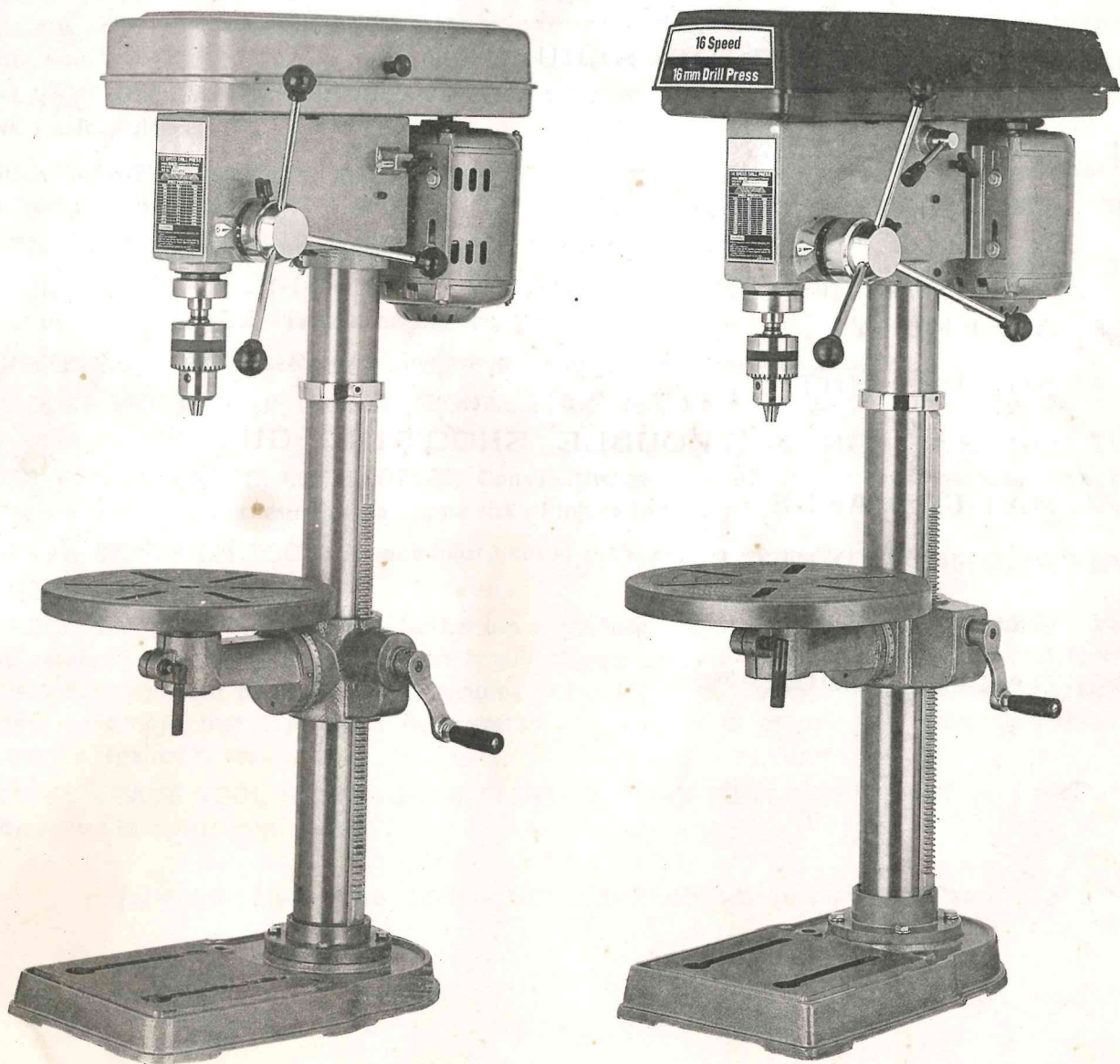


DRILL PRESS INSTRUCTIONS

ATTENTION : READ INSTRUCTIONS BEFORE OPERATING DRILL PRESS



CE

MODEL: CH-13(F), CH-16(F), CH-18(F)

I M P O R T A N T

DO NOT OPERATE, PROGRAM OR REPAIR THE
MACHINE UNTIL YOU HAVE READ THIS MANUAL!

DO NOT OPERATE, PROGRAM OR REPAIR THE
MACHINE UNTIL YOU HAVE READ THE
APPROPRIATE MANUALS!

NOTE: A SAFETY MANUAL MUST REMAIN
ATTACHED TO THE MACHINE AT ALL TIMES.

SAFETY INSTRUCTION MANUAL

- I SAFETY RULES
- II TRANSPORTATION
- III PARTS
- IV ASSEMBLY
- V ADJUSTMENT
- VI OPERATION & TROUBLE SHOOTING GUIDE
- VII MAINTENANCE
- VIII POWER CONNECTION
- IX GROUNDING
- X PARTS DIAGRAM

I. 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.

Always lock the "ON - OFF" Switch when not using.

