

# Antegra Instruments and Implants.

Anterior fixation to achieve fusion in the lumbosacral spine.

Technique Guide





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# Antegra Instruments and Implants

The Antegra System is a comprehensive set of instruments and implants designed for the anterior stabilization of the lumbosacral spine. The Antegra implants are indicated for use from L1 to S1.

## Plates

- Sacral plates allow direct anterior placement on the spine below the bifurcation of the great vessels
- Lumbar plates can be placed from the anterior, lateral or anterolateral approach, depending on the location of the bifurcation of the great vessels
- Lordotic curvature to match anatomical alignment
- Plates can be further contoured for specific patient anatomy
- Convergent axial screw trajectories for increased purchase
- Plates align screws to vertebral body endplates for cortical purchase
- 3.5 mm profile
- Sacral step to facilitate placement at L5–S1
- Window for midline visualization

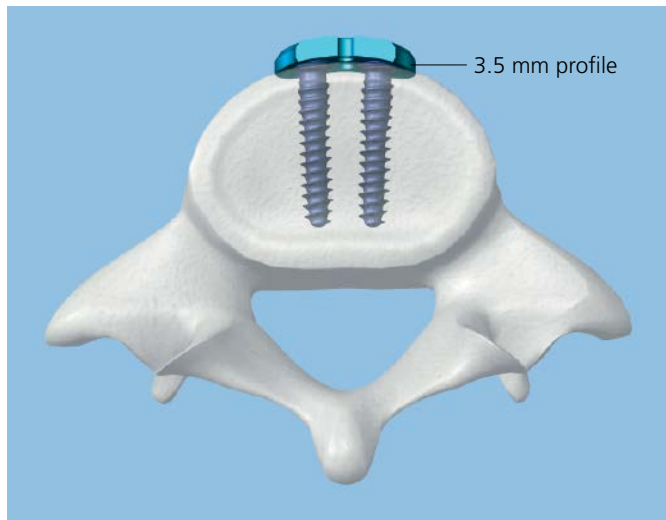
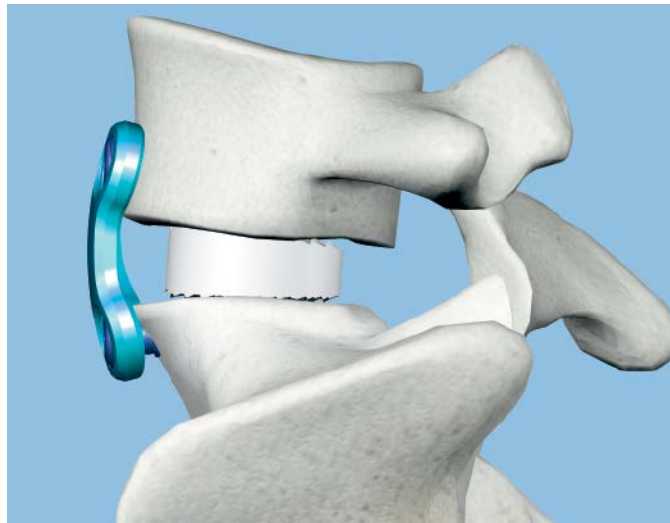
## Screws

- One-step conical locking mechanism
- Dual-core thread for cortical and cancellous purchase
- Fixed-angle screws for purchase in vertebral body
- 6.0 mm and 6.5 mm screw diameters
- Thread length etched in the recess of each screw
- StarDrive recess (T25) for screw retention and improved torque transmission

## Implant benefits

Both plate designs are low profile, offered in one- and two-level configurations, and available in a range of lengths.

The 6.0 mm and 6.5 mm cancellous screws have conical heads that lock to the plate, creating stable constructs. The 6.5 mm screw can be used to provide greater purchase in place of the 6.0 mm screw.



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### **Instruments**

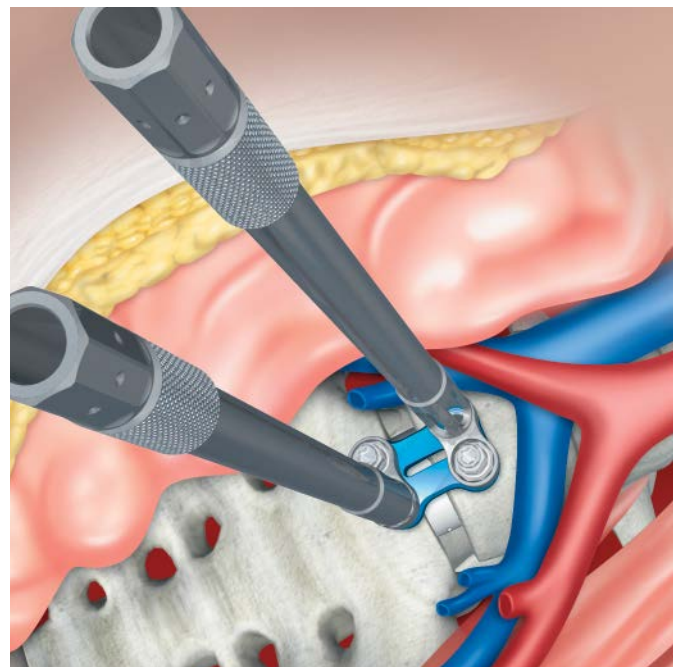
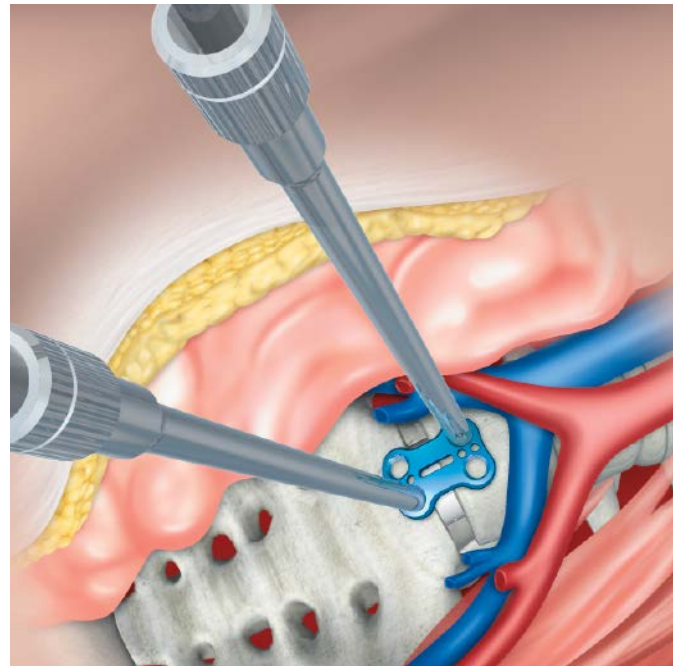
The instruments in the Antegra System offer a variety of technique options to accommodate surgeon preference. Options include instrumentation for optimized tissue protection and for decreased OR time.

