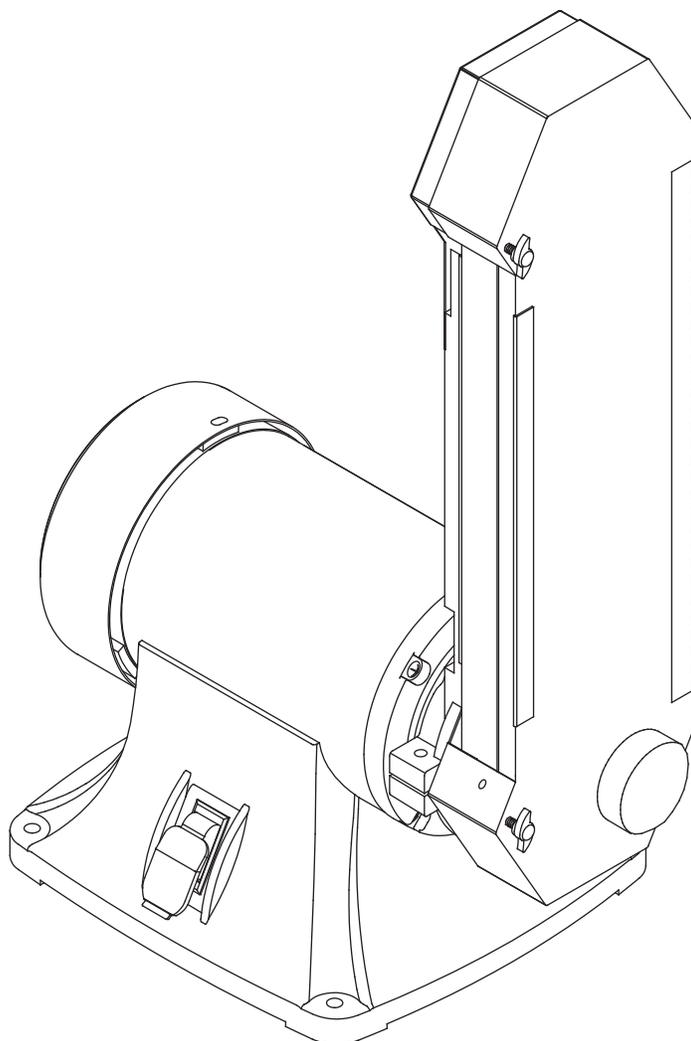


# PALMGREN®

## 1", 2" & 4" BELT GRINDERS



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

**DESCRIPTION**

Palmgren Belt Grinders are used for grinding, deburring, squaring, polishing and finishing metals, woods and plastics. Belt grinders have totally enclosed, fan-cooled direct drive motors. Belt housing swivels from vertical to horizontal for grinding long workpieces. Features include a fully adjustable tool rest, quick release belt tension and tracking mechanism, OSHA compliant safety guard with dust collection port and easy opening side door for belt changes.

**UNPACKING**

Check for shipping damage. If damage has occurred, a claim must be filed with the carrier immediately. Check for completeness. Immediately report missing parts to dealer.

The grinder comes assembled as one unit. Additional parts which need to be fastened to grinder should be located and accounted for before assembling.

- A Stop rod with hex nut
- B Bracket
- C Tool rest
- D 3/8 x 16 x 1/2" Knob with flat washer
- E 5/16-18 x 1" Knob with flat washer
- F 12mm Open end wrench
- G 6mm Hex wrench

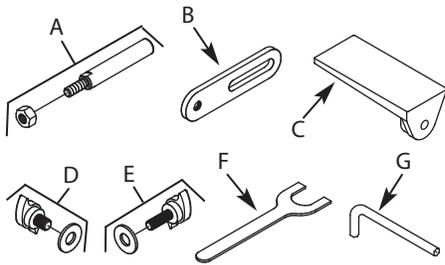


Figure 1 – Unpacking

**SPECIFICATIONS**

**82401 - 1" Belt Grinder**

Belt size	.....1 x 42", 80 grit
Belt platen area	.....10 x 1 1/2"
Belt speed	.....1800 FPM
Dust collection chute	......2" diameter
Dimensions (L x W x H)	......22 x 16 x 24"
Switch	.....DP, Locking rocker
Motor	.....1/2 Hp, 115/230V, 5/2.5 AMPS, 1725 RPM
Weight	......46 lbs

