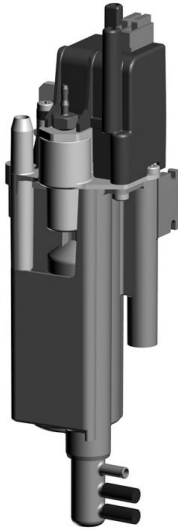


# Vario rinsing unit



EN Installation and operating instructions



The current version of the installation and operating instructions is available in the Download Center:



<http://qr.duerdental.com/7100100013>

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## ! Important information

### 1 About this document

These installation and operating instructions represent part of the unit.

 If the instructions and information in these installation and operating instructions are not followed, Dürr Dental will not be able to offer any warranty or assume any liability for the safe operation and the safe functioning of the unit.

The German version of the installation and operating instructions is the original manual. All other languages are translation of the original manual. These installation and operating instructions apply to:

#### Vario rinsing unit


REF: 7100-260-00; 7100-260-50; 7100-260-51; 7100260030; 7100260031


### 1.1 Warnings and symbols

#### Warnings

The warnings in this document are intended to draw your attention to possible injury to persons or damage to machinery.

The following warning symbols are used:

 General warning symbol

 Biohazard warning

The warnings are structured as follows:



#### SIGNAL WORD

#### Description of the type and source of danger

Here you will find the possible consequences of ignoring the warning

- › Follow these measures to avoid the danger.

The signal word differentiates between four levels of danger:

- **DANGER**  
Immediate danger of severe injury or death
- **WARNING**  
Possible danger of severe injury or death
- **CAUTION**  
Risk of minor injuries
- **NOTICE**  
Risk of extensive material/property damage

#### Other symbols

These symbols are used in the document and on or in the unit:



Note, e.g. specific instructions regarding efficient and cost-effective use of the unit.



Refer to Operating Instructions.



Wear protective gloves.



Disconnect all power from the unit.



Refer to the accompanying electronic documents.



Comply with the lower and upper temperature limits



Comply with the lower and upper humidity limits



CE labelling



Conformity mark for the United Kingdom of Great Britain and Northern Ireland



Order number



Serial number



Health Industry Bar Code (HIBC)



Manufacturer

## 1.2 Copyright information

All circuits, processes, names, software programs and units mentioned in this document are protected by copyright.

The installation instructions must not be copied or reprinted, either in full or excerpts thereof, without written authorisation from Dürr Dental.

## 2 Safety

Dürr Dental has developed and designed the unit in such a way that dangers are effectively ruled out if the unit is used in accordance with the Intended Use. Nevertheless, residual risks can remain. You should therefore observe the following notes.

### 2.1 Intended purpose

The rinsing unit supplies fresh water to the dental suction system, ensuring that the suction system is kept moist during the suction process.

### 2.2 Intended use

The rinsing unit can be integrated into either "dry" or into "wet" suction systems.

The rinsing unit may only be connected to a fresh water supply. In case of excessive water pressure, a pressure reducer must be installed upstream from the rinsing unit.

### 2.3 Improper use

Any use of this appliance / these appliances above and beyond that described in the Installation and Operating Instructions is deemed to be incorrect usage. The manufacturer cannot be held liable for any damage resulting from incorrect usage. The operator will be held liable and bears all risks.

### 2.4 General safety information

- › Always comply with the specifications of all guidelines, laws, and other rules and regulations applicable at the site of operation for the operation of this unit.
- › Check the function and condition of the unit prior to every use.
- › Do not convert or modify the unit.
- › Comply with the specifications of the Installation and Operating Instructions.
- › The Installation and Operating Instructions must be accessible to all operators of the unit at all times.

## 2.5 Systems, connection with other devices

Additional devices connected with medical electrical devices must be proven to conform with their corresponding IEC or ISO standards. All configurations must continue to comply with the standard requirements for medical systems (see IEC 60601-1).

Whoever connects additional devices to medical electrical devices automatically becomes the system configurator and is responsible for ensuring that the system corresponds with the standard requirements for systems. Local laws take priority over the requirements outlined above.

## 2.6 Specialist personnel

### Operation

Unit operating personnel must ensure safe and correct handling based on their training and knowledge.

- › Instruct or have every user instructed in handling the unit.

### Installation and repairs

- › Installation, readjustments, alterations, upgrades and repairs must be carried out by Dürr Dental or by qualified personnel specifically approved and authorized by Dürr Dental.

