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INSTALLATION AND OPERATION

MANUAL

OF

CIRCULAR LOOM CONTROLLER

(LCM 2.50 B)

Release Date: 2/5/2008
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LCM 2.50

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MANUAL

CIRCULAR LOOM CONTROLLER
INDEX

Due to continuous development, specifications are subject to change without notice.
Please mail to betacompngp@gmail.com for further information or updates.
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TECHNICAL DESCRIPTION:-

Functional description:

The loom controller is integrated unit for controlling various functions of Circular Woven Sack Loom. It has a powerful 32 Microprocessor, which is used for Haul-off speed control, Basic loom operation and stores the various Loom data for future analysis.
Two proximity switches mounted on Main motor shaft and Haul motor shaft measure the speed, and on basis of these speeds, the haul off speed is controlled to get the desired Weft Density of fabric. The 32-bit microprocessor also takes care of loom inertia with PID loop, so that during Start, Stop and inch period, Weft density is maintained.

The important functions of the loom controller are,

- Automatic Weft Density Control by PID controller.
- Recording of Shift data like production, breakages, and efficiency.
- Seamless correction / adjustment of Weft Density by Keypad.
- Indication of Pick per Minute (PPM).
- Periodical weft cramming
- Order completion and change indication.
- Real time Clock for automatic Change over of shifts. (3 shifts or 2 shifts)
- Auto cramming in case of Weft Break.
- Interlocking and fault processing.(PLC function)
- Loom operation like Start, Stop, Inch, Fault reset.
- Indication of various faults.

Construction:

The Loom Controller consists of high contrast Graphical LCD screen (Yellow/ Black or Blue/White), 7Tactile keys for setting and reading of various parameters. The extra contrast makes the display readable in all light conditions. The Graphical display also uses higher font size for display of loom parameters when loom is running. In addition to these, all digital inputs and outputs status are indicated on the front side of loom controller with green and red LED, so that faultfinding becomes much faster. A high bright white LED indicates the Readiness of loom and it is visible from considerable distance. In general the design of Loom Controller has been made with Operator Convenience easy maintenance in mind.

On the backside all the connections are terminated on polarized plug type connectors. The connectors are screw type for firm grip of wire and plug type so that, in case loom controller needs to be replaced, no unscrewing of wires is required. This reduces the down time of Loom.
A key switch on the back also prevents unauthorized change of Loom parameter. The crucial parameters are also password protected.

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MASTER RESET :

Note - Master resets the set points and sets updates parameters to 00. Hence use master reset in absolute necessity and the set the parameter set points immediately.

The loom controller has many parameters to be set and many parameters values are updated depending upon various inputs and the events. To reset the set parameters to some default values and to reset the updated parameter values the Master Reset function is provided.
Please refer to the chart on previous page. It shows the default values of all the parameters after doing master reset. The clock should be set to current time immediately after the master reset.

Procedure for Master Reset: Switch off the 230VaC power supply to the loom controller . Then by keeping the 'R' &'+' key pressed continuously, switch on the power supply to loom controller. When the display shows "ALL PARAMETER RESET'' the pressed 'R' & '+' key should be released. Wait for a few seconds and now all the parameter will be set to their default values as mentioned in above chart.
Statistic Menu & Total Production reset by 'R' & '+' key.

Perform the master reset only when necessary because it will change the settings required for your particular loom. Then carefully set all the required parameters to their correct values.

There are three types of master resets as mentioned below:

1) With 'R' key only.
Switch OFF the power supply & then by keeping 'R' key pressed switch ON the power supply, wait for master reset message on display & release 'R' key.> All set parameters will reset to default values & all updated parameters will reset to 00, Except RTC & Statistical menu, Total Production.
2) With 'R' & '+' key only
Switch OFF the power supply & then by keeping 'R' & ' + 'key pressed simultaneously switch ON the power supply, wait for master reset message on display & release 'R' & '+' key simultaneously.> All set parameters will reset to default values , all updated parameters will reset to 00and RTC will reset to 00:00, Except Statistical menu, Total Production.
3) With 'R' & '- 'key only.
Switch OFF the power supply & then by keeping 'R' & '-' key pressed simultaneously switch ON the power supply, wait for master reset message on display & release 'R' & '+' key simultaneously.> All set parameters will reset to default values , all updated parameters will reset to 00 and statistical menu parameters will reset to 00 Except RTC.

