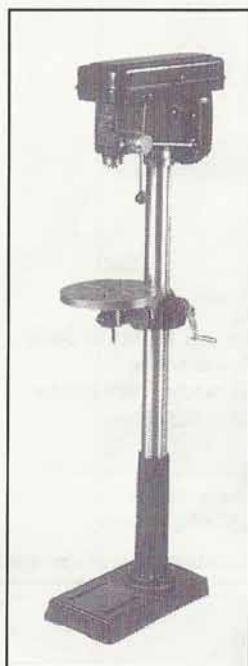
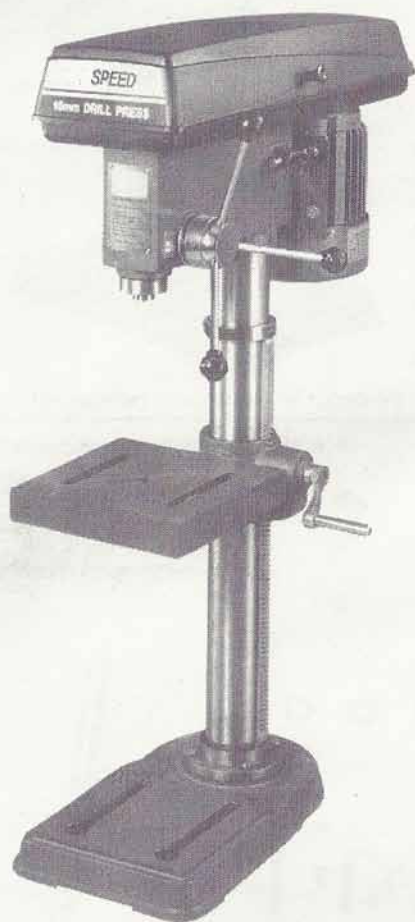


Drill Press



I. PARTS

Unpack carton, check your machine to see parts listed below:

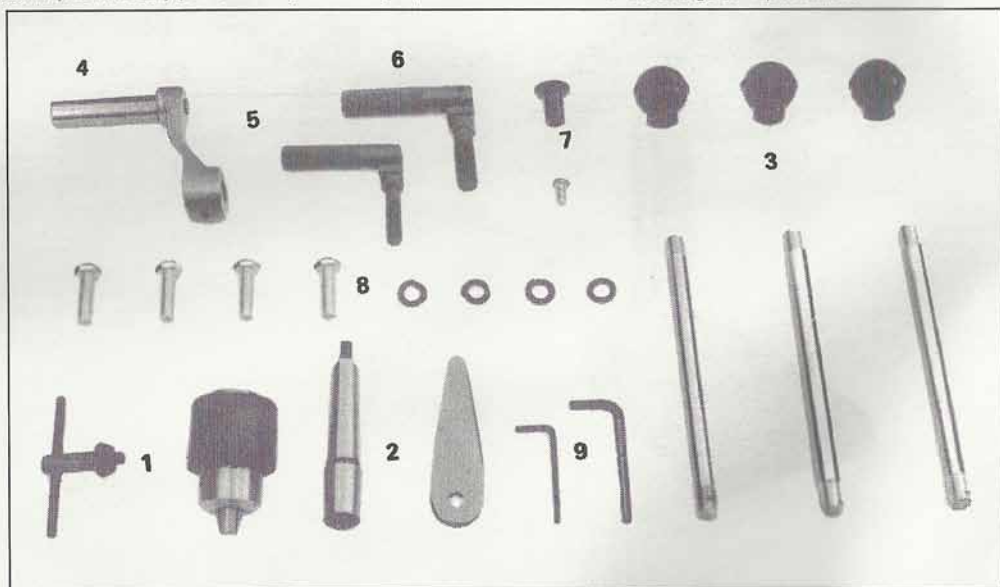
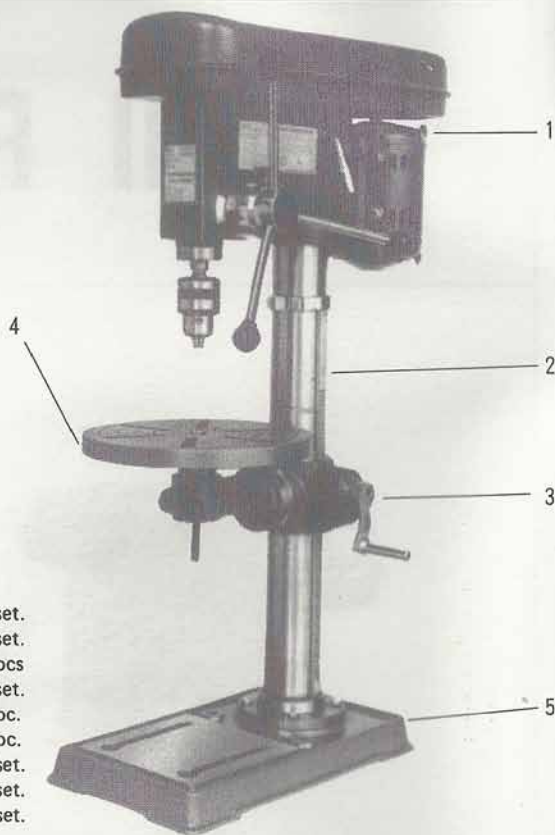
A. Main Parts:

