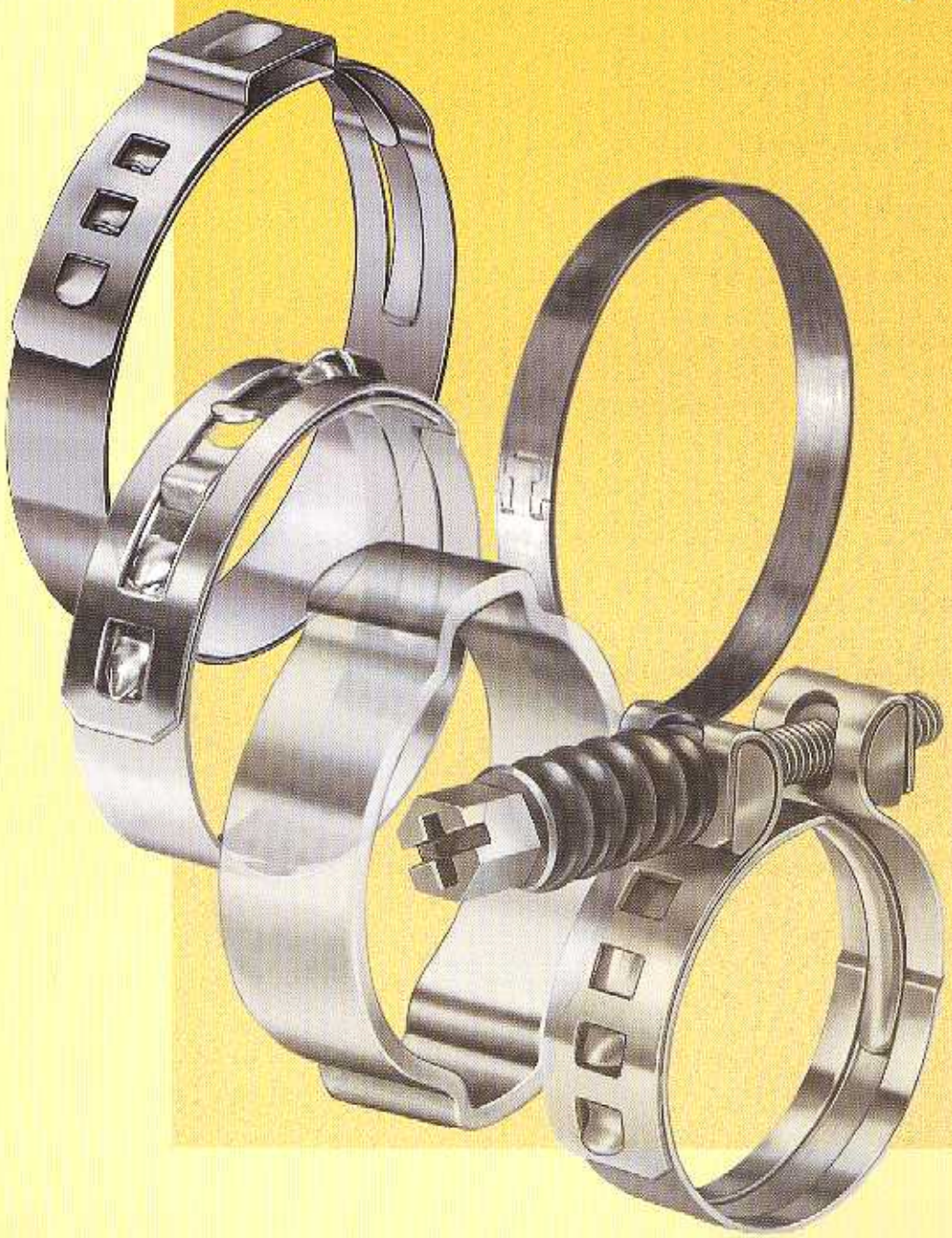
OETIKER

Clamps



OETIKER®

Connecting Technology

OETIKER Clamps

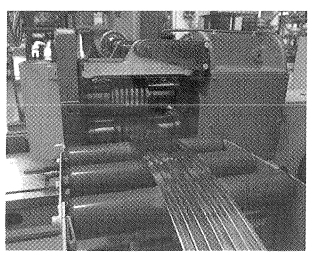
Contents

The OETIKER Group World-Wide
It is and shall continue to be a primary objective of the OETIKER Group to provide customers with safe, reliable products. OETIKER revolutionized the art of clamping hose, tubing and other objects made of common and the most difficult to seal and fasten materials. The company is committed to providing products that are continuously tested and evaluated to assure the highest standard in quality and performance.

Founded in Switzerland in 1943, the OETIKER Group is today a multinational company and is networked to provide a full complement of customer service, design and engineering support.

OETIKER manufactures product through strategically located facilities throughout the world. The products are manufactured to common standards, and are available through OETIKER sales offices in many countries, and selected distributors. The OETIKER name is trademark protected and the history of many patents is evidence of the importance of the OETIKER name in clamping and coupling technology the world over. The OETIKER Logo signifies that the product has been produced to quality standards demanded by the founder, Hans Oetiker, and customers world wide.

Quality Standards
All companies within the OETIKER group have quality certification according to either ISO 9001, QS 9000 or VDA 6.1 for production, research and development and ISO 9002 for sales and supply. Most OETIKER Clamps conform to SAE J1508 specifications.



