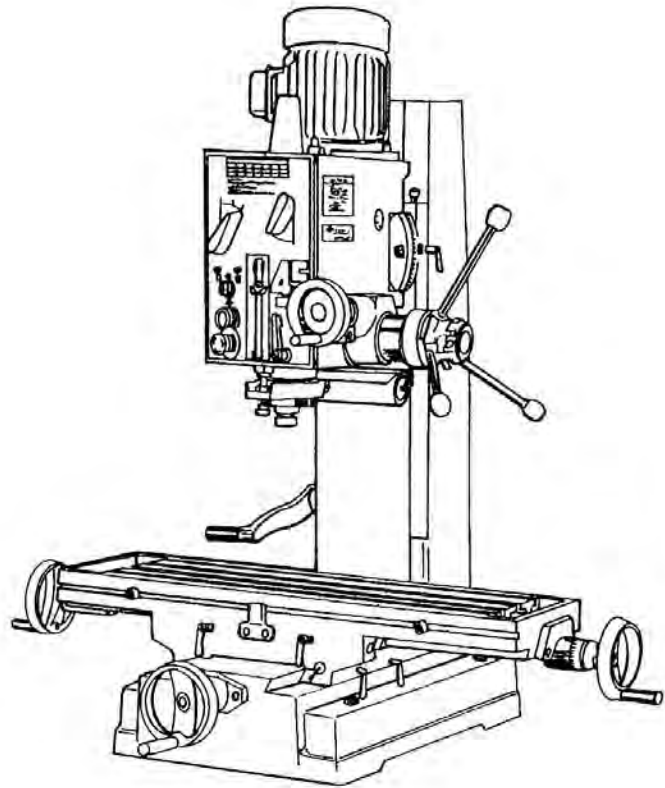


SAVE THIS MANUAL
FOR FUTURE REFERENCE



OWNER'S MANUAL

**CAUTION:
READ ALL
INSTRUCTIONS
CAREFULLY**



MODEL: KC-45

GEARED HEAD MILLING & DRILLING MACHINE

SPECIFICATIONS:

Drilling capacity	Cast iron	40mm(1-9/16")	
	mild steel	32mm(1-1/4")	
Face mill capacity		102mm(4")	
End mill capacity		32mm(1-1/4")	
Swing		550mm(21 5/8")	
Max. distance, spindle to table		445mm(17 1/2")	
Spindle taper		M.T. 3 or R-8, NT#30(Option)	
Spindle stroke		130mm(5")	
Quill diameter		76mm(3")	
Spindle speed (r.p.m.)	6S	60HZ	60,130,230,450,800,1500(4P)
		60HZ	50,110,190,380,670,1250(4P)

WARNING: FAILURE TO FOLLOW THESE RULES MAY RESULT IN SERIOUS PERSONAL INJURY

As with all machinery there are certain hazards involved with operation and use of the machine. Using the machine with respect and caution will considerably lessen the possibility of personal injury. However, if normal safety precautions are overlooked or ignored, personal injury to the operator may result.

This machine was designed for certain applications only. We strongly recommends that this machine NOT be modified and/or used for any application other than for which it was designed. If you have any questions relative to its application DO NOT use the machine until you have had detail instruction from your dealer.

SAFETY RULES FOR ALL TOOLS

1. FOR YOUR OWN SAFETY, READ INSTRUCTION MANUAL BEFORE OPERATING THE TOOL.

Learn the tool's application and limitations as well as the specific hazards peculiar to it.

2. KEEP GUARDS IN PLACE and in working order.

3. GROUND ALL TOOLS. If tool is equipped with three-prong plug, it should be plugged into a three-hole electrical receptacle. If an adapter is used to accommodate a two-prong receptacle, the adapter lug must be attached to a known ground. Never remove the third prong.

4. REMOVE ADJUSTING KEYS AND WRENCHES.

Form habit of checking to see that keys and adjusting wrenches are removed from tool before turning it "on."

5. KEEP WORK AREA CLEAN. Cluttered areas and benches invite accidents.

6. 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.

7. KEEP CHILDREN AND VISITORS AWAY. All children and visitors should be kept a safe distance from work area.

8. MAKE WORKSHOP CHILDPROOF-with padlocks, master switches, or by removing starter keys.

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

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

11. WEAR PROPER APPAREL. No loose clothing, gloves, neckties, rings, bracelets, or other jewelry to get caught in moving parts. Nonslip foot wear is recommended. Wear protective hair covering to contain long hair.

