Footwear& Leather goods Quality Assurance & Inspection Manual 2018

Leathergoods And Footwear Manufacturers & Exporters Association of Bangladesh

Footwear& Leather goods

Quality Assurance & Inspection

Manual

2018

Leathergoods And Footwear Manufacturers
& Exporters Association of Bangladesh

OVERVIEW: Leather goods And Footwear Manufacturers and Exporters Association of Bangladesh (LFMEAB) is the official trade association registered under the Ministry of Commerce, Government of Bangladesh of the export oriented leather footwear and leather goods industry of Bangladesh. With over 150 members, LFMEAB represents most of the companies in Bangladesh that are engaged in export of leather footwear and goods.

It has been established with the aim and object of uniting all the leather goods &footwear manufacturing companies by encouraging co-operation amongst the members and provide them with a platform to have local and international exposure, creating awareness amongst international buyers and making representations to the government and concerned public bodies on behalf of the members for effective trade and export facilitation.

OBJECTIVE: Leather sector has been declared as one of the priority sectors and Government is also facilitating the sector with necessary development assistance to materialize its export growth potentials. LFMEAB aspires to brand Bangladesh leather products sector a preferred sourcing destination for the global buyers and brands. Achieving a consistent quality standard is the primary requirement for such brand image. In order to induce systematic approach in this regard, **LFMEAB and BPC** is developed "**In line Quality Control and Inspection Manua**l" for leather goods and footwear manufacturers.

Quality assurance system embraces every aspect of manufacturing from the purchase of raw materials to the finished goods. It also takes account of such facet of management as documentation, process control, Inspection, testing, corrective action plan and its implementation and training. It will help to archive buyer confidence that the product produced through the system will be the exceptional quality product.

What is Quality?

Quality is a logical consequence “of good work”.

“**Quality** is conformance to customer expectations…. the goal must be zero defects.”

- Philip Crosby- Quality Guru

'Quality is the ongoing process of building and sustaining relationships by assessing, anticipating, and fulfilling stated and implied needs.'

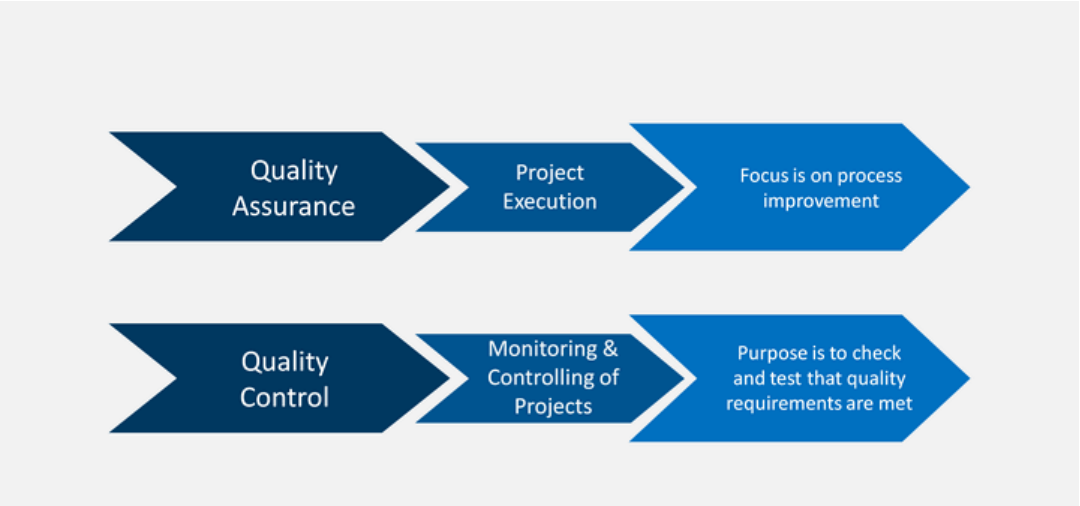
When Quality failed on shoe…….

•Excessive cement /mold on upper (Aesthetic beauty loss)

•Water proof property failure of shoe (Property failure)

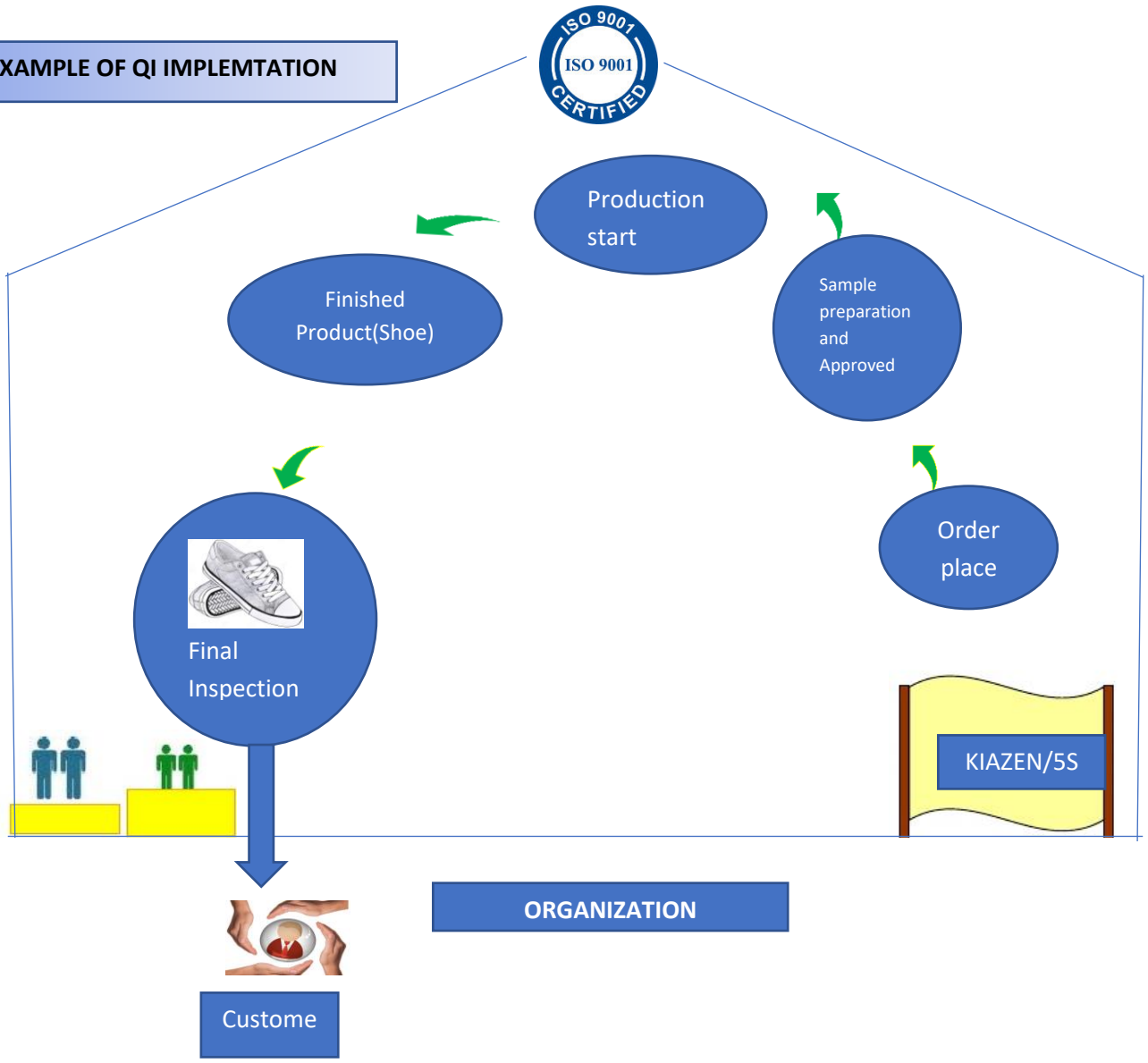
•Sole bond delamination of shoe (Construction failure)

DO QA AND QC CAN RESOLVE THE QUALITY PROBLEM ??.....



Quality Control	Quality Assurance	Quality Improvement
❑ Planned Inspection/examination of a **PRODUCT** or **SERVICE** for a certain minimum level of quality. ❑ Product/service oriented.	❑ Activity to ensure that PROCESS implemented to produce the **PRODUCT** or **SERVICE** satisfy customer requirement in a systematic and reliable fashion consistently. ❑ Process oriented.	❑ Quality improvement (QI) is a systematic, formal approach to the analysis of practice performance and efforts to improve performance.
Example: The manufacture of products is according to the outlined specification. Maintain the color consistency of shoe finishing as per **SOP**.	Example: Shoe in **PROCESS** Quality Audit. Shoe **FINAL** Quality Audit.	Example: 1. Kaizen 2. 5S 3. ICC (innovative and Creative Circle)

EXAMPLE OF QI IMPLEMTATION



Qc vs .QA vs. QI

QUALITY MANAGEMENT

- **Quality Planning**
  - Determine who the customers are
  - Determine the needs of the customer
  - Develop product features that responds to customer's needs
  - Develop processes that are able to produce those product features
  - Transfer the resulting plan to the operating forces
- **Quality control**
- **Quality improvement**

QUALITY IMPROVEMENT…….

Implementation

- Example

KAIZEN ELEMENTS

- **CUSTOMER FOCOUS**
- **Team Work**
- **JIT (Just in time)**
- **Quality cycle (P-D-C-A)**
- **Automation**
- **Labor/Management co operation**

Provide the resources, motivation,

training,

Diagnose the causes

Stimulate establishment of remedy

Establish controls to retain the benefits

Total productive maintenance

THE DIFFERENCE BETWEEN QUALITY ASSURANCE AND QUALITY CONTROL

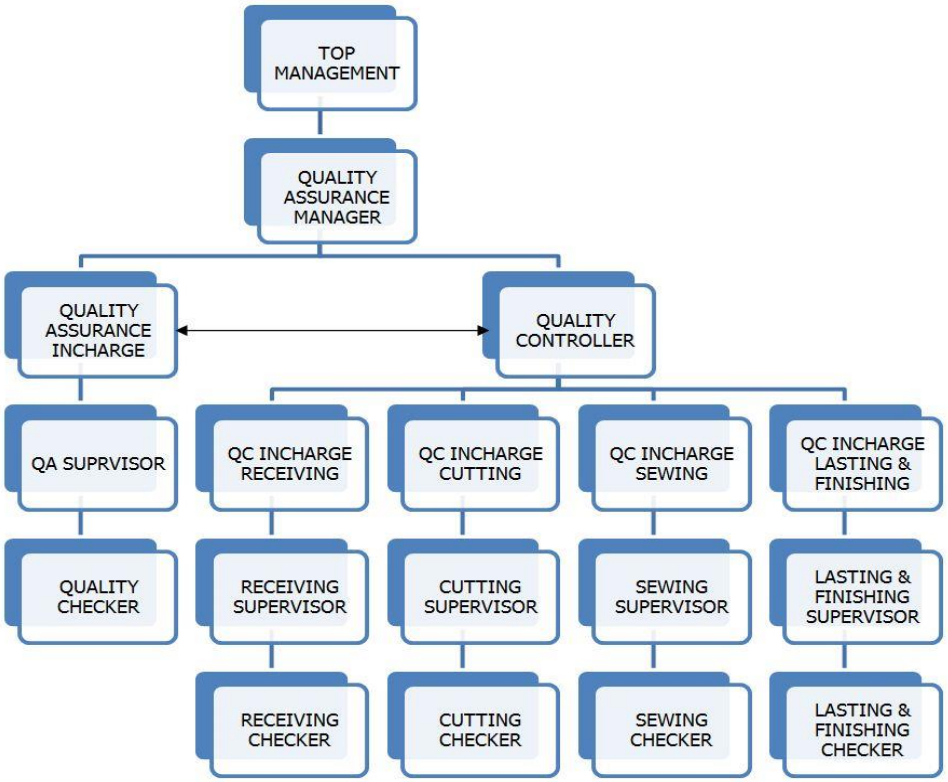
QA

- In quality assurance, we plan to avoid the defect in the first place.
- Quality assurance is all about prevention.
- Quality assurance is a process based approach.
- Quality assurance involves processes managing quality

QC

- In quality control, we try to find defects and correct them while making the product.
- Quality control is all about the detection.
- Quality control is a product based approach.
- Quality control is used to verify the quality of the product.

Organogram of Quality Assurance Department



MISSION OF QA INSPECTOR/AUDITOR

- Set up Work Method
- Set up quality standard
- Manage and set up consistent process to ensure quality and flow of information
- Continuous improvement and audit result
- Check the quality improvement

All the to get: THE BEST EUROPEAN QUALITY

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GENERAL JOB DESCRIPTION:

1. Bi-weekly/Monthly/season/yearly QA/QC report analysis
2. Evaluate & develop QA/QC system
3. QA/QC organization memory
4. Customer complain PDCA
5. Potential quality issue call out & record & analysis report
6. Personal training to BD QA/QC management
7. Skill matrix training evaluation
8. Develop new tools
9. Monthly quality audit report for buyer

QA WORKING FLOW

Pre-production

- **PP/GO-BY Sample**
  - Check Mould/JIGS
  - Follow up making process
  - Evaluate Critical or Major issue
  - Evaluate potential Quality issue and Call out.
- **IQC & Test Lab**
  - Confirmation of bulk leather and H/W
  - Bulk Material Test
  - Evaluate potential Quality issue and Call out.
- **PILOT Production:**
- Manage and set up consistant process.
- Approval of spare parts & finished goods.
- PP meeting with related chinese and BDofficers.

