Model No.:	Stock No.:
Serial No.:	
Purchased From:	
Date Purchased:	Date Installed:

Operation and Maintenance Instructions
GH-1640ZK Lathe

For ZK Lathe Parts List and Electrical Diagrams, see document M-321850-1

WALTER MEIER (Manufacturing) Inc.

427 New Sanford Road
LaVergne, Tennessee 37086
Ph.: 800-274-6848
www.waltermeier.com

Part No. M-321850
Revision B 02/2013

1.0 **Warranty and Service**

Walter Meier (Manufacturing) Inc., warrants every product it sells. If one of our tools needs service or repair, one of our Authorized Service Centers located throughout the United States can give you quick service. In most cases, any of these Walter Meier Authorized Service Centers can authorize warranty repair, assist you in obtaining parts, or perform routine maintenance and major repair on your JET® tools. For the name of an Authorized Service Center in your area call 1-800-274-6848.

MORE INFORMATION

Walter Meier is consistently adding new products to the line. For complete, up-to-date product information, check with your local Walter Meier distributor, or visit jettools.com.

WARRANTY

JET products carry a limited warranty which varies in duration based upon the product (MW = Metalworking, WW = Woodworking).

90 DAY WARRANTY

Lathe Accessories
Machine Accessories
Mobile Bases
Safety Equipment
Specialty Items
Vise Accessories

1 YEAR WARRANTY

Air Tools-Contractor
Air Tools-Industrial
Air Tools-Light Industrial
Lubrication

2 YEAR WARRANTY

Body Repair Kits
Bottle Jacks
Cable Pullers
Cold Saws
Hoists-Air
Hoists-Electric
Metal forming
Mill/Drills
Milling Machines
MW Bandsaws
MW Drill Presses
MW Finishing Equipment
MW Lathes
MW Precision Vises
Palet Trucks
Rigging Equip.
Service Jacks
Stackers
Surface Grinders
Tapping
Trolleys-Air
Trolleys-Electric
Web Slings
Winches-Electric

3 YEAR WARRANTY

WW Benchtop Tools

5 YEAR WARRANTY

Beam Clamps
Chain Hoist-Manual
Lever Hoists
Pullers-JCH Models
Scissor Lift Tables
Screw Jacks
Trolleys-Geared
Trolleys-Plain
Winches-Manual
WW Air Filtration
WW Bandsaws
WW Buffers
WW Drill Presses
WW Dust Collectors
WW Dust Filters
WW Dust Fittings
WW Jointers
WW Lathes
WW Planers
WW Sanders
WW Shapers
WW Tablesaws

LIFE LIFETIME WARRANTY

Fastening Tools
Mechanics Hand Tools
Striking Tools
Vises (no -precision)
Clamps

Warranty reverts to 1 Year Warranty if woodworking (WW) products listed above are used for industrial or educational purposes.

WHAT IS COVERED?

This warranty covers any defects in workmanship or materials subject to the exceptions stated below. Cutting tools, abrasives and other consumables are excluded from warranty coverage.

WHO IS COVERED?

This warranty covers only the initial purchaser of the product.

WHAT IS THE PERIOD OF COVERAGE?

The general JET warranty lasts for the time period specified in the product literature of each product.

WHAT IS NOT COVERED?

Five Year Warranties do not cover woodworking (WW) products used for commercial, industrial or educational purposes. Woodworking products with Five Year Warranties that are used for commercial, industrial or education purposes revert to a One Year Warranty. This warranty does not cover defects due directly or indirectly to misuse, abuse, negligence or accidents, normal wear-and-tear, improper repair or alterations, or lack of maintenance.

HOW TO GET SERVICE

The product or part must be returned for examination, postage prepaid, to a location designated by us. For the name of the location nearest you, please call 1-800-274-6848.

You must provide proof of initial purchase date and an explanation of the complaint must accompany the merchandise. If our inspection discloses a defect, we will repair or replace the product, or refund the purchase price, at our option. We will return the repaired product or replacement at our expense unless it is determined by us that there is no defect, or that the defect resulted from causes not within the scope of our warranty in which case we will, at your direction, dispose of or return the product. In the event you choose to have the product returned, you will be responsible for the shipping and handling costs of the return.

HOW STATE LAW APPLIES

This warranty gives you specific legal rights; you may also have other rights which vary from state to state.

LIMITATIONS ON THIS WARRANTY

WALTER MEIER (MANUFACTURING) INC., LIMITS ALL IMPLIED WARRANTIES TO THE PERIOD OF THE LIMITED WARRANTY FOR EACH PRODUCT. EXCEPT AS STATED HEREIN, ANY IMPLIED WARRANTIES OR MERCHANTABILITY AND FITNESS ARE EXCLUDED. SOME STATES DO NOT ALLOW LIMITATIONS ON HOW LONG THE IMPLIED WARRANTY LASTS, SO THE ABOVE LIMITATION MAY NOT APPLY TO YOU.

WALTER MEIER SHALL IN NO EVENT BE LIABLE FOR DEATH, INJURIES TO PERSONS OR PROPERTY, OR FOR INCIDENTAL, CONTINGENT, SPECIAL, OR CONSEQUENTIAL DAMAGES ARISING FROM THE USE OF OUR PRODUCTS. SOME STATES DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATION OR EXCLUSION MAY NOT APPLY TO YOU.

Walter Meier sells through distributors only. The specifications in Walter Meier catalogs are given as general information and are not binding. Members of Walter Meier reserve the right to effect at any time, without prior notice, those alterations to parts, fittings, and accessory equipment which they may deem necessary for any reason whatsoever. JET® branded products are not sold in Canada by Walter Meier.

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3.0 **Safety warnings**

1. Read and understand the entire owner's manual before attempting assembly or operation.
2. Read and understand the warnings posted on the machine and in this manual. Failure to comply with all of these warnings may cause serious injury.
3. Replace the warning labels if they become obscured or removed.
4. This lathe is designed and intended for use by properly trained and experienced personnel only. If you are not familiar with the proper and safe operation of a lathe, do not use until proper training and knowledge have been obtained.
5. Do not use this lathe for other than its intended use. If used for other purposes, Walter Meier (Manufacturing) Inc., disclaims any real or implied warranty and holds itself harmless from any injury that may result from that use.
6. Always wear approved safety glasses/face shields while using this lathe. Everyday eyeglasses only have impact resistant lenses; they are not safety glasses.
7. Before operating this lathe, remove tie, rings, watches and other jewelry, and roll sleeves up past the elbows. Remove all loose clothing and confine long hair. Non-slip footwear or anti-skid floor strips are recommended. Do **not** wear gloves.
8. Wear ear protectors (plugs or muffs) during extended periods of operation.
9. Some dust created by power sanding, sawing, grinding, drilling and other construction activities contain chemicals known to the state of California to cause cancer, birth defects or other reproductive harm. Some examples of these chemicals are:

   - Lead from lead based paint.
   - Crystalline silica from bricks, cement and other masonry products.
   - Arsenic and chromium from chemically treated lumber.

   Your risk of exposure varies, depending on how often you do this type of work. To reduce your exposure to these chemicals, work in a well-ventilated area and work with approved safety equipment, such as face or dust masks that are specifically designed to filter out microscopic particles.
10. Do not operate this machine while tired or under the influence of drugs, alcohol or any medication.
11. Make certain the switch is in the **OFF** position before connecting the machine to the power supply.
12. Make certain the machine is properly grounded.
13. Make all machine adjustments or maintenance with the machine unplugged from the power source.
14. Remove adjusting keys and wrenches. Form a habit of checking to see that keys and adjusting wrenches are removed from the machine before turning it on.
15. Keep safety guards in place at all times when the machine is in use. If removed for maintenance purposes, use extreme caution and replace the guards immediately after maintenance is complete.
16. Check damaged parts. Before further use of the machine, a guard or other part that is damaged should be carefully checked to determine that it will operate properly and perform its intended function. Check for alignment of moving parts, binding of moving parts, breakage of parts, mounting and any other conditions that may affect its operation. A guard or other part that is damaged should be properly repaired or replaced.
17. Provide for adequate space surrounding work area and non-glare, overhead lighting.
18. Keep the floor around the machine clean and free of scrap material, oil and grease.
19. Keep visitors a safe distance from the work area. **Keep children away.**
20. Make your workshop child proof with padlocks, master switches or by removing starter keys.
21. Give your work undivided attention. Looking around, carrying on a conversation and "horse-play" are careless acts that can result in serious injury.
22. Maintain a balanced stance at all times so that you do not fall or lean against moving parts. Do not overreach or use excessive force to perform any machine operation. Never force the cutting action.
23. Maintain a balanced stance at all times so that you do not fall or lean against moving parts. Do not overreach or use excessive force to perform any machine operation. Never force the cutting action.

24. Use the right tool at the correct speed and feed rate. Do not force a tool or attachment to do a job for which it was not designed. The right tool will do the job better and more safely.
25. Use recommended accessories; improper accessories may be hazardous.
26. Maintain tools with care. Keep cutting tools sharp and clean for the best and safest performance. Follow instructions for lubricating and changing accessories.
27. Do not attempt to adjust or remove tools during operation.
28. Never stop a rotating chuck or workpiece with your hands.
29. Choose a low spindle speed when working unbalanced workpieces, and for threading and tapping operations.
30. Do not exceed the maximum speed of the workholding device.
31. Do not exceed the clamping capacity of the chuck.
32. Workpieces longer than 3 times the chucking diameter must be supported by the tailstock or a steady rest.
33. Avoid small chuck diameters with large turning diameters.
34. Avoid short chucking lengths and small chucking contact.
35. Turn off the machine and disconnect from power before cleaning. Use a brush to remove shavings or debris — do not use your hands.
36. Do not stand on the machine. Serious injury could occur if the machine tips over.
37. Never leave the machine running unattended. Turn the power off and do not leave the machine until moving parts come to a complete stop.
38. Remove loose items and unnecessary work pieces from the area before starting the machine.
39. Do not operate the lathe in flammable or explosive environments. Do not use in a damp environment or expose to rain.

Familiarize yourself with the following safety notices used in this manual:

⚠CAUTION This means that if precautions are not heeded, it may result in minor injury and/or possible machine damage.

⚠WARNING This means that if precautions are not heeded, it may result in serious injury or possibly even death.

4.0 **Specifications**

Model Number **GH-1640ZK**
Stock Number 321850

General Capacities:

Maximum Swing over Bed ..... 16” (406mm)
Maximum Swing over Cross Slide ..... 10” (254mm)
Maximum Swing Through Gap ..... 23-7/32” (590mm)
Length of Gap ..... 10-5/8” (270mm)
Distance between Centers ..... 40” (1016mm)
Width of Bed ..... 12-3/16” (309.6mm)

Motors and Electrical:

Main Motor ..... totally enclosed, fan-cooled, induction
Horsepower ..... (2-speed): 7.5HP (5.6 kW), Low 5.5HP (4.1 kW)
Phase ..... 3 PH
Voltage ..... 230V only
Full Load Amps ..... 16.2/20.3 A
Cycle ..... 60 Hz
Motor speed ..... 1150/1720 RPM
Coolant Pump Motor ..... Induction
Horsepower 1/8HP
Phase ..... 3 PH
Voltage 230V
Full Load Amps 0.54A
Cycle ..... 60 Hz
Power Transmission ..... v-belt (x4)
Controls circuit ..... 110V A.C.
Lamp circuit ..... 24V A.C.
Indicators circuit ..... 110V A.C.

Headstock and Spindle:

Spindle Bore ..... 2” (51mm)
Spindle Mount ..... D1-6 Camlock
Spindle Taper with Sleeve MT-6 (MT-4)
Number of Spindle Speeds 12
Range of Spindle Speeds ..... 42-1800 RPM
Distance Floor to Spindle Center (approx.) ..... 42-29/32” (1090mm)
3-Jaw Scroll Chuck:
Load Capacity ..... 330 lb (149.7kg)
Inside Diameter ..... 2” (51mm)
4-Jaw Independent Chuck:
Load Capacity ..... 551 lb (250kg)
Inside Diameter ..... 3” (76mm)

Carriage:

Maximum Tool Size ..... 1” x 1” (25.4 x 25.4mm)
Maximum Compound Rest Travel ..... 5-1/8” (130mm)
Maximum Compound Rest Swivel ..... +/- 90 deg.
Maximum Cross Slide Travel ..... 10-5/8” (270mm)
Maximum Carriage Travel ..... 36” (914mm)

Gearbox:

Number of Longitudinal Feeds 122
Range of Longitudinal Feeds ..... 0.0015 – 0.0913 in./rev
Number of Cross Feeds 122
Range of Cross Feeds ..... 0.0006 – 0.0365 in/rev
Number of Inch Threads 61
Range of Inch Threads ..... 1-5/8 – 72 TPI
Number of Metric Threads 24
Range of Metric Threads ..... 0.5 – 20 mm
Number of Diametral Threads 45
Range of Diametral Threads ..... 3-1/4-96D.P.
Number of Modular Threads 20

Range of Modular Threads ..... 0.25-10M.P.
Leadscrew Pitch ..... 1/4”

Tailstock:

Tailstock Spindle Travel ..... 6” (152.4mm)
Tailstock Taper MT-4
Maximum Tailstock Cross Displacement ..... +/- 0.40” (10mm)

Other:

Steady Rest Capacity ..... 3/8 - 4” (9.5 x 102mm)
Follow Rest Capacity ..... 1/2" – 3-1/8” (12.7 x 79.4mm)
Coolant tank capacity (approximate) ..... 4 gal. (15L)
Noise emission (idling at max. speed) [1] ..... 85 dB
Overall Dimensions ..... 91”L x 42-1/8”W x 49”H (2311 x 1070 x 1245mm)
Shipping Weight ..... 3630 lb (1647kg)
Net Weight ..... 4159 lb (1887kg)

[1] *Values are emission levels, not necessarily to be seen as safe operating levels. Since workplace conditions vary, this information is only intended to allow the user to make a better estimation of the hazards involved.*

The specifications in this manual were current at time of publication, but because of our policy of continuous improvement, Walter Meier (Manufacturing) Inc., reserves the right to change specifications at any time and without prior notice, without incurring obligations.

5.0 **Dimensions and mounting hole centers**

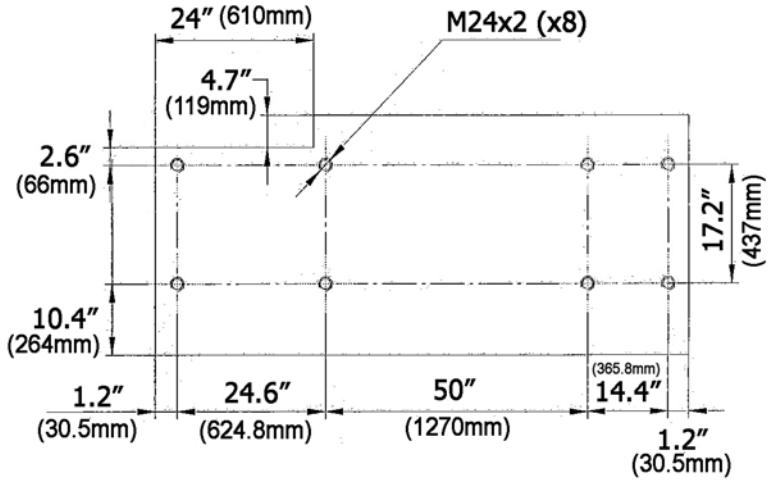

Figure 1

6.0 **General Description and Nomenclature**

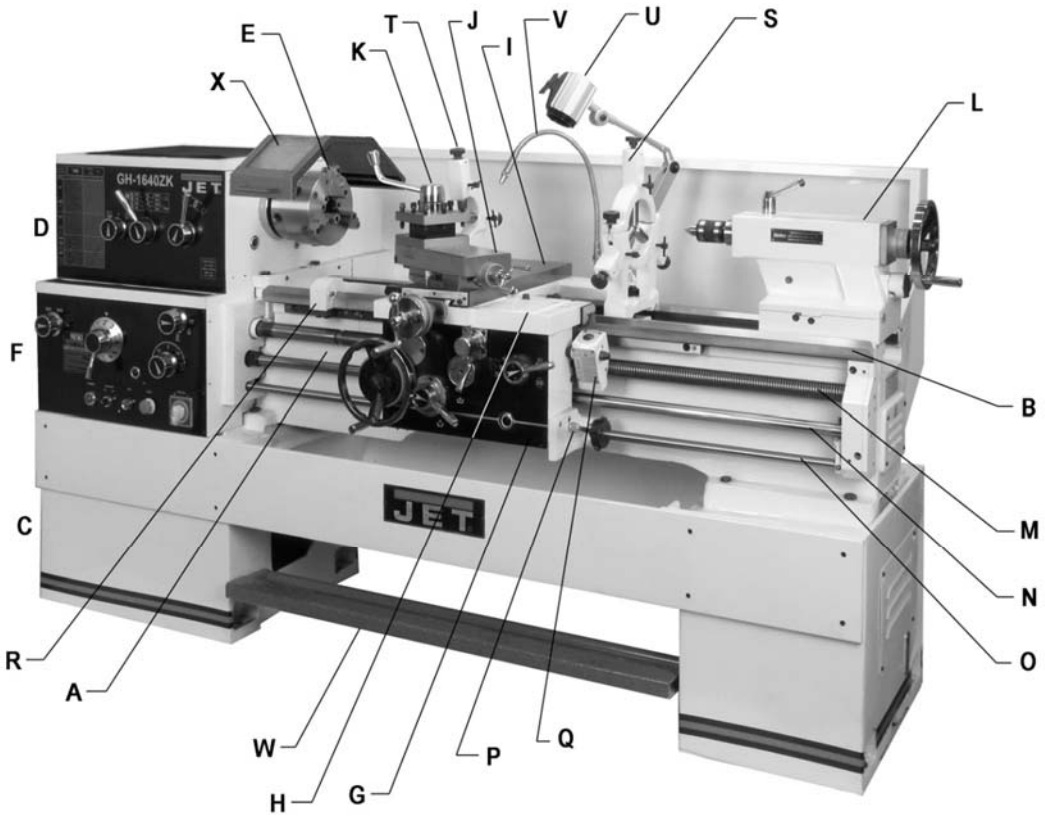

Figure 2 – General Description

Bed and stand

The lathe bed (A) is made of cast iron with low vibration and high rigidity. Two precision-ground v-slideways (B), reinforced by supersonic frequency hardening, offer precision guidance for the carriage. The main drive motor is mounted in the stand (C) below the gearbox.

Headstock

The headstock (D) is cast from high grade, low vibration cast iron. In the head, the spindle is supported at three points; by a cylindrical roller bearing at the front and a tapered roller bearing and ball bearing. See *section 11.0* for detailed explanation of controls. The electrical box is mounted to the rear of the headstock.

A 3-Jaw scroll chuck (E) and a 4-jaw independent chuck are included.

Feed gearbox

The gearbox (F) is made from high quality cast iron and is mounted to the left side of the machine bed. This lathe adopts a three-axle sliding common gear mechanism, together with thread selection change mechanism, and doubling mechanism, which enable it to cut a comprehensive range of metric, modular and diametral pitch threads, thus eliminating the need for gear changes except where special threading is required.

Carriage

The carriage assembly is composed of the *Apron*, the *Saddle*, the *Cross Slide*, the *Compound Rest*, and the four-way *Tool Post*.

Apron (G). Quick travel of the Apron for positioning is accomplished by means of a bed-mounted rack and pinion, operated manually by the handwheel on the front of the apron, or automatically by the feed direction handle.

Saddle (H). The saddle is made from high quality cast iron and rides along the v-ways.

Cross Slide (I). The cross-slide is mounted on the saddle and used for cross feed operations. It moves on a dovetailed slide which can be adjusted for play by means of the gibs.

Compound Rest (J). The compound rest, which is T-slotted and mounted on the cross slide, can be rotated 360°, allowing tapers to be turned. The compound rest travels on dovetailed ways, with adjustable gibs.

Four-Way Tool Post (K). The tool post is a turret design, mounted to the compound rest. It holds up to four tools simultaneously, and includes an indexing function.

Tailstock

The tailstock (L) slides on a v-way and can be locked at any location by a clamping lever. The tailstock has a heavy duty quill with a No. 4 Morse Taper and etched graduation scale. The tailstock can be offset for taper cutting.

Leadscrew and feed rod

The leadscrew (M) and feed rod (N) are mounted on the front of the machine bed. They are connected to the gearbox at the left and are supported by bearings on both ends.

Spindle direction control axle (O)

Spindle rotation can be reversed by simply moving the control lever (P) mounted at the right of the carriage. (Allow spindle to come to a stop before reversing.)

Thread Chaser (Q)

Simplifies the process of setting leadscrew/carriage positions in relation to the workpiece, by indicating the point on the leadscrew where the half nut can be reengaged to continue threading.

Micro carriage stop (P)

A dial with incremental scale offers precise positioning of the stop.

Steady rest (S)

The steady rest serves as a support for shafts on the free tailstock end. The steady rest is mounted on the bedway and secured from below with a bolt, nut and locking plate.

Follow rest (T)

The traveling follow rest is mounted to the saddle, and thus follows the movement of the turning tool. Only two fingers are required as the place of the third is taken by the turning tool. The follow rest is used for turning operations on long, slender work pieces. It prevents the work piece from flexing under the pressure of the cutting tool.

Work lamp (U)

Adjustable halogen lamp with independent on/off switch.

Coolant nozzle (V)

Fully adjustable gooseneck; flow is regulated through a valve lever at its base.

Foot brake (W)

Activates a braking strap at the motor for emergency stopping of all lathe functions.

Chuck guard (X)

7.0 **Unpacking**

Open shipping container and check for shipping damage. Report any damage immediately to your distributor and shipping agent. Do not discard any shipping material until the Lathe is set up and running properly.

Compare the contents of your container with the following parts list to make sure all parts are intact. Missing parts, if any, should be reported to your distributor. Read the instruction manual thoroughly for set up, maintenance and safety instructions.

7.1 **Contents of the Shipping Container**

(Refer to Figure 3)

1 Lathe
1 Steady Rest (mounted on Lathe)
1 Follow Rest (mounted on Lathe)
1 Three Jaw Scroll Chuck, 8" (mounted on Lathe) **– A**
1 Drive Plate 8" – **B**
1 Four Jaw Independent Chuck, 10" – **C**
1 Face Plate, 16" – **D**
1 Tool Box, containing the following:
  1 Morse Reduction Sleeve 6/4 – **E**
  1 Live Center, MT-4 – **F**
  1 Dead Center, MT-4 – **G**
1 Crossfeed Handle – **H**
2 Shear Pins – **I**
1 Cam Wrench – **J**
1 Chuck Wrench – **K**
1 Tool Post Wrench – **L**
1 Gap Bridge Pin Driver – **M**
1 Taper Piece – **N**
2 Round Nut Spanners (100-110, 115-130 mm) – **O**
1 Hex Key Set (2.5,3,4,5,6,8,10) – **P**
5 Fuses (2A,3A) – **Q**
8 Leveling Bolts with Hex Nuts – **R**
8 Leveling Pads – **S**
1 Flat Blade Screwdriver – **T**
1 Cross Point Screwdriver – **U**
2 Open End Wrenches (10-12,9-11, 12-14,17-19) – **V**
1 Gear, 3.5m36T – **W**
1 Adjustable Wrench – **X**
1 White Touch-up Paint Can – **Y**
1 Oil Gun – **Z**
1 Indicator bulb 110V (not shown)
1 Operating Instructions Manual
1 Parts List Manual
1 Warranty Card
1 Test Record
1 Packing List

NOTE: Optional accessories are available for JET Lathes, such as Taper Attachment, Collet Closer and Digital Read Out. Contact your dealer or Walter Meier (Manufacturing) Inc., for more information.

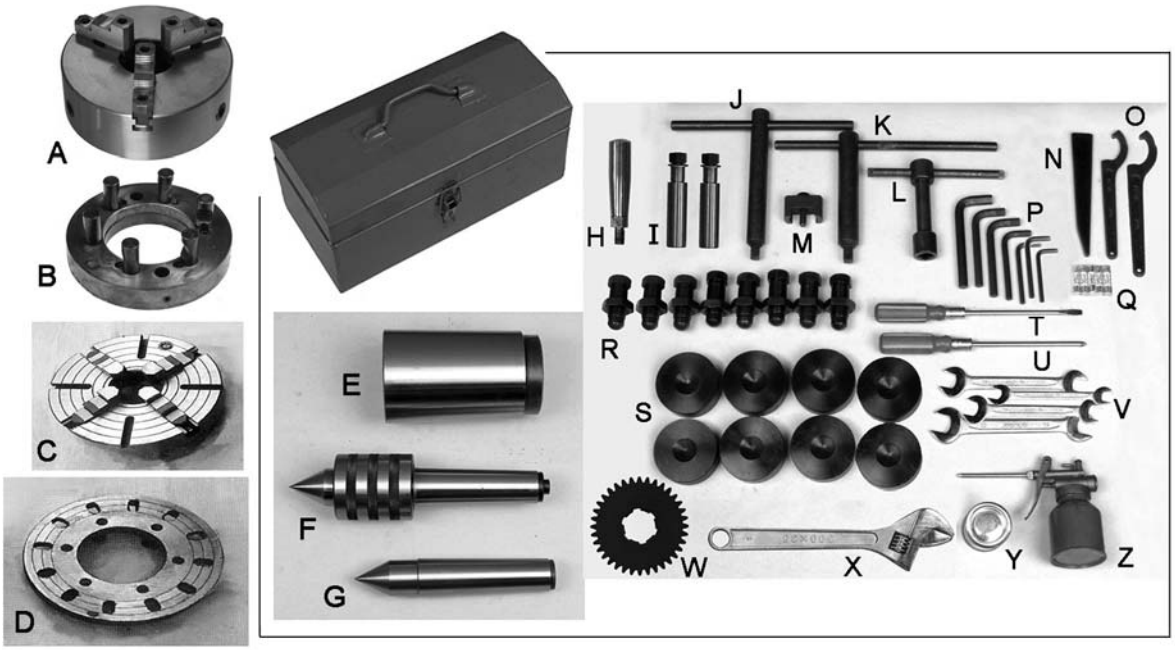

Figure 3
ZK Lathe – Contents of Shipping Container

⚠WARNING Read and understand the entire contents of this manual before attempting set-up or operation. Failure to comply may cause serious injury.

8.0 Installation

1. Finish removing all crate material from around lathe.
2. Unbolt lathe from shipping pallet.
3. Choose a location for the lathe that is dry and has sufficient illumination (consult OSHA or ANSI standards for recommended lighting levels in workshop environments).
4. Allow enough room to service the lathe on all four sides, and to load and off-load work pieces. In addition, if bar work is to be performed, allow enough space for stock to extend out the headstock end. If used in production operations, leave enough space for stacking unfinished and finished parts.
5. The foundation must be solid to support the weight of the machine and prevent vibration, preferably a solid concrete floor.
6. The lathe's center of weight is near the headstock. Before lifting, move the tailstock and the carriage *(release carriage lock, see section 11.0)* to the right end of the bed and lock them.
7. With properly rated lifting equipment, slowly raise lathe off shipping pallet. (see Figure 4). **Do not lift lathe by the spindle.**

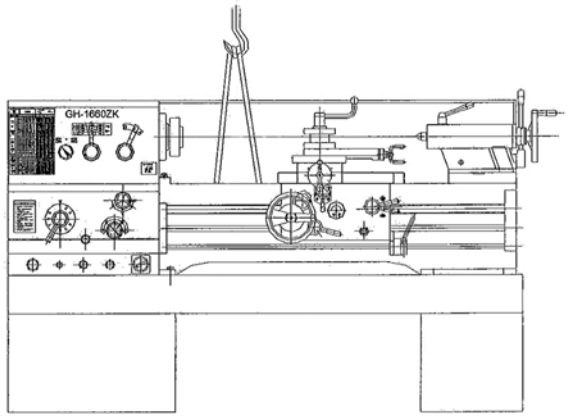

Figure 4 – Lifting the lathe

⚠CAUTION Confirm that all suspension equipment is properly rated and in good condition for lifting lathe. Do not allow anyone beneath or near load while lifting.

8. The lathe can be placed upon the cast iron leveling pads under each foot hole, and adjusted using the adjusting bolts with hex nuts. Or, it may be secured to the floor using bolts placed head-down in the concrete, and using shims where needed to level the machine. Refer to Figure 1 for mounting hole dimensions.

8.1 Leveling the lathe

It is imperative that the lathe be on a level plane; that is, where headstock and tailstock center points remain aligned throughout the tailstock travel, with the bed ways absent of twist and thus parallel to the operational center line.

A lathe which is not properly leveled will be inaccurate, producing tapered cuts. Also, the center point of the tailstock will vary as it is positioned along the bed, thus requiring constant readjustment of the set of the tailstock.

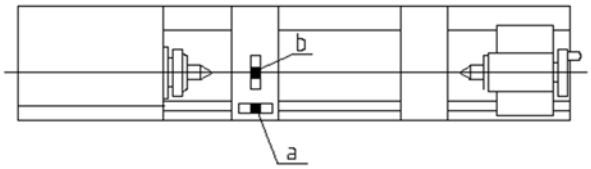

Figure 5 – Leveling

9. Use a machinist's precision level on the bed ways both front to back and side to side, as shown in Figure 5. Take the reading in one direction every ten inches. Make sure the ways are clean and free of any debris before placing a level upon them.
10. Deviation over bed length *(see Figure 5)*:
    (a) Maximum 0.02/1000mm
    (b) Maximum 0.04/1000mm
11. Tighten foot screw nuts evenly to avoid distortion.
12. Leveling should be inspected occasionally, and especially if the accuracy of the lathe begins to diminish.

