

No. 27-100

DELTA-MILWAUKEE®

*7" "Precision Shaper
for Metalworking"*

Instruction Manual

PM-1737

No. 27-100 - 7" METAL SHAPER Operating and Maintenance Instructions

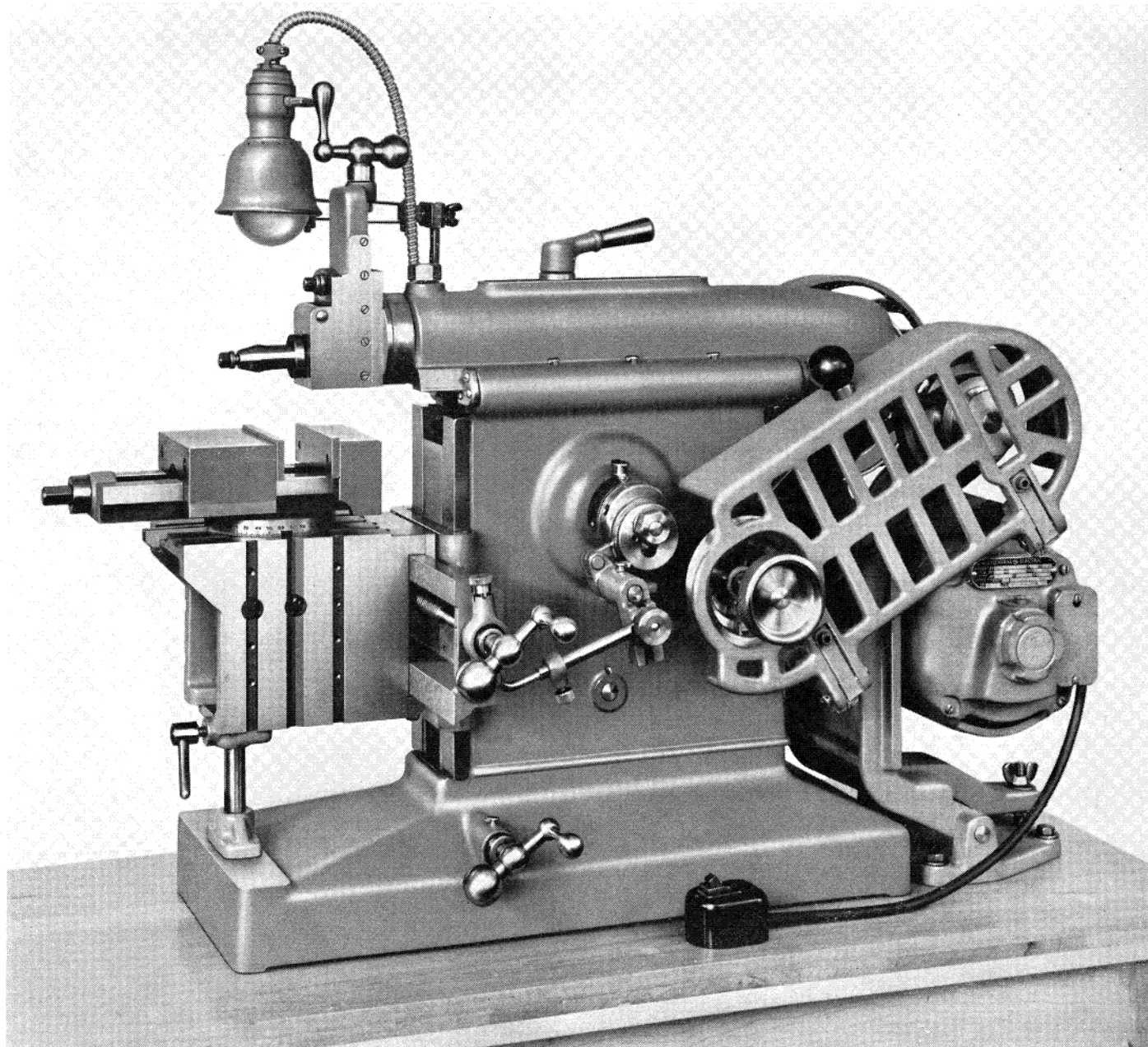


Fig. 1. Bench Model.

The New Streamlined Delta Shaper offers the most complete, up to date shaper available today. It is a sturdy and well built machine, and made to withstand high speed production work. Its precision machined parts make it accurate.

Portability of the Delta Shaper mounted on a portable cabinet is a definite advantage and profitable. Shaper can be moved from one job to another. It can be brought right up to the machine or bench where

operator is working, thus saving wasted steps and time.

The 7" Delta Shaper covers a range which makes it ideal for tool room, maintenance departments, production work, machine shops, schools, laboratories, and other industrial plants.

This is an easy to operate shaper that can be safely turned over to, and profitably operated by, even those with limited shaper experience.

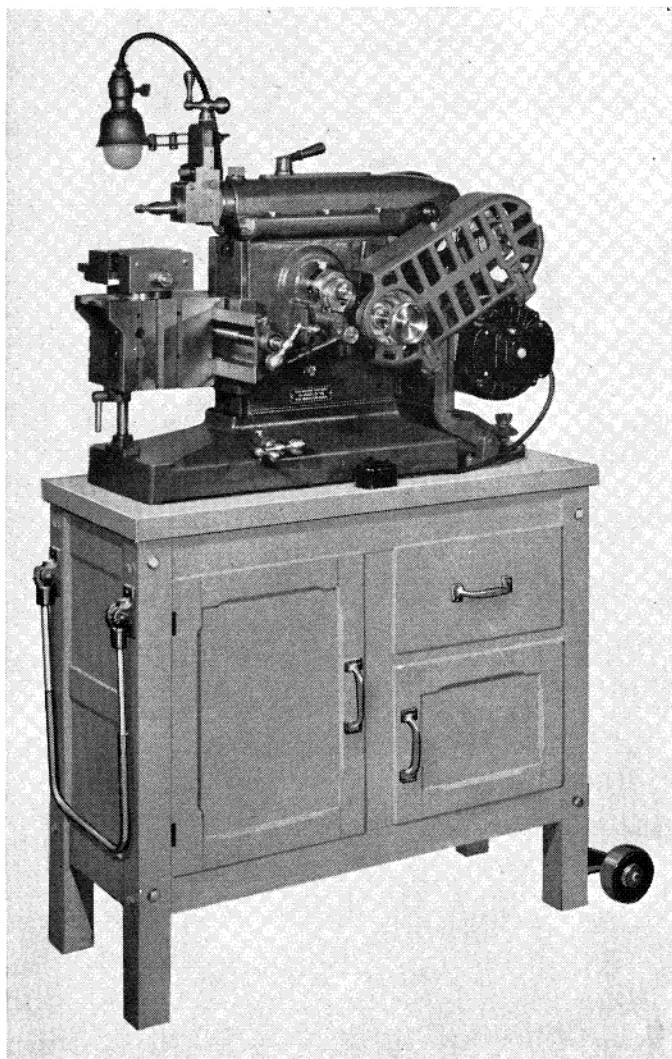


Fig. 2. Cabinet Model.

This machine will uniformly operate with extreme length of stroke of $7\frac{3}{4}$ ". Total length of ram is $16\frac{3}{4}$ ", has four speeds, and 40 to 180 strokes per minute.

The overall dimensions of the bench model machine are: 32" long, 18" wide, and 24" high.

The basic unit No. 27-100 Bench Model Shaper consists of: shaper, swivel vise, wrenches, 4 step V-pulley, adjustable counter shaft, 2 V-belts, and adjustable lamp with switch.

The basic unit No. 27-120 Cabinet Model consists of No. 27-100 7" shaper, swivel vise, wrenches, 4 step V-pulley, adjustable counter shaft, 2 V-belts, adjustable lamp with switch No. 27-860 portable maple cabinet and No. 27-850 belt guards, but without motor.

Accessories which may be purchased as additional equipment are: No. 27-880—Index Centers. These index centers have a capacity of 5 inches between centers and a 3 inch swing. This unit can be mounted on the working surface of the table and is equipped with centers and index plate so that parts may be machined with equally spaced slots or surfaces; and can be used in cutting many types of gears. This unit is furnished with 2 index plates for divisions of from 2 to 48 spaces. A dog for holding the work is included. No. 27-890 4" Rotary Table. This table has a working surface of 4" diameter and has three "T" slots on the face for clamping and holding a variety of parts that require slotting, etc. There are eight "T" headed bolts

furnished with this Rotary Table ranging in length in pairs of from 1" to $2\frac{1}{2}$ ". No. 27-895 Angle Plate. This angle plate is of great value for irregularly shaped work and can be clamped to the top or the side of the table through the holes provided. This plate is very useful when working on odd shaped pieces that cannot be held in the vise. No. 27-900 Round Keyway Tool Holder $\frac{7}{16}$ " diameter. This tool is mounted in place of the regular tool holder and is used for cutting internal keyways, slotting, and other similar work. No. 27-901 Round Keyway Tool Holder $\frac{5}{8}$ " diameter. This tool is mounted in place of the regular tool holder and is used for cutting internal keyways, slotting, and other similar work. No. 27-902 Armstrong Tool Holder with straight shank $\frac{7}{8}$ " x $\frac{3}{8}$ " x 5" for $\frac{1}{4}$ " square tool bits. No. 27-903 One set of seven tool bits $\frac{1}{4}$ " square as follows: Round nose ruffing bit; offset ruffing bit, right hand; offset ruffing bit, left hand; broad finishing bit; bottom ruffing bit, right hand; bottom ruffing bit, left hand; and narrow dovetail bit. No. 27-101 Fractional horsepower A.C. Manual Starter, Square 'D' Class 2510 type A.G.-1 or equal, enclosed type complete with thermal overload relay single phase. To be used with $\frac{1}{3}$ H.P. single phase 115-230 V 60 cycle motor.

The motor pulley is not furnished with the basic unit. The motor pulley is contained in the motor unit together with the switch, cord, cord grip, and motor mounting screws.

Customers, who furnish their own motor, should use a 2" diameter pulley on the motor in order to maintain the proper R.P.M.

Refer to the photographs, drawings, and Table 1 to identify the parts mentioned in the following paragraphs.

ASSEMBLY

Before the Shaper leaves the factory it receives an application of rust preventative, which can be removed with kerosene or some other similar solvent. The shaper is also wrapped in heavy waterproof paper, then placed in a wooden box.

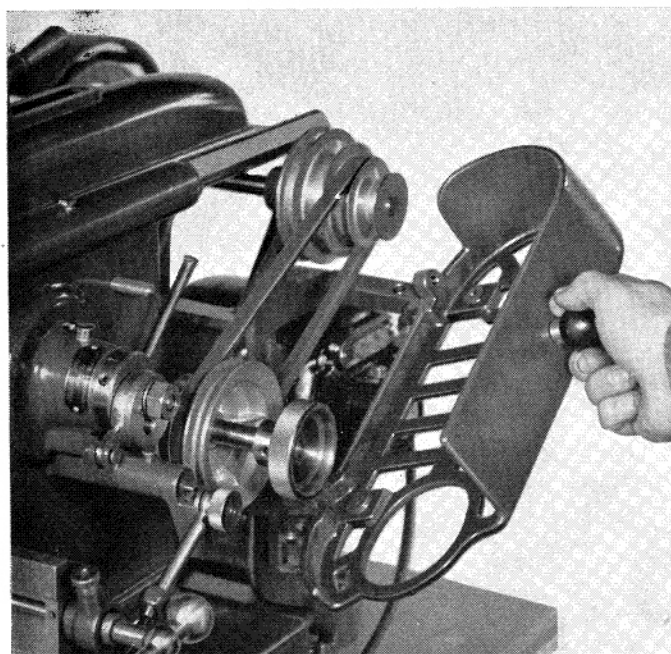


Fig. 3. Adjustable Countershaft.

