

	Technical Information	730-089-EN		V05
	Printer roll applications (with various roll dimensions) and GKE label roll specifications	Created	07.02.2008	UK
		Changed	02.09.2021	KP
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File no.: 5.2				

Encl.: Questionnaire Label roll specifications

1. Specification of printers used in hospitals

1.1 Printer axes

They have different printer axes of 1, 1.5, 2 or 3" diameter. Some printers have flexible axes to apply core diameters of 1 – 2".

1.2 Housing dimensions

Printer housings can host rolls with maximum outside diameters of: 5 / 6 / 8 inch = 12,7 / 15,24 / 20,32 cm

Small printers have typically a 5 or 6" outside housing diameter, big printers, used as centralized printers in CSSDs have always a 6 or 8" outside housing diameter.

For large label rolls < 8" an external label roll holder is used behind the printer with the advantage that the roll exchange has to be made less often.

1.3 Printer width

The width of all normal printers used in CSSDs is 10-12 cm. Only special label printers may have smaller width dimensions, but are seldom used in CSSDs. All label products produced by GKE fit in all CSSD printers.

1.4 Detection of label start

Printers must know when the next label is arriving to position the text correctly.

There are several detection methods used:

- 1.4.1 The space between two labels uses the transparency of the silicon paper. A light source and a detector discover the start of a new label.
- 1.4.2 Alternatively to detect the start of a new label a little hole is cut inside the label or backing material where the light beam is going through.
- 1.4.3 Some printers work with reflection. At the back side there is a black area printed detecting the start of a new label.
- 1.4.4 Some printers use endless label rolls. The printer software determines the length of a label. The label is cut by an internal cutter of the printer. Depending on the cutter type the knife may be sensitive to the adhesive which may built up at the knife and need to be cleaned sometimes with an organic solvent. GKE offers special adhesives to minimize this problem.

2. Label description

2.1 Label dimensions

2.1.1 Core

Inner core diameters used:

1 / 1,5 / 2 / 3" = 2,54 / 3,8 / 5,8 / 7,6 cm

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1 and 1,5" cores have the difficulty that the radius of the core is bending the labels heavily. During production and application in the printer the bended labels may cause problems. Therefore it is recommended to use only 2 or 3" cores. There is only a minimal difference in the amount of labels when 1" and 1,5" are compared against 2" diameter core. Therefore GKE has decided to produce only rolls with 2 or 3" cores, but 1" and 1.5" core may be delivered on special demand or large core diameters may be reduced by using a core reduction insert, free of charge available at GKE (see no. 3).

Note:

Due to the production process about 5 % of the GKE label rolls have a tape joint coming from mother rolls which cannot be avoided. To compensate this potential loss of one label, all GKE label rolls always contain some more labels (about 1 m more roll length) than documented in the roll specifications.

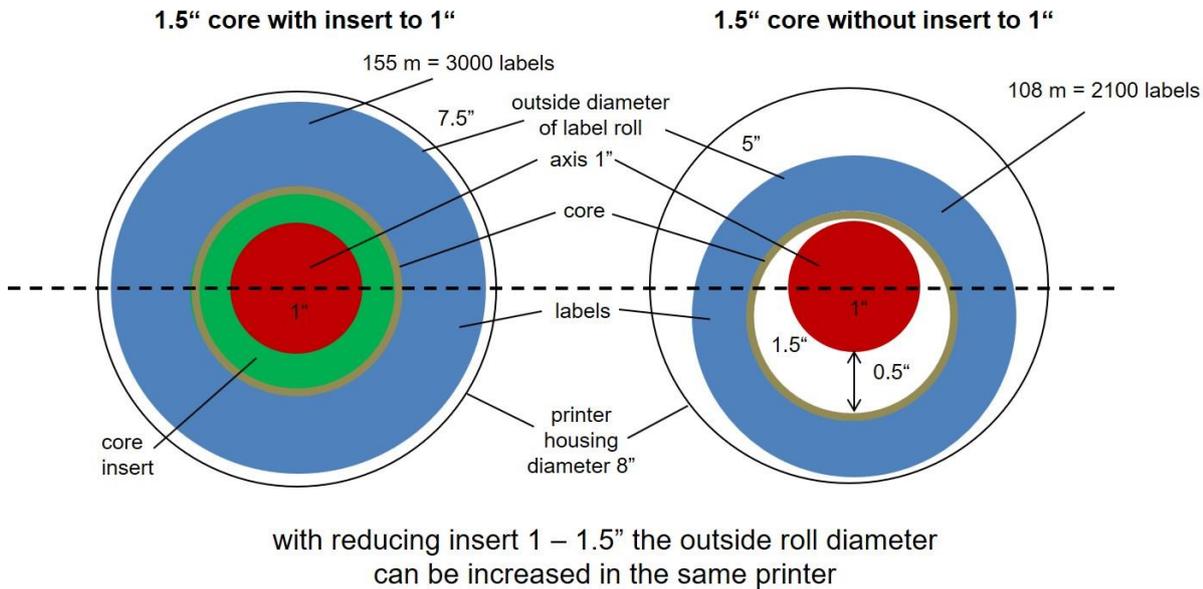
2.1.2 Core inserts

GKE provides reusable plastic inserts for the cores which reduce the inner core diameter so that the maximum internal space of a printer can be used to fit the biggest roll diameter:

Reducing core inserts to be used for	
label rolls with core diameter	Internal insert diameter printer axes of
3"	1"
3"	2"
2"	1"
2"	1,5"

For each printer 2 inserts are required (one for the roll in the printer, one to be fitted in the next roll). They will be supplied free of charge by GKE with the first order and may be used continuously.

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If the core does not fit exactly the printer axes, a reducing insert should be used to increase the outside roll diameter having more labels a roll.

Using a 2" core with an insert to reduce the core to 1" allows in an 8" core case to roll 155 m in comparison using the same printer with a 1,5" core where only $\frac{3}{4}$ = 108 m can be inserted.

2.1.3 Outside diameter

The larger the outside diameter of a label roll, the more labels are available on the roll, with the advantage that the roll exchange is made less often. Therefore GKE offers rolls with different label amounts and different diameters of the same label size.

2.1.4 Label dimensions

2.1.4.1 Label width:

GKE is producing the following outside label width:

6 / 7 / 8 / 9,6 / 12 cm (7 cm width is not recommendable since paper from mother rolls is waste. 6 and 8 cm can be produced most economically.)

2.1.4.2 Label height:

3.5, 5, 6, 8, 10, 12 cm or endless rolls are available.

Other sizes can be ordered on demand.

2.2 Material of labels

2.2.1 Upper label layer

- Mostly used 80 g/m² (letter quality) paper
- For special applications 160 – 170 g/m² (Postcard) paper
- In addition special surfaces are used for barcode etc.
- Special plastic foils are used to replace cellulose fibres for H₂O₂ processes.

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2.2.2 Adhesive specifications

The label must adhere during steam sterilization at 134°C on metal, plastic films, cotton or linen wovens or non-wovens, etc. requiring special designed adhesive. Standard permanent adhesives used for office applications can't be used because labels may fall off. GKE offers a special adhesive for sterilization applications:

Standard adhesive for most of the applications, especially for low temperature sterilization processes. For woven and non-woven packaging material in steam sterilization processes the advanced adhesives are recommended.

2.2.3 Adhesive backing

Mostly siliconized paper of 50 g/m² is used. The "silicon release force" is especially adapted for sterilization processes where labels for office applications fall off.

2.2.4 Single and double adhesive labels

- Single adhesive layer construction:
Upper layer / adhesive / backing
- Double adhesive layer construction:
Upper layer / adhesive / silicon layer / adhesive / backing
Double adhesive labels are used to tear off the label after sterilization and document it in the patient's recording.

2.2.5 Splits

Splits are horizontally and/or vertically cut into the upper label constructions to enable easy take-off adhesive backing and/or to separate labels in two or more segments:

- Splits at the backing (to take off the backing easier)
- Splits in the upper layer (to divide the label in two or more pieces)

2.3 Chemical indicators for sterilization monitoring

2.3.1 Available for steam, ethylene oxide, formaldehyde, hydrogen peroxide

2.3.2 Type1 according EN ISO 11140-1

All colours don't bleed in the process. The indicator colours are UV-cured and may be covered with a transparent surface layer for better visual appearance and to prevent bleeding.

2.3.3 Position of indicator and text

- Indicator bar left or right at the border
Alternatively dots at each label part when splits are present

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- Text print required according standard to inform about the indicator specification and the order number
- Backside contains the batch number after several labels

3. General order information

According to above information various dimensions of label rolls can be made. To produce all versions does not make sense and would explode our inventory. However, all size combinations may be ordered on demand. If the label is produced and available from our inventory, we can change core, label amount and outside diameter where a minimum order of 100 rolls must be ordered. If label dimensions not being produced already from GKE, a minimum order volume of 500 rolls is required to compensate for the tooling cost, the set-up and cleaning cost for the printing and rolling machine. Smaller amounts may be ordered when the tooling and cliché cost and printing machine setup is paid separately.

4. Overview of GKE labels for small and large printers

Printer type	Diameter of [inch]	
	Printer axis	inside housing
Small printers	1 – 1.5	5 - 6
Large printers	2 – 3	8

GKE rolls for:	of: Core diameter [inch]	outside roll diameter [inch]	Total roll length [m]	Number of labels by core diameter of label roll	
				1.5 inch	2 inch
Small printers	1, 2 with insert	5	55	1500	2000
Large printers	2	8	155	5100	3000
	3	8	144	3800	2800

However, some of those printers can exchange the internal axes or have flexible axes and can fit cores of 3, 2, 1.5 or 1".