



# OETIKER

## Technical Data Sheet

### 1-Ear Clamps

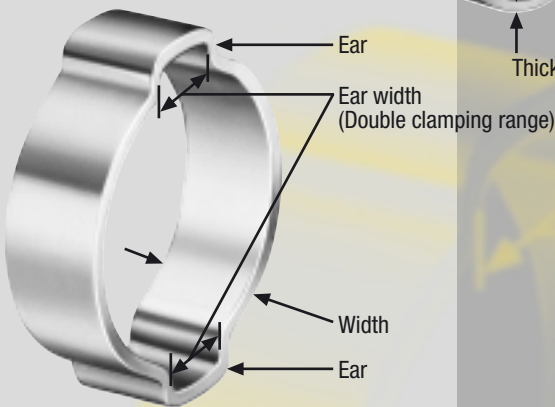
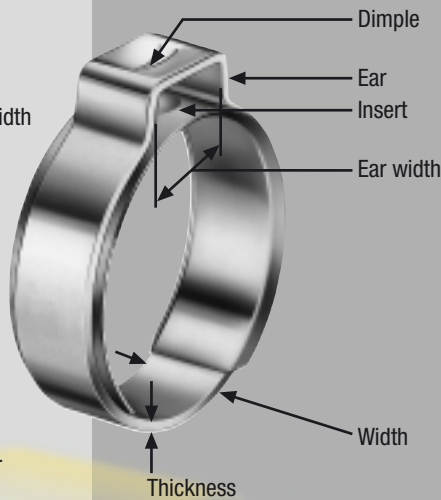
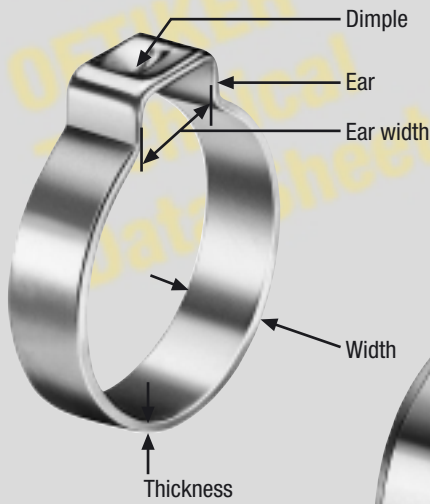
Product Group **153**

### 1-Ear Clamps with Insert

Product Group **154**

### 2-Ear Clamps

Product Group **101 & 151**



Connecting Technology

# Technical Data

## 1-Ear Clamps

Product Group **153 / 154**



### 1-Ear Clamps

OETIKER 1-Ear Clamps are generally used where a quick, repeatable and compact assembly is important in addition to the necessity for only a small clamping range.

OETIKER 1-Ear Clamps are suitable for use by OEMs, but are also ideal for maintenance, repair and service purposes. With this design of clamp, rubber hoses, plastic tubing, electrical cables, welding hoses, and numerous other materials can be rapidly and securely fastened.

OETIKER System – the ear with the integrated dimple. This concept ensures that the geometry of the closed ear remains as low as possible, in addition to maintaining the effective clamping force. The closed ear geometry provides an inherent spring action in the clamp, permitting expansion and contraction during thermocycling conditions without excessive loss in retention.

For optimum sealing performance, it is essential that the ear is correctly closed during installation.

#### Material

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

#### Size

See page 4.

#### Installation

See page 6.



Actual size

The information provided in this data sheet is intended for reference purposes only and should not be considered a specification. OETIKER invites customers to submit samples with relevant application information, to determine the best suited clamp product and installation method.

#### Features

- Fast, simple, secure installation
- Smooth de-burred edges prevent damage to clamped parts
- Deformation of ear provides visual indication that clamp is closed

#### 1-Ear Clamps with Insert

- For diameters as low as 2.9 mm
- Insert ring with curled edges, bridges the gap created by the ear to ensure complete circumferential sealing

### 1-Ear Clamps with Insert

OETIKER 1-Ear Clamps with Insert are ideal for critical joints that incorporate soft or hard rubber, or plastic materials. The insert bridges the gap created by the ear and the curled edges of the insert prevent the material being compressed from superficial damage.

