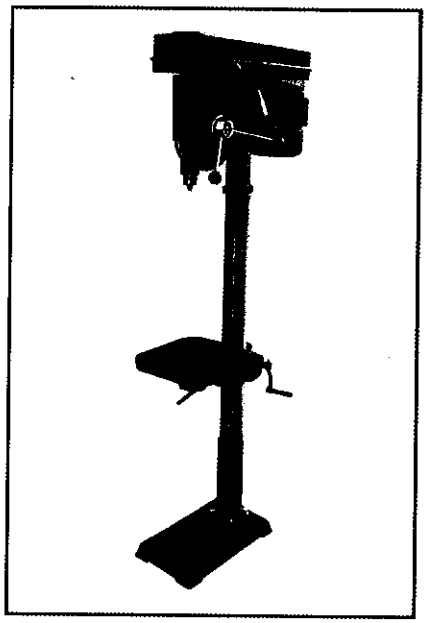
Assembly & Instruction Manual

16 SPEED-FLOOR DRILL PRESS

Model 3113



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CUMMINS INDUSTRIAL TOOLS

THANK YOU FOR BUYING CUMMINS INDUSTRIAL TOOLS

Your new Drill Press has been engineered and manufactured to Cummins tools high standards for dependability,ease of operation,and operator safety.properly cared for,it will give you years of rugged,trouble-free performance

CAUTION: Carefully read through this entire operator's manual before using your new machine

Pay close atention to the Rules for Safe Operation,Wamings,and Cautions.If you use your machine properly and only for what it is intended,you will enjoy years of safe,reliable service.

SAVE THIS MANUAL FOR FUTURE REFERENCE

WARNING

To reduce risk of injury,everyone using,installing, repairing,maintaining,changing accessories on,or working near this tool must read and understand these instructions before performing any such task.

Customer Service Postal Address:
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You can purchase additional items at www.cumminstools.com

Safety Warnings and Precautions

WARNING: When using tool, basic safety precautions should always be followed to reduce the risk of personal injury and damage to equipment.

Read all instructions before using this tool!

1. **Keep work area clean.** Cluttered areas invite injuries.
2. **Observe work area conditions.** Do not use machines or power tools in damp or wet locations. Don't expose to rain. Keep work area well lighted.
3. **Keep children away.** Children must never be allowed in the work area. Do not let them handle machines, tools, or extension cords.
4. **Store idle equipment.** When not in use, tools must be stored in a dry location to inhibit rust. Always lock up tools and keep out of reach of children.
5. **Use the right tool for the job.** Do not attempt to force a small tool or attachment to do the work of a larger industrial tool. There are certain applications for which this tool was designed. It will do the job better and more safely at the rate for which it was intended. Do not modify this tool and do not use this tool for a purpose for which it was not intended.
6. **Dress properly.** Do not wear loose clothing or jewelry as they can be caught in moving parts. Protective, electrically non-conductive clothes and non-skid footwear are recommended when working. Wear restrictive hair covering to contain long hair.
7. **Use eye protection.** Always wear ANSI approved impact safety glasses underneath a full face shield during use. Also, wear heavy duty work gloves.
8. **Do not overreach.** Keep proper footing and balance at all times. Do not reach over or across running machines.
9. **Maintain tools with care.** Keep tools sharp and clean for better and safer performance. Follow instructions for lubricating and changing accessories. The handles must be kept clean, dry, and free from oil and grease at all times.
10. **Remove adjusting keys and wrenches.** Check that keys and adjusting wrenches are removed from the tool or machine work surface before starting work.
11. **Stay alert.** Watch what you are doing, use common sense. Do not operate any tool when you are tired.
12. **Check for damaged parts.** Before using any tool, any part that appears damaged should be carefully checked to determine that it will operate properly and perform its intended function. Any part that is damaged should be replaced.
13. **Replacement parts and accessories.** When servicing, use only identical replacement parts. Use of any other parts will void the warranty. Only use accessories intended for use with this tool. Approved accessories are available from Cummins Industrial Tools.
14. **Do not operate tool if under the influence of alcohol or drugs.** Read warning labels on prescriptions to determine if your judgment or reflexes are impaired while taking drugs. If there is any doubt, do not operate the tool.

Warning: The warnings, cautions, and instructions discussed in this instruction manual cannot cover all possible conditions and situations that may occur. It must be understood by the operator that common sense and caution are factors which cannot be built into this product, but must be supplied by the operator.

GENERAL SAFETY INSTRUCTIONS

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 locations, 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 KID PROOF** with padlocks, master switches, or by removing starter keys.

7. **DON' T FORCE TOOL** It will do the job better and safer at the rate for which it was designed.

8. **USE RIGHT TOOL** Don' t force tool or attachment to do a job for which it was not designed.

