

Instruction Manual

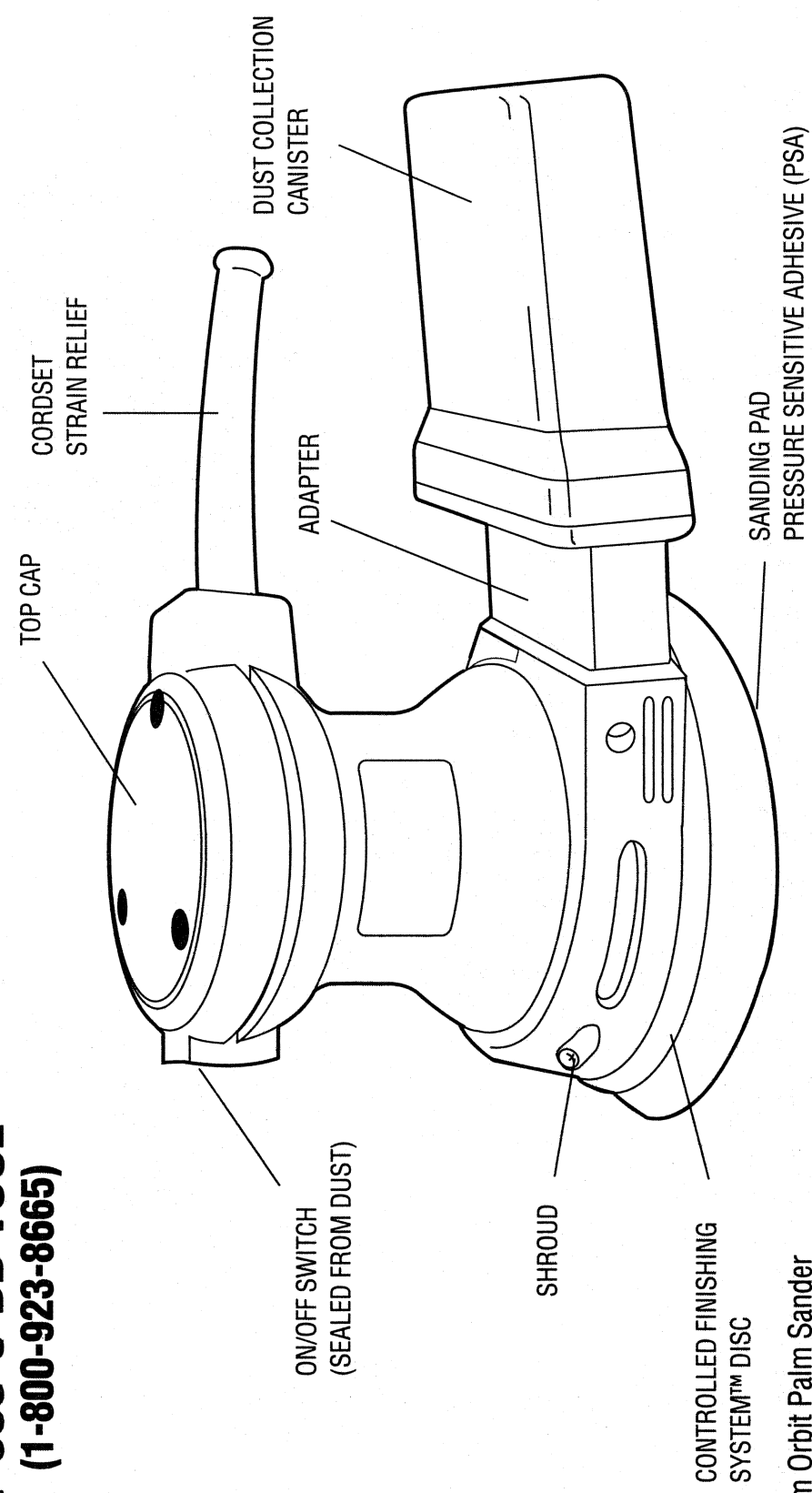
2771

5" (125mm) Random Orbit Palm Sander

Getting the most out of your tool.

Please take time to read this manual and pay particular attention to the safety rules we've provided for your protection. Don't forget to send in your owner's registration card. If you have any questions about your tool please call:

1-800-9-BD TOOL
(1-800-923-8665)



2771 5" Random Orbit Palm Sander

FOR YOUR SAFETY - ALL TOOLS

WARNING: When using electric tools, basic safety precautions should always be followed to reduce risk of fire, electric shock, and personal injury, including the following:

READ ALL INSTRUCTIONS.

