Part 4: Instructions for programming DA-Microcontrol Cl. 745-22; -23; -24

Program-Version: 745-22; -23 = 745 P08; 745-24 = 745 Q01

1. General

The **MICROCONTROL** controls of the **DÜRKOPP ADLER 745-22;-23; -24** include the integrated comprehensive **MULTITEST** testing and monitoring system.

A microcomputer assumes the control tasks, monitors the sewing process and signals operating faults and malfunctions.

Special programs facilitate mechanical adjustments and make possible a rapid testing of the input and output elements without additional measuring apparatus.

Errors and test results are shown in a 2 x 16 digit display.

Under normal working conditions the display shows information to operation and the sewing process.
When an operating error or malfunction occurs the functions are interrupted. The cause is shown in the display by the appropriate error symbol.
In most cases the error symbol will disappear when the cause of the fault has been remedied.
In some cases the main switch must be turned off during error correction for safety reasons.
A portion of the error messages are meant only for the service personnel.

All functions can be called up and changed by pressing the appropriate key. The unit must be in its initial position for this.

When the unit is switched on the controls conduct several comprehensive self-tests. Among other things the program and data memories and the display are checked for flawless operation at this time.

After the machine is switched off the set values of the individual functions are stored in the program and data memories (battery buffered) and automatically activated when switched on again.

ATTENTION !

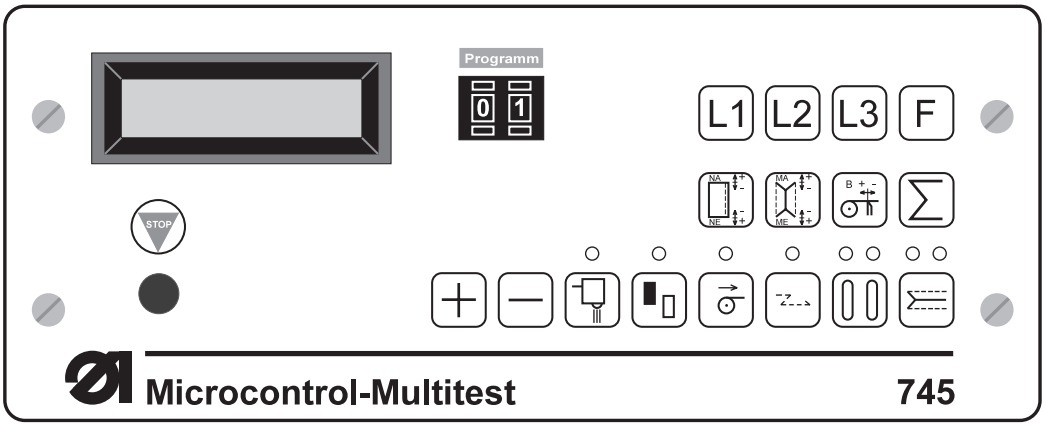
The controls for the Class **745-24** are **not** compatible with the controls for the Class **745-22;-23**.

Controls **745-22;-23:** Parts no. 9850 745040

Controls **745-24:** Parts no. 9850 745030

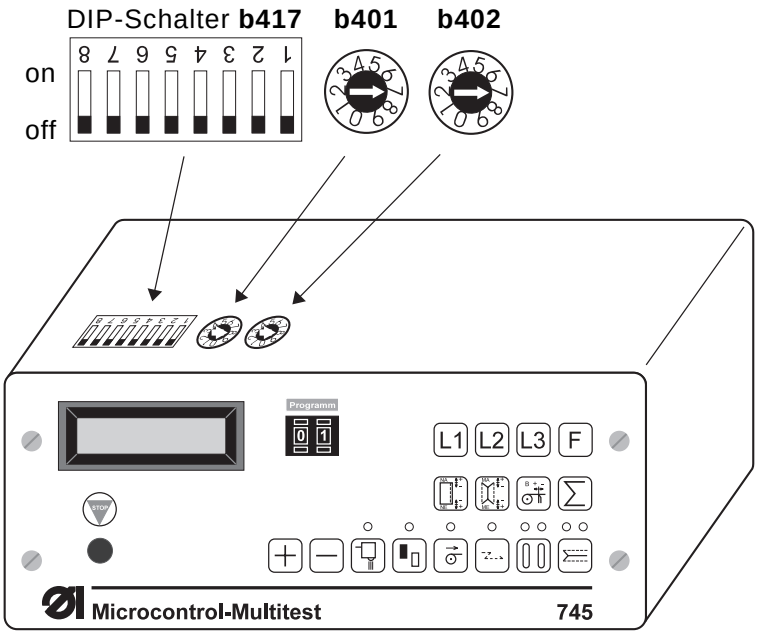
2. Description of the Controls

2.1 Keys on the Front Panel



Key	Function	Key	Function
Programm 0 1	Selecting Sewing and Testing Programs	STOP	Stopping the Current Program, Activating a Selected Program
L1	Sewing Length L1	+	Increase Parameter Value
L2	Sewing Length L2	—	Decrease Parameter Value
L3	Sewing Length L3		Light Barrier On
F	Sewing a Seam Series		Selecting the Positioning Point
NA NE	Correcting of Seam Beginning/End when Sewing Flaps with Light barrier		Tape Feed On/Off
MA ME	Correcting the Corner Knives at Seam Beginning and Seam End		Tacking On/Off
B + -	Setting Tape Length when Sewing with Light Barrier		Selecting the Closing Order of the Flap Clamps
Σ	Setting the Counter		Center Knife and Corner Knife On/Off

2.2 Internal Switches



In the control behind the display there are three pre-selector switches for setting certain machine parameters.

CAUTION !

The switches are only evaluated once when the sewing unit is turned on.
After changing a switch setting switch the main switch off and then on again or operate the **STOP** key.

DIP-Switch b417:

b417	Function	745-22;-23 OFF	745-22;-23 ON	745-24 OFF	745-24 ON
.1	Stitch Length	2,5 mm	3,2 mm	2,5 mm	3,2 mm
.2	Stitch Condensation Stitch Length	0,8 mm	1,4 mm	0,8 mm	1,4 mm
.3	Maximum Sewing Length	180 mm	200 mm	180 mm	200 mm
.4	Thread Monitor	ON	OFF	No function	
.5	Locking Vacuum (b8 / s14)	OFF	ON	OFF	ON
.6	Late Opening of the Flap Clamps	OFF	ON	OFF	ON
.7	with Reverser Device	OFF	ON	No function	
.8	Continuous Operation (only in combination with .4 "OFF")	OFF	ON	OFF	ON*

* Thread monitor is turned off

745-22;-24: b417.7 = OFF

745-23: b417.7 = ON (with Reverser Device)

Dial b401:
Sewing Revolutions

b401 = 1 2500 1/min
b401 = 2 2750 1/min
b401 = 3 3000 1/min

Dial b402:
Operation Mode of the Left Transport Clamp

b402 = 0 No function
b402 = 1 Lower left transport clamp separately
b402 = 2 Lower left transport clamp with the right

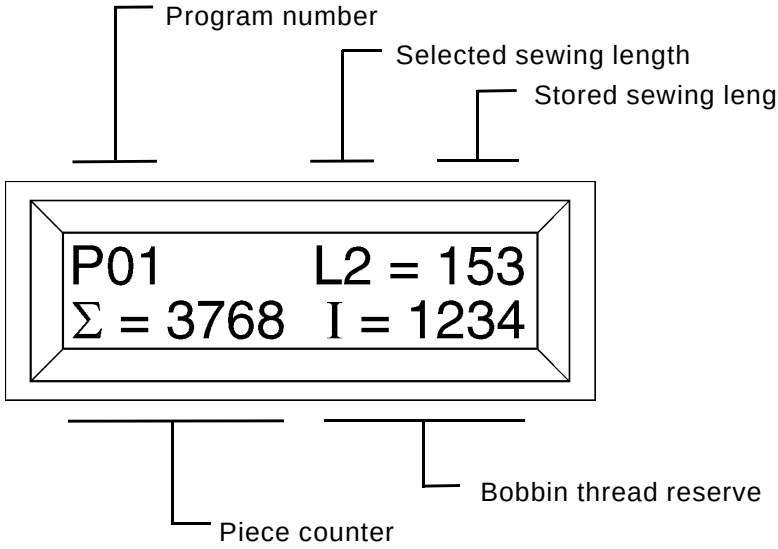
2.3 Display

The Microcontrol is equipped with a 2 x 16-digit display.
It shows the program number, sewing lengths, bobbin thread reserve and piece count. By operating errors or malfunctions the functions are interrupted and the cause shown by the appropriate error symbol.

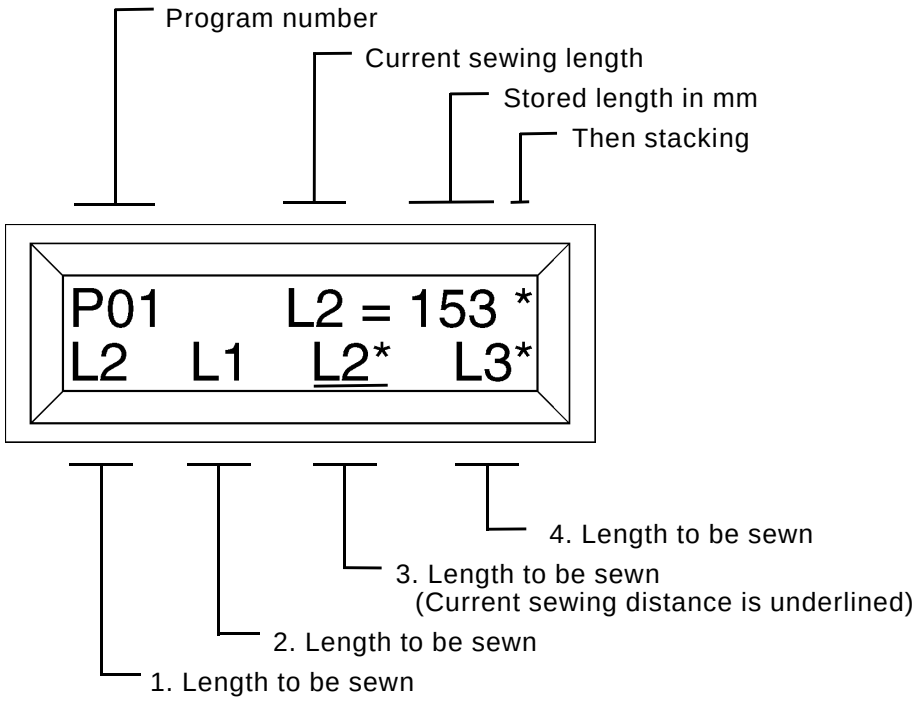
The operational readiness of the sewing unit is shown by having the current parameters in the display. The settings are the same as those last selected before the machine was switched off.

