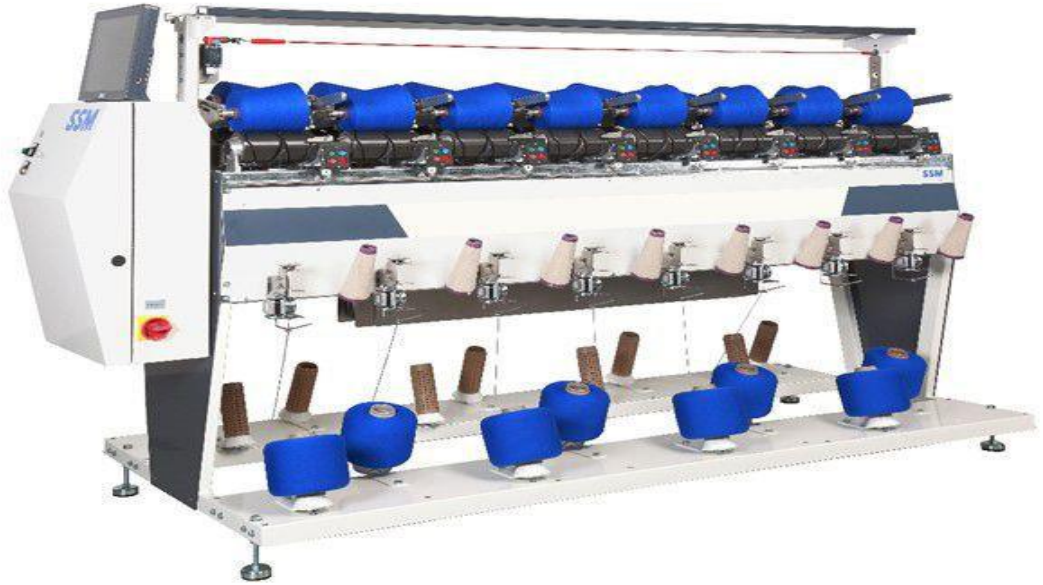
Quality Control
in
Fabric Manufacturing

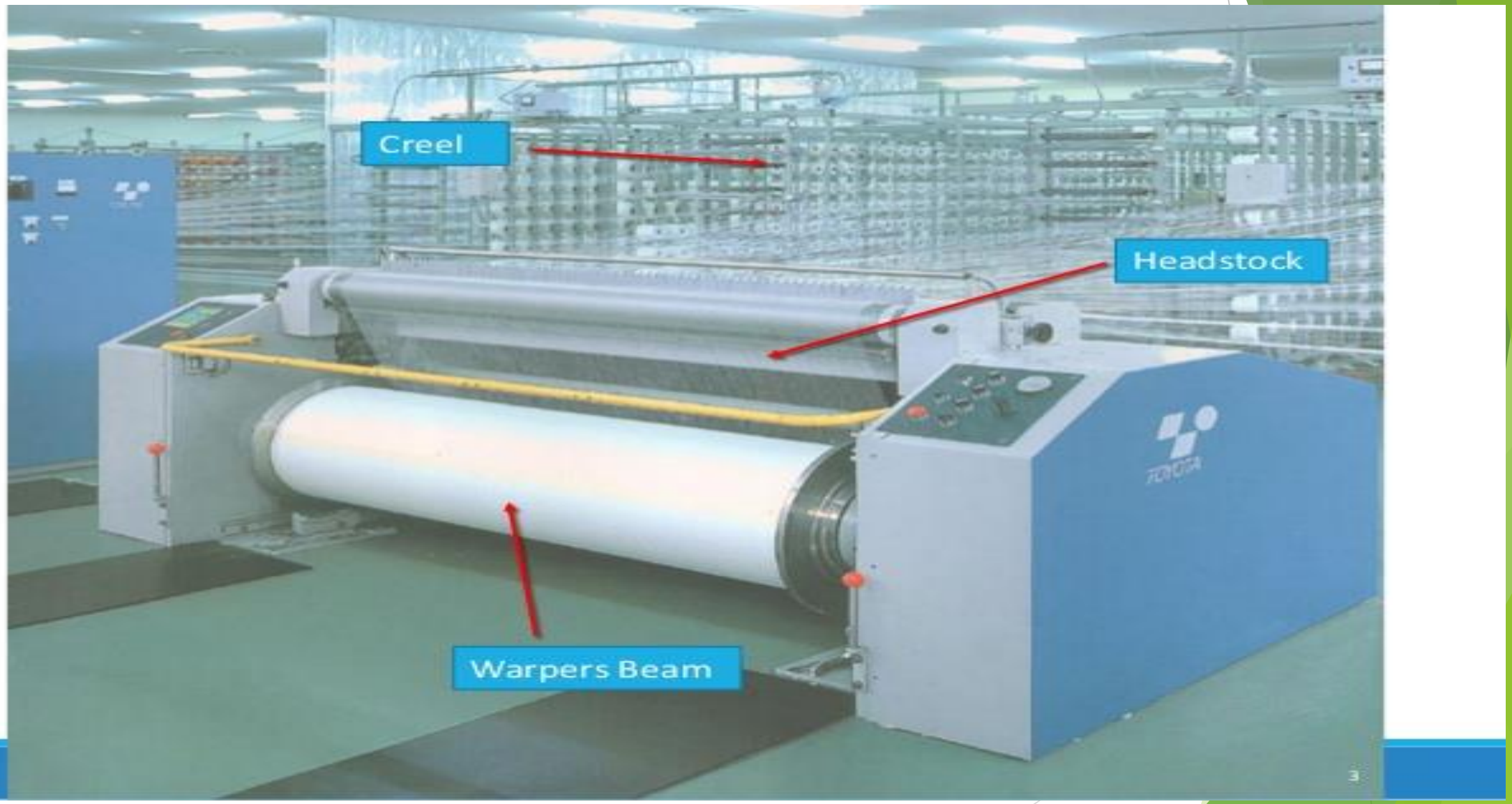
WINDING

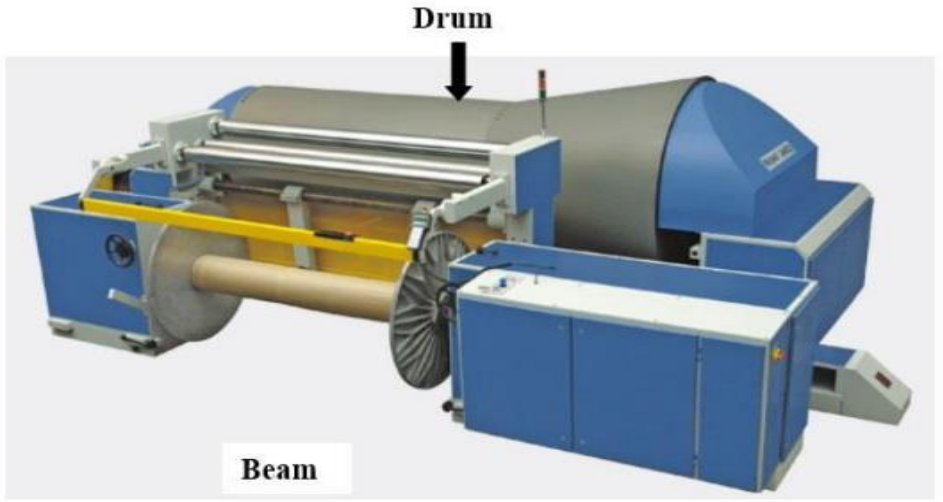


Points to be maintained for quality winding

- Appropriate **winding tension**
- **Free from** different **count mixing**
- Winding machine should be **free from mechanical fault** (Exap-Free from defective traversing motion, fault free yarn guide)
- The **knots & splices** must have sufficient **strength and stability**.
- Winding should be carried out at **high speed in order to get high productivity**. At high speed less time & auto coner will be required.

WARPING




Drum
Beam

Factors affecting the quality of warping

- **Condition of the beam flange:**

Problem: If the **beam flange get damaged** then **unwinding** at the two edges will **not be satisfactory.** There will also be **problem in sizing and weaving**. Beam flange get damaged due to **improper handling and improper storage**.

Solution: **Repairment** should be done on a **regular basis.**

- **Stop motion:**

Problem: Stop motion should be capable of **stopping the machine immediately after any end break.** Sometimes **flying dust and tufts gets stuck in the stop motion** so that the machine does not stop even after any end break.

Solution: **Creel fans should work properly.**

- **Beam barrel diameter:** **Smaller dia** gives **high unwinding tension** during sizing, though it can **accommodate more yarns**.

