



20"
HEAVY DUTY FLOOR MODEL
DRILL PRESS

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

DESCRIPTION

Palmgren Drill Presses feature a heavy 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 and features T-slots for secure, accurate mounting of workpiece and also a coolant trough. Digital readout displays spindle depth and RPM. 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 1½ HP, 1725 RPM motor. Chuck and chuck arbor 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 352 lbs, proper tools, equipment and qualified personnel should be employed in all phases of unpacking and installation.

Crates should be handled with care to avoid damage from dropping, bumping, etc. Store and unpack crates with correct side up. After uncrating 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.

Drill press is shipped unassembled. Locate and identify the following assemblies and loose parts:

- A Head Assembly
- B Table
- C Base
- D Column Assembly
- E Feed Handle Knob
- F Feed Handle
- G Table Handle
- H Table Handle Knob
- I Center Pulley Assembly

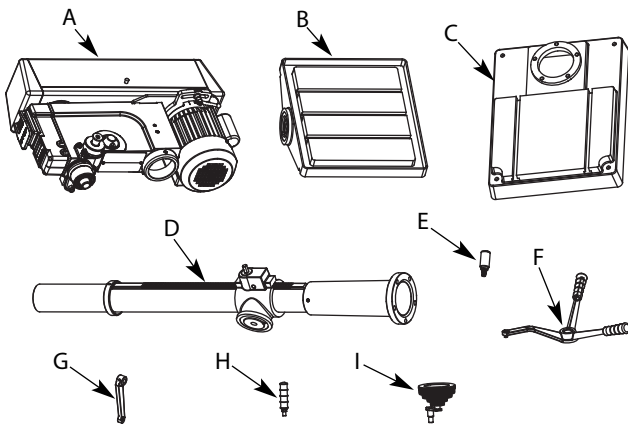


Figure 1 - Unpacking

Not Shown: Drill Chuck with Key, Arbor, Drill Drift, Belt Tension Handle, Table Bolt, Taper Pin with Nut, five M12 x 45 Socket Head Bolts, 3, 5 and 10mm Hex Wrenches, four M8 x 125 Hex Head Bolts, four M8 Lock Washers, eight M8 Flat Washers, and four M8 Hex Nuts.

IMPORTANT: The tool has been coated with a protective coating. In order to ensure proper fit and operation the coating must be removed. Remove coating with mild solvents such as mineral spirits and a soft cloth. Nonflammable solvents are recommended. After cleaning, cover all exposed surfaces with a light coating of oil. Paste wax is recommended for table top.

CAUTION: Never use highly volatile solvents. Avoid getting cleaning solution on paint as it may tend to deteriorate these finishes. Use soap and water on painted components.

SPECIFICATIONS

Chuck size	5-20mm, JT3
Spindle taper	MT3
Spindle travel	6"
Quill diameter	2.44"
Quill collar diameter	2.95" (75mm)
Column diameter	3.62"
Speeds	16
RPM	120-3605
Swing	20"
Table size	16 ⁵ / ₈ x 18 ⁵ / ₈ "
Table working surface	16 ⁵ / ₈ x 18 ⁵ / ₈ "
T-Slots	3 x 14mm
Base size	17 ⁵ / ₈ x 22 ¹ / ₂ "
Base working surface	13 x 16"
Drilling capacity (cast iron)	1"
Distance, spindle to table:	4 ³ / ₄ -26 ³ / ₈ "
Distance, spindle to base:	45 ³ / ₈ "
Overall height:	69.7"
Weight	336 lbs
Shipping weight	352 lbs
Motor	1½ HP, 120/240 V, 14.0/7.0 A, 1725 RPM, 60 Hz

SAFETY RULES

PROPOSITION 65 WARNING: Some dust created by power sanding, sawing, grinding, drilling and other construction activities contains 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 vary, 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.

Before any work is done, carefully read the cautions listed. Working safely prevents accidents.

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 which comply 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 cutting operation is dusty.
- Be alert and think clearly. Never operate power tools when tired, intoxicated or when taking medications that cause drowsiness.

WORK AREA SHOULD BE READY 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 outlet should be available for tool. Three-prong 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 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.
- Read operating instructions manual for specific maintaining and adjusting procedures.
- Keep tool lubricated.
- Use sharp cutters and keep the tool clean for safest operation.
- Remove adjusting tools. Form the habit of checking that adjusting tools are removed before turning on the machine.
- 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, breakage, mounting and any other condition that may affect a tool's operation.
- Damaged parts should be properly repaired or replaced. Do not perform makeshift repairs. (Use the parts list provided to order replacement parts.)

