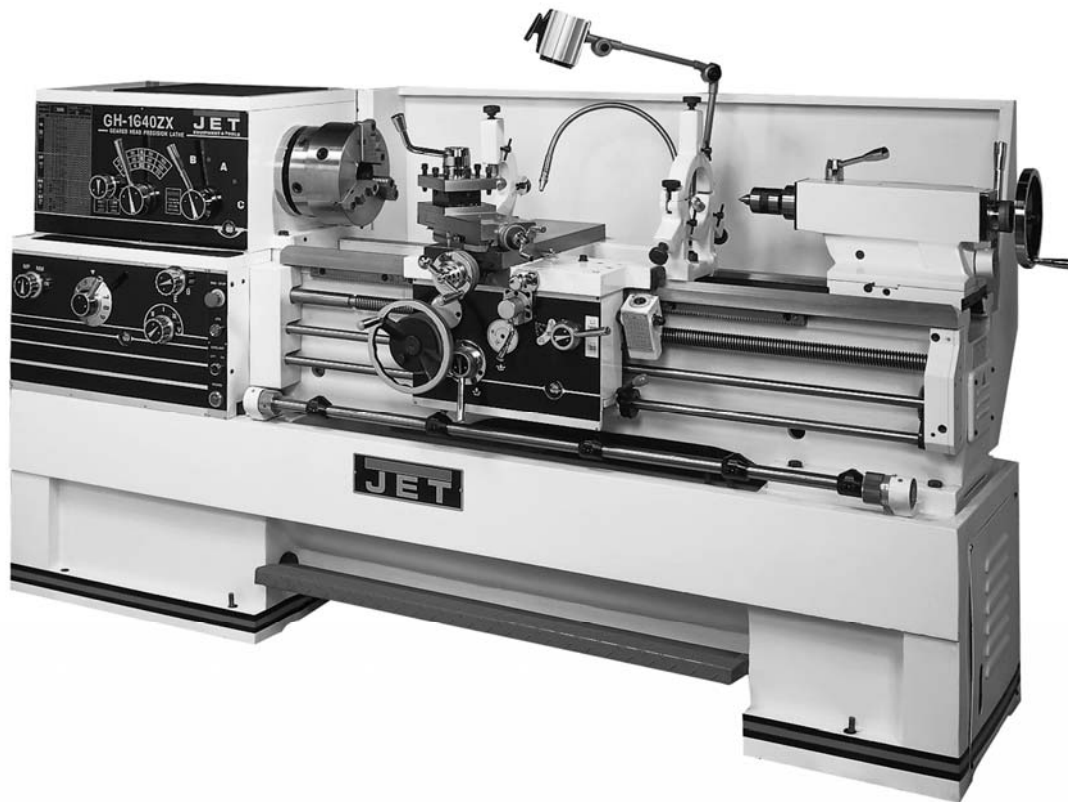




Operating Instructions ZX Series Lathes

Models GH-1440ZX/1440ZX-EVS/1460ZX
GH-1640ZX/1660ZX
GH-1840ZX/1860ZX/1880ZX
GH-2280ZX



WMH TOOL GROUP, Inc.

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Part No. M-321910

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Warranty and Service

WMH Tool Group, 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 WMH Tool Group 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

WMH Tool Group is consistently adding new products to the line. For complete, up-to-date product information, check with your local WMH Tool Group 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 Metalforming Mill/Drills Milling Machines	2 YEAR WARRANTY MW Bandsaws MW Drill Presses MW Finishing Equipment MW Lathes MW Precision Vises Pallet Trucks Rigging Equip. Service Jacks	2 YEAR WARRANTY Stackers Surface Grinders Tapping Trolleys-Air Trolleys-Electric Web Slings Winches-Electric	5 YEAR WARRANTY Beam Clamps Chain Hoist- Manual Lever Hoists Pullers-JCH Models Scissor Lift Tables Screw Jacks Trolleys-Geared	5 YEAR WARRANTY <i>Warranty reverts to 1 Year Warranty if woodworking (WW) products listed below are used for commercial, industrial or educational purposes</i> Trolleys-Plain Winches-Manual WW Air Filtration WW Bandsaws WW Buffers WW Drill Presses WW Dust Collectors WW Dust Filters	5 YEAR WARRANTY 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 (non-precision) Clamps
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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

WMH TOOL GROUP 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.

WMH TOOL GROUP, INC., 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.

WMH Tool Group sells through distributors only. The specifications in WMH catalogs are given as general information and are not binding. Members of WMH Tool Group 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 WMH Tool Group.

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Warnings

1. Read and understand the entire owners 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, WMH Tool Group 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 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.
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.



Warnings

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. 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 safer.
24. Use recommended accessories; improper accessories may be hazardous.
25. Maintain tools with care. Keep cutting tools sharp and clean for the best and safest performance. Follow instructions for lubricating and changing accessories.
26. Do not attempt to adjust or remove tools during operation.
27. Turn off the machine and disconnect from power before cleaning. Use a brush to remove shavings or debris — do not use your hands.
28. Do not stand on the machine. Serious injury could occur if the machine tips over.
29. Never leave the machine running unattended. Turn the power off and do not leave the machine until it comes to a complete stop.
30. Remove loose items and unnecessary work pieces from the area before starting the machine.

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



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



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

- - SAVE THESE INSTRUCTIONS - -

The following specifications were current at the time this manual was published, but because of our policy of continuous improvement, WMH Tool Group, Inc. reserves the right to change specifications at any time and without prior notice, without incurring obligations.

Specifications – 14” Lathes

Model Number.....	GH-1440ZX	GH-1440ZX-EVS	GH-1460ZX
Stock Number.....	321910	321900	321920

Capacities:

Swing over Bed (in.)	14	14	14
Swing over Cross Slide (in.).....	7-5/8	7-5/8	7-5/8
Swing Through Gap (in.).....	23-5/8	23-5/8	23-5/8
Length of Gap (in.).....	12-1/4	12-1/4	12-1/4
Distance between Centers (in.).....	40	40	60

Headstock:

Spindle Bore (in.).....	3-1/8	3-1/8	3-1/8
Spindle Mount	D1-8	D1-8	D1-8
Spindle Taper with Sleeve	MT-7(MT-5)	MT-7(MT-5)	MT-7(MT-5)
Number of Spindle Speeds	12	12	12
Range of Spindle Speeds (RPM)	42 to 1800	40 to 2000	42 to 1800

Gearbox:

Number of Longitudinal and Cross Feeds	122	122	122
Range of Longitudinal Feeds (in./rev.)	0.0015 to 0.0913	0.0015 to 0.0913	0.0015 to 0.0913
Range of Cross Feeds (in./rev.)	0.0006 to 0.0365	0.0006 to 0.0365	0.0006 to 0.0365
Number of Inch Threads	61	61	61
Range of Inch Threads (in.)	1-5/8 to 72	1-5/8 to 72	1-5/8 to 72
Number of Metric Threads	24	24	24
Range of Metric Threads (mm)	0.05 to 20	0.05 to 20	0.05 to 20

Compound and Carriage:

Maximum Tool Size (in.)	1 x 1	1 x 1	1 x 1
Maximum Compound Slide Travel (in.)	5-1/8	5-1/8	5-1/8
Maximum Cross Slide Travel (in.)	9	9	9
Carriage Travel (in.).....	35	35	55

Tailstock:

Tailstock Spindle Travel (in.).....	5	5	5
Tailstock Taper.....	MT-4	MT-4	MT-4

Steady Rest Capacity (in.)	1/2 to 3-1/2	1/2 to 3-1/2	1/2 to 3-1/2
Follow Rest Capacity (in.).....	3/8 to 7	3/8 to 7	3/8 to 7
Width of Bed (in.).....	13-3/8	13-3/8	13-3/8
Overall Dimensions(in.)(LxWxH). 97-1/2 x 40 x 46-7/8.....	97-1/2 x 40 x 46-7/8	116-1/2 x 40 x 46-7/8	97-1/2 x 40 x 46-7/8
Motor.....	7-1/2HP,3Ph,230/460V*	7-1/2HP,3Ph,230/460V*	7-1/2HP,3Ph,230/460V*
Approximate Net Weight (lbs.)	5187	5187	5380

*pre-wired 230V

Specifications – 16” Lathes

Model Number.....	GH-1640ZX	GH-1660ZX
Stock Number.....	321930	321940

Capacities:

Swing over Bed (in.)	16	16
Swing over Cross Slide (in.).....	10	10
Swing Through Gap (in.).....	25-7/8	25-7/8
Length of Gap (in.).....	12-1/4	12-1/4
Distance between Centers (in.).....	40	60

Headstock:

Spindle Bore (in.).....	3-1/8	3-1/8
Spindle Mount	D1-8	D1-8
Spindle Taper with Sleeve	MT-7(MT-5)	MT-7(MT-5)
Number of Spindle Speeds	12	12
Range of Spindle Speeds (RPM)	25 to 1800	25 to 1800

Gearbox:

Number of Longitudinal and Cross Feeds	122	122
Range of Longitudinal Feeds (in./rev.)	0.0015 to 0.0913	0.0015 to 0.0913
Range of Cross Feeds (in./rev.)	0.0006 to 0.0365	0.0006 to 0.0365
Number of Inch Threads	61	61
Range of Inch Threads (in.)	1-5/8 to 72	1-5/8 to 72
Number of Metric Threads	24	24
Range of Metric Threads (mm)	0.05 to 20	0.05 to 20

Compound and Carriage:

Maximum Tool Size (in.)	1 x 1	1 x 1
Maximum Compound Slide Travel (in.)	5-1/8	5-1/8
Maximum Cross Slide Travel (in.)	9	9
Carriage Travel (in.).....	35	55

Tailstock:

Tailstock Spindle Travel (in.).....	5	5
Tailstock Taper.....	MT-4	MT-4

Steady Rest Capacity (in.)	1/2 to 3-1/2	1/2 to 3-1/2
Follow Rest Capacity (in.).....	3/8 to 7	3/8 to 7
Width of Bed (in.).....	13-3/8	13-3/8
Overall Dimensions (in.)(LxWxH)	97-1/2 x 40 x 48	116-1/2 x 40 x 48
Motor.....	7-1/2HP, 3Ph, 230/460V*	7-1/2HP, 3Ph, 230/460V*
Approximate Net Weight (lbs.)	5475	5795

*pre-wired 230V

Specifications – 18” Lathes

Model Number.....	GH-1840ZX	GH-1860ZX	GH-1880ZX
Stock Number.....	321950.....	321960.....	321970.....

Capacities:

Swing over Bed (in.)	18.....	18.....	18.....
Swing over Cross Slide (in.).....	11.....	11.....	11.....
Swing Through Gap (in.).....	27-1/2.....	27-1/2.....	27-1/2.....
Length of Gap (in.).....	12-1/4.....	12-1/4.....	12-1/4.....
Distance between Centers (in.).....	40.....	60.....	80.....

Headstock:

Spindle Bore (in.).....	3-1/8.....	3-1/8.....	3-1/8.....
Spindle Mount	D1-8.....	D1-8.....	D1-8.....
Spindle Taper with Sleeve	MT-7(MT-5).....	MT-7(MT-5).....	MT-7(MT-5).....
Number of Spindle Speeds	12.....	12.....	12.....
Range of Spindle Speeds (RPM)	25 to 1800.....	25 to 1800.....	25 to 1800.....

Gearbox:

Number of Longitudinal and Cross Feeds	122.....	122.....	122.....
Range of Longitudinal Feeds (in./rev.)	0.0015 to 0.0913.....	0.0015 to 0.0913.....	0.0015 to 0.0913.....
Range of Cross Feeds (in./rev.)	0.0006 to 0.0365.....	0.0006 to 0.0365.....	0.0006 to 0.0365.....
Number of Inch Threads	61.....	61.....	61.....
Range of Inch Threads (in.)	1-5/8 to 72.....	1-5/8 to 72.....	1-5/8 to 72.....
Number of Metric Threads	24.....	24.....	24.....
Range of Metric Threads (mm)	0.05 to 20.....	0.05 to 20.....	0.05 to 20.....

Compound and Carriage:

Maximum Tool Size (in.)	1 x 1.....	1 x 1.....	1 x 1.....
Maximum Compound Slide Travel (in.)	5-1/8.....	5-1/8.....	5-1/8.....
Maximum Cross Slide Travel (in.)	9.....	9.....	9.....
Carriage Travel (in.).....	35.....	55.....	75.....

Tailstock:

Tailstock Spindle Travel (in.).....	5.....	5.....	5.....
Tailstock Taper.....	MT-5.....	MT-5.....	MT-5.....

Steady Rest Capacity (in.)	1/2 to 3-1/2.....	1/2 to 3-1/2.....	1/2 to 3-1/2.....
Follow Rest Capacity (in.).....	3/8 to 7.....	3/8 to 7.....	3/8 to 7.....
Width of Bed (in.).....	13-3/8.....	13-3/8.....	13-3/8.....
Overall Dimensions (in.)(LxWxH)	97-1/2x40x48-7/8.....	116-1/2x40x48-7/8.....	136-1/8x40x48-7/8.....
Motor.....	7-1/2HP, 3Ph.....	7-1/2HP, 3Ph.....	7-1/2HP, 3Ph.....
.....	230/460V*.....	230/460V*.....	230/460V*.....
Approximate Net Weight (lbs.)	5980.....	6245.....	6590.....

*pre-wired 230V

Specifications – 22” Lathes

Model Number.....**GH-2280ZX**
Stock Number..... 321980

Capacities:

Swing over Bed (in.) 22
Swing over Cross Slide (in.)..... 11
Swing Through Gap (in.)..... 27-1/2
Length of Gap (in.)..... 12-1/4
Distance between Centers (in.)..... 80

Headstock:

Spindle Bore (in.)..... 3-1/8
Spindle MountD1-8
Spindle Taper with SleeveMT-7(MT-5)
Number of Spindle Speeds 12
Range of Spindle Speeds (RPM)25 to 1800

Gearbox:

Number of Longitudinal and Cross Feeds 122
Range of Longitudinal Feeds (in./rev.) 0.0015 to 0.0913
Range of Cross Feeds (in./rev.) 0.0006 to 0.0365
Number of Inch Threads 61
Range of Inch Threads (in.) 1-5/8 to 72
Number of Metric Threads 24
Range of Metric Threads (mm)0.05 to 20

Compound and Carriage:

Maximum Tool Size (in.)1 x 1
Maximum Compound Slide Travel (in.) 5-1/8
Maximum Cross Slide Travel (in.) 9
Carriage Travel (in.)..... 75

Tailstock:

Tailstock Spindle Travel (in.)..... 5
Tailstock Taper..... MT-5

Steady Rest Capacity (in.) 1/2 to 3-1/2
Follow Rest Capacity (in.)..... 3/8 to 7
Width of Bed (in.)..... 13-3/8
Overall Dimensions (in.)(LxWxH) 136-1/8 x 40 x 48-7/8
Motor.....10HP, 3PH, 230V/460V (pre-wired 230V)
Approximate Net Weight (lbs.) 7400

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 assembled 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 assembly, maintenance and safety instructions.

Contents of the Shipping Container

- 1 Lathe
- 1 Steady Rest (mounted on Lathe)
- 1 Follow Rest (mounted on Lathe)
- 1 10" Three Jaw Chuck (mounted on Lathe)
- 1 12" Four Jaw Chuck
- 1 Face Plate (12" Face Plate for 14" & 16" lathes; 16" Face Plate for 18" & 22" lathes)

- 1 Tool Box containing:
 - 1 Open End Wrench Set
 - 1 Hex Wrench Set
 - 1 Morse Reduction Sleeve
 - 1 Center
 - 6 Leveling Bolts with Hex Nuts
 - 6 Leveling Pads
 - 1 Flat Blade Screwdriver
 - 1 Cross Point Screwdriver
 - 1 Chuck Wrench
 - 1 Tool Post Wrench
 - 1 Cam Wrench
 - 1 Adjustable Wrench
 - 1 Round Nut Wrench
 - 1 Oil Gun
 - 1 Cross Feed Handle (not shown)
 - 2 Shear Pins (not shown)
 - 1 Gap Bridge Pin Driver
 - 1 Live Center (MT4 for 14" & 16" lathes; MT5 for 18" & 22" lathes)
 - 1 Operating Instructions Manual
 - 1 Parts List Manual
 - 1 Test Record
 - 1 Warranty Card



contents of Tool Box

⚠ WARNING

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

Uncrating and Cleanup

1. Finish removing the wooden crate from around the lathe.
2. Unbolt the lathe from the shipping crate bottom.
3. Choose a location for the lathe that is dry, has good lighting, and has enough room to allow servicing the lathe on all four sides.
4. Sling the lathe as shown in Figure 1, using steel rods or pipes of sufficient strength inserted through the holes in the bed casting. **Do not lift lathe by the spindle.** With adequate lifting equipment, slowly raise the lathe off the shipping crate bottom. Make sure lathe is balanced before moving.
5. To avoid twisting the bed, the lathe's location must be absolutely flat and level. Check for a level condition using a machinist's precision level on the bedways both front to back and side to side. The leveling pads included in the tool box and the leveling screws in the lathe base will help you to reach a level condition. **The lathe must be level to be accurate.**
6. Clean all rust protected surfaces using a mild commercial solvent, kerosene or diesel fuel. Do not use paint thinner, gasoline, or lacquer thinner. These will damage painted surfaces. Cover all cleaned surfaces with a light film of 20W machine oil.
7. 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.

Chuck Preparation (Three Jaw)

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

NOTE: Before removing the chuck from the spindle, place a flat piece of wood (plywood, etc.) across the bedways under the chuck to prevent damage to the bedways should the chuck fall from your hands.

To remove the chuck:

1. Support the chuck while turning six camlocks 1/4 turn counterclockwise with the chuck wrench from the tool box.
2. Carefully remove the chuck from the spindle and place on an adequate work surface.

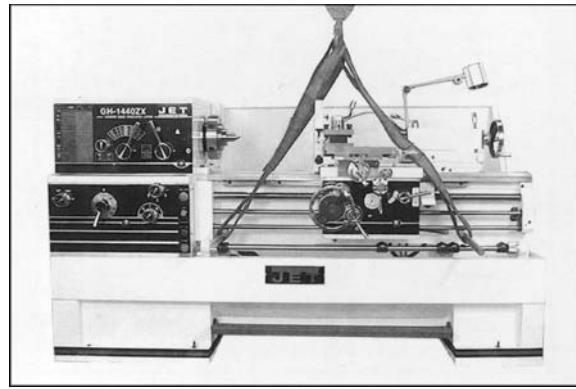


Figure 1

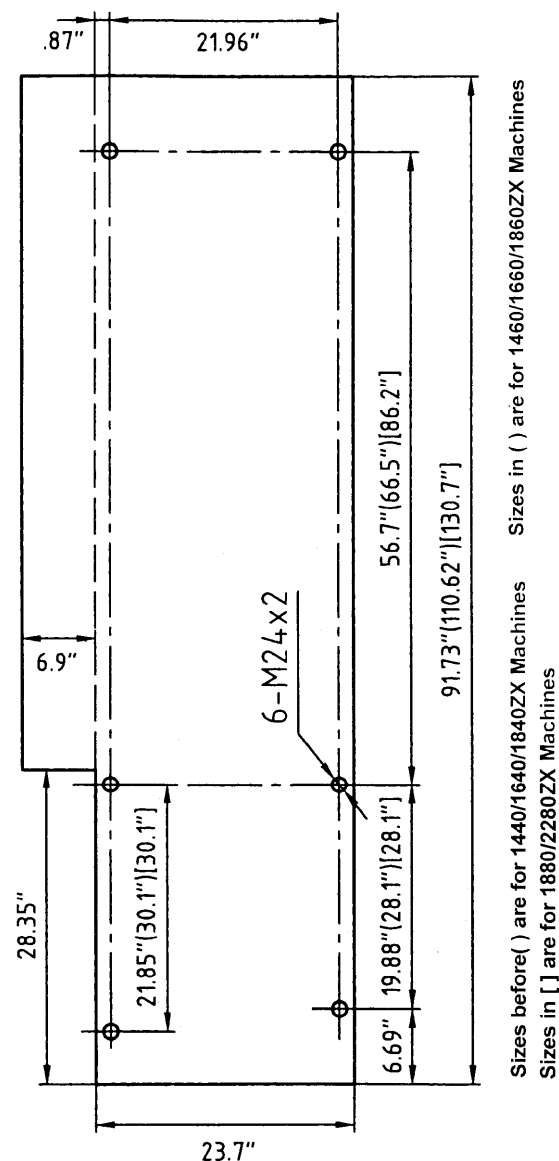


Figure 2

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 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 3) on the camlock should be between the two indicator arrows when tight (B, Figure 3). If the index mark is not between the two arrows, remove the chuck and adjust the camlock studs by either turning out one full turn (if cams will not engage) or turning in one full turn (if cams turn beyond indicator marks.)
6. Install chuck and tighten in place.

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.

1. **Headstock** – Oil must be up to indicator mark in oil sight glass (A, Figure 4). Top off with Mobil DTE® Oil Heavy Medium. Fill by removing the plug on top of the headstock. To drain, remove drain plug on the left side of the headstock at the lower rear corner. Drain oil completely and clean out all metal shavings. Refill after the first month of operation. Then change the oil in the headstock every two months.
2. **Gearbox** – Oil must be up to indicator mark in oil sight glass (B, Figure 4). Top off with Mobil DTE® Oil Heavy Medium. To add oil to the gearbox, remove two screws on the top cover and remove cover. To drain, remove drain plug (C, Figure 4) on the left side of the gearbox. Drain oil completely and refill after the first three months of operation. Then change oil in the gearbox every six months.
3. **Apron** – Oil must be between indicator marks in the oil sight glass (A, Figure 5). Top off with Mobil DTE® Oil Heavy Medium. Remove oil plug (B, Figure 5) to fill. To drain, remove drain plug on bottom of apron.

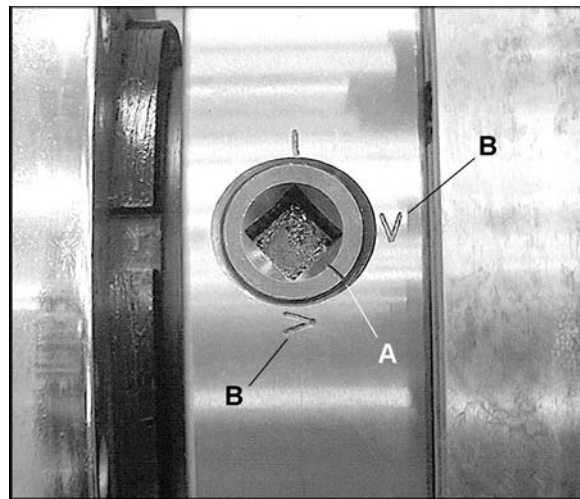


Figure 3

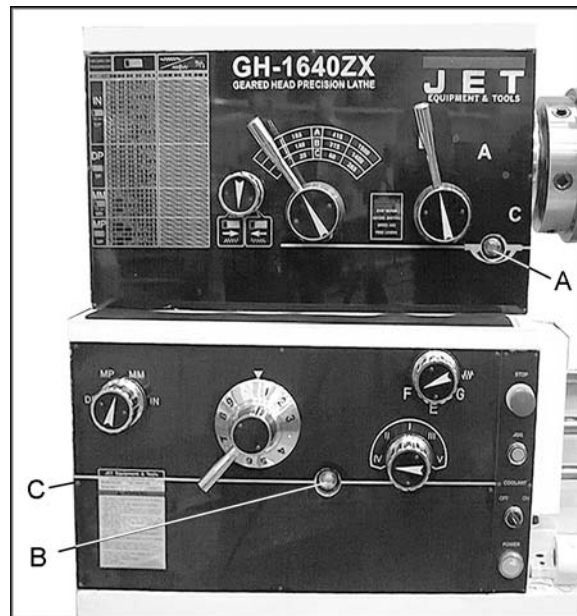


Figure 4

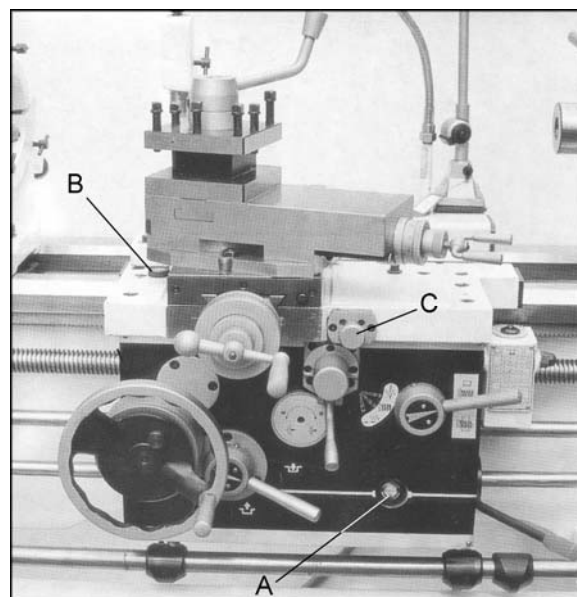


Figure 5

Drain oil completely and refill after the first three months of operation. Then, change oil in the apron annually. Pull knob (C, Figure 5) on the one-shot lube system and hold for several seconds to allow oil to fill the pump. When the knob is released, oil will flow through various oil lines to lubricate the ways and cross slide surface. Perform this twice daily or as needed. When the oil level is below the indicator mark, oil must be added.

4. **Leadscrew and Feed Rod** – Lubricate two ball oilers on the right side bracket (A, Figure 6) with 30W machine oil daily.
5. **Saddle** – Daily lubricate ball oiler (A, Figure 7) on handwheel shaft with Mobil DTE® Oil Heavy Medium.
6. **Compound Rest** – Daily lubricate two ball oilers (B, Figure 7) on top of compound slide with Mobil DTE® Oil Heavy Medium.
7. **Cross Slide** – Daily lubricate one ball oiler (C, Figure 7) with Mobil DTE® Oil Heavy Medium.
8. **Tailstock** – Daily lubricate one ball oiler (A, Figure 8) on top of tailstock with Mobil DTE® Oil Heavy Medium.

Coolant Preparation

CAUTION Follow coolant manufacturer's recommendations for use, care and disposal.

1. Remove access cover on tailstock end at the rear base of the lathe. Make sure coolant pump has not shifted during transport.
2. Pour four gallons (approximate) of coolant mix into the chip pan.
3. After machine has been connected to power, turn on coolant pump and check to see that coolant is cycling properly.
4. Replace access cover.

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.

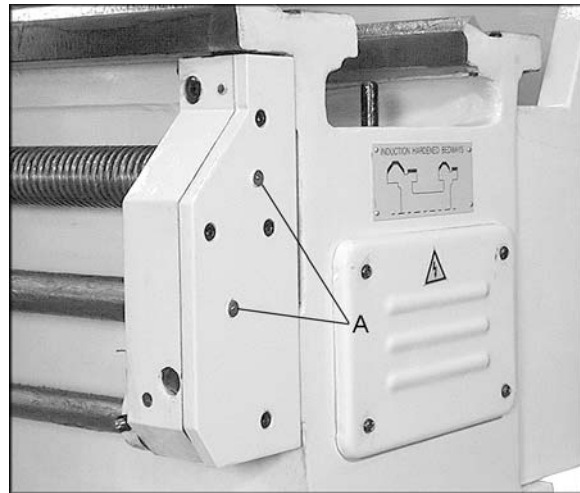


Figure 6

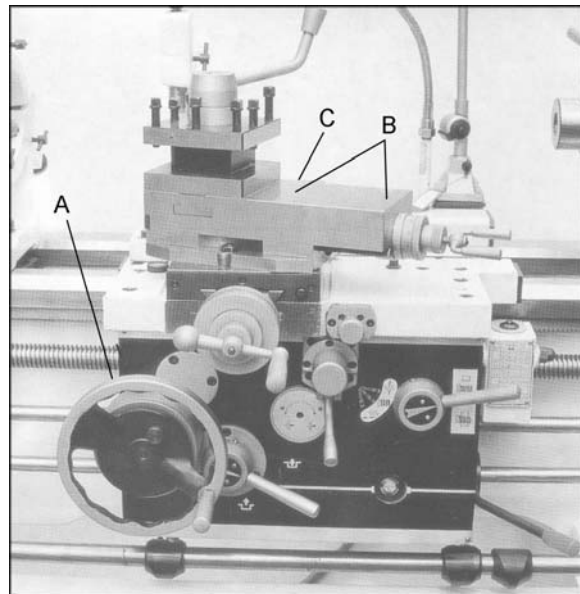


Figure 7

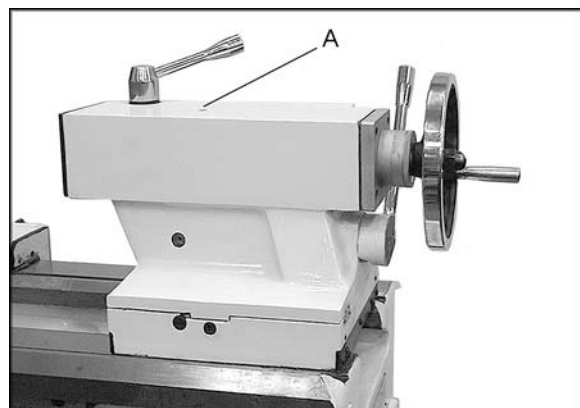


Figure 8

The main motor is rated at 7-1/2 HP (or 10HP for model 2280ZX), 230/460V and comes from the factory prewired at 230V. Confirm that power available at the lathe's location is the same rating as the lathe.

