Chapter 7 "Measurements and annotation"

Content

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In the first section you learn about temporary measuring of points, lines, distances and angles. Content of the second section is the recorded finished measurement function which is required for specification sheets, finished measurement charts and other documents.

After this, labelling, marking and annotation of the construction is covered. For this, GRAFIS offers the following functions:
- *texts*,
- *symbols*, e.g. notch, drillhole, buttonhole,
- *attributes*, such as dotted lines and especially highlighted points and
- *hatching* of sections of the construction.

The functions of this chapter are not functions for alteration of the construction but important aides for control and annotation of patterns.

Practise the functions within the respective section, already. The complex exercises at the end of the chapter relate to work with symbols and texts, mainly.

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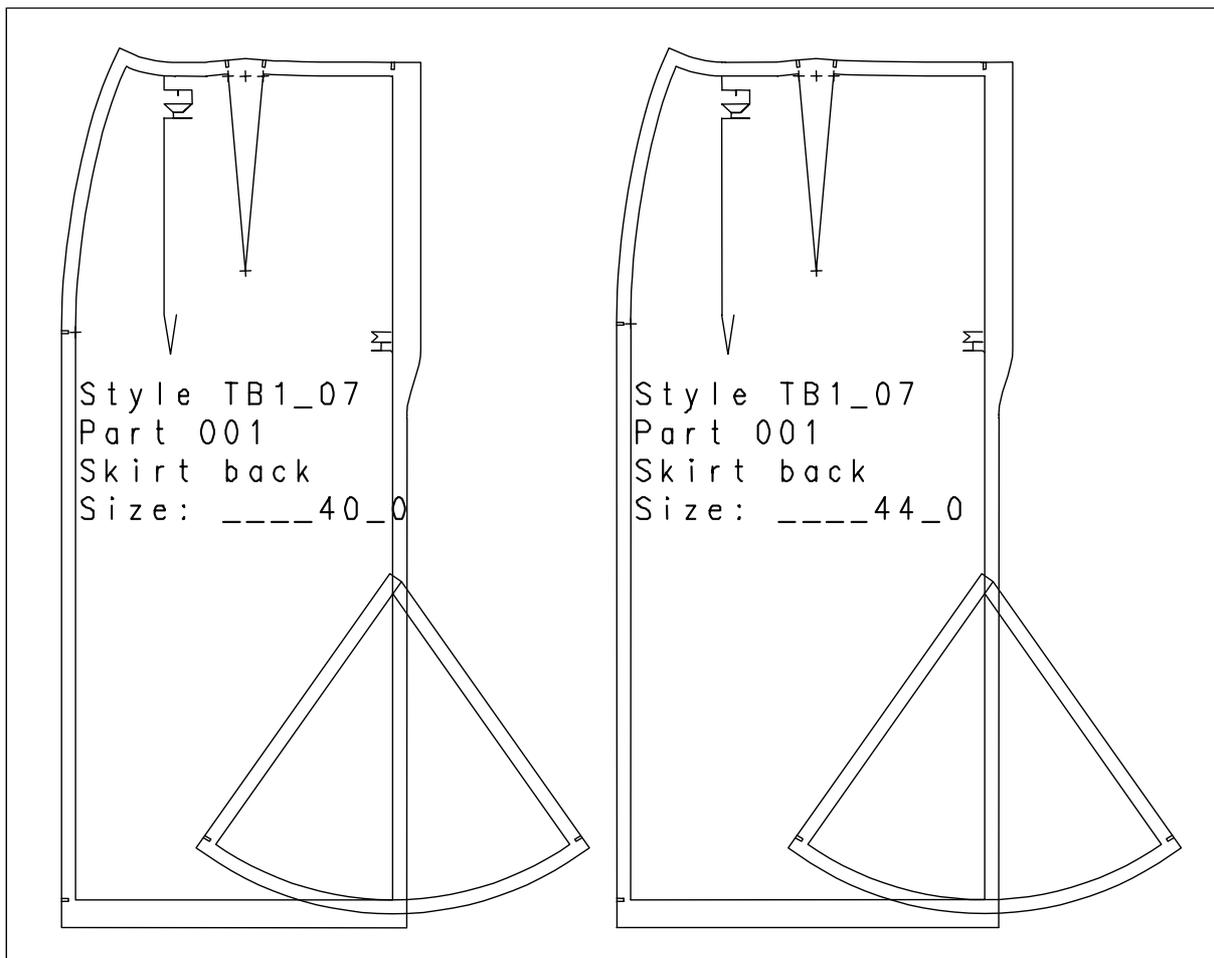
7.1 The measure menu

The *measure* menu is offered as a constant tool in a number of functions, e.g. *p+l+c+r, link, raster* and *lengthen*. It is used for temporary measuring during pattern development. GRAFIS also offers a recorded measurement function, which is discussed in the next section. *increments* opens the sub-menu for measuring increments in a graded nest, see section 17.2

measure
measure by
* click
construct
set new
coordsystem
sure:
point
line
distance
d on line
area
angle
increments

Step-by-step guide

⇒ Start *measure* from the *Extras* pull-down menu or from the menu of a record function
⇒ Activate *click* or *construct*
⇒ possibly: set new co-ordinate origin with *set new coordsystem* (relevant for points, only)
⇒ Click **what** is to be measured (*point, line, distance,...*)
⇒ Click the objects in the construction

measure by: click or construct

Selecting between *click* and *construct* determines **HOW** the measurement point is defined. *Construct* uses the sub-menu point construction. With *click* the position of the cursor defines the measurement. More accurate result are obtained with *construct*.
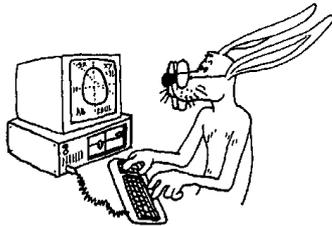
Set new coordsystem

After having opened the *measure* menu, the source for the point co-ordinates is absolute zero of the construction (Picture 7-1). However, point co-ordinates can also be determined relative to a defined point (relative zero). This relative zero is defined with *set new coordsystem*.
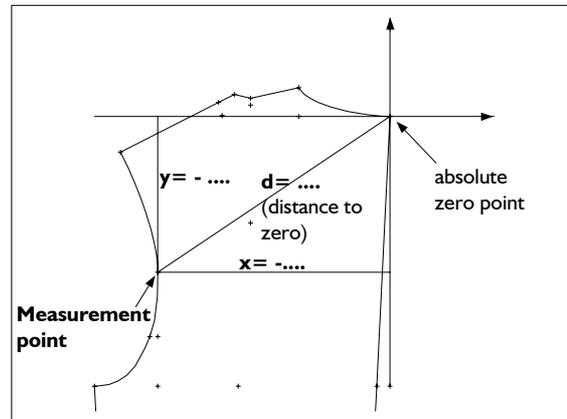
measure:

This option determines **WHAT** is to be measured:

|	
point	co-ordinates, distance to zero
line	total length, relative length, direction
distance	distance between two points
d on line	distance between two points along a line
area	length of the perimeter of an area and the area
angle	angle between two lines.

Measure co-ordinates of a point

Geometrical basics, especially for work with absolute (Picture 7-1) and relative co-ordinates (Picture 7-2) were discussed in section 4.3, already.

Picture 7-1

⇒ Activate *construct* or *click*
⇒ for relative measurement, only: click on *set new coordsystem* and construct zero
⇒ Activate *point*
⇒ Determine the measure point
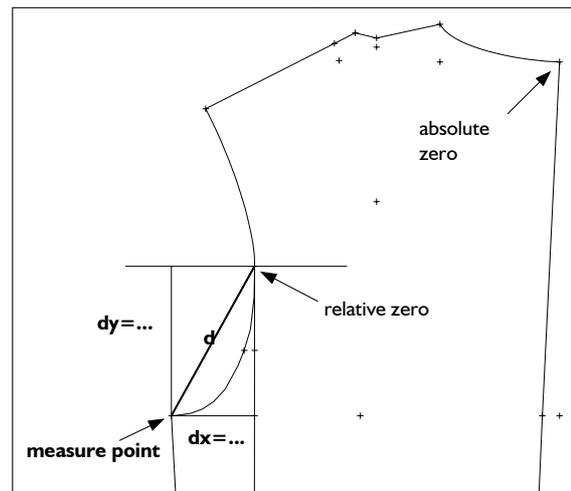
Picture 7-2

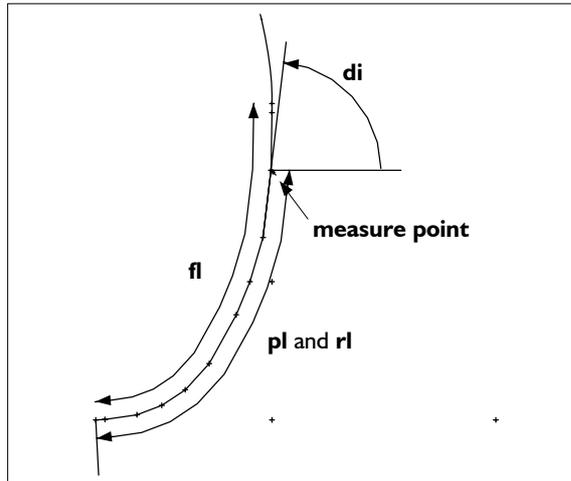⇒ The measurements appear in the measure result window:

$x=$ ...   absolute x co-ordinate in mm
$y=$ ...   absolute y co-ordinate in mm
$dx=$ ... relative x co-ordinate in mm
$dy=$ ... relative y co-ordinate in mm
$d=$ ...   distance from the measure point to zero (=length of green line)

Measure line

See also Picture 7-3.
⇒ Activate *construct* or *click*
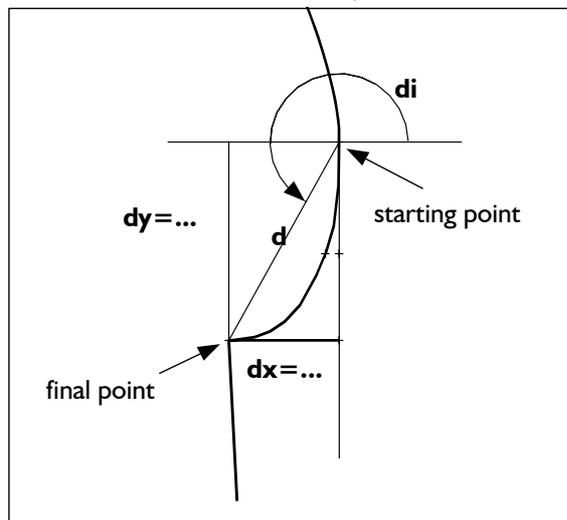⇒ Activate *line*
⇒ Click the line

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Picture 7-3

⇒ The measurements appear in the GRAFIS Messages window:

fl= ... full length in mm

di= ... direction in the measure point

pl=... partial length up to the measure point in mm

rl= ... relative length up to the measure point in %

Distance between two points

See also Picture 7-4.

⇒ Activate *construct* or *click*

⇒ Activate *distance*

⇒ Construct the two measure points

Picture 7-4

⇒ The measurements appear in the GRAFIS Messages window:

d=...   distance between the points

dx= ... x co-ordinate of the distance in mm

dy= ... y co-ordinate of the distance in mm

di=...   direction from the first measure point to the second

Distance between two points along a line

See also Picture 7-5.

⇒ Activate *construct* or *click*
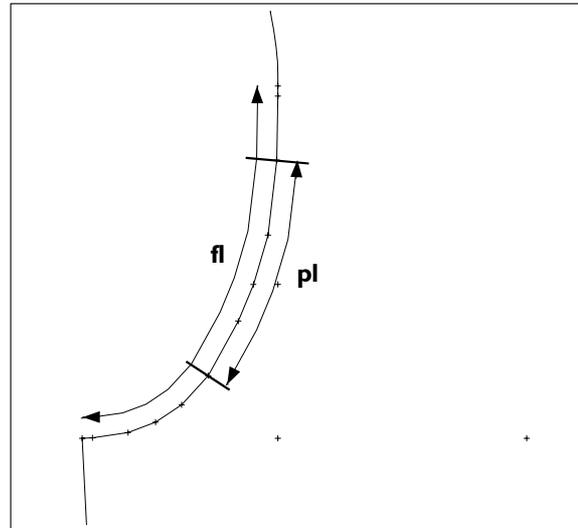
Picture 7-5

⇒ Activate *d on line*

⇒ Click the line along which is to be measured

⇒ Construct starting and final point

⇒ The measurements appear in the GRAFIS Messages window:

pl=... partial length between the measure points in mm

rl=... relative length of the selected partial line in %

fl=... full length of the line in mm

Measure area and perimeter

Directly after having activated *area,* a sub-menu with functions for generation of hatching is opened, see also chapter 7.6.

automat. and clicking a line automatically generates a closed perimeter, highlighted in blue. With **step-step forward** or **back** and clicking lines individually (right principle), the perimeter of the area is defined
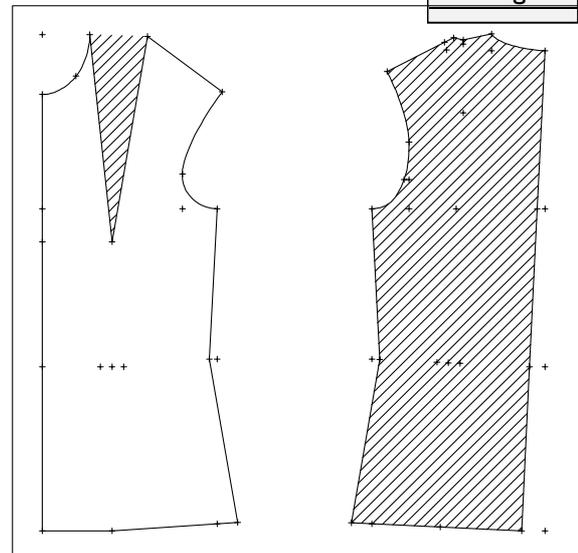
Picture 7-6

step-by-step. After clicking on **new**, you restart. **Hatching** highlights the currently surrounded area with hatching. (Picture 7-6). The hatching is undone after **new** or selection of a new perimeter.

After each click of a line GRAFIS calculates the current values for perimeter and area. They are displayed in the GRAFIS Messages window:

pm=...   total length of the perimeter in mm
ar=...   area in cm^2

Measure angle between two lines
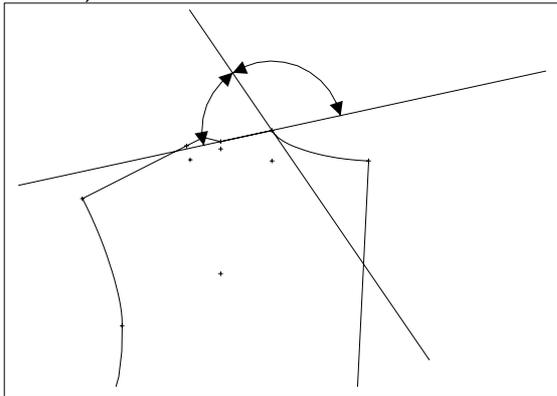
After having activated *angle,* both lines defining the angle are to be clicked. GRAFIS highlights the sides of the measured angle with long straights (see Picture 7-7).

Picture 7-7

For curves, zooming in to the measure area is recommended. If a different part of the line was measured click both lines again in the zoomed view and the measurements are updated.

The measurements appear in the GRAFIS Messages window:

an= ... ° (or .....°)

Both angles are given (see Picture 7-7).

Exercises on the functions in the *measure* menu

Call the basic block 001 "bodice with normal dart a. H" in size 40, delete all points in the back and show the fulcrums of the lower armhole curve (bk) with *raster0*. The results of the following measurements are displayed in the GRAFIS Messages window, which can be enlarged and positioned anywhere on screen:

Measure the absolute co-ordinates of the sleeve notch (ft) and the corner point side seam / armhole (ft):

Extras | measure
   construct
   point
      click p   sleeve notch (ft)
result: (x=-481.1, y=-162.0)
      click p   corner side seam/armhole (ft)
result: (x=-434.1, y=-209.0)

Now, try to obtain the same results with the option *click*. With *construct* and *click p* the sleeve notch is clicked, exactly; with **click* it is only an approximation.

Measure the relative co-ordinates of the corner point side seam / armhole (ft) with relative zero in the sleeve notch (ft):

set new coordsystem   sleeve notch
   construct
   point
      click p   corner side seam / armhole
result: (dx=47.0, dy=-47.0)

Now, try to obtain the same result with the option *click*.

Measure the direct distance between sleeve notch (ft) and corner point side seam / armhole (ft):

   construct
   distance
      click p   sleeve notch (ft)
      click p   side seam/armhole (ft)
result: (d=66.5, dx=47.0, dy=-47.0, di=-45°)

Measure along the lower armhole curve (bk) from the corner side seam / armhole to the 3rd fulcrum from the top. First, zoom in to the curve.

   construct
   d on line   click curve
      click p   side seam / armhole
      click p   3rd fulcrum from top
result: (pl=96.5, rl=82.4, fl=117.0)

Measure the area of the back and the bust dart in the front (Picture 7-6):

   area
      automat   click the back
      hatching   show hatched area
      (perimeter=1709mm, area = 1299cm^2)
      step-step click both dart lines (right principle!)
      hatching   show hatched area
result: (perimeter=657mm, area = 120 cm^2)

Measure the angles of the following lines in the back at their intersections: side seam / armhole; shoulder / armhole; centre back / neck; shoulder / neck.

   angle
      click first line
      click 2nd line

Apart from neck / shoulder, all angles are 90.0°. If this value is not given, exactly, zoom in to the area of the intersection and repeat the measurement.

7.2 Finished measurements

fin.measure is a record function for calculation of areas and perimeters, line lengths and distances. As opposed to the *measure* function (section 7.1) the function *fin.measure* is recorded. Measurements are automatically calculated for all graded sizes and the results are saved in Finished Measurement Tables. These are required for specification sheets, finished measurement charts and other documentation.

First, the record function *fin.measure* is discussed. The display of Finished Measurement Tables follows.

Step-by-step guide

⇒ *fin.measure*
⇒ Activate the type of measurement: *area, length* or *distance*
⇒ set the measurement with the sub-menu point construction
⇒ for *distance*: Adjust *horizontal, vertical, direct* or *x/y co-ord*
⇒ Position the measurement with *drag*
⇒ Adjust the *text size* and enter a name for the measurement with the *text editor*
⇒ Adjust the *display options*
⇒ possibly: *retake* or *delete* measurement
⇒ Quit with ⬛.