1. **KEEP WORK AREA CLEAN.** Cluttered areas and benches invite injuries.
2. **CONSIDER WORK AREA ENVIRONMENT.** Don't expose power tools to rain. Don't use power tools in damp or wet locations. Keep work area well lit.
3. **GUARD AGAINST ELECTRIC SHOCK.** Prevent body contact with grounded surfaces. For example; pipes, radiators, ranges, refrigerator enclosures.
4. **KEEP CHILDREN AWAY.** All visitors should be kept away from work area. Do not let visitors contact tool.
5. **STORE IDLE TOOLS.** When not in use, tools should be stored in dry, and high or locked-up place – out of reach of children.
6. **DON'T FORCE TOOL.** It will do the job better and safer at the rate for which it was intended.
7. **USE RIGHT TOOL.** Don't force small tool or attachment to do the job of a heavy-duty tool. Don't use tool for purpose not intended, for example, don't use circular saw for cutting tree limbs or logs.
8. **DRESS PROPERLY.** Do not wear loose clothing or jewelry. They can be caught in moving parts. Non-skid footwear is recommended when working outdoors. Wear protective hair covering to contain long hair.
9. **USE SAFETY GLASSES.** Also use face or dustmask if operation is dusty.
10. **DON'T ABUSE CORD.** Never carry tool by cord or yank it to disconnect from receptacle. Keep cord from heat, oil, and sharp edges.
11. **SECURE WORK.** Use clamps or a vise to hold work. It's safer than using your hand and it frees both hands to operate tool.

12. **DON'T OVERREACH.** Keep proper footing and balance at all times.
13. **MAINTAIN TOOLS WITH CARE.** Keep tools sharp and clean for better and safe performance. Follow instructions for lubricating and changing accessories. Keep handles dry, clean, and free from oil and grease.
14. **DISCONNECT TOOLS** when not in use, before servicing, and when changing accessories.
15. **REMOVE ADJUSTING KEYS AND WRENCHES.** Form habit of checking to see that keys and adjusting wrenches are removed from tool before turning it on.
16. **AVOID UNINTENTIONAL STARTING.** Don't carry plugged in tool with finger on switch. Be sure switch is off when plugging in.
17. **OUTDOOR USE EXTENSION CORDS.** When tool is used outdoors, use only extension cords intended for use outdoors and so marked.
18. **STAY ALERT.** Watch what you are doing. Use common sense. Do not operate tool when you are tired.
19. **CHECK DAMAGED PARTS.** Before further use of the tool, a guard or other part that is damaged should be carefully checked to determine that it will operate properly and perform its intended function. Check for alignment of moving parts, binding of moving parts, breakage of parts, mounting, and any other conditions that may affect its operation. A guard or other part that is damaged should be properly repaired by an authorized service center unless otherwise indicated in this manual. Have defective switches replaced by authorized service center. Don't use tool if switch does not turn it on and off.
20. **DO NOT OPERATE** portable electric tools near flammable liquids or in gaseous or explosive atmospheres. Motors in these tools normally spark, and the sparks might ignite fumes.

SAVE THESE INSTRUCTIONS FOR FUTURE USE

SAFETY INSTRUCTIONS - SANDERS

1. Always wear eye protection and a respirator when sanding.
2. Sanding of lead based paint is not recommended. See page 6 for additional precautions when sanding paint.
3. Do not operate the unit without the dust shroud.
4. **CAUTION:** Some wood contains preservatives such as copper chromium arsenate (CCA) which can be toxic. When sanding these materials extra care should be taken to avoid inhalation and minimize skin contact.

SAVE THESE INSTRUCTIONS FOR FUTURE USE

Double Insulation

Double insulated tools are constructed throughout with two separate "layers" of electrical insulation or one double thickness of insulation between you and the tool's electrical system.

Tools built with this insulation system are not intended to be grounded. As a result, your tool is equipped with a two-prong plug which permits you to use extension cords without concern for maintaining a ground connection.

NOTE: Double insulation does not take the place of normal safety precautions when operating this tool. The insulation system is for added protection against injury resulting from a possible electrical insulation failure within the tool.

CAUTION: When servicing all tools, USE IDENTICAL REPLACEMENT PARTS. Repair or replace damaged cords.

Polarized Plug

To reduce the risk of electric shock, this appliance has a polarized plug (one blade is wider than the other). This plug will fit in a polarized outlet only one way. If it still does not fit, contact a qualified electrician to install a proper polarized outlet. Do not modify or change this plug in any way.

