

# Intruction Manual



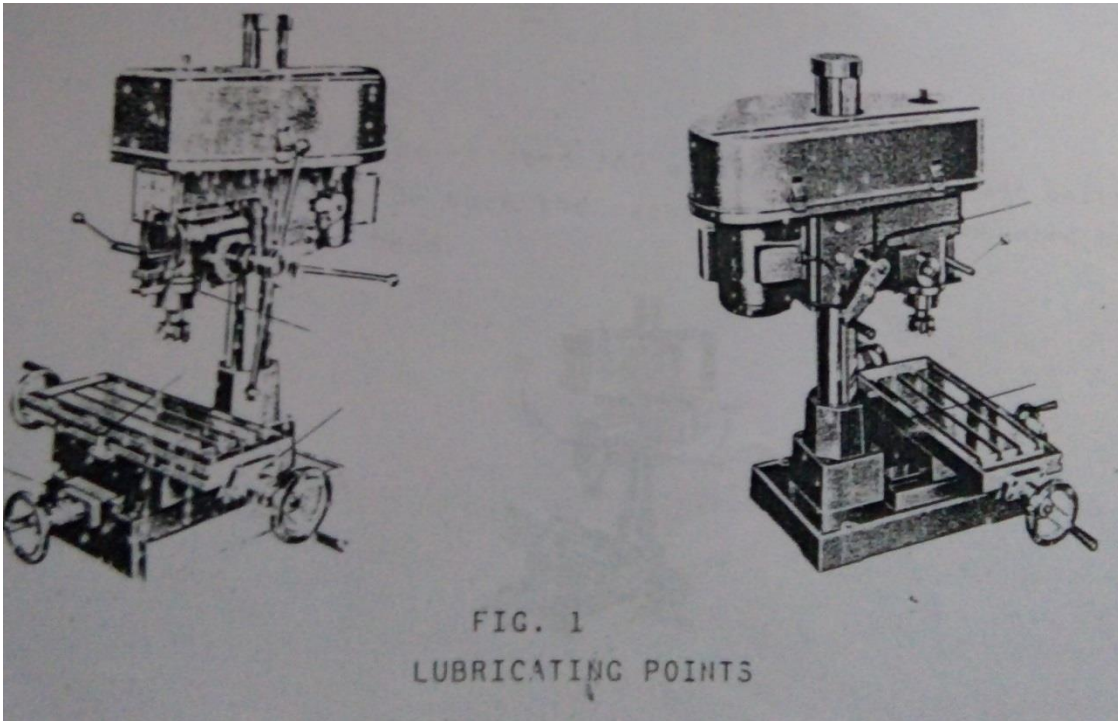
## TABLE OF CONTENTS

1. CLEANING & LUBRICATING
2. MOUNTING MACHINE
3. OPERATION
  - a. ADJUSMENT OF HEAD
  - b. PREPARE FOR DRILLING
  - c. PREPARE FOR MILLING
4. ADJUSTING TABLE SLACK
5. SPINDLE ADJUTMENT
6. SPEED CHANGING
7. GRADUATE DOWN FEED OPERATION
8. TO CHANGE TOOLS
9. DIALS SPECIFICATION
10. EXTRA TOOLING AND ACCESSORIES
11. T- SLOTS SPECIFICTION

## 1. CLEANING & LUBRICATING

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.

After cleaning, coat all bright work with a light lubricating oil. Lubricate all points in fig. 1 with medium consistency machine oil



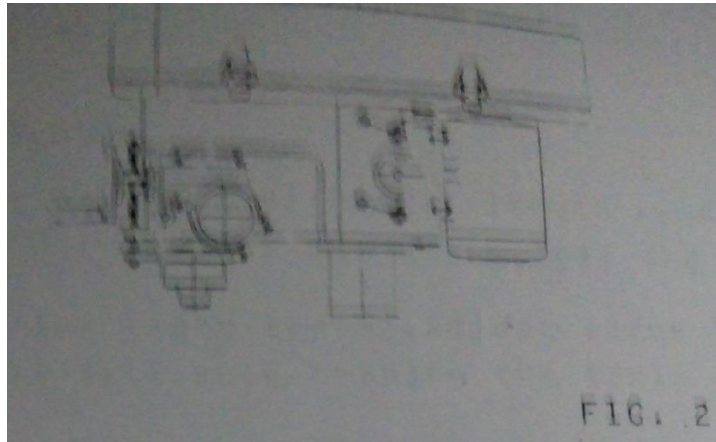
## 2. MOUNTING MACHINE

Mount the machine to a sturdy table or base. It is advisable that the table you choose be well constructed to avoid any vibration during operation. Four holes are provided on the machine base (part # 152) for mounting. Before tightening bolts make sure the work table of the machine (part # 150) is level lengthwise and crosswise. Use shims if necessary.

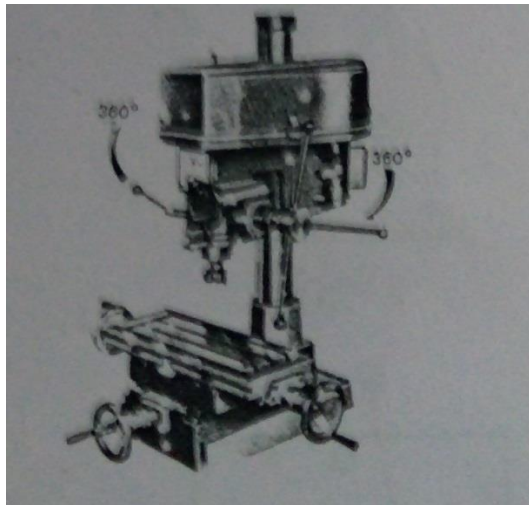
### 3. OPERATION

#### A. ADJUSTMENT OF HEAD

1. To raise and lower the head, loosen the two bolts (part # 104) shown in fig.2 use side handle (part # 40) to raise and lower the head on its rack and pinion mechanism. When the desired height is reached, tighten the bolts to avoid vibration.