All measurements are given a consecutive measure number M1, M2, M3,... .

Set area measurement

Activate the measure type *area*. The sub-menu for area measurement is opened with functions similar to the ones used for hatching and measuring areas, see section 7.1.

automat. and clicking a line automatically generates a closed perimeter, highlighted in blue. With **single** and clicking lines individually, the perimeter of the area is determined step-by-step. **reset single** resets the steps individually. **reset all** resets the complete perimeter.

subtract area allows for exclusion of an area within the perimeter. In Picture 7-8, for example, the areas of the darts are subtracted from the total area. Mark the complete outer perimeter, first and then, subtract the inner areas with *subtract area*. The measurement is set after each ⬛.

fin.measure
meas.type:
area
length
distance:
*horizon.
vertical
direct
X/Y co-or
drag
text size
004 020
*006 030
010 050
015 100
indicate:
+number
+text
+value
+comment
edit text
measurement
retake
delete:
single
all
end

fin. measure area
perimeter:
automat.
single
reset
single
all
subtract area
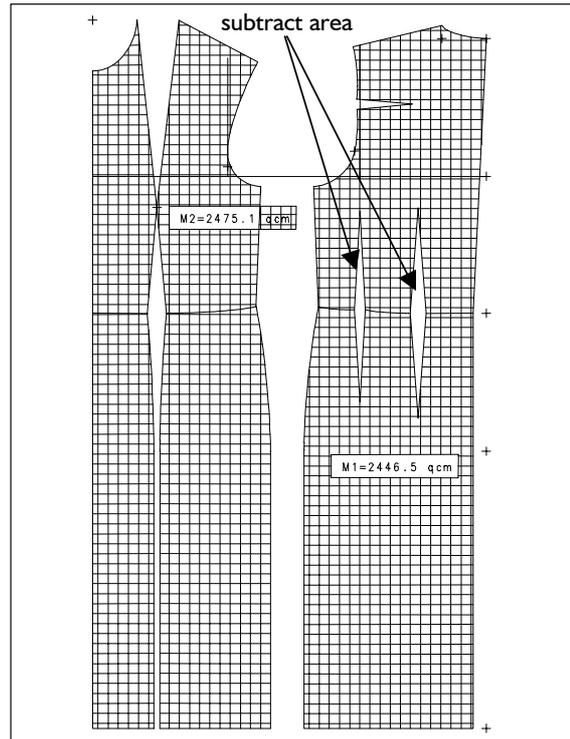
Picture 7-8

Set length measurement

Activate the measurement type *length*. A sub-menu with the functions *click l* and *reset* is opened. Click the line to be measured and click ⬛. The direction indicator of the cursor determines the direction of the measurement text. To set one measurement for a number of lines click the lines in succession, fol-

The length measurement was set, twice by clicking the other side, respectively. The direction indicator at the cursor determines the direction of the measurement annotation.
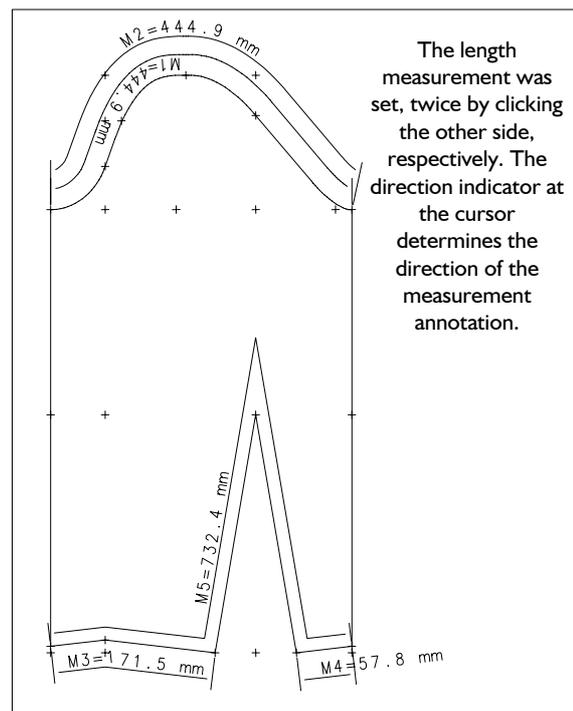
Picture 7-9

lowing the right principle. Lines which are not con-

nected are bridged as in the function *link single*. After ⬚ the measurement for the lines is set.

Set distance measurement

Activate the measurement type *distance*. The sub-menu point construction you already know from

Picture 7-10

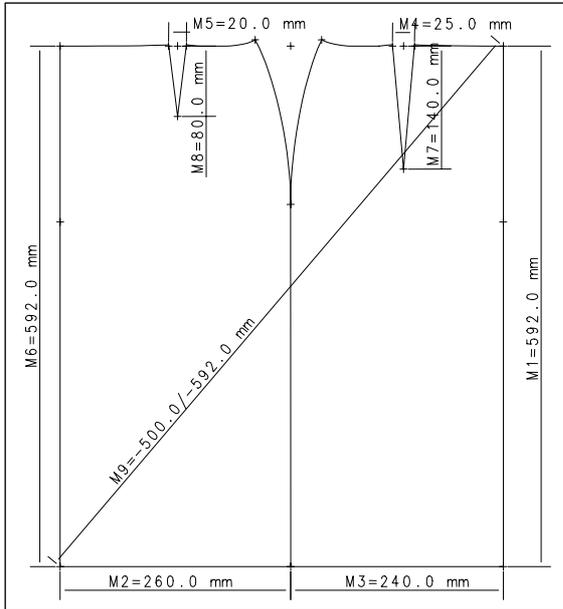chapter 6.1 is opened. Determine starting and final point for the distance measurement. The measurement is set and marked with an asterisk. Adjust the required option for the marked measurement: *horizontal, vertical, direct* or *x/y co-ord*. The measurement lines are adjusted, accordingly. *direct* gives the direct measurement in millimetres. *x/y co-ord* gives the direct distances through difference in x and y co-ordinates.

Drag measure text and measure lines

With the function *drag* each measurement can be moved with pressed left mouse button. Click at the beginning of the measure text. When dragging, the measure lines are changed, also.

After setting a new measurement, *drag* is active, automatically.

Measurement text size

The measure text can be 4 mm to 100 mm high. Select the desired size by clicking. It applies to all measurements.

Display options

The following information about the measurement can be shown (+) or hidden (-):

number   the measurement number, e.g. M1 or M7

code   the measurement code set with the *text editor*

text   the measurement description set with the *text editor,* also

value   the measurement value in the respective size

The settings apply to all measurements of the part.

Text editor

Each measurement can be complemented with a standard description consisting of code and measurement text or with an individual measurement annotation using the *text editor*. Both code and measurement text appear in the finished measurement table.

When assigning a standard measurement description in the detailed view ("short view" unchecked) the measure group is to be selected, first. Then, select the measurement description. If "show graphic" is checked a graphic - if available - with explanations about the measurement is opened. With double-click or <OK> the measurement description is accepted.

retake / *delete* finished measurement

After having activated *fin.measure retake* click the measurement to be retaken. The measurement type remains unchanged.

After having activated *delete: single* click the measurement to be deleted. Clicking on *delete: all* removes all measurements of the part after a security question.

Exercises on finished measurements

Set the finished measurements shown in Picture 7-8 in the basic block "036 dress" with <u>area measurements.</u>

    call
    fin.measure
        area
            automat.   click back outside
            subtract area   click internal darts
            ⬚

The measurement is set and the *drag* function is active. Click the measurement text close to the first letter and drag it to the required position. Change the text size and enter an individual text for the measurement.

        edit text

Set a measurement for the area of the front by defining the perimeter step-by-step with *single*. Reset with *reset single* if necessary. After ⬚ the area measurement is set. Should the measurement be incorrect, select *measurement retake,* click the incorrect measurement and set it again.

Set finished measurements shown in Picture 7-9 in the basic block "004 one-piece sleeve after Hohenstein" with <u>length measurements.</u>

    call
    fin.measure
        length

First, click the upper armhole curve, the direction indicator points to the left. After ⬚ the armhole

_____

curve measurement is set. Click the measure text close to the first letter and drag into the desired position. The measure text was written from right to left according to the direction indicator. Set the armhole measurement again and click the curve below. The text appears as required. Set the third and fourth measurement in the same way.

Set the fifth measurement for the wrist seam and dart as one line. Click all three lines from the right, one after the other (below) and terminate with ◰. Position the measure text, adjust the required text size and enter a text for the measurements (not shown). Should the measurements be incorrect, correct them with *measurement retake*.

In the basic block "017 skirt after Hohenstein" set the measurements shown in Picture 7-10 with <u>distance measurements.</u>

>   *call*
>   *fin.measure*
>   *distance*

Click the starting and final point of the centre back with *click p*.

>   **vertical*

Position the measure text with *drag*.

>   *distance*

Set the second measurement horizontally along the hem of the front skirt.

>   **horizontal*

and the third measurement along the hem of the back skirt. Set the measurement for the dart width as direct distance.

