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The New 1000 Series

August 2005 by PETER SCHUELER
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Vfc's "Riser Operation"

for Juki

Program ID: 1095ri1.9

Description about:

Please Note:
The LCD- box can be unplugged or plugged-in any time without turning the power off.

Before using the new system, please read this carefully !!!

Installation of the system:

Never run the power cable of the motor parallel with the encoder cable of the motor because of high electrical noise.

The speed selector (speed control) has to be properly grounded. Attach the braided wire to the metal of the control box or the sew head.

Power-On:

Due the motor does not use commutator lines, the system has to check the location of the index in the power-on procedure. The motor has to be connected completely to the box (power- and encoder cable) before the power is turned on! The motor will not work, if it is connected after the power is already turned on.

Caution !!

The machine goes to the NEEDLE-DOWN position.

The display reads: "GO DOWN POSITION"

If the motor does not move (not plugged in properly etc.), this part can be bypassed by pushing the NU/ND button on the command box.

In this case, the machine will not run !!

LCD- display box (Programmer)

The LCD- display can be connected any time, even during the power is already turned on. (old system: The power has to be turned off)

Going to the "Hidden Parameters" or "MASTER RESET":

The same procedure as with the old system: Turn the power on by pressing the desired buttons.

In some cases, when the power was completely off and is turned on, the LCD-display stays blank for as couple of seconds. The reason is a longer RESET-mode. In this case, turn on the power, wait until the display is initialized and reads "OPERATING MODE". Now turn the power off.

The display reads: "…..saving data" and then "goodbye, see you"

Before the display gets blank again, turn on the power and follow the procedure to go to the "HIDDEN PARAMETER" or "MASTER RESET"

Set the Positions

This is similar to the old system using the mini motor. There is a 'teach-in' mode in the 'hidden parameters', group ' POSITIONS'.

Go to the desired parameter: 'NEEDLE UP', 'NEEDLE DN' or 'TRIM", then turn the hand wheel to the desired position and press the NU-ND button.

This will store the position. You can see the result in the display.

Caution:

You can not turn on the power and set the positions. The hand wheel has to turn at least one revolution to know about the location of the index.

How it works:
The unit is designed to work with one photo eye.
Two purposes of the eye:

a) To avoid start without material (to start, the eye has to be covered)
b) To detect the end of the garment.

If the machine does not run and the eye gets covered, the venturi turns on for 350 ms

How to sew:
Put the material in to sew position (the eye is covered) and push the pedal. The machine starts sewing . The speed is controlled by the treadle.
With the very first stitch after EOC (End Of Cycle) the programs starts with the following seam lengths:

a) .Soft start (if turned on)
b) Venturi front
c) Puller start

As soon the counter for the puller counts down to zero, the puller gets started.
If the pedal is in neutral position, the machine and the puller stop.
Pedal heel 2 (full backward) will rise the needle in the upper position and cancel the cycle (EOC)!

When the eye gets uncovered, the end of the seam gets started. The stitch count for the venturi at the end gets started.
As soon the counter counts down to zero, the needle stops in the end position and starts the venturi-delay timer. As soon the timer is zero, the venturi turns off.

Pleas note:
For different sizes of the garment, there are two (2) different programs for the start of the puller and the seam end accessible:
Program 1 (puller 1, venturi 1) The display reads: "PROGRAM –1- EOC"
and program 2 (puller 2, venturi 2) The display reads: "PROGRAM –2- EOC"

Outputs:

Presser foot:	**2-pin Molex, pin 1 & 2**
Venturi	**9-pin Molex, pin 1 & 3**
Puller lift:	**9-pin Molex, pin 2 & 5**
Needle c.	**9-pin Molex, pin 3 & 6**
Puller:	**4-pin Molex, pin 1 & 2 or pin 3 & 4**

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)

<u>These parameters should be changed by authorized personnel only</u>

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.

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).

2.0.0 ACCESS TO the 'HIDDEN PARAMETERS'

Step 1:
Turn power OFF

Step 2:
Press the NEEDLE UP / DOWN and ARROW RIGHT buttons at the same time.

Step 3:
Turn the power ON while both buttons are held down.
wait until a string of stars is displayed (******), which are counting down.

