StepLess® Ear Clamps
Dual Slide 167 – PureLine

Reliable Connections

Recommended for applications where cleanliness matters

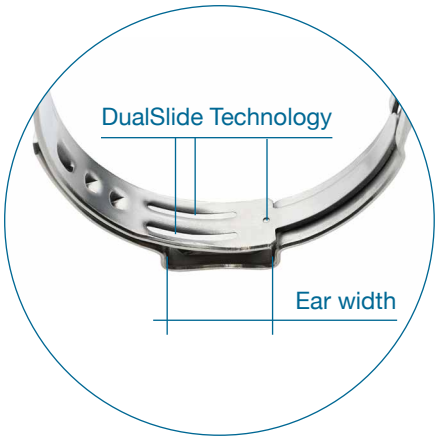
Benefits

- Reliable closing after cleaning process
- Cleaned to remove particulates
- Double bagged and vacuum sealed to reduce risk of contamination
- Uniform compression
- Tolerances compensation
- Improved traceability via labeling
- Fast and easy installation

High purity cleaning: to ensure control over particulates
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

PureLine StepLess® DualSlide

FEATURES



StepLess® Ear Clamps Dual Slide 167 – PureLine

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

Sterilization methods	
Autoclavable	One time 30 minute cycle at 130 °C / 250 °F
Gamma or X-Ray irradiation	One time up to 65 kGy

Note: Oetiker is not responsible for the performance of other components or tubing. Please reach out to your Oetiker sales representative for more information.

Particulate analysis according to VDA 19.1/ISO 16232

Particle size (µm)	**Specification**	
	Target	**Acceptance criteria**
<100	Not specified	Not specified
100≤ × <1000	0	<1
≥1000	0	0

Note: Ultrasonic method. Specification measurements are given as per piece testing lot averages, and include both metallic and nonmetallic particulates.

PRODUCT DESCRIPTION

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

We have developed PureLine, a high-precision cleaning process for the most sensitive environments, including medical cleanrooms. Our sustainable process is performed in a cleanroom setting ensuring reliably clean products. PureLine clamps are double-bagged and vacuum-sealed. Oetiker PureLine® is ideal for industries where cleanliness is crucial.

Biocompatibility
All products are free from animal-derived materials and other non desired substances such as Bisphenol A, Melamine, Trisphosphite, DEHP phthalates, and others. Please reach out to your Oetiker sales representative for more information.

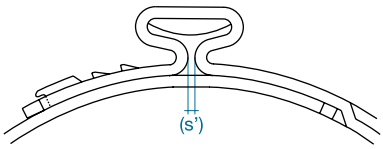
Typical applications
- Single-use bags
- Single-use assemblies
- Cell culture, fermentation and bioreactor applications
- Single-use fluid transfer applications
- Tubing and bags manifolds
- Filtration and chromatography
- Fill and finish applications
- Peristaltic pumps

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.

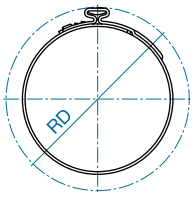
Mechanical interlock
The interlock is a mechanical system for joining the clamp ends to permit closure. Some interlock designs can be opened for radial installation prior to closure.

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 EPC 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 EPC.

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 01	HO EL 2000 – 4000
	17.8 – 30.8	2400	HMK 01	HO ME 3000 – 4000	CP 01	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)
16709610	011.9-706R	8	9.4 – 11.9
16709611	012.3-706R	8	9.8 – 12.3
16709612	012.8-706R	8	10.3 – 12.8
16709613	013.3-706R	8	10.8 – 13.3
16709614	013.8-706R	8	11.3 – 13.8
16709615	014.0-706R	8	11.5 – 14.0
16709616	014.2-706R	8	11.7 – 14.2
16709617	014.5-706R	8	12.0 – 14.5
16709618	014.8-706R	8	12.3 – 14.8
16709619	015.3-706R	8	12.8 – 15.3
16709620	015.7-706R	8	13.2 – 15.7
16709621	016.0-706R	8	13.5 – 16.0
16709622	016.2-706R	8	13.7 – 16.2
16709623	016.6-706R	8	14.1 – 16.6
16709624	016.8-706R	8	14.3 – 16.8
16709625	017.0-706R	8	14.5 – 17.0
16709626	017.5-706R	8	15.0 – 17.5

Item No.	Ref. No.	Ear width inside (mm)	Size range (mm)
16709627	017.8-706R	10	14.6 – 17.8
16709628	018.0-706R	10	14.8 – 18.0
16709629	018.5-706R	10	15.3 – 18.5
16709630	019.2-706R	10	16.0 – 19.2
16709631	019.8-706R	10	16.6 – 19.8
16709632	021.0-706R	10	17.8 – 21.0
16709633	022.6-706R	10	19.4 – 22.6
16709634	023.5-706R	10	20.3 – 23.5
16709635	024.1-706R	10	20.9 – 24.1
16709636	025.6-706R	10	22.4 – 25.6
16709637	027.1-706R	10	23.9 – 27.1
16709638	028.6-706R	10	25.4 – 28.6
16709639	030.1-706R	10	26.9 – 30.1
16709640	030.8-706R	10	27.6 – 30.8