

# Instruction manual

## BELT SANDER



### MODEL 352VS

#### IMPORTANT

Please make certain that the person who is to use this equipment carefully reads and understands these instructions before starting operations.

**PORTER-CABLE**  
PROFESSIONAL POWER TOOLS

## SAFETY GUIDELINES - DEFINITIONS

It is important for you to read and understand this manual. The information it contains relates to protecting YOUR SAFETY and PREVENTING PROBLEMS. The symbols below are used to help you recognize this information.



### **▲ DANGER**

indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

### **▲ WARNING**

indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

### **▲ CAUTION**

indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

### **CAUTION**

used without the safety alert symbol indicates a potentially hazardous situation which, if not avoided, may result in property damage.

## CALIFORNIA PROPOSITION 65

### **▲ WARNING**

Some dust created by power sanding, sawing, grinding, drilling, and other construction activities contains chemicals known (to the State of California) to cause cancer, birth defects or other reproductive harm. Some examples of these chemicals are:

- lead from lead-based paints
- crystalline silica from bricks and cement and other masonry products
- arsenic and chromium from chemically-treated lumber

Your risk from these exposures 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 NIOSH/OSHA approved, properly fitting face mask or respirator when using such tools.

# GENERAL SAFETY RULES

**▲ WARNING** Read all instructions. Failure to follow all instructions listed below may result in electric shock, fire and/or serious injury. The term "power tool" in all of the warnings listed below refers to your mains-operated (corded) power tool or battery-operated (cordless) power tool.



SAVE THESE INSTRUCTIONS

## 1) Work area safety

- a) **Keep work area clean and well lit.** Cluttered or dark areas invite accidents.
- b) **Do not operate power tools in explosive atmospheres, such as in the presence of flammable liquids, gases or dust.** Power tools create sparks which may ignite the dust or fumes.
- c) **Keep children and bystanders away while operating a power tool.** Distractions can cause you to lose control.

## 2) Electrical safety

- a) **Power tool plugs must match the outlet. Never modify the plug in any way. Do not use any adapter plugs with earthed (grounded) power tools.** Unmodified plugs and matching outlets will reduce risk of electric shock.
- b) **Avoid body contact with earthed or grounded surfaces such as pipes, radiators, ranges and refrigerators.** There is an increased risk of electric shock if your body is earthed or grounded.
- c) **Do not expose power tools to rain or wet conditions.** Water entering a power tool will increase the risk of electric shock.
- d) **Do not abuse the cord. Never use the cord for carrying, pulling or unplugging the power tool. Keep cord away from heat, oil, sharp edges or moving parts.** Damaged or entangled cords increase the risk of electric shock.
- e) **When operating a power tool outdoors, use an extension cord suitable for outdoor use.** Use of a cord suitable for outdoor use reduces the risk of electric shock.

## 3) Personal safety

- a) **Stay alert, watch what you are doing and use common sense when operating a power tool. Do not use a power tool while you are tired or under the influence of drugs, alcohol or medication.** A moment of inattention while operating power tools may result in serious personal injury.
- b) **Use safety equipment. Always wear eye protection.** Safety equipment such as dust mask, non-skid safety shoes, hard hat, or hearing protection used for appropriate conditions will reduce personal injuries.
- c) **Avoid accidental starting. Ensure the switch is in the off-position before plugging in.** Carrying power tools with your finger on the switch or plugging in power tools that have the switch on invites accidents.

## GENERAL SAFETY RULES continued

- d) **Remove any adjusting key or wrench before turning the power tool on.** A wrench or a key left attached to a rotating part of the power tool may result in personal injury.
- e) **Do not overreach. Keep proper footing and balance at all times.** This enables better control of the power tool in unexpected situations.
- f) **Dress properly. Do not wear loose clothing or jewelry. Keep your hair, clothing and gloves away from moving parts.** Loose clothes, jewelry or long hair can be caught in moving parts.
- g) **If devices are provided for the connection of dust extraction and collection facilities, ensure these are connected and properly used.** Use of these devices can reduce dust-related hazards.

