



**PM-P254**  
***Router Motor***  
***3.25 hp Variable Speed\****



**OPERATORS MANUAL**

Assembly • Operation • Warnings • Warranty

**Caution: Read all instructions carefully.**

**SAVE THESE INSTRUCTIONS. Refer to them often and use them to instruct others.**

Date Purchased: \_\_\_\_\_

Where Purchased: \_\_\_\_\_

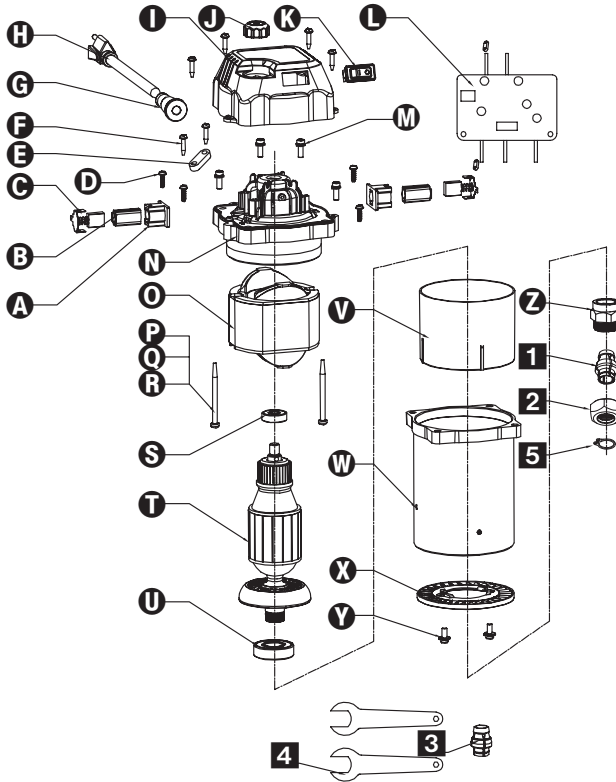
Address: \_\_\_\_\_

\*Peak Horse Power

# Congratulations

You have just purchased a PMP254 Router Motor. This product has been designed specifically for use with most router lifts.

## Parts



Description	Part No.	Qty
<b>A</b> Brush Box	3999	2
<b>B</b> Brush Shell	4000	2
<b>C</b> Carbon Brush	4001	2
<b>D</b> Self Screw	4005	4
<b>E</b> Strain Relief	4006	1
<b>F</b> Self Screw	4007	6
<b>G</b> Wire Bushing	4008	1
<b>H</b> Power Cord 12AWG	4009	1
<b>I</b> Motor Rear Cover	4010	1
<b>J</b> Adjustment Knob	4011	1
<b>K</b> Power Switch	4012	1
<b>L</b> PCB Board	4013	1
<b>M</b> Head Cap Screw	4014	4
<b>N</b> Stator Housing	4015	1
<b>O</b> Motor Stator	4016	1

Description	Part No.	Qty
<b>P</b> Pan Head Screw	4017	2
<b>Q</b> Flat Washer	4018	6
<b>R</b> Spring Washer	4019	6
<b>S</b> NSK Bearing	4020	1
<b>T</b> Motor Rotor	4021	1
<b>U</b> NSK Bearing	4022	1
<b>V</b> Wind deflector	4023	1
<b>W</b> Motor Housing	4024	1
<b>X</b> Dust Board	4025	1
<b>Y</b> Flange Face Screw	4026	2
<b>Z</b> Exchange Bolt	4027	1
<b>1</b> 1/4" Collet	4003	1
<b>2</b> Collet Nut	4004	2
<b>3</b> 1/2" Collet	4002	1
<b>4</b> Wrench	4028	2
<b>5</b> Collet snap ring	4029	2

# General Safety Rules



## READ AND UNDERSTAND ALL INSTRUCTIONS

Failure to follow all instructions listed below, may result in electric shock, fire and/or serious personal injury.