9. **USE PROPER EXTENSION CORD.** Make sure you extension cord is in good condition. When using an extension cord, be sure to use one heavy enough to carry the current your product will draw. An undersized cord will cause a drop in line voltage resulting in loss of power and overheating. Table 1 shows the correct size to use depending on cord length and nameplate ampere rating. If in doubt, use the next heavier gage. The smaller the gage number, the heavier the cord.

10. **WEAR PROPER APPAREL** Do not wear loose clothing, gloves, neckties, rings, bracelets, or other jewelry which may get caught in moving parts. Nonslip rootwear is recommended. Wear protective hair covering to contain long hair.

11. **ALWAYS USE SAFETY GLASSES.** Also use face or dust mask if cutting operation is dusty. Everyday eyeglasses only have impact resistant lenses, they are NOT safety glasses.

12. **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.

13. **DON' T OVERREACH.** Keep proper footing and balance at all times.

14. **MAINTAIN TOOLS WITH CARE.** Keep tools sharp and clean for best and safest performance. Follow instructions for lubricating and changing accessories.

15. **DISCONNECT TOOLS** before servicing; when changing accessories, such as blades, bits, cutters, and the like.

16. **REDUCE THE RISK OF UNINTENTIONAL STARTING.** Make sure switch is in off position before plugging in.

17. **NEVER STAND ON TOOL.** Serious injury could occur if the tool is tipped or if the cutting tool is unintentionally contacted.

18. **CHECK DAMAGED 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.

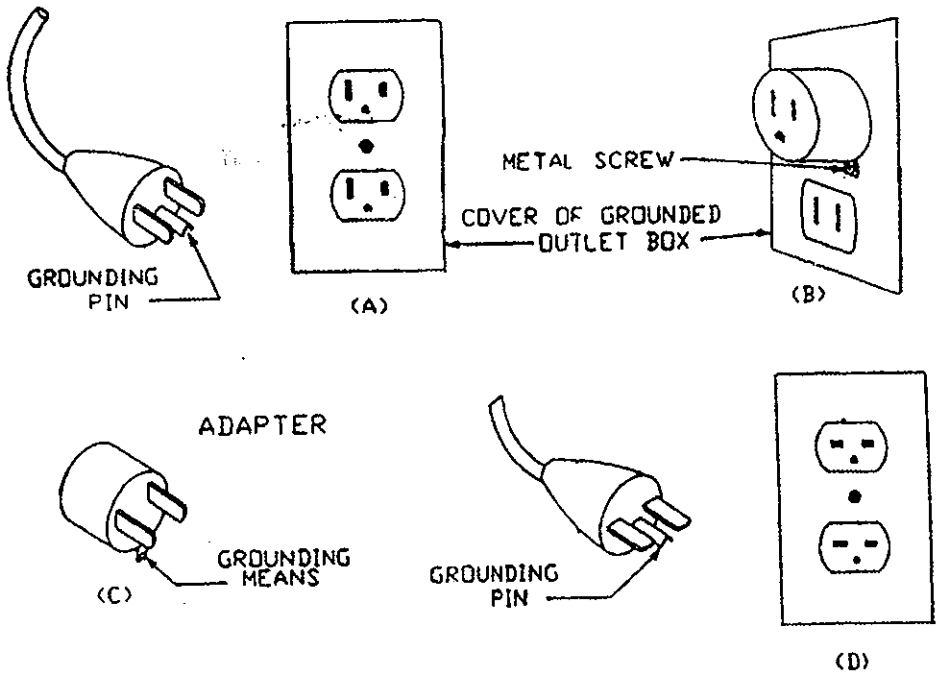
19. **DIRECTION OF FEED.** Feed work into a blade or cutter against the direction of rotation of the blade or cutter only.

20. **NEVER LEAVE TOOL RUNNING UNATTENDED. TURN POWER OFF.** Don' t leave tool until it comes to a complete stop.

TABLE 1

		Volt	Total length of cord in feet			
		120V	25 ft.	50ft.	100ft.	150ft.
More Than	Not More Than	AWG				
0	6		18	16	16	14
6	10		18	16	14	12
10	12		16	16	14	12
12	16		14	12	Not Recommended	

Grounding methods



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GROUNDING INSTRUCTIONS

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.

DO NOT MODIFY THE PLUG PROVIDED– If it will not fit the outlet, have the proper outlet installed by a qualified electrician

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 stripes 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 .

CHECK WITH A QUALIFIED ELECTRICAIAN OR SERVICE PERSONNEL if the grounding instructions are not completely understood, or if in doubt as to whether the tool is properly grounded.

USE ONLY 3 - WIRE EXTENSIO CORDS that have 3-prong grounding plugs and 3-pole receptacles that accept the tool' s plug.

REPAIR OR REPLACE DAMAGED OR WORN CORD IMMEDIATELY.

