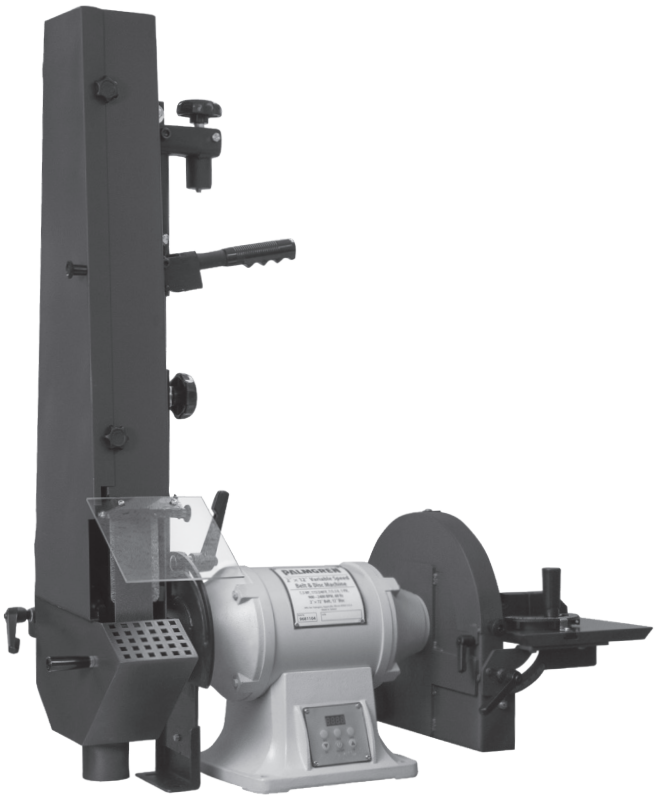
PALMGREN®



# 2” x 72” Belt and 12” Disc Sander

**Model 9681104**

9649551.02 - 0725

PALMGREN®

***PLEASE READ AND SAVE THESE INSTRUCTIONS. READ CAREFULLY BEFORE ATTEMPTING TO ASSEMBLE, INSTALL, OPERATE OR MAINTAIN THE PRODUCT DESCRIBED.***

***PROTECT YOURSELF AND OTHERS BY OBSERVING ALL SAFETY INFORMATION. FAILURE TO COMPLY WITH INSTRUCTIONS COULD RESULT IN PERSONAL INJURY AND/OR PROPERTY DAMAGE! RETAIN INSTRUCTIONS FOR FUTURE REFERENCE.***

***PLEASE REFER TO BACK COVER FOR INFORMATION REGARDING PALMGREN'S WARRANTY AND OTHER IMPORTANT INFORMATION.***

***Model #:*** _____

***Serial #:*** _____

***Purch. Date:*** _____

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***All Rights Reserved***

# GETTING STARTED

## Save this manual

You will need this manual for the safety warnings and precautions, assembly instructions, operating and maintenance procedures, parts lists and diagrams. Keep your invoice with this manual. Write the invoice number on the inside of the front cover. Keep this manual and invoice in a safe and dry place for future reference.

## Structural requirements



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

## Electrical requirements



The power supply to the 9681104 belt/disc finishing machine must be 115V/230V, 7A/3.5A,
single phase, 60 Hz.
The standard allowable voltage variation is ±10%.

## Tools needed

Standard professional mechanic's hand tool set.

# UNPACKING

Do not discard packing materials until after machine has been inspected for damage and completeness. Locate loose parts and set aside.

## Inspect

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

## Package Contents:

- 1x sanding unit, with belt arm, disc, and table
- 3x locking handles
- 1x support bracket set
- 1x miter gauge
- 1x double sided, open end wrench

## Unpack



Do not discard packing materials until after machine has been inspected for damage and completeness. Locate loose parts and set aside.

## Inspect



After unpacking the unit, carefully inspect for any damage that may have occurred during transit. Check for loose, missing, or damaged parts. Shipping damage claims must be filed with the carrier. Immediately report missing parts to dealer.

All tools should be visually inspected before use, in addition to regular periodic maintenance inspections.

Be sure that the voltage labeled on the unit matches your power supply.



***See General Safety Instructions, Cautions and Warnings as shown.***

## SAFETY RULES

***Before repairs, powering on the machine or maintenance, the user must know and follow all safety guidelines.***

***Clothing and General Use***

**⚠ WARNING**

- For your own safety, read all of the instructions and precautions before operating tool.
- Always follow proper operating procedures as defined in this manual even if you are familiar with the use of this or similar tools. Remember that being careless for even a fraction of a second can result in severe personal injury.
- **PROPOSITION 65 WARNING**: Some dust created by using power tools contain chemicals known to the state of California to cause cancer, birth defects or other reproductive harm. Some examples of these chemicals are:
  - Lead from lead-based paints.
  - Crystalline silica from bricks and cement and other masonry products.
  - Arsenic and chromium from chemically-treated lumber.

