

OPERATING INSTRUCTIONS AND PARTS LIST FOR DRILL PRESS

Model Number 103.23141

This is the model number of your Drill Press. It will be found on a plate located on the base near the column. Always mention this model number when communicating with us regarding your Drill Press, or when ordering parts.

Instructions for Ordering Parts

All parts listed herein must be ordered through a Sears retail store or mail order house. Parts are shipped prepaid. When ordering repair parts, always give the following information:

1. The Part Number.
2. The Part Name and Price.
3. The Model Number 103.23141.

This list is valuable. It will assure your being able to obtain proper parts service. We suggest you keep it with other valuable papers.

SEARS, ROEBUCK and CO.

**OPERATING INSTRUCTIONS AND PARTS LIST FOR
DRILL PRESS
MODEL NO. 103.23141**

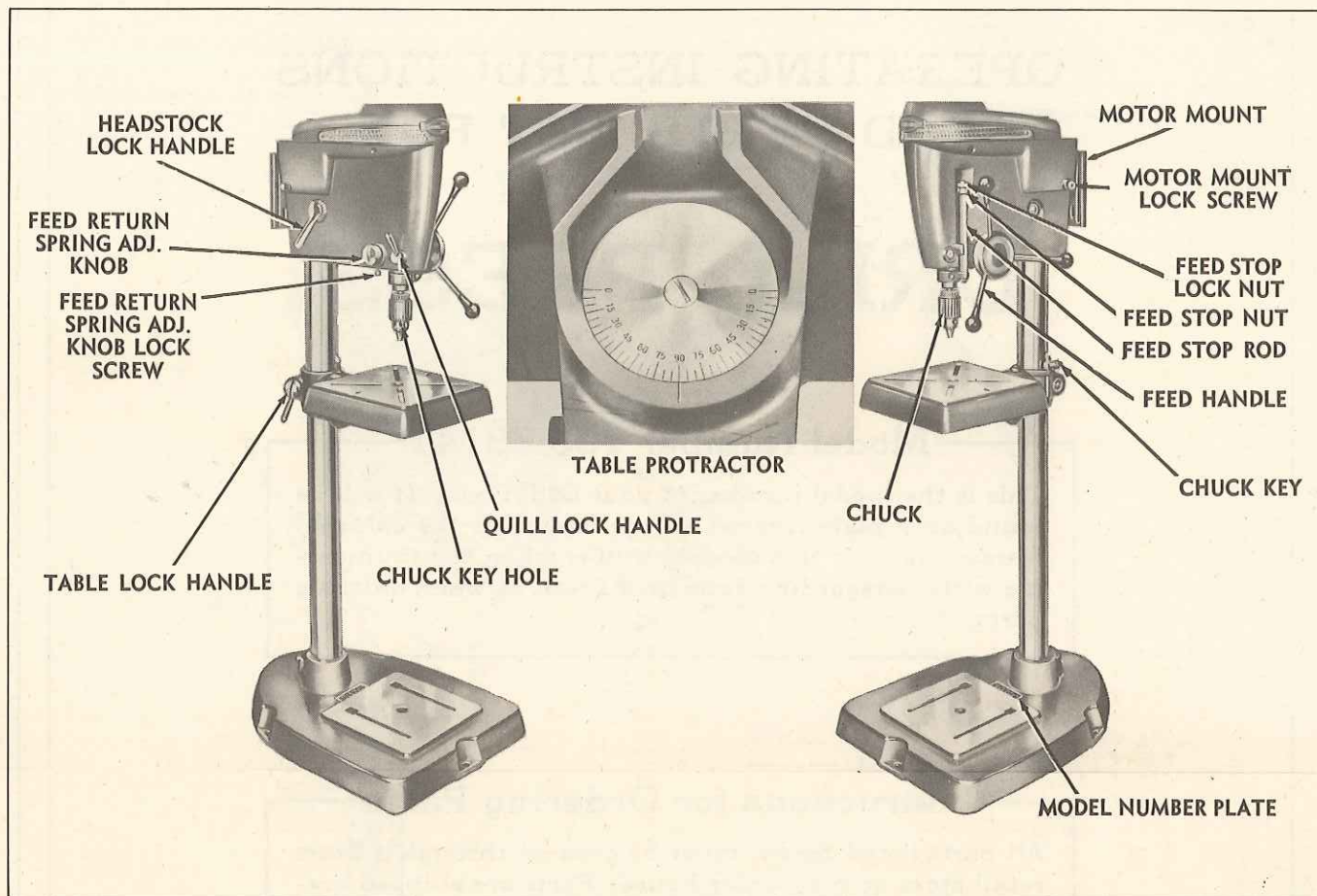


FIGURE 1

This drill press has been planned to give you the utmost in precision and efficiency of operation. Quality material coupled with rigid manufacturing standards are maintained to give you the high standard of quality found in this tool. The chuck furnished has a collar attached which will keep it firmly seated on the spindle taper for all operations especially where side thrust on the cutting tool, such as routing, might loosen the chuck.

Exterior styling of the head on this drill press encloses the revolving mechanism for safety, yet leaves the belt readily accessible for changing to obtain different spindle speeds.

All features combine to give you maximum trouble free service.

To prevent damage or loss in shipment some of the parts were disassembled from the tool. These parts are listed below. Be sure they are all accounted for before discarding any of the packing materials.

Box located under table contains:

1. Illustration No. 77, Column plug.
2. Illustration No. 55, V-belt.
3. Illustration No. 30, Chuck key.
4. Illustration No. 56, Motor pulley with set screw.
5. Illustration No. 29, Chuck.
6. Three assemblies, each consisting of Illustration No. 47, Feed handle rod. Illustration No. 48, Feed handle knob.

7. Paper bag contains;

- Illustration No. 14, Allen wrench 3/32.
- Illustration No. 58, Allen wrench 5/32.
- Illustration No. 41, 4 pcs. Motor bolt nuts.
