



User Instruction for Estimation of CABAS Heavy Plastic



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1 General

The times in this document are based on time studies carried out at companies operating in the industry and approved by the automotive and insurance sectors. All the workshops in the study have fulfilled the authorities' and Bilplastteknik's standards and requirements. The studies have been performed under the supervision and with the assistance of representatives from the automotive and insurance sectors.

Only approved repair methods and equipment have been used. The car manufacturers' requirements and instructions regarding pedestrian protection have been followed.

The times assume that the component has been dismantled from the vehicle and any removable parts removed prior to the repair. The times specified in the document are expressed in periods (1 hour = 100 periods).

The filling of damage surfaces may only be carried out using approved repair materials. Polyester filler may only be used for individual pores or small chips.

All painting work, including priming, is time as painting. A repaired component should be timed with surface factor old plastic.

The time study has been carried out at plastic repair workshops for passenger cars.

2 Repair groups

2.1 Repair group 1

Plastic repair that requires subsequent painting work (topcoat, structure). E.g. bumpers, spoiler, door mirrors and visible repairs on internal front panels and headlights.

2.2 Repair group 2

Plastic repair that does not require subsequent painting work (topcoat, structure). E.g. washer reservoirs, wing liners, engine guards, guide pins for radiators and headlights.

2.3 Both repair groups 1 and 2

The component can only belong to one of the above repair groups.

A component that is repaired according to both repair groups 1 and 2 is timed as repair group 1, category External and internal damage.



3 Timing, repair group 1

3.1 Repair category

There are three repair categories, depending on the damage to the component.

The component can only belong to one repair category.

Scratch	The component has scratches and scrapes that are deeper than 1 mm in the plastic material but follows the contours and does not need to be aligned.
External damage	The component does not follow the contours and needs to be aligned. The component may also have scratches and scrapes deeper than 1 mm.
External and internal damage	The component has holes and/or cracks that go right through and/or damaged brackets. The component may also need to be aligned and may have scratches and scrapes deeper than 1 mm.

3.2 Setup times, plastic repairs

Scratches	60 periods
External damage	73 periods
External and internal damage	108 periods

3.3 Surface factors, plastic repairs

Scratches	0.186 periods/cm ²
External damage	0.208 periods/cm ²
External and internal damage	0.418 periods/cm ²

3.4 Included work stages

3.4.1 Scratch

- Cleaning/washing
- Grinding the damage
- Filling the damage
- Grinding the filler/feather edge grinding

3.4.2 External damage

- Cleaning/washing
- Heat treatment
- Aligning the damage
- Filling the damage
- Grinding the damage
- Grinding the filler/feather edge grinding



3.4.3 External and internal damage

- Cleaning/washing
- Heat treatment
- Aligning the damage
- Repair of cracks/holes and any reinforcement of these
- Repair of damaged brackets on the component
- Grinding the damage
- Filling the damage
- Grinding the filler/feather edge grinding

3.5 Surface finish on repaired plastic damage surface in repair group 1

The surface must be worked with at least P240 in the case of machine grinding or P320 in the case of manual grinding.

The surface must not require any extra filling or grinding work.

3.6 Extent of damage surfaces

The timing applies to the following damage surface sizes:

Scratches	Up to 300 cm ²
External damage	Up to 750 cm ²
External and internal damage	Up to 750 cm ²

Components with a total damage surface larger than that shown above are timed on a case-by-case basis.

3.7 Replacement of units (spare parts)

Replacement of large brackets or entire member sections on components are timed on a case-by-case basis.

The construction of the missing component/bracket is timed on a case-by-case basis.



4 Structure method

The structure method is a repair procedure for restoring the plastic component's original surface, which may be smooth or embossed.

4.1 Timing, structure method

The surface that is to be repaired is measured in dm² and the time is calculated as follows:

Setup time	30 periods
Surface factor	1,280 periods/dm ²

The time refers to complete work and includes matt and colour adaptation, as well as rectifying damage to the structured surface/component that amounts to a depth of less than 1 mm in the plastic material.