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 materials.
3. Drilling in metal: Use clamps to hold the work when drilling in metal. The work should never be held with the bare hands. 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 secured tightly before using this machine.
10. Connect to power supply, protected by a circuit breaker or time delay fuse.
11. Fasten base to floor or worktable before using the drill press.
12. Use only the chuck key provided by the manufacturer or a duplicate of it. This chuck key is spring loaded to prevent chuck key from remaining in chuck during operation of drill.

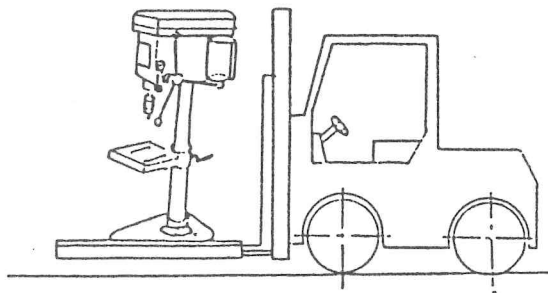
II. TRANSPORTATION

LIFTING BY FORK LIFT

1. If lifting equipment is not available, then please use 1 Ton capacity fork lift under the machine base for moving the machine to its final location.

NOTE: (1) To move the machine safely, please be sure to place the forks of the fork lift at the rear side of the machine and it must be on a pallet.

(2) Please be sure to keep balance during moving.



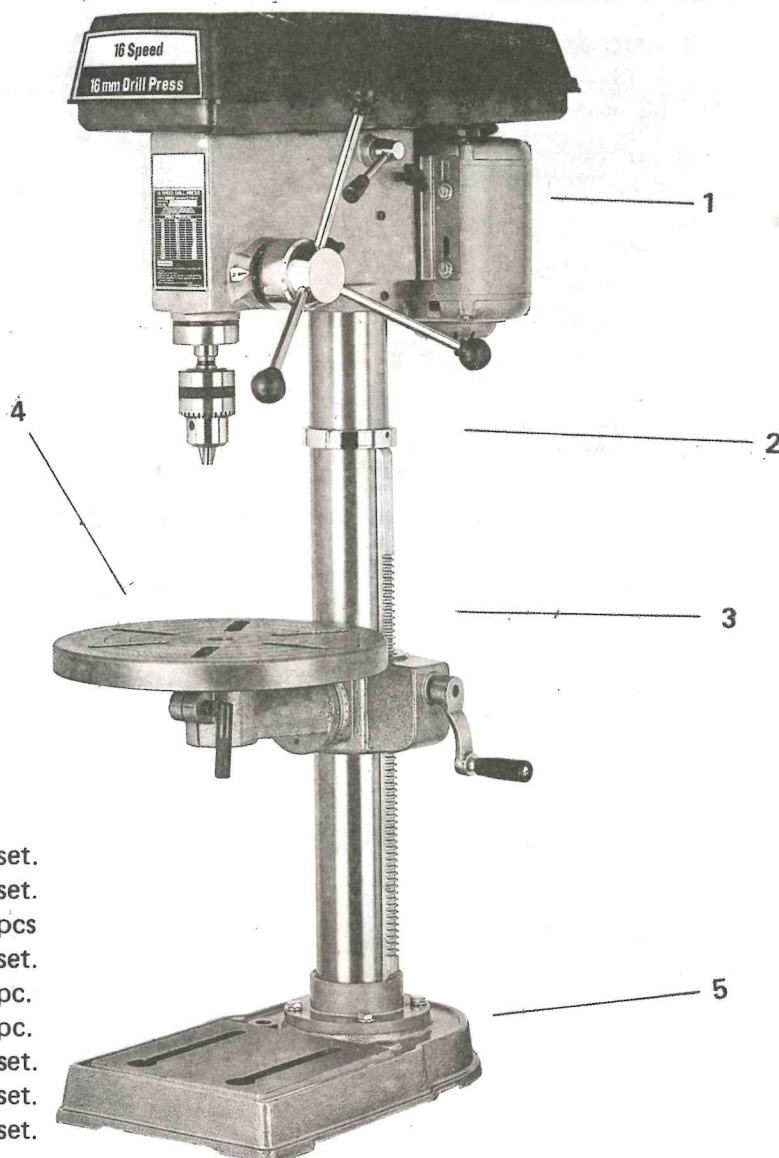
2. If the machine is lighter, it can be carried by oneself or ask someone help to move machine together.