- | | |
|-----------------------------|--------|
| 1. Head assembly | 1 pc. |
| 2. Column with flange | 1 pc. |
| 3. Arm of table and bracket | 1 set. |
| 4. Table | 1 pc. |
| 5. Base | 1 pc. |

B. Accessories

- | | |
|---|--------|
| 1. Chuck and key | 1 set. |
| 2. Arbor and wedge (for K-16(F)N only) | 1 set. |
| 3. Feeding handles and knobs | 3 pcs |
| 4. Height adjusting handle, table bracket | 1 set. |
| 5. Clamp bolt, table bracket | 1 pc. |
| 6. Clamp bolt, table arm | 1 pc. |
| 7. Knob and screw, upper pulley cover | 1 set. |
| 8. Screws and washers, flange | 1 set. |
| 9. Allen wrenches (3mm, 5mm) | 1 set. |

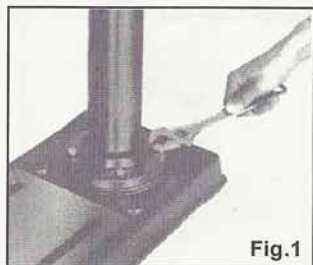
Note: If you find any parts missing or damaged, contact the dealer for exchange or replacement



II. ASSEMBLY

1. Assembly the Column

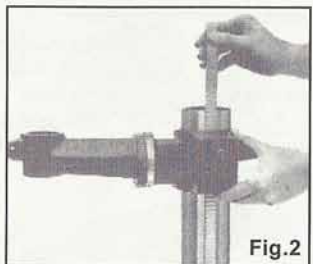
- * Place column assembly on base and align holes in column support with holes in base.
- * Secure the column with four or three bolts and washers provided.



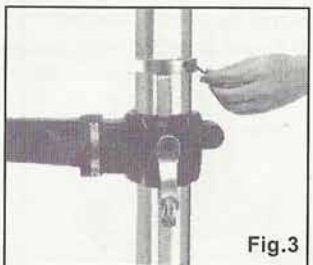
2. Install table bracket

2-1 Take off collar and rack.

2-2 Install table bracket together with rack. Fig. 2.

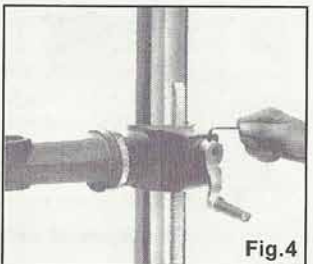


2-3 Install collar and fix it firmly. Fig. 3.

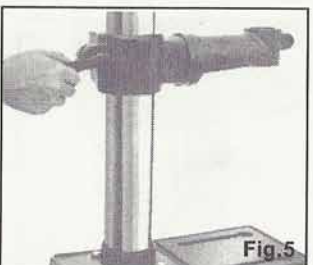


3. Install bracket handle and clamp bolt. Fig. 4, 5.

Fix handle with attached set screw.