**82402 - 2" Belt Grinder**

Belt size	......2 x 48", 80 grit
Belt platen area	......12 1/4 x 2 1/2"
Belt speed	......4500 FPM
Dust collection chute	......2" diameter
Dimensions (L x W x H)	......25 x 16 1/2 x 26"
Switch	.....DP, Locking rocker
Motor	......3/4 Hp, 115/230V, 7/3.5 AMPS, 3450 RPM
Weight	......56 lbs

**82404 - 4" Belt Grinder**

Belt size	......4 x 36", 80 grit
Belt platen area	......7 3/8 x 4 1/2"
Belt speed	......3600 FPM

Dust collection chute	......2" diameter
Dimensions (L x W x H)	......19 x 20 x 21"
Switch	.....DP, Locking rocker
Motor	......3/4 Hp, 115/230V, 7/3.5 AMPS, 3450 RPM
Weight	......55 lbs

**SAFETY RULES**

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

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

**WARNING:** Some dust created by power sanding, sawing, grinding, drilling and other construction activities contains chemicals known 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.

**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.

**SAFETY RULES (CONTINUED)**

- Keep tool 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 accessories such as grinding wheels, buffing wheels and the like.
- 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 over.
- 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.
- Do not over tighten wheel nut. Replace cracked wheel immediately. Use only flanges supplied with the grinder.
- Adjust distance between wheel and tool rest to maintain  $\frac{1}{16}$ " or less gap.
- Handle the workpiece correctly. Whenever possible, use tool rest to support workpiece during grinding operation. Turn tool off if it jams.
- Always use guards and eyeshields.
- Clean grinding dust from beneath tool frequently.

**ASSEMBLY**

Refer to Figure 7.

**CAUTION:** Do not attempt assembly if parts are missing. Use parts list to order repair parts.

**ASSEMBLE TOOL REST**

- Slide  $\frac{5}{16}$ -18 x 1" knob (Ref. No. 15) and  $\frac{5}{16}$ " flat washer (Ref. No. 22) through hole in the belt tool rest (Ref. No. 14).
- Thread knob into the tool rest bracket (Ref. No. 11). Tighten finger tight.
- Attach the above assembly to slot on platen (Ref. No. 10) using  $\frac{3}{8}$ " flat washer and  $\frac{3}{8}$ -16 x  $\frac{1}{2}$ " knob (Ref. Nos. 12 and 13).
- Position tool rest so that distance between tool rest and belt is  $\frac{1}{16}$ " or less. Use square to set tool rest 90° to belt. Secure all nuts and bolts tight.

**ATTACH STOP BAR**

Refer to Figure 7.

A stop bar with nut is provided for positive stop when the belt assembly position is adjusted horizontally. To attach stop bar:

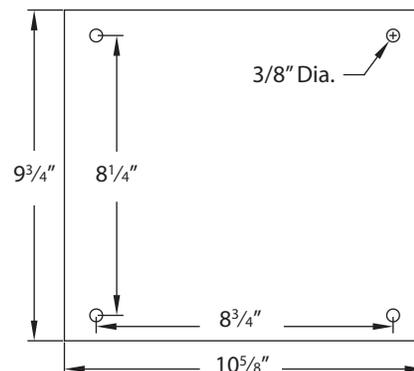
- Thread the stop bar (Ref. No. 36) into the threaded hole on the rear side of platen (Ref. No. 10).
- Tighten hex nut. (Ref. No. 34).

**INSTALLATION****MOUNT GRINDER**

Refer to Figure 2.

Choose a suitable location to mount the grinder. The grinder must be installed in a place with ample lighting and correct power supply. To install grinder:

- The grinder must be bolted to a firm, level surface.
- Make sure there is plenty of room for moving the workpiece. There must be enough room that neither operators nor bystanders will have to stand in line with the workpiece while using the tool. Allow room so that belt assembly can be positioned horizontally.
- Grinder can be installed on a workbench or a tool stand (see Recommended Accessories, page 9) using bolts, lock washers and hex nuts (not supplied).
- Figure 2 shows the base dimensions and mounting holes. See Specifications for required space to allow belt assembly in horizontal position.

