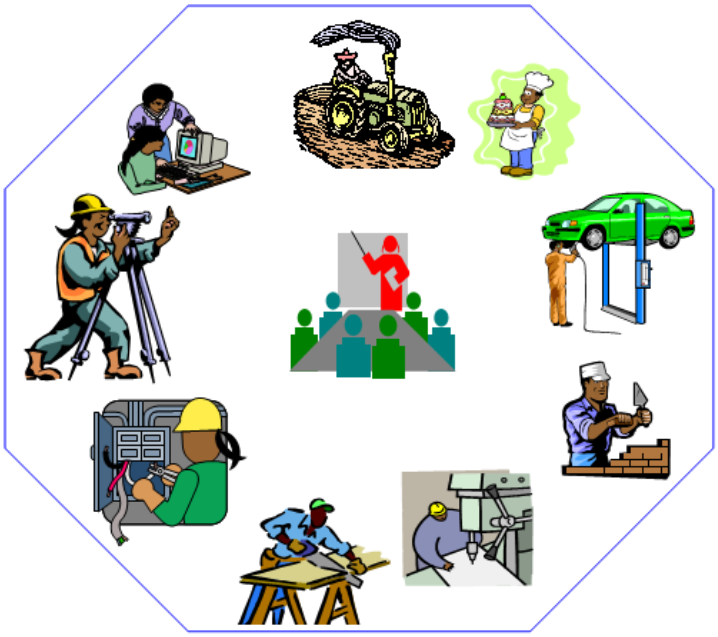
Basic Footwear Production Operation Level-I

Based on November 2019, Version 5 Occupational Standard and February 2021 Version 1 Curriculum



Module Title: Operating Footwear Cutting Machine

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Table of Contents

LG #37	LO#1- Identify and Use Hand Tools Equipment and Machines

Instruction sheet

This learning guide is developed to provide you the necessary information regarding the following content coverage and topics:

- Identifying materials, tools and equipment
- Checking tools for serviceability and safety
- Clearing work area following workplace standard procedures.
- Cleaning, checking, maintaining and storing hand tools and equipment
- Obtaining work instructions, specifications and operation details
- Identifying safety with regard to tools, equipment and machine
- Identifying safety of operator and workplace

This guide will also assist you to attain the learning outcomes stated in the cover page. Specifically, upon completion of this learning guide, you will be able to:

- Identify Materials, tools and equipment which are consistent with machine cutting.
- Check Tools for serviceability, safety and faults.
- Clear work area following workplace standard procedures.
- Clean, check, maintain and store Hand tools and equipment in accordance with manufacturers' specifications and work standard practices
- Obtain work instructions, specifications and operation details related to machine cutting
- Identify Safety with regard to tools, equipment and machine.
- Identify Safety of operator and workplace as per OHS practices

Learning Instructions:

1. Read the specific objectives of this Learning Guide.
2. Follow the instructions described below.
3. Read the information written in the information Sheets
4. Accomplish the Self-checks

Information Sheet 1- Materials, tools and equipment

1.1 Materials, tools and equipment

1.1.1 Introduction

Shoes come in different shapes, colors, designs and sizes; all of which are important when choosing a specific pair. However, besides these factors, the most important to consider when settling for a particular pair of shoes are the material used, which in turn also determines its durability and cost.

1.1.2 Materials

As we know shoe can be made of different materials with different components so these components have to be cut pair wisely.

Some of these materials are

I. Leather

Leather is derived from raw hide and skin, which is a byproduct of meat industry. The outer covering of large animals is called hide whereas the outer covering of small animals is called skin.

This can be explained by the following diagram.

For making footwear, leather is being replaced nowadays by varieties of synthetic materials available in the market due to the cost factor. But leather is still the most suitable material for making footwear and is superior to synthetic leather or any other leather substitutes.

Upper leather

Leathers for footwear upper are commonly produced from:

- **Calf skin**
- **cow**
- **buffalo**
- **kid skin**
- **goat and**
- **sheep skin.**

Different types of leathers are used for upper making purpose in foot wear industry today.

Some of these are listed and described as follows.

a. Full grain leather

Full grain leather is often denoted by F/G. This type of leather has original grain pattern. Since, covering or hiding of grain is not done by finishing or plating the raw hide /skin from which this leather is made, it is almost defect free. Hence, the full grain leather is costly leather.

This type of leather has a natural look. This is mostly finished with aniline or semi-aniline. Sometimes, we have F/G leather in pigmented finish and also called F/G pigmented leather. Full grain refers to leather which has not been sanded or buffed.

Sanding or buffing removes surface imperfections from the leather, except in the case of nubuck where the buffing is very light.

Figure 1: full grain leather

b. Corrected grain leather

A large proportion of the hide or skin coming to the tannery are full of defects and they are either unusable or it is very costly for shoe manufacturers to use them. The tanner therefore, endeavors to improve the quality by eliminating or rendering these defects by a procedure called “Correcting the grain side”.

If the raw hide/side is defective from the grain side, in tannery, the leather is buffed (rubbing with fine emery paper) from the grain side and then finished, plated at high temperature & pressure to give it a good appearance and again finished with heavy coats of pigmented finish. Since, correction of grain pattern takes place in the whole process, to hide the defects and increase the cutting value, this leather is called corrected grain leather often denoted by C/G.

Based on different design and different plates, different names is gives to C/G leather e.g. smooth C/G is a plain plated leather, hair cell printed, booty print etc.

Figure 2: corrected grain leather

c. Resin finished leather

This kind of finish is normally given on a leather whose grain side needs covering or correction to hide the defects or imperfections. A heavy coat of pigment finish, which gives a very good covering effect, is applied on leather.

Finish for corrected grain leather, prime constituent is acrylic or meth acrylic binder, good covering power due to high content of pigments (coloring material), better water resistance, cannot withstand high temperature.

d. Suede leather

If the grain side of leather is having more deep defects it is made velvety by buffing the flesh side. This leather is called suede. Suede leather is basically buffed leather with a fine velvety nap on the flesh surface. Dye finish is carried out in this case without binder and then proper fixation of the dye is done.

Figure 3: suede leather

e. Split suede

If the leather is made velvety from both sides, it is called split suede. Course fibres of similar look are visible from both the sides. This leather can be utilized from both the sides.

If the grain side is totally defective then the fresh side is made usable by giving it a velvety appearance. This leather is called **reverse side suede.**

Figure 4: split suede leather

f. Nubuck leather

In nubuck leather, the grain side of the leather is made velvety by snuffing. The nap in nubuck leather is very fine because of the tight fiber structure in the grain layer. The dye finish is done on Nubuck leather.

This leather has got a very good writing effect. Writing effect is the effect caused due to raised naps on the surface. When we apply our finger on the surface we get finger marks on this leather. This effect is called writing effect.

Note: Buff nubuck has low writing effect.

Figure 5: nubuck leather

g. Burnish leather

This finish is given by a special kind of wax called burnishing wax which gives shine or burning gloss on high abrasive action (by rubbing on the surface). This finish is normally given on full grain leather.

Good burnishing effect can be observed using the specific tool as in this case a type of burnishing wax is used during finishing giving dry & shiny surface effect.

When you burnish something, you are making the object shiny using friction and pressure. Leather is usually burnished at the edges, such as on a belt, using a metal tool, like a spinning disk. Burnishing is different than polishing as no polish is used in the process. Leather must be fairly moist when burnishing, but not wet.

Figure 6: burnished leather

h. Glazed leather

It is a type of leather in which a type of protein finish is done and the glazing effect is obtained by glazing machine. Glazed leather is leather treated with a pigment containing not only gloss, but also protection.

Compactness of grain is required to sustain the high temperature & pressure of the machine. Glazed finish is again a natural finish given normally on goat/kid leather. This has a very brilliant & natural gloss.

Figure 7: glazed leather

i. Oily leather

This leather is oily in nature. It is carried out on full grain leather (partially snuffed). The pull-up oil (free oil) is when sprayed with the season and finally the oil is sealed inside by top coat permitting the oil to move freely inside, responsible for color change when pulling the leather. On pulling this leather or folding this leather, the oil deposited in between the layers is removed and give the folded pulled area a light color. Hence, this finish also gives a two-tone effect to leather. This effect is normally given on full grain leather. Cow leather having a pull up effect is called cow oil pull up. Sometimes, we have oil pull up effect even on milled leather. This leather is called milled oil pull up.

Figure 8: oil pull up leather

j. Patent leather

Patent finish is basically a P.U. finish in which a special coating is carried out. The finish film thickness is restricted to be less than 0.15 mm. The mirror like appearance is the unique feature of this finish.

Patent PU Coated or PU Film Coated**:** A patent or PU coated leather is split leather with a thick film of PU laminated on it. This leather does not have breakability like leather because of thick PU film.

PU film coated leather is either a split or sometimes full grain leather with a very thin film of PU laminated on it. This leather breathes.

Figure 9: patent leather

k. Crimpled leather

Distressed leather is any type of leather that has been treated to age the appearance of the leather while not weakening the overall integrity of the product. There are a number of different methods used to distress leather clothing and upholstery. Often, the goal is to give newly produced products a weathered and broken in quality that is sometime more appealing to consumers.

The use of distressed leather is common with many different types of items. Accessories like gloves, belts, wallets and hand bags are sometimes aged using one or more distressing methods. A jacket or coat, along with other clothing such leather pants and vests, are often aged to make the leather more supple without causing the material to weaken. Even leather furniture may be distressed, as the look and feel of the aged leather on a couch, sofa, or chair is often considered inviting.

While treating leather products is often conducted at home, there are manufacturers who offer new clothing and other products with distressed leather. While techniques vary, the leather is usually treated with a thin coating of some type of alcohol based agent, and then subjected to a series of steps aimed at creating wrinkles and creases in the grain. This pre-distressed leather may also undergo treatments that effectively scrape the material to lighten the color in random areas.

Figure 10: crimpled leather

l. Dry milled leather

Very high quality Natural Dry Milled (NDM) leather refers to the high end vegetable tanning process of bovine (cow) leather. NDM is a softer leather finish which contains the natural texture of a top grain cowhide. Inside leather is durable cowhide leather.

Figure 11: dry milled leather

m. Velvety

The leather is given a velvety look either on the grain side or flesh side by buffing (rubbing by course emery paper) or snuffing (by fine emery paper). In this process small fibres called naps are raised on the surface which gives a velvety look. Nubuck, suede, split suede and reverse side suede comes under this category.

Leather is the most suitable material for uppers, linings, insoles, outsoles, heels, toe puff and stiffeners.

Lining leather

Lining leather is the leather that is used to constitute the inside of the footwear i.e., the materials against the foot. Lining can be prepared from the following different types of leather.

Leathers for footwear lining are commonly produced from: Calf skin

- **cow**
- **buffalo**
- **kid skin**
- **goat and**
- **sheep skin**

a) Drum dyed leather

Drum dyed leather is obtained when leather is immersed in a drum with dyes and tumbled to insure complete color absorption.

b) Pigmented leather

Pigmented (protected) leather is the most durable but is less natural in appearance, having a polymer coating. Pigmented leather is leather whose surface has a finish containing pigment particles that render the finish completely opaque.

Pigmented Leather is used in the majority of furniture upholstery and almost all car upholstery. The durability is provided by a polymer surface coating which contains pigments.

The surface coating allows the manufacturer more control over the properties of the leather, e.g., resistance to scuffing or fading. The thickness of the surface coating can vary.

Full grain pigmented leather: The grain surface is left intact before applying the surface coating.

Corrected grain pigmented leather: The grain surface is abraded to remove imperfections before the surface coating is applied. A decorative grain pattern is then embossed into the surface it is indistinguishable from full grain pigmented leather to the naked eye.

Figure 12: Pigmented leather

c) Pigmented split

Pigmented leather is any top grain leather to which a clear topcoat and pigments have been applied. The pigments are what usually give the shiny even top color to

the leather. The leather may or may not be aniline dyed. Sometimes the pigments (color) are applied to a base crust of a different color and in this case the leather in not dyed all the way through. If the pigments are applied to a hide that has been aniline dyed and matched for color then this leather is called protected aniline leather. Leather is usually pigmented to give it durability and hide its natural blemishes. Pigmented leathers are easy to maintain and have maximum resistance to wear, soiling, and fading from light. Pigmented split leather is the split pigmented part of pigmented leather.

d) Split

Split leather is leather created from the fibrous part of the hide left once the top-grain of the rawhide has been separated from the hide. During the splitting operation, the top grain and drop split are separated. The drop split can be further split (thickness allowing) into a middle split and a flesh split. In very thick hides, the middle split can be separated into multiple layers until the thickness prevents further splitting. Split leather then has an artificial layer applied to the surface of the split and is embossed with a leather grain. Splits are also used to create suede. The strongest suede are usually made from grain splits (that have the grain completely removed) or from the flesh split that has been shaved to the correct thickness. Suede is "fuzzy" on both sides. Manufacturers use a variety of techniques to make suede from full-grain. Reversed suede is grained leather that has been designed into the leather article with the grain facing away from the visible surface. It is not considered to be a true form of suede.

II. Fabrics

A variety of fabrics are used as upper and ling materials as per the fashion or choice of end user.

Fabrics are manufactured from yarns by weaving, Knitting, Braiding and fibres by felting. Based on these, fabrics are classified as **woven**, **non-woven** and **knitted fabrics.**

The commonly used fabrics for footwear are:

Woven Fabric

- Plain weave
- Twill weave
- Drill weave
- Satin weave

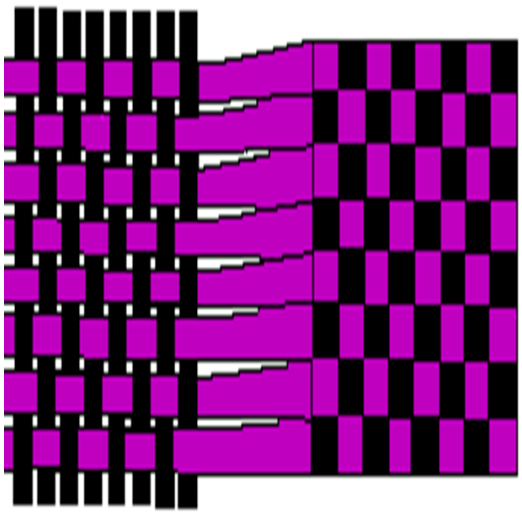


Figure 13: Plain weave

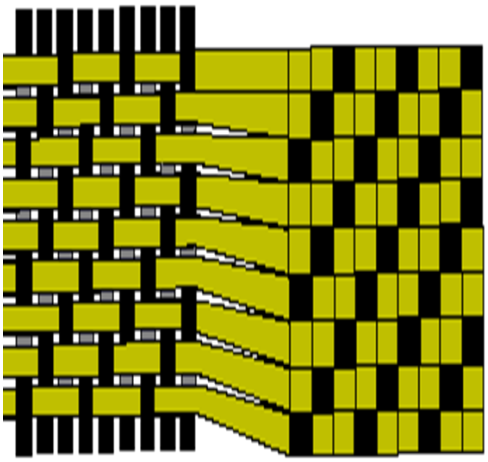


figure 14: Twill weave

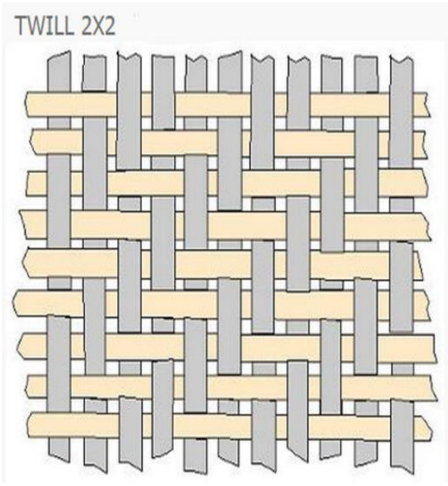


Figure 15. Twill weave

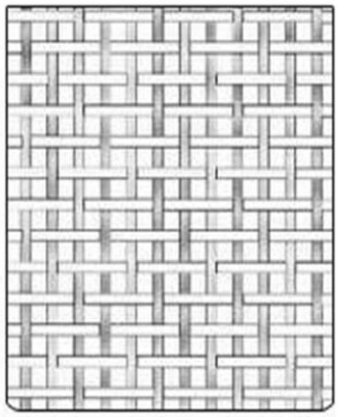


figure 16. Drill weave

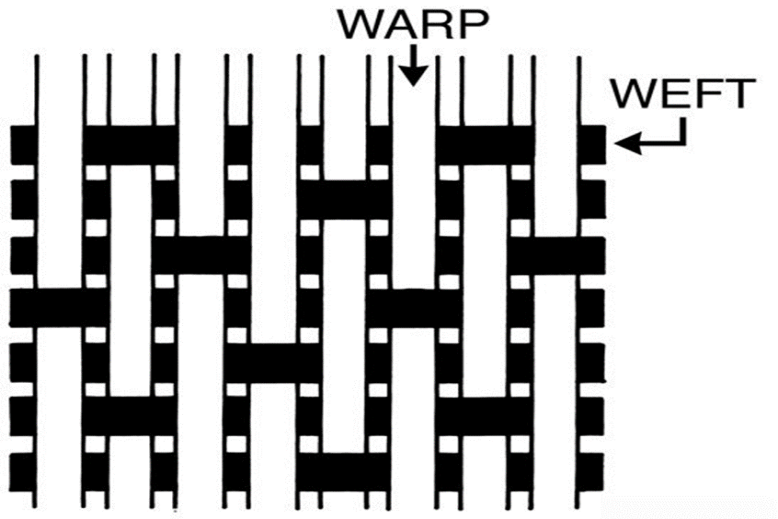


Figure 17 satin weave

- **Knitted fabric**

Figure 18. Knitted fabric

- **Non-woven Fabric**

Non-woven fabrics are produced directly from fibres, by passing the yarn style although they are often more expensive than woven &knitted fabrics.


Figure 19. non-woven fabric

Coated fabrics (Synthetics)

The fabrics coated with Poly Vinyl Chloride (PVC) or Poly Urethane (PU) for the development of leather look-a-like material known as synthetics.

In coated fabrics the coating provides the attractive finish and good wearing properties, whereas, the fabric provides most of the strength. The Colour, types, finishes & embossing which can be given to coated fabrics are unlimited and are difficult to differentiate from leather.

The two main types of coated fabrics are PVC coated & PU coated fabrics. PUCF's have a more attractive appearance and handle than PVC coated fabrics and are permeable. They are however, generally weaker, and the PU coating is less robust than PVC.

Figure 20. coated/synthetic fabrics

III. Insole board

Figure 21. Insole board

IV. Shank board

Figure 22. Shank board

V. Soling materials

Leather sole:

Leather can be used for making leather sole. Leather sole should be Solid, bold and flexible. It should not wear out easily, it must not increase in area as a result of shoe wearer's body pressure and at the same time it should not crack when subjected to a certain degree of bending on a specified metallic ball or rod. The real secrecy of vegetable tanning of heavy leathers like the sole lies mainly with their degree of tannages.

Figure 23. Vegetable tanned sole leather

Synthetic soling materials

There are different types of synthetic soling materials. They can be described as follows.

- Poly vinyl chloride Sole (PVC)
- Poly Urethane Sole (PU)
- Rubber Sole
- Microcellular Rubber
- Thermoplastic rubber Sole (TPR)
- EVA & Pylon Sole
- Crepe Sole
- Resin rubber

1.1.3 Tools and Equipment

The difference between tools and equipment

Tools: - are an item or implement used for a specific purpose. A tool can be a physical object such as mechanical tools including saws and hammers.

Equipment: - is defined as a set of tools, devices, kit, etc., assembled for a specific purpose.

Tools used in machine cutting

- **Clicking dies**: - there are different types of dies, this will be discussed further in other learning guide

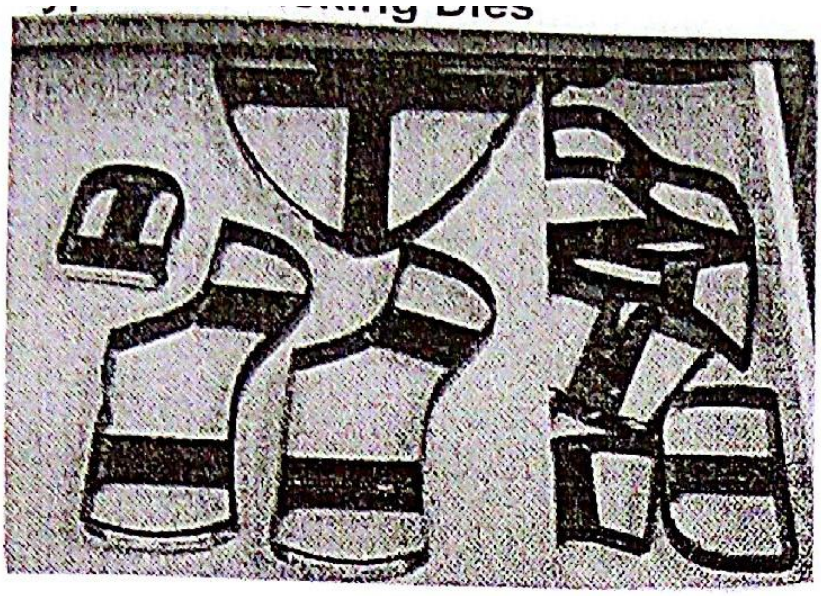


Figure 24 cutting dies

- Cutting board/nylon board

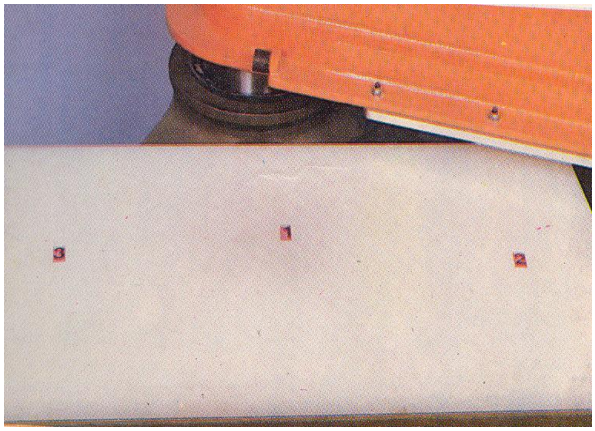


Figure 25 Cutting board/nylon board

- Measuring ruler

Figure 26. ruler

- **Silver pen**

- **Hammer**
- **Scissors**

machines used for cutting upper and lining materials

- **Swing arm hydraulic cutting machines**: - it is a hydraulic machine used to cut materials in single layer using clicking dies.

Figure 27. cutting machine

- **Travel head cutting and hydraulic plain cutting press machines**: - it is a hydraulic machine used to cut materials with several layers.

Figure 28. Travel head cutting press machine

- **Strap cutting machine**:-is a machine used to cut strap components with accuracy

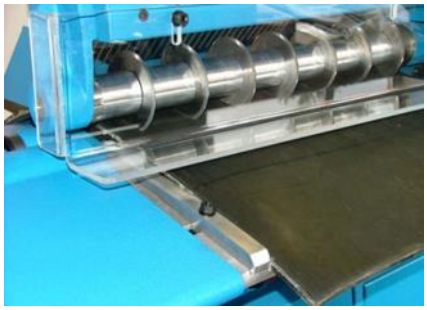


Figure 29 Strap cutting machine

- **Stamping machine: -**is a type of cutting machine use for stamping of upper/lining with electro pneumatic control with the use of counter with composing disk and plasticized foil.

Figure 30. Stamping machine

Self-check 1	**Written test**

NAME_____ DATE_____TOTAL POINT (10)

Instructions: Write all your answers in the provided answer sheet

DIRECTION: - Write long answers for the following question

1. What is the difference between tools and equipment?
2. What are materials will be cut in the machine cutting operation?
3. What are the tools used for machine cutting?
4. What is the equipment's and describe their use for machine cutting?

Information Sheet-2 Tools Serviceability and Safety

2.1 Tools serviceability and safety

2.1.1 Tools serviceability

Before any use of the tools there must be checking practice. Tools are checked for the sake of serviceability and safety, and faults to be reported. Some of check points for the tools can be:

- Check the dies don't have crack and breakage

- Check the dies blade sharpness and accuracy
- Check the cutting board/nylon board plain
- Check other tools like silver pen, ruler and hammer are working correctly

2.1.2 Safety Measures While Using the Tools

Generally, safety measures are those actions taken to improve or ensure the safety of a particular place, activity, group, function, or piece of equipment/tools. One of the key issues associated with hand tool safety is choosing and using the right tool. Unfortunately, many people use tools improperly, where they improvise with what they have on hand. Also, many people view hand tools as simple to use, so there is little concern for safety. In reality, a person using hand tools, no matter what they are, should always follow safety precautions. Approximately 8 percent of industrial incidents result from the improper use of hand tools, according to studies. Injuries range from simple cuts, contusions and abrasions to amputations, fractures and punctures. For instance, when we perform cutting operation manually by using cutting tools, methods for holding the tools and operating must be clearly known for the sake of safety, unless damage will occur in our fingers or hand

General safety rules for hand tool usage include

- Selecting the correct tool and the right sized tool for the job
- Inspecting tools for damage before attempting a task
- Keeping tools clean and cutting tools sharp
- Carrying tools in a manner that prevents cuts to yourself or someone else, especially if you should fall
- Always passing tools to others handle first and never throwing tools to another person
- Ensuring workers have proper training before using a particular tool for the first time
- Wearing proper personal protective equipment (e.g., safety glasses, face shields, gloves, etc.) when using hand tools
- Cutting away from your body to avoid injury if the cutting device should slip

- Taking advantage of the ergonomically shaped handles available on some tools and holding tools in a manner that minimizes stress to the hand, wrist and arm.

Self-check 2	**Written test**

NAME_____ DATE_____ TOTAL POINT (10)

Instructions: Write all your answers in the provided answer sheet

DIRECTION: - Write long answers for the following question

1. What does it mean by serviceability?
2. What are the check points for tools serviceability?
3. What are the safety measures while using tools?

Information Sheet-3 Work Area Cleaning

3.1 Work area clearing

The objective of this information sheet is to show you how to keep work areas and tool clean and ready for operation. At the end of each working day clean the tools and equipment you used and check them for any damage. If you note any damage, tag the tool as faulty and organize a repair or replacement.

Work area should be cleaned as per standard procedure:

- Dust bins for bio-degradable waste materials

- Bio-degradable garbage (waste materials) means the garbage or waste materials that are capable of being destroyed by the action of living beings.
- Dust bins for non-biodegradable waste materials
- A Non-bio-degradable waste material (garbage) means the garbage or waste materials that are not capable of being destroyed by the action of living beings.
- Cleaning of workshop
- Clean floors and decking at the end of each shift and place all rubbish and waste in approved containers for disposal.

Figure 31. clearing work area

- Some cleaning agents are toxic. Refer the instructions on any cleaning agent and follow any recommendations before using it.
- Do not use flammable cleaners or water on electrical equipment.
- Make sure designated walkways are kept clear of any obstructions.
- Always wear protective clothing and the appropriate safety equipment.
- Make sure that you understand and observe all legislative and personal safety procedures when carrying out the maintenance tasks. If you are unsure of what these are, ask your Instructor.

Cleaning of Work Area

You have to be:

- Clear and clean the area
- Store any reusable materials
- Check, clean and store away any tools and equipment

- Dispose of hazardous and non-hazardous waste according to legal and workplace requirements.

Clean cutting floor:

Wipe off any oil or grease on the floor and check for fluid leaks. If you find any, top up the hydraulic fluid. Occasionally, apply a few drops of lubricating oil to the wheels and a few drops to the posts of the safety stands.

Figure 32. Clean machines surrounding floor

The following points should be followed:

- Sort reusable equipment, components and materials from waste
- Reusable materials are correctly stored
- All tools and equipment are properly stored.

Self-check -3	**Written test**

NAME_____ DATE_____ TOTAL POINT (10)

Instructions: Write all your answers in the provided answer sheet

DIRECTION: - Write long answers for the following question

1. What is the objective work area cleaning?
2. Write down the procedures will be taken to clear work area?
3. What are the points to remember when cleaning cutting floor?

Information Sheet – 4 Cleaning, checking, maintaining and storing tools and equipment

4.1 Cleaning, checking, maintaining and storing tools and equipment

4.1.1 Cleaning and checking tools and equipment

Every time a piece of equipment is used, the general rule is to clean it straight away so it is ready for the next person to use. The manufacturers' instructions should be strictly followed when maintaining and cleaning equipment.

Clean your hand tools after every project for better performance and lifespan. Keep your hand tools in good, clean condition with two sets of rags. One rag should be lint-free to clean or handle precision instruments or components. The other should be oily to prevent rust and corrosion.

