

# PALMGREN®

## 13" BENCH TOP DRILL PRESS



***Read carefully and follow all safety rules and operating instructions before first use of this product.***

# GETTING STARTED

## STRUCTURAL REQUIREMENTS

Make sure all supporting structures and load attaching devices are strong enough to hold your intended loads. If in doubt, consult a qualified structural engineer.

## ELECTRICAL REQUIREMENTS

Refer to Specifications on page 3 for the tools electrical requirements. The standard allowable voltage variation is plus or minus 10%.

## TOOLS NEEDED:

Standard mechanic's hand tool set.

# DESCRIPTION

Palmgren 13" Bench Model Drill Press features a cast iron base, column collar, work table and head. Work table height is adjustable using rack and pinion. Table can be tilted 45° both right and left, and rotates 360° on a vertical axis. Work table surface is precision ground which features T-slots for secure, accurate mounting of workpiece and a coolant trough. Other features of the Palmgren drill press are an enclosed ball bearing quill assembly, quick belt change and tension mechanism, positive quick-adjust feed depth stop and a 1/3 HP, 1700 RPM motor. A chuck and chuck key are included.

Palmgren drill presses are ideal for use in home shops, maintenance shops and light industrial applications. Spindle speeds are adjustable for drilling steel, cast iron, aluminum, wood and plastic.

# UNPACKING

Refer to Figure 1.

**WARNING:** Be careful not to touch overhead power lines, piping, lighting, etc., if lifting equipment is used. Drill press weighs up to 110 lbs. Proper tools, equipment and qualified personnel should be employed in all phases of unpacking and installation.

Carton should be handled with care to avoid damage from dropping, bumping, etc. Store and unpack carton with correct side up. After unpacking drill press, inspect carefully for any damage that may have occurred during transit. Check for loose, missing or damaged parts. If any damage or loss has occurred, claim must be filed with carrier immediately. Check for completeness. Immediately report missing parts to dealer.

On receipt, carefully unpack the components ensuring that no damage was suffered in transit and that all parts are accounted for.

The following loose items are to be found in the packing case:

- A Table Assembly (1)
- B Arm (1)
- C This Manual (1)
- D Bag of Loose Parts (1)
- E Base (1)
- F Head Assembly (1)
- G Box of Loose Parts (1)
- H Column Assembly (1)

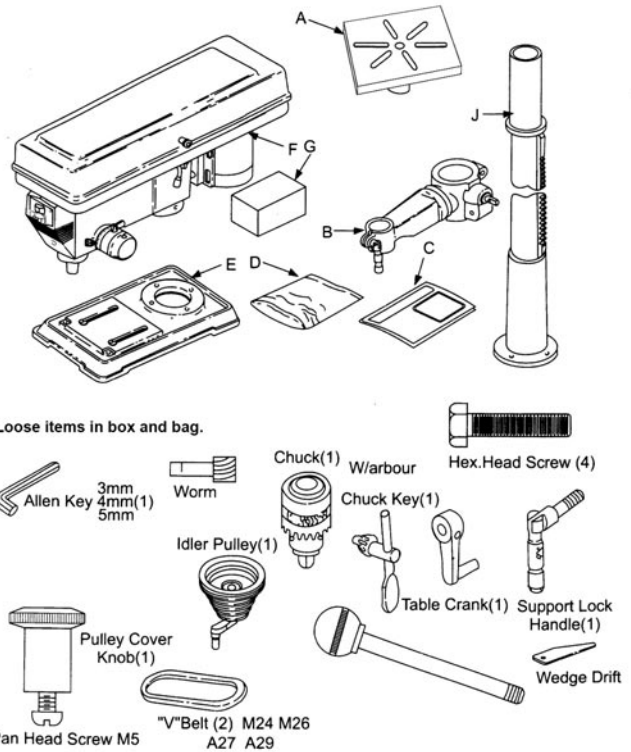


Figure 1 - Loose parts.

## UNPACK:

Do not discard packing materials until after machine has been inspected for damage and completeness. Locate loose parts and set aside. Refer to Unpacking on page 1 for contents list.

## INSPECT:

- After unpacking the unit, carefully inspect for any damage that may have occurred during transit. Check for loose, missing or damaged parts. Shipping damage claims must be filed with the carrier.
- All tools should be visually inspected before use, in addition to regular periodic maintenance inspections.
- Be sure that the voltage labeled on the unit matches your power supply.

# SAFETY RULES

**WARNING:** For your own safety, read operating instructions manual before operating tool.

**PROPOSITION 65 WARNING:** Some dust created by using power tools contain chemicals known to the state of California to cause cancer, birth defects or other reproductive harm.

Some examples of these chemicals are:

- Lead from lead-based paints
- Crystalline silica from bricks and cement and other masonry products.
- Arsenic and chromium from chemically treated lumber.

Your risk from these exposures varies, depending on how often you do this type of work. To reduce your exposure to these chemicals; work in a well ventilated area and work with approved safety equipment. Always wear OSHA/NIOSH approved, properly fitting face mask or respirator when using such tools.

**SAFETY RULES (CONTINUED)**

**WARNING:** Always follow proper operating procedures as defined in this manual even if you are familiar with the use of this or similar tools. Remember that being careless for even a fraction of a second can result in severe personal injury.

**BE PREPARED FOR JOB**

- Wear proper apparel. Do not wear loose clothing, gloves, neckties, rings, bracelets or other jewelry which may get caught in moving parts of machine.
- Wear protective hair covering to contain long hair.
- Wear safety shoes with non-slip soles.
- Wear safety glasses complying with United States ANSI Z87.1. Everyday glasses have only impact resistant lenses. They are **NOT** safety glasses.
- Wear face mask or dust mask if operation is dusty.
- Be alert and think clearly. Never operate power tools when tired, intoxicated or when taking medications that cause drowsiness.

**PREPARE WORK AREA FOR JOB**

- Keep work area clean. Cluttered work areas and work benches invite accidents.
- Do not use power tools in dangerous environments. Do not use power tools in damp or wet locations. Do not expose power tools to rain.
- Work area should be properly lighted.
- Proper electrical plug should be plugged directly into properly grounded, three-prong receptacle.
- Extension cords should have a grounding prong and the three wires of the extension cord should be of the correct gauge.
- Keep visitors at a safe distance from work area.
- Keep children out of the workplace. Make workshop childproof. Use padlocks, master switches or remove switch keys to prevent any unintentional use of power tools.

