OPERATOR'S MANUAL

RADIAL DRILL

MODEL: RD-1600H

Baileigh Industrial, Inc.
P.O. Box 531
Manitowoc, WI 54221-0531
Phone: 920.684.4990
Fax: 920.684.3944
sales@baileighindustrial.com

Rev. 7/2014

Table of Contents

THANK YOU & WARRANTY

Thank you for your purchase of a machine from Baileigh Industrial. We hope that you find it productive and useful to you for a long time to come.

Inspection & Acceptance. Buyer shall inspect all Goods within ten (10) days after receipt thereof. Buyer's payment shall constitute final acceptance of the Goods and shall act as a waiver of the Buyer's rights to inspect or reject the goods unless otherwise agreed. If Buyer rejects any merchandise, Buyer must first obtain a Returned Goods Authorization ("RGA") number before returning any goods to Seller. Goods returned without a RGA will be refused. Seller will not be responsible for any freight costs, damages to goods, or any other costs or liabilities pertaining to goods returned without a RGA. Seller shall have the right to substitute a conforming tender. Buyer will be responsible for all freight costs to and from Buyer and repackaging costs, if any, if Buyer refuses to accept shipment. If Goods are returned in unsalable condition, Buyer shall be responsible for full value of the Goods. Buyer may not return any special order Goods. Any Goods returned hereunder shall be subject to a restocking fee equal to 30% of the invoice price.

Specifications. Seller may, at its option, make changes in the designs, specifications or components of the Goods to improve the safety of such Goods, or if in Seller's judgment, such changes will be beneficial to their operation or use. Buyer may not make any changes in the specifications for the Goods unless Seller approves of such changes in writing, in which event Seller may impose additional charges to implement such changes.

Limited Warranty. Seller warrants to the original end-user that the Goods manufactured or provided by Seller under this Agreement shall be free of defects in material or workmanship for a period of twelve (12) months from the date of purchase, provided that the Goods are installed, used, and maintained in accordance with any instruction manual or technical guidelines provided by the Seller or supplied with the Goods, if applicable. The original end-user must give written notice to Seller of any suspected defect in the Goods prior to the expiration of the warranty period. The original end-user must also obtain a RGA from Seller prior to returning any Goods to Seller for warranty service under this paragraph. Seller will not accept any responsibility for Goods returned without a RGA. The original end-user shall be responsible for all costs and expenses associated with returning the Goods to Seller for warranty service. In the event of a defect, Seller, at its sole option, shall repair or replace the defective Goods or refund to the original end-user the purchase price for such defective Goods. Goods are not eligible for replacement or return after a period of 30 days from date of receipt. The foregoing warranty is Seller's sole obligation, and the original end-user's exclusive remedy, with regard to any defective Goods. This limited warranty does not apply to: (a) die sets, tooling, and saw blades; (b) periodic or routine maintenance and setup, (c) repair or replacement of the Goods due to normal wear and tear, (d) defects or damage to the Goods resulting from misuse, abuse, neglect, or accidents, (f) defects or damage to the Goods resulting from improper or unauthorized alterations, modifications, or changes; and (f) any Goods that has not been installed and/or maintained in accordance with the instruction manual or technical guidelines provided by Seller.

EXCLUSION OF OTHER WARRANTIES. THE FOREGOING LIMITED WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED. ANY AND ALL OTHER EXPRESS, STATUTORY OR IMPLIED WARRANTIES, INCLUDING BUT NOT LIMITED TO, ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE ARE EXPRESSLY DISCLAIMED. NO WARRANTY IS MADE WHICH EXTENDS BEYOND THAT WHICH IS EXPRESSLY CONTAINED HEREIN.

Limitation of Liability. IN NO EVENT SHALL SELLER BE LIABLE TO BUYER OR ANY OTHER PARTY FOR ANY INCIDENTIAL, CONSEQUENTIAL OR SPECIAL DAMAGES (INCLUDING, WITHOUT LIMITATION, LOST PROFITS OR DOWN TIME) ARISING FROM OR IN MANNER CONNECTED WITH THE GOODS, ANY BREACH BY SELLER OR ITS AGENTS OF THIS AGREEMENT, OR ANY OTHER CAUSE WHATSOEVER, WHETHER BASED ON CONTRACT, TORT OR ANY OTHER THEORY OF LIABILITY. BUYER'S REMEDY WITH RESPECT TO ANY CLAIM ARISING UNDER THIS AGREEMENT IS STRICTLY LIMITED TO NO MORE THAN THE AMOUNT PAID BY THE BUYER FOR THE GOODS.

Force Majuere. Seller shall not be responsible for any delay in the delivery of, or failure to deliver, Goods due to causes beyond Seller's reasonable control including, without limitation, acts of God, acts of war or terrorism, enemy actions, hostilities, strikes, labor difficulties, embargoes, non-delivery or late delivery of materials, parts and equipment or transportation delays not caused by the fault of Seller, delays caused by civil authorities, governmental regulations or orders, fire, lightening, natural disasters or any other cause beyond Seller's reasonable control. In the event of any such delay, performance will be postponed by such length of time as may be reasonably necessary to compensate for the delay.

Installation. If Buyer purchases any Goods that require installation, Buyer shall, at its expense, make all arrangements and connections necessary to install and operate the Goods. Buyer shall install the Goods in accordance with any Seller instructions and shall indemnify Seller against any and all damages, demands, suits, causes of action, claims and expenses (including actual attorneys' fees and costs) arising directly or indirectly out of Buyer's failure to properly install the Goods.

Work By Others; Safety Devices. Unless agreed to in writing by Seller, Seller has no responsibility for labor or work performed by Buyer or others, of any nature, relating to design, manufacture, fabrication, use, installation or provision of Goods. Buyer is solely responsible for furnishing, and requiring its employees and customers to use all safety devices, guards and safe operating procedures required by law and/or as set forth in manuals and instruction sheets furnished by Seller. Buyer is responsible for consulting all operator's manuals, ANSI or comparable safety standards, OSHA regulations and other sources of safety standards and regulations applicable to the use and operation of the Goods.

Remedies. Each of the rights and remedies of Seller under this Agreement is cumulative and in addition to any other or further remedies provided under this Agreement or at law or equity.

Attorney's Fees. In the event legal action is necessary to recover monies due from Buyer or to enforce any provision of this Agreement, Buyer shall be liable to Seller for all costs and expenses associated therewith, including Seller's actual attorneys' fees and costs.

Governing Law/Venue. This Agreement shall be construed and governed under the laws of the State of Wisconsin, without application of conflict of law principles. Each party agrees that all actions or proceedings arising out of or in connection with this Agreement shall be commenced, tried, and litigated only in the state courts sitting in Manitowoc County, Wisconsin or the U.S. Federal Court for the Eastern District of Wisconsin. Each party waives any right it may have to assert the doctrine of "forum non conveniens" or to object to venue to the extent that any proceeding is brought in accordance with this section. Each party consents to and waives any objection to the exercise of personal jurisdiction over it by courts described in this section. Each party waives to the fullest extent permitted by applicable law the right to a trial by jury.

Summary of Return Policy.

- 10 Day acceptance period from date of delivery. Damage claims and order discrepancies will not be accepted after this time.
- You must obtain a Baileigh issued RGA number PRIOR to returning any materials.
- Returned materials must be received at Baileigh in new condition and in original packaging.
- Altered items are not eligible for return.
- Buyer is responsible for all shipping charges.
- A 30% re-stocking fee applies to all returns.

Baileigh Industrial makes every effort to ensure that our posted specifications, images, pricing and product availability are as correct and timely as possible. We apologize for any discrepancies that may occur. Baileigh Industrial reserves the right to make any and all changes deemed necessary in the course of business including but not limited to pricing, product specifications, quantities, and product availability.

For Customer Service & Technical Support:
Please contact one of our knowledgeable Sales and Service team members at:
(920) 684-4990 or e-mail us at sales@baileighindustrial.com

INTRODUCTION

The quality and reliability of the components assembled on a Baileigh Industrial machine guarantee near perfect functioning, free from problems, even under the most demanding working conditions. However if a situation arises, refer to the manual first. If a solution cannot be found, contact the distributor where you purchased our product. Make sure you have the serial number and production year of the machine (stamped on the nameplate). For replacement parts refer to the assembly numbers on the parts list drawings.

Our technical staff will do their best to help you get your machine back in working order.

In this manual you will find: (when applicable)

- Safety procedures
- Correct installation guidelines
- Description of the functional parts of the machine
- Capacity charts
- Set-up and start-up instructions
- Machine operation
- Scheduled maintenance
- Parts lists

GENERAL NOTES

After receiving your equipment remove the protective container. Do a complete visual inspection, and if damage is noted, **photograph it for insurance claims** and contact your carrier at once, requesting inspection. Also contact Baileigh Industrial and inform them of the unexpected occurrence. Temporarily suspend installation.

Take necessary precautions while loading / unloading or moving the machine to avoid any injuries.

Your machine is designed and manufactured to work smoothly and efficiently. Following proper maintenance instructions will help ensure this. Try and use original spare parts, whenever possible, and most importantly; **DO NOT** overload the machine or make any unauthorized modifications.

Note: *This symbol refers to useful information throughout the manual.*

IMPORTANT

PLEASE READ THIS OPERATORS MANUAL CAREFULLY

It contains important safety information, instructions, and necessary operating procedures. The continual observance of these procedures will help increase your production and extend the life of the equipment.

SAFETY INSTRUCTIONS

LEARN TO RECOGNIZE SAFETY INFORMATION

This is the safety alert symbol. When you see this symbol on your machine or in this manual, **BE ALERT TO THE POTENTIAL FOR PERSONAL INJURY!**

Follow recommended precautions and safe operating practices.

UNDERSTAND SIGNAL WORDS

A signal word – **DANGER**, **WARNING**, or **CAUTION** is used with the safety alert symbol. **DANGER** identifies a hazard or unsafe practice that will result in severe **Injury or Death**.

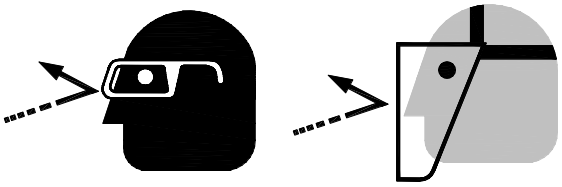
Safety signs with signal word **DANGER** or **WARNING** are typically near specific hazards.

General precautions are listed on **CAUTION** safety signs. **CAUTION** also calls attention to safety messages in this manual.

SAVE THESE INSTRUCTIONS.
Refer to them often and use them to instruct others.

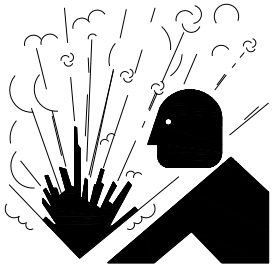
PROTECT EYES

Wear safety glasses or suitable eye protection when working on or around machinery.



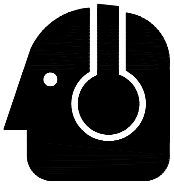
HYDRAULIC HOSE FAILURE

Exercise **CAUTION** around hydraulic hoses in case of a hose or fitting failure.



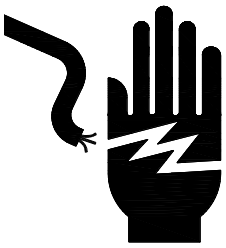
PROTECT AGAINST NOISE

Prolonged exposure to loud noise can cause impairment or loss of hearing. Wear suitable hearing protective devices such as ear muffs or earplugs to protect against objectionable or uncomfortable loud noises.



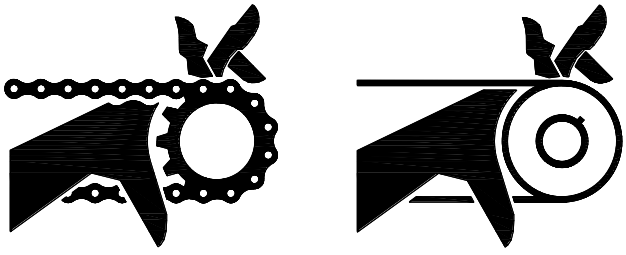
HIGH VOLTAGE

USE CAUTION IN HIGH VOLTAGE AREAS. DO NOT assume the power to be off.
FOLLOW PROPER LOCKOUT PROCEDURES.

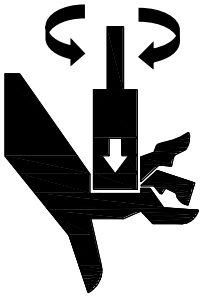


BEWARE OF PINCH POINTS

Keep hands and fingers clear of all potential pinch points. These include sprockets and chains along with belts and pulleys.

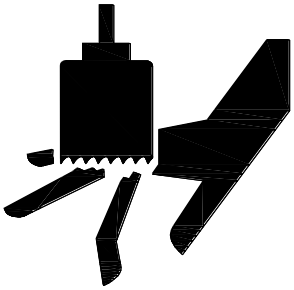


BEWARE OF PIERCING POINTS



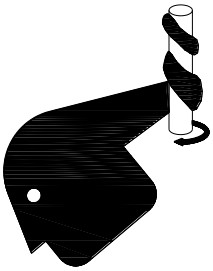
NEVER place Keep hands, fingers, or any part of your body away from rotating tooling bit.

BEWARE OF CUTTING POINTS



Keep hands and fingers clear of the rotating hole saw. The teeth are extremely sharp and can cause severe bodily injury.

ENTANGLEMENT HAZARD – ROTATING SPINDLE



Contain long hair, **DO NOT** wear jewelry or loose fitting clothing.

EMERGENCY STOP BUTTON

In the event of incorrect operation or dangerous conditions, the machine can be stopped immediately by pressing the **E-STOP** button. Twist the emergency stop button clockwise (cw) to reset. Note: Resetting the E-Stop will not start the machine.

SAFETY PRECAUTIONS

Metal working can be dangerous if safe and proper operating procedures are not followed. As with all machinery, there are certain hazards involved with the operation of the product. 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.
Safety equipment such as guards, hold-downs, safety glasses, dust masks and hearing protection can reduce your potential for injury. But even the best guard won't make up for poor judgment, carelessness or inattention. **Always use common sense** and exercise **caution** in the workshop. If a procedure feels dangerous, don't try it.
REMEMBER: Your personal safety is your responsibility.

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

1. **Only trained and qualified personnel can operate this machine.**
2. **Make sure guards are in place and in proper working order before operating machinery.**
3. **Remove any adjusting tools.** Before operating the machine, make sure any adjusting tools have been removed.
4. **Keep work area clean.** Cluttered areas invite injuries.
5. **Overloading machine.** By overloading the machine you may cause injury from flying parts. **DO NOT** exceed the specified machine capacities.
6. **Dressing material edges.** Always chamfer and deburr all sharp edges.
7. **Do not force tool.** Your machine will do a better and safer job if used as intended. **DO NOT** use inappropriate attachments in an attempt to exceed the machines rated capacity.
8. **Use the right tool for the job. DO NOT** attempt to force a small tool or attachment to do the work of a large industrial tool. **DO NOT** use a tool for a purpose for which it was not intended.
9. **Dress appropriate. DO NOT** wear loose fitting clothing or jewelry as they can be caught in moving machine parts. Protective clothing and steel toe shoes are recommended when using machinery. Wear a restrictive hair covering to contain long hair.
10. **Use eye and ear protection**. Always wear ISO approved impact safety goggles. Wear a full-face shield if you are producing metal filings.

11. **Do not overreach**. Maintain proper footing and balance at all times. **DO NOT** reach over or across a running machine.
12. **Stay alert**. Watch what you are doing and use common sense. **DO NOT** operate any tool or machine when you are tired.
13. **Check for damaged parts**. Before using any tool or machine, carefully check any part that appears damaged. Check for alignment and binding of moving parts that may affect proper machine operation.
14. **Observe work area conditions**. **DO NOT** use machines or power tools in damp or wet locations. Do not expose to rain. Keep work area well lighted. **DO NOT** use electrically powered tools in the presence of flammable gases or liquids.
15. **Blade adjustments and maintenance**. Always keep blades sharp and properly adjusted for optimum performance.
16. **Keep children away**. Children must never be allowed in the work area. **DO NOT** let them handle machines, tools, or extension cords.
17. **Store idle equipment**. When not in use, tools must be stored in a dry location to inhibit rust. Always lock up tools and keep them out of reach of children.
18. **DO NOT operate machine if under the influence of alcohol or drugs**. Read warning labels on prescriptions. If there is any doubt, **DO NOT** operate the machine.
19. **DO NOT** touch live electrical components or parts.
20. Be sure all equipment is properly installed and grounded according to national, state, and local codes.
21. Inspect power and control cables periodically. Replace if damaged or bare wires are exposed. **Bare wiring can kill!**
22. **DO NOT** bypass or defeat any safety interlock systems.
23. Keep visitors a safe distance from the work area.

TECHNICAL SPECIFICATIONS

Drilling Capacity	2” (50.8mm)
Distance Column Surface To Spindle Center	13.75”～63” (350～1600mm)
Maximum Travel Of Spindle	17.12” (435mm)
Maximum Distance Base To Spindle	13.75”-49.25” (350-1250mm)
Spindle Travel	17.12” (435mm)
Spindle Taper	MT5
Number Of Spindle Speed	16
Range Of Spindle Speed	635-50800r/in. (25-2000r/mm)
Number Of Feed	16
Range Of Feed	0.04～3.2 mm/r
Elevating Speed	1.2 m/min
Angle Of Arm Rotation	360°
Max Torque Of Spindle	400 Nm
Maximum Feed Load	16000N
Spindle Driving Motor	4kw
Arm Elevation Motor	1.1KW
Clamping Motor	0.75KW
Coolant Pump	0.120KW
Weight	3500Kg

TECHNICAL SUPPORT

Our technical support department can be reached at 920.684.4990, and asking for the support desk for purchased machines. Tech Support handles questions on machine setup, schematics, warranty issues, and individual parts needs: (other than die sets and blades).

For specific application needs or future machine purchases contact the Sales Department at: sales@baileighindustrial.com, Phone: 920.684.4990, or Fax: 920.684.3944.

