



Specification

KRONES coding/dating specifications



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1 General information

1.1 Basic information

The indicated dimensions and tolerances are the minimum requirements necessary for the configuration of the different machines. Deviations of this specification must be reported in advance to the special field departments.

This concerns the following parameters:

1. Shape/geometry and dimensional accuracy
2. Physical properties

The specification is valid for the following coding/dating:

1. Coding/dating on label
2. Coding/dating on tank
3. Coding/dating on cap
4. Coding/dating on pack

The specification is to be understood as a supplement and as a clarification of a drawing for a dating proposal. If the weight, tolerances and other requirements of the specification are exceeded, please consult with KRONES!

Coding/dating can only be designed in connection with the original sample. The sample must be provided by the customer. This is especially the case when there are different suppliers (one sample each is to be provided per supplier). Despite the adherence to all the points indicated here, the supplier of the coding/dating supplier is not released from the obligation to test the processability of all customer objects under operating conditions.

All statements in this specification correspond to our current state of knowledge. This way they do not have the meaning to assure specific properties of the products or their suitability with a certain operation purpose. We therefore recommend contacting the dating/coding supplier for advice.

If you have any questions, please contact our product specialists in the respective specialist departments (product divisions).

1.2 Coding/dating proposal drawing

The drawing for a dating proposal indicates the exact position of the coding/dating on the corresponding customer object. It forms the basis for configuring the coding/dating system and facilitates communication between specialised departments and the customer.

The coding/dating proposal drawing is to be created in coordination with the various specialist departments.



2 Label coding/dating

2.1 Ink-jet coding/dating

2.1.1 General information

The surfaces to be coded/dated must be dry.

Light surfaces must be given preference for ink-jet coding/dating. Various ink types must be selected depending on the surface condition and the product temperature. The selection of the optimum ink will be determined in special cases using the test material to be provided. Please ask the specialists at KRONES should you have any questions about this.

2.1.2 Coding/dating field

Size

Properties	Dimensions
Character field height	With single-line coding/dating, at least 6 mm high With two-line coding/dating, at least 10 mm high
Character field width	See chapter 2.1.2 2.1.2.2 [▶ 4] 2.1.2 Guide values for size of coding/dating field [▶ 4]
Coding/dating lines	1 – 4 lines possible (depending on supplier)
Character height	Generally approx. 3 mm (higher character heights with performance restrictions possible)
Character width	Incl. blanks 2.54 mm = 10 characters per inch (25.4 mm)
Characters	From a diameter of 70 mm, approx. 12 characters are possible (on the cylindrical part with a depth of field of 4 mm)

Guide values for size of coding/dating field

Diameter of container based on coding/dating field width for ink-jet coding/dating *)				
Based on 2.54 mm/character for ink-jet based on 4 mm depth				
Number of characters	Coding/dating character width	Coding/dating field width incl. per 3 mm L/R	Query interval value	Diameter of the container
7	17.78	23.78	23-24.99	25
8	20.32	26.32	25-27.99	30
9	22.86	28.86	28-30.99	40
10	25.4	31.4	31-32.99	45
11	27.94	33.94	33-35.99	50
12	30.48	36.48	36-38.99	60
13	33.02	39.02	39-40.99	70
14	35.56	41.56	41-43.99	80
15	38.1	44.1	44-45.99	90
16	40.64	46.64	46-48.99	100

*) Remark: Coding/dating field width corresponds to data width plus 6 mm!

Coding/dating field position

Coding/dating must be positioned only on the cylindrical part of the container if at all possible. The position of a code is only feasible on the textured surface to a limited extent and is not recommended. For the conveyor application, a wrap-around coding/dating surface without printing is required.

Colour



Fig. 1: Examples of ink-jet and laser coding/dating

With ink-jet coding/dating, all labels must have a dating field that provides contrast. This is generally a bright field if the ink is dark. Gold, silver or reflecting materials can also be used (see 2.1.2 Figure 1 [▶ 4]).

1. Ink-jet coding/dating
2. Laser coding/dating

2.1.3 Coding/dating speed

In standard applications (2 lines of 10 characters each), a coding/dating speed of up to approx. 2.25 m/sec is possible. In individual cases, a coding/dating speed of up to approx. 4.87 m/sec (one line) is possible. However, these speeds are dependent on the coding/dating supplier and the number of lines.