Install clamp bolt to fix table bracket.



4. Install table and clamp with bolt. Fig. 6.



5. Attach the Head Assembly

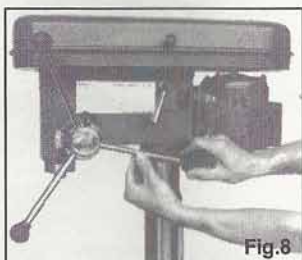
Carefully put the head assembly over column and slide it onto column into position. Align head frame with table and base.

Fix set screws in right side of head to lock head into position then tighten with allen wrench. Fig. 7.



6. Install the Feeding Handles

* Screw knob on each feeding handle, install them into hub of pinion shaft. Fig. 8.



7. Attach the Arbor and Chuck

7-1 Insert arbor into spindle first. Pull feeding handle down to press arbor inward, Fig. 9.

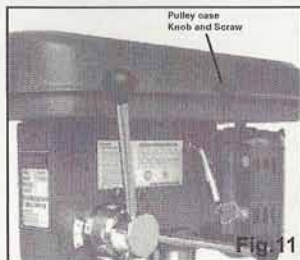
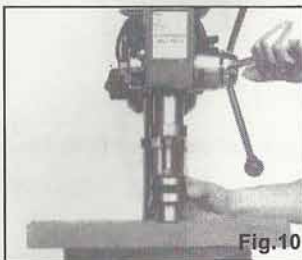
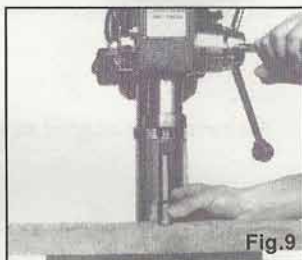
7-2 Open chuck jaws completely by turning attached chuck key counter-clockwise to the end.

* Put a piece of scrap wood on the table to protect chuck nose.

7-3 Install chuck to the arbor tightly. Fig. 10.

8. Install knob and screw of upper pulley cover.

Fig. 11



III. ADJUSTMENT

1. Table Adjustment

A. Height Adjustment

To adjust up or down, loosen the clamp bolt then adjust the table to your desired position by swing the table bracket handle. Fig. 12.

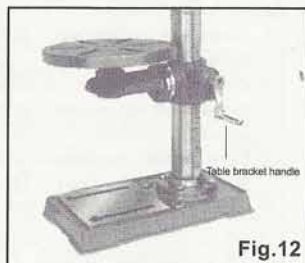


Fig.12

B. Tilting Adjustment:

Loosen the table level lock bolt with adjustable wrench.

Tilt table to desired angle and retighten the bolt. Fig. 13.

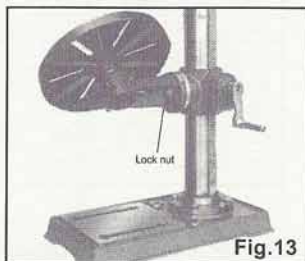


Fig.13

C. Swing 360°

Loosen clamp bolt then swing table to appropriate position and retighten clamp bolt. Fig. 14.

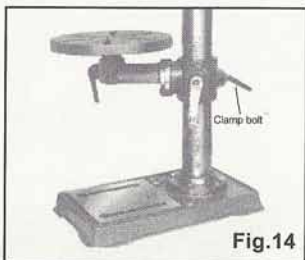


Fig.14

2. Feed Depth Adjustment

2-1 Depth control scale sleeve type

Loose the clamp bolt and move to the desired depth then retighten the clamp bolt. Fig. 15-1, 15-2.