***Note**: The photos illustrations using in this manual are representative only and may not depict the actual color, labeling or accessories and may be intended to illustrate technique only.*

***Note:** The specifications and dimensions presented here are subject to change without prior notice due to improvements of our products.*

UNPACKING AND CHECKING CONTENTS

Your Baileigh machine is shipped complete in one crate. Separate all parts from the packing material and check each item carefully. Make certain all items are accounted for before discarding any packing material.

WARNING: If any parts are missing, do not plug in the power cable, or turn the power switch on until the missing parts are obtained and installed correctly.

- Remove the two shipping braces supporting the radial arm and securing the drilling head to the radial arm.
- Remove the plastic sheeting covering the slides, ways and control panels.
- Remove the rust inhibitor from all the slide and way surfaces.

Cleaning

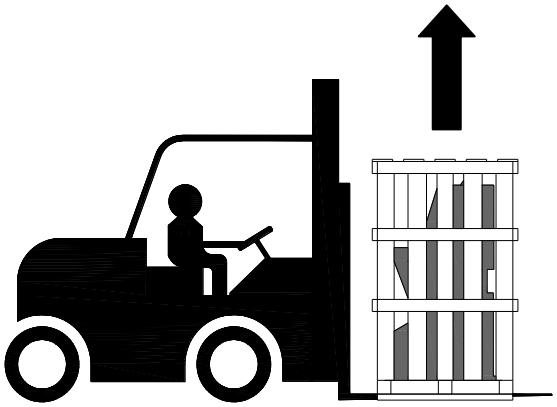
Your machine may be shipped with a rustproof waxy oil coating and grease on the exposed unpainted metal surfaces. To remove this protective coating, use a degreaser or solvent cleaner. For a more thorough cleaning, some parts will occasionally have to be removed. **DO NOT USE** acetone or brake cleaner as they may damage painted surfaces.
Follow manufacturer's label instructions when using any type of cleaning product. After cleaning, wipe unpainted metal surfaces with a light coating of quality oil or grease for protection.

WARNING: DO NOT USE gasoline or other petroleum products to clean the machine. They have low flash points and can explode or cause fire.

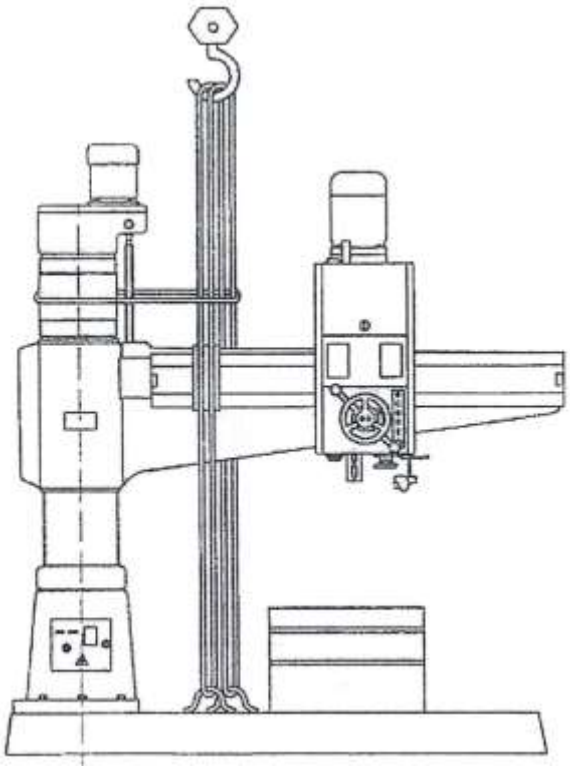
CAUTION: When using cleaning solvents work in a well-ventilated area. Many cleaning solvents are toxic if inhaled.

TRANSPORTING AND LIFTING

⚠ CAUTION: Lifting and carrying operations should be carried out by skilled workers, such as a truck operator, crane operator, etc. If a crane is used to lift the machine, attach the lifting chain carefully, making sure the machine is well balanced. Choose a location that will keep the machine free from vibration and dust from other machinery. Keep in mind that having a large clearance area around the machine is important for safe and efficient working conditions.



Follow these guidelines when lifting:



- Always lift and carry the machine with the lifting holes points as shown.
- **DO NOT** crush or damage the electrical cabinet or drill arm during lifting.
- **DO NOT** remove the arm and drill head packaging braces until the machine has been located and secured to the floor.
- Use lift equipment such as straps, chains, capable of lifting 1.5 to 2 times the weight of the machine.
- Take proper precautions for handling and lifting.
- Check if the load is properly balanced by lifting it an inch or two.
- Lift the machine, avoiding sudden accelerations or quick changes of direction.
- Locate the machine where it is to be installed, and lower slowly until it touches the floor.

- The lift truck must be able to lift at least 1.5 – 2 times the machines gross weight.
- Make sure the machine is balanced. While transporting, avoid rough or jerky motion, and maintain a safe clearance zone around the transport area.

- Use a fork lift with sufficient lifting capacity and forks that are long enough to reach the complete width of the machine.
- Remove the securing bolts that attach the machine to the pallet.
- Approaching the machine from the side, lift the machine on the frame taking care that there are no cables or pipes in the area of the forks.
- Move the machine to the required position and lower gently to the floor.
- Level the machine so that all the supporting feet are taking the weight of the machine and no rocking is taking place.

INSTALLATION

This machine requires a minimum of 23ft^2 (2.13m^2) and a solid floor such as concrete a minimum of 4” thick. 6” minimum is preferred.

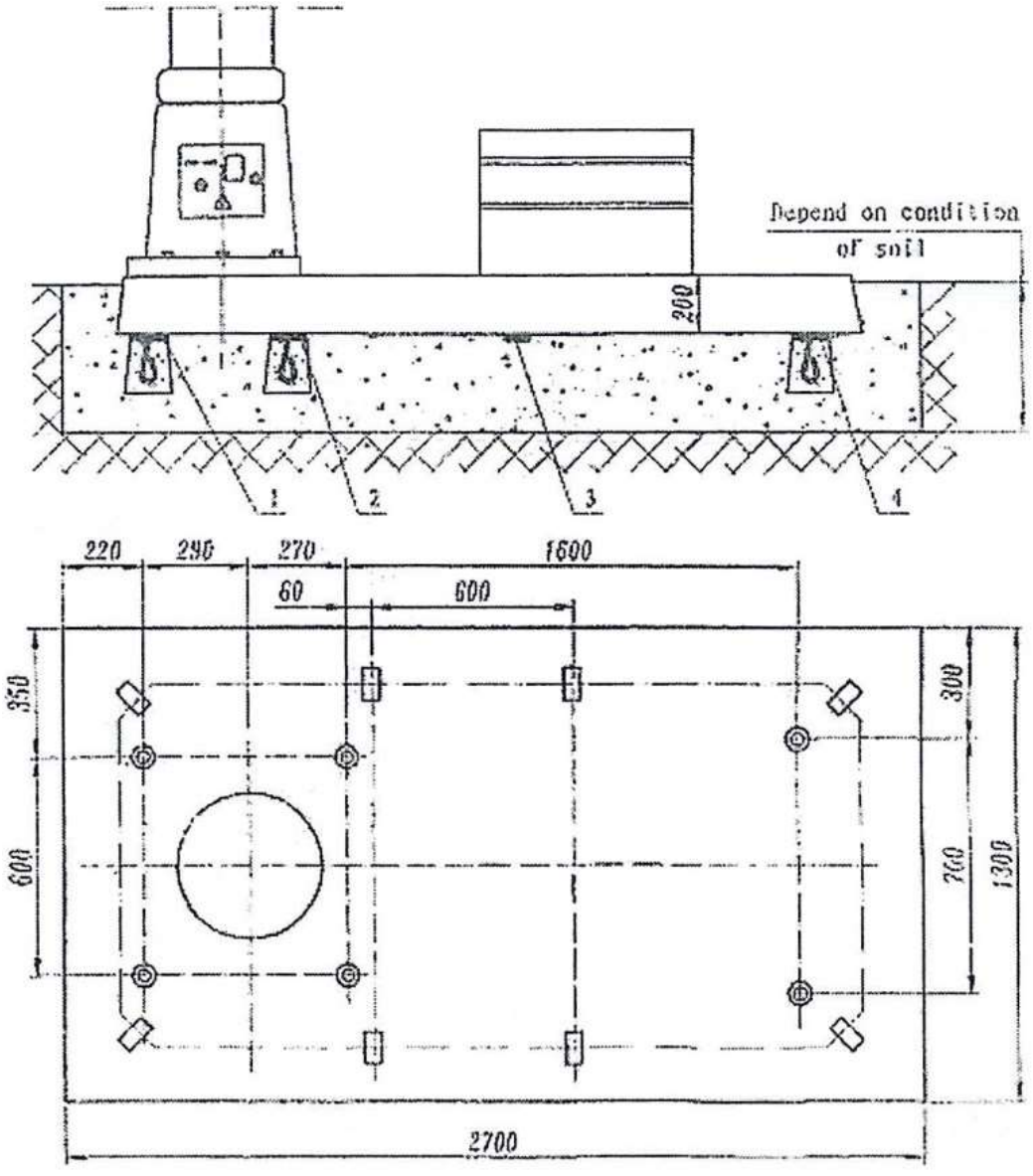
IMPORTANT:

- Consider the following when looking for a suitable location to place the machine:
- Overall weight of the machine.
- Weight of material being processed.
- Sizes of material to be processed through the machine.
- Space needed for auxiliary stands, work tables, or other machinery.
- Clearance from walls and other obstacles.
- Maintain an adequate working area around the machine for safety.
- Have the work area well illuminated with proper lighting.
- Keep the floor free of oil and make sure it is not slippery.
- Remove scrap and waste materials regularly, and make sure the work area is free from obstructing objects.
- If long lengths of material are to be fed into the machine, make sure that they will not extend into any aisles.
- **LEVELING:** The machine should be sited on a level, concrete floor. Provisions for securing it should be in position prior to placing the machine. The accuracy of any machine depends on the precise placement of it to the mounting surface.
- **FLOOR:** This tool distributes a large amount of weight over a small area. Make certain that the floor is capable of supporting the weight of the machine, work stock, and the operator. The floor should also be a level surface. If the unit wobbles or rocks once in place, be sure to eliminate by using shims.

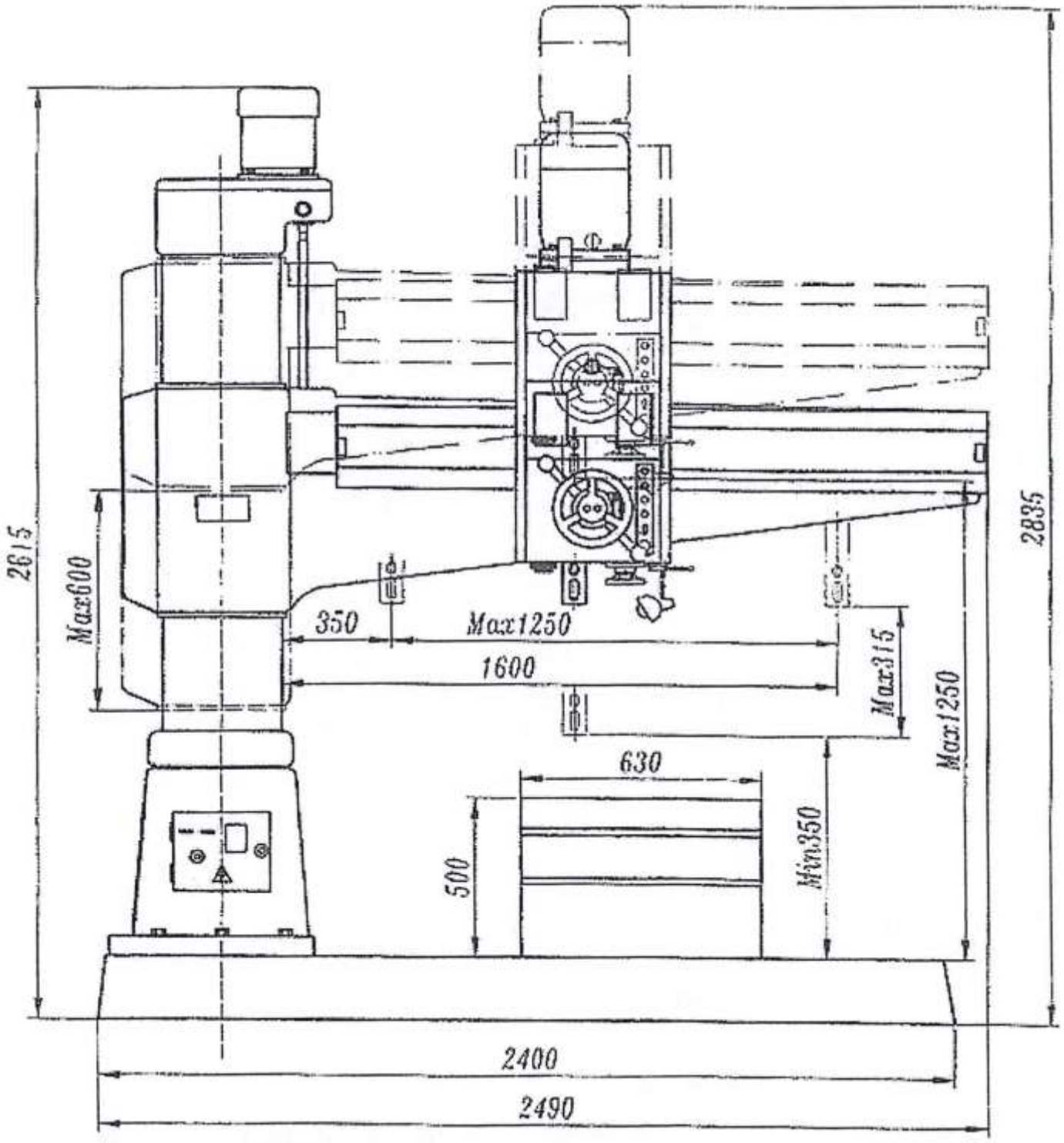
- **WORKING CLEARANCES:** Take into consideration the size of the material to be processed. Make sure that you allow enough space for you to operate the machine freely.
- **POWER SUPPLY PLACEMENT:** The power supply should be located close enough to the machine so that the power cord is not in an area where it would cause a tripping hazard. Be sure to observe all electrical codes if installing new circuits and/or outlets.

Anchoring the Machine

- Once positioned, anchor the machine to the floor, as shown in the diagram, using bolts and expansion plugs or sunken tie rods that connect through holes in the base of the stand.
- Level the machine to be within 0.0015”/40” (0.04/1000mm) in each direction across the base of the machine. Use steel shims as needed.



OVERALL DIMENSIONS



ASSEMBLY AND SET UP

WARNING: For your own safety, DO NOT connect the machine to the power source until the machine is completely assembled and you read and understand the entire instruction manual.

Arm Elevation Motor Installation

1. Locate and unpack the arm elevation motor.
2. Install the motor onto the top of the main column and secure with the four bolts and washers included.
3. Connect the power supply connector.

ELECTRICAL

WARNING: Baileigh Industrial is not responsible for any damage caused by wiring up to an alternative 3-phase power source other than direct 3-phase. If you are using an alternate power source, consult a certified electrician or contact Baileigh Industrial prior to energizing the machine.

CAUTION: HAVE ELECTRICAL UTILITIES CONNECTED TO MACHINE BY A CERTIFIED ELECTRICIAN!
Check if the available power supply is the same as listed on the machine nameplate.

WARNING: Make sure the grounding wire (green) is properly connected to avoid electric shock. DO NOT switch the position of the green grounding wire if any electrical plug wires are switched during hookup.

Motor Specifications

Your tool is wired for 220 volt, 60Hz alternating current. Before connecting the tool to the power source, make sure the machine is cut off from power source.

Considerations

- Observe local electrical codes when connecting the machine.
- The circuit should be protected with a time delay fuse or circuit breaker with a amperage rating slightly higher than the full load current of machine.
- A separate electrical circuit should be used for your tools. 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 indicated on the tool.
- All line connections should make good contact. Running on low voltage will damage the motor.
- 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.

⚠ WARNING: In all cases, make certain the receptacle in question is properly grounded. If you are not sure, have a qualified electrician check the receptacle.

- Improper connection of the equipment-grounding conductor can result in risk of electric shock. The conductor with insulation having an outer surface that is green with or without yellow stripes is the equipment-grounding conductor. If repair or replacement of the electric cord or plug is necessary, do not connect the equipment-grounding conductor to a live terminal.
- Check with a qualified electrician or service personnel if the grounding instructions are not completely understood, or if in doubt as to whether the tool is properly grounded.
- Repair or replace damaged or worn cord immediately.

Power cord connection

1. Check that the power cord has not been damaged during the machines installation.
2. Have and electrician install the proper plug onto the end of the power cord.
3. Route the cord to the power supply in a manner that will not cause a trip or entanglement hazard.

Check for correct rotation of the motor

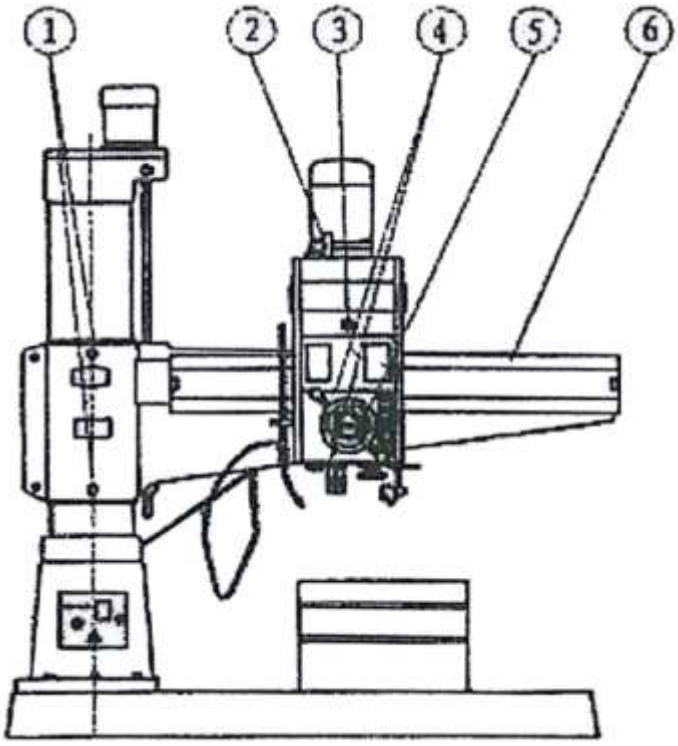
⚠ **IMPORTANT: DO NOT** run the machine until all the packaging materials have been removed and fluid levels have been filled as needed.

