



# Beckhoff TwinCAT ®

The Window Control and Automation Technology

## XML Production data format for

### PVC/ALUMINIUM Window manufacture

- Single piece data and treatments
- Version: 1.3.14

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## 1 General features of the XML - format

The abbreviation XML stands for Extensible Markup Language. XML is particularly suitable for storing structured data in a text file. XML extends SGML (Standard Generalised Markup Language in accordance with ISO) by adding a facility for individual extensions.

The use of this format is based on the following reasons:

- It is particularly easy for humans and machines to read.
- Structured data can be particularly well stored, represented and transmitted in this form.
- Standard mechanisms for searching, filtering and display are available.
- Individual extensions to the data structure can be made at any time.
- There is support for display in a PC web browser.
- Support and further development of XML technology across the whole company (Microsoft, SUN, IBM).
- Simple cross-platform, system-independent data exchange (business to business communication).
- Availability of working XML parsers for various development sectors.

Information regarding document type definitions and other notations will not initially be given here.

## 2 Number formats

It is possible that when figures for position or velocity are given, resolution in mm or m/min is inadequately precise. In such cases, and depending on the regional settings, the corresponding number formats from the operating system can be used.

Under Windows, the number format must be changed as follows:

Settings ⇨

Regional settings ⇨

Number formats

## 3 Text formats

For text characters it should be noted that umlauts and special characters from other languages can only be read properly if the file coding is set to Unicode or UTF-8. This must be done when the file is saved. If it is not possible to save the file UTF-8 coded, it should be saved ANSI-coded, and the language area selection can be done via the "ISO-8859-x" encoding option. Further information can be found in chapter "Example encoding".

Only literals may be used as attribute values for the XML elements. Within a literal the markup characters »<",">« and the »&« sign may not be used. They must be masked through so-called entity references: &lt; &gt; und &amp;. Further information can be found in the chapter: Entity references.

If the text field contains further special characters that belong to the parser control characters, then the data of the element should additionally be enclosed in a CDATA block.

`<![CDATA[...]]>`

For instance, in association with the element `<Designation>` (data content=Transom ^):

`<Designation><![CDATA[Transom ^]]></Designation>`

For the sake of simplicity, this information can generally be enclosed in CDATA blocks.

## 4 Units

Unless additional or varying specifications are made, the following dimensional information applies:

Velocities are in mm/min

Position values are in mm

Angle in degrees

Times in seconds

Decimal places can be transferred without problems. Use of the separator set for your language.

## 5 The main level of the XML data is the filename <File>

Dataline:

<File Name="ExampleProdDat.xml"> ... (Data structures see chapter 5.1) </File>	<Datei Name="BeispielProdDat.xml"> ... </Datei>
--	---

Principal element: <File>

Attribut: **Name**

Value: "**(Filename)**"

Data type: **Text**

- Identifier for filename
- Original filename
- The file name should only contain numbers from 0 – 9, letters from a – z, A – Z, no spaces, and should not be longer than 40 characters.

This entry is only use for the internal description of the principal area for the following production data.

## 5.1 Piece production < PieceProduktion>

Data of piece production

Dataline:

<PieceProduktion Machine="SBZ" Name="Los XY">	<Teilefertigung Maschine="SBZ" Name="Los XY">
... (Piece loading data see chapter 5.1.1...)	...
</PieceProduktion >	</Teilefertigung>

Element name: <PieceProduktion>

Attribut: **Name**

Value: "**(Batch name)**"

Data type: **Text**

- Identifier for batch name
  - Distinguishing feature for multiple results
  - The batch name should only contain numbers from 0 – 9, letters from a – z, A – Z, no spaces, and should not be longer than 40 characters.
- Under this designation, the order is stored on the controller and he is available.

The batch name must be unique, since a batch is already on the machine located in resubmit them, would be overwritten by the newly default. In this case, there is appropriate message on the machine, which needs to quit by user.

The choice of this name should be taken that it be used as a file name for the machine; he became the father-exchange files with other machines or machine parts. It should therefore be dispensed with the use of special characters.

The next attribute is only for advanced native file job description, they are not transferred to the machine controller!

Attribut: **Machine**

Value: "**(Machine)**"

Data type: **Text**

- Identifier for machine name (optional)
- Distinguishing feature for multiple results
- The machine name should only contain numbers from 0 – 9, letters from a – z, A – Z, no spaces, and should not be longer than 40 characters.

Because the batch data are stored under the name that you are hand over in "*PieceProduktion*⇒*Name*" on the machine, it would be possible within a XML file to hand over also different batches. In this case a new *PieceProduktion* element would have to be opened, with a new name.

### 5.1.1 Piece loading data <PieceLoading>

Dateline:

<PieceLoading PieceNo="1" ProfileName="12-XY" Length="1200" >  ... (Piece data see Chapter 5.1.1.1 )  </PieceLoading>	<TeilBeladedaten TeileNr="1" ProfilName="12-XY" Laenge="1200" >  ...  </Teiledaten>
---	---