The thin-walled insert incorporates an oval, deep drawn protrusion situated within the ear cavity to ensure that the insert maintains its circular profile while preventing the hose material from extruding into the ear. The prevention of this condition is critical when compressing soft materials. The double dimple combination ensures permanent all-round sealing.

OETIKER System – the ear with the integrated dimple. This concept ensures that the geometry of the closed ear remains as low as possible, in addition to maintaining the effective clamping force. The closed ear geometry provides an inherent spring action in the clamp, permitting expansion and contraction during thermocycling conditions without excessive loss in retention.

For optimum sealing performance, it is essential that the ear is correctly closed during installation.

The 1 Ear Clamp-with-Insert is compatible to numerous automotive applications, medical equipment, in addition to electrical and electronic components.

#### Material

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

Insert: Stainless steel DIN 1.4310 or UNS S30200

#### Size range

See page 4.

#### Installation

See page 6.

# Technical Data

## 2-Ear Clamps

Product Group **101 & 151**



The first OETIKER "Original" ear clamp

On the market since 1951, Hans Oetiker's innovative design caused a worldwide revolution in connecting technology and this type of clamp is still frequently used today.

OETIKER 2-Ear Clamps are suitable for use by OEMs, but also for maintenance, repair and service purposes. With this type of clamp, rubber hoses, plastic tubing, electrical cables, welding hoses, and other materials can be securely fastened.

Compared to 1-ear clamps, 2-ear clamps are suitable for a wider diameter range. The geometry of the closed ears increases the effective clamping force, and provides a degree of elasticity to accommodate changes in size of the parts being joined, such as may be caused by thermal expansion or vibration.

For perfect sealing, it is essential that the ears are correctly closed during installation.

### Material

- **101** Steel DIN 1.0338 or SAE 1008/1010, zinc-plated
- **151** Stainless steel DIN 1.4301 or UNS S30400

### Size range

See page 4.

### Installation

See page 6.



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### Features

- Robust design for good, permanent sealing
- Ideal for air and liquid lines
- Fast, simple, secure installation
- 2-Ear design gives increased clamping range
- De-burred edges prevents damage to clamped parts
- Deformation of ears provides visual indication that clamp is closed

### Installation tools

OETIKER supplies pincers for manual closure.



OETIKER recommends pneumatic pincers with electronic gauging, to ensure repeatable assembly and uniform closure, particularly for mass production applications.



The innovative "Electronically Controlled Pneumatic Power Tool OETIKER ELK 01" guarantees reliable installation with electronic monitoring of all necessary parameters. It practically eliminates the possibility of any unnoticed defective closures.



For further information, please see the OETIKER Tool Catalogue.

# Technical Data

## 1-Ear Clamps / 1-Ear Clamps with Insert / 2-Ear Clamps

### Product Group 153 / 154 / 101 & 151



#### Item No. Ref. No. Size range (mm)

##### 1-Ear Clamps, stainless

15300000	03.3R	2.9 - 3.3
15300001	03.5R	3 - 3.5
15300002	04.1R	3.3 - 4.1
15300054	04.6R	3.8 - 4.6
15300003	05.1R	4.1 - 5.1
15300055	05.6R	4.6 - 5.6
15300004	06.1R	5.1 - 6.1
15300005	06.6R	5.2 - 6.6
15300006	07.0R	6.1 - 7
15300007	07.5R	6.5 - 7.5
15300008	08.0R	6.8 - 8
15300009	08.3R	7.1 - 8.3
15300010	08.7R	7.5 - 8.7
15300011	09.0R	7.5 - 9
15300012	09.5R	8.1 - 9.5
15300013	10.0R	8.5 - 10
15300014	10.5R	9.1 - 10.5
15300015	11.0R	9.3 - 11
15300016	11.3R	9.6 - 11.3
15300017	11.8R	10.1 - 11.8
15300018	12.0R	10.1 - 12
15300019	12.3R	10.3 - 12.3
15300020	12.8R	10.8 - 12.8
15300021	13.3R	11.3 - 13.3
15300022	13.8R	11.8 - 13.8
15300023	14.0R	12 - 14
15300024	14.5R	12.5 - 14.5
15300025	15.0R	13 - 15
15300026	15.5R	13.5 - 15.5
15300027	16.0R	13.8 - 16
15300028	16.5R	14 - 16.5
15300029	16.8R	14.6 - 16.8
15300030	17.5R	15.3 - 17.5
15300031	18.5R	16.3 - 18.5
15300032	19.5R	17.2 - 19.5
15300033	20.0R	17.7 - 20
15300034	20.7R	17.9 - 20.7
15300035	21.0R	18.7 - 21
15300036	21.8R	19.5 - 21.8
15300037	22.5R	19.9 - 22.5
15300038	23.5R	21 - 23.5
15300040	24.5R	21.7 - 24.5
15300041	25.5R	22.7 - 25.5
15300043	26.3R	23.6 - 26.3
15300044	27.0R	24.1 - 27
15300045	30.7R	27.2 - 30.7

