BELT DRIVE MILL/DRILL MACHINE

OTMT

Before Operating Your Tools,
Please Read These Instructions Carefully

ITEM NO. 87-115-929

MODEL NO. OT25020

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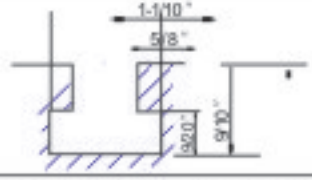
OTMT

Specifications

Model		OT25020
Max. drilling capacity		20mm (4/5")
Max. face mill capacity		63mm(2-1/2")
Max. end mill capacity		20mm(4/5")
Swivel angle of head-stock at level direction		360°
Max. distance between spindle nose and table		382mm (15.03")
Spindle taper		MT3
Spindle stroke		85mm (3-1/3")
Working area of table		520mm×160mm (20-1/2"×6-3/10")
Forward and backward travel of table		130mm (5-1/6")
Right and left travel of table		290mm (11-2/5")
Motor		0.55kW (0.75hp)
Spindle speed (4p) (r/min)	50Hz	100-2200
	60Hz	120-2640
Weight		704lbs
T-Solt		
Optional accessories		Face milling cutter 63mm2-1/2" Machine vice 90mm(3-1/2") or 125mm (4-9/10") End mill cutter 2-20mm (1/12" -3/4") Machine stand
Standard accessories		Allen wrench 4mm, 5mm, 6mm Screwdriver (-)6" Drill stock Drill chuck 1-13mm(B16) (1/2") Wedge Draw bar Draw bar washer

2 USE AND FEATURES

2.1 This machine may be use for surface cutting, drilling, milling, and tapping.

2.2 The high quality of this machine and its ease of operation make it suitable for use by students, amateurs, and home hobbyists, as well as skilled technicians.

2.3 Drilling and milling may be done using hand operated feeding, or worm gear feeding.

2.4 Many of the adjustable nuts are bronze, for adjusting the thread clearance and reducing wear. These bronze parts also allow screws to rotate smoothly and improve accuracy.

2.5 The vertical column is very strong and stiff, which makes the machine very stable and improves accuracy of manufactured parts.

2.6 Head of tough cast ensures its accuracy lasting enduring through the treatment of precise boring, grinding, and relieving internal stress.

2.7To adjust belt and change speed, pulley cover easy to open the cover.

3 SAVE THIS MANUAL

You will need the manual for the safety warnings and cautions,assemblyinstructions,operating procedures, maintenance procedures, trouble shooting, parts list, and diagram.Keep your invoice with this manual. Write the invoice number on the inside of the front cover. Keepboththismanualandyour invoice in a safe, dry place for future reference.

4 NOTICE

The Warnings, Cautions, and Instructions discussed in this instruction manual cannot cover all possible conditions and situations that may occur. The operator must understand that common sense and caution are factors, which cannot be built into this product, but must be supplied by the operator.

5 SAFETY WARNING & CAUTIONS

Please read all instructions before using this tool!

5.1 KEEP WORK AREA CLEAN:
Cluttered areas invite injuries.

5.2 OBSERVE WORK AREA CONDITIONS:
Do not use tools in damp, wet, or poorly lit locations.

5.3 KEEP CHILDREN AWAY:
Children must never be allowed in the work area. Do not let them handle machines, tools, or equipment.

5.4 STORE IDLE EQUIPMENT:
When not in use, tools must be locked up in a dry location to inhibit rust.Always lock up tools and keep out of reach of children.

5.5 DO NOT FORCE THE TOOL :
It will do the job better and more safely at the rate for which it was intended. Do not use inappropriate attachments in an attempt to exceed the tool's capacities.

5.6 USE THE RIGHT TOOL FOR THE JOB:
Do not use a tool for a purpose for which it was not intended.

5.7 DRESS PROPERLY:
Do not wear loose clothing or jewelry, as they can be caught in moving parts. Nonskid shoes are recommended.Wear restrictive hair covering to contain long hair. Always wears appropriate work clothing.

5.8 USE EYE, EAR AND BREATHING PROTECTION:
Always wear safety goggles if you are producing metal filings or wood chips. Wear dust mask or respirator when working around metal, wood, and chemical dusts and mists. Use ear protection when working in a loud or noisy environment.