## 2.7 Electrical safety

- › Comply with all the relevant electrical safety regulations when working on the unit.
- › Never touch the patient and unshielded plug connections on the device at the same time.
- › Replace any damaged cables or plugs immediately.

## 2.8 Only use original parts

- › Only use accessories and optional items that have been recommended or specifically approved by Dürr Dental.
- › Only use only original wear parts and replacement parts.

## 2.9 Essential performance characteristics

The rinsing unit does not have any essential performance characteristics as set out in IEC 60601-1 (EN 60601-1) section 4.3.

The unit complies with the requirements according to IEC 60601-1-2:2014.

## 2.10 Transport

The original packaging provides optimum protection for the unit during transport.

If required, original packaging for the unit can be ordered from Dürr Dental.



Dürr Dental will not accept any responsibility or liability for damage occurring during transport due to the use of incorrect packaging, even where the unit is still under guarantee.

- › Only transport the unit in its original packaging.
- › Keep the packing materials out of the reach of children.

## 2.11 Disposal



The unit may be contaminated. Instruct the company disposing of the waste to take the relevant safety precautions.

- › Decontaminate potentially contaminated parts before disposing of them.
- › Uncontaminated parts (e.g. electronics, plastic and metal parts etc.) should be disposed of in accordance with the local waste disposal regulations.
- › If you have any questions about the correct disposal of parts, please contact your dental trade supplier.



An overview of the waste keys for Dürr Dental products can be found in the download area:



<http://qr.duerdental.com/P007100155>



## Product description

### 3 Overview

#### 3.1 Scope of delivery

The following items are included in the scope of delivery (possible variations due to country-specific requirements and/or import regulations):

Vario rinsing unit 24 V AC/DC . . . . . 7100xx

- Fixing materials
- Short information

#### 3.2 Accessories

The following items are required for operation of the device, depending on the application:

Parts set with mounting materials  
and connection hoses . . . . . 0781-500-55

Fresh water hose 2x1x4 mm . . . . . 9000-317-54

#### 3.3 Optional items

The following optional items can be used with the device:

Adapter nozzles (set of 5) . . . . . 7100-250-13E

Non-return valve NW10 . . . . . 0700-730-50E

Housing . . . . . 7100-800-00

#### 3.4 Spare parts



Information about replacement parts is available from the portal for authorised specialist dealers at:

*[www.duerrdental.net](http://www.duerrdental.net)*

## 4 Technical data

### Electrical data

Rated voltage	V AC	24
	V DC	24 - 36
Electrical frequency (for AC)	Hz	50/60
Nominal current	mA	130
Type of protection		IP 00
Protection class		II

### General data

Dimensions (H x W x D)	mm	168 x 51 x 42
Weight, approx.	kg	~0,085
Water pressure	bar	2 - 5
Water inflow approx.	l/min	0.5

### Ambient conditions during storage and transport

Temperature	°C	-29 - +60
Relative humidity	%	< 95
Air pressure	hPa	700 - 1060

### Ambient conditions during operation

Temperature	°C	+10 - +40
Relative humidity	%	< 90
Air pressure	hPa	700 - 1060

### Electromagnetic compatibility (EMC)

#### Interference emission measurements

High-frequency emissions in accordance with CISPR 11		Group 1 Class B
Interference voltage at the power supply connection CISPR 11:2009+A1:2010		Compliant
Electromagnetic interference radiation CISPR 11:2009+A1:2010		Compliant
Emission of harmonics IEC 61000-3-2:2005+A1:2008+A2:2009		N/A
Voltage changes, voltage fluctuations and flicker emissions IEC 61000-3-3:2013		N/A
N/A = not applicable		



### Electromagnetic compatibility (EMC) Interference immunity measurements

Immunity to electrostatic discharge IEC 61000-4-2:2008	Compliant
Immunity to high-frequency electromagnetic fields IEC 61000-4-3:2006+A1:2007+A2:2010	Compliant
Immunity to near fields of wireless HF communication devices IEC 61000-4-3:2006+A1:2007+A2:2010	Compliant
Immunity to fast electrical transients/bursts – AC mains voltage IEC 61000-4-4:2012	Compliant
Immunity to electrical fast transients/bursts – I/O, SIP/SOP ports IEC 61000-4-4:2012	N/A
Immunity to interference, surges IEC 61000-4-5:2005	Compliant
Immunity to conducted disturbances, induced by radio-frequency fields – AC mains voltage IEC 61000-4-6:2013	Compliant
Immunity to conducted disturbances, induced by radio-frequency fields – SIP/SOP ports IEC 61000-4-6:2013	N/A
Immunity to power frequency magnetic fields IEC 61000-4-8:2009	N/A
Immunity to voltage dips, short interruptions and voltage variations IEC 61000-4-11:2004	N/A
N/A = not applicable	

