Owner's Manual & Safety Instructions

Save This Manual Keep this manual for the safety warnings and precautions, assembly, operating, inspection, maintenance and cleaning procedures. Write the product's serial number in the back of the manual (or month and year of purchase if product has no number). Keep this manual and the receipt in a safe and dry place for future reference.

23k



232012E-B

17" VARIABLE-SPEED DRILL PRESS



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When unpacking, make sure that the product is intact and undamaged. If any parts are missing or broken, please call 1-888-866-5797 as soon as possible.

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Diagrams within this manual may not be drawn proportionally. Due to continuing improvements, actual product may differ slightly from the product described herein.

Tools required for assembly and service may not be included.

AWARNING

Read this material before using this product. Failure to do so can result in serious injury. SAVE THIS MANUAL.

Table of Contents

Important Safety Information2	Maintenance and Servicing 12
Specifications5	Parts List and Assembly Diagram14
Setup - Before Use5	Warranty16
Operating Instructions 8	

	WARNING SYMBOLS AND DEFINITIONS
A	This is the 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.
▲ DANGER	Indicates a hazardous situation which, if not avoided, will result in death or serious injury.
AWARNING	Indicates a hazardous situation which, if not avoided, could result in death or serious injury.
ACAUTION	Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.
NOTICE CAUTION	Addresses practices not related to personal injury.

IMPORTANT SAFETY INFORMATION

General Tool Safety Warnings

AWARNING

Read all safety warnings and instructions.

Failure to follow the warnings and instructions may result in electric shock, fire and/or serious injury. Save all warnings and instructions for future reference.

- 1. KEEP GUARDS IN PLACE and in working order.
- REMOVE ADJUSTING KEYS AND WRENCHES. Form habit of checking to see that keys and adjusting wrenches are removed from tool before turning it on.
- KEEP WORK AREA CLEAN.
 Cluttered areas and benches invite accidents.
- 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.
- KEEP CHILDREN AWAY. All visitors should be kept safe distance from work area.
- MAKE WORKSHOP KID PROOF with padlocks, master switches, or by removing starter keys.
- DON'T FORCE TOOL. It will do the job better and safer at the rate for which it was designed.
- 8. USE RIGHT TOOL. Don't force tool or attachment to do a job for which it was not designed.

Table A: RECOMMENDED MINIMUM WIRE GAUGE FOR EXTENSION CORDS (120 VOLT)				
NAMEPLATE AMPERES	EXTENSION CORD LENGTH			RD
(at full load)	25'	50′	100′	150′
0 – 6	18	16	16	14
6.1 – 10	18	16	14	12
10.1 – 12	16	16	14	12
12 1 – 16	14	12	Do not use	

9. USE PROPER EXTENSION CORD. Make sure your extension cord is in good condition. When using an extension cord, be sure to use one heavy enough to carry the current your product will draw. An undersized cord will cause a drop in line voltage resulting in loss of power and overheating. Table A shows the correct size to use depending on cord length and nameplate ampere rating. If in doubt, use the next heavier gauge. The smaller the gauge number, the heavier the cord.

General Tool Safety Warnings (continued)

- 10. WEAR PROPER APPAREL. Do not wear loose clothing, gloves, neckties, rings, bracelets, or other jewelry which may get caught in moving parts. Nonslip footwear is recommended. Wear protective hair covering to contain long hair.
- 11. ALWAYS USE SAFETY GLASSES. Also use face or dust mask if cutting operation is dusty. Everyday eyeglasses only have impact resistant lenses, they are NOT safety glasses.
- 12. SECURE WORK. Use clamps or a vise to hold work when practical. It's safer than using your hand and it frees both hands to operate tool.
- 13. DON'T OVERREACH. Keep proper footing and balance at all times.
- 14. MAINTAIN TOOLS WITH CARE. Keep tools sharp and clean for best and safest performance. Follow instructions for lubricating and changing accessories.
- 15. DISCONNECT TOOLS before servicing; when changing accessories, such as blades, bits, cutters, and the like.
- REDUCE THE RISK OF UNINTENTIONAL STARTING. Make sure switch is in off position before plugging in.