- Illustration No. 42, 8 pcs. Motor bolt washers.
- Illustration No. 43, 4 pcs. Motor bolts.

ASSEMBLY:

Place **feed handles** on tool as shown in Fig. 1.

Clean taper on spindle and the tapered socket in chuck body. Be sure they are free of any particles which might not allow proper seating. Apply a film of light oil to both spindle taper and chuck socket. Place chuck on end of spindle and screw the collar onto the threaded portion of the spindle. Tap the chuck body, **not jaws**, from below with a piece of wood to firmly seat it on spindle then tighten collar. The collar does not need to be excessively tight as it has a tendency to tighten when drill press is running.

Place the chuck key in the hole provided at side of table support, see Fig. 1.

Keep the Allen wrenches in a handy place near the tool.

INSTALLATION:

Three 17/32 inch diameter holes have been provided in the base through which bolts or screws may be inserted to secure the drill press in place.

To install motor loosen the **motor mount lock screws**, Fig. 1, until the **motor mount** may be removed. Fasten the motor to the motor mount with the bolts, nuts, and washers provided so that when motor mount is reinstalled on the tool, the larger portion of the mount will be down. For convenience, if your motor has a switch, and rotation will be correct, place motor on motor mount so that the switch is on the left side. **Direction of rotation of the spindle must be clockwise when viewed from pulley end of spindle.**

Mount the motor pulley, No. 56, on motor shaft so that the small diameter is at bottom. For normal speeds, the largest groove on the motor pulley should be in line with the smallest groove on the spindle pulley, No. 1.

Tighten the pulley set screw with the larger Allen wrench, No. 58. If your motor shaft has a flat on it, position the pulley so that the set screw will tighten against the flat.

Place belt around the pulleys and tighten, not excessively, by sliding the motor mount away from tool. Tighten the motor mount lock screws to maintain this tension.

MOTOR:

A 1/3 horsepower 1750 R.P.M. ball bearing motor will provide sufficient speed and power for your drill press on general work. For continuous heavy duty operation a 1/2 horsepower motor is recommended.