### Electromagnetic compatibility (EMC) Interference immunity measurements on the supply input

Immunity to fast electrical transients/bursts – AC mains voltage IEC 61000-4-4:2012 ± 2 kV 100 kHz repetition rate	Compliant
Immunity to surges, line-to-line IEC 61000-4-5:2005 ± 0.5 kV, ± 1 kV	Compliant
Immunity to surges, line-earth IEC 61000-4-5:2005 ± 0.5 kV, ± 1 kV, ± 2 kV	N/A

**Electromagnetic compatibility (EMC)  
Interference immunity measurements on the supply input**

Immunity to conducted disturbances, induced by radio-frequency fields – AC mains voltage IEC 61000-4-6:2013 3 V 0.15–80 MHz	Compliant
6 V ISM frequency bands 0.15–80 MHz 80% AM at 1 kHz	
Immunity to voltage dips, short interruptions and voltage variations IEC 61000-4-11:2004	N/A
N/A = not applicable	

**Electromagnetic compatibility (EMC)  
Interference immunity measurements SIP/SOP**

Immunity to electrical fast transients/bursts – I/O, SIP/SOP ports IEC 61000-4-4:2012 ± 1 kV 100 kHz repetition rate	N/A
Immunity to impulse voltages, conductor to earth IEC 61000-4-5:2005 ± 2 kV	N/A
Immunity to conducted disturbances, induced by radio-frequency fields – SIP/SOP ports IEC 61000-4-6:2013 3 V 0.15–80 MHz	N/A
6 V ISM frequency bands 0.15–80 MHz 80% AM at 1 kHz	
N/A = not applicable	

**Electromagnetic compatibility (EMC)  
Interference immunity measurements on the cover**

Immunity to electrostatic discharge IEC 61000-4-2:2008 ± 8 kV contact ± 2 kV, ± 4 kV, ± 8 kV, ± 15 kV air	Compliant
Immunity to high-frequency electromagnetic fields IEC 61000-4-3:2006+A1:2007+A2:2010 3 V/m 80 MHz–2.7 GHz 80% AM at 1 kHz	Compliant

### Electromagnetic compatibility (EMC) Interference immunity measurements on the cover

Immunity to near fields of wireless HF communication devices

IEC 61000-4-3:2006+A1:2007+A2:2010

Compliant

Refer to the table with immunity to interference levels for near fields of wireless HF communication devices.

Immunity to power frequency magnetic fields

IEC 61000-4-8:2009

30 A/m

N/A

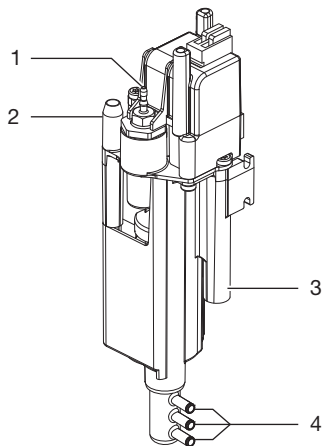
30 Hz or 60 Hz

N/A = not applicable

### Immunity to interference table, near fields of wireless HF communication devices

Radio service	Frequency band MHz	Test level V/m
TETRA 400	380 - 390	27
GMRS 460 FRS 460	430 - 470	28
LTE band 13, 17	704 - 787	9
GSM 800/900 TETRA 800 iDEN 820 CDMA 850 LTE band 5	800 - 960	28
GSM 1800 CDMA 1900 GSM 1900 DECT LTE band 1, 3, 4, 25 UMTS	1700 - 1990	28
Bluetooth WLAN 802.11 b/g/n RFID 2450 LTE band 7	2400 - 2570	28
WLAN 802.11 a/n	5100 - 5800	9

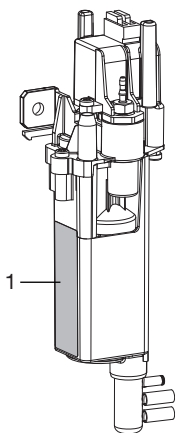
## 4.1 Connections



- 1 Water connection  $\varnothing$  2 mm
- 2 Additional water inlet connection  $\varnothing$  7 mm
- 3 Waste water connection  $\varnothing$  10 mm
- 4 Rinse connector  $\varnothing$  3.7 mm

## 4.2 Type plate

The type plate is located on the water collection chamber.