- 17. USE RECOMMENDED ACCESSORIES.

 Consult the owner's manual for recommended accessories. The use of improper accessories may cause risk of injury to persons.
- 18. NEVER STAND ON TOOL. Serious injury could occur if the tool is tipped or if the cutting tool is unintentionally contacted.
- 19. CHECK DAMAGED PARTS. Before further use of the tool, 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.
- 20. DIRECTION OF FEED. Feed work into a blade or cutter against the direction of rotation of the blade or cutter only.
- 21. NEVER LEAVE TOOL RUNNING UNATTENDED. TURN POWER OFF. Don't leave tool until it comes to a complete stop.

Grounding Instructions



AWARNING

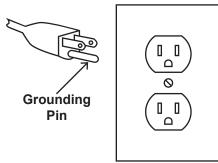
TO PREVENT ELECTRIC SHOCK AND DEATH FROM INCORRECT GROUNDING WIRE CONNECTION READ AND FOLLOW THESE INSTRUCTIONS:

110-120 VAC Grounded Tools: Tools with Three Prong Plugs

- In the event of a malfunction or breakdown, grounding provides a path of least resistance for electric current to reduce the risk of electric shock. This tool is equipped with an electric cord having an equipment-grounding conductor and a grounding plug. The plug must be plugged into a matching outlet that is properly installed and grounded in accordance with all local codes and ordinances.
- 2. Do not modify the plug provided if it will not fit the outlet, have the proper outlet installed by a qualified electrician.
- Improper connection of the equipment-grounding conductor can result in a risk of electric shock.
 The conductor with insulation having an outer surface that is green with or without yellow stripes is the equipment-grounding conductor.

- If repair or replacement of the electric cord or plug is necessary, do not connect the equipmentgrounding conductor to a live terminal.
- Check with a qualified electrician or service personnel if the grounding instructions are not completely understood, or if in doubt as to whether the tool is properly grounded.
- Use only 3-wire extension cords that have 3-prong grounding plugs and 3-pole receptacles that accept the tool's plug.
- 6. Repair or replace damaged or worn cord immediately.

110-120 VAC Grounded Tools: Tools with Three Prong Plugs (cont.)



125 VAC 3-Prong Plug and Outlet (for up to 125 VAC and up to 15 A)

- This tool is intended for use on a circuit that has an outlet that looks like the one illustrated above in 125 VAC 3-Prong Plug and Outlet. The tool has a grounding plug that looks like the plug illustrated above in 125 VAC 3-Prong Plug and Outlet.
- 8. The outlet must be properly installed and grounded in accordance with all codes and ordinances.
- 9. Do not use an adapter to connect this tool to a different outlet.

Drill Press Safety Warnings

For Your Own Safety Read Instruction Manual Before Operating Drill Press

- 1. Wear eye protection.
- 2. Do not wear gloves, necktie, or loose clothing.
- Clamp workpiece or brace against column to prevent rotation.
- Use recommended speed for drill accessory and workpiece material.
- The included chuck key is specially designed to be self-ejecting, reducing the risk of ejecting at high speed. Only use the included chuck key or an identical replacement key.
- 6. DO NOT OPERATE WITH ANY GUARD DISABLED, DAMAGED, OR REMOVED. Moving guards must move freely and close instantly.
- The use of accessories or attachments not recommended by the manufacturer may result in a risk of injury to persons.
- 8. When servicing use only identical replacement parts.
- 9. Only use safety equipment that has been approved by an appropriate standards agency. Unapproved safety equipment may not provide adequate protection. Eye protection must be ANSI-approved and breathing protection must be NIOSH-approved for the specific hazards in the work area.

