

Interlocking Nail System



ORTHOPEDIC
CATALOGUE

010.1, 010.2, 010.3, 010.4, 010.5 GEOORTHO Femoral (Antegrade) Interlocking Nail

Stainless Steel	Titanium	Dia	Length
010.1.SS01	010.1.TI01	9	320
010.1.SS2.	010.1.TI2.	9	340
010.1.SS03	010.1.TI03	9	360
010.1.SS04	010.1.TI04	9	380
010.1.SS05	010.1.TI05	9	400
010.1.SS06	010.1.TI06	9	420
010.1.SS07	010.1.TI07	9	440
010.1.SS08	010.1.TI08	9	460
010.1.SS09	010.1.TI09	9	480
010.2.SS01	010.2.TI01	10	320
010.2.SS2.	010.2.TI2.	10	340
010.2.SS03	010.2.TI03	10	360
010.2.SS04	010.2.TI04	10	380
010.2.SS05	010.2.TI05	10	400
010.2.SS06	010.2.TI06	10	420
010.2.SS07	010.2.TI07	10	440
010.2.SS08	010.2.TI08	10	460
010.2.SS09	010.2.TI09	10	480
010.3.SS01	010.3.TI01	11	320
010.3.SS2.	010.3.TI2.	11	340
010.3.SS03	010.3.TI03	11	360
010.3.SS04	010.3.TI04	11	380
010.3.SS05	010.3.TI05	11	400
010.3.SS06	010.3.TI06	11	420
010.3.SS07	010.3.TI07	11	440
010.3.SS08	010.3.TI08	11	460
010.3.SS09	010.3.TI09	11	480
010.4.SS01	010.4.TI01	12	320
010.4.SS2.	010.4.TI2.	12	340
010.4.SS03	010.4.TI03	12	360
010.4.SS04	010.4.TI04	12	380
010.4.SS05	010.4.TI05	12	400
010.4.SS06	010.4.TI06	12	420
010.4.SS07	010.4.TI07	12	440
010.4.SS08	010.4.TI08	12	460
010.4.SS09	010.4.TI09	12	480
010.5.SS01	010.5.TI01	13	320
010.5.SS2.	010.5.TI2.	13	340
010.5.SS03	010.5.TI03	13	360
010.5.SS04	010.5.TI04	13	380
010.5.SS05	010.5.TI05	13	400
010.5.SS06	010.5.TI06	13	420
010.5.SS07	010.5.TI07	13	440
010.5.SS08	010.5.TI08	13	460
010.5.SS09	010.5.TI09	13	480



Is indicated for use in femoral shaft fractures situated below the intact lesser trochanter to just above the supra condylar region
 Matching(Proximal/Distal Locking Screws): Ø4.9

GEOORTHO Interlocking Nail System

010.6, 010.7, 010.8, 010.9 GEOORTHO Femoral (Retrograde) Interlocking Nail



Stainless Steel	Titanium	Dia	Length
010.6.SS01	010.6.TI01	9	180
010.6.SS2.	010.6.TI2.	9	200
010.6.SS03	010.6.TI03	9	220
010.6.SS04	010.6.TI04	9	240
010.6.SS05	010.6.TI05	9	260
010.6.SS06	010.6.TI06	9	280
010.6.SS07	010.6.TI07	9	300
010.7.SS01	010.7.TI01	10	180
010.7.SS2.	010.7.TI2.	10	200
010.7.SS03	010.7.TI03	10	220
010.7.SS04	010.7.TI04	10	240
010.7.SS05	010.7.TI05	10	260
010.7.SS06	010.7.TI06	10	280
010.7.SS07	010.7.TI07	10	300
010.8.SS01	010.8.TI01	11	180
010.8.SS2.	010.8.TI2.	11	200
010.8.SS03	010.8.TI03	11	220
010.8.SS04	010.8.TI04	11	240
010.8.SS05	010.8.TI05	11	260
010.8.SS06	010.8.TI06	11	280
010.8.SS07	010.8.TI07	11	300
010.9.SS01	010.9.TI01	12	180
010.9.SS2.	010.9.TI2.	12	200
010.9.SS03	010.9.TI03	12	220
010.9.SS04	010.9.TI04	12	240
010.9.SS05	010.9.TI05	12	260
010.9.SS06	010.9.TI06	12	280
010.9.SS07	010.9.TI07	12	300

Is indicated for use in femoral shaft fractures situated between the proximal and distal third of the femur. Can also be used for nonunions, malunions, prophylactic nailings of impending pathological fractures, supracondylar fractures and periprosthetic fractures.