After Master reset: Please refer to Default values in the Min, Max and Max Chart.

1) Real time clock is reset to 00:00. Please set it to current time (R and + keys)
2) Roll Length is set to 0. 0 values disable the Roll Length feature. If required then set the Parameter.
3) Order Length is set to 0. 0 values disable the Roll Length feature. If required then set the Parameter.
4) A Shift time will be set to 6:00. Change if different A shift starts timing.
5) B Shift time will be set to 14:00. Change if different B shift start timing.
6) C Shift time will be set to 22:00. Change if different C shift start timing.

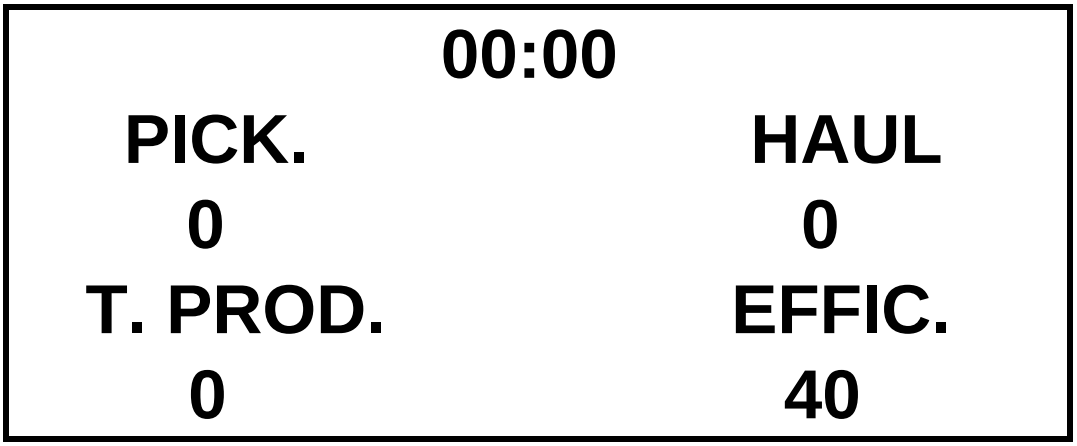
7) M. Pulse/Shuttle Value will be set to 32. Change it if different as per loom design.
8) Haul Pulse/mm value will be 17.7 pulses per mm of fabric produced. Change if different for your Loom.
9) Winder Stop value is set to 0. 0 values disable the winder stop function. This is power saving function when loom is stopped. Change the value if required.
10) In Shift Menu all parameter values are reset to 0.
11) In PID parameters are set to their default values. These parameters should be set as per their required values.

Main Display , Key Handling and Menu Selection:

Main Display:

Graphical Display - The display shows the current status of the loom in bold letters so that it can be
Viewed from distance. Following parameters are displayed in main display:

MAIN SCREEN or MAIN DISPLAY:



1. **T. PROD. :** Total production:-On left bottom of LCD display total fabric produced in meters is displayed.
2. **PICK:** Pick per minute: -- On left top of LCD display Pick i.e. number of weft (horizontal) tapes inserted in fabric in one minute is displayed. This is instantaneous value. This value will be displayed only when loom is running.
3. **HAUL:** On right top of LCD display this parameters indicates instantaneous value of production rate in cm/minute
4. **EFFIC:** Efficiency: -- On right bottom of LCD display this parameter shows the percentage of time duration the loom is running in current shift till the given moment.
   Thus if 4 hour have been passed in current shift and loom was running i.e. on for 2 hours, then Efficiency will be 50% up to that moment in current shift.
5. **00: 00:** Current time is displayed at the center top of LCD Display. If not current please set the actual time

(The Green and Red LEDS on the right & left side of the front sticker show the Input and Output conditions. This is very much helpful for fault diagnosis.)

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Key Handling and Menu selection:

- The user menu can be activated by pressing the 'UP' arrow key when in main screen.
- The controller will remain in menu mode for fixed duration of time (and then go to Graphical display automatically after the fixed delay) OR you come out of menu by pressing ‘‘Left’ arrow key. If you are in sub menu, then you have to press the ' Left' arrow key multiple times.
- You can use Up / Down key to scroll through menu, and Right / Left key to enter / exit respectively from sub menu. The + Plus / -- Minus key will change the parameter value.
- R key is for Master Reset:- Please refer to " Master reset " function.
- The parameter value can be only changed if key lock is open (mounted on back side of controller box.
- Certain parameters need a password to change the default password is 123.

