



**neoss®** | ProActive Implants

Straight and Tapered Implants

Intelligent Simplicity

## Inspiration behind innovation

Convinced that existing implant systems were too complex, Professor Neil Meredith and Fredrik Engman founded Neoss® in 2000. Their idea was to rationalise both implant design and treatment to create a truly simple solution. The result is a high quality, optimised implant system featuring two implant designs – ProActive Straight Implant and ProActive Tapered Implant.



## Proven design and surface of Neoss Implants

### Material

Our implants are produced in Commercially Pure Titanium Grade IV.

### Dual surface roughness

Neoss ProActive® Implants have a low surface roughness flange (Sa <0.4) designed to reduce marginal bone loss.<sup>1</sup> At the same time, higher surface roughness of the threaded body of the implants (Sa 1.0) optimises stability and osseointegration.

### Unique Thread Cutting and Forming design

The universal Thread Cutting and Forming (TCF) design of the implant ensures suitability for all bone qualities. The secondary cutting face provides additional efficiency in dense bone.<sup>2</sup> Threads extend to the tip of the implant ensuring excellent stability.

### A strong connection

The key to a successful long-term tooth replacement is a mechanical integrity of all the components that make up a complete implant pillar. The intelligent design of the Neoss Implant System features NeoLoc®, combining an interference fit, an implant with unparalleled strength<sup>3</sup> and a high performance abutment screw. Together these provide an outstanding implant pillar with a high clamping force that resists micromovement and long-term fatigue.<sup>4</sup>

## Features of the Neoss ProActive® Surface

### Superhydrophilicity

Surface roughness and hydrophilicity are essential to the adsorption of proteins and biomolecules onto implant surfaces thereby facilitating healing and bone formation.<sup>5</sup>

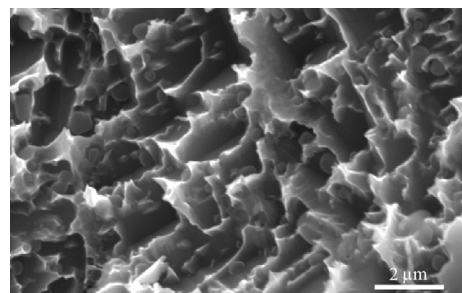
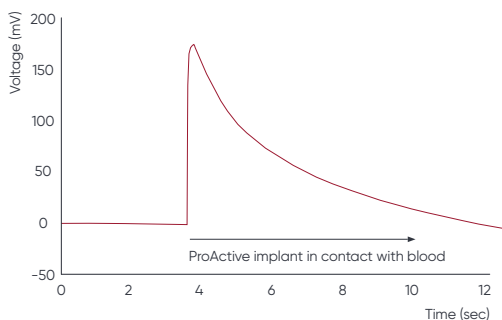
The ProActive Implants have a superhydrophilic surface demonstrated by an immeasurably low contact angle.

Neoss is using a completely unique method to deposit hydrated ions onto an implant surface to increase hydrophilicity and maximise the penetration of blood and its components onto the implant surface.<sup>6</sup>



Surgical placement of a ProActive Implant visually demonstrating the hydrophilic properties.

### Surface electrical charge generated by ProActive Implants

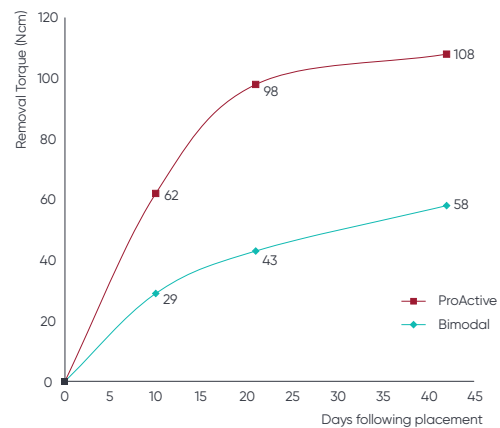


SEM image of ProActive surface.

