Chapter 14 „Part organisation“

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Content of this chapter is working with parts, in particular the hereditary automatic and the differences between insert, duplicate and connection part. The section “modifying mother parts” is especially important as only certain modifications are permitted for mother parts to protect the hereditary automatic. The complex exercises at the end of the chapter shall consolidate the teachings.
14.1 Part organisation

The basics of part organisation were introduced already in section 3.5. In this chapter all information on part organisation is collated.

**Functions of the partorganisation menu**

- **open**
  - Clicking on open creates a new part with the name „NN“ and the next highest number after the last part. The new part is not active straight away. It has to be activated to be processed.

- **insert**
  - Clicking on insert generates a new part before the selected part.

- **activate** (no menu function)
  - Clicking on a part number, a part text or clicking the part number in the hereditary structure activates the part. It is then highlighted by a bar. The part can be processed after having quit part organisation. When activating mother parts (see section 14.5) a warning message appears.

- **duplicate, duplicate to**
  - see section 14.4

- **delete**
  - After a security question the record steps of the selected part are reset to 0. The last part in the list is removed, directly.

- **remove**
  - Remove an empty part (with 0 record steps) from the part list. The following parts move up in the list.

- **hide**
  - With the function hide: all all parts apart from the active selected part are removed to the background memory. Hidden parts are no longer visible on screen, but are not deleted. With the function call hidden parts can be recalled to the screen. Individual parts can be hidden or called by clicking the „visible“ column in the part list. In the „visible“ column „x“ indicates the part is on screen, „ “ the part is in the background memory.
  - It is recommended that only parts required for work are visible on screen.

- **call**
  - Individual parts can be called from the background memory to the screen by clicking in the visible column. Clicking call all recalls all removed parts from the background onto the screen. Selecting call ancestors calls all ancestors of the active part onto the screen. Clicking call successors recalls all successors (heirs) of the active part onto the screen.

- **text**
  - Activating text and clicking a part in the list allows for editing the part text. After <ENTER> entry can continue with the next part text. A part text can be edited, also with double-click on the text. In this case, <ENTER> does not switch to the next part text.
  - Take care of your part names! This makes your work easier and avoids mistakes.

- **+/-text box**
  - Opens/closes the window in which comments on the selected part can be stored.

- **+/-techn. parameter**
  - Opens/closes the window for technical parameters relevant for the layplan (see Chapter 16).

- **Edit | Copy**
  - Copies the part list to the clipboard.

- **print**
  - Clicking this function starts printing the part list given the printer is switched on.

- **Insert connection, update connection**
  - see section 14.4

The number of parts per style is limited to 500.

The active part is always displayed in yellow. Only this part can be edited. All other parts remain unchanged.
14.2 Insert with transformation

Parts are extracted with the functions of the `insert` menu. Insert without transformation has already been described in section 3.5. This section gives an overview of all functions of the `insert` menu, in particular the two insert transformations.

**Functions of the `insert` menu**

**Select object:**

All visible objects belonging to an inactive part with a lower part number can be inserted into the active part with these functions. One of the type of objects points, lines or parts is to be selected and the objects are to be clicked one after the other. The inserted objects appear in a different colour and, after having pressed `<F5>` removed from the original object.

With `reset single` or `reset all` individual inserted objects can be reset step-by-step or completely.

The selected coloured objects are accepted into the active part only after having called a function in the `obj.transf.a.deposit` section of the menu.

**object transform and deposit:**

This block of functions determines **HOW** the objects or parts are deposited in the new part. In section 3.5 parts were inserted exclusively without transformation. However, Grafis allows for parts to be moved or rotated during insertion. This transformation is also stored as a hereditary step and repeated automatically during grading.

1. **move** \( p = > p \)
   
   Moving a point of the object to be inserted to a point of the active part. All objects to be inserted are moved accordingly.

2. **turn+move** \( p+p = > p+p \)
   
   Move and rotation of the insert object according to the identical instruction of the transformation type with the same name in the `transformation` menu.

   This function is especially useful for inserting yokes, sleeves or facings which already have the correct dimensions.

3. **without transformation**

   The selected objects are inserted without transformation, see section 3.5.

   **Reset** undoes the last transformation step.

   Quit insert with \( \Box \).

**Exercises on insert with move transformation**

In part 002, construct a small embroidery motif from scratch with a radius of approx 35mm (according to Picture 14-1). Call the „Grafis Bodice 10“ into part 001, delete the auxiliary lines, adjust the construction as required and construct positioning points for the embroidery motif (Picture 14-2 left), using the function `digi on p=>p`. Construct a point in the centre of the embroidery motif.

Insert all lines and points of the bodice construction from part 001 into part 003. Use `insert without transformation`.