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

***Installation***

**⚠ WARNING**

- Ensure the installation location can support the weight of the machine.
- Do not allow water or other liquids, dust, metal dust or other contaminants to enter the controls or electrical box, otherwise it may cause fires or damage to the machine and surroundings.

**⚠ CAUTION**

- Use the appropriate means to place the machine on work surface.
- When installing, check for adequate space in the install location for the belt grinder.
- When moving to the install location make sure the belt grinder is firmly secured to the lifting means.
- Check that this machine has adequate ventilation and heat dissipation.

***Electrical***

**⚠ WARNING** ***Before connecting the machine's power cord to power, check that the power switch is off and that the cord is undamaged.***

**IMPORTANT:** A ground fault circuit interrupter (GFCI) is built into this tool and cannot be disengaged. Use ONLY a non-GFCI outlet with this tool. Plugging this tool into a GFCI outlet will trip the outlet breaker and the tool will not function.

**NOTE:** A GFCI is a fast-acting circuit breaker designed to shut off electrical power in the event of a ground fault.

***Operation***

**⚠ WARNING**

***Before starting machine check:***

- Make sure that the guards are in place and provide adequate visibility.
- Keep the surrounding workspace clean with regular maintenance and cleaning.
- Do not make any changes or modifications to the machine; this could cause an electric shock or personal injury and void the warranty.
- KEEP GUARDS IN PLACE AND IN WORKING ORDER.
- KEEP WORK AREA CLEAN. Cluttered areas and benches invite accidents.
- NEVER USE IN DANGEROUS ENVIRONMENT. Do not use power tools in damp or wet locations, or where any flammable or noxious fumes may exist. Keep work area well lighted.
- KEEP CHILDREN AND VISITORS AWAY. All children and visitors should be kept at a safe distance from work area.
- MAKE WORKSHOP CHILDPROOF with padlocks, master switches, or by removing starter keys.
- NEVER FORCE TOOL. It will do the job better and safer at the rate for which it was designed.
- USE THE RIGHT TOOL. Do not force tool or attachment to do a job for which it was not designed.

**⚠ CAUTION**

- Do not plug or unplug line power to the machine while it is running.
- Do not repeatedly turn on and turn off the power switch in a short amount of time. This will damage the machine.
- Deactivate the power before any service or maintenance.
- Only a qualified electrician should check the electric parts.
- Please treat the debris generated during processing as industrial waste to prevent environmental pollution or personal injury.

## PREPARING FOR YOUR 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 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.
- 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.
- 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 parts list provided to order repair 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 when changing abrasive belt.
- Do not force tool. It will work most efficiently at the rate for which it was designed.
- Use of improper accessories may cause risk of injury to persons.
- Handle workpiece correctly. Protect hands from possible injury.
- Turn machine off if it jams. Belt jams when it digs too deeply into workpiece. (Motor force keeps it stuck in the work.)
- Never leave tool running unattended. Turn 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 is unintentionally contacted.
- Keep hands away from moving parts and sanding surfaces.
- Know your tool. Learn its operation, application, and specific limitations.
- Maintain 1/16″ maximum clearance between table and sanding belt.
- Handle workpiece correctly. Whenever possible, use tool rest to support workpiece during buffing operation. Turn tool off if it jams.
- Clean buffing dust from beneath tool frequently.

**⚠ CAUTION**

Think safety! Safety is always a combination of operator common sense and alertness when tool is being used.

**⚠ WARNING**

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

## SPECIFICATIONS

| | |
|---|---|
| **Description** | 2" x 72" Belt and 12" Disc Finishing Machine |
| **Model number** | 9681104 |
| **HP** | 1.5 HP |
| **Voltage** | 115/230 |
| **Amps AC** | 7/3.5 |
| **Belt size** | 2" x 72" |
| **Belt SFPM** | 1800 - 5000 |
| **Belt wheel rpm** | 900 - 2400 |
| **Belt Wheel Ø** | 8" |
| **Belt Idler wheel Ø** | 4" |
| **Disc wheel Ø** | 12" |
| **Disc RPM** | 900-2400 |
| **Overall Dimensions** | 27" x 14" (+25") x 37.25" |
| **Platen** | 2" x 10" |
| **Weight** | 188 lbs |

## ASSEMBLY/INSTALLATION

### Location

The belt grinder must be installed on a structurally stable work surface. If in doubt, consult a qualified structural engineer.

