

**OPERATING INSTRUCTIONS
AND PARTS LIST FOR**

DUNLAP DRILL PRESS

MODEL NUMBERS

101.03521 (Standard chuck)

101.03541 (Jacobs chuck)

This is the Model Number of your Drill Press. It will be found on the rear center of the Base Top. Always mention this Model Number when communicating with us regarding your Drill Press or when ordering Parts.

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

SEARS, ROEBUCK AND CO.

OPERATING INSTRUCTIONS

When unpacking, be very careful to go through all papers thoroughly so as not to miss any parts.

This drill press is designed to be used for all ordinary work with a motor having a speed of approximately 1725 R.P.M. and with such a motor will have nine different speeds as follows: 750, 1325, 2250 and 4000 R.P.M. with motor in normal position (pulleys in line); 1075, 1725 and 2760 R.P.M. with motor lowered on motor base so that top step of motor pulley lines up with the second step on the spindle pulley; 950 and 3100 R.P.M. with motor raised on motor base so that the top step on the spindle pulley lines up with the third step on the motor pulley.

If the direct motor drive set-up is used (Fig. 1) the motor should revolve in a clockwise direction when facing the pulley end. If it revolves in the opposite direction, reverse this according to the manu-

facturer's instructions. When you are sure the motor revolves properly, bolt it to the mounting bracket, locating it centrally on the provided slots. Attach the motor pulley to the shaft with the large step on top. Use a straight edge to line up the motor pulley with that on the spindle. Bolt the Drill Press to the bench, BEING SURE IT IS LEVEL. Locate the belt in the desired groove, and it is ready for operation.

If the countershaft and idler pulley are to be used (Fig. 2) the motor should revolve in a counter-clockwise direction when facing the pulley end. Bolt the Drill Press to the bench and attach the countershaft in position as shown. Locate the motor pulley on the shaft with the large end out and directly under the countershaft. Bolt the motor to the bench, put the belt in the desired groove, and the Drill Press is ready for operation. When using the belt in one of the smaller motor pulley grooves, pull out the countershaft to keep the belt tight.

DRILLING

The proper speed for drilling depends upon: 1. The material to be drilled; 2. The size of the hole; 3. The kind of drill. Generally speaking, the harder the material and the larger the drill, the slower should be the speeds.

Make sure that the drill runs true when starting—it may be necessary to countersink the work. Small drills should be fed into the work carefully, since they are designed to be run at very high speeds. Avoid too high a speed, especially with the larger drills—excessive speed wears off the drill corners, draws the temper of the drill, and may even burn or break the drill tip.

NOTE: When drilling brass, aluminum, lead and other soft materials which cause the drill to "hog-in", reduce the rake angle of the cutting edge by grinding the drill as shown in Fig. 4. This reduced rake angle is also desirable when drilling very hard materials because it lessens the strain on the drill.

This change makes drilling easier and results in a more accurately drilled hole.

LUBRICATION: A cutting compound is essential when drilling practically any metal. The following compounds will give best results.

Hard, tough steels—Turpentine or kerosene.

Softer steels—Lard oil or equivalent. Aluminum and other soft alloys—Kerosene.

Brass—Drill dry or use paraffin oil.

Die Castings—Drill dry or use kerosene.

Cast Iron—Drill dry.

Do not attempt to make large holes in small pieces or in thin material without first clamping the work securely to the table. For maximum accuracy, raise the table high enough so that the spindle does not run entirely out of head in going through the work. When drilling the larger holes much better results are obtained by using our new slow-speed attachment in Fig. 3. This attachment provides a low speed of 260 R.P.M.. It can be attached or detached in less than two minutes.

The quill is graduated from 0 to 3 inches in sixteenths of an inch for convenience and accuracy in gauging the depth of holes. An adjustable stop collar on the top of the spindle may be set so that any number of holes may be drilled to same depth.

DRILLS: After the drill point is dulled for the first time, its effectiveness depends entirely upon how it is reground. For clean, accurate drilling, the operator must sharpen the drill properly. The cone-shaped surface at the end of the drill is called the "point", and the edge at the extreme tip end is the "dead center".