## SAVE THESE INSTRUCTIONS

### Work Area

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1. **Keep work area clean and well lit.** Cluttered, dark work areas invite accidents.
2. **Avoid dangerous environments.** Do not use your power tool in rain, damp or wet locations or in the presence of explosive atmospheres (gaseous fumes, dust or flammable materials). Remove materials or debris that may be ignited by sparks.
3. **Keep bystanders away.** Children and bystanders should be kept at a safe distance from the work area to avoid distracting the operator and contacting the tool or extension cord.
4. **Protect others in the work area** from debris such as chips and sparks. Provide barriers or shields as needed.
5. **Make workshop child proof** with padlocks, master switches, or by removing starter keys.

### Electrical Safety

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6. **Grounded tools must be plugged into an outlet properly installed and grounded in accordance with all codes and ordinances.** Never remove the grounding prong or modify the plug in any way. Do not use any adaptor plugs. Check with a qualified electrician if you are in doubt as to whether the outlet is properly grounded. If the tool should electrically malfunction or break down, grounding provides a low resistance path to carry electricity away from the user.
7. **Double insulated tools are equipped with a polarized plug (one blade is wider than the other). This plug will fit in a polarized outlet only one way. If the plug does not fit fully in the outlet, reverse the plug. If it still does not fit, contact a qualified electrician to install a polarized outlet. Do not change the plug in any way.** Double insulation eliminates the need for the three wire grounded power cord and grounded power supply system.
8. **Guard against electric shock.** Prevent body contact with grounded surfaces such as pipes, radiators, ranges and refrigerators. When making blind or plunge cuts, always check the work area for hidden wires or pipes. Hold your tool by insulated nonmetal grasping surfaces. Use a Ground Fault Circuit Interrupter (GFCI) to reduce shock hazards.

9. **Do not expose to rain or use in damp locations.**
10. **Do not abuse the cord. Never use the cord to carry the tools or pull the plug from an outlet. Keep cord away from heat, oil, sharp edges or moving parts. Replace damaged cords immediately.** Damaged cords increase the risk of electric shock.

## Personal Safety

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11. **Know your power tool.** Read this manual carefully to learn your power tool's applications and limitations as well as potential hazards associated with this type of tool.
12. **Stay alert, watch what you are doing, and use common sense when operating a power tool. Do not use tool while tired or under the influence of drugs, alcohol, or medication.** A moment of inattention while operating power tools may result in serious personal injury.
13. **Dress properly.** Do not wear loose clothing or jewelry. Wear a protective hair covering to contain long hair. These may be caught in moving parts. When working outdoors, wear rubber gloves and insulated non-skid footwear. Keep hands and gloves away from moving parts.
14. **Reduce the risk of unintentional starting.** Be sure your tool is turned off before plugging it in. Do not use a tool if the power switch does not turn the tool on and off. Do not carry a plugged-in tool with your finger on the switch.
15. **Remove all adjusting keys and wrenches.** Make a habit of checking that adjusting keys, wrenches, etc. are removed from the tool before turning it on.
16. **Do not overreach. Maintain control.** Keep proper footing and balance at all times.
17. **Use safety equipment.** Everyone in the work area should **wear safety goggles or glasses with side shields** complying with current safety standards. Everyday eyeglasses only have impact resistant lenses. They are not safety glasses. Wear hearing protection during extended use and a dust mask for dusty operations. Hard hats, face shields, safety shoes, etc. should be used when specified or necessary. Keep a fire extinguisher nearby.
18. **Keep guards in place** and in working order.
19. **Never stand on tool.** Serious injury could occur if the tool is tipped or if the cutting tool is tipped or if the cutting tool is unintentionally contacted.
20. **Keep hands away from all cutting edges and moving parts.**

## Tool Use and Care

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21. **Secure work.** Use clamps or a vise to hold work when practical. It is safer than using your hand and it frees both hands to operate the tool.