2.3.1 Display of the 745-22;-23

Display example 1: With selected sewing length



Display example 2: With programmed length series

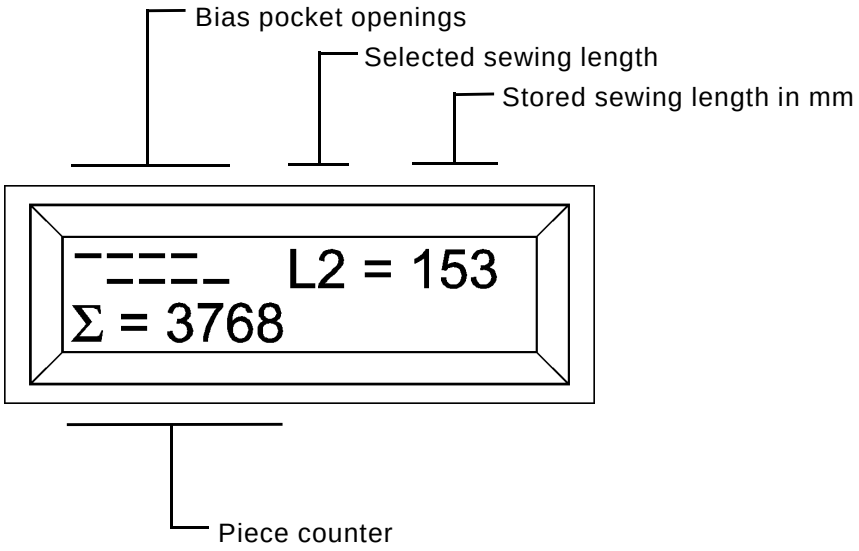


2.3.2 Display of the 745-24

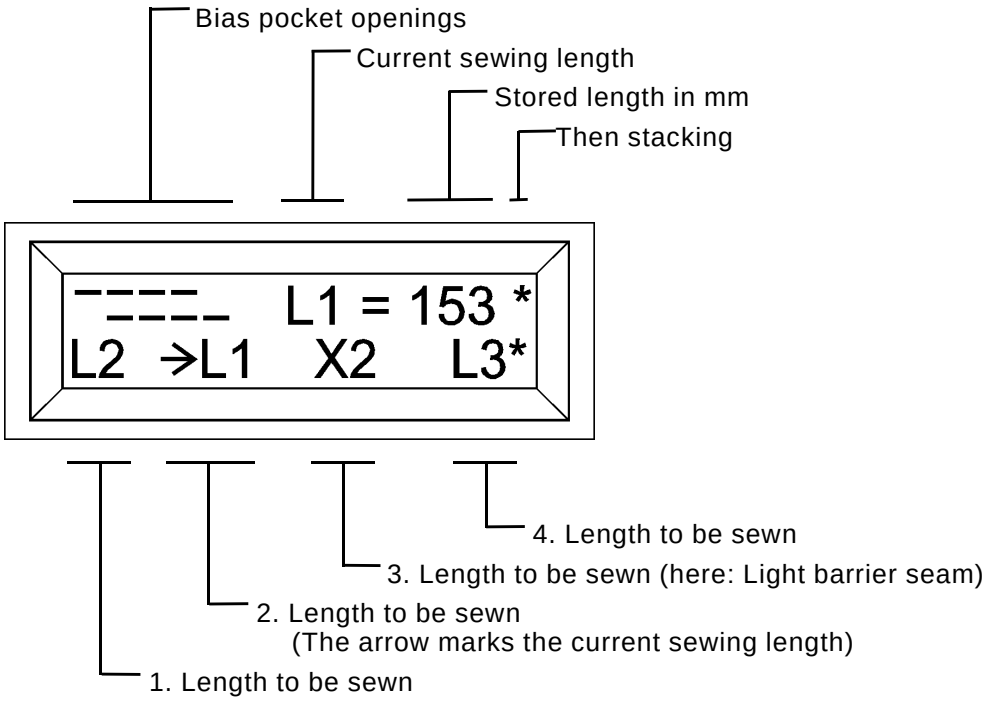
With the **745-24** a symbol for the bias of the corner incisions appears in the right half of the first line of the display.
Through this symbol the seamstress can establish which bias has been set for the currently selected program.

The "=====" symbol, for example, denotes straight pocket corners at the seam beginning and seam end.

Display example 1: With selected sewing length



Display example 2: With programmed length series



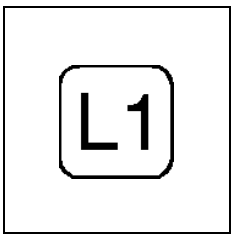
If the display remains blank after the main switch has been turned on, then the 1,6 A fuse(on the underside of the mains unit) is to be replaced.

3. Description of the Function Keys

The values for the various functions can be set as follows:

- Call up the desired function by pressing the appropriate function key.
  The function will be shown in the display with a blinking cursor.
- Change the set value with the "**+** / **-**" keys.
- Press the same function key again.
  The change is completed.
  The unit is ready to start again.

3.1 Selecting and Changing Sewing Length



With the **L1**, **L2** and **L3** keys three sewing lengths stored in memory can be selected. A change of the sewing length can only occur before the feed procedure has begun.

- Select the stored sewing length by pressing the key **L1**, **L2** or **L3**.
  The selected sewing length is shown in the right half of the first display line.
- If "**L?**" appears in the display, then a sewing length without an allowable value in memory was selected.
  Enter an allowable value with the "**+/-**" keys or select a different sewing length.
- Change the set sewing length with the "**+/-**" keys.
- Press the function key (**L1**, **L2** or **L3**).
  The set sewing length will be stored in memory.
  It will remain in memory until it is changed again.
- For further details see chapter 5 and 6 ("Sewing Programs").

CAUTION !

When changing the sewing length L1 it is essential that the corner knife interval also be altered at the same time.

Setting the Corner Knife Interval

That sewing length which is most often sewn should be stored under L1.
The interval between the corner knives must be set so that it is the same as the sewing length stored under L1.

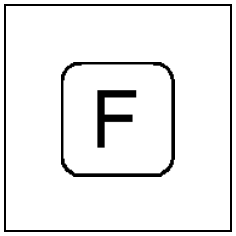
With all other sewing lengths the corner incision occurs seperately in two strokes. After the incision of the first corner knife the material is transported to the second corner knife.

Exception:
With Class **745-23** the corner knives must always be switched on or off together.

Positioning the Material

- With short seams under 75 mm place the material at the forward positioning point.
- If, by sewing lengths under 75 mm, the rear positioning point is chosen, then the error message " **ERROR**" will appear in the display. You must then change to the forward positioning point.
- With placing at the rear positioning point the following condition must be satisfied: **L1 - L2(L3) < 50**
  Otherwise the error message " **ERROR**" will appear in the display. You must then change to the forward positioning point.

3.2 Sewing of a Seam Series



With the aid of the "**F**" key a stored series of up to four seams can be called up.

745-22;-23: The series can be made up of any desired order of the three sewing lengths **L1**, **L2** and **L3**.

745-24: The series can be made up of any desired order of the sewing lengths **L1**, **L2**, **L3** and the light barrier seams **LX1**, **LX2** and **LX3**.

Calling up the Series

- Call up the series by pressing the key "**F**".
  The series is shown in the lower display line.
  The current sewing length has a special marking:
  745-22;-23: The current sewing length is underlined (e.g. **"L2"**).
  745-24: The current sewing length is preceded by an arrow (e.g. **"->L1"**).
  The current sewing length with the appropriate value in millimeters is shown in the right half of the upper display line (see display example 2).
- A star "*****" behind a sewing length means that stacking occurs after this length is sewn.
  Without stacking the material is transported back to the feed area after sewing.
  Then the next sewing length is automatically activated.
- Using the "**+/-**" keys any desired sewing length in the series can be activated.
  Key "**+**": Cursor to the right
  Key " **-**": Cursor to the left
- To exit from the series press the keys **L1**, **L2** or **L3**.
  The approriate sewing length (L1, L2 or L3) is activated.
- To exit form the series with the **745-24** press the key "".
  The light barrier seam is activated.

Programming a New Series

The values for the programmed sewing lengths must established before entering the series mode (see "Selecting and Adjusting the Sewing Length").

- Press and hold the key "**F**".
- At the same time press the key "**-**".
  The previous series is erased.
- By pressing the keys **L1**, **L2** and **L3** up to four sewing lengths can be entered in the desired order.
- **745-24 only:** After selecting a sewing length the following functions can be set for this length using the appropriate keys:


Light Barrier On / Off


Positioning Point


Tape Feed On / Off


Tacking On / Off


Closing Order of the Flap Clamps


Corner and Center Knives On / Off

CAUTION !

The functions set with the keys only valid for the sewing program **in the series mode**.
The settings have no effect on the sewing programm beyond the series mode.

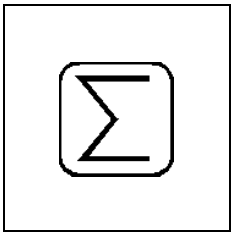
- **745-24**: Each entry of a sewing length must be confirmed with the "Σ" key.
- **745-24**: Programming the light barrier seam **LX1, LX2** or **LX3**: Press the " " key until the desired light barrier seam **X1, X2** or **X3** appears in the display.
  Set the desired functions for the selected sewing lenght using the keys listed on page 9.
  Confirm with the "Σ" key.
- After selecting a sewing length (L1, L2 or L3) stacking after this sewing length can be programmed by pressing the "**+**" key.

CAUTION !

With the **745-24** the selection of the sewing length and the functions must first be confirmed with the "Σ" key.
Then stacking after this sewing length can be programmed by pressing the "**+**" key.

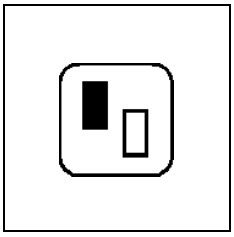
- By pressing the "**-**" key the last entry is erased.
- To start the series press the key "**F**" again.
  The first sewing length is automatically set.

3.3 Setting the Piece Counter



By pressing this key the piece counter is reset to **0000**.
The current piece count is shown in the left half of the lower display line. The piece counter shows the number of pieces made since the last resetting of the counter.

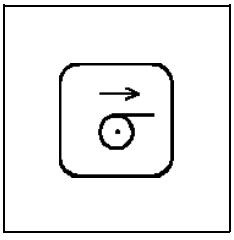
3.4 Selecting the Positioning Point



Depending on the type of sewing pieces the feed occurs at the forward or rear positioning point.
By pressing this key the positioning point is changed.
If the LED above the key is lit then the forward positioning point was selected.

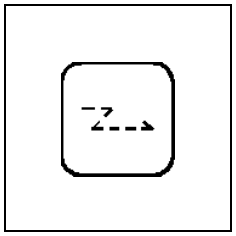
The changeover between manual and automatic alteration of the positioning points occurs in program P42.

3.5 Switching the Tape Feed On/Off



By pressing this key the tape feed is switched on and off.
If the LED above this key is lit then the tape feed is switched on.

3.6 Switching Tacking On/Off

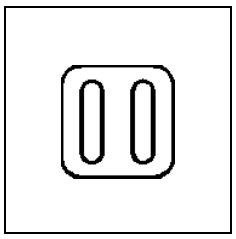


By pressing this key tacking is switched on and off.
If the LED above the key is lit then tacking is switched on.

CAUTION !

With 1.4 mm stitch length in stitch condensation tacking is generally switched off.

3.7 Selecting the Closing Order of the Flap Clamps



With this key the order of the closing of the flap clamps can be set.
In sewing programs P07 to P12 the order of the closing of the flap clamps cannot be set.

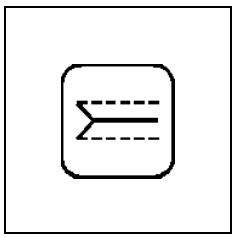
Operating the key switches between four possibilities.
The order is shown by the two LEDs above the key:

- Both LEDs lit:
  The flap clamps close at the same time.
- Only the left LED is lit:
  First the left flap clamp closes, then the right.
- Only the right LED is lit:
  First the right flap clamp closes, then the left.
- Both LEDs are off:
  Operation without flap clamps (optimally timed procedure).