2. Head may also be rotated 360° by loosening the same bolts mentioned above. Be sure the machine is securely mounted before rotating the head.



## B. PREPARE LC – 15A FOR DRILLING

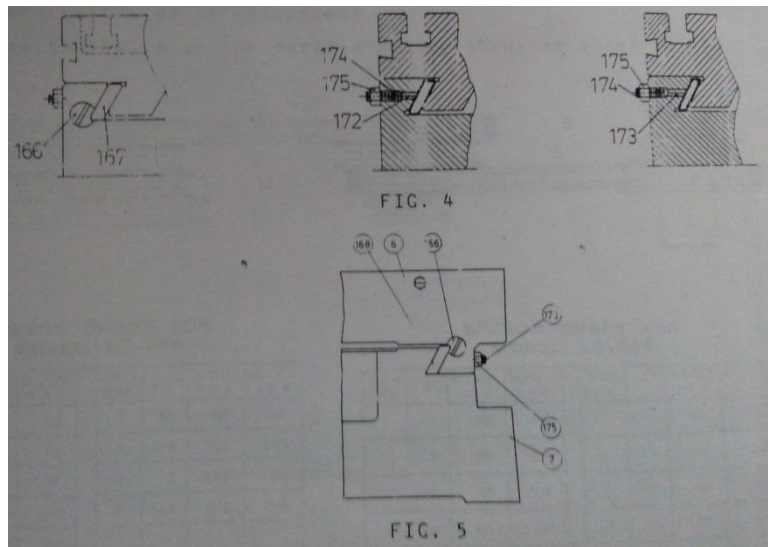
1. Release back the lock handle (parts # 32), pulling the clutch (part # 16) out to the right side
2. Adjust screw on the graduated depth stop bar (part#43) to the desired drilling depth.
3. Turn power on, and operate using rapid down feed handle (part # 14)

## C. PREPARE LC-15A FOR MILLING

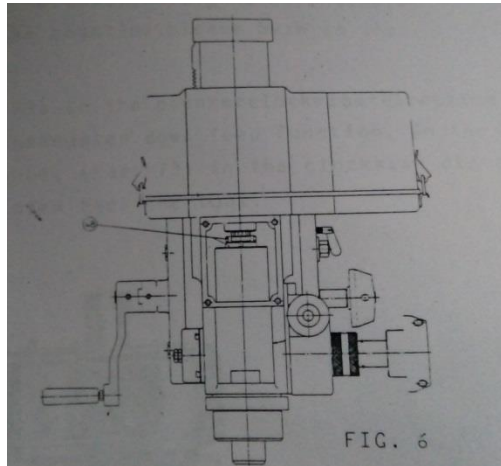
1. Adjust screw on the graduated depth stop bar (par#43) to its highs position
2. Engage fine downfeed handle (part#73) by loosening lock nuts on side of handle and moving handle to its lowest position. Make sure the worm gear is securely engaged by jiggling rapid downfeed handle (part#14) until you feel the gears mesh. Retighten lock nuts.
3. Adjust spindle to desired position using fine downfeed wheel (part # 73) and lock at desired height with spindle lock (part#31)
4. Operate work table before and after, left and right by turning hand wheels (part # 158)

## 4. ADJUSTING TABLE SLACK

- A. Your machine is equipped with full length tapered gibs to adjust for excess slack in before and after , left and right table travel
- B. To adjust left and right travel, adjust large screw (parts#166) until a slight drag is fell when turning the table (fig.4).
- C. To adjust before and after travel, adjust large screw (parts #166) as shown in Fig. 5



5. To spindle is too tight or too loose, remove name plate and loosen the sighten the nut (part#48) on spindle shaft as needed



6. SPEED CHANGING

- A. TURN POWER OFF
- B. Remove belt cover by releasing side latches
- C. Loosen motor mount bolts (part # 63)
- D. Push motor in to loosen belts ( right side of motor mount is fixed, left side is tensioned)
- E. Please the helts on the desired pulley steps as shown on Fig.7