When removing this box, loosen the wire straps along one edge of the box first. Cut the strap holding the carton containing accessories inside of the box. Then loosen one side of the box and the cover and sides will lift right off of the base, leaving the shaper and bottom intact. The shaper is bolted to the bottom with four bolts, as is the countershaft too, with four bolts.

In the carton which is in the box that has been cut loose are 2 V-belts, a round cover from the machine, instruction manual PM-1737, and belt guards, and 1 set of 3 wrenches if a cabinet is ordered with the shaper, and any other extra accessories ordered with the shaper.

If the cabinet has not been ordered and the shaper is to be used as a bench model, the purchaser can, if he wants to, leave the shaper and countershaft bolted to the bottom of the box for operation.

However, before operating the shaper, be sure that the four step pulley on the countershaft lines up with the pulley on drive shaft of the shaper, because when drilling the four holes in the bottom of the box for the countershaft they may have been drilled out of line, and that is why, if the countershaft does not line up with the shaper, four new holes will have to be drilled in the bottom board of the shipping box. It will be necessary, in any event, to line up the countershaft with the shaper, otherwise there will be undue strain on the pulleys and the belt will wear much faster than it should.

When mounting the shaper on a cabinet, should one be purchased with the shaper, extreme care must be taken. If the cabinet top is not true or even, the shaper should be shimmed up and a dial indicator used to see that the shaper base is parallel to the crossrail when the shaper is pulled down tight on the cabinet.

CONSTRUCTION FEATURES

The ways of the Ram, Tool Head, and Front Face of the Main Frame are of the V-type. They are carefully fitted together and ground and lapped to insure accuracy and long life. These Ways are all gibbed and are provided with adjusting screws to take up any

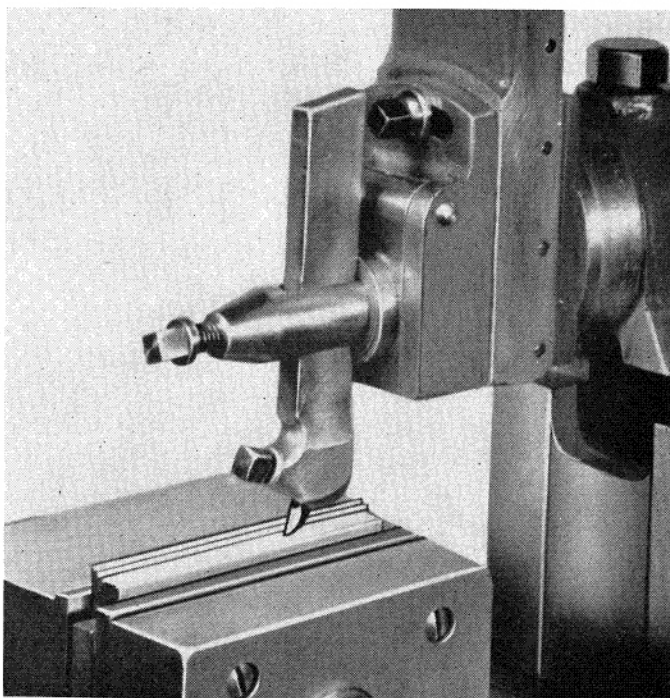


Fig. 4. Straight Cut on Flat Piece of Work.

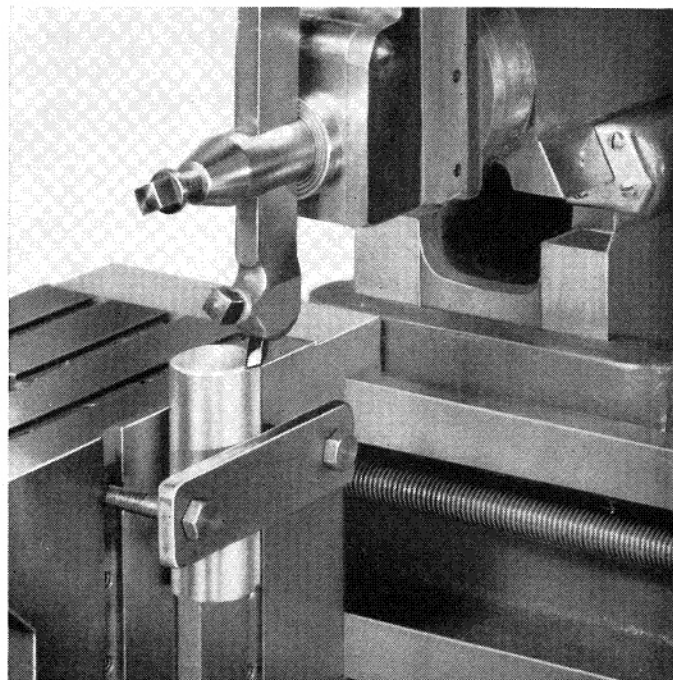


Fig. 5. Machining End of Round Piece of Work, Held in "V" Groove on Side of Table.

wear that may develop. These screws are set at the factory and should not require resetting for a considerable time. See Figure 20.

The Tool Head is adjustable and graduated from 0 to 90° for angle work, and is quickly loosened or tightened by one screw. The down feed screw is provided with a graduated collar for adjustment. See Figure 20.

The vise is made of semi-steel and is mounted on the table with a single bolt, and is held in position with a Key. The base is graduated for any angle from 0 to 90° on each side of center. The vise jaws have steel insert plates. See Figure 1.

The Castings are made of a close grain semi-steel.

The Cross Rail and the Table Ways are of the square type on the upper surface and of the V-type on the lower surface, both with suitable gibs for adjustment in case of wear. The table is provided with an adjustable support that bears on the accurately machined surface of the Main Frame. This gives an exceedingly rigid construction.

The Cross Rail Feed Screw is constructed to provide a safety factor in that the table will run off the Cross Rail Feed Screw when it has traveled its maximum length in either direction. See Figure 17.

The Base of the shaper is deep, heavily ribbed, and of rugged construction.

The Column, like the base is ribbed and reinforced to produce maximum rigidity. Bearings bosses are reamed and honed.

The Feed Mechanism is of the reversible and adjustable type. By adjusting the position of the T-Bolt in the Feed Adjusting Lever, a feed varying from .003" to .018" can be obtained. The stroke is adjusted by loosening the lock nut on the end of the shank near the end of the feed eccentric and then by adjusting the rocker arm block up or down. The proper stroke is indicated by the scale on the rocker arm. See Figure 8.

The Adjustable Countershaft has a 4 step V-pulley with separate adjustment for V-belt and motor belt. Pulleys and belt can be enclosed behind hinge-type

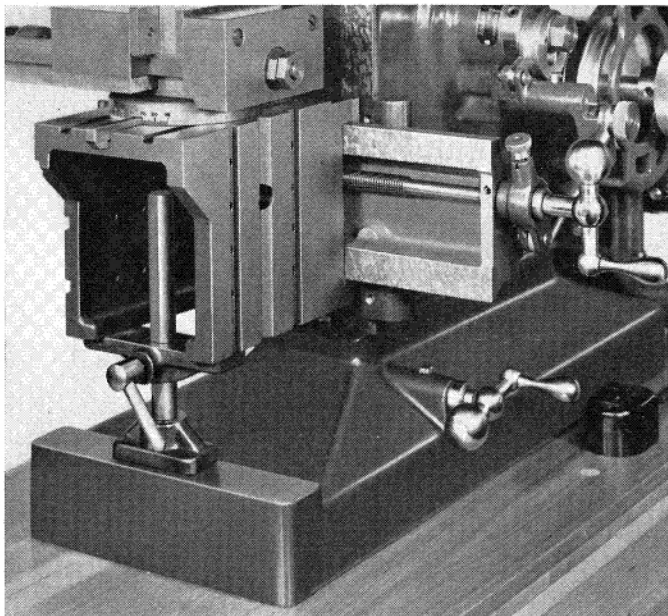


Fig. 6. Showing Vertical and Horizontal Movement of Table.

Safety Belt Guard for quick change of belt. The 26" V-belt connects the motor pulley and countershaft pulley. The 27" V-belt connects countershaft pulley and shaper drive pulley. See Figure 3.

POWER, SPEED AND FEED

Use a $\frac{1}{3}$ H.P. Motor for this machine. We have available a $\frac{1}{3}$ H.P., 1725 R.P.M., 110 Volt, 60 Cycle, single phase motor.

All motor pulleys furnished for this machine have a $\frac{5}{8}$ " bore. They fit any of the Delta motors recommended for this machine. Consult your Delta dealer for the correct motor to meet your needs.

CONNECTING TO POWER LINE

When connecting the power line to the starter box have a licensed electrician check the following:

1. The line voltage, phase, and frequency match the motor name plate.
2. The overload heater coil in switch must be right size for the full load amperage rating of the motor.
3. The proper size of wire is used in connecting the machine to the power line to obtain proper voltage. Using too small a wire will cause an excessive loss of power.
4. The fuse used has enough capacity to carry the starting and full load current of the motor.
5. The starting switch is of the proper size and voltage.
6. Make sure the motor rotates in the proper direction.

MOUNTING THE MOTOR

Before installing the motor, be sure it runs in the right direction. The motor is to run counterclockwise when facing it from left side of shaper. If the motor runs the wrong way, reverse it according the manufacturers directions.

The motor mounting bracket is on and part of the countershaft, as shown in Figure 19 and has holes in it to receive NEMA No. 56 frame motors. The motor mounting bracket has two extra holes to accommodate the motor frames furnished by different manufacturers, therefore be sure the proper holes are used.

After motor has been mounted on the bracket, the motor shaft should be on the right hand side when facing the shaper from the rear.

To prevent excess wear and loss of power the V-belts must run true. Place a straight edge over the pulleys of countershaft and motor driveshaft. After the pulleys have been lined up fasten them securely to the shafts, see Figures 3 and 19.

HOLDING THE WORK IN THE SHAPER

The table is designed so that the work can be set up in the shaper with comparative ease.

The table is raised and lowered by means of a ball crank, see Figure 6 located on the right hand side of the shaper, Figure 6. The table is held secure by two locks. One is a gib lock, located on the left hand side of the shaper. The other is on the traveling foot rest, see Figure 6 to the front of the shaper. Loosen both of these locks and the table can be raised or lowered by turning the ball crank to the right or left.

The height of the table should be such as not to compel the tool head to be adjusted more than $\frac{3}{8}$ " either way from its central position only on short stroke work when the tool head does not strike the main frame. This is usual shaper practice. After the proper height is obtained, tighten the gib lock and secure the traveling foot rest in contact with the base.

The table has a horizontal travel of $9\frac{1}{2}$ " and a vertical travel of $4\frac{1}{4}$ ". The length of the table top is 6", the width $4\frac{1}{2}$ ", and the depth $5\frac{1}{8}$ ". It has a cross feed range of .003" to .018" in 6 feeds. The maximum distance from the ram is $5\frac{1}{4}$ " and minimum distance is $1\frac{1}{8}$ ".

The table has three $\frac{5}{16}$ " slots on the top; also two $\frac{5}{16}$ " slots and a V-slot on one side and three $\frac{5}{16}$ " slots on the opposite side. All these slots are drilled for clamping purposes. These slots are most generally used when the size of the work prohibits the use of the vise.