Key lock and Password Policy :

Please refer to activation chart for various parameters.

The parameters changing require Key lock to be in unlocking position.

The parameters in parameter reading also require that password be set before changing their values.
Go to password parameter in further menu and set password to the set password. The Default password is 123. After setting the password go to required changing its value.
To deactivate the password, simply come to main display by pressing the left arrow key multiple times.

To change the password, go to set password in parameter regarding menu.

Input and Output Indication On Front Panel

- There are 16 Digital input of 24VDC, (Electrically isolated) having green LED indication for each input.
- There are 8 relay outputs & 7 relay output status is displayed by red LEDS . 8^{th} cut to length Relay status is not available on LEDS 8^{th} White bright LED indicates loom status .When loom is running the white LED glow Continuously (ON).
- Where any faults conditions are whenever loom is stopped, the white LED off.

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Reading the shift data:

The shift data shows the running (Current) shift data . Every time the shift changeover occurs as per shift timings set in SET RTC MENU, the shift data is transferred to respective 1 or 2 or 3 shift data and the shift data parameters resets to 0 for counting of next shift data.

Press UP key to go to main Menu.

- Reading of the shift data is provided in the main menu.
- With the key [↓] you will move to the [Shift Menu]

Main Menu-> Shift data

SHIFT DATA	
Current shift	→
Shift 1	→
Shift 2	→
Shift 3	→
Shift Total	→

- After operating the key [↓] & [→] you move to the sub menu and read the Parameter data as listed in above box.

When actuating the key [→] you move to current shift

SHIFT DATA	
Fabric	0m
Efficiency	0%
Main ON	00:00h
Loom ON	00:00h
Warp Break	0
Weft Break	0
Weft End	0

When actuating the key [←] you move back to the[Shift Data]& and again actuating key [←] You move back to the [MAIN Menu].

Description of Shift Menu parameters:

FABRIC: The value in this parameter indicates the production in meters occurred in current shift up to that Moment.

EFFICIENCY: it is the percentage of time duration the loom is running in current shift till the given moment. Thus if 4 hours have been passed in current shift and loon was running i.e. ON for 2 hours, then efficiency will be 50 %

MAIN ON: This parameter measure the amount of time in hours the loom supply was on.(star)

LOOM ON: This parameter measures the amount of time in hours the loom was actually running in the current shift till any given moment

WEFT BREAK: The circular loom has 4 or 6 or 8 or so shuttles in loom. The tape coming out of shuttle bobbin is popularly called as WEFT. The number of times this tape breaks while loom is running is Counted in this parameter. A Weft Break sensor is used for the detection of the broken weft.

WARP BREAK: Hundreds of tapes are coming from creel stand are woven by circular loom using weft tapes to produce woven sack fabric. These hundreds of tapes are popularly called WARP. The number of times the loom stops due to wart tape breakage is counted in this parameter. Warp zone wires are connected to fault PCB or any warp control system, which generates the warp break signal.

WEFT END: The near empty condition of shuttle bobbin is detected by another sensor installed on loom, call Bobbin Sensor or color sensor or weft end sensor. The operator need not keep watch on shuttle bobbin and frequently stop loom to watch the status. The Weft end sensor (Bobbin Sensor) will automatically detect and stop the loom. These number of breakage are counted in this parameter.

Setting the Weft Density:

Weft density represents the wove sack fabric weaving. Number of weft (horizontal)tapes required in 100mm length of fabric produced is termed as Weft Density. It can be represented in different units like number of weft tapes per inch or so.

- Setting the Weft Density can be carried out in the [MAIN MENU]. With the key [↓] you move to [MAIN MENU]
- Main Menu-> Weft Density

WEFT DENSITY	
Weft/10cm	40.0
Picks/min	0
Haul Speed	0cm

- Activate the key lock to ON position.
- Go to WEFT DENSITY parameter by pressing down key.
- Enter the desired value by means of the keys [+] & [-]
- The weft insertion depends on the machine and on the product to be produced

Setting of the weft break Compression:

When a tape coming out of any shuttle breaks , gap in fabric is observed, resulting in damaged fabric. To avoid this fault in fabric , WEFT COMP. Parameter is used to correct the weft fault. In case of a broken weft tape the cloth is crammed in order to avoid any visible weft fault. The value of Compression depends on number of shuttles. For example if one weft is missing in 4 shuttle loom the Compression should be 33% (1/3). You can set the value by trial and error for the specific loom once.