8.2 Completing installation

13. Exposed metal surfaces have been coated with a rust protectant. Remove this using a soft rag and mild commercial solvent or kerosene. Do not use paint thinner, gasoline, or lacquer thinner, as these will damage painted surfaces. Cover all cleaned surfaces with a light film of SAE-20W machine oil, such as Mobil DTE Oil Heavy Medium.
14. Open the end gear cover. Clean all components of the end gear assembly and coat all gears with a heavy, non-slinging grease. Close the end gear cover. (Note: A limit switch prevents the lathe from operating when the end gear cover is open.)

8.3 **Chuck preparation**

WARNING **Read and understand all directions for chuck preparation. Failure to comply may cause serious injury and/or damage to the lathe.**

The three-jaw scroll chuck is shipped pre-installed on the lathe. It can be used for clamping cylindrical, triangular and hexagonal stock, and has reversible jaws.

The four-jaw chuck has independently adjustable jaws, and permits the holding of square and asymmetrical pieces. It also enables accurate concentric set-up of cylindrical pieces.

WARNING **Chucks are heavy; use an assistant to help remove.**

Before removing a chuck, place a flat piece of thick plywood across the bedways under the chuck to prevent damage to the bedways should the chuck fall from your hands. Alternatively, many users make a wood chuck cradle that sits atop the ways and accepts the specific diameter of chuck, for easier installing and removal. Figure 6 shows an example.

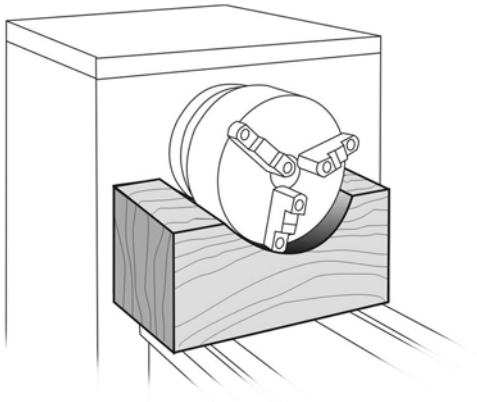

Figure 6 – Chuck cradle (not included)

To remove a chuck from the spindle:

1. Support the chuck while turning six camlocks 1/4-turn counterclockwise, using the chuck wrench from the tool box. See Figure 7.
2. Carefully remove the chuck from the spindle and place on a firm work surface. If the spindle seems stuck, use a mallet at various points on the back side to help free it from the spindle.
3. Inspect the camlock studs. Make sure they have not become cracked or broken during transit. Clean all parts thoroughly with solvent. Also clean the spindle and camlocks.
4. Cover all chuck jaws and the scroll inside the chuck with #2 lithium tube grease. Cover the spindle, camlocks, and chuck body with a light film of 20W oil.
5. Lift the chuck up to the spindle nose and press onto the spindle. Tighten in place by turning the camlocks 1/4 turn clockwise. The index mark (A, Figure 7) on the camlock should be between the two indicator arrows (B) when tight, as shown in Figure 7.
   - If the index mark (A) is *not* between the two arrows, i.e. the cam turns beyond the indicator arrows, then remove the chuck and turn the camlock stud IN one full turn.
   - If a camlock will not engage, remove the chuck and turn the camlock stud OUT one full turn.
6. Make sure chuck is secure on the spindle with the camlocks correctly engaged.

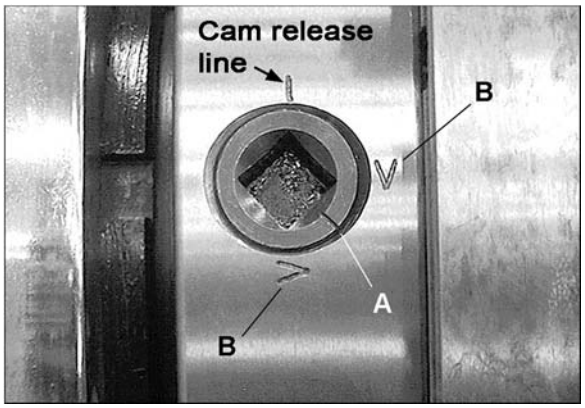

Figure 7 – Camlock

8.4 **Break-in period**

Do not run the lathe above 560 RPM for the first six hours of operation, to allow gears and bearings to adapt and run smoothly.

9.0 Maintenance/Lubrication

⚠CAUTION Lathe must be serviced at all lubrication points and all reservoirs filled to operating level before the lathe is put into service. Failure to comply may cause serious damage to the lathe.

The ZK series lathe is shipped with oil in the reservoirs. Coolant is not included.

Use clean lubricants and check levels often, including before each working shift. To ensure proper lubrication, oil levels should not be less than the center of the oil sight glass. Try not to overfill, as this may cause leakage.

A chart is supplied in *section 15.0* for quick reference to all lubrication points.

Unless specified otherwise, the lubrication points require a non-detergent, ISO 68, SAE 20W oil. The recommended brand for this lathe is **Mobil DTE® Oil Heavy Medium.**

1. **Chuck** – In addition to the lubrication already described in *section 8.3,* daily lubricate the chuck with SAE 20W oil through the ball oiler, shown in Figure 8.

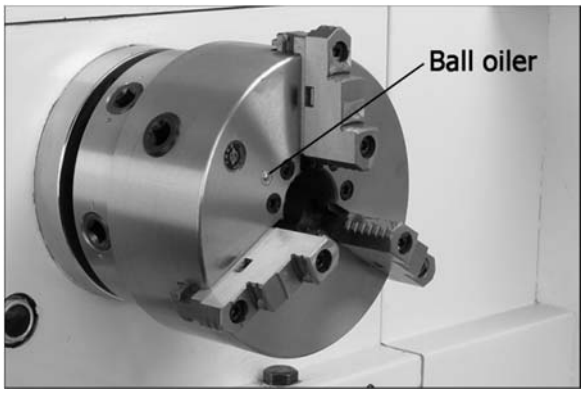

Figure 8 – Chuck lubrication

2. **Headstock** – Oil must be up to indicator mark in oil sight glass on right side of headstock (A, Figure 9). Top off with SAE 20W oil. Fill by removing the rubber mat and unscrewing the plug (B) on top of headstock.

   To drain headstock, remove drain plug (C, Figure 10). Drain oil completely and clean out all metal shavings, then rinse the casting case with kerosene. Refill after the first month of operation, then change the oil in the headstock every two months.

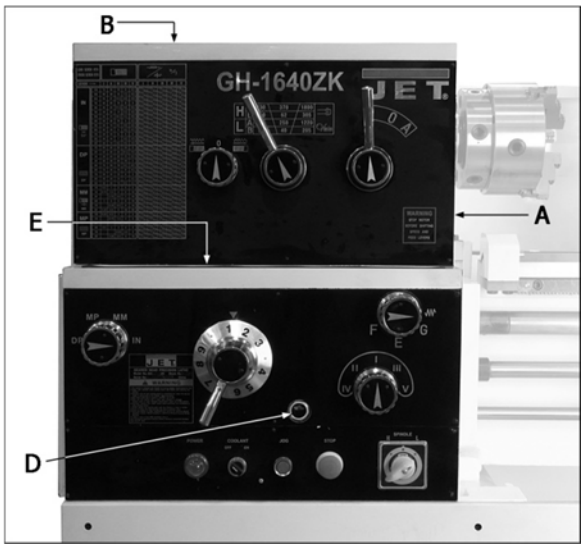

Figure 9 – Headstock lubrication

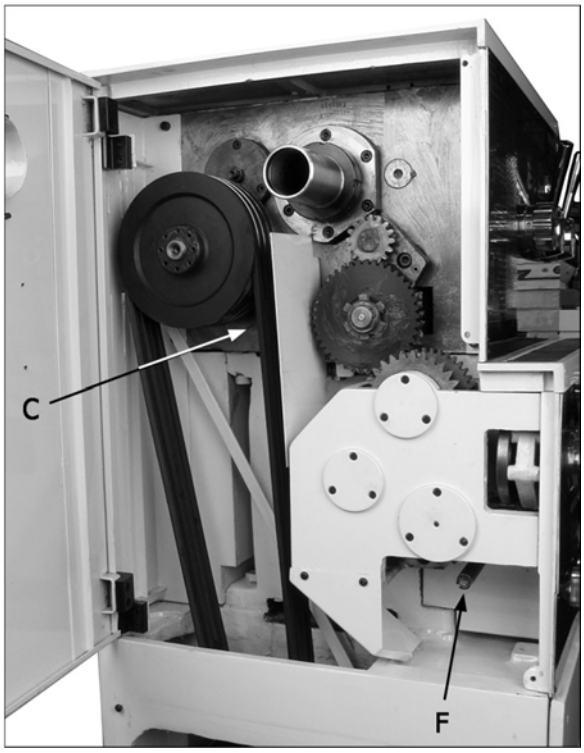

Figure 10 – Lubrication points

3. **Gearbox** – Oil must be up to indicator mark in oil sight glass (D, Figure 9). Top off with SAE 20W oil. To add oil to the gearbox, remove rubber mat and unscrew oil plug (E, Figure 10). To drain, remove drain plug from the pipe (F, Figure 10). Drain oil completely and refill after the first three months of operation. Then change oil in the gearbox every six months.

4. **Apron** – Oil must be between indicator marks in the oil sight glass (G, Figure 11). Top off with SAE 20W oil. Unscrew oil plug (H, Figure 11) to fill. To drain, remove drain plug on the underside of apron. Drain oil completely and refill after the first three months of operation. Then, change oil in the apron annually.

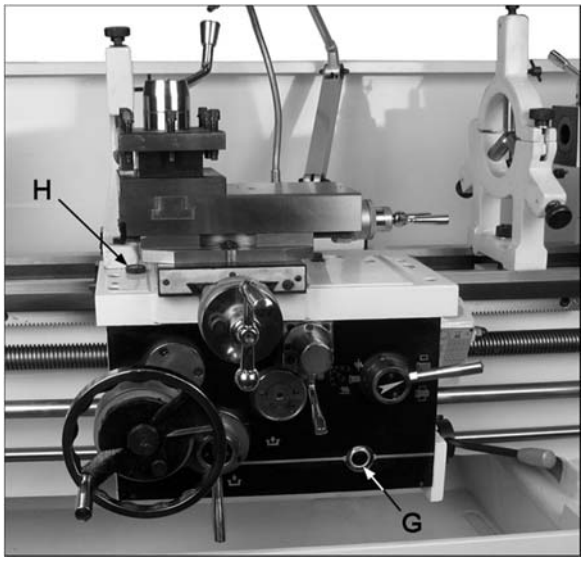

Figure 11 – Lubrication points

5. **Saddle** – The anti-dust felt on both ends of the saddle (Figure 12) should be cleaned weekly with kerosene. If the felt becomes damaged, replace it.

Figure 12– Anti-dust felt

6. **V-Belts** – Regularly check and adjust the tightness of the v-belts to prolong their service life. See *section 13.5, Belt adjustment and replacement*.

9.1 Ball oiler locations

All ball oilers must be lubricated with SAE-20W oil (Mobil DTE® Oil Heavy Medium), as follows. Refer to Figures 13 and 14.

7. **Threading Dial** – Daily lubricate two ball oilers (J, Figure 13).

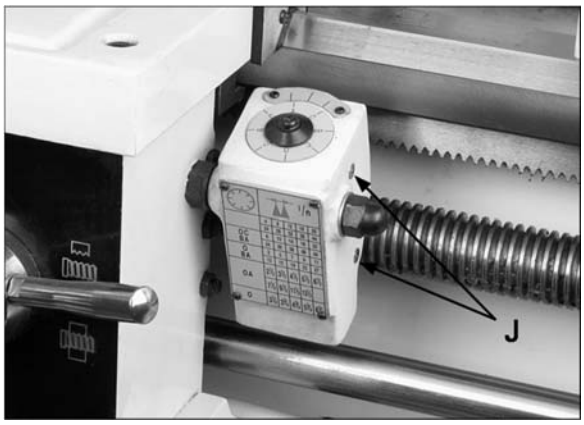

Figure 13

8. **Cross Slide** – Daily lubricate one ball oiler on the handwheel housing (K, Figure 14) and three ball oilers on the platform (L, Figure 14).

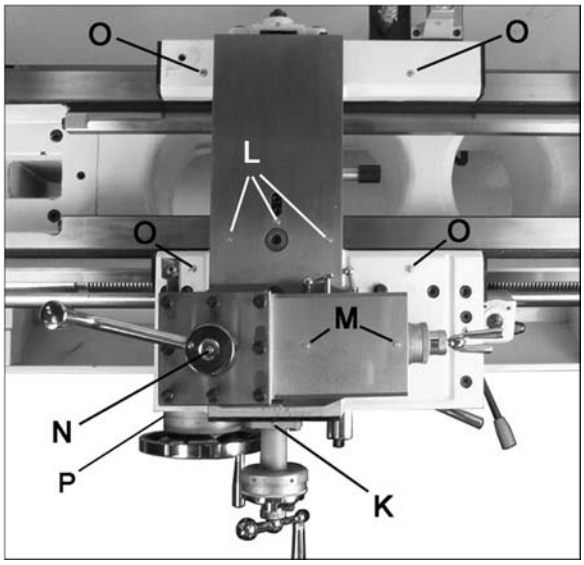

Figure 14 – Ball Oilers

9. **Compound Rest** – Daily lubricate two ball oilers (M, Figure 14) on top of compound rest.

10. **Tool Post** – Regularly clean dirt and coolant around the tool post to maintain its re-positioning accuracy. Daily lubricate one ball oiler on top the clamping hub (N, Figure 14).

11. **Saddle** – Daily lubricate four ball oilers (O, Figure 14) and one ball oiler on the handwheel shaft (P, Figure 14).

12. **Leadscrew and Feed Rod** – Lubricate two ball oilers (Figure 15) once or twice per shift.

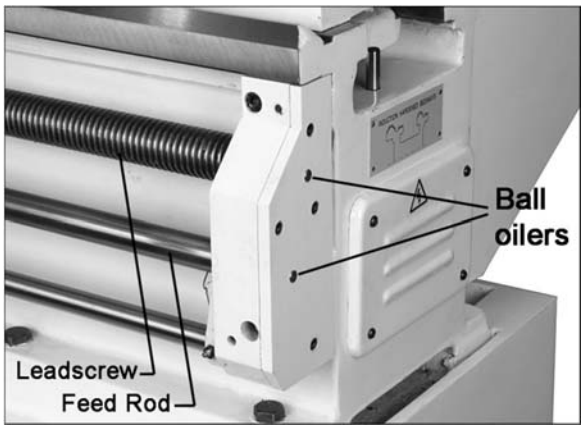

Figure 15 – Lubrication points

13. **Tailstock** – Daily lubricate two ball oilers (Figure 16) on top of tailstock.

    The anti-dust felt beneath the tailstock that runs along the ways should be cleaned weekly with kerosene. If the felts become damaged, replace them.

Figure 16 – Tailstock lubrication

9.2 Coolant preparation

⚠CAUTION **Follow local regulations and/or coolant manufacturer's recommend-dations for use, care and disposal.**

1. Remove access cover on the tailstock end of the lathe stand (Figure 17). Make sure coolant pump has not shifted during transport. Pour four gallons (approximate) of coolant mix into the reservoir. Use the gauge to determine when full.
2. After machine has been connected to power, turn on coolant pump and check to see that coolant is cycling properly. Flow is controlled by the tap at the base of the nozzle.
3. Reinstall access cover.

To drain coolant, remove two drain plugs (Figure 17).

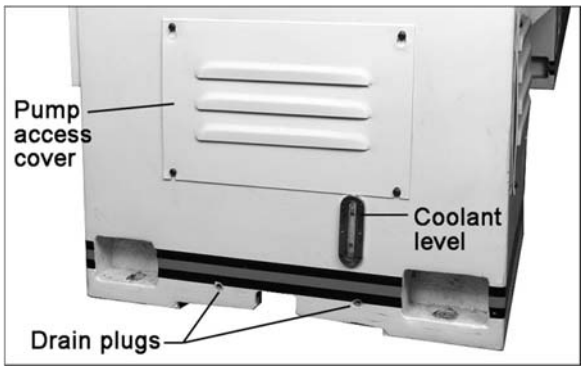

Figure 17

10.0 Electrical connections

⚠WARNING **Electrical connections must be made by a qualified electrician in compliance with all relevant codes. This machine must be properly grounded while in use to help protect the operator from electrical shock and possible fatal injury.**

The main motor is rated for 230 volt only. Confirm that power available at the lathe's location is the same rating as the lathe.

IMPORTANT: The lathe must be wired properly and phased correctly. The spindle should rotate counterclockwise (as viewed from the tailstock end) while the feed rod rotates clockwise (as viewed from the tailstock end). If the phasing needs correction, disconnect lathe from power source and switch any two of the three power leads (not the green ground wire).

Make sure the lathe is properly grounded.

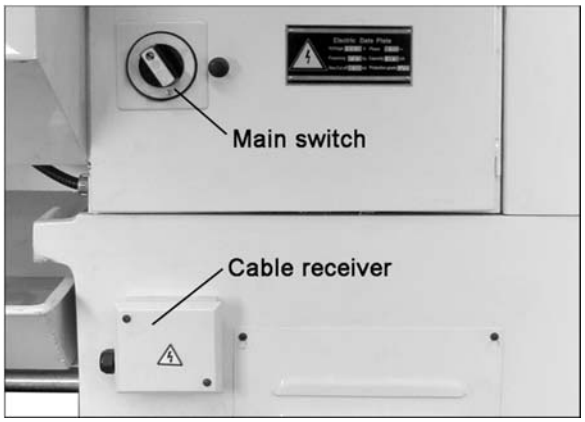

Figure 18 – Power input

11.0 **Basic controls**

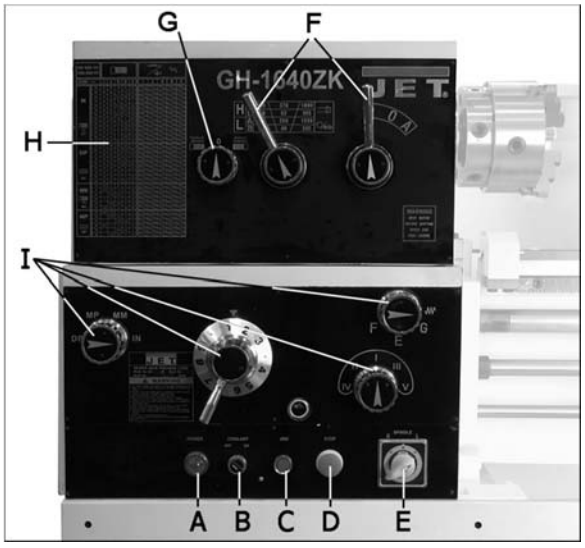

Figure 19 – Headstock Controls

1. **Control Panel:** Located on front of headstock.
   - **Power Indicator Light** (A, Figure 19). Illuminates whenever lathe is receiving power.
   - **Coolant On-Off Switch** (B, Figure 19). Activates coolant pump.
   - **Jog Button** (C, Figure 19). Quickly press and release to rotate spindle.
   - **Emergency Stop Button** (D, Figure 19). Shuts down all machine functions. ***NOTE:*** *Lathe will still have power.* Twist button clockwise to reset.
   - **Motor Speed Switch** (E, Figure 19). Turn to select high or low speed.
2. **Speed Selection Levers** (F, Figure 19): Move levers left or right to desired spindle speed, according to accompanying chart.
3. **Feed Direction Knob** (G, Figure 19): Rotating the knob changes direction of feed. Center position is neutral.

   ⚠CAUTION **Do not move feed direction knob (G) while machine is running.**
4. **Lead and Feed Selector Levers** (I, Figure 19): Used conjunctively to set up for threading or feeding, according to the accompanying chart (H, Figure 19).

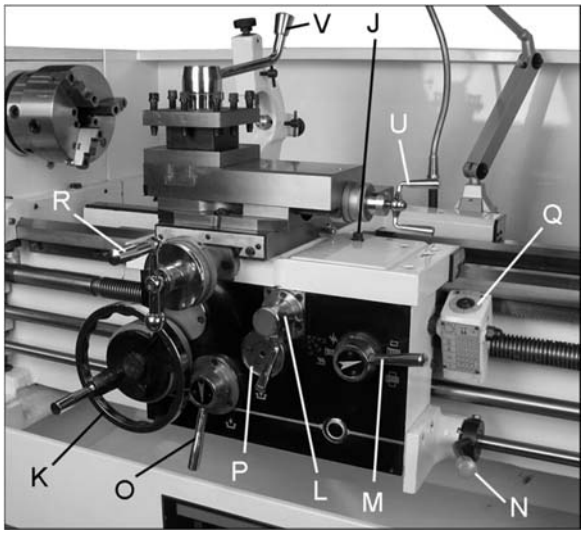

Figure 20 – Carriage controls and settings

5. **Carriage Lock** (J, Figure 20): Located on top right of carriage. Turn clockwise to lock, counterclockwise to unlock.

   ⚠CAUTION **Carriage lock must be loose before moving carriage or damage to lathe may occur.**
6. **Carriage Handwheel** (K, Figure 20): Located on the apron. Rotate handwheel clockwise to move the carriage assembly toward the tailstock (right). Rotate the wheel counterclockwise to move the carriage assembly toward headstock (left). A scale is mounted to the ring, graduated in 0.005 inch increments, and can be calibrated by loosening the thumb screw lock and rotating the ring as needed. Always retighten ring before using the feed.
7. **Feed Direction Lever** (L, Figure 20): Push to one of three positions; Up for crossfeed; Down for longitudinal; the middle position allows screws to be cut by engaging the half nut.
8. **Half Nut Lever** (M, Figure 20): Located on the front of the apron assembly. Engages the leadscrew for threading operations.
9. **Spindle Direction Control Lever** (N, Figure 20). Move the lever to the right so that its tab clears the notch, then down for forward spindle rotation, or up for reverse spindle rotation. *Allow the spindle to come to a stop before changing directions.* Position lever in neutral position (tab in notch) before shutting off the lathe.
10. **Feed Engagement Lever** (O, Figure 20): Pull up to engage, down to disengage.
11. **Adjustable Feed Clutch** (P, Figure 20): The clutch may slip if the machine is overloaded; cutting rate must be reduced. The setting of the clutch has been adjusted at the factory and should not require attention. If future

adjustment is ever needed, follow the diagram on the front of apron. *Only qualified personnel should make clutch adjustments.*

12. **Threading Dial** (Q, Figure 20): Indicates the point on the leadscrew where the half nut can be re-engaged to continue inch threading.

13. **Cross Slide Handwheel** (R, Figure 20): Located above the apron assembly. Clockwise rotation moves the cross slide toward the rear of machine. The accompanying scale is graduated in 0.002 inch increments, and can be calibrated by loosening the thumb screw lock and rotating the ring as needed. Always re-tighten ring before using the feed.

    The cross slide lock is located at the right of the cross slide (S, Figure 21).

14. **Compound Rest**: Located on top of the cross slide and can be rotated 360° after loosening the lock (T, Figure 21). There are calibrations in degrees at the base of the rest to assist in placement to the desired angle.

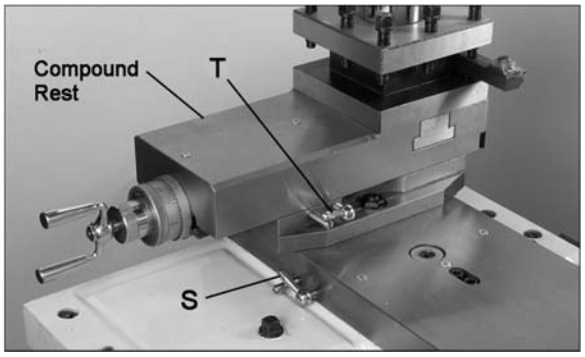

Figure 21

15. **Compound Rest Handle** (U, Figure 20): Rotate clockwise or counterclockwise to position. The accompanying scale on the collar is graduated in 0.001 inch increments.

16. **Tool Post Clamping Lever** (V, Figure 20): Rotate counterclockwise to loosen and clockwise to tighten. Always use minimum of two clamping screws to secure a cutting tool.

17. **Tailstock Quill Clamping Lever** (W, Figure 22): Rotate clockwise to lock the sleeve. Rotate counterclockwise to unlock.

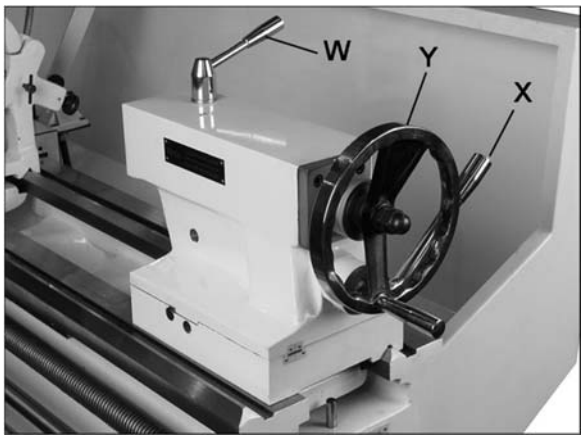

Figure 22 – Tailstock controls

18. **Tailstock Clamping Lever** (X, Figure 22): Lift up to lock. Push down to unlock.

19. **Tailstock Quill Traverse Handwheel** (Y, Figure 22): Rotate clockwise to advance the quill and counterclockwise to retract it. Fully retract it to eject a center or drill chuck.

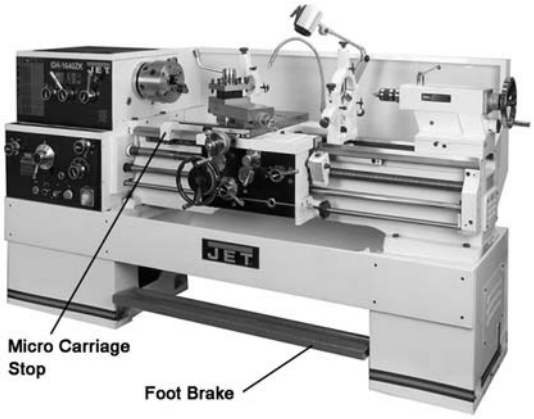

Figure 23 – Other controls

20. **Foot Brake** (Figure 23): For emergency shutdown of all lathe functions. The connecting rod mechanism is in the bed stand, and activates a brake strap at the main motor. (**Caution:** Lathe still has power.) *The foot brake is not intended for normal stopping of the lathe. Overuse can result in hastened wear of brake parts.*

21. **Micro Carriage Stop** (Figure 23): Can be used during manual feed operation to limit carriage travel. *NOTE: It is not intended to stop the carriage during automatic feed.* The carriage stop can be repositioned along the bed by loosening the two screws underneath the stop.

12.0 **Operation**

The operator should consult shop manuals such as "Machinery's Handbook" for cutting speeds and feeds appropriate to specific workpieces. Correct feed depends upon material to be cut, cutting operation, tool type, chucking rigidity, depth of cut, and desired surface quality.

IMPORTANT: Allow a break-in period for the new lathe so that gears and bearings can adapt; do not run the lathe above 560 RPM for the first six hours of operation.

⚠CAUTION The following points must be observed when operating the lathe:

- Never turn any handles or levers when spindle is at high speed.
- Change spindle speed only after spindle stops.
- Change feed rate only when spindle is at low speed or is stopped.
- Never exceed maximum speed limitation of the work holding device.
- Before starting spindle, check that each handle or lever is at correct position to ensure normal engagement of gears. The spindle direction control lever should be at neutral position.
- If the brake becomes ineffective, turn off machine and adjust brake immediately.
- When operating spindle direction control lever, always turn it to correct position; never use "pre-position" for cutting at a reduced speed.
- Jaw teeth and scroll must be fully engaged, to prevent the jaws from breaking and being thrown from chuck (see Figure 24).

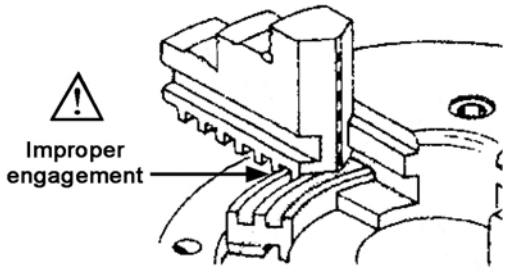

Figure 24 – Insufficient jaw tooth engagement

- Avoid long workpiece extensions, as parts may bend or fly off (see figure 25). Use rests or the tailstock for support.

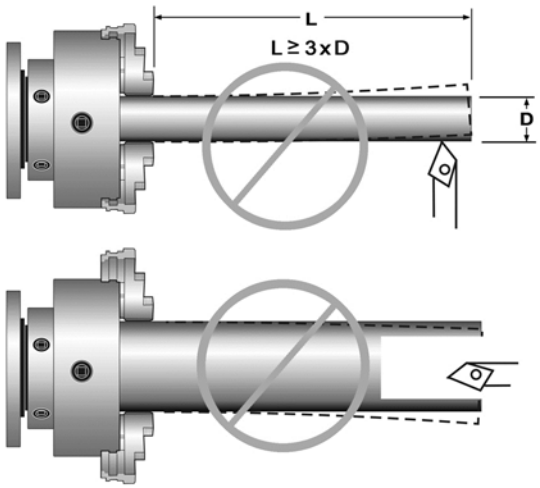

Figure 25 – Improper setups

- Avoid short clamping contact (Figure 26, A) or clamping on a minor part diameter (Figure 26, B). Face-locate the workpiece for added support.