Continued…

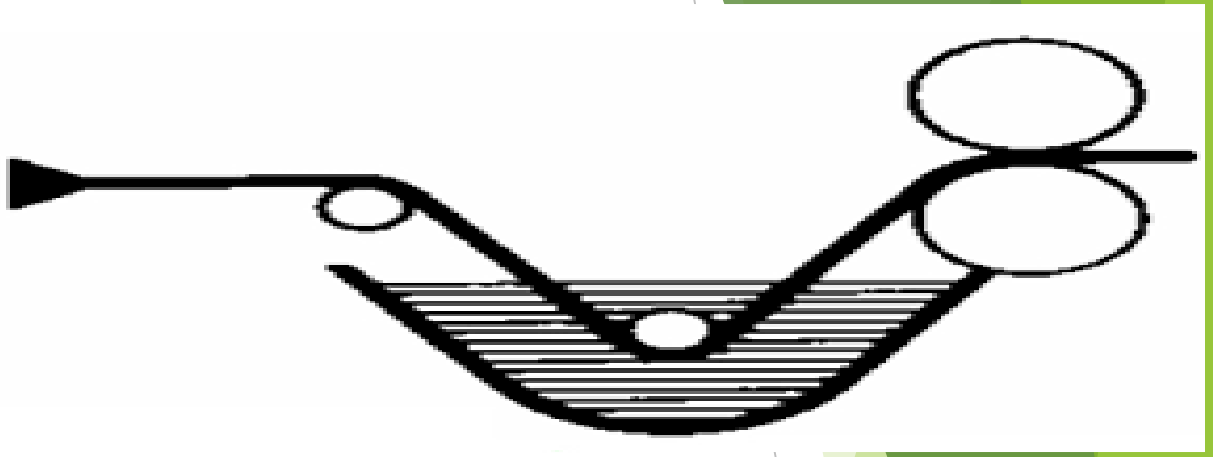
- **Condition of the driving drum:** **Driving drum** is used to drive the warp beam by **means of frictional force.** In case of modern machines the **warp beam is driven directly**, however a drum is used to stop the rotating beam instantly. Any **roughness of the drum** is therefore **dangerous for the safety of the yarn.**

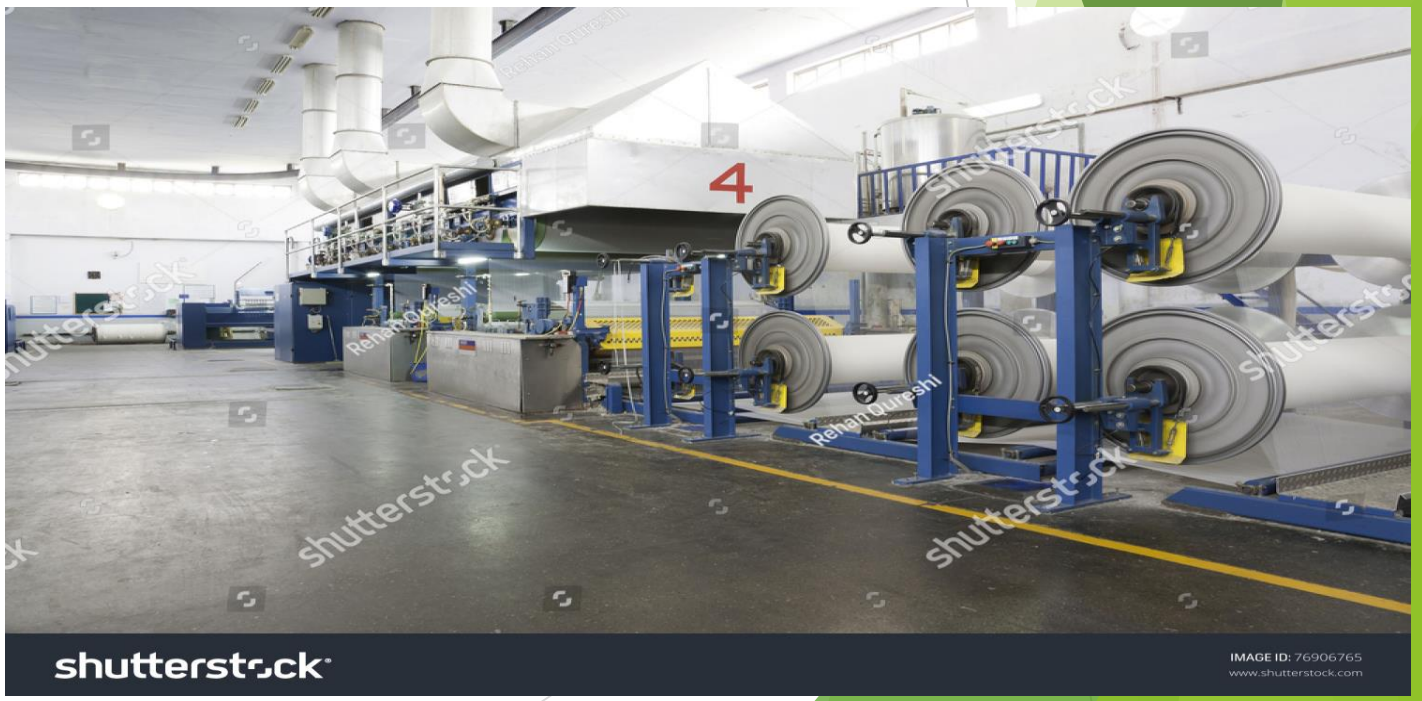
- **Length measuring motion:** This device should work properly. **Miss representation** of the **actual length** may cause **unnecessary wastage or shortage of yarn.** The size% calculated from the length of the yarn. So a **wrong length measuring** will lead to **incorrect estimation of the size%.**

- **Density of the beam:** In order to obtain satisfactory result the **warp beam must be sufficiently compacted.** The compactness should not be achieved **by means of yarn tension rather** it has to be achieved **by means of creating pressure by drum.**

Factors influencing size pick up %/Sizing

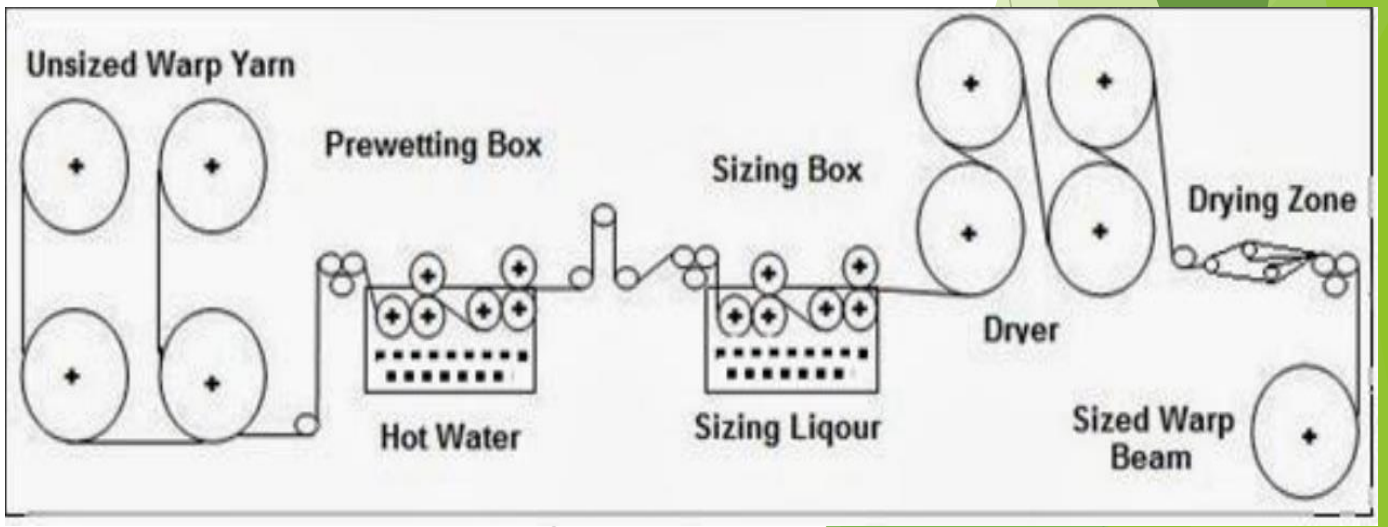
- **Viscosity** of the size paste in the size box
- Squeezing **pressure** & condition of **squeezing nip.**
- Yarn **tension**
- Yarn **twist**
- **Speed** of the sizing machine
- **Duration of immersion** in the size paste
- **Level** of size paste
- **Density** of the warp
- **Dia** of the yarns



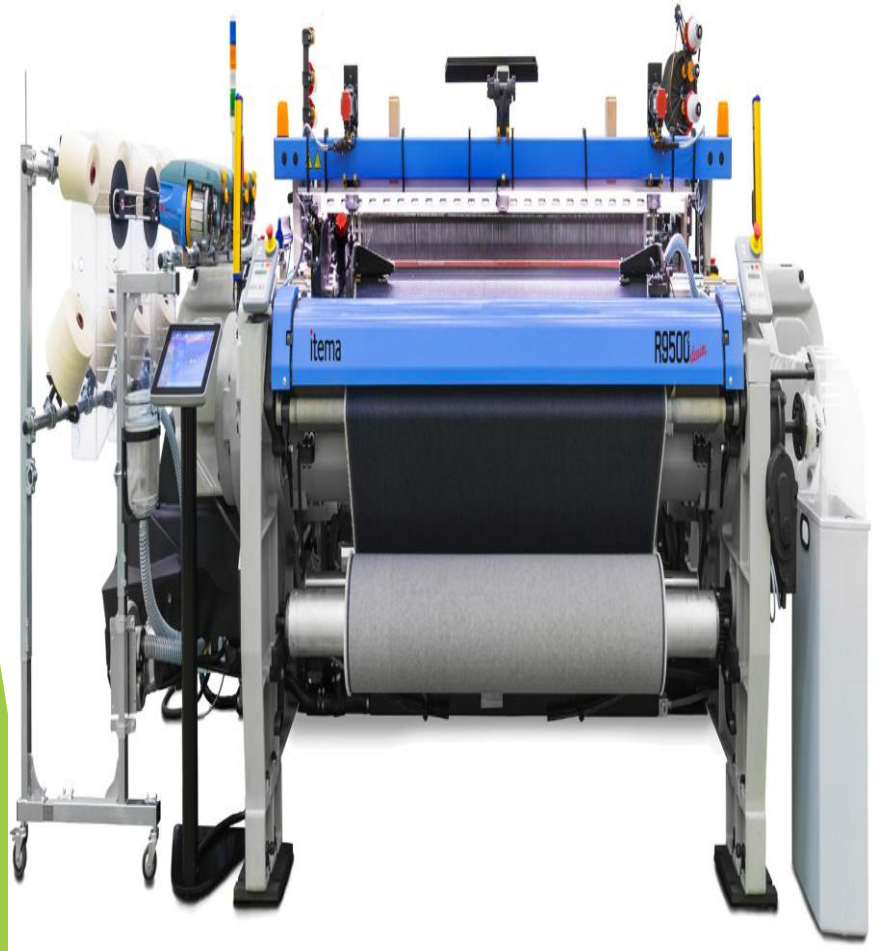


Factors influencing drying efficiency

- Speed of sizing
- No of ends in warp sheet (density)
- Pick up % of size to be applied
- Linear density of warp
- Box concentration
- Temperature of the drying cylinder
- Area of contact around the cylinder



