

DHS/DCS System

Surgical Technique



TABLE OF CONTENTS

INTRODUCTION	
▶ System Overview	2
▶ Indications and Contraindications	3
SURGICAL TECHNIQUE	
▶ DHS Implantation	5
▶ DHS Removal	13
▶ DCS Implantation	15
▶ DCS Removal	20
PRODUCT INFORMATION	
▶ Implants	21
▶ Instruments	26
▶ Sets	28



Fixation elements

DHS / DCS Lag Screws

- ◆ Stainless steel / Titanium
- ◆ Length 50mm – 120mm
- ◆ Thread diameter 12.5mm
- ◆ Shaft diameter 8.0mm



Plates

DHS Plate (DC Hole) 38mm Barrel

- ◆ Stainless steel / Titanium
- ◆ Barrel angle 125°–140°
- ◆ 4 to 18 holes
- ◆ Barrel length: 38mm (Long Barrel)
- ◆ Thickness 5.8mm
- ◆ Fixation with cortex screws



Locking DHS Plate 38mm Barrel

- ◆ LCP combi-holes
- ◆ Tapered end
- ◆ Undercuts
- ◆ Barrel angle 125°–140°
- ◆ 4 to 10 holes
- ◆ Barrel length: 38mm (Long Barrel)
- ◆ Thickness 5.8mm
- ◆ Fixation with locking screws 5.0mm, cortex screws 4.5mm or a combination of both



DCS 95° Plate (Round Hole)

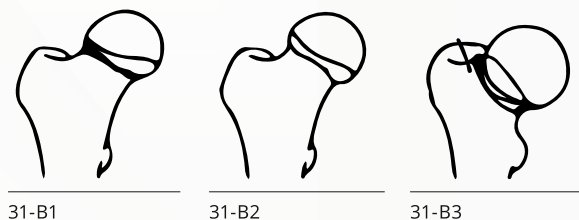
- ◆ With DCP holes
- ◆ Stainless steel
- ◆ 5 to 20 holes
- ◆ Barrel length: 25mm short
- ◆ Thickness: 5.8mm
- ◆ Width: 19.0mm
- ◆ Fixation with cortex screws 4.5mm



Compression Screw For DHS/DCS Lag Screw

Used for both DHS and DCS plates to compress the femoral fragments on the proximal and distal sides of the fracture.

- ◆ Stainless steel or Titanium
- ◆ Hexagonal Socket 3.5mm
- ◆ Length 36mm



DHS

Including all combinations of DHS Screw, DHS Blade, DHS plate with DCP holes, LCP DHS plate and LCP DHS with collar.

Indications DHS

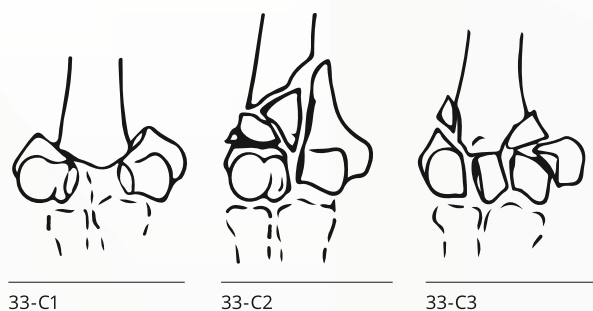
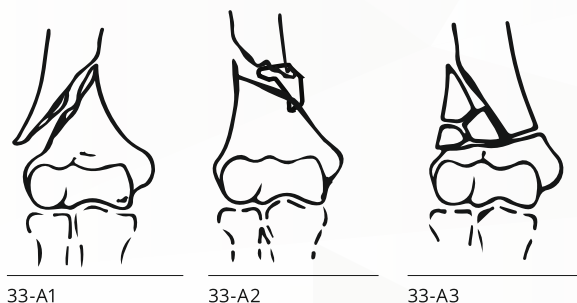
- ◆ 31-A1 & 31-A2 - Petrochanteric fractures
- ◆ 31-A3 - Intertrochanteric fractures
- ◆ 31-B - Basilar neck fractures
(DHS Screw in conjunction with an antirotation screw)
- ◆ Subtrochanteric fractures

Contraindications DHS

- ◆ The DHS is not to be used in cases where there is a high incidence of:
 - ◆ Sepsis
 - ◆ Malignant primary or metastatic tumors
 - ◆ Material sensitivity
 - ◆ Compromised vascularity

Recommendations DHS

- ◆ LCP DHS: for the use of shorter plates, especially in the case of femoral neck fractures
- ◆ For certain subtrochanteric fractures, a 95° DCS plate is recommended.



DCS

Indications DCS

- ◆ Proximal femur: Very proximally located, purely subtrochanteric fractures
- ◆ Distal femur: Fractures of type 33-A (extra-articular, supracondylar) and fractures of type 33-C (fully articular fractures)

Contraindications DCS

- ◆ Pertrochanteric fractures or trochanteric fractures with subtrochanteric expansion (31-A3)

DHS Implantation

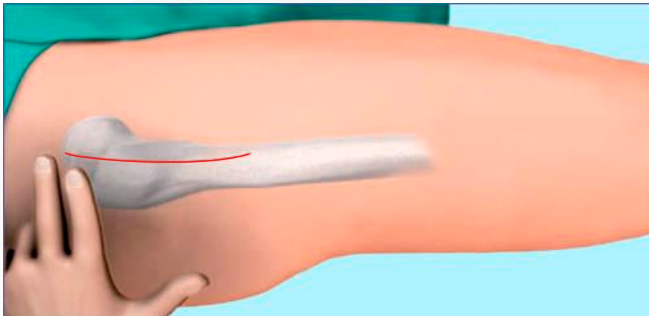


1. Position of patient

Position the patient in supine position on the operation table.