**TOOL SHOULD BE MAINTAINED**

- Always unplug tool prior to inspection.
- Consult manual for specific maintaining and adjusting procedures.
- Keep tool lubricated and clean for safest operation.
- Remove adjusting tools. Form habit of checking to see that adjusting tools are removed before turning machine on.
- Keep all parts in working order. Check to determine that the guard or other parts will operate properly and perform their intended function.
- Check for damaged parts. Check for alignment of moving parts, binding of moving parts, breakage of parts, mounting and any other condition that may affect a tool's operation.
- A guard or other part that is damaged should be properly repaired or replaced. Do not perform makeshift repairs. (Use the parts list to order replacement parts.)

**KNOW HOW TO USE TOOL**

- Use right tool for job. Do not force tool or attachment to do a job for which it was not designed.
- Disconnect tool from power when changing drill bit or cutter.

- Avoid accidental start-up. Make sure that the switch is in the OFF position before plugging in.
- Do not force tool. It will work most efficiently at the rate for which it was designed.
- Keep hands away from moving parts and grinding surfaces.
- Never leave a tool running unattended. Turn the power off and do not leave tool until it comes to a complete stop.
- Do not overreach. Keep proper footing and balance.
- Never stand on tool. Serious injury could occur if tool is tipped or if drill bit is unintentionally contacted.
- Know your tool. Learn the tool's operation, application and specific limitations.
- Use recommended accessories. Understand and obey all safety instructions supplied with accessories. The use of improper accessories may cause risk of injury to persons.
- Turn machine off if it jams. Drill bit jams when it digs too deeply into workpiece. (Motor force keeps it stuck in the work.)
- All work shall be secured using either clamps or a vise to the drill press table. It is unsafe to use your hands to hold any workpiece being drilled.
- Feed work into a bit or cutter against the direction of rotation of bit or cutter.
- Use recommended speed for drill accessory and workpiece material.
- Keep guards in place and in proper working order. Do not operate the machine with guards removed.
- Always be sure the machine is securely anchored to the floor or the workbench.
- Make certain table locks and head locks are tightened before starting machine.

**CAUTION:** Think safety! Safety is a combination of operator common sense and alertness at all times when tool is being used.

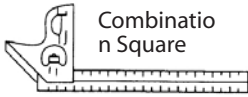
**SPECIFICATIONS**

Chuck size	.5/8", JT3
Spindle taper	.MT2
Spindle travel	.3 1/8"
Quill diameter	.157"
Quill collar diameter	.45mm
Column diameter	.2756"
Speeds	.12
RPM	.210–3100
Swing	.13"
Table size	.10" × 10"
T-slots	.15mm
Base size	.17" × 10"
Base working surface	.10" × 10"
Drilling capacity (cast iron)	.5/8"
Distance, spindle to table	.18.5"
Distance, spindle to base	.28"
Overall height	.42"
Weight	.100 lbs
Shipping weight	.110 lbs
Motor	.1/2 HP, 120V, 1700 RPM, 5 A, 60 Hz

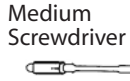
# ASSEMBLY

**WARNING:** For your own safety, never connect plug to power source outlet until all assembly steps are completed.

—— TOOLS NEEDED ——



Combination Square

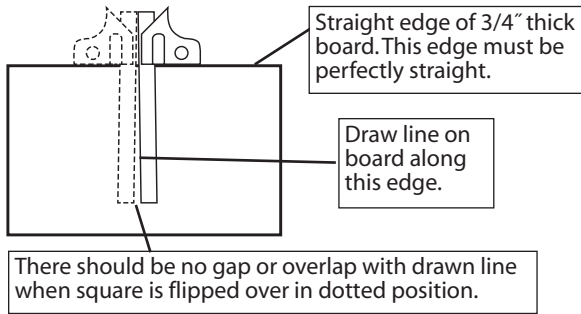


Medium Screwdriver



Adjustable Wrench

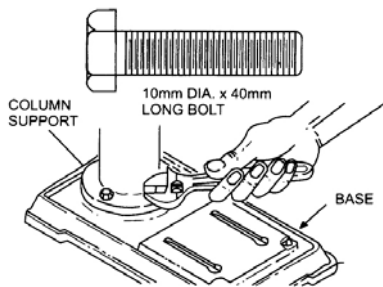
**Combination square must be true. Check its accuracy as illustrated below.**



**Figure 2 - Tools needed for assembly.**

### ASSEMBLY OF COLUMN AND TABLE HARDWARE

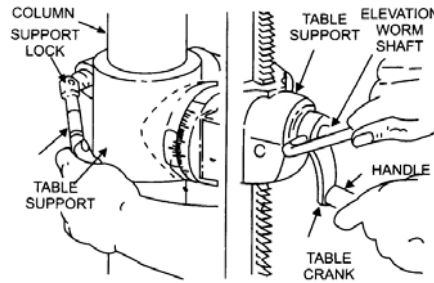
1. Position base on floor. Remove protective covering and discard.
2. Remove protective sleeve from column tube and discard. Place column assembly on base, and align holes in column support with holes in base.
3. Locate (4) four 10mm dia. x 40mm long bolts (see illustration) in loose parts bag.
4. Install a bolt in each hole through column support and base and tighten with adjustable wrench.



**Figure 3 - Attach column to base.**

5. Locate table crank and support lock in loose parts box.
6. Install support lock from left side into table support and tighten by hand.
7. Install table crank assembly and tighten set screw with a 3mm hex "L" wrench. Do not overtighten. Set screw should be tightened against the flat section of the shaft.

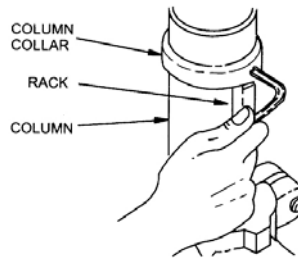
**NOTE:** To minimize crank backlash, tighten support lock, rotate elevation worm shaft clockwise, then assemble crank tight against table support and tighten set screw.



**Figure 4 - Attach support lock and table crank.**

8. Check column collar for proper adjustment. Collar should not be angled on the column and it should be positioned so rack will slide freely in collar when table is rotated 360° around column table. If re-adjusted, only tighten set screw enough to keep collar in place.

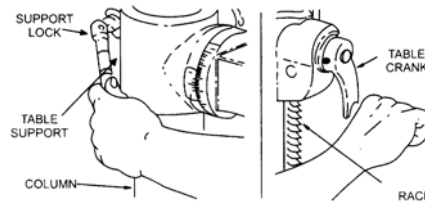
**NOTE:** To avoid column or collar damage, do not overtighten set screw.