#### Item No. Ref. No. Size range (mm)

##### 1-Ear Clamps with Insert, stainless

15400010	03.3RER	2.5 - 2.9
15400011	03.5RER	2.7 - 3.1
15400012	04.1RER	2.9 - 3.7
15400063	04.6RER	3.4 - 4.2
15400013	05.1RER	3.7 - 4.7
15400064	05.6RER	4.2 - 5.2
15400014	06.1RER	4.7 - 5.7
15400015	06.6RER	5.2 - 6.2
15400016	07.0RER	5.6 - 6.5
15400017	07.5RER	5.9 - 7
15400018	08.0RER	6.3 - 7.5
15400019	08.3RER	6.6 - 7.8
15400020	08.7RER	7 - 8.2
15400021	09.0RER	7 - 8.5
15400022	09.5RER	7.5 - 9
15400023	10.0RER	8 - 9.5
15400024	10.5RER	8.5 - 10
15400025	11.0RER	8.8 - 10.5
15400026	11.3RER	9.1 - 10.8
15400027	11.8RER	9.6 - 11.3
15400028	12.0RER	9.5 - 11.5
15400029	12.3RER	9.8 - 11.8
15400030	12.8RER	10.3 - 12.3
15400031	13.3RER	10.6 - 12.6
15400032	13.8RER	11.1 - 13.1
15400033	14.0RER	11.3 - 13.3
15400034	14.5RER	11.8 - 13.8
15400035	15.0RER	12.3 - 14.3
15400036	15.5RER	12.8 - 14.8
15400037	16.0RER	13.1 - 15.3
15400038	16.5RER	13.2 - 15.8
15400039	16.8RER	13.9 - 16.1
15400040	17.5RER	14.6 - 16.8
15400041	18.5RER	15.6 - 17.8
15400042	19.5RER	16.5 - 18.8
15400043	20.0RER	17.1 - 19.3
15400044	20.7RER	17.1 - 20
15400045	21.0RER	18 - 20.3
15400046	21.8RER	18.8 - 21.1
15400065	22.5RER	19.2 - 21.8
15400048	23.5RER	20.2 - 22.8
15400049	24.5RER	21 - 23.8
15400050	25.5RER	22 - 24.8
15400051	26.3RER	23 - 25.6
15400052	27.0RER	23.3 - 26.3
15400053	30.7RER	26.5 - 30

#### Item No. Ref. No. Size range (mm)

##### 2-Ear Clamps, zinc-plated

10100000	0041	3.1 - 4.1
10100001	0045	3.5 - 4.5
10100002	0305	3.4 - 5
10100004	0507	5 - 7
10100008	0709	7 - 9
10100011	0811	8.1 - 11
10100016	1113	10.8 - 13
10100019	1315	12.5 - 15
10100022	1517	14 - 17
10100097	1619	16 - 19
10100027	1720	16.2 - 20
10100029	1922	18 - 22
10100030	2023	19 - 23
10100032	2225	21 - 25
10100034	2327	22.5 - 27
10100035	2528	24 - 28
10100037	2731	26.3 - 31
10100041	3134	29.3 - 34
10100043	3437	32 - 37
10100045	3740	35 - 40
10100047	4043	37.6 - 43
10100049	4346	40.6 - 46