The vise is fastened to the table by means of a stud bolt, and is on a swivel base which is graduated from 0° to 90° and can be turned to the right and to the left. There is a keyway in the base of the vise

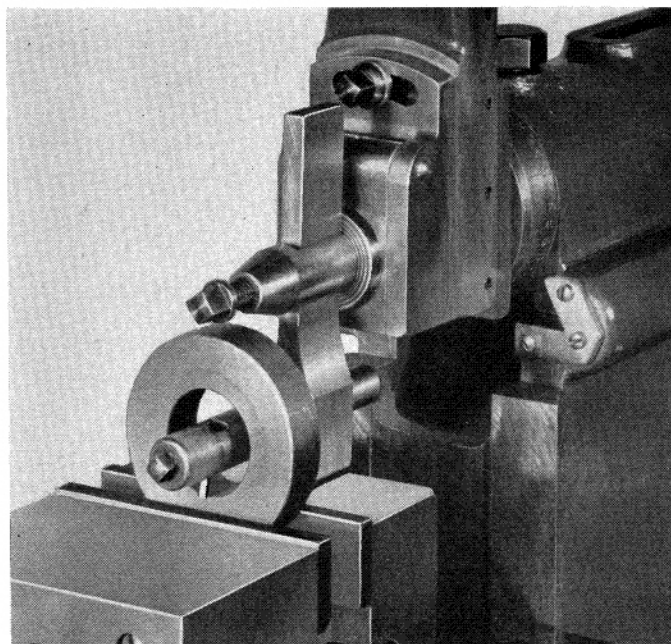


Fig. 7. Set-up for Cutting Internal Keyways.

which when used in conjunction with a key and keyway in the table, the vise can be rotated 90° at a time with exact precision. See Figure 1.

When using the vise, care should be taken to set the work high enough in the vise so the tool bit will not strike the vise before the work is completed. There are different methods by which the work can be set up in the vise. If the work is plain and of regular shape, parallel bars are usually used under the work. If the work is of an irregular nature, a surface gauge can be easily applied to line up the surface to be machined, whether the work is held in a vise or clamped on a table.

STROKE ADJUSTMENT

The removal of the cover plate on the left side of the shaper gives access to the stroke adjustment, see Figure 8. A scale is stamped on the crank arm which represents in inches the stroke of the shaper ram. To set the stroke, the shaper is turned by hand until the crank shoe comes to its top position. Loosen the clamp nut, see Figure 9 which is located on the eccentric which moves the feed mechanism. It is on the opposite side of the shaper from the cover plate. With the nut loose, the shoe will move with comparative ease. Set the indicating mark on the shoe opposite the desired number on the crank arm. A stroke of $7\frac{3}{4}$ " can be obtained by setting the indicator mark on the maximum mark. To determine the stroke desired, measure the work. Allow $\frac{1}{4}$ " to $\frac{3}{8}$ " extra for tool clearance. This tool clearance will allow the clapper box time to bring the tool to its cutting position before the ram starts on its cutting stroke.

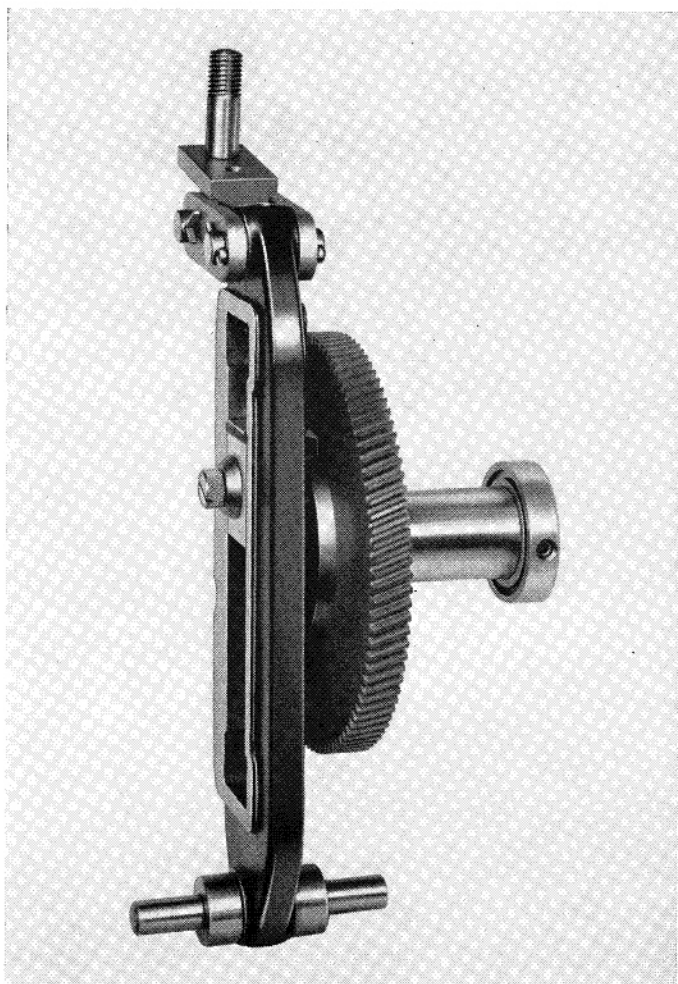


Fig. 8. Showing Stroke Adjustment of Bull Gear.

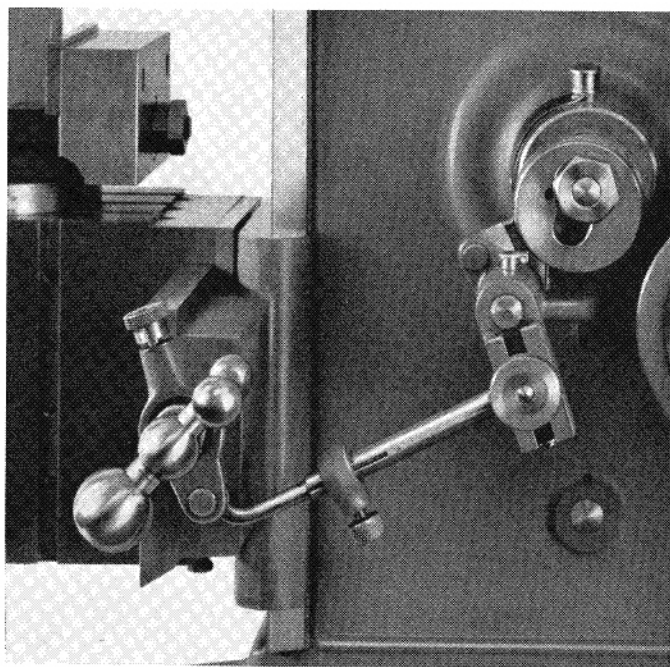


Fig. 9. Showing Clamp Nut and Horizontal Table Feed.

LOCATING RAM POSITION

After making the stroke adjustment it may be necessary to locate the ram so the tool will cover the work. To do this, loosen the ram block handle, Figure 20, in the upper slotted part of the ram. The extreme length of the stroke is $7\frac{3}{4}$ " and the total length of ram is $16\frac{3}{4}$ ". Length of the bearing in the main frame is $10\frac{3}{8}$ " and width of bearing in the main frame is $3\frac{5}{8}$ ". There are 40 to 180 strokes per minute, which is controlled in four speeds.

To find the correct position of the ram, turn the shaper by hand until the ram is at its extreme feed position. Set the ram so that the tool clears the work from $\frac{1}{4}$ " to $\frac{3}{8}$ ". After the proper position of the ram is reached, tighten the ram block handle.

TOOL HEAD

The tool head, Figure 20, is fastened to the ram on a swivel. It will rotate 90° to the right and left of its upright position. To make this setting, loosen the lock nut directly behind the tool head. The tool head can be set at any angle desired. When operating the shaper with the tool head in its upright position, do not lower it more than $\frac{3}{8}$ " from its central position. Any shaper will do better work if this precaution is observed. It centralizes the load and maintains a better balance throughout the machine. It also prevents the tool head from striking the ram V-ways in the main frame when the tool head is set over from its upright position. This is usual shaper practice.

TOOL AND TOOL HOLDERS

Various types of tools and tool holders can be used in the shaper. With the removal of the tool post, special tool holders can be installed. These tool holders vary in size according to the size and type of work that is to be shaped. They are easily adapted to the cutting of internal keyways, female ends of couplings, unions, etc. With the aid of these tools the shaper can be used as a slotter.

CLAPPER BOX

A swivel clapper box, Figure 20 is mounted on the tool head. The purpose of this box is to allow the tool to clear the work on the return stroke of the ram.

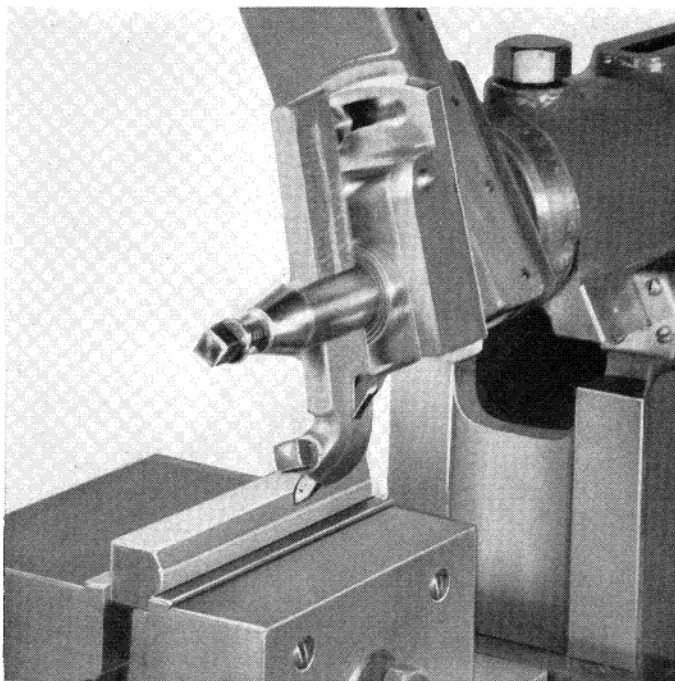


Fig. 10. Angular Cut on Edge of Piece of Work and Showing Tool Head and Holder.

Clearance can be obtained by proper adjustment of the swivel. When the cut is on a horizontal plane, the clapper box should be in its central or upright position. This position will allow the tool to lift directly upward and thus clear the work. If the cut is on a vertical plane and the feed is from the tool head down, the clapper box should be adjusted so the top of the box will be away from the work.

By shifting or tilting the clapper box this allows a double movement of the tool on the return stroke of the ram, up and away from the work, whichever the case may be.

FEED ADJUSTMENT

The feed is a reversible and adjustable type. One tooth on the ratchet is equal to a cross feed of .003". By adjusting the position of the T-bolt, see Figure 9 in the Feed Adjusting Lever, Figure 9 a feed varying from .003" to .018" can be obtained.

The adjustment in the Feed Adjusting Lever is made by loosening the Knurled Nut, Figure 22 and moving the T-bolt up to decrease feed or down to increase feed.

To reverse feed, turn the Knurled Knob on top of the ratchet dog, Figure 9 one-half turn. By turning this knob, feed of the table in either direction may be had.

For best operation, the feed should take place during the return stroke of the ram. If it does not, loosen the eccentric clamp nut, Figure 22 and move the eccentric to the opposite end of the elongated hole, being sure to tighten the clamp nut afterwards.

IMPORTANT

When the crossrail is changed, it is necessary to correct the length of linkage operating the feed pawl. This is done by loosening the Knurled screw, Figure 9 that clamps the feed rod sleeve, and resetting the pawl lever and feed adjusting lever approximately parallel to each other after the crossrail has been changed.

FEED SAFETY FACTOR

When the table has traveled its maximum length

in either direction, it runs off in either direction, it runs off the crossrail feed screw, Figure 1.