Step 4:
Release both buttons and press the 'SBT' button before the stars disappear.

Go to the programming mode, the "HIDDEN PARAMETERS" follow after the regular parameters.
The hidden parameters display stars in front of the group name:
Normal parameter: SPEEDS
Hidden parameter: ** SPEEDS**

The 'HIDDEN PARAMETER' groups are displayed after going through the OPERATOR level.
Note: Access to HIDDEN PARAMETERS is disabled after power was turned OFF.
HIDDEN PARAMETERS are enabled automatically after proceeding a MASTER RESET.

If there is a problem going to the "HIDDEN PARAMETERS", this may be caused by the initialization time of the LCD- display:
In this case, turn the power on regularly and wait until the program is in the operation mode.
Turn the power off and wait until the display reads "good bye, see you".
Proceed with step # 3.

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a. MASTER RESET:

(Caution: Overwrites the program memory with the default settings)

Step 1:
Turn the power off

Step 2:
Press 'NEEDLE UP / NEEDLE DOWN','ARROW RIGHT' and 'ARROW UP' button at the same time.

Step 3:
Turn the power ON while all three push buttons are held down.
The display reads: "GO RESET? >9<"
The number in the message is counting down

Step 4:
Push the 'SET' button before the number is down to zero (0). The display reads:
' MASTER RESET '

Note:
If the 'SET' button is not pushed in time, the program goes to the main menu without executing the MASTER RESET.

4.0.0 Operators Parameters:

SPEEDS: rpm (spm, stitches per minute)

4.1.1 SOFT ST

Range: 150 to 1000
Steps: 10
Default: 700

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: 80

4.1.2 VENTdel Venturi delay
Range: 0 to 2500
Steps: 10
Default: 350

COUNTERS (Stitches)

4.2.1 SOFT ST **Soft Start**
Range: 1 to 50
Steps: 1
Default: 3

4.2.2 VENTfrnt **Venturi front**
Range: 1 to 200
Steps: 1
Default: 35

4.2.3 V-1-end **Venturi 1 end**
Range: 1 to 200
Steps: 1
Default: 15

4.2.4 PULLER1 **Puller # 1**
Range: 1 to 200
Steps: 1
Default: 10

4.2.5 V-2-end **Venturi 2 end**
Range: 1 to 200
Steps: 1
Default: 50

4.2.4 PULLER2 **Puller # 2**
Range: 1 to 200
Steps: 1
Default: 40

4.2.5 STOP LBL **Stop for Label**
Range: 1 to 200
Steps: 1
Default: 50

4.5.1 TOGGLE SWITCHES

4.5.1	**PF/EOC**	**Presser Foot End of Cycle** **Default: DOWN**	**UP / DOWN**
4.5.2	**PF/seam**	**Presser foot in the seam** **Default: DOWN**	**UP / DOWN**
4.5.3	**Pos E o C**	**Needle Position End of Cyc.** **Default: UP**	**UP / DOWN**
4.5.4	**Pos in Seam**	**Needle Position in the seam** **Default: DOWN**	**UP / DOWN**
4.5.5	**SOFT ST**	**Soft start** **Default: OFF**	**ON/OFF**
4.5.6	**Pos LBL**	**Needle Position stop label** **Default: DOWN**	**UP / DOWN**
4.5.7	**PR. f LBL**	**Presser foot for Label** **Default: DOWN**	**UP / DOWN**

5.0.0 HIDDEN PARAMETER

5.1.0 ***** SPEEDS (rpm)

5.1.1 TRM/POS **Trim and Positioning Speed**
Range: 30 to 1000
Steps: 10
Default: 200

5.1.2 MAXIMUM **Maximum Speed**
Range: 500 to 9000
Steps: 100
Default: 3500

5.1.3 POS.TL **Position Tail**
This is the speed before the machine stops in the position program
Range: 50 to 200
Steps: 1
Default: 200

5.1.4 BACK **This is not a speed, this is the brake time. It should be set to ten (10) Milliseconds.**
Range: 5 to 200
Steps: 1
Default: 50

5.2.0 ***** TIMERS (ms)

5.2.1 RES. BK **Residual Break Residual Brake Time after Stop**
Range: 0 to 2000
Steps: 1
Default: 40

5.4.0 *** POSITIONS Adjustment of the needle positions

Before these parameters, please read 6.1.0 "Teach-in Mode"

