

OPERATING MANUAL FOR LABKON

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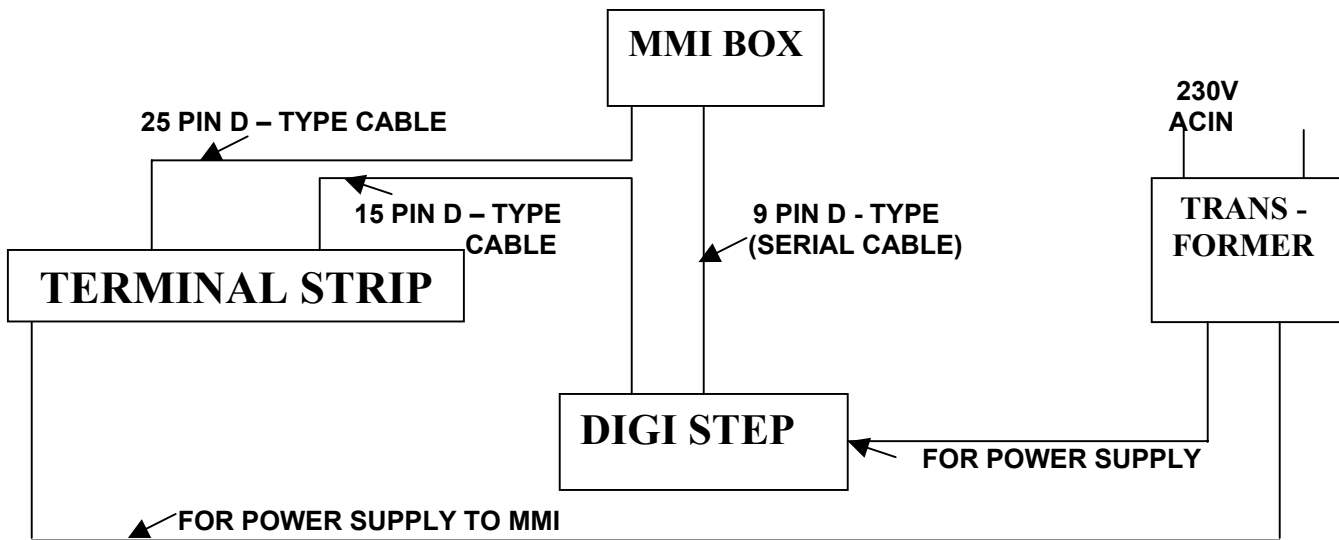
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LABKON UNIT CONSIST OF FOLLOWING ITEMS

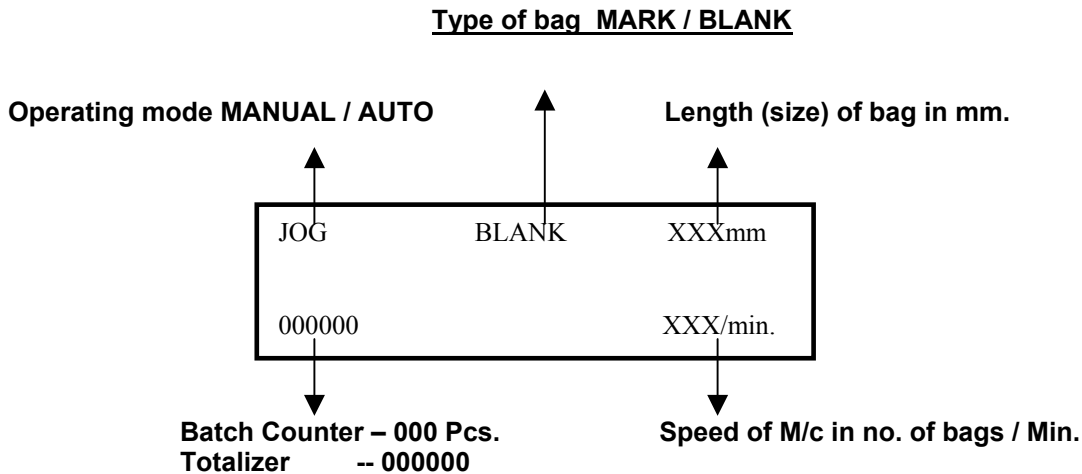
1. Display unit (MMI BOX) : This is 144 x 144 box with 16 x 2 LCD & 9 keys keypad & 1 synchronization pot in front of it.
2. DIGISTEP (DC Stepper Drive) : This is the drive unit to drive the stepper motor. This is mounted on the plate with 230VACoperated Fan
3. Terminal Strip : This is the terminal strip to connect external Solenoids, Limit OR Proximity switches & Label Sensor to *LABKON*
4. Cable Set : There are 4 cables to interconnect Display unit, Terminal Strip & drive with each other.
5. TRANSFORMER : *LABKON* is provided with TRANSFORMER with 230 input.

