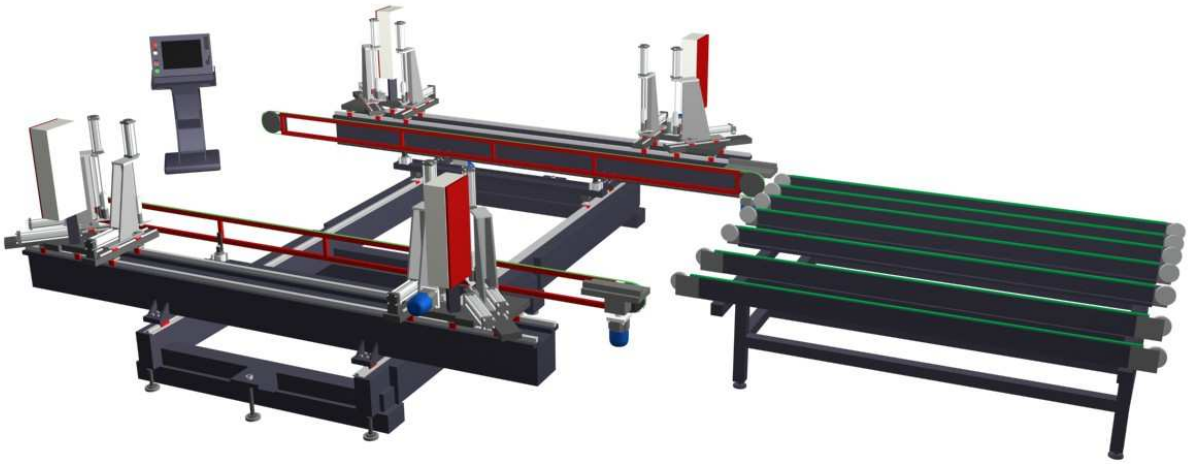
COMMUNICATION PROTOCOL
FOR
SL4Q, WP-CNC2, WP-CNC4



TECHNICAL SPECIFICATION

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1. WEL Protocol

1.1. File specification

This protocol is for welder SL4Q and corner cleaner WP-CNC2, WP-CNC4.
All information for cutting lists is in this type file:

- The file name has extension "**.WEL**".
- The file format is ASCII text type, where there are different machine programmation block.
- Each programmation block has:
  - Three or four rows for window acknowledgment (Usual are 4, one for each window side).
    - These rows will be always and only found by the keyword "**CodeId**"
    - Each field is separate from next, with "**;**" (semicolon = ASCII 59).
    - The rows are separate by characters semicolon + Carriage-return ("**;**"=ASCII 59+ "**CR**"=ASCII 13).
  - One row for machine configuration.
    - This row is the first row as don't start with CodeId.
    - Each field is separate from next, with "**;**" (semicolon = ASCII 59).
    - The rows are separate by characters semicolon + Carriage-return ("**;**"=ASCII 59+ "**CR**"=ASCII 13).
  - Six rows for window configuration:
    - These rows will be always and only found by the keywords:
      - "**Gasket**": If there is the gasket.
      - "**ColorInside**": If window inside colour is white or coloured.
      - "**ColorOutside**": If window outside colour is white or coloured..
      - "**Height**": Window height.
      - "**Width**": Window width.
      - "**NoAngle**": Number of angles that the corner cleaner machine must clean.
    - Each field is separate from next, with "**;**" (semicolon = ASCII 59).
    - The rows are separate by characters semicolon + Carriage-return ("**;**"=ASCII 59+ "**CR**"=ASCII 13).
  - One or more rows for work configuration.
    - These rows will be always and only found by the keyword "**Fab**".
    - Each field is separate from next, with "**;**" (semicolon = ASCII 59).
    - The rows are separate by characters semicolon + Carriage-return ("**;**"=ASCII 59+ "**CR**"=ASCII 13).
  - End block row.
    - These rows will be always and only found by the keyword "**End**".
    - The rows are separate by characters semicolon + Carriage-return ("**;**"=ASCII 59+ "**CR**"=ASCII 13).

