FSH-65120

HEAVY DUTY LATHE

OPERATOR'S MANUAL

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INDEX

1. Description

1.1 Features

- The lathe of great effort is made to research and design by experience adopting the features of modern high power engine lathe and face lathe so that difficulty of finishing large of precision work piece in general machine shop will be easily solved.
- The lathe bed is made of high-strength cast iron FC 25.
- The bed with high tensile structure for heavy cutting feature.
- The chassis of bed casts box-shaped and to be foot cutting plate.
- Diameter of the spindle is large and installed on "three points support" with three roller bearings for the purposes of heavy duty and precision cutting.
- The speeds of spindle have 12 steps and designed on theoretical base.
- The face plate and claw fit accuracy, rigid structure; it can clamp the work piece handily.
- There are thread cutting, longitudinal-cross moving, auto cutting etc., make for control of the feed gear box.
- The carriage base is high tensile structure for heavy load cutting.
- The apron fits the motor machine. It is carry the carriage be made of longitudinal and cross rapid moving.
- The tailstock are steady heavy load and easily to clamp.
- In this machine all electrical system for control of the electric control box.
- The Feed Rod equipped with safety device for overload to prevent from the damage of this machine.

1.2 Installation

- **Unpacking**

  Each machine is dispatched fully assembled except for attachment such as taper attachment etc.

  Unloading the machine, packed in the wooden case, should be made by wiring cable from the sleepers.

  Lifting unpacked machine is made easily by the method shown in the following figure and according to the center of gravity of this lathe.

  Rising and lowering the lathe, should be done carefully, especially when you lower the lathe, be careful not to bump it against the floor and give attention to the other men to attain the purpose of safety.

- **Foundation**

  The incomplete foundation apt to produce vibration and super-hand tool or tungsten carbide tool are easily influenced by the vibration, it is impossible to avoid vibration completely during cutting operation when the heavy duty large lathe is installed on the incomplete foundation.

  The KENT USA ALL GEAR HEAVY DUTY SUPER LATHE is especially designed to avoid vibration during heavy cutting operation by reinforcing each part and be lowering centroid through mono-block base which enables the ground to absorb vibration as much as possible, the foundation work should be perfect for efficiency of super-hard tool to the maximum in the operation of high speed, precision and heavy cutting, the foundation work should be completed for 10 days before the delivery of the lathe, it is according to the foundation plan figure shown as follow.

- **Preparation**

  Anchor bolt and installation block, the details show in the fig 12-1.

  That's type and quantity required as shown in part list supplied by our company.

- **Machine Position**

  In order to adapt the cutting of larger work pieces, the space of machine must fully reserve so that raising and falling, clamping, calibrating and clean of work piece can be well-done.

- **Method**

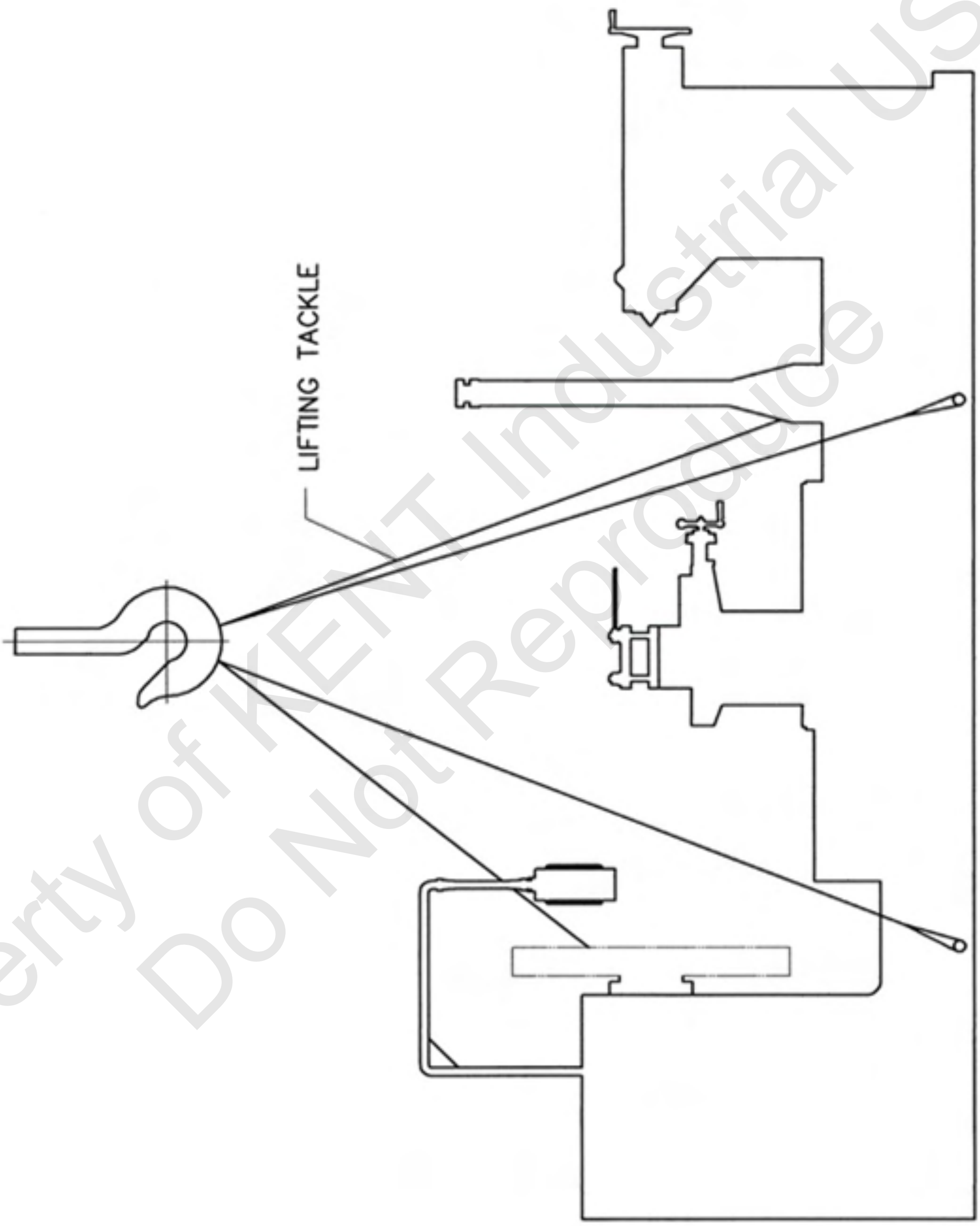
  As the state of the machine lifted (FIG 1-1A), anchor bolts, jack bolts and installation blocks must be arranged as shown in fig 12-1 and the lathe has to be lowered down gradually against the anchor holes, then put mortar around anchor holes. Finally, jack bolts are adjusted and calibrated level. When mortar is completely concreted, lock anchor bolts and jack bolts integrate into the lathe and foundation.

  Check the level of the lathe when one month later, then check it every half year and then ensure the level of this lathe, it is essential for the accuracy maintaining of this lathe.

- **Caution**

  Before mix into the concrete, that's must to be pre-stay pipe line of electric wire.

FIG 1-1A ARRANGEMENT OF LIFTING TACKLE



1.3 Machine Operation

Power Source Wiring

- Power connector is located at lower left part of the lathe.
- Power source switches with fuse must be set up in the lathe and electric circuit, the wire of the lathe must be connected too.
- After wire connection, then, input the power source by power source button. To change the spindle in low speed, check the spindle rotating direction by operating the start-lever in the right side of APRON. See the result whether it is normal or not, in this case, the spindle rotates to the direction of operator, then the rotation is normal. As the spindle rotates to the opposite direction, you should replace any two of the three electric wires.

Identification before Operation

- Supply oil to all the necessary positions.
- Check all the levers and handles, whether or not in normal condition.
- Check the V-belt of headstock motor, whether it is in adequate tension state or not.
- Make clearly understand with the relative position before operate the transmission mechanism, such as head stock, feed gear box, cross slide, etc., and automatic feeding, thread cutting.

1.4 Maintenance

Identification on Operation

- Keep the machine in accurate state and long life under normal conditions of usage.
- Remove the chips and swarfs, clean every part of the machine especially slide ways daily as necessary and pay attention to the power source required.
- Renew the lubrication oil in headstock after 3 months usage, in order to reduce the noise be produced.
- Stop the machine immediately if the following are happened, overheat in headstock, vibration, oil leakage or no oil, then repair it as soon as possible.
- Don't use hammer or other tool to knock the work piece, in order to keep the accuracy of spindle.
- Form to habit to put every tool in right position, and don't put any tool in slide way to avoid hurting slide way and then affect accuracy.
- Don't to adjust or operate this machine arbitrary unless operator to do it.
- It is great profit to the life and accuracy of this machine to maintain it periodically.
- Clean the machine, remove the chips from machine and surroundings, apply oil on the sliding surfaces and turn off the power source after work per day.

1.5 Oil Recommendations

Oiling Position	Parts to be Lubrication	Recommended Oil
Headstock	All the gear, shafts, bearings, holes and shifter in headstock.	1. CPC circulation oil R53. 2. Mobil DTE oil light. 3. Sunvis 706 or 916.
Apron	All the gear, shafts, bearings, holes in apron. And guide way, cross and top of saddle.	1. CPC circulation oil R44. 2. Mobil Vectra oil No.2. 3. Suncoco way lubricant SAE 80.
Feed gear box	All the gear, shafts, bearings, holes and shifters in feed gear box.	1. CPC general purpose oil 30. 2. Febis K-53.
Hand oiling	Change gears, lead screws of longitudinal cross, tailstock center, sleeve and lead screw bracket.	1. CPC general purpose oil 30. 2. Mobil plex 46.

1.6 Fault Diagnosis

Fault	Probable cause	Remedy
Over heat of headstock bearing	1. Oil level in headstock is too low. 2. Viscosity of lubricant is wrong. 3. Oil pipe is blocked or leaked. 4. Spindle is too fastened. 5. Filter fails to be effective.	1. Check the oil levels in all reservoirs. 2. Same as recommended oil. 3. Check and repair it. 4. Rotate and adjust it. 5. Clean or renew it.
Oil leakage at shaft cover, box cover, spindle bore or bolt.	1. Bolt is loosed. 2. Washer is damaged. 3. Oil is over. 4. Seal is broken.	1. Fasten it uniformly. 2. Renew. 3. Reduce. 4. Renew.
Vibration of knife tool	1. Work piece is clamped too loose. 2. The style or material of knife tool is not correct.	1. Clamp it tightly. 2. Select correct tool according to the material, diameter of work piece and cutting speed.

1.7 Lubrication Diagram

NO let	Method	Q'ty	Oil no	Schedule	Oil change
1. Headstock 2. Feed gear box	Open oil tank cover	Few	1	Gauge once a month of oil tank left stand	New machine once a month, later every other month
3. Change gears	Open the V-pulley cover	Few	2	Daily	
4. Compound	Use gun oiler.	Few	2	Daily	
5. Apron	Open the cup, fill by gun oiler.	Few	2	Daily	
6. Tailstock	Use gun oiler	Few	2	Daily	
7. Lead screw Feed Rod	Fill with gun oiler	Few	2	Daily	
8. bed way	Fill with hand pump	Few	2	Daily	
9. Bracket	Fill with gun over	Few	2	Daily	
10. Carriage screw	Fill with hand pump	Few	2	Daily	

OIL NO	MOBIL	ESSO	SHELL
1	DTE Heavy medium	Tellesso 52	Tellus 68
2	Vactrn NO.	Febis K-53	Tonna Oil 27

1.8 Operation of This Machine Assemble and Disassemble

- WHEN DOES REISING-LOWING OF THIS MACHINE, BE CARE ABOUT AS FOLLOW 3:
  First, consider the weight of this lathe (see specification at the front of this publication), notice the wire-rope and crane whether it is in sale load or not.
  Because that cubic-content and weight of this lathe was very large, when raising and lowing the lathe should be done carefully, and pay attention the safety of nose parts persons.
  Before the raising, operator can slightly adjust the gravity position of machine from the carriage and tailstock.

2. HEADSTOCK

2.1 General Description and Adjusting

Headstock is the main part as to the quality of the heavy lathe, in order to accomplish the purpose to cutting large work pieces in modern machine shops, the main spindle installed on “three points support” to make the front bearing near work piece and driving gear, its generous through hole increase the range of cutting work, all gears in headstock are made of chromium-molybdenum steel, treated by ho treatment to exert form and durable from wearing. After long time use, bearing suffer from wearing and tearing, in order to avoid clearance arising. This machine was designed to have clearance adjusting nut, its adjusting process is as follow: loose the left nut and until smooth and no clearance, then fasten the left nut tightly. (Refer to the Fig 2-102).

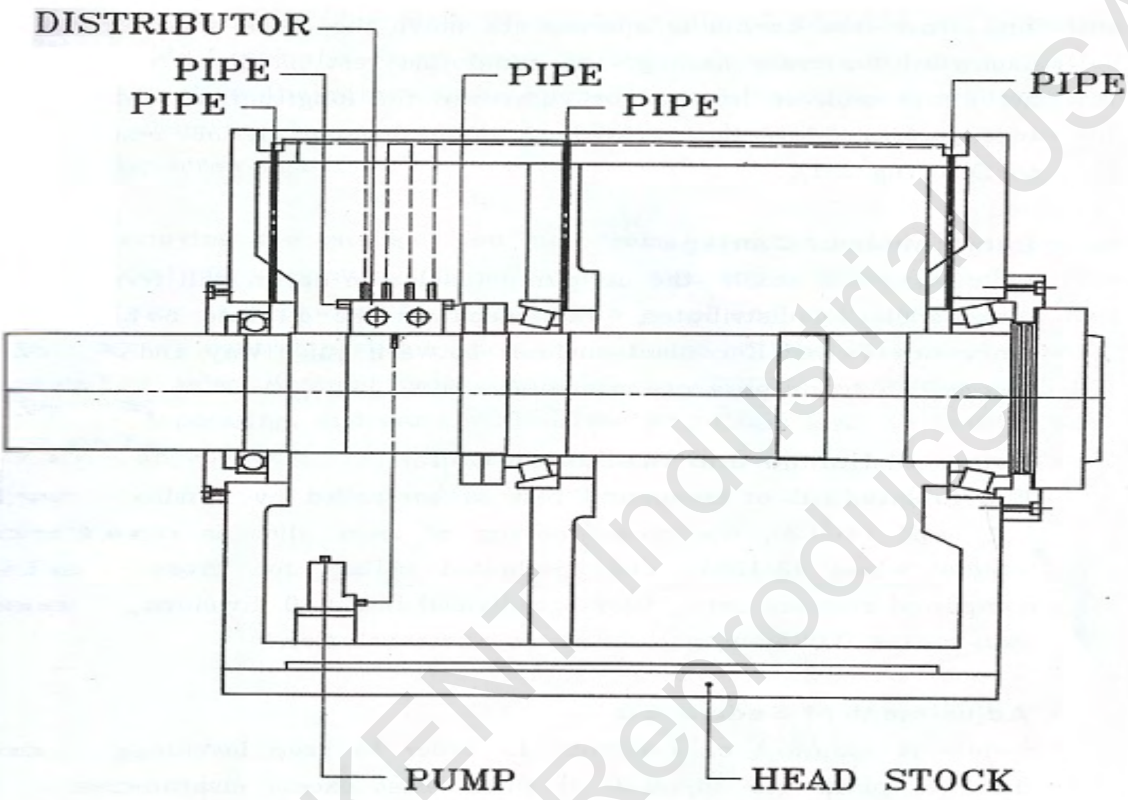
2.2 Lubricant of Equipment of Headstock

To lubricate the gears, bearings in headstock, the ways adopt oil bath and pump forced lubrication system. The oil cup on the headstock for oil supply while the oil level below the Red line in oil window, for change all the oil in headstock can be performed by taking off the oil plug at the headstock, let the oil flow out, then clean out the precipitation inside the headstock oiling inlet, and the lubricating oil the headstock up to the red line of oil window.

If the oil is discolored or deteriorated, replace it with new oil. (Refer to the Fig 2-1A)

The machine should be changed the oil; first in after three months running, the second time change the oil should be after half year and then every year changes once.

FIG 2-1A LUBRICATION OF HEADSTOCK



LUBRICATION OF HEADSTOCK

The oil bath and pump forced lubrication systems are used in the headstock with need of supply the gear and bearing. The oil cup on the headstock for supply, while the oil level below the red line in oil window, in case the oil is discolored or deteriorated, replace it with new oil, for changing the oil in the headstock can be performed by takeoff the oil plug at the headstock, let the oil flow out, them clean out the precipitation inside the headstock, and stop up the plug again, then open the oil cover, oiling the lubricate oil unto the headstock up to the red line in oil window.