BLOCK DIAGRAM



FUNCTIONAL DESCRIPTION

DISPLAY:



-System operates in two modes

1. MANUAL MODE 2. AUTO MODE

IN MANUAL MODE:

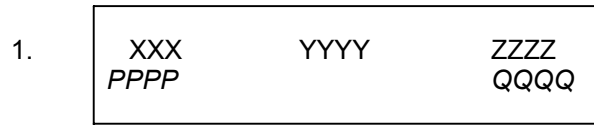
- At the time of power ON (system stays in MANUAL mode) In MANUAL mode Upper line in LCD shows 'JOG'.
- In this mode stepper motor can be moved either in forward direction or in reverse direction as per input applied at the terminal strip (i.e. at INCH FOR or INCH REV) or directly from keys on MMI.

IN AUTO MODE :-

- Upper line of display shows 'RUN'
- On applying start signal to proxi-start input, stepper motor starts running. Motor moves for set length at set speed.
- After starting of stepper motor *RIBBEN output* operates as per set time.
- IF LABEL SENSOR INPUT IS ENABLED (This can be seen in Upper line of display. If LABEL SENSOR IS ENABLED, 'LABEL' is displayed and if LABEL SENSOR IS DISABLED, 'PLAIN' is displayed.) Stepper motor stops as soon as LABEL SENSOR input is received. If LABEL SENSOR input is not received then motor will stop at set length.
- IF LABEL SENSOR IS DISABLED then stepper motor will stop at set length.
- After stopping of stepper motor *PRINT Output* operates as per set time.
- After the output goes off system waits for next start.
- Now if input configuration is set to '5' then motor restarts after cycle time set in timar menu.
- If input configuration is set to '1' then system waits for start input (proximity switch).
- For other then '1' & '5' system starts as per explained in programmers guide.

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DISPLAY STATUS: IN NORMAL RUNNING MODE DISPLAY SHOWS '*NORMAL STATUS*'.



XXX SHOWS AUTO OR MANU MODE

YYYY SHOWS MARK OR PLAIN

ZZZZ SHOWS SET LENGTH

PPPP SHOWS BATCH COUNTER / TOTALIZER

QQQQ SHOWS SHOTS/ MIN

2. On pressing *SAVE* key display shows '*I/O STATUS MENU*' in MANUAL MODE & AUTO MODE.

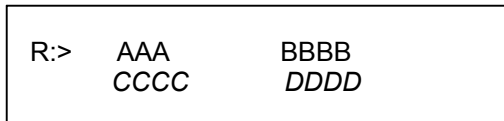
First line shows the status of INPUTS & second line shows the status of OUTPUTS



- I/O STATUS MENU is useful to monitor START, LENGTH STOP, and PHOTOCELL STOP INPUT signals or PRINT & RIBBEN OUTPUT signal.
- START INPUT is given to the MMI at that time in INPUT STATUS MENU **2** shown
- LENGTH STOP INPUT: when LABEL SENSOR not in used & in counter menu LABEL SENSOR is OFF at that time stepper motor stop at its Set Length so stepper stop at its Length in '*I/O STATUS MENU*' 'input shows.
- PHOTOCELL STOP INPUT: when LABEL SENSOR used & in counter menu LABEL SENSOR is ON while LABEL SENSOR is sensed in LABEL WINDOW at that time Stepper motor stop at its photocell stop. This input is '*F*' in '*I/O STATUS MENU*'.
- When stepper stop at PHOTOCELL STOP in I/O STATUS MENU inputs EF shows.

