

DP16UL

16 Speed Drill Press

Assembly & Operating Instructions



READ ALL INSTRUCTIONS AND WARNINGS BEFORE USING THIS PRODUCT.

This manual provides important information on proper operation & maintenance. Every effort has been made to ensure the accuracy of this manual. These instructions are not meant to cover every possible condition and situation that may occur. **We reserve the right to change this product at any time without prior notice.**

IF THERE IS ANY QUESTION ABOUT A CONDITION BEING SAFE OR UNSAFE, DO NOT OPERATE THIS PRODUCT!

HAVE QUESTIONS OR PROBLEMS? DO NOT RETURN THIS PRODUCT TO THE RETAILER - CONTACT CUSTOMER SERVICE.

If you experience a problem or need parts for this product, visit our website <http://www.buffalotools.com> or call our customer help line at 1-888-287-6981, Monday-Friday, 8 AM - 4 PM Central Time. A copy of the sales receipt is required.

FOR CONSUMER USE ONLY – NOT FOR PROFESSIONAL USE.

KEEP THIS MANUAL, SALES RECEIPT & APPLICABLE WARRANTY FOR FUTURE REFERENCE.

RECOGNIZE SAFETY SYMBOLS, WORDS AND LABELS

What You Need to Know About Safety Instructions

Warning and Important Safety Instructions appearing in this manual are not meant to cover all possible conditions and situations that may occur. Common sense, caution and care must be exercised when assembling or using this product.

Always contact your dealer, distributor, service agent or manufacturer about problems or conditions you do not understand.



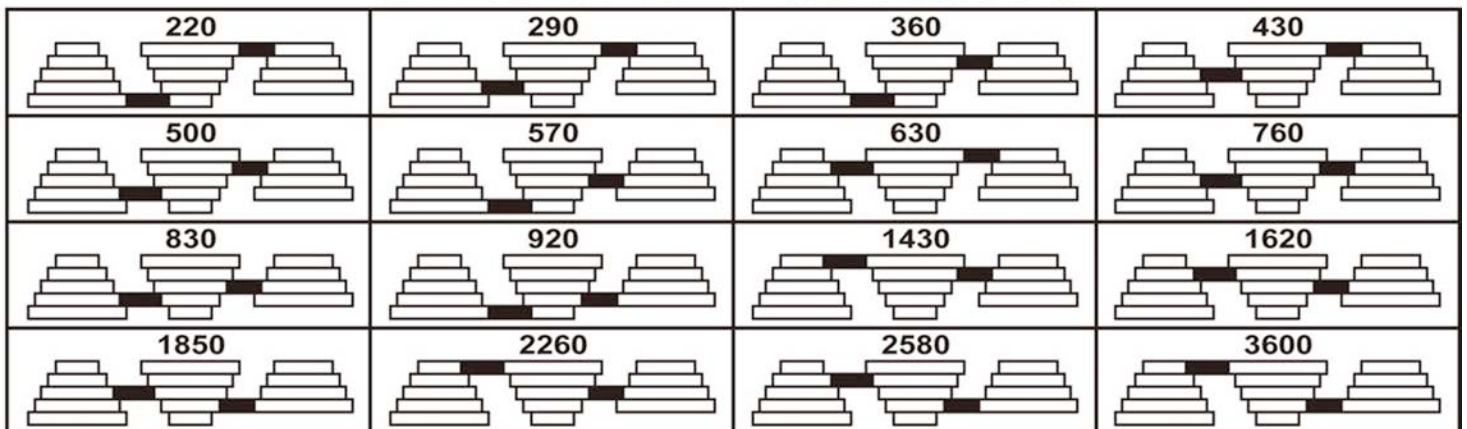
This is a safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.



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NOTE: FOLLOW THE DIAGRAM BELOW TO OBTAIN THE CORRECT RPM SPEED 220-3,600 RPM

BELT SPEED SETTINGS



GENERAL PRODUCT SPECIFICATIONS



FEATURES:

- Enclosed Fan Cooled Motor
- Belt Drive Speed Adjustment
- Rack & Pinion Table Raises And Lowers Easily
- 11" Diameter Dry Round Table Tilts 90 Degrees Left & Right
- With Laser Centering Device and Work Light (requires up to 40W Bulb not included)

SPECIFICATIONS

- | | |
|------------------|--------------------|
| • Rated Current | 6.6 AMP / 550 Watt |
| • Rated Voltage | 120V / 60 Hz |
| • Max Speed | 220-3,600 RPM |
| • Chuck Capacity | 5/8" |
| • Motor: | 3/4 HP |

KEEP THIS MANUAL, SALES RECEIPT & APPLICABLE WARRANTY FOR FUTURE REFERENCE. READ ALL INSTRUCTIONS AND WARNINGS BEFORE USING THIS

PRODUCT. When unpacking, check to make sure all parts listed are included. If any parts are missing or broken, please call Customer Service at 1-888-287-6981.

FOR CONSUMER USE ONLY – NOT FOR PROFESSIONAL USE

IMPORTANT SAFETY RULES

COMMON SENSE AND CAUTION ARE FACTORS WHICH CANNOT BE BUILT INTO ANY PRODUCT.

THESE FACTORS MUST BE SUPPLIED BY THE OPERATOR.

⚠ WARNING

Keep your work area clean and well lit. Cluttered work benches and dark work areas may cause accidents or injury.

Do not operate drill in explosive areas, such as in the presence of flammable liquids, gases or dust. The drill may create sparks which may ignite the dust or fumes.

Keep bystanders, children & visitors away while operating the drill. Distractions can cause you to lose control.

⚠ WARNING

Double insulated tools are equipped with a polarized plug (one blade is wider than the other.) This plug will fit in a polarized outlet only one way. If the plug does not fit fully in the outlet, reverse the plug. If it still does not fit, contact a qualified electrician to install a polarized outlet. Do not change the plug in any way. Double insulation eliminates the need for the three wire grounded power cord and grounded power supply system.

Avoid body contact with grounded surfaces such as pipes, radiators, ranges and refrigerators. There is an increased risk of electric shock if your body is grounded.