Element name: <PieceLoading>

Attribut: <b>PieceNo</b>	- Identifier for piece number
Value: <b>"(Piece number)"</b>	- Piece number
Data type: <b>Number</b>	- Number from 1 – 9999
Attribut: <b>Designation</b>	- Identifier for profile designation
Value: <b>"(Designation)"</b>	- Text for general profile information
Data type: <b>Text</b>	- max. 255 characters
Attribut: <b>Comment</b>	- Identifier for comment (optional)
Value: <b>"(Comment)"</b>	- Text for any commenting purpose
Data type: <b>Text</b>	- max. 255 characters
Attribut: <b>Length</b>	- Identifier for part length
Value: <b>"(Part length)"</b>	- Part length in millimetres, possibly with decimal places, measured from tip to tip
Data type: <b>Number</b>	- Value in mm This requirement may differ from the actual parts length when specifics of loading must be considered and possibly being piece cutting function is part of the machine.
Attribut: <b>ProfileName</b>	- Identifier for profile name
Value: <b>"(Profile name)"</b>	- Name of the profile
Data type: <b>Text</b>	- The profile name should only contain numbers from 0 – 9, letters from a – z, A – Z, no spaces, and should not be longer than 40 characters. In addition, all special use, with exception of: ' \ / <> * „ ? “

Attribut: **Color**

Value: **"(Profile color)"**

Data type: **Text**

- Identifier for profile colour
- Colour of the profile
- The profile colour should only contain numbers from 0 – 9, letters from a – z, A – Z, no spaces, and should not be longer than 40 characters. In addition, all special use, with exception of: ' \ / <> \* „ ? “

Using a special coding of color specification, the transport speed (following TS) of the bars / parts is controlled in the machine. For this purpose, the following definition applies:

*insideColor;outsideColor;any sequence text*

**Note the semicolon as separator! The identifier of the colors no special characters, spaces or the semicolon itself may be used!**

The marking of the outside color determines whether to work with normal or with the special TS.

By defining the exterior color "White" working with the normal TS. For all other color codes is then worked with the special TS. The various spellings for "White" or its translations are taken into account.



### 5.1.1.1 Piece data <PieceData>

Dataline:

<pre>&lt;PieceData PieceNo="1" CarriageNo="1" CaseNo="12" Commission="6789" Position="3" Length="1200" AngleOnCut="90" AngleOffCut="90" Steel="1" Steelnumber="12" SteelLength="1200" Barcode="12345"&gt;  ... (ToolData, see chapter 5.1.1.1.1)  &lt;/PieceData&gt;</pre>	<pre>&lt;Teiledaten TeileNr="1" WagenNr="1" FachNr="12" Kommission="6789" Position="3" Laenge="1200" AnGehrung="90" AbGehrung="90" Stahlanwahl="1" Stahlnummer="12" Stahllaenge="1200" Barcode="12345"&gt;  ... (Tool data)  &lt;/Teiledaten&gt;</pre>
--	--

Element name: <PieceData>

Attribut: **PieceNo** - Identifier for piece number  
 Value: **"(Piece number)"** - Piece number  
 Data type: **Number** - Number from 1 – 9999

Attribut: **CarriageNo** - Identifier for carriage number (optional)  
 (Only necessary if an automatic sorter unit is installed at the machine)  
 Value: **"(Carriage no.)"** - Carriage number  
 Data type: **Number** - Number from 1 – 999.999.999, or coded  
 If the possibility exists in the machine that parts in the area of the sorting unit may be ejected, then the concerning part can be marked about the default by CarriageNo = 0 for it.  
 With the possibility of simultaneous filling of several carriages, the carriage number is for a "large" carriage. A change in the carriage number in the job by a carriage has changed.

Attribut: **CaseNo** - Identifier for case number (optional)  
 Value: **"(Case number)"** - Case number  
 Data type: **Number** - Number from 1 – 999.999.999, or coded for case arrangement  
 About the following coding of the case number is able, with the possibility of the filling of several carriages which an one sub carriage are marked:

u	f	f	f
Case number for the part made in accordance with the definition made by your machine manufacturer.			
This number must be specified for the sub-carriage, with the largest number results from the maximum number of carriages can be filled simultaneously. In general, this is the '1' - '2'.			

Please call your machine manufacturer for details.

Attribut: **Designation** - Identifier for piece designation (optional)  
 Value: **"(Designation)"** - Text for general piece information  
 Data type: **Text** - max. 255 characters

Attribut: <b>Commission</b>	- Identifier for commission (optional)
Value: <b>"(Commission)"</b>	- Commission designation / -number
Data type: <b>Text</b>	- max. 255 characters
Attribut: <b>Position</b>	- Identifier for position (optional)
Value: <b>"(Position)"</b>	- Position designation / -number
Data type: <b>Text</b>	- max. 255 characters
Attribut: <b>Piectype</b>	- Identifier for piece type (optional)
Value: <b>"(Piece type)"</b>	- Piece type designation for additional information
Data type: <b>Text</b>	- max. 10 characters
Attribut: <b>WindowNo</b>	- Identifier for Window number (optional)
Value: <b>"(Window no.)"</b>	- Unique Window number to assign all piece for this window
Data type: <b>Number</b>	- Number from 1 – 999.999.999
Attribut: <b>Length</b>	- Identifier for part length
Value: <b>"(Part length)"</b>	- Part length in millimetres, possibly with decimal places, measured from tip to tip
Data type: <b>Number</b>	- Value in mm
Attribut: <b>AngleOnCut</b>	- Identifier for start cut angle
Value: <b>"(First cut angle)"</b>	- First cut angle in degrees (see example in chapter 6.2.1)
Data type: <b>Number</b>	- Value in degrees
Attribut: <b>AngleOffCut</b>	- Identifier for end cut angle
Value: <b>"(Last cut angle)"</b>	- Last cut angle in degrees (see example in chapter 6.2.1)
Data type: <b>Number</b>	- Value in degrees
Please note that intermediate angle, i.e. angle unequal to 45° and 90°, can only be defined if the machine has a stepless pivoting saw.	
Attribut: <b>AngleOnCutID</b>	- Identifier for first cut function
Value: <b>"(Start cut func)"</b>	- First cut angle function number (see example in chapter 6.2.1)
	0 = Angle default over AngleOnCut
	1 = 45 degrees
	2 = 90 degrees
	3 = Transom cut
	4 = cut for butt weld (cross-cut, top)
	5 = cut for inverse butt weld (cross-cut, bottom)
Data type: <b>Number</b>	- Number from 0 - 5
Attribut: <b>AngleOffCutID</b>	- Identifier for last cut function
Value: <b>"(End cut func)"</b>	- Last cut angle function number (see example in chapter 6.2.1)
	0 = Angle default over AngleOnCut
	1 = 45 degrees
	2 = 90 degrees
	3 = Transom cut
	4 = cut for butt weld (cross-cut, top)
	5 = cut for inverse butt weld (cross-cut, bottom)

