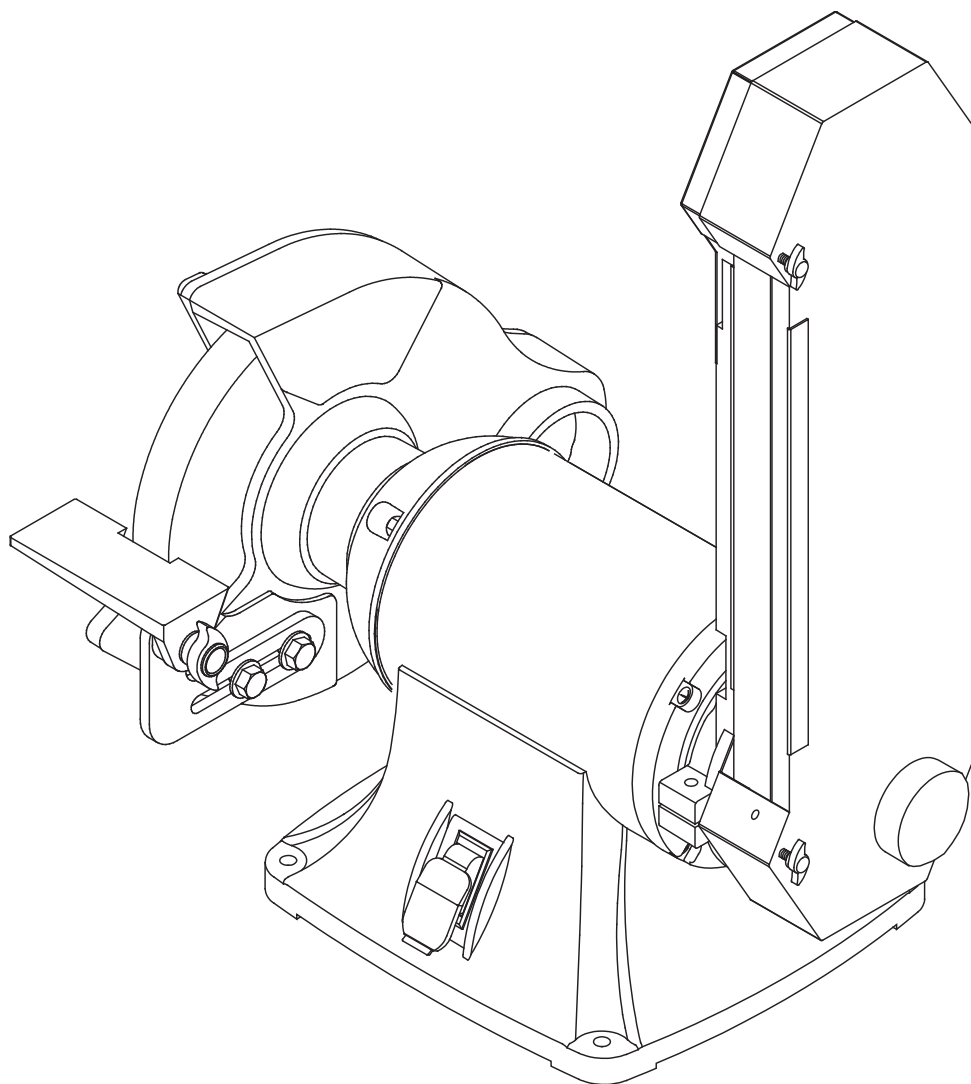




COMBINATION GRINDER/SANDER



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

DESCRIPTION

Palmgren Combination Grinder/Sander is used for grinding, deburring, squaring, polishing and finishing metals, woods and plastics. Grinder/Sander has a totally enclosed, fan-cooled direct drive motor. Belt housing swivels from vertical to horizontal for grinding long workpieces. Features include fully adjustable tool rests on belt and grinding wheel, quick release belt tension and tracking mechanism, OSHA compliant belt guard with dust port, spark guard and safety eye shield for grinding wheel.

