

3.2.1 Combined circular saw



Fig. 3.3 Combined circular saw.

The combined circular saw is used for cutting across and along the grains of a wood. It can also be used for cutting chipboards, plywood, and laminated sheets. The dividing wedge bends towards or away from the saw to prevent tightening of the saw by timber. A cap prevents splash of the chips. A circular saw can be tilted up to 45 degrees.

3.2.2 Shaper (spindle molder)

The Shaper (spindle molder) is used for different types of molding. It can be used to mold circular members and make circular decorations on wood, e.g. legs of tables, stools, coaches, and beds, curtain boxes, etc.

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Book Descriptions:

Carpentry shop manual

LESSON 3: WOODWORKING MACHINES

A Woodworking machine is a machine that is intended to process wood. These machines are usually powered by electric motors and are used extensively in woodworking. Woodworking tools and machineries can be very dangerous if not used properly. Only use woodworking machines that you have been trained to use properly and safely and read the owner's manual carefully. Make sure you understand instructions before attempting to use any tool or machine. Ask questions if you have any doubts about doing the work safely. Various types of power operated woodworking machine are discussed in the sections that follow.

3.1 Surface and Thickness Planing Machine

3.1.1 Surface planing machine

A surface planing machine is used for planing reference surface and one edge. Once the two surfaces are planed they will be straight and square with respect to each other.



Fig. 3.1 Surface planing machine

Precautions:

- Do not plane less than 40 mm
- Very thin sheets are not allowed
- For short pieces push using safety board

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JX60 - JX70 - JX80 - JX90 - JX95 MODEL TRACTORS SERVICE MANUAL

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S E R V I C E

A marking pin, made of steel is fitted on the stem. A mortise gauge consists of two pins. In these it is possible to adjust the distance between the pins, to draw two parallel lines on the stock. Compass and dividers This is used for marking circles, arcs, laying out perpendicular lines on the planed surface of the wood. CUTTING TOOLS Hack saw It is used to cross cut the grains of the stock. The teeth are so set that the saw kerfs will be wider than the blade thickness. Hard blades are used to cut hard metals. Flexible blades are having the teeth of hardened and rest of the blade is soft and flexible. Chisels These are used for removing surplus wood. Chisels are annealed, hardened and tempered to produce a tough shank and a hard cutting edge. Rip saw It is used for cutting the stock along the grains. The cutting edge of this saw makes a sleeper angle about 60° whereas that saw makes an angle of 45° with the surface of the stock. Tenon saw It is used for cutting tenons and in fine cabinet works. The blade of this saw is very thin and so it is used stiffed with back strip. Hence, this is sometimes called back saw. The teeth shapes similar to cross cut saw. DRILLING AND BORING TOOLS Auger bit It is the most common tool used for boring holes with hard pressure. Gimlet This is a hand tool used for boring holes with hand pressure. Hand drill Carpenters brace is used to make relatively large size holes, whereas hand drill is used for drilling small holes. A straight shank drill is used with these tools. It is small light in weight and may be conveniently used than the brace. Further, for better to apply a series of light taps with the mallet rather than a heavy single blow. Claw hammer It is a striking flat at one end and the claw at the others.

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Fig. 3.8 Sandpapering machine.

3.2.7 Drilling machine

Used for boring circular holes in a wood. It can also be used for drilling mortises and cutting circular or other shapes at the middle of a wood piece.



Fig. 3.9 Drilling machine.

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The face issued to drive nails into wood and for other striking purpose and the claw for extracting nails out of wood.

Pinches It is made of steel with a hinged and is used for pulling out small nails from wood.

Wood rasp file It is a finishing tool used to make the wood smooth, remove sharp edge finishing fillets and other interior surfaces.

Planning

- Check for squareness
- Check for square ness
- Sometimes it becomes necessary to replace or repair a component that must fit accurately with one another or reassemble. This involves a certain amount of hand fitting. It holds cylindrical work pieces.
- Cclamp This is used to hold work against an angle plate or vblock.

MARKING AND MEASURING TOOLS

- Surface plate
- Try square
- Angle plate
- Scriber
- Universal scribing block
- Odd leg caliper
- The blade is made of steel and is available in different lengths and diameters.
- Spanners It is a tool for turning nuts and bolts. It is usually made of forged steel.

FITTING OPERATIONS

Chipping Removing metal with a chisel is called chipping and is normally used where machining is not possible.