Then, insert the embroidery motif into part 003, centred on the positioning points: Use the function `insert with move p==>p`. Activate `select object: parts` and click on the embroidery motif. It appears with red lines after having pressed `<F5>`.
Then, click on *objects transform and deposit: move*. Now, click on the first move point in the red group of objects. Switch to `click p` and click the centre of the motif. Then, determine the end point of the move with `click p`, in this case the positioning points in the active part. The menu remains active. You can insert the embroidery motif a second time, a third time and so on.

**Exercises on insert with turn+move transformation**

Construct a yoke in „Grafis Skirt 20“, which is attached to the dart end points. Control the yoke height at the centre front and the side seam via `x` values.

---

**Raglan sleeve construction**

Construct a raglan sleeve from „Grafis Bodice 10“, using *insert with turn-move*.

Call „Grafis Bodice 10“ into part 001. Loosen the armhole interactively by 10 to 20mm. Rotate the rest of the bust dart into the hem with *relocate dart*.

Relocate the back shoulder dart into the armhole.

Open a further part and call „Grafis Sleeve 40“. Adjust the following in the options for the sleeve:

- 4 segments
- grade as sleeve head base
- deduction from medium armhole height.

Adjust a tolerance of 20mm in the „Tolerances“ drag area and in the „Ease distribution“ area adjust ease of approx 10mm in the 2nd and 3rd segment

Construct a line from the shoulder point to the hem in the direction of the grain. Separate the sleevehead and the hem at this line.
Open a further part and insert the lines of the front. Construct an auxiliary line with 3mm length from the sleeve pitch horizontally to the outside. Create an x value for the length of the auxiliary line. Construct a second auxiliary line with 10mm length (x2) from the shoulder point to the outside in direction of the shoulder. Construct a third auxiliary line of 5 mm length (x3) for raising the shoulder.

Insert the lines and points of the front sleeve into the front. When inserting, use the insert transformation turn+move, clicking in the following order:
- sleeve pitch of sleeve
- shoulder point of sleeve
- end of 1st auxiliary line
- end of 2nd auxiliary line.

Construct a curve from the neckline to the sleeve hem and attach the curve to the end of the third auxiliary line and to the intersection upper arm line/panel seam. Adjust the directions. Construct a yoke line from the sleeve pitch as a perpendicular onto the CF.

Proceed in the same way for the back.

14.3 Hereditary automatic

What does hereditary automatic mean?
The different parts of a style must fit together taking into account their interdependence. GRAFIS ensures this by building an automatic heredity. If, for example, a waistband is to be designed to fit the parts „skirt front“ and „skirt back“, the waistlines of skirt front and skirt back can be inserted into the new part „waistband“ and the waistband can be constructed. When grading the waistband in different sizes the insertion of the waist lines is repeated automatically. When grading the waistband in different sizes the insertion of the waistlines is repeated automatically.

We call this heredity of the waistlines to the part „waistband“. The heredity ensues with the functions of the insert menu.

Inserting (heredity) always ensues into the active part out of parts with lower part number. GRAFIS records the hereditary steps and displays the hereditary structure in the partorganis menu. The hereditary structure is arranged to generations.

The heredity

Picture 14-5 elucidates the principle of heredity using the style „Trouser with flared hem“ as an example.

Part 001 contains the basic construction „Grafis Trouser 10“, which has been adjusted interactively. All lines and points of the basic block were inserted from part 001 into part 002 „style development“. Thus, part 002 has become a part of the 1st generation; part 001 has become a mother part. Alterations to part 001 are automatically transferred to part 002. The style was developed in part 002 with the use of x values.

In part 004 „trouser front“ all lines and points for the production pattern trouser front were transferred with insert and the trouser front was completed. Thus, part 002 has become mother part for part 004. Part 004 is now the daughter part of part 002 and therefore, indirectly related to part 001. Alterations to part 001 are first transferred to part 002 and then further to part 004.

All other parts of the 2nd generation (Picture 14-5) were also derived by inserting lines and points from the style development in part 002.

A pocket module with a number of pieces was loaded into part 008 „trouser back“. The pocket programme belongs to part 008 „trouser back“. In this part, the position, size and shape of the pocket are adjusted interactively. The parts of the 3rd generation are dependent on the pocket in part 008 and are thus, daughter parts of part 008. Part 008, which in itself is a daughter part, has now also become a mother part. For modification of mother parts separate rules apply, see session 14.5.

Heredity information can only be passed on to parts with a higher part number.

The hereditary structure

For presentation of the hereditary structure the parts are divided into generations; the following applies:

A daughter part automatically receives a generation number at least 1 up from the mother part.

This rule ensures that a part of the 3rd generation can carry hereditary information of the 0, 1st and 2nd generation, only.
Picture 14-6 shows the partorganis menu for the example „Trouser with flared hem“ (Picture 14-5). In the centre of the Picture the hereditary structure is displayed. All parts of a generation are combined in a part block. Part 001 and the empty parts 003, 012, 016, 017 belong to generation 0 (first part block). They are marked with generation number "0" in the list of parts. Part 002 belong to the 1st generation with generation number "1" and so on.