**Figure 5 - Check column collar.**

### INSTALLING THE TABLE

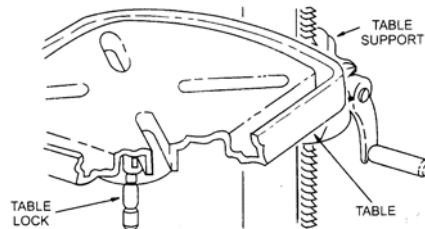
1. Loosen support lock and raise table support by turning table crank clockwise until support is at a working height level. Tighten support lock.



**Figure 6 - Set table support to working height.**

2. Remove protective covering from table and discard. Place table in table support and tighten table lock (located under table) by hand.

**NOTE:** If table won't fit into table support easily, pry open table support with a flat blade screw driver.

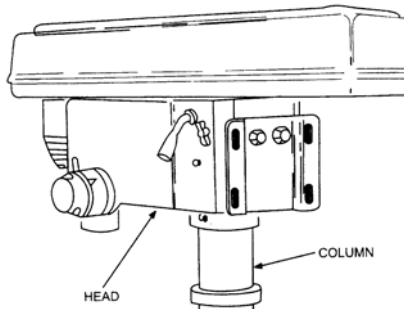


**Figure 7 - Position table into table support and secure.**

**ASSEMBLY (CONTINUED)****INSTALLING THE HEAD**

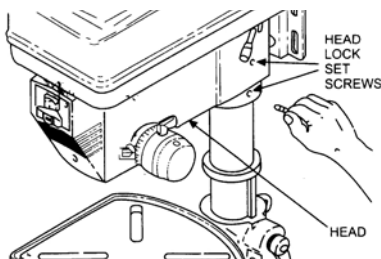
**CAUTION:** The head assembly weighs about 55 pounds. Carefully lift head.

1. Remove protective bag from head assembly and discard. Carefully lift head above column tube and slide it onto column making sure head slides down over column as far as possible. Align head with table and base.



**Figure 8 – Position head onto column.**

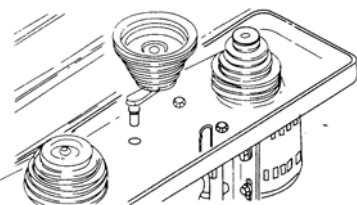
2. Locate (2) two 10mm dia. x 12mm long set screws (see illustration) in loose parts bag.
3. Install a set screw in each hole (as indicated) on the right side of the head, and using a 5mm hex "L" wrench to tighten the two head lock set screws.



**Figure 9 – Use set screws to secure head.**

**INSTALLING THE CENTER PULLEY**

1. Locate center pulley assembly in loose parts bag and place in proper hole.

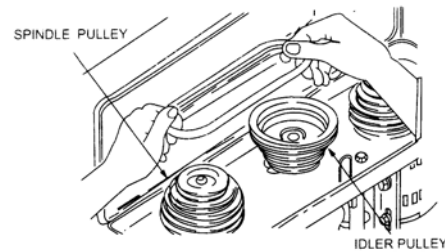


**Figure 10 – Install center pulley.**

**INSTALLING BELT**

1. Locate two (2) v-belts in the loose parts bag.
2. Use speed chart inside belt guard to choose speed for drilling operation. Install belts in correct position for desired speed. The LONGER of the two belts is always positioned between the spindle pulley and idler pulley.

**NOTE:** Refer to inside belt guard for recommended drilling speeds.

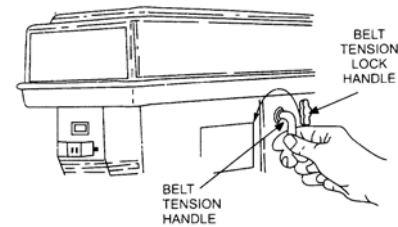


**Figure 11 – Install belts for desired speed.**

3. Apply tension to belt by turning belt tension handle counter-clockwise until belt deflects approximately 1/2 inch by thumb pressure at its center.

**NOTE:** Over tensioning belt may cause motor not to start or damage bearings.

4. Tighten belt tension lock handles.

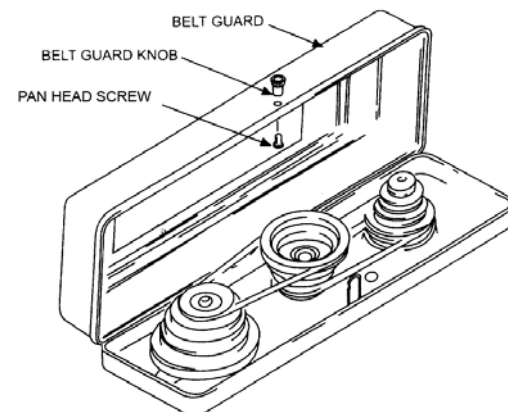


**Figure 12 – Tighten belt tension lock handles.**

5. If belt slips while drilling, re-adjust belt tension.

**INSTALLING BELT GUARD KNOB**

1. To attach belt guard knob, locate knob and 5mm dia. x 12mm long pan head screw in loose parts bag. Install screw in hole located in guard and attach knob turning until tight.



**Figure 13 – Attach belt guard knob.**

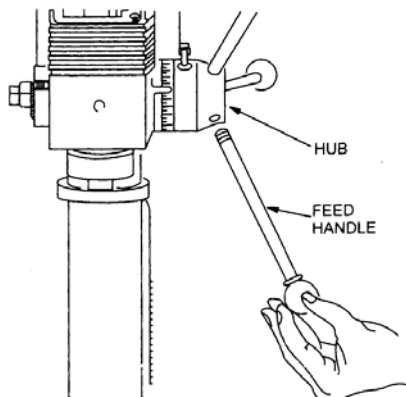
**WARNING:** To avoid possible injury keep guard in place and in proper working order while operating.



**ASSEMBLY (CONTINUED)**

**INSTALLING FEED HANDLES**

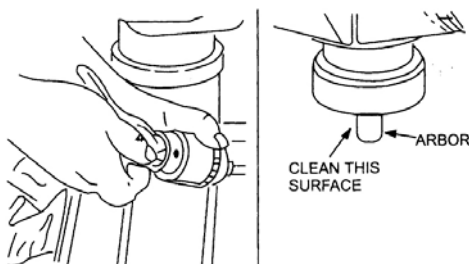
1. Locate three (3) feed handles among loose parts.
2. Screw the feed handles into the threaded holes in the hub and tighten.