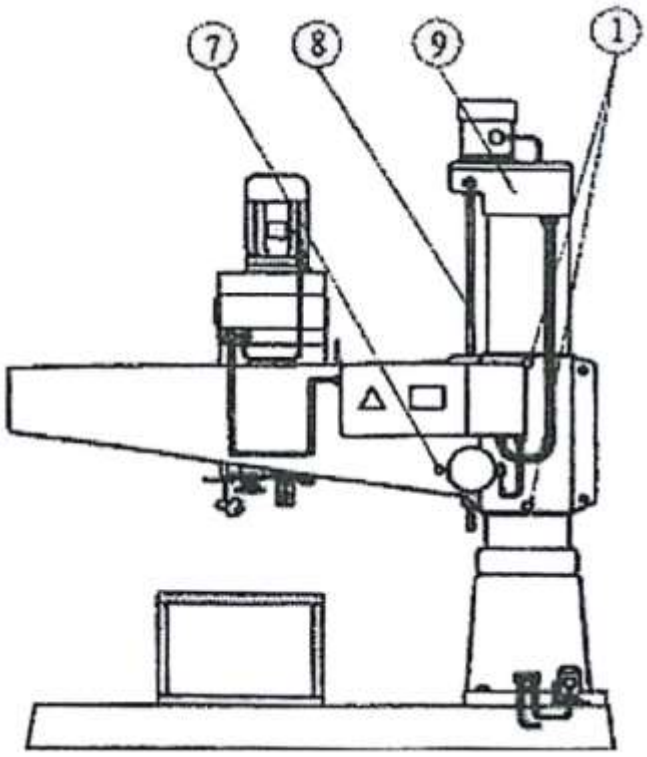
1. Verify that all tools and materials have been removed from any area around the machines moving parts.
2. With power connected and the main disconnect turned ON, the power light on the lower control panel will be illuminated.
3. Place the motor selector switch in the center radial arm movement position.
4. One at a time press the raise and lower arm buttons. The arm should raise or lower as the matching button is pressed.
5. If not, disconnect power to the machine, and switch the L1 and L3 wires. **DO NOT** move the ground wire.
6. Retest, and then test the other motors for correct rotation.

FIRST TIME OPERATION

⚠ CAUTION: Always wear proper eye protection with side shields, safety footwear, and leather gloves to protect from burrs and sharp edges.

1. Lubricant the main column with 30W oil.
2. Start the machine and lower the radial arm 2” (50.8mm) and clean and lubricant the exposed surface.
3. Raise the radial arm 3-4” (76-102mm) and clean and lubricate the exposed surface. This will prevent any dirt or grit that may have accumulated during shipping from damaging and scratching the column.
4. Lubricate the machine as shown in the lubrication diagram.
5. Run the machine in each function. If the machine runs smoothly and properly, it may be placed into service.





Item	Lube Position	Lubricant	Frequency
1	Column Slide Way	40W Machine Oil	Daily
2	Spindle Spline	20W Machine Oil	Daily
3	Upper Oil Reservoir	20W Machine Oil	Replace every 3 Months
4	Upper and Lower Spindle Bearing	No.2 Calcium Based Grease	Monthly
5	Micro-Adjustment	20W Machine Oil	Daily
6	Arm Guides	40W Machine Oil	Daily
7	Oil Pump Reservoir	10W Machine Oil	Replace every 3 Months
8	Radial Arm Elevating Screw	40W Machine Oil	Daily
9	Arm Elevating Gears	20W Machine Oil	Replace every 3 Months

GETTING TO KNOW YOUR MACHINE

Item	Description
1	Coolant Pump On/Off Switch
2	Main Power Switch
3	Spindle Speed Pre-Select Button
4	Spindle Feed Capacity Pre-Select Button
5	Spindle Head Moving Handwheel
6	Spindle Moving Handle/Lock
7	Pin Limitation Handle
8	Dial Micro-Adjustment Handle
9A	Motor Control Selection Switch
9	Motor Start Button
10	Motor Stop Button
11	Arm Rise Button
12	Arm Lower Button
13	Emergency Stop Button
14	Spindle Speed and Rotation Change Handle
15	Work Lamp
16	Mechanical Feed Handle
17	Micro-Feed Handle
18	Spindle Head Column Release Button
19	Spindle Head Column Clamp Button
20	Cooling Fluid

OPERATION

⚠ CAUTION: Always wear proper eye protection with side shields, safety footwear, and leather gloves to protect from burrs and sharp edges.

Refer to “Getting To Know Your Machine” and your actual machine as needed to become familiar with the operational control referenced below.

1. Verify that the spindle is clear and then turn on the main power switch. The green power lamp will be illuminated.

Drill Spindle

- Place the motor control selector switch in the up position to select the drill motor.
- Press the motor start button to start the spindle rotation.
- Place the handle in the forward or reverse rotation or reverse position, the spindle will rotate clockwise or counter clockwise.

Spindle Rotation.

- Lift the spindle speed and rotation handle and the spindle will rotate by hand easily.
- Place the handle in the down positon to engage the spindle to the drive system.

Changing Spindle Speed and Feed Speed

- Turn the pre-selection button 3 or 4 to the target speed or feed. Place the handle 14 in the speed change position. Speed is now changed.
- The speed still can be pre-selected while the spindle is turning.
- There are 3 spindle speeds (2000, 1250, 800r/min) and 3 feeding speeds (3.20, 2.00, 1.25mm/r). Select a spindle speed and then if desired, select a feed speed.

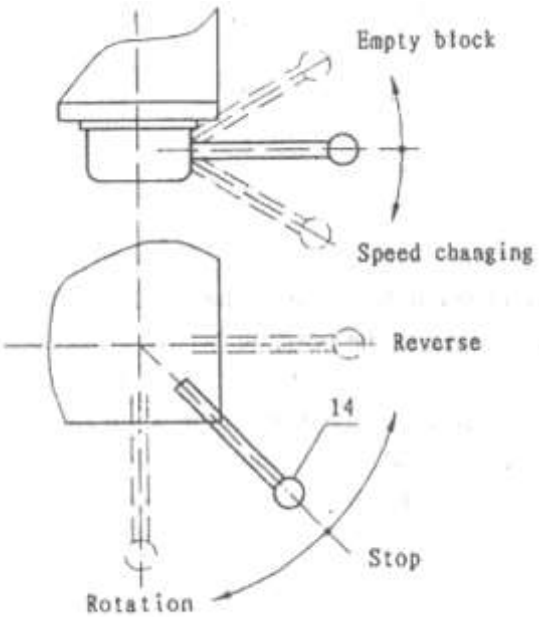


Fig. 4-1

Feeding

- Auto-feeding — place the mechanical feed handle 16 in the down position and then pull out the spindle move/lock handle 6.
- Manual feeding — push the spindle move/lock handle 6 in and then rotate the handle to move the spindle down or up as desired.
- Micro feeding — turn the handle to lever position and then pull out the spindle move/lock handle 6. Turn the hand wheel 17. The micro feeding is affected.

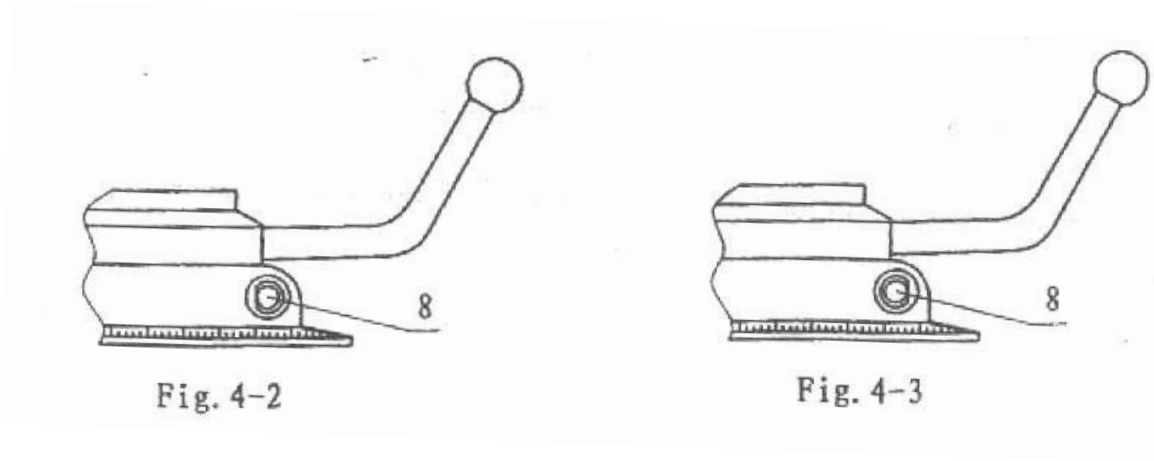


Fig. 4-2 Fig. 4-3

Depth Stop cutting

- Pull out on the spindle move/lock handle 6 and turn the dial micro-adjustment handle 8 to the position where the flat side is facing inward as indicated in fig.4-2.
- Then turn the scale plate to the position where the set depth value scale is in approximating a line with the 0 lever line on the spindle box.
- Turn the handle 8 to the position indicated as fig.4-3.
- Complete the macro adjustment until the scale and 0 in a line lever.
- Push handle 7 and the auto-feeding is engaged. The handle will rise automatically when the drilling depth arrive at the stop value.
- The depth stop cutting procedure is complete. Never set a value beyond the stop limited value, otherwise the lever shaft will be damaged.

Arm Elevating

Press and hold the arm raise (11) or lower (12) button to raise or lower the radial arm. When the arm is at the desired height, release the button and the arm will stop and the braking mechanism will clamp the arm in position.

Clamping/Unclamping the Column and Spindle Head

- Press the clamping button 19 to clamp the column and spindle head. The button will illuminate when the clamp has engaged. If the button does not light, push the button several times until it light.
- Press the unclamping button 18 to release the clamp, The light on button 19 will turn of and the light on button 18 will illuminate showing the column and head has been relieved.

⚠ **IMPORTANT: DO NOT** always rotate the radial arm in the same direction around the column. This will damage wires, cables and hoses that are routed between the column and the arm.

Arm Elevating

Press and hold the arm raise (11) or lower (12) button to raise or lower the radial arm. When the arm is at the desired height, release the button and the arm will stop and the braking mechanism will clamp the arm in position.

Coolant

Locate the coolant pump On/Off switch located at the base of the column. Press the green On button to turn the pump on and the red Off button to stop the pump. Use the flexible tube to direct the coolant flow toward the cutting point. Use the valve at the base of the flexible tube to control the coolant flow.

MATERIAL SELECTION

⚠ **CAUTION: It must be determined by the customer that materials being processed through the machine are NOT potentially hazardous to operator or personnel working nearby.**

When selecting materials keep these instructions in mind:

- Material must be clean and dry. (without oil)
- Material should have a smooth surface so it processes easily.
- Dimensional properties of material must be consistent and not exceed the machine capacity values.
- Chemical structure of material must be consistent.
- Buy certificated steel from the same vendor when possible.

DRIVING SYSTEM

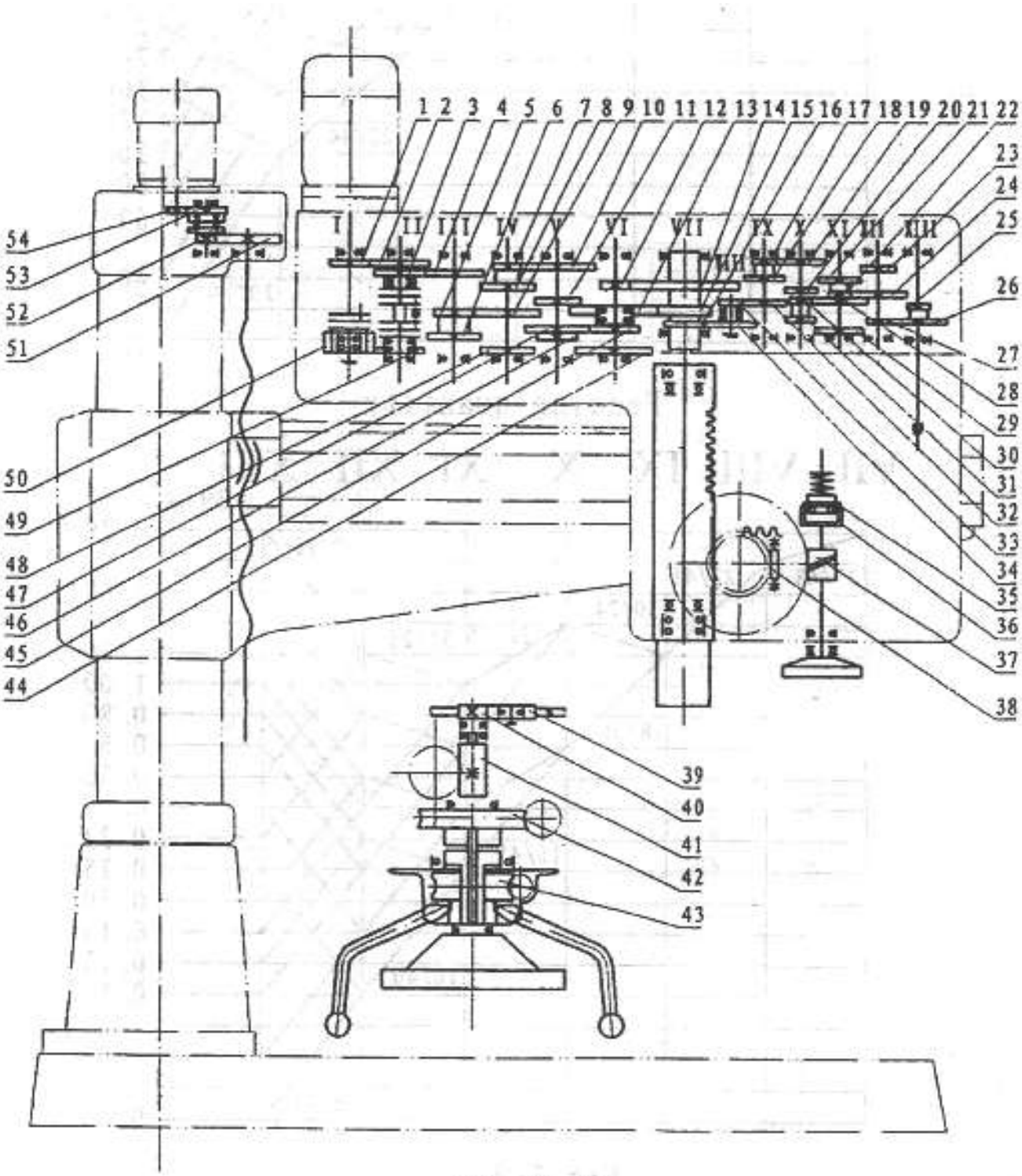
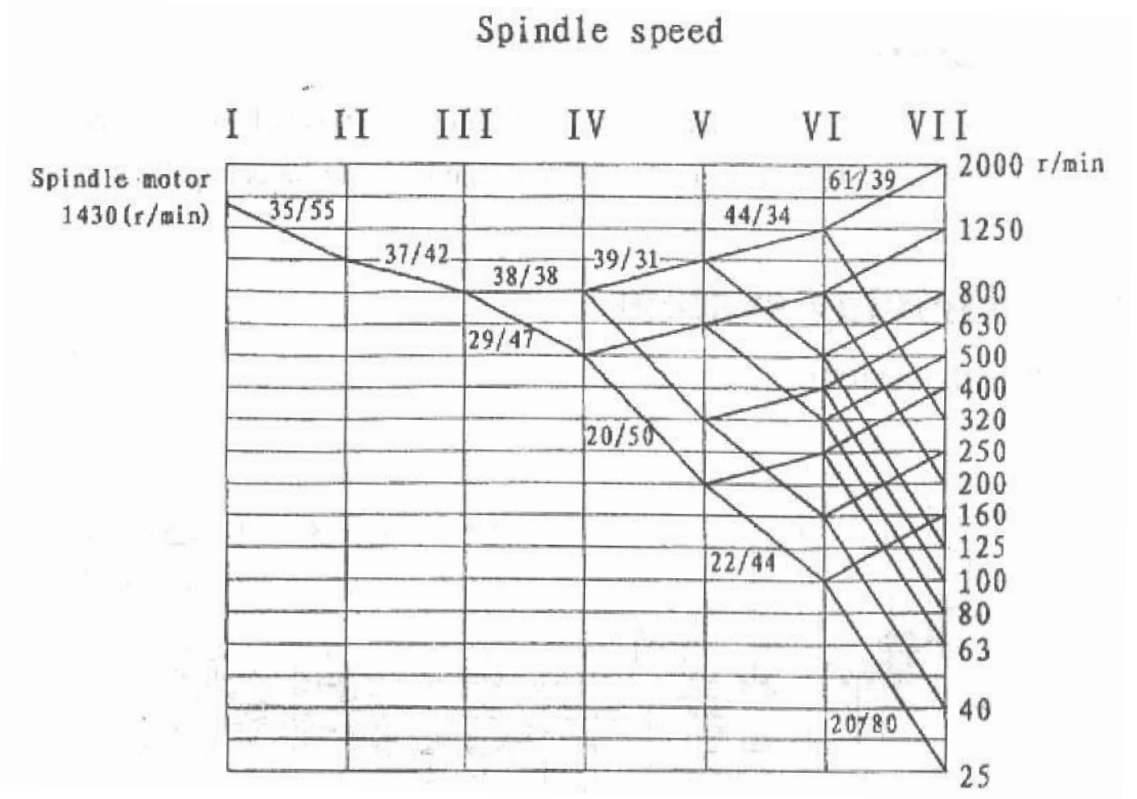