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 this plug to a 2-pole receptacle 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, and the like, extending from the adapter must be connected to a permanent ground such as a properly grounded outlet box.

Please refer to Grounding Methods on page 2.

CAUTION - ADAPTER IS NOT PERMITTED IN CANADA

WARNING

For Your Own Safety Read Instruction Manual Before Opening Drill press

a) Wear eye protection
b) Do not wear gloves, necktie, or loose clothing.
c) Clamp workpiece or brace against column to prevent rotation.
d) Use recommended speed for drill accessory and workpiece material.
e) Do not expose in rain or used in damp condition

TECHNICAL DATA

SPECIFICATIONS:

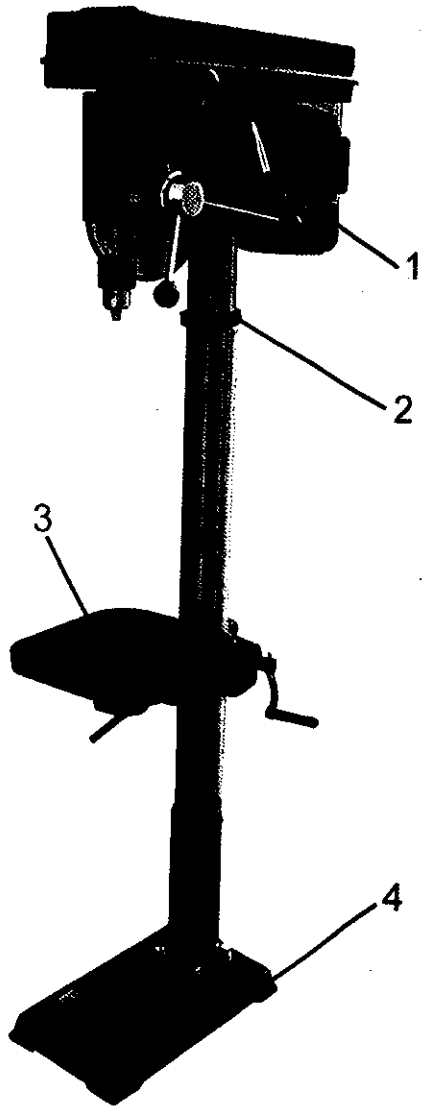
MODEL		ZJ 4116	ZJ 4116H
Max, Drilling Capacity		25/32"	25/32"
Spindle Taper		MT2	MT2
Chuck		16mm(5/8")	16mm(5/8")
Max Spindle Stroke		3 1/8"	3 1/8"
Swing		16"	16"
Number of Speeds		16	16
Spindle Speed (R.P.M)	60HZ	210-3840RPM	210-3840RPM
Max. Distance From Spindle to Table		15 3/8"	30 3/4"
Max. Distance from Spindle to Base		25 3/16"	47 5/8"
Diameter of Column		2 3/4"	2 3/4"
Diameter of Table		11 7/16"	11 7/16"
Size of Base		17"x10"x1 3/4"	17"x10"x1 3/4"
Overall Height		39"	61 3/4"
Motor		3/4HP	3/4HP
Weight (Net)		53kg	60KG
(Gross)		57kg	66KG