**Figure 14 – Attach feed handles to hub.**

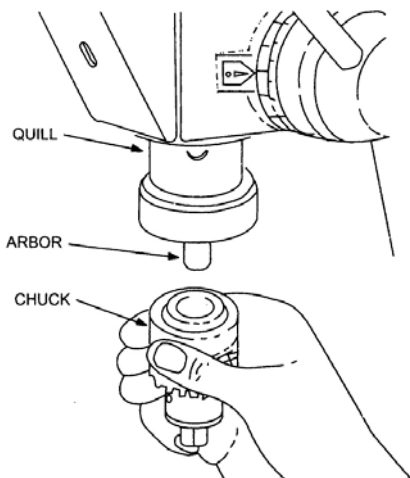
**INSTALLING THE CHUCK**

1. Clean out the TAPERED HOLE in the chuck. Clean the tapered surface on the arbor with a clean cloth. Make sure there are no foreign particles sticking to the surfaces. The slightest piece of dirt on any of these surfaces will prevent the chuck from seating properly. This will cause the drill to “wobble.”



**Figure 15 – Clean chuck and arbor.**

2. Slide the chuck up over the arbor as illustrated.
3. Unlock support lock and raise table so its about two (2) inches below tip of chuck.
4. Turn chuck sleeve clockwise and open jaws in chuck completely.
5. Turn feed handles counterclockwise and force chuck against table until chuck is secure.

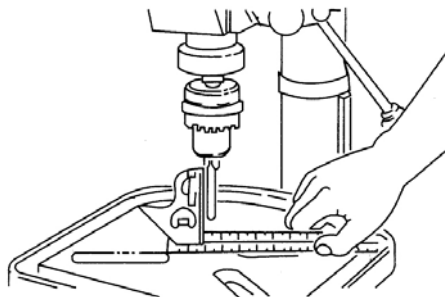


**Figure 16 – Slide chuck over arbor.**

**ADJUSTING THE TABLE SQUARE TO HEAD**

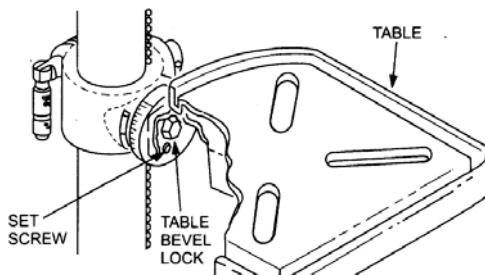
**NOTE:** The combination square must be “true.” See “Tools Needed” at beginning of Assembly section for method.

1. Insert a straight ground steel rod or a straight drill bit (not included) approximately 3” long into chuck and tighten.
2. With table raised to working height and locked on column, place combination square flat on table beside rod.



**Figure 17 – Check squareness of table to head.**

3. If an adjustment is necessary, loosen the set screw under bevel lock with 3mm hex “L” wrench, then loosen the table bevel lock with the 24mm flat wrench (included). (These adjustments are located under the table).
4. Align the table square to the bit by rotating the table until the square and bit are in line.
5. Retighten table bevel lock.
6. Retighten set screw.

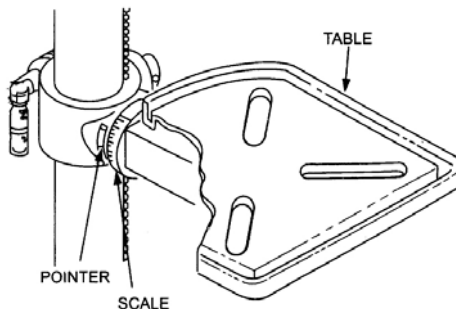


**Figure 18 – Adjust table to head.**

**BEVEL SCALE**

**NOTE:** The bevel scale has been included to provide a quick method for beveling the table to approximate angles. If precise accuracy is necessary a square, or other precision measuring tool should be used to position the table.

1. To use the bevel scale do the following:
  - a. Loosen set screw and table bevel lock (see step 3 above).
  - b. Move table so desired angle or bevel scale is straight across from zero line on table support.
  - c. Retighten table bevel lock and set screw.



**Figure 19 – Adjust table to head.**

# INSTALLATION

## POWER SOURCE

The motor is designed for operation on the voltage and frequency specified. Normal loads will be handled safely on voltages not more than 10% above or below the specified voltage.

Running the unit on voltages which are not within the range may cause overheating and motor burn-out. Heavy loads require that the voltage at motor terminals be no less than the voltage specified.

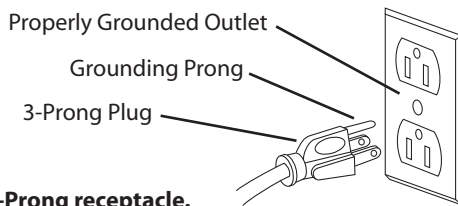
## GROUNDING INSTRUCTIONS

**WARNING:** Improper connection of equipment grounding conductor can result in the risk of electrical shock. Equipment should be grounded while in use to protect operator from electrical shock.

Check with a qualified electrician if grounding instructions are not understood or if in doubt as to whether the tool is properly grounded.

This tool is equipped with an approved 3-conductor cord rated at 300V and a 3-prong grounding type plug (See Figure 20) for your protection against shock hazards.

Grounding plug should be plugged directly into a properly installed and grounded 3-prong grounding-type receptacle, as shown in Figure 20



**Figure 20 – 3-Prong receptacle.**

Do not remove or alter grounding prong in any manner. In the event of a malfunction or breakdown, grounding provides a path of least resistance for electrical shock.

**WARNING:** Do not permit fingers to touch the terminals of plug when installing or removing from outlet.

Plug must be plugged into matching outlet that is properly installed and grounded in accordance with all local codes and ordinances. Do not modify plug provided. If it will not fit in outlet, have proper outlet installed by a qualified electrician.

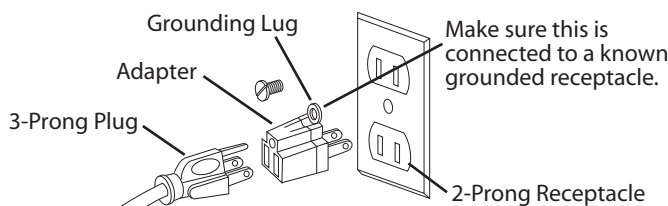
Inspect tool cords periodically, and if damaged, have repaired by an authorized service facility.

Green (or green and yellow) conductor in cord is the grounding wire. If repair or replacement of the electric cord or plug is necessary, do not connect the green (or green and yellow) wire to a live terminal.

Where a 2-prong wall receptacle is encountered, it must be replaced with a properly grounded 3-prong receptacle installed in accordance with National Electric Code and local codes and ordinances.

**WARNING:** This work should be performed by a qualified electrician.

A temporary 3-prong to 2-prong grounding adapter (See Figure 21) is available for connecting plugs to a two pole outlet if it is properly grounded.



**Figure 21 – 2-Prong receptacle with adapter.**

Do not use a 3-prong to 2-prong grounding adapter unless permitted by local and national codes and ordinances.