A typical block is:

```
CodeId;06030045401;1;
CodeId;06030046301;2;
```

```
CodeId;06030011101;3;
CodeId;06030012201;4;
PG612;;;;1;603/2006;Graf Synergy;Window 01;
Gasket;G;
ColorInside;WH;
ColorOutside;WH;
Height;12800;
Width;5615;
NoAngle;4;
Fab;Hinge1;1000;4;
Fab;Hinge1;11800;4;
Fab;Hinge1;1000;2;
Fab;Hinge1;11800;2;
End;
```

1.2. Block describe

We use the next strings for generic block:

1) **Window acknowledgment rows**: `CodeId;BarCode;ProfPos;←`
2) **Machine configuration row**: `Profile;NU1;NU2;NU3;Box;Order;Customer;FreeComment;←`
3) **Window configuration rows**:
```
Gasket;TypeGasket;←
ColorInside;TypeColorInside;←
ColorOutside;TypeColorOutside;←
Height;ValueHeight;←
Width;ValueWidth;←
NoAngle;QtyAngle;←
```
4) **Work configuration rows:** `Fab;WorkName;Posit;ProfPos;←`
5) **End block row:** `End;←`

The rows are separate by characters semicolon + Carriage-return ("**;**"=ASCII59+"**CR**"=ASCII13).

1) **Window acknowledgment rows (**one for each "square" side**)**:
   1.1) **Block identification:**
   `CodeId;BarCode;ProfPos;←`
   - **Describe**: Use the keyword "**CodeId**". With this keyword, we acknowledge the barcode for one "square".
   - **String type:** Alphabetical
     - **Acceptable strings:** "**CodeId**"

     Others values generation errors.

   1.2) **Barcode:**
   `CodeId;BarCode;ProfPos;←`
   - **Describe**: Barcode in this "square".
   - **String type:** Alphanumerical

   1.3) **Profile position (**opzional, only for corner cleaner WP-CNC2 e WP-CNC4 with works system**):**
   `CodeId;BarCode;ProfPos;←`
   - **Describe**: Profile position in the "square". If the inside view of the window is up on machine, the profile position are:

- "**1**" for bottom profile.
- "**2**" for right profile.
- "**3**" for up profile.
- "**4**" for left profile.

- **String type:** Numerical
  - **Acceptable strings:** "**1**", "**2**", "**3**", "**4**".
    Others values generation errors.

2) **Machine configuration row**:

2.1) **Profile code:**

`Profile;NU1;NU2;NU3;Box;Order;Customer;FreeComment;←`

- **Describe**: Profile identification code.
- **String type:** Alphanumerical

2.2) **Not use1, Not use2, Not use3**:

`Profile;NU1;NU2;NU3;Box;Order;Customer;FreeComment;←`

- **Describe**: Not use field. To leave empty.
- **String type:** Alphanumerical
  - **Acceptable strings:** " " (Empty space = ASCII(160))
    Others values generation errors.

2.3) **Box**:

`Profile;NU1;NU2;NU3;Box;Order;Customer;FreeComment;←`

- **Describe**: Position where insert the clean "square".
- **String type:** Alphanumerical

2.4) **Order**:

`Profile;NU1;NU2;NU3;Box;Order;Customer;FreeComment;←`

- **Describe**: Describe for order acknowledge.
- **String type:** Alphanumerical

2.5) **Customer**:

`Profile;NU1;NU2;NU3;Box;Order;Customer;FreeComment;←`

- **Describe**: Describe for customer acknowledge.
- **String type:** Alphanumerical

2.6) **Comment**:

`Profile;NU1;NU2;NU3;Box;Order;Customer;FreeComment;←`

- **Describe**: Field for free comment.
- **String type:** Alphanumerical

3) **Window configuration rows**:

3.1) **Gasket type configuration:**

3.1.1) **Gasket identification:**

`Gasket;TypeGasket;←`

- **Describe**: Use the keyword "**Gasket**".
- **String type:** Alphabetical
  - **Acceptable strings:** "**Gasket**"
    Others values generation errors.

3.1.2) **Gasket inside**:

`Gasket;TypeGasket;←`

- **Describe**: If gasket in inside. Insert "**G**", if gasket is inside, or "" or " " if gasket isn't inside.
- **String type:** Alphanumerical
  - **Acceptable strings:**

- "**G**" if gasket is inside.
- "" or " "if gasket isn't inside.

