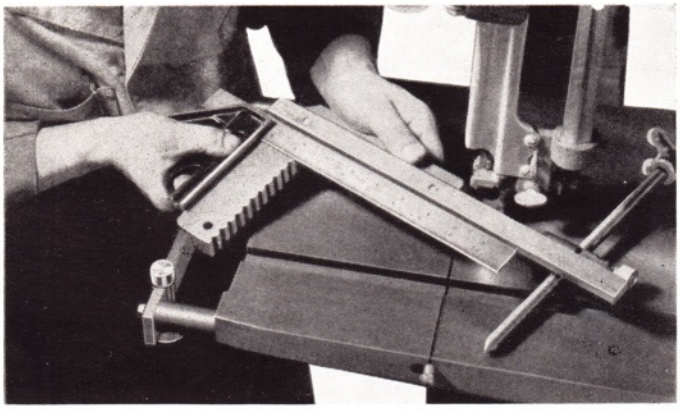


Fig. 1

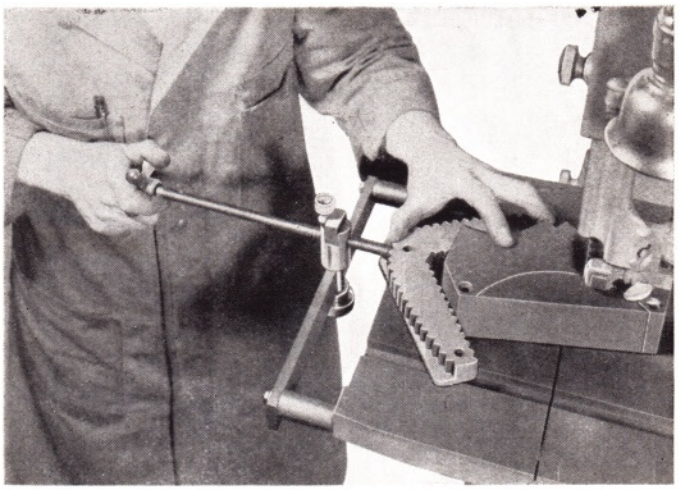


Fig. 3

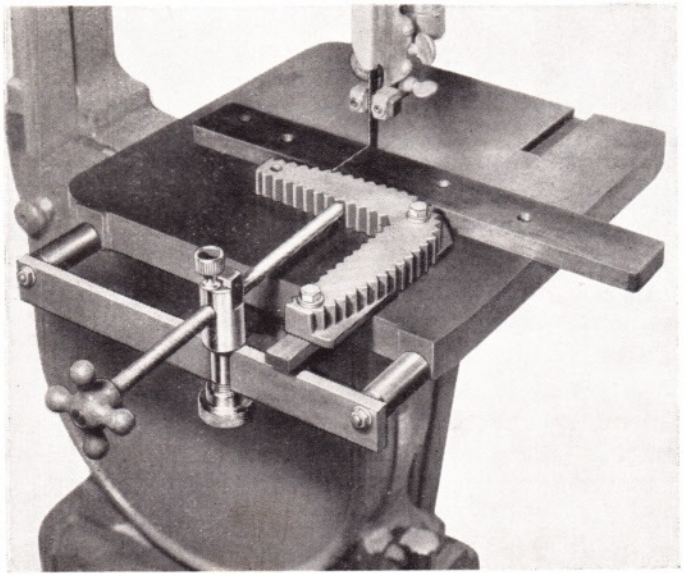


Fig. 2

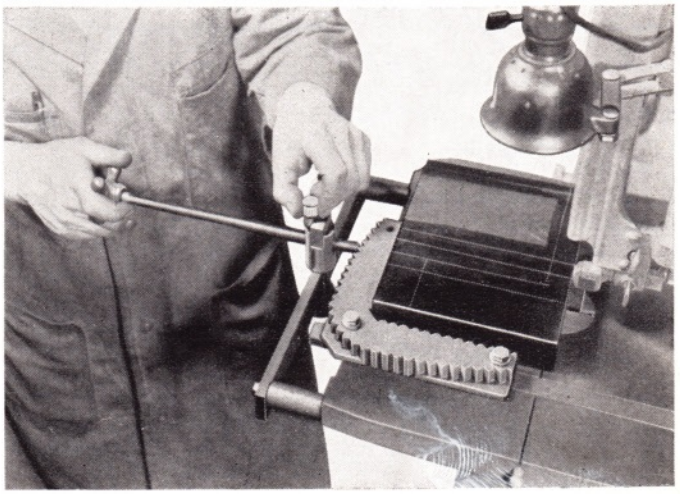


Fig. 4

To install screw feed attachment to Delta 14" band saw, thread two studs (LBS-243) into the tapped holes in front of table, threading deep enough to allow lock washer (SP-1702) and hexagon nut (SP-1209) to be fastened on opposite side. Assemble two spacers (LBS-242) and guide rail (LBS-241) to the studs. Guide bar clamp (LBS-248) is then slipped on guide rail and the knurled clamp knob (LBS-246) is used for locking clamp to rail. The upper pivot block assembly (LBS-247-S) can be swiveled in any direction and when not in use may be slipped off its pilot and set aside. The feed screw bracket (LBS-239) is not assembled to guide bar (LBS-240) at the factory, and when assembled by customer, care should be taken to "square up" the guide bar with the milled surface of feed screw bracket (LBS-239).

This can easily be done with a try square as shown in Fig. 1 on front page, thus insuring an absolutely square cut.

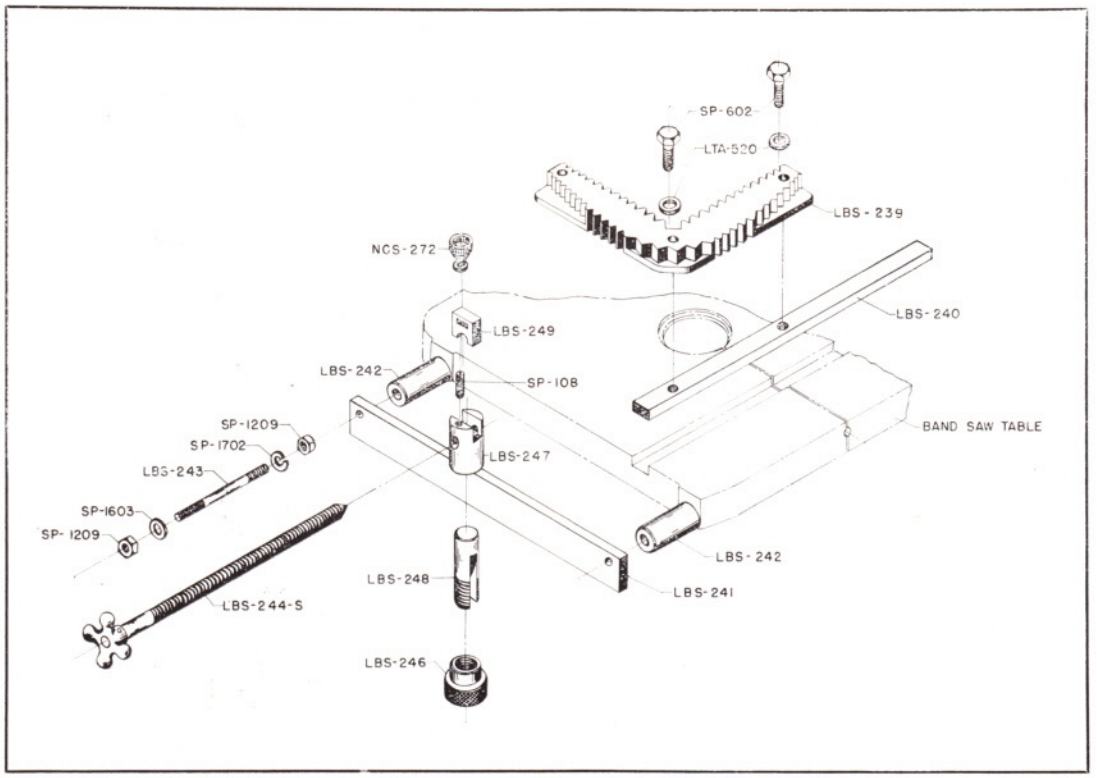
The bracket (LBS-239) can be used in a number of different positions, depending upon the work to be cut.

Fig. 2 shows the bracket being used to "square cut" without limiting the stock length.

When cutting irregular shapes as in Fig. 3, the guide bar is not used.

The work is then fitted into the most practical position according to its shape and the feed bracket is guided by hand as the work is fed into the saw, new serrations being used by the feed screw point as the bracket it rotated.

Fig. 4 shows the method of quick adjustment. The knurled knob (NCS-272) is used to engage and disengage the half nut (LBS-249) with the threads of the feed screw (LBS-244-S).



REPLACEMENT PARTS

Part No.	Description	No. Req.	Price Each
LBS-239	Feed Screw Bracket	1	$1.90
LBS-240	Guide Bar	1	.50
LBS-241	Guide Rail	1	.90
LBS-242	Spacer Block	2	.10
LBS-243	Stud	2	.10
LBS-244-S	Feed screw with Knob	1	.75
LBS-246	Lock Knob	1	.45
LBS-247	Feed Screw Pivot Block	1	.80
LBS-247-S	Feed Screw Pivot Block Assembly, (Pivot Block, Half Nut and Knurled Knob)	1	1.25

Part No.	Description	No. Req.	Price Each
LBS-248	Guide Bar clamp	1	$ .25
LBS-249	Half Nut	1	.25
LTA-520	Steel Washer	2	.10
NCS-272	Knurled Knob	1	.10
SP-108	1/4-20 x 3/4" Headless Set screw	1	.10
SP-602	3/8-18 x 1 1/4" Hex. Hd. Cap Screw	2	.10
SP-1209	1/4-28 Hexagon Nut	4	.10
SP-1603	1/4" Steel Washer	2	.10
SP-1702	1/4" Lock Washer	2	.10

NOTE: Prices in this list apply only to parts ordered for repair and replacement. They cannot be used for computing allowance values when a machine is ordered "less" certain parts.

PRICES SUBJECT TO CHANGE WITHOUT NOTICE

DELTA MILWAUKEE

THE DELTA MFG. CO., MILWAUKEE 1, WIS.

SECTION
Index: 120—28B
Product Data—14" Band Saws
Operators Instruction Sheets
Form No.: PM 1656 Date: 12-9-44
Replaces Form No.: None

No. 883 BELT GUARD FOR 14" BAND SAWS
Instructions for Installing New Pressed Steel Guard

REPLACES CAST IRON GUARD

The No. 883 Belt Guard for both the metal cutting and the wood cutting 14" Delta Band Saw is now being made of sheet steel, replacing the cast iron guard formerly furnished under this same designation.

The new guard retains the same general appearance and dimensions, but has advantages in lighter weight and greater clearance around the belt and pulleys. The hand knob and snap spring provide for instant accessibility when changing belts. Made of 16 and 20 gage sheet steel, this guard is rigid and strong enough to give full protection.

INSTALLING THE GUARD

The No. 883 Belt Guard is assembled ready to install on the 14" Band Saw. It is packed in a carton and includes the required spacers and attachment screws.

The upper pulleys of the band saw must be removed before the guard can be mounted on the machine base. The motor pulley need not be removed, as it will pass through the opening in the lower end of the guard pan. Care should be taken to avoid damage to pulleys, shafts and keys when making this change.

Because of a slight difference in fit of the guard upon the steel and cast iron bases, different spacers and screws are needed for the two cases. Alternate fittings are provided and those not used may be discarded.

For attaching on the steel stand, the 1/4-inch spacer disk is placed between the bottom end of the guard pan and the face of the motor shelf. The 5/16-18x1 inch machine screw is used for the connection at this point. The mid-section of the guard pan fits directly against the top edge of the steel stand and is fastened there by the two 5/16-18 x 5/8-inch machine screws through holes which have been provided. Lock washers and hex nuts tightened on these screws complete the attachment.

On the cast iron stand, the 3/4-inch spacer and 5/16-18 x 1 1/2-inch machine screw are used for the bottom end, with the same two 5/16-18 x 5/8-inch screws for the upper connection. The mounting holes in the cast iron machine base have been tapped to receive these screws; the hex nuts are therefore not needed in this case, and the lock washers should be used under the heads of the machine screws to make a permanent attachment.

P.M. No. 1513
DATE 7-1-43
REPLACES: NONE
INDEX: 120-6-F

DELTA MILWAUKEE

THE DELTA MFG. CO., MILWAUKEE 1, WIS.

SERIES
28
BAND SAWS

BAND SAW ACCESSORIES
Instructions for Installing No. 882 Light Attachment

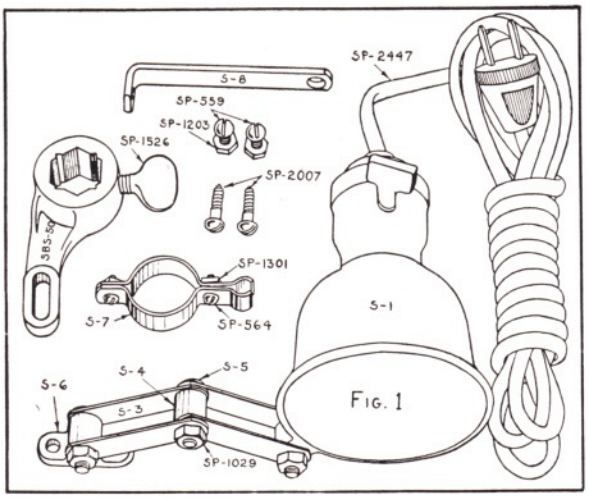


FIG. 1

This light attachment is furnished complete with shade, socket, cord, four flat links, three bolts and attachment bracket.

It can be swung on the built-in bracket of all our present models of band saws, scroll saws and 14 inch drill presses.

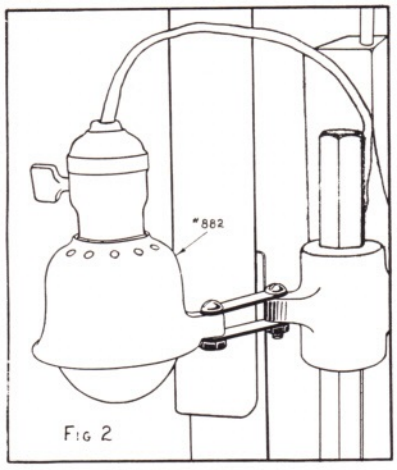


FIG 2

The light is attached to the boss of the 14 inch band saw as shown in Fig. 2.

It may be attached to our present model scroll saws in a similar manner.

To attach to any of our late model 14 inch drill presses having a boss cast on the side of the head which is drilled for the link bolt, the bracket S-6 is removed and the links slipped over the boss, then the bolt is inserted and tightened as shown in Fig. 2.

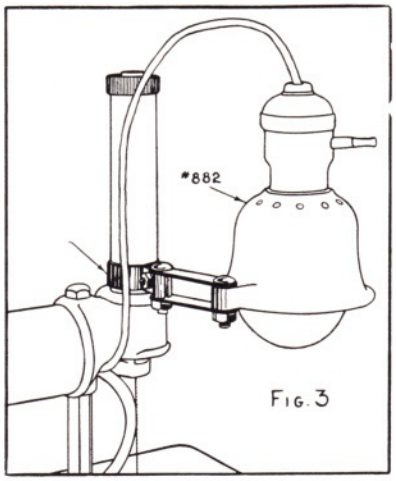


FIG. 3

Bracket No. 1135 is used to fasten the light to the upper spring tube of the old style No. 700 scroll saw. The manner of its use will be obvious from Fig. 3.

Bracket SBS-50-S is used to fasten the light to old style No. 785 10-inch band saw and No. 385 12-inch band saw. This bracket can be slipped over the hexagon guide-support post either below the arm or above it, according to the desire of the user. Bracket S-6 is discarded when SBS-50-S is used.

To attach the light to old style No. 620 drill press, use the standard bracket furnished with the attachment. Use bracket S-6 as a template for drilling the holes. Set the bracket against the left-hand side of the drill-press head and, using a No. 11 drill, placed through the holes, drill through the wall of the head. Be sure to place the bracket so that the nut of the front 10-32 machine screw used for fastening will not

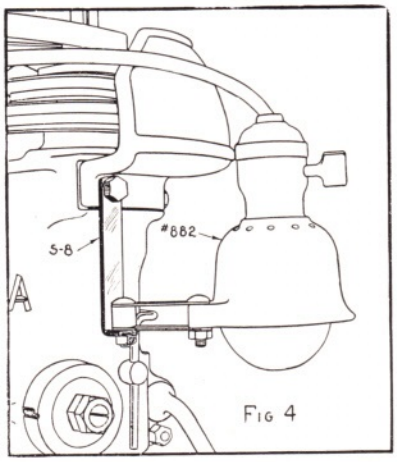


FIG 4

come too close to the rib running across between the walls of the head. To avoid this, place the front end of the bracket ½ inch behind the cap that covers the spindle-return spring.

To attach light to models of the old No. 970 drill press without the boss on the head, use bracket S-8 as shown in Fig. 4. This bracket is fastened under one of the capscrews that hold the guard, and only one pair of links on the lamp is used. One spacer is used on top of the bent end of the S-8 bracket, as shown.

The shade is designed for use with 15 and 25-watt lamps. These sizes furnish ample light for almost any purpose.

The light attachment may be attached to many other machines, or to almost any surface, by the use of some one of the brackets furnished for it. Extra support links may be added if necessary to make the attachment longer or more flexible. It can be used anywhere where a flexible light is needed and concentrates the light just where it is wanted to illuminate the work.

REPLACEMENT PARTS

Part No.	Description	No. Req.	Price Each
S-1	Lamp Shade	1	$ .65
S-2	Deflector Washer	1	.10
S-3	Shade Support Link	4	.10
S-4	Spacer	1	.10
S-5	Special Screw	3	.10
S-6	Standard Shade Bracket	1	.15
S-7	Clamp for attachment bracket	1	.10
S-8	Attachment Bracket for old No. 970 Drill Press	1	.15
J-44	8-32 x 5/16" Headless Setscrew	2	.10
SBS-50-S	Attachment Bracket for old No. 385 and old No. 785 Band Saws	1	$ .55
SP-1029	¼"-20 Hex. Nut	3	.10
SP-1526	Thumb Screw	1	.10
SP-2447	Cord, Plug and Socket (sold assembled only)	1	.75
#1134	Support Links (pair) with spacer, screw and nut	1	
#1135	Attachment Bracket for No. 700 Scroll Saw	1	

P.M. No. 1518
DATE 6-1-43
REPLACES: NONE
INDEX:

DELTA MILWAUKEE

THE DELTA MFG. CO., MILWAUKEE, WIS.

SERIES 28 BAND SAWS

OPERATING AND MAINTENANCE INSTRUCTIONS
For Part No. 768 10″ Band Saw

GENERAL. A band saw requires a reasonable amount of care and attention in order to insure perfect performance and accurate work. No matter how good a machine a manufacturer may make, it will not do its best work unless the user takes the trouble to familiarize himself with the proper method of using the machine and setting the adjustments, and to learn what is necessary for best results. It takes but a few minutes to read these instructions and it may save hours of trouble or delay later.

SETTING UP. The band saw is ready for operation as received, except that the table has been tilted for easier packing. Remove the side boards carefully from the crate, unbolt the base of the machine from the crate bottom, remove the weatherproof covering and the machine is ready for installation on stand or bench.

The table insert and the tapered pin for the table-alignment hole at the end of the table slot, together with the Allen wrench for the guides, will be found in the envelope attached to the saw. The table pin should be tapped into place with a hammer, striking lightly until the pin is firmly seated and no more. ***Do not drive the pin in any further than necessary for this, or the table may be broken.*** The pin is very easily removed when changing blades simply by turning it backwards with a wrench on the hexagon head in the same manner as when removing a screw.