Fig.15-1

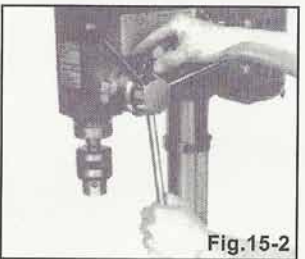


Fig.15-2

3. Speed Adjustment

- 3-1 1. Open the pulley case and loosen the belt tension lock handle.
2. Choose speed for drilling operation and move belt to correct position for desired speed.
3. Push motor backward until moderate belt tension is acquired. Then retighten the lock handle again. Fig. 16



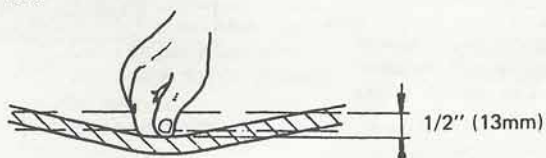
Fig.16

3-2 The proper drill speed for a given drill bit size is as on following table:

Size		Cast steel		Tool steel		Cast iron		Mild steel		Alum.&copper	
		Cutting speed									
		m/min	ft/min	m/min	ft/min	m/min	ft/min	m/min	ft/min	m/min	ft/min
Diameter		12	40	18	60	24	80	30	100	60	200
mm	inch	Cutting speed revolution per minute									
2	1/16	1910	2445	2865	3665	3820	4890	4775	6110	9550	12225
3	1/8	1275	1220	1910	1835	2545	2445	3185	3055	6365	6110
5	3/16	765	815	1145	1220	1530	1630	1910	2035	3820	4075
6	1/4	610	610	955	915	1275	1220	1590	1530	3180	3055
8	5/16	480	490	715	735	955	980	1195	1220	2390	2445
10	3/8	380	405	570	610	765	815	955	1020	1910	2035
11	7/16	350	350	520	525	700	700	870	875	1740	1745
13	1/2	300	305	440	460	590	610	735	765	1470	1530
16	5/8	240	245	360	365	480	490	600	610	1200	1220
19	3/4	190	205	285	305	380	405	480	510	955	1020

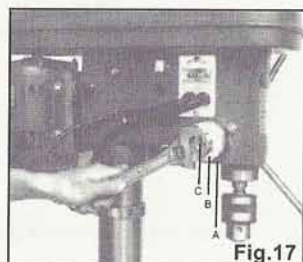
4. Belt Tension Adjustment

For proper belt tension: Use 10 lbs pressure or hand pressure on the belt as shown below. The distance is 1/2" (13mm) + 10%.



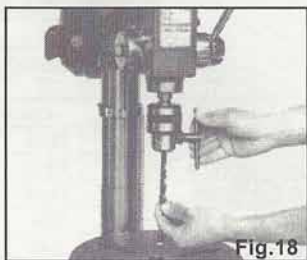
5. Quill Spring Adjustment

1. Move the stop nuts to lowest position and lock in place with wrench to prevent quill dropping while tensioning spring.
2. Place screwdriver in lower front notch (A) of spring cap (B) and hold it in place while loosening and removing nuts.
3. Carefully turn screwdriver counter clockwise and engage next notch. Fig. 17.
4. Tighten inner nut (C) with wrench. Do not overtighten as this will restrict quill removal.
5. Move stop nuts to upper position and check tension while turning feed handle. If there is not enough tension on spring, repeat steps 2 – 4.
6. Check quill while feeding to be smooth and unrestricted movement. If movement is too tight, slightly loosen nuts until unrestricted.



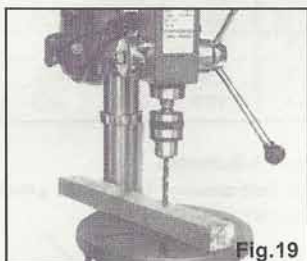
1. Installing Drills

Insert drill into chuck jaws about 1" (25.4mm) long. When using a small drill does not insert it so far that the jaws touch the arbor of the drill. Make sure that the drill is centered in the chuck before tightening the chuck with the key. Fig. 18.



2. Positioning Workpiece

Always place a piece of wood (or plywood . . .) on the table. This will prevent "splintering" or making a heavy hurs on the underside of the workpiece as the drill breaks through. The wood must contact the left side of the column. Fig. 19.



3. Using Vise

For small workpiece that cannot be clamped to the table, use a drill press vise not included. The vise must be clamped or bolted to the table.