5.9 DO NOT ABUSE THE POWER CORD:
Protect the power cord from damage, either from impacts, pulling or corrosive materials. Do not yank machine's cord to disconnect it from the receptacle.

5.10 DO NOT OVERREACH:
Keep proper footing and balance at all times. Do not reach over or across running machines.

5.11 MAINTAIN TOOLS WITH CARE:
Keep tools sharp and clean for better and safer performance. Follow instructions for lubricating and changing accessories, Inspect power cord periodically and, if damaged, have it repaired by an authorized technician. Inspect all hydraulic seals for leaks prior to use. Control handle and power switch must be kept clean, dry, and free from and grease at all times.

5.12 REMOVE ADJUSTING KEYS AND WRENCHES
Be sure that keys and adjusting wrenches are removed from the tool or machine work surface before operation.

5.13 AVOID UNINTENTIONAL STARTING
Be sure that you are prepared to begin work before turning the start switch on.

5.14 STAY ALERT:
Watch what you are doing. Do not operate this machine when you are tired.

5.15 DO NOT OPETATE THIS MACHINE WHILE UNDER THE INFLUENCE OF ALCOHOL, DRUGS, OR PRESCR IPTION MEDICINES.

5.16 CHECK FOR DAMAGED PARTS:
Before using any tool, any part that appears damaged should be carefully checked to determine that it would operate properly and perform its intended function. Check for alignment and binding of moving parts, any broken parts or mounting fixtures, and any other condition that may affect proper operation. Any part that is damaged should be properly epaired or replaced by a qualified technician. Do not use the tool if any switch does not turn on and off properly.

5.17 REPLACEMENT PARTS AND ACCESSORIES:
When servicing, use only identical replacement parts intended for use with this tool. Replacement parts are available from Harbor Freight Tools. Use of any other parts will void the warranty.

5.18 USE THE RIGHT TOOL FOR THE JOB:
Do not attempt to force a small tool or attachment to do the work of a larger industrial tool. There are certain applications for which this tool was designed. Do not modi9fy this tool and do not use this tool for a purpose for which it was not intended.

5.19 MAINTENANCE:
For your own safety, maintenance should be performed regularly by a qualified technician.

6 SPECIAL WARNINGS WHEN USING THIS DRILLING/MILLING MACHINE

Using this machine may create special hazards. Take particular care to safeguard yourself and those around you.

6.1 ELECTRICAL SAFETY:
Never operate any tool if there is an electrical hazard. Never operate an electrical tool in wet conditions. Never operate a tool with an improper electrical cord or extension cord. Never operate an electrical tool unless you are plugged into a properly grounded outlet. We recommend you use a circuit, which is protected by an appropriate circuit breaker.

6.2 EJECTED MATERIAL
Use safe practices to avoid injury from ejected material. Because milling tools and work-pieces turn at high speed, there is a danger of being injured by materials that may be ejected. Always wear certified eye protection. Never attempt to machine any item if it is not adequately held. Always stand to one side of the plane in which the materials are spinning, to avoid being hit if an item is ejected. Never allow bystanders to be in the proximity of this machine while in operation.

6.3 ENTANGLEMENT
Use extreme caution to prevent loose materials from being caught in the machine. Never operate this machine with loose clothing, long hair, jewelry, or other items, which may become caught in the tools or work-pieces. In case of entanglement, the OFF switch immediately.

7 SCHLEPPING AND INSTALLATION

7.1 Please holding well-suited methods to schlep, which avoid damnify the face of machine.

7.2 Be sure to fix the head on the upright before moving machine. while moving machine, please keep it′ s balance and safety.

7.3 Do not mount machine at the sunshine place to avoid the deformity of machine and the loss of accuracy.

7.4 Check to see if the motor turning in clockwise direction before connecting the electric distribution line.

7.5 Mount machine to a sturdy table or base. It is advisable that the table you choose be well constructed to avoid any vibration during operation.

7.6 Four holes are provided on the machine base for mounting. Before tightening bolts make sure the working table on the machine is level lengthwise and crosswise. Use shims if necessary.

