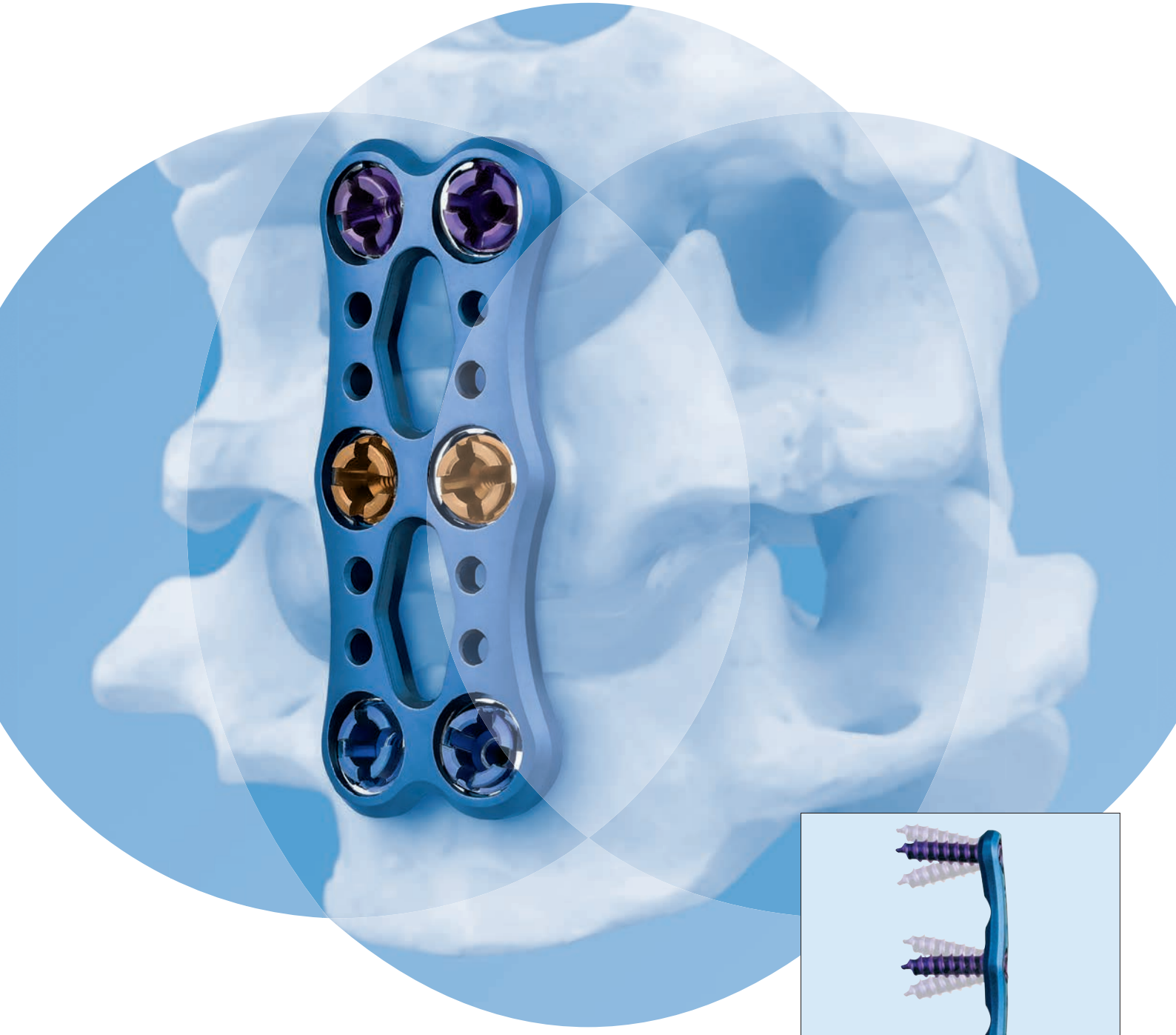
DePuy Synthes

PART OF THE Johnson & Johnson FAMILY OF COMPANIES

# VECTRA

Anterior cervical plate system





This publication is not intended for distribution in the USA.

## SURGICAL TECHNIQUE

Image intensifier control

This description alone does not provide sufficient background for direct use of DePuy Synthes products. Instruction by a surgeon experienced in handling these products is highly recommended.