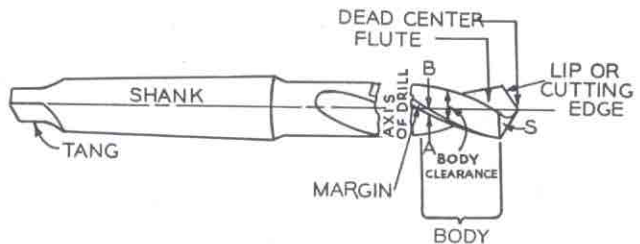


Fig. 5

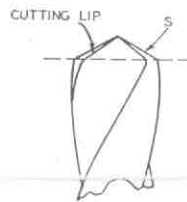


Fig. 6

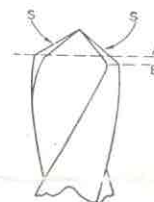


Fig. 7

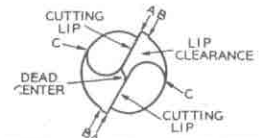


Fig. 8

In order to penetrate the work, the cutting edge must have the correct cutting angle and "lip clearance" at the center of the drill (Fig. 8). Fig. 6 shows a drill ground with no lip clearance. The cutting lip and heel "S" are in the same plane. This drill will cut very poorly, if at all. Fig. 7 shows how the "heel", the part directly back of the cutting angle, must be ground away.

THE PROPERLY GROUND DRILL: Two rules are especially important when grinding drill points. 1. The lip clearance angle (Fig. 9A) should be between 12 and 15 degrees. 2. The two cutting edges must be of equal length and angle. In Figs. 9A, 9B, 9C, the properly ground drill point is shown. Refer to these figures when grinding a drill—they will aid in grinding drills which will cut true-sized holes with a minimum of drill wear.

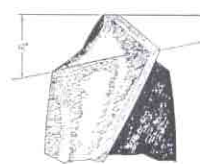


Fig. 9A



Fig. 9B
Fig. 9

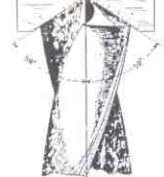


Fig. 9C

REAMING: When a hole must be accurate to within .002 inch or less, it is first drilled a few thousandths of an inch undersize and then hand-reamed or reamed with the drill press to the finish-diameter. For best results, follow the same rules in reaming as for drilling. Use slow speeds, feed in evenly and be sure there are no burrs on the reamer teeth.

A reaming allowance between .010 and 1/64 inch is usually sufficient for machine-reaming holes with diameters of 1 inch or less—an allowance of 1/64 or 1/32 inch is recommended for machine-reaming holes between 1 and 2 inches in diameter. .003 to .005 inch is usually allowed for hand reaming operations.

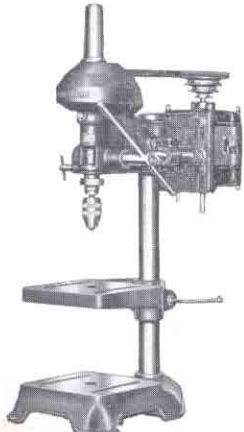


Fig. 1

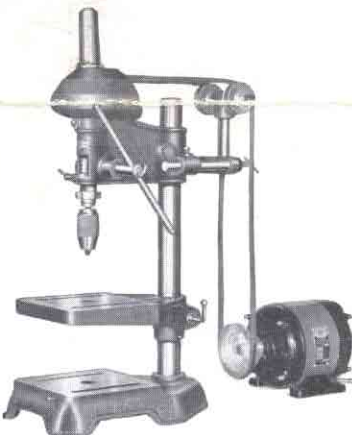


Fig. 2

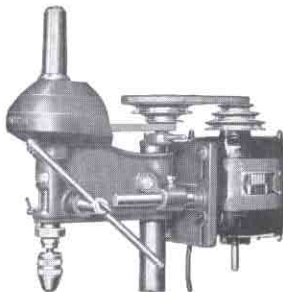


Fig. 3

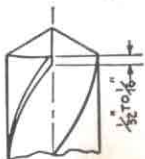


Fig. 4

OPERATING INSTRUCTIONS (Continued)

CAUTION! In using the drill press for any purpose other than drilling, it is necessary to make use of special chucks and adapters.