Production

- **Mass production:**
  - Check and evaluate QC process
  - Check and evaluate Production process
  - Ensure that production is following all SOP's

Post-production

- **QA Final Inspection**
  - Final decision on quality is made after final inspection according to AQL.
- **Customer complaints and Action Plan:**
  - Record all customer complaints and share the issues with all departments
  - To control the same issues happen in future, work with PE department to get proper solution.

How can we get the best European quality

Testing & Set up Work Method	Set up quality standard		Manage and set up consistent process	Continuous improvement	
Market sample	PP sample & Go-by sample	IQC	Pilot production	Mass Production	Customer/QA inspection
Detect physical/ process risk	PP Meeting to share customer standard or requirements	Incoming Materials quality control	IQM 5pcs Audit	QCR Andon light QC visual board Rework & Reject system QTF QCC PDCA	Detect/avoid any potential risk products deliver to customer

THE BEST EUROPEAN QUALITY

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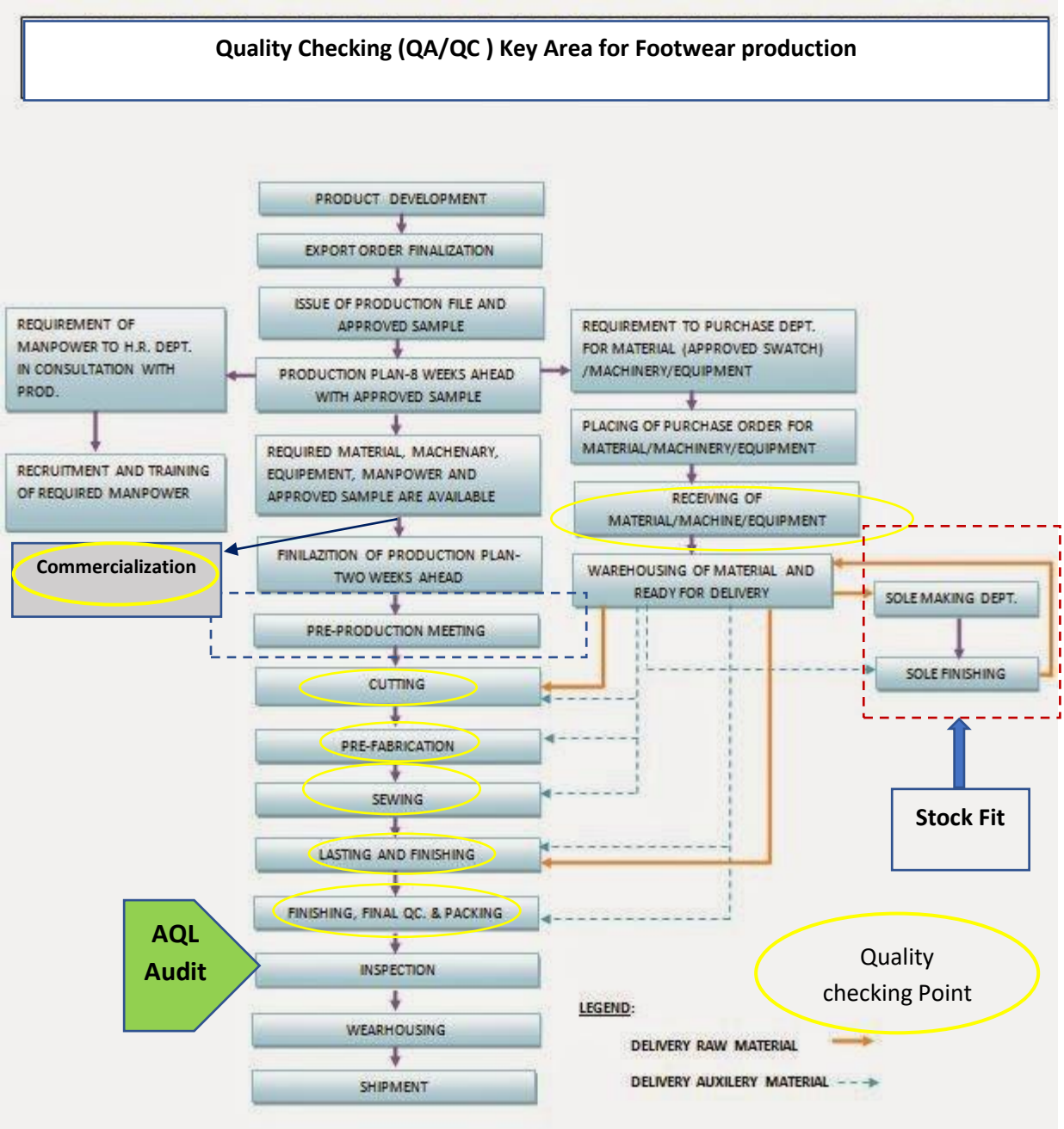
What is a quality inspection?

The term **"inspection"** generally refers to the activity of checking products, whereas "audit" applies to analyzing manufacturing processes and organizations. The quality inspector usually follows a pre-established checklist that is based on the product specifications. Inspected products can be the components used for production, semi-finished goods, or (most often) finished goods before shipment to a customer.

The three most common types of quality inspections

- Pre-production inspection ("initial production inspection")
- During production inspection ("in-line" or "in-process" inspection)
- Final random inspection ("pre-shipment inspection")



QA STANDARD & TOOLS:

Total Quality Management is a set of practices put in place throughout a company that are geared to ensure all process or final products consistently meets or exceeds customer requirements. QA places strong focus on process measurement and controls as means of continuous improvement.

Before new style running, QA members need to follow their standards and tools which are given below

QA Standard (Documents to follow):

- Confirmation sample from buyer (Goby sample, PP sample, other standards)
- Confirmation sample comments
- Trim card
- File information/SOP
- PO sheet

GO-BY & TRIM CARDS

QA General Tools:

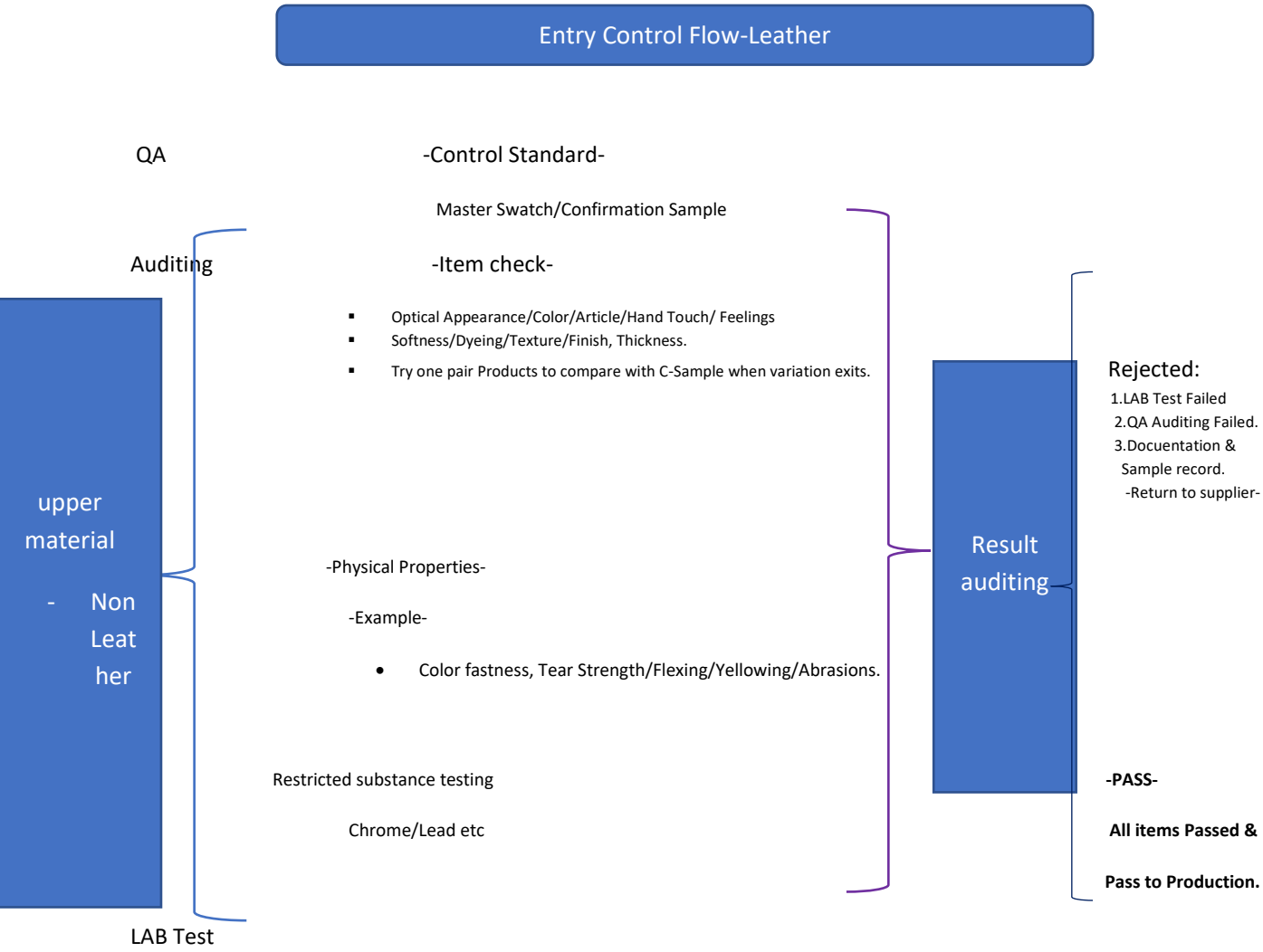
- Camera
- Steel tape/Flexible ruler
- Stitching gauge
- Thickness gauge
- Humidity sensor
- Scissors
- Pen/paper
- Screw driver
- Yellow lock

QA GENERAL TOOLS

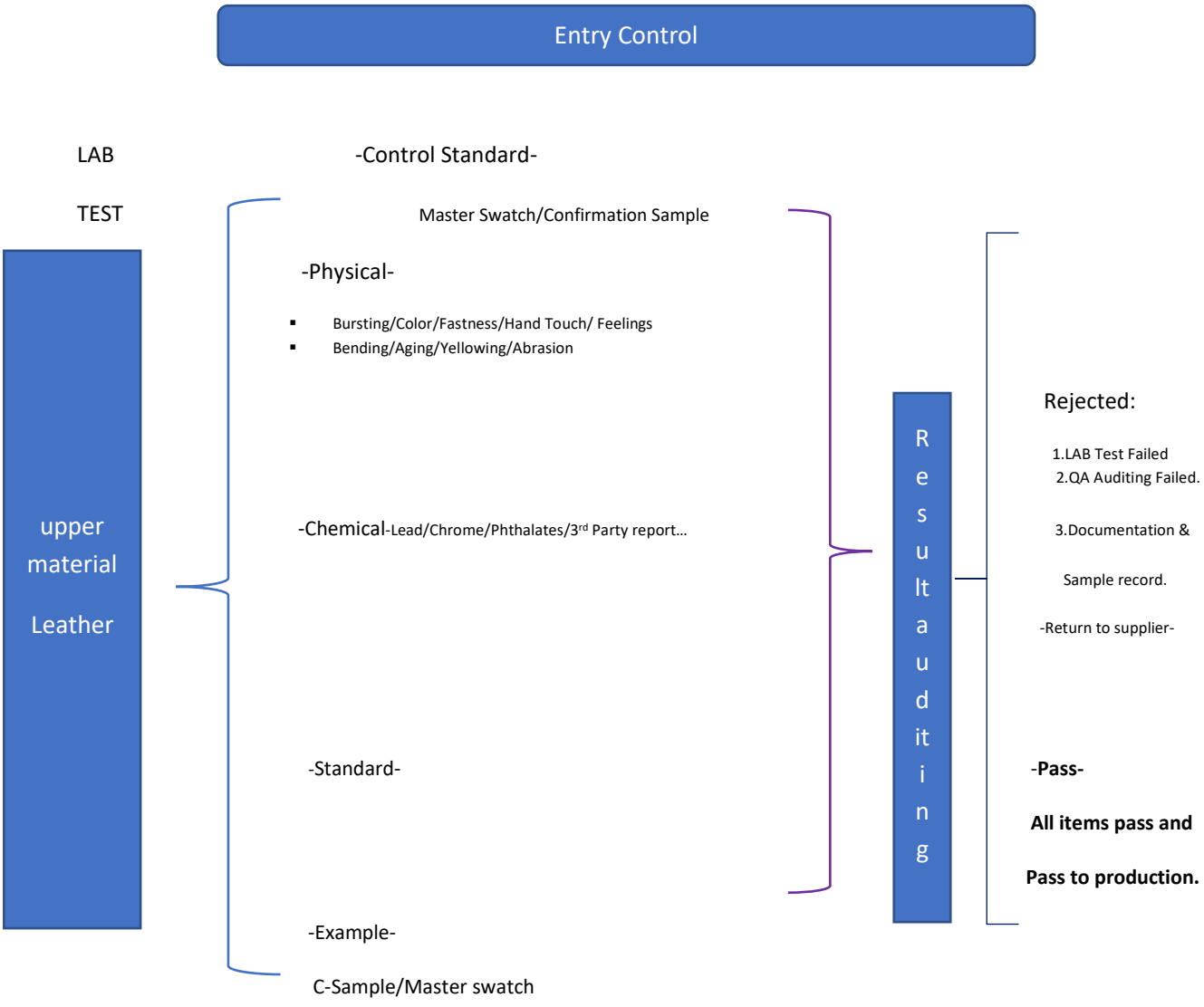
QA DEPARTMENTAL MEETING:

- Pre- Production Quality Meeting (PP Meeting): QC officer need to open PP meeting to all related QC people before bulk cutting in attend of QA. Pass all information from PE and give training on standard to them.
- Internal Quality Meeting (IQM meeting): After pilot production QA team arrange a meeting with QC, production and PE department. In this meeting they discuss with PP sample comments and overall improvement quality issue and production officer, production Supervisor, production Leader, QC officer, QC Supervisor, QC Leader, FQC, IPQC and Lean team will present.
- Pilot Audit (5 Pcs): QA officer should involve in pilot sample making process. Confirm and give clear standard to PE and production
- PDCA Meeting: Find out the top problem issue of last week and analysis the root causes and find out the solution according to the weekly report.QA, QC Chinese officer, QC officer, QC supervisor, QC leader (any 1 person), Production officer, Production Supervisor (any 1 person), Lean team (any 1 person) will present this meeting

Incoming material check/Whorehouse follow up:



Incoming material check/Whorehouse follow up:

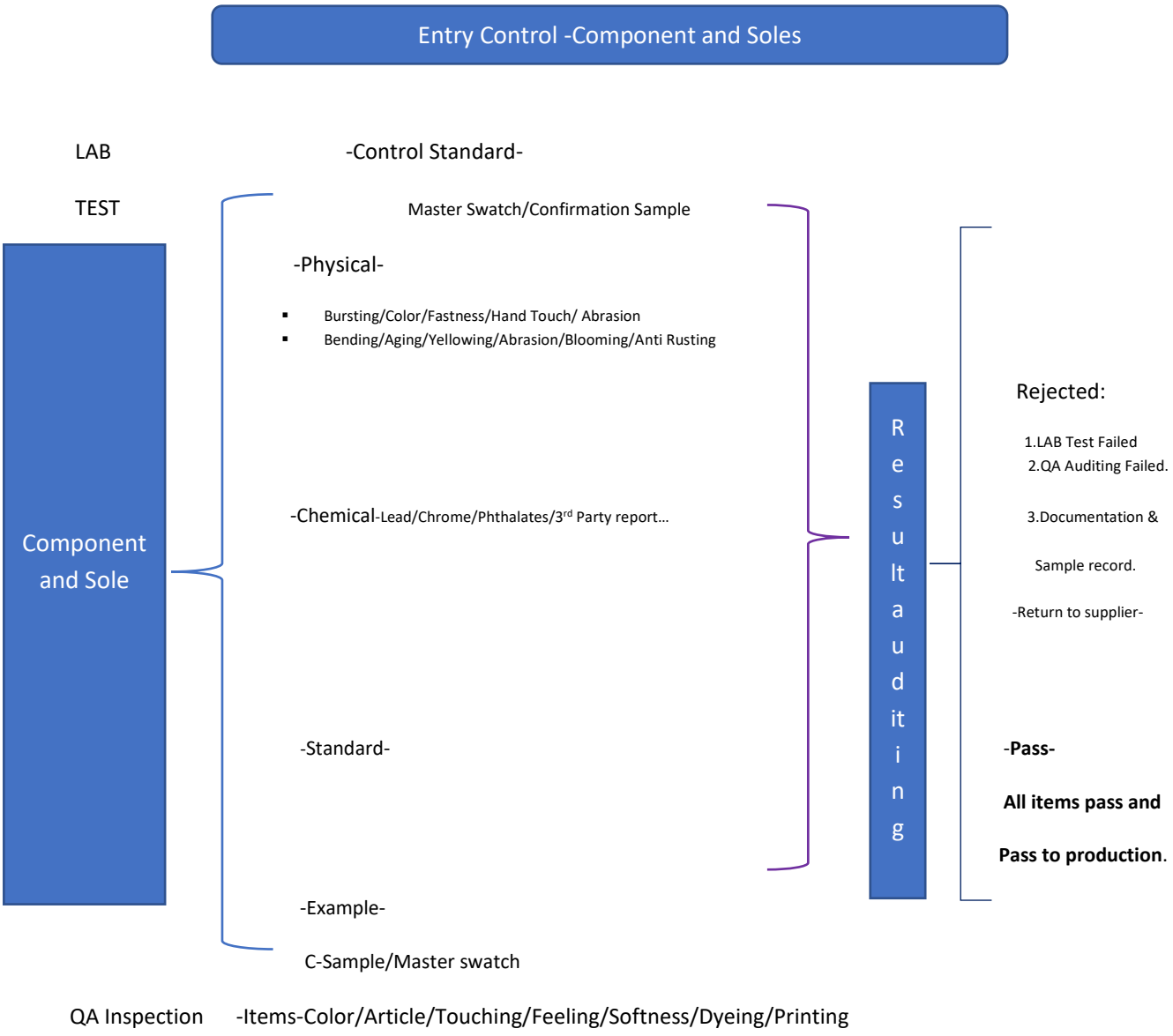


QA Inspection -Items-Color/Article/Touching/Feeling/Softness/Dyeing

Texture/Finish/Thickness etc

-Try one pair products to compare with C-sample when variation exists.

Incoming material check/Whorehouse follow up:



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Texture/Finish/Thickness/logo/edge etc

-SOLE AND MID SOLE BOARDS NEED CHEEKING AGAINST INNER BOARDS

Quality check points for Incoming warehouse material

- **FIFO/LIFO SYSTEM:** FIFO/LIFO System is mandatory to maintain quality of material.
  1.Use monthly color code or Tag
  2.Maintain Pot life and Self life in case of liquid container.

Fig: Not following FIFO/LIFO

Fig: Good FIFO/LIFO system

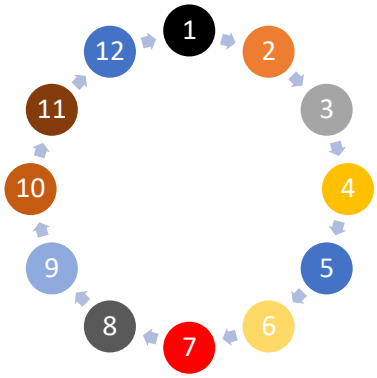

Fig: Monthly color Swatch (12 Months Batch Sequence Circle chart)

1.January	2.February	3.March	4.April	5.May	6.June
7.July	8.August	9.September	10.October	11.November	12.December

- **Humidity Control Management:** Humidity control RH (Tgt<60%) is very important for incoming material as well finish foods storage area. It is required for physically properties maintain/control of the materials. Quality inspector check as regular basis humidity condition of warehouse. It is suggested that use Humidifier machine to control humidity and temperature of the warehouse area.

Fig: Humidifier in Leather W/H

- **Packing Management:** Appropriate packing must be ensured in incoming and finished goods. Special concern on foaming material must covered with black color poly bag to avoid yellow effect. In case of metal hardware must be tie-up with air tight poly bag to control rusting effect.

- **Housekeeping /7 S System Management: :** Regular housekeeping is needed to ensure the floors are clean & dry.
  Quality Manager should arrange weekly basis 7S training program to educate supervisor and operator.

Why it is required?

A clean and tidy workplace leads to greater well-being and increased motivation.

- ❑ Company image improves
- ❑ Health and Safety is ensured
- ❑ Machine maintenance
- ❑ Quality
- ❑ Productivity
- ❑ Lean Manufacturing
- ❑ Results in a place easier to manage
- ❑ Smooth working ⟶ no obstruction
- ❑ Time saving
- ❑ Quick retrieval
- ❑ Accidents & mistakes minimized
- ❑ Increases space
- ❑ Creates workplace ownership

Inline Follow up of Cutting unit

Production QA/QC team are responsible for identify material Cutting defect, check board/die management. During walkthrough bellow mention Quality check point need /suggested to be checked.

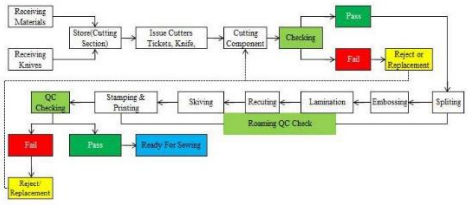

Fig: Cutting and pre-Fabrication Quality Process Inspection

Fig: Cutting department Process inspection

Cutting

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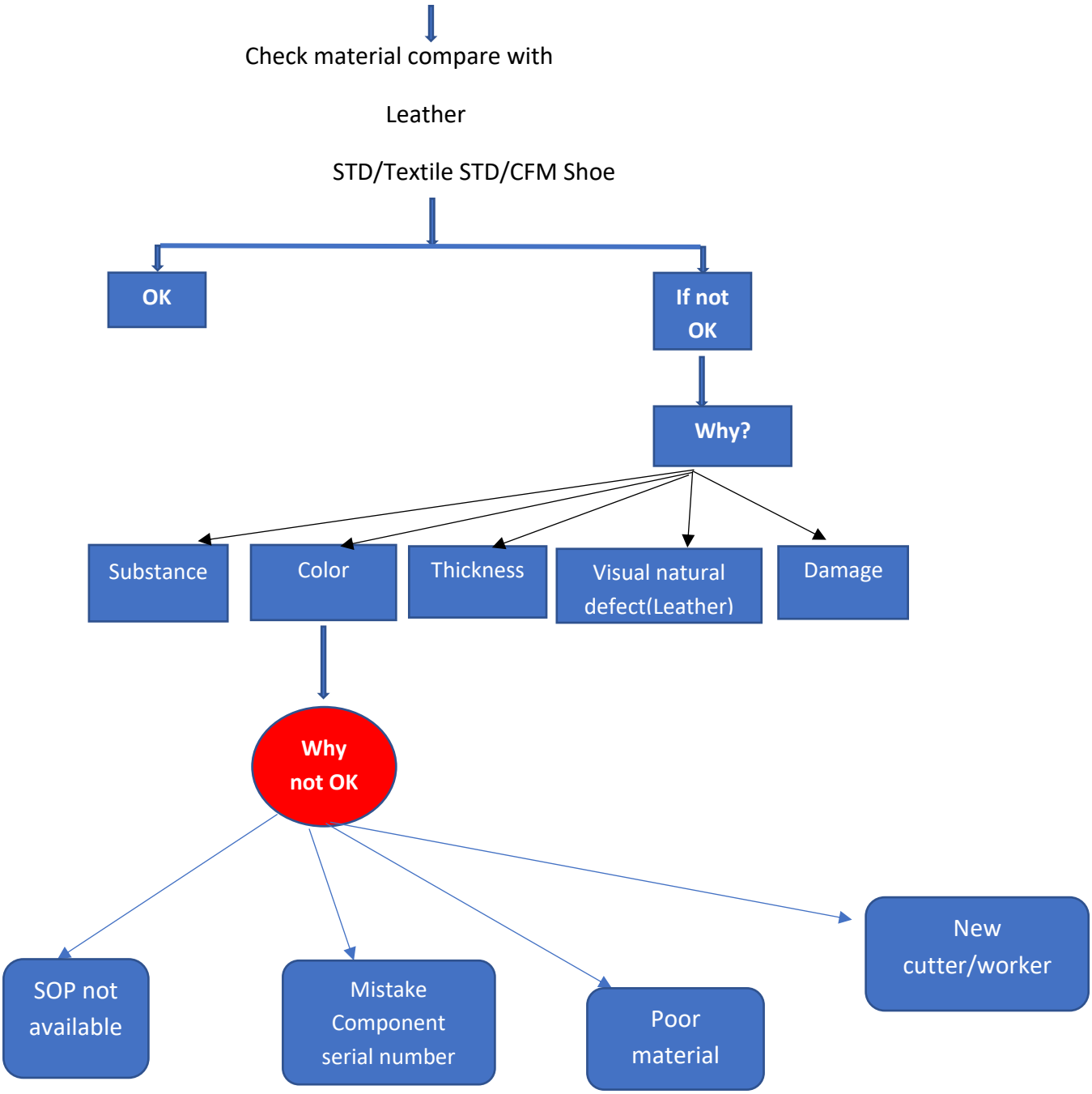

Check material compare with
Leather
STD/Textile STD/CFM Shoe
OK
If not OK
Why?
Substance
Color
Thickness
Visual natural defect(Leather)
Damage
Why not OK
SOP not available
Mistake Component serial number
Poor material
New cutter/worker

Cutting direction of material:

Cutting direction SOP must hang on the cutting machine either it leather material or non-leather material (Textile, lining, foam, thermoplastic etc.)

- **SOP:**

Based on Article visual SOP should be hang on the cutting Machine and language should be easily understandable for worker as well supervisor. Visual SOP from the Operation Manual are to be posted on all relevant Cutting section of the factory floor the product flows through.

- **Cutting board condition:**
  Cutting board need to be even(Smoot) during cutting and QA supervisor hourly basis check cutting board condition if found any distortion immediately sharpening is required.

- **Light intensity:**
  Adequate light intensity is mandatory for cutting unit because it related to worker efficiency and cutting quality. It is recommended to use 650-750 Lux light intensity in cutting area. After completion of 250 to 500 hours uses of light change is required.