### Accelerated and increased strength of osseointegration

The etched, blasted and superhydrophilic ProActive Implant surface stimulates bone to form more rapidly and with a greater strength at the implant interface. In vivo removal torque tests showed significantly increased removal torque for ProActive Implants which also surpassed the performance of competitive implants in similar studies.<sup>7</sup>

### Rate of osseointegration<sup>6</sup>

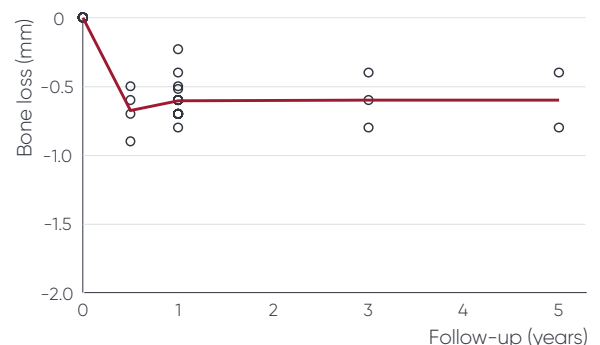


### Extraordinary clinical success

A systematic review of the published literature on Neoss dental implants shows minimal bone resorption (average 0.6 mm after 5 years), a high implant survival for ProActive (CSR 97.8% after 1 year and 97.5% after 5 years) and excellent primary and secondary stability in all types of bone.

Compared to Derks et al.<sup>8</sup>, the percentage of Neoss implants with more than 2 mm bone loss is nearly halved (5.1% vs. 9.9%). This indicates that Neoss implants have a lower percentage of high bone loss cases than the main competitor implants. Since peri-implant bone loss is one of the prerequisites for peri-implantitis, low incidence of bone loss means low incidence of peri-implantitis.

### Minimal bone resorption



Compilation of all published studies on Neoss implants that report bone remodeling data (n=15). Each circle represents one study, the line represents the mean of all studies.<sup>9</sup>

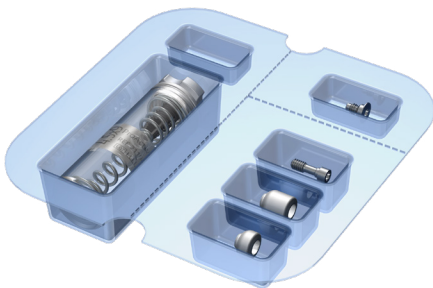
# Two Implant Designs – One Connection

## One prosthetic connection

The Neoss Implant System provides both the surgeons and the restorative doctors the greatest possible freedom and flexibility without compromise to performance or success. The ProActive Straight and ProActive Tapered Implant designs allow surgeons to adapt their implant choice to their own preferences, changing clinical conditions or complexity considerations without being constrained by the restorative implications.

The ProActive Implants share the fundamental technologies of the Neoss ProActive® surface and Thread Cutting and Forming (TCF) design, as well as a prosthetic range based on the unique NeoLoc® implant to abutment connection.

All prosthetic components in the Neoss System are compatible with both the ProActive Straight and ProActive Tapered Implants providing choice of implant at the time of surgery. With a single common connection, single screwdriver and procedure friendly impression copings, restoration could not be made simpler.

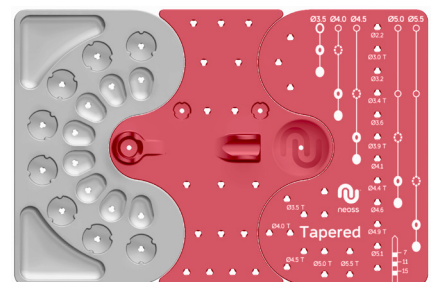


## Comprehensive implant system

To make each patient treatment as efficient as possible, the implant, cover screw and two healing abutments are packed together.

## Simple instruments and organiser

The use, ergonomics and handling of every component in the Neoss System has been carefully evaluated. A unique system tray design combined with carefully designed instruments make this user-friendly for the entire clinical team.



