

SPECIFICATIONS

SECTIONAL WARPING MACHINE - SERVOTECH - 130

1.0 TECHNICAL SPECIFICATIONS:

• WORKING WIDTH	:	2200mm to 4000 mm
• DRUM TYPE	:	Metallic Drum, Dynamically Balanced
• DRUM CONE HEIGHT	:	Fixed - 9° or 7°
• DRUM CIRCUMFERENCE	:	3.0 Mtrs.
• WARPING SPEED	:	0 – 600 Mtrs. / Min.
• BEAMING SPEED	:	0 – 100 Mtrs. / Min.
• WARP TABLE	:	With feeler roller and traverse By Servo Motor
• SECTION WIDTH - STD	:	250 mm (Std.)
• - WIDER	:	Incase of coarse & Higher ends
• BEAM FLANGE DIA	:	800 mm – 1250 mm
• BEAMING SECTION	:	Separate and Fixed on floor
• MAIN POWER SUPPLY	:	440 V \pm 5%, 50 Hz, 3 phase
• DRUM DRIVE	:	AC variable speed, frequency controlled.
• ELECTRIC MOTORS	:	One for warping, One for Beaming
• PLC CONTROLS	:	Various controls (Para No.3)
• SERVO CONTROLS	:	Three Servo Systems
• GRAPHIC DISPLAY	:	10" TFT ColourTouch Screen (Para No.3.1)
• BEAM DRIVE	:	AC variable speed, Frequency Controlled
• BEAMING TENSION	:	Hydraulic, uniform, auto controlled
• BEAM PRESSING	:	Pneumatic
• LIQUID WAXING	:	Three roller system
• BEAM CHUCKING	:	Special designed and Motorised
• ELN. STATIC ELIMINATOR	:	Provision with high, low and medium intensity

* Optional attachment not included in above mentioned specification

1.2 SALIENT FEATURES OF MODEL – SERVOTECH – 130

Constant Linear Warping and Beaming Speed
 Two Servo Motors Systems
 Feeler Roller With Pneumatic Pressure
 Constant Beaming Tension
 Compact Beam At Low Winding Tension
 Separate Heavy Duty Beaming Section
 Plc Controls With Inspection Software
 Waxing Roll And Beaming Motor Working Inter-Connected
 Accurate Length Of Warp
 Yarn Break Memory
 Advanced Computerized Applications
 Minimum Manual Errors
 Wide Range Of Yarn Counts Possible
 Automatic Machine Stoppage In case Of Power Failure

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 warpi g designed and constructed for heavy loads and vibration free operations. Beaming Section in servotech models is offered separate and fixed on floor.

3.0 PROGRAMMABLE LOGIC CONTROLLER (PLC)

ALSO WE INCLUDE OUR FUNCTION LIST

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 COMPUTER DISPLAY

10” TFT Colour LCD compact touch panel LAN & USB connector. Status of machine operations can be seen in the office by LAN connector.

- **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 solutions.

3.3 PRINTER – To print input data, machine status, machine run data, date & time of warping section wise, end breakages record for record purpose.

3.4 SPECIAL INSPECTION SOFTWARE

To check and ensure the correct input and output data fed through display. So as to make sure for proper working before start of production. Machine operations are electronically interlocked to avoid any malfunction.

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

Warping drum has been designed after many trials and working experience with various yarn materials. The drum is complete in M.S of 8 mm thick steel plate, machined over whole length of drum with **fixed cone height** (either 11^0 or 9^0 or 7^0) **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** either manually by speed pot at warping table.

Warping drum can be run in **reverse or forward** direction by a foot pedal running through out 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.

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 SERVOTECH-130 is provided two powerful **Disc brakes** on each side of drum which operates by hydraulic system.

Braking action takes place on various instances such as :

- (1) **At the time of yarn break**
- (2) **At the finish of section length**
- (3) **In case of power failure the brakes are applied automatically specially built in.**
- (4) **At the time of beaming for warp tension**
- (5) **At any emergency time**

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

7.0 WARPING TABLE – THREE ROLLER SYSTEM AND SERVO MOTOR DRIVE.

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 consists of three roller system, electronic static eliminator, flat reed, foot pedal for stopping and starting machine, pneumatic pressure gauge and knob, operating desk, Servo motor and mechanism, clutch for warping table displacement etc.

- **Servo motor and mechanism** is built-in to maintain precise traverse of warping table **by ball screw and linear guide.**
- **Three roller system** which facilitates the exact width of section from lease reed to the drum and yarn is uniformly distributed across the width of section **by servo motor, ball screw and linear guide.**

- The **feeler roller** mounted just below two rollers is very useful to control the built up of cylindrical warp over full width. The feeler roller maintains the pressure on section built up on cylinder continuously as the warp section goes on winding. Feeler roller is connected with pneumatic cylinder and pressure valve supplied on the warping table which can be set desired value displayed on pressure gauge.
- **Section Width** can be set precisely and with uniform warp distribution in flat reed with fine angular and lateral adjustments provided on warp table.
- **Constant distance between** drum and warp table is maintained by Servo system.
- **Operating desk** is provided on the warp table with push buttons for: traverse of drum forward and reverse motion, stop and start, speed regulator, emergency stop, pneumatic pressure knob, feeler roller displacement and static eliminator settings etc. All controlling operations of warper at one place and conveniently accessible.