- 10. Stay alert, watch what you are doing and use common sense when operating a power tool. Do not use a power tool while you are tired or under the influence of drugs, alcohol or medication. A moment of inattention while operating power tools may result in serious personal injury.
- 11. Industrial applications must follow OSHA guidelines.
- 12. Maintain labels and nameplates on the tool. These carry important safety information. If unreadable or missing, contact Harbor Freight Tools for a replacement.
- Avoid unintentional starting.
 Prepare to begin work before turning on the tool.
- 14. People with pacemakers should consult their physician(s) before use. Electromagnetic fields in close proximity to heart pacemaker could cause pacemaker interference or pacemaker failure.
- 15. The warnings, precautions, and instructions discussed in this instruction manual cannot cover all possible conditions and situations that may occur. It must be understood by the operator that common sense and caution are factors which cannot be built into this product, but must be supplied by the operator.

Vibration Safety

This tool vibrates during use. Repeated or long-term exposure to vibration may cause temporary or permanent physical injury, particularly to the hands, arms and shoulders. To reduce the risk of vibration-related injury:

- Anyone using vibrating tools regularly or for an extended period should first be examined by a doctor and then have regular medical check-ups to ensure medical problems are not being caused or worsened from use. Pregnant women or
- people who have impaired blood circulation to the hand, past hand injuries, nervous system disorders, diabetes, or Raynaud's Disease should not use this tool. If you feel any medical or physical symptoms related to vibration (such as tingling, numbness, and white or blue fingers), seek medical advice as soon as possible.
- Do not smoke during use. Nicotine reduces the blood supply to the hands and fingers, increasing the risk of vibration-related injury.

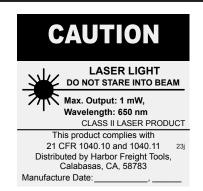
- 3. Use tools with the lowest vibration when there is a choice between different processes.
- 4. Include vibration-free periods each day of work.
- 5. Grip workpiece as lightly as possible (while still keeping safe control of it). Let the tool do the work.
- To reduce vibration, maintain the tool as explained in this manual. If any abnormal vibration occurs, stop use immediately.



SAVE THESE INSTRUCTIONS.

Specifications

Electrical Rating	120VAC / 60Hz / 8A
Spindle Speeds	Variable 300-3100 RPM
Throat Depth	8-1/2"
Table Tilt	45° left and right
Table Swing Around Column	360°
Spindle Stroke	4.7" (120mm)
Spindle Taper	MT3
Chuck Capacity	5/8" (16mm)



<u>CAUTION!</u> Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous exposure.

<u>CAUTION!</u> The use of optical instruments with this product will increase eye hazard.

Setup - Before Use



Read the <u>ENTIRE</u> IMPORTANT SAFETY INFORMATION section at the beginning of this manual including all text under subheadings therein before set up or use of this product.

AWARNING

TO PREVENT SERIOUS INJURY FROM ACCIDENTAL OPERATION: Turn the Power Switch of the tool off and unplug the tool from its electrical outlet before performing any procedure in this section.

Note: For additional information regarding the parts listed in the following pages, refer to the Assembly Diagram near the end of this manual.

Mounting

<u>CAUTION!</u> Secure Drill Press to a supporting structure before use.

- 1. Verify that installation surface has no hidden utility lines before drilling or driving screws.
- Bolt Base to a flat, level, solid floor location capable of supporting the weight of the Drill Press and any work pieces.

Setup - Before Use (continued)

Assembly

Column to Base

- 1. Place Column Base (141) onto the Base (136).
- 2. Place Bolts (142) in Column Base and Base.
- 3. Tighten Bolts.

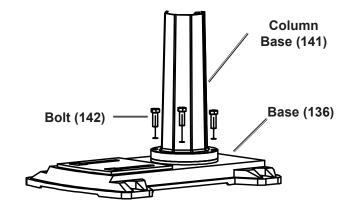
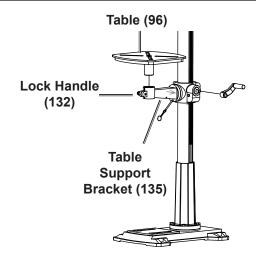


Table to Table Support

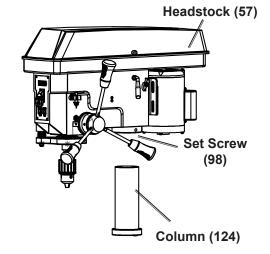
- Thread Lock Handle (132) into Table Support Bracket (135).
- 2. Lower Table (96) into Table Support Bracket and tighten Lock Handle to secure.