III. PARTS

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

A. Main Parts:

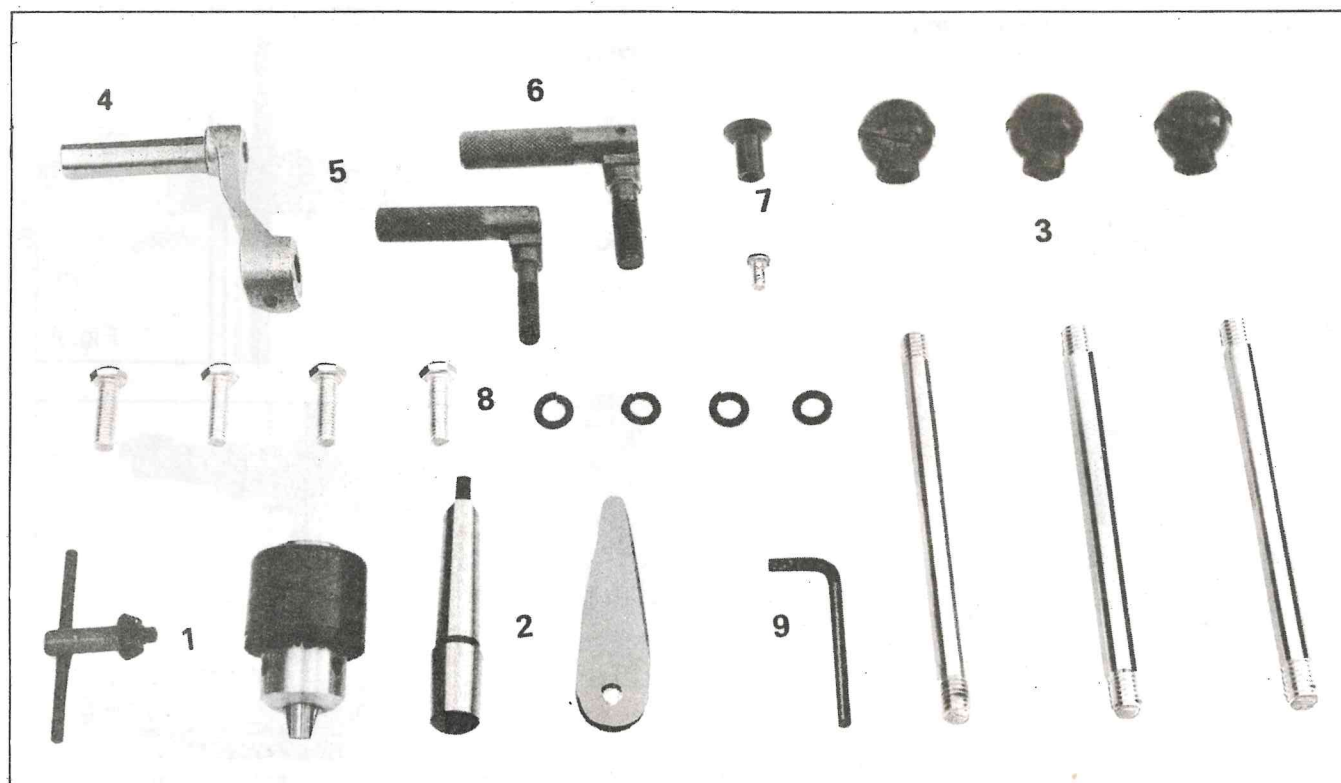
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|-----------------------------|--------|
| 1. Head assembly | 1 pc. |
| 2. Column with flange | 1 pc. |
| 3. Arm of table and bracket | 1 set. |
| 4. Table | 1 pc. |
| 5. Base | 1 pc. |



B. Accessories (in one separate box)

- | | |
|---|--------|
| 1. Chuck and key | 1 set. |
| 2. Arbor and wedge (for CH -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



IV. ASSEMBLY

1. Assemble the Column

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

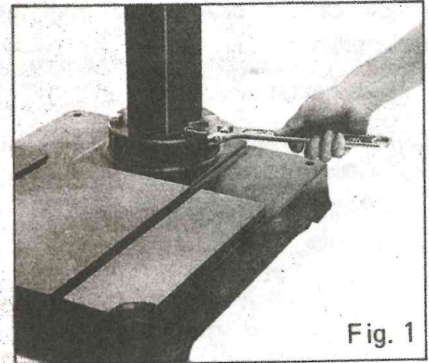


Fig. 1

2. Install table bracket

- 2-1 Take off collar and rack.
- 2-2 Install table bracket together with rack. Fig. 2.

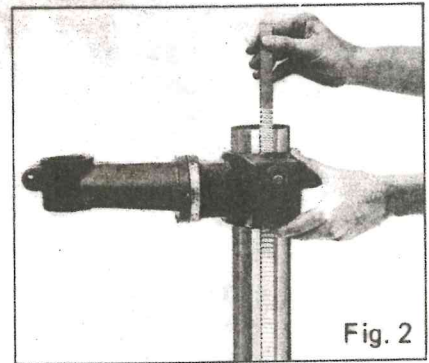


Fig. 2

- 2-3 Install collar and tighten firmly. Fig. 3

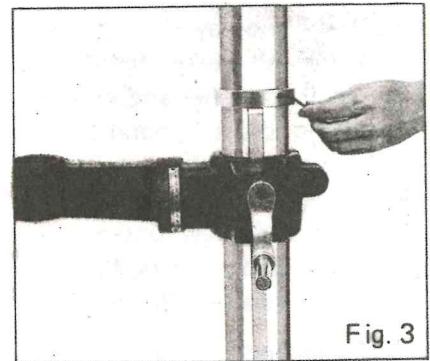


Fig. 3

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

tighten handle with attached set screw.