12. ALWAYS WEAR EYE PROTECTION. Refer to ANSI Z87.1 Standard for appropriate recommendations. Also use face or dust mask if cutting operation is dusty.

13. SECURE WORK. Use clamps or a vise to hold work when practical. It's safer than using your hand and frees both hands to operate tool.

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

15. MAINTAIN TOOLS IN TOP CONDITION. Keep tools sharp and clean for best and safest performance. Follow instructions for lubricating and changing accessories.

16. DISCONNECT TOOLS before servicing and when changing accessories such as blades, bits, cutters, etc.

17. USE RECOMMENDED ACCESSORIES. Consult the owner's manual for recommended accessories. The use of improper accessories may cause hazards.

18. AVOID ACCIDENTAL STARTING. Make sure switch is in "OFF" position before plugging in power cord.

19. NEVER STAND ON TOOL. Serious injury could occur if the tool is tipped or if the cutting tool is accidentally contacted.

20. CHECK DAMAGED PARTS. Before further use of the tool, a guard or other part that is damaged should be carefully checked to ensure 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.

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

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

23. DRUGS, ALCOHOL, MEDICATION. Do not operate tool while under the influence of drug, alcohol or any medication.

24. MAKE SURE TOOL IS DISCONNECTED FROM POWER SUPPLY while motor is being mounted, connected or reconnected.

ADDITIONAL SAFETY RULES FOR MILL DRILL

1. **BE SURE** drill bit or cutting tool is securely locked in the chuck.
2. **BE SURE** chuck key is removed from the chuck before turning on power.
3. **ADJUST** the table or depth stop to avoid drilling into the table.
4. **SHUT OFF** the power, remove the drill bit or cutting tool, and clean the table before leaving the machine.
5. **CAUTION.** When practical, use clamps or a vise to secure workpiece to keep the workpiece from rotating with the drill bit or cutting tool.
6. **WARNING:** For Your Own Safety – Don't wear gloves when operating a mill/drill.

SPECIFICATIONS:

Drilling capacity	cast iron	40mm (1 9/16")	T-Slot size	16mm (5/8")	
	mild steel	32mm (1 1/4")	Working size	820mm x 240mm (32" x 9 1/2")	
Face mill capacity		102mm (4")	Working table longitudinal travel	510mm (20")	
End mill capacity		32mm (1 1/4")	Working table cross travel	240mm (9 1/2")	
Swing		550mm (21 5/8")	Overall height W/Stand	1745mm (68 5/8")	
Max. distance, spindle to table		445mm (17 1/2")	Length	785mm (30 7/8")	
Spindle taper		R-8 or MT#3, NT#30 (option)	Width	1100mm (43 1/4")	
Spindle stroke		130mm (5")	Vertical Spindle motor	2HP (4 Pole)	
Quill diameter		76mm (3")	Packing	1 set/1 case	
Spindle speed (r.p.m.)	6S	60HZ	60-1500 r.p.m. (4P)	Weight (NW/GW)	330 kgs/360 kgs
		50HZ	50-1250 r.p.m. (4P)	Measurement	838mm x 737mm x 1143mm (33" x 29" x 45")
Head tilt, left & right		90°	Q'nty/1 x 20' Container	39 sets	

OPTIONAL ACCESSOIRES:

- | | |
|--|---|
| <ol style="list-style-type: none"> 1. 1/2" drill chuck 2. 3-Way angle vise 3. Table power feed 4. K-type milling vise 5. Face milling cutter 6. 52 pcs clamping kits 7. Milling chuck (7 pcs/set) | <ol style="list-style-type: none"> 8. Dividing head 9. 5" lathe chuck 10. Tapping switch 11. Boring head set 12. Digital readout 13. Multi-spindle attachment 14. Horizontal / Vertical rotary table |
|--|---|

WARNING: CHANGE SPEED ONLY WHEN MACHINE IS STOPPED

SPEED CHANGING

LEVERS RPM	L1	L2	L3	H1	H2	H3
60Hz	60	130	230	450	800	1500
50Hz	50	110	190	380	670	1250

CHANGING THE GEAR BOX OIL

Tilt the head stock over as shown in Fig 1. Open the oil drain plug to allow the oil to drain from the opening completely. Then lock the oil drain plug and turn the head to be upright position. Remove the oil filler plug fill the oil to the gear box until the oil lever reach the middle of oil fluid lever indicator. Then lock the plug.

