StepLess® Ear Clamps
Dual Slide 167

Reliable Connections

Recommended for various Medical Applications

Benefits

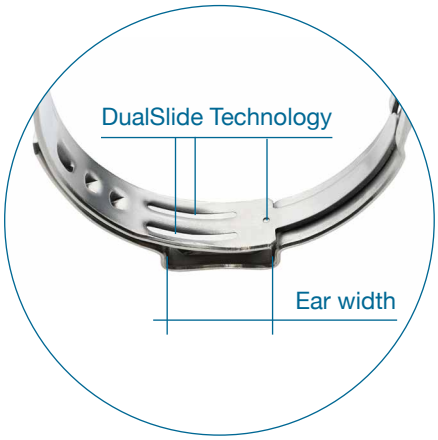
- Reliable closing after cleaning or degreasing process
- Degreased to reduce particulates
- Double bagging to reduce risk of contamination
- Uniform compression
- Tolerances compensation
- Improved traceability via labeling
- Fast and easy installation

DualSlide Technology: to mitigate friction during closing
Narrow band: concentrates transmission of clamping force, less weight
StepLess® over 360°: uniform compression or uniform surface pressure
Burr-free strip edges: reduced risk of damage to parts being clamped

StepLess®

DualSlide

FEATURES



StepLess® Ear Clamps
Dual Slide 167

TECHNICAL DATA OVERVIEW

Material
Stainless Steel, Material no. 1.4301/UNS S30400
Optional alternative materials

Corrosion resistance according to DIN EN ISO 9227
≥ 1000 h

Standard Series PG 167	
Size range	**width × thickness**
11.9 – 30.8 mm	7.0 × 0.6 mm

PRODUCT DESCRIPTION

Medical Standard
StepLess® Ear Clamps – Dual Slide 167 uses DualSlide technology to reduce friction during closing. This new technology is designed to be used in an unlubricated setting, which ensures a smooth closure after a clamp has been degreased or cleaned.

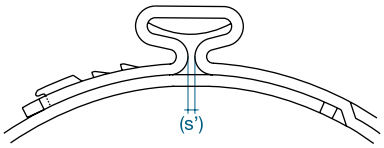
Our products have shown through years of industry use that they can physically withstand standard sterilization processes (autoclave, gamma, X ray). All customers are responsible for evaluating this fit for use for their applications.

Material thickness
StepLess® Ear Clamps are produced in nominal widths and thicknesses. The selected material dimensions for a specific application are based on the stress required to obtain an adequate seal or load.

Clamp ear (closing element)
Using tools designed or endorsed by Oetiker, the clamp is closed by drawing together the lower radii of the “ear”. The maximum diameter reduction is proportionate to the open “ear” width (s).

The theoretical maximum reduction in diameter is given by the formula:

$$\text{Max. diameter reduction} = \frac{\text{Ear width (s)}}{\pi}$$



Note: the above sketch shows the appearance of a closed "ear" (s'); it does not necessarily indicate an effective closed assembly.

The following applies as a guideline: To determine the correct clamp diameter, push the hose onto the attaching material, (e.g. the nipple), and then measure the outer diameter of the hose. The value of the outer diameter must be slightly above the average value of the diameter range of the clamp to be selected. A clamp can only be considered adequately closed when the ear width (s) has been reduced by at least 40%, and the correct closing force was used for assembly.

Block closure
Block closure means that, during the applied closing force, both ear shanks of one ear clamp touch each other. The closing force applied after the occurrence of block closure is absorbed by the block closure and not transferred to the parts being clamped. If a statement about the effective closing force acting on the parts being clamped during closure is required, a block closure should be avoided.

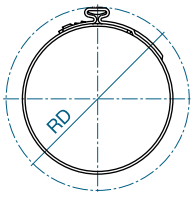
Mechanical interlock
The interlock is a mechanical system for joining the clamp ends to permit closure. Some interlock designs can be opened for radial installation prior to closure.