When determining a final location, ensure there is enough clearance for using the belt grinder in its various configurations. Also, consider the size of the work pieces that may require extra space.

### Machine Dimensions

Figure 1 shows the approximate dimensions of the belt grinder. When determining a final location, ensure there is enough clearance for using the belt grinder in its various configurations. Also,consider the size of the work pieces that may require extra space.

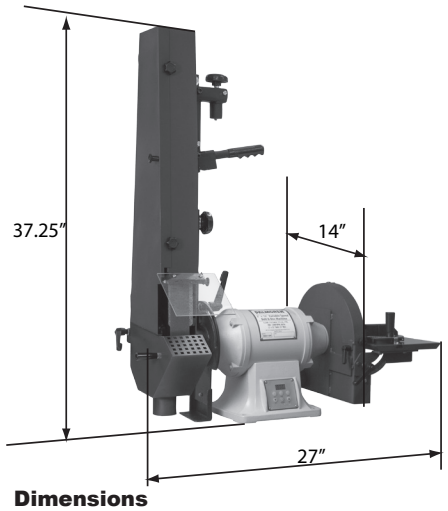



**Figure 1. Dimensions**

This machine requires some assembly. The support brackets, eye-shields, and lower dust collection guards must be attached before use.

**⚠ CAUTION**

***Do not attempt assembly if parts are missing. Use this manual to order repair parts.***

### Support Brackets

1. Assemble the support bracket, using the provided plates, matching 3/8” screw and 3/8” washer and 3/8” spring washer on the motor side of the plate (shown in Figure 2).

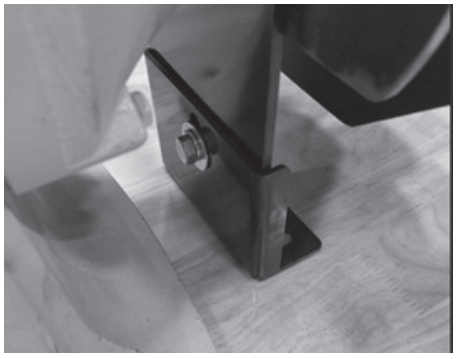


**Figure 2. Support bracket, beneath left-side guard.**

2. Tighten the 3/8” screw into the pivot bracket that hangs from the motor casing.

NOTE: Ensure that the foot of each plate faces away from the motor, as shown in Figure 2.

3. Install the plate on the inside of the pivot bracket.
4. Tighten the 3/8” screw into the pivot bracket that hangs from the motor casing.
5. Do these steps for both sides. All parts can be used for either side.

### Left and Right Eye-Shields

Before any grinding is performed you must install the safety eye-shield to both sides.

1. Attach the clear eye-shield to the bracket using 3/16” Phillips screws. See Figure 3.

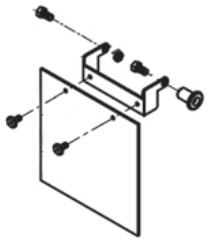


**Figure 3. Eye-shield and bracket assembly**

NOTE: The brackets are mounted to both guards. The knob must be mounted on the motor side of the guard.

2. Attach the eye-shield bracket to the dust collection guard brackets with two ¼” bolts. The bolt on the outside of the guard, opposite the motor, is secured with a nut as shown in Figure 3 and the other is secured with a knob as shown in Figure 4.



**Figure 4. Eye-shield assembled**

3. Lock the eye-shields in place by tightening the knobs.

### Dust Collection

Assemble the dust collection ports.

1. Align the cover by making sure the grate is facing front.
2. Extending from the back of the cover are two small brackets, make sure to align these with the upper guard brackets.
3. See Figure 5. Install the locking handle with a spring washer on the outside bracket, and the 3/8” bolt and matching nut on the inside bracket.

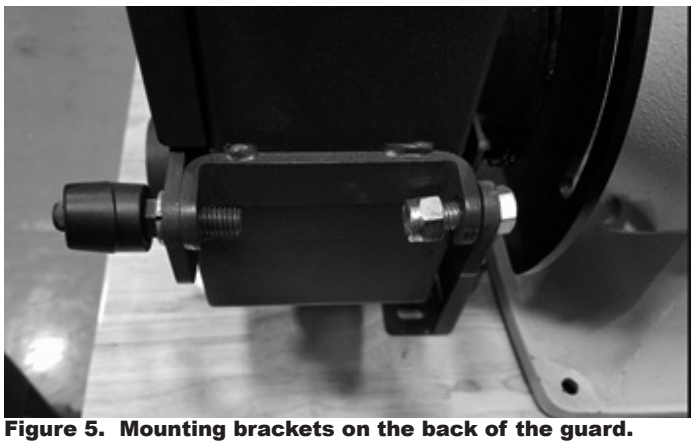


**Figure 5. Mounting brackets on the back of the guard.**

4. Connect your dust collection system to the port.

## Installation

**⚠ 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.

## Locating

- The grinder must be bolted to a firm, level surface.
- Ensure there is enough room for the grinder's arms to move through their full range of motion, fully upright and extending 28" to the rear.
- Ensure there is enough room around the machine so that neither operator nor bystanders will be in line with the workpiece while the machine is operating.
- The base dimensions and mounting footprint are shown in Figure 6.