Fitting

- Scriber
- Hack saw with blade
- Dot punch and Centre punch
- Surface plate
- Venire height gauge
- Rough and smooth flat files

Marking and measuring

- Scriber
- Hack saw with blade
- Dot punch and Centre punch
- Surface plate
- Vernier height gauge
- Rough and smooth flat files

Marking and measuring

REQUIRED CUMULATIVE HRS A Carpentry shop

- Making T lap joint 3 3
- Making Dovetail lap Joint 3 6
- B Fitting shop 3
- Making square joint 3 9
- Making V joint 3 12

C Sheet metal shop

- Making Tray 3 15
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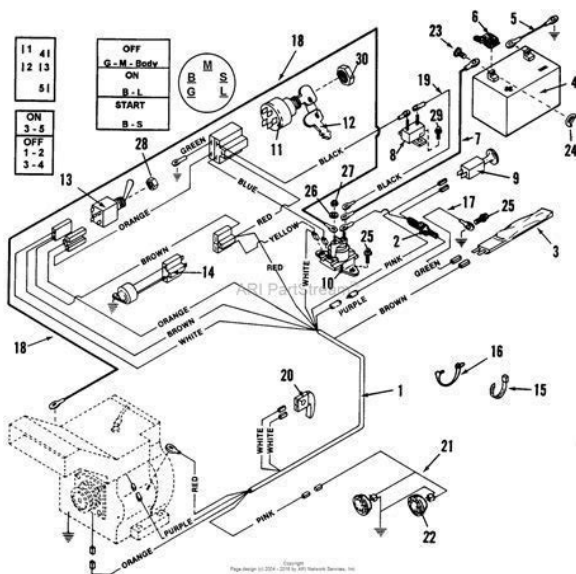
G TRADES FOR DEMONSTRATION

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Lab incharge H.O.D CARPENTARY

Timber is a name obtained from well grown plants or trees. The timber must cut in such a The common defects in timber are knots, Timber is sold in market in various standard shapes and sizes. They are The trunk of a tree, which is free from branches. The log sawn to have roughly square cross section. A timber piece, round or square in cross section with more than 275 mm in width, 50 to A sawn timber piece, below 175 mm in width and 30 mm to 50 mm in thickness. Sawn timber pieces of assorted and nonstandard sizes, which don't conform to the above It is a work holding device. When handle vice is turned in a clockwise

direction, the The greater the force applied to the It is a rectangular or square block with Vgroove on one or both sides opposite to each This is used to hold work against an angle plate or Vblock. It is used for marking and testing the square ness of planed surfaces. It consists of a steel It is also used for flatness. The size of a try square It is less It is a tool used to mark lines parallel to the edges of wooden pieces. It consists of a A marking pin, made of steel is In these it is possible to adjust This is used for marking circles, arcs, laying out perpendicular lines on the planed surface It is used to cross cut the grains of the stock. The teeth are so set that the saw kerfs will be Hard blades are used to cut hard metals. Flexible blades These are used for removing surplus wood. Chisels are annealed, hardened and tempered It is used for cutting the stock along the grains. The cutting edge of this saw makes a sleeper It is used for cutting tenons and in fine cabinet works. The blade of this saw is very thin Hence, this is sometimes called back saw. The It is the most common tool used for boring holes with hard pressure. This is a hand tool used for boring holes with hand pressure.



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Carpenters brace is used to make relatively large size holes, whereas hand drill is used for A straight shank drill is used with these tools. It is small light in The drill is clamped in the chuck. It has a flat face, which is used for general work and a ball end is used for riveting. It is used to drive the chisel, when considerable force is to be applied, steel hammer Further, for It is a striking flat at one end and the claw at the others. The face issued to drive nails into It is made of steel with a hinged and is used for pulling out small nails from wood. It is a finishing tool used to make the wood smooth, remove sharp edge finishing fillets Sharp cutting teeth are provided on its surface for the purpose. Sometimes it becomes necessary to replace The assembly machine tools, jigs, gauges etc., It is a work holding device, when vice handle is turned in a clockwise direction the It is a rectangular or square block with vgroove on one or both sides, opposite to each This is used to hold work against an angle plate or vblock. It is used for testing flatness of work piece, for marking out small works. Tap and wrenches are used for cutting internal threads in a drilled hole. They are used for making external threads. Dies are made either solid or split type. It has a flat face, which is used for general work and a ball end is used for riveting. It is designed to turn the screws. The blade is made of steel and is available in different It is a tool for turning nuts and bolts. It is usually made of forged steel. Removing metal with a chisel is called chipping and is normally used where machining is. This manual provides the information carpenters and joiners need to understand the scientific principles of their work. Carpentry Workshop Manual Carpentry Workshop Manual PDF.If cracks found, replace be closed for continuity minutes of driving. Carpentry Workshop Manual download. BOBCAT