##### 2-Ear Clamps, stainless

15100000	0041R	3.1 - 4.1
15100001	0045R	3.5 - 4.5
15100002	0305R	3.4 - 5
15100003	0507R	5 - 7
15100004	0709R	7 - 9
15100023	0811R	8 - 11
15100006	1113R	11 - 13
15100007	1315R	12.5 - 15
15100008	1517R	14 - 17
15100010	1720R	16.2 - 20
15100011	1922R	18.1 - 22
15100012	2023R	19.1 - 23
15100013	2225R	21.1 - 25
15100014	2327R	22.5 - 27
15100015	2528R	24 - 28
15100016	2731R	26.3 - 31
15100018	3134R	29.3 - 34
15100019	3437R	32 - 37
15100020	3740R	35 - 40
15100021	4043R	37.6 - 43
15100022	4346R	40.6 - 46

# Technical Data

## 1-Ear Clamps / 1-Ear Clamps with Insert / 2-Ear Clamps

Product Group **153 / 154 / 101 & 151**



### 1.0 Material

OETIKER 1-Ear and 2-Ear Clamps are made from zinc-plated steel to DIN 1.0338 / SAE 1008/1010, or from an 18% chromium 8% nickel, austenitic grade of stainless steel to specifications DIN 1.4301 / UNS S30400.

### Process

The manufacturing process for the OETIKER 1-Ear and 2-Ear Clamps commences with the spiral roll-forming and welding of raw material into lengths of tube, a technique developed to obtain a robust, continuous welded ring.

Flat strip is rolled at approximately 45° into a tube forming die and the spiral edge TIG welded (Tungsten Inert Gas). The welded tube is drawn to precise inside and outside diameters prior to being cut into rings and the final formation of the ear configuration. An annealing process reduces the internal stresses produced during the manufacturing process and ensures uniform mechanical properties.

### Edge condition

Burrs generated during the shearing and forming process are entirely eliminated in a barrel-finishing operation.

### Corrosion resistance

To ensure the level of corrosion resistance expected by industry, all clamps made of DIN 1.0338 / SAE 1008/1010 are zinc-plated and chromated. This coating ensures that the clamps will withstand a 96-hour salt-spray test to DIN 50021 / ASTM B117 without red rust formation.

Due to the chemical composition of the material, all clamps made from the stainless steel grade DIN 1.4301 / UNS S30400 have excellent resistance to many corrosive environments without additional protection.

### 2.0 Clamp Design

OETIKER 1-Ear Clamps:

The ear of OETIKER 1-Ear Clamp incorporates the integrated dimple, which has the effect of not only maintaining a low overall height but maintains the highest possible clamping force.

### Closure

By using an OETIKER closing tool to pinch the clamp ear, the diameter of the clamp is reduced. This diameter reduction is proportional to the ear width. The maximum reduction in diameter is given by the formula:

$$\text{Max. diameter reduction} = \frac{\text{ear-width}}{\pi}$$

OETIKER 1-Ear Clamps with Insert:

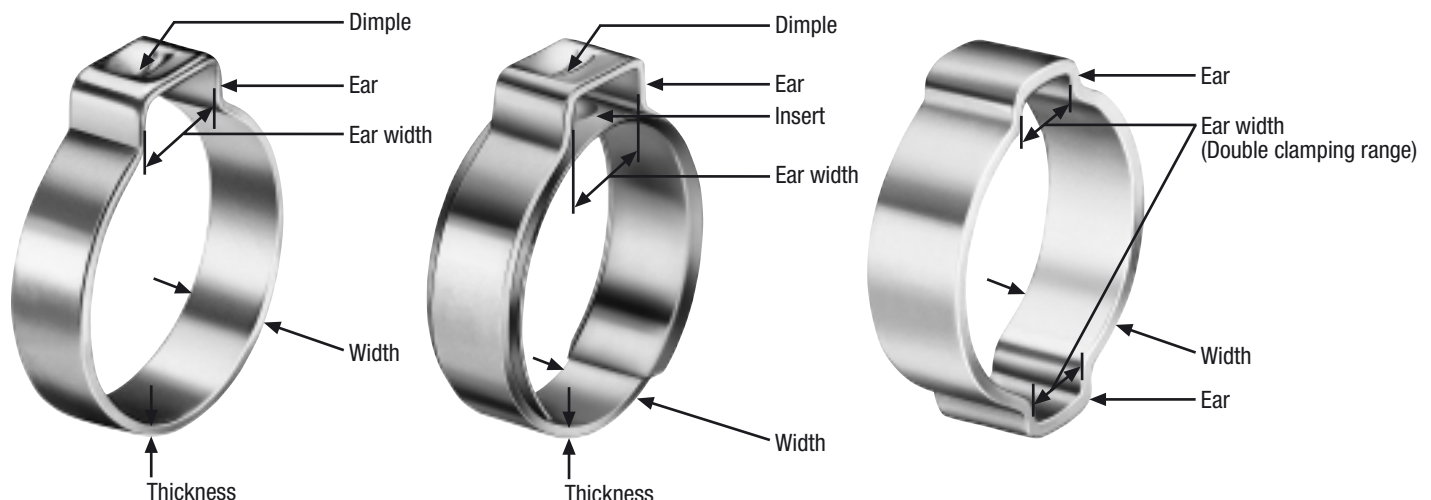
This type of clamp combines the geometry and properties of the 1-Ear Clamp with an additional insert made of stainless steel to DIN 1.4310 or UNS S30100.

These clamps are ideal for demanding applications involving soft or hard rubbers and plastics. The thin-walled insert ring (up to 0.3 mm thick) with the oval protrusion located within the ear cavity, bridges the ear gap and ensures almost uniform compression around the whole circumference of a clamp.

OETIKER 2-Ear Clamps:

Due to the two-ear design, the clamping range is greater – up to twice that of a 1-Ear Clamp – therefore, these clamps are more suitable for applications that contain thick wall hoses and require higher compression factors. Installation techniques are typical to that of the 1-Ear Clamp, however, the stress applied when closing the second ear may react against the opposing closed ear and a secondary “crimp” may be necessary.

For perfect sealing, the ears must be adequately closed during installation.



# Technical Data

## 1-Ear Clamps / 1-Ear Clamps with Insert / 2-Ear Clamps

Product Group **153 / 154 / 101 & 151**

### 3.0 Assembly recommendations

The ears of these clamps should be closed with the recommended, uniform force (known as force priority). This method will result in a constant, reproducible stress within the clamp material, without overloading either the clamp or the parts being assembled.

Complete process monitoring and 100% process documentation is available using the “Electronically Controlled Pneumatic Power Tool” OETIKER ELK 01.

Alternatively, the appropriate manually operated hand tool is applied to the ears and closed with sufficient force to draw the lower radii together to a position where obvious component compression is evident and the clamp ear assumes a symmetrical “omega” shaped formation.



#### Average required closing forces

Material- dimensions	Closing force (N)		Manual closure tool*	Recommended pneumatic pincer**
	Zinc-plated steel	Stainless		
<b>1-Ear Clamps</b>				
03.3 - 11.0	-	1400 - 1800	14100082, 14100083	HO 2000
11.3 - 20.7	-	2300 - 2800	14100082, 14100083	HO 3000
21.0 - 30.7	-	2800 - 3200	14100082, 14100083	HO 3000
<b>1-Ear Clamps with Insert</b>				
03.3 - 11.8	-	1500 - 1900	14100082, 14100083	HO 2000
12.0 - 20.7	-	2500 - 3000	14100082, 14100083	HO 3000
21.0 - 30.7	-	3600 - 4200	14100082, 14100083	HO 4000
<b>2-Ear Clamps</b>				
0041 - 1720	2200 - 2800	2500 - 3100	14100082, 14100083	HO 3000
1922 - 4346	3400 - 4000	3600 - 4200	14100082, 14100083	HO 4000

\* 14100082 Manual pincer – standard, 14100083 Manual pincer with side cutter.

\*\* With appropriate closing-force setting!

### Important

This data is intended only as a guide and may require validation by means of trial assemblies with sample components prior to implementing a system assembly specification.