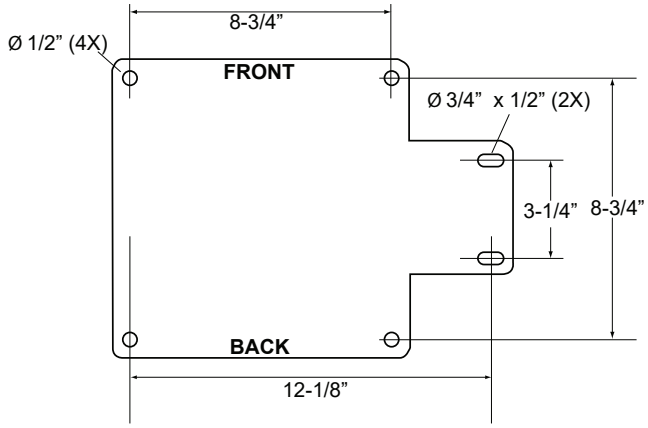



**Figure 6. Base plate and support bracket footprint dimensions**

## Electrical Connections

**⚠ WARNING**

- Make sure tool is off and disconnected from power source when any maintenance is being performed or the belts are being replaced.
- All electrical connections must be performed by a qualified electrician.
- Do not connect the belt grinder to the power source until all assembly steps have been completed.

1. The motor is designed for operation on the voltages and frequency specified.
2. Normal loads will be handled safely on voltages not more than 10% above or below the specified voltage.
3. Running the unit on voltages which are not within the range may cause overheating and motor burnout.
4. Heavy loads require the voltage at motor terminals be not less than the voltage specified. Power supply to the motor is controlled by a single pole locking rocker switch. Remove the key to prevent unauthorized use.

# OPERATION

## Controls

- See Figure 7. To turn on press the “On/Off” button (bottom, center). The wheels will begin to spin. Pressing the button again turns OFF the machine.




**Figure 7. Control buttons**

- When ON, press the desired RPM buttons: “900”, “1800”, or “2400”. The selected rpm value is displayed on the screen and the motor changes its rpm to match the selection.
- Pressing the “Dn” (down arrow) decrements the speed by 100 rpm. The minimum speed is 900 rpm.
- Pressing the “Up” (up arrow) increments the speed up by 100 rpm. The maximum speed is 2400 rpm.

## Adjustment And Locking Handles And Knobs

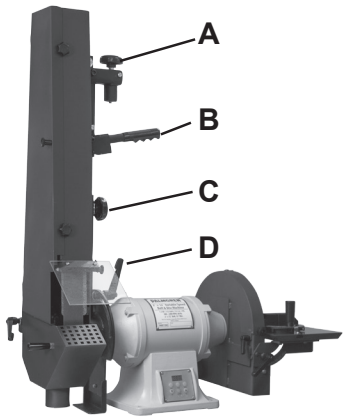



**Figure 8. Handle identification**

A – Idler wheel tracking adjustment – tilts the wheel for tracking adjustment.

B – Belt tightness locking handle– allows short arm length adjustment (for removing the belt)

C – Arm length locking knob

D – Arm pivot locking handle – allows arm to be pivoted between up position and flat position.

## Removing And Replacing The Belt

To remove or replace the belt, follow these steps.

**⚠ WARNING**

Before starting, make sure to power down the belt grinder and unplug from the power source.

1. Put handle B (Figure 98) into locking position by pulling down. The idler wheel lowers creating slack on the belt.
2. See Figure 9. Loosen the dust guard handle E at the back of the machine.