Do not abuse the cord. Never use the cord to carry the tool or pull the plug from an outlet. Keep the cord away from heat, oil, sharp edges, or moving parts. Replace damaged cords immediately. Damaged cords increase the risk of electric shock.

When operating the tool outside, use an outdoor extension cord marked “WA” or “W.” These cords are rated for outdoor use and reduce the risk of electric shock. Make sure the extension cord being used is in good condition. If there are any cuts or nicks (no matter how deep) in the insulation, DO NOT use that cord. Also, make sure the extension cord is heavy enough to carry the current needed. DO NOT use small "around-the-house" lamp extension cords. These cords can easily overheat and/or catch fire when used with power tools.

⚠ CAUTION

Do not force tool. Use the correct tool for your application. The correct tool will do the job better and safer at the rate for which it is designed.

Do not use the tool if the power switch does not turn it “ON” or “OFF”. Any tool that cannot be controlled with the switch is dangerous and must be repaired.

Disconnect the power cord plug from the power source before making any adjustments, changing accessories or storing the tool. Such preventive safety measures reduce the risk of starting the tool accidentally.

Store idle tools out of reach of children and other untrained persons. Tools are dangerous in the hands of untrained users.

⚠ DANGER

People with pacemakers or other electronic devices should consult with a physician before operating this product. Interruption or failure of the pacemaker could occur when electrical equipment is operated within close proximity of electrical devices.

⚠ WARNING

Wash hands after handling the power cord. Touching the power cord could expose you to lead, which is known in the State of California to cause cancer, birth defects and other reproductive harm.

WARNING

All work areas should be clean and well lit. Accidents are more likely to occur in poorly lit and cluttered areas.

WARNING

Keep children, and other distractions at a distance while operating power tools.

WARNING

Keep the power cord in good condition, and replace damaged cords immediately. Do not use the cord to pull the plug from the outlet. Keep the cord away from materials and surfaces that could damage cords. The risk of electric shock increases when the power cord is damaged.

WARNING

Always use the appropriate extension cord, making sure it is rated for use with drills. Always be sure the extension cords are in good condition, free of cuts or nicks in the insulation. If using the drill in an outside area with an extension cord, make sure the cord is rated for outdoor use.

WARNING

Do not make contact with a grounded surface while using this power tool. Contact with surfaces like pipes, radiators or major appliances increases your risk of electric shock.

WARNING

Use common sense while operating this drill.

Do not use this drill if you are:

- Feeling tired or are under the influence of alcohol or drugs.
- Wearing loose clothing or jewelry. Keep long hair pulled back and away from moving parts.
- Overreaching or have improper footing. Handling the tool in this way could cause serious injury.

When using this drill always:

- Wear the proper safety equipment, such as safety goggles, dust masks, non-skid shoes, etc.
- Be sure all adjusting keys or wrenches have been removed before starting the drill.
- Be sure the power switch is in the "OFF" position before plugging the drill into an electrical outlet.

CAUTION

Follow these steps to maintain safe working conditions and good working condition of power tools.

Improper care can result in electric shock or serious injury.

- Secure and support the work piece using clamps. **Do not use your hands to hold the piece in place.**
- **Use the correct tool for the job.** Using the correct tool is safer and faster.
- **Make sure the power switch is in good working order.** If the power switch no longer turns the tool "ON" or "OFF", discontinue use, and have the tool replaced or repaired.
- **Remove the power cord from the power source before storage, changing accessories, or moving the tool.**
- **Keep out of reach of children,** or any untrained person. Store tools in a safe and dry place.
- **Keep tools clean, and cutting tools sharp.** Maintaining tools with proper care will increase the life of the power tool, and reduce the risk of injury.
- **Check to be sure all moving parts are free from binding and are properly aligned.**
- Use only accessories that are recommended by the manufacturer for your tool model.

WARNING

Safety glasses and ear protection must be worn during operation.

SERVICE

Tool service must be performed only by qualified repair personnel. Service or maintenance by unqualified personnel could result in a risk of injury.

When servicing a tool, use only identical replacement parts and follow instructions in the manual. Use of unauthorized parts or failure to follow maintenance Instructions may create a risk of shock or injury.

SAVE THESE INSTRUCTIONS FOR FUTURE REFERENCE.

This manual contains important information regarding safety, operation, maintenance and storage of this product. Before use, read carefully and understand all warnings, cautions, instructions and labels. Failure to do so could result in serious personal injury, property damage or even death.

IMPORTANT SAFETY INSTRUCTIONS

WARNING

Before using this tool, you need to become familiar with its operation. If you are unsure about the operation of the tool, or have any questions about its proper use, call the Customer Service Department at 1-888-287-6981. Follow these instructions for safe handling of the tool:

- **Always secure and support the work piece using clamps. Do not use your hands to hold the piece in place.**
- **Be sure your work area is clean and secure before turning the power switch into the “ON” position.** Be sure the area is free from all foreign material, nails, staples, or any other material.
- **Turn the drill “OFF” and unplug from the power source before making any changes or adjustments to the drill.**
- **Do not use solvents containing carbon tetrachloride, ammonia or acetone to clean the drill.** Never use gasoline, paint thinner, or other caustic chemicals that can damage the plastic parts of the tool.
- **Always use the appropriate safety gear when operating this drill.** Including but not limited, to goggles, dust mask or respirator. Always work in a well-ventilated area to reduce your exposure to harmful chemicals and dust particles.
- **Keep hands away from the cutting area.**
- **Do not reach under the work piece.**

SPECIFIC SAFETY RULES AND/OR SYMBOLS

SYMBOLS

The following symbols may be used on your tool. Be familiar with and learn the symbols to operate the tool safely.