POWER REQUIRED. For most work around the small shop or home work-shop a good ⅓-H.P. motor will be found to furnish ample power for this machine. It is recommended that the No. 62 110 Capacitor Motor, or a motor of equivalent power, be used. For steady production work, using wide blades, a good ½-H.P. Repulsion-Induction Motor, like the No. 64 510, should be used. Only a constant-speed motor should be selected.

SPEED. On standard motors running at 1725 R.P.M. a 2¾-in. V-pulley should be used, and this will give the band saw the correct speed of 950 R.P.M. This speed will be found ample for all requirements, and nothing is gained by increasing it; in fact, blade life will be considerably shortened if this speed is greatly increased except for wide blades.

Be sure the motor turns in the right direction. The wheels of the band saw should rotate in a clockwise direction when viewed from the guard side of the machine, the teeth of the blade moving downward toward the table. If the motor turns the wrong way, turn it around if it is a double shaft motor, or reverse it in accordance with the maker's instructions.

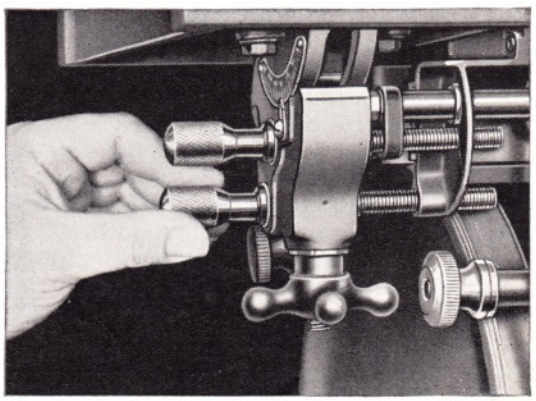
FITTING ON STAND. No. 329 Steel Stand for the 768 Band Saw is slotted for both ⅓ and ½ H.P. motors with standard bases.

ADJUSTMENTS

TILTING TABLE. The table of the No. 768 band saw may be tilted 45 degrees to the right and 10 degrees to the left. To tilt, loosen star wheel NCS-32, under each trunnion seat, and retighten after table has been tilted to the desired angle. To tilt the table to the left, first tilt it slightly to the right, remove the sleeve LBS-4 from stop screw SP-105, then the table may be tilted 10 degrees to the left. Stop screw SP-105 is set at the factory to bring the table square with the blade, but this should first be checked before the machine is used to insure that the setting has not been disturbed in shipping. Screwing the screw up or down enables the table to be set square; when set, it is locked with the lock nut. Always set the table square with the sleeve in place on the screw. When the table is set, adjust the movable pointer SBS-46 to the zero mark on the graduated segment on the front trunnion, and it will then indicate the correct tilt in degrees.

BLADE AND GUIDE ADJUSTMENTS. When it is desired to change the blade on this saw remove upper and lower wheel guards by unscrewing the knurled knobs. Lower the upper wheel by turning the ball-crank handle of the adjustment screw in a counter-clockwise direction until the blade is loose. Remove the table alignment pin and the table insert, then slip the blade off the wheel and guide it out through the slot in the table. This can be done without removing the sliding guard with blades up to ⅜ in wide. For ½ in. and ¾ in. blades it is better to remove the sliding guard; as the screw holes are slotted for quick removal and installation of this guard, this operation takes but a second to perform.

To install a new blade merely reverse the above procedure. Before attempting to set the guides on the new blade, loosen the Allen screw (NCS-37) that hold the square guide pins, and pull the pins back entirely clear of the blade, so that they will not effect the centering of the blade on the wheel. Loosen all the thumbscrews that lock the blade-supports and guide rod brackets, and run the ball-bearing blade supports and guide pins as far back as they will go, so that the blade is completely free of all interference.



Turning the lower adjustment knob as above adjusts the guide pins to the teeth of the blade. The upper knob adjusts the blade support.

TENSION. On the back of the upper-wheel slide bracket there is a series of graduations. These indicate the proper tension for various widths of blades. With the blade on the wheel, the ball-crank handle is turned so as to raise or lower the wheel until the red-fiber washer under the tension-screw nut comes to the proper graduation for the size of blade being used.

These graduations will be found correct for average work, and are not affected by re-brazing of the saw blade. It is urged that you use these graduations until you have become familar enough with the operation of the band saw to vary the tension a trifle for varying kinds of blades or work. Over-straining is the commonest cause of blade breakage and other unsatisfactory blade performance, and it will be found that the tension gauge will eliminate many of the commoner blade troubles if it is intelligently used.

CENTERING BLADE. After the tension has been adjusted, revolve the wheels slowly forward by hand, and watch the blade to see that it travels in the center of the tires. There is a thumb-nut and wing screw on the rear of the upper-wheel bracket (LBS-106 and SP-1403), which are used to alter the tilt of the upper wheel in order to make the blade "track". If, when the turning the wheels by hand, the blade begins to creep toward the front edge, loosen the wing screw and tighten the thumbscrew a little. This will tilt the top of the wheel toward the back of the machine and will draw the blade toward the center of the wheel rim. If the blade creeps toward the back of the rim, turn the thumbscrew in the opposite direction. Adjust the thumbscrew only a fraction of a turn at a time, as it does not take much to draw the blade one way or the other, and never adjust the blade while the machine is running. After the blade has been "tracked" in the center of the wheel rims, tighten the wing nut that locks the adjusting thumbscrew.

SETTING THE GUIDES. The brackets carrying the guide pins should now be adjusted forward by means of their knurled thumb nuts until the front edges of the guide pins will be just behind the roots of the teeth. If the guide pins are too far forward the teeth of the blade will be worn against the pins; if they are too far back, the blade will not be correctly supported for curve cutting. The micrometer adjustment on your guides makes it easy for you to set your guides precisely to the bottom of the teeth.

When the brackets have been properly adjusted, then set the guide pins inward until they are as close as possible to the blade, but without binding it, then tighten the setscrews that hold the pins and adjust the ball-bearing blade supports in toward the back of the blade. The supports should be adjusted so they will be about 1/64 in. clear of the back of the blade whenever the table is running free—without cutting. The blade should bear against the support only ***when it is actually cutting.*** If the blade is allowed to run hard against the supports at all times the back will become case-hardened, and this will cause eventual breakage of the saw. The proper adjustment of the blade and saw is very important for the correct operation of the band saw.

Be sure to readjust the guides every time you change a blade, especially if you use blades of varying widths.

BLADES. A band saw blade is a delicate piece of steel that is subjected to tremendous strain. However, you can obtain long use from a band-saw blade if you give it fair treatment. Be sure you have blades of the proper thickness and temper for 10-inch wheels. It is insurance against trouble to purchase your blades from us, for our blades are made especially for this machine.

Always use the widest blade possible, using the narrow blades for sawing small, abrupt curves and for fine delicate work only. Change blades and use a wider blade whenever the work will permit its use. This policy will not only save blades but will produce better work. Band saw blades may be purchased welded, set and sharpened ready for use. For cutting wood and similar materials we can supply them in widths of 1/8 inch., 3/16 inch, 1/4 inch, 3/8 inch, 1/2 inch and 3/4 inch.

File and set the blades whenever you find it requires pressure to make them cut. If a blade is broken it can be brazed; however, if it has become badly case-hardened it is not economical to have it brazed because it will soon break in another place. If you are not equipped to file, set and braze or weld blades ask us for prices.

Blades for the standard model No. 768 band saw are 74 inches long.

OPERATING THE BAND SAW. Before starting the machine, see that all adjustments are properly made and that the guards are in place. Turn the pulley by hand to make sure that everything is correct before turning on the power.

Keep the top guide down close to the work at all times. When using a band saw, do not force the material against the blade too hard. Light contact with the blade will permit easier following of the line and prevent undue friction, heating and case-hardening of the blade at its back edge.

Keep the saw sharp and you will find that very little forward pressure is required for average cutting. Move the stock against the blade steadily and no faster than will give an easy cutting movement.

Avoid twisting the blade by trying to turn sharp corners. Remember you must saw around the corner; use a narrow blade if you want to saw a very small radius.

When cutting curves turn the stock carefully so that the blade may follow without being twisted. If a curve is so abrupt that it is necessary to repeatedly back up and cut a new kerf, either a narrow blade is needed or more set in blade being used is required. The more set a blade has, the easier it will allow the stock to be turned, but the cut is usually rougher than where a medium amount of set is used.

In withdrawing the piece being cut in order to change the cut, or for any other reason, the operator must be careful that he does not accidentally draw the blade off the wheels. In most cases it is easier and safer to turn the stock and saw out through the waste material, rather than to try to withdraw the stock from the blade.

BLADE BREAKAGE. Any one of a number of conditions may cause a band saw blade to break. Blade breakage is in some cases unavoidable, being the natural result of the peculiar stresses to which such saws are subjected. It is, however, often due to avoidable causes, most often to lack of care or judg-

ment on the part of the operator in mounting or adjusting the blades or guides. The most common causes of blade breakage are: (1) faulty alignments and adjustments of the guides, (2) forcing or twisting a wide blade around a curve of short radius, (3) feed-too fast, (4) dullness of the teeth or absence of sufficient set, (5) excessive tightening of the blade, (6) top guide set too high above the work being cut and, (7) using a blade with a lumpy or improperly finished braze or weld.

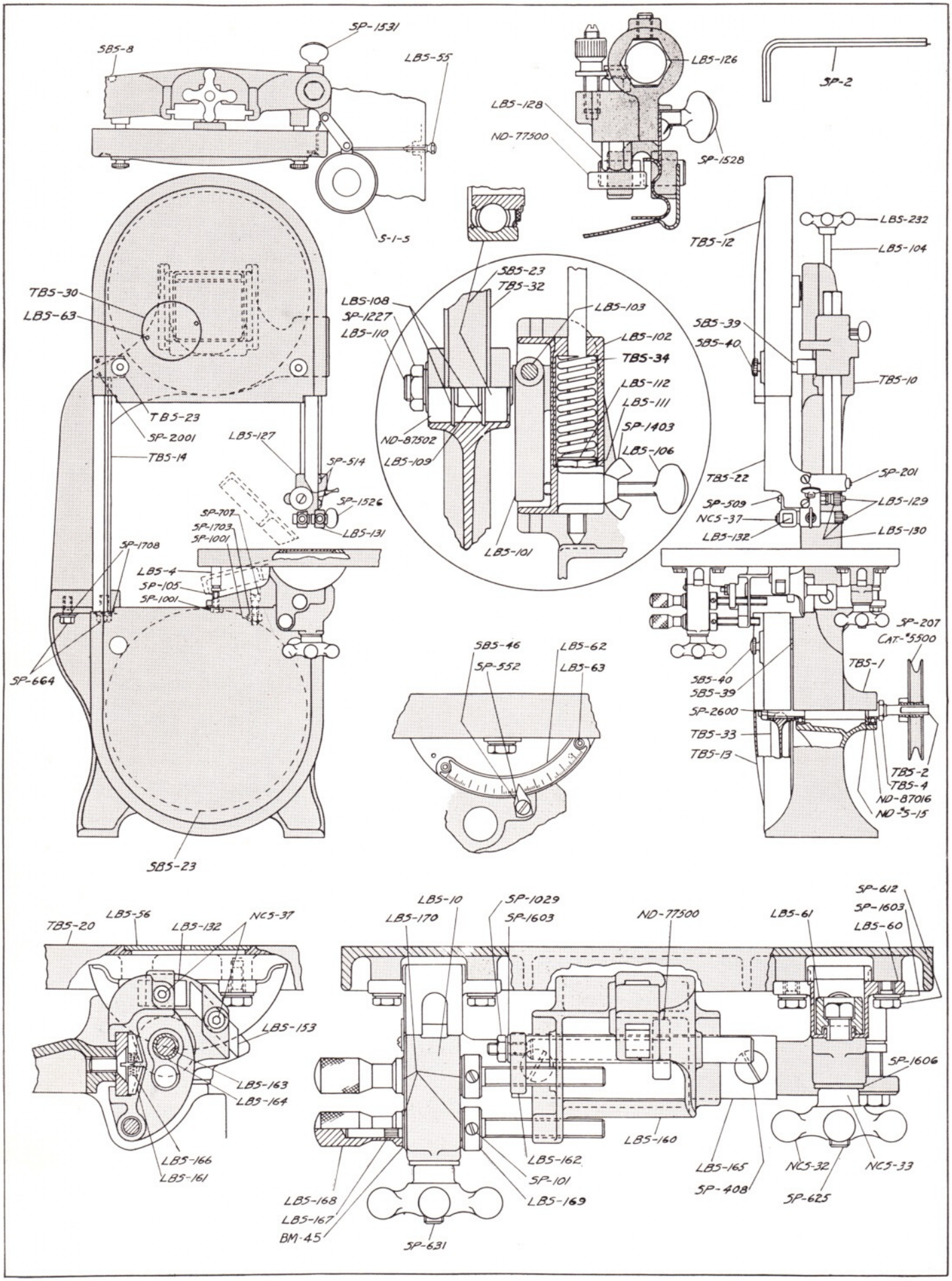
LUBRICATION. The wheels of the No. 768 band saw are carried on self-sealed ball bearings, which require no lubrication for the life of the bearing; in fact, they require no attention whatever. Ball-bearing blade supports are of the same type. Oil of every kind should be kept away from the blade supports, and any traces of grease that may be apparent due to slight leakage of lubricant after running for some time should be wiped away before starting to work.

REPLACEMENT PARTS

Part No.	Description	No. Req.	Price Each
TBS-1	Base casting only	1	$4.25
SBS-39	Wheel-guard stud	2	.15
LBS-10	Trunnion-support bracket	1	1.65
LBS-4	Table-top spacer	1	.10
SBS-8	Dowel pin, ¼"x¾"	1	.10
SBS-46	Indicator pointer	1	.10
SP-105	Stop screw, 5/16"-18x2"	1	.10
SP-552	Indicator screw, #10-32x5/16"	1	.10
SP-707	5/16"-18x1" Fill. hd. cap screw	2	.10
SP-1001	5/16"-18 stop-screw nut	3	.10
SP-1703	5/16" lock washer	2	.10
SP-664	7/16-20 x 1" Hex. Head Cap Screw	2	.10
SP-676	7/16"-20x7/8" frame bolt	2	.15
SP-1708	29/64" lock washer	2	.10
ND-S-15	Pre-loading spring for bearing	1	.10
ND-87016	Sealed ball bearing	2	2.20
	UPPER-ARM PARTS		
TBS-10	Upper arm only	1	3.30
SP-1531	Thumbscrew, 7/16"-14x¼"	1	.10
SBS-39	Wheel-guard stud	2	.15
	TABLE PARTS		
TBS-20	Table	1	3.50
TBS-20-S	Table assembly, with trunnions	1	4.65
LBS-60	Table trunnion	2	.40
LBS-62	Tilting scale for front trunnion	1	.10
LBS-63	Hollow rivet for trunnion scale	2	.10
LBS-61	Table clamp shoe	2	.20
LBS-55	Table alignment pin	1	.10
LBS-56	Table insert (aluminum)	1	.10
NCS-32	Star hand knob	2	.25
NCS-33	Hand-knob spring	2	.10
SP-1606	7/16" steel washer	2	.10
SP-612	¼"-20x5/8" hx. hd. cap screw	6	.10
SP-1603	¼" steel washer	6	.10
SP-631	7/16"-14x4" trunnion-clamp sc. (front)	1	.15
SP-625	7/16"-14x2¼" trunnion-clamp sc. (rear)	1	.10
	DRIVE-SHAFT AND WHEEL PARTS		
TBS-2	Drive shaft	1	.85
SBS-23	Rubber tire	1	.40
TBS-33	Lower wheel	1	2.45
TBS-4	Drive-shaft nut	2	.10
SP-2600	No. 6 standard Woodruff key	1	.10
	UPPER-SHAFT AND WHEEL PARTS		
TBS-32	Upper Wheel	1	2.50
TBS-34	Upper Wheel Tension Spring	1	.10
LBS-101	Upper-wheel hinge	1	.30
LBS-102	Hinge-bracket slide	1	.90
LBS-103	Hinge pin	1	.10
*LBS-104	Tension screw	1	....
LBS-104-S	Tension Screw with Star Wheel for Upper Wheel Adjustment	1	.40
LBS-108	Guide for Upper Bearing	2	.10
LBS-106	Tracking thumbscrew, 5/16"-18x2¼"	1	.10
SBS-23	Rubber tire	1	.40
LBS-109	Bearing spacer	1	.15
LBS-111	Tension-screw nut, 3/8"-16	1	.10
LBS-112	Indicator washer (fiber)	1	.10
*LBS-232	Cast Iron Star Wheel for Upper Wheel Adjustment	1	....
SP-1403	Tracking-screw wing nut, 5/16"-18	1	.10
SP-1227	Upper-wheel nut, ½"-20	1	.10
ND-87502	Special Greaseal bearing	2	1.50
LBS-110	Upper Wheel Shaft	1	.20

Part No.	Description	No. Req.	Price Each
	UPPER SAW-GUIDE PARTS		
TBS-22	Sliding Blade Guard	1	$ .55
TBS-22-S	Upper saw-guide assembly	1	4.50
LBS-126	Hex. guide post	1	.50
LBS-127	Guide support	1	.75
LBS-128	Blade-support shaft	1	.10
LBS-129	Blade-support adjusting screw	2	.10
LBS-130	Adjusting-screw nut	2	.10
LBS-131	Guide-pin bracket	1	.20
LBS-132	Straight guide pin	2	.15
ND-77500	Ball-bearing blade support	1	1.45
NCS-37	Allen setscrew, 5/16"-18x17/64"	2	.10
SP-201	Allen setscrew, 5/16"-18x5/16"	1	.10
SP-509	Blade-support screw, ¼"-20x½"	1	.10
SP-1504	Bl. support thumbscrew, 5/16"-18x1 3/8"	1	.15
SP-1526	Guide bracket thumbscrew, 5/16"-18x9/16"	1	.10
SP-1528	5/16-18 x 1" Thumb Screw	1	.10
	LOWER SAW-GUIDE PARTS		
LBS-160	Lower guide-pin bracket	1	.75
LBS-160-S	Lower guide assembly, complete with blade support, bearing links, screws, etc.	1	3.50
LBS-161	Wedge for lower guide-pin bracket	4	.10
LBS-162	Link for lower blade-support shaft	1	.10
LBS-163	Lower blade-support shaft	1	.25
LBS-164	Lower blade-support spacer	1	.15
LBS-165	Rail for lower guide-pin bracket	1	.30
SP-408	Flat-hd. mach. screw, 5/16"-18x¾"	2	.10
LBS-166	Spring for lower saw-guide wedge	2	.10
LBS-167-S	Lower-guide adjusting sc., with knob	2	.30
LBS-167	Adjusting Screw for Lower Guide	1	.10
LBS-168	Knob for Adjusting Screw	1	.10
LBS-169	Stop collar	2	.10
LBS-170	Fiber washer	4	.10
LBS-132	Straight guide pin	1	.15
LBS-153	Angular guide pin	1	.20
SP-101	Headless setscrew, ¼"-20x¼"	2	.10
SP-1029	Hex. nut, ¼"-20	1	.10
SP-1603	¼" steel washer	1	.10
NCS-37	Allen setscrew, 5/16"-18x17/64"	2	.10
ND-77500	Ball-bearing blade support	1	1.45
BM-45	Hardened Spring Washer—7/8" O.D.	2	.10
	GUARD PARTS		
TBS-12	Upper-wheel guard	1	....
TBS-13	Lower-wheel guard	1	2.65
TBS-14	Wood blade guard	1	.30
TBS-22	Sliding blade guard	1	.55
TBS-23	Bracket for wood blade guard	2	.10
TBS-30	Name plate	1	.20
LBS-63	Hollow rivet for name plate	2	.10
SP-514	¼"-20x3/8" rd. hd. mach. screw	2	.10
SP-2001	#5 wood screw, 3/8" long	4	.10
SBS-40	Knurled Nuts	4	.10
	MISCELLANEOUS		
S-1-S	Lamp Attachment	1	....
SP-2	5/16" Allen Wrench, same as Cat. #194	1	....
#560	V-belt	1	....
#889	Special steel table insert for metal sawing	1	....
#5275	V-pulley for motor ½" bore	1	....
#5500	V-pulley for saw, ½" bore	1	....