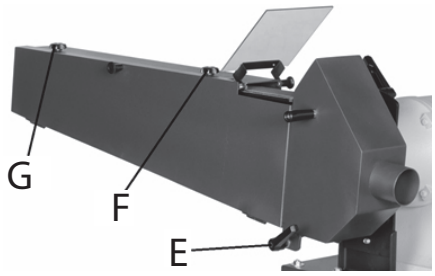



**Figure 9. Access panel knobs and handles**

3. Loosen handle F and knobs G and H to open the access panel.
4. Remove belt carefully, you may need to loosen the two platen handles, shown in Figure 10. You may need to loosen the tool rest D (Figure 98) to remove the belt

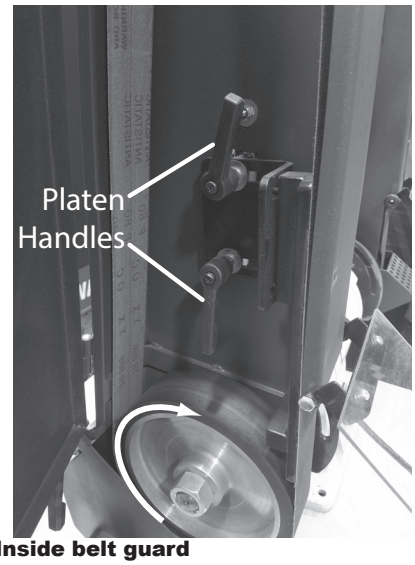



**Figure 10. Inside belt guard**

5. Replace the belt such that it will run in the correct direction. The wheel rotates counterclockwise in operation as shown in Figure 10.
6. Re-align the platen, if it had been adjusted before.
7. Unlock Handle B (see Figure 8), to tighten the belt.
8. Using your hand to rotate the wheel, adjust the belt tracking using knob A (see Figure 8).
9. Adjust tool rest to be 1/16” away from the belt.
10. Close access panel and tighten knobs G and H (see Figure 9).
11. Close lower dust collection guard and tighten handle F.

## Adjusting table angle and guard

The disc table can be angled down, to 50° at max. Loosen the two locking handles on the front and back of machine (front handle shown in figure 5). Then find the scale on the front, and set the angle needed. Retighten the locking handles.

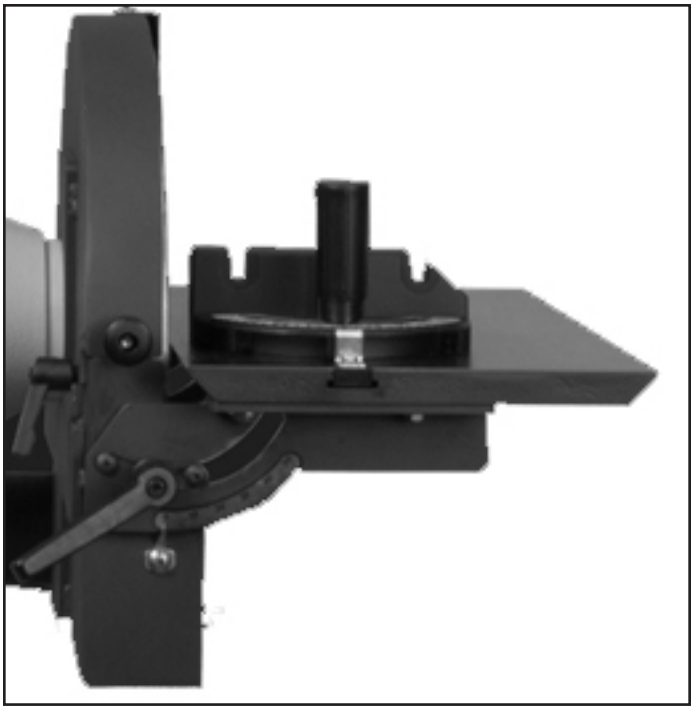


**Figure 11. Belt Table, Front Handle and Angle Scale**

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

## TROUBLESHOOTING

| Symptom | Possible Causes | Corrective Action |
|---|---|---|
| Motor will not start | 1. Blown line fuse or tripped circuit breaker<br>2. Low line voltage<br>3. Defective switch<br>4. Defective, blown capacitor | 1. If fuse is blown, replace with fuse of proper size. If breaker tripped, reset it<br>2. Check power supply for voltage and correct as needed<br>3. Replace switch<br>4. Replace capacitor |
| Motor will not start; fuses blown or circuit breakers tripped | 1. Overloading due to binding<br>2. Defective plug<br>3. Defective cord<br>4. Defective switch | 1. Clean around wheels and shaft and/or replace bearings<br>2. Replace plug<br>3. Replace cord<br>4. Replace switch |
| Motor fails to develop full power (power output of motor decreases rapidly with decrease in voltage at motor terminals) | 1. Power line overloaded with lights, appliances and other motors<br>2. Undersized wires or circuits too long<br>3. General overloading of power company's facilities | 1. Reduce load on power line<br>2. Increase wire sizes, or reduce length of wiring<br>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) | 1. Short circuit in motor or loose connections<br>2. Low voltage<br>3. Motor wired for different line voltage<br>4. Incorrect fuses or circuit breakers in power line<br>5. Motor overloaded | 1. Inspect connections in motor for loose or shorted terminals or worn insulation on lead wires<br>2. Correct the low line voltage conditions<br>3. Rewire motor as per line voltage<br>4. Install correct fuses or circuit breakers<br>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 | Abrasive belt runs off top wheel | See operation section "Removing And Replacing The Belt" on page 8 |
| Excessive vibration | 1. Improper mounting of belt<br>2. Improper wheel mounting | 1. Align belt<br>2. Remount the wheel |