In the hereditary structure the active part is highlighted. Ancestors and successors are highlighted in grey. Parts without relation to the active part are not highlighted.

Clicking a part number in the hereditary structure activates the part. With pressed left mouse button the display changes as well. Thus, the user gets a quick overview of the hereditary structure of the parts.

**Grading a number of parts**

The functions test run and grading in the basic menu apply to the active part, only. GRAFIS also offers the option to calculate (test run) or grade all parts of the style or the successors of the active part, only. These function can be found in the Grading pull-down menu. In this menu you can choose between:

- Test Run Active Part
- Test Run Successor Parts
- Test Run All Parts

and

- Grade Active Part
- Grade Successor Parts
- Grade All Parts

and the functions for curve correction treated in Chapter 9.
Exercise

Construct the „Trouser with flared hem“ shown in Picture 14-5. Organise your part list according to Picture 14-6.

Call „Grafis Trouser 10“ into part 001 and adjust the following interactively:
- contour identical side seams
- adjust waist at side seam
- no shaped seat seam

In the „Tolerances“ drag area:
- tolerance at waist: 15 mm
- tolerance at hip: 20 mm

Apart from the base size 40, also enter sizes 38 and 42 into the size table and activate them.

In the „Finished measurement“ drag area enter the break sizes 38 and 42 and adjust:

- knee width
- hem width

In the „Line relocation“ drag area:
- waist relocation -50 mm

In the „Dart front“ area close the dart. In the „Dart back“ area close the second dart and move the first dart to 50% of the waist. In the „Waist and waist edge“ area reduce the centre front by 30 mm (to -30 mm). In the „Hem“ area set the hem position to 0 mm.

Insert all lines and points from part 001 into part 002: Activate part 002, select parts in the insert menu and click on an object from part 001. Part 001 is selected and is inserted into part 002 after having clicked on without transformation.

Create the following x values in part 002 and design the trouser, using the x values (Picture 14-7):

- x1 yoke ss from waist in mm
- x2 yoke CB from waist in mm
- x3 pocket position waist from ss in %
- x4 pocket position ss from waist in mm
- x5 pocket length in mm
- x6 back pocket position from ss in mm
- x7 back pocket position from waist in mm
- x8 zip length in mm
- x9 fly facing width
Now, start extracting the pattern pieces from the style development in part 002. Open a new part for the trouser front and insert the objects of the trouser front from the style development. Create global x values for general seam allowance and the hem respectively:

GLOBAL x values

x1  seam allowances in mm  \[ x_{\text{mm}} = 10.000 \]
x2  hem in mm  \[ x_{\text{mm}} = 30.000 \]

Construct the seam allowance and the hem with xg1 and xg2. Create mirrored hem corners with the Grafis corner programme from the call overview.

Construct the fly facing and the fly guard in the same way. Insert the lines of the pocket into a new part and construct the seam allowances and the facing (Picture 14-8).

Construct the trouser back in part 008. Call the Grafis Pocket without lining| patched| facing| 001. The first positioning point for the pocket is the end of the auxiliary line. Adjust the pocket and its grading interactively. The pattern pieces for the pocket (parts 009, 013, 014 in Picture 14-9) were generated automatically by the pocket module. After having adjusted the pocket, start test run all parts.

Insert the lines for the yoke from the style development. Close the dart with insert with transformation turn and move \( p+p \rightarrow p+p \). Link the yoke line with link with curve.

Construct the waistband with the help of z values. Create an x value for the waistband height. Then, construct the marking template for the back pocket.

Start test run all parts and grade all parts. Modify an x value in the style development. After test run successors, the modification will be transferred onto all related parts.
14.4 The difference between insert, duplicate and connection part

The most important differences

insert... performs a hereditary step between two parts. Grafis automatically repeats this hereditary step when grading other sizes. The source part becomes a mother part and the target part becomes a daughter part.

duplicate ... creates a copy of a part in the same generation. Existing relations to mother parts remain intact. The part is gradeable in the same way as x and z values are also duplicated. The daughter parts are not duplicated! The part has no daughter parts after duplication. The duplicate function can be found in the part organisation menu.

insert connection part(s) ... transfers parts from another style. This function can also be found in the part organisation menu. When inserting a connection part, the switch "insert with complete record" decides whether or not the part is inserted with its complete construction record.

If this switch is set, at least the parts of the 0 generation can be graded unchanged, provided the global x values of source and target style have been aligned.

If the switch is not set, objects are only transferred in the existing sizes. Adding new record steps is not possible. These parts can be used for measuring, stacking and comparison.

Further information on connection parts can be obtained with <F1> or in the Textbook Chapter 17 „Layplan II“.

