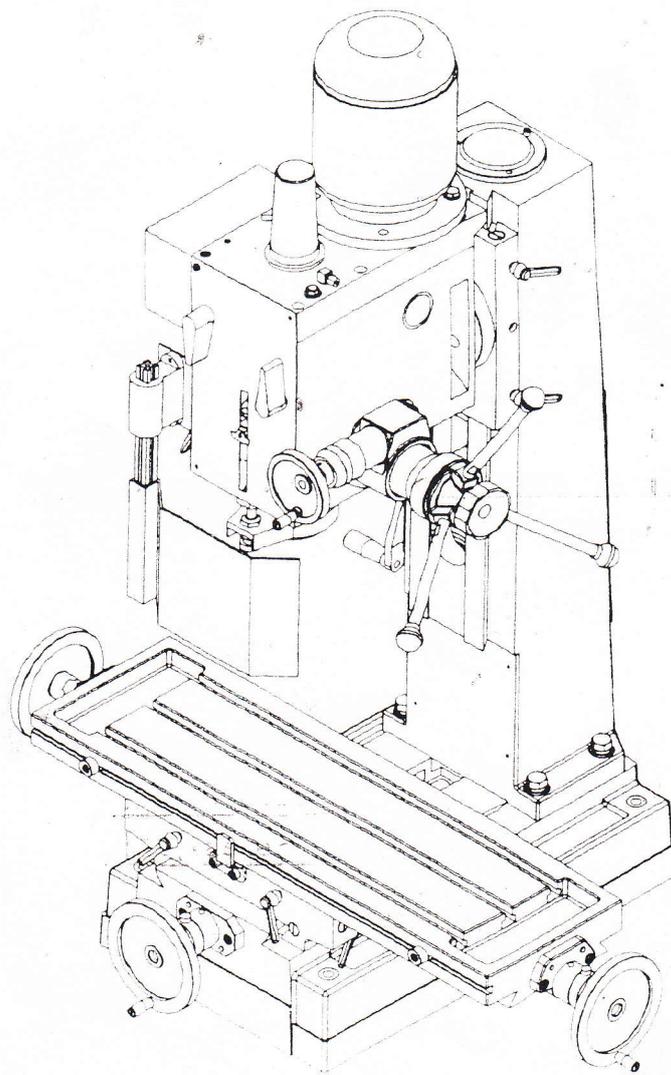

OWNER'S MANUAL

GEARED HEAD

MILLING & DRILLING MACHINE

Model GH UNIVERSAL



READ ALL INSTRUCTIONS CAREFULLY

Keep for future reference!

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

As with all machinery there are certain hazards involved with operation and use of the machine. Using the machine with respect and caution will considerably lessen the possibility of personal injury. However, if normal safety precautions are overlooked or ignored, personal injury to the operator may result.

This machine was designed for certain applications only. We strongly recommends that this machine. NOT be modified and/or used for any application other than for which it was designed. If you have any questions relative to its application DO NOT use the machine until you have had detail instruction from your dealer.

SAFETY RULES FOR ALL TOOLS

1. FOR YOUR OWN SAFETY ,READ THIS INSTRUCTION MANUAL BEFORE OPERATING THE TOOL. Learn the tool's application and limitations as well as the specific hazards peculiar to it.

2.KEEP GUARDS IN PLACE and in working order .

3.GROUND ALL TOOLS .If tool is equipped with three-prong plug, it should be plugged into a three-hole electrical receptacle. If an adapter is used to accommodate a two-prong plug receptacle, the adapter lug must be attached to a know ground. Never remove the third prong.

4.REMOVE ADJUSTING AND WRENCHES. -

Form habit of checking to see that keys and adjusting wrenches are removed from tool before turning it"on."

5.KEEP WORK AREA CLEAN. Cluttered areas and benches invite accidents.

6.DON'T USE IN DANGEROUS ENVIRONMENT .Don't use power tools in damp or wet locations, or expose them to rain. Keep work area well-lighted.

7.KEEP CHILDRE AND VISITORS AWAY. All children and visitors should be keep a safe distance from work area.

8.MAKE WORKSHOP CHILDROOF -with padlocks, master switches, or by removing starter keys.

9.Don't force tool. It will do the job better and be safer at the rate for which it was designed.

10.USE RIGHT TOOL .Don't force tool or attachment to do a job for which it was not designed.

11. **WEAR PROPER APPAREL.** No loose clothing, gloves, neckties, rings, bracelets, or other jewelry to get caught in moving parts. Nonslip foot wear is recommended. Wear protective hair covering to contain long hair.

12. **ALWAYS WEAR EYE PROTECTION.** Refer to ANSIZ87.1 Standard for appropriate recommendations. Also use face or dust mask if cutting operation is dusty.

13. **SECURE WORK.** Use clamps or a vise to hold work when practical. It's safer than using your hand and frees both hands to operate tool.

14. **DON'T OVERREACH.** Keep proper footing and balance at all times.

15. **MAINTAIN TOOLS IN TOP CONDITION.**

Keep tools sharp and clean for best and safest performance. Follow instructions for lubricating and changing accessories.

16. **DISCONNECT TOOLS** before servicing and when changing accessories such as blades, bits, cutters, ect.

17. **USE RECOMMENDED ACCESSORIES.**

Consult the owner's manual for recommended accessories .The use of improper accessories may cause hazards.

18. **AVOID ACCIDENTAL STARTING.** Make sure switch is in "OFF" position before plugging in power cord.