010.10, 010.11, 010.12, 010.13 GEOORTHO Proximal Femoral Nail (Short)

Stainless Steel	Titanium Alloy	Dia	Length
010.010.SS01	010.010.TI01	9	180
010.010.SS2.	010.010.TI2.	9	240
010.11.SS01	010.11.TI01	10	180
010.11.SS2.	010.11.TI2.	10	240
010.012.SS01	010.012.TI01	11	180
010.012.SS2.	010.012.TI2.	11	240
010.013.SS01	010.013.TI01	12	180
010.013.SS2.	010.013.TI2.	12	240

Short nail(Lengths 180 mm &240 mm) is indicated for use in:

- Pertrochanteric fractures
- Intertrochanteric fractures
- High subtrochanteric fracture

GEOORTHO Interlocking Nail System

010.14, 010.15, 010.16, 010.17 GEOORTHO Proximal Femoral Nail(Long)

Stainless Steel	Titanium	Dia	Length
010.014.SS01L	010.014.TI01L	9	320
010.014.SS2.L	010.014.TI2.L	9	340
010.014.SS03L	010.014.TI03L	9	360
010.014.SS04L	010.014.TI04L	9	380
010.014.SS05L	010.014.TI05L	9	400
010.014.SS06L	010.014.TI06L	9	420
010.014.SS07L	010.014.TI07L	9	440
010.014.SS01R	010.014.TI01R	9	320
010.014.SS2.R	010.014.TI2.R	9	340
010.014.SS03R	010.014.TI03R	9	360
010.014.SS04R	010.014.TI04R	9	380
010.014.SS05R	010.014.TI05R	9	400
010.014.SS06R	010.014.TI06R	9	420
010.014.SS07R	010.014.TI07R	9	440
010.15.SS01L	010.15.TI01L	10	320
010.15.SS2.L	010.15.TI2.L	10	340
010.15.SS03L	010.15.TI03L	10	360
010.15.SS04L	010.15.TI04L	10	380
010.15.SS05L	010.15.TI05L	10	400
010.15.SS06L	010.15.TI06L	10	420
010.15.SS07L	010.15.TI07L	10	440
010.15.SS01R	010.15.TI01R	10	320
010.15.SS2.R	010.15.TI2.R	10	340
010.15.SS03R	010.15.TI03R	10	360
010.15.SS04R	010.15.TI04R	10	380
010.15.SS05R	010.15.TI05R	10	400
010.15.SS06R	010.15.TI06R	10	420
010.15.SS07R	010.15.TI07R	10	440
010.16.SS01L	010.16.TI01L	11	320
010.16.SS2.L	010.16.TI2.L	11	340
010.16.SS03L	010.16.TI03L	11	360
010.16.SS04L	010.16.TI04L	11	380
010.16.SS05L	010.16.TI05L	11	400
010.16.SS06L	010.16.TI06L	11	420
010.16.SS07L	010.16.TI07L	11	440
010.16.SS01R	010.16.TI01R	11	320
010.16.SS2.R	010.16.TI2.R	11	340
010.16.SS03R	010.16.TI03R	11	360
010.16.SS04R	010.16.TI04R	11	380
010.16.SS05R	010.16.TI05R	11	400
010.16.SS06R	010.16.TI06R	11	420
010.16.SS07R	010.16.TI07R	11	440
010.17.SS01L	010.17.TI01L	12	320
010.17.SS2.L	010.17.TI2.L	12	340
010.17.SS03L	010.17.TI03L	12	360
010.17.SS04L	010.17.TI04L	12	380
010.17.SS05L	010.17.TI05L	12	400
010.17.SS06L	010.17.TI06L	12	420
010.17.SS07L	010.17.TI07L	12	440
010.17.SS01R	010.17.TI01R	12	320
010.17.SS2.R	010.17.TI2.R	12	340
010.17.SS03R	010.17.TI03R	12	360
010.17.SS04R	010.17.TI04R	12	380
010.17.SS05R	010.17.TI05R	12	400
010.17.SS06R	010.17.TI06R	12	420
010.17.SS07R	010.17.TI07R	12	440



Long Nail (Lengths 320-440mm) is indicated for use in:

- Low and extended subtrochanteric fractures
- Ipsilateral trochanteric fractures
- Combination fractures (in the proximal femur)
- Pathological fractures