- Use kerosene/solvent for cleaning tools

- Clean tool and keep their place

Points to Note:

- Clean tools and equipment help work more efficiently. At the end of each working day clean the tools and equipment you used and check them for any damage. If you note any damage, tag the tool as faulty and organize a repair or replacement.
- Electrical current can travel over oily or greasy surfaces. Keep electrical power tools free from dust and dirt and make sure they are free of oil and grease.
- All workshop equipment should have a maintenance schedule. Always complete the tasks described on the schedule at the required time. This will help to keep the equipment in safe working order.
- Store commonly used tools in an easy-to-reach location. If a tool, or piece of equipment, is too difficult to return, it could be left on a workbench or on the floor where it will become a safety hazard.
- Keep your work area tidy. This will help you work more efficiently and safely.
- Always use chemical gloves when using any cleaning material because excessive exposure to cleaning materials can damage skin.
- Some solvents are flammable. Never use cleaning materials near an open flame or cigarette.
- The fumes from cleaning chemicals can be toxic, so wear appropriate respirator and eye protection wherever you are using these products.
- When cleaning products lose their effectiveness. they will need to be replaced. Refer to the suppliers' recommendations for collection or disposal. Do not pour solvents or other chemicals into the sewage system. This is both environmentally damaging and illegal.

Equipment and tools that will need cleaning includes:

- Garbage receptacles
- Pans

- Brooms, dusters and brushes
- Mops and buckets
- Electrical equipment, Ex: vacuum cleaners, polishers, scrubbers

4.1.2 Skills and actions need to clean up tools

a. Cleaning and clearing techniques:

- Select and use an appropriate method for cleaning
- tools and specialist equipment
- any leakages
- Restore your work area to a safe and tidy condition
- Make sure that any materials, components, tools and equipment that you may need for the next task are set up ready for use.

Figure 33. Cleaning of equipment

Figure 34. Cleaning and keeping tools

b. Safe disposal techniques:

- Handle and dispose of waste materials appropriately according to organizational and legal requirements
- Recognize what materials are hazardous and require special procedures
- Report any problems associated with cleaning, storing or disposing of materials and equipment to the relevant person.

c. Hazardous and non-hazardous materials:

- Types of waste material generated in the work area
- Know how to handle hazardous waste and reusable materials safely including:
  - Fluids, Adhesives and Solvents.
  - Personal protective equipment is required and how to use it.

4.1.3 Maintain and store hand tools

Maintenance Kit:

i. Brush: for cleaning fluff & material build-up.

ii. Oil Container: Oiling the moveable parts of m/c.

iii. Kerosene container: Cleaning the material build-up using the brush.

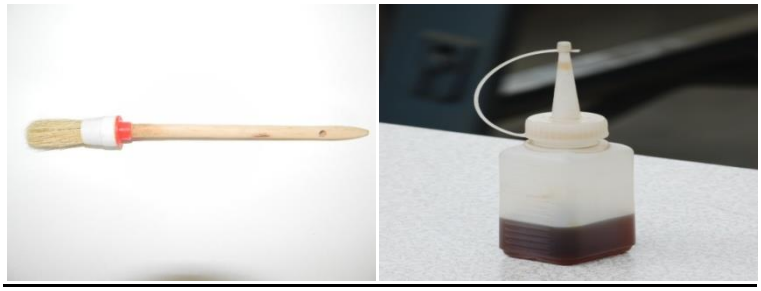


Figure 35. Brush & oil keep

Storing of hand tools

- Location: - Hand tools should be safely located when not in immediate use.

- Safety: - Hand tools should be used safely and effectively according to their intended use.
- Systematically arrangement: - Hand tools should be clamped or fixed in position.

Clicking dies storing: the clicking dies must be store separately and by the types so the dies will put on die rack/shelf.

To maintain cleaning equipment and keep it in a good working condition, it must be thoroughly cleaned and stored correctly every time it is used. If regular maintenance does not occur, the equipment may, over time, become dangerous to individuals.

Self-check -4	**Written test**

NAME_____ DATE_____ TOTAL POINT (10)

Instructions*:* Write all your answers in the provided answer sheet

DIRECTION: - Write long answers for the following question

1. Write the points to clean tools and equipment's?
2. What are the points to remember when storing tools?

Information Sheet – 5 Work instruction, specification and operational detail

5.1 Work instruction, specification and operational detail

5.1.1 Work instruction

A work instruction is a tool provided to help someone to do a job correctly. This simple statement implies that the purpose of the work instruction is quality and that the target user is the worker.

Work instruction, including plans, specifications, quality requirements and operations details relevant to the task should be obtained, confirmed and applied to the allotted task.

Work instructions for machines used in cutting department

I. Work instruction for Swing arm clicking press

a. Receive the leather with work-ticket. Verify the leather for quality and area issued.

b. Put the leather on the leather horse.

c. Before cutting, collect the dies for right article, & size to be put on the table. Do not keep the dies on top of other.

d. Check the die for deformation of shape before proceeding for cutting.

e. Set the correct pressure & adjust the height of the head 10-15 mm above the die.

f. Cut large components first. Take small sizes from more defective skin.

g. Components should be placed edge to edge to minimize waste.

h. Ensure that components are cut pair wise & components should be placed edge to edge to minimize waste.

i. Bundling of components should be done on 10 Pairs basis with flesh side up.

j. Always transfer the cut component with upper job-card.

k. Clean your work place after completing your work and place the dies in the specified die rack.

l. Throw the leather waste in to bin only.

m. Switch off the machine when not in use.

n. Return the remaining quantity of leather to the department in-charge.

II. Work instructions for the travel head clicking press

a. Receive the material with work-ticket. Verify the material for quality and quantity issued.

b. Layer the material and staple it before cutting.

c. Before cutting, collect the dies for right article, & size to be put on the table. Do not keep the dies on top of other.

d. Check the die for deformation of shape before proceeding for cutting.

e. Set the correct pressure & adjust the height of the head before cutting.

f. Ensure that components are cut pair wise & components should be interlocked well (minimum 2 mm gap is recommended) to minimize waste.

g. Making a bundle of components should be done on 10 Pairs basis.

h. Always transfer the cut component with upper job-card.

i. Clean your work place after completing your work and place the dies in the specified die rack.

j. Throw the waste in to bin only.

k. Switch off the machine when not in use.

l. Return the remaining quantity of material to the department in-charge.

III. Work instruction for the strap cutting machine

a. Do not operate the machine without prior approval.

b. Do not work without written job order card.

c. Only one person is allowed to work on the machine at one time.

d. Before starting cutting straps, set the correct width of knife and pressure.

e. Switch off the machine when not in use.

f. Put the leather on the leather horse.

g. Components should be placed edge to edge to minimize waste.

h. Always transfer the cut-comp. after stamping with job-card.

i. Clean your work place after completing your work.

j. Return the remaining quantity of leather after cutting to the department in change.

k. Throw the leather waste in to bin only.

IV. Work instructions for the stamping machine

1. Receive the cut-components with upper job card on 10 Pairs basis.
2. Check the digits for stamping as per plan no., size etc.
3. Check for the temperature of the heated number plate / die (70-80 degree Celsius).
4. Place each component on machine platform carefully with specified margin/place on the components.
5. Keep the hands away from the heated number plate/die
6. Clean your work place after completing your work.
7. Switch off the machine when not in use.

5.1.2 Specification

Standard specification of article

It is a specification for an article derived from a standard.

Special instruction from buyer

-In this case customers are the owners of the specification/requirement. And also the product must feet or conform to known customer or buyer requirements.

Quality requirements

The first requirement for a shoe upper material is that it should take the desired shape during making. The second requirement is that, it should retain the shape during storage and wear. Lastly it should be able to take new shape to adjust to the feet of the wearer. And also attaching of the upper with the sole requires some quality requirements. In order to achieve this quality requirements, one should realize and fulfill the following key points:

Quality specification sheet

It is a sheet that contains the exact statement of the particular needs to be satisfied and the requirement for a particular material or component.

Table 1- Simple example of specification for physical testing of threads

Test	**Equipment (M/Cs)**	**Requirement**
Breaking load and extension at break	Tensile tester	
Twist per unit length	Twist Tester	
Fastness of color to abrasion	Bally Finish Tester	

5.1.3 Operational details

Operational details are the specific details of day-to-day workings and activities. These records kept will be one of the most important management tools and then it also creates a good communication between the operators. Therefore, it should be allocated due importance. Operational details include:

Plan is a list of steps with timing and resources, used to achieve an objective.

Monthly plan: - It is a plan which resources are allocated into months or the plan is divided into months.

Sr. no.	Customer name	Material description/ model no	Color	Due date	Upper leather	Lining leather	Other material	Order quantity	Month-1	Month-2

Table 2. Example for Monthly plans

Weekly plan: - It is a plan which is divided into weeks.

Table 3-Example for Weekly plan

Sr. no	Customer name	Material description/ model no	Color	Due date	Upper leather	Lining leather	Other material	Order quantity	Wk-1	Wk-2	Wk-3

Daily plans: -

It is a plan which allocates resources into daily basis.

Sr. no	Customer name	Material description/model no	Color	Due date	Upper leather	Lining leather	Other material	Order quantity	Day 1	Day 2	Day 3	Day 4	Day 5

Table 4. Example for Daily plans

Stamping details

This operational detail contains the information bellow:

- the size of the shoe
- the pair number of the components
- the style of the shoe
- the organization's name and so on

So, this will help for the next operator to easily identify the components and accomplish the next operation efficiently.

Daily Material Consumption Report of Cutting

Daily material consumption like leather can be taken from every cutter's ticket data. And can be easily calculated by subtracting material returned from the material issued. This will provide clear information about the cutters' performance.

Upper Material Consumption Sheet

Table 6 : Upper material consumption sheet

Sr. no.	Date	Cutter's Name	Order no.	Article no.	Last no.	Color	Order Qty.	Total no. of pairs	Material Consumption/pr.(sdm/sq.ft.)	Issued Quantity (Sdm/sq.ft.)	Return (sdm/sq.ft.)	Consumed (sdm/sq.ft.)

Lining Material Consumption Sheet

Table 7 : Lining material consumption sheet

Sr. no.	Date	Cutter's Name	Order no.	Article no.	Last no.	Color	Order Qty.	Total no. of pairs	Material Consumption/pr.(sdm/sq.ft.)	Issued Quantity (Sdm/sq.ft.)	Return (sdm/sq.ft.)	Consumed (sdm/sq.ft.)

Self-check -5	Written test

NAME_____ DATE_____ TOTAL POINT (10)

Instructions: Write all your answers in the provided answer sheet

DIRECTION:- Write long answers for the following question

1. Describe about work instruction?
2. Describe about specification sheet?
3. Discuss about operational detail ?

Information Sheet – 6 Tools, equipment and machine safety

6.1 Tools, equipment and machine safety

Safety aspects while using machines in the cutting department:

Cutting machine/clicking machine

In using a Cutting machine/clicking machine the following safety rules must be followed.

- Do not operate the machine without prior approval
- Do not work without written job order card
- Only one person is allowed to work on the machine at one time
- Before the start of the cutting, check the die for the Article, Size, and Upper/lining/interlining.
- Before starting cutting, set the pressure and adjust the aluminum plate 10mm above the die
- Check the die for deformation of shape before proceeding for cutting
- Do not keep the Dies on top of the other
- Switch off the machine when not in use
- Use only one die on the Nylon board while cutting material

Clicking dies/Knives:

- Use the right knife for the task.
- Keep knives sharp

- Always cut on a stable surface, like a cutting board.
- Always cut away from your body.
- Store knives safely in a rack or knife block.
- Don't leave knives in washing –up water.
- Always carry knives with the blade pointing downwards.

Grinder

In using a grinder especially for blade making; the following safety points must be followed.

- Hair must be tied back
- Wear tight clothes
- Shoe must be protective
- Do not operate the machine without prior approval.
- Do not work without safety glass.
- Only one person is allowed to work on the machine at one time.
- Switch off the machine when not in use.
- Do not spill the water on the machine.
- Break the hack saw blade on the vice.
- Do not wear loose cloth while sharpening the blade,
- Clean your work place after completing your work.
- Do not walk around carrying the knife with the cutting blade exposed. It can cause injury.
- Do not try and catch a falling knife instead when it is not in use put your knife in a secure place

Strap cutting machine

- Do not operate the machine without prior approval
- Switch off the machine when not in use

- Only one person is allowed to work on the machine at one time
- Do not work without written job order card

Stamping machine

- Do not operate the machine without prior approval.
- Only one person is allowed to work on the machine at one time.
- Switch off the machine when not in use.
- do not spill the water on the machine
- do not wear loose cloth while working,
- place the component on machine platform carefully
- keep the hands away from the heated number plate/die
- Clean your work place after completing your work.
- Empty the leather waste in to waste bin only.

Self-check -6	**Written test**

NAME_____ DATE_____ TOTAL POINT (10)

Instructions*:* Write all your answers in the provided answer sheet

DIRECTION:- Write long answers for the following question

1. Write down the safety points while using click machine?
2. Write down the safety points while using clicking dies?

3. Describe briefly about safety while using stamping, strap cutting and grinder?

Information Sheet – 7 Operator and workplace safety

7.1. Operator and workplace safety

7.1.1 Safety Requirements:

A safe and healthy work environment is the basic right of every worker. However, the global situation falls far short of this right. The International Labor Organization (ILO)

estimates that more than 125 million workers are victims of occupational accidents and disease in a single year. Of these approximately 220,000 workers die and about 10 million are seriously disabled.

Safety and health occupy a very significant position and in hazardous occupations. It aims to protect the health and strength of all workers. It prevents employment in occupations unsuitable for the age and strength of the workers. It is the policy of the state to make provisions for securing just and humane conditions of work. The constitution provides a broad framework under which policies and programmes for occupational health and safety could be established.

The factory occupier must facilitate the following facilities for worker's welfare and their health:

- To ensure cleanliness of the workplace;
- Make effective arrangement for treatment and disposal of waste and effluent;
- Make suitable and effective provisions for adequate ventilation;
- Maintain temperatures to secure reasonable comfort for workers;
- Remove any dust or fumes from the workplace which may be injurious to workers;
- Prevent overcrowding by maintaining a specific cubic area for each worker;
- Provide sufficient and suitable light;
- Make suitable arrangements to provide clean drinking water conveniently situated for all workers and;
- Provide suitable latrines and urinals to specified standards.

The factory occupier must provide basic safety measures including:

- Securely guarding all parts of dangerous machinery;
- Precautions for working on machinery;

- Emergency devices for cutting off power;
- Maintain hoists and lifts;
- Lifting machines, chains, ropes, and other lifting tackle must be maintained in good condition;
- Ensure walking surfaces are of sound construction;
- Provide protective equipment;
- Measures to remove gas and dust before entering confined places;
- Measures to prevent fires.

The factory occupier must disclose information about:

- Dangers, health hazards, and measures to protect workers from substances or materials in manufacture, transportation, storage etc. to the workers, the chief factory inspector, and the local authority;
- Safety and policy;
- Quantity and characteristics and disposal of substances and waste;
- Emergency plans to workers and the local public;
- Handling, using, transportation, storage and disposal of hazardous substances to workers and the local public.

The employer should maintain up-to-date health records of workers, and to appoint a person experienced in handling hazardous substances to supervise handling, and provide protective measures and regular medical examinations.

Clothing requirements

Wearing a protective cloth is important especially during machine operations. Whenever you perform a task in the workshop you must use personal protective clothing and equipment that is appropriate for the task and which conforms to your local safety regulations and policies. Among other items, this may include:

- **Work clothing** - such as coveralls and steel-capped footwear
- **Eye protection** - such as safety glasses and face masks
- **Ear protection** - such as earmuffs and earplugs

- **Hand protection** - such as rubber gloves and barrier cream

If you are not certain what are appropriate or required, ask your supervisor.

Self-check -7	Written test

NAME_____ DATE_____ TOTAL POINT (10)

Instructions: Write all your answers in the provided answer sheet

DIRECTION:- Write long answers for the following question

1. What does it mean by safety?
2. Describe briefly about safety work place and operator?

LG #38	LO #2- Set up workstation

Instruction sheet

This learning guide is developed to provide you the necessary information regarding the following content coverage and topics:

- Workstation set up and arrangement.
- cutting equipment and patterns
- Material collection, sorting and laying out in preparation for cutting.
- Cutting board Cleaning and maintaining
- Records maintaining

This guide will also assist you to attain the learning outcomes stated in the cover page. Specifically, upon completion of this learning guide, you will be able to:

- Set up workstation according to job specifications.
- Select and prepare cutting equipment and patterns are according to work specifications and manufacturer instructions.
- Collect, sort and lay out materials in preparation for cutting.
- Clean and maintain cutting board is routinely.
- Maintain records

Learning instruction

1. Read the specific objectives of this Learning Guide.
2. Follow the instructions described below.
3. Read the information written in the information Sheets
4. Accomplish the Self-checks

Information Sheet-1 Work station setup and arrangement

1.1 workstation setup and arrangement

In this information sheet, participants will be able to understand about setting up and arranging work station according to work specifications such as Leather, Synthetics, Textile, Toe puff and counter stiffener sheets, Insole board, and Shank board. All concerns activities help the participants to produce quality with productivity.

1.1.1 Setting the swing arm clicking press machine

Place the knife on the clicking board

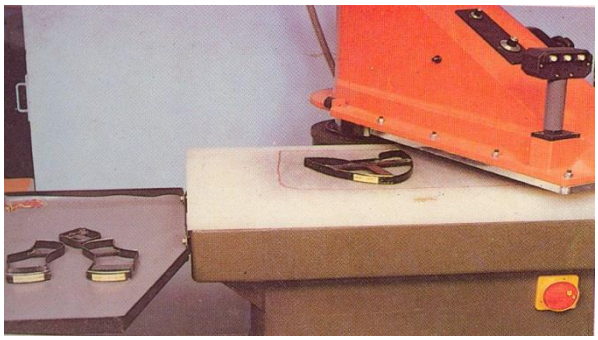


Figure 36: putting knife on clicking board

Setting of Pressure Control

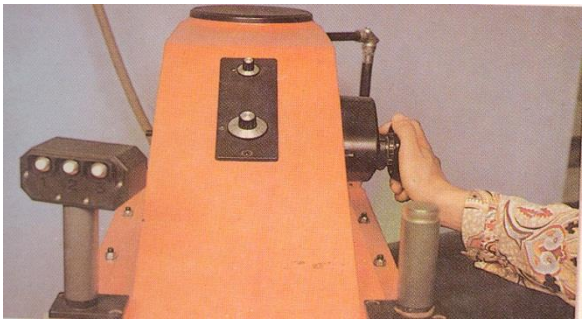


Figure 37: setting pressure

Turn the arm stroke adjustment control: Clockwise for down position and Anti clockwise for up position. Approx. 10 mm to 15 mm clearance is required from the top of the die depending on the substance of the leather.

Place 1 piece of thin cardboard on the clicking board.

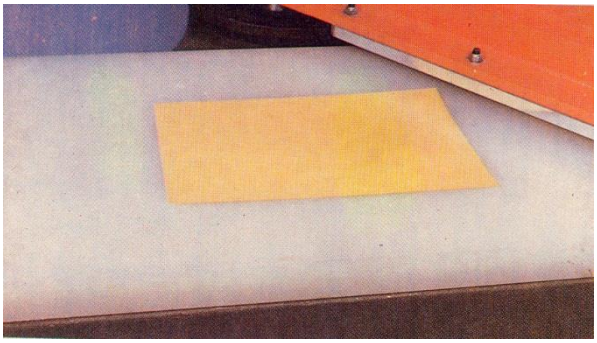


Figure 38: put piece of thin card board

Place the small knife on the cardboard.

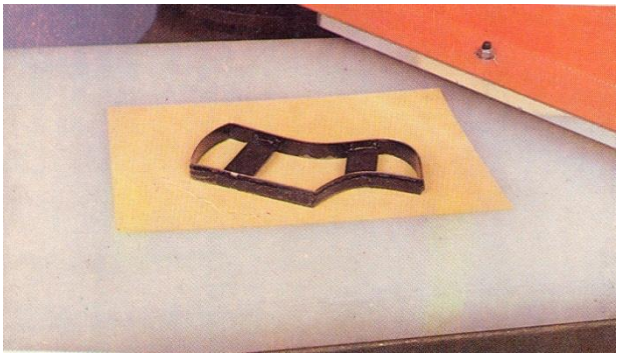


Figure 39: place knife on card board

Test the machine for cutting depth.

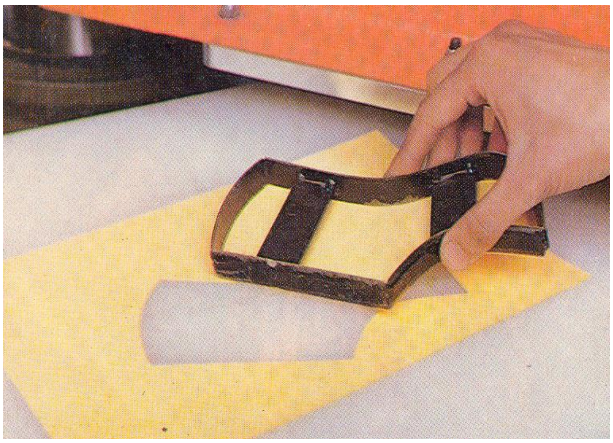


Figure 40: test the machine

If the machine has been set correctly it should cut through and only show a very small imprint on the cutting board.

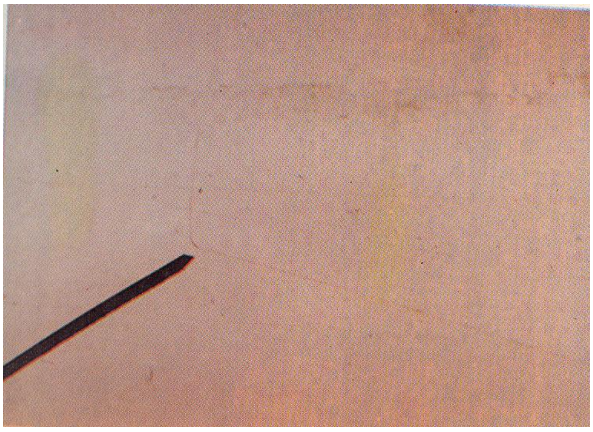


Figure 41: imprint of cutting board

If the knife cuts deeply into the nylon board reduce the pressure.

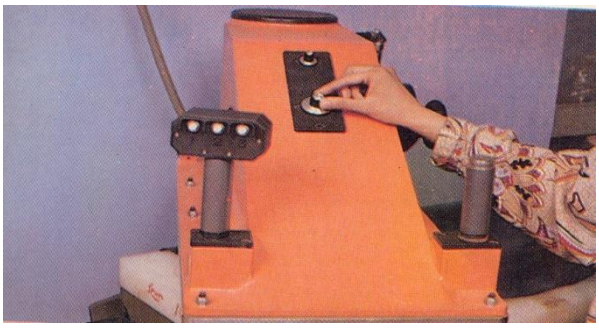


Figure 42: adjusting the pressure

Test the cutting depth in three different areas of the board.

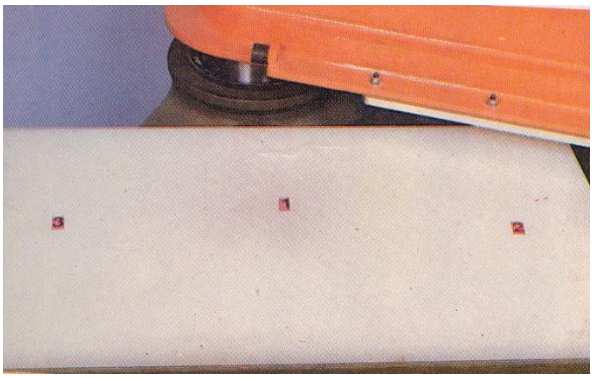


Figure 43: testing the cutting depth

This system can only be used if the cutting block and the aluminum plate are in good condition.

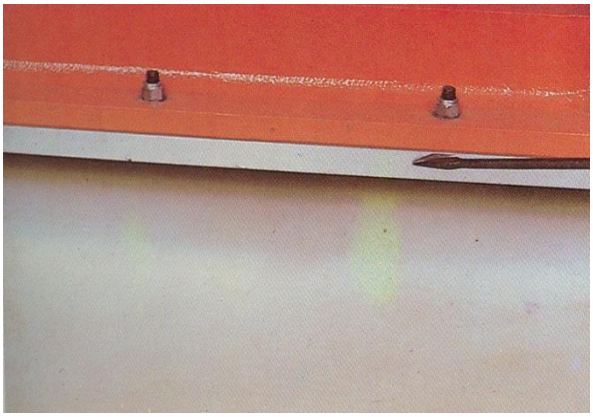


Figure 44: seeing the condition cutting block and the aluminum plate

If this system does not work adjust the cutting stroke pressure until you have minimum knife penetration into the board.

Figure 45: condition of cutting board

Depth of the cut can be altered by button no.1 and button no.3.

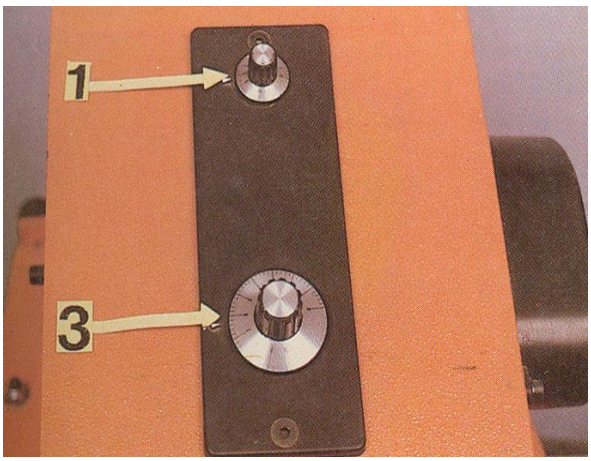


Figure 46: button no.1 and button no.3

Button No.3 or heavy cutting stroke button should be operated when an operator is using a larger knife with heavy leather.

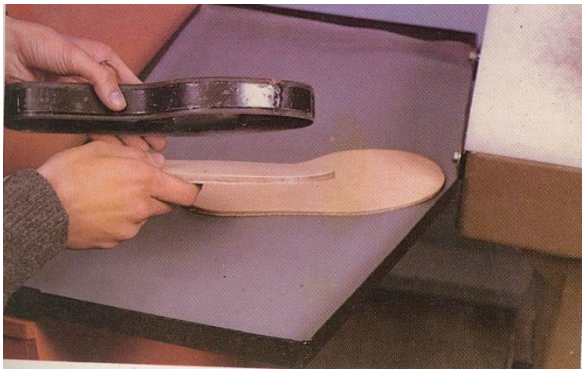


Figure 47: Button No.3 heavy stroke button

The pressure control adjustment is completed by turning the lower potentiometer clockwise for extra pressure and anti clockwise for less pressure.

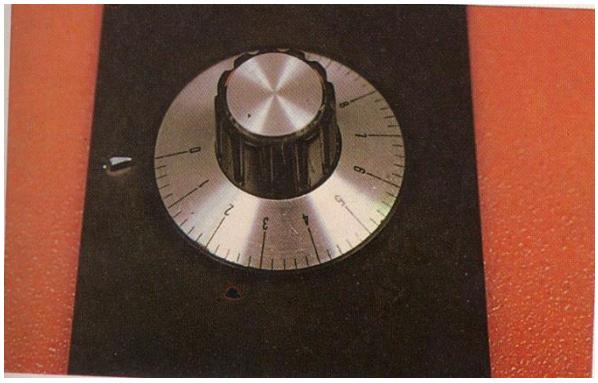


Figure 48: pressure control adjustment

1.1.2 Setting up and arranging work station for Cutting Leather

Turn the machine on and wait for 2 to 3 minutes to allow the machine to circulate the oil.

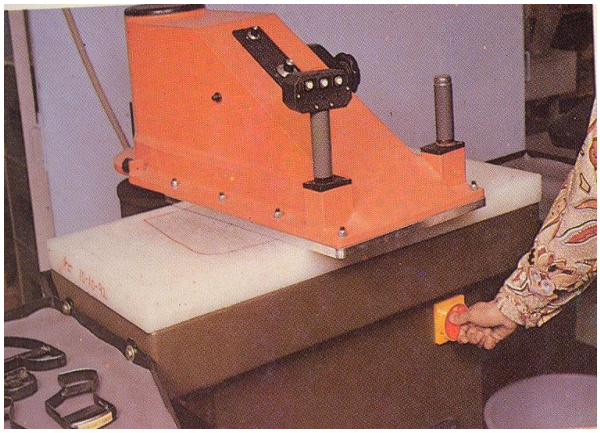


Figure 49: turning the machine on

Select the leather and place it in the leather well at the back of the machine.