(A 3-prong to 2-prong grounding adapter is not permitted in Canada.) Where permitted, the rigid green tab or terminal on the side of the adapter must be securely connected to a permanent electrical ground such as a properly grounded water pipe, a properly grounded outlet box or a properly grounded wire system.

Many cover plate screws, water pipes and outlet boxes are not properly grounded. To ensure proper ground, grounding means must be tested by a qualified electrician.

## EXTENSION CORDS

- The use of any extension cord will cause some drop in voltage and loss of power.
- Wires of the extension cord must be of sufficient size to carry the current and maintain adequate voltage.
- Running the unit on voltages which are not within  $\pm 10\%$  of the specified voltage may cause overheating and motor burn-out.
- Use the table to determine the minimum wire size (A.W.G.) extension cord.
- Use only 3-wire extension cords having 3-prong grounding type plugs and 3-pole receptacles which accept the tool plug.
- If the extension cord is worn, cut or damaged in any way, replace it immediately.

Extension Cord Table						
		Volts	Total Length of Cord in Feet			
Ampere Rating		120	25	50	100	150
		240	50	100	150	300
More Than	Not More Than	Minimum Gage for Cord				
0	6		18	16	16	14
6	10		18	16	14	12
10	12		16	16	14	12
12	16		14	12	Not Recommended	

## ELECTRICAL CONNECTIONS

Refer to Figure 22.

**WARNING:** All electrical connections must be performed by a qualified electrician.

**WARNING:** Make sure tool is off and disconnected from power source while motor is mounted, connected, reconnected or any time wiring is inspected.

- The motor should be wired for 120 volts and clockwise rotation as viewed from shaft end of motor.
- A label on the motor describes the possible wiring configurations. There are many different possible combinations, so only the diagram provided with the motor should be used.
- The motor cord must be secured to protect the wiring connections from possible strain.
- The power supply to motor is controlled by a push button switch. Power lines are connected to the quick connect terminals of the switch.
- The green ground line must remain securely fastened to the motor ground terminal to provide proper grounding.
- To operate drill press at 240 volts, rewire motor as shown in Figure 15 and replace line cord plug with a 240 volt, 15A, 3-prong plug. If motor label has a different wiring configuration, use the motor label diagram to rewire motor.

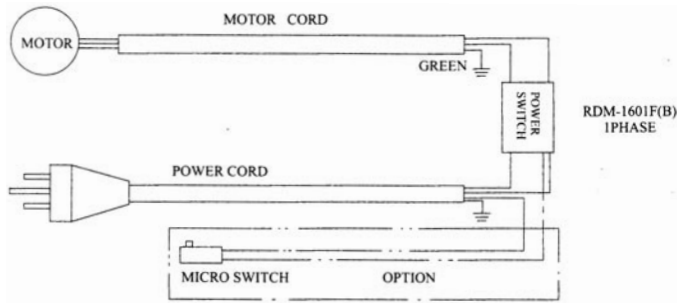


Figure 22 - Wiring diagram.

## OPERATION

Refer to Figures 23 through 30.

### STARTING AND STOPPING THE DRILL PRESS

Refer to Figure 30, page 12.

**WARNING:** Be sure drill bit is not in contact with workpiece when motor is started. Start motor and allow bit to come up to full speed before drilling.

1. The ON/OFF switch (Ref. No. 64) is located on the front of the head casting.
2. To turn the drill press on, push green ON button. Always allow drill bit to come up to speed before drilling.
3. To turn the drill press off, press the large red OFF paddle or lift the paddle and press directly on the red OFF button. Do not leave drill press until the bit has come to a complete stop.

### TABLE ADJUSTMENT

1. Height adjustment (Figure 23).
  - Loosen the table bracket locking handle then adjust table to the desired position by turning the table adjusting handle.

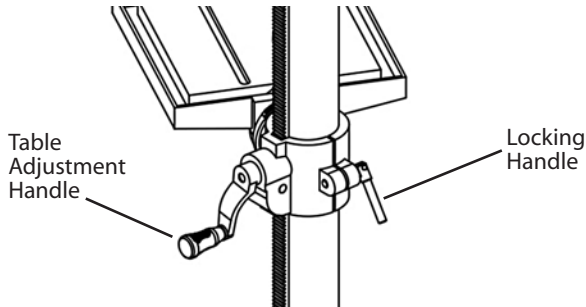


Figure 23 - Height adjustment.

2. Tilt adjustment (Figures 24 and 25).
  - Loosen the hex bolt. Rotate the table to desired angle left or right. Tighten the hex bolt to secure table tilt.
3. Swing 360° (Figures 23 and 26).
  - Loosen table bracket locking handle then swing table to appropriate position and retighten the locking handle.

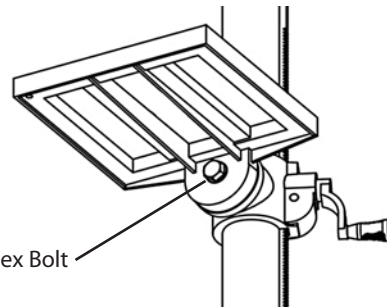


Figure 24 - Tilt adjustment hex bolt.

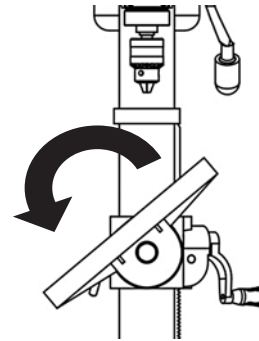


Figure 25 - Rotate table to desired angle.

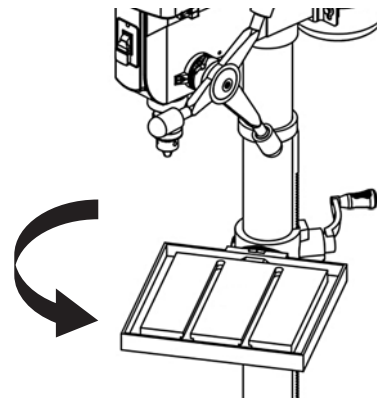


Figure 26 - Swing table to desired position.

### FEED DEPTH ADJUSTMENT

- Turn the depth scale ring to the desired depth, lock the scale ring in place with the depth knob (Figure 27).
- The drill bit will stop after traveling the distance selected on the depth scale.