OETIKER Clamps Product Chart

Page	Clamp Type	Product Group	Size Reference	Width mm	Thickness mm	Zinc Plated	Stainless	Installation Axial	Installation Radial
5	Stepless® Ear Clamps	**167**	6.5 - 120.5	5.0 - 10.0	0.5 - 1.0	X	X	X	X
6	Stepless® Low Profile Clamps	**168**	10.5 - 120.0	7.0 - 9.0	0.5 - 0.6		X	X	X
7	Adjustable Clamps	**163**	30.0 - 132.0	7.0 - 9.0	0.6		X	X	X
8	1-Ear Clamps (with mechanical interlock)	**105 & 155**	10.5 - 99.5	0.7	0.6 - 0.75	X	X	X	
9	1-Ear Clamps	**153**	3.3 - 17.5	3.0 - 6.0			X	X	
10	1-Ear Clamps with Insert	**154**	2.9 - 17.5	5.5 - 8.2			X	X	
11	2-Ear Clamps	**101 & 151**	4.1 - 46.0	3.5 - 10.0		X	X	X	
12	Constant Tension Clamps	**178**	19.0 - 255.0	9.0	0.6		X	X	X
13	Do-It-Yourself Clamps	**174**	≥ 35.0	5.0 - 18.0	0.5 - 0.8		X	X	X
13	Ratchet Lock Clamps	**174**	≥ 35.0	10.0	0.5		X	X	X

OETIKER provides Clamps and Rings to varied industrial sectors to assure leak-free sealing and fastening solutions.

Applications include a wide range of materials and OETIKER products are used in the following industries:

- agriculture, farm watering and irrigation systems
- appliances, light duty applications
- communication, computerized equipment
- electrical control systems and wiring
- food and beverage dispensing equipment
- environmental, energy, mining, forest
- housing construction, mobile homes, recreational vehicles
- industrial machinery, welding, injection moulding
- medical and life-support systems
- pharmaceutical, scientific instruments
- plant maintenance, heavily vibrating equipment
- automobiles, auto aftermarket
- transit (diesel) systems, trucks, buses, railroad
- marine, shipyard
- off-road, heavy duty or farming equipment

OETIKER Clamps Technical Information

System OETIKER - a series of clamps pioneered by Hans OETIKER, the signature in clamping

Materials

OETIKER Clamps and Rings are manufactured from premium grades of austenitic, ferritic or corrosion protected ferrous strip or band. The standard composition for the majority of products is UNS S30400 or DIN 1.4301. This chromium-nickel grade of the stainless steel material offers excellent corrosion resistance when exposed to a variety of atmospheric or aqueous environments. The customized mechanical and physical properties provide high strength with good formability. Stringent controls are maintained at the OETIKER strip processing facilities to condition the slit material with a smooth edge.
This specially edged bandsteel greatly reduces the potential for damage to the hose material.

Pressure / Sealability

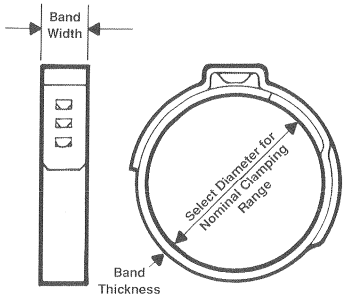
The clamp sealing performance is dependent on the relationship of several factors:

- hose / tubing material, durometer and geometry
- geometrical form between hose core and fitting surface
- service conditions, i.e. operating pressure, temperature, vibration, internal media and environment
- correct clamp selection and installation

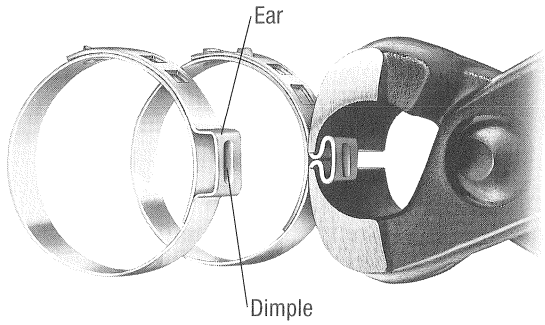
Customers are invited to submit application samples with information of the above listed factors so that OETIKER may determine the appropriate clamp style, size and installation method.

Ordering information

OETIKER Clamps and Rings are manufactured in metric dimensions. Clamps are identified by the nominal clamp size stamped onto the clamps e. g. 145 corresponds to the open clamp diameter of 14.5 mm. However, for correct product selection, please order by 8-digit item numbers.



As a guide: select size nearest to, yet slightly larger than outside diameter to be clamped with connection fully assembled (see OETIKER Product Chart page 3) and price pages for size range / size selection.



Product information

OETIKER has the "ear" with the dimple. The closed "ear" geometry provides an inherent retained load and a spring action in the clamp, permitting expansion and contraction during thermocycling or vibrating conditions. For proper installation and seal, the "ear" must be crimped closed.

OETIKER 360° Stepless® Design

As the name states, the term "Stepless" relates to the absence of steps or gaps on the clamp's inner circumference. The OETIKER Stepless® Clamp Series with its unique, precise tongue-in-groove design provides a 360° uniform sealing compression, that does not depend on the hose to fill in any steps or gaps usually found on the inside of commonly available clamps. Their smooth, inner clamp circumference coupled with the strength of the stainless steel band allows clamps to be narrower, hence lighter in weight – yet retain their strength needed for effective clamping of various hose materials.

Worm drive clamp

OETIKER Stepless® 1-Ear Clamp

OETIKER
Stepless® Ear Clamps

Product Group 167

Features
- precise tongue-in-groove stepless design provides smooth, inner band circumference for 360° uniform seal
- narrow band for concentrated seal compression
- smooth edged bandsteel prevents damage to hose
- light weight, strong low clearance design
- tampering is visible

The term "Stepless" relates to the absence of gaps or steps on the clamp's inner circumference. The unique tongue-in-groove design provides uniform compression and a 360° seal.