Weaving Loom



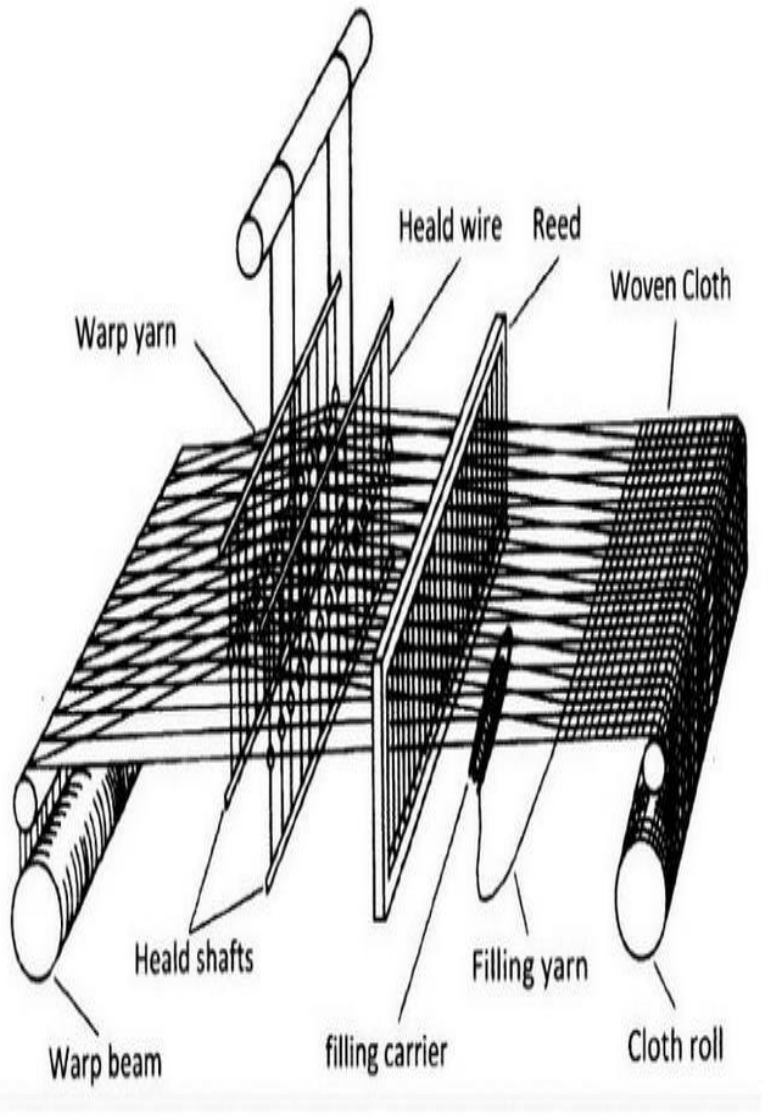


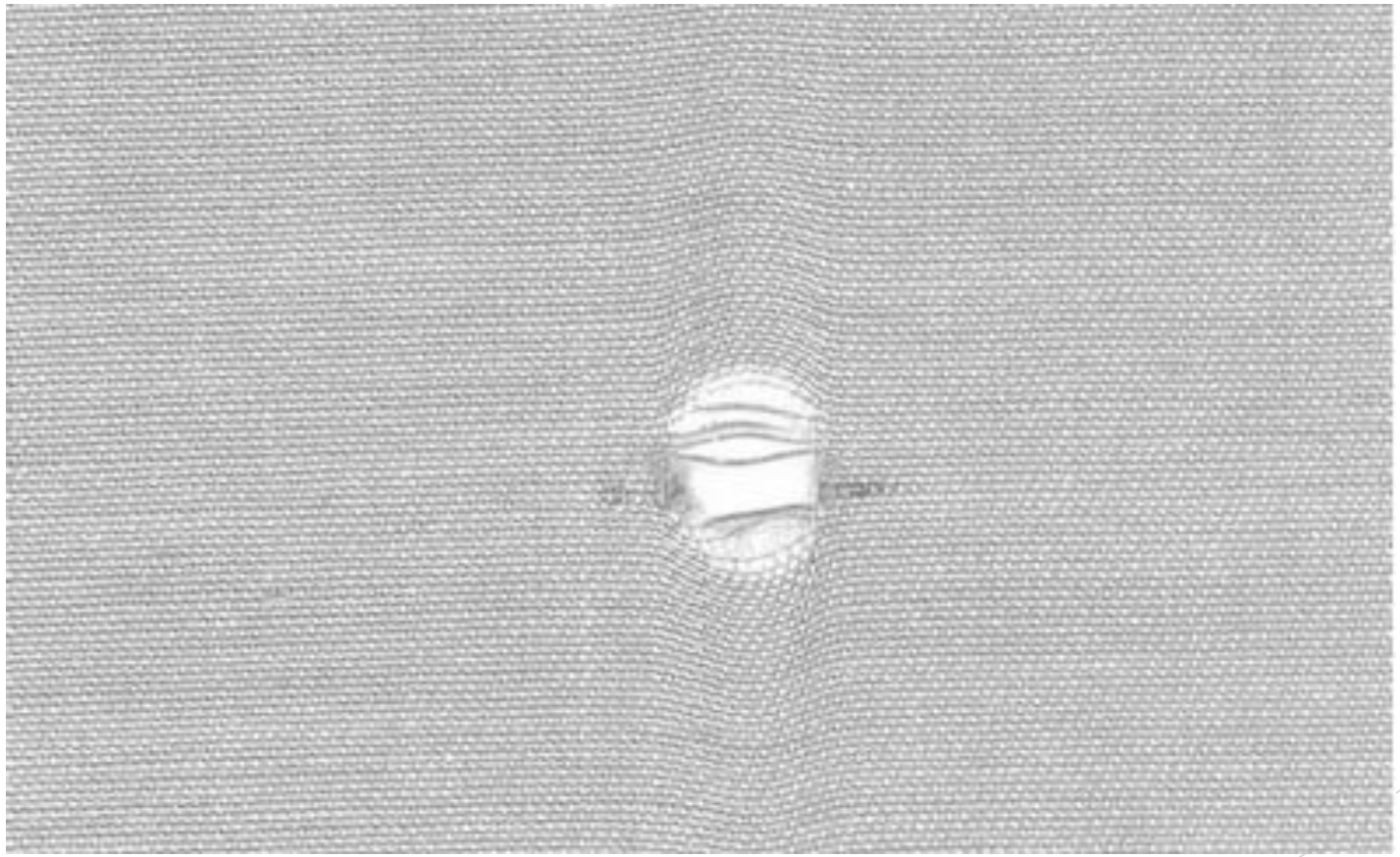
Fig: Basic structure of weaving loom machine

Defects in Grey Fabric: Woven

1. Hole
2. Broken End/warp
3. Broken Picks/weft
4. Loose Warp
5. Loose Weft
6. Double End
7. Tight End
8. Float of Warp
9. Foreign Yarn
10. Miss Pick
11. Double Pick
12. Bar(s)
13. Ball
14. Oil Spot
15. Tails Out
16. Slub
17. Reed Mark
18. Damaged Selvedge