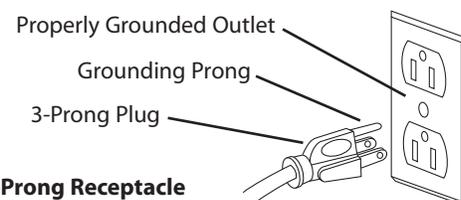


**Figure 2 – Base Dimension and Mounting Holes**

**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 grinder is equipped with an approved 3-conductor cord rated at 300V and a 3-prong, grounding type plug (See Figure 3) for your protection against shock hazards.
- Grounding plug should be plugged directly into a properly installed and grounded 3-prong grounding-type receptacle (See Figure 3).



**Figure 3 – 3-Prong Receptacle**

**INSTALLATION CONTINUED**

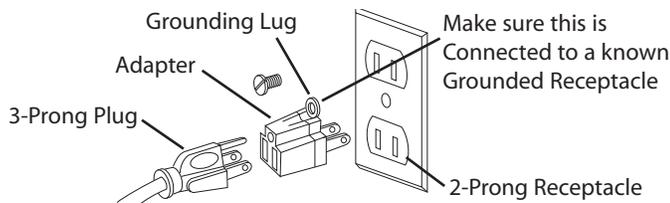
- Do not remove or alter grounding prong in any manner. In the event of a malfunction or breakdown, grounding provides a path of least resistance for electrical shock.

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



**Figure 4 – 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 LENGTH**

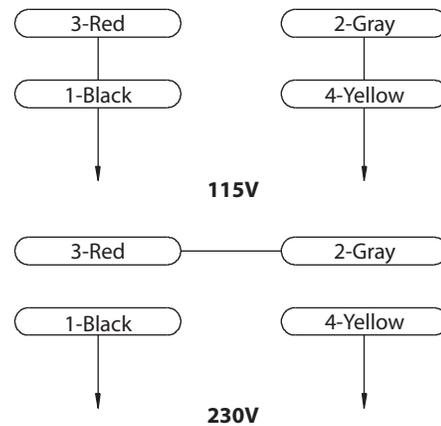
Wire Size .....	A.W.G.
Up to 25 ft .....	18
25 to 50 ft .....	16
50 to 100 ft .....	14

**NOTE:** Using extension cords over 100 ft. long is not recommended.

**ELECTRICAL CONNECTIONS**

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

- Motor and wires are installed as shown in wiring diagram (See Figure 5. Motor is assembled with approved, 3-conductor cord to be used at 115/230 volts. Motor is prewired at the factory for 115 volts.
- To use the grinder with a 230V power supply, have a qualified electrician rewire motor and attach a 230 volt, 15A three-prong plug onto grinder line cord.



**Figure 5 – Wiring Diagram**

**OPERATION**

Refer to Figures 6 and 7.

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

**CAUTION:** Always observe the following safety precautions:

- Whenever adjusting or replacing any parts on the grinder turn power off and remove the plug from power source.
- Recheck tool rest bolts, they must be tightened securely.
- Make sure all guards are properly attached. All guards should be securely fastened.
- Make sure all moving parts are free and clear of any interference.
- Make sure all fasteners are tight and have not vibrated loose.
- With power disconnected, test operation by hand for clearance and adjust if necessary.
- Always wear eye protection or face shield.
- Make sure abrasive belt tracks properly. Correct tracking gives optimum performance.
- After turning switch on, always allow belt to come up to full speed before sanding or grinding.
- Abrasive belt must travel down.

**OPERATION (CONTINUED)**

- Avoid kickback by grinding in accordance with the directional arrows.
- Keep your hands clear of abrasive belt and all moving parts.
- For optimum performance do not stall motor or reduce speed. Do not force the work into the abrasive.
- Support workpiece with tool rest when grinding with belt.
- Never push a sharp corner of workpiece rapidly against belt. Abrasive backing may tear.
- Replace abrasives when they become loaded (glazed) or frayed.
- When grinding metal, move workpiece across abrasive to prevent heat build-up.
- Never attempt wet sanding. If work-piece becomes too hot to handle, cool it in water.

**BELT INSTALLATION AND TRACKING**

Refer to Figure 7.

- Sanding belt should be replaced when worn, torn, or glazed. Loosen belt cover knobs (Ref. No. 25) and open belt cover.
- Release belt tension by pulling up on tension handle Ref. No. 38). Slide old belt off the drive and tracking wheels.
- Slide new belt over the drive and tracking wheels, center belt on wheels, and pull down on tension handle to tension belt.
- Replace belt cover and tighten knobs.
- Rotate belt by hand to check tracking, belt should ride centered on drive and tracking wheels. Adjust socket head bolt (Ref. No. 33) at top of tracking bracket to track belt properly. Be sure to secure socket head bolts with hex nut (Ref. No. 34).