Prices in this list apply only to parts ordered for repair and replacement. They cannot be used for computing allowance values if a machine is ordered "less" certain parts. Quotations on such machines will be furnished upon request. PRICES SUBJECT TO CHANGE WITHOUT NOTICE.


SP-1531
SBS-8
LBS-55
S-1-5
LBS-126
LBS-128
ND-77500
SP-1528
SP-2
TBS-12
LBS-232
LBS-104
SBS-39
SBS-40
TBS-10
TBS-22
SP-201
SP-509
LBS-129
NCS-37
LBS-132
LBS-130
SBS-23
TBS-32
LBS-108
SP-1227
LBS-110
LBS-103
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LBS-101
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LBS-63
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SP-2001
TBS-14
LBS-127
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LBS-131
SP-707
SP-1703
SP-1001
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LBS-4
SP-105
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SP-664
SBS-23
SBS-46
SP-552
LBS-62
LBS-63
SP-207
CAT-*5500
TBS-1
SBS-40
SBS-39
SP-2600
TBS-33
TBS-13
TBS-2
TBS-4
ND-87016
ND-*5-15
TBS-20
LBS-56
LBS-132
NCS-37
LBS-153
LBS-163
LBS-164
LBS-166
LBS-161
LBS-10
LBS-170
SP-1029
SP-1603
ND-77500
LBS-61
SP-612
SP-1603
LBS-60
SP-1606
LBS-160
LBS-162
SP-101
LBS-169
LBS-168
LBS-167
BM-45
SP-631
LBS-165
SP-408
NCS-32
SP-625
NCS-33

Setting Up and Operating No. 785 10--Inch Band Saw

GENERAL—A Band Saw requires a reasonable amount of care and attention to insure perfect performance and accurate work. The operation and adjustment of a Band Saw is very simple, if you know what is necessary for its best performance. By following these directions carefully you should have no trouble at all with this Band Saw.

Setting Up The Band Saw

Those who purchase the Band Saw without base or motor will receive the machine completely set up and packed in a fiber box so that no parts should be broken or missing. The table is removed and attached to the crate for easier shipping. First remove the table carefully from the crate, then remove the crate from around the machine.

Remove the ball crank nut (SBS-15-S) and segment guide from the stud No. SBS-7. Place the table in position on the machine so the edge of the segment on the table slips into the circular groove in the saddle casting. Slip the segment guide over the bolt so that the circular groove fits over the edge of the trunnion, then put on and tighten the nut.

To set the indicator (SBS-46) for the graduated scale; see that the table is set at right angles to the blade, checking this with a square, then set and tighten the screw so the pointer is held at the zero mark on the scale. See Figure No. 1.

The table insert will be found in the envelope. It should be placed in the opening in the saw table with the slot toward the front.

A screw and wing nut are also packed in the envelope. This screw should be inserted in the slot in the table after the blade is in place, to give the table greater stiffness. The position of the screw and wing nut is shown in Figure 3 at SP-1401.

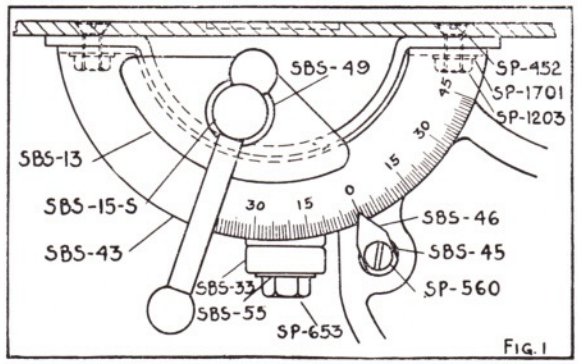

FIG. 1

Tilting Table Adjustment

By loosening the ball crank nut you can tilt the table to any angle up to 45 degrees. The indicator aids in selecting any angle instantly. The stop screw (SP-505) when properly adjusted insures bringing the table back to a position square with the blade.

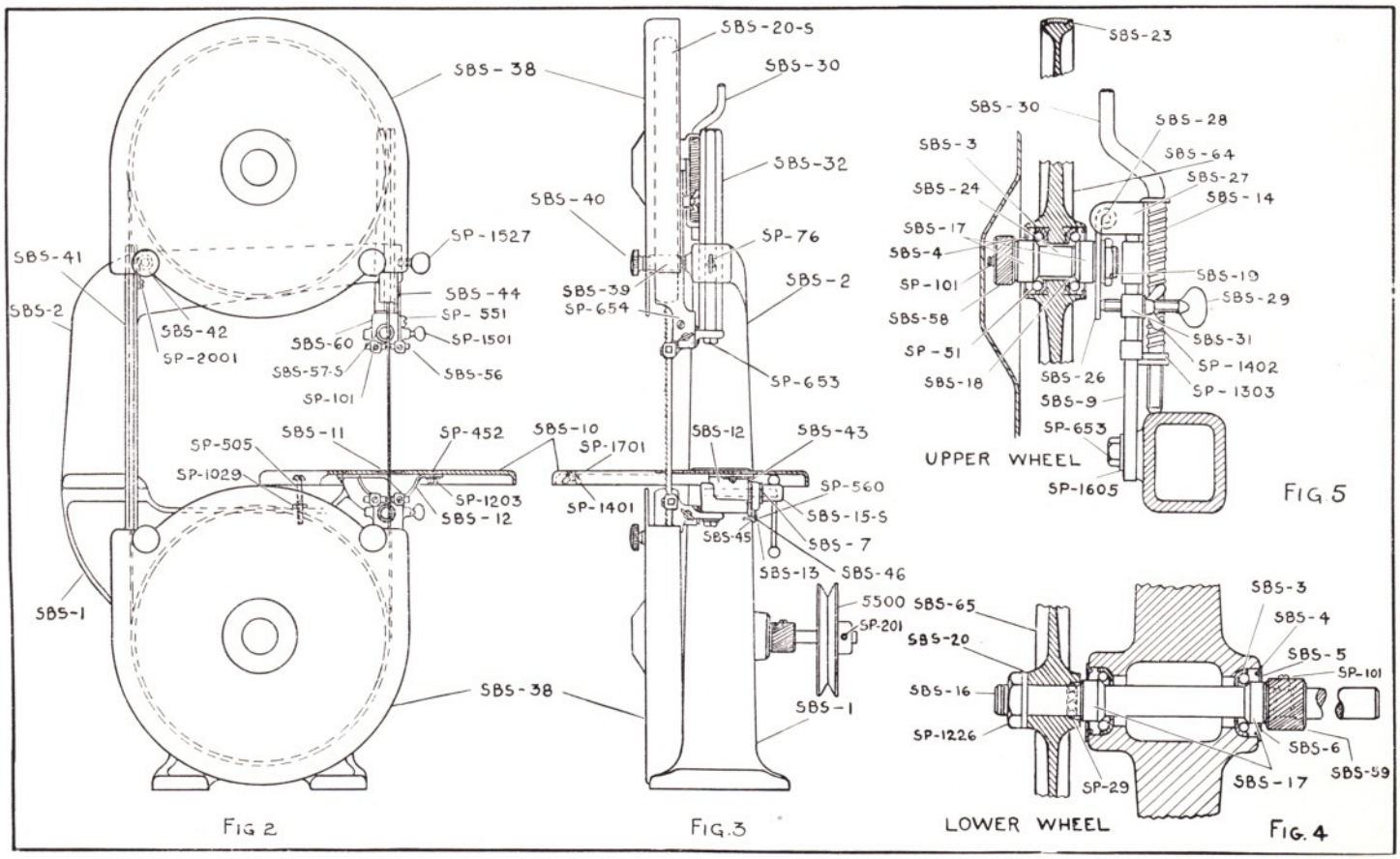

FIG 2
FIG. 3
FIG. 5
LOWER WHEEL
FIG. 4

Motor

Any ⅛ or ¼ H.P. motor will provide ample power for this machine for the average work. Use only a constant-speed type motor. A universal motor is not satisfactory as this motor races when idle and slows down when work is being done. On a motor running at 1725 R.P.M. you should use a pulley 2¾ inches in diameter. No. 785 Band Saw is intended for the efficient V-Belt drive. Our motor pulley No. 5275 is recommended for the motor.

The motor can be placed either below or to the rear of the band saw. Be sure the motor turns in the right direction. The wheels of the band saw should rotate in a clockwise direction when viewed from the front (guard side) of the machine. If the motor turns in the wrong direction turn it around if it is a two shaft motor and put the pulley on the other shaft. If a single shaft motor rotates in the wrong direction it will be necessary to reverse its rotation by following the directions given by the motor manufacturer.

Lubrication

No. 785 10" Band Saw is equipped with sealed ball bearings which require greasing only at intervals of six months where the machine is used daily. The bearings are packed with grease before the machine is shipped and the machine can be operated a long time before any greasing is necessary.

Whenever it becomes necessary to repack the bearings use a good grade of clean vaseline.

To repack the lower wheel-shaft bearings with vaseline, remove the V-pulley, then loosen the setscrew SP-101 in the knurled nut SBS-59. Unscrew the knurled nut, and remove it and the cone SBS-17 from the shaft, then pull the shaft out of the casting from the wheel side. Do not remove the bearing seals unless absolutely necessary for the purpose of removing and cleaning the bearings themselves. These seals are SBS-4, in Fig. 4, and may be removed, if necessary, by gently prying around their edges with a small screwdriver.

After packing vaseline into the bearings, insert the shaft again, put on the rear cone and the knurled nut, then tighten the knurled nut until the shaft turns freely without any end play. Do not make this nut too tight, and on the other hand do not have it loose enough to allow end play in the shaft. When properly adjusted, lock the nut by tightening the setscrew SP-101.

To grease the top-wheel bearings (see Fig. 5) remove the wheel guard, then loosen the setscrew SP-101 in the knurled nut SBS-58 and remove the nut and the cone at the front of the wheel. The wheel can now be gently eased off the shaft, and the bearings repacked with clean vaseline. Do not remove the seals on the bearings except for the purpose of removing the bearings themselves, as indicated in the preceding paragraph. After repacking, put the wheel back on the shaft, install the front cone, and adjust the knurled nut until the wheel turns freely on the shaft without play, then lock with the setscrew in the center of the knurled nut. Be sure, when adjusting, that this setscrew is backed off enough to permit the nut to be turned against the cone, as, if the setscrew is screwed too deeply into the nut while adjusting, it will bear against the end of the shaft and prevent the proper seating of the nut.

The ball bearing blade supports should not be lubricated at any time. If oiled or greased, the fine particles of wood dust that gather around them while the saw is in use will form a hard paste with the oil, and this will quickly prevent the bearings from revolving, thus in time ruining them for their purpose.

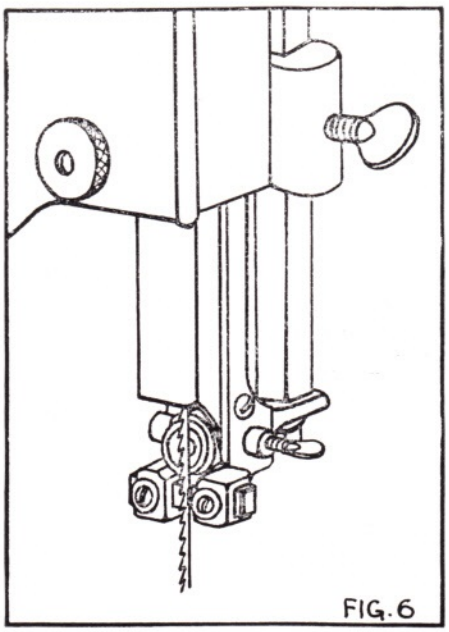

FIG. 6

Blades

A band saw blade is a delicate piece of steel that is subjected to tremendous strain. However, you can obtain long use from a band-saw blade if you give it fair treatment. Be sure you have blades of the proper thickness and temper for 10 inch wheels. It is insurance against trouble to purchase your blades from us, for our blades are made especially for this machine.

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File and set the blades whenever you find it requires pressure to make them cut. If a blade is broken it can be brazed; however, if it has become badly casehardened it is not economical to have it brazed because it will soon break again in another place. If you are not equipped to file, set and braze or weld blades ask us for prices.

Adjustment of the Blade and Guides

When you wish to change the blade on this band saw remove the wheel guards; lower the top wheel by turning the crank screw (SBS-30) back of the top wheel in a counter clockwise direction; remove the screw in the saw slot in the table and remove the saw blade. Loosen the bolts which hold the saw guides so the guides will not interfere with the proper setting of the blade. Place the blade on the wheels and tighten the crank screw enough to take the slack out of the blade, then give the crank about two more turns to give the blade tension. ***The lighter the tension a blade can be worked with, the less risk of breakage.*** Wide blades can stand more tension than narrow ones.

After the blade has been placed on the wheels and tightened, revolve the wheels slowly by hand and watch the blade to see how it travels on the tires of the wheels. You will notice a thumb screw (SBS-29) and wing nut at the back of the upper block for tilting the upper wheel so that the blade may be made to run on the center section of the rims.

If the blade should begin to creep to the front edge of the wheel, loosen the wing nut and tighten the thumb screw in a little. Should the blade try to creep to the back of the wheel turn the thumb screw a little in the opposite direction; that is, loosen it. Adjust the top wheel until the blade tracks in the center of both wheels, then tighten the wing nut so that the thumb screw will not become loose.

After the top wheel has been adjusted so the blade runs in the center of the rims, adjust the guides both above and below the table. The guide holders should be set so that the pins in the guides will enclose only the back part of the blade; ***they should not enclose any part of the teeth.*** Set the ball bearing disk guides which take the back thrust so that they are about 1/64 in. from the back edge of the blade. If the blade is allowed to bear hard against the guides, the back edge of the blade will become case-hardened, which will cause the blade eventually to break. The proper adjustment of the blade and guides is very important for the successful operation of the band saw.

Be sure to adjust the guides each time you change blades. Figure 6 shows the top guide adjusted properly.

Operating the Band Saw

Before starting the machine, see that all adjustments are properly made and that the guards are in place. Turn the pulley by hand to make sure that everything is correct before turning on the power.

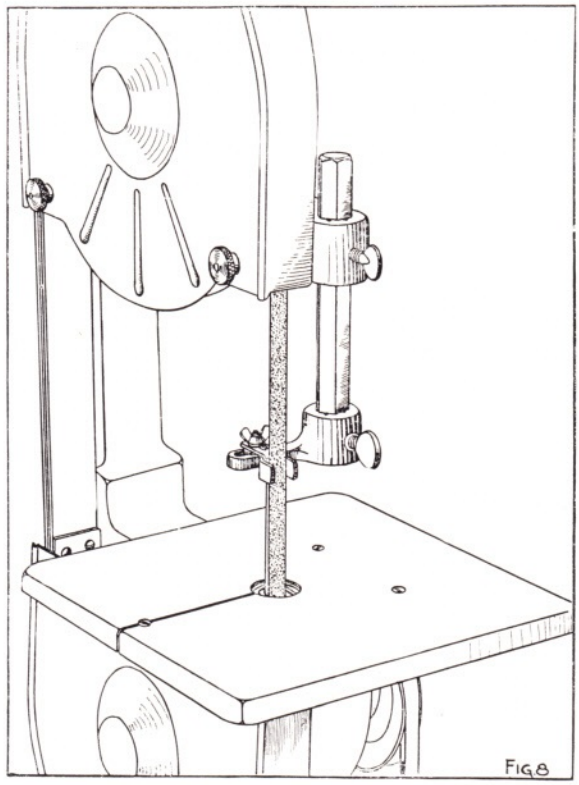
Keep the top guide down close to the work at all times. When using a band saw, do not force the material against the blade too hard. Light contact with the blade will permit easier following of the line and prevent undue friction, heating and case-hardening of the blade at its back edge.

Keep the saw sharp and you will find that very little forward pressure is required for average cutting. Move the stock against the blade steadily and no faster than will give an easy cutting movement.

Avoid twisting the blade by trying to turn sharp corners. Remember you must saw around the corner; use a narrow blade if you want to saw a very small radius.

When cutting curves turn the stock carefully so that the blade may follow without being twisted. If a curve is so abrupt that it is necessary to repeatedly back up and cut a new kerf, either a narrow blade is needed or more set in the blade being used is required. The more set a blade has, the easier it will allow the stock to be turned, but the cut is usually rougher than where a medium amount of set is used.

In withdrawing the piece being cut, in order to change the cut, or for any other reason, the operator must be careful that he does not accidentally draw the blade off the wheels. In most cases it is easier and safer to turn the stock and saw out through the waste material, rather than to try to withdraw the stock from the blade.



Causes of Blade Breakage

Anyone of a number of conditions may cause a band saw blade to break. Blade breakage is in some cases unavoidable, being the natural result of the peculiar stresses to which such saws are subjected. It is, however, often due to avoidable causes, most often to lack of care or judgment on the part of the operator in mounting or adjusting the blades or guides. The most common causes of blade breakage are: (1) faulty alignment and adjustments of the guides, (2) forcing or twisting a wide blade around a curve of short radius, (3) feeding the work too fast, (4) dullness of the teeth or absence of sufficient set or clearance, (5) excessive tightening of the blade on the wheels, (6) top guide set too high above the work being cut and, (7) using a blade with a lumpy or improperly finished braze or weld.

Using a Sanding Belt on the Band Saw

The sanding of the edges of scroll work, or the edges of straight or curved parts which have been sawed on the band saw or the scroll saw, is a difficult job when hand methods are used. A narrow sanding belt can be used on the band saw to good advantage for smoothing the edges of straight or irregular shapes. A great variety of work may thus be handled with ease and in a fraction of the time required for the slow hand sanding methods.

We can furnish the sand belts ½ inch wide, spliced and ready to be placed on the wheels. Our sand belt No. 783 is made for fine sanding and our belt No. 784 is made for coarse sanding or fast cutting.

A bracket and guides are necessary to support and guide the belt when the work is held against it. One guide has a curved face and is indispensable for sanding the edges of scroll work. The other guide is flat and is intended for straight edge sanding. The guides and bracket with 66″ garnet belt are our attachment No. 782.

To use the No. 782 Sanding Attachment on the band saw remove the upper and lower saw guides; remove the saw blade and the table insert piece; place the sanding belt on the wheels the same as if it were a band saw blade but tighten it only enough to keep it on the wheels, as excessive tightening will break the belt; adjust the top wheel so that the belt travels in the center of the wheels; fasten the sanding attachment bracket to the upper guide column; attach the belt support to the bracket and adjust it so that the belt will be supported when

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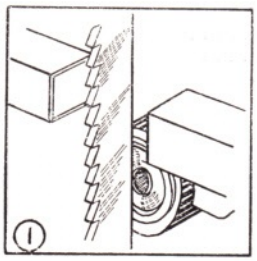
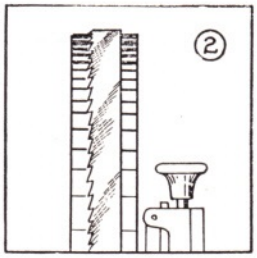




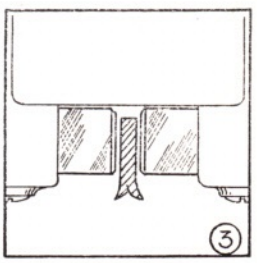
READ THESE INSTRUCTIONS CAREFULLY

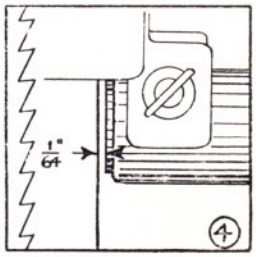
1 Loosen the screws locking the square guide pins, also the screw holding the ball-bearing blade support. Move the square pins apart and the blade support back until they are well clear of the blade, so the blade can be centered on the wheel rim. Be sure the blade is free to assume its correct position.