8 CLEANING AND LUBRICATING (see Fig. 2)

8.1 Your machine has been coated with heavy grease to protect it before 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 rubber parts.

8.2 After cleaning, coat all bright work with a light lubricant. Lubricate all points in Fig. 2 with medium consistency machine oil.

8.3 Lubricating points as shown in arrows.(See Fig.1)

9 LEVELING THIS MACHINE

Before operation, it is critical to level the work surface both lengthwise and crosswise, using a precision level. It will not be possible to maintain accuracy of machined parts if the mill is not properly leveled to start.

10 USING AND SAFEGUARDING

10.1 USE OF MAIN MACHINE PARTS (See Fig.1)

①To raise and lower the head by head handle.

②Forward-stop-reverse switch for tapping operation clockwise or counterclockwise.

③To adjust the quick or slow feeding by feed handle.

④To adjust the table left and right travel by table handle wheel.

⑤To adjust the table fore and after travel by table handles wheel.

⑥To operate the spindle handle wheel for micro-feed.

⑦To adjust the scale size according to working need.

10.2 PRECAUTION FOR OPERATION

Check all parts for proper condition before operation; if normal safety precautions are proceed carefully, this machine can provide you with standing of accurate service.

(a) Before Operation

①Fill the lubricant.

②In order to keep the accurate precision the table must be free from dust and oil deco.

③Check to see that the tools are corrective set and the work-piece is set firmly.

④Be sure the speed is not too fast.

⑤Be sure everything is ready before use.

(b) After Operation

①Turn off the electric switch.

②Turn down the tools.

③Clean the machine and coat it with lubricant.

④Cover the machine with cloth to keep out the dust.

10.3 ADJUSTMENT OF HEAD

⑴To raise and lower the head, loosen the two heavy-duty head lock nuts shown in Fig.1. Use the left side head handle to raise and lower the head on its rack and pinion mechanism. When the desired height is reached, tighten the bolts to avoid vibration.

⑵ head may be rotated 360° by loosening the same bolts mentioned above. Adjust the head to the desired angle, then fixed the heavy-duty head lock nut. It is tighten the same time to fix the head if drilling & milling too much.

10.4 PREPARING FOR DRILLING (See Fig.2) (Except addition power feed system)

Turn off the knob make loose the taper body or 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.

10.5 PREPARING FOR MILLING (See Fig.2)(Except addition power feed system)

⑴ your machine is equipped with wedge strip adjustment to compensate for wear and excess slack on cross and longitudinal travel.

⑵ 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.

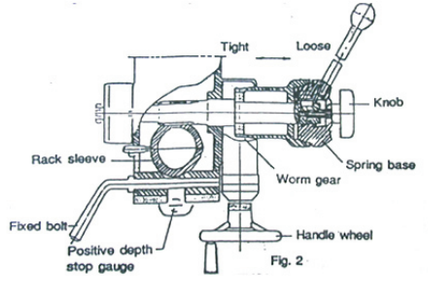


Fig. 2

10.6 ADJUSTING TABLE SLACK AND COMPENSATE FOR WEAR (See Fig. 5)

⑴Your machine is equipped with wedge strip adjustment to compensate for wear and excess slack on cross and longitudinal travel.

⑵Clockwise rotation the wedge strip bolt with a dog screw for excess slack otherwise a little counter clockwise if too tight.

Adjust the wedge strip bolt until feel a slight drag when shifting the table.

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

⑴When 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 small leaf screw located on the right side of the table base.

⑵To tighten the longitudinal feed travel of the table for cross feed milling, tighten the two small leaf screws on the front of the table base.

⑶Adjustable travel stops are provided of the front of the table for control of cross travel and desired milling length.

10.8 SPEED CHANGING AND ADJUST BELT (Step see Fig.4)

⑴Turn power off.

⑵Open belt cover by releasing side latches step sees (a) (b) (c).

⑶Loosen motor mount leaf screw.

⑷Push motor in order to loosen belts head side of motor mount is set fixed two motor's ear side with motor screw to tighten or loosen of belts.

⑸Loosen two screws of base for speed changes into pulley that also adjusts the location of base for speed change inter pulley.