To re-engage the feed nut, push the table against the threads of the crossrail feed screw and at the same time turn the cross feed ball crank by hand until the threads on the crossrail feed screw engage the cross feed nut.

CUTTING SPEEDS

Cutting speeds varying from 40 to 180 strokes per minute can be obtained by shifting the belt to the desired position on the pulley.

LUBRICATION

All moving parts and bearings are supplied with oil holes and oilers. Care should be taken to keep the shaper lubricated with a good grade of machine oil. This will insure better operation and a longer life of the machine. See Figure 12.

IMPORTANT

1. Do not run this machine until properly oiled.
2. Be careful when operating shaper, and be sure the tool does not strike front of ram V-ways when feeding down.
3. Keep the surface clean under the foot rest.
4. Do not attempt heavy cuts. Use speed and small cuts.
5. Use fine feed for smoothest finish.

DIVIDING HEAD

The dividing head is an attachment used when the work calls for some accurate dividing, such as equally spacing of keys on a shaft, teeth on a ratchet or in the shaping of a spline shaft. The dividing head is fastened to the top of the table. Its position is located by the key which aligns the dividing head parallel with the table.

The dividing head, Figure 13 is equipped with dividing plates which will cover the average line of work done on the shaper. It is 5" between centers and has a swing of 3".

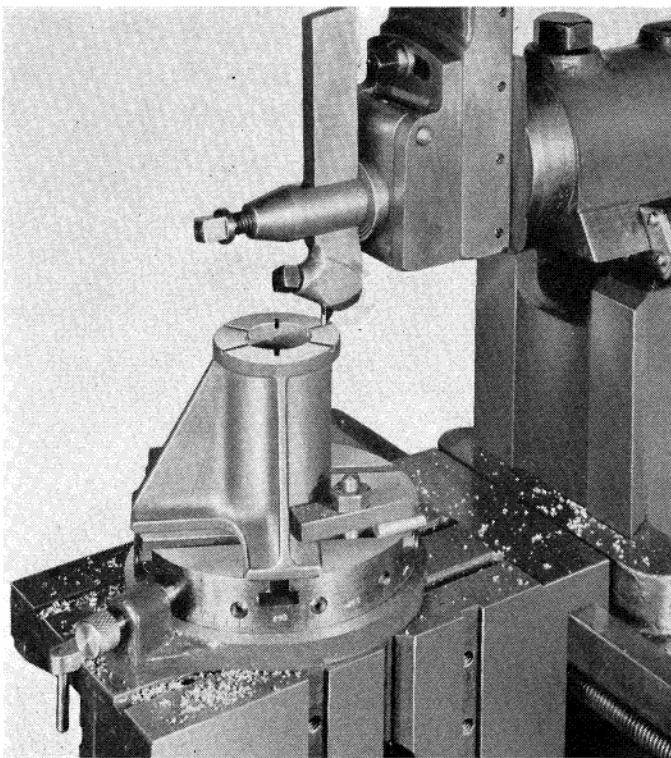


Fig. 11. Blotting Operation on Small Casting Mounted on Rotary Table.

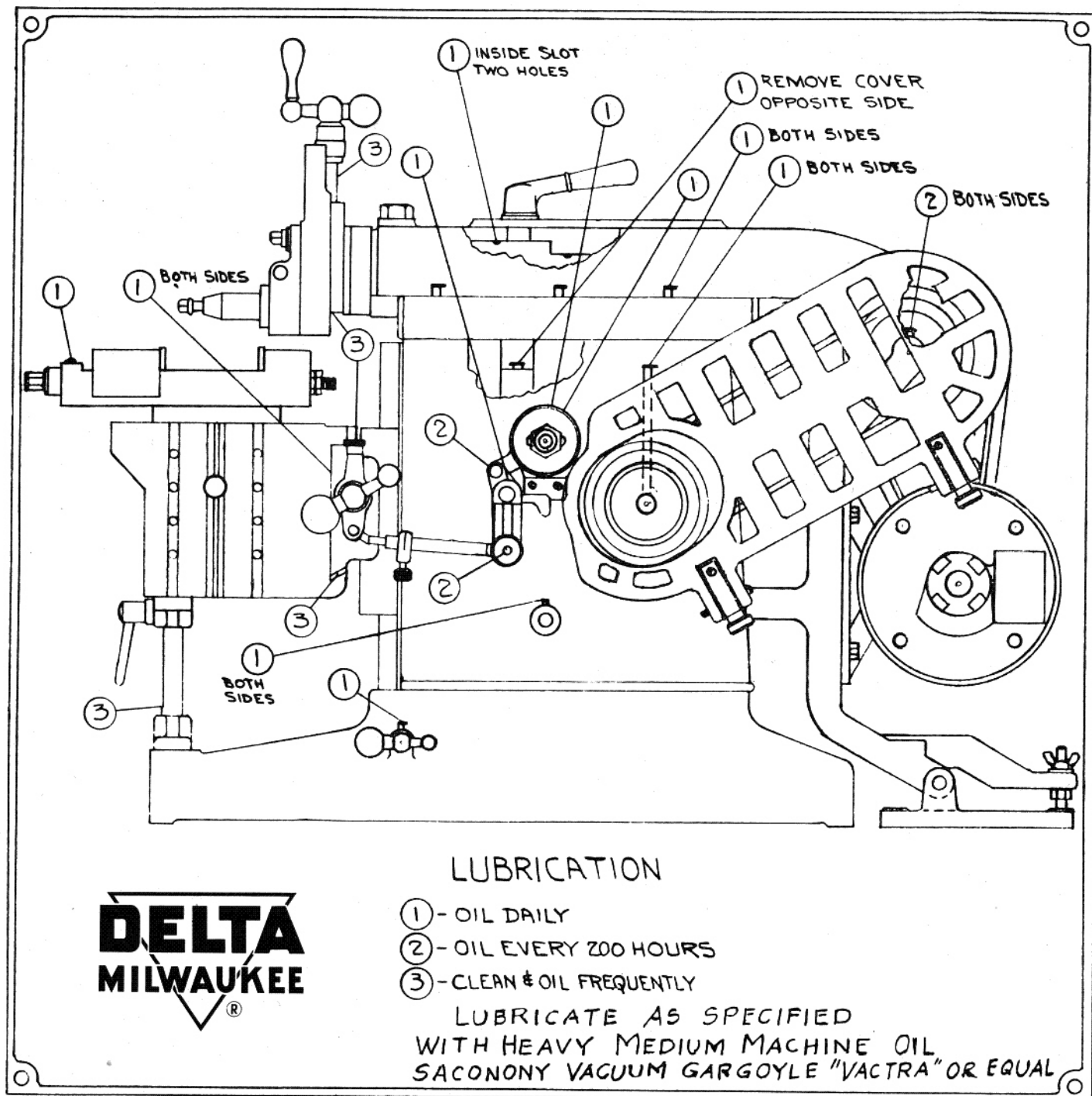


Fig. 12. Lubrication Chart.

The work is placed between the centers of the dividing head. For example: If a hex is to be cut on a bolt, there are six faces that will have to be cut. There are four sets of holes in the plates. One set has 36 holes in the circle and the other has 30 holes. A multiple of both 30 and 36 is 6. Therefore, if the group of 30 holes is used the work will be rotated 5 holes for each face, or if the group of 36 holes is used, the work will be rotated 6 holes for each face. If a square is to be cut, the group of 36 holes can be used because 36 is a multiple of 4. Dividing 36 by 4 gives 9. Therefore, the work will be rotated 9 holes for each surface. Spline shafts and keyways are cut by the same method.

In some cases, the width and shape of the tool will have to be considered.

ROTARY TABLE

The Rotary Table, Figure 15 is fastened to the table in the same manner as the vise and dividing head. The base is located on the table by the keyways and key. The table is graduated from 0° to 360°. It also has an index pin for indexing in 12 holes located in the work table. This attachment is adaptable to the cutting of slots and grooves that intersect at different angles. The work is clamped on the table by means of bolts whose heads fit in the "T" slots which are conveniently located on the plate.

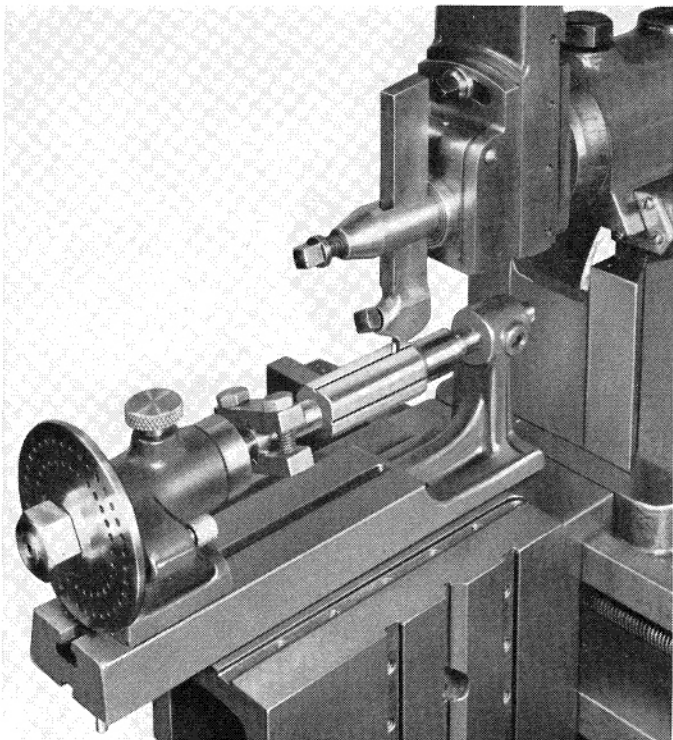


Fig. 13. Dividing Head in Use.

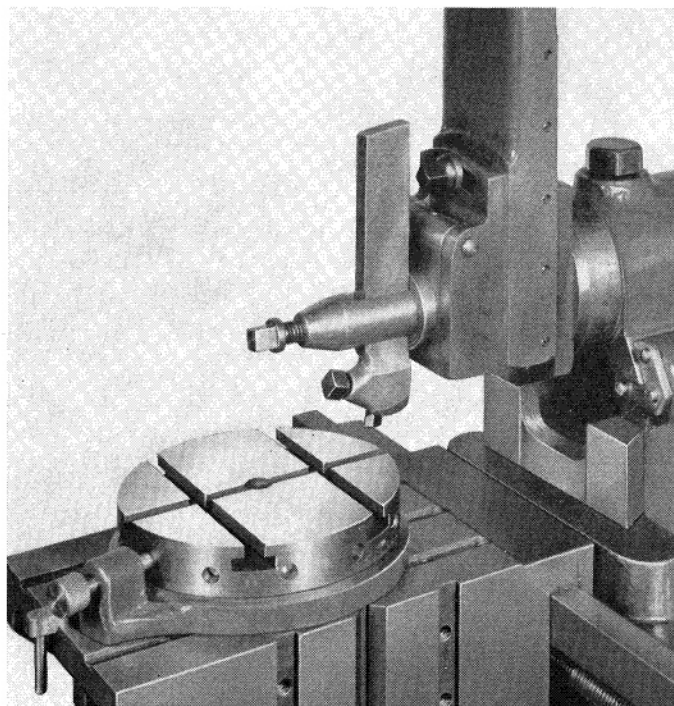


Fig. 15. Rotary Table.