19. **NEVER STAND ON TOOL.** Serious injury could occur if the tool is tipped or if the cutting tool is accidentally contacted

20. **CHECK DAMAGED PARTS.** Before further use of the tool, a guard or other part that is damaged should be carefully checked to ensure 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.

21. **DIRECTION OF FEED.** Feed work into a blade or cutter against the direction of rotation of the blade or cutter only.

22. **NEVER LEAVE TOOL RUNNING UNATTENDED. TURN POWER OFF.**

Don't leave tool until it comes to a complete stop.

23. **DRUGS, ALCOHOL , MEDICATION.** Do not operate tool while under the influence of drug, alcohol or any medication.

24. **MAKE SURE TOOL IS DISCONNECTED FROM POWER SUPPLY** while motor is being mounted, connected or reconnected.

ADDITIONAL SAFETY RULES FOR MILL DRILL

1. BE SURE drill bit or cutting tool is securely locked in the chuck.
2. BE SURE chuck key is removed from the chuck before turning on power.
3. Adjust the table or depth stop to avoid drilling into the table.
4. SHUT OFF the power , remove the drill bit or cutting tool, and clean the table before leaving the machine.
5. CAUTION. When practical , use clamps or a vise to secure workpiece to keep the workpiece from rotating while the drill bit or cutting tool.
6. WARNING: FOR Your Own Safety Don't wear gloves when operating a mill/drill.

SPECIFICATIONS:

Model		45		40	
Drilling capacity	cast iron	45mm		40mm	
	mild steel	32mm		32mm	
Face mill capacity		80mm		76mm	
End mill capacity		32mm		32mm	
Working table size		800mm × 240mm		730mm × 210mm or 800mm × 240mm	
Working table cross travel		190mm or 230mm		190mm or 230mm	
Working table longitudinal travel		560mm		500mm	
T-Slot size		12mm		12mm	
Head tilt left right		90°		90°	
Head swivel				360°	
Spindle taper (option)		MT3 or MT4	R8 or ISO30	MT3 or MT4	R8 or ISO30
Max distance spindle to table		460mm	440mm	430mm	410mm
Spindle stroke		120mm		120mm	
Spindle speed(rpm) (option)	Motor 0.85KW/1.1KW	I	75 180 280 600 1000 1600		
		II	150 360 560 1200 2000 3200		
	Motor 1.1KW	50HZ	75 170 280 540 960 1600		
		60HZ	90 210 345 670 1180 1970		
Overall dimension		1090mm × 1120mm × 785mm		1075mm × 1090mm × 800mm	
Packing dimension		850mm × 760mm × 1150mm		820mm × 760mm × 1150mm	
NW/GW Weight		300/350Kg		270/300Kg	

WARNING: CHANGE SPEED ONLY WHEN MACHINE IS STOPPED

CHANGING THE GEAR BOX OIL

Tilt the head stock over as shown in Fig 1. Open the drain plug to allow the oil to drain from the opening completely. Then lock the oil drain plug and turn the head to be upright position. Remove the oil filler plug fill the oil to the gear box until the oil lever reach the middle of oil fluid lever indicator. Then lock the plug.

CLEANING

- (1) Your machine has been coated with a heavy grease to protect it in shipping. This coating should be completely removed before operating the machine. Commercial degreaser, kerosene or similar solvent may be used to remove the grease from the machine, but avoid getting solvent on belts or other rubber parts.
- (2) After cleaning, coat all bright work with a light lubrication. Lubricate all points with a medium consistency machine oil.

LUBRICATION:

All ball bearings in your mill/drill are sealed for life, requiring no lubrication. Points requiring lubrication are:

- (1) Internal spline drive assembly. Keep this area well lubricated with a good grade grease, insert grease in the hole at the top of spindle pulley spline driver, lube twice yearly.
- (2) A light film of oil applied to the quill and column will reduce wear, prevent rust, and assure ease of operation.
- (3) Quill return spring should receive oil (SAE 20) once yearly. Remove cover plate and apply oil with squirt can or small brush.
- (4) **IMPORTANT:** The gear box should be oiled with a lubricant such as SAE 68 oil in level. **CHANGE OIL EVERY ONE YEAR.**
- (5) Apply lubricate to quill pinion every 90 days.

NOTE: use extreme care when performing this operation and keep hands clear of pinch points. When using paraffin bar, do this only by turning the sheaves by hand. Do not apply with motor running.

USE OF MAIN MACHINE PARTS

- (1) To raise and lower the head by head handle.
- (2) Equipped with an electric switch for tapping operation clockwise or counterclockwise.
- (3) To adjust the quick or slow feeding by feed handle.
- (4) To adjust the table left and right travel by table handle wheel.
- (5) To adjust the table fore and after travel by table handle wheel.
- (6) To operate the spindle handle wheel for micro feed.
- (7) To adjust the scale size according to working need.

PRECAUTION FOR OPERATION

Check all parts for proper condition before operation; if normal safety precautions are noticed carefully, this machine can provide you

withstanding of accurate service.

