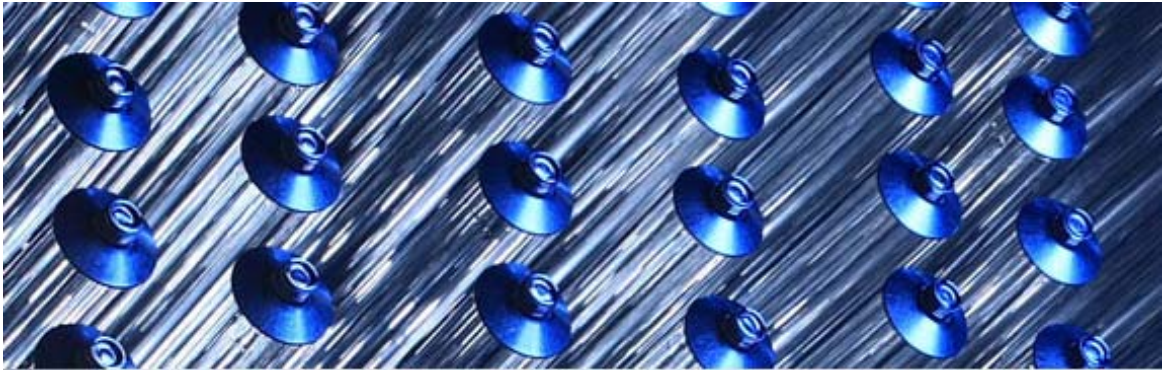
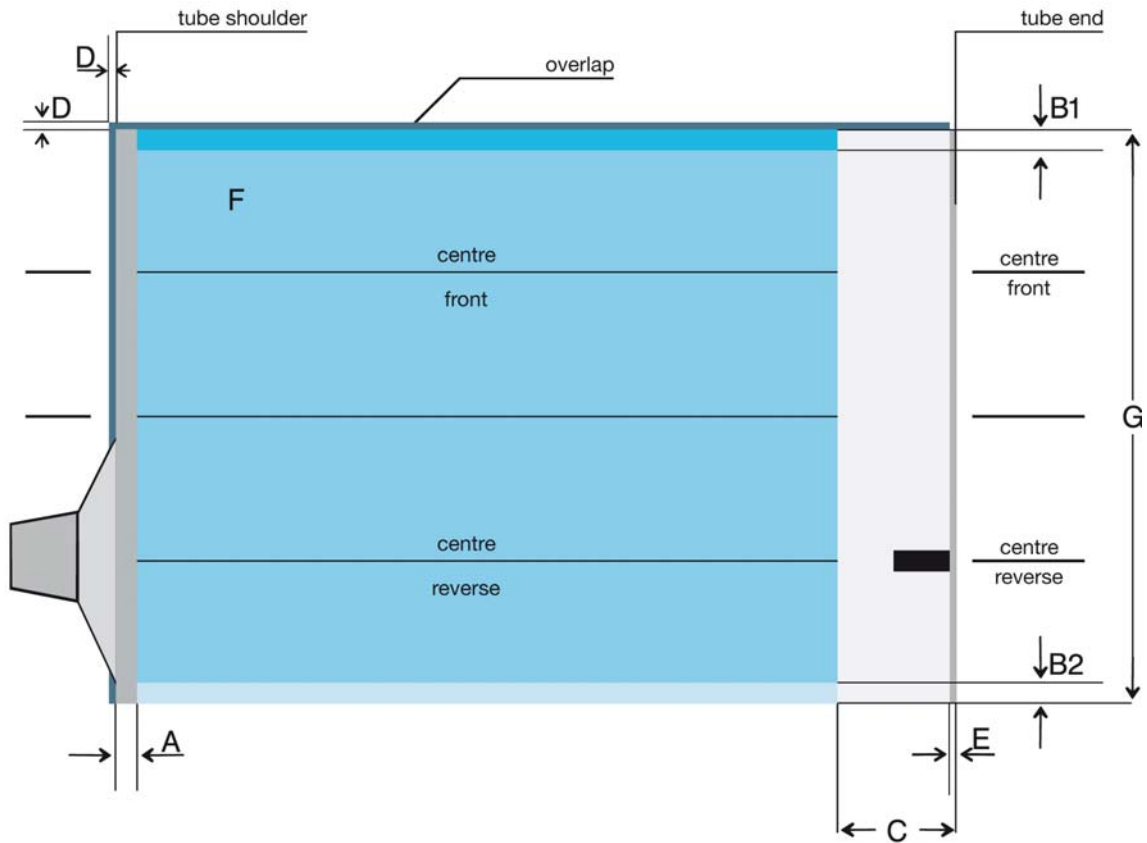