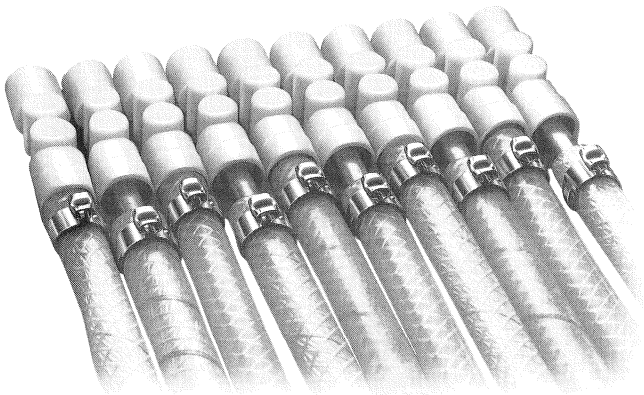
Standard Series Stepless Ear Clamps were perfected for demanding applications where lighter, thin-walled hose or tubing is being used.

The higher retained loads of the OETIKER Stepless Heavy Duty Series are ideal for difficult to seal applications such as moulded thermo-plastics or other less malleable materials, commonly used in the automotive industry.

Material
- **167** Stainless steel band UNS S30400 or DIN 1.4301
- Alternate materials optional

Standard Series

clamp size range	*width / thickness*
6.5 - 11.8 mm	5.0 x 0.5 mm
11.9 - 120.5 mm	7.0 x 0.6 mm
21.0 - 120.5 mm	9.0 x 0.6 mm



Heavy Duty Series

clamp size range	*width / thickness*
25.0 - 120.5 mm	9.0 x 0.8 mm
21.5 - 120.5 mm	10.0 x 0.8 mm
62.0 - 120.5 mm	10.0 x 1.0 mm

custom sizes on request

Clamp Installation
See page 15.

OETIKER
Stepless® Low Profile Clamps

Product Group 168

OETIKER Stepless Low Profile Clamps with only a scant 1.6 mm protrusion from outside of clamp band have been developed for applications with clearance restrictions. They are custom sized to assure the correct compression ratio for individual applications. Clamp designs vary and they may be custom shaped.

OETIKER Stepless Low Profile Clamps do not have the inherent spring action normally provided by OETIKER Clamps with an "Ear". Their seal retention relies solely on the expansion force created by the elasticity of the material being clamped.

OETIKER Stepless Low Profile Clamps are reusable for service and inspections. These clamps can be opened and re-installed several times and can be wrapped around an assembly.

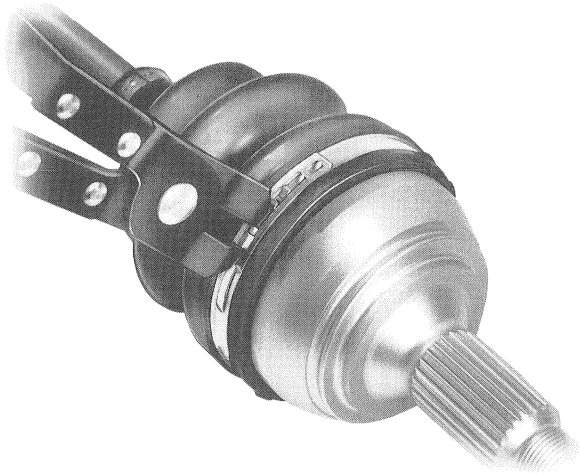
Material
- **168** Stainless steel band UNS S30400 or DIN 1.4301
- Alternate materials optional

clamp size range	*width / thickness*
10.5 - 19.0 mm	9.0 x 0.5 mm
19.5 - 110.0 mm	7.0 x 0.6 mm
25.0 - 120.0 mm	9.0 x 0.6 mm

larger sizes on request

Installation
Installation instructions on request.

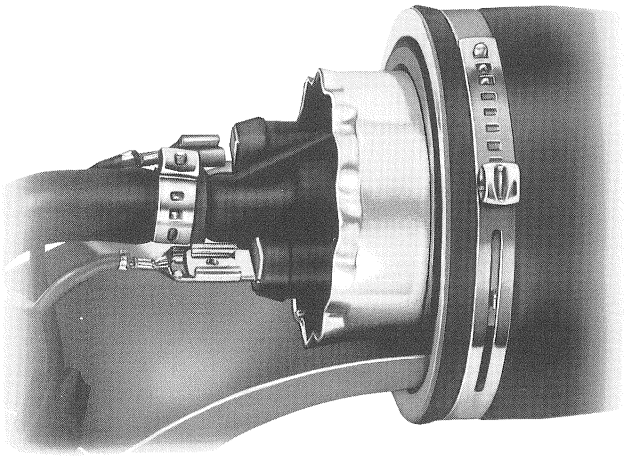
Features
- where clearance is of the essence
- minimal imbalance on rotating parts
- precise tongue-in-groove stepless design provides smooth, inner band circumference for 360° uniform seal
- smooth edged bandsteel prevents damage to hose
- reusable



OETIKER
Adjustable Clamps

Product Group 163

Features
- ideal for CVJ rebuilders
- one clamp fits various diameters
- seals soft neoprene or other low durometer materials
- alignment of underlapping clamp band with radial guide guarantees an effective and strong all-around seal
- fast, easy radial or axial installation
- multi-purpose clamp