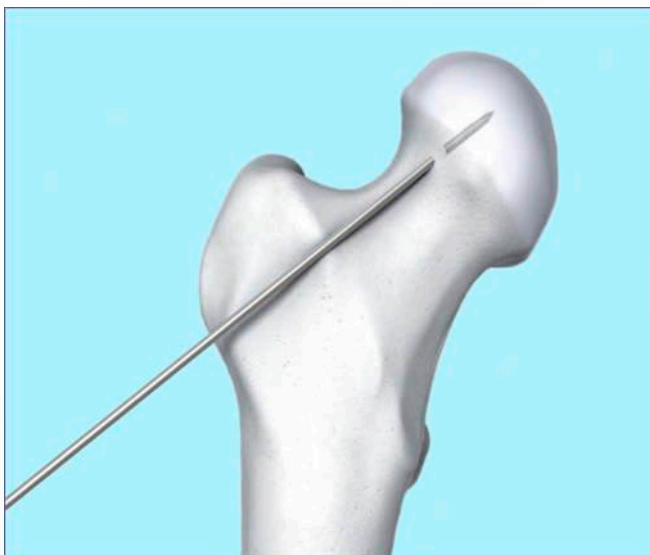
2. Reduce fracture

If possible, minimize fractures under the image Internal circulation, intensified by abduction And traction.



3. Access

Make a cut of straight lateral skin of approximately 15 cm in length, beginning at two finger widths proximal to the tip of the greatest trochanter.

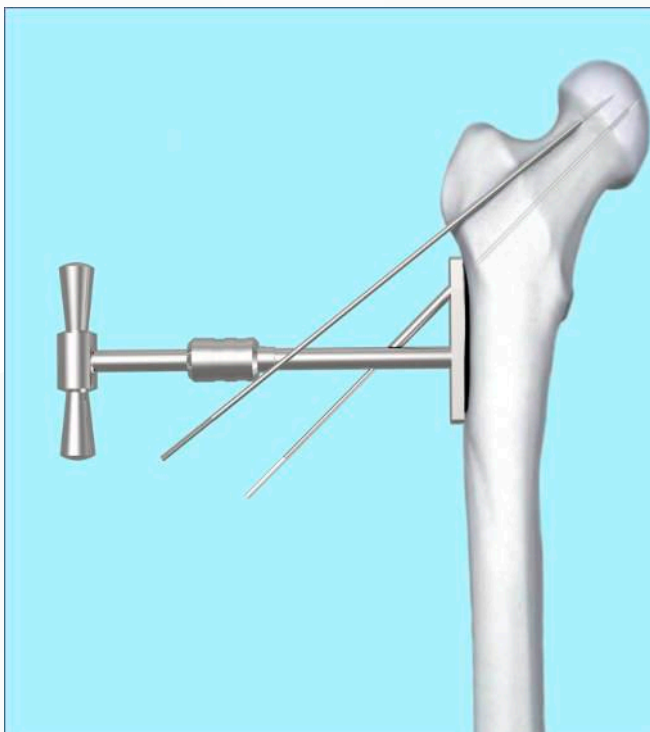


4. Insert anteversion wire

Instruments

672.250 Guide Wire 2.5mm x 225mm With Threaded Tip

Determine an anteversion of the femoral neck by inserting a New Kirschner wire in front of the femoral collar. In the case of unstable fractures, insert a number of Kirschner Wires in the femoral head to secure the femoral head temporarily reduced volume Fragmental.



5. Insert guide wire

Instruments

672.250 Guide Wire 2.5mm x 225mm With Threaded Tip

651.125 DHS Angled Guide 125°

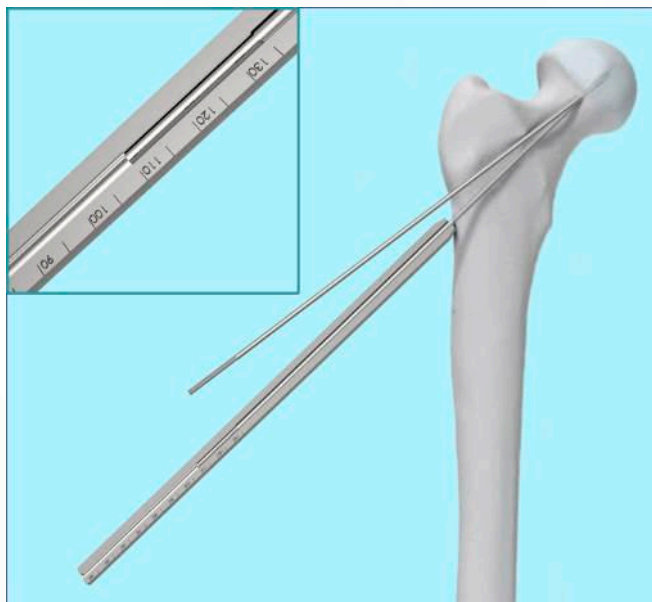
651.130 DHS Angled Guide 130°

651.135 DHS Angled Guide 135°

651.140 DHS Angled Guide 140°

Insert a new DHS/DCS guide wire to the desired angle with the angled guide. The guide wire should be positioned in the center of the femoral head and extend to the subchondral bone.

Check the location of the guide wire in both the AP and the mediolateral positions.



6. Determine length of DHS Screw

Instruments

670.250 Direct Measuring Device for
2.5mm Guide Wire

Measure the length of the DHS screw from the guide wire using a measuring device.

If inserted into the subchondral bone, the guide wire is take 10 mm off the scale.



7. Ream for insertion of DHS Screw

Instruments

651.003 DHS Triple Reamer for 38mm Barrel Length

672.250 Guide Wire 2.5mm x 225mm With
Threaded Tip

Assemble the triple reamer. Slide the reamer over the drill bit until it clicks into place.

Set the triple reamer at the length of the implant selected.

Secure the reamer by tightening the knurled nut.



8. Tap for DHS Screw

Instruments

651.005 DHS / DCS Centering Sleeve Short for Tap

651.006 DHS / DCS Tap

Mount the centering sleeve on the side of the tap and lock it in place by turning the inside sleeve clockwise against the outer sleeve.

Tap to the measured length. Check insertion depth.



9. Screwing the DHS screw

Instruments

651.009 Coupling Screw for DHS Lag Screws

651.008 DHS / DCS Wrench

651.007 DHS / DCS Centering Sleeve Long for DHS / DCS Wrench

Insert the connecting screw into the wrench, slide and insert the appropriate screw. The DHS plate is connected to it and the DHS Screw to the wrench.

Slide the assembled instrument over the guide wire and push the centering sleeve into the pre-drilled hole.