4. Trouble Shooting Guide

TROUBLE	PROBABLE CAUSE	REMEDY
Noisy operation	A) Incorrect belt tension B) Dry spindle C) Loosen pulley D) Loose belt E) Bad bearing	A) Adjust tension B) Remove spindle/quill assembly – lubricate C) Tighten pulley D) Adjust belt tension E) Replace bearing
Excessive drill wobble	A) Loose chuck B) Worn spindle shaft or bearing C) Bad chuck	A) Tighten by pressing chuck down against table B) Replace spindle shaft or bearing C) Replace chuck
Motor won't start	A) Power supply B) Motor connection C) Switch connections D) Motor windings burned E) Bad switch	A) Check power cord B) Check motor connections C) Check switch connections D) Replace motor E) Replace switch
Drill binds in workpiece	A) Excessive pressure on feed handle B) Loose belt C) Loose drill D) Speed too fast	A) Apply less pressure B) Check belt tension C) Tighten drill with key D) Change speed
Drill burns or smokes	A) Incorrect speed Slow down RPM B) Chips are not discharging C) Dull drill or not cut properly for material D) Needs lubrication E) Feed pressure wrong	A) Refer to speed chart B) Clean drill C) Check sharpness & taper D) Use lubrication while drilling E) Apply less pressure
Table difficult to raise	A) Needs lubrication B) Bent rack C) Table lock tightened	A) Lubricate with light oil B) Straighten rack C) Loosen clamp

V. MAINTENANCE

Frequently blow out any dust that may accumulate inside the motor.

A coat of automobile-type wax applied to the table and column will help to keep the surfaces clean.

If the power cord is worn or cut, or damaged in any way, have it replaced immediately.

Lubrication

All of the BALL BEARINGS are packed with grease at the factory. They require no further lubrication.

Periodically lubricate the gear and rack table elevation mechanism, the SPLINES (grooves) in the spindle, and the RACK (teeth on the quill).

VI. SAFETY RULES

General Safety Rules:

1. KEEP GUARDS IN PLACE and in working order.
2. REMOVE ADJUSTING KEYS AND WRENCHES. Form habit of checking to see that keys and adjusting wrenches are removed from tool before turning it on.
3. KEEP WORK AREA CLEAN. Cluttered areas and benches invite accidents.
4. DON'T USE IN DANGEROUS ENVIRONMENT. Don't use power tools in damp or wet location, or expose them to rain. Keep work area well lighted.
5. KEEP CHILDREN AWAY. All visitors should be kept safe distance from work area.
6. MAKE WORKSHOP CHILD PROOF with padlocks, master switches, or by removing starter keys.
7. DON'T FORCE TOOL. Don't force tool or attachment to do a job for which it was not designed.
8. USE RIGHT TOOL. It will do the job better and safer at the rate for which it was designed.
9. WEAR PROPER APPAREL. No loose clothing, gloves, neckties, rings bracelets, or other jewelry to get caught in moving parts. Nonslip footwear is recommended, Wear protective hair covering to contain long hair.
10. ALWAYS USE SAFETY GLASSES. Common eyeglasses only have impact resistant lenses, they are NOT safety glasses.
11. SECURE WORK. Use clamps or a vise to hold work when practical. It's safer than using your hand and it frees both hands to operate tool.
12. DON'T OVERREACH. Keep proper footing and balance at all times.
13. MAINTAIN TOOLS WITH CARE. Keep tools sharp and clean for best and safest performance. Follow instructions for lubricating and changing accessories.
14. DISCONNECT TOOLS before servicing; when changing accessories such as blades.
15. REDUCE THE RISK OF UNINTENTIONAL STARTING. Make sure switch is in off position before plugging in.
16. USE RECOMMENDED ACCESSORIES. Consult the owner's manual for recommended accessories. The use of improper accessories may cause risk of injury to persons.
17. NEVER STAND ON TOOL. Serious injury could occur if the tool is tipped or if the cutting tool is unintentionally contacted.
18. CHECK DAMAGE PARTS. Before further use of the tool, a guard or other part that is damaged should be carefully checked to determine that it will operate properly and perform its intended function-check for alignment of moving parts, binding of moving parts, breakage of parts, mounting, and any other conditions that may affect its operation. A guard or other part that is damaged should be properly repaired or replaced.
19. NEVER LEAVE TOOL RUNNING UNATTENDED. TURN POWER OFF. Don't leave tool until it comes to a complete stop.