3.2) **Inside colour type configuration:**

3.2.1) **Inside colour identification**:

`ColorInside;TypeColorInside;←`

- **Describe**: Use the keyword "**ColorInside**".
- **String type:** Alphabetical
  - **Acceptable strings:** "**ColorInside**"

  Others values generation errors.

3.2.2) **Inside colour type**:

`ColorInside;TypeColorInside;←`

- **Describe**: Write "**WH**" if inside window colour is white, whichever string if inside window is coloured.
- **String type:** Alphanumerical

3.3) **Outside colour type configuration:**

3.3.1) **Outside colour identification**:

`ColorOutside;TypeColorOutside;←`

- **Describe**: Use the keyword "**ColorOutside**".
- **String type:** Alphabetical
  - **Acceptable strings:** "**ColorOutside**"

  Others values generation errors.

3.3.2) **Outside colour type**:

`ColorOutside;TypeColorOutside;←`

- **Describe**: Write "**WH**" if outside window colour is white, whichever string if outside window is coloured.
- **String type:** Alphanumerical

3.4) **Window height configuration:**

3.4.1) **Window height identification**:

`Height;ValueHeight;←`

- **Describe**: Use the keyword "**Height**".
- **String type:** Alphabetical
  - **Acceptable strings:** "**Height**"

  Others values generation errors.

3.4.2) **Window height**:

`Height;ValueHeight;←`

- **Describe**: Insert window height. Value in 1/10mm.
- **String type:** Numerical

3.5) **Window width configuration:**

3.5.1) **Window width identification**:

`Width;ValueWidth;←`

- **Describe**: Use the keyword "**Width**".
- **String type:** Alphabetical
  - **Acceptable strings:** "**Width**"

  Others values generation errors.

3.5.2) **Window width**:

`Width;ValueWidth;←`

- **Describe**: Insert window width. Value in 1/10mm.
- **String type:** Numerical

3.6) **Cleaning angles number configuration:**

3.6.1) **Angles number identification:**

`NoAngle;QtyAngle;←`

- **Describe**: Use the keyword "**NoAngle**".
- **String type:** Alphabetical
  - **Acceptable strings:** "**NoAngle**"

  Others values generation errors.

3.6.2) **Angles number**:

`NoAngle;QtyAngle;←`

- **Describe**: Insert cleaning angles number.
- **String type:** Numerical

4) **Work configuration rows (**opzional, only for corner cleaner WP-CNC2 e WP-CNC4 with works system) **(**one for each work**):**

4.1) **Work identification**:

`Fab;WorkName;Posit;ProfPos;←`

- **Describe**: Use the keyword "**Fab**". With this keyword, start a new work configuration row.
- **String type:** Alphabetical
  - **Acceptable strings:** "**Fab**"

  Others values generation errors.

4.2) **Work name**:

`Fab;WorkName;Posit;ProfPos;←`

- **Describe**: Generic name for the work.
- **String type:** Alphanumerical

4.3) **Work position:**

`Fab;WorkName;Posit;ProfPos;←`

- **Describe**:
  - This ids the work position.
  - Value in 1/10mm.
  - Example 123.5mm = "**1235**"
  - See paragraph "**Work position**", for work position rule.
- **String type:** Numerical
  - **Acceptable strings**: "**0**"..."**99999**" These values are permissible for the protocol. The real permissible values depended by machine type. See technical machine book.

  Others values generation errors.

4.4) **Profile position**:

`Fab;WorkName;Posit;ProfPos;←`

- **Describe**: Profile position in the "square". If the inside view of the window is up on machine, the profile position are:
  - "**1**" for bottom profile.
  - "**2**" for right profile.
  - "**3**" for up profile.
  - "**4**" for left profile.
- **String type:** Numerical
  - **Acceptable strings:** "**1**", "**2**", "**3**", "**4**".

  Others values generation errors.

5) **End block row**:

5.1) **End block configuration:**

End;←

- **Describe**: Use the keyword "**End**"
- **String type:** Alphabetical
  - **Acceptable strings:** "**End**"

  Others values generation errors.

1.3. Resume table

The next table (Table 16) describe in shortly mode all records.