Fig. 7-1


Spindle speed
I II III IV V VI VII
Spindle motor
1430(r/min)
35/55
37/42
38/38
29/47
39/31
20/50
44/34
61/39
22/44
20/80
2000 r/min
1250
800
630
500
400
320
250
200
160
125
100
80
63
40
25

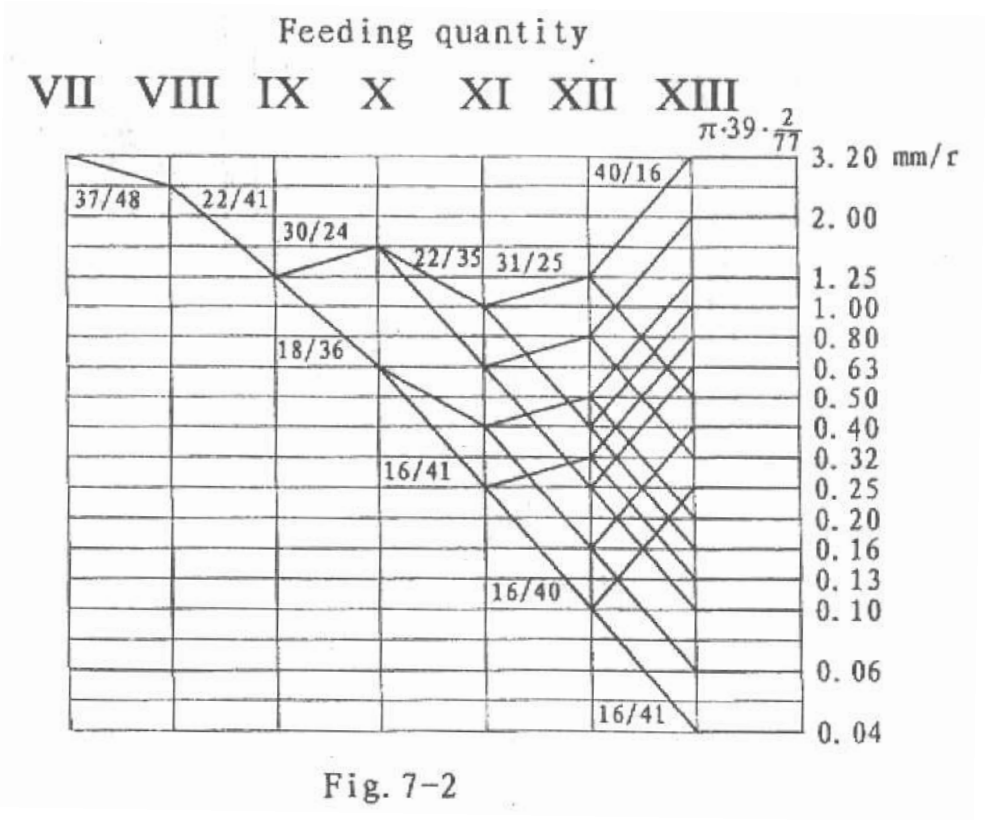

Feeding quantity
VII VIII IX X XI XII XIII
π·39·2/77
37/48
22/41
30/24
18/36
16/41
22/35
31/25
16/40
40/16
16/41
3.20 mm/r
2.00
1.25
1.00
0.80
0.63
0.50
0.40
0.32
0.25
0.20
0.16
0.13
0.10
0.06
0.04

Fig. 7-2

Parts of Drive System

Position No.	No. of pitch or start	Modulus	Spiral angle and direction	Precision grade	Materials item	Heat treatment and hardness
1	35	2		7-Dc	45	G54
2	55	2		7-Dc	45	G54
3	37	2.5		7-Dc	45	G54 Claw H42
4	42	2.5		7-Dc	45	G54
5	29	2.5		7-Dc	40Cr	T235,D0.35-450
6	38	2.5				
7	20	2.5		7-Dc	40Cr	T235,D0.35-450
8	39	2.5				
9	47	2.5		7-Dc	45	G54
10	50	2.5		7-Dc	45	G54
11	43	2.5		7-Dc	45	G54
12	20	2.5		7-Dc	40Cr	G52
13	61	2.5		6-Dc	40Cr	G48
14	80	2.5		7-Dc	40Cr	G48
15	39	2.5		6-Dc	45	G54
16	37	2		7-Dc	45	G54
17	18	2.5		8-Dc	45	G54
18	30	2.5				
19	36	2.5		8-Dc	45	G54
20	24	2.5		8-Dc	45	G54
21	43	2.5		8-Dc	45	G54
22	16	2.5				
23	25	2.5		8-Dc	45	G54
24	40	2.5		8-Dc	45	G54
25	16	2.5		8-Dc	45	G54
26	41	2.5				
27	16	2.5		8-Dc	45	G54
28	41	2.5		8-Dc	45	G54
29	35	2.5		8-Dc	45	G54
30	16	2.5		8-Dc	45	G54

43	22	2.5				
Position No.	No. of pitch or start	Modulus	Spiral angle and direction	Precision grade	Materials item	Heat treatment and hardness
32	41	2		8-Dc	45	G54
33	22	2			45	G52
34	48	2		8-Dc	45	G54
35	38	1.5		8-Dc	45	
36	38	1.5				
37	2	2	4°58′right	8-Dc	40Cr	T235
38	2	1.5	5°42′38″right	8-Dc	45	
39	35	2		9-Dc	45	G48
40	20	2		9-Dc	45	G48
41	13	3		8-Dc	40Cr	T235,D0.3-500
42	77	2	4°58′right	8-Dc	HT300	
43	72	1.5	5°42′38″right	8-Dc	40Cr	
44	44	3		7-Dc	45	G54
45	34	2.5		7-Dc	45	G54
46	22	3		7-Dc	40Cr	G54
47	44	2.5		7-Dc	45	G54
48	38	2.5		7-Dc	45	G54
49	36	2.5		7-Dc	45	G54 Claw H42
50	36	2.5		7- Dc	45	G54 Claw H42
51	54	2.5		8-Dc	45	G48
52	16	2.5		8-Dc	45	G48
53	42	2.5		8-Dc	45	G48
54	20	2.5		8-Dc	45	G48

Bearing

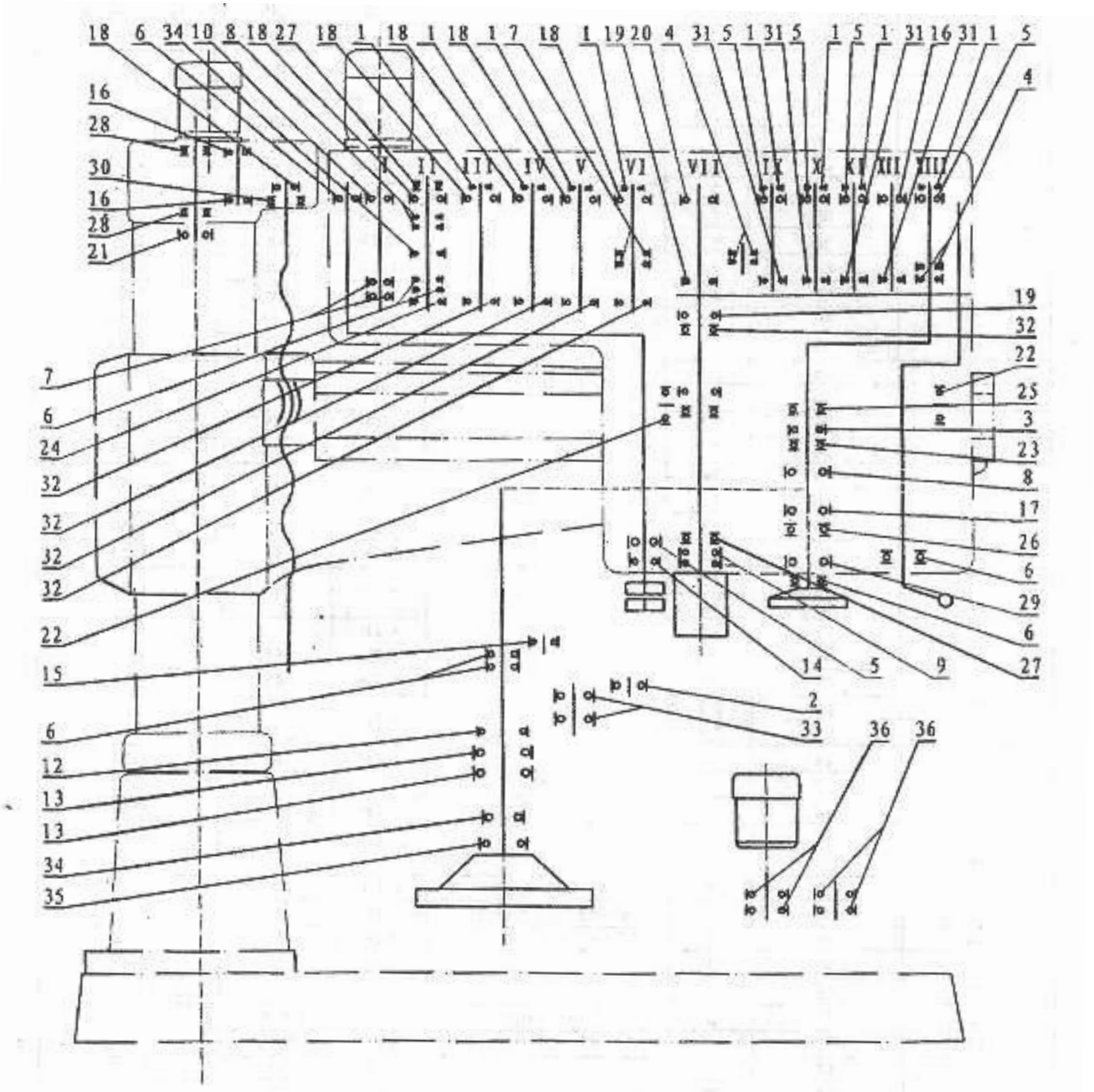


Fig. 7-3

Position of Roll Bearing

No.	Item	Specification	Precision	Qty.
1	626	6×19×6	G	8
2	6000	10×26×8		1
3	6001	12×28×8		1
4	6004	20×42×12		4
5	6005	25×47×12		5
6	6006	30×55×13		5
7	6007	35×62×14		4
8	6008	40×68×15		2
9	D6008	40×68×15	D	3
10	6009	45×75×16	G	1
11	6010	50×80×16		1
12	6011	55×90×18		1
13	6016	80×125×22		2
14	6201	12×32×10		1
15	6203	17×40×12		1
16	6204	20×47×14		3
17	6205	25×52×15		1
18	6206	30×62×16		5
19	6210	50×90×20		1
20	6211	55×100×21		1
21	6217	85×150×28		1
22	2305	25×62×24		2
23	51101	12×29×9		1
24	51105	24×42×11		2
25	51106	30×47×11		1
26	51107	35×52×12		1
27	51108	40×60×13	D	2
28	51117	85×110×19	G	2
29	51205	25×47×15		1
30	51207	35×62×18		1
43	6204N	20×47×14		4
32	6206N	30×62×16		4
33	16005	25×47×8		2

No.	Item	Specification	Precision	Qty.
34	16006	30×55×9		5
35	16010	50×80×10		1
36	94.1/15	15×20×12		4

HYDRAULIC SYSTEM

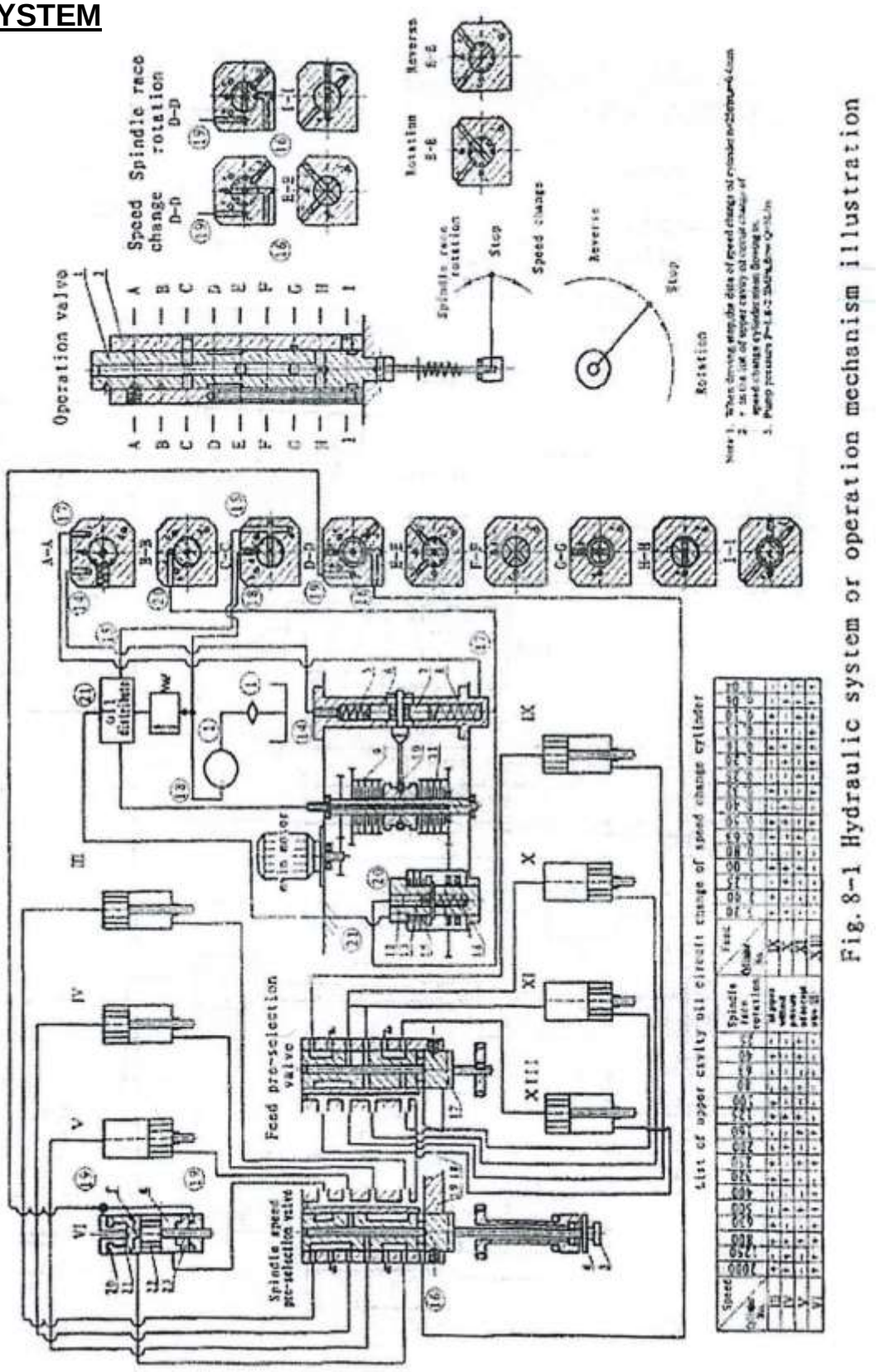


Fig. 8-1 Hydraulic system or operation mechanism illustration

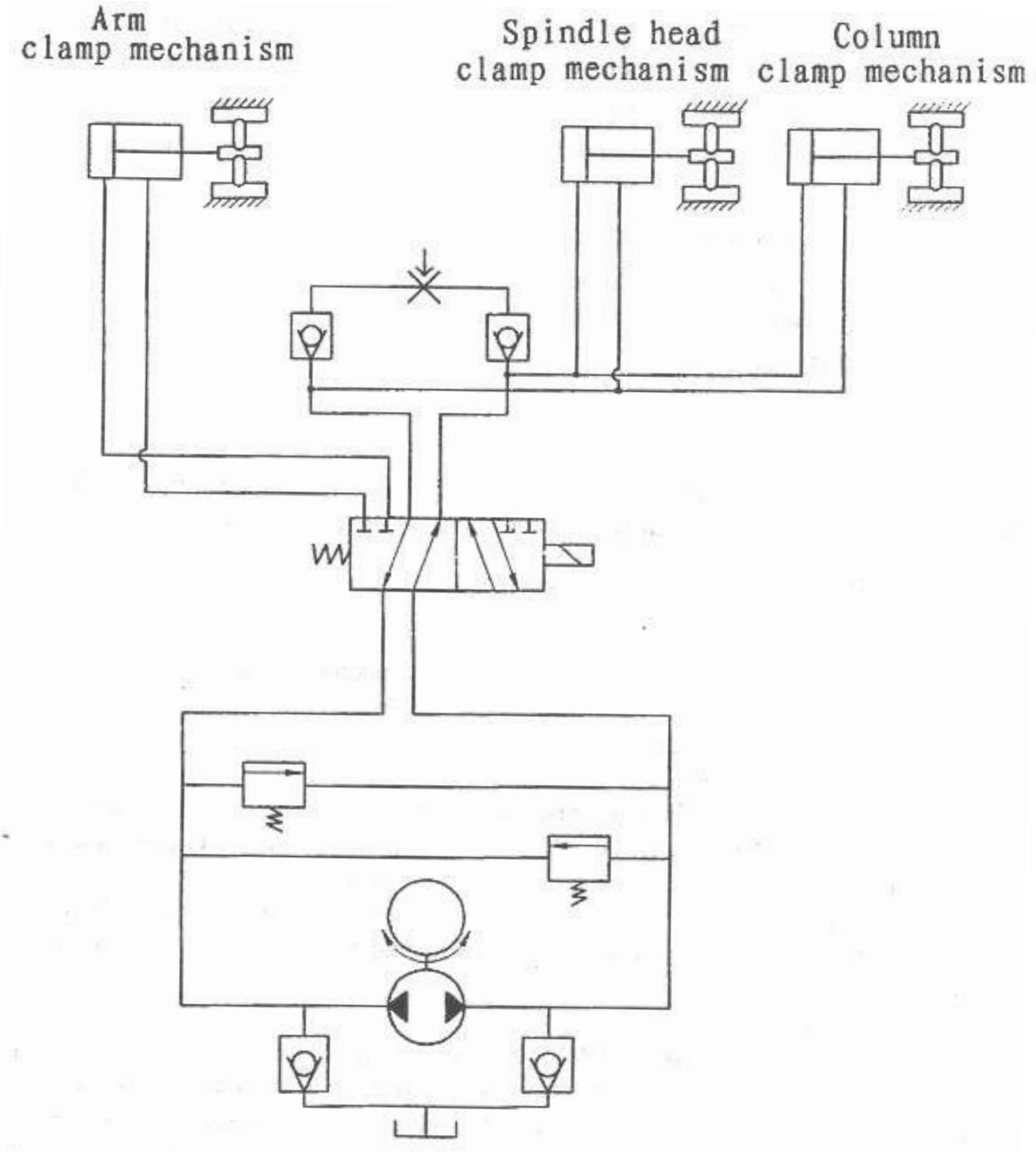


Fig. 8-2 clamp hydraulic mechanism and oil circuit illustration

ELECTRCAL

Brief Description

This machine use 220V, 3ph, 60hz AC power. The controlling transformer supplies power to the controlling circuit at 110V, the lighting circuit at 24V, and the signal lamp at (6.3V).