II. PARTS

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

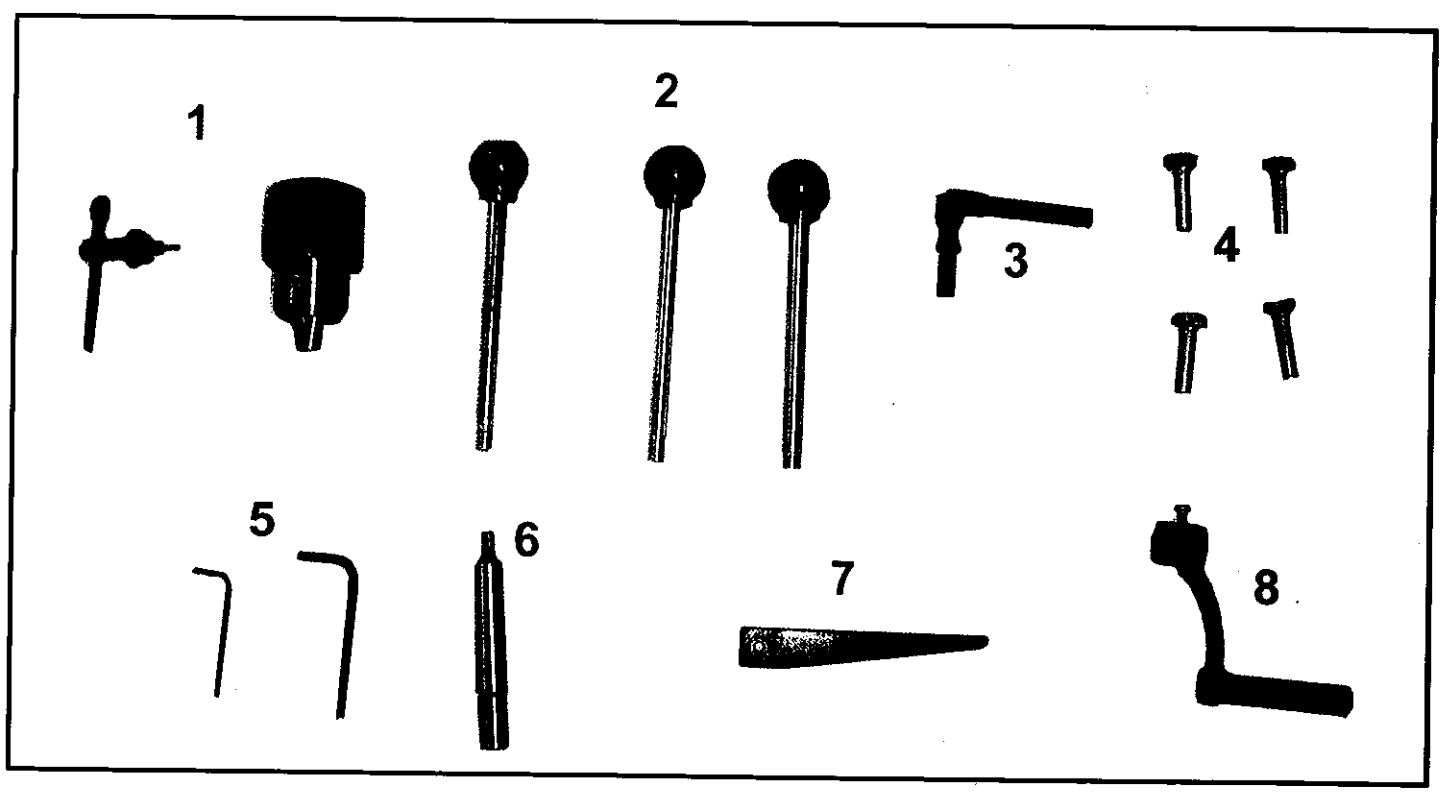
A. Main Parts:

1.Head Assembly	1 pc.
2.Column with flange	1 pc.
3.Working table assembly	1 pc.
4.Base	1 pc



B. Accessories

1 Chuck and key	1 set
2.Feed handles with knobs	3 pcs
3.Column lock handle	1 pc
4.Column Flange Bolts	4 pcs
5.Allen wrenches (3mm & 5mm)	2 pcs
6.Arbor (MT3)	1 pc
7 Cotter	1 pc
8.Crank handle	1 pc



III. ASSEMBLY

1. ASSEMBLE THE COLUMN

- Place column assembly on base and align holes in column support with holes in base.
- Secure the column with the four bolts provided Fig 1.

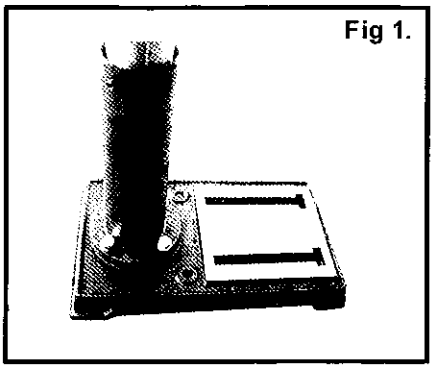


Fig 1.

2. INSTALL TABLE

- Attach crank handle to worm pinion.
- Remove rack ring and rack from column by undoing setscrew with allen wrench.
- Slide rack and table assembly over column and replace rack ring.
- Secure table assembly with column lock handle Fig 2.

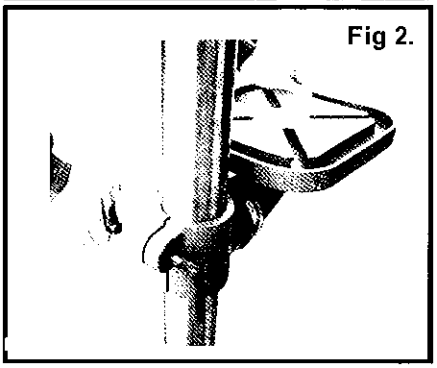


Fig 2.

3. ATTACH HEAD TO COLUMN

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

Fix set screw in left side of head to lock head into position then tighten with allen wrench. Fig. 3.

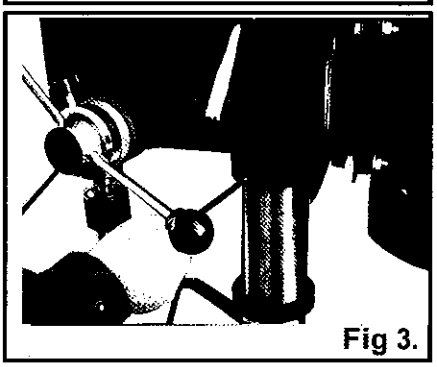


Fig 3.