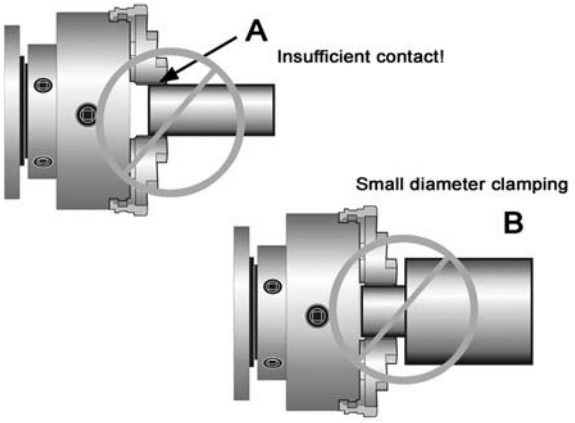

Figure 26 – Improper setups

12.1 **Tool setup**

The cutting angle is correct when the cutting edge is in line with the center axis of workpiece. Use the point of the tailstock center as a gauge and shims under the tool to obtain correct center height.

Use a minimum of two clamping screws to secure each tool.

12.2 **Spindle speed**

Twelve speeds are available by positioning the two speed levers (F, Figure 27) according to the accompanying chart on the front of the headstock.

You may need to turn the chuck by hand to assist engagement of the gears.

Never change speed while spindle is turning.

12.3 **Feed and thread selection**

To obtain various feed settings and thread pitches, the four levers (I, Figure 27) are used conjunctively. Position the four levers according to the Feed and Thread Chart on the front of the headstock. The chart is also shown at the back of this manual.

TIP: When selecting feed/speed correlations, remember the general principal that high speeds complement fine feeding, and low speeds are better for coarse feeding.

12.4 **Thread cutting**

Threading is performed in multiple passes, with decreasing depths in succeeding cuts. It is recommended that test cuts be made on scrap material and the results checked before proceeding with regular material.

1. Move **feed direction knob** (G, Figure 27) to desired direction, for right-hand or left-hand threads.
2. Set **speed levers** (F, Figure 27) to desired speed. Use lowest speed possible when threading.
3. Select desired thread using **thread pitch levers** (I, Figure 27) in conjunction with the charts on the headstock. These charts are also included at the back of this manual.
4. Set feed direction lever (see L, Figure 20) to correct position (neutral).
5. Engage the half nut (M, Figure 20). The half nut must be engaged during the entire threading process when doing metric, diametral, and modular threading.
6. When tool reaches end of cut, disengage and back out the tool to clear the workpiece.
7. Reverse direction to allow cutting tool to return to its starting point.
8. Repeat process until desired result is obtained.

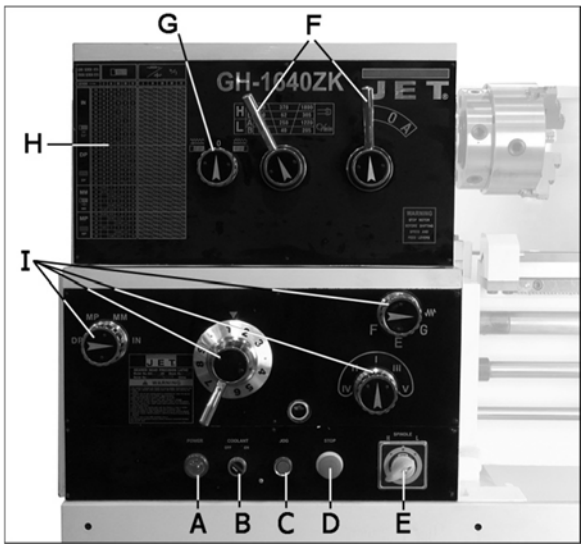

Figure 27 – Operating Selections

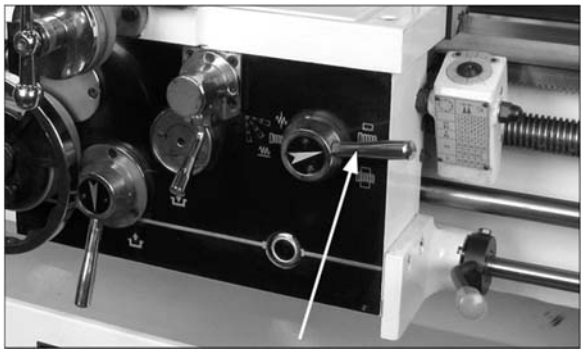

Figure 28 – Half Nut Lever

13.0 **Adjustments**

⚠CAUTION **Adjustments to the lathe, especially those involving alignments of bearings, spindle, leadscrew, clutch, etc., should only be performed by qualified personnel, as improper alignments can damage the machine and/or create a safety hazard.**

⚠WARNING **Turn off main switch and press emergency stop button before making adjustments to lathe.**

13.1 **Chuck jaw reversal**

The three jaws on the scroll chuck are reversible, to hold stock with larger diameters. See Figure 29. Loosen two screws with the provided hex key, remove jaw, and rotate it 180-degrees. Re-install jaw, and tighten each screw in increments until fully tightened.

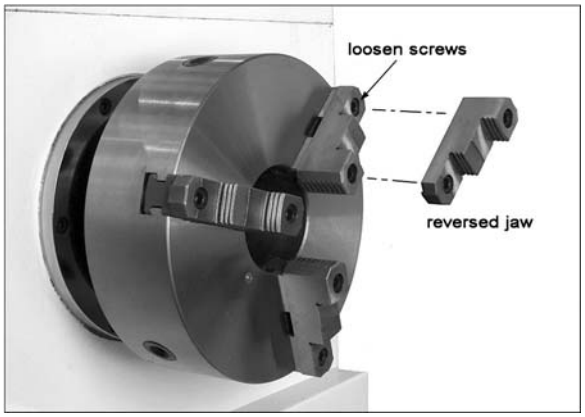

Figure 29 – Chuck jaw reversal

13.2 **Gib adjustments**

After a period of time, some moving components may need adjustment for play (or "backlash") due to wear. *Do not overtighten gib screws as this can hasten wear to components.*

Saddle – Turn screws on either side of saddle at the rear to adjust drag on saddle.

Cross Slide – Gib screws are located at front and rear of slide opposite to one another (A, Figure 30). To adjust drag, loosen rear gib screw one turn, and tighten front gib screw a quarter turn. Rotate handwheel to check play. Repeat as needed until slide moves freely without play. Gently tighten rear gib screw.

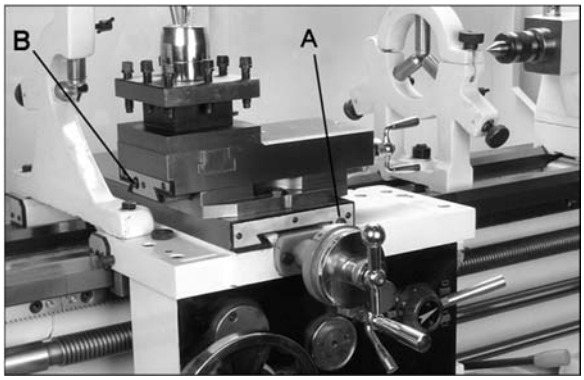

Figure 30 – Gib adjustments, slide and rest

Compound Rest – Gib screws are located at front and rear of compound rest (B, Figure 30). To adjust, use same method as for Cross Slide.

Half Nut – Gib screws are located on right side of apron (C, Figure 31). Loosen the jam nuts and rotate the screws clockwise until any backlash is corrected. Then retighten nuts.

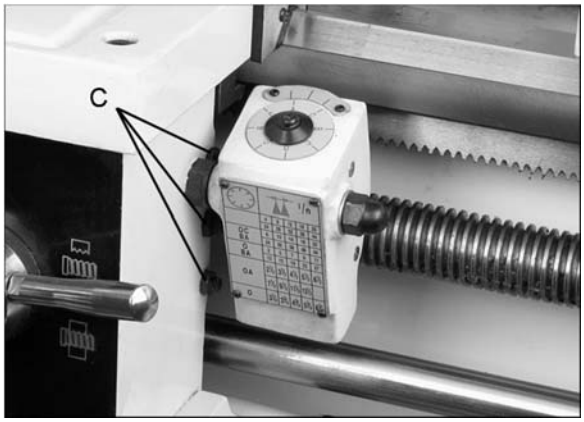

Figure 31 – Half Nut gib adjustment

13.3 **Tailstock adjustments**

The tailstock can be offset to cut shallow tapers up to 5° angle. See Figure 32.

1. Loosen tailstock in position by lowering locking handle (D).
2. Alternately loosen and tighten front and rear screws (E). [Only front screw shown.]

The scale (F) on the end of the tailstock indicates amount of offset, and helps when re-centering.

If the clamping force needs to be adjusted, use the hex nut beneath the tailstock body.

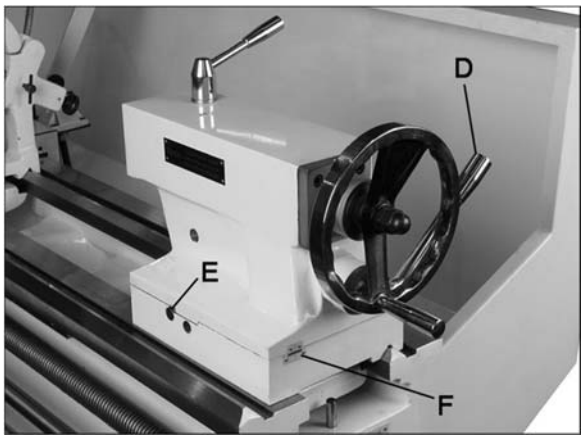

Figure 32 – Tailstock offset adjustment

13.4 **Gap section**

1. To remove the gap section (Figure 33), remove four socket head cap bolts (A) and two socket bolts at the ends of the rails (B).
2. Remove two tapered alignment pins (C) by placing the provided gap bridge pin driver (D) over them and threading its screw down into them, until the pins are loosened enough to be pulled out.
3. Remove gap section.

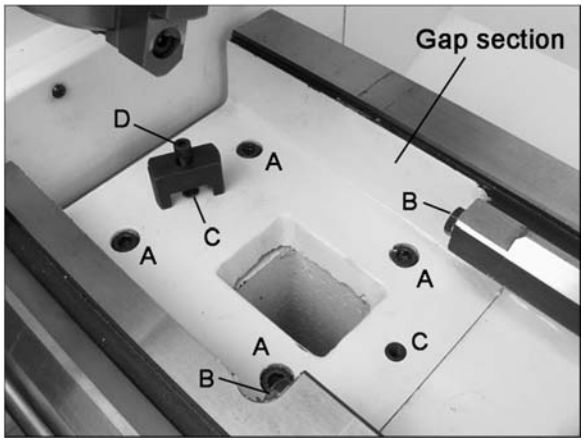

Figure 33 – Gap section

To reinstall gap section:

1. Thoroughly clean bottom and ends of gap section.
2. Set gap section in place and align the ends.
3. Insert the tapered pins into their holes through gap and into lathe bed.
4. Re-insert the six bolts (A,B) and tighten alternately until all are snug. Make sure gap remains aligned with ways while tightening screws.

13.5 **Belt Adjustment and replacement**

The belts should be inspected periodically. New belts have a tendency to stretch slightly after a short period of use; and prolonged use will require that they be tightened to compensate for normal wear.

NOTE: If a worn, cracked or frayed belt needs replacing, replace *all three* as a matched set.

To adjust or replace belts:

1. Disconnect machine from power source.
2. Open end gear cover, remove lower rear cover and lower side cover. This will expose motor and v-belts.
3. Loosen upper hex nut (A, Figure 34). Place scrap piece of wood under motor to act as lever. Lift motor up and block temporarily.
4. Remove belts. Install new belts onto pulleys.
5. Lift up on motor and remove temporary blocking.
6. Tension belts by loosening lower nut (B, Figure 34) and tightening down upper nut (A, Figure 34) until light finger pressure causes approximately 3/4" deflection on each belt.
7. Install covers and connect lathe to power source.

Figure 34 – Belt adjustment

13.6 **Aligning tailstock to headstock**

Headstock and Tailstock have been aligned at the factory and should not require attention. If future adjustment should ever be needed, proceed as follows. (Make sure that twist in the lathe bed is not contributing to the problem; refer to *sect. 8.1.*)

1. Fit a 12" ground, center-drilled, steel bar between centers of headstock and tailstock (Figure 35).
2. Fit a dial indicator to the top slide and traverse the center line of the bar. If it indicates a taper, adjustment is needed.
3. Align tailstock using the off-set screws at front and back (see E, Figure 32) until tailstock is aligned.

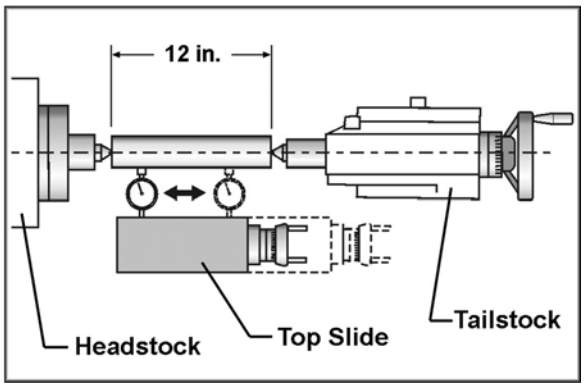

Figure 35 – Tailstock/Headstock alignment

13.7 Cross slide nut adjustment

The cross slide moves via a lead screw which drives a nut. This can be adjusted if backlash develops. Backlash is identified by turning the cross slide handwheel left and right – if there is a delay before any cross slide movement, the nut needs adjusting.

Tighten or loosen the two screws shown in Figure 36 until backlash is adjusted out.

Figure 36 – Cross slide nut adjustment

13.8 Shear pin replacement

The lead screw and feed shaft are equipped with shear pins, which are designed to break in order to protect the drive system against overload. A broken shear pin must be replaced.

Knock out the broken pin; line up the holes and insert new pin.

13.9 Steady rest adjustment

Always lubricate the fingers with grease before using the steady rest. The point at which the fingers contact the workpiece require continuous lubrication to prevent premature wear.

To set the steady rest (see Figure 37):

1. Loosen hex nut (A) to slide steady rest along the ways.
2. Loosen knurled handle (B) until it can be pivoted out of the slot.
3. Loosen three lock knobs (C), and back off the fingers (D) using knurled handles (E).
4. Pivot the collar on its hinge and position steady rest around workpiece.
5. Firmly tighten hex nut (A).
6. Set the fingers snugly to work piece and secure by tightening locking knobs. *Fingers should be snug but not overly tight.*

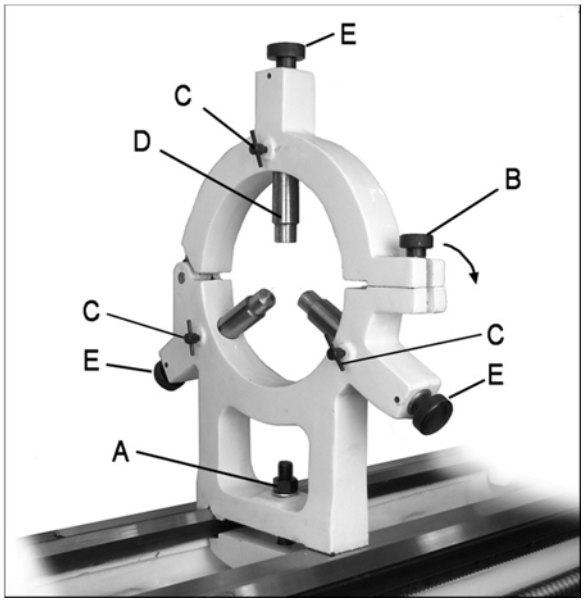

Figure 37 – Steady rest adjustment

13.10 Follow rest adjustment

The follow rest mounts to the saddle with two socket head cap bolts. The follow rest should be mounted so that locking knobs point away from chuck.

The sliding fingers are set similar to those on the steady rest – free of play, but not binding.

Always lubricate the fingers sufficiently with grease before operating.

14.0 **Troubleshooting the ZK series lathe**

Table 2

Trouble	Probable Cause	Remedy
Lathe will not start.	No electrical power, or wiring incorrect.	Verify incoming power, main leads, main switch is on.
	Emergency stop switch is pressed.	Rotate switch clockwise to release.
	End gear cover open, limit switch activated.	Close cover.
	Fuse blown in main electrical box.	Replace fuse.
	Fuse blown/circuit breaker tripped at power source.	Reset. Verify incoming power is proper for lathe.
	Defective on/off switch, motor or cable.	Have electrician test elements.
	Foot brake switch is faulty.	Check and replace as needed.
	Thermal relay tripped.	Reset. If it trips frequently, increase amp setting.
Spindle lacks turning power; or starts up slowly.	Belts are slipping.	Tighten belts.
Excessive machine vibration.	Workpiece unbalanced.	Reduce spindle speed.
	Workpiece deflecting.	Change chucking length or diameter. Use support on tailstock end.
	Tool deflecting.	Reduce tool length.
	Backlash on slide ways/gibs.	Adjust backlash.
	Slides running dry.	Properly lubricate slides/ways.
	Tool edge is dull.	Resharpen or replace tool.
	Chip load too high.	Reduce depth of cut or feed rate.
	Spindle bearings out of adjustment.	Adjust bearings.
	V-belts misaligned.	Inspect belts and correct.
Lathe overheating.	Bogging down in cut; excessive feed rate or depth of cut.	Decrease feed rate or depth of cut.
Tool tip burns.	Cutting speed too high.	Reduce speed.
	Tool is dull.	Resharpen or replace.
Lathe turns a taper.	Tailstock not aligned with headstock.	Align tailstock.
	Lathe bed is twisted.	Correct by leveling lathe.
No automatic power feed.	Shear pin is broken.	Replace shear pin.
Carriage, cross slide or compound rest move with difficulty.	Carriage lock is tightened down.	Release carriage lock.
	Gibs are too tight.	Adjust using gib screws.
	Bed ways have shavings/debris on them; or are dry.	Clean ways and verify they are being lubricated properly.

15.0 **Lubrication schedule and general maintenance**

Regularly scheduled maintenance is crucial to ensure a long service life for your machine. The schedule below shows general cleaning, lubrication points and coolant replacement information for the ZH Series Lathes. **Push stop button and power off before lubricating.** Follow local regulations for disposal of used coolant/lubricants. Minimize direct skin contact with lubricants and coolants, and wear eye protection when pouring coolant in case of splash.

Mobile DTE® Oil Heavy Medium is recommended for the SAE-20W machine oil.

If the brand of oil is ever changed, it is recommended that you flush and clean the reservoir first to prevent any compatibility issues.

Table 3

Section	Element	Action	Lubricant	Frequency
8.3	Chuck	Grease jaws and scroll	#2 lithium tube grease	periodically
9.0		Fill at (1) ball oiler	SAE-20W machine oil	daily
9.0	Spindle/cam locks/ chuck body	light coat of oil	SAE-20W machine oil	periodically
8.2	All exposed metal surfaces	light coat of oil	SAE-20W machine oil	frequently
9.0	Headstock	Drain and fill	SAE-20W machine oil	- after first 10 days, - after next 20 days, - every 2 to 3 months
9.0	Gearbox	Drain and fill	SAE-20W machine oil	- after first 3 months, - every 6 months
9.0	Apron and Saddle	Drain and fill	SAE-20W machine oil	- after first 3 months, - then annually
9.1	Leadscrew; Feed Rod; Spindle Direction Control Axle	Fill at oil port	SAE-20W machine oil	daily (1 or 2 times per shift)
9.1	Travel Setting Rod	Fill at (1) ball oiler	SAE-20W machine oil	as needed
9.1	Cross slide	Fill at (2) ball oilers	SAE-20W machine oil	daily
9.1	Compound rest	Fill at (2) ball oilers	SAE-20W machine oil	daily
9.1	Tool Post	Fill at (1) ball oiler	SAE-20W machine oil	daily
9.1	Tailstock	Fill at (2) ball oilers	SAE-20W machine oil	daily
9.0	Anti-dust felt on v-ways	Clean	kerosene	Inspect weekly
9.2	Coolant reservoir	(follow coolant manufacturer's directions)	Coolant of choice, approx. 4 gallons	(follow coolant manufacturer's directions)
9.2	Chip trays	Clean; clear drain filters		periodically
13.9	Steady Rest	Lubricate finger shafts and contact points	Lead-based grease	before each use
13.10	Follow Rest	Lubricate finger shafts and contact points	Lead-based grease	before each use
13.5	V-belts	Inspect and tighten if needed		periodically

16.0 **Reference Tables**

16.1 **Inch Lead And Feed**

Table 4

LEAD SCREW 4T. P. I
CROSS SCREW 8T. P. I

	LEVER →	I	II	III	IV	V
IN T/1"	1G	72	36	18	9	4 1/2
	4G	60	30	15	7 1/2	3 3/4
	6G	54	27	13 1/2	6 3/4	3 3/8
	1E	48	24	12	6	3
	2E	46	23	11 1/2	5 3/4	2 7/8
	3E	44	22	11	5 1/2	2 3/4
	8G	42	21	10 1/2	5 1/4	2 5/8
	4E	40	20	10	5	2 1/2
	5E	38	19	9 1/2	4 3/4	2 3/8
	6E	36	18	9	4 1/2	2 1/4
	7E	32	16	8	4	2
	8E	28	14	7	3 1/2	1 3/4
	9E	26	13	6 1/2	3 1/4	1 5/8
DP DP	1E	96	48	24	12	6
	2E	92	46	23	11 1/2	5 3/4
	3E	88	44	22	11	5 1/2
	4E	80	40	20	10	5
	5E	76	38	19	9 1/2	4 3/4
	6E	72	36	18	9	4 1/2
	7E	64	32	16	8	4
	8E	56	28	14	7	3 1/2
	9E	52	26	13	6 1/2	3 1/4
MM MM	1G	0.5	1	2	4	8
	1E	0.75	1.5	3	6	12
	4F		1.75	3.5	7	14
	6E	1	2	4	8	16
	7E		2.25	4.5	9	18
	8F	1.25	2.5	5	10	20
MP MP	1G	0.25	0.5	1	2	4
	1E		0.75	1.5	3	6
	4F			1.75	3.5	7
	6E	0.5	1	2	4	8
	7E			2.25	4.5	9
	8F		1.25	2.5	5	10

in

I	II	III	IV	V
0015 0006	0031 0012	0062 0025	0124 0050	0248 0099
0018 0007	0037 0015	0073 0029	0147 0059	0294 0118
0021 0008	0041 0016	0081 0032	0162 0065	0325 0130
0015 0006	0031 0012	0062 0025	0124 0050	0248 0099
0016 0006	0031 0012	0063 0025	0125 0050	0250 0100
0016 0006	0033 0013	0066 0026	0132 0053	0263 0105
0026 0010	0052 0021	0104 0042	0209 0084	0418 0167
0018 0007	0037 0015	0073 0029	0147 0059	0294 0118
0019 0008	0039 0016	0077 0031	0155 0062	0309 0124
0020 0008	0041 0016	0081 0032	0162 0065	0325 0130
0022 0009	0044 0018	0089 0036	0178 0071	0356 0142
0026 0010	0052 0021	0104 0042	0209 0084	0418 0167
0028 0011	0056 0022	0112 0045	0224 0090	0449 0180
0023 0009	0046 0018	0093 0037	0186 0074	0371 0148
0025 0010	0050 0020	0101 0040	0201 0080	0402 0161
0026 0010	0052 0021	0104 0042	0209 0084	0418 0167
0029 0012	0058 0023	0116 0046	0232 0093	0464 0186
0030 0012	0060 0024	0120 0048	0240 0096	0480 0192
0032 0013	0064 0026	0128 0051	0255 0102	0511 0204
0036 0014	0072 0029	0143 0057	0286 0114	0573 0229
0041 0016	0081 0032	0162 0065	0325 0130	0650 0260
0044 0018	0087 0035	0174 0070	0348 0139	0696 0278
0021 0008	0043 0017	0085 0034	0170 0068	0341 0136
0021 0008	0043 0017	0085 0034	0170 0068	0341 0136
0025 0010	0051 0020	0102 0041	0205 0082	0410 0164
0028 0011	0057 0023	0114 0046	0228 0091	0456 0182
0032 0013	0064 0026	0128 0051	0255 0102	0511 0204
0037 0015	0073 0029	0146 0058	0293 0117	0585 0234
0034 0014	0068 0027	0135 0054	0271 0108	0542 0217
0034 0014	0068 0027	0135 0054	0271 0108	0542 0217
0041 0016	0081 0032	0162 0065	0325 0130	0650 0260
0044 0018	0089 0036	0178 0071	0356 0142	0712 0285
0050 0020	0101 0040	0201 0080	0402 0161	0805 0322
0057 0023	0114 0046	0228 0091	0456 0182	0913 0365

t = metric threads
n = inch threads
m = modular threads
DP = diametral threads

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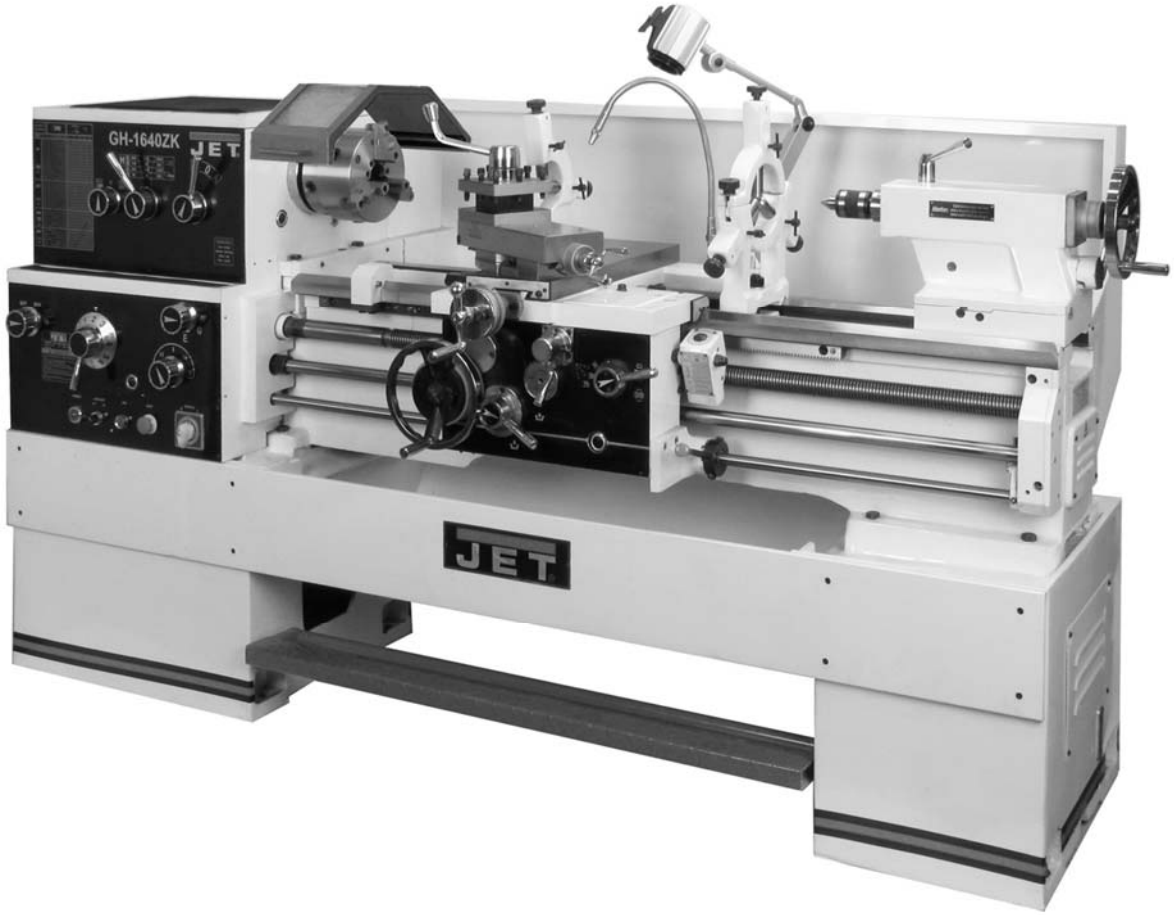
www.waltermeier.com

Model No.:	Stock No.:
Serial No.:	
Purchased From:	
Date Purchased:	Date Installed:

Parts List and Electrical Diagrams
GH-1640ZK Lathe



For ZK Lathe Operation and Maintenance Instructions, see document M-321850

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Part No. M-321850-1
Revision B 02/2013

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WHO IS COVERED?
This warranty covers only the initial purchaser of the product.

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WHAT IS NOT COVERED?
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The product or part must be returned for examination, postage prepaid, to a location designated by us. For the name of the location nearest you, please call 1-800-274-6848.

You must provide proof of initial purchase date and an explanation of the complaint must accompany the merchandise. If our inspection discloses a defect, we will repair or replace the product, or refund the purchase price, at our option. We will return the repaired product or replacement at our expense unless it is determined by us that there is no defect, or that the defect resulted from causes not within the scope of our warranty in which case we will, at your direction, dispose of or return the product. In the event you choose to have the product returned, you will be responsible for the shipping and handling costs of the return.