SPEED:

The spindle speeds obtainable with these 4 step pulleys are shown in Fig. 2.

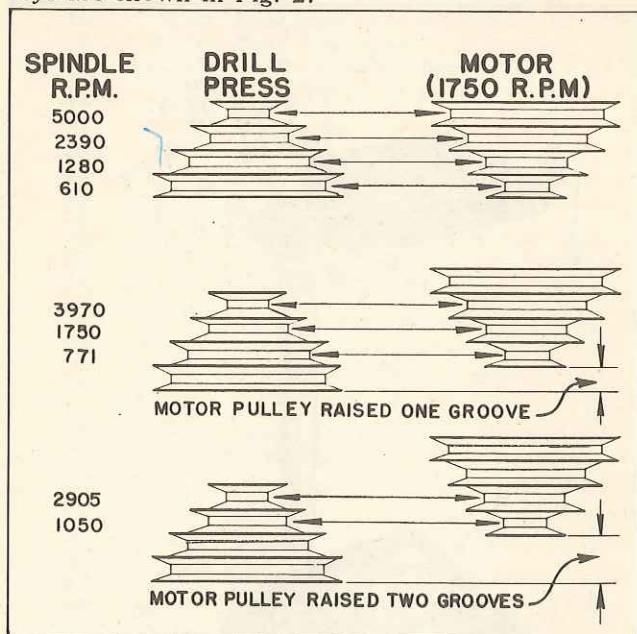


FIGURE 2

For slower speeds use a Multi-Speed Attachment available from your nearest Sears retail store or mail order house. Ask for Catalog No. 9-2338.

LUBRICATION:

The spindle and pulley bearings have been packed with lubricant and will require no further attention for the life of the bearing.

Place a few drops of oil occasionally on the pinion shaft, No. 51. The oil hole is located in the hub on the right hand side of the head.

To maintain smoothness of operation and to prevent rust, occasionally apply a small amount of light cup grease to the quill while in a down position. With quill still fully extended, reach into the backside of the head and apply grease to the spindle, below the pulley, and to the upper portion of the quill.

Occasionally wipe the column, table and base with an oil soaked rag to prevent rust and maintain smooth sliding action.

CONTROLS:

The **chuck** is a key-type and has a capacity of 0-1/2 inch diameter. It is equipped with a lock collar to retain it on the spindle. This eliminates the necessity of having collet chucks for such tools that develop side thrust while in operation, such as routers.

The **feed stop nut**, Fig. 1, provides a means of drilling several holes to the same depth or to pre-setting depth before drilling.

The **feed stop lock nut**, Fig. 1, as the name implies, retains the feed stop nut at its setting.

The **feed stop rod** is a gauge, with 5 inches of 1/16 inch graduations, carrying the feed stop and lock nut.

The **feed handle** is used to raise and lower the chuck 4 inches. It has an automatic spring loaded return action. The feed handle is held on the pinion shaft, No. 51, by the pin, No. 50.

The **table protractor**, under the table, indicates the angle between the table surface and the spindle. For angle drilling remove the taper pin, No. 59, and loosen the table tilt clamp bolt, No. 63, located under the table near the column. When the table is tilted to the desired angle, as shown on the protractor, the clamp bolt should be securely tightened. To return the table to a level position tap the tapered pin firmly in place.

The **quill lock handle** when tight holds the quill at any depth of cut for such operations as shaping, routing, surface grinding, etc. Always release the quill lock before changing position of quill.

The **table lock handle** and **headstock lock handle** control the barrel locks which grip the column. When releasing either of these handles do so with care. Support the part you wish to adjust so that it will not drop too rapidly causing damage to the tool.

The **feed return adjusting knob** controls the spring tension on the feed lever.

ADJUSTMENTS:

The following adjustments may be necessary to keep your drill press at its most efficient operation.