>   *distance*   click dart points
>   **direct*

Position the measure text and set the fifth measurement as described. Set direct measurements for the centre front and the dart lengths, also. Set a measurement for the distance centre back / waist to

Show and hide finished measurements

As long as the *fin.measure* menu is not open, set measurements can be shown or hidden with <F7>. Quit the *fin.measure* menu, grade and press <F7> a few times.

Pattern development after set measurement

After having set measurements, the pattern can be developed further without restrictions. Hide the measurements with <F7>. They are updated after each test run or grading.

Alter the basic block as shown in Picture 7-10 by generating a 40 mm wide hem with *-copy*.

>   *parallel*
>   *separate*   lengthen CF, CB and sseam
>   *test run*

The measurements M1, M6 and M9 were updated, given they were bound to the line with *click pl* and not to the points. In this case reset the hem or set the measurements M1, M6 and M9 again with *fin. meas: retake* and *click pl*.

The set measurements are bound to points (*click p*) or lines (*click l, click pl, intersectn.*). If points or lines of a measurement are deleted during pattern development, GRAFIS gives an undefined measurement after the next test run. You then have the option to set the measurement again or delete it.

Display finished measurement table

The finished measurements are recorded and can be repeated for other sizes. Grade the measured basic block according to Picture 7-10 (without hem) in sizes 40, 42, 44 and 46, quit the *fin. meas.* menu and open the *Finished Measurement Table* from the *Finished Measurements* pull-down menu. The "GRAFIS Finished Measurement Table" is opened as shown in Table 7-1.

*	*	T1.M1	T1.M2	T1.M3	T1.M4	T1.M5	T1.M6	T1.M7	T1.M8	T1.M9	
*	*	|dy|..cm	|dx|..cm	|dx|.cm	dist..cm	dist..cm	dist..cm	dist..cm	dist..cm	dx....cm	../dy.cm
*	*						hFr				
*	*						Front				
01	___40_0	59,2	26,0	24,0	2,5	2,0	59,2	14,0	8,0	-50,0	-59,2
02	___42_0	59,2	26,8	24,8	2,5	2,0	59,2	14,0	8,0	-51,5	-59,2
03	___44_0	59,2	27,5	25,5	2,5	2,0	59,2	14,0	8,0	-53,0	-59,2
04	___46_0	59,2	28,3	26,3	2,5	2,0	59,2	14,0	8,0	-54,5	-59,2

Table 7-1

centre front / hem as x/y co-ordinate.

The measurements are arranged in columns and the graded sizes in lines. The first line contains part and measure number. Up to Chapter 12 inclusive, you will work with part 1, only. T1.M6 stands for sixth measurement in part 1.

The second line states the measurement type:

`area.qcm`	area measurement in cm^2
`line..cm`	length measurement in cm
`|dx|..cm`	horizontal distance in cm
`|dy|..cm`	vertical distance in cm
`dist..cm`	direct distance in cm
`dx....cm`	x component of the x/y measurement in cm
`../dy.cm`	y component of the x/y measurement in cm

The third and fourth line give the measurement name (code and text) The fifth line contains the measurement values in the base size. The following lines give the values for the other graded sizes with position number in the size table in column one and size name in column two.

Alter the display of the finished measurement table in the *View / Display Options* pull-down menu. The display options are self-explanatory. Help can be obtained with <F1>.

Mark the table with *Edit | Select all* and copy the table to the clipboard with *Edit |Copy*. Now start a different windows application, e.g. Word for Windows or Excel and insert the table from the clipboard. If you have already prepared forms in these applications, seam lengths and calculations can be solved, quickly.

7.3 Set and edit text

The *text* menu

This menu can be called from the basic menu, directly by clicking on *texts*. It allows for entry, editing, positioning and adjustment of texts. The functions offered are sufficient for pattern annotation or entry of making-up instructions. They cannot be compared to a word-processing package.

Step-by-step guide for entry of new text

⇒ *Basic menu --> texts*
⇒ Click on *via keyb.* in the menu
⇒ Enter text and/or specific information
⇒ Quit text entry with clicking on „OK" or „Cancel"
⇒ Position the text
⇒ Manipulate the active text according to 3. to 9. in "Step-by-step guide for alteration of text"
⇒ Quit with ⬚

Step-by-step guide for alteration of text

⇒ *Basic menu --> texts*
⇒ Click the text
⇒ Alteration of text content:
   • Double-click on the text
   • Alter the text
   • Quit with „OK" or „Cancel"
⇒ Alteration of text position:
   • Drag as soon as the cursor ⬦ appears
   • possibly: bind the **text position** onto the construction with the upper left corner of the text frame
⇒ Alter text alignment:
   • Drag the upper text frame as soon as the cursor ◣ appears.
   • possibly: bind the **direction** onto the construction with the upper right corner of the text frame
⇒ Alter text size
   • Drag the text frame as soon as the cursor ⟷ appears.
⇒ Alter text format:
   • Click << (aligned left), <> (centred) or >> (aligned right) in the menu
⇒ Set the switch +/-*grading*
⇒ Set the switch +/-*frame*

texts
via file
via keyb.
activate
copy
delete
active
all
>< >>
-grading
-frame
-di –autom.
-siz-autom.
formats
004 009
016 025
036 049
064 081
100 121
change opt.
old=>new

Enter or activate text

The active text is surrounded by a solid frame with active points. Existing text is activated by clicking (applies in the *text* menu, only). Double-click on a text opens the window for text entry. All functions in the middle of the function strip relate to the active text, only. A new text is set with:

via file

After having clicked *via file* the position for the text is to be set, first (Picture 7-11). Then, a window for selection of prepared text masks opens. Prepared texts should be saved on the current drive in the directory \GRAFIS\TEXTE as ___.TXT files. ASCII text files are permitted, only. The application of this function is especially interesting for pattern annotation with standard text.
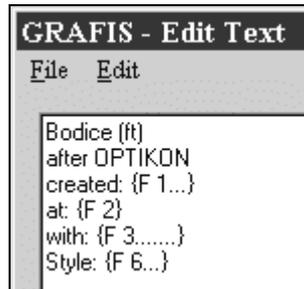
_____
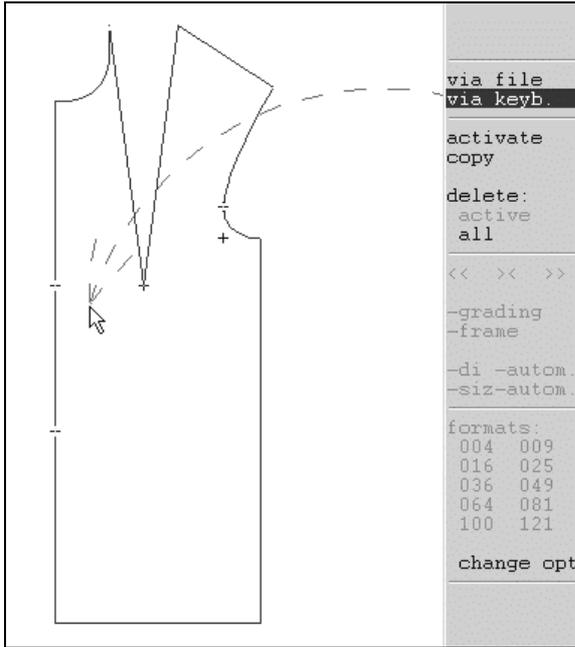
Picture 7-11

via keyb.

After having pre-positioned the text (Picture 7-11) the window for entry of new text opens (Picture 7-12).

Additionally, the following text blocks with specific information can be inserted by clicking the radio buttons:

Picture 7-12

> **date**
> **time**
> **GRAFIS version**
> **size name**
> **collection**
> **style**
> **part number**
> **part name**
> **construction system**

After <OK> the text is accepted and can be positioned, aligned and altered in size

Position and align text

To *position the text* drag the text as soon as the

cursor appears (Picture 7-13). The text is positioned and remains in this position in all sizes.

Only after *binding the text* onto a line of the construction will its position change during grading. For binding the text the active point at the upper left corner of the text frame can be used. As soon as the

cursor in the shape of a pin appears the text can be bound onto a line. (Picture 7-14).
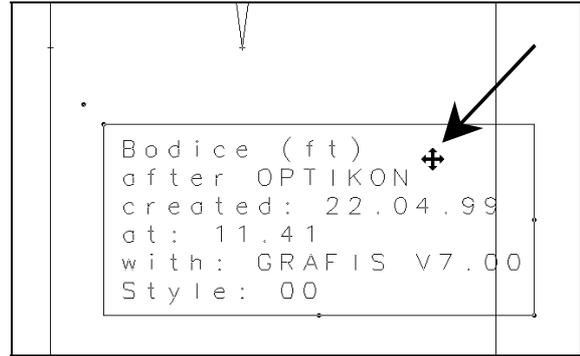
Picture 7-13
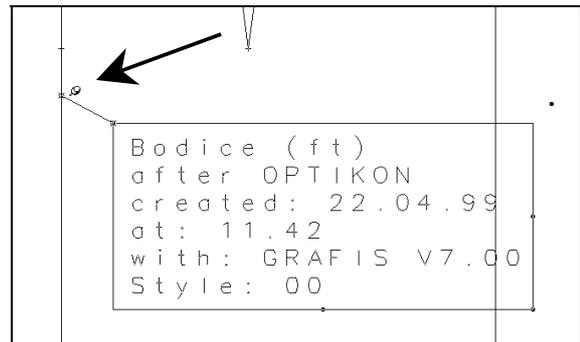
Picture 7-14

In Picture 7-17 the text was bound onto the dart lines with „+ grading" and graded with the pattern.