# Implant Designs 7 Connection

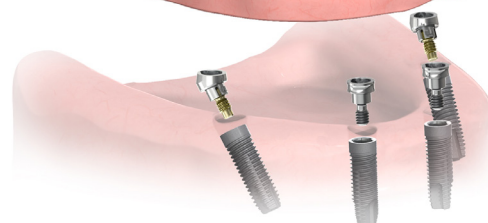
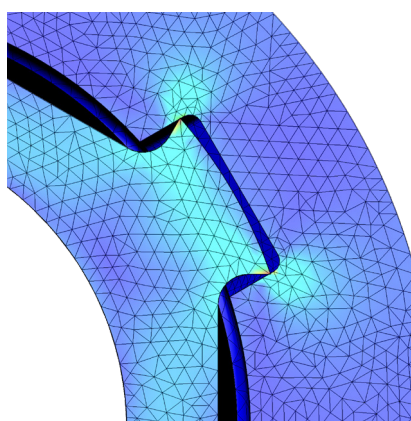
## NeoLoc® connection

NeoLoc® is the unique Neoss implant to abutment connection that offers the advantages of a remarkably strong and tight connection, proven long-term clinical success, high levels of bone preservation, greater flexibility for restoration and the 'one connection' concept.

Neoss engaging abutments have deformation lugs which minimise rotational movements and secures a distinct seating.

Crystaloc™ abutment screws are 30% stronger than gold screws in static strength testing facilitating a high clamping force between the abutment and implant.<sup>10</sup> The outcome is an additional 10% resistance to fracture during long-term clinical function.<sup>4</sup>

Warranty data over many years has demonstrated an unparalleled low fracture rate with less than one fractured implant per 10,000.<sup>3</sup>



## Complete prosthetic offering

The Neoss Implant System offers patients a broad range of aesthetic and functional solutions. These are available as cemented or screw-retained options, overdenture and CAD/CAM designed prostheses.

# ProActive Straight Implant

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## Design features

### Parallel coronal flange

The parallel coronal flange has been carefully designed to provide predictable seating and stability.

### Dual surface roughness

The ProActive Straight Implant has a low surface roughness flange ( $Sa < 0.4$ ) designed to reduce marginal bone loss, while the rougher body ( $Sa 1.0$ ) optimises osseointegration.

### Neoss ProActive<sup>®</sup>, a superhydrophilic surface

The ProActive Straight Implant has a superhydrophilic surface demonstrated by an immeasurably low contact angle. The ProActive surface has demonstrated faster and stronger osseointegration.<sup>7</sup>