Special Safety Rules For Drill Press:

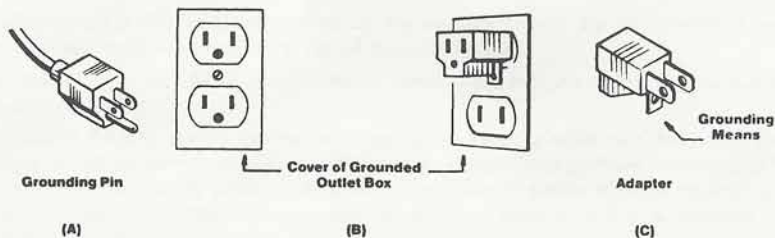
1. **Caution:** This drill press is intended for use only with drill bits. The use of other accessories may be hazardous.
2. **Correct drilling speeds:** Factors which determine the best speed to use in any drill press operation are: Kind of material being worked, size of hole, type of drill or other cutter, and quality of cut desired. The smaller the drill, the greater the required RPM. In soft materials, the speed should be higher than for hard metals.
3. **Drilling in metal:** Use clamps to hold the work when drilling in metal. The work should never be held in the bare hand, the flutes of the drill may seize the work at any time, especially when breaking through the stock. If the piece is whirled out of the operator's hand, he may be injured, in any case, the drill will be broken when the work strikes the column.
4. **The work must be clamped firmly while drilling:** Any tilting, twisting, or shifting results not only in a rough hole, but also increases drill breakage. For flat work, lay the piece on a wooden base and clamp it firmly down against the table to prevent it from turning. If the piece is of irregular shape and cannot be laid flat on the table, it should be securely blocked and clamped.
5. The chuck shall be securely fastened to the spindle and so that it can't separate from spindle.
6. Remove key from chuck after adjustment.
7. The tool is to be disconnected from the power supply while the motor is being mounted, connected, or reconnected.
8. Secure the tool to the supporting structure if, during normal operation, there is any tendency for the tool to tip over, slide, or walk on the supporting surface.
9. The set screws of head frame should be screwed tightly before using this machine.
10. Connect to a supply circuit protected by a circuit breaker or time delay fuse.
11. Fasten base to floor or worktable before using the drill press.