8.0 SERVO CONTROL FOR MACHINE TRAVERSE

Third servo motor is provided to maintain machine traverse with synchronous speed of drum and table.

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 all sections of warping.

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 & FIXED POSITION

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, pneumatic beam pressing, liquid waxing device, 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 800 mm to 1250 mm and beam width ranging from 2200 mm to 4000 mm.

- Two heavy duty adjustable carriages are provided with a **separate motor** for adjustments of beam width.
- Both side adopters are provided with **specially designed chucking device** which hold the beam barrel and beam very firmly till the finish of beaming.

10.3 BEAMING DRIVE – Separate heavy duty electric motor drives to the beam through heavy duty gear box. **AC variable speed** drive, frequency control system is provided from the operating panel in the speed range of **0-100 mtr. / min.** **Constant beaming speed** through out beaming operation by PLC Control.

10.5 BEAMING TENSION is applied on warp sheet by hydraulic brake system by adjusting the knob for hydraulic pressure and can be set at required tension in the starting of beaming and maintained **constantly** and automatically **by the proportional control valve**. Tension will be displayed on touch screen from start to the finish of beam as per set value. Beam tension can be set as per requirement.

10.7 BEAM DOFFING & DONNING - HYDRAULIC

Two heavy duty support levers are fulcrumed on the shaft across the beaming section which load the empty beam and unload the beam after beaming operation by pressing the push button with **hydraulic system** provided.

11.0 BEAM PRESSING - PNEUMATIC

Pneumatic beam pressing device designed and supplied to produce the beam of **Compact and desired hardness at low winding tension** and maintain hardness from beginning to finish of beam length. Yarn sheet is not applied unnecessary tension while beaming and therefore elasticity of yarn & quality is maintained.

Polished and chrome plated pair of press rolls are placed over six UHMW rollers (High Density Synthetic material) which rotates easily under pressure and without any damage to

metal surface and yarn. Two press rolls are adjusted lengthwise as per warp width in the beam. Press rolls and rollers are supported by two solid fabricated arms and both the arms are connected to pneumatic unit having pressure valve, dial gauge and knob supplied with unit to set the required pressure for beam pressing.

12.0 LIQUID WAXING DEVICE – THREE ROLLERS, VARIABLE SPEED.

The purpose of liquid waxing device is to apply liquid wax on **entire width and surface of the yarn** for smooth working at weaving stage. Our well established liquid waxing device since last many years is very successful and efficiently working in industry. Waxing device is mounted between warping machine and beaming section. The device consists of

1. The **fluted guide roll** is provided for spreading the yarn sheet uniformly. **Guide roll** is polished and hard chrome plated.
2. **Wax roll** is made of S.S and fitted in S.S tray is driven by A.C. motor & separate A.C. drive can be set at **desired speed** by adjustments of knob supplied at end of tray.
3. Waxing roller motor and beaming motor are **operated simultaneously** so as to pickup uniform wax on the warp sheet. Main wax application roller and beaming motor operations are inter-connected.
4. S.S liquid wax tank is supplied with the machine having 30 -40 liters capacity of liquid wax and fitted at the side of machine.

13.0 ELECTRONIC STATIC ELIMINATOR – FOR THREE LEVELS OF ELE. CHARGES

Electrical static charges produced on synthetic yarn due to friction with machine parts and inter friction between yarns prohibits the speed and breaks the yarn frequently and hence electronic static eliminator is essential. Electronic static electrode is mounted on warping table just above the section warping sheet to take up **static charges** on the surface of yarn. Electronic static eliminator unit is designed for **high, medium and low** levels of electrical charges and depending upon the intensity of static charges the correct selection is done by push button arrangement to suit to the level of static charges created on yarn surface. Complete kit is fitted within the warp table assembly.

14.0 SAFETY DEVICE – OPTICAL SENSOR AND SAFETY BAR

Safety bar is fulcrumed on main framing of beaming section. The machine can be started only when safety bar is in lower position. Additionally **optical sensing device** is provided in front of beaming section for instant stopping to avoid any accident. The safety bar is fitted with switches for -

- (i) **To stop and start** the machine
- (ii) **To vary the speed** of waxing and beaming.
- (iii) **To stop** the machine instantly **in emergency**.

15.0 POWER SAVING – WHILE MACHINE FREQUENT STOPPAGES

Additional provision has been made in the 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 period of time is substantially higher. During the time hydraulic motor is stop.

15.1 MAIN PANEL & POWER PROTECTION

The main panel is equipped with **protection device** to protect electric motors, PLC Controls, hardware and software for excess or lower voltage than specified. The main panel is manufactured by standard quality specification and rules and regulation led by engineering authorized agency is totally enclosed and sheet metal fabricated panel and conveniently located in the machine framing for trouble free operations.