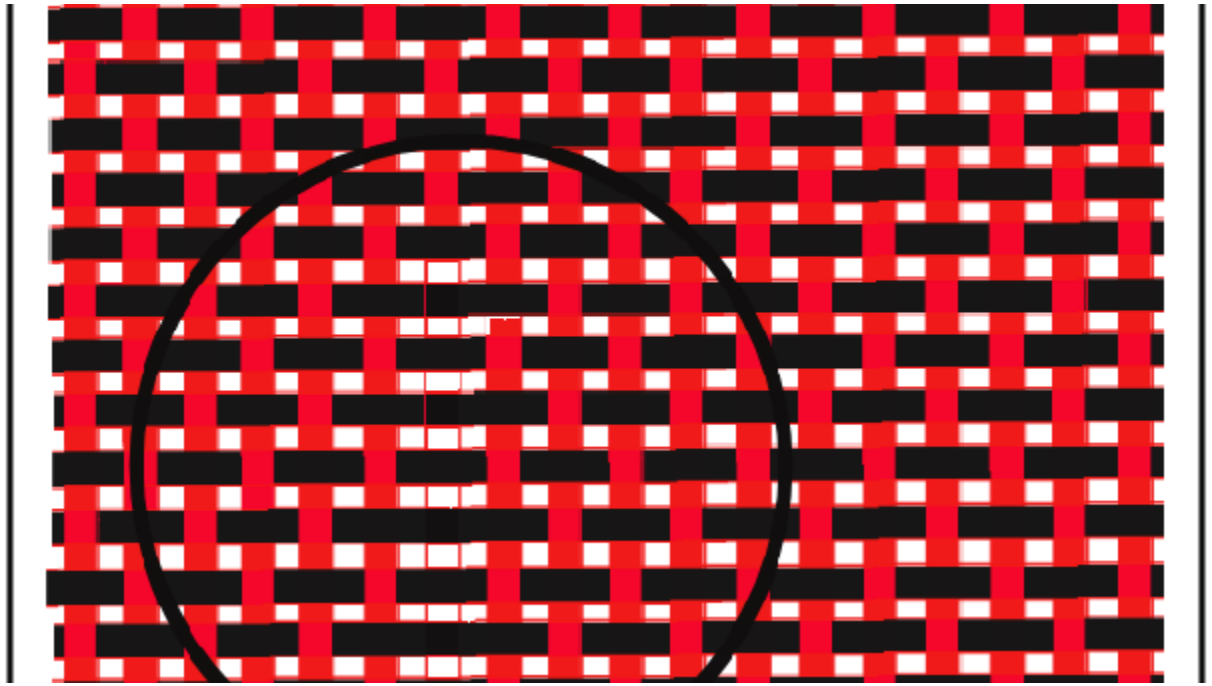
Woven Fabric Faults: Hole

- A fabric imperfection in which **one or several yarns are sufficiently damaged** to create an opening



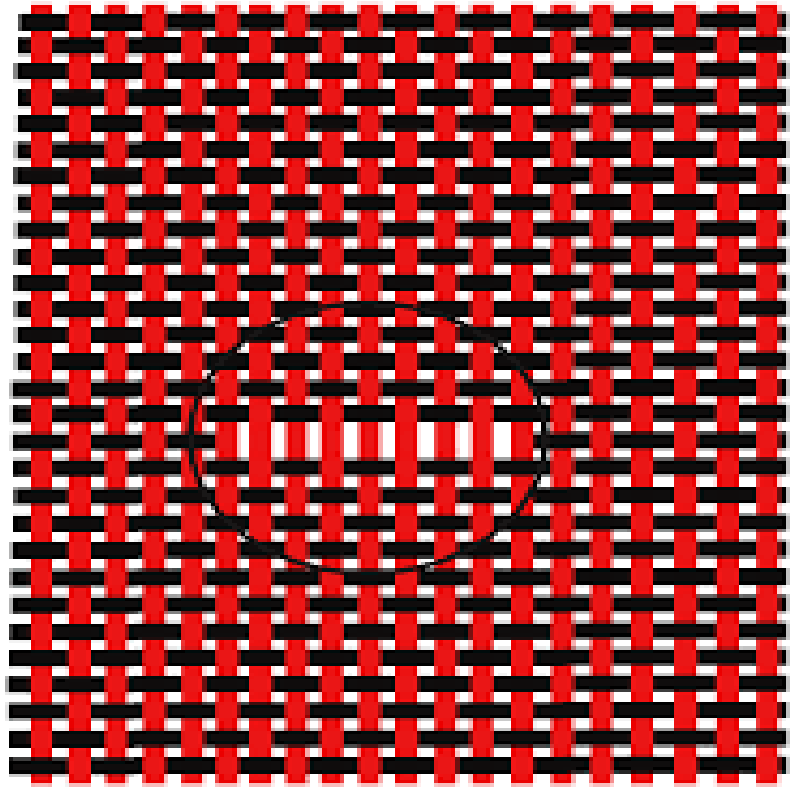
Woven Fabric Faults: Broken ends/warp

- A defect in the woven fabrics caused by a **warp yarn that was broken** during weaving



Woven Fabric Faults: Broken picks/weft

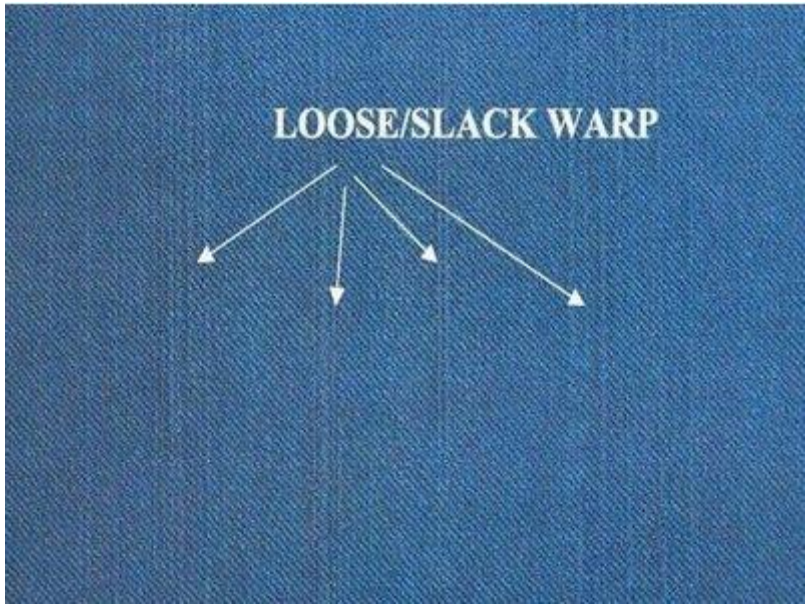
- A filling yarn that is **broken in the weaving** of fabric



BROKEN PICK IN THE FABRIC

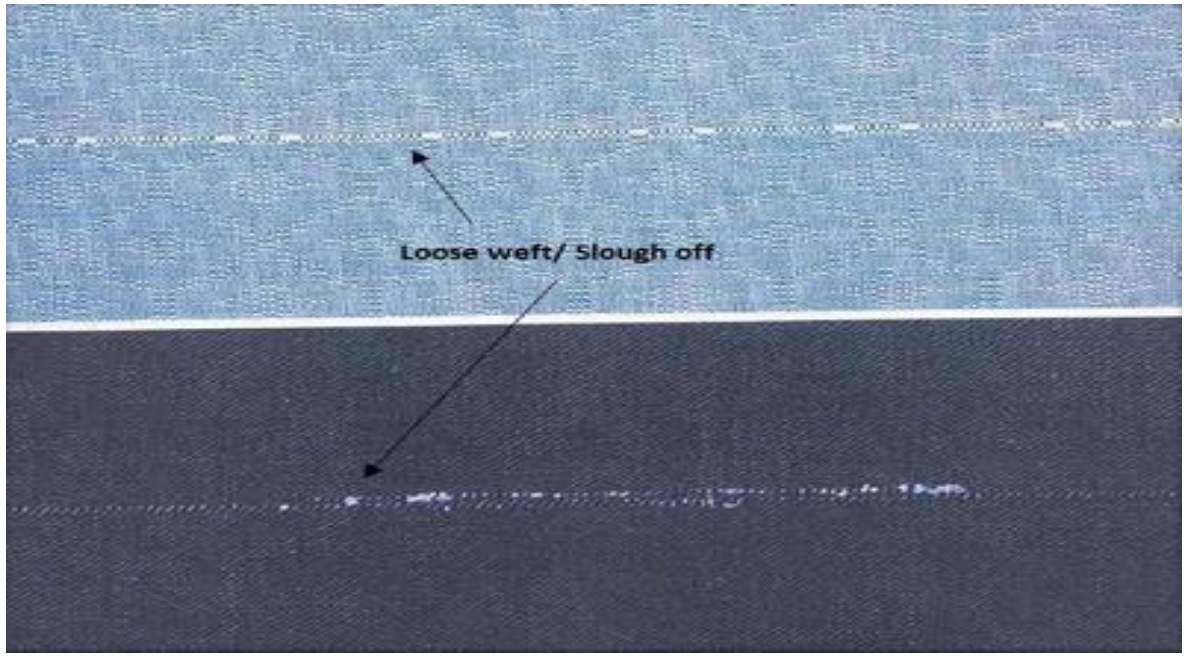
Woven Fabric Faults: Loose Warp

- This type of fault is produced in woven fabrics when the **tension of warp yarn is low**