In using the various types of mortising bits, router bits, dovetailing bits, etc., the operator **MAY** use a collet chuck rather than the drill chuck or Jacobs chuck. On those drills equipped with a threaded spindle, the collet chuck threads on to the spindle in the same manner as the regular drill chuck. On those drills equipped with a tapered spindle, it is necessary to remove the Jacobs chuck and the threaded collar immediately above it. The collet chuck is placed on the taper, and the threaded collar is then replaced. There is a small flange on the inner side of this collar which will hold the collet chuck securely in position on the taper.

If the Jacobs chuck is used with any type of cutter where there is a thrust coming on from the side, the chuck will be pulled off the taper. This can be quite dangerous. Then, too, most of these operations are done at a high speed, and a collet chuck is much lighter and is preferable for the higher speed. The collet chuck grips the cutter shank all the way around instead of at just three points.

Exactly the same procedure is followed in installing the shaping adapter which is used on the tapered spindle drills to carry the shaping cutters.

WOODCARVING AND INLAYING

For this work, use the special router or woodcarving bits shown in our catalogue. The Drill Press should run at a speed of about 4000 R.P.M. Hold the piece to be worked firmly in one hand and run the bit into the work the proper depth. Clamp the spindle securely at this point. Now, holding the work with both hands, guide it through the desired design.

MORTISING

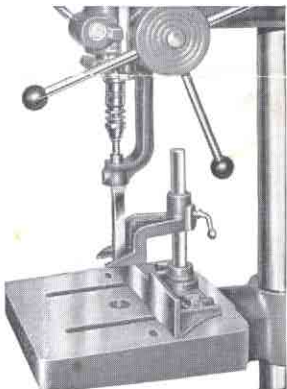


Fig. 10

Use the hollow chisel mortising attachment and accessories as shown in our catalog.

To set up mortising attachment, first slip chisel socket over quill collar and tighten securely. (See Fig. 10).

Select a mortising chisel and bit of correct size. Insert chisel in socket. Slide the bit up through the chisel and fasten in drill chuck, leaving 1/16 clearance between the spur of the bit and the lower edge of the chisel. This adjustment must be carefully made or a damaged bit and chisel will result. Turn the spindle by hand to make sure bit runs freely.

Set the guide fence in position and clamp the hold-down lightly against the top surface of the work. Adjust the

stop collar on the spindle to the proper depth and take the first cut slowly. Raise the chisel frequently to discharge the chips. Move the work along the guide fence about two-thirds the width of the mortising chisel and take a second cut. This and succeeding cuts may be taken rapidly. Repeat the above operation until the desired hole or design is obtained. **DO NOT FORCE THE CHISEL THROUGH THE WORK TOO RAPIDLY.** Too rapid feed will cause burned chisels and bits.

For mortising wide pieces which cannot be accommodated over the base, swing the Drill Press head to one side so as to swing over the bench. In this manner very wide pieces such as doors, etc., may readily be mortised. **USE THE SLOWER DRILL SPEEDS FOR MORTISING.**

DOVETAILING: Use dovetailing attachment as shown in our catalog. (See instructions furnished with attachment.)

SHAPING

The head may be used in the normal position or inverted as shown in Fig. 12. Use the special extension table and spring clips listed in our catalog. When the drill is equipped with a tapered spindle, a special arbor is mounted on the spindle and held by the collar above the chuck. On drills equipped with a threaded spindle, the cutter is mounted directly on it and is locked with a nut.

Select the proper cutters and lock securely on the arbor. **IMPORTANT:** The direction of rotation should be **TOWARD** the work to be cut. Always set the wood facings as close to the cutter as possible to secure maximum safety. To feed work from the opposite side: 1. Turn cutter or cutters over. 2. Reverse direction of rotation of spindle. 3. Place hold-downs on opposite side. (A reversing switch will be found to be convenient.)

