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Carpet / Napkin Sewer

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Description about:

Indicator LED's at the front panel:

Yellow: No motor connected (no encoder pulses detected at power-on)

Red: Over current error (Motor)

This setup needs a synchronizer at the hand wheel

How it works:

There are four seams: A; B; C & D

The machine starts sewing with the photo eye covered. If the operator tries to start without the eye covered, the display reads: "COVER THE EYE !"

Each seam starts with an adjustable number of slow stitches, if the function is enabled (group TOGGLE SWITCHES parameter "SOFT START). The number of stitches and the speed is adjustable (group "SPEEDS", parameter "SOFTSTRT" and group "COUNTERS", parameter SOFT ST").

After the slow stitches, the machine sews with top speed (***SPEEDS) until the eye gets uncovered. This will start the end count of the seam (group "COUNTERS", parameter "STOP…"). After finishing the count, the machine comes to the stop and waits for a new start. The end count are the same for seam "A", "B" & "C".

Seam "D" has a different length (group "COUNTERS", parameter "END" to allow the machine to sew off.

The push buttons "ARROW-UP" or "ARROW-DOWN" at the LCD- box allow to change the present seam (from A to B or else)

There are two modes of operation: MANUAL mode and AUTO mode

Push the "NU/ND" button to toggle between the two modes

Manual Mode

The machine sews with pedal speed, limited by the selected maximum speed (group "*SPEEDS", parameter "MAXIM.." until the eye gets uncovered. Sews the end count with auto speed and stops. If the pedal is in neutral position, the presser foot is <u>always</u> down. The next start is possible if the pedal was in neutral position and the eye is covered.**

AUTO mode:

For this operation: The presser foot should be in the 'up position': To select: group "TOGGLE SW", parameter "PF End of cycle"
Start: push the pedal forward and release it.
The machine sews the seam with top (max) speed until the eye gets uncovered and the machine stops after counting stitches. The Stop can be selected in "needle-up" or "needle-down" (a 2- needle machine needs to stop in neele-up)
The presser foot is up or down, depending on the parameter setting (TOGGLE SWITCHES, parameter PRESSER F EoC)
Turn the material until the eye is covered again. This will start the "PIVOT" timer. The machine will start automatically after the 'pivot time' is over (group "TIMER" parameter "PIVOT"
After the last seam (seam "D") the machine has to be started with the pedal again.
If the 'slow start' is selected, it occurs only at the beginning of seam "A"

There is a slightly difference between the older 900er series and the new M16 system.

Power-On:

Never connect the motor (power or encoder cable) after the power is turned ON !

LCD- display box (Programmer)
　　　To connect or disconnect the LCD- box, the power has to be turned **off** to initialize the system after power-on
Going to the "Hidden Parameters" or "MASTER RESET":
　　　Please read the procedure carefully at page 3

The new system with the large motor needs a synchronizer, mounted to the hand wheel.

Synchronizer discs:
Outer disc: 　　　　**Needle-UP**
Middle disc: 　　　　**Needle-DOWN**
Inner Disc: 　　　**Trim**

Pulley ratio:
In order to get the selected speed at the sewing machine and not at the motor,
The pulley ratio between motor pulley and machine pulley (hand wheel) has to be taken.
This happens after a "MASTER RESET" or a special procedure to take the ratio. The display reads: "TAKE NEW RATIO"
The ratio is verified after each power-on.
In case of the change of the pulley, new ratio will be taken.

How to force to take a new ratio:
1. **The power has to be turned on.**
2. **Press the "NEEDLE-UP/NEEDLE-DOWN" and the "SBT" buttons at the same time.**
3. **Turn the power off.**
4. **Wait for the message "GOOD BYE< SEE YOU"**
5. **Turn the power back on before the message disappears**
6. **Held both buttons down until the massage "RELEASE BUTTONS" appears.**
7. **Release the buttons. Now the display should read "TAKE NEW RATIO"**

Access to "HIDDEN PARAMETER"

A)   If the power is OFF, turn it ON (the display reads "*OPERAION MODE*")
B)   Turn the power OFF (the display reads *"good bye, see you"*)
C)   Hold down the "NU/ND", and the "ARROW-RIGHT" buttons
D)   Turn the power back ON <u>before the display gets blank </u>(very important!)
E)   Held the buttons down until a string of stars is displayed.
F)   Release the buttons and push the "SET" button before the stars disappear. The access to the "HIDDEN PARAMETER" is enabled.
            Power OFF will disable the access.