Wel Protocol			
String	**Describe**	**Type***	**Note**
1) Window acknowledgment rows (one for each “square” side):**CodeId;BarCode;ProfPos;**←			
CodeId	Block identification	A	Use keyword “**CodeId**”. With this keyword, we acknowledge the barcode for one “square”.
BarCode1.. BarCode4	Barcode	AN	Barcode in this “square”.
ProfPos op	Profile position	N	Profile position in the “square”. If the inside view of the window is up on machine, the profile position are: ➢ “**1**” for bottom profile. ➢ “**2**” for right profile. ➢ “**3**” for up profile. ➢ “**4**” for left profile.
2) Machine configuration row: **Profile;NU1;NU2;NU3;Box;Order;Customer;FreeComment;**←			
Profile	Profile code	AN	Profile identification code
NU1..NU3	Not use	AN	Not use field. To leave empty.
Box	Box	AN	Position where insert the clean “square”.
Order	Order	AN	Describe for order acknowledge.
Customer	Customer	AN	Describe for customer acknowledge.
FreeComment	Comment	AN	Field for free comment.
3) Window configuration rows:			
3.1) Gasket type configuration: **Gasket;TypeGasket;**←			
Gasket	Gasket identification	A	Use the keyword “**Gasket**”.
TypeGasket	Gasket inside	AN	Use: ➢ “**G**” if gasket is inside ➢ “” or “ “if gasket isn’t inside.
3.2) Inside colour type configuration: **ColorInside;TypeColorInside;**←			
ColorInside	Inside colour identification	A	Use the keyword “**ColorInside**”.
TypeColor Inside	Inside colour type	AN	Write “**WH**” if inside window colour is white, whichever string if inside window is coloured.

Table 16.1

Wel Protocol			
String	**Describe**	**Type***	**Note**
3.3) Outside colour type configuration: **ColorOutside;TypeColorOutside;**←			
ColorOutside	Outside colour identification	A	Use the keyword "**ColorOutside**".
TypeColor Outside	Outside colour type	AN	Write "**WH**" if outside window colour is white, whichever string if outside window is coloured.
3.4) Window height configuration: **Height;ValueHeight;**←			
Height	Window height identification	A	Use the keyword "**Height**".
ValueHeight	Window height	N	Insert window height. Value in 1/10mm.
3.5) Window width configuration: **Width;ValueWidth;**←			
Width	Window width identification	A	Use the keyword "**Width**".
ValueWidth	Window width	N	Insert window width. Value in 1/10mm.
3.6) Cleaning angles number configuration: **NoAngle;QtyAngle;**←			
NoAngle	Angles number identification	A	Use the keyword "**NoAngle**".
QtyAngle	Angles number	N	Insert cleaning angles number
4) Work configuration rows [op] (one for each work): **Fab;WorkName;Posit;ProfPos;**←			
Fab	Work identification	A	Use the keyword "**Fab**". With this keyword, start a new work configuration row.
WorkName	Work name	AN	Generic name for the work.
Posit	Work position	N	➢ This ids the work position. ➢ Value in 1/10mm. ➢ Example 123.5mm = "**1235**" ➢ See paragraph "**Work position**", for work position rule
ProfPos	Profile position	N	Profile position in the "square". If the inside view of the window is up on machine, the profile position are: ➢ "**1**" for bottom profile. ➢ "**2**" for right profile. ➢ "**3**" for up profile. ➢ "**4**" for left profile.
5) End block configuration: **End;**←			
End	End block	A	Use the keyword "**End**"

Table 16.2

Note: * Type:
- AN = Alphanumerical
- N = Numerical
- A = Alphabetical

[op]: opzional, only for corner cleaner WP-CNC2 e WP-CNC4 with works system

1.4. Example

With the technician data in the Appendix A, the next files are examples for this protocol. The first, file "**00001.wel**", is for two sash window, the second, file "**00002.wel**", is for door.