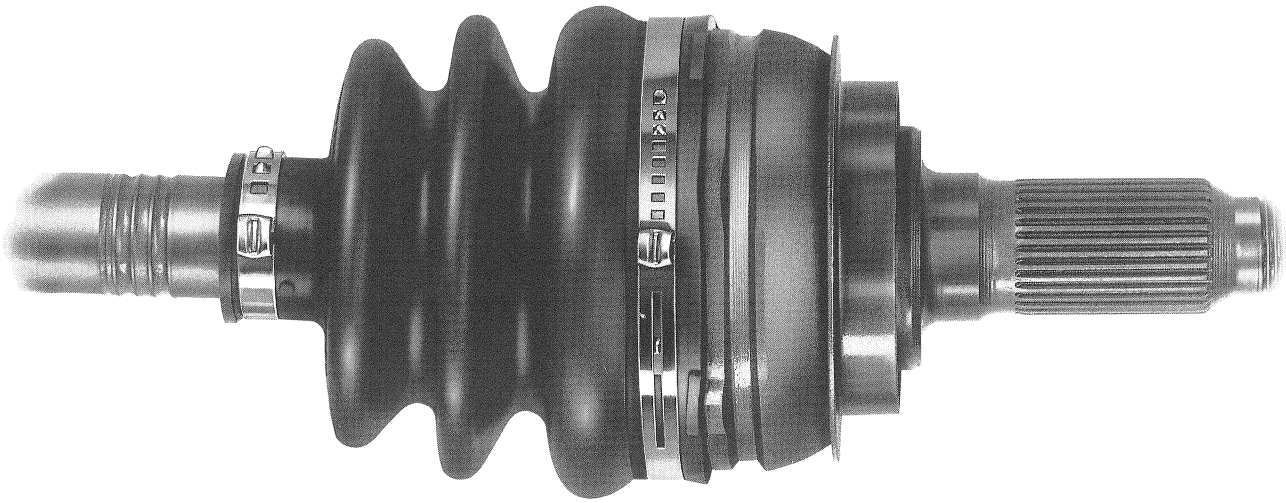
The OETIKER Adjustable Clamps are commonly used to fasten neoprene CV joint boots, rack and pinion bellows and many industrial applications. These high grade stainless steel Adjustable Clamps allow multiple diameter settings.

Material
– **163** Stainless steel band UNS S30400 or DIN 1.4301

clamp size range	*width / thickness*
30.0 - 116.0 mm	7.0 x 0.6 mm
72.0 - 132.0 mm	9.0 x 0.6 mm

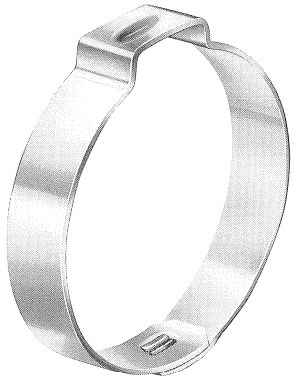
Installation
- place clamp over object
- engage interlocking hooks in tightest window position
- firmly crimp ear with OETIKER pincers

See page 15.



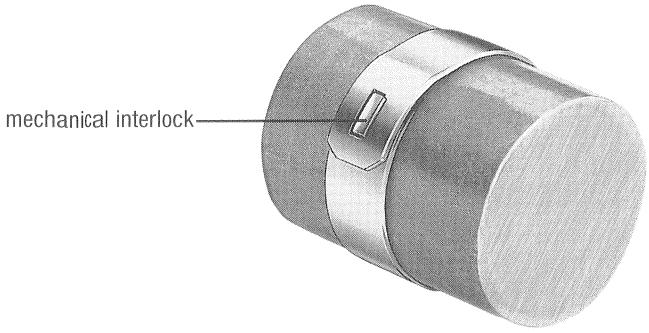
OETIKER
1-Ear Clamps (with mechanical interlock)

Product Group 105 & 155



Features
- narrow band – 7 mm wide
- light weight
- quick and easy to install
- economical
- mechanical interlock allows use of precoated material

An economical quality clamp for light duty low pressure applications. Automotive, industrial and poly pipe tubing are some of the applications this clamp is designed for.
Spotwelding techniques are not used and therefore the possibility of premature failure due to corrosion at the spot weld is eliminated.

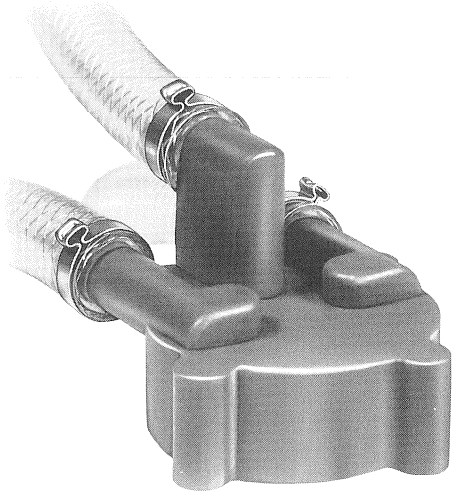


Material
- **105** Hot dipped galvanized or zinc coated carbon steel band
- **155** Stainless steel band UNS S30400 or DIN 1.4301

clamp size range
10.5 - 99.5 mm

larger sizes on request

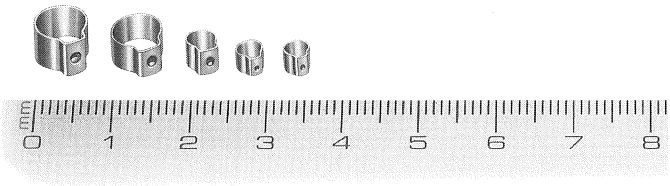
Installation
See page 15.



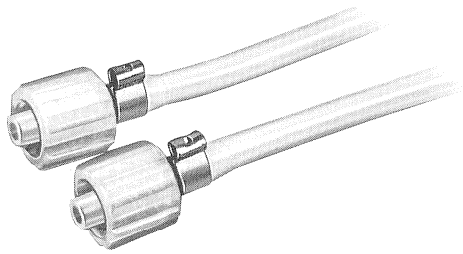
OETIKER
1-Ear Clamps

Product Group 153

Features
- popular for miniature sizes from 3.3 mm diameter
- one-piece design offers quick and easy installation
- smooth edges prevent damage to hose
- for air and fluid media lines



original size



OETIKER 1-Ear Clamps are commonly used where a low profile protrusion and a small, snug clamping range is of the essence.