VII. GROUNDING

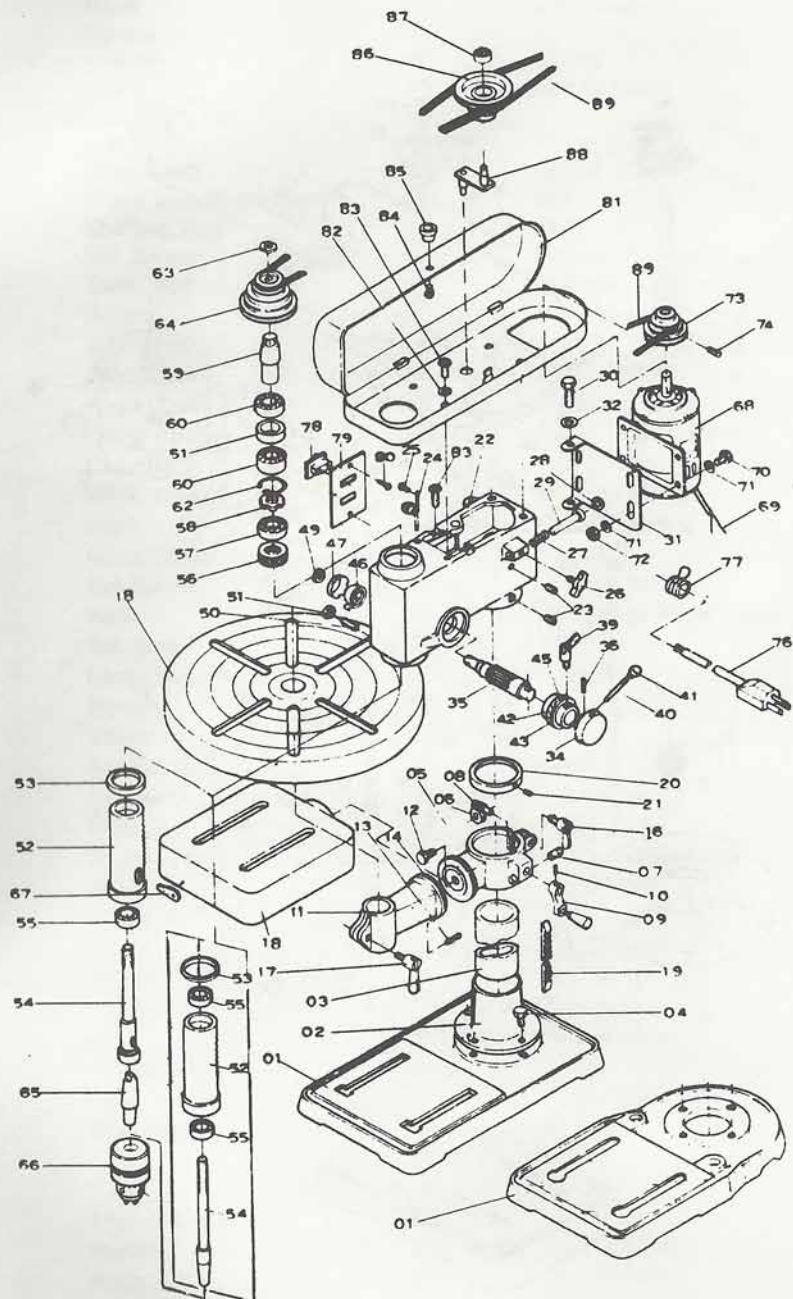
1. In the event of a malfunction or breakdown, grounding provides a path of least resistance for electric current to reduce the risk of electric shock. This tool is equipped with an electric cord having an equipment-grounding conductor and a grounding plug. The plug must be plugged into a matching outlet that is properly installed and grounded in accordance with all local codes and ordinances.
2. Do not modify the plug provided it will not fit the outlet, have the proper outlet installed by a qualified electrician.
3. Improper connection of the equipment grounding conductor can result in a risk of electric shock. The conductor with insulation having an outer surface that is green with or without yellow stripe is the equipment-grounding conductor. If repair or replacement of the electric cord or plug is necessary, do not connect the equipment-grounding conductor to a live terminal.
4. Check with a qualified electrician or serviceman if the grounding instructions are not completely understood, or if in doubt, as to whether the tool is properly grounded.
5. Use only 3-wire extension cords that have 3-prong grounding plugs and 3-pole receptacles that accept the tool's plug.
6. Repair or replace damaged or worn cord immediately.
7. This tool is intended for use on a circuit that has an outlet that looks like the one illustrated in sketch A. The tool has a grounding plug that looks like the plug illustrated in sketch A. A temporary adapter, which looks like the adapter illustrated in sketches B and C, may be used to connect his plug to a 1-pole receptable as shown in sketch B if a properly grounded outlet is not available. The temporary adapter should be used only until a properly grounded outlet can be installed by a qualified electrician. The green-colored rigid ear, lug, etc. extending from the adapter must be connected to a permanent ground such as a properly grounded outlet box.

Note: The type of electrical plug and receptacle differs from country to country.