**SPEEDS CHART FOR MODEL: LC-15A**

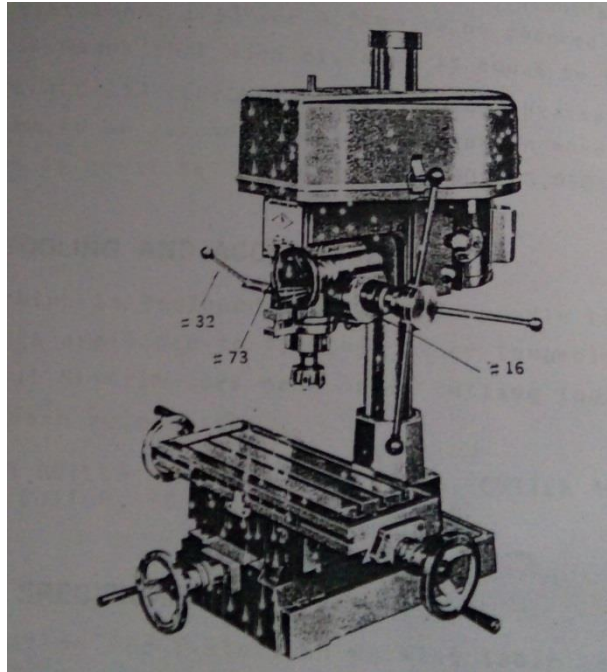
| SPEED SERIAL | 50 CYCLE R.P.M. | 60 CYCLE R.P.M. | STEPS | 50 CYCLE R.P.M. | 60 CYCLE R.P.M. |
|--------------|-----------------|-----------------|-------|-----------------|-----------------|
| 6            | 175             | 210             | 4.7   | 585             | 700             |
| 7            | 290             | 350             | 1.6   | 1175            | 1410            |
| 8            | 320             | 385             | 2.7   | 1465            | 1760            |
| 9            | 450             | 540             | 1.7   | 2115            | 2540            |
| 535          | 535             | 642             |       |                 |                 |

**SPEEDS CHART FOR MODEL: LC-3CA**

| SPEED SERIAL | STEPS | 50 CYCLE R.P.M. | 60 CYCLE R.P.M. | SPEED SERIAL | STEPS   | 50 CYCLE R.P.M. | 60 CYCLE R.P.M. |
|--------------|-------|-----------------|-----------------|--------------|---------|-----------------|-----------------|
| 1            | 4.5   | 185             | 220             | 5            | 4.7 : 5 | 550             | 660             |
| 2            | 3.5   | 290             | 350             | 6            | 1.5     | 1110            | 1330            |
| 3            | 4.6   | 340             | 410             | 7            | 2.7     | 1250            | 1500            |
| 4            | 2.5   | 415             | 500             | 8            | 1.7     | 1775            | 2130            |

## 7. GRADUATE DOWN FEED OPERATION

- A. To release back the handle (part#32), moving handle (part # 14) forward a little bit, in the meantime, please push in the clutch (part#16) to the left.
- B. Turn the head wheel (part#73) in the counterclockwise direction and then you will get the graduated down feed function. On the contrary, rotate the hand wheel (part#73) in the clockwise direction, that is the action which draw back the tool



## 8. TO CHANGE TOOLS

- A. Loosen the drawbar (parts#53) approximately 2 turns with wrench. Rap the top of the drawbar sharply with a mallet. After taper has been broken loose, hold chuck in one hand and unscrew drawbar with other hand.
- B. TO INSTAL FACE MILI OR CHUCK ARBOR  
Insert tool into spindle taper and thread the arbor to the drawbar by turning the drawbar. Tighten securely, but do not overtighten.
- C. REMOVING TAPER DRILLS  
Turn the rapid downfeed handle (part#14) down until the oblong hole in the rack gear sleeve appears. Line up this hole with the hole in the spindle. Insert drill drift (part#72) through holes and strike lightly with a mallet. This will force the taper drill out.

9. This machine offers 10 threads (Acme screw thread) per inch on lengthwise and crosswise screw and also the clutch (parts#157) is calibrated to 100 division. 1/10" or 2.54mm to be reached when turn a run on wheel, it means that each division is equal to 1 thousandths ( 0.0254mm). but MODEL : LC-15A CLUTCH (part#157) is calibrated to 50 division . 1/10" or 2.54mm to be reached when turn a run on wheel, it means that each division is equal to 2 thousandths (0.002") (0.0508mm).

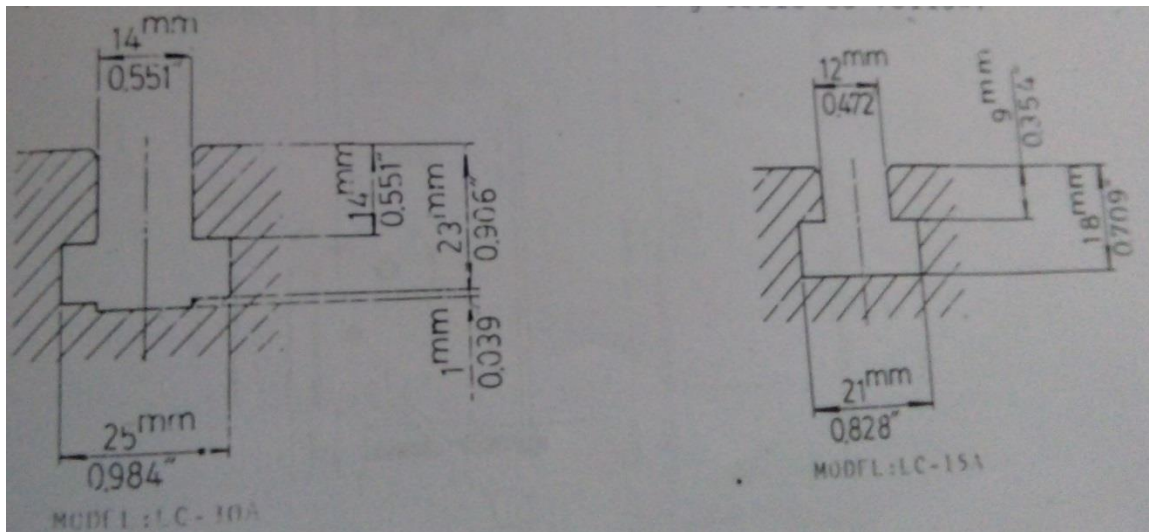
#### 10. EXTRA TOOLING AND ACCESSORIES

This machine is equipped with a MT#3 spindle taper, a variety of tooling is available to fit this taper (examples below). Contact your local distributors or a major cutting tool distributor to obtain any of these accessories.