Headstock to Column

Note: Make sure Set Screw (98) is backed out enough to allow column insertion.

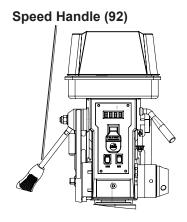
 With help of an assistant, lift Headstock (57) above Column (124), and gently slide it down Column as far as it will go.



- 2. Align Headstock with Base (136).
- 3. Using a hex wrench, tighten Set Screw (98) to secure Headstock in place.

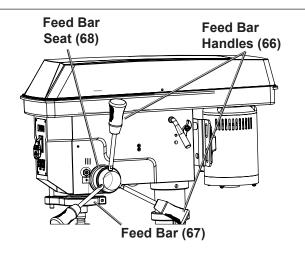
Install Speed Handle (92) by threading

into opening on left side of Drill Press.



Feed Handles/Bars

Thread Feed Bars (67) into Feed Bar Seat (68) and tighten them.



Installing/Removing the Chuck

- 1. Thoroughly clean Arbor (120) and the tapered hole in Chuck (121) of all dirt, grease, oil, and protective coatings. Make sure all parts are thoroughly clean, dry and burr free.
- 2. Insert Arbor into end of Spindle (119). If necessary, rotate Arbor to ensure that it is correctly positioned and fully inserted into the Spindle shaft. Firmly tap Arbor nose with a rubber mallet.
- 3. Open jaws of the Chuck to their maximum, using the supplied Chuck Key.
- Slide the Chuck onto the Arbor nose as far as it will go.

- 5. Hold a piece of scrap wood against the Chuck nose to protect it and firmly tap wood with a rubber mallet to ensure proper seating and a solid fit of the Chuck on the Spindle.
- 6. To remove Chuck, use Feed Handles to lower Chuck until slots in Quill and Spindle are exposed. Rotate chuck until they align.
- 7. Adjust lower Stop Nut all the way up to lock Spindle in place.
- Insert Drift Key (97) into slot and tap it with a rubber mallet (not included) to release Chuck and Arbor. Make sure to hold Chuck with one hand to prevent it from falling.

Operating Instructions



Read the <u>ENTIRE</u> IMPORTANT SAFETY INFORMATION section at the beginning of this manual including all text under subheadings therein before set up or use of this product.

Tool Set Up

AWARNING

TO PREVENT SERIOUS INJURY FROM ACCIDENTAL OPERATION:

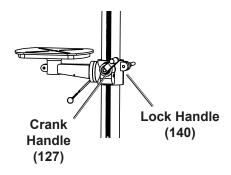
Turn the Power Switch of the tool off and unplug the tool from its electrical outlet before performing any procedure in this section.

TO PREVENT SERIOUS INJURY:

DO NOT OPERATE WITH ANY GUARD DISABLED, DAMAGED, OR REMOVED. Moving guards must move freely and close instantly.

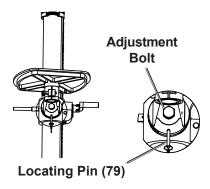
Table Adjustment

 Raise or lower Table by loosening Lock Handle (140) and turning Height Crank (127) clockwise to raise and counterclockwise to lower.



2. Loosen Lock Handle to pivot Table (96) around Column.

- 3. Remove Locating Pin (79).
- 4. Loosen Adjustment Bolt and tilt to required angle.
- 5. Tighten Adjustment Bolt.
- 6. To adjust table back to horizontal, loosen Adjustment Bolt, tilt table to 0°, and insert Locating Pin.



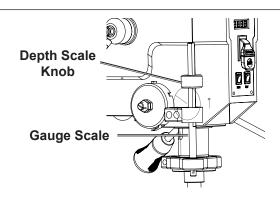
 TO ENSURE THAT THE DRILL IS ENTIRELY PERPENDICULAR TO THE TABLE, insert a straight round bar (not included) into Chuck, place a square on Table and bring it up to round bar. Adjust angle as needed.