Data type: **Number** - Number from 0 – 5

Please note that the predetermined cut angle function numbers are depending from the machinery configuration.  
The cutting height for cut code '4 – 5' must be specified under separately attribute.

Attribut: **CutHeightOnCut** - Identifier for cutting height start cut

Value: **"(cutting height)"** - Cutting height in mm,  
(Measured from the upper/lower edge of the profile up to the mitre)

Data type: **Number** - Value in mm

Attribut: **CutHeightOffCut** - Identifier for cutting height end cut

Value: **"(cutting height)"** - Cutting height in mm  
(Measured from the upper/lower edge of the profile up to the mitre)

Data type: **Number** - Value in mm

Attribut: **Barcode** - Identifier for barcode (optional)

Value: **"(Barcode)"** - Part barcode for part production requestion

Data type: **Text** - The barcaode should only contain numbers from 0 – 9, letters from a – z, A – Z, no spaces, and should not be longer than 40 characters.

This information serves only for the unique selection possibility of the part for functions those requests the part data over bar code information. (Scanner functions)

This information can also used to pass it from the BAZ to subsequent machines. Please contact your machine facturer, if you will use this function over a special communication part.

Attribut: **TeilePos**

Value: **"(Piece index)"**

Data typ: **Number**

- Identifier for piece position in batch (optional)

- Piece idex in batch

- Value 1 – 9999

This continuous index must always be defined if the piece numbers (PieceNo) in a batch is not continuously, starting at '1 'must be passed! With reference to this index is then applied to the machine, the cutting sequence of parts determined. In other words, is this index not passed, the piece cutting order determined by PieceNo.

If ther is an optimisation modul activ on the machine,this attribut don't need.

The following attribute can be used for advanced print data selection.

By default, every part of a label is assigned, so they do not explicitly label selection in the pieces data must be made, regardless of the label data itself. If a part is assigned, for example, two labels, or to print only certain parts of labels, can work with this additional attribute.

Attribut: <b>PrintPicture</b>	- Identifier for advanced print selection (optional)
Value: <b>"(Selection)"</b>	- Label selection as coded information (i.e. 12 or 23,1023)
Data type: <b>Text</b>	- Selecting data for all labels to be printed on a PVC part. The various selections must be passed separated by semicolons. Will be only one selection, the separator must be omitted. When selection is by default the label you must pass-on the number of the printed label. If the field is not passed, then it defaults, PVC piece number = label number. The behavior of the machine with respect to this field can be configured on the machine on machine parameters.

The following specifications for the associated steel are only required if the machine has a manual steel loading and cutting unit or an automatic steel insertion unit.

Attribut: <b>Steel</b>	- Identifier for steel selection (optional)
Value: <b>"(Steel selection)"</b>	- Steel selection
	- 0 = no steel
	- 1 = Steel inserted manually
	- 2 = Steel inserted automatically
	- 3 = Special steel inserted manually (The steel part is supplied externally)
	5 = Special part with special equipment or special treatment at the manual steel insertion unit. (Please talk with the machine builder about this function.)
	yx = Two steel parts, inserted manually and/or automatically, combinations of selection codes
Data type: <b>Number</b>	- Number 0 – 3, 5 and yx for special use
Attribut: <b>SteelNo</b>	- Identifier for steel typ name
Value: <b>"(Steel typ)"</b>	- Name of the steel
Data type: <b>Text</b>	- The steel typ name should only contain numbers from 0 – 9, letters from a – z, A – Z, no spaces, and should not be longer than 40 characters. In addition, all special use, with exception of: ' \ / <> * „ ? “
Attribut: <b>SteelLength</b>	- Identifier for steel length (optional)
Value: <b>"(Steel length)"</b>	- Steel length in millimetres, possibly with decimal places
Data type: <b>Number</b>	- Value in mm

Attribut: <b>Steelnumber</b>	- Identifier for steel number (optional)
Value: <b>"(Steelnumber)"</b>	- Note for the operator at the manual insertion unit. The specified number can have different meanings. For example, it can refer to the steel type number or the number of the case from which the steel part is to be taken. It may also be used to provide information for special steel inserts, if the steel is not cut on the steel saw that may be present.
Datentyp: <b>Text</b>	- Code number or text identifier
Attribut: <b>SteelPieceNo</b>	- Identifier for Steel piece number (optional)
Value: <b>"(Steel-PieceNo)"</b>	- Steel piece number associated with pvc part.
Data type: <b>Number</b>	- Number from 1 – 9999

If the machine only features a manual steel loading unit, only the following fields have to be transferred: *Steel*, *SteelNo*, *Steelnumber*, *SteelLength* and *SteelPieceNo*. This information is displayed at the manual steel loading unit for the operator. Please note that usually only the steel length and the steel number are displayed.

