



Short description of Microcontrol with Multitest on class 578

Programme version A15

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1. General

The MICROCONTROL includes an extensive test and monitoring system MULTITEST. This is enabled by a microcomputer that - in addition to the control tasks - supervises the sewing process and indicates the disturbances. A number of special programmes facilitates the mechanical adjustments and enables quick checking of input and output elements without any additional instruments.

Disturbances and test results are shown by an 8 digit display, this being done by symbols in the right half of the display. The left half indicates the number of the just selected programme. At normal operation the right half of the display shows the counter count. In case of an operation error or a disturbance the function is interrupted and the trouble cause is indicated by a symbol. In most cases the symbol disappears as soon as the trouble cause is eliminated. In some cases, for safety reasons, the main switch must be turned off before eliminating the trouble.

Some extensive self-tests are carried out already when the machine is switched on. Checking among others the programme and data memory and the display for perfect function.



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2. Adjusting the sewing and test programmes

The programmes specified hereinafter are selected by the "PROGRAMME" selector on the face plate. The programme selected will be activated by turning on the main switch or by operating the "STOP" key.

If an inadmissible programme number has been selected, the display presents the symbol "P?". A sewing process can be interrupted by the "STOP" key.

Selector position	Programme	Function
00	P00	Display of the programme version, e.g. 578A06
01	P01	Sewing a buttonhole
02	P02	Resetting from cutting "before" to cutting "after" sewing
03	P03	Resetting piece counter (=0000)
04	P04	Setting the maximum speed
05	P05	Enabling / disabling the thread monitor
09	P09	Erasing the adjustment values of P44-P49 and transferring the standard values to P01
40	P40	Displaying mains frequency and electrical coding
41	P41	Setting end position 1 (cutting after sewing) ---> N
42	P42	Setting end position 2 (cutting before sewing) V <---
43	P43	Setting the middle of the eyelet
44	P44	Setting beginning of transversal bar
45	P45	Setting the length of transversal bar
46	P46	Setting buttonhole length (in mm)
47	P47	Setting buttonhole beginning (precise setting in respect to the incision)
48	P48	Setting the needle thread cutting timing
49	P49	Setting the needle thread catching timing
50	P50	Service sewing programme
51	P51	Transportation by pedal control
52	P52	Memory dump
53	P53	Displays of the rotation transmitter impulses
58	P58	Test of the serial interface
59	P59	Timertest and memory test
60	P60	Continuity test
61	P61	Test of the face plate elements
62	P62	Test of the input elements
63	P63	Selecting input elements
64	P64	Selecting output elements
65	P65	Sewing motor: pedal control
66	P66	Sewing motor: nominal value X, pos. 2
67	P67	Sewing motor: nominal value X, pos. 1
68	P68	Sewing motor: nom. value X, pos. 1, pos. 2
69	P69	Sewing motor: nominal value X, position 2
80	P80	Setting the motor typ



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3. Description of the programmes

3.1 Sewing programme

P01 Sewing a buttonhole

Starting the sewing process

The automatic unit is started by lowering the pedal forwards. The first forwards step permits to close or open the clamp. The second forwardes step starts the sewing process. Between two sewing operations (buttonholes) the pedal must be returned to its initial position at least one time (pedal not operated).

A sewing process can only be started when the needle is in its upper position and the automatic unit in its end position. Error possibilities after switching on:

- The needle is not in its upper position --> Error symbol "■" (The position of the needle must be corrected by hand and the automatic unit must be restarted by the "STOP" key.
- The automatic unit is not in its end position --> Error symbol "^^^" (Close the clamp by hand, so that the automatic unit can move in the end position. Operate for this purpose the "STOP" key.

All error symbols will disappear as soon as the end positions are admissible and the needle position is correct. The start readiness is always shown by the display of the piece counter in the right half of the display.

Working speed

The "SPEED" selector on the face plate permits to set the working speed of the machine. After resetting to a new speed, always operate the "STOP" key. 9 speed ranges are available.

Speed range	Speed of the machine rpm/min ⁻¹	Number of stitches/min ⁻¹
9	1100	2200
8	1030	2060
7	970	1940
6	920	1840
5	850	1700
4	800	1600
3	730	1460
2	670	1340
1	600	1200



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STOP when sewing

The sewing process can be interrupted by lowering the pedal backwards. The automatic unit can then be restarted by pedal only if no changes on the machine have been done (by hand) (e.g. change of the needle position or manual opening of the clamp). If during the stop of the automatic unit a manipulation has been detected, the entire sewing process will be stopped immediately.