MASTER RESET

Caution: This procedure will overwrite the whole parameter set with the default settings!

A)   If the power is OFF, turn it ON (the display reads "*OPERAION MODE*")
B)   Turn the power OFF (the display reads *"good bye, see you"*)
C)   Push and hold down the "NU/ND", the "ARROW-RIGHT" <u>and</u> the "ARROW-UP" buttons
D)   Turn the power back ON <u>before the display gets blank </u>(very important!)
E)   Held the buttons down until the displayed message alternates between:
            "PUSH SET" and   *"FOR RESET"*
F)   Release the buttons and push the "SET" button within ten (10) cycles.
             The display reads: "PROGRAMMING"
            NOTE: if the "SET" button is not pushed within 10 cycles, the program goes to the main menu without executing the MASTER RESET.
            Access to the "HIDDEN PARAMETER" is enabled to make important settings such as speeds and needle-positions.

TAKE NEW RATIO

G)   If the power is OFF, turn it ON (the display reads "*OPERAION MODE*")
H)   Turn the power OFF (the display reads *"good bye, see you"*)
I)   Push and hold down the "NU/ND" and the "SBT" buttons
J)   Turn the power back ON <u>before the display gets blank </u>(very important!)
K)   Held the buttons down until the display reads: "release buttons"
        As soon the buttons are released, the display reads" TAKE RATIO"

MODES OF OPERATION:

The LCD display can be operated in three (3) different modes.
   They are:
   1. **OPERATING MODE:**   To operate the machine
   2. **PROGRAMMING MODE:**   To change a parameter
   3. **TEST MODE**   An easy way to maintain and check the system.

Two different parameter levels are available:
                          OPERATORS LEVEL
                          MECHANICS LEVEL

To use the MECHANICS LEVEL, please see the section 2.0.0 (Access to "HIDDEN PARAMERTERS)

1.0.0.   HOW TO CHANGE A PARAMETER:
              Four parameter groups are available (OPERATORS LEVEL)
                          SPEEDS
                          TIMERS
                          COUNTERS
                          TOGGLE SWITCHES.
              To change a parameter, please proceed the following sequence:

STEP 1
              Push the 'ARROW ROUND' button repeatedly until the desired parameter group is displayed.
STEP 2
              Push the 'SET' button repeatedly until the desired parameter is displayed
STEP 3
              Change the parameter with the buttons:
                          'ARROW-UP'   (increase the value)
                 or   'ARROW DOWN'   (decrease the value)

              In the group 'TOGGLE SWITCHES' , either button, "ARROW UP" or "ARROW DOWN"
              will toggle the parameter.

PLEASE NOTE:
To optimize a certain parameter, it may be necessary to go repeatedly from the operation mode
back to the same parameter.
It can be easy done by pressing the 'SET' button.
If the program is in the OPERATION MODE, the SET button takes you right back to the last
displayed parameter.
Exemption:
If you are in the group "TOGGLE SWITCHES", the "SET" button brings you to the first parameter of the
group "TOGGLE SWITCHES"

If a parameter was changed by accident and the machine doesn't work properly, it is possible
to go back to the original factory setup by using the feature of the MASTER RESET (section 3.0.0).

4.0.0 Operators Parameters:

4.0.0   SPEEDS: rpm (spm, stitches per minute)

4.0.1   Soft Strt.   **Soft start after End of Cycle**
                   Range: 150 to 1000
                   Steps: 10
                   Default: 700

4.0.2   End sp .   **The speed after the eye is uncovered to stop.**
                   Range: 150 to 2500
                   Steps: 10
                   Default: 1700

4.1.0   TIMERS   ms (milliseconds)

4.1.1   Strt Del.   **Start Delay**
                   The delay from presser foot down to start.
                   If the foot is already down, this time will not affect.
                   Range: 30 to 2500
                   Steps: 10
                   Default: 60