4. INSTALL THE FEEDING HANDLES

- Screw the knobs to the feeding handles
- Screw each feeding handle into hub of pinion shaft. Fig 4.

5. ATTACH THE CHUCK

- Position working table up about 5" (125mm) from the tip of spindle.
- Remove all oil and grease from tapers on arbor and drill chuck.
- Slide short end of arbor into chuck. Place long end inside spindle.
- Open chuck jaws completely by turning attacked chuck key counter clockwise to the end.
- Put a piece of scrap wood on the table to protect chuck nose.
- Pull feeding handle down pressing the chuck against the scrap wood until arbor is secure on the spindle. Fig. 5.

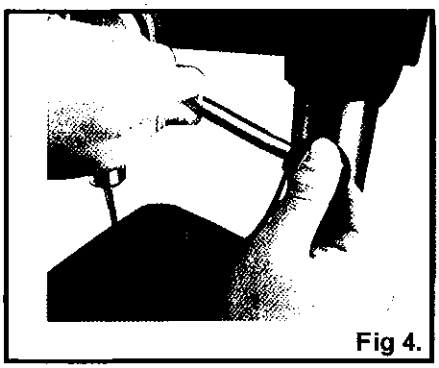


Fig 4.

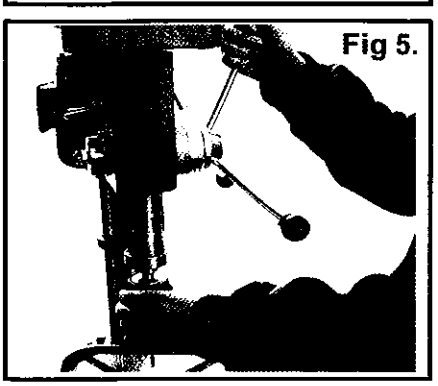


Fig 5.

IV. ADJUSTMENT

1. TABLE ADJUSTMENT

A. Mounting the drill press

1. Your drill press must be securely fastened by the two base holes (1) to a floor or workbench with heavy-duty fasteners. This will prevent the drill press from tipping over, sliding, or walking during operation. Fig. 6.
   Model ZJ4116 is floor or workbench mount.
   Model ZJ4116H is floor mount only; due to the height.

IMPORTANT: If the workbench has a tendency to move during operation, fasten it securely to the floor.

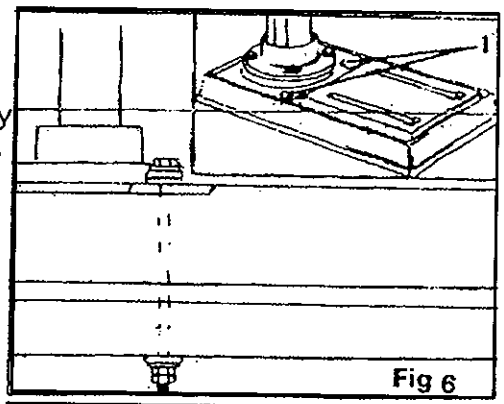


Fig 6

B. Height Adjustment:

To adjust up or down, loosen the column lock handle, then turn crank handle to desired height. Retighten column lock handle before drilling.
Fig. 7.

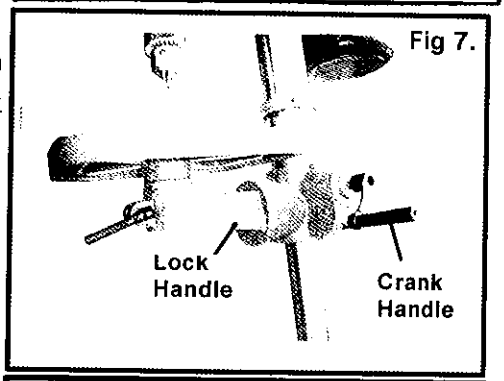


Fig 7.

C. Tilting Adjustment:

Loosen pivot bolt. Remove small locator pin. Tilt table to desire angle up to 45° and retighten bolt. Reinsert locator pin when returning table to zero degrees. Fig. 8.

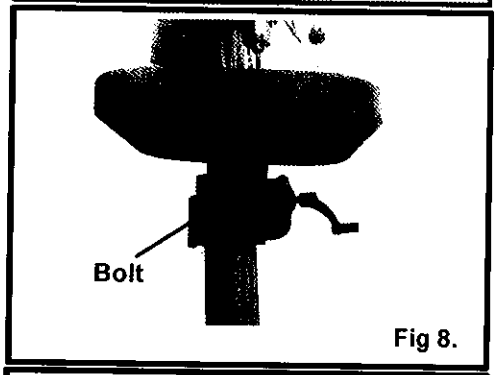


Fig 8.