OETIKER 1-Ear Clamps are well suited for Original Equipment Manufacturing (OEM) or Maintenance, Repair and Overhaul (MRO). EPDM rubber hose, plastic tubing, electrical cable, strain relief, insert moulding, welding and heavily vibrating equipment hoses are readily clamped.

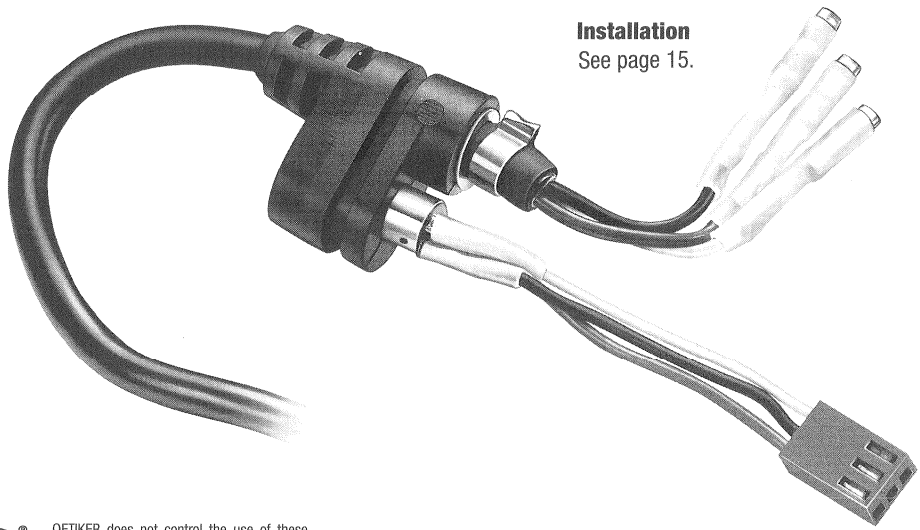
The closed "ear" geometry provides an inherent retained load and a spring action in the clamp, permitting expansion and contraction during thermocycling or vibrating conditions. For proper installation and seal, the "ear" must be crimped closed.

Material
– **153** Stainless steel UNS S30400 or DIN 1.4301

clamp size range
3.3 - 17.5 mm

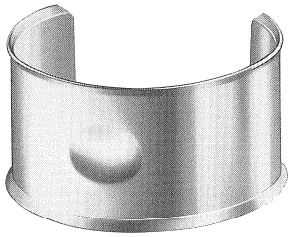
larger sizes on request

Installation
See page 15.



OETIKER
1-Ear Clamps with Insert

Product Group 154



Features
- popular for miniature sizes from 3.3 mm diameter
- design offers quick and easy installation with pincers
- smooth edges prevent damage to hose
- curled insert provides effective all-around seal
- light weight, strong and tamper resistant
- corrosion resistant material

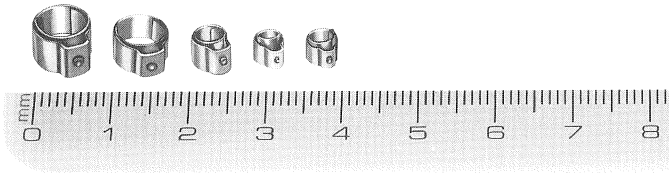
OETIKER 1-Ear Clamps (with Insert) are ideal for very demanding hose or tubing clamping applications, such as rubber or synthetic materials. The curled edges of the "Insert" prevent cutting or damage to hose or tubing materials particulary when subjected to strong pulsation, expansion and contraction.

The thin "Insert" has an oval outward dimple which is positioned precisely under the clamp ear, effectively preventing material from being lifted into the ear gap during clamp closure. This double dimple combination in insert and clamp creates a particular strong all-around effective compression seal.

OETIKER 1-Ear Clamps are well suited for Original Equipment Manufacturing (OEM) or Maintenance, Repair and Overhaul (MRO). EPDM rubber hose, plastic tubing, electrical cable, strain relief, insert moulding, welding and heavily vibrating equipment hoses are readily clamped.

The closed "ear" geometry provides an inherent retained load and a spring action in the clamp, permitting expansion and contraction during thermocycling or vibrating conditions. For proper installation and seal, the "ear" must be crimped closed.

Ideally suited for automotive, medical, pharmaceutical and scientific instrument grade hose and tubing, and a wide varity of applications.



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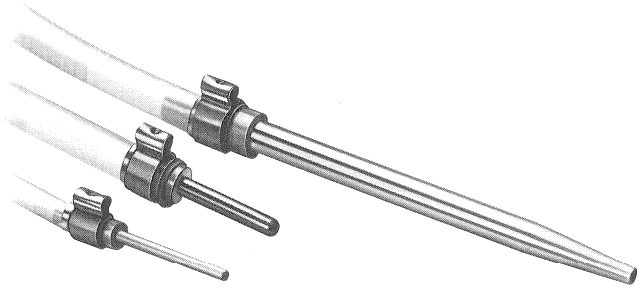
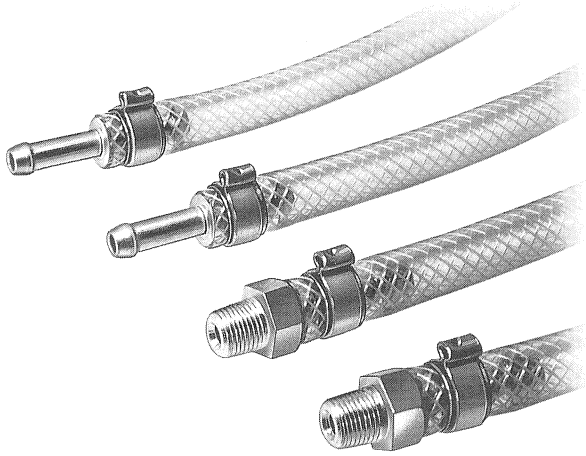