Main Menu -> Further Menu-> Password Required ->Param. Reading -> Weft compress.

- Activate the key lock to ON position.
- Set the value in % with the keys [+] or [-]
- The minimum, maximum, and default value are as under.

	Minimum	Maximum	Default
Weft break Compression	10	90	33

ROLL LENGTH FACILITY:

The fabric produced is wound in roll form of desired length. Thus producing rolls of desired length is an important function. Roll length parameter is used for this function. The desired length is set in ROLL LENGTH parameter.
As loom produces fabric, the PRODUCTION parameter counts production in meter. The BAL. ROLL LENGTH parameter is a down counter to display the balance quantity in meter to be produced in the current roll. When the BAL. ROLL LENGTH parameter decrements to 0, the loom is stopped and display shows ROLL COMPLETE in fault screen. The CUT RELAY is activated till the fault is reset. The roll should be cut and new empty former is put in winder to wind the next new roll. The loom can be restarted by resetting the fault by pressing 'R' key on front panel of loom controller. As the new roll restarts from 0 length, the BAL. ROLL LENGTH will now show value same as ROLL LENGTH.
When you are in the [Main Menu] you move to [Roll Change] with the key [↓]

Main Menu -> Roll Change
In Roll Change Menu, go to Roll Length parameter to set or check the roll length & go to Balance roll parameter to read the balance fabric to be produced in current roll.

ROLL CHANGE	
Roll length	**0**
Balance	**0**
Ready	**0**

- Set the desired roll length with the keys [+] or [-].
- In case of an interruption of the roll length there exists the possibility to reset i.e. change the roll length Parameter value.
- Roll Complete: - When roll gets completed to set roll length then loom will 'Stop' indicating "Roll Complete" on display. The roll should be cut and new roll should be started. The loom can be reset by Pressing 'R' key on keypad ("Loom Ready" White LED will glow). Then the loom can be restarted by Pressing START push button. A CUT RELAY is provided to use it for any indication purpose.

The master reset will also reset this parameter to factory setting i.e. "0"
When the ROLL LENGTH parameter value is set to 0 , this feature is disabled.
The minimum, maximum, and default value are as under.

	Minimum	Maximum	Default
Roll Length	**0**	**9999**	**0**

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ORDER LENGTH FACILITY:

Indication of order change:
The loom controller can keep track of your order. It monitors the production and alerts when the order is complete. It also shows the balance quantity.
This feature is similar to roll length feature. The difference is that an order length is the total length of fabric to be produced on that loom for the current fabric. An order length will consist of multiple rolls. All the description for roll length feature will similarly apply to this feature. The Parameters are now ORDER LENGTH and the BAL. ORDER.

ORDER CHANGE	
Order length	0
Balance	0
Ready	0

Setting the periodical weft cramming:

The parameters used for this feature are BAG LENGTH, CRAM LENGTH and CRAM DENSITY in Periodic cramming.

The Controller provides periodical cramming of fabric for stitching. This crams the fabric at set bag Length and the width of cramming can also be set.

- When you are in the [Main Menu] you move with the key [↓] to [Period. Cramming]
  Main Menu-> Periodic Cramming

PERIODIC CRAMMING	
Bag length	0cm
Cram length	0mm
Cram density	100%

- After having operating the key [↓] you move in the menu [Periodic Cramming] to [Bag length] Subsequently to [Cram length] and [Weft density]
  The Bag length has always to exceed the cramming length by at least 1cm.
  Activate the key lock to ON position,
- And set the desire values (Bag length, Cram length,& Cram density in % of the nominal weft insertion) by the keys [+] or [-].

NOTE: - 100% Cram density means no cramming.

Setting of RTC (Real Time Clock):

The Loom controller has a Real Time Clock built in. This clock will keep track of time even when Loom controller is OFF. The clock will run for 10 years. You can set the current time of the clock in this menu and also set the shift start timings.

Main Menu-> Further Menu -> password required ? param. Reading -> set RTC

SET RTC	
Set Min.	0m
Set Hour	0h
Set Date	0d
Set month	0m
Set year	0y

Go to SET RTC menu and set the real time in hour = minute style in 24 hours format using + and – keys.
The time will be updated when we come out of that menu by pressing left arrow key.