D. Swing 360°

Loosen lock handle then swing table to appropriate position and retighten. Fig. 9.

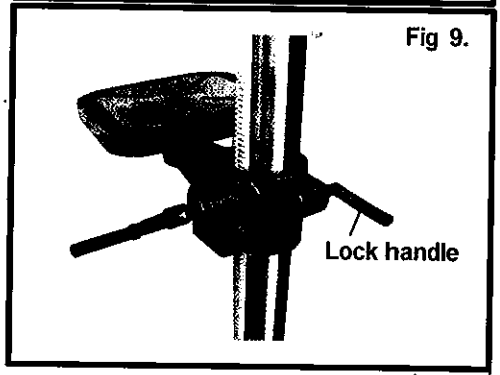


Fig 9.

E. Rotate 360°

Loosen table lock handle, rotate table to desired position and retighten. Fig. 10.

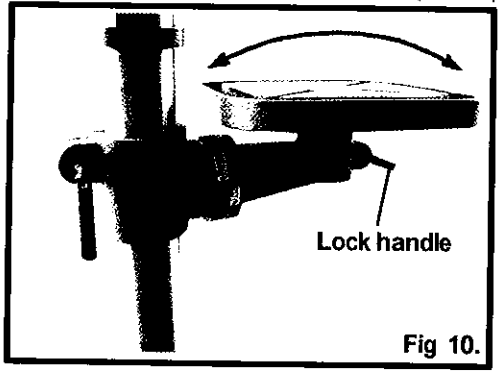


Fig 10.

2. DEPTH ADJUSTMENT

A. Feed Depth Adjustment.

Loosen scale set knob on feed shaft assembly. Rotate spindle gauge to desired depth and tighten scale set knob. Fig 11.

B. Stationary Depth.

Loosen scale set knob. Turn feed shaft to lowest point then rotate spindle depth to desired depth and retighten scale set knob. Fig. 11.

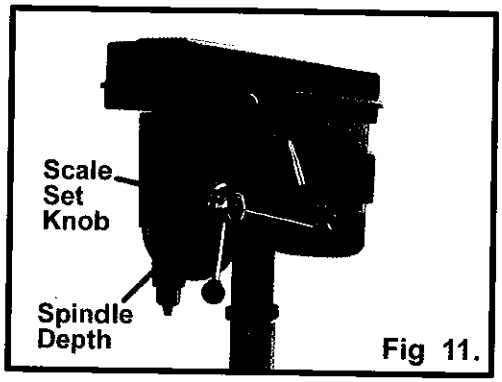


Fig 11.

3. SPEED ADJUSTMENT

3-1 1. Loosen the slide bar bolt on tight hand side of head.
2. Slide motor toward front of drill press and tighten the slide bar bolt
3. Relocate the belts to the correct pulleys for the required spindle speed.(see chart below)
4. Loosen slide bar bolt and slide motor toward rear of drill press and tighten the slide bar bolt. Fig. 12.

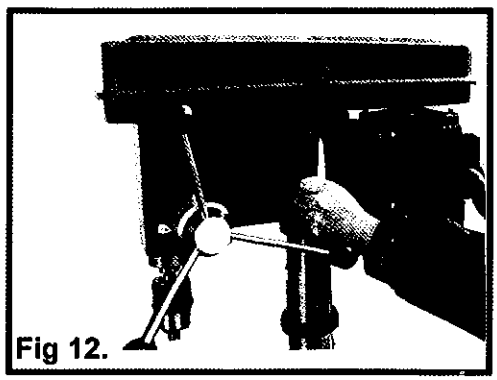


Fig 12.

3-2. The proper drill speed for a given drill bit size is as follows:

Drill Diameter		Softwood	Hardwood	Plastic	Cast	Soft	Mild	Hard'
mm	inch			Rubber	iron	Metals	Steel	Steel
2	1/16	3840	3840	3840	3840	3840	3840	2480
3	1/8	3840	3840	3840	2480	3840	3840	1290
4	5/32	3840	3840	3840	2480	3840	2480	830
5	3/16	3840	3840	3840	1350	3840	1350	540
6	1/4	3840	3840	3840	1290	3840	1290	540
7	9/32	2780	2780	2480	830	3840	1290	500
8	5/16	2780	2780	2480	540	3840	1290	420
9	11/32	2780	2780	1350	540	3840	830	420
10	3/8	2780	2780	1290	540	3840	830	420
11	7/16	2780	2480	830	540	3840	540	280
12	15/32	2780	2480	830	540	2780	540	280
13	1/2	2480	1580	830	540	2780	540	280
14	9/16	2480	1580	540	500	2780	540	280
16	5/8	1580	1580	540	420	2480	540	280