<u>CAUTION!</u> To prevent injury from unexpected Table movement, tighten Lock Handle (140) after adjustment.

Setting a Drilling Depth

Pushing button on Depth Scale Knob allows for depth adjustments on the Depth Scale.

- Push button on Depth Scale Knob and slide Knob until bottom of Knob is aligned with desired depth mark on Gauge Scale. Release button.
- 2. Rotate Depth Scale Knob for finetuning of the setting.



1. Refer to table below to determine appropriate speed for drill size being used.

Note: Drill press must be running during speed change.

2. To adjust drill speed, simply raise or lower the Speed Handle (91) until LED display shows desired RPM.

Note: If Belt is too long to be properly tensioned, it must be replaced.

Speed Range	WOOD Drill Bit Size		ALUMINUM/ZINC/BRASS Drill Bit Size		IRON/STEEL Drill Bit Size	
(RPM)	IN	mm	IN	mm	IN	MM
2000 - 3100	3/8	9.5	7/32	5.6	3/32	2.4
1400 - 2000	5/8	16	11/32	8.75	5/32	4
1000 - 1400	7/8	22	15/32	12	1/4	6.4
800 - 1000	1-1/4	31.75	11/16	17.5	3/8	9.5
300 - 800	1-5/8	41.4	3/4	19	1/2	12.5

The table above shows drill speeds for various materials used by this Press.

Drill Bit Installation

- 1. Insert drill bit into jaws of Chuck approximately 1", ensuring that jaws do not touch flutes of drill bit.
- Before tightening Chuck, ensure that drill bit is centered within jaws.
- 3. Tighten Chuck securely with included Chuck Key.

Workpiece and Work Area Set Up

- Designate a work area that is clean and well-lit.
 The work area must not allow access by children or pets to prevent distraction and injury.
- Route the power cord along a safe route to reach the work area without creating a tripping hazard or exposing the power cord to possible damage. The power cord must reach the work area with enough extra length to allow free movement while working.
- Secure loose workpieces using a vise or clamps (not included) to prevent movement while working.
- There must not be objects, such as utility lines, nearby that will present a hazard while working.
- Make sure the table height and position is set so that the drill travel range is sufficient for the material to be drilled.
- 6. Make sure the work is securely clamped. That is, held in a drill vise, or bolted to the table. Never hold the material with your bare hands while drilling. Severe personal injury may be caused if the material is flung out of the operator's hand.

- 7. IF THE MATERIAL IS IRREGULARLY SHAPED and cannot be laid flat on the table, it should be securely blocked and clamped. Any tilting, twisting or shifting will result not only in a roughly drilled hole but also increases the chances of damage to the drill.
- 8. FOR FLAT WORK, lay the piece on to a wooden base and clamp it down firmly against the table to prevent it from turning.
- FOR SMALL MATERIALS that cannot be clamped to the table, use a drill press vise. Make sure the vise is clamped or bolted to the table.
- 10. WHEN DRILLING COMPLETELY THROUGH WOOD, position a piece of scrap wood between the material and the table to prevent splintering on the underside of the material as the drill breaks through. The scrap piece of wood must make contact with the left side of the column. Securely clamp the other end of the scrap wood to the table. Also, set the depth of the drill so that the drill will not come in contact with the table or align the table so that the hole in its center is in line with the drill bit.



General Operating Instructions

- Bring drill bit down with Feed Knob to where hole is to be drilled.
 Make minor workpiece alignment adjustments.
- 2. Plug Power Cord into an electrical outlet.
- 3. Turn Drill Press on.
- 4. Move speed lever to appropriate setting (see table on page 9).
- Pull down on the Feed Knob and slowly drill hole into workpiece.
- 6. Turn Drill Press off by flipping Power Switch down.

7. To lock Drill Press in OFF position, remove safety key from Power Switch and store key in a safe place until next use.

WARNING! TO PREVENT SERIOUS INJURY: If the drill bit grabs and spins the workpiece, do not attempt to stop the spinning with your hands. Step back, and turn the drill press off. Wait for the spindle to stop turning before dislodging the workpiece.