Part identifiers

The first column in the part list of the style contains an identification symbol with the following significance:

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;*&quot;</td>
<td>The part is a mother part, other parts depend on it.</td>
</tr>
<tr>
<td>&quot; &quot;</td>
<td>(empty) No other parts depend on this part. It can be a daughter part.</td>
</tr>
<tr>
<td>&quot;&gt;&quot;</td>
<td>This is a connection part.</td>
</tr>
<tr>
<td>&quot;?&quot;&gt;&quot;</td>
<td>This is a connection part. The source style is no longer available.</td>
</tr>
<tr>
<td>&quot;!&gt;&quot;</td>
<td>This is a connection part. The part in the source style has been changed.</td>
</tr>
</tbody>
</table>

When to use which function?

Insert without transformation is the most frequently used of the functions. It is always required when information from one part is to be passed onto another part.

Duplicate is used to create a copy of a part. The copied part serves either as a starting point for a new development variation or simply as a comparison for further changes. Modifications to x values are clearly visible when original and copy are displayed and placed on top of one another. The duplicated part can easily be deleted or reset step-by-step in the record.

Insert connection is used if temporary templates are required or if company-specific standard pieces are to be loaded.

14.5 Modifying mother parts

Organisation of the heredity

Each object (point, line, text) of a part has a GRAFIS internal name. When inserting objects into other parts GRAFIS relates to these internal names. When inserting a line out of part 003 into part 010 the internal GRAFIS record of part 010 reads for example: “The 4th line out of part 003 is inserted.” A modification to the mother part 003 resulting in a changed or deleted 4th line can possibly lead to insertion of a completely different line when running through the record of part 010. All record steps relating to this inserted object could now be faulty. Part 010 appears damaged on screen. In this case the only cure is resetting the construction record of part 003 to the state before the modification. Therefore, the following applies: Modifications in mother parts must not disturb the recorded hereditary steps.

As a rule, each construction step which does not delete objects can also be applied to mother parts. After the modification the recorded construction must still be executable in a meaningful manner.

The following functions can be used for modifications without problems:

- x values
- curve correction
- call
- attributes
- curves with +replace curve

Modifications with any other functions of the basic menu are to be applied with care as they can lead to errors.

After each modification in a mother part, daughter parts have to be tested thoroughly with test run and grading! If errors occur, the record must be reset by the modification steps!
Exercise on modifications in mother parts

Three typical modifications are to be practiced. Modify the „Trouser with flared hem“ from section 14.3 as follows:

Modify interactive construction

Change the hem width of the interactive trouser construction in part 001 from 520mm to 470mm in base size 40. The grade is to remain unchanged. After test run successors this modification has been transferred to the related parts „trouser front“ and „trouser back“.

Curve correction

In the style development part 002, start test run with curve correction and modify the yoke curve in the trouser back according to Picture 14-11.

Replace curve

Change the pocket mouth of the trouser front from a straight line to a curve: Construct a new curve in the style development in part 002, which is attached to the original pocket mouth with click pl or intersection. Shape the curve. After depositing the curve, switch to +replace and then, click on deposit+end. Click on the original straight pocket mouth and confirm the prompt. After test run successors this alteration has been transferred to the related parts „trouser front“, „trouser back“ and „pocket trouser front“. The global x value xg2 „seam allowance2“ was used for the seam allowance at the pocket mouth. For the new shaped pocket mouth, adjust the seam allowance2 from 20mm to 10mm and let part 007 „pocket trouser front“ be calculated again. The result of the modification is shown in Picture 14-12.
14.6 Complex exercises

Overview

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1st Exercise „Skirt with yoke“

Design specification:
From „Grafis Skirt 20“ a skirt with yoke in front and back, a waistband and a zip in the centre back is to be constructed.

Part list:
001 basic block Skirt 20
002 x style development
003 PP yoke ft
004 PP yoke bk
005 PP skirt ft
006 PP skirt bk
007 waistband

Call the „Grafis Skirt 20“ into part 001 and interactively close the second dart and set the hem reduction to 0.

Open part 002 „style development“ and insert all objects from part 001. Construct the yokes in the front and back skirt, using the following x values:

- \(x_1\) yoke CF from waist in mm (150.)
- \(x_2\) yoke ss from waist in mm (75.)
- \(x_3\) yoke CB from waist in mm (150.)

Open parts 003 to 006 and insert all required lines and points from part 002. Lengthen the darts to the yoke line in part „yoke ft“ and „yoke bk“ and close the darts. Link the yoke curves, construct the seam allowance, the notches and set the text. Use the following global x values:

Global x values:
- \(XG_1\) seam allowance in mm (10.)
- \(XG_2\) hem in mm (20.)

To conclude, open part 007 and transfer all waist lines of the front and back skirt from part 002. Use z values to construct the waistband.

\(x\) values of part 007 „waistband“:
- \(x_1\) waistband height in mm (40.)
2nd Exercise " Skirt with separate box pleat"

Design specification:
From „Grafis-Rock 20“ a straight skirt is to be constructed with separate box pleat in the centre front and flared side seam. A vent and a zip are to be constructed at the centre back.

Use the following global x values:
- xg1 seam allowance 1 (10.)
- xg2 seam allowance hem (20.)