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%

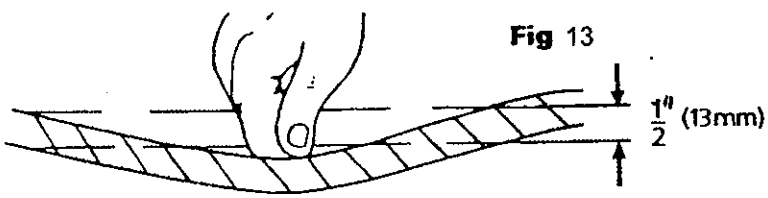


Fig 13

V. OPERATION AND TROUBLE SHOOTING

1. INSTALLING DRILL BITS

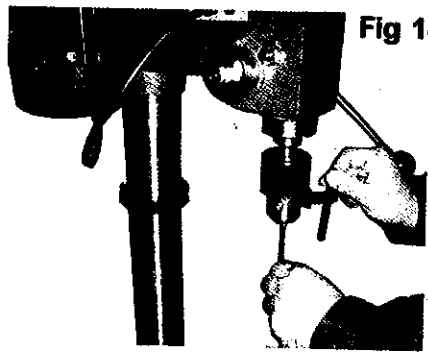


Fig 14.

Insert drill into chuck jaws about 1" (25mm). When using a small drill do 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. 14. Which provided with a spring load so that the risk of injury can be prevented when the tool is being started.

2. DRILLING

Use clamps to hold the work when drilling. The work should never be held in the bare hand, the lips 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, injury may occur. Also, the drill will be broken when the work strikes the column. 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.

Using Vise

For smaller workpieces that cannot be clamped to the table, use a drill press vise (not included). The vise must be clamped or bolted to the table.

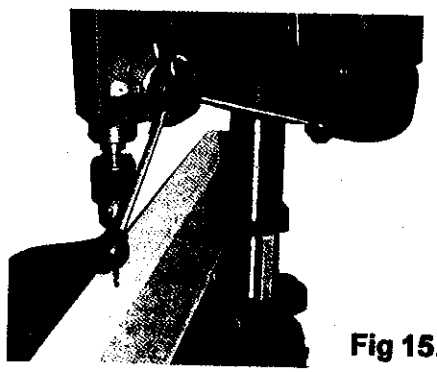


Fig 15.

Positioning Workpiece

Always place a piece of wood (or plywood...) on the table. This will prevent "splintering" or making heavy burs on the underside of the workpiece as the drill breaks through. The wood must contact the left side of the column. Fig. 15.

Morse Taper Drill Bits

To use Morse taper bits remove chuck and taper. To remove taper and chuck adjust stationary depth to 3" (75mm) (see depth instructions). Turn spindle manually lining up spindle and quill key hole.

Place the wedged end of the Cotter in the quill key hole and lightly tap until the arbor and chuck fall out. Place tapered bit into the spindle hole, twist and push upwards until bit is snug, place a block of wood on the table and crank up table until the tapered bit is firmly into the spindle.

Round-Out Tolerance

For drilling operations requiring close tolerances, place drill blank in the chuck and check round out with a dial indicator if the round-out is not within desired tolerance, tap the chuck bottom with a rubber or leather mallet until you get the desired tolerance.

