ITS.

Implants
trauma

PRS

Pelvic Reconstruction System

CAUTION: Federal Law (USA) restricts this device to sale by or on the order of a board certified physician.

WARNING: If there is no sufficient bone healing, wrong or incomplete postoperative care, plate might break.

All ITS plates are preformed anatomically as a matter of principle. If adjustment of the plate to the shape of the bone is required, this is possible by carefully bending gently in one direction once. Particular care is required when bending in the region of a plate hole, as deformation of the plate may lead to a failure of the locking mechanism. The plate must not be buckled or bent several times. This is particularly important in the case of titanium implants, to prevent material fatigue and subsequent failure. The method of bending is the conscious responsibility of the operating doctor; I.T.S. GmbH can accept no liability whatsoever for this.

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Introduction

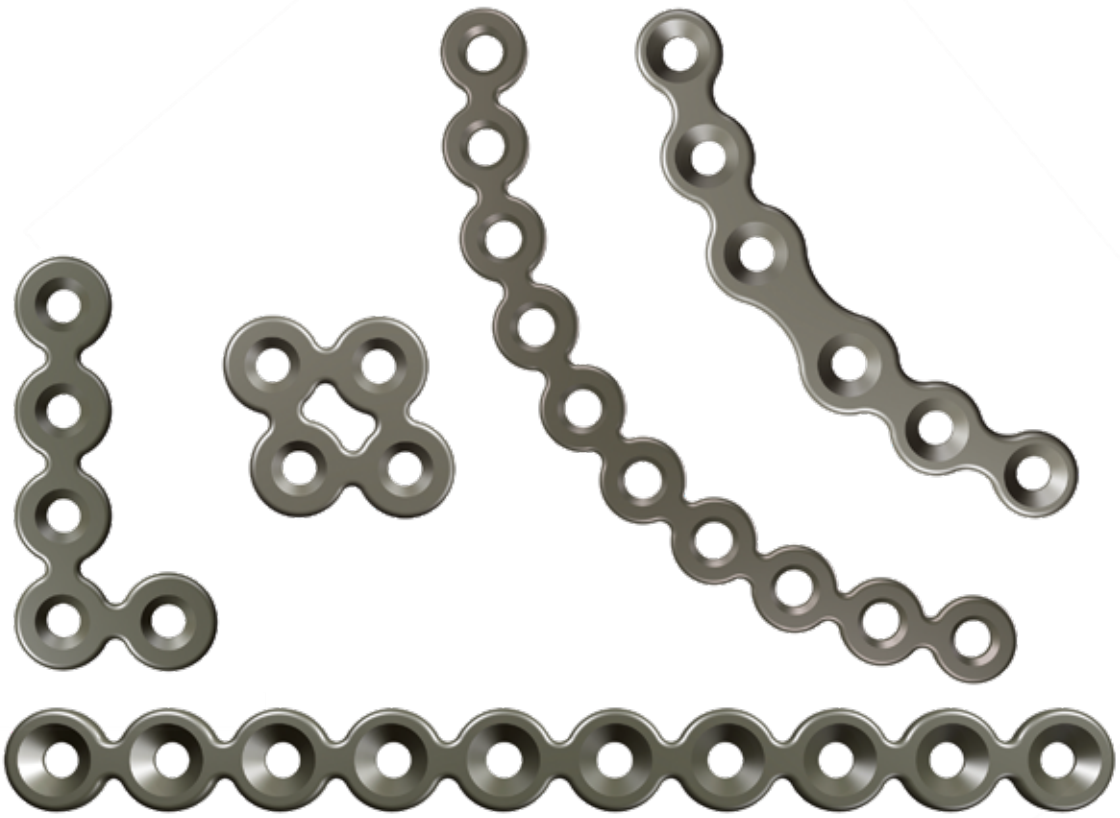
1.

Preface

The Pelvic Reconstruction System is a proven osteosynthesis system for various fractures of the pelvis.

The special feature of this implant is the free choice of screw placement. The user is able to set any desired screw in any hole (either locking or non-locking screw).

The free choice of screw angulation (+/- 15°, see page 21) provides an advantage in fracture treatment, especially in the case of complex fractures.