2.3 Spindle Operation

After the PREPARATION FOR OPERATION is finished, then you can perform SPINDLE OPERATION, turn “ON” the power supply switch, set the spindle speed change lever in required position, push main spindle jog button “5”, select the spindle forward or reverse rotation button, if spindle will rotate the wrong direction to operator, check the all is in abnormal condition, when you select forward, push the main spindle button”2” for F position, the spindle will rotate continuously. If you will charge spindle rotating direction, push main spindle stop button”3” waiting the spindle is actually stopped, then push main spindle button “2” for R position, the spindle will rotate reversely. (Refer to the Fig 2-101).

Caution: stop the spindle completely before you will change spindle rotating direction, this will protect transmission mechanism from damage.

2.4 Change of Spindle Speed

The speed change is made by speed change lever (2-105) (2-106) (2-107) of combine these; there are 12 speed steps, all its rotating speeds and change lever position are listed below. (Refer to the FIG 2-1) NOTE: Stop the spindle completely before you will change the speed of spindle, otherwise, it is apt to create collision between the gears and induced hurt on gear face or caused the crack of gears, so as to decrease the vibration and noise, increased the accuracy and life of this machine.

2.5 Fore-backward Adjustment of Headstock

When the centerline of main spindle is not paralleled with the bed way, it could adjust by clamp screw (2-116) and adjust screw (2-115), the adjusting method: If the headstock is needed to move backward, loose the clamp screw, fasten the adjusting screw to [roper position, then fasten the clamp screw again, if the headstock us needed to move forward, loose the adjusting screw, fasten the clamp screw to proper position, then fasten the adjusting screw again. (Refer to the Fig 2-1).

FIG 2-1 HEAD STOCK

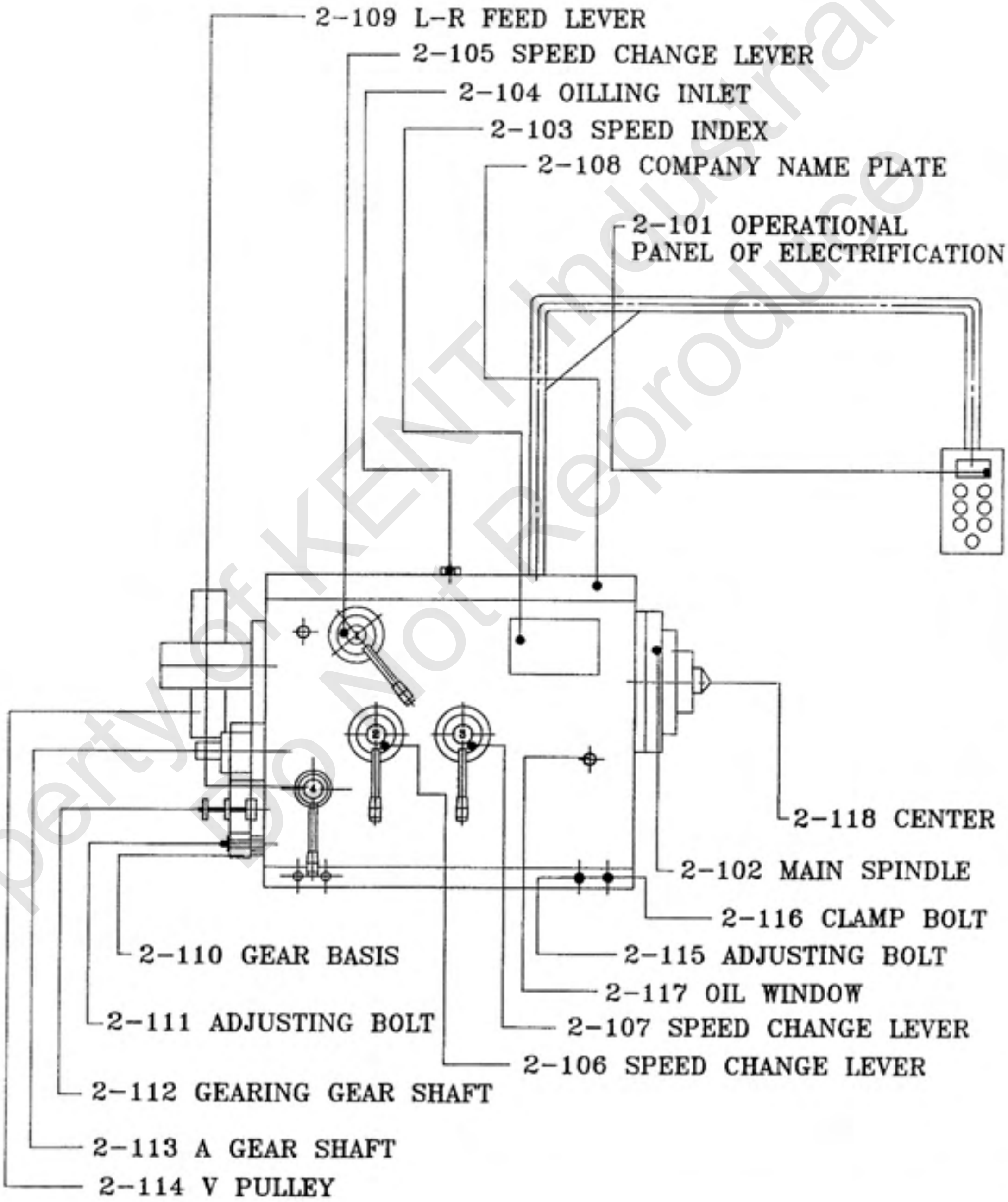
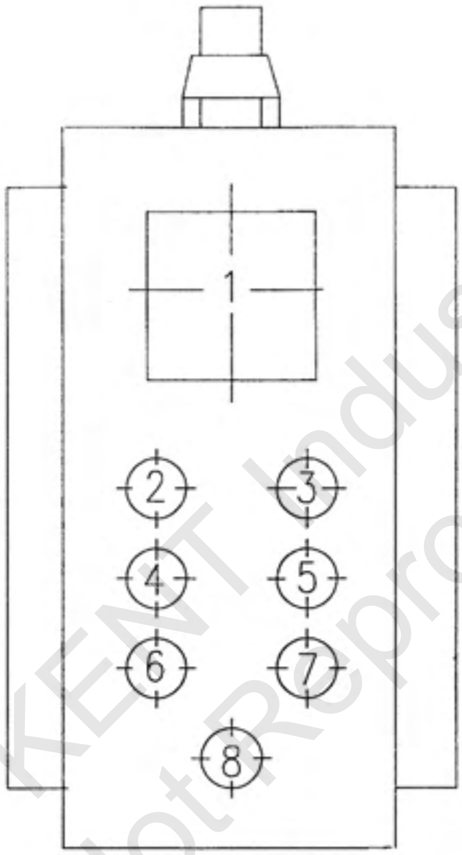
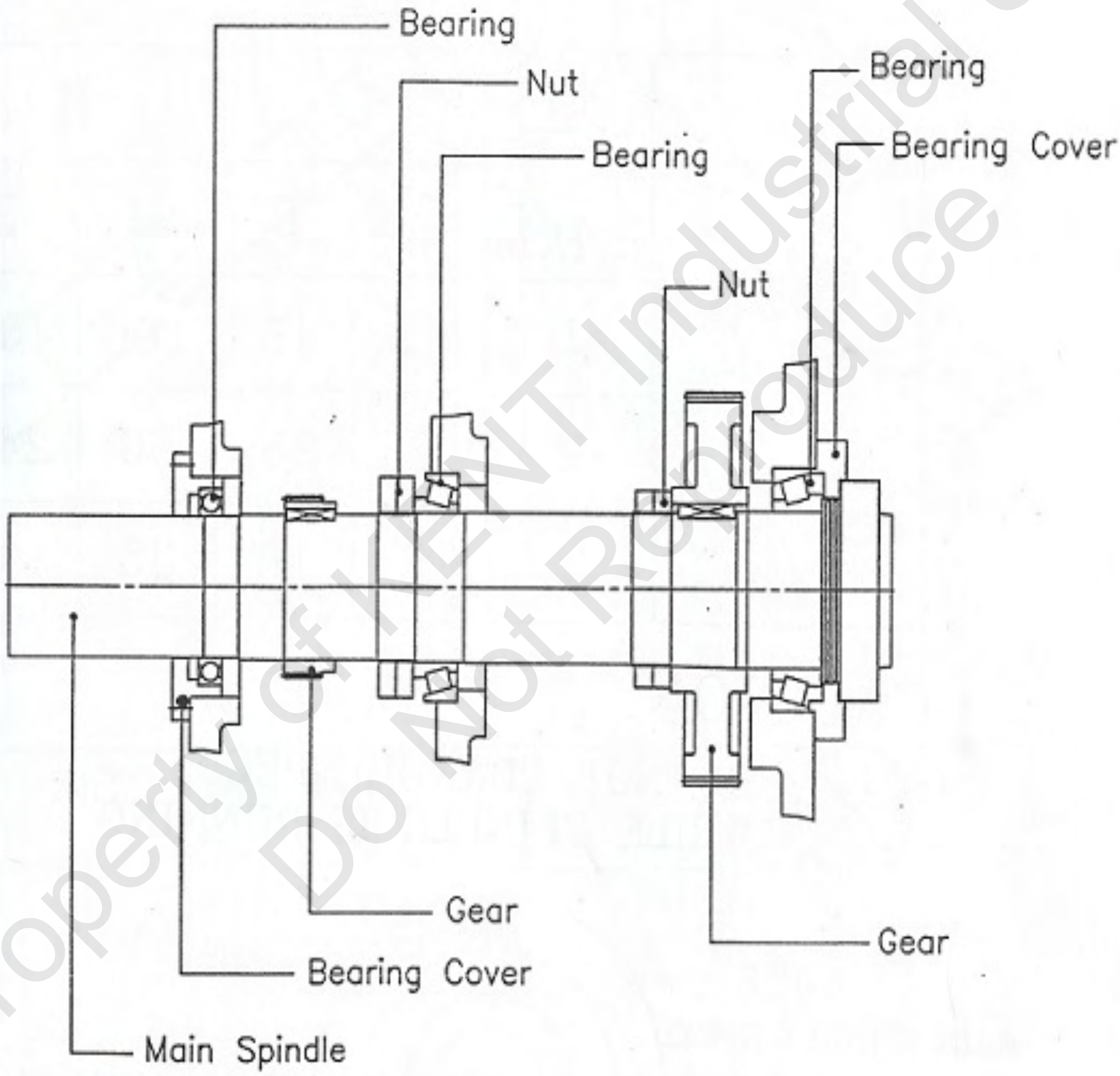


FIG 2-101 OPERATORS PANEL



1		AMP METER
2		POWER INDICATE LAMP
3	SW1	CONTROL SWITCH
4	PB1	MAIN SPINDLE JOG 'F'
4	LPB1	MAIN SPINDLE 'F'
6	PB2	MAIN SPINDLE JOG 'R'
7	LPB3	MAIN SPINDLE 'R'
8	SP1	MAIN SPINDLE STOP

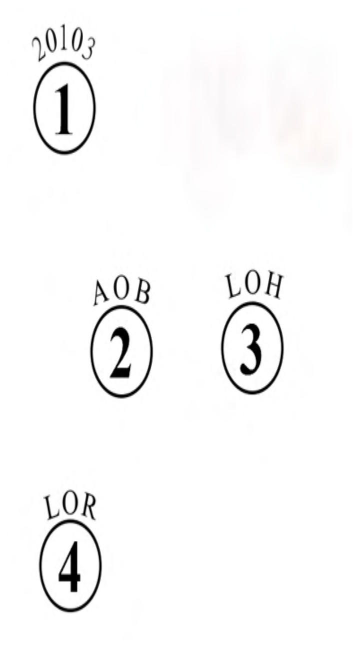
FIG 2-102 MAIN SPINDLE STRUCTURE

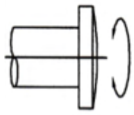


MAIN SPINDLE STRUCTURE

The main spindle was made of forge steel by special treated, the main spindle installed on three precision bearing, the front two taper roller bearing are opposed, the rear bearing is a ball bearing, to obtain high stability and precision.

FIG 2-103 MAIN SPINDLE SPEED



 R.P.M	L		H	
	A	B	A	B
1	11	45	100	400
2	7	28	60	240
3	4	16	35	140

CAUTION:

DO NOT CHANGE SPEED WHILE SPINDLE IS RUNNING

MAIN SPINDLE SPEED

The main spindle speed was made to research and design experience of this machine, for form's three control levers of fitting finished, total have 12 steps change speed, that's change range as follow the change speed chapter (FIG 2-103), in universal machine shop so that large size of precision workpiece is usable.

The main spindle gearshift introduction: (1) 3-steps main spindle speed change indication, refer to the fig 2-105. (2) 2-steps main spindle speed change indication, refer to the fig 2-106. (3) 2-steps main spindle speed change indication, refer to the fig 2-107. (4) internal/external thread conversion indication, refer to fig 2-109.