8. To prevent accidents, turn off tool and disconnect its power supply after use. Clean, then store tool indoors out of children's reach.

Laser Function

WARNING! TO PREVENT SERIOUS

INJURY: Do not stare directly into laser beam. Please observe all safety rules:

- a. Never aim the beam at a person or an object other than the workpiece.
- b. Do not project the laser beam into the eye of others.

- c. Always make sure the laser beam is aimed at a workpiece that does not posses reflective surfaces, as the laser beam could project into your eyes or the eyes of others.
- 1. Place workpiece on table.
- 2. Turn Laser Switch to ON.

Note: The two laser lines cross where drill meets workpiece.

3. Lower Drill to meet Workpiece.



Maintenance and Servicing



Procedures not specifically explained in this manual must be performed only by a qualified technician.

AWARNING

TO PREVENT SERIOUS INJURY FROM ACCIDENTAL OPERATION:

Turn the Power Switch of the tool off and unplug the tool from its electrical outlet before performing any procedure in this section.

TO PREVENT SERIOUS INJURY FROM TOOL FAILURE:

Do not use damaged equipment. If abnormal noise or vibration occurs, have the problem corrected before further use.

Cleaning, Maintenance, and Lubrication

- 1. **BEFORE EACH USE**, inspect the general condition of the tool. Check for:
 - · loose hardware
 - · misalignment or binding of moving parts
 - · cracked or broken parts
 - damaged electrical wiring
 - any other condition that may affect its safe operation.
- 2. **AFTER USE**, wipe external surfaces of the tool with clean cloth.

- 3. AWARNING! TO PREVENT SERIOUS INJURY: If the supply cord of this power tool is damaged, it must be replaced only by a qualified service technician.
- Periodically wear ANSI-approved safety goggles and NIOSH-approved breathing protection and blow dust out of the motor vents using dry compressed air.
- 5. Periodically apply a light coat of machine oil to the column to inhibit rust.
- Apply a light coat of paste wax, or similar product, to the table surface to protect the metal and inhibit rust. (Avoid products containing silicone, which may stain wood.)

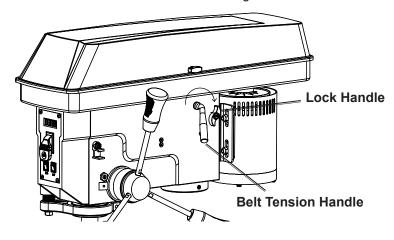
Belt Inspection and Tensioning

 Examine belt for cracks, tears in backing, and other damage.

- 2. Replace belt if damaged.
- 3. Loosen Lock Handle.

Note: Belt should deflect to 1/2" while pressing midway between pulleys. Do not overtighten belt.

- Turn Belt Tension Handle clockwise to desired tension and hold.
- Tighten Lock Handle.



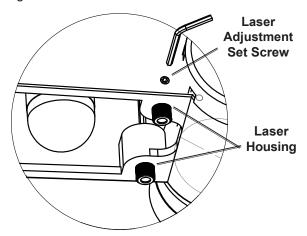
Laser Adjustment

WARNING! TO PREVENT SERIOUS

INJURY: Do not stare directly into laser beam. Please observe all safety rules:

- a. Never aim the beam at a person or an object other than the workpiece.
- b. Do not project the laser beam into the eye of others.
- c. Do not use a workpiece with reflective surfaces, as the laser beam could project into your eyes or the eyes of others.
- 1. Adjust table to 0° and clamp a workpiece to table.
- 2. Use a small drill bit in the chuck, and lower it to create an indentation in workpiece.
- Turn on Laser Switch. Lasers should intersect exactly at the indentation.
- 4. If laser needs adjustment, use a 3mm hex key (not included) to turn Laser Adjustment Set Screws counterclockwise.

- 5. Gently rotate Laser Housing until both Laser lines intersect at the indentation.
- 6. Tighten both set screws.