Insert the screw to the desired depth. Turn the handle of the wrench until it lies in the same plane as the femoral shaft. Only in this position can the plate be moved over the laterally flattened shank of the DHS Screw

check depth of insertion.



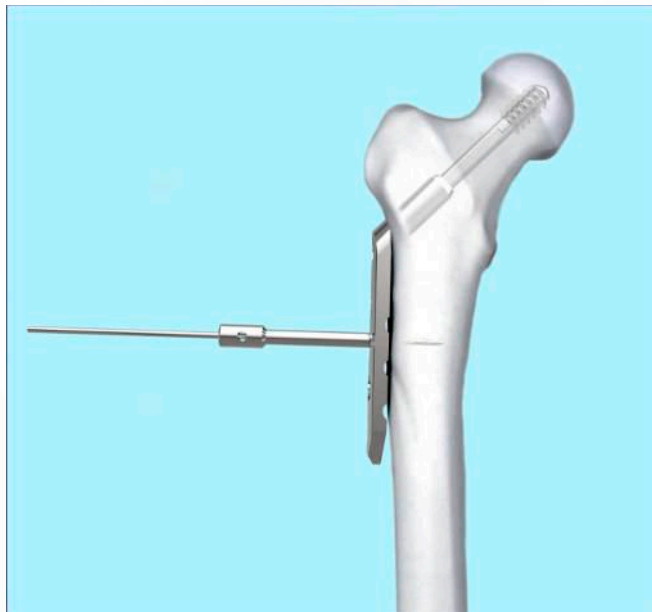
10. Impact DHS plate onto the bone

Instruments

651.010 DHS / DCS Impactor

731.350 Hammer Small 350gm With Fiber Handle

Plate can be impacted on to the bone using DHS impactor.



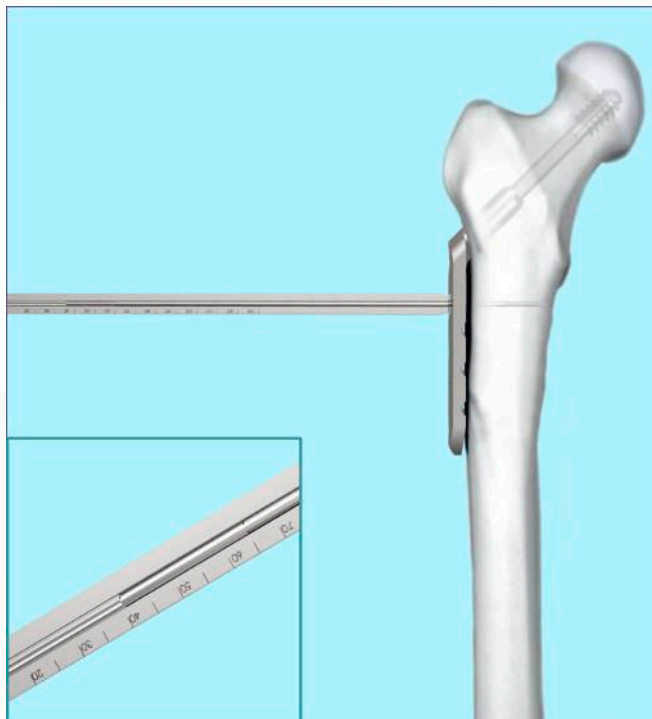
11. Locking screws for locking DHS plate

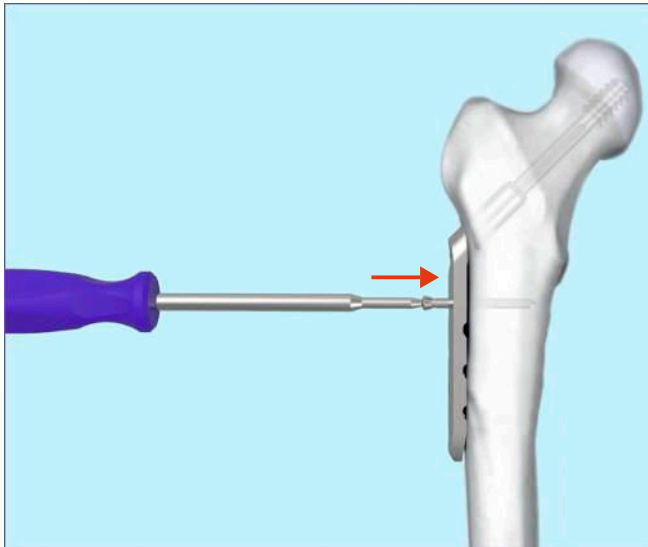
Instruments

- 733.050 LCP Drill Sleeve 5.0, for Drill Bits 4.3mm
- 601.020 Drill Bits 4.3mm x 225mm for Quick Coupling T Handle
- 612.035 Large Hexagonal Screw Driver 3.5mm Tip

Screw the LCP drill sleeve carefully into the selected LCP hole until it is securely engaged by the thread.

Using the Drill Bit, drill the screw hole. Read the screw hole length using measuring device.



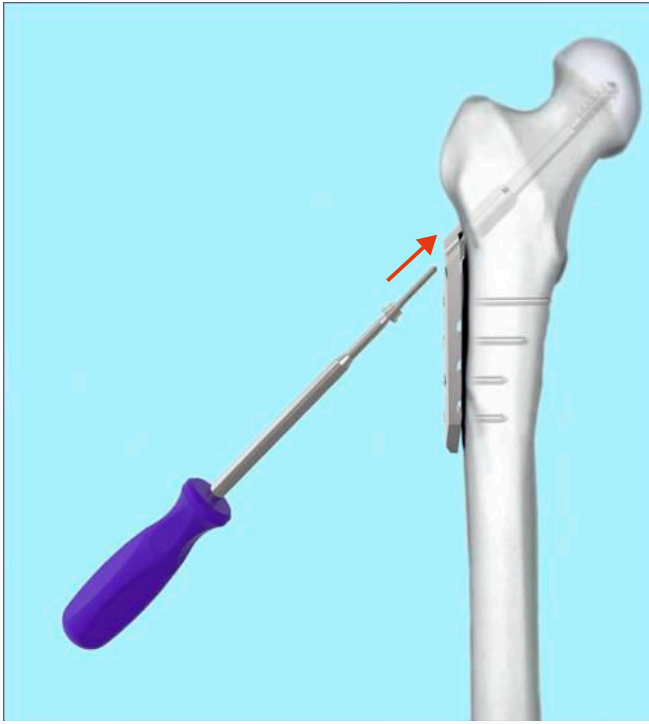


12. Insert Locking screws

Instruments

612.035 Large Hexagonal Screw Driver 3.5mm Tip

Insert the 5.0 mm self-tapping locking screws with a Screw Driver.