### ELECTRONIC ERROR CODE GUIDE

| Electronic Error Code | Possible Causes | Corrective Action |
|---|---|---|
| OT | Motor Overheated | Turn machine off and unplug to let the motor cool. |
| OV | Excessive voltage | Turn machine off.<br>Check supply voltage and current. If within range, press On/Off again to turn machine on. |
| LV | Low voltage | |
| OL | Motor overloaded | |
| OC | Excessive input current | |

If error code recurs, contact Palmgren: call 1-800-827-3398.

## 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.

### KEEP TOOL IN REPAIR

- If power cord is worn, cut or damaged, replace it immediately.
- Replace worn abrasives when needed.
- Replace any damaged or missing parts using the parts list to order parts.
- Ensure that replacement is performed by a qualified service technician.

## PARTS LIST

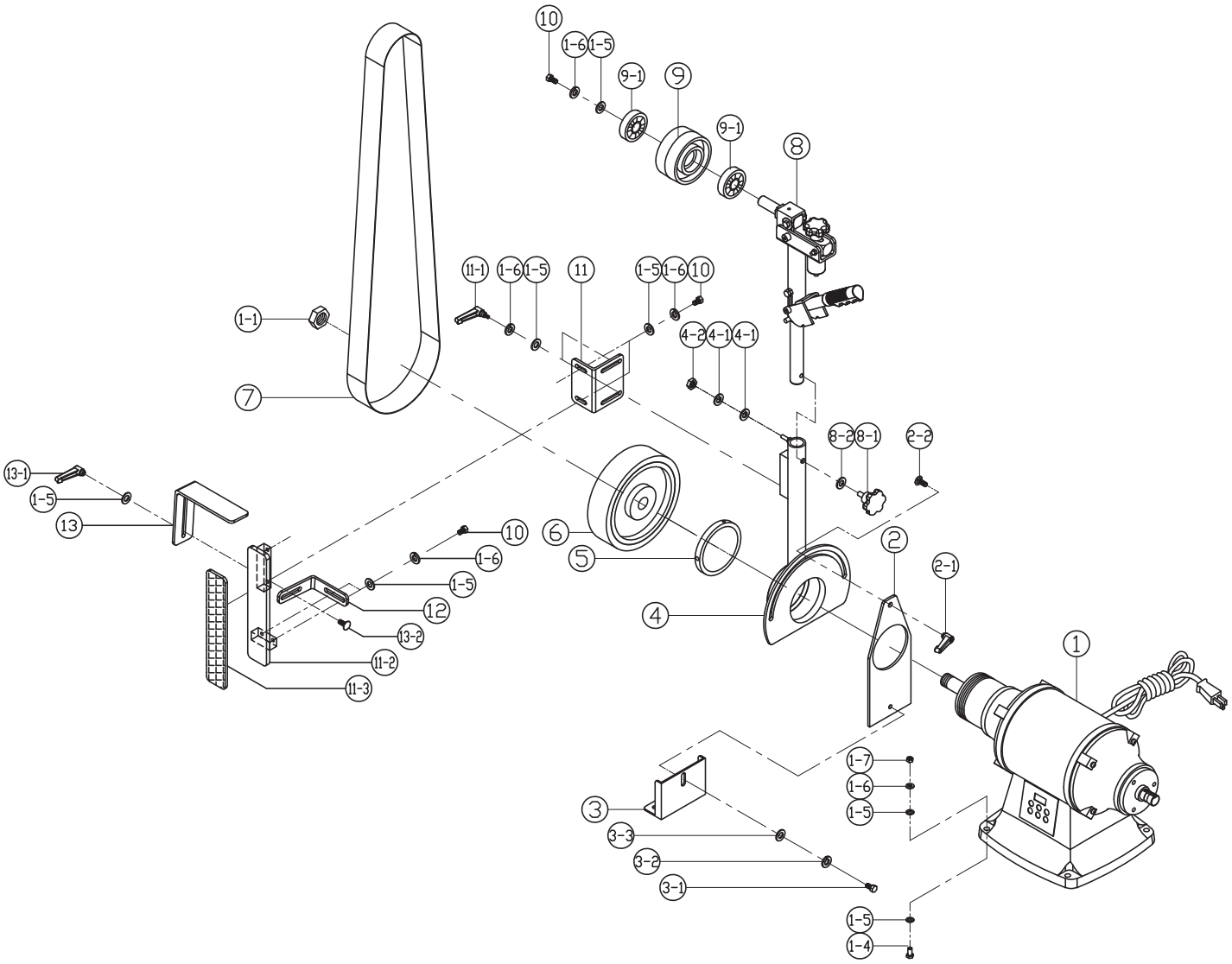



**Figure 12. Parts - Belt Side**

| Ref # | Description | Specification | Part No | Qty |
|---|---|---|---|---|
| 1 | MOTOR | | 965016001 | 1 |
| 1-1 | HEX NUT | 1”-8UNC L.H. | 965016101 | 1 |
| 1-4 | HEX SCREW | 5/16” X 1-3/4” L | * | 4 |
| 1-5 | WASHER | 5/16” | * | 13 |
| 1-6 | SPRING WASHER | 5/16” | * | 9 |
| 1-7 | HEX NUT | 5/16” | * | 4 |