Set Shift timings

The Loom Controller will change the shifts automatically based on shift start time setting and Current time from real time clock. You will have to enter the shift start time of each shift. You can have unequal shift also. Maximum three shifts are supported. However you can have two shifts also, by setting third shift start time as 24.00. **(Password required)**

Set the A SHIFT i.e. 1st shift start timing. For Example set to 6:00 if A shift starts at 6 'O' clock in the morning.
Go to B SHIFT parameter in SET SHIFT MENU and press right arrow key.
Set the B SHIFT i.e. 2nd shift start timing. For Example set to 16:00 if B shift starts at 4 'O' clock in the afternoon.
Go to C SHIFT parameter in TIME MENU and press right arrow key.
Set the C SHIFT i.e. 3rd shift start timing. For Example set to 22:00 if C shift starts at 10 'O' clock in the night.

SET SHIFT TIMING	
Sh 1 Start	06:00h
Sh 2 Start	14:00h
Sh 3 Start	22:00h

Activate the key lock to ON position, and set the value by means of the key [+] or [-].

NOTE: - For 2 shift selection, Sh 3 Start = 24:00

Winder Stop:-

A facility is available in loom controller to stop winder motor and save power while loom is not running.

This feature is used for switching off winder motor while loom is stopped after set time in seconds . If set to "0" this feature is disabled and the winder motor will be usually ON.
To restart the winder any time the STOP push button should be pressed and released. The loom will go to ready condition if no fault.
The minimum, Maximum and default value are as under

	Minimum	Maximum	Default
Winder Stop	**0**	**240**	**0**

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SETTING OF MAIN PULSE AND HAUL PULSE:

The two essential input settings required for mesh control (Weft Density control) is to set correct values for the parameters M. PULSU/SHU. And HAUL/PULSE under SYSTEM MENU.

MAIN PULSE/SHUTTLE: It is the number of pulses received to loom controller per shuttle in one rotation of loom.

PULSE/SHU. = Number of Main Pulses generated in one rotation of loom
Number of shuttle on loom.

For example, if192 pulses are generated for one rotation of loom and no of shuttle in the loom are 6 then the value of MAIN PULSE/SHUTTLE Will be 192 / 6= 32.0.
This parameter is also used in PPM calculation. (Pick/minute or Tape/minute)

HAUL PULSE/MM: It is the number of pulses received to loom controller for 1 mm of fabric produced.
HAUL PULSE/MM = Circumference of the Haul-off roller / (total Gear reduction from motor to Haul-off roller X Number of Pulses received in one rotation of Haul-off motor)
For Example:
If Circumference of Haul-off (Take-up) Roller = 533mm,
Total Gear Reduction = Gear Box reduction X Chain coupling reduction = 90 X 2.05 = 184.5
Number of Haul pulses received in one rotation of Haul-off motor = 40
Then HAUL PULSE/MM = (184.5 X 40) / (533)

The Haul-off roller circumference must be very accurately measured, as it is also used of measuring the production. Measure the total gear reduction accurately

SETTING THE PID CONTROLLER VALUES :-

P I D controller is an important form of control for Haul motor. These values in Haul Controller menu need to set once only. First correctly set all other parameters . Set required Weft Density, set Main PULSE/SHUTTLE and HAUL PULSE/MM. Ensure that these three parameters values are accurately calculated and correctly measured.

Following PID parameters need to be set for correct operation of mesh control (Weft Density Control) function .

Refer to Haul Controller Menu:
PID GAIN: This is overall gain of Haul-off system.
P Control Amplifier (PROPORTIONAL).: This is multiplying factor is for proportional error which is the difference between calculated and actual haul pulses received.
I Control Amplifier (INTEGRAL): This multiplying factor is for accumulated error for number haul pulses that must be received in reference to Main Pulses received.
D Control Amplifier (DIFF). This is multiplying factor for the differential error.

