SPECIFICATIONS
SECTIONAL WARPING MACHINE - PLCTECH-110

1.0 TECHNICAL SPECIFICATIONS:

- **WORKING WIDTH**: 2200mm to 4000 mm
- **DRUM TYPE**: Metallic Drum, Dynamically Balanced.
- **CONE HEIGHT**: Fixed,( 11% or 9% or 7% )
- **DRUM CIRCUMFERENCE**: 2.5 Mtrs. Or 3.0 Mtrs.
- **WARPING SPEED**: 0 – 600 Mtrs. / Min.
- **BEAMING SPEED**: 0 – 100 Mtrs.
- **SECTION WIDTH - STD**: 250 mm standard supply
- **SECTION WIDTH - WIDER**: More than 250 mm in special cases.
- **BEAM FLANGE DIA**: 800 mm – 1250 mm
- **BEAMING SECTION**
  - (a) **BUILT-IN**: For working width up to 2800 mm and Beam flange dia up to 1000 mm.
  - (b) **SEPARATE**: For working width more than 2800 mm & Beam flange dia more than 1000 mm.
- **MAIN POWER SUPPLY**: 440 V ± 5%, 50 Hz ,3 Phase
- **DRUM DRIVE**: AC variable speed, frequency controlled.
- **ELECTRIC MOTORS**: One for warping and one for beaming
- **PLC CONTROLS**: Various controls.
- **GRAPHIC DISPLAY**: 5.7” TFT Touch screen.
- **BRAKING SYSTEM**: Hydraulic, Disc brakes.

1.1 OPTIONAL ATTACHMENTS*

- Beam Pressing Pneumatic
- Liquid Waxing Device – 3roller system
- Static Eliminator
- Oiling Device
- Special Inspection Software
- Printer for various data information

*Optional attachments are not included in above mentioned specifications.

1.2 SALIENT FEATURES OF MODEL – PLCTECH – 110

- Constant Linear Warping and Beaming speed
- Wide range of warp widths and capacity
- Choice for beaming section with machine or separate
- Wide range of table traverses out of 500 steps and gear ratios.
- PLC controls and touch screen display
- Power saving
2.0 BASIC MACHINE CONSTRUCTION – WARPING & BEAMING

Basic construction of the machine is **sturdy, compact, modular, ergonomically designed** and comfortable to operators, electricians and mechanics. Overall height of machine structure is one meter and cone drum is 1.52 meters. The highest point is light signal pole at 1.6 meter height. All the four sides are within the range of eyesight and supervision of operator. The main frames and side walls are connected with sturdy cross members of M.S. frames and smoothly moving with M.S. wheels fitted with bearings. Main frame is with warping designed and constructed for heavy loads and vibration free operations. Beaming Section in “PLCTECH/110” model is offered in two versions. One is separate and **fixed on floor or second with the machine** depending upon beam flange dia and beam width.

3.0 PROGRAMMABLE LOGIC CONTROLLER (PLC)

The operations controlled by PLC are

- Accurate length of warps
- Auto home position and repositioning of warp table
- Constant linear speed in warping and beaming
- Auto stopping of lost warp end at beaming stage.
- Yarn break memory and data stored
- No. of sets of warping
- Stopping the drum at exact position at end of section.

3.1 TOUCH PANEL GRAPHIC DISPLAY

5.7” TFT Monocrome LCD compact touch panel graphic display.

**Input Data:**
- Total Length, Section Width, No. of Sections, Warping Speed, Beaming Speed, Yarn count/denier, total no. of ends of beam, total warp width in the beam.

**Display:**
- Status of Section Operations, Status of running and set warp length, No. of breaks Of warp, Locking of data input by password, display shows current time and date.

3.2 MODEM CONNECTIVITY – Machine can be linked by modem & telephone line with suppliers for instant diagnostic solution.

4.0 WARPING DRUM – METALIC, FIXED CONE HEIGHT, DYNAMICALLY BALANCED.

Warping drum has been designed after many practical trials and working experience with various yarn materials. The metallic drum is complete in M.S of 8 mm thick steel plate, machined over whole length of drum with **fixed cone height** (either 11° or 9° or 7°) and **dynamically balanced** to avoid vibrations during high speed operations. The cone and cylindrical drum is strongly supported with 6 to 7 M.S rings on a sturdy main shaft of drum to withstand very high crushing force. Main shaft is fitted with heavy duty wide bearings on main side walls of the machine. The working width may be from 2200 mm to 4000 mm and drum circumference may be either 2.5 mtrs. Or 3.0 mtrs.
5.0 DRUM DRIVE – VARIABLE SPEED

Warping drum is driven by AC electric motor having frequency controlled A.C Drive at any desired speed suitable as per yarn quality and material. Warping speed can be varied from 0-600 mtrs / min manually by speed pot at warping table. Warping drum can be run in reverse or forward direction by a foot pedal running throughout the length of the machine or the push buttons on the side of the machine. Crawl speed (inching motion) can also be varied from 0-50 mtrs. / min manually by push button supplied on warping table.

Provision has been made in the A.C drive system to protect A.C electric motors and panel for excess or lower voltage than specified. PLC Control, hardware and software have been provided protection in panel.

Beaming drive has separate A.C motor, frequency controlled A.C drive system which can be varied from 0-100 mtrs / min from the operating panel on beaming side.