Material

– **154** Clamp: Stainless steel UNS S30400 or DIN 1.4301
Insert: Stainless steel UNS S30200 or DIN 1.4310

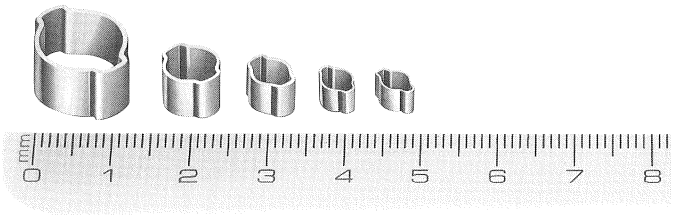
clamp size range
2.9 - 17.5 mm

larger sizes on request

Installation
See page 15.

OETIKER
2-Ear Clamps
Product Group 101 & 151

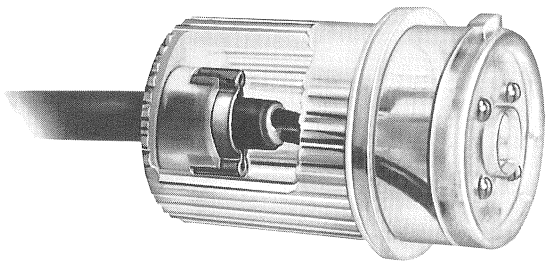
Features
- robust, durable one-piece design offers positive, tamper resistant seal
- for air and fluid media lines
- one-piece design offers quick and easy installation
- smooth edges prevent damage to hose



original size

This is the first "original" OETIKER Ear Clamp invented. It came onto the market in 1951 and revolutionized clamping. To this day, it has remained a best-seller.

OETIKER 2-Ear Clamps are well suited for Original Equipment Manufacturing (OEM) or Maintenance, Repair and Overhaul (MRO). EPDM rubber hose, plastic tubing, electrical cable, strain relief, insert moulding, welding and heavily vibrating equipment hoses are readily clamped.

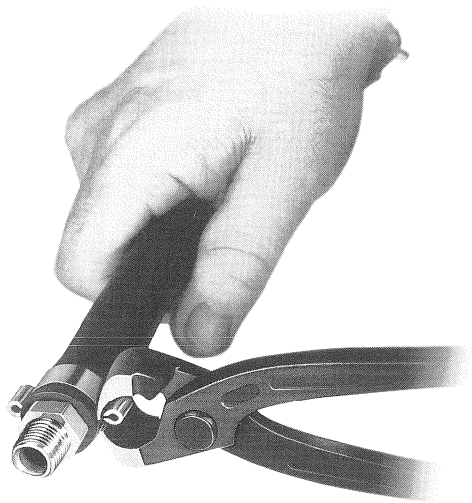


The 2-ear clamp has an increased clamping range over the 1-ear clamps. The closed "ear" geometry provides an inherent retained load and a spring action in the clamp, permitting expansion and contraction during thermocycling or vibrating conditions. For proper installation and seal, the "ear" must be crimped closed.

Material
- **101** Zinc plated carbon steel SAE 1008/1010 or DIN 1.0338
- **151** Stainless steel UNS S30400 or DIN 1.4301

clamp size range
4.1 - 46.0 mm

narrow width clamps on request



Installation
See page 15.

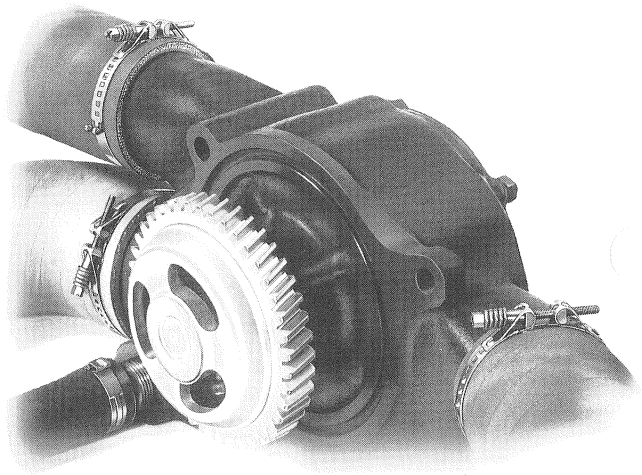
OETIKER
Constant Tension Clamps
OETIKER Stepless® Spring Clamps
Product Group 178

Features
- self-tensioning spring reacts to thermal cycle diameter changes to maintain a strong uniform seal to prevent leakage
- its precise tongue-in-groove (stepless) design provides a smooth inner band circumference with no steps or gaps which guarantees a 360° uninterrupted seal
- slim, light weight, strong, all stainless steel
- conform with: SAE J1508 type SSPC, TMC RP332 type SSPC
- rounded edged bandsteel prevents damage to hose
- multiple diameter settings

OETIKER Stepless Spring Clamps are specifically developed to permanently stop cold leaks with black EPDM or soft silicone coolant system hoses on diesel or other engines. Their less than typical band width, and the precise tongue-in-groove stepless interior, coupled with a low installation torque achieves a strong uniform 360° seal.