2 Adjust the tilt of the upper wheel with the adjusting screw until the blade tracks in the center of the tire on both upper and lower wheels. If the blade creeps toward the front of the wheel, tighten the adjusting screw; if toward the back, loosen the screw a little.

3 Move the guide brackets forward until the guide pins, when pushed in, will touch the blade just back of the teeth. Tighten the guide bracket. Adjust the square pins so that the blade runs snugly but easily between them. The pins must not bind the blade and must not touch the teeth.

4 Move the blade supports forward until they are 1/64″ behind the blade, then lock them. The blade supports should touch the back of the blade only when cutting. Allowing the blade to bear hard on the supports at all times will cause rapid carehardening and breakage of the blade.





the work is held against it; lower the guide column so that the bottom end of the belt support enters the insert opening in the saw table; turn the pulley by hand to see that all parts are adjusted properly and see that all screws are tight. The edges of the garnet-paper belt should be dulled so that the edges will not cut into the part being sanded and leave deep scratches. This may be done by starting the machine and holding a piece of emery stone or coarse oil stone against the extreme edges of the belt. The stone will remove the garnet from the belt at the edges and thus prevent the edges from cutting deeper than intended. The machine is now ready to be used to sand the edges of parts. Use the coarse belt No. 784 for rapid cutting and the fine garnet belt No. 783 for smooth sanding. Figure 8 shows the sanding belt, guide and bracket adjusted ready for operation.

How to Order Replacement Parts

If you should ever need replacement parts for your Band Saw, refer to Figs. 1, 2, 3 and 4. Find the location of the part you need in the illustration, then refer to the list below, which gives you the number and name of the part, and its price.

In your order be sure to give the name and number exactly as it is given in the parts list. Remember, the clearer you make your order the better the service we can give you.

Base Parts

No.	Name	No. Req.	Each
SBS-1	Base	1	$4.80
SBS-3	Inner Race	2	.15
SP-51	Bearing Retainer (with balls)	2	.15
SBS-4-S	Bearing Seal	2	.10
SBS-7	Table Clamp Stud	1	.10
SBS-46	Indicator	1	.10
SP-551	Indicator Screw	1	.10
SP-505	1/4"-20 x 2" R. H. Adjusting Screw	1	.10
SP-1029	1/4"-20 Hex. Lock Nut	1	.10
SP-2352	3/4"-10 x 2" Sq. Head Screw	1	.10
SP-1027	3/4"-10 Hex. Nut	1	.10
SP-1707	3/4" Lock Washer	1	.10

Upper-Arm Parts

SBS-2	Upper Arm	1	$3.00
SP-1527	5/16"-18 x 3/4" Thumbscrew	1	.10
SBS-9	Upper-Wheel Slide	1	.40
SP-653	3/8"-24 x 5/8" Hex. Head Screw	2	.10
SP-1605	3/8" Washer	2	.10
SP-1504	Thumb Screw	1	.15

Table Parts

SBS-10	Table	1	$1.00
SBS-11	Table Insert	1	.10
SP-452	10-32 x 7/16" F. H. Screw	3	.10
SP-1203	10-32 Hex. Nut	2	.10
SP-1401	10-32 Wing Nut	1	.10
SP-1701	3/16" Lock Washer	3	.10
SBS-12	Trunnion	1	.20
SBS-13	Trunnion Clamp Plate	1	.10
SBS-43	Graduated Segment	1	.10
SBS-49	3/8" Washer	1	.10
SBS-15-S	Clamp-Nut Assembly	1	.20

Drive Shaft and Wheel Parts

SBS-16	Drive Shaft	1	$0.60
SBS-17	Cone	2	.35
SBS-20	Arbor Washer	1	.10
SBS-65	Lower Wheel, with Tire	1	2.15
SP-1226	Arbor Nut	1	.10
SP-29	3/16" Steel Balls	4	.10
SP-101	1/4" Headless Setscrew	1	.10
SBS-59	Knurled Adj. Nut	1	.20
SBS-16-SA	Drive Shaft Complete with Cones and Bearings	1	2.10

Upper Shaft and Wheel Parts

No.	Name	No. Req.	Each
SBS-24	Upper Shaft	1	$0.15
SBS-17	Cone	2	.35
SBS-18	Cone Ring	1	.10
SBS-19	5/8"-18 Hex. Nut (Spec.)	1	.10
SBS-23	Rubber Tire	1	.40
SBS-3	Inner Race	2	.15
SP-51	Bearing Retainer, with Balls	2	.15
SBS-4-S	Bearing Seal	2	.10
SBS-26	Upper-Wheel Hinge Plate	1	.15
SP-101	1/4" Headless Setscrew	1	.10
SBS-58	Knurled Adj. Nut.	1	.10
SBS-64	Upper Wheel with Tire	1	2.15
SBS-24-S	Upper Shaft Complete with Bearings and Retainers	1	2.00

Upper-Shaft Adjustment Parts

SBS-55	Steel Washer	1	$0.10
SBS-27	Sliding Hinge Bracket	1	.20
SBS-28	Hinge Pin	1	.10
SBS-29	Hinge Adjusting Screw	1	.10
SBS-14	Spring	1	.10
SP-1303	5/16"-18 Sq. Nut	1	.10
SBS-30	Adjusting Crank	1	.15
SP-1402	1/4"-20 Wing Nut	1	.10
SBS-31	Threaded Insert	1	.10

Upper and Lower Saw Guide Parts

SBS-32	Hex. Saw-Guide Post	1	$0.45
SP-653	3/8"-24 x 5/8" Hex. Head Screw	2	.10
SBS-55	3/8" Washer (Spec.)	2	.10
SBS-60-S	Guide, complete with Pins, Screws and Blade Supports	2	.90
SBS-60	Guide Bracket only	2	.45
SBS-57-S	Ball-Bearing Blade Support	2	.50
SP-1501	1/4" Thumbscrews	2	.10
SBS-56	Square Guide Pins	4	.10
SP-101	1/4" Headless Setscrew	4	.10
SP-551	10-32 Machine Screw	1	.10

Saw-Guard Parts

SBS-38	Wheel Guard	2	$0.70
SBS-39	Guard Stud	4	.15
SBS-40	Knurled Nut	4	.10
SBS-41	Wood Guard	1	.25
SBS-42	Wood-Guard Brackets	2	.10
SBS-44	Front Saw Guard	1	.10
SP-2001	3/8" R. H. Wood Screw	2	.10
SP-551	Front Guard Screw	1	.10

PRICES SUBJECT TO CHANGE WITHOUT NOTICE

THE DELTA MANUFACTURING CO. DELTA MILWAUKEE **600-634 E. Vienna Ave., Milwaukee, Wis.**

Form I. S. 158—3-42

Printed in U. S. A.

NEW

Electric Butt Welder for Band Saw Blades

DELTA MILWAUKEE

A handy, portable unit that makes a clean, perfect weld—is fast in operation.

HERE is a new electric welding unit for butt welding band saw blades which has so many advantages, is so well engineered and constructed and does such a fine welding job that it is the favorite in all shops where it is used.

It is simple to operate—anyone without previous experience can make a clean, perfect weld—it is almost fool-proof. The saw clamps are of an entirely new design. They grip the saw blade firmly and give a positive and accurate line-up of the blade so that full electrical contact is obtained for a good weld. Only the flat portion of the blade is clamped—the saw teeth are free. All thicknesses of blade can be clamped. By turning the Tension Indicator handle to the "Weld" position and turning on the electrical switch, the weld is automatically made. It then can be properly annealed—the heat being accurately controlled by means of a convenient trigger switch. The convenient, built-in bakelite grinding wheel allows the operator to remove all welding flash so that the blade makes a clean smooth cut.

These operations are simple and direct. There is no "guess work"—even the most inexperienced operator can do a perfect job. Instructions are so simple that they are all contained on the metal nameplate on the front of the unit.

LEFT — Note complete, simple instructions on nameplate, clamping levers, indicator and switches. RIGHT — Complete, compact unit is portable to be moved where needed. Stand is sturdy and heavy.

Saves Time and Money

There is a tremendous saving in time and money by using this new Butt Welder. In addition, it is so low in cost that it soon pays for itself.

Being entirely portable (mounted on the stand as shown) it can be used for several machines; thus it will take care of an entire battery of metalcutting band saws.

☆ ☆ ☆

These are but a few of the most prominent advantages of this new Butt Welder, but they are important enough to you to show you that you should have this unit in your shop. Additional features are of added value to you. At this low cost any type of shop can afford one or more units. Order yours today.

Specifications

Size (unit) 12" high, on stand 42", 8" wide, 8¼" deep. Available for 110 or 220 volt service only. Has snap acting switch. Grinder is built-in with ball bearing motor. One Bakelite 46 grit grinding wheel furnished.

No. 28-905—Complete Butt Welder as illustrated for 1/16" to ½" blades with grinding wheel, mounted on stand. For 110 volt, 50 or 60 cycle AC single phase service. Shipping Wt. 102 lbs. Code WELDA **$139.50**

No. 28-907—Complete Butt welder as illustrated for 1/16" to ½" blades with grinding wheel, mounted on stand. For 220 volt, 50 or 60 cycle AC single phase service. Shipping Wt. 102 lbs. Code WELDS **$139.50**

No. 28-908—Complete Butt welder as illustrated for 1/16" to ¾" blades with grinding wheel, mounted on stand. For 220 volt, 50 or 60 cycle AC single phase service. Shipping Wt. 102 lbs. Code WELDR **$179.50**

No. 28-910—Extra grinding wheel for Butt Welder. 46 grit. 2½"x⅜" with 5/16" hole. Shipping Weight 4 lbs. Code WELDW **$1.00**

THE DELTA MANUFACTURING COMPANY • MILWAUKEE, WIS.

P.M. N. 1641
DATE REVISED 11-10-43
REPLACES: 7-1-43
INDEX: 120-6-G

DELTA MILWAUKEE
THE DELTA MFG. CO., MILWAUKEE 1, WIS.

Setting Up and Operating the Electric Butt Welder

UNPACKING AND SETTING UP

The complete unit consists of a carton containing the stand parts and a wood box which contains the welding unit.

Unpack and assemble the stand first, being sure that the Cap Screws holding the feet are drawn up tightly. The top flange (item No. 25 Parts Drwg.) should also be turned onto the column snugly.

Carefully unpack Welding Unit and assemble to top flange with the 4-5/16 Flat Head Machine Screws. Do not draw these screws up too tightly, to avoid stripping the threaded holes in the sheet metal case.

CURRENT

The welder is equipped with a cord and plug, and OPERATES ONLY ON A.C. SINGLE PHASE CURRENT, either 110 volt or 220 volt as shown on the name plate. They will operate on 50 or 60 cycle current. **Check the line voltage and cycles before plugging in unit.**

Operating Instructions:

The welding unit is designed practically, and built for long life and efficient operation. The electrical controls or switches are mechanically and electrically interlocked to provide for fool-proof operation. No damage can result from any error of operation.

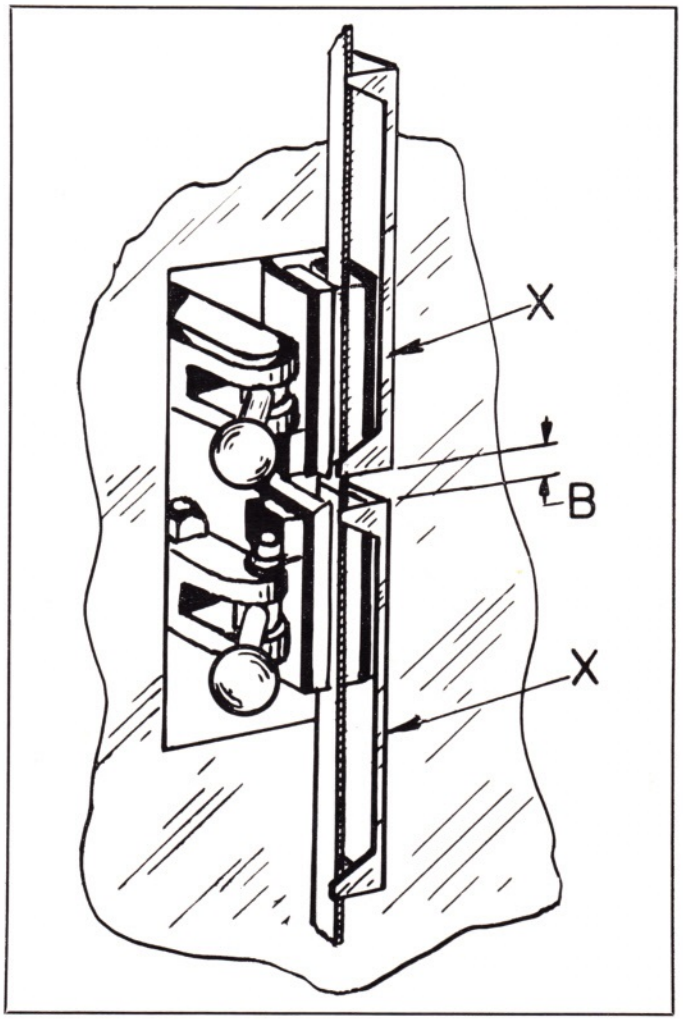
It is necessary, however, as in the case of many other types of electrical equipment, that certain instructions be followed to obtain the best results.

Before welding, the ends of the saw blade to be welded should be cut off straight. This is especially important for wide blades. To avoid dulling the cutter or snips, always cut the saw blade from the rear, not from the tooth side.

Set Tension Indicator (lower right hand corner of panel) on "Clamp" index mark. Place blade in upper clamp first with teeth touching blade gauge "X", with the end approximately in the center of space "B" and clamp. Now place other end of blade in lower clamp with teeth against blade gauge, with this end butting against end of blade already in position, and clamp. Check saw blade to be sure it is not twisted.

After clamping, turn Tension Indicator to width of blade being welded, under "Weld" position. A slight variation is provided because of various thicknesses of blades, and the operator will quickly find, after a little experience, which position works best for the various thicknesses.

IMPORTANT: The Tension Indicator should be turned ONLY TO THE RIGHT. Due to the cam and ratchet arrangement, if the Tension Indicator is moved to a position beyond the point wanted, it must be turned a complete revolution to the right until the exact point wanted is reached.



WELDING—Select the proper welding heat by turning the welding heat switch to "High", "Medium", or "Low" depending on the width of the saw blade.

The correct heat for the various widths of blades as indicated on the Name Plate, applies when the voltage is constant, but due to the fluctuation in voltage which is known to exist in various vicinities or plants, it is suggested that the proper setting be determined by the best results obtained through actual trial. (If welding heat is too low, the result will be a weak joint and breakage at the same point—If heat is too high, excessive melting of the metal will occur which appears as a large gob of metal on the side of the blade and requires excessive grinding.)

After setting Welding Heat Switch, **press Welding Switch until weld is completed. Do not let switch snap back when weld flashes because weld is not complete at that moment. The current shuts off automatically when weld is completed, so no harm is done by holding Welding Switch on too long.**

ANNEALING—When weld is completed, release the lower clamp and reset Tension Indicator to "Anneal" position. Release upper clamp and re-clamp saw blade so the weld is again midway between the clamps. It will be noted that when setting the Tension Indicator to "Anneal" position that the space between the clamps increases. This permits annealing the blade the proper distance on each side of the weld. (If "Anneal" index mark is missed by indicator, Tension Indicator must be turned a complete revolution to the RIGHT until correct position is reached.)

Set Welding Heat Switch in "Low" position and anneal weld by operating Welding Switch **INTERMITTENTLY** until blade is cherry red. **DO NOT OVERHEAT** by holding switch to the right too long.

GRINDING—Remove blade from clamps, switch on Grinder and grind off flash of weld on each side until welded part of blade is no thicker than the blade itself. Run a file across back edge of blade at weld to remove any rough edges, which will cause wear on saw guides.

The welding of 1/16" wide blades requires particular care because of their fineness. They can be welded on this machine however, and with a little practice the operator will be able to obtain good results. A few points to watch are the position of the Tension Indicator both in the "Clamp" setting and "Weld" setting. For 1/16" wide blades the Tension Indicator should be set to the right of the "Clamp" index mark before clamping the blade. After clamping the blade, **and only for high voltage (220 volt unit)** the "Weld" setting of the Tension Indicator should be past the 1/16 space—somewhere in the 1/8 space. Actual practice will indicate the correct settings to obtain best results.

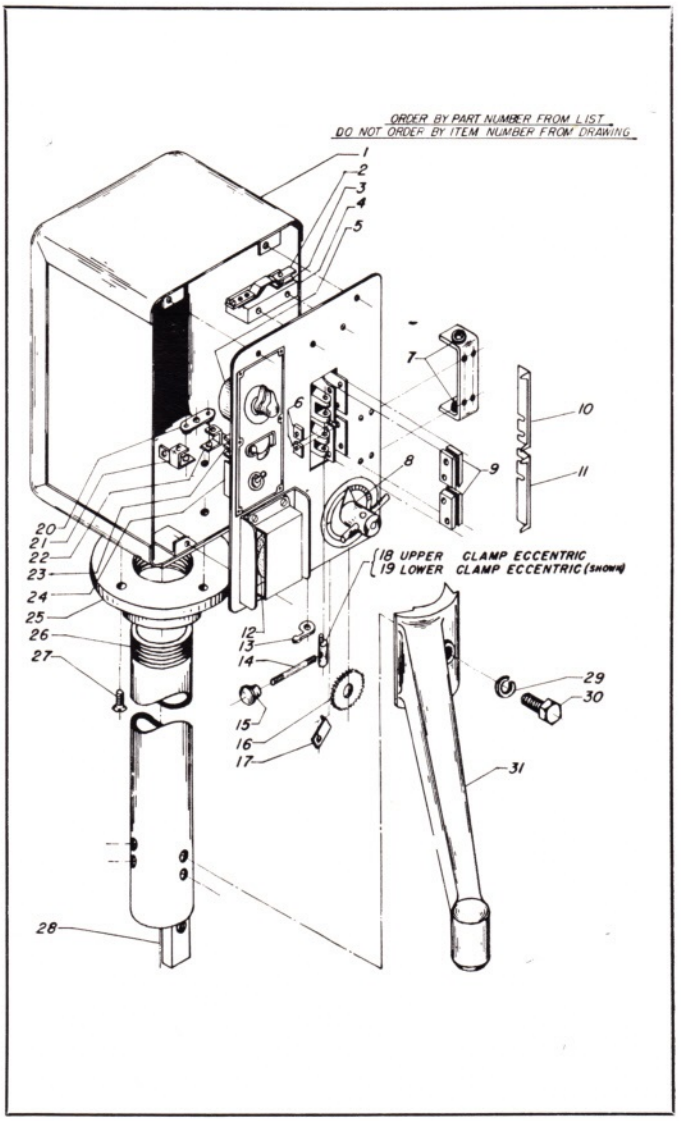
Important:

Use only Bakelite or Resinoid Bond wheels on grinder. Other bonds will shatter due to the high speed of this grinder—(10,000-20,000 R.P.M. Running Free.)

REPLACEMENT PARTS

IMPORTANT. To avoid errors and delay, order parts by Part No. NOT Item No. Also give Voltage, Cycles, Type, and Machine No. as stamped on Name Plate.