Troubleshooting

Problem	Possible Causes	Likely Solutions
Tool will not start.	Cord not connected.	Check that cord is plugged in.
	2. No power at outlet.	Check power at outlet. If outlet is unpowered, turn off tool and check circuit breaker. If breaker is tripped, make sure circuit is right capacity for tool and circuit has no other loads.
	Tool's thermal reset breaker tripped (if equipped).	Turn off tool and allow to cool. Press reset button on tool.
	4. Internal damage or wear. (Carbon brushes or switch, for example.)	4. Have technician service tool.
Tool operates slowly.	Extension cord too long or wire size too small.	Eliminate use of extension cord. If an extension cord is needed, use one with the proper diameter for its length and load. See Table A on page 2.
Performance decreases	Accessory dull or damaged.	Keep cutting accessories sharp. Replace as needed.
over time.	2. Carbon brushes worn or damaged.	Have qualified technician replace brushes.
Excessive noise or rattling.	Internal damage or wear. (Carbon brushes or bearings, for example.)	Have technician service tool.
	2. Belt (if equipped) too loose (slipping) or too tight (bearing damage).	2. Properly tension belt.
Overheating.	Forcing machine to work too fast.	Allow machine to work at its own rate.
	Accessory dull or damaged.	Keep cutting accessories sharp. Replace as needed.
	3. Blocked motor housing vents.	Wear ANSI-approved safety goggles and NIOSH-approved dust mask/respirator while blowing dust out of motor using compressed air.
	Motor being strained by long or small diameter extension cord.	4. Eliminate use of extension cord. If an extension cord is needed, use one with the proper diameter for its length and load. See Table A on page 2.



Follow all safety precautions whenever diagnosing or servicing the tool. Disconnect power supply before service.