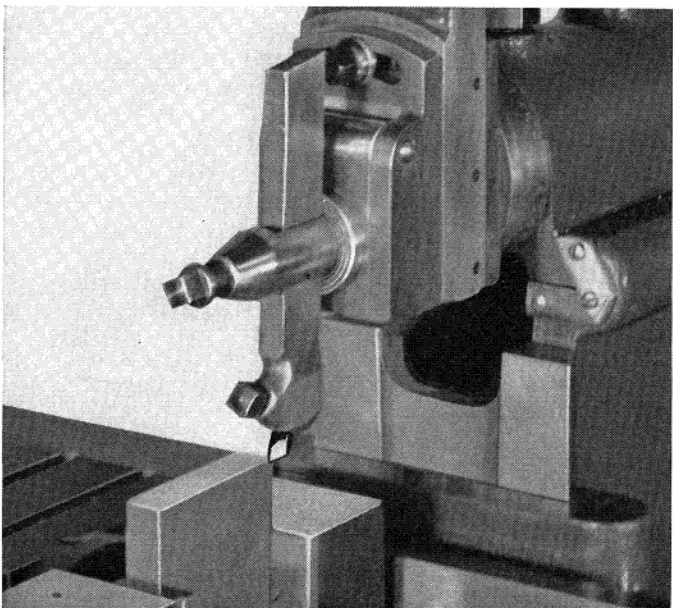


Fig. 14. Squaring Up the End of a Piece of Work Held in Vise.

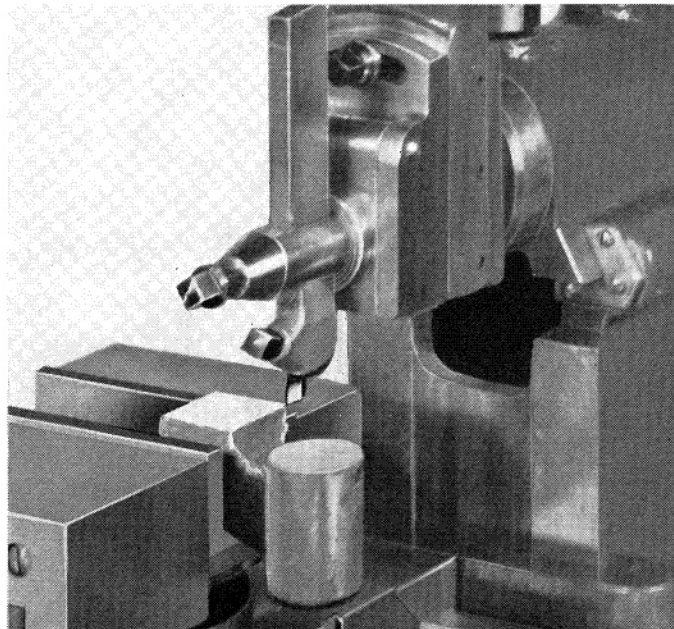


Fig. 16. Set-up for a Part Placed in Vise Ready for Machining.

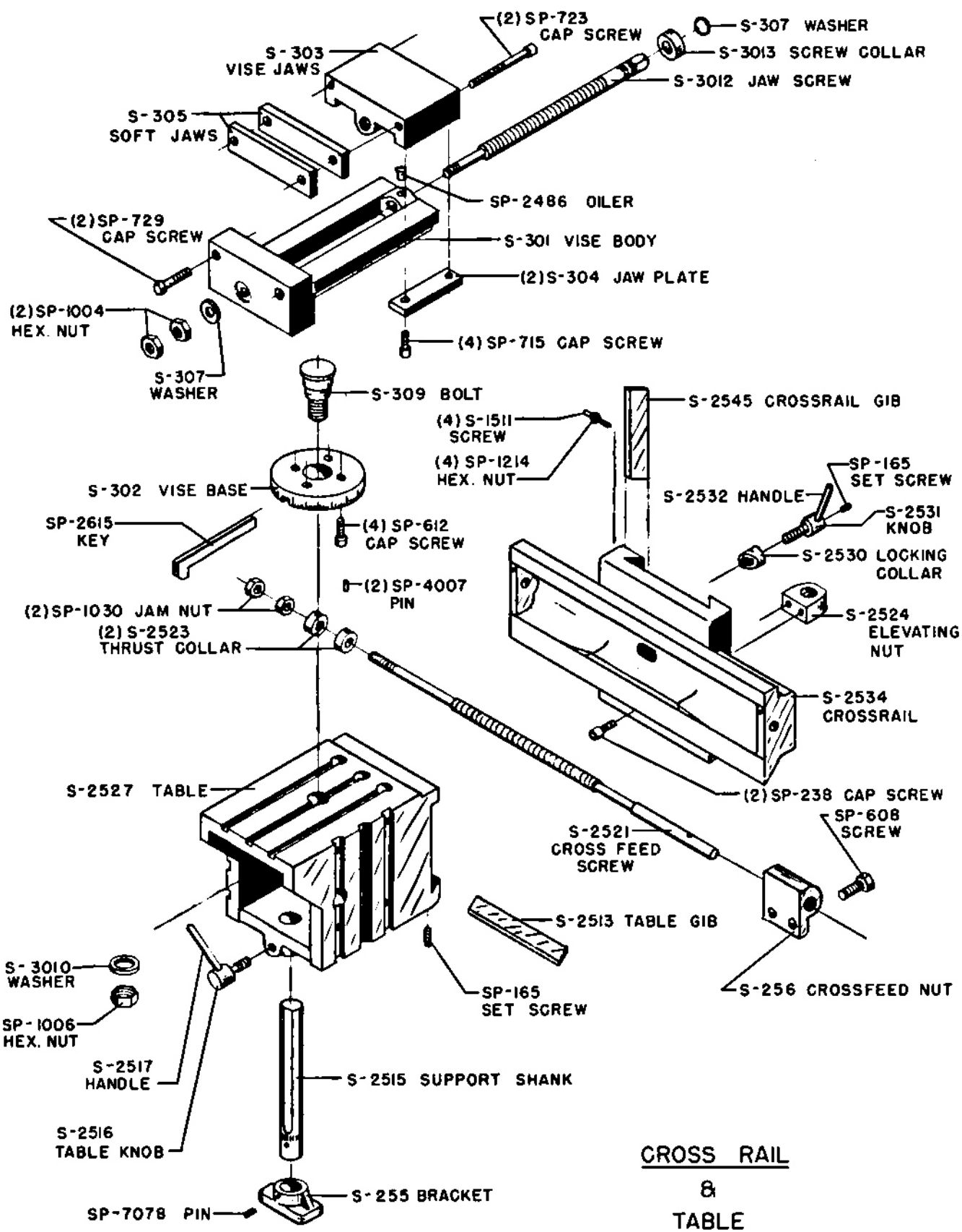
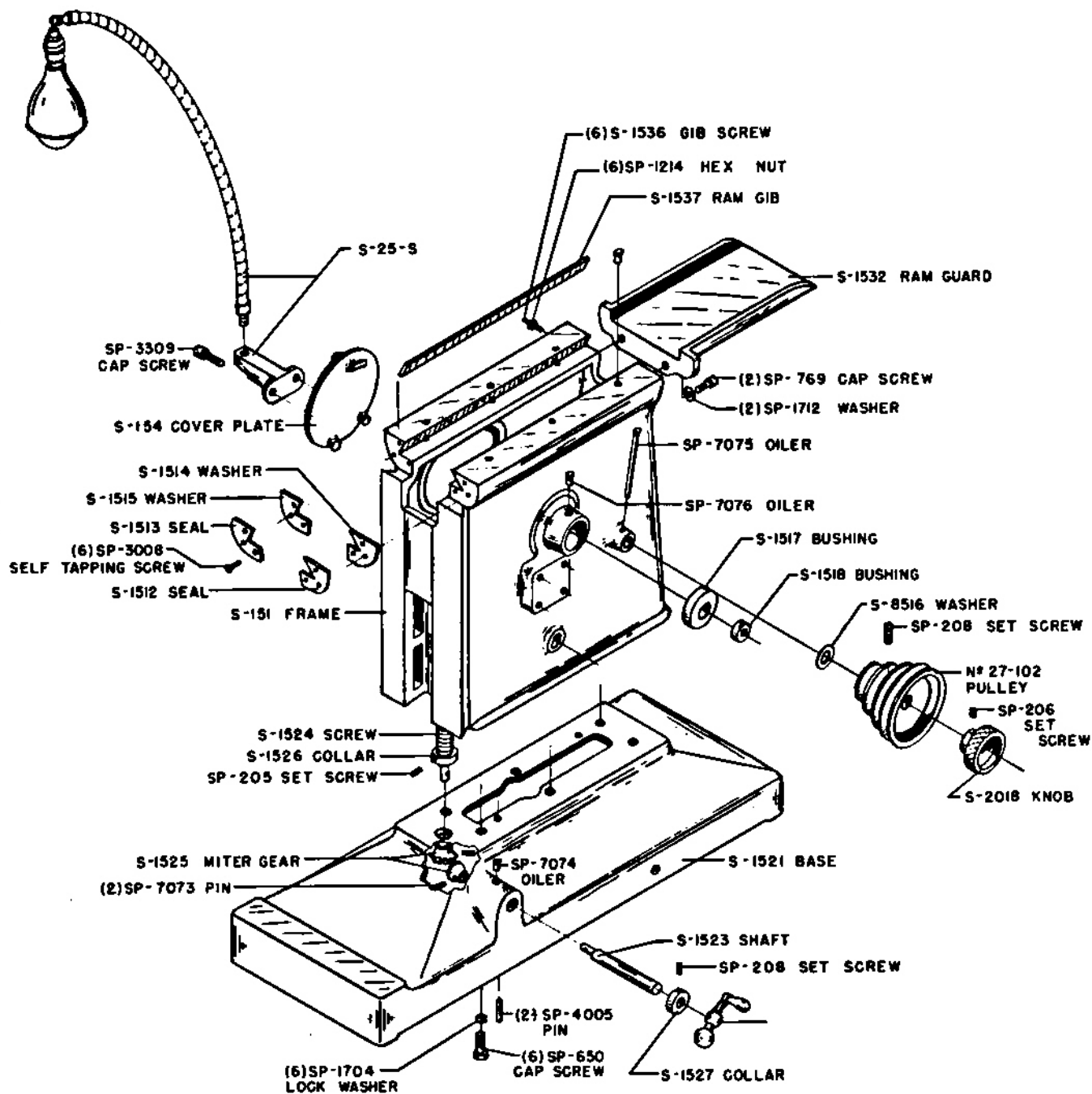
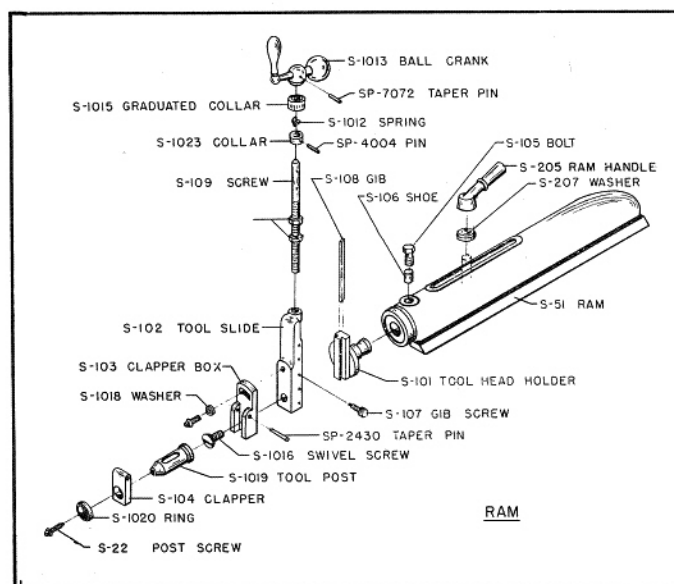
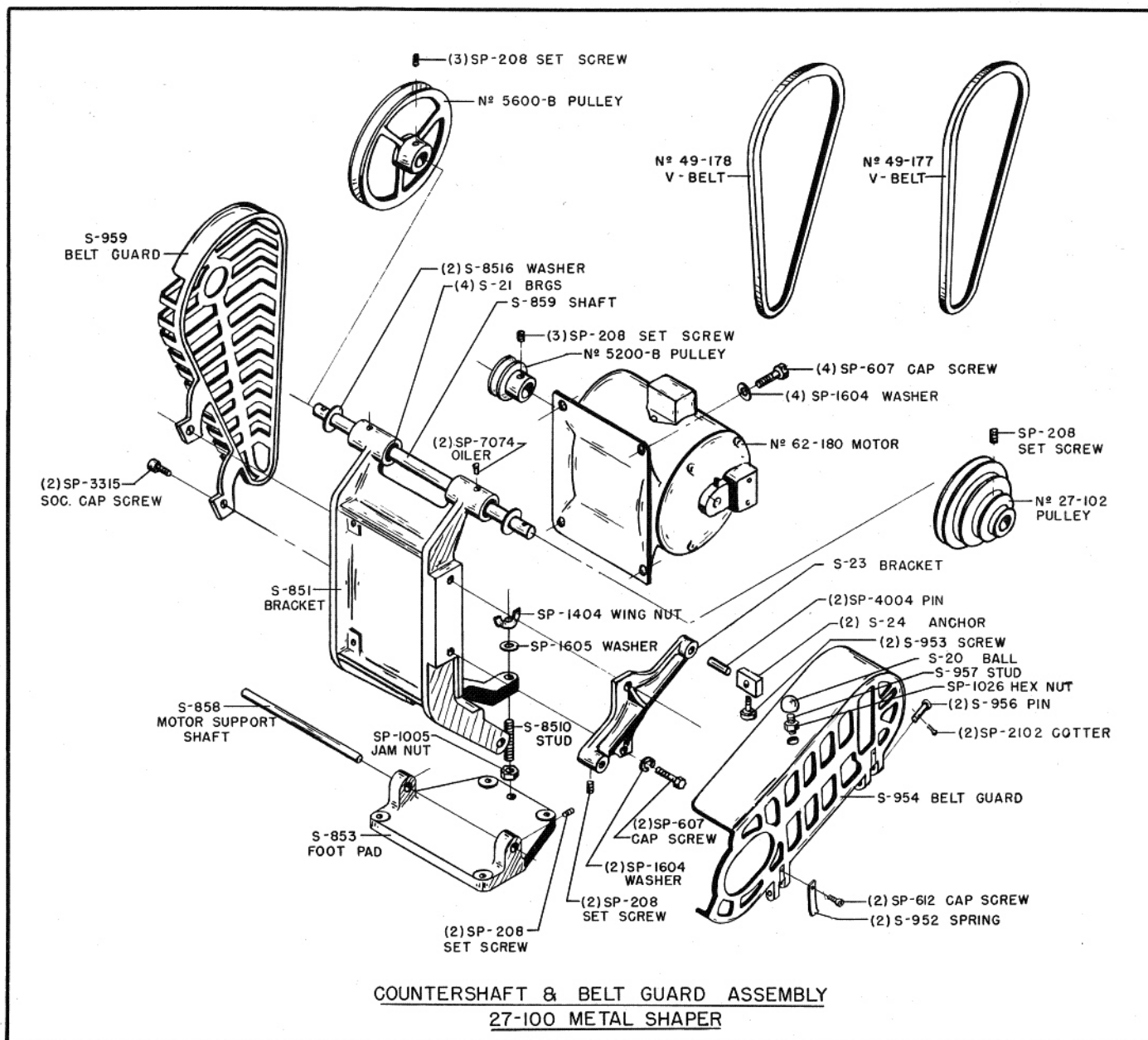