**Processing, Reprocessing, Care and Maintenance**
For general guidelines, function control and dismantling of multi-part instruments, as well as processing guidelines for implants, please contact your local sales representative or refer to:
http://emea.depuysynthes.com/hcp/reprocessing-care-maintenance
For general information about reprocessing, care and maintenance of Synthes reusable devices, instrument trays and cases, as well as processing of Synthes non-sterile implants, please consult the Important Information leaflet (SE_023827) or refer to:
http://emea.depuysynthes.com/hcp/reprocessing-care-maintenance

# Contents

# **Vectra.** The flexible and easy-to-use anterior cervical plate system.

**Plates**
- Integrated blocking mechanism
- Prelordosed
- Large graft visibility window
- 16.5 mm wide and 2.5 mm thin
- Titanium alloy plate (TAN)
- Integral Elgiloy clips lock the screws to the plate

**Screws**
- Screws are color coded to identify function and diameter 1
- Regular screw diameter 4.0 mm
- Each screw type is also available with diameter 4.5 mm for revision or where higher purchase is required

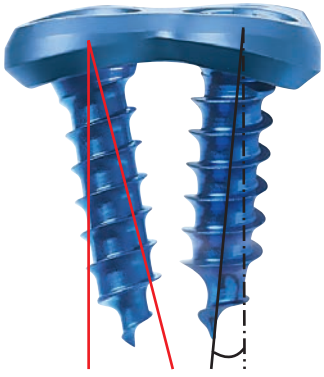
1 Self-drilling Screws shown, same color code applies to self-tapping screws

**Variable angle screws**
- Cephalad/caudal: 28° range
- Medial/lateral: 14° range

purple 4.0 mm

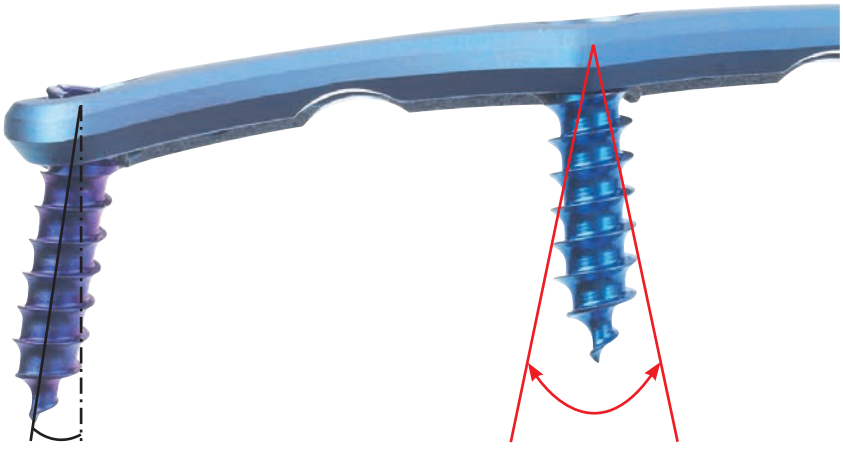
blue 4.5 mm

**Medial/lateral angulation**



14° range 7° offset

**Cephalad/caudal angulation**



8° offset 28° range

aqua 4.5 mm

brown 4.0 mm

**Fixed angle screws**
- Cephalad/caudal: offset of 8°
- Medial/lateral: offset of 7°

**Cephalad/caudal angulation**

8° offset

**Medial/lateral angulation**

7° offset

# Indications and contraindications

**Indications**

The Vectra System is intended for anterior screw fixation to the cervical spine (C2–C7) for the following indications:

- Degenerative disc disease (DDD, defined as neck pain of discogenic origin with degeneration of the disc confirmed by history and radiographic studies)
- Spondylolisthesis
- Spinal stenosis
- Tumors (primary and metastatic)
- Failed previous fusions
- Pseudarthrosis
- Deformity (i.e kyphosis, lordosis and/or scolosis)

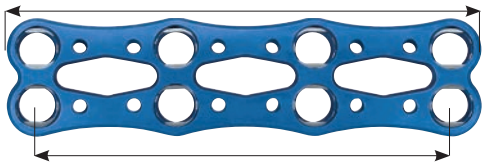
**Contraindications**

- Severe osteoporosis
- Any indication where fusion is not required

**Note for long spans or poor bone quality:** The surgeon is urged to consider the nature of such cases. The treatment may require the use of screws longer than 16 mm, and/or posterior fixation for this kind of inherently unstable case.

# Implants

## Vectra plate options




### One-level plates

| Art. No. | Hole pair length mm | Total plate length mm |
|---|---|---|
| 04.613.012* | 12 | 21 |
| 04.613.014* | 14 | 23 |
| 04.613.016* | 16 | 25 |
| 04.613.018* | 18 | 27 |
| 04.613.020* | 20 | 29 |
| 04.613.022* | 22 | 31 |
| 04.613.024* | 24 | 33 |
| 04.613.026* | 26 | 35 |

### Two-level plates

| Art. No. | Hole pair length mm | Total plate length mm |
|---|---|---|
| 04.613.126* | 26 | 35 |
| 04.613.128* | 28 | 37 |
| 04.613.130* | 30 | 39 |
| 04.613.132* | 32 | 41 |
| 04.613.134* | 34 | 43 |
| 04.613.136* | 36 | 45 |
| 04.613.138* | 38 | 47 |
| 04.613.140* | 40 | 49 |
| 04.613.142* | 42 | 51 |
| 04.613.144* | 44 | 53 |
| 04.613.146* | 46 | 55 |

* All implants are also available sterile packed. Add suffix "S" to article number.