22. **Do not force tool.** Your tool will perform best at the rate for which it was designed. Excessive force only causes operator fatigue, increased wear and reduced control.
23. **Use the right tool.** Do not use a tool or attachment to do a job for which it is not recommended.
24. **Unplug tool** when it is not in use before changing accessories or performing recommended maintenance.
25. **Store idle tools.** When not in use, store your tool in a dry, secured place. Keep out of reach of children.
26. **Never leave the tool running unattended.** Turn power off. Do not leave the tool until it comes to a complete stop.
27. **Check for damaged parts.** Inspect guards and other parts before use. Check for misalignment, binding of moving parts, improper mounting, broken parts and any other conditions that may affect operation. If abnormal noise or vibration occurs, turn the tool off immediately and have the problem corrected before further use. Do not use a damaged tool.
28. **Use proper accessories.** Consult this manual for recommended accessories. Using improper accessories may be hazardous. Be sure accessories are properly installed and maintained. Do not discard a guard or other safety device when installing an accessory or attachment.
29. **Maintain tools carefully.** Keep cutting edges sharp and clean. Follow instructions for lubricating and changing accessories. Periodically inspect tool cords and extension cords for damage. Have damaged parts repaired or replaced by PortaMate.
30. **Maintain labels & nameplates.** These carry important information.

## Service

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31. Service or maintenance performed by unqualified personnel may result in a risk of injury.
32. **When servicing a tool, use only identical replacement parts. Follow instructions in the maintenance section of the manual.** Use of unauthorized parts or failure to follow maintenance instructions may create a risk of shock or injury.
33. Note that 2 spare motor brushes are included with your router.



**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 paint

Crystalline silica from bricks and cement and other masonry products, and

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, such as those dust masks that are specifically designed to filter out microscopic particles.

**Read, understand, and follow the instructions packaged with the router table and router lift.** Do not plug in Remote Power until Router Table Motor is fully installed.

**Always wear safety goggles and dust mask.** Use only in a well-ventilated area. Using personal safety devices in a safe environment can reduce the risk for injury.

**Some woods contain preservatives that can be toxic.** Take extra care to prevent inhalation and skin contact when working with these materials. Request, and follow, any safety information available from your material supplier.

**Always make sure the workpiece is free from nails, screws, and other foreign objects. Keep the working edge away from the clamping surface.** Cutting these objects can cause loss of control of the workpiece and damage to the bit.

**Never place hands near cutting surface.**

**Never use dull or damaged bits. Sharp bits must be handled with care.** Damaged bits can break during use. Dull bits require more force, which could cause the bit to break. Damaged bits can throw carbide pieces and burn the workpiece.



**To reduce the risk of injury, wear safety goggles or glasses with side shields.**

**To reduce the risk of injury, always unplug tool before attaching, removing accessories or making adjustments. Use only specifically recommended accessories. Others may be hazardous.**

**After changing the bit or making any adjustments, make sure the collet nut and any other adjustment devices are securely tightened.** Loose adjustment devices can

unexpectedly shift, causing loss of control. Loose rotating components will be violently thrown. Watch for vibration or wobbling that could indicate an improperly installed bit.



**Always keep the power supply cord away from moving parts on the tool.**

**Never start the tool when the bit is in contact with the material.** The bit cutting edge may grab the material causing loss of control of the workpiece.

**Never touch the bit during or immediately after use.** After use the bit may be hot enough to burn bare skin.

**To reduce the risk of injury, avoid “climb cutting.”** Climb cutting can cause the workpiece to be thrown violently out of your control. Even small router bits can result in climb cutting. Always feed the workpiece against the cutter rotation.

## Symbology

	Double Insulated
$V\sim$	Volts Alternating Current
$n_0$ <u>xxxx</u> min: <sup>1</sup>	No Load Revolutions per Minute (RPM)
A	Amperes
	Do not expose to rain or use in damp locations

## Specifications

Volts AC	Horsepower	No Load RPM
120	3.25 hp*	10,000 – 22,000

# Extension Cords

Grounded tools require a three wire extension cord. Double insulated tools can use either a two or three wire extension cord. As the distance from the supply outlet increases, you must use a heavier gauge extension cord. Using extension cords with inadequately sized wire causes a serious drop in voltage, resulting in loss of power and possible tool damage. Refer to the table shown to determine the required minimum wire size.