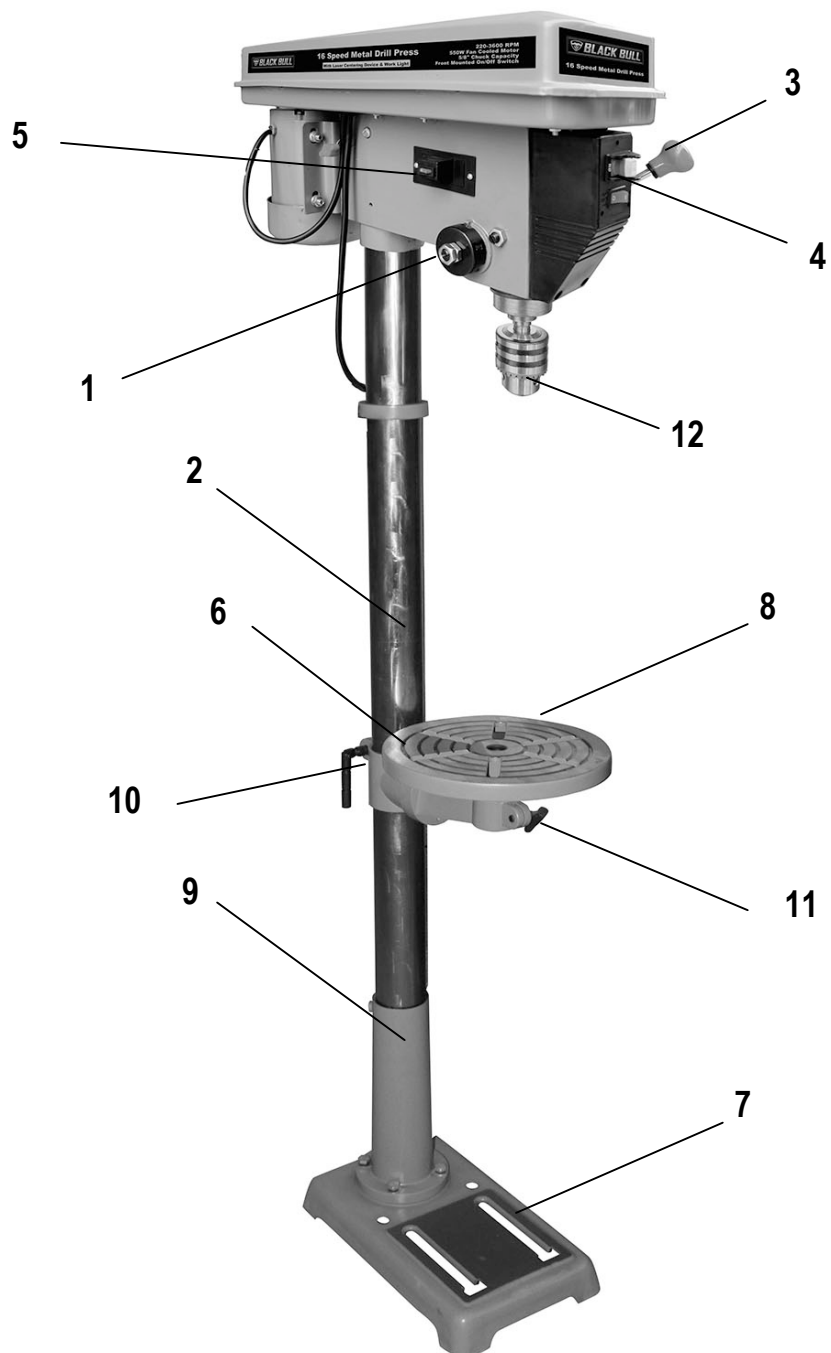
Symbol	Name	Description
V	Volts	Voltage (Potential)
A	Amperes	Current
Hz	Hertz	Frequency (Cycles per Second)
W	Watt	Power
Kg	Kilograms	Weight
	Alternating Current	Type of Current
	Direct Current	Type of Current
	Alternating or Direct Current	Type of Current
	Earthing Terminal	Grounding Terminal
	Class II Construction	Denotes Double Insulation
min	Minutes	Time
s	Seconds	Time
ϕ	Diameter	Size of Drill Bits, Grinding Wheels, etc.
n_0	No Load Speed	No-load Rotational Speed
.../min	Revolutions per Minute	Revolutions, Surface Speed, Strokes, etc. per Minute
1,2,3...	Ring Selector Settings	Speed, Torque or Position Settings

PACKAGE CONTENTS

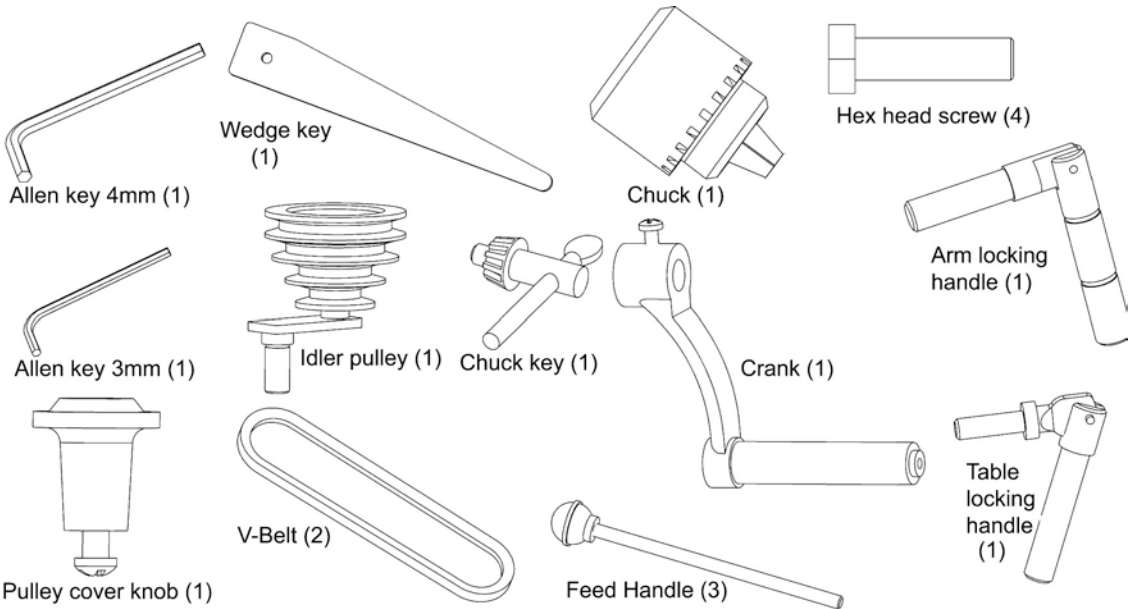
- 16 Speed Drill Head Assembly
- Table Assembly
- Base
- Column Assembly
- Chuck Guard Assembly
- Assorted loose parts