**Three-level plates**

| Art. No. | Hole pair length mm | Total plate length mm |
|---|---|---|
| 04.613.245* | 45 | 54 |
| 04.613.248* | 48 | 57 |
| 04.613.251* | 51 | 60 |
| 04.613.254* | 54 | 63 |
| 04.613.257* | 57 | 66 |
| 04.613.260* | 60 | 69 |
| 04.613.263* | 63 | 72 |
| 04.613.266* | 66 | 75 |
| 04.613.269* | 69 | 78 |

**Four-level plates**

| Art. No. | Hole pair length mm | Total plate length mm |
|---|---|---|
| 04.613.360* | 60 | 69 |
| 04.613.364* | 64 | 73 |
| 04.613.368* | 68 | 77 |
| 04.613.372* | 72 | 81 |
| 04.613.376* | 76 | 85 |
| 04.613.380* | 80 | 89 |
| 04.613.384* | 84 | 93 |
| 04.613.388* | 88 | 97 |
| 04.613.392* | 92 | 101 |
| 04.613.396* | 96 | 105 |
| 04.613.400* | 100 | 109 |

* All implants are also available sterile packed. Add suffix "S" to article number.

**Vectra screw options**

- Variable angle screws (purple and blue)
- Fixed angle screws (brown and aqua)
- Regular screw diameter 4.0 mm
- Each screw type is also available with diameter 4.5 mm for revision or where higher purchase is required
- Monocortical screw lengths range from 12–18 mm (self-drilling and self-tapping cancellous screws)
- Bicortical screw lengths range from 18–26 mm (self-tapping cortex screws)
- Screws are color coded to identify type and diameter
- Material: Titanium alloy (TAN)

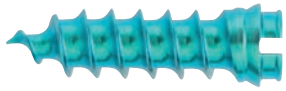
**Variable angle**

purple 4.0 mm

blue 4.5 mm

**Fixed angle**

brown 4.0 mm



aqua 4.5 mm

## Standard screws

### Self-drilling screws, cancellous

| | |
|---|---|
| 04.613.514/516* | 4.0 mm, variable angle, 14 mm, 16 mm |
| 04.613.564/566* | 4.5 mm, variable angle, 14 mm, 16 mm |
| 04.613.714/716* | 4.0 mm, fixed angle, 14 mm, 16 mm |
| 04.613.764/766* | 4.5 mm, fixed angle, 14 mm, 16 mm |

## Available lengths

### Self-drilling screws, cancellous

| | |
|---|---|
| 04.613.512–518* | 4.0 mm, variable angle, 12–18 mm, increments of 2 mm |
| 04.613.562–568* | 4.5 mm, variable angle, 12–18 mm, increments of 2 mm |
| 04.613.712–718* | 4.0 mm, fixed angle, 12–18 mm, increments of 2 mm |
| 04.613.762–768* | 4.5 mm, fixed angle, 12–18 mm, increments of 2 mm |

### Self-tapping screws, cancellous

| | |
|---|---|
| 04.613.612–618* | 4.0 mm, variable angle, 12–18 mm, increments of 2 mm |
| 04.613.662–668* | 4.5 mm, variable angle, 12–18 mm, increments of 2 mm |
| 04.613.812–818* | 4.0 mm, fixed angle, 12–18 mm, increments of 2 mm |
| 04.613.862–868* | 4.5 mm, fixed angle, 12–18 mm, increments of 2 mm |

### Self-tapping bicortical screws, cortical

| | |
|---|---|
| 04.614.618–626* | 4.0 mm, variable angle, 18–26 mm, increments of 2 mm |
| 04.614.668–676* | 4.5 mm, variable angle, 18–26 mm, increments of 2 mm |

* All implants are also available sterile packed. Add suffix "S" to article number.