The machine is equipped with four motors:
M1 — Main Motor
M2 — Elevating Motor
M3 — Hydraulic Motor
M4 — Coolant Pump
The coolant pump is connected with through the lower electrical enclosure while the other motors and controls are connected through the upper arm mounted electrical enclosure.

IMPORTANT: DO NOT always rotate the radial arm in the same direction around the column. This will damage wires, cables and hoses that are routed between the column and the arm.

Description of Electrical Circuit

Preparation for running

- In order to ensure the safety of operator, the electrical enclosure door on the radial arm is interlocked to prevent operation with the door open. Power to the machine is shut off when the door opens.
- Turn on the switch QS1, the signal lamp HL1 light.

Inspection of the Power Phase Sequence

- After installation of the machine, turn on the power and push the start button SB3, main motor start to run, signal lamp is extinguished. Turn the handle 16 to the rotation or reversal position and the spindle can rotate in clockwise or counter clockwise. Verify that it rotates the correct direction/correct phase sequence. If it does not rotate the correct direction, exchange the position between any 2 for the input wires verifying that the ground wire is correct and has not moved.

Main Motor Rotation

- Push the starting button SB2, AC contactor KM1 is energized, motor M1 run, signal HL2 lit.
- Push stopping button, AC contactor KM1 is released, motor M1 stops running, signal HL2 is extinguished.
- The thermal-relay will prevent the main motor run overtime under overloaded condition. The set value of the relay can be adjusted against the rating currant of the main motor.

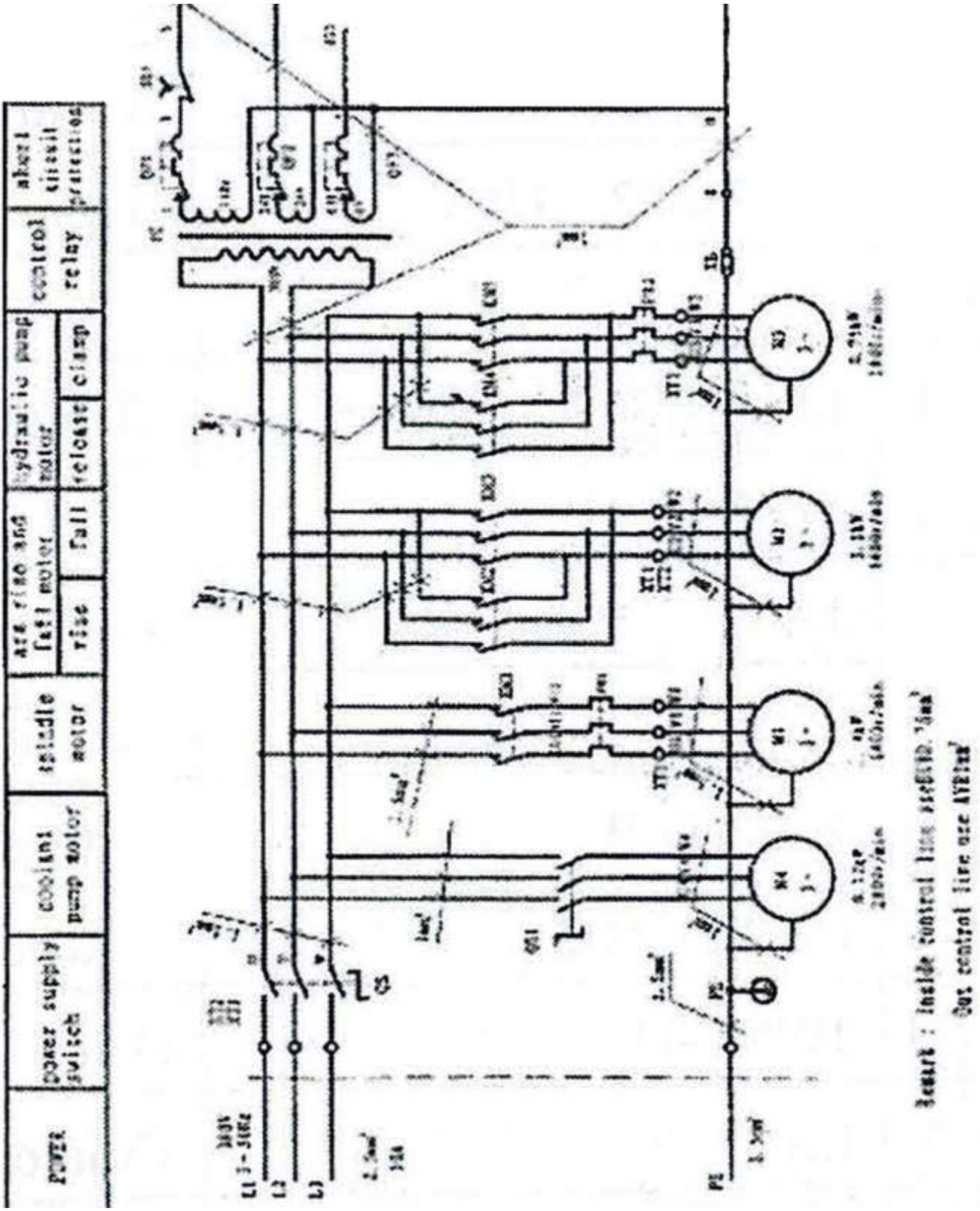
Arm Elevation

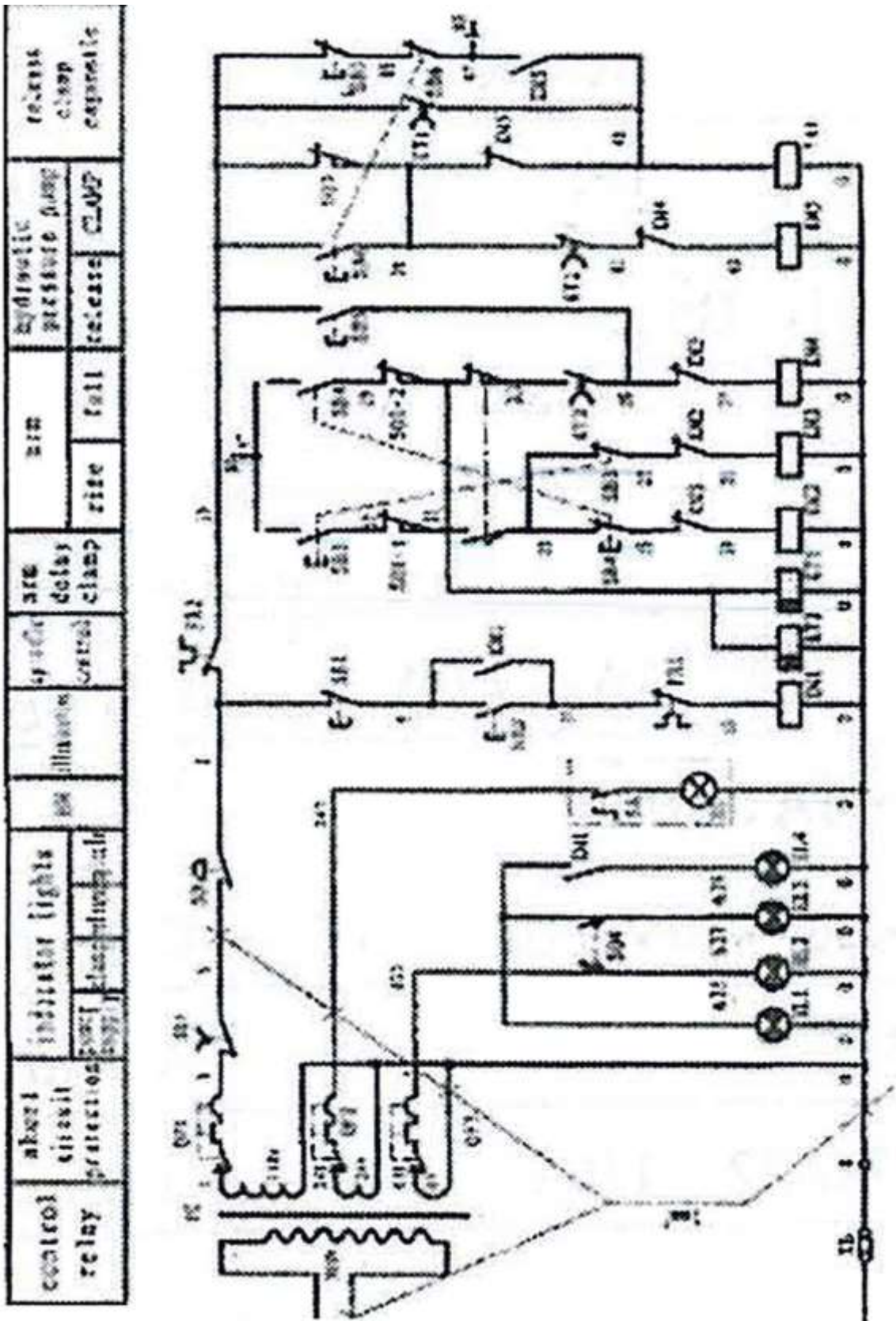
- Push the up or down button SB3 or SB4, time relay KT is self-adhered, it makes the magnet YA and contactor KM4 self-adhered at the same time.
- Hydraulic motor M3 rotates to supply oil flowing through the valve into arm releasing cylinder, pushing the piston and rhombic block to release the arm. At the same time the piston shaft press position switch SQ2 through the spring sheet. Contactor KM4 is released; KM1 or KM3 is self-adhered, motor M3 stop running. Elevating motor M2 runs to raise or lower the arm. If they are not released, SQ2 cannot close its contactor points, KM2 (or KM3) cannot be adhered, thus the arm cannot elevate.
- When the arm move to the target position, release button SB3 or SB4, K2, K3 and time relay KT is released. The elevating motor stops running and the arm stops elevation. Because the time relay KT is released, 1-3 second later, contactor KM5 and magnet are self-adhered, hydraulic motor M3 reverse to supply the oil flow through the valve into arm clamping cylinder pushing piston shaft and rhombic block along the counter direction to clamp the arm. At the same time the piston shaft press position switch SQ3 through the spring sheet. KM4 and YA is released. Hydraulic motor M3 stops running.
- The main function of the time relay is to control the controlling contactor being adhering time which makes the arm is clamped after elevating motor stops running. The delay time need 1-3 second.
- Combined switch is for limiting the arm travel. When the arm is raised to the limited position, SQ1 is triggered and KM2 is released, elevating motor stop running. When the arm is lowed to the limited position, SQ1 is triggered and KM3 is released, elevating motor stop running.
- Switch SQ3 is for controlling auto-clamping of the arm. If there is a problem with the hydraulic clamping system such as auto-clamping could not be finished, or SQ3 is adjusted improperly to make the SQ3 contacting point opened, this will cause the hydraulic pump motor to be overloaded. Continued running overtime will damage the motor. Thermal relay in the circuit which set value can be adjusted according to the rated current of the motor is to prevent overheating.

Clamping and Releasing of Column and Spindle Head

- The clamping and releasing of column and spindle head are affected at the same time. Push the releasing or clamping button SB5 or SB6, contactor KM4 is self-adhered. Hydraulic motor M3 rotates to supply the oil flowing through the valve into column clamping or releasing cylinder, pushing piston and rhombic block to clamp or release the arm. Clamping or releasing signal lamp is illuminated.

ELECTRICAL SCHEMATIC




control relay
alarm circuit protection
indicator lights
arm
fall
release
clamp
release clamp cylinder

Electrical Item List

No	Part No.	Qty.	Specification	Part
1	M1	1	Y112L1-4，B5	3 phase motor
2	M2	1	Y90S4，B5	3 phase motor
3	M3	1	Y8024	3 phase motor
4	M4	1	AOB-25	Coolant pump
5	QF1, QF2, QF3, QF4	7	18A, 9A, 4A, 2.0A	Fuse cartridge
	QF5, QF6, QF7		2A, 3A, 3A	
6	TC	1	BK-150 400V/110-24-6V	Controlling relay
7	KM1	1	3TB42-22 110V	AC contactor
8	KM2, KM3, KM4	6	3BT40-22 110V	AC contactor
	KM5, KM6, KM7			
9	FR	1	LR2-D1305C 0.63～1A	Thermal relay
10	KA	1	MY2N 110V	Relay
11	KT1	1	JSZ3F	Time relay
12	SA	1	HZ5-10/1,7LO2	Combination switch
13	SQ1a, SQ1b	3	XZ-15G-B	Limit switches
14	SQ2, SQ3	2	LXW5-11G2	Limit switches
15	SQ4	1	JWM6-11	Door switch
16	SB2, SB4, SB5	3	LAY3	Control button
17	SB3, SB6, SB7	3	LA19-11	Control button
18	SB8	1	LY42	Control button
19	SB9	1	LA42H-11	Control button
20	SB1	1	LAY3-01ZS/1，	Control button
21	QS1	1	HZ12-40/03	Changeover switch
22	YA1, YA2, YA3	3	110V	Magnet
23	EL	1	40W，24V	Lamp
24	HL	1	XD1，6.3V	Indicator lamp
25		1	JL40A-7	Work lamp

MAIN STRUCTURE

Spindle Speed Change Transmission Mechanism

Figure 10-1
Spindle speed change transmission mechanism is equipped on upper hand of spindle head box which has 7 pieces transmission shaft, through the different joggle between 4 pieces slippage gear and fixed gear enable spindle achieve 16 serials speeds. There is a spindle friction clutch on shaft II which can not only make spindle start stable and change rotation direction without impact but also friction piece skid and motor over-load while spindle load is over motor rated power. There are three claws on outer side of friction piece in order to reduce abrasion when there has interspace between neighboring friction pieces. Outer friction piece is divided into two kinds due to the way of three claws. The way of two outer friction piece claw on shaft should be consistent when they range on shaft. Slippage gear on shaft III could cut off the transmission chain between main motor and spindle through operation mechanism moving to the middle, (Check with “spindle race rotation”). Cut off the transmission chain between main motor and spindle, spindle rotation can be rotated easily, we called “spindle race rotation”. In order to equip and release tools and aim at the hole will be processed.

Structure Arrangement

Spindle head box was divided into three floors. If you want to takedown the spindle head box, move out the main motor and then unpack the organic glass cover on two side of spindle head cover, take out the stopper pin with a bolts on its side, unpack the fasten screws, then second floor spindle head box can be unpacked. Hence, all the parts of transmission system exposure outside, all transmission shafts can pull out directly from spindle head body.

Spindle Feed Speed Change Transmission Mechanism

Figure 10-2
Structure model, position, structure arrangement, assemble and unpack procedure of spindle feed speed change transmission mechanism is similar to the spindle speed change transmission mechanism.

Spindle Feed Mechanism

Spindle feed mechanism include two parts: worm shaft and plane shaft. Motility is transmitted from spindle feed speed change transmission mechanism to worm shaft, via worm wheel, transmitted from plane shaft to spindle cover at last, make spindle got feed motivation.