KNOW HOW TO USE TOOL

- Use the right tool for the job. Do not force tool or attachment to do a job for which it was not designed.
- Disconnect tool when changing accessories such as bits, cutters and the like.
- Avoid accidental start-up. Make sure switch is in OFF position before plugging in.
- Do not force tool. It will work most efficiently at the rate for which it was designed.
- Handle workpiece correctly. Secure work with clamps or vise. Leave hands free to operate machine, Protect hands from possible injury.
- 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 cutter is unintentionally contacted.
- Keep hands away from moving parts and cutting surfaces.
- Know your tool. Learn its operation, application and specific limitations.
- Feed work into a bit or cutter against the direction of rotation of bit or cutter.

- Turn the machine off if it jams. A cutter jams when it digs too deeply into the workpiece. (The motor force keeps it stuck in workpiece.)
- Use recommended accessories. Refer to page 11. Use of improper accessories may cause risk of injury to persons.
- Clamp workpiece or brace against column to prevent rotation.
- Use recommended speed for drill accessory and workpiece material.

WARNING: Think Safety! Safety is a combination of operator common sense and alertness at all times when drill press is being used.

ASSEMBLY

MOUNT COLUMN ASSEMBLY TO BASE

Refer to Figure 7.

- Place base (Ref. No. 1) on flat level surface.
- Mount column assembly (Ref. No. 7) to base using five socket head bolts (Ref. No. 6).

MOUNT TABLE

Refer to Figure 7.

- Attach crank handle (Ref. No. 20) to shaft of worm gear (Ref. No. 19), rotate worm gear to remove slack, and shoulder crank handle with set screw (Ref. No. 17). Attach crank handle knob (Ref. No. 21) to handle.
- Attach table (Ref. No. 11) to table bracket (Ref. No. 13) using table bolt (Ref. No. 9).

Do not tighten bolt completely at this time.

- Position table at 0°. Insert taper pin (Ref. No. 10) into the hole under the table located below the table bolt. With a mallet, tap pin completely into bracket. Thread hex nut onto pin (thread on lightly—this nut is used to draw pin out when adjusting table angle). Tighten the table bolt completely at this time.

MOUNT HEAD ASSEMBLY

Refer to Figure 9.

WARNING: Although compact, the drill press head assembly is heavy. Two people are required to mount the drill press head assembly onto the column.

- Slide drill press head assembly onto top of column.
- Position head so that it is centered over base.
- Secure head by tightening the set screws (Ref. No. 39) on the right side of the head casting.

ATTACH BELT TENSION HANDLE

Refer to Figure 8.

- Thread handle (Ref. No. 18) into motor mount plate (Ref. No. 14).

MOUNT QUILL FEED HANDLE ASSEMBLY

Refer to Figure 8.

- Place key (Ref. No. 26) into keyway of pinion (Ref. No. 27).
- Place quill feed handle assembly (Ref. No. 25) over pinion.
- Secure handle assembly with flat head screw (Ref. No. 22) and plate (Ref. No. 23).
- Thread quill feed knob (Ref. No. 24) into quill feed handle assembly.

INSTALL CENTER PULLEY ASSEMBLY

Refer to Figures 8 and 9.

- Loosen motor lock handle (Fig. 8, Ref. No. 17) and use belt tension handle (Fig. 8, Ref. No. 18) to pivot motor toward front of drill press.

- Open cover of pulley housing (Fig. 9, Ref. No. 2) and insert center pulley assembly (Fig. 8, Ref. No. 9) into the head casting.
 - Choose a speed from Figure 5 or the pulley housing speedchart and connect spindle pulley to center pulley with front drive belt (Fig. 8, Ref. Nos. 2, 8 and 9). Connect center pulley to motor pulley with rear drive belt (Fig. 8, Ref. Nos. 9, 10 and 11).
- NOTE:** Front drive belt is type 310J4 and rear drive belt is type 290J4.
- Pull handle (Fig. 8, Ref. No. 18) to move motor toward rear of drill press and tighten motor lock handle (Ref. No. 17).

MOUNT DRILL CHUCK AND ARBOR

Refer to Figure 8.

- Be sure spindle taper, arbor taper and chuck taper are clean and dry.
- Use the provided chuck key (Ref. No. 32) to adjust the jaws of the chuck (Ref. No. 31) until they are recessed inside the drill chuck body.
- Place drill chuck on a workbench face down. Arbor (Ref. No. 30) has a short taper and a long taper. Place short taper into top of drill chuck and tap with a rubber or wooden mallet.
- Slide arbor into the spindle (Ref. No. 29) while slowly rotating drill chuck. Spindle has a rectangular pocket in which the tang fits into. Once tang is oriented correctly, drill chuck will not rotate without turning the spindle.
- Tap the end of drill chuck with a rubber or wooden mallet to seat it into the spindle.

Hardware (Four M8 x 125 hex head bolts, M8 lock washers, M8 hex nuts and eight M8 flat washers) has been provided for mounting the drill press to a wood base plate. This is recommended if you intend to place the drill press on a mobile base. The minimum recommended size of the wood base plate is $\frac{3}{4}$ x 24 x 24".

INSTALLATION

Refer to Figures 2, 3 and 4.