TAPER DRILLS, REAMERS, AND MILLS, CUTTER ARBOR, TAPS, COLLETS, FACE CUTTER, ADAPTERS AND SLEEVES

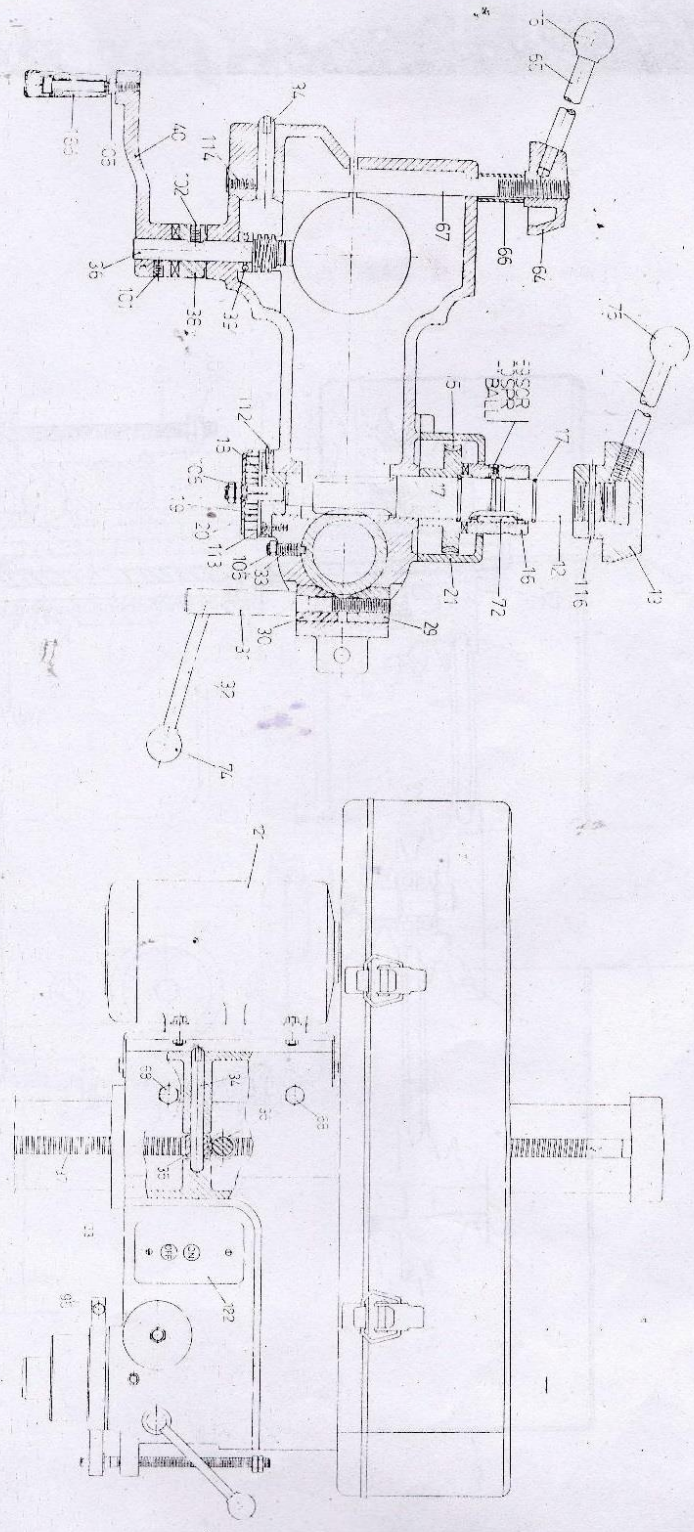
#### 11. T-SLOTS SPECIFICATION

Specification for T-slots on working table as follow:

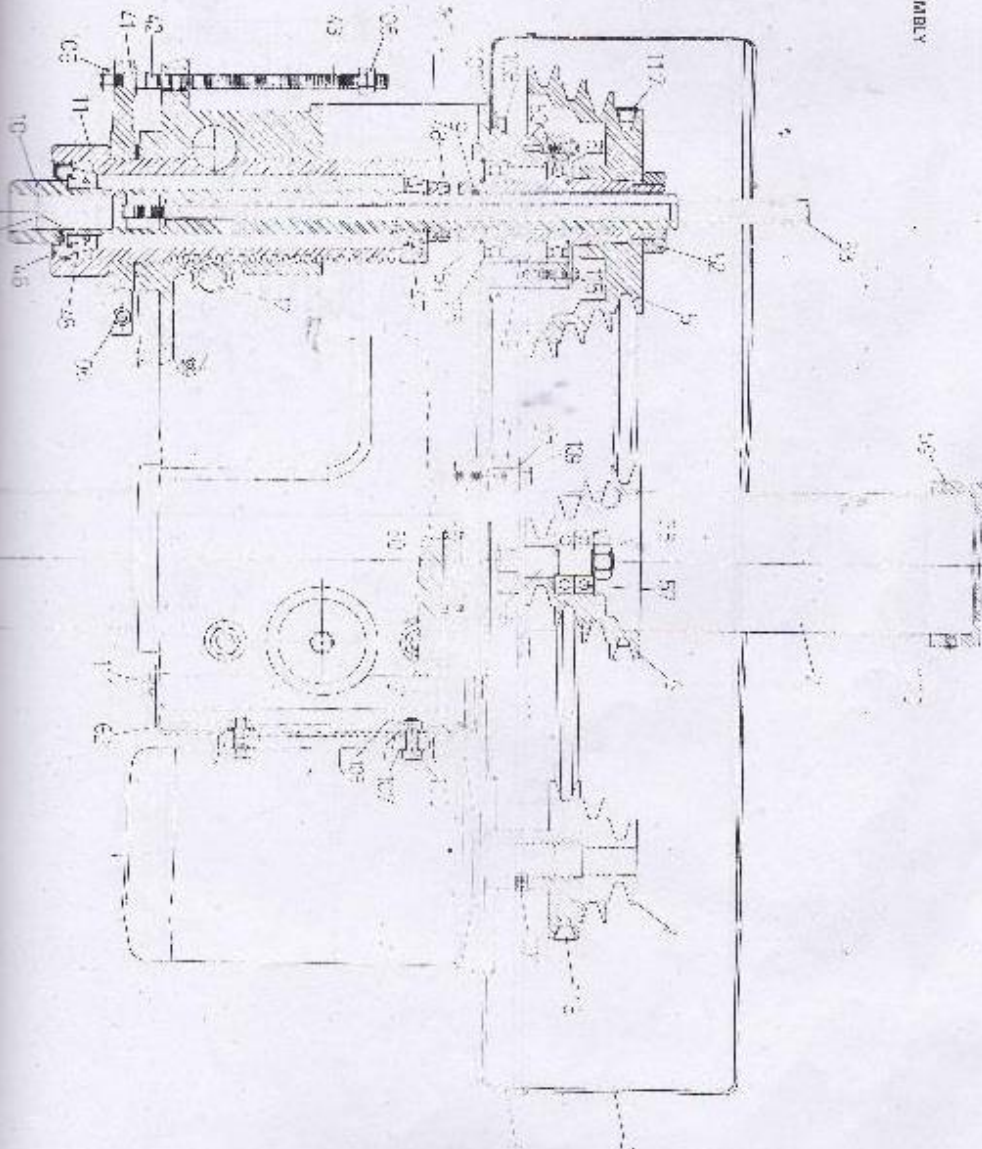




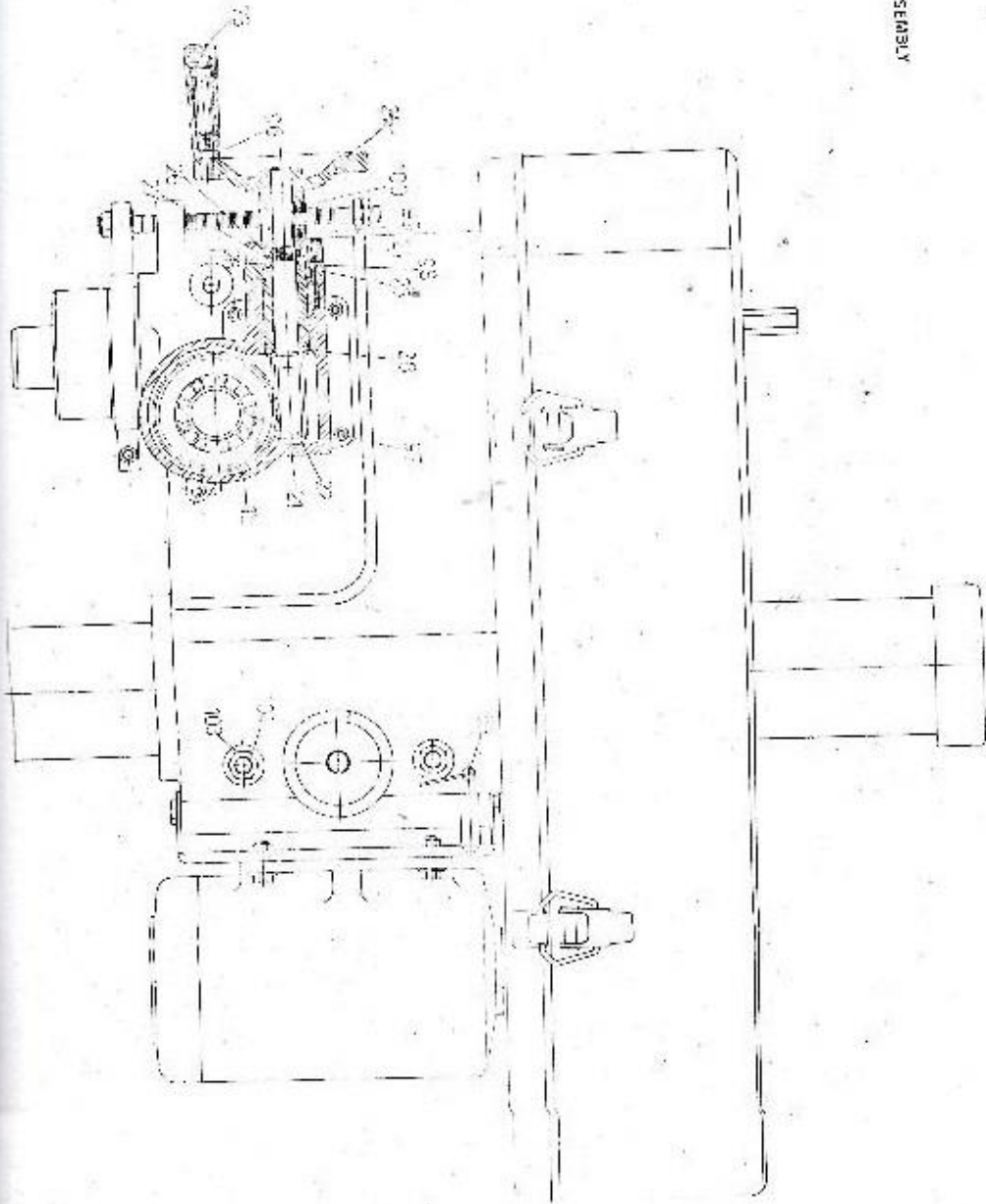
HEAD ASSEMBLY