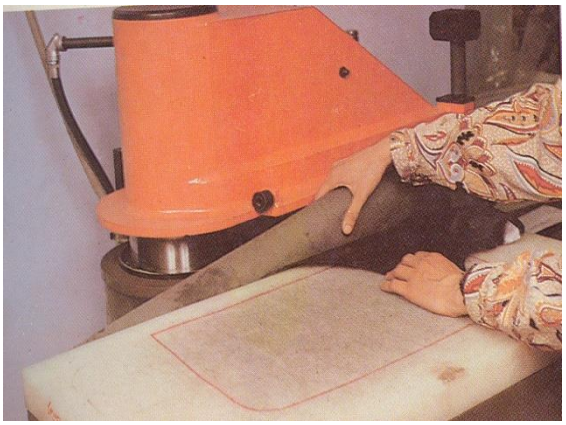


Figure 50: place the leather on the leather well

Bring the leather over the cutting board; care should be taken not to scratch the leather grain surface on the aluminum plate.

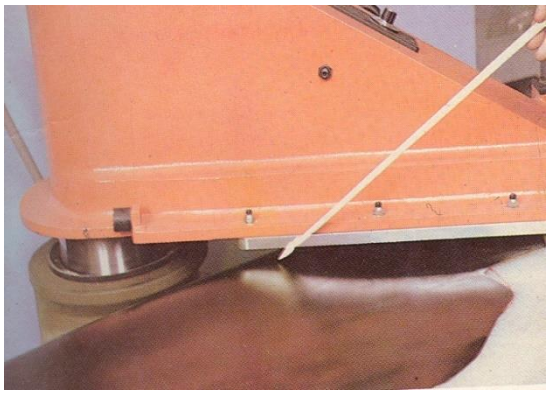


Figure 51: bring the leather over cutting board

Select the required knife

Figure 52: selecting the knife

Adjust the pressure stroke being, if required, this should be a minimum of 10 mm above the knife and not more than 15 mm.

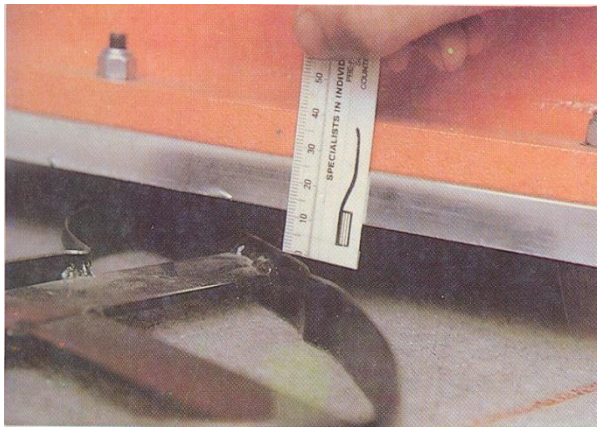


Figure 53: Adjust the pressure stroke

Adjust the pressure for the cutting depth as required. Swing the beam over the center of the knife.

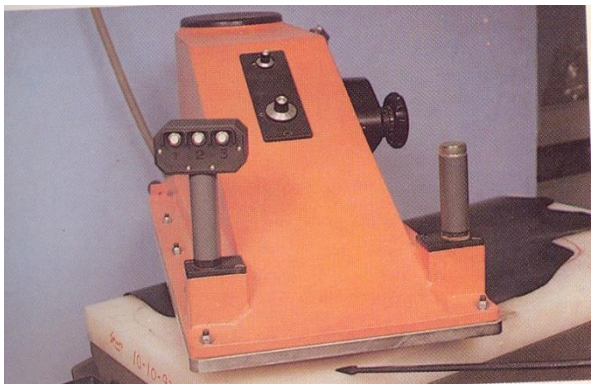


Figure 54: Adjust the pressure

Press the selected button on the left-hand control at the same time as you press the button on top of the right-hand control. Hold the button down until you feel the press coming up.

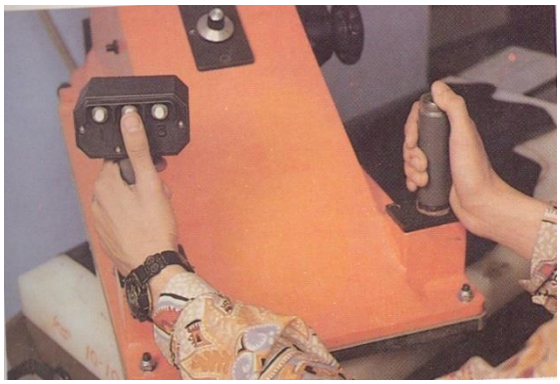


Figure 55: Pressing the selected button

Swing the beam away from the knife.

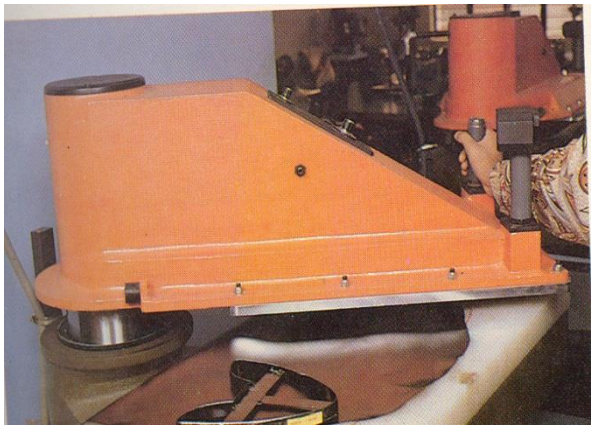


Figure 56: Swing the beam away

Pick up the knife and the cut component

Figure 57: Picking up the cut and the knife

Place the cut component in an orderly fashion on the side bench.

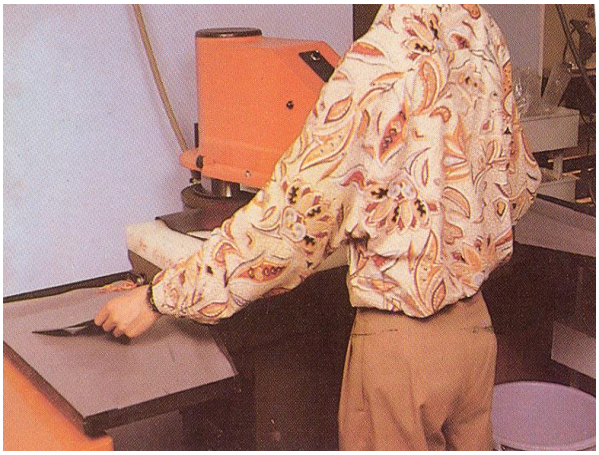


Figure 58: Place the cut component in an orderly manner

Repeat the same procedure, change knives when required.

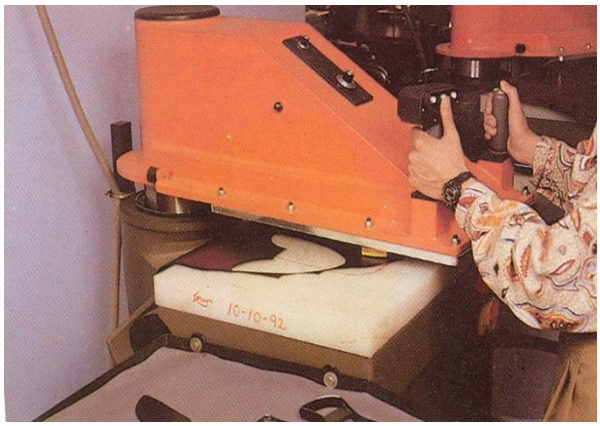


Figure 59: Repeating the same procedure

On completion of cutting, replace knife and leather.

Figure 60: replacing knife and leather

Turn off machine. The machine will rest on the cutting board when turned off.

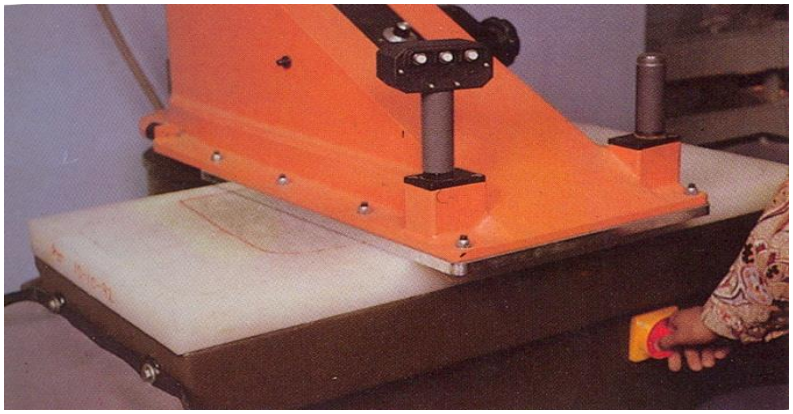


Figure 61: Turning off machine

Pack and bundle cut components

Figure 62: Packing and bundling

Clean down machine.

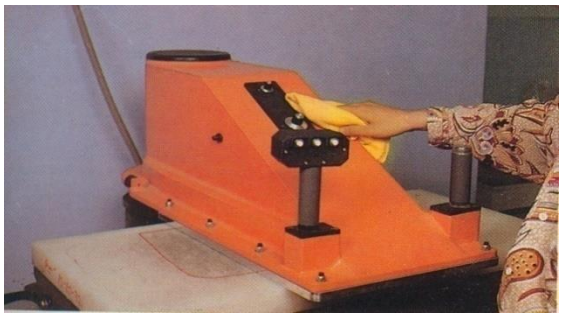


Figure 63: Cleaning the machine

Bench Utilization

Bench usage will vary from clicker to clicker. Some clicker may be right-handed, others may be left-handed.

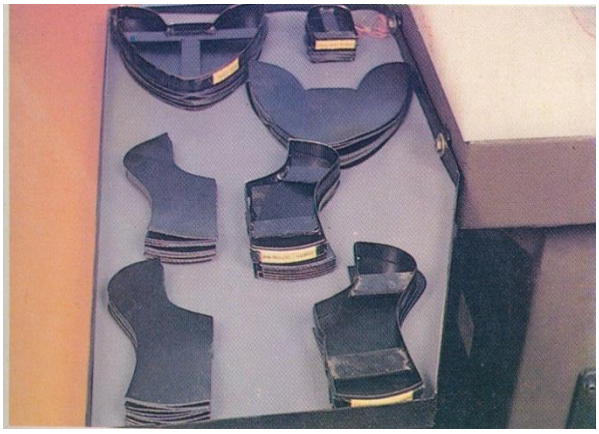


Figure 64: Bench Utilization

The main thing to remember is that the bench should be used in an orderly manner.

Figure 65: using the bench in orderly manner

Normally a clicker will favor using one side of his machine either left or right.

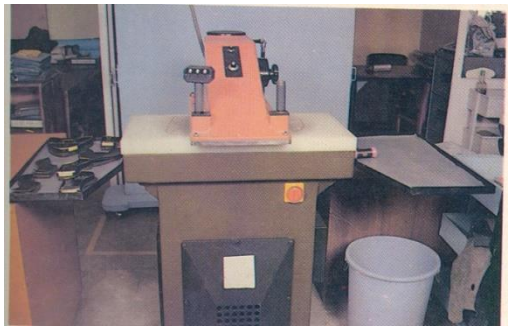


Figure 66: usage of bench, either left or right

The favored side the clicker can place main components, vamps and quarters.

Figure 67: put the main components in favored side (vamps and quarters)

On the opposite side the clicker may place the counters, straps, fingers etc. if the design requires them.

Figure 68: put the other components in opposite side (counters, straps, fingers)

All work should be placed neatly and stacked for easy bundling.

Figure 69: placing all neatly and stacked for easy bundling

Do not mix components; this only reduces output because each time the clicker's stops cutting, the output is reduced.

Figure 70: not to mix components

65% of a good clicker's time is spent on preparation and packing, only 35% of the time is actually used in cutting.

Figure 71: operator on work

Do not try to count large numbers when cutting, find a method of counting. For example, after each 10 pieces turn 45 degree to the last cut when stacking, this allows you to keep count of various components at the same time.

Figure 72: counting cut components

1.1.3 Setting up and arranging work station for Cutting Synthetic, Textile, Toe-puff, Counter Stiffener Sheets, Insole board, shank board

Shoe manufacturers have a number of options for cutting synthetic materials, textile, toe puff and counter stiffener, insole board and shank board with varying mixture of technology and human skills. The synthetic materials are cut in multiple layers and require more substantial knives. For upper and lining materials these are usually single-edged heavy duty strip steel knives 32 mm deep. For bottom stock they are usually forged steel knives up to 100 mm deep.

Checklist: The checklist should be made ready before the cutting actually performed.

- Materials to be cut.
- Tooling- Die templates etc.
- Proper layering of the material (even no. of layers).
- Design and material specifications.
- Job order quantity.
- Bundling and packing specifications.

Quality Parameters:

- Cut tight to toe whenever possible.
- Use sharp knives and keep cutting boards in good condition.
- The knives are suitably stored in racks to avoid damage of edges.
- Determine direction and ease of laddering by picking at the cut edges of a scrap piece of the fabric cut component such that the laddering direction is from the feather line upwards to the top line.
- The no. of layers to be cut should be fixed for different materials.
- No two layers are kept in opposite weaving direction.
- Reinforcement and foam materials should be cut at the end of the plan.
- Proper lighting of the work area should be given.

Work station setup:

Before starting the cutting process, the machine is adjusted as per the die height, type of material and no. of layers to be cut. During cutting the most important factor is interlocking pattern of dies, both widthwise and lengthwise. Smaller patterns used at the edges can save materials.

Further it is always advisable to cut pair wise for the same fold so as to provide uniformity in the lot. Proper checking, stamping and bundling of all the cut-components is required before packing and transfer.

1.1.4 Machine Cutting

The following two types of machines commonly cut the synthetic materials:

Swing Arm Beam Press

A typical swing arm beam press with a cutting force of around 20 tons is a good general work-horse for cutting a wide range of synthetic, Textile materials etc.

Figure 73: swing arm cutting press

If a swing arm press has to be used regularly for cutting synthetic materials, a table is often constructed at the front and one side of the press.

Travelling Head Clicking Press

Figure 74: Travelling Head Clicking Press

If reasonably large quantity is required, synthetic cutting is more effectively carried out on a traveling head press. The cutting forces vary from 20 to 70 tons.

a. Arrangement for Cutting Synthetic and Textile Material:

- The tight direction of Synthetics is usually along the roll.
- Components should be cut tight to toe wherever possible and given a little extra pattern allowance to avoid excessive stretch in lasting.
- Woven and knitted backings tend to fray at cut edges and these must be bound but cannot be skived.
- When press cutting, uncut yarns should be severed by hand (not pulled). Proper maintenance of knives and cutting boards or a layer of paper under the material may help to reduce this problem.
- Non-woven backers usually show some directional effect, although this may be quite small. Materials with such backers cut more cleanly and the cut edges do not fray as easily as with woven and knitted fabrics.
- Decorative punching is not recommended on any type of coated fabric unless adequately backed because of the undue weakening effect on the fabric structure.

Figure 75: Synthetic materials

The following points should be considering for cutting Toe puff and Stiffener sheet:

- Check the type of shoe construction.
- The climate/Pointet that the finished shoe is destined.
- The synthetic/textile sheets should be evenly layered.
- Select the die type as per no. of layers.
- As required, Synthetic/Textile materials should be cut in pairs at a time generally using cold bend knives, 19 mm or 32 mm single edge.

b. Arrangement for Cutting Toe puffs and Counter Stiffener sheet:

The following points should be considering for cutting Toe puff and Stiffener sheet:

- Check the type of shoe construction.
- The climate/Pointet that the finished shoe is destined.
- Staple the sheets in pairs with plain side facing each other and printed sides always on the outside.
- The sheets should be evenly layered.

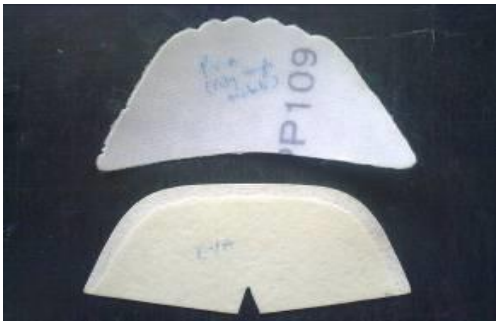


Figure 76: toe puff materials

- Select the die type as per no. of layers.

- Toe-puff/Stiffener sheets should be cut in pairs at a time generally using cold bend knives, 32 mm single edge.

c. Arrangement for Cutting Insole board/Shank board:

The following points should be considered for cutting insole board/shank board.

- Check the type of shoe construction.
- The climate/Pointet that the finished shoe is destined.
- Staple the sheets in pairs with plain side facing each other and printed sides always on the outside.

Figure 77: cutting insole board

- The sheets should be evenly layered.
- Cut according to direction Pointed on insole board/shank board.
- Insole board/shank board should be cut in pairs at a time generally using cold bend
- knives, 32 mm single edge.

Figure 78: cutting shank board

Self-Check 1	Written Test

Name: _____ Date: _____

Instructions: **Write all your answers in the provided answer sheet.**

Directions: Answer all the questions listed below.

(Total Points=7)

Part I: One word answer (Total Points: 3)

1. Write down the one main parts of the clicking mahcine. (1 Point)
2. What is the use of arm strock adjustment control. (1 Point)
3. After turn on the machine, how much time we should wail for oil circulation? (1 Point)

Part II: Short answer questions: (Total Points: 4)

4. What checklist should be made ready before the cutting is actually performed?

(4 Points)

Information Sheet-2 Selection and preparation of cutting Equipment and Patterns

2.1 Selection and preparation of cutting equipment's and patterns

In this information sheet, participants should be able to understand about Selecting and preparing cutting equipment such as cutting dies, layer cutting motorized knife and patterns according to work specifications and customer's instructions. Selection of dies for cutting depends on the type of materials such as Upper, Lining, Foam, Textile, Insole board, Shank board, Elastics, Inter-lining and Re-enforcements. All concerns activities help to participants to produce quality with productivity

Cutting Dies:

A die is a specialized tool used in manufacturing industries to cut or shape materials mostly using a press. Like moulds, Dies are generally customized to the item they are used to create.

Figure 79: Cutting Dies

Selection of dies:

Selection of Dies for cutting Upper, Lining, Foam, Textile, Insole board, Shank board, Elastics, Inter-lining, Reinforcement etc vary as per the material characteristics and the cutting process. The different types of dies with their specific uses are given below:

Types of Dies and their Uses:

Dies is of various types. Some of them are listed below

(i) **Dies as per Height** – 19 mm, 32 mm and 50 mm height Dies are available for various purposes. Normally19 mm die is used for leather upper and lining cutting. 32 mm and 50 mm dies are normally used for synthetic cutting, layer cutting, insole and shank board cutting, interlining and reinforcement cutting.

(ii) **Dies as per Edge** – Single edge and double edge Dies are made for cutting. Using double edge die we can cut right and left component from the same die which reduces the die cost. The single edge die is generally used for layer cutting.

(iii) **Straight Edge and Decorative Edge Dies** – Die edges can be straight or gimped as per the design requirements.

(iv) **Perforated Dies** – Dies can be perforated. It can be perforated for punched designs e.g. Brogue, Moccasin etc.

- Dies for Upper and Lining Cutting (preferably 19 mm double edge).

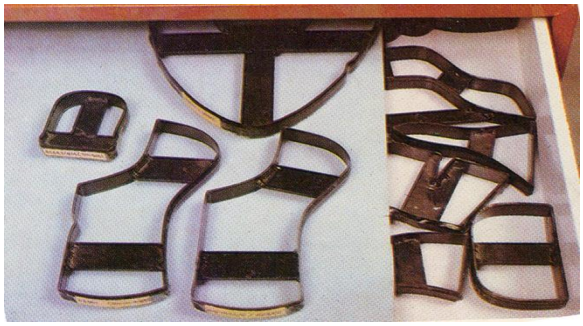


Figure 80: Dies for Upper and Lining Cutting

- Dies for Foam, Textile, Toe-puff and Counter Stiffener Cutting ((preferably 32 mm single edge)

Figure 81: dies for Foam, Textile, Toe-puff and Counter Stiffener Cutting

- Dies for Insole board and Shank board Cutting ((preferably 32 mm or 50 mm single edge).

Figure 82: dies for insole board and Shank board Cutting

- Dies for Sole Cutting (preferably 32 mm or 50 mm single edge).

Figure 83: Dies for Sole Cutting

Storage of Dies: When Dies are damaged through bad storage the cost can be quite high. The cost of replacement or repair plus the cost of lost production and often excess board wear must also be considered.

Figure 84: Storage of Dies

Dies can be stored in shelves or draws; these are normally specially made for this purpose.

Figure 85: Die Racks

Die Racks

The die racks do not have to be fancy, but can be made out of simple building methods to utilize space and prevent damage of cutting edges.

The main storage method required should be such that no die is placed on top of another. This reduces the life of the cutting blade.

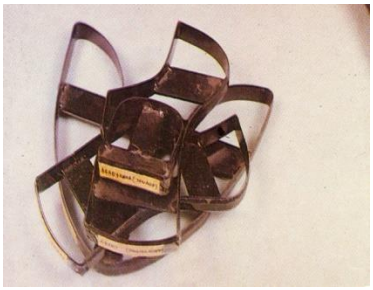


Figure 86: not placing dies on top of another

If dies are required to be placed on top of other, they should have a layer of paper or cardboard between each layer.

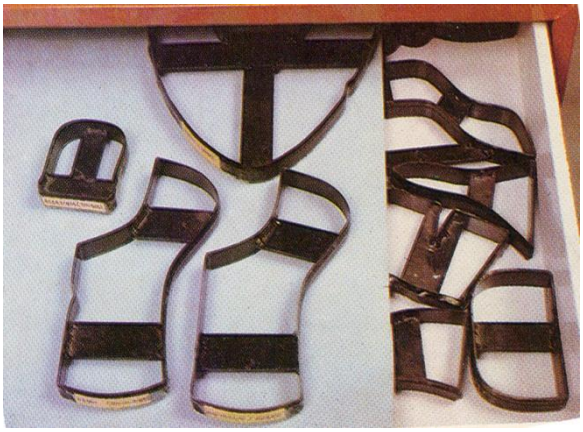


Figure 87: puting card board between each other

This is especially important when packing knives away after order has been completed. They should be boxed and labeled to allow quick access and should not be damaged in storage.

Figure 88:lebeling and boxing dies for quick access

Self-Check 2	**Written Test**

Name: _____ Date: _____

Instructions: **Write all your answers in the provided answer sheet on page 31.**

Directions: Answer all the questions listed below.

(Total Points: 10)

Part I: Multiple choices: (Total Points: 4)

1. Which type of height of cutting die is suitable for leather upper and lining cutting?

   a. 50mm b. 32mm c. 19mm d. no difference among them

2. Before starting the cutting what should be checked in the cutting dies by the cutter?

   a. Cutting edge quality b. dimension c. design d. all

3. Cutting in layers is recommended for:

   a. Leather b. Synthetics & Textiles c. All d. None

4. Die as per the edge can be:

   a. Single edge b. double edge c. both single and double edge d. none

Part II: Fill in the blanks: (Total Points: 4)

5. _____dies are used for punched designs.
6. Dies can be stored in ----------.
7. With---------- we can cut right and left component from the same die which reduces the die cost.
8. While cutting by machine, mixing components reduces _____.

Part III: Short answer questions: (Total Points: 2)

9. Define perforated dies.
10. Define dies as per height.

Information Sheet-3 Material collection, sorting and laying out in preparation for cutting

3.1 Material collection, sorting and laying out in preparation for cutting.

The material issued to the clicker from the store for a particular order or plan. A work ticket is issued to the clicker. In this work ticket order no., color of the leather, sizes of the pairs, sizes of the skins, no. of the pairs to be cut etc. is mentioned. On the basis of this work ticket leather is issued to the clicker. **Clicker collects** the leather from the store.

Cutter's Ticket

NAME OF THE ORGANIZATION
CUTTERS' JOB TICKET.
CUTTER'S NAME:-_____
DATE:-_____
MATERIAL:-_____
COLOR:-_____
GRADE:-_____ LAST NO:-_____
STYLE MODEL:-_____

SIZE	PAIRS

MATERIAL ISSUED:-_____
MATERIAL RETURN/EXTRA:-_____
SAVED/WASTE MATERIAL:-_____

DEPARTMENT'S SINGNATURE:-

Figure 89: cutter's ticket

Sorting and laying out of Leather

Leather may be sorted for standard **size, grain and shade**. This increases his productivity. The sorting is done as follows:

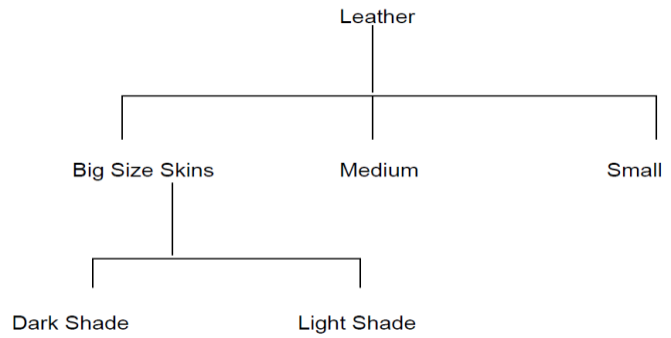


Figure 90: Sorting out of Leather

The material is put on the leather horse according to the following rules

- ✓ At first, he can put thinner leather and thicker ones are put up.
- ✓ Color shades are put from the darkest to the lightest one's step by step (for an easier pairing).
- ❖ Whole leather is over loaded at the longitudinal axis by grain up and shifted out slightly.

Figure 91: laying out leather

Sorting of textile

This term describes any-woven or knitted material. Yarns used for weaving and knitting are of natural origin, such as cotton, wool or linen, or a host of synthetic yarns, such as viscose, nylon, etc. Some fabrics are made of a blend of natural and synthetic fibers. All textiles used in shoe production must be backed with another material, usually cotton sheeting or drill, or double-woven in such a way to provide the necessary weight or thickness required of shoe uppers and linings.

Figure 92: sorting of textiles

Bottoms components

Component: This is collective term which is used to describe items which is incorporated in shoe and includes the following.

a. Toe puff.

b. Stiffener.

c. Shank board

d. Insole board

e. Socks

f. steel shank

g. midsole

h. heel

i. welt

a. **Toe puff and Stiffener:** Toe puff and counter sheets are cut in the layer form. All the sheets are uniformly match with each other and stapled at the corner. For hand cutting we should use knife, scissors etc. with the help of tin patterns

b. **Insole board:** Layering of insole board sheets are carried in such a way that there should be matching face to face and stapled at the corner. Insole board sheets should cut along with the arrow Point. For hand cutting we should use knife, scissors, searing machine etc. with the help of tin patterns

c. Shank board: Shank board sheets are kept in layers and stapled at the corner. For hand cutting we should use knife, scissors, searing machine etc. with the help of tin patterns.

d. Socks

f. steel shank

g. midsole

h. heel

i. welt

Self-check -3	Written test

Name: _____ Date: _____

Instructions: **Write all your answers in the provided answer sheet.**

Directions: Answer all the questions listed below.

Part I long answer

1. What is cutters ticket and show its format?
2. What does it mean by laying out materials?
3. Summarize about collecting, sorting and laying out materials?

Information Sheet-4 Cutting board Cleaning and maintaining

4.1 Cutting board cleaning and maintaining

Cutting board can be made of different materials as per the manufacturers some of these are: -

- Wood cutting board
- Nylon cutting board

Most of the swing arm clicking press machines cutting board is nylon board so these boards must always be properly clean and maintained.

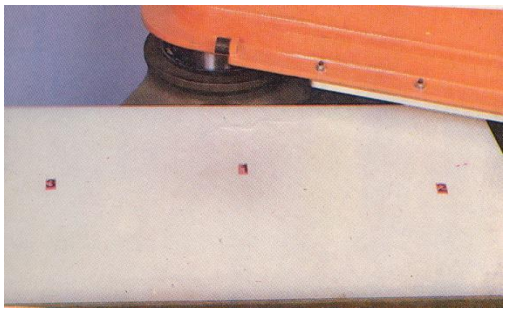


Figure 93: nylon cutting board

The purpose which cutting boards will be defected is when the pressure is too much the clicking die with greater depth will be stuck on the board. Other purposes are using these boards for other work so the board will be spoiled and the surface will be rough.

How to maintain the cutting board when clicking die stuck on it

✓ To maintain these, we have to take out the board from the machine and take to other maintenance room table and using heater we will heat the around the die and picked up.

✓ When a cutting board surface is too much rough and the depth of cut print is not similar we have maintain it. To do these check the level of board and depth plain the board with the cutting machine of boards.