### 4) Power tool use and care

- a) **Do not force the power tool. Use the correct power tool for your application.** The correct power tool will do the job better and safer at the rate for which it was designed.
- b) **Do not use the power tool if the switch does not turn it on and off.** Any power tool that cannot be controlled with the switch is dangerous and must be repaired.
- c) **Disconnect the plug from the power source before making any adjustments, changing accessories, or storing power tools.** Such preventive safety measures reduce the risk of starting the power tool accidentally.
- d) **Store idle power tools out of the reach of children and do not allow persons unfamiliar with the power tool or these instructions to operate the power tool.** Power tools are dangerous in the hands of untrained users.
- e) **Maintain power tools. Check for misalignment or binding of moving parts, breakage of parts and any other condition that may affect the power tools operation. If damaged, have the power tool repaired before use.** Many accidents are caused by poorly maintained power tools.
- f) **Keep cutting tools sharp and clean.** Properly maintained cutting tools with sharp cutting edges are less likely to bind and are easier to control.
- g) **Use the power tool, accessories and tool bits etc., in accordance with these instructions and in the manner intended for the particular type of power tool, taking into account the working conditions and the work to be performed.** Use of the power tool for operations different from those intended could result in a hazardous situation.











### 5) Service

- a) **Have your power tool serviced by a qualified repair person using only identical replacement parts.** This will ensure that the safety of the power tool is maintained.

## ADDITIONAL SPECIFIC SAFETY RULES

1. **Hold power tools by insulated gripping surfaces when performing an operation where the cutting tool may contact hidden wiring or its own cord.** Contact with a "live" wire will make exposed metal parts of the tool "live" and shock the operator.
2. **Use proper safety equipment.** Wear safety goggles for eye protection, wear hearing protection, and wear a protective mask to minimize breathing in the fine dust created while sanding.
3. **Always disconnect the sander cord plug from the power circuit before changing abrasive sheets.** Such preventive safety measures reduce the risk of starting the power tool accidentally.
4. **Sanding of lead-based paint is not recommended.** Lead-based paint should only be removed by a professional.
5. **Always maintain a firm grip on the belt sander handles** with both hands to prevent loss of control.
6. **Do not operate belt sander without all guards and covers** securely in place.
7. **Wear eye and hearing protection. Always use safety glasses.** Everyday eyeglasses are NOT safety glasses. USE CERTIFIED SAFETY EQUIPMENT. Eye protection equipment should comply with ANSI Z87.1 standards. Hearing equipment should comply with ANSI S3.19 standards.
8. **⚠ WARNING Use of this tool can generate and disburse dust or other airborne particles, including wood dust, crystalline silica dust and asbestos dust.** Direct particles away from face and body. Always operate tool in well ventilated area and provide for proper dust removal. Use dust collection system wherever possible. Exposure to the dust may cause serious and permanent respiratory or other injury, including silicosis (a serious lung disease), cancer, and death. Avoid breathing the dust, and avoid prolonged contact with dust. Allowing dust to get into your mouth or eyes, or lay on your skin may promote absorption of harmful material. Always use properly fitting NIOSH/OSHA approved respiratory protection appropriate for the dust exposure, and wash exposed areas with soap and water.

**SAVE THESE INSTRUCTIONS!**

<b>SYMBOL</b>	<b>DEFINITION</b>
V	volts
A	amperes
Hz	hertz
W	watts
kW	kilowatts
F	farads
$\mu$ F	microfarads
l	litres
g	grams
kg	kilograms
bar	bars
Pa	pascals
h	hours
min	minutes
s	seconds
$n_0$	no-load speed
.../min or ...min <sup>-1</sup>	Revolutions or reciprocations per minute
 or d.c.	direct current
 or a.c.	alternating current
2 	two-phase alternating current
2N 	two-phase alternating current with neutral
3 	three-phase alternating current
3N 	three-phase alternating current with neutral
 A	rated current of the appropriate fuse-link in amperes
 X	time-lag miniature fuse-link where X is the symbol for the time/current characteristic, as given in IEC 60127
	protective earth
	class II tool
IPXX	IP symbol

## ADDITIONAL SAFETY RULES FOR PAINT REMOVAL

### ⚠ WARNING

Extreme care should be taken when removing paint. The peelings, residue, and vapors of paint may contain lead, which is poisonous. Exposure to even low levels of lead can cause irreversible brain and nervous system damage. Young and unborn children are particularly vulnerable.