If the component requires masking for the structuring process, this is timed according to the painting time list's Plastic masking supplement.

If a topcoat also must be applied to the structured surface, the painting is timed according to the painting time list New surface.

4.2 Included work stages in the structure method.

- Cleaning/washing
- Grinding/creating a matt surface
- Filling
- Grinding the filler
- Priming
- Matt and colour adaptation
- Application according to the structure method

5 Timing, repair group 2

Damage to these components can comprise cracks and damaged brackets. One setup time per component (spare part).

Setup time	19 periods
Bracket	23 periods/pc
Crack	4 periods/cm

In those cases where a bracket is missing and a new one is "built up", this is timed on a case-by-case basis.



5.1 Included work stages

- Cleaning
- Grinding
- Repair with approved chemical or welding method
- Grinding
- Filling/grinding the damage
- Adjusting the shade of the surface

5.2 Surface finish on repaired plastic damage surface in repair group 2

The component must be repaired correctly from a shape and function perspective. If necessary, this includes adjusting the shade of the repaired surface.

6 Measurement instructions

6.1 Repair group 1

The damage surface is measured prior to heat treatment and machining. The damage surface is measured in whole cm, rounded up.

There must be a distance of at least 1 cm between scratches in order for them to be measured separately; if they are closer than this, they are measured as one area.

In the case of cracks that go right through, the measured length of the crack in cm is multiplied by 10 to obtain a damage surface.

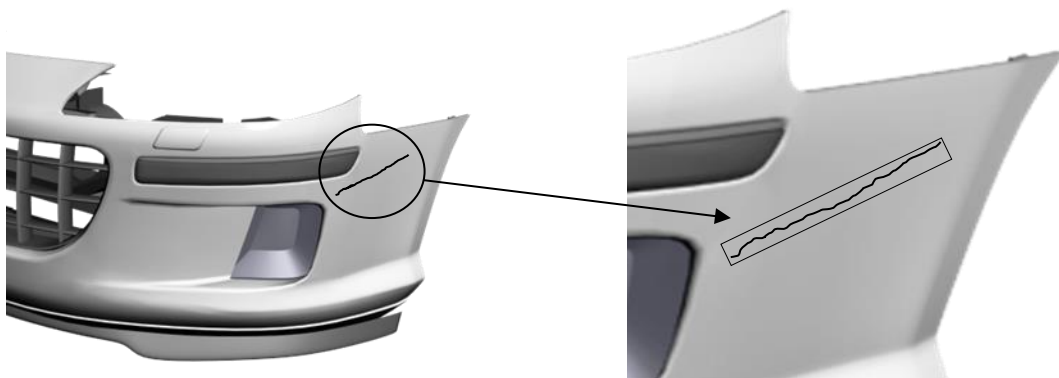
In the event of several different repair categories in the same component, the damage surfaces are added together and timed according to the highest repair category for this component.

If different damage categories are to be found in the same damage surface, the highest category must always be selected, and the largest surface must be measured.

The repair of a damaged bracket is included in the time for the category External and internal damage.

A scratch or external damage with one or more damaged brackets is reclassified to repair category External and internal damage.