5.4.1 NEED.UP **Needle up Position**
This parameter can be changed by:
- **a) Arrow-Up / Arrow-down Buttons**
- **b) Teach-in mode (recommended)**

5.4.2 NEED.dwn **Needle Down Position**
This parameter can be changed by:
- **a) Arrow-Up / Arrow-down Buttons**
- **b) Teach-in mode (recommended)**

Setting the Needle Positions by using the Teach-in Mode:

When you install the motor:
Please make sure, the index signal of the motor does not match with any position.

1. **Go to the desired group "***POSITIONS"**
2. **Go to the first parameter (NU, Needle Up)**
3. **Turn the hand wheel to the correct position**
4. **Press the "NU/ND" button (left hand side)**
   The displayed number should change to the new position
5. **Go to the next parameter (ND, Needle Down)**
   Proceed with step 3

IMPORTANT:
Any displayed position should not be higher then 490 and lower then 10 counts!
If this happens, please take the motor off and move it in the coupling.

5.5.0 *** MISCEL Miscellasneous Parameters

5.5.1 PULLER DY **Puller duty: Sets the speed of the puller: 10 is slowest, 100 is fastest**
Range 10 to 100
Step: 10
Default: 40

5.5.1 PF-on 100 % **The time the current for the presser foot is 100 % (no duty cycle) To rise the presser foot, the solenoid needs 100 % current for a short time. This time is adjustable to slow down the speed of the presser foot to rise up to the upper position. The shorter the time, the slower the presser foot. Under normal conditions, the default time of 200 milliseconds is perfect,**
Range 30 to 2500
Steps: 10
Default: 200

5.5.2 PF.-DUTY **Presser foot duty cycle**
Due the voltage of the supply for the solenoids is too high to turn on a solenoid valve permanent, the current has to be chopped.
If the duty cycle is too low, the presser foot will not stay up (drops back).
If too low, the solenoid will turn too hot!
Range 30 to 100
Steps: 10
Default: 30 (30%)

5.6.0 ****TOGG SW TOGGLE SWITCHES

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

5.6.2 SEAMEND: **with posit. / without posit, *****
Default: with position

5.6.3 POSITION **Positions ramp (normal/fast)**
Default: normal

*** This parameter works only at the seam end (after the eye is uncovered and the end is running).
If the parameter is set to “without position, the machine will not stop at pedal neutral position. The machine runs on low speed and speeds up on pedal forward.

Display the Program ID (the Program Identification)

1. **Turn the Power OFF**
2. **Push the pedal forward**
3. **Turn the power ON while the pedal is held in the forward position. After initialization, the program ID will be displayed.**

Indicator LED's at the front panel:

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

Red: Over current error (Motor)

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 THREADLE** 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 inputs**
(this will be displayed for two seconds)
Then activated inputs are displayed
If no inputs are activated, the display reads **" ---------- "**
Please note:
If any input is activated, no other input can be displayed.
The photo eyes have to be covered etc…..

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

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.

Instructions for Important Changes in Vfc's Box for the Puller Control

Units before November 2006

Units after November 2006 have a 24 Volt DC- motor, controlled by Clinton. This system is less violent

How it works:
The input for the puller control is 220 VAC, but the puller motor works with 110 VAC, this is the reason for the transformer.

Drawing "A"
is the original setup.
The relay operates with two contacts the two output lines of the transformer to the motor. The relay separates two heavy inductions, the motor and the transformer. The contacts are not protected.
The relay turns on to operate the puller. If the relay turns off, both ends (the transformer side and the motor side) generate giant spikes because the stored energy in both coils (transformer and motor). The energy has no way to go because there is no protection against over voltage (spikes). This is dangerous to any other electronic which operates the puller relay.

Drawing "B"
explains the changes:
The relay operates one line of the input side of the transformer (only one induction, the transformer).This setup works already good because part of the energy can go back to the line (only one line is interrupted).
For additional protection, a varistor, "ZN1" is added. This component cuts the violent spike down to 400 Volts. This is not enough energy to be dangerous for other components.
Additional, the varistor protects the contacts of the relay.