Before beginning any paint removal process you should determine whether the paint you are removing contains lead. This can be done by your local health department or by a professional who uses a paint analyzer to check for lead.

### **Lead-based paint should only be removed by a professional.**

Persons removing paint should follow these guidelines:

- 1. Keep the work area well ventilated.** Open the windows and put an exhaust fan in one of them. Be sure the fan is moving air from inside to outside.
- 2. Remove or cover any carpets, rugs, furniture, clothing, cooking utensils, and air ducts.** Such preventive safety measures reduce the risk of exposure.
- 3. Place drop cloths in the work area to catch any paint chips or peelings. Wear protective clothing such as extra work shirts, overalls and hats.** Such preventive safety measures reduce the risk of exposure.
- 4. Work in one room at a time.** Furnishings should be removed or placed in the center of the room and covered. Work areas should be sealed off from the rest of the dwelling by sealing doorways with drop cloths.
- 5. Children, pregnant, or potentially pregnant women and nursing mothers should not be present in the work area until the work is done and all cleanup is complete.** Such preventive safety measures reduce the risk of injury.
- 6. Wear a dust respirator or a dual filter (dust and fume) respirator mask which has been approved by the Occupational Safety and Health Administration (OSHA), the National Institute of Safety and Health (NIOSH), or the United States Bureau of Mines.** These masks and replaceable filters are readily available at major hardware stores. Be sure the mask fits. Beards and facial hair may keep the masks from sealing properly. Change filters often. DISPOSABLE PAPER MASKS ARE NOT ADEQUATE.
- 7. Keep food and drink out of the work area.** Wash hands, arms, and face and rinse mouth before eating or drinking. Do not smoke or chew gum or tobacco in the work area.
- 8. Clean up all removed paint and dust by wet mopping the floors.** Use a wet cloth to clean all walls, sills and any other surfaces where paint or dust is clinging. DO NOT SWEEP, DRY DUST OR VACUUM. Use a high phosphate detergent or trisodium (TSP) to wash and mop areas.
- 9. At the end of each work session, put the paint chips and debris in a double plastic bag, close it with tape or twist ties and dispose properly.** Such preventive safety measures reduce the risk of exposure.
- 10. Remove protective clothing and work shoes in the work area to avoid carrying dust into the rest of the dwelling.** Wash work clothes separately. Wipe shoes off with a wet rag, then wash that rag with the work clothes. Wash hair and body thoroughly with soap and water.

## MOTOR

Many Porter-Cable tools will operate on either D.C., or single phase 25 to 60 cycle A.C. current and voltage within plus or minus 5 percent of that shown on the specification plate on the tool. Several models, however, are designed for A.C. current only. Refer to the specification plate on your tool for proper voltage and current rating.

**CAUTION** Do not operate your tool on a current on which the voltage is not within correct limits. Do not operate tools rated A.C. only on D.C. current. To do so may seriously damage the tool.

## EXTENSION CORD SELECTION

If an extension cord is used, make sure the conductor size is large enough to prevent excessive voltage drop which will cause loss of power and possible motor damage. A table of recommended extension cord sizes will be found in this section. This table is based on limiting line voltage drop to 5 volts (10 volts for 230 volts) at 150% of rated amperes.

If an extension cord is to be used outdoors, it must be marked with the suffix W-A or W following the cord type designation. For example – SJTW-A to indicate it is acceptable for outdoor use.

### RECOMMENDED EXTENSION CORD SIZES FOR USE WITH PORTABLE ELECTRIC TOOLS

		Length of Cord in Feet									
		115V	25 Ft.	50 Ft.	100 Ft.	150 Ft.	200 Ft.	250 Ft.	300 Ft.	400 Ft.	500 Ft.
		230V	50 Ft.	100 Ft.	200 Ft.	300 Ft.	400 Ft.	500 Ft.	600 Ft.	800 Ft.	1000 Ft.
Nameplate Ampere Rating	0-2	18	18	18	16	16	14	14	12	12	12
	2-3	18	18	16	14	14	12	12	10	10	8
	3-4	18	18	16	14	12	12	10	10	8	8
	4-5	18	18	14	12	12	10	10	8	8	6
	5-6	18	16	14	12	10	10	8	8	6	6
	6-8	18	16	12	10	10	8	6	6	4	4
	8-10	18	14	12	10	8	8	6	6	4	4
	10-12	16	14	10	8	8	6	6	4	4	2
	12-14	16	12	10	8	6	6	4	4	2	2
	14-16	16	12	10	8	6	6	4	4	2	2
	16-18	14	12	8	8	6	4	4	2	2	2
18-20	14	12	8	6	6	4	4	2	2	2	

**SAVE THESE INSTRUCTIONS!**

## CARTON CONTENTS

Carton contents include the sander, an instruction manual, and a parts list.