Printing Guideline for the Design of

Aluminium Tubes



1. Definition of Printed Areas and Blank Spaces



- A no printing of text in this area
- B1 no printing of text in this area because of overlap
- B2 no printing of text in this area because of overlap
- C no printing of text in this area disappears in the tube crimp
- D additional space of 1 mm for overlap and tube shoulder
- E minimum print free area 1 mm at tube end
- F space for text design
- G length of printing plate

2. Minimum Textfree Zones

Diameter of Tube	A	B1	B2	E
10 – 19 mm	2.0 mm	2.0 mm	2.0 mm	1.0 mm
22 – 32 mm	3.0 mm	3.5 mm	3.0 mm	1.0 mm
35 – 45 mm	3.0 mm	4.0 mm	3.0 mm	1.0 mm

C = no printing of text as this area disappears in the tube crimp



Diameter of Tube	C/a double crimp	C/b triple crimp	C/c saddle-back crimp
10-16 mm	14.0 mm	18.0 mm	22.0 mm
19 mm	14.0 mm	19.0 mm	25.0 mm
22 - 45 mm	16.0 mm	21.0 mm	27.0 mm

3. Important Criteria for the Design of Tubes

3.01 Printing Colours

Printing of tubes in classic 4-colour-setting (Printing one over the other of Cyan, Magenta, Yellow and Black) is not possible with regard to the printing procedure we use (waterless offset printing).

The printing colours are printed separately one after another on the offset printing blanket without intermediate drying (wet in wet) and are completely transferred from there in one operation onto the tube.

A printing of 2 printing colours one over the other is partly possible depending on colour and design.

3.02 Unprinted Areas

Do not print into the defined areas for blank space

- types
- company logo or drawing elements.

Printing of space in the blank spaces is possible.

3.03 Type „positive“

The height of type may not be below 5 points (cap height 1.3 mm).

3.04 Type „negative“

The height of type must be at least 6 points (cap height 1.6 mm) with a secondary bold size of line.

3.05 Line width

Minimum line width should be

- for positive lines: 0.10 mm
- for negative lines: 0.15 mm

3.06 Overprinting

All colours should be set up without overprinting as this could cause problems depending on the constellation of colours. If necessary, we will create the spreading.

3.07 Tone screens

Ideal for printing is a 48-tone-screen with round dots.
(48-tone-screen = 48 dots on 1 cm length)

More than a 48-tone screen, e.g. 54-tone screen, can be printed in special cases. Tone screen value should have a minimum of 3% tone value and a maximum of 80% tone value.

Please allow for an additional dot gain of about 10-15%, as this cannot be avoided in this printing procedure.

3.08 Grading

A) Grading of tone screens

Grading of tone screens can start at a min. tone value of 3% in the film and can be executed up to 100% of the full tone. It is not possible to print a soft gradient ending in 0% tone value!

CAUTION: Allow for a dot gain of app. 10-15%. The length of the gradient should be at least 25 mm with regard to the tone screen.

B) Grading in axial direction (iris printing)

Grading from the tube shoulder in direction to the tube open end or vice versa (grading in axial direction) can be printed in iris printing (full space grading) from a tone value of 100% to 0%.

In the iris printing process the ink fountain is divided: In order to be able to achieve 100% tone value on the tube the respective paint box contains the gradient colour. On the opposite side, expiring at a 0% tone, the ink fountain contains transparent white as counter colour.

3.09 Tone screen angles

The tone screen angles of the individual colours have to be laid down at different angles to avoid the formation of Moiré patterns.

Perfect angles for the printing of tubes are:

Cyan	22°
Magenta	82°
Yellow	7
Black	52°

3.10 Number of colours

The printing machines can print between 4 and 6 colours.

3.11 Separation for printing

For optimal results we recommend the separation of the tone screen and fine types from area printing and bold types.

3.12 Setup Aid

In all films under the registration mark a line of 0.3 mm will be placed under the registration mark in the same width. This acts as a setup aid for our printing personnel.

3.13 Printing pattern for conical tubes

The design of the printing plate is the same as for cylindrical tubes, since the printing takes place in cylindrical state. The conification takes place after the printing process.

Please notice a distortion of drawing elements, especially at the end of the tube. To counter this effect, e.g. a circle has to be created as an oval, so that it will be circular after conification.