3. On pressing *SAVE* key display shows '*I/O STATUS MENU*' in MANUAL MODE & AUTO MODE.

On pressing *SAVE* key again display shows '*SPEED STATUS*' menu.



- AAA → Shows stepper motor actual running time in milli seconds.
- BBBB → Not Used
- CCCC → Shows actual frequency input given by synchronization pot (potentiometer) which is used for speed variation of stepper motor & conveyer. Its unit is HZ
- DDDD → shows actual speed of stepper motor set by synchronization pot

➤ On pressing *SAVE* key again display shows *NORMAL STATUS*.

HOW TO PROGRAM

Parameter SET 1:

- To enter, press **PROG** once.
- The upper line of LCD shows parameter name in the upper line,
- Parameter value in the lower line. The cursor blinks on least significant digit.
- Use **INC** to increment the digit under the cursor.
- Use **SHIFT** to shift the cursor.
- Use **SAVE** to save the current parameter & to switch to the next parameter.
- Use **PROG** key again to exit.

Parameters :

Lable+Gap len (mm) : Length to run in millimeters.
Range : 1 to 9999
Unit : mm
Default : 200

Totalizer Reset : When put to On, resets the 6 digit totalizer to 0.
Range : On / Off
Unit : -
Default : Off

Parameter SET 2 :

- To enter, keeping **INC** pressed, press **PROG (INC + PROG)**.
- The upper line of LCD shows parameter name in the upper line,
- parameter value in the lower line.
- Use **INC** to increment the digit under the cursor.
- Use **SHIFT** to shift the cursor.
- Use **SAVE** to save the current parameter & to switch to the next parameter.
- Use **PROG** key to exit.

Parameters :

Cycle Time : With Input Config Option 5, time between two consecutive cycles.
Range : 00.00 to 99.99
Unit : Seconds
Default : 00.00

NOTE :

- Press **PROG + INC** & then press **PROG** to toggle between batch counter or totalizer.
- To change Label + Gap Length use **INC** key to increase the value in MM OR use **SHIFT** key to decrease the value in MM directly in main menu.

Print on time : On completion of motor run, the output for the print operates for print on Time.
Range : 00.00 to 99.99
Unit : Seconds
Default : 00.00

Reject on time : Not use for LABkon application
Range : 00.00 to 99.99
Unit : Seconds
Default : 00.00

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Ribbon on time : The Ribbon output turn on with the running of motor & operates for the Ribbon on Time.
Range : 00.00 to 99.99
Unit : Seconds
Default : 00.00

Parameter SET 3 :

- To enter, keeping **SAVE** pressed, press **PROG (SAVE + PROG)**.
- The upper line of LCD shows parameter name in the upper line,
- Parameter value in the lower line.
- Use **INC** to increment the digit under the cursor.
- Use **SHIFT** to shift the cursor.
- Use **SAVE** to save the current parameter & to switch to the next parameter.
- Use **PROG** key to exit.

Parameters :

Run Speed : Maximum speed of the motor.
Range : 1 to 3000
Unit : Hz
Default : 500

Parameter SET 4 : Engineer Level :

NO.1 : To enable, turn on the power to the unit keeping **SAVE** pressed.

- To enter, keeping **INC** pressed, press **PROG (INC + PROG)**.
- The upper line of LCD shows parameter name in the upper line, Parameter value in the lower line.
- Use **INC** to increment the digit under the cursor.
- Use **SHIFT** to shift the cursor.
- Use **SAVE** to save the current parameter & to switch to the next parameter.
- Use **PROG** key to exit.
- To exit from Engineer's Level, turn off the power to the unit.

Parameters :

Ratio PPR : PPR (Pulse Per Revolution) for the motor.
Range : 1 to 2000
Unit : Pulses / Revolution
Default : 400 (After changing the value of this parameter switch OFF & ON the system to activate the value.)

Ratio mm : Total linear travel in ten revolutions of the motor.
Range : 1 to 9999
Unit : mm
Default : 2000 (After changing the value of this parameter switch OFF & ON the system to activate the value.)

Remote Start : If set to On, the START Signal is activated through remote input. Local Start from AUTO/MAN is disabled.
Range : On / Off
Unit : --
Default : Not in used.

