

APPENDIX H

SANDING EQUIPMENT AND TOOLS

BASIC AND SPECIALTY EQUIPMENT AND SUPPLIES

The primary tools needed are eye, ear and approved respiratory protection; a drum or belt floor sander; edger sander; buffer; hand scraper; sanding block ;and a variety of abrasives and screen discs ranging in grit from coarse to fine, as well as a vacuum cleaner and broom.

Drum and belt sanders are similar, the difference lying in the way the sandpaper is attached. On a drum sander, a sheet of sandpaper is wrapped around the drum and secured by insertion in a diagonal slot on the drum. A belt sander, as the name suggests, employs a continuous belt of abrasive.

Edgers are hand-held rotary-disc floor-sanding machines used to sand closely around the perimeter of the room, as well as in closets, on stairs and in other small areas.

Harder-to-reach places require the use of hand scrapers and sanding blocks.

The buffer, fitted with fine-grit screen or abrasive discs, is used after the final cut — typically with the drum or belt sander — to blend the field and the edge. A detailed discussion of sanding equipment can be found in the National Wood Flooring Association's Technical Publication No. A300: Tools of the Trade.

DRUM AND BELT SANDERS

The "big machines" — drum and belt floor sanders — are large, heavy, walk-behind (primarily electric) sanding machines designed for high production. They are usually available in widths of 8, 10 or 12 inches. All have integrated dust-collection systems. They are used for sanding wood over large, open areas, as well as removing old stain or finish.

BUFFERS, OSCILLATING MACHINES AND MULTI-DISC MACHINES

Buffers use circular sanding paper, screens, pads or polishing brushes - sizes vary from around 13 to more than 22 inches in diameter. They are walk-behind machines that abrade in a circular pattern.

Buffers for floor sanding run at low speeds and are used for final sanding, screening, screening between finish coats, and low-speed buffing. Some models are designed for dedicated use as either sanders or polishers - be sure to match the machine with your main application. These machines are available with or without integrated dust-collection systems.

One of the primary uses of these machines is to blend drum or belt sander and edger marks to get rid of the "picture frame" effect around a room. Some finish manufacturers also recommend using buffer screens or pads after sealer or finish application to smooth imperfections and to lightly abrade the surface for better adhesion between coats. However, other finish suppliers recommend different methods. As always, rely on the recommendations made by the manufacturer of the finish you are applying.

Buffers can be difficult for beginners to operate. On start-up, they tend to "kick" to one side, usually the left. It's best to practice initially with a polishing pad in the middle of a large room. Start with the handle adjusted to waist height. You will notice that as you raise it, it will move to

the right And as you lower it, it moves to the left. An easy way to remember this is raise-right (R-R) and lower-left (L-L).

There are also oscillating machines, which move in an elliptical pattern. Oscillating machines provide a less aggressive cut than big machines, but with more random abrasion patterns.

Another machine sometimes used in sanding hardwood floors is the multi-disc sander (those with three discs are sometimes called triplanetary sanders). This machine is often used for fine finish sanding and for flattening floors. It has three or more perimeter discs that rotate in one direction around a main disc, which rotates in the opposite direction. Most multi-disc sanders are also equipped with dust-containment systems.

EDGERS

Edgers, or spinners, are small circular sanding machines designed to reach the areas where big machines can't. Several types of edgers are available, most consisting of a seven-inch shrouded disc connected to a motor. Two wheels on the housing hold most of the machine's weight; each is adjustable to vary the depth and angle of cut. The edger pad is set to hold the sandpaper disc at a slight angle to the floor. The offset edger drives a disc offset from the motor, with a belt-and-pulley arrangement. This configuration allows reaching under difficult areas like cabinet toe kicks and radiators. Some companies offer integrated dust collection for edgers, directly connecting a portable vacuum system to the edger to gather dust as it is produced. Some edgers can be set to cut on the left, right or near center of the leading edge of the paper. Follow the manufacturer's recommendations for setting the edger.

DUST COLLECTION

Most standard sanding machines have dust-collection bags attached. This performs two functions: It collects large dust particles and also filters the air that passes through by catching the smaller particles on the inside of the bag. The key to keeping such machines performing optimally is permitting air flow through the system. That means that the bag should not only be emptied often, but cleaned as well.

Note: For best dust collection, the bag should be emptied by the time the dust reaches the line that says "full" - usually about halfway up the bag. If it isn't emptied by then, the dust-collection system will not function properly.

Periodically, the bag should be turned inside-out and vacuumed to help remove the edger sander smaller particles that clog the bags pores. Some manufacturers' bags can be washed.

Several manufacturers have also introduced dust-containment systems. Some have vacuums mounted on top of the machines, others have hoses that attach to vacuums inside or outside the building, and still others can also attach to a vacuum strapped on the operator's back. There are dust-containment systems on the market for buffers, edgers and sanding machines, with some systems allowing the user to hook up two or more machines to a vacuum at once. For older machines, there are also retrofit options.

Regardless of how dust is collected, it must be disposed of safely. Contact local agencies for guidelines and directives on proper disposal.