13. Fitting of compression screw

Instruments

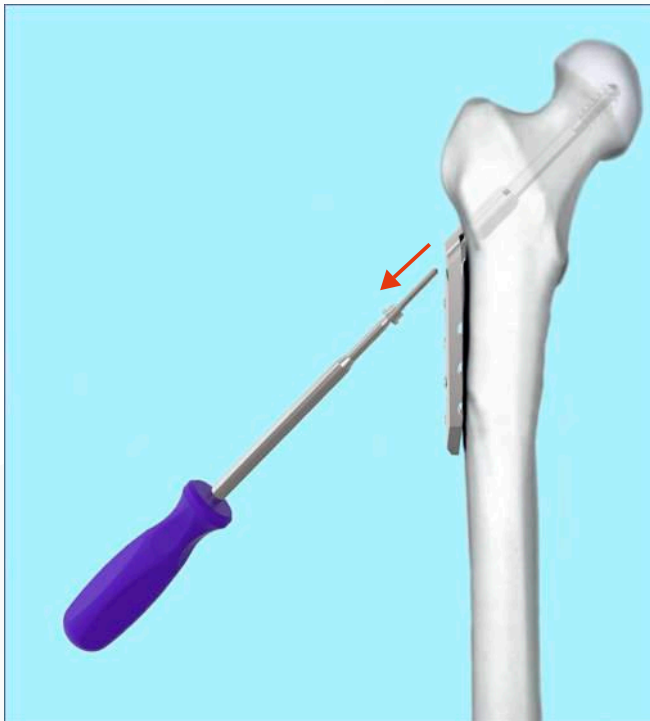
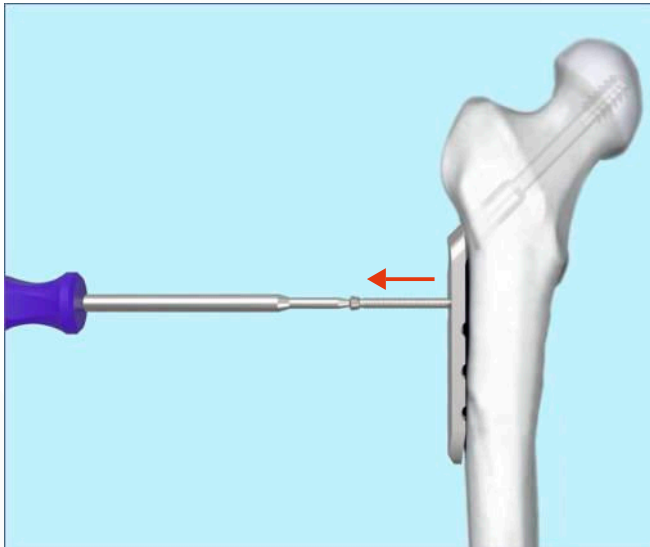
265 DHS / DCS Compression Screw

612.035 Large Hexagonal Screw Driver 3.5mm Tip

DHS/DCS compression screws can also be used to compress fractures.

Warning:

Compression should not be used on an osteoporotic bone.



A. Removal of DHS with Locking Screw and Compression Screw

Instruments

612.035 Large Hexagonal Screw Driver 3.5mm Tip

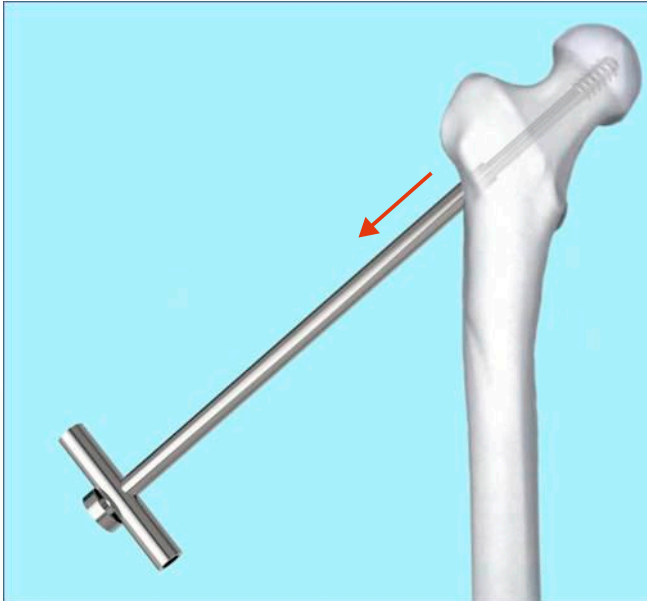
Use a 3.5mm tip screw driver to remove all 5.0mm LCP screw from the shaft hole of the plate.

After removing all LCP screw from shaft.

De-attached Compression screw from plate, using a 3.5mm tip Screw Driver.

Carefully attached the Hex tip into the compression screw for easy removal of the screw.

After removing of screw carefully remove the plate from the bone.