Default Loading : If set to On, default values of all the parameters get loaded.
Range : On / Off
Unit : --
Default : Not in used.

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Remote Speed : If set to On, the speed of the motor is in reference to remote analog signal of 0-10 Vdc.
Range : On / Off
Unit : --
Default : Not in used.

PWM Width : Decides the Pulse Width in PWM.
Range : 0 to 50
Unit : Numbers
Default : 12

PWM On Speed: Decides the Speed at which PWM Width is active.
Range : 1 to 1000
Unit : Hz
Default : 250

Hold Time : Once the motor is in HOLD Condition, it remains In HOLD mode for the Hold Time. After that the winding outputs are disabled from the drive.
Range : 1 to 1000
Unit : Seconds
Default : 3

Half Step : If set to Off, the motor runs in Full Step Mode : 200 PPR
If set to On, the motor runs in Half Step Mode : 400 ppr
Range : On / Off
Unit : --
Default : Off

NO.2 : To enable, turn on the power to the unit keeping **SAVE** pressed.

- To enter, keeping **SAVE** pressed, press **PROG (SAVE + PROG)**.
- The upper line of LCD shows parameter name in the upper line, Parameter value in the lower line.
- Use **INC** to increment the digit under the cursor.
- Use **SHIFT** to shift the cursor.
- Use **SAVE** to save the current parameter & to switch to the next parameter.
- Use **PROG** key to exit.
- To exit from Engineer's Level, turn off the power to the unit.

Parameters :

Run Speed : Maximum speed of the motor.
Range : 1 to 5000
Unit : Hz
Default : 2000

Set Speed : Starting speed of the motor.
Range : 1 to 1000
Unit : Hz
Default : 400

Start Steps : No. of Steps the motor run at Start Speed before accelerating to the run Speed.
Range : 0 to 9999
Unit : Numbers
Default : 0

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Accel. Time	:	Time to accelerate the motor from the Start Speed to the Run Speed.
Range	:	1 to 9999
Unit	:	Milliseconds
Default	:	25
End Speed	:	End speed of the motor.
Range	:	1 to 1000
Unit	:	Hz
Default	:	400
End Steps	:	No. of Steps the motor run at End Speed after decelerating to the End Speed.
Range	:	0 to 9999
Unit	:	Numbers
Default	:	0
Decel. Time	:	Time to decelerate the motor from the Run Speed to the End Speed.
Range	:	1 to 9999
Unit	:	Milliseconds
Default	:	25
Photo Speed	:	Speed of the motor during Mark Window.
Range	:	0 to 1000
Unit	:	Hz
Default	:	400
Direction	:	Decides the direction of motor. On - Forward Off - Reverse
Range	:	On / Off
Unit	:	--
Default	:	Off
Inch Speed	:	Maximum speed of the motor during Inching.
Range	:	1 to 3000
Unit	:	Hz
Default	:	200

NO.3 : To enable, turn on the power to the unit keeping **SAVE** pressed.

- To enter, keeping **SHIFT** pressed, press **PROG (SHIFT + PROG)**.
- The upper line of LCD shows parameter name in the upper line, parameter value in the lower line.
- Use **INC** to increment the digit under the cursor.
- Use **SHIFT** to shift the cursor.
- Use **SAVE** to save the current parameter & to switch to the next parameter.
- Use **PROG** key to exit.
- To exit from Engineer's Level, turn off the power to the unit.

Parameters :

Label Sensor	:	To enable / disable the mark sensor input.
Range	:	On / Off
Unit	:	--
Default	:	Off
Label Window	:	When Mark Sensor is On, the sensor input is active only for the distance in mark window before the set length.
Range	:	0 to 9999
Unit	:	mm
Default	:	10

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Missing Label : When Mark Sensor is On, the system waits Missing Mark no of missing marks before generating Mark Sense Error. The counter resets on receipt of mark or on error generation.

Range : 0 to 9999
Unit : numbers
Default : 1

Speed Error Count :
Default : 2

Input Configuration: Decides different configuration for the start / error conditions as follows

1:The system awaits transition of *START* Signal from Off to On to start the motor. Speed Error is disabled.

5:The system awaits for the *CYCLE TIME* to start the motor. Speed Error is not generated.