MAINTENANCE OF EQUIPMENT

Proper maintenance will keep your equipment operating at peak efficiency and keep it operating longer. Perhaps just as important, it will prevent costly down-time when you can least afford it. Keeping sanding machines properly tuned and adjusted also will help their vacuums perform optimally. Pulley belts that are loose will reduce air movement and inhibit dust collection. and can also cause chatter marks. Cleaning the machines out after every job by mechanically

blowing out the motor and fan system with an air hose greatly reduces wear on the machines. Maintenance practices vary among the different kinds of equipment, so follow manufacturers' guidelines. Keep in mind that many repairs should be done by an authorized service center. Repairs performed by an unauthorized center may void your warranty. Knowing the equipment and recommended service intervals will help keep your equipment running for years. There are nine primary areas to focus on: carbon brushes, dust bags, bearings, lubrication, sanding chambers, wheels, belts, pads and drum covers.

CARBON BRUSHES should be replaced after every 500 hours of use. The brushes are the pathways for electric current. Once the brushes are worn, the electric current will find the path of least resistance, causing a short-circuit. Also check the brush spring — it keeps the pressure on the brushes, preventing arcing and premature wear of the armature. The big machines that have carbon brushes have a wear indicator. Inspect the motor brushes once a month and change all the motor brushes at the same time. Brushes must slide freely in the brush holder. Dust accumulated around the brush block must be cleaned out frequently. This prevents the brushes from sticking in an open position and keeps the motor from overheating.

MACHINE LUBRICATION - The machines come fully lubricated. Have the machine lubrication changed every year and inspected every six months. Remember that over-lubrication is as bad as under-lubrication. Ask your service center for the correct amount and the type of lubricants to use.

MACHINE BEARINGS - These are general guidelines for the maintenance of bearings. Follow the specific recommendations of the machine's manufacturer. With edgers, have the armature and pad driver bearings inspected after every 1,500 hours to ensure reliable service. Have the bearing replaced seasonally. Belt sanders need to be inspected according to the following schedule: Guide rollers every 650 hours; idler pulleys every 1,500 hours; dust fan shafts every 2,500 hours; arbor shafts every 5,000 hours; and motor shafts every 5,000 hours. Periodically check the guide rollers for wear. Drum sanders call for the following schedule: idler pulleys every 1,500 hours; fan shafts every 2,500 hours; arbor shafts every 5,000 hours; and motor shafts every 5,000 hours. A good rule is: Always keep an ear tuned to the sound of the machine. Any new or different sound is a sign of a bad bearing or wear in the bearing. If it remains unrepaired, a bad bearing can cause sanding irregularities.

EDGER PADS - Inspect and clean edger pads before each job. An unbalanced or bent edger pad will cause gouging. Worn and improperly dressed edger pads also result in uneven sanding.

SANDING DRUMS - Inspect and clean the sanding drum on split-drum or belt sanders before attaching sandpaper. Dust and debris on the drum will cause chatter marks. Gouged, grooved or badly damaged drum surfaces should be replaced. To prolong the life of a sanding drum, release the tension on the sandpaper or belt after every job, and leave sandpaper on the drum to protect it during transit

SANDING CHAMBERS – Clean the sanding chamber once a week to prevent accumulation of debris, which can interfere with the performance of the dust-control system, the upper roller and contact wheel (drum). Cleaning the dust chamber also keeps the fan balanced, preventing vibrations that can cause chatter and imperfections in the floor.

WHEELS - Always inspect the wheels before you start any job. Debris on the wheels (grit, finish and stones, for example) can be left on the floor and also may cause chatter, wave and damage to the wood during sanding. When transporting the machine, lift it over stones and rough areas. After each grit or cut, clean the wheels. since grit can build up and cause the machine to

cut unevenly. Keep the weight of the machine off of the wheels during storage and transportation. This prevents flat spots and prolongs the life of the wheels.

DRIVE BELTS - The best way to check drive belts is hands-on: If the belt feels rough, cupped, worn or grooved, it probably needs to be replaced. The most common problem with belts is letting the belts "take a set" or take the shape of the pulleys. During use, the belts become hot. If they are not loosened during a long shut-down (overnight or lunch), they can "take a set." This causes vibration and chatter. Tighten the belts before each use and always loosen the belts overnight or for any long-term idle period. Always use a high-speed belt per the manufacturer's recommendations. Most belts from a hardware store are for general use only, not high-speed. Belt tension is important. If it is too tight, the belt life will be short. If it is too loose, the machine can slip and vibrate. Do a visual check with the machine running for belt shake or vibration. Tighten or loosen the belt until it runs true. Check with your service center for correct belt tension. Read the operator's manual. This is possibly the most important element in preventive maintenance. A poorly maintained machine can be costly.

DUST BAGS should be turned inside out, shaken vigorously, and machine-washed (if recommended by the manufacturer) in cold water to prevent pore blockage and loss of dust control. Empty a dust bag when it is half full; never leave a dust bag unattended with dust in it. Sanding dust can ignite and cause injury or damage. Countersink all nails before sanding the floor — hitting a nail or staple while sanding can cause a spark, igniting a dust fire in the bag. Also, dust bags will eventually wear out and should be replaced periodically.