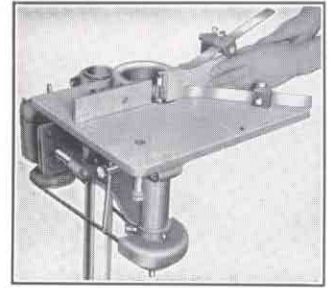


Fig. 11

In shaping circular or irregular work this shaping fence and hold downs are dispensed with. For this work we

recommend and sell a set of nested depth collars. In these sets there is one thin inner collar slightly higher than the other collars. Outside of this is a bronze bearing collar, and outside of the bearing collar are a series of steel collars. In operation the work rests against the outer steel collar which remains practically stationary while the spindle revolves. These collars may be mounted above or below the cutter. The collars serve as a depth stop for the work preventing the cutter from "hogging-in". They should always be used on irregular work.

In commencing the cut on irregular work use the starting pin as a fulcrum to prevent the work from getting caught. Bring the work gradually in contact with the cutter. Hold the work firmly and keep it in contact with the depth collar. The shape of the piece will be governed by its contour; hence the work must be sawed to the desired shape before shaping. **USE ONLY THE HIGHER SPEEDS FOR SHAPING.**

STATIC ELECTRICITY

Small static electrical discharges from power tools may be caused by friction between any two unlike surfaces, such as belt and pulleys, etc. This may be eliminated by grounding the tool to a water pipe.

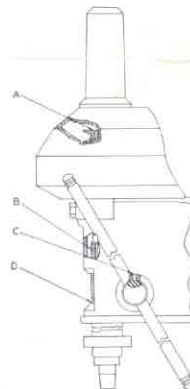
IMPORTANT—LUBRICATION

USE S.A.E. NO. 20 MACHINE OIL

- A. Spindle Pulley Bearing—Oil frequently.
- B. Quill Bearings—Oil frequently. (Note: Spindle must be in lowest position to uncover oil hole.)
- C. Pinion Shaft Hub—Oil occasionally.
- D. Quill Surface—Oil should frequently be applied to the outside surface of quill. The spindle cap should be removed frequently and oil applied to the splined spindle also.

The ball thrust bearing on the extreme lower end of spindle should be oiled frequently.

The grease cups on the countershaft should be filled with Lubrico M-6 Grease every 3 months.



QUILL RETURN SPRING TENSION ADJUSTMENT

Turn spring cap 1/4" counterclockwise and pull out 1/4". To increase tension, turn cap a half or full turn (as required) counterclockwise and reinsert cap. To decrease tension, turn cap a half or full turn (as required) clockwise and reinsert.

SPINDLE ADJUSTMENT

If longitudinal play is noticeable in spindle when the quill is locked, it may be eliminated as follows: 1. Remove spindle guard and the collar on the top of the spindle by loosening set screw. 2. Turn quill downward until the collar directly above the quill comes into view. 3. Lock the quill at this position and while holding the spindle to prevent it from falling out, loosen the set screw in the collar. 4. Hold spindle tightly against the bottom of the quill and force the collar tightly against the top of the quill and lock in position. 5. Rotate the spindle by hand to see whether it binds or not. If the adjustment is set too tightly, loosen it a little.

NOTE: If so desired, the entire spindle can be removed by loosening the set screws in both the collar at top of spindle and the one above the quill and pulling spindle downward.