Extension Cords

Double insulated tools have 2-wire cords and can be used with 2-wire or 3-wire extension cords. Only round jacketed extension cords should be used, and we recommend that they be listed by Underwriters Laboratories (U.L.). If the extension is to used outside, the cord must be suitable for outdoor use. Any cord marked as outdoor can be used for indoor work. The letters "W" or "WA" on the cord jacket indicate that the cord is suitable for outdoor use.

TOOL OPERATION

An extension cord must have adequate wire size (AWG or American Wire Gauge) for safety, and to prevent loss of power and overheating. The smaller the gauge number of the wire, the greater the capacity of the cable, that is 16 gauge has more capacity than 18 gauge. When using more than one extension to make up the total length, be sure each individual extension contains at least the minimum wire size.

To determine the minimum wire size required, refer to the extension cord chart.

CHART FOR MINIMUM WIRE SIZE (AWG) OF EXTENSION CORDS

NAMEPLATE RATING-AMPS	TOTAL EXTENSION CORD LENGTH - FEET							
0 - 10.0	25	50	75	100	125	150	175	200
10.1 - 13.0	18	18	16	16	14	14	12	12
13.1 - 15.0	16	16	14	14	14	12	12	12
	14	14	12	12	12	12	12	—

Before using an extension cord, inspect it for loose or exposed wires, damaged insulation, and defective fittings. Make any needed repairs or replace the cord if necessary.

Motor

Your tool is powered by a B&D-built motor. Be sure your power supply agrees with nameplate marking. (Volts, 120 AC only). Voltage decrease of more than 10% will cause loss of power and can result in overheating. All B&D tools are factory tested; if this tool does not operate, check the power supply.

Attaching Sanding Discs

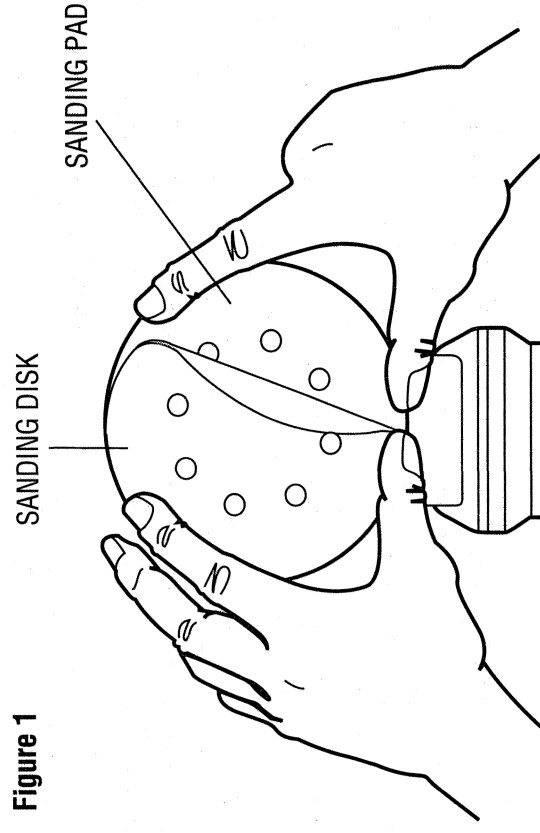
Your sander is designed to use 5" sanding discs with the 8 hole dust extraction pattern.

PSA - Pressure Sensitive Adhesive.

To attach paper to the sanding pad:

1. Turn off and unplug tool.
2. Turn the sander over so that the sanding pad is facing upward.
3. Clean dust from vinyl pad face.
4. Hold the pad with one hand to keep it from rotating.
5. With the other hand, align the holes and place the disc directly on top of the pad. (see Figure 1).

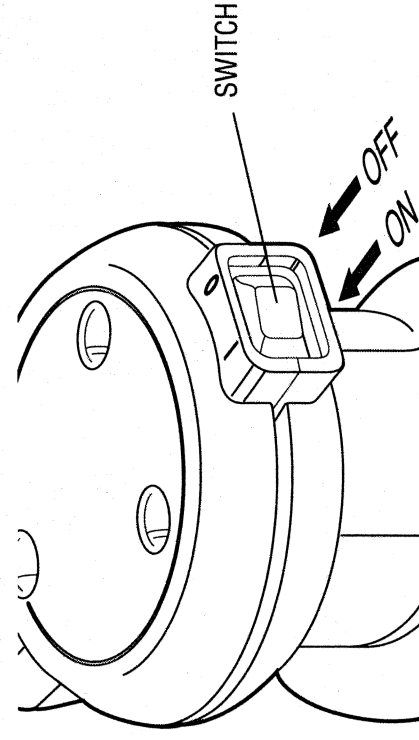
Figure 1



Switch

To turn the unit on, depress the side of the dust protected switch that corresponds to the symbol "1". To turn the tool off, depress the side of the switch that corresponds to the symbol "0". See Figure 2.