3. TROUBLE SHOOTING GUIDE

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

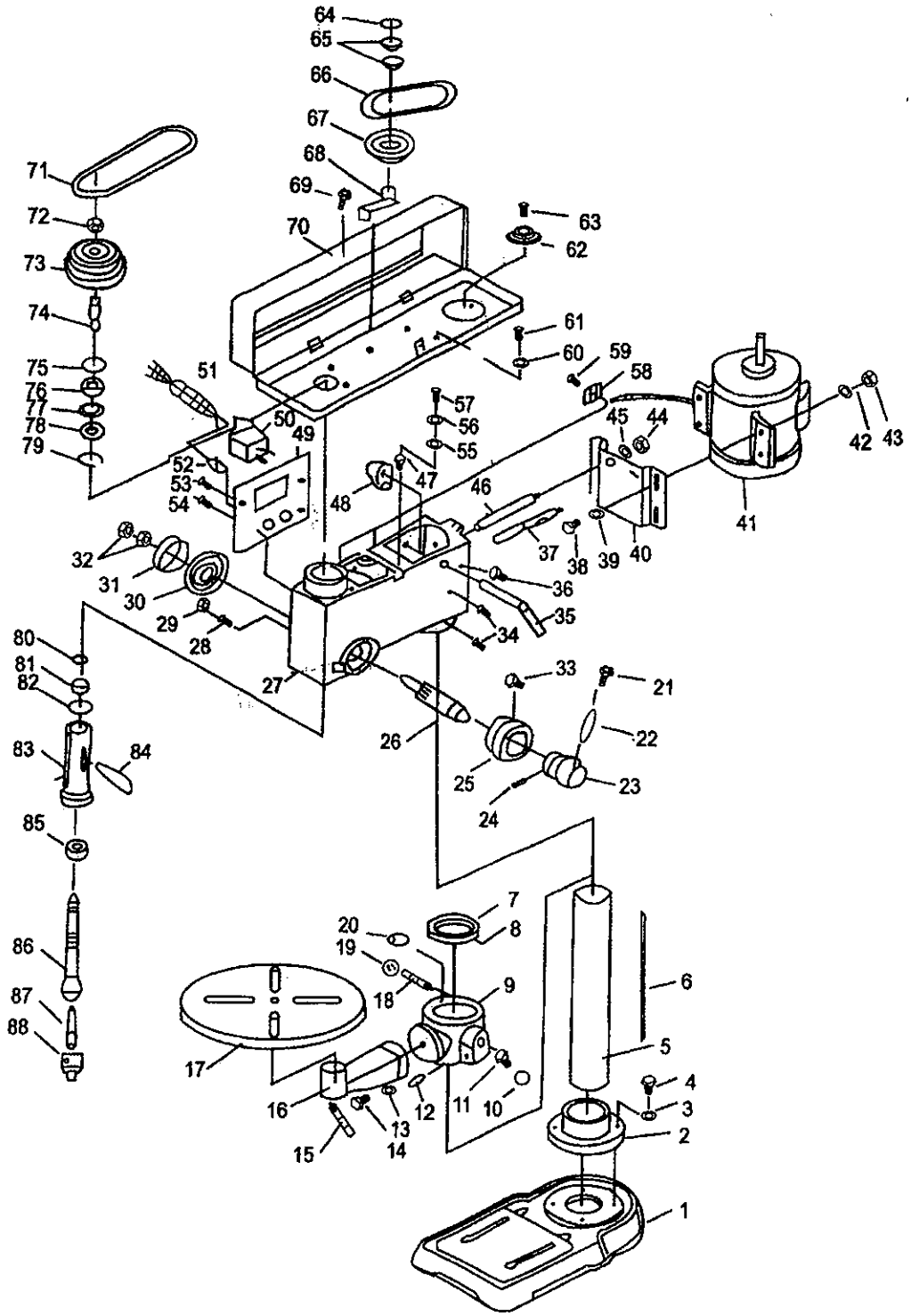
VI. MAINTENACE

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 surface clean.
If the power cord is 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 (groves) in the spindle and the rack on the quill.

EXPLODED VIEW



PARTS LIST

Part No.	Description	Q'ty	Part No.	Description	Q'ty
1	Base	1	45	Washer	2
2	Column Support	1	46	Support	1
3	Washer	4	47	Bolt	1
4	Bolt	4	48	Lever	1
5	Column	1	49	Plate	1
6	Rack	1	50	Key Safety Switch	1
7	Collar	1	51	Cable & Plug	1
8	Screw	1	52	Strain Relief	1
9	Clamping Sleeve	1	53	Screw	2
10	Crank	1	54	Screw	2
11	Bolt	1	55	Star Washer	2
12	Pin Gear	1	56	Washer	2
13	Washer	1	57	Screw	2
14	Bolt	1	58	Clamp Cord	1
15	Clamping Handle	1	59	Screw	1
16	Arm	1	60	Washer	4
17	Table	1	61	Screw	4
18	Clamping Handle	1	62	Motor Pulley	1
19	Gear	1	63	Screw	1
20	Worm	1	64	Retaining Ring	1
21	Knob	3	65	Ball Bearing	2
22	Handle Bar	3	66	Belt	1
23	Feed Shaft	1	67	Middle Pulley	1
24	Pin	1	68	Pulley Adjusting	1
25	Ring	1	69	Knob	1
26	Shaft	1	70	Guard	1
27	Body	1	71	Belt	1
28	Screw	1	72	Nut	1
29	Nut	1	73	Spindle	1
30	Spring	1	74	Internal Spine Sleeve	1
31	Cap	1	75	Retaining Ring	1
32	Nut	2	76	Ball Bearing	1
33	Bolt	1	77	Retaining Ring	1
34	Screw	2	78	Ball Bearing	1
35	Belt Tension Handle	1	79	Retaining Ring	1
36	Bolt	1	80	Retaining Ring	1
37	Support	1	81	Ball Bearing	1
38	Bolt	4	82	Collar	1
39	Washer	9	83	Spindle Sleeve	1
40	Plate	1	84	Drift Key	1
41	Motor	1	85	Ball Bearing	1
42	Washer	4	86	Spindle	1
43	Nut	4	87	Arbor	1
44	Nut	2	88	Chuck	1