010.18, 010.19, 010.20, 010.21 GEOORTHO Femoral Reconstruction Nail

Stainless Steel	Titanium Alloy	Dia	Length
10.18.SS01L	10.18.TI01L	9	320
10.18.SS2.L	10.18.TI2.L	9	340
10.18.SS03L	10.18.TI03L	9	360
10.18.SS04L	10.18.TI04L	9	380
10.18.SS05L	10.18.TI05L	9	400
10.18.SS06L	10.18.TI06L	9	420
10.18.SS07L	10.18.TI07L	9	440
10.18.SS01R	10.18.TI01R	9	320
10.18.SS2.R	10.18.TI2.R	9	340
10.18.SS03R	10.18.TI03R	9	360
10.18.SS04R	10.18.TI04R	9	380
10.18.SS05R	10.18.TI05R	9	400
10.18.SS06R	10.18.TI06R	9	420
10.18.SS07R	10.18.TI07R	9	440
10.19.SS01L	10.19.SS01L	10	320
10.19.SS2.L	10.19.SS2.L	10	340
10.19.SS03L	10.19.SS03L	10	360
10.19.SS04L	10.19.SS04L	10	380
10.19.SS05L	10.19.SS05L	10	400
10.19.SS06L	10.19.SS06L	10	420
10.19.SS07L	10.19.SS07L	10	440
10.19.SS01R	10.19.SS01R	10	320
10.19.SS2.R	10.19.SS2.R	10	340
10.19.SS03R	10.19.SS03R	10	360
10.19.SS04R	10.19.SS04R	10	380
10.19.SS05R	10.19.SS05R	10	400
10.19.SS06R	10.19.SS06R	10	420
10.19.SS07R	10.19.SS07R	10	440
10.20.SS01L	10.20.SS01L	11	320
10.20.SS2.L	10.20.SS2.L	11	340
10.20.SS03L	10.20.SS03L	11	360
10.20.SS04L	10.20.SS04L	11	380
10.20.SS05L	10.20.SS05L	11	400
10.20.SS06L	10.20.SS06L	11	420
10.20.SS07L	10.20.SS07L	11	440
10.20.SS01R	10.20.SS01R	11	320
10.20.SS2.R	10.20.SS2.R	11	340
10.20.SS03R	10.20.SS03R	11	360
10.20.SS04R	10.20.SS04R	11	380
10.20.SS05R	10.20.SS05R	11	400
10.20.SS06R	10.20.SS06R	11	420
10.20.SS07R	10.20.SS07R	11	440
10.21.SS01L	10.21.SS01L	12	320
10.21.SS2.L	10.21.SS2.L	12	340
10.21.SS03L	10.21.SS03L	12	360
10.21.SS04L	10.21.SS04L	12	380
10.21.SS05L	10.21.SS05L	12	400
10.21.SS06L	10.21.SS06L	12	420
10.21.SS07L	10.21.SS07L	12	440
10.21.SS01R	10.21.SS01R	12	320
10.21.SS2.R	10.21.SS2.R	12	340
10.21.SS03R	10.21.SS03R	12	360
10.21.SS04R	10.21.SS04R	12	380
10.21.SS05R	10.21.SS05R	12	400
10.21.SS06R	10.21.SS06R	12	420
10.21.SS07R	10.21.SS07R	12	440



Is Indicated for use in trochanteric, subtrochanteric, diaphyseal or combined (segmental) femoral fractures.

GEOORTHO Interlocking Nail System

010.22, 010.23, 010.24, 010.25 GEOORTHO Femoral Reconstruction / Interlocking Nail Type II

Stainless Steel	Titanium	Dia	Length
10.22.SS01L	10.22.TI01L	9	320
10.22.SS2.L	10.22.TI2.L	9	340
10.22.SS03L	10.22.TI03L	9	360
10.22.SS04L	10.22.TI04L	9	380
10.22.SS05L	10.22.TI05L	9	400
10.22.SS06L	10.22.TI06L	9	420
10.22.SS07L	10.22.TI07L	9	440
10.22.SS01R	10.22.TI01R	9	320
10.22.SS2.R	10.22.TI2.R	9	340
10.22.SS03R	10.22.TI03R	9	360
10.22.SS04R	10.22.TI04R	9	380
10.22.SS05R	10.22.TI05R	9	400
10.22.SS06R	10.22.TI06R	9	420
10.22.SS07R	10.22.TI07R	9	440
10.23.SS01L	10.23.TI01L	10	320
10.23.SS2.L	10.23.TI2.L	10	340
10.23.SS03L	10.23.TI03L	10	360
10.23.SS04L	10.23.TI04L	10	380
10.23.SS05L	10.23.TI05L	10	400
10.23.SS06L	10.23.TI06L	10	420
10.23.SS07L	10.23.TI07L	10	440
10.23.SS01R	10.23.TI01R	10	320
10.23.SS2.R	10.23.TI2.R	10	340
10.23.SS03R	10.23.TI03R	10	360
10.23.SS04R	10.23.TI04R	10	380
10.23.SS05R	10.23.TI05R	10	400
10.23.SS06R	10.23.TI06R	10	420
10.23.SS07R	10.23.TI07R	10	440
10.24.SS01L	10.24.TI01L	11	320
10.24.SS2.L	10.24.TI2.L	11	340
10.24.SS03L	10.24.TI03L	11	360
10.24.SS04L	10.24.TI04L	11	380
10.24.SS05L	10.24.TI05L	11	400
10.24.SS06L	10.24.TI06L	11	420
10.24.SS07L	10.24.TI07L	11	440
10.24.SS01R	10.24.TI01R	11	320
10.24.SS2.R	10.24.TI2.R	11	340
10.24.SS03R	10.24.TI03R	11	360
10.24.SS04R	10.24.TI04R	11	380
10.24.SS05R	10.24.TI05R	11	400
10.24.SS06R	10.24.TI06R	11	420
10.24.SS07R	10.24.TI07R	11	440
10.25.SS01L	10.25.TI01L	12	320
10.25.SS2.L	10.25.TI2.L	12	340
10.25.SS03L	10.25.TI03L	12	360
10.25.SS04L	10.25.TI04L	12	380
10.25.SS05L	10.25.TI05L	12	400
10.25.SS06L	10.25.TI06L	12	420
10.25.SS07L	10.25.TI07L	12	440
10.25.SS01R	10.25.TI01R	12	320
10.25.SS2.R	10.25.TI2.R	12	340
10.25.SS03R	10.25.TI03R	12	360
10.25.SS04R	10.25.TI04R	12	380
10.25.SS05R	10.25.TI05R	12	400
10.25.SS06R	10.25.TI06R	12	420
10.25.SS07R	10.25.TI07R	12	440