### **Tissue protection**

- The temporary fixation pin, awl, and screw selection probe can be inserted through the drill guide applicator or threaded sleeve. Additionally, the threaded sleeve has a retention mechanism that engages the awl during insertion and removal
- The cancellous locking screws can be inserted through the drill/screw guides for additional tissue protection

### **Controlled screw insertion**

- The threaded drill guides and threaded sleeves control the trajectory of the awl and temporary fixation pins, to provide a controlled pathway for the cancellous locking screws
- The drill/screw guide can be used to guide the cancellous locking screws into the plate



# AO Principles

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In 1958, the AO formulated four basic principles, which have become the guidelines for internal fixation.<sup>1</sup> They are:

- Anatomic reduction
- Stable internal fixation
- Preservation of blood supply
- Early, active mobilization

The fundamental aims of fracture treatment in the limbs and fusion of the spine are the same. A specific goal in the spine is returning as much function as possible to the injured neural elements.<sup>2,3</sup>

1. M.E. Müller, M. Allgöwer, R. Schneider, and H. Willenegger. *Manual of Internal Fixation*, 3rd Edition. Berlin: Springer-Verlag, 1991.

2. Ibid.

3. M. Aebi, J.S. Thalgott, and J.K. Webb. *AO ASIF Principles in Spine Surgery*. Berlin: Springer-Verlag, 1998.

# Indications and Contraindications

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## Indications

The Synthes Antegra System is indicated for use via the lateral or anterolateral surgical approach above the bifurcation of the great vessels or via the anterior surgical approach below the bifurcation of the great vessels, as an adjunct to fusion.

This system is indicated in the treatment of lumbar and lumbosacral (L1–S1) spine instability as a result of:

- Fracture (including dislocation and subluxation)
- Tumor
- Degenerative disc disease (defined as back pain of discogenic origin with degeneration of the disc confirmed by patient history and radiographic studies)
- Pseudoarthrosis
- Spondylolysis
- Scoliosis
- Lordotic deformities of the spine
- Spinal stenosis
- Failed previous spine surgery

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**Warning:** This device is not intended for screw attachment or fixation to the posterior elements (pedicles) of the cervical, thoracic, or lumbar spine.

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## Contraindications

Use of the Synthes Antegra System is contraindicated when:

- There is active systemic infection, infection localized to the site of the proposed implantation, or when the patient has demonstrated allergy or foreign body sensitivity to any of the implant materials
- Severe osteoporosis may prevent adequate fixation and thus preclude the use of this or any other orthopaedic implant
- Metastatic tumors are present in the adjacent vertebral bodies
- Conditions that may place excessive stresses on bone and implants, such as severe obesity or degenerative disease are relative contraindications. The decision whether to use these devices in such conditions must be made by the physician taking into account the risks versus the benefits to the patient

Use of these implants is relatively contraindicated in patients whose activity, mental capacity, mental illness, alcoholism, drug abuse, occupation, or lifestyle may interfere with their ability to follow postoperative restrictions and who may place undue stresses on the implant during bony healing and may be at a higher risk of implant failure.

Please refer to package insert (GP2607) for the full list of indications, contraindications, warnings and/or precautions and sterilization information.

**Caution: Federal law restricts this device to sale by or on the order of a Physician.**

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1101 Synthes Avenue, Monument CO 80132  
800-523-0322

Note: For additional information, please refer to the package insert or [www.e-ifu.com](http://www.e-ifu.com).

For detailed cleaning and sterilization instructions, please refer to [www.depuysynthes.com/hcp/cleaning-sterilization](http://www.depuysynthes.com/hcp/cleaning-sterilization) or sterilization instructions, if provided in the instructions for use.