A new start is only possible if the needle is in correct position and the clamps are closed by operating the "STOP" key.

Manual opening of the clamps while sewing

If the clamp is opened during a sewing process, the entire cycle will be interrupted immediately. The machine can only be restarted after closing the clamps by operating the "STOP" key.

If the symbol  appears, move the needle upwards by turning the handwheel until OK is displayed. Operate the key "Setting the counter".

P02 Resetting from cutting "before" to cutting "after" sewing

By means of this programme the control unit is informed whether the automatic unit has been set mechanically for "CUTTING BEFORE SEWING" or for "CUTTING AFTER SEWING". The programme can only be activated if the automatic unit belongs to the corresponding sub-class (buttonhole without transversal or round bar). After activating the programme the display first shows the actual adjustment, i.e.

V <---
---> N

cutting before sewing
cutting after sewing

These two modes can be selected by the key ""SETTING THE COUNTER". The last mode setting is valid and is effective for all sewing and service programmes.

P03 Resetting the piece counter

This programme permits to cancel the actual count of the piece counter. After activating the programme, reset the piece counter to 0000 by operating the key "SETTING THE COUNTER".

P04 Speed limitation

After activating this programme and after a waiting time of about 5 seconds it is possible to preset the allowed maximum speed (speed range 4-9).

For changing this speed range operate the key "Setting counter". The control unit will then accept only the speed ranges (set by the key "speed") that are not higher than the above mentioned maximum speed.



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P05 Enabling / disabling the thread monitor

With this programme the thread monitor (optional equipment) can be enabled or disabled. Via the key "SETTING THE COUNTER" "FW ON " or "FW OFF" can be selected.

FW = ON

Thread monitor enabled

FW = OFF

Thread monitor disabled

With activated thread monitor the error message "-x-" appears when the needle thread breaks.

ATTENTION-- Safety recommendation:

Always switch off the machine before starting to thread. After the error message "-x-" (thread breakage) the machine can only be restarted by turning off and on the main stitch.

P09 Transferring the standard values to the sewing programme P01 (display default)

For the values adjustable in programmes P44 to P49, standard values can be used as well. They are set by activating programme P09. The programme P09 is to be started once after the error message "ERROR 19" (wrong RAM-check sum).

Attention: With this programme all individual adjustments incl. the function "cut before" are erased! The individual adjustment of P44 -P49 requires re-programming.

3.2 Programmes for adjustment aids

The function of these programmes is partly determined by the sub-class used. Therefore it can occur that not all programmes, specified here, can be activated. In case of an "incompatibility" between the sub-class used and the programme set the error message "EROR 20" will be displayed.

P40 Displaying mains frequency and electrical coding

For the correct control of the driving motor it is important to determine the mains frequency (50 Hz, 60 Hz). The left half of the display will show the mains frequency detected by the control unit. The electro-distributor of each automatic unit contains a coding, offering all informations about the respective sub-class, important for the control unit. When using the programme P40 this coding is shown in the right half of the display.

Following codings are possible:

Coding	Buttonhole type	Length	Cuts	Sub-cl.
11	Taper bar or without bar	All lengths	V/N	151301
72	Taper bar or without bar	All lengths	V/N	131391
12	Taper bar or without bar	All lengths	V/N	121301
23	Taper bar	All lengths	V	141191
33	Taper bar	All lengths	N	141291
45	Round bar	16 mm	N	112211
46	Round bar	18 mm	N	112221
48	Round bar	22 mm	N	112231
49	Round bar	24 mm	N	112241
4B	Round bar	28 mm	N	112251
4A	Round bar	26 mm	N	112261
47	Round bar	20 mm	N	112271
50	Cord hole dia. depending on E no.		V	114181



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65	Transversal bar	16 mm	N	113211
66	Transversal bar	18 mm	N	113221
68	Transversal bar	22 mm	N	113231
69	Transversal bar	24 mm	N	113241
6B	Transversal bar	28 mm	N	113251
6A	Transversal bar	26 mm	N	113261
67	Transversal bar	20 mm	N	113271

P41 Setting end position 1 (cutting after sewing) (Display End 1)

After operating the key "SETTING THE COUNTER" the automatic unit transports into end position 1, i.e. for cutting after sewing. Adjust the respective proximity switch (b11) on the lower side so that after each transportation process the automatic unit stops again in the end position.