FIG 2-105 NO.1 OPERATION OF 3-STEPS CHANGE LEVER

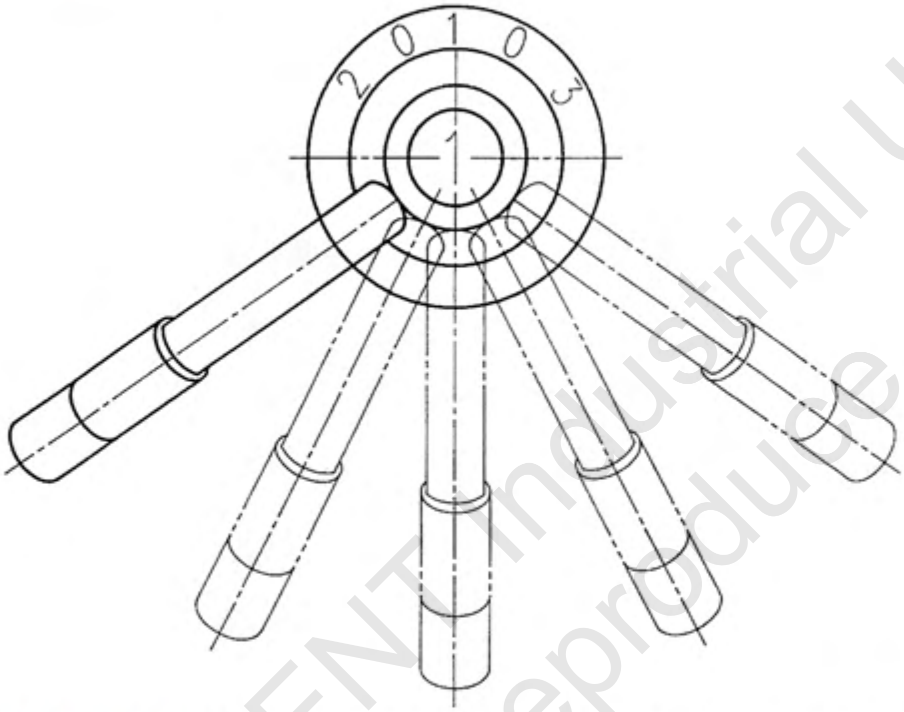


FIG 2-106 NO.2 OPERATION OF A-B CHANGE LEVER

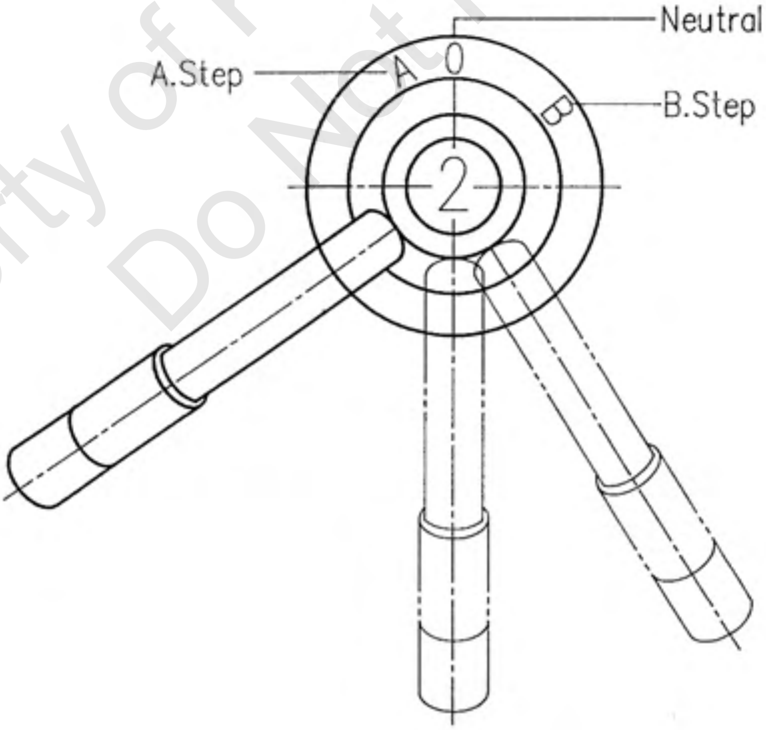


FIG 2-107 NO.3 OPERATION OF H-L CHANGE LEVER

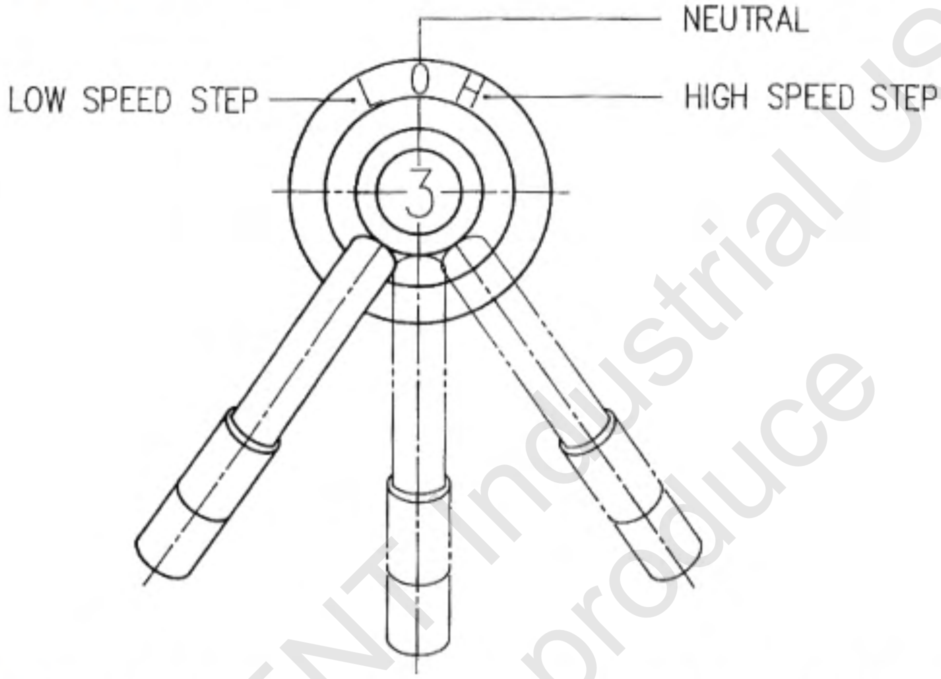
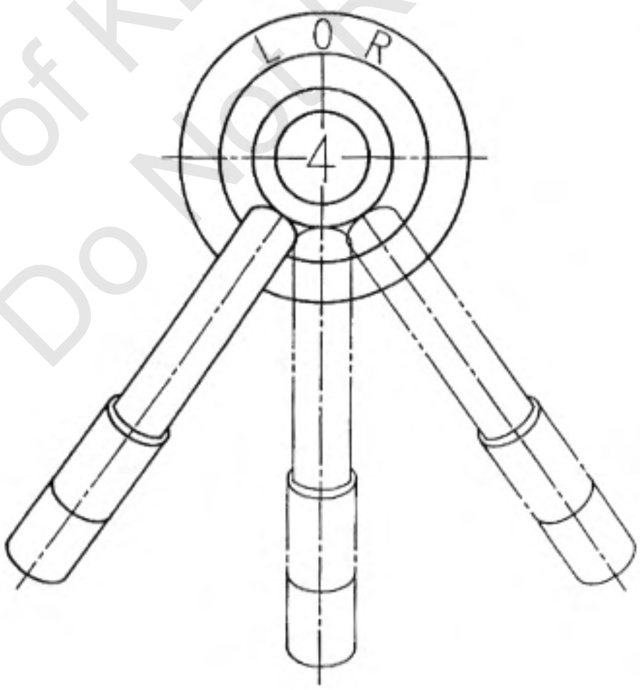
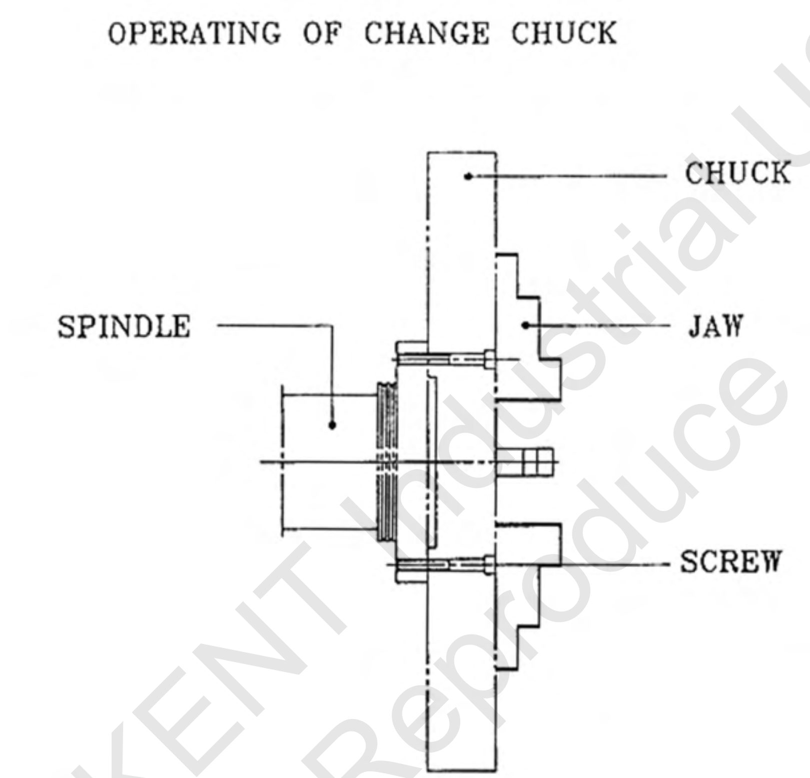


FIG 2-109 NO.4 OPERATION OF FORWARD-REVERSE CHANGE LEVER



2.6 Operating of Change Chuck

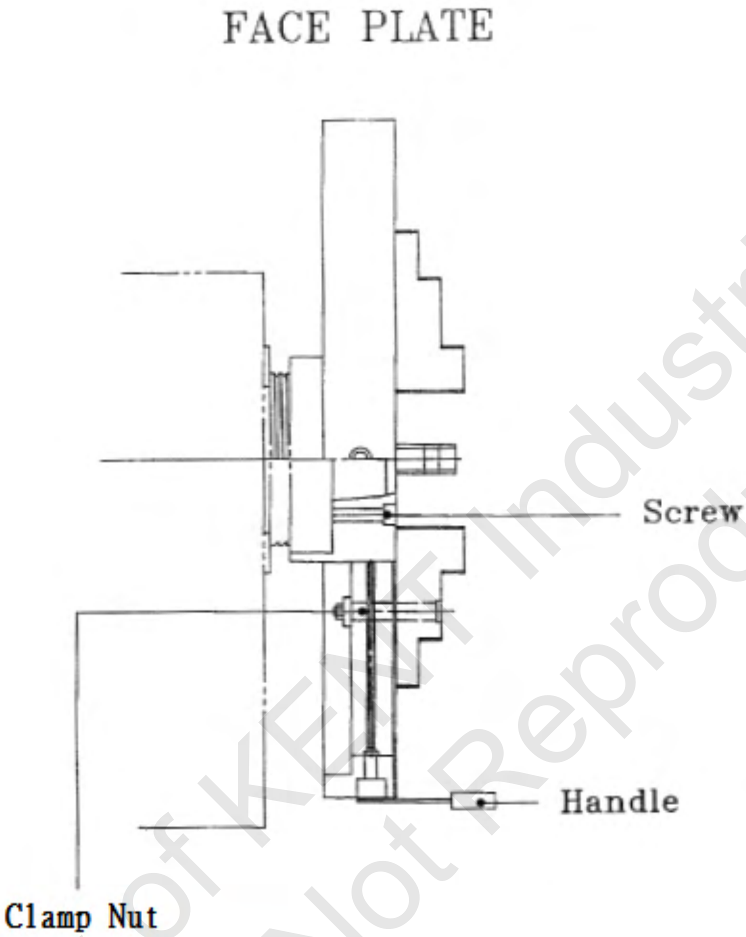
2.6.1 4-Jaw Chuck



4-JAW CHUCK

The 4-jaw chuck is use in cutting more big workpiece. If in cutting the irregular body of workpiece, must change the plain face, first loose the screw be take off the chuck and fitting the plain face, then locking the screw the change work was finished.

2.6.2 Face Plate



FACE PLATE
Face plate on the lathe head, that's function for use claw clamping solid workpieces, it has clamping and lifting workpieces on operational.

3. CARRIAGE

3.1 General Description

The carriage bestrides and crosses on the bed with way in front and plane in rear side designed as narrow rail type. Its main structure include addle body slide plate, compound rest and square tool rest.

Its function consists that “installed the tool rest on compound rest seat and fixed the tool” and provide the operation of traverse and longitudinal feed.

3.2 Lubrication of Carriage

As moving the saddle, the oil pump inside the apron will force the oil into saddle oil distributor, then separate the oil into both sides of cross side D and E contact surfaces between bed way and saddle, to accomplish to purpose of forcing lubrication. (Refer to the FIG 3-1A)

3.3 Usage of Handle and Graduated Collar

The longitudinal of compound rest is controlled by handle wheel (FIG 5-1) and (FIG 3-103), the cross moving of cross slide is controlled by handle wheel (FIG 3-105). The graduated collars for cross slide and compound rest are same, they are divided into 240 divisions, each division means 0.025mm, and 6mm for one revolution.

3.4 Adjustment of Saddle Gib

Saddle is strived on bed ways. In order to keep leveling accuracy, there is plane gib to adjust. If there exist excess clearance between saddle and bed ways, loose the fixing nut, then fasten the adjusting screw in right-hand rotation, the plane gib will be pushed to proper position, then fasten the fixing nut again.

3.5 Adjustment of Cross Slide Gib

After long-term motion, cross slide arisen clearance from wearing. . In order to eliminate the excess clearance, the cross slide gib should be adjusted. Its adjusting method: Loose the fixing screw in the rear side, fasten the adjusting screw, then the gib will be pushed forward to proper position that the clearance between saddle and cross is adequate. Fasten the fixing screw again. (Refer to the FIG 3-103, F3-105)

As moving the carriage, you can use by either auto-rapid move or manual for operating. When you select auto-rapid move, selecting the advance or backward from operator’s panel and shifting the auto feed lever at neutral position, then the carriage will be auto-rapid moving. When you select manual move, using APRON handle wheel (FIG 5-1) comes operating, and must the long-Cross lever to neutral position in advance.

FIG 3-1 CARRIAGE

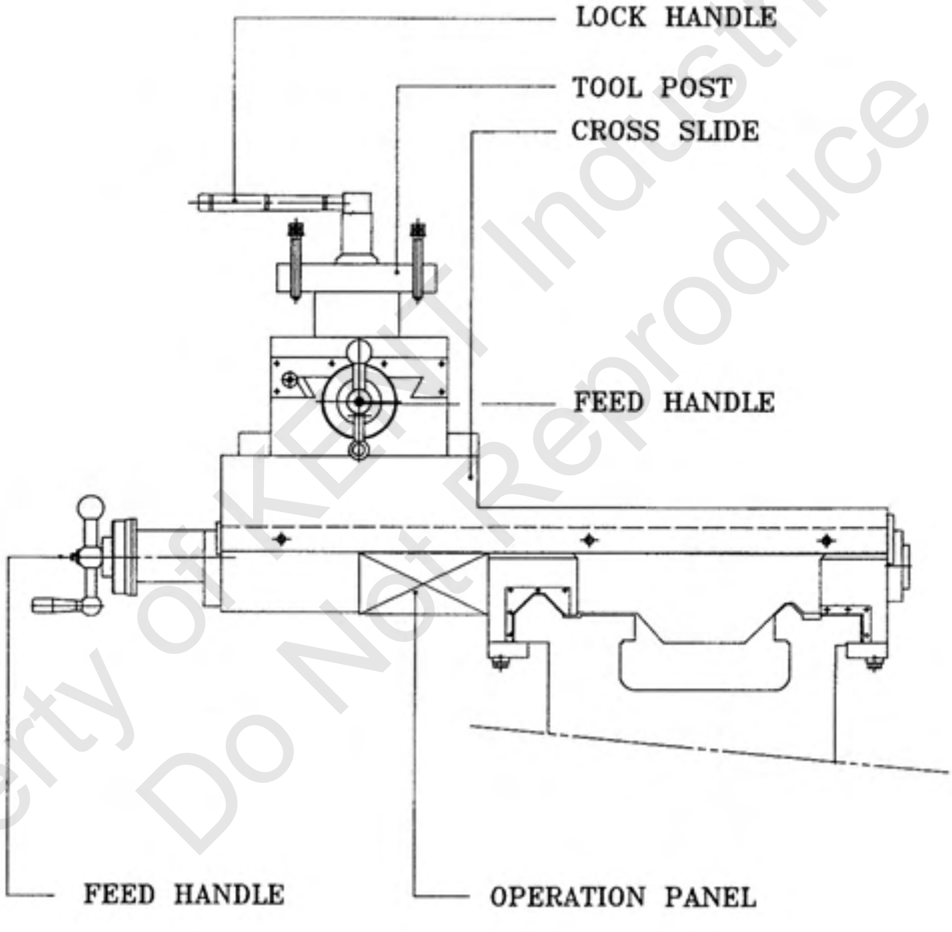
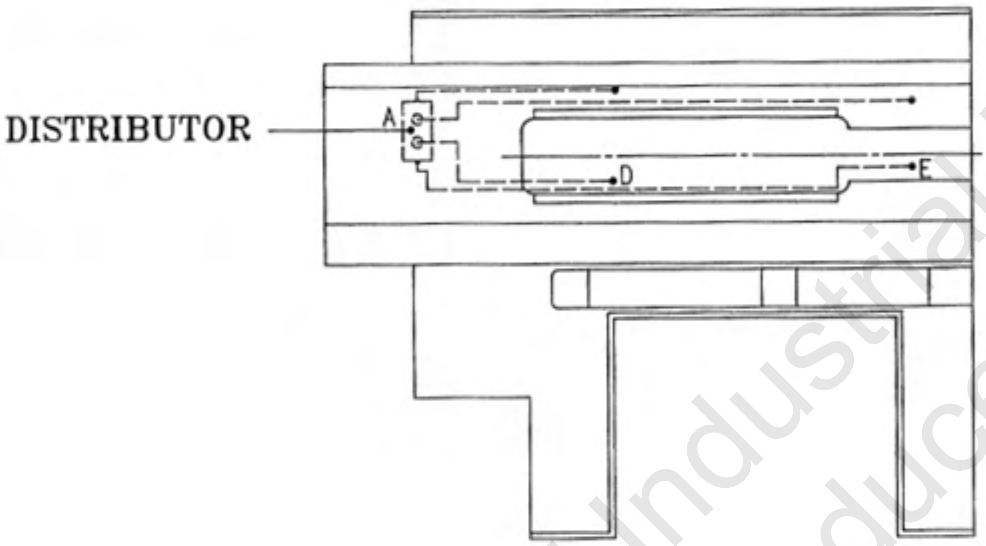
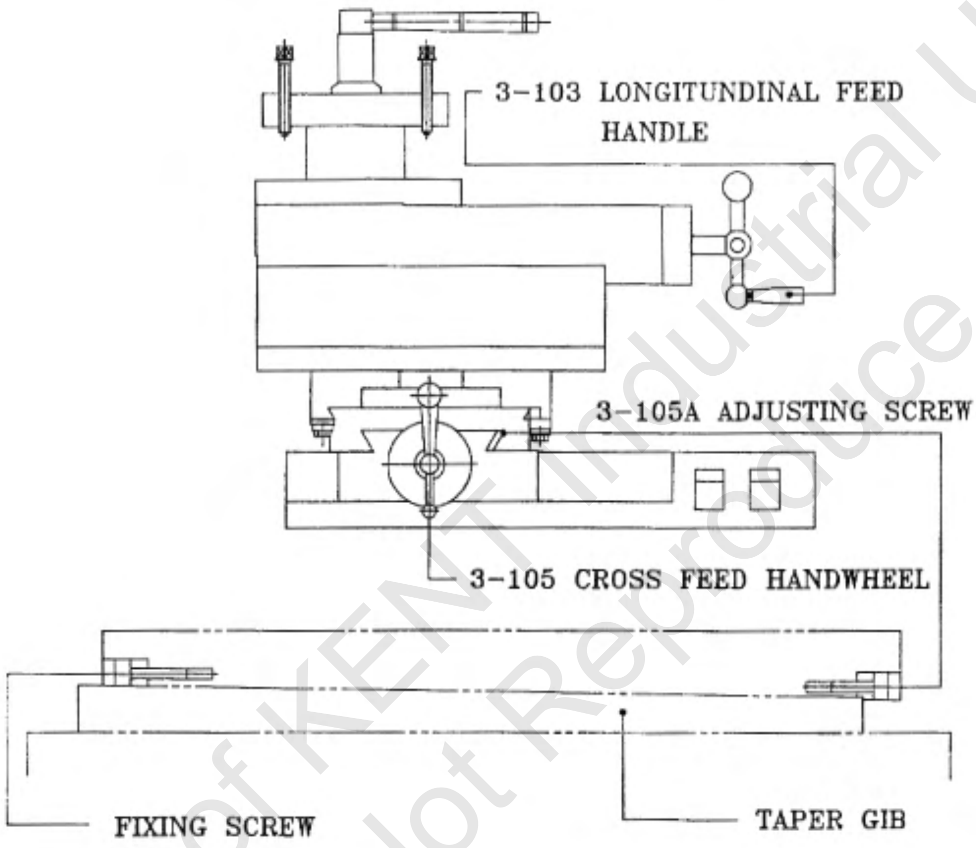


FIG 3-1A LUBRICATION SYSTEM FOR SADDLE



- As moving the saddle, the oil pump inside the apron will force the oil into saddle oil distributor "A", then separate the oil into both sides of cross slide D and E contact surfaces between guide way and saddle, to accomplish to purpose of force lubrication. (Refer to FIG 3-1A)
  In case where the oil is discolored or deteriorated, replace it with new oil.