Fig. 17.



MAIN FRAME
 27-100 METAL SHAPER



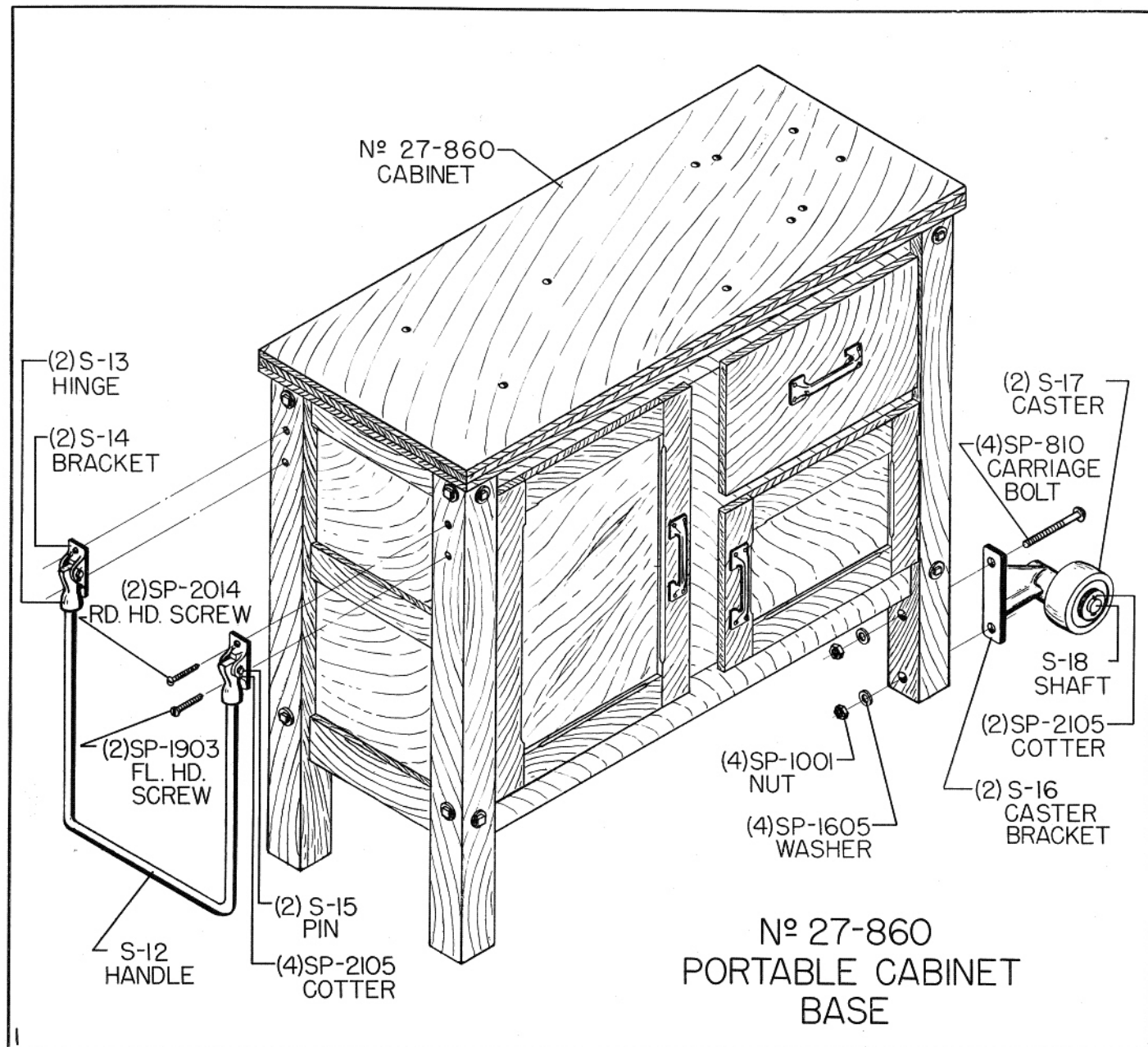


Fig. 21.

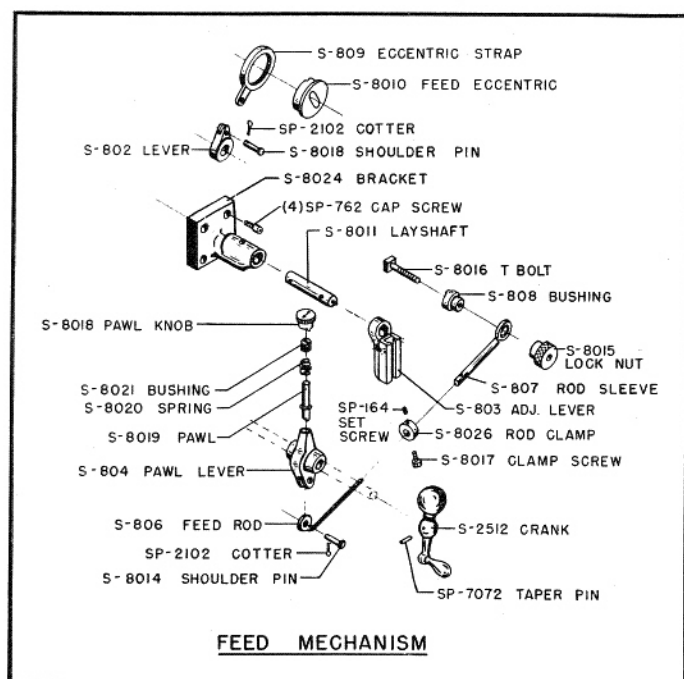


Fig. 22.

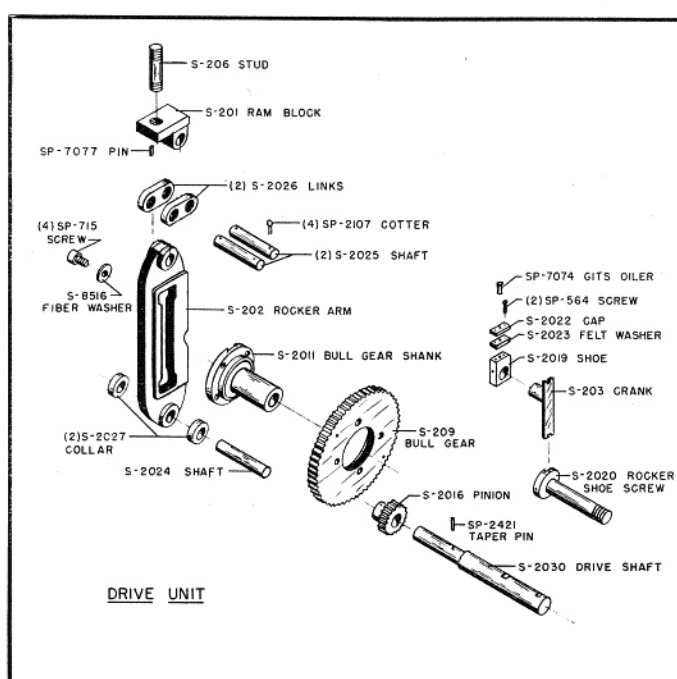


Fig. 23.