Is indicated for use in a variety of femoral fractures such as:

- A. Comminuted fractures
- B. Segmental fractures
- C. Fractures with bone loss
- D. Proximal and distal fractures
- E. Nonunions
- F. Subtrochanteric fractures
- G. Intertrochanteric fractures

010.26 Locking Screw (Proximal / Distal) Half Threaded



Stainless Steel	Titanium	Dia	Length
010.26.SS01	010.26.TI01	4.9	20
010.26.SS2.	010.26.TI2.	4.9	25
010.26.SS03	010.26.TI03	4.9	30
010.26.SS04	010.26.TI04	4.9	35
010.26.SS05	010.26.TI05	4.9	40
010.26.SS06	010.26.TI06	4.9	45
010.26.SS07	010.26.TI07	4.9	50
010.26.SS08	010.26.TI08	4.9	55
010.26.SS09	010.26.TI09	4.9	60
010.26.SS10	010.26.TI10	4.9	65
010.26.SS11	010.26.TI11	4.9	70
010.26.SS12	010.26.TI12	4.9	75

010.27 Locking Screw (Proximal / Distal)Fully Threaded



Stainless Steel	Titanium	Dia	Length
010.27.SS01	010.27.TI01	4.9	20
010.27.SS2.	010.27.TI2.	4.9	25
010.27.SS03	010.27.TI03	4.9	30
010.27.SS04	010.27.TI04	4.9	35
010.27.SS05	010.27.TI05	4.9	40
010.27.SS06	010.27.TI06	4.9	45
010.27.SS07	010.27.TI07	4.9	50
010.27.SS08	010.27.TI08	4.9	55
010.27.SS09	010.27.TI09	4.9	60
010.27.SS10	010.27.TI10	4.9	65
010.27.SS11	010.27.TI11	4.9	70
010.27.SS12	010.27.TI12	4.9	75

GEOORTHO Interlocking Nail System

010.28 Blade for Proximal Femoral Nail



Stainless Steel	Titanium	Dia	Length
010.28.SS01	010.28.TI01	010.4	70
010.28.SS2.	010.28.TI2.	010.4	75
010.28.SS03	010.28.TI03	010.4	80
010.28.SS04	010.28.TI04	010.4	85
010.28.SS05	010.28.TI05	010.4	90
010.28.SS06	010.28.TI06	010.4	95
010.28.SS07	010.28.TI07	010.4	100
010.28.SS08	010.28.TI08	010.4	105
010.28.SS09	010.28.TI09	010.4	110
010.28.SS10	010.28.TI10	010.4	115