Assembly Recommendations
The clamp "ear" is deformed with a constant tool jaw force – this practice is referred to as "force priority closure". This assembly method ensures that a uniform and repeatable stress is applied to the joint in addition to a consistent tensile force on the clamp interlock. Employing this methodology when closing a 167 series clamp will compensate for any component tolerance variations, and ensure that the clamp applies a constant radial force to the application. Fluctuations in component tolerances are absorbed by variations in the "ear" gap (s'). Clamp installation monitoring and process data collection are available by incorporating an "Electronically Controlled Pneumatic Power Tool" Oetiker ELK in the assembly process.

Closing force
The closing force must be chosen to give the required material compression or surface pressure and should be qualified by dimensional evaluation and experiment. The resistance against the clamp equals the applied force, so the closing force is greatly reduced when compressing a soft material. The table below gives the maximum applied closing force for clamp and material dimensions when compressing and sealing relatively hard synthetic materials.

Complete process monitoring, including 100% documentation is available using the Electronically controlled pneumatic pincer ELK.

Rotation diameter
The rotation diameter (RD) of an assembled clamp can be critical design information for applications that rotate in close proximity to adjacent components. Many factors can influence this final assembly diameter including compression, "ear" gap "s" and material thickness. It is recommended that all variables be considered and evaluated prior to specifying a rotating diameter.



Important

– The ear height is naturally given. Do not influence the ear height, either by changing the ear gap or with built-in hold-down devices in installation tools.
– Single tool stroke closure only, do not apply secondary crimping force.

INSTALLATION DATA

Material dimensions (mm)	Size (mm)	Closing force max. (N)	Installation tools force-monitored[1]: Manual	Pneumatic	Cordless	Electronically controlled
7.0 x 0.6	11.9 – 17.5	2100	HMK 01/S01	HO ME 2000 – 4000	CP 10	HO EL 2000 – 4000
	17.8 – 30.8	2400	HMK 01	HO ME 3000 – 4000	CP 10	HO EL 3000 – 4000

For alternatives, see Oetiker TDS of hand tools or power tools
[1] Further information on www.oetiker.com

Important note: These figures are intended as a guide, they may vary depending on the type and tolerances of parts being clamped. To ensure optimum clamp selection, we recommend making functional tests with several assemblies.

ORDER INFORMATION

Item No.	Ref. No.	Ear width inside (mm)	Size range (mm)
16709411	011.9-706R	8	9.4 – 11.9
16709368	012.3-706R	8	9.8 – 12.3
16709413	012.8-706R	8	10.3 – 12.8
16709414	013.3-706R	8	10.8 – 13.3
16709415	013.8-706R	8	11.3 – 13.8
16709419	014.0-706R	8	11.5 – 14.0
16709416	014.2-706R	8	11.7 – 14.2
16709417	014.5-706R	8	12.0 – 14.5
16709418	014.8-706R	8	12.3 – 14.8
16709420	015.3-706R	8	12.8 – 15.3
16709421	015.7-706R	8	13.2 – 15.7
16709425	016.0-706R	8	13.5 – 16.0
16709422	016.2-706R	8	13.7 – 16.2
16709423	016.6-706R	8	14.1 – 16.6
16709424	016.8-706R	8	14.3 – 16.8
16709427	017.0-706R	8	14.5 – 17.0
16709426	017.5-706R	8	15.0 – 17.5

Item No.	Ref. No.	Ear width inside (mm)	Size range (mm)
16709185	017.8-706R	10	14.6 – 17.8
16709367	018.0-706R	10	14.8 – 18.0
16709430	018.5-706R	10	15.3 – 18.5
16709431	019.2-706R	10	16.0 – 19.2
16709432	019.8-706R	10	16.6 – 19.8
16709433	021.0-706R	10	17.8 – 21.0
16709434	022.6-706R	10	19.4 – 22.6
16709435	023.5-706R	10	20.3 – 23.6
16709436	024.1-706R	10	20.9 – 24.1
16709437	025.6-706R	10	22.4 – 25.6
16709438	027.1-706R	10	23.9 – 27.1
16709439	028.6-706R	10	25.4 – 28.6
16709440	030.1-706R	10	26.9 – 30.1
16709441	030.8-706R	10	27.6 – 30.8

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