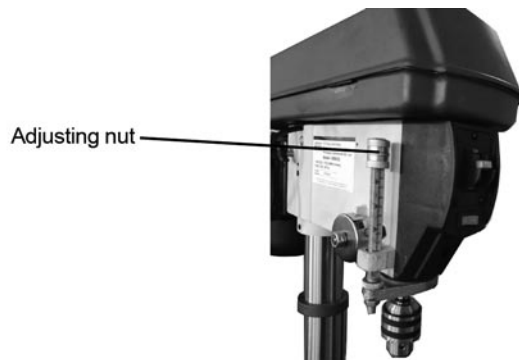


Figure 27 - Feed depth adjustment.



**OPERATION (CONTINUED)**

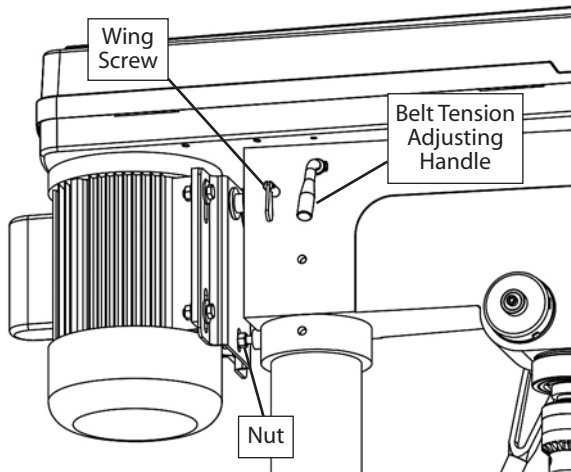
**SPEED ADJUSTMENT**

Refer to Figure 28, speed chart inside belt guard and chart below.

**WARNING:** Be sure drill press is turned off and is disconnected from power source before adjusting speeds.

This drill press has 12 speeds. The speed can be changed by changing the belt locations on the pulleys as shown.

1. Open the belt cover.
2. Loosen the wing screw and the nut on the motor support plate.
3. Turn the belt tension adjusting handle to loosen belt tension.
4. Change the belt location as shown in speed chart inside belt guard.
5. Check belt for proper tension and make any final adjustment. A belt is properly tensioned when light pressure applied to midpoint of the belt produces about 1/2" deflection.



**Figure 28 - Speed adjustment.**

**INSTALLING DRILL BIT**

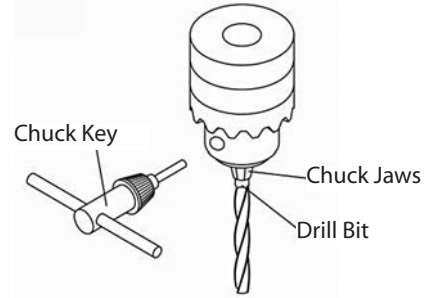
Refer to Figure 29.

For key type drill chuck.

- With the switch "OFF", open the chuck jaws using the chuck key. Turn the chuck key counterclockwise to open the chuck jaws.
- Insert the drill bit into the chuck far enough to obtain maximum gripping by the jaws, but not far enough to touch the spiral grooves (flutes) of the drill bit when the jaws are tightened.

- Make sure that the drill is centered in the chuck.
- Turn the chuck key clockwise to tighten the jaws.

**WARNING:** To avoid injury or accident by the chuck key ejecting



**Figure 29 - Installing drill bit.**

forcibly from the chuck when the power is turned ON, always recheck and remove the chuck key before turning the power on.

**POSITIONING WORKPIECE**

**WARNING:** To prevent the workpiece or back-up material from being torn from your hands while drilling, you must position it against the LEFT side of the column. Failure to do this could result in personal injury.

**USING VISE**

For small workpiece that cannot be clamped to the table, use a drill press vise. The vise must be clamped or bolted to the table.

**WARNING:** The drill press vise must be clamped or bolted to the table to avoid injury from a spinning workpiece, or damaged vise or bit parts.

**REMOVING THE CHUCK**

Refer to Figure 30.

1. Rotate feed handle (Ref. No. 28) until slot is exposed in the side of the quill (Ref. No. 71). Lock quill in position.
2. Rotate spindle until inner slot is aligned with outer slot. You will see through spindle when slots are properly aligned.
3. Insert the drift key (Ref. No. 72) into the slots and tap lightly with hammer. The arbor and chuck will drop from spindle.

**RECOMMENDED SPEED BASED ON MATERIAL AND DRILL BIT SIZE**

RPM	Wood		Zinc Diecast		Aluminum & Brass		Plastic		Cast Iron & Bronze		Steel - Mild & Malleable		Steel - Cast & Med. Carbon		Steel - Stainless & Tool	
	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm
3020	5/16	7.9	3/16	4.8	11/64	4.4	5/32	4.0	7/64	2.8	3/32	2.4	1/16	1.6	1/32	0.8
2101	5/8	15.9	3/8	9.5	11/32	8.7	5/16	7.9	1/4	6.4	5/32	4.0	1/8	3.2	1/16	1.6
1699	3/4	19.0	7/16	11.1	13/32	10.3	3/8	9.5	5/16	7.9	3/16	4.8	1/8	3.2	1/16	1.6
1453	7/8	22.2	1/2	12.7	15/32	11.9	7/16	11.1	11/32	8.7	1/4	6.4	3/16	4.8	1/8	3.2
973	1	25.4	5/8	15.9	1/2	12.7	1/2	12.7	3/8	9.5	5/16	7.9	1/4	6.4	3/16	4.8
596	1 1/4	31.8	3/4	19.0	11/16	17.5	5/8	15.9	1/2	12.7	3/8	9.5	5/16	7.9	1/4	6.4
424	1 5/8	41.3	7/8	22.2	3/4	19.0	13/16	20.6	5/8	15.9	1/2	12.7	7/16	11.1	3/8	9.5
309	1 3/4	44.4	15/16	23.8	13/16	20.6	7/8	22.2	3/4	19.0	5/8	15.9	1/2	12.7	7/16	11.1
210	2	50.8	1	25.4	—	—	—	—	—	—	—	—	9/16	14.3	1/2	12.7

## MAINTENANCE

**WARNING:** Turn switch OFF and remove plug from outlet before maintaining or lubricating your drill press.

Replace worn drive belt when needed.

### LUBRICATION

Refer to Figure 30, page 12.

The ball bearings are lubricated at the factory and need no further lubrication. Using 20 wt. non detergent oil, periodically lubricate the splines (grooves) in the spindle and the rack (teeth on the quill) as follows:

1. Lower quill assembly (Ref.No.68–75) all the way down.
2. Apply lubricant around the inside of the hole in the spindle pulley (Ref.No.89) .
3. Apply lubricant to rack (teeth) on quill (Ref.No.71) while extended below drill press head.
4. Apply lubricant to rack and pinion gear (Ref.Nos.5 and 29) on column and table assembly.
5. Frequently blow out any dust that may accumulate inside the motor.If the power cord is worn, cut, or damaged in any way, have it replaced immediately. For motor lubrication, follow instructions on motor plate.