2.1.4 Reel-fed labels

Due to the high circumferential speeds involved, coding/dating for wraparound labels is usually applied outside the labeller. When coding/dating is applied on the label, a print-free wraparound area must be provided on the label. Coding/dating on self-adhesive labels is usually applied after the labels are placed on the containers.

In both cases, coding/dating should not be applied on the labelling station if possible. Exceptions to this must always be checked individually by the KRONES specialists.

2.1.5 Pre-cut labels

Coding/dating on carrousel

Table cam	Position of the coding/dating device
Mechanic	A coding/dating position for all label types (width)
Servo technology	Several, label-specific coding/dating positions possible (position of coding/dating can be varied over the width with the software). The position of the code/dating device is height-adjustable.

Coding/dating on the unit

Labelling station	Position of the code/dating device
Mechanic	Any coding/dating position is possible in the area of the coding/dating curve
Servo technology	Coding/dating on the unit not recommended *)

*) The code/dating device must be removed and then reinstalled each time the unit is changed.



2.2 Laser coding/dating

2.2.1 General information

The surfaces to be coded/dated must be dry.

Films must always be tested in advance, since some materials do not respond to the laser or respond only to a limited extent. Gold, silver, or reflective materials can only be used for laser coding/dating to a limited extent (please consult with KRONES!).

The character size for laser coding/dating is about 2.4 mm. A coloured wraparound coding/dating surface on the reel-fed label is also required for dating on the conveyor (larger text heights with output restriction possible).

2.2.2 Coding/dating field

Size

Properties	Dimensions
Character field height	With single-line coding/dating, at least 6 mm high With two-line coding/dating, at least 10 mm high
Character field width	See chapter 2.2.2 2.2.2.2 [▶ 6] 2.2.2 Guide values for size of coding/dating field [▶ 6]
Coding/dating lines	1 – 4 lines possible (depending on supplier)
Character height	Generally up to approx. 3 mm (higher character heights with possible performance restrictions)
Character width	Incl. blanks 2.54 mm = 10 characters per inch (25.4 mm)
Characters	From a diameter of 70 mm, approx. 12 characters are possible (on the cylindrical part with a depth of field of 4 mm)

Guide values for size of coding/dating field

Diameter of container based on coding/dating field width for laser code/dating device*)				
Based on 1.9 mm/character for matrix/writing laser based on 2.5 mm depth				
Number of characters	Coding/dating character width	Coding/dating field width incl. per 3 mm L/R	Query interval value	Diameter of the container
7	13.3	19.3	19-20.99	20
8	15.2	21.2	21-22.99	22
9	17.1	23.1	23-24.99	25
10	19.0	25	25-26.80	30
11	20.9	26.9	26.81-28.70	35
12	22.8	28.8	28.71-29.99	42
13	24.7	30.7	30-31.99	49
14	26.6	32.6	32-33.99	57
15	28.5	34.5	34-35.99	65
16	30.4	36.4	36-37.99	74
17	32.3	38.3	38-39.99	84
18	34.2	40.2	40-41.99	94
19	36.1	42.1	42-43.99	104

*) Remark: Coding/dating field width corresponds to data width plus 6 mm!

Coding/dating field position

Coding/dating must be positioned only on the cylindrical part of the container if at all possible. The position of a code is only feasible on the textured surface to a limited extent and is not recommended.

For the conveyor application, a wrap-around coding/dating surface without printing is required.

Colour



Fig. 2: Examples of ink-jet and laser coding/dating

With laser coding/dating, dark coding/dating fields must be used whenever possible. Nor are any metallised or shiny surfaces to be selected in the area of the coding/dating field (see 2.2.2 Figure 2 [▶ 6]).

1. Ink-jet coding/dating
2. Laser coding/dating

2.2.3 Reel-fed labels

Due to the high circumferential speeds involved, coding/dating for wraparound labels is usually applied outside the labeller. When coding/dating is applied on the label, a print-free wraparound area must be provided on the label. Coding/dating on self-adhesive labels is usually applied after the labels are placed on the containers.

In both cases, coding/dating should not be applied on the labelling station if possible. Exceptions to this must always be checked individually by the KRONES specialists.

A coding/dating speed for laser coding/dating is dependent on the supplier and the laser type.