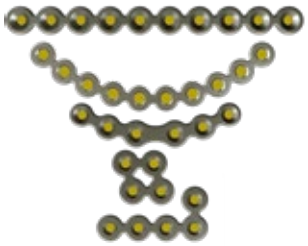


Screws

37592-XX Cancellous Screw, locking, D=5.9mm

61353-110/280 Spiral Drill, D=3.5mm, L=110/280mm, AO Connector

54353-90/230-SH Screwdriver Shank, PRS, Solid, WS 3.5, L=90/230mm, AO Connector



30591-XX Cancellous Screw, D=5.9mm

61353-110/280 Spiral Drill, D=3.5mm, L=110/280mm, AO Connector

54353-90/230-SH Screwdriver Shank, PRS, Solid, WS 3.5, L=90/230mm, AO Connector

32455-XX Cortical Screw, D=4.5mm

61323-145/225 Spiral Drill, D=3.2mm, L=145/225mm, AO Connector

54353-90/230-SH Screwdriver Shank, PRS, Solid, WS 3.5, L=90/230mm, AO Connector

37455-XX Cortical Screw, locking, D=4.5mm

61323-145/225 Spiral Drill, D=3.2mm, L=145/225mm, AO Connector

54353-90/230-SH Screwdriver Shank, PRS, Solid, WS 3.5, L=90/230mm, AO Connector

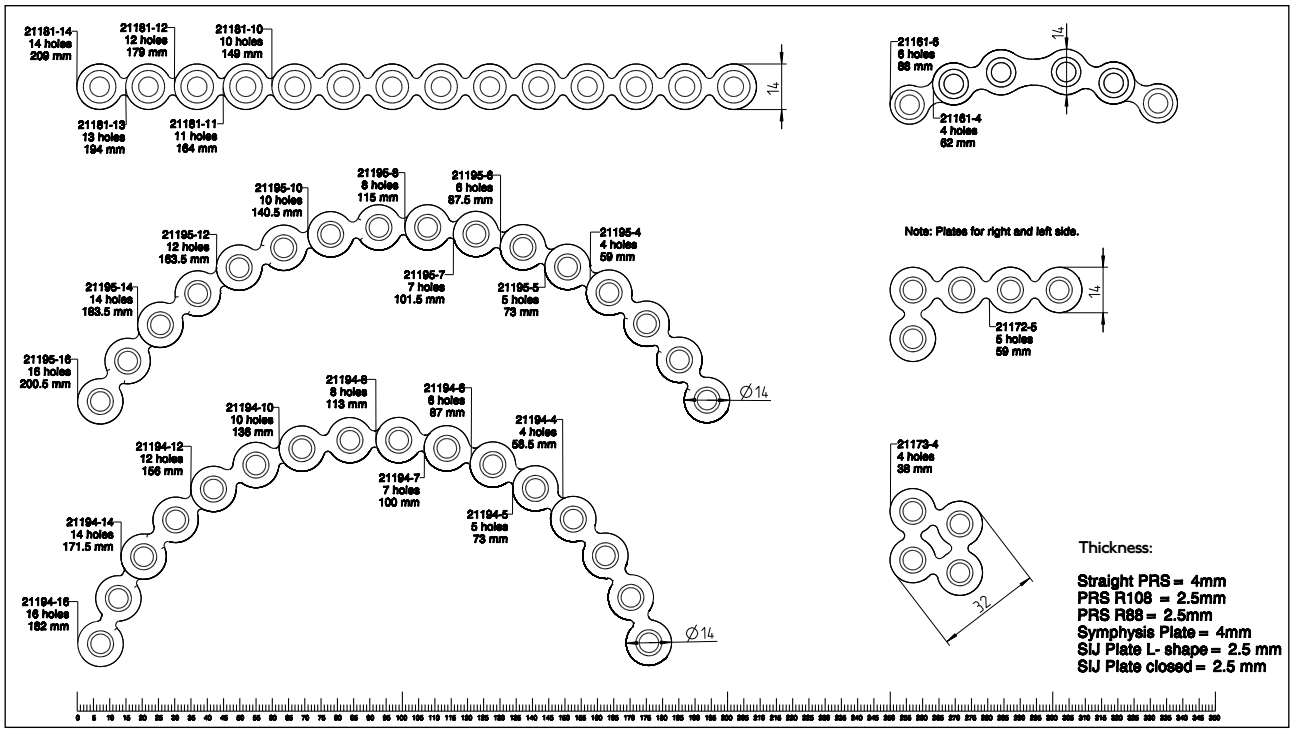
Properties

Properties of the material:

- Plate material: Titanium
- Material of screws: TiAl6V4 ELI
- Easier removal of the implant after the fracture has healed
- Improved fatigue strength of the implant
- Reduced risk of cold welding
- Reduced risk of inflammation and allergy

Properties of the implant:

- Multi-directional Locking
- Can be anatomically shaped (with bending pliers and setting instruments)
- Curved plate in 2 different degrees R88 & RI08
- Bending templates (to avoid repeated in situ attachment and readjustment)
- Plate profile of the Straight Plate, Symphysis Plate: 4.0mm
- Plate profile of the SIJ Plate (L-Shape & Closed), Curved Plate (R88 & RI08): 2.5mm



Indications, Contraindications & Time of operation

Indications:

- All pelvic injuries

Contraindications:

- Existing infections in the fracture zone and operation area
- Common situations that do not allow osteosynthesis
- Obesity
- Lack of patient compliance

Time of operation:

- Immediately after trauma or delayed

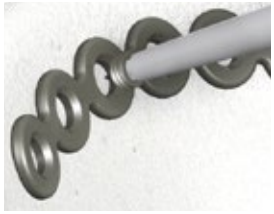
Surgical Technique

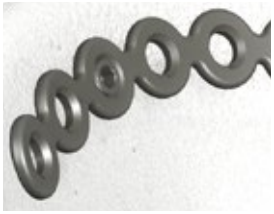
2.