The template for printing has to correspond to the size of the cylindrical tube.

Usually this is carried out by our specialists. It is also possible to send in appropriate documents.

3.14 Data files

It is essential, that all text in the data provided is vectorized. Please send all images for tone screens with a minimum resolution of 300 dpi.

We work with the following software: Freehand MX, Illustrator CS4, InDesign CS4, QuarkXPress 8, Photoshop CS4 and ArtPro. Our software is very versatile and state of the art. Furthermore we are also able to convert PDF-X3 and PDF-X4.

3.15 Tolerances of colour and printing

There are tolerances of colour and printing due to the procedure, which should be fixed in each individual case (e.g. by colour card).

3.16 Design of the registration mark / pharma code

The registration mark should be set in a dark colour to ensure enough contrast for the filling process.

4. Tube Diameter and Length of Printing Plate

Diameter of tube Ø	Circumference of tube ($\pi \times d$)	Length of plate
10.0 mm	31.4 mm	29.3 mm
11.0 mm	34.5 mm	33.6 mm
12.7 mm	39.9 mm	38.5 mm
13.5 mm	42.4 mm	41.0 mm
16.0 mm	50.2 mm	48.2 mm
19.0 mm	59.7 mm	57.7 mm
22.0 mm	69.0 mm	67.5 mm
25.0 mm	78.5 mm	76.5 mm
28.0 mm	87.9 mm	85.9 mm
30.0 mm	94.2 mm	92.2 mm
32.0 mm	100.5 mm	98.5 mm
35.0 mm	109.2 mm	108.2 mm
38.0 mm	119.3 mm	117.3 mm
40.0 mm	125.6 mm	123.6 mm
45.0 mm	141.3 mm	138.3 mm

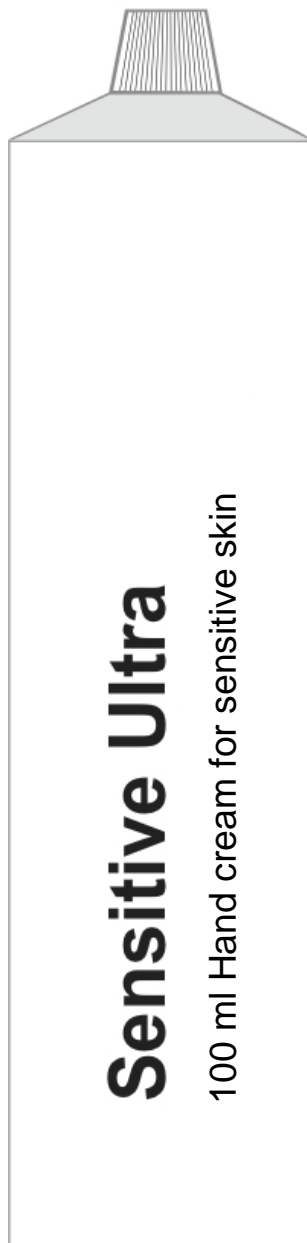
Since the tubes are printed in relief printing process, all original drawings and films etc. have to be shortened to the length of the specific plate.

Note:

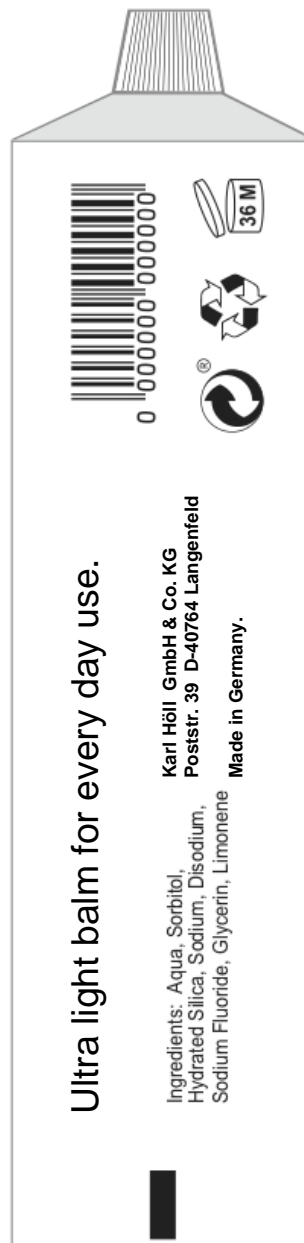
With regard to the printing design and the original drawings, the length of the plate has to be followed strictly.

5. Example of a Printing Design

front



reverse





Thank you for co-operation.