List of parts:
- 001 basic block Skirt 20
- 002 style development
- 003 skirt front
- 004 pleat
- 005 skirt back
- 006 waistband

Call the „Grafis Skirt 20“ into part 001 and interactively close the second dart. Adjust the following interactively:

Drag area „Hem“:
- flare side seam by 20mm
- rotation point side seam: 60mm

Drag area „Dart front“:
- close 2nd dart
- position for 1st dart: 66%

Drag area „Dart back“:
- close 2nd dart
- position for 1st dart: 33%

Open the part 002 „style development“ and insert all objects from part 001. Construct the box pleat in the front skirt and shorten the pleat and the inside pleat by x2, using the following x values:

x values of part 002 „style development“:
- x1 pleat content in mm (40.)
- x2 shorten inside pleat in mm (5.)

Open the part 003 „skirt front“ and insert all required lines and points from part 002. Construct the dart hood, the seam allowance and set the symbols and the text. The hem/ side seam corner is constructed by mirroring the seam allowance of the side seam at the hem.

Create part 004 in the same way.

Now, open part 005 „skirt back“ and insert all required lines and points from part 002. Construct the skirt back in the same way as part 003 using the following x values:

x values of part 005 „skirt back“:
- x1 vent height in mm (200.)
- x2 vent width in mm (30.)
- x3 zip length in mm (180.)

Open part 006 and construct the waistband with the use of z values.
3rd Exercise "Shirt blouse with pin-tucks in the front and various back variations"

Design specification:
From the basic block "Bodice 10" a blouse with front, yoke and four different back variations is to be designed. The front is to have 5 pin-tucks, a button-stand and an overlap; the back is to have four variations:
- back with pleats from yoke,
- back with flared hem,
- back with gathering at the yoke,
- back with different spread amount in yoke and hem.

Part list:
- 001 Bodice 10 shirt blouse
- 002 SD shirt blouse
- 003 PP ft
- 004 PP bk yoke
- 005 SD bk
- 006 PP bk with flared hem
- 007 PP bk with pleats
- 008 PP bk with gathering
- 009 PP bk with variable pleats

Call the "Grafis Bodice 10" into part 001 and load the shape "shirt blouse" (see section 2.5).

Open part 002 and insert all objects from part 001. Construct the yoke in the back and the curved hem.

Use the following x values:
- x values of part 002 "SD shirt blouse":
  - x1 bk yoke from neck in mm (100.)
  - x2 curve hem in mm (60.)
  - x3 curve ss in mm (120.)

Open part 003 and insert all required lines and points from part 002. Construct the position for the first pin-tuck, the further pin-tucks, the overlap to the centre front and finally the facing. Spread the pin-tucks after constructing the facing. Use the following x values:
- Global x values:
  - xg1 seam allowance in mm (10.)
- x values of part 003 "PP ft":
  - x1 position 1st pin-tuck in mm (20.)
  - x2 pin-tuck content in mm (12.)
  - x3 overlap width in mm (20.)
  - x4 facing width in mm (60.)
Open part 004 „PP bk yoke” and insert all required lines and points from part 002. Construct the seam allowance and mirror the piece. Set the symbols and the text.

Open part 005 and insert all lines and points required for the back construction from part 002. Raster the yoke line equally and construct the spread lines. Spread the back using the following x values for the pleat content:

- x values of part 005 „SD bk“:
  - x1 pleat content yoke (40.)
  - x2 pleat content hem (40.)

Duplicate part 005 four times. The two x values for the pleat content are also duplicated. Adjust the part name and the value of the x values as follows:

- x values of part 006 „PP bk with flared hem“:
  - x1 pleat content yoke (0.)
  - x2 pleat content hem (40.)

- x values of part 007 „PP bk with pleats“:
  - x1 pleat content yoke (50.)
  - x2 pleat content hem (50.)

- x values of part 008 „PP bk with gathering“:
  - x1 pleat content yoke (40.)
  - x2 pleat content hem (0.)

- x values of part 009 „PP bk with variable pleats“
  - x1 pleat content yoke (30.)
  - x2 pleat content hem (70.)

Develop production patterns for the backs in parts 006 to 009. Construct dart hoods, link if necessary, set symbols and text.
4th Exercise "Flared skirt"

Working drawing:

Design specification:
From the basic block „Grafis Skirt 20“ a panelled skirt with flared hem, concealed zip in the side seam and variable seam allowance is to be constructed. Use global x values for the seam allowance, the hem and for the spread amount of the pleats.

Part list:
- 001 basic block Skirt 20
- 002 style development
- 003 PP skirt ft left
- 004 PP skirt ft right
- 005 PP skirt ft centre
- 006 PP skirt bk left
- 007 PP skirt bk right
- 008 PP skirt bk centre
- 009 waistband

Call the „Grafis Skirt 20“ into part 001, close the second dart, reset the hem reduction and position the darts in front and back at 40% respectively.