SPINDLE ASSEMBLY



CLUTCH ASSEMBLY



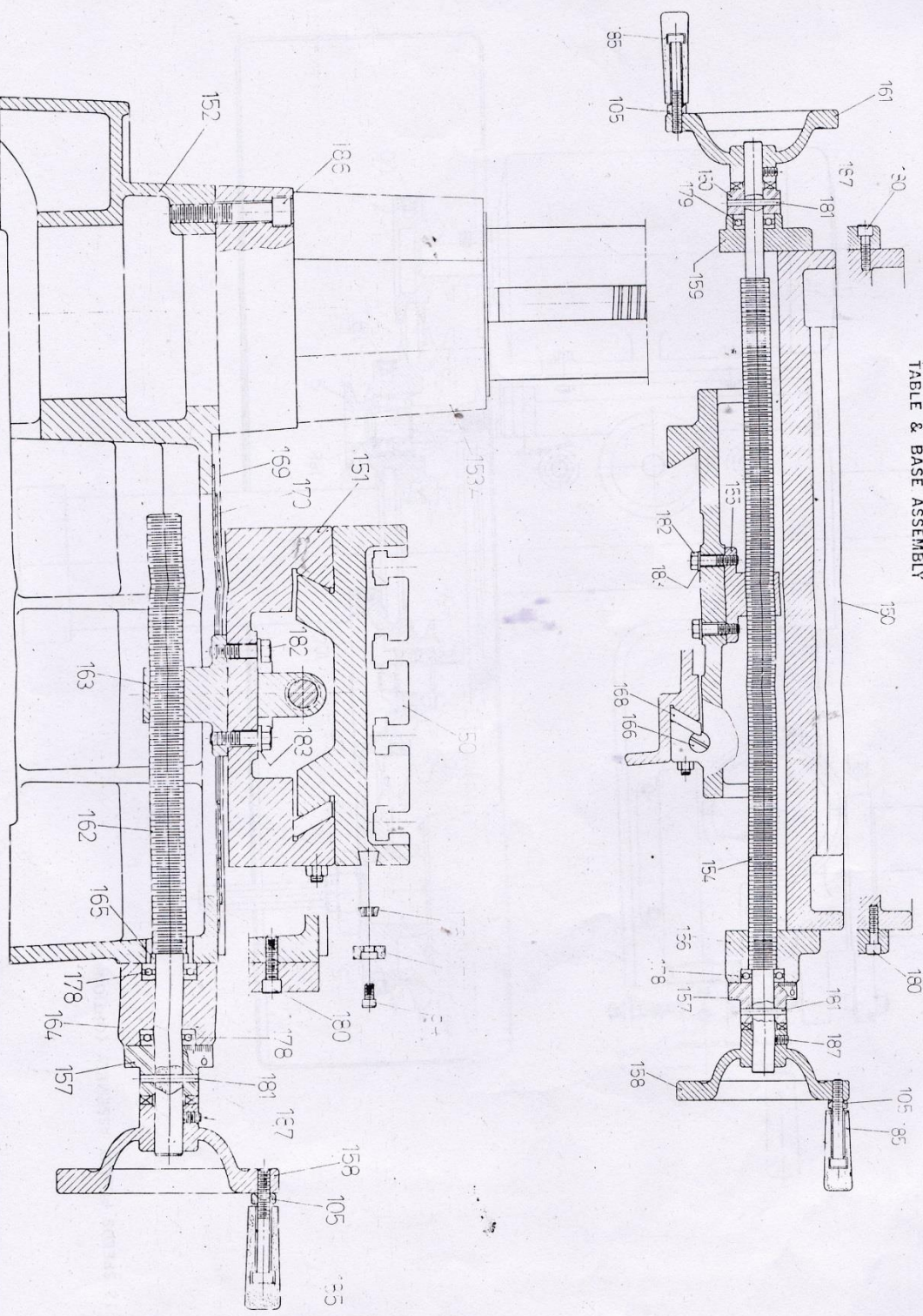
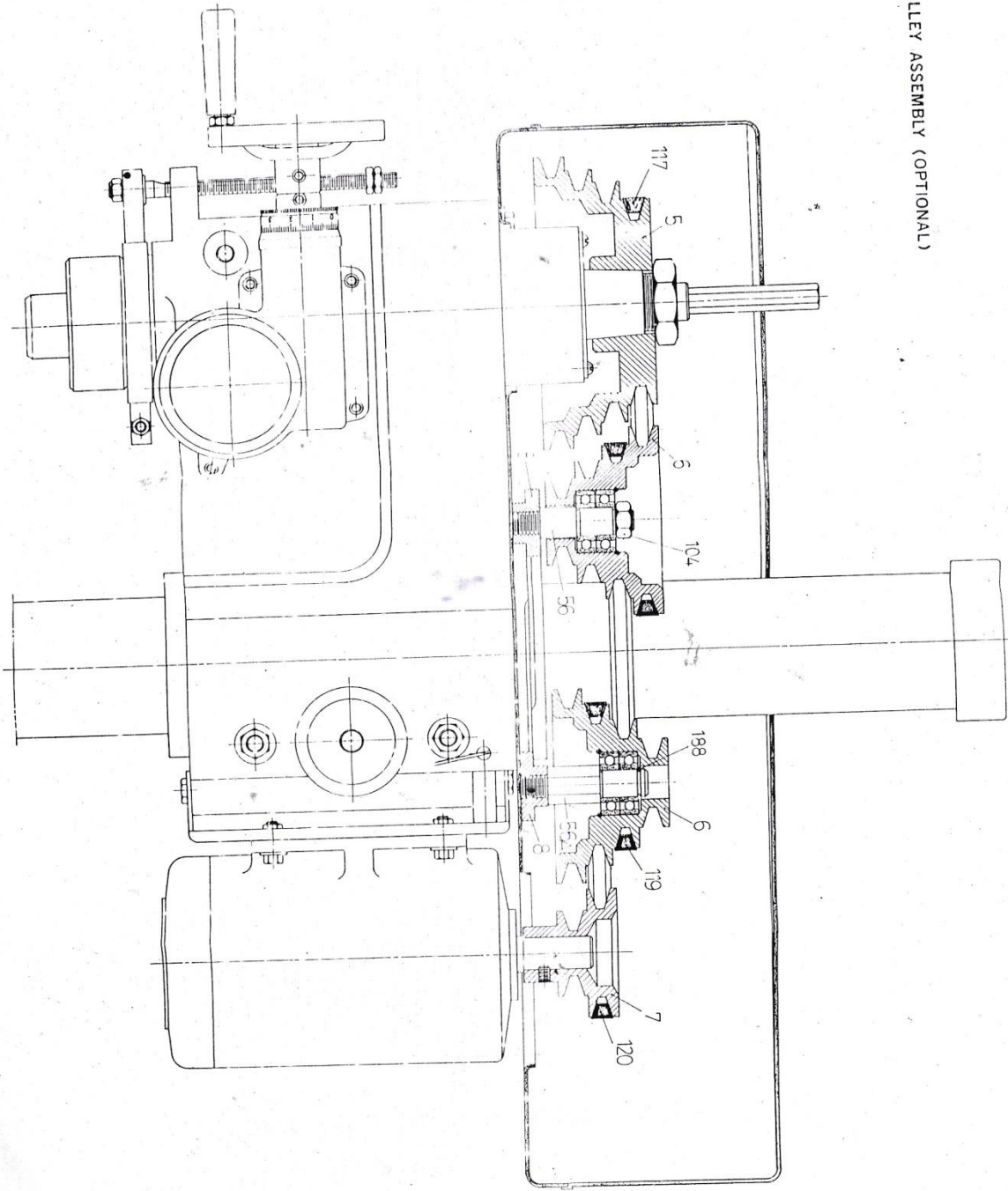