Figure 2



Dust Collection Canister

Your sander comes equipped with a porous plastic canister to collect the dust generated during sanding. It was designed to be very durable and efficient yet easy to empty. To empty the dust collection canister:

1. TURN OFF AND UNPLUG TOOL.
2. Firmly pull the adapter and canister off together while holding the shroud. (Figure 3)
3. While holding the canister, remove the adapter. (Figure 4)
4. Gently empty the canister and shake out the adapter.

You may notice that all the dust will not come free from the canister.

This will not affect sanding performance but will reduce its dust collection efficiency.

To thoroughly clean the canister, use one of two methods:

- a) Vacuum the canister with a shop vacuum, applying suction to the interior surface of the canister.
- b) Use dry compressed air. Direct the air from outside of canister to blow dust out of the canister pores.

CAUTION: Wear protective gloves and eye protection when using compressed air to avoid personal injury.

NOTE: We recommend that you do not wash the canister with soap and water.

NOTE: NEVER OPERATE THIS TOOL UNLESS THE DUST COLLECTION CANISTER IS IN PLACE.

Figure 3

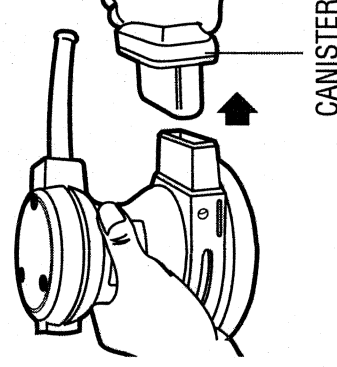
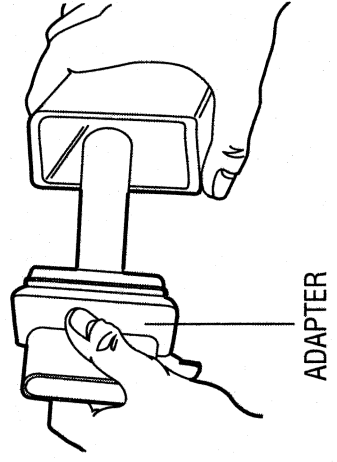


Figure 4



To operate your sander, grasp it as shown in Figures 5A or 5B and turn it on. Move the unit in long, sweeping strokes along the surface being sanded, letting the sander do the work.

NOTE: Pushing down on the tool while sanding actually slows the removal rate and produces an inferior quality surface.

NOTE: Be sure to check your work often, this sander is capable of removing material rapidly, especially with coarse paper.

The random orbital action of your sander allows you to sand with the grain or at any angle across it for most sanding jobs. To produce the best finish possible, start with coarse grit sandpaper and change gradually to finer and finer paper. Vacuum and wipe surface with a tack cloth between grit steps.

Your sander is designed to sand into small or confined areas. Its small size and light weight make it ideal for overhead work.

The rate at which the dust collection canister fills up will vary with the type of material being sanded and the coarseness of the sandpaper. For best results, empty the canister frequently.

When sanding painted surfaces, (see page 6 for additional precautions when sanding paint) you may find that the sandpaper loads up and clogs with paint. A heat gun will work much better to remove paint before sanding. FOLLOW ALL SAFETY INSTRUCTIONS IN HEAT GUN INSTRUCTION MANUAL.

NOTE: When using PSA sanding discs, it is necessary to remove the disc soon after operation. PSA papers, if left on during tool storage, sometimes become difficult to remove. To aid in the removal of old PSA paper, sand for a few minutes to soften adhesive backing prior to changing disc.