P42 Setting end position 2 (cutting before sewing) (Display End 2)

After operating the key "SETTING THE COUNTER" the automatic unit transports into end position 2, i.e. for cutting before sewing. Adjust the metal ring on the underside so that after each transportation process the automatic units stops again in the end position. (Nose of the metal ring in front of the proximity switch b14).

P43 Setting the middle of the eyelet (Display> M<)

For doing this, transport the automatic unit by the crank lever until the hook support has been turned out of its basic position by exactly 90. Loosen then the screws of the rotation transmitter (on the back of the machine) and adjust the rotation transmitter so that the symbol "OK" appears in the right part of the display. The exact adjustment is ensured by moving the rotation transmitter slowly in the direction of rotation of the work (counter clockwise). The adjustment window has a "width" of only 0.9 °! Effect this adjustment very carefully.

By the exact position of the middle of the eyelet, the seam beginning and the seam end are set for the same length.

P44 Setting the beginning of the transversal bar (Display QR-A)

This programme permits to set the exact position of the transversal bar. Set for this programme a figure that determines directly the beginning of the transversal bar. The setting of this figure is done by the pedal (For increasing the figure: lower the pedal forwards, for reducing the figure: lower the pedal backwards). When using this Service programme, the sewing process ("test sewing") is started by the key "SETTING THE COUNTER".

Principle: the higher is the figure, the later is the seam beginning. This programme can be activated only in case of a transversal bar machine. Admitted are only numerical the values for the pre-determined adjustment sector.



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P45 Setting the length of the transversal bar (Display QR-L)

Set for this programme a figure that determines directly the length of the transversal bar. The setting of this figure is done by the pedal. (For increasing the figure: lower the pedal forwards, for reducing the figure: lower the pedal backwards). When using this Service programme ("test sewing") the sewing process is started by the key "SETTING THE COUNTER".

Principle: the higher is the figure, the longer is the transversal bar. This programme can be activated only in case of a transversal bar machine. Admitted are only the numerical values for the pre-determined adjustment sector.

P46 Setting buttonhole length (in mm) (Display L/mm)

This programme can be activated only in machines admitting variable buttonhole lengths. According to the sub-class used set only the buttonhole sizes that are enabled by the automatic sewing unit. The size is displayed directly in millimeters. Also with this programme the setting is done by the pedal control.

For sewing buttonholes with taper bar, increase the millimeter figure (L/mm) according to the desired taper bar length.

P47 Setting buttonhole beginning (Display L=)

This programme permits a precise adjustment of the seam beginning.

Set a figure determining directly the buttonhole beginning. The setting of this figure is done by pedal ((for increasing the figure: lower the pedal forwards, for reducing the figure: lower the pedal backwards). When using this Service programme the sewing process ("test sewing") is started by the key "SETTING THE COUNTER".

Principle: The higher is the figure, the later is the seam beginning. Admitted are only the numerical values for the determined adjustment range.

P48 Setting the needle thread cutting timing (Display FLNS)

Set a number that determines directly the thread cutting timing. The setting of this figure is done by the pedal (for increasing the figure: lower the pedal forwards, for reducing the figure: lower the pedal backwards). When using this Service programme, the sewing process ("test sewing") is started by the key "SETTING THE COUNTER".

Principle: The higher the number, the later the cutting. Admitted are only the numerical values for the determined adjustment range.

P49 Setting the needle thread catching timing (Display FF)

Set a number that directly determines the thread catching timing. To do this, press the pedal (to increase the number: press the pedal forward, to decrease the number: heel back the pedal).

In this service programme the sewing process ("test sewing") is started with the key "setting counter".

Principle: The higher the number, the later the thread catching. Only plausible numerical values are permitted.

On the subclass 131391 threads can only be caught up to a buttonhole length of 30 mm, and on the subclass 151301 only up to a buttonhole length of 38 mm. If the buttonholes are longer, thread catching will be automatically deactivated.



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3.3 Service programmes

These programmes are intended only for the service technician.