TABLE & BASE ASSEMBLY

12 SPEEDS PULLEY ASSEMBLY (OPTIONAL)



**PARTS LIST**  
**DRILLING & MILLING MACHINE**

| <u>PARTS NO.</u> | <u>DESCRIPTION</u>              |
|------------------|---------------------------------|
| 1                | HEAD BODY                       |
| 2                | COLUMN                          |
| 3                | BELT COVER (BOTTOM)             |
| 4                | BELT COVER (TOP)                |
| 5                | SPINDLE PULLEY                  |
| 6                | CENTER PULLEY                   |
| 7                | MOTOR PULLEY                    |
| 8                | BRACKET FOR CENTER PULLEY       |
| 9                | SPINDLE TAPER SLEEVE            |
| 10               | SPINDLE SHAFT NT#3              |
| 10A              | SPINDLE SHAFT R-8               |
| 10B              | SPINDLE SHAFT NT#30             |
| 11               | RACK GEAR SLEEVE NT#3           |
| 11A              | RACK GEAR SLEEVE R-8            |
| 11B              | RACK GEAR SLEEVE NT#30          |
| 12               | PINION SHAFT                    |
| 13               | HANDLE BODY                     |
| 14               | HANDLE                          |
| 15               | WORM GEAR FOR PINION SHAFT      |
| 16               | CLUTCH FOR WORM GEAR            |
| 17               | SNAP RING                       |
| 18               | PINION SHAFT COVER              |
| 19               | SPRING COVER                    |
| 20               | HELICAL SPRING                  |
| 21               | WORM SHAFT COVER                |
| 22               | WORM SHAFT                      |
| 23               | WORM SLEEVE                     |
| 24               | DIAL                            |
| 25               | HAND WHEEL                      |
| 26               | NUT FOR WORM                    |
| 27               | WASHER                          |
| 28               | THRUST BEARING #51103           |
| 29               | STOP PIECE FOR RACK GEAR SLEEVE |
| 30               | STOP PIECE FOR RACK GEAR SLEEVE |