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Setting Procedure:

1) Set Weft density, MAIN PULSES/SHUTTLE for one rotation of loom And the HAUL PULSE/MM of production accurately.
2) Connect 0-10VDC Analog output to Haul-off AC Drive and configure it correctly.
3) Initially Set P Control Amplifier Value to 0, I Control Amplifier value to 0 and D Control Amplifier
   Value to 0.
4) Now by running the loom, set the PID Gain parameter value by + / _ key (password required) such that Haul Pulse actual becomes equal to Haul Pulse Calculated when loom is running. You will have to repeat this procedure to accurately set the PID GAIN.
5) Once PID Gain is correctly set , then you can enter the following values
   P Control Amplifier = 10
   I Control Amplifier = 20
   D Control Amplifier = 0

Now observe the fabric quality while the start and stop of loom. If gap while start is observed then decrease HAUL INTEGRAL parameter value and if the cramming is observed while start and stop then increase the HAUL INTEGRAL parameter value.

Run the loom to full speed and actual Weft density and Set weft density should match.

Main Menu	Sub Menu	Sub Menu	Sub Menu	Unit
Level - 1	**Level – 2**	**Level - 3**	**Level - 4**	
Weft Density	Weft / 10 Cm			TP / 100mm
	Pick / Min			TP / MIN
	Haul Speed			cm
Haul off Manual	Not Used			
	Haul Off			V
	Not Used			
Roll Change	Roll Length			Mt
	Balance			Mt
	Ready			Mt
Periodic Cramming	Bag Length			Cm
	Cram Length			mm
	Cram Density			%
Order	Total			Mt
	Balance			Mt
	Ready			Mt
Shift Data	**Current Shift**	Fabric		Mt
		Efficiency		%
		Main On		HR : Min
		Loom On		HR: Min
		Warp Break		-
		Weft Break		-
		Weft End		-
	Shift 1	Fabric		Mt
		Efficiency		%
		Main On		HR : Min

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		Loom On		HR : Min
		Warp Break		-
		Weft Break		-
		Weft End		-
	Shift 2	Fabric		Mt
		Efficiency		%
		Main On		HR : Min
		Loom On		HR : Min
		Warp Break		No
		Weft Break		No
		Weft End		No
	Shift 3	Fabric		Mt
		Efficiency		%
		Main On		HR : Min
		Loom On		HR : Min
		Warp Break		No
		Weft Break		No
		Weft End		No
	Shift Total	Fabric		Mt
		Efficiency		%
		Main On		HR : Min
		Loom On		HR : Min
		Warp Break		No
		Weft Break		No
		Weft End		No
Further Menu	**System Menu**	Machine No.		-
		Language		EN
		Measuring Unit		CM
		Loom Address		-
		Loom Serial No.		-
		Manufacturing Year		-
	Statistical Menu	Fabric		Mt
		Efficiency		%
		Main Switch		HR : Min
		Operating Time		HR : Min
		Warp Break		No's
		Weft Break		No's
		Weft End		No's
	Test Menu	Main Pulse Act.		P
		Haul Pulse Act.		P
		Haul Pulse Cal.		P
		DAC Volts		C
		P Error		C
		I Error		C
		D Error		C
		Weft Den. Calc.		P
		Total Main Cnt.		-
		Total Haul Cnt.		hr
		Prod. In mm		mm
		Total Hour		-
	Parameter Reading	Machine No.		-

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		Type		-
		Shuttle		No.
		Main Drive	Start Delta	-
			Pulses / Shuttle	-
			Chg. Over Time	S
			Dead Time	S
		Haul Off Cntrl.	Pulses / mm	-
			Not Used	
			Not Used	
			Not Used	
			Not Used	
			Not Used	
			PID Gain	
			P Cntrl. Ampl.	-
			I Cntrl. Ampl.	-
			D Cntrl. Ampl.	-
			Not Used	-
		Inlet Cntrl.		
		Set RTC	Set Min.	mn
			Set Hour	hr
			Set Date	d
			Set Month	m
			Set Year	y
		Set Shift	Shift 1 Start	HR : Min
			Shift 2 Start	HR : Min
			Shift 3 Start	HR : Min
		Measuring Unit		Cm
		Winder Stop		S
		Set Password		-
		Weft Compress.		-
		Not Used		
		Lub. Interval.		Mn
		Lub. Time		Mn
		Width Fault		Mt
	Not Used			
	Password	Machine No.		-
		Not Used		-
		Password		Nos

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MINIMUM MAXIMUM AND DEFAULT VALUES :-