**ADJUST BELT ASSEMBLY POSITION**

Refer to Figure 7.

The belt assembly can be adjusted from vertical to horizontal position.

- Loosen the belt housing bolt (Ref. No. 9) that clamps belt housing to motor assembly.
- Tilt belt assembly to desired position (from vertical to horizontal). Secure belt assembly position by tightening belt housing bolt.

**ABRASIVE BELT FINISHING**

- Finishing flat surfaces: Hold workpiece firmly with both hands, keep fingers away from abrasive belt.  
Use tool rest. Tool rest is used to position and stabilize work. Keep end butted against tool rest and move work evenly across abrasive belt. Use extra caution when finishing very thin pieces. For finishing long pieces: remove tool rest. Apply only enough pressure to allow abrasive belt to remove material.
- Finishing curved edges: Finish outside curves on flat portion of abrasive belt.

**MAINTENANCE**

**WARNING:** Make certain that the unit is disconnected from power source before attempting to service or remove any component.

**CLEANING**

- Keep machine and workshop clean. Do not allow sawdust to accumulate.
- Keep the wheels clean. Dirt on wheels will cause poor tracking and belt slippage.
- Operate grinder with dust collector to keep dust from accumulating.

**WARNING:** After sanding wood or non-metallic material, always clean dust collector and guards of sawdust before grinding metal. Sparks could ignite debris and cause a fire.

- Be certain motor is kept clean and is frequently vacuumed free of dust.
- Use soap and water to clean painted parts, rubber parts and plastic guards.

**LUBRICATION**

- The shielded ball bearings in this grinder are permanently lubricated at the factory. They require no further lubrication.
- When operation seems stiff, a light coat of paste wax applied to the tool rest will make it easier to feed the work while finishing.
- Do not apply wax to the belt platen. Belt could pick up wax and deposit it on wheels causing belt to slip.

**KEEP GRINDER IN REPAIR**

- If power cord is worn, cut or damaged, have it replaced immediately.
- Replace worn abrasives when needed.
- Replace any damaged or missing parts. Use parts list to order parts.



## TROUBLESHOOTING

SYMPTOM	POSSIBLE CAUSE(S)	CORRECTIVE ACTION
Motor will not start	<ol style="list-style-type: none"> <li>1. Blown line fuse or tripped circuit breaker</li> <li>2. Low line voltage</li> <li>3. Defective switch</li> <li>4. Defective, blown capacitor</li> </ol>	<ol style="list-style-type: none"> <li>1. If fuse is blown, replace with fuse of proper size. If breaker tripped, reset it</li> <li>2. Check power supply for voltage and correct as needed</li> <li>3. Replace switch</li> <li>4. Replace capacitor</li> </ol>
Motor will not start; fuses blown or circuit breakers tripped	<ol style="list-style-type: none"> <li>1. Overloading due to binding</li> <li>2. Defective plug</li> <li>3. Defective cord</li> <li>4. Defective switch</li> <li>5. Motor wired for different line voltage</li> <li>6. Faulty internal wiring</li> </ol>	<ol style="list-style-type: none"> <li>1. Clean around wheels and shaft and/or replace bearings</li> <li>2. Replace plug</li> <li>3. Replace cord</li> <li>4. Replace switch</li> <li>5. Rewire motors as per line voltage (See "Electrical Connections," page 4)</li> <li>6. Replace motor</li> </ol>
Motor fails to develop full power (power output of motor decreases rapidly with decrease in voltage at motor terminals)	<ol style="list-style-type: none"> <li>1. Power line overloaded with lights, appliances and other motors</li> <li>2. Undersized wires or circuits too long</li> <li>3. General overloading of power company's facilities</li> </ol>	<ol style="list-style-type: none"> <li>1. Reduce load on power line</li> <li>2. Increase wire sizes, or reduce length of wiring</li> <li>3. Request a voltage check from power company</li> </ol>
Motor overheats	Motor overloaded	Reduce load on motor
Motor stalls (resulting in blown fuses or tripped circuit breakers)	<ol style="list-style-type: none"> <li>1. Short circuit in motor or loose connections</li> <li>2. Low voltage</li> <li>3. Motor wired for different line voltage</li> <li>4. Incorrect fuses or circuit breakers in power line</li> <li>5. Motor overloaded</li> </ol>	<ol style="list-style-type: none"> <li>1. Inspect connections in motor for loose or shorted terminals or worn insulation on lead wires</li> <li>2. Correct the low line voltage conditions</li> <li>3. Rewire motor as per line voltage</li> <li>4. Install correct fuses or circuit breakers (See "Electrical Connections," page 4)</li> <li>5. Reduce load on motor</li> </ol>
Machine slows down while operating	Applying too much pressure to workpiece	Ease up on pressure
Abrasive belt runs off top wheel	Not tracking properly	See "Belt Installation," page 5