(1) Before Operation

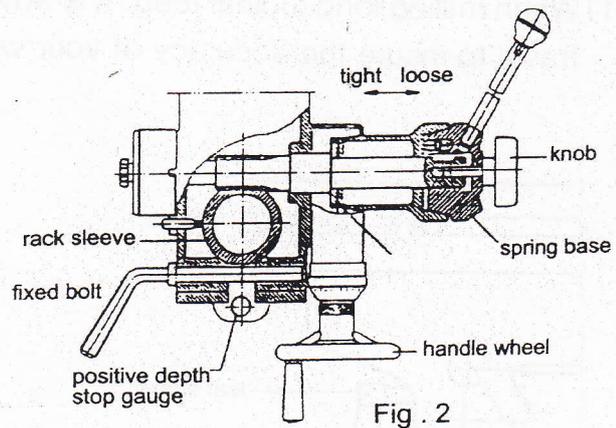
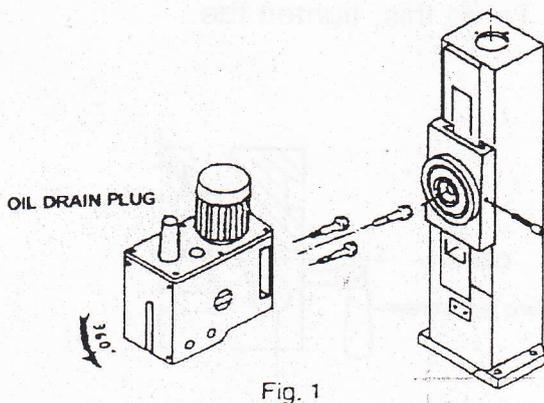
- (a) Fill the lubricant
- (b) In order to keep the accurate precision, the table must be free from dust and oil deposits.
- (c) Check to see that the tools are correctly set and the workpiece is set firmly.
- (d) Be sure the speed is not set too fast.
- (e) Be sure everything is ready before use

(2) After Operation

- (a) Turn off the electric switch.
- (b) Turn down the tools.
- (c) Clean the machine and coat it with lubricant.
- (d) Cover the machine with cloth to keep out the dust.

(3) Adjustment of head

- (a) To raise and lower the head, loosen the leaf screw located on the right side of the raise and lower base. When the desired height is reached tighten leaf screw to avoid vibration.
- (b) Unscrew 3 nuts while the workpiece needs to be bevel turn to the degrees you wish on the scale ,then screw the 3.



QUILL RETURN SPRING ADJUSTMENT:

Spring tension for return of spindle, after hole drilling, has been pre-set at the factory .No further adjustment should be attempted unless absolutely necessary. Adjustment will probably be required if a multiple spindle drilling or tapping head is used .If adjustment is necessary ,loosen lock screw while holding quill spring housing .Do not allow the housing to turn in your hand, or spring will unwind. Turn entire housing assembly clockwise the number of

turns necessary to cause the quill to return to its up position. (NOTE: The flat of the spring housing pilot is lined up with the spring loading hole on the body of the spring housing.) Reset lockscrew make sure point of screw mates the flat on the housing journal.

(1) Preparing for Drilling (see fig.2) (Except addition power feed system).

Turn of the knob make loose the taper body of worm gear and spring base. Then we decide spindle stroke setting the positive depth stop gauge for drilling blind hole or free state for pass hole.

(2) Preparing for Milling (see fig.2) (Except addition power feed system).

(a) Adjust the positive depth stop gauge to highest point position.

(b) Turn tight of the knob be use to taper friction force coupling the worm gear and spring base. Then turning the handle wheel by micro set the spindle of work piece machining height.

(c) Lock the rack sleeve at the desired height with fixed bolt.

ADJUSTING TABLE SLACK AND COMPENSATE FOR WEAR (see fig.3)

(1) Your machine is equipped with jib strip adjustment to compensate for wear and excess slack on cross and longitudinal travel.

(2) Clockwise rotation the job strip bolt with a big screw for excess slack otherwise a little counter clockwise if too tight.

(3) Adjust the jib strip bolt until feel a slight drag when shifting the table.

CLAMPING TABLE BASE AND MACHINE BASE (See Fig.3)

(1) When milling longitudinal feed. It is advisable to lock the cross feed table travel to insure the accuracy of your work. To do this, tighten the

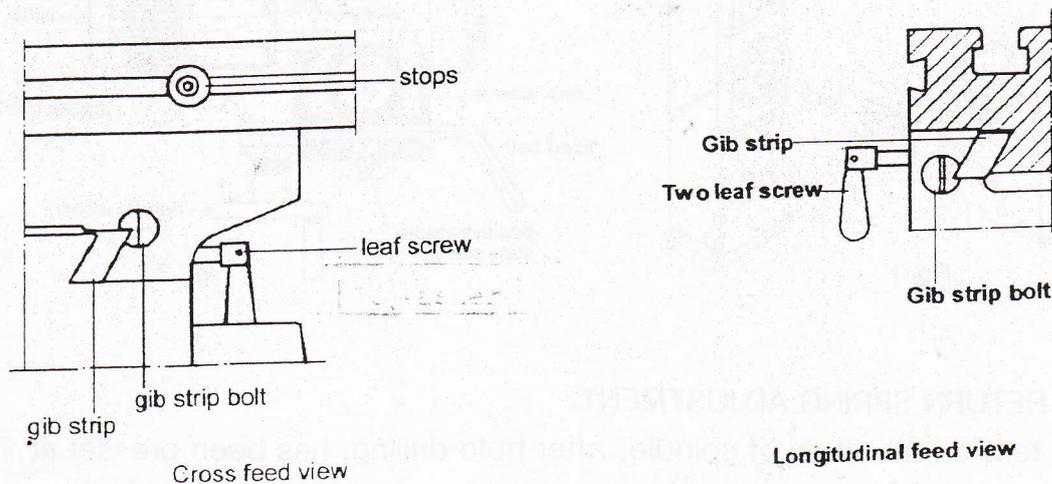


Fig.3

- small leaf screw located on the right side of the table base.
- (2) To tighten the longitudinal feed travel of the table for cross feed milling, tighten the two small leaf screw on the front of the table base.
 - (3) Adjustable travel stops are provided on the front of the table for control of cross travel and the desired milling length.