Open part 002 and insert all objects from part 001. Construct a panel seam, not using perpendicular but using $p+dir+lg$ parallel to the centre front and centre back in case the hem is modified interactively at a later date. Create the parallels to the hip line and construct the curves shown in the front and back skirt, using the following x values:

```
x values of part 002 „style development“:
  x1  distance from hip line (140.)
  x2  curve depth (70.)
```

Open part 003 and transfer all required lines and points from part 002. Then, duplicate part 003, creating part 004. Continue with parts 005 to 008. Use the following x values for construction of the pleats:

```
x values of part 005 „PP skirt ft centre“:
  x1  spread amount hem (40.)
```

Finally, open part 009 and transfer all waist lines of front and back skirt from part 002. Use z values to construct the waistband.

```
x values of part 007 „waistband“:
  x1  waistband height in mm (40.)
  x2  raise waistband at CF in mm (20.)
```
5th Exercise "Culottes with pleats"

Working drawing:

Trouser front

Trouser back

Design specification:

From the basic block "Grafis Trouser 10" culottes with pleats in the front, a yoke, raised hem and concealed zip in the side seam are to be developed.

Use the following global x values:

- \( x_1 \) seam allowance 1 (10.)
- \( x_2 \) hem (20.)

Part list:

- 001 Basic block Trouser 10
- 002 style development
- 003 yoke front
- 004 trouser front left
- 005 trouser front right
- 006 yoke back left
- 007 yoke back right
- 008 trouser back left
- 009 trouser back right

Call the "Grafis Trouser 10" into part 001 and adjust the following interactively:

Drag area „Dart back“:

- 2. Abnäher: 0 mm

Drag area „Hem“:

- Saumlinie: 0 mm

Open part 002 „style development“ and insert all objects from part 001. Construct the yokes in the front and back trouser and the flared and raised hem, applying the following x values:

- \( x_1 \) pleat content in mm (40.)
- \( x_2 \) yoke ft ss from waist in mm (60.)
- \( x_3 \) yoke ft CF from waist in mm (100.)
- \( x_4 \) yoke bk CB from waist in mm (120.)
- \( x_5 \) flare ss in mm (100.)
- \( x_6 \) raise hem at ss from hip in % (75.)
- \( x_7 \) raise hem inside leg in % (85.)

Open part 003 „yoke front“ and insert all required lines and points from part 002. Note that a zip is to be inserted into the left side..
6th Exercise "Dress with panel seams"

Working drawing:

Design specification:
From "Grafis Bodice 10" a dress with panel seams and concealed zip in the centre back is to be developed.

Use the following global x values:
- \( x_1 \) seam allowance 1 (10.)
- \( x_2 \) seam allowance centre back (20.)
- \( x_3 \) hem (40.)

Part list:
- 001 Basic block Bodice 10
- 002 style development
- 003 -----PATTERN PIECES------
- 004 bk centre panel
- 005 bk side panel
- 006 ft side panel
- 007 ft centre panel
- 008 ft facing
- 009 bk facing
- 010 armhole facing

Call the "Grafis Bodice 10" into part 001 and adjust the following options interactively:
- CB shaped
- CB length measured from waist
- side seam contour identical
- position waist dart relative to waist
- length waist dart to hem
- bust dart into armhole
- armhole direction linked at shoulder
- hem direction linked at side seam
- panel seam in the back: yes
- 4 segments

Adjust the following in the drag areas:
- Drag area 'Tolerances':
  - tolerance at bust: 50 mm
  - tolerance at waist: 50 mm
  - tolerance at hip: 50 mm
  - tolerance at across bust: 10 mm
  - tolerance at across back: 5 mm
- Drag area 'Line relocation':
  - length: 500 mm
- Drag area 'Bust dart':
  - position from sleeve pitch: 50 mm
- Drag area 'Shoulder dart':
  - position at 60 %
- Drag area 'Waist dart':
  - relocate towards side seam by 20 mm
- Drag area 'Neckline':
  - drop neckline bk: 30 mm
  - increase neckline at shoulder: 50 mm
  - drop neckline CF: 150 mm

Adjust the neckline to your preference.

Drag area 'Hem':
- side seam reduction at hem 15 mm

Open part 002 "style development" and insert all objects from part 001. Create the following x values:

<table>
<thead>
<tr>
<th>x values of part 002 &quot;style development&quot;:</th>
</tr>
</thead>
<tbody>
<tr>
<td>x1 facing width neck (30.)</td>
</tr>
</tbody>
</table>

Construct the princess lines and the facing. Then, relocate the dart into the princess seam.

Open part 004 "bk centre panel" and insert all required lines and points from part 002.
x values of part 004 „bk centre panel“:
   x1    zip length (530.)

Construct the seam allowance and the hem. Set the symbols and the text.