# Vario Case

**Vectra Vario Case**

| | |
|---|---|
| 68.613.000 | Vario Case for Vectra and Vectra-T, with screw inserts and plate modules |
| 68.613.000.02 | Insert, size 1/4, for additional items, for Vario Case No. 68.613.000 |
| 68.613.020 | Module for Vectra and Vectra-T Plates 4.0/4.5 (1 to 3 levels plates), for Vario Case No. 68.613.000 |
| 68.613.030 | Insert for Screws, for Vectra and Vectra-T, for Vario Case 68.613.000 |

**Optional**

| | |
|---|---|
| 68.613.021 | Additional Module for Vectra and Vectra-T Plates 4.0/4.5 (4 level plates), for Vario Case No. 68.613.000 |

# Instruments

## Plate manipulation instruments

| | |
|---|---|
| 324.101 | Fixation Pin for temporary use Holds the plate securely to the bone prior to final placement of screws. |
| 324.101S | Fixation Pin for temporary use, sterile |
| 352.312 | Holding Sleeve for temporary Fixation Pin For use with Screwdriver 324.105. |
| 03.600.004 | Bending Pliers for Vectra Plates For contouring Vectra plates to the desired curvature. |

## Screw site preparation instruments

| | |
|---|---|
| 311.402 | Tap for Cancellous Bone Screws ∅ 4.0 mm, length 220 mm, in combination with 324.107 |
| 311.404 | Tap for Cancellous Bone Screws ∅ 4.5 mm, length 220 mm, in combination with 324.107 |
| 324.107 | Handle with Quick Coupling For use with drill bits and taps. |
| 324.111 | Awl ∅ 2.5 mm with trocar tip Breaks the cortex. |
| 324.151–159 | Drill Bit ∅ 2.5 mm, lengths 12–20 mm, 2-flute, for Quick Coupling in combination with 324.107 |
| 03.613.222–226 | Drill Bit ∅ 2.5mm, lengths 22–26mm, 2-flute, for Quick Coupling in combination with 324.107 |

| | | |
|---|---|---|
| 387.292 | Screw length indicator, depth up to 50 mm |  |
| 03.600.002 | Drill Sleeve 8.0/3.2, for Vectra and Vectra-T Plates with fixed angle screws<br><br>Functions as a plate holder and works as a guide for drill bits when preparing insertion of fixed angle screws. |  |
| 03.600.003 | Drill Sleeve 8.0/3.2, for Vectra and Vectra-T Plates with variable angle screws<br><br>Functions as a plate holder and works as a guide for drill bits when preparing insertion of variable angle screws. |  |
| 03.613.001 | Drill and Screw Guide, for Vectra and Vectra-T Facilitates use of awl, drill bits, and taps and allows for fixed and variable angle screw insertion. |  |
| 03.614.002 | Compression Drill Guide 8.5/3.1 for Vectra and Vectra-T |  |

## Screw insertion instruments

| | |
|---|---|
| 324.105 | Screwdriver for Insertion, self-holding<br>For inserting screws and temporary fixation pins. |

## Extraction and revision instrument

| | |
|---|---|
| 324.071 | Cleaning Instrument for Screw Head<br>For removal of tissue in the screw head prior to attaching the Screwdriver for Extraction. |

| | |
|---|---|
| 352.311 | Screwdriver for Extraction.<br>For extracting screws from the plate. |

## 1
### Approach

Using the standard surgical approach, expose the vertebral bodies to be fused. Prepare the fusion site as per the appropriate technique for the given indication.

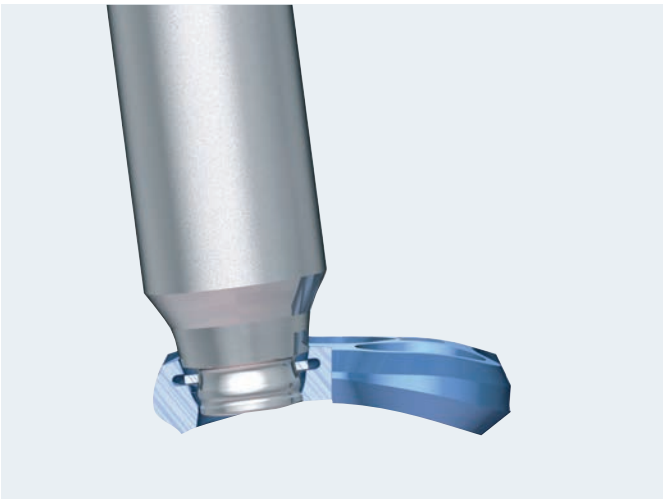
## 2
### Select and bend plate

**Optional instruments**

| | |
|---|---|
| 03.600.002 | Drill Guide 8.0/3.2, for Vectra and Vectra-T plates with fixed angle screws |
| 03.600.003 | Drill Guide 8.0/3.2, for Vectra and Vectra-T plates with variable angle screws |
| 03.600.004 | Bending Pliers for Vectra Plates |

Select appropriate plate size.

Plate may be brought in position with the Drill Guide (fixed angle or variable angle).



Tip of Drill Guide snaps into clip in plate hole

**Precautions:**
- It must be considered that the intervertebral discs in the neck region are slightly inclined from anterocaudal to posterocranial. Screws should remain in the vertebral body and not penetrate the intervertebral discs. Make sure there will be enough space between the intact adjacent intervertebral discs and the screws.
- Only bend the plate at the bending notches or else the holes may distort.
- Repeated bending may weaken the plate.
- Do not bend the plate at the holes or carriages.