B. Removal of DHS with DHS Screw

Instruments

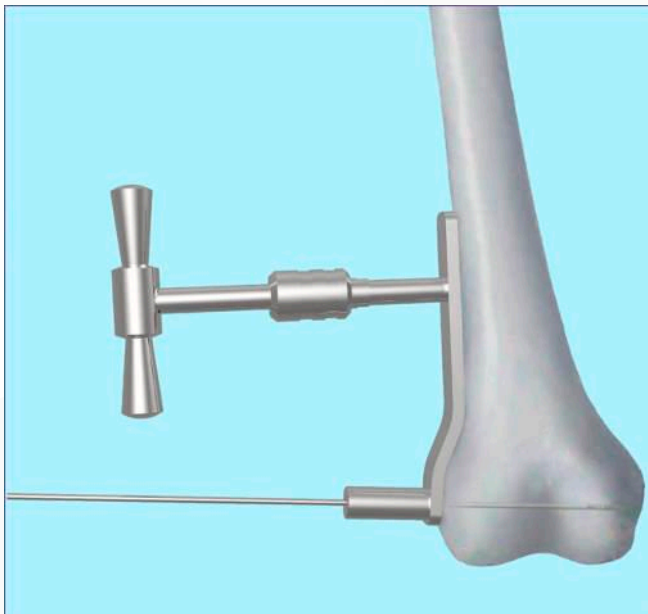
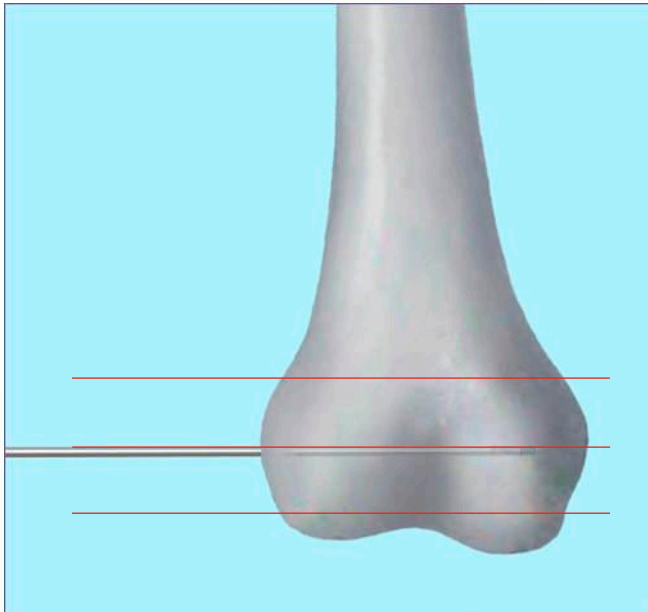
651.008 DHS / DCS Wrench

651.009 Coupling Screw for DHS Lag Screws

After removing the DHS plate, use the connection screw to secure the wrench to the end of the DHS Screw. The wrench and connecting screw must be a perfect match for the DHS Screw. The connection screw must be carefully tightened.

Warning:

Implant removal should never be done with the insertion equipment.



Guide Wire Insertion: Determine the proximal femur's entrance point: Choose an entry location one third ventral and two thirds caudal from the greater trochanter at the union. With the DCS angled guide, place the DHS / DCS guide wire at the precise angle. In both the AP and mediolateral orientations, check the guide wire's location.

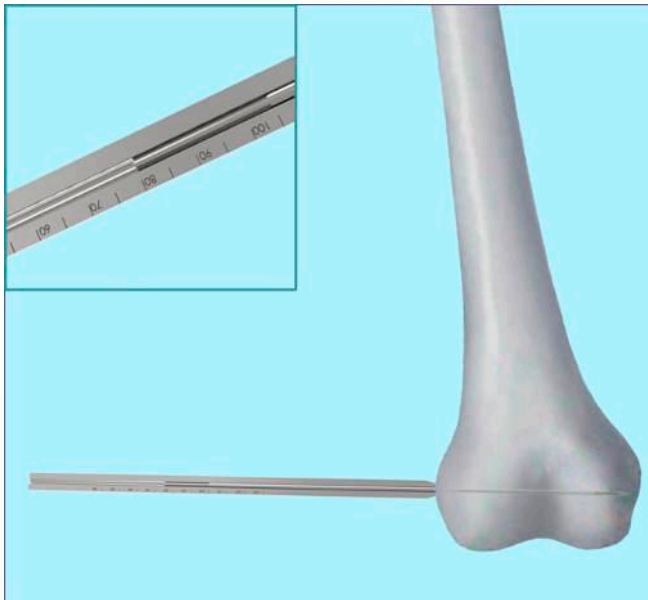
1. Insert guide wire

Instruments

- 672.250 Guide Wire 2.5mm x 225mm With Threaded Tip
- 651.095 DCS 95° Angled Guide
- 651.002 T-Handle with Quick Coupling

Insert a DHS / DCS guide wire to the desired angle with the angled guide. The guide wire should be positioned in the center of the femoral head and extend to the subchondral bone.

Check the location of the guide wire in both the AP and the mediolateral positions.



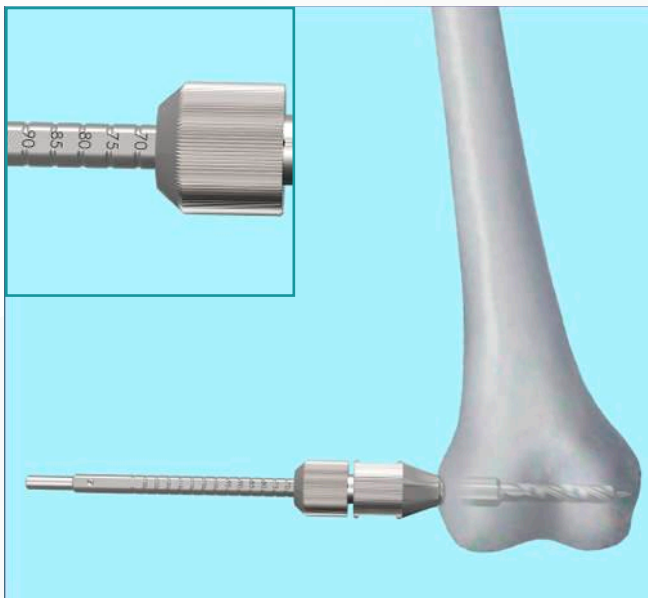
2. Measure the length of the guide wire

Instruments

670.250 Direct Measuring Device for 2.5mm Guide Wire

Measure the length of the DHS screw from the guide wire using a measuring device.

If inserted into the subchondral bone, the guide wire is take 10 mm off the scale.