HOW TO ORDER PARTS FOR DUNLAP DRILL PRESS

MODEL NUMBERS

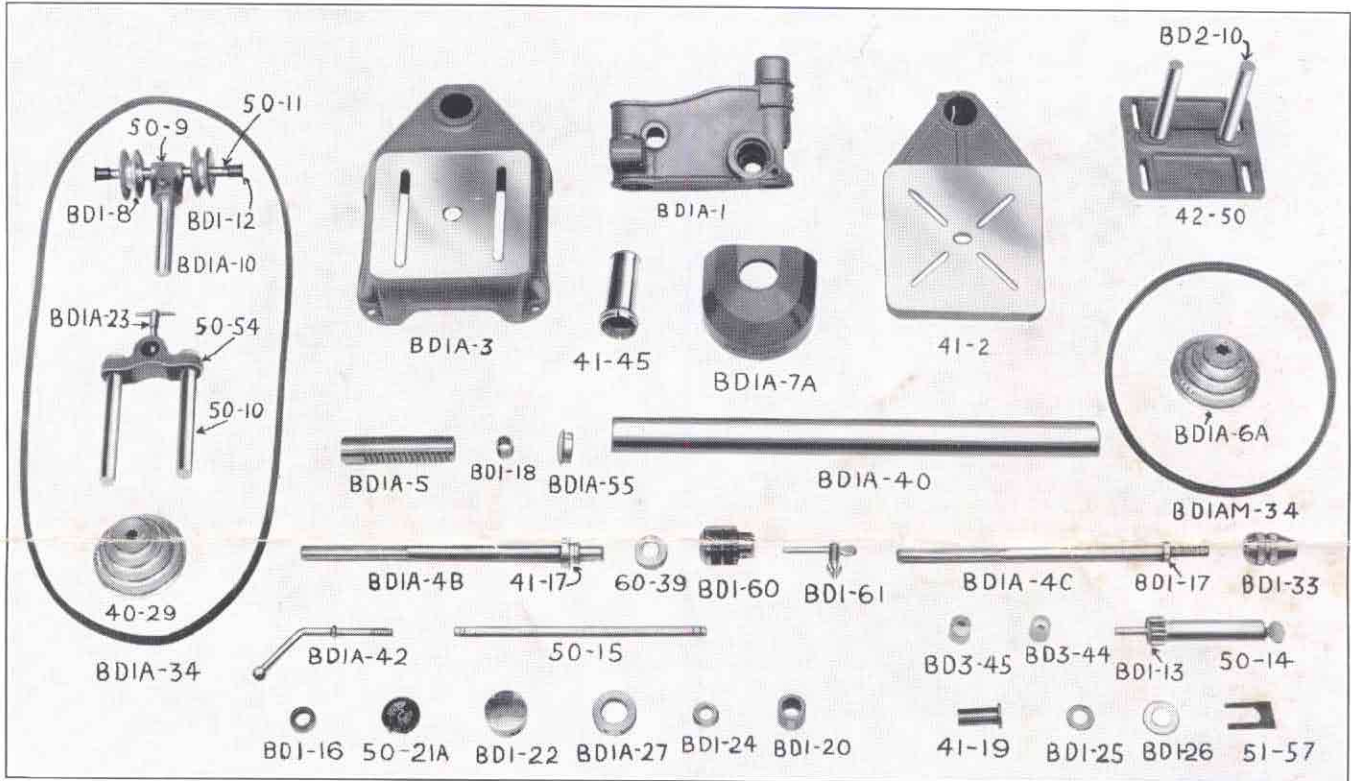
- 101.03521 (Standard chuck)
101.03541 (Jacobs chuck)

All parts listed here may be ordered through any Sears retail store or the mail order store which serves the territory in which you live. When ordering, always give the following:

1. Part number in this list.
2. Part name and price in this list.
3. Model number, which will be found on the plate on the rear center of the base top.

A minimum charge of 25c will be made on any order.