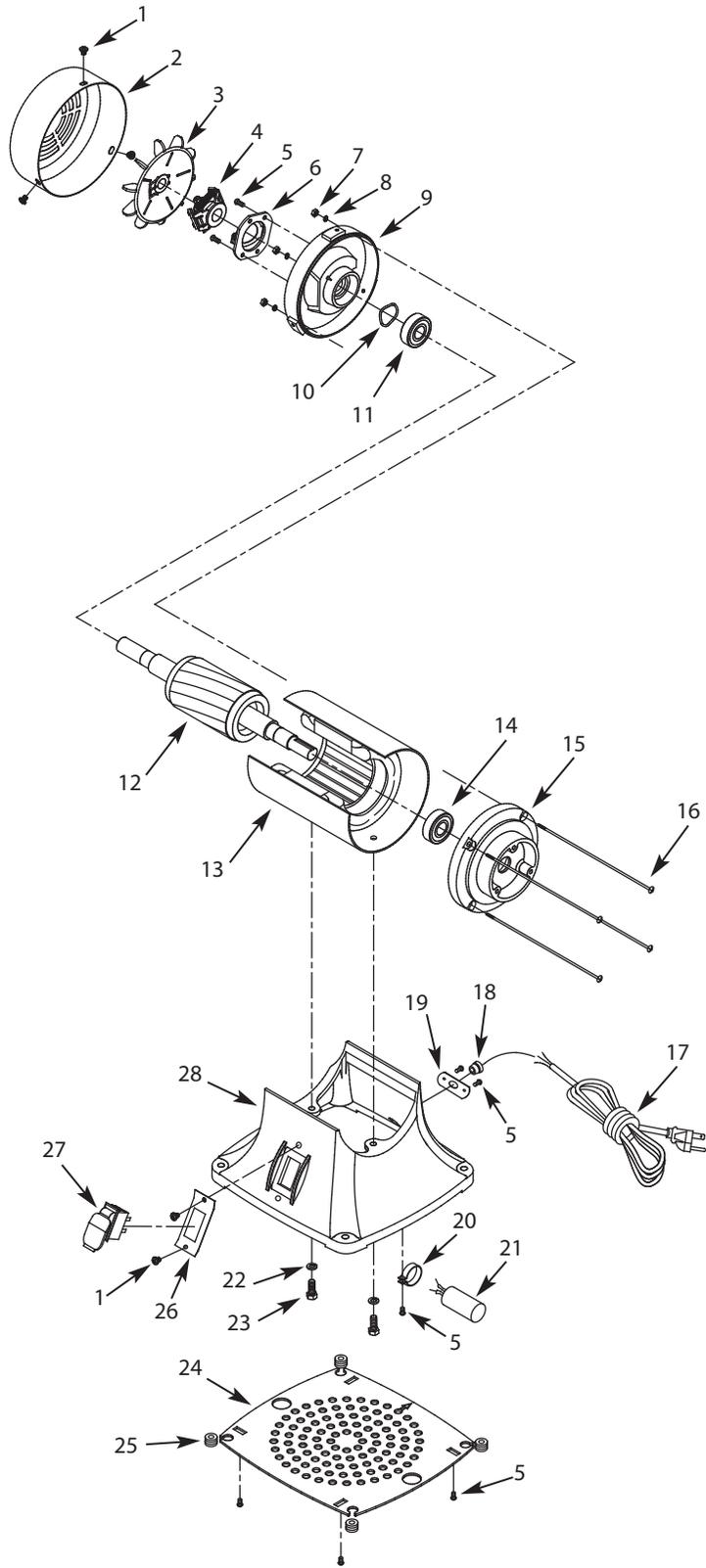


Figure 6 – Repair Parts Illustration for Motor

## REPLACEMENT PARTS LIST FOR MOTOR

Reference Number	Description	Part Numbers For:			Quantity
		82401	82402	82404	
1	#10-24 x 1/4" Pan head screw	*	*	*	5
2	Fan cover	28649.00	28649.00	28649.00	1
3	Fan	28650.00	28650.00	28650.00	1
4	Centrifugal switch	28651.00	28651.00	28651.00	1
5	#10-24 x 3/8" Pan head screw	*	*	*	9
6	Stationary Switch	28652.00	28652.00	28652.00	1
7	5-0.8mm Hex nut	*	*	*	4
8	5mm Serrated washer	*	*	*	4
9	End shield	28653.00	28653.00	28653.00	1
10	Wavy washer	16724.00	16724.00	16724.00	1
11	6203ZZ Ball bearing	01901.00	01901.00	01901.00	1
12	Armature	†	†	†	1
13	Stator with housing	†	†	†	1
14	6204ZZ Ball bearing	00989.00	00989.00	00989.00	1
15	End shield	28654.00	28654.00	28654.00	1
16	5-0.8 x 215mm Pan head screw	28655.00	28655.00	28655.00	4
17	Line cord	28656.00	28656.00	28656.00	1
18	Strain relief	04055.00	04055.00	04055.00	1
19	Strain relief plate	28657.00	28657.00	28657.00	1
20	Capacitor clamp	28658.00	28658.00	28658.00	1
21	Capacitor	28659.00	28659.00	28659.00	1
22	1/4" Lock washer	*	*	*	2
23	1/4-20 x 1/2" Hex head bolt	*	*	*	2
24	Base cover	28660.00	28660.00	28660.00	1
25	Base bumper	28661.00	28661.00	28661.00	4
26	Switch plate	28662.00	28662.00	28662.00	1
27	Switch with key	26035.00	26035.00	26035.00	1
28	Base	28663.00	28663.00	28663.00	1

Recommended Accessories	
Δ	Universal stand
	70102

† Not available as repair part.

\* Standard hardware item, available locally.