The timing for the opening of the flap clamps in the feed area is established by the setting of the preselector switch b417.6 inside the controls (see "Internal Switches"):

- In the **OFF** setting the flap clamps open after the transport clasp lowers.
- In the **ON** setting the flap clamps open after the folder lowers.

3.8 Switching the Corner and Center Knives On/Off

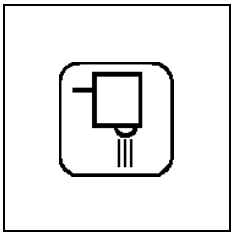


With this key the corner knives or the center and corner knives can be switched on and off.
In sewing programs P07 to P12 the corner and the center knives cannot be switched off.

Operating the key switches between three possibilities.
The different settings are shown by the two LEDs above the key:

- Both LEDs are lit:
  Corner and center knives are switched on.
- Only the right LED is lit:
  The corner knives are switched off.
- Both LEDs are off:
  All knives are switched off.

3.9 Switching On the Light Barrier



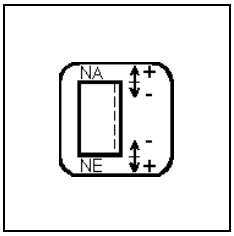
By pressing this key the light barrier is switched on.
The light barrier recognizes the seam beginning and seam end on flaps.
The light barrier cannot be activated in the operating modes for piping reversing and zippers.

– Press the key.
  The lit LED above the key signals, that the light barrier is switched on.
  745-22;-23: Instead of the sewing lengths **L1, L2, L3,** the display shows "**LX**".
  745-24: Through repeated pressing of the key, the display shows the light barrier seams **LX1, LX2** and **LX3** in sequence.
– To switch off the light barrier press one of the keys **L1**, **L2** or **L3**.

CAUTION !

When sewing with the light barrier, the flap must be placed **between** the two positioning points.
If the flap is positioned in front of the forward or extends beyond the rear positioning point, the error message **"LS"** appears in the display.

3.10 Correcting the Seam Beginning and Seam End



This key calls up the correction function for seam beginning and seam end.

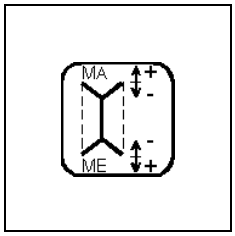
The correction of seam beginning (NA) and seam end (NE) occurs for the sewing lengths **L1, L2, L3** and for the light barrier seams **LX** (745-22;-23) and **LX1, LX2, LX3** (745-24).
By changing the values for NA and NE the corner knife action is appropriately adjusted for sewing with the light barrier.

– Press the function key.
  The set values for NA and NE are shown in the display.
– Increase or decrease the value for NA in steps by pressing the "**+/-**" keys.

Minimum:	0
Maximum:	99
Median value:	50 (no correction)
Step distance:	1 cycle = 0.085 mm

– Press the function key again.
  This switches from NA to NE.
– Increase or decrease the value for NE in steps by pressing the "**+/-**" keys.
– Complete the correction procedure by calling up the selected sewing length.

3.11 Correcting the Corner Knives



This key calls up the correction function for the corner knives at the seam beginning (MA) and the seam end (ME).

The correction can be made for the sewing lengths **L1, L2, L3** as well as for the light barrier seams **LX** (745-22;-23) and **LX1, LX2** and **LX3** (745-24).

– Press the function key.
  The set values for MA and ME will be shown in the display.
– Increase or decrease the value for MA in steps by pressing the "**+/-**" keys.

Minimum:	0
Maximum:	99
Median value:	50 (no correction)
Step distance:	1 cycle = 0.085 mm

– Press the function key again.
  This switches from MA to ME.
– Increase or decrease the value for ME in steps by pressing the "**+/-**" keys.
– Complete the correction procedure by calling up the selected sewing length.

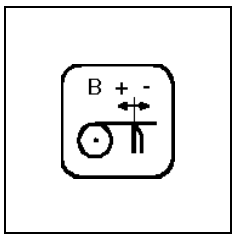
CAUTION !

With the **745-23** the corner knives must always be switched on or off together.
Set the parameters MA and ME at the median value **50**.

Special note for 745-23:

When sewing with piping reverser only sewing length L1 can be set.

3.12 Tape Length when Sewing with Light Barrier



This key sets the tape length at the seam end when sewing with light barrier.

The set value corresponds to the distance from the initial position of the transport clasps to cutting.

– Switch on the tape feed.
– Press the function key.
  The set value for the tape length is shown in the display.
– Increase or decrease the tape length in steps by pressing the "**+/-**" keys.

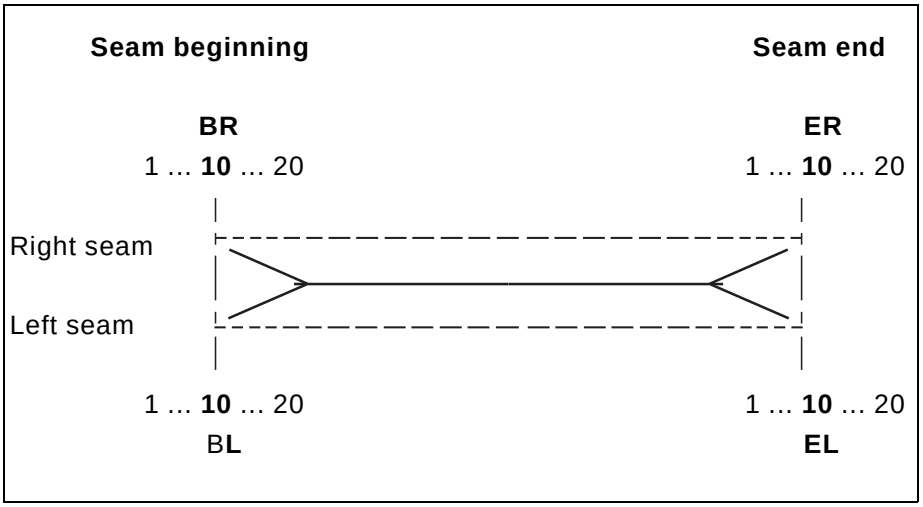
Minimum:	20 mm
Maximum:	100 mm
Step distance:	1 cycle = 1 mm

– Complete the setting procedure by calling up the selected sewing length.

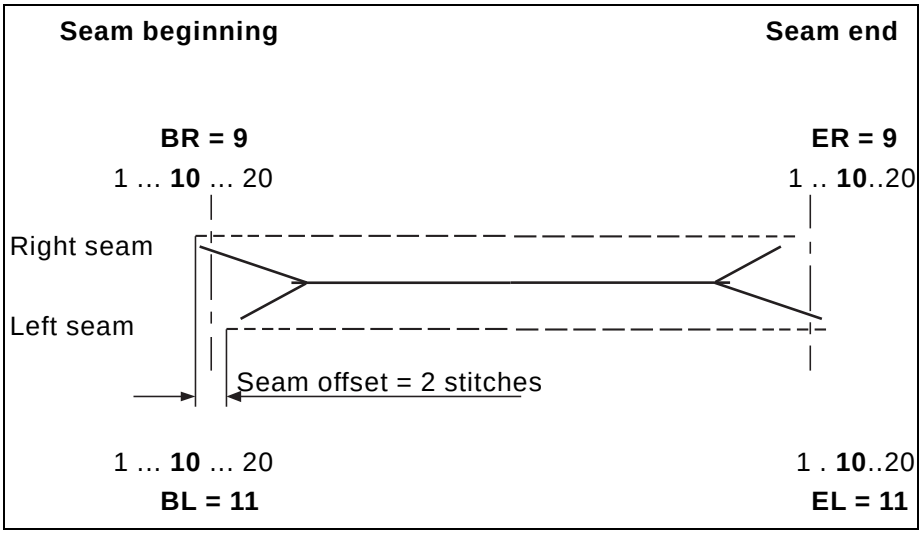
4. Sewing of Bias Pocket Corners (745-24)

The bias pocket corners result from the offset between the left and the right seam row.
The desired seam offset is programmed separately at the control unit for the seam beginning (**BR,BL**) and the seam end (**ER,EL**).
If all parameters are set to the median value **"10"**, then a straight pocket results.

Parameters for the programming of the bias pocket corners:

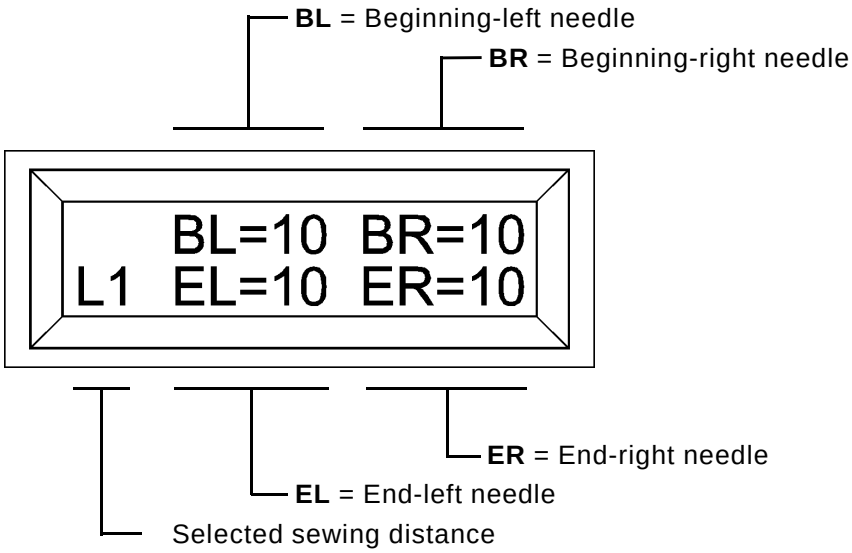


Programming example: **Bias pocket corners at the seam beginning and seam end (Seam offset = 2 stitches)**



Seam offset [Stitches]	Parameter to be set (Seam beginning) Right seam	Left seam
2	**BR** = 10 - 1 = **9**	**BL** = 10 + 1 = **11**
4	**BR** = 10 - 2 = **8**	**BL** = 10 + 2 = **12**
6	**BR** = 10 - 3 = **7**	**BL** = 10 + 3 = **13**
•	•	•
•	•	•
•	•	•
16	**BR** = 10 - 8 = **2**	**BL** = 10 + 8 = **18**
18	**BR** = 10 - 9 = **1**	**BL** = 10 + 9 = **19**

Display example: Straight pocket corners



Programming the bias of the pocket corners:

- Simultaneously press the key for the desired sewing distance (**L1**, **L2** or **L3**) and the "" key.
- For selecting a light barrier seam:
  Press the "" key until the desired light barrier seam **LX1**, **LX2** or **LX3** appears in the display.
  Simultaneously press the "" and the "" keys.
- The parameters for the programmed bias of the selected sewing distance appear in the display (see display example).
- Increase or decrease the parameter values in steps by pressing the "**+/-**" keys.

  Minimum: 1
  Maximum:20
  Median value: 10 (straight pocket corner)
  Steps: 1 step = 1 stitch of the current stitch condensation

  Attention!
  The left and right seam rows must always be offset an equal number of stitches with reference to the median value "**10**".
  The parameters **BR** and **BL** to be set for the desired seam offset can be found in the table on page 14.
  The parameters **ER** and **EL** are arrived at in the same manner.
- Press the "Σ" key.
  The cursor moves to the next parameter.
- Complete the setting procedure by pressing the key for the selected sewing distance **L1**, **L2**, **L3** or the "" key (for light barrier seams).

ATTENTION !