COMPONENTS

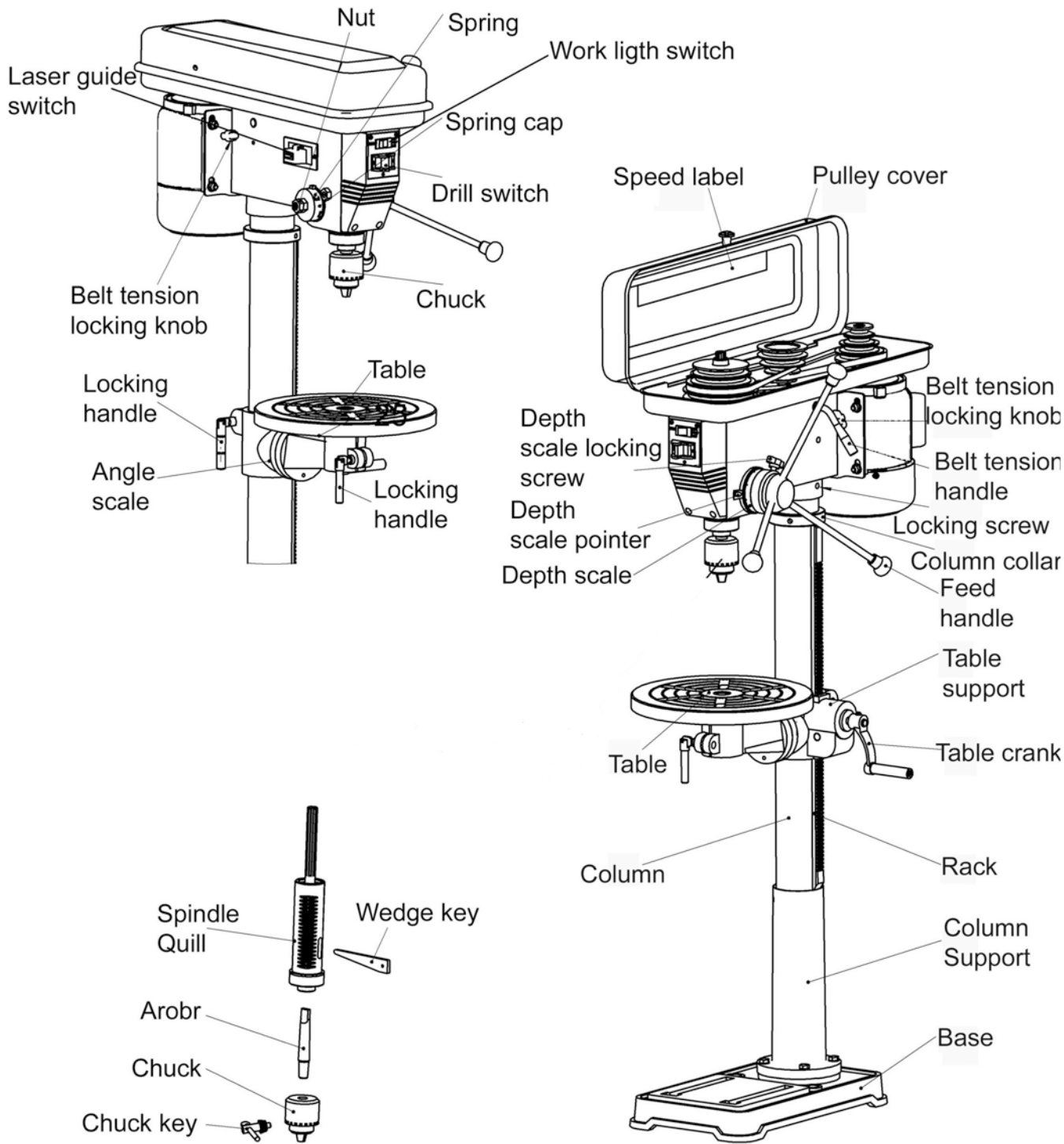
- 1) Quill Feed Spring Adjustment
- 2) Column
- 3) Feed Handle
- 4) Power Switch
- 5) Laser Light Switch
- 6) Rack
- 7) Base
- 8) Table
- 9) Column Support
- 10) Arm Locking Handle
- 11) Table Lock
- 12) Chuck Guard



ASSORTED LOOSE PARTS



PARTS DESCRIPTION



ASSEMBLY

⚠ WARNING

Do not stare directly at the laser beam. Never aim the beam at any person or object other than the work piece. Do not deliberately aim the beam at personnel. Staring at the beam may cause flash blindness.

NOTE

Unpack product from package and review contents. Keep all packaging until product has been reviewed.

Do not operate the machine until it is completely assembled.

Make sure the proper electrical regulations are followed, and that the machine is properly grounded. Before switching the machine ON, ALWAYS: a. Make sure all chuck keys, spanners and wrenches are removed from the machine. b. Examine the setup carefully, making certain that the workpiece is perfectly secure. c. Make sure your clothing is properly adjusted.

Make all adjustments with the power OFF.

Always use the correct drilling speeds for the drill size, and the type of material being drilled.

NEVER leave the drill unattended while it is running. Turn the machine OFF and do not leave until it has come to a complete stop. When you have finished with the machine, always remove and store the drill bits.

CAUTION: This Drill Press is designed for use with Drill Bits and Mortising attachments ONLY.

The use of other cutting tools or accessories could be hazardous. ALWAYS use clamps, or a drill vise bolted to the table, to hold the work. It should NEVER be held in bare hands.

Using the Laser

The laser light/laser radiation used in this laser centering device system is Class 2 with maximum 1 mW and 400nm - 700nm wavelengths. These lasers do not normally present an optical hazard, although staring at the beam may cause flash blindness.