MOUNT DRILL PRESS

- Drill press must be mounted to flat level surface. Use shims or machine mounts if necessary. Do not mount drill press in direct sunlight.
- Be sure to bolt drill press to floor or bench securely to prevent tipping and minimize vibration.
- Tighten all nuts and bolts that may have loosened during shipment.

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 up to 300V and a 3-prong grounding type plug rated at 115V (See Figure 2) 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 (Figure 2).

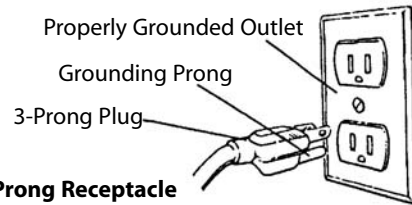


Figure 2 – 3-Prong Receptacle

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 3) is available for connecting plugs to a two pole outlet if it is properly grounded.

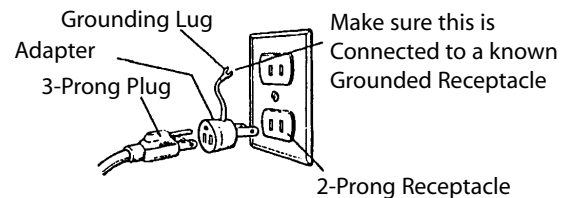


Figure 3 – 2-Prong Receptacle with adapter

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.
- 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 LENGTH (120 VOLTS)

Wire Size	A.W.G.
Up to 25 ft.	14
25-50 ft.	12

NOTE: Using extension cords over 50 ft. long is not recommended.

EXTENSION CORD LENGTH (240 VOLTS)

Wire Size	A.W.G.
Up to 50 ft.	18
50-100 ft.	16
100-200 ft.	14
200-300 ft.	12

NOTE: Using extension cords over 300 ft. long is not recommended.

POWER SOURCE

Drill press requires a 120/240 volt, 60 Hz power source.

To use the drill press with a 240V power supply, have a qualified electrician attach a 240 volt, 20/30A three-prong plug onto drill press line cord.

ELECTRICAL CONNECTIONS

Refer to Figure 4.

WARNING: All electrical connections must be performed by a qualified electrician. Make sure unit is off and disconnected from power source while motor is mounted, connected, reconnected or anytime 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 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 4 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.

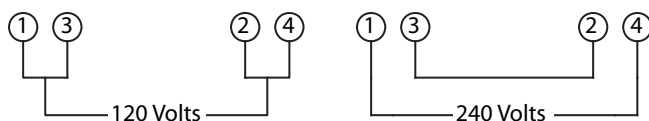


Figure 4 – Wiring Schematic for Motor

OPERATION

Refer to Figures 5-9.

WARNING: Read and understand operating instructions and parts manual before operating this machine.

CAUTION: The operation of any power tool can result in foreign objects being thrown into the eyes, which can result in severe eye damage. Always wear safety glasses complying with United States ANSI Z87.1 (shown on package) before commencing power tool operation.

STARTING AND STOPPING THE DRILL PRESS

Refer to Figure 9.

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.

- The ON/OFF switch (Ref. Nos. 13 and 14) is located on the front of the head casting.
- To turn the drill press on, push green ON button. Always allow drill bit to come up to speed before drilling.
- 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.

SPEED ADJUSTMENTS

Refer to Figures 5 and 8.

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

- To change spindle speed, loosen motor lock handle (Ref. No. 17), pivot the motor toward front of drill press. This will loosen the belt and permit relocating the belt to the desired pulley groove for the required spindle speed (See Figure 5, page 6).
- After belt has been repositioned, pull handle (Ref. No. 18) to move motor toward rear of drill press and tighten motor lock handle.
- Check belt for proper tension and make any final adjustment. A belt is properly tensioned when light pressure applied to mid-point of the belt produces about 1/2" deflection.

TABLE ADJUSTMENTS

Refer to Figure 7.

- Height adjustments: To adjust table, loosen locking handle (Ref. No. 14) and turn crank handle (Ref. No. 21) to desired height. Immediately retighten table bracket locking handle.
- Rotation of work table : Loosen table locking handle (Ref. No. 14) and rotate table (Ref. No. 11) to desired position and retighten handle.
- Tilting work table: Loosen table bolt (Ref. No. 9). Remove pin and nut (Ref. No. 10). To do this, tighten nut until pin slips out easily. Tilt table to desired angle up to 45° and retighten table bolt. Reinsert pin and nut when returning the table to 0° position.
- To obtain more distance between chuck and table, the work table can be rotated 180° and base can be used as a work surface. This permits drilling of larger objects.
- Clamp table securely after adjustments have been made.

DEPTH STOP ADJUSTMENT

Refer to Figure 8.

To control drilling depth, use scale (Ref. No. 39) to adjust to desired depth. Depress and hold pin, slide depth stop nut (Ref. No. 41) along lead screw until bottom edge of nut coincides with the desired depth on the scale, then release pin. Use this feature to drill more than one hole to the same depth.