FIG 3-103, FIG 3-105 ADJUSTMENT OF CROSS SLIDE GIB



ADJUSTMENT OF CROSS SLIDE GIB

Its adjusting method: First, loose the fixing screw in the rear side, and then fasten the adjusting screw, then the gib will be pushed forward to proper position that the clearance between saddle and cross slide or compound tool rest slide and cover are adequate. How long the shifting distance of gib decides to the size of clearance.

The last, fasten the fixing screw again.

FIG 3-108 OPERTION PANEL OF CARRIAGE

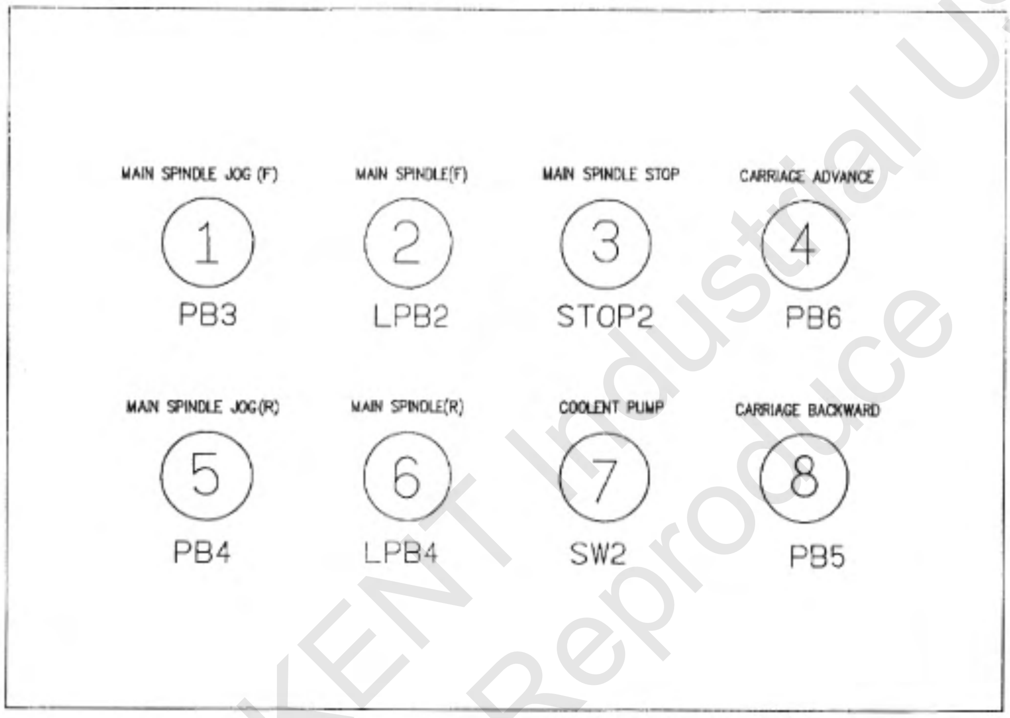
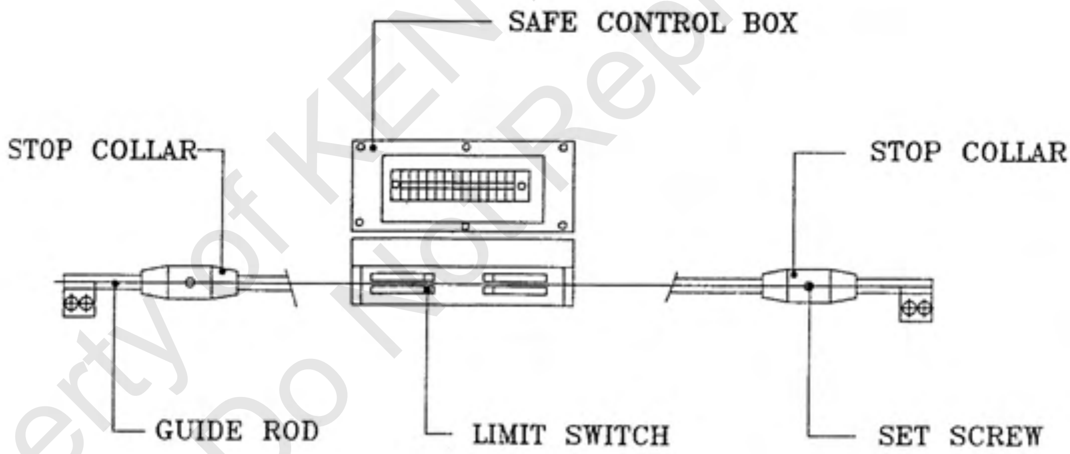


FIG 3-111 SAFE CONTROL SYSTEM

- When electric longitudinal feed may be according to cutting size of workpiece which you need, and then adjust the position of stop coilar to suit position in advance.
- In operation, the limit switch was installed at the back of carriage and it will be stopped feeding automatically until reach the position of stop collar, and will succeed in the effect of safety.
- The attachment of stop coilar is essential for accurate turning and cutting and feeding. These safety devices can be used to prevent the carriage over-running.



(Option)

4. TAILSTOCK

4.1 General Description

The tailstock center of spindle center is located at the tailstock spindle, the tailstock spindle is located in the rigid tailstock body, the tailstock body links the tailstock base, the tailstock can be moved along the bed ways, and be fixed at anywhere on the bed ways. (Refer to the FIG 4-1 & FIG 4-2)

4.2 Lubrication of Tailstock

Tailstock is lubricated by oil bath lubrication system, and center sleeve adds oil at any times.

4.3 Adjustment

When the spindle and tailstock center(4-101) are not in same central line, loose the front and rear adjusting screws (4-106), adjust the tailstock center until its central line is same as spindle, then fasten both the screws(4-105). (Refer to the FIG 4-1)

4.4 Operational Method

If needing the tailstock moved at anywhere, loose the tailstock locking bolt (4-105), take advantage of arm. When the tailstock moves proper position, fasten tailstock screw so that the tailstock can be fixed on the bed way.

In order to adjust the tailstock spindle, loose the spindle clamp lever (FIG 4-102), for long distance moving, the rapid movement should be used, stake fluctuation lever (FIG 4-104) to the rapid button, the hand lever (FIG 4-103) will be rapid moving. When tailstock spindle make short distance move, take the fluctuation lever to slow button, hand wheel make tailstock center and center of work piece relatively, reach to the proper stress, fasten the lever tightly again, then the cutting work can be started.

If you want to remove the center to rotate the tailstock hand wheel in counter clockwise direction, the center will be pulled back to the end, then the center will be remove easily.

Caution: Remove the center lightly, otherwise the screw and nut will be hurt and deformed by impact.

FIG 4-1 TAIL STOCK

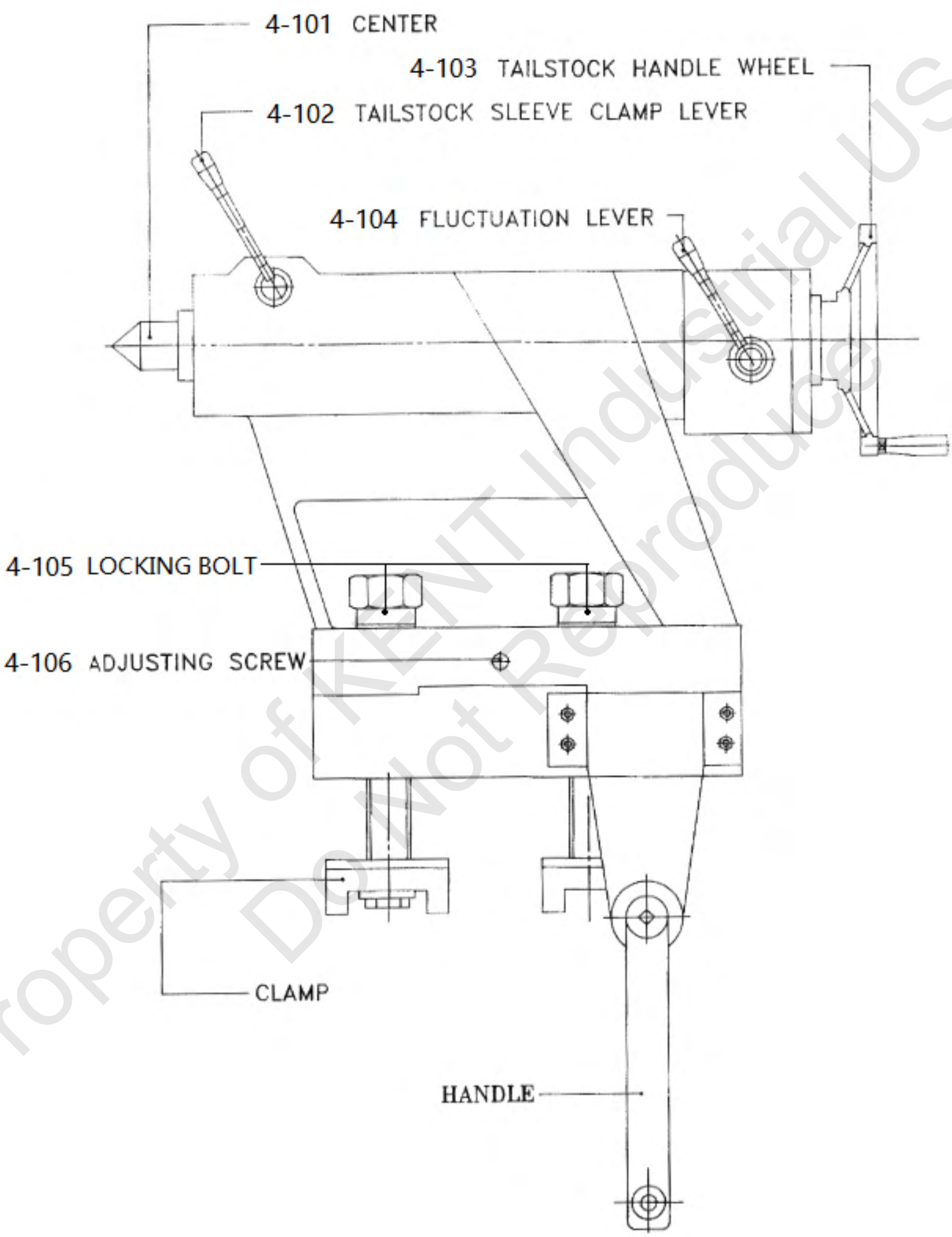
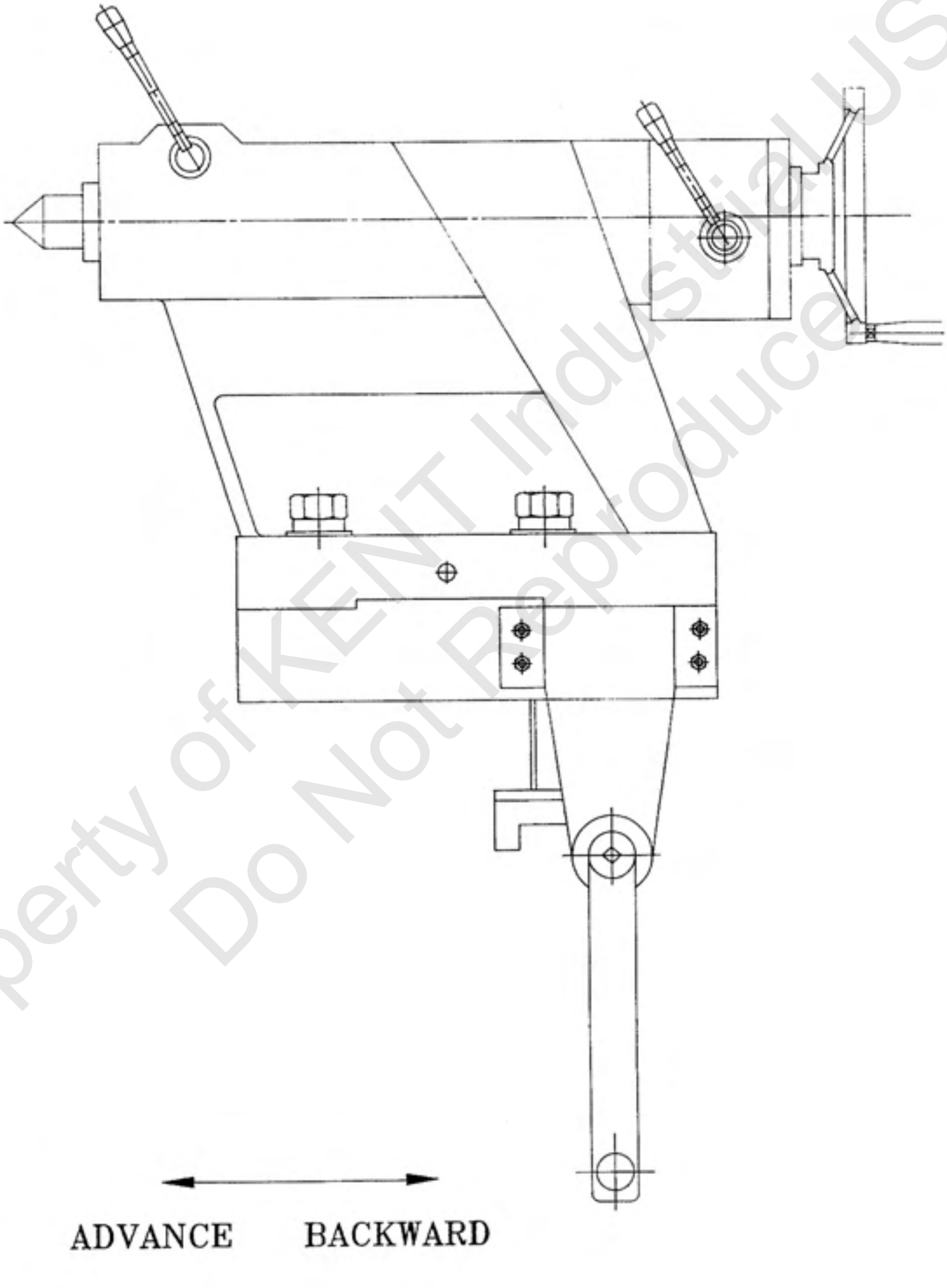
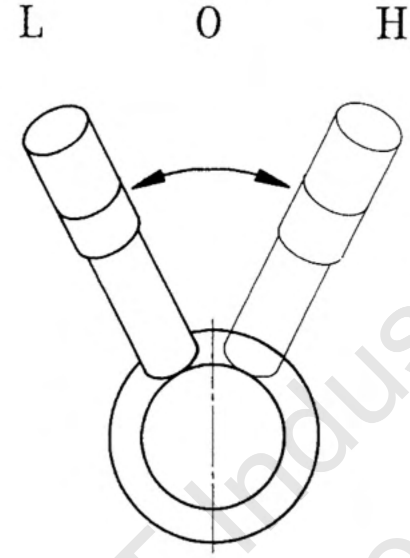


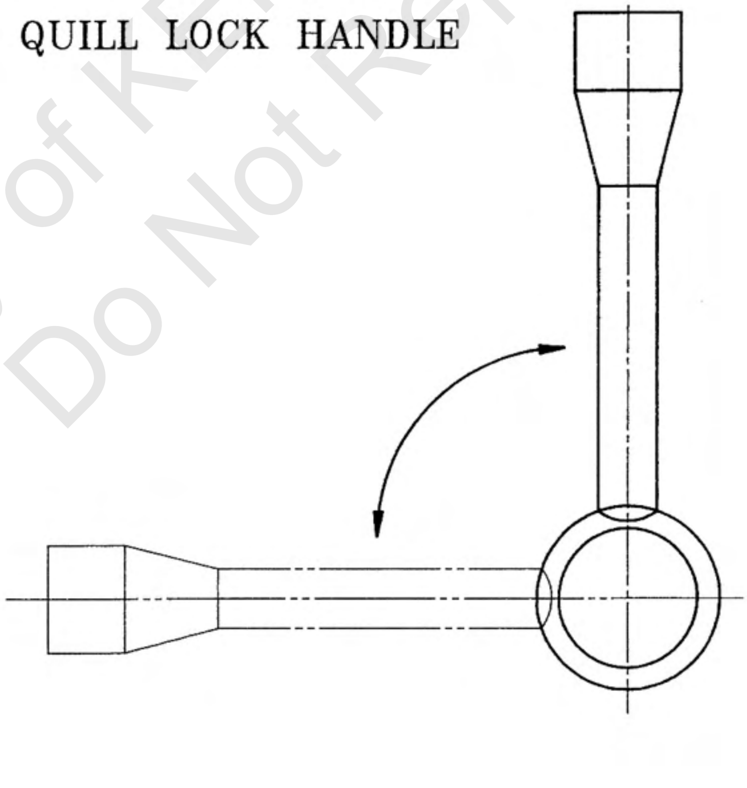
FIG 4-2 CRANK DEVICE OF TAILSTOCK



TWO STEP CHANGE LEVER



QUILL LOCK HANDLE



5. APRON

5.1 General Description

The case iron box that is installed at front of carriage is called apron, there is a mechanical pump in the apron, there is s mechanical pump in the apron to lubricate gears, bearings, shafts, contract surface between carriage and cross slide, the motor at the right of apron is made of leftward-rightward automatic rapid moving. The function of the transmission mechanism is to move cross slid forward-backward and to move the carriage leftward-rightward safely device is also install -ed in apron to reduce or eliminate the damaged to overload happens, it should be kept in mind of supply adequate oil in apron as mentioned before. (Refer to the Fig 5-1 & Fig 5-2)

5.2 Lubrication of Apron

The oil bath lubrication and splash lubrication are adopted in the apron. When the hand-wheel is rotated, the oil will be slashed by gears and shafts to lubricate each part of apron.
Supply oil into oil inlet should up to the red line of oil window. (Refer to the Fig 5-3)

5.3 Transmission of Tread Cutting

When the feed-thread lever is put at thread position, the lead screw will be driven by feed gear box, push the half-nut lever (Fig 5-4) downward to engage the leadscrew, then the saddle can be moved leftward or rightward to perform the thread cutting.
Caution: Before pushing the half-nut lever downward, be certain that the auto-feed lever at neutral position and the long-cross change lever at the neutral control position, then the half-nut lever should be operated. (Refer to the Fig 5-5)

5.4 Feed Transmission

The auto-feed lever (Fig 5-5) on neutral can be put to control rightward, leftward, forward and backward moving.
Caution: Only as the half-nut lever (Fig 5-4) at the upward position i.e. the half-nut don’t mesh with the leadscrew, and the auto-feed change lever (Fig 5-5) at neutral position, then the long-cross lever can be put at the “longitudinal” position.
Only as the manual-auto change lever (Fig 5-5) at neutral position, then the long-cross lever can be put at the “cross” position.