- **Cutting board rotation:** If the Standard working is eight hours by this time cutting board rotation four times is recommended (Two hours' time interval). Quality personnel/QA

inspector need to be check it hourly basis. Normally four-color use in cutting board.

Set up Board rotation SOP in cutting table. Curter should follow **COLOR CODE** left hand of cutting board as per time schedule.

Cutting Board Color Code SOP

RED	**YELLOW**	**GREEN**	**BLUE**
8-10 AM	**10-12AM**	**12-2:30 PM**	**2:30-4:30 PM**

- **Cutting die management:**

  1.Cutting die should be placed in EVA padded rack.

  2.Broken knife sharpening is required if damage knife is found in production floor. Observe physically knife is sharp enough or not. **Shininess is not indicated sharpness of knife**.

  3.Cutting board must be drafting two days' time interval.

  4.It is recommended that cutting board thickness not less than 20 mm.

  5.To determine the accuracy of cutting die cutter must check it against pattern paper daily basis. After cutting completion cutting, die must be place on paraffin blocks.

Fig: Conventional knife sharpening

Fig: Standard knife sharpening

Fig: Cutting knife on EVA rack

Fig: Unorganized cutting knife in work place

Fig: Destroyed packaging

Fig: Improper Cutting die management

- **Safety measures for cutting section: PPE (Personal protective equipment)** is required during cutting operations.

1. Always use double push machine

2. Chest guard /Apron is used by operators
3. Use musk and hand gloves
4. Use of cutting knife carefully
5. Be aware during machine is running.
6. Use air plug and hand gloves during cutting board and cutting knife sharpening.

Quality inspector/Auditor follow up overall cutting unit while cutting operation in progress. Daily basis need to arrange Quality meeting with all respective supervisor about defects and its remedial corrective action Plan.

Some examples:

- Cut component check in AQL and find out defects in line.

Quality personnel should have good knowledge on Material cutting (Leather/Synthetic/Thermoplastic).

Check points are…

- Thickness of material.
- Color/Shade.
- Leather grading (As per Standard).
- Leather, lining and reinforcement selection.
- Leather defects

  (Pox marks, vein marks, flay cut, Loose grain, Pin hole, Wrinkle/crease, Growth marks).

- Matching with different parts shoe component (Texture, color etc.)

- Knife selection.
- Cutting machines maintenance record.

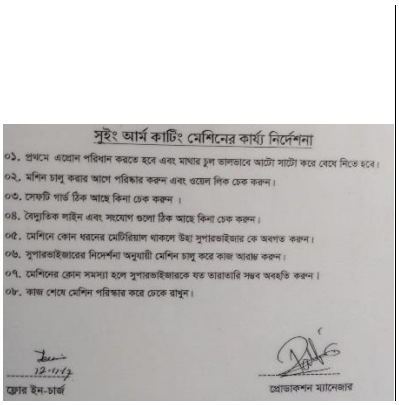
AT A GLANCE, VARIOUS TYPES OF FULL LEATHER GRAIN DEFECTS.

Cutting Inspection table:

- **Adequate light intensity is required in Inspection table around 1000 Lux**
- **STD sample should be kept in inspection table if possible dummy cut component placed in assembly mode.**

Fig: Cut component assembly

- **Visual SOP should be keep in cutting machine**



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- Quality inspector check cutting die condition by pattern paper while walkthrough in line.

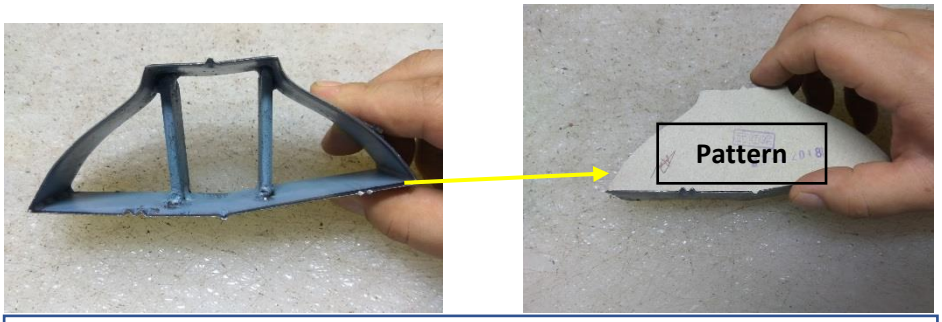


Fig: Knife condition checking by pattern board

- **<u>Cut-Component (pair) serial number should be match.</u>**

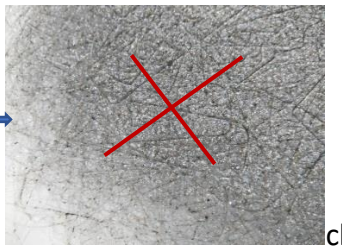
Fig: Serial matching stage(Pair)

- To identify the material defect(Leather) Use appropriate tools, Quality responsible personnel check it on line during walkthrough.

Fig: Manual Leather Pulling Tool

- Cutting board condition

Damage cutting board not suitable for cutting.



check.

Cutting standard photos/ actual sample are in place at each cutting machine.

Actual sample standard should be match with bulk cutting material

Cutting die blades are sharp and maintenanc schedule visible

Process in place to check panels for quality and matching

- **5S/7S Practice:** Regular housekeeping needed to ensure the floors are clean & dry. Quality Manager should arrange weekly basis 5S /7S training program to educate supervisor and operator.

Example: **Bad practice in cutting floor which is not allowed** and strictly prohibited while cutting operation in progress.

Check points:

1. After every cutter.
2. After re-cutting.
3. After completion of the entire prefabrication job before supply to sewing dept.

Documents used:

- Daily Quality Report by individual checker.
- Daily Quality Report recapitulation as per Department.
- Random inspection report.
- Corrective & Preventive action report.

Inline Follow up of Preparation & Stitching unit

Production QA/QC team are responsible for identify preparation and sewing defects. During walkthrough bellow mention Quality check point need /suggested to be checked.

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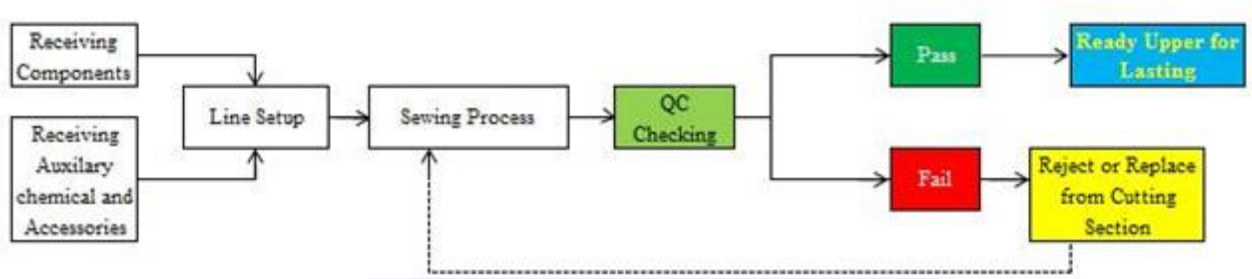


Fig: Sewing Process Inspection

Which points need to know for Skiving / Stitching operator and QA/QC?

Fig: Sewing M/C

Fig: Skiving M/C

Machine and Product knowledge

- Knowledge about different parts of shoe component (Upper, lining, Interlining, backer hardware etc.)
- Machine operation
- Skiving adjustment of the machine

- Pressure adjustment of the machine
- Skiving knife sharpening techniques
- Changing of skiving knife
- Setting knife and roller
- Use PPE during machine is running

Quality check points during skiving and splitting

- Skiving and splitting thickness
- Skiving width
- Leather quality
- Skiving and splitting fault

Inspection Table

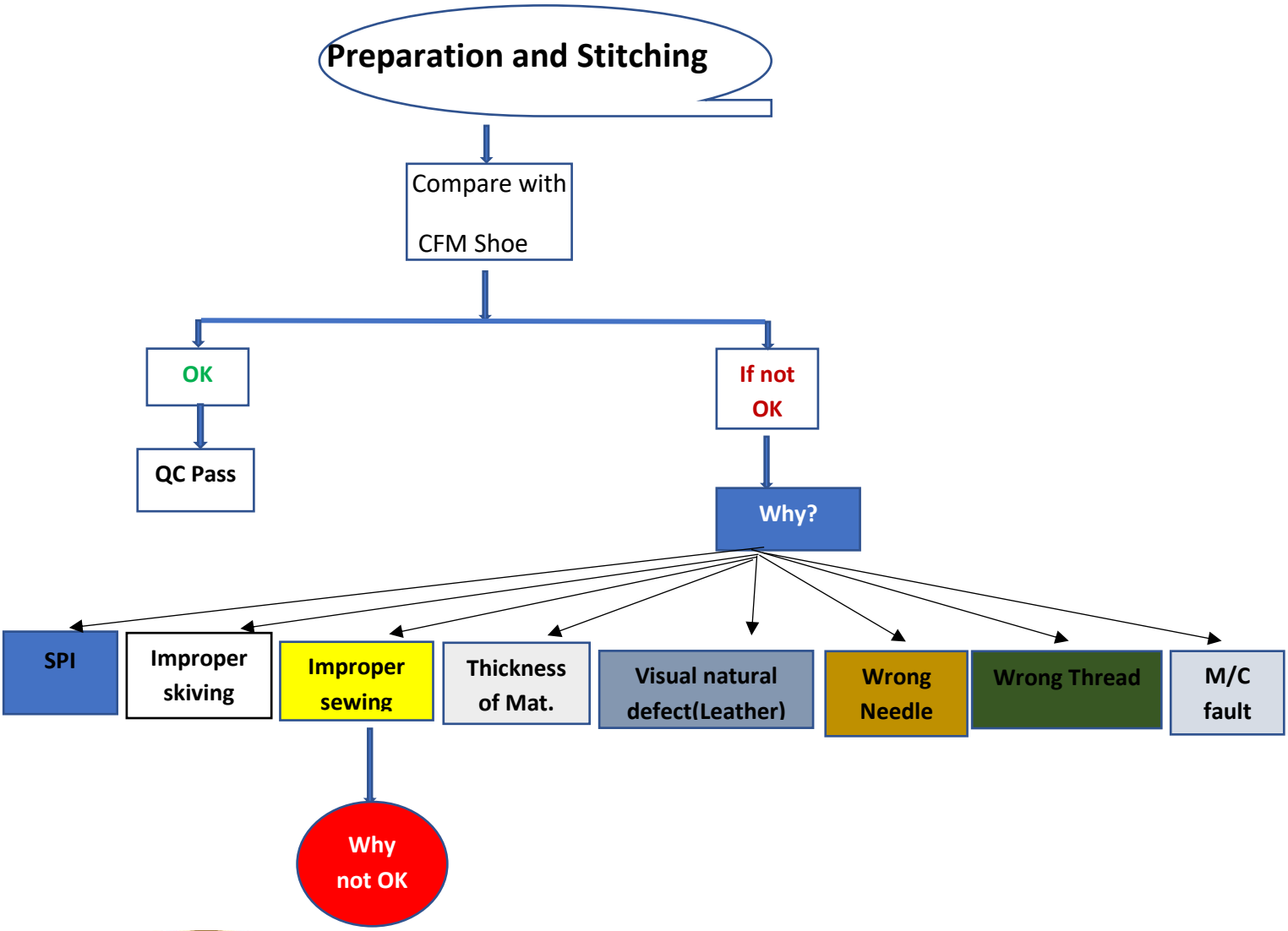
After skiving and splitting different leather parts are checked and counted.

- To check skiving and splitting faults
- To check leather parts with sample shoe and order sheet
- After counting and binding of leather parts and reinforcement, it goes for the table, sewing and color sections with attached number and style number.

Setting and Assembling

Which points need to know for table workers?

- Proper knowledge about different parts of shoe component
- Proper knowledge about sample shoe
- Proper knowledge about scale
- To know about leather defect
- Use of pattern
- To know color matching
- Different parts setting capability
- Folding technique
- Use of both side tape.


Preparation and Stitching
Compare with CFM Shoe
OK
QC Pass
If not OK
Why?
SPI
Improper skiving
Improper sewing
Thickness of Mat.
Visual natural defect(Leather)
Wrong Needle
Wrong Thread
M/C fault
Why not OK

SOP not available

New worker

Fatigue

Inadequate training

- Sample shoes should be present in Production line

Quality responsible personnel check all sewing parameter compare with Sample.

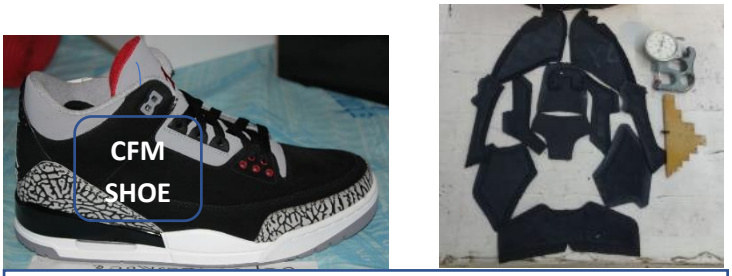


Fig: Sample and upper cut component

- Article relevant each operation SOP is recommended and SOP should be hang on line.