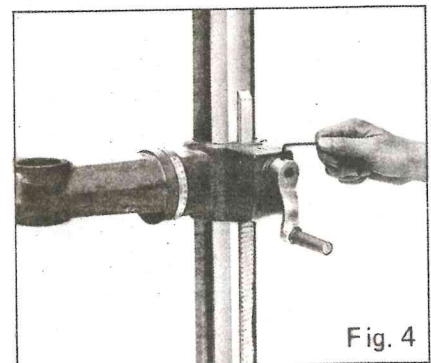


Fig. 4

Install clamp bolt to tighten.

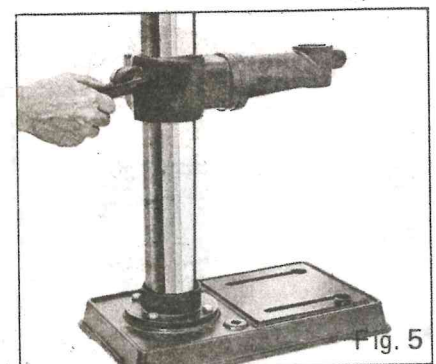


Fig. 5

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

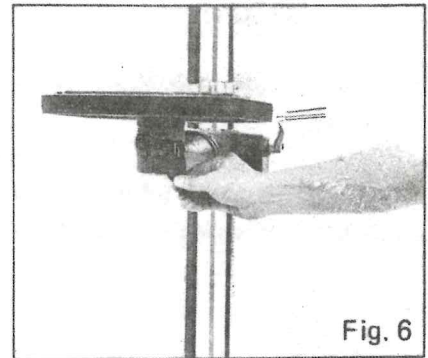


Fig. 6

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.

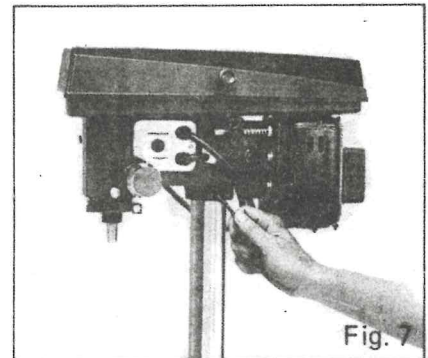


Fig. 7

6. Install Feeding Handles

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

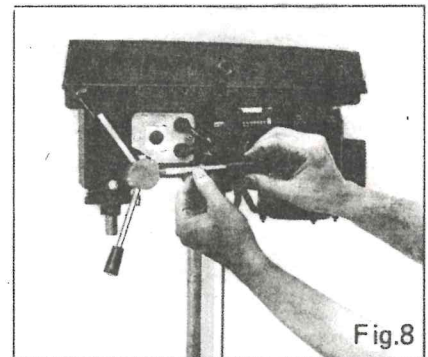


Fig. 8

7. Attach the Arbor and Chuck

7-1 Insert arbor into spindle first. Pull feed handle down to press arbor in place 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

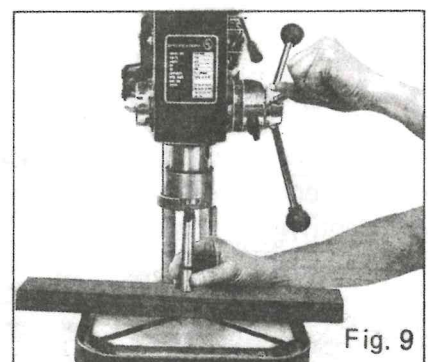


Fig. 9

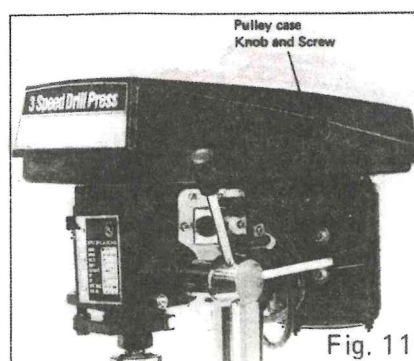


Fig. 11

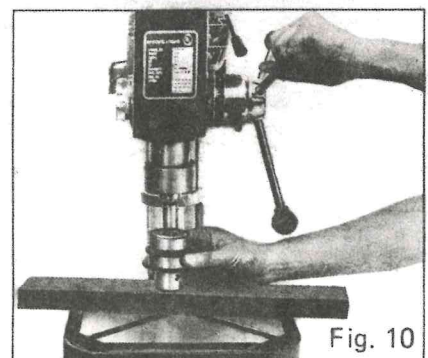


Fig. 10

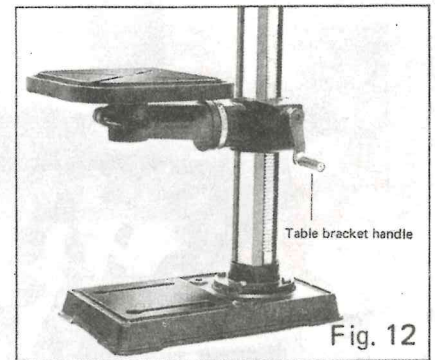
9. For preventing fall down during operating, the drill press should be fixed to the table or ground after assembly completely.