Self-check -4	Written test

Name: _____ Date: _____

Instructions: **Write all your answers in the provided answer sheet.**

Directions: Answer all the questions listed below.

Part I long answer

1. What type material can be of a cutting board?
2. What are the purposes that cutting board will be defected?
3. Describe what we should do when the clicking die stuck on it?

Information Sheet-5 Maintaining records

5.1 Maintaining records

In this information sheet, participants should be able to understand how records are maintained concerning upper material consumption, number of pairs cut, lining material consumption, other material consumption, productivity of upper cutting,

productivity of lining cutting etc. All concerns activities help the participants to produce quality and productivity.

For both establishing the initial cost of style and to control the consumption of material by the clicker it is necessary to determine the amount of material required.

It is important to get an accurate figure because:

a. The upper is typically the largest single item in the cost of materials of the shoe and sufficiently accurate figures are needed to set material consumption allowance for product development, product costing, material requirement planning.
b. The profitability of the company depends on accurate costing.
c. The consumption allowance relating to a batch for a clicker to cut is called clicker allowance.

CLICKER ALLOWANCE can be used as a basis for payment by results on “Leather saved” against the allowance by the clicker.

Any system for predetermining the material consumption allowance needs the following attributes:

a. Consistency between styles and shoe sizes.
b. Consistency between material types.
c. Sufficient accuracy to be used as a standard against which cutting results can be compared so that steps can be taken to eliminate excessive wastage.

Work Order Sheet

The most important document is the work order sheet. This document gives the details of the buyers order and for the companies ‘The current order position’. The planning department of the organization to prepare this keeping the customer’s priority listed. The order is broken down to the pair’s basis. The delivery dates are also mentioned to ensure that goods are required to be delivered on time.

Lot Number

To follow the safeguard and convenience during shoe production is to divide the complete shoe order in to the quantities or lots as per the dispatch schedule. This is because of:

- Buyers very rare asks for the whole order quantity at once,
- Different destination suggested to ship,
- Storage cost or any damage against heavy loading or unloading.
- Payment releases and
- Working capital.

The planned dispatch quantities of shoes are divided in to the small lots and Lot No is allocated accordingly. The Lot No is stamped over the components edges or (suitable area), which helps to recognize the component against any happening during production.

Example

Suppose on 1st January, 5000 pairs of shoe uppers order have been received from buyer, which is to be dispatched according to following:

Pairs 500 to be dispatched by 31st January,

Pairs 500 to be dispatched by 31st March,

Pairs 1200 to be dispatched by 30th April,

Pairs 1400 to be dispatched by 31st May,

Pairs 1400 to be dispatched by 30th June,

Now for the convenience during the production is to divide the Ist dispatch quantity in following ways:

Order breaks up of first 500 pairs will divided in to five equal lots.

One Lot of 100 pairs (even number) is considered suitable for calculation purposes during recording and planning.

Serial all the concerns Lots in numbers like 1, 2, 3, 4 and 5 (100 each).

This 100 pairs Lot is allocated further by providing numbering in following ways:

Take lot number one of 100 pairs and start planning the serial number from one to hundred.

Material to be issued for cutting will be according to the lot number one.

Stamping done on above lot material will be given as serial number like **order number/article number/size/lot number/serial number.**

Plan Sheet

The work orders are broken in to plans. This typical plan sheet indicates breaking up of the order in to small lot. Usually the production is broken down in to small lots of 10pairs in every size though; the lot size is variable from company to company. The breaking of the order is necessary to track the pairs and ensure that the pair mix-up is not taking place. Also the company – for the buyer they remain in the fair position to check that whether the orders are reaching on time or in case of delay how much delay can occur.

The plan sheet depicted indicated here shows the article/design details for tracking and then breakup of the plan.

Note

- ✓ The size break up is 10 pairs per size.
- ✓ The plan number cannot be repeated within the order no. and article number.
- ✓ The article number can be alpha – numeric.
- ✓ Each plan contains equal number of pairs.
- ✓ The issue of the material has to be plan wise only depending on the day's capacities.
- ✓ The daily lot has to be completed.

Table -1 Daily plan sheet

Daily Plan Sheet (production)

Date	8.00 9.00	9.00 10.00	10.00 11.00	11.00 12.00	Total Production	1.00 2.00	2.00 3.00	3.00 4.00	4.00 5.00	Total Production
Monday										
Tuesday										
Wednesday										
Thursday										
Friday										
Saturday										
Total										

Work Loading Chart

(i) Based on the planning sheet the daily loading chart is prepared this is necessary for loading the individual workstation.

(ii) The example shown here is for the daily load plan for any workday. For the preparation of the day plan following things are required :

- ✓ Capacity of the department
- ✓ Availability of the material
- ✓ Capacity of the individual cutter
- ✓ Size assortment to be cut
- ✓ Delivery dates
- ✓ Types of material to be cut on individual machine
- ✓ Skill of the operator.

(iii) Based on the individual capacities of the workstation the loading is carried out. You may note that individual sizes (big and smaller sizes) are mixed together. This is done to save the material.

(iv) This is merged with the plan. Therefore the cutter will have to cut 10 plans. Each plans containing the 10prs. of the individual plan. Number e.g. 001 (pl. refer plan sheet). Therefore 10 plans of the 10 prs. each are given accounting to 100 prs.

(v) The clicker cuts the material as per the plan. The cutting ticket shows the plan numbers to be cut. That is the reason why lots are accepted in 10 prs. The Q.C. personnel Points this out (the plan number) and the checking is carried out as per the plan number work allocation.

Specification Sheet:

Generally, specification sheet is designed according to the order sample and maximum time it is sent by customer along with the order sheet. This helps in identifying the material concern for the shoe upper to be made and dictate all production terms as per the sample. This is a kind of agreement between buyer and manufacturer regarding deal of particular products.

Manufacturer cannot neglect the given specifications during making the shoe and buyer will have to accept the related product, if it is to be made according to the specifications given. Specification can be of regarding following types:

- Material specifications,
- Technical specifications
- Machinery specifications,
- Method specifications and
- Packing and dispatch specifications.

These specifications are collected from the buyer and recording has been done at various levels of the system. All the concerned information is sent to the respective departments and necessary considerations are taken care of. Transparency is made at all levels of production for the necessary specifications to be followed and necessary steps are taken for the remedial action.

Clicker/Cutter's Ticket

The Clicking ticket is prepared after preparing the load chart. This is prepared as per the load chart. Changes may occur in case of absentees of the operator or certain priority orders.

This is made on accounting principles. The amount of the material required as well as issue quantity is also mentioned. The amount of the material returned is credited to the cutter's accounts.

This also shows the sizes to be cut along with article details and materials to be used. In some cases, die numbers are also mentioned. It is better to mention quality requirements on the cutting tickets to ensure that the quality remains addressed in all respects such as shade matching, defects, or grain matching.

Table – 2 cutter's ticket

Cutter's ticket

NAME OF THE ORGANIZATION
CUTTERS' JOB TICKET.
CUTTER'S NAME:-_____
DATE:-_____
MATERIAL:-_____
COLOR:-_____
GRADE:-_____ **LAST NO:-**_____
STYLE MODEL:-_____

SIZE	PAIRS

MATERIAL ISSUED:-_____
MATERIAL RETURN/EXTRA:-_____
SAVED/WASTE MATERIAL:-_____

DEPARTMENT'S SINGNATURE:-

Table - 3 Productivity report sheet of upper and lining

Productivity Report of Upper Cutting Department

Sr. No.	Date	Customer Name	Order no.	Article no.	Last no.	Color	Order Qty.	35	36	37	38	39	40	41	42	43	44	Total

Productivity Report of Lining Cutting Department

Sr. No.	Date	Customer Name	Order no.	Article no.	Last no.	Color	Order Qty.	35	36	37	38	39	40	41	42	43	44	Total

Table - 4 upper and lining material consumption sheet

Upper Material Consumption Sheet

Sr. no.	Date	Cutter's Name	Order no.	Article no.	Last no.	Color	Order Qty.	Total no. of pairs	Material Consumption/ pr.(sdm/sq.ft.)	Issued Quantity (Sdm/sq.ft.)	Return (sdm/sq. ft.)	Consumed (sdm/sq.ft.)

Lining Material Consumption Sheet

Sr. no.	Date	Cutter's Name	Order no.	Article no.	Last no.	Color	Order Qty.	Total no. of pairs	Material Consumption/ pr.(sdm/sq.ft.)	Issued Quantity (Sdm/sq.ft.)	Return (sdm/sq. ft.)	Consumed (sdm/sq.ft.)

Demo Layouts

Demo layouts are used to explain the operators that how the cutting process is to be followed this helps the operator to understand the quality requirements as well as the allowances.

The simple process that is explaining on the board or tracing one skin with actual patterns is the commonly used method. The operators usually follow this before cutting.

Quality Report

The quality reports are prepared for the control of the defective pieces going through the process thereby preventing the production of the defective footwear. This is required to be carried out for the 100% inspection, unless such is not the case (cutting of the synthetics).

The QC report is prepared in accordance of the work plan and load chart. In inconsistency is noted therefore preventive actions are initiated to prevent the reasons.

Cause analysis helps the company to prevent future happening or higher rate of rejections.

Dispatch Report

Dispatch records are maintained to ascertain that how much work is completed against the load schedule. The QC passed complete uppers are only entered in the dispatch record. This is recorded as per the plan number and work allocations.

Table – 5 Dispatch Report sheet

Date	Dept.	Order No	Article No	Plan No	Size	Input (Prs)	WIP (Prs)	Rejection (Prs)	Output (Prs)	Packing (Prs)

READING A WORK TICKET

The clicking tickets can vary from company to company. The one explained here is only a demonstrative example.

There are two requirements of a clickers work ticket:

(i) To give cutting instructions clearly.

(ii) To control material usage.

To give cutting instructions clearly:

When an order is received from the buyer the order may be broken in to economical cutting or planning reasons. The wok ticket that is issued to the clicker should never be more than one day's work and should also contain mix sizes.

Material Control:

This area of the ticket records material usage.

Calculated: This is the amount of material that is cost to complete the work.

Received: This is amount of material actually received by the clicker to complete the work.

- QTY. The quantity of material issued by the store this will vary from the calculated quantity as the store may issue various grades of leather.

- @: Price per unit in DM2 OR SQ. decimeter or mtr sq. for the grade of leather that has been issued 4TH grade leather would be cheaper than 1st grade leather.

- R-Calculated value of material issued.

Returned: This portion of the ticket records in the same way as previous. However, care should be taken that the material returned by the clickers credited at the correct grade and price.

Calculated: This is used to give a total loss or profit result for the order.

By keeping records of orders an assessment of each clicker is possible for daily, weekly or monthly basis.

Self-check -5	**Written test**

Name: _____ Date: _____

Instructions: **Write all your answers in the provided answer sheet.**

Directions: Answer all the questions listed below.

Part I long answer

1. What are the two requirements for maintaining the records? (2 Points)
2. What is clickers' allowance? (2 Points)
3. What is the use of work loading chart? (2 Points)
4. What is indicated in the plan sheet? (2 Points)

LG #39	LO #3- Assess materials

Instruction sheet

This learning guide is developed to provide you the necessary information regarding the following content coverage and topics:

- Material Assessment
- Material check for defects
- Material sorting

This guide will also assist you to attain the learning outcomes stated in the cover page. Specifically, upon completion of this learning guide, you will be able to:

- Assess materials against job specifications.
- Check finishing of materials for defects that may impact on cutting.
- Sort materials according to colour, grain or shade and other specifications.

Learning instruction

1. Read the specific objectives of this Learning Guide.
2. Follow the instructions described below.
3. Read the information written in the information Sheets
4. Accomplish the Self-checks

Information Sheet-1 Material Assessment

1.1 Material assessment

This unit covers the skills and knowledge required to carry out the preparation activities, selection of materials and cutting of materials by hand to the specifications and workplace standards.

Leather Assessment

Leather is the most suitable material for uppers, linings, insoles, outsoles, heels, toe puff and stiffeners. Leathers for footwear are commonly produced from calf, cow, buffalo, kid, goat and sheep.

Sources of leather and its characteristics

Calf leather It is produced from the young ones of cow or buffalo usually chrome tanned having an area of 5 to 15 sq. ft. Calf leather has close fibrous structure with little variation in substance over the whole area of the hide. The leather could be smooth boarded or suede finished having rubbery feel with good lasting characteristics are used in the manufacture of high-quality ladies and men's shoe.

Hides They are produced from cattle. They are cut into two along the back bone and are called sides. Usually, each side will have an area of 11-35 sq. ft. and are chrome, semi chrome or chrome tanned. They have strong fibers structure, coarse grain with heavy feel. The fibrous structure as well as the substance varies from but to belly-looser in the belly than in the butt. Surfaces are finished smooth boarded or printed grain and splits are processed as suede. Side leathers are used for making uppers from medium grade shoes, boots, sandals, chappal, straps and ladies footwear.

Kid: Kid skins are from milk fed young ones of a goat having an area of 1.5 to 3.75 sq. ft. They have compact fibrous structure, tight grain, and light substance with a full rounded mellow feel. The surface could be glazed, metallic (gold or silver) finished and go in for pointing ladies high grade footwear.

Goat skins: They have an area of 4 to 8 sq. ft. with a compact fibrous structure varying between butt and belly. Substance is thick, surfaces are glazed, resin or polyurethane

finished and are used in ladies medium grade footwear. Vegetable tanned goat skins are used as linings.

Sheep skins: Sheep skins have loose fibrous structure, loose grain surface and light substance with a soft feel. They have an area of 2 to 7 sq. ft. and are suede finished. The wool sheep skins can be sheared. Sheep skins are used for upper, lining etc.

Assessment of Upper and Lining Leather

a) Color: - Color of the leather is checked by comparing with the reference sample leather or shoe.

Figure 94: checking of colour

b) Substance/Thickness The thickness of the leather is measured comparing with the reference sample leather and with the help of thickness gauge.

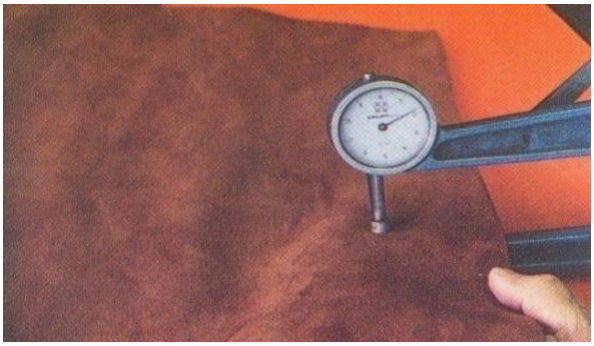


Figure 95: Substance/Thickness

c) Finish appearance: -The finish appearance of the leather is checked by comparing with the reference sample leather or shoe

Figure 96: Finish appearance

d) Feel/softness and stretch

Feel/softness of the leather is checked by filling up with palm with it at different places and comparing with the reference sample leather.

Figure 97: Feel/softness and stretch

Assessment of Fabrics

Fabric are made out of yearn and are classified as woven, non-woven and knitted. Natural fibers of cotton, jute and synthetic fibres such as Polyester, Nylon, Terylene and so on are used in fabric manufacture. Fabrics are extensively used as upper materials, linings, inter-linings and backers. Fabrics are manufactured and sold in rolls.

Fabrics are woven from yarns which run at right angles to each other. Warp threads are those which run the length of the fabric. Weft threads are those which run along the width of the fabric. Warp threads stretch less but possess more tensile strength. Weft threads stretch more but have less strength as compared to warp threads.

Woven fabrics

Woven fabrics have good strength and low elongation at break. This has the disadvantage of breaking during wear in certain shoe constructions. The fabric is cut in bias (diagonal) direction, for use as tapes and top line bindings.

Non-woven fabrics

Non-woven fabrics are produced by a random arrangement of fibers. Woolen felts, needle felts and bonded fibers are used in non-woven fabrics. In woolen felts the fibers are milled and passed to lock the portion fibers together. Needle felts are obtained when the fibers are tangled together by rapidly thrusting needles through the fibers mat. Bonded fabrics are manufactured by using resin binder or adhesive to hold the fibers together. Bonded fibers are also known as impregnated non-woven and when abraded gives a finish similar to suede with leather like appearance and touch.

Knitted fabrics

Knitted fabrics have high stretch but low strength. These are used in slipper and casual shoes, as insole coverings. The disadvantage being raw edges fray.

Assessment of fabrics :

a. **Color:-** Color of the fabric is checked by comparing with the reference sample fabric or shoe.

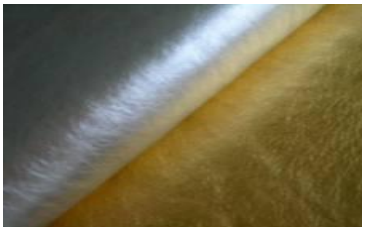


Figure 98: assessment of color

Color fastness is one of the important factors in case of buyers demand. The outstandingly important property of a dyed material is the fastness of the shade of color. Color fastness refers to the resistance of color to fade or bleed of a dyed or printed textile materials to various types of influences e.g. water, light, rubbing, washing, **perspiration** etc. to which they are normally exposed in textile manufacturing and in daily use. We have written a lot of articles on color fastness.

b. **Substance/thickness**

The thickness of the fabric is measured comparing with the reference sample fabric and with the help of a precision thickness gauge by which the thickness can be measured in Micro-meter.

Figure 99: thickness gauge

c. Feel/softness and stretch

Feel/softness of the textile material is checked by filling up with palm with it at different places and comparing with the reference sample fabric.

d. GSM

The **GSM of fabric** is one kind of specification of fabric which is very important for a textile engineer for understanding and production of fabric. 'GSM' means 'Gram per square meter' that is the weight of fabric in gram per one square meter. By this we can compare the fabrics in unit area which is heavier and which is lighter.

e. Count

Count is the measure of fineness or coarseness of **yarn.** There are two systems for the measurement of count.

a. Direct System
b. Indirect System

a. Direct System

It is used for the measurement of weight per unit length of yarn. When count increases, fineness decreases.

b. Indirect System

It is used for the measurement of length per unit weight of yarn. When count increases, fineness increases.

Assessment of Toe-Puff and Counter Stiffener materials

i. Toe puffs

Toe puff is inserted in between the toe portion of a shoe the toe portion of the shoe upper and the lining. Toe puff protects the toe shapes and front portion of the foot. A toe puff material is to produce toe protector that is either soft and flexible or firm and extremely resilient with excellent shape retention in wear.

Materials used for Toe-puffs: Toe puff are produced from vegetable tanned leather, leather board, polystyrene impregnated fabric, rubber impregnated fabric and thermo plastic material.

Thickness of Toe-puff varies from 0.7 mm to 1.5 mm according to the design of footwear.

Leather

Vegetable tanned leather from shoulder or belly is split to the required thickness wetted and applied to the upper by an adhesive latex gum starch paste. Leather toe puff is costly, strong and durable but takes longer time to dry.

Nitrocellulose impregnated fabric

Woven cotton fabrics with a Napa non-woven needle fabric from a blend of synthetic fabrics are impregnated by a solution of nitrocellulose is precipitated on the fabric as discontinues particles dried and rolled into sheets. The toe puff is activated by a solvent using acetone and industrial spirits.

Polystyrene impregnated fabric

The fabric is impregnated by polystyrene using a solvent based impregnate.

During attachment it is activated by a solvent containing toluene. Thermoplastic toe puffs these toe puffs are made from (A) un vulcanized rubber fabric (b) synthetic fibers impregnated with styrene butadiene rubber lattices (C) poly chloroprene rubber lattices. The toe puff is given a coating of hot melt adhesive of EVA. Toe puffs are available at different thickness varying between 0.60mm to 1.7 mm. they are cut in multiple layers on the

bias with the adhesive side on the top. The material is skived on the cylinder knife heavy duty skiving machine, or with silicon-based lubricant applied to the ball knife edge. (D) styrene/acrylate copolymer. Thermoplastic toe puffs are heat activated and applied under pressure**.**

The basic types of toe puff used by the footwear industry are:

(i) Paint on liquids

(ii) Impregnated Fabrics

(iii) Thermoplastic /Thermo adhesive (heat activated)

(iv) Solvent activated

(v) Print on Hot-Melt Resin

(vi) Steel toe cap and etc.

Stiffeners

Stiffeners or counters are attached in between the upper and the lining at the back part of the shoe. Stiffener imparts snug fit to thee foot and prevents the shoe from slipping. A stiffener should be stiff resilient moisture break down, give a soft flexible and firm back part in the finished shoe. it should also have excellent molding characteristics.

Materials used for stiffeners: vegetable tanned leather, leather board, fiber board solvent activated plastics and thermo plastics and thermoplastic. Leather and leather board after cutting to shape is reduced to required thickness, bonded to the upper by latex or neoprene based adhesive.

Fiber board stiffener is polished and coated on both sides by a thermoplastic adhesive. These are pre moulded to the shape of, the counter of the last, attached to the upper under heat and pressure.

hermoplastic stiffeners

Non –woven needle fabrics made from a bland of synthetic fibers are impregnated with styrene copolymer containing plasticizer. The material is coated with hot melt EVA adhesive.

Solvent activated stiffeners

Non- woven needle fabric, from a blend of synthetic fibers and impregnated with polystyrene based synthetic latex. The counter is conditioned using a suitable polystyrene softener attached to the upper under pressure and lasted while still, there is solvent present in it. The solvent activated stiffeners are used mostly in tack lasted

shoe leather bored stiffeners for welted high grade women's shoes and thermo plastic stiffeners for all types of footwear.

Apart from the materials used which are similar to that used for toe puff except for the thickness, leather board can be used. There are three types of stiffener:

- ✓ Flat stiffener
- ✓ Semi-moulded stiffener
- ✓ Fully-moulded stiffener

Stiffener can be:

- ✓ Solvent dipped
- ✓ Thermal activated
- ✓ Pre molded leather board

Thickness of Counter Stiffener varies from 0.7 mm to 1.5 mm according to the design of footwear.

Self-check -1	**Written test**

Name: _____ Date: _____

Instructions: **Write all your answers in the provided answer sheet.**

Directions: Answer all the questions listed below.

Part I long answer

1. Describe about different kinds of fabrics? (4pt)

2. Discuss about toe puff and counter stiffener? (2pt)

Information Sheet-2 Material check for defects

2.1 Material check for defects

Leather is an incredibly wonderful natural fabric that's been used for thousands of years. No man-made material has been able to surpass the natural beauty and toughness of leather but there are defects which may be caused during the life or after death of an animal which may finally appear on finished leather. Some of the common leather defects are listed below: Every skin of an incoming shipment of upper leather is examined for possible defects.

2.2 Leather Defects

a. Looseness

Looseness of the leather is happen due to poor fiber structure and compactness in some parts of the skin or hide. It mostly occurs in the belly and offal areas of skin/hide.

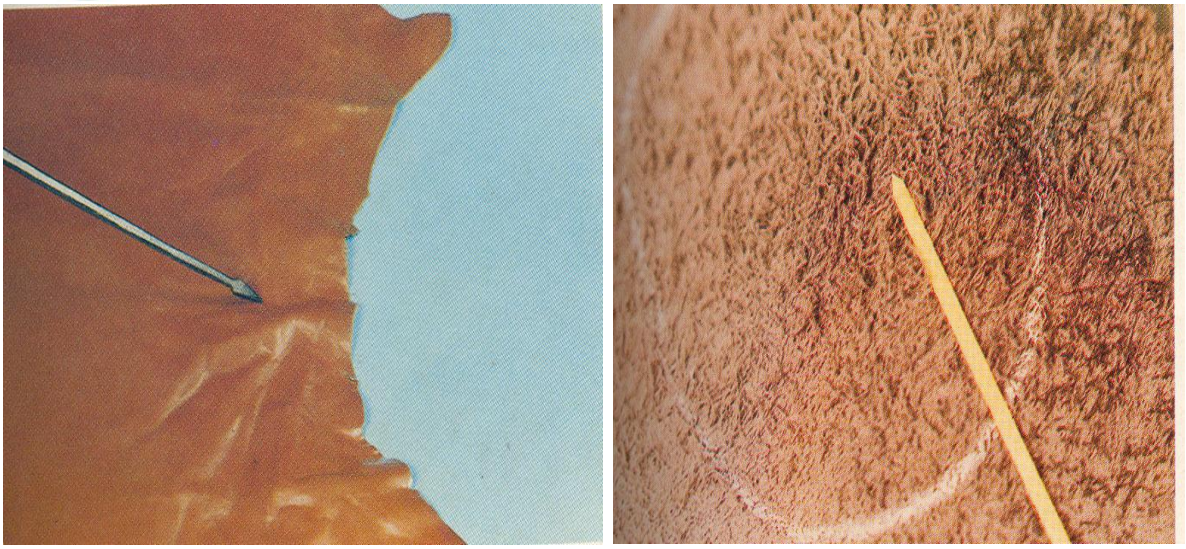


Figure 100: Loose flanks and loose fibers

b. Tick Points

Ticks are known to carry bacterial, viral and parasitic infections. They feed off any warm blooded animal and so can transmit disease. The mouth part punctures the skins, causing visible damage to the hide and results in holes in the leather. Additional damage may be caused by rubbing due to irritation.

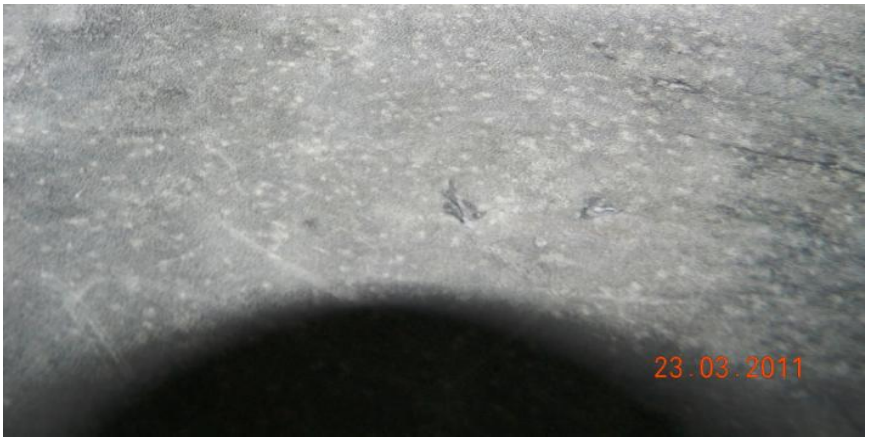


Figure 101: tick marks

c. Warble Holes

A defect in leather can be seen as small pinholes or as tiny scars. Warbles are caused by the larvae of the grub or warble fly (family Oestridae), which develop under the skin of the animal and emerge in the area of the backbone. If the animal is slaughtered before the wounds heal, the defect is known as "open warbles," while if sufficient time elapses for the animal to develop scar tissue, they are then called closed or "blind warbles." In either case leather produced from a warbled hide is unsatisfactory in both strength and appearance

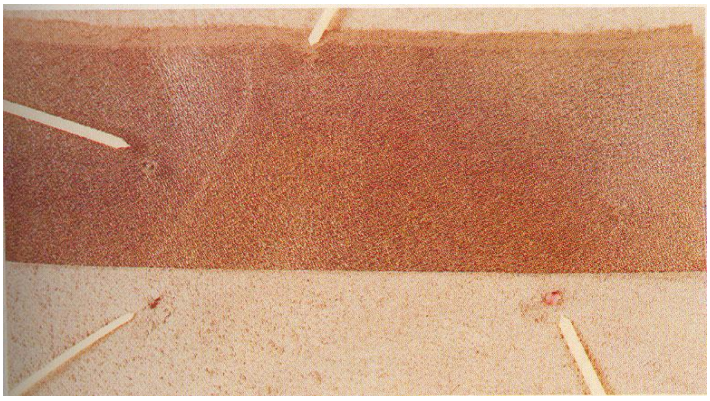


Figure 102: warble holes

d. Scratches or Blemishes in the Grain

One of the most common damages of hide and skins is the grain scratches and tears. The main causes are barbed wire, nails, thorns, horns, etc. which encounter the animals during their grazing time, fighting each other or rubbing of the animal to get relief from insect bites, sores, etc.

Figure 103: Scratches or Blemishes in the Grain

e. Brand Points

These are identification Points made on the skin of the animal, by the owner, using hot branding irons, which causes deep Points, resulting in damage to the skin or hide and cannot be covered after even after finishing. Normally the brand Points are inserted in the butt area which is the area with the best leather quality.

Figure 104: brand marks

f. Poor Thickness

It is caused due to over splitting/shaving of the leather during tanning operation. Sometimes the poor substance of leather is found naturally also.