010.29 Lag Screw for Reconstruction Nail

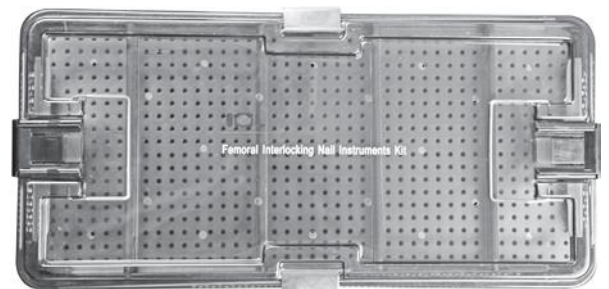
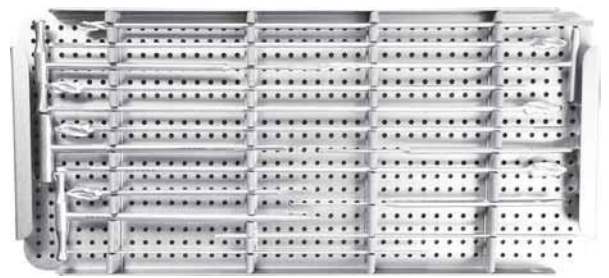
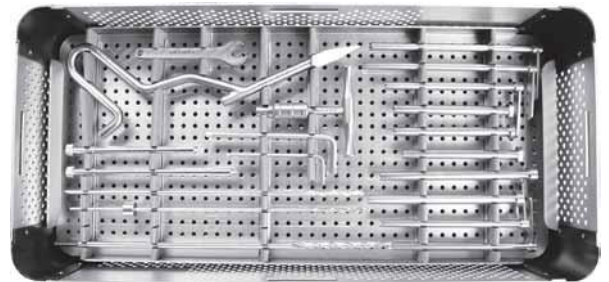
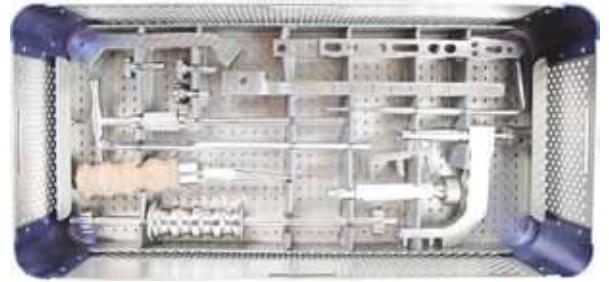


Stainless Steel	Titanium	Dia	Length
010.29.SS01	010.29.TI01	6.4	60
010.29.SS2.	010.29.TI2.	6.4	65
010.29.SS03	010.29.TI03	6.4	70
010.29.SS04	010.29.TI04	6.4	75
010.29.SS05	010.29.TI05	6.4	80
010.29.SS06	010.29.TI06	6.4	85
010.29.SS07	010.29.TI07	6.4	90
010.29.SS08	010.29.TI08	6.4	95
010.29.SS09	010.29.TI09	6.4	100
010.29.SS10	010.29.TI10	6.4	105
010.29.SS11	010.29.TI11	6.4	110
010.29.SS12	010.29.TI12	6.4	115

GEOORTHO Interlocking Nail System

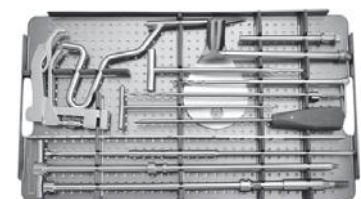
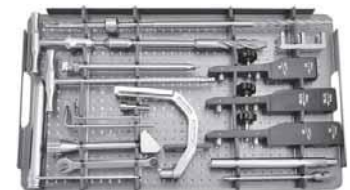
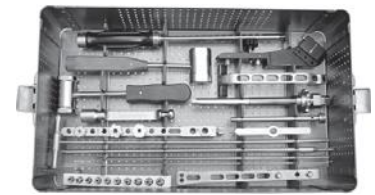
010.30 Femoral/ Reconstruction Interlocking Nail Instruments

