

## Contra Vision® Impress™ Through Combination Method

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### Configuration

This method can be used by any printing method, for example screen, litho, flexo or any digital printing method, using conventional equipment to achieve a design of consistent colour rendering which is not visible from the other side of the panel, which should have a consistent uniform black line pattern.

It is important that you read to the end of this document, although you will find downloadable files in the Know-how section of the website that enable you to simply assess the 'Line Discipline' most suited to your printing equipment, the substrate onto which you are printing and the required level of transparency and design impact.

1. Lines should typically be printed parallel with the direction of application of ink, i.e. parallel to the direction of pull of a squeegee for screen-printing (perpendicular to the squeegee), parallel to the movement of inkjet printheads, perpendicular to line of grippers for litho-printing or parallel to the web for flexo-printing.
2. Print black lines, typically one layer for screen-printing, 3 layers for litho-printing, 1 or 2 layers for flexo-printing, one layer for digital UV inkjet.
3. Print sufficient layers of white lines to give a good opaque white impression (for example 2 layers for digital UV inkjet or screen-printing, 10 layers for litho-printing and 5 layers for flexo-printing). Gloss white may be more effective than matt white. 1 or more layers of silver between the white and black layers may help to achieve a "bright" white and eliminate a reverse 'ghosted' image from 1 side visible on the other side.
4. Use transparent or translucent design colour inks that provide a good color rendering against the white but are not visible or barely visible when printed on black.
5. Use normal practice to minimise registration error with the printing equipment, which is helped by a stable substrate, such as polyester film. If unstable substrates are used, such as static cling film, they should have a stable liner.
6. Assess the tolerance perpendicular to the lines (t) that can confidently be worked within.
7. Pre-Press Proofing System  
As an alternative to a full press proof, an optional pre-press proofing system is as follows:  
  
Transparent polyester sheet pre-printed with the "opacity layers" of black lines (wb) with thinner white lines (ww) superimposed according to the production specification. The design being proofed is digitally printed in lines (wd) either:  
  
(i) directly onto the pre-printed lines, or  
(ii) onto another transparent polyester sheet which is then superimposed onto and taped to the "backing sheet" in good register. The polyester sheets do not have to have any adhesive.  
  
This pre-press proof is submitted for approval before going to press.
8. Line Dimensional Discipline:  
t = tolerance  
C = line centres  
wb = width black  
ww = width white =  $wb - 8t$   
wd = width design colour =  $wb - 4t$   
(any silver layers printed  $ws = ww - t$  or  $ww$ )  
  
Maintaining this discipline will guarantee that the white and design colour layers lie within the black and the design colour layers cover the white, thus providing a consistent colour rendering over the whole area of the panel, for all panels in a run. The line discipline can be adopted for either external or internal application, as illustrated in the attached figures of the Overlap Registration System™.

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### Example Line Disciplines

Line discipline TC/5 has been proven for screen printing, litho and flexo printing up to a maximum size of approximately 1000mm x 700mm.

For larger sizes, for up to say 1800mm x 900mm, line discipline TC/7 has been proven or, alternatively, for example for an entrance door advertisement, using line discipline TC/5 for the upper half of the door where the best quality of see-through is required and line discipline TC/7 for the lower half of the door. In this latter case, achieving the required standards of line discipline TC/5 in the upper half of the panel will typically ensure the required, less demanding standards for line discipline TC/7 are achieved on the lower half of the panel.

Line disciplines TC/10 and TC.11 suit flatbed digital UV inkjet machines, such as the Inca Spyder 320 + white.