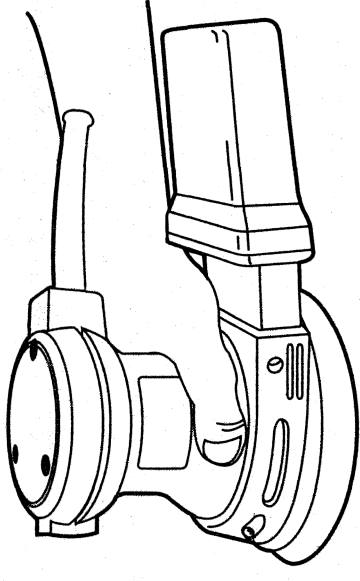


Figure 5A

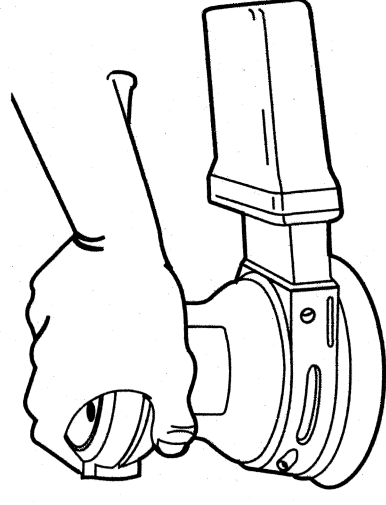


Figure 5B

Precautions To Take When Sanding Paint

1. Sanding of lead based paint is NOT RECOMMENDED due to the difficulty of controlling the contaminated dust. The greatest danger of lead poisoning is to children and pregnant women.
2. Since it is difficult to identify whether or not a paint contains lead without a chemical analysis, we recommend the following precautions when sanding any paint:

PERSONAL SAFETY

- a. No children or pregnant women should enter the work area where the paint sanding is being done until all clean up is completed.
- b. A dust mask or respirator should be worn by all persons entering the work area. The filter should be replaced daily or whenever the wearer has difficulty breathing.

NOTE: Only those dust masks suitable for working with lead paint dust and fumes should be used. Ordinary painting masks do not offer this protection. See your local hardware dealer for the proper N.I.O.S.H. approved mask.

- c. NO EATING, DRINKING or SMOKING should be done in the work area to prevent ingesting contaminated paint particles. Workers should wash and clean up BEFORE eating, drinking or smoking. Articles of food, drink, or smoking should not be left in the work area where dust would settle on them.

ENVIRONMENTAL SAFETY

- a. Paint should be removed in such a manner as to minimize the amount of dust generated.

- b. Areas where paint removal is occurring should be sealed with plastic sheeting of 4 mils thickness.
- c. Sanding should be done in a manner to reduce tracking of paint dust outside the work area.

CLEANING AND DISPOSAL

- a. All surfaces in the work area should be vacuumed and thoroughly cleaned daily for the duration of the sanding project. Vacuum filter bags should be changed frequently.
- b. Plastic drop cloths should be gathered up and disposed of along with any dust chips or other removal debris. They should be placed in sealed refuse receptacles and disposed of through regular trash pick-up procedures.
During clean up, children and pregnant women should be kept away from the immediate work area.
- c. All toys, washable furniture and utensils used by children should be washed thoroughly before being used again.

Tool Care

1. Keep your machine as clean as possible by wiping with a clean cloth and blowing through it with air after every 5 hours of use.
2. As part of CFS (Controlled Finishing System), your sander is equipped with a replaceable disc which is located between the pad and the shroud. It is designed to increase the dust collection efficiency and control the pad speed while the unit is off the work. The disc is designed to be a consumable part and will occasionally need to be replaced. Replacement will be necessary if you notice the pad speed increasing very dramatically

when the unit is lifted from the work surface. To replace your CFS disc:
(See Figure 7)

- a. **TURN OFF AND UNPLUG TOOL.**
- b. Remove 3 phillips head screws from the bottom of the pad.
- c. Remove the pad.
- d. Snap out worn disc.
- e. Snap in new disc, aligning notch in disc with cut out in shroud shown in Figure 7.
- f. Press in new disc around the edges with two hands to ensure tightness (See Figure 8).
- g. Replace the pad and the 3 phillips screws.