MOUNT DRILL BIT

Refer to Figure 8.

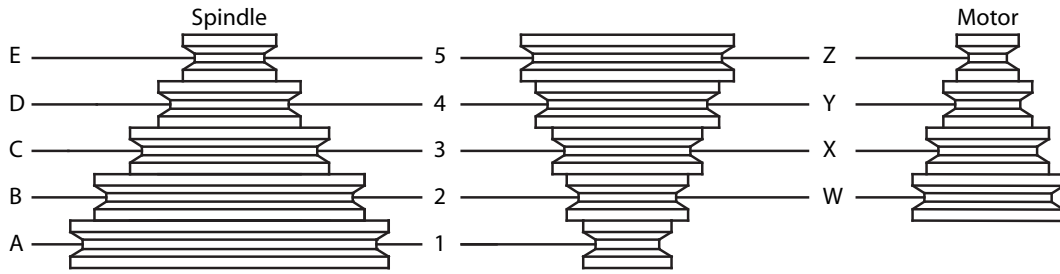
WARNING: Be sure drill press is turned off and is disconnected from power source before adjusting speeds.

- Place drill bit in jaws of drill chuck.
- Tighten chuck with drill chuck key. Be sure to tighten the chuck using all three key positions on the chuck body and remove chuck key.
- Use only the self-ejecting chuck key (Ref. No. 32) supplied with this drill press, or a duplicate key. Use of any other key might allow start up with the key still in the chuck. An airborne key could strike the operator and cause injury.

REMOVE THE CHUCK

Refer to Figure 8.

- Rotate quill feed handle (Ref. No. 25) until slot is exposed in the side of the quill (Ref. No. 29). Lock quill in position.



RPM	Belt Location
120	A1-5Z
161	A1-4Y
231	B2-5Z
281	A1-3X
309	B2-4Y
424	C3-5Z
540	B2-3X
567	C3-4Y
596	A1-2W
622	D4-5Z
973	E5-4Y
1453	D4-3X
1699	E5-3X
2101	C3-2W
3083	D4-2W
3605	E5-2W

Figure 5 – Spindle Speed Adjustment

RPM	Wood		Zinc Diecast		Alum. & 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	
3605	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
231	2	50.8	1	25.4	—	—	—	—	—	—	—	—	9/16	14.3	1/2	12.7

- Rotate spindle until inner slot is aligned with outer slot. You will see through spindle when slots are properly aligned.
- Insert the drift key (Ref. No. 51) into the slots and tap lightly with hammer. The arbor and chuck will drop from spindle.

DIGITAL DISPLAY PANEL

Refer to Figure 6.

- Display panel 'A' shows the depth of the spindle and spindle RPM.
- Button 'B' turns power on and off to Display 'A'.
- Button 'C': Press once for spindle depth in inches; press again for spindle depth in mm; press once again for spindle RPM.
- Button 'D' resets display at zero for spindle depth.

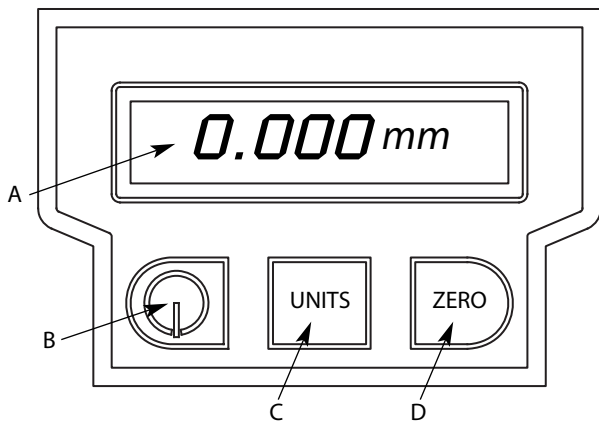


Figure 6 – Digital Display Panel

MAINTENANCE

WARNING: Turn switch off and remove plug from power source outlet before maintaining or lubricating your drill press

DRIVE BELT

Replace drive belt when worn.

LUBRICATION

Refer to Figures 7 and 8.

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

- Lower quill assembly (Figure 8, Ref. No. 29) all the way down.
- Apply lubricant around the inside of the hole in the spindle pulley (Figure 8, Ref. No. 2).
- Apply lubricant to rack (teeth) on quill (Figure 8, Ref. No. 29) while extended below drill press head.
- Apply lubricant to rack and pinion gear (Figure 7, Ref. Nos. 8 and 18) on column and table assembly.

CLEAN MOTOR

Frequently blow out any dust that may accumulate inside motor. If power cord is worn, cut or damaged in any way, have it replaced immediately.