Instruments

Spike:

- For fixation of the plate to bone fragments where screw fixation is not possible because of the anatomic situation





PRS Extension System:

- Especially complex fractures can therefore be treated more simply
- The PRS Extension System expands the range of indications, due to the fact that any PRS plate can be combined with one or more plates

Bending Forceps:

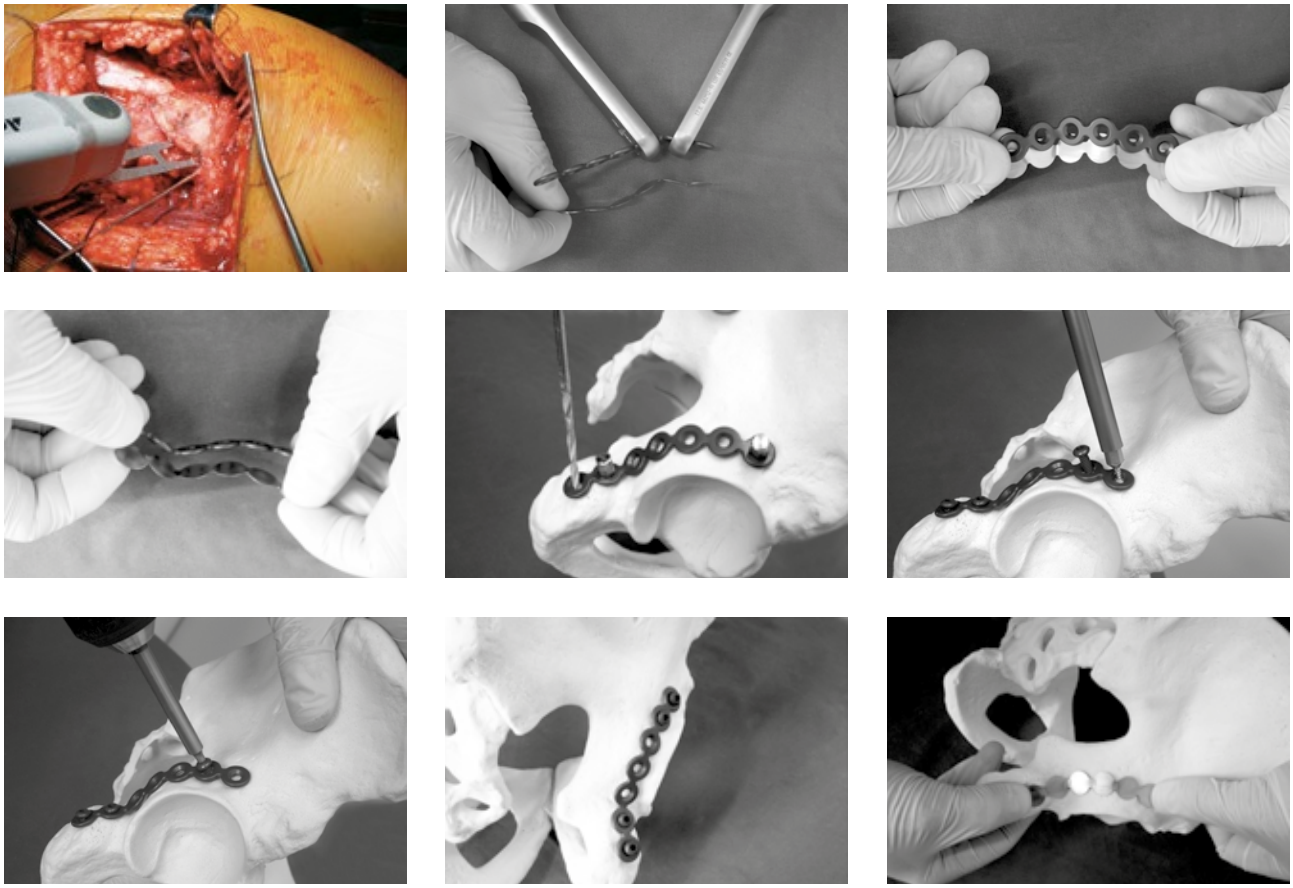
- For fine-adjustment of the radius of the curved plate

Bending Iron:

- To form the plate to the respective pelvic region

Application of Acetabular Plate

- Access by means of Kocher-Langenbeck approach, possibly using trochanter-flip osteotomy and surgical luxation
- Reduction and temporary fixation using a K-wire
- Shaping of the bending template
- Appropriate final adjustment of the plate
- Application of the plate and temporary fixation using spikes and fluoroscopic or X-ray inspection
- Finally, insertion of cortical or cancellous screws (either locking or non-locking) into the holes of the plate
- Fluoroscopic or X-ray inspection
- Drainage of the area and layered closure of the wound (refixation of greater trochanter if required)

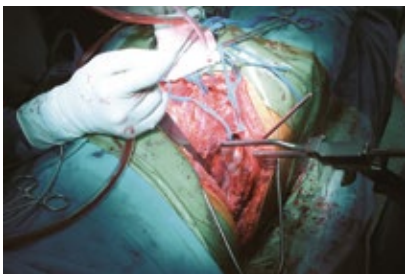
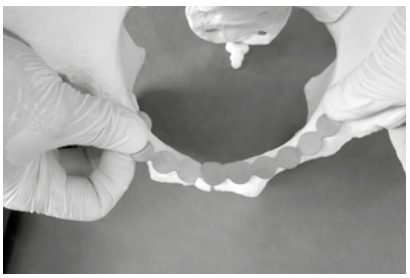
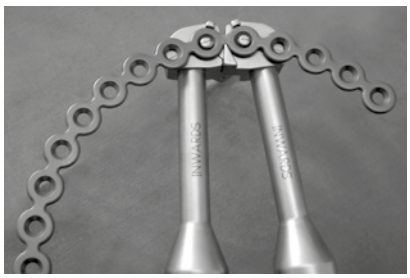
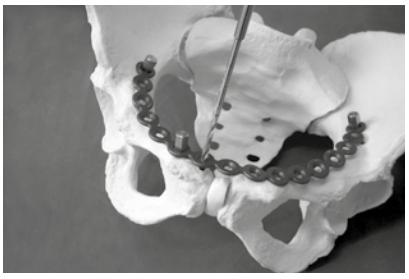


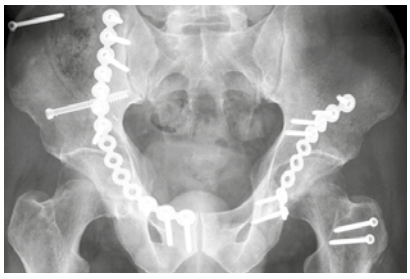
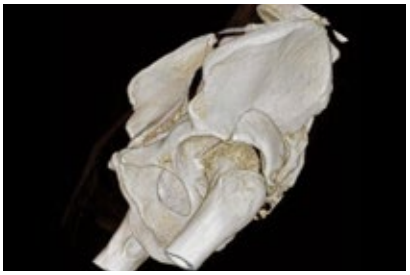
Curved Plate Radius 88mm

Curved Plate Radius 108mm

Reconstr. of Anterior Pelvic Ring using Reconstr. Plate

- Ilio-inguinal approach or possibly Stoppa approach
- Reduction using Weber or Jungbluth forceps, Schanz screw and temporary K-wire fixation if required
- Attachment and adjustment of appropriate bending template, with fluoroscopic or X-ray inspection if required
- Adjustment and setting of reconstruction plate on the bending template using setting instruments or bending pliers
- Attachement of the plate and temporary fixation using spikes and fluoroscopic or X-ray inspection
- Finally, insertion of cortical or cancellous screws (either locking or non-locking)
- Conclude with fluoroscopic or X-ray inspection
- Drainage, closure of wound