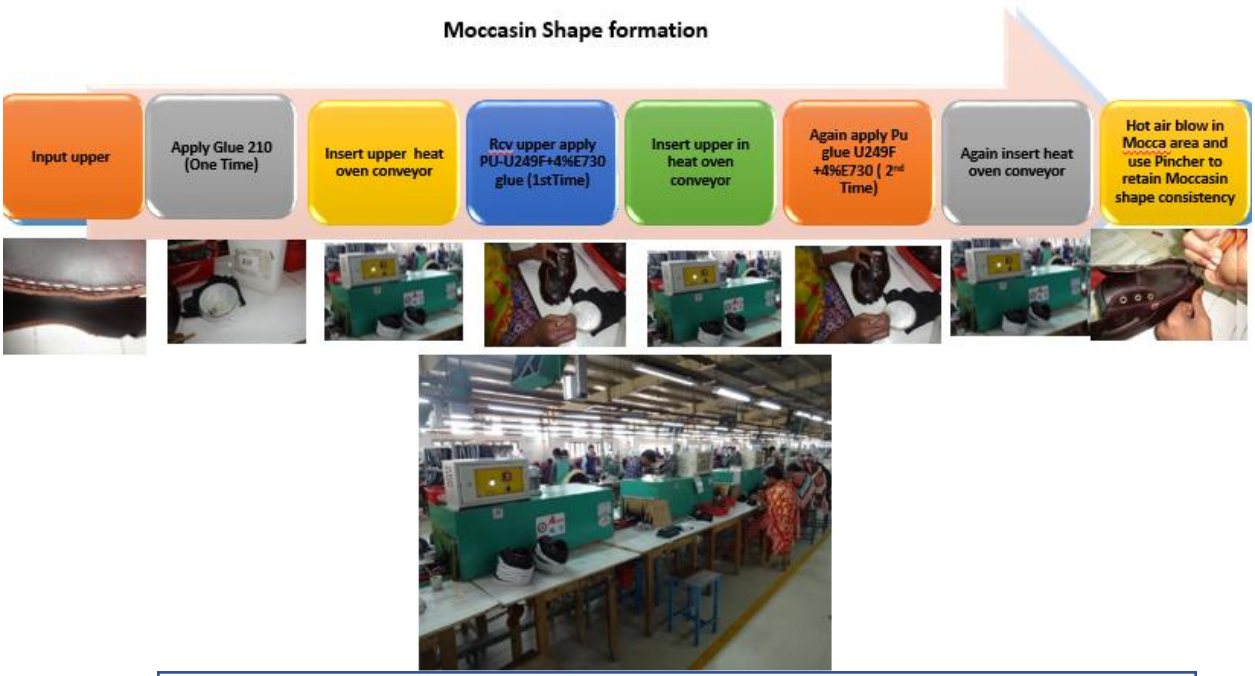


Fig: SOP in Shape forming area

SOP is recommended for skiving /splitting operation.

Fig :Skiving thickness guideline

Thickness & Width Checked as per SOP

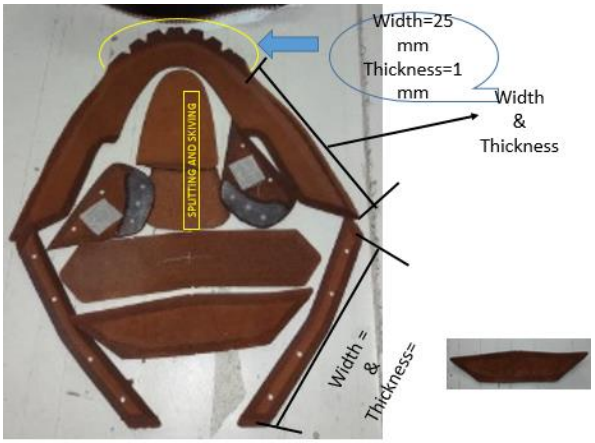
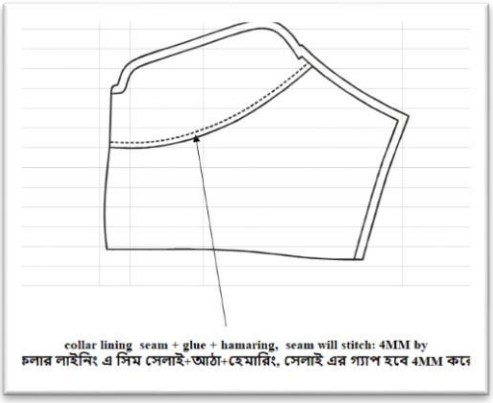
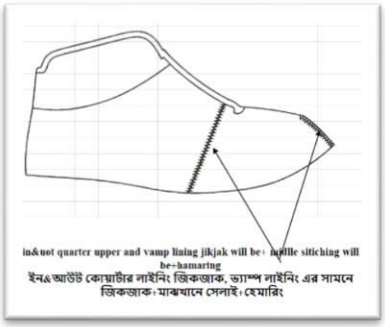


Fig: Full skived Upper

- Specific operation required Specific SOP

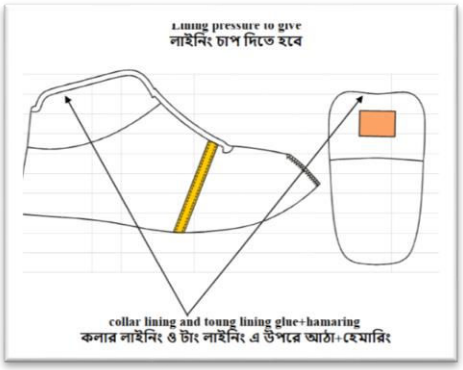
Example: Collar lining seam





Example: Inside and Outside Quarter Zig- Zag Stitching

Example: Collar and Tongue lining gluing and hammering operation



- Screen Print SOP: QAI should check chemical mixing SOP and use appropriate zigs for alignment consistency.



- Component defect checks
  During walkthrough in line quality auditor should check component/ material/identify the defects as per minimum AQL

- Adequate lighting on machine

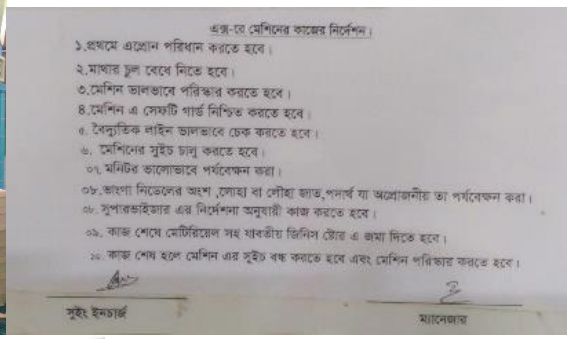
Proper lighting condition can ensure quality work, in case of sewing production floor light intensity should be around 600-700 Lux is recommended. Adequate lighting condition is also necessary in sewing machine to ensure precious stitching quality and avoid concentration break of the worker in workplace.

- Folding tools / eyeleting machine Safety guard check

In Hammering operation hammer, should be tie-up with rope to avoid accidental risk

Remember!

- Metal detector used as per the needle control policy.



Check Stitch per Inch (SPI) as per SOP

Recommendation:

Ready upper must be check in Metal detector machine to identify ferrous component. It is a mandatory requirement!

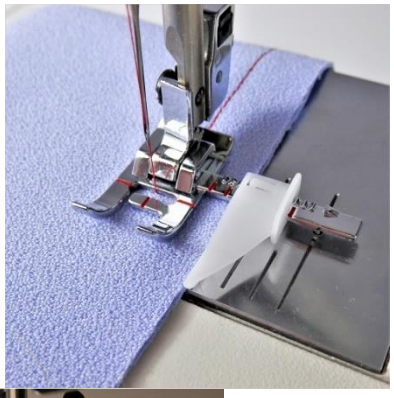
Number of stitch per inch/ as per SOP

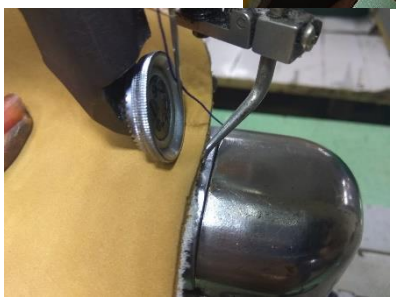
How it could be control?

- **To control SPI thread tension and Needle thread relation should be follow as per SOP.**
- **Operator should hourly check preccrive SPI.**
- **Line supervisor/leader frequently check setting of SPI**
- **Final QC inspector must check SPI**
- **Any critical stitching area such as Curve area Oprerator should stitch by slowing down and carefully.**

Stitching Guide:

To improve quality of stitching consistency, use appropriate stitching guide as possible as.





Customized Stitching guide is used as per material thickness for good quality stitching constancy

Sewing glue/Chemical must have MSDS record on container

Right glue should be applying on right material as per SOP.Is is recommended that all chemical container/pot have right MSDS . Quality line leader/auditor should check in line where chemical is using.

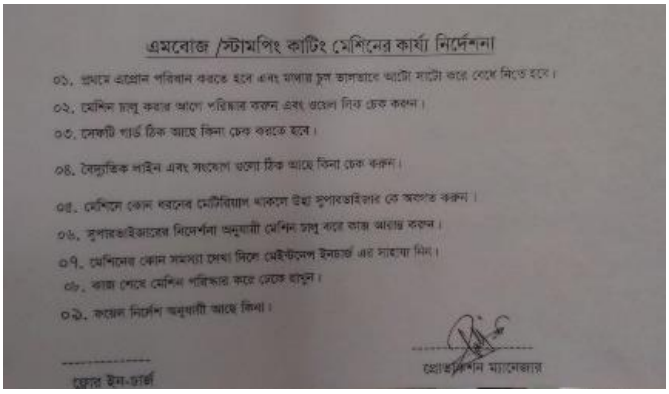
No MSDS used

- Maintain appropriate marking and margin (Consistency)

Stitch Margin from edge

Stitching as per marking

Emboss/Stamping follow up:

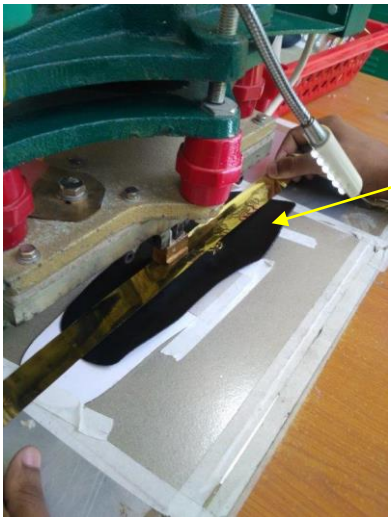


এমবোজ /স্টামপিং কাটিং মেশিনের কার্য্য নির্দেশনা

০১. প্রথমে এপ্রোন পরিধান করতে হবে এবং মাথায় চুল ভালভাবে আটো ম্যাটো করে বেধে নিতে হবে।
০২. মেশিন চালু করার আগে পরিষ্কার করুন এবং ওয়েল লিক চেক করুন।
০৩. সেফটি গার্ড ঠিক আছে কিনা চেক করতে হবে।
০৪. বৈদ্যুতিক লাইন এবং সংযোগ গুলো ঠিক আছে কিনা চেক করুন।
০৫. মেশিনে কোন ধরনের মেটিরিয়াল থাকলে উহা সুপারভাইজার কে অবগত করুন।
০৬. সুপারভাইজারের নির্দেশনা অনুযায়ী মেশিন চালু করে কাজ আরম্ভ করুন।
০৭. মেশিনের কোন সমস্যা দেখা দিলে মেইনটেনেন্স ইনচার্জ এর সাহায্য নিন।
০৮. কাজ শেষে মেশিন পরিষ্কার করে ঢেকে রাখুন।
০৯. কারেন্ট নির্দেশ অনুযায়ী আছে কিনা।

ফোর ইন-চার্জ

প্রোডাকশন ম্যানেজার



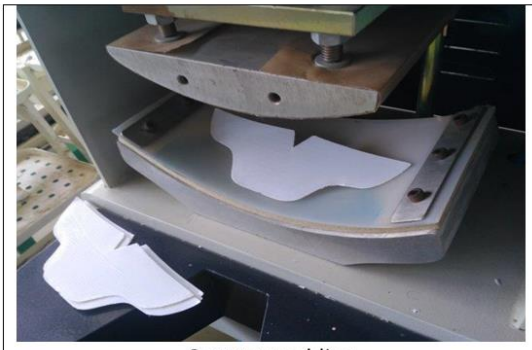
As per SOP Time, Temperature and Pressure(TTP) must be adjusted before

starts the operation.

Foil printing by embossing m/c

Toe Puff and Counter Attatchment:

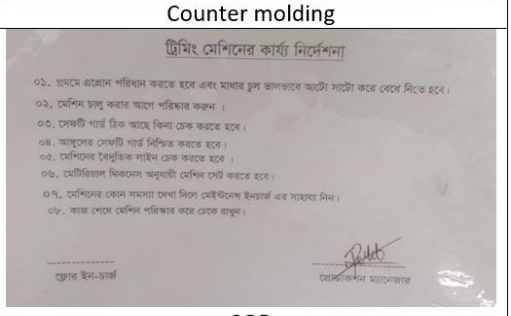
Toe puff and Counter attatchment is a sensitive operation for footwear production .SOP is recommended .Right Time,Temparatutre and Pressure should follow during this operation.