### Straight implant body and unique Thread Cutting and Forming design

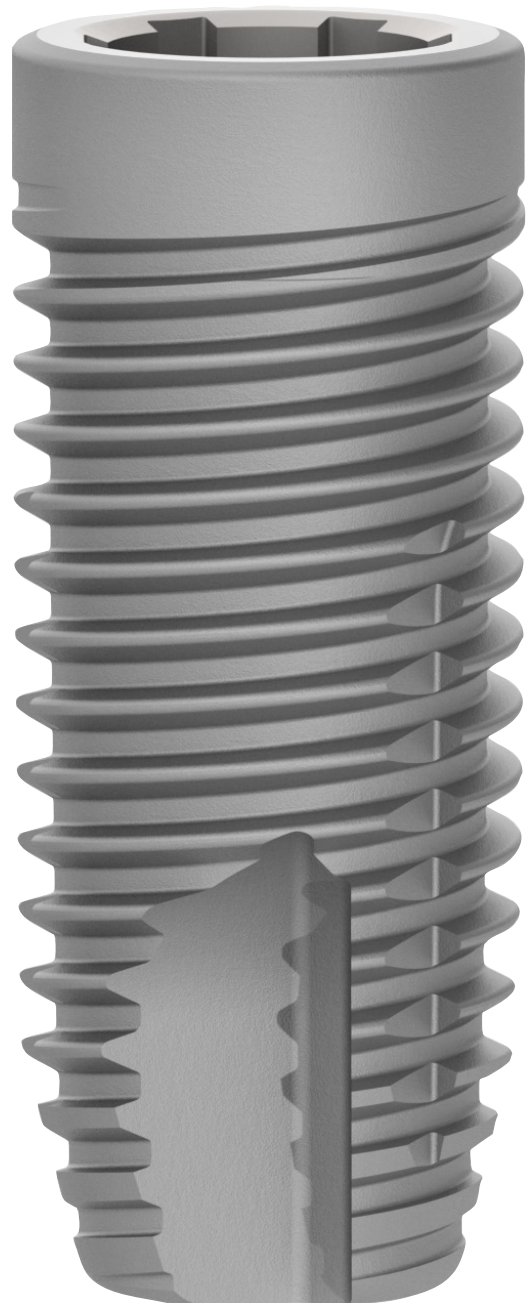
A major challenge in modern implant dentistry is achieving maximum stability in all bone qualities.<sup>11</sup> Neoss Implants address this issue in a simple and predictable manner by the provision of a contoured mid section in combination with a secondary cutting face<sup>2</sup> resulting in the unique Thread Cutting and Forming (TCF) design.

### Ultraclean low carbon surface

An ultraclean low carbon surface is achieved by a combination of surface processing, cleaning and packaging in a glass vial.

### Apical design

The apex is designed for initial stability and maximum long-term support. It features an optimised thread and cutting design.



## Design concept

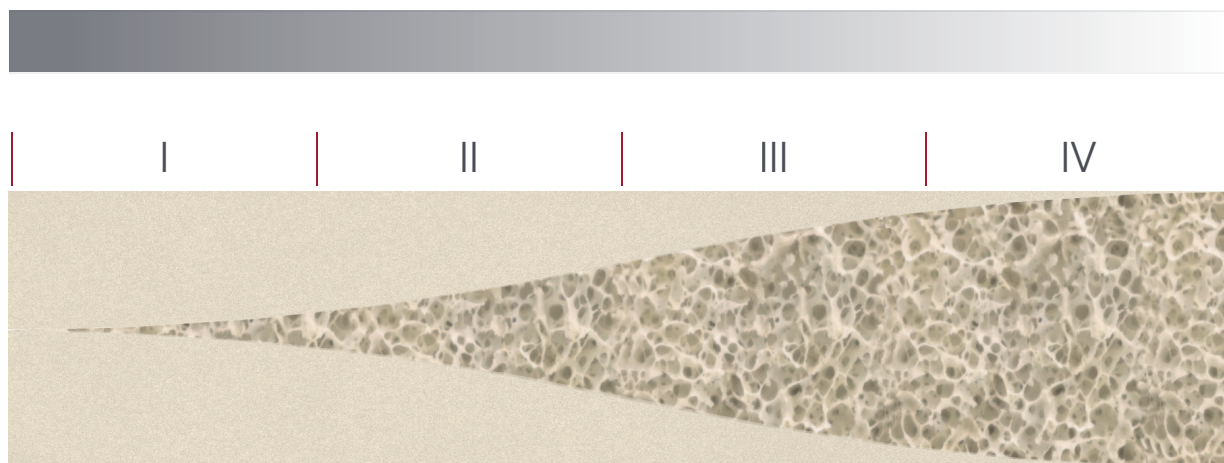
ProActive Straight Implants, which have been used widely throughout the world over the past 10 years, are based on extensive research and development, the outcome of which is a state-of-the-art system.

There is a unique relationship between the preparation site, instruments and the geometric features of the ProActive Straight Implant and the Thread Cutting and Forming (TCF) design.

The system fulfils a vast variety of clinical indications with a compact and rational assortment including short, wide and narrow implants.

## Indication – Bone Density

The bar below illustrates the ideal density range for the optimal placement of ProActive Straight Implants.