Power is connected properly when rotating the forward-reverse knob (E, Figure 12) to the left position causes the spindle to rotate counterclockwise as viewed from the tailstock. If the chuck rotates in the clockwise direction, disconnect the lathe from the power source, switch any two of the three power leads (not the green ground wire), and re-connect the lathe to the power source.

Conversion to 460 Volt Operation

⚠WARNING Disconnect machine from power source. Failure to do so may cause serious injury.

Main Motor: Change the wires according to the diagram on the outside of the motor junction box.

Transformer: Open electrical panel on rear of machine on the headstock side. Switch wire from 230V terminal to 460V terminal as outlined on the transformer.

Coolant Pump: Open access panel on the base at the tailstock end. Change wires in coolant pump junction box according to diagram on the outside of the junction box cover.

Main Power Switch (A, Figure 9): Turns power to machine on and off.

Power Source Cable Receiver (B, Figure 9).

Make sure the lathe is properly grounded.

General Description

Lathe Bed

The lathe bed (A, Figure 10) is made of cast iron with low vibration and high rigidity. Two precision ground v-slideways, reinforced by induction hardening and grinding, are an accurate guide for the carriage and headstock. The main drive motor is mounted in the stand below the the headstock.

Headstock

The headstock (B, Figure 10) is cast from high grade, low vibration cast iron. It is bolted to the bed by four hex socket cap bolts. In the head, the spindle is mounted on precision taper roller bearings.



Figure 9

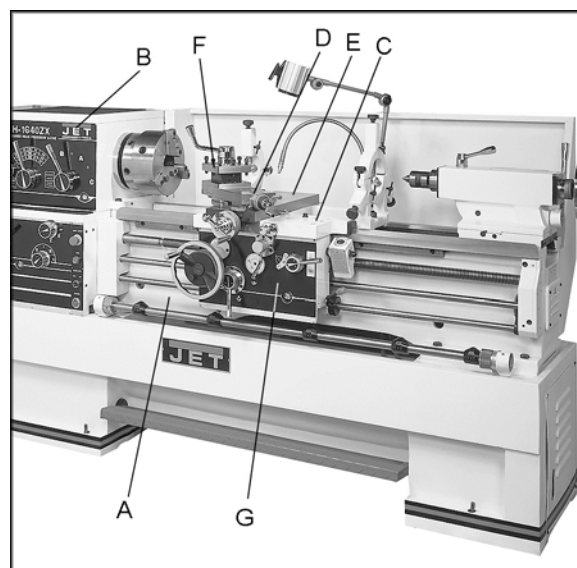


Figure 10

Carriage

The carriage (C, Figure 10) is made from high quality cast iron. The cross-slide (E, Figure 10) is mounted on the carriage and moves on a dovetailed slide which can be adjusted for play by means of the gibs.

The compound slide (D, Figure 10) which is T-slotted, and mounted on the cross slide (E, Figure 10) can be rotated 360°. The compound slide and the cross slide travel in a dovetailed slide and have adjustable gibs.

Four Way Tool Post

The four way tool post (F, Figure 10) is mounted on the compound slide and allows a maximum of four tools to be mounted at the same time. Remember to use a minimum of two clamping screws when installing a cutting tool.

Apron

The apron (G, Figure 10) is mounted to the carriage. Quick travel of the apron is accomplished by means of a bed-mounted rack and pinion, operated by the handwheel on the front of the apron.

Tailstock

The tailstock (H, Figure 11) 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 Morse Taper #4, or Morse Taper #5 (18" and 22" models).

Leadscrew and Feed Rod

The leadscrew (J, Figure 11) and feed rod (K, Figure 11) 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. Both are equipped with shear pins.

Feed Gearbox

The gearbox (L, Figure 11) is made from high quality cast iron and is mounted to the left side of the machine bed.

Steady Rest

The steady rest (M, Figure 11) 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. The sliding fingers require continuous lubrication at the contact points with the workpiece to prevent them from premature wear.

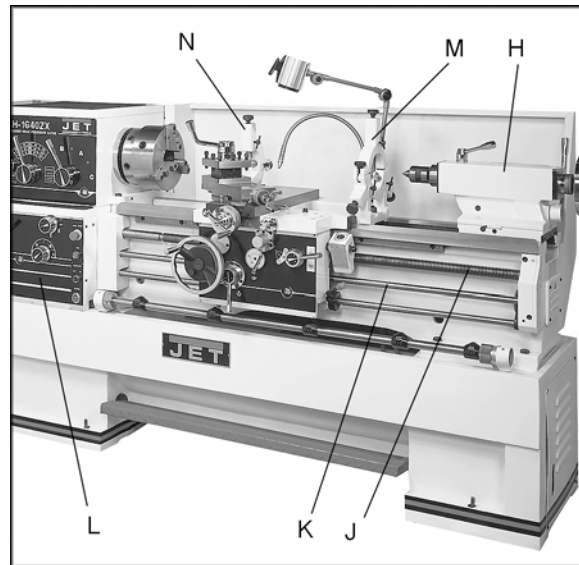


Figure 11

To set the steady rest:

1. Loosen three hex socket cap screws.
2. Loosen knurled screw and open sliding fingers until the steady rest can be moved with its fingers around the workpiece. Secure the steady rest in position.
3. Set the fingers snugly to the workpiece and secure by tightening three hex socket cap screws. Fingers should be snug but not overly tight. Lubricate sliding points with lead-based grease.

Follow Rest

The traveling follow rest (N, Figure 11) is mounted on the saddle and 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 workpieces. It prevents the workpiece from flexing under the pressure of the cutting tool.

The sliding fingers are set similar to the steady rest, free of play, but not binding. Always lubricate adequately with lead-based grease before operating.

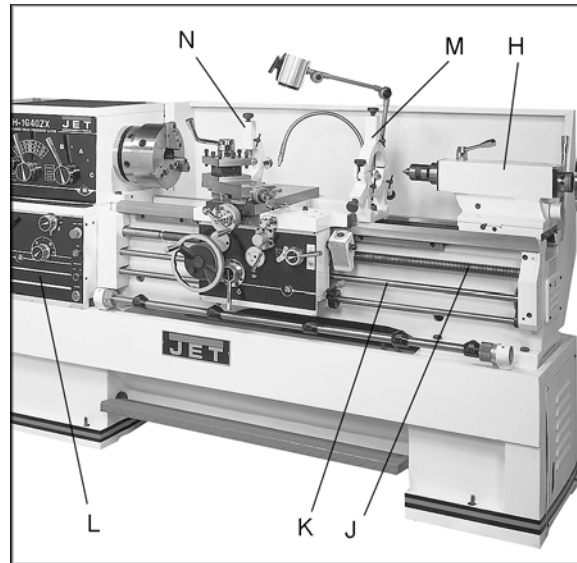


Figure 11 (repeated)

Controls

1. **Control Panel:** located on front of headstock. [On EVS models, control panel is located on a swivel post above the headstock.]
 - **Coolant On-Off Switch** (A, Figure 12) turns coolant pump on and off.
 - **Power Indicator Light** (D, Figure 12) is lit whenever lathe is receiving power.
 - **Emergency Stop Switch** (C, Figure 12) stops all machine functions (**Caution:** Lathe will still have power). Twist clockwise to re-set.
 - **Jog Switch** (B, Figure 12). Quickly press and release to rotate the spindle.
2. **Headstock Gear Change Levers** (F, Figure 12): Located on front of headstock. Move levers left or right to desired spindle speed. *NOTE: The left handle is omitted on EVS models.*
3. **Leadscrew/Feed Rod Directional Lever** (E, Figure 12): Located on front of headstock at lower left. Changing knob changes direction of feed.

CAUTION Do not move knob while machine is running.

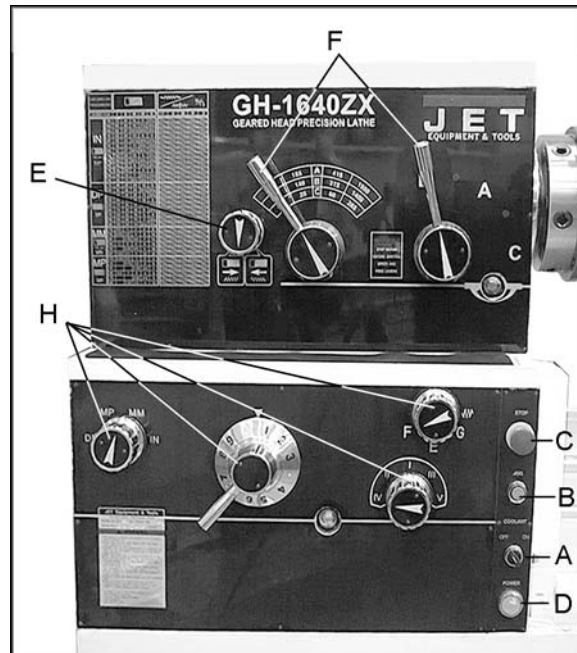


Figure 12

4. **Feed/Lead Selector Lever (H, Figure 12):** Located on front of headstock. Used when setting up for threading or feeding.
5. **Compound Slide (L, Figure 13)** is located on top of the cross slide and can be rotated 360°. There are calibrations in degrees (M, Figure 13) below the rest to assist in placement of the compound slide to the desired angle.
6. **Compound Lock** (not shown): Lever located on back of compound slide. Turn clockwise to lock and counterclockwise to unlock.
7. **Cross Slide Lock (A, Figure 13):** Lever located on left side of cross slide. Turn clockwise to lock and counterclockwise to unlock.
8. **Carriage Lock (B, Figure 13):** 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.

9. **Longitudinal Traverse Handwheel (C, Figure 13):** Located on the apron assembly. Rotate handwheel clockwise to move the apron assembly toward the tailstock (right). Rotate the wheel counterclockwise to move the apron assembly toward headstock (left).
10. **Longitudinal/Cross Feed Selector Lever (E, Figure 13):** Can be pushed to upper, middle and lower three positions. Push the lever up, cross feed is effected. Push the lever down, longitudinal feed is effected. When the lever is in the middle position, screws can be cut by engaging the half nut.
11. **Half Nut Lever (D, Figure 13):** Located on the front of the apron assembly. Used for threading.
12. **Feed Engage Lever (G, Figure 13):** Located in the front of the apron assembly. Pull lever up to engage. Push lever down to disengage.
13. **Adjustable Feed Clutch (F, Figure 13):** When the machine is overloaded, it can slip. Then cutting rate must be reduced. **Note:** This setting has been calibrated at the factory and should not need adjustment. If adjustment ever becomes necessary, follow the diagram on the front of the apron.
14. **Cross Traverse Handwheel (H, Figure 13):** Located above the apron assembly. Clockwise rotation moves the cross slide toward the rear of machine.

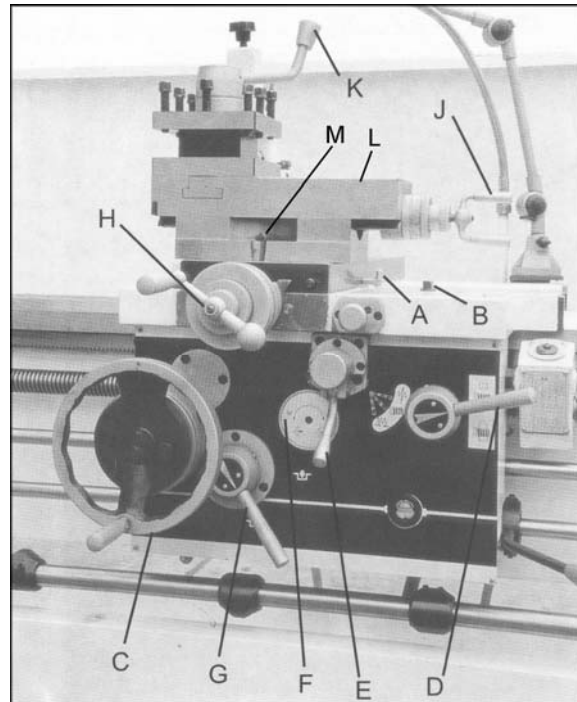


Figure 13

15. **Compound Rest Traverse Handle** (J, Figure 13): Located on the end of the compound slide. Rotate clockwise or counterclockwise to position.
16. **Tool Post Clamping Lever** (K, Figure 13): Located on top of the tool post. Rotate counterclockwise to loosen and clockwise to tighten.
17. **Tailstock Quill Clamping Lever** (A, Figure 14): Located on the tailstock. Rotate clockwise to lock the sleeve. Rotate counterclockwise to unlock.
18. **Tailstock Clamping Lever** (B, Figure 14): Lift up to lock. Push down to unlock. If the tailstock has a heavy load, tighten the hexagon head at right side of the tailstock for auxiliary locking.
19. **Tailstock Quill Traverse Handwheel** (C, Figure 14): Rotate clockwise to advance the quill and counterclockwise to retract it.
20. **Tailstock Off-Set Adjustment** (D, Figure 14): Two hex socket cap screws located on the tailstock base are used to off-set the tailstock for cutting tapers. Loosening one screw while tightening the other will off-set the tailstock. Do not clamp the tailstock lock handle when adjusting.
21. **Foot Brake** (A, Figure 15): The connecting rod mechanism is in the bed stand. The braking device is in the pulley of the headstock. Press the pedal to stop all lathe functions. (**Caution:** Lathe still has power.)
22. **Micro Carriage Stop** (B, Figure 15): can be used during manual feed operation. The dial can be turned for fine tuning the position of the stop. The micro carriage stop can be moved along the bed by loosening the two socket head cap screws underneath the stop.
23. **Bed Cover** (C, Figure 15): can be easily removed to clean out the stand.

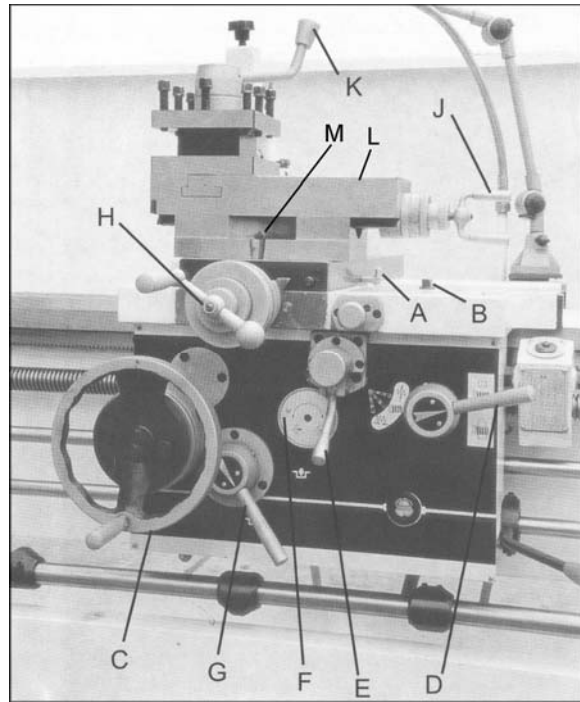


Figure 13 (repeated)

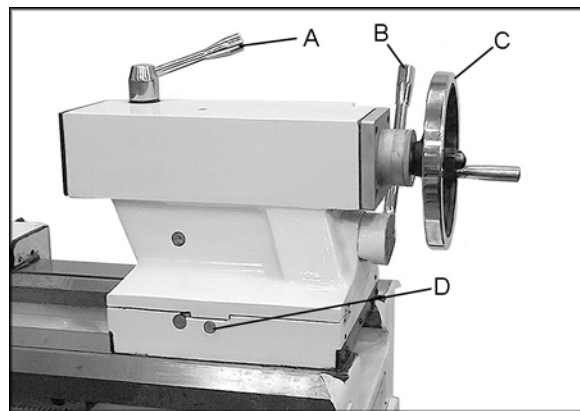


Figure 14

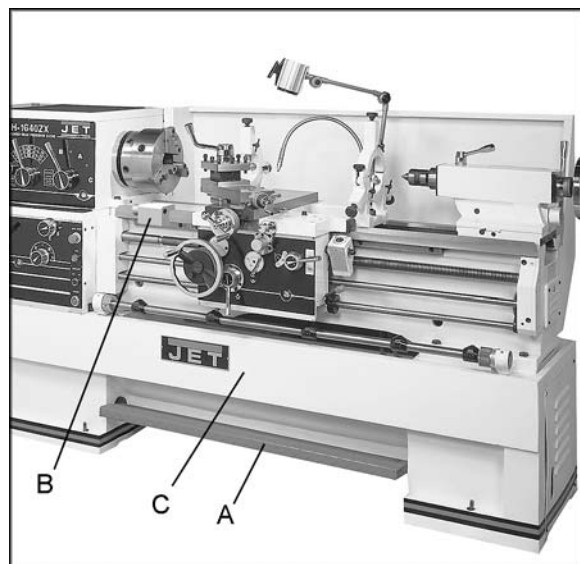


Figure 15

Operation

Feed and Thread Selection

1. Reference the feed and thread chart on the front of the headstock (A, Figure 16).
2. Move levers and knobs (B/C/D/E, Figure 16) to the appropriate position according to the feed and thread chart.

Thread Cutting

1. Set forward/reverse lever (F, Figure 16) to desired direction.
2. Set selector levers (G/H, Figure 16) to desired R.P.M. [On EVS models, use lever H and the variable speed dial on the swivel control panel to select speed.]
3. Select desired thread using levers (B/C/D/E, Figure 16).
4. Set selector lever (A, Figure 17) to correct position (neutral).
5. Engage the half nut lever (B, Figure 17).
6. Make a test cut with scrap material and check results before cutting regular material.

Gib Adjustments

After a period of time, some of the moving components may need to be adjusted due to wear.

Saddle

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

Cross Slide

Turn gib screws in the front and rear of the gib to adjust the drag of the cross slide.

Compound Slide

Turn gib screws to adjust the drag of the compound slide.

Tailstock Off-Set

Follow the procedure below to off-set the tailstock to cut shallow tapers:

1. Loosen tailstock in position by lowering locking handle (B, Figure 18) and loosening hexagon head eccentric shaft at back of tailstock.
2. Alternately loosen and tighten front and rear screws (D, Figure 18). **Note:** Front screw is shown.

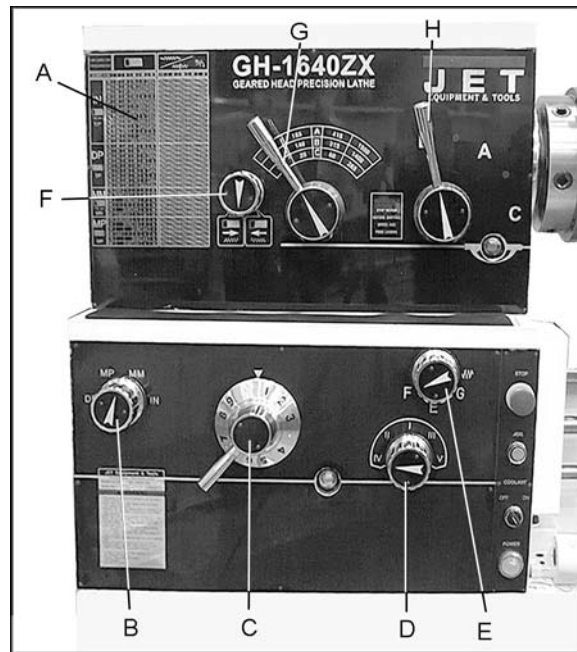


Figure 16

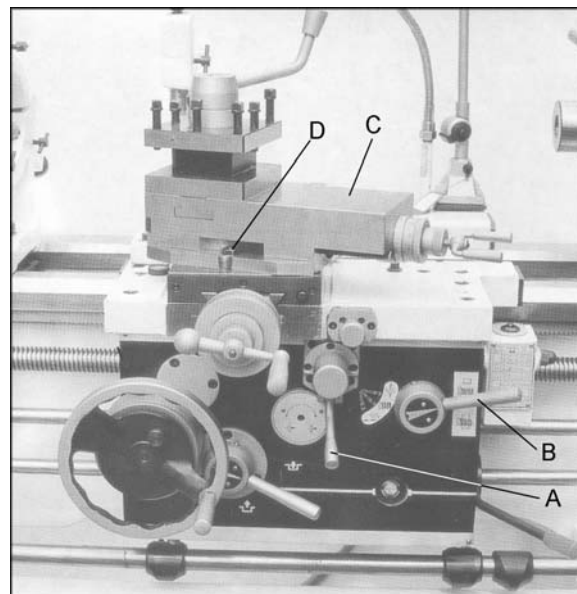


Figure 17

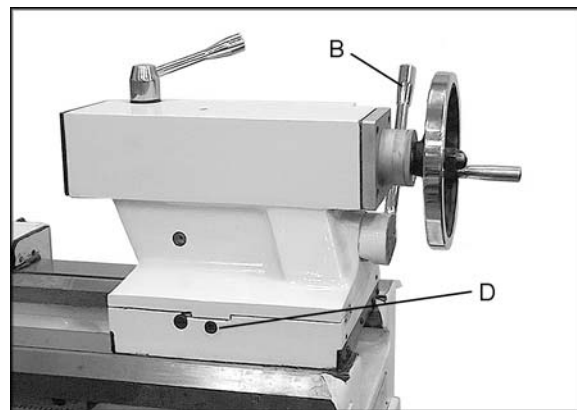


Figure 18

Removing Gap Section

1. To remove the gap section, remove four hex socket cap screws, and two hex cap bolts.
2. Tighten the hex nuts on the tapered alignment pins to loosen the pins. Once loosened, they can be removed.
3. Gap section can now be removed.

Installing Removable Gap Section

1. Clean the bottom and the ends of the gap section thoroughly.
2. Set gap section in place and align the ends.
3. Loosen the nuts on the locating pins and push down through the gap into the lathe bed.
4. Replace four hex socket cap screws and tighten alternately until all are snug.

Belt Replacement and Adjustment

1. Disconnect machine from power source.
2. Open end gear cover, remove lower rear cover and lower side cover. This will expose the motor and v-belts.
3. Loosen upper hex nut (A, Figure 19). 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 19) and tightening upper nut (A, Figure 19) until light finger pressure causes approximately 3/4" deflection on each belt.
7. Install covers and connect lathe to the power source.

Aligning Tailstock to Headstock

1. Fit a 12" ground steel bar between centers of the headstock and tailstock (Figure 20).
2. Fit a dial indicator to the top slide and traverse the center line of the bar.
3. If adjustment is needed, align the tailstock using the off-set screws (D, Figure 21) until the tailstock is aligned.

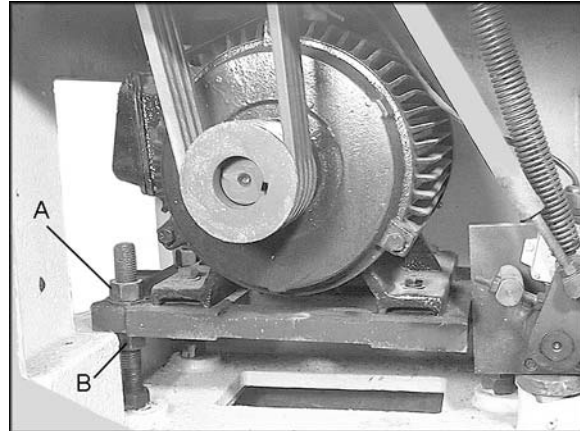


Figure 19

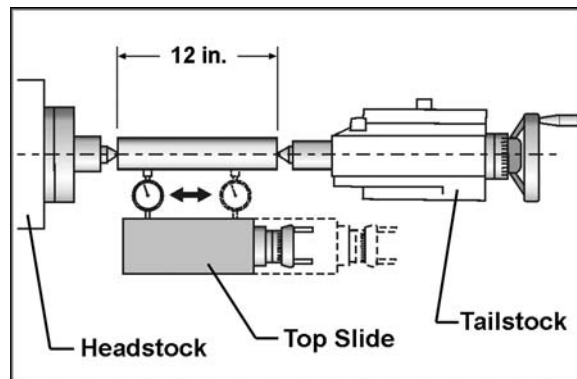


Figure 20

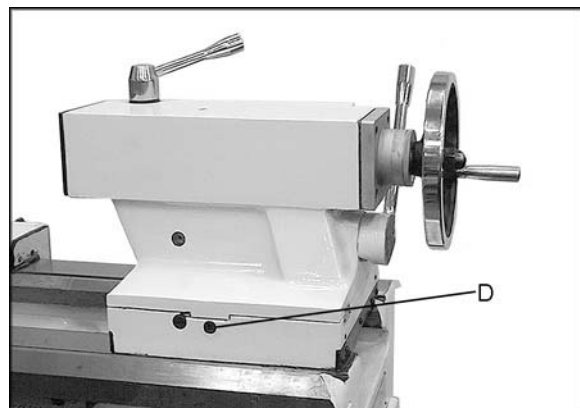
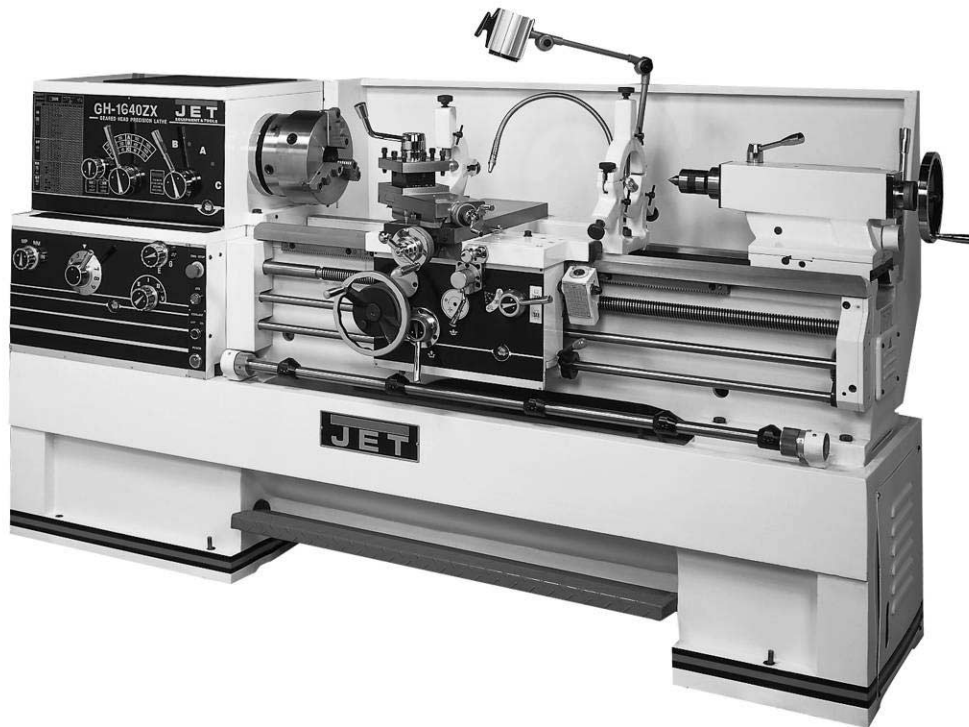


Figure 21



Parts List ZX Series Lathes



WALTER MEIER (Manufacturing) Inc.

