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1. BASIC TEXTILES TERMS:

- **Yarn:** A continuous strand of fibers/filament, twisted /non twisted, it is basic raw material for weaving.
- **Type of Yarns:** single yarn, double or multi fold yarn, spun yarn & filament yarn etc.
- **Yarn count:** the yarn count is a numerical expression which defines it's fineness or coarseness.
- **Yarn count:**
Indirect system: English count(Ne), Worsted Count etc.
i.e. Higher the yarn number , finer the yarn.
Direct System: Tex, Denier
i.e. Higher the yarn number , Coarser the yarn.
- **Warp & Weft Yarn:**
The lengthwise yarns are called the warp yarn and the widthwise yarns are called the weft yarn.
- **Selvedge:** The length wise running edges of *woven fabric* are known as selvedges. It prevents unraveling of warp yarns.

2. WARPING

- The parallel winding of warp ends from many winding packages (cone or cheese) on to a common package (warp beam) is called warping.
- Direct Warping Denotes the transference of yarns from single-end yarn packages, wound packages, directly to a beam in a one step process.

3 SEQUENCE OF OPERATIONS IN WEAVING SHED

Warping



Sizing

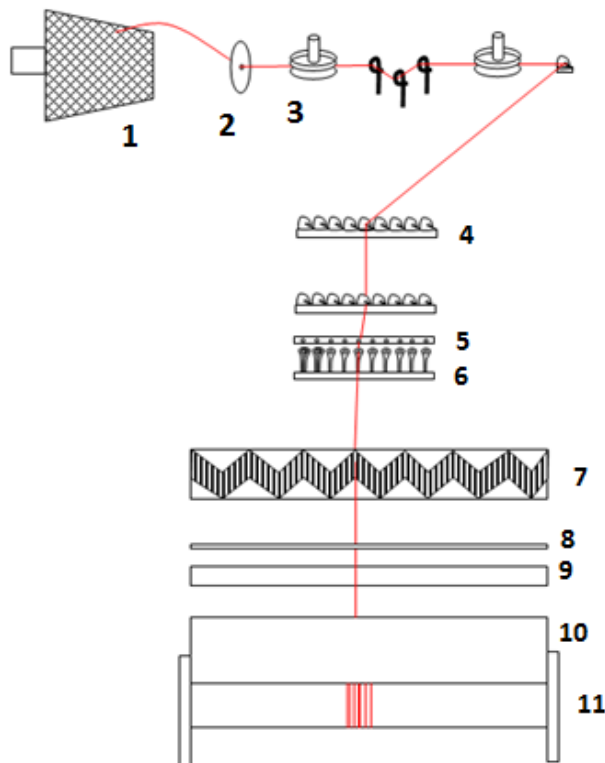


Drawing in



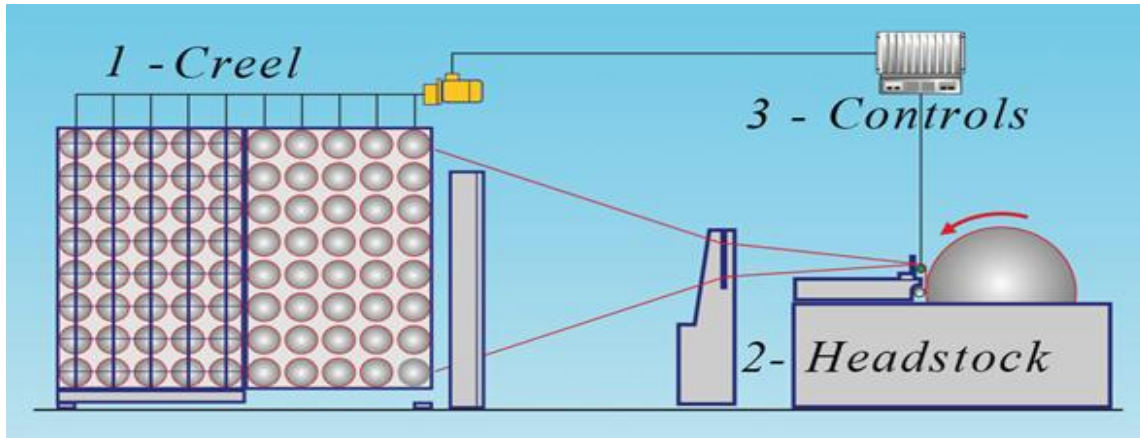
Weaving

4 IDENTIFICATION OF PARTS OF BEAM OR DIRECT WARPING MACHINE



Main Parts:

1. Yarn cone or Chase
2. Balloon Breaker
3. Yarn tensioner
4. Yarn guide
5. Ceramic guide
6. Auto stopper
7. V-reed
8. Lease rod
9. Roller
10. Pressure Roller
11. Pre-beam



Main warping machine Parts:

Creel: to hold the cones of yarn or cheese packages



Balloon Breaker & Warp Break Detector: to avoid breakages of yarn and to stop the machine in the event of yarn break



Warp

Tensioner: to keep the warp ends at desired tension to avoid

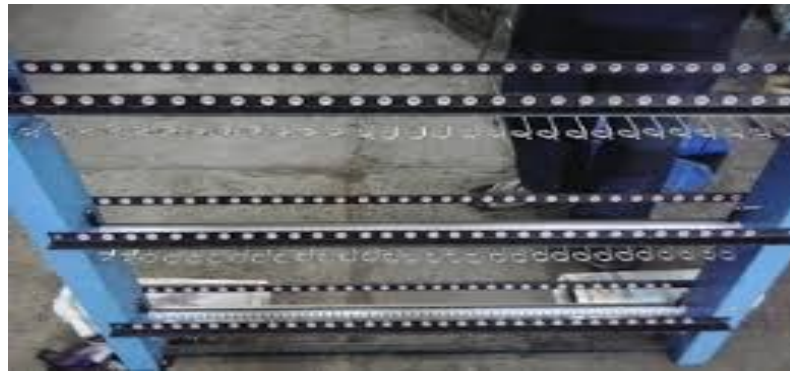
formation of soft beams

Ceramic

Guides: to guide the yarn from creel to beam without any entanglement or abrasion

V- Reed: to maintain uniform beam density

Pressure Roller & Warper Beam: to wrap the yarns on beam with uniform tension and avoid soft beams formation



Warping machine has three major components:

- **CREEL:**

- Cone Holder : Hold the cone or arrange the cone in the creel.
- Yarn Guide : To guide the yarn.
- Tension Rod : Maintain yarn tension by upper & lower disc tensioner.
- Yarn Cleaner : To remove various faults of the yarn like slubs, neps, etc
- Ceramic Guide Disc : To guide the yarn from creel to warping m/c.
- Auto Stop Sensor : To sense the breakage yarn.
- Creel Panel Board : Display where the yarn break.

- **HEAD STOCK:**

- Guide Reed : Uniformly spread the yarn over the warp width.
- Adjustable V-Reed : Guides the yarn to follow the fixed path.
- Speed Controller : control the speed, crawl speed or full speed.
- Pressure Roller : Exert required pressure to the warp yarn.
- Measuring Device : Measures the length of the yarn.
- Driving Drum : Beam is in contact and control with driving drum.
- Beam Bracket : Holds the warp beam.
- Emergency Stop Device: For emergency stop.
- Automatic Knock Off : Stop m/c at achieving required length of beam or in case of Yarn breaks.
- Lease Rod: Used for separation of Yarn individually.

- **CONTROL DEVICE:**

- Electrical Panel Board : To give the automatic controlled function

5 OBJECTIVES OF DIRECT WARPING MACHINE

- To form from a predetermined number of single end packages, such as cones of cheeses, as cones of cheeses, a continuous sheet of yarn of specified length and width.
- The individual ends of the sheet should be spaced uniformly across its full width.
- All the ends in the sheet should be wound at almost uniform tension.

- The density of wound yarn beam should be uniform across the width and from start

6 OPERATION OF THE MACHINE

➤ Attending the Warp break

- Take straight the broken end in the warping beam.
- Knot the broken end in the warping beam with the broken end in the creel, using tiny & firm warper knot by hand or by the knotting machine provided.
- Leave straight the mended warp yarn in the beam and the machine has to be allowed to be run in slow speed for some time, before the machine is allowed to run in the speed prescribed.
- Record the warping breakages details in the 'yarn performance book' kept.