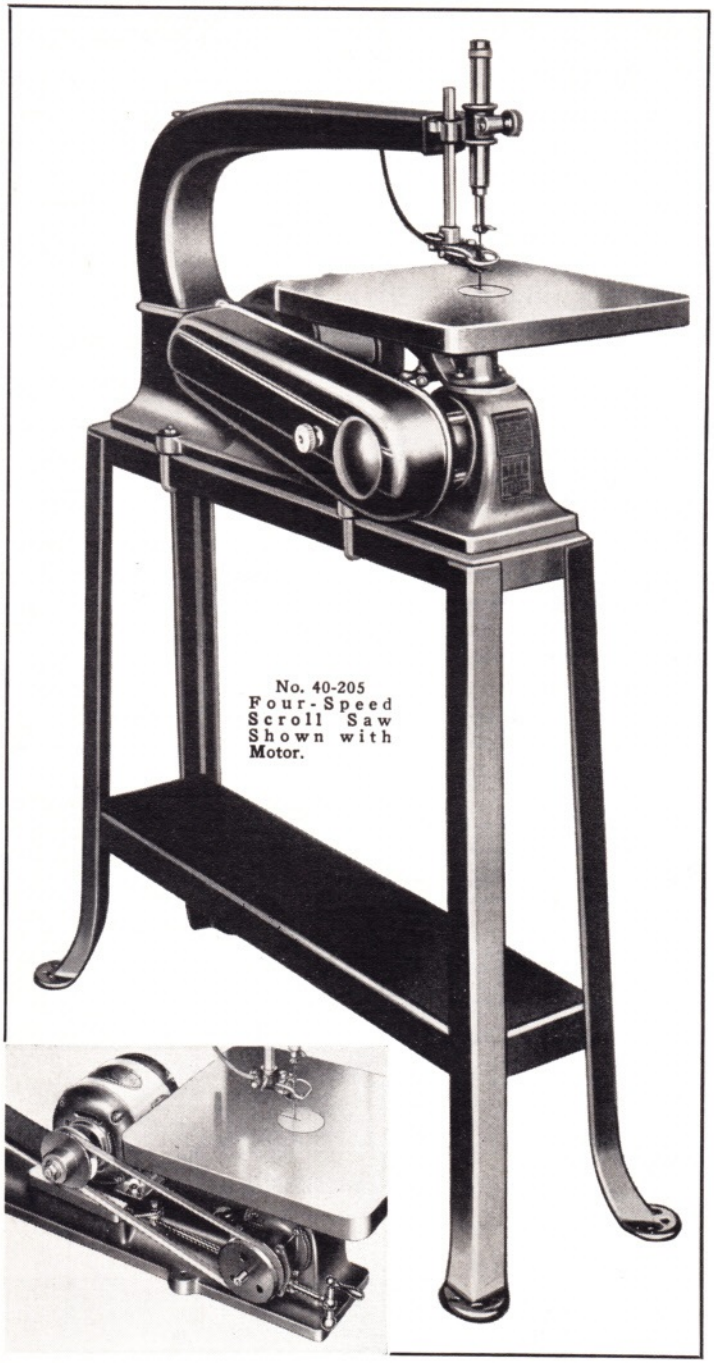
Item No.	Part No.	Description	No. Req.	Price Each
1	BW-7	Sheet Metal Case	1	$3.00
	BW-114	Sheet Metal Case for 3/4" Welder	1	3.50
2	4196	Upper Contact Point-5/16"R	1	.10
3	4279	Lower Contact Point-1/2"R	1	.10
4	BW-126	Breaker Switch—complete assembly including contact points —#4196 and #4279	1	2.00
5	8681-CL	Heat Switch, complete	1	2.50
6	BW-21	Clamp Insert Holder Plate	2	.15
7	BW-54	Clamp Shaft Bearing	2	.20
8	BW-22	Clamp Adj. Handwheel Pin Bear.	1	.50
9	BW-47ABCD	Clamp Inserts (Set of 4)	1	1.00
	BW-117ABCD	Clamp Inserts (set of 4) for 3/4" Blades	1	
10	BW-12C	Upper Saw Band Gage	1	.20
11	BW-12D	Lower Saw Band Gage	1	.20
12	#28-910	2 1/2" Dia. x 3/8" x 5/16" Hole-Grinding Wheel. Grit 46—Bakelite Bond	1	
13	BW-9	Lower Clamp Guide	1	.10
14	BW-17	Clamp Eccentric Pin	2	.10
15	M39 1B	Knob	2	.10
16	BW-140	Brake Ratchet Wheel	1	1.25
17	BW-113	Brake Latch	1	.20
18	BW-14A	Upper Clamp Eccentric	1	.40
19	BW-14B	Lower Clamp Eccentric	1	.40
20		Movable Magnetic Contactor	1	1.00
21		Rear Magnetic Contactor	1	1.00
22		Front Magnetic Contactor	1	1.00
23	8654-K1	Welding Switch—complete	1	1.50
24	8621-K2	Grinder Switch—complete	1	.75
25	LBS-250	Flange	1	1.25
26	DDL-192	Column	1	2.75
27	SP-408	5/16-18 x 3/4 Flat Head Machine Screw	4	.10
28	DDL-210	Clamp Plate	3	.85
29	SP-1705	1/2 Lock Washer	3	.10
30	SP-616	1/2-13 x 1 1/2 Hexagon Head Cap Screw	3	.10
31	DDL-186	Spider Leg Casting	3	2.25



NOTE: If major repairs are required, ship the complete Welding Unit to us, Via prepaid express. Send purchase order or letter of instructions separately by first class mail.

DELTA MILWAUKEE

This Sturdy Scroll Saw is Fast and Accurate



No. 40-205 Four-Speed Scroll Saw Shown with Motor.

THESE FEATURES INSURE LONG LIFE BETTER PERFORMANCE, FASTER OUTPUT

EXPERIENCED scroll saw users know that there are several features essential in a good scroll saw: (1) it must be capable of using all types of blades, (2) it must operate with a minimum of blade breakage, (3) it must be solid and sturdy and have a minimum of vibration at all speeds, and (4) it must have a selection of speeds for various types of work.

The scroll saws, shown here, not only meet all these requirements but have added features which make them the "finest scroll saws ever made."

The patented chucks are completely universal, taking jeweler's blades, pin blades, saber blades, round shank files up to ¼" without any extra parts.

The blade is perfectly guided, thus eliminating blade breakage. Operation is smooth and positive. The heavy castings in the base, table and overarm give rigidity and "weight." Vibration is held to an absolute minimum so that accurate delicate work can be done.

Available in two models: a standard 4-speed model, and a multi-speed model—there is a type of saw and speed for every possible job.

In addition to these "must" features which are so well covered in these scroll saws there are these other advantages: The heavy cast table not only tilts to the right and left, but by rotating the table bracket 90 degrees and the chucks so that the blade cuts sideways, the table tilts to the front to cut stock of any length. The crankshaft has Timken bearings chosen for their long life and accuracy. The blower pump is driven by the crankshaft which makes air available even for saber blades. The blade is properly supported and has a convenient tension adjustment. The hold-down can be tilted so that it holds the work down evenly when the table is tilted. The crankshaft is splash lubricated.

These are but a few of the outstanding features of these fine scroll saws but all of them contribute toward accurate and convenient operation and long life.

AVAILABLE IN TWO POPULAR MODELS

THE STANDARD 4-SPEED MODEL

This model is illustrated to the left. It is equipped with a 4-step motor pulley and a 4-step arbor pulley and with a 1725 R.P.M. motor has speeds of 650, 1000, 1300 and 1750 R.P.M. For average work this range has been found to be quite satisfactory and thousands of these units are being used today in plants of all kinds.

No. 40-205—Complete Four Speed Scroll Saw Unit is illustrated on steel stand consisting of: Scroll Saw, 4-step Cone Pulley on Arbor, Puzzle Jaw for Upper Chuck; 4-step Cone Pulley for Motor; V-Belt; Belt and Pulley Guard and Steel Stand. Without Motor or Switch. 194 lbs. ..... Code LUXSD

No. 340—Replacement V-Belt. ½ lb. ..... Code BELUX

THE MULTI-SPEED MODEL

This scroll saw provides the highest degree of convenience and performance because it has **a Thousand Speeds at the Touch of Your Finger!** Two or four speed saws have limited speed range — too slow for some materials — too fast for others. With the Multi-Speed Scroll Saw you can select ANY speed from 650 to 1700 R.P.M. controlling the speed within 1 or 2 R.P.M. if necessary. High speed for fast, fine work — low speed for heavy work — and ANY speed in between. Speed controlled by conveniently located ball crank. In general appearances this unit is the same as the one illustrated except that the ball-crank handle projects out of the front of the belt guard as shown by the small photo.

No. 40-305—Complete Multi-Speed Scroll Saw Unit consisting of: Scroll Saw with Puzzle Jaw for upper chuck; Variable Speed Motor pulley; Motor Base with Bracket; V-Belt; Arbor Pulley; Belt and Pulley Guard; and Steel Stand. Without Motor or Switch, 197 lbs. ..... Code MULTM

No. 331—Replacement V-Belt for Multi-Speed Scroll Saw. ½ lb. ..... Code MULTG

MOTORS RECOMMENDED

Light and Medium Duty: 60-310—⅓ H.P. Sp. Ph. A.C. 110 V. 60 Cy.

Heavy Duty: 62-110—⅓ H.P. CAP. A.C. 110 V. 60 Cy.
66-110—⅓ H.P. 3 Ph. A.C. 220 V. 50/60 Cy.

For 3 Ph. Motors use No. 1320 or No. 1329 3 Ph. Manual Starters and No. 1322 Mounting Parts.

See Pages 18 and 19 for Motors and Switch Parts.

SPECIFICATIONS OF BOTH SAWS

35" long, 14" wide, 43" high on stand, 14"x 14" cast iron table, capacity 1¾" thick, 24" reach.

(FOR PRICES SEE ATTACHED PRICE LIST)

DELTA MILWAUKEE

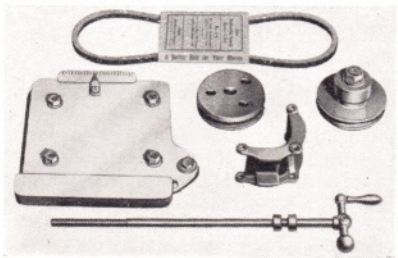
Saber Blades for Wood

Made of best steel, accurately hardened and set. Are 5″ long overall.

No. of Blade	Thickness and Width	Teeth Per In.	Code Word
703	.025″x.187″	9	SABLA
704	.035″x.250″	7	SABLB

Ship. Wt. Per Pkg. of Six Approximately 5 oz.

Multi-Speed Attachment



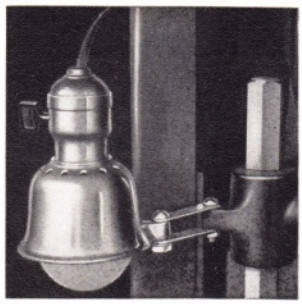
Any standard four-speed 24″ Scroll Saw of our manufacture may be easily converted into a Multi-Speed Model by use of the No. 1444 Accessory Group shown above.

It consists of the variable-speed motor pulley, motor base with bracket screw and handles, special V-belt, and special arbor pulley. With this accessory group any speed from 650 to 1700 R.P.M. may be obtained using a 1725 R.P.M. motor.

No. 1444—Standard Accessory group as described and illustrated above. 12 lbs. .....Code MULTE

No. 1442—Belt and Pulley Guard for 1444 group. 7 lbs.....Code MULTC

Lamp Attachment

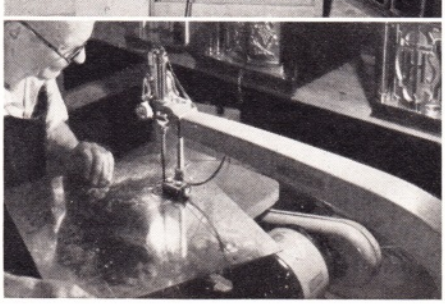


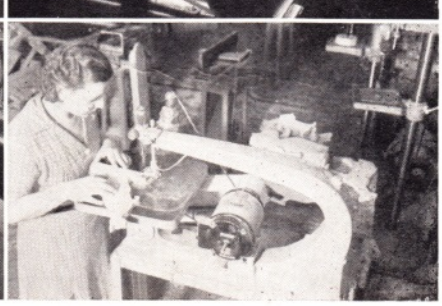
There is nothing quite the equal to the No. 882 lamp attachment to bring plenty of light to your work just where it is needed in volume enough for accuracy in following layouts, yet not bright enough to glare.

Can be swung on the brackets of the scroll saw, drill press or band saw or can be easily and quickly attached to any other machine. Can be swung out of the way by a touch of the finger. It furnishes every machine with its own illumination independently of the shop lighting system. Uses 15 or 25 Watt Bulbs.

No. 882—Lamp Attachment. 1½ lbs. ..... LAMPA

(For Prices See Attached Price Sheet)





Scroll-Saw Blades For All Types of Material

It has always been a problem to be sure that you were buying the right type of saw blade for the material you wanted to saw. Now, with this new complete listing you will find just the type of blade you want.

These blades are the finest obtainable, 5″ long with accurately spaced teeth—properly set and hardened. Ends of blade have ⅝″ blank for fastening into chuck. Packed 12 to a package.

Cat. No. & Size	No. Teeth	Per Doz.	Per Gross	ACTUAL SIZE
Fret saw blades with wide spaced teeth (not set—not tempered for metal) for sawing wood where extremely thin cut is required—very fast cutting.				
No. 81 .010x.070	14			
No. 82 .010x.055	16			
No. 83 .010x.045	18			
No. 84 .008x.035	20			
Fret saw blades, wide spaced teeth approx. .010″ thicker than above blades (not set). Tempered for sawing plastics, bone, celluloid, etc. Very fast in wood.				
No. 85 .020x.055	15			
No. 86 .020x.065	12			
No. 87 .020x.070	7			
No. 88 .020x.110	7			
Jig saw blades, filed and set teeth, oil hardened and of medium temper for sawing wood and other substances—will also saw soft metals.				
No. 91 .020x.110	15			
No. 92 .020x.110	10			
No. 93 .028x.187	10			
No. 94 .028x.250	7			
Piercing saw blade (not set) hardened and tempered for scroll sawing metals, bone, pearl, etc. Used most exclusively in fine metal arts. Will discolor wood at high speed because teeth are not set.				
No. 95 .016x.054	30			
No. 96 .016x.054	20			
No. 97 .020x.070	15			
No. 98 .020x.085	12			
Scroll saw blades with set teeth hardened and tempered for sawing metals. Used extensively for sawing templates, light and heavy metal craft, electrotype metals, etc. **Nos. 59, 60,** and **61** also good wood cutters.				
No. 58 .020x.070	32			
No. 59 .020x.070	20			
No. 60 .020x.070	15			
No. 61 .020x.085	15			
No. 64 .020x.110	20			
No. 65 Heavy Duty Hack saw blade .028x.025	20			

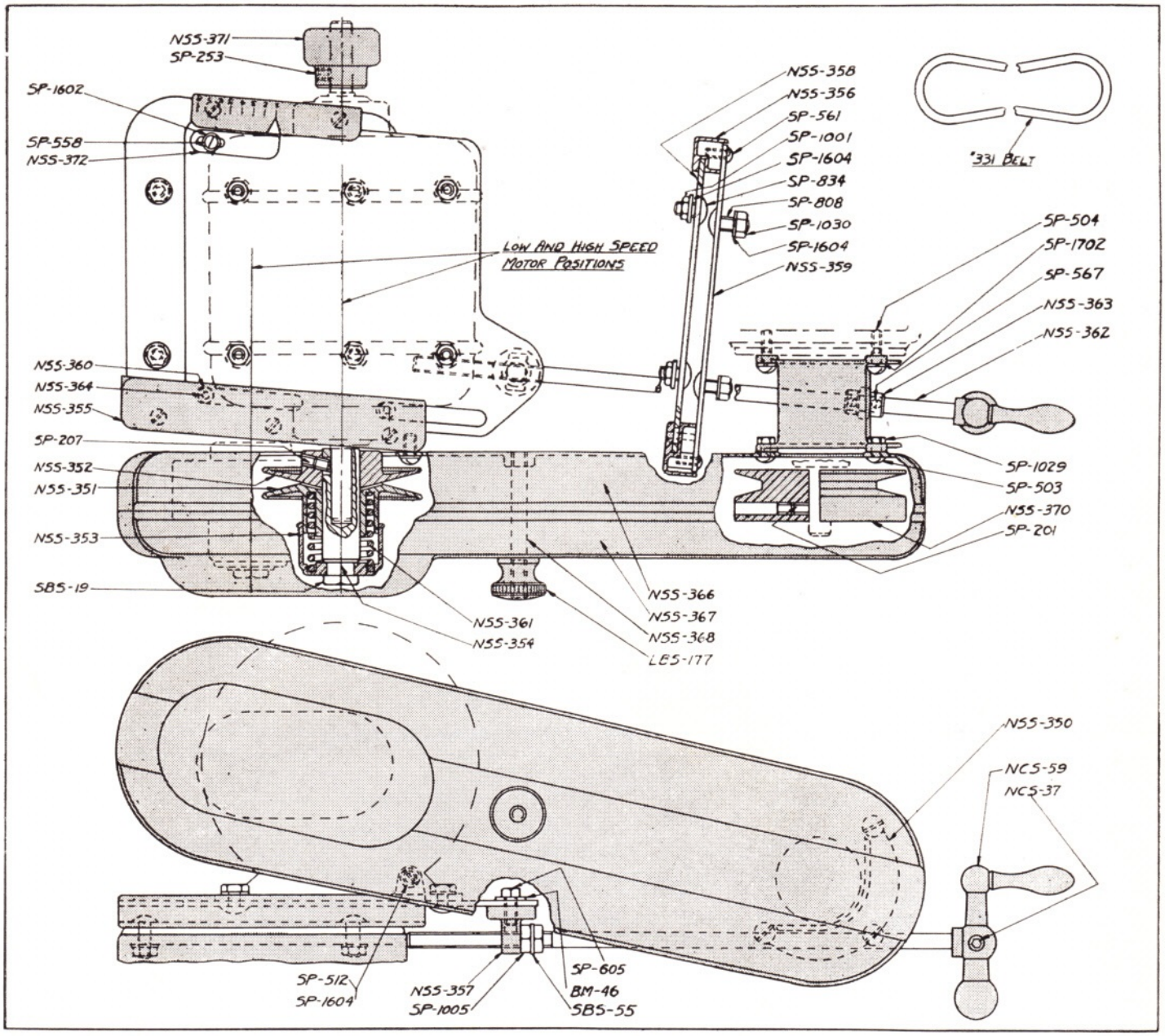
P.M. No. 1549
DATE: 1-1-44
REPLACES: NONE
INDEX: 120-10-B

DELTA MILWAUKEE

THE DELTA MFG. CO., MILWAUKEE 1, WIS.

SERIES 40 SCROLL SAW

Setting Up No. 1444 Variable Speed Attachment



The Variable Speed Unit comes to you in sub-assemblies for convenience in packing. Attachment to your scroll saw is simple if instructions are carefully followed.

Remove the motor and the crankshaft cone pulley from your machine if you have a standard 4-Speed model, then when you add the No. 1444 accessory group, your machine will be the same as the Multi-Speed Model, which is without motor or pulley.

MOUNTING MOTOR

Mount the sliding motor base plate assembly, with the graduated slide at the right, on the scroll saw base and fasten from the bottom with the 4 SP-834 carriage bolts and SP-1030 Hexagon nut and SP-1604 washer. The bolt holes in both the scroll saw base and the lower motor plate, are slotted for adjustment. In setting up the motor plate on your machine, it is best to set it with the screws in the middle of the slots, allowing an equal amount of adjustment in either direction. The upper and lower motor plates come assembled with the slides and both upper and lower sets of carriage bolts, and it is unnecessary to dis-assemble for mounting.