2.2.4 Pre-cut labels

Coding/dating on carrousel

Table cam	Position of the code/dating device
Mechanic	A coding/dating position for all label types (width)
Servo technology	Several, label-specific coding/dating positions possible (position of coding/dating can be varied over the width with the software). The position of the code/dating device is height-adjustable.

Coding/dating on the unit

Labelling station	Position of the code/dating device
Mechanic	Any coding/dating position is possible in the area of the coding/dating curve
Servo technology	Coding/dating on the unit not recommended *)

*) The code/dating device must be removed and then reinstalled each time the unit is changed.



Laser coding/dating on no-label-look labels:

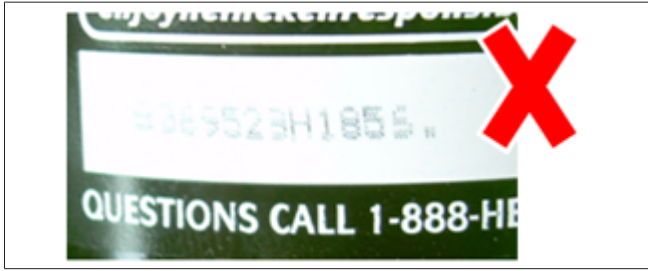


Fig. 3: Example of NON-functioning laser coding/dating

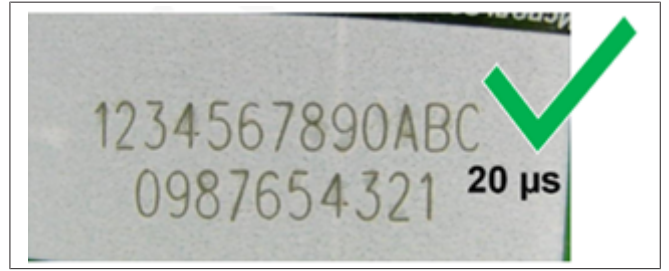


Fig. 4: Example of functioning laser coding/dating

3 Container coding/dating

3.1 Ink-jet coding/dating

Coding/dating at the liquid level and dating on the bottle is unsuitable if the contents are dark. In rare cases, special inks must be used for coding/dating of glass bottles. Please ask the specialists at KRONES should you have any questions about this!

Surface condition of the area to be coded/dated:

- Avoidance of coding/dating in area of debossing or embossing
- Avoidance of grooves or nubs

3.2 Laser coding/dating

3.2.1 PET bottles (CO₂ laser)

In the following cases, laser coding/dating is inappropriate: At the product level, with bright or transparent bottle contents, with bright or coated bottle surface. Suitability for processing must be confirmed by the dating supplier.

Surface condition of the area to be coded/dated:

- Avoidance of coding/dating in area of debossing or embossing
- Avoidance of grooves or nubs



Fig. 5: Writing laser coding/dating on the bottle

3.2.2 Can base (fibre laser)

When coding/dating on the base of a beverage can, a correct positioning of the imprint is necessary for a proper inspection.

Since the brightness gradient within the can base from the edge is very high, the code should be placed as centrally as possible. If necessary, the position has to be adjusted due to the (individual) base embossing on the customer site.

The suitable coding/dating area is within the green circle (see illustration).

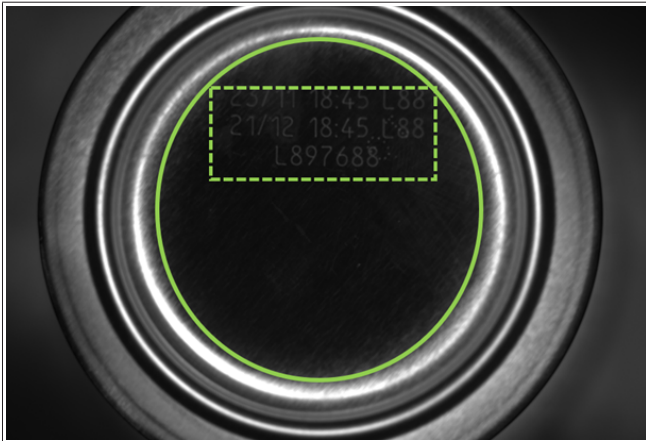


Fig. 6: Writing laser coding/dating on the base of a can

4 Cap coding/dating

4.1 Ink-jet coding/dating

4.1.1 General information



Fig. 7: Ink-jet coding/dating on grooves

The surfaces to be coded/dated must be dry.