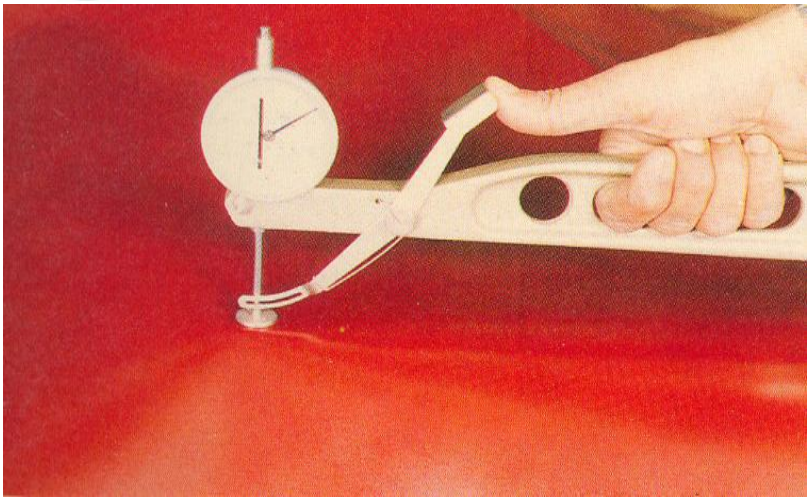


Figure 105: poor thickness

g. Colour fastness

Colour fastness is an important parameter to assess the quality of leather. Poor colour fastness is observed in leather due to the unfixed dyes (colouring materials) with the leather and the color comes out from the surface on rubbing, staining socks etc.

h. Grain Cracking

During use, leather can be subjected to considerable stresses, e.g. during lasting, the leather is stretched with considerable force. To check the Grain Cracking of leather, double fold leather at least 4 places per hide to see whether there is any tendency of pigment and or grain cracking.

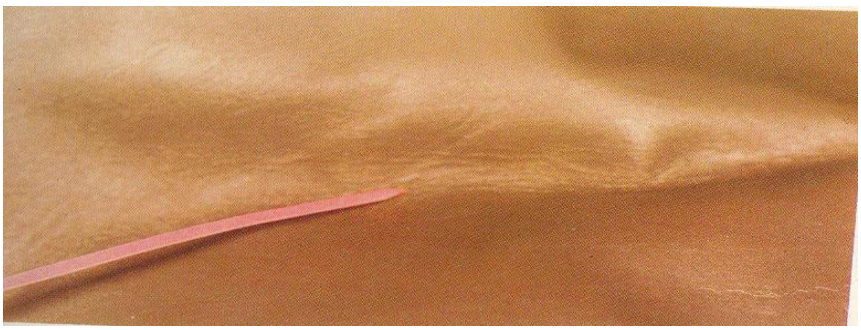


Figure 106: grain cracking

I. Flay cuts

The operation, by which the skin or hide is removed from the body of the animal, is referred to as flaying. During the flaying operation, due to bad handling of the knife, sometimes deep knife cuts are made into the skin or hide, resulting in damage. As these flay cuts are taken from the flesh side, of the skin or hide, they are not so visible from the grain side of the finished leather. Therefore, when cutting lther, the grain side as well as the flesh side should be carefully inspected for such deep cuts.

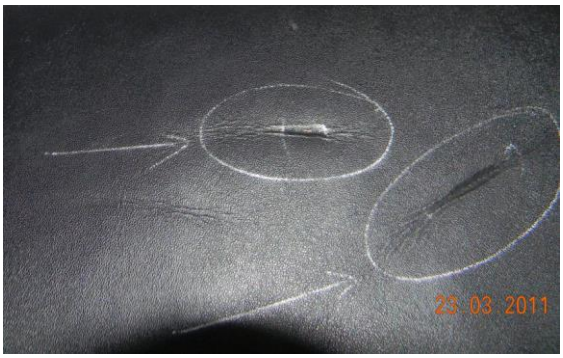


Figure 107: flay cuts

i. Tearing strength

In the butt region, we make a half inch cut from an edge with a scissor. By holding leather on two sides of cut with thumb and a finger we try to tear it further. If it tears easily the lot is not acceptable. That is, it fails tear strength.

j. Growth Points

It is a defect caused due to animals aging. Reveals the age of the leather, as with scars, growth Points really do show off the full-bodied character of real leather.

Figure 108: growth marks

I. Vein Points

Vein usually results from the use of skins of animals found dead of natural causes, from improper or delayed curing after flaying, or for some reason wherein the blood is not drained from the animal immediately after slaughter. Here the branching lines of the blood can be seen on the flesh side.

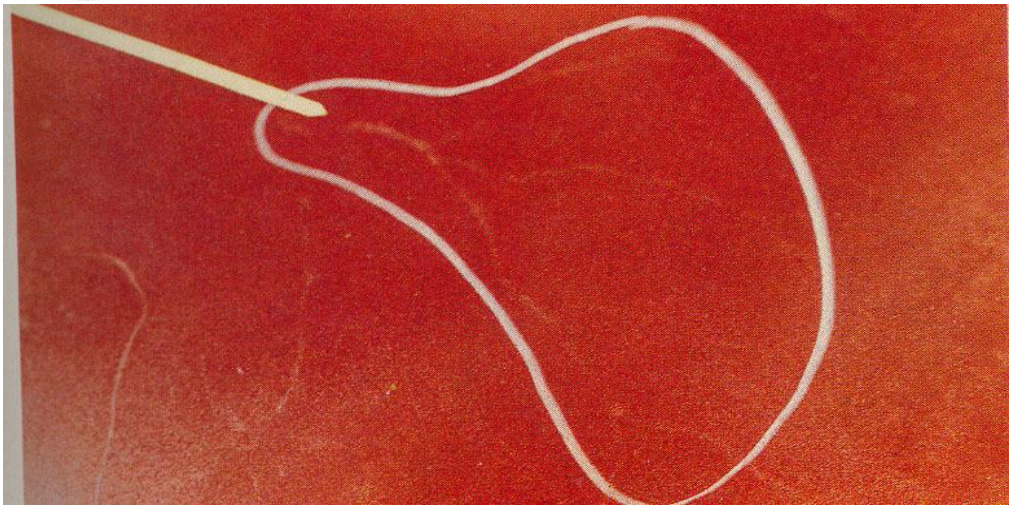


Figure 109: vein marks

m. Stain Points on Reverse Side, if used for Unlined Shoes

The stains Points (colour, oil etc.) are checked usually on the grain side of leather and for the unlined shoe it is mandatory that the reverse side (flesh side) should not have any stain Points.

2.3 Insole Board Defects

- No uniformity of thickness
- Cracking due to moisture
- No flexibility
- No resistance to shrinkage or growth
- Dust and dirt on the board
- No ability to hold tacks adhesives or stitches.
- More bulky

2.4 Heel Defects

- Not good quality finish.
- Color not matching.

- Cracking on attachment.
- Last bottom profile not matching with heel
- Size not matching
- **I**nadequate pin holding strength

2.5 Toe Puff and Stiffener Sheet Defects

- No uniformity of thickness.
- Less tack retention.
- No ability to survive molding and shape retention.
- Skiving problem.
- Coating of adhesive not good.

2.6 Shank Defects

- Variation of thickness
- Strength or performance
- Length & width problem
- Shank design not match

Self-check -2	Written test

Name: _____ Date: _____

Instructions: **Write all your answers in the provided answer sheet.**

Directions: Answer all the questions listed below.

Part I long answer

1. List and explain some defects of leather?
2. Discuss about insole board defect?
3. What are the defects of toe puff and counter stiffener?
4. List some defects of shank board?

Information Sheet-3 Material sorting

Refer to

Cutting materials by hand module (IND BFP1 M07 0220)

Learning guide # 3 information sheet 3

LG #40	**LO #4- Prepare tools and equipment/ machine**

Instruction sheet

This learning guide is developed to provide you the necessary information regarding the following content coverage and topics:

- Checking machine, accessories and tools
- clicking knives selection
- Adjusting pressures
- Recognizing and referring problems

This guide will also assist you to attain the learning outcomes stated in the cover page. Specifically, upon completion of this learning guide, you will be able to:

- Check machine, its accessories, the necessary tools for functionality and any defects reported for repair
- Select clicking knives according to job specifications and size requirements
- Adjust pressures on press to knife sizes and shapes
- Recognize problems or faults with press, patterns, knives and cutting boards and referred for repair or correction

Learning instruction

1. Read the specific objectives of this Learning Guide.
2. Follow the instructions described below.
3. Read the information written in the information Sheets
4. Accomplish the Self-checks
5. Perform Operation Sheets
6. Do the “LAP test”

Information Sheet-1 Checking Machine, accessories and tool

1.1 Checking machine, accessories and tool

In this information sheet, participants should be able to understand about checking machine, accessories and tools for functionalities. This includes:

- Check the clicking Machine for pressure etc. and adjust as per the need
- Check lighting of the cutting area of the swing arm cutting machine
- Check cutting board for plane surface
- Check the clicking dies for
    - Sharpness
    - Bends
    - Breakage
    - Check punches and pricker
    - Check size notches
- All concerned activities help the participants to produce quality and productivity.

Quality of light

- Poor lighting leads to low productivity and poor quality, as workers will start suffering from eye strain, fatigue and headache. Better lighting does not mean that more light bulbs have to be fixed in many cases, rearrangement of existing lighting and proper maintenance and cleanliness of reflectors/fittings will result in improvements.
- Make full use of natural daylight by installing skylights or modifying size and location of window. Keeps window clean all the time. You save the electricity cost of artificial lighting.
- Paint ceilings and inner walls in lighter colors. This provides better reflection and distribution of existing light sources besides resulting in better visual condition and a pleasant work environment.
- Avoid direct and indirect glare, glare can distract the workers concentration, possibly resulting in poorer quality or even accidents.

Check size notches

The size notches on dies for upper components cutting can be done as per the specification given and could be in following ways:

- Size can be Pointed in various size systems like English and French sizes.
- It also can be Pointed as 41
- It also can be Pointed as 42
- It also can be Pointed as 43
- And so on

For English size Pointing “U” shape notch shows size 5. For 6 sizes it shows

This information might be used to:

(i) Trace faulty footwear and send back to the unit that made it.

(ii) Order new stocks of the same styles, sometimes known as “repeats”.

(iii) Ensure that any returned shoes can be repaired on the correct size and shape of lasts.

(iv) Enable the production units to see what size uppers they are dealing with.

Description of different trends of dies

a. **Underlay Prickers**: The pins are provided on the dies at the underlay margin of the component to get pin Pointing on cut-components.
b. **Moccasin Punches**: For moccasin shoes punches are provided in the plug and vamp for moccasin stitching.

Underlay prickers

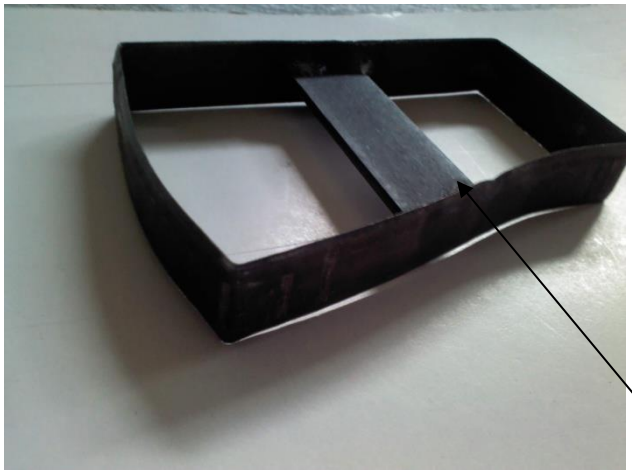
Moccasin Punches

Figure 110: moccasin punches and underlay prickers

c. **Bent Die / Breakage of die**: The edges/blade of dies may get deformed (bent) or broken at the edges during production.

Bent Die

Figure 111: bent dies



Breakage of die

Figure 112: die breakage

d. **Inside/Centre Notch**: Notches can be provided at the edge of die at the inside portion or at centre of the component to get notch Point on the cut-components.

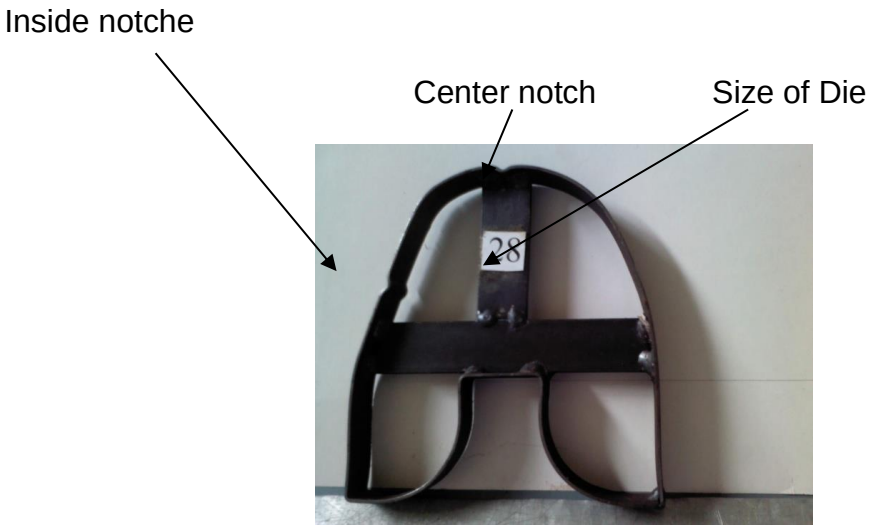


Figure 113: Inside/Centre Notch

e. **Size Notch**: Size notch helps in identifying the size of the cut-component.


Size notches

Figure 131: size notch

Self-Check-1	Written Test

Name: _____ **Date:** _____ **(Total Points: 10)**

Instructions: **Write all your answers in the provided answer sheet.**

Directions: Answer all the questions listed below.

Part I: Fill in the blanks:

1) Poor lighting leads to low _____and poor _____.(Point 1)
2) Size can be pointed in various size systems like _____and _____sizes. (Point 1)
3) For moccasin shoes _____ are provided in the plug and vamp for moccasin stitching.
   (Point 1).
4) Size notch helps in identifying the size of the _____.
   (Point 1)

Information Sheet-2 Clicking Knives/Dies Selection

2.1 Clicking Knives/Dies Selection

In this chapter, participants should be able to understand about selecting clicking/cutting knives/dies according to job specification and size requirements. This includes:

- Checking the article number of the dies/knives
- Checking number of components to be cut from each die/knife
- Checking the sizes of the dies/knifes

2.1.1 Checking the article number of the dies/knives: The article number of an order is Pointed on each of the dies of an article and the same should be matched by the clicker before starting production.

2.1.2 Checking number of components to be cut from each die/knife: The clicker must check the number of components of a given article and match the same while selecting the dies for production.

2.1.3 Checking the sizes of the dies/knifes: The article size must also be Pointed on the die and matched by the clicker during die selection. This avoids any mistake in cutting an order.

Clicking knives are of various types. Some of them are listed below:

a. **Knife as per Height** – 19 mm, 32 mm and 50 mm height knife are available for various purposes. Normally19 mm die is used for leather upper and lining cutting 32 mm and 50 mm dies are normally used for synthetic cutting, layer cutting or cutting thick materials.

b. **Knives as per Edge** – Single edge and double edge knives are available. Using Double edge die we can cut right and left component from the same die which reduces the die cost.

c. **Straight Knife and Decorative Edges** – Knife edges can be straight or gimped as per the design.

d. **Perforated Knives** – Knives can be perforated. It can be perforated for punched designs.

Self-Check 2	Written Test

Name: _____ **Date:** _____

(Total Points: 10)

Instructions: **Write all your answers in the provided answer sheet.**

Directions: Answer all the questions listed below.

Part I: Short answer type questions:

1) What is perforated die? (Points 2.5)
2) What is the use of 19 mm die? (Points 2.5)
3) Which die is used for synthetic cutting? (Points 2.5)
4) On what basis the selection of dies is carried out? (Points 2.5)

Operation Sheet-3 Pressure Adjustment

3.1 pressure adjustment

In this chapter, participants should be able to understand how to adjust pressure on cutting press on knife/die size and shape. This is done during machine adjustment according to the following procedures:

- Start machine
- Check die/knife height
- Adjust machine arm height
- Adjust the pressure of machine
- Cut and readjust pressure

All concerned activities help the participants to produce quality and productivity.

Adjust pressures of clicking press as per knife size and shape

i. Start machine

- Switch-on clicking press machine.

ii. Check die/knife height

- Place the knife on the clicking board.
- Turn the arm stroke adjustment control clockwise for down position or Anticlockwise for up position.

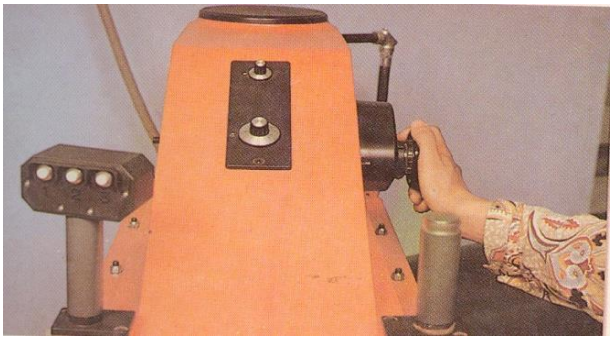


Figure 114: Check die/knife height

- Approx. 10 mm to 15 mm clearance is required depending on the substance of the leather.

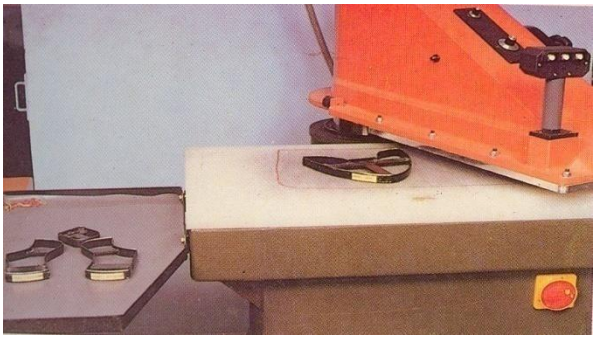


Figure 115: height between the board and aluminum sheet

iii. Adjust machine arm height

- Place 1 piece of thin cardboard on the clicking board.

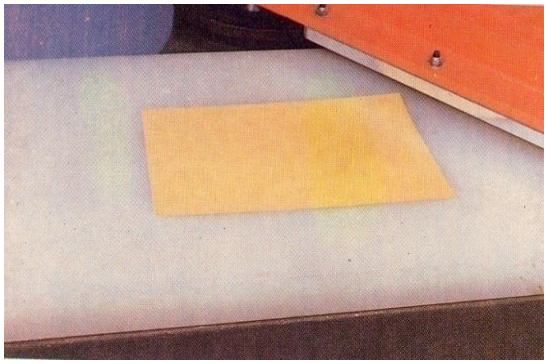


Figure 116: Adjusting machine arm height

- Place the small knife on the cardboard.

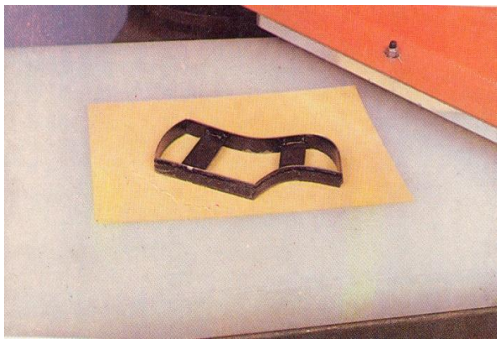


Figure 117: Placing the die on card board

- Test the machine for cutting depth.

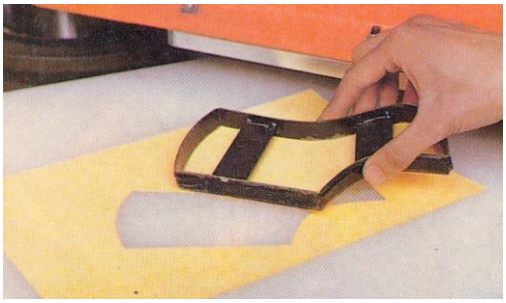


Figure 118: Testing the machine for cutting depth

- If the machine has been set correctly it should cut through and only show a very small imprint on the cutting board.

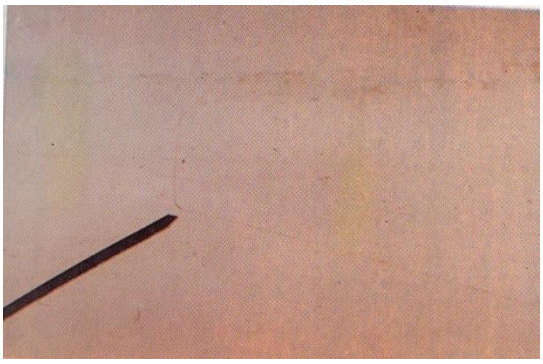


Figure 119: checking the amount of imprint on the cutting board

iv. Adjust the pressure of machine

- If the knife cuts deeply into the nylon board reduce the pressure.

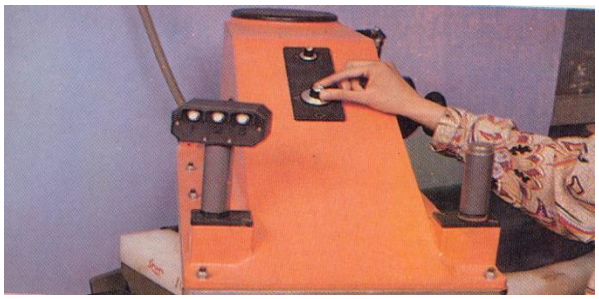


Figure 120: Adjusting the pressure

- Test the cutting depth in three different areas of the board.

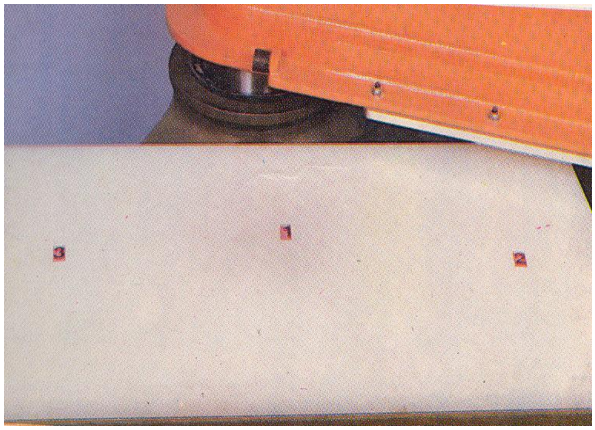


Figure 121: Testing the cutting depth

- This system can only be used if the cutting block and the aluminum plate is in good condition.

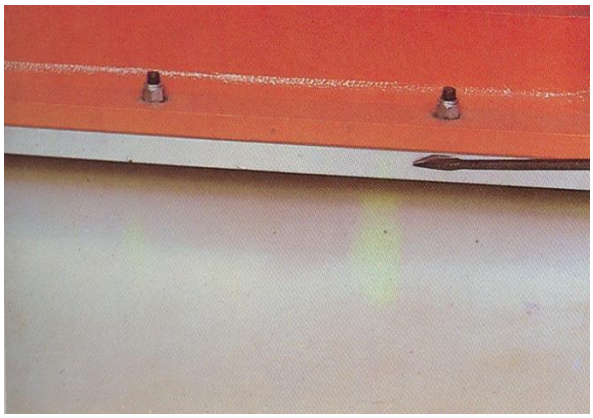


Figure 122: Condition of cutting block aluminum plate

- If this system does not work adjust the cutting stroke pressure until you have minimum knife penetration into the board.

v. Cut and readjust pressure

- Depth of the cut can be altered by button no.1 and button no.3

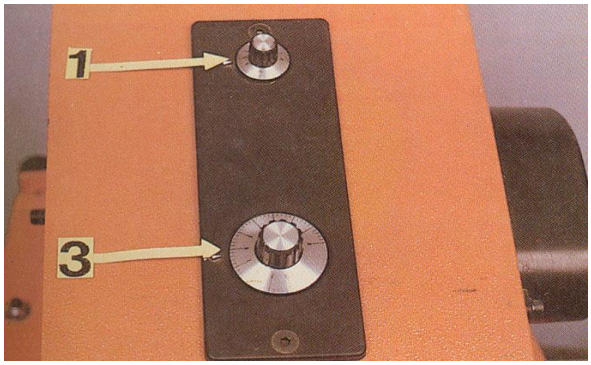


Figure 123: altering cutting depth using button no.1 and button no.3

- Button No.3 or heavy cutting stroke button should be operated when an operator is using a large knife with heavy leather.

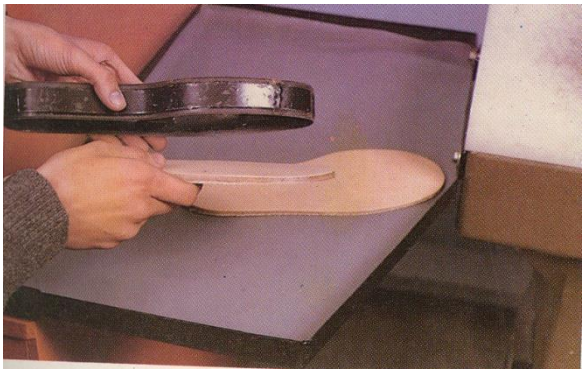


Figure 124: using heavy cutting stroke for large knife

- The pressure control adjustment is completed by turning the lower potentiometer clockwise for extra pressure and anti-clockwise for less pressure.

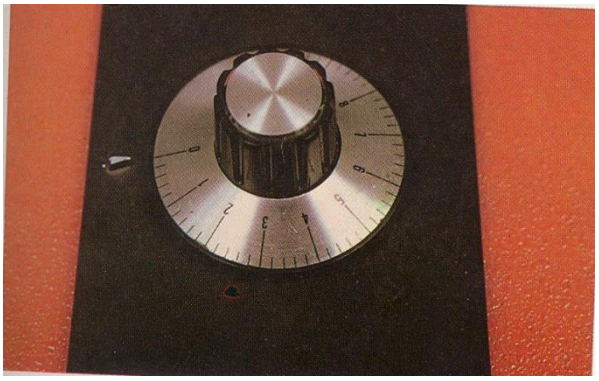


Figure 125: pressure control adjustment

Lap test -3	Practical test

Name: _____ **Date:** _____

Time: _____

Directions: Answer all the questions listed below. Illustrations may be necessary to aid some explanations/answers.

Task- 1. Set and adjust the clicking machine for cutting.

Information Sheet- 4 Recognizing and referring problems

4.1 Recognizing and referring problems

In this information sheet, participants will be able to recognize and refer problems related to press machines, clicking dies, cutting boards and take appropriate repairing action.

Some of the problems in machine cutting operations: -

- Press machine power cable connections
- Press machine power buttons and pressure controls
- Press machine maintenance time as per the schedule
- Distance between clicking dies and arm stroke
- Pressure differences due to die height and size
- Pressure difference due to the thickness of material
- Knives sharpness and breakage
- Knives proper positioning for cutting
- Cutting board levelness
- Cutting board surface roughness

Self-Check 4	Written Test

Name: _____ **Date:** _____

(Total Points: 10)

Instructions: **Write all your answers in the provided answer sheet.**

Directions: Answer all the questions listed below.

Part I: Long answer type questions:

1. Write the problems will be faced to machine cutting operation?

2. What is the benefit of recognizing and referring problems as clicker worker?

LG #41	LO #5- Identify and use hand tools equipment and machines

Instruction sheet

This learning guide is developed to provide you the necessary information regarding the following content coverage and topics:

- work ticket specifications
- Positioning dies.
- Cutting 5 shoe styles
- Pieces selection
- distortion/defects and appropriate actions
- OHS practices.

This guide will also assist you to attain the learning outcomes stated in the cover page. Specifically, upon completion of this learning guide, you will be able to:

- Follow work ticket specifications according to pieces and pairs
- Position dies according to job specification.
- cut parts to achieve best yield according to appropriate allowance and workplace quality standards
- Select pieces, match colour or grain to workplace quality standards
- Identify distortion and defects on press cutting boards and take appropriate action
- Carry out work is according to OHS practices

Learning instruction

1. Read the specific objectives of this Learning Guide.
1. Follow the instructions described below.
2. Read the information written in the information Sheets
3. Accomplish the Self-checks
4. Perform Operation Sheets
5. Do the “LAP test”

Information Sheet-1 Work Ticket Specifications

1.1 work ticket specifications

In this information sheet, participants should be able to follow Work ticket specifications according to pieces and pairs. These specifications include

- Article number
- Leather/material type
- Color
- Thickness
- Number of pairs to be cut in each size

The purpose of job ticket is to ensure that the components are traced during the operations and accountability for such is maintained. It is always recommended to use a job ticket.

Any worker in a cutting department should follow a work ticket specification mentioned on the following sample ticket below. The following information is specifically required to be mentioned in the work ticket:

a. Article No.