To *align the text freehand* the text is to be dragged at the upper right frame. As soon as the

cursor takes on the shape the text can be rotated freehand with pressed left mouse button (Picture 7-15).
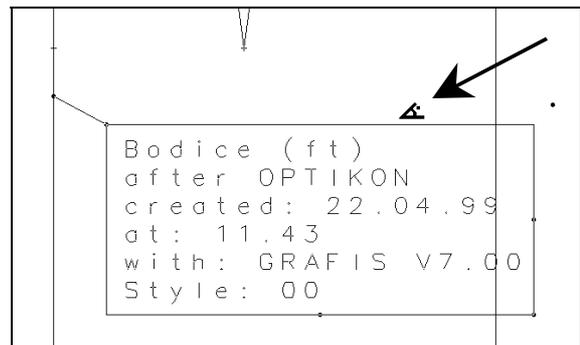
Picture 7-15

With bound direction point the text is also aligned along an existing line. The direction tag is located at the upper right corner of the text frame. It appears only after the text has been bound according to Picture 7-14. As soon as the cursor takes on the

shape of the pin near the upper right corner the text direction can be bound (no picture). In the different sizes the text is rotated about the angle the connection between the binding points is rotated.

_____

Text size and format
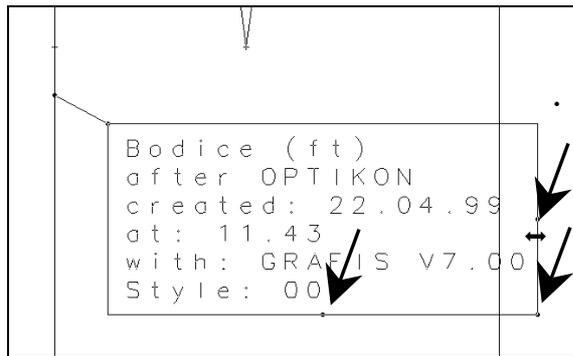
Picture 7-16

Adjust the text size with the active points according to Picture 7-16. Near these active points the cursor takes on the shape of a double arrow ⇔ .

Text of more than one line can be aligned *left, right* or *centred*. This format relates to the alignment of lines, only. The format for the active text is to be selected from the menu:

         << for aligned left
         <> for centred
         >> for aligned right.

+grading or -grading

With this switch you decide whether or not the active text is graded.

  -grading   text appears in base size, only
  +grading   text appears in all graded sizes

Text with *+grading* is displayed slightly lighter than text with *-grading*.

+frame or -frame

With this switch you decide whether the active text is displayed with frame (*+frame)* or without frame (*-frame)*.

Copy and delete text

After having selected *copy* from the menu the text to be copied is to be clicked. The copy is to be postioned according to Picture 7-11. **NB: Text can also be copied from an inactive piece into an active piece (relevant from Chapter 13).**

delete: active deletes the active text. *delete: all* deletes all text.

Prepared text format and automatic direction and size adjustment

Clicking on of the ten prepared text formats (004 to 121 with delivery) assigns the active text with the respective settings. The text formats can be edited via *options*.

With the switch *+dir autom.* you decide whether the direction of the text is changed according to the direction point during grading. If the direction tag is bound the switch is automatically set to *+dir autom.* With *+meas. autom.* the direction point is also responsible for enlarging/reducing the text during grading. This ensures that the text does not protrude outside the pattern perimeter in small sizes.

Exercise

Call basic block 015 "bodice (ft) after OPTIKON" and enter the following texts (Picture 7-17):
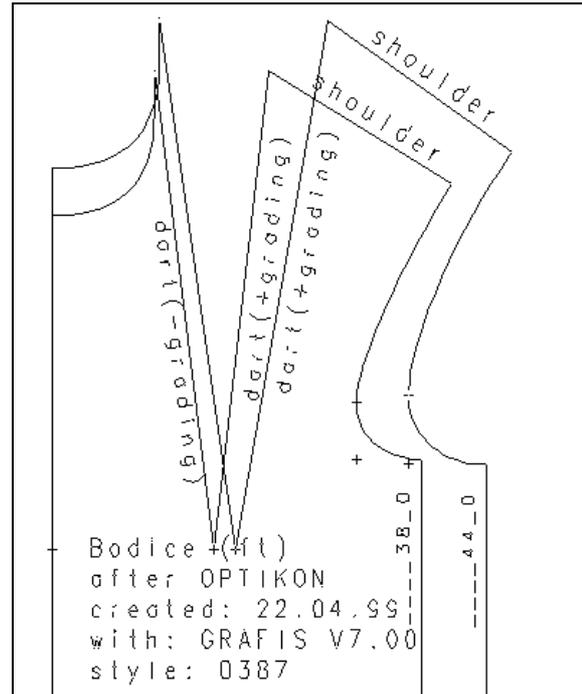
Picture 7-17

1. "-grading" on the left dart line:
   call
   texts
       via keyb.   pre-position text (Picture 7-11)
           enter text "-grading"
     „OK"
   Bind text onto the dart according to Picture 7-13.
   Bind the direction tag to the dart line according to Picture 7-14 and align the text according to Picture 7-15
     -grading
2. "+grading" on the right dart line in all graded sizes:
        further as 1.
        +grading

_____

3. "shoulder" at the shoulder in all graded sizes:
        further as 2.
Picture 7-18 shows the active points for the texts
entered so far.
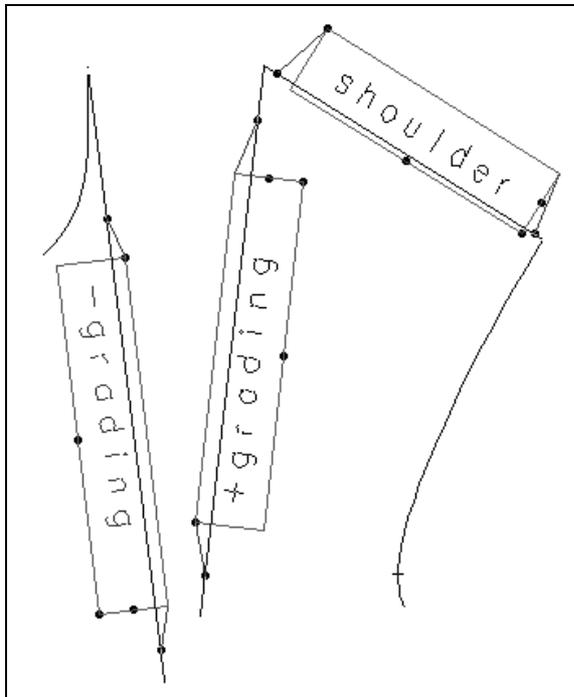

Picture 7-18

4. Size name at the side seam in all graded sizes:
        further as 2.
        In the window for text entry the „Size
        Name" button is to be clicked.
5. Insert detailed text according to Picture 7-17
        with current information about your construc-
        tion near the centre front.
        further as 1 or 4 by using the radio buttons
        for specific text blocks
Vary also the format (*left...*). Switch between
+*frame* and -*frame*.

7.4 Set symbols

The *symbols* menu
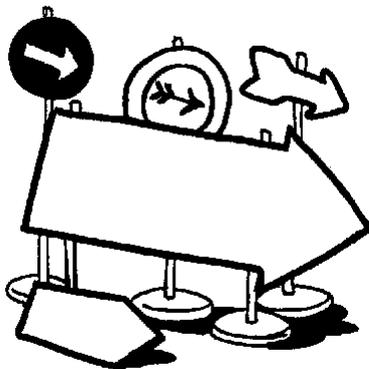
With the functions from this menu symbols can be
set onto points or lines in any direction. If the sym-
bol is not to lie on the construction line it can be

moved to the seam allowance with
on allowce, later. The available sym-
bols are listed in the lower part of
the menu. The active symbol is high-
lighted.

Setting a new symbol

Step-by-step guide
⇒ *Basic menu --> symbols*
⇒ Activate the symbol required
⇒ Enter length of the new symbol
⇒ Activate *place on*
⇒ Construct position for the new
    symbol
Note
**The function "on allowce" is al-
ways active. For each new symbol
the function "place on" has to be
clicked!**
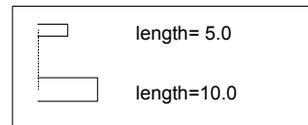
Picture 7-19

To set a new symbol select the sym-
bol from the list (see also picture 7-
20). If the symbol is required in a
length different from the default
length (picture 7-19) the line *length=20.0* is to be
clicked and the required value is to be entered. With
place on the symbol can be bound onto a point or a

symbols
----
length= 20.
place on
on allowce
allowce
+copy
----
reset
measure
----
stripe (N1)
notch
pitch
peak (N2)
buttonhole
arrow *=>
cross
circle
arrow =>*
drillhole
.CF
.CB
_GL___>
drillh. pl.
scissors
RP weft
RP warp
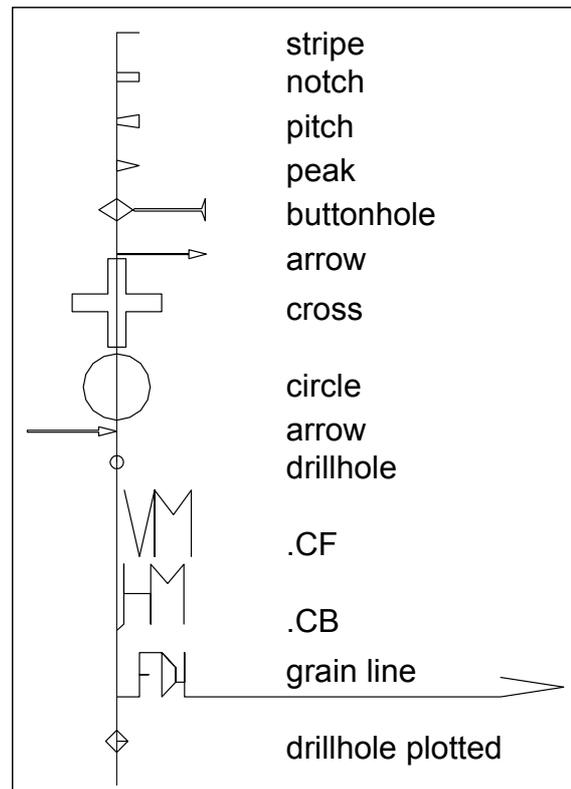
Picture 7-20

line. Then, the sub-menu direction construction is opened, automatically for orientation of the symbol. There are no functions available for the alteration of size, direction or type of symbol, later. In this case the current symbol is to be deleted and a new symbol is to be set.