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Ph.: 800-274-6848
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Part No. M-321910-1

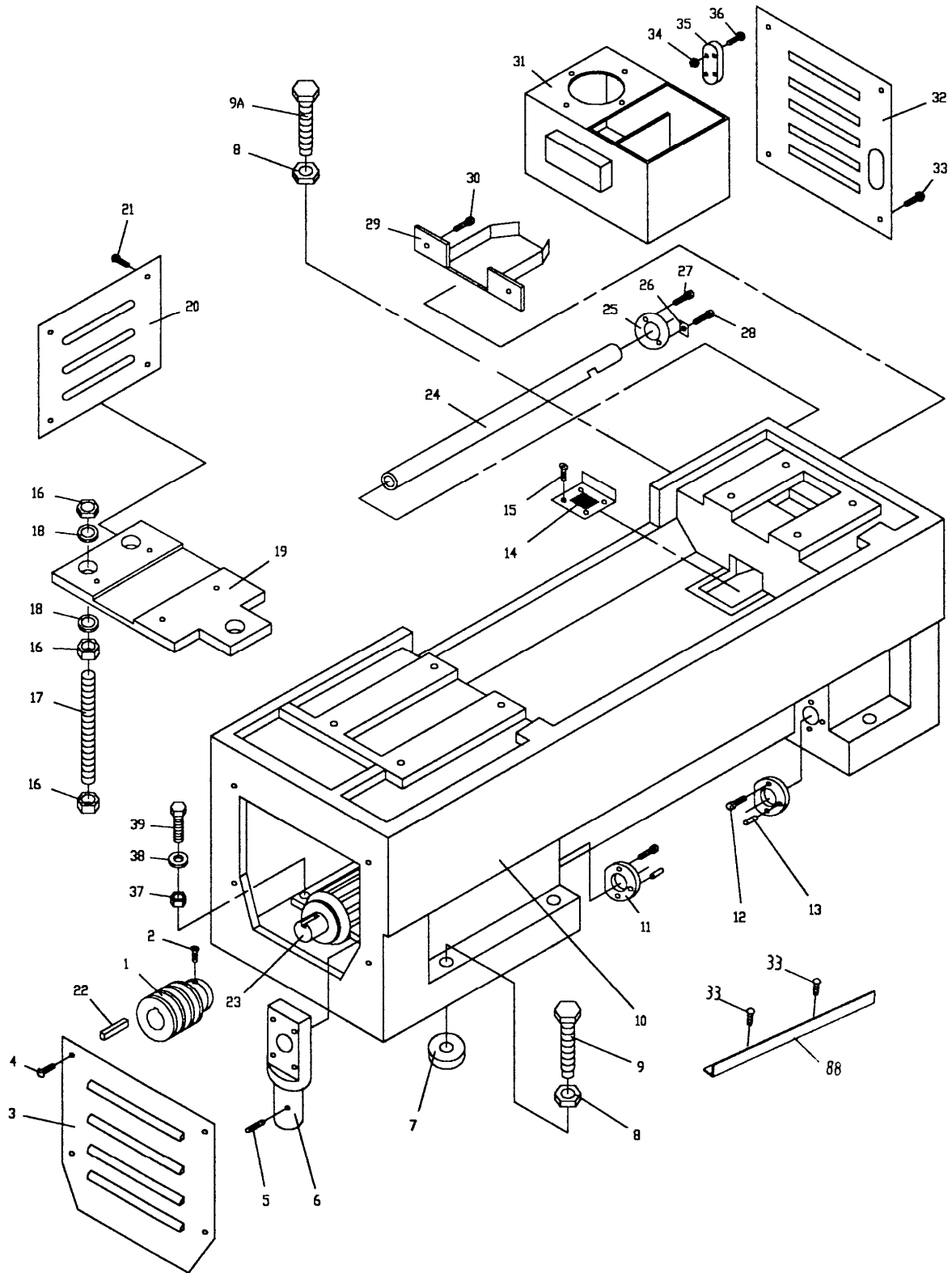
Revision H1 08/2010

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Stand Assembly

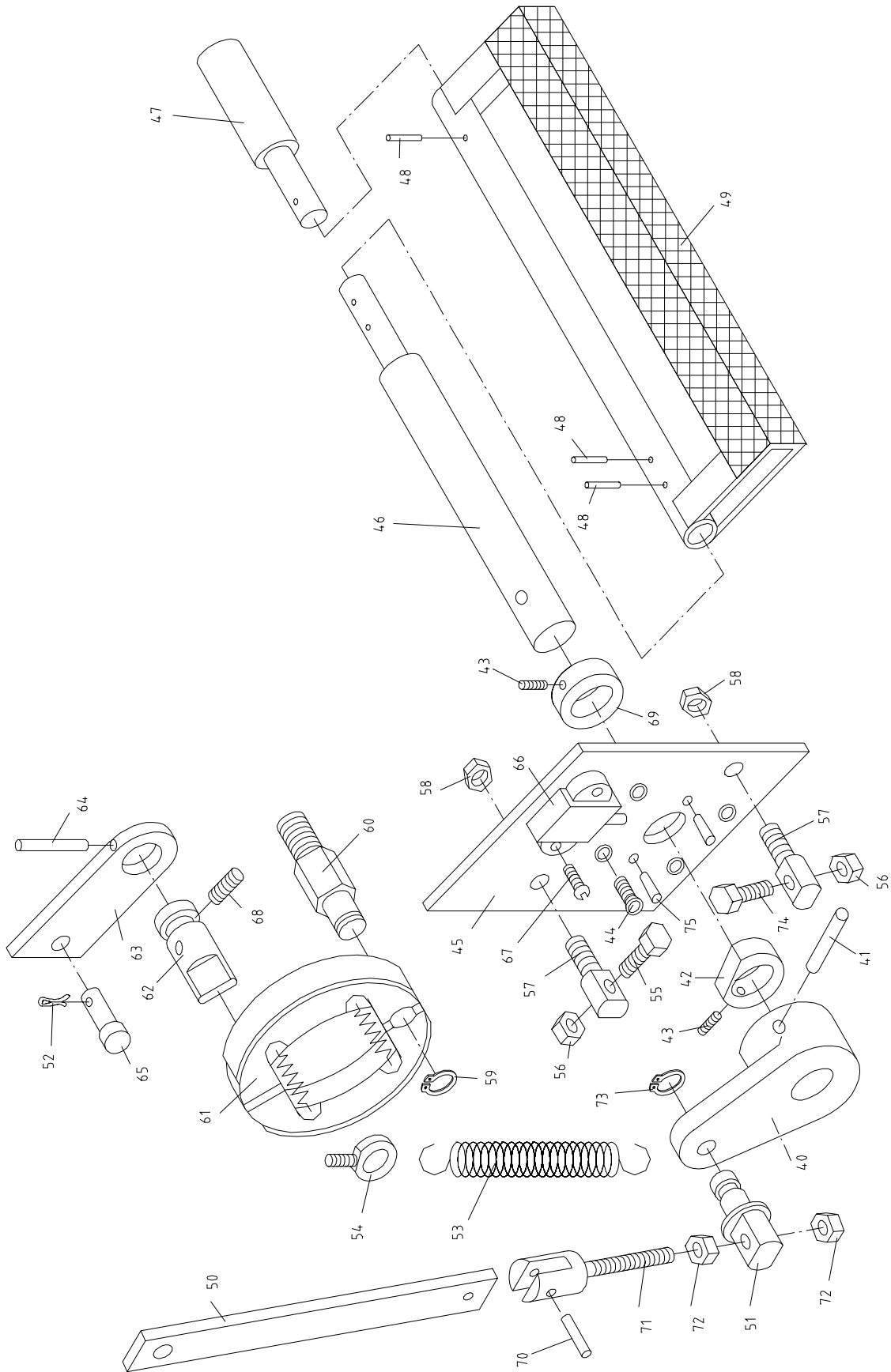


Stand Assembly

Index No.	Part No.	Description	Size	Qty.
1.....	ZX-01101A.....	Pulley		1
	GH2280ZX-01101	Pulley (for 2280ZX).....		1
2.....	ZX-S2	Cylindrical End Set Screw.....	M8x16	1
3.....	ZX-01734.....	Cover		1
	ML-2080-01701.....	Cover (for 2280ZX).....		1
4.....	ZX-S4	Cross Head Screw.....	M6x14	4
5.....	ZX-S2	Cylindrical End Set Screw.....	M8x16	1
6.....	ZX-01701.....	Pedal Rod Support		1
	ML-2080-01703.....	Pedal Rod Support (for 2280ZX).....		1
7.....	ZX-01715.....	Lining		6
8.....	TS-1540231.....	Hex Nut.....	M24-2.....	6
9.....	ZX-01712.....	Hex Cap Bolt.....		3
9A.....	ZX-01713.....	Hex Cap Bolt.....		3
10.....	ZX-01102A.....	Bed Stand (for 40" models, serial # 010611ZX349 and lower)		1
	ZX-01102AN	New Bed Stand (for 40" models, serial # 010618ZX350 and higher).....		1
	ZX-01102B.....	Bed Stand (for 60" models, serial # 010611ZX349 and lower)		1
	ZX-01102BN	New Bed Stand (for 60" models, serial # 010618ZX350 and higher).....		1
	ZX-01102C.....	Bed Stand (for 1880ZX, serial # 010611ZX349 and lower)		1
	ZX-01102CN	New Bed Stand (for 1880ZX, serial # 010618ZX350 and higher).....		1
	GH2280ZX-01102	Bed Stand (for 2280ZX)		1
11.....	ZX-01703.....	Fixed Support.....		2
12.....	TS-150341.....	Socket Head Cap Screw.....	M6x14	4
13.....	ZX-S13	Taper Pin.....	5x20	2
14.....	ZX-01705.....	Water Leaking Chip Guard.....		1
15.....	ZX-S15A.....	Cross Head Screw.....	M5x20	4
16.....	TS-1540121.....	Hex Nut.....	M20.....	9
17.....	ZX-01702.....	Bolt.....		3
	ML-2080-01704.....	Bolt (for 2280ZX)		3
18.....	TS-1550111	Flat Washer	M20.....	6
19.....	ZX-01122A.....	Motor Mounting Plate (for 14" models)		1
	ZX-01122B.....	Motor Mounting Plate (for 16"/18" models)		1
	ML-2080-01122.....	Motor Mounting Plate (for 22" model)).....		1
20.....	ZX-01726.....	Cover		1
	GH2280ZX-01701.....	Cover		1
21.....	ZX-S4	Cross Head Screw.....	M6x14	4
22.....	ZX-S22	Key.....	10x8x70	1
23.....	ZX-S23BC	Main Motor (for 22" model)	10 HP, 6P, 3Ph.....	1
	ZX-S23A	Main Motor (for 14" models).....	7.5HP, 4P, 3Ph.....	1
	ZX-S23B	Main Motor (for 16"/18" models).....	7.5HP, 6P, 3Ph.....	1
24.....	ZX-017609A.....	Wire Conduit (for 1440/1640/1840ZX).....		1
	ZX-017609B.....	Wire Conduit (for 1460/1660/1860ZX).....		1
	ZX-017609C	Wire Conduit (for 1880/2280ZX)		1
25.....	ZX-01708.....	Wire Conduit Support		1
26.....	ZX-01706.....	Locking Plate.....		1
27.....	ZX-S27	Cross Head Screw.....	M5x8	2
28.....	ZX-S15	Cross Head Screw.....	M4x6	1
29.....	ZX-01711	Water Reception Plate.....		1
30.....	ZX-S4	Cross Head Screw.....	M6x14	2
31.....	ZX-01510.....	Coolant Tank		1
32.....	ZX-01714.....	Cover		1
	ML-2080-01702.....	Cover (for 2280ZX).....		1
33.....	ZX-S4	Cross Head Screw.....	M6x14	4
34.....	ZX-S34	Nut	M3.....	4
35.....	ZX-S35	Coolant Indicator		1
36.....	ZX-S36	Cross Head Screw.....	M3x20	4

Index No.	Part No.	Description	Size	Qty.
37.....	TS-1540072	Hex Nut.....	M10.....	4
38.....	TS-1550071	Flat Washer	M10.....	4
39.....	TS-1491041	Hex Cap Bolt.....	M10x30	4
80.....	ZX-01716A	Stand Front Cover (for 1440/1640/1840ZX).....		1
.....	ZX-01716B	Stand Front Cover (for 1460/1660/1860ZX).....		1
.....	ZX-01716C	Stand Front Cover (for 1880/2280ZX)		1
81.....	ZX-01501.....	Gasket.....		1
82.....	ZX-S82	Hex Nut.....	M5.....	2
83.....	ZX-01740.....	Left Tray.....		1
84.....	ZX-01741.....	Right Tray.....		1
85.....	ZX-01511	Gasket.....		2
86.....	ZX-S86	Cross Head Screw.....	M5x16	6
87.....	ZX-01512.....	Gasket.....		1
88.....	ZX-05753.....	Extending Plate		1
.....	JX21004	Terminal Board (not shown)		1
.....	18301	Junction Box (not shown).....		1
.....	D97-4.....	Plastic Fitting (not shown).....		1

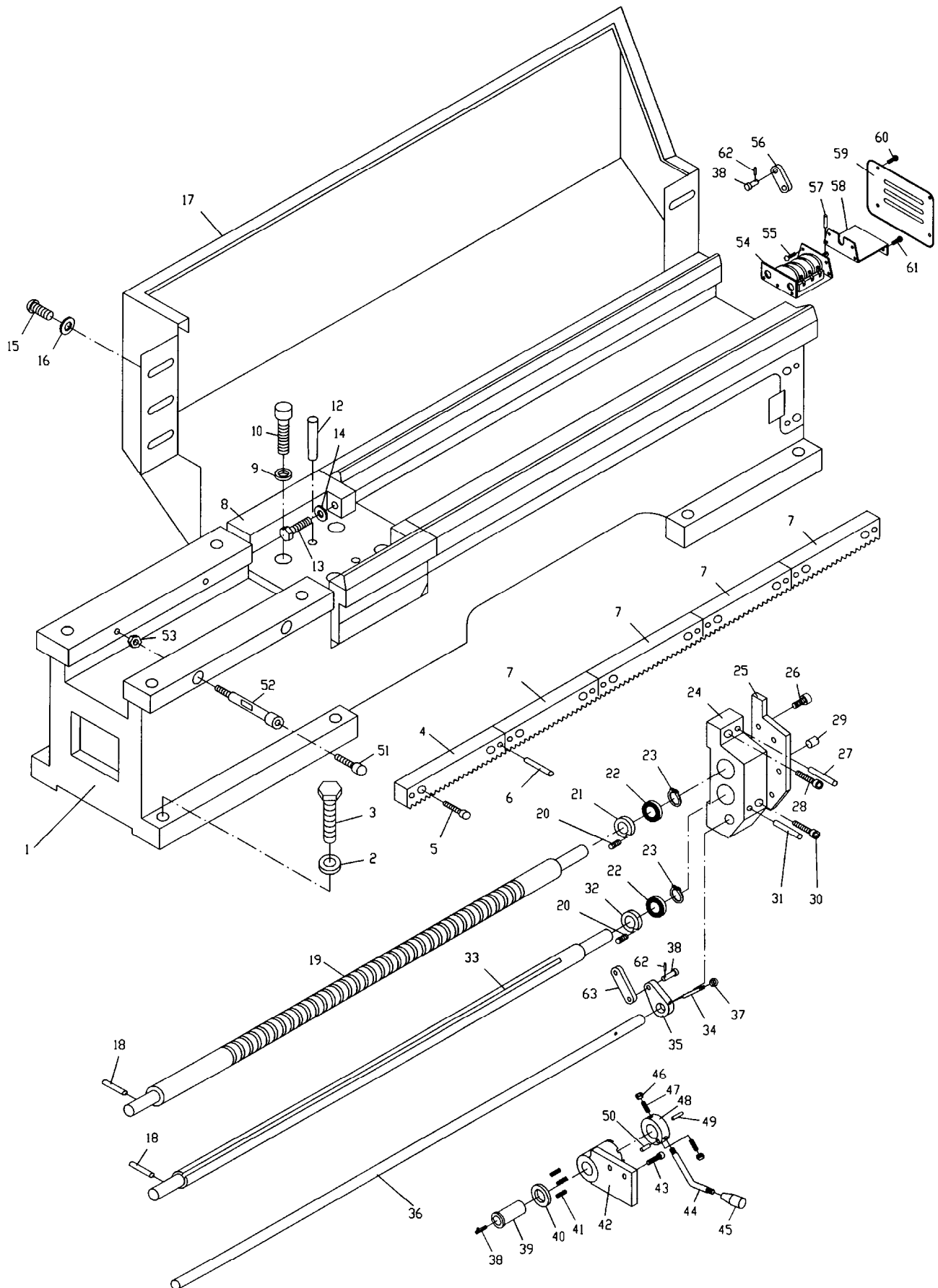
Brake Assembly



Brake Assembly

Index No.	Part No.	Description	Size	Qty.
40.....	ZX-22101.....	Fork.....		1
41.....	ZX-S41.....	Spring Pin.....	5x40.....	1
42.....	ZX-22703.....	Butt Nail Support.....		1
43.....	TS-1524021.....	Socket Set Screw.....	M8x10.....	1
44.....	ZX-S44.....	Cross Head Screw.....	M5x20.....	4
45.....	ZX-22714.....	Positioning Plate.....		1
46.....	ZX-22704A.....	Driving Shaft-Longer.....		1
47.....	ZX-22705A.....	Driving Shaft.....		1
48.....	ZX-S48.....	Spring Pin.....	5x30.....	3
49.....	ZX-22712A.....	Pedal (for 1440/1640/1840ZX).....		1
.....	ZX-22712B.....	Pedal (for 1460/1660/1860ZX).....		1
.....	ZX-22712C.....	Pedal (for 1880/2280ZX).....		1
50.....	ZX-22710A.....	Draw Bar (for 14" models).....		1
.....	ZX-22710B.....	Draw Bar (for 16" models).....		1
.....	ZX-22710C.....	Draw Bar (for 18" models).....		1
.....	GH2280ZX-22710.....	Draw Bar (for 22" model).....		1
51.....	ZX-22706.....	Connecting Shaft.....		1
52.....	ZX-S52.....	Split Pin.....	2x20.....	2
53.....	ZX-S53.....	Tensile Spring.....	3.5x26x190.....	1
54.....	ZX-S54.....	Eyebolt.....	M8.....	1
55.....	TS-1490091.....	Hex Cap Bolt.....	M8x50.....	1
56.....	TS-1540061.....	Hex Nut.....	M8.....	1
57.....	ZX-22707A.....	Butt Rod Support.....		1
58.....	TS-1540072.....	Hex Nut.....	M10.....	1
59.....	ZX-S59.....	C-Clip.....	8.....	1
60.....	ZX-22701.....	Positioning Shaft.....		1
61.....	ZX-S61.....	Brake Shoe.....		1
62.....	ZX-22702.....	Brake Shaft.....		1
63.....	ZX-22708.....	Connecting Plate.....		1
64.....	ZX-S64.....	Elastic Pin.....	5x25.....	1
65.....	ZX-22709.....	Connecting Shaft.....		1
66.....	ZX-S66.....	Stroke Switch.....		1
67.....	ZX-S67.....	Screw.....	M4x25.....	2
68.....	ZX-S68.....	Cylindrical End Set Screw.....	M5x10.....	1
69.....	ZX-22711.....	Butt Nail Support.....		1
70.....	ZX-S70.....	Pin.....	5n6x20.....	1
71.....	ZX-22715.....	Adjust Bolt.....		1
72.....	TS-1540061.....	Hex Nut.....	M8.....	1
73.....	ZX-S73.....	C-Clip.....	12.....	2
74.....	TS-149006.....	Hex Cap Screw.....	M8x35.....	1
75.....	ZX-S75.....	Taper Pin.....	5x20.....	2

Bed Assembly

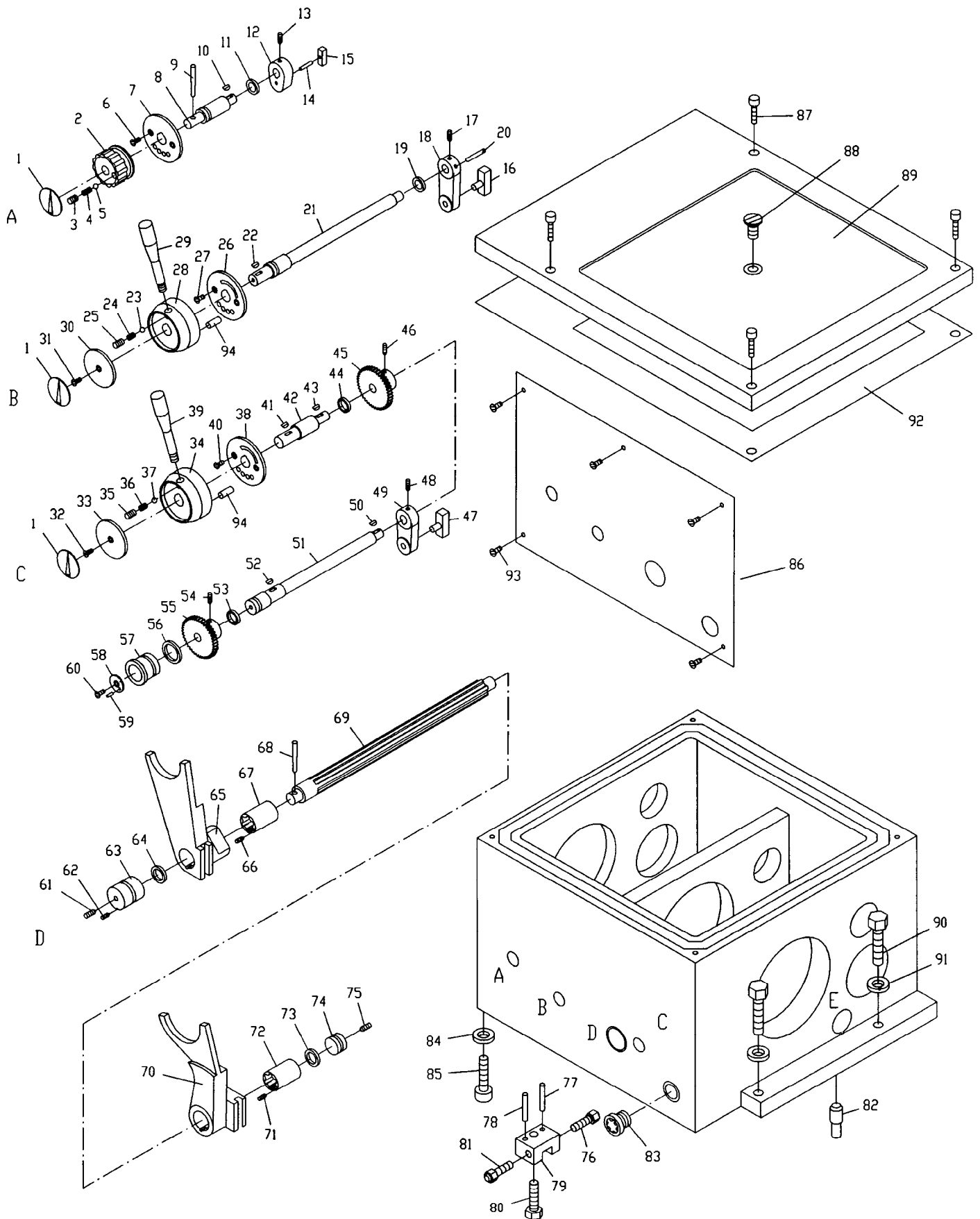


Bed Assembly

Index No.	Part No.	Description	Size	Qty.
1.....	ZX-01104A.....	Bed (for 1440/1640/1840ZX).....		1
.....	ZX-01104B.....	Bed (for 1460/1660/1860ZX).....		1
.....	ZX-01104C.....	Bed (for 1880/2280ZX).....		1
2.....	TS-1550101.....	Flat Washer.....	M16.....	8
3.....	ZX-B3.....	Hex Cap Bolt.....	M16x50.....	8
4.....	ZX-01706.....	Rack.....		1
5.....	TS-1505051.....	Hex Socket Cap Screw (for 1440/1640/1840ZX).....	M10x35.....	10
.....		Hex Socket Cap Screw (for 1460/1660/1860ZX).....	M10x35.....	14
.....		Hex Socket Cap Screw (for 1880/2280ZX).....	M10x35.....	18
6.....	ZX-B6.....	Taper Pin (for 1440/1640/1840ZX).....	8x50.....	10
.....		Taper Pin (for 1460/1660/1860ZX).....	8x50.....	14
.....		Taper Pin (for 1880/2280ZX).....	8x50.....	18
7.....	ZX-01706A.....	Rack (for 1440/1640/1840ZX).....		4
.....		Rack (for 1460/1660/1860ZX).....		6
.....		Rack (for 1880/2280ZX).....		8
8.....	ZX-01112.....	Saddle.....		1
9.....	TS-1551081.....	Lock Washer.....	M12.....	4
10.....	TS-1506091.....	Hex Socket Cap Screw.....	M12x55.....	4
12.....	ZX-B12.....	Thread Taper Pin.....	12x70.....	2
13.....	TS-1491101.....	Hex Cap Bolt.....	M10x60.....	2
14.....	TS-1550071.....	Washer.....	M10.....	2
15.....	TS-1503021.....	Hex Socket Cap Screw.....	M6x10.....	6
16.....	TS-1550041.....	Washer.....	M6.....	6
17.....	ZX-01741A.....	Splash Guard (for 1440ZX).....		1
.....	ZX-01741B.....	Splash Guard (for 1460ZX).....		1
.....	ZX-01741C.....	Splash Guard (for 1640ZX).....		1
.....	ZX-01741D.....	Splash Guard (for 1660ZX).....		1
.....	ZX-01741E.....	Splash Guard (for 1840ZX).....		1
.....	ZX-01741F.....	Splash Guard (for 1860ZX).....		1
.....	ZX-01741G.....	Splash Guard (for 1880ZX).....		1
.....	GH2280ZX-12701.....	Splash Guard (for 2280ZX).....		1
18.....	ZX-B18.....	Shear Pin.....	5x35.....	2
19.....	ZX-01708A.....	Lead Screw (for 40" models, serial # 010611ZX349 and lower).....		1
.....	ZX-01708AN.....	New Lead Screw (for 40" models, serial # 010618ZX350 and higher).....		1
.....	ZX-01708B.....	Lead Screw (for 60" models, serial # 010611ZX349 and lower).....		1
.....	ZX-01708BN.....	New Lead Screw (for 60" models, serial # 010618ZX350 and higher).....		1
.....	ZX-01708C.....	Lead Screw (for 80" models, serial #010611ZX349 and lower).....		1
.....	ZX-01708CN.....	New Lead Screw (for 80" models, serial #010618ZX350 and higher).....		1
20.....	ZX-B20.....	Flat End Set Screw.....	M6x10.....	2
21.....	ZX-01109.....	Sleeve (serial # 010611ZX349 and lower).....		1
.....	ZX-01109N.....	New Sleeve (serial # 010618ZX350 and higher).....		1
22.....	ZX-1204.....	Double Row Spherical Ball Bearing.....	20x47x14.....	2
23.....	ZX-B23.....	C-Clip.....	20.....	2
24.....	ZX-01110.....	Bracket (serial # 010611ZX349 and lower).....		1
.....	ZX-01110N.....	New Bracket (serial # 010618ZX350 and higher).....		1
25.....	ZX-01111.....	Cover.....		1
26.....	TS-1503041.....	Hex Socket Cap Screw.....	M6x16.....	4
27.....	ZX-B27.....	Taper Pin.....	6x60.....	1
28.....	TS-1505081.....	Socket Cap Screw.....	M10x50.....	1
29.....	ZX-B29.....	Oil Cup.....	10.....	2
30.....	GH2280ZX-1230.....	Socket Cap Screw.....	M10x100.....	1
31.....	ZX-B31.....	Taper Pin.....	6x100.....	1

Index No.	Part No.	Description	Size	Qty.
32.....	ZX-01108	Sleeve (serial # 010611ZX349 and lower)		1
.....	ZX-01108N.....	New Sleeve (serial # 010618ZX350 and higher)		1
33.....	ZX-01709A	Feed Rod (for 40" models, serial # 010611ZX349 and lower)		1
.....	ZX-01709AN	New Feed Rod (for 40" models, serial # 010618ZX350 and higher)		1
.....	ZX-01709B	Feed Rod (for 60" models, serial # 010611ZX349 and lower)		1
.....	ZX-01709BN	New Feed Rod (for 60" models, serial # 010618ZX350 and higher)		1
.....	ZX-01709C	Feed Rod (for 80" models, serial # 010611ZX349 and lower)		1
.....	ZX-01709CN	New Feed Rod (for 80" models, serial # 010618ZX350 and higher)		1
34.....	ZX-B34	Taper Pin.....	5x30	1
35.....	ZX-01107	Poking Block		1
36.....	ZX-01707A	Control Rod (for 1440/1640/1840ZX)		1
.....	ZX-01707B	Control Rod (for 1460/1660/1860ZX)		1
.....	ZX-01707C	Control Rod (for 1880/2280ZX)		1
37.....	TS-1540031	Nut	M5.....	1
38.....	ZX-06720	Small Shaft.....		2
39.....	ZX-06001C-3	Sleeve		1
40.....	ZX-06001C-2	Spacer		1
41.....	ZX-B41	Spring.....	1x75x25	3
42.....	ZX-06001C-1	Bracket.....		1
43.....	TS-1540031	Hex Socket Cap Screw.....	M8x16	2
44.....	ZX-B44	Lever		1
45.....	ZX-06001C-4	Long Lever Sleeve.....		1
46.....	ZX-B46	Hex Nut.....	M8.....	2
47.....	ZX-B47	Set Screw.....	M8x28	2
48.....	ZX-06001C-5	Direction Change Ring.....		1
49.....	ZX-B49	Pin.....	8n6x20	1
50.....	ZX-B50	Taper Pin.....	3x20	1
51.....	TS-1505081	Socket Cap Screw.....	M10x50	2
52.....	ZX-05741	Threaded Tube		2
53.....	TS-1540081	Hex Nut.....	M12.....	2
54.....	ZX-B54	Drum Switch.....		1
55.....	ZX-S27	Cross Head Screw.....	M5x8	5
56.....	ZX-01718.....	Rocker.....		1
57.....	ZX-B57	Pin.....	3x16	1
58.....	ZX-01716.....	Bracket.....		1
59.....	ZX-01715C	Cover		1
60.....	ZX-B60	Cross Recessed Pan Head Screw	M6x18	4
61.....	TS-1482031	Hex Cap Bolt	M6x16	2
62.....	ZX-B62	Pin.....	2x15	2
63.....	ZX-01719.....	Rocker.....		1