Changing the Batteries

Unclip the battery cover to gain access to the batteries. (Figure A)
Replace both AA batteries, taking care to insert the new batteries with the correct polarity. (Figure B)



(Figure A)



(Figure B)

Use only 2 AA batteries. DO NOT mix old and new batteries. DO NOT mix alkaline, standard (carbon-zinc) or rechargeable (nickel-cadmium) batteries.

Replace the laser light battery cover and make certain that the light is not directed towards the eye of a person. Always make sure that the laser beam is aimed at a sturdy work piece without reflective surfaces, i.e. wood or rough surfaces are acceptable. Bright, shiny, reflective sheet steel or the like is not suitable for laser use, as the reflective surface could direct the beam back at the operator. Only turn the laser beam on after the work piece is in place. CAUTION: Remove the laser light batteries when tool is to be stored without use for a few days.

Resetting the Laser Beam

Loosen the set screw on each of the laser tubes and adjust the tubes until the two beams intersect at the point where the drill bit touches the work piece. Retighten the set screws more. If left in position, the batteries might leak and damage the laser light assembly. Damage caused by battery leakage is not covered under warranty.

Column Assembly to Base

NOTE: Ideally, the base should be firmly bolted to the floor, prior to assembly of other components. The mounting surface must be flat, level and capable of supporting the drill weight.

With the base on a flat level surface, bolt on the Column using the 4.M10 Hex head screws provided and tighten. Carefully locate the table in its support and tighten up with the table locking handle. Check to make sure the column securing set screws, at the column support, are tight. Fit the crank to the shaft on the crank assembly.

Head to Column

NOTE: It may be necessary to unscrew the Head Lock Set Screws slightly to make sure they do not protrude internally as this would prevent the head from sliding fully into position. 1. Raise the head and locate it on top of the column. 2. Align the head with the base and firmly secure with the set screws using the wrench. Locate the three feed handles and screw them into the hub of the spindle feed shaft.

Chuck Guard Assembly

NOTE: This operation should be carried out before the chuck is installed. Slide the Chuck Guard over the Quill shaft, turn it so that the pinch bolt faces the front, then tighten up the pinch bolt to temporarily secure it in this position. IMPORTANT Make sure the Quill Shaft Spindle is at the top of its travel.

Pulley Cover Knob

Locate the knob, with pan head screw and attach to the cover, screwing on tightly.

Installing the Chuck

1. Slide the table up the column and secure it to within 6" of the spindle.
2. Open the jaws of the chuck to their maximum, using the chuck key supplied.
3. Put a piece of scrap wood on to the table to protect the chuck nose.
4. Make sure all parts are thoroughly clean, dry, and burr free.
5. Ensure the jaws are drawn up inside of chuck. Place the chuck over the end of the arbor and pull the spindle down using the feed handles.

Fitting the Drive Belts

Undo the Belt Tension Locking Screws (one on either side of the head) and turn the Belt Tension Lever clockwise to bring the Motor Pulley closer to the Spindle Pulley (which will allow the belts to be slipped on with ease).

Lightly grease the idler pulley pivot shaft and locate the idler pulley assembly in its' mounting between the Motor and spindle Pulleys. Consult the chart inside the belt cover, and fit the belts in the position corresponding to spindle/drill speed required.

Turn the Belt Tension Lever counter-clockwise so that tension is applied to the belts. Tension is correct when the belts deflect by approx. 1/2" at their centers of run when using reasonable thumb pressure. Lock the motor in the position with the Belt Tension Locking Screws. 1. The idler pulley will 'float' so that tension is applied equally to both belts 2. If the belt should slip while drilling, adjust the belt tension.

SETTINGS AND ADJUSTMENTS

Table

The table may be raised, lowered or swivelled about the column, by loosening the table support locking handle (Fig.8). Adjust accordingly using the table crank, and re-tighten the locking handle. If the table assembly moves stiffly when being swivelled about the column, loosen the upper collar allen screw (at the rack) to allow the collar to move very slightly, thereby providing a little more clearance between rack and collar. Tighten the allen screw when satisfied. The table may also be turned on its axis by loosening the pinch bolt at its' mounting shaft.

Spindle Depth

Located around the spindle feed shaft is a Depth Stop Collar, printed with a graduated scale. The collar is capable of turning about the shaft and may be locked in place by the locking screw. The scale is printed in both inches and metric. To set a drilling depth: 1. With the power OFF, lower the drill bit so that it contacts the work, and hold in that position. 2. Loosen the locking screw and turn the collar so that the measurement for the depth of hole required is in line with the pointer (C). Lock the collar in this position using the locking screw. The drill is now set to drill holes to your predetermined depth, from that particular start point.

Changing Drill Speed

Before changing the speed, make sure the machine is switched OFF, and unplugged. Undo the Belt Tension Locking Screws on either side of the head and turn lever clockwise to relieve any tension on the belts. Refer to the chart inside the belt cover install the belts in the positions corresponding to the spindle speed required. Level the motor, on its bracket, away from the head, by turning lever counter clockwise so that tension is applied to the belts.

NOTE: The idler pulley will 'float' so that tension is equally applied to both belts. Tension is correct when the belts deflect by approx. 1/2" at their center when using reasonable thumb pressure. Lock the motor in this position using the two locking screws. If the belt should slip while drilling, adjust the belt tension.

OPERATION



Wear safety eyewear and dust filters or respirators while using this tool.

Insert the drill bit into the jaws of the chuck by approximately 1". Be certain that the jaws do not touch the flutes of the drill. Before tightening the chuck, make sure that the drill bit is centered within the jaws. Make sure the table height and position is set so that drill travel is sufficient for the job in hand.

Make sure the work is securely clamped, or held in a drill vise bolted to the table. Never hold it with bare hands. Severe personal injury may be caused if the workpiece is forced out of the operator's hand, and damage to the machine incurred if the work strikes the column. If the piece is of irregular shape and cannot be laid flat on the table, it should be securely blocked and clamped. Any tilting, twisting or shifting, results not only in a rough hole, but also increases drill bit breakage.