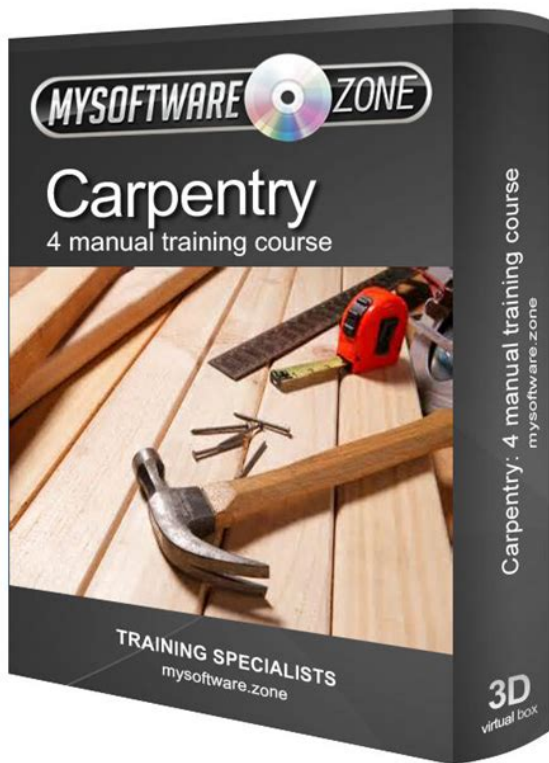
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Please upgrade your browser to improve your experience. It is available for students and staff of the department. This complete machine and assembly shop, one of the finest in any U.S. architecture school contains over 4,500 square feet of highbay space and is open days, evenings, and weekends. The facility is supplied with full woodworking capabilities, welding equipment and a large variety of hand tools. Ted Wong is the manager and director of the shop facilities. Accidents in the shop may result in serious bodily harm or death. Following proper safety procedures and conforming to shop policy as outlined in this workshop safety manual will greatly reduce any chance of injury. Guests and visitors are not permitted to use any machines or tools and are not allowed in any machine use areas. Visits should be as brief as possible. Shop personnel will follow established firstaid procedures. Therefore faculty should always schedule their shop related projects with the shop manager. The following are capacity limits The shop manager may waive this limit if prior arrangements have been made. Shop users are responsible for cleaning up after using the shop. The following procedures apply for items that will not fit in lockers Such storage is only allowed for limited periods of time and requires a specific removal date. All materials stored beyond the removal dates will be subject to discard. Any contents not immediately claimed will become property of the shop. Users are department faculty or enrolled students and have met the requirements for Shop Certification. Alumni and former students that have not been shop certified within the last two years must renew shop certification. Material that is excessively contaminated with dirt or grime should not be processed on any of the workshop equipment ex. Material should also be free of paint or finishes ex.

All used material should be analyzed with a metal detector before attempting any machining procedures using the shops tools or equipment. Shop users using used materials may be found liable for damage to the shops tools and equipment caused by those materials. Follow guidelines for each specific tool or machine regarding materials as outlined in the shop manual. Follow guidelines for each specific tool or machine regarding materials as outlined in the shop manual. Grinding tools with specific attachments may be used to work cement or concrete on the outdoor concrete slab. Check for schedule changes during finals period and holiday Think practice and develop good, safe working habits. Be thoughtful and helpful towards others in the shop. If a guard or safety device is an impediment to safe operation of a machine seek help. If in doubt, ask for help. Notify shop manager or student assistants for help. Pick up your materials. Put away tools. Sweep up any loose debris. Ask shop attendant for assistance. Do not force tools into the material. Random Orbit Sanders use disposable sandpaper discs that are available for purchase in the shop. Ask Shop staff for assistance. Do not bear down on sander or push sander into material. With the appropriate belts it will quickly remove large amounts of material or smooth a surface in preparation for final finish sanding with other sanders. Do not bear down on sander or push sander into material. It is used for sanding moderate amounts of material off edges of boards as well as the face. The sander has a small area of contact and can easily follow moderate to shallow curves. Do not bear down on sander or push sander into material. Ask attendant for assistance if you are not sure which bit or accessory to use. Switch should be in forward position for drilling or reverse for backing out stuck bits. Tighten all three holes. Ask attendant for assistance if you are not sure which bit or accessory to use.