Headstock Assembly I

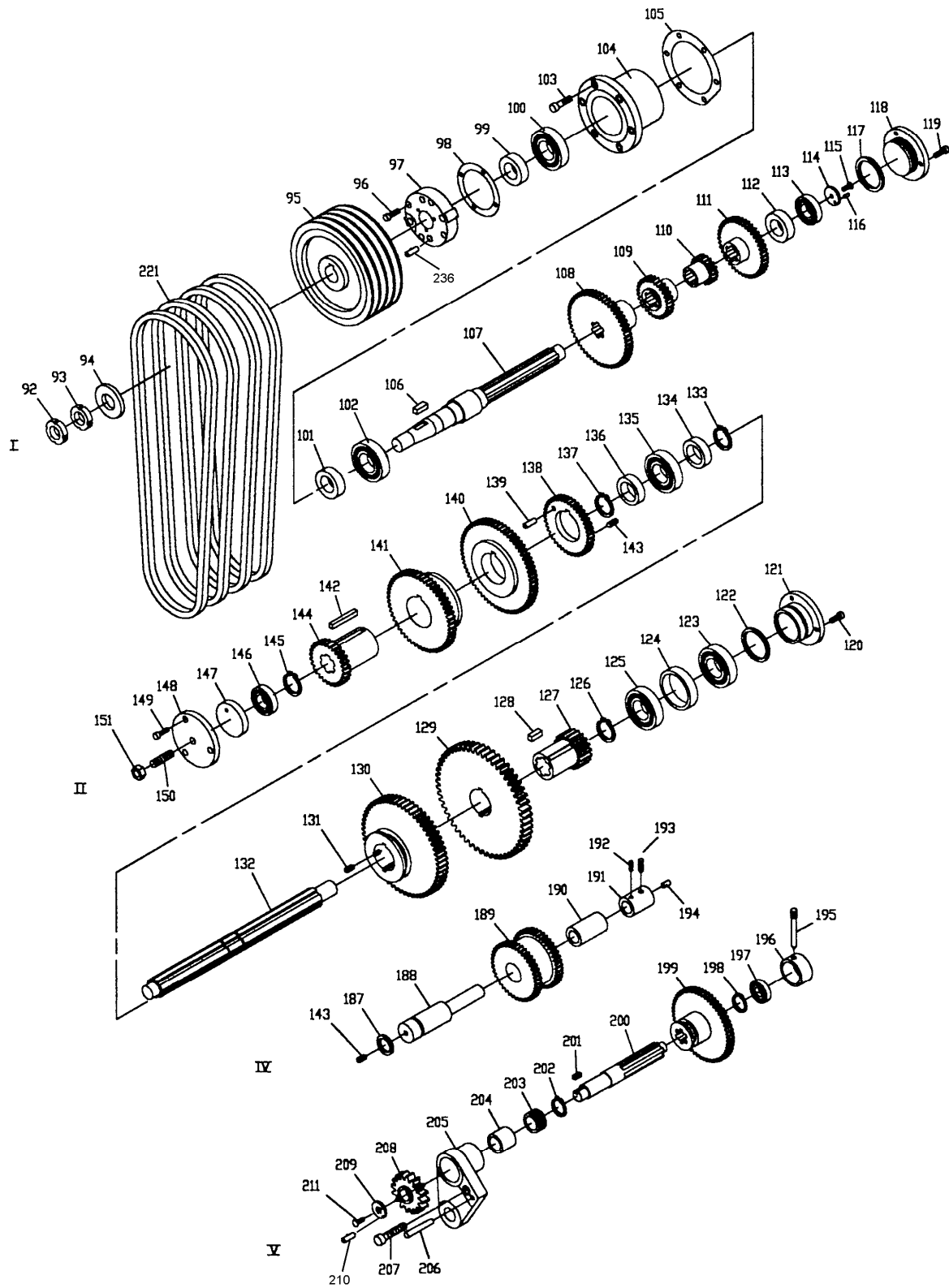


Headstock Assembly I

Index No.	Part No.	Description	Size	Qty.
1.....	ZX-02306.....	Round Sign Plate.....		3
2.....	ZX-02122.....	Positioning Handle.....		1
3.....	ZX-H3.....	Flat End Set Screw.....	M10x12.....	1
4.....	ZX-H4.....	Spring.....	YI-1x8x25.....	1
5.....	ZX-H5.....	Steel Ball.....	8.....	1
6.....	ZX-H6.....	Countersunk Head Screw.....	M5x12.....	2
7.....	ZX-02743.....	Positioning Disc.....		1
8.....	ZX-02738.....	Shaft.....		1
9.....	ZX-H9.....	Taper Pin.....	5x55.....	1
10.....	ZX-H10.....	Woodruff Key.....	4x16.....	1
11.....	ZX-H11.....	Ring Seal.....	25x2.4.....	1
12.....	ZX-02116.....	Crank.....		1
13.....	TS-1523051.....	Set Screw.....	M6x16.....	1
14.....	ZX-H14.....	Pin.....	5n6x28.....	1
15.....	ZX-02302.....	Poking Block.....		1
16.....	ZX-02738C.....	Pin Block.....		1
17.....	TS-1523051.....	Set Screw.....	M6x16.....	1
18.....	ZX-02114.....	Crank.....		1
19.....	ZX-H11.....	Ring Seal.....	25x2.4.....	1
20.....	ZX-H20.....	Pin.....	5x30.....	1
21.....	ZX-02734.....	Shaft.....		1
22.....	ZX-H10.....	Woodruff Key.....	4x16.....	1
23.....	ZX-H5.....	Steel Ball.....	8.....	1
24.....	ZX-H4.....	Spring.....	YI-1x8x25.....	1
25.....	ZX-H3.....	Flat End Set Screw.....	M10x12.....	1
26.....	ZX-02733.....	Left Positioning Disc.....		1
27.....	ZX-H6.....	Countersunk Head Screw.....	M5x12.....	2
28.....	ZX-02113.....	Left Lever Support.....		1
29.....	ZX-02741.....	Handle.....		1
30.....	ZX-02732.....	Cover.....		1
31.....	ZX-H6.....	Countersunk Head Screw.....	M5x12.....	1
32.....	ZX-H6.....	Countersunk Head Screw.....	M5x12.....	1
33.....	ZX-02732.....	Cover.....		1
34.....	ZX-02119.....	Right Lever Support.....		1
35.....	ZX-H3.....	Flat End Set Screw.....	M10x12.....	1
36.....	ZX-H4.....	Spring.....	YI-1x8x25.....	1
37.....	ZX-H5.....	Steel Ball.....	8.....	1
38.....	ZX-02728.....	Right Positioning Disc.....		1
39.....	ZX-02741.....	Handle.....		1
40.....	ZX-H6.....	Countersunk Head Screw.....	M5x12.....	2
41.....	ZX-H10.....	Woodruff Key.....	4x16.....	1
42.....	ZX-02727.....	Shaft.....		1
43.....	ZX-H10.....	Half Circle Key.....	4x16.....	1
44.....	ZX-H11.....	Ring Seal.....	25x2.4.....	1
45.....	ZX-02730.....	Gear.....	1.5m36T.....	1
46.....	TS-1523051.....	Set Screw.....	M6x16.....	1
47.....	ZX-02738C.....	Pin Block.....		1
48.....	TS-1523051.....	Set Screw.....	M6x16.....	1
49.....	ZX-02111.....	Crank.....		1
50.....	ZX-H10.....	Woodruff Key.....	4x16.....	1
51.....	ZX-02731/1.....	Control Shaft.....		1
52.....	ZX-H10.....	Woodruff Key.....	4x16.....	1
53.....	ZX-H11.....	Ring Seal.....	25x2.4.....	1
54.....	ZX-H54.....	Taper End Set Screw.....	M6x16.....	1
55.....	ZX-02732/2.....	Gear.....	1.5m36T.....	1
56.....	ZX-H56.....	Ring Seal.....	40x3.1.....	1

Index No.	Part No.	Description	Size	Qty.
57.....	ZX-02110.....	Bushing.....		1
58.....	ZX-02729.....	Cover.....		1
59.....	ZX-H59.....	Pin.....	3n6x10.....	1
60.....	ZX-H6.....	Countersunk Head Screw.....	M5x12.....	1
61.....	ZX-H61.....	Countersunk Head Screw.....	M8x12.....	1
62.....	ZX-H62.....	Flat End Set Screw.....	M8x12.....	1
63.....	ZX-02115C.....	Bearing Support.....		1
64.....	ZX-H64.....	Ring Seal.....	40x3.1.....	1
65.....	ZX-02115.....	Left Fork.....		1
66.....	ZX-H66.....	Flat End Set Screw.....	M6x10.....	1
67.....	ZX-02120A/2.....	Bushing.....		1
68.....	ZX-H68.....	Taper Pin.....	6x35.....	1
69.....	ZX-02736.....	Control Shaft.....		1
70.....	ZX-02112.....	Right Fork.....		1
71.....	ZX-H66.....	Flat End Set Screw.....	M6x10.....	1
72.....	ZX-02120A/2.....	Bushing.....		1
73.....	ZX-H73.....	Ring Seal.....	30x3.1.....	1
74.....	ZX-02735.....	Blocking Piece.....		1
75.....	ZX-H61.....	Countersunk Head Screw.....	M8x12.....	1
76.....	ZX-02744.....	Adjusting Screw.....		1
77.....	ZX-H77.....	Taper Pin.....	8x40.....	1
78.....	ZX-H77.....	Taper Pin.....	8x40.....	1
79.....	ZX-92124.....	Adjusting Block.....		1
80.....	ZX-H80.....	Hex Cap Bolt.....	M12x50.....	1
81.....	ZX-02744.....	Adjusting Screw.....		1
82.....	ZX-02736C.....	Positioning Pin.....		1
83.....	ZX-H83.....	Oil Sight Glass.....		1
84.....	ZX-H84.....	Washer.....	A16.....	2
85.....	ZX-H85.....	Hex Socket Cap Screw.....	M16x50.....	2
86.....	ZX-02301A.....	Label (for 1440ZX).....		1
.....	ZX-02301B.....	Label (for 1460ZX).....		1
.....	ZX-02301C.....	Label (for 1640ZX).....		1
.....	ZX-02301D.....	Label (for 1660ZX).....		1
.....	ZX-02301E.....	Label (for 1840ZX).....		1
.....	ZX-02301F.....	Label (for 1860ZX).....		1
.....	ZX-02301G.....	Label (for 1880ZX).....		1
.....	GH2280ZX-02301.....	Label (for 2280ZX).....		1
87.....	TS-1504071.....	Hex Socket Cap Screw.....	M8x35.....	4
88.....	ZX-H88.....	Countersunk Head Screw.....	M16x25.....	1
89.....	ZX-02117.....	Top Cover.....		1
90.....	ZX-H90.....	Hex Cap Bolt.....		2
91.....	ZX-H91.....	Washer.....	A16.....	2
92.....	ZX-02505.....	Paper Gasket.....		1
93.....	TS-1531012.....	Slotted Pan Head Screw.....	M3x6.....	7
94.....	ZX-H94N.....	Pin.....	4n6x15.....	2

Headstock Assembly II

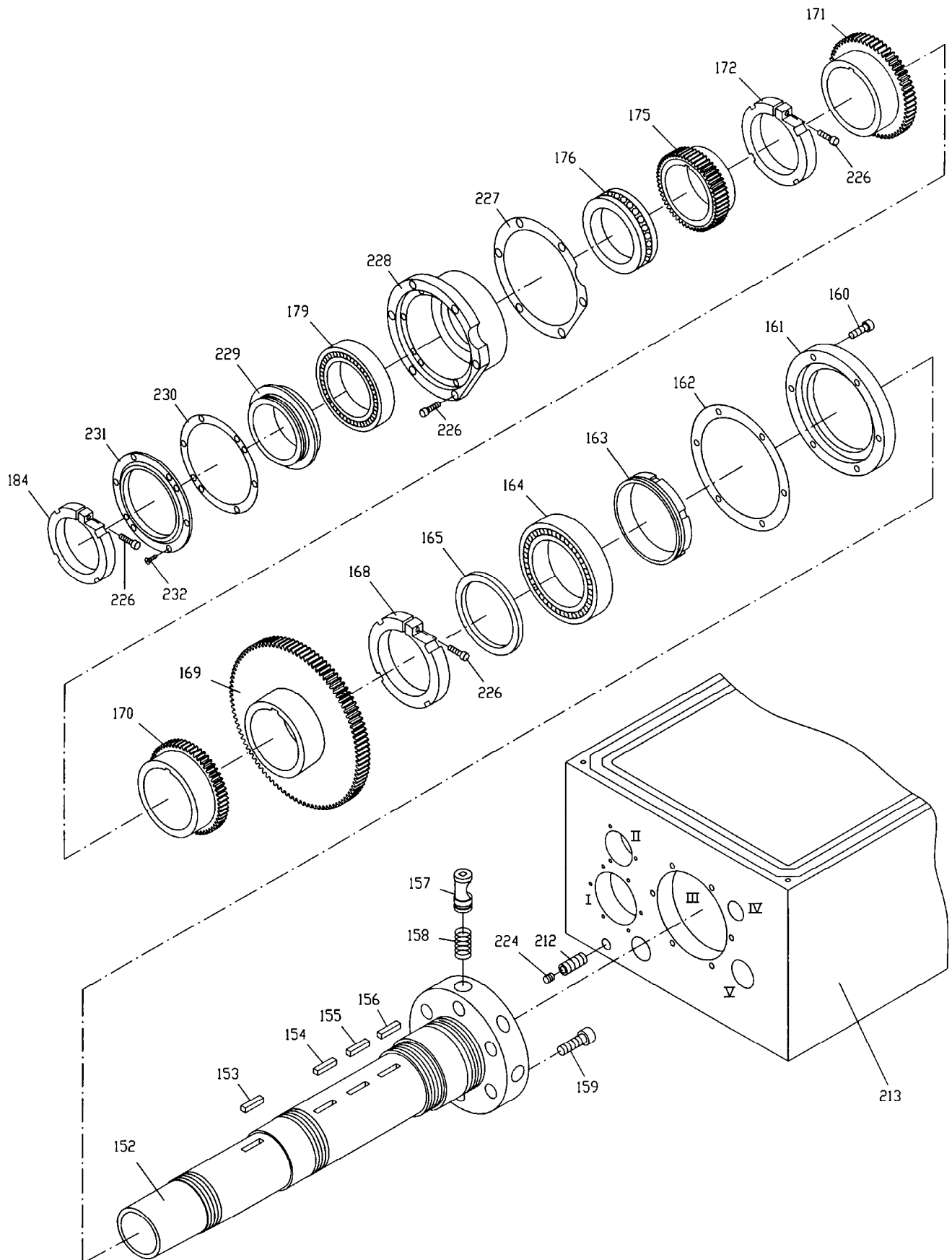


Headstock Assembly II

Index No.	Part No.	Description	Size	Qty.
95.....	ZX-02107.....	Pulley.....		1
96.....	TS-1503061.....	Socket Cap Screw.....	M6x25.....	4
97.....	ZX-02106.....	Bearing Cover.....		1
98.....	ZX-02506.....	Gasket.....		1
99.....	ZX-H99.....	Ring Seal.....	32x52.....	1
100.....	BB-6207/P5.....	Ball Bearing.....	35x72x17.....	1
101.....	ZX-H102.....	Sleeve.....	30x10.....	1
102.....	BB-6207/P5.....	Ball Bearing.....	35x72x17.....	1
103.....	TS-1504051.....	Socket Cap Screw.....	M8x25.....	6
104.....	ZX-02105.....	Bearing Support.....		1
105.....	ZX-02502.....	Gasket.....		1
106.....	ZX-H106.....	Flat Key.....	10x8x35.....	1
107.....	ZX-02709.....	Shaft.....		1
108.....	ZX-02754X.....	Gear (for 14" models).....	2.5m52T.....	1
.....	ZX-02754X/6P.....	Gear (for 16"/18"/22" models).....	2.5m61T.....	1
109.....	ZX-02753X.....	Gear (for 14" models).....	2.5m28T.....	1
.....	ZX-02753X/6P.....	Gear (for 16"/18"/22" models).....	2.5m32T.....	1
110.....	ZX-02752X.....	Gear.....	2.5m18T.....	1
111.....	ZX-02751X.....	Gear (for 14" models).....	2.5m41T.....	1
.....	ZX-02751X/6P.....	Gear (for 16"/18"/22" models).....	2.5m47T.....	1
112.....	ZX-H112.....	Sleeve.....		1
113.....	BB6305/P5.....	Ball Bearing.....	25x62x17.....	1
114.....	ZX-H114.....	Shaft End Lock Ring.....	32.....	1
115.....	ZX-H115.....	Countersunk Head Screw.....	M6x20.....	1
116.....	ZX-H59.....	Pin.....	3n6x10.....	1
117.....	ZX-H117.....	Ring Seal.....	60x3.1.....	1
118.....	ZX-02104.....	Blocking Flange.....		1
119.....	TS-1503041.....	Socket Cap Screw.....	M6x15.....	3
120.....	TS-1503041.....	Socket Cap Screw.....	M6x15.....	3
121.....	ZX-02103.....	Blocking Flange.....		1
122.....	ZX-H117.....	Ring Seal.....	60x3.1.....	1
123.....	BB-6305/P5.....	Ball Bearing.....	25x62x17.....	1
124.....	ZX-H124.....	Sleeve.....	62x6.....	1
125.....	BB-6305/P5.....	Ball Bearing.....	25x62x17.....	1
126.....	ZX-H126.....	Circle Clip For Shaft.....	35.....	1
127.....	ZX-02705.....	Gear.....	3m19T.....	1
128.....	ZX-H128.....	Flat Key.....	8x7x50.....	2
129.....	ZX-02706.....	Gear.....	3m67T.....	1
130.....	ZX-02707.....	Gear.....	3m59T.....	1
131.....	ZX-H62.....	Flat End Set Screw.....	M8x12.....	1
132.....	ZX-02708.....	Shaft.....		1
133.....	ZX-H133.....	C-Clip.....	35.....	1
134.....	ZX-H134.....	Sleeve.....	35x8.....	1
135.....	BB-6007/P5.....	Ball Bearing.....	35x62x14.....	1
136.....	ZX-H134.....	Sleeve.....	35x8.....	1
137.....	ZX-H133.....	C-Clip.....	35.....	1
138.....	ZX-02756.....	Gear (for 14" models).....	2.5m42T.....	1
.....	ZX-02756/6P.....	Gear (for 16"/18"/22" models).....	2.5m36T.....	1
139.....	ZX-H139.....	Pin.....	8n6x25.....	1
140.....	ZX-02757.....	Gear (for 14" models).....	2.5m65T.....	1
.....	ZX-02757/6P.....	Gear (for 16"/18"/22" models).....	2.5m65T.....	1
141.....	ZX-02758.....	Gear (for 14" models).....	2.5m55T.....	1
.....	ZX-02758/6P.....	Gear (for 16"/18"/22" models).....	2.5m51T.....	1
142.....	ZX-H142.....	Flat Key.....	10x6x60.....	2

Index No.	Part No.	Description	Size	Qty.
143	ZX-H143	Flat Head Set Screw	M8x12	2
144	ZX-02755X	Gear (for 14" models)	2.5m31T	1
	ZX-02755X/6P	Gear (for 16"/18"/22" models)	2.5m22T	1
145	ZX-H133	C-Clip	35	1
146	BB-6305	Ball Bearing	25x62x17	1
147	ZX-H147	Pushing Disc	62	1
148	ZX-02109C	Cover		1
149	TS-1503041	Socket Cap Screw	M6x15	3
150	ZX-H150	Set Screw	M12x65	1
151	ZX-H151	Hex Nut	M12	1
187	ZX-H187	Ring Seal	35x3.1	1
188	ZX-02714	Shaft		1
189	ZX-02716	Double Gear	2m48T	1
190	ZX-02303	Copper Sleeve		1
191	ZX-02734C	Positioning Sleeve		1
192	TS-1523031	Set Screw	M6x10	1
193	TS-1524041	Set Screw	M8x15	1
194	ZX-02733C	Blocking Piece		1
195	ZX-02718	Taper End Set Screw		1
196	ZX-02114C	Sleeve		1
197	BB-6203	Ball Bearing	17x40x12	1
198	ZX-H198	C-Clip	28	1
199	ZX-02717	Gear	2m65T	1
200	ZX-02715	Shaft		1
201	ZX-H201	Flat Key	5x5x1	1
202	ZX-H198	C-Clip	28	1
203	ZX-02722C	Sleeve		1
204	ZX-02301	Oil Bushing		1
205	ZX-08106A	Bracket (for Shaft V, Vb) (for 14"/16" models)		1
	ZX-08106B	Bracket (for Shaft V, Vb) (for 18" models)		1
	GH2280ZX-08106	Bracket (for Shaft V, Vb, Vc) (for 22" model)		1
206	ZX-H77	Taper Pin	8x40	1
207	TS-1505031	Hex Socket Cap Screw	M10x25	1
208	TNMP-08706A(N)	Gear (for 14"/16"/22" models)	3.5m16T	1
	TNMP-08706B(N)	Gear (for 18" models)	4m16T	1
209	ZX-02724C	Washer		1
210	ZX-H59	Pin	3n6x10	1
211	ZX-H211	Countersunk Head Screw	M5x16	1
221	VB-A75	V-Belt (for 14" models)	A-75	4
	VB-A76	V-Belt (for 16" models)	A-76	4
	VB-A77	V-Belt (for 18" models)	A-77	4
	VB-A85	V-Belt (for 22" model)	A-85	4
233	ZX-02506	Paper Gasket		2
234	ZX-H234	Set Screw	M8x6	2
235	ZX-02743N	Clamping Round Nut		1
236	ZX-H236	Pin	8×30	2

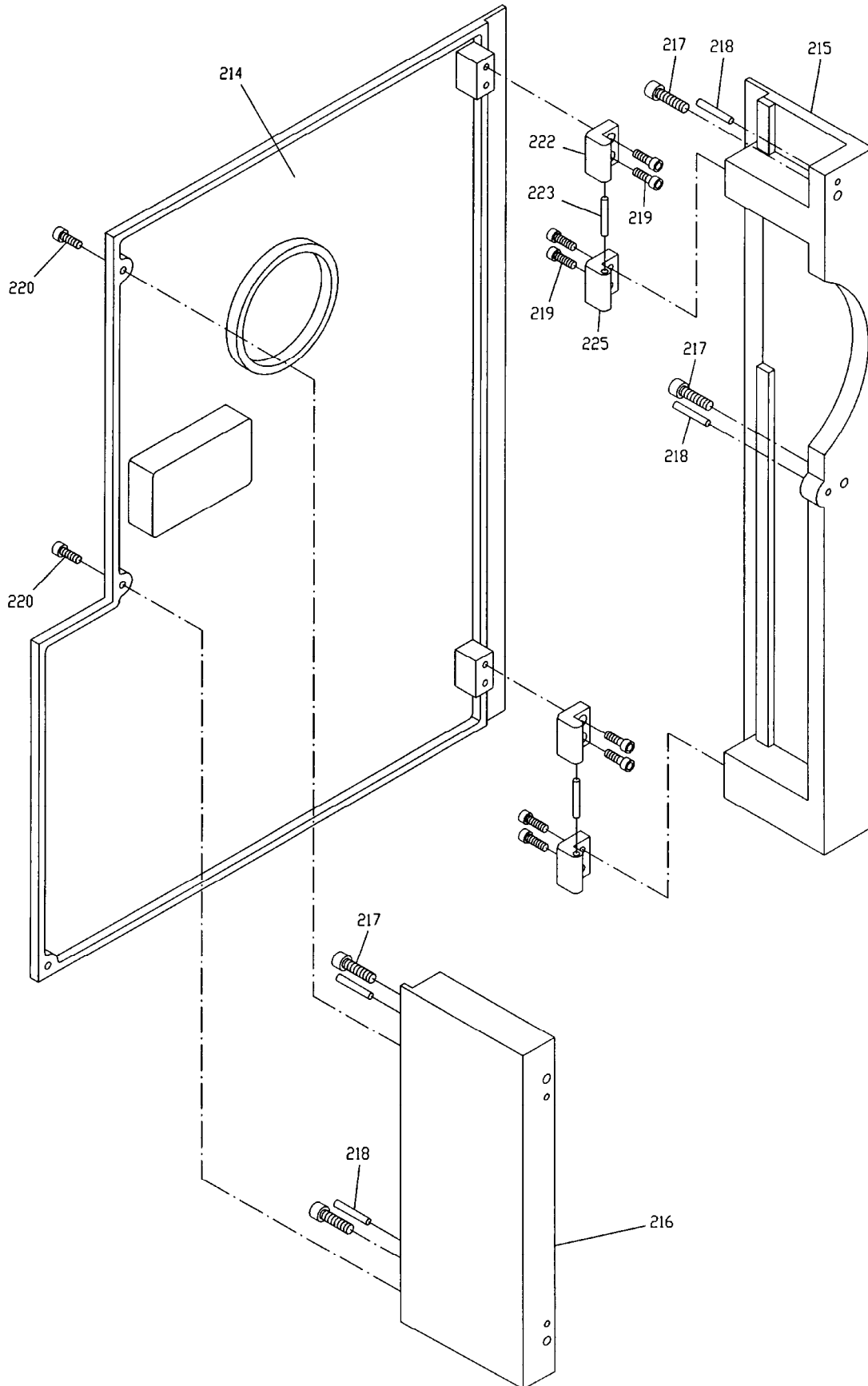
Headstock Assembly III



Headstock Assembly III

Index No.	Part No.	Description	Size	Qty.
152	ZX-02704	Spindle		1
153	ZX-H153	Flat Key	10x8x40	1
154	ZX-H154	Flat Key	10x8x50	1
155	ZX-H155	Flat Key	12x8x50	1
156	ZX-H156	Flat Key	14x9x50	1
157	ZX-02701	Cam Lock		6
158	ZX-H158	Spring	1x8x25	6
159	ZX-02703	Cam Positioning Screw		6
160	TS-1505041	Hex Socket Cap Screw	M10x28	6
161	ZX-02102	Bearing Front Cover		1
162	ZX-02501	Gasket		1
163	ZX-02702	Oil Splashing Ring		1
164	NN3024/P5	Taper Roller Bearing	120x180x46	1
165	ZX-02726	Lining		1
168	ZX-02725A	Round Nut w/Screw		1
169	ZX-02723	Gear	3m98T	1
170	ZX-02722	Gear	3m50T	1
171	ZX-02721	Gear	3m58T	1
172	ZX-02720A	Round Nut w/Screw		1
175	ZX-02710	Gear	2m65T	1
176	51120/P5	Thrust Bearing	100x135x25	1
179	BB-7020AC/P5	Angular Bearing	100x150x24	1
184	ZX-02713A	Round Nut w/Screw		1
212	ZX-H212	Drain Plug (14" models, serial # 001204ZX258 and lower)		1
	ZX-H212	Drain Plug (16" models, serial #010312ZX293 and lower, also includes serial # 010319ZX298 and 299)		1
	ZX-H212	Drain Plug (18" models, serial # 010416ZX313 and lower)		1
	ZX-H212A	Drain Plug (14" models, serial # 010105ZX263 and higher)		1
	ZX-H212A	Drain Plug (16" models, serial #010319ZX294 and higher, except for serial # 010319ZX298 and 299)		1
	ZX-H212A	Drain Plug (18" models, serial # 010514ZX323 and higher)		1
	ZX-H212A	Drain Plug (22" model)	Z3/8"	1
213	ZX-02101A	Headstock Casting (14" models, serial # 001204ZX258 and lower)		1
	ZX-02101AN	Headstock Casting (14" models, serial # 010105ZX263 and higher)		1
	ZX-01201B	Headstock Casting (16" models, serial # 010312ZX293 and lower, also includes serial # 110319ZX298 and 299)		1
	ZX-02101BN	Headstock Casting (16" models, serial # 010319ZX294 and higher, except for serial # 010319ZX298 and 299)		1
	ZX-02101C	Headstock Casting (18" models, serial # 010416ZX313 and lower)		1
	ZX-02101CN	Headstock Casting (18" models, serial # 010514ZX323 and higher)		1
	GH2280ZX-02101	Headstock Casting (22" model)		1
224	ZX-G38-3A	Screw		1
226	ZX-H226	Hex Socket Cap Screw	M8x28	9
227	ZX-02502F	Gasket		1
228	ZX-02108F	Bearing Support		1
229	ZX-02711F	Sleeve		1
230	ZX-02510F	Gasket		1
231	ZX-02761F	Bearing Back Cover		1
232	ZX-H232	Screw	M5x10	6