After the motor plates are in place and securely fastened to the base, mount a No. 60 310 motor, using the carriage bolts provided, so that the switch on the motor is on the right-hand side. Next, slip the variable-speed pulley assembly onto the motor shaft and fasten with Allen set screw No. SP-207. Be sure the screw engages the flat on the motor shaft to avoid burring shaft.

To mount the bearing bracket NSS-350, remove the front upper and two lower round head machine screws, SP-509, from the present drive shaft housing, NSS-206-S, and put the bearing bracket, NSS-350, in place, using the three SP-504 round head machine screws which are furnished and fasten both the drive shaft housing, NSS-206-S and the bearing bracket, NSS-350, with the longer screws.

To mount the control rod NSS-362, remove the round head machine screw SP-567, from the collar nearest the thread on the control rod and slip off the collar.

Slip control rod through the hole in bearing bracket, NSS-350, and slip collar back on the control rod. Before tightening in place, thread the two lock nuts, SP-1005, with the washer, SP-1605, between as shown, to the end of the thread. Then thread the nut NSS-357, onto control rod so the rod sticks through the nut approximately 1". Fasten control-rod nut into motor plate, NSS-358, by slipping the round shank of the nut into the hole on the motor plate and fastening from the top with hexagon-head cap screw, SP-605, and BM-46 washer.

Slide entire motor plate and control rod assembly to the rear until front collar of control rod touches front of bearing bracket NSS-350, then tighten rear collar, NSS-363, with round head machine screw, SP-567.

Fasten the flywheel pulley, NSS-370, onto the crankshaft by tightening Allen set screw, SP-201, against the flat on the shaft, with the belt groove nearest the machine, allowing 1/16" clearance between the pulley and the bearing cap. Then, slip the special belt No. 331 in place.

ADJUSTING ATTACHMENT

Your variable speed unit is now ready for adjustment and this is done as follows: Start the motor, and screw the control rod to the right (which brings the motor forward and increases the speed), until the belt is flush with the outside diameter of the variable speed pulley. Set the locknuts, SP-1005, on the control rod so that they are against the control rod nut, NSS-357, at this speed. Set the indicator pointer, NSS-372, to point to graduation No. 1, and fasten with round head machine screw, SP-558, and SP-1602 washer. Your machine should now be ready for operation.

Adjustment for variation in belts and wear can be made by shifting the motor on the upper motor plate, NSS-358.

The belt guard, No. 1442, for the variable speed unit, is mounted as follows: Remove the variable speed pulley from the motor shaft, and the flywheel pulley, NSS-370, from the crankshaft. Place the inside part of the guard in position so that the large oblong hole fits over the motor shaft, and the small round hole over the crankshaft. Fasten the crankshaft end of the rear guard, NSS-366, to the bearing bracket, NSS-350, with two round head machine screws, SP-503 and two hexagon nuts, SP-1029. The motor end is fastened to the lug on the motor plate slide bracket, NSS-355, with a round head machine screw, SP-512 and washer, SP-1604. The pulleys are then replaced in their respective positions.

The front guard, NSS-367, is held in place by the center stud, NSS-368, and the knurled knob, LBS-177.

Before operating machine, check the alignment of the belt. This is done best by checking the inside faces of the pulleys when the motor is adjusted to the high speed position (to the front). In this position the belt engages the variable speed pulley at its largest diameter similar to any standard pulley, and is in perfect alignment with the front pulley.

Replacement Parts

IMPORTANT: To avoid possible errors, be sure to include the serial number of the machine when ordering parts for repair or replacement.

Part No.	Description	No. Req.	Price Each
NSS-350	Bearing Bracket	1	.70
NSS-353	Spring Cover	1	.20
NSS-354	Motor Extension Shaft for No. 1446 Variable Speed Pulley	1	1.00
NSS-355	Guide Rail (Long)	1	.70
NSS-356	Guide Rail (Short)	1	.30
NSS-357	Control Rod Nut	1	.20
NSS-358	Motor Plate	1	.60
NSS-359	Base Plate	1	.55
NSS-360	Roller	2	.10
NSS-361	Spring	1	.10
NSS-362-S	Control Rod with Collars and Screws	1	.50
NSS-364	Roller Pin	2	.10
NSS-366	Back Guard	1	2.00
NSS-367	Guard Cover	1	1.55
NSS-368	Stud	1	.10
NSS-371-S	Motor Shaft Collar Assembly	1	.40
NSS-372	Pointer	1	.10
NCS-59-S	Ball Crank Assembly	1	.35
LBS-177	Knurled Knob	1	.15
SBS-19	Hex. Nut 5/8-18 S.A.E. Thread	1	.10
SBS-55	11/16" x 25/64" x 1/16" Steel Washer	1	.10

Part No.	Description	No. Req.	Price Each
BM-46	Special Washer	1	.10
SP-201	5/16-18 x 5/16 Ft. Pt. Allen Set Screw	1	.10
SP-207	5/16-18 x 1/2 Allen Set Screw	1	.10
SP-503	1/4-20 x 5/8 Rd. Hd. Machine Screw	2	.10
SP-504	1/4-20 x 3/4 Rd. Hd. Machine Screw	3	.10
SP-512	5/16-18 x 1/2 Rd. Hd. Machine Screw	1	.10
SP-558	No. 8-32 x 1/4 Rd. Hd. Machine Screw	1	.10
SP-561	No. 10-32 x 3/8 Rd. Hd. Machine Screw	5	.10
SP-605	5/16-18 x 1/2 Hex. Head Cap. Screw	1	.10
SP-808	5/16" x 1" Carriage Bolt	4	.10
SP-834	5/16" x 3/4" Carriage Bolt	4	.10
SP-1001	5/16-18 Hex. Jam Nut	4	.10
SP-1005	3/8-16 Hex. Jam Nut	1	.10
SP-1029	1/4-20 Hex. Nut	2	.10
SP-1030	5/16-18 Hex. Nut	4	.10
SP-1602	Washer 3/16 x 7/16 x No. 20 Thick	1	.10
SP-1604	Washer 5/16 x 3/4 x 1/16 Thick	5	.10
SP-1702	Lock Washer 1/4 x 7/16 x 1/16 Thick	3	.10
#331	Special V-Belt		
#1443	Crank Shaft Pulley Assembly		
#1446	Variable Speed Pulley		

Prices Subject To Change Without Notice

NOTE: Prices in this list apply only to parts ordered for repair and replacement. They cannot be used for computing allowance values if a machine is ordered "less" certain parts.

P.M. No.: 1646
DATE: 11-1-43
REPLACES: NONE
INDEX: 120-10-C

DELTA MILWAUKEE

THE DELTA MFG. CO., MILWAUKEE 1, WIS.

SERIES 40 SCROLL SAW

OPERATING AND MAINTENANCE INSTRUCTIONS
For No. 700 24″ Scroll Saw

The No. 700 24 inch Scroll Saw is crated and shipped in a fibre box. It should be removed from the crate carefully and mounted on a straight solid board at least 8 inches wide and 32 inches long, and not less than 1¾″ thick; this is very important. Do not use plywood. Base board should be screwed or bolted to a straight and level bench. The bench should be rigid and sturdy to prevent vibration. The whole base board should be supported by bench if possible.

If the bench is strong and has a straight top at least 1¾ inches (net) thick and 32 inches wide, the machine may be bolted directly to the bench top.

Unpack table, remove trunnion clamp plate, set table in position, insert clamp plate over trunnions and tighten cap screw with the socket wrench. Place a blade in the machine, setting it perfectly vertical, then set table at right angles to the blade, checking with a square if necessary. Set the pointer at the zero mark on scale, and tighten round-head screw to hold it as set.

The table can be tilted to any angle up to 45 degrees to the right or to the left, however, the lower saw blade chuck should be turned to prevent its striking the bottom of the table when the table is tilted to a greater angle than 30 degrees.

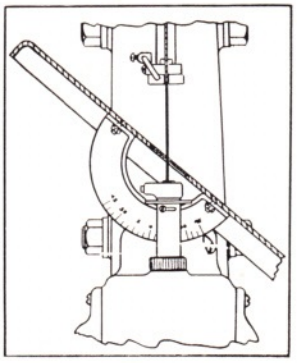


Fig. 1

If the table is tilted to the right the lower chuck should extend to the left as shown in Fig. 1. Likewise if the table is to be tilted to the left the lower chuck should extend to the right as shown in Fig. 2.

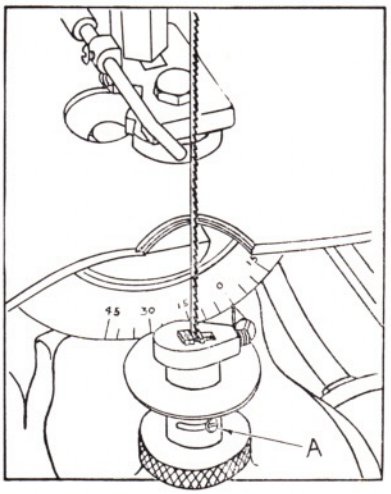


Fig. 2

Any ⅓ H.P. Motor will provide ample power for this machine. Use only a constant-speed type motor; a universal motor is not satisfactory. This Scroll Saw is built to operate at a maximum speed of 1725 R.P.M. Pulley No. 718 when placed on a motor having a speed of 1725 R.P.M. will drive the saw at the proper speeds. This machine will run equally well whether the motor runs clockwise or counter-clockwise.

INSERTING PIN BLADES

To insert blades having a pin in each end, turn the pulley until the lower chuck is at the lowest point of its stroke. Loosen the hexagon screw which clamps the blade in the lower chuck, openingg the jaws wide.

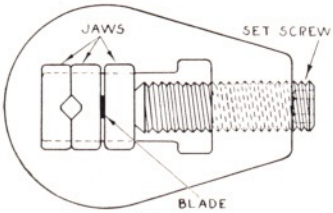


Fig. 3

Insert the pin blade between the two outer movable jaws as shown in Fig. 3. Tighten the screw and pull up on the blade slightly while tightening. Be sure the teeth of the blade point downward.

Loosen the screw on the upper chuck. Turn the pulley so that the blade is raised to its highest point. Press down on the tension spring and when ½ inch of the end of the blade has entered the top chuck, tighten the screw on the chuck. This completes the setting of the pin blade.

SETTING THE BLADE GUIDE

The blade guide is a circular disk having slots for blades of various thickness. Loosen the capscrew shown in Fig. 4, and turn the disk so that an opening of the correct width will support the sides of the blade.

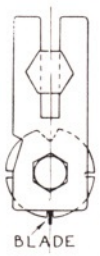


Fig. 4

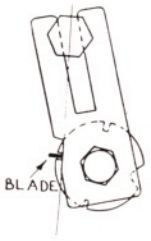


Fig. 5

This guide should be set so that only the back portion of the blade passes through the slot. If the guide is set too far forward the teeth of the blade will strike the guide and the blade will be ruined. When the correct adjustment has been secured tighten the nut which holds the disk guide.

Adjust the guide to take the back thrust of the blade by loosening the capscrew in the end of the hexagon post. The guide should be set so that the blade does not rub hard against it. There should be a clearance between the blade and guide of about the thickness of a calling card.

When the guide has been set at the correct position tighten the capscrew securely. The guide can be set as shown in Fig. 4, when the work is to be fed from the front, and as shown in Fig. 5, when feeding the work from the left side.

The entire guide assembly can be adjusted up or down by loosening the thumb screw which engages the hexagon post. The clearance between the blade and the guide should be the same whether the guide is at its lowest or its highest point.

The guide should always be adjusted up or down so that the material being cut will just pass under it freely without binding.

INSERTING JEWELERS' BLADES

To insert jewelers' blades, turn the pulley until the lower chuck is at the highest point of its cutting stroke. Loosen the screw which clamps the blade in the lower chuck. Insert the end of the blade between the two outer movable jaws as shown in Fig. 3. Hold the blade in a vertical position and see that the end of the blade is being held at the center of the jaws. When the blade is in the correct position tighten the nut. Loosen the screw on the upper chuck and press down the upper plunger over the blade. When the end of the blade has entered the top chuck ½ inch, see that it centers properly, then tighten the screw.

Set the blade guide as before.

The blade should travel up and down perfectly vertical. If the blade is clamped too far back in the top jaws, the material will be lifted from the table on the "up" stroke, which can be corrected by setting the blade perfectly straight.

INSERTING SABER BLADES

Saber blades, 4½ inches long, can be used very successfully on this scroll saw. These blades are held in the lower chuck only. The lower chuck should be turned to the position shown in Fig. 6, before inserting the blade. To turn the chuck, loosen the screw shown at **A** in Fig. 2 and turn the chuck until the screw strikes the other end of the sleeve slot, then tighten it.

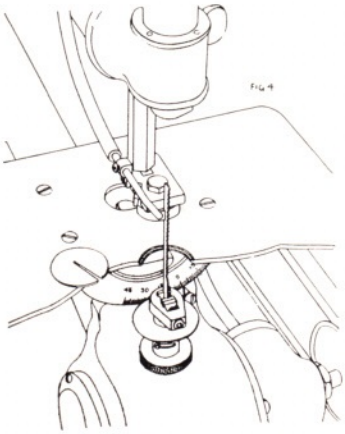


Fig. 6

Loosen chuck screw and turn it until the rear jaws are completely open, then insert the blade in the notches in the jaws as shown, and tighten the screw. The blade must extend into the lower chuck at least ⅝ inch. If it is not set deep enough in the chuck the shank of the blade will extend above the table on the "up" stroke. After setting the blade turn the pulley by hand to see that the blade does not strike the top chuck, also set the guide low enough so that the top end of the blade will be supported when the blade is at its lowest point of the stroke. If the guide is set too high the end of the blade will be forced under the guide when the work is forced against the blade, this will of course break the blade.

Adjust the guide as for pin blades or jewelers' blades.

USING FILES IN THE MACHINE

Regular filing machine files having a ¼ inch shank will work best in this machine, although files with a tapered shank may be used for light work. The round shank gives stiffness and strength which is not obtained with files having the tapered shank.

The files may be flat, round, three cornered or square, but should not be more than 5 inches long.

To insert the file remove the table insert piece; loosen the guide-post capscrew, swing the guide to one side and tighten the screw; loosen the jaws of the lower chuck, insert the shank of the file between the notched rear jaws and tighten the chuck screw.

THE SANDING ATTACHMENT FOR THE SCROLL SAW

A sanding attachment which can be used on the scroll saw is very useful for sanding the edges of irregular shaped work which has been cut on the band saw or the scroll saw. The No. 711 sanding attachment is semi-circular in cross section, to sand both straight and curved work.

We can furnish garnet paper sleeves of the proper size for this attachment. To change paper on the sander loosen the knurled nut at the top of the sander and slip the old paper off; slip a new sanding sleeve over the sander and tighten the nut, this will expand the parts and tighten the paper.

To use the sander, remove the circular insert piece in the saw table; loosen the blade guide and either swing it to the side or remove it entirely, in either case raise the guide post to its highest position and tighten it; insert the sanding attachment through the hole in the table so the shank fits into the notched rear jaws of the lower chuck, then tighten. Turn the pulley over several times by hand to see that everything is adjusted properly before turning on the power.

The paper can be changed in a few seconds as previously described without removing the attachment from the machine.

TO CHANGE THE POSITION OF THE LOWER CHUCK

For certain kinds of work it is desirable to change the position of the lower chuck so the blades or attachments can be held in a convenient position for the work being done. Provision is made for setting the chuck in three positions. The chuck is held in position by a screw which passes through a slot in the shaft into the chuck shank. The slot will permit the chuck to be moved ¼ turn without removing the screw, but when a half turn is desired it is necessary to remove the screw and insert it into the other hole in the shank which is provided for this purpose. Figure 2 shows the position of the parts when the long part of the chuck extends to the right. The screw is shown at A. Fig. 6 shows the long part of the chuck extending to the front. Fig. 1 shows the chuck turned to the left.

TO CHANGE THE POSITION OF THE UPPER CHUCK

To change the position of the upper chuck; remove any blade or attachment from the chucks; lower the guide to the table; pull down on the chuck until the guide pin is clear of the hole, turn the chuck until the end of the pin is opposite one of the other holes, then let the chuck up slowly. Holes are provided for setting the chuck in three positions. Both the upper and lower chucks should be turned in the same direction.

OILING

All the lower parts which require lubrication are enclosed in the crank case. The case must be filled before using. All that is necessary is to remove the crank case plug occasionally and add enough oil so that it is level with the plug hole. Use only a good grade of clean, light automobile oil.

The upper slide shaft and guide pin should be lubricated with cup grease or vaseline which can be spread on when the shaft is at its lowest position.

A few drops of oil should be put in at the top of the spring about every 100 working hours.

REVERSING DRIVE SHAFT

The machine is shipped with the drive shaft on the right side as shown in Fig. 7.

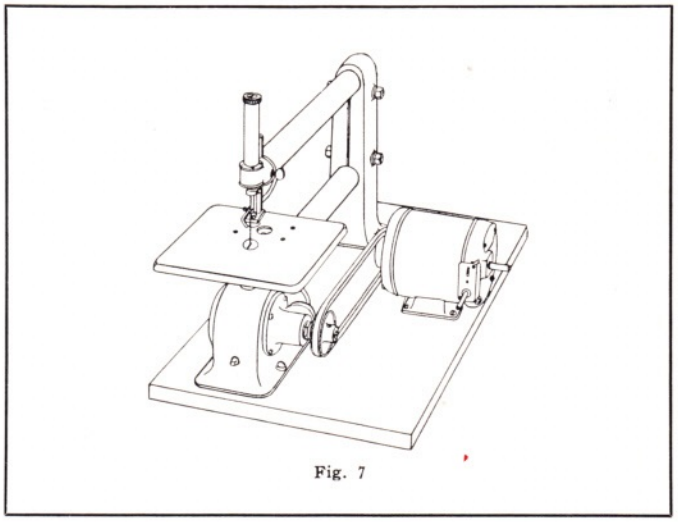


Fig. 7

If desired the shaft can be reversed so that the pulley is on the left side. To reverse the position of the drive shaft, remove the four round-head screws in the drive shaft housing and also the screws in the opposite cover; the housing and cover can then be removed. The guide on the sliding shaft must be turned half way around so that the guide fin will slide in the slot in the cover. To do this remove the nut shown at A in Fig. 8 on following page; hold the chuck with one hand to prevent the shaft from turning and turn the guide until the screw hole is opposite the other hole in the shaft. The screw can then be inserted and tightened securely.

Scrape all dirt from the flanges on the covers and the crank case, and spread a thin coating of shellac on the flanges. Place the crank shaft and cover on before putting on the opposite cover. See that the end of the crank fits into the hole in the slide block and also see that the slide block is in the slide. The air pump should extend toward the rear of the machine. Insert the four screws in the cover and tighten each screw a little at a time until all are perfectly tight.

Turn the pulley by hand and see that all parts are in their proper places and work perfectly before putting on the other cover. The fin on the shaft guide should fit into the groove in the cover. Place this cover in position, and insert and tighten the screws. This completes the change and the pulley should be turned several times by hand to see that everything is in working order before turning on the power.

MOVING THE UPRIGHT FRAME NEARER THE BLADE

The upright frame at the rear of the machine is set to give a clearance of 24 inches between the blade and the upright frame. This frame should not be moved closer to the blade at any time unless it is absolutely necessary.

It is very important that the upper sliding shaft is in perfect alignment with the lower sliding shaft so the blade will travel up and down in a perfectly vertical position.

This machine has been set in perfect alignment at the factory by using a special aligning tool.

If the upright frame is moved nearer the blade, some accurate means of aligning the sliding shafts must be employed because if the parts are out of line even a few thousandths of an inch poor results will be obtained.