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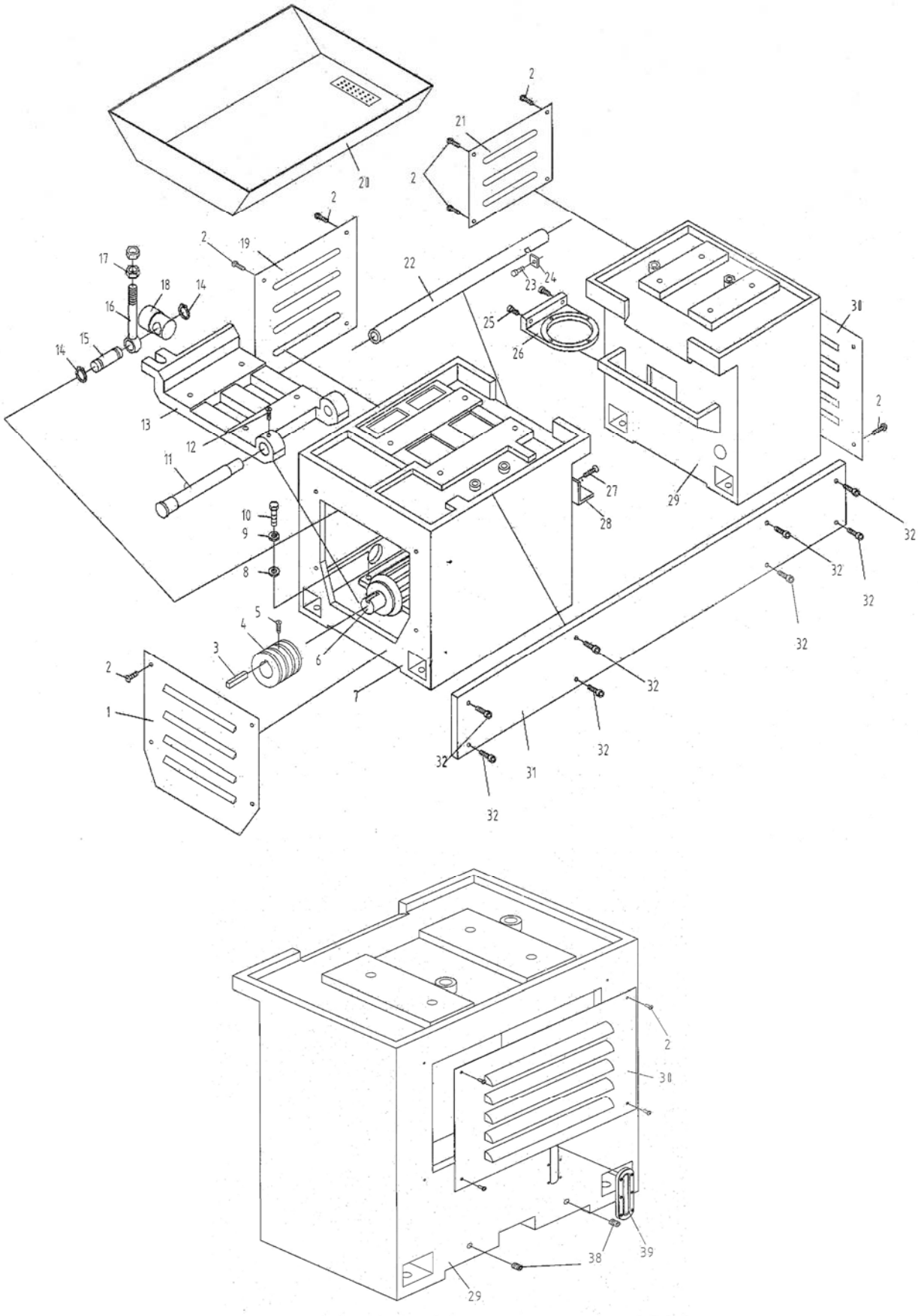
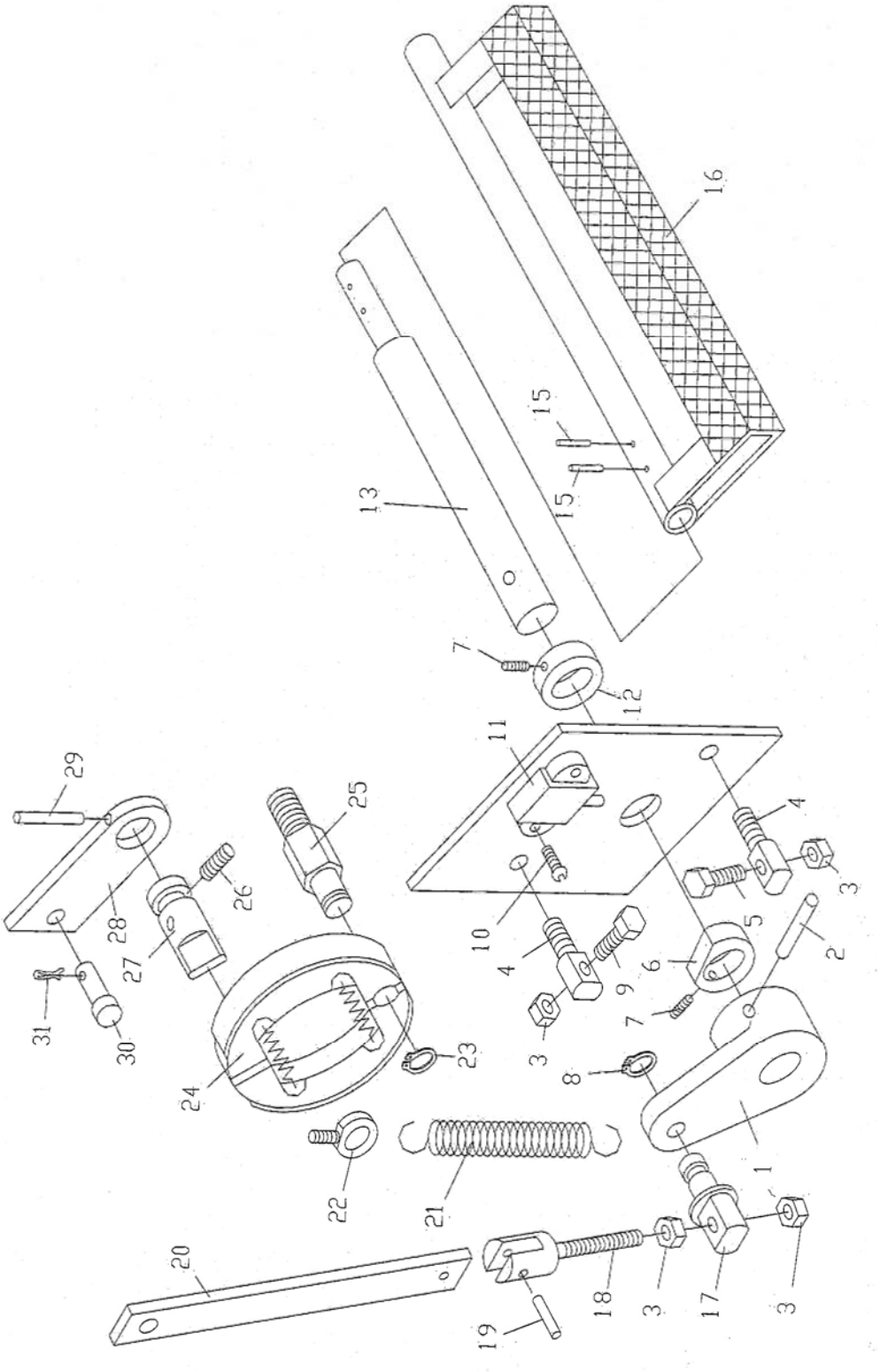
3.0 **Stand Assembly – Exploded View**



3.1 **Stand Assembly – Parts List**

Index No.	Part No.	Description	Size	Qty
1	1640ZK-101	Cover		1
2	TS-1534032	Cross Recessed Pan Head Screw	M6x8	16
3	1640ZK-103	Key		1
4	1640ZK-104	Pulley		1
5	1640ZK-105	Cylindrical End Set Screw	M8x12	1
6	1640ZK-106	Main Motor		1
7	1640ZK-107	Big Stand		1
8	TS-1550071	Flat Washer	10 mm	4
9	TS-2361101	Lock Washer	10 mm	4
10	TS-2210451	Hex Cap Screw	M10x45	4
11	1640ZK-111	Shaft		1
12	1640ZK-112	Cylindrical End Set Screw	M8x25	1
13	1640ZK-113	Motor Mounting Plate		1
14	GB894-22	C-Clip	22 mm	2
15	1640ZK-115	Shaft		1
16	1640ZK-116	Bolt		1
17	TS-2311161	Hex Nut	M16	2
18	1640ZK-118	Shaft		1
19	1640ZK-119	Cover		1
20	1640ZK-120	Oil Pan		1
21	1640ZK-121	Cover		1
22	1640ZK-122	Wire Conduit		1
23	TS-1534042	Slotted Pan Head Screw	M6x12	1
24	1640ZK-124	Locking Plate		1
25	TS-1505041	Hex Socket Cap Screw	M8x20	2
26	1640ZK-126	Pump Support		1
27	TS-1515021	Countersunk Head Screw	M8x20	2
28	1640ZK-128	Support		1
29	1640ZK-129	Small Stand		1
30	1640ZK-130	Cover		1
31	1640ZK-131	Front Cover		1
32	TS-1503041	Hex Socket Cap Screw	M6x16	8
38	1640ZK-138	Drain Plug	Z1/4	2
39	1640ZK-139	Coolant Level Indicator		1
40	TS-155010	Washer	M16	1
	STRIPE-1-3/4	JET stripe (not shown)	1-3/4”W	per ft.

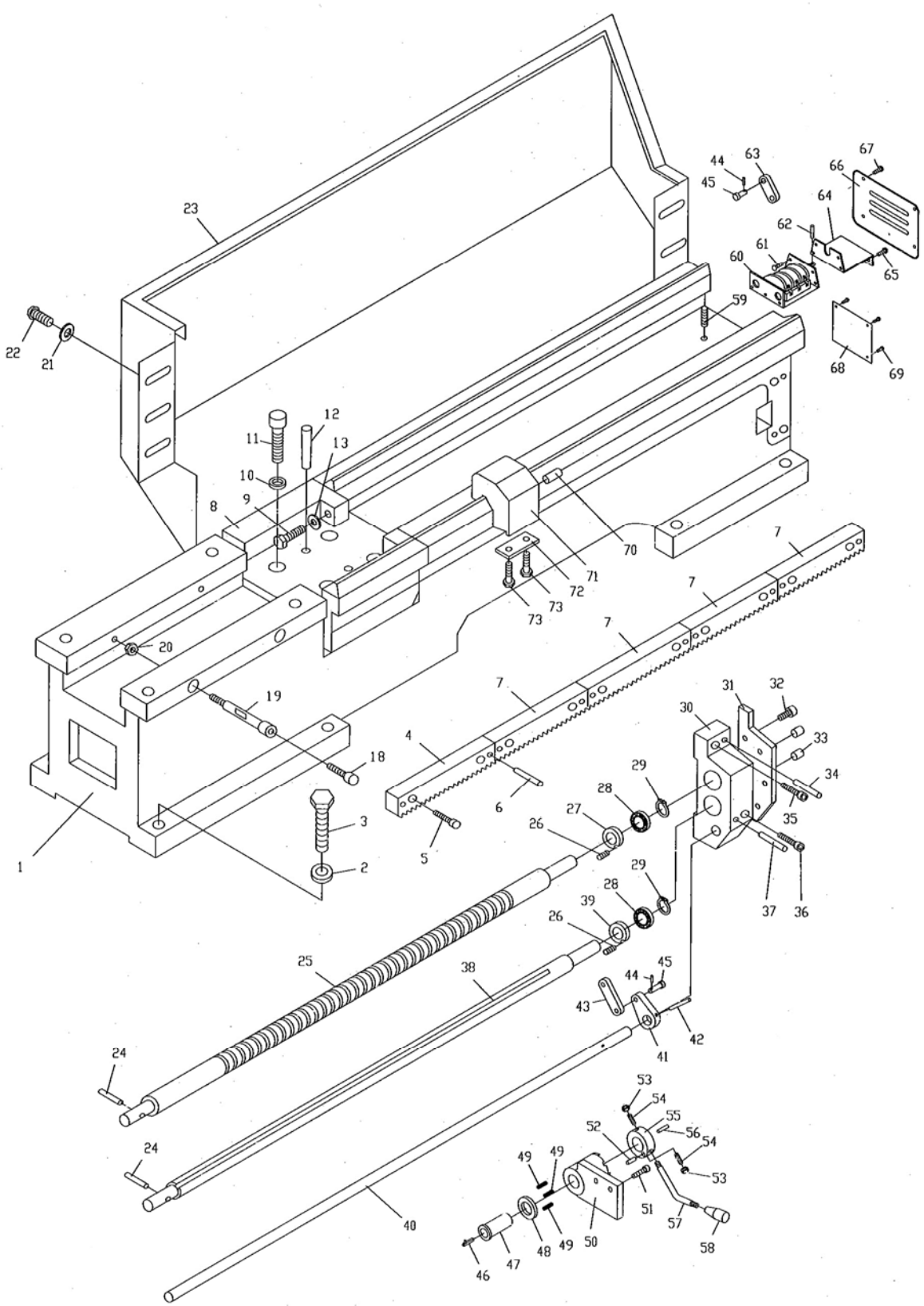
4.0 **Brake Assembly – Exploded View**



4.1 **Brake Assembly – Parts List**

Index No.	Part No.	Description	Size	Qty
1	ZX-22101	Fork		1
2	ZX-S41	Spring Pin	5x40 mm	1
3	TS-1540061	Hex Nut	M8	4
4	ZX-22707A	Butt Rod Support		2
5	TS-149006	Hex Cap Screw	M8x35	1
6	ZX-22703	Butt Nail Support		1
7	TS-1524021	Hex Set Screw	M8x10	1
8	ZX-S73	C-Clip	12 mm	2
9	TS-1490091	Hex Cap Screw	M8x50	1
10	ZX-S67	Screw	M4x25	2
11	ZK-S11	Stroke Switch		1
12	ZX-22711	Butt Nail Support		1
13	ZX-22704A	Driving Shaft – Longer		1
15	ZX-S48	Spring Pin	5x30 mm	2
16	1640ZK-216	Pedal		1
17	ZX-22706	Connecting Shaft		1
18	ZX-22715	Adjust Bolt		1
19	ZX-S70	Pin	5n6x20	1
20	1640ZK-220	Linkage		1
21	ZX-S53	Tensile Spring	3.5x26x190 mm	1
22	ZX-S54	Eyebolt	M8	1
23	ZX-S59	C –Clip	8 mm	1
24	ZK-S24	Brake Shoe		1
25	ZX-22701	Positioning Shaft		1
26	ZX-S68	Cylindrical End Set Screw	M5x10	1
27	ZX-22702	Brake Shaft		1
28	ZX-22708	Connecting Plate		1
29	ZX-S64	Straight Pin	5x25 mm	1
30	ZX-22709	Connecting Shaft		1
31	ZX-S52	Split Pin	2x20 mm	1

5.0 **Bed Assembly – Exploded View**

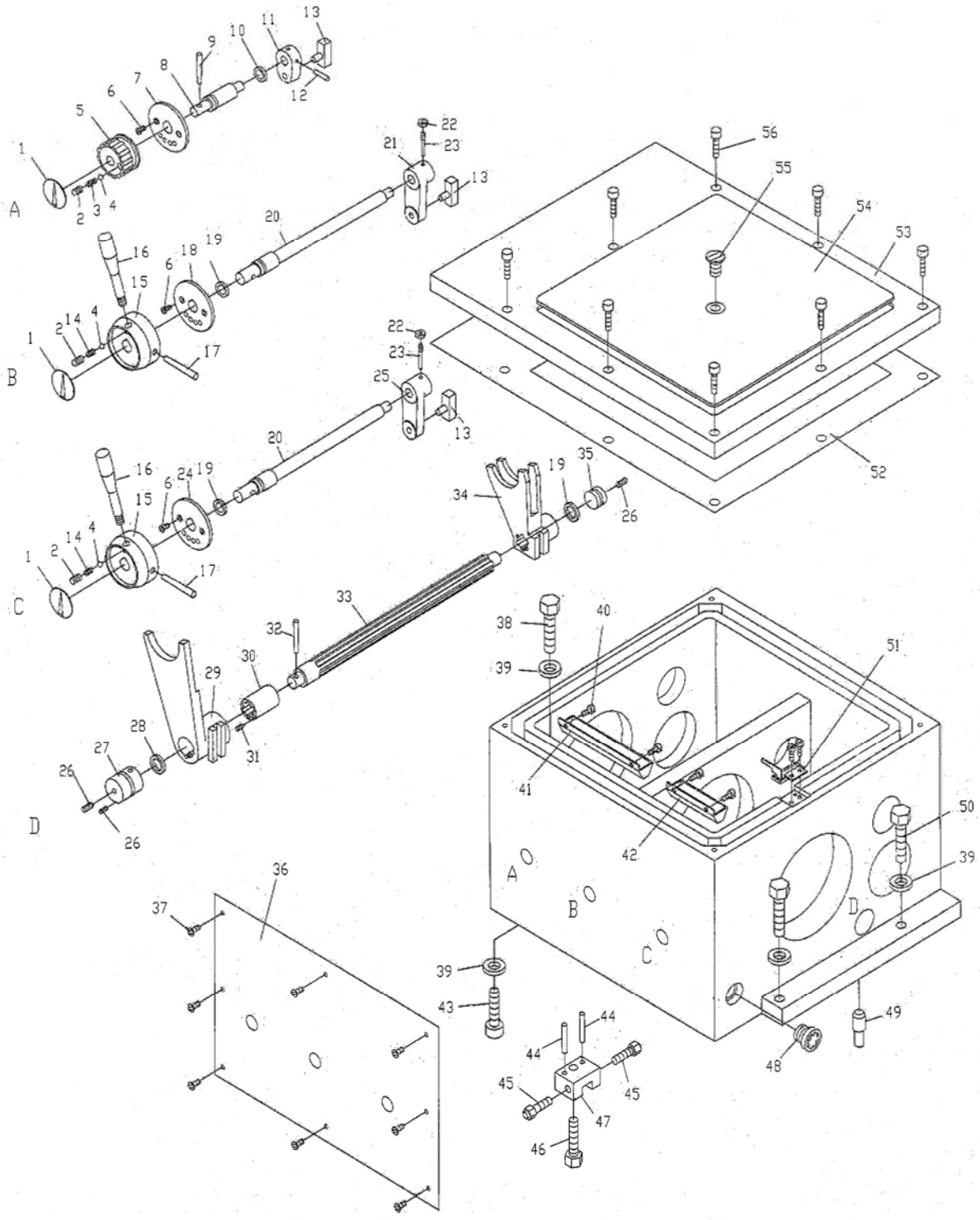


5.1 **Bed Assembly – Parts List**

Index No.	Part No.	Description	Size	Qty
1	1640ZK-301	Bed		1
2	1640ZK-302	Washer	B16	8
3	1640ZK-303	Hex Cap Bolt	M16x45	8
4	1640ZK-304	Rack		1
5	TS-1505051	Hex Socket Cap Screw	M10x35	10
6	1640ZK-306	Taper Pin	8x45 mm	10
7	1640ZK-307	Rack		4
8	1640ZK-308	Gap		1
9	CL1640ZX-0153	Hex Cap Screw	M10x55	2
10	TS-1550071	Washer	10 mm	2
11	TS-1492031	Hex Socket Cap Screw	M12x35	4
12	1640ZK-312	Threaded Taper Pin	12x55 mm	2
13	TS-2360121	Washer	12 mm	4
18	TS-1505071	Hex Socket Cap Screw	M10x45	2
19	1640ZK-319	Threaded Tube		2
20	TS-1540081	Hex Nut	M12	2
21	TS-1550041	Washer	M6	5
22	TS-1503021	Hex Socket Cap Screw	M6x10	5
23	1640ZK-323	Splash Guard		1
24	ZX-B18	Shear Pin	M5x35	2
25	1640ZK-325	Lead Screw (inch)		1
26	ZX-B20	Flat End Set Screw	M6x10	2
27	1640ZK-327	Sleeve		1
28	ZX-1204	Double Row Spherical Bearing	20x47x14 mm	2
29	ZX-B23	C-Clip	20 mm	2
30	ZX-01110	Bracket		1
31	ZX-01111	Cover		1
32	GB70-M6x14	Hex Socket Cap Screw	M6x14	4
33	ZX-B29	Oil Cup	10 mm	2
34	1640ZK-334	Taper Pin	6x60 mm	1
35	TS-1505081	Hex Socket Cap Screw	M10x50	1
36	1640ZK-336	Hex Socket Cap Screw	M10x85	1
37	1640ZK-337	Taper Pin	6x70 mm	1
38	1640ZK-338	Feed Rod		1
39	C6136-01108	Sleeve		1
40	1640ZK-340	Control Rod		1
41	ZX-01107	Poking Block		1
42	ZX-B34	Taper Pin	5x30 mm	1
43	1640ZK-343	Rocker		1
44	1640ZK-344	Pin	2x20 mm	2
45	1640ZK-345	Small Shaft		2
46	ZX-06702	Sliding Key		1
47	ZX-06001C-3	Sleeve		1
48	ZX-06001C-2	Spacer		1
49	ZX-B41	Spring	1x75x25 mm	3
50	ZX-06001C-1	Bracket		1
51	TS-1504031	Hex Socket Cap Screw	M8x16	2
52	ZX-B49	Taper Pin	8n6x20 mm	1
53	TS-1540061	Hex Nut	M8	2
54	ZX-B47	Set Screw	M8x28	2
55	ZX-06001C-5	Direction Change Ring		1
56	ZX-B57	Pin	3x16 mm	1
57	ZX-B44	Lever		1
58	ZX-06001C-4	Lever Sleeve		1
59	1640ZK-359	Taper Pin	12x50 mm	1
60	ZK-S4	Drum Switch		1
61	ZX-S27	Cross Recessed Pan Head Screw	M5x8	4
62	ZX-B57	Pin	3x16 mm	1
63	1640ZK-363	Rocker		1

Index No.	Part No.	Description	Size	Qty
64	1640ZK-364	Bracket		1
65	TS-1482031	Hex Cap Screw	M6x16	2
66	1640ZK-366	Cover		1
67	ZX-B60	Cross Recessed Pan Head Screw	M6x18	4
68	1640ZK-368	Chip Screw		1
69	GHW-CW02	Cross Recessed Pan Head Screw	M6x14	4
70	1640ZK-370	Pin		1
71	1640ZK-371	Stop		1
72	1640ZK-372	Clamping Plate		1
73	TS-1492011	Hex Cap Screw	M12x25	2

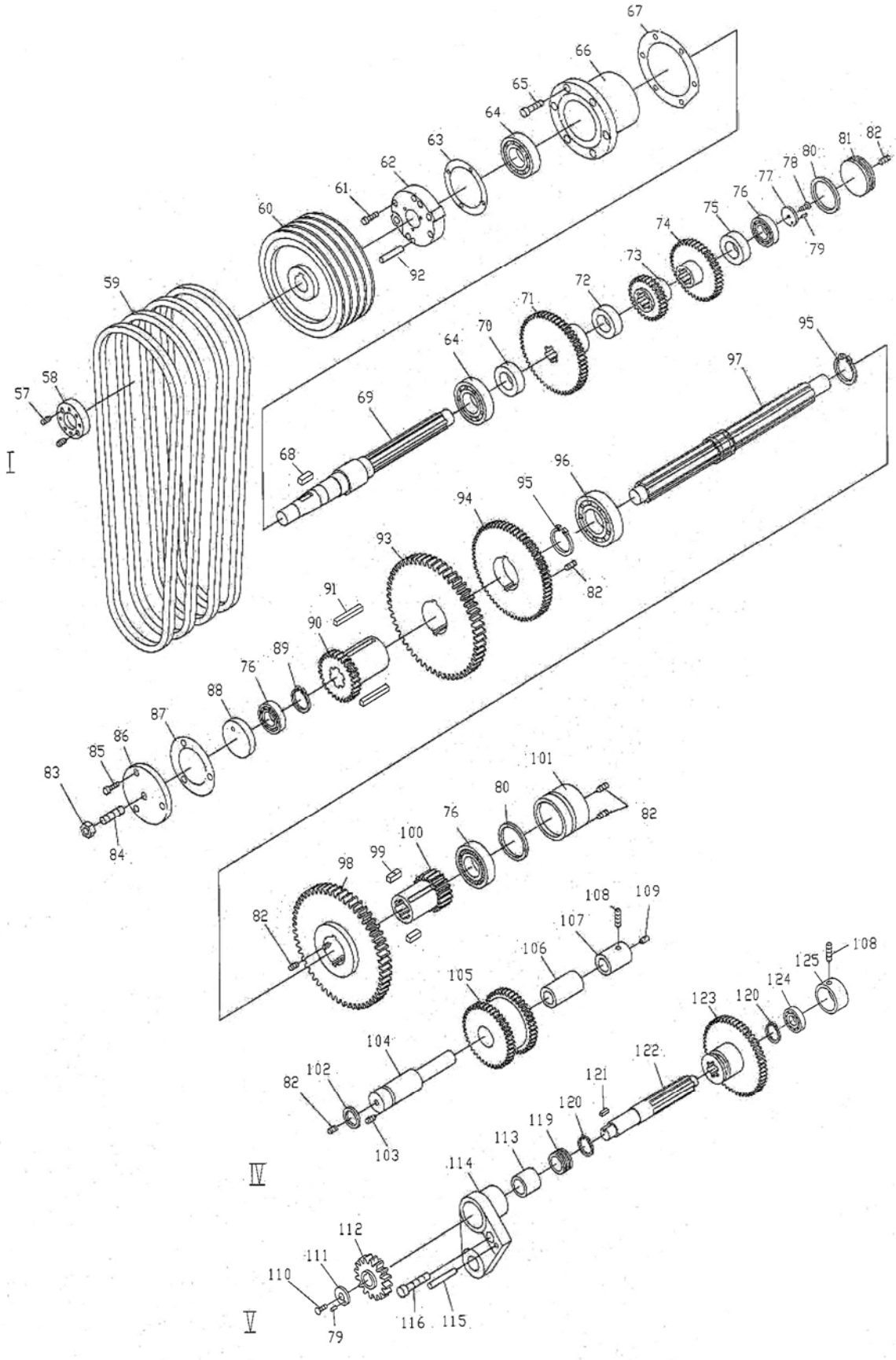
6.0 **Headstock Assembly I – Exploded View**



6.1 **Headstock Assembly I – Parts List**

Index No.	Part No.	Description	Size	Qty
1	1640ZK-401	Round Sign Plate		3
2	ZX-H3	Flat End Set Screw	M10x12	3
3	ZX-H4	Spring	YI-1x8x25	1
4	SB-8MM	Steel Ball	8 mm	3
5	1640ZK-405	Positioning Handle		1
6	ZX-H6	Countersunk Head Screw	M5x12	6
7	ZX-02743	Positioning Disc		1
8	1640ZK-408	Shaft		1
9	ZX-H9	Taper Pin	5x55 mm	1
10	1640ZK-410	O-Ring	20x2.4 mm	1
11	1640ZK-411	Crank		1
12	1640ZK-412	Taper Pin	4x30 mm	1
13	1640ZK-413	Pin Block		2
14	1640ZK-414	Spring	YI-1x7x25	2
15	1640ZK-415	Left Lever Support		2
16	1640ZK-416	Pin Block		2
17	1640ZK-417	Taper Pin	5x70 mm	2
18	1640ZK-418	Left Positioning Disc		1
19	ZX-H11	Ring Seal	25x2.4 mm	3
20	1640ZK-420	Shaft		1
21	1640ZK-421	Crank		1
22	TS-1540031	Hex Nut	M5	2
23	1640ZK-423	Threaded Tail Taper Pin	5x25 mm	2
24	1640ZK-424	Left Positioning Disc		1
25	1640ZK-425	Crank		1
26	1640ZK-426	Countersunk Head Screw	M8x10	4
27	1640ZK-427	Bearing Support		2
28	ZX-H64	Ring Seal	40x3.1	1
29	1640ZK-429	Left Fork		1
30	1640ZK-430	Bushing		1
31	ZX-H66	Flat End Set Screw	M6x10	1
32	ZX-H68	Taper Pin	6x35 mm	1
33	1640ZK-433	Control Shaft		1
34	1640ZK-434	Right Fork		1
35	1640ZK-435	Block Piece		1
36	1640ZK-436	Headstock Label Plate		1
37	TS-1531012	Cross Recessed Pan Head Screw	M3x6	8
38	AB1012W-D55	Hex Cap Screw	M16x45	1
39	CL1640ZX-0223	Washer	A16	4
40	1640ZK-440	Slotted Cheese Head Screw	M6x8	6
41	1640ZK-441	Oil Tray		1
42	1640ZK-442	Oil Tray		1
43	ZX-H85	Hex Socket Cap Screw	M16x50	1
44	ZX-H77	Taper Pin	8x40 mm	2
45	ZX-02744	Adjusting Screw		1
46	ZX-H80	Hex Cap Bolt	M12x50	1
47	1640ZK-447	Adjusting Block		1
48	R51-2	Oil Sight Glass	20 mm	1
49	1640ZK-449	Crank		1
50	ZX-H85	Hex Cap Bolt	M16x50	2
51	1640ZK-451	Oil Tray		1
52	1640ZK-452	Paper Gasket		1
53	1640ZK-453	Top Cover		1
54	1640ZK-454	Rubber Mat		1
55	1640ZK-455	Countersunk Head Screw		1
56	TS-1504051	Hex Socket Cap Screw	M8x25	8