Δ Not Shown

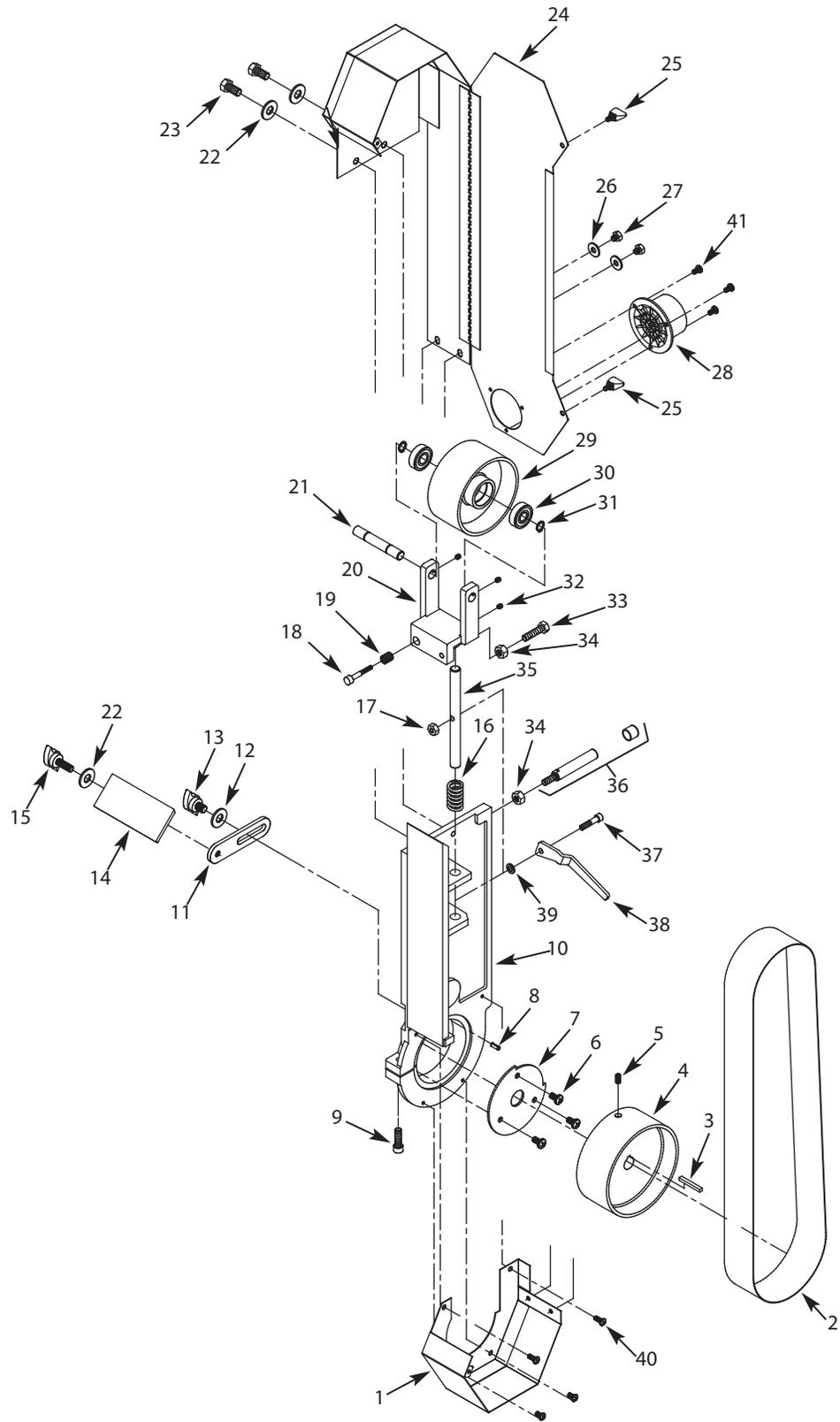


Figure 7 – Repair Parts Illustration for Housing

## REPLACEMENT PARTS LIST FOR HOUSING

Reference Number	Description	Part Numbers For:			Quantity
		82401	82402	82404	
1	Lower guard	28747.01	28664.01	28758.01	1
2	Abrasive belt	01345.00	30788.00	30787.00	1
3	Key	28748.00	28665.00	28759.00	1
4	Drive pulley	28749.00	28666.00	28760.00	1
5	1/4-20 x 3/8" Set screw	*	*	*	1
6	1/4-20 x 1/4" Pan head screw	*	*	*	3
7	Pivot stop bracket	28667.00	28667.00	28667.00	1
8	5 x 14mm Spring pin	15991.00	15991.00	15991.00	1
9	5/16-18 x 1" Hex head bolt	*	*	*	1
10	Platen	28750.00	28668.00	28761.00	1
11	Bracket	28669.00	28669.00	28669.00	1
12	3/8" Flat washer	*	*	*	1
13	3/8-16 x 1/2" Knob	25817.00	25817.00	25817.00	1
14	Tool rest	28751.00	28670.00	28762.00	1
15	5/16-18 x 1" Knob	25812.00	25812.00	25812.00	1
16	Spring	28672.00	28672.00	28672.00	1
17	1/4"-20 Hex nut	*	*	*	1
18	1/4-20 x 1 1/4" Hex head bolt	*	*	*	1
19	Spring	28673.00	28673.00	28673.00	1