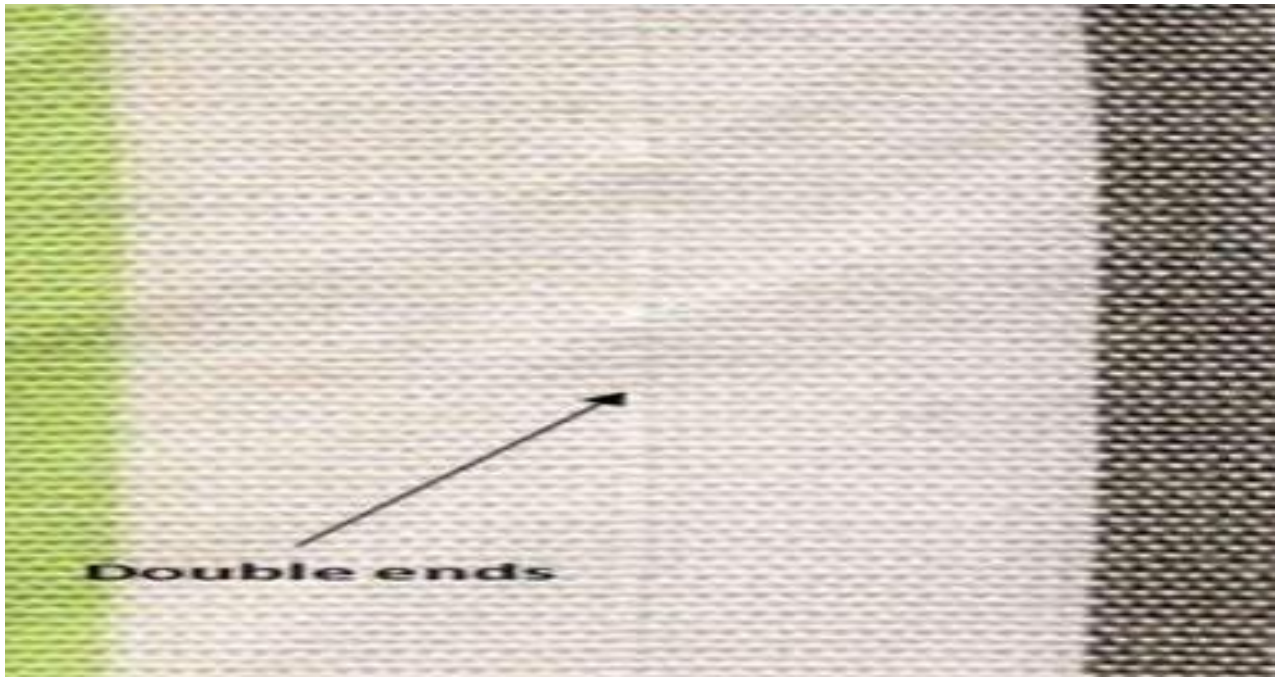
Woven Fabric Faults: Loose Weft or Snarl

- It is produced in woven fabrics due to the **looseness of filling yarn**



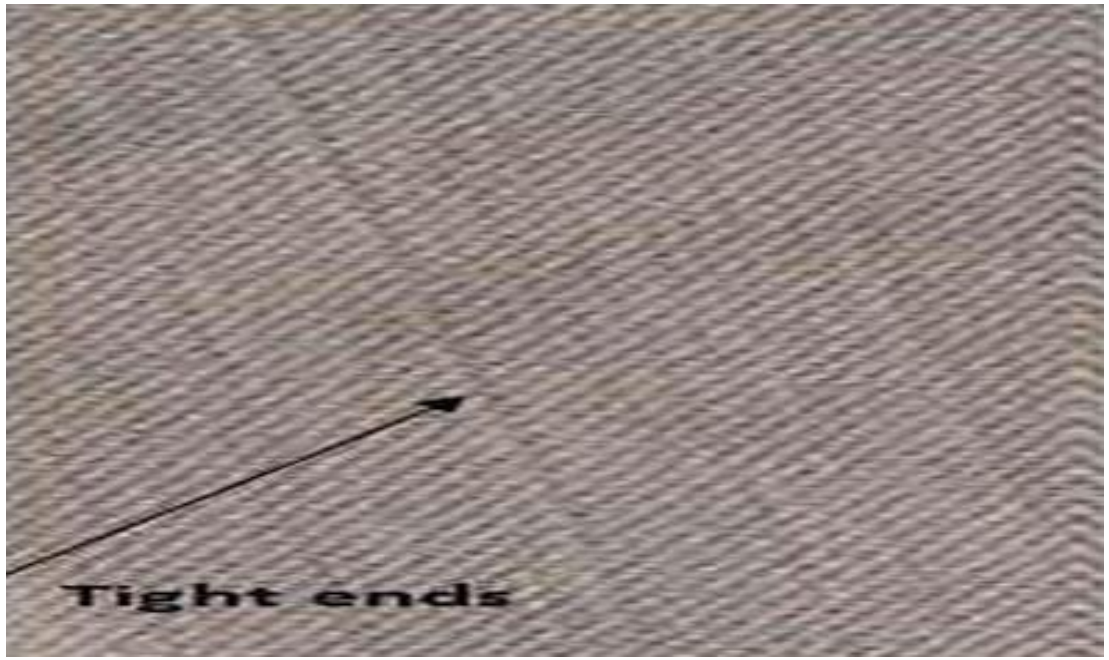
Woven Fabric Faults: Double End

- This kind of fault is produced in woven fabrics when the **two ends of warp sticks together after sizing**



Woven Fabric Faults: Tight End

- If the **tension of warp yarn is more than the other ends present** in the loom then this type of fault is produced in woven fabrics



Woven Fabric Faults: Float of Warp

- If **cloth roller is pulled off intentionally or unintentionally** then this kind of defect is produced in woven fabrics