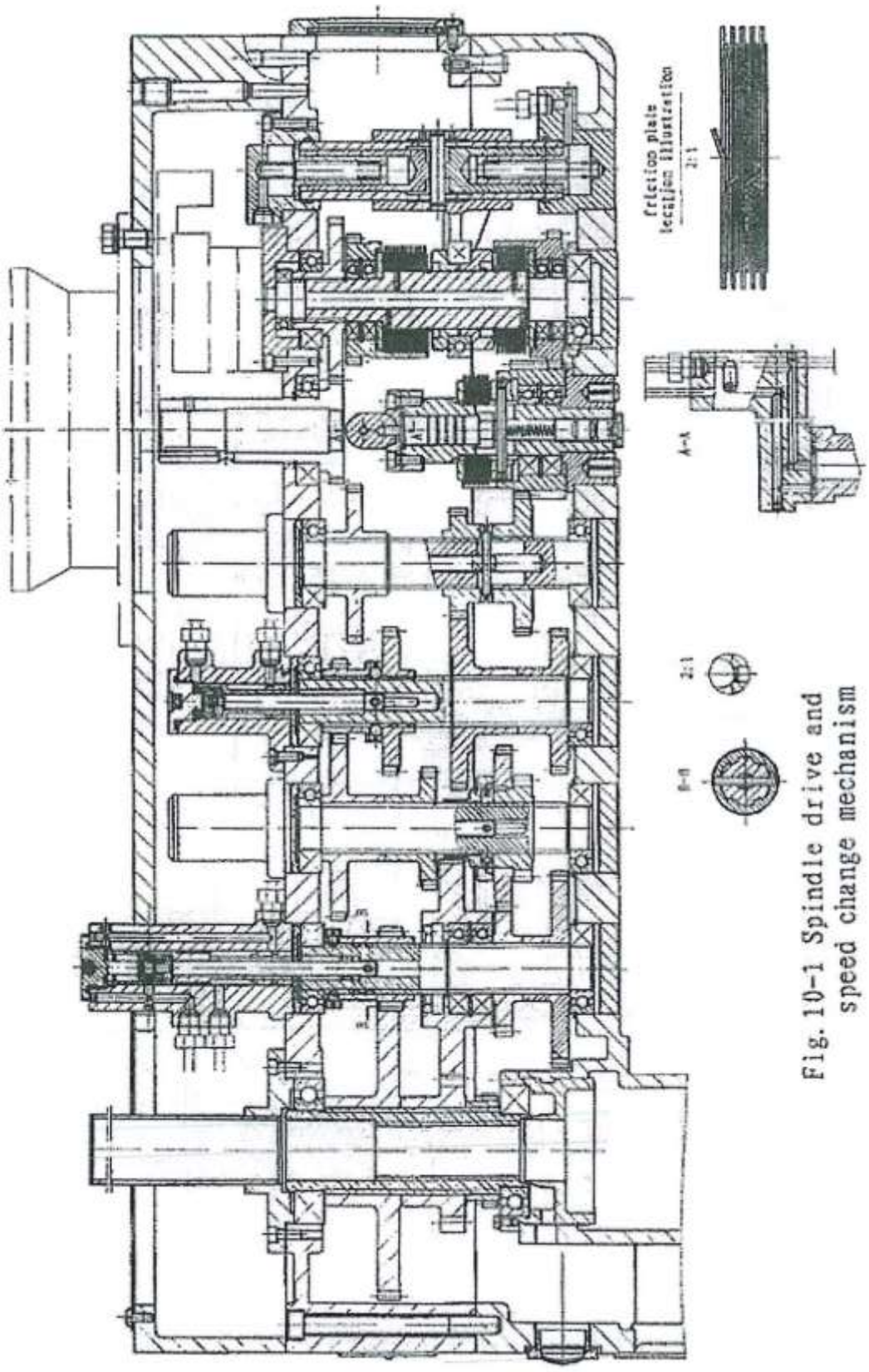


Fig. 10-1 Spindle drive and speed change mechanism

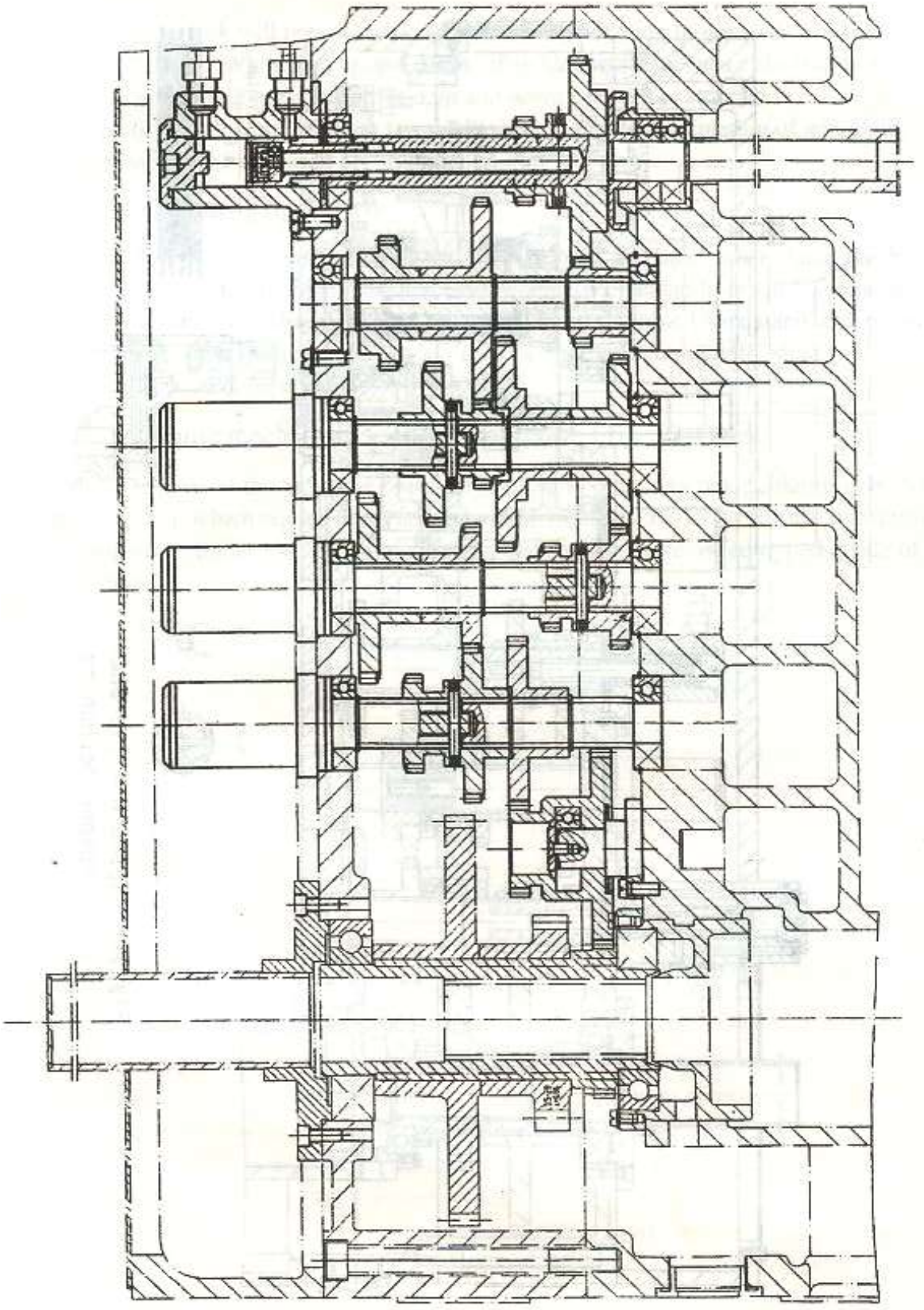


Fig. 10-2 Spindle feed speed change mechanism

Worm Shaft

Figure 10-3
Figure 10-3 shows manual feed micro-feed position, handle 15 was at steel ball insurance clutch on upper limitation place gear 8. Spindle feed speed change mechanism drive unload race. If you want to connect mechanical feed, press handle 15 to the limitation place, push parts such as gear cover 1 and haulm 3, upward moving inner gear cover 7 (0.314” [8mm]), and joggle with outer gear, circulation movement via spline 9 and spline hole on inner gear cover 7 transmitted to worm shaft 5, make worm wheel 4 reverse, plane shaft drive spindle feed at last. Hand wheel 17 turns altogether, if you want to connect micro-feed, push handle 15 to the upper limitation place, push parts like cover 1 etc., let inner gear 7 and 8 come away with joggle, turning handle wheel 17, worm shaft reverse directly, via feed worm wheel 4, at last micro-feed effected due to plane shaft drive spindle, herewith, plane shaft with manual feed if not turning handle wheel 17. The steel ball insurance clutch is an insurance function device which can be cut off the mechanical feed while feed assistant power is over the rated value. It can cut off the mechanical feed also while fixing pin.
When unpack, unpack the front mark plate of spindle head, upper part of worm shaft emerged unpack the small pin 10 on spline sleeve, draw out the steel ball insurance clutch set from the upper side, if you want to unpack the worm shaft, you need to unpack the pin 6 on inner gear sleeve, and then inner gear sleeve, screw off six fixing screws on bearing sleeve, and all these parts complete with sleeve 2, all the worm shaft parts pull out from the spindle head body.

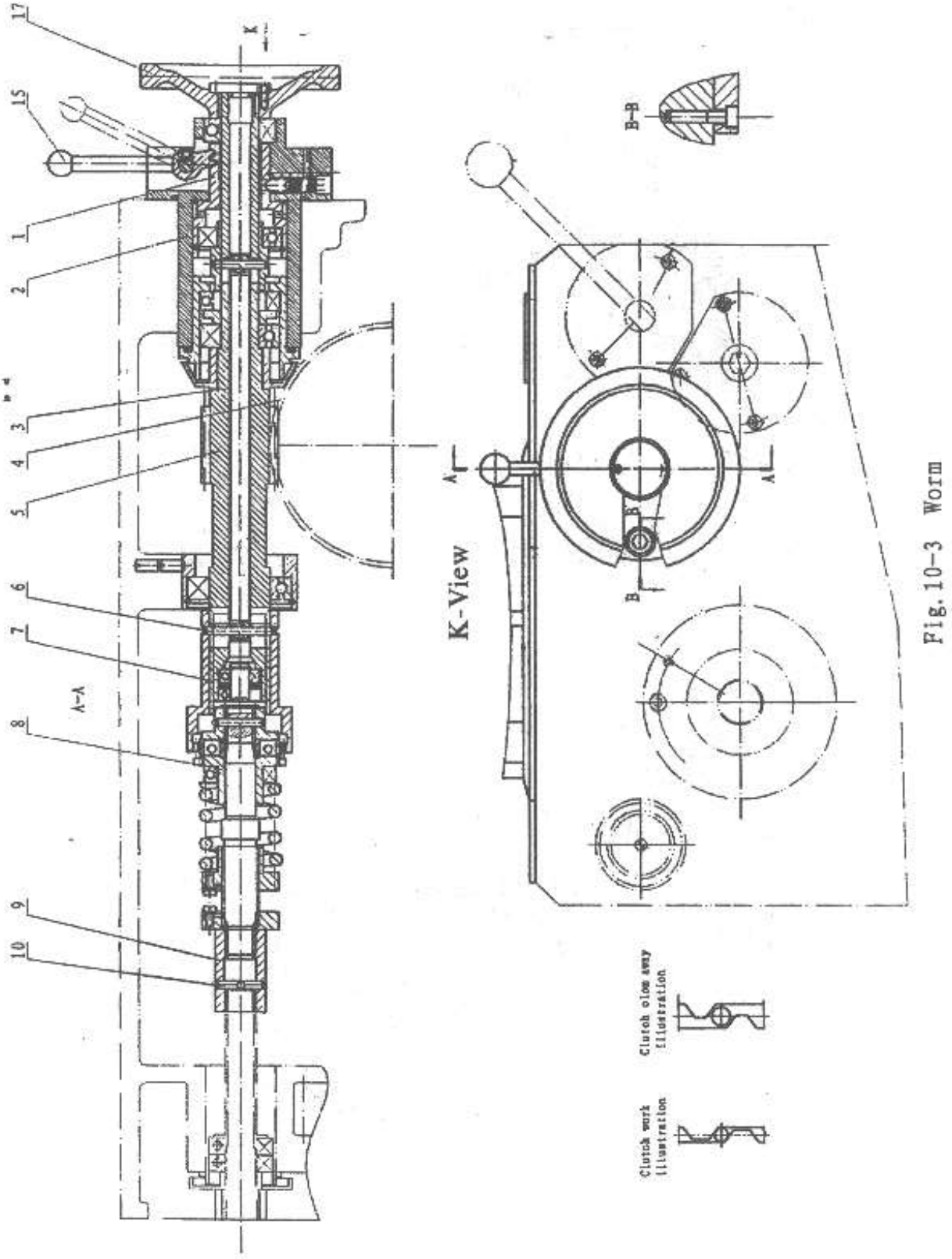

17
15
1
2
3
4
5
6
7
8
9
10
K
V-V
B-B
B
K-View
Clutch slow away illustration
Clutch work illustration

Fig. 10-3 Worm

Plane Shaft

Figure 10-4

Plane Shaft Unpack and Assemble:

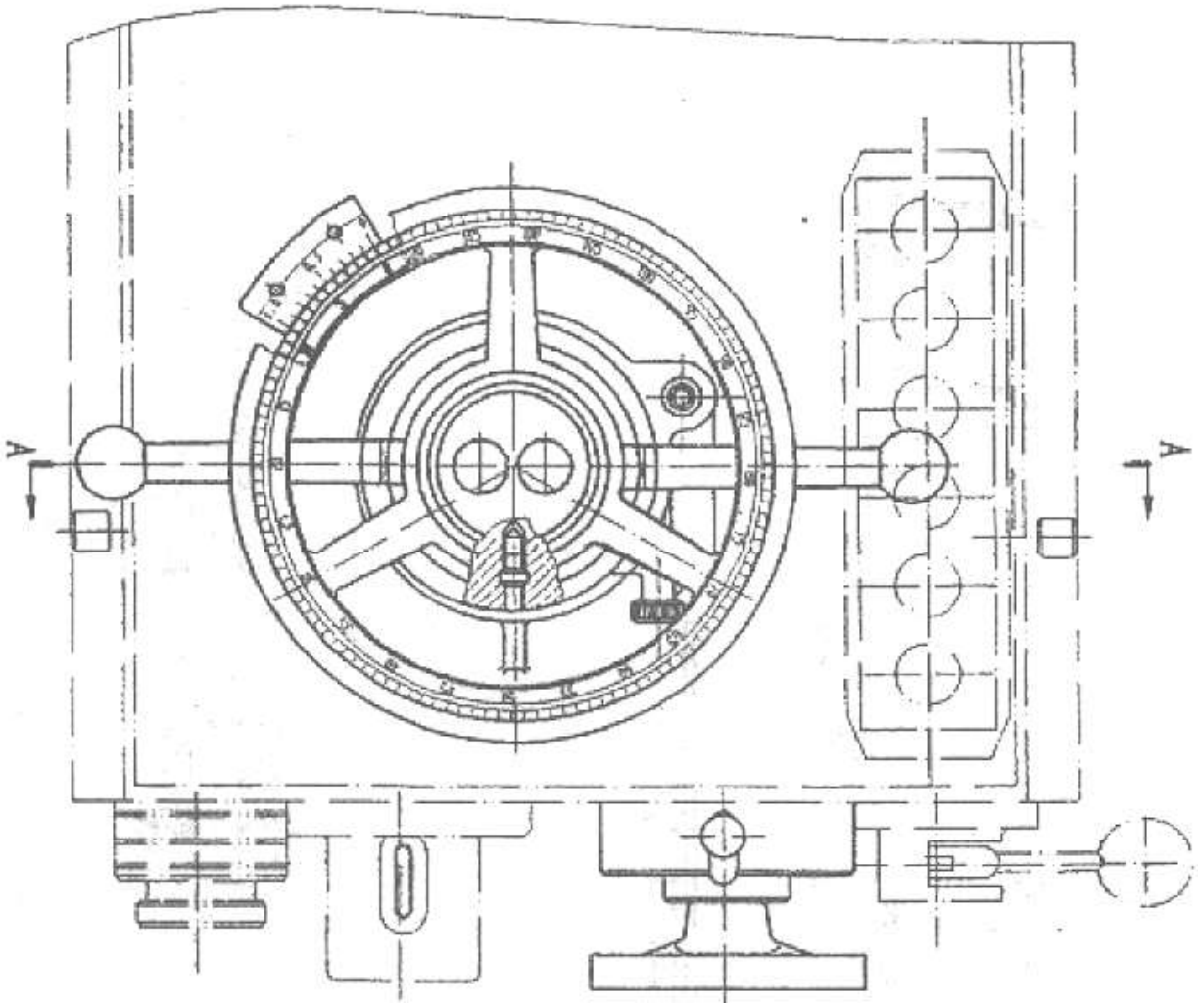
Loosen the nut 1, and unpack the hand wheel 5. Plane shaft parts can unpack completely. Must pay more attention that when unpack the plane shaft, spindle must move to the upper position, release spindle balance spring pad in prevent the spindle down suddenly.

Assemble the horizontal shaft, the spindle must move to upper position. The shaft balance cam must be in suitable position.

Clutch Adjustment:

When the clutch is in a proper position, the handle 4 put in the “mechanism” position. Tighten the nut 3.

Important: *The* 36 pieces of the 9VIB steel ball control the connection or movement away of the clutch. DO NOT Dissemble and loose the steel balls. During assembly; pay strict attention to the number and location of the steel balls as missing, damaged or wrong steel balls will destroy the clutch.