**Increase** lordotic bend

**Decrease** lordotic bend

Once the correct plate size has been chosen, determine plate alignment. The Bending Pliers may be used to give the plate its correct lordotic curvature.

## 3

**Secure plate with temporary Fixation Pins**

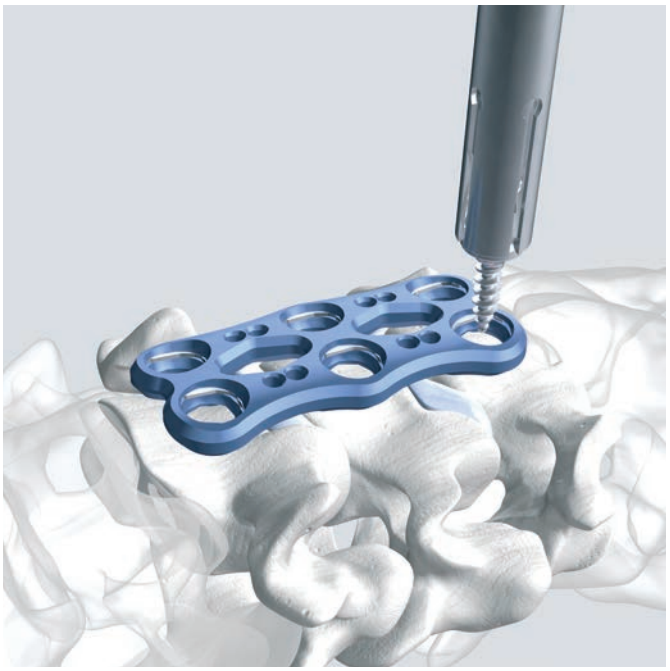
**Required instruments**

| | |
|---|---|
| 324.101(S) | Fixation Pin for temporary use, (sterile) |
| 324.105 | Screwdriver for Insertion, self-holding |
| 352.312 | Holding Sleeve for temporary Fixation Pin |

After the plate is placed in the appropriate position, it is secured with Fixation Pins. Insert the first Fixation Pin using the Screwdriver for Insertion and the additionally available Holding Sleeve. Screw the pin into the vertebral body. Insert a second pin into the diagonally opposite plate hole.

Additional temporary Fixation Pins may be inserted if desired.

**Precaution:** Intraoperative imaging should be used for a lateral view of the position of the fixation pins to indicate the potential positions of the screws.



# Option A
# Variable angle, self-drilling screw

## A 4

**Break cortex**

**Required instruments**

| | |
|---|---|
| 324.111 | Awl ∅ 2.5 mm with trocar tip |

**Optional instruments**

| | |
|---|---|
| 03.613.001 | Drill and Screw Guide, for Vectra and Vectra-T |

Determine the entry point and trajectory for the screw. Insert the awl at the desired angle into the screw hole and push down while simultaneously twisting the awl handle. Remove the awl maintaining hole and plate alignment.

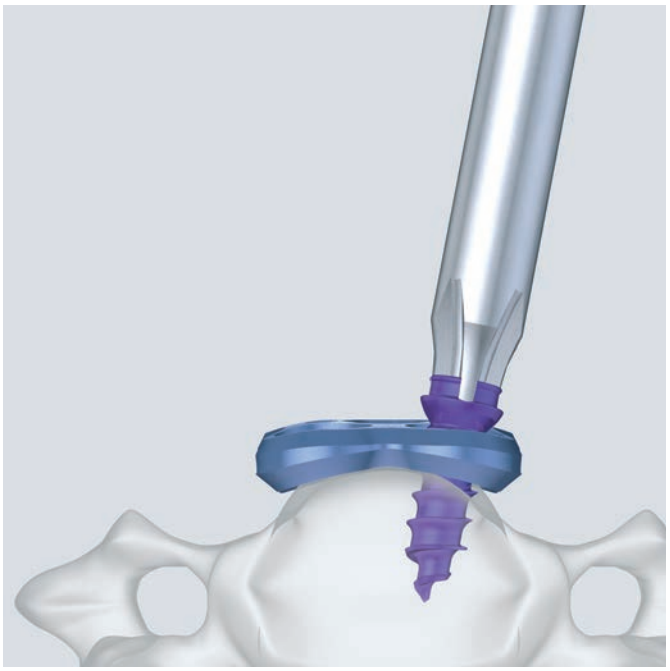
**Precaution:** Intraoperative imaging should be used to verify awl position.

Optionally the Drill and Screw Guide can be introduced with the alignment post in the diamond window and used as a guide for the following steps.

Insert the tip of the drill guide at an angle, as shown, and rotate the instrument forward until the tip is engaged. The tip of the drill guide snaps into the clip in the plate hold.
The awl may be used with either the fixed- or variable-angle single-barrel drill guide to break the cortex.