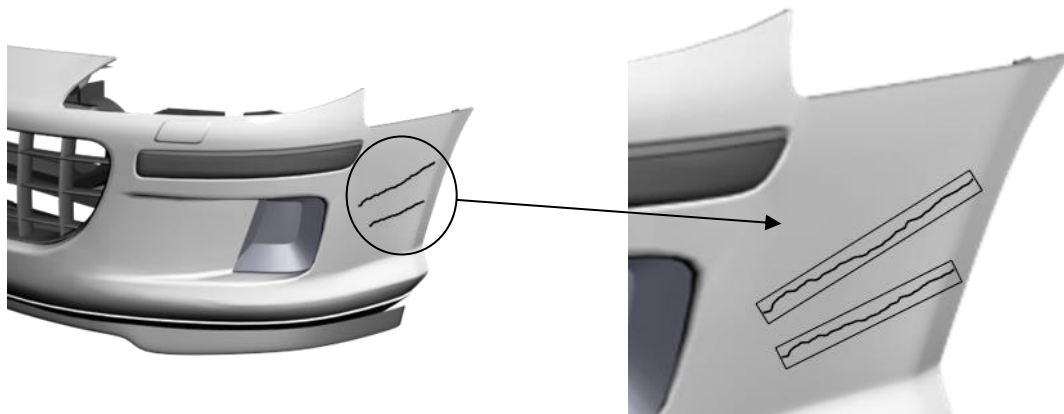
6.1.1 Scratch





Only one scratch. Measure the length and width of the damage. Example: 12 cm long, 1 cm wide.
Total damage surface, scratch $12 \times 1 = 12 \text{ cm}^2$

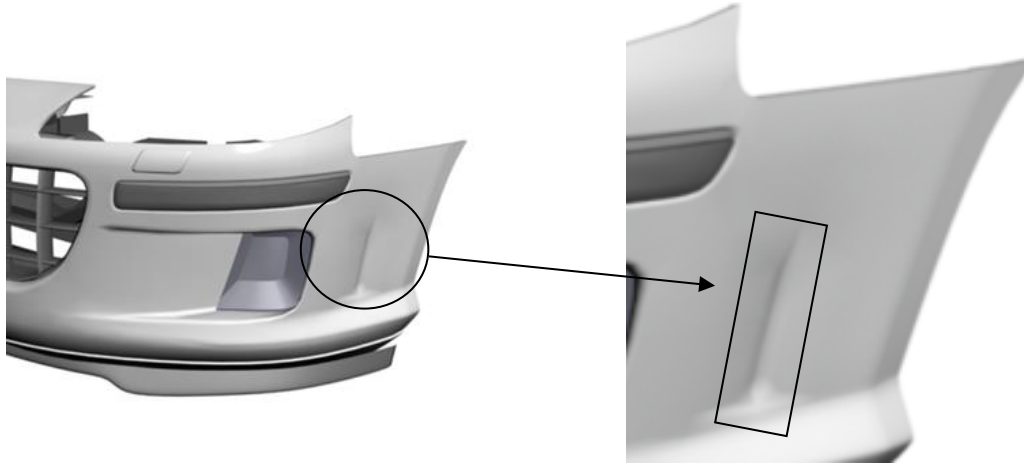
6.1.2 Scratch, several damage surfaces



Several scratches on the same component. There is more than 1 cm between the scratches.
Example: Upper, 12 cm long, 1 cm wide = $12 \times 1 = 12 \text{ cm}^2$. Lower, 8 cm and 1 cm = $8 \times 1 = 8 \text{ cm}^2$
Total damage surface, scratch $12 + 8 = 20 \text{ cm}^2$.

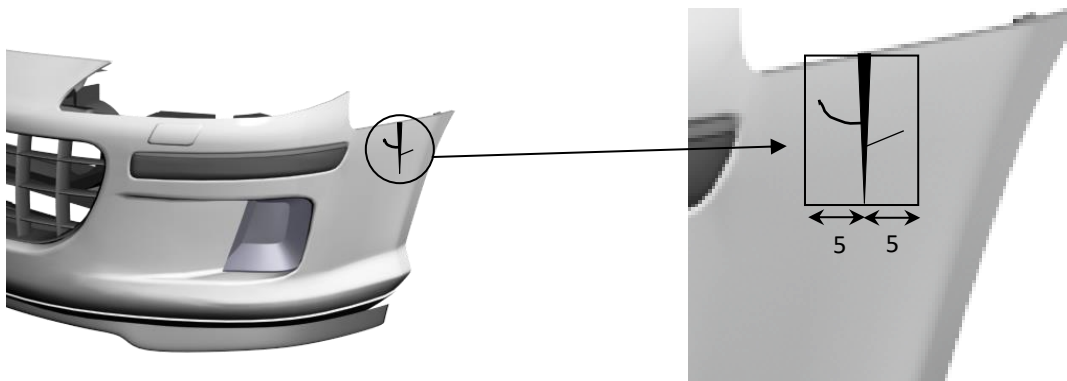


6.1.3 External damage (incorrect shape)



Measure the height and width of the damage. Example: Height 20 cm, width 6 cm
Total damage surface, external damage = $20 \times 6 = 120 \text{ cm}^2$.