With **bias** pockets the following additional setting work must be conducted:

- Manually adjust the angle and height of the corner knives according to the programmed seam offset (see Operating Instructions)
  or:
  Switch the corner knives off via the "" key on the controlunit.

5. Selecting the Sewing and Testing Programs

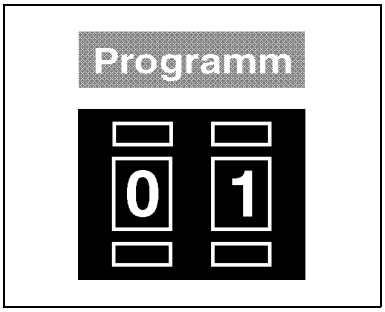
The sewing and testing programs listed below can be selected with the "**Program**" preselector switch.

- Set the "**Program**" switch to the desired program.
- Switch on the main switch or press the key "**STOP**".
  The desired program is activated.
- If the symbol "**P?**" appears in the right half of the first display line, then an illegal program number was selected.
  A sewing procedure running at the time the "**STOP**" key was operated will be cancelled.
- Correct the setting and press the "**STOP**" switch.

Switch	Program	Function	Subclass 745-22	745-23	745-24
00	**P00**	Display of the Program Version	**X**	**X**	**X**
01	**P01**	Sewing program	**X**	**X**	**X**
02	**P02**	as P01, with automatic carriage return	**X**	**X**	**X**
03	**P03**	as P01, with material return	**X**	**X**	**X**
04	**P04**	as P01, with zipper cutter	**X**		
05	**P05**	as P04, with automatic carriage return	**X**		
06	**P06**	as P04, with material return	**X**		
07	**P07**	as P01, with piping reverser for dual piping		**X**	
08	**P08**	as P07, with material return		**X**	
09	**P09**	as P01, with piping reverser for simple piping		**X**	
10	**P10**	as P09, with automatic carriage return		**X**	
11	**P11**	as P01, with piping reverser for asymmetr. piping		**X**	
12	**P12**	as P11, with material return		**X**	
13	**P13**	as P01 } without piping reverser for		**X**	
14	**P14**	as P02 } asymmetrical piping and		**X**	
15	**P15**	as P03 } simple piping		**X**	
40	**P40**	Center knife adjustment	**X**	**X**	**X**
41	**P41**	Setting the bobbin thread counter	**X**	**X**	
42	**P42**	Changing the positioning point manual/automatic	**X**	**X**	**X**
43	**P43**	Testing the piping reverser for dual piping		**X**	
44	**P44**	Testing the piping reverser for simple piping		**X**	
45	**P45**	Testing the piping reverser for asymmetrical piping		**X**	
46	**P46**	Testing the positioning procedure (dual piping)		**X**	
47	**P47**	Loading of standard values	**X**	**X**	**X**
51	**P51**	Setting the remaining thread monitor	**X**	**X**	**X**
52	**P52**	Testing the zipper cutter	**X**		
53	**P53**	Checking the needle and center knife actuation	**X**	**X**	**X**
54	**P54**	Testing the positioning procedure (simple piping)		**X**	
55	**P55**	Setting the light barrier for seam beginning/end	**X**	**X**	**X**
56	**P56**	Setting the material strip reverser		**X**	
57	**P57**	Checking the step motor control	**X**	**X**	**X**
58	**P58**	Checking the serial interface	**X**	**X**	**X**
59	**P59**	Testing the timer and memory	**X**	**X**	**X**
60	**P60**	Checking continuity	**X**	**X**	**X**
61	**P61**	Checking the front panel elements	**X**	**X**	**X**
62	**P62**	Checking the input elements	**X**	**X**	**X**
63	**P63**	Selecting input elements	**X**	**X**	**X**
64	**P64**	Selecting output elements	**X**	**X**	**X**
65	**P65**	Sewing drive: pedal operation	**X**	**X**	**X**
66	**P66**	Sewing drive: set value X, position 2	**X**	**X**	**X**
67	**P67**	Sewing drive: set value X, position 1	**X**	**X**	**X**
68	**P68**	Sewing drive: set value X, position 1, position 2	**X**	**X**	**X**
69	**P69**	Sewing drive: set value X, position 2, with thread trimming procedure	**X**	**X**	**X**

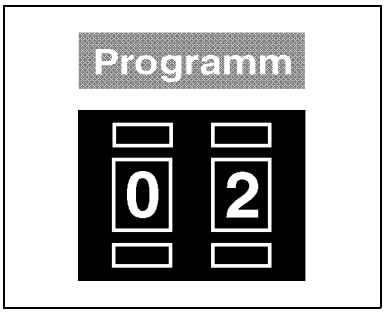
6. Sewing Programs 745-22

6.1 Sewing of Simple, Dual and Asymmetrical Piping



- Turn the DIP-Switch **b417.7** in switch setting "**OFF**".
- Turn on main switch.
  "**<---REF**" appears in the lower display line.
- Step back on the left pedal.
  The transport clasps are raised.
  The transport carriage runs to its rear position.
- The display signals start readiness by showing the current parameters (see display example 1).
  The settings correspond to the last settings selected before the machine was turned off.
- Set the "**Program**" switch to "**01**".
- Press the "**STOP**" key.
  The program is activated.
- By tapping the left pedal bring the carriage return out of the hold position, switch on the feed procedure and start.
- By stepping back on the left pedal during the feed procedure the previous steps can be activated again.
- By stepping back on the left pedal the sewing process can be interrupted after starting.
- When the sewing unit is equipped with a right pedal this activates the holder and the vacuum.
  When the sewing unit is equipped with a knee switch this operates the vacuum.

6.2 Sewing with Automatic Carriage Return

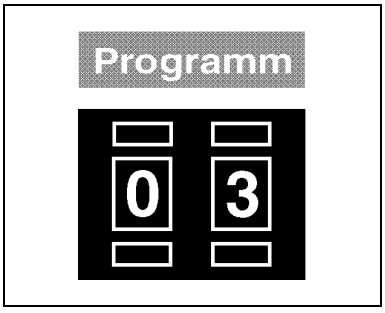


- Turn the DIP-Switch **b417.7** in switch setting "**OFF**".
- Set the "**Program**" switch to "**02**".
- Press the "**STOP**" key.
  The program is activated.

In contrast to P01:

- After stacking the transport clasps are automatically run back to the feed area.

6.3 Sewing with Material Return

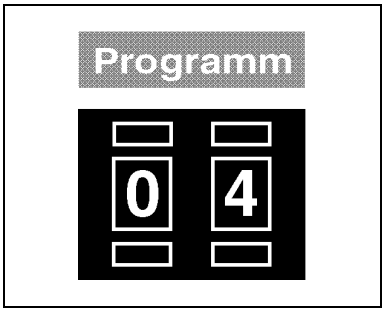


- Turn the DIP-Switch **b417.7** in switch setting "**OFF**".
- Set the "**Program**" switch to "**03**".
- Press the "**STOP**" key.
  The program is activated.

In contrast to P01:

- There is no stacking after sewing.
- The material is transported back to the feed area by the transport clasps.

6.4 Sewing with Zipper Cutter

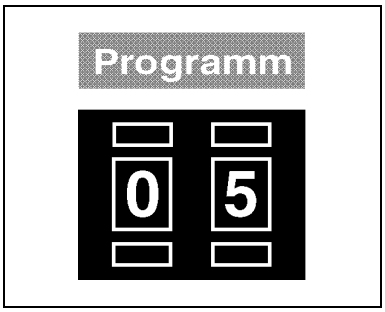


- Turn the DIP-Switch **b417.7** in switch setting "**OFF**".
- Set the "**Program**" switch to "**04**".
- Press the "**STOP**" key.
  The program is activated.

In contrast to P01:

- After sewing the sewn zipper is cut off.
- The material is generally placed at the rear positioning point.
- The shortest sewing length is 75 mm.
- The light barrier cannot be activated.

6.5 Sewing with Zipper Cutter and Automatic Carriage Return

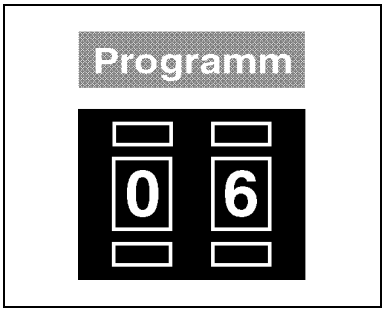


- Turn the DIP-Switch **b417.7** in switch setting "**OFF**".
- Set the "**Program**" switch to "**05**".
- Press the "**STOP**" key.
  The program is activated.

In contrast to P04:

- After stacking the transport clasps are automatically run back to the feed area.
- The light barrier cannot be activated.

6.6 Sewing with Zipper Cutter and Material Return



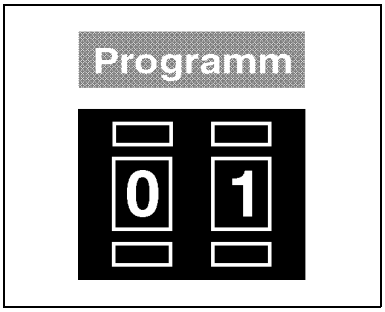
- Turn the DIP-Switch **b417.7** in switch setting "**OFF**".
- Set the "**Program**" switch to "**06**".
- Press the "**STOP**" key.
  The program is activated.

In contrast to P04:

- After sewing there is no stacking.
- The material is transported back to the feed area by the transport clasps.
- The light barrier and the flap clamp cannot be activated.

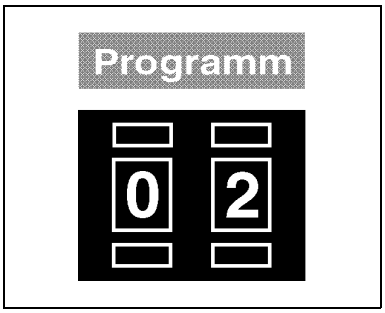
7. Sewing Programs 745-23

7.1 Sewing of Dual Piping



- Turn the DIP-Switch **b417.7** in switch setting "**ON**".
- Turn on main switch.
  "**<---REF**" appears in the lower display line.
- Step back on the left pedal.
  The transport clasps are raised.
  The transport carriage runs to its rear position.
- The display signals start readiness by showing the current parameters (see display example 1).
  The settings correspond to the last settings selected before the machine was turned off.
- Set the "**Program**" switch to "**01**".
- Press the "**STOP**" key.
  The program is activated.
- By tapping the left pedal bring the carriage return out of the hold position, switch on the feed procedure and start.
- By stepping back on the left pedal during the feed procedure the previous steps can be activated again.
- By stepping back on the left pedal the sewing process can be interrupted after starting.
- When the sewing unit is equipped with a right pedal this activates the holder and the vacuum.
  When the sewing unit is equipped with a knee switch this operates the vacuum.

7.2 Sewing of Dual Piping with Automatic Carriage Return

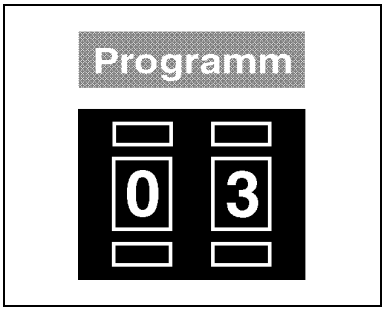


- Turn the DIP-Switch **b417.7** in switch setting "**ON**".
- Set the "**Program**" switch to "**02**".
- Press the "**STOP**" key.
  The program is activated.

In contrast to P01:

- After stacking the transport clasps are automatically run back to the feed area.