TROUBLESHOOTING

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

NOTES

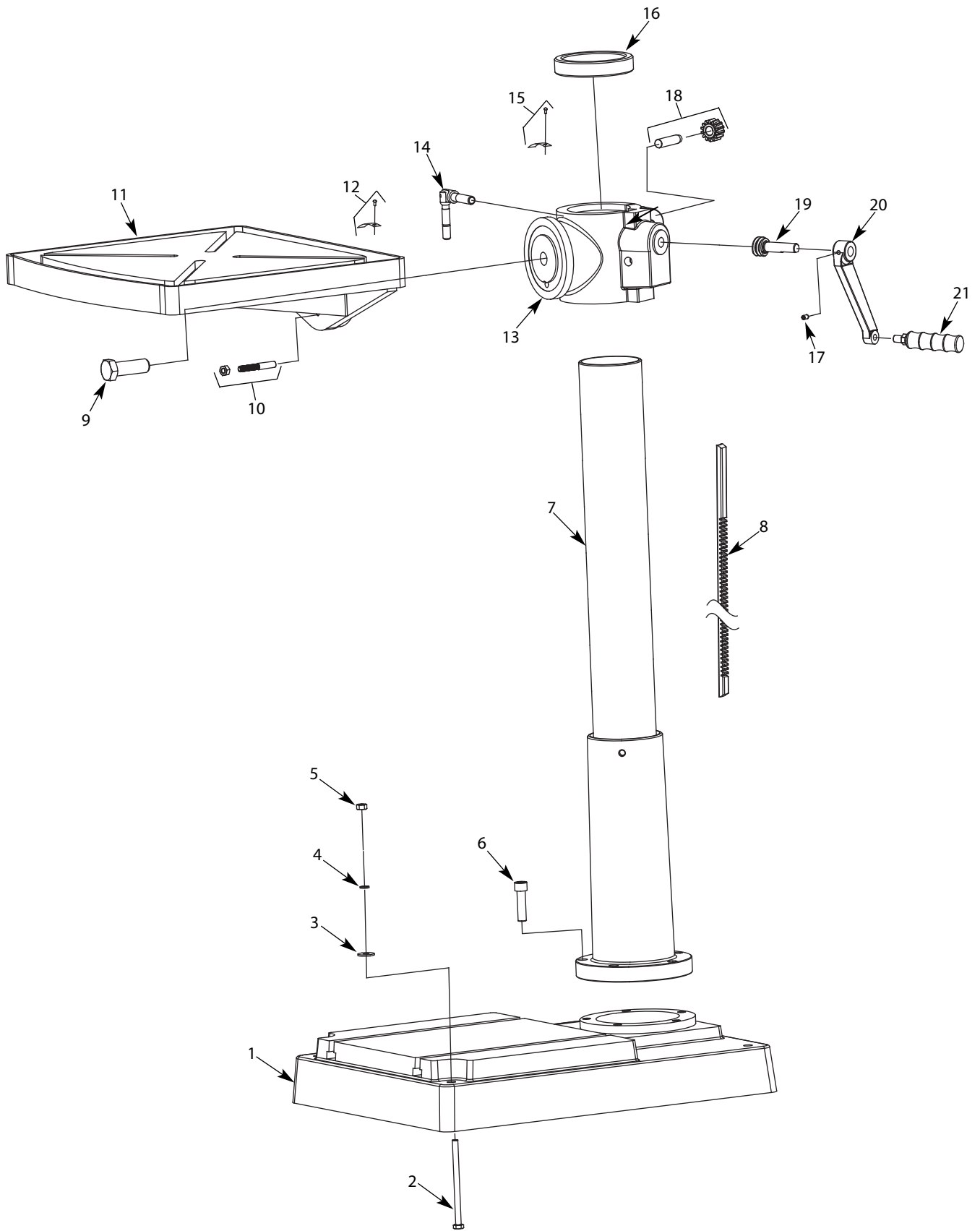


Figure 7 - Replacement Parts Illustration for Base

REPLACEMENT PARTS LIST FOR BASE

Ref. No.	Description	Part Number for: 80207	Qty.
1	Base	31635.00	1
2	8-1.25 x 125mm Hex head bolt	*	4
3	8mm Flat washer	*	8
4	8mm Lock washer	*	4
5	8-1.25mm Hex nut	*	4
6	12-1.75 x 45mm Socket head bolt	*	5
7	Column assembly	31958.00	1
8	Rack	31959.00	1
9	Table bolt	31971.00	1
10	Taper pin and nut	31972.00	1
11	Table	31973.00	1
12	Scale set	31974.00	1
13	Table bracket	31975.00	1
14	Locking handle	31976.00	1
15	Indicator set	31977.00	1
16	Rack retaining ring	31978.00	1
17	6-1.0 x 10mm Set screw	*	1
18	Pinion gear and shaft	31979.00	1
19	Worm gear	31980.00	1
20	Crank	31981.00	1
21	Handle	31982.00	1
Δ	Operator's manual	32000.19	1
Recommended Accessories			
Δ	4" Angle Vise	11351	1
Δ	4" Drill Press Vise	12352	1
Δ	4" Standard Vise	12403	1
Δ	6" Quick Grip Vise	12621	1
Δ	6" Standard Vise	12601	1
Δ	6" Cross Vise	30601	1

Δ Not Shown.