## Site preparation – maximum flexibility

Well designed instruments and drills aid the surgeon to achieve high primary stability and excellent seating in all bone variations by making it possible to adapt to each clinical situation.

Integrated drilling protocols for all Neoss implants reduce the total number of drills required during placement.

A range of additional instruments, such as a lance drill, pilot drill, short drills, screw taps and countersinks for each implant diameter, provides maximum flexibility for all positioning and preferences.

High cutting performance and carefully evaluated drill steps make placement very straightforward.

II Regular Bone	I Dense Bone
<b>0</b>	<b>0</b>
Ø2.2	Ø2.2
Ø3.0	Ø3.0
Ø3.4	Ø3.4
	Ø3.6

*Example, Ø4.0 ProActive Straight Implant*

# ProActive Tapered Implant

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## Design features

### Conical coronal flange with additional threads

The conical coronal flange with additional threads has been carefully designed to provide improved stability and faster healing in extraction sites and cases relying mainly on cortical anchorage.

### Dual surface roughness

The ProActive Tapered Implant has a low surface roughness flange ( $Sa < 0.4$ ) designed to reduce marginal bone loss, while the rougher body ( $Sa 1.0$ ) optimises osseointegration.

### Neoss ProActive<sup>®</sup>, a superhydrophilic surface

The ProActive Tapered Implant has a superhydrophilic surface demonstrated by an immeasurably low contact angle. The ProActive surface has demonstrated faster and stronger osseointegration.<sup>7</sup>

### Tapered implant body and unique Thread Cutting and Forming design

The combination of the unique Thread Cutting and Forming (TCF) design and tapered implant body provides excellent stability in compromised cases and predictable seating in dense bone.

### Ultraclean low carbon surface

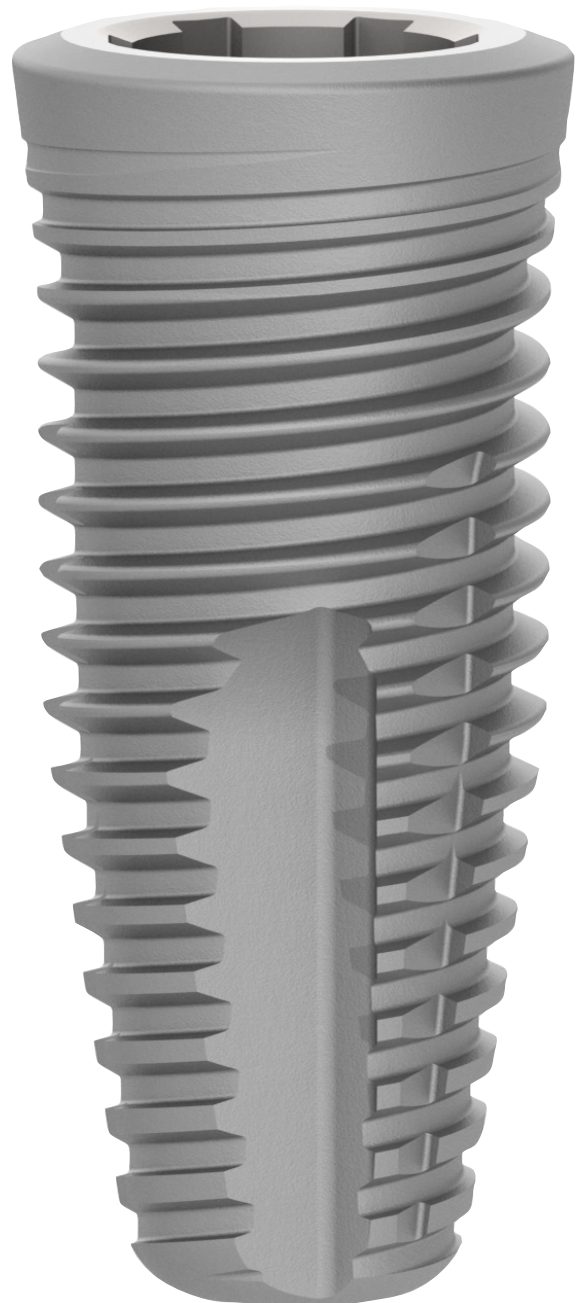
An ultraclean low carbon surface is achieved by a combination of surface processing, cleaning and packaging in a glass vial.