Clamp down on cold leaks
Cold leaks occur after an engine is shut off and cools down. The fittings and hoses contract. With conventional clamps loosening of the seal will occur resulting in loss of coolant, environmental concerns and potential damage to the engine. OETIKER Stepless Spring Clamps are designed to help prevent such an occurance.

The clamp installed with a preloaded spring tension effectively compensates for common coolant leakage during thermal cycle changes.



Material

– **178** Bandsteel, spacer,

Pivot Segments (D-Nuts):	Stainless steel UNS S30400 or DIN 1.4301
Screw:	Stainless steel UNS S30200 or DIN 1.4300
Spring:	17-7PH aircraft quality

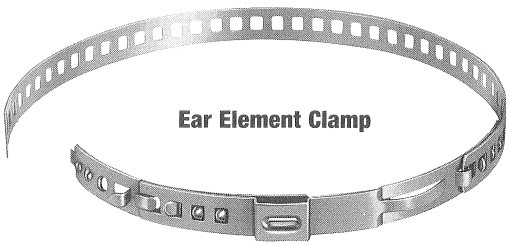
clamp size range	*width / thickness*
19.0 - 255.0 mm	9.0 x 0.6 mm

Range Control Latch windows allow for multiple diameter settings

Installation
Torque guide and installation instructions on request.

OETIKER
Do-It-Yourself Clamps

Product Group 174



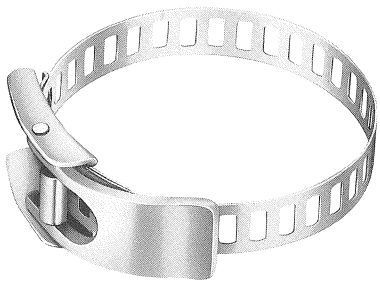
Features
- separate locks and perforated bandsteel
- clamps round, flat or irregular shapes
- in bulk, kits or custom clamp assemblies

Ideally suited for large diameter clamping in a wide range of applications. Do-It-Yourself Clamps can be used for emergency on-the-spot repairs, including marine, at home and industrial use. A variety of separate locks fasten CV-Joints, bellows, ducts, filter or dust bags and many other unique applications.

Note: OETIKER Bandclamps are sufficiently strong for a wide variety of materials, including rubber, plastic and general fastening applications. These products are intended for DIY and repair applications an are not rated for pressure and should not be used where high pressure is involved.

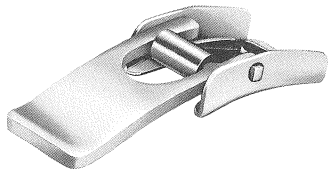
Material
– **174** Stainless steel band and components
UNS S30400 or DIN 1.4301

Installation
Installation instructions on request.



Features
- quick clamping and releasing without tools
- custom sized and reusable
- may be supplied pre-assembled
- choice of materials
- tolerance compensation

Ratchet Lock Clamps



The OETIKER Ratchet Locks as well as the OETIKER Lever Clamps are part of the OETIKER Do-It-Yourself clamping system. Both styles of Lever Clamps are intended to fasten larger diameter objects.

Ratchet Locks are used with perforated stainless steel band.

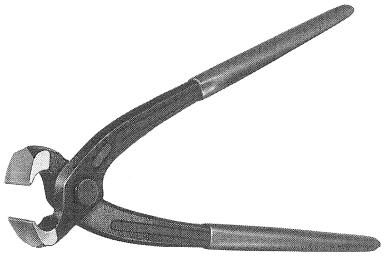
Lever Clamps are custom engineered for specific applications. Features may include tolerance compensation and unperforated band.

Material
– **174** All stainless steel components UNS S 30400 or DIN 1.4301

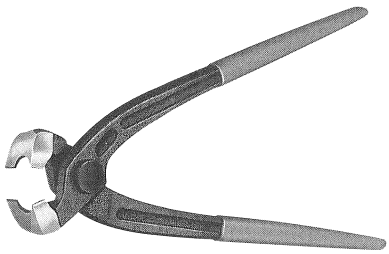
OETIKER
Clamp Installation Tools

Product Group 141 & 144

Straight Jaw Pincers
- Standard Jaw Pincers
- Narrow Jaw Pincers
- Long Handle Pincers



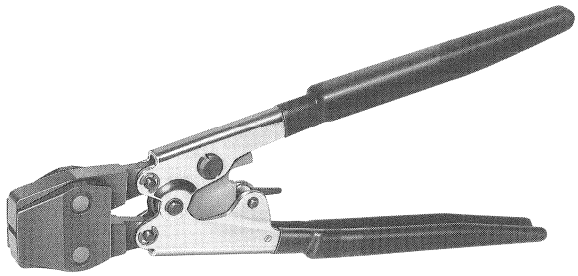
Side Jaw Pincers
- Dual purpose, design allows clamps to be installed and removed with pincers in confined areas held parallel or perpendicular to the hose.



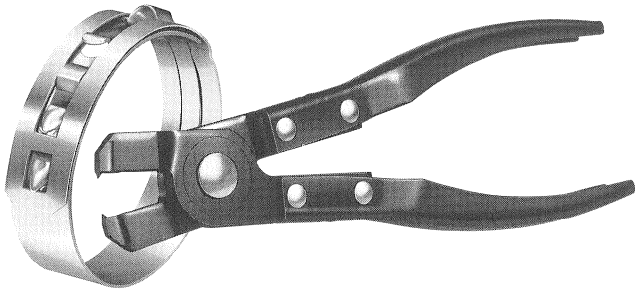
Pneumatic Power Tools
OETIKER provides Pneumatic Power Tools and electronic tool calibration equipment, to ensure proper installation and consistant closure of its clamp products. These tools are recommended to reduce operator fatigue for high volume applications. OETIKER representatives would be pleased to provide technical assistance for tool applications and clamp assembly processes.