If a CPxxxx panel is used for displaying the steel information, any text information can be displayed without problems, but by default only the first ten characters from the field *Steelnumber* can be displayed. Through a customization it is possible to display longer fields or other additional informations.

If an automatic steel insertion or an automatic steel lowering unit is available, the steel insertion depth must be specified in addition to the steel length.

In special cases two steel parts may have to be assigned to one PVC part. In this case can the information for the two steel parts can be specified via additional fields.

For details relating to data handling please refer to the machine manufacturer.

#### 5.1.1.1.1 Tool data <ToolData>

Dataline:

<ToolData PieceNo="1">	<Werkzeugdaten TeileNr="1">
...	...
( <Treatment TNo=.....>	( <ProfilBearb BNr=.....>
( <Treatment TNo=.....>	( <ProfilBearb BNr=.....>
...	...
</ToolData>	</Werkzeugdaten>

Element name: **<ToolData>**

Attribut: **PieceNo** - Identifier for piece number  
 Value: **"(Piece number)"** - Piece number  
 Data type: **Number** - Number from 1 – 9999

##### 5.1.1.1.1.1 Any type of treatment with profile reference <Treatment>

The type of processing (treatment) is defined using the treatment numbers individually specified by the machine constructor. Each treatment number is stored in the system's profile data together with full dimensional and speed information. Optionally, in addition to the minimum information represented by TNo and XPos, further values such as ToolNo, YPos, Zpos and so forth may also be transferred. This type of treatment always accesses the system's profile data. The treatment cannot be carried out unless the treatment number is defined at the machine. The treatment processes, including the treatment numbers, are to some extent pre-defined by the machine builder, and can be taken from his detailed documentation.

Dataline:

<Treatment TNo="1" XPos="120" YPos="20" ZPos="30" />	<ProfilBearb BNr="1" XPos="120" YPos="20" ZPos="30" />
---	---

Element name: **<Treatment>**

Attribut: **TNo** - Identifier for treatment number  
 Value: **"(Treatment no.)"** - Treatment number (see detailed list provided by machine manufacturer)  
 Data type: **Number** - Number from 1 – 9999

Attribut: **XPos** - Identifier for X-position of the treatment  
 Value: **"(Position)"** - Centre of the treatment in the X direction in mm, possibly with decimal places  
 Data type: **Number** - Value in mm

Attribut: **Designation** - Identifier for treatment designation (optional)  
 Value: **"(Designation)"** - Text for general processing information  
 Data type: **Text** - max. 255 characters

Attribut: **Comment** - Identifier for comment (optional)  
 Value: **"(Comment)"** - Text for any commenting purpose  
 Data type: **Text** - max. 255 characters

### 5.1.2 Label data <LabelPrintData >

Dateline:

<pre>&lt;LabelPrintData PieceNo="1"&gt;   &lt;PrintData&gt; ... &lt;/PrintData&gt;   &lt;InkJetPrintData&gt; ... &lt;/InkJetPrintData&gt; &lt;/LabelPrintData&gt;</pre>	<pre>&lt;Etikettendaten TeileNr="1"&gt;   &lt;Druckdaten&gt; ... &lt;/Druckdaten&gt;   &lt;TintenDruckdaten&gt; ... &lt;/TintenDruckdaten&gt; &lt;/Etikettendaten&gt;</pre>
---	---

Element name: <LabelPrintData>

Attribut: **PieceNo** - Identifier for piece number  
 Value: **"(Piece number)"** - Piece number  
 Data type: **Number** - Number from 1 – 9999

#### 5.1.2.1 Print data <PrintData>

Data for the label printer: The syntax can be found in the corresponding manual from the used printer. Example:

DIR: Print alignment / PP: Print position X Y / PT: Print output text / ...

Dateline:

<pre>&lt;PrintData&gt; DIR4:AN1:FT"SW030RSN.2":MAG2,2 PP80,80:PT"BLANCO 2236 /\ 1" P130,80:PT"Piece vertical      " PP180,80:PT"10578/ 2236/   6 /1 " PP310,80:MAG4,2:PT"Example":MAG2,1 PP360,80:PT"A      / 900 X 2150" PF\$013 &lt;/PrintData&gt;</pre>	<pre>&lt;Druckdaten&gt; DIR4:AN1:FT"SW030RSN.2":MAG2,2 PP80,80:PT"BLANCO 2236 /\ 1" PP130,80:PT"Teil vertikal      " PP180,80:PT"10578/ 2236/   6 /1 " PP310,80:MAG4,2:PT"Beispiel":MAG2,1 PP360,80:PT"A      / 900 X 2150" PF\$013 &lt;/Druckdaten&gt;</pre>
--	---

Element name: <PrintData>

Attribut: - none  
 Text: **"(Print text)"** - Print text for the label printer being used  
 Data type: **Text** - Max. 3000 characters text without control codes. Control characters can be specified starting with a dollar sign (\$) followed by three digits according to their decimal number code. Please note also the special features are listed in the chapters 6.2.3 and 6.2.4.

### 5.1.2.2 Inkjet printer data <InkJetPrintData>

Data for an inkjet printer: The syntax can be found in the corresponding manual from the used printer.