Float of Warp

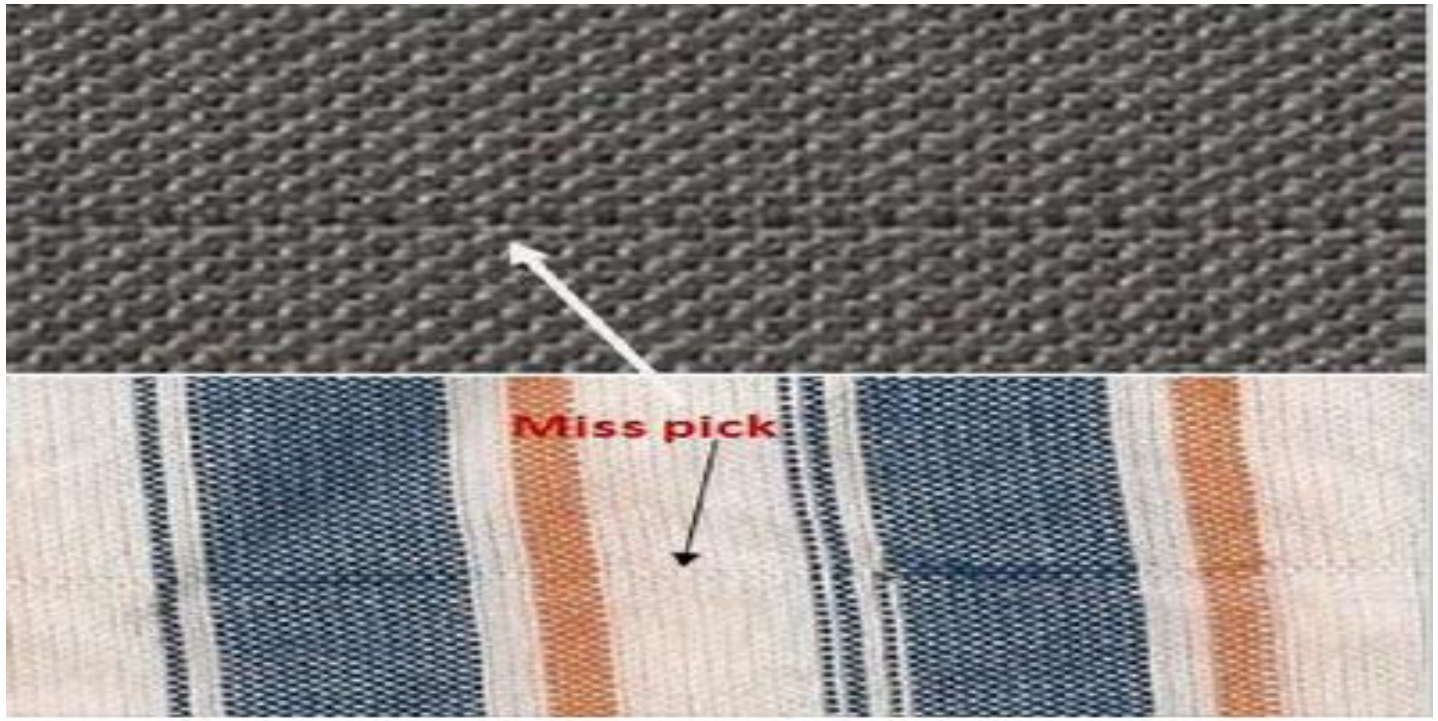
Woven Fabric Faults: Foreign Yarn

- It is produced in woven fabric due to the **wrong drawing of colored yarn**

Foreign Yarn

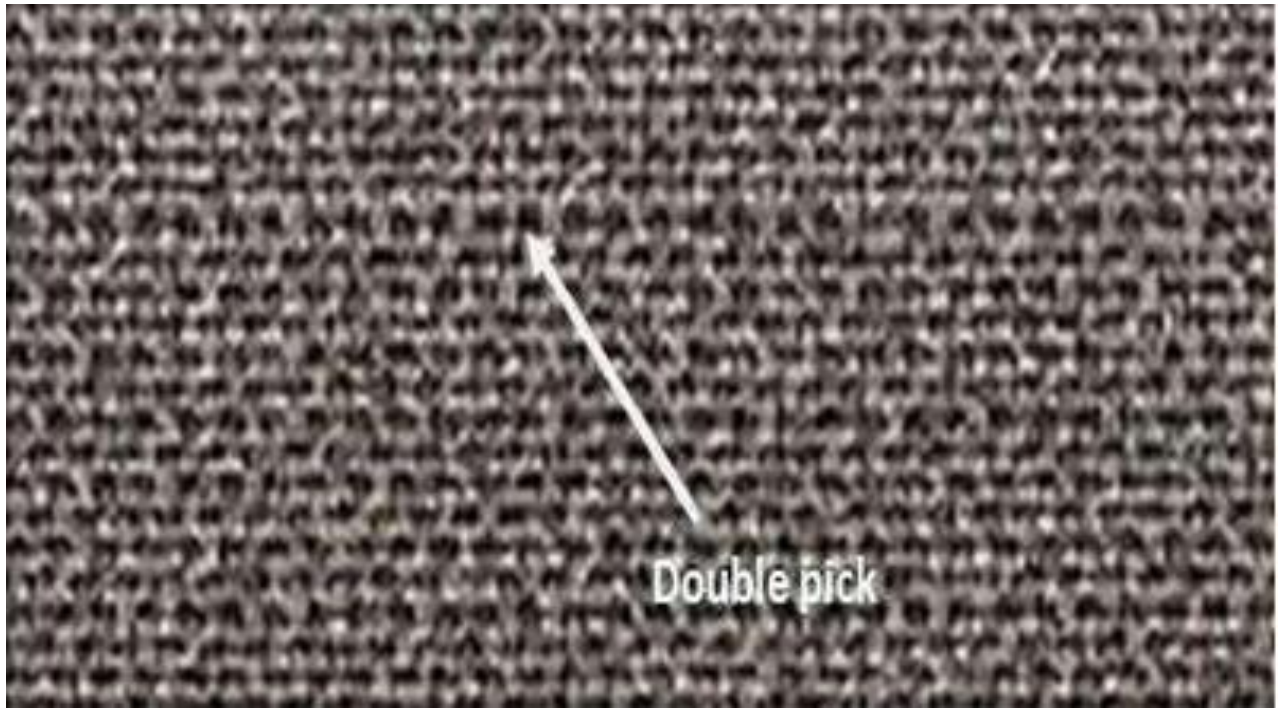
Woven Fabric Faults: Miss Pick

- This kind of defect is produced in woven fabric when **operator starts a stopped machine without picking the broken weft from the shade**



Woven Fabric Faults: Double Pick

- It is produced in woven fabric when the **two weft yarn stay together**



Woven Fabric Faults: Bar

- **Bar:** It is a **band running across the full width** of cloth due to **difference in appearance from its adjacent surface**. This term covers a number of specific defect as below:

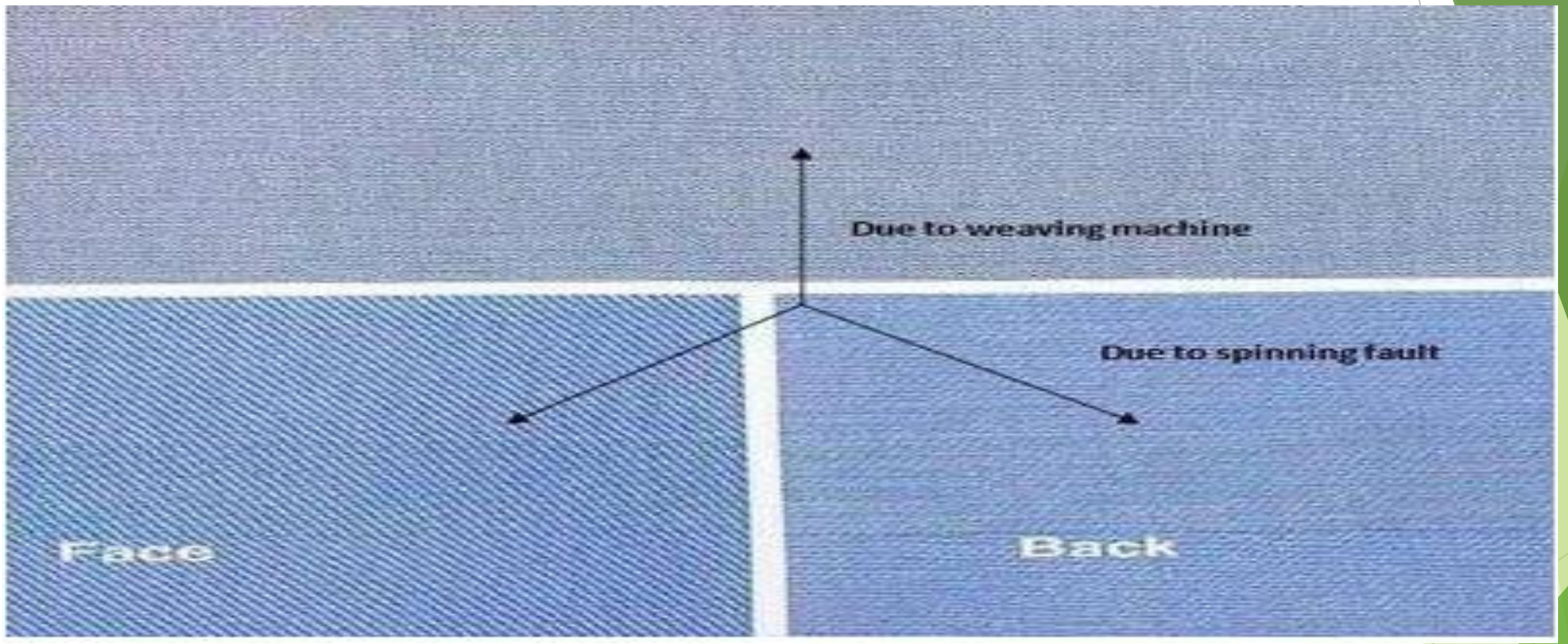
1. **Pick bar:** A bar due to difference **in pick spacing**. The causes of pick bars are **faulty gearing in take-up motion.**

2. **Starting mark:** An isolated **narrow marks along the pick**. It is occurred due to **restart of weaving** after- a) Unweaving or Pulling back b) Prolonged loom stoppage.

3. **Tension bar/Shiner:** A bar due to **difference in weft tension.**

4. **Weft bar:** A bar due to **difference in count, twist, luster, color or shade** of adjacent groups of weft yarns