UNPACKING

Refer to Figure 1.

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

To be certain the grinding wheels have not been damaged in shipment, strike the edges slightly with a metal object. A ringing sound indicates a good wheel, but a dull noise may signal a fracture.

WARNING: If you suspect a wheel of being fractured, replace it immediately. Fractured wheels may shatter, causing serious injury. The grinder/sander 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 Belt tool rest bracket
- C Belt tool rest
- D 12mm Open end wrench
- E 6mm Hex wrench
- F Grinder tool rest bracket
- G Grinder tool rest
- H 5/16 x 18 x 1" Knob (2)
- I Upper eyeshield bracket
- J Lower eyeshield bracket
- K Eyeshield
- L 1/4-20 x 1/2" Knob
- M Spark guard
- N 3/8-16 x 1/2" Knob (2)

Not shown:

- 3/8-16-3/4" Hex head bolt (2)
- 3/8" Flat washer (4)
- 5/16" Flat washer (2)
- #10-24 x 3/8" Pan head screw (2)

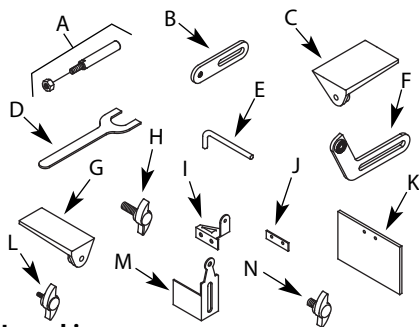


Figure 1 – Unpacking

SPECIFICATIONS

Belt size	.....2 x 48"; 80 grit
Belt platen area	.....12 1/4 x 2 1/2"
Belt speed	......4500 FPM

Belt dust port	......2" diameter
Wheel size	......8 x 1 x 5/8"
Wheel type	......Aluminum oxide, A60P
Wheel speed	......3450 RPM
Wheel dust port	......31/4" dia.
Dimensions (L x W x H)	......21 x 14 x 26"
Dimensions-belt horizontal (L x W x H)	......21 x 26 x 13"
Switch	......DP, Locking rocker
Motor	......3/4 Hp, 115/230V, 7.0/3.5 AMPS, 3450 RPM
Weight	......74 lbs
Shipping weight	......86 lbs

SAFETY RULES

WARNING: For your own safety, read all of the instructions and precautions 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 receptacle 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.

SAFETY RULES (CONTINUED)

- Keep children out of the workplace. Make workshop childproof. Use padlocks, master switches or remove switch keys to prevent any unauthorized 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 switching 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, breakage, 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 abrasive belt or disc.
- 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 sanding surfaces.
- Never leave 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 belt or disc are unintentionally contacted.
- Know your tool. Learn the tool's operation, application and specific limitations.
- Handle workpiece correctly. Protect hands from possible injury.
- Turn machine off if it jams. Belt jams when it digs to deeply into workpiece. (Motor force keeps it stuck in the work).
- Support workpiece with miter gauge, belt platen or work table.
- Maintain $\frac{1}{16}$ " maximum clearance between table and sanding belt or disc.

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

WARNING: Do not attempt to operate tool until it is completely assembled according to instructions.

ASSEMBLY

Refer to Figures 2 and 3.

CAUTION: Do not attempt assembly if parts are missing. Use this manual to order replacement parts.

ASSEMBLE BELT TOOL REST

Refer to Figure 2.

- Slide 5/16-18 X 1" knob (A) and 5/16" flat washer (B) through the hole in the belt tool rest (C).
- Thread knob into the tool rest bracket (D). Tighten finger tight.
- Attach the above assembly to slot on platen (I) using 3/8" flat washer and 3/8-16" hex head bolt (E and F).

- 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.