TO CHANGE TOOLS

(1) Removing Face Mill or Drill Chuck Arbor

Loosen the arbor bolt at the top of the spindle shaft approximately 2 turns with a wrench. Tap the top of the arbor bolt with a mallet. After taper has been broken loose, holding chuck arbor on hand and turn detach the arbor bolt with the other hand.

(2) To install Face Mill or Cutter Arbor

Insert cutter and cutter arbor bolt detach securely, but do not over-tighten.

(3) Removing Taper Drills

- (a) Turn down the arbor bolt and insert the taper drill into the spindle shaft.
- (b) Turn the rapid down handle rod down until the oblong hole in the rack sleeve appears. Line up this hole with the hole in the spindle. Insert key punch key through holes and strike lightly with a mallet. This will force the taper drill out.

SPECIFICATION OF T-SLOT

The size of T-Slot on table as Fig.4.

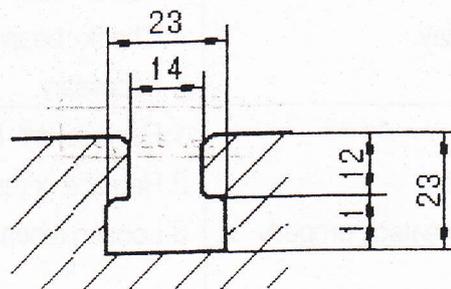
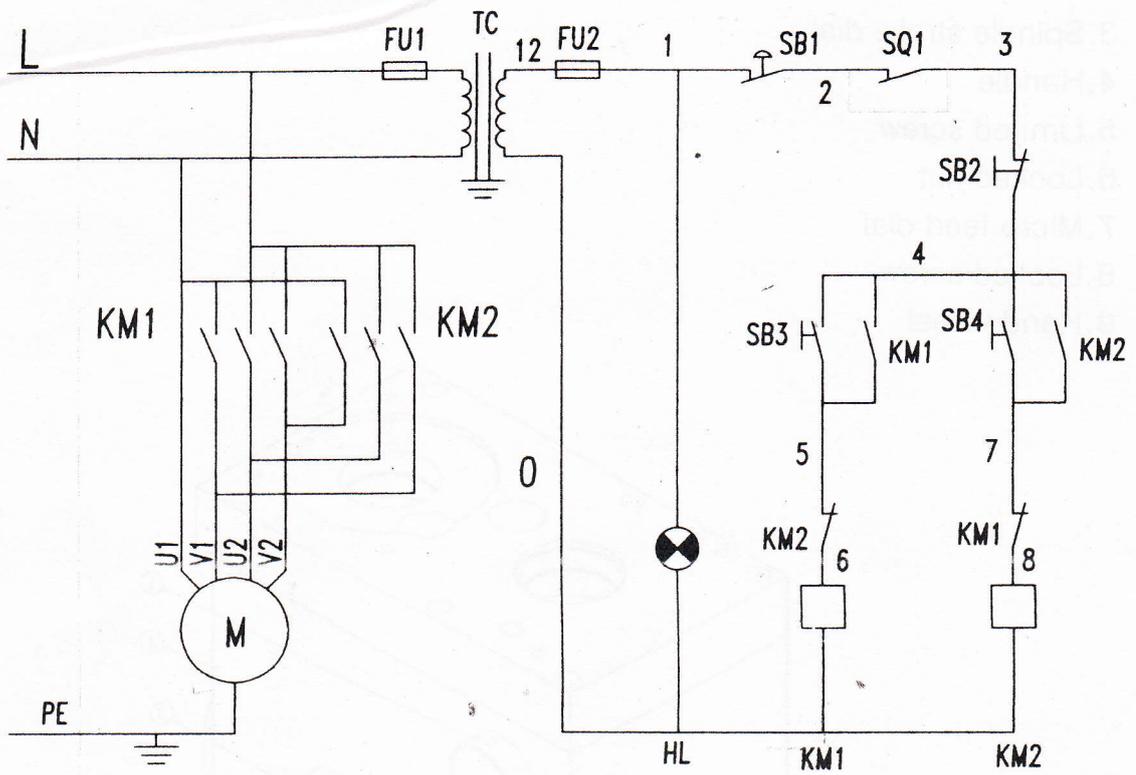