P50 Service sewing programme, only for the service technician

This sewing programme works in principle like the sewing programme P01. Deviations are constituted by the following points:

- During a sewing process the automatic machine stops as a rule at the following points: seam beginning, seam end, beginning of the transversal bar (if any), end of the transversal bar (if any) and position of the thread interception. After each stop the machine can be restarted by the pedal.
- The automatic sewing unit can be restarted also after turning the needle bar out of its upper position. (Not after opening the clamp. After stopping the automatic sewing unit the pedal must be returned to its basic position!

NOTE: After an erroneous lowering of the pedal the machine will follow moving.

CAUTION: When the needle is down or when the parts have been loosened there is a danger of injuries or damages.

P51 Transportation by the pedal control, only for the service technician

With the pedal being lowered, there will be an endless transportation at low speed. (Display: ">> "). After heeling down, the automatic unit will be stopped (Display: "STOP". If during the transportation or during the stop the needle bar has been turned out of its upper position or if the clamp has been opened, the transportation process will be stopped. Furthermore, the respective error symbols will be shown. After the elimination of the error cause (turn needle bar into its upper position, close the clamp), the right half of the display shows the symbol "OK". After "checking" this message the automatic unit is in the same state as after lowering the pedal backwards.

P52 Memory dump, only for the service technician

This programme permits to select the internal sewing parameters (XRAM O...255)

P53 Displays of the rotation transmitter impulses, only for the Service technician

This programme gives after a complete rotation (at low speed) the number of the determined rotation transmitter impulses. The correct value is exactly 400. In case of deviations the rotation transmitter is defective or there is a disturbance in the control unit.



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3.4 Test programmes

P00 Display of the programme number and of the check sum

The display shows in succession the programme number and a check sum.
The programme number includes

- the class designation of the automatic unit
- a reference letter
- and two figures

e.g. 578A01. If the reference letter does not change the programmes are exchangeable backwards.
For instance the programme 578A03 replaces the programmes 578A01 and 578A02.

The check sum shows to the specialists of the factory service whether the programme memory (EPROM) contains the entire programme of the automatic unit.

P58 Checking the serial interface (if available)

This programme serves to check the SIO element of the control unit. For preparing this test, introduce the SIO test plug into the socket b109 on the main plate. This test plug links the sender with the receiver, so that a loop test is possible.

If there is no defect, the display shows "OK". But if the SIO element is defective or if SIO test plug is not introduced, the error message "Err" appears. If the control unit is run without SIO element (special equipment), the message "kein SIO" will be displayed.

P59 Memory test / Timer test

If the memory (RAM) and all timer circuits of the control unit are working perfectly, the message "OK" will be presented after a short while. In case of an error, the display will show the messages "ERROR 0", "ERROR 6" or "ERROR 7".



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P60 Continuity test

This programme checks the 24 V supply and the output elements.

If a current flows in spite of the output buffers being switched off, there is a short circuit in the wiring or one of the output buffers is effective. The display shows then "V?".

If there is no such a defect, check all existing output elements (including the output buffers and the wiring) for continuity. If all circuits have a continuity, the display shows "OK". If a circuit has no continuity, the wiring diagram designation of the respective output element will be displayed.

If, for instance, there is an interruption in the circuit of the solenoid valve s10, "s10" will be displayed. Possible defect cause:

An interruption in the solenoid valve, in its wiring or in its buffer, or s10 does not exist, because it belongs to the specialequipment. After pressing the key "ZÄHLER STELLEN" the test is continued by s11.

P61 Checking the face plate elements

If a selector on the face plate is reset, the display will show the present adjustment value of the last modified selector. When actuating a key on the face plate (exception: STOP key), the figures allocated to this switch (1 or 2) will be displayed.

Selector	Function	Designation
b408/407 b404	Programme switch Speed	PROGRAMME SPEED

P62 Checking the input elements

If an input element is operated, the display shows its wiring diagram designation and its state, e.g. "+B14" until the state of any other input element has been modified.

The state "+" means in:

switches with contact	-->	open contact
proximity switches	-->	metal before the switch



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P63 Selecting input elements

After activating the programme any input element can be selected by adjusting a code number. The display shows the state of the preselected element together with the code number. The code numbers are the short designations of the wiring diagram. This does not apply to the selectors on the face plate (see the table). The code numbers are set by the "PROGRAMME" selector. The meaning of the states corresponds to P62.