* Standard hardware item available locally.

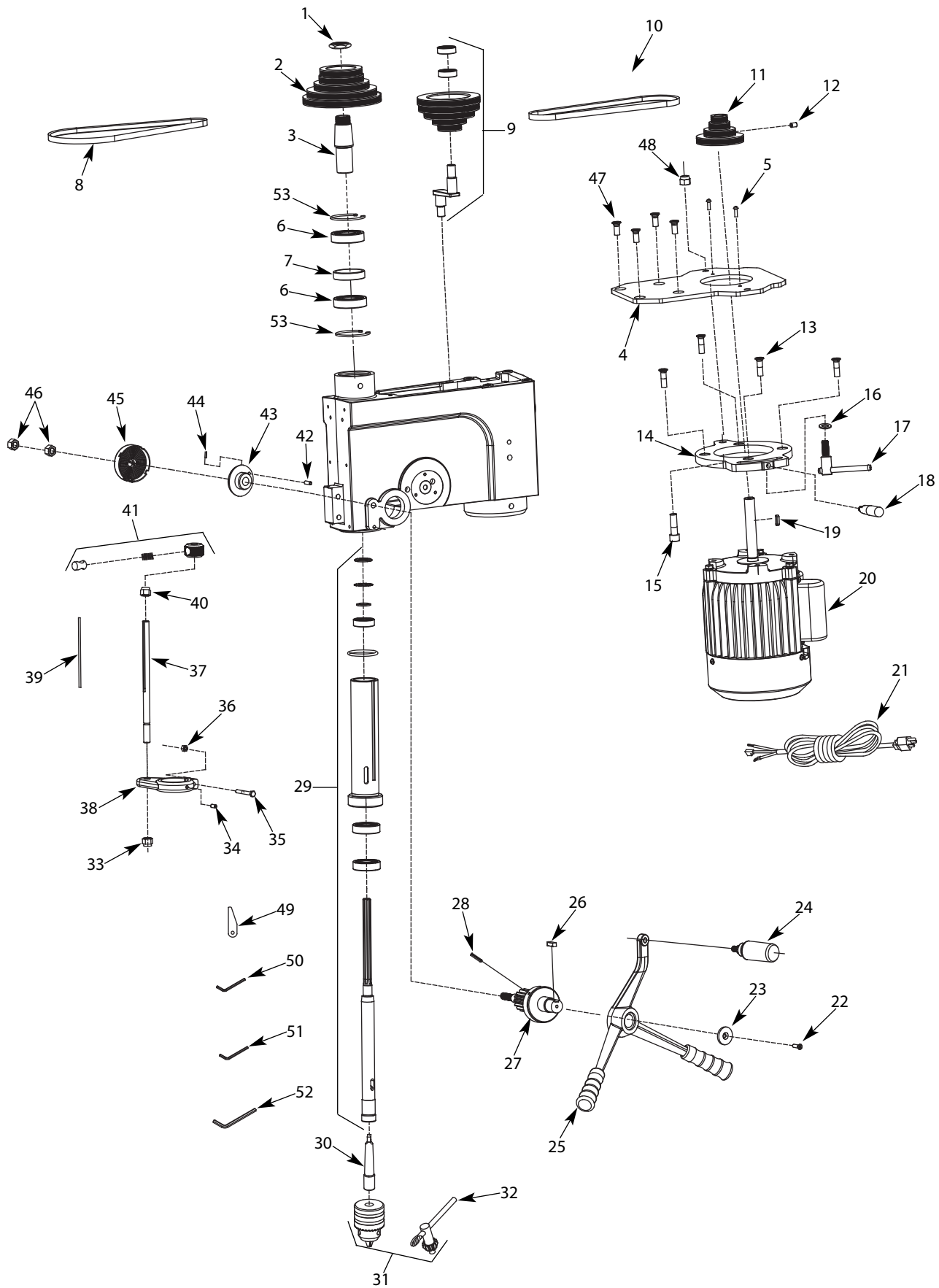


Figure 8 - Replacement Parts Illustration for Spindle and Drive

REPLACEMENT PARTS LIST FOR SPINDLE AND DRIVE

Ref. No.	Description	Part No.	Qty.	Ref. No.	Description	Part No.	Qty.
1	Spindle nut	32001.00	1	28	5 x 26mm Spring pin	32022.00	2
2	Spindle pulley	32002.00	1	29	Quill assembly	32023.00	1
3	Spindle sleeve	32003.00	1	30	MT3/JT3 Arbor	18338.00	1
4	Plate	32035.00	1	31	JT3 chuck with key	32024.00	1
5	6-1.0 x 8mm Cheese head screw with flat washer	32251.00	2	32	Chuck key	32025.00	1
6	6206zz Ball bearing	20006.00	2	33	12-1.75 Fiber hex nut	*	1
7	Spacer	32006.00	1	34	6-1.0 x 12mm Set screw	*	1
8	Front drive belt 310J	32007.00	1	35	6-1.0 x 45mm Hex head bolt	*	1
9	Center pulley assembly	32008.00	1	36	6-1.0mm Hex nut	*	1
10	Rear drive belt 290J	32009.00	1	37	Depth stop lead screw	32026.00	1
11	Motor pulley	32010.00	1	38	Depth stop collar	32027.00	1
12	8-1.25 x 12mm Set screw	*	1	39	Scale	32028.00	1
13	10-1.5 x 25mm Tap screw	32011.00	4	40	10-1.5mm Fiber hex nut	*	1
14	Motor mount plate	32662.00	1	41	Depth stop nut assembly	32029.00	1
15	12-1.75 x 40mm Socket head bolt	*	1	42	2.5 x 10mm Spiral pin	32030.00	1
16	12mm Flat washer	*	1	43	Spring seat	32031.00	1
17	Motor locking handle	32013.00	1	44	6 x 10mm Spiral pin	32032.00	1
18	Belt tension handle	32359.00	1	45	Cap cover with spring	32033.00	1
19	6 x 6 x 40mm Key	07338.00	1	46	½"-20 Hex nut	*	2
20	Motor	32015.00	1	47	10-1.5 x 25mm Tap screw	32034.00	4
21	Line cord	32016.00	1	48	12-1.75mm Hex nut	*	1
22	6-1.0 x 16mm Tap screw	32004.00	1	49	Drift key	18839.00	1
23	Plate	32017.00	1	50	3mm Hex wrench	00149.00	1
24	Quill feed knob	32018.00	1	51	5mm Hex wrench	00150.00	1
25	Quill feed handle w/grips	32019.00	1	52	10mm Hex wrench	32036.00	1
26	8 x 7 x 24mm Key	32020.00	1	53	Retaining ring	32373.00	2
27	Pinion	32021.00	1	Δ	Run capacitor	32188.00	1
				Δ	Start Capacitor	32185.00	1

Δ Not Shown.

* Standard hardware item available locally.