## FUNCTIONAL DESCRIPTION

### FOREWORD

The Porter-Cable Variable Speed Belt Sander (Model 352VS) is designed for removing old paint and varnish, smoothing rough boards, and fine-surfacing wood, metal, plastics, and other materials.



## ASSEMBLY

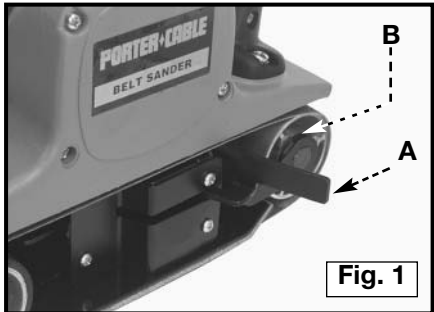
**NOTE:** This tool is shipped completely assembled. No assembly time or tools are required.

## OPERATION

### INSTALLING AND REMOVING THE ABRASIVE BELT

**⚠ WARNING** DISCONNECT TOOL FROM POWER SOURCE.

1. Place the sander on its left side.
2. Pull the lever (A) Fig. 1 out toward the front of the machine to retract the idler pulley (B) and release the tension on the abrasive belt.
3. Remove the old belt.
4. Install the new belt with the arrow (printed on the inside of the belt) on the top and pointing TOWARD the idler pulley.

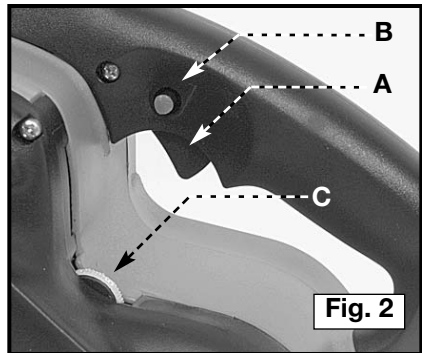


**NOTE:** Some sanding belts are bi-directional. These belts will not have arrows printed on them. They can be installed to run in either direction.

5. Engage the front pulley by pushing the lever (A) Fig. 1 back to its original position.

### TO START AND STOP THE BELT SANDER

1. Be certain that the the switch is off and the power circuit voltage is the same as the voltage shown on the specification plate. Connect the machine to a power circuit.
2. Squeeze the trigger (A) Fig. 2 to start the motor. Release the trigger to stop the motor.
3. To allow the motor to run without constantly holding the trigger, press the trigger switch (A), push the lock button (B) Fig. 2, and release the trigger switch.
4. To release the lock button, squeeze the trigger and release.



## VARIABLE SPEED

Model 352VS has a Variable Speed Control. The operating speed is adjustable between 850 SFM (surface feet per minute) and 1300 SFM.

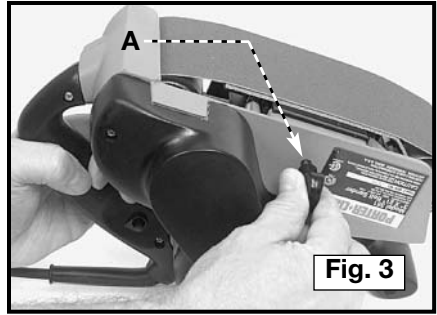
The speed is adjusted by turning the thumbwheel, (C) Fig. 2. The first position provides the slowest operating speed (850 SFM) while position 6 is the fastest (1300 SFM). The speed can be changed either when the motor is running or is stopped.