# A 5

**Insert variable angle screw**



**Required instruments**

| | |
|---|---|
| 324.105 | Screwdriver for Insertion, self-holding |

Load a self-drilling variable angle screw of the appropriate length onto the Screwdriver for Insertion. Advance the screw until the head of the screw is fully seated and the plate is lagged to the bone.

**Warning:** For long spans or poor bone quality: The surgeon is urged to consider the nature of such cases. The treatment may require the use of screws longer than 16 mm, and/or posterior fixation for this kind of inherently unstable cases.

**Precautions:**

- It must be considered that the intervertebral discs in the neck region are slightly inclined from anterocaudal to posterocranial. Screws should remain in the vertebral body and not penetrate the intervertebral discs. Make sure there will be enough space between the intact adjacent intervertebral discs and the screws.
- The 4.5 mm screw may be used as an emergency screw where the 4.0 mm screw has stripped the bone and a larger screw thread is required.
- Intraoperative imaging should be used to verify screw position.

# Option B
# Fixed angle, self-drilling screw

## B4
**Break cortex**

**Required instruments**

| | |
|---|---|
| 324.111 | Awl ∅ 2.5 mm with trocar tip |
| 03.613.001 | Drill and Screw Guide, for Vectra and Vectra-T |

Introduce the Drill and Screw Guide in the small posthole of the plate. Insert the awl in the Drill and Screw Guide and push down while simultaneously twisting the awl handle. Remove the awl maintaining hole and plate alignment.

**Precaution:** Intraoperative imaging should be used to verify awl position.

The Drill and Screw Guide must be introduced with the alignment post in the small hole adjacent to the screw hole and used as a guide for the following steps.

## B5

**Insert fixed angle screw**

**Required instruments**

| | |
|---|---|
| 324.105 | Screwdriver for Insertion, self-holding |
| 03.613.001 | Drill and Screw Guide, for Vectra and Vectra-T |

Load a self-drilling fixed angle screw of the appropriate length onto the Screwdriver for Insertion. Insert the loaded Screwdriver in the Drill and Screw Guide and advance the screw until the head of the screw is fully seated in the plate.

**Warning:** For long spans or poor bone quality: The surgeon is urged to consider the nature of such cases. The treatment may require the use of screws longer than 16 mm, and/or posterior fixation for this kind of inherently unstable cases.

**Precautions:**

- It must be considered that the intervertebral discs in the neck region are slightly inclined from anterocaudal to posterocranial. Screws should remain in the vertebral body and not penetrate the intervertebral discs. Make sure there will be enough space between the intact adjacent intervertebral discs and the screws.
- The 4.5 mm screw may be used as an emergency screw where the 4.0 mm screw has stripped the bone and a larger screw thread is required.
- Intraoperative imaging should be used to verify screw position.

# Option C
# Variable angle, self-tapping screw

## C4
**Drill pilot hole**


**Required instruments**

| | |
|---|---|
| 03.600.003 | Drill Guide 8.0/3.2, for Vectra and Vectra-T plates with variable angle screws |
| 324.107 | Handle with Quick Coupling |
| 324.151–159 | Drill Bit ∅ 2.5 mm, lengths 12–20 mm, 2-flute, for Quick Coupling |
| 03.613.222–226 | Drill Bit ∅ 2.5 mm, lengths 22–26 mm, 2-flute, for Quick Coupling for Quick Coupling |

**Optional instruments**

| | |
|---|---|
| 03.613.001 | Drill and Screw Guide, for Vectra and Vectra-T |
| 387.292 | Screw length indicator, depth up to 50 mm |
| 311.402 | Tap for Cancellous Bone Screws ∅ 4 mm |
| 311.404 | Tap for Cancellous Bone Screws ∅ 4.5 mm |

Select a drill bit and screw of appropriate length.

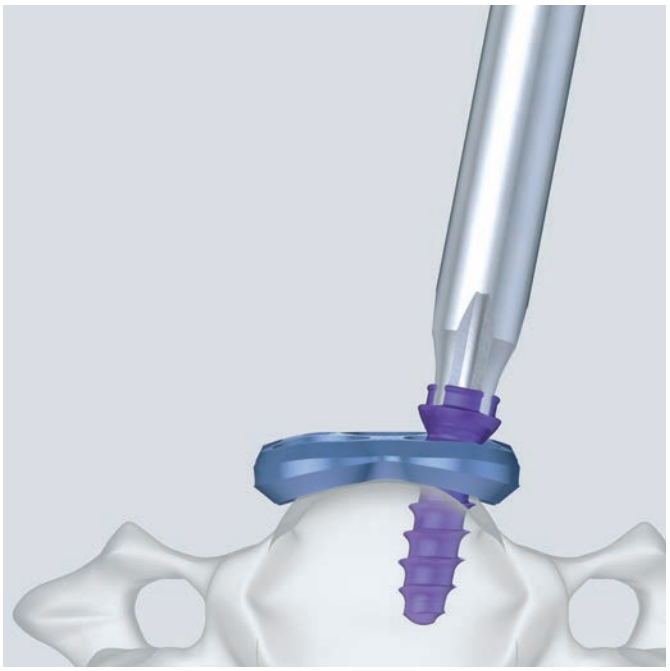
Insert the Drill Guide into the desired hole inclined to the appropriate direction for drilling. Insert the Drill Bit into the Drill Guide and drill to desired depth. The drill will stop at the depth indicated on the drill when the stop contacts the top of the Drill Guide.