If the automatic feed return fails to return the chuck to the top of the stroke or if the return action becomes sluggish, the tension may be adjusted as follows; Lock the chuck at the top of its stroke

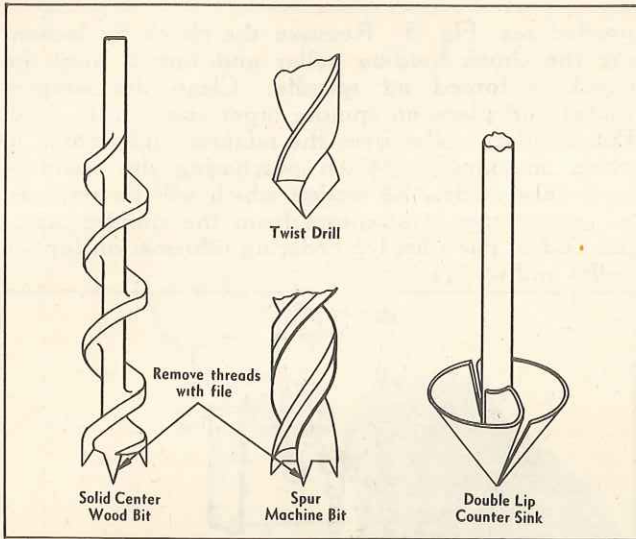


FIGURE 3

using the quill lock handle. Hold the **feed return adjusting knob** firmly and release the **feed return adjusting knob lock screw**, Fig. 1. Turn the adjusting knob counter-clockwise and re-tighten the lock screw. Release the quill lock handle and run the chuck down. If spring tension is still not sufficient repeat the above adjustment until it is.

If the **table protractor**, Fig. 1, does not indicate 90° when the tapered pin, No. 59, is in place release the screw, No. 62, and rotate the protractor to a correct reading and re-tighten the screw.

The **headstock lock handle**, **table lock handle**, and **quill lock handle**, (Fig. 1) for greatest ease of operation should point down when locked. To change the position of the handles; loosen the set screws, remove handles from hex. head screws and rotate to correct position, replace handles and tighten set screws.

Belt tension adjustment is made by loosening the motor mount lock screws and moving the motor mount away from the tool. Excessive tension shortens bearing life, causes excessive belt wear and robs the motor of power. Tension should be just enough to prevent slippage at normal operating speeds and feeds.

Tighten pulley set screws after a few hours operation.

TYPES OF BITS:

A variety of bits are available for use in your drill press.

For metal drilling the standard twist drill will prove adequate for the home work shop. If extensive commercial operations are to be performed, high speed steel drills although more expensive, will prove to be the better tool as higher operating speeds are possible plus longer cutting edge life.

The solid center wood bit has a single flute turning around a solid center but carries two spurs.

The fluted bit is an excellent all purpose wood bit. It has two flutes each terminating in a cutting edge and spur.

The best bit for high quality machine drilling in wood is the spur machine bit. It is the stiffest drill, tracks nicely and produces an exceptionally smooth hole.

For larger holes, a hole saw is available for either metal or wood. This bit has a center drill for pilot

and teeth around the outer rim similar to a saw blade.

Also, for large holes in wood an expansion bit may be used. When the expansion bit or any hand wood bit is used in the drill press, the screw point must have the threads removed from it so that it will not enter the wood too rapidly. These threads may be filed off. (See Fig. 3.)

Countersinking in wood may best be accomplished by using the double lip style. It will give the cleanest cut and will not gum up under continuous operation.