For further work, symbols are treated as lines.

Moving a symbol

Step-by-step guide

Prerequisite is a line onto which the symbol is to be moved.

⇒ *Basic menu --> symbols*
⇒ Adjust *+copy* or *-copy*
⇒ Activate *on allowce* (red bar)
⇒ Click the symbol

Frequently, a symbol, e.g. a notch, is to lie on the seam allowance rather than the construction line. The function *on allowce* is always active and the symbol to be moved can be clicked, directly. GRAFIS then asks for the seam allowance onto which the symbol is to be moved. The *+copy/-copy* switch determines whether or not the original symbol remains existent.
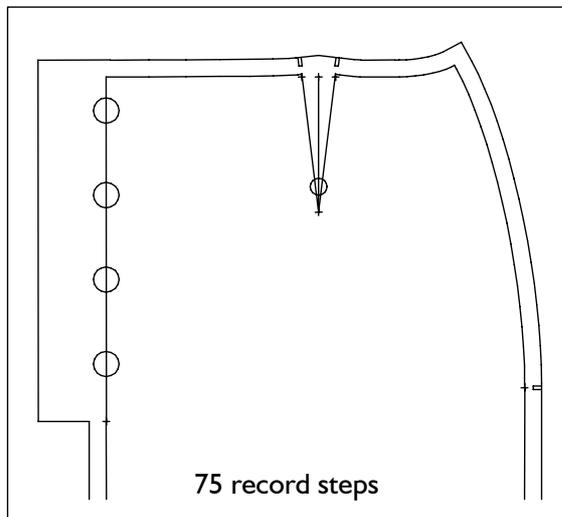
  +copy   original symbol remains existent
  -copy   original symbol does not remain existent

75 record steps

Picture 7-21

Exercise

Call the basic block 017 "skirt after Hohenst.", delete the skirt back, construct an overlap of 40 mm and seam allowance of 10 mm, close the dart and construct the bisector of the angle (picture 7-21):

 call
 delete
 p+l+c+r
 parallel
 corners

1. Set a circle with 10 mm length onto the bisector of the dart, 15 mm from the vertex:
 symbols
  circle
  length=10.
  place on
   plg on l with *plg = 15*   click the bisector of the angle
   ⊞   terminate adjustment

2. Set the dart notches on the seam allowance, directly:
 symbols
  notch
  length=5.
  place on
   intersectn
   click l   to adjust the notches click the respective dart line.
   ⊞   terminate adjustment

3. Set the notch on the side seam:
 symbols
  notch
  length=5.
  place on
   click p
 Align the notch horizontally to the left and then, move it to the seam allowance
  on allowce
   click notch
   click seam allowance

4. Construct a point sequence on the centre front with *raster3* (s=*20., N=4, db=50.*) Set circles with 15 mm length onto these points with *click p.*
 as 1.

Grade the basic block in sizes 38.0 and 44.0 and check the position and direction of the notches.

_____

7.5 Attributes

The *attributes* menu

This menu which can be called from the basic menu allows for alteration of line type or changing of a point into a particular marker.

Alteration of line type

Step-by-step guide
⇒ *Basic menu --> attributes*
⇒ Activate the line type required
⇒ Click the line

Each line can be turned into one of the following line types:
- continuous
- dotted line with small distance
- dotted line with greater distance
- dashed
- dot-dash rough
- dot-dash fine

Select the line type and click the line to be altered in the construction.

If the option *chain* is active continuous lines, e.g. the contour are assigned the selected attribute.

Setting a marker

Step-by-step guide
⇒ *Basic menu --> attributes*
⇒ Activate the marker required
⇒ Click the point

attributes
----
lines

....
· · · · · · · · ·
-- -- -- --
-- - -- -- -
--.--.--.--.--
marker
cross
big point
small p.
hash
arrow
----
reset

```
  +      cross

  ○      great point

  ∘      small point

  ✳      asterisk

  ↖      arrow
```

Picture 7-22

Each point can be changed into one of the markers shown in Picture 7-22. For further modification, it is still treated as a point.

To change a point into a marker activate the selected marker and click the point. The marker *cross* corresponds with the original point.

7.6 Hatching

The *hatching* menu

The hatching menu can be opened via *Edit | Hatching*. Hatching is not recorded. Calling a record function will delete the created hatching.

Step-by-step guide
⇒ *Edit | Hatching*
⇒ Adjust the values for the hatching: *dist, dir* and *pen*.
⇒ Generate the perimeter with *automat.*, or *step-step etc.*
⇒ Click *generate*

Hatching parameters

hatching
----
values:
dist= 20.
dir= 45.
pen= 2.
outline
automat
step-step
'' reset
complete
delete
hatching:
generate
delete

The first part of the menu allows for adjustment of hatching parameters such as distance between the hatching lines *dist* in mm, direction of the lines *dir* and pen number *pen* for output to a plotter. These parameters must be adjusted before clicking *generate*.

Determine the perimeter

The second part of functions in the menu are used for determination of the perimeter of the hatching. Selecting *automat.* and clicking a line of the construction will automatically generate a closed outline. In case this line is incorrect click *delete* to return to the original state. Follow the right principle when creating an outline, automatically. The outline starts at the clicked line and continues along the direction of the line. It continues from its final point on to the next adjacent line. If several lines touch at this point the perimeter will always follow the branch to the right.

If the required outline cannot be generated with *automat.* the function *step-step* is to be activated. Each line of the required perimeter is to be clicked at the right side in direction of travel. Should white lines appear on screen which do not correspond to any line of the construction, a line was clicked on the wrong side. Activate *step-step reset ('' reset)* to undo the last step of the outline creation. Clicking *delete* will delete the whole active (blue) outline. The function *complete* connects the starting point and the final point of the perimeter and thus, creates a closed outline.

_____

Generate or delete the hatching

After having generated the outline click *generate* to create the hatching. This step can be undone by activating *delete* and clicking the hatching.

Exercise

Call the basic block 001 "bodice after Hohenstein" and construct the following:

- the waist line in the front,
- separate the centre front and the side seam at the waist,
- delete the complete back and all points in the front and
- close the dart with a line.

1. Then, generate the hatching shown (picture 7-23), using automatic generation of the outline, only.
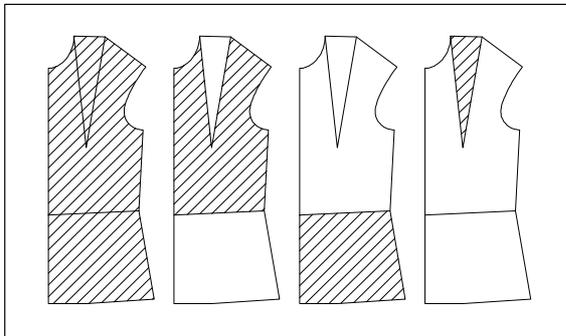
Picture 7-23

> *call*
> *p+l+c+r*
> *delete*
> *separate*
> *Edit | Hatching*
> > *automat.*
> > *generate*
> > *(delete)*

Click to the right/left of various lines. Work out why GRAFIS creates this particular outline.
> *test run*

2. Run a test run and create the hatching shown (Picture 7-24).
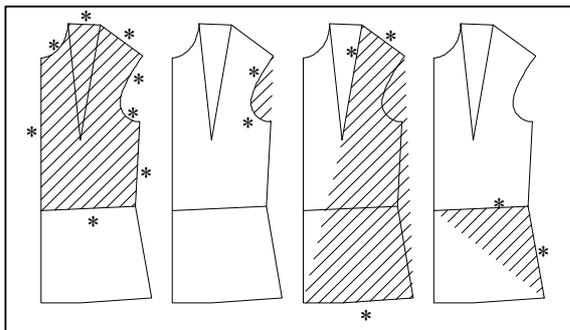
Picture 7-24

> *Edit | Hatching*
> > *step-step*
> > *(step-step reset)*
> > *(complete)*
> > *(delete)*