### Apical profile aids placement

The apical profile provides ease of placement in soft bone cases where under preparation is desirable or where there are narrow roots or walls.

### Sinus floor friendly apical tip

The rounded tip is designed to protect the sinus floor membrane.



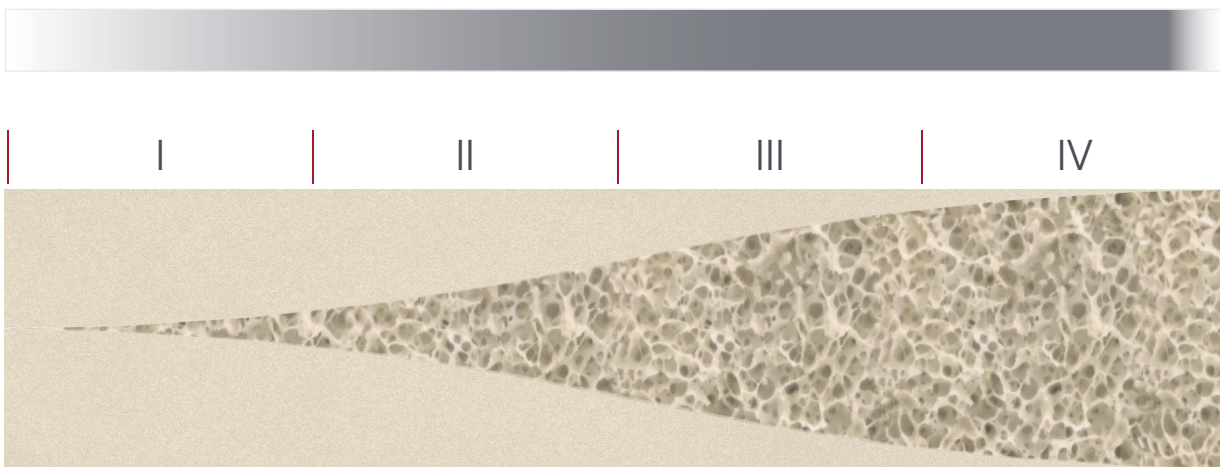


## Design concept

The ProActive Tapered Implant is part of a design evolution, utilising the main characteristics of the ProActive Straight Implant. This has resulted in an implant which has additional capacity in compromised cases and is ideal for installation in soft bone, including extraction sites.

## Indication - Bone Density

The bar below illustrates the ideal density range for the optimal placement of ProActive Tapered Implants.



## Simplified protocol

In a standard  $\text{Ø}4.0$  implant procedure, only one tapered drill is required following the initial protocol of straight drills for cavity preparation. A Countersink is available for the conical flange of the implant if required.

In some bone types, under-preparation may be desirable. As an example, only a  $\text{Ø}2.2$  straight drill is required for a  $\text{Ø}4.0$  implant.

The drilling procedure is simplified by the provision of one tapered drill catering for the different lengths of each implant diameter.

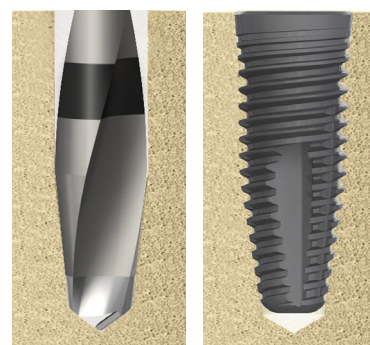
III, IV Soft Bone	II Regular Bone
<b>0</b>	<b>0</b>
$\text{Ø}2.2$	$\text{Ø}2.2$
$\text{Ø}3.0$ T	$\text{Ø}3.4$ T

*Example,  $\text{Ø}4.0$  ProActive Tapered Implant*

## Implant design and drill compatibility

The tapered drills are designed specifically for the tapered contour of the implants.