CLEANING

- (1) Your machine has been coated with a heavy grease to protect it in shipping. This coating should be completely removed before operating the machine. Commercial degreaser, kerosene or similar solvent may be used to remove the grease from the machine, but avoid getting solvent on belts or other rubber parts.
- (2) After cleaning, coat all bright work with a light lubrication. Lubricate all points with a medium consistency machine oil.

LUBRICATION:

All ball bearings in your mill/drill are sealed for life, requiring no lubrication. Points requiring lubrication are:

- (1) Internal spline drive assembly. Keep this area well lubricated with a good grade non-hardening grease, such as Fiske Company "Lubriplate". Insert grease in the hole at the top of spindle pulley spline driver. Lube twice yearly.
- (2) A light film of oil applied to the quill and column will reduce wear, prevent rust, and assure ease of operation.
- (3) Quill return spring should receive oil (SAE 20) once yearly. Remove cover plate and apply oil with squirt can or small brush.
- (4) **IMPORTANT:** The gear box should be oiled with a lubricant such as SAE 68 oil in level. **CHANGE OIL EVERY ONE YEAR.**
- (5) Apply Lubriplate to quill pinion every 90 days.

NOTE: Use extreme care when performing this operation and keep hands clear of pinch points. When using parafin bar, do this only by turning the sheaves by hand. Do not apply with motor running.

USE OF MAIN MACHINE PARTS

- (1) To raise and lower the head by head handle.
- (2) Equipped with an electric switch for tapping operation clockwise or counterclockwise.
- (3) To adjust the quick or slow feeding by feed handle.
- (4) To adjust the table left and right travel by table handle wheel.
- (5) To adjust the table fore and aft travel by table handle wheel.
- (6) To operate the spindle handle wheel for micro feed.
- (7) To adjust the scale size according to working need.

PRECAUTION FOR OPERATION

Check all parts for proper condition before operation; if normal safety precautions are noticed carefully, this machine can provide you withstanding of accurate service.

- (1) Before Operation
 - (a) Fill the lubricant.
 - (b) In order to keep the accurate precision, the table must be free from dust and oil deposits.
 - (c) Check to see that the tools are correctly set and the workpiece is set firmly.
 - (d) Be sure the speed is not set too fast.
 - (e) Be sure everything is ready before use.
- (2) After Operation
 - (a) Turn off the electric switch.
 - (b) Turn down the tools.
 - (c) Clean the machine and coat it with lubricant.
 - (d) Cover the machine with cloth to keep out the dust.

(3) Adjustment of Head

- (a) To raise and lower the head, loosen the two heavy duty head free handle shown in Fig.1. Use the left side head handle to raise and lower the head on its rack and pinion mechanism. When the desired height is reached, tighten the bolts to avoid vibration.
- (b) Unscrew 3 nuts while the workpiece needs to be bevel drilled Turn to the degrees you wish on the scale, then screw the 3.

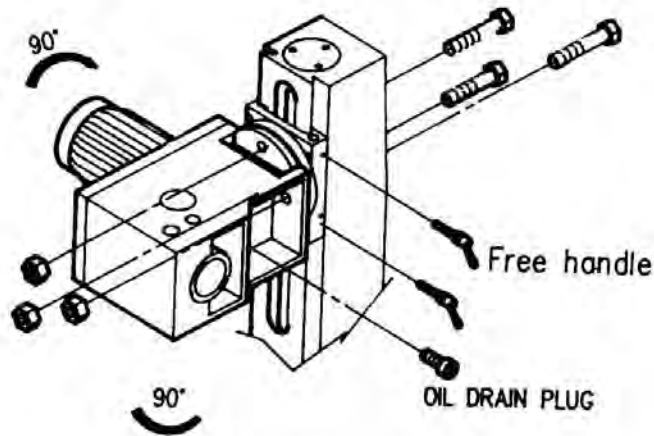


Fig. 1

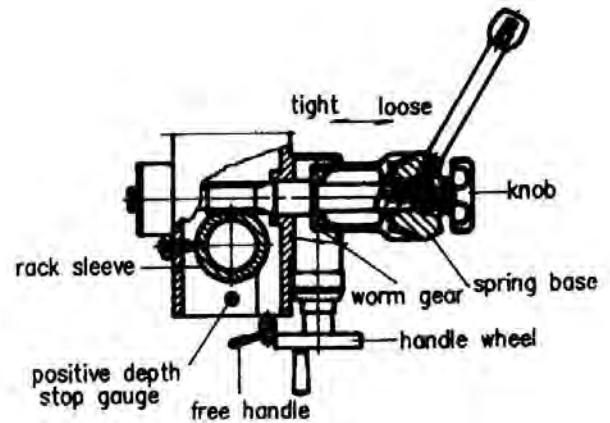


Fig 2

QUILL RETURN SPRING ADJUSTMENT:

Spring tension for return of spindle, after hole drilling, has been pre-set at the factory. No further adjustment should be attempted unless absolutely necessary. Adjustment will probably be required if a multiple spindle drilling or tapping head is used. If adjustment is necessary, loosen lock screw while holding quill spring housing. Do not allow the housing to turn in your hand, or spring will unwind. Turn entire housing assembly clockwise the number of turns necessary to cause the quill to return to its up position. (NOTE: The flat of the spring housing pilot is lined up with the spring loading hole on the body of the spring housing.) Reset lockscrew make sure point of screw mates to flat on the housing journal.

(4) Preparing for Drilling (see fig. 2) (Except addition power feed system).

Turn of the knob make loose the taper body of worm gear and spring base. Then we decide spindle stroke setting the positive depth stop gauge for drilling blind hole or Free state for pass hole.

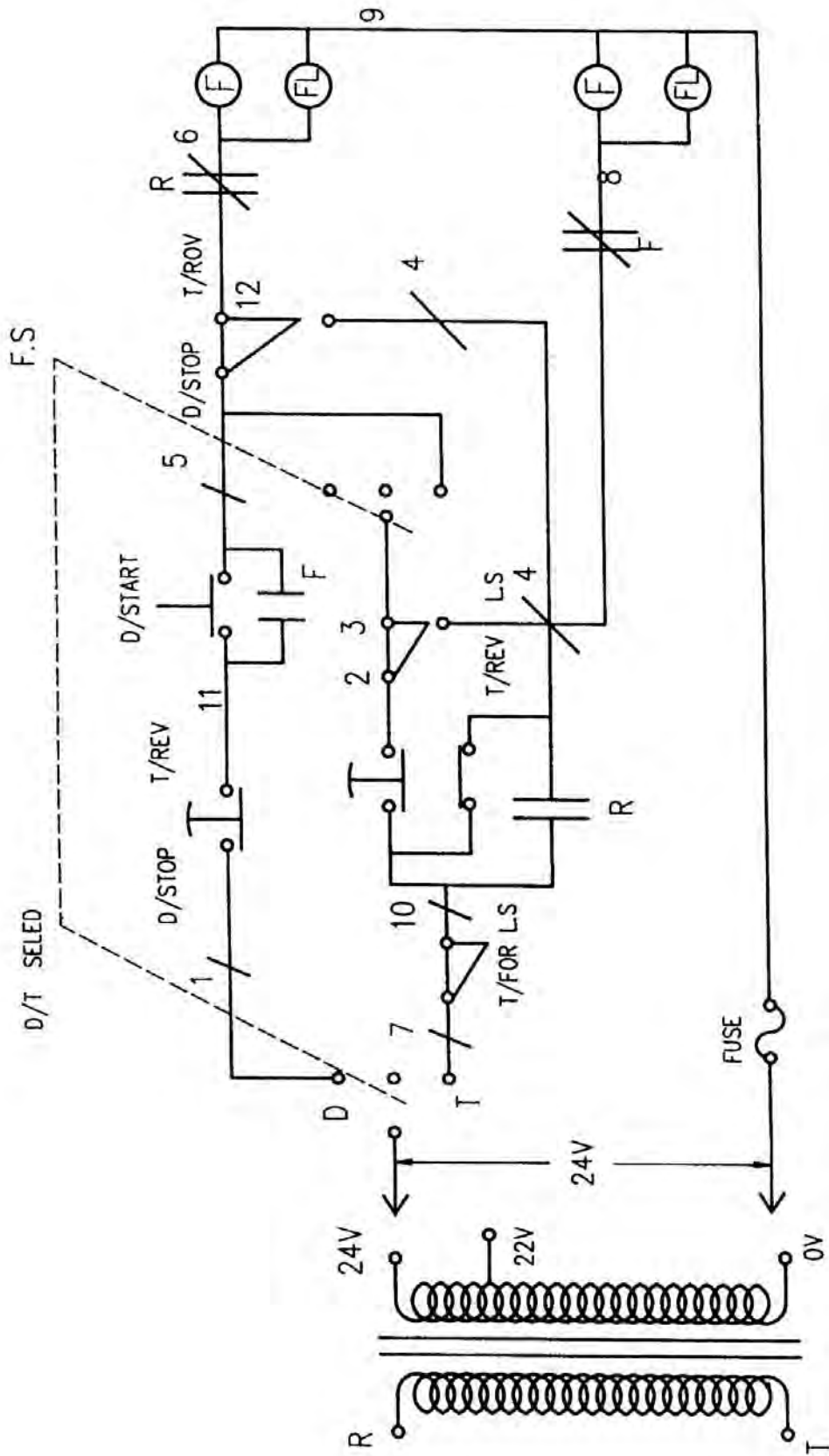
(5) Preparing for Milling (see fig. 2) (Except addition power feed system).