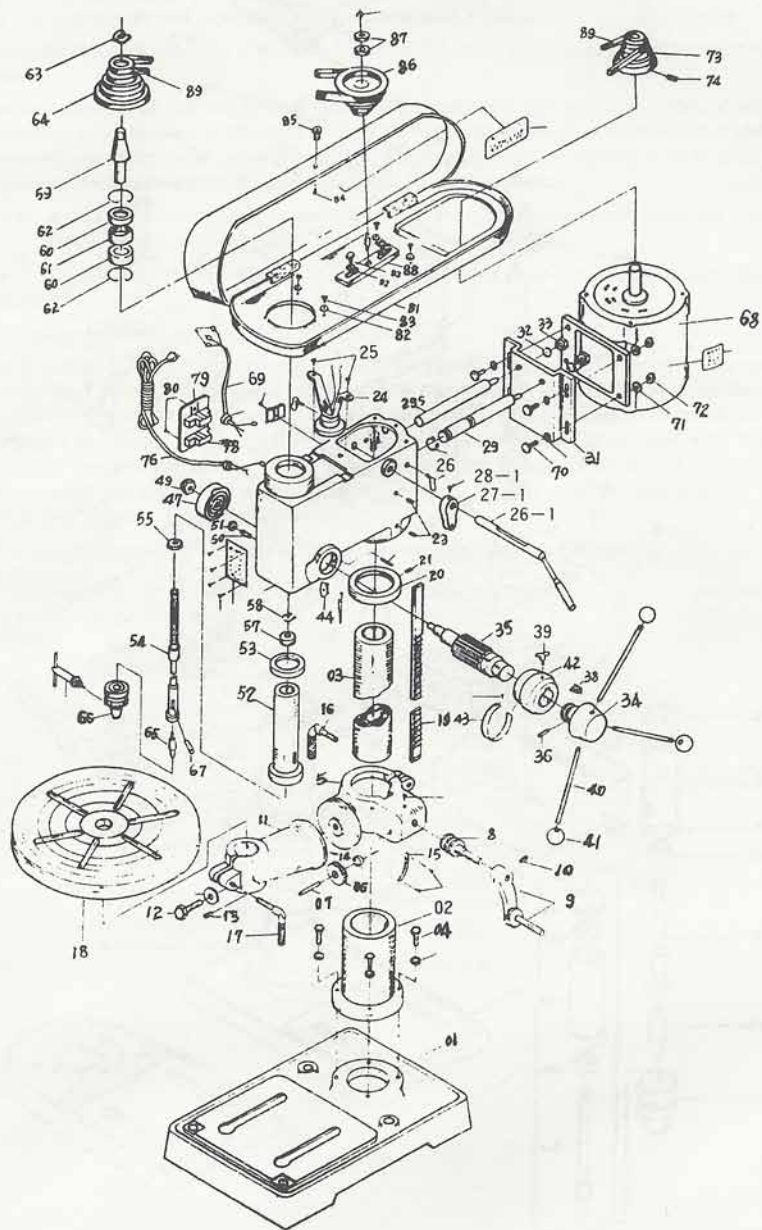
Caution: In Canada only the grounding shown in figure (A) is acceptable. The extension cords should be SA certified S.J.T. type or something better.



Assembly Diagram and Parts List



Assembly Diagram and Parts List



Parts No.	Description	Parts No.	Description
1	Base	44	Zero Mark
2	Flange	45	
3	Column	46	Spring
4	Screw	47	Spring Cover
5	Table Bracket	48	
6	Gear	49	Nylon Nut
7	Gear Shaft	50	Screw
8	Worm and Worm Gear	51	Nut
9	Shafting Rod	52	Quill
10	Set Screw	53	Rubber Washer
11	Table Arm	54	Sprindile
12	Screw	55	Ball Bearing
13	Set Screw	56	
14	Zero Mark	57	Ball Bearing
15	Angle Scale	58	Retaining Ring
16	Clamp Bolt	59	Drive Taper Sleeve
17	Clamp Bolt	60	Ball Bearing
18	Work Table	61	Bearing Spacer
19	Rack	62	Retaining Ring
20	Rack Collar	63	Nut
21	Set Screw	64	Spindle Pulley
22	Head	65	#2 Morse Taper Arber
23	Set Screw	66	Chuck
24	Lamp Mounte	67	Wedge
25	Screw	68	Motor
26	Thumb Screw	69	Cord
26-1	Shaft Lever	70	Screw
27	Spring	71	Washer
27-1	Adjusting Lever	72	Nut
28	Washer	73	Motor Pulley
29	Adjusting Bolt	74	Set Screw
29S	Adjusting Bolt	75	
30	Screw	76	Power Cord
31	Mounting Plate	77	
32	Washer	78	Switch
33	Nut	79	Switch Plate
34	Handle Body	80	Screw
35	Feed Pinion	81	Pulley Cover
36	Stop Pin	82	Washer
37		83	Screw
38		84	Screw
39	Thumb Screw	85	Knob
40	Handle	86	Middle Pulley
41	Knob	87	Bail Bearing
42	Scale Sleeve	88	Pivot Bracket
43	Scale	89	V-Belt