Dataline:

<InkJetPrintData> \$001\$010\$001\$203\$033\$002\$056Imaje\$001\$052InkJet \$010\$001\$053Print example\$013 </InkJetPrintData>	<TintenDruckdaten> \$001\$010\$001\$203\$033\$002\$056Imaje\$001\$052Tintenstrahl \$010\$001\$053Druckbeispiel\$013 </TintenDruckdaten>
--	--

Element name: <InkJetPrintData>

Text: "(Print text)"

Data type: **Text**

- Print text for the inkjet printer being used
- Max. 3000 characters text without control codes. Control characters can be specified starting with a dollar sign (\$) followed by three digits according to their decimal number code. Please note also the special features are listed in the chapters 6.2.3 and 6.2.4.

The difference between the two possible print data selections is that the inkjet printer integrated in the machine and thus an automatic labeling is possible. Whereas the normal printer usually is standing at the buffer, and the labels must be put to the pieces manually. The handover is therefore dependent on the configuration of the machine.



If the XML file is open with an xml enabled text editor or Explorer, the long text lines break automatically. These breaks are only apparently present in the data specifications. If you are within your print data the default line ending with a newline, it should be noted that these breaks are also transferred to the printer. Does this represent a problem, the compressed data input in one row.

Line breaks can be passed without problems, then it make sure that that any unused command separator (eg ':' for Intermec printers) not at the end of a line may be passed.