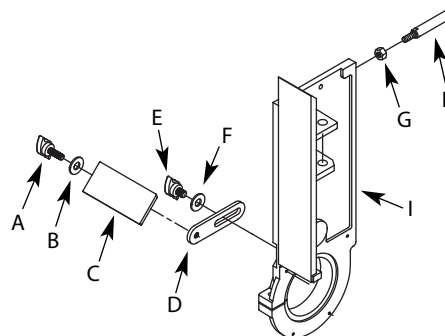


Figure 2 – Belt Tool Rest and Stop Bar Assembly

ATTACH STOP BAR TO BELT PLATEN

Refer to Figure 2.

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 with nut (G and H) into the threaded hole on the rear side of platen (I).
- Tighten hex nut.

GRINDER TOOL REST ASSEMBLY

Refer to Figure 3.

- Place tool rest (D) over tool rest bracket (C) and secure in position with 5/16" flat washer (E) and 5/16-18 x 1" knob (F).
- Attach tool rest bracket to the bottom of the wheel guard using two 3/8-16 x 3/4" hex head bolts (A) and two 3/8" flat washers (B). Tighten bolts finger tight.
- Position tool rest so that distance between tool rest and grinding wheel is less than $\frac{1}{16}$ ". Reposition angle of tool rest if necessary. Secure all knobs and bolts.

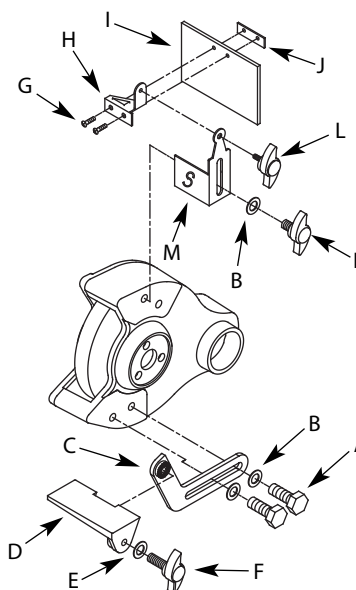


Figure 3 – Grinder Tool Rest and Eyeshield Assembly

EYESHIELD ASSEMBLY

Refer to Figure 3.

- Attach spark guard (M) to wheel guard using 3/8-16 x 1/2" knob (N) and 3/8" flat washer (B).
- Mount upper eyeshield bracket (H) to eyeshield (I) using two #10-24 x 3/8" pan head screws (G) and lower eyeshield bracket (J).

ASSEMBLY (CONTINUED)

- Slide 1/4-20 x 1/2" knob (L) through hole at top of left spark guard (M) into upper eyeshield bracket (H) and secure in position.
- Locate eyeshield in desired position for protecting operator and secure all knobs and bolts.

INSTALLATION

Refer to Figures 4, 5 6 and 7.

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

MOUNT GRINDER/SANDER

Refer to Figure 4.

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 11) using bolts, lock washers and hex nuts (not supplied).
- Figure 4 shows the base dimensions and mounting holes. See Specifications for required space to allow belt assembly in horizontal position.

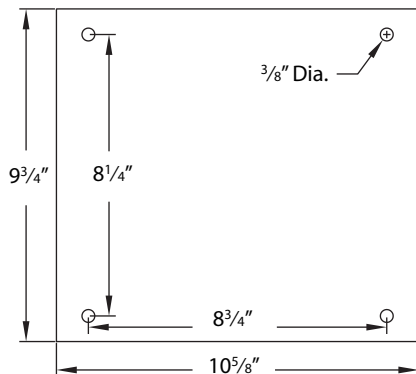


Figure 4 – Base Dimension and Mounting Holes

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 burnout. Heavy loads require that voltage at motor terminals be no less than the voltage specified on nameplate. Power supply to the motor is controlled by a single pole locking rocker switch. Remove the key to prevent unauthorized use.

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 5) 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 5).