For small workpieces that cannot be clamped to the table, use a Drill Press Vise. The vise must be clamped or bolted to the table. When drilling completely through wood, always position a piece of scrap wood between the workpiece and the table to prevent splintering on the underside of the workpiece as the drill breaks through. The scrap piece of wood must make contact with the left side of the column. In addition, set the depth of drill travel so that the drill cannot possibly come into contact with the table, or, align the table so that the center hole is directly in line with the drill bit. When completely satisfied that the setup is sound, lower the Chuck Guard into place, and switch the machine ON.

Insert KEY into switch. Key is made of yellow plastic. A light is also provided which is built into the head. The light switch is located above the ON/OFF switch.

REMOVING THE CHUCK

To remove the chuck, pull the spindle down fully, using the feed handles. The slot in the side of the Quill will become visible. Note the position of the chuck, perhaps by placing a chalk mark, in line with the chuck, on the column, then raise the table so that it is only an inch or so below the position marked.

Place a thick cloth, or similar material, on the table to catch the chuck, to prevent damage when it drops. Pull down the spindle once more, until the slot in the Quill tube is visible. Insert the drift wedge into the slot and give it a sharp tap, preferably with a copper hammer. This will break the seal between the quill tube and the arbor, allowing the chuck to fall free, on to the cloth on the table. To disconnect the chuck from the arbor, give it a sharp rap with a soft head mallet to break the taper seal.

NOTE: Morse taper drills (MTS), may also be used with this machine, and are inserted into the Quill to replace the arbor. Removal is the same as that for removing the chuck.

MAINTENANCE

WARNING

Disconnect the power supply before cleaning. Wear safety eyewear before cleaning. Used compressed dry air to blow off dust and debris. Use a soft bristle brush if compressed air is not available.

CAUTION

Applying excessive force to the tool can overload the motor, decrease the life and increase the wear on the tool.

CAUTION

Some chemicals can damage the product. Do not use harsh chemicals such as gasoline, carbon tetrachloride, paint thinner, etc.

CAUTION

A qualified repair technician must perform any tool service or repair. Service or maintenance performed by unqualified personnel could result in injury. Use only identical replacement parts. Use of unauthorized parts or failure to follow maintenance instructions may create a risk of electric shock or injury.

WARNING

Do not make contact with a grounded surface while using drill press. Contact with surfaces like pipes, radiators or major appliances increase your risk of electric shock.

The Drill Press must be properly maintained for maximum performance. Always inspect before use. Any damage should be repaired, and faults rectified. Please refer to the troubleshooting chart. If you are unable to correct any problems, please contact customer service.

Monthly (When in constant use)

1. Check tightness of mounting bolts, and head and column securing set screws.
2. Check belt for wear and replace if frayed or damaged in any way.
3. Blow out any dust that may have accumulated in the motor fan.
4. Apply a thin coat of wax paste or light oil to the table and column for lubrication and to help prevent corrosion.

Lubrication

All bearings are packed with grease at the factory and require no further lubrication. After use, remove all swarf from the machine and thoroughly clean all surfaces. Components should be dry, with machined surfaces lightly oiled. Always remove drill bits, and store in a safe place.

ACCESSORIES

Use only accessories that are recommended by the manufacturer for your model. Accessories that may be suitable for one tool may become hazardous when used on another tool.

Always attach grounded (3-prong) extension cords to grounded (3-prong) outlets.

If you must use an extension cord, be sure that the gauge is large enough to carry the amount of current necessary for your power tool. If not, your tool may experience a loss of power, excessive voltage drop or overheating. For example, the smaller the gauge number, the heavier the cord.

TROUBLESHOOTING

Noisy? Review the probable cause and remedy:

- | | |
|---------------------------|--|
| A) Incorrect belt tension | A) Adjust tension operation |
| B) Dry spindle | B) Remove spindle / quill assembly and lubricate |
| C) Loose pulley lubricate | C) Tighten Pulley |
| D) Worn bearing | D) Replace bearing |

Excessive drill wobble? Review the probable cause and remedy:

- | | |
|----------------------------|--|
| A) Loose chuck | A) Tighten by pressing chuck down on to a block of wood against the table. |
| B) Worn spindle or bearing | B) Replace spindle shaft or bearing |
| C) Worn chuck | C) Replace chuck |
| D) Bent drill bit | D) Replace drill bit |

Motor won't start? Review the probable cause and remedy:

- | | |
|---------------------------|--------------------------------|
| A) Power supply | A) Check power cord/fuse start |
| B) Motor connection | B) Check motor connections |
| C) NVR switch connections | C) Check switch connections |
| D) Faulty Switch | D) Replace switch |
| E) Motor Windings Burned | E) Replace Motor |