Click the lines to the right in direction of travel one after the other. The lines do not necessarily have to touch. Undo individual steps with *step-step reset*.
> > *generate*

3. Generate the following hatching (Picture 7-25):
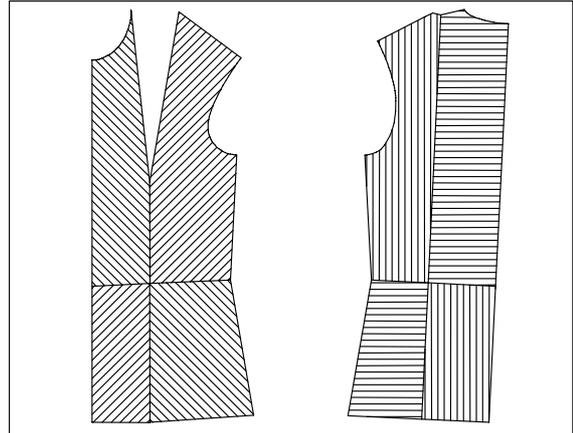
Picture 7-25

> *p+l+c+r*
> *separate*
> *Edit | Hatching...*
> > *dir= 45.* (also 90., 135., 180.)
> > *step-by-step*
> > *generate*

4. To conclude, generate the hatchings in Picture 7-26 with *automat.*

| dist=10. | dist=20. | dist=20. | dist=20. |
| dir=45. | dir=45. | dir=30. | dir=-45. |
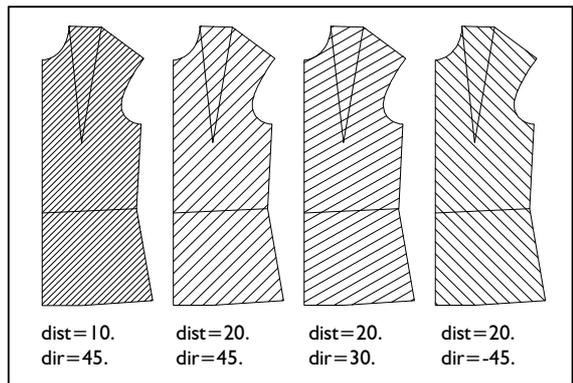
Picture 7-26

> *Edit | Hatching...*
> > *dist=...*
> > *dir=...*
> > *automat.*
> > *generate*
> > *(delete)*

_____

7.7 Exercises

<u>1st Exercise</u>

Author: B.Götting, Mönchengladbach

Call the basic block „two-piece sleeve", construct a 40 mm wide vent in the top sleeve and add 4 buttons and 4 buttonholes of 22 mm.


57 record steps
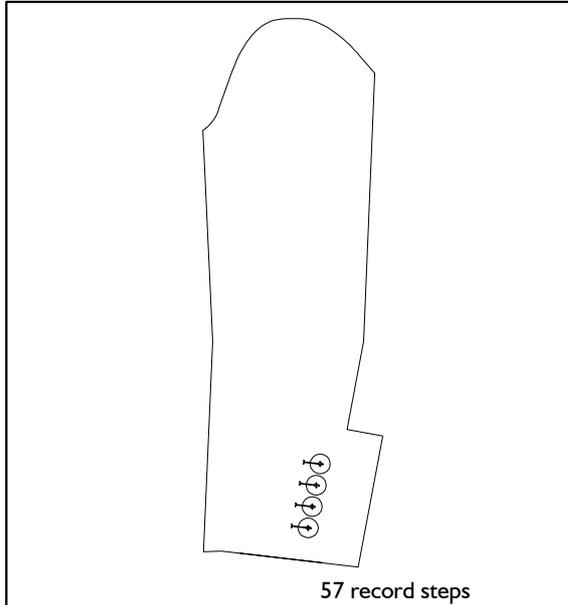
call	
delete	lines of the under sleeve and all points
parallel	
d=40	vent width
d=22	button position
p+l+c+r	
p+dir+lg with lg=40	
plg on l with plg=150	
	vent length
corners	
corner	draw vent facing
raster	
raster3	
s=35.	
N=4	
d=24.	
symbols	
place on	set buttons (circle) and buttonholes with length=22.

<u>2nd Exercise</u>

Construct the pocket flap shown and set the depicted symbols;

p+l+c+r	
rectangle	160 x 60 mm
lengthen	by 10 mm
corners	
parallel	
symbols	

25 record steps
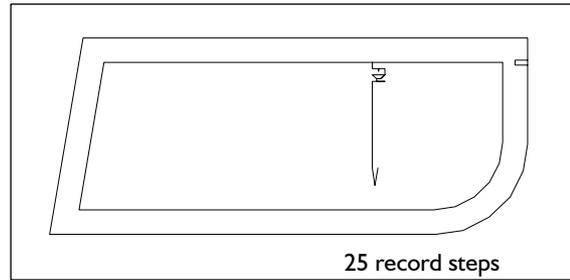
<u>3rd Exercise</u>

Construct the pocket flap shown from a rectangle 160x60 with the symbols circle, drillhole, grain line and stripe:
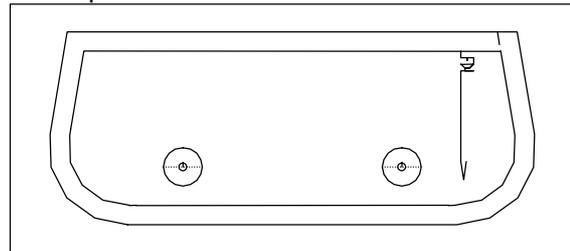
<u>4th Exercise</u>

Call the basic block 001, enter name, date, size and the name of the construction, position the text and grade the style in four sizes.
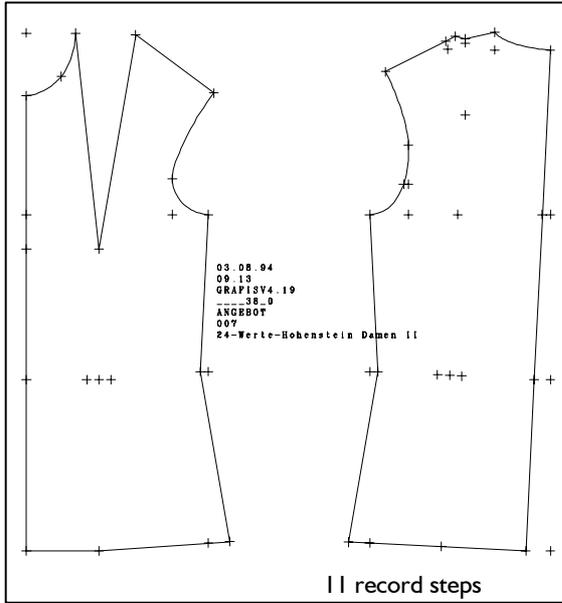

Tailor 05.08.97
size ____38_0, bodice

6 record steps
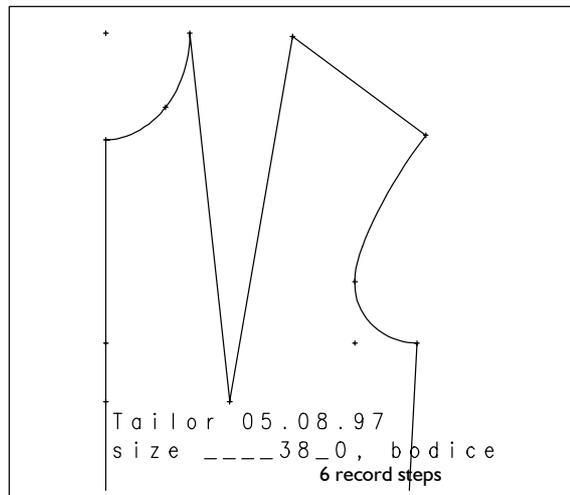
call
texts
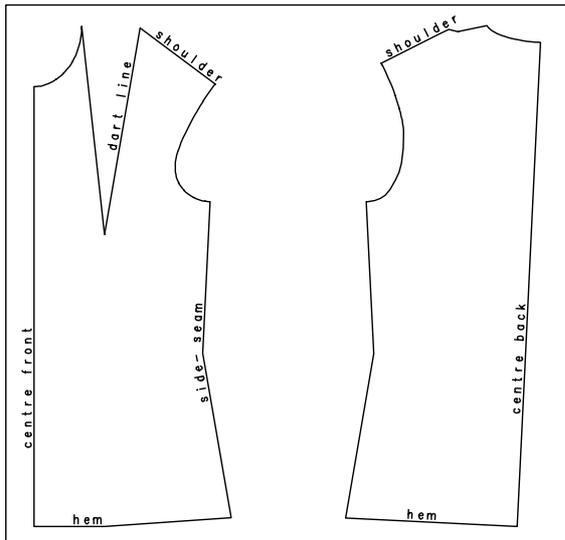*Extras | Size Table*
grading
Edit | Outlay

<u>5th Exercise</u>

Call the basic block 001, enter text via keyboard. Use all available auto texts with special information and grade the style in four sizes.

call
texts
Extras | Size Table
grading
Edit | Outlay

```
03.08.94
09.13
GRAFISV4.19
____38_0
ANGEBOT
007
24-Werte-Hohenstein Damen II
```

11 record steps

6th Exercise

Call the basic block 001, and annotate all lines of the construction.