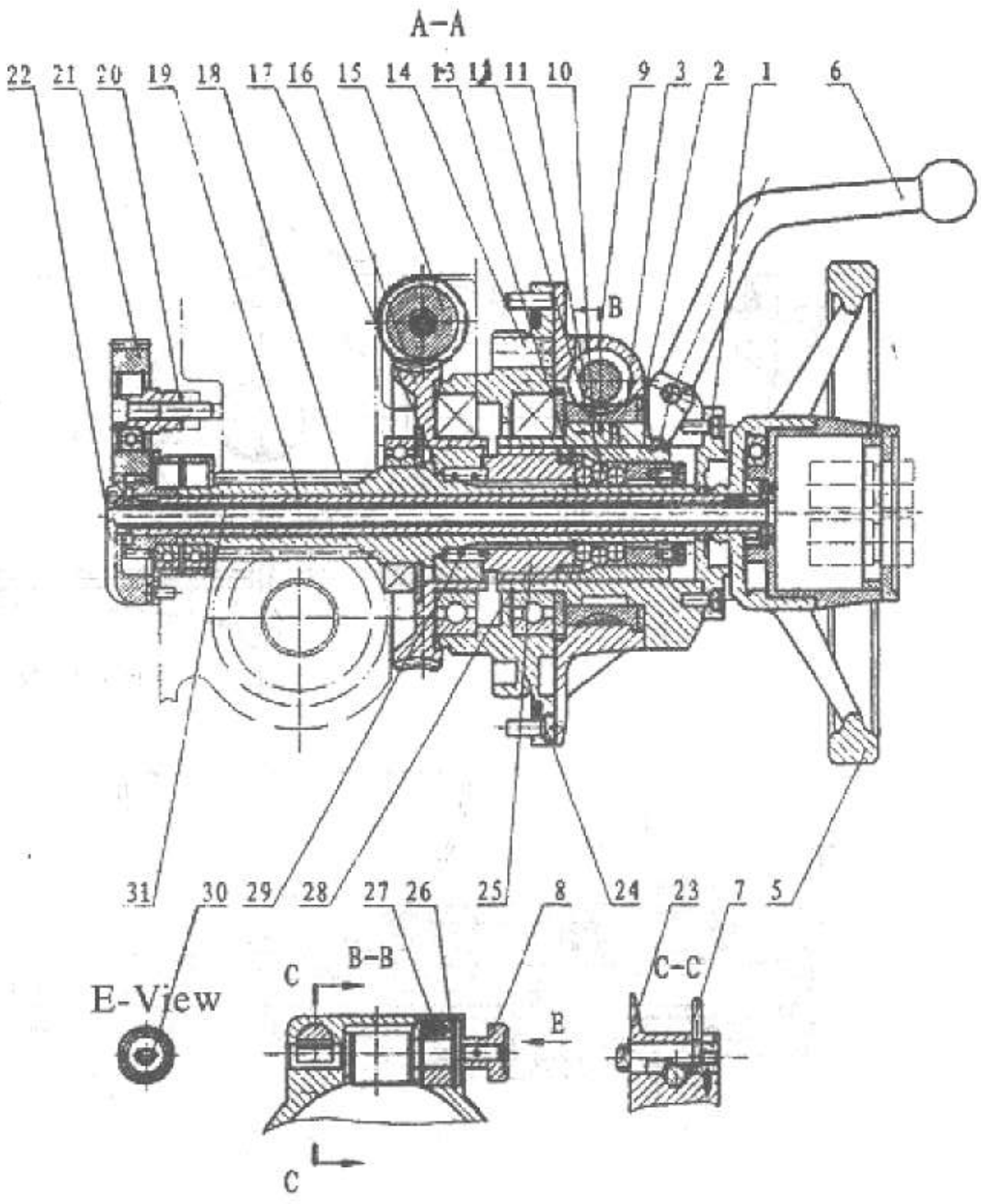


Fig. 10-4 Lever shaft

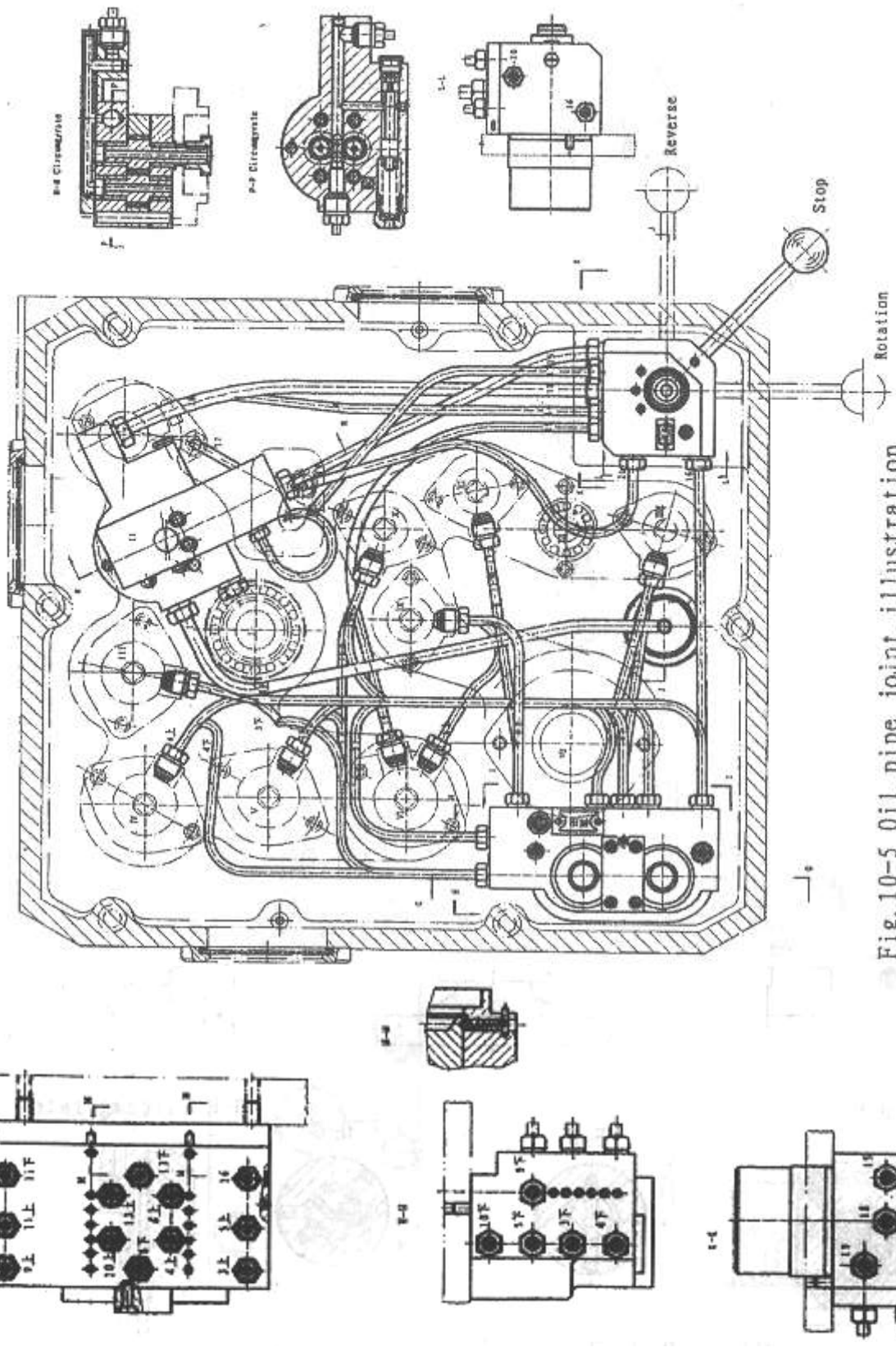


Fig.10-5 Oil pipe joint illustration

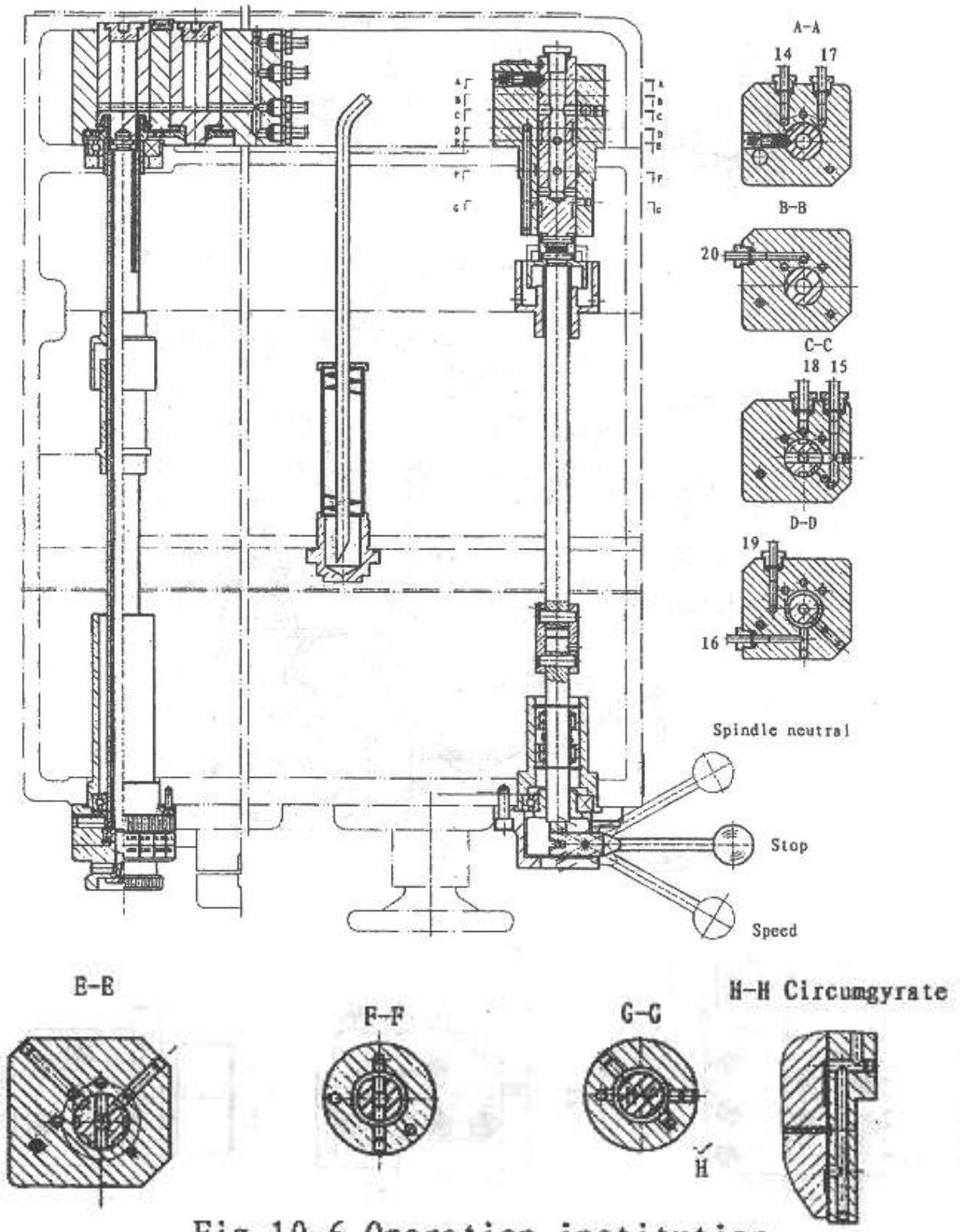


Fig. 10-6 Operation institution

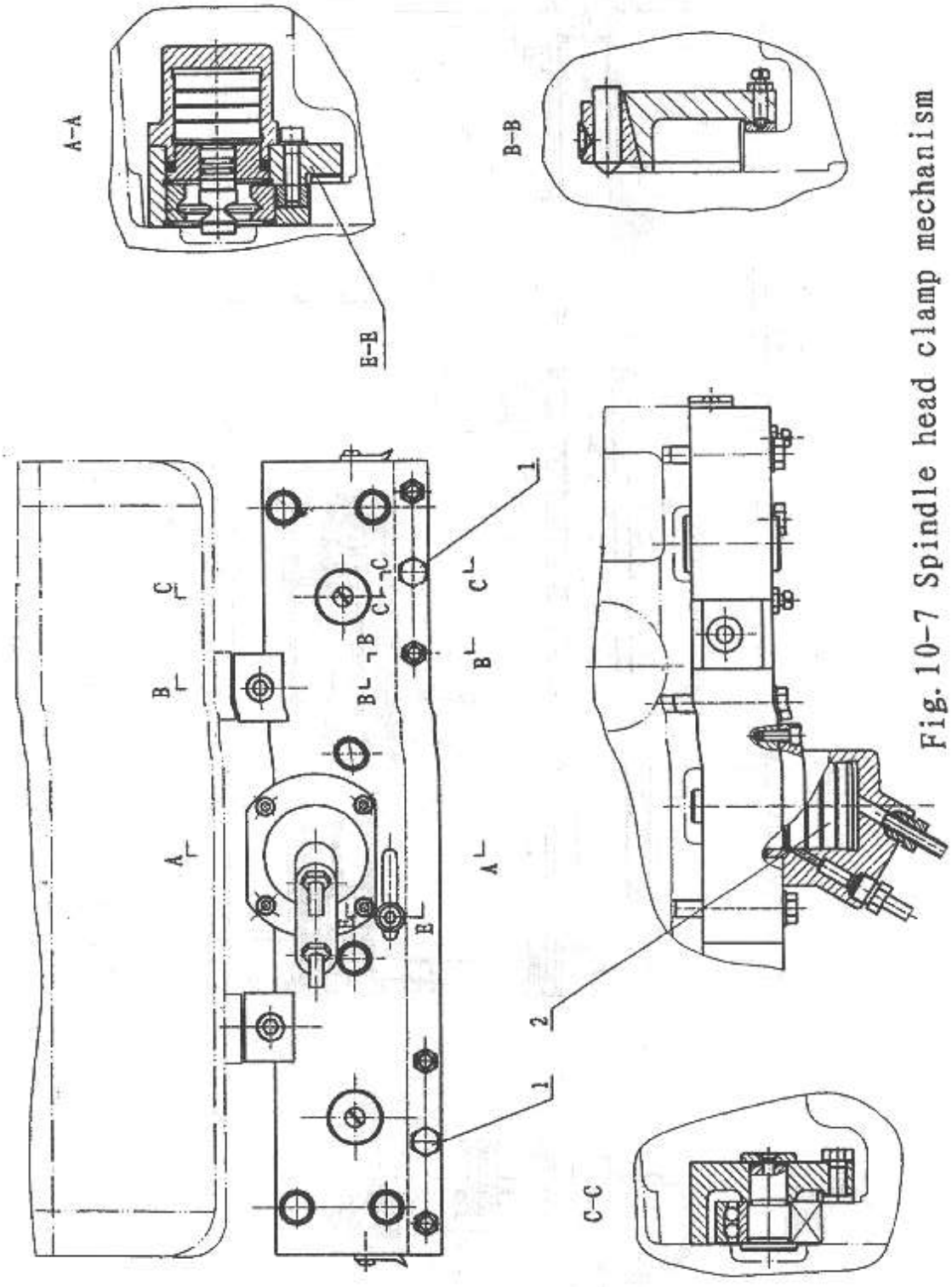


Fig. 10-7 Spindle head clamp mechanism

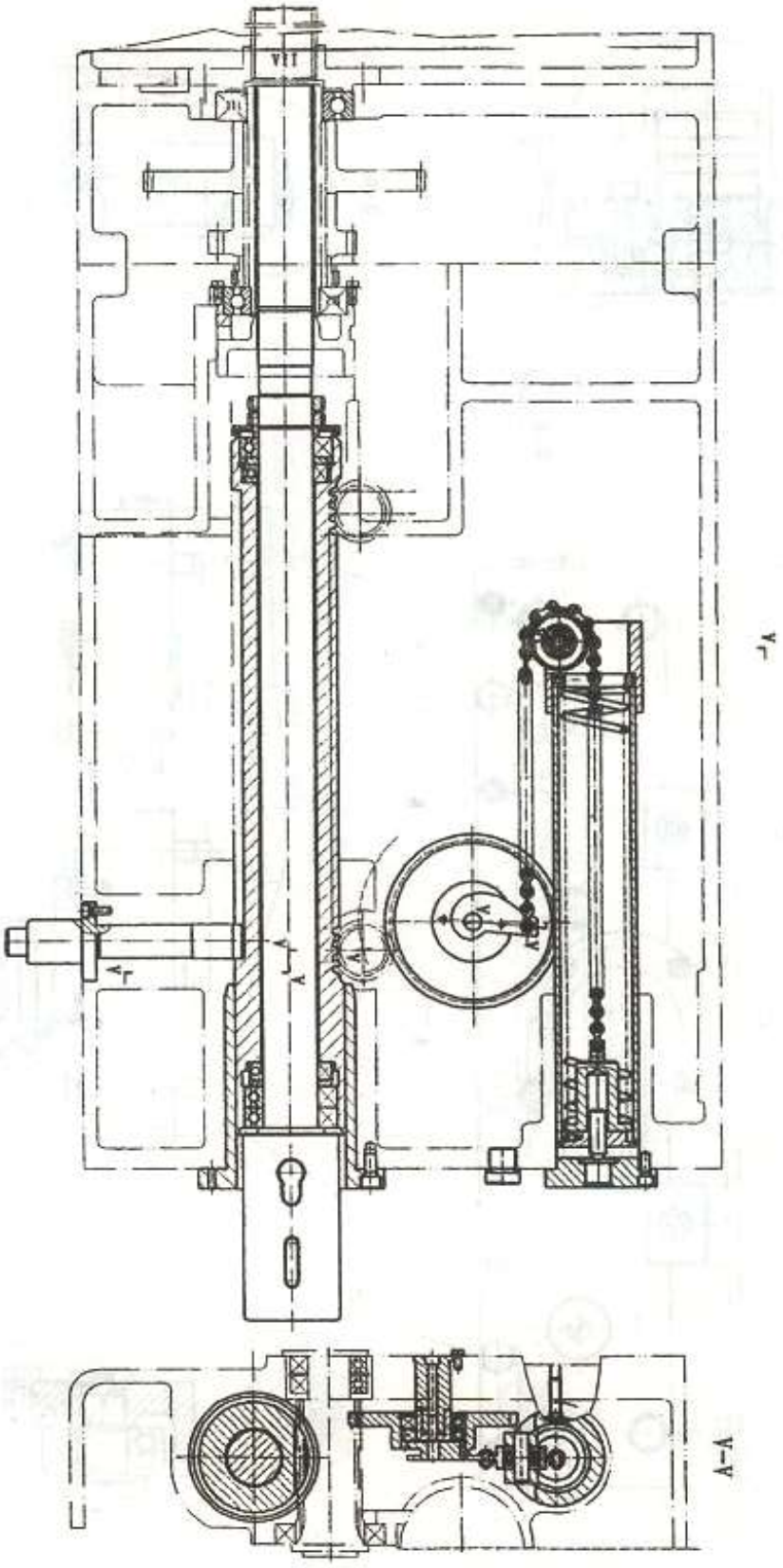


Fig.10-8 Spindle balance mechanism

Arm Elevating

Figures 10-9 and 10-10
Inside of elevating shell 13, equipped with an arm elevating framework (fig.10-9 B-B section), shows elevating motor driven elevating link 23 via lower speed motor and steel ball insurance clutch 15, due to (fig.10-10 A-A section) shows elevating nuts 21 wad limited by pin 22, cannot rotation, link 23 reverse can drive arm up and down, to ensure the affluent lubrication of all transmission parts in elevating framework, there is a splash set equipped on motor shaft 14 for the consideration of elevating nut 21 abrasion after long time working and probably out of it, there is an insurance nut 20. When elevating nut 21 damaged, arm moving down to contact with pressure cover 18, pressure 18 supporting arm, in order to contingency happens. Nut 17 is used for link 23 limitation in shaft way, when arm up and down to the travel end, not till steel ball insurance clutch 15 function, link will press electric switch and let elevating motor stop rotation, and then stop up and down. While arm up and down, if suddenness happens or electric switch failed turn on, steel ball will press spring skid, up and down movement stopped.
Arm up and down movement has relationship with auto-circulation of arm clamp.