7.3 Sewing of Dual Piping with Material Return

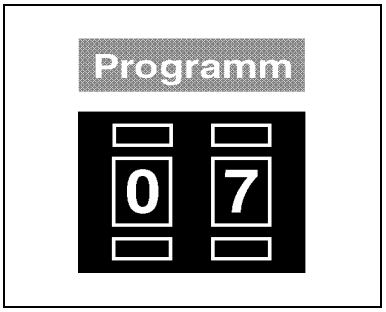


- Turn the DIP-Switch **b417.7** in switch setting "**ON**".
- Set the "**Program**" switch to "**03**".
- Press the "**STOP**" key.
  The program is activated.

In contrast to P01:

- There is no stacking after sewing.
- The material is transported back to the feed area by the transport clasps.

7.4 Sewing of Dual Piping with Piping Reverser

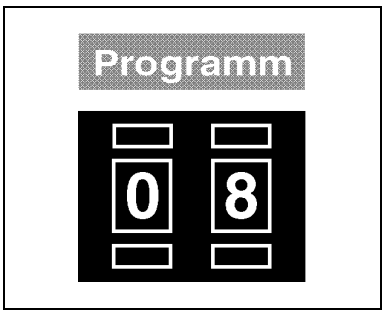


- Turn the DIP-Switch **b417.7** in switch setting "**ON**".
- Set the "**Program**" switch to "**07**".
- Press the "**STOP**" key.
  The program is activated.

In contrast to P01:

- After the corner incision the pipings are reversed and the material overlaps are drawn through the incision.
- The light barrier and the flap clamp cannot be activated.
- Only one sewing length L1 can be activated.

7.5 Sewing of Dual Piping with Piping Reverser and Automatic Carriage Return

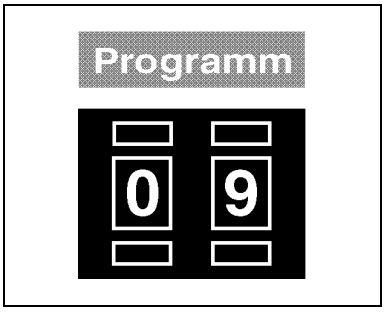


- Turn the DIP-Switch **b417.7** in switch setting "**ON**".
- Set the "**Program**" switch to "**08**".
- Press the "**STOP**" key.
  The program is activated.

In contrast to P07:

- After stacking the transport clasps are automatically run back to the feed area.

7.6 Sewing of Simple Piping with Piping Reverser



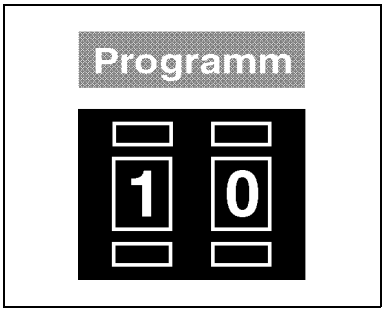
Presupposition: Optional equipment **0792 030901** (Reverser device for simple piping) required.

- Turn the DIP-Switch **b417.7** in switch setting "**ON**".
- Set the "**Program**" switch to "**09**".
- Press the "**STOP**" key.
  The program is activated.

In contrast to P01:

- After the corner incision the piping is reversed and the material overlap of the piping and the right material strip is drawn through the incision.
- Before this operation the left transport clasp is removed aside.
- The light barrier and the flap clamp cannot be activated.
- Only one sewing length L1 can be activated.

7.7 Sewing of Simple Piping with Piping Reverser and Automatic Carriage Return

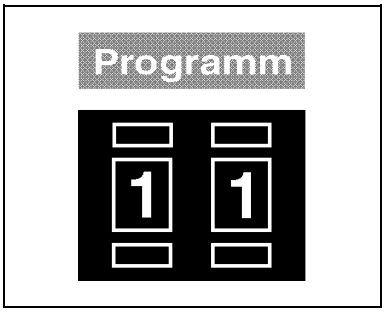


- Turn the DIP-Switch **b417.7** in switch setting "**ON**".
- Set the "**Program**" switch to "**10**".
- Press the "**STOP**" key.
  The program is activated.

In contrast to P09:

- After stacking the transport clasps are automatically run back to the feed area.

7.8 Sewing of Asymmetrical Piping with Piping Reverser

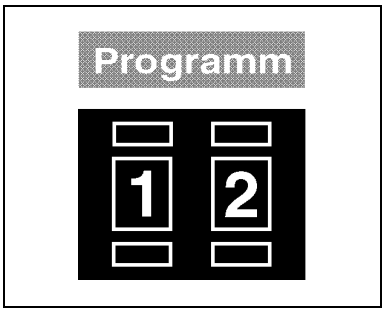


- Turn the DIP-Switch **b417.7** in switch setting "**ON**".
- Set the "**Program**" switch to "**11**".
- Press the "**STOP**" key.
  The program is activated.

In contrast to P01:

- After the corner incision the pipings are reversed and the material overlaps are drawn through the incision.
- Before this operation the left transport clasp is removed aside.
- The light barrier and the flap clamp cannot be activated.
- Only one sewing length L1 can be activated.

7.9 Sewing of Asymmetrical Piping with Piping Reverser and Automatic Carriage Return

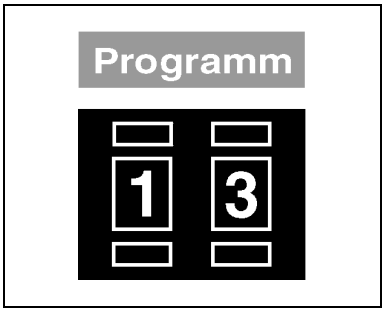


- Turn the DIP-Switch **b417.7** in switch setting "**ON**".
- Set the "**Program**" switch to "**12**".
- Press the "**STOP**" key.
  The program is activated.

In contrast to P11:

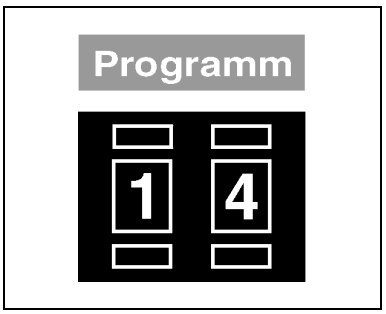
- After stacking the transport clasps are automatically run back to the feed area.

7.10 Sewing of Simple and Asymmetrical Piping without Piping Reverser



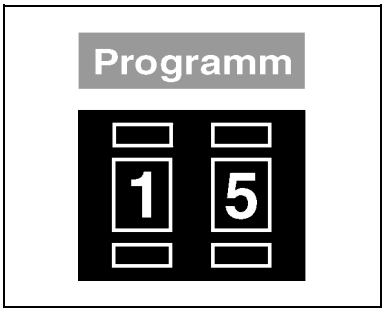
- Turn the DIP-Switch **b417.7** in switch setting "**ON**".
- Set the "**Program**" switch to "**13**".
- Press the "**STOP**" key.
  The program is activated.
- The running of the program is suitable to sewing program **P01**.

7.11 Sewing of Simple and Asymmetrical Piping without Piping Reverser with Automatic Carriage Return



- Turn the DIP-Switch **b417.7** in switch setting "**ON**".
- Set the "**Program**" switch to "**14**".
- Press the "**STOP**" key.
  The program is activated.
- The running of the program is suitable to sewing program **P02**.

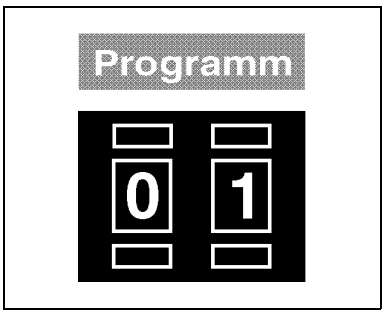
7.12 Sewing of Simple and Asymmetrical Piping without Piping Reverser with Material Return



- Turn the DIP-Switch **b417.7** in switch setting "**ON**".
- Set the "**Program**" switch to "**15**".
- Press the "**STOP**" key.
  The program is activated.
- The running of the program is suitable to sewing program **P03**.

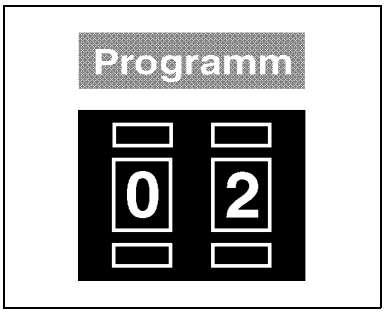
8. Sewing Programs 745-24

8.1 Sewing of Dual Piping



- Turn on main switch.
  "**<---REF**" appears in the lower display line.
- Step back on the left pedal.
  The transport clasps are raised.
  The transport carriage runs to its rear position.
- The display signals start readiness by showing the current parameters (see display example 1).
  The settings correspond to the last settings selected before the machine was turned off.
- Set the "**Program**" switch to "**01**".
- Press the "**STOP**" key.
  The program is activated.
- By tapping the left pedal bring the carriage return out of the hold position, switch on the feed procedure and start.
- By stepping back on the left pedal during the feed procedure the previous steps can be activated again.
- By stepping back on the left pedal the sewing process can be interrupted after starting.
- When the sewing unit is equipped with a right pedal this activates the holder and the vacuum.
  When the sewing unit is equipped with a knee switch this operates the vacuum.

8.2 Sewing of Dual Piping with Automatic Carriage Return

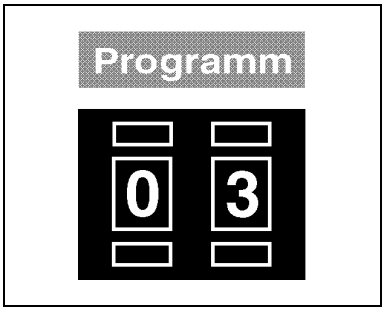


- Set the "**Program**" switch to "**02**".
- Press the "**STOP**" key.
  The program is activated.

In contrast to P01:

- After stacking the transport clasps are automatically run back to the feed area.

8.3 Sewing of Dual Piping with Material Return



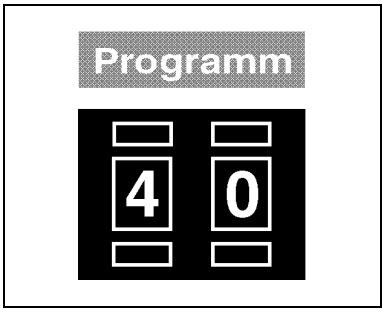
- Set the "**Program**" switch to "**03**".
- Press the "**STOP**" key.
  The program is activated.

In contrast to P01:

- There is no stacking after sewing.
- The material is transported back to the feed area by the transport clasps.

9. Aid Programs

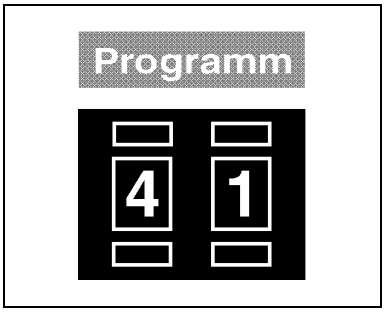
9.1 Center Knife Adjustment



Program P40 alters the incision of the center knife.
If a higher value is selected the incision moves to the outside at the seam beginning and at the seam end.
With a smaller value the incision moves in the seam.

- Set the "**Program**" switch to "**40**".
- Press the "**STOP**" key.
  The program is activated.
  The lower left display line shows the current value for the center knife incision.
- Correct the set value with the "**+/ -**" keys.