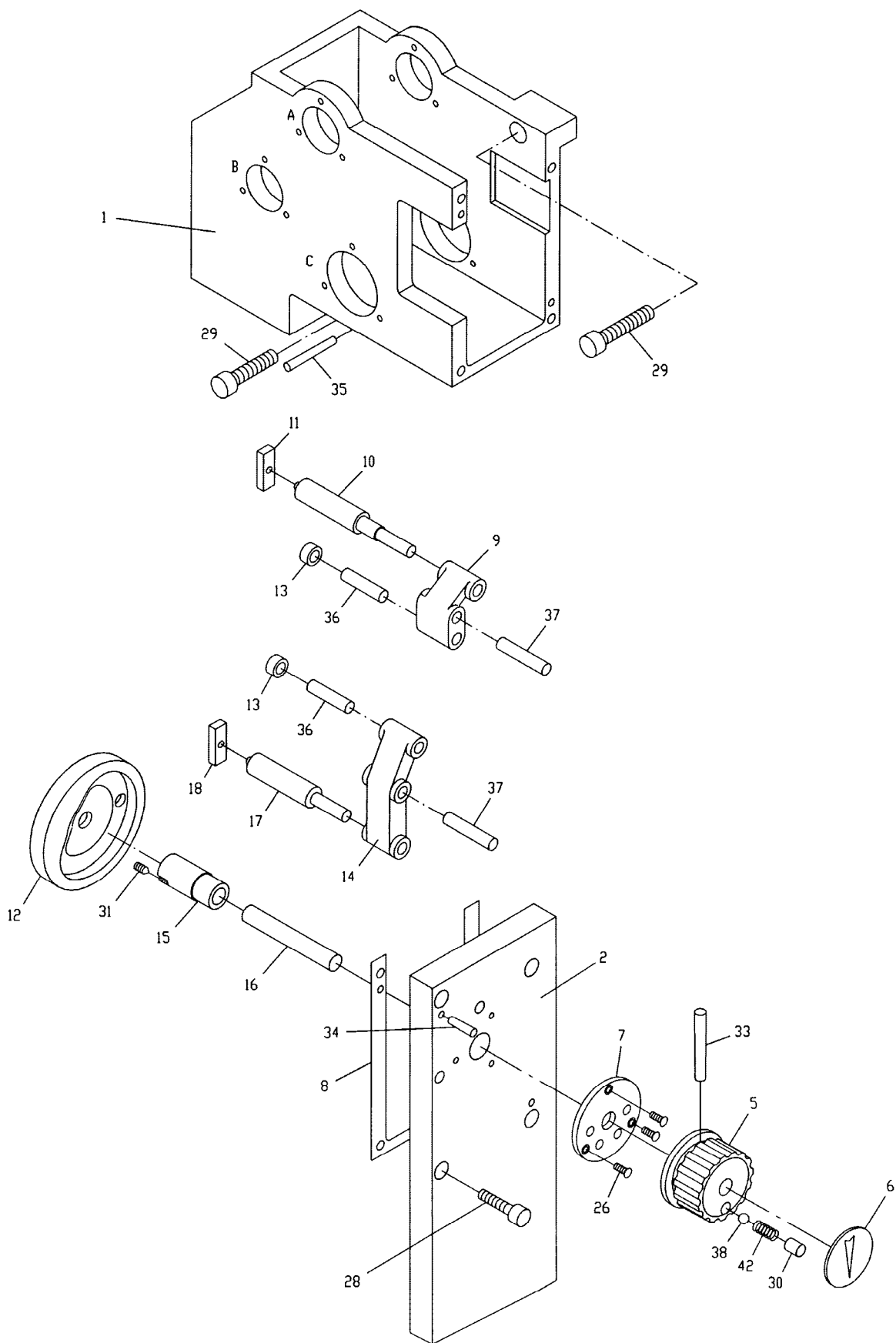
Headstock Assembly IV



Headstock Assembly IV

Index No.	Part No.	Description	Size	Qty.
214.....	ZX-08302A	Back Cover (for 14" models)		1
.....	ZX-08302B	Back Cover (for 16" models)		1
.....	ZX-08302C	Back Cover (for 18" models)		1
.....	GH2280ZX-08301	Back Cover (for 22" model).....		1
215.....	ZX-08114A.....	Rear Side Plate (for 14" models).....		1
.....	ZX-08114B.....	Rear Side Plate (for 16" models).....		1
.....	ZX-08114C.....	Rear Side Plate (for 18" models).....		1
.....	GH2280ZX-08114	Rear Side Plate (for 22" model).....		1
216.....	ZX-08113A.....	Front Side Plate (for 14" models)		1
.....	ZX-08113B.....	Front Side Plate (for 16" models)		1
.....	ZX-08113C.....	Front Side Plate (for 18" models)		1
.....	GH2280ZX-08113	Front Side Plate (for 22" model).....		1
217.....	TS-1504051	Socket Cap Screw	M8x25	4
218.....	ZX-H218	Taper Pin	6x25	4
219.....	TS-1503051	Socket Cap Screw	M6x20	8
220.....	TS-1514021	Socket Cap Screw	M6x15	3
222.....	ZX-08712	Upper Hinge		2
223.....	ZX-H223	Pin.....	6n6x40	2
225.....	ZX-08711	Lower Hinge		2

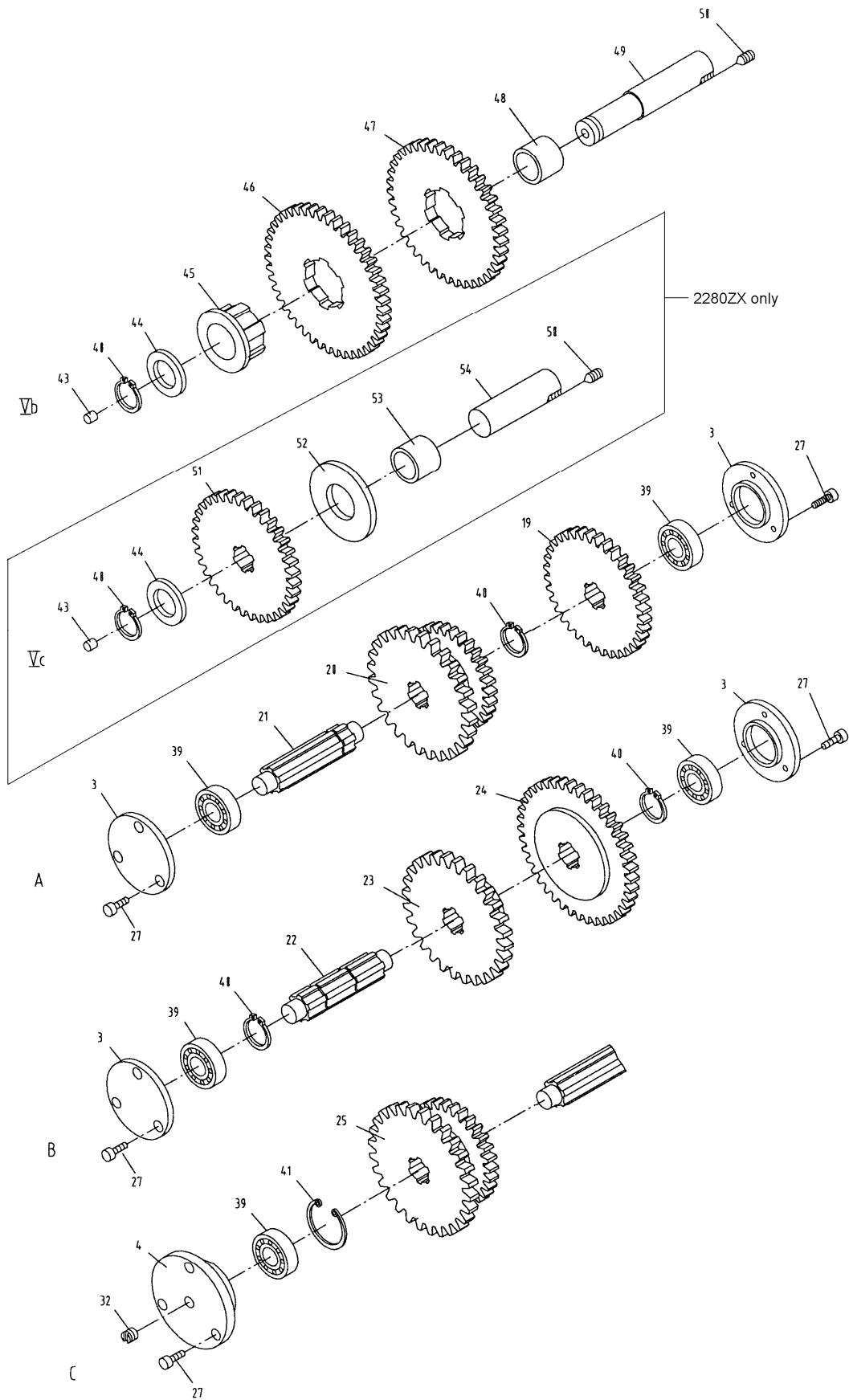
Change Gear Box Assembly I



Change Gear Box Assembly I

Index No.	Part No.	Description	Size	Qty.
1.....	ZX-08101.....	Change Gear Box Casting.....		1
2.....	ZX-08108.....	Front Cover		1
5.....	ZX-05104C	Hand Wheel		1
6.....	ZX-05301C	Sign Plate.....		1
7.....	ZX-08708.....	Positioning Disc.....		1
8.....	ZX-08505.....	Gasket.....		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.....	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	1
34.....	ZX-C34	Taper Pin.....	6x30	2
35.....	ZX-C35	Taper Pin.....	6x50	1
36.....	ZX-C36	Pin.....	10m6x40	2
37.....	ZX-C37	Pin.....	10m6x50	2
38.....	ZX-H5	Steel Ball	8.....	1
42.....	ZX-C42	Spring.....	1x8x30	1

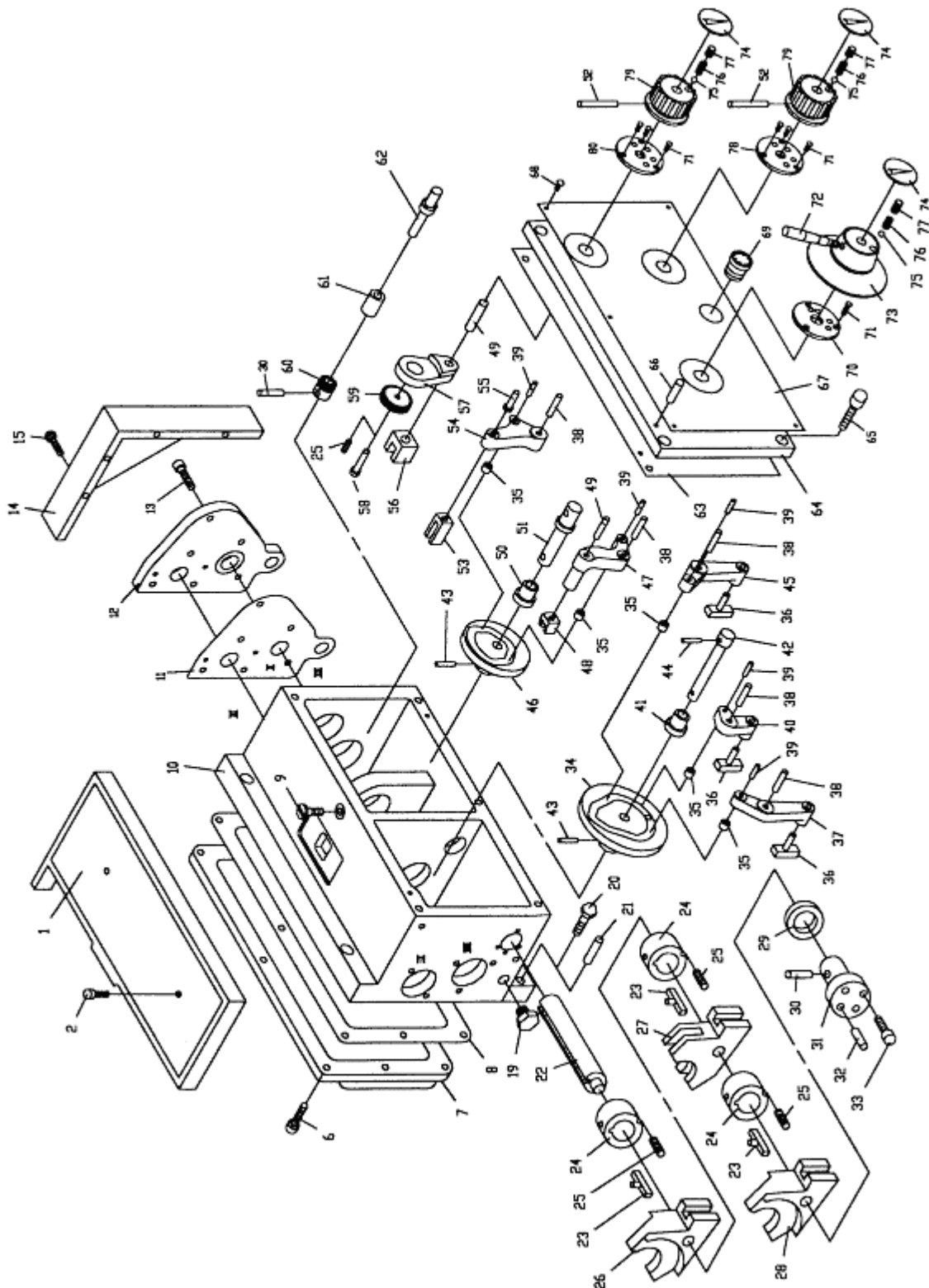
Change Gear Box Assembly II



Change Gear Box Assembly II

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	3.75m27T.....	1
24.....	ZX-08709.....	Gear	3m41T.....	1
25.....	ZX-08102.....	Double Gear.....	3.75m30T/3m29T	1
27.....	ZX-C27	Slotted Cheese Head Screw	M5x12	15
32.....	ZX-C32	Flat Head Set Screw.....	M10x12	1
39.....	BB-6203ZZ/P6	Ball Bearing.....	17x40x12	5
40.....	ZX-C40	C-Clip.....	25.....	4(5 for 22")
41.....	ZX-C41	C-Clip.....	40.....	1
43.....	ZX-C43	Oil Cup.....	8.....	1 (2 for 22")
44.....	TNMP08108.....	Washer.....		1 (2 for 22")
45.....	TNMP08102.....	Splined Sleeve.....		1
46.....	TNMP08504.....	Gear	3m41T.....	1
47.....	TNMP08501A	Gear (for 14"/16"/22" models)	3.5m36T.....	1
.....	TNMP08501B	Gear (for 18" models)	4m36T.....	1
48.....	ZX-05502C	Oil Bushing.....		1
49.....	ZX-08707	Shaft Vb		1
50.....	ZX-C50	Flat Head Set Screw.....	M8x10	1 (2 for 22")
51.....	GH2280ZX-08112	Gear (for 22" model)	3m30T.....	1
52.....	GH2280ZX-1052.....	Washer.....		1
53.....	GH2280ZX-1053.....	Oil Bushing.....		1
54.....	GH2280ZX-08707	Axis Vc (for 22" model)		1

Quick Change Gear Box I

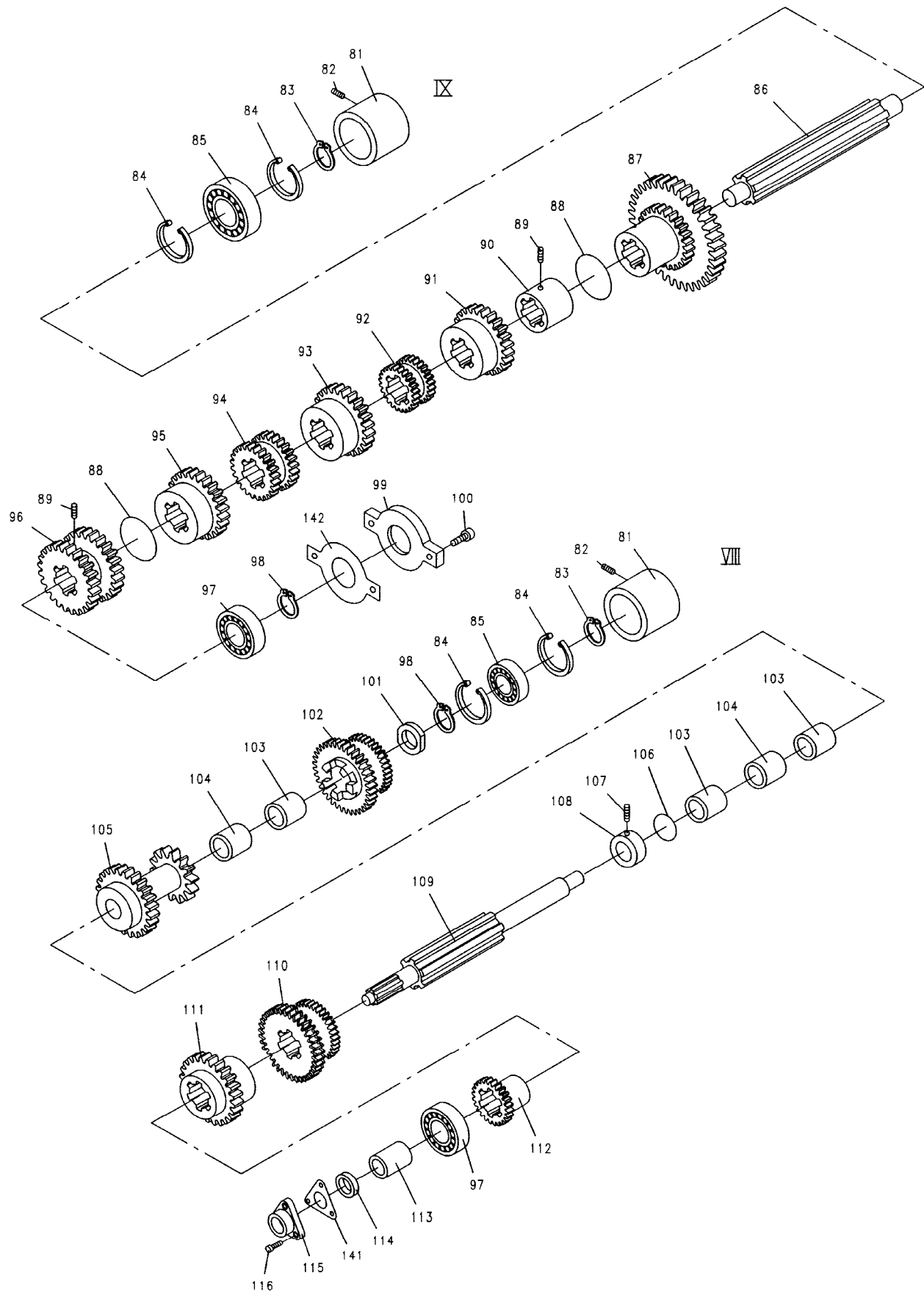


Quick Change Gear Box I

Index No.	Part No.	Description	Size	Qty.
1.....	ZX-05153A	Upper Cover.....		1
2.....	TS-1503071	Hex Socket Cap Screw.....	M6x30	2
6.....	TS-1504031	Hex Socket Cap Screw.....	M8x16	10
7.....	ZX-05109.....	Rear Cover.....		1
8.....	ZX-05502.....	Gasket.....		1
9.....	ZX-Q09.....	Countersunk Head Screw.....	M10x18	1
10.....	ZX-05101.....	Feedbox Casting		1
11.....	ZX-05501.....	Gasket.....		1
12.....	ZX-05108.....	Flange.....		1
13.....	TS-1504031	Hex Socket Cap Screw.....	M8x16	6
14.....	ZX-05151.....	Extending Plate		1
15.....	TS-1503131	Hex Socket Cap Screw.....	M6x60	4
19.....	ZX-Q19.....	Hex Cap Bolt.....	M10x1	1
20.....	TS-1491061	Hex Cap Bolt.....	M10x40	2
21.....	ZX-H68.....	Taper Pin.....	6x35	2
22.....	ZX-05738.....	Control Shaft		1
23.....	ZX-05739.....	Sliding Key		3
24.....	ZX-05128.....	Sliding Sleeve.....		3
25.....	ZX-Q25.....	Flat Head Set Screw.....	M5x8	4
26.....	ZX-05125.....	Right Fork.....		1
27.....	ZX-05126.....	Middle Fork		1
28.....	ZX-05127.....	Left Fork.....		1
29.....	ZX-Q29.....	Ring Seal	32x3.1	1
30.....	ZX-Q30.....	Taper Pin.....	4x25	2
31.....	ZX-05129.....	Cover		1
32.....	ZX-Q32.....	Pin.....	5n6x15	1
33.....	ZX-Q33.....	Cheese Head 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.....	ZX-05726.....	Lever Shaft.....		1
43.....	ZX-Q43.....	Taper Pin.....	4x32	2
44.....	ZX-Q44.....	Taper Pin.....	4x65	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	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

Index No.	Part No.	Description	Size	Qty.
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
66.....	ZX-Q66	Taper Pin.....	5x35	6
67.....	ZX-05303A	Sign Plate.....		1
68.....	ZX-Q68	Cross Head Screw.....	M3x6	7
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.....	ZX-H5	Steel Ball	8	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	Hand Wheel		2
80.....	ZX-05733	Positioning Disc.....		1

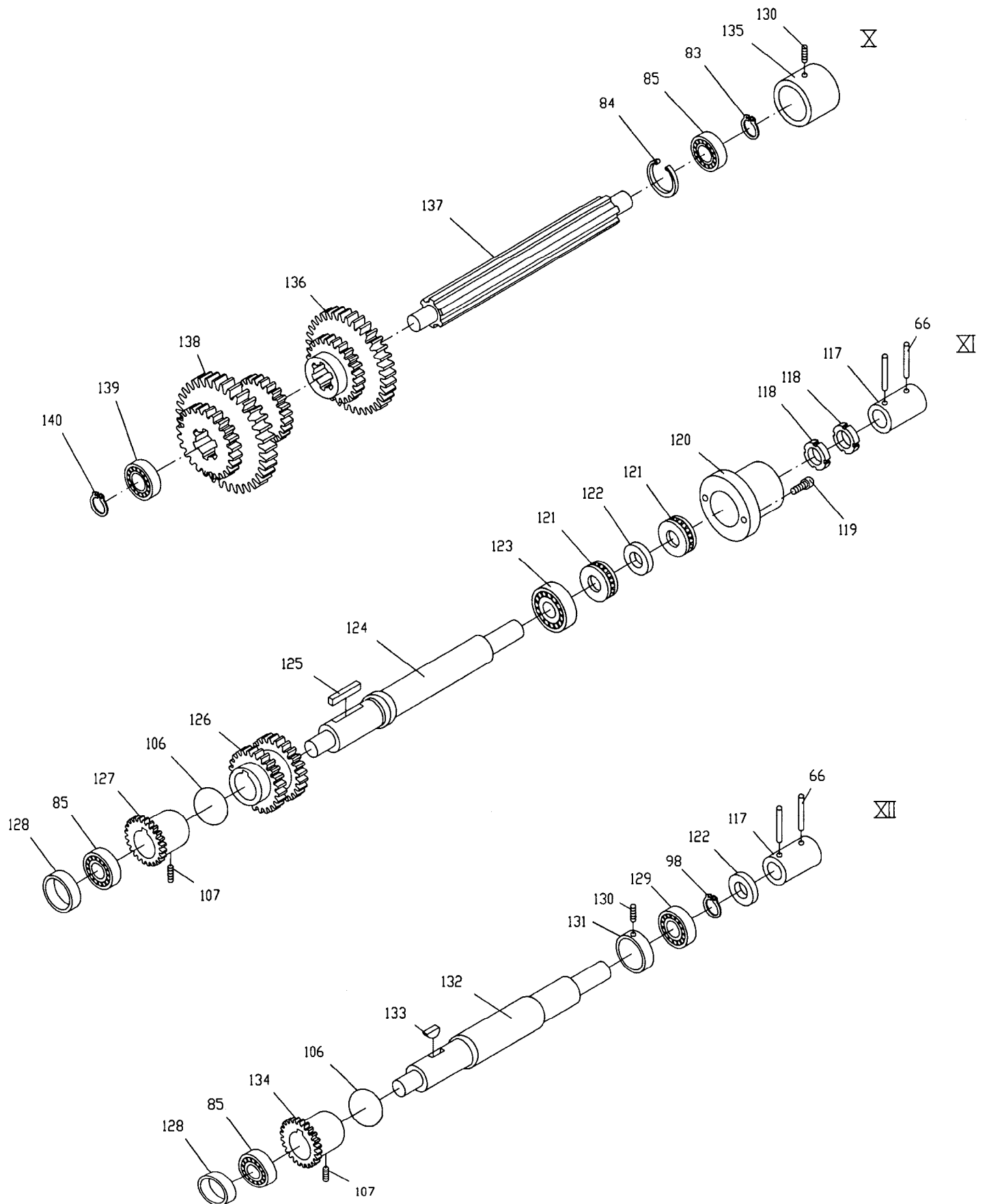
Quick Change Gear Box II



Quick Change Gear Box II

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.....	3
84.....	ZX-Q84.....	C-Clip.....	42.....	5
85.....	BB-6004.....	Single Row Radial Ball Bearing.....	20x42x12	5
86.....	ZX-05721.....	Shaft		1
87.....	ZX-05722.....	Double Gear.....	2m26T/2m52T	1
88.....	ZX-Q88.....	Iron Wire	1x190	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.....	3
99.....	ZX-05125.....	Shaft End Cover		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-05502C.....	Oil Bushing.....		3
104.....	ZX-05105.....	Sleeve.....		2
105.....	ZX-05707.....	Double Gear.....	2m39T/2m26T	1
106.....	ZX-Q106.....	Iron Wire	1x160	3
107.....	TS-1524031.....	Set Screw.....	M8x12	3
108.....	ZX-05714C.....	Fixed Bushing.....		1
109.....	ZX-05710.....	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.....	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