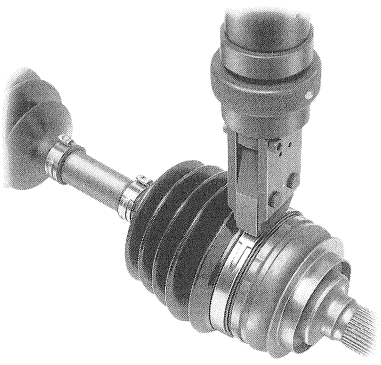
Miniature Clamp Pincers
Stainless steel – may be autoclaved to suit the application.
On request.

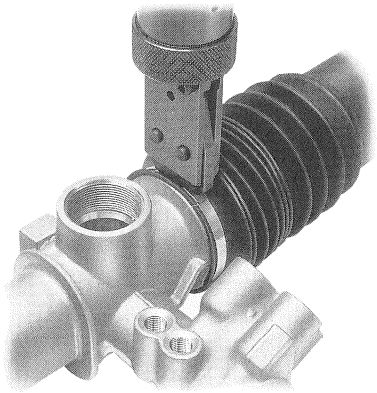
Ratchet Pincers
The Ratchet design ensures complete closure of clamps and will not release until clamp is properly closed.
On request.



Low Profile Pincers
For low profile band with minimal height protrusions.





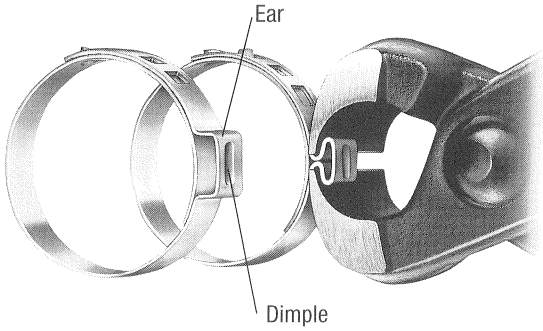


OETIKER Clamps
Installation and instruction

Careful selection and installation of an OETIKER clamp is important to ensure a proper seal or fastened application. OETIKER supplied or recommended tools should be used. OETIKER Ear Clamps are intended for one-time use only. Prying open the clamp renders the product non-functional. Tampering is visible.

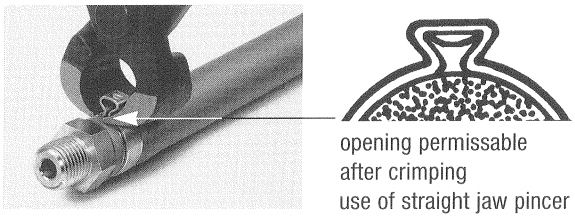
OETIKER invites customers to submit samples with relevant application information, to determine the best suited clamp product and installation method.

- As a guide: select size nearest to, yet slightly larger than outside diameter to be clamped with connection fully assembled
- see product chart on page 3 or OETIKER price pages for clamping range/size selection.

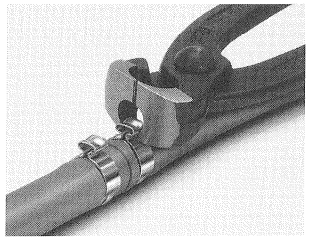


Closing
The clamp "ear" should be crimped with a constant tool jaw force. This method assures that a positive and repeatable stress is applied to the application without excessive component compression or yielding of the band material.
Note: Although the tool may completely close the clamp ear, forces excerted from the compressed material may cause the ear to open up and create a slight opening.

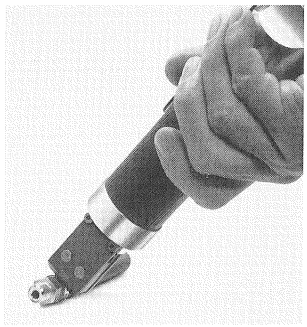
Installation example
Position clamp on hose with end fitting inserted.
Close clamp ear(s) fully.



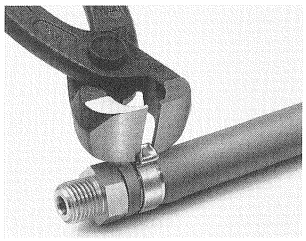
opening permissable
after crimping
use of straight jaw pincer



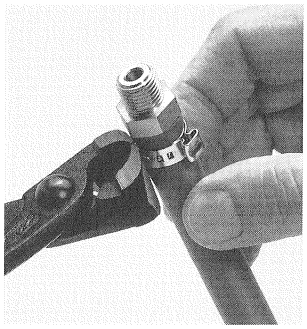
use of side jaw pincer
held parallel to hose



use of pneumatic power tool



Remove clamp by cutting through outer edge of ear with pincers.



To remove stepless or adjustable clamps. Grip band end and pull over ear.

OETIKER Clamps

OETIKER Product Lines

Clamping Technology

OETIKER provides sealing and fastening solutions for most demanding and difficult clamping applications. This is supported by our qualified research and development, engineering and manufacturing techniques, utilizing state-of-the-art testing, design and production methods.

Coupling Technology

OETIKER Swing couplings allow unrestricted full flow and safe, quick connection – disconnection under pressure. The unique design provides superior sealing, ease of operation and long service life.

Thank you for your interest in OETIKER products – Give us a call !

For over 50 years, OETIKER has been developing technology that connects. OETIKER products are manufactured to ISO 9001, QS 9000, VDA 6.1 and ISO 14001 guidelines. OETIKER provides a distribution network for over 40 countries around the world. Various patents attest to OETIKER's commitment to continuous improvement.

Don't just take a clamp ... ... Take an OETIKER

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