1) File "**00001.Wel**":

```
CodeId;000010000001;1;
CodeId;000010000002;2;
CodeId;000010000003;3;
CodeId;000010000004;4;
1505;;;;1;Graf00001;Graf Synergy;FRAME;
Gasket;G;
ColorInside;C;
ColorOutside;C;
Height;13000;
Width;14000;
NoAngle;4;
Fab;HINGE_FRAME;1325;2;
Fab;HINGE_FRAME;11725;2;
Fab;HINGE_FRAME;1325;4;
Fab;HINGE_FRAME;11725;4;
End;
CodeId;000010000005;
CodeId;000010000006;
CodeId;000010000007;
CodeId;000010000008;
1601;;;;2;Graf00001;Graf Synergy;SASH 2;
Gasket;G;
ColorInside;WH;
ColorOutside;WH;
Height;11000;
Width;6000;
NoAngle;4;
End;
CodeId;000010000009;
CodeId;000010000010;
CodeId;000010000011;
CodeId;000010000012;
1601;;;;3;Graf00001;Graf Synergy;SASH 1;
Gasket;G;
ColorInside;WH;
ColorOutside;WH;
Height;11000;
Width;6000;
NoAngle;4;
End;
```

2) File “**00002.Wel**”:

```
CodeId;000020000001;
CodeId;000020000002;
CodeId;000020000003;
1505;;;;1;Graf00002;Graf Synergy;FRAME;
Gasket;G;
ColorInside;C;
ColorOutside;C;
Height;24000;
Width;13000;
NoAngle;2;
End;
CodeId;000020000004;
CodeId;000020000005;
CodeId;000020000006;
CodeId;000020000007;
1601;;;;2;Graf00002;Graf Synergy;SASH;
Gasket;G;
ColorInside;WH;
ColorOutside;WH;
Height;23000;
Width;11000;
NoAngle;2;
End;
```

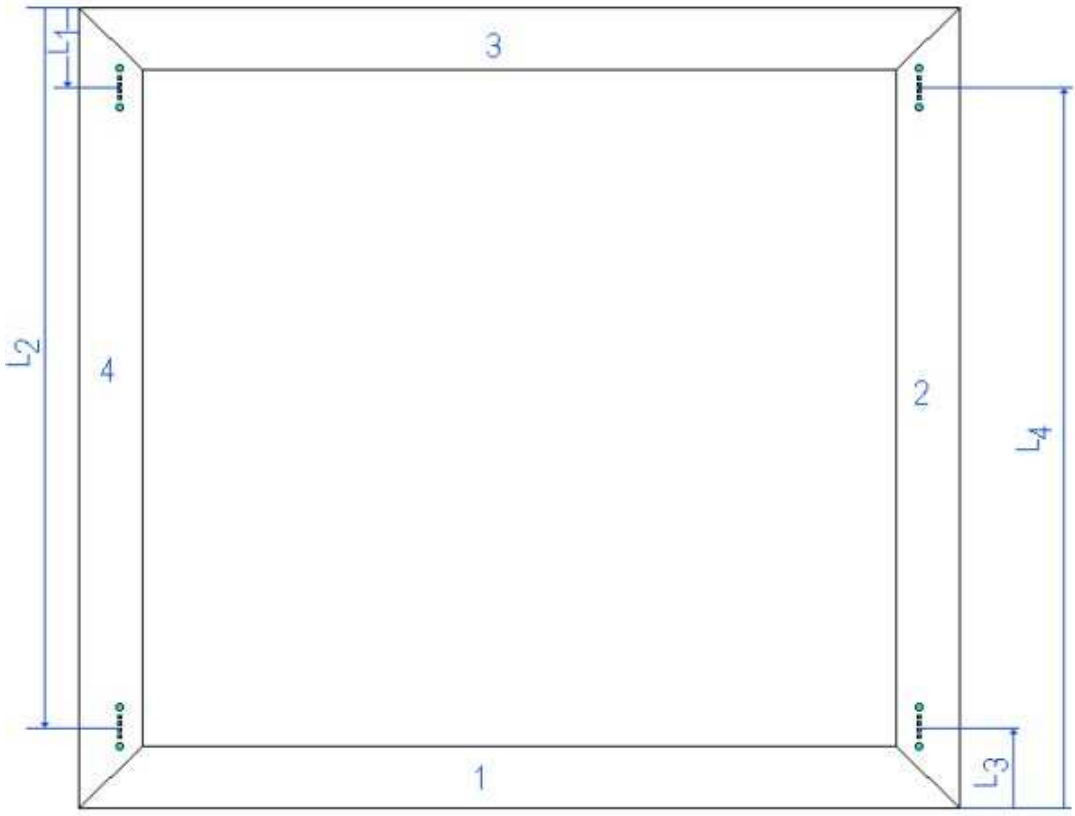
2. Work position

2.1. Work position rules.

In the next picture, you see the inside window view. The work position rules are (the start point of arrow):

- For left profile is in up position.
- For bottom profile is in left position.
- For right profile is in bottom.
- For up profile is in right position.