The smaller the gauge number of the wire, the greater the capacity of the cord. For example, a 14 gauge cord can carry a higher current than a 16 gauge cord. When using more than one extension cord to make up the total length, be sure each cord contains at least the minimum wire size required. If you are using one extension cord for more than one tool, add the nameplate amperes and use the sum to determine the required minimum wire size.

## Guidelines for Using Extension Cords

If you are using an extension cord outdoors, be sure it is marked with the suffix “W-A” (“W” in Canada) to indicate that it is acceptable for outdoor use.

Be sure your extension cord is properly wired and in good electrical condition. Always replace a damaged extension cord or have it repaired by a qualified person before using it.

Protect your extension cords from sharp objects, excessive heat and damp or wet areas.

### Recommended Minimum Wire Gauge for Extension Cords \*

Nameplate Amperes	Extension Cord Length				
	25'	50'	75'	100'	150'
0 - 2.0	18	18	18	18	16
2.1 - 3.4	18	18	18	16	14
3.5 - 5.0	18	18	16	14	12
5.1 - 7.0	18	16	14	12	12
7.1 - 12.0	16	14	12	10	
12.1 - 16.0	14	12	10		
16.1 - 20.0	12	10			

\* Based on limiting the line voltage drop to five volts at 150% of the rate amperes.



# Tool Assembly



To reduce the risk of injury, always unplug tool before attaching or removing accessories or making adjustments. Use only specifically recommended accessories. Others may be hazardous.

## Collets

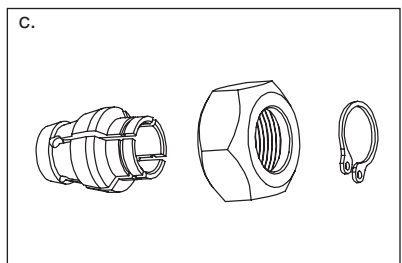
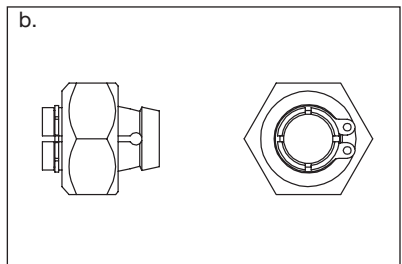
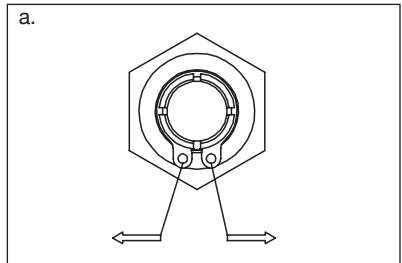
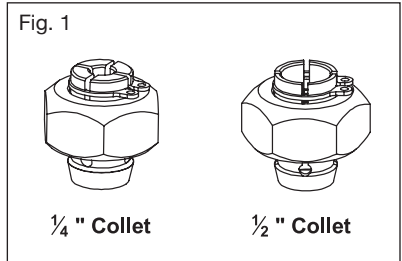
The collet must be attached to the collet nut before it is put into the collet shaft. Be sure that the size of the collet matches the size of the bit shank being used. If the wrong size bit shank is used, the collet may break. For attaching or detaching the collet nut to the collet, follow the illustrated instructions on this page.

### Attaching Collet to Collet Nut:

This product includes a 1/4" and 1/2" collet, as shown in Fig. 1

To assemble the collet or to replace a broken part, complete the following steps:

- Using snap ring pliers – open the snap ring and remove it.
- Loosen the collet completely and replace the broken part.
- Tighten the collet completely and replace the snap ring.



## Installing the Motor into the Lift

To install the motor into a router lift, read, understand, and follow the instructions packaged with the router lift.

## Installing the Bit

It is not necessary to remove the motor from the lift to install a collet assembly or a bit. (If removal of the motor is desired, see the lift instructions.) Raise the motor as high as possible. Always wipe wood chips, dust, or other foreign materials from the collet shaft and collet assembly before assembling.