**Precaution:** Intraoperative imaging should be used to check the drilling operation.

Remove drill guide and bit.

## C5

**Insert variable-angle screw**



### Required instruments

| | |
|---|---|
| 324.105 | Screwdriver for Insertion, self-holding |

### Optional instruments

| | |
|---|---|
| 03.613.001 | Drill and Screw Guide, for Vectra and Vectra-T |

Load a variable angle self-tapping screw of the appropriate length onto the Screwdriver for Insertion. Advance the screw until the head of the screw is fully seated in the plate and the plate is lagged to the bone.

**Warning:** For long spans or poor bone quality: The surgeon is urged to consider the nature of such cases. The treatment may require the use of screws longer than 16 mm, and/or posterior fixation for this kind of inherently unstable cases.

**Precautions:**

- It must be considered that the intervertebral discs in the neck region are slightly inclined from anterocaudal to posterocranial. Screws should remain in the vertebral body and not penetrate the intervertebral discs. Make sure there will be enough space between the intact adjacent intervertebral discs and the screws.
- The 4.5 mm screw may be used as an emergency screw where the 4.0 mm screw has stripped the bone and a larger screw thread is required.
- Intraoperative imaging should be used to verify screw position.

## C6

**Optional instrumentation**

### Optional instruments

| | |
|---|---|
| 311.402 | Tap for Cancellous Bone Screws ∅ 4 mm |
| 311.404 | Tap for Cancellous Bone Screws ∅ 4.5 mm |

Dense bone may be tapped using the Tap for 4.0 mm or 4.5 mm cancellous screws.

# Option D
# Fixed angle, self-tapping screw

## D4
**Drill pilot hole**


**Required instruments**

| | |
|---|---|
| 03.600.002 | Drill Guide 8.0/3.2, for Vectra and Vectra-T plates with fixed angle screws |
| 324.107 | Handle with Quick Coupling |
| 324.151–159 | Drill Bit ∅ 2.5 mm, lengths 12–20 mm, 2-flute, for Quick Coupling<br><br>Drill Bit ∅ 2.5 mm, lengths 22–26 mm |
| 03.613.222–226 | 2-flute, for Quick Coupling |

**Optional instruments**

| | |
|---|---|
| 03.613.001 | Drill and Screw Guide, for Vectra and Vectra-T |
| 387.292 | Screw length indicator, depth up to 50 mm |
| 311.402 | Tap for Cancellous Bone Screws ∅ 4 mm |
| 311.404 | Tap for Cancellous Bone Screws ∅ 4.5 mm |

Select a drill bit and screw of appropriate length.

Insert the Drill Guide fully into the desired hole so that the correct fixed angle screw trajectory is given.

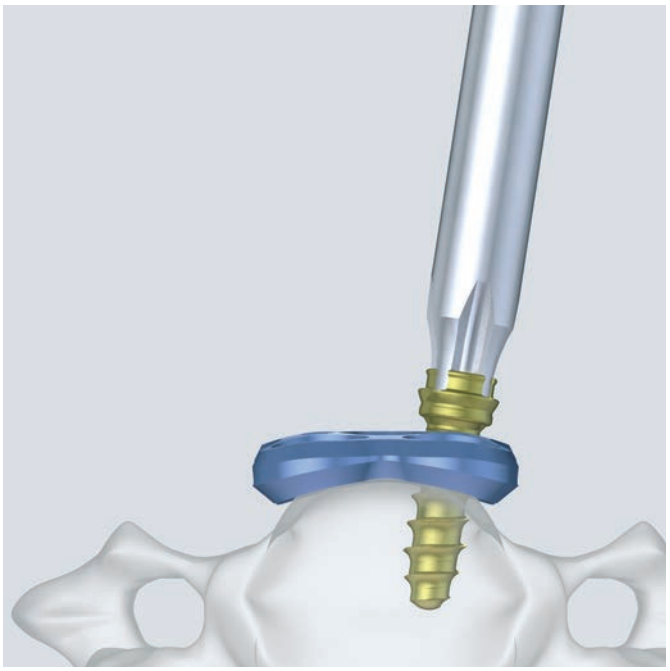
Insert the Drill Bit into the Drill Guide and drill to desired depth. The drill will stop at the depth indicated on the drill when the stop contacts the top of the Drill Guide.