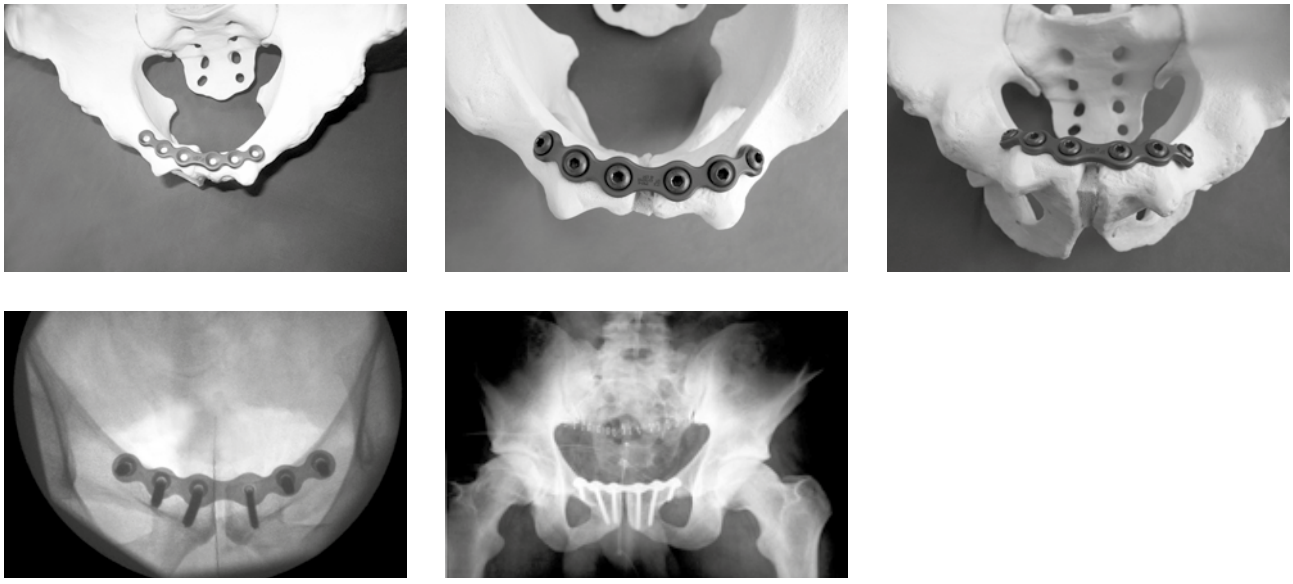



Curved Plate
Radius 88mm

Curved Plate
Radius 108mm

Application of Symphysis Plate

- Lower medial laparotomy (emergency) or Pfannenstiel incision
- Extra-peritoneal opening of the pelvis minor in the linea alba
- Notch the muscle attachment of the muscle rectus abdominis from inside, if possible do not sever laterally
- Resection using pointed reduction or pelvic reduction forceps
- Positioning of 4 or 6-hole plate superiorly (adjust using setting instruments if required)
- Temporary fixation using spikes and fluoroscopic or X-ray inspection
- Finally, insertion of cortical or cancellous screws (either locking or non-locking)
- Drainage of retropubic space, closure of the wound



Symphysis Plate

Application of SIJ Plate

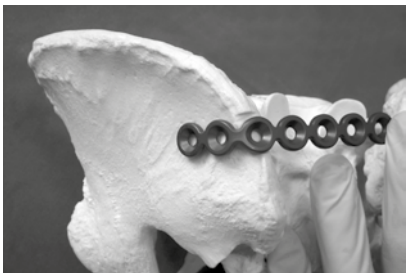
- Antero-lateral approach or first window in the context of an ilio-inguinal approach
- Adjustment of sacroiliac joint with Hohmann retractors
- Resection using pointed reduction or pelvic reduction forceps
- Adjustment of a double-hole plate or double L-plates
- Temporary fixation using spikes, fluoroscopy or X-ray inspection
- Finally, insertion of cortical or cancellous screws (either locking or non-locking)
- Drainage, closure of wound

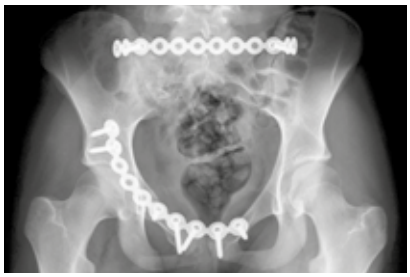
SIJ Plate L-Shape

SIJ Plate Closed

Ilio-Iliac Distance Osteosynthesis

- Approach: bilateral superior 5 cm long incision from the anterior inferior to the posterior superior
- Bilateral exposure of the rear iliac crest
- Reduction using Schanz screw, longitudinal traction on leg, if necessary with the help of reduction forceps
- Determination of plate length
- Chisel off plate bearing (approx. 4 mm deep)
- Bend the plate from one side. Push the plate through behind the sacrum. Bend the plate on the other side in situ
- Adjust plate and insert both screws on iliac crest. Alternate tightening of screws
- Insert locking screws in both holes of the short side piece of the plate, at the same time making sure that the screwing angle is 10-15° to the plane of the already attached screw on iliac crest (to prevent collision of the screws - this is not a problem when using ITS. locking screws)
- Drainage, closure of wound

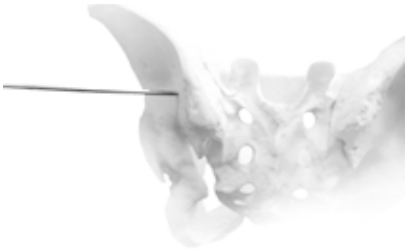




Straight Plate

SIJ Screw Fixation

- Approach: abdominal position, lateral stab incision after fluoroscopic inspection
- Position the guide wire under fluoroscopic inspection, alternating in inlet and outlet view or with 2D or 3D navigation
- Determine the length and position of the cannulated self-drilling D=7.3mm screw with spacer disk. (it is necessary to drill into cortical bone only when bone is very hard)
- Final X-ray inspection and wound closure



SIJ Screw D=7.3mm

Postoperative treatment

- The postoperative treatment may vary depending on the patients age, bone quality or type of fracture

Explantation

If desired by the patient, the implant can be removed.
Removal should be performed at the earliest 1 1/2 years later or after radiographic verification of the healed bone.