| 2 | PIVOT BRACKET | | 965016201 | 1 |
| 2-1 | LOCK LEVER | 3/8” | 965016301 | 1 |
| 2-2 | CARRIAGE BOLT | 3/8” X 3/4”L | 965016401 | 1 |
| 3 | PIVOT ARM MOUNTING BRACKET | | 965016501 | 1 |
| 3-1 | HEX SCREW | 3/8” X 3/4”L | * | 1 |
| 3-2 | SPRING WASHER | 3/8” | * | 1 |
| 3-3 | WASHER | 3/8” | * | 1 |
| 4 | PIVOT ARM | | 965016601 | 1 |
| 4-1 | WASHER | 1/4” | * | 2 |
| 4-2 | HEX NUT | 1/4” | * | 1 |
| 5 | WHEEL FLANGE | | 965016701 | 1 |
| 6 | DRIVE WHEEL | | 965016801 | 1 |
| 7 | SANDING BELT | 2” X 72” 100GR | 965016901 | 1 |
| 8 | AXLE ADJUSTABLE LEVER SET | | 965017001 | 1 |
| 8-1 | KNOB | 3/8” X 1”L | 965017101 | 1 |
| 8-2 | WASHER | 3/8” | * | 1 |
| 9 | IDLER WHEEL | | 965017201 | 1 |
| 9-1 | BEARING | C&U 6204 RZ | 965017301 | 2 |
| 10 | HEX SCREW | 5/16” X 5/8”L | * | 3 |
| 11 | PLATEN BRACKET | | 965017401 | 1 |
| 11-1 | LOCK LEVER | 5/16” X 3/4”L | 965017501 | 2 |
| 11-2 | PLATEN | | 965017601 | 1 |
| 11-3 | GRAPHITE PAD | 2”W X 9”L | 965017701 | 1 |
| 12 | TOOL REST SUPPORT | | 965078301 | 1 |
| 13 | TOOL REST | | 965078401 | 1 |
| 13-1 | LOCK LEVER | 5/16" | 965078501 | 1 |
| 13.2 | CARRIAGE BOLT | 5/16" X 3/4"L | * | 1 |

(*) Standard hardware item, available locally.