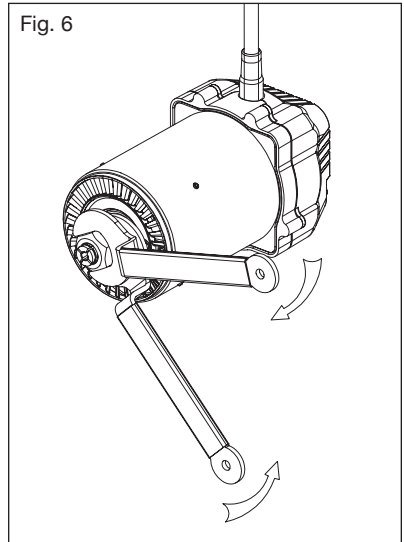
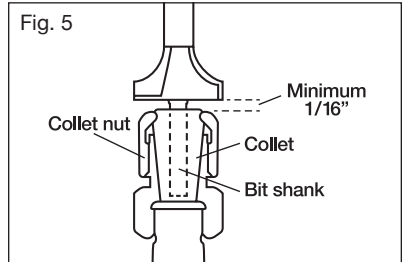
Insert the collet assembly into the collet shaft. Insert the bit shank into the collet as follows:

1. Insert the bit shank into the collet as far as it will go.
2. Back the bit shank out slightly to avoid bottoming out.
3. Be sure there is a minimum of 1/16" between the bottom of the collet assembly and the radius to the cutting portion of the bit (Fig. 5).
4. Be sure that the collet is not clamped to a fluted section on the bit shank. The collet should be clamped to a solid part on the bit shank.
5. To tighten the bit in the collet assembly use two wrenches (Fig. 6).

**NOTE: Never tighten a collet assembly without inserting a bit shank of the proper size. This may damage the collet.**

## Removing the Bit

1. Loosen the collet nut from the collet shaft using two wrenches.
2. Once loose, unscrew the collet nut by hand until it feels tight again.
3. Return to using the wrenches until the bit shank can be pulled out.



# Operation



To reduce the risk of injury, wear safety goggles or glasses with side shields. Always wait for the bit to stop completely and unplug the tool before changing accessories or making adjustments. Never make adjustments while the router is running. Do not modify or remove the guards.

**Do not use this router unless it is securely installed into a recommended router lift and table.**

## Contents

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Check the contents of the box carefully before using the tool.

- (1) Router motor                      (1) 1/4" collet    (2) Spare motor brushes  
(2) Offset wrenches                  (1) 1/2" collet

## Variable Speed Dial

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The variable speed dial allows you to adjust the rotating speed (RPM) of the tool.

Use the following chart to determine the best speed for the bit diameter.

Speed Setting	RPM	Max. Bit Diameter
Slow	10,000	3" to 3-1/2"
Slow	12,000	3" to 3-1/2"
Medium	14,000	2-1/4" to 2-1/2"
Medium	16,000	2-1/4" to 2-1/2"
Medium	18,000	1-1/4" to 2"
Fast	20,000	1"
Fast	22,000	1"

## Electronic Overload Protection

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Before the motor is overloaded, the electronic overload protection circuit will turn off the tool.

## Soft Start

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The Soft-Start feature reduces the amount of torque reaction of the tool. This feature gradually increases the motor speed up from zero to the speed set by the variable speed dial.

## Feedback Control

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The electronic speed control system allows the tool to maintain constant speed between no-load and load conditions.



To reduce the risk of injury, always use feather boards, push sticks or push blocks with proper guarding. Keep hands away from moving bit. Refer to the Router Table manual for proper table setup and use.