The problem of cold welding was resolved by using a special surface treatment (for further information see page 21).

Notes

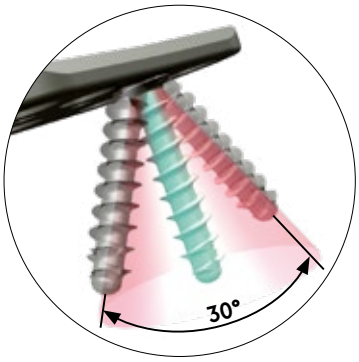
Information

3.

Locking

Locking works because:

- Screw material (TiAlV) is slightly harder than plate material (Titanium Grade 2)
- Screw head **forms** thread into the plate (no cutting)



Benefits:

- ± 15° and Locking
- No pre threading
- No cold welding
- No debris
- You can re-set the screw up to 3 times

Dotize®

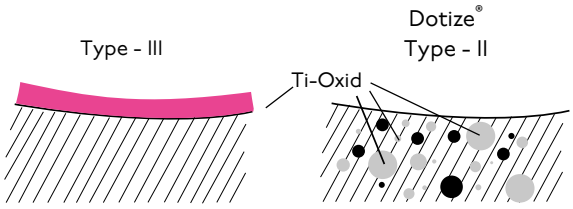
Chemical process - anodization in a strong alkaline solution*

Type III anodization

- Layer thickness 60-200nm
  - \+ Different colors
  - \- Implant surface remains sensitive to:
    Chipping
    Peeling
    Discoloration

Dotize Type II anodization

- Layer thickness 2000-10 000nm
  - \+ Film becomes an interstitial part of the titanium
  - \- No visible cosmetic effect



Anodization Type II leads to following benefits*

- Oxygen and silicon absorbing conversion layer
- Decrease in protein adsorption
- Closing of micro pores and micro cracks
- Reduced risk of inflammation and allergy
- Hardened titanium surface
- Reduced tendency of cold welding of titanium implants
- Increased fatigue resistance of implants
- Improved wear and friction characteristics

* White Paper: Ti6Al4V with Anodization Type II: Biological Behavior and Biomechanical Effects; Axel Baumann, Nils Zander

Order list

Symphysis Plate, 4-hole	21161-4
Symphysis Plate, 6-hole	21161-6

SIJ Plate, 5-hole, Right	21171-5
SIJ Plate, 5-hole, Left	21172-5
SIJ Plate, 4-hole, Closed	21173-4

PRS Plate, 10-hole, Straight	21181-10
PRS Plate, 11-hole, Straight	21181-11
PRS Plate, 12-hole, Straight	21181-12
PRS Plate, 13-hole, Straight	21181-13
PRS Plate, 14-hole, Straight	21181-14

PRS Plate, 4-hole, Curved, R88	21194-4
PRS Plate, 5-hole, Curved, R88	21194-5
PRS Plate, 6-hole, Curved, R88	21194-6
PRS Plate, 7-hole, Curved, R88	21194-7
PRS Plate, 8-hole, Curved, R88	21194-8
PRS Plate, 10-hole, Curved, R88	21194-10
PRS Plate, 12-hole, Curved, R88	21194-12
PRS Plate, 14-hole, Curved, R88	21194-14
PRS Plate, 16-hole, Curved, R88	21194-16

PRS Plate, 4-hole, Curved, R108	21195-4
PRS Plate, 5-hole, Curved, R108	21195-5
PRS Plate, 6-hole, Curved, R108	21195-6
PRS Plate, 7-hole, Curved, R108	21195-7
PRS Plate, 8-hole, Curved, R108	21195-8
PRS Plate, 10-hole, Curved, R108	21195-10
PRS Plate, 12-hole, Curved, R108	21195-12
PRS Plate, 14-hole, Curved, R108	21195-14
PRS Plate, 16-hole, Curved, R108	21195-16

Sterilization Tray, PRS, Plates	50167

Mold, 4-hole, Curved, R88	67194-4
Mold, 5-hole, Curved, R88	67194-5
Mold, 6-hole, Curved, R88	67194-6
Mold, 7-hole, Curved, R88	67194-7
Mold, 8-hole, Curved, R88	67194-8
Mold, 10-hole, Curved, R88	67194-10
Mold, 12-hole, Curved, R88	67194-12
Mold, 14-hole, Curved, R88	67194-14
Mold, 16-hole, Curved, R88	67194-16
Mold, 4-hole, Curved, R108	67195-4
Mold, 5-hole, Curved, R108	67195-5
Mold, 6-hole, Curved, R108	67195-6
Mold, 7-hole, Curved, R108	67195-7
Mold, 8-hole, Curved, R108	67195-8