3. Reaming

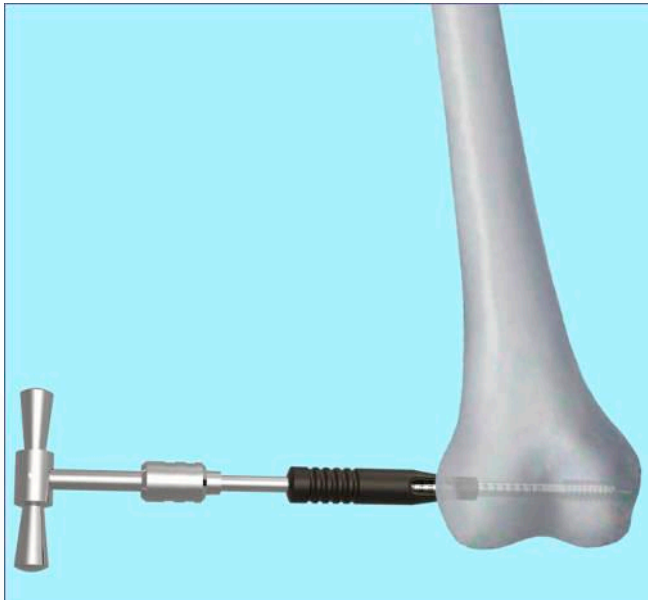
Instruments

651.004 DCS Triple Reamer For 25mm Barrel Length

Assemble the triple reamer. Slide the reamer over the drill bit until it clicks into place.

Set the triple reamer at the length of the implant selected.

Secure the reamer by tightening the knurled nut.



4. Tap for DHS Screw

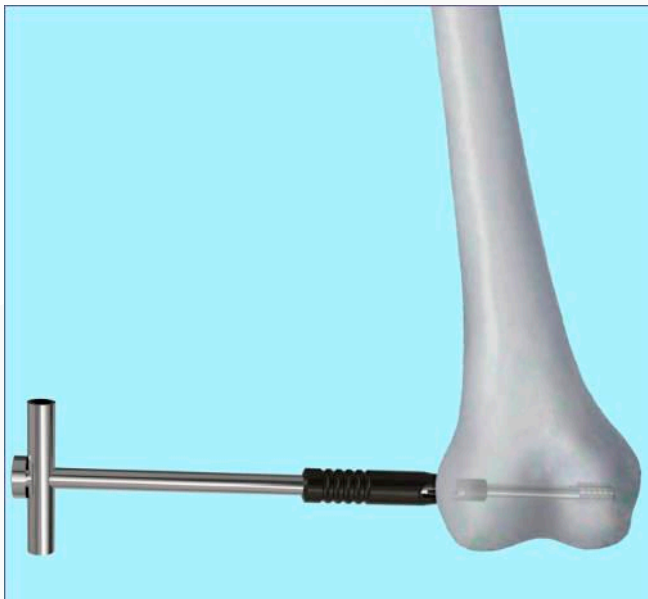
Instruments

651.005 DHS / DCS Centering Sleeve Short for Tap

651.006 DHS / DCS Tap

Mount the centering sleeve on the side of the tap and lock it in place by turning the inside sleeve clockwise against the outer sleeve.

Tap to the measured length. Check insertion depth.



5. Screwing the DHS screw

Instruments

651.009 Coupling Screw for DHS Lag Screws

651.008 DHS / DCS Wrench

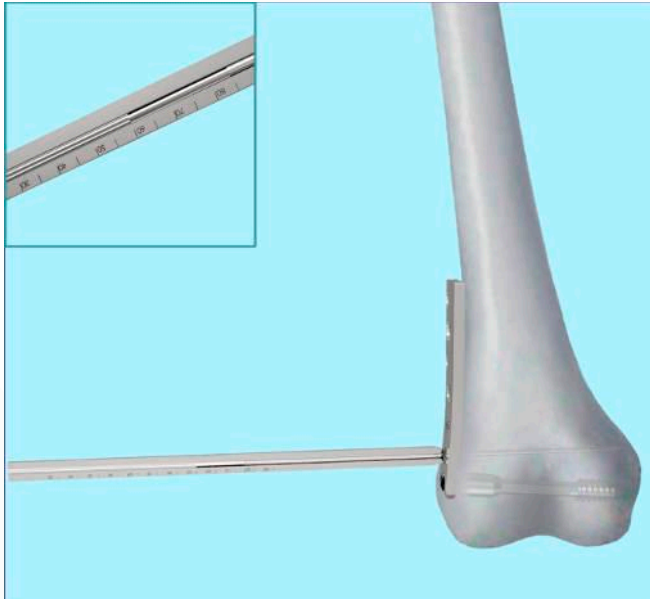
651.007 DHS / DCS Centering Sleeve Long for DHS / DCS Wrench

Insert the connecting screw into the wrench, slide and insert the appropriate screw. The DCS plate is connected to it and the DHS Screw to the wrench.

Slide the assembled instrument over the guide wire and push the centering sleeve into the pre-drilled hole.

Insert the screw to the desired depth. Turn the handle of the wrench until it lies in the same plane as the femoral shaft. Only in this position can the plate be moved over the laterally flattened shank of the DHS Screw.

check depth of insertion.