FIG 5-1 APRON

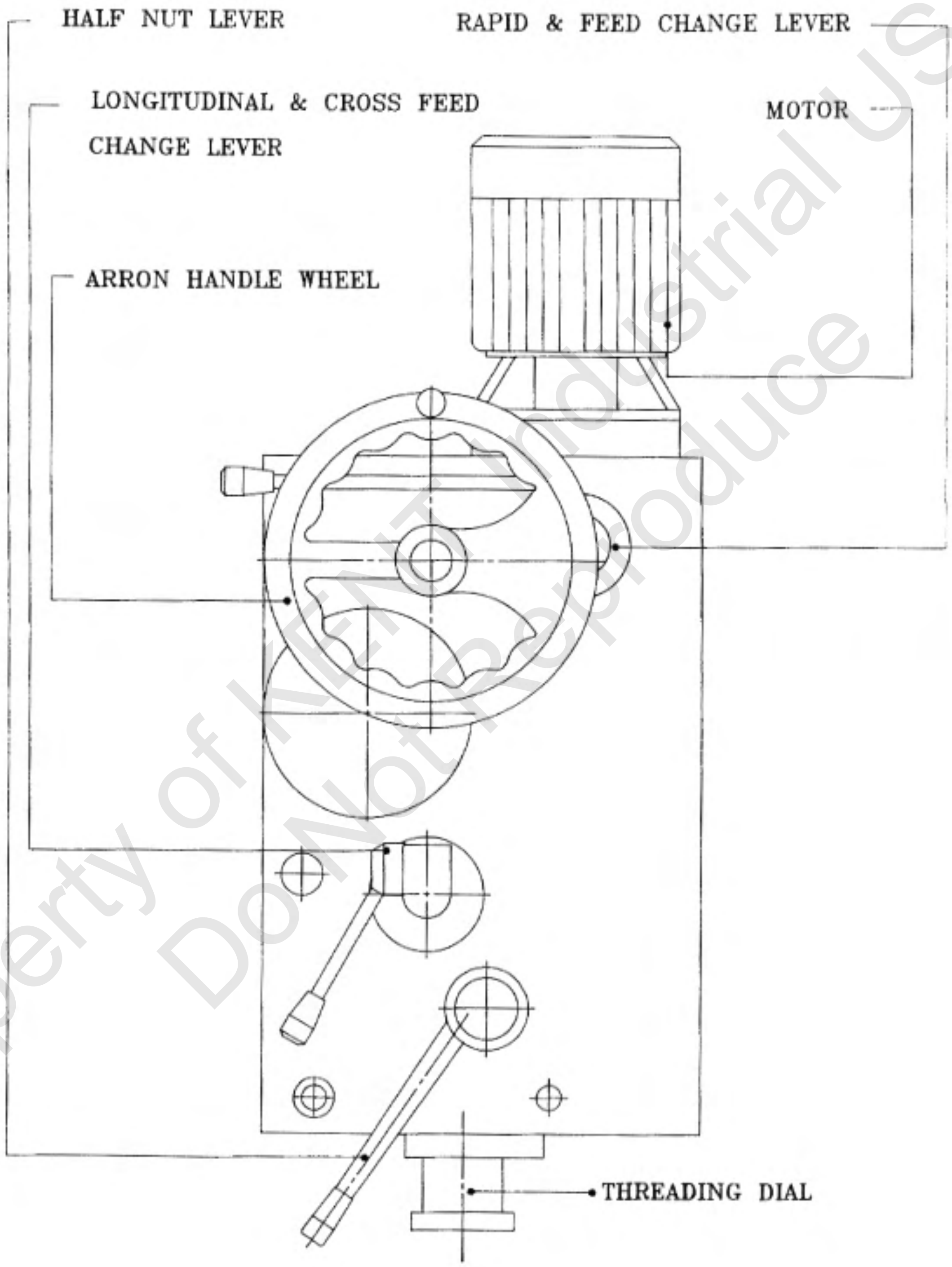

HALF NUT LEVER
RAPID & FEED CHANGE LEVER
LONGITUDINAL & CROSS FEED
CHANGE LEVER
MOTOR
ARRON HANDLE WHEEL
THREADING DIAL

FIG 5-2 OPERATION OF APRON

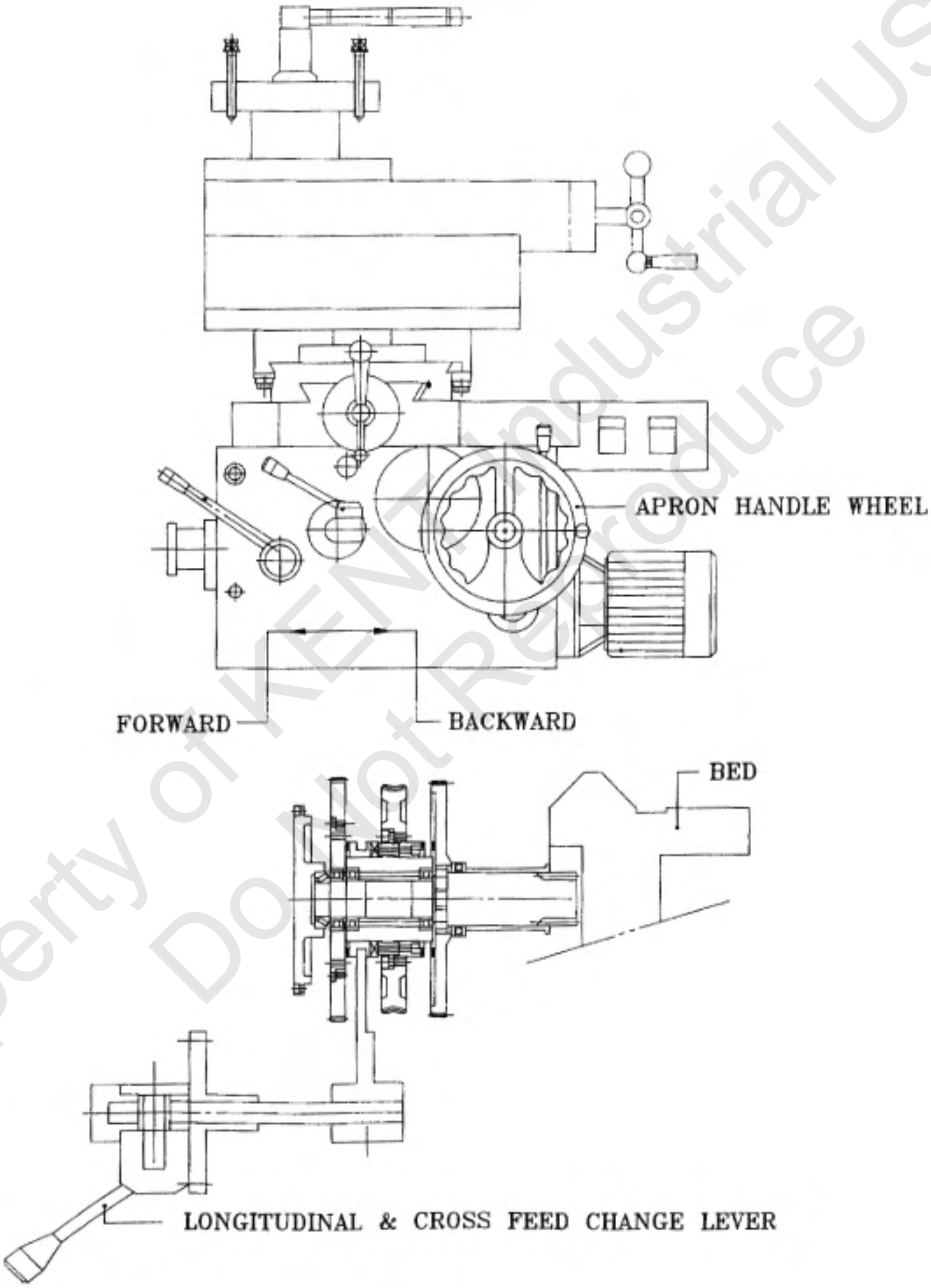


FIG 5-3 LUBRICATION SYSTEM FOR APRON

Cross slide, guideway and apron

The lower part of the apron properly forms an oil tank. The oil inlet is at the front side of the apron, the oil gage (oil window) is at the front of the apron, by it we can check the oil quantity in apron.

Supply oil into oil inlet should up to the red line of oil window.

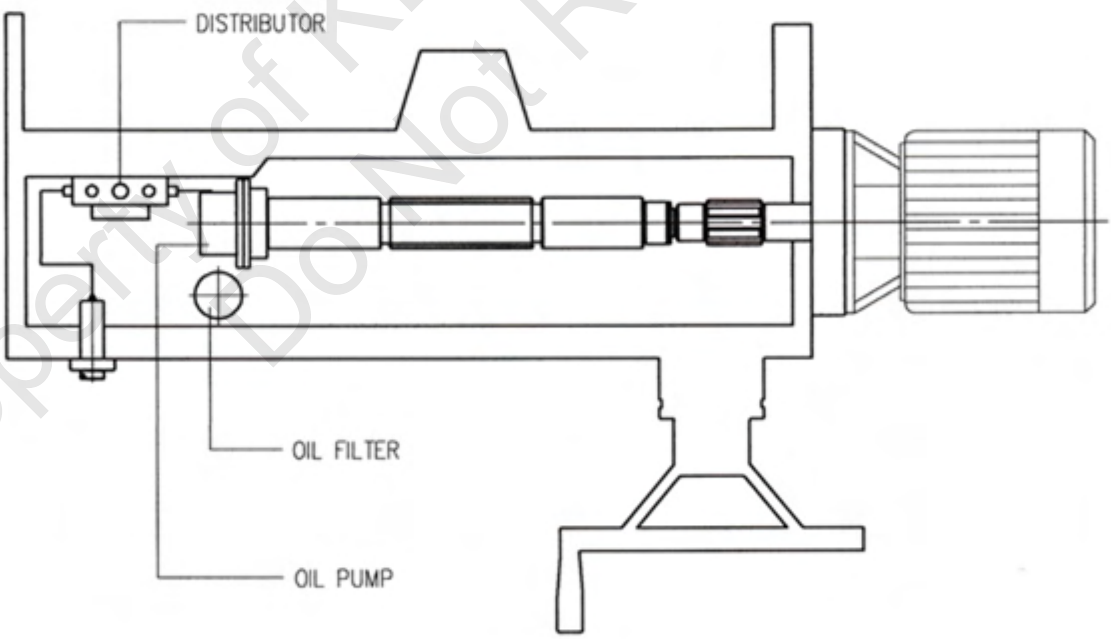


FIG 5-4 OPERATION OF HALF NUT LEVER

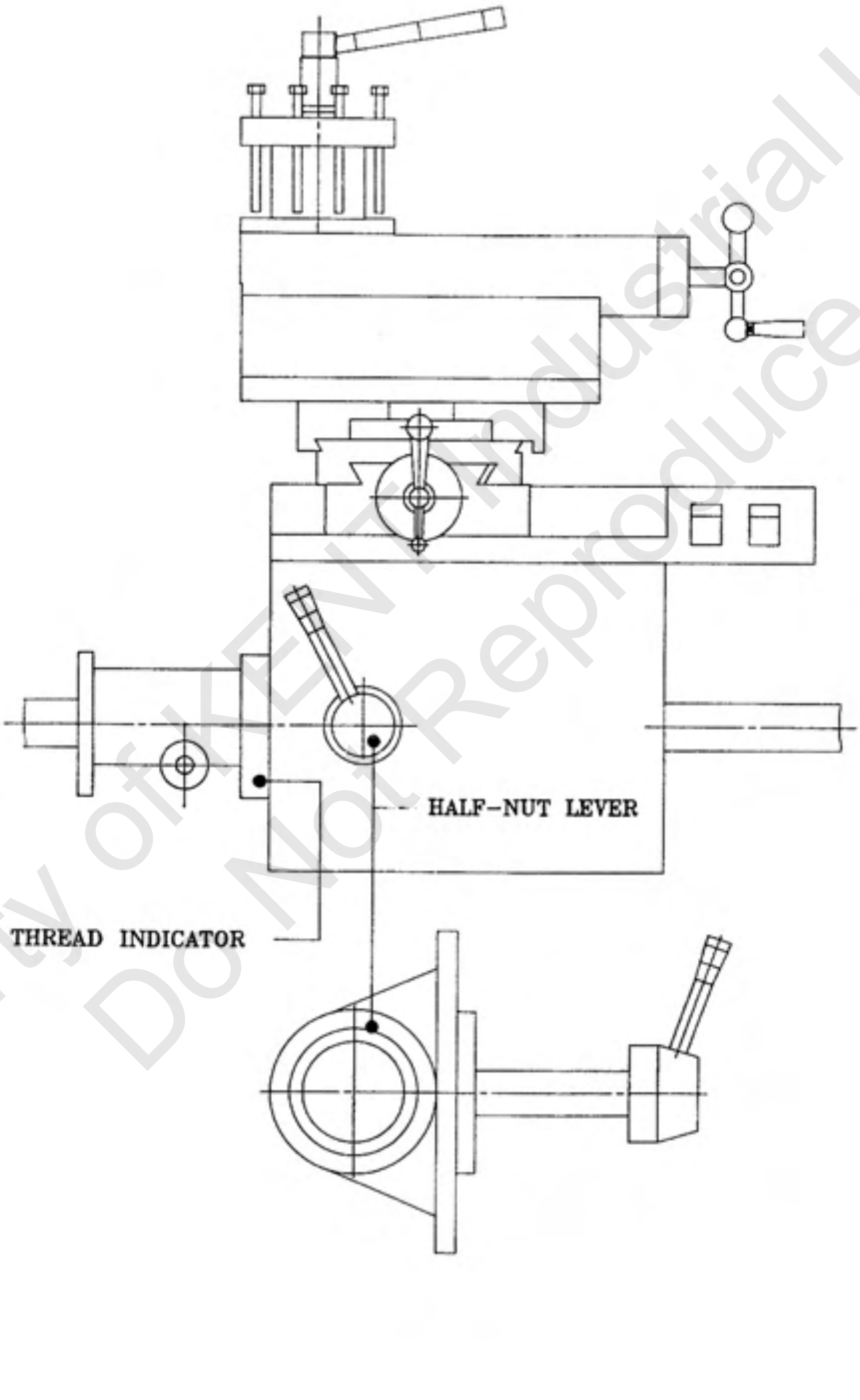
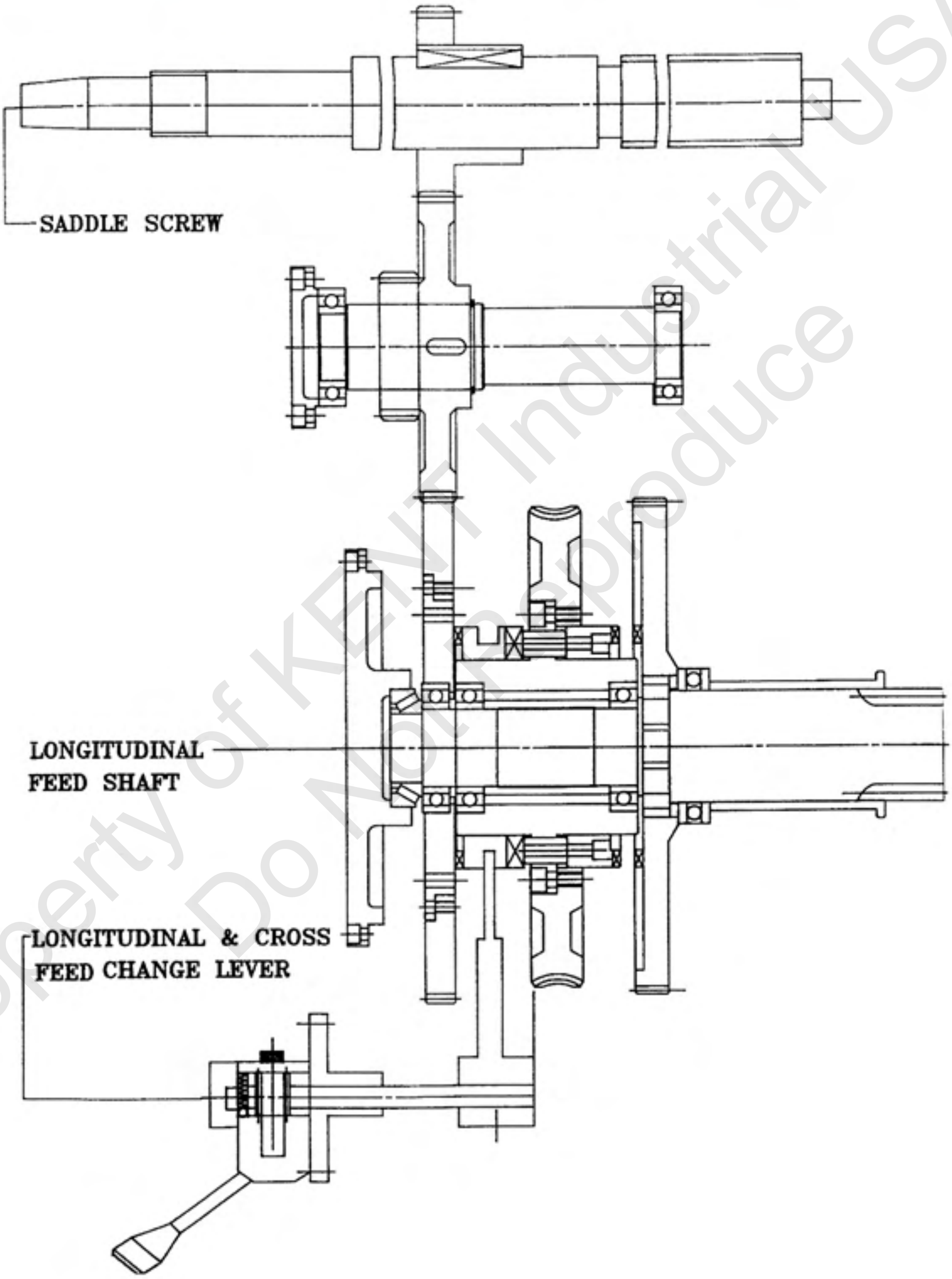