TC/1 t = 0.05 mm  
C = 2.0 mm  
wb = 1.6 mm (80% opacity)  
ww = 1.6 - 8 x 0.05 = 1.2 mm (60% design impact)  
wd = 1.6 - 4 x 0.05 = 1.4 mm

TC/2 t = 0.1 mm  
C = 3.0 mm  
wb = 2.3 mm (77% opacity)  
ww = 2.3 - 8 x 0.1 = 1.5 mm (50% design impact)  
wd = 2.3 - 4 x 0.1 = 1.9 mm

TC/3 t = 0.1 mm  
C = 4.0 mm  
wb = 3.0 mm (75% opacity)  
ww = 3.0 - 8 x 0.1 = 2.2 mm (55% design impact)  
wd = 3.0 - 4 x 0.1 = 2.6 mm

TC/4 t = 0.15 mm  
C = 4.0 mm  
wb = 3.2 mm (80% opacity)  
ww = 3.2 mm - 8 x 0.15 = 2.0 mm (50% design impact)  
wd = 3.2 mm - 4 x 0.15 = 2.6 mm

TC/5 t = 0.075 mm  
C = 3.0 mm  
wb = 2.4 mm (80% opacity)  
ww = 2.4 mm - 8 x 0.075 = 1.8 mm (60% design impact)  
wd = 2.4 mm - 4 x 0.075 = 2.1 mm

TC/6 t = 0.075 mm  
C = 3.0 mm  
wb = 2.7 mm (90% opacity)  
ww = 2.7 mm - 8 x 0.075 = 2.1 mm (70% design impact)  
wd = 2.7 mm - 4 x 0.075 = 2.4 mm

TC/7 t = 0.15 mm  
C = 6.0 mm  
wb = 4.8 mm (80% opacity)  
ww = 4.8 mm - 8 x 0.15 = 3.6 mm (60% design impact)  
wd = 4.8 mm - 4 x 0.15 = 4.2 mm

TC/8 t = 0.10mm  
C = 4.0 mm  
wb = 3.2 mm (80% opacity)  
ww = 3.2 mm - 8 x 0.1 = 1.6 mm (60% design impact)  
wd = 3.2 mm - 4 x 0.1 = 2.8 mm

TC/9 t = 0.050 mm  
C = 3.0 mm  
wb = 2.2 mm (73% opacity)  
ww = 2.2 mm - 8 x 0.05 = 1.8mm (also silver) (60% design impact)  
wd = 2.2 mm - 4 x 0.05 = 2.0mm

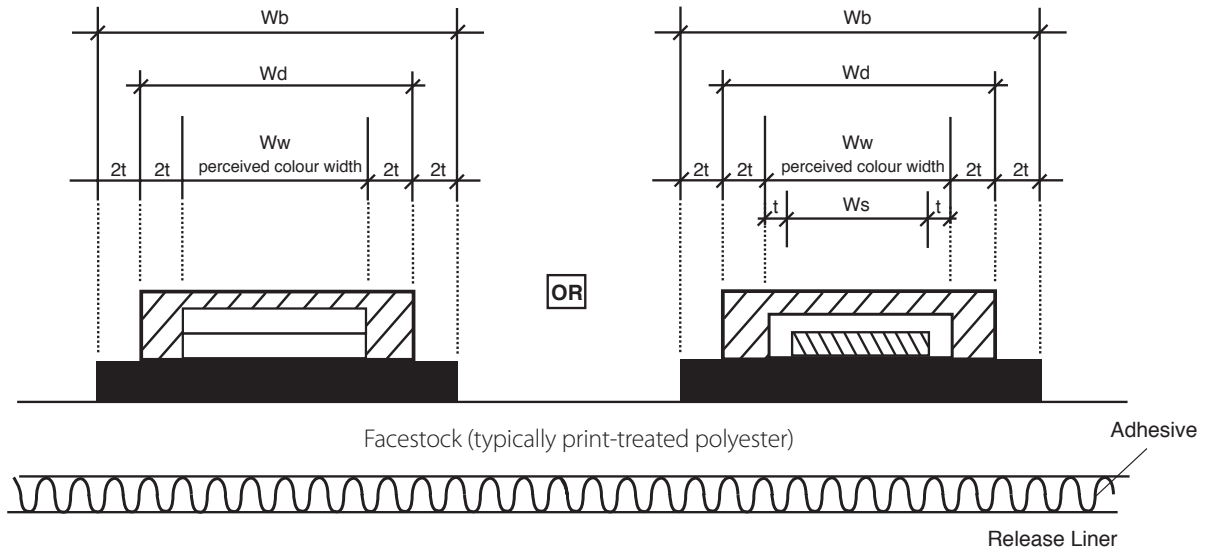
TC/10 t = 0.01 mm  
C = 3.0 mm  
wb = 2.4 mm  
ww = 2.4 - 8 x 0.01 = 2.32 (77% design impact)  
wd = 2.4 - 4 x 0.01 = 2.36