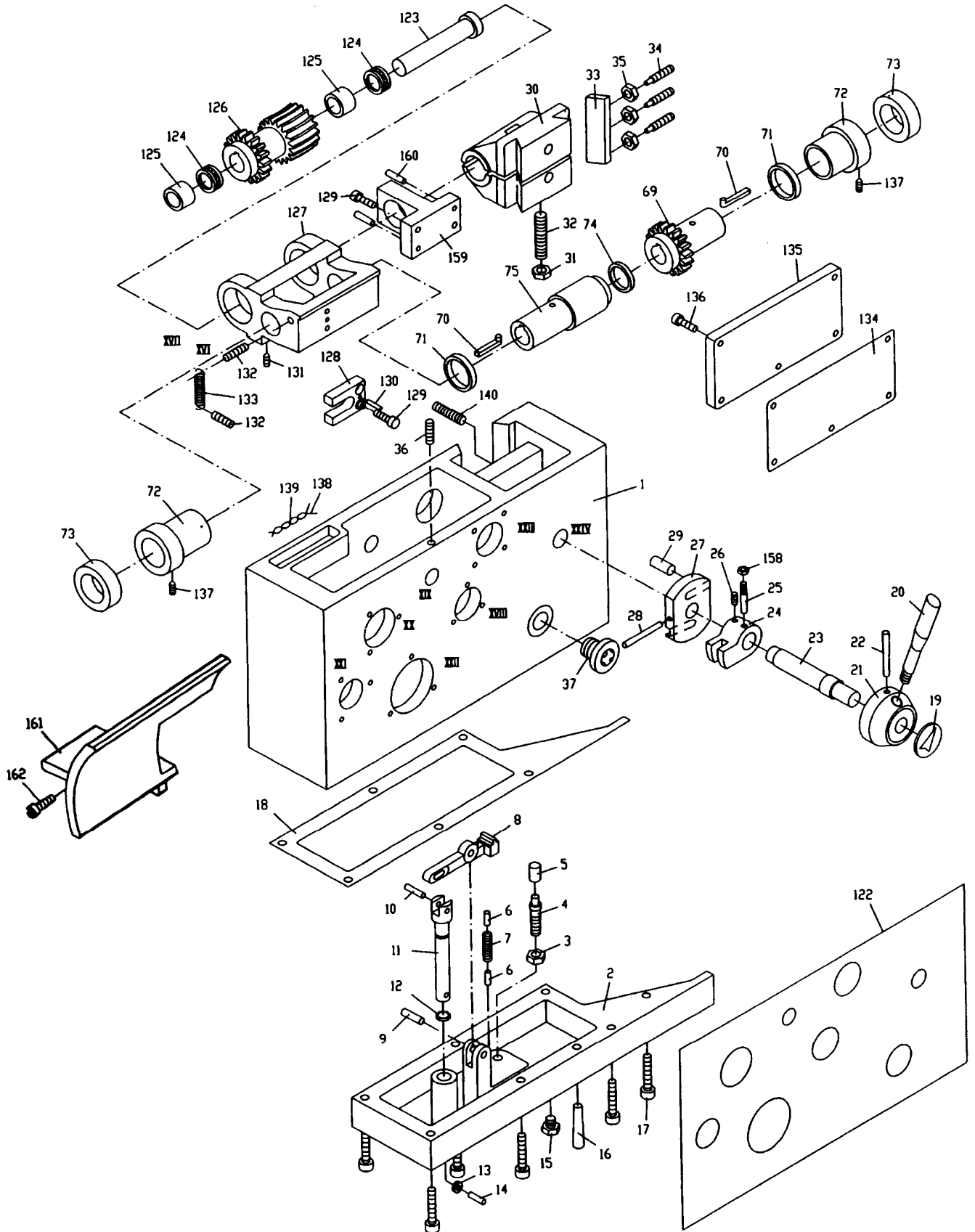
Quick Change Gear Box III



Quick Change Gear Box III

Index No.	Part No.	Description	Size	Qty.
66.....	ZX-Q66.....	Taper Pin.....	5x35.....	6
83.....	ZX-Q83.....	C-Clip.....	20.....	3
84.....	ZX-Q84.....	C-Clip.....	42.....	5
85.....	BB104.....	Single Row Radial Ball Bearing.....	20x42x12.....	5
98.....	ZX-Q98.....	C-Clip.....	25.....	3
106.....	ZX-Q106.....	Iron Wire.....	1x160.....	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.....	2
123.....	BB-6305.....	Ball Bearing.....	25x62x17.....	1
124.....	ZX-05725.....	Shaft.....		1
125.....	ZX-Q125.....	Key.....	8x7x50.....	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.....	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.....	1
134.....	ZX-05703.....	Gear.....	2.5m36T.....	1
135.....	ZX-05102.....	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.....	1
140.....	ZX-Q140.....	C-Clip.....	17.....	1

Apron Assembly I

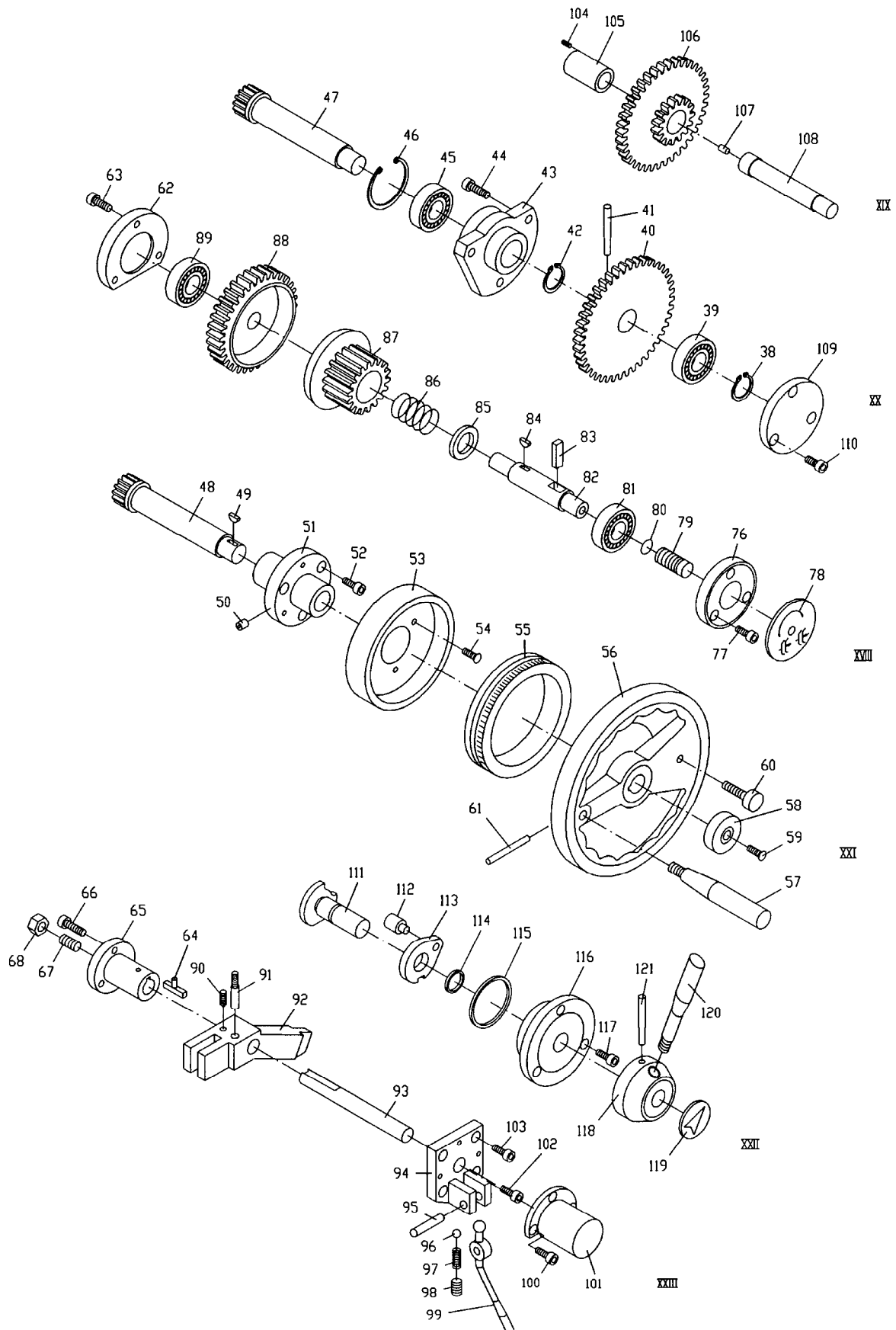


Apron Assembly I

Index No.	Part No.	Description	Size	Qty.
1.....	TL06101	Apron Casting.....		1
2.....	TL06103	Bottom Cover		1
3.....	TS-1540072	Hex Nut.....	M10.....	1
4.....	ZX-A4	Flat Head Set Screw.....	M10x70	1
5.....	TL06502	Cushion Cap		1
6.....	ZX-A6	Pin.....	6n6x16	2
7.....	ZX-A7	Tensile Spring.....	YI1.2x9x50	1
8.....	TL06734	Lever.....		1
9.....	ZX-A9	Pin.....	8n6x30	1
10.....	ZX-A10	Pin.....	6n6x18	1
11.....	TL06701-A	Pushing Rod.....		1
12.....	ZX-A12	Oil Seal	15x2.4	1
13.....	BB60016	Ball Bearing.....	6x17x6	1
14.....	ZX-A6	Pin.....	6n6x16	1
15.....	ZX-A15	Drain Plug	Z 1/4"	1
16.....	ZX-B34	Taper Pin.....	5x30	2
17.....	TS-1504041	Hex Socket Cap Screw.....	M8x20	6
18.....	TL06501	Gasket.....		1
19.....	TL06307	Sign Plate.....		1
20.....	TL06716	Lever.....		1
21.....	ZX-06122	Lever Support.....		1
22.....	ZX-B27	Taper Pin.....	6x60	1
23.....	TL06717	Half Nut Shaft.....		1
24.....	TL06111	Positioning Block		1
25.....	ZX-A25	Thread Tail Taper Pin.....	6x25	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-06302	Half Nut (serial # 010611ZX349 and lower)		1
.....	ZX-06302N	New Half Nut (serial # 010618ZX350 and higher)		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	1
69.....	TL06727	Gear (serial # 010611ZX349 and lower)	2m25T.....	1
.....	TL06727N	New Gear (serial # 010618ZX350 and higher) ...	2m25T.....	1
70.....	TL06728	Sliding Key		2
71.....	TL06121	Spacer (serial # 010611ZX349 and lower)		2
.....	TL06121N	New Spacer (serial # 010618ZX350 and higher)		2
72.....	TL06304	Positioning Sleeve (serial # 010611ZX349 and lower)		2
.....	TL06304N	New Positioning Sleeve (serial # 010618ZX350 and higher)		2
73.....	ZX-A73	Ring Seal For Rotating	3x55	2
74.....	ZX-A74	Oil Seal	35x3.1	1
75.....	TL06729	Sleeve (serial # 010611ZX349 and lower)		1
.....	TL06729N	New Sleeve (serial # 010618ZX350 and higher)		1
122.....	TL06302	Sign Plate.....		1
123.....	TL06730	Shaft		1
124.....	BB-51104	Thrust Bearing.....		2
125.....	TL06305	Sleeve		2
126.....	TL06726	Worm (serial # 010611ZX349 and lower)		1
.....	TL06726N	New Worm (serial # 010618ZX350 and higher)		1
127.....	TL06122	Worm Support (serial # 010611ZX349 and lower)		1

Index No.	Part No.	Description	Size	Qty.
.....	TL06122N	New Worm Support (serial # 010618ZX350 and higher)		1
128	TL06720	Control Plate		1
129	TS-1514031	Hex Socket Cap Screw	M6x20	4
130	ZX-A130	Taper Pin	4x20	1
131	TS-1524031	Set Screw	M8x12	2
132	ZX-A132	Screw	M8x25	2
133	ZX-A133	Cylindrical Tensile Spring	LI-1.6x10x58	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	2
139	ZX-A139	Oil Conducting Cord	3x100	2
140	ZX-A140	Screw	M10x40	1
158	TS-1540041	Hex Nut	M6	1
159	TL06124	Bracket		1
160	ZX-A160	Taper Pin	5x25	2
161	TL06308	Bracket		1
162	TS-1503041	Hex Socket Cap Screw	M6x16	1

Apron Assembly II

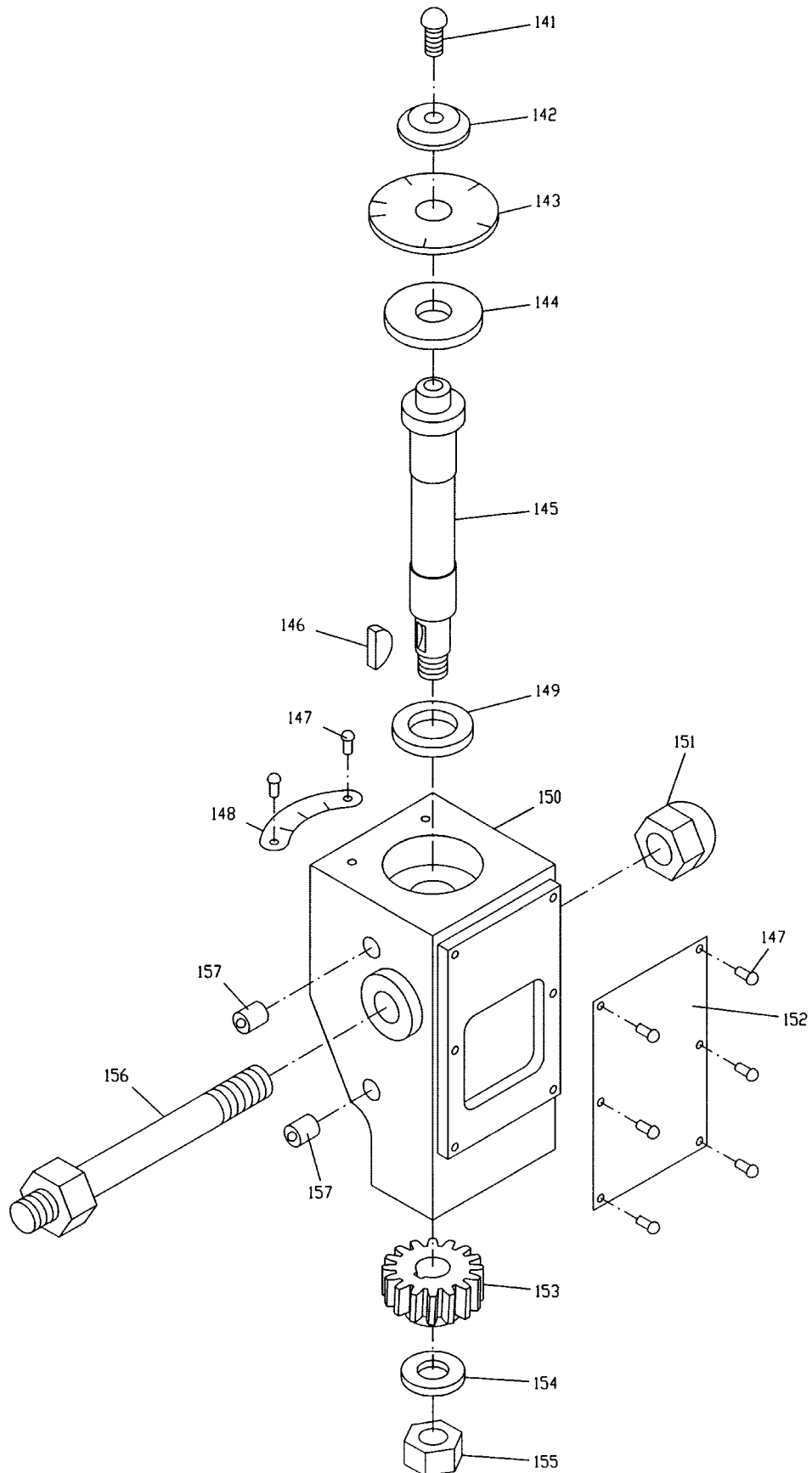


Apron Assembly II

Index No.	Part No.	Description	Size	Qty.
38.....	ZX-B23	C-Clip.....	20.....	1
39.....	BB-6204.....	Ball Bearing.....	20x47x14	1
40.....	TL06705	Gear.....	2m65T.....	1
41.....	ZX-A41	Taper Pin.....	6x40.....	1
42.....	ZX-C40	C-Clip.....	25.....	1
43.....	ZX-06127	Bearing Support (serial # 010611ZX349 and lower)		1
.....	ZX-06127N	New Bearing Support (serial # 010618ZX350 and higher)		1
44.....	TS-1504041	Hex Socket Cap Screw.....	M8x18.....	3
45.....	BB-6205Z	Ball Bearing.....	25x52x15	1
46.....	ZX-A46	C-Clip.....	52.....	1
47.....	TL06704	Shaft (serial # 010611ZX349 and lower)	2m14T.....	1
.....	TL06704N	New Shaft (serial # 010618ZX350 and higher)	2m14T.....	1
48.....	TL06706	Hand Wheel Shaft	2mx15T.....	1
49.....	ZX-H10	Half Circle Key.....	4x16.....	1
50.....	ZX-A50	Oil Cup.....	8.....	1
51.....	TL06104	Lever Support.....		1
52.....	TS-1503051	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	Hand Wheel		1
57.....	ZX-06710.....	Shaft Driven Lever.....		1
58.....	TL06709	Shaft Cover		1
59.....	ZX-A54	Cross Head Screw.....	M5x12	1
60.....	TL06708	Screw.....		1
61.....	TL06707	Pin.....		1
62.....	TL06112.....	End Cover		1
63.....	TS-1503031	Hex Socket Cap Screw.....	M6x12	3
64.....	TL06733	T Shaped Flat Key.....		1
65.....	TL06115.....	Flange Sleeve		1
66.....	TS-1503031	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-1503031	Hex Socket Cap Screw.....	M6x12	3
78.....	TL06303	Sign Plate.....		1
79.....	TL06714	Adjusting Screw.....		1
80.....	ZX-A80	Oil Seal	8x1.9	1
81.....	BB-7203.....	Ball Bearing.....	17x40x12	1
82.....	TL06713	Shaft		1
83.....	TL06715	Adjusting Rod.....		1
84.....	ZX-H10	Half Circle Key.....	4x16.....	1
85.....	TL06712	Spring Cover		1
86.....	ZX-A86	Spring.....	YI-5x35x50.....	1
87.....	TL06718	Gear.....	2m28T.....	1
88.....	TL06113.....	Helical Gear	2.5m40T.....	1
89.....	BB7006/P6	Ball Bearing.....	30x55x13	1
90.....	TS-1523031	Set Screw.....	M6x10	1
91.....	ZX-A25	Thread Tail Taper Pin.....	6x25.....	1
92.....	TL06110.....	Fork.....		1
93.....	TL06721	Control Rod.....		1
94.....	TL06116.....	Lever Support.....		1
95.....	ZX-A9	Pin.....	8n6x30	1
96.....	ZX-H5	Steel ball	8.....	1
97.....	ZX-A97	Spring.....	YI-1x7x25.....	1
98.....	ZX-A98	Flat Head Set Screw.....	M10x16	1

Index No.	Part No.	Description	Size	Qty.
99.....	TL06722	Lever.....		1
100.....	ZX-A100	Cross Head Screw.....	M5x10	3
101.....	TL06117.....	Cover		1
102.....	ZX-A102	Adjusting Screw.....	M6x30	1
103.....	TS-1503051.....	Hex Socket Cap Screw.....	M6x18	3
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	1
115.....	ZX-A115.....	Oil Seal	50x3.1	1
116.....	TL06119.....	Lever Flange		1
117.....	TS-1503031.....	Hex Socket Cap Screw.....	M6x12	3
118.....	TL06118.....	Lever Support.....		1
119.....	TL06307	Sign Plate.....		1
120.....	TL06716	Lever		1
121.....	ZX-B27	Taper Pin.....	6x60	1

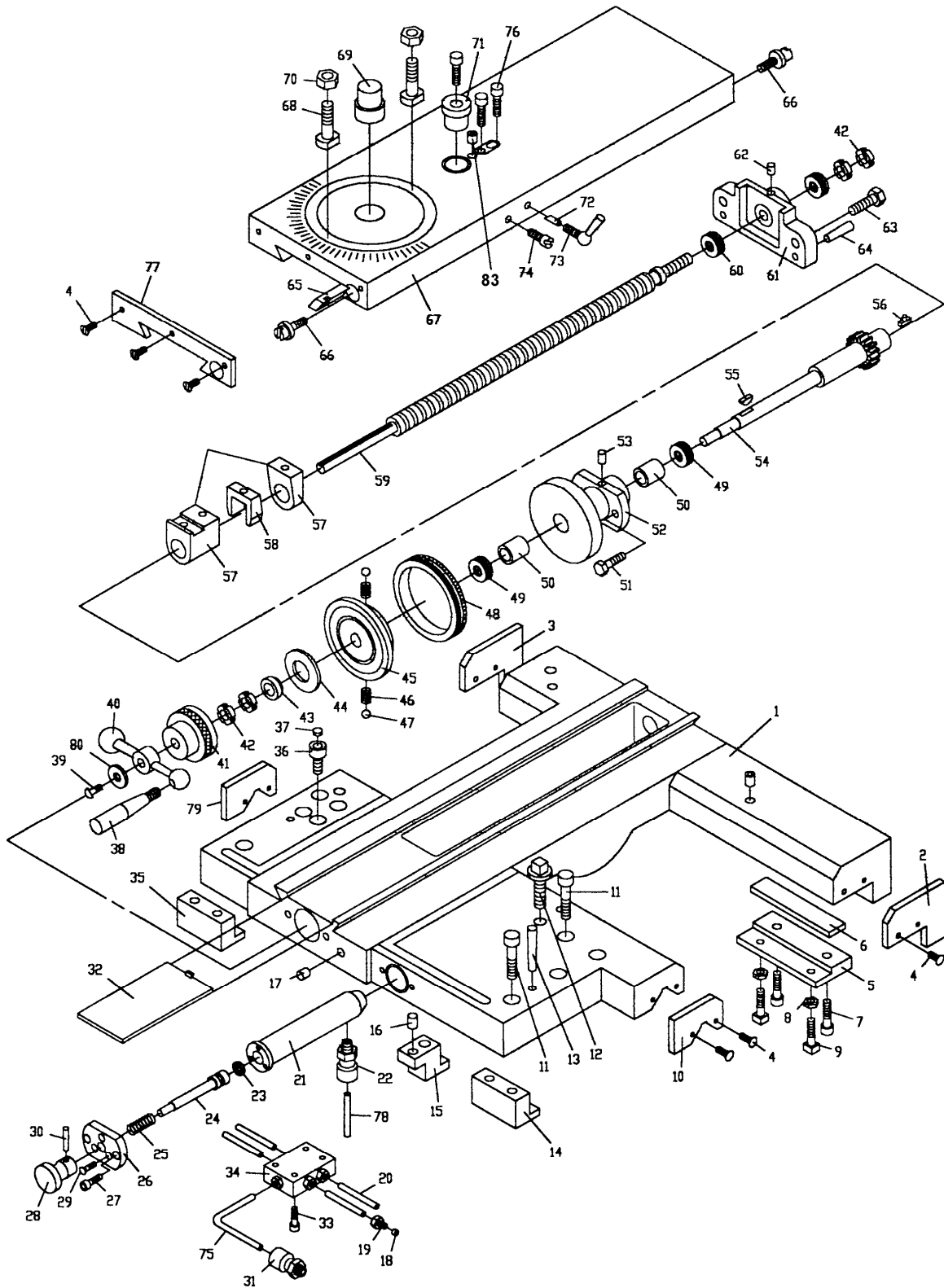
Apron Assembly III



Apron Assembly III

Index No.	Part No.	Description	Size	Qty.
141.....	ZX-A141	Half Round Head Screw	M6x18	1
142.....	ZX-11704	Washer		1
143.....	ZX-11301	Dial		1
144.....	ZX-11105	Adjusting Washer		1
145.....	ZX-11701	Shaft		1
146.....	ZX-H10	Half Circle Key	4x16	1
147.....	ZX-A147	Half Round Head Screw	M3x6	8
148.....	ZX-11303	Positioning Sign Plate		1
149.....	ZX-11703	Adjusting Washer		1
150.....	ZX-11101	Casting		1
151.....	ZX-A151	Acorn Nut	M12	1
152.....	ZX-11304	Thread Chasing Label		1
153.....	ZX-11102	Helical Gear	2m16T	1
154.....	TS-1550071	Flat Washer	M10	1
155.....	TS-1540072	Hex Nut	M10	1
156.....	ZX-11702	Bolt		1
157.....	ZX-A157	Oil Cup	8	2

Carriage Assembly



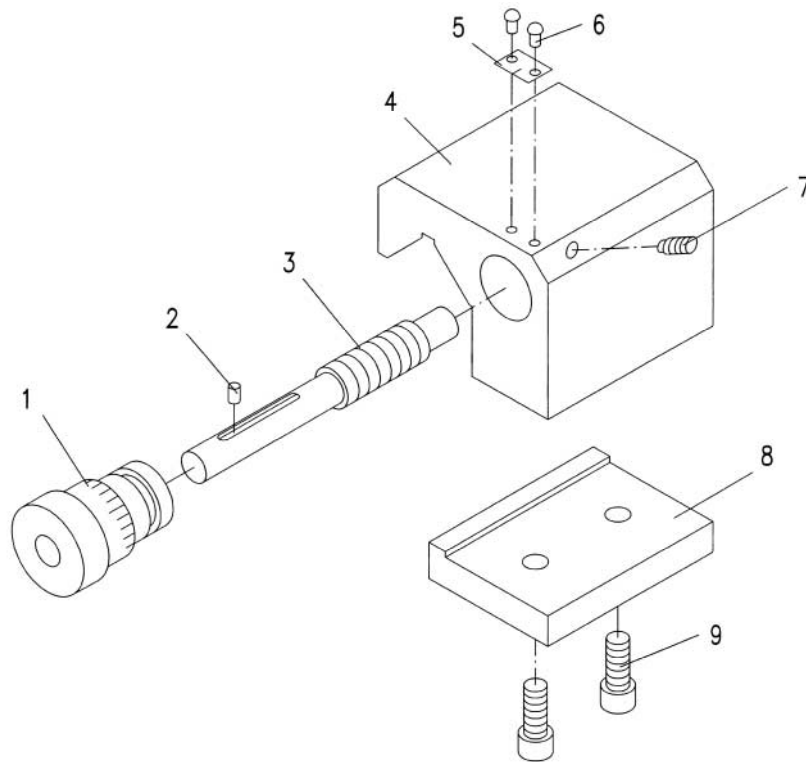
Carriage Assembly

Index No.	Part No.	Description	Size	Qty.
1	ZX-04101A	Saddle Casting		1
	GH2280ZX-14101	Saddle Casting (for 2280ZX)		1
2	ZX-04505	Wipe Plate		1
3	ZX-04504	Wipe Plate		1
4	ZX-H211	Countersunk Head Screw	M5x16	11
5	ZX-04724	Clamping Block		2
6	ZX-04113	Lining Plate		2
7	TS-1505041	Hex Socket Cap Screw	M10x30	4
8	TS-1540061	Hex Nut	M8	4
9	ZX-CA09	Square Set Screw	M8x20	4
10	ZX-04506	Wipe Plate		1
11	TS-1505071	Hex Socket Cap Screw	M10x45	8
12	ZX-CA12	Square Cap Bolt	M12x70	1
13	ZX-CA13	Taper Pin	8x60	2
14	ZX-04729	Clamping Block		1
15	ZX-04730	Locking Plate		1
16	ZX-CA16	Pin	4n6x12	1
17	ZX-04772	Blocking Piece		1
18	ZX-CA18	Fitting Joint Seal	A4	8
19	ZX-CA19	Hollowed Bolt	A4	8
20	ZX-CA20	Copper Tube		4
21	ZX-04782	Manual Oil Pump Casting		1
22	ZX-04781A	In Valve		1
23	ZX-CA23	Oil Ring	15x2.4	1
24	ZX-04784	Piston		1
25	ZX-CA25	Spring	1.2x14x65	1
26	ZX-04785	Oil Pump Cover		1
27	TS-1502041	Hex Socket Cap Screw	M5x16	2
28	ZX-04783	Lever		1
29	ZX-CA29	Countersunk Head Screw	M4x16	3
30	ZX-A130	Taper Pin	4x20	1
31	ZX-04781B	Out Valve		1
32	ZX-04716	Chip Guard		1
33	ZX-CA33	Slotted Cheese Head Screw	M5x20	4
34	ZX-04780	Oil Distributor		1
35	ZX-04740	Clamping Block		1
36	ZX-04750	Oil Cap		1
37	ZX-04301	Oil Indicator Cap		1
38	ZX-04721	Lever		1
39	ZX-CA39	Cross Head Screw	M5x16	1
40	ZX-04720	Handle		1
41	ZX-04769	Sleeve		1
42	ZX-CA42	Round Nut	M12x1.25	4
43	ZX-04719	Lining		1
44	ZX-04770	Disc Spring		1
45	ZX-04108	Flat Pan		1
46	ZX-04790	Pushing Rod		1
47	ZX-04789	Screw		1
48	ZX-04717	Dial		1
49	BB-51102	Thrust Bearing	15x28x9	2
50	ZX-04111	Sleeve		2
51	TS-1490041	Hex Cap Bolt	M8x25	2
52	ZX-04109	Screw Support		1
	GH2280ZX-04109B	Screw Support (for 2280ZX)		1
53	ZX-CA53	Oil Cup	8	2