9.2 Setting the Bobbin Thread Counter (745-22;-23)



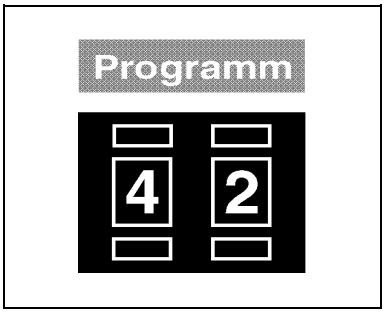
With the sub-classes **745-22** and **745-23** the bobbin thread is monitored by a countdown counter.
The setting of this counter is made with program P41.

- Set the "**Program**" switch to "**41**".
- Press the "**STOP**" key.
  The program is activated.
  The lower display line shows the preset value.
  The position to be set blinks.
- Set the desired value for each of the positions with the "**+/ -**" keys.
- The next higher position is selected with the key "Σ".
- By operating both keys "+" and "-" at the same time the counter is reset to "**0000**".
  Setting the value "0000" causes the bobbin thread monitor to be shut off by the counter.

Note:

The set value multiplied by factor four is approx. the number of possible stitches.

9.3 Changing the Positioning Point Manual/Automatic

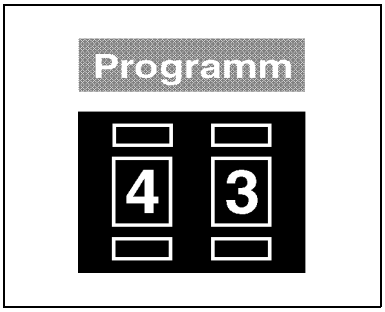


Program P42 switches over between manual and automatic changing of positioning point.

An automatic change is only possible when sewing a sewing length.

- Set the "**Program**" switch to "**42**".
- Press the "**STOP**" key.
  The program is activated.
  The set status is shown in the display.
- The switch over between manual and automatic change is made with key "Σ".

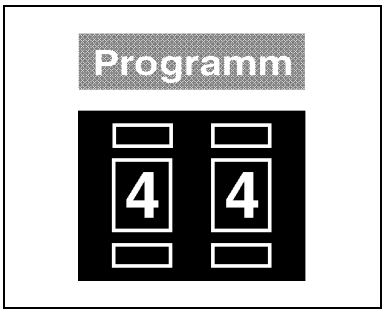
9.4 Testing the Piping Reverser for Dual Piping (745-23)



Program P43 corresponds to sewing program P07.
During the reversing procedure there is a stop after each step.

- Set the "**Program**" switch to "**43**".
- Press the "**STOP**" key.
  The program is activated.
- After the first step of the draw-through procedure the process is stopped.
- By pressing the "**+**" key the process is continued to the next stop point.

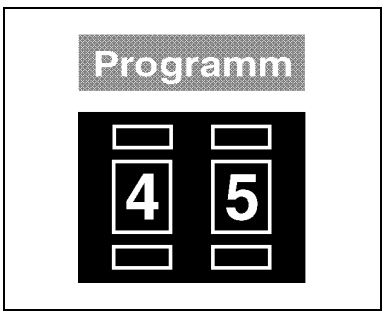
9.5 Testing the Piping Reverser for Simple Piping (745-23)



Program P44 corresponds to sewing program P07.
During the reversing procedure there is a stop after each step.

- Set the "**Program**" switch to "**44**".
- Press the "**STOP**" key.
  The program is activated.
- After the first step of the draw-through procedure the process is stopped.
- By pressing the "**+**" key the process is continued to the next stop point.

9.6 Testing the Piping Reverser for Asymmetrical Piping (745-23)

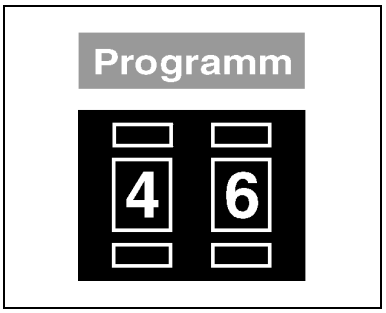


Program P45 corresponds to sewing program P11.
During the reversing procedure there is a stop after each step.

- Set the "**Program**" switch to "**45**".
- Press the "**STOP**" key.
  The program is activated.
- After the first step of the draw-through procedure the process is stopped.
- By pressing the "**+**" key the process is continued to the next stop point.

10. Setting Programs

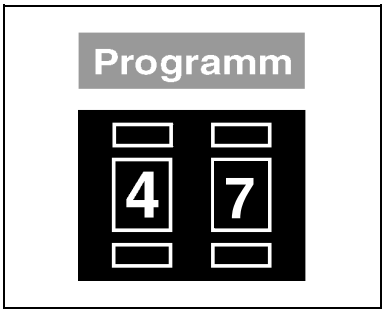
10.1 Testing the Positioning Procedure for Dual Piping (745-23)



Program **P46** serves to test the positioning procedure for dual piping.

- Set the "**Program**" switch to "**46**".
- Press the "**STOP**" key.
  The program is activated.
  A reference run is conducted.
- Press the pedal.
  The transport carriage runs to the feed station.
- The positioning procedure is run through as in a sewing program.
  Then the display shows the symbol "**<---**".
- Run the transport carriage into the rear position by tapping the "Σ" key.
- When the rear edge of the transport clasps is under the needles the zipper cutter is operated.

10.2 Loading of standard values

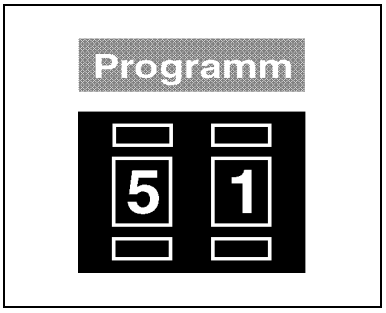


Program **P47** serves for loading of the following standard values:

Correction seam beginning (NA) / seam end (NE):	50
Correction of corner knife seam beginning (MA) / seam end (ME):	50
745-24: Seam beginning (BL) / seam end (EL) left needle:	10
745-24: Seam beginning (BR) / seam end (ER) right needle:	10

- Set the "**Program**" switch to "**47**".
- Press the "**STOP**" key.
  The program is activated.
- Press the "Σ" key for starting the program.
  The display shows the loaded standard values.

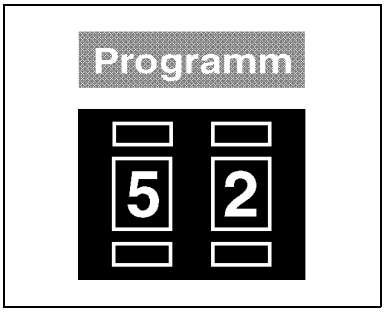
10.3 Setting the Remaining Thread Monitor (Light Reflection Barriers)



Program P51 serves for aligning the light reflection barriers of the remaining thread monitor.

- Set the "**Program**" switch to "**51**".
- Press the "**STOP**" key.
  The program is activated.
  The middle of the lower display line shows two bobbins.
- With correctly aligned light barriers a reflection occurs when an empty bobbin is turned.
  A reflection of the left light barrier is shown in the left half of the lower display line by the symbol "**]->>**".
  A reflection of the right light barrier is shown in the right half of the lower display line by the symbol "**<<-[**".

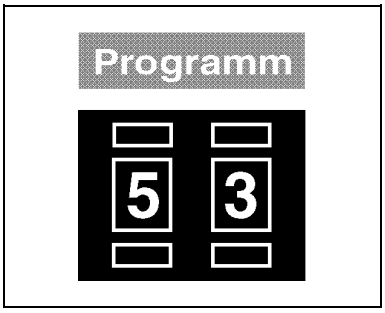
10.4 Testing the Zipper Cutter (745-22)



Program P52 can start a zipper cutter cutting sequence.

- Set the "**Program**" switch to "**52**".
- Press the "**STOP**" key.
  The program is activated.
- Press the "Σ" key.
  The zipper cutter cutting sequence is started.
- If the transport carriage is not in its rear position, this is shown by the symbol "**<---**".
- Step back on the left pedal.
  The transport carriage runs to the rear.

10.5 Checking Needle and Center Knife Actuation



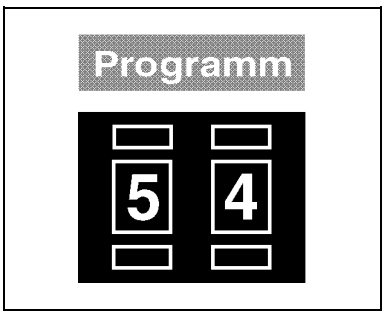
Program P53 checks the actuation of the needles and center knife with the sewing drive running.

- Set the "**Program**" switch to "**53**".
- Press the "**STOP**" key.
  The program is activated.
- Set the desired revolutions (1 - 13) with the "**Program**" switch.
  The lower display line shows the set value belonging to the selected revolutions.
- Press the "Σ" key.
  The sewing drive starts and runs until the "Σ" key is pressed again.
  When the sewing drive is stopped there is a positioning sequence in the 2nd needle position (needle up).
- The needles and the center knife can be actuated at any time by pressing the key "**L1**" (needles) and "**L2**" (center knife).

CAUTION !

When exiting program **P53** it is essential that the machine head be allowed to run for a short time with needles and center knife shut off. Otherwise the next seam will not be sewn correctly.

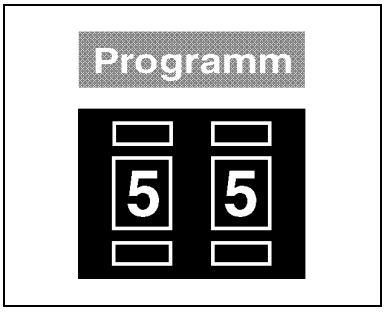
10.6 Testing the Positioning Procedure for Simple Piping (745-23)



Program **P54** serves to test the positioning procedure.

- Set the "**Program**" switch to "**54**".
- Press the "**STOP**" key.
  The program is activated.
  A reference run is conducted.
- Press the pedal.
  The transport carriage runs to the feed station.
- The positioning procedure is run through as in a sewing program.
  Then the display shows the symbol "**<---**".
- Run the transport carriage into the rear position by tapping the "Σ" key.
- When the rear edge of the transport clasps is under the needles the zipper cutter is operated.

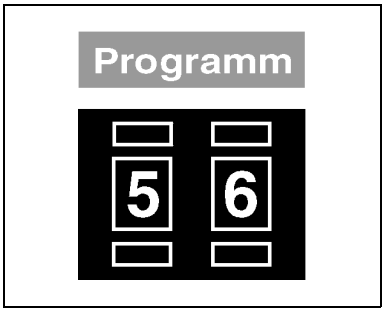
10.7 Setting the Light Barrier for Seam Beginning / Seam End



With program **P55** the reflecting light barrier for recognition of the seam beginning and seam end is aligned.

- Set the "**Program**" switch to "**55**".
- Press the "**STOP**" key.
  The program is activated.
- Move the transport clasp by hand.
  By reflection the first display line will show "**+B44**".
  By interruption "**-B44**" appears.

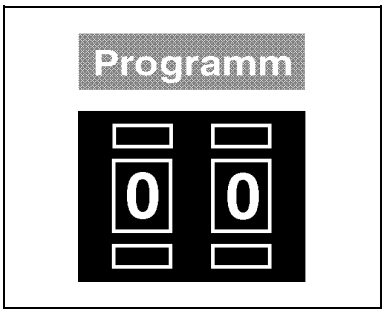
10.8 Setting the Material Strip Reverser (745-23)



- Set the "**Program**" switch to "**56**".
- Press the "**STOP**" key.
  The program is activated.
- Press the "Σ" key.
  The material and piping reverser is switched on and off.
- If the transport carriage is not in its rear position, this is shown by the symbol "**<---**".
- Step back on the left pedal.
  The transport carriage runs to the rear.