4.1.2   PIVOT   **The pivot time in the "AUTO" mode. This time delays the new start**
                   after covering the eye.
                   Range: 1 to 2500
                   Steps: 10
                   Default: 600

4.1.2   CUTTER   **Cutter-on Time, the time the cutter is turned ON**
                   Range: 1 to 250
                   Steps: 1
                   Default: 80

4.1.2   V- OFF   **Venturi off time in the seam *****
                   Range: 0 to 2500
                   Steps: 10
                   Default: 300

*** Please note:
If this time is set to zero (0), the venture stays ON permanently.

4.4.0　　　　　　　COUNTERS, (Numbers of Stitches)

4.4.1　Soft St　　　Soft Start after End of Cycle
Range:　　　1 to 30
Steps:　　　1
Default:　　3

4.4.2　STOP A-C　　Stop at seam A, B & D
Range:　　　1 to 200
Steps:　　　1
Default:　　15

4.4.3　END　　　　End count for seam "D"
Range:　　　1 to 200
Steps:　　　1
Default:　　25

4.4.4　VENTURI　　Venturi ON count
Range:　　　1 to 250
Steps:　　　1
Default:　　25

4.6.0　　　　　　　TOGGLE SWITCHES

4.5.1　Pf seam end　　　Presser Foot End of Cycle　　UP / DOWN
Default:　　UP

4.5.2　SOFT START　　ON / OFF
Default:　　OFF

4.5.3　POS A B C　　　UP/DOWN
Default:　　DOWN

4.5.4　SLOW END　　　ON / OFF
Default:　　ON

5.0.0 HIDDEN PARAMETER

5.1.0 ***** SPEEDS (rpm)

5.1.1   MINIM   **Minimum Speed**
                          Range: 30 to 600
                          Steps: 10
                          Default: 230

5.1.2   MAXIM.   **Maximum Speed**
                          Range: 500 to 6500
                          Steps: 100
                          Default: 3500

5.4.0 ****** MISCELEN   (Miscellaneous)

Presser foot duty cycle:
Due the voltage is too high to turn a solenoid permanent on all time,
the current is turned on only permanently a short time, after that,
the current has to be chopped.
For example: Duty cycle 40% means 40% on, 60% off
If the duty cycle is too low, the solenoid will not stay on.
If too low, the solenoid will turn too hot!

5.4.1   PF 100%   **Presser foot on 100 %**
                          Range   10 to 2000
                          Steps: 10
                          Default: 200

5.4.2   PF DUTY   **Presser foot duty cycle**
                          Range   10 to 100
                          Steps: 10
                          Default: 50 (50%)

5.4.3   ACCEL   **Acceleration ramp**
                          Range   05 to 50
                          Steps: 1
                          Default: 40

5.4.3   DECEL   **Deceleration ramp**
                          Range   05 to 50
                          Steps: 1
                          Default: 40

Acceleration / Deceleration Ramp:
The lower the number, the slower the Ramp!

5.5.0 ****TOGG SW   TOGGLE SWITCHES

5.5.1   DIRECTN   Direction of Rotation (CCW / CW)
                      Default: CW (Clockwise)

5.5.2   START   Before the next start is allowed:
                      The pedal he to be neutral or start immediately after the eye is
                      covered
                      Default: always

5.5.3   POSITION   fast or normal
                      Default: normal

5.5.4   AUTO MODE   ON or OFF
                      This parameter is not used in this application.

5.5.5   SSEE REGS   See register YES or NO
                      This parameter is only for software programming to allow to check
                      certain registers. It should not be used by the customers.