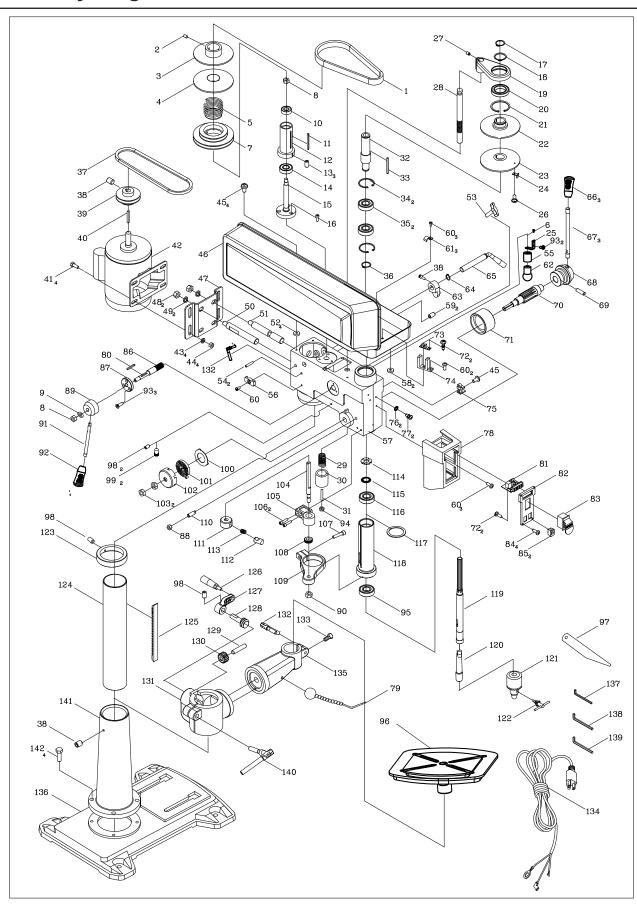
Parts List

Part	Description	Otv
	Description	Qty
1	V-Belt	1
3	Hex Socket Screw	1
	Upper Medium Wheel	1
4	Lower Medium Wheel	1
5	Medium Wheel	1
	Compression Spring	
6	Screw	1
7	Medium V-Belt Wheel	1
8	Nut	2
9	Spring	2
10	Bearing	1
11	Key	1
12	Medium Shaft Sleeve	1
13	Hex Screw	3
14	Bearing	
15	Medium Wheel Shaft	1
16	Socket Set Screw	3
17	Circlip	1
18	Circlip	1
19	Adjusting Base	1
20	Bearing	1
21	Circlip	1
22	Spindle Upper Wheel	1
23	Spindle Lower Wheel	1
24	Counter Baffle	1
25	Lamp Holder	1
26	Screw	1
27	Socket Screw	1
28	Rack Shaft	1
29	Spring	1
30	Sleeve	1
31	Socket Screw	1
32	Sleeve	1
33	Key	1
34	Circlip	
35	Bearing	2
36	Circlip	1
37	V-Belt	1
38	Socket Screw	3
39	Motor V-Belt Pulley	1
40	Key	1
41	Bolt	4
42	Motor	1
43	Washer	4
44	Nut	4
45	Screw	<u>+</u>
46		5
40	Pulley Cover	'
	Assembly	

Part	Description	Qty
47	Motor Plate	1
48	Nut	2
49	Spring Washer	2
50	Motor Rod 2	1
51	Motor Rod 1	1
52	Washer	4
53	Handle	2
54	Spring Pin	2
55	Lamp Holder	1
56	Bracket	1
57	Head	1
58	Bushing	2
59	Socket Screw	2
60	Screw	9
61	Plate	3
62	LED Bulb	1
63	Fork	1
64	Circlip	1
65	Motor Adjusting Rod	1
66	Feed Bar Handle	
67	Feed Bar	3
	Feed Bar Seat	1
68		1
69	Spring Pin	
70	Pinion Shaft	1
71	Scale Circle	1
72	Screw	4
73	Counter Probe	1
74	Counter Base	1
75	Chuck Key Holder	1
76	Star Washer	2
77	Screw	2
78	Switch Box	
79	Locating Pin	1
80	Key	1
81	Digital Display	1
	Transformer	
82	Switch Box Cover	1
83	ON/OFF Switch	1
84	Screw	4
85	Lamp/Laser Switch	2
86	Gear Shaft	1
87	Gear Base	1
88	Thin Nut	1
89	Variable Handle Base	1
90	Nut	1
91	Variable Handle	1
92	Speed Handle	1
93	Screw	5
94	Nut	1
	<u> </u>	

96 Work Table 97 Drift Key 98 Socket Screw 99 Laser 100 Spring Plate 101 Spring 102 Spring Cap	1 1 1 4 2 1 1 1 1 2 1 1 1 1
97 Drift Key 98 Socket Screw 99 Laser 100 Spring Plate 101 Spring 102 Spring Cap	1 4 2 1 1 1 1 2 2 1 1
97 Drift Key 98 Socket Screw 99 Laser 100 Spring Plate 101 Spring 102 Spring Cap	4 2 1 1 1 2 1 1 1
99 Laser : 100 Spring Plate 101 Spring 102 Spring Cap	2 1 1 1 2 1 1 1
99 Laser : 100 Spring Plate 101 Spring 102 Spring Cap	1 1 2 1 1 2
101 Spring 102 Spring Cap	1 1 2 1 1 2
101 Spring 102 Spring Cap	1 2 1 2 1
102 Spring Cap	2 1 2 1
103 Nut	1 1 2 1
	1 2 1
104 Ruler	2 1 1
105 Ruler Bracket	1 1
106 Screw	1
107 Socket Screw	
108 Nut	1
109 Scale Collar	
	1
111 Sleeve	1
	1
	1
	1
115 Washer	1
	1
	1
	1
119 Spindle	1
120 Arbor	1
121 Chuck	1
	1
	1
	1
125 Rack	1
	1
	1
1=0 1101111	1
129 Inner Gear Shaft	1
	1
10.010 = 10.010	1
	1
100 = 010	1
	1
	1
	1
	1
	1
	1
	1
Lock Bar	
	1
142 Bolt	4

Assembly Diagram



Record Product's Serial Number Here:_

Note: If product has no serial number, record month and year of purchase instead.

Note: Some parts are listed and shown for illustration purposes only, and are not available individually as replacement parts. Specify UPC 193175446565 when ordering parts.

PLEASE READ THE FOLLOWING CAREFULLY

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