BLADES

Always use the widest blade possible for the work to be sawed. Use narrow blades for sawing small, abrupt curves and for fine delicate work only. This policy will not only save blades, but will produce the best work.

The No. 700 Scroll Saw is made to take blades 5 inches long. Pin blades, jewelers' blades, sabre blades, files or the sanding attachment may be used in this machine. There is no advantage in using the pin blades instead of the jewelers' blades, and a wider range of sizes can be obtained in the jewelers' blades.

When using extremely fine blades the speed should be reduced to 1,000 R.P.M.

To remove a blade broken off short in the lower chuck, remove the chuck and start the machine, when the blade will bounce out.

REMOVING THE LOWER CHUCK

The lower chuck can be removed for cleaning by removing the screw shown at A in Fig. 2. The chuck can then be lifted up and removed for cleaning it of any dust or grit which may accumulate.

THE AIR BLOWER

The purpose of the blower is to keep the dust away from the top of the work in front of the blade so that the design can be seen as it is being cut and the lines followed carefully. The blower is designed so that only enough air is supplied to accomplish this result. The air is forced through a flexible rubber tube. The rubber tubing should fit snugly over the brass tubing to prevent loss of air.

If the air fails to blow from the nozzle, examine the rubber tubing at the nozzle and the blower pump, see that the connections are tight, examine the tubing for leaks or obstructions, remove the rubber tubing from the pump and blow through the nozzle. If the tubing is free of leaks or obstruction and the air fails to blow remove the rubber tubing from the pump and place several drops of light machine oil in the blower pump. Only a few drops of oil are necessary because too much oil will find its way into the rubber tubing and destroy it in a short time. See that pump cylinder does not become jammed with fine wood dust.

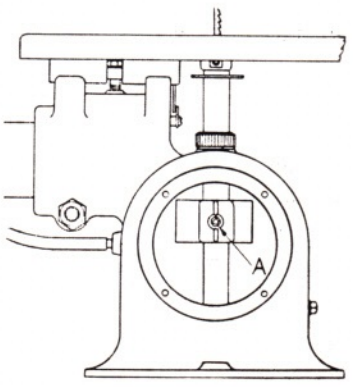


Fig. 8

REPLACEMENT PARTS

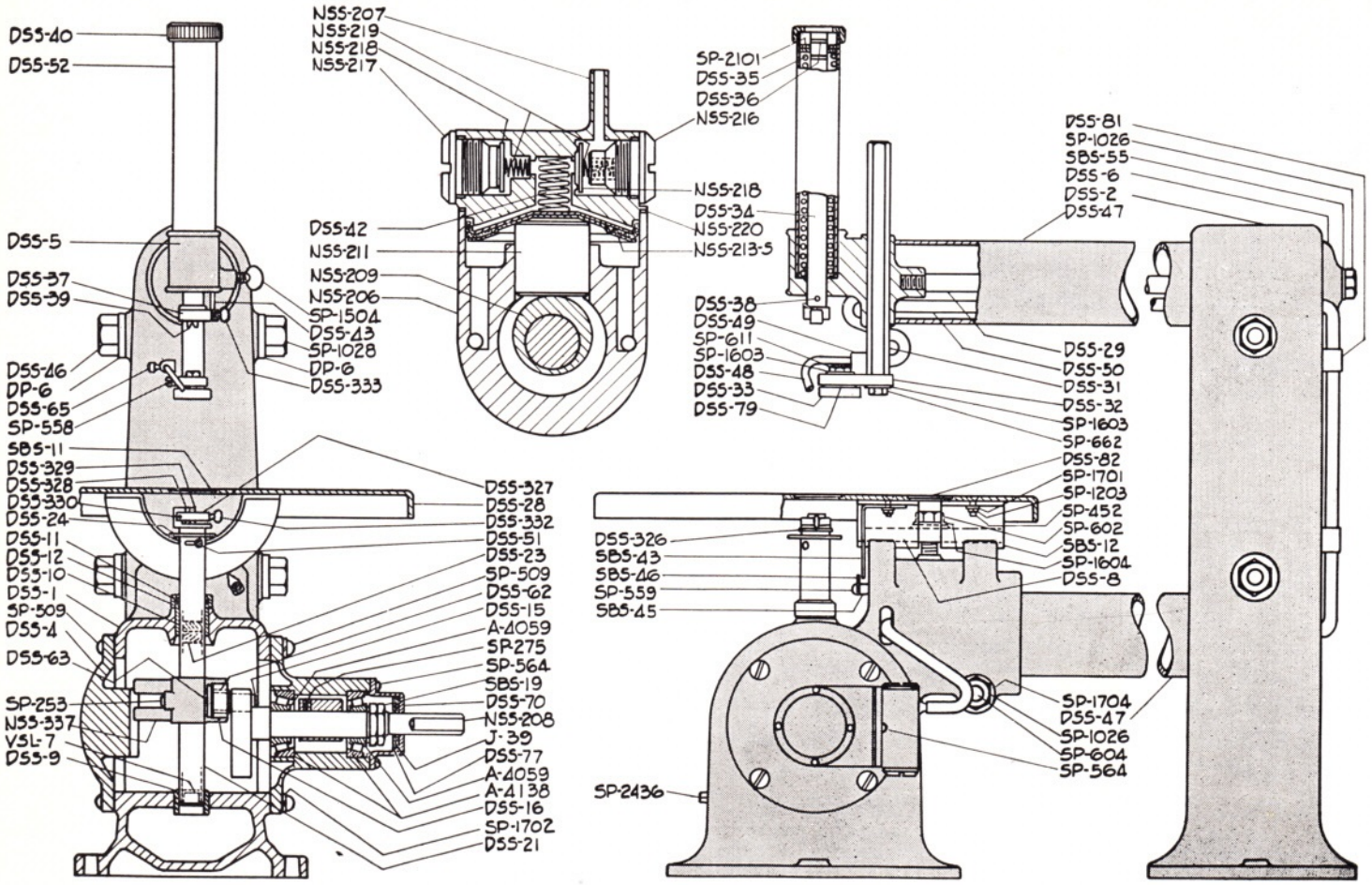
IMPORTANT: To avoid possible errors, be sure to include the serial number of the machine when ordering parts for repair or replacement.

Part No.	Description	No. Req.	Price Each
	UPPER PLUNGER AND SAW GUIDE PARTS		
DSS-5-S	Upper Head, complete	1	$4.26
DSS-31	Hex. Saw Guide Post	1	.15
DSS-32	Blade Guide Plate	1	.25
DSS-33	Hardened Blade Guide Disk	1	.25
DSS-35	Upper Plunger Spring	1	.10
DSS-36	Fiber Washer	1	.10
DSS-37-S	Upper Chuck Comp. with Jaws and Plunger	1	1.10
DSS-38	Upper Chuck Pin	1	
DSS-39	Upper Chuck Plain Jaw	2	.15
DSS-40	Knurled Safety Cap	1	.15
DSS-43	Upper Plunger Guide Pin	1	.10
DSS-48	Blower Nozzle	1	.10
DSS-49	Blower Nozzle Bracket	1	.10
DSS-50	Rubber Tubing	77 inches	.15
CS-29	Fiber Washer	1	.10
DSS-65	Nozzle Adjusting Screw	1	.10
SP-611	¼"-20 x ½ Hex. Hd. Cap Screw	1	.10
SP-662	¼"-28 x ⅝ Hex. Hd. Cap Screw	1	.10
NSS-280	¼" Washer	2	.10
SP-558	No. 8-32 x ¼" Rd. Hd. Mach. Screw	1	.10
SP-2101	3/32 x ⅝" Cotter Pin	1	.10
SP-1504	5/16-18 x 1⅛" Thumb Screw	1	.15
DSS-333	¼-20 x 9/16" Thumb Screw	1	.10
DSS-52-SA	Upper Plunger Casing with Head Casting only	1	1.10
	TABLE PARTS		
DSS-28-S	Table Assembly (with Trunnions)	1	1.95
DSS-8	Trunnion Clamp Plate	1	.15
DSS-82	Blank Insert	1	.10
SBS-11	Center Insert	1	.10
SBS-12	Table Trunnion	2	.15
SBS-43	Graduated Segment	1	.10
SP-452	No. 10-32 x 7/16" Flat Hd. Mach. Sc.	4	.10
SP-1203	No. 10-32 Hex Nut	4	.10
SP-1701	3/16" Lockwasher	4	.10
SP-1604	5/16" Washer	1	.10
SP-602	5/16 x 1¼" Hex. Hd. Cap Screw	1	.10
	LOWER PLUNGER PARTS		
DSS-21-S	Lower Plunger Assem. (less Chuck)	1	.40
DSS-24	Fiber Dust Washer	1	.10
DSS-51	Special Screw	1	.10
DSS-326-R	Lower Chuck Assem. (with Jaws)	1	1.75
DSS-328	Lower Chuck Grooved Jaw	1	.15
DSS-329	Lower Chuck Plain Jaw	1	.15
DSS-330	Lower Chuck Clamp Pin	1	.10
DSS-332	Lower Chuck Clamp Screw	1	.10
NSS-337	Cross Head	1	
SP-275	¼"-28 x ¼" Allen Cone Pt. Set Sc.	1	.10
DSS-63	Cross Head Shoe	1	.10

Part No.	Description	No. Req.	Price Each
	MAIN HOUSING PARTS		
DSS-1-SA	Main Housing with Upper and Lower Bushings	1	$5.20
DSS-4	Housing Cover	1	.40
DSS-12-S	Knurled Gland with Felt Washer	1	.15
SBS-45	Indicator Spacer	1	.10
SBS-46	Indicator	1	.10
SP-509	¼"-20 x ½" R. H. Mach. Screw	8	.10
SP-604	⅜"-16 x 2¼" Hex. Hd. Cap Screw	1	.10
SP-1026	⅜"-16 Hex. Nut	1	.10
SP-1704	⅜" Lockwasher	1	.10
SP-559	No. 10-32 x ½" Rd. Hd. Mach. Sc.	1	.10
SP-2436	¼" Steel Pipe Plug	1	.10
SP-1702	¼" Lock washer	4	.10
	REAR COLUMN PARTS		
DSS-2	Rear Column	1	3.10
DSS-47	Frame Tube	2	2.10
DSS-46	½"-13 x 4½" Stud	2	.10
SP-1028	½"-13 Hex. Nut	4	.10
DP-6	½" Spec. Washer	4	.10
DSS-6	Clamp Flange	1	.10
DSS-29	Tie Rod	1	.25
SP-1026	Tie Rod Hex. Nut	1	.10
DSS-81	Hose Clip	2	.10
SBS-55	Special Washer	1	.10
	DRIVE SHAFT PARTS		
NSS-206	Drive Shaft Housing	1	1.15
NSS-207	Pump Head	1	.45
NSS-208-S	Drive Shaft with Crank and Pin	1	2.35
NSS-209	Eccentric Sleeve	1	.25
NSS-211	Plunger	1	.25
NSS-213-S	Piston Assembly	1	.10
NSS-216	Exhaust Valve Screw	1	.10
NSS-217	Inlet Valve Screw	1	.10
NSS-218	Valve	2	.10
NSS-219	Valve Spring	2	.10
NSS-220	Pump Head Gasket	1	.10
DSS-16-S	Fiber Slide Block Assembly	1	.50
DSS-42	Blower Spring	1	.10
DSS-70-S	Felt Seal Cap with Washers	1	.25
SBS-19	Spec. ⅝"-18 Hex. Nut	2	.10
DSS-75-S	Timken Bearing, complete	2	1.05
SP-564	No. 6-⅜" Rd. Hd. Mach. Screw	7	.10
SP-275	¼"-28 x ¼" Allen Hd. Screw	1	.10
	MISCELLANEOUS ITEMS		
DSS-41-S	Socket Wrench	1	.30
DSS-44-S	Chuck Wrench	1	.25
#712	Set of 6 Ind. Guides, with bracket	1	
#716	Steel Stand	1	
#1334	Switch Rod, with Clamp	1	
#1526	Wrench (old SBS-47)	1	

NOTE: Prices in this list apply only to parts ordered for repair and replacement. They cannot be used for computing allowance values when a machine is ordered "less" certain parts.

PRICES SUBJECT TO CHANGE WITHOUT NOTICE



DELTA

MILWAUKEE

Installing NSS-337-S Crosshead on No. 1200

IMPORTANT: Read Before Installing Crosshead

Our scroll-saw crossheads are tested under the severest possible conditions, and are fully adequate in strength for the work they are called upon to perform. When these crossheads break, we have found that it is invariably due to the loosening of the setscrew that locks the head to the plunger. This setscrew is marked A in Fig. 1.

In order to prevent this from happening in the future, we have changed the design slightly, to permit the use of a screw with a pilot, such as shown at B, Fig. 2. This pilot fits into a hole drilled in the plunger, and the pilot screw is locked by means of a short lock screw on top of the pilot screw. The possibility of these two screws loosening is remote, but, if it should happen, the pilot will not withdraw completely from the hole in the plunger (thus allowing the crosshead to fly around loose) but will loosen up enough to cause a noise when operating the machine, and thus enable you to investigate the cause and retighten the screw before the crosshead can be broken.

With this crosshead, you will find two setscrews, A and B in Fig. 2, and one short lock screw, C in the same drawing. If your plunger is of the type that formerly used screw A, the plunger will be countersunk to take the point of the screw. You can reinstall this screw and assemble the crosshead and plunger as before, if you wish, but it is better if you use screw B and drill the plunger to take the pilot of this screw.

Use a No. 25 drill, and drill the plunger as shown in Fig. 3, using the old countersinks as guides to center the drill. Countersink the edges of the drilled holes as shown. Then assemble the crosshead to the plunger, using pilot screw B. When this is tightened in place, lock it with short lock screw C. This short lock screw should always be used no matter which method of assembly is used.

AFTER CROSSHEAD HAS BEEN ASSEMBLED WITH PILOT SCREW B, AND THE MACHINE IS IN OPERATION THEREAFTER, ALWAYS STOP INSTANTLY AND INVESTIGATE ANY UNUSUAL NOISE IN THE CRANKCASE. Such noise may mean that the pilot screw has become loose and should be re-tightened. The rattle caused by this loosening will always give warning before the crosshead can be broken.

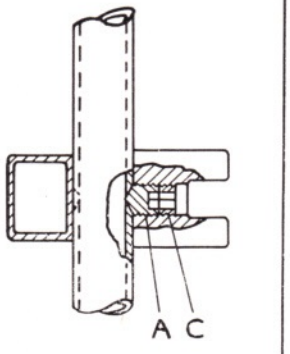


FIG. 1

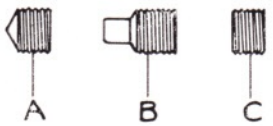


FIG. 2

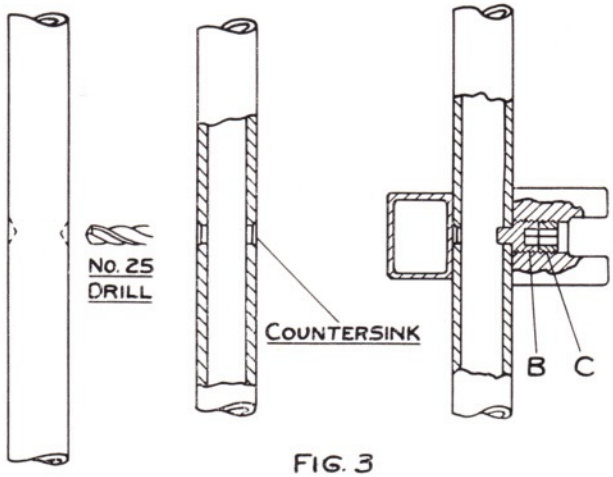


FIG. 3

THE DELTA MANUFACTURING CO. DELTA MILWAUKEE 600-634 E. Vienna Ave., Milwaukee, Wis.

Form 1.S. 174—4-43 Printed in United States of America Printed in U.S.A. P.M. 1558

Setting Up and Operating the No. 24 110 16-Inch Scroll Saw

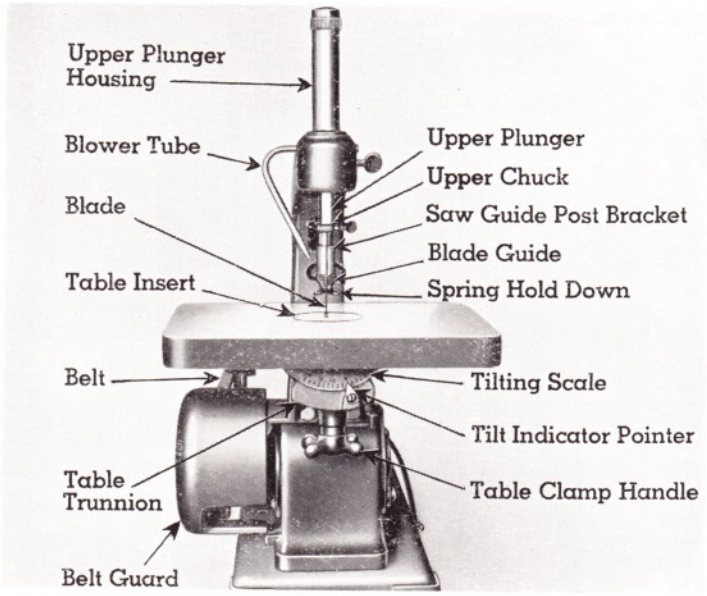


Figure 1

The No. 24 110 Scroll Saw comes completely assembled, however, to avoid any possibility of breakage the table and upper plunger housing are shipped loose. After unpacking the machine, bolt it down to a bench or stand. If our No. 716 Stand is used, first drill four holes corresponding to the holes in the Scroll Saw base. Make sure when drilling these holes, that they are placed far enough to the front of the stand so that room is left to mount the motor. When bolting to bench or stand use a rubber washer under the head of the bolt or under the nut to prevent "drumming".

Unpack the table, remove the Star Wheel, and seat the table in place with the index plate to the front of the machine.

Insert the upper plunger housing through the opening in the upper arm casting, with the chuck thumbscrew facing the right and lock in place with set screw SP-106.

Place a blade in the machine, setting it perfectly vertical, then set the table at right angles to the blade. Adjust the table tilt pointer to the zero mark on the index plate, and lock it into position with the round head screw SP-551.

Power and Speed

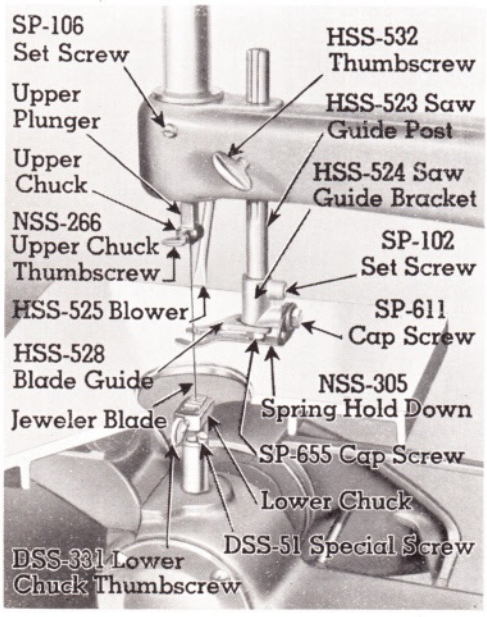


Figure 2

Any ¼ or ⅓ H.P. motor will furnish ample power for this machine. The motor can be mounted below, behind or to the side of the machine, as desired. Direction of the motor is not important unless the other end of the motor shaft is to be used to drive some other machine, in which case the rotation can suit the other machine. The No. 5300 3-inch pulley should be used on the motor, which will provide a speed of 1275 R.P.M. with a 1725 R.P.M. motor.