Counter molding

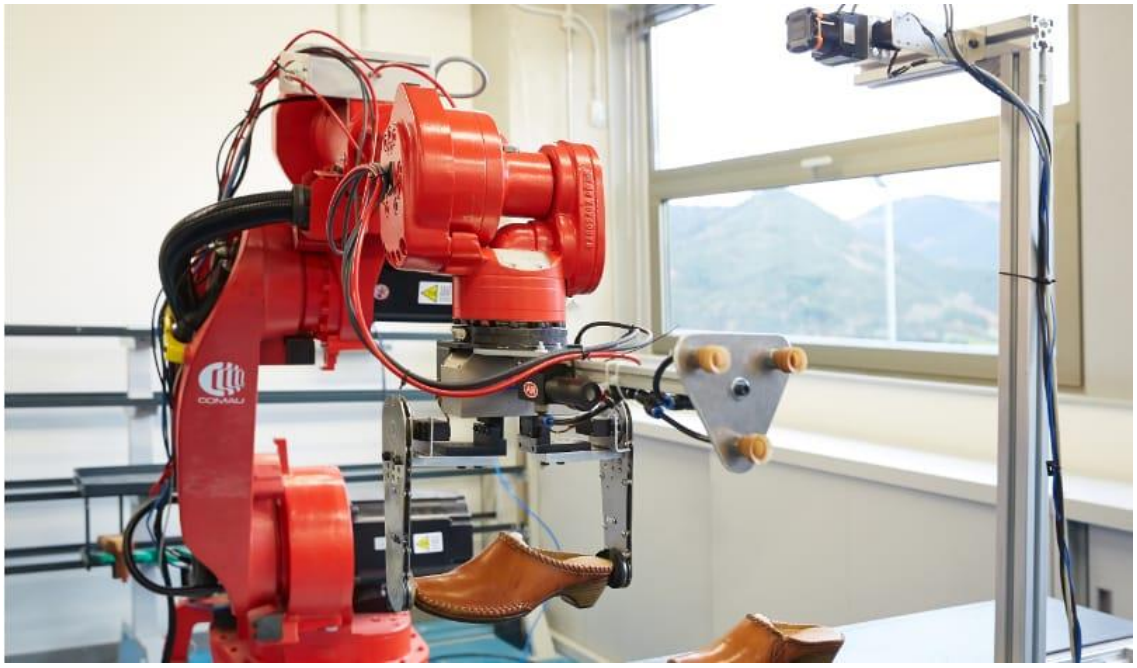
Counter molding

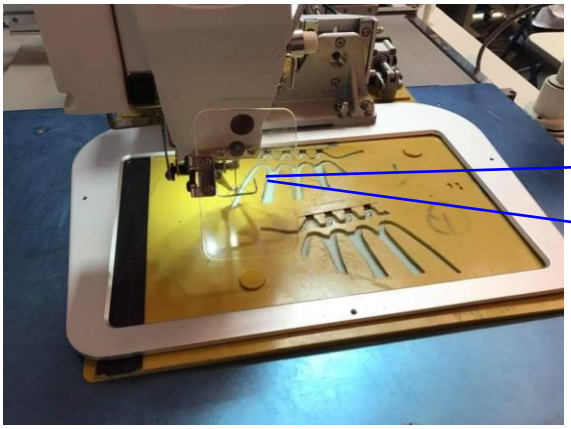
Toe puff setting

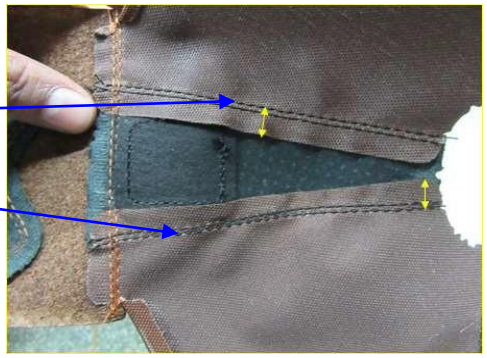


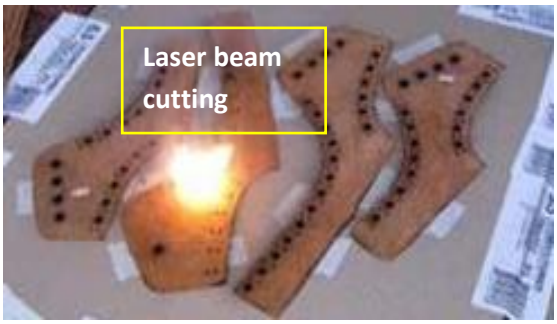
SOP

AUTOMATION:



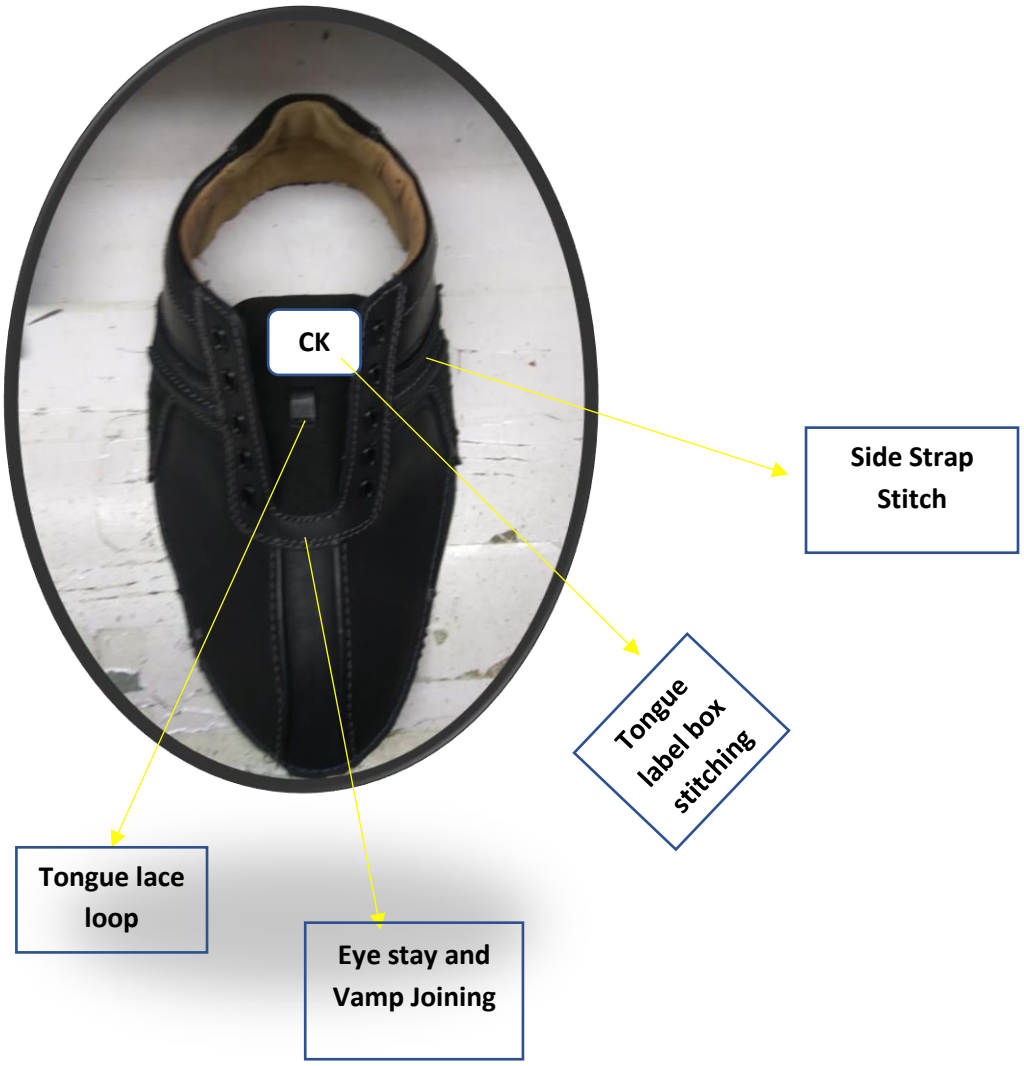






Advantage of Computer Stitch:

- Reduce Marking operation
- Reduce Operator
- More efficiency than Manual stitch
- More Accuracy
- Reduce gluing operation
- Improve productivity
- Improve quality (Less error)


CK
Side Strap Stitch
Tongue label box stitching
Tongue lace loop
Eye stay and Vamp Joining

- Finished upper inspection table

Finished upper check in 100%. Inspection table should have adequate light intensity minimum 600-700 lux/ signed Sample/defect list.

PIC -Finished upper checking mode.

Documents used:

- Daily Quality Report by individual checker.
- Daily Quality Report recapitulation as per Department.
- Random inspection report.
- Corrective & Preventive action report.

Possible defects in sewing department its root cause and Corrective action plan

Case Study #1

Defect: Strap looseness on shoes

Root cause: Not used reinforcement tape while stitching operation.

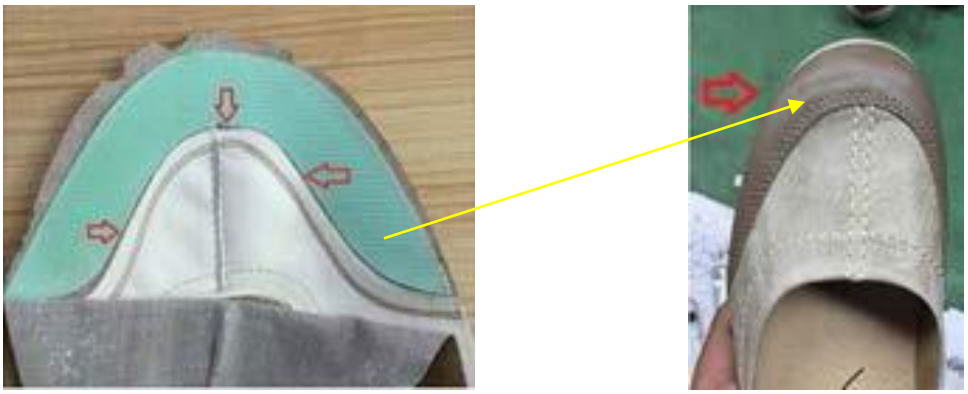
Remedy:

Use non- oven reinforcement tape .

Case Study #2

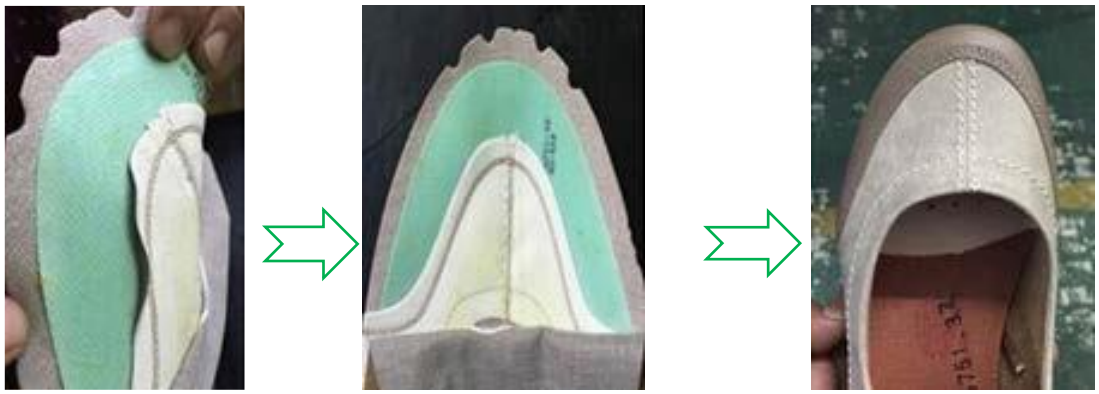
Defect: Wrinkle on Apron

Root cause: Improper Toe-puff attachment. Either not followed notch mark direction or Time, Temperature, Pressure any of while toe puff attached.



Remedy:

Adjust Vamp and apron center line (Follow notch mark). Toe puff attached (Maintain TTP) with vamp with adequate hammering.

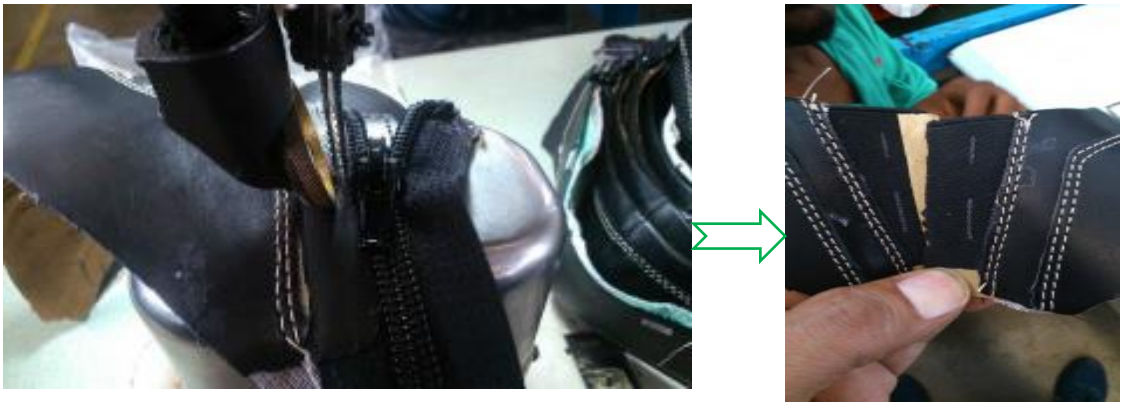


Case Study #3

Defect: Inconstancy of two row stitching

Root cause: Used single needle sewing machine instead of Double Needle M/C.