7.0 **Headstock Assembly II – Exploded View**

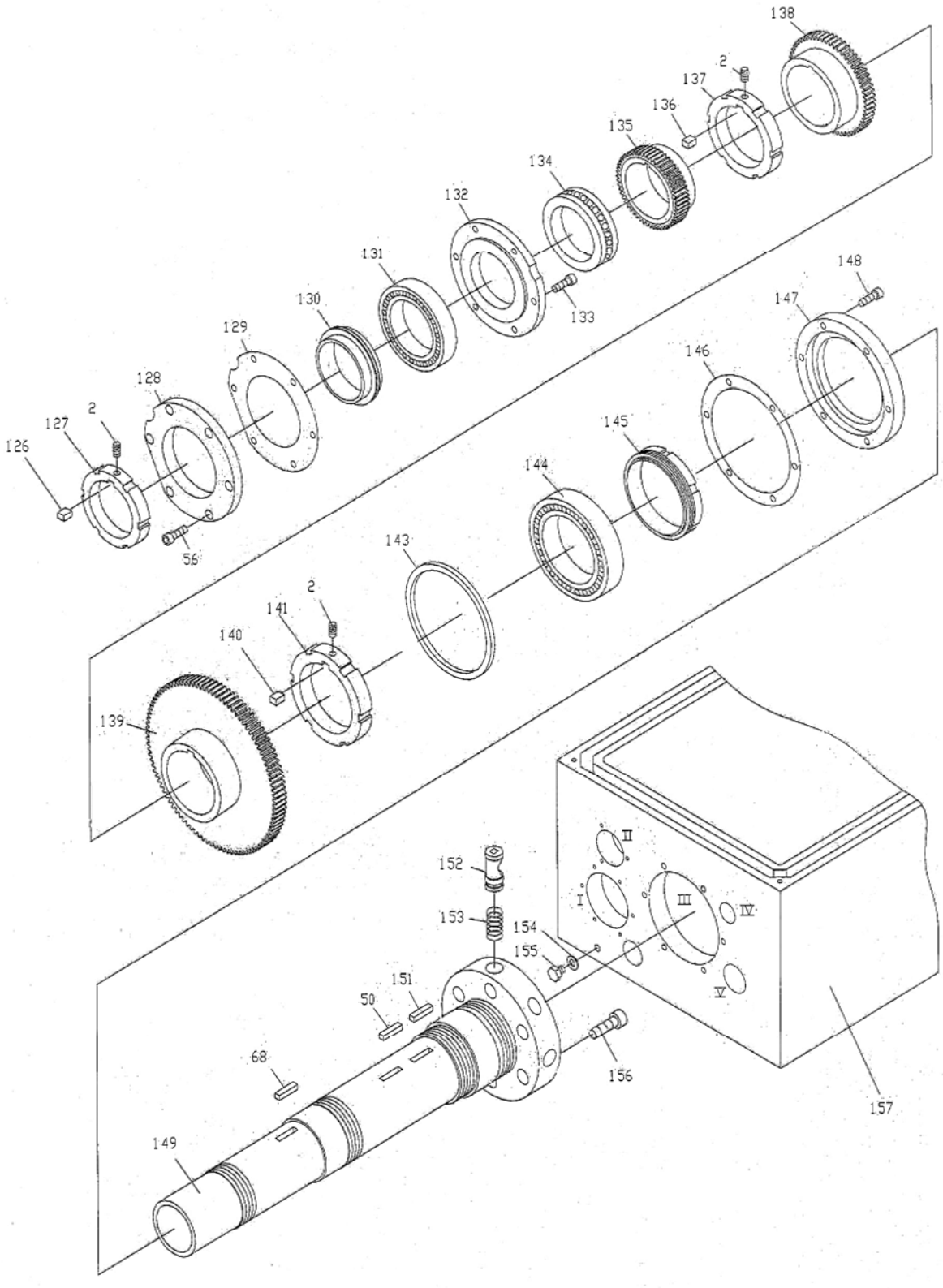


7.1 **Headstock Assembly II – Parts List**

Index No.	Part No.	Description	Size	Qty
57	TS-1524041	Set Screw	M8x16	2
58	1640ZK-558	Round Clamp Nut		1
59	ZX-H60B	V-Belt		4
60	1640ZK-560	Pulley		1
61	1640ZK-561	Hex Socket Cap Screw	M6x22	4
62	1640ZK-562	Bearing Cover		1
63	ZX-02506	Gasket		1
64	BB-6207ZZ	Ball Bearing	35x72x17 mm	2
65	TS-1504041	Hex Socket Cap Screw	M8x20	6
66	1640ZK-566	Bearing Support		1
67	ZX-02502	Gasket		1
68	ZX-H106	Flat Key	10x8x35 mm	2
69	1640ZK-569	Shaft		1
70	1640ZK-570	Sleeve	30x16 mm	1
71	1640ZK-571	Gear	2.5m49T	1
72	1640ZK-572	Sleeve	30x25 mm	1
73	1640ZK-573	Gear	2.5m19T	1
74	1640ZK-574	Sleeve	2.5m42T	1
75	1640ZK-575	Sleeve	30x8 mm	1
76	BB-6305	Bearing	25x62x17	3
77	ZX-H114	Shaft End Lock Ring	32 mm	1
78	ZX-H115	Countersunk Head Screw	M6x20	1
79	ZX-H59	Pin	3n6x10	2
80	ZX-H117	Ring Seal	60x3.1	2
81	ZX-02104	Blocking Flange		1
82	1640ZK-582	Flat End Set Screw	M8x12	6
83	TS-1540081	Hex Nut	M12	1
84	ZX-H150	Set Screw	M12x65	1
85	TS-1503041	Hex Socket Cap Screw	M6x16	3
86	1640ZK-586	Cover		1
87	1640ZK-587	Gasket		1
88	ZX-H147	Pushing Disc	62 mm	1
89	ZX-H133	C-Clip	35 mm	1
90	1640ZK-590	Gear	2.5m34T	1
91	1640ZK-591	Flat Key	10x8x40	2
92	1640ZK-592	Pin	8x30 mm	2
93	1640ZK-593	Gear	2.5m64T	1
94	1640ZK-594	Gear	2.5m41T	1
95	GB894.1-40	C-Clip	40 mm	2
96	BB-6208ZZ	Ball Bearing	40x80x18	1
97	1640ZK-597	Shaft		1
98	1640ZK-598	Gear	3m52T	1
99	1640ZK-599	Flat Key	8x7x28 mm	2
100	1640ZK-5100	Gear	2.5m18T	1
101	1640ZK-5101	Blocking Flange		1
102	ZX-H187	Ring Seal	35x3.1	1
103	1640ZK-5103	Flat End Set Screw	M6x8	6
104	1640ZK-5104	Shaft		1
105	1640ZK-5105	Double Gear	2m38T	1
106	ZX-02303	Copper Sleeve		1
107	1640ZK-5107	Positioning Sleeve		1
108	1640ZK-5108	Set Screw	M8x16	2
109	1640ZK-5109	Blocking Piece		1
110	ZX-H211	Countersunk Head Screw	M5x16	1
111	1640ZK-5111	Washer		1
112	1640ZK-5112	Gear	3.5m16T	1
113	ZX-02301	Bushing		2
114	1640ZK-5114	Bracket		1
115	ZX-H77	Taper Pin	8x40 mm	1

Index No.	Part No.	Description	Size	Qty
116	TS-1505031	Hex Socket Cap Screw	M10x25	1
119	1640ZK-5119	Sleeve		1
120	ZX-H198	C-Clip	28 mm	2
121	GB1096-5x12	Flat Key	5x12 mm	1
122	1640ZK-5122	Shaft		1
123	1640ZK-5123	Gear	2m48T	1
124	BB-6203ZZ	Ball Bearing	17x40x12	1
125	1640ZK-5125	Sleeve		1

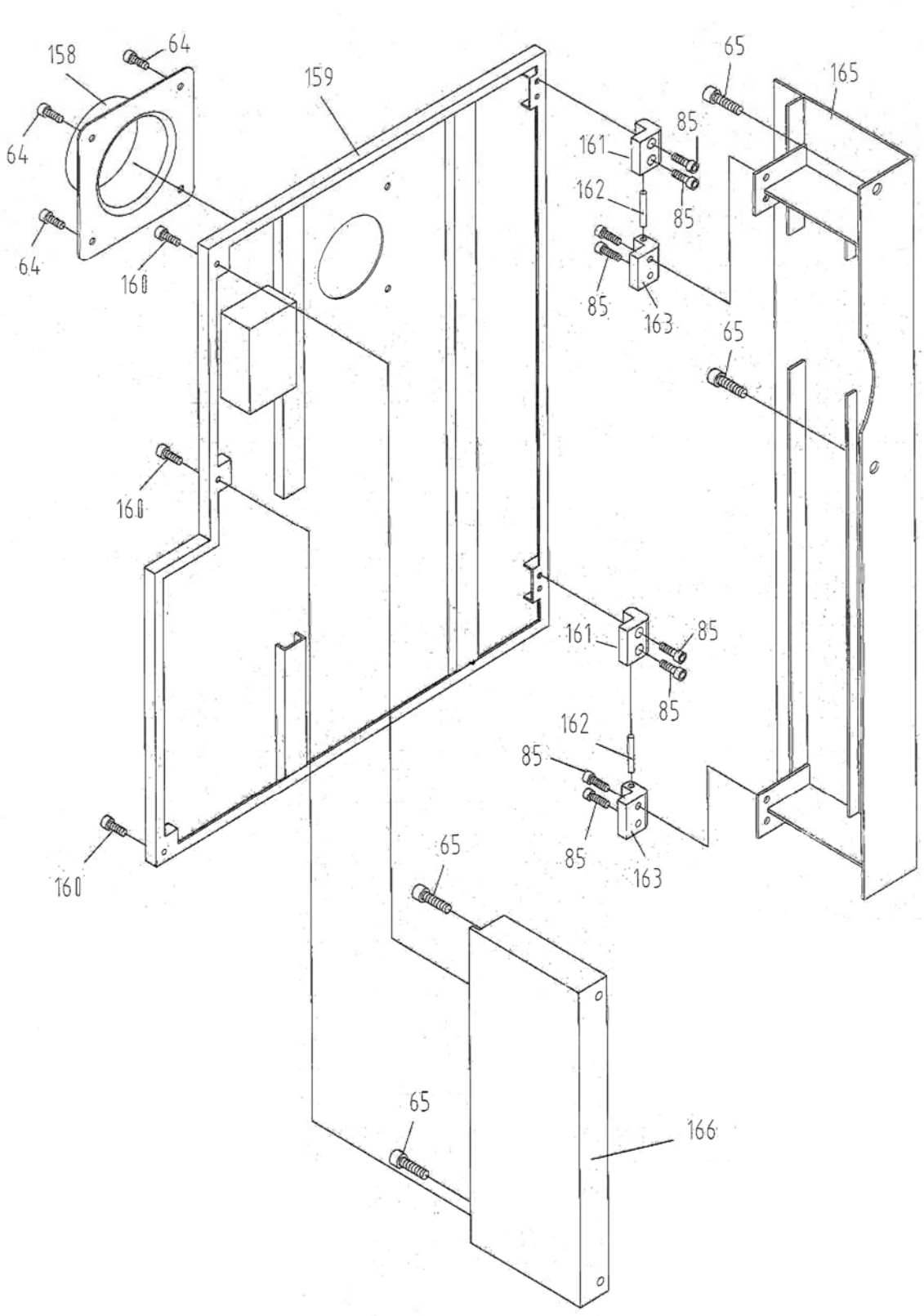
8.0 **Headstock Assembly III – Exploded View**



8.1 **Headstock Assembly III – Parts List**

Index No.	Part No.	Description	Size	Qty
2	ZX-H3	Flat End Set Screw	M10x12	3
126	1640ZK-6126	Locking Block		1
127	1640ZK-6127	Round Nut		1
128	1640ZK-6128	Bearing Back Cover		1
129	1640ZK-6129	Gasket		1
130	1640ZK-6130	Sleeve		1
131	BB-32013/P5	Taper Roller Bearing	65x100x22	1
132	1640ZK-6132	Bearing Support		1
133	TS-1490051	Hex Cap Screw	M8x30	6
134	51213/P5	Thrust Bearing	65x100x27	1
135	1640ZK-6135	Gear	2m48T	1
136	1640ZK-6135	Locking Block		1
137	1640ZK-6135	Round Nut		1
138	1640ZK-6135	Gear	3m33T	1
139	1640ZK-6139	Gear	3m67T	1
140	1640ZK-6140	Locking Block		1
141	1640ZK-6141	Round Nut		1
143	1640ZK-6143	Lining	130 mm	1
144	D3182117	Taper Roller Bearing	85x130x34	1
145	1640ZK-6145	Oil Splash Ring		1
146	1640ZK-6146	Gasket		1
147	1640ZK-6147	Bearing Front Cover		1
148	TS-1504061	Hex Socket Cap Screw	M8x30	1
149	1640ZK-6149	Spindle		1
150	ZX-H154	Flat Key	10x8x50 mm	1
151	1640ZK-6151	Flat Key	12x8x55 mm	1
152	1640ZK-6152	Cam Lock		6
153	1640ZK-6153	Spring	1x8x22 mm	6
154	1640ZK-6154	Copper Washer	17 mm	1
155	G38-2	Drain Plug	M16x1.5	1
156	1640ZK-6156	Cam Positioning Screw		6
157	1640ZK-6157	Headstock Casting		1

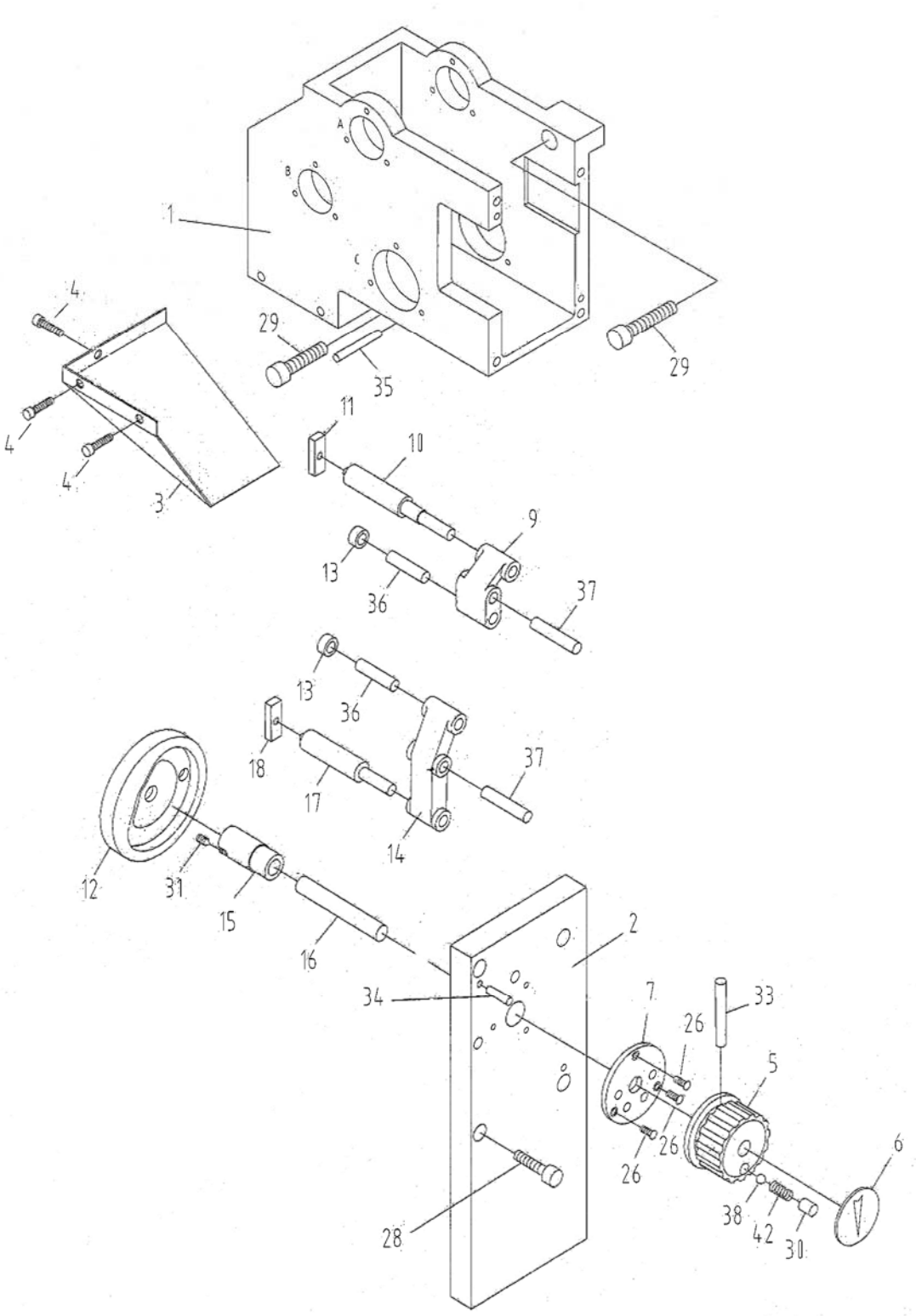
9.0 **Headstock Assembly IV – Exploded View**



9.1 **Headstock Assembly IV – Parts List**

Index No.	Part No.	Description	Size	Qty
64	TS-1503011	Hex Socket Cap Screw	M6x8	4
65	TS-1504021	Hex Socket Cap Screw	M8x12	4
85	TS-1503041	Hex Socket Cap Screw	M6x16	8
158	1640ZK-7158	Cover		1
159	1640ZK-7159	Back Cover		1
160	TS-1502031	Hex Socket Cap Screw	M5x12	3
161	ZX-08712	Upper Hinge		2
162	ZX-H223	Pin	6n6x40	2
163	ZX-08711	Lower Hinge		2
165	1640ZK-7165	Rear Side Plate		1
166	1640ZK-7166	Front Side Plate		1

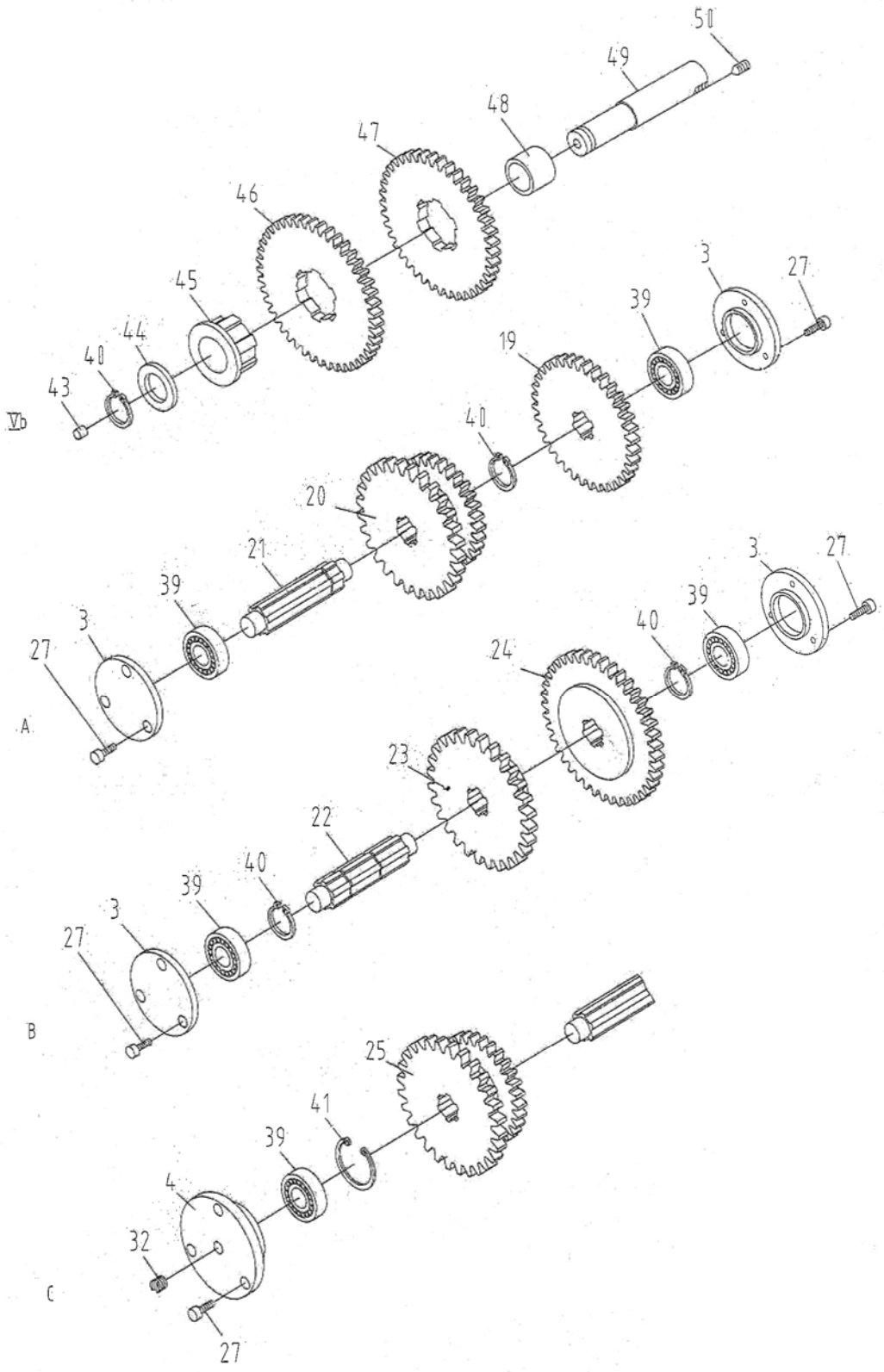
10.0 **Change Gear Box Assembly I – Exploded View**



10.1 **Change Gear Box Assembly I – Parts List**

Index No.	Part No.	Description	Size	Qty
1	ZX-08101	Change Gear Box Casting		1
2	ZX-08108	Front Cover		1
3	C6140ZK-08703	Splash Guard		1
4	TS-1502031	Hex Socket Cap Screw	M5x12	3
5	ZX-05104C	Handwheel		1
6	ZX-05301C	Sign Plate		1
7	ZX-08708	Positioning Disc		1
9	ZX-08111	Crank		1
10	ZX-08705	Connecting Rod		1
11	ZX-08304	Sliding Block		1
12	ZX-05103C	Cam		1
13	ZX-05702C	Roller		2
14	ZX-08109	Crank		1
15	ZX-08110	Bushing		1
16	ZX-08704	Rotating Shaft		1
17	ZX-08703	Connecting Rod		1
18	ZX-08304	Sliding Block		1
26	ZX-C26	Cross Head Screw	M4x12	3
28	TS-1504051	Hex Socket Cap Screw	M8x25	4
29	TS-1516051	Hex Socket Cap Screw	M10x40	2
30	TS-1525021	Set Screw	M10x12	1
31	ZX-C31	Flat Head Set Screw	M6x8	1
33	ZX-C33	Taper Pin	4x45 mm	1
34	ZX-C34	Taper Pin	6x30 mm	2
35	ZX-C35	Taper Pin	6x50 mm	1
36	ZX-C36	Pin	10m6x40	2
37	ZX-C37	Pin	10m6x50	2
38	SB-8MM	Steel Ball	8 mm	1
42	ZX-C42	Spring	1x8x30 mm	1

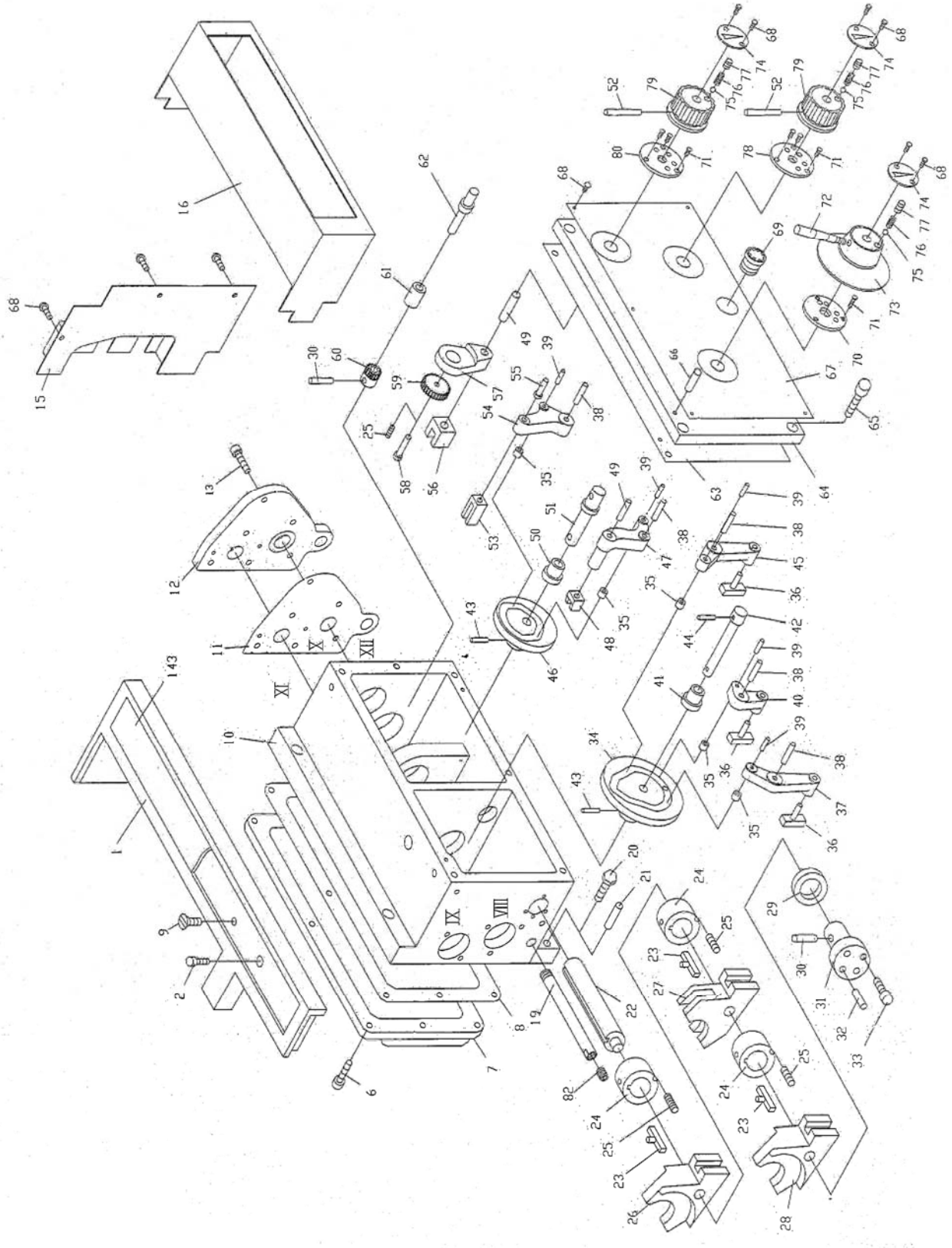
11.0 **Change Gear Box Assembly II – Exploded View**



11.1 **Change Gear Box Assembly II – Parts List**

Index No.	Part No.	Description	Size	Qty
3	ZX-08104	End Cover		4
4	ZX-08103	Bearing Support		1
19	ZX-08107	Gear	3m36T	1
20	ZX-08105	Double Gear	3.75m28T/3m30T	1
21	ZX-08702	Shaft		1
22	ZX-08701	Shaft		1
23	ZX-08710	Gear	3.75m30T/3m29T	1
24	ZX-08709	Gear	3m41T	1
25	ZX-08102	Double Gear	3.75m30T/3m29T	1
27	ZX-C27	Slotted Cheese Head Screw	M5x12	9
32	ZX-C32	Flat Head Set Screw	M6x12	1
39	BB-6203ZZ	Ball Bearing	17x40x12	5
40	ZX-C40	C-Clip	25 mm	4
41	ZX-C41	C-Clip	40 mm	1
43	ZX-C43	Oil Cup	8 mm	1
44	TNMP08108	Washer		1
45	TNMP08102	Splined Sleeve		1
46	TNMP08504	Gear	3m41T	1
47	TNMP08501A	Gear	3.5m36T	1
48	ZX-05502C	Oil Bushing		1
49	1640ZK-649	Shaft Vb		1
50	ZX-C50	Flat Head Set Screw	M8x10	1