The article no. as per order is mentioned in the work ticket for cutting as per article specifications.

b. Leather/Material Type

On the work ticket type of material to be cut such as leather, synthetic, toe puff, stiffener, foam etc. has to be mentioned. The leather itself can be elaborated with type as Nubuck, Suede, Goat glazed, Sheep Nappa etc.

c. Colour:

The colour of the material to be cut is infdicated,

d. Thickness:

The material thickness is very important quality parameter which should be uniform in the cut components.

e. Number of pairs to be cut in each size:

In the Cutter's Ticket the column is provided against each size for no. of pairs to be cut. The same work ticket can be used for cutting mixed size order per article in smaller quantity.

Self-Check 1	Written Test

Name: _____ **Date:** _____

(Total Points: 8)

Instructions: **Write all your answers in the provided answer sheet**

Directions: Answer all the questions listed below.

Part I: long answer

1. What are the components included in work ticket specification?

2. What is the purpose of job ticket?

Information Sheet-2 Positioning Dies/knives

2.1 positioning die/knives

As it was discussed in module cutting materials by hand learning guide # 2 **(perform interlocking of upper component)** concept the will be positioned for the machine cutting operation

When the positioning dies points to remember

- **Check the die blade and inside notch**
- **Check the line of tight ness and stretchiness**
- **Check the pair wise component positioned**
- **Check the interlocking to minimize wastage**

2.1.1 Interlocking

There are guidelines given for achieving better dies/knives interlocking. One may consider the following while interlocking:

a. Curve to curve interlocking.
b. Straight edge to straight edge.

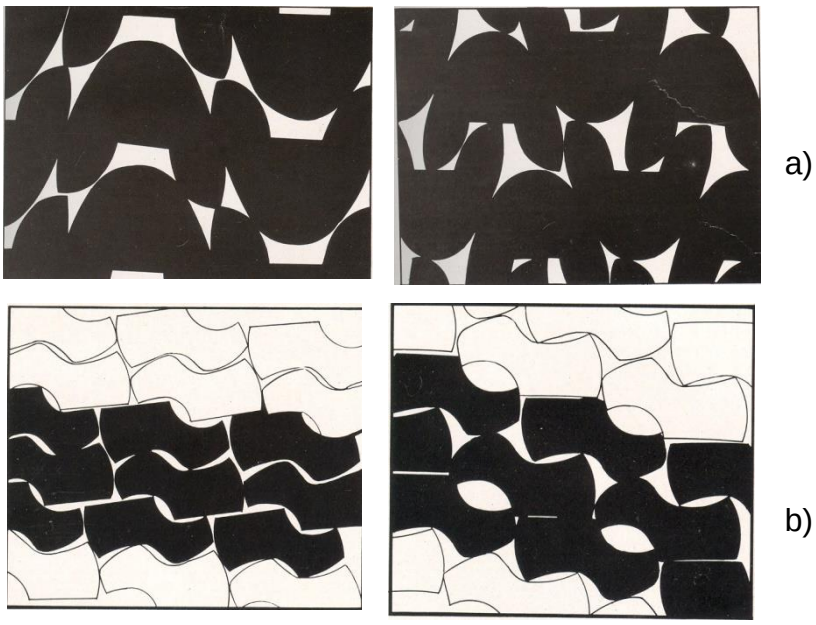


figure 126: interlocking

i. The person must be clear about the lines of tightness of all the components to make a pair of shoe, their quality division & the allowances.

ii. The cutter must be able to virtually divide the skin correctly in various parts i.e. butt, belly, shoulder and should have a clear understanding of lines of tightness in different parts of the skin/side.

iii. The aim of the cutter should be to use his/her leather as economical as possible by avoiding wastage due to bad die interlocking.

a. Cutters are not required to interlock components in pairs in the case of corrected grain cutting exercise. Rather on completion of the work, they should end up with approx. equal no. of pairs.

b. Cutting usually commences from the butt, continue along the backbone, working outwards as far as the substance (thickness) and quality permits, utilizing the poor-quality areas for the parts which have little or no strain during wear.

c. If by reason of defects the material near the backbone is unsuitable, cutting should still be in accordance with the principle of working in the direction from backbone to bank commencing as more as possible to the defects, in order to ensure the minimum waste of the best material, which invariably is to be found in the butt.

d. Change the direction of the patterns for getting components pair wise.

2.1.2 Mix Cutting of Different Sizes

a. A clicker would also have a set of mixed size patterns to run in. Sometimes he would cut 1 pair large size & one pair of small size from the same skin to optimize material utilization.

b. The clicker must have a clear picture in his /her mind of how he is going to cut the skin taking in to account grain & shade matching. The following arrangement shows how the cutter expects the skin to be cut. He can use mix patterns for the better utilization of the skin.

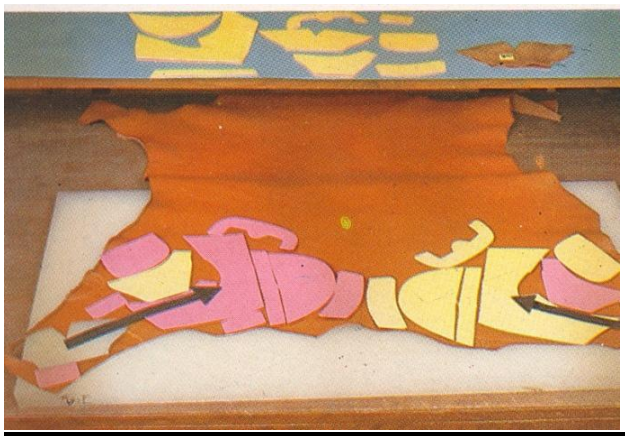


Figure 127: Mix Cutting of Different Sizes

c. As we know the leather skin is never homogeneous & rectangular. The quality of the leather on the side of the skin is generally poor. So for getting maximum utilization of the skin we can adjust the larger patterns with the small patterns.

2.1.3 Pattern/knife Size and Skin Size relationship

a. Whenever possible, always start cutting with the largest size pattern from the larger skins. This will give better material usage.

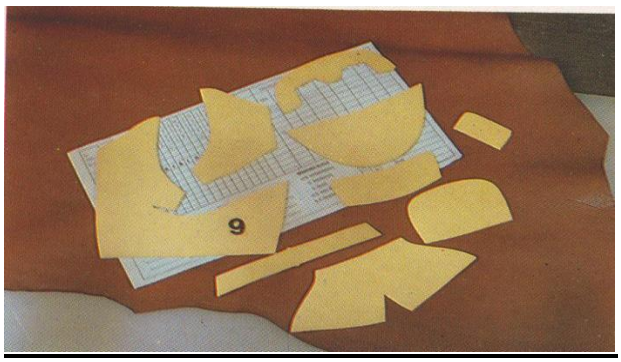


Figure 128: knife Size and Skin Size relationship

b. Select smaller skins for smaller size components.

Figure 129: selecting smaller skin for smaller size component

c. We should interlock the big patterns in such a way that wastage is minimum.

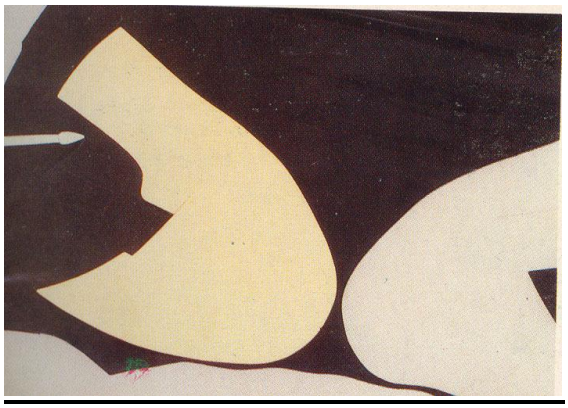


Figure 130: interlocking bigger patterns wastage minimization way

d. Likewise, we should interlock the other patterns of the shoe so that we can maximum cuttability of the skin.

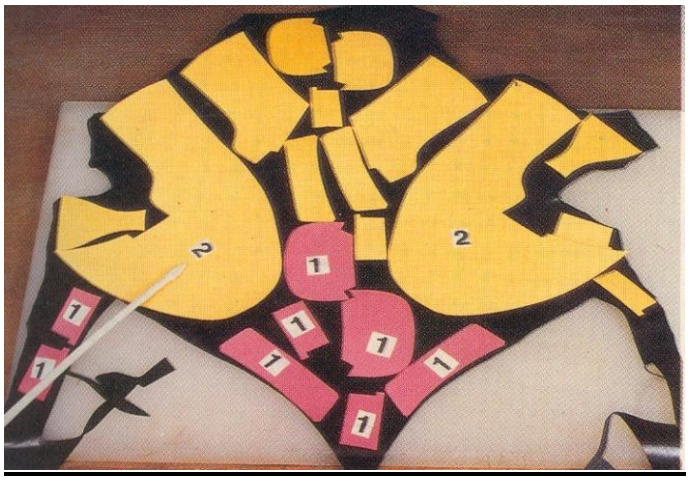


Figure 131: interlocking in cuttability maximization way

Self-Check 2	Written Test

Name: _____ **Date:** _____

(Total Points: 8)

Instructions: **Write all your answers in the provided answer sheet**

Directions: Answer all the questions listed below.

Test I: long answer

1. What are the points to be check when positioning die?
2. Describe about interlocking principles?
3. Discuss about mix cutting of different sizes

Operation-Sheet-3 Cutting 5 shoe styles

3.1 Cutting 5 shoe styles by referring LO-4 information sheet- 4

3.1.1 Derby Shoe

Here we have considered all upper and leather components are of leather and tongue is not one piece with vamp but cut separately. The interlining is attached to add strength to the upper material if upper material has enough strength then interlining may not be required. The components of Derby shoe are:

Figure 132: derby shoe

Upper

Two Vamp (1 left foot and 1 for right foot)

Four Quarters (2 inside and 2 outside)

Two Back strap (one for left and one for right shoe)

Two Tongue (one for left and one for right)

Lining:

Two Vamp lining (one for left foot and one for right foot)

Four Quarter lining (two for inside and two outside)

Two Heel grip (one for right and one for left foot)

Interlining

Two for vamp

Four for quarter

- Peaks or cut out is given on the inside of the vamp and vamp lining. These indicate left and right feet. They must always be facing on the

inside of the upper and lining. Peaks or cutouts are also given on the quarter lining these indicate inside and outside to match

- quarter and vamp. Care should be taken to stitch inside quarter with the inside portion of the vamp and lining for left foot must be stitched on the left upper and right foot lining on right foot upper.

3.1.2 Oxford Shoe

Oxford shoes have following components. Here we have considered all upper and leather components are of leather. In some cases vamp lining could be of drill and quarter lining can be of synthetic material. The interlining is added to add strength to the upper material if upper material has enough strength then interlining may not be required.

Figure 133: oxford shoe

Upper

Two Toe cap (one for left foot and one for right foot)

Two Vamp (one for left foot and one for right foot)

Four Quarters (2 inside and 2 outside)

Four Eyelet facing (2 for left foot and 2 for right foot)

Two Tongue (one for left foot and one for right foot)

Lining

Two Vamp lining (one for left foot and one for right foot)

Four Quarter lining (two for inside and two outside)

Two Heel grip (one for right and one for left foot)

Two Tongue lining (one for right foot and one for left foot)

Interlining

Two for Vamp

Four for Quarter

Four for Eyelet facing

- Peaks or cut out is given on the inside of the vamp and vamp lining. These indicate left and right feet. They must always be facing on the inside of the upper and lining. Peaks or cutouts are also given on the quarter lining these indicate inside and outside to match quarter and vamp. Care should be taken to stitch inside quarter with the inside portion of the vamp and lining for left foot must be stitched on the left upper and right foot lining on right foot upper.

3.1.3 Court Shoe

Here we have considered all upper and leather components of leather. The interlining is added to add strength to the upper material but if upper material has enough strength then interlining may not be required. Interlining is pasted on flesh side of upper components. Top line can be given various treatments. Bow can also be attached on the vamp. We have considered plain court shoe with inside quarter. The main components of court shoe are:

Figure 134: court shoe

Upper

Two Vamp (1 left foot and 1 for right foot)

Two Quarters (one for left foot and one for right foot)

Lining

Two Vamp lining (one for left foot and one for right foot)

Two Quarter lining (one for left foot and one for right foot)

Two Heel grip (one for right and one for left foot)

Interlining

Two for vamp

Two for quarter

3.1.4 Slip-on Shoe

Here we have considered all upper and leather components are of leather and tongue is not one piece with vamp but cut separately. The interlining is attached to add strength to the upper material if upper material has enough strength then interlining may not be required. The components of slip on shoe are:

Upper

Two Vamp (one for left foot and one for right foot)

Two Quarters (one for left foot and one for right foot)

Two counters (one for left foot and one for right foot)

Two saddle strip (one for left foot and one for right foot)

Two collars (one for left foot and one for right foot)

Lining

Two Vamp lining (one for left foot and one for right foot)

Four Quarter lining (two for inside and two outside)

Two Heel grip (one for right and one for left foot)

Two Saddle lining (one for right and one for left foot)

Interlining

Two for Vamp

Two for Quarter

Two for Counter

3.1.5 Mocassin

Upper

Two apron (one for left foot and one for right foot)

Two mud guard (one for left foot and one for right foot)

Two counters (one for left foot and one for right foot)

Two saddle strip (one for left foot and one for right foot)

Two collars (one for left foot and one for right foot)

Lining

Two Vamp lining (one for left foot and one for right foot)

Four Quarter lining (two for inside and two outside)

Two Heel grip (one for right and one for left foot)

Two Saddle lining (one for right and one for left foot)

Lap test 3	Practical Test

Name: _____ **Date:** _____

Time: _____

Directions: perform all the questions listed below

Task-1 Cut all the components at least derby shoe.

Task-2 Cut all the components at least oxford shoe.

Task-3 Cut all the components at least slip-on shoe.

Task-4 Cut all the components at least court shoe.

Task-5 Cut all the components at least moccasin shoe.

Information Sheet-4 Pieces Selection

4.1 pieces selection

Selecting pieces are selected and matching colors or grains

4.1.1 Cutting pair-wise

a. Closely inspect the leather for any defects. These include surface Points, flay cuts & loose offal. Point these areas for easy identification.

Figure 135: inspect defects

b. Check the flesh side of the leather for warble holes & flay cuts.

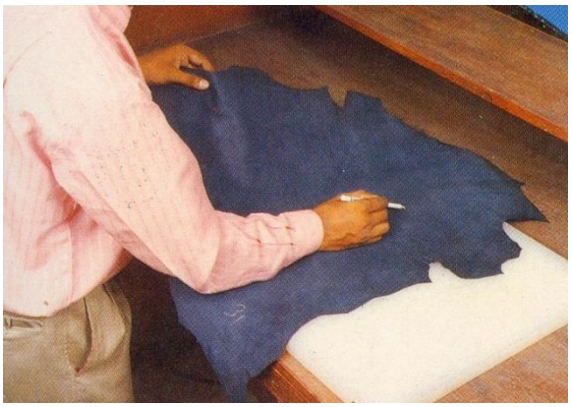


Figure 136: check flesh side for warble holes and flay cuts

c. Check for the correct line of tightness as this will vary slightly form skin to skin.

Figure 138: line of tightness

4.1.2 Grain & Colour matching

a. Check the components to be cut , make sure that all parts are there. (In case any pattern is missing, it is very difficult to match the grain at a later stage- so first check for the grain matching)

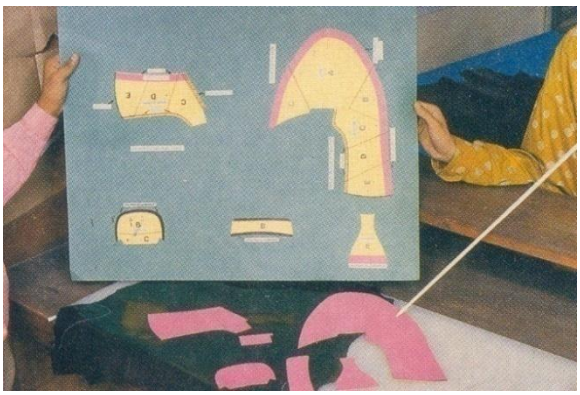


Figure 139: check grain and colour matching

b. Ensure that the work bench is clean.

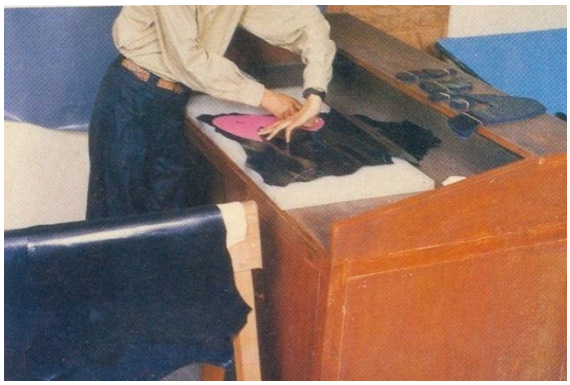


Figure 156: checking of cleanliness of work station

c. From your cutting sheet select the largest size patterns.

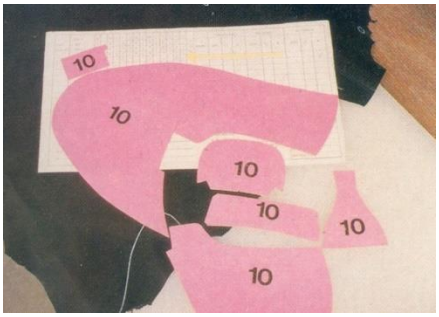


Figure 140: selecting largest size pattern first

d. The first cut is the vamp however he should ensure that the wastage does not takes place during placement.

Figure 141: cutting vamp

e. After cutting the clicker must check the quality of the product.

Figure 142: checking the quality

f. Then place the cutting on the top of the bench, in front of him.

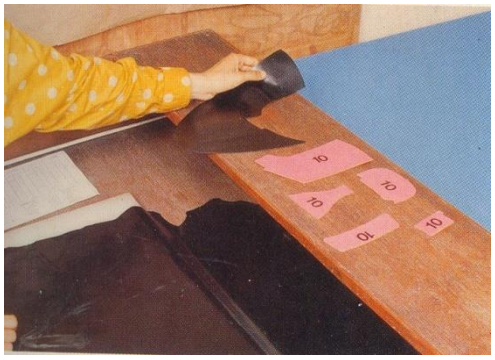


Figure 143: put cut component on top of bench

g. No.-2 cut left ¾ cut vamp (pr.no.-1). This is the matching opposite foot. It is a mirror image cut of the 1st cut; the toe is put close to the back bone.

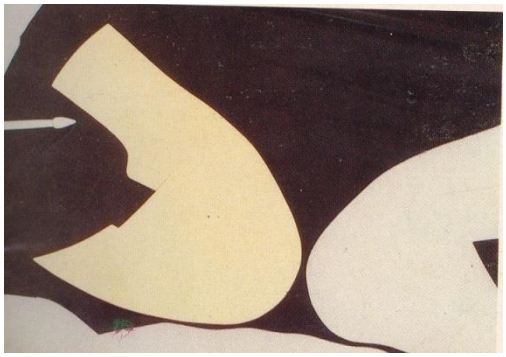


Figure 144: mirror image cut of the 1st cut

h. After cutting clicker must check the cut components for tightness.

Figure 145: check the cut component line of tightness

i. Then place the vamp on the top of the 1st vamp, grain side down (face to face).

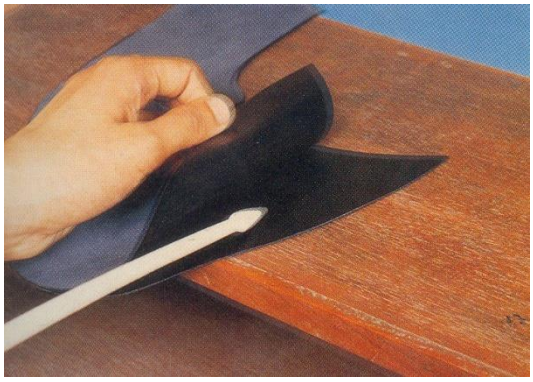


Figure 146: put cut component face to face

j. No. 3 cut left inside quarter (pr.no. -1). This quarter will actually match the vamp cut from the opposite side of the skin.

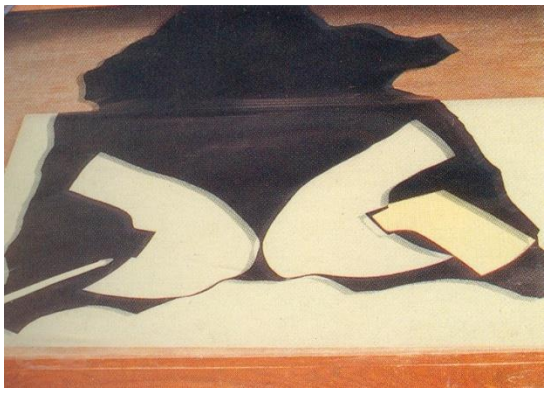


Figure 147: cutting the 3rd left quarter

k. The small flaw found in the flank must not be allowed to enter the back seam as this could stretch the line of tightness runs from heel to toe.

l. After cutting the clicker must check the quality then place it on the bench in front of him.

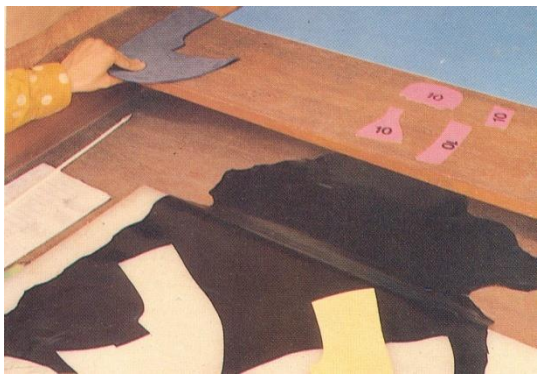


Figure 148: check cut component quality

m. If unsure of the grain match, he could check it against the vamp. The quarter should grain match on the front of the quarter & the back seam.

n. Cut-4, left outside quarter. This is a mirror image of the previous cut.

o. After cutting check for the stretch or defect then place this quarter on the previous quarter to face.

p. Cut no.-5, Counter pr.-no-1. Both counters are cut from the same portion of the skin in a mirror image itself.

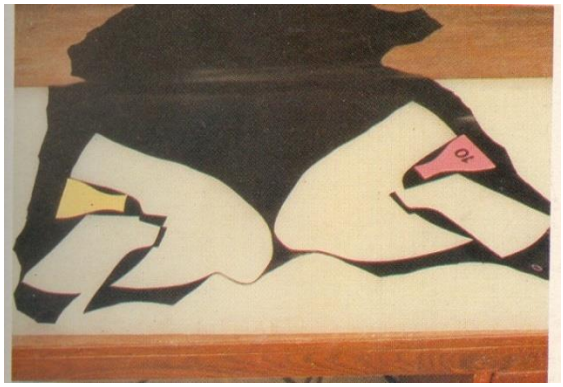


Figure 149: cut counters from same portion

q. The right counter would be cut first.

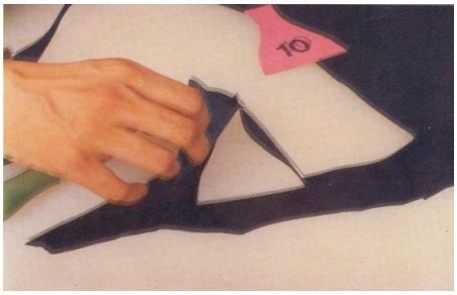


Figure 150: cut the right counter

r. Then the left notice how the lasting allowance was put closest to the edge of the skin.

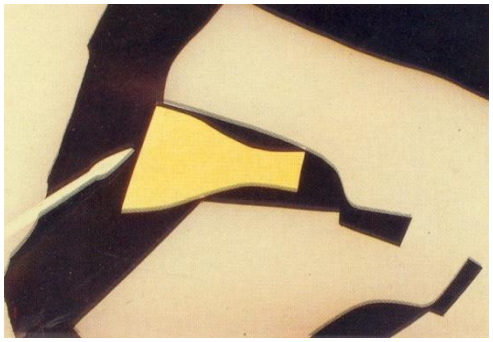


Figure 151: lasting allowance cutting

s. After cutting both pieces are inspected and placed face to face as a pair.

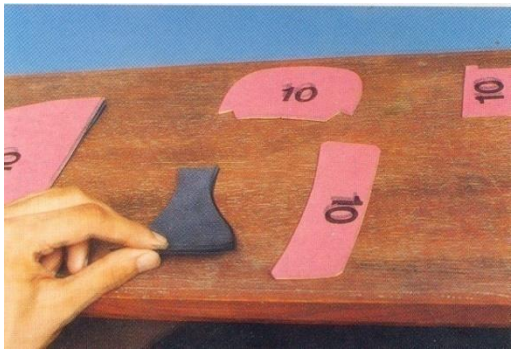


Figure 152: inspect and place face to face cut components

t. We are now half way up the skin. At this point the clicker must visualize what he is going to cut from the remaining skin. He must also consider grain and shade matching.

u. Cut number-6, saddle and bars pair number –1.The saddle divides the tongue & the vamp as it crosses the two, the saddle needs to have a similar grain match, although some times the saddle can be used as an area to slightly break up the grain variation will depend on the price structure of the shoe.

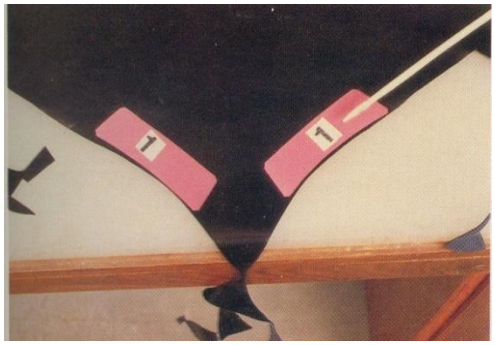


Figure 153: Cutting sadle

v. After cutting, the clicker inspects the grain & places the saddles on the bench as a matching pair

w. Cut no.-7, there are four bars to a pair; grain match is minimum as they are rolled up to make the decoration.

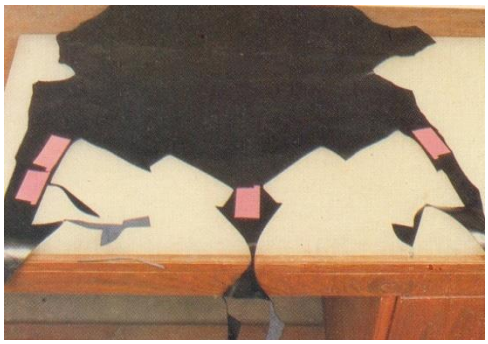


Figure 154: no -7 for a pair

x. At this point the clicker must make sure that the next pair of ¾ cut vamps can fit, here must also allow enough grain matching grain to be left for the tongue.

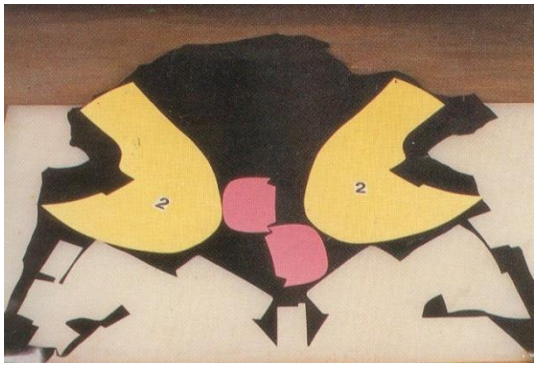


Figure 155: cut the tongue

y. The vamps are most important before cutting the clicker must also check the line of tightness in the leather.

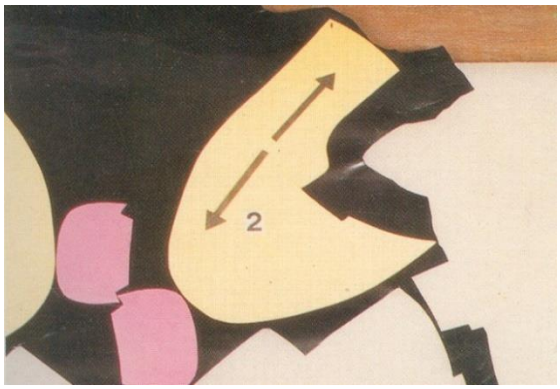


Figure 156: check line of tightness

z. Pattern interlocking is the key to the good clicking. Leather is money, do not waste it.

Figure 157: pattern interlacking

aa. Although we have not completed the 1st pair at this stage we would cut the second vamp. This is to ensure pattern interlocking.

Figure 158: Cutting the 2nd vamp

bb. Cut number 8, right vamp (pair –2). The top line would be reinforced with tape or string to give extra strength. Defects should not put in to top line.