Remedy: As per SOP use double needle M/C and standardized the stitch allowance.

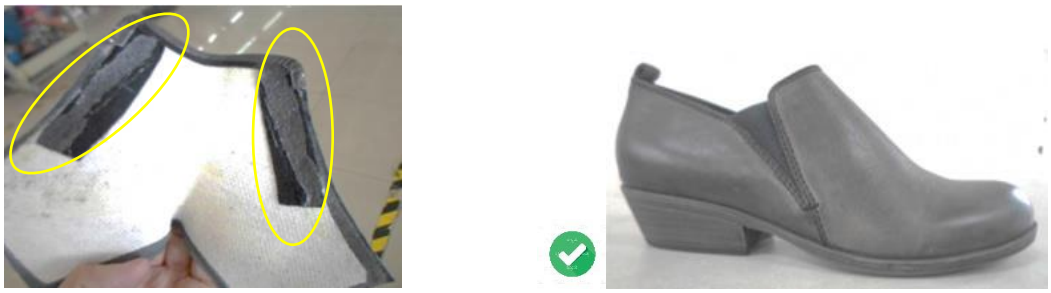


Case Study #4

Defect: Impression on Elastic Tape

Root cause: Reinforcement tape not used in elastic edge.

Remedy: Use approprite reinforcement tape

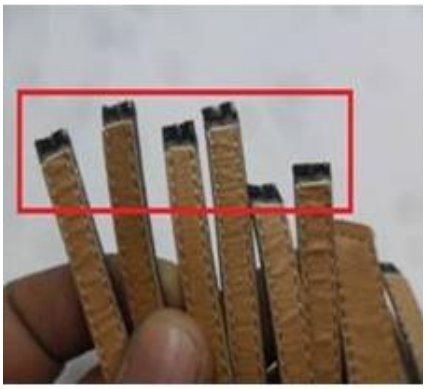


Case Study #5

Defect: Impression on Decorative strap.

Root Cause: Improper or inadequate skiving operation.

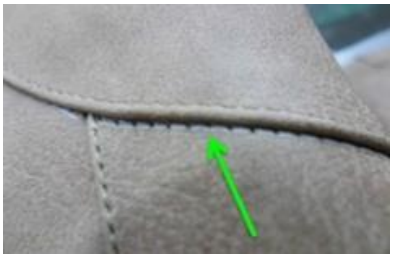
Remedy: Skive 6 mm from the edge. (Underlay skive)



Case Study #6

Defect: Visible needle hole on upper.

Root cause: No reinforcement used in vamp and counter joining during stitching.



Remedy: Use a piece of reinforcement between Vamp and Counter before stitching Or Use full backer on Vamp and counter before stitching.

Case Study #7

Defect: **Poor backstay loop shape**

Root cause: **Suitable reinforcement not used on backstay loop.**

Remedy: Required shape will be outcome if use 0.4 mm thickness leather /Synthetic material as reinforcement.

Case Study #8

Defect: Irregular SPI (Stitch per inch)

Root Cause: Not adjusted stitch length and density on Sewing machine.

Remedy: 1. Adjust machine Stitch length and density as per SOP.

2.Hourly basis QA/QC personnel check SPI by measuring gauge. If found any dissimilarities again check M/C.

Case Study #9

Defect: Uneven of Quarter and eye stay joining area.

Root cause: Inadequate hammering operation or SOP not followed properly.

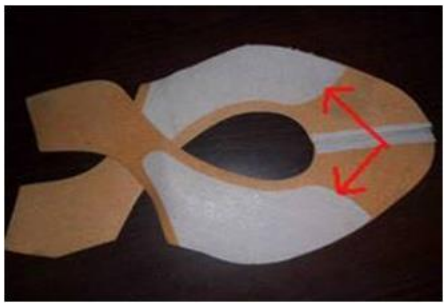
Remedy: Apply vibrating hammering before eyelet attachment.

Case Study #10

Defect: Wrinkle on Lining

Root cause: 1. Inappropriate reinforcement attachment.

Remedy: Use appropriate reinforcement and should be attached uniformly.



Inline Follow up of Assembly unit

Production QA/QC team are responsible for identify assembly defect.During walkthrough bellow mention Quality check point need /suggested to be checked

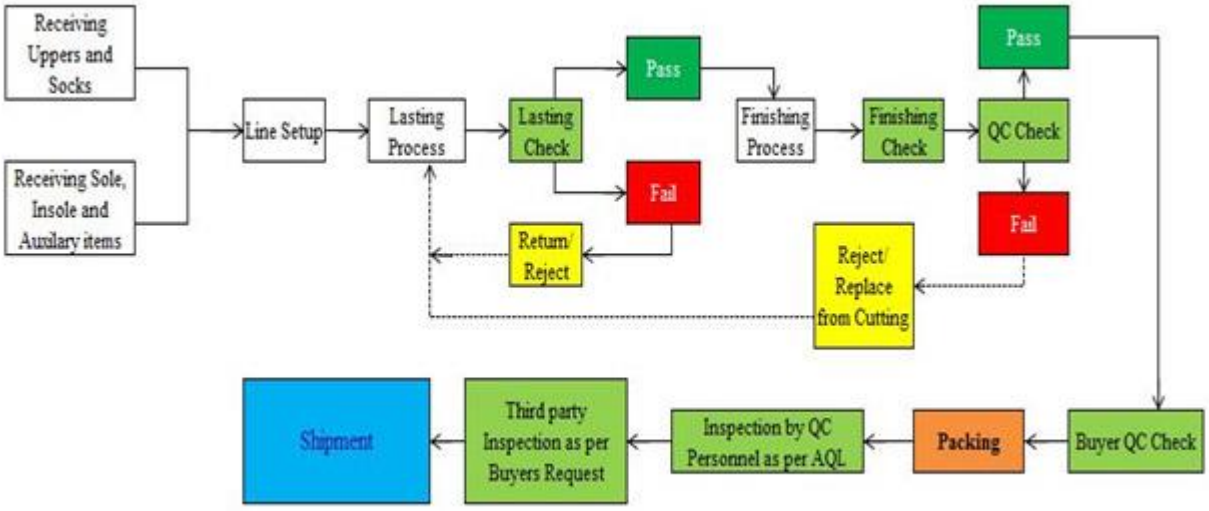
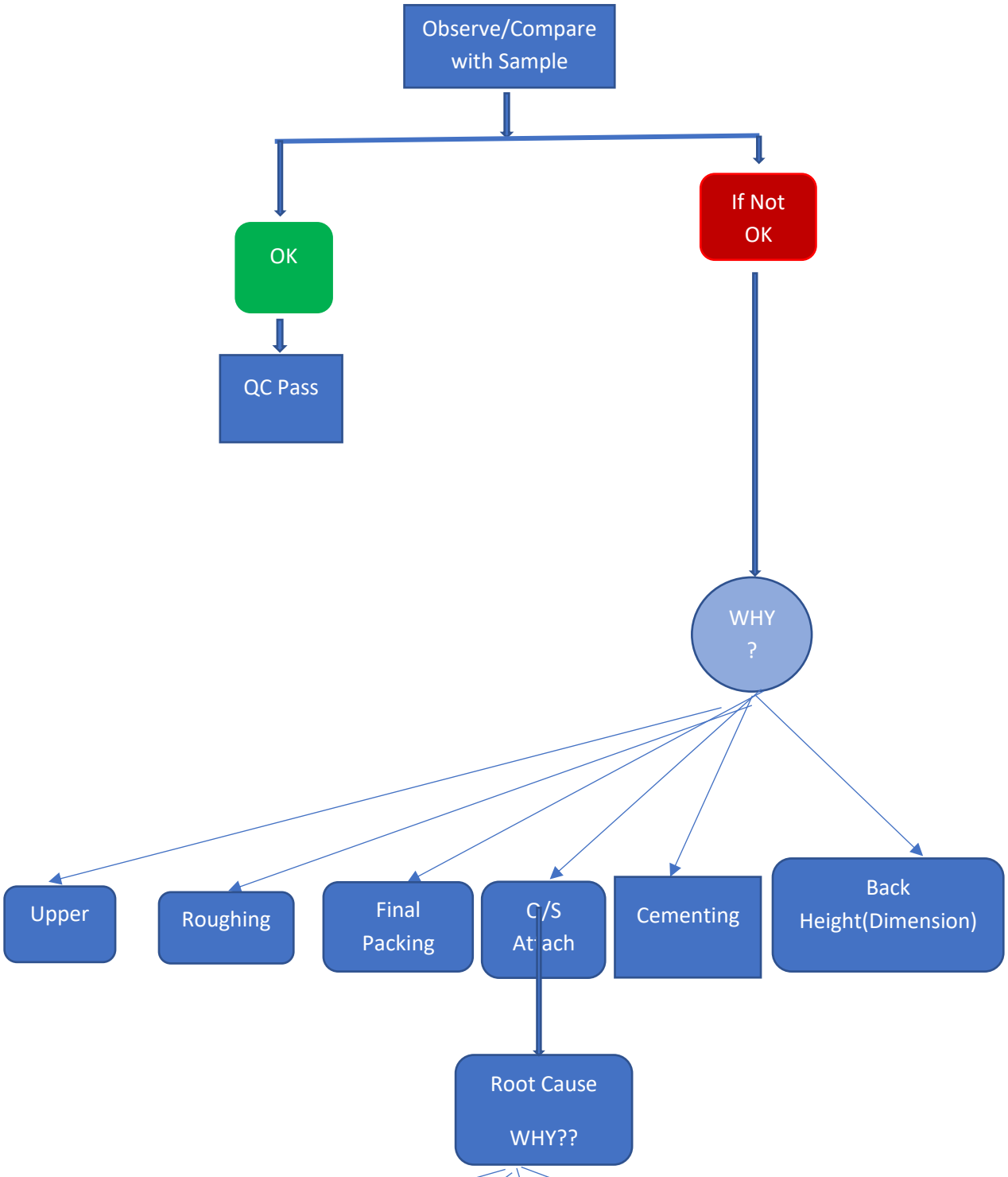
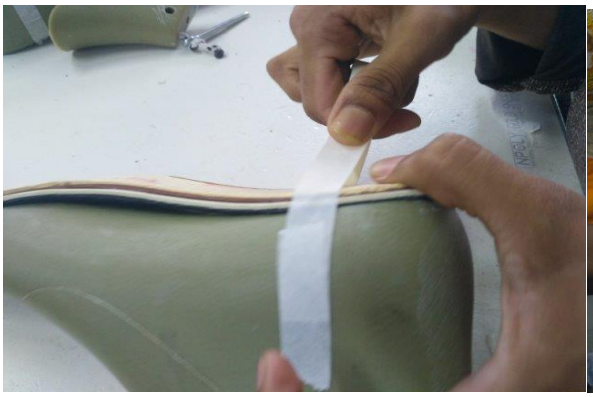


Fig: Process Inspection lasting and finishing

Assembly unit



Lasting insole gluing operating standard



Insole setting with last

Gluing in sole for lasting

Quality check point:

- Brush should be applied clock wise.
- As per SOP apply glue 20MM around the insole.
- Glue pot must be covered.

Lasting upper gluing operating standard

upper gluing in progress

Quality check point:

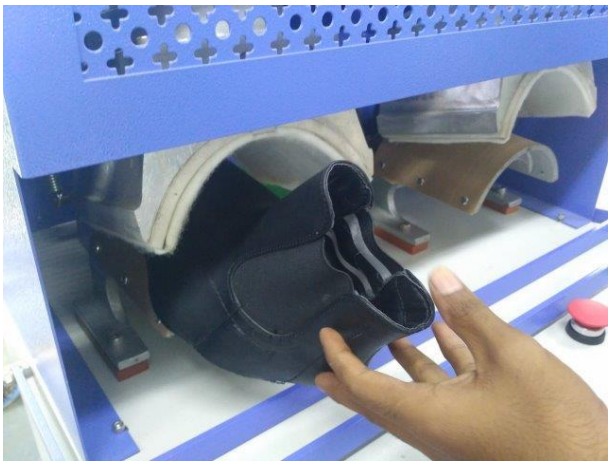
- Brush should be applied clock wise around the upper. Glue should not leak in to heel quarter lining
- As per SOP apply smoothly glue 18MM around the insole.
- Glue pot must be covered.

Upper input Operating standard

Quality check point:

- Input upper by pair serial number.
- Ensure Upper size and pictogram size information same
- Ensure heat chamber temperature match with Spec.

Toe molding operation Standard



Quality check point:

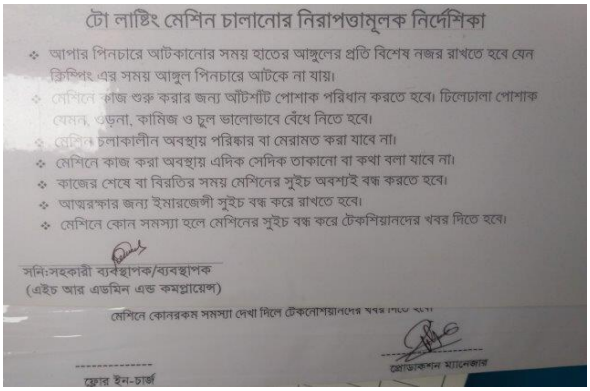
- According to article set up hot and cold mold temperature.
- Toe activation should be follow correct temp.
- Compare under cross light to ensure the straightness between collar and counter.