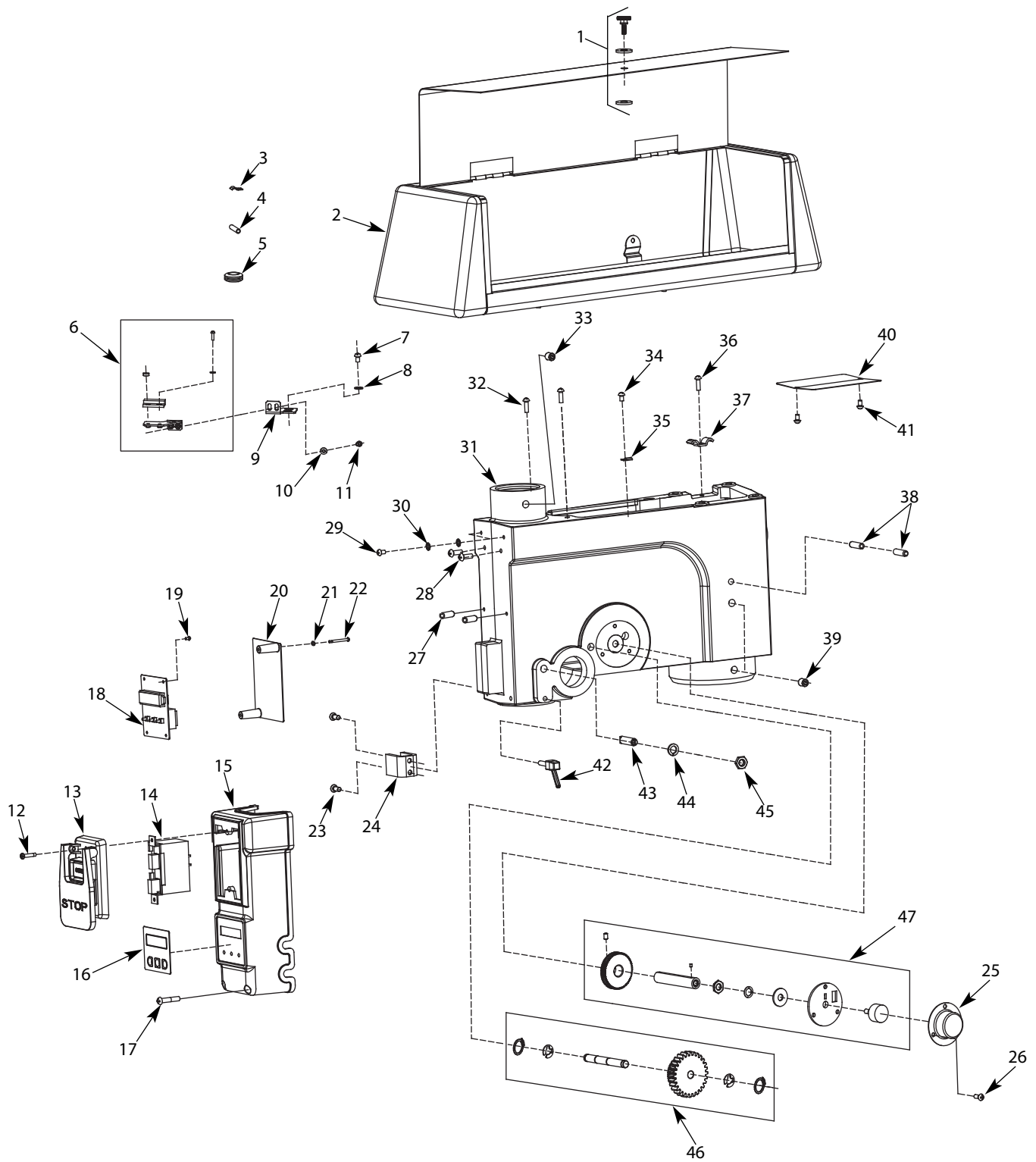


Figure 9 - Replacement Parts Illustration for Head

REPLACEMENT PARTS LIST FOR HEAD

Ref. No.	Description	Part No.	Qty.	Ref. No.	Description	Part No.	Qty.
1	Knob assembly	32037.00	1	25	Cover	32061.00	1
2	Pulley housing	32038.00	1	26	5-0.8 x 10mm Pan head screw	*	3
3	Clamp	32039.00	1	27	5 x 8mm Spring pin	32051.00	2
4	Foam	32040.00	1	28	6-1.0 x 16mm Pan head screw	*	2
5	Grommet	32041.00	1	29	5-0.8 x 8mm Pan head screw	*	2
6	Speed sensor assembly	32042.00	1	30	5mm Serrated washer	*	4
7	5-0.8 x 10mm Pan head screw	*	2	31	Head	N/A	1
8	5mm Flat washer	*	2	32	6-1.0 x 12mm Cheese head screw with flat washer	32155.00	2
9	Bracket	32043.00	1	33	Set screw	32052.00	1
10	4mm Flat washer	*	2	34	5-0.8 x 8mm Pan head screw	*	1
11	4-0.7 x 10mm Socket head bolt	*	2	35	Clamp	32053.00	1
12	4-0.7 x 20mm Pan head screw	*	2	36	5-0.8 x 16mm Pan head screw	*	1
13	Switch paddle and cover assembly	32044.00	1	37	Clamp	32054.00	1
14	Switch	31089.00	1	38	8 x 24mm Spring pin	32055.00	2
15	Switch housing	32045.00	1	39	10-1.5 x 12mm Set screw	*	2
16	Display cover	32046.00	1	40	Plate	32056.00	1
17	6-1.0 x 30mm Pan head screw	*	2	41	5-0.8 x 8mm Pan head screw	*	2
18	Circuit board	32047.00	1	42	Quill lock handle	32057.00	1
19	3-0.5 x 5mm Pan head screw	*	4	43	Dog point screw	32062.00	1
20	Circuit board shield	32048.00	1	44	10mm Lock washer	*	2
21	Washer	32049.00	2	45	10-1.5mm Hex jam nut	*	1
22	3-0.5 x 35mm Pan head screw	*	2	46	Transfer shaft assembly	32059.00	1
23	6-1.0 x 12mm Tap screw	32252.00	2	47	Potentiometer shaft assembly	32060.00	1