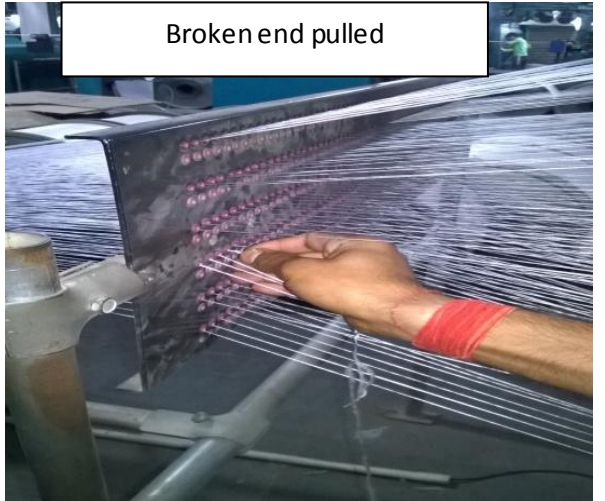




Broken end passed from guides



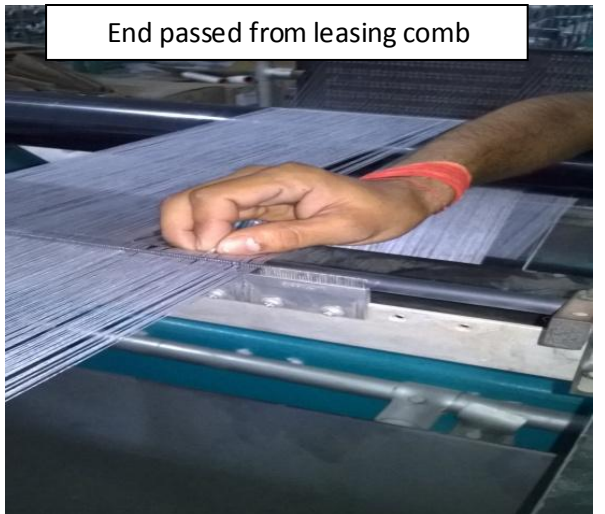
Broken end passed through guides



Broken end pulled



End passed from leasing comb



End passed from leasing comb



Tracing End on beam and starting

➤ **Creeling of Cones/ Cheeses in the Warping Creel**

- Remove the run out cones/ cheeses of the previous program.
- Collect the removed cones/cheeses in trolleys/ bags provided.
- Pack the said collected cones/ cheeses as per the instructions given
- Write the following details on the packed bags
- Count details
- Mill Name
- Warping Set No.
- No. Of Cones
- Gross wt. in kgs
- Net Wt. in Kgs
- Clean the warping creel area & the warping machine thoroughly
- Bring the yarn bags required for the next program and keep the same at the centre of the warping creel
- Bring the empty trolleys provided to store empty polythene cone covers . cone inserts and keep the same at the centre of the warping creel
- Remove the polythene cone bags, cone inserts etc., & to store the same in the respective trolleys provided
- creel the cones/ cheeses in the creel stand
- Remove the trolleys wherein the empty polythene covers & cone inserts are collected, from the warping area.

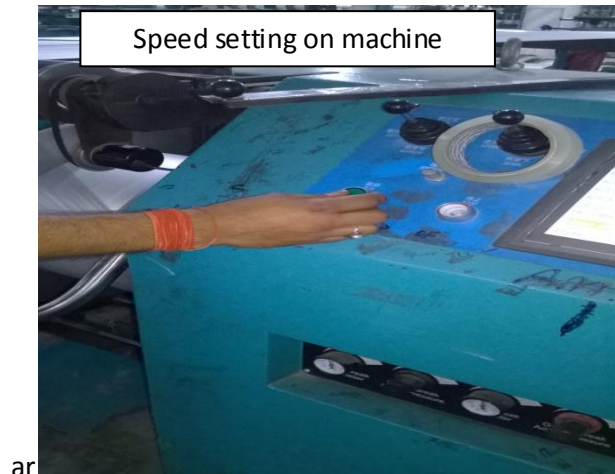
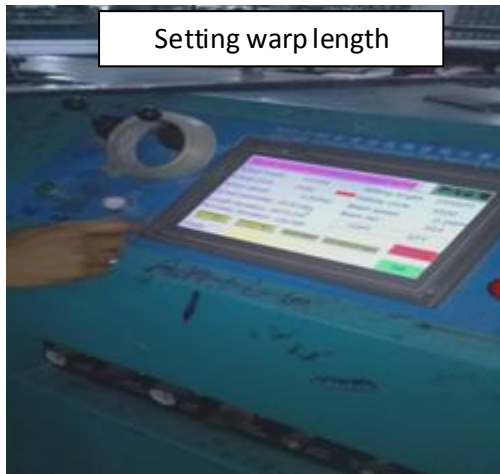
➤ **Leasing of warp :**

Comprises inserting lease cords between the warp yarns to separate groups of warp yarns.