Mold, 10-hole, Curved, R108	67195-10
Mold, 12-hole, Curved, R108	67195-12
Mold, 14-hole, Curved, R108	67195-14
Mold, 16-hole, Curved, R108	67195-16

Bending Forceps, Left, Right, Inwards	66251-1
Counter Bending Forceps, Left, Right, Outwards	66251-2

Bending Iron, PRS Plate	66252-14

Sterilization Tray, PRS, Plates	50167
Sterilization Tray, PRS, Instruments	50168

Cancellous Screw, Locking, D=5.9mm, L=16mm	37592-16
Cancellous Screw, Locking, D=5.9mm, L=20mm	37592-20
Cancellous Screw, Locking, D=5.9mm, L=24mm	37592-24
Cancellous Screw, Locking, D=5.9mm, L=28mm	37592-28
Cancellous Screw, Locking, D=5.9mm, L=32mm	37592-32
Cancellous Screw, Locking, D=5.9mm, L=36mm	37592-36
Cancellous Screw, Locking, D=5.9mm, L=40mm	37592-40
Cancellous Screw, Locking, D=5.9mm, L=44mm	37592-44
Cancellous Screw, Locking, D=5.9mm, L=48mm	37592-48
Cancellous Screw, Locking, D=5.9mm, L=52mm	37592-52
Cancellous Screw, Locking, D=5.9mm, L=56mm	37592-56
Cancellous Screw, Locking, D=5.9mm, L=60mm	37592-60

Cancellous Screw, D=5.9mm, L=16mm, Threaded	30591-16
Cancellous Screw, D=5.9mm, L=20mm, Threaded	30591-20
Cancellous Screw, D=5.9mm, L=24mm, Threaded	30591-24
Cancellous Screw, D=5.9mm, L=28mm, Threaded	30591-28
Cancellous Screw, D=5.9mm, L=32mm, Threaded	30591-32
Cancellous Screw, D=5.9mm, L=36mm, Threaded	30591-36
Cancellous Screw, D=5.9mm, L=40mm, Threaded	30591-40
Cancellous Screw, D=5.9mm, L=44mm, Threaded	30591-44
Cancellous Screw, D=5.9mm, L=48mm, Threaded	30591-48
Cancellous Screw, D=5.9mm, L=52mm, Threaded	30591-52
Cancellous Screw, D=5.9mm, L=56mm, Threaded	30591-56
Cancellous Screw, D=5.9mm, L=60mm, Threaded	30591-60

Cortical Screw, Locking, D=4.5mm, L=16mm	37455-16
Cortical Screw, Locking, D=4.5mm, L=20mm	37455-20
Cortical Screw, Locking, D=4.5mm, L=24mm	37455-24
Cortical Screw, Locking, D=4.5mm, L=28mm	37455-28
Cortical Screw, Locking, D=4.5mm, L=32mm	37455-32
Cortical Screw, Locking, D=4.5mm, L=36mm	37455-36
Cortical Screw, Locking, D=4.5mm, L=40mm	37455-40
Cortical Screw, Locking, D=4.5mm, L=44mm	37455-44
Cortical Screw, Locking, D=4.5mm, L=48mm	37455-48
Cortical Screw, Locking, D=4.5mm, L=52mm	37455-52
Cortical Screw, Locking, D=4.5mm, L=56mm	37455-56
Cortical Screw, Locking, D=4.5mm, L=60mm	37455-60

Order list

Cortical Screw, D=4.5mm, L=16mm, Cort. Thread	32455-16
Cortical Screw, D=4.5mm, L=20mm, Cort. Thread	32455-20
Cortical Screw, D=4.5mm, L=24mm, Cort. Thread	32455-24
Cortical Screw, D=4.5mm, L=28mm, Cort. Thread	32455-28
Cortical Screw, D=4.5mm, L=32mm, Cort. Thread	32455-32
Cortical Screw, D=4.5mm, L=36mm, Cort. Thread	32455-36
Cortical Screw, D=4.5mm, L=40mm, Cort. Thread	32455-40
Cortical Screw, D=4.5mm, L=44mm, Cort. Thread	32455-44
Cortical Screw, D=4.5mm, L=48mm, Cort. Thread	32455-48
Cortical Screw, D=4.5mm, L=52mm, Cort. Thread	32455-52
Cortical Screw, D=4.5mm, L=56mm, Cort. Thread	32455-56
Cortical Screw, D=4.5mm, L=60mm, Cort. Thread	32455-60

Spike, WS 7, PRS Set	70301-7

Socket Spanner with Handle, WS 7, L=350mm	560701-350

Screwdriver Shank, PRS, WS 3.5mm, L=90mm, AO Connector	54353-90SH
Screwdriver Shank, PRS, WS 3.5mm, L=230mm, AO Connector	54353-230SH