11. Testing Programs

11.1 Program Version and Check-Sum Display



- Set the "**Program**" switch to "**00**".
- Press the "**STOP**" key.
  Das Program ist activated.
  In the lower display line the program version and a check-sum appear.

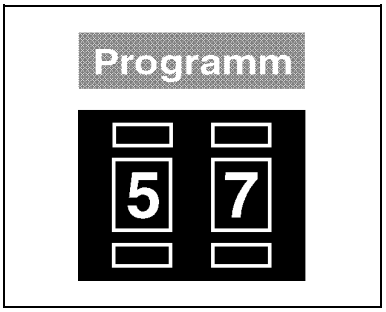
e.g.: **745P06** **CE9D** (for 745-22;-23)

745 = Class designation of the sewing unit
P = ID letter
06 = Series number
CE9D= Check-sum

By program versions with the same class designation and same ID letter the higher version replaces all lower versions (Example: 745P03 replaces 745P01 and 745P02).

The check-Sum is only meant for the factory service department. In it specialists can see if the program memory (EPROM) of the sewing unit controls faultlessly contains the complete program.

11.2 Checking the Step Motor Control

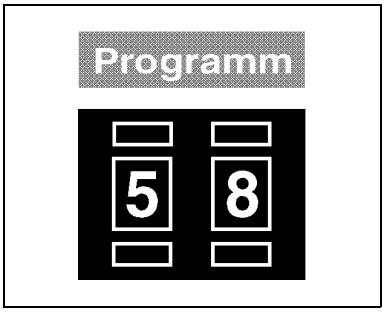


Program P57 tests the step motor controller and the step motor output.

- Set the "**Program**" switch to "**57**".
- Press the "**STOP**".
  The program is activated.
  The results of the test are shown in the display.

Display	Explanation
AMP ERR	Fault in the step motor output or linking cable unplugged
LINK OK	Transmission to the step motor controller
LINK ERR	Fault in the transmission to the step motor controller
EPROM OK	EPROM on the step motor card OK
EPROM ERR	EPROM on the step motor card defective
XCOU OK	Cycling counter module on the step motor card OK
XCOU ERR	Cycling counter module on the step motor card defective
SCOU OK	Counter module for cycle generation on the step motor card OK
SCOU ERR	Counter module for cycle generation on the step motor card defective

11.3 Checking the Serial Interface

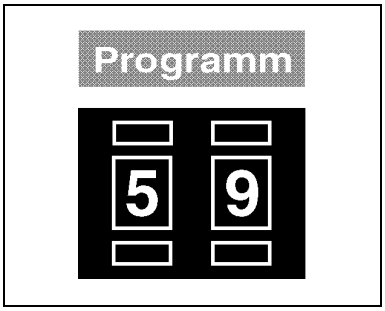


Program P58 checks the SIO module of the controls.

- Plug the SIO test plug into the socket b109 on the main circuit board.
  The test plug links the transmitter with the receiver.
  This makes a loop test possible.
- Set the "**Program**" switch to "**58**".
- Press the "**STOP**" key.
  The program is activated.

Display	Explanation
OK	SIO module is OK
Err	SIO module is defective SIO test plug is not plugged in
kein SIO	Controls are operated without SIO module (optional equipment)

11.4 Memory and Timer Test

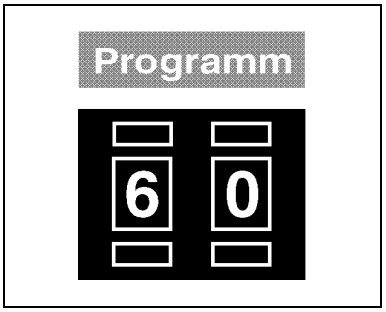


Program P59 checks the working memory (RAM) and all timer switches of the controls.

- Set the "**Program**" switch to "**59**".
- Press the "**STOP**".
  The program is activated.

Display	Explanation
OK	Working memory and all timer switches are OK
ERROR 0	RAM error
ERROR 6	Timer 1 defective
ERROR 7	Timer 2 defective
ERROR 8	Timer 3 defective
ERROR 9	Timer 4 defective

11.5 Continuity Check



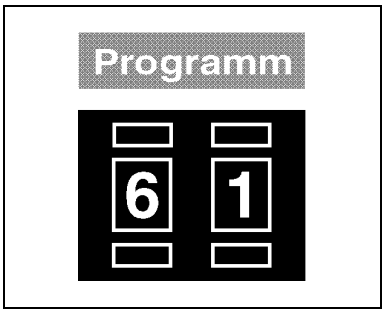
Program P60 checks to see if the 24V current supply supplies current when the output drivers are shut off.

Then the program checks all existing output elements (including output drivers and installation) for continuity.

- Set the "**Program**" switch to "**60**".
- Press the "**STOP**" key.
  The program is activated.

Display	Explanation
V?	Short in the installation or one of the output drivers defective
OK	All circuit have continuity
S17 (Example)	Interruption in the output element s17, in its installation or driver Output element s17 does not exist because it is optional equipment Continue the test with the next element by pressing the "Σ" key.

11.6 Checking the Front Panel Elements



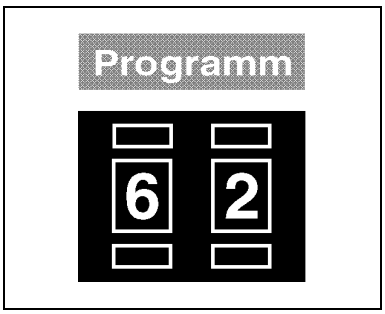
Program P61 checks the front panel elements.

- Set the "**Program**" switch to "**61**".
- Press the "**STOP**" key.
  The program is activated.
- Operate the preselector switch on the front panel.
  The display will show the current set value of the preselector switch operated.
  When a key on the front panel is operated (Exception: STOP key) the numbers relating to this switch (1, 2, 4 or 8) are displayed.
- The LEDs on the front panel are selected using code numbers. The short designation from the circuit diagram (1 - 8) acts as their code number.
  The LEDs are switched on with the "Σ" key.

Switch	Function	Designation
b417	Function switch	
b401	Revolutions	
b402	Operation mode of the left transport clamp	
b413/412	Program switch	PROGRAM
b416	Stop (Key 13)	STOP

Key	Function	Symbol	Indicator
b814	Positioning point forward		LED
b815	Set counter		Display
b816	Minus		
b817	Plus		
b818	Center and corner knives on / off		LED / LED
b819	Order of closing of the flap clamps		LED / LED
b820	Tacking on / off		LED
b821	Tape feedon / off		LED
b822	Light barrier on		LED / Display
b823	Tape length when sewing with light barrier		Display
b824	Correction the corner knife		Display
b825	Correction of seam beginning and seam end		Display
b826	Sewing of seam series	F	Display
b827	Sewing length 3	L3	Display
b828	Sewing length 2	L2	Display
b829	Sewing length 1	L1	Display
LED	**Function Indication**		
H1b	Positioning point forward		
H2	Light barrier NA / NE		
H3c	Flap clamp left		
H4c	Corner knife		
H5b	Center knife		
H6b	Flap clamp right		
H7a	Tacking		
H8a	Tape guide		

11.7 Checking the Input Elements



- Set the "**Program**" switch to "**62**".
- Press the "**STOP**" key. The program is activated.
- Press the input element to be checked.
  The display will show the circuit diagram designation and switching status of the input elements (e.g. "+B25").
  The display will change when the switching status of any other input elements is changed.

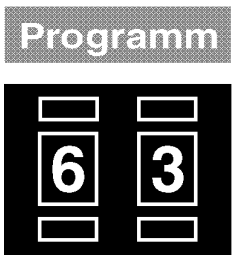
The switch status "**+**" means:

- for switches with contact = contact open
- for proximity switches = metal in front of the switch
- for reflecting light barriers = no reflection
- Continuous beam light barrier = beam uninterrupted

11.8 Selecting Input Elements

CAUTION !

All input elements have been carefully set at the factory.
Adjustment and correction may only be undertaken by trained service personnel.



Program P63 serves for setting the input elements.

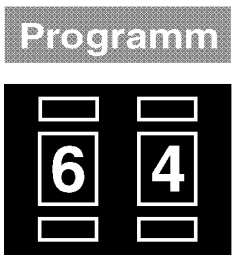
- Set the "**Program**" switch to "**63**".
- Press the "**STOP**" key.
  The program is activated.
- Set the "**Program**" switch to the code number of the desired input element.
  The short designation in the circuit diagram acts as the code number (see table). This does not apply for the keys on the front panel (see "Checking the Front Panel Elements").
- The display shows the circuit diagram designation and the switch status of the input element (e.g. "+B14").
- Adjust the input element (e.g. proximity switch) until the desired switching status is shown in the display.
  The meaning of the switch status corresponds to the switching status in program P62.

Input Element	Function
b1	Carriage at rear
b2	Reference position
b3	Carriage forward
b4	Folder up
b5	Folder down
b8	Material holder lowered / Vacuum on (second pedal / Knee switch, optional equipment)
b9	Pedal 3 (External transmitter for sewing drive)
b10	Pedal 4 (External transmitter for sewing drive)
b11	Pedal 1 (External transmitter for sewing drive)
b12	Pedal 2 (External transmitter for sewing drive)
b13	Transmitter control
b14	Thread monitor left
b15	Thread monitor right
b35	Position 1 (Needle down)
b37	Position 2 (Needle up)
b39	(Position 3)
b44	Light barrier NA / NE (optional equipment)
b45	Stacker control
b46	Remaining thread monitor left
b47	Remaining thread monitor right

11.9 Selecting Output Elements

Caution Risk of Injury !

During the function testing of the output elements do not reach into the running machine.



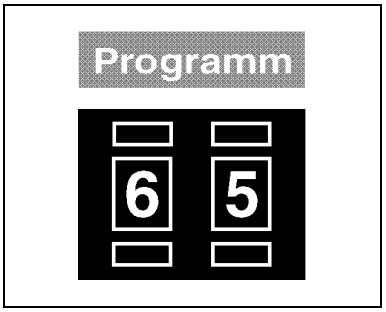
Program P64 checks the function of the output elements.

- Move the transport carriage at a distance of 50 mm to its rear end position by hand.
- Set the "**Program**" switch to "**64**".
- Press the "**STOP**" key.
  The program is activated.
- Set the "**Program**" switch to the code number of the desired output element.
  The short designation in the circuit diagram serves as the code number (see table).
- Turn the selected output element on and off by tapping the "Σ" key.