Continue with part 006 and 007 in the same way.
In part 007 „ft centre panel“, construct a dart hood for the remaining bust dart, set the seam allowance and mirror the part. For the construction of the angled corner at the princess line/ armhole, first transfer the extension of the seam line from part 006, measure this extension with a z value and create a parallel to the auxiliary line with the z value distance, see Picture. In this way, the angled corner does not alter the length of the princess seam.

For part 010 „armhole facing“ insert the lines of the armhole step-by-step from part 002, starting with the shoulder, upper armhole front, princess line. Transfer the further armhole lines with insert with transformation. Alternatively, transformation can ensue after all required lines and points have been inserted.

7th Exercise "Long dress with godets"

Working drawing:

Design specification:
From „Grafis Bodice 10“ a long dress with straps, band and godets is to be developed.

Use the following global x values:
   x1    seam allowance l (10.)
   x2    seam allowance centre back (20.)
   x3    hem (40.)
   x4    rotation angle for godet in degrees (25.)

Part list:
   001 Basic block Bodice 10
   002 style development
Call the „Grafis Bodice 10” into part 001 and adjust the following options interactively:
• CB seam shaped
• CB length measured from waist
• side seam not contour identical
• position waist dart relative to waist
• length waist dart to hem
• bust dart on shoulder
• armhole direction linked at shoulder
• hem direction linked at ss
• panel seam in the back: yes
• 4 segments

Adjust the following in the drag areas:
Drag area „Zugabe“:
• tolerance at bust: 30 mm
• tolerance at waist: 30 mm
• tolerance at hip: 30 mm
• tolerance at across bust: 10 mm
• tolerance at across back: 5 mm
• ss/waist ft 12.5 mm (half dart suppression ft)
• ss/waist bk 15 mm (half dart suppression bk)

Drag area „Line relocation“:
• length: 950 mm
• armhole relocation: -15 mm

Drag area „Bust dart“:
• position from neck: 40%

Drag area „Waist dart“:
• reduce waist darts in ft + bk by half (ft: 12.5, bk: 15 mm)

Open part 002 „style development“ and insert all objects from part 001. Create the following x values:

x values of part 002 „style development“:
  x1  band position ft from bust point (100.)
  x2  drop neckline CF (140.)
  x3  drop neckline CB (250.)
  x4  band width (50.)
  x5  godet position from hem (400.)

Construct the 2nd waist darts in ft and bk in the centre between first dart and side seam respectively.

Use the function move p => p. Then, construct the neckline with curve, create the band with parallel and lengthen or shorten the darts in ft and bk up to the band.

Open part 004 „bk centre panel“ and insert all required lines and points from part 002. Construct the godets with circle arc the transformation turn turn+ang. Create an x value:

x values of part 004 „bk centre panel“:
  x1  zip length (500.)

Construct the seam allowances and the hem. Set the symbols and the text.

Open the next part 005 „bk side panel 1“ and insert all required lines and points from part 002. Construct the seam allowances and the hem. In the area of the zip at the centre back use the x value xg2. Set the symbols and text.
Construct parts 006 „bk side panel 2“, 007 „ft centre panel“, 008 „ft side panel 1“ und 009 „ft side panel 2“ in the same way.

For part 010 „bk neck band“ and 011 „ft neck band“, insert the lines for the neckband step-by-step from part 002. The two pieces of the ft are rotated towards one another. Construct the seam allowances and symbols and mirror the „ft neck band“ at the centre front.

To construct the strap transfer the lines in the bust dart area, the shoulder, armhole ft and bk. Transform the back shoulder onto the front shoulder and construct a curve for the strap shape. The width of the strap is controlled via an x value.

8th Exercise "Casual trouser with detachable legs and patch pockets"

Design specification:
From „Grafis Trouser 10“ trousers with elasticated waist, two zips in the legs and patch pockets at the side of the legs are to be developed.

Use the following global x values:

| x1 | seam allowance 1 (10.) |
| x2 | seam allowance 2 (5.) |

Part list:

001 basic block Trouser 10
002 style development
003 ------PATTERN PIECES------
004 trouser ft part 1
005 trouser ft part 2
006 trouser ft part 3
007 pocket 1
008 decorative flap
009 -----------------------
010 yoke trouser bk
011 yoke facing
012 trouser bk part 1
013 trouser bk part 2
014 trouser bk part 3
015 pocket 2
016 pocket 3
017 side strip pocket 3
018 flap pocket 3
019 -----------------------
020 waistband
021 template for elastic

Holen Sie in Teil 001 die „Grafis-Trouser 10“ und stellen interaktiv folgende Optionen ein:

- Seitennaht konturengleich
- Ausgleich Taille an Seitennaht
- Ausgleich Ausstich an Schrittnaht
- Bundfalten: nein

Adjust the following in the drag areas:

Drag area ‘Tolerances’:
- tolerance at waist: 10 mm
- tolerance at hip: 20 mm
Drag area „Finished measurements“:
- knee width: 540 mm
- instep width: 480 mm

Assign the finished measurements with one or more break sizes and adjust a suitable grade, see Chapter 13.