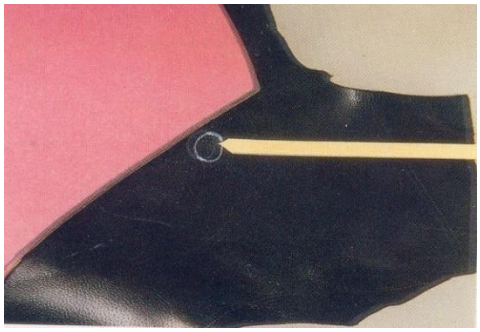


Figure 159: defect identification

cc. Cut no.-9 (left vamp pr.-2)

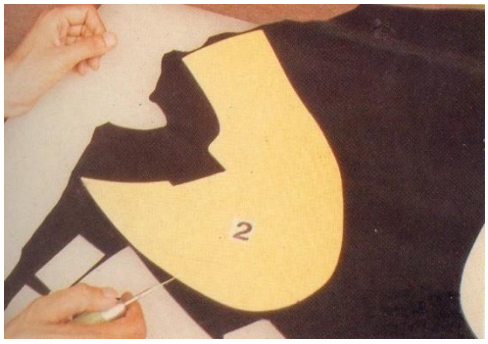


Figure 160: cut left vamp

dd. After cutting the clicker must check the pair for grain matches in the plug area.

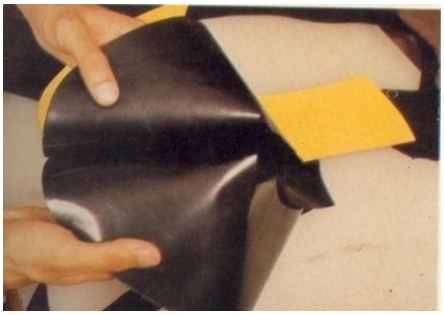


Figure 161: check grain matching

ee. We now complete the tongue for pair no.-1.Down the center of the skin is the back bone. The top of the tongue should not be cut out of this area as the grain may pull out.

ff. The grain from the back bone can be placed in the area that the saddle covers.

gg. Cut no.-10, single tongue for pair no.-1.

Figure 162: cut the single tongue

hh. Cut no.-11, single tongue for pair number 1, this tongue has been reversed to allow the back bone to be placed under the saddle.

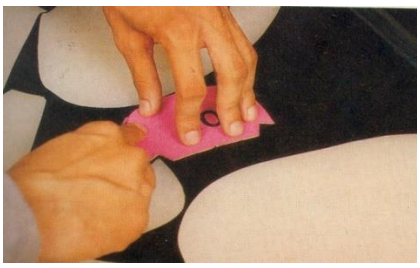


Figure 163: cut the tongue for the above pair

ii. We have completed the pair no.-1.

Figure 164: completed cut pairs

jj. All the cut-components are stacked in the pair basis after cutting.

Figure 165: stack in pair wise

4.1.3 Nap matching in Suede and Nubuck

The color of the suede may vary due to the nap. The nap varies greatly especially in the belly & flank area. When pair of components is completed the operator has to stack them with the nap face to face.

Figure 166: Nap matching in Suede

The nap varies all over the skins (the nap refers to the fineness or coarseness of the split texture).

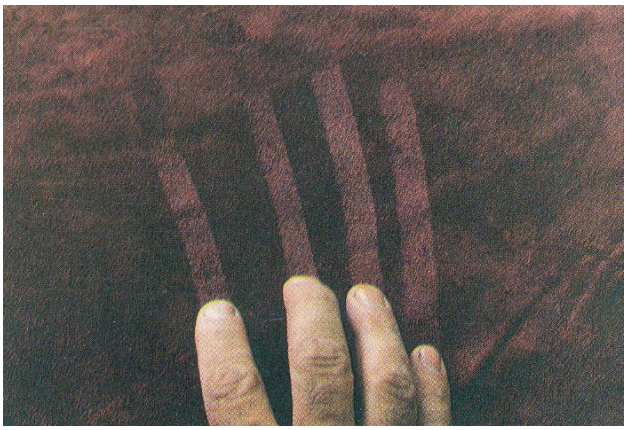


Figure 167: Nap matching in Nubuck

Self-Check 4	**Written Test**

Name: _____ **Date:** _____

(Total Points: -8*1=8)

Instructions: **Write all your answers in the provided answer sheet on page-25.**

Directions: Answer all the questions listed below.

Test - I: One word answer:

1. We should always start cutting bigger size or smaller size. (Point:-1)
2. What are the biggest problems in full grain leather cutting? (Point:-1)
3. After cutting what clicker should check? (Point:-1)

Test – II: Fill in the blanks:

4. Check the flesh side of the leather for ---------- & ----------. (Point:-1)

5. During cutting the clicker must check the pair for ---------- matches in the plug area. (Point:-1)

6. All the cut-components are stacked in the ---------- basis after cutting. (Point:-1)

Operation-Sheet-5 Distortion or defects and appropriate actions

5.1 Distortion or defects

During machine cutting, an operator has to follow the following practices

- **a.** Do not operate the machine without prior approval.
- **b.** Do not work without written job order card.
- **c.** Only one person is allowed to work on the machine at one time.

Figure 168: practicing machine cutting

d. Before the start of the cutting, check the die for the following:

- Article,
- Size,
- Material (upper /lining/interlining)

Figure 169: checking dies Article, Size, Material (upper /lining/interlining

e. Before starting cutting, set the pressure & adjust the Aluminum plate 10 mm above the die.

Figure 170: adjust pressure & height of the Aluminum plate

f. Check the die for deformation of shape before proceeding for cutting.

Figure 171: check the shape of the die

g. Match your die with the master pattern once a day.

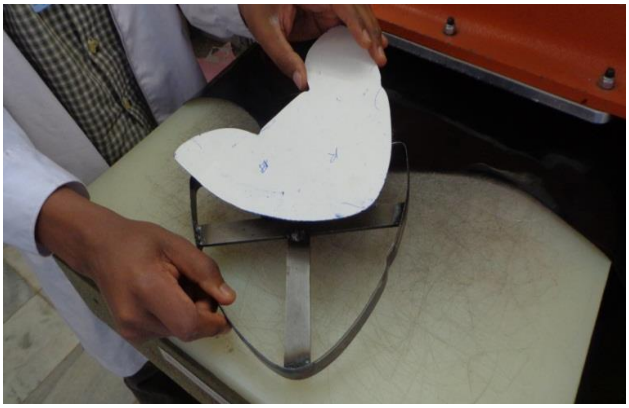


Figure 172: matching the die with the master pattern

h. Do not keep the dies on top of other.

Figure 173: not keeping the dies on top of anther

i. Switch off the machine when not in use.

j. Put the leather on the leather horse.

Figure 174: putting the leather on the leather hourse

k. Point the defect in leather before cutting.

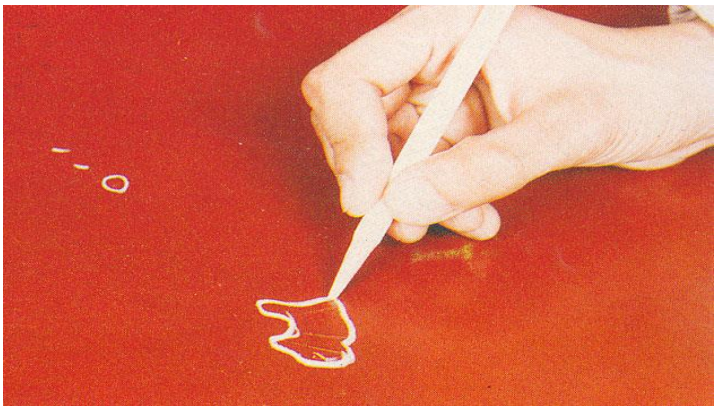


Figure 175: point the defect before cutting operation

l. Check leather before cutting each component.

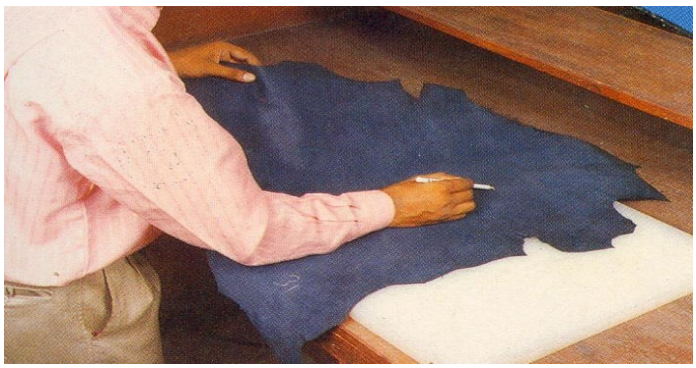


Figure 176: Checking the leather before cutting

m. Check the components after cutting.

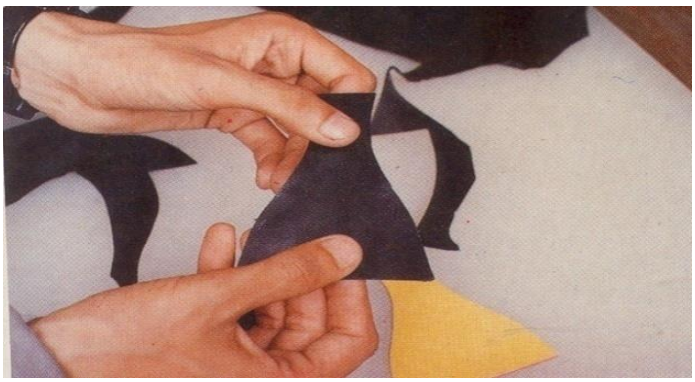


Figure 177: checking the quality of cut components

n. Use only one die use on the nylon board while cutting material.

o. Do not cut leather in layers.

Figure 178: do not cut leather in layer

p. large components first. Take small size from defective skin.

Figure 179: Cut large components first

q. Components should be placed edge to edge to minimize waste.

Figure 180: components cut edge to edge to minimize waste

r. Ensure that components are cut pair wise and make the bundles after cutting.

Figure 181: making the bundles after cutting

s. Dies, punches & prickers of dies should be handled carefully.

Figure 182: Dies with punches & prickers should be handled carefully

t. Always transfer the cut component to next operation with job-card.

kk. Clean your work place after completing your work with dies.

figure 183:cleaning work area after cutting

u. Return the remaining quantity of leather after cutting to the department in charge.
v. Throw the leather waste in to bin only.

Figure 184: put the leather waste into dust bin

w. While changing the oil use container to remove the hydraulic oil.

Lap test 5	Practical Test

Name: _____ **Date:** _____

Time: _____

Directions: perform all the questions listed below

Task-1 Prepare and ready the clicking machine for machine cutting operation

Information Sheet-6 OHS Practices

6.1 OHS PRACTICES

Some of the important OHS factors which affect the work are mentioned below:

Workstation:

- The workstation is the place a worker occupies when performing a job.
- A well-designed workstation is important for preventing disease related to poor working conditions, as well as for ensuring work is productive.
- Every workstation should be designed with both the worker and the task in mind.
- A properly designed workstation should allow the worker to maintain a correct and comfortable body posture.

The working position should be as comfortable as possible. The arrows indicate areas that need to be improved to prevent potential injuries from developing. To improve the sitting position for the worker on the right, the chair height should be lowered, tilted slightly forward and the worker should be provided with a footrest.

The job should be designed to allow the workers to keep the arms low and the elbows close to body.

Standing:

- Standing for long periods of time to perform a job should be avoided wherever possible.
- Long periods of standing works station can cause health problems. For example

Figure 185. A chair, footrest, a mat to stand on, and an adjustable work surface are essential

Components for a standing workstation.

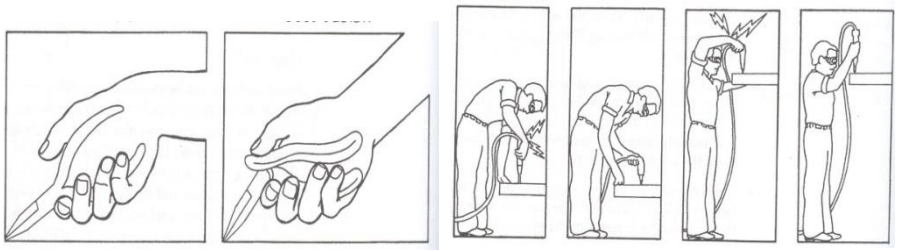


Figure 186. These pictures illustrate how to design can prevent you having to work with a bent wrist

Do not use tools with spaces that can catch finger or flesh.

Self-Check 6	Written Test

Name: _____ **Date:** _____

(Total Points: 8)

Instructions: **Write all your answers in the provided answer sheet .**

Directions: Answer all the questions listed below.

Part I: long answer

1. List down Eight points on practices and measures during machine cutting.
   (Points:- 8)

LG #42	LO #6- Check and dispatch cut components

Instruction sheet
This learning guide is developed to provide you the necessary information regarding the following content coverage and topics: • Cut components arrangement • Checking finished cut products • Accomplishing necessary record and report This guide will also assist you to attain the learning outcomes stated in the cover page. Specifically, upon completion of this learning guide, you will be able to: • Arrange cut components and tie grain to grain as per ticket number • Check finished cut products against job specifications and enterprise quality standards. • Accomplish Necessary record and report in accordance with work procedures and standard format
Learning instruction
1. Read the specific objectives of this Learning Guide. 2. Follow the instructions described below. 3. Read the information written in the information Sheets 4. Accomplish the Self-checks 5. Perform Operation Sheets 6. Do the “LAP test”

Information Sheet-1 Cut components Arrangement

1.1 Cut components arrangement

This unit covers the skills and knowledge required to carry out the preparation activities, selection of materials and cutting of materials by hand to the specifications and workplace standards.

1.1.1 Bundling of the cut components:

- Check the color & shade of the components
- Check the grains of the components particularly those cut in goat and sheep skins.
- Arrange and tie cut components grain to grain as per ticket number.

a. After checking the grain & color match, the clicker must identify each pair. In this step the clicker is writing the size & pair number. Size 10-1 is the pair number 01 of size 10.

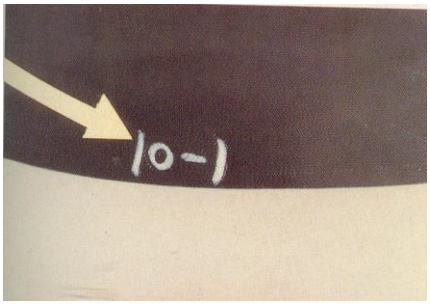


Figure 187: size and pair number

b. When a pair of components are completed, stack them with the nap face to face

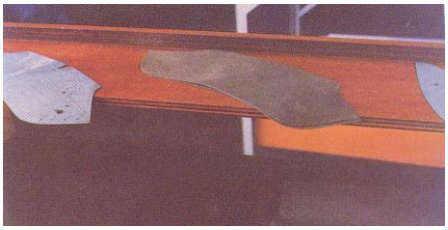


Figure 188: stack nap face to face

c. After grain matching the components are laid grain side out & pairs are numbered

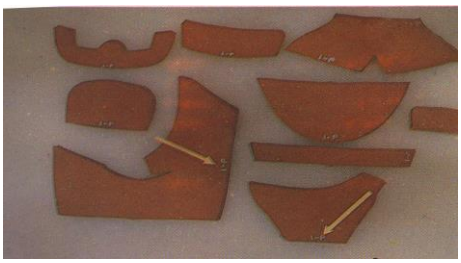


Figure 189. Laying grain side out and numbered

d. Elastic bands are paced on each group of the components.

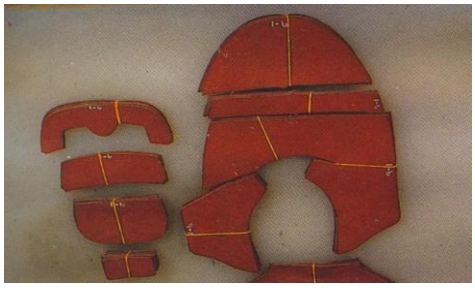


Figure 190: Paced with elastic bands

e. Then each completed 5 pairs are bundled securely together.

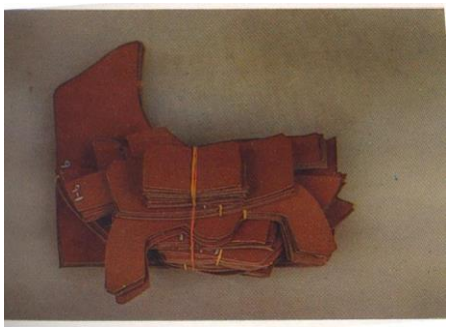


Figure 191: bundling the component

f. The leather cut components are stacked in the pair basis.

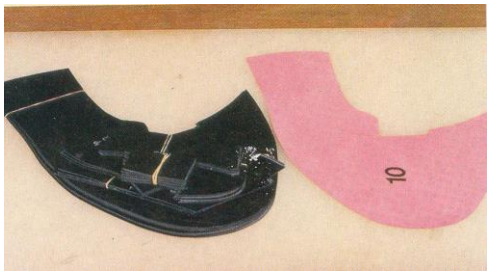


Figure 192. stack the component

Self-Check 1	Written Test

Name: _____ **Date:** _____

(Total Points: 10)

Instructions: **Write all your answers in the provided answer sheet**

Directions: Answer all the questions listed below.

Test I: long answer

1. Discuss about the points to arrange cut components?
2. Describe about the bundling operation?

Operation Sheet-2 Checking finished cut components

2.1 Checking finished cut components

2.1.1 Methods of Inspection for cut components:

a. Check the visual defects on the cut components.

The cut components should be inspected for the following defects.

- Loose or fibrous material.
- Brand Points, scars and open flaws.
- Closed flaws, wire Points and scratches.
- Growth Points or fat wrinkles.
- Veins.
- Flay cuts.
- Discolored areas
- Insect or parasitic damage.
- Any other defect that may render an area of leather unusable.

b. Check the edge of the cut components. Components should be checked if any fault on the edges of the components.

c. Check the line of tightness and stretch direction

The line of tightness runs from toe to heel.

After cutting the clicker must check the component for quality & stretch.

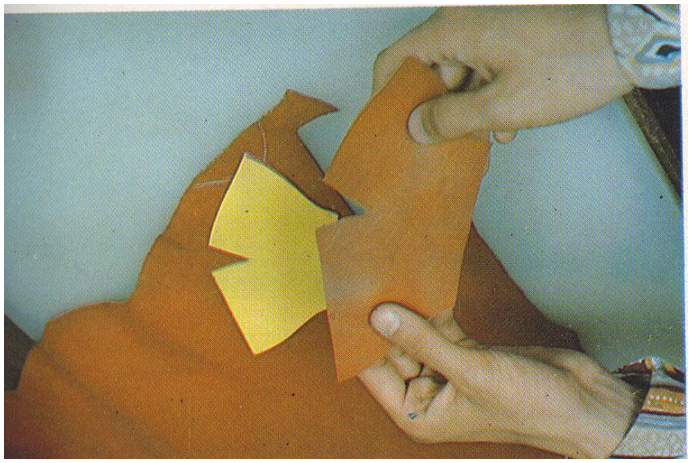


Figure 193. the line of tightness and stretchiness

d. Check the thickness of the leather

The thickness of cut components must be uniform and as per specifications. Sometimes leather are too thick & heavy for footwear upper.

The clicker must check the thickness of cut components randomly.

Figure 194 Checking the thickness

e. Check the notches and perforation on the components

The clicker would also check for any notches /center pointy or prick Points in the patterns as he cuts them.

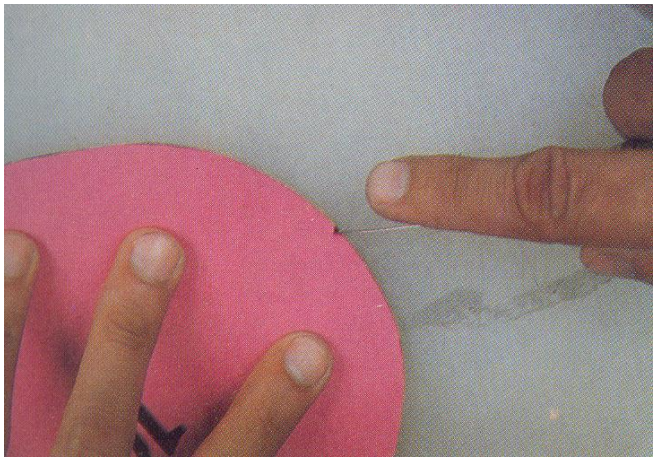


Figure 195 checking the notches and perforation

f. The toe cap must match the toe strap & the toe cap must match the vamp.

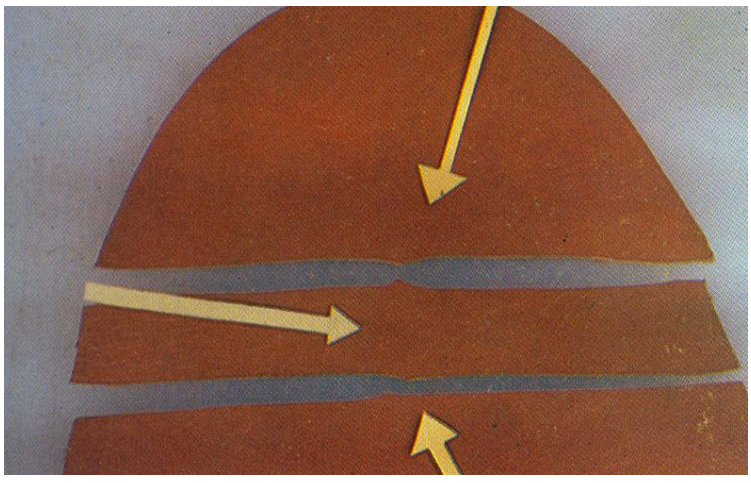


Figure 196. Matching cut components

g. The front of the inside quarter must match the vamp.

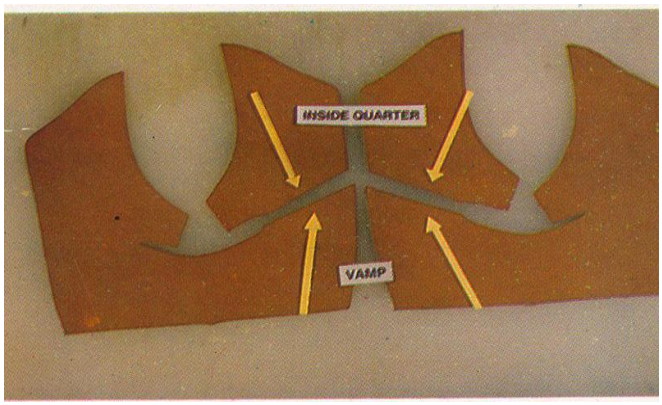


Figure 197. Matching quarter and vamp

h. Counter must match with the quarter.

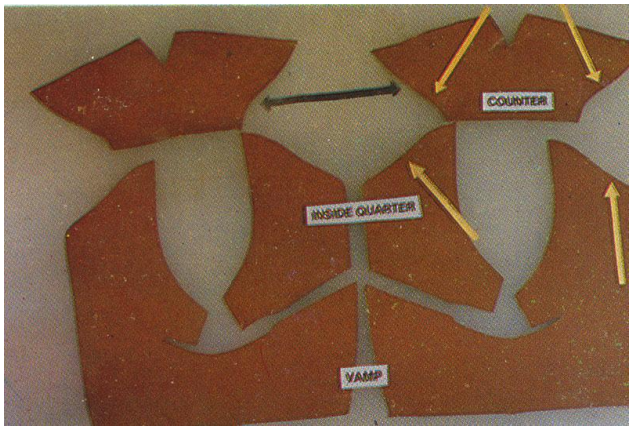


Figure 198: Matching counter with quarter

i. The decoration on the front of the vamp must also match. The tassels are not required to be matched.

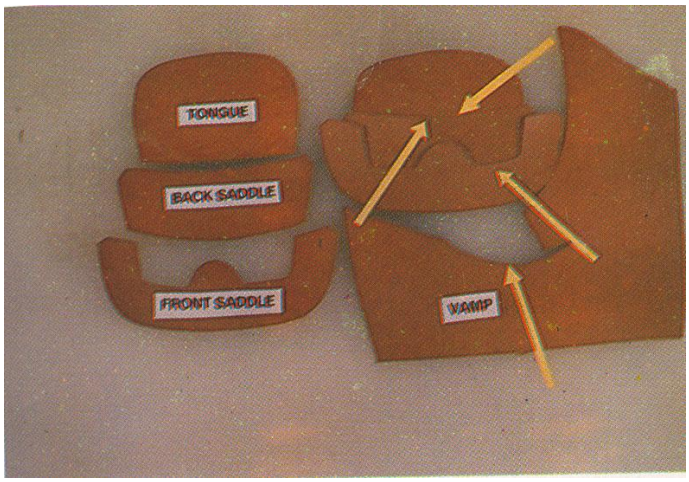


Figure 199: Matching decoration on front of vamp

j. The left foot must match the right foot.

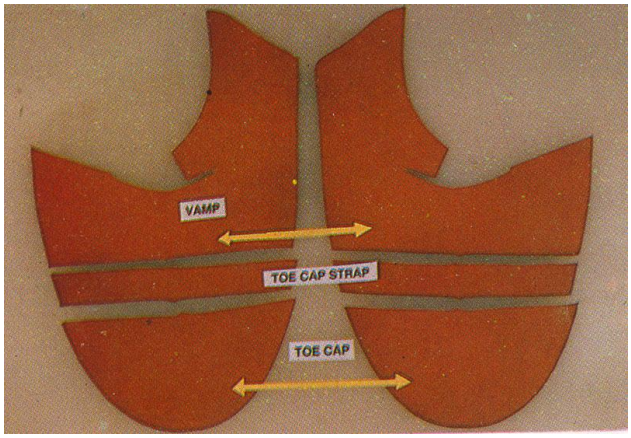


Figure 200: Matching inside and outside foot

k. All parts of the shoe should be collected for the grain matching.

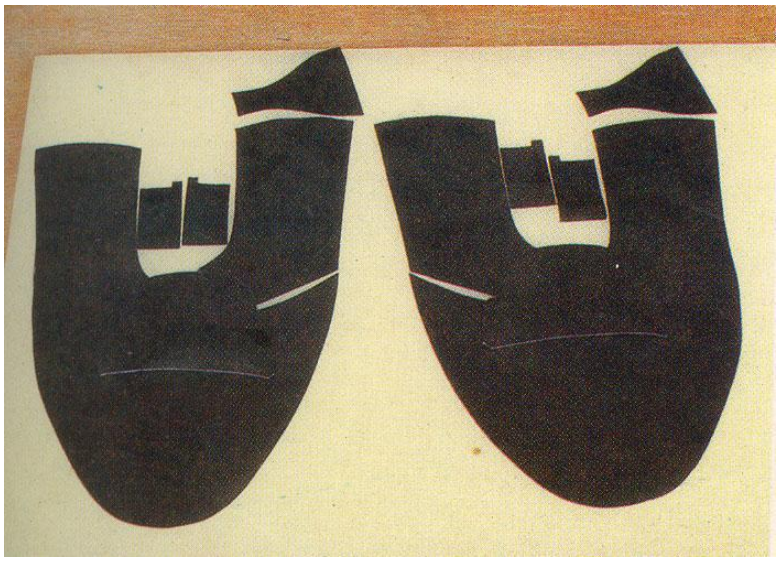


Figure 201: grain matching

l. The front of the quarter must match with the area of the vamp. They are also to be inspected together.

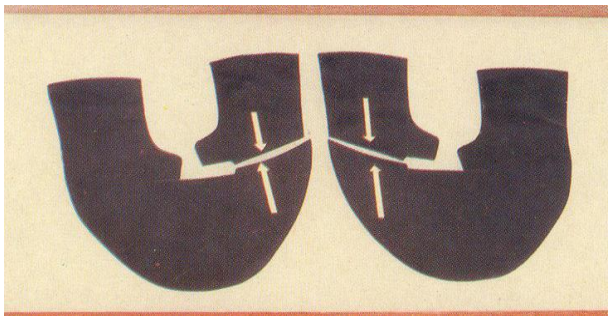


Figure 202: matching front of quarter with area of vamp

m. After cutting clicker must check the cut components for tightness.

Figure 203: checking the cut component

n. Both vamps should match.