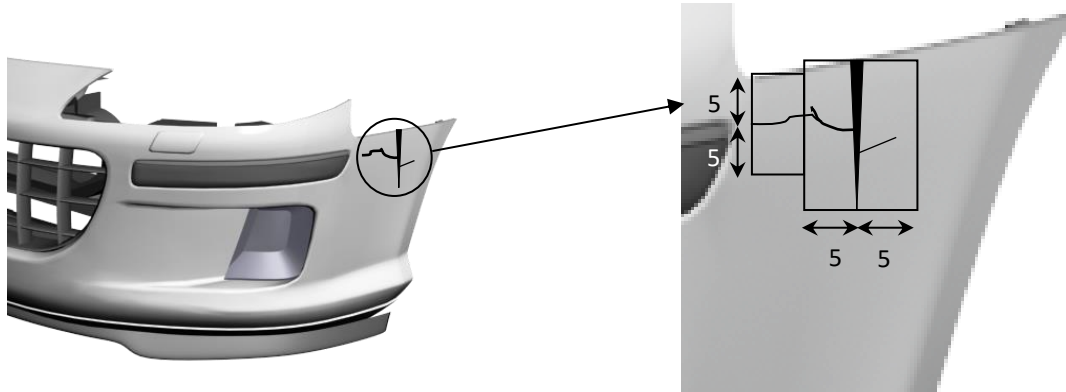
6.1.4 External and internal damage, crack



Measure the length of the main crack and multiply it x 10. This is to cover a 5 cm damage surface on either side of the crack. Damage within this area is included. Example: The length of the main crack is 14 cm.

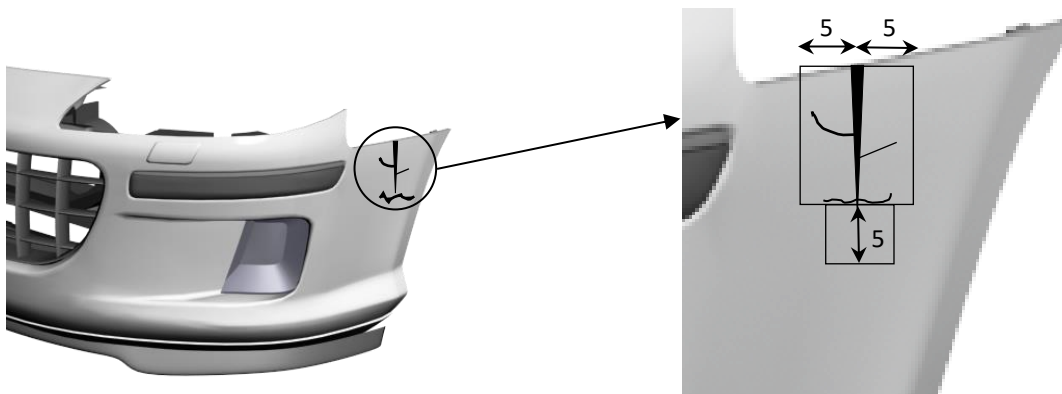
Total damage surface, external and internal damage = $14 \times 10 = 140 \text{ cm}^2$.

6.1.5 External and internal damage, cracks



A second crack has been added to the above example. This side crack measures 4 cm and is located outside of the previously measured damage surface. Main crack $14 \times 10 = 140 \text{ cm}^2$, side crack $4 \times 10 = 40 \text{ cm}^2$
Total damage surface, external and internal damage = $140 + 40 = 180 \text{ cm}^2$.