## TRACKING THE ABRASIVE BELT

To prevent excessive wear on both the sander and belt, **NEVER** allow the abrasive belt to rub on the sander frame. To make sure that the belt is tracking correctly, do the following:

**▲CAUTION** Make sure that the trigger switch is “**OFF**” before connecting the tool to the power source.

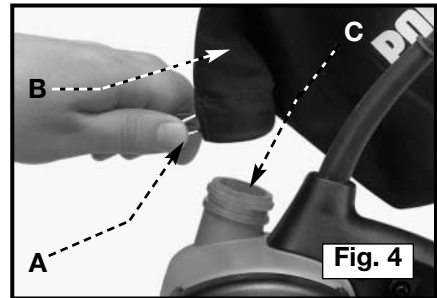
1. Turn the tool over. Hold the rear handle with the left hand so that the ring finger and the little finger rest on trigger (Fig. 3).
2. Squeeze the trigger to start the motor.
3. Turn the belt aligning screw (A) in either direction until the edge of the belt is even with the outer edge of the rear rubber-covered pulley. The edge of the belt will extend beyond the edge of the front pulley.
4. Release the trigger to stop the motor. Allow the tool to come to a **COMPLETE STOP** before turning it over and putting it down.



## ATTACHING AND CARE OF DUST BAG

Depress the spring clips (A) Fig. 4 of the dust bag (B) and clip the dust bag over the rib of the dust spout (C).

For the most efficient operation, empty the dust bag when it is approximately half full. Pull the dust bag straight out of the vacuum housing, unzip the rear of the bag, and shake out the dust. Every so often, turn the bag inside out and brush the accumulated dust from the inside.



**▲CAUTION** Do not operate the tool without a dust bag or a dust collection system.

## SELECTING AN ABRASIVE BELT

The principle abrasive materials used on belts for machine sanding are aluminum oxide and silicon carbide. Aluminum oxide is the softer of the two, but is tougher and more suited for woods and soft (non-ferrous) metals. Silicon carbide is extremely hard and is best suited for surfacing stone, marble, and glass.

Abrasives are classed as open-coated (with grits spaced apart), or closed-coated (with grits close together). Closed coatings provide hard, fast cutting action for hardwoods and dense metals, while open coatings are more suited to soft materials and painted surfaces.

To obtain the best finish, start with a "COARSE" grade of abrasive and change to "MEDIUM" and then to "FINE" as work progresses.

## GENERAL SANDING

### ⚠ CAUTION

SECURE THE WORK and maintain a FIRM GRIP on the sander. Friction between the sanding belt and the work will tend to move the work backward and the sander forward.

### ⚠ CAUTION

ALWAYS be sure that the switch is OFF before connecting the tool to the power source.

1. Hold the sander off the work before starting the motor.
2. Lower the sander to the work, touching the rear part of the belt first. Level the machine when moving it forward.
3. Guide the machine over the work in overlapping strokes. Allow the sander to do the work.
4. Avoid applying excessive pressure. The weight of the machine is usually sufficient for a fast smooth finish. A slight increase in pressure may speed removal of material, but too much pressure will slow the motor and decrease removal.
5. Work back and forth over a fairly wide area to obtain an even surface.
6. Do not let the tool tilt. The edge of the belt can make a deep cuts into the surface.
7. Do not pause in any one spot during the sanding operation. The belt will eat into the work and make the surface uneven.
8. Lift the tool from the work before turning the motor off.
9. Always be sure that the motor has completely stopped before putting the tool down.

## FAST SANDING ON ROUGH WORK

To smooth a rough surface quickly, use a coarse grit abrasive belt. With the belt positioned diagonally across the grain, move the tool in the direction of the grain (Fig. 5).



Overlap the strokes and cover the entire surface, working from both sides of the board (angle left and then angle right.) Smooth the surface by guiding the sander back and forth with the grain. Change the belt to a medium grit and follow the same procedure.

Finish by thoroughly working the grain lengthwise. Change again to a fine grit and repeat. Always finish sanding with the grain.

## REMOVING OLD PAINT AND VARNISH

### **▲ CAUTION**

Read and follow “**ADDITIONAL SAFETY RULES FOR PAINT REMOVAL**” section of this manual.