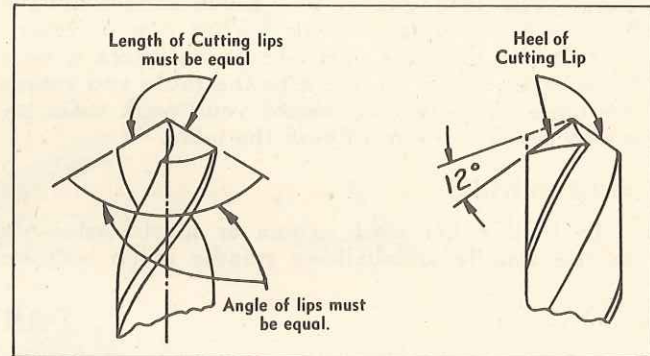


FIGURE 4

DRILL SHARPENING:

When grinding twist drills, in order to maintain the efficiency of the drill, extreme care should be exercised. The dead center of the point must be maintained, that is, the cutting lips must be the same length, Fig. 4. Also their angle in relation to the center line of the drill must be equal. The angle should be approximately 60 degrees, 120 degrees included, for metal and 35 degrees, 70 degrees included, for wood. The cutting lip should be relieved gradually behind the cutting edge so that the clearance at the heel is about 12 degrees.

OPERATION:

Chuck removal;

If at any time you wish to remove the chuck merely loosen the chuck holding collar and continue to turn it. This will force the chuck from the spindle taper. Do not attempt to drive or wedge the chuck off as you may damage the spindle or bearings.

For extensive use on woodworking, an auxiliary table of $3/4$ inch plywood will prove its worth in added work area and the protection from shifting of your work. Fasten the plywood table to the drill press table with countersunk screws. This auxiliary table also provides a good surface for mounting a shaping fence, pivot pins and other similar units. It affords protection for the drill press table when drills break through the work piece.

When drilling through wood, a piece of scrap material under the work piece will eliminate splintering and mutilation as the drill point breaks through.

Another method of preserving the surface is to reverse the work piece when the point of drill breaks through and finish the hole from opposite side.

For drilling to a definite depth, such as a blind hole, the feed stop nuts may be set to the desired depth by lowering the drill to a mark on the edge of the work piece corresponding to the depth of hole desired.

A straight piece clamped to the table, as a guide or fence, has many uses, as in drilling several holes the same distance from an edge or as a guide for grooving, fluting or milling.

SAFETY:

The work piece should be held securely on the table, either by clamps, pins, or a vise, to prevent its turning with the drill. A drill vise is an inexpensive means of holding many varieties of work and is readily adaptable for use with cylindrical work. The drill vise or a V-block should always be used for cylindrical work. When it is necessary to drill into the edge of a circular flat piece it may be safer to clamp the piece to the table and rotate the table. In any case secure your work piece as it may break drills and fly off the table.

ACCESSORIES:

To hold either work arbors or special adaptors on the spindle an auxiliary spindle collar will be

needed see, Fig. 5. Remove the chuck by loosening the chuck holding collar and turn it until the chuck is forced off spindle. Clean the adaptor socket and place on spindle taper and tap in place. Put auxiliary collar over the adaptor and tighten in place on spindle. When purchasing the auxiliary collar also order the wedge which will be required to release special adaptors from the spindle taper. See end of parts list for ordering information for the collar and wedge.