Drag area „Line relocation“:
- waist: -40 mm

Drag area „Dart back“:
- 2nd dart: 0 mm

Drag area „Hem“:
- hem line: 0 mm

Open part 002 „style development“ and insert all objects from part 001. Create the following x values:

x values of part 002 „style development“:
- x1 yoke CB from waist in mm (50.)
- x2 yoke ss from waist in mm (100.)
- x3 separation for zip at thigh at ss (400.)
- x4 back pocket depth (220.)
- x5 pocket position from CB in mm (60.)
- x6 pocket position ss from waist in mm (240.)
- x7 pocket corner with circle (40.)
- x8 ---------- TROUSER FRONT----------
- x9 pocket mouth waist from ss in mm (55.)
- x10 pocket mouth ss from waist in mm (180.)
- x11 pocket depth from waist at ft centre in mm (220.)
- x12 flap depth in mm (70.)
- x13 overlap width for zip at thigh (40.)
- x14 separation for 7/8 length from hem in mm (200.)

Construct the style development, applying the x values. Then, derive the related pattern pieces and develop them into production patterns.
9th Exercise "Fitted jacket with panel seams"

Design specification:
From the basic block "Grafis Bodice 10" a fitted jacket with panel seams and pocket is to be developed.

Part list:
- 001 basic block Bodice 10
- 002 style development
- 003 basic block Sleeve
- 004 basic block Flap

Call the „Grafis Bodice 10“ and adjust the following options:
- CB seam shaped
- ss contour identical
- position shoulder dart as bust dart
- length dart to hem
- bust dart in shoulder
- armhole direction linked at shoulder
- hem direction linked at ss
- panel seam in the back: yes
- 8 segments

Adjust the following in the drag areas:

Drag area „Tolerances“:
- tolerance at bust: 80 mm
- tolerance at waist: 80 mm
- tolerance at hip: 80 mm
- tolerance at across bust: 15 mm
- tolerance at across back: 10 mm

Drag area „Line relocation“:
- drop armhole: -20 mm
- style length: 720 mm

Drag area „Bust dart“:
- loosen armhole 5 mm
- position bust dart at 50% of shoulder

Drag area „Waist dart“:
- move back dart to 60 %
- shape waist curves

Drag area „Shoulder dart“:
- reduce dart suppression to 15 mm

Drag area „Shoulder“:
- move shoulder by 10 mm at neckline and armhole.

Open part 002 „style development“ and insert all lines and points from part 001. Create the following x values:
- x1 overlap width in mm (25.)
- x2 position 1st button from bust point in mm (30.)
- x3 hem curve CF in mm (200.)
- x4 hem curve hem in mm (100.)
- x5 pocket position from waist at dart (70.)
- x6 pocket position from waist at ss (90.)

Construct the overlap, the first button position, the pocket position and the curved hem using the x values. Link the front edge.

Then, call the interactive „Grafis Collar 50“ into the style development. Adjust the collar interactively to your preference.

Open part 003 „basic block Sleeve“, activate part 003 and keep part 002 „style development“ visible. Call the „Grafis Sleeve 30“ into part 003, clicking the required lines in the style development. Adjust the sleeve interactively to your preference. Adjust the wrist width using break sizes.
Call the „Grafis Pocket | with lining | cut | single jet | 001“ into the style development and adjust it. Alternatively, you can open a separate part for the pocket and attach it to the style development when clicking. The corresponding pattern pieces are automatically loaded into the part organisation when calling the pocket.

Open a further part 004 „basic block flap“ and keep part 002 with the basic pocket shape visible. Call the „Grafis Pocket 60 (Pocket flap)“ and adjust it interactively.

Now open further positions for the other pattern pieces. Create global x values for seam allowance and hem and construct.

Global x values:
- x1 seam allowance 1 (10.)
- x2 seam allowance 2 (20.)
- x3 seam allowance 3 (5.)
- x4 hem (40.)

Part list:
- 001 Basic block Bodice 10
- 002 style development
- 003 Basic block Sleeve
- 004 Basic block flap
- 005 ==
- 006 back
- 007 back side panel
- 008 front side panel
- 009 front
- 010 undersleeve
- 011 top sleeve
- 012 facing
- 013 under collar stand
- 014 under collar
- 015 top collar
- 016 top collar stand
- 017 pocket flap
- 018 jet
- 019 facing
- 020 ===INTERFACING==
- 021 interfacing front
- 022 interfacing facing
- 023 interf. u collar stand
- 024 interfacing under collar
- 025 interfacing top collar
- 026 interf. t collar stand
- 027 interfacing jet
- 028 ===LINING==
- 029 flap lining
- 030 pocket bag lin. bottom
- 031 pocket bag lining top
- 032 bk lining
- 033 ft lining
- 034 top sleeve lining
- 035 undersleeve lining

Self parts 006-019

Interfacing parts 021-027

Lining parts 029-035