Code	Description	Sizes	QTY
010.30.01	Proximal Target Device		1
010.30.02	Target Guide Rod		1
010.30.03	Distal Target Device		1
010.30.04	U-type Locking block		1
010.30.05	Nail Connector	M8×1	1
010.30.06	Locking Rod	Ø8	1
010.30.07	Connecting screw	M8×1	2
010.30.08	Connecting screw(distal)	M8×1	1
010.30.09	T type quick coupling handle		1
010.30.10	Reamer(quick coupling)	Ø9×450	1
010.30.11	Reamer(quick coupling)	Ø10.4×45	1
010.30.12	Reamer(quick coupling)	0	1
010.30.13	Reamer(quick coupling)	Ø11×450	1
010.30.14	Reamer(quick coupling)	Ø12×450	1
010.30.15	Flexible Reamer Start Front Cutting 9MM	Ø12.5×22	1
010.30.16	Flexible Reamer Shaft 9MM use with Bits Dia 9	0	1
010.30.17	Flexible Reamer Shaft 9MM use with Bits Dia 9.5	9MM	1
010.30.18	Flexible Reamer Shaft 9MM use with Bits Dia 10	9	1
010.30.19	Flexible Reamer Shaft 9MM use with Bits Dia 10.5	9.5	1
010.30.20	Flexible Reamer Shaft 9MM use with Bits Dia 11	10	1
010.30.21	Flexible Reamer Shaft 9MM use with Bits Dia 11.5	10.5	1
010.30.22	Flexible Reamer Shaft 9MM use with Bits Dia 12	11	1
010.30.23	Flexible Reamer Shaft 10MM use with Bits Dia 12.5	11.5	1
010.30.24	Flexible Reamer Shaft 10MM use with Bits Dia 13	12	1
010.30.25	Flexible Reamer Shaft 10MM use with Bits Dia 13.5	12.5	1
010.30.26	Flexible Reamer Shaft 10MM use with Bits Dia 14	13	1
010.30.27	Shaft Reamer Type I	13	1
010.30.28	Shaft Reamer Type II	13.5	1
010.30.29	Guide Wire with Olive Length 950MM	5	2
010.30.30	Guide Wire without Olive Length 950MM	14	2
010.30.31	Tissue Protector		1
010.30.32	Exchange Tube		1
010.30.33	Right Angle Locking Rod	2	1
010.30.34	Screws Extractor	2	1
010.30.35	Tap	1	1
010.30.36	T Handle Hex Screw Driver	1	1
010.30.37	Depth Gauge		1
010.30.38	Impacting Handle		1
010.30.39	Wrench		1
010.30.40	Universal Adapter		1
010.30.41	Sliding Hammer		1
010.30.42	L type Hex Wrench		1
010.30.43	L type Hex Wrench		1
010.30.44	AWL	M8×1	1
010.30.45	Guide Sleeve		3
010.30.46	Drill Sleeve	SW5	2
010.30.47	Drill Sleeve	SW3	1
010.30.48	Drill Sleeve	big size	1
010.30.49	Guide Pin Sleeve	Ø8	1
010.30.50	Trocar (short)	Ø4.0	1
010.30.51	Drill bit	Ø5.2	2
010.30.52	Drill bit	Ø6.5	1
010.30.53	Drill bit	Ø2.5	1
010.30.54	T handle drill	Ø8	1
010.30.55	Drill bit position stopper	Ø4.0×300	1
010.30.56	Guide Pin	Ø5.2×300	1
010.30.57	Guide pin	Ø4/Ø6.5	2
010.30.58	Thread Guide pin	Ø5.2×220	2
010.30.59	Depth Gauge	Ø4.0	1
010.30.60	Lag screw Wrench	Ø2.5×660	1
010.30.61	Trocar (Long)	Ø2.5×320	1
010.30.62	T Handle With Chuck	Ø2.5×320	1
010.30.63	Aluminum Box		1