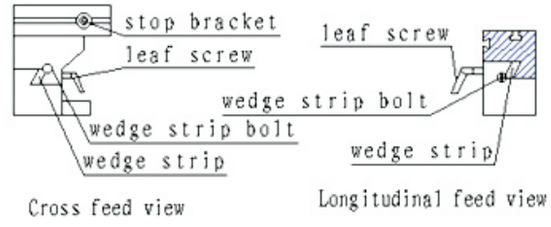


Fig.3

⑹Select the suitable RPM from speed charts of Fig.5. Then place the belts on the desired pulley steps.

⑺Tighten two screws of base for speed change pulley and the bolt of motor mount lock.

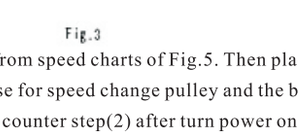
⑻Cover the belt cover with counter step(2) after turn power on.

10.9 TO CHANGE TOOLS

(a) Removing Face Mill or Drill Chuck Arbor

Loosen the arbor bolt (See Fig.4) at the top of the spindle shaft approximately 2 turnswith a wrench. Rap 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.



SPINDLE SPEEDS 50HZ	SPINDLE SPEEDS 60HZ	BELT	SPINDLE SPEEDS 50HZ	SPINDLE SPEEDS 60HZ	BELT
100	120	4-5	660	790	1-6
160	190	3-5	890	1065	2-7
200	240	4-6	1045	1250	3-8
240	290	2-5	1250	1500	1-7
320	380	3-6	1565	1880	2-8
380	455	4-7	2200	2640	1-8

Fig.5

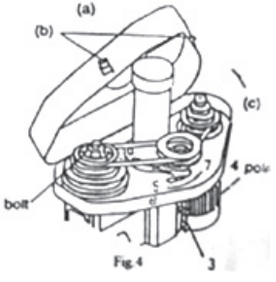


Fig.4

(b)To Install Face Mill or Cutter Arbor

Insert cutter and cutter arbor into the taper of spindle. Tighten arbor bolt detachsecurely, but do not over tighten.

(c) Removing Taper Drills

⑴Turn down the arbor bolt and insert the taper drill into the spindle shaft

⑵Turn 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 keypunches keys through holes and strike lightly with a mallet. This will force the taper drill out.

11 EXTRA TOOLING AND ACCESSORIES

Each of machines is equipped with a MT3 spindle taper (examples below). Contact your local distributor or a mater cutting tool distributor to obtain any of these accessories.

Taper DrillReamers

End Mills

Cutter ArborTapsCollets

Adapters and Sleeves

12 TAPPING EQUIPMENT

This machine can be equipped with an electric switch for tapping operation clockwise or counterclockwise, and the working depth also can be adjusted by the limit switch (Electric switch will be installed according to your requirement, and you must pay the cost only.)

13 NOISE

When ambience is not other voice, machinery's noise less than 80dB(A) or equal to.

14 ORDERING REPLACEMENT PARTS

Complete parts list is attached. If parts are needed, contact your local distributor.

15 TROUBLE SHOOTING

15.1 NO RUNNING AFTER SWITCH ON:

(1) Main switch interruption while volts irregular. ---Adjust input voltage and draw back the main switch.

(2) Break down of fuse in switch box---Replace with new one.

(3) In case of too much current, the overload relay jumps away automatically. ---Press the overload relay, and it will return to the correct position.

15.2 MOTOR OVERHEAT AND NO POWER:

(1) Overload---Decrease the load of feed.

(2) Lower voltage---Adjust to accurate voltage.

(3) Spoiled contact point of magnetic switch---Replace with new one.

(4) Breakdown of contact relay---Connect it or replace with new one.

(5) Motor is poor---Replace with new one.

(6) Break down of fuse or poor contact with wire (It is easily to spoil motor while short circuit) ---Shut off power source at once and replace fuse with new one.

(7) The tension of pulley V-belt too tight ---Adjust for proper tension of V-belt.

(8) If this machine with the tapping attachment, there is an aid plum screw fix on the motor mount in order to avoid the motor pulleys shake while turning.

15.3 THE TEMPERATURE OF THE SPINDLE BEARING IS TOO HOT.

(1) Grease is insufficient---Fill the grease.