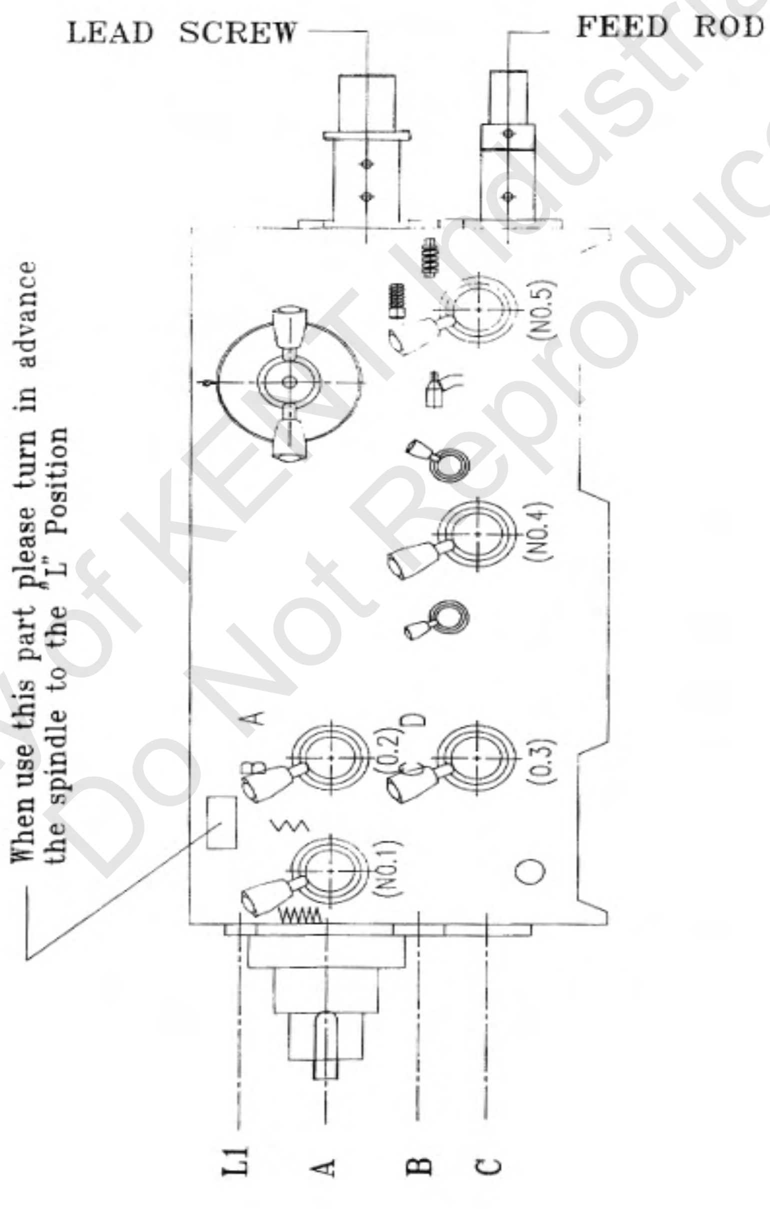
FIG 5-5 OPERATION OF AUTO FEED LEVER



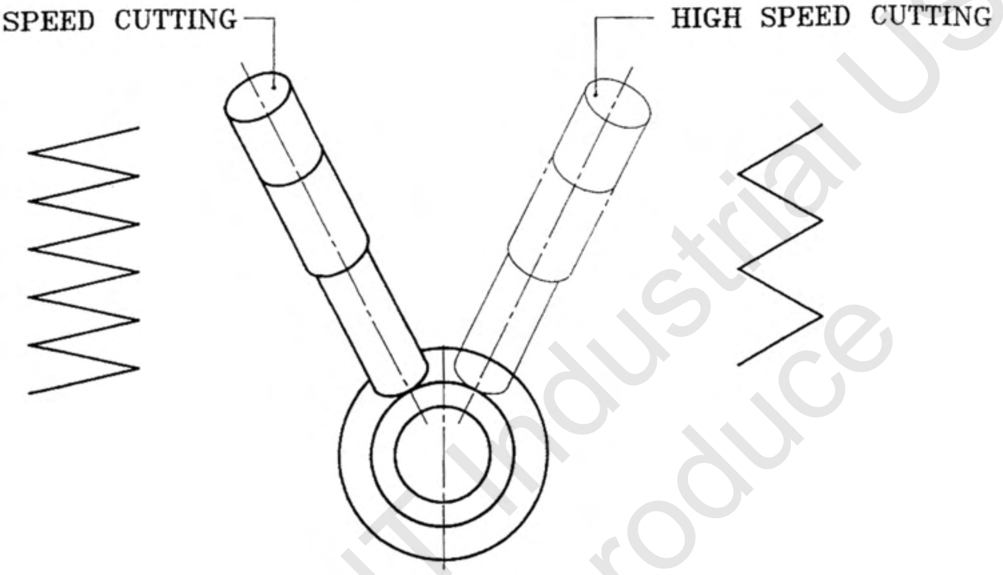
5.5 Gear Box

The feed mechanism including two steps feed change gear in headstock, change gears, feed gear box then to feed rod or lead screw. To accomplish the feeding and thread cutting function. Quick change lever was specially designed as rotating type for easy operating. (Refer to the FIG 5-6)