6.0 BRAKE SYSTEM – HYDRAULIC, DISC BRAKES

The brake system is developed at our factory after many trials which is successful due to minimum maintenance and efficient working. Model PLCTECH – 110 is provided two powerful Disc brakes on each side of drum which operates with hydraulic system.

Braking action takes place on various instances such as:
- (i) At the time of yarn break
- (ii) At the finish of section length
- (iii) In case of power failure the brakes are applied automatically.
- (iv) At the time of beaming for warp tension
- (v) At any emergency time

All the stoppages are indicated by bright signal lamp pole mounted on machine body at corner of machine and easily noticed from a distance.

7.0 WARPING TABLE – TWO ROLLER SYSTEM

This is very precisely built mechanism for accurate and smooth working of warping table to get perfect and parallel warp sheet laying over the drum. Warping table consist of two roller system for section, flat reed, foot pedal for starting & stopping, operating desk with push buttons for various operating functions.

- **Wide range of traverses** are possible out of 500 steps of gear ratios combination from a specially designed gear box and connected to drive shaft and warp table.
- To select the exact gear ratios are supplying a separate table charts to refer and decide.
- **Density wheel** for density measurement of yarn and Yarn length meters which is used for winding yarn from the creel and number of turns in the wheel and meter give exactly which table charts are to be referred for traverse.
• Two Rollers are provided on the warping table guides the yarn section perfectly parallel and as per section width over the drum.

Section Width can be set precisely and with uniform warp distribution in flat reed with fine angular and lateral adjustments provided on warp table. Standard section width offered is 250 mm but in case of special cases wider width is possible to supply after specifications. Constant Distance between drum and guide roll is maintained by clutch controlled by PLC.

8.1 CENTRAL POSITION OF THE MACHINE

The machine is mounted on the rails and an electrical drive system maintains the lateral angle between creel and warping table automatically while working.

9.0 LEASING DEVICE - MOTORISED

The leasing device is operated by electric motor to raise up & down the leasing reed. Leasing stand is fabricated with wider & firm base fitted with polished chrome plated rods.

10.0 BEAMING SECTION - SEPARATE AND FIXED

Very sturdy, compact and operator’s friendly beaming section is separate and fixed on the floor behind warping machine. Beaming section is equipped with beam drive, beam doffing and donning, two beam carriages, safety device and operating panels for start and stop, pneumatic and hydraulic operations, waxing operation etc. Beaming can be supplied suitable for beam flange diameter of minimum 1000 mm to 1250 mm and beam width ranging from 2800 mm to 4000 mm.

• Two heavy duty adjustable carriages are operated manually for adjustments of beam width.
• Both sides adopters are provided which hold the beam barrel and beam very firmly till the finish of beaming.

10.1 BEAMING TENSION is applied by Disc brakes and hydraulic pressure as per requirement depending upon yarn counts, no. of ends and desired beam hardness by adjustments in the hydraulic pressure. Operator easily operates by knob supplied on hydraulic unit on left hand side of machine.

10.3 BEAMING DRIVE - Separate heavy duty electric motor drives to the beam through heavy duty gear box, triplex sprockets and chains. A.C. variable speed drive, frequency control system provided from the operating panel in the speed range of 0-100 mtr. / min. Constant beaming speed through out beaming operation by PLC Control.
10.7 BEAM DOFFING & DONNING - HYDRAULIC
Two heavy duty support levers are supplied in beaming section which load and unload the loom beam. Both are adjustable as per loom beam size and operate simply by manual operation by operator with the hydraulic system comfortably.

10.4 BEAMING SECTION – BUILT WITH MACHINE
Beaming section built in with machine is suitable for beam flange dia 800-1000 mm and beam width 2200-2800mm. Very sturdy beaming section has been designed and constructed to take up the load and heavy torque of beam rotation. Both side carriages are adjustable easily and chucked perfectly with loom beam barrels. Both carriages are supported by 32 bearings (16each) so as to slide the carriages very easily on two lengthwise shafts while beaming operation takes place. Separate heavy duty motor drives to the beam through triplex sprockets and chains. The beaming section with machine is also equipped with beam doffing and donning by hydraulically operated system as mentioned in 10.7 paragraph. Beaming tension can be set through regular for tension adjustments on warp sheet from beginning to end depending on the yarn count and density.

14.1 SAFETY DEVICE – SAFETY BAR
Safety bar is fulcrumed on main framing beaming section. The machine can be started only when safety bar is in lower position. Additionally electrical switch is provided in front of beaming section for instant stopping to avoid any accident. The safety bar is fitted with switches for start and stop of the machine or stop the machine instantly in emergency.

15.0 POWER SAVING – IN CASE OF FREQUENT STOPPAGES
Additional provision has been made in control panel to stop and start hydraulic motor at the time of yarn breaks and stoppages of machine for about 1.5 – 2.0 minutes which saves power and increase life of hydraulic oil due to lower temperature. Idle time (unutilized) when considered over a period of time is substantially higher. During this time hydraulic motor is stopped.

15.1 MAIN PANEL AND POWER PROTECTION
The main panel is equipped with protection device to protect electric motors for excess or lower voltage than supplied. The main panel is manufactured by standard quality specifications and rules and regulations laid by electrical engineering authorized agency. The panel is totally enclosed with sheet metal fabrication and conveniently located in the machine framing for trouble free operations.