(2) The spindle bearing is fixed too tight---Turn with no speed and feel the tightness with hand.

(3) Running with high speed for a long time---Turn it to lightly cutting.

15.4 TABLE TRAVEL HAS NOT BALANCED:

(1) The gap of spindle taper is too wide---Adjust bolt in proper.

(2) Loosening of leaf bolt ---Turn and fasten in place.

(3) Feed too deep---Decrease depth of fed.

(4) Feel a heavy drag when shifting the table---Adjust wedge strip or table nut.

15.5 SHAKE OF SPINDLE AND ROUGHNESS OF WORKING SURFACE HAS TAKEN PLACE DURING PERFORMANCE:

(1) The gap of spindle taper is too wide---Adjust the gap in proper or replace bearing with new one.

(2) Spindle loosening up and down ---Make two of inner bearing covers on the top tight each other. Do not over-tight two inner bearing covers with the taper bearing, it is OK as long as no gap between them.

(3) The gap of taper sliding plate too wide---Adjust the tension of proper.

(4) Loosening of chuck ---Fasten chuck.

(5) Cutter is dull---Sharpen it.

(6) Work-piece has not hold firmly---Be sure to tighten.

15.6 MICRO FEED DOES NOT WORK SMOOTHLY:

(1) Loosening of clutch---Be sure to tighten.

(2) Worm and worm shaft has worn out---Replace new one.

(3) Loosening of hand-wheel fixed screw---Be sure to tighten it.

15.7 WITHOUT ACCURACY IN PERFORMANCE:

(1) Imbalance of heavy work-piece ---Must be considerate of the principle of balance while holding work-piece.

(2) Often use of hammer to strike work-piece---Forbidden to use hammer to strike work-piece.

(3) Inaccurate horizontal labels---Check and maintains table for keeping accurate horizontal after a period of use.

15.8 LOCK OF POWER WITH MAINSPINDLE REVOLVING:

The tension of V belts too loose ---Adjust for proper tension of V-belt.

Motor has burned out ---Change a new motor.

Fuse has burned out ---Replace a new one.

16 MAINTAINING

That's easier to keep machine in good conditions and the best performance by means of maintaining than to remedy it after being out of order at any time.

16.1 DAILY MAINTENANCE (by operator)

(1) Fill the lubricant before starting machine everyday.

(2) If temperature of spindle caused overheating or strange noise, stop machine immediately to check it for keeping accurate performance.

(3) Keep work area clean, release vise, cutter, work-piece from table, switch off power source, take chip or dust away from machine and follow instructions lubricating or coating antirust oil before leaving.

16.2 WEEKLY MAINTENANCE

(1) Clean and coat the cross lead screw with oil.

(2) Check to see if sliding surface turning parts lack of lubricant. If the lubricant is insufficient, fill it.

16.3 MONTHLY MAINTENANCE

(1) Adjust the accurate gap of slide both on cross and longitudinal feed.

(2) Lubricate bearing, worm, and worm shaft to avoid wear.

16.4 YEARLY MAINTENANCE

(1) Adjust table to horizontal position for maintenance of accuracy.

(2) Check electric cord, plugs, and switches at least once a year to avoid loosening or wearing.