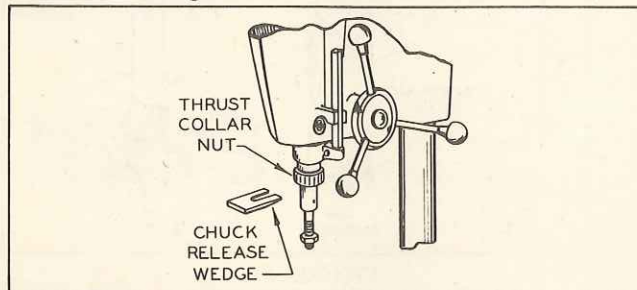


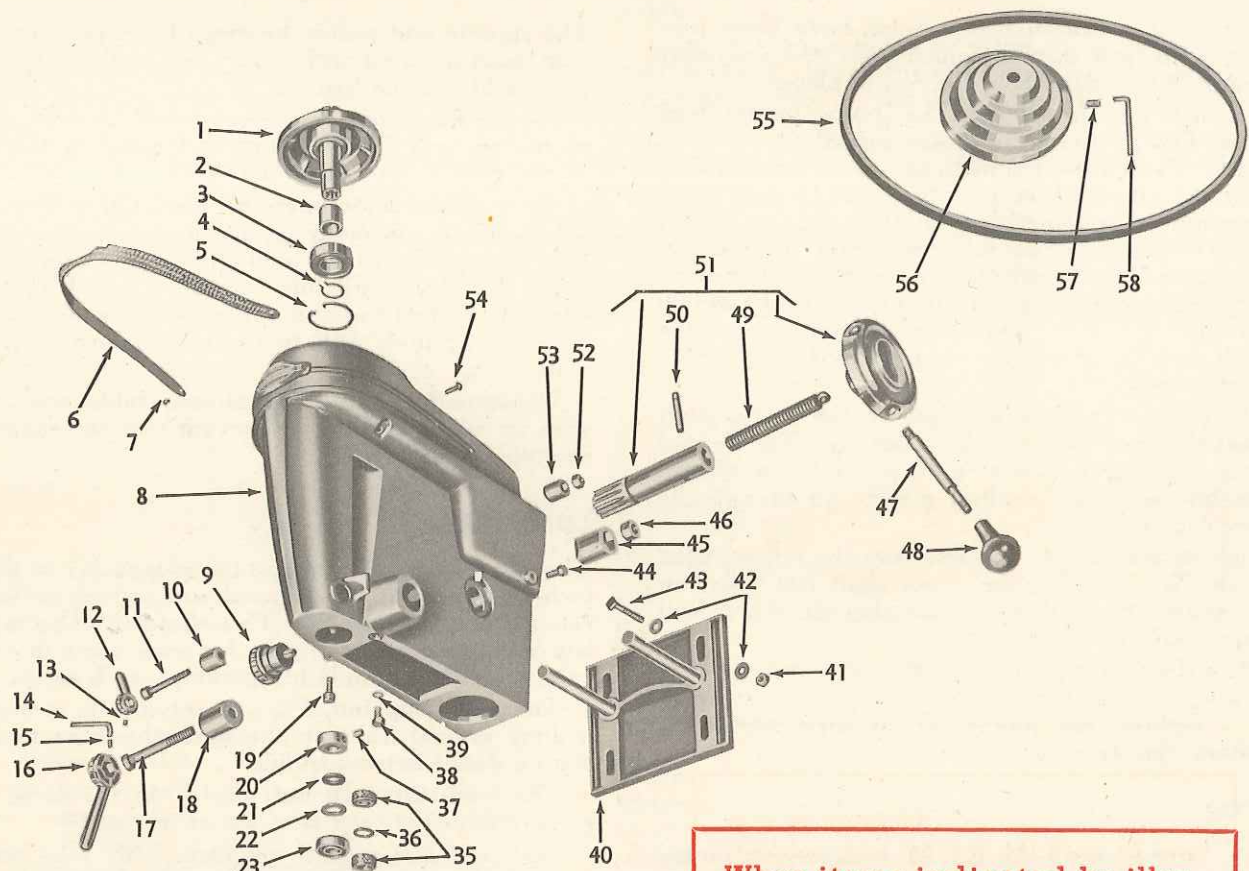
FIGURE 5

PARTS LIST

Illust. No.	Order By Part No.	PART NAME	Prepaid Selling Price Each	Illust. No.	Order By Part No.	PART NAME	Prepaid Selling Price Each
1	27415	Spindle pulley	\$ 4.75	44	*X-205	Cap screw 5/16—18 x 3/4 hex. head	\$.10
2	18413	Spindle pulley sleeve	.25	45	18119	Headstock lock	.45
3	18212	Pulley ball bearing	2.15	46	*X-446	Hex. nut 1/2—13	.10
4	18414	Inner snap ring	.10	47	27618	Feed handle rod	.60
5	18415	Outer snap ring	.15	48	18916	Feed handle knob	.40
6	27714	Panel	.80	49	18915	Feed return spring	.25
7	38617	Panel screw	.15	50	27617	Pin	.15
8	27217	Drill head frame	26.00	51	27160	Hub, pinion, spring and pin assembly	4.25
9	18604	Hand knob	.85	52	X-417	Hex. nut 5/16—18	.10
10	18122	Quill lock sleeve	.30	53	18121	Quill lock	.30
11	18512	Quill lock screw	.15	54	X-565	Machine screw No. 8—32 x 3/4 rd. head	.10
12	18120	Lock handle and set screw	.80	55	X-1467	V-belt 1/2 x 45 inches long. Purchase from nearest Sears retail store or mail order house. Ask for catalog No. 9-1645	—
13	X-181	Set screw No. 10—24 x 1/4 socket head cone pt.	.10	56	18026	Motor pulley with set screw	2.00
14	*X-1407	Allen wrench 3/32	.15	57	X-135	Set screw 5/16—18 x 5/8 soc. hd. cup point	.10
15	X-180	Set screw No. 10—24 x 3/8 soc. hd. cone pt.	.10	58	*X-1400	Allen wrench 5/32	.15
16	18110	Lock handle and set screw	1.20	59	27612	Taper pin	.25
17	18626	Head lock screw	.15	60	27005	Table and support assembly including item 59	19.00
18	18118	Head lock sleeve	.45	61	27713	Scale	.35
19	18511	Knob lock screw	.15	62	*X-517	Machine screw 1/4—20 x 3/8 round head	.10
20	18424	Spindle collar	.35	63	X-278	Cap screw 1/2—13 x 3 hex. head.	.10