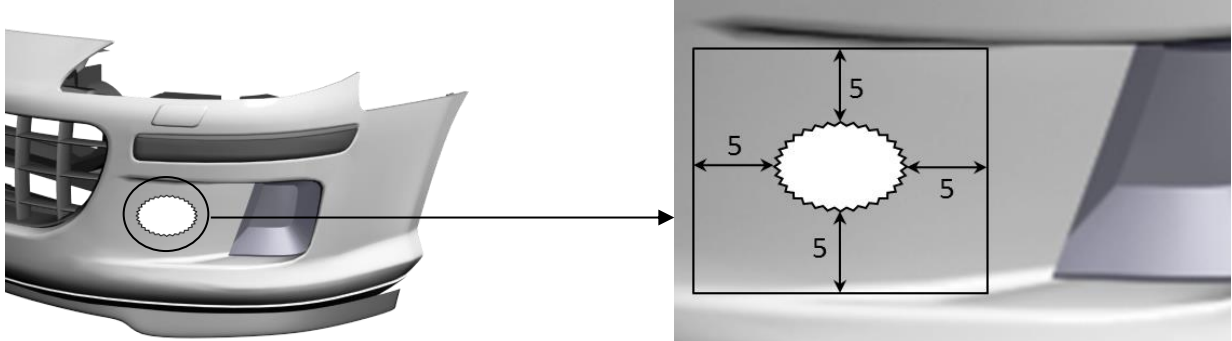
6.1.6 External and internal damage, T-crack



Two cracks adjacent to each other, the main crack measures 14 cm. $14 \times 10 = 140 \text{ cm}^2$. The additional horizontal crack measures 6 cm and coincides with the main crack's damage surface. Damage surface of additional crack $6 \times 5 \text{ cm} = 30 \text{ cm}^2$.
Total damage surface, external and internal damage = $140 + 30 = 170 \text{ cm}^2$.



6.1.7 External and internal damage, hole



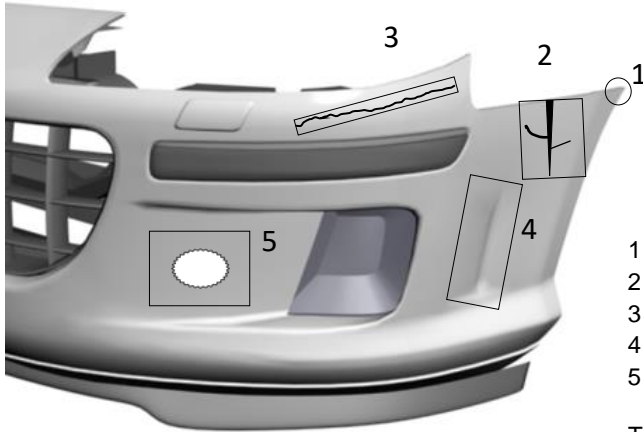
Measure the maximum height and width of the hole, add 10 cm to each dimension. The damage is then covered by an area of 5 cm around the entire hole. The damage within this damage surface is included. Example: The height is 4 cm and the width is 7 cm. Total damage surface, external and internal damage = $14 \times 17 = 238 \text{ cm}^2$.

6.1.8 External and internal damage, edge damage

Measure the maximum height and width of the damage and add 10 cm to each dimension. Example: Material is missing covering an area of $4 \times 6 \text{ cm}$. Total damage surface, external and internal damage = $14 \times 16 = 224 \text{ cm}^2$.