Figure 7

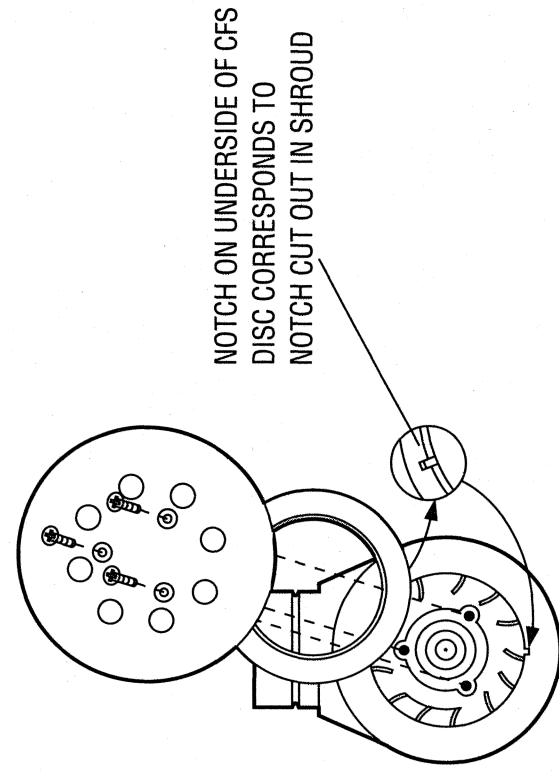
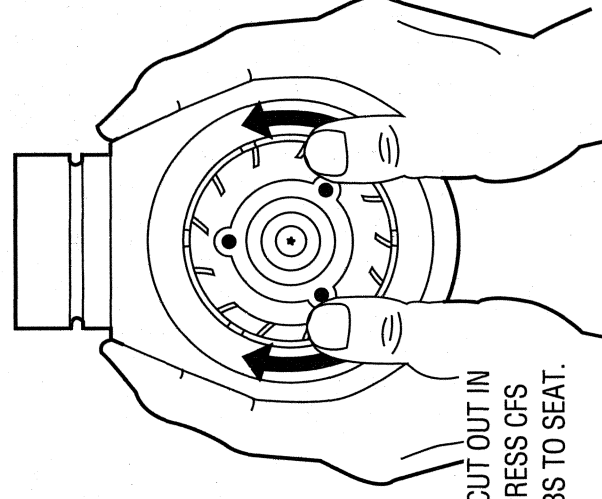


Figure 8



ALIGN NOTCH TO CUT OUT IN SHROUD AND DEPRESS CFS DISC WITH THUMBS TO SEAT.

3. Don't use harsh chemicals or solvents to clean the tool. These chemicals could seriously damage the engineering polymers used to construct your sander.
4. Avoid overloading your sander. Overloading will result in a considerable reduction in speed and finish quality of your work. The unit may also become hot. In this event, run sander at a no load condition for a minute or two.
5. If you typically wrap the cord around the tool when you store it, leave a generous loop of cord such that the strain relief does not bend. This helps prevent premature cord failure.

Brush Replacement

TURN OFF AND UNPLUG THE SANDER

To replace the tool's brushes, remove the three screws located in the top cap, as shown in Figure 9.

Lift off the top cap. Observe the brush holders, as shown in Figure 10 and the wires leading from the brushes to the motor field.

Pull the wires from the motor field and then lift and hold out of the way one of the brush springs. Remove the old brush from the brush holder and discard the brush/wire assembly. Still holding the brush spring out of the way, insert the new brush, release the spring against the back of the brush and plug the wire into the motor field. Repeat the procedure for the second brush. Replace the top cap and tighten the three screws that hold it in place. (Always replace both brushes.)

Lubrication

Self lubricating bearings are used in the tool and periodic relubrication is not required. However, it is recommended that, once a year, you take or send the tool to a service center for a thorough cleaning and inspection.

Application Notes

SANDPAPER

GRIT TYPES

Natural Abrasives

Flint is the softest (Mohs' Scale 7) * of the common natural abrasives. It has a tan color and is very inexpensive.

Garnet paper is harder than flint (Mohs' Scale 7.5) and is easily identified by its bright orange color. Even though it is not the hardest, the way the abrasive fractures gives you a good cutting edge for woodworking.

* Mohs' Scale is the mineral hardness scale. It rates diamond at 15, the hardest, and talc at 1.

Emery, even though harder than garnet (Mohs' Scale 9), has blunt edges making it a poor sanding abrasive. Its primary use is for polishing metal.