21	18429	Washer (rubber)	.10	64	18115	Table lock sleeve	.35
22	18422	Washer	.10	65	*X-446	Hex. nut 1/2—13	.10
23	18211	Quill bearing	1.80	66	18116	Table support lock	.35
24	27614	Quill	4.00	67	27622	Column	14.80
25	18417	Quill gasket	.10	68	27140	Base	25.00
26	*X-277	Cap screw 1/4—20 x 1 1/2 hex. head	.10	69	X-185	Set screw 1/2—13 x 1 1/4 square head	.10
27	38422	Feed stop bracket	1.00	70	27212	Base lock shoe	.35
28	27130	Spindle assembly	4.00	71	18117	Table support lock sleeve	.35
29	38623	Chuck	10.00	72	18625	Table support lock screw	.15
30	18129	Chuck key Jacobs No. 3	.80	73	18110	Lock handle with set screw	1.20
31	X-413	Hex. nut 3/8—16	.10	74	X-180	Set screw No. 10—24 x 3/8 soc. hd. cone point	.10
32	*X-420	Hex. nut 1/4—20	.10	75	*X-446	Hex. nut 1/2—13	.10
33	*X-605	Lock washer 1/4	.10	76	18114	Table tilt lock	.35
34	27615	Feed stop rod	2.60	77	27717	Column plug	.30
35	18427	Feed stop nut	.30	Accessories	{ 18131	Release wedge	.20
36	18426	Feed stop spacer	.10		{ 18428	Thrust collar nut	.35
37	X-170	Set screw 5/16—18 x 1/2 soc. hd. cone pt.	.10				
38	18513	Pinion shaft retaining screw	.15				
39	18421	Washer	.10				
40	18920	Motor support assembly	2.15				
41	X-417	Hex. nut 5/16—18	.10				
42	X-601	Plain washer 11/32 I.D. x 11/16 O.D.	.10				
43	X-325	Mach. screw 5/16—18 x 2 1/4 sq. hd.	.10				

*Parts marked in this manner may be purchased locally.

This sheet is intended for instruction and repair parts only and is not a packing slip. The parts shown and listed may include accessories not necessarily part of this tool. All parts are shipped prepaid. All prices are subject to change without notice.



When items indicated by illustration Nos. 45, 53, 66, and 76 are threaded, items indicated by illustration Nos. 46, 52, 65, and 75 will not be needed.