The unique implant design, in combination with a simple and versatile drill protocol, creates a fit that optimises stability in all bone qualities.





*Tapered (T) Drill*

*Implant shape*

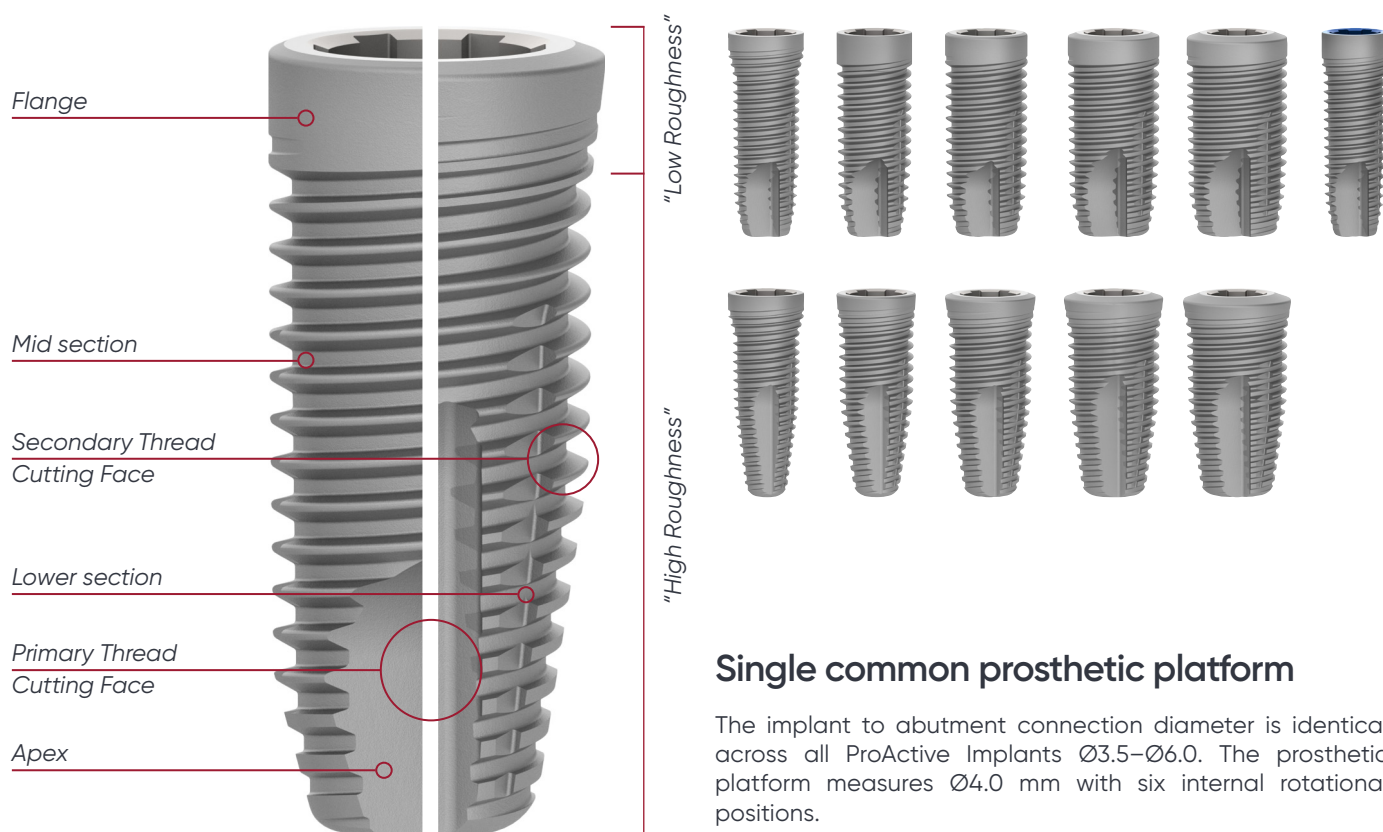
# Facts and Figures

## Comprehensive implant range

Neoss ProActive® Implants are available in a variety of diameters and lengths. The combination of the ProActive Tapered and ProActive Straight Implant designs provide optimal surgical flexibility.