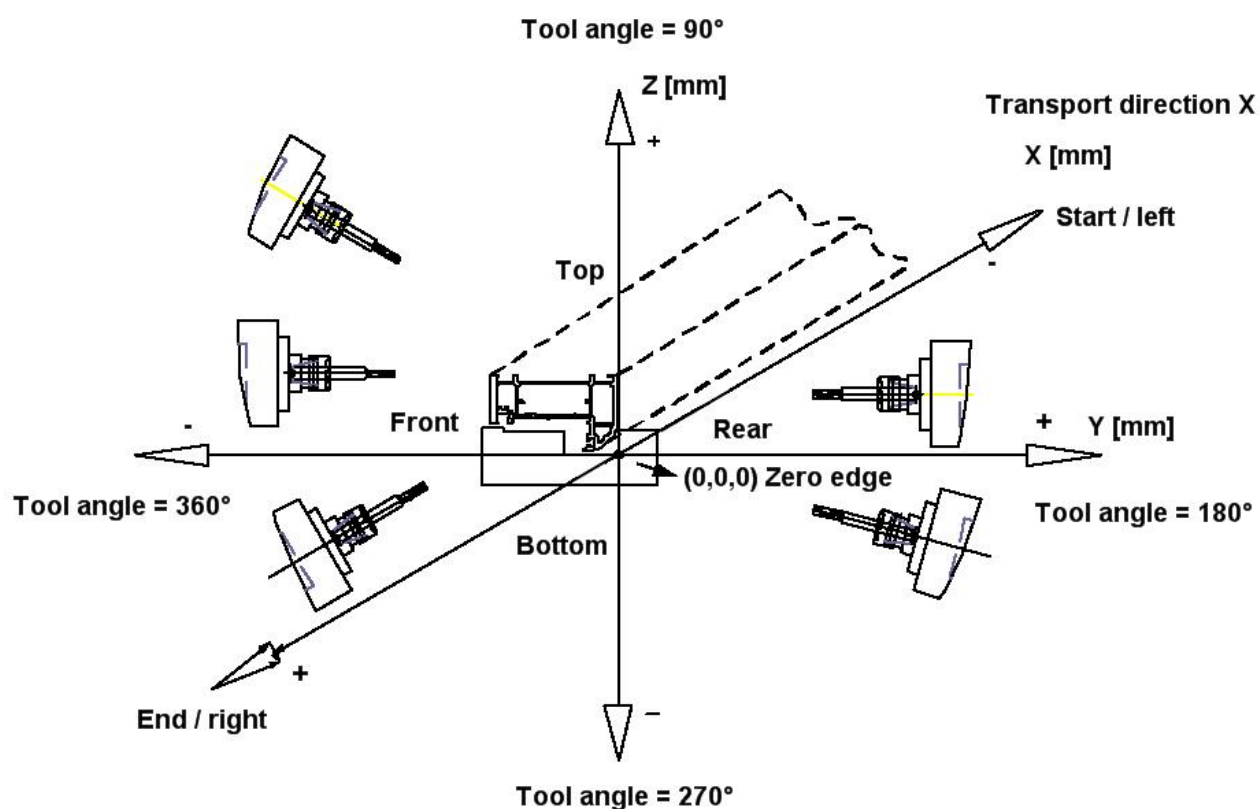
## 6 Appendix

### 6.1 System constants

#### 6.1.1 Material types

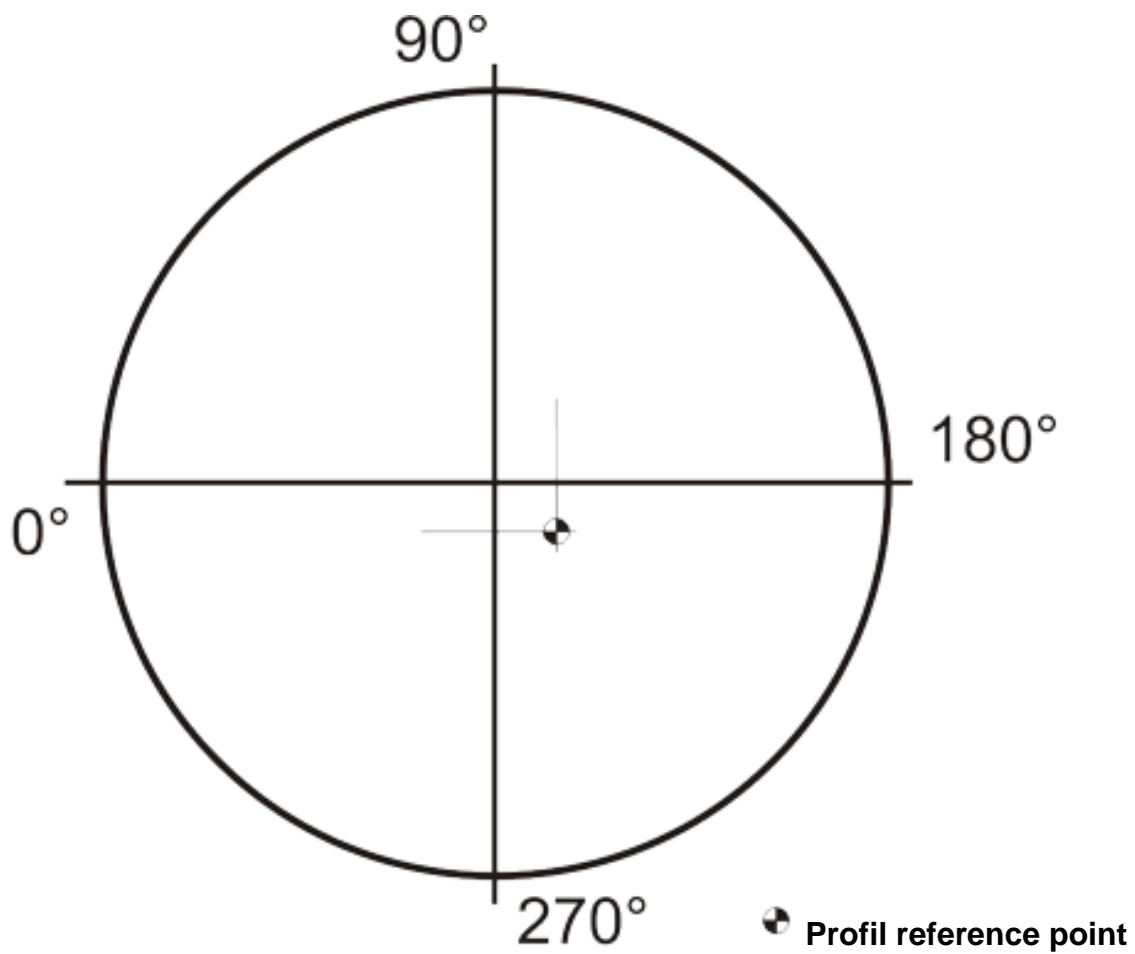
0	No material
1	PVC
2	Aluminium
3	Wood
4	Steel

#### 6.1.2 Tool angle



Coordinate system for the tools

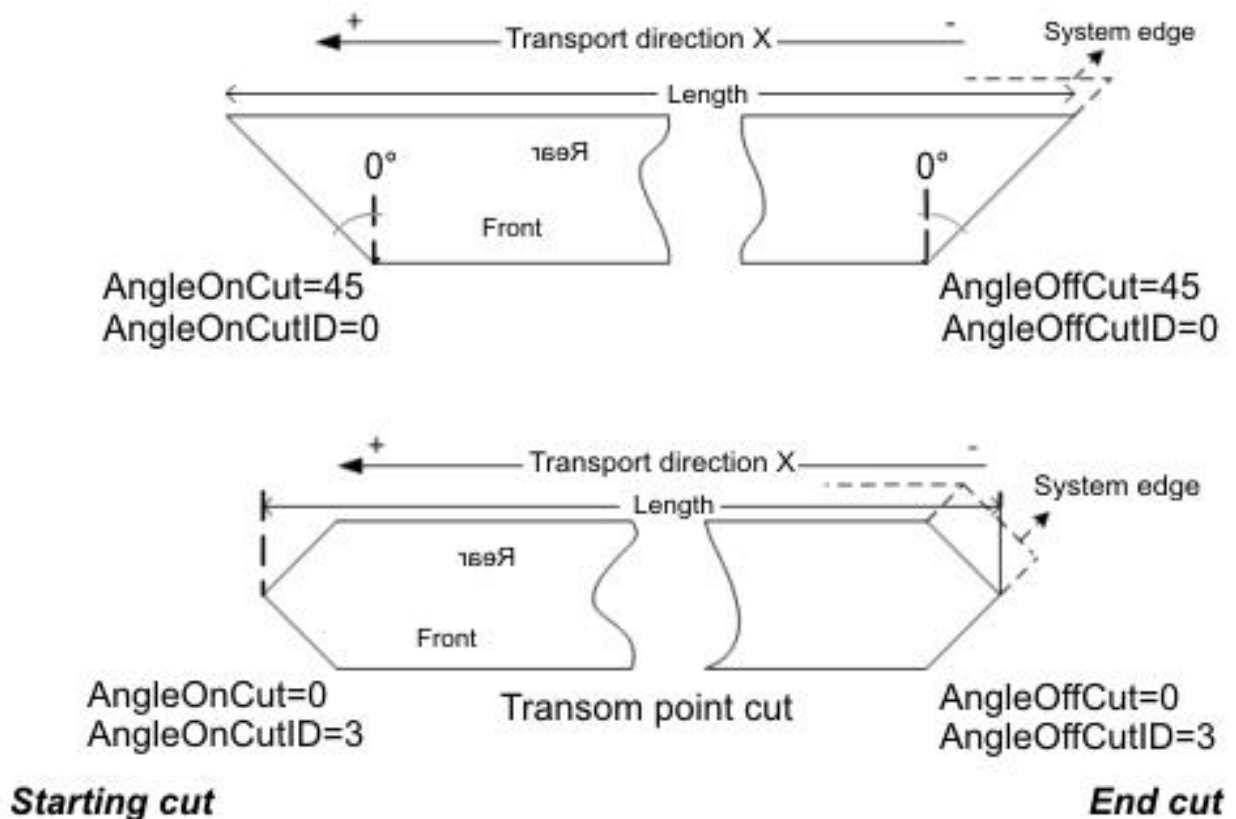
### 6.1.3 Tool rotation



## 6.2 Examples

### 6.2.1 Examples of cutting to length

Angle specification for first and last cut:



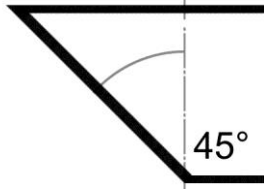
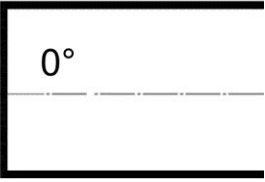
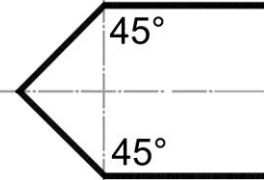
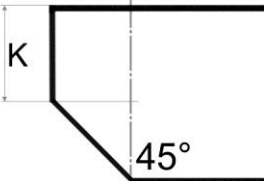
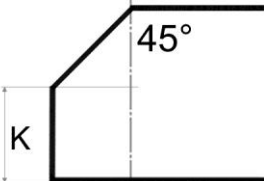
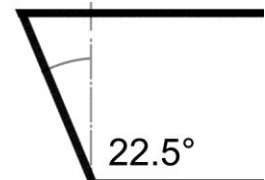
If 45 and 90 degrees are the only angle specifications required for the machine, AngleOnCut and AngleOffCut should be used. In this case the fields AngleOnCutID and AngleOffCutID are no longer required or should be specified as 0, as shown in the example.

Angle specifications in the other direction must be specified as negative numbers. Note that this does not correspond to the machine standard and may only be specified after consulting the machine manufacturer!

Specification via Angle IDs is possible for compatibility reasons. Normally the angle should be specified via AngleOnCut and AngleOffCut. If an identifier is transferred there, this takes precedence over the angle specifications!

The use of the Angle IDs is only compulsory when selecting cutting functions such as first and last transom cuts.

The cut default can be handed over as follows:

Cut	First cut specification	Last cut specification
	AngleOnCut="45" AngleOnCutID="0" or AngleOnCut="0" AngleOnCutID="1"	AngleOffCut="45" AngleOffCutID="0" or AngleOffCut="0" AngleOffCutID="1"
	AngleOnCut="90" AngleOnCutID="0" or AngleOnCut="0" AngleOnCutID="2"	AngleOffCut="90" AngleOffCutID="0" or AngleOffCut="0" AngleOffCutID="2"
	AngleOnCutID="3" AngleOnCut="0"	AngleOffCutID="3" AngleOffCut="0"
	AngleOnCutID="4" AngleOnCut="0" CutHeightOnCut="K"	AngleOffCutID="4" AngleOffCut="0" CutHeightOffCut="K"
	AngleOnCutID="5" AngleOnCut="0" CutHeightOnCut="K"	AngleOffCutID="5" AngleOffCut="0" CutHeightOffCut="K"
	AngleOnCut="22.5" AngleOnCutID="0"  (Angle in the opposite direction must be given negative)	AngleOffCut="22.5" AngleOffCutID="0"  (Angle in the opposite direction must be given negative)

Please, note that the default possibilities for on and off cutting as well as on and off cut function are dependent on the respective construction of the saw module in the machine! Please ask your machine builder.

### 6.2.2 Example for encoding

The coding is necessary if linguistic-dependent special characters must be handed over and the file cannot be stored UTF-8 encoded. The selection of the language area will give in the prologue of the XML file. The default for for Western Europe, e.g., is:

```
<?xml version="1.0" encoding="ISO-8859-1"?>
```

For other language areas there must use the following codes:

Encoding	Language area
ISO-8859-1	Latin 1, Latin West, für westerb europe langauges: English, German, Icelandic, Italian, Spanish, Portuguese, Swedish, Norwegian, Finnish, Danish
ISO-8859-2	Latin 2, east europe languages : Polish, Czech, Slovene, In Slovak, Croatian, Roumanian, Sorbian
ISO-8859-4	Latin 4, baltic languages: Lithuanian, nevertheless, herewith Estonian, Latvian, Can be also written German, English among other things
ISO-8859-5	Cyrillic writing languages: Russian, Bulgarian, Serbian, Macedonian, White Russian, Ukrainian
ISO-8859-7	Modern Greek, for Ancient Greek there is no norm

Please note that encoding="UTF-8" can only be transferred if the file is saved in UTF-8-coded format, otherwise umlauts and special characters used in various languages would be interpreted as errors. Further information on coding can be found in the relevant literature or on the Internet.

### 6.2.3 Entity references

As in the introduction described, attributes of the XML elements may be only quoted strings. Within a quoted string the markup character »><« and the character »&« not may be used. However, they have to pass following possibilities this in the values and you can use the entity reference or the character reference.