Figure 9

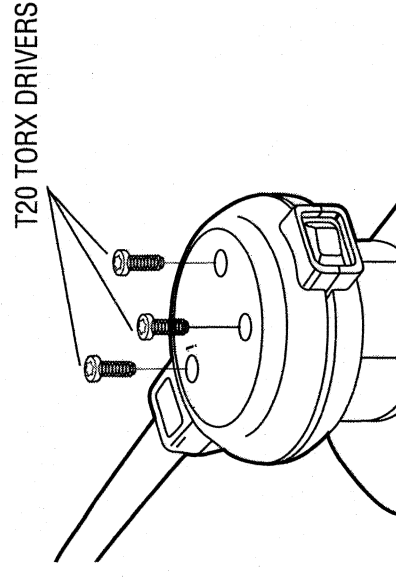
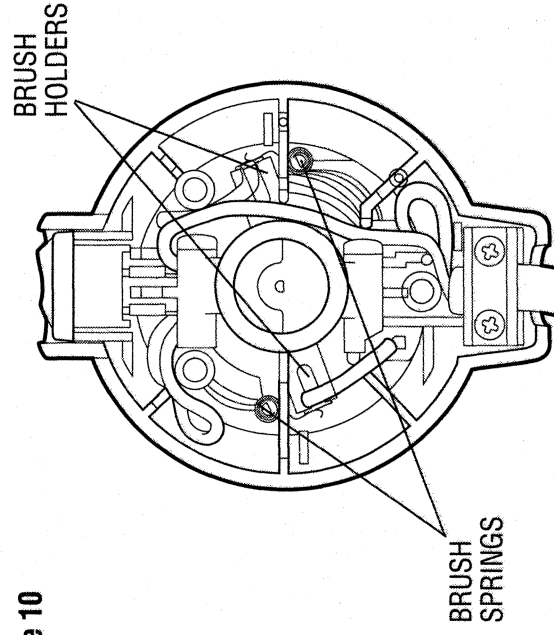


Figure 10



Manufactured Abrasives

White Aluminum Oxide (AlO) is extremely hard (Mohs' Scale 12) and durable which makes it a great abrasive for use with the Random Orbit Sander. "White" describes the particular way the abrasive is manufactured not its color. This abrasive is widely available and comes in a variety of colors due to the increasing use of dyes. Stearate lubricants on the paper also enhance performance by reducing heat and the rate at which the paper clogs.

Silicon Carbide (SiC) is the hardest abrasive (Mohs' Scale 13) commonly available next to industrial diamond but is not as tough as Aluminum Oxide abrasives. This abrasive easily fractures and provides sharp faces to the work throughout the life of the sanding paper. This "self-sharpening" feature makes SiC an outstanding abrasive for material removal but limits its life.

OPEN COAT VERSUS CLOSED COAT

Abrasives are applied to the paper with glue. When the grit is large (say 60 or 80 grit) the percent of coverage is usually reduced to 60% to 70% of the backing paper surface. This increases the life of the paper by reducing the rate at which the paper clogs. This is called an open coat and almost the only way you can buy sandpaper in heavier grits. With finer grits the grit is applied at rates of 90% or more and are labeled closed coat. Since the dust particle is much smaller the tendency of the paper to load up and clog is greatly reduced. Which is better for your application? The answer is probably the one that is available at the store.

GRIT SIZES

There are several grading systems used. The system most popular today is sieve size. The number on the back of your sandpaper disc refers to the screen size the particle can pass through. 120 grit paper for example will sift through a screen with 120 holes per linear inch. Every square inch of screen has 14,400 holes (120 x 120). The higher the number the finer the particle

size. Common sizes are from 36 to 600 with the recent introduction of grit sizes up to 1200.

PAPER AND FILM: THE BACKING

Paper: The material most commonly used to carry the abrasive is paper. Paper is graded by weight. "A" weight paper which is the most prevalent is the lightest paper used and gives good durability and flexibility in most sanding applications. Other paper weights that are available are C, D, E, and F weight. The disadvantage of paper is its low mechanical stiffness. Since the paper fiber gives during sanding, the abrasive doesn't stand up and some of the cutting edges do not engage the work. The advantage is cost.

Film: Film backed sanding discs address the disadvantage of paper. The film is mechanically stiffer than paper. Film is also more expensive but when all other things are held constant improves the cutting performance of the abrasive.

Cloth and Vulcanized Fiber: These backings are typically hard to find and are used in specialty applications. Most sandpaper you will use will have the paper or film backing.

HOOK & LOOP AND PSA: What holds the sanding disc to the pad.

Hook & Loop: The sanding disc is backed with a fabric nap (loops) that interlocks with a grid of posts (hooks) on the sander's pad. The advantages are paper reusability and cooler interface between paper and work.

PSA: Pressure Sensitive Adhesive is applied to the back of the sanding disc and adheres to the sanding pad (Not the same pad that carries hook & loop paper). The advantage is cost. The major disadvantage is the tendency of PSA backed papers to adhere permanently to the pad if left on after sanding. Why does this happen? The main culprit is heat. During sanding the pad and paper heat up. This causes the adhesive to flow into all the ridges on the vinyl pad

and form a tight bond. If you remove the paper soon after you are finished sanding you don't allow the adhesive to set. If you leave it on for a couple of days the adhesive sets and has more strength than the paper carrier, causing the paper to tear and leaving you with a difficult clean up job. One more disadvantage: if you do small sanding jobs and don't use up the paper you cannot reuse it and tend to waste more paper.