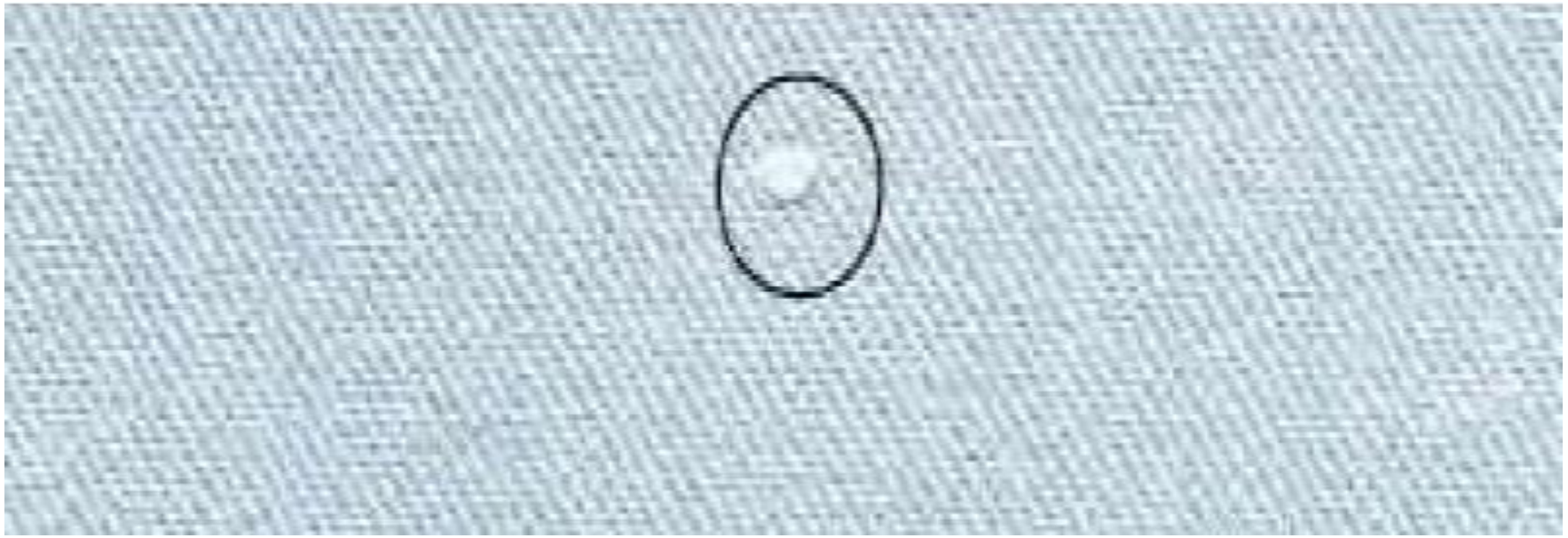
Woven Fabric Faults: Bar



Bar

Woven Fabric Faults: Ball

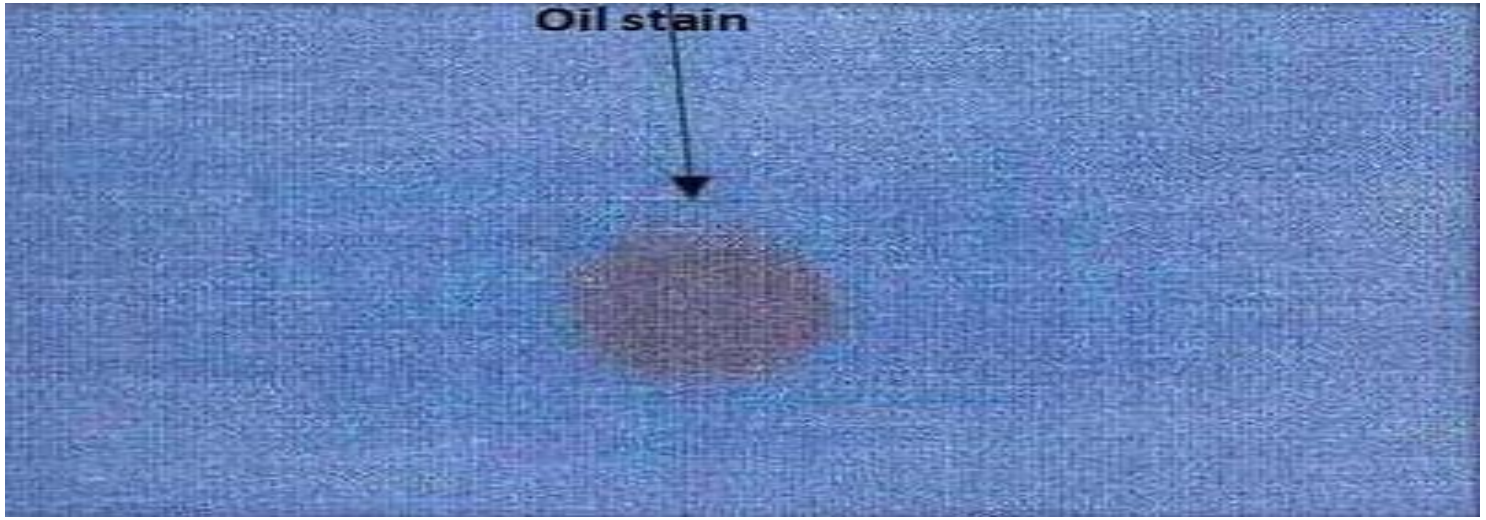
- If the warp is **too much hairy then the reed will create ball in warp yarn in between reed and heald shaft.** If the **ball is small** enough to pass through the **dent of reed** then those will **form the ball** in fabric



Ball

Woven Fabric Faults: Oils Spot

- **Discoloration on a local area of a substrate** that may be resistant to remove by laundering. It may occur during spinning, weaving or finishing. It is also produced in woven fabric if too much oiling is done on the different parts of the loom



Oil Spot

Woven Fabric Faults: Tails Out

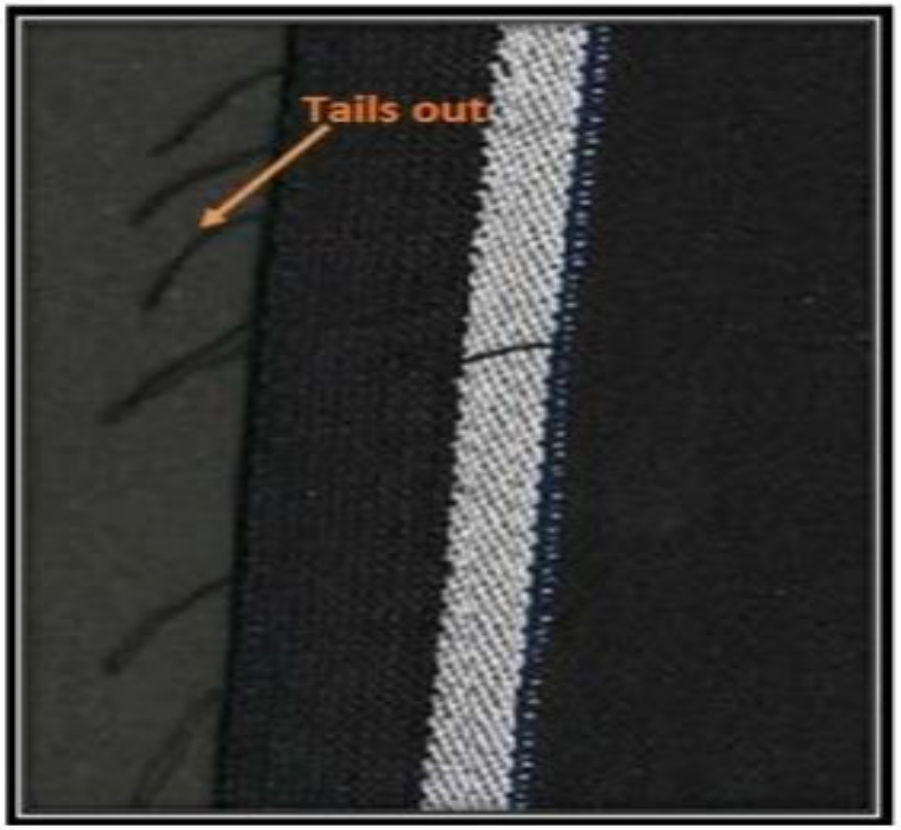
TAILS OUT

REASON:

IF THE CUTTER DON'T WORK PROPERLY THEN THIS KIND FAULTS ARISE.

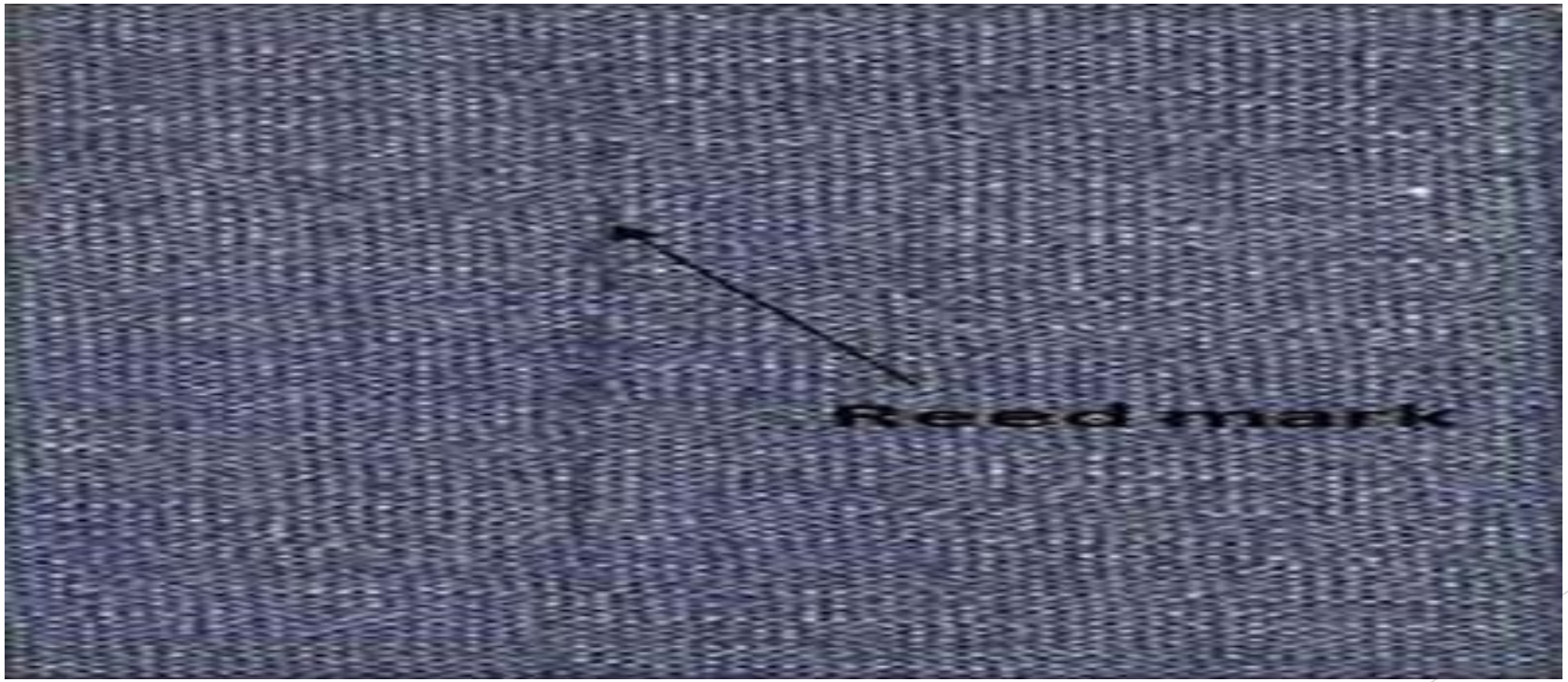
REMEDY:

TO SOLVE THIOS PROBLEM EITHER WE HAVE CHANGE THE DEGREE OF CUTTER OR WE HAVE TO CHANGE THE CUTTER BLADE.