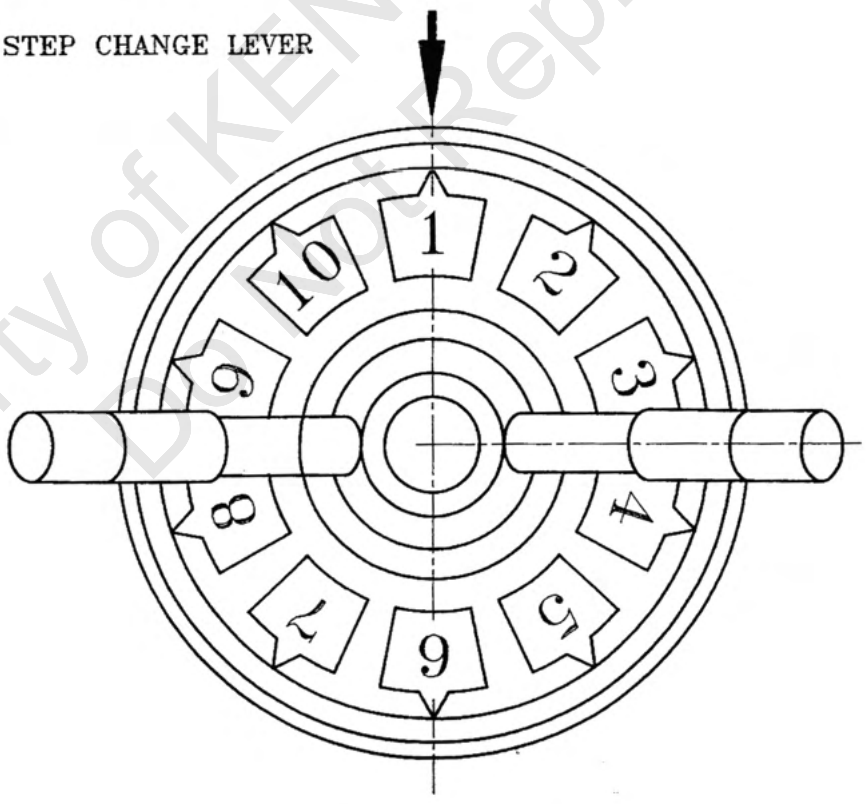
FIG 5-6 **OUT LINE OF GRAR BOX**



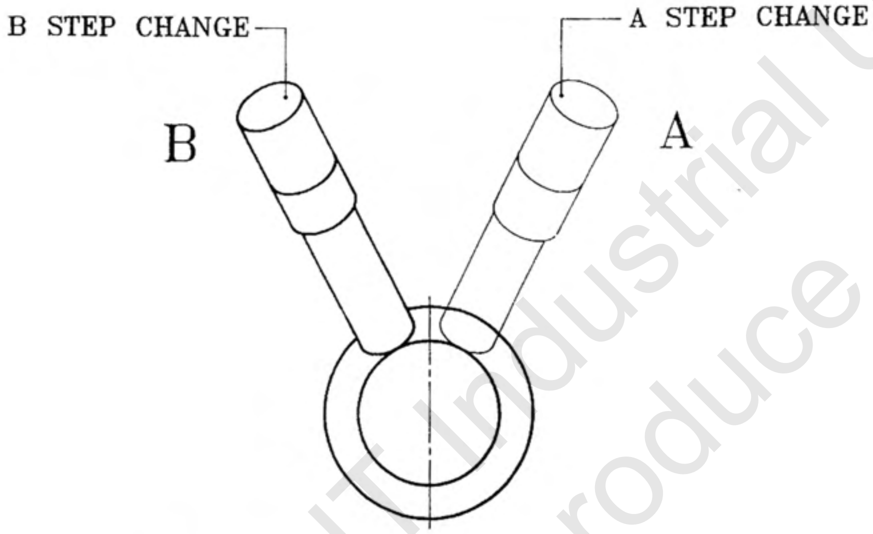
NO.1 OPERATION OF CHANGE LEVER



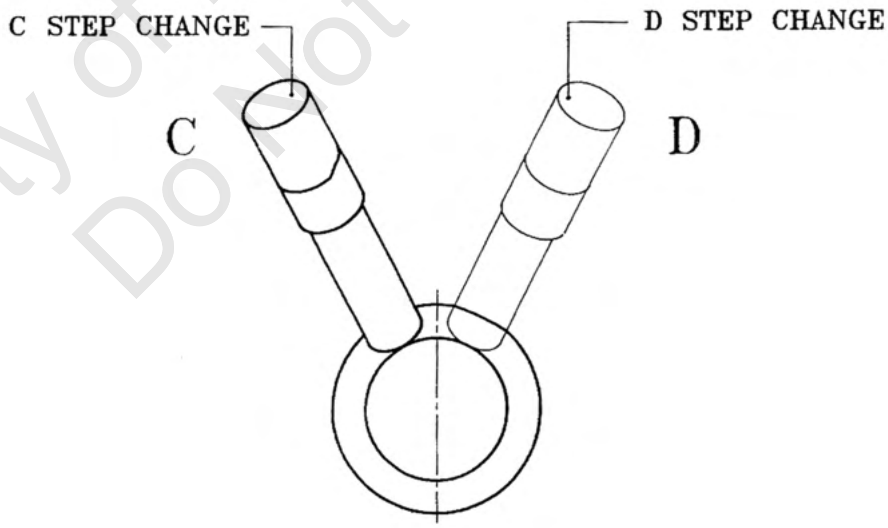
10 STEP CHANGE LEVER



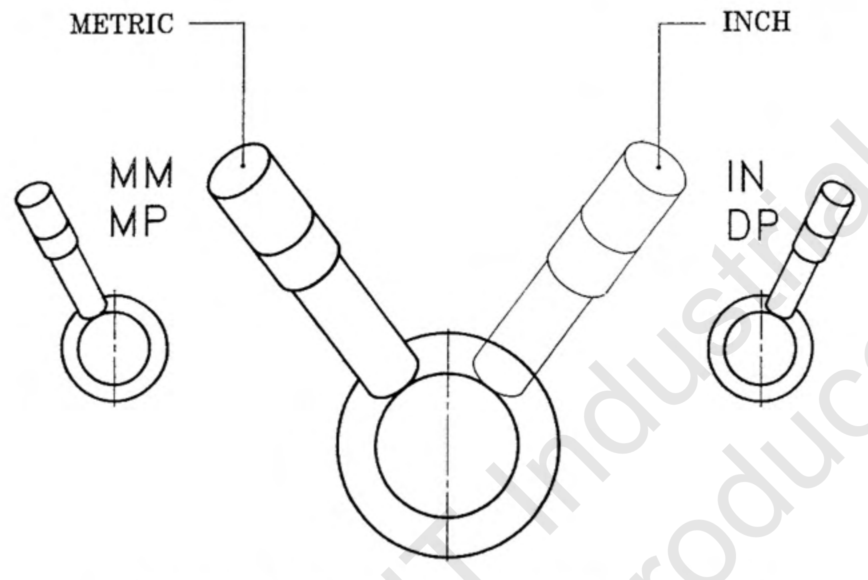
NO.2 OPERATION OF CHANGE LEVER



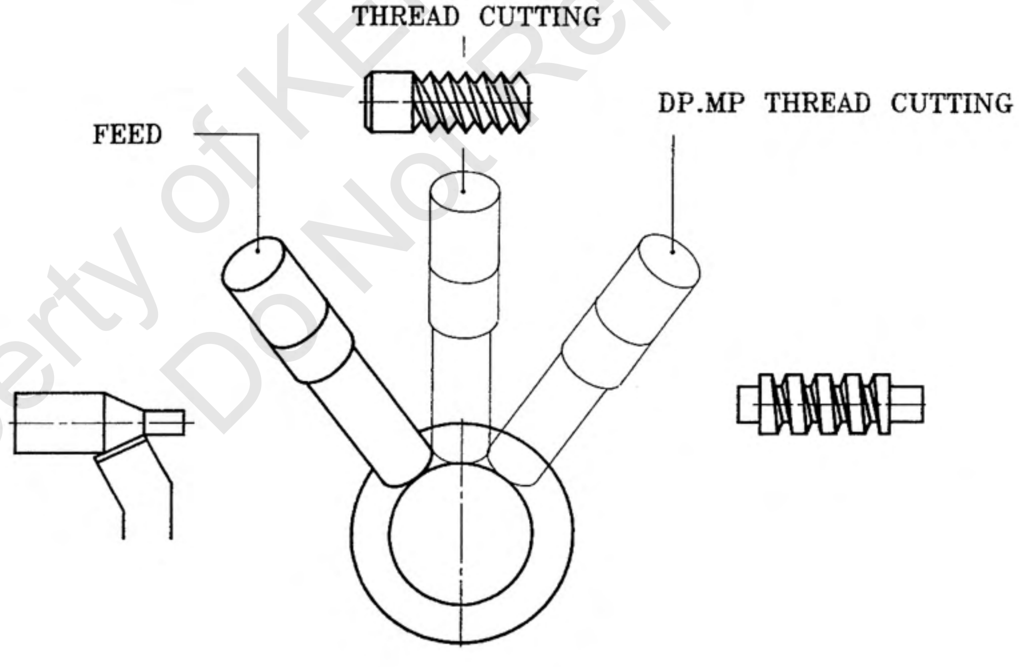
NO.3 OPERATION OF CHANGE LEVER



N0.4 OPERATON OF CHANGE LEVER



N0.5 OPERATON OF CHANGE LEVER

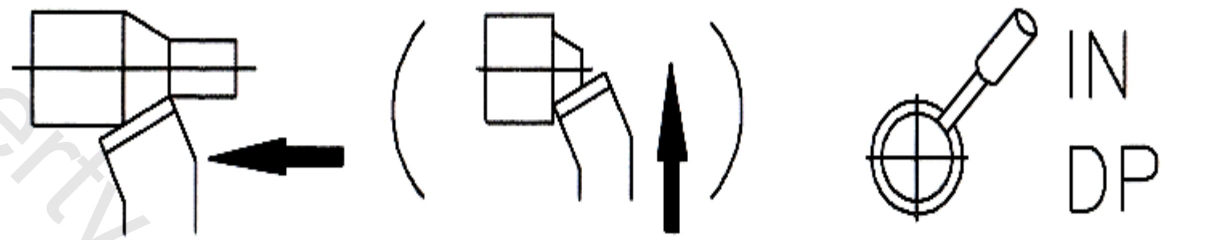


		IN								IN DP	
		1	2	3	4	5	6	7	8	9	10
	AC	16	18	19	20	22	23	24	26	28	30
	BC	8	9	9-1/2	10	11	11-1/2	12	13	14	15
	AD	4	4-1/2	4-3/4	5	5-1/2	5-3/4	6	6-1/2	7	7-1/2
	BD	2	2-1/4	2-3/8	2-1/2	2-3/4	2-7/8	3	3-1/4	3-1/2	3-3/4
	BC	1	1-1/8	1-3/16	1-1/4	1-3/8	1-7/16	1-1/2	1-5/8	1-3/4	1-7/8
	AD	1/2	9/16	19/32	5/8	11/16	23/32	3/4	13/16	7/8	15/16
	BD	1/4	9/32	19/64	5/16	11/32	23/64	3/8	13/32	7/16	15/32

		MM					MM MP				
		1	2	3	4	5	6	7	8	9	10
	AC	1			1.25			1.5		1.75	
	BC	2	2.25		2.5	2.75		3	3.25	3.5	3.75
	AD	4	4.5	4.75	5	5.5	5.75	6	6.5	7	7.5
	BD	8	9	9.5	10	11	11.5	12	13	14	15
	BC	16	18	19	20	22	23	24	26	28	30
	AD	32	36	38	40	44	46	48	52	56	60
	BD	64	72	76	80	88	92	96	104	112	120

		DP								IN DP	
		1	2	3	4	5	6	7	8	9	10
	AC	64	72	76	80	88	92	96	104	112	120
	BC	32	36	38	40	44	46	48	52	56	60
	AD	16	18	19	20	22	23	24	26	28	30
	BD	8	9	9-1/2	10	11	11-1/2	12	13	14	15
	BC	4	4-1/2	4-3/4	5	5-1/2	5-3/4	6	6-1/2	7	7-1/2
	AD	2	2-1/4	2-3/8	2-1/2	2-3/4	2-7/8	3	3-1/4	3-1/2	3-3/4
	BD	1	1-1/8	1-3/16	1-1/4	1-3/8	1-7/16	1-1/2	1-5/8	1-3/4	1-7/8

		MP						MM MP			
		1	2	3	4	5	6	7	8	9	10
	AC	0.25						0.375			
	BC	0.5			0.625			0.75		0.875	
	AD	1	1.125		1.25	1.375		1.5	1.625	1.75	
	BD	2	2.25	2.375	2.5	2.75	2.875	3	3.25	3.5	3.75
	BC	4	4.5	4.75	5	5.5	5.75	6	6.5	7	7.5
	AD	8	9	9.5	10	11	11.5	12	13	14	15
	BD	16	18	19	20	22	23	24	26	28	30



		1	2	3	4	5	6	7	8	9	10
	AC	0.16	0.14	0.13	0.12	0.115	0.11	0.1	0.095	0.09	0.08
	BC	0.32	0.28	0.26	0.24	0.23	0.22	0.2	0.19	0.18	0.17
	AD	0.63	0.56	0.52	0.48	0.46	0.44	0.4	0.38	0.36	0.34
	BD	1.26	1.12	1.04	0.96	0.92	0.88	0.8	0.76	0.72	0.68
	BC	2.52	2.24	2.08	1.92	1.84	1.76	1.6	1.52	1.44	1.36
	AD	5.04	4.48	4.16	3.84	3.68	3.52	3.2	3.04	2.88	2.72
	BD	10.08	8.96	8.32	7.68	7.36	7.04	6.4	6.08	5.76	5.44

6. BED

6.1 General Description

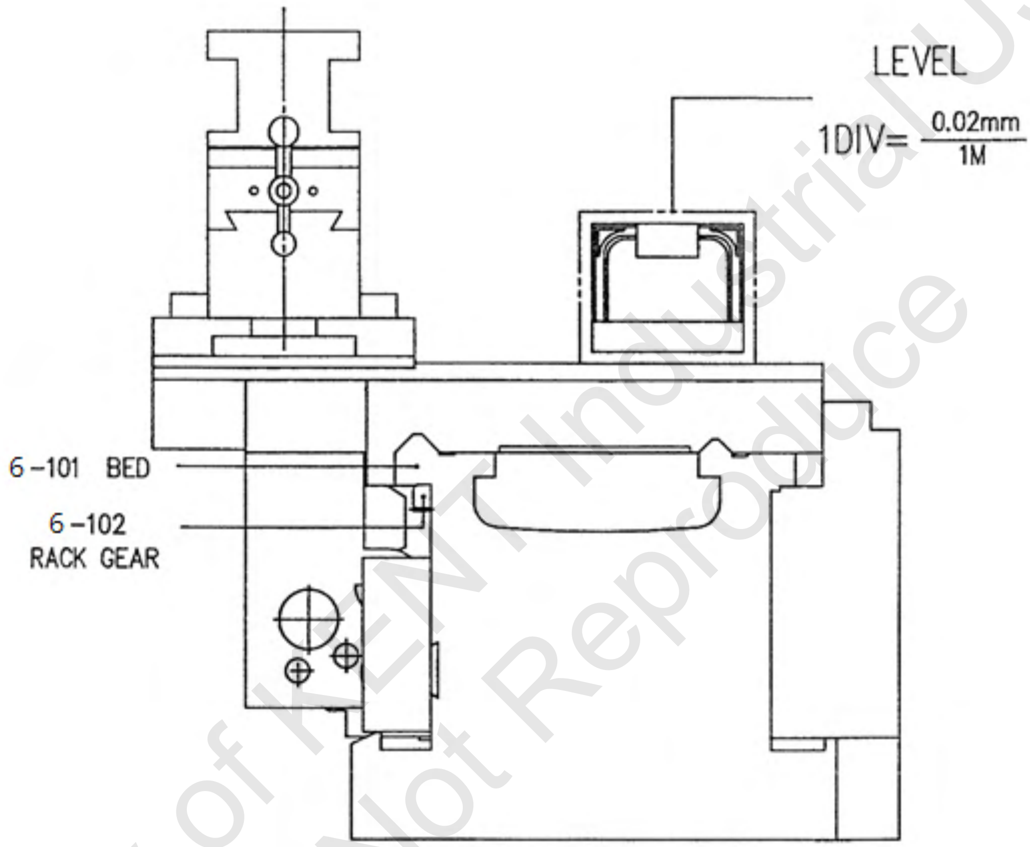
The lathe bed is made of high –strength cast iron FC 25, pass through precise processing, the bed us made if accuracy work with the three slide way, that's front and rear slide ways has eliminate the cutting stress. That's between slide way is the tailstock travelling slide way, the slide way and carriage contact surface is through accuracy work fitting finish, at the bed front assembly the feed rod and lead screw must be paralleled, take on horizontal, at the bed rear assembly the electric control box to control all of the electrical system and assembly the wire bracket, may be follow the carriage of advance and reverse to be retractable.

6.2 Correction of Bed

Correction main has adjusting machine level of the bed, using two level, selecting distances once and once check the level of cross. The machine requires $1DIV = \frac{0.02MM}{1M}$ of this machinery (Refer to the FIG 6-1)

When the spindle and tailstock center are not in the same central line, that's adjusting method from refer to then manual 4.3.

FIG 6-1 CORRECTION



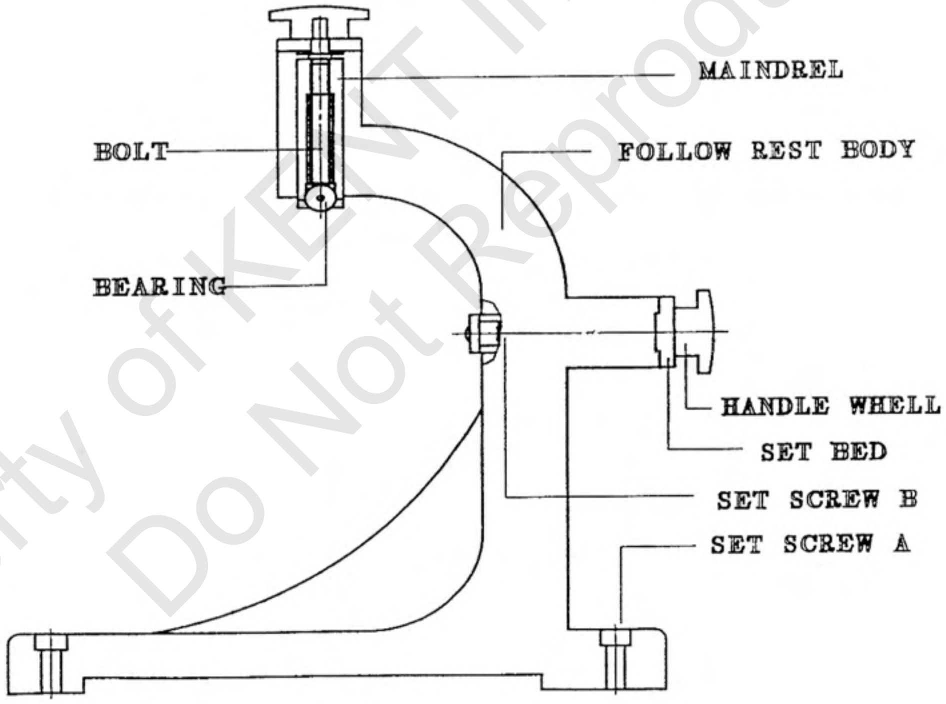
- **Correction of Bed**

Correction main has adjusting the mechanism level, hope the level in the $1DIV = \frac{0.02MM}{1M}$ of this machinery, that's adjusting method from refer to the fig 12-1.

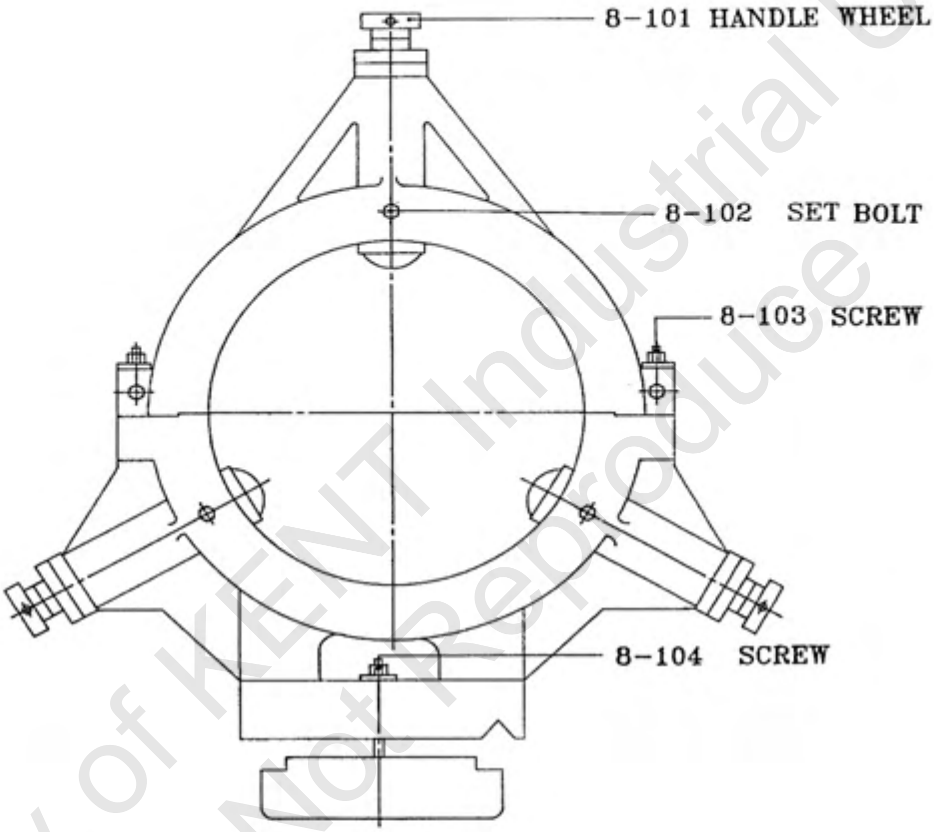
7. FOLLOW REST

The follow rest is used for cutting less diameter and long workpiece with support that weight and reduce the centrifugal force of rotation, First must lock the setting screw A on the saddle in operation before, than rotate the hand wheel by clockwise and it transmit the mandrel to contact with the workpiece, till then lock the set screw B, and that is finished.

NOTE: The end of mandrel, parts was mad of bearing, it must hand oiling usually in operation.



8. STEADY REST



STEADY REST FUNCTION KNOWLEDGE
The steady rest function is for cutting length of rigid less workpieces, that both touch parts is made of bearings, it must hand oiling in operation usually.

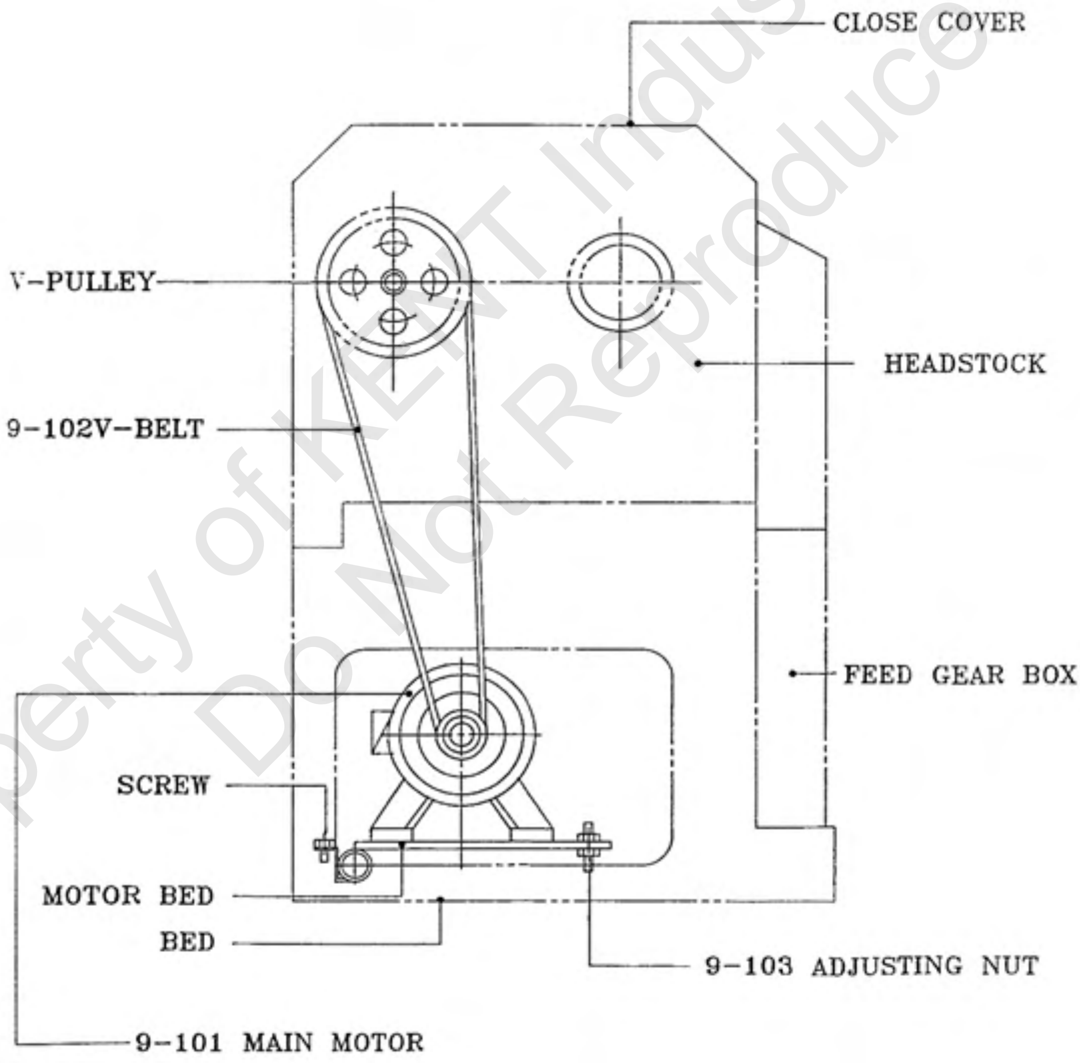
CAUTION: First must locking the screw 8-104 in operation before.