Fig.4

Maintenance instructions

TROUBLE SHOOTING HINTS

TROUBLE	PROBABLE CAUSE	REMEDY
Excessive Vibration	<ol style="list-style-type: none"> 1. Motor out of balance 2. Bad motor 	<ol style="list-style-type: none"> 1. Balance or replace problem motor. 2. Replace motor
Motor stalls	<ol style="list-style-type: none"> 1. Over feeding. 2. Dull drill. 3. Motor not building up to running speed 4. Bad motor 	<ol style="list-style-type: none"> 1. Reduce feed rate. 2. Sharpen drill and keep sharp. 3. Replace or repair motor. Check fuses in all three legs on three phase motors and replace if necessary. 4. Replace motor.
Noisy Operation	<ol style="list-style-type: none"> 1. Excessive vibration. 2. Improper quill adjustment. 3. Noisy spline 4. Noisy motor 	<ol style="list-style-type: none"> 1. Check remedy under excessive vibration. 2. Adjust quill. 3. Lubricate spline. 4. Check motor bearings or for loose motor fan.
Drill or Tool heats up or burns work.	<ol style="list-style-type: none"> 1. Excessive speed. 2. Chips not clearing. 3. Dull tool. 4. Feed rebate too slow. 5. Rotation of drill incorrect. 6. Failure to use cutting oil or coolant(on steel) 	<ol style="list-style-type: none"> 1. Reduce speed. 2. Use pecking operation to clear chips. 3. Sharpen tool or replace. 4. Increase feed enough to clear chips. 5. Reverse motor rotation. 6. Use cutting oil or coolant on steel
Drill leads off	<ol style="list-style-type: none"> 1. No drill spot. 2. Cutting lips on drill off center. 3. Quill loose in head. 4. Bearing play. 	<ol style="list-style-type: none"> 1. Center punch or center drill workpiece. 2. Regrind drill. 3. Tighten quill. 4. Check bearings and reseal or replace if necessary.
Excessive drill runout or wobble	<ol style="list-style-type: none"> 1. Bent drill. 2. Bearing play. 3. Drill not seated properly in chucks. 	<ol style="list-style-type: none"> 1. Replace drill. Do not attempt to straighten 2. Replace or reseal bearings. 3. Loosen, reseal and tighten chuck.
Work or fixture comes loose or spins	<ol style="list-style-type: none"> 1. Failure to clamp workpiece or work holding device to table. 	<ol style="list-style-type: none"> 1. Clamp workpiece or work holding device to table surface.



WIRING DIAGRAM

Power feed device

This machine be equipped with the Power feed device see Fig.1.

1. Power feed switch
2. Speed lever
3. Spindle stroke dial
4. Handle
5. Limited screw
6. Locked nut
7. Micro feed dial
8. Locked screw
9. Hand wheel

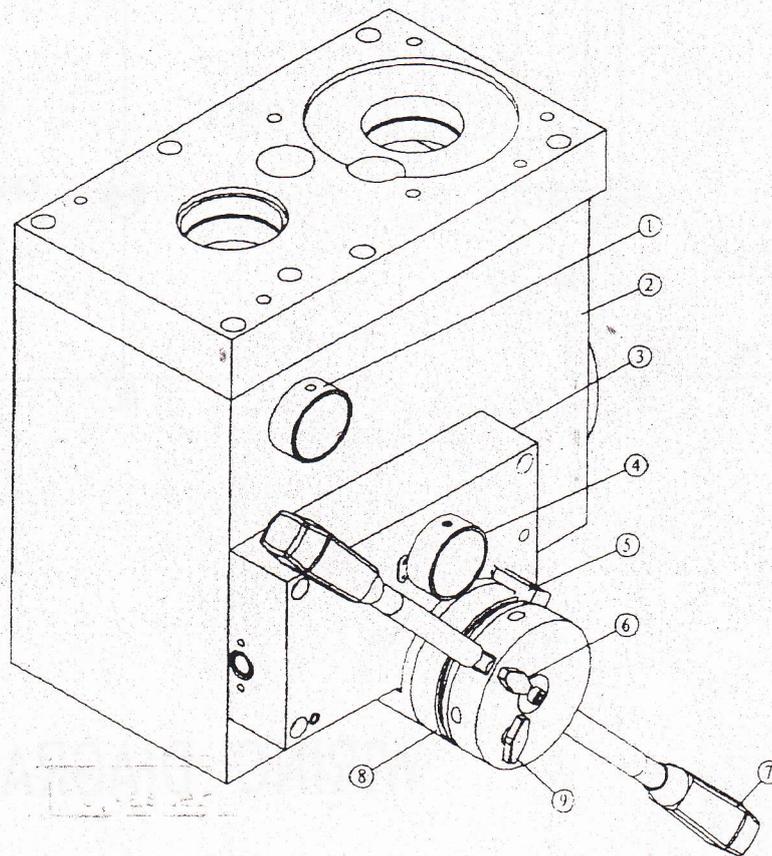


Fig.1.

OPERATION PROCEDURE

Manual feed

Turn the Power feed switch 1 off, handle 4 will be vertical with the axis of Spindle stroke dial 3, rotate limited screw 5 and be contacted with handle 4, then can be manually feed spindle.

When the Power feed switch 1 on, make handle 4 vertical, locked limited screw 5, rotate Speed lever 2 to "0", then can be manually feed spindle.

When want to trade off manual feed and power feed, stop the machine and turn on Power feed switch 1 and Speed lever 2. Make handle 4 vertical can be manually feed Spindle, Push handle 4 right can be power feed Spindle.

Power feed

Turn on Power feed switch 1 and Speed lever 2, Start the machine and push handle 4 right can be power feed spindle, the machine can be automatically shut down when spindle arrived at the designed Depth. (max Depth 120mm, availability Depth 115mm), and spindle send back. Turn Speed lever 2 can realize 0.10, 0.18, 0.26 three kinds depth feed to choose.

Want to make the machine spindle direct into power feed, loose lock nut 6, make Spindle stroke dial 3 to max stroke depth dial position, tighten locked nut 6 from Spindle stroke dial 3 can read spindle the position.