12.0 **Quick Change Gear Box I – Exploded View**

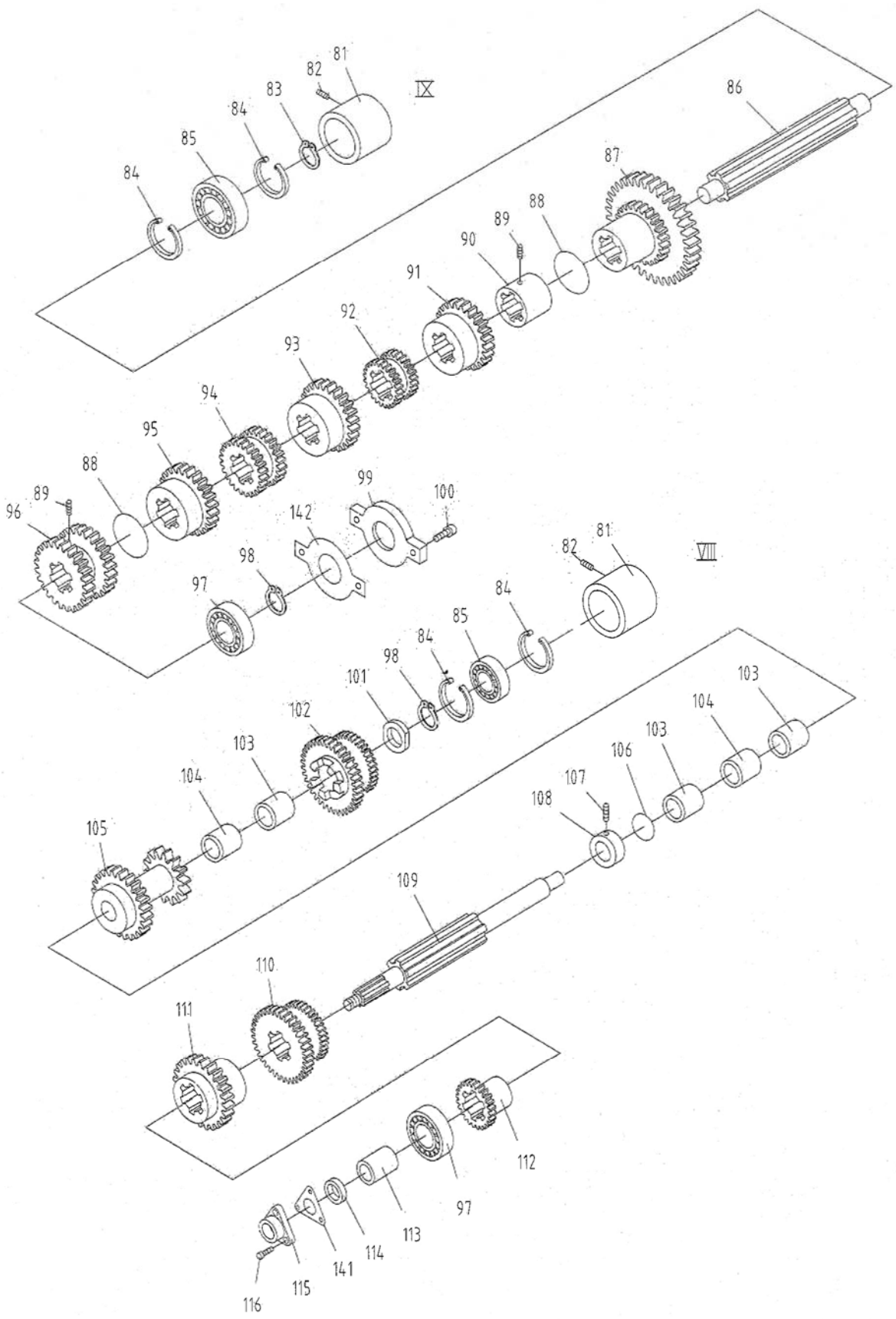


12.1 **Quick Change Gear Box I – Parts List**

Index No.	Part No.	Description	Size	Qty
1	1640ZK-1001	Upper Cover		1
2	TS-1503061	Hex Socket Cap Screw	M6x25	2
6	TS-1504031	Hex Socket Cap Screw	M8x16	10
7	ZX-05109	Rear Cover		1
8	ZX-05502	Gasket		1
9	1640ZK-1009	Cross Head Screw	M10x18	1
10	ZX-05101	Feedbox Casting		1
11	ZX-05501	Gasket		1
12	1640ZK-1012	Flange		1
13	TS-1504031	Hex Socket Cap Screw	M8x16	6
15	1640ZK-1015	Extending Plate		1
16	1640ZK-1016	Feedbox Heightening Case		1
19	ZK-1019	Pipe	M10x10	1
20	TS-1491061	Hex Cap Screw	M10x40	2
21	ZH-H68	Taper Pin	6x35 mm	2
22	1640ZK-1022	Control Shaft		1
23	1640ZK-1023	Sliding Key		3
24	1640ZK-1024	Sliding Sleeve		3
25	ZX-Q25	Flat Head Set Screw	M5x8	4
26	1640ZK-1026	Right Fork		1
27	1640ZK-1027	Middle Fork		1
28	1640ZK-1028	Left Fork		1
29	ZX-Q29	Ring Seal	32x3.1 mm	1
30	ZX-Q30	Taper Pin	4x25 mm	2
31	1640ZK-1031	Cover		1
32	ZX-Q32	Pin	5n6x15	1
33	TS-1502041	Hex Socket Cap Screw	M5x16	3
34	ZX-05122	Cam		1
35	ZX-05728	Rolling Sleeve		5
36	ZX-05729	Poking Key		3
37	ZX-05123	Crank		1
38	ZX-Q38	Pin	8n6x32	5
39	ZX-Q39	Pin	6n6x20	5
40	ZX-05124	Crank		1
41	ZX-05111	Sleeve		1
42	1640ZK-1042	Lever Shaft		1
43	ZX-Q43	Taper Pin	4x32 mm	2
44	ZX-Q44	Taper Pin	4x65 mm	1
45	ZX-05121	Crank		1
46	ZX-05118	Cam		1
47	ZX-05120	Crank		1
48	ZX-05116	Fork		1
49	ZX-Q49	Pin	8n6x18	2
50	ZX-05117	Sleeve		1
51	ZX-05737	Lever Shaft		1
52	ZX-C33	Taper Pin	4x45 mm	2
53	ZX-05115	Fork		1
54	ZX-05119	Crank		1
55	ZX-05735	Pin		1
56	ZX-05112	Fork		1
57	ZX-05113	Crank		1
58	ZX-05730	Small Shaft		1
59	ZX-05731	Big Gear	1m44T	1
60	ZX-05732	Small Gear	1m22T	1
61	ZX-05114	Sleeve		1
62	ZX-05734	Lever Shaft		1
63	ZX-05503	Gasket		1
64	ZX-05110	Front Cover		1
65	TS-1505021	Hex Socket Cap Screw	M10x20	5

Index No.	Part No.	Description	Size	Qty
66	ZX-Q66	Taper Pin	5x35 mm	6
67	1640ZK-1067	Gear Box Sign Plate		1
68	ZX-S27	Cross Head Screw	M5x8	4
69	ZX-Q69	Oil Sight Glass	20	1
70	ZX-05727	Positioning Disc		1
71	ZX-Q71	Countersunk Head Screw	M4x12	9
72	ZX-05740	Lever		1
73	ZX-05130A	Lever Support		1
74	ZX-05301	Sign Disc		3
75	SB-8MM	Steel Ball	8 mm	3
76	ZX-Q76	Compression Spring	YZ-1x8x25	3
77	ZX-H3	Flat End Set Screw	M10x12	3
78	ZX-05736	Positioning Disc		1
79	ZX-05140	Handwheel		2
80	ZX-05733	Positioning Disc		1
82	1640ZK-1082	Hex Socket Cap Screw	M8x5	1
143	1640ZK-10143	Rubber Mat		1

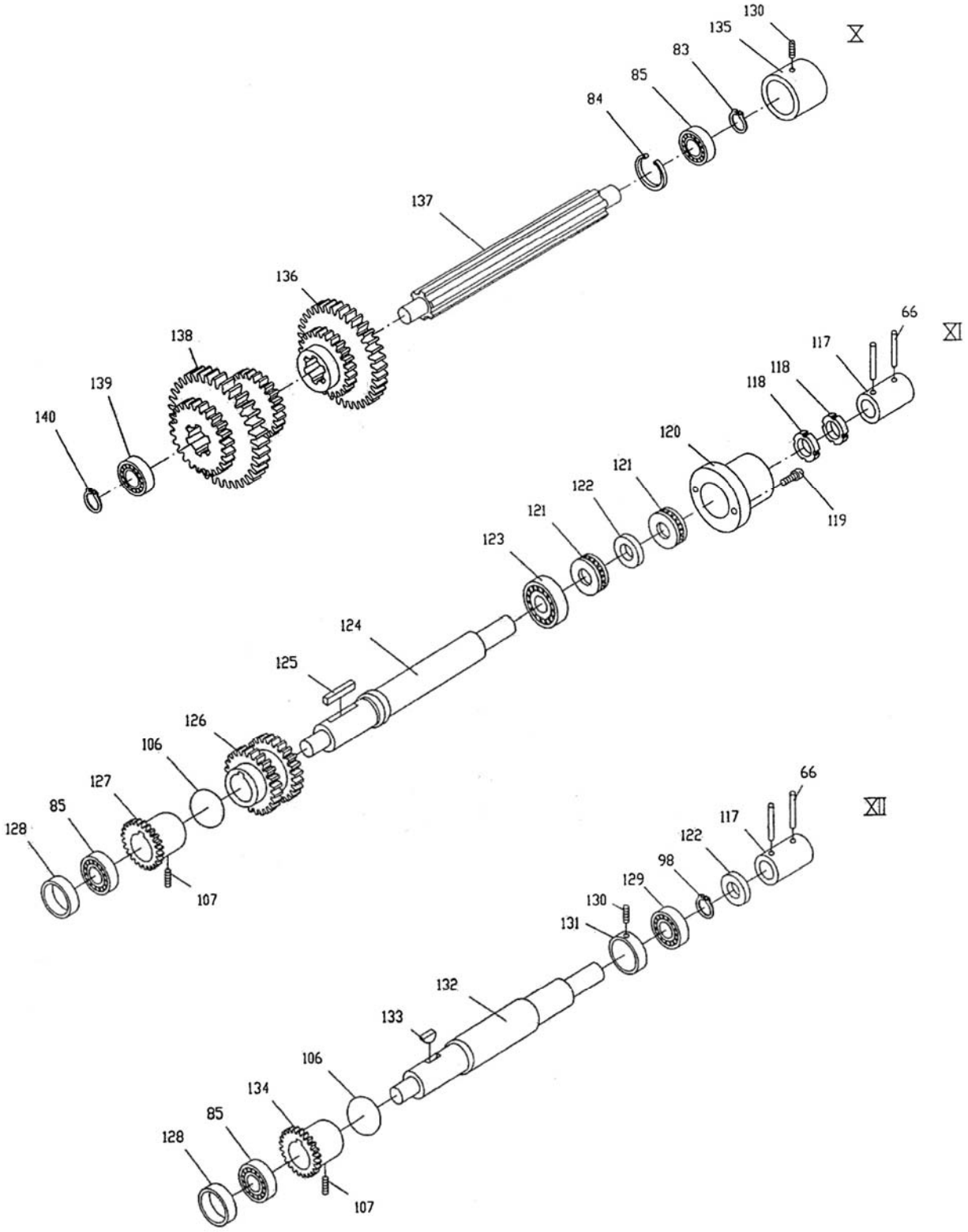
13.0 **Quick Change Gear Box II – Exploded View**



13.1 **Quick Change Gear Box II – Parts List**

Index No.	Part No.	Description	Size	Qty
81	ZX-05104	Middle Bearing Support		2
82	ZX-Q82	Taper End Set Screw	M10x16	2
83	ZX-B23	C-Clip	20 mm	1
84	ZX-Q84	C-Clip	42 mm	5
85	BB-6004	Single Row Radial Ball Bearing	20x42x12	5
86	1640ZK-1186	Shaft		1
87	ZX-05722	Double Gear	2m26T/2m52T	1
88	ZX-Q88	Iron Wire	1x190 mm	2
89	TS-1524051	Set Screw	M8x20	2
90	ZX-05720	Positioning Sleeve		1
91	ZX-05719	Gear	2.25m28T	1
92	ZX-05718	Double Gear	2m26T/2m28T	1
93	ZX-05717	Gear	3.5m20T	1
94	ZX-05716	Double Gear	3.5m18T/3.5m19T	1
95	ZX-05715	Gear	3.25m22T	1
96	ZX-05714	Double Gear	3.25m24T/3.25m23T	1
97	BB-6205	Single Row Radial Ball Bearing	25x52x15	2
98	ZX-C40	C-Clip	25 mm	3
99	1640ZK-1199	Bearing Support		1
100	TS-1504041	Hex Socket Cap Screw	M8x18	2
101	ZX-05704	Spacer		1
102	ZX-05705	Double Gear	2m52T/2m26T	1
103	ZX-055022	Oil Bushing		3
104	ZX-05105	Sleeve		2
105	ZX-05707	Double Gear	2m39T/2m26T	1
106	ZX-Q106	Iron Wire	1x160 mm	3
107	TS-1524031	Set Screw	M8x12	3
108	1640ZK-11108	Fixed Bushing		1
109	1640ZK-11109	Shaft		1
110	ZX-05709	Double Gear	2m48T/2.25m42T	1
111	ZX-05711	Sliding Gear	3.5m24T	1
112	ZX-05712	Sliding Gear	3.25m24T	1
113	ZX-05713	Sleeve		1
114	ZX-G51-1	Spacer	32 mm	1
115	ZX-05106	Bearing Support		1
116	TS-1504051	Hex Socket Cap Screw	M8x25	3
141	ZX-05504	Gasket		1
142	ZX-05505	Gasket		1

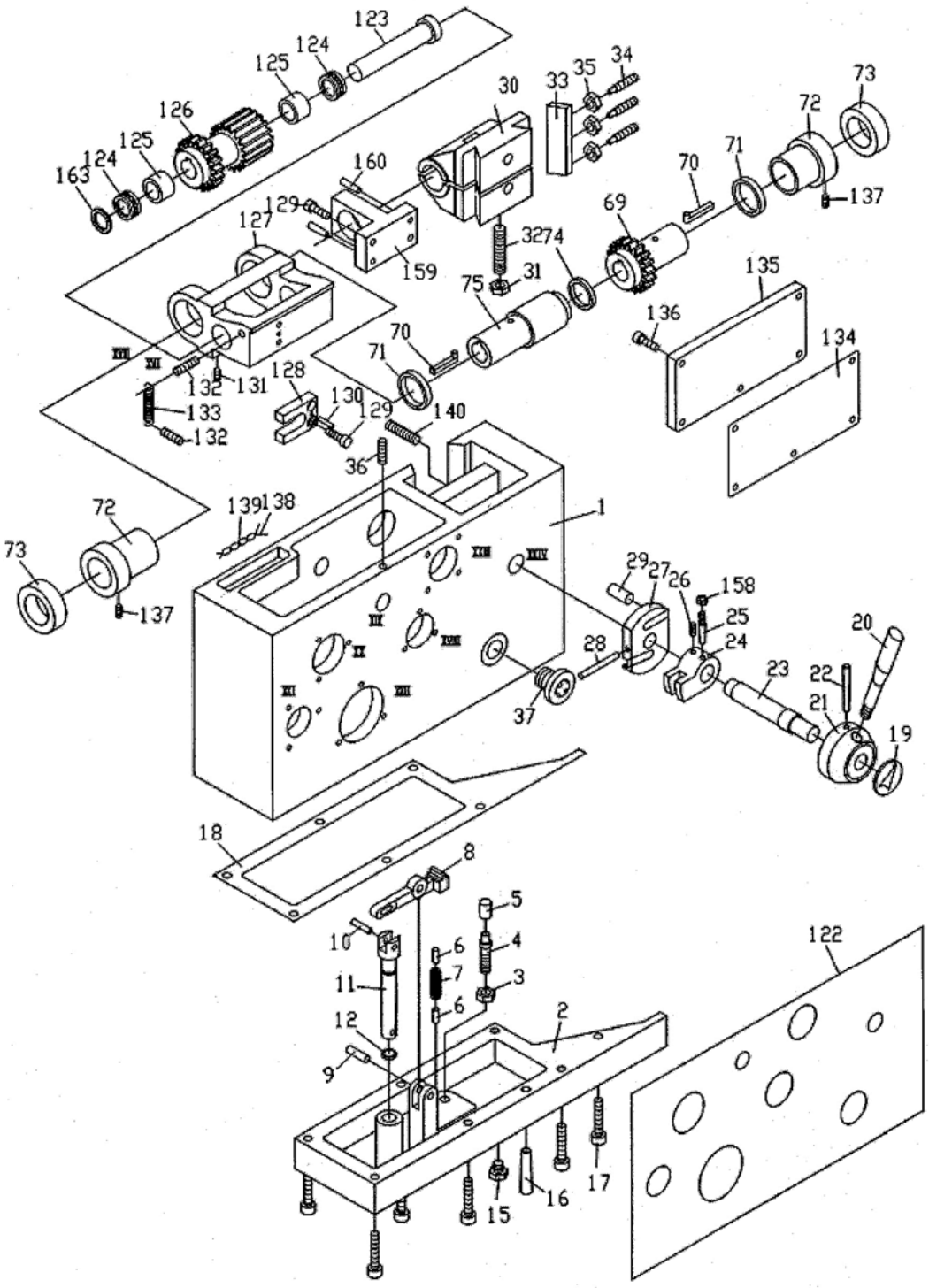
14.0 **Quick Change Gear Box III – Exploded View**



14.1 **Quick Change Gear Box III – Parts List**

Index No.	Part No.	Description	Size	Qty
66	ZX-Q66	Taper Pin	5x35 mm	6
83	ZX-Q83	C-Clip	20 mm	3
84	ZX-Q84	C-Clip	42 mm	5
85	BB104	Single Row Radial Ball Bearing	20x42x12	5
98	ZX-Q98	C-Clip	25 mm	3
106	ZX-Q106	Iron Wire	1x160 mm	3
107	TS-1524031	Set Screw	M8x12	3
117	ZX-05113C	Shaft Coupling		2
118	ZX-Q118	Round Nut	M24x1.5	2
119	TS-1503021	Hex Socket Cap Screw	M6x10	2
120	ZX-05114C	Cover		1
121	BB-51105	Thrust Bearing	25x42x11	2
122	ZX-Q122	Spacer	25 mm	2
123	BB-6305	Ball Bearing	25x62x17	1
124	ZX-05725	Shaft		1
125	ZX-Q125	Key	8x7x50 mm	1
126	ZX-05724	Double Gear	2.25m35T/2.25m36T	1
127	ZX-05723	Gear	2.5m36T	1
128	ZX-05107	Sleeve		2
129	BB-6005	Ball Bearing	25x47x12 mm	1
130	TS-1525021	Set Screw	M10x12	2
131	ZX-05103	Bearing Support		1
132	ZX-05701	Shaft		1
133	ZX-Q133	Half Circle Key	6x22 mm	1
134	ZX-05703	Gear	2.5m36T	1
135	1640ZK-12135	Bearing Support		1
136	ZX-05702	Double Gear	2.5m24T/2.25m35T	1
137	ZX-05708	Shaft		1
138	ZX-05706	Triple Gear	2m39T/2m52T/2m26T	1
139	BB-6203	Ball Bearing	17x40x12 mm	1
140	ZX-Q140	C-Clip	17 mm	1

15.0 **Apron Assembly I – Exploded View**

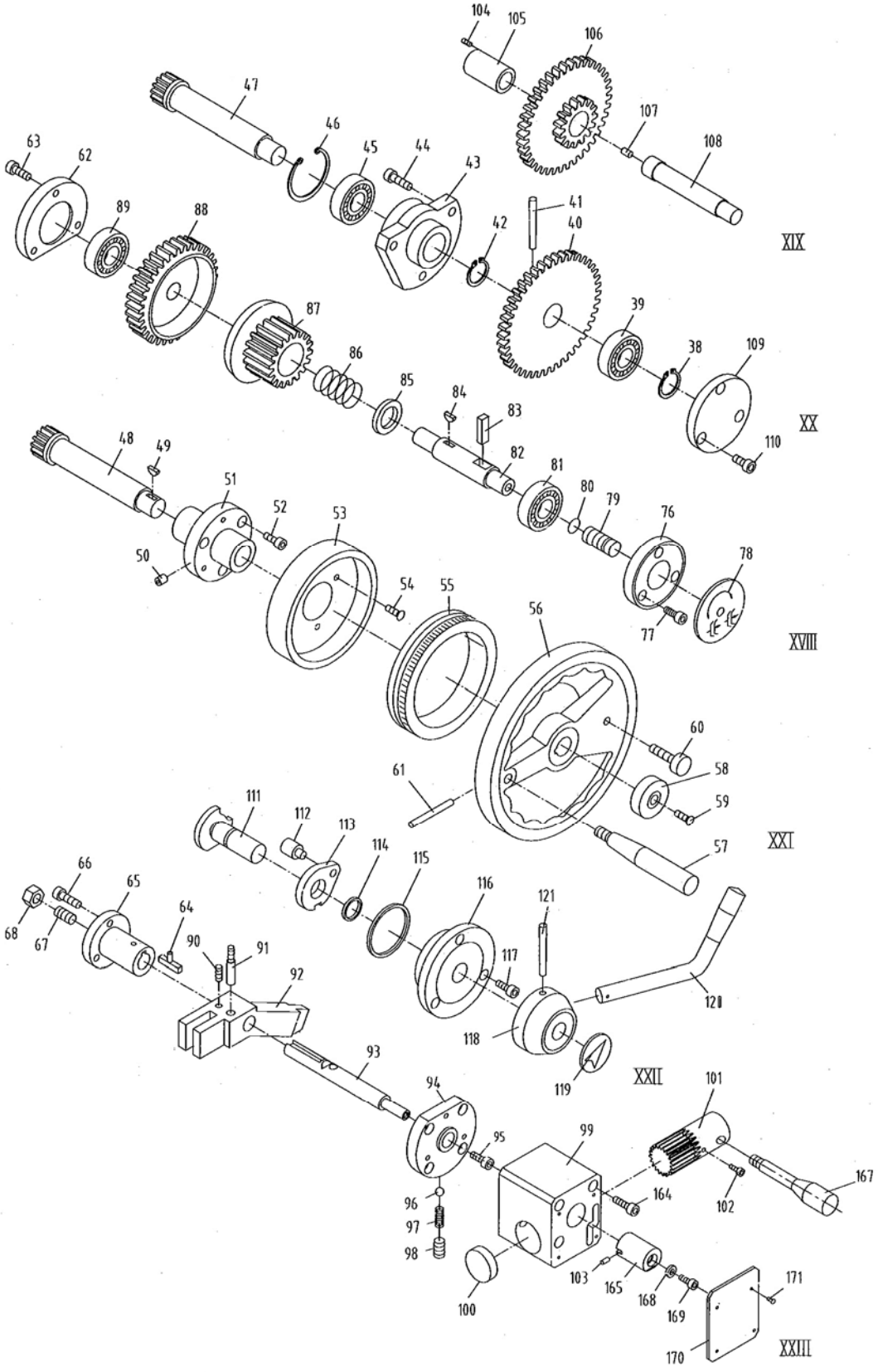


15.1 **Apron Assembly I – Parts List**

Index No.	Part No.	Description	Size	Qty
1	1640ZK-1301	Apron Casting		1
2	1640ZK-1302	Bottom Cover		1
3	TS-1540072	Hex Nut	M10	1
4	ZX-A04	Flat Head Set Screw	M10x70	1
5	1640ZK-1305	Cushion Cap		1
6	ZX-A06	Pin	6n6x16 mm	2
7	ZX-A07	Tensile Spring	YI1.2x9x50	1
8	1640ZK-1308	Lever		1
9	ZX-A9	Pin	8n6x30	1
10	ZX-A10	Pin	6x6x18	1
11	1640ZK-1311	Pushing Rod		1
12	ZX-A12	Oil Seal	15x2.4 mm	1
15	1640ZK-1315	Hex Socket Cap Screw	M8x6	1
16	ZX-B34	Taper Pin	5x30 mm	2
17	TS-1504041	Hex Socket Cap Screw	M8x20	6
18	1640ZK-1318	Gasket		1
19	1640ZK-1319	Sign Disc		1
20	1640ZK-1320	Lever		1
21	ZX-06122	Lever Support		1
22	ZX-B27	Taper Pin	6x60 mm	1
23	1640ZK-1323	Half Nut Shaft		1
24	1640ZK-1324	Positioning Block		1
25	ZX-A25	Thread Tail Taper Pin	6x25 mm	1
26	TS-1523031	Set Screw	M6x10	1
27	ZX-06733	Half Nut Control Plate		1
28	ZX-A28	Taper Pin	6x55	1
29	ZX-06732	Pin		2
30	ZX-06302N	New Half Nut		1
31	TS-1540072	Hex Nut	M10	1
32	ZX-A32	Cylindrical End Set Screw	M10x60	1
33	ZX-06121	Gib		1
34	ZX-06731	Cylindrical End Set Screw		3
35	TS-1540061	Hex Nut	M8	3
36	ZX-A36	Set Screw	M8x32	1
37	ZX-A37	Oil Sight Glass	20 mm	1
69	1640ZK-1369	Gear	2m25T	1
70	1640ZK-1370	Sliding Key		2
71	1640ZK-1371	Spacer		2
72	1640ZK-1372	Positioning Sleeve		2
73	ZX-A73	Ring Seal for Rotating	3x55 mm	2
74	ZX-A74	Oil Seal	35x3.1 mm	1
75	1640ZK-1375	Sleeve		1
122	1640ZK-13122	Sign Plate		1
123	1640ZK-13123	Shaft		1
124	BB-51104	Thrust Bearing	51104	2
125	TL06305	Sleeve		2
126	TL06726N	Worm		1
127	TL06122N	Worm Support		1
128	TL06720	Control Plate		1
129	TS-1514031	Hex Socket Cap Screw	M6x20	4
130	ZX-A130	Taper Pin	4x20 mm	1
131	TS-1524031	Set Screw	M8x12	2
132	ZX-A132	Screw	M8x25	2
133	ZX-A133	Cylindrical Tensile Spring	LI-1.6x10x58mm	1
134	TL06503	Gasket		1
135	TL06114	Back Cover		1
136	TS-1514011	Hex Socket Cap Screw	M6x12	5
137	ZX-A137	Set Screw	M8x30	2
138	ZX-A138	Iron Wire	1x50 mm	2

Index No.	Part No.	Description	Size	Qty
139	ZX-A139	Oil Conducting Cord	3x100 mm	2
140	ZX-A140	Screw	M10x40	1
158	TS-1540041	Hex Nut	M6	1
159	TL06124	Bracket		1
160	ZX-A160	Taper Pin	5x25 mm	2
163	TL06120	Sleeve		1