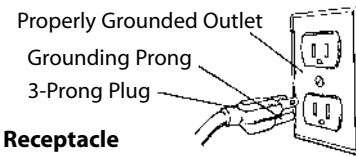


Figure 5 – 3-Prong Receptacle

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

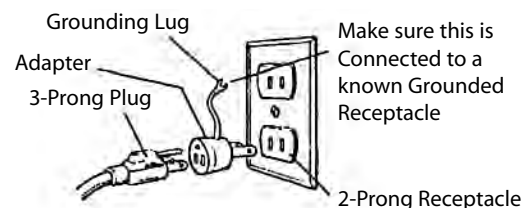


Figure 6 – 2-Prong Receptacle with Adapter

- 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.

INSTALLATION (CONTINUED)

- Running the unit on voltages which are not within ±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 (120V)

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 7). Motor is assembled with approved, 3-conductor cord to be used at 120/240 volts. Motor is prewired at the factory for 120 volts.

To use the grinder with a 240V power supply, have a qualified electrician rewire motor and attach a 240 volt, 15A three-prong plug onto grinder line cord.

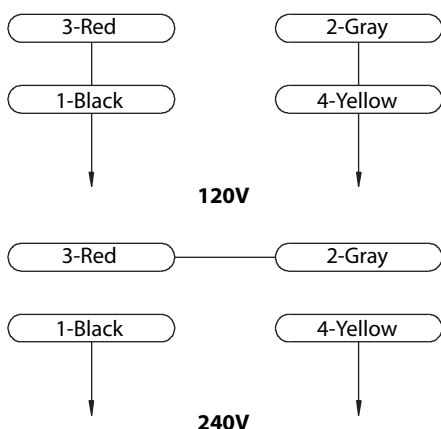


Figure 7 – Wiring Diagram

OPERATION

Refer to Figures 8 and 9.

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 before commencing power tool operation.

CAUTION: Always observe the following safety precautions:

- Whenever adjusting or replacing any parts on the tool, turn switch OFF and remove the plug from power source.
- Recheck table knobs and bolts. They must be tightened securely.
- Make sure all guards are properly attached and 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 to verify 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.
- Be sure motor runs clockwise on disc side. Abrasive belt must travel down.
- Avoid kickback by sanding in accordance with the directional arrows.
- Keep your hands clear of abrasive belt, disc 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 belt table when sanding with belt.
- Never push a sharp corner of workpiece rapidly against belt or disc. 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 workpiece becomes too hot to handle, cool it in water.

BELT INSTALLATION AND TRACKING

Refer to Figure 8, page 8.

- Sanding belt should be replaced when worn, torn, or glazed. Loosen belt cover knobs (Ref. No. 36) and open belt cover.
- Release belt tension by pulling up on tension handle Ref. No. 19). 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. 30) at top of tracking bracket to track belt properly. Be sure to secure socket head bolts with hex nut (Ref. No. 22).

ADJUST BELT ASSEMBLY POSITION

Refer to Figure 8, page 8.

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

- Loosen the belt housing bolt (Ref. No. 7) 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.

ABRASIVE GRINDING

- Keep a steady, moderate pressure on the work and keep it moving at an even pace for smooth grinding.
- Pressing too hard overheats the motor and prematurely wears down the grinding wheels.

OPERATION (CONTINUED)

- Note the original bevel angle on the item to be sharpened and try to maintain that angle. Sharpening a cutting edge requires removing burrs from edge.
- Deburring edge is done best by using the grinder to pull burr from edge across the bevel angle.
- The grinding wheel should rotate into object being sharpened.
- Dip work into a coolant regularly to prevent overheating. Overheating can weaken metals.

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 on the tool.
- Keep wheels clean. Dirt on wheels will cause poor tracking and belt slippage.
- Operate tool 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 tool are permanently lubricated at the factory. They require no further lubrication.