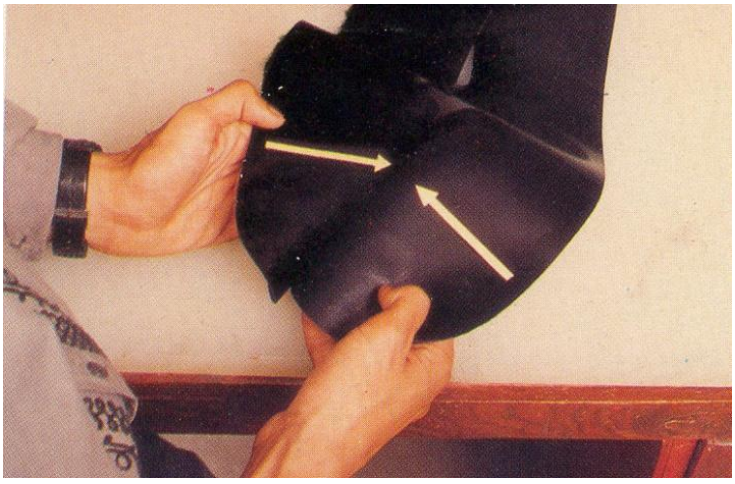


Figure 204. matching both vamp

o. The quarter should grain match on the front with the vamp and at the back-seam with other quarter.

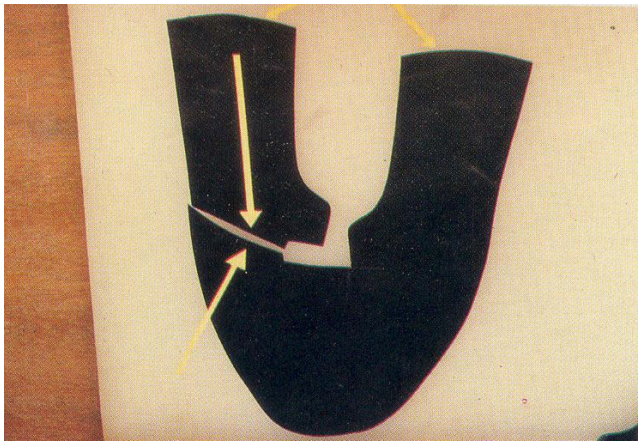


Figure 205. Grain matching

p. After cutting the clicker must check the pair for grain matches in the plug area.

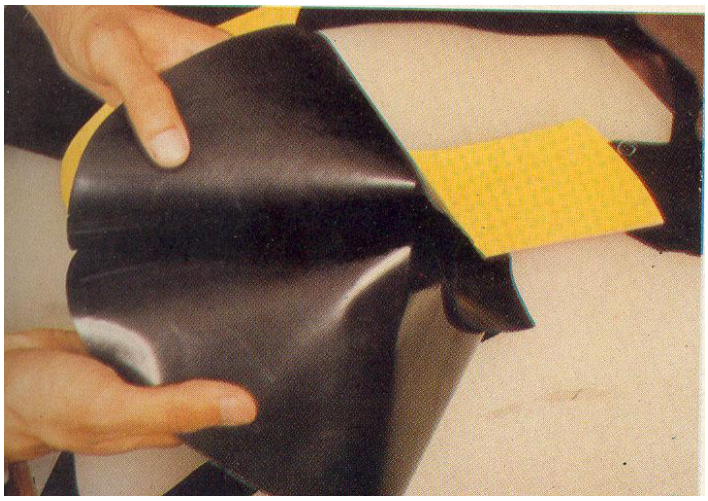


Figure 206 pair of grain matching

q. The back seamers should not stretch. In this shoe a counter covers the back-seam. So preference should be placed on matching the counters & quarters.

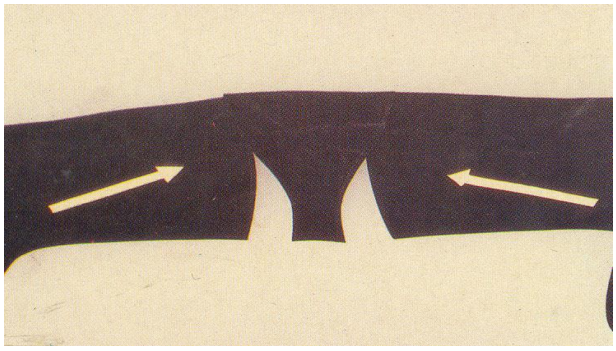


Figure 207. The back seamers should not stretch

r. The top of the vamp, saddle & tongue must also match.

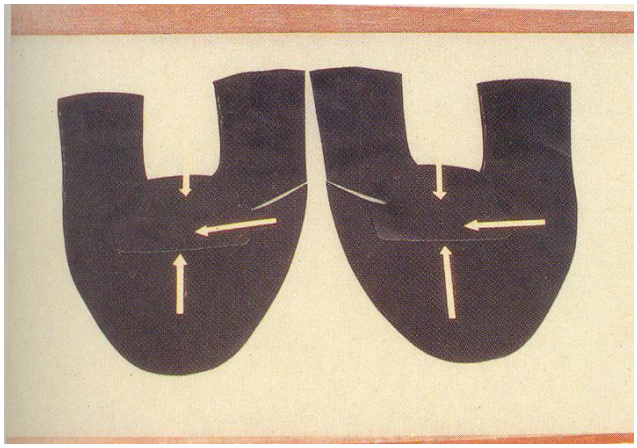


Figure 208 matching the vamp, saddle & tongue

s. Counters: The grain of the counter may need to be checked against the back of the quarter.

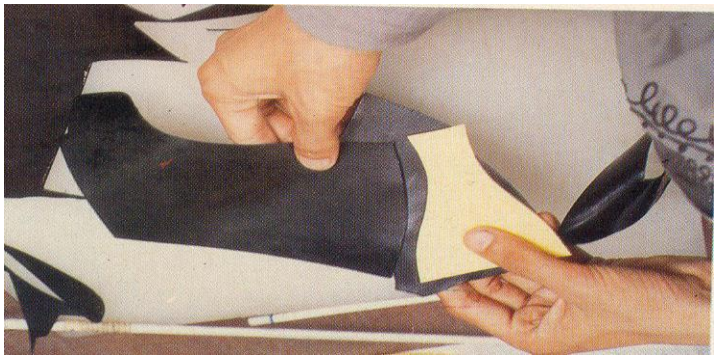


Figure 209. checking the grain of the counter

t. Nap of suede and nubuck leather components should be matched.

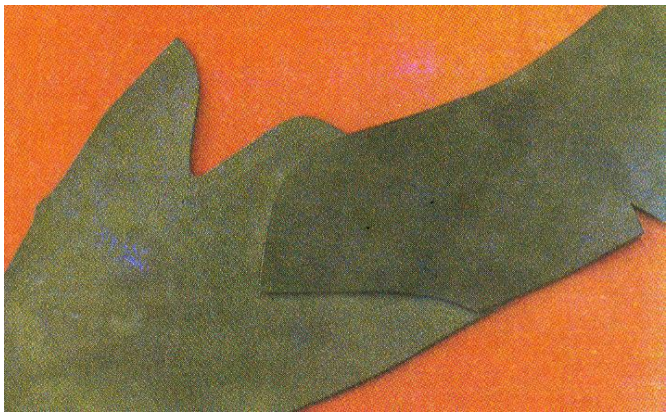


Figure 210. matching Nap of suede and nubuck

u. Color of suede and nubuck leather components should be matched.

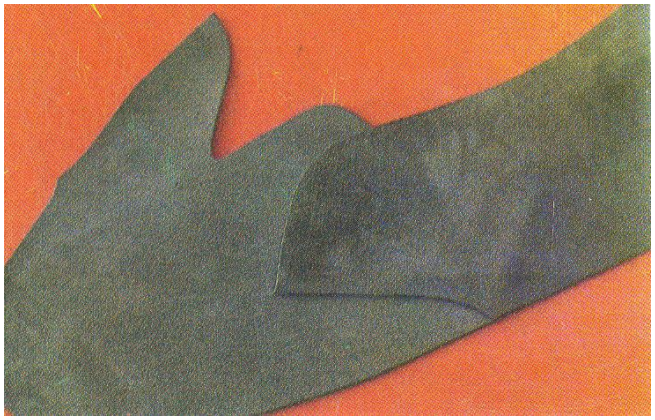


Figure 211. matching color of suede and nubuck

Lap test 2	Practical Test

Name: _____ **Date:** _____

Time: _____

Directions: perform all the questions listed below

From learning guide #5 lap test 3

Task-1 Check all the components of derby shoe with the parameters discussed.

Task-2 Check all the components of oxford shoe with the parameters discussed

Task-3 Check all the components of slip-on shoe with the parameters discussed

Task-4 Check all the components of court shoe with the parameters discussed

Task-5 Check all the components of moccasin shoe with the parameters discussed

3.1 Necessary record and report accomplishment

3.1.1 Standard Format and Work Procedures

The quality reports are prepared for the control of the defective pieces going through the process thereby preventing the production of the defective footwear. This is required to be carried out for the 100% inspection, unless such is not the case (cutting of the synthetics).

The QC report is prepared in accordance of the work plan and load chart. The inconsistency is noted and further actions are initiated to prevent the reasons. Cause analysis helps the company to prevent future happening or higher rate of rejections. The standard format for quality control is given in following paragraphs.

a. Cut Component Inspection Report

Table 7. Inspection Report sheet

CUTTING FINAL INSPECTION

DATE:_____ ART/COLOR:_____ PASSED QTY: _____

PLAN No:_____ DESCRIPTION:_____ REJECTED QTY:_____

PLAN Qty:_____ No of pairs seen:_____ PERCENTAGE :_____

S. No.	DEFECT	VAMP		QUARTER		COUNTER	H/GRIP /	SOCKS	TOUNGE		TOTAL		% age
		U	L	U	L	U	L	L	U	L	U	L	
1	Loose Leather												
2	Uneven Skiving												
3	Skiving Damage												
4	Improper Skiving Allowance												
5	Edge Cut in Cutting												
6	Improper Splitting												
7	Under Substance												
8	Thickness variation												
9	Wrong Size												
10	Colour Variation												
11	Different Type Of Leather												
12	Stamping												
13	Plan No. Mixed												
14	Pair No. Size Not Stamped												
15	Embossing Not Clear												

Table 8. upper and lining cut component inspection

UPPER/LINING CUT COMPONENT INSPECTION

DATE:_____ ART/COLOR:_____ PASSED QTY: _____
PLAN No:_____ DESCRIPTION:_____ REJECTED QTY:_____
PERCENTAGE :_____
Plan Qty:_____ No of pairs seen:_____

S/N	DEFECT	VAMP/		QUARTER		COUNTER/ BACK STRAP	H/Grip	SOCKS	TOUNGE/		SADDLE		MUDGUARD		APRON		TOTAL		% age	
		U	L	U	L	U	L	L	U	L	U	L	U	L	U	L	U	L	U	L
1	Loose Leather																			
2	Open Defect																			
3	Cut/flaw																			
4	Vein Marks																			
5	Scratches																			
6	Growth Marks																			
7	Under thickness																			
8	Bossy nap																			

b. Daily production report

A daily production report (**DPR**) is a term for the form filled out each day of production for a shoe to summarize what occurred that day. There is standard template for a production report and the purpose of this form is to keep track of a production's progress. With the help of this report, we can know the how much components are rejected in a particular plan. With this report we can know the name of the components and the percentage of the rejection can be known easily.

Table 9. daily cutting production report

XXX COMPANY									
DAILY CUTTING PRODUCTION REPORT									
DATE									
MODEL NO									
PLAN NO									
COLOUR									
	TYPE	SIZES							
	M	38	39	40	41	42	43	44	
	W	34	35	36	37	38	39	40	
	C	33	34	35	36	37	38		
MATERIAL	SIZES								TOTAL
UPPER									
LINING									
TOE PUFF									
COUNTER STIFINER									
SOCKS									
FOAMS									
TEXTILE									
INSOLE									

Self- check 3	Written test

Name: _____ **Date:** _____

(Total Points: 10)

Instructions: **Write all your answers in the provided answer sheet**

Directions: Answer all the questions listed below.

1. What is the purpose of daily production report?

Answer Sheet

LG #37	**LO #1- Identify and use hand tools equipment and machines**

Self - check -1

2. What is the difference between tools and equipment?

Tools: - are an item used for a specific purpose. A tool can be a physical object such as mechanical tools including saws and hammers.

Equipment: - is defined as a set of tools, devices, kit, etc., assembled for a specific purpose.

3. What are materials will be cut in the machine cutting operation?
   - Leather
   - Lining
   - Synthetics
   - Fabrics
   - Shank board
   - foam
4. What are the tools used for machine cutting?
   - Cutting dies
   - Scissors
   - Cutting board/nylon board
   - Measuring ruler
   - Silver pen
   - Hammer
5. What is the equipment's and describe their use for machine cutting?

- **Swing arm hydraulic cutting machines**: - it is a hydraulic machine used to cut materials in single layer using clicking dies.
- **Travel head cutting and hydraulic plain cutting press machines**: - it is a hydraulic machine used to cut materials with several layers
- **Strap cutting machine**:-is a machine used to cut strap components with accuracy
- **Stamping machine**: -is a type of cutting machine use for stamping of upper/lining with electro pneumatic control with the use of counter with composing disk and plasticized foil.

Self - check -2

4. What does it mean by serviceability?

- checking of the functionality of machine before doing cutting operation

5. What are the check points for tools serviceability?

Some of check points for the tools can be:

- Check the dies don't have crack and breakage
- Check the dies blade sharpness and accuracy
- Check the cutting board/nylon board plain
- Check other tools like silver pen, ruler and hammer are working correctly

6. What are the safety measures while using tools?

Safety measures are those actions taken to improve or ensure the safety of a particular place, activity, group, function, or piece of equipment/tools

General safety rules for hand tool usage include:

- Selecting the correct tool and the right sized tool for the job
- Inspecting tools for damage before attempting a task
- Keeping tools clean and cutting tools sharp
- Carrying tools in a manner that prevents cuts to yourself or someone else, especially if you should fall
- Always passing tools to others handle first and never throwing tools to another person

- Ensuring workers have proper training before using a particular tool for the first time
- Wearing proper personal protective equipment (e.g., safety glasses, face shields, gloves, etc.) when using hand tools
- Cutting away from your body to avoid injury if the cutting device should slip
- Taking advantage of the ergonomically shaped handles available on some tools and holding tools in a manner that minimizes stress to the hand, wrist and arm.

Self - check -3

4. **What is the objective work area cleaning?**
   - The objective of work area cleaning is to show how to keep work areas and tool clean and ready for operation
5. **Write down the procedures will be taken to clean work area?**

Work area should be cleaned as per standard procedure:

- Dust bins for bio-degradable waste materials
- Dust bins for non-biodegradable waste materials
- Clean floors and decking at the end of each shift and place all rubbish and waste in approved containers for disposal.
- Do not use flammable cleaners or water on electrical equipment.
- Make sure designated walkways are kept clear of any obstructions.
- Always wear protective clothing and the appropriate safety equipment.
- Make sure that you understand and observe all legislative and personal safety procedures when carrying out the maintenance tasks.

6. **What are the points to remember when cleaning cutting floor?**
   - Sort reusable equipment, components and materials from waste
   - Reusable materials are correctly stored
   - All tools and equipment are properly stored.

Self - check -4

1. **Write the points to clean tools and equipment's?**

- Clean tools and equipment help work more efficiently.
- Electrical current can travel over oily or greasy surfaces. Keep electrical power tools free from dust and dirt and make sure they are free of oil and grease.
- All workshop equipment should have a maintenance schedule. Always complete the tasks described on the schedule at the required time. This will help to keep the equipment in safe working order.
- Store commonly used tools in an easy-to-reach location. If a tool, or piece of equipment, is too difficult to return, it could be left on a workbench or on the floor where it will become a safety hazard.
- Keep your work area tidy. This will help you work more efficiently and safely.
- Always use chemical gloves when using any cleaning material because excessive exposure to cleaning materials can damage skin.
- Some solvents are flammable. Never use cleaning materials near an open flame or cigarette.
- The fumes from cleaning chemicals can be toxic, so wear appropriate respirator and eye protection wherever you are using these products.
- When cleaning products lose their effectiveness. they will need to be replaced. Refer to the suppliers' recommendations for collection or disposal. Do not pour solvents or other chemicals into the sewage system. This is both environmentally damaging and illegal.

2. What are the points to remember when storing tools?

Location: - Hand tools should be safely located when not in immediate use.

Safety: - Hand tools should be used safely and effectively according to their intended use.

Systematically arrangement: - Hand tools should be clamped or fixed in position

Self - check -5

4. Describe about work instruction?

- A work instruction is a tool provided to help someone to do a job correctly

5. Describe about specification sheet?

- It is a sheet that contains the exact statement of the particular needs to be satisfied and the requirement for a particular material or component

6. Discuss about operational detail?

- Operational details are the specific details of day-to-day workings and activities. These records kept will be one of the most important management tools and then it also creates a good communication between the operators. Therefore, it should be allocated due importance.

Operational details include:

Daily plan sheet

Weekly plan sheet

Monthly plan sheet

Self - check -6

4. Write down the safety points while using click machine?

- Do not operate the machine without prior approval
- Do not work without written job order card
- Only one person is allowed to work on the machine at one time
- Before the start of the cutting, check the die for the Article, Size, and Upper/lining/interlining.
- Before starting cutting, set the pressure and adjust the aluminum plate 10mm above the die
- Check the die for deformation of shape before proceeding for cutting
- Do not keep the Dies on top of the other
- Switch off the machine when not in use
- Use only one die on the Nylon board while cutting material

5. Write down the safety points while using clicking dies?

- Use the right knife for the task.
- Keep knives sharp
- Always cut on a stable surface, like a cutting board.
- Always cut away from your body.
- Store knives safely in a rack or knife block.
- Don’t leave knives in washing –up water.

- Always carry knives with the blade pointing downwards.

6. Describe briefly about safety while using grinder, strap cutting and stamping?

Grinder

In using a grinder especially for blade making; the following safety points must be followed.

- Hair must be tied back
- Wear tight clothes
- Shoe must be protective
- Do not operate the machine without prior approval.
- Do not work without safety glass.
- Only one person is allowed to work on the machine at one time.
- Switch off the machine when not in use.
- Do not spill the water on the machine.
- Break the hack saw blade on the vice.
- Do not wear loose cloth while sharpening the blade,
- Clean your work place after completing your work.
- Do not walk around carrying the knife with the cutting blade exposed. It can cause injury.
- Do not try and catch a falling knife instead when it is not in use put your knife in a secure place

Strap cutting machine

- Do not operate the machine without prior approval
- Switch off the machine when not in use
- Only one person is allowed to work on the machine at one time
- Do not work without written job order card

Stamping machine

- Do not operate the machine without prior approval.
- Only one person is allowed to work on the machine at one time.

- Switch off the machine when not in use.
- do not spill the water on the machine
- do not wear loose cloth while working,
- place the component on machine platform carefully
- keep the hands away from the heated number plate/die
- Clean your work place after completing your work.
- Empty the leather waste in to waste bin only.

Self - check -7

5. What does it mean by safety?

- A safe and healthy work environment for every worker

6. Describe briefly about safety work place and operator?

The factory occupier must provide basic safety measures including:

- Securely guarding all parts of dangerous machinery;
- Precautions for working on machinery;
- Emergency devices for cutting off power;
- Maintain hoists and lifts;
- Lifting machines, chains, ropes, and other lifting tackle must be maintained in good condition;
- Ensure walking surfaces are of sound construction;
- Provide protective equipment;
- Measures to remove gas and dust before entering confined places;
- Measures to prevent fires.

The factory occupier must facilitate the following facilities for operator welfare and their health:

- To ensure cleanliness of the workplace;
- Make effective arrangement for treatment and disposal of waste and effluent;
- Make suitable and effective provisions for adequate ventilation;
- Maintain temperatures to secure reasonable comfort for workers;
- Remove any dust or fumes from the workplace which may be injurious to workers;

- Prevent overcrowding by maintaining a specific cubic area for each worker;
- Provide sufficient and suitable light;
- Make suitable arrangements to provide clean drinking water conveniently situated for all workers and;
- Provide suitable latrines and urinals to specified standards.

LG #38	**LG #38 LO #2- Set up workstation**

self-check-1

Part I:

6 Write down the one main parts of the clicking mahcine. (1 Point)

- Switch off/on botton
- Pressure adjustment
- Height adjustment
- Almunium sheet
- clicking board
- clicking button

7 What is the use of arm strock adjustment control.

- It is used fod adjustig the height between cutting board and almunium sheeet

8 After turn on the machine, how much time we should wail for oil circulation?

- After the machine is on, the operator should wait about 2minutes for oil circulation

Part II:

9 What checklist should be made ready before the cutting is actually performed?

- Materials to be cut.
- Tooling- Die templates etc.
- Proper layering of the material (even no. of layers).
- Design and material specifications.
- Job order quantity.
- Bundling and packing specifications.

Self - check - 2

Part I:

9. C
10. D
11. C
12. C

Part II:

13. perforated
14. Dies rackes
15. Double edge
16. productivity

Part III:

17. Define perforated dies.
    - Dies with prickers and punchers
18. Define dies as per height.
    - 19mm dies
    - 32 mm dies
    - 50 mm dies

Self - check - 3

Part I:

4 What is cutters ticket and show its format?

- A cutter's ticket is issued to the clicker. In this work ticket order no., color of the leather, sizes of the pairs, sizes of the skins, no. of the pairs to be cut etc are described.

Cutter's Ticket

NAME OF THE ORGANIZATION
CUTTERS' JOB TICKET.
CUTTER'S NAME:-_____
DATE:-_____
MATERIAL:-_____
COLOR:-_____
GRADE:-_____ LAST NO:-_____
STYLE MODEL:-_____

SIZE	PAIRS

MATERIAL ISSUED:-_____
MATERIAL RETURN/EXTRA:-_____
SAVED/WASTE MATERIAL:-_____

DEPARTMENT'S SINGNATURE:-

5 What does it mean by laying out materials?

- The cutting materials leather are laying out on cutting table and assess its quality and cutting direction

6 Summarize about collecting, sorting and laying out materials?

- The material are sorted according to their sizes, collected and laying out on the cutting board or table in order to assess the cutting direction

Self-check -4

Part I:

4. What type material can be of a cutting board?
   - Nylon board

5. What are the purposes that cutting board will be defected?
   - Poor product quality
   - Low productivity

6. Describe what we should do when the clicking die stuck on it?
   - By using hammer and gently hit the die can remove the stucked die

Self-check -5

Part I

1. What are the two requirements for maintaining the records? (2 Points)

- To establishing the initial cost of style and
- To control the consumption of material by the clicker

2. What is clickers' allowance? (2 Points)

- The consumption allowance relating to a batch for a clicker to cut

2. What is the use of work loading chart? (2 Points)

- It is necessary for loading the individual workstation.

3. What is indicated in the plan sheet? (2 Points)

- Date
- Article number
- Order number
- Last number
- Order quantity
- Size of the styles etc

LG #39	**LO #3- Assess materials**

Self-check -1

Part I:

1. Describe about different kinds of fabrics? (4pt)

- Woven fabrics
- Non-woven fabrics
- Knitted fabrics

2. Discuss about toe puff and counter stiffener? (2pt)

- Toe puff is a bottom material inserted in between the toe portion of a the shoe upper and the lining for reinforcement purpose
- Likewise, Counter stiffener a bottom material used for reinforcing the back part of the shoe

Self-check -2

5. List and explain some defects of leather?
   - Looseness
   - Tick Points
   - Warble Holes
   - Scratches or Blemishes in the Grain
   - Brand Points
   - Poor Thickness
   - Colour fastness
   - Grain Cracking
   - Flay cuts
   - Tearing strength
   - Growth Points
   - Vein Points
   - Stain Points on Reverse Side, if used for Unlined Shoes
6. Discuss about insole board defect?
   - No uniformity of thickness
   - Cracking due to moisture
   - No flexibility
   - No resistance to shrinkage or growth
   - Dust and dirt on the board
   - No ability to hold tacks adhesives or stitches.
   - More bulky
7. What are the defects of toe puff and counter stiffener?
   - No uniformity of thickness.
   - 2. Less tack retention.
   - 3. No ability to survive molding and shape retention.

- 4. Skiving problem.
- 5. Coating of adhesive not good

8. List some defects of shank board?
   - Variation of thickness
   - 2. Strength or performance
   - 3. Length & width problem
   - 4. Shank design not match

LG #40	LO #4- Prepare tools and equipment/ machine

Self-Check-1

5) **Low productivity** and **poor quality**

6) French sizing system and English sizing system

7) punches

8) cut-component

Self-Check 2

5) What is perforated die?

- **It is a type of die that has a prickers for punched design**

6) What is the use of 19 mm die?

- **Normally19 mm die is used for leather upper and lining cutting**

7) Which die is used for synthetic cutting?)

- **32 mm and 50 mm dies are used for synthetic cutting**

8) On what basis the selection of dies is carried out? (Points 2.5)

- **Knife as per Height**
- **Knives as per Edge**
- **Straight Knife and Decorative Edges**
- **Perforated Knives**

Lap test -3

Task -1: Set and adjust the clicking machine for cutting.

Self-Check 4

Part I:

1. **Write the problems will be faced to machine cutting operation?**

- Press machine power cable connections
- Press machine power buttons and pressure controls
- Press machine maintenance time as per the schedule
- Distance between clicking dies and arm stroke
- Pressure differences due to die height and size
- Pressure difference due to the thickness of material
- Knives sharpness and breakage
- Knives proper positioning for cutting
- Cutting board levelness
- Cutting board surface roughness

2. What is the benefit of recognizing and referring problems as clicker worker?

- It is used for operators to understand and know what is the problems faced during cutting and take a precaution from the possible hazards

LG #41	LO #5- Identify and use hand tools equipment and machines

Self-Check 1:

1. **What are the components included in work ticket specification?**
   - Article number
   - Leather/material type
   - Color
   - Thickness
   - Number of pairs to be cut in each size
2. **What is the purpose of job ticket?**
   - To ensure that the components are traced during the operations and accountability for such is maintained

Self-Check 2

1. **What are the points to be check when positioning die?**
   - Check the die blade and inside notch
   - Check the line of tight ness and stretchiness
   - Check the pair wise component positioned
   - Check the interlocking to minimize wastage
2. **Describe about interlocking principles?**
   - Curve to curve interlocking.
   - Straight edge to straight edge
3. **Discuss about mix cutting of different sizes.**
   - A clicker would have a set of mixed size patterns to run in. Sometimes he would cut 1 pair large size & one pair of small size from the same skin to optimize material utilization.
   - The clicker must have a clear picture in his /her mind of how he is going to cut the skin taking in to account grain & shade matching.
   - Getting maximum utilization of the skin we can adjust the larger patterns with the small patterns.

Lap test 3

Task-1. Cut all the components of derby shoe styles

Task-2. Cut all the components of oxford shoe styles

Task-3. Cut all the components of court shoe styles

Task-4. Cut all the components of slip-on shoe styles

Task-5. Cut all the components of moccasin shoe styles

Self-Check 4

Test-I:

4. **We should always start cutting bigger size or smaller size.**
   2. bigger size

2.**What are the biggest problems in full grain leather cutting?**

- Shade and grain variation

3. **After cutting what clicker should check?**

- Quality of cut components

Test – II:

4. warble holes & flay cuts
5. grain matches
6. pair basis

Lap test 5

Task -1: Prepare and ready the clicking machine for machine cutting operation

Self-Check 6

c. **List down Eight points on practices and measures during machine cutting.**

- Do not operate the machine without prior approval.
- Do not work without written job order card.
- Only one person is allowed to work on the machine at one time
- Before the start of the cutting, check the die for the following:

- Article,

- Size,
- Material (upper /lining/interlining)

- Before starting cutting, set the pressure & adjust the Aluminum plate 10 mm above the die.
- Check the die for deformation of shape before proceeding for cutting
- Match your die with the master pattern once a day
- Do not keep the dies on top of other
- Switch off the machine when not in use.
- Put the leather on the leather horse

LG #42	**LO #6- Check and dispatch cut components**

Self-Check 1

1. **Discuss about the points to arrange cut components?**

- After checking the grain & color match, the clicker must identify each pair
- When a pair of components are completed, stack them with the nap face to face
- After grain matching the components are laid grain side out & pairs are numbered
- Elastic bands are paced on each group of the components.
- Then each completed 5 pairs are bundled securely together.
- The leather cut components are stacked in the pair basis.

d. Describe about the bundling operation?

- Check the color & shade of the components
- Check the grains of the components particularly those cut in goat and sheep skins.
- Arrange and tie cut components grain to grain as per ticket number

Lap test 2

Task- 1. From learning guide #5 lap test 3

- Check all the components at least 5 shoe styles with the parameters discussed.
    I. Derby
    II. Oxford
    III. Slip-on
    IV. Court
    V. Moccasin

Self- check 3

1. What is the purpose of daily production report?

- To filled out each day of production for a shoe to summarize what occurred that day

Reference

Book:

- Previous TTLM operate footwear cutting machines
- Previous TTLM perform hand cutting
- Previous TTLM use hand tools and equipment
- http://www.ardorblog.com/what-are-shoes-made-of-7-different-shoe-material-types/

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