010.31 GEOORTHO Proximal Femoral Nail Instruments

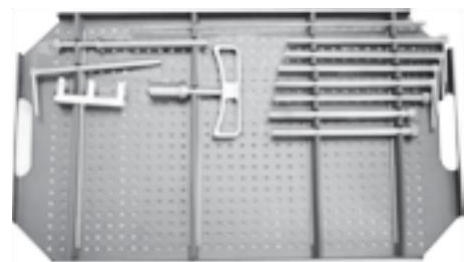
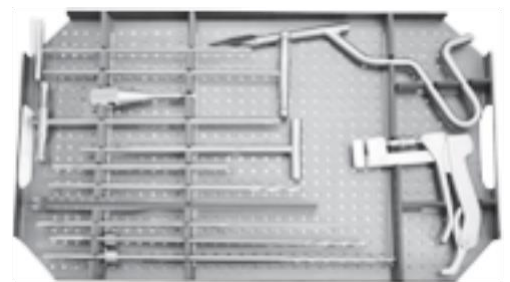
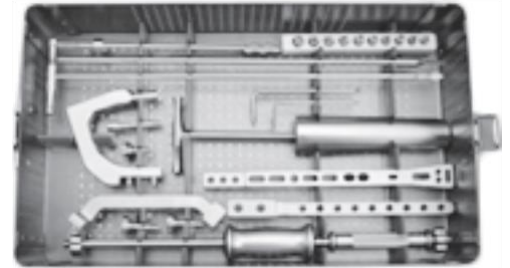
Code	Description	Sizes	QTY
010.31.01	Template for development		1
010.31.2.	Guide Sleeve	16.5mm	1
010.31.03	Guide Pin Sleeve	16.5mm/3.2mm	1
010.31.04	Quick coupling Handle		1
010.31.05	Proximal Hollow Drill bit	16.5mm/3.2mm	1
010.31.06	Hollow Open Tapper		1
010.31.07	Protected Plate for soft tissue		1
010.31.08	Handle		1
010.31.09	Connecting Blot	M10*1.5/SW8	1
010.31.10	Universal Wrench of connection bolt	SW8	1
010.31.11	Main pin impactor		1
010.31.12	Open wrench	SW11	1
010.31.13	Impactor Hammer		1
010.31.14	Proximal Guide Bar		1
010.31.15	Guide Sleeve for lag screw	11.2mm	1
010.31.16	Support/Compression Nut		1
010.31.17	Guide Sleeve for Pins	11.2/3.2mm	1
010.31.18	Pins	3.2mm	1
010.31.19	Thread Pins	3.2*400mm	4
010.31.20	Depth Gauge	3.2	1
010.31.21	Proximal Hollow Drill bit	010.6/3.2	1
010.31.22	Position Stopper		1
010.31.23	Lag screw Impactor/locking screw driver	M7*1left SW4.5/3.2	1
010.31.24	Lag screw Extracting connecting rod		1
010.31.25	Lag screw Extracting wrench		1
010.31.26	Distal guide bar	180mm	1
010.31.27	Distal guide bar	240mm	1
010.31.28	Distal 90°guide bar	180/240	1
010.31.29	Distal locking pin sleeve	11/8.2	2
010.31.30	Distal locking pin drill sleeve	8.2/4.3	2
010.31.31	sleeve pins	4.3mm	1
010.31.32	Drill bit	4.3mm	2
010.31.33	Position Stopper	4.3/3.0	1
010.31.34	Small wrench	SW3.0/4.0	1
010.31.35	Distal locking hole depth gauge		1
010.31.36	Distal locking screw wrench	SW4.0	1
010.31.37	Tail Hook guide pin	2.8	1
010.31.38	Tail hollow screw driver	2.8/SW6.5/SW11	1
010.31.39	Tail Hollow Sleeve/Extension Rod	SW11	1
010.31.40	Lag screw Extractor	M7*1 left SW4.5	1
010.31.41	Sliding Hammer		1
010.31.42	nails remove rod	M10*1.5	1
010.31.43	Reduction Rod(guide pin leading device)		1
010.31.44	ball head guide pin guide	2.5/4.0	1
010.31.45	pin control device Soft		1
010.31.46	expansion tool rod Soft	2.5/8.0	1
010.31.47	expansion tool head	8-13mm(each size one piece)	7
010.31.48	Long nail distal connection guide rod		1
010.31.49	Long nail distal connection guide bar lock wheels	M8*1/SW5	1
010.31.50	Locking Wheels spanner		1
010.31.51	Long nail distal guider bar		1
010.31.52	Long nail distal connection guide bar lock wheels	M8*1/SW5	1
010.31.53	Long nail distal position frame		1
010.31.54	Long nail distal connection guide bar lock wheels	M6/SW5	1
010.31.55	Position Pipe	10/8.1	1
010.31.56	Position stem bushing needle	8.1	1
010.31.57	Position stem drill sleeve	8.1/5.2	1
010.31.58	Position stem drill bit	5.2	1
010.31.59	Position stem flat drill	5.2	1
010.31.60	Position rod	8.1/5.2	1
010.31.61	Position card		1
010.31.62	Aluminum Box		1



GEOORTHO Interlocking Nail System

010.32 Femoral Reconstruction / Interlocking Nail Type II Instruments

Code	Description	Sizes	QTY
010.32.01	Locking Pipe		2
010.32.2.	Soft Tissue separating device	Long	1
010.32.03	Locking drills	Ø4.3	2
010.32.04	Locking screw bone drill	Ø4.3	2
010.32.05	Position Stopper	Ø4.3	1
010.32.06	Locking hole depth gauge		1
010.32.07	Locking screw spanner	SW4.0	1
010.32.08	Femur neck nail/tail spanner	SW5/M3.5	1
010.32.09	Femur neck nail drill bit	Ø6.4	1
010.32.10	Position Stopper	Ø6.4	1
010.32.11	Femur neck nail drill sleeve	Ø6.4	1
010.32.12	Depth gauge for femur neck guide pin	Ø2.5*320	1
010.32.13	Guide pin for femoral neck screw	Ø2.5*320	2
010.32.14	Drill sleeve for guide pin(femoral neck screw)	Ø2.5*320	2
010.32.15	Proximal enlargement	Ø2.5	1
010.32.16	Proximal enlarger position stopper		1
010.32.17	Position Stopper wrench		1
010.32.18	Protection skin plate	SW3	1
010.32.19	Guide pin device		1
010.32.20	AWL		1
010.32.21	Quick coupling handle		1
010.32.22	Reduction rod(guide pin)		1
010.32.23	Flexible reamer shaft		1
010.32.24	Flexible reamer head	Ø2.5/Ø8	1
010.32.25	Flexible reamer head	Ø8.5	1
010.32.26	Flexible reamer head	Ø9	1
010.32.27	Flexible reamer head	Ø9.5	1
010.32.28	Flexible reamer head	Ø10	1
010.32.29	Flexible reamer head	Ø10.5	1
010.32.30	Flexible reamer head	Ø11	1
010.32.31	Flexible reamer head	Ø11.5	1
010.32.32	Flexible reamer head	Ø12	1
010.32.33	Flexible reamer head	Ø12.5	1
010.32.34	Flexible reamer head	Ø13	1
010.32.35	Ball head guide pin	Ø2.5/Ø4	1
010.32.36	Proximal guide rod		1
010.32.37	Connecting screw spanner	SW6.5	1
010.32.38	Distal guide rod		1
010.32.39	Distal position frame		1
010.32.40	Connecting guide pin locking wheel		2
010.32.41	Position Card		1
010.32.42	Position Card		1
010.32.43	Impactor/Extractor device		1
010.32.44	Handle		1
010.32.45	Connecting bolt		1
010.32.46	Connecting Handle wheel		1
010.32.47	Locking wheel spanner	SW5	1
010.32.48	Position Pipe		1
010.32.49	Soft tissue separating device	Short	1
010.32.50	Position drill sleeve	Ø5.2	1
010.32.51	Position stem bone drill	Ø5.2	1
010.32.52	Position stem flat drill	Ø5.2	1
010.32.53	Connecting screw universal spanner	SW6.5	1
010.32.54	Main pin pull connecting rod		1
010.32.55	Aluminum Box		1