- 1 Type plate

## 4.3 Certification

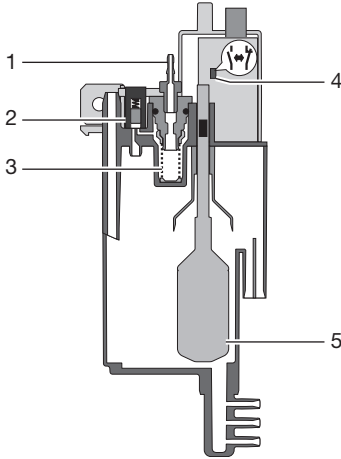
DVGW: on request

## 4.4 Evaluation of conformity

This device has been subjected to conformity acceptance testing in accordance with the current relevant European Union guidelines. This equipment conforms to all relevant requirements.

## 5 Operation

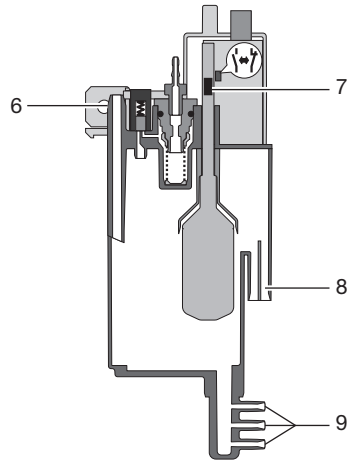
The rinsing unit is supplied with water via the water connection. The rinsing container is filled via the fine filter and the water solenoid valve. The water solenoid valve is operated by an electronic controller. The controller contains a sensor which monitors the upper position of the integrated float sensor.



- 1 Water connection
- 2 Water solenoid valve
- 3 Fine filter
- 4 Sensor
- 5 Float sensor

When suction begins at the treatment unit, the rinsing unit is provided with current. If the float sensor lies below the maximum fill level, the electronic controller opens the water solenoid valve. Water can now pass through the fine filter and the water solenoid valve into the water collection chamber, flowing along an intake with a 25 mm drop.

The filling of the water collecting container raises the float monitor. The float rod is equipped with a magnet. Once the upper fill level has been reached, the sensor recognises this and the water solenoid valve is closed.



- 6 Additional water intake
- 7 Magnet
- 8 Overflow connection piece
- 9 Rinse water connections

Extraction of the water via the rinse water connections leads the water level to sink. This causes the magnet in the float rod to move away from the sensor and the water solenoid valve is opened again, thus filling the water collection container.

An additional water intake allows raw water to be diverted from the treatment unit to the water collection container. When the amount of water supplied is too great compared to the amount of aspirated water, the surplus flows through the overflow connection piece into the waste water system.

# Assembly

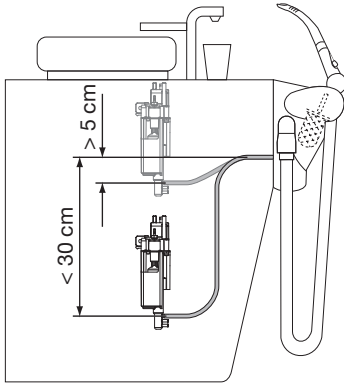
## 6 Requirements

### 6.1 Fastening options

The rinsing unit can be mounted in different ways:

- With a screw to the plastic hanger attached to the housing upper part.
- With two screws to the plastic hanger of the water collection chamber.
- From above with two screws to the cover.

### 6.2 Fitting position




When installing the rinsing unit the height distance between the rinsing unit outlet and the rinse connection of the suction pipe must be observed. The height difference must be greater than 5 cm but must not exceed 30 cm.

### 6.3 Hose materials

**For waste connections and suction lines only use the following hose types:**

- Flexible spiral hoses made of PVC with integrated spiral or equivalent hoses
- Hoses that are resistant to dental disinfectants and chemicals

 Plastic hoses will display signs of ageing over time. Therefore, they should be inspected regularly and replaced as necessary.