## PARTS LIST

| PARTS NO. | DESCRIPTION<br>SPECIFICATION    |
|-----------|---------------------------------|
| 17        | LOCK HANDLE SHAFT               |
| 18        | LOCK KEY                        |
| 19        | STOP SCREW FOR BACK GEAR SLEEVE |
| 24        | GEAR SHAFT FOR MACHINE HEAD     |
| 25        | GEAR                            |
| 26        | WORM (HEAD)                     |
| 27        | RACK                            |
| 28        | CLUTCH (HEAD)                   |
| 29        | THRUST BEARING #2903            |
| 40        | HANDLE                          |
| 41        | SCREW STOP                      |
| 42        | SCALE                           |
| 43        | SCALE FRAME                     |
| 44        | RUBBER RING                     |
| 45        | ROLLER PLATE G #30207           |
| 46        | OIL SEAL                        |
| 47        | BALL BEARING #30206             |
| 48        | SPINDLE NUT                     |
| 49        | BEARING SPACER                  |
| 50        | BALL BEARING #6209              |
| 51        | BEARING COUPLER                 |
| 52        | NUT                             |
| 53        | DRAWBAR BUSH                    |
| 53A       | DRAWBAR BUSH                    |
| 53B       | DRAWBAR NUT                     |
| 54        | SNAP RING                       |
| 55        | SNAP RING                       |
| 56        | PULLEY SHAFT                    |
| 57        | BALL BEARING #6209              |
| 58        | SNAP RING                       |
| 59        | COLUMN CAP                      |
| 60        | ADJUSTING SPRING                |
| 61        | ADJUSTING BAR                   |
| 62        | MOTOR FRAME                     |

PARTS LIST

| PARTS NO. | DESCRIPTION            |
|-----------|------------------------|
| 63        | BOLTS                  |
| 64        | HANDLE BODY            |
| 65        | HANDLE                 |
| 66        | SLEEVE FOR HANDLE BODY |
| 67        | TAPER BOLT SET(HEAD)   |
| 68        | TAPER BOLT SET(HEAD)   |
| 69        | SCREW                  |
| 70        | SPRING                 |
| 71        | STEEL BALL             |
| 72        | DRILL DRIFT            |
| 73        | HAND WHEEL KNOB        |
| 74        | KNOB                   |
| 75        | KNOB                   |
| 76        | CHUCK ARBOR MT#3       |
| 77        | CHUCK ARBOR R-6        |
| 76D       | CHUCK ARBOR NT#30      |
| 78        | CUTTER ARBOR MT#3      |
| 76A       | CUTTER ARBOR NT#30     |
| 79        | CUTTER ARBOR R-8       |
| 80        | DSC STOP               |
| 81        | SCREW                  |
| 82        | STOP SCREW             |
| 95        | BOLT                   |
| 96        | NUT                    |
| 97        | BOLT                   |
| 98        | BOLT                   |
| 99        | SET SCREW              |
| 100       | SET SCREW              |
| 101       | SET SCREW              |
| 102       | SET SCREW              |
| 103       | FLAT WASHER            |
| 104       | NUT                    |
| 105       | NUT                    |
| 106       | NUT                    |
| 107       | FLAT WASHER            |
| 108       | BOLT                   |



## PARTS LIST

| <u>PARTS NO.</u> | <u>DESCRIPTION</u>    |
|------------------|-----------------------|
| 109              | BOLT                  |
| 110              | BOLT                  |
| 111              | BOLT                  |
| 112              | SPRING PIN            |
| 113              | SCREW                 |
| 114              | SET SCREW             |
| 115              | SCREW                 |
| 116              | SPRING PIN            |
| 117              | BELT B-34             |
| 118              | BELT B-41             |
| 119              | BELT B-38             |
| 120              | BELT B-29             |
| 121              | MOTOR                 |
| 122              | SWITCH                |
| 123              | SET SCREW FOR SWITCH  |
| 124              | NAME PLATE            |
| 125              | SCREW FOR NAME PLATE  |
| 126              | MILLING CUTTER        |
| 127              | CUTTER WASHER         |
| 128              | LOCK SCREW FOR CUTTER |
| 130              | WORK TABLE            |
| 151              | TABLE BASE            |
| 152              | MACHINE BASE          |
| 153              | COLUMN FLANGE         |
| 154              | LEAD SCREW            |
| 155              | NUT FOR LEAD SCREW    |
| 156              | LEAD SCREW BRACKET    |
| 157              | CLUTCH WITH DIAL      |
| 158              | HAND WHEEL            |
| 159              | LEAD SCREW BRACKET    |
| 160              | CLUTCH                |
| 161              | HAND WHEEL            |
| 162              | LEAD SCREW            |
| 163              | NUT FOR LEAD SCREW    |
| 164              | LEAD SCREW BRACKET    |
| 165              | SLEEVE FOR LEAD SCREW |

## PARTS LIST

| <u>PARTS NO.</u> | <u>DESCRIPTION</u>    |
|------------------|-----------------------|
| 166              | ADJUSTING SCREW       |
| 167              | ADJUSTING GIB(TOP)    |
| 168              | ADJUSTING GIB(BOTTOM) |
| 169              | DUST PIECE (BOTTOM)   |
| 170              | DUST PIECE(TOP)       |
| 171              | DOG                   |
| 172              | GIB STOPER            |
| 173              | GIB STOPER            |
| 174              | SCREW                 |
| 175              | NUT                   |
| 176              | DOG'S PIECE           |
| 177              | DOG'S PIECE           |
| 178              | THRUST BEARING #2904  |
| 179              | THRUST BEARING #2903  |
| 180              | BOLT                  |
| 181              | SPRING PIN            |
| 182              | BOLT                  |
| 183              | FLAT WASHER           |
| 184              | BOLT                  |
| 185              | HAND WHEEL            |
| 186              | BOLT                  |
| 187              | SCREW-SET             |
| 188              | SNAP RING             |
| 189              | COLUMN SLEEVE         |
| 190              | BOLT                  |