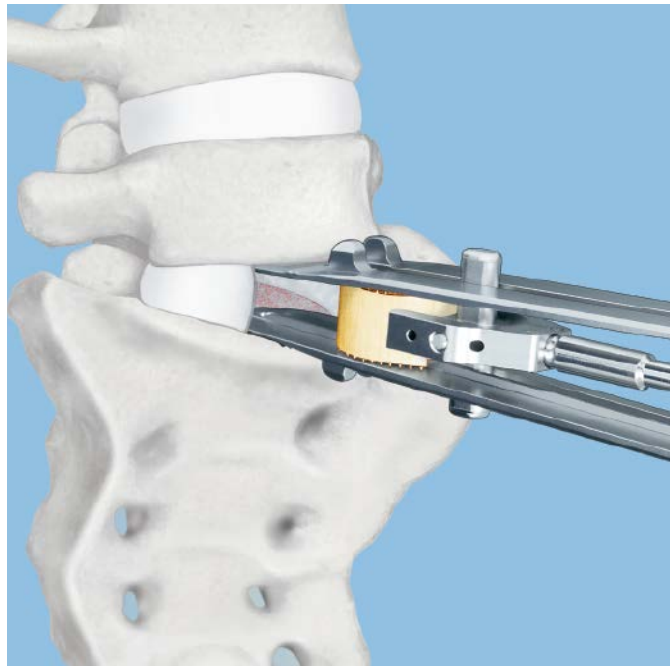
# Implant Selection and Preparation

## 1

### Select and insert graft

Following the approach and decompression, insert the appropriately sized graft.

**Note:** For recommended grafting technique, refer to the *Luminary ALIF Technique Guide*.



## 2

### Bend plate (optional)

#### Instrument

329.30\* Plate-Bending Press

Once the correct size plate is chosen, the plate can be contoured to match anatomical alignment. Use the plate-bending press to bend the plate.

**Note:** Plate bending must be done centrally so that the threaded holes are not deformed.



\*Also available



# Option 1: Threaded Drill Guides and Applicator

## 1

### Attach threaded drill guides and position plate

#### Instruments

03.661.121 Threaded Drill Guide

03.661.122 Drill Guide Applicator

Attach the threaded drill guides to all of the holes in the selected Antegra plate using the drill guide applicator.

Using the drill guide applicator, place the plate so that the screw holes are close to the vertebral body endplates, for optimal screw purchase.

**Note:** The step on the sacral plates should rest on the sacral promontory.



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## 2

### Lag plate

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#### Instruments

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03.161.057	Temporary Fixation Pin
03.620.036	StarDrive Screwdriver, T25, with Straight Handle, long
03.661.122	Drill Guide Applicator

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#### Alternative instruments

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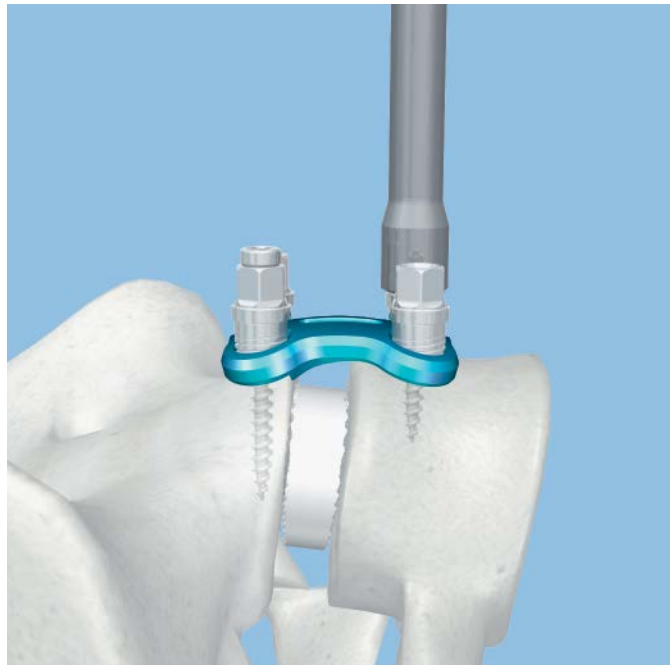
03.620.002	StarDrive Screwdriver Shaft, T25, 6 mm hex coupling, long
03.620.005	Ratchet T-Handle with low toggle, 6 mm hex coupling

---

Lag the plate to the bone by inserting the temporary fixation pins through the threaded drill guides using the StarDrive screwdriver. Pin placement in diagonally adjacent screw holes is recommended. The temporary fixation pins may be driven through the drill guide applicator to ensure tissue protection.

**Note:** The temporary fixation pins will penetrate 23 mm into the vertebral body.

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### 3

#### Prepare for screw insertion

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##### Instruments

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03.161.053 Awl

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03.661.122 Drill Guide Applicator

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Insert the awl through the threaded drill guides to perforate the cortical shell of the vertebral body. Light impaction may be necessary. The awl may be driven through the drill guide applicator to ensure tissue protection.

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**Note:** The awl will penetrate 23 mm into the vertebral body.

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## 4

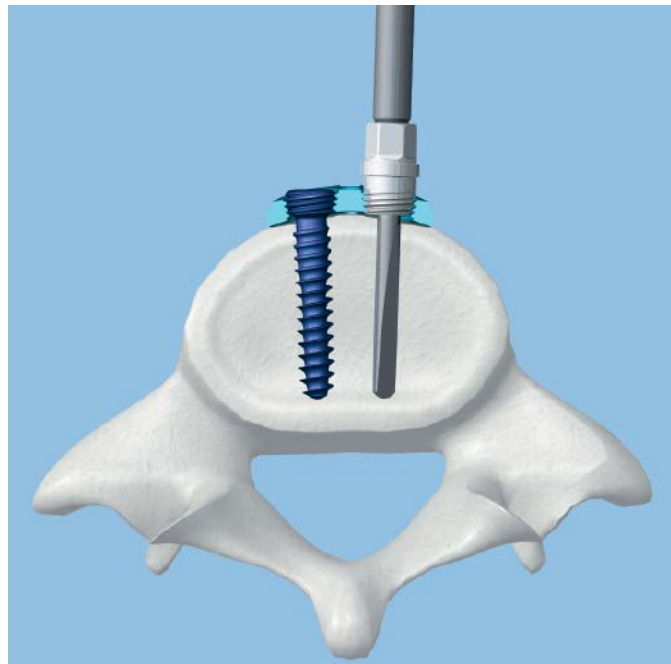
### Select screws

#### Instruments

03.661.122 Drill Guide Applicator

03.661.124 Screw Selection Probe

Assemble the screw selection probe, and advance the sleeve to the handle. Insert the screw selection probe through the threaded drill guides to the desired screw penetration. Holding in the release button, push the sleeve until it contacts the threaded drill guide. Once the appropriate depth has been obtained, the corresponding thread length, as indicated in the StarDrive recess, will be visible in the indicator window. The screw selection probe may be driven through the drill guide applicator to ensure tissue protection.