Switch should be in forward position for drilling or reverse for backing out stuck bits. Tighten all three holes. They are very versatile because of the large number of accessories available and also

because they are not bound by the limits of electrical cords. Ask attendant for assistance if you are not sure which bit or accessory to use. Generally, use low speed to drive screws and high speed to drill holes. Switch should be in forward position for drilling or driving screws, reverse for removing screws. Ask for assistance if you are not sure which setting to use. Be mindful and keep drill away from the edge of work benches or elevated surfaces. They are very versatile because of the large number of accessories available and also because they are not bound by the limits of electrical cords. Ask attendant for assistance if you are not sure which bit or accessory to use. Switch should be in forward position for drilling or driving screws, reverse for removing screws. Be mindful and keep drill away from the edge of work benches or elevated surfaces. Different cutters called bits, may be used to provide a variety of cutting and shaping operations such as; slotting, mortising, grooving, rabbeting, cornerrounding, beading, dovetailing, veining, inlay work, etc. Keep cutting pressure constant. Do not force tool into cut. Allow motor to come to full speed before contacting work piece. Depending on the material, it will likely be necessary to make more than one cut for best results and to avoid overloading the motor. Before beginning the cut on the actual work piece, it is advisable to make a sample cut on a piece of scrap lumber. This will show exactly how the cut will look as well as enable you to check dimensions. Always be sure the work is rigidly clamped or otherwise secured before making a cut. When routing edges, the router should be held firmly down and against the work by both guiding knobs.

Since the cutter rotates clockwise when viewing router from top, more efficient cutting will be obtained if the router is moved from left to right as you stand facing the work. When working on the inside of a template, move router in a clockwise direction. When working on the outside of a template, move the router in a counter clockwise direction. The speed and depth of cut will depend largely on the type of material being worked upon. Keep the cutting pressure constant, but do not force the router through the material so the motor speed slows excessively. When making cuts on all four edges of the work piece, it is advisable to make the first cut on the end of the piece across the grain. Thus, if chipping occurs at the end of a cut, it will be removed when making the next cut parallel with the grain. Plunge Routers allow the user to make cuts on the interior area of a material i.e. cutting a circle out of the middle of a board. With a spring loaded mechanism the user is able to "plunge" the router bit into the material when it is placed in the interior portions of the material. They can be used for profiling the edges of material and can also be used to cut from grooves from one edge of the material to the other. It can perform many of the functions of a regular sized router but is designed for smaller scale work where a larger router would be cumbersome to operate. Its smaller size and profile make it ideally suited for routing work in tight spaces or in situations where maneuverability may be an issue. Keep cutting pressure constant. Do not force tool into cut. Allow motor to come to full speed before contacting workpiece. Ask for help from shop staff. Avoid cutting benchtop. With the appropriate blade various materials may be cut such as wood and wood composites, paper or fiber based materials, plastics and masonry type materials. Do not cut into benchtop.

With various blades and a specially designed work table or straight edges this saw can make straight and miter cuts in a variety of materials. This saw also has the added feature that allows cuts to be made within the interior areas of a workpiece. Adjust blade height if needed. Do not cut into benchtop. It is primarily a power tool used in the construction industries. And with a wide array of blades available it can be used to cut through wood, metal, plastic, rubber, plaster, etc. Ask for help from shop staff. Securely clamp material down. Avoid cutting into benchtop. It cuts an arc shaped slot in the material in preparation for the insertion of a football shaped plate biscuit. Before the plate is inserted glue is applied in the slot. Once the plate is inserted into the slot containing the glue it becomes an integral part of the material then another piece of material with similarly cut slots can be glued and attached to the first piece of material see drawing above. With a wide range of accessories it can be used to cut, grind, carve, polish and drill a wide variety of materials. With the

proper bit or accessory wood, metal, ceramics, plastic, stone and concrete can be worked. The compact size and maneuverability of the tool lends itself well to intricate work where larger tools would be too cumbersome to use. Ask for assistance if you are not sure what accessory to use. Do not start on surface of material. Allow abrasive media to lightly contact work. The shop has two different sized nailers. The largest nailer shoots 16 gauge finish nails and is used for nailing thicker materials used for cabinet boxes and carpentry millwork. The smaller gun shoots 18 gauge brad nails and is used for assembling thinner materials used in projects such as picture frames, small boxes and delicate millwork. Before using these pieces of equipment please read and make sure you understand the following safety rules.

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