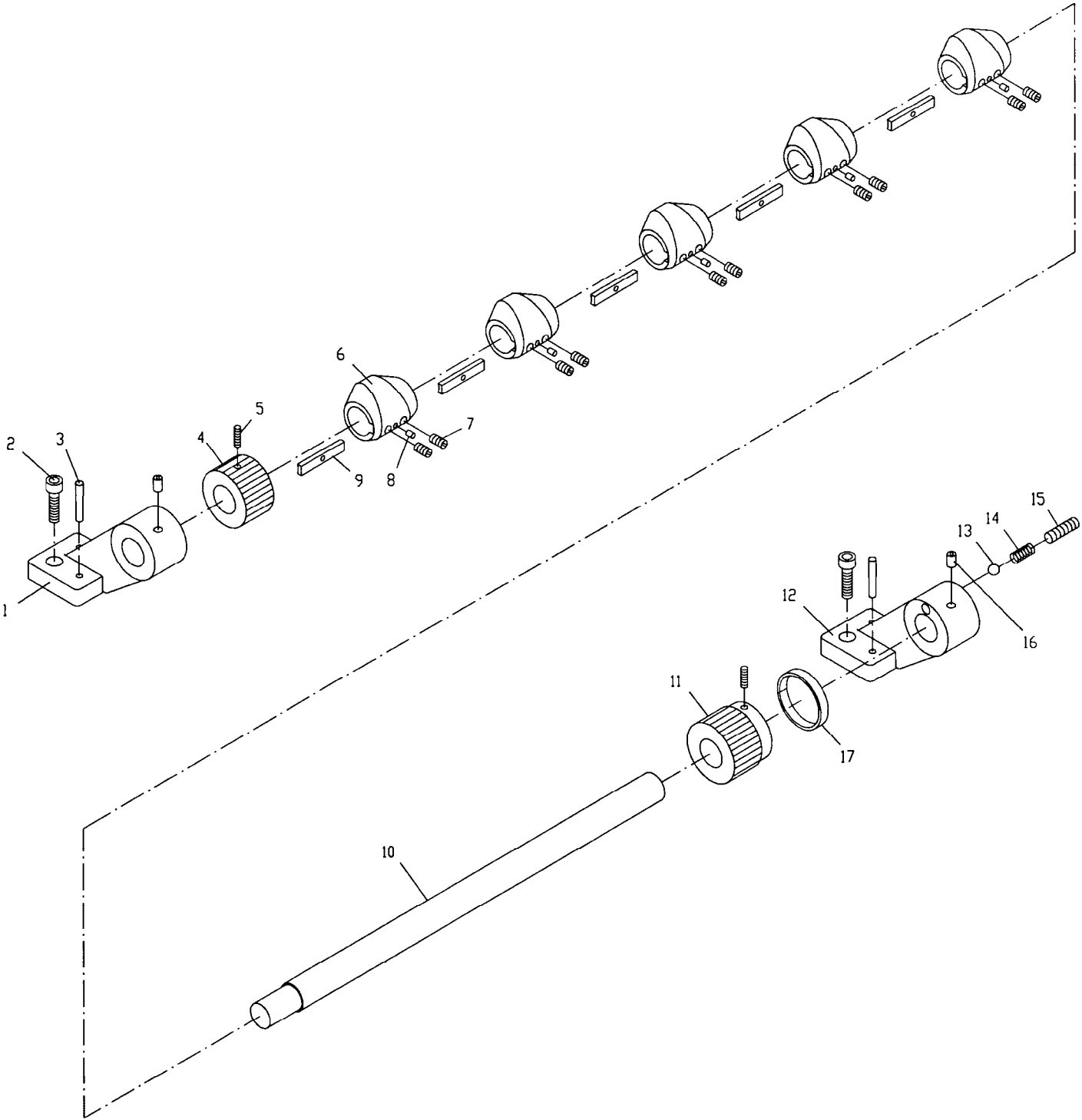
Index No.	Part No.	Description	Size	Qty.
54.....	ZX-04707-1.....	Gear Sliding Sleeve.....	2m16T.....	1
.....	ZX-04707-1A.....	Gear Sliding Sleeve(for 2280ZX).....		1
55.....	ZX-H10.....	Half Circle Key.....	4x16.....	1
56.....	ZX-04751.....	Flat Key.....		1
57.....	ZX-04302.....	Nut Assembly.....		1
.....	ML-2080-04301.....	Nut Assembly (for 2280ZX).....		1
58.....	ZX-04748.....	Wedge.....		1
59.....	ZX-04707-2.....	Lead Screw.....		1
.....	GH2280ZX-04707-2.....	Lead Screw (for 2280ZX).....		1
60.....	BB-51101/P6.....	Thrust Bearing.....	12x26x9.....	2
61.....	ZX-04116.....	Bracket.....		1
62.....	ZX-CA62.....	Oil Cup.....	6.....	1
63.....	TS-1491041.....	Cap Screw.....	M10x30.....	2
64.....	ZX-CA64.....	Taper Pin.....	8x30.....	2
65.....	ZX-04731.....	Cross Slide Gib.....		1
66.....	ZX-04725C.....	Screw.....		2
67.....	ZX-04102A.....	Cross Slide.....		1
.....	GH2280ZX-04102.....	Cross Slide (for 2280ZX).....		1
68.....	ZX-04714.....	Screw (for 18"/22" models, T-Slot).....		2
.....	ZX-04714C.....	Screw (for 14"/16" models, T-Slot).....		2
69.....	ZX-04732.....	Pin.....		1
70.....	TS-1540081.....	Hex Nut.....	M12.....	2
71.....	ZX-04709.....	Sleeve.....		1
.....	GH2280ZX-04701.....	Sleeve (for 2280ZX).....		1
72.....	ZX-04304.....	Pressing Pin.....	1.....	1
73.....	ZX-04746.....	Screw.....		1
74.....	ZX-04786.....	Set Screw.....		1
75.....	ZX-CA75.....	Long Copper Tube.....		1
76.....	TS-1504051.....	Socket Head Cap Screw.....	M8x22.....	3
77.....	ZX-04502.....	Wipe Plate.....		1
.....	GH2280ZX-04502.....	Wipe Plate (for 2280ZX).....		1
78.....	ZX-CA78.....	Copper Tube.....		6
79.....	ZX-04503.....	Wipe Plate.....		1
80.....	ZX-04771.....	Lining.....		1
81.....	ZX-04788.....	Stop Pin.....		1
82.....	ZX-04507.....	Stop Pin Cap.....		1
83.....	ZX-CA83.....	Oil Cup.....	10.....	1
.....	ZX-CSNA.....	Crossfeed Screw & Nut Assy. (includes # 57- 59. for 14/16/18").....		
.....	ZX-CSNA-GH2280ZX.....	Crossfeed Screw & Nut Assy. (includes #57-59,. for 22").....		
.....	ZX-CDA.....	Crossfeed Dial Assy. (includes # 41-50, 51-56. for 14/16/18").....		
.....	ZX-CDA-GH2280ZX.....	Crossfeed Dial Assy. (includes # 41-50, 51-56. for 22").....		

Micro Carriage Stop

Index No.	Part No.	Description	Size	Qty.
1.....	ZX-09709.....	Dial.....		1
2.....	ZX-MS2.....	Pin.....	B4x8.....	1
3.....	ZX-09708.....	Axle.....		1
4.....	ZX-09105.....	Stop.....		1
5.....	ZX-03302.....	Sign Plate.....		1
6.....	ZX-MS6.....	Nail.....	3x8.....	2
7.....	ZX-MS7.....	Hex Socket Set Screw.....	M6x12.....	1
8.....	ZX-09106.....	Clamping Plate.....		1
9.....	ZX-MS9.....	Hex Socket Cap Screw.....	M8x20.....	2



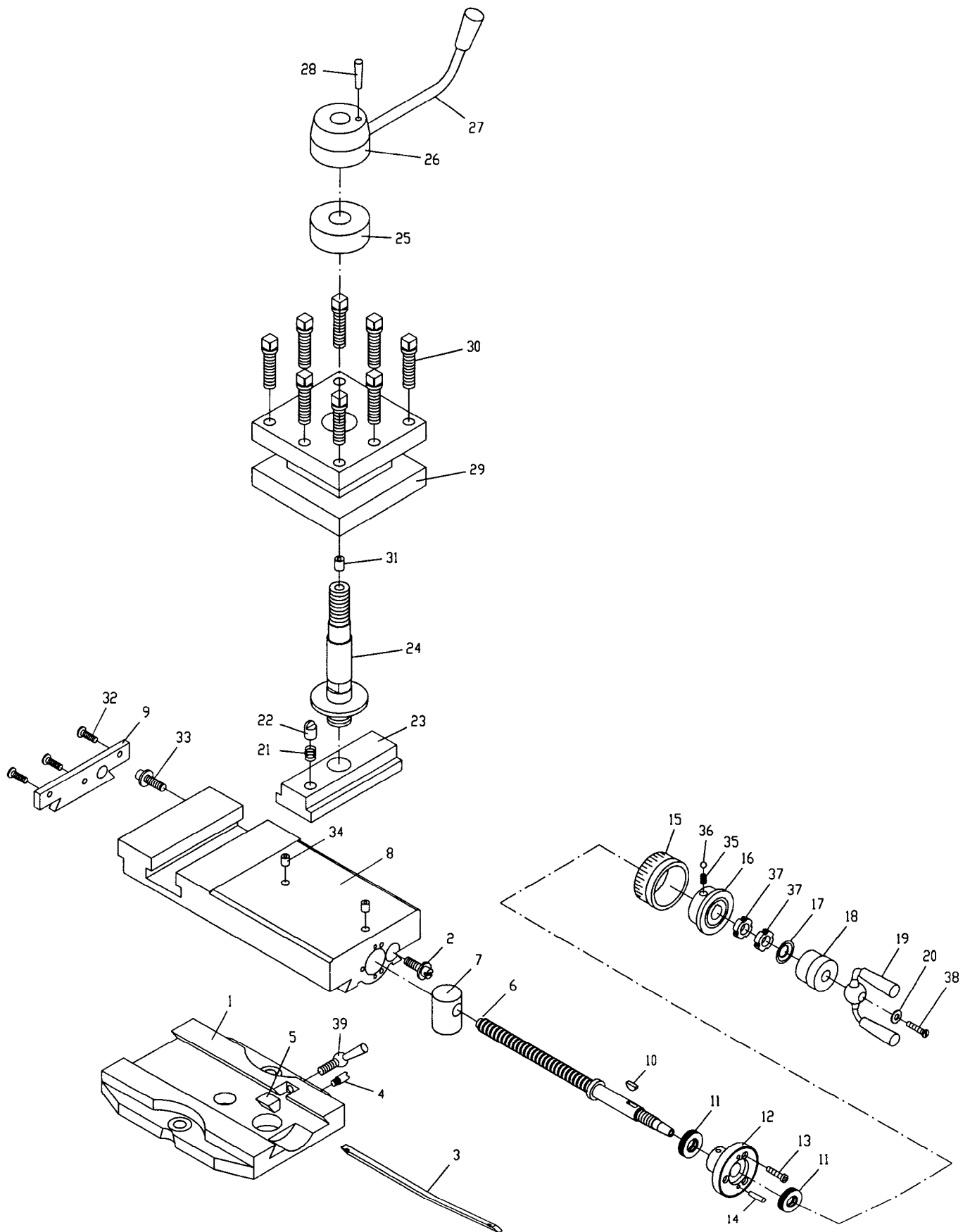
Carriage Stop Assembly



Carriage Stop Assembly

Index No.	Part No.	Description	Size	Qty.
1.....	ZX-26101.....	Left Support.....		1
2.....	TS-1504041.....	Hex Socket Cap Screw.....	M8x20.....	4
3.....	ZX-C34.....	Taper Pin.....	6x30.....	4
4.....	ZX-26704.....	Control Ring.....		1
5.....	TS-1523031.....	Set Screw.....	M6x10.....	2
6.....	ZX-26702.....	Eccentric Travel Setting Ring.....		5
7.....	ZX-H66.....	Flat End Set Screw.....	M6x10.....	10
8.....	ZX-C08.....	Pin.....	4n6x10.....	5
9.....	ZX-26703.....	Locking Key.....		5
10.....	ZX-26701A.....	Travel Setting Rod (for 1440/1640/1840ZX).....		1
.....	ZX-26701B.....	Travel Setting Rod (for 1460/1660/1860ZX).....		1
.....	ZX-26701C.....	Travel Setting Rod (for 1880/2280ZX).....		1
11.....	ZX-26705.....	Control Ring.....		1
12.....	ZX-26104.....	Right Support.....		1
13.....	ZX-H5.....	Steel Ball.....	8.....	1
14.....	ZX-CS14.....	Compression Spring.....	2x8x25.....	1
15.....	ZX-CS15.....	Flat Head Set Screw.....	M10x12.....	1
16.....	ZX-CS16.....	Oil Cup.....	8.....	2
17.....	ZX-26301.....	Dial.....		1

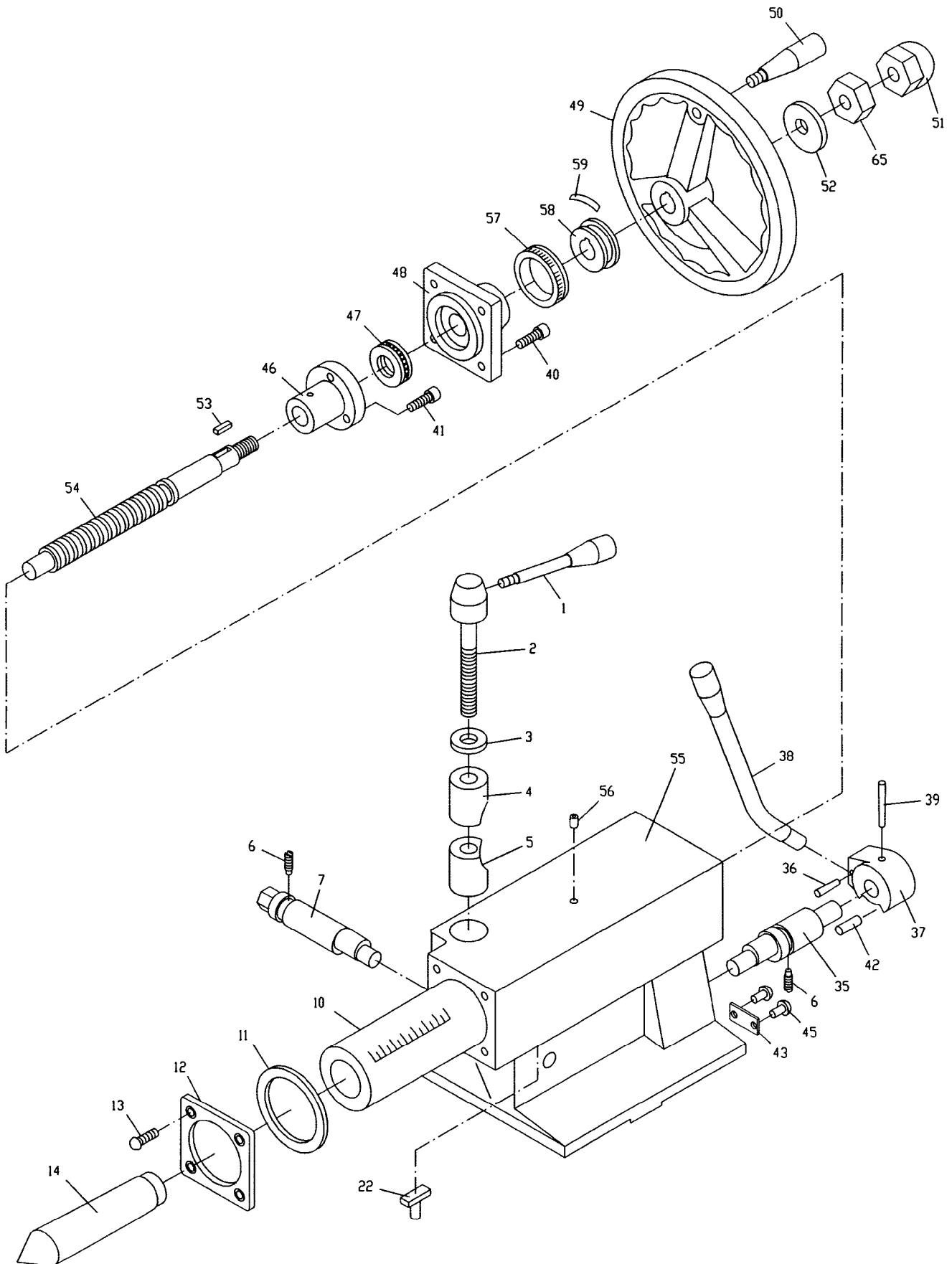
Four Way Tool Post



Four Way Tool Post

Index No.	Part No.	Description	Size	Qty.
1.....	ZX-04103A	Revolving Plate (for 14" models)		1
.....	ZX-04103B	Revolving Plate (for 16" models)		1
.....	ZX-04103C	Revolving Plate (for 18" models)		1
.....	GH2280ZX-04103	Revolving Plate (for 22" model).....		1
2.....	ZX-04725.....	Screw.....		1
3.....	ZX-04710.....	Gib		1
4.....	ZX-04786.....	Screw.....		1
5.....	ZX-04303.....	Pressing Block.....		1
6.....	ZX-04706.....	Lead Screw		1
7.....	ZX-04106A	Nut		1
8.....	ZX-04107A	Top Slide (for 14" models).....		1
.....	ZX-04107B	Top Slide (for 16"/18" models).....		1
.....	GH2280ZX-04107	Top Slide (for 22" model).....		1
9.....	ZX-04501.....	Wipe Plate.....		1
10.....	ZX-F10	Half Circle Key.....	3x13	1
11.....	BB-51102.....	Thrust Bearing.....	15x28x9	2
12.....	ZX-04115	Sleeve		1
13.....	ZX-F13	Slotted Cheese Head Screw	M5x12	3
14.....	ZX-F14	Taper Pin.....	3x18	2
15.....	ZX-04727.....	Dial.....		1
16.....	ZX-04114	Sleeve		1
17.....	ZX-04768.....	Disc 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	1
29.....	ZX-04713A	Tool Post (for 14" models).....		1
.....	ZX-04713B	Tool Post (for 16"/18"/22" models).....		1
30.....	ZX-F30A	Clamping Screw (for 16"/18"/22" models).....	M12x45	8
.....	ZX-F30B	Clamping Screw (for 14" models).....	M12x50	8
31.....	ZX-F31	Oil Cup.....	8	1
32.....	ZX-H211	Countersunk Head Screw	M5x16	3
33.....	ZX-04725C	Screw.....		1
34.....	ZX-F34	Oil Cup	8.....	2
35.....	ZX-F35	Spring.....	0.7x5x9	1
36.....	ZX-F36	Steel Ball	6.....	1
37.....	ZX-F37	Round Nut.....	M12x1.25	2
38.....	ZX-CA39.....	Cross Head Screw.....	M5x16	1
39.....	ZX-04746K	Screw Wrench		1
.....	ZX-TA14	Toolholder Assembly 14" (includes # 29 & 30).....		
.....	ZX-TA16/18/22.....	Toolholder Assembly 16"/18"/22" (includes # 29 & 30).....		
.....	ZX-CPA14.....	Compound Assembly 14" (includes # 1-20,32-39)		
.....	ZX-CPA16.....	Compound Assembly 16" (includes # 1-20,32-39)		
.....	ZX-CPA18.....	Compound Assembly 18" (includes # 1-20,32-39)		
.....	ZX-CPA22.....	Compound Assembly 22" (includes # 1-20,32-39)		

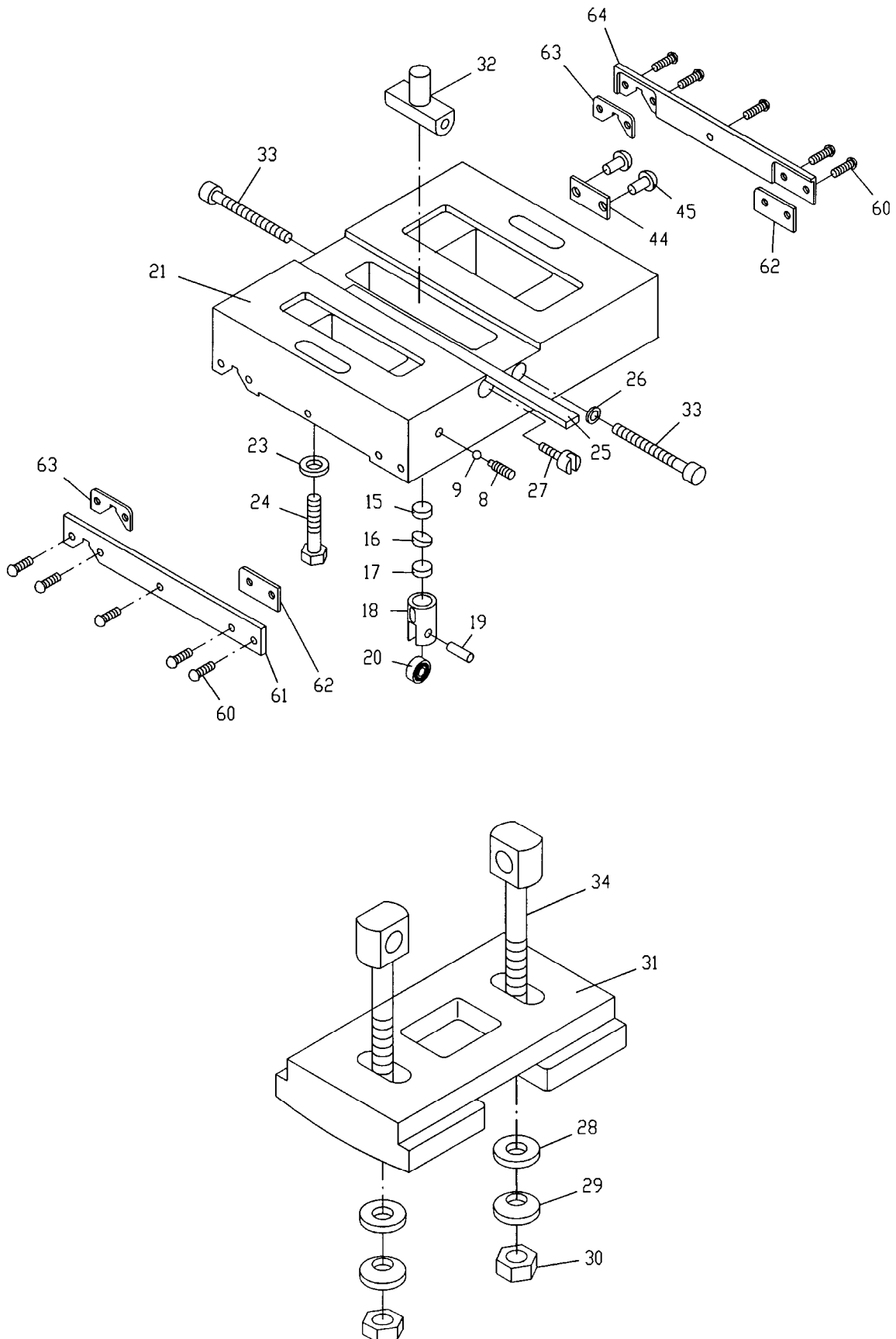
Tailstock Assembly I



Tailstock Assembly I

Index No.	Part No.	Description	Size	Qty.
1.....	ZX-03711	Handle.....		1
2.....	ZX-03717	Lever Support.....		1
3.....	ZX-03718	Washer.....		1
4.....	ZX-03719	Clamping Block		1
5.....	ZX-03720	Clamping Block		1
6.....	ZX-T06	Cylindrical End Set Screw.....	M8x14	2
7.....	ZX-03712	Eccentric Shaft		1
10.....	ZX-03701A	Center Sleeve (for 18"/22" models)		1
.....	ZX-03701B	Center Sleeve (for 14"/16" models)		1
11.....	ZX-T11	Ring Seal	75x2.65	1
12.....	ZX-03703	Front Cover		1
13.....	ZX-T13	Cross Recessed Countersunk Head Screw.....	M5x10	4
14.....	ZX-T14A	Center Morse (for 18"/22" models)	No.5	1
.....	ZX-T14B	Center Morse (for 14"/16" models)	No.4	1
22.....	ZX-03702	Positioning Block		1
35.....	ZX-03714	Eccentric Shaft		1
36.....	ZX-T36	Taper Pin.....	6x32	1
37.....	ZX-03104	Lever Sleeve		1
38.....	ZX-03709	Lock handle.....		1
39.....	ZX-A28	Taper Pin.....	6x55	1
40.....	TS-1504041	Hex Socket Cap Screw.....	M8x20	4
41.....	TS-1515031	Hex Socket Cap Screw.....	M8x22	3
42.....	ZX-T42	Pin.....	10n6x22	1
43.....	ZX-03302	Sign Plate.....		1
45.....	ZX-T45	Nail.....	3x8	4
46.....	ZX-03105	Nut		1
47.....	BB-51205	Thrust Ball Bearing	25x47x15	1
48.....	ZX-03104	Back Cover.....		1
49.....	ZX-03103	Hand Wheel		1
50.....	ZX-03707	Lever.....		1
51.....	ZX-T51	Acorn Nut.....	M16	1
52.....	TS-155010	Flat Washer	M16	1
53.....	ZX-T53	Key.....	6x40	1
54.....	ZX-03710A	Lead Screw (for 18"/22" models).....		1
.....	ZX-03710B	Lead Screw (for 14"/16" models).....		1
55.....	ZX-03101A	Tailstock Casting (for 18" models)		1
.....	ZX-03101B	Tailstock Casting (for 16" models)		1
.....	ZX-03101C	Tailstock Casting (for 14" models)		1
.....	GH2280ZX-03101	Tailstock Casting (for 22" model).....		1
56.....	ZX-T56	Oil Cup.....	8	1
57.....	ZX-03708	Dial.....		1
58.....	ZX-03706	Sleeve		1
59.....	ZX-03711C	Spring Leaf.....		1
65.....	TS-2310162	Nut	M16	1

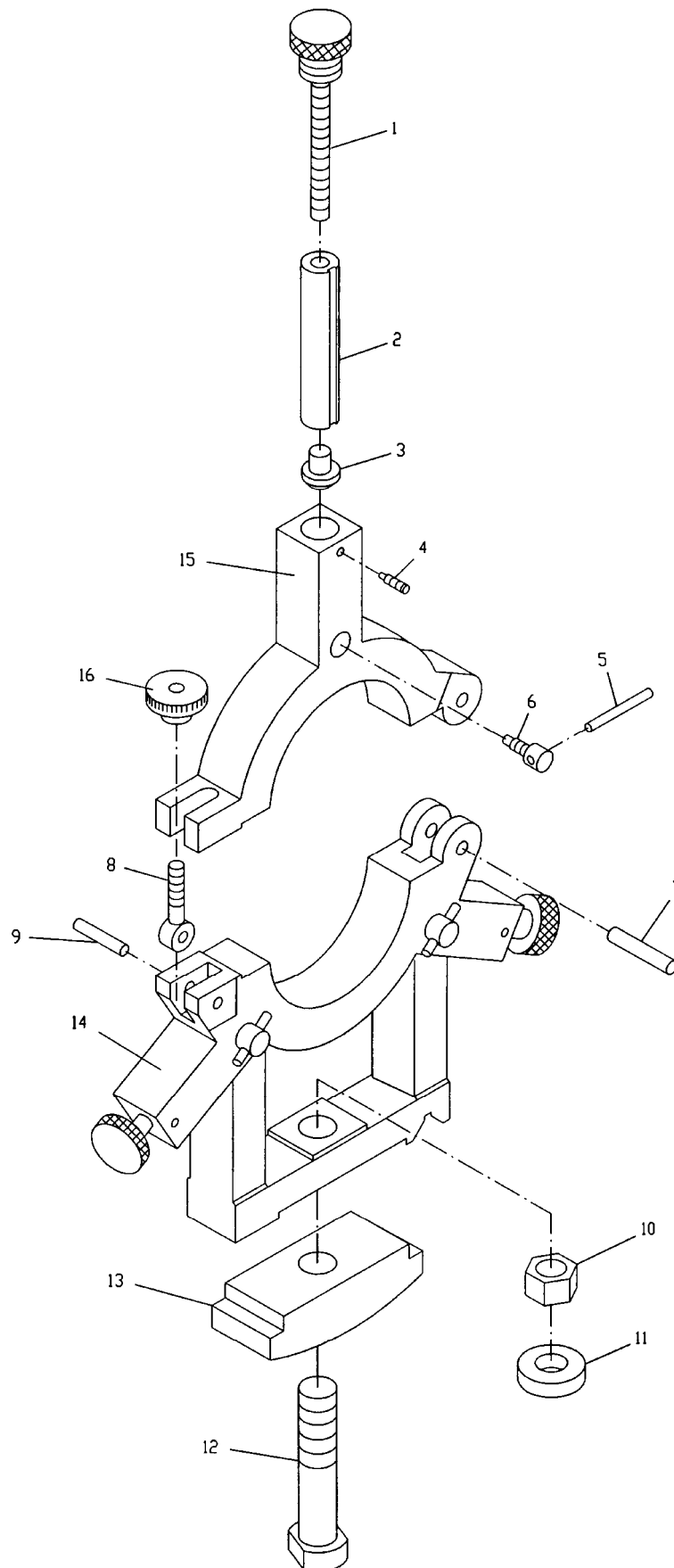
Tailstock Assembly II



Tailstock Assembly II

Index No.	Part No.	Description	Size	Qty.
8.....	ZX-T8	Flat End Set Screw (except in 14" models).....	M6x18	4
9.....	ZX-T9	Steel Ball (except in 14" models).....	4.....	4
15.....	ZX-03712.....	Rubber Washer (except in 14" models)		4
16.....	ZX-03713.....	Pressing Block (except in 14" models)		4
17.....	ZX-03501.....	Circle Plate (except in 14" models)		4
18.....	ZX-03714.....	Bearing Support (except in 14" models)		4
19.....	ZX-03715.....	Small Axle (except in 14" models)		4
20.....	ZX-T20	Ball Bearing (except in 14" models).....	7x19x6	4
21.....	ZX-03102A	Sliding Base (for 18"/22" models).....		1
.....	ZX-03102B	Sliding Base (for 16" models).....		1
.....	ZX-03102C	Sliding Base (for 14" models).....		1
23.....	TS-1550071.....	Flat Washer	M10.....	2
24.....	TS-1491151	Hex Cap Bolt (for 18"/22" models).....	M10x90	2
.....	TS-1491121	Hex Cap Bolt (for 16" models).....	M10x70	2
.....	TS-1491081.....	Hex Cap Bolt (for 14" models).....	M10x50	2
25.....	ZX-03704.....	Gib		1
26.....	ZX-03721C	Spherical Washer		2
27.....	ZX-03718C	Adjusting Screw.....		2
28.....	ZX-T28	Taper Washer	16.....	2
29.....	ZX-T29	Spherical Washer	16.....	2
30.....	TS-2310162.....	Hex Nut.....	M16.....	2
31.....	ZX-03106.....	Clamping Bracket		1
32.....	ZX-03105C	Nut		1
33.....	ZX-T33	Hex Socket Cap Screw.....	M8x85	2
34.....	ZX-03705A	Pulling Rod (for 18"/22" models)		2
.....	ZX-03705B	Pulling Rod (for 16" models)		2
.....	ZX-03705C	Pulling Rod (for 14" models)		2
44.....	ZX-03303.....	Sign Plate.....		1
45.....	ZX-T45	Nail.....	3x8	4
60.....	ZX-T60	Half Round Head Screw	M5 x12	10
61.....	ZX-03721.....	Plate.....		1
62.....	ZX-03502.....	Wipe Plate.....		2
63.....	ZX-03503.....	Wipe Plate.....		2
64.....	ZX-03716.....	Plate.....		1
.....	ZX-TSA14.....	Tailstock Assembly, 14" (includes # 1-13,15-64)		
.....	ZX-TSA16.....	Tailstock Assembly, 16" (includes # 1-13,15-64)		
.....	ZX-TSA18.....	Tailstock Assembly, 18" (includes # 1-13,15-64)		
.....	ZX-TSA22.....	Tailstock Assembly, 22" (includes # 1-13,15-64)		