- When operation seems stiff, a light coat of paste wax applied to the belt table and disc table 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 TOOL 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.
- Any attempt to repair motor may create a hazard unless repair is done by a qualified service technician.

GRINDING WHEEL MAINTENANCE

- As wheels wear, tool rests should be positioned closer to the face of the wheels.
- The gap between the wheel and the tool rest should not be greater than 1/16". When the wheels are worn to the extent that the 1/16" maximum gap cannot be maintained, the wheels should be replaced.
- Replacement wheels should have a minimum rated speed of at least 3600 RPM.
- Maximum wheel diameter is 8".
- To loosen nuts holding the wheels, disconnect power and push a wood wedge between the tool rest and the wheel to keep the shaft from turning. The threads on the right side of the grinder (facing unit) are right hand; threads on the left side are left hand. Tighten nuts securely before operating the grinder.
- For grinding efficiency, wheels should be dressed periodically, especially if they become clogged from grinding soft metals.

TROUBLESHOOTING

SYMPTOM	POSSIBLE CAUSE(S)	CORRECTIVE ACTION
Motor will not start	<ol style="list-style-type: none"> 1. Blown line fuse or tripped circuit breaker 2. Low line voltage 3. Defective switch 4. Defective, blown capacitor 	<ol style="list-style-type: none"> 1. If fuse is blown, replace with fuse of proper size. If breaker tripped, reset it 2. Check power supply for voltage and correct as needed 3. Replace switch 4. Replace capacitor
Motor will not start; fuses blown or circuit breakers tripped	<ol style="list-style-type: none"> 1. Overloading due to binding 2. Defective plug 3. Defective cord 4. Defective switch 	<ol style="list-style-type: none"> 1. Clean around wheels and shaft and/or replace bearings 2. Replace plug 3. Replace cord 4. Replace switch
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"> 1. Power line overloaded with lights, appliances and other motors 2. Undersized wires or circuits too long 3. General overloading of power company's facilities 	<ol style="list-style-type: none"> 1. Reduce load on power line 2. Increase wire sizes, or reduce length of wiring 3. Request a voltage check from power company
Motor overheats	Motor overloaded	Reduce load on motor.
Motor stalls (resulting in blown fuses or tripped circuit breakers)	<ol style="list-style-type: none"> 1. Short circuit in motor or loose connections 2. Low voltage 3. Motor wired for different line voltage 4. Incorrect fuses or circuit breakers in power line 5. Motor overloaded 	<ol style="list-style-type: none"> 1. Inspect connections in motor for loose or shorted terminals or worn insulation on lead wires 2. Correct the low line voltage conditions 3. Rewire motor as per line voltage 4. Install correct fuses or circuit breakers 5. Reduce load on motor
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 operation section "Tracking Abrasive Belt"
Excessive vibration	<ol style="list-style-type: none"> 1. Improper mounting of grinder or accessories 2. Grinding wheel out of balance 3. Improper wheel mounting 	<ol style="list-style-type: none"> 1. Remount 2. Dress wheels or replace wheels 3. Remount wheels, but rotate one wheel 90° with respect to its previous position. Other wheel should remain in its original position