Input elements

b09	Clamp opened
b10	Needle in upper position
b11	End position 1
b12	Switch (optional equipment knee or hand switch)
b13	Position transmitter control
b14	End position 2
b15	Thread monitor
b17	Transmitter contact 1 (pedal)
b18	Transmitter contact 2 (pedal)
b19	Transmitter contact 3 (pedal)
b20	Transmitter contact 4 (pedal)
b21	Inc-trace B of the rotation transmitter
b22	Inc-trace A of the rotation transmitter
b23	Middle of the eyelet
b35	Machine head position transmitter: position 1
b37	Machine head position transmitter: position 2
b38	Machine head position transmitter: position 3

P64 Selecting output elements

After activating the programme any output element can be selected by the code number. The selected element is switched on and off by tipping the key "ZÄHLER STELLEN" (setting the counter). To prevent damage (eg overheating) to the output element, it is switched off after 1 minute. The code numbers are the short designations of the wiring diagram. They are set in the "PROGRAMME" switch.

Output elements	Designation	all subclasses	-112000	-113000	-121000	Optional equipment
s09	Sewing clutch	x				
s10	Transportation clutch	x				
s11	Releasing thread tension	x				
s12	Thread cutting	x				
s13	Thread interception _1 lowers		x	x	x	x
s15	Thread interception _2 swings		x	x	x	x
s16	Thread interception _3 opener		x	x	x	x
s18	thread sucking		x	x		
s19	Indexer signal					x
s21	Looper thread advancing		x	x		
"	Needle thread advancing		x	x		
s34	Closing the clamp	x				



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P65 Sewing motor: pedal control

After activating this programme, the machine can be run at the speed controlled by the pedal.

When lowering the pedal backwards, the motor runs at the speed that corresponds to the pedal position. After some seconds the right half of the display shows the actual speed (the real speed of the machine head). After moving the pedal into its basic position, the machine stops without positioning the needle.

P66 Sewing motor: speed test

This programme permits to test different speeds of the motor. After activating this programme, the right half of the display shows the symbol "SW".

By this programme switch it is possible to select different speeds of the motor. If the value desired is admissible, the right half of the display shows "0000". If the desired value is inadmissible, "SW" will be shown. A total of 9 speed ranges is available:

Speed range	Standard sewing rpm-1
9	1100
8	1030
7	970
6	920
5	850
4	800
3	730
2	670
1	600

After operating the key "SETTING THE COUNTER", the motor will run at the selected speed. After some seconds the right half of the display will show the actual speed (the real speed of the machine head). After releasing the key "SETTING THE COUNTER" the motor will be stopped.

P67 Sewing motor: Speed test

Proceed as for P66

P68 Sewing motor: Speed test

Proceed as for P66

P69 Sewing motor: Speed test

Proceed as for P66



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P80 Setting the motor typ

With some machine classes the KOBOLD drive is replaced by an EFKA drive.
Since these drives have differing start-up and braking characteristics, positioning problems can occur.
For this reason, the software for these machine classes was expanded to include Program 80 which converts the motor parameters to the drive used.

After the program is called up, one of three settings can be chosen with the Σ -key:

- | | | |
|----------------|----------|----------|
| 1.Neutral | Display: | MOTORTYP |
| 2.KOBOLD drive | Display: | KOBOLD |
| 3.EFKA drive | Display: | EFKA |

In the 'Neutral' setting, Program 80 can not be exited by operating the STOP key.
This setting is designed for controls which were supplied as replacement/repair controls to customers whose machine equipment is not known.

After controls are turned on in "Neutral Status", Program 80 is started immediately, independent of the setting of the program selector switch. The operator must then choose between KOBOLD and EFKA drives. In order to exit the program after making the selection, the operator must set the program selector switch to the desired program and operate the STOP key.