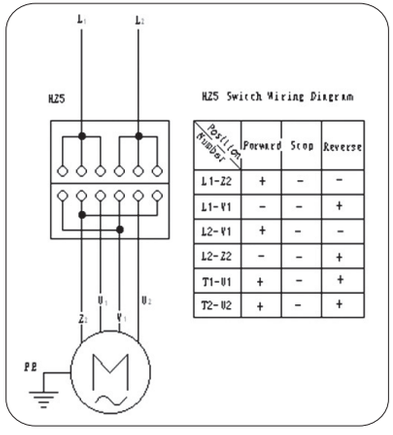
17 LIST OF BEARING

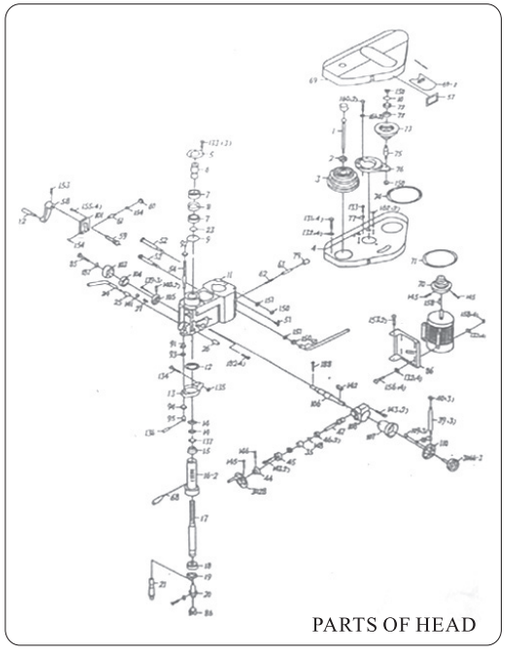
No.	BEARING MODEL	BEARING NAME	ASSEMBLY PLACE	AMOUNT
1	8103	Thrust ball bearing	Table	4
2	7206E	Taper ball bearing	Spindle	1
3	7207D	Taper ball bearing	Spindle	1
4	60203	Collar ball bearing	Head body	1
5	80200	Collar ball bearing	Micro-feed	2
6	80107	Collar ball bearing	Head body	2

18 ELECTRIC CONTROL SYSTEM (Wiring diagram is behind)

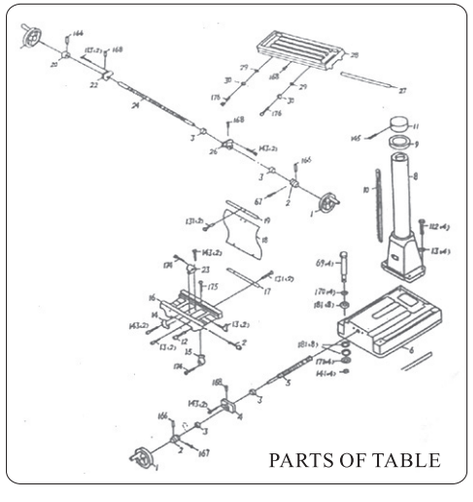
The power source is 230V, 50Hz. Single phase you'd better install a 10A air switch or 10A fuse box, and the machine should be ground well.A electromagnetic switch with emergency equipment. On the left side of head body to start or stop the motor. As starting the machine, turn the changeover switch on the electromagnetic switch to "Forward" or "Reverse", open the red head mushroom cover on electromagnetic switch, press the green push button, the coil of it joint and protect itself, then the motor revolve forward or reverse; as stopping the machine, press the red push button, the motor stop. As emergently, press the red head mushroom push button and lock it, then the motor stop at once.

Attention: When changing the revolve direction of motor, otherwise the electromagnetic switch is easy to be damaged. >>





PARTS OF HEAD



PARTS OF TABLE

Head Parts

Part No.	Description	Number Required
3-01	Chuck arbor bolt	1
3-02	Spindle lock nut	1
3-03	Spindle pulley	1
3-04	Belt bottom cover	1
3-05	Outer bearing plate	1
3-06	Spindle taper sleeve	1
3-07	Ball bearing(109)	2
3-08	Bearing spacer	1
3-09	C-Retainer ring	1
3-10	C-Retainer ring	1
3-11	Head body	1
3-12	Rubber flange	2
3-13	Feed base	1
3-14	Lock nuts	2
3-15	Taper roller bearing(7206E)	1
3-16	Rack sleeve	1
3-17	Spindle shaft	1
3-18	Taper roller bearing(7207E)	1
3-19	Bearing cap	1
3-20	Cutter arbor	1
3-21	Chuck arbor bolt	1
3-22	Grip	4
3-23	Retainer ring	1
3-24	Handle rod	1
3-25	Fixed tight collar	1
3-26	Fixed tight collar(thread)	1
3-27	Screw key	1
3-35	Bearing spacer	1
3-39	Handle rod	3
3-40	Knob	3
3-44	Micro adjusting indicator	1
3-45	Worm cover	1
3-46	Ball bearing(202G)	2
3-47	Worm shaft	1
3-50	Lock handle	1
3-51	Leaf screw	1
3-52	Head body fix bolt	2
3-54	Graduated rod	1
3-57	Name plate	1
3-58	Head handle	1
3-59	Worm shaft	1
3-60	Worm	1
3-61	Shaft	1
3-62	Compression spring	1
3-63	Pin	1
3-66	Motor mount	1