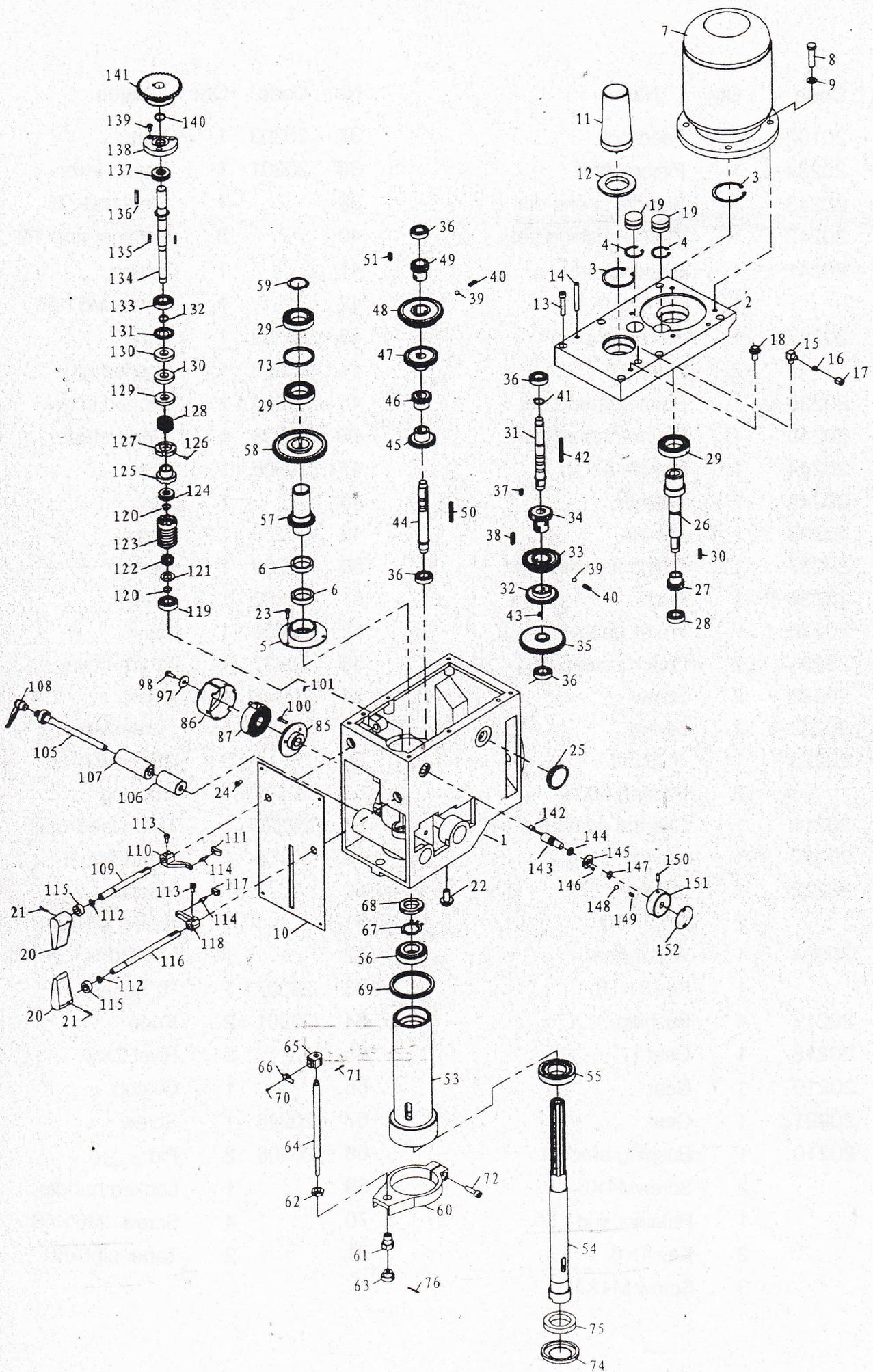
Adjustment power feed depth

Move spindle to the designed position, shut down the machine. Push handle 4 right, loose locked nut 6, adjusted Spindle stroke dial 3, make the designed dial level with "0", locked Spindle stroke dial 3, start the machine can power feed. Automatically shut down when spindle arrived at the designed Depth, and spindle send back. During power feed, make handle 4 vertical can stop power feed. make handle 4 vertical can stop power feed.

Need to use micro feed device, rotate Speed lever 2 to "0", push handle 4 right, loose locked screw 8, adjust micro feed dial 7 to "0", tighten locked screw 8, rotate hand wheel 9 can realize micro feed.

The system have safety clutch device, and be on use estate before leave factory. When clutch invalidation because of fray, and want to adjustment, can take away the panel and adjust spring can immediately recover the function.