## TROUBLESHOOTING

SYMPTOM	POSSIBLE CAUSE(S)	CORRECTIVE ACTION
Noisy operation	<ol style="list-style-type: none"> <li>1. Incorrect belt tension</li> <li>2. Dry spindle</li> <li>3. Loose spindle</li> <li>4. Loose motor pulley</li> </ol>	<ol style="list-style-type: none"> <li>1. Adjust tension</li> <li>2. Lubricate spindle (See Lubrication)</li> <li>3. Tighten pulley nut</li> <li>4. Tighten set screw in pulley</li> </ol>
Bit burns or smokes	<ol style="list-style-type: none"> <li>1. Incorrect belt speed</li> <li>2. Chips not coming out of hole</li> <li>3. Dull bit</li> <li>4. Feeding too slow</li> <li>5. Bit not lubricated</li> <li>6. Bit running backwards</li> </ol>	<ol style="list-style-type: none"> <li>1. Change speed</li> <li>2. Retract bit frequently to clear chips</li> <li>3. Sharpen or replace bit</li> <li>4. Feed faster; enough to allow drill to cut</li> <li>5. Lubricate bit</li> <li>6. Check motor rotation to be sure it is clockwise facing shaft end</li> </ol>
Excessive drill runout or wobble	<ol style="list-style-type: none"> <li>1. Bent bit</li> <li>2. Bit not properly installed in chuck</li> <li>3. Chuck not properly installed</li> <li>4. Worn spindle bearings</li> </ol>	<ol style="list-style-type: none"> <li>1. Replace bit</li> <li>2. Install bit properly</li> <li>3. Install chuck properly</li> <li>4. Replace bearings</li> </ol>
Drill bit binds in workpiece	<ol style="list-style-type: none"> <li>1. Workpiece pinching bit or excessive feed pressure</li> <li>2. Improper belt tension</li> <li>3. Workpiece not supported or clamped properly</li> </ol>	<ol style="list-style-type: none"> <li>1. Support or clamp work, decrease feed pressure</li> <li>2. Adjust tension</li> <li>3. Support or clamp workpiece securely</li> </ol>
Spindle does not turn	<ol style="list-style-type: none"> <li>1. No power to drill press</li> <li>2. Defective switch</li> <li>3. Defective motor</li> </ol>	<ol style="list-style-type: none"> <li>1. Check wiring, fuse or circuit breaker</li> <li>2. Replace switch</li> <li>3. Replace motor</li> </ol>
Noisy spindle	Defective bearings	Replace bearings









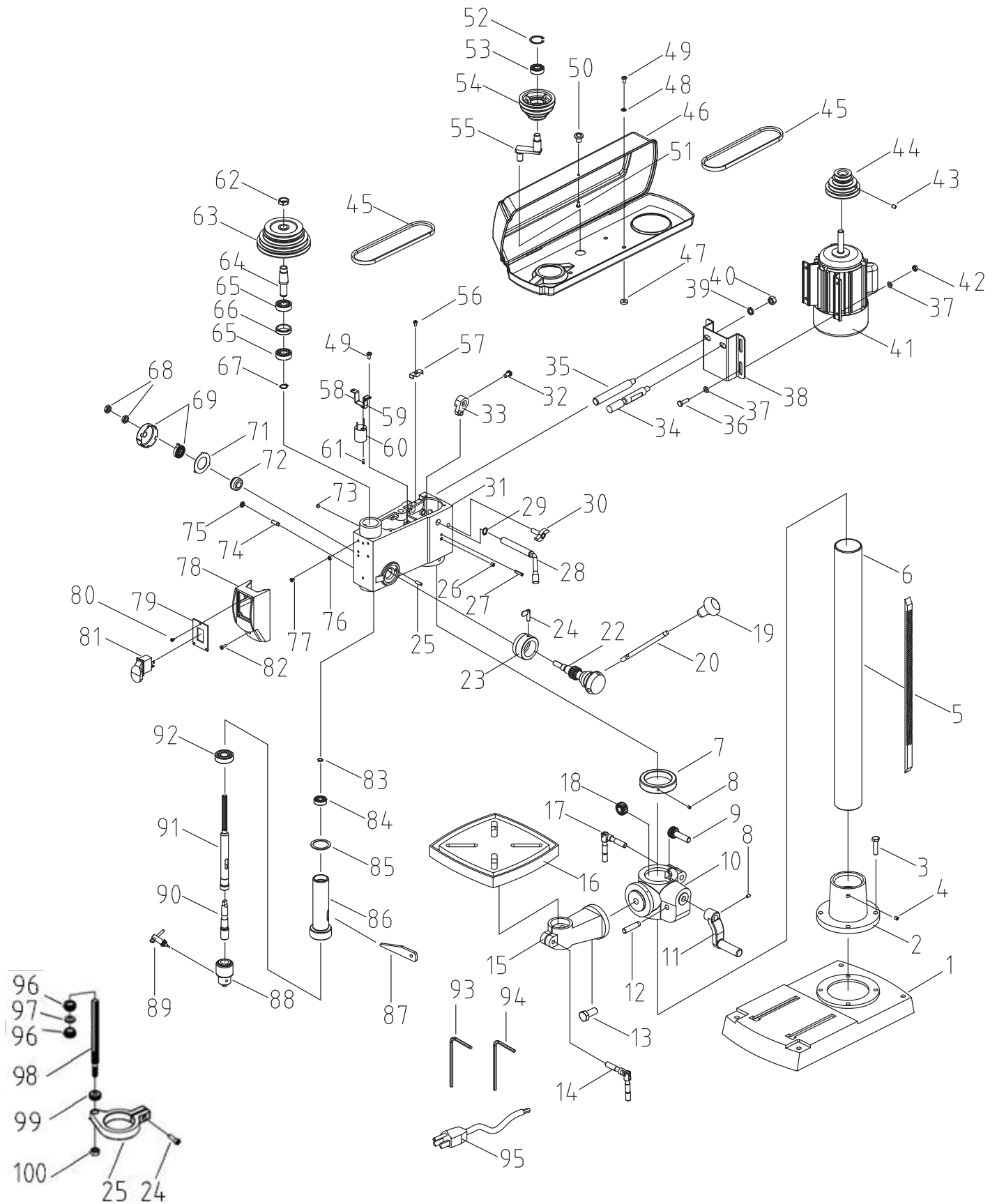


Figure 30 - Parts illustration for 13" Bench Top Drill Press.