						
Implant Ø (mm)	Ø3.5	Ø4.0	Ø4.5	Ø5.0	Ø5.5	Ø3.25
Straight, length	7–17	7–17	7–17	7–15	7–13	9–15
Straight, flange diameter	Ø4.0	Ø4.0	Ø4.5	Ø5.0	Ø5.5	Ø3.5
Tapered, length	9–15	9–15	9–15	9–15	9–13	–
Tapered, flange diameter	Ø4.0	Ø4.3	Ø4.9	Ø5.4	Ø5.9	–
Tapered, tip diameter	Ø2.1	Ø2.3	Ø2.8	Ø3.3	Ø3.8	–

*ProActive Ø6.0 implants in lengths 7–11 mm now available.*



### Single common prosthetic platform

The implant to abutment connection diameter is identical across all ProActive Implants Ø3.5–Ø6.0. The prosthetic platform measures Ø4.0 mm with six internal rotational positions.

## Surface properties

The Neoss ProActive® surface has been subjected to a multistage blasting, etching and superhydrophilicity treatment.

**Surface roughness** – Sa 1.0µm over the fully threaded part of the implant and a reduced roughness, Sa <0.4µm, over the flange (~2mm) of the implant.

**Superhydrophilicity** – Surface treatment enables the implant to achieve a high level of wettability.

**Ultraclean low carbon surface** – The surface is ultraclean which is achieved by a combination of surface processing, cleaning and packaging methods.

**Material** – Commercially Pure Titanium Grade IV.

## Implant body design

	ProActive Tapered Implant	ProActive Straight Implant
Flange	Conical flange (except Ø3.5 implant) with extended threads.	Straight flange.
Mid Section	The mid section of ProActive Tapered and ProActive Straight Implants are identical and extends in relation to the length of the implant. The mid section is initially slightly tapered.	
Lower Section	Tapered section is 5mm long on all implant lengths and diameters except the 9mm implants where it is 4mm long.	
Apex	Narrow and spherical.	2mm long on all lengths and diameters.
Double Thread	The implants are 'double threaded' for fast insertion and are designed to achieve additional stability in poor quality bone.	
TCF Thread Cutting and Forming	The Neoss Implant System incorporates TCF geometry by combining both Thread Cutting and Thread Forming (TCF) features.  Thread cutting is provided by the primary cutting faces. The secondary cutting faces engage and improve cutting in dense bone.	

## Instruments and installation

	ProActive Tapered Implant	ProActive Straight Implant
Implant Inserter	ProActive Tapered and ProActive Straight Implants utilise the same inserter.	
Drills	There is one nominal tapered twist drill per implant diameter. Drill assortment allows for soft, regular and dense bone drilling protocols. Tapered twist drills are compatible with drill stops. Tapered drills are marked with a 'T'.	Twist drills are compatible with drill stops.  Drill assortment allows for soft, regular and dense bone drilling protocols.
Countersinks	There is one tapered countersink for each implant diameter should that be required. Tapered countersinks are marked with a 'T'.	There is one countersink for each implant diameter should that be required.
Screw Taps	ProActive Tapered and ProActive Straight Implants utilise the same screw taps.	
Clinical Organisers	There is a specific organiser for the tapered implant which is marked 'Tapered'. It indicates protocols for soft, regular and dense bone.	There is a specific organiser for the straight implant. It indicates protocols for regular and dense bone.

# References

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