Counter molding Operating Standard

Quality check point:

- According to article set up hot and cold mold temperature (Follow SOP). Normally used 90 +/- 5 degree centigrade. (Hot mold) and Cold 5 +/- degree centigrade.
- Incorporate mold size range and Upper size range
- Follow pressing time as prescribed. Normally used 30 Second.

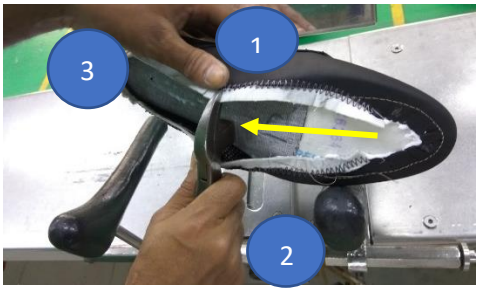
Toe lasting operating standard



Quality check point:

- Place last with upper on last support (insole rest) and insert the upper lasting margin into the toe pincers.
- Check laser beam light straight compare to center line
- Clean the pressing pad (To avoid dirt for light color upper)

Side lasting operating standard



Quality check point

- Manual Pulling starts from Inside
- Uniformly pull as per SOP (Margin line)
- Vacuum Place is not allowed after lasting.

Heel lasting operating standard

Hot airing for softening

Heel Lasting

Quality check point:

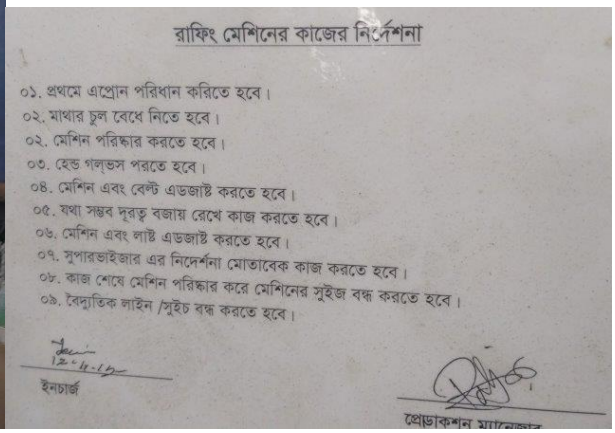
- Follow heel band match with last
- Check last size and Upper side
- Check load is uniformly distribution or not.

Back height operating standard

Quality check point:

- Back height should be as per size range (Follow tech sheet)
- Follow back height pin mark on Last as per SOP.
- Follow corrects jigs/template to maintain correct B/P molding marking area

Roughing Operating Standard



রাফিং মেশিনের কাজের নির্দেশনা

০১. প্রথমে এপ্রোন পরিধান করিতে হবে।
০২. মাথার চুল বেধে নিতে হবে।
০২. মেশিন পরিষ্কার করতে হবে।
০৩. হেড গলভস পরতে হবে।
০৪. মেশিন এবং বেল্ট এডজাষ্ট করতে হবে।
০৫. যথা সম্ভব দুরত্ব বজায় রেখে কাজ করতে হবে।
০৬. মেশিন এবং লাষ্ট এডজাষ্ট করতে হবে।
০৭. সুপারভাইজার এর নিদের্শনা মোতাবেক কাজ করতে হবে।
০৮. কাজ শেষে মেশিন পরিষ্কার করে মেশিনের সুইজ বন্ধ করতে হবে।
০৯. বৈদ্যুতিক লাইন /সুইচ বন্ধ করতে হবে।

ইনচার্জ

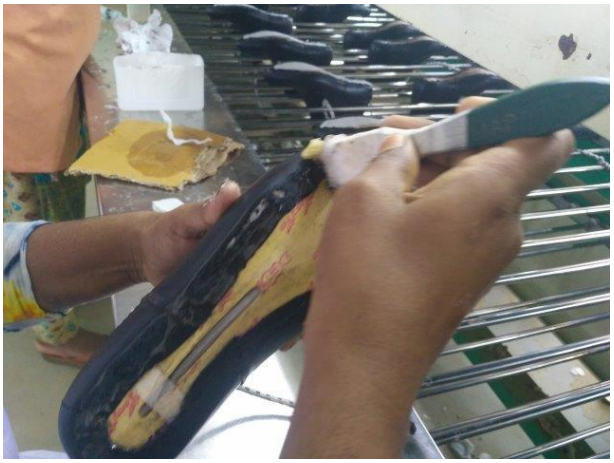
প্রোডাকশন ম্যানেজার

Quality check point:

- Before grinding, hold the shoe and check if the glued and attached edge crazes or not.
- Use emery paper as per SOP
- Check adequate roughing and avoid excessive roughing
- Carefully handle featheredge roughing and change the roughing wheel two hours' time interval -follow SOP
- Check uniformity of roughing surface.

Priming and Gluing Operating Standard

Sole priming



Gluing for sole attaching

Gluing applying on O/S

Input through heat reactivator for sole attaching

Quality check point:

- Apply two times priming and gluing operation
- Follow Upper and Bottom temperature as per SOP.
- Use brush rotation System and maintain it two hours' time interval
- Check MSDS in gluing and Priming pot.
- Every two hours check Conveyor Temperature
- Check primer /glue /hardener ratio that meet as per SOP

Brush and POT Rotation SOP

RED (Pot & Brush)	YELLOW (Pot &Brush)	GREEN (Pot &Brush)	BLUE (Pot &Brush)
8-10 AM	10-12AM	12-2:30 PM	2:30-4:30 PM

Sole laying manually

Hydraulic sole pressing

Quality check point:

- Adjust M/C load as per SOP.
- Check Carbon paper test to determine uniform distribution of load.
- Check load in Kg (Normally 35-40 kg horizontal and Vertical depending on outsole characteristic)
- Every 4 hours' time interval check carbon paper pressing test.

Chiller M/C


Quality check point:

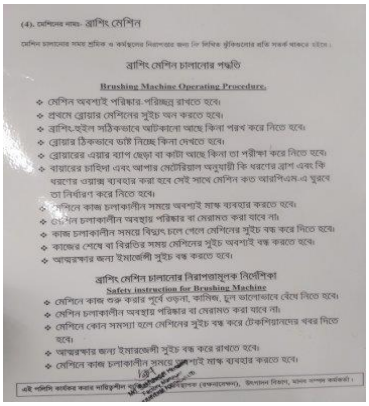
- Check M/C Temp. is +/_ 5-degree centigrade
- Conveyor passing time Follow SOP (3-5 Minutes)

Un-Lasting

Quality check points:

- Carefully un last the upper to avoid wrinkle on instep point.



ব্রাশিং মেশিন চালানোর পদ্ধতি

Brushing Machine Operating Procedure.

- মেশিন অবশ্যই পরিষ্কার পরিচ্ছন্ন রাখতে হবে।
- প্রথমে ব্রোয়ার মেশিনের সুইচ অন করতে হবে।
- ব্রাশিং-হুইল সঠিকভাবে আটকানো আছে কিনা পরখ করে নিতে হবে।
- ব্রোয়ার ঠিকভাবে ডাষ্ট নিচ্ছে কিনা দেখতে হবে।
- ব্রোয়ারের এয়ার ব্যাগ ছেড়া বা কাটা আছে কিনা তা পরীক্ষা করে নিতে হবে।
- বায়ারের চাহিদা এবং আপার মেটেরিয়াল অনুযায়ী কি ধরণের ব্রাশ এবং কি ধরণের ওয়াক্স ব্যবহার করা হবে সেই সাথে মেশিন কত আরপিএম-এ ঘুরবে তা নির্ধারণ করে নিতে হবে।
- মেশিনে কাজ চলাকালীন সময়ে অবশ্যই মাস্ক ব্যবহার করতে হবে।
- মেশিন চলাকালীন অবস্থায় পরিষ্কার বা মেরামত করা যাবে না।
- কাজ চলাকালীন সময়ে বিদ্যুৎ চলে গেলে মেশিনের সুইচ বন্ধ করে দিতে হবে।
- কাজের শেষে বা বিরতির সময় মেশিনের সুইচ অবশ্যই বন্ধ করতে হবে।
- আত্মরক্ষার জন্য ইমার্জেন্সী সুইচ বন্ধ করতে হবে।

ব্রাশিং মেশিন চালানোর নিরাপত্তামূলক নির্দেশিকা

Safety instruction for Brushing Machine

- মেশিনে কাজ শুরু করার পূর্বে ওড়না, কামিজ, চুল ভালোভাবে বেঁধে নিতে হবে।
- মেশিন চলাকালীন অবস্থায় পরিষ্কার বা মেরামত করা যাবে না।
- মেশিনে কোন সমস্যা হলে মেশিনের সুইচ বন্ধ করে টেকনিশিয়ানদের খবর দিতে হবে।
- আত্মরক্ষার জন্য ইমারজেন্সী সুইচ বন্ধ করে রাখতে হবে।
- মেশিনে কাজ চলাকালীন সময়ে [illegible] মাস্ক ব্যবহার করতে হবে।

Brushing M/C operating SOP

- Carefully insert footed and check size match with shoe.
- Follow SOP for creaming ops.
- Check and adjust brushing wheal RPM as per SOP.



Quality key points:

- Check box size and shoe size similarity.
- Check UPC label clearly legible and scannable.
- Check shoe staffing inserting properly or not.
- Check shoe packing process meets as per customer requirement.

- Check Box ratio.
- Check destination wise any care card/ sticker/Leather crocking card required or not.

Overall Check points:

- After lasting
- After buffing
- After un-lasting
- After finishing on quality table
- Roaming check by quality supervisor.

Documents used:

- Daily Quality Report by individual checker.
- Daily Quality Report recapitulation as per Department.
- Random inspection report.
- Corrective & Preventive action report.
- Daily Process parameter test report.

Some discussion about Shoe defects and its <u>Root cause, Remedy and Corrective action plan</u> against defects:

<u>1.Poorly repair of Shoe:</u>

<u>Root cause:</u> Badly repair of shoe in Footwear industry is a very common bad practice we observed. Lack of skill manpower is an impact factor of it. Some of reason regarding on this issue can be consider as….

1.Very poor knowledge about shoe repair.

2.Unskill worker involve.

3.Lack of awareness during repair.

4.Inadequate training about shoe repair.

5.Inapproprite tools /method used during repair.

<u>Remedy and Corrective Action:</u>

1.Use correct tools and method while repair.

2.Arrange training program and involve repairing personnel.

3.Only very skill repair person need to involve.

4.Create/grow awareness in to the operator.

2.Color Variation:

Root cause: Color variation of shoe is a very common issue for shoe production but when it doesn't match pair by pair becomes Major defect. Customer dissatisfies on this. Some of reason regarding on this issue can be consider as….

1.Cutter /final cutting QC can't detect color variance of different part of shoe component.

2.Serial number mistake on cutting/stitching and assembly stage.

3.Poor color sense of operator.

4.Finisher color identification error.

5.Improper light intensity in production floor.

Remedy and Corrective Action:

1.Enhance color sense of supervisor/Operator/Material cutter.

2.Involve strong QC in component serial number inputter.

3.Check in line component serial number match by pair.

4.Educate shoe finishing operator about color sense.

5.Ensure light intensity inline around 650 to 1000 Lux.

3.Poor quality Material Used (Leather/non- leather):

Root cause: Very poor-quality material used in footwear production which is not acceptable it may leather/non- leather/soling component/hardware/foot bed/sock liner/lining and so on. Some of reason regarding on this issue can be consider as….

1.Incoming material not tested (Lab test).

2.In case of leather accept poor quality Leather (Not followed SATRA grading system).

3.Accept Quality failure hardware/soling material/textile etc.

Remedy and Corrective Action:

1.All material should be pass lab test and its standard must meet as per customer requirements.

2.Factory should ensure it before starts the production.

4.Raughing:

Root cause: Roughing defect can be occurred in three ways inadequate roughing, excessive roughing and over roughing.

1.Unskill worker involve in roughing operation.

2.Used wrong emery grade paper.

3.As per SOP Roughing wheel not change.

Remedy and Corrective Action:

1.Trained the worker how to operate roughing operation.

2.Adjust roughing wheel and sand paper as per SOP.

5.Cleanliness:

Root cause: Stain /cement/chalk mark/pen mark found in shoe in every number of quantity**.** In that case many minor issue becomes major quality problem.

1.Lack of awareness of worker/supervisor/operator.

2.Not used hand gloves during production.

3.Dirty last used.

4.Improper method use during gluing operation.

5.Not follow 6S.

Remedy and Corrective Action:

1.Trained / Create awareness in to production people about adverse impact on Stain /cement/chalk mark/pen mark on shoe.

2.Follow 6S and used hand gloves.

3.Apply right glue applying method.

6.Back height:

Root cause: This is a common major quality problem during shoe production. Some of reason regarding on this issue can be consider as….

1.Not followed last pin mark during production.

2.QC not followed last Pin mark after lasting.

3.Pair serial number breakdown during production.

Remedy and Corrective Action:

1.Do lasting as per Pin mark.

2.Line QC must check back height after lasting.

END