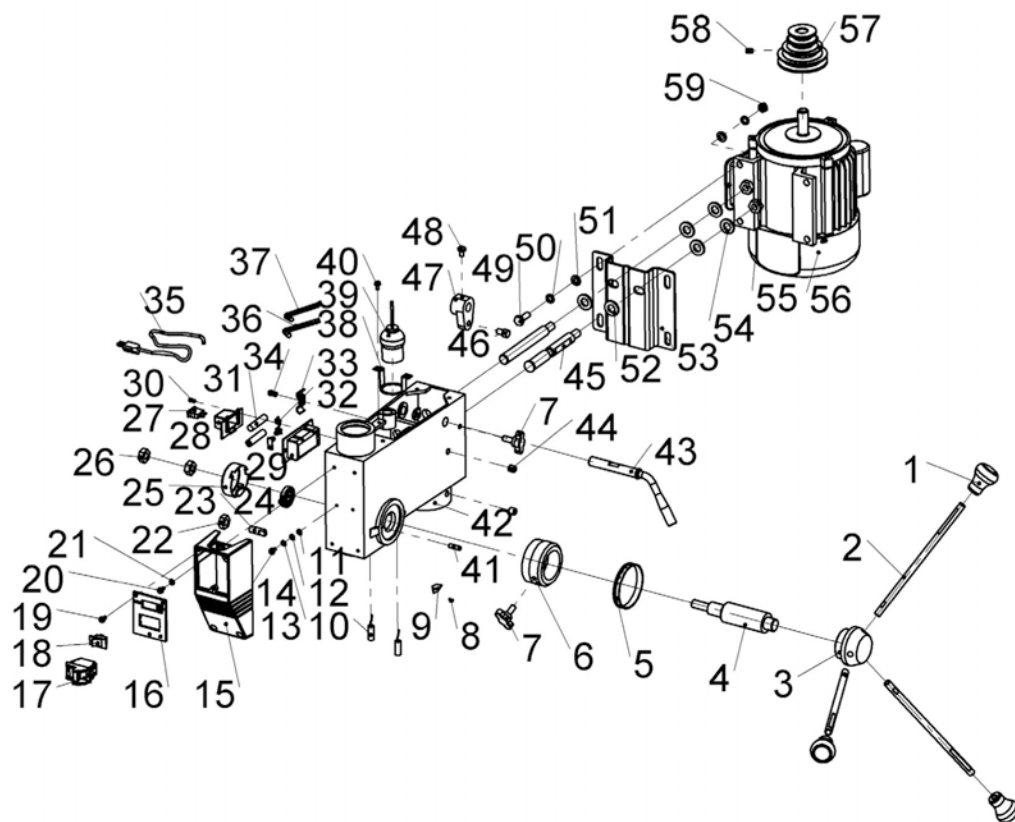
Drill Bit Binds in Workpiece? Review the probable cause and remedy:

- | | |
|----------------------------|---|
| A) Excessive Feed Pressure | A) Apply less pressure |
| B) Loose Belt | B) Check Belt tension |
| C) Loose Drill Bit | C) Tighten drill bit with key |
| D) Incorrect drill speed | D) Refer to Cutting Speed chart, and adjust drill speed accordingly |

Table difficult to raise? Review the probable cause and remedy:

- | | |
|-------------------------|-----------------------------|
| A) Needs lubrication | A) Lubricate with light oil |
| B) Table lock tightened | B) Loosen clamp |

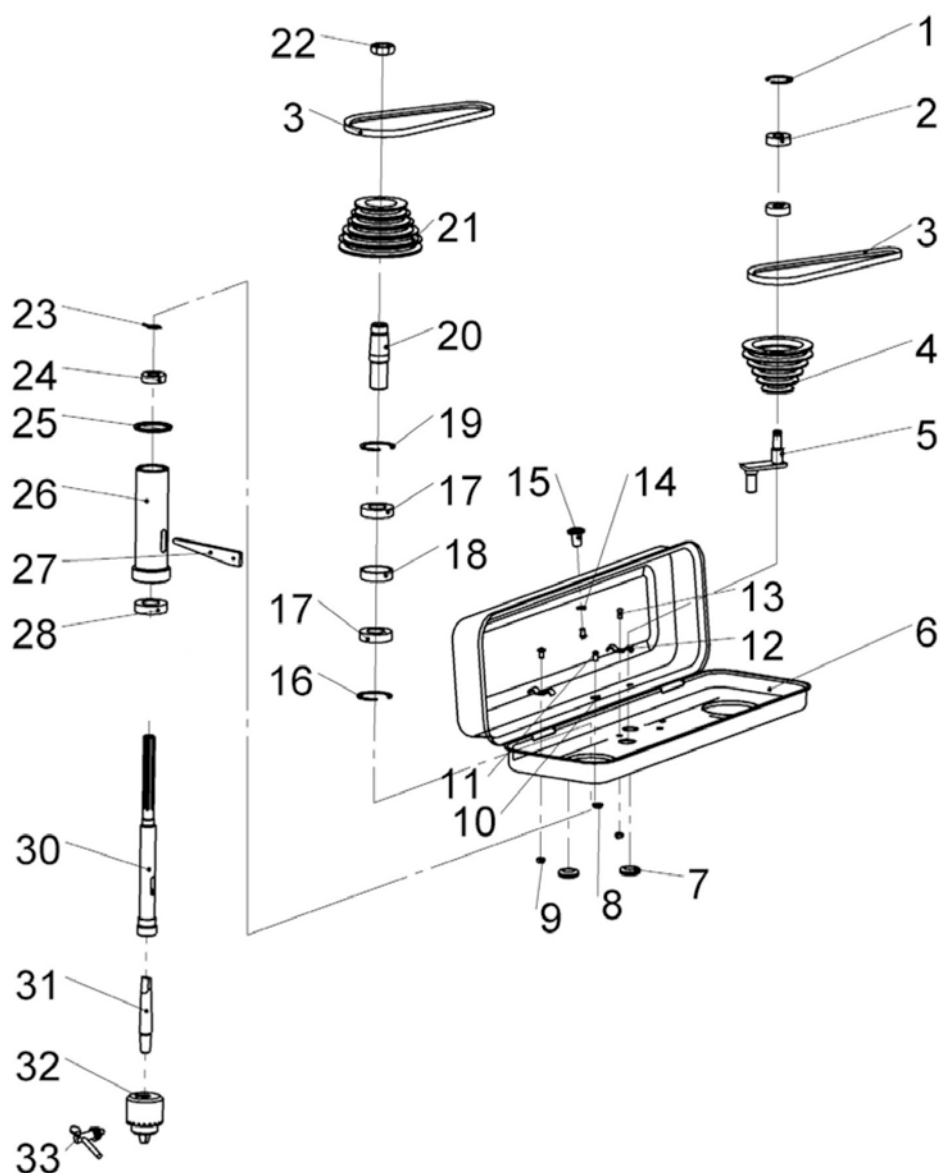
HEAD ASSEMBLY DIAGRAM



HEAD ASSEMBLY PARTS LIST

NO.	DESCRIPTION	NO.	DESCRIPTION
1	Knob	31	Battery
2	Operating handle	32	Electric polarity
3	Handle holder	33	Cable clamping plate
4	Gear shaft	34	Screw
5	Depth scale label	35	Cable and plug
6	Scale label ring	36	Allen key
7	Depth setting knob	37	Allen key
8	Rivet	38	Fixing bracket for light holder
9	Depth pointer	39	Light holder
10	Laser guide	40	Screw
11	Teeth washer	41	Cylinder pin
12	Earth terminal	42	Machine body
13	Elastic washer	43	Belt tension adjusting handle
14	Screw	44	Screw
15	Switch box	45	Motor supporting bar
16	Switch box plate	46	Key
17	Switch	47	Adjusting lever
18	Work light switch	48	Screw
19	Screw	49	Bolt
20	Screw	50	Elastic washer
21	Flat washer	51	Flat washer
22	Nut	52	Flat washer
23	Screw	53	Motor base
24	Spring	54	Elastic washer
25	Spring cap	55	Nut
26	Nut	56	Motor
27	Laser guider switch	57	Motor pulley
28	Battery box cover	58	Screw
29	Battery box	59	Nut
30	Screw		