Range : 1 & 5
Unit : numbers
Default : 5

LIST OF INPUTS & OUTPUTS

OUTPUTS : All outputs are of 24v open collector type are capable of driving 100mA load. (One can connect pneumatic valves of 24 V coil directly.)

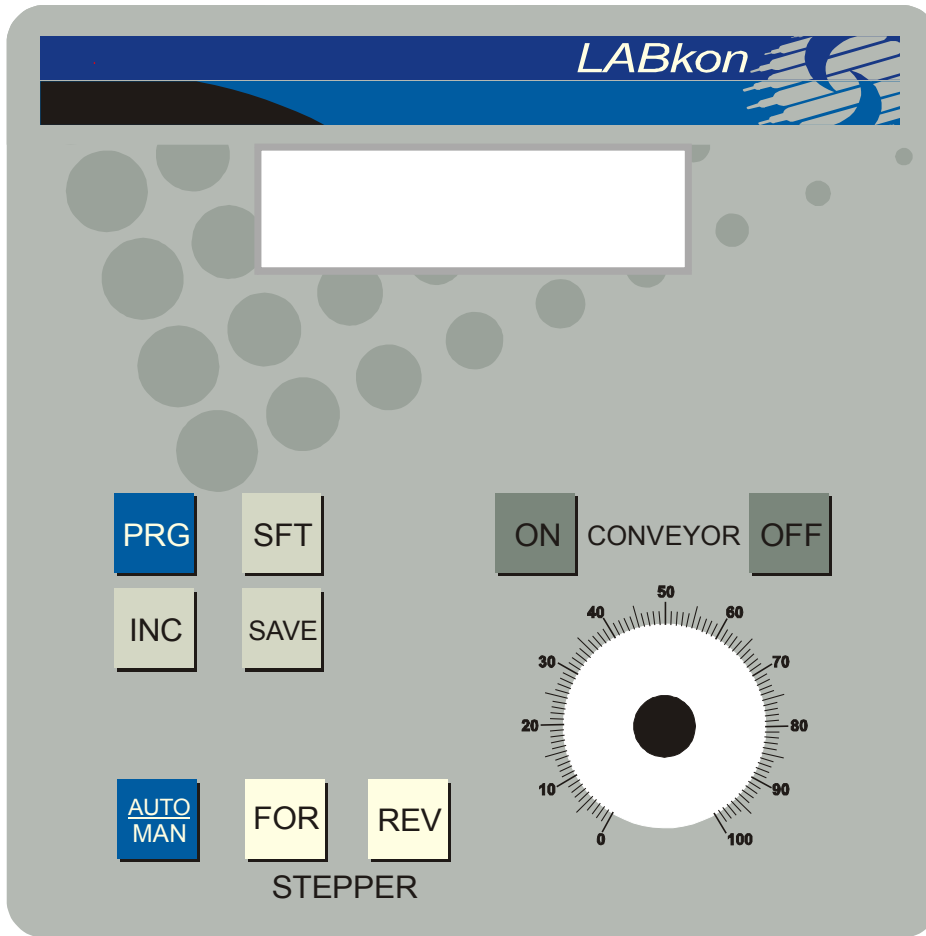
1. PRINT : This is the output which can be used to operate PRINTER after stepper Motor completes its travel. The duration for which the output remains ON is adjustable by PRINT ON TIME in timer menu.
2. RIBBEN : This is the output which can be used to operate RIBBEN after stepper starting its travel. The duration for which the output remains ON is adjustable by RIBBEN ON TIME in timer menu.

INPUTS :

1. PROXI-IN This is the start input. Stepper motor starts running as soon as start Input is received. This is N-P-N NO type input. For this input 10 – 30 VDC N-P-N NO type switch can be used.
2. PH IN NPN This is the mark sensor input . stepper motor stops as per this input. For this NPN type photocell (Mark Sensor) can be used.
3. PH IN PNP This is the mark sensor input . stepper motor stops as per this input. For this NPN type photocell (Mark Sensor) can be used.
4. INCHF On applying this input motor jogs in forward direction.
5. INCHR On applying this input motor jogs in reverse direction.

To activate any above inputs, input terminal is to be connected with GND.