## Cutting

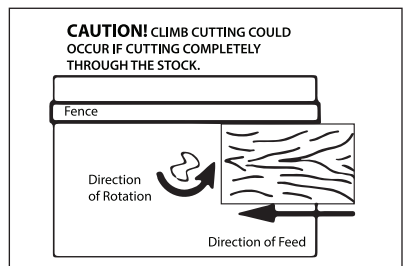
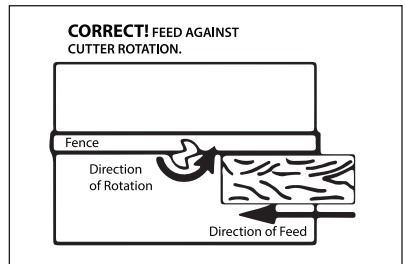
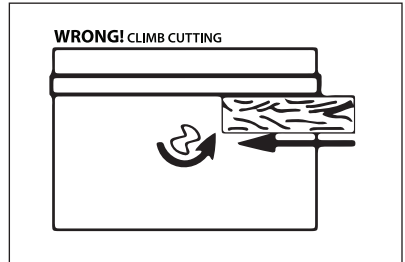
The speed and depth of cut will depend largely on the type of material being used. Keep the cutting pressure constant but do not use excessive force so the motor speed slows excessively. It may be necessary on exceptionally hard woods or problem materials to make more than one pass to get the desired depth of cut.

Before beginning the cut on the actual workpiece, it is advisable to take a sample cut on a scrap piece of lumber. This will show you exactly how the cut will look as well as enable you to check dimensions.

Position the fence so that the workpiece feeds against the cutter rotation. Feeding the workpiece with the cutter rotation is called climb cutting, which is very dangerous. Climb cutting can result in the workpiece being thrown violently out of your control at great speed.



To reduce the risk of injury, avoid “climb cutting.” Climb cutting can cause the workpiece to be thrown violently out of your control. Even small router bits can cause in climb cutting.



# Maintenance



To reduce the risk of injury, always unplug your tool before performing any maintenance. Never disassemble the tool or try to do any rewiring on the tool's electrical system.

## Tool Maintenance

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Keep your tool in good repair by adopting a regular maintenance program. Before use, examine the general condition of your tool. Inspect guards, switches, power cords and extension cord for damage. Check for loose screws, misalignment, binding of moving parts, improper mounting, broken parts and any other condition that may affect its safe operation. If abnormal noise or vibration occurs, turn the tool off immediately and have the problem corrected before further use. Do not use a damaged tool.



To reduce the risk of injury, electric shock and damage to the tool, never immerse your tool in liquid or allow a liquid to flow inside the tool

## Cleaning Your Tool

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Clean dust and debris from vents. Keep tool handles clean, dry and free of oil or grease. Use only mild soap and a damp cloth to clean your tool. Never use cleaning agents and solvents such as: gasoline, turpentine, lacquer thinner, paint thinner, chlorinated cleaning solvents, ammonia, household detergents containing ammonia, flammable or combustible solvents around tools. These are harmful to your tool, plastics and insulated parts.

# One Year Limited Warranty

Warrantor warrants to the original purchaser that PortaMate PM-254 will be free from defects in materials and workmanship under normal use and service for a period of one (1) year from the date of original purchase.

The obligation of this Warranty is limited to repair or replacement, at our option, of components which prove defective under normal use.

This warranty is in lieu of all other express warranties obligations or liabilities.

ANY IMPLIED WARRANTIES, OBLIGATIONS OR LIABILITIES, SHALL BE LIMITED IN DURATION TO THE ONE YEAR PERIOD OF THIS LIMITED WARRANTY. NO AGENT, REPRESENTATIVE, DEALER, OR EMPLOYEE OF THE COMPANY HAS THE AUTHORITY TO INCREASE OR ALTER THE OBLIGATIONS OF THIS WARRANTY.

This Warranty shall not apply to any product or component which in the opinion of the Warrantor has been modified or altered in any way, damaged as a result of an accident, misuse or abuse, or loss of parts. In no case shall the Warrantor be liable for any special or consequential damages, or any other costs or warranty, expressed or implied, whatsoever. This Warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

## Customer Service Department

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an  TOOL WORKS company

**Portamate**

1161 Rankin, Troy, MI 48083

1-800-624-2027 • 248-588-0395

[www.portamate.com](http://www.portamate.com)