**The following types of hoses must not be used:**

- Rubber hoses
- Hoses made completely of PVC
- Hoses that are not sufficiently flexible

**Hose for water connection:**

Dürr Dental recommends a water hose with an I.D. of 2 mm.

Material: TPU, 87 Shore A

test certificate in accordance with German directive on contact with drinking water (KTR).

### 6.4 Electrical connections

- › The supply voltage to the device must satisfy the requirements for two means of patient protection (MOPP) as set out in IEC 60601-1 in relation to the supply network.

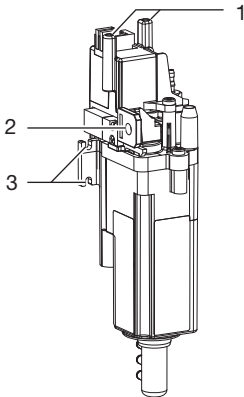
## 7 Installation



Prior to working on the unit or in case of danger, disconnect it from the mains.

### 7.1 Fastening the rinsing unit

- › Place the rinsing unit at a suitable location.
- › Choose appropriate fastening option.
- › If necessary, drill mounting holes and cut threads as required.
- › Secure the rinsing unit with suitable screws or bolts and nuts.



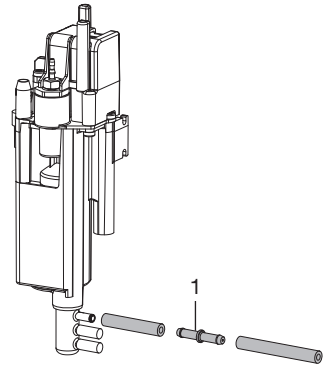
- 1 From above with two screws to the cover.
- 2 With a screw to the plastic hanger attached to the housing upper part.
- 3 With two screws to the plastic hanger of the water collection chamber.

### 7.2 Mounting the reducing nozzle



The reducing nozzle is designed to reduce the amount of water required to rinse out the suction pipe so that only as much water is drawn from the rinsing unit as the amount which can actually pass through the solenoid valve.

- › Attach the short hose piece to a rinsing connection.
- › Push reducing nozzle into the rinsing hose.
- › Attach rinsing hose to the reducing nozzle for rinsing.



- 1 Adapter nozzle

### 7.3 Connect overflow

- › Attach overflow hose to overflow connection.
- › Secure the overflow hose with a hose clamp.
- › Install DürrConnect nonreturn valve in the drain line below the rinsing unit.



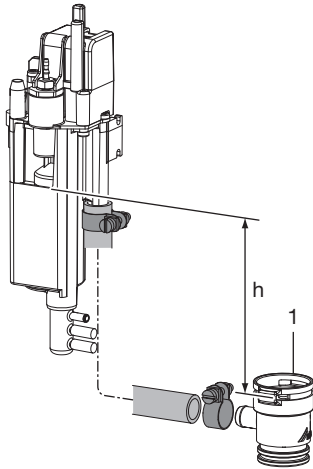
Pay attention to the orientation of the nonreturn valve. Reliable operation is assured only when the nonreturn valve is oriented vertically. If necessary, secure the nonreturn valve with DürrConnect clamps.

- › Route the overflow hose to the nonreturn valve and attach the hose to the hose adapter.
- › Secure the hose with a hose clamp.

Observe minimum installation height:

To ensure that sufficient water can flow off via the non-return valve, a minimum installation height (h) must be observed during installation. This depends on the operating pressure (p) with which the rinsing unit is operated.

p	h
2 bar	> 7 cm
3 bar	> 12 cm
4 - 5 bar	> 15 cm



1 DürrConnect non-return valve

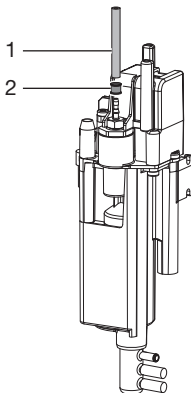
### 7.4 Rinsing unit water connections



The water connection must be established to a free connection in the treatment unit or by way of a T-piece.

The water pressure must be observed at the connection; install a pressure reducer if necessary.