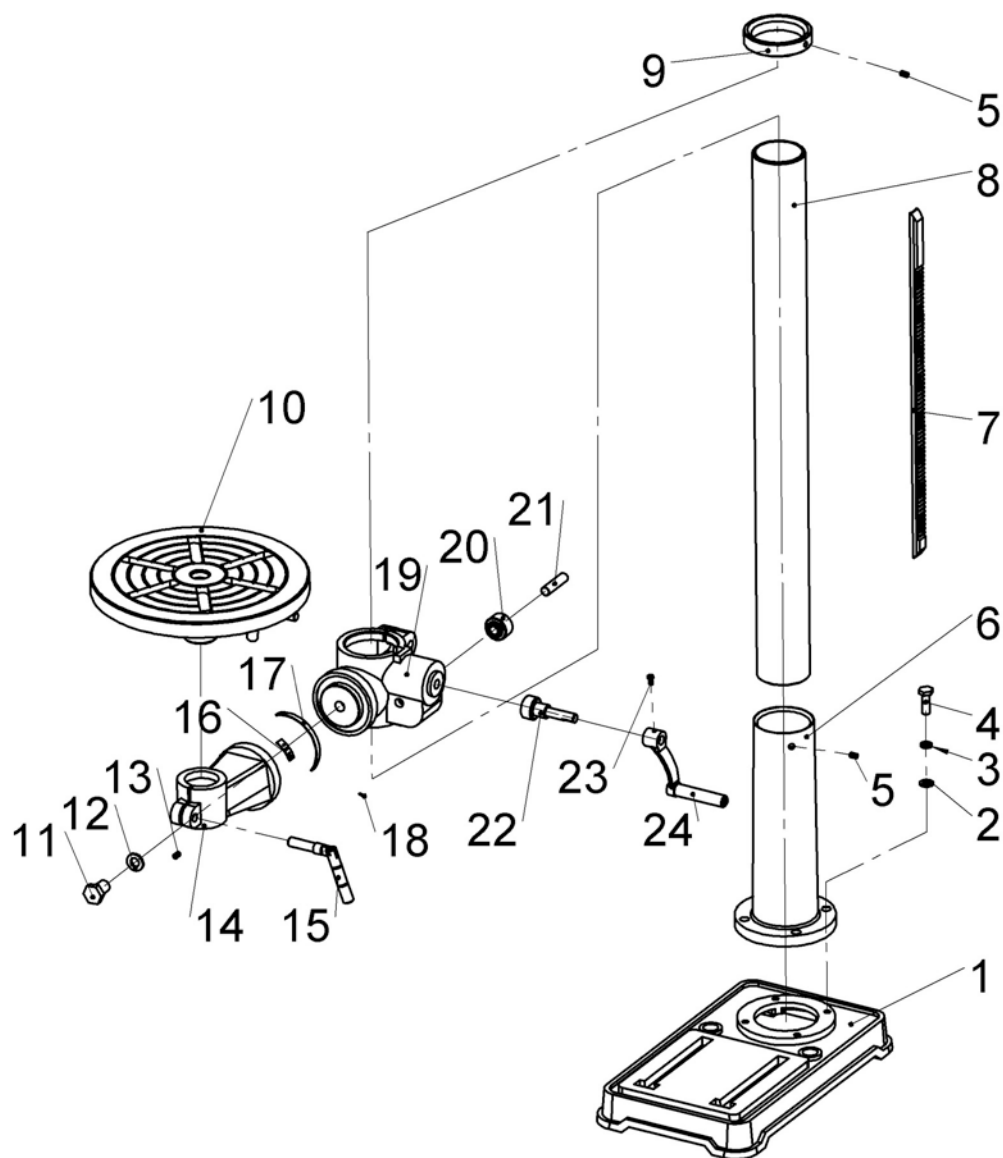
PULLEY & SPINDLE ASSEMBLY



PULLEY AND SPINDLE ASSEMBLY PARTS LIST

NO.	DESCRIPTION	NO.	DESCRIPTION
1	Retaining ring	18	Spacer
2	Ball bearing	19	Retaining ring
3	V-belt	20	Pulley insert
4	Middle pulley	21	Spindle pulley
5	Idle bracket	22	Nut
6	Pulley cover	23	E-ring
7	Rubber ring	24	Ball bearing
8	Rubber pad	25	Rubber washer
9	Nut	26	Spindle quill
10	Flat washer	27	Wedge key
11	Screw	28	Ball bearing
12	Cable clamping plate	30	Spindle
13	Screw	31	Arbor
14	Flat washer	32	Chuck
15	Knob	33	Chuck key
16	Retaining ring		
17	Ball bearing		

COLUMN/BASE ASSEMBLY



COLUMN/BASE ASSEMBLY PARTS LIST

NO.	DESCRIPTION	NO.	DESCRIPTION
1	Base	13	Screw
2	Flat washer	14	Table holder
3	Elastic washer	15	Locking handle
4	Bolt	16	Zero scale label
5	Screw	17	Angle scale label
6	Column holder	18	Rivet
7	Rack	19	Table support
8	Column	20	Gear
9	Column collar	21	Gear pin
10	Work table	22	Worm
11	Bolt	23	Screw
12	Elastic washer	24	Crank