Table 1. REPLACEMENT PARTS

Part No.	Description	Number Required	Part No.	Description	Number Required
TOOL HEAD					
S-22	5/16-18 x 1 1/4" Lg. Mac-It Tool Post Screw	1	S-206	Ram Block Stud	1
S-51	Ram	1	S-207	Ram Block Washer	1
S-101	Tool Head Holder	1	S-208	Ram Block Bushing	2
S-102	Tool Slide	1	S-209	Bull Gear	1
S-103	Clapper Box	1	S-2011	Bull Gear Shank	1
S-104	Clapper	1	S-2012	Bull Gear Collar	1
S-105	Tool Head Clamp Bolt	1	S-2013	Bull Gear Collar Felt Wick	2
S-106	Tool Head Clamp Shoe	1	S-2014	Crank Clamp	1
S-107	Tool Slide Gib Screw	5	S-2015	Crank Stop Pin	2
S-108	Tool Slide Gib	1	S-2016	Drive Pinion	1
S-109	Tool Head Screw	1	S-2018	Hand Knob	1
S-1011	Tool Slide Collar	1	S-2019	Rocker Arm Shoe	1
S-1012	Tool Slide Collar Spring	1	S-2020	Rocker Arm Shoe Screw	1
S-1013	Tool Slide Ball Crank	1	S-2021	Rocker Arm Washer	1
S-1014	Ball Crank Handle	1	S-2022	Rocker Arm Shoe Cap	1
S-1015	Tool Slide Graduated Collar	1	S-2023	Rocker Arm Shoe Felt Washer	1
S-1016	Clapper Box Swivel Screw	1	S-2024	Rocker Arm Shaft (Long)	1
S-1017	Clapper Box Lock Screw	1	S-2025	Rocker Arm Shaft (Short)	2
S-1018	Clapper Box Lock Screw Washer	1	S-2026	Rocker Arm Links	2
S-1019	Tool Post	1	S-2027	Rocker Arm Shaft Collar	2
S-1020	Tool Post Ring	1	S-2030	Drive Shaft	1
S-1023	Tool Slide Collar	1	S-2032	Bull Gear Lock Nut	4
S-1024	Tool Head Lock Screw	1	S-2037	Crank Clamp Nut	1
SP-1005	5/16 Hex. Jam Nut 11/16" Across Flats	1	S-8516	Fibre Washer	1
SP-2430	#5 x 2" Lg. Taper Pin	1	SP-206	5/16-18 x 5/16" Lg. Soc. Hd. Cup Pt. Set Sc.	4
SP-4004	1/8" Dia. x 3/8" Lg. Pin	1	SP-231	5/16-18 x 3/8" Lg. Soc. Hd. Cup Pt. Set Sc.	3
SP-7072	#00X1" Lg. Taper Pin	1	SP-564	#6-32 x 3/8" Lg. Rd. Hd. Mach. Screw	2
MAIN FRAME			SP-715	1/4-20 x 1/2" Lg. Fill. Hd. Cap Sc.	4
S-25-S	Light Assembly	1	SP-2107	1/8" Dia. x 3/4" Lg. Steel Cotter Keys	4
CBL-431	Name Plate	1	SP-2421	#0 x 3/4" Lg. Taper Pin	1
S-151	Main Frame	1	SP-4006	1/8" Dia. x 3/8" Lg. Pin	3
S-154	Cover Plate	1	SP-7074	#501 Gits Oiler	1
S-156	Cover Plate Knob	1	SP-7077	1/16 Dia. x 3/8" Lg. Groove-Pin; Type 2	1
S-157	Latch	1	Cat. 27-102	Step Cone Pulley, 4 Step, 3/8" Bore	1
S-158	Latch Knob Spring	1	CROSSRAIL AND TABLE		
S-1512	Ram Oil Seal (R.H.)	1	S-255	Table Support Bracket	1
S-1513	Ram Oil Seal (L.H.)	1	S-256	Cross Feed Nut	1
S-1514	Oil Seal Felt Washer (R.H.)	1	S-1014	Ball Crank Handle	1
S-1515	Oil Seal Felt Washer (L.H.)	1	S-1511	Table Gib Screw	4
S-1516	Bull Gear Shank Bushing	1	S-1536	Ram Gib Screw	4
S-1517	Drive Shaft Bushing (Large)	1	S-2512	Cross Feed Ball Crank	1
S-1518	Drive Shaft Bushing (Small)	1	S-2513	Table Gib	1
S-1521	Base	1	S-2514	Top Guide Gib	1
S-1522	Adjustable Stroke Name Plate	1	S-2515	Table Support Shank	1
S-1523	Elevating Crank Shaft	1	S-2516	Table Support Knob	1
S-1524	Elevating Screw	1	S-2517	Handle to Shank Knob	2
S-1525	#L-110 Miter Gears	2	S-2520	Cross Feed Gear	1
S-1526	Elevating Screw Collar	1	S-2521	Cross Feed Screw	1
S-1527	Crank Shaft Collar	1	S-2523	Cross Feed Thrust Collar	2
S-1528	Oil Wick	1	S-2524	Elevating Screw Nut	1
S-1532	Ram Guard	1	S-2527	Table	1
S-1536	Ram Gib Screw	6	S-2528	Spring Washer	1
S-1537	Ram Gib	1	S-2530	Gib Locking Collar	1
S-1538	.501 I.D., .628 O.D. x 7/8" Lg. Oilite Bushing	2	S-2531	Locking Collar Knob	1
SP-205	5/16-18 x 1/4" Lg. Soc. Hd. Cup Pt. Set Sc.	1	S-2532	Locking Knob Handle	1
SP-207	5/16-18 x 1/2" Lg. Soc. Hd. Cup Pt. Set Sc.	1	S-2534	Crossrail	1
SP-208	1/4-20 x 1/4" Lg. Soc. Hd. Cup Pt. Set Sc.	1	S-2545	Crossrail Gib	1
SP-650	3/8-16 x 7/8" Lg. Hex. Cap Screw	6	SP-165	#8-32 H'dless Cup Pt. Set Sc.	1
SP-769	1/4-28 x 3/4" Lg. Soc. Hd. Cap Sc.	2	SP-238	1/4-20 x 3/4" Lg. Soc. Hd. Cap Sc.	2
SP-1214	#10-32 Semi Finished Hex. Full Nut	6	SP-608	5/16-18 x 7/8" Lg. Hex. Hd. Cap Sc.	2
SP-1704	3/8 x 3/32" Kant Link, Split Lock Washer	3	SP-715	1/4-20 x 1/2" Lg. Fill. Hd. Cap Sc.	3
SP-1712	S.A.E. Heavy Kant Link Lock Washer, 1/4" Hole	2	SP-1030	5/16-18 Hex. Semi Finished Jam Nut	2
SP-2252	#2 x 3/16" Drive Screw	4	SP-1214	#10-32 Hex. Semi Finished Full Nut	4
SP-2482	Serial Plate	1	SP-4007	3/32 Dia. x 1/4" Lg. Pin	2
SP-3008	#6-32 x 7/16" Lg. Rd. Hd. Self Tapping Screw	6	SP-7072	#00 x 1" Lg. Taper Pin	1
SP-4005	1/4 Dia. x 7/8" Lg. Pin	2	SP-7073	#00 x 3/4" Lg. Taper Pin	1
SP-7072	#00 x 1" Lg. Taper Pin	1	SP-7078	5/32 Dia. x 1 1/8" Lg. Groove Pin, Type 3	1
SP-7073	#00 x 3/4" Lg. Taper Pin	2	WISE		
SP-7074	#501 Gits Oiler	8	S-301	Vise Body	1
SP-7075	#414 x 4" Lg. Gits Oiler	1	S-302	Vise Base	1
SP-7076	#504 Gits Oiler	1	S-303	Vise Jaw	1
DRIVE UNIT			S-304	Vise Jaw Plates	2
S-201	Ram Block	1	S-305	Vise Soft Jaws	2
S-202	Rocker Arm	1	S-307	Vise Screw Washer	1
S-203	Crank	1	S-309	Hold Down Bolt	1
S-205	Ram Block Handle	1	S-3010	Hold Down Bolt Washer	1
			S-3012	Vise Jaw Screw	1
			S-3013	Vise Jaw Screw Collar	1

Table 1. REPLACEMENT PARTS (Continued)

IMPORTANT: Give both the Part Number and the Description of each item when ordering from this list; also the Serial Number of the machine on which the parts are to be used.

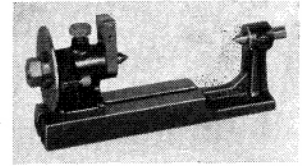
Part No.	Description	Number Required	Part No.	Description	Number Required
S-3014	Wire Snap Ring	1	SP-1804	#6S—Brass Washer	1
SP-612	1/4-20 x 5/8" Lg. Soc. Hd. Cap Sc.	4	SP-2102	1/16" Dia. x 1/2" Lg. Cotter Pin	2
SP-715	1/4-20 x 1/2" Lg. Fill. Hd. Cap Sc.	4	SP-2424	#0 x 1" Lg. Cotter Pin	2
SP-723	1/4-20 x 2 1/2" Lg. Fill. Hd. Cap. Sc.	2	SP-7074	#501 Gits Oil Hole Cover	1
SP-729	1/4-20 x 1 1/4" Lg. Fill. Hd. Cap Sc.	2	SP-7079	1/16 Dia. x 1/2" Lg. Groove Pin, Type 2	1
SP-1004	7/16-14, Hex. Jam Nut, 3/4" Across Flats	2	COUNTERSHAFT AND BELT GUARD ASSEMBLY		
SP-1006	1/2-13, Hex. Jam Nut, 7/8" Across Flats	1	S-20	#95 With 3/8-16 Insert Ball	1
SP-2486	#521 Gits Oiler	1	S-21	.626" I.D., .815 O.D. x 1" Lg. Bearings, Plain Bronze ..	4
SP-2615	5/16 Sq. x 2" Lg. Gib Hd. Key	1	S-23	Belt Guard Bracket	1
INDEX CENTERS			S-24	Belt Guard Anchor	2
S-551	Base	1	S-851	Countershaft and Motor Support	1
S-552	Index Head	1	S-853	Countershaft Foot Pad	1
S-553	Driver	1	S-858	Motor Support Shaft	1
S-554	Spindle	1	S-859	Countershaft Shaft	1
S-555	Spindle Key	1	S-952	Belt Guard Spring	2
S-556	Spindle Shoe	1	S-953	Belt Lock Sc.	2
S-557	Index Hd. Cutter	1	S-954	Belt Guard	1
S-558	Dead Center	1	S-956	Hinge Pin	2
S-559	Index Plate 48-28	1	S-957	Knob Stud	1
S-5510	Index Plate 36-30	1	S-959	Belt Guard, Small	1
S-5511	Indexing Pin	1	S-8510	Foot Pad Stud	1
S-5512	Washer	1	S-8516	Fibre Washer	2
S-5513	Stud	1	SP-208	1/4-20 x 1/4" Lg. Soc. Hd. Cup Pt. Set Sc.	3
S-5514	Knurled Screw	1	SP-607	5/16-18 x 3/4" Lg. Hex. Hd. Cap Sc. (Milled Th'd)	4
S-5515	Knurled Nut	1	SP-612	1/4-20 x 3/8" Lg. Soc. Hd. Cap Sc.	2
S-5516	Dog (2 1/2" Long)	1	SP-649	5/16-18 x 3/4" Lg. Hex. Hd. Cap Sc. (Milled Th'd)	6
S-5517	Pin	1	SP-1005	3/8-16 Hex. Jam Nut	1
S-5518	Dog (2" Long)	1	SP-1026	3/8-16 Hex. Semi-Finished Nut	1
S-5519	Special Jam Nut	1	SP-1404	3/8-16 Wing Nut	1
S-5520	Special Cap Sc.	2	SP-1604	5/16" Wrought Iron Washer	6
SP-10	5/16" Soc. Hd. Wrench	1	SP-1605	3/8" Wrought Iron Washer	1
SP-162	#10-24 x 5/8" Lg. H'dless Flat Pt. Set Sc.	2	SP-1766	5/16" Lock Washer, Internal Type 12	2
SP-207	5/16-18 x 1/2" Lg. Soc. Hd. Flat Pt. Set Sc.	1	SP-2102	1/16 Dia. x 1/2" Lg. Cotter Keys	2
SP-7080	1/8" Dia. x 7/8" Lg. Groove Pin, Type 2	1	SP-3315	5/16-18 x 1" Soc. Cap Scr.	2
300A28	Pin Wrench	1	SP-4004	1/8 Dia. x 5/8" Lg. Pin	2
ROTARY TABLE			SP-7074	#501—Gits Oil Hole Cover	2
S-601	Base	1	Cat. 27-102	Step Cone Pulley, 4-Step, 3/8" Bore	1
S-602	Index Head	1	Cat. 49-177	V-Belt, 27"	1
S-603	Indexing Pin	1	Cat. 49-178	V-Belt, 26"	1
S-604	Stud	1	Cat. 62-180	1/2 H.P., 1725 RPM, 110 V, 60 cycle, 1 Phase	1
S-605	T-Bolt	1	Cat. 5200-B	Pulley, 2" Dia. 5/8" Bore	1
SP-163	#10-24 x 1/4" Lg. H'dless Flat Pt. Set Sc.	1	Cat. 5600-B	Pulley, 6" Dia. 5/8" Bore	1
SP-1023	1/4"-20, Hex. Semi-Finished Full Nut	8	PORTABLE CABINET		
FEED MECHANISM			S-12	Handle	1
S-802	Layshaft Fixed Lever	1	S-12-S	Handle Assembly	1
S-803	Feed Adjusting Lever	1	S-13	Handle Hinge	2
S-804	Feed Pawl Lever	1	S-14	Handle Bracket	2
S-805	Feed Rod	1	S-15	Handle Hinge Pin	2
S-807	Feed Rod Sleeve	1	S-16	Caster Bracket	2
S-808	Feed Sleeve Bushing	1	S-17	Caster	2
S-809	Eccentric Strap	1	S-18	Caster Bracket Shaft	1
S-8010	Feed Eccentric	1	S-19	Pin 5/32" Dia. x 1-1/16" LG	2
S-8011	Feed Drive Layshaft	1	SP-810	5/16 x 3" Carriage Bolts	4
S-8014	Shoulder Pin	2	SP-1001	5/16-18 Hex. Nuts	4
S-8015	T-Bolt Lock Nut	1	SP-1605	Wrought Iron Washer	4
S-8016	T-Bolt	1	SP-1903	#14 x 1 1/4" Lg. Fl. Hd. Wood Screws	2
S-8017	Rod Clamp Screw	1	SP-2014	#14 x 1 1/4" Lg. Rd. Hd. Wood Screws	2
S-8018	Pawl Lever Knob	1	SP-2105	3/32 x 3/4" Cotter Pins	6
S-8019	Feed Pawl	1	Cat. 27-860	Wood Cabinet	1
S-8020	Feed Pawl Spring	1	ACCESSORIES		
S-8021	Threaded Bushing	1	No. 27-101	Fractional H.P.—AC Manual Starter with Overload Relay	
S-8023	Wear Washer	1	No. 27-880	Index Centers	
S-8024	Feed Layshaft Bracket	1	No. 27-890	4" Rotary Table	
S-8026	Feed Rod Clamp	1	No. 27-895	Angle Plate	
SP-164	#6-32 x 3/16" Lg. H'dless Cup Pt. Set Sc.	1	No. 27-900	Round Keyway Tool Holder 7/16" Dia.	
SP-744	#6-32 x 1/4" Lg. Fill. Hd. Mach. Sc.	1	No. 27-901	Round Keyway Tool Holder 3/8" Dia.	
SP-762	5/16-18 x 5/8" Lg. Soc. Hd. Cap Sc.	4	No. 27-902	Armstrong Tool Holder	
			No. 27-903	One Set of Seven Tool Bits, 1/4" Sq.	
			No. 27-904	Armstrong Tool Shank 3/8 x 7/8 x 5 1/2"	
			No. 27-905	Armstrong Extension Tool Shank 3/8 x 7/8 x 5 1/2"	