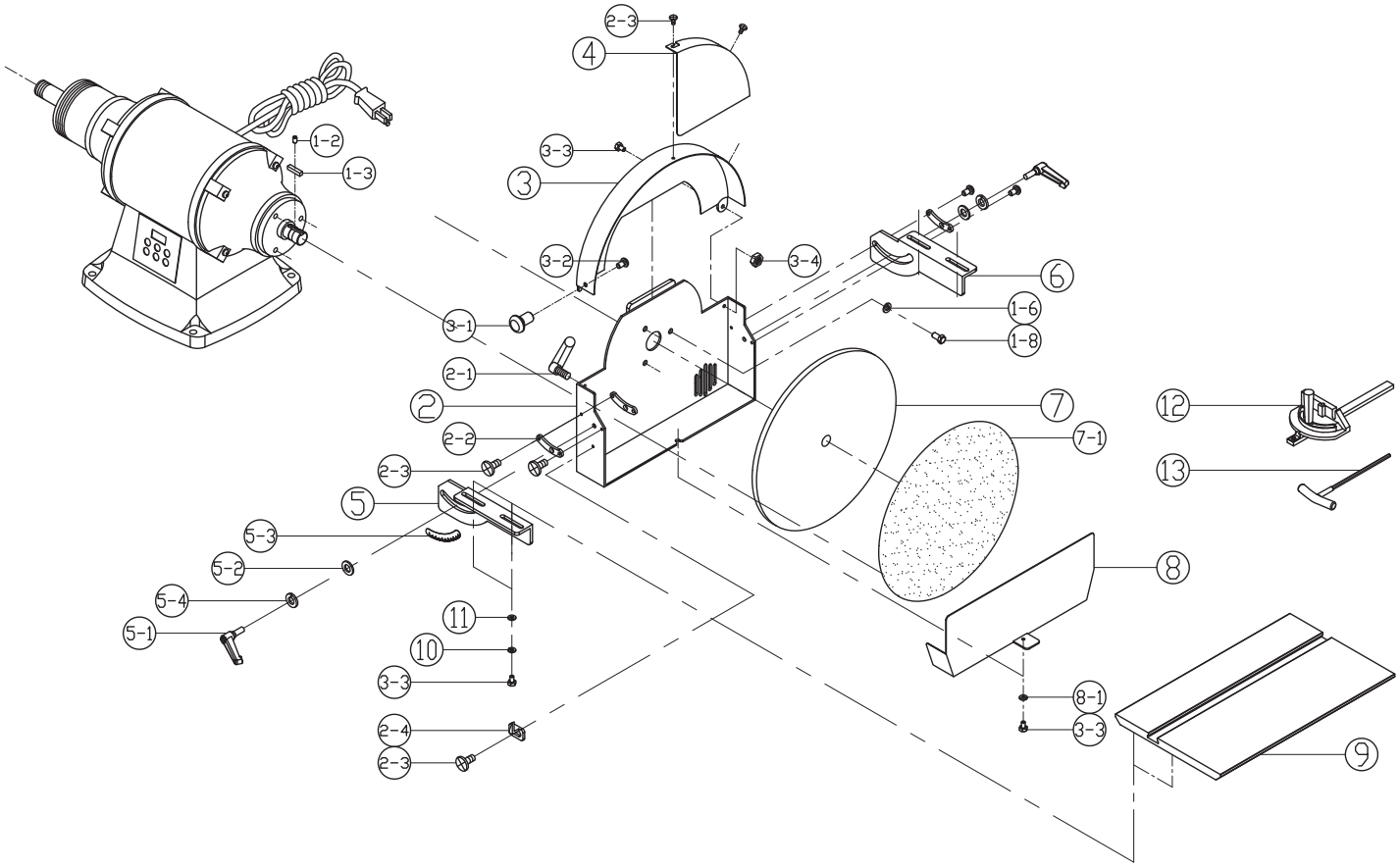



**Figure 13. Parts - Disc Side**

| Ref # | Description | Specification | Part No | Qty |
|---|---|---|---|---|
| 1-6 | SPRING WASHER | 5/16” | * | 3 |
| 1-8 | HEX SCREW | 5/16” X 5/8” L | * | 3 |
| 2 | DISC GUARD | | 965014201 | 1 |
| 2-1 | LOCK LEVER | M6X16L | 965014301 | 1 |
| 2-2 | PLATE | | 965014401 | 2 |
| 2-3 | SCREW | M5X8L | * | 7 |
| 2-4 | INDEX | | 965014501 | 1 |
| 3 | UPPER GUARD | | 965014601 | 1 |
| 3-1 | KNOB | 1/4” | 965014701 | 1 |
| 3-2 | PHILLIPS HEAD SCREW | 1/4” X 3/8”L | * | 1 |
| 3-3 | HEX SCREW | M6X10L | * | 6 |
| 3-4 | NYLON HEX NUT | M6 | * | 1 |
| 4 | HALF-DISC GUARD | | 965014801 | 1 |
| 5 | SIDE PLATE (L) | | 965014901 | 1 |
| 5-1 | LOCK LEVER | 5/16” X 1”L | 965015001 | 2 |
| 5-2 | WASHER | 5/16” | * | 2 |
| 5-3 | LABEL | | 965015101 | 1 |
| 6 | SIDE PLATE (R) | | 965015201 | 1 |
| 7 | SANDING DISC PLATEN | | 965015301 | 1 |
| 7-1 | 12” SANDING DISC | | 965015401 | 1 |
| 8 | DUST CHUTE | | 965015501 | 1 |
| 9 | DISC TABLE | | 965015601 | 1 |
| 10 | SPRING WASHER | 1/4” | * | 4 |
| 11 | WASHER | 1/4” | * | 5 |
| 12 | MITRE GAUGE | | 965015701 | 1 |
| 13 | T-HANDLE HEX WRENCH | | 965015801 | 1 |

(*) Standard hardware item, available locally.

## PALMGREN WARRANTY

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

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

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

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

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

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

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

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

PALMGREN®

***Palmgren - a C.H. Hanson Company***
***2000 N. Aurora Rd., Naperville, IL 60563 U.S.A.***
***or call 1-800-827-3398***