## REPLACEMENT PARTS LIST FOR 13" BENCH TOP DRILL PRESS

Ref. No.	Description	Part No.	Qty.	Ref. No.	Description	Part No.	Qty.
1	BASE	9644896.01	1	49	SCREW PAN, M6 x 12	*	6
2	SUPPORT COLUMN	9644897.01	1	50	KNOB	9644942.01	1
3	SCREW HEX HEAD, M10 x 40	*	4	51	SCREW PAN, M5 x 12	*	1
4	HEX SOCKET SET SCREW, M10 x 12	*	2	52	RETAINING RING, 35MM	*	1
5	RACK	9644899.01	1	53	BEARING BALL, 6202ZZ	*	1
6	TUBE COLUMN	9644898.01	1	54	TRANSMITTING PULLEY	9644940.01	1
7	COLUMN COLLAR	9644900.01	1	55	TRANSMITTING BRACKET	9644941.01	1
8	HEX SOCKET SET SCREW, M6 x 10	*	2	56	SCREW PAN, M5 x 10	*	1
9	WORM GEAR	9644909.01	1	57	CORD CLAMP	*	1
10	TABLE SUPPORT	9644901.01	1	61	SCREW PAN, M3 x 10	*	1
11	CRANK	9644902.01	1	62	LEFT HAND-NUT	9644947.01	1
12	GEAR PIN	9644903.01	1	63	SPINDLE PULLEY	9644946.01	1
13	SCREW HEX HEAD, M16 x 35	*	1	64	UPPER SPINDLE SLEEVE	9644945.01	1
14	TABLE CLAMP	9644904.01	1	65	BEARING BALL, 6203ZZ	*	2
15	TABLE ARM	9644905.01	1	66	SPACER	9644944.01	1
16	TABLE	9644906.01	1	67	RETAINING RING, 17MM	*	1
17	SUPPORT CLAMP	9644907.01	1	68	NUT HEX, M12	*	2
18	PINION GEAR	9644908.01	1	69	SPRING CAP COVER ASSY.	9632523.00	1
19	KNOB	9644926.01	3	71	SPRING RETAINER	9644918.01	1
20	FEED HANDLE ROD	9644925.01	3	72	SPRING SEAT	9644919.01	1
22	QUILL FEED ASSEMBLY	9644923.01	1	73	HEX SOCKET SET SCREW, M8 x 8	*	1
23	DEPTH STOP RING	9644922.01	1	74	SOCKET SET SCREW	*	1
24	SCREW PAN M8 x 30	9644921.01	1	75	NUT HEX, M8	*	1
25	CLAMPING HOOP	9644920.01	1	76	STAR WASHER, M5	*	2
26	HEX SOCKET SET SCREW, M8 x 8	*	2	77	SCREW PAN, M5 x 6	*	2
27	ROLL PIN, 6MM x 25	*	2	78	SWITCH BOX	9644948.01	1
28	BELT TENSION HANDLE	9644927.01	1	79	SWITCH PLATE	9644915.01	1
29	RETAINING RING, 15MM	*	1	80	SCREW PAN, M4.2 X 9.5	*	3
30	ADJUST KNOB	9644928.01	2	81	SWITCH	9616080.00	1
31	HEAD	N/A	1	82	SCREW PAN, M5 x 16	*	3
32	SCREW HEX HEAD, M8 x 16	*	1	83	RETAINING RING, 11MM	*	1
33	ADJUSTING LEVER	9644935.01	1	84	BEARING BALL 6201ZZ	*	1
34	MOTOR SUPPORT BRACKET, LEFT	9644934.01	1	85	GASKET QUILL	9644912.01	1
35	MOTOR SUPPORT BRACKET, RIGHT	9644929.01	1	86	QUILL	9644913.01	1
36	SCREW HEX HEAD, M8 x 25	*	4	87	KEY-DRIFT	9618839.00	1
37	WASHER M8	*	8	88	CHUCK w/ KEY, 5/8"-JT3	9632138.05	1
38	MOTOR MOUNT	9644932.01	1	89	CHUCK KEY	9632139.05	1
39	LOCK WASHER, M12	*	2	90	ARBOR MT2/JT3	9627926.00	1
40	NUT HEX, M12	*	2	91	SPINDLE SHAFT	9644914.01	1
41	MOTOR	9644931.01	1	92	BEARING BALL, 6204ZZ	*	1
42	NUT HEX, M8	*	4	95	CORD and PLUG	9644933.01	1
43	HEX SOCKET SET SCREW, M8 x 12	*	1	96	ADJUSTING NUT	9644956.01	2
44	PULLEY MOTOR	9644937.01	1	97	LOCK WASHER	9644962.01	1
45	V-BELT, M-24	9644939.01	2	98	ADJUSTING SCREW	9644957.01	1
46	PULLEY HOUSING	9644938.01	1	99	LOCK NUT	9644963.01	1
47	RUBBER BUSHING	*	4	100	NUT HEX M10	9644964.01	1
48	WASHER, M6	*	4	Δ	OWNER'S MANUAL	9644895.02	

(Δ) Not shown.

(N/A) Not available as repair part.

(\*) Standard hardware item, available locally.

## PALMGREN WARRANTY

C.H. Hanson / Palmgren warrants their products to be free of defects in material or workmanship. This warranty does not cover defects due directly or indirectly to misuse, abuse, normal wear and tear, failure to properly maintain the product, heated, ground or otherwise altered, or used for a purpose other than that for which it was intended.

The warranty does not cover expendable and/or wear part (i.e. v-belts, screws, abrasives, jaws), damage to tools arising from alteration, abuse or use other than their intended purpose, packing and freight. The duration of this warranty is expressly limited to the terms noted below beginning from the date of delivery to the original user.

**The Palmgren branded items carry the following warranties on parts:**

**All vises, clamps, positioning tables, tombstones, jack screws and vise accessories - LIFETIME.**

**All bench grinders, drill presses, tapping machines, band saws, lathes, milling machines, arbor presses, abrasive finishing machines and work stands - 3 YEARS.**

The obligation of C.H. Hanson / Palmgren is limited solely to the repair or replacement, at our option, at its factory or authorized repair agent of any part that should prove inoperable. Purchaser must lubricate and maintain the product under normal operating conditions at all times. Prior to operation become familiar with product and the included materials, i.e. warnings, cautions and manuals.

**Failure to follow these instructions will void the warranty.**

This warranty is the purchaser's exclusive remedy against C.H. Hanson for any inoperable parts in its product. Under no circumstances is C.H. Hanson liable for any direct, indirect, incidental, special or consequential damages including loss of profits in any way related to the use or inability to use our products. This warranty gives you specific legal rights which may vary from state to state.

**PALMGREN**<sup>®</sup>

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