➤ **Running of Warping Machine**

- Check the stop motions & to ensure they are in 'on 'position, before the machine is allowed to run.
- Check the length measuring meter
- Mount the empty warping beam in the machine
- Set the beam mtrs in the counter meter
- Note down the beam no, beam ends , beam set mtrs etc. in the job card , immediately after the loading of the empty warping beam in the machine
- Switch on the 'warping drum' so as to ensure no deviation between the 'beam set mtrs' & 'the actual beam mtrs'.
- While starting the machine, ensure that the ends in both the edges are coming properly without any overlapping. It has to be corrected using warping comb.

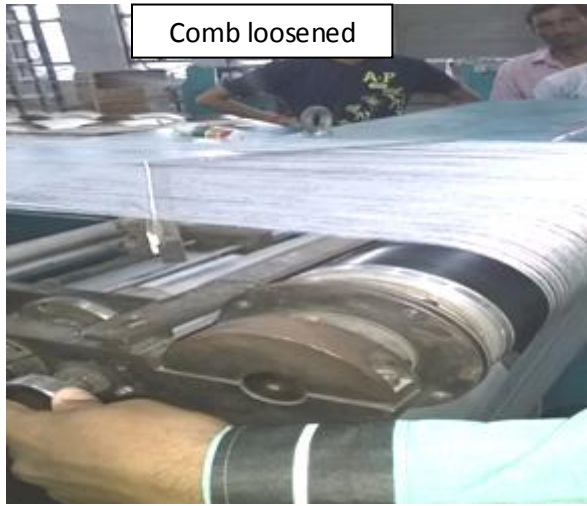


➤ **Doffing of Warped Beam**

- After the completion of the warping beam, as per the set mtrs, the warped beams have to be doffed.
- Immediately after the doffing of the warped beams , the following details have to be written on the warped beams using chalk
 - a. Count
 - b. Warp Set No.
 - c. Warp Beam No.
 - d. No. Of Ends
 - e. Beam Mtrs



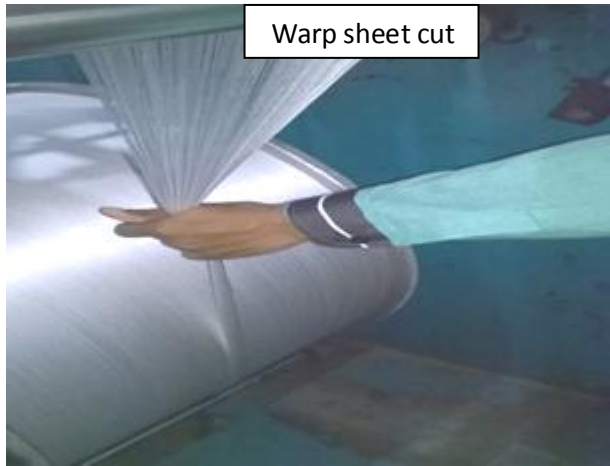
Beam is full



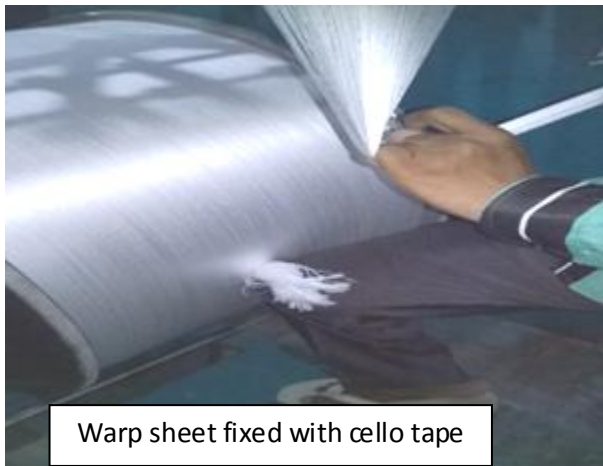
Comb loosened



Beam released



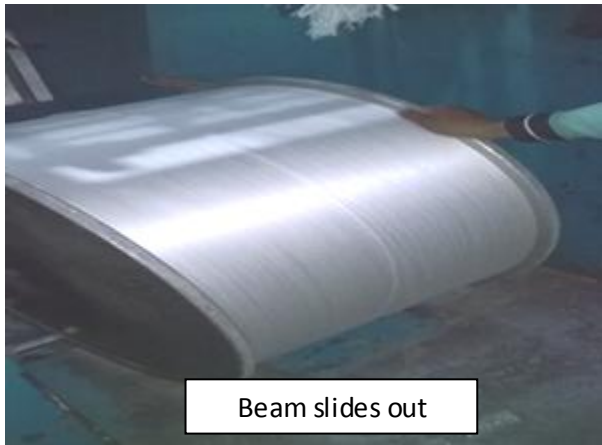
Warp sheet cut



Warp sheet fixed with cello tape



Warp sheet gathered



7 WARPING DEFECTS AND REMEDIALS:

➤ Causes of yarn breakage in warping:

- Weak yarn, Sloughing off, Over lapping, Knots/ bad splice, Slubs, Loose yarn, Pig tail, Cut yarn, Bad tip cone, Short cone

➤ Warp off centre of the beam:

Due to not carefully placing of creel wraith and flanged beam.

Remedy: Beam and wraith placed properly.

➤ Ridgy or uneven warp beam:

This effect due to Winding of small no of ends on larger beam. When the dents are bent or the spacing between dents is uneven. Mixed count

Remedy: Higher no of ends be used.

➤ Crossed ends:

Due to Faulty knotting after yarn breakage. Tying of broken ends. Loose warp.

Remedy: Knotting and tension controlled.

➤ Snarl formation in the warp:

Due to Over tension. Improper twist. Position of guide.

Remedy: By proper tension and twist.

➤ Missing ends:

Due to Faulty stop device. Exhausted cone or bobbin. Absence of cone or bobbin on creel.

Remedy: By correct stop device is used

➤ Hard beam:

Due to high tension.

Remedy: Tension and pressure maintained.

➤ **Unequal length :**

Due to faulty measuring device.

Remedy: correct measuring device.

➤ **Broken ends:**

Remedy: To be joined carefully the yarn.

8 CHECKING MEASURES

- Cleanliness of the machine including the Creel. Cleaning to be done with compressed air at every creel change.
- Check the alignment of packages mounted on the creel.
- Check whether the tension disc are used for right weight according to count of the yarn.
- Check that damaged beam should not used unless repaired.

9. Instructions for Shift Change

➤ **Take Charge of the Shift**

- Come at least 10 - 15 minutes earlier to the work spot
- Meet the previous shift warper , discuss with him/ her regarding the issues faced by them with respect to the quality or production or spare or safety or any other specific instruction etc.
- Check the condition of the running beams , machine, performance of the yarn running for the running program & Check whether all the stop motions work in good condition
- Follow the job card quality instruction issued by higher authority.
- Check availability of the cones/ cheeses & empty warping beams required for the next programs.
- Check the cleanliness of the machines.
- Check whether any spare/raw material/ tool /any other material is thrown under the machines or in the other work areas.

- Ask question to the previous shift warper for any deviation in the above and bring the same to the knowledge of his/ her shift superior as well that of the previous shift as well.

➤ **Handing over the Shift**

- Hand over the shift to the incoming warper in a proper manner & get clearance from the incoming counterpart before leaving the work spot.
- Report to his/ her shift superiors as well as that of the incoming shift, in case his/ her counterpart doesn't doesn't come for work for the incoming shift. in that case, the shift has to be properly handed over to the incoming shift superior & get clearance from him/ her, before leaving the work spot.
- Report to his/ her shift superior about the quality / production / safety issues/ any other issue faced in his/ her shift and should leave the department only after getting concurrence for the same from His/ Her superiors.

10 Safety Aspects

- Comply with health and safety related instructions applicable to the workplace
- Use and maintain personal protective equipment such as 'ear plug', 'nose mask' & 'head cap' etc., as per protocol
- Maintain a healthy lifestyle and guard against dependency on intoxicants
- Follow environment management system related procedures
- Report any service malfunctions that cannot be rectified
- Store materials and equipment in line with organisational requirements
- Safely handle and remove waste
- Minimize health and safety risks to self and others due to own actions
- Seek clarifications, from supervisors or other authorized personnel in case of perceived risks
- Monitor the workplace and work processes for potential risks and threat
- Carry out periodic walk-through to keep work area free from hazards and obstructions, if assigned

- Report hazards and potential risks/ threats to supervisors or other authorized personnel
- Undertake first aid, fire-fighting and emergency response training, if asked to do so
- Take action based on instructions in the event of fire, emergencies or accidents
- Follow organisation procedures for shutdown and evacuation when required.