Output Element	Function	745-22	745-23	745-24
s1	Raise flap clamp left	**X**	**X**	**X**
s2	Swing link	**X**	**X**	**X**
s3	Corner knife seam beginning	**X**	**X**	**X**
s4	Corner knife seam end	**X**	**X**	**X**
s5	Close fold plates	**X**	**X**	**X**
s6	Smoother forward	**0**	**0**	**0**
s7	Raise flap clamp right	**X**	**X**	**X**
s8	Smoother back	**0**	**0**	**0**
s9	Stacking / Blowing out	**X**	**X**	**X**
s10	Raise transport clasp	**X**	**X**	**X**
s11	Lower transport clasp	**X**	**X**	**X**
s12	Raise tensioning strip	**-**	**X**	**-**
s13	Center knife	**X**	**X**	**X**
s14	Material holder / Vacuum	**0**	**0**	**0**
s15	Loosen thread tension	**X**	**X**	**X**
s16	Open thread clamp	**X**	**X**	**X**
s17	Close zipper cutter	**0**	**-**	**-**
	* Lower piping reverser	**-**	**X**	**-**
s18	Pull thread forward	**X**	**X**	**X**
s19	Blow out lint	**X**	**X**	**X**
s20	Lower folder	**X**	**X**	**X**
s21	Raise folder	**X**	**X**	**X**
s22	Zipper cutter back	**0**	**-**	**-**
	* Knife block forward	**-**	**X**	**-**
s23	Transport clasp closed	**-**	**X**	**-**
s24	Thread trimmer / Thread catch	**X**	**X**	**X**
s25	Needle right and left (745-22;-23)	**X**	**X**	
	Needle right (745-24)			**X**
s26	Needle left	**-**	**-**	**X**
s27	Close tape trimmer	**0**	**0**	**0**
s28	Advance tape	**0**	**0**	**0**
s29	Raise piping reverser	**-**	**X**	**-**
	* Zipper cutter forward	**0**	**-**	**-**
s30	Lock hood	**X**	**X**	**X**
s31	Lift left transport clamp	**0**	**0**	**0**
s32	Lower left transport clamp	**0**	**0**	**0**

* = Alternative designation with different optional equipment
x = Standard equipment
0 = Optional equipment

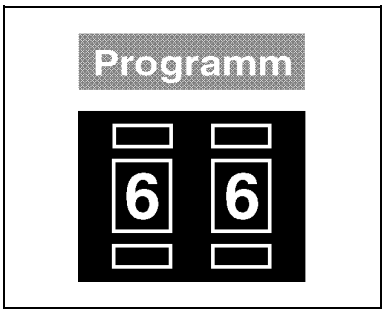
11.10 Sewing Drive: Pedal Operation



After the program P65 is activated the unit can be operated with revolutions selected via the pedal.

- Set the "**Program**" switch to "**65**".
- Press the "**STOP**" key.
  The program is activated.
- Step forward on the pedal.
  The drive runs at those revolutions corresponding to the pedal position.
  After a few seconds the right half of the first display line shows current revolutions (actual revolutions of the machine head).
- Bring the pedal to the neutral position.
  The machine head is stopped without a positioning sequence.

11.11 Positioning the Machine Head in the 2nd Needle Position/Revolution Test



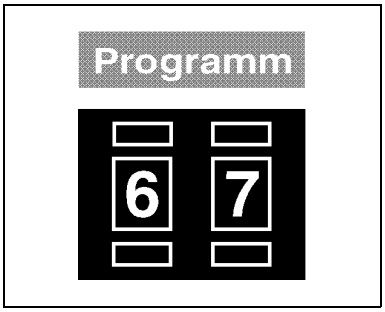
Program P66 serves for setting the 2nd needle position (needle up). After the main switch is turned on the right display half shows the symbol "**SW?**".

Different revolutions of the motor can be preselected with the program switch.

- Set the "**Program**" switch to "**66**".
- Press the "**STOP**" key.
  The program is activated.
- Preselect the revolutions of the drive with the "**Program**" switch.
  A total of 13 revolution stages are available (see table).
- With an allowable value the right half of the first display line shows "**0000**", with an illegal value "**SW?**".
- Press and hold key "Σ".
  The drive runs with the selected revolutions.
  After a few seconds the right half of the first display line shows current revolutions (actual revolutions of the machine head).
- Release the key "Σ".
  The machine head will be positioned in the 2nd needle position (needle up).

Revolutions	**1/min**
13	3000
12	2750
11	2500
10	1700
9	1000
8	720
7	540
6	410
5	310
4	230
3	170
2	130
1	100

11.12 Positioning the Machine Head in the 1st Needle Position



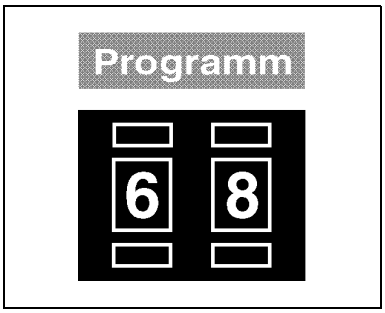
Operation of the program P67 is as described under program P66.

- Set the "**Program**" switch to "**67**".
- Press the "**STOP**" key.
  The program is activated.

In contrast to P66:

- The machine head is positioned in the 1st needle position (needle down).
  The slots in the synchronizer for the two needle positions must be opposite each other.

11.13 Positioning the Machine Head with Cutting Revolutions



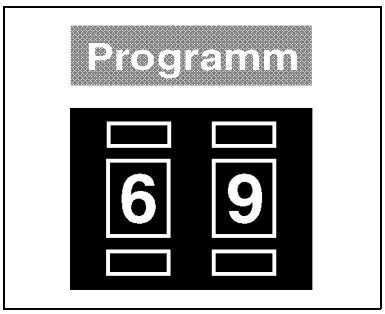
Operation of the program P68 is as described under program P66.

- Set the "**Program**" switch to "**68**".
- Press the "**STOP**" key.
  The program is activated.

In contrast to P66:

- The machine head is positioned in the 1st needle position (needle down).
- After a short pause the needle is positioned in the 2nd needle position (needle up).

11.14 Positioning the Machine Head and Thread Trimming



Operation of the program P69 is as described under program P66.

- Set the "**Program**" switch to "**69**".
- Press the "**STOP**" key.
  The program is activated.

In contrast to P66:

- The positioning of the machine head in the 2nd needle position (needle up) occurs with a thread trimming sequence.

12. Function Displays and Error Messages

12.1 Displays for Operating Aids

Display	Explanation	Remedy
P?	Illegal program selected	Reset "Program" switch
745N06	Display of the program version	
<----REF	Carriage not in rear position when switched on (reference run)	Step back on pedal
<----REF PEDAL STOP	Sewing sequence interrupted, run carriage to rear	Step back on pedal
<----	Run carriage to rear	Step back on pedal
F?	Entry of a new series is expected	Program a new seam series
- - - -	Illegal sewing length selected	
L?	(e.g. Length in P04 - P06 smaller than 75 mm)	Reset sewing length
LS	Fabric to be scanned by the light barrier is positioned outside the sewing area	Reposition fabric inside the sewing area
▮▯ ERROR	Positioning error, rear positioning point chosen by sewing lengths under 75 mm	Select the front positioning point
I I	Left bobbin empty (left blinks)	Change left bobbin
I I	Right bobbin empty (right blinks)	Change right bobbin
I I	Bobbins empty (blinks)	Change bobbins
-- X --	Thread tear (blinks)	Reinsert thread
Σ=xxxx	Piece counter	
I =xxxx	Bobbin thread reserve	
]->>	Left bobbin thread monitor has reflection	
<<-[	Right bobbin thread monitor has reflection	
SW?	Invalid revolution level set	Reset "Program" switch
SMC-TEST	Step motor controller being tested	
LINK OK	Transmission to step motor controller OK	
XCOU OK	Counter module for cycle counting on the step motor card OK	
SCOU OK	Counter module for cycle generation on the step motor card OK	
EPROM OK	EPROM on the step motor card OK	

12.2 Displays by Malfunctions

Display	Explanation	Remedy
E2	Fuse e2 in transformer defective	Replace fuse e2 (24V)
V?	Error message in P60	
STOP	Hood open	Close hood, replace hood control or Stop key
	Hood control or Stop key defective	
POS2	Machine head will not position	
POS-Err	Synchronizer not installed,	Install synchronizer,
	Motor protection switch off	Switch on motor protection switch
--<>--	Synchronizer not plugged in	Plug in synchronizer
START ERROR	Short in the lead for switch on pedal, pedal was already operated when the main switch was turned on	Check lead Release pedal, press STOP key
ERROR --> [b3	Transport carriage run up against forward stop	Check switch b3
ERROR b1] <--	Transport carriage run up against rear stop	Check switch b1
? <----> ?	Transport carriage run in the wrong direction during reference run	Check direction of rotation of the step motor
REF ERROR	Error during reference run	Check transport carriage and switch b2
PROG ERROR1	Error in the stored values	Press STOP key and check values (also in P40)
PROG ERROR2	Error in storing the check-sum	Check RAM in P59
? b417 ?	b417.8 only in conjunction with b417.4	
? b401 ?	Illegal switch position by revolution selection	Reset "Program" switch
ERROR1 LS] <--	No reflection at the beginning of the rail	Realign light barrier b44 Glue reflecting foil on rail
ERROR2 LS] <--	Reflection at the beginning of the railincorrect	Realign reflecting foil on rail
ERROR3 LS] <--	Too short a flap at rear positioning point	Use longer flap
ERROR4 LS] <--	Flap lies beyond forward positioning point	Position flap again
ERROR5 LS] <--	Lint in front of flap	Remove lint, thread
ERRORLS --> [END	Flap lies beyond rear positioning point	Position flap again

12.3 Error Messages

Display	Explanation	Remedy
DISP-Err	Display error when switching on	
ERROR 0	RAM error in P59	Call factory service dept.
ERROR 2	Error in reading the front panel elements	Check front panel elements
ERROR 3	Program switch defective	Replace program switch
ERROR 4	Regulator card for sewing drive defective	Replace regulator card
ERROR 5	Short voltage drops in mains	Stabilize voltage supply
ERROR 6	Timer 1 defective	Call factory service dept.
ERROR 7	Timer 2 defective	Call factory service dept.
ERROR 8	Timer 3 defective	Call factory service dept.
ERROR 9	Timer 4 defective	Call factory service dept.
ERR B..	Error in reading input elements: Defective or falsely adjusted limit switches (no lower stroke) or proximity switches are shown in the display with their circuit diagram designation (e.g. "ERR B31")	Replace defective switch, Reset switch
kein SIO	Controls have no SIO module	Press STOP key
ERR	Interruption in the SIO send/receive loop	Press STOP key
AMP ERR	Error in step motor output	Check LED's on the step motor card
SMC ERR	Step motor controller defective	Replace step motor card
LINK ERR	Error in the transmission to the step motor controller	Replace step motor card
XCOU ERR	Counter module for cycle counting on step motor card defective	Replace step motor card
SCOU ERR	Counter module for cycle generation on step motor card defective	Replace step motor card
EPRO ERR	EPROM on step motor card defective	Replace step motor card

13. Step Motor Output

13.1 Programing Switches on the Front

Caution Current !

The three gravity switches are not to be adjusted when under current. Before adjustment the main switch must be turned off.

- The three gravity switches for step count and current reduction must be open.
- The dial must be in position **C**.

13.2 Displays on the Front

The five LEDs on the step motor card show operating status and malfunctions.

LED 1 (green)	**Readiness** lit in as far as there is no malfunction
LED 2 (red)	**Short circuit** lit with a short circuit between two motor phases
LED 3 (red):	**Excess temperature** lit with a heat sink temperature > 75°
LED 4 (red)	**Overvoltage** lit with operating voltages > 140 V VDC (in braking operation)
LED 5 (red)	**Undervoltage** lit with operating voltages < 80 V VDC

The step motor runs only when the is no fault in the step motor output.

A fault is displayed as follows:

- The motor is switched currentless.
  The green LED 1 goes out.
- The fault is shown in that the appropriate red
  LED 2 - 5 is lit.
  After the malfunction is corrected the malfunction indicator is is turned off by switching the main switch off and on.