V. ADJUSTMENT

1. Table Adjustment

A. Height Adjustment

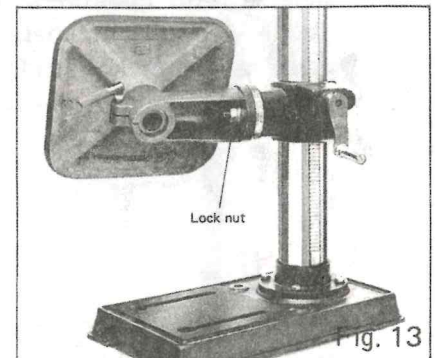
To adjust up or down, loosen the clamp bolt then adjust the table to your desired position by turning the table bracket handle. Fig. 12.



B. Tilting Adjustment:

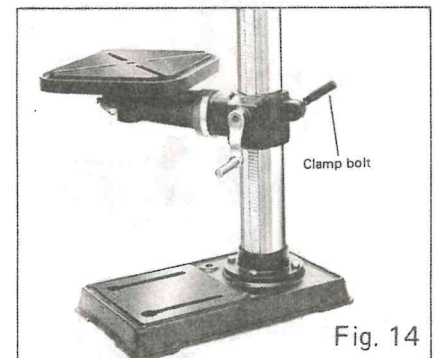
Loosen the table bevel lock bolt with adjustable wrench.

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



C. Swing 360°

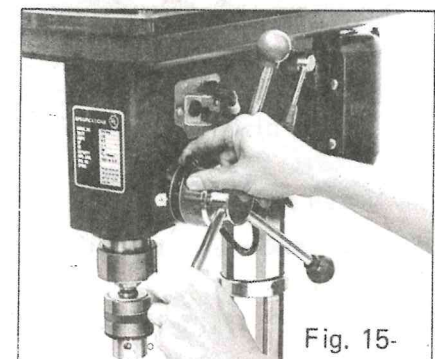
Loosen clamp bolt then swing table to appropriate position and retighten clamp bolt. Fig. 14.



2. Feed Depth Adjustment

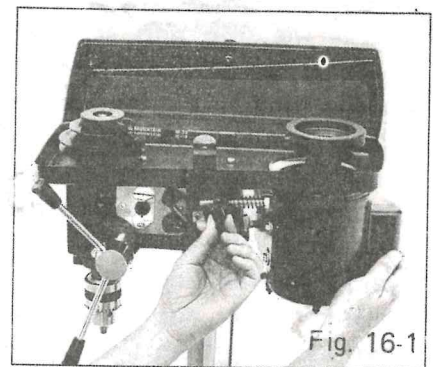
Depth control scale sleeve type

Loosen the clamp bolt and move to the desired depth then retighten the clamp bolt. Fig. 15



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. 16-1 or Fig. 16-2.

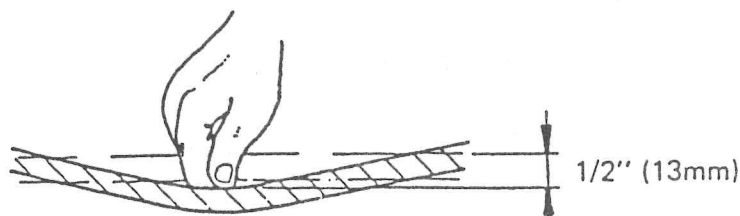


3-2 The proper drill speed for a given drill bit size is as on following table: (APPROXIMATELY)

Size Diameter		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
		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	870	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 movement.
5. Move stop nuts to highest 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 for smooth and unrestricted movement. If movement is too tight, slightly loosen nuts until unrestricted.

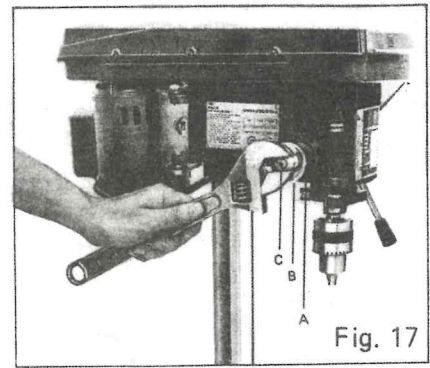


Fig. 17

VI. OPERATION & TROUBLE SHOOTING GUIDE

1. Installing Drills

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

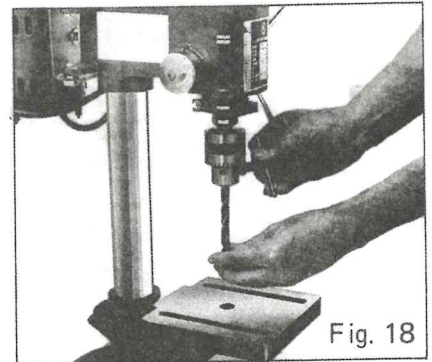


Fig. 18

2. Positioning Workpiece

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



Fig. 19

3. Using Vise

For small workpiece that cannot be clamped to the table, use a drill press vise. 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) Loose 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 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

5. NOISE EMISSION:

IT IS BELOW 70 dB(A) (PLEASE REFER TECHNICAL FILE)

VII. MAINTENANCE

⚠ Before any intervention on the machine, disconnect it from the electrical supply by pulling out the plug or switching of the main switch.