Handle, 25mm, AO Connector	53011
Screwdriver, WS 3.5, Conic, self-holding	56352-SH

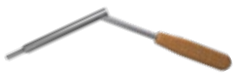
Spiral Drill, D=3.2mm, L=280mm, AO Connector	61324-280
Spiral Drill, D=3.2mm, L=145mm, AO Connector	61323-145
Spiral Drill, D=3.5mm, L=280mm, AO Connector	61353-280
Spiral Drill, D=3.5mm, L=110mm, AO Connector	61353-110

Depth Gauge f. 4.5/5.9mm, gauge length 110mm	9-114

Drill Guide, D=2.5/3.5mm	62252

Screw Tweezers, 8cm	33.839.09

Drill Guide, Long, D=3.5mm, PRS Plate	62351



Sterilization Tray, PRS, Screws, Instruments	50169
Sterilization Tray, PRS System	50225

Special sizes & instruments optional on request *

Fixation Screw, PRS Upgrade System	70302
Bolt, PRS Upgrade System	70303
Spike Short	70304

Cancellous Screw, Locking, D=5.9mm, L=65mm	37592-65
Cancellous Screw, Locking, D=5.9mm, L=70mm	37592-70
Cancellous Screw, Locking, D=5.9mm, L=75mm	37592-75
Cancellous Screw, Locking, D=5.9mm, L=80mm	37592-80
Cancellous Screw, Locking, D=5.9mm, L=85mm	37592-85
Cancellous Screw, Locking, D=5.9mm, L=90mm	37592-90
Cancellous Screw, Locking, D=5.9mm, L=95mm	37592-95
Cancellous Screw, Locking, D=5.9mm, L=100mm	37592-100
Cancellous Screw, Locking, D=5.9mm, L=105mm	37592-105
Cancellous Screw, Locking, D=5.9mm, L=110mm	37592-110
Cancellous Screw, Locking, D=5.9mm, L=115mm	37592-115
Cancellous Screw, Locking, D=5.9mm, L=120mm	37592-120

Cancellous Screw, D=5.9mm, L=65mm	30591-65
Cancellous Screw, D=5.9mm, L=70mm	30591-70
Cancellous Screw, D=5.9mm, L=75mm	30591-75
Cancellous Screw, D=5.9mm, L=80mm	30591-80
Cancellous Screw, D=5.9mm, L=85mm	30591-85
Cancellous Screw, D=5.9mm, L=90mm	30591-90
Cancellous Screw, D=5.9mm, L=95mm	30591-95
Cancellous Screw, D=5.9mm, L=100mm	30591-100
Cancellous Screw, D=5.9mm, L=105mm	30591-105
Cancellous Screw, D=5.9mm, L=110mm	30591-110
Cancellous Screw, D=5.9mm, L=115mm	30591-115
Cancellous Screw, D=5.9mm, L=120mm	30591-120

Cortical Screw, Locking, D=4.5mm, L=65mm	37455-65
Cortical Screw, Locking, D=4.5mm, L=70mm	37455-70
Cortical Screw, Locking, D=4.5mm, L=75mm	37455-75
Cortical Screw, Locking, D=4.5mm, L=80mm	37455-80
Cortical Screw, Locking, D=4.5mm, L=85mm	37455-85
Cortical Screw, Locking, D=4.5mm, L=90mm	37455-90
Cortical Screw, Locking, D=4.5mm, L=95mm	37455-95
Cortical Screw, Locking, D=4.5mm, L=100mm	37455-100
Cortical Screw, Locking, D=4.5mm, L=105mm	37455-105
Cortical Screw, Locking, D=4.5mm, L=110mm	37455-110
Cortical Screw, Locking, D=4.5mm, L=115mm	37455-115
Cortical Screw, Locking, D=4.5mm, L=120mm	37455-120

Cortical Screw, D=4.5mm, L=65mm	32455-65
Cortical Screw, D=4.5mm, L=70mm	32455-70
Cortical Screw, D=4.5mm, L=75mm	32455-75
Cortical Screw, D=4.5mm, L=80mm	32455-80
Cortical Screw, D=4.5mm, L=85mm	32455-85
Cortical Screw, D=4.5mm, L=90mm	32455-90
Cortical Screw, D=4.5mm, L=95mm	32455-95
Cortical Screw, D=4.5mm, L=100mm	32455-100
Cortical Screw, D=4.5mm, L=105mm	32455-105
Cortical Screw, D=4.5mm, L=110mm	32455-110
Cortical Screw, D=4.5mm, L=115mm	32455-115
Cortical Screw, D=4.5mm, L=120mm	32455-120

For detailed cleaning and sterilization instructions, please refer to package insert.

* Delivery times, prices & minimum quantities may vary from standard

Notes

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