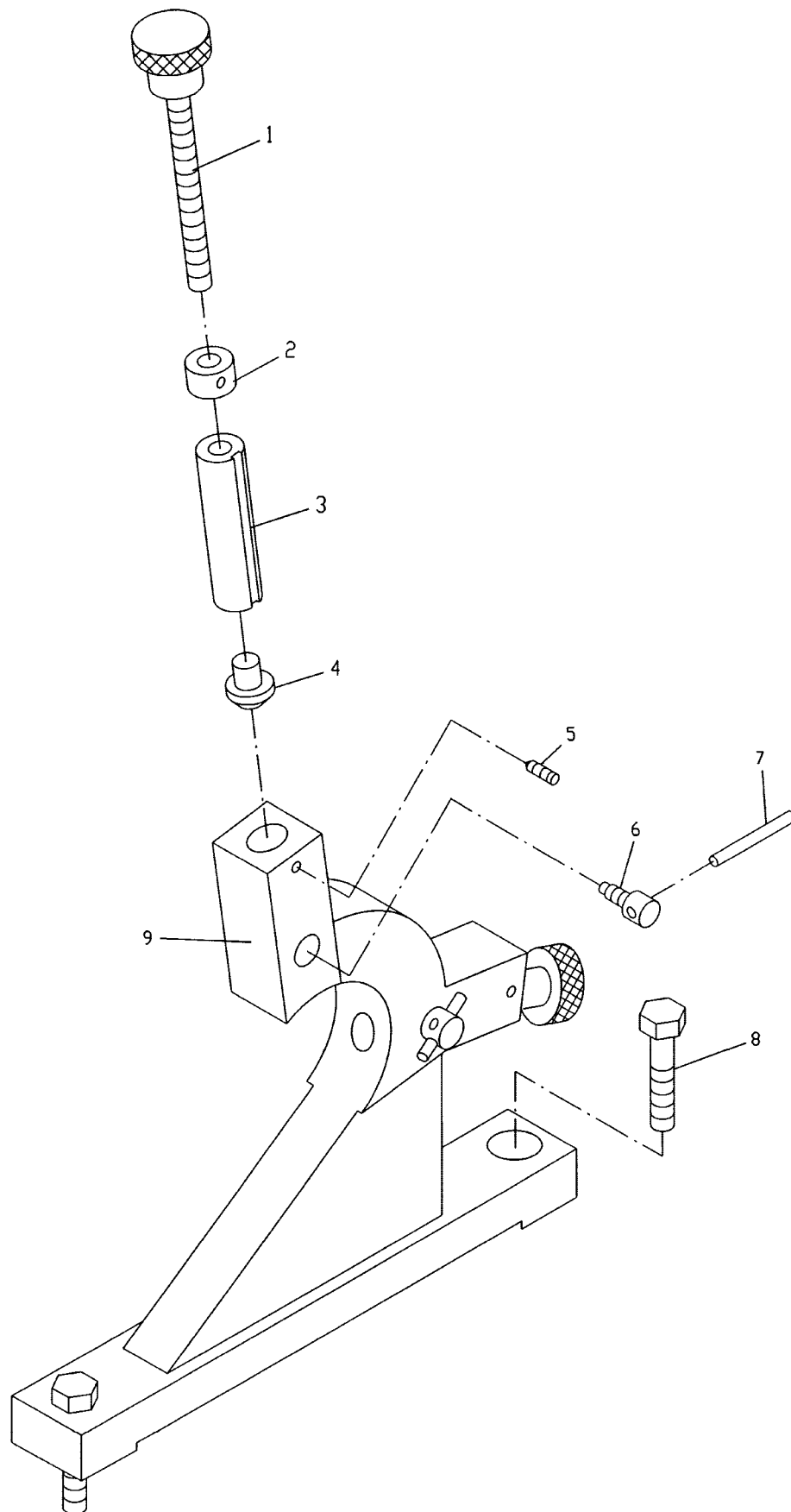
Steady Rest Assembly



Steady Rest Assembly

Index No.	Part No.	Description	Size	Qty.
.....	ZX-SRA14	Steady Rest Assembly, 14" (includes # 1-16)		
.....	ZX-SRA16	Steady Rest Assembly, 16" (includes # 1-16)		
.....	ZX-SRA18	Steady Rest Assembly, 18" (includes # 1-16)		
.....	ZX-SRA22	Steady Rest Assembly, 22" (includes # 1-16)		
1.....	ZX-10702A	Screw (for 14" models)		3
.....	ZX-10702B	Screw (for 16" models)		3
.....	ZX-10702C	Screw (for 18"/22" models)		3
2.....	ZX-10704D	Sliding Sleeve	90-180	3
.....	ZX-10705D	Sliding Sleeve	20-210	3
3.....	ZX-10301D	Pushing Block		3
4.....	ZX-SR04	Slotted Set Screw	M6x20	3
5.....	ZX-10705	Lever		3
6.....	ZX-10706	Locking Screw		3
7.....	ZX-C36	Pin	10n6x40	1
8.....	ZX-10701F	Hinge Screw		1
9.....	ZX-SR9	Pin	8n6x40	1
10.....	ZX-SR10	Hex Nut	M20	1
11.....	ZX-SR11	Flat Washer	20	1
12.....	ZX-10708	Tightening Screw		1
13.....	ZX-10103D	Clamping Plate		1
14.....	ZX-10101A	Lower Part of Steady Rest (for 14" models)		1
.....	ZX-10101B	Lower Part of Steady Rest (for 16" models)		1
.....	ZX-10101C	Lower Part of Steady Rest (for 18" models)		1
.....	GH2280ZX-10101	Lower Part of Steady Rest (for 22" model)		1
15.....	ZX-10102AS	Upper Part of Steady Rest (for 14" models)		1
.....	ZX-10102BS	Upper Part of Steady Rest (for 16"/18" models)		1
.....	ZX-10102F	Upper Part of Steady Rest (for 22" model)		1
16.....	ZX-SR16	Round Nut	M10	1

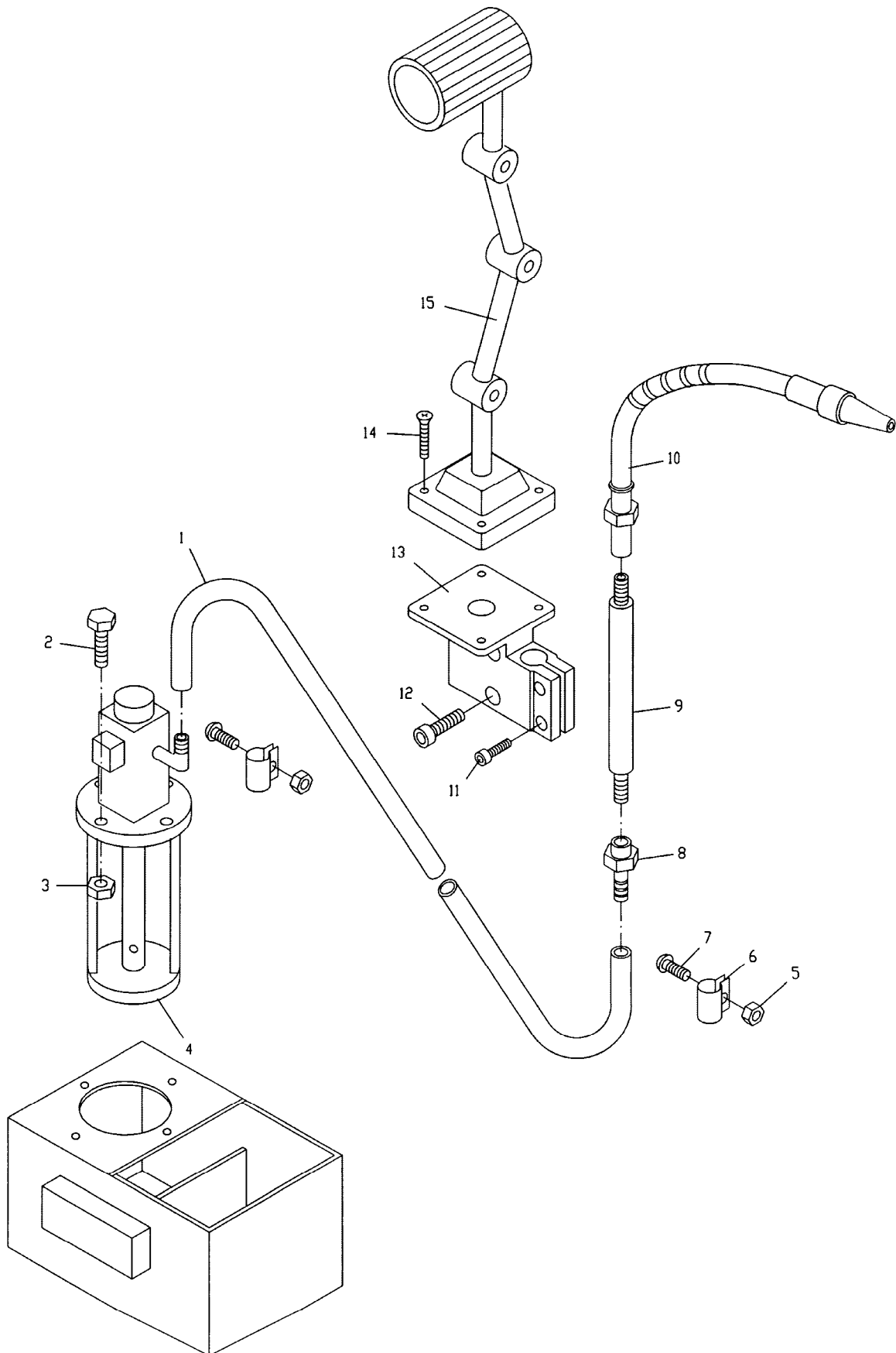
Follow Rest Assembly



Follow Rest Assembly

Index No.	Part No.	Description	Size	Qty.
.....	ZX-FRA14.....	Follow Rest Assembly, 14" (includes #1-7,9).....		
.....	ZX-FRA16.....	Follow Rest Assembly, 16" (includes #1-7,9).....		
.....	ZX-FRA18.....	Follow Rest Assembly, 18" (includes #1-7,9).....		
.....	ZX-FRA22.....	Follow Rest Assembly, 22" (includes #1-7,9).....		
1.....	ZX-10710.....	Screw.....		2
2.....	ZX-10704.....	Nut.....		2
3.....	ZX-10707.....	Sliding Sleeve.....		2
4.....	ZX-10301.....	Supporting Piece.....		2
5.....	ZX-FR05.....	Slotted Set Screw.....	M6x10.....	2
6.....	ZX-10705.....	Locking Screw.....		2
7.....	ZX-10706.....	Handle.....		2
8.....	ZX-FR8.....	Hex Cap Bolt.....	M12x55.....	2
9.....	ZX-10102A.....	Follow Rest Casting (for 14" models).....		1
.....	ZX-10102B.....	Follow Rest Casting (for 16" models).....		1
.....	ZX-10102C.....	Follow Rest Casting (for 18" models).....		1
.....	GH2280ZX-10102.....	Follow Rest Casting (for 22" model).....		1

Coolant & Work Light Assembly

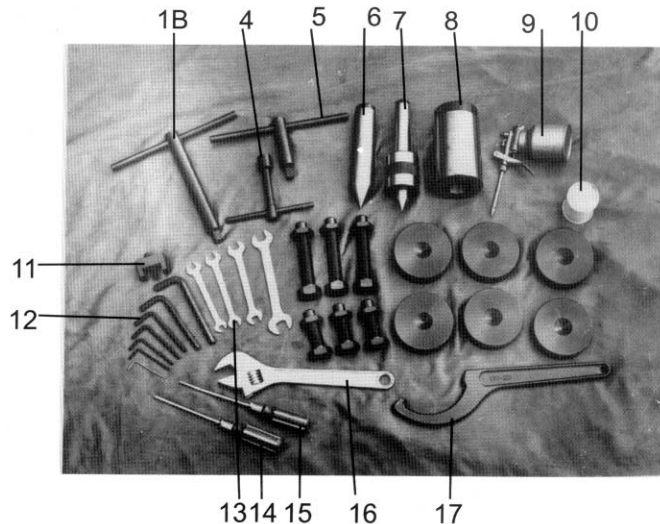
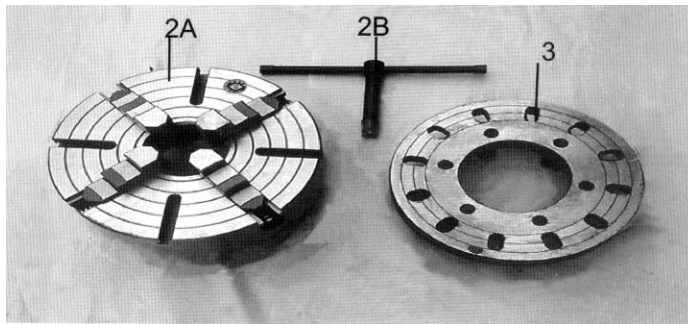


Coolant & Work Light Assembly

Index No.	Part No.	Description	Size	Qty.
1.....	RT-001A	Rubber Tube (for 1440/1640/1840ZX).....	ID 1/2"x1280mm.....	1
.....	RT-001B	Rubber Tube (for 1460/1660/1860ZX).....	ID 1/2"x1780mm.....	1
.....	RT-001C	Rubber Tube (for 1880/2280ZX)	ID 1/2"x2280mm.....	1
2.....	ZX-CW02.....	Hex Cap Bolt	M5x25	4
3.....	ZX-CW03.....	Hex Nut.....	5.....	4
4.....	ZX-CW04.....	Coolant Pump.....		1
5.....	ZX-CW05.....	Hex Nut.....	M6.....	2
6.....	ZX-01727.....	Clip For Rubber Tube		2
7.....	ZX-CW07.....	Half Round Head Screw	M6x16	2
8.....	ZX-01728.....	Fitting		1
9.....	ZX-01729.....	Flow Pipe		1
10.....	ZX-CW10.....	Coolant Device		1
.....	ZX-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.....	ZX-CW13.....	Lamp Support.....		1
14.....	ZX-S04	Cross Head Screw.....	M6x14	4
15.....	ZX-CW15.....	Lamp Frame.....		1
.....	ZX-CW16.....	Bulb.....	50W, AC24V	1
.....	ZX-LA	Light Assembly (includes # 13-15)		

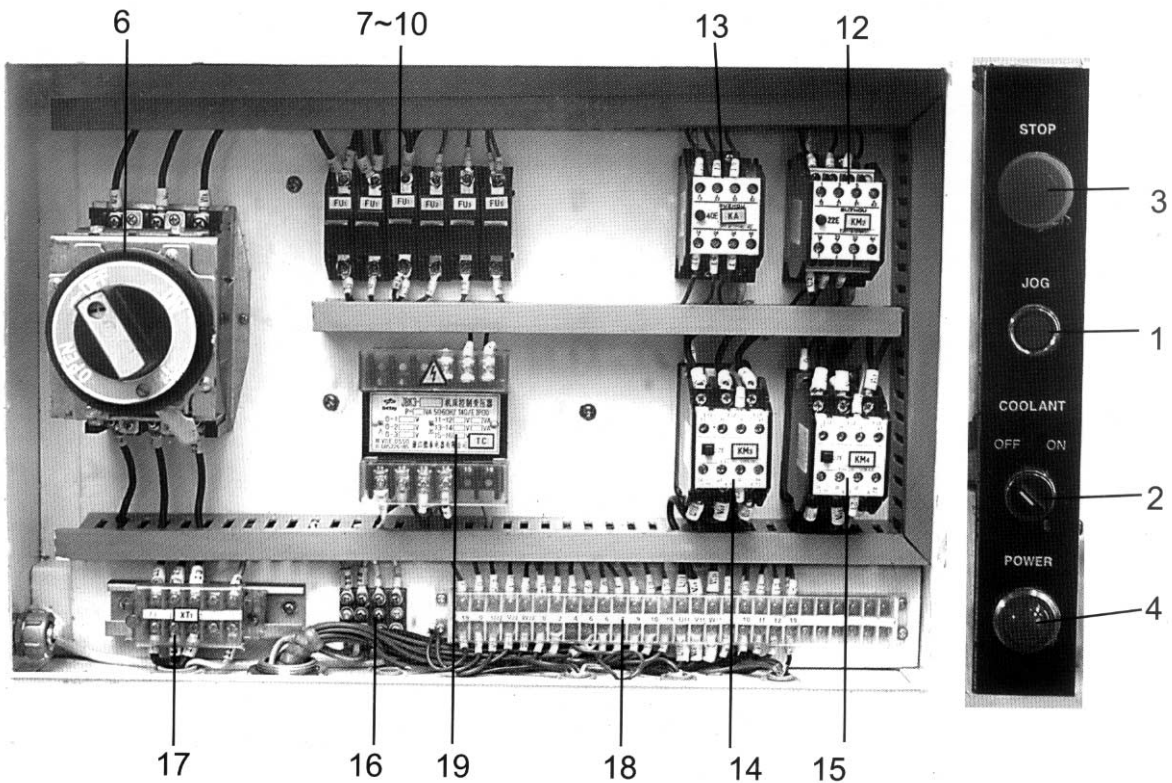
Other Parts

Index No.	Part No.	Description	Size	Qty.
1A	ZX-OP-1A	3-Jaw Chuck (mounted on lathe)	10", D1-8	1
1B	ZX-OP-1B	Chuck Wrench		1
2A	ZX-OP-2A	4-Jaw Chuck	12", D1-8	1
2B	ZX-OP-2B	Chuck Wrench		1
3	ZX-OP-03	12" Face Plate (for 14"/16" models)		1
	ZX-OP-03N	16" Face Plate (for 18"/22" models)		1
4	ZX-OP-04	Tool Tightening Wrench		1
5	ZX-OP-05	Cam Tightening Wrench		1
6	ZX-OP-06	Center		1
7	ZX-OP-07	MT-4 Live Center (for 14"/16" models)		1
	ZX-OP-07N	MT-5 Live Center (for 18"/22" models)		1
8	ZX-OP-08	Morse Reduction Sleeve		1
9	ZX-OP-09	Oil Gun		1
10	ZX-OP-10	Touchup Paint Can		1
11	ZX-OP-11	Gap Bridge Pin Driver		1
12	ZX-OP-12	Hex Wrench	2.5,4,5,6,8,10	1
13	ZX-OP-13	Double End		1
14	ZX-OP-14	Flat Blade Screw Driver		1
15	ZX-OP-15	Cross Point Screw Driver		1
16	ZX-OP-16	Adjustable Wrench		1
17	ZX-OP-17	Round Nut Wrench		1
	ZX-18TBCP	Tool Box Complete (not shown)	ZX-18"	

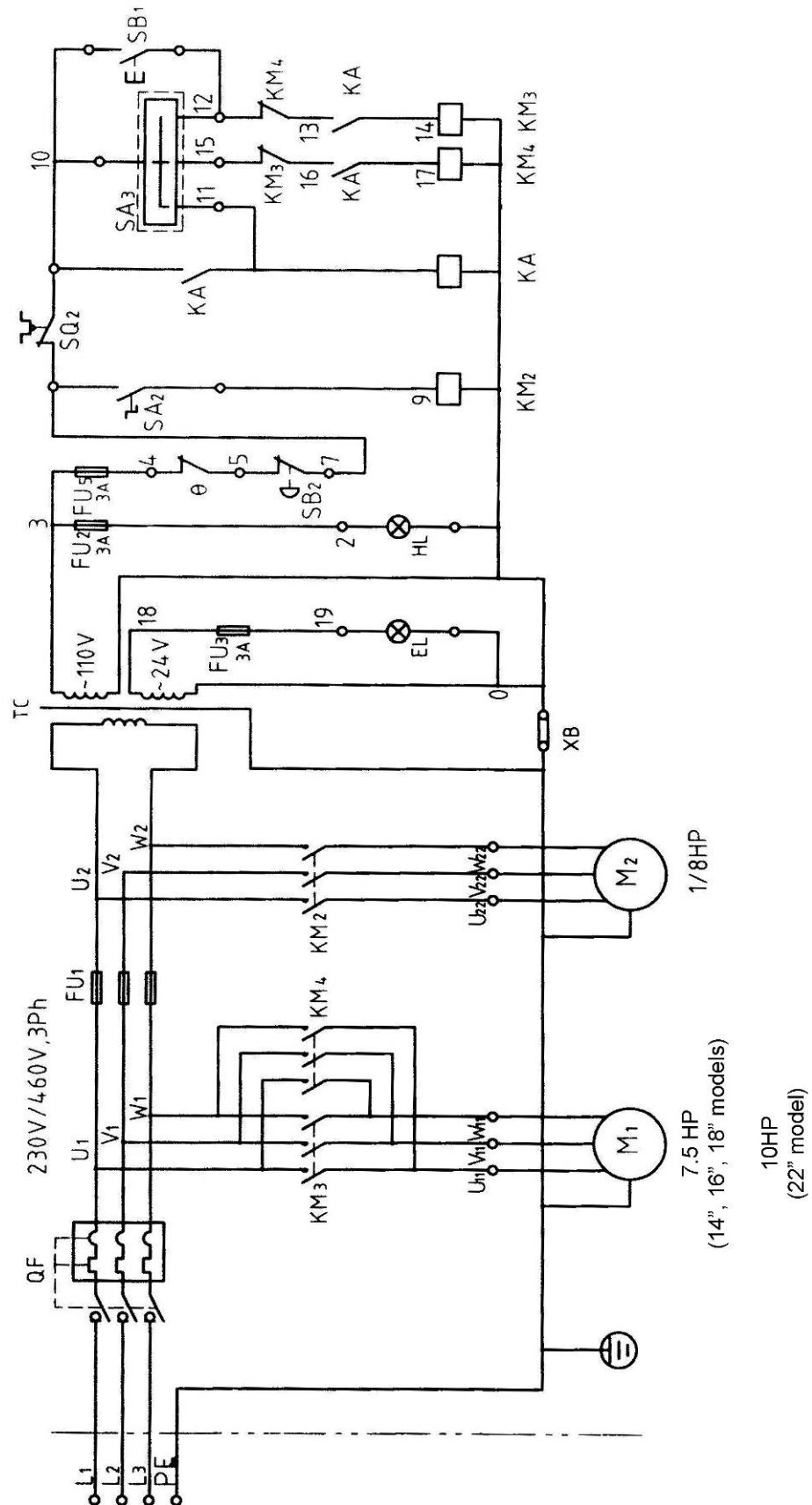


Electrical Cabinet

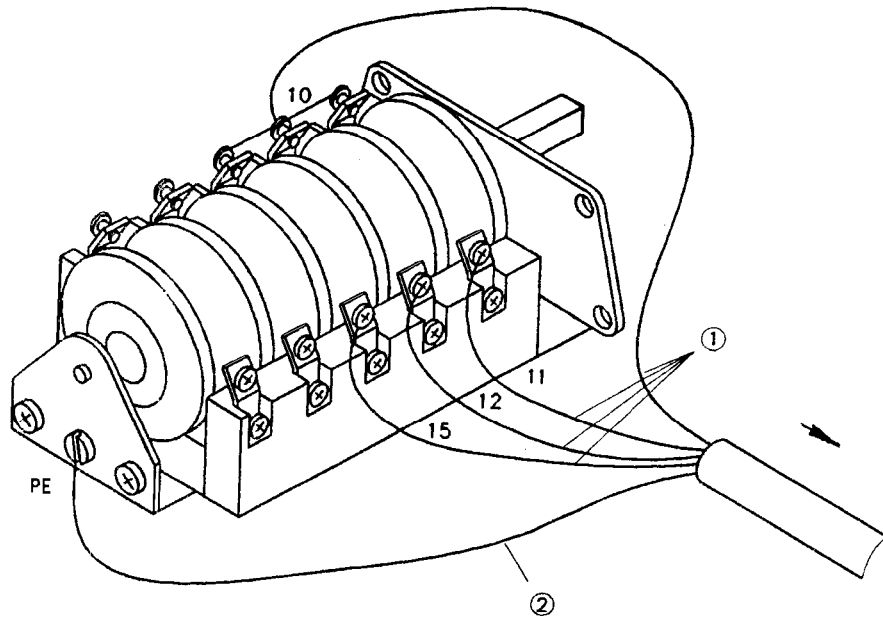
Index No.	Part No.	Description	Size	Qty.
1.....	ZX-SB1.....	Jog Button.....	LAY3-11.....	1
2.....	ZX-SA2.....	Coolant Control Button	LAY3-11X/2	1
3.....	ZX-SB2.....	Emergency Stop.....	LAY3-012S/1	1
4.....	ZX-HL.....	Power Indicator Light.....	XD11-30/20	1
5.....	ZX-SA3.....	Rotary Switch	HZ3-452	1
6.....	ZX-QF.....	Master Switch (40A)	D215-40	1
7.....	ZX-FU1.....	Fuse (3A)	JRT1-16A.....	1
8.....	ZX-FU2.....	Fuse (2A)	JRT1-16A.....	1
9.....	ZX-FU3.....	Fuse (2A)	JRT1-16A.....	1
10.....	ZX-FU5.....	Fuse (2A)	JRT1-16A.....	1
.....	ZX-FB.....	Fuse Block		1
11.....	ZX-Q.....	Temperature Relay	JW6.....	1
12.....	ZX-KM2	A.C. Contactor	3TB40	1
13.....	ZX-KA.....	A.C. Contactor.....	3TB80	1
14.....	ZX-KM3	A.C. Contactor (for 14,16,18" models).....	3TB43	1
.....	GH-2280ZX-KM3	A.C. Contactor (for 22" models)	3TB44	1
15.....	ZX-KM4	A.C. Contactor (for 14,16,18" models).....	3TB43	1
.....	GH-2280ZX-KM4	A.C. Contactor (for 22" models)	3TB44	1
16.....	ZX-XB.....	Copper Plate (for grounding).....		1
17.....	ZX-XT1.....	Wiring Board	JT1.....	1
18.....	ZX-XT2.....	Wiring Board	JX0.....	1
19.....	ZX-TC.....	Control Transformer.....	JBK3-100-TH.....	1
20.....	ZX-SQ2.....	Stroke Switch	LXW5-11N1.....	1



Wiring Diagram



Rotary Switch Diagram



1.....The Cord from the Wiring Board (part no. ZX-XT2)

2.....The Grounding Wire from the Copper Plate (part no. ZX-XB)

NOTES

NOTES



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