**Precaution:** Intraoperative imaging should be used to check the drilling operation.

Remove drill guide and bit.

## D5

**Insert fixed-angle screw**



### Required instruments

| | |
|---|---|
| 324.105 | Screwdriver for Insertion, self-holding |

### Optional instruments

| | |
|---|---|
| 03.613.001 | Drill and Screw Guide, for Vectra and Vectra-T |

Load a fixed angle self-tapping screw of the appropriate length onto the Screwdriver for Insertion. Advance the screw until the head of the screw is fully seated in the plate and the plate is lagged to the bone.

**Warning:** For long spans or poor bone quality: The surgeon is urged to consider the nature of such cases. The treatment may require the use of screws longer than 16 mm, and/or posterior fixation for this kind of inherently unstable cases.

**Precautions:**

- It must be considered that the intervertebral discs in the neck region are slightly inclined from anterocaudal to posterocranial. Screws should remain in the vertebral body and not penetrate the intervertebral discs. Make sure there will be enough space between the intact adjacent intervertebral discs and the screws.
- The 4.5 mm screw may be used as an emergency screw where the 4.0 mm screw has stripped the bone and a larger screw thread is required.
- Intraoperative imaging should be used to verify screw position.

## D6

**Optional instrumentation**

### Optional instruments

| | |
|---|---|
| 311.402 | Tap for Cancellous Bone Screws ∅ 4 mm |
| 311.404 | Tap for Cancellous Bone Screws ∅ 4.5 mm |

Dense bone may be tapped using the tap for 4.0 mm or 4.5 mm cancellous screws.

# Implant removal

## 1
**Clean screw head**

**Required instruments**

| | |
|---|---|
| 324.071 | Cleaning Instrument for Screw Head |

If access to the screw head is blocked by tissue, use the Cleaning Instrument for Screw Head to clean out material. Insert the instrument into the screw head and twist the handle back and forth until material is removed.

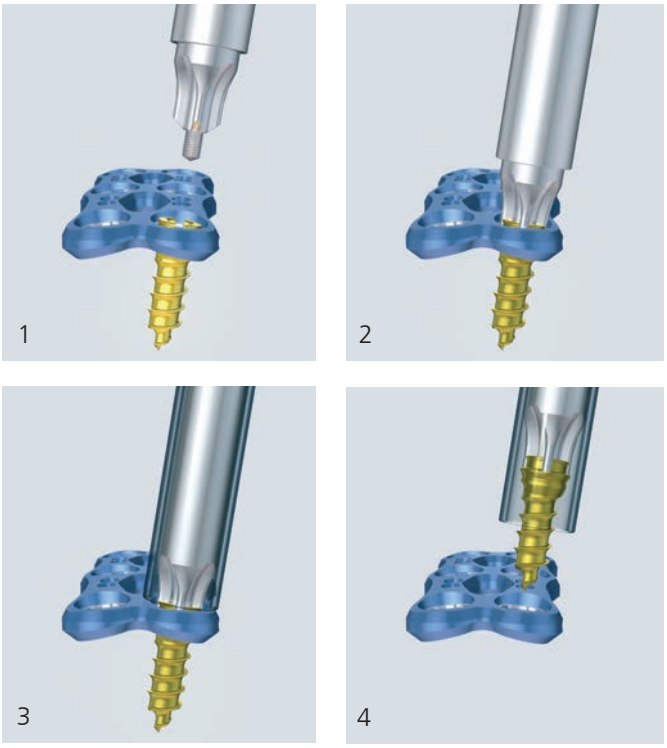
## 2
**Remove screw**

**Required instruments**

| | |
|---|---|
| 352.311 | Screwdriver for Extraction |

For screw removal the Screwdriver for Extraction must be used.
Insert the driver shaft into the screw head recess. Tighten the knob on the handle to thread the threaded tip of the inner shaft into the mating thread of the screw. Advance the sleeve downward to contact the upper surface of the plate by turning the sleeve clockwise.
**Do not rotate the sleeve after it has contacted the surface of the plate. While holding the sleeve, turn the handle counterclockwise to extract the screw.**

**Precaution:** After the second screw insertion trial, the plate needs to be replaced.




## 3
**Remove plate**

After all the screws have been removed, the plate can then be removed.

**Precaution:** If the inner shaft knob is not fully tightened to the handle, breakage of the driver may occur and could potentially harm the patient.

**Precaution:** The extraction screw driver should only be used for screw removal; use of the extraction screwdriver for screw insertion may lead to driver and/or implant breakage.

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