TC/11 t = 0.01 mm  
C = 3.0 mm  
wb = 2.14 mm  
ww = 2.14 - 8 x 0.01 = 2.06 (69% design impact)  
wd = 2.14 - 4 x 0.01 = 2.10

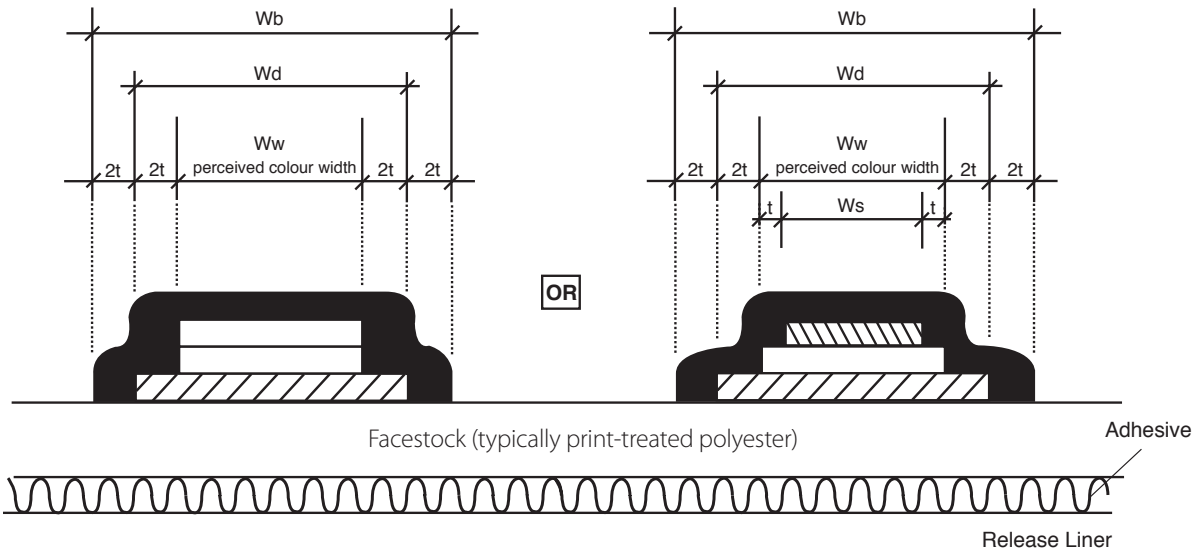
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### Cross-sections through a single line

#### Outside Application



#### Inside Application



**Note:** Illustrations are typical for screenprinting. The left hand illustrations are typical for UV inkjet printing. For litho-printing the number of layers of white, black and silver (if present) are increased to produce the required opacity.



**t** - printing tolerance  
**W<sub>b</sub>** - width black  
**W<sub>w</sub>** - width white  
**W<sub>d</sub>** - width design  
**W<sub>s</sub>** - width silver  
 (if present)

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### Patent and Licensing Information

#### PATENT AND TRADE MARK NOTICE

The above method is covered by the patent family of European Patent No. 0,858,399 or US Patent No. 6,210,776. The design layer or layers will normally be created by computer manipulation of conventional artwork to achieve the required line format, in which case the method also falls within the patent family of European Patent No. 0,904,206 or US Patent No. 6,507,413 and 7,193,631.

There should be at least one clearly visible patent and trade mark notice on each panel, provided to you as a "Total Job Code", for example:  
"Contra Vision® Impress™/EP 0858399:EP 0904206/009/132"

This notice may be printed on one line of the design side or reversed out of a black line on the other side.

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The following additional trade mark may be used for explanatory purposes;  
Overlap Registration System™ (No other versions acceptable).

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