S.R. NO.	PARAMETER	MIN.	MAX.	AFTER MASTE	UNITS
	NAME			RESET	
1	**WEFT DENSITY**				
	Weft / 10 CM	10	100	40	Weft / 10 Cm
2	**Haul - Off Manual**				
	Haul - Off	0	2	0	0 V
3	**Roll Change**				
	Roll Length	0	999	0	0 Mt
4	**Period. Cramming**				
	Bag Length	0	250	0	0 Cm
	Cram Length	0	100	0	0 mm
	Cram Density	10	100	100.00%	100 %
5	**Order**				
	Total	0	65000	0	0 Mt
6	**Parameter Reading**				
	Shuttles	4	10	6	6 No
7	**Password**				
	Password	100	999	0	-
8	**Main Drive**				
	Transmit Pulse	1	1000	32	-
	Pulses / Shuttle	1	100	32	-
	Chg. Over Time	1	10	2	2. 0S
	Dead Time	0	100	0	S
	Star Delta			0	
9	**Haul - Off Control.**				
	Pulses / mm	1	100	17.7	-
	PID Gain	100	2000	800	-
	P - Control, Amp.	0	100	20	-
	D - Control. Amp.	0	100	0	-
	I - Control, Amp.	0	100	20	-
10	**Set RTC**				
	Set Min	0	59	0	min
	Set Hour	0	23	0	hr
	Set Date	1	31	0	d
	Set month	1	12	0	m
	Set year	1	99	0	y
11	**Set Shift Time**				
	Shift 1 Start	0 : 00	23 : 59	6 : 00	hr
	Shift 2 Start	0 : 00	23 : 59	14 : 00	hr
	Shift 3 Start	0 : 00	24 : 00 : 00	22 : 00	hr
	Winder Stop	0	240	0	s
	Set Password	100	999	0	-
	Weft Compress	10	90	33	-
12	**Lubrication Interval**	0	240	0	min
13	**Lubricating. Time**	0	20	0	min
14	**Width Fault**	0	20	0	Mt

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15	**Loom Address**	10	220	10	-
16	**Loom Serial No.**	1	250	1	-

PARAMITERCHANGES AND ACTIVATIION

Sr. No.	PARAMITER	PASSWARD	POWER ON / OFF	LOOM : STOP	LOOM RUNNING	KEY LOCK
1	**Weft Density**	No Password	without	Activate	Activate	Unlock
			Power ON / OFF			
2	**Haul Off Manual**					
	Haul Off	NO Password	without	Activate	No Activate	Unlock
			Power ON / OFF			
3	**Roll Change**	No Password	without	Activate	Activate	Unlock
			Power ON / OFF			
4	**Periodic**					
	Bag Length	No Password	without	No Activate	Activate	Unlock
			Power ON / OFF			
	Cram Length	No Password	without	No Activate	Activate	Unlock
			Power ON / OFF			
	Cram Density	No Password	without	No Activate	Activate	Unlock
			Power ON / OFF			
5	**Order**	No Password	without	No Activate	Activate	Unlock
			Power ON / OFF			
6	**Parameter Reading**					
	Shuttles	Yes Password	without	Activate	Activate	Unlock
			Power ON / OFF			
	Pulses / Shuttle	Yes Password	without	Activate	Activate	Unlock
			Power ON / OFF			
	Chg. Over Time	Yes Password	without	Activate	Activate	Unlock
			Power ON / OFF			
	Pulses / mm	Yes Password	without	Activate	Activate	Unlock
			Power ON / OFF			
	PID Gain	Yes Password	without	Activate	Activate	Unlock
			Power ON / OFF			
	P - Ctrl amp.	Yes Password	Activate without	Activate	Activate	Unlock
			Power ON / OFF			
	I - Ctrl amp	Yes Password	without	Activate	Activate	Unlock
			Power ON / OFF			
7	**Set Clock**					
	Set Min	Yes Password	without	Activate	Activate	Unlock
			Power ON / OFF			
	Set Hour	Yes Password	without	Activate	Activate	Unlock
			Power ON / OFF			
	Set Date	Yes Password	without	Activate	Activate	Unlock
			Power ON / OFF			
	Set Month	Yes Password	without	Activate	Activate	Unlock
			Power ON / OFF			
	Set Year	Yes Password	without	Activate	Activate	Unlock