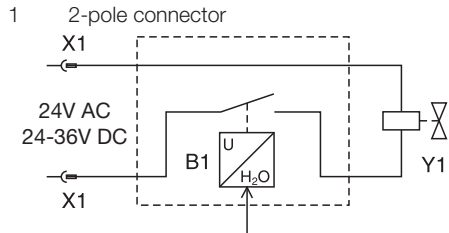
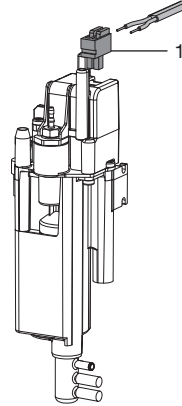
› The water hose from the rinsing unit must be attached to the water connection and secured using a retaining clamp  $\varnothing$  4 mm.



1 Water hose  
2 Retaining clamp

### 7.5 Electrical connections

The rinsing unit should be connected via a 2-pole connector to the connection line. The power supply must be controlled via the hose manifold or using a 2-pole relay parallel to the place selection valve, so that the rinsing unit can only be refilled when suction is actually taking place.



X1 Power supply connection  
B1 Control electronics  
Y1 Solenoid valve



## 8 Commissioning

- › Turn on the unit power switch or the main surgery switch.
- › Carry out a function check of the system.
- › Check all connections for leak tightness.
- › Carry out an electrical safety check in accordance with applicable regulations (e.g. regulations concerning set up, operation and application of medical devices) and record the results as appropriate, e.g. in the technical log book.

## 9 Maintenance



All maintenance work must be performed by a qualified expert or by one of our Service Technicians.



### NOTICE

**Electronic defect due to escaping Water**

- › Disconnect water supply.



Prior to working on the unit or in case of danger, disconnect it from the mains.

Maintenance interval	Maintenance work
Annually	<ul style="list-style-type: none"><li>› Depending on the water quality, clean or replace the fine filter more often.*</li><li>› Check the float for soiling *</li></ul>

\* to be done by service technicians only

## 9.1 Clean or replacing water filters



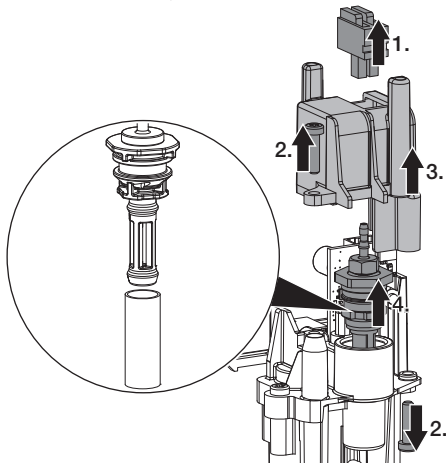
### NOTICE

#### The filter housing is under pressure

Risk of damage from escaping water

- › Disconnect water supply.
- › Reduce pressure in the system.

- › Disconnect the power supply from the rinsing unit.
- › Unscrew and remove blue cover.
- › Pull the yellow filter holder out of the housing.
- › Pull the filter out of the filter holder.
- › Clean the filter or replace the filter with a new one as necessary.



# ? Troubleshooting

## 10 Tips for service technicians



Any repairs exceeding routine maintenance may only be carried out by qualified personnel or our service.



### WARNING

#### Infection due to contaminated unit

- › Clean and disinfect the suction before working on the unit.
- › Wear protective equipment when working (e. g. impermeable gloves, protective goggles and mouth and nose protection).

Error	Possible cause	Remedy
<b>No rinse water in the suction line</b>	No voltage present	› Check the voltage supply. *
	Solenoid valve does not open	› Check the float. * › Check the solenoid valve. *
	Height difference between the suction unit and rinsing connector in the suction line too great	› Reduce the height difference, e.g. by raising the rinsing unit. *
	Insufficient suction	› Reduce the height difference, e.g. by raising the rinsing unit. *

\* Only to be done by service technicians.

 Appendix

## 11 Country representatives

Country	Address
GB	 <b>UK Responsible Person:</b> Duerr Dental (Products) UK Ltd. 14 Linnell Way Telford Way Industrial Estate Kettering, Northants NN 16 8PS







**Hersteller / Manufacturer:**

DÜRR DENTAL SE  
Höfigheimer Str. 17  
74321 Bietigheim-Bissingen  
Germany  
Fon: +49 7142 705-0  
[www.duerrdental.com](http://www.duerrdental.com)  
[info@duerrdental.com](mailto:info@duerrdental.com)