7.0.0   OPTIONS

Download a "HEX"- file to program a memory chip:

**The original program for the M16 systemstarts at address "F0000" HEX and
ends at "FFFFF"**
**The addresses from 00 to "EFFFF" are reserved for the internal ROM of the
CPU. After downloading the hex file from your computer to your
programmer, the hex file has to be moved from the higher address to the
start address "00000"**

7.1.0 Using the Built-in Test Program

To enter: Press simultaneously the ARROW- RIGHT and the SBT button., release the
ARROW-RIGHT button first! Otherwise you are back in the main program!
>   The display should read: **TEST MODE**

To go to the first group, press the "ARROW-ROUND" button
The display reads: **TEST TREADLE**   for about 2 seconds
Then it reads the position of the threadle:

This can be: 1.   NEUTRAL
                2.   FORWARD and a number
                A)   HEEL 1
                B)   HEEL 1 / HEEL 2
If the threadle is in forward position, the displayed number is the reading of the
ADC- converter.
The lowest number should be below ten (10) and the highest number at least 245

To go to the next group, press the "ARROW-ROUND" button again
The next group is: **test synchronizer**
Turn the hand wheel and the display reds all 3 positions:
 NEEDLE-UPor/ NEEDLE-DOWN or TRIM

To go to the next group, press the "ARROW-ROUND" button again
The next group is: **test inputs**
                    (this will be displayed for two seconds)
Then activated inputs are displayed
If no inputs are activated, the display reads   "   ----------------   "

To go to the next group, press the "ARROW-ROUND" button again
The next group is: **test outputs**

After two seconds, the display reads: **-1- PRESSERFOOT**

To activate the output, press the "NEEDLE-UP / NEEDLE-DOWN button.
To go to the next output, press the "ARROW-UP" button.
The next reading is;   **- 2 – NEEDLE COOLER**

To go to the next output, press the "ARROW-UP" button.
To go to the former output, press the "ARROW-DOWN" button

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To go to the next group, press the "ARROW-ROUND" button again

The next group is: **Test Encoder / Index**

The LCD- display reads the number of pulses of the encoder. Turn the hand wheel
And the number counts up or down, dependent on the direction. The index signal
resets the counter at 2000 (up) or 1 (down). If the encoder counts up and the
number changes at 2000 to 1, every thing is fine.

To go to the next group, press the "ARROW-ROUND" button again

The next group is: **Test Motor (Balance)**

This test allows testing the "balance" of the motor. If this adjustment is not
correct, the motor turns hot while operating.

To perform the test the motor has to be disconnected from the machine.

Push the NU/ND- button, the motor starts running with a low speed (100 rpm) for
about three revolutions. The display reads: **"WAITING FOR INDEX"**
 After the motor stops, the following message will be displayed:
 "CALCULATE OFFSET". When the offset is calculated, the result will be
displayed: **"ADJUSTMENT: + xx "** or **"ADJUSTMENT – xx"**
"+xx" or "- xx" represents a number. This number should not be higher then 15.
If the reading is not correct, please repeat the test (Press NU/ND again).
5.6 counts is one degree.

Display the PIN (Program Identification Number)
1. Turn the power OFF
2. Press the pedal forward
3. Turn the power ON while the pedal is held in the forward position
   (Don't worry, the machine (Motor) will not move)
4. The LCD- display reads the PIN as long as the pedal is held down

Indicator LED's at the front panel:

Yellow: No encoder pulses detected at power-on
The program could not set the position of the hand wheel. Check the encoder pulses !
Red: Over current error (Motor)

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Download a "HEX"- file to program a memory chip (E- prom) for the new M16 system:

The external program for the M16 system starts at address "F0000" HEX and ends at "FFFFF"
The addresses from 00 to "EFFFF" are reserved for the internal ROM (or flash memory) of the CPU.
Because the .ORG of the program is set to "F0000hex the program will be downloaded at a higher address (This depends on the size of the buffer of your programmer.

A)   Fill the buffer of your programmer complete with "FF"hex
     (recommended)
2.   Download the hex file into the buffer of your programmer
3.   Check out where the program starts. This can be "70000" or "F0000"
     This address depends on the size of the programmers memory.
A)   Move the complete hex file to address "00000" and program the e- prom.