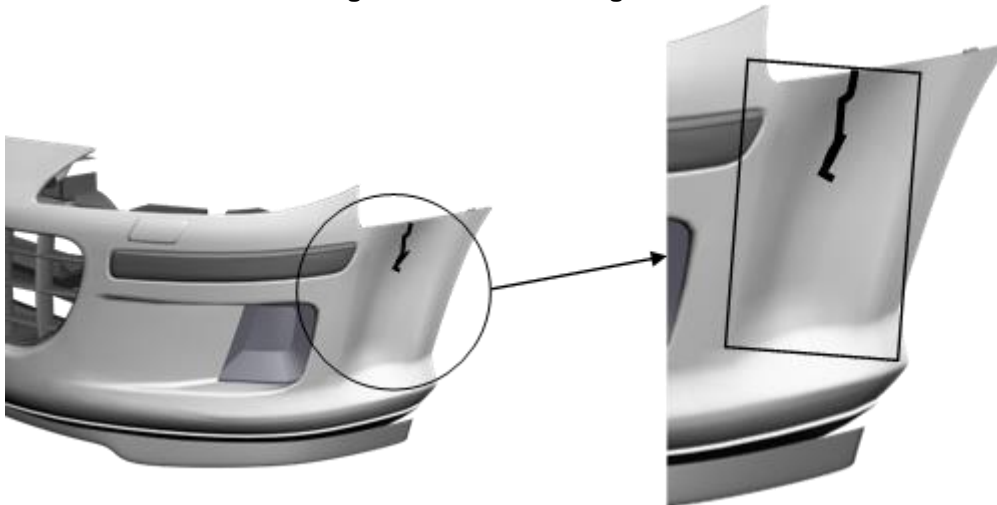
6.1.9 Several instances of damage in the same component



1.	Damaged bracket (included in external and internal damage)	
2.	Crack 12 x 10 =	120 cm ²
3.	Scratch 16 x 1 =	16 cm ²
4.	External damage 20 x 6 =	120 cm ²
5.	Hole 14 x 17 =	238 cm ²

Total damage surface, external and internal damage 494 cm².

6.1.10 Several instances of damage in the same damage surface



If different damage categories are to be found in the same damage surface, the highest category must always be selected, and the largest surface must be measured.

In this case, for example, a crack going right through has arisen within a depression. The crack's measured damage surface is located within the depression.

Select the highest category, External and internal damage.

Measure the depression 30 x 15 = 450 cm²



6.2 Repair group 2

6.2.1 Brackets

The number of damaged brackets are counted and timed per bracket. In the event of a crack in a bracket, this is timed as a bracket.



1. Example (left) of a headlight with a damaged bracket: The bracket has broken off completely but has been utilised (it is not necessary to build up a new bracket) and can therefore be timed according to repair group 2.
2. Example (right) where the bracket has not broken off completely: A crack in a bracket is timed as repair group 2.

Example 1.

1 x bracket	23 periods
<u>Setup time</u>	<u>19 periods</u>
Total	42 periods

Example 2.

1 x bracket	23 periods
<u>Setup time</u>	<u>19 periods</u>
Total	42 periods

6.2.2 Crack

The length of the crack is measured in centimetres. In the event of several cracks in the same component, the length of these is added together.



Example of a crack in a wing liner, repair group 2:

Crack length 9 cm, 9 x 4 =	36 periods
<u>Setup time</u>	<u>19 periods</u>
Total	55 periods



6.2.3 Bracket and crack in the same component



Example when a bracket has broken off and there is a crack in the same component, repair group 2:

1 x bracket	23 periods
3 cm crack, 3 x 4 =	12 periods
<u>Setup time</u>	<u>19 periods</u>
Total	54 periods

7 Material cost

7.1 Material cost

The cost of the plastic repair material is calculated based on the repair time. This is done by multiplying the time for the plastic repair, in hours, by the billing factor for plastic materials. The billing factor for plastic materials is agreed between the workshop and the insurance company in question

8 Other

8.1 Repair of headlight glass

The repair of headlight glass refers to grinding surface-scratched headlight glass (made of plastic) as well as surface treatment with the intended UV protective coating. The repair is carried out by a plastic repair specialist. The time does not include installation/dismantling of the headlight from the vehicle.

The work operation that corresponds with the repair method that is performed should be selected in the calculation.



9 Change log

Document	Version	Date	Change	Issued by
CABNET-904420094-1060	1.0	12-02-2021	New document. Translated from Swedish document CABNET-904420094-188.	Markus Carlén
CABNET-904420094-1060	2.0	15-03-2021	1 General: Clarification of painting of repaired component.	Markus Carlén