Inserting Jeweler's Blades

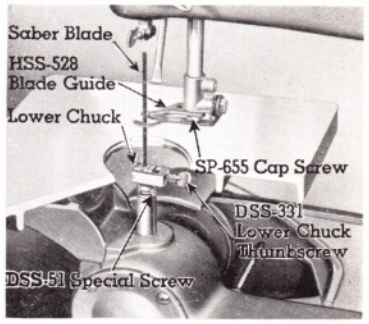


Figure 3

To insert jeweler's blades in the chucks, remove the table insert and turn the pulley until the lower chuck is at the top of its stroke. Loosen the chuck thumbscrew DSS-331, and insert the end of the blade about one-half inch between the two outer flat jaws DSS-328 and DSS-329. Be sure that the teeth of the blade point downward. Hold the blade in a vertical position, and see that the end of the blade is at the center of the jaws. When the blade is in the correct position tighten the thumbscrew. Now loosen the upper chuck thumbscrew NSS-266, pull the entire upper plunger down until the upper end of the blade enters about ½ inch between the jaws of the chuck and retighten the thumbscrew. This will hold the blade in position at the required tension. It is a good idea to turn the machine over by hand before starting the motor, to make sure that the tension spring does not compress flat when in lowest position of the stroke, as this would cause blade breakage.

Inserting Saber Blades

Saber blades are held between the V-jaws of the lower chuck, rather than the flat jaws. The chuck is turned so that the thumbscrew is to the rear of the machine. This is done by loosening special screw DSS-51, turning the chuck to the left and retightening the screw. Be sure to retighten the screw. Slip the saber blade between the V-jaws and lock in place with the thumbscrew. The upper chuck is not used in saber blade work, the blade being held in the lower chuck jaws only.

Pin Blades

To use pin blades, simply knock the pins out and insert them in the same manner as jeweler's blade.

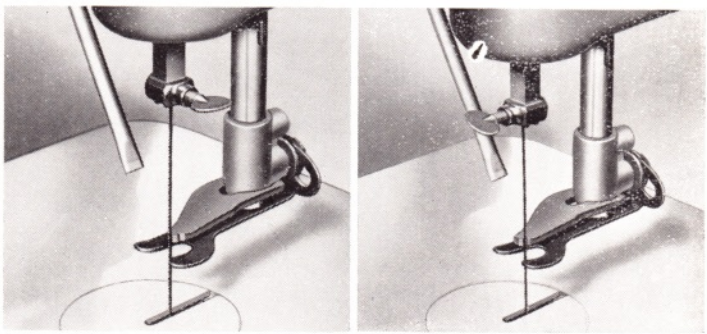


Figure 4

Blade Guides

Blade Guide HSS-528 standard with the machine, is a specially designed guide. Figure 4 shows how the guide gives support to the blade in doing either front or side work.

To adjust the guide up or down, merely loosen the thumbscrew HSS-532 and slide the guide post HSS-523 to the desired position.

If a great deal of cutting is done with one blade as in marquetry and puzzle cutting, it is recommended that a set of individual blade guides No. 24 810 be purchased and used rather than the standard guide. When changing guides, first remove the spring hold down or tilt it to one side,

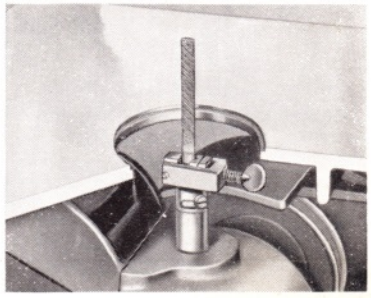
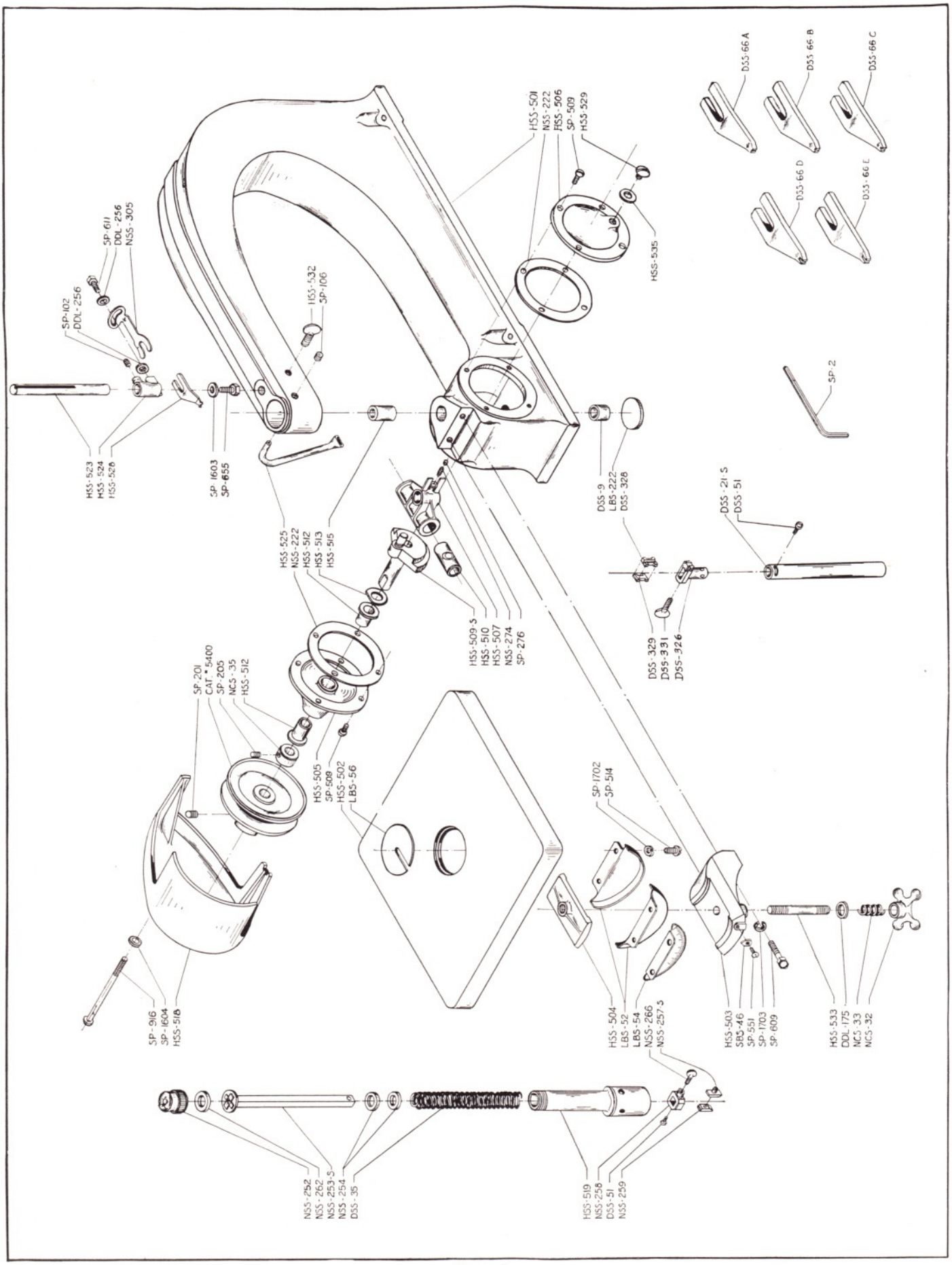


Figure 5


DSS-66 A
DSS-66 B
DSS-66 C
DSS-66 D
DSS-66 E
HSS-501
NSS-222
HSS-506
SP-509
HSS-529
HSS-535
SP-611
DDL-256
NSS-305
SP-102
DDL-256
HSS-523
HSS-524
HSS-526
HSS-532
SP-106
SP 1603
SP-655
HSS-525
NSS-222
HSS-512
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HSS-515
DSS-9
LBS-222
DSS-326
SP-2
DSS-21 S
DSS-51
HSS-509-S
HSS-510
HSS-507
NSS-274
SP-276
DSS-329
DSS-331
DSS-326
SP-201
CAT * 5400
SP-205
NCS-35
HSS-512
HSS-505
SP-509
HSS-502
LBS-56
SP-1702
SP-514
SP-916
SP-1604
HSS-518
HSS-504
LBS-52
LBS-54
NSS-266
NSS-257-S
HSS-503
SBS-46
SP-551
SP-1703
SP-609
HSS-533
DDL-175
NCS-33
NCS-32
NSS-252
NSS-262
NSS-253-S
NSS-254
DSS-35
HSS-519
NSS-258
DSS-51
NSS-259

Figure 6

out of the way. Then loosen the hex head cap screw SP-655 and slide the blade guide off. Put new blade guide into its place, retighten screw and adjust spring hold down. The entire guide and holddown can be adjusted to right or left by loosening the setscrew SP-102.

Filing

Regular filing-machine files, having ¼ inch or ⅛ inch round shank, are the proper kind to use in this machine; the round shank provides stiffness and strength which is not found in tapered shank files. They may be flat, round, half-round, three-cornered or square—in fact of any commercial cross section, but must not be more than 5 inches long.

To insert the file, remove the table insert, loosen the guide-post thumb-screw and shove the guide up completely out of the way, loosen the jaws of the chuck and insert the file between the V-jaws. If the work is fed from the front of the table, the chuck thumbscrew should face the front also, so that the pressure of the work is taken by the back of the chuck.

IMPORTANT: Most machine files are not perfectly straight, and occasionally it will be found that one will not line up square with the table. In the case of a round or square file, this can often be adjusted merely by turning the file in the chuck until a position is reached where the file is square. If this cannot be done, say in the case of a flat file which is decidedly bent toward one flat side, grasp the file in the chuck with the edge facing the front, then tilt the table slightly until it is square with a face of the file, and feed the work from the side. The table is tilted in the same manner, of course, when filing work at an angle.

Sanding

The sanding attachment No. 711 is fitted with a ¼ inch shank so that it may be held in the chuck in the same manner as the files. It is exceedingly useful for sanding the edges of scroll-sawed or band-sawed work, being semi-circular in cross section so that it can be used either for straight or curved work.

Garnet-paper sleeves of the proper size are available for the sanding attachment. To change sleeves, simply loosen the knurled nut at the top of the sander, slip off the old sleeve and slip on the new one, then retighten the nut.

To use the sander, remove the table insert and move the guide up out of the way. Set the sander shank down into the V-jaws of the lower chuck with the straight or curved face forward as required, then tighten the chuck thumbscrew.

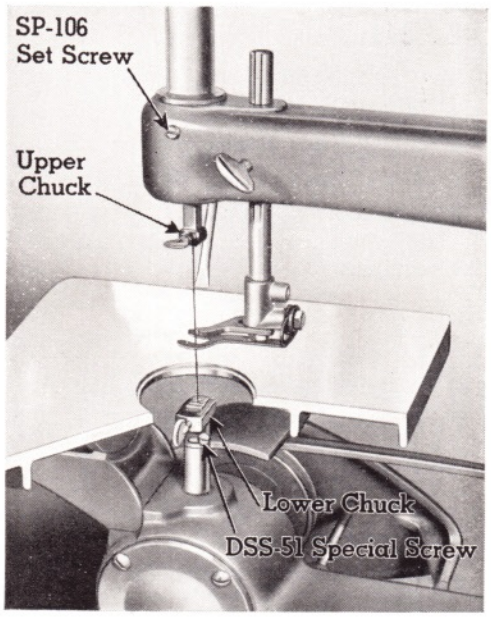

Figure 7

Changing Lower-Chuck Position

For certain kinds of work it is necessary or desirable to change the position of the lower and upper chuck so that the teeth of the saw blade face the side of the table. The normal position of the lower chuck is with the thumbscrew facing the right. To turn the chuck through 90 degrees, so that the thumbscrew faces the rear, simply loosen the screw DSS-51 holding the chuck to the lower plunger, turn the chuck with the thumbscrew facing the left, remove screw DSS-51, then turn the chuck completely around to the left, which will expose a new hole to receive screw DSS-51.

Changing Upper-Chuck Position

To change the position of the upper chuck, loosen the set screw SP-106, so as to loosen the upper-plunger housing. Then, turn the entire housing through 45 degrees, so that the thumb-screw faces the front of the machine. Retighten the setscrew, making certain that the set-screw enters the hole in the upper plunger housing.

Tilting the Table

To tilt the table, simply loosen star wheel NCS-32 and tilt the table to the desired angle.

IMPORTANT: When the table is to be tilted more than 15 degrees to the right, the position of the lower chuck must be reversed as described above, so that the thumbscrew points to the left, otherwise the thumbscrew will strike the table. It is always a good idea after making adjustments, to turn the pulley by hand several times before starting the motor, to check that the machine is in working order.

Figure 8

Reversing Drive Shaft

The machine is shipped with the drive pulley at the left side of the machine. If necessary the drive can be reversed so that the pulley is at the right. First remove the pulley and the NCS-35 collar. Then, loosen the four screws holding the drive shaft housing to the base, and also the four holding the opposite guide bracket cover. Housing and cover along with the HSS-509-S counterbalance, can now be removed.

Working from the right hand side of the machine remove the lock screw SP-276. Then loosen the set screw NSS-274. The crosshead HSS-507 must now be turned round until it faces the other opening in the crankcase. When this is done, retighten the setscrew NSS-274, making sure that it engages with the hole in the lower plunger assembly. Lock it in place with the lock screw SP-276 and reassemble the counter balance to the crosshead.

Scrape all dirt from the cover flanges, then spread a thin coating of shellac on the flanges and fasten in place with the screws. Turn the pulley by hand several times to be sure that everything is correct before turning on the power.

Air Blower

The blower is designed so that plenty of air is furnished to blow sawdust away from around the lines marking the design on the work, but not enough to cause a blast, which might blow sawdust into the eyes. If the blower fails, check to see that it is tightly inserted into the opening on the left hand side of the upper arm.

Oiling

All lower parts which require lubrication are enclosed in the crankcase. The case must be filled before using. Fill it with the light winter-grade automobile oil up to the lower edge of the oil level hole. The upper plunger bearing is self-lubricating and requires no attention. Crankcase capacity is about one pint.

Blades

This scroll saw is designed to take jeweler's blades 5 inches long and saber blades 4½ inches long. There is no advantage, in using pin blades, in fact there is a disadvantage, as a wide range of sizes can be obtained in jeweler's blades.

Always use the widest blades possible, consistent with the radius of the curves to be sawed. Use narrow blade for sawing small, abrupt curves and for fine, delicate work only. This will not only save blades, but will produce the best work. Be sure that teeth of blade point downward.

REPLACEMENT PARTS

IMPORTANT: To avoid possible errors, be sure to include the serial number of machine when ordering parts for repair or replacement.

Number	Name of Part	No. Req.	Price Ea.
	DRIVE SHAFT PARTS		
HSS-507	Cross head	1	
HSS-509-S	Counterbalance and crank assembly	1	
HSS-510	Cross head pin	1	
HSS-513	1⅛" O.D. x 41/64" I.D. x 1/16" Thk. washer	1	.10
NCS-35	Collar only	1	.15
NSS-274	¼"-28 x ⅜" full dog Allen set screw	1	.10
SP-205	5/16"-18 x ¼ cup point Allen set screw	1	.10
SP-276	¼"-28 x ⅛" lock screw (Mas-It Hollow)	1	.10
	UPPER PLUNGER PARTS		
HSS-519	Upper plunger housing	1	
DSS-35	Upper plunger spring	1	.10
DSS-51	Special screw	1	.10
NSS-252	Knurled safety cap	1	.25
NSS-253-S	Upper plunger assembly	1	.55
NSS-254	Upper plunger washer	2	.10
NSS-257-S	Pin and jaw assembly	1	.15
NSS-258	Upper chuck body	1	.20
NSS-259	Upper chuck fixed jaw	1	.10
NSS-262	Upper plunger bumper	1	.10
NSS-266	Chuck clamp screw	1	.10
	LOWER PLUNGER PARTS		
DSS-327	Yoke for lower chuck	1	.40
DSS-326-R	Chuck assembly consisting of jaws, chuck body and thumb screw	1	1.75
DSS-330	Lower chuck clamp pin	1	.10
DSS-331	Lower chuck thumb screw	1	.10
DSS-21-S	Lower plunger assembly	1	.40
DSS-51	Special screw	1	.10
DSS-328	Lower chuck V-Jaw	2	.15
DSS-329	Lower chuck plain jaw	1	.15
	BASE PARTS		
HSS-501	Cast iron frame	1	
HSS-505	Drive shaft housing	1	
HSS-506	Cross head guide bracket	1	
HSS-512	Bushing for drive shaft	2	.10
HSS-515	Upper bushing for lower plunger	1	.10
HSS-525	Copper blower tube	1	
HSS-529	Oil level hole screw	1	.10
HSS-532	5/16"-18 x 1⅜" Thumbscrew	1	.10
HSS-535	Special washer	1	.10
DSS-9	Lower plunger bushing	1	.15
LBS-222	Expansion plug	1	.10
NSS-222	Gasket	2	.10
SP-106	5/16"-18 x ½" headless setscrew	1	.10
SP-509	¼"-20 x ½" round head mach. screw	8	.10
SP-2252	No. 2 x 3/16 drive screw	2	.10
TCS-295	Name plate	1	.10

Number	Name of Part	No. Req.	Price Ea.
	TABLE AND TRUNNION BRACKET PARTS		
HSS-502	Table	1	
HSS-503	Trunnion bracket	1	.75
HSS-504	Trunnion clamp	1	
HSS-533	Stud 3 5/16" long, for trunnion clamp	1	
DDL-175	Special washer	1	.10
LBS-52	Trunnion	2	.10
LBS-54	Index plate	1	.15
LBS-56	Standard slotted table insert	1	.10
NCS-32	Star wheel	1	.25
NCS-33	Coil spring	1	.10
SBS-46	Indicator pointer	1	.10
SP-514	¼"-20 x ⅛" round head mach. screw	4	.10
SP-551	#10-32 x ¼" round head mach. screw	1	.10
SP-609	5/16"-18 x 1½" hex. head cap. screw	2	.10
SP-1702	Lock washer—7/16" O.D. x ¼" I.D. x 1/16" thick	4	.10
SP-1703	Lock washer—5/16" O.D. x 5/16" I.D. x 1/16" thick	2	.10
	GUIDE PARTS		
HSS-523	Saw guide post	1	
HSS-524	Saw guide bracket	1	
HSS-528	Saw blade guide	1	
DDL-256	Special washer	2	.10
*DSS-66-A	Saw blade guide	1	.15
*DSS-66-B	Saw blade guide	1	.15
*DSS-66-C	Saw blade guide	1	.15
*DSS-66-D	Saw blade guide	1	.15
*DSS-66-E	Saw blade guide	1	.15
NSS-305	Spring hold down	1	.10
SP-102	¼"-20 x ⅜" headless set screw	1	.10
SP-611	¼"-20 x ½" hex. head cap screw	1	.10
SP-655	¼"-28 x 1" hex. head cap screw	1	.10
SP-1603	Steel washer—9/16" O.D. x ¼" I.D. x 3/64" thick	1	.10

*Not standard equipment.

	GUARD PARTS		
HSS-518	Pulley Guard	1	
SP-916	5/16"-18 x 4½" round head stove bolt	1	.10
SP-1604	Steel washer—¾" O.D. x 5/16" I.D. x 1/16" thick	1	.10
	MISCELLANEOUS		
SP-201	5/16"-18 x 5/16" flat point Allen set screw	1	.10
#194	5/32" plain Allen wrench for 5/16" set screw or #10 cap screw (old SP-2)	1	
#5400	4" dia. pulley	1	

Prices Subject To Change Without Notice

NOTE: Prices in this list apply only to parts ordered for repair and replacement. They cannot be used for computing allowance values if a machine is ordered "less" certain parts.

THE DELTA MANUFACTURING CO. DELTA MILWAUKEE **600-634 E. Vienna Ave., Milwaukee, Wis.**

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