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## 5

### Insert screws

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#### Instruments

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03.161.057	Temporary Fixation Pin
03.620.036	StarDrive Screwdriver, T25, with Straight Handle, long
03.661.122	Drill Guide Applicator

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#### Alternative instruments

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03.620.002	StarDrive Screwdriver Shaft, T25, 6 mm hex coupling, long
03.620.005	Ratchet T-Handle with low toggle, 6 mm hex coupling

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Using the drill guide applicator, remove the threaded drill guides that are not anchored with the temporary fixation pins. Using the StarDrive screwdriver, select the appropriate screws. Insert the screws until the screwheads engage the plate. Remove the temporary fixation pins and remaining threaded drill guides. The remaining screws can then be inserted.



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## 6

### Final tightening

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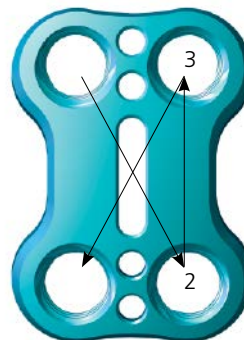
#### Instruments

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03.620.002	StarDrive Screwdriver Shaft, T25, 6 mm hex coupling, long
321.133	Torque Limiting Handle, quick release, 6 mm hex coupling

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For final tightening, it is recommended to tighten screws in a diagonal pattern, using the torque limiting handle and StarDrive screwdriver shaft.



## Option 2: Drill/Screw Guide

### 1

#### Attach threaded drill guide

##### Instruments

03.161.048 Drill/Screw Guide

03.661.121 Threaded Drill Guide

03.661.122 Drill Guide Applicator

Attach the drill/screw guide to the cranial end of the selected plate with a threaded drill guide, using the drill guide applicator.



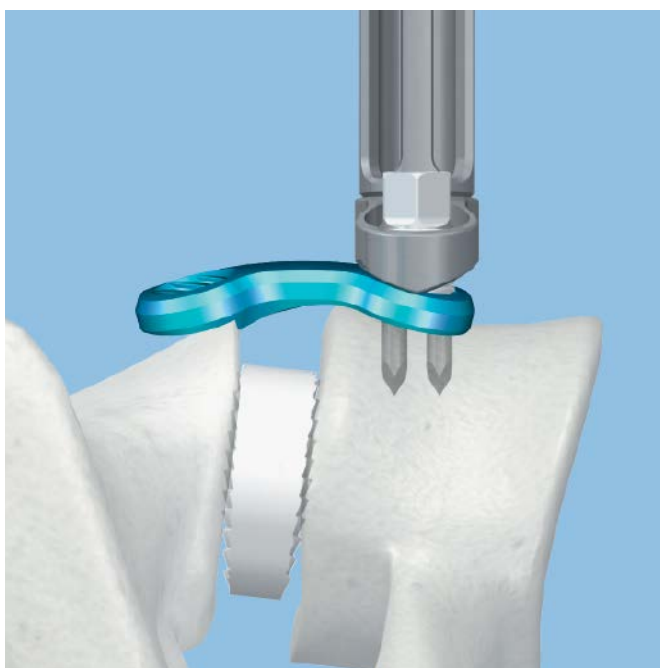
### 2

#### Position plate

Place the plate so that the screw holes are close to the vertebral body endplates for optimal screw purchase.

**Note:** The step on the sacral plates should rest on the sacral promontory.

Impact the plate and drill/screw guide into position. An additional drill/screw guide can then be impacted through the caudal end of the plate. This may be locked into position using a threaded drill guide. The cannulated shafts of the drill/screw guides should be in diagonally adjacent positions.



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### 3

#### Lag plate (optional)

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##### Instruments

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03.161.057	Temporary Fixation Pin
03.620.036	StarDrive Screwdriver, T25, with Straight Handle, long

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##### Alternative instruments

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03.620.002	StarDrive Screwdriver Shaft, T25, 6 mm hex coupling, long
03.620.005	Ratchet T-Handle with low toggle, 6 mm hex coupling

---

Lag the plate to the bone by inserting the temporary fixation pins through the threaded drill guides using the StarDrive screwdriver. The temporary fixation pins may be driven through the drill guide applicator to ensure tissue protection.

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**Note:** The temporary fixation pins will penetrate 23 mm into the vertebral body.