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			Power ON / OFF			
8	**Set shift time**					
	Set 1 start	Yes Password	without	Activate	Activate	Unlock
			Power ON / OFF			
	Set 2 Start	Yes Password	without	Activate	Activate	Unlock
			Power ON / OFF			
	Set 3 Start	Yes Password	without	Activate	Activate	Unlock
			Power ON / OFF			
	Winder Stop	Yes Password	without	Activate	No Activate	Unlock
			Power ON / OFF			
	Set Password	Yes Password	without	Activate	Activate	Unlock
			Power ON / OFF			
	Weft Compress					
	Lub. Interval	Yes Password	only	Activate		Unlock
			power ON / OFF			
	Lub. Time	Yes Password	only	Activate		Unlock
			power ON / OFF	Activate		
	Width Fault	Yes Password	Without Power	Activate	Activate	Unlock
			ON / OFF			

Sr. No.	Input's Connector No's	Nature Of Faults	Information On Display & Loom Status	Reset / Fault Release By	Effect of STOP Push Button	Effect of INCH Push Button	E ST
1	33	Haul Pulse missing	Loom Stopped Fault "No Haul Pulses"	While Fault	Fault Release	Yes	
2	34	Main Pulse missing	Loom Stopped Fault "No Main Pulses"	While Fault	Fault Release	Yes	
3	35	Winder Motor On	Loom Stopped Fault "Winder Motor Off"	"Auto " After Fault Clear	No	Yes	
4	36	Main Motor Overload	Loom Stopped Fault "Main Motor Overload"	While Fault While Fault Clear	No Fault Rel.	No No	
5	37	Haul Motor Overload	Loom Stopped Fault "Haul Motor overload"	While Fault While Fault Clear	No Fault Rel.	No No	
6	38	Winder Motor Overload	Loom Stopped Fault "Winder Motor overload"	While Fault While Fault Clear	No Fault Rel.	No No	
7	42	Weft Break	Loom Stopped Fault "Weft Break"	While Fault While Fault Clear	No Fault Rel.	Yes Yes	
8	43	Weft End	Loom Stopped Fault "Weft End"	While Fault While Fault Clear	No Fault Rel.	Yes Yes	
9	44	Warp Break	Loom Stopped Fault "Warp Break"	While Fault While Fault Clear	No Fault Rel.	Yes Yes	
10	45	Lubrication Fault	Loom Stopped Fault "Lubrication"	"Auto" After Fault Clear	No	Yes	
11	46	Width Fault	Loom Stopped Fault "Width Fault"	While Fault While Fault Clear	No Fault Rel.	Yes Yes	

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Fault description: Running Loom will automatically stop under following events / faults:

Sr. No	Fault/ Event Display as FAULT MENU	Cause Reason for the fault	Remedy (Fault Reset) (After fault is cleared and reset, white Status LED will glow indicating READY status)
1	WEFT BREAK	Weft Tape from shuttle bobbin has broken or shuttle bobbin has completely exhausted.	Inching is allowed while fault. press and release the stop button to Reset the fault Reconnect the weft tape, or put new filled bobbin and start loom.
2	WEFT END	Weft Shuttle bobbin Tape-end has arrived.	Inching is allowed while fault. press and release the stop button to Reset the fault Put new filled bobbin and start loom.
4	MAIN MOTOR	Main motor is too hot. Motor protection of main motor has failed	Check the easy motion of the machine press and release the stop button to Reset the fault after it is cleared Switch off and switch on the main switch. Switch on the motor protection.
5	HAUL MOTOR	Haul off motor too hot Frequency converter of haul-off motor is overloaded or defective.	Check haul off motor. Check parameters of frequency Converter. press and release the stop button to Reset the fault after it is cleared. Switch off and switch on the main switch .
6	WINDER MOTOR	Motor protection of winder motor has failed.	Check winder motor. Check for overload situation and rectify. press and release the stop button to Reset the fault after it is cleared. Switch off and switch on the main switch
7	ROLL COMPLETE	The machine has reached the set roll length i.e. the roll is now of the set roll length.	Press and release stop button to Reset Cut the completed roll and restart the loom
8	ORDER COMPLETE	The machine has finished the last roll of the set order length.	Press and release stop button to Reset Cut the completed roll and restart the loom.
9	WINDER STOP	The Winder motor has stopped after the winder stop delay to save power. Whenever loom is stopped the winder motor will stop after the set delay in Winder Stop Parameter.This is power saving feature	Press and release stop button to Reset This feature can be disabled by setting the Winder Stop parameter value to 0 . This feature can be enabled and the delay in seconds can be set to enable power saving feature , whenever the loom is stopped .