     Your programmer has no "MOVE" command?
     In this case you change the starting address of the buffer from "0000" to the address where the program starts.
     Keep the device address "0000"

TROUBLE SHOOTING

IN GENERAL:

All units have to pass strong test procedures.
They are tested from the
1. MANUFACTURER
2. CLINTON INDUSTRIES

The test at CLINTON INDUSTRIES includes:
a) Cycling the unit under normal conditions for about 6 hours
b) 1st Stress test
c) Vibration test
d) 2nd Stress test
e) Full function test

Most failures happen because of :
1. Improper grounding.
   Static voltage at different parts of the machine may cause serious problems.
Large Motor:
CLINTON INDUSTRIES provides a braided ground wire which has
to be connected between sew head and control box.
Mini Taurus:
If the motor is attached to the sew head, the system is grounded thru the motor
   a) The power supply system has to be grounded properly.
   b) Additional attachments like stackers etc. needs to be grounded too.

2. Improper connections
   a) Connections between control box and motor
   b) Connections between control box and attachments.
   c) Connection to the power supply system.

Trouble Shooting Guide:

Turn the power on and the display stays blank: No power at all !
1. *Is the display box plugged in properly?*
2. *Check the line voltage*
3. *Check the power plug for proper connection*
4. *Check the power switch*
5. *Turn the power off, Unplug all connections except the power plug and the LCD- display box and turn the power back on. Still blank? If yes,*
Try another LCD- display box.
6. *If this fails, replace the control box.*

Turn power on and the display has 8 black bars at the left hand side:
The power supply seems O.K. but the program doesn't run.
1. *The LCD- box is not properly connected*
2. *The LCD box was plugged-in during "POWER ON" (not initialized)*
To connect a LCD- box, the power has to be turned off before the LCD- box gets plugged-in.
3. *Check logic board for LCD- box jumpers (see logic board drawing).*

The motor runs properly, but the solenoids don't work:
The power supply for the transformer is missing.
The transformer is only used to operate the solenoids
1. *Open the control box and check the plug which connects the transformer to the output board (3-pin plug, two yellow and one green wire)*
2. *Check the connection of the black ribbon cable between solenoid board (CN5) and logic board (CN1)*
3. *Check the fuse "F1"on the solenoid board.*
4. *Go to the "TEST MODE, TEST OUTPUTS and check all outputs for function*

The unit has a "strange" behavior:

> An important parameter may have been changed by accident.
> 1. *Make notes about your parameter setups.*
> 2. *Proceed a "MASTER RESET" (see MASTER RESET instruction)*
> 3. *Test the machine for proper function.*
> 4. *Reprogram the machine step by step to your original setup.*
> 5. *Please remember to check the positions and the direction carefully before you start the machine.*

The motor gets too hot:

> 1. *Go to the SYSTEM TEST and check the balance of the motor see the manual for " system test instruction"*
> 2. *Check the machine head. The machine head should turn freely.*

The position stop points are not matching correctly with the adjustment made with the "teach-in" mode:

> *Please return back to the parameter and make the final adjustments in small increments with the ARROW UP / DOWN button.*
> *Don't use the "TEACH-IN" mode to change small amounts.*

The position is erratic and/or migrating:

> 3. *Go to the "SYSTEM TEST" routine and test the balance of the motor.*
> 4. *Make sure, the position point is slightly before the top center.*
> 5. *Check the LOVEJOY coupling at the motor and machine shaft for proper tightness.*

WATCHDOG ERROR:

IN GENERAL:
A watchdog error occurs, when the feedback from the motor to the processor is missing. That means, the processor does not receive the encoder pulses.
In case of a watchdog error, please proceed the following:
Press the NEEDLE UP / DOWN button, the program will go back to the operation mode.
Start again.

If the machine operates normal:
1. *Check the motor plugs for proper connection*
2. *Check the temperature of the motor.*
3. *If the motor turns too hot, check the mech. part of the machine*
4. *Run the test for the balance of the motor.*

If the machine turns about one revolution with uncontrolled speed:
The encoder pulses are missing.
1   Check the encoder plug for proper connection.
2. *Run the encoder test*

If the machine does not run at all:
1. *Check all motor plugs for proper connection*
2. *Check your line voltage (must have at least 180 volt).*
3. *Remove the motor and run the motor test.*
4. *Check the overload LED (red LED at the front of the control box).*
If the LED is lit, turn the power off and wait at least one minute.
Turn the power back on.
If the machine runs normal, a spike may have caused the problem.
CHECK FOR PROPER GROUNDING.
Check the ferrites on the following cables:
LCD box input, encoder input and pedal input.