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## 4

### Prepare for screw insertion

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#### Instruments

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03.161.053 Awl

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03.661.123 Threaded Sleeve

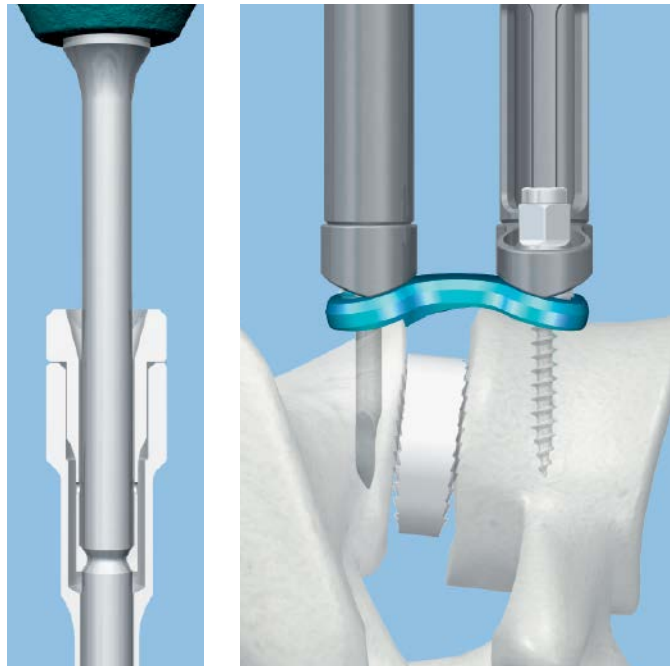
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Insert the awl into the threaded sleeve. Insert the threaded sleeve through the drill/screw guides to perforate the cortical shell of the vertebral body. Light impaction may be necessary.

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**Note:** The awl will penetrate 23 mm into the vertebral body when the threaded sleeve is seated in the plate.

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## 5

### Select screws

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#### Instrument

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03.661.124 Screw Selection Probe

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Assemble the screw selection probe, and advance the sleeve to the handle. Insert the screw selection probe through the threaded sleeve to the desired screw penetration. Holding in the release button, push the sleeve until it stops. Once the appropriate depth has been obtained, the corresponding thread length, as indicated in the StarDrive recess, will be visible in the indicator window.



## 6

### Insert screws

#### Instrument

03.620.036 StarDrive Screwdriver, T25, with Straight Handle, long

#### Alternative instruments

03.620.002 StarDrive Screwdriver Shaft, T25, 6 mm hex coupling, long

03.620.005 Ratchet T-Handle with low toggle, 6 mm hex coupling

Capture the selected screw using the StarDrive screwdriver. While maintaining downward pressure on the drill/screw guide, insert the screw until the head engages the plate. Remove the temporary fixation pins and threaded drill guides, then rotate the drill/screw guides 180°. Insert the remaining screws.



## 7

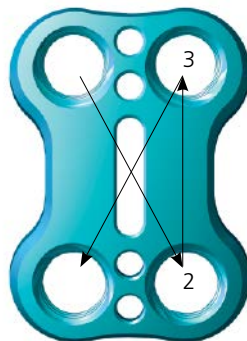
### Final tightening

#### Instruments

03.620.002 StarDrive Screwdriver Shaft, T25, 6 mm hex coupling, long

321.133 Torque Limiting Handle, quick release, 6 mm hex coupling

For final tightening, it is recommended to tighten screws in a diagonal pattern, using the torque limiting handle and StarDrive screwdriver shaft.



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***Optional technique***

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**Instruments**

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03.161.046 Countertorque Handle

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03.161.048 Drill/Screw Guide

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The countertorque handle can be applied to the drill/screw guide to provide countertorque during final tightening.



# Implant Removal

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## Instrument

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03.620.036	StarDrive Screwdriver, T25, with Straight Handle, long
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## Alternative instruments

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03.620.002	StarDrive Screwdriver Shaft, T25, 6 mm hex coupling, long
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03.620.005	Ratchet T-Handle with low toggle, 6 mm hex coupling
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Using the StarDrive screwdriver, engage one of the screws and loosen it. Continue loosening the screws in a diagonal pattern. Once all of the screws have been loosened, they can be removed.

## *Optional technique*

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### Instrument

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03.600.001*	Conical Extraction Screw, for 5.5 mm Locking Screws
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If the screws are difficult to loosen, the conical extraction screw can be used. When using the conical extraction screw, turn the shaft counterclockwise until the screw is removed.