Frequency 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).

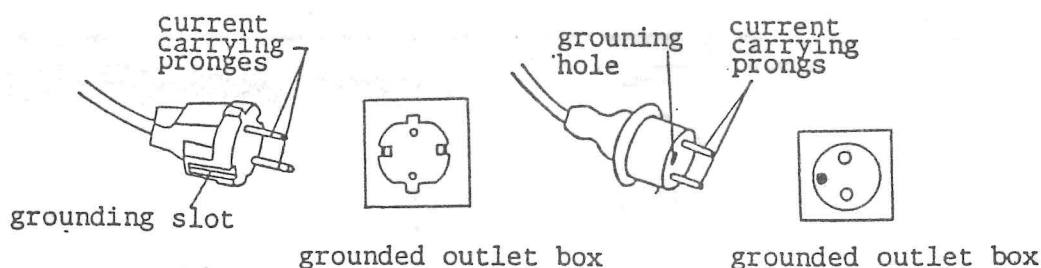
VIII. POWER CONNECTIONS

1. Connect to power according to local regulations.
2. A separate electrical circuit should be used for your tools. This circuit should not be less than 1.5mm wire and should be protected with a max. 10Amp time lag fuse. If an extension cord is used, use 3-wire extension cords for 220v 1 ph, 4-wire extension cords for 380v 3ph. For distances up to 35M use 1.5mm wire. For distances up to 50M use 2.5mm wire. Have a certified electrician replace or repair damaged or worn cord immediately. Before connecting the motor to the power line, make sure the switch is in the 'OFF' position and be sure that the electric current is of the same characteristics as stamped on motor nameplate. All line connections should make good contact. Running low voltage will be injure the motor.
3. Make sure the switch is in the 'OFF' position and pull plug out from receptacles after operating. But don't try to separate plug from outlet by pulling cord due to it will be damaged by this way.

IX. 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. Repair or replace damaged or worn cord immediately.
6. For 220V 1PH models:

This tool is intended for use on a circuit has an outlet and a plug that looks like the one shown in Fig.A.



7. For 380V 3PH models:

Fig. A

The L1, L2, L3 wires of 4-wire power cord should be against Fig. B, L1, L2, L3 correctly and green-yellow grounding wire must be connected to PE as Fig. B

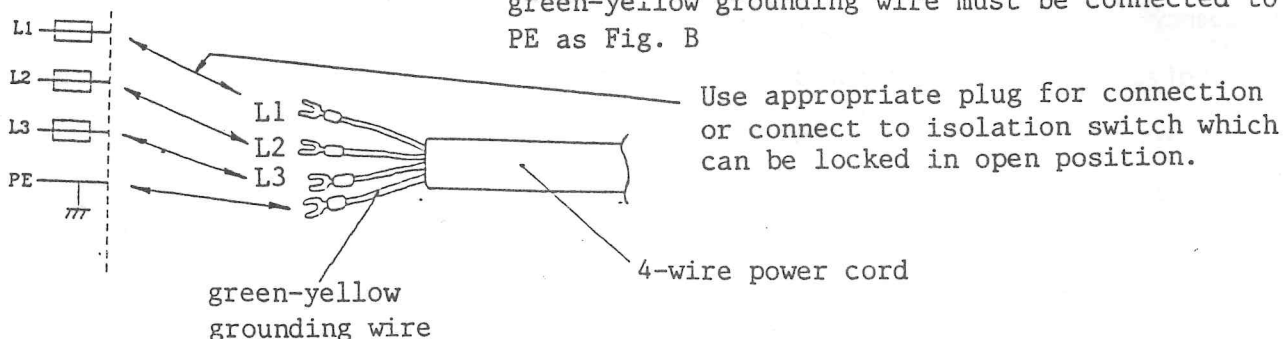
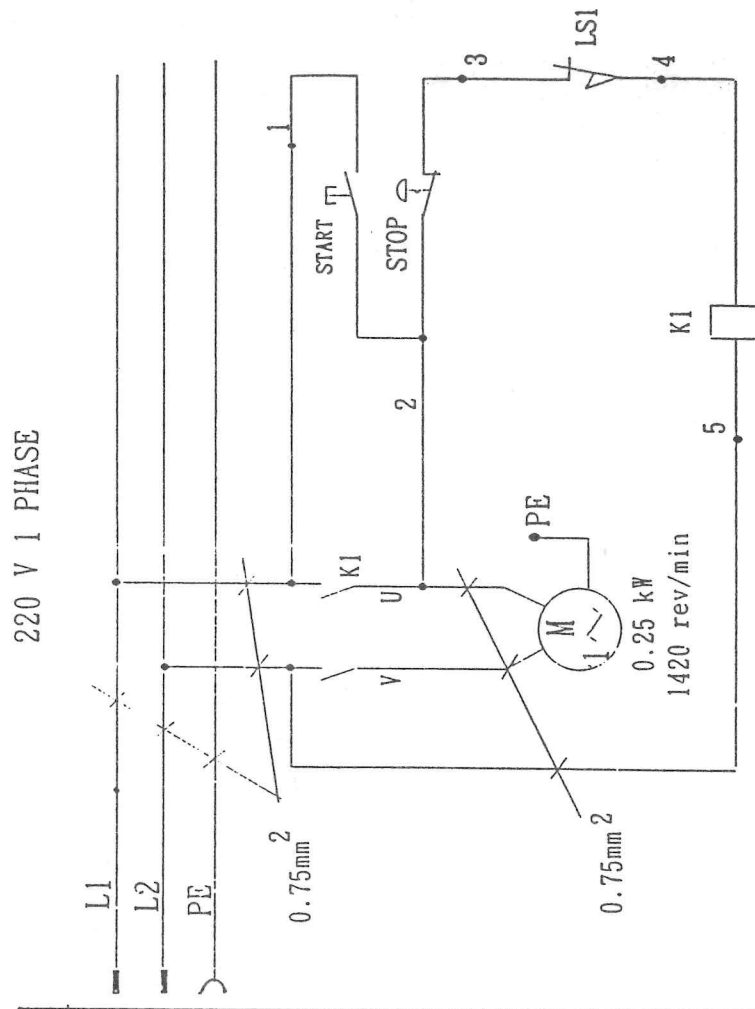