call
texts

7th Exercise

Annotate the basic block 015 at your discretion.
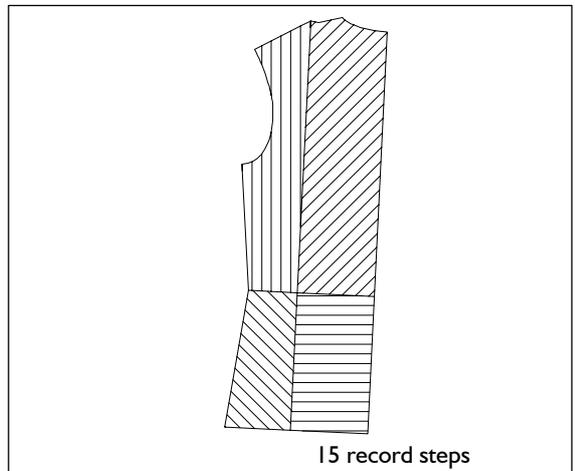
call
texts

53 record steps
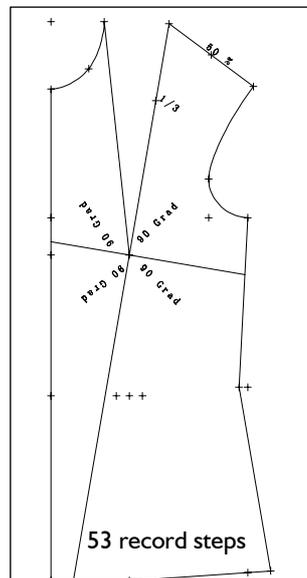
8th Exercise

Call the basic block 001, construct the depicted separation line and hatch.

3 record steps
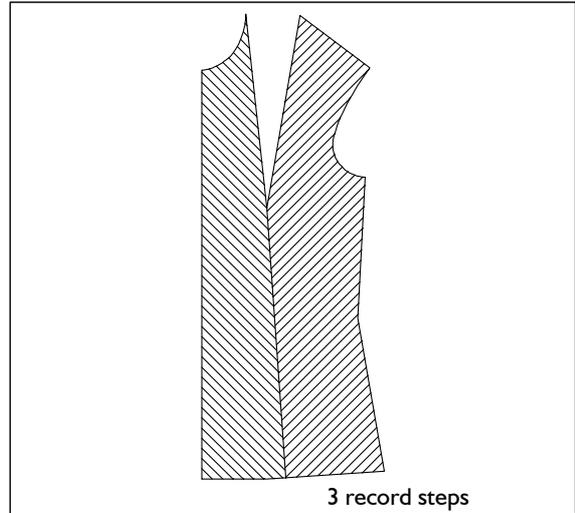
call
p+l+c+r
separate
Edit |Hatching...

9th Exercise

Call the basic block 001, construct the depicted separation lines in the back and hatch.

15 record steps

call
p+l+c+r
separate
Edit |Hatching...

_____

10th Exercise

Call the basic block 008, construct a 20 mm seam allowance and hatch the seam allowance.
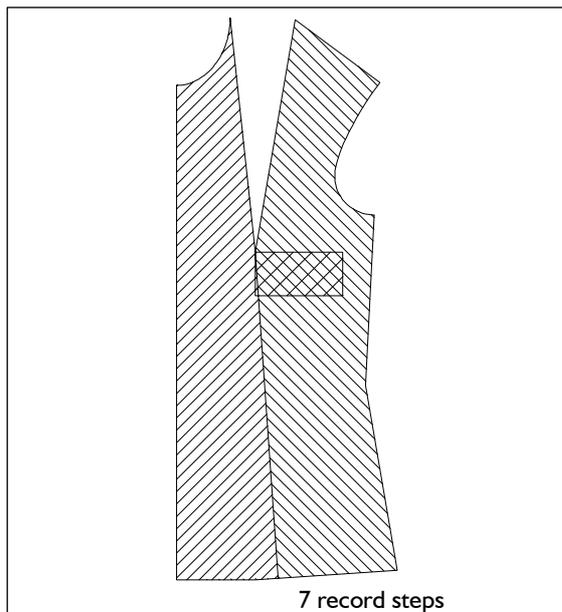

16 record steps
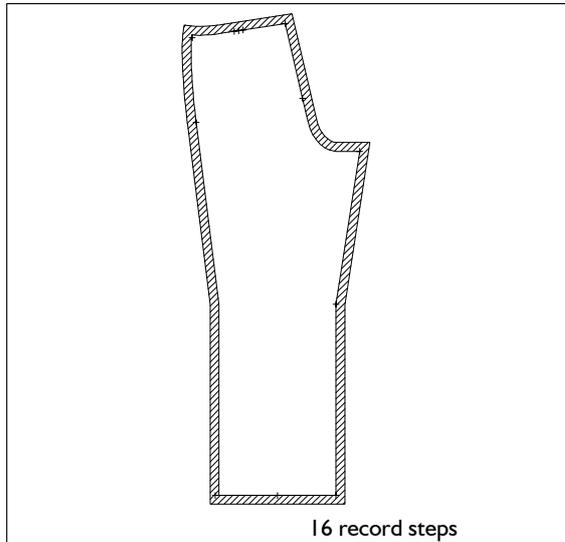
> *call*
> *delete*
> *parallel*
> *corners*
> *Edit | Hatching...*
> Click both lines.
>> *generate*
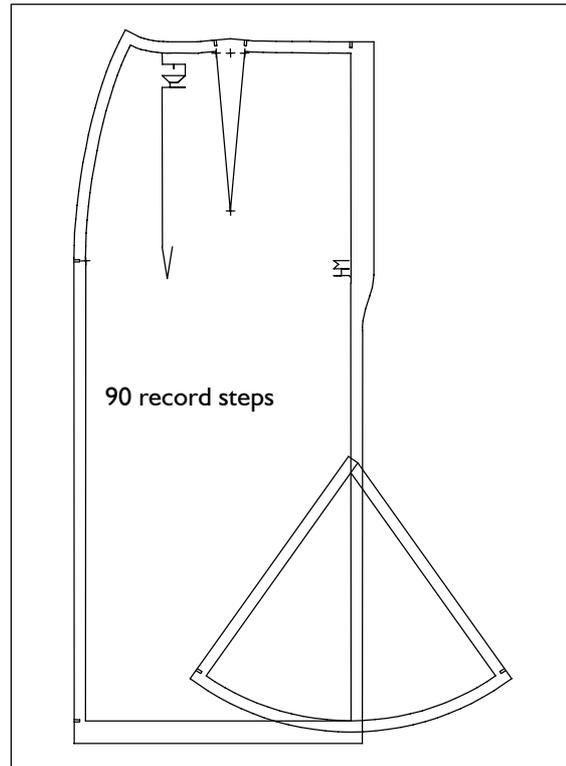
11th Exercise

Call the basic block 001, construct the perpendicular from the bust point onto the hem and the rectangle show. The top left corner of the rectangle is to be placed on the bust point. Hatch.

7 record steps

call
p+l+c+r
*separate*
Edit |Hatching...

12th Exercise

Construct a skirt with separate godet (bk) and hidden zip in the centre back from basic block 017. Annotate centre back and grain line. Set the notches shown.

90 record steps

> *call*
> *delete*
> *separate*
> *parallel*
> *link*
> *p+l+c+r*
>> *circle arc*
>> *p+dir+lg*
> *corners*
> *separate*
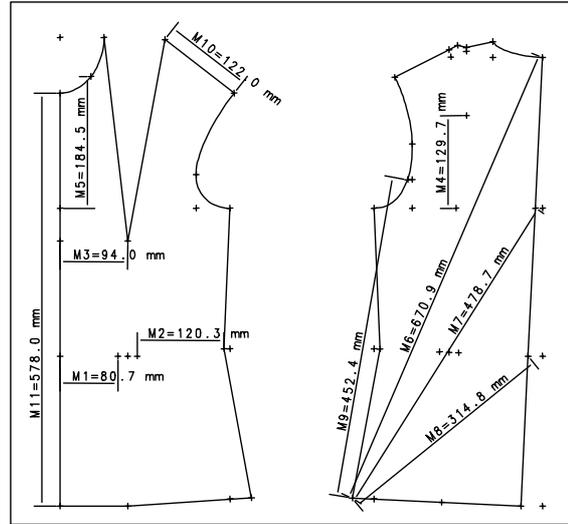> *symbols*

<u>13th Exercise</u>

Construct the style lines shown in the kimono block and set measurements for the different areas.
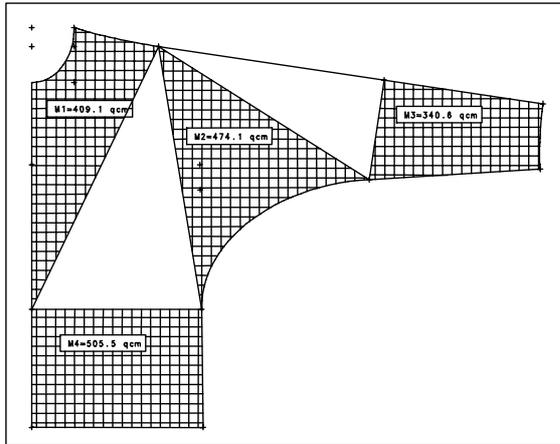
call
p+l+c+r
fin.measure
grading

<u>14th Exercise</u>

Set the measurements shown in the bodice after Hohenstein.

call
fin.measure
grading