\*Also available

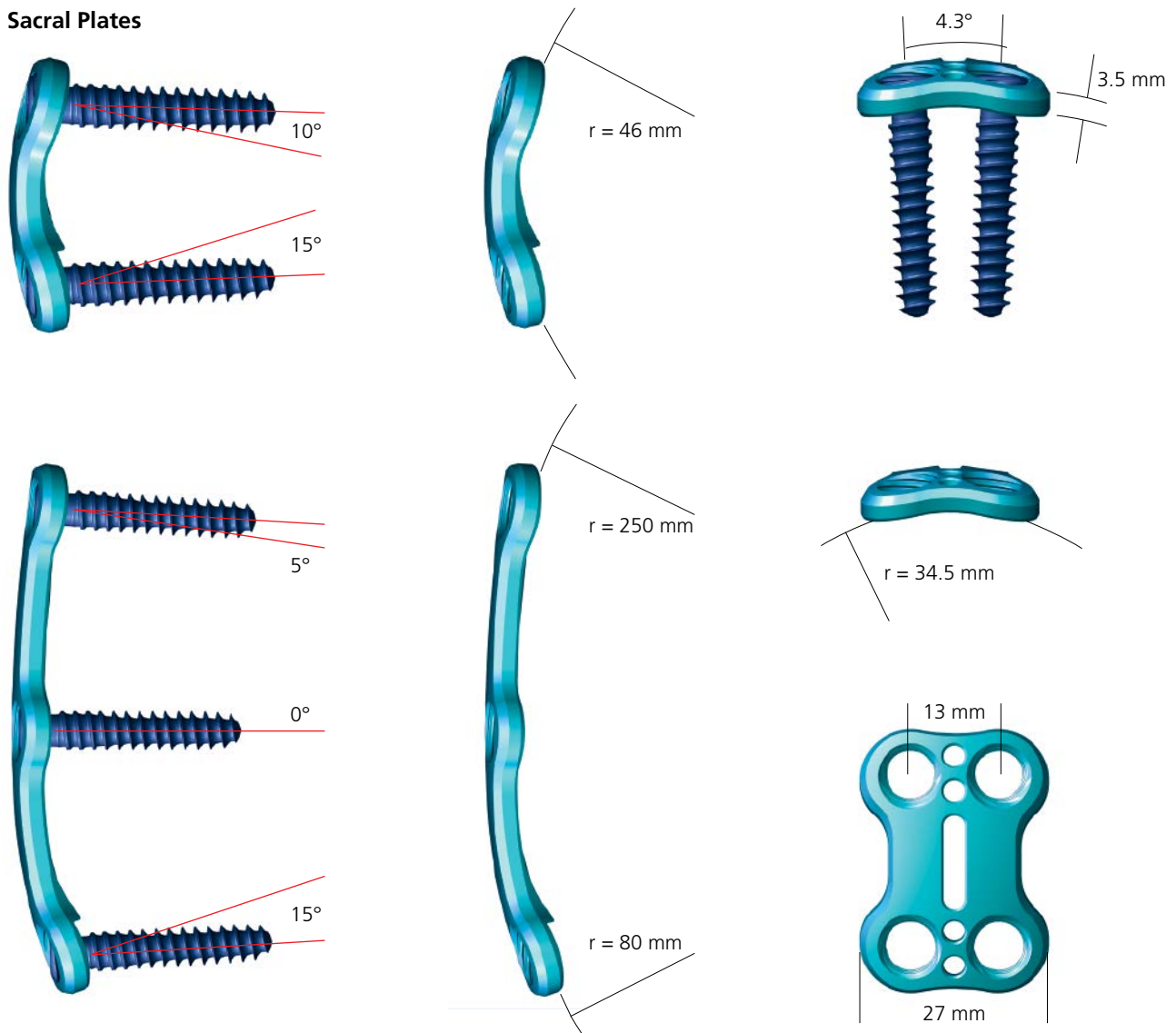
# Implants

## Titanium Antegra Plates

Material: Titanium-6% aluminum-7% niobium alloy

- Each plate is contoured in the sagittal and axial planes to accommodate patient anatomy
- Screw holes are offset from perpendicular to accommodate the surgical approach and to orient screws approximately parallel to the vertebral body endplates for bone/screw purchase
- Each plate has a 3.5 mm profile

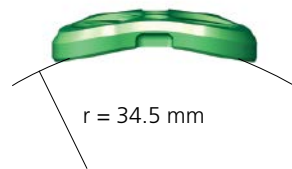
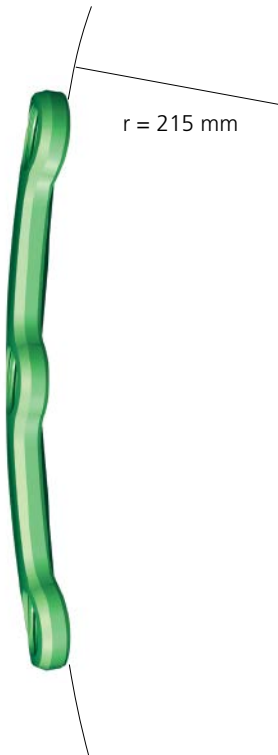
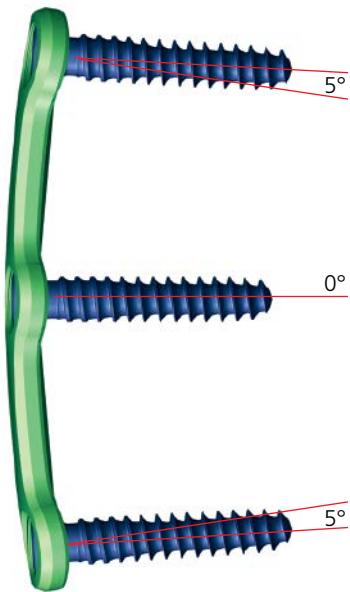
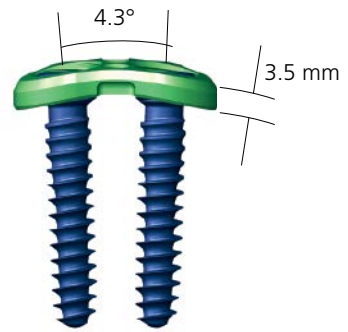
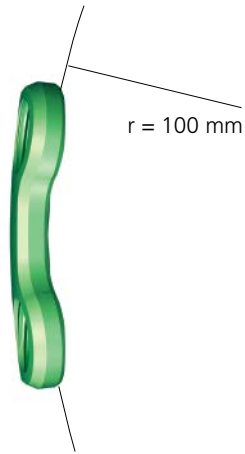
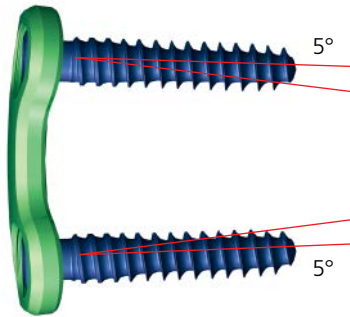
## Sacral Plates



Note: The plate length is etched on each plate.

**Titanium Antegra Plates** *continued*

**Lumbar Plates**



Note: The plate length is etched on each plate.