Fig. B

Motor Output	Fuse Recom. Max.	Model
0.12 kW	10 A	CH-6
0.18 kW	10 A	CH-10
0.25 kW	10 A	CH-13N(F), CH-16N(F) CH-13N(F), CH-16(F) CH-18(F)
0.37 kW	10 A	CH-13N(F), CH-16N(F) CH-13(F), CH-16(F) CH-18(F)

Limit of equipment



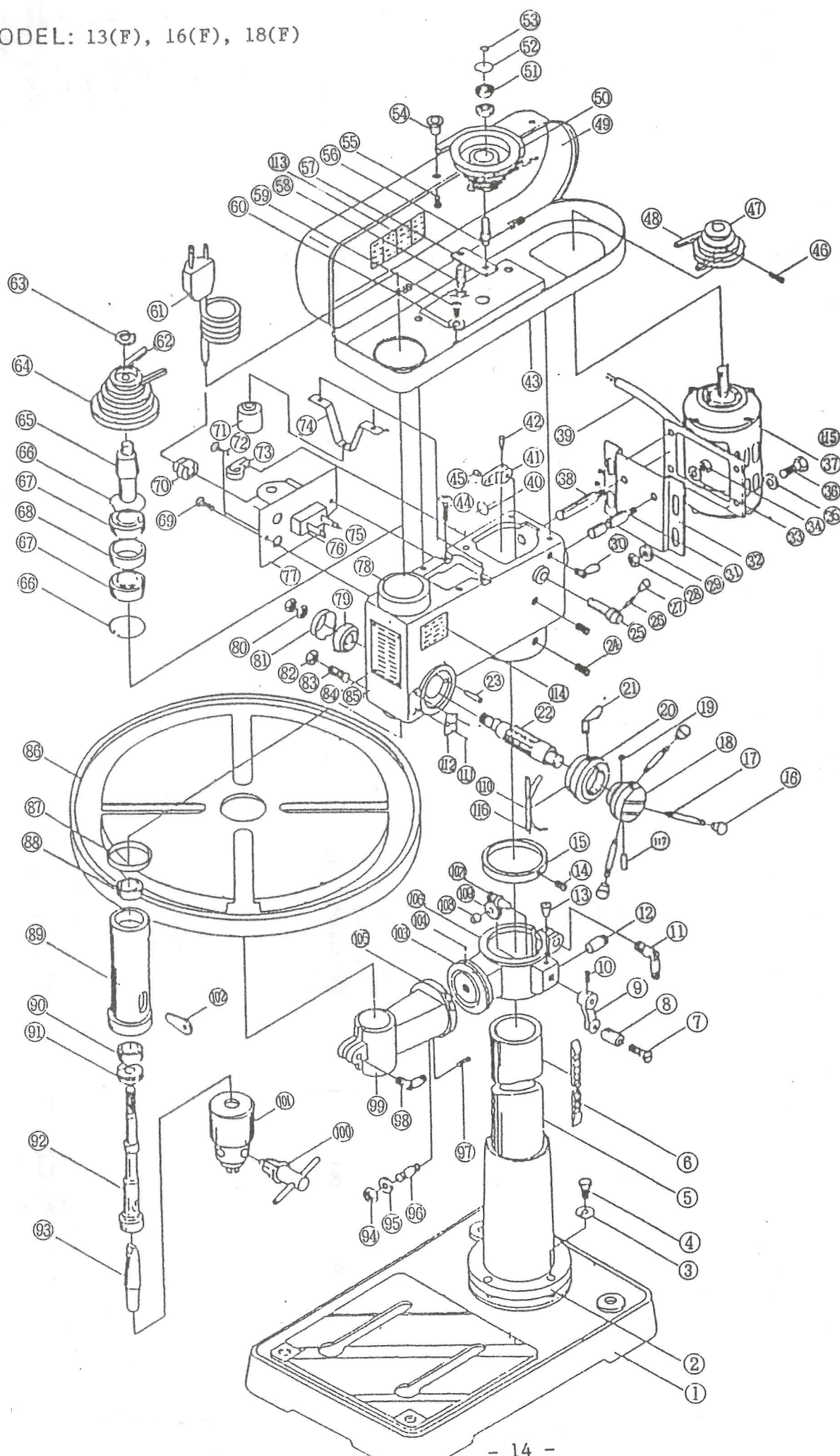
Motor Output	Fuse Recom. Max.	Model
0.25 kW	10 A	CII-13N(F), CII-16N(F)
		CII-13(F), CII-16(F)
		CII-18(F)
0.37 kW	10 A	CII-13N(F), CII-16N(F)
		CII-13(F), CII-16(F)
		CII-18(F)