20	Idler bracket	28752.00	28674.00	28763.00	1
21	Idler shaft	28753.00	28675.00	28764.00	1
22	5/16" Flat washer	*	*	*	3
23	5/16-18 x 3/8" Hex head bolt	*	*	*	2
24	Guard	28754.01	28676.01	28765.01	1
25	Knob	28677.00	28677.00	28677.00	2
26	1/4" Flat washer	*	*	*	2
27	1/4-20 x 1/4" Hex head bolt	*	*	*	2
28	Dust chute	28678.00	28678.00	28678.00	1
29	Idler pulley	28755.00	28679.00	28766.00	1
30	6201ZZ Ball bearing	00520.00	00520.00	00520.00	2
31	Retaining ring	28680.00	28680.00	28680.00	2
32	#10-24 x 1/4" Set screw	*	*	*	3
33	5/16-18 x 1 1/4" Hex head bolt	*	*	*	1
34	5/16-18 Hex nut	*	*	*	2
35	Bracket shaft	28756.00	28681.00	28767.00	1
36	Stop rod with cap	28682.00	28682.00	28768.00	1
37	1/4-20 x 1 1/8" Socket head bolt	*	*	*	1
38	Tension lever	28684.00	28684.00	28684.00	1
39	1/4" Lock washer	*	*	*	1
40	#10-24 x 3/8" Pan head screw	*	*	*	7

\* Standard hardware item, available locally.

## 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 forming 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.