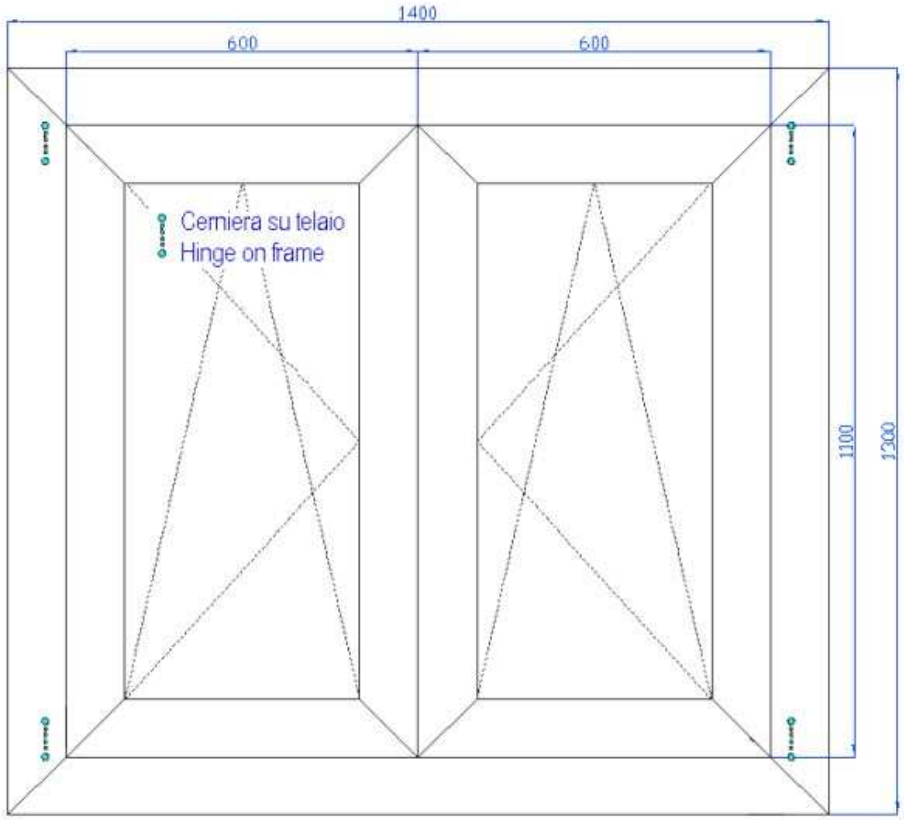
The shortly rule is: Start from left up position and around in contrary clockwise.
From these points, start the dimension (L_1, L_2, L_3, L_4 in the picture).