TO FACILITATE HANDLING WE SUGGEST ORDERING ALL PARTS THROUGH YOUR DELTA DEALER. CONSULT YOUR DELTA DEALER FOR PRICES OF REPLACEMENT PARTS, ACCESSORIES AND TOOLS

ACCESSORIES FOR 7" METAL SHAPER

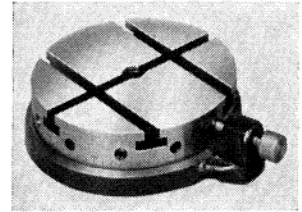
No. 27-880 INDEX CENTERS

These index centers have a capacity of 5 inches between centers and a 3 inch swing. This unit can be mounted on the working surface of the table and is equipped with centers, index plates, and a dog for turning the work.



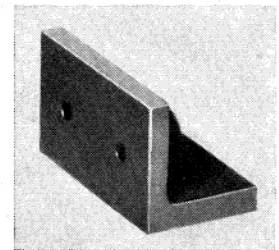
No. 27-890 ROTARY TABLE

This table has a working surface of 4" diameter and has 3 "T" slots on the face for clamping and holding a variety of parts that require slotting.



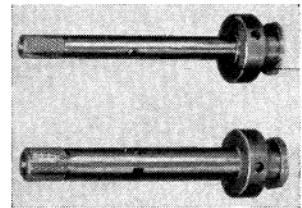
No. 27-895 ANGLE PLATE

This is used for holding irregular shaped parts which cannot be held in the vise. Angle plate can be clamped to the top or side of the table for use in either position.



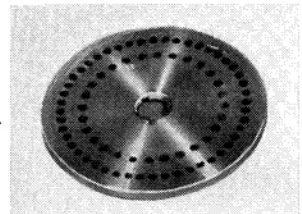
No. 27-900 Round Keyway Tool Holders 7/16" diameter for inside work such as keyways and slotting.

No. 27-901 Round Keyway Tool Holders 5/8" diameter for inside work such as keyways and slotting.



INDEX PLATES

Two index plates are available making a combination of divisions of from two to forty-eight spaces.



T-BOLTS

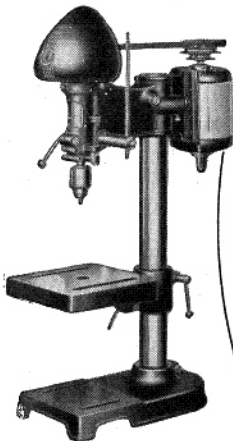
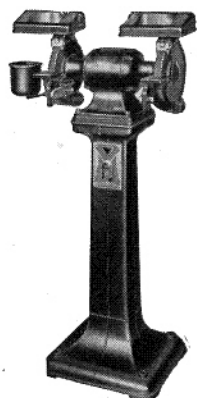
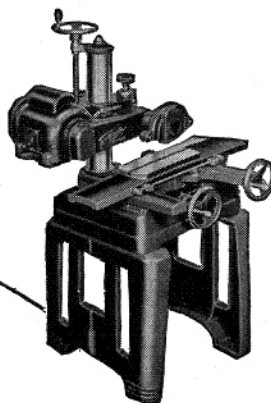
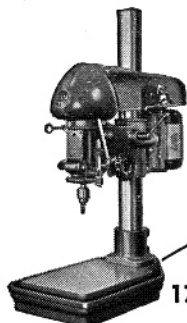
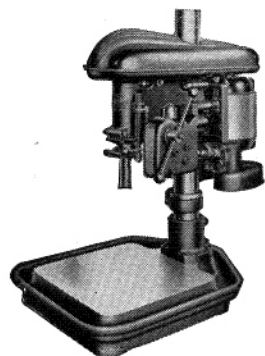
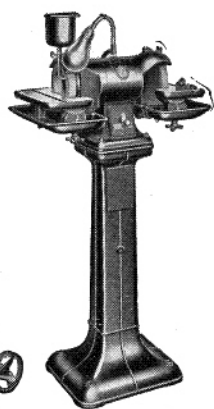
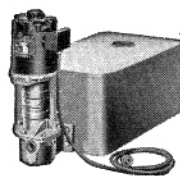
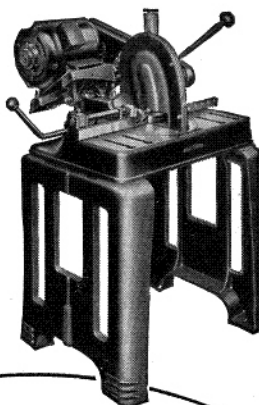
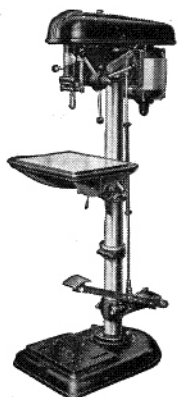
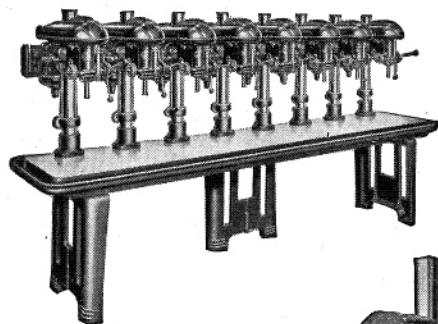
There are eight "T" headed bolts available for the rotary table ranging in length and in pairs of from 1 inch to two and a half inches.



DOG

This dog is used to turn the material that is placed between the centers of an index head.



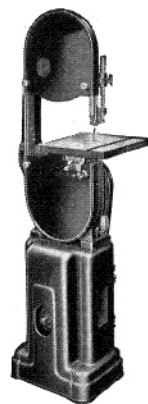
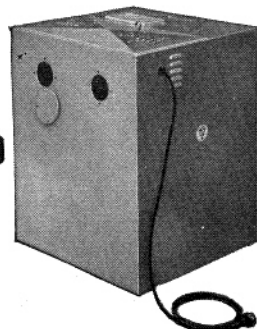
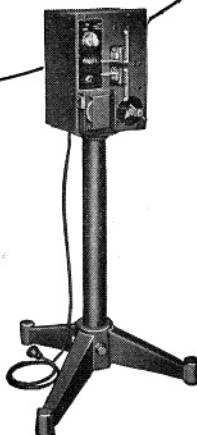
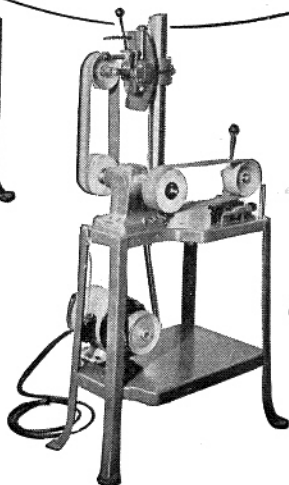
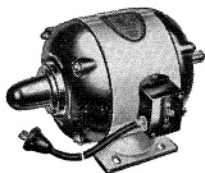
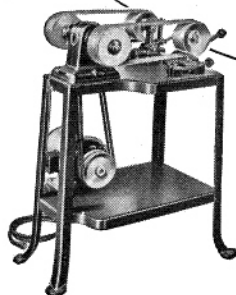
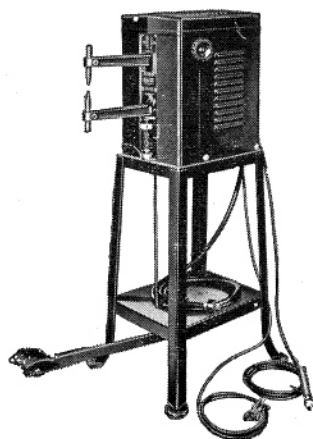
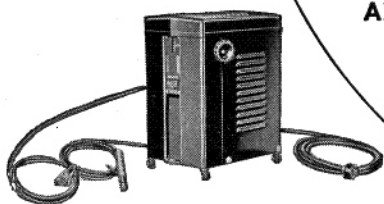


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SPOT WELDER

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