- (a) Adjust the positive depth stop gauge to highest point position.
- (b) Turn tight of the knob be use to taper friction force coupling the worm gear and spring base. Then turning the handle wheel by micro set the spindle of work piece machining height.
- (c) Lock the rack sleeve at the desired height with fixed bolt.

ADJUSTING TABLE SLACK AND COMPENSATE FOR WEAR (see fig. 3)

- (1) Your machine is equipped with jib strip adjustment to compensate for wear and excess slack on cross and longitudinal travel.
- (2) Clockwise rotation the job strip bolt with a big screw for excess slack otherwise a little counter clockwise if too tight.
- (3) Adjust the jib strip bolt until feel a slight drag when shifting the table.

ELECTRICAL WIRING DIAGRAM



TROUBLE SHOOTING HINTS

TROUBLE	PROBABLE CAUSE	REMEDY
Excessive Vibration	<ol style="list-style-type: none"> 1. Motor out-of-balance. 2. Bad motor. 	<ol style="list-style-type: none"> 1. Balance or replace problem motor. 2. Replace motor.
Motor Stalls	<ol style="list-style-type: none"> 1. Over feeding. 2. Dull drill. 3. Motor not building up to running speed 4. Bad motor. 	<ol style="list-style-type: none"> 1. Reduce feed rate. 2. Sharpen drill and keep sharp. 3. Replace or repair motor. Check fuses in all three legs on three phase motors and replace if necessary. 4. Replace motor.
Noisy Operation	<ol style="list-style-type: none"> 1. Excessive vibration. 2. Improper quill adjustment. 3. Noisy spline. 4. Noisy motor. 	<ol style="list-style-type: none"> 1. Check remedy under excessive vibration. 2. Adjust quill 3. Lubricate spline. 4. Check motor bearings or for loose motor fan.
Drill or Tool heats up or burns work .	<ol style="list-style-type: none"> 1. Excessive speed. 2. Chips not clearing. 3. Dull tool. 4. Feed reate too slow. 5. Rotation of drill incorrect. 6. Failure to use cutting oil or coolant (on steel). 	<ol style="list-style-type: none"> 1. Reduce speed. 2. Use pecking operation to clear chips. 3. Sharpen tool or replace. 4. Increase feed enough to clear chips. 5. Reverse motor rotation. 6. Use cutting oil or coolant on steel.
Drill leads off	<ol style="list-style-type: none"> 1. No drill spot. 2. Cutting lips on drill off center. 3. Quill loose in head. 4. Bearing play. 	<ol style="list-style-type: none"> 1. Center punch or center drill workpiece. 2. Re grind drill. 3. Tightne quill. 4. Check bearings and reseat or replace if necessary.
Excessive drill runout or wobble	<ol style="list-style-type: none"> 1. Bent drill. 2. Bearing play. 3. Drill not seated properly in chucks. 	<ol style="list-style-type: none"> 1. Replace drill. Do not attempt to straighten 2. Replace or reseat bearings. 3. Loosen, reseat and tighten chuck.
Work or fixture comes loose or spins.	<ol style="list-style-type: none"> 1. Failure to clamp workpiece or work holding device to table. 	<ol style="list-style-type: none"> 1. Clamp workpiece or work holding device to table surface.