Arm Clamp

Figure 10-10
Arm clamp mechanism is similar with spindle head and inner outer clamp mechanism, but still use rhombic block mechanism. Clamp mechanism hydraulic system pressure oil entry into oil cylinder 1, push piston 2, make rhombic block stand and exceeding center about 0.5mm and auto-lock. Link 4 rotation around with shaft, via screws fasten arm on outer column.

Hydraulic Mechanism for Clamp Purpose

Figure 10-11
Clamp of three parts of this machine (Spindle head, arm, outer and inner column), both use clamp oil pump which equipped on arm providing oil, (fig.10-11). Pressure transmitted to all clamp oil cylinder via distribution valve, distribution valve is equipped inside of arm electric box.

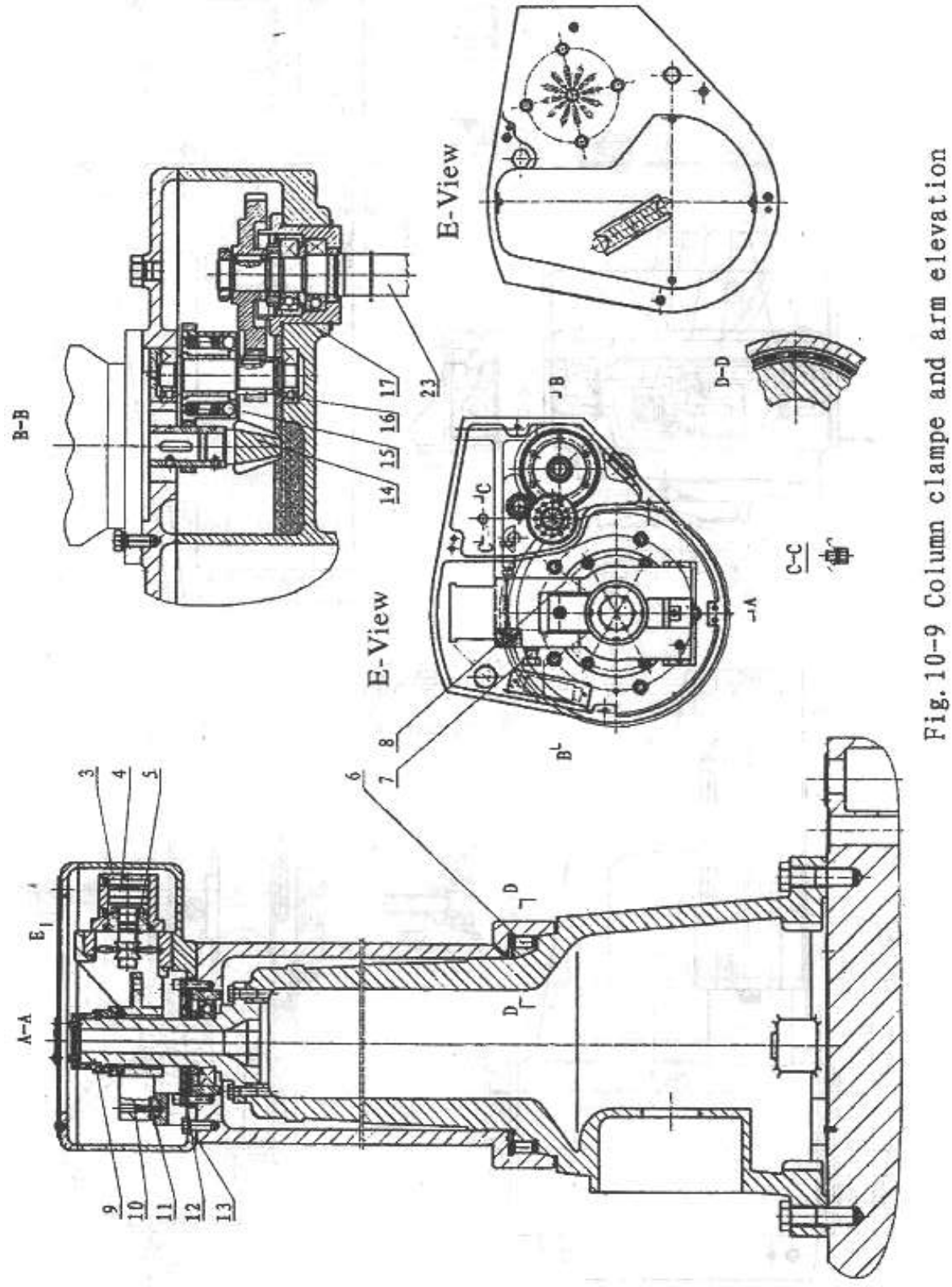


Fig. 10-9 Column clampe and arm elevation

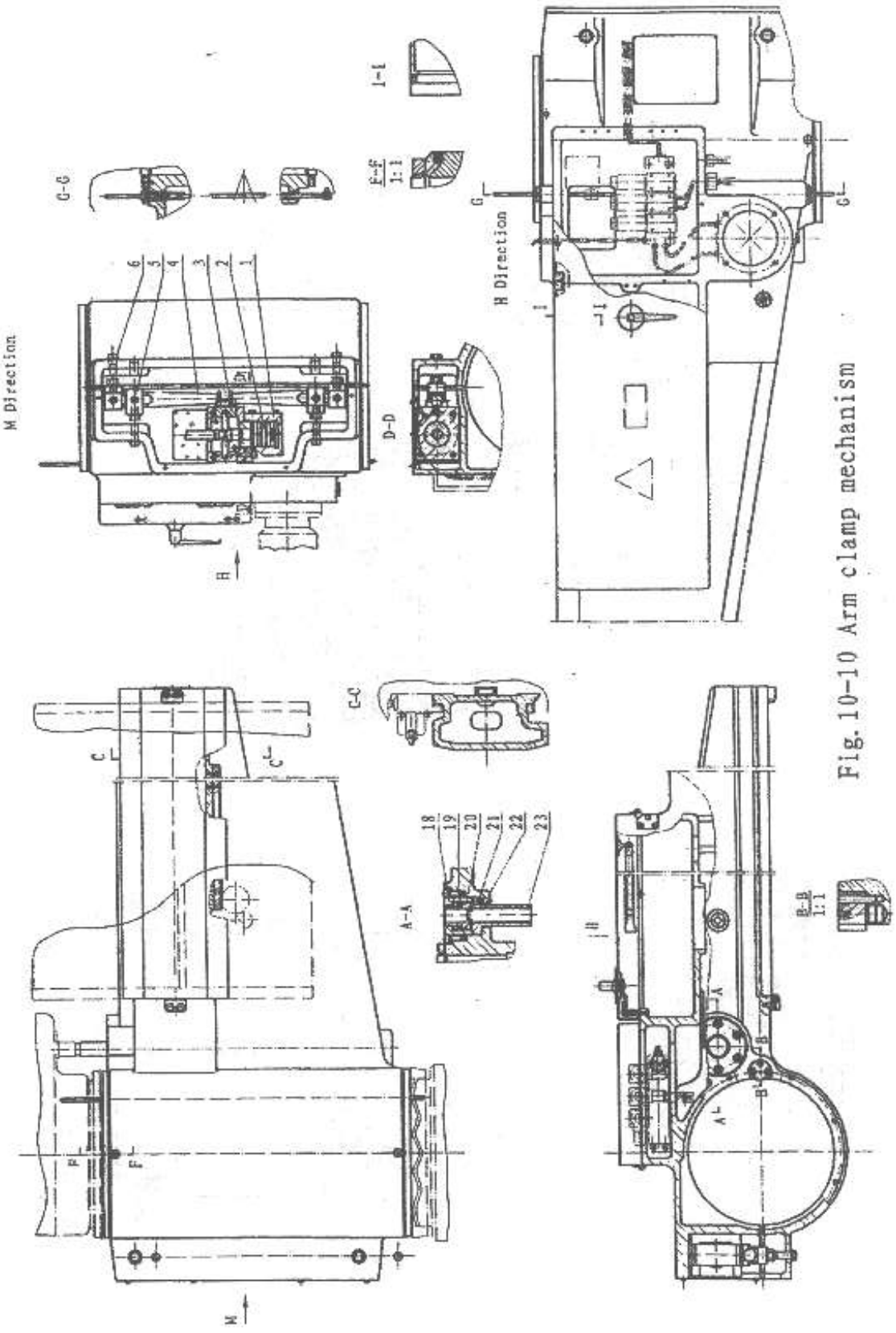


Fig. 10-10 Arm clamp mechanism

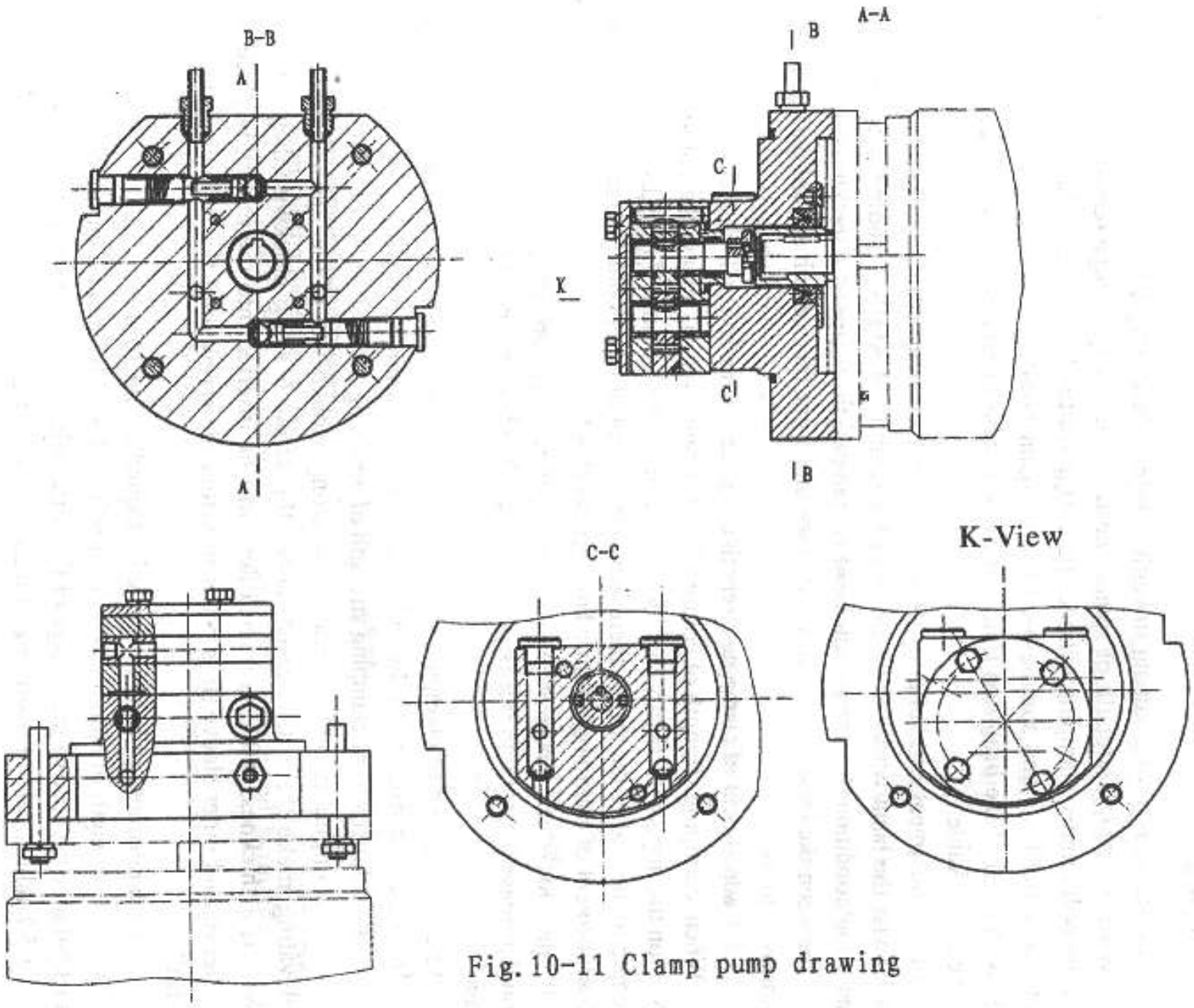


Fig. 10-11 Clamp pump drawing

ADJUSTMENTS AND MAINTENANCE

WARNING: Make sure the electrical disconnect is OFF before working on the machine.
Maintenance should be performed on a regular basis by qualified personnel.
Always follow proper safety precautions when working on or around any machinery.

- Check daily for any unsafe conditions and fix immediately.
- Check that all nuts and bolts are properly tightened.
- On a weekly basis clean the machine and the area around it.
- Lubricate threaded components and sliding devices.
- Apply rust inhibitive lubricant to all non-painted surfaces.

***Note**: Proper maintenance can increase the life expectancy of your machine.*

Adjustment of clamping strength of spindle head (fig.10-7)

- When clamping strength of spindle head is not strong enough, release the spindle box and the bolts under clamping cylinder (fig. e-e). Move the bolt to the right position along the slot, clamp the bolts and spindle head firmly again. Twist the hand wheel along circle with 40kg strength. If the head don't move, the adjustment of clamping strength of spindle head has been workable.
- After adjustment of clamping strength, inspect releasing condition.
- Release the spindle head. Twist the hand wheel along circle with strength 3-4kg. The spindle head should move. Under the condition that the spindle head is clamped firmly. Insert a thickness 0.04mm insert ruler between the head and 55 arm slide face and front face. Depth should be not exceeding 20mm.

Adjustment of clamping strength of column (fig.10-9)

- When clamping strength of column is not strong enough, release the column. Unload the cover on the top. Twist firmly the lock nut. Clamp the column firmly. Load 160kg thrust strength to the end of the arm. If there is no movement of outer column against inner column, the adjustment of clamping column has been workable.
- If the lock nut have been at the limited position, clamping strength still not enough. Release the column. Release the inner hex head screw above the spring plate 12, adjust again.
- After adjustment of clamping strength. Inspect releasing condition. Release the column. Load 160kg thrust strength to the end of the arm. The column can be turn.

Adjustment of clamping strength of arm (fig.10-10)

- When clamping strength of arm is not strong enough, shut off the power while the arm is elevating make the arm released. Fasten the screw 6 along clockwise, and then turn on the power. If a thickness 0.04mm insert ruler can`t be inserted into the mounting place of the arm sleeve and outer sleeve. (It is better to fasten the screw until the rhombic can stand up vertically.

Adjustment of balance strength of spindle (fig.10-8)

- Balance strength of spindle have been adjusted well by manufacturer. When the spindle lost its balance because of the change of the cutter. Adjustment by turning the screw14.

Adjustment of resistance of feeding-load (fig.10-3)

- Resistance of feeding load have been adjusted well by manufacturer, usually do not adjust it in the operation. Under some special conditions, the user can turn the lock nut above the gear 8 to strengthen or loosen the strength of the spring. The resistance of feeding-load will be strengthened or loosened. When the resistance of feeding-load is 1600-1760kg, the overload safety protection device is in the normal work condition. If load over 1760-2000kg, the device will make the feed drive not work. The resistance strength should be measured by resistance strength testing instrument.

Adjustment of pressure strength of the hydraulic clamping system. (fig.10-11)

- Pressure strength of the hydraulic clamping system been adjusted well by manufacturer. Usually do not adjust it in the operation. Under some special conditions, the user can adjust it by changing the spring. (fig.10-11)
- There is screw plug on the distribution valve. Unload the plug and install an oil pressure meter on the hole and release the all the plugs of the fig. B-B alternatively. The readout of the meter is the system pressure which should be 20-25 Pa.
- Note: The clamp of spindle head, column and arm all are affected by rhombic block structure. In the operation, it is possible that the mechanism was released after your hand leave the pushed down button. The reason maybe are rhombic and back block are installed with a wrong angel, or the distance H is not correct to make the vertically standing up rhombic block not exceeding the center to self-lock, or the strength of clamp is too strong, hydraulic pressure is not enough. The operator can take these factors into consideration we meet this problem.

Maintenance

- The maintenance of the machine must be done according to the requirements in this manual. Lubricate the machine on time by stipulated lubricant oil. Oil screen should be washed regularly and keep the oil pure.
- Arm slide and column should be wiped by precision emery paper regularly to prevent the surface scratched.
- The cutting work must obey the technical data stipulated in this manual and not beyond the machine capacity. Loading strength should not exceed the spindle torque capacity 40KG/M and feeding-resistance strength 1600kg.
- When cutting, the spindle head, column should be clamped firmly under common situation, otherwise it will be easy to bring the bad consequence and harm the machine precision and durability.
- Prohibition to move the arm always along a same direction.

NOTES

BAILEIGH INDUSTRIAL, INC. 1625 DUFEK DRIVE MANITOWOC, WI 54220
PHONE: 920. 684. 4990 FAX: 920. 684. 3944
www.baileigh.com

BAILEIGH INDUSTRIAL, INC. 1455 S. CAMPUS AVENUE ONTARIO, CA 91761
PHONE: 920. 684. 4990 FAX: 920. 684. 3944

BAILEIGH INDUSTRIAL LTD. UNIT 1 FULLWOOD CLOSE
ALDERMANS GREEN INDUSTRIAL ESTATE
COVENTRY, CV2 2SS UNITED KINGDOM
PHONE: +44 (0)24 7661 9267 FAX: +44 (0)24 7661 9276
WWW.BAILEIGHINDUSTRIAL.CO.UK

BAILEIGH INDUSTRIAL GMBH HOFENER STRAßE 64
70736 FELLBACH
DEUTCHSLAND
WWW.BAILEIGHINDUSTRIAL.DE