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4. Display symbols

4.1 Display for control aids

P?	Inadmissibl programme has ben selected
578A06	Programme number
default	P09, setting the standard values
End1	P41, setting end position 1
End2	P42, setting end position 2
>M<	P43, setting the middle of the eyelet
QR-A	P44, setting the beginning of transversal bar
QR-L	P45, setting the length of the transversal bar
L/mm	P46, setting buttonhole length, mm
L=	P47, setting seam beginning
FLNS	P48, setting the thread cutting timing
FF	P49, setting the thread catching timing
	When switching on, the needle is not in its upper position
	Close the clamp, so that the machine can transport into end position
OK	After eliminating the preceding error, the automatic unit can be moved into end position by the key "SETTING THE COUNTER"
- x -	Thread breakage

4.2 Displays in case of disturbances

E2	Fuse e2 in the transformer defective (24 V)
V?	Error message in P60
STOP	Stop key defective or interruption of the sewing process
--<>--	Position transmitter not plugged in
POS2	The machine head is not positioned
STRT-Err	Short circuit in the installation of the pedal or the pedal was already operated when turning on the main switch
CNT-Err	Stitch counting failure
POS-Err	Position transmitter not installed, or motor protective switch is off

4.3 Error messages by the control unit

PROM-Err	EPROM check sum incorrect when switching on
RAM-Err	RAM test incorrect when switching on
DISP-Err	Display error when switching on
ERROR 0	RAM error
ERROR 1	Error in reading the input elements
ERROR 2	Error in reading the face plate elements
ERROR 3	Programme switch defective
ERROR 4	Regulator card in the sewing motor defective
ERROR 5	Short power interruptions in the mains
ERROR 6	Timer 1 defective
ERROR 7	Timer 2 defective
ERR B ..	Error in reading the input elements: Limit switches defective or improperly adjusted (no overstroke) or the proximity switches are shown by the display with their code number, e.g. "ERR B14"
kein SIO	The control unit has no SIO element.
Err	Interruption of the SIO transmitter/receiver.



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ERROR 10	The machine is not in end position. - Check in P62 switch B11 and B14.
ERROR 11	The needle is not in upper position during the STOP-phase. - Check in P62 switch B10.
ERROR 12	No impulse for the middle of the eyelet, or parameters wrong adjusted. - Check in P53 the right position and 400 Incs of the Incremental transducer B21/B22. - Check also switch B10.
ERROR 13	The fabric clamp has been opened during the sewing phase. - Check in P62 switch B9.
ERROR 14	Between bottomhole end and transversal bar, the needle is not in upper position. - Check in P62 switch B10.
ERROR 15	The needle is during sewing in the STOP phase not in upper position (Pedal still in backwards position).
ERROR 16	Manipulation on the machine during the STOP has been detected. - Check in P62 all switches.
ERROR 17	In front of the first or in the second transportation phase the needle is not in upper position. - Check in P62 switch B10.
ERROR 18	Wrong motor programme version, motor wrong adjusted, check the synchronizer. - Unexpected appear of ERROR 18. Removal: It is also possible that the proximity switch B10 is defective or wrong adjusted. Check B10 in programme P62 and the right distance between switch and handwheel disc (0,5 mm).
ERROR 19	Parameter error, wrong check sum (start P09).
ERROR 20	Allocation error between the programme set and the sub-class.
ERROR 21	The main plug of the distributor not introduced.
ERROR 22	No speed adjusted on the control unit.
ERROR 23	The fabric clamp has been opened during sewing in the STOP phase. (Pedal in backwards position). - Check in P62 switch B9 and B10.
ERROR 24	Wrong coding in the distributor.
ERROR 25	Wrong coding for transversal bar.
ERROR 26	Fault in the motor control, wrong motor version.
ERROR 27	Incremental transducer not mounted mechanically or wrong direction of motor rotation (change phases in the plug!) - Magnetic clutch for driving the fabric rest plate defective or wrong adjusted.
ERROR 28	Fabric clamp does not close. - Lifting magnet or leading defective. - Check in P64 lifting magnet (S34). - Check in P62 switch B9. - Unexpected appear of ERROR 28. Removal: The fabric is possibly too thick, that the fabric clamp cannot close properly.
ERROR 29	Proximity switch B10 (needle up) defective or wrongly adjusted. - Check in P62 this switch. - Magnetic clutch for driving the machine arm (sewing) defective or wrong adjusted.
ERROR 30	Switch B10 has been switched during the first transportation phase.
ERROR 31	Incremental transducer B21/B22 is defective or wrong adjusted. Check in P53 Incremental transducer of right adjustment and 400 Incs.
ERROR 32	Following the pedal stop, the pulse transmitter has been turned by hand too far.
ERROR 33	In the basic position, the pulse transmitter has been turned by hand too far.

If after turning of the main switch the display remains empty, change the fuse 1.6 A (on the underside of the mains unit).