16.0 **Apron Assembly II – Exploded View**

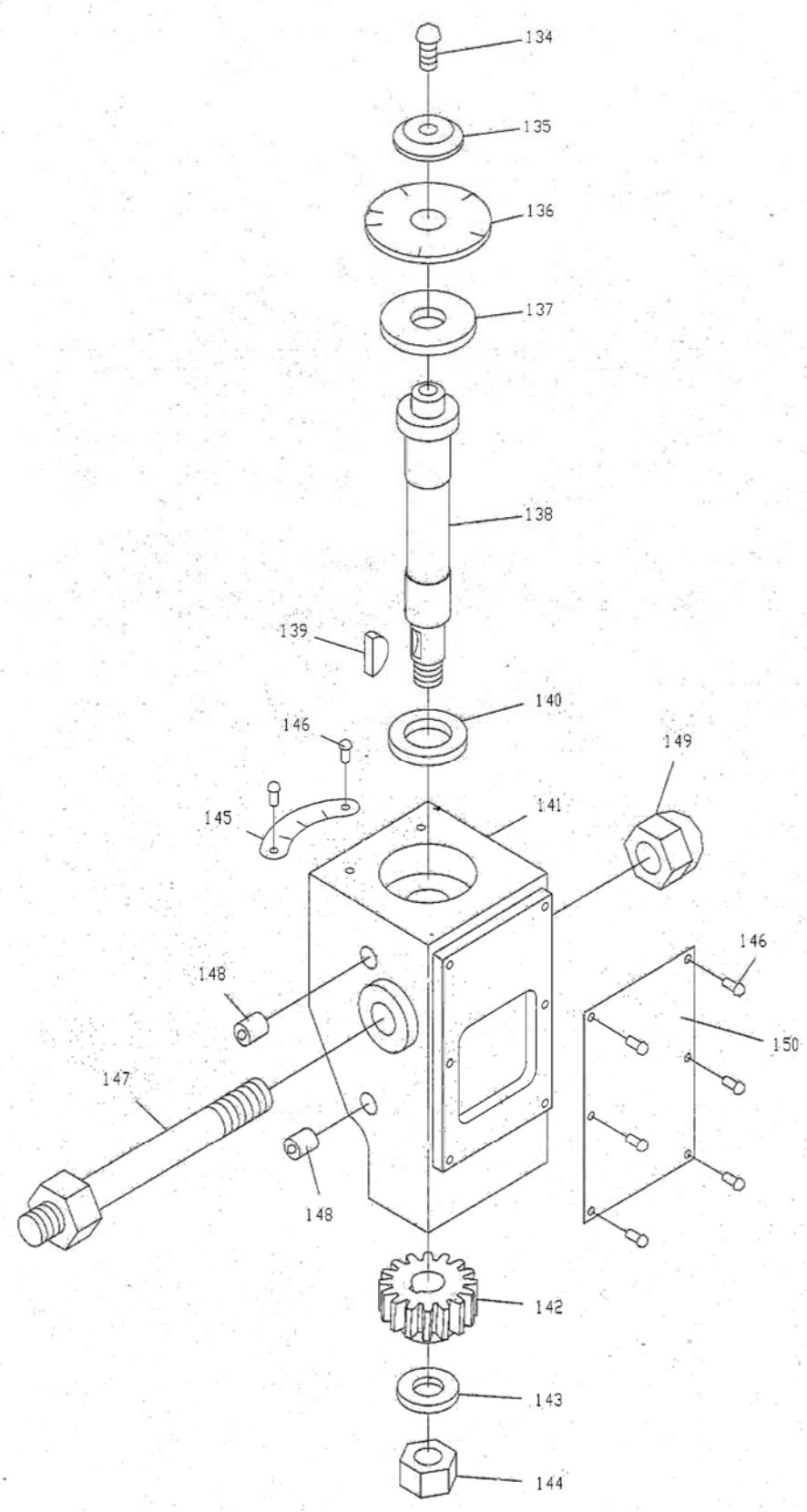


16.1 **Apron Assembly II – Parts List**

Index No.	Part No.	Description	Size	Qty
38	ZX-B23	C-Clip	20mm	1
39	BB-6204	Ball Bearing	20x47x14	1
40	TL06705	Gear	2m65T	1
41	ZX-A41	Taper Pin	6x40mm	1
42	ZX-C40	C-Clip	25mm	1
43	ZX-06127N	Bearing Support		1
44	GHB1340A-151	Hex Socket Cap Screw	M8x18	3
45	BB-6205Z	Ball Bearing	25x52x15	1
46	ZX-A46	C-Clip	52mm	1
47	TL06704N	Shaft	2m14T	1
48	TL06706	Handwheel Shaft	2mx15T	1
49	ZH-H10	Half Circle Key	4x16mm	1
50	ZX-A50	Oil Cup	8mm	1
51	TL06104	Lever Support		1
52	TS-1514031	Hex Socket Cap Screw	M6x18	3
53	TL06105	Dial Support		1
54	ZX-A54	Cross Head Screw	M5x12	3
55	TL06732	Dial		1
56	TL06107	Handwheel		1
57	ZX-06710	Shaft Drive Lever		1
58	ZX-06709	Shaft Cover		1
59	ZX-A54	Cross Head Screw	M5x12	1
60	TL-06708	Screw		1
61	TL06707	Pin		1
62	TL06112	End Cover		1
63	TS-1514011	Hex Socket Cap Screw	M6x12	3
64	TL06733	T-Shaped Flat Key		1
65	TL06115	Flange Sleeve		1
66	TS-1514011	Hex Socket Cap Screw	M6x12	3
67	ZX-A67	Flat End Set Screw	M6x30	1
68	TS-1540041	Hex Nut	M6	1
76	TL06109	Flange		1
77	TS-1514011	Hex Socket Cap Screw	M6x12	3
78	TL06303	Sign Plate		1
79	TL06714	Adjusting Screw		1
80	ZX-A80	Oil Seal	8x1.9mm	1
81	BB-7203	Ball Bearing	17x40x12	1
82	TL06713	Shaft		1
83	TL06715	Adjusting Rod		1
84	ZX-H10	Half Circle Key	4x16mm	1
85	TL06712	Spring Cover		1
86	ZX-A86	Spring	YI-4x32x40	1
87	TL06718	Gear	2m28T	1
88	TL06113	Helical Gear	2.5m40T	1
89	BB-7006/P6	Ball Bearing	30x55x13	1
90	TS-1523031	Set Screw	M6x10	1
91	ZX-A25	Threaded Tail Taper Pin	6x25mm	1
92	TL06110	Fork		1
93	ZX-06721E	Control Rod *(serial #120405ZK0007 and higher)*		1
94	ZX-06116E	Lever Support *(serial #120405ZK0007 and higher)*		1
95	ZX-A95E	Cross Head Screw *(serial #120405ZK0007 and higher)*	M6x30	1
96	ZX-H5	Steel Ball *(serial #120405ZK0007 and higher)*	8mm	1
97	ZX-A97	Spring *(serial #120405ZK0007 and higher)*	YI-1x7x25	1
98	ZX-A98	Flat Head Set Screw *(serial #120405ZK0007 and higher)*	M10x16	1
99	ZX-06737E	Bracket *(serial #120405ZK0007 and higher)*		1
100	ZX-06741E	Plug *(serial #120405ZK0007 and higher)*		1
101	ZX-06739E	Gear Shaft *(serial #120405ZK0007 and higher)*		1
102	ZX-A102E	Hex Head Screw *(serial #120405ZK0007 and higher)*	M4x8	1
103	ZX-A103E	Pin *(serial #120405ZK0007 and higher)*	4x8mm	1

Index No.	Part No.	Description	Size	Qty
104	ZX-A104	Flat Head Set Screw	M4x8	1
105	TL06301	Sleeve		1
106	TL06710	Gear	2m21T/2m57T	1
107	ZX-A107	Pin	6n6x8	1
108	TL06711	Shaft		1
109	TL06108	End Cover		1
110	TS-1503031	Hex Socket Cap Screw	M6x12	3
111	TL06723	Control Shaft		1
112	TL06725	Pin		1
113	TL06724	Control Block		1
114	ZX-A114	Oil Seal	20x2.4 mm	1
115	ZX-A115	Oil Seal	50x3.1 mm	1
116	TL06119	Lever Flange		1
117	TS-1503031	Hex Socket Cap Screw	M6x12	3
118	TL06118	Lever Support *(serial #120405ZK0007 and higher)*		1
119	TL06307	Sign Plate		1
120	ZX-K06722	Lever *(serial #120405ZK0007 and higher)*		1
121	ZX-B27	Taper Pin	6x60mm	1
164	ZX-A164E	Hex Head Screw *(serial #120405ZK0007 and higher)*	M6x35	3
165	ZX-06738E	Rack *(serial #120405ZK0007 and higher)*		1
167	ZX-06740E	Handle *(serial #120405ZK0007 and higher)*		1
168	ZX-06736E	Washer *(serial #120405ZK0007 and higher)*		1
169	ZX-A169E	Hex Head Screw *(serial #120405ZK0007 and higher)*	M5x10	1
170	ZX-06303E	Label *(serial #120405ZK0007 and higher)*		1
171	ZX-A171E	Screw *(serial #120405ZK0007 and higher)*	M3x5	4

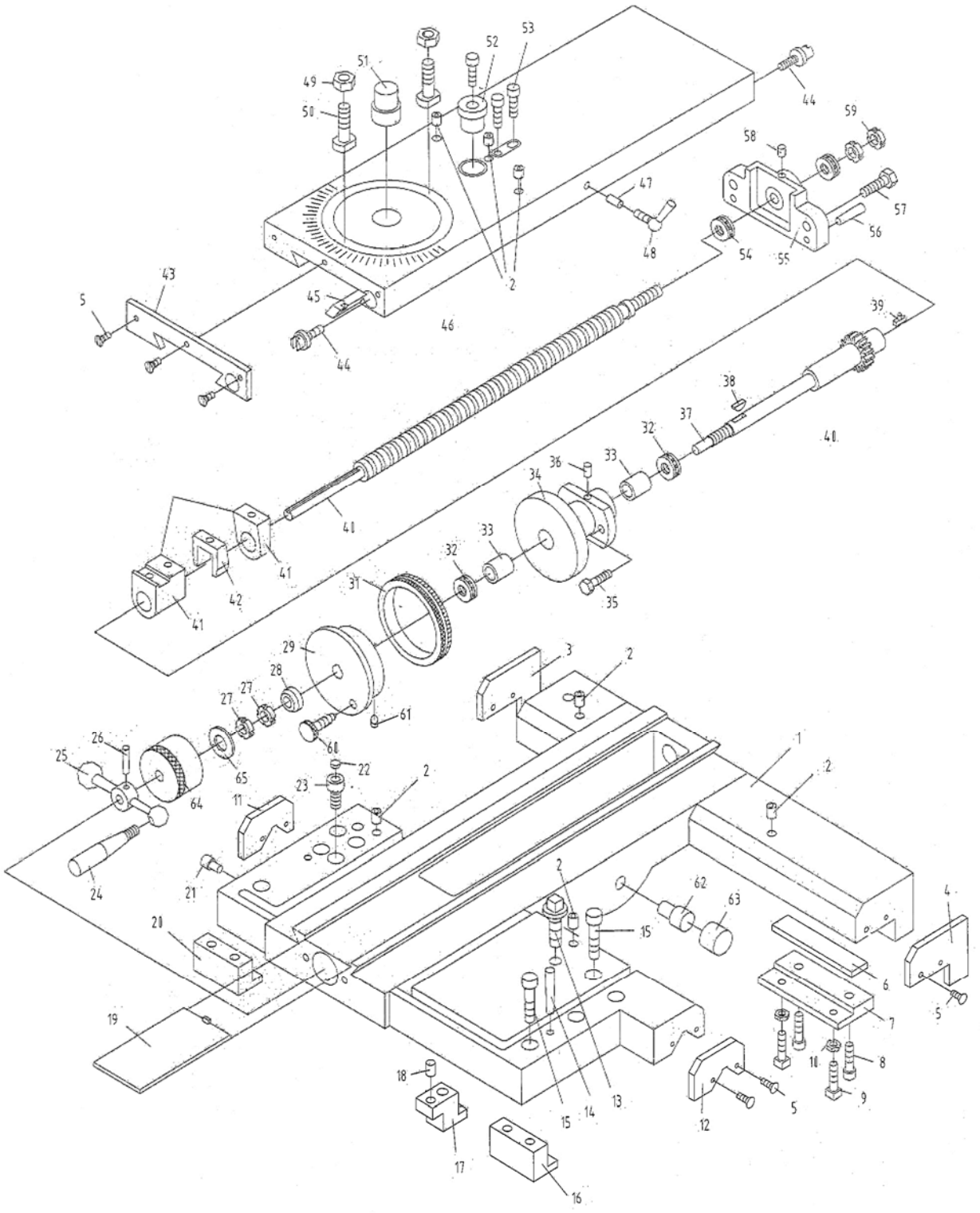
17.0 **Apron Assembly III (Threading Dial) – Exploded View**



17.1 **Apron Assembly III (Threading Dial) – Parts List**

Index No.	Part No.	Description	Size	Qty
134	ZX-A141	Half Round Head Screw	M6x18	1
135	ZX-11704	Washer		1
136	1640ZK-15136	Dial (inch)		1
137	1640ZK-15137	Adjusting Washer		1
138	1640ZK-15138	Shaft		1
139	ZX-H10	Half Circle Key	4x16 mm	1
140	1640ZK-15140	Adjusting Washer		1
141	1640ZK-15141	Casting		1
142	1640ZK-15142	Helical Gear (inch)	2m16T	1
143	TS-1550071	Flat Washer	10 mm	1
144	TS-1540072	Hex Nut	M10	1
145	1640ZK-15145	Positioning Sign Plate		1
146	ZX-A147	Half Round Head Screw	M3x6	8
147	ZX-11702	Bolt		1
148	ZX-A157	Oil Cup	8 mm	2
149	ZX-A151	Acorn Nut	M12	1
150	1640ZK-15150	Thread Chasing Label (inch)		1

18.0 **Saddle and Cross Slide Assembly – Exploded View**

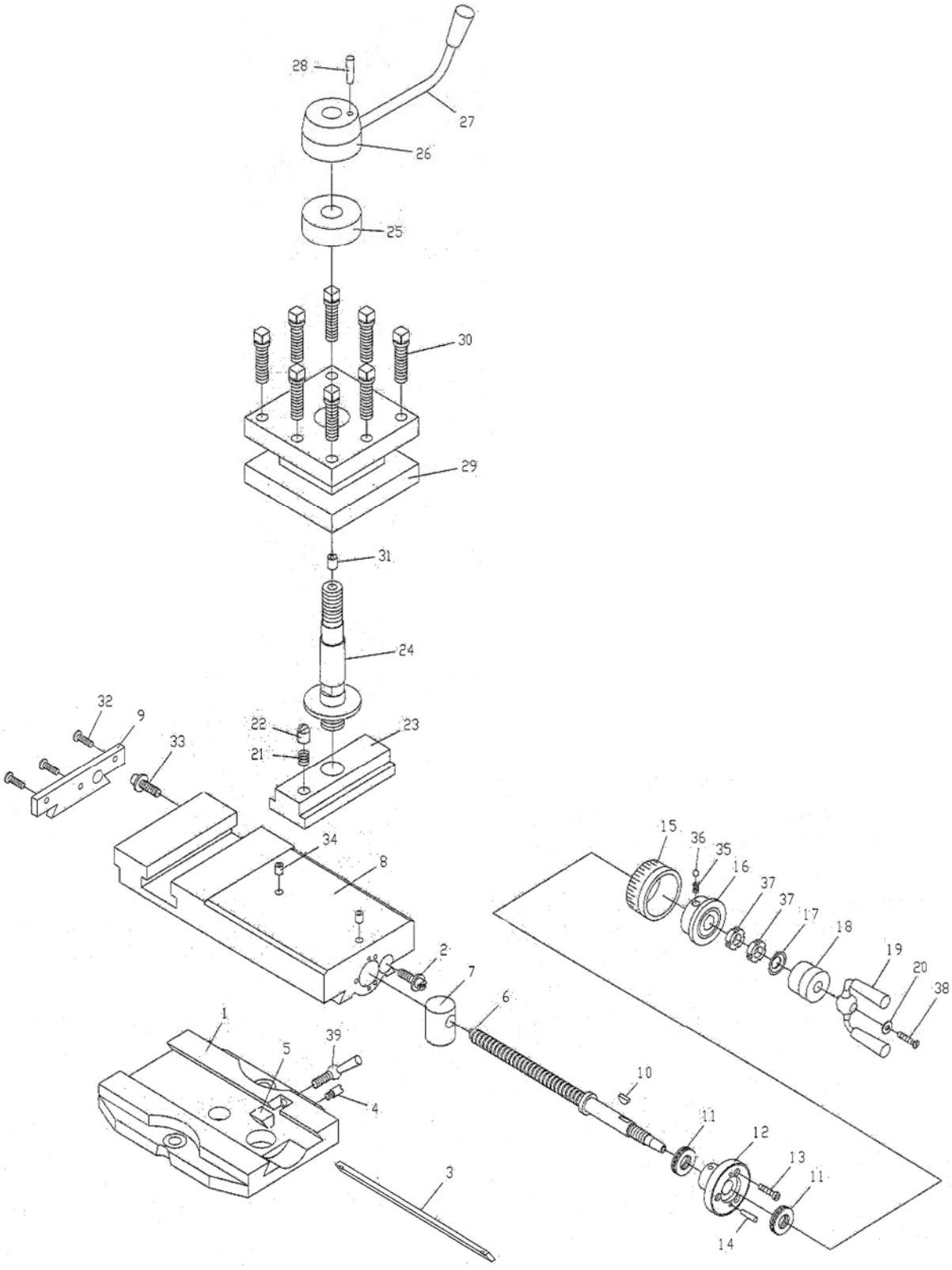


18.1 **Saddle and Cross Slide Assembly – Parts List**

Index No.	Part No.	Description	Size	Qty
1	1640ZK-1601	Saddle Casting		1
2	GB1155-10	Oil Cup	10 mm	7
3	1640ZK-1603	Wipe Plate		1
4	1640ZK-1604	Wipe Plate		1
5	ZX-H211	Countersunk Head Screw	M5x16	11
6	ZX-04113	Lining Plate		2
7	ZX-04724	Clamping Block		2
8	TS-1505031	Hex Socket Cap Screw	M10x25	4
9	ZK-1609	Square Set Screw	M8x18	4
10	TS-1540061	Hex Nut	M8	4
11	1640ZK-1611	Wipe Plate		1
12	1640ZK-1612	Wipe Plate		1
13	1640ZK-1613	Square Cap Bolt	M12x60	1
14	1640ZK-1614	Taper Pin	8x45 mm	2
15	TS-1505071	Hex Socket Cap Screw	M10x45	8
16	ZX-04729	Clamping Block		1
17	ZX-04730	Locking Plate		1
18	GB119-4n6x10	Pin	4n6x10	1
19	1640ZK-1619	Chip Guard		1
20	ZX-04740	Clamping Block		1
21	1640ZK-1621	Positioning Pin		1
22	ZX-04301	Oil Indicator Cap		1
23	ZX-04750	Oil Cap		1
24	ZX-04721	Lever		1
25	ZX-04720	Handle		1
26	GB117-4x25	Taper Pin	4x25 mm	1
27	ZX-CA42	Round Nut	M12x1.25	2
28	ZX-04719	Lining		1
29	ZX-04108	Flat Pan		1
31	ZX-04717	Dial		1
32	BB-51102	Thrust Bearing	15x28x9 mm	2
33	ZX-04111	Sleeve		1
34	1640ZK-1634	Screw Support (inch)		1
35	TS-1490041	Hex Cap Screw	M8x25	2
36	ZX-CA53	Oil Cup	8 mm	1
37	1640ZK-1637	Gear Sliding Sleeve	2m16T	1
38	ZX-H10	Half Circle Key	4x16 mm	1
39	ZX-04751	Flat Key		1
40	1640ZK-1640	Lead Screw		1
41	ZX-04302	Nut Assembly		1
42	ZX-04748	Wedge		1
43	1640ZK-1643	Wipe Plate		2
44	ZX-04725C	Screw		1
45	1640ZK-1645	Cross Slide Gib		1
46	1640ZK-1646	Cross Slide		1
47	ZX-04304	Pressing Pin		1
48	1640ZK-1648	Screw		1
49	TS-1540081	Hex Nut	M12	2
50	ZX-04714	Screw		2
51	ZX-04732	Pin		1
52	ZX-04709	Sleeve		1
53	TS-1504051	Hex Socket Cap Screw	M8x22	3
54	BB-51101	Thrust Bearing	12x26x9	2
55	ZX-04116	Bracket		1
56	ZX-CA64	Taper Pin	8x30 mm	2
57	TS-1491041	Hex Cap Screw	M10x30	2
58	ZX-CA62	Oil Cup	6 mm	1
59	ZX-CA42	Round Nut	M12x1.25	2
60	ZX-04789	Screw		1

Index No.	Part No.	Description	Size	Qty
61	ZX-04790	Pushing Rod		1
62	ZX-04788	Stop Pin		1
63	ZX-04507	Stop Pin Cap		1
64	ZX-04769	Sleeve		1
65	ZX-04770	Dish Spring		1
66	ZX-SC66	Turcite-B (not shown)	510x50x0.8	1
67	ZX-SC67	Turcite-B (not shown)	510x25x0.8	2
	ZX-CSNA	Crossfeed Screw & Nut Assy. (index #40-42)		1
	ZX-CDA	Crossfeed Dial Assembly (index # 27-40,65,65)		1

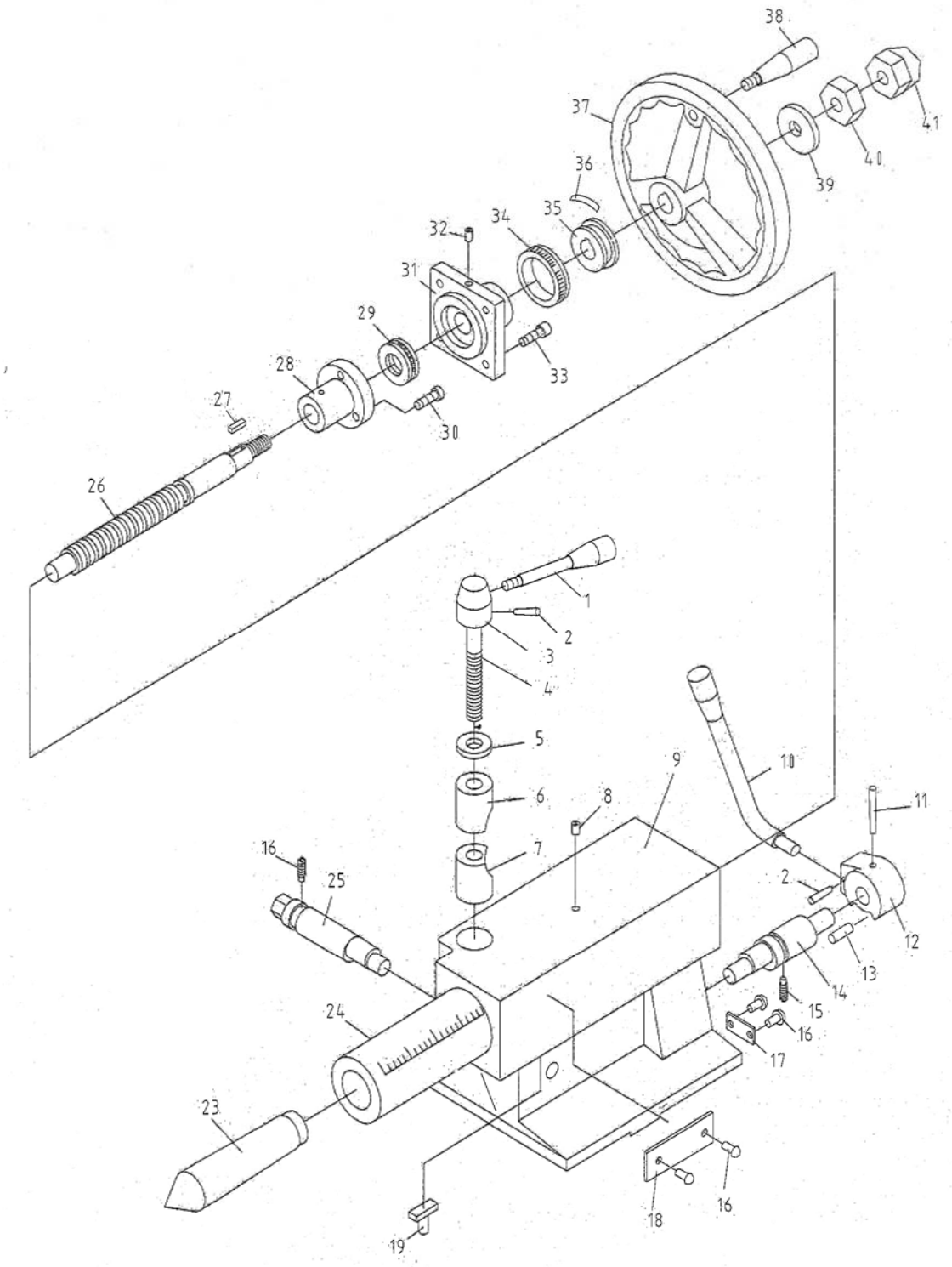
19.0 **Tool Post and Compound Rest – Exploded View**



19.1 **Tool Post and Compound Rest – Parts List**

Index No.	Part No.	Description	Size	Qty
1	ZX-04103B	Revolving Plate		1
2	ZX-04725	Screw		1
3	1640ZK-1703	Gib		1
4	ZX-04786	Screw		1
5	ZX-04303	Pressing Block		1
6	ZX-04706A	Lead Screw (inch)		1
7	ZX-04106A	Nut (inch)		1
8	ZX-04107B	Top Slide		1
9	ZX-04501	Wipe Plate		1
10	ZX-F10	Half Circle Key	3x13 mm	1
11	BB-51102	Thrust Bearing	15x28x9	2
12	ZX-04115	Sleeve		1
13	GB65-4x12	Slotted Cheese Head Screw	M4x12	3
14	ZX-F14	Taper Pin	3x18 mm	2
15	ZX-04727	Dial (inch)		1
16	ZX-04114	Sleeve		1
17	ZX-04768	Dish Spring		1
18	ZX-04767	Sleeve		1
19	ZX-04726	Handle		1
20	ZX-04771	Lining		1
21	ZX-04763	Spring	0.8x6x25	1
22	ZX-04787	Positioning Block		1
23	ZX-04752A	T-Slot Nut		1
24	ZX-04754	Shaft		1
25	ZX-04759	Adjusting Lining Sheet		1
26	ZX-04110	Lever Support		1
27	ZX-04753	Handle		1
28	ZX-Q66	Taper Pin	5x35 mm	1
29	ZX-04713B	Tool Post		1
30	ZX-F30A	Clamping Screw	M12x45	8
31	ZX-F31	Oil Cup	8 mm	1
32	ZX-H211	Countersunk Head Screw	M5x16	3
33	ZX-04725C	Screw		1
34	ZX-F34	Oil Cup	8 mm	2
35	ZX-F35	Spring	0.7x5x9	2
36	SB-6MM	Steel Ball	6 mm	2
37	ZX-F37	Round Nut	M12x1.25	2
38	ZX-CA39	Cross Head Screw	M5x16	1
39	1640ZK-1739	Lock Handle		1

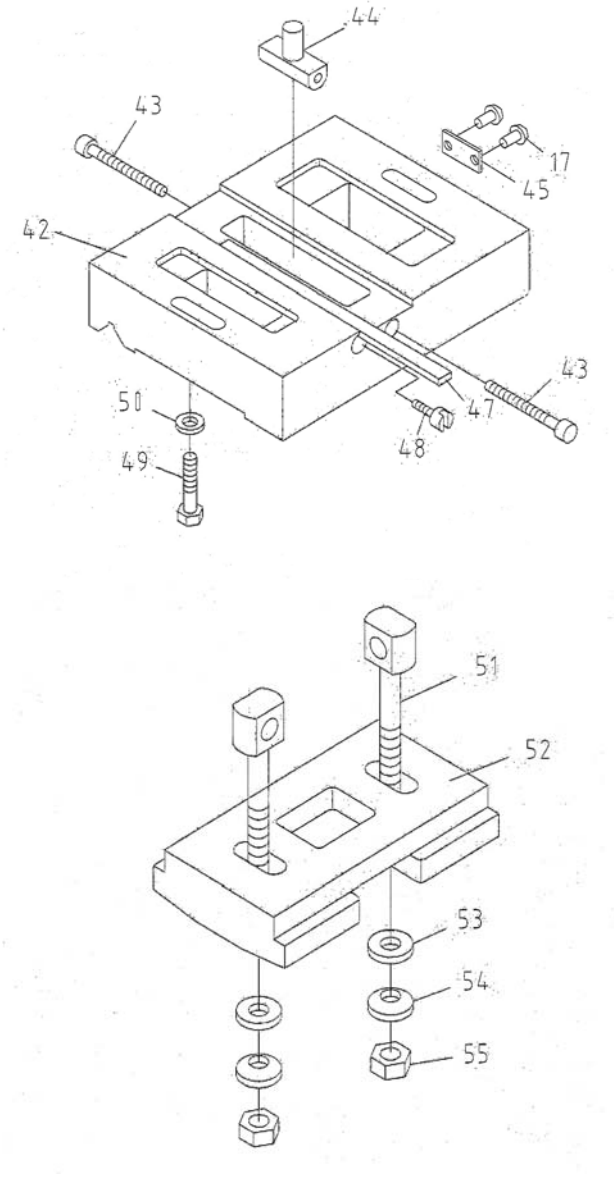
20.0 **Tailstock Assembly I – Exploded View**



20.1 **Tailstock Assembly I – Parts List**

Index No.	Part No.	Description	Size	Qty
1	1640ZK-1801	Handle		1
2	ZX-T36	Taper Pin	6x32 mm	1
3	1640ZK-1803	Lever Support		1
4	1640ZK-1804	Bolt		1
5	1640ZK-1805	Washer		1
6	1640ZK-1806	Clamping Block		2
7	1640ZK-1807	Clamping Block		1
8	ZX-CA83	Oil Cup	10 mm	1
9	1640ZK-1809	Tailstock Casting		1
10	1640ZK-1810	Lock Handle		1
11	ZX-A28	Taper Pin	6x55 mm	1
12	ZX-03014	Lever Sleeve		1
13	ZX-T42	Pin	10n6x22	1
14	1640ZK-1814	Eccentric Shaft		1
15	ZX-T06	Slotted Set Screw	M8x14	2
16	ZX-T45	Nail	3x8 mm	6
17	1640ZK-1817	Indicator Plate		1
18	1640ZK-1818	Sign Plate: Attention		1
19	1640ZK-1819	Positioning Block		1
23	JS95-1	Morse Center	No. 4	1
24	1640ZK-1824	Center Sleeve		1
25	ZX-03712	Eccentric Shaft		1
26	1640ZK-1826	Lead Screw (inch)		1
27	1640ZK-1827	Key	5x35 mm	1
28	1640ZK-1828	Nut (inch)		1
29	BB-51104	Thrust Ball Bearing	20x35x10	1
30	GB65-M8x22	Slotted Socket Cap Screw	M8x22	3
31	1640ZK-1831	Back Cover		1
32	ZX-T56	Oil Cup	8 mm	1
33	TS-1504031	Hex Socket Cap Screw	M8x18	4
34	1640ZK-1834	Dial		1
35	1640ZK-1835	Sleeve		1
36	1640ZK-1836	Leaf Spring		1
37	1640ZK-1837	Handwheel		1
38	1640ZK-1838	Lever		1
39	TS-155010	Plain Washer	B16	1
40	TS-2310162	Hex Nut	M16	1
41	ZX-T51	Acorn Nut	M16	1