24	Bracket	32050.00	1				

* Standard hardware item available locally.

N/A Not available as replacement part.

WARRANTY

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 parts (i.e. v-belts, coated screws, abrasives), 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 one year parts and labor, unless otherwise noted below beginning from the date of delivery to the original user. The Palmgren products carry the following warranties on parts with a 1 year warranty on labor:

- USA Machine vises – Lifetime
- IQ Machine vises – Lifetime
- Bench vises – Lifetime
- Positioning tables – Lifetime
- Bench grinders & buffers – 3 years
- Tapping machines – 2 years
- Drilling machines – 2 years
- Finishing machines – 2 years
- Band saws – 2 years
- Work stands – 2 years
- Arbor presses – 2 years
- Metal framing equipment – 2 years
- Accessories – 1 year

The obligation of 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 deficient. 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 Palmgren for any deficiency in its products. Under no circumstances is Palmgren liable for any direct, indirect, incidental, special or consequential damages including lost 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.

SERVICE & REPAIR

1. If a Palmgren product requires a repair or warranty service **DO NOT** return the product to the place of purchase.
2. All warranty related work must be evaluated and approved by Palmgren.
3. Prior to returning any item the user must obtain factory approval and a valid RGA number.
4. For instructions and RGA number call toll free (800) 621-6145.