## Cancellous Locking Screws

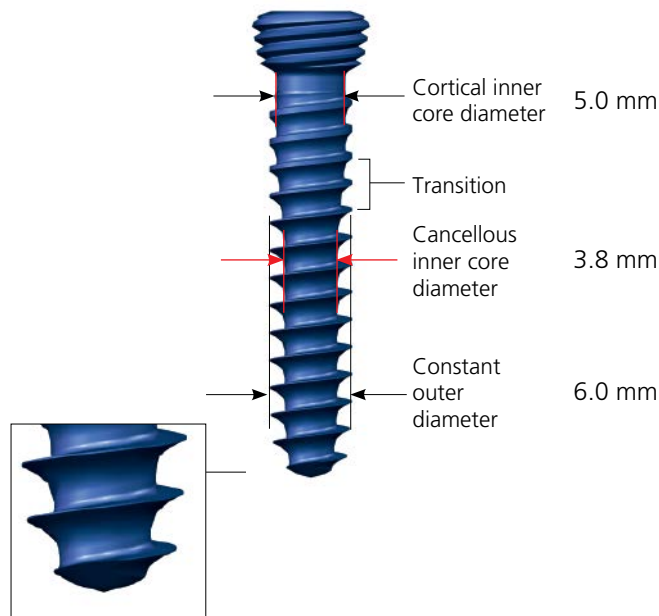
Material: Titanium-6% aluminum-7% niobium alloy

- Each screw has a tapered T25 StarDrive recess to allow the screwdriver to retain the screw during insertion
- Antegra screws have a dual-core thread design for purchase in cortical and cancellous bone
- The conical head facilitates alignment of the locking screw in the plate
- The screws have a self-tapping design with blunt, threaded tips

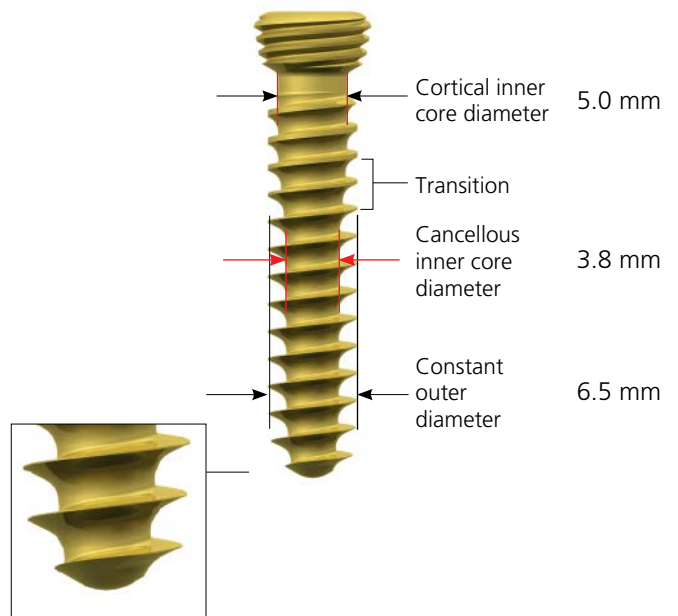


Conical screw holes allow  $\pm 5^\circ$  angulation during screw insertion

6.0 mm Cancellous Locking Screw



6.5 mm Cancellous Locking Screw



Note: The thread length is etched on each screw.

# Instruments

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03.161.046 Countertorque Handle



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03.161.048 Drill/Screw Guide



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03.161.053 Awl



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03.161.055 3.8 mm Drill Bit with 20 mm stop, quick coupling



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03.161.057 Temporary Fixation Pin



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03.620.002 StarDrive Screwdriver Shaft, T25, 6 mm hex coupling, long



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03.620.005 Ratchet T-Handle with low toggle, 6 mm hex coupling





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03.620.036 StarDrive Screwdriver, T25, with Straight Handle, long



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03.661.121 Threaded Drill Guide



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03.661.122 Drill Guide Applicator



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03.661.123 Threaded Sleeve



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03.661.124 Screw Selection Probe



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03.661.125 Temporary Fixation Pin, long



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311.425 Handle, with quick coupling



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321.133 Torque Limiting Handle, quick release, 6 mm  
hex coupling



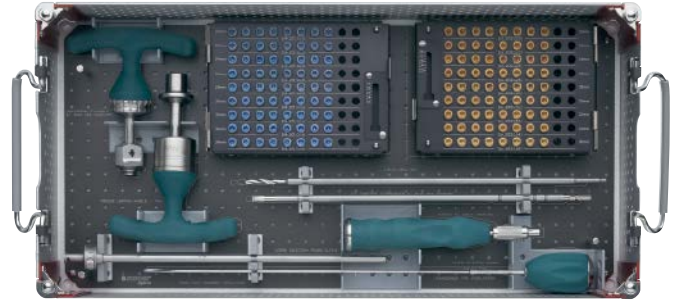
# Antegra Instrument and Titanium Implant Set (01.661.006)

## Graphic Cases

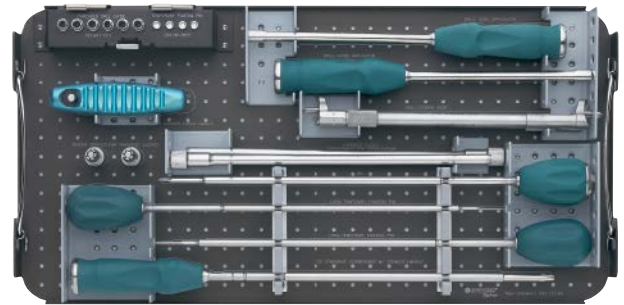
- 690.270 Graphic Case, for Antegra Instruments
- 690.271 Graphic Case, for Titanium Antegra One-Level Implants