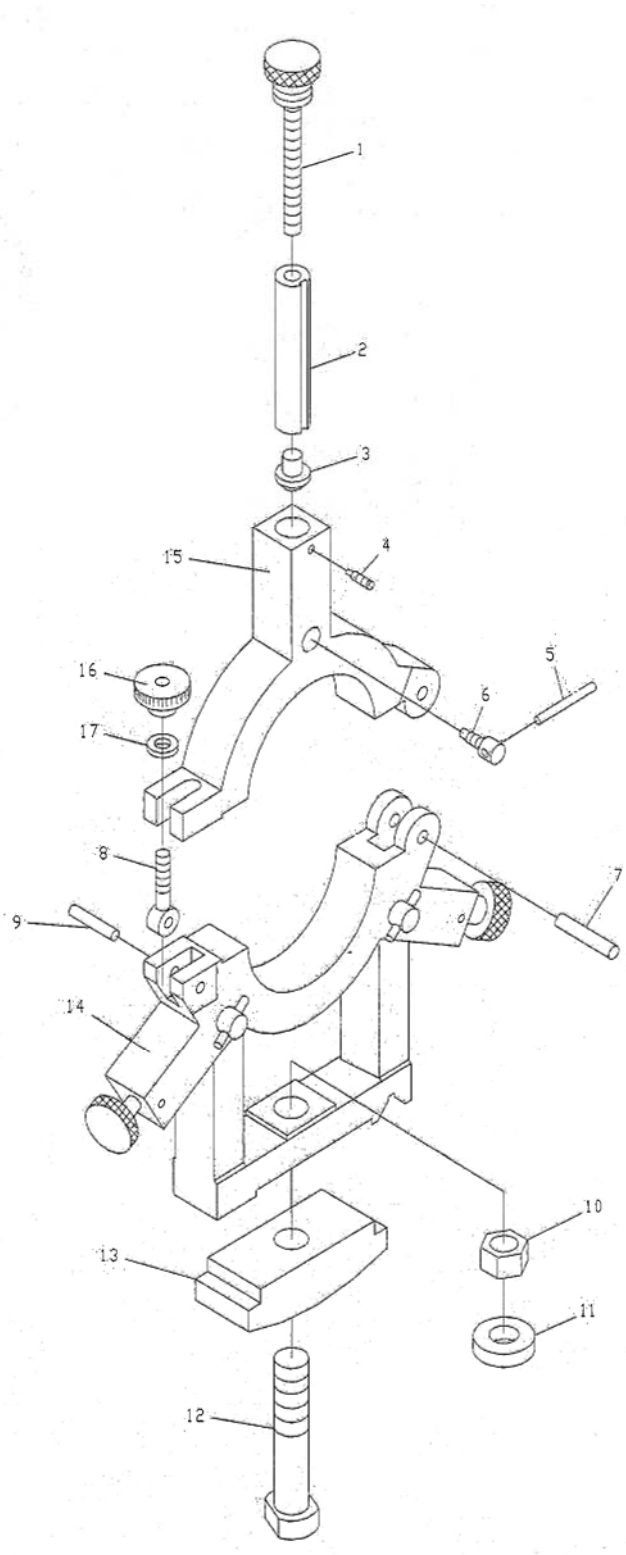
21.0 **Tailstock Assembly II – Exploded View**



21.1 **Tailstock Assembly II – Parts List**

Index No.	Part No.	Description	Size	Qty
42	1640ZK-1942	Sliding Base		1
43	GB70-8x80	Hex Socket Cap Screw	M8x80	2
44	1640ZK-1944	Nut		1
45	1640ZK-1945	Scale Plate		1
47	1640ZK-1947	Gib		1
48	ZX-03718C	Adjusting Screw		2
49	TS-1491121	Hex Cap Screw	M10x70	2
50	TS-1550071	Flat Washer	10 mm	2
51	1640ZK-1951	Pulling Rod		2
52	1640ZK-1952	Clamping Bracket		1
53	ZX-T28	Taper Washer	16 mm	2
54	ZX-T29	Spherical Washer	16 mm	2
55	TS-2310162	Hex Nut	M16	2

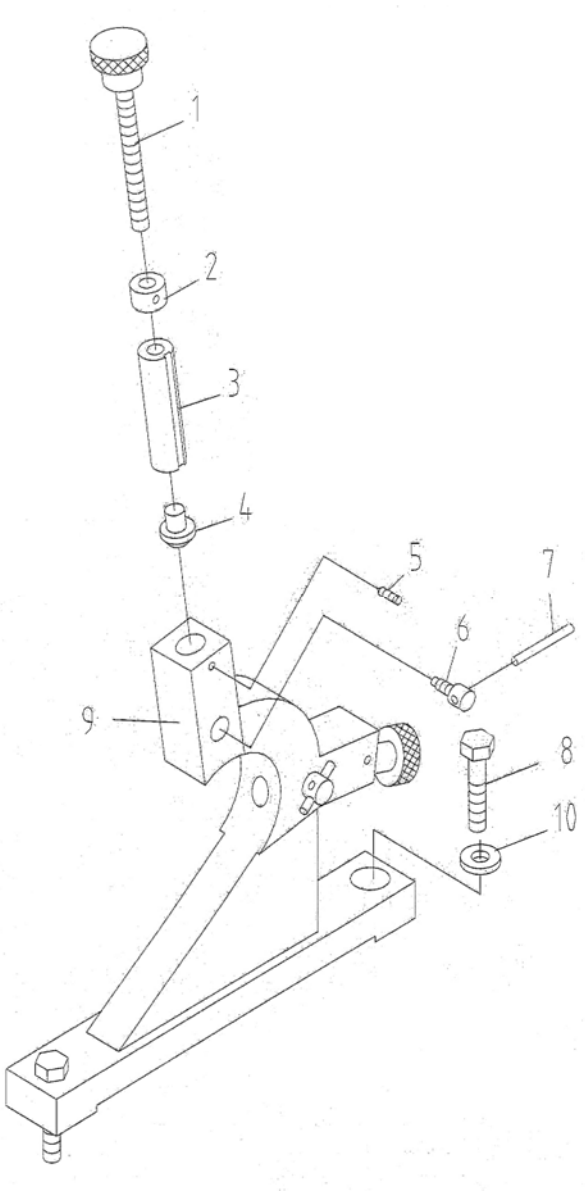
22.0 **Steady Rest Assembly – Exploded View**



22.1 **Steady Rest Assembly – Parts List**

Index No.	Part No.	Description	Size	Qty
	1640ZK-SRA	Steady Rest Assembly 16” (index #1-17)		1
1	1640ZK-2001	Screw		3
2	1640ZK-2002	Sliding Sleeve		3
3	1640ZK-2003	Pushing Block		3
4	GB75-6x10	Slotted Set Screw	M6x10	6
5	1640ZK-2005	Lever		3
6	1640ZK-2006	Locking Screw		3
7	ZX-C36	Pin	10n6x40	1
8	1640ZK-2008	Hinge Screw		1
9	ZX-SR9	Pin	8n6x40	1
10	ZX-SR10	Hex Nut	M20	1
11	ZX-SR11	Flat Washer	20 mm	1
12	1640ZK-2012	Tightening Screw		1
13	1640ZK-2013	Clamping Plate		1
14	1640ZK-2014	Lower Part of Steady Rest		1
15	1640ZK-2015	Upper Part of Steady Rest		1
16	1640ZK-2016	Round Nut	M10	1
17	TS-1550071	Flat Washer	10 mm	1

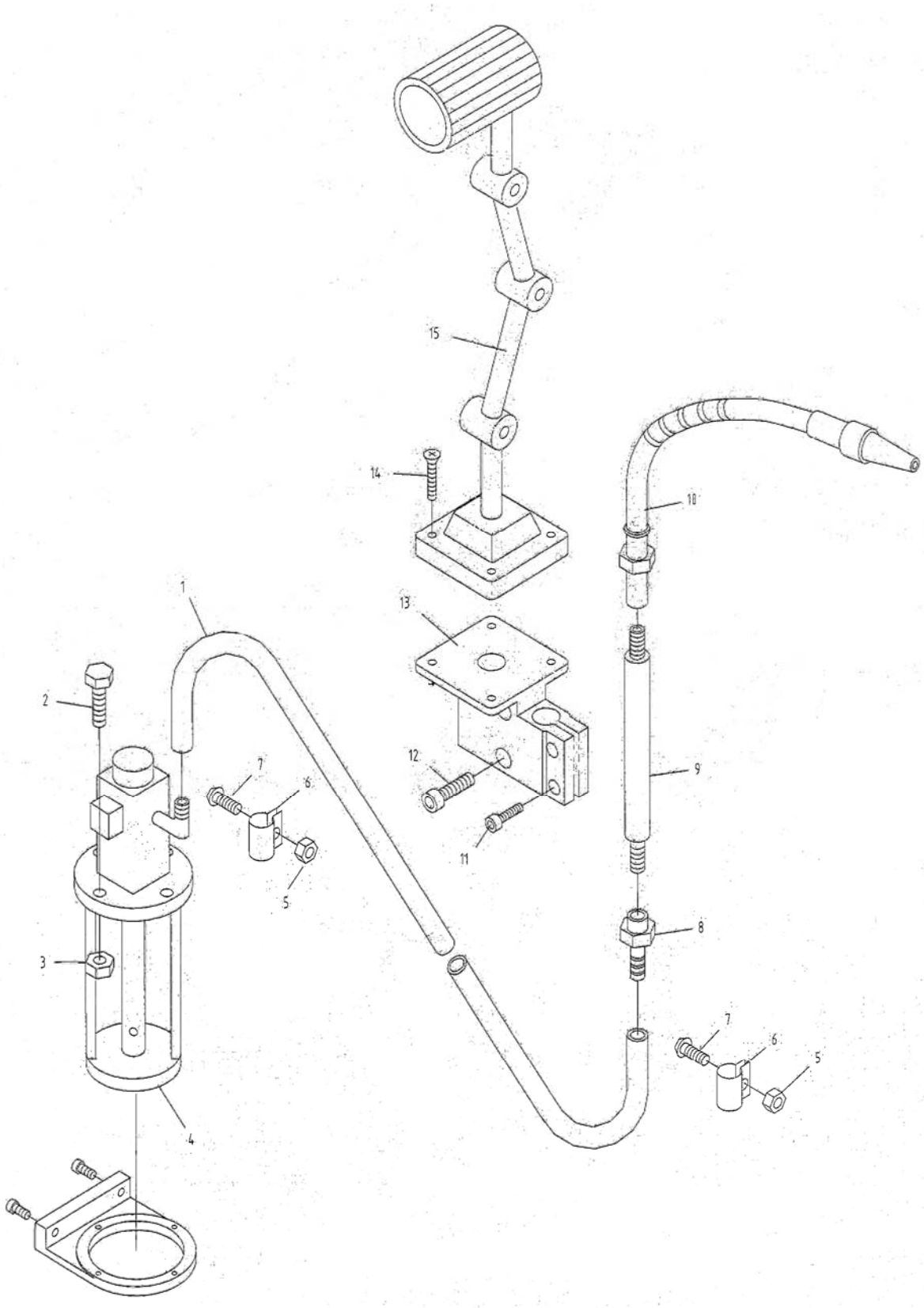
23.0 **Follow Rest Assembly – Exploded View**



23.1 **Follow Rest Assembly – Parts List**

Index No.	Part No.	Description	Size	Qty
	ZK-FRA16	Follow Rest Assembly (index #1-9)		1
1	1640ZK-2101	Screw		2
2	1640ZK-2102	Nut		2
3	1640ZK-2103	Sliding Sleeve		2
4	1640ZK-2104	Supporting Piece		2
5	ZX-SR05	Slotted Set Screw	M6x10	4
6	1640ZK-2106	Locking Screw		2
7	1640ZK-2107	Handle		2
8	ZX-FR8	Hex Cap Screw	M12x55	2
9	1640ZK-2109	Follow Rest Casting		1

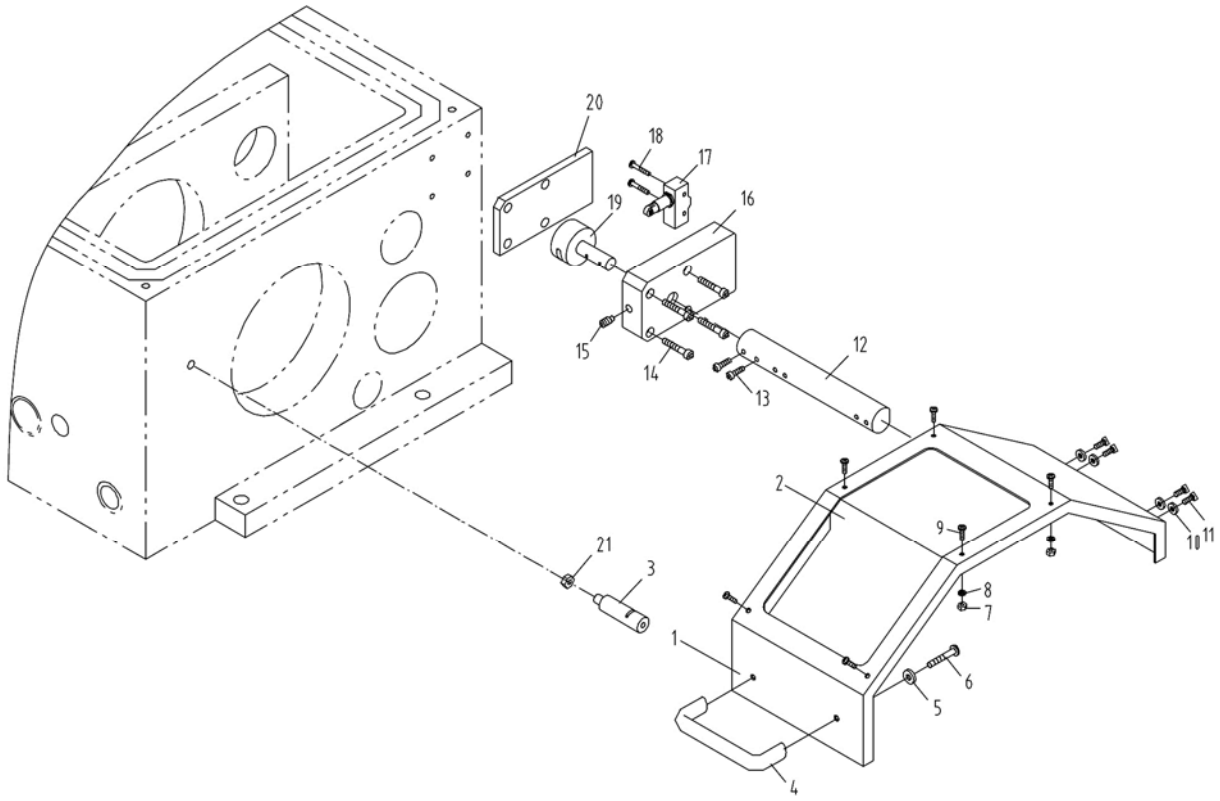
24.0 **Coolant and Work Light Assembly – Exploded View**



24.1 **Coolant and Work Light Assembly – Parts List**

Index No.	Part No.	Description	Size	Qty
1	RT-001B	Rubber Tube	ID 1/2" x 1780	1
2	TS-1481061	Hex Cap Screw	M5x25	4
3	TS1540031	Hex Nut	M5	4
4	ZK-CW04	Coolant Pump		1
5	TS-154041	Hex Nut	M6	2
6	ZX-01727	Clip for Rubber Tube		2
7	ZX-CW07	Cross Head Screw	M6x16	2
8	ZX-01728	Fitting		1
9	ZX-01729	Flow Pipe		1
10	ZK-CW10	Coolant Device		1
	ZK-CW10-1	Coolant Tap	G 3/8”	1
11	TS-1514021	Hex Socket Cap Screw	M6x16	2
12	TS-1515051	Hex Socket Cap Screw	M8x40	2
13	1640ZK-2213	Lamp Support		1
14	ZX-S04	Screw	M6x14	4
15	ZX-CW15	Lamp Frame		1
16	ZX-CW16	Bulb (not shown)	50W,AC24V	1
17	ZX-CW17	Lens (not shown)		1
	ZX-LA	Light Assembly (index # 13-17)		1

26.0 **Chuck Guard Assembly – Exploded View**



26.1 **Chuck Guard Assembly – Parts List**

Index No.	Part No.	Description	Size	Qty
	ZK-CGA	Chuck Guard Assembly (# 1 thru 21)		1
1	ZX-19701E	Protection Guard		1
2	ZX-19501E	Protection Guard Visual Glass		1
3	ZX-19704E	Fixing Rod		1
4	ZX-S04E	Handle	Z96-6	1
5	TS-1550041	Plain Washer	6 mm	2
6	TS-1534042	Cross Recessed Pan Head Screw	M6x12	2
7	ZX-S07E	Hex Thin Nut	M4	6
8	TS-1550021	Plain Washer	4 mm	6
9	TS-1532042	Cross Recessed Pan Head Screw	M4x12	6
10	TS-1550031	Plain Washer	5 mm	4
11	TS-1502041	Hex Socket Cap Screw	M5x16	4
12	ZX-19703E	Rest Bar		1
13	ZX-S13E	Slotted Set Screw	M8x10	2
14	TS-1503081	Hex Socket Cap Screw	M6x35	4
15	TS-1524041	Hex Socket Set Screw	M8x16	1
16	GH1440A-19101E	Switch Box		1
19	ZX-19702E	Shaft		1
21	ZXS21E	Nut	M8	1

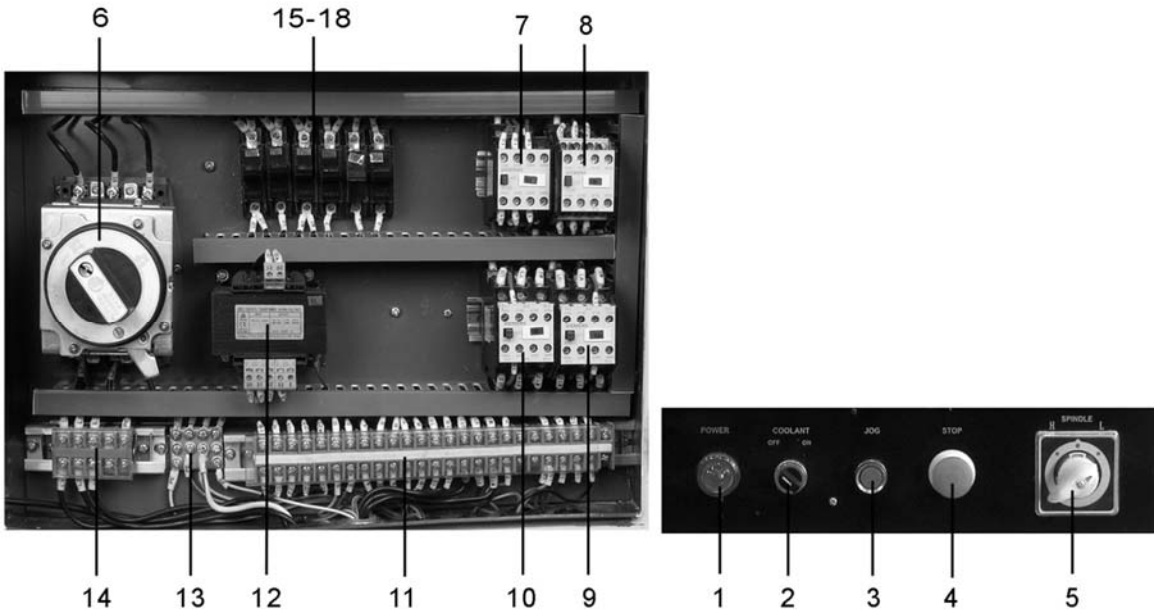
27.0 **Toolbox, Accessories, and Attachments**

Index No.	Part No.	Description	Size	Qty
A	ZK-2401	3-Jaw Scroll Chuck	8", D1-6	1
B	ZK-2402	Drive Plate	8"	1
C	ZK-2403	4-Jaw Independent Chuck	10", D1-6	1
D	ZK-2404	Face Plate	16"	1
E	ZK-2405	Morse Reduction Sleeve *	MT6/4	1
F	ZK-2406	Live Center *	MT4	1
G	ZK-2407	Dead Center *	MT4	1
H	ZX-04721	Crossfeed Handle		1
I	ZK-2409	Shear Pin		2
J	ZK-2410	Cam Wrench *		1
K	ZK-2411	Chuck Wrench *		1
L	ZK-2412	Tool Post Wrench *		1
M	ZK-2413	Gap Bridge Pin Driver *		1
N	ZK-2414	Drift Key *		1
O	RNS-100/110	Round Nut Spanner *	100-110	1
	RNS-115/130	Round Nut Spanner *	115-130	1
P		Hex Key Set *	2.5,3,4,5,6,8,10 mm	1
Q	ZK-FU1	Fuse	2A	3
	ZK-FU2	Fuse	3A	2
R	ZK-2420	Leveling Bolt *		8
	ZK-2421	Hex Nut *		8
S	ZK-2422	Leveling Pad		8
T	ZX-OP-14	Flat Blade Screw Driver *		1
U	ZX-OP-15	Cross Point Screw Driver *		1
V		Open End Wrench Set *	10-12,9-11,12-14,17-19 mm	1
W	TNMP08501A	Gear *	3.5m36T	1
X		Adjustable Wrench *		1
Y	ZX-OP-10	Touchup Paint Can (JET White) *		1
Z	ZX-OP-09	Oil Gun *		1
	ZK-TBC	Tool Box Complete, ZK Lathe *(includes items with asterisk *)*		

28.0 **Electrical Components – Parts List**

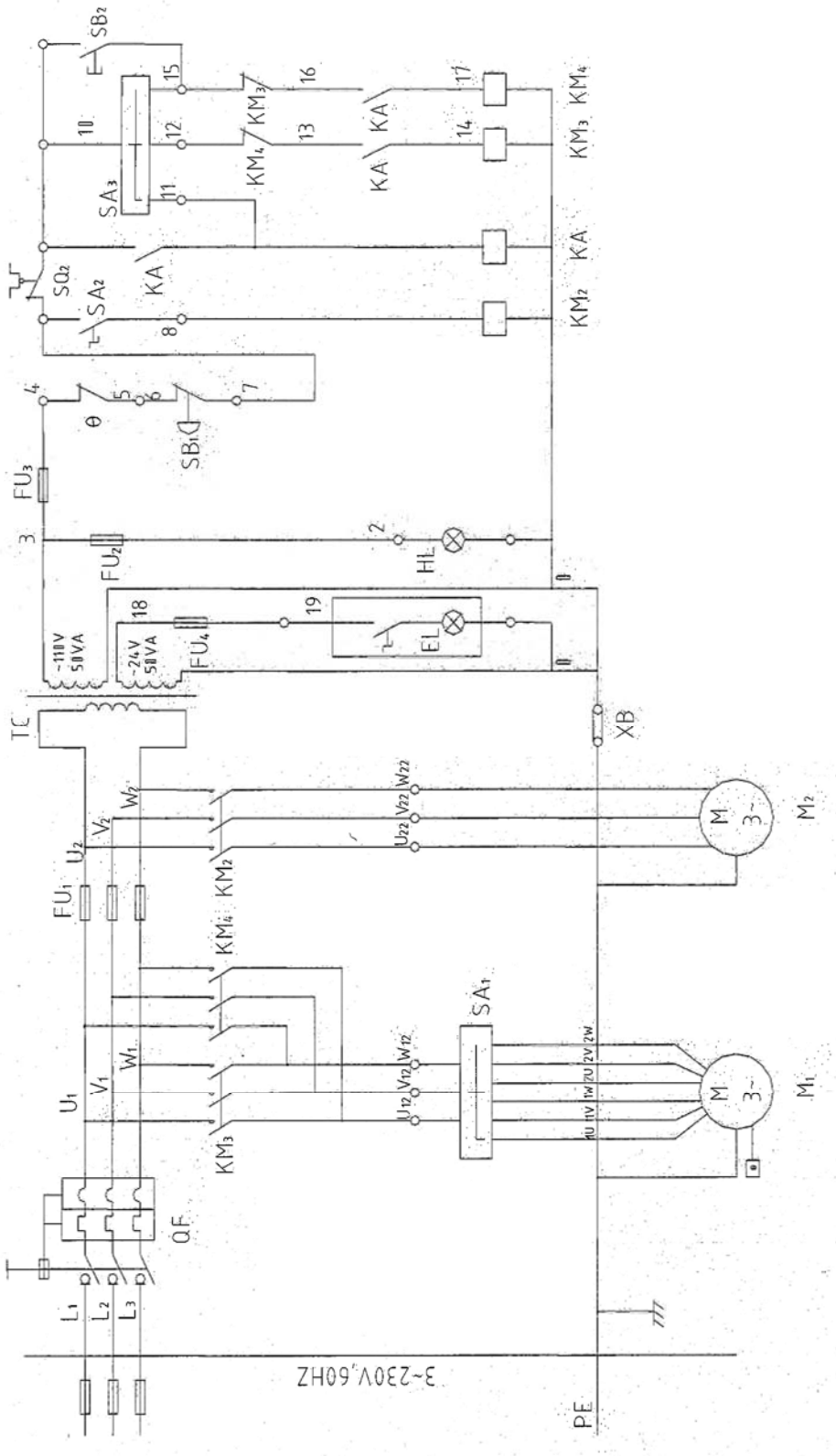
(Index numbers are shown below; diagram numbers are shown on following page.)

Index No.	Diagram No.	Part No.	Description	Size	Qty
1	HL	ZK-HL	Power Indicator Light	AD11-30/20	1
2	SA2	ZX-SA2	Coolant Pump Switch	LAY3-11X/2	1
3	SB2	ZX-SB1	Jog Button	LAY3-11	1
4	SB1	ZK-SB1	Emergency Stop Button	LAY3-01ZS/1	1
5	SA1	ZK-SA1	Commutator Switch	LW5D-16	1
6	QF	ZK-QF	Master Switch (40A)	DZ15-40	1
7	KA	ZK-KA	A.C. Contactor	3TH80	3
8	KM3	ZK-KM3	A.C. Contactor	3TB40	1
9	KM2	ZX-KM3	A.C. Contactor	3TB43	1
10	KM1	ZX-KM3	A.C. Contactor	3TB43	1
11	XT2	ZX-XT2	Wiring Board	JX0	1
12	TC	ZK-TC	Control Transformer	JBK5-100-TH	1
13	XB	ZK-XB	Copper Plate (for grounding)		1
14	XT1	ZX-XT1	Wiring Board	JT1	1
15	FU1	ZK-FU1	Fuse (2A)	am1-16	1
16	FU2	ZK-FU2	Fuse (3A)	am1-16	1
17	FU3	ZK-FU1	Fuse (2A)	am1-16	1
18	FU4	ZK-FU2	Fuse (3A)	am1-16	1
19	SQ2	ZK-SQ2	Limit Switch	JW2-11H/W1	1
20	SA3	ZX-SA3	Rotary Switch	HZ3-452	1
21	EL	ZK-EL	Machine Lamp	JC11-1	1

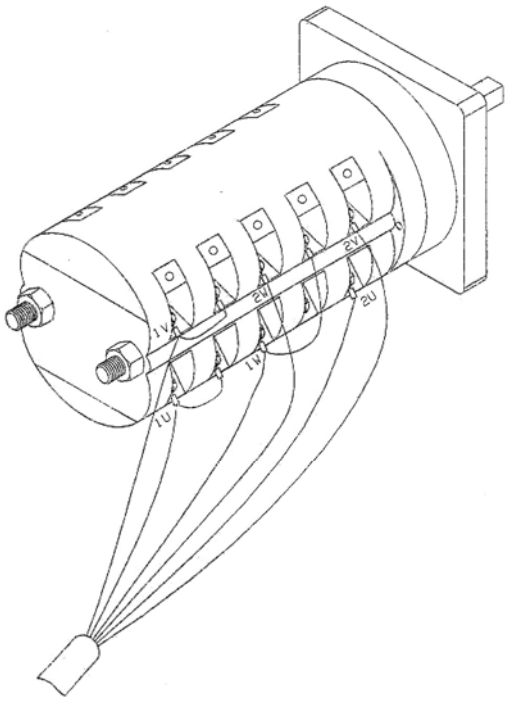


28.1 **Electrical Diagram**

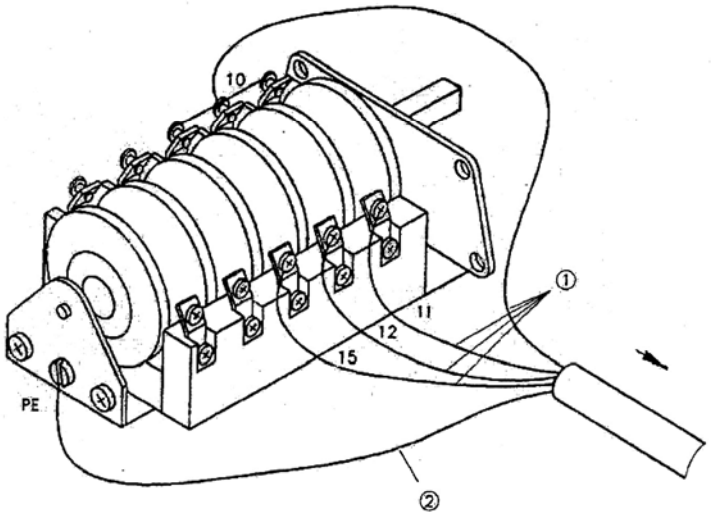
GH-1640ZK Lathe, 3PH/230V



28.2 **Rotary Switch Diagram**



SA1



SA3

29.0 Ordering Replacement Parts

To order parts or reach our service department, call 1-800-274-6848, Monday through Friday (see our website for business hours, www.jettools.com). Having the Model Number and Serial Number of your machine available when you call will allow us to serve you quickly and accurately.