Head Parts

Part No.	Description	Number Required
3-67	Moter	1
3-68	Punch key	1
3-69	Belt cover	1
3-70	Motor pulley	1
3-71	V-Belt(B32")	1
3-72	Ball bearing(60204)	2
3-73	Inter pulley	1
3-74	V-Belt(42")	1
3-75	Inter pulley shaft	1
3-76	Speed change inter pulley base	1
3-77	Clip plate	1
3-79	Rubber collar	1
3-85	Screw with plum knob	1
3-86	Cutter arbor	1
3-91	Set distance nut	1
3-92	Set position block	1
3-93	Lock nuts	1
3-94	Support base	1
3-95	Handle	1
3-101	Up-down with stand	1
3-102	Limit plate	1
3-103	Spring cover	1
3-104	Spring	1
3-105	Sping base	1
3-106	Pinion shaft	1
3-107	Worm gear	1
3-108	Feed cover	1
3-109	Buffer spring	1
3-110	Spring base	3
3-111	Terminal	1
3-131	Hexagon head bol	3
3-132	Washer	4
3-133	Cross-recess round head screw	12
3-134	Hexagon head bolt	4
3-135	Hexagon nut	1
3-136	Spring pin	1
3-137	Lock washer	1
3-139	Cross-recess round head screw	3
3-140	Spring pin	2
3-141	Hexagon nut	1
3-142	key	1
3-143	Hexagon socket head screw	2
3-145	Hexagon socket headless screw	3
3-146	Hexagon socket headless screw	1
3-147	Hexagon socket head screw	2
3-148	C-Retainer ring	1

Head Parts

Part No.	Description	Number Required
3-150	Hexagon nut	4
3-151	Washer	2
3-152	Cross-recess round head screw	4
3-153	Hexagon socket headless screw	1
3-154	C-Retainer ring	2
3-155	Hexagon socket head screw	4
3-156	Hexagon head screw	4
3-157	Hexagon head screw	2
3-158	Hexagon nut	4
3-159	key	1
3-160	Hexagon head bolt	2
3-161	Washer	2
3-162	Outline bush	2
3-182	Cross-recess round head screw	4
3-187	Washer	1
3-188	Cross-recess round head screw	1
3066-3	Lock bolt with knob	1
3028	Feed handle wheel	1

Table Base Parts

Part No.	Description	Number Required
4-03	Thrust bearing(8103)	4
4-04	Square flange	1
4-05	Table screw	1
4-06	Base	1
4-07	Gib strip	1
4-08	Column base	1
4-09	Column flange ring	1
4-10	Rack	1
4-11	Column head	1
4-12	Gib strip bolt	2
4-13	Leaf screw	4
4-14	Movable fixed block	1
4-15	Table base nut	1
4-16	Conter base	1
4-17	Antidust plate	1
4-18	Antidust plate	1
4-19	Antidust plate	1
4-20	Table clutch	1
4-22	Left flange	1
4-23	Table nut	1
4-24	Table screw	1
4-26	Right flange	1
4-27	Gib strip	1
4-28	Table	1
4-29	Fixed block	2
4-30	Movable fixed ring	2
4-37	Base screw collar	1
4-131	Hexagon head bolt(same3-131)	4
4-132	Washer(same 3-132)	16
4-141	Hexagon nut(same 3-141)	4
4-143	Hexagon socket head screw	10
4-145	Hexagon(same 3-145)	2
4-166	Spring pin	3
4-167	Indicated zero with screw	1
4-168	Oil ball	5
4-169	Hexagon head bolt(same3-131)	4
4-170	Washer	4
4-171	Washer	4
4-172	Hexagon head bolt	4
4-173	Spring washer	4
4-174	Hexagon socket head screw	2
4-175	Hexagon socket head screw	1
4-176	Hexagon socket head screw	2