Light surfaces must be given preference for ink-jet coding/dating. Various ink types must be selected depending on the surface condition and the product temperature. The selection of the optimum ink will be determined in special cases using the test material to be provided. Please ask the specialists at KRONES should you have any questions about this.

The grooves on the cap can present a problem during coding/dating. In this case tests must be performed to check the legibility of coding/dating.

4.1.2 Cap material

Ink-jet coding/dating is suitable when no imprint is present and the surface is light-coloured.

For coding on the edge of the cap, it must always be checked whether sufficient legibility is ensured with grooving and whether sufficient space is available.

Coding/dating on the edge of a crown is not advisable.



Fig. 8: Ink-jet coding/dating on cap



Fig. 9: Ink-jet coding/dating on cap

4.2 Laser coding/dating

4.2.1 General information

The surfaces to be coded/dated must be dry.

The grooves on the cap can present a problem during coding/dating. In this case tests must be performed to check the legibility of coding/dating.

4.2.2 Cap material

Plastic caps cannot be dated with a laser. Since the substrate is subject to high thermal loads, melting must be taken into account.

Exception:

- Laser-sensitive ink with light-coloured caps
- Dark paint layer on light-coloured caps

Metal caps can only be dated subject to alteration after detailed tests, since the possibility of moisture on the cap cannot be excluded. The metal surface is damaged by the laser and rust can therefore form. A sufficiently thick layer of lacquer must be ensured in this case.

Coding/dating on the edge of a crown is not advisable.



Fig. 10: Laser-sensitive colour



Fig. 11: Dark paint layer (writing laser)



Fig. 12: Laser coding/dating on metal caps

5 Film and carton coding/dating

5.1 Ink-jet pack coding/dating

5.1.1 General information

Bright surfaces are preferable for pack coding/dating. Various ink types must be selected depending on the surface condition and the product temperature. The selection of the optimum ink will be determined in special cases using the test material to be provided. Please ask the specialists at KRONES should you have any questions about this.

Pack coding/dating is installed on the pack conveyor or is integrated into the KRONES packer. The quality of the coding/dating result is influenced by the distance between the product and the writing head. Smooth pack guiding free of jams and interruptions must be ensured.



Fig. 13: Example of film coding/dating (bar code)



Fig. 14: Example of carton coding/dating (bar code)

5.1.2 Coding/dating field

Size

Properties	Dimensions
Character field width	See chapter 5.1.2 5.1.2.2 [▶ 13] 5.1.2 Guide values for size of coding/dating field [▶ 13]
Character field height	See chapter 5.1.2 5.1.2.2 [▶ 13] 5.1.2 Guide values for size of coding/dating field [▶ 13]
Coding/dating lines	1- 2 lines possible (depending on supplier)
Character height	8 - 24 mm
Character width	50.8 - 240 mm with 20 characters possible

It should be noted that the possible printing height is dependent on the angle of the print head and the respective matrix to be printed.

Guide values for size of coding/dating field

These guide values refer to KRONES standard suppliers. Guide values for two-line coding/dating (20 characters each):

- Lower case code/dating device (with a max. product distance of 5 mm): Coding/dating field width at least 60.8 mm, coding/dating field height at least 18 mm
- Upper case code/dating device (with a max. product distance of 20 mm): Coding/dating field width at least 90 mm, coding/dating field height at least 34 mm

For the optimum marking field, an additional 5 mm was provided on each side!

Coding/dating field position

The coding/dating field position should be defined according to the direction in which the pack is running (to ensure accessibility for dating). If several coding/dating field positions must be realised, this must be communicated in advance. The position of a code is only feasible on the textured surface to a limited extent and is not recommended.

Colour

With pack coding/dating, all packs must have a coding/dating field that provides contrast. This is generally a light-coloured field if the ink is dark (see Fig. "Example of film coding/dating" and Fig. "Example of carton coding/dating").

5.1.3 Coding/dating speed

For standard applications (2 lines, 1 – 20 characters per line), a coding/dating speed of up to approx. 0.8 m/sec. can be implemented (dependant on manufacturer).

5.1.4 Surface condition of the packs

Which packs can be processed must be clarified in advance. Is film or a carton/tray to be marked? Is the material absorbent (e.g. cardboard) or non-absorbent (e.g. film or lacquered cartons)?



Fig. 15: Example of a possible coding/dating field or dating on a light-coloured dating field