3. Appendix A

3.1. Cutting technical information for two sashes window

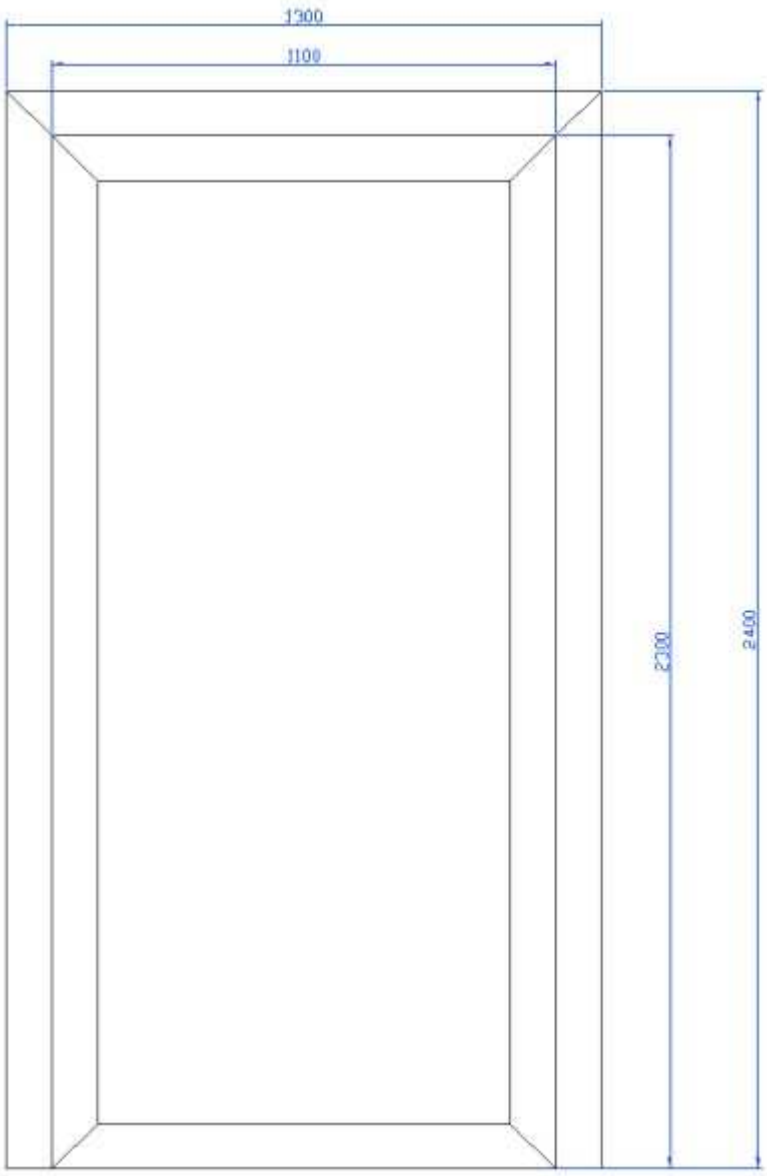
In picture A.1, see cutting technical information for two sashes window.



A these dimension, you insert the burning (in example we use 2.5mm for burning).

3.2. Cutting technical information for door

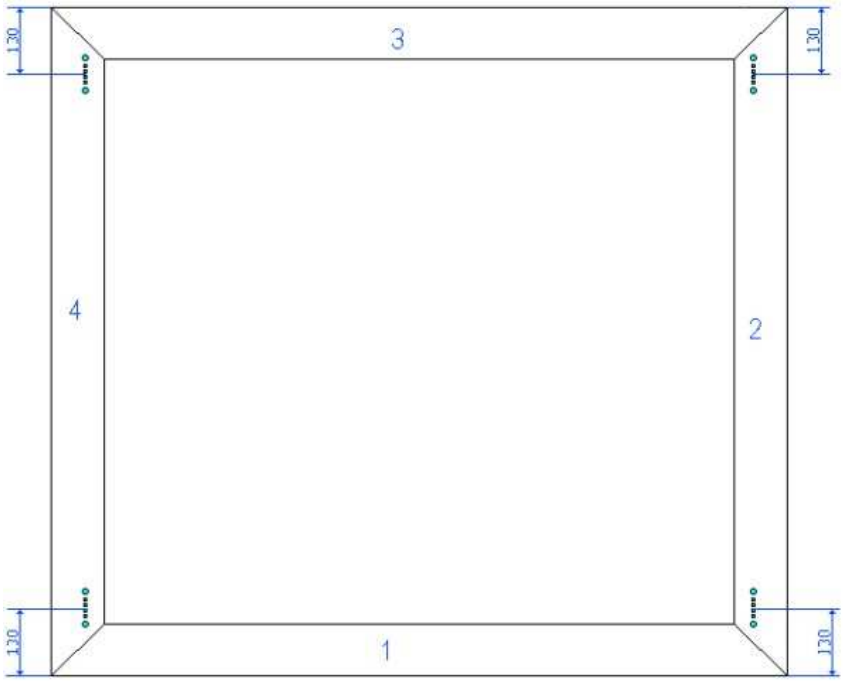
In picture A.2, see cutting technical information for door.



A these dimension, you insert the burning (in example we use 2.5mm for burning).

3.3. Work (hinge) technical specification for two sashes window

In next picture, you see the customer information, for the work (hinge) for two sashes window.



In next picture, you see dimension for the machine. These dimension arrive from the office software. A these dimension, you insert the burning (in example we use 2.5mm for burning).