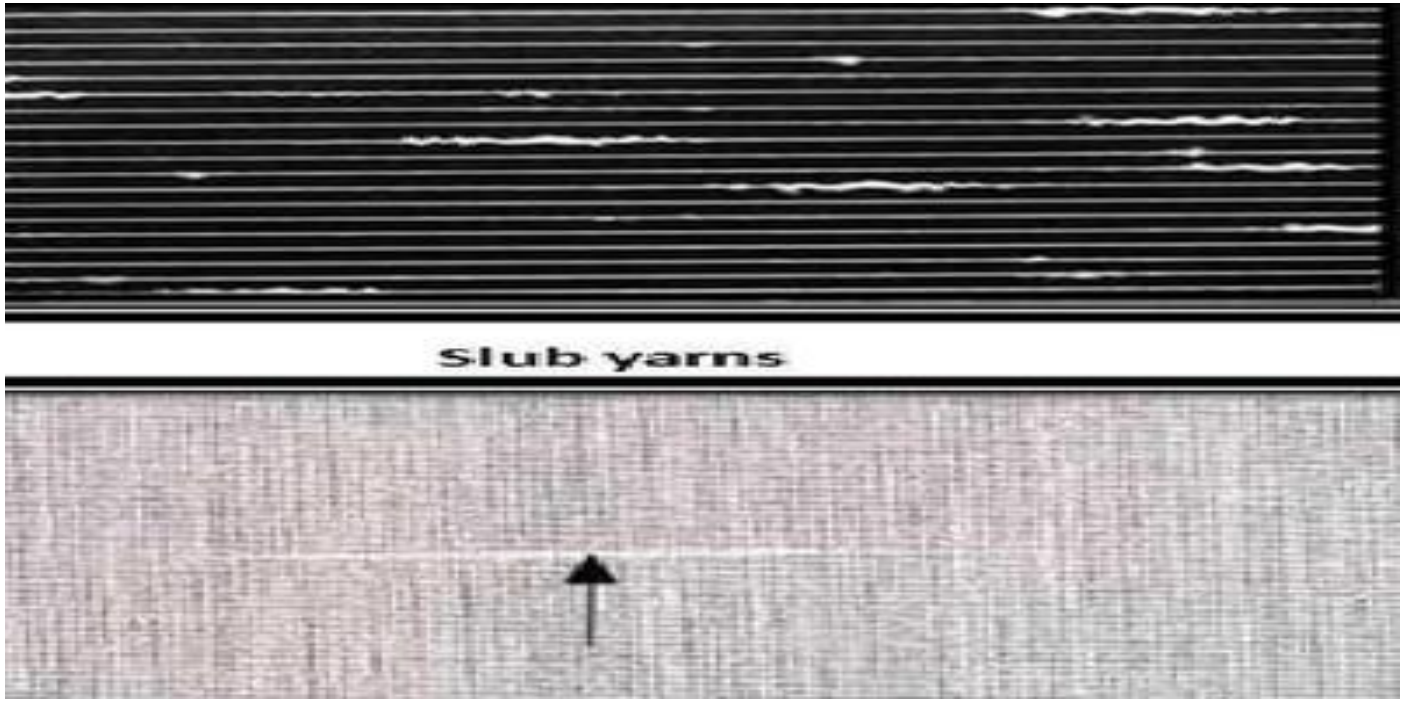
Woven Fabric Faults: Reed Mark

- In woven fabric, a crack between the groups of warp ends either **continuous or at intervals**. It's may be caused by the **wrong drawing-in of the warp or damage to the reed wires.**



Woven Fabric Faults: Slub

- If the **yarn contains unexpected slub** in it then those slub will be appeared in the fabric as a fault



Woven Fabric Faults: Damaged Selvedge

- **Warp ends being set too far** apart for the thickness of the yarn or in finished fabric.

KNITTING

Faults in Knit Grey fabric

Hole: Holes of the **same or different size** which appear as defects in the Knitted fabrics.

Causes:

- High Yarn Tension
- Yarn Overfeed or Underfeed
- High Fabric Take Down
- Presence of defects like Slubs, and Knots etc.

Remedies:

- Ensure uniform yarn tension on all the feeders with a Tension Meter.
- Rate of yarn feed should be strictly regulated as per the required Stitch Length.
- The fabric tube should be just like a fully inflated balloon, not too tight or too slack.
- The yarn being used should have no imperfections like; Slubs, Naps & big knots etc.

Oil spot:

When **lubricant or oil from knitting machine attached** with the grey fabric it creates a spot on it and that is called oil spot.

Causes:

- Excessive oiling of the needle beds.
- Grease or oil stains from the unguarded moving machine part.
- Fabric touching the floors & other soiled places during transportation in the trolleys.

Remedies:

- Clean the grooves of the Cylinder & Dial of the machine thoroughly with petrol.
- Blow the grooves of the Cylinder Dial & Sinker ring with dry air after cleaning.

Fly:

This fault is occur when the **flying or projecting yarn get mixed** with the yarn during knitting

Causes:

- In knitting section too much lint is flying to and fro that are created from yarn due to low twist as well as yarn friction. This lint may adhere or attaches to the fabric surface tightly during knit fabric production.

Remedies:

- Blowing air for cleaning and different parts after a certain period of time.
- By cleaning the floor continuously.
- By using ducting system for cleaning too much lint in the floor.

Needle Mark:

Defects caused by the broken needles show prominently as vertical lines parallel to the Wales. There are **no loops formed in the Wale** which has a broken needle

Causes:

- High Yarn Tension
- Bad Setting of the Yarn Feeders
- Old & Worn out Needle set
- Cylinder Grooves are too tight restricting needle movement
- Breakage of hook or butt in needle.

Remedies:

- Ensure uniform & the right Yarn tension on all the feeders.
- Keep the recommended gap between the Yarn Feeders & the Needles.
- Periodically change the complete set of needles.
- Remove fly or blockage from groove.
- Replace defective needle.

Pin Holes:

Tiny holes appears in the grey knit fabric is called pin holes

Causes:

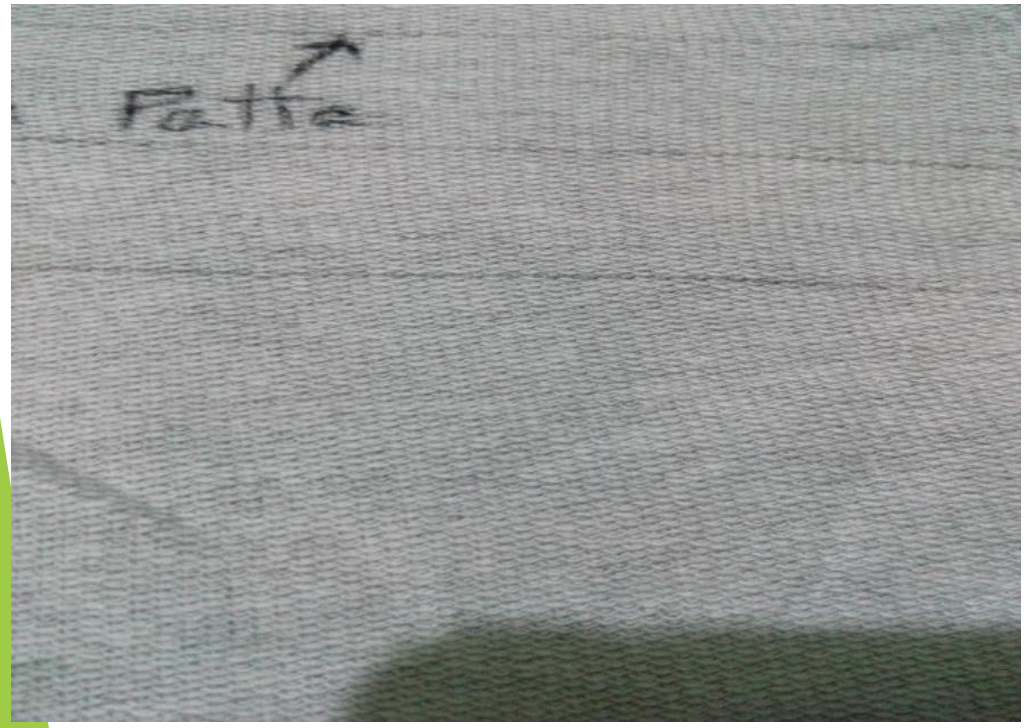
- Due to break down or bend of latch, pin hole may come in the fabric

Remedies:

- Change the needle.

Barre/Patta:

Thick or thin places visible in grey fabric in certain distance is called Barre or Patta.



Causes:

1. Lot mixing of yarn
2. Variation in package hardness
3. Improper yarn tension
4. Uneven dyed yarn

Remedies:

1. Flawless yarn
2. Proper machine setting

- **Lycra out:** This fault is occurred if the **machine is not immediately after the breakage of lycra** during production.

Causes:

1. Careless supervision
2. Faulty auto stop motion

Remedies:

1. **Proper maintenance of the knitting machine**
2. **Conscious worker**

Crease mark:

Crease mark is caused by-

1. Yarn tension variation
2. Lower GSM of fabric
3. Faulty fabric take-up

Drop stitch:

Drop stitches are caused by-

- Defective needles
- Wrong setting of yarn feeder.
- Bad take up.

Sinker mark:

Sinker mark is caused by the defective sinker.

Faults in Knit Finished fabric

Oil Spot:

Causes:

- Lubricant oil utilized in machine parts.
- Unclean parts utilized.
- Open hand dust.
- Natural dust.

Remedies:

- Should be utilized deformity free machine.
- Lubricating ought to be utilized property.
- Operator must be spotless and utilize hand gloves.
- Proper support of machine.
- Proper cleaning of machine.