No.	Code	Qty.	Name	No.	Code	Qty.	Name
1	20102	1	Feed box	37	20202	1	Gear
2	20234	1	Pinion shaft	38	20201	1	Speed lever
3	20243	1	Spindle stroke dial	39		1	Steel ball 8
4	20242	1	Clutch bushing set	40		2	Retainer ring 12
5	20241	1	Backing pin	41		1	Spring
6		1	Pin 6×12	42		1	Screw M6×20
7	20247	1	Ball head pin	43	20303	1	Plate
8		2	Pin4×10	44	20206	1	Knurled pin
9	20239	1	Square thread set	45	20204	1	Limited screw
10	20240	1	Square thread nut	46	20233	1	Worm shaft
11	20244	1	Handle body	47	20306	1	Bush
12	20245	2	Washer	48		1	Key
13	20203	1	Handle	49	20228	1	Gear
14	20237	1	Clutch key base set	50	20229	1	Gear
15	20236-2	1	Bush	51	20230	1	Gear
16	20236-1	1	Worm gear	52	20106	1	Bush
17	20231	2	Clutch screw set	53	20227	1	Worm cover
18	20235	2	Screw	54	20305	1	Bush
19	20232	2	Spring	55		1	Screw M6×12
20	20223	1	II Shaft	56		2	ScrewM6×25
21		2	Bearing 6003	57	20107	1	Bushing
22	20215	1	Change gear lever set	58	20226	1	Mirco feed dial
23	20220	1	spring	59	20105	1	Hand wheel
24	20222	1	Pull key	60		1	Handle
25		2	Pin 2×10	61		1	Screw M5×8
26	20304	1	Worm gear	62		1	Locked screw M5×12
27		1	Key 8×16	63	20307	1	"0"Scale
28	20217	4	Bushing	64	20301	2	Knob
29	20218	1	Gear	65		2	Rivet 2×5
30	20219	1	Gear	66		1	Oil cup
31	20221	1	Gear	67	20246	1	Screw
32	20216	1	Bushing bracket	68	20308	2	Pin
33		2	ScrewM4×6	69		1	Locked handle
34		1	Retainer ring 35	70		4	Screw M6×50
35		2	Key 4×8	71		2	Taper pin6x60
36		3	Screw M4×12				