ALL PARTS ARE SHIPPED PREPAID



PARTS LIST

Part No.	PART NAME	Selling Price Each	Part No.	PART NAME	Selling Price Each	Part No.	PART NAME	Selling Price Each
HEAD ASSEMBLY			BD3-44	Quill Lock	.15	BDIA-34	Belt (Idler Drive) 72 25/32" O. C.	1.45
BDIA-1	Head	\$3.60	41-45	Spindle Guard	.75	BDIAM-34	Belt (Direct Motor Drive) 36 15/32" O. C.	.90
BDIA-4B	Spined Spindle— for 1/16 to 1/2 Jacobs Chuck	1.20	BD3-45	Quill Lock Sleeve	.15	BDIA-40	Column	2.00
BDIA-4C	Spined Spindle— for Standard Chuck	1.20	BDI-49	Stop Collar Set Screw	.10	BDIA-55	Column Cap	.30
BDIA-5	Quill	1.35	TABLE			51-57	Chuck Release Wedge	.15
BDIA-6A	Spindle Pulley	.90	41-2	Table	3.00	BDI-33	Chuck-Threaded Type	1.00
BDIA-7A	Spindle Pulley Guard	.75	BDIA-42	Clamp Handle	.45	BDI-60	Jacobs Chuck—1/16 to 1/2	5.75
50-14A	Spindle Feed Pinion Shaft with Pinion	1.80	BD3-44	Quill Lock	.15	BDI-61	Jacobs Chuck Wrench	.45
50-15	Spindle Feed Lever	.30	BD3-45	Quill Lock Sleeve	.15	SAMPLE ORDER		
BDI-16	Spindle Thrust Bearing	.70	IDLER PULLEY			BDIA-40	Column	2.00
BDI-17	Spindle Thrust Collar (use on threaded spindle only)	.30	BDI-8	Idler Pulley (2 req.) ea.	.25	BDIA-55	Column Cap	.30
41-17	Chuck Release Collar	.45	50-9	Idler Pulley Bracket	.60	51-57	Chuck Release Wedge	.15
BDI-18	Spindle Quill Bearing (2 req.) ea.	.30	BDIA-10	Idler Pulley Bracket Shank	.45	BDI-33	Chuck-Threaded Type	1.00
41-19	Spindle Pulley Sleeve	.45	50-10	Idler Pulley Bracket Pin (2 req.) ea.	.30	BDI-60	Jacobs Chuck—1/16 to 1/2	5.75
BDI-20	Spindle Pulley Sleeve Bushing	.30	50-11	Idler Pulley Shaft	.45	BDI-61	Jacobs Chuck Wrench	.45
50-21A	Feed Lever Balance Spring	.35	BDI-12	Idler Pulley Shaft Grease Cup (2 req.) ea.	.15	SAMPLE ORDER		
BDI-22	Feed Lever Balance Spring Cap	.45	50-54	Idler Pulley Adj. Bracket	.80	BDIA-34	Belt (Idler Drive) 72 25/32" O. C.	1.45
BDIA-23A	Spindle Lock Screw	.45	MOTOR BASE			BDIAM-34	Belt (Direct Motor Drive) 36 15/32" O. C.	.90
BDI-24	Spindle Upper Thrust Collar (2 req.) ea.	.20	BD2-10	Motor Base Pin (2 req.) ea.	.30	BDIA-40	Column	2.00
BDI-25	Spindle Thrust Washer	.15	42-50	Motor Base	1.00	BDIA-55	Column Cap	.30
BDI-26	Upper Pulley Sleeve Washer	.15	MISCELLANEOUS			51-57	Chuck Release Wedge	.15
BDIA-27	Quill Collar	.30	BDIA-3	Base	3.20	BDI-33	Chuck-Threaded Type	1.00
60-39	Chuck Release Nut	.30	40-29	Motor Pulley	.90	BDI-60	Jacobs Chuck—1/16 to 1/2	5.75
BDIA-42	Head Clamp Handle (2 req.) ea.	.45				BDI-61	Jacobs Chuck Wrench	.45

SEARS, ROEBUCK AND CO.
Enclosed find my check for \$2.25 for which please send me by parcel post the following parts for my Dunlap drill press, Model Number 101.03541.
1 ea.—BDIA-5 Quill \$1.35
1 ea.—BDIAM-34 Belt .90
\$2.25
Yours truly,
John Marten
Box 128, Richmond, Ind.

NOTICE: This is NOT a packing slip. The parts shown and listed include accessories that are not necessarily part of this tool.
NOTE: Standard parts, such as bolts, nuts, washers, etc., are not listed above as such parts can be obtained locally.

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July, 1940