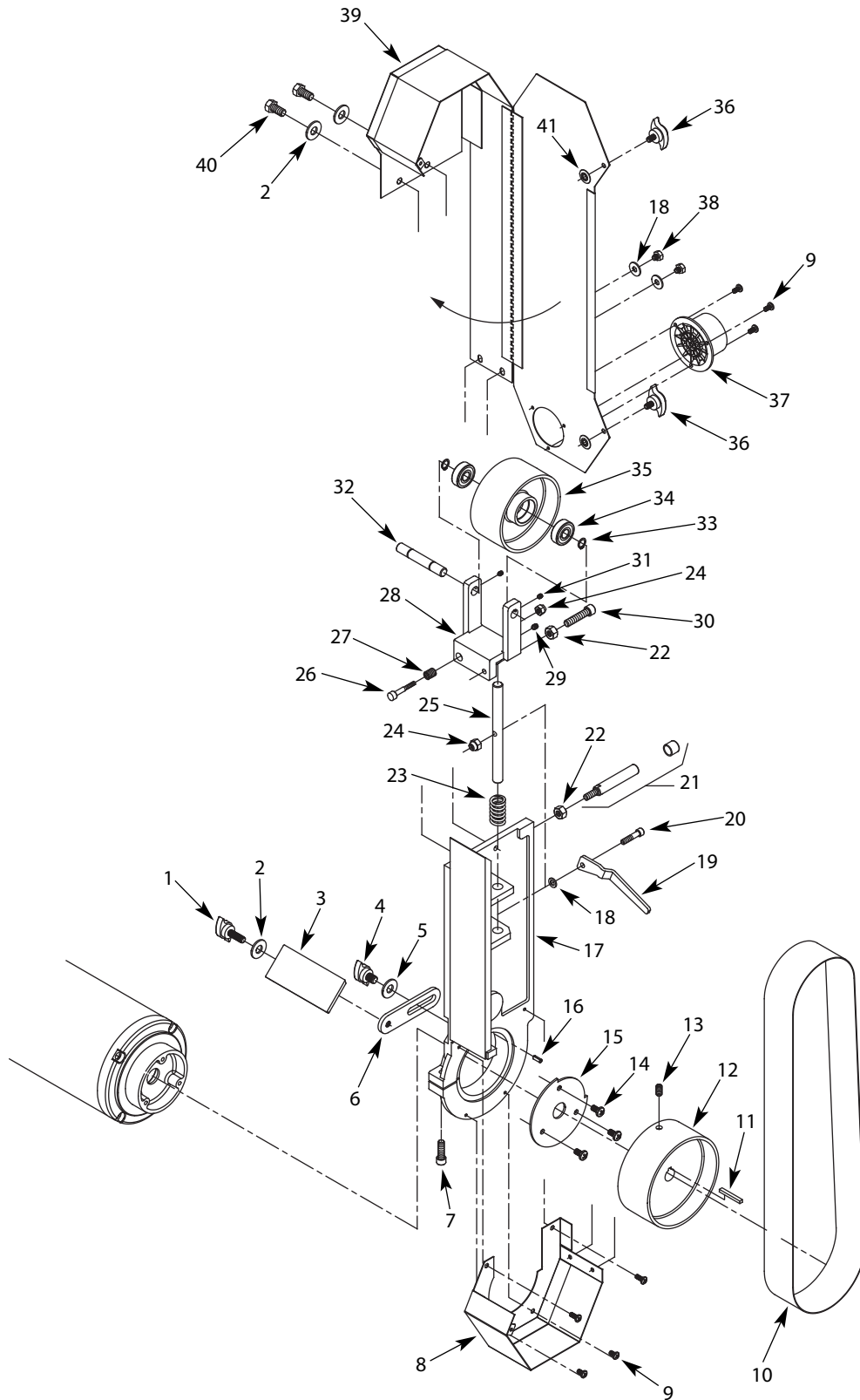


Figure 8 – Repair Parts Illustration for Belt Housing

REPLACEMENT PARTS LIST FOR BELT HOUSING

Ref. No.	Description	Part No.	Qty.
1	5/16-18 x 1" Knob	25812.00	1
2	5/16" Flat washer	*	3
3	Tool rest	28670.00	1
4	3/8-16 x 1/2" Knob	25817.00	1
5	3/8" Flat washer	*	1
6	Bracket	31459.00	1
7	5/16-18 x 1" Socket head bolt	*	1
8	Lower guard	28664.00	1
9	#10-24 x 1/4" Flange screw	03210.00	7
10	Abrasive belt (80 grit)	30788.00	1
11	Key	28665.00	1
12	Drive pulley	28666.00	1
13	1/4-20 x 3/8" Set screw	*	1
14	1/4-20 x 1/2" Flange screw	*	3
15	Pivot stop bracket	28667.00	1
16	5 x 14mm Spring pin	15991.00	1
17	Platen	28668.00	1
18	1/4" Flat washer	*	4
19	Tension lever	28684.00	1
20	1/4-20 x 1 1/8" Socket head bolt	*	1
21	Stop rod with cap	28682.00	1
22	5/16"-18 Hex nut	*	2
23	Spring	28672.00	1
24	1/4"-20 Fiber hex nut	*	2
25	Bracket shaft	28681.00	1
26	1/4-20 x 1 1/4" Socket head bolt	*	1
27	Spring	28673.00	1
28	Idler bracket	28674.00	1
29	1/4-20 x 1/4" Set screw	*	1
30	5/16-18x1 1/4" Socket head bolt	*	1
31	#10-24 x 1/4" Set screw	*	2
32	Idler shaft	28675.00	1
33	Retaining ring	28680.00	2
34	6201LL Ball bearing	03862.00	2
35	Idler pulley	28679.00	1
36	1/4-20 x 3/8" Knob	25816.00	2
37	Dust chute	28678.00	1
38	1/4-20 x 1/4" Hex head bolt	*	2
39	Guard	28676.00	1
40	5/16-18 x 3/8" Hex head bolt	*	2
41	5mm Push nut	31460.00	2
Δ	Operator's manual	37115.00	1
Recommended Accessories			
Δ	Heavy Duty Floor Stand	70102	
Δ	Not shown		
*	Standard hardware item, available locally.		