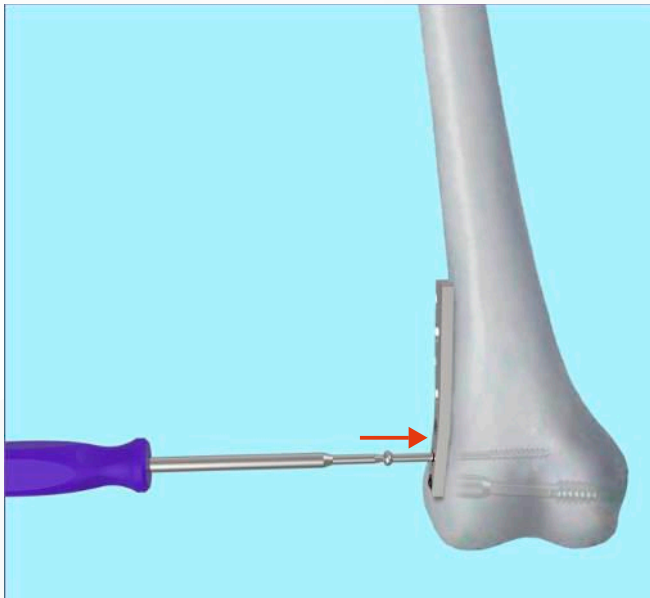
6. Insertion of Screw and Plate

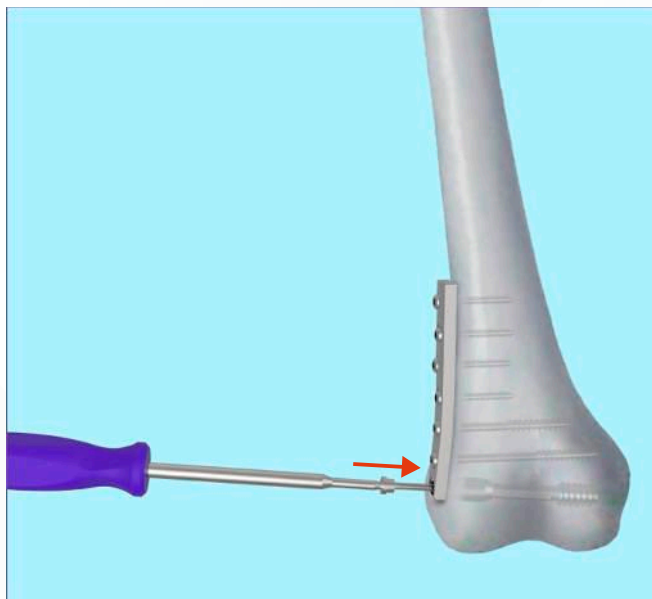
Fix the plate to the epiphysis with a screw resting against the internal cortex of the neck through a gliding hole after the screw has been introduced and the plate has been impacted.

Apply the plate to the femoral diaphysis to reduce the subtrochanteric fracture.

One or two lag screws might be used to improve contact at the fracture site.

Use self-tapping 4.5 mm cortical screws to secure the plate to the femur in its final position.





7. Fitting of compression screw

Instruments

265 DHS / DCS Compression Screw

612.035 Large Hexagonal Screw Driver 3.5mm Tip

DHS / DCS compression screws can also be used to compress fractures.

Warning:

Compression should not be used on an osteoporotic bone.

DCS Removal

Remove the implants in the following sequence:

- ◆ DCS plate
- ◆ DHS / DCS Screw

Please also refer to DHS implant removal, page 13, 14.

Length	SS	Titanium
50mm	251.50	T251.50
55mm	251.55	T251.55
60mm	251.60	T251.60
65mm	251.65	T251.65
70mm	251.70	T251.70
75mm	251.75	T251.75
80mm	251.80	T251.80
85mm	251.85	T251.85
90mm	251.90	T251.90
95mm	251.95	T251.95
100mm	251.100	T251.100
105mm	251.105	T251.105
110mm	251.110	T251.110
115mm	251.115	T251.115
120mm	251.120	T251.120
Note: DHS screws from 50 –75mm must be used with a DHS plate with short barrel.		

DHS / DCS Screw



DHS Plate (DC Hole) 38mm Barrel



Holes	= 125°		= 130°		= 135°		= 140°
	SS	Titanium	SS	Titanium	SS	Titanium	SS
2	-	-	252B.02	T252B.02	252C.02	T252C.02	-
3	-	-	252B.03	T252B.03	252C.03	T252C.03	-
4	252A.04	T252A.04	252B.04	T252B.04	252C.04	T252C.04	252D.04
5	252A.05	T252A.05	252B.05	T252B.05	252C.05	T252C.05	252D.05
6	252A.06	T252A.06	252B.06	T252B.06	252C.06	T252C.06	252D.06
7	252A.07	T252A.07	252B.07	T252B.07	252C.07	T252C.07	252D.07
8	252A.08	T252A.08	252B.08	T252B.08	252C.08	T252C.08	252D.08
9	252A.09	T252A.09	252B.09	T252B.09	252C.09	T252C.09	-
10	252A.10	T252A.10	252B.10	T252B.10	252C.10	T252C.10	252D.10
11	252A.11	T252A.11	252B.11	T252B.11	252C.11	T252C.11	-
12	252A.12	T252A.12	252B.12	T252B.12	252C.12	T252C.12	-
14	-	-	252B.14	T252B.14	252C.14	T252C.14	-
16	-	-	252B.16	T252B.16	252C.16	T252C.16	-
18	-	-	-	-	252C.18	T252C.18	-

DHS Plate (DC Hole) 25mm Barrel



Holes	= 125°		= 130°		= 135°		= 140°
	SS	Titanium	SS	Titanium	SS	Titanium	SS
2	-	-	254B.02	-	254C.02	-	-
3	-	-	254B.03	-	254C.03	-	-
4	254A.04	T254A.04	254B.04	T254B.04	254C.04	T254C.04	252D.04
5	254A.05	T254A.05	254B.05	T254B.05	254C.05	T254C.05	252D.05
6	254A.06	T254A.06	254B.06	T254B.06	254C.06	T254C.06	252D.06
7	254A.07	T254A.07	254B.07	T254B.07	254C.07	T254C.07	252D.07
8	254A.08	T254A.08	254B.08	T254B.08	254C.08	T254C.08	252D.08
9	254A.09	T254A.09	254B.09	T254B.09	254C.09	T254C.09	-
10	254A.10	T254A.10	254B.10	T254B.10	254C.10	T254C.10	-
11	-	-	254B.11	-	254C.11	-	-
12	-	-	254B.12	-	254C.12	-	-
14	-	-	-	-	-	-	-
16	-	-	-	-	-	-	-
18	-	-	-	-	-	-	-

Note: Use short barrel DHS plates only with DHS screws shorter or equal 75mm.