SANDING

THE BASIC RULES: Which ones to break and which ones not to.

Always start with the coarsest grit first. Don't break this rule. The scratches get smaller as the grit number gets larger and the quality of the finish generally improves. When you change grits be particular about cleaning the surface that you are finishing. An 80 grit particle floating on your work under your 220 grit paper will leave 80 grit scratches. The best way to avoid this is to vacuum the work and then carefully wipe down the work with a tack rag.

Always sand with the grain. This rule applies with orbital only tools. The random orbit sander action is equally applied across the grain and with the grain. Since the scratch mark is small and random in all directions, the ability of the eye to see a scratch is greatly reduced.

Always wear a mask to avoid breathing the dust. NEVER BREAK THIS RULE. We have engineered the tool to collect a lot of the dust created in the sanding process but the tool does not capture it all. To improve the capture rate use a vacuum but ALWAYS wear a dust mask.

SOME OTHER HINTS FOR A BETTER FINISH

A random orbit sander is much more aggressive than other similarly sized orbital tools so you may want to consider the next finer grit when you start to sand your project.

Since the random orbit action makes a short scratch, you may find that a project doesn't require as many grit steps. A lot of professional cabinet makers only use 80, 120, and 150 grit on their work with satisfactory results. If in doubt about how the finish will take to your sanded surface, wipe the surface with some paint thinner. Defects will show up darker than the surrounding wood.

Careful inspection of the work prior to the finishing operation may reveal dents. Try to correct these problems by raising the dent (a hot iron and wet rag will do this) or carefully sand a large area around the dent. If you vigorously sand the dent, your flat board may look more like a salad bowl.

When you have done all you can do with your random orbit sander and need to hand sand, use a small block of wood for a sanding block. Your hand makes a poor sanding block and your work will show it. Also, hand sand with the grain.

When you are satisfied with the sanding job and you have finished sanding with your finest grit, raise the grain by dampening the wood with a wet rag. When the wood has dried and you are ready to apply the finish, resand lightly to take off the wood fibers raised by the water. Vac and tack the surfaces and immediately apply the first coat of finish before the wood gets dirty.

WOOD: Some important characteristics of wood

Hard grain and soft grain

Wood has hard grain and soft grain. Hard grain is typically the product of summer growth and soft grain the product of spring. All sanders will remove more soft grain than hard grain and since the random orbit sander is more aggressive, it will remove it that much more quickly. Extended sanding on a piece of fir for example, will produce a noticeably uneven finish. This is a good reason to correct flaws before sanding.

ACCESSORIES

Recommended accessories for use with your tool are available at extra cost from your local service center. A complete listing of service centers is included with your tool.

CAUTION: DO NOT USE STRING TIE POLISHING BONNETS WITH THIS SANDER. EXTREME PERSONAL INJURY MAY RESULT IF FINGERS ARE CAUGHT BY ROTATING STRING TIE.

CAUTION: The use of any non-recommended accessory may be hazardous. If you need any assistance in locating any accessory, call 1-800-9-BD TOOL (1-800-923-8665) or contact Black & Decker, Consumer Services Department, 626 Hanover Pike, P.O. Box 618, Hampstead, MD 21074.

IMPORTANT!

To assure product safety and reliability, particularly for double insulated tools, repairs, maintenance and adjustment (excluding maintenance described in this manual) should be performed by B&D service centers or authorized service centers, using identical B&D replacement parts.

Every B&D tool is of the highest quality.

If you wish to contact us regarding this product, please call toll free between 8:00am and 8:00pm ET, seven days a week:

1-800-9-BD TOOL
(1-800-923-8665)

One Year Free Maintenance

All B&D tools for Industry and Construction are covered under a service/safety check program where B&D will inspect your tool for safety and provide necessary maintenance or repairs, including normal wear and tear parts, for one year, FREE OF CHARGE.

Full Warranty

All B&D tools for Industry and Construction are warranted to be free of any defects in materials or workmanship. Upon thorough examination of tool, B&D will repair or replace, at our option, any product that is determined to be defective.

Conditions

The service/safety check and the warranty do not apply to: repairs made or attempted by anyone other than an authorized B&D service location; misuse, abuse, neglect, improper application of the tool; missing parts; or normal wear and tear (after first year of ownership). Please return the complete unit, transportation prepaid, to any B&D factory owned or B&D authorized service center location (list provided with tool or see yellow pages under "Tools Electric").

These symbols on the nameplate mean the product is listed by Underwriter's Laboratories, Inc. and certified by the Canadian Standards Association.



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