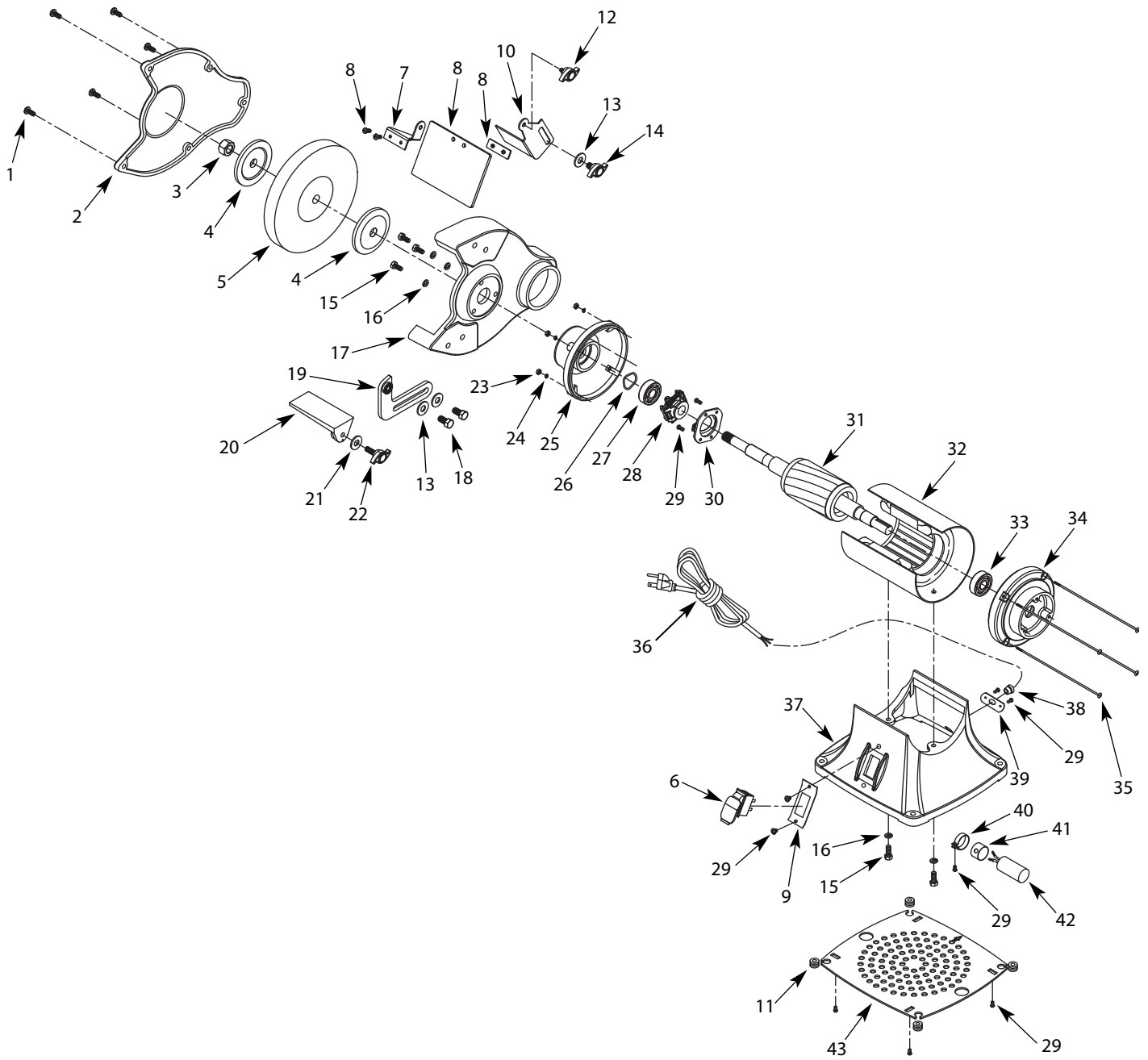


Figure 9 – Repair Parts Illustration for Grinding Wheel and Motor

REPLACEMENT PARTS LIST FOR GRINDING WHEEL AND MOTOR

Ref. No.	Description	Part No.	Qty.
1	#10-24 x 7/8" Pan head screw	*	5
2	Wheel guard cover	24496.02	1
3	5/8"-11 Hex nut (LH)	00088.00	1
4	Wheel flange	24497.00	2
5	Grinding wheel (36 grit)	02037.00	1
6	Switch	08066.01	2
7	Upper eye shield bracket (left)	25177.00	1
8	Eye shield kit	32290.00	1
9	Switch plate	28662.00	1
10	Spark guard	31456.00	1
11	Base bumper	23391.00	4
12	1/4-20 x 1/2" Knob	25816.00	1
13	3/8" Flat washer	*	1
14	3/8-16 x 1/2" Knob	25817.00	1
15	1/4-20 x 1/2" Hex head bolt	*	5
16	1/4" Lock washer	*	5
17	Wheel guard	26056.00	1
18	1/4-20 x 5/8" Hex head bolt	*	2
19	Bracket	31447.00	1
20	Tool rest	25813.00	1
21	5/16" Flat washer	*	3
22	5/16-18 x 1" Knob	25812.00	1
23	5-0.8mm Hex nut	*	4
24	#10 Serrated washer	*	4
25	End shield	16627.02	1
26	Wavy washer	16640.00	1
27	6203ZZ Ball bearing	01901.00	1
28	Centrifugal switch	25172.00	1
29	#10-24 x 1/4" Flange screw	03210.00	11
30	Stationary switch	25171.00	1
31	Armature	†	1
32	Stator with housing	†	1
33	6204ZZ Ball bearing	00989.00	1
34	End shield	28654.00	1
35	5-0.8 x 215mm Pan head screw	28655.00	4
36	Line cord	00090.00	1
37	Base	†	1
38	Strain relief	04055.00	1
39	Strain relief plate	28657.00	1
40	Capacitor clamp	16655.00	1
41	Capacitor cap	31472.00	1
42	Capacitor	26642.00	1
43	Base cover	24500.00	1

△ Not shown

* Standard hardware item, available locally.

† Not available as repair 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 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.