The 352VS is an excellent tool for removing old paint and varnish from flat surfaces. However, two problems are common: 1) sanding material that loads the abrasive and, 2) friction heat caused by working too long in one place. To overcome the loading problem, use a coarse grit open coat abrasive belt and a single stroke action. Overheating can be avoided by using a fairly quick stroke and moving to another area quickly. A piece of felt about 1/4" thick can be inserted under the shoe for fast spot sanding and for working on stubborn areas of paint and varnish.

## SPECIAL SANDING PROCEDURES

Generally, sand with a back and forth motion. Some materials and some types of operations, however, require a different technique. In rough sanding, use the tool at an angle. In spot sanding, use the tool with only the front pulley touching the surface (especially useful in smoothing excess glue from wood joints). On metals, slate, marble, or plastic materials, sanding can be done in all different directions because of a lack of grain.

## DOORS AND MILL WORK

When sanding doors, cabinet frames, sash, storm windows and screens, take care to avoid working into the cross grain where one member meets another. Notice that the right edge of the belt is visible on the sander. Work carefully along the edge where the rail meets the stile. If the joint is slightly uneven, use a fine abrasive and very light sanding pressure to smooth it before making finishing runs.

For lengthy work on walls or other vertical surfaces, balance the tool with a length of sash cord, two small pulleys, a light wood frame, and a weight that is the same as, or slightly less than, the weight of the sander. The frame consists of two pieces leaning against a wall with a third piece nailed to their top ends. The two pulleys are located so that the weight on one end of the cord will be out of the way, but will balance the sander fastened to the other end. When starting vertical work, angle the sander so you can see that the belt makes contact with the material. As the belt touches, level the machine and make the stroke away and to the left. This movement will offset the tendency to cut heavily into the work at the start of the stroke.

## GOOD SANDING TECHNIQUE

Getting to know the sander is most important in obtaining smooth results with a minimum of labor. Operators will quickly learn how to start a stroke with a sweeping motion to produce the best results. Use a long even stroke without additional pressure on the tool. Overlap each stroke and vary the length of movement so the results will be even. Always lift the tool from the work before starting and stopping the motor.

**BE CAREFUL** when sanding at the end of a board. Keep the tool level and flat on the work surface. Don't let the front of the tool drop. (Fig. 6). If this happens, it will round the edge.

The model 352VS sander works very fast and can do a thorough job in a fraction of the time required by hand sanding. Do not rush the job. Give every surface a thorough sanding with each grade of abrasive before changing to finer grits. Always use the abrasive material and grit size recommended for the particular job.



Fig. 6

## SANDING METAL

Use the Belt Sander to obtain a grained satin finish on metal. A special graphite pad is available to replace the steel shoe on the bottom of the sander. The softness of this pad aids in blending the graining. The pad is the proper length for sanders using a 3" x 24" belt. For sanders using shorter belt lengths, cut the pad so that it is the same length as the steel shoe. Replace the steel shoe with the graphite pad.

# MAINTENANCE

## KEEP TOOL CLEAN

Periodically blow out all air passages with dry compressed air. All plastic parts should be cleaned with a soft damp cloth. NEVER use solvents to clean plastic parts. They could possibly dissolve or otherwise damage the material.

**⚠ WARNING** Wear ANSI Z87.1 safety glasses while using compressed air.

## FAILURE TO START

Should your tool fail to start, check to make sure the prongs on the cord plug are making good contact in the outlet. Also, check for blown fuses or open circuit breakers in the line.

## LUBRICATION

This tool has been lubricated with a sufficient amount of high grade lubricant for the life of the unit under normal operating conditions. No further lubrication is necessary.

## BRUSH INSPECTION (If applicable)

For your continued safety and electrical protection, brush inspection and replacement on this tool should ONLY be performed by an AUTHORIZED PORTER-CABLE SERVICE STATION or a PORTER-CABLE•DELTA FACTORY SERVICE CENTER.

At approximately 100 hours of use, take or send your tool to your nearest authorized Porter-Cable Service Station to be thoroughly cleaned and inspected. Have worn parts replaced and lubricated with fresh lubricant. Have new brushes installed, and test the tool for performance.

Any loss of power before the above maintenance check may indicate the need for immediate servicing of your tool. DO NOT CONTINUE TO OPERATE TOOL UNDER THIS CONDITION. If proper operating voltage is present, return your tool to the service station for immediate service.