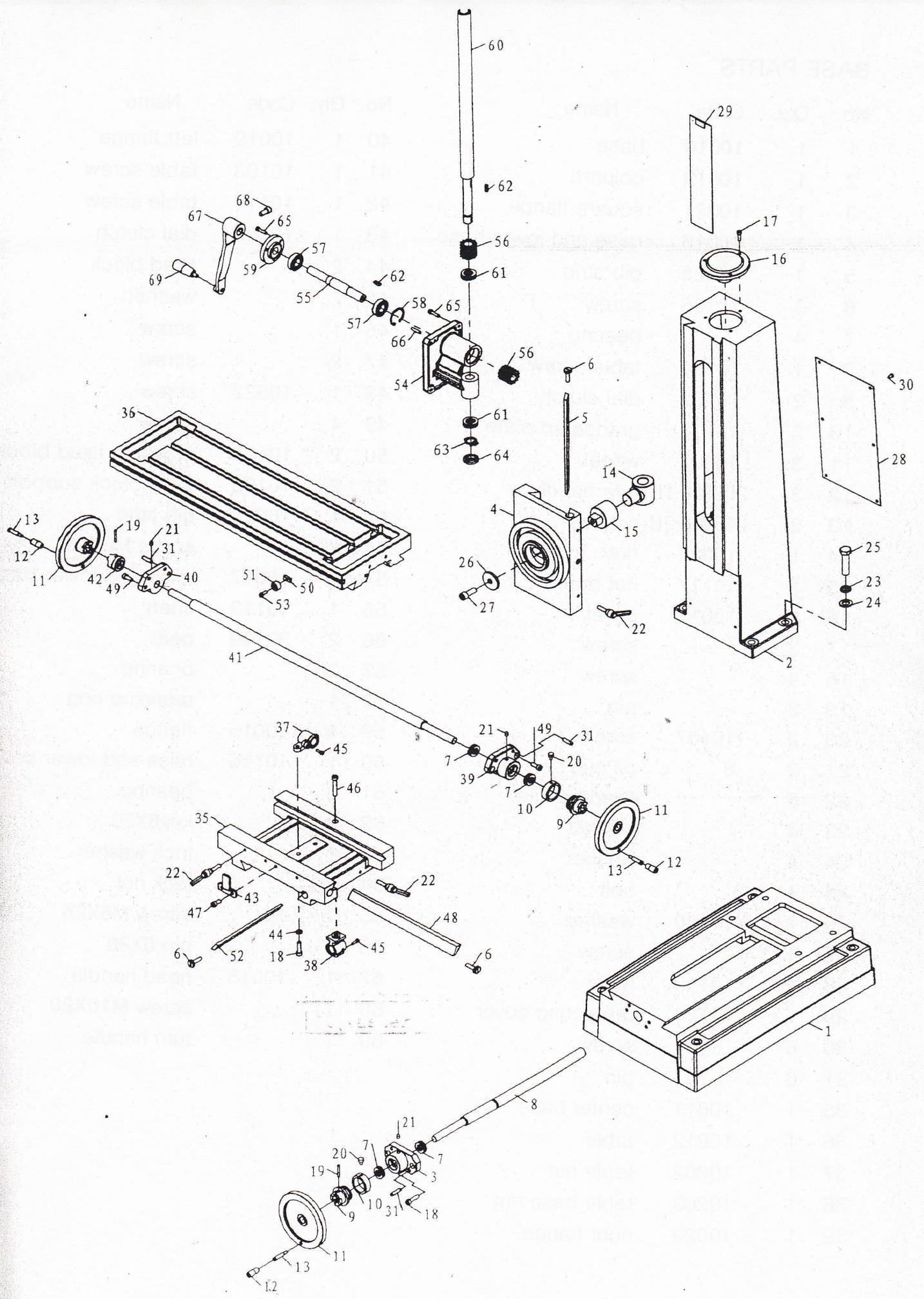


Head parts for spindle power feed

No.	Qty.	Code	Name	No.	Qty.	Code	Name
1	1	20010B	head body	37	1		key
2	1	20011B	head body cover	38	1		key
3	2		retaining ring	39	2		ball
4	2		retaining ring	40	2		spring
5	1	20018B	airtight base	41	2		retaining ring
6	2		airtight ring	42	1		key
7	1		motor	43	4		screw
8	1		screw	44	1	20107B	III shaft
9	1		washer	45	1	20109-B	gear
10	1	20201	plate	46	1	20110-2-B	gear
11	1	20304-1B	arbor bolt cover	47	1	20112-B	gear
12	1	20304-2B	arbor bolt cover base	48	1	20113-B	gear
13	1		screw	49	1	20115-B	gear
14	1		pin	50	1		key
15	1	20025B	joint	52	1		key
16	1	20026B	sleeve	53	1	20019	spindle sleeve
17	1	20027B	nut	54	1	20104B	spindle
18	1		bolt	55	1		bearing
19	2	20020B	cap	56	1		bearing
20	2	20307B	speed lever	57	1	20114-B	splined sleeve
21	2		pin	58	1	20116-B	gear
22	1		oil plug	59	1		retaining ring
23	1		screw	60	1	20012	feed base
24	1		screw	61	1	20128	support base
25	1		oil pointer	62	1	20129	nut
26	1	20105B	I shaft	63	1	20130	knob
27	1	20105-1-B	gear	64	1	20131	graduated rod
28	1		bearing	65	1	20021	fixed bolt
29	3		bearing	66	1	20132	scale board
30	1		key	67	1		lock washer
31	1	20106B	II shaft	68	1		lock nut
32	1	20108-B	gear	69	1	20308	rubber washer
33	1	20110-1-B	gear	70	1		screw
34	1	20111-B	gear	71	1		split pin
35	1	20106-1-B	gear	72	1		bolt
36	4		bearing	73	1	20024B	separating ring

Head parts for spindle power feed

No.	Qty.	Code	Name	No.	Qty.	Code	Name
74	1	20133B	oil tight cover	131	1	20103A	washer
75	1		air tight	132	1		retaining ring
76	1		pin	133	1		bearing
85	1	20118	spring base	134	1	20213A	I shaft
86	1	20123	spring cap	135	2		key
87	1	20122	spring plate	136	1		key
97	1	20102	washer	137	1		bearing
98	1		bolt	138	1	20104A	flange
100	1		screw	139	3		screw
101	2		pin	140	1		retaining ring
105	1	20124B	fixed bolt	141	1	20212A	gear
106	1	20203B	fixed tight block	142	1	20109A	quill
107	1	20202B	fixed tight block	143	1	20214A	lever shaft
108	1		adjust handle	144	1		O-airtight
109	1	20125B	lever shaft	145	1	20250	flange cover
110	1	20022-1B	lever	146	2		screw
111	1	20204-2B	lever bracket	147	1		retaining ring
112	2		retaining ring	148	1		steel ball
113	2		screw	149	1		spring
114	2	20204-3B	lever rod	150	1		screw
115	2		oil seal	151	1	20201	speed lever
116	1	20126B	long lever shaft	152	1	20303	label
117	1	20204-1B	lever bracket				
118	1	20022-2B	lever				
119	1		bearing				
120	2		retaining ring				
121	1		washer				
122	1	20209	spring				
123	1	20207A	worm shaft				
124	1		bearing				
125	1	20208B	clutch base				
126	3		screw				
127	1		locked nut				
128	1	20205B	spring				
129	1	20108A	fixed sleeve				
130	2		oil seal				



BASE PARTS

No.	Qty.	Code	Name	No.	Qty.	Code	Name
1	1	10010	base	40	1	10019	left flange
2	1	10013	column	41	1	10103	table screw
3	1	10021	square flange	42	1	10110	table screw
4	1	10016	raise and lower base	43	1	10105	dial clutch
5	1	10025	gib strip	44	2		fixed block
6	3	10106	screw	45	2		washer
7	4		bearing	46	1		screw
8	1	10104	table screw	47	2		screw
9	2	10102	dial clutch	48	1	10022	screw
10	2	10111	graduated plate	49	4		screw
11	3	10301	wheel	50	2	10108	movable fixed block
12	3	20305-1B	turn handle	51	2	10109	fixed block support
13	3	20305-2B	screw	52	1	10023	gib strip
14	1	10024	nut	53	2		screw M6X16
15	1	10117	nut bracket	54	1	10017	raise and lower base
16	1	10014	cover	55	1	10113	shaft
17	3		screw	56	2	20109	gear
18	4		screw	57	2		bearing
19	3		pin	58	1		retaining ring
20	2	10107	screw	59	1	10015	flange
21	3	8	oil cup	60	1	10116	raise and lower screw
22	6		fixed handle	61	2		bearing
23	4		washer	62	2		key6X20
24	4		washer	63	1		lock washer
25	4		bolt	64	1		lock nut
26	1	10120	washer	65	7		screw M6X25
27	1		screw	66	2		pin 6X30
28	1	10119	plate	67	1	10018	head handle
29	1	10124	protecting cover	68	1		screw M10X20
30	6		screw	69	1		turn handle
31	6		pin				
35	1	10011	center base				
36	1	10012	table				
37	1	10202	table nut				
38	1	10203	table base nut				
39	1	10020	right flange				