## Instruments

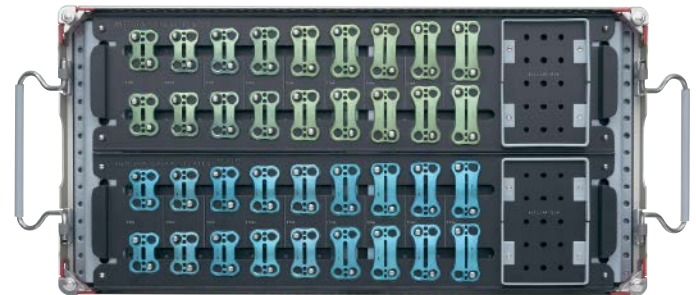
- 03.161.046 Countertorque Handle
- 03.161.048 Drill/Screw Guide, 2 ea.
- 03.161.053 Awl
- 03.161.055 3.8 mm Drill Bit with 20 mm stop, quick coupling
- 03.161.057 Temporary Fixation Pin, 4 ea.
- 03.620.002 StarDrive Screwdriver Shaft, T25, 6 mm hex coupling, long
- 03.620.005 Ratchet T-Handle with low toggle, 6 mm hex coupling
- 03.620.036 StarDrive Screwdriver, T25, with Straight Handle, long
- 03.661.121 Threaded Drill Guide, 6 ea.
- 03.661.122 Drill Guide Applicator, 2 ea.
- 03.661.123 Threaded Sleeve, 2 ea.
- 03.661.124 Screw Selection Probe
- 03.661.125 Temporary Fixation Pin, long, 2 ea.
- 311.425 Handle with quick coupling
- 321.133 Torque Limiting Handle, quick release, 6 mm hex coupling



690.270



690.270



690.271

For additional information, please refer to package insert.

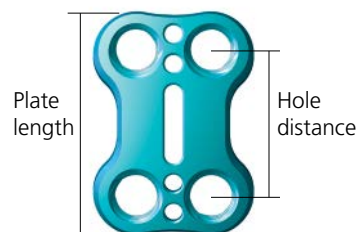
**Implants**

Titanium Antegra One-Level Lumbar Plates, 2 ea.

	Hole Distance (mm)	Plate Length (mm)
04.102.137	23	37
04.102.139	25	39
04.102.141	27	41
04.102.143	29	43
04.102.145	31	45
04.102.147	33	47
04.102.149	35	49
04.102.151	37	51
04.102.153	39	53

Titanium Antegra One-Level Sacral Plates, 2 ea.

	Hole Distance (mm)	Plate Length (mm)
04.103.137	23	37
04.103.139	25	39
04.103.141	27	41
04.103.143	29	43
04.103.145	31	45
04.103.147	33	47
04.103.149	35	49
04.103.151	37	51
04.103.153	39	53

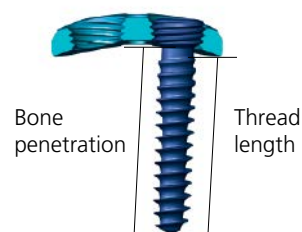


6.0 mm Titanium Cancellous Locking Screws, with StarDrive recess, 8 ea.

	Thread Length (mm)	Bone Penetration (mm)
04.201.020	20	23
04.201.022	22	25
04.201.024	24	27
04.201.026	26	29
04.201.028	28	31
04.201.030	30	33
04.201.032	32	35
04.201.034	34	37
04.201.036	36	39

6.5 mm Titanium Cancellous Locking Screws, with StarDrive recess, 8 ea.

	Thread Length (mm)	Bone Penetration (mm)
04.202.020	20	23
04.202.022	22	25
04.202.024	24	27
04.202.026	26	29
04.202.028	28	31
04.202.030	30	33
04.202.032	32	35
04.202.034	34	37
04.202.036	36	39



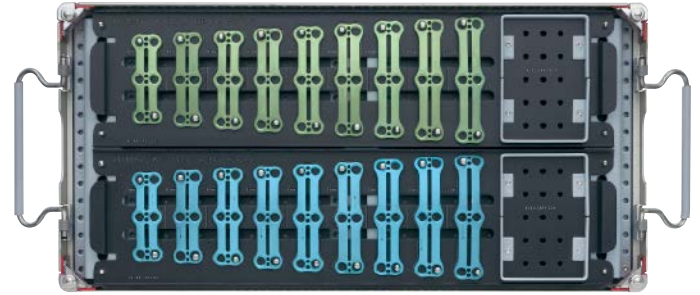
**Also Available**

- 03.600.001 Conical Extraction Screw, for 5.5 mm Locking Screws
- 329.30 Plate-Bending Press

# Antegra Two-Level Titanium Implant Set (01.661.003)

## Graphic Case

60.661.001 Graphic Case, for Titanium Antegra Two-Level Implants



## Implants

Titanium Antegra Two-Level Lumbar Plates

	Hole Distance (mm)	Plate Length (mm)
04.102.279	65	79
04.102.283	69	83
04.102.287	73	87
04.102.291	77	91
04.102.295	81	95
04.102.299	85	99
04.102.303	89	103
04.102.307	93	107
04.102.311	97	111

Titanium Antegra Two-Level Sacral Plates

	Hole Distance (mm)	Plate Length (mm)
04.103.279	65	79
04.103.283	69	83
04.103.287	73	87
04.103.291	77	91
04.103.295	81	95
04.103.299	85	99
04.103.303	89	103
04.103.307	93	107
04.103.311	97	111





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To order (Canada): 844-243-4321

Note: For recognized manufacturer, refer to the product label.

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