010.33, 010.34, 010.35, 010.36, 010.37 GEOORTHO Tibial Interlocking Nail



Stainless Steel	Titanium Alloy	Dia	Length
010.33.TI01	010.33.SS01	8	240
010.33.TI2.	010.33.SS2.	8	260
010.33.TI03	010.33.SS03	8	280
010.33.TI04	010.33.SS04	8	300
010.33.TI05	010.33.SS05	8	320
010.33.TI06	010.33.SS06	8	340
010.33.TI07	010.33.SS07	8	360
010.33.TI08	010.33.SS08	8	380
010.33.TI09	010.33.SS09	8	400
010.34.TI01	010.34.SS01	9	240
010.34.TI2.	010.34.SS2.	9	260
010.34.TI03	010.34.SS03	9	280
010.34.TI04	010.34.SS04	9	300
010.34.TI05	010.34.SS05	9	320
010.34.TI06	010.34.SS06	9	340
010.34.TI07	010.34.SS07	9	360
010.34.TI08	010.34.SS08	9	380
010.34.TI09	010.34.SS09	9	400
010.35.TI01	010.35.SS01	10	240
010.35.TI2.	010.35.SS2.	10	260
010.35.TI03	010.35.SS03	10	280
010.35.TI04	010.35.SS04	10	300
010.35.TI05	010.35.SS05	10	320
010.35.TI06	010.35.SS06	10	340
010.35.TI07	010.35.SS07	10	360
010.35.TI08	010.35.SS08	10	380
010.35.TI09	010.35.SS09	10	400
010.36.TI01	010.36.SS01	11	240
010.36.TI2.	010.36.SS2.	11	260
010.36.TI03	010.36.SS03	11	280
010.36.TI04	010.36.SS04	11	300
010.36.TI05	010.36.SS05	11	320
010.36.TI06	010.36.SS06	11	340
010.36.TI07	010.36.SS07	11	360
010.36.TI08	010.36.SS08	11	380
010.36.TI09	010.36.SS09	11	400
010.37.TI01	010.37.SS01	12	240
010.37.TI2.	010.37.SS2.	12	260
010.37.TI03	010.37.SS03	12	280
010.37.TI04	010.37.SS04	12	300
010.37.TI05	010.37.SS05	12	320
010.37.TI06	010.37.SS06	12	340
010.37.TI07	010.37.SS07	12	360
010.37.TI08	010.37.SS08	12	380
010.37.TI09	010.37.SS09	12	400

Is indicated for use in all fractures extending 7-8 cm distal to the tibial plateau to within 5.5 cms from the distal articular surface provided that the epiphyses are closed.

GEOORTHO Interlocking Nail System

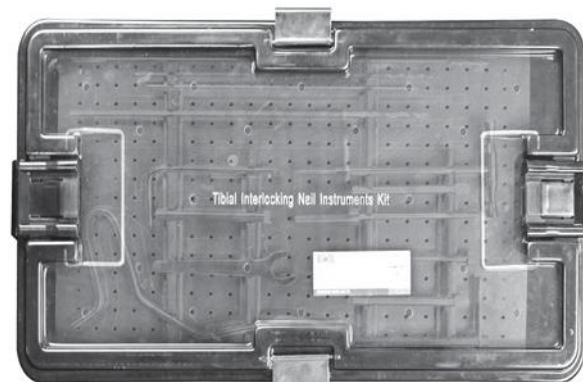