Limit of equipment



X. PARTS DIAGRAM

* MODEL: 13(F), 16(F), 18(F)



PARTS LISTING

* MODEL: 13(F), 16(F), 18(F)

Parts No.	Description	Unit	Parts No.	Description	Unit
1	Base	1	31	Support motor bracket	1
2	Flange	1	32	Mount, motor	1
3	Spring washer	4	33	Spring washer	2
4	Screw	4	34	Nut	2
5	Column	1	35	Washer	4
6	Rack	1	36	Screw, hex.	4
7	Clamp bolt	1	37	Motor	1
8	Handle sleeve	1	38	Support motor bracket	1
9	Rod	1	39	Cord	1
10	Set screw	1	40	Ring, retaining	1
11	Clamp bolt	1	41	Lever adjusting	1
12	Gear shaft	1	42	Pin, lock	1
13	Oil cup	1	43	Guard asm	1
14	Set screw	1	44	Screw, pan	2
15	Rack collar	1	45	Pin	1
16	Knob	3	46	Set screw	1
17	Handle	3	47	Pulley motor	1
18	Handle base	1	48	Belt "V"	1
19	Key	1	49	Guard asm	1
20	Scale sleeve	1	50	Pulley, center	1
21	Clamp ball	1	51	Bearing, ball	2
22	Feed pinion	1	52	Ring, retaining	1
23	Stop pin	1	53	Ring, retaining	1
24	Set screw	2	54	Knob	1
25	Shaft lever	1	55	Screw, pan	1
26	Rod	1	56	Pivot	1
27	Knob	1	57	Pivot asm	1
28	Motor lock screw	4	58	Pivot asm	1
29	Lock washer	4	59	Screw, pan	4
30	Thumb screw	2	60	Spring washer	4

Parts No.	Description	Unit	Parts No.	Description	Unit
61	Cord w/plug	1	90	Bearing, thrust	1
62	Belt "V"	1	91	Bearing, ball	1
63	Nut, ring	1	92	Spindle	1
64	Spindle pulley	1	93	Arbor	1
65	Insert, pulley	1	94	Nut, hex.	1
66	Ring, retaining	2	95	Washer	1
67	Bearing, ball	2	96	Stud	1
68	Spacer, bearing	1	97	Screw, set	1
69	Screw, pan	2	98	Handle asm table lock	4
70	Strain relief	2	99	Arm, table	1
71	Socket, lamp	1	100	Key, chuck	1
72	Screw, pan	2	101	Chuck	1
73	Clamp, cord	2	102	Wedge	1
74	Bracket, socket	1	103	Scale, angle	1
75	Switch	1	104	Rivet	2
76	Switch asm	1	105	Zero mark	1
77	Switch plate	1	106	Support, table	1
78	Head	1	107	Worm, elevation	1
79	Spring, torsion	1	108	Sleeve, wheel	1
80	Nut-hex.	2	109	Worm, helical	1
81	Cap, spring	1	110	Scale	1
82	Nut, hex.	1	111	Rivet	2
83	Screw slotted set	1	112	Zero mark	1
84	Rivet	4	113	Nameplate	1
85	Nameplate	1	114	Nameplate, caution	1
86	Table	1	115	Nameplate, motor	1
87	Gasket, quijuer	1	116	Rivet	1
88	Bearing, ball	1	117	Pin, lock	1
89	Quill	1			