Locking DHS Plate 38mm Barrel

Holes	= 125°		= 130°		= 135°		= 140°	
	SS	Titanium	SS	Titanium	SS	Titanium	SS	Titanium
3	-	-	261B.03	T261B.03	261C.03	T261C.03	-	-
4	261A.04	T261A.04	261B.04	T261B.04	261C.04	T261C.04	261D.04	T261D.04
4	261A.05	T261A.05	261B.05	T261B.05	261C.05	T261C.05	261D.05	T261D.05
6	261A.06	T261A.06	261B.06	T261B.06	261C.06	T261C.06	261D.06	T261D.06
7	261A.07	T261A.07	261B.07	T261B.07	261C.07	T261C.07	261D.07	-
8	261A.08	T261A.08	261B.08	T261B.08	261C.08	T261C.08	261D.08	-
9	261A.09	T261A.09	261B.09	T261B.09	261C.09	T261C.09	-	-
10	261A.10	T261A.10	261B.10	T261B.10	261C.10	T261C.10	261D.10	-

Locking DHS Plate 25mm Barrel

Holes	= 125°		= 130°		= 135°		= 140°	
	SS	Titanium	SS	Titanium	SS	Titanium	SS	Titanium
3	-	-	262B.03	T262B.03	262C.03	T262C.03	-	-
4	262A.04	T262A.04	262B.04	T262B.04	262C.04	T262C.04	262D.04	T262D.04
4	262A.05	T262A.05	262B.05	T262B.05	262C.05	T262C.05	262D.05	T262D.05
6	262A.06	T262A.06	262B.06	T262B.06	262C.06	T262C.06	262D.06	T262D.06
7	262A.07	T262A.07	262B.07	T262B.07	262C.07	T262C.07	262D.07	-
8	262A.08	T262A.08	262B.08	T262B.08	262C.08	T262C.08	262D.08	-
9	262A.09	T262A.09	262B.09	T262B.09	262C.09	T262C.09	-	-
10	262A.10	T262A.10	262B.10	T262B.10	262C.10	T262C.10	-	-

Note: Use short barrel LCP DHS plates only with DHS screws shorter or equal 75mm.



5.0mm Locking Compression Screws (Self Tapping)

Length:
14mm to 50mm (2mm increment)
50mm to 110mm (5mm increment)



4.5mm Cortex Screw (Self Tapping)

Length:
14mm to 50mm (2mm increment)
50mm to 70mm (5mm increment)



6.5mm Cancellous Screws

16mm	205.20 - 205.120
32mm	206.45 - 206.120
Full thread	207.20 - 207.110

All screws are available Stainless Steel and Titanium



DCS 95° Plate (Round Hole)

Holes	SS
5	260.05
6	260.06
7	260.07
8	260.08
9	260.09
10	260.10
11	260.11
12	260.12
13	260.13
14	260.14
16	260.16
18	260.18
20	260.20



Compression Screw For DHS / DCS Lag Screw

265 : Stainless Steel
 T265 : Titanium

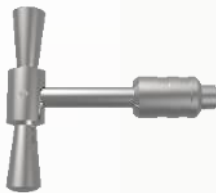
651.135 DHS Angled Guide Fixed 135°



651.095 DCS 95° Angled Guide



651.002 T-Handle with Quick Coupling



651.003 DHS Triple Reamer for 38mm Barrel Length
651.004 DCS Triple Reamer for 25mm Barrel Length



651.005 DHS / DCS Centering Sleeve Short for Tap
651.007 DHS / DCS Centering Sleeve Long for DHS / DCS Wrench



651.006 DHS / DCS Tap



651.008 DHS / DCS Wrench



651.009 Coupling Screw for DHS Lag Screws



651.010 DHS / DCS Impactor 	670.250 Direct Measuring Device for 2.5mm Guide Wire 
733.050 LCP Drill Sleeve 5.0mm, For Drill Bits 4.3mm 	672.250 Guide Wire 2.5mm x 225mm With Threaded Tip 
612.035 Large Hexagonal Screw Driver 3.5mm Tip 	602.009 Drill Bits 3.2mm x 130mm for Jacobs Chuck 



AGC.21A DHS Implant and Instrument Set

Implants

202	4.5mm Cortex Screw
251	DHS / DCS Lag Screws
252A	DHS Plate (DC Hole) 38mm Barrel 125°
252B	DHS Plate (DC Hole) 38mm Barrel 130°
252C	DHS Plate (DC Hole) 38mm Barrel 135°
252D	DHS Plate (DC Hole) 38mm Barrel 140°
254A	DHS Plate (DC Hole) 25mm Barrel 125°
254B	DHS Plate (DC Hole) 25mm Barrel 130°
254C	DHS Plate (DC Hole) 25mm Barrel 135°
254D	DHS Plate (DC Hole) 25mm Barrel 140°
265	Compression Screw For DHS / DCS Lag Screw

OR

261A	Locking DHS Plate 38mm Barrel 125°
261B	Locking DHS Plate 38mm Barrel 130°
261C	Locking DHS Plate 38mm Barrel 135°
261D	Locking DHS Plate 38mm Barrel 140°
262A	Locking DHS Plate 25mm Barrel 125°
262B	Locking DHS Plate 25mm Barrel 130°
262C	Locking DHS Plate 25mm Barrel 135°
262D	Locking DHS Plate 25mm Barrel 140°
265	Compression Screw For DHS / DCS Lag Screw

Instruments

651.001	DHS Angled Guide Adjustable 125° to 150°
651.095	DCS 95° Angled Guide
651.135	DHS Angled Guide Fixed 135°
651.002	T-Handle with Quick Coupling for DHS / DCS
651.003	DHS Triple Reamer for 38mm Barrel Length
651.004	DHS Triple Reamer for 25mm Barrel Length
651.005	DHS / DCS Centering Sleeve Short for Tap
651.006	DHS / DCS Tap
651.007	DHS / DCS Centering Sleeve Long for DHS / DCS Wrench
651.008	DHS / DCS Wrench
651.009	Coupling Screw for DHS Lag Screws
651.010	DHS / DCS Impactor
651.016	Cannulated Guide Shaft
651.012	Coupling Sleeve for Guide Shaft
670.250	Direct Measuring Device for 2.5mm Guide Wire
672.250	Guide Wire 2.5mm x 225mm With Threaded Tip
612.035	Large Hexagonal Screw Driver 3.5mm Tip
602.009	Drill Bits 3.2mm x 130mm for Jacobs Chuck
733.050	LCP Drill Sleeve 5.0mm, For Drill Bits 4.3mm
601.020	Drill Bits 4.3mm x 225mm for Quick Coupling T Handle
603.045	Tap 4.5mm Cortex Screws for Quick Coupling



House of Ortho Tools

Plot No. G-2041/42/A, Kishan Gate, Lodhika G.I.D.C.,
Kalawad Road, Metoda, RAJKOT-360 021, (INDIA).

www.hardikinternational.com
info@hardikinternational.com

☎ : +91 97370 47470/1/2/4 S : [hardikinternational](https://www.hardikinternational.com)

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