Character	Entity reference	Character reference
< (smaller as)	&lt;	&#60;
> (greater than)	&gt;	&#62;
' (singel quotation marks)	&apos;	&#39;
" (double quotation marks)	&quot;	&#34;
& (ampersand)	&amp;	&#38;

```
<?xml version="1.0" encoding="ISO-8859-1"?>
<File Name="Example_24.xml">
  <OptiCuttingData>
    <OptiData Name="Example_24">
      <BarData BarNo="1" ProfileName="30190.W" BarLength="6000,00" Designa-
        tion="Test spezial characters" RestLength="3686,00">
        <PieceData PieceNo="1" Commission="Test &lt; -- 1234 -- &gt;";"
          Length="1051,00" AngleOnCut="45" AngelOffCut="45" >
          <Treatment TNo="165" XPos="605,00"/>
          <LabelPrintData PieceNo="1">
            <PrintData>
              DIR1:AN1:FT"SW030RSN.1":NASC1252
              PP50,205:PT"Example part 1 Meier &amp; Muller"
              PF$013
            </PrintData>
          </LabelPrintData>
        </Teiledaten>
        <PieceData PieceNo="2" Commission="Test &#60; -- 5678 -- &#62;";"
          Length="1051,00" AngelOnCut="45" AngelOffCut="45" >
          <Treatment TNo="165" XPos="605,00"/>
          <LabelPrintData PieceNo="2">
            <PrintData>
              DIR1:AN1:FT"SW030RSN.1":NASC1252
              PP50,205:PT"Example part 2 Meier &#38; Mayer"
              PF$013
            </PrintData>
          </LabelPrintData>
        </PieceData>
      </BarData>
    </OptiData>
  </OptiCuttingData>
</File>
```

On the machine the following would be displayed:

Bar 1 / part 1:

Commission: Test < -- 1234 -- >

Label: Example part 1 Meier & Muller

Bar 1 / part 2:

Commission: Test < -- 5768 -- >

Label: Exampel part 2 Meier & Mayer

Please request that you do not use this kind of the default in the selection of the profile type or the steel type!

Within the printing data the references must be also used to print out these characters on the label.

The defaults in part ' 1 ' and '2' differs only in the kind of the used reference, however, causes the same.

#### 6.2.4 Character references (Label data)

Additional non-displayable characters can be transferred in coded form under the print data for a label printer. In principle, any character with a character reference can be transferred. This applies in particular to following characters:

Character	ASCII (decimal)	Character reference
STX	2	\$002
ETX	3	\$003
TAB	9	\$009
LF (line feed)	10	\$010
CR (carrige return)	13	\$013
ESC	27	\$027

The characters transferred in this way are only interpreted in the print data specification and transferred to the printer as a hex value.

## 6.2.5 Examples for XML data

### 6.2.5.1 Example file for PVC start cut (English):

```
<File Name="EN-Piecedata.xml">
  <PieceProduktion Name="EN-PieceData2" Maschine="BAZ" >
    <PieceLoading PieceNo="1" Length="1200" Designation="Blr. 67 mm" ProfileName="PRF-1234">
      <PieceData PieceNo="1" CaseNo="12" Commission="Meier 6789" Position="3" Length="1200" AngleOnCut="45" AngleOffCut="45">
        <Werkzeugdaten PieceNo="1">
          <Treatment BNr="1" XPos="120" />
          <Treatment BNr="1" XPos="120" />
          <Treatment BNr="1" XPos="120" />
        </Werkzeugdaten>
      </PieceData>
    </PieceLoading>
    <PieceLoading PieceNo="2" Length="1200" Designation="Blr. 67 mm" ProfileName="Prf-1234">
      <PieceData PieceNo="2" Length="1200" AngleOnCut="90" AngleOffCut="90" SteelNo="12" Steel="3" Steelnumber="12" SteelLength="1200">
        <ToolData PieceNo="2">
          <Treatment BNr="1" XPos="120" YPos="20" ZPos="30"/>
          <Treatment BNr="1" XPos="120" YPos="50" ZPos="30"/>
          <Treatment BNr="1" XPos="120" YPos="40" ZPos="30"/>
        </ToolData>
      </PieceData>
    </PieceLoading>
  </PieceProduktion>
</File>
```

### 6.2.5.2 Example file for PVC start cut (German):

```
<Datei Name="DE-Teiledaten.xml">
  <Teilefertigung Name="DE-Teiledaten" Maschine="BAZ">
    <TeilBeladedaten TeileNr="1" Laenge="1200" Bezeichnung="Blr. 67 mm" ProfilName="PRF-1234">
      <Teiledaten TeileNr="1" FachNr="12" Kommission="Meier 6789" Position="3" Laenge="1200" AnGehrung="45" AbGehrung="45">
        <Werkzeugdaten TeileNr="1">
          <ProfilBearb BNr="1" XPos="120"/>
          <ProfilBearb BNr="1" XPos="120" Tiefe="90"/>
          <ProfilBearb BNr="1" XPos="120" />
        </Werkzeugdaten>
      </Teiledaten>
    </TeilBeladedaten>
    <TeilBeladedaten TeileNr="2" Laenge="1200" Bezeichnung="Blr. 67 mm" ProfilName="Prf-1234">
      <Teiledaten TeileNr="2" Laenge="1200" AnGehrung="90" AbGehrung="90" StahlNr="12" Stahlanwahl="1" Stahlnummer="12" Stahllaenge="1200">
        <Werkzeugdaten TeileNr="2">
          <ProfilBearb BNr="1" XPos="120" YPos="20" ZPos="30"/>
          <ProfilBearb BNr="1" XPos="120" YPos="50" ZPos="30"/>
          <ProfilBearb BNr="1" XPos="120" YPos="40" ZPos="30"/>
        </Werkzeugdaten>
      </Teiledaten>
    </TeilBeladedaten>
  </Teilefertigung>
</Datei>
```