FRONT KEY BOARD OPERATION



1. AUTO/ MAN: PRG Mode: No function
RUN Mode: Toggles between AUTO and MANU mode.
2. PROG: PRG Mode: To set parameters in *LENGTH* menu.
RUN Mode: No function.
3. INC: PRG Mode : Increments the Digit Value (0 to 9)
RUN Mode : Increase label + gap length directly
4. SHIFT: PRG Mode : Shifts the Digit in the Parameter.
RUN Mode : Decrease label + gap length directly
5. SAVE : PRG Mode : Saves Current parameter & switches to next parameter
RUN Mode : Switches menus (i) Regular menu (ii) Input / Output menu (iii) Speed menu
6. (SHIFT+ PROG): PRG Mode: To set parameters in *COUNTER* menu.
RUN Mode: To set parameters in *COUNTER* menu.
7. (SAVE + PROG): PRG Mode: To set parameters in *SPEED* menu.
RUN Mode: To set parameters in *SPEED* menu.
8. (INC +PROG): PRG Mode: To set parameters in *TIMER* menu.
RUN Mode: To set parameters in *TIMER* menu.

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- | | | |
|-----|------|--|
| 9. | FOR: | PRG Mode: N/U.
RUN Mode: Moves the stepper motor in FORWARD direction in inching Operation for inching length & Rate in MANUAL MODE |
| 10. | REV: | PRG Mode: N/U.
RUN Mode: Moves the stepper motor in REVERSE direction in Inching Operation for inching length & Rate in MANUAL MODE |
| 11. | ON: | Starts conveyor. |
| 12. | OFF: | Stop the conveyor. |

COMMISSIONING TIPS

1. HOW TO IDENTIFY THE STEPPER MOTOR CONNECTIONS

- This should be done before you connect stepper motor to drive.
- We have six terminals two groups of three wires showing connections with each other.
- Identify two groups by measuring continuity between six wires.
- Measure resistance between any two leads of same group, note down the reading
- Again measure reading between third lead & any of two lead, note down the reading. One of two reading will be double than the other reading (if not motor winding may be faulty) The leads with double resistance are phases The leads with single resistance are phase & common. Repeat this procedure for other group.

2. HOW TO CHANGE STEPPER MOTOR DIRECTION

- Interchanging R & O phase of motor.

3. HOW TO SET RATIO MM COUNT AS PER ROLL DIA METER

1. Set PPR = 400, RATIO MM = 2000
2. SET LENGTH =200 mm
3. Run the machine and measure the actual draw length
4. Multiplying Draw length by 10
5. Set RATIO MM as per multiplied figure

NOTE:

For setting of correct RATIO MM if you set the LABEL+GAP LENGTH=(ROLL DIA. * 22/7) at that time in counter menu LABEL SENSOR should be off then check the ROLL (DRUM) is running exact one revolution.

4. Following parameter are set as fixed values they need not to change in engg. Level

RATIO PPR = 400
REMOTE START =OFF
DEFAULT LOADING =OFF
REMOTE SPEED =OFF
PWM ON SPEED = 250
HOLD TIME = 3
HALF STEP = ON

5. LABEL sensor must be set such that when MARK appears in front of sensor. The 'MARK led in DIGISTEP stepper drive should remain on.

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6. Start proxy must be set such that when sensed by object on shaft, the '2" in I/O status menu is seen.

ERROR MESSAGES

There are two types of error messages

➤ **LABEL SENSOR ERROR**

When the LABEL SENSOR is enabled and LABEL SENSOR input is not received for more then set *MISSING LABEL* count continuously then LABEL SENSOR error occurs.

➤ **HIGH SPEED ERROR**

When input configuration is set other then 5 and start command is received before stepper motor stops for more then high-speed error count continuously then high-speed error occurs.

IN HEALTHY CONDITION

- The voltage between 0-24 of cn4 in DIGIStep drive must be approx. ➤ 24v ac (In case of BLL drive)
- The voltage between 0-L1 of cn4 in DIGIStep drive must be approx. ➤ 4v ac
- The voltage between 0-H1 of cn4 in DIGIStep drive must be approx. ➤ 35V ac

- The current status through L1 lead must be as follows
 - In MANUAL MODE and motor in stand steel condition - less then 1 Amp.
 - In MANUAL MODE while INCHING - 2 to 8 Amp.
 - In AUTO running condition - 1 to 3 Amp.

- The current status through H1 lead must be as follows
 - In MANUAL MODE at stand still or at inching - less then 1 amp.
 - In AUTO running - 1 to 3 amp.

- NU2 Indication is blinking at the rate of 1 sec. On & 1 sec. Off
- In AUTO mode *MODE* Indication in DIGI STEP should be ON
- When any change in speed or length is made RX Indication in DIGISTEP blinks once.
- In MANUAL MODE when INCHING is done motor rotates and INCH FORWARD, INCH REVERSE led in digistep drive glows.
- Red led on the terminal strip glows with enough brightness.

HOW TO VERIFY LABEL SENSOR FUNCTION

- Set label sensor enabled
- Set label sensor out side the job such that *MARK* led on digistep drive remains on
- Run the machine
- Label sensor error should not appear anytime and the length of the job should be (set length) – (LABEL window)
- Now set the sensor such that *MARK* led on digistep drive remains off
- Run the machine
- *LABEL* sensor error should appear after missing mark count
- The length of the job should be equal to set length

TROUBLE SHOOTING GUIDE

STEPPER MOTOR DOES NOT START

- Verify auto mode
- Verify input configuration
- Verify timer setting
- Verify input start pulse from status menu
- Verify mode, nu2, start led as per healthy condition

STEPPER MOTOR ROTATES BUT NOT PROPER LENGTH IS DRAWN

- Verify ratio mm / ratio ppr parameter
- Verify supply volts & current as per healthy condition
- Verify with mark sensor disabled

VARIATION IN LENGTH OF APPROX- 5 TO 15 MM

- If mark sensor is enabled, disable the mark sensor & check
- Verify supply volts and currents as per healthy condition
- Variation in length does not appear in MARK SENSOR DISABLED then verify mark sensor connections and settings.

STEPPER MOTOR DOES NOT ROTATE BUT JUST GIVES JERKS.

- Verify all the parameters.
- Verify supply volts & currents as per healthy condition.

NO DISPLAY

- Just remove cn4 from digistep drive and if display appears verify input 24 volts at terminal
- Contact supplier.

NO OUTPUTS

- Check 24v dc power supply on terminal strip
- Verify timer settings
- Check in manual mode refer I/O test mode
- Verify output wiring common of the outputs must be connected to 24 volts.
- Check cutter count. It should be one

SYSTEM CONFIRMATION TEST

- To run this test kindly set all the parameters to default value as per given in programmer's guide.
- Now put the system in auto mode.
- Stepper motor should run EXECT ONE REVOLUTION. Then stops for 0.5 sec. And again one revolution.

LV MCB TRIPPED

- Verify inching function is working or not.
- Measure LV current; verify it with healthy condition currents.
- Contact supplier (drive may be faulty)

INCHING FUNCTION IS NOT WORKING

- Verify LV current as per healthy condition currents
- If zero current then may be fuse (in side the drive) failed
- Verify LV voltage at cn4 of digistep
- Fill the form given with this manual & contact supplier

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For any kind of problem kindly fill the following form & email us to communicate faster

Volts at cn4 of digistep 0-24 0-L1 0-H1

Current through	LEAD L1	LEAD H1
At motor stand still	<input type="text"/>	<input type="text"/>
At motor inching	<input type="text"/>	<input type="text"/>
At motor normal running	<input type="text"/>	<input type="text"/>

Status of **LEDS** in digistep

	ON	OFF
INCH F		
START		
MARK		
MODE		
INCH R		
NU 1		
F 2		
F 1		
NU 2 (BLINKING)		
RX		

- (1) Status of Display in (NORMAL RUNNING) mode in Display unit
- (4) Counter increment \longrightarrow YES / NO (in lower line in normal menu)
- (5) Value of shots / min in auto mode in lower line in normal menu.
- (6) Value of R in 3rd menu (you can access third menu by pressing next key twice)
- (7) Value of all the parameters
- (8) Run the system confirmation test motor is running
Exact one revolution \longrightarrow YES / NO.

Wiring Diagram

Wiring Diagram