9. MAIN MOTOR

9.2 Main Motor

FIG 9-1 MAIN MOTOR

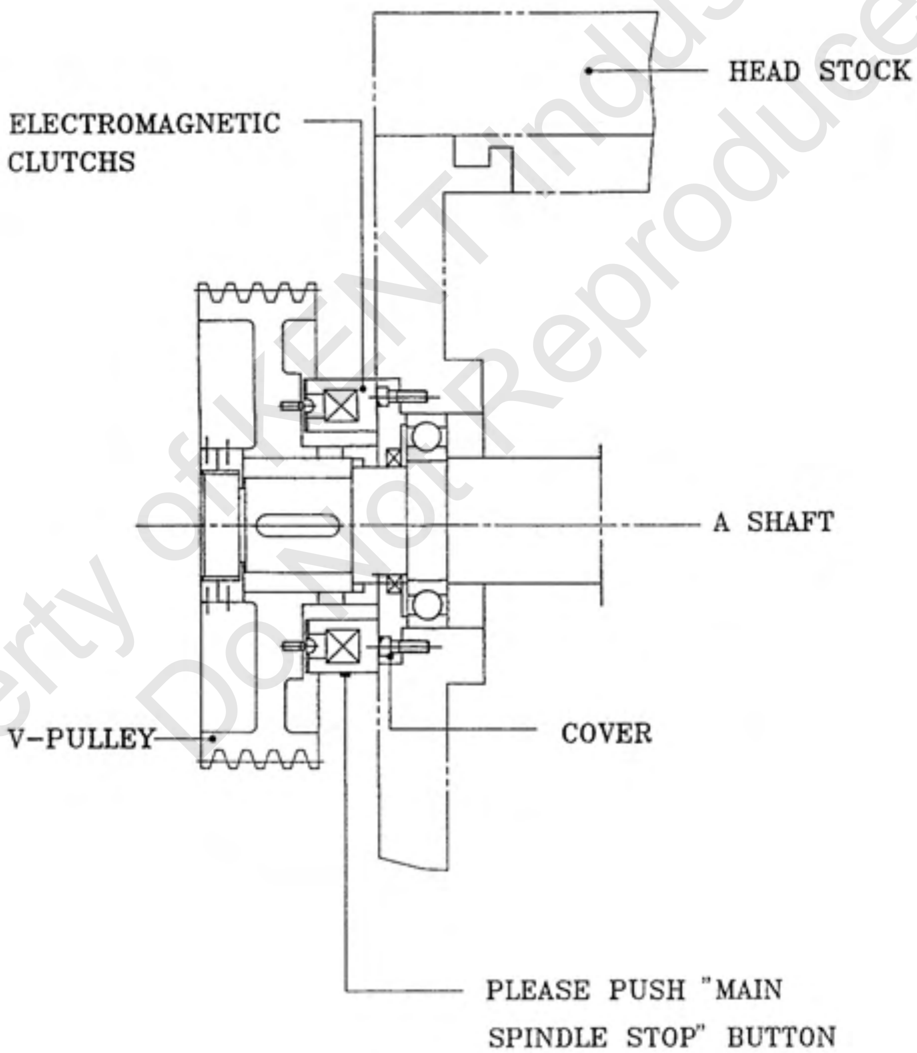
The main spindle rotating is depend upon the motor power for V-belt (9-102) by transmission. It must check the V-belt is tight/loose as often. Having adjusting the adjusting NUT (9-103) in com loose



9.2 Brake Device

FIG 9-2 BRAKE DEVICE

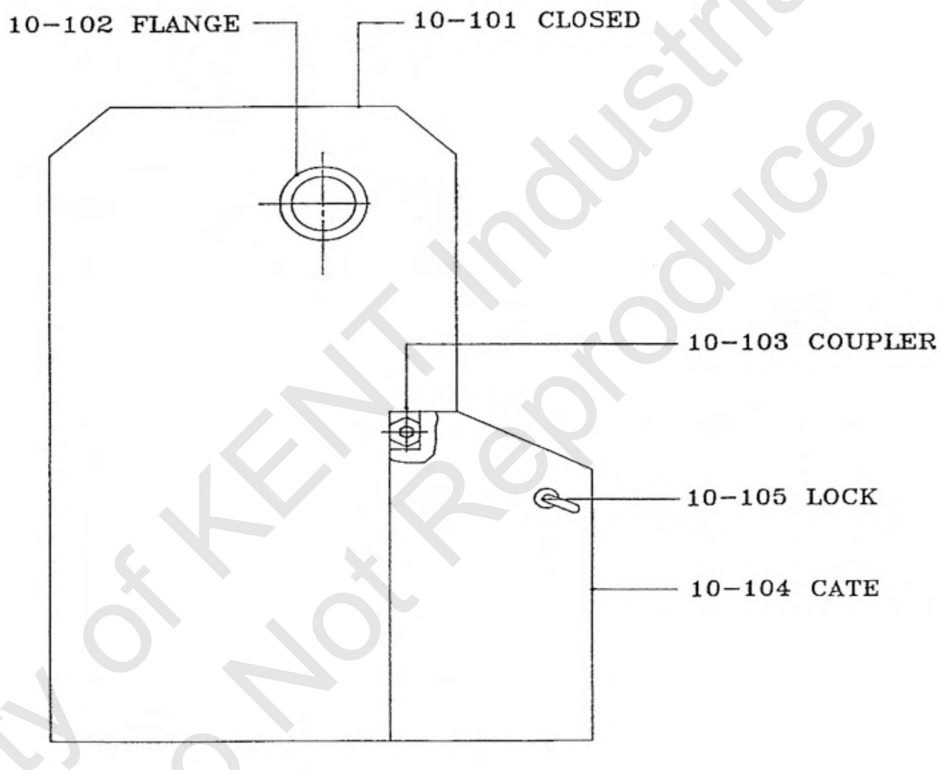
The brake device is use electromagnetic clutches.
Whenever you wish the main spindle stop, please push the “main spindle stop” button on the operator’s panel, (2-101) (3-108), then the main spindle will be stopped at once.



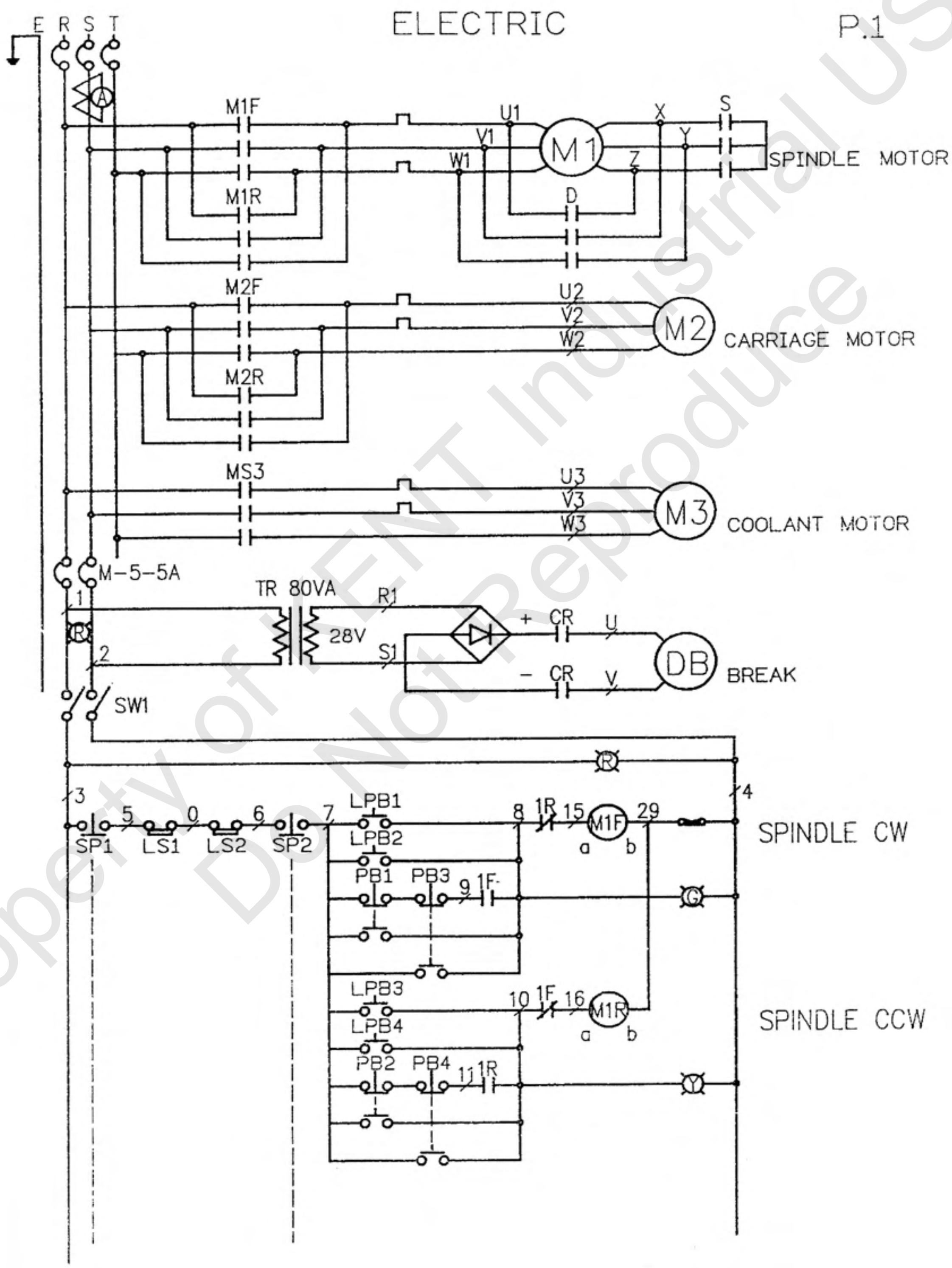
10. CLOSED

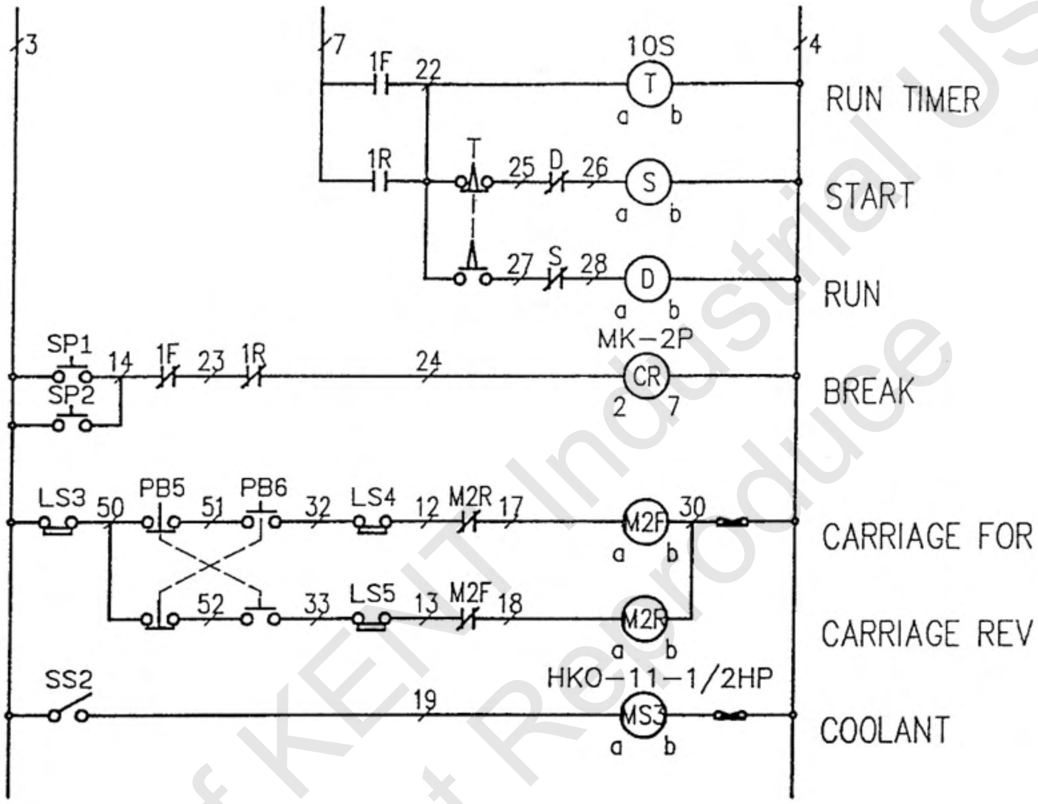
CLOSED ASSEMBLY
10-1 CLOSED

Closed on the lathe head main fanceion 3.①increment safety②inorement beautiful ③ clean or renew, if think change belt or gear and motor maintenance having open the closed operation most convenience.



11.ELETRICAL SYSTEM AND CIRCUIT DIAGRAM





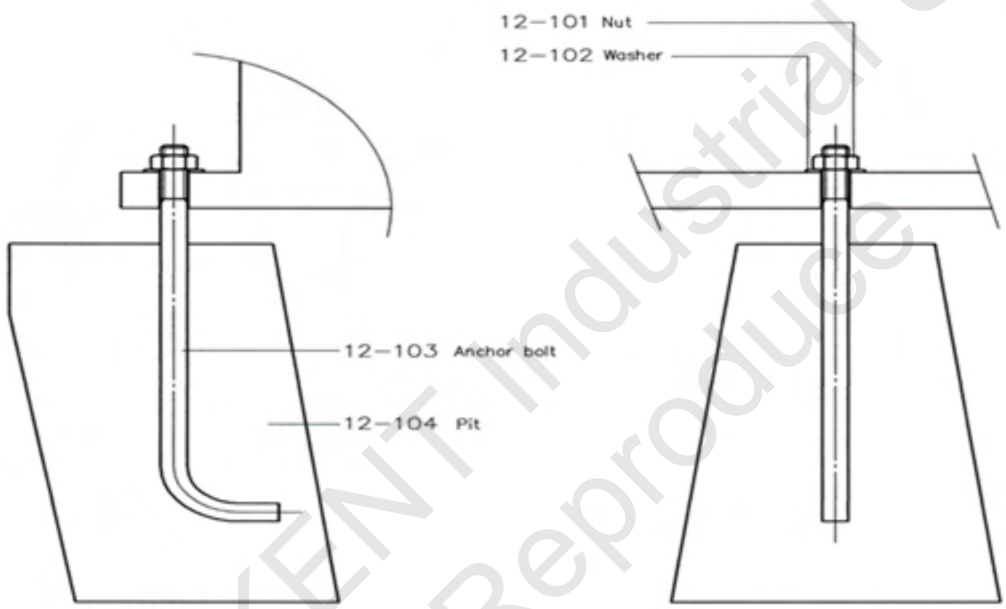
ELECTRIC BOX :
K,L,1,2,3,4,5,7,8,9,10,11,12,13,14,19,20,21,
U2,V2,W2,G,U3,V3,W3,U,V (20A27P)

OPERATOR BOX :
K,L,1,2,3,4,5,7,8,10,14,20,21 (20A13P)

CARRIAGE BOX :
3,4,5,0,6,7,8,9,10,11,12,32,13,33,14,19,20,21,U2,V2,W2,G (20A22P)

12. FOUNDATION STRUCTURE

FIG 12-1 FOUNDATION STRUCTURE



FOUNDATION CONSTRUCTION

Before the machine fitting, with mortar solid the anchor bolt in base pit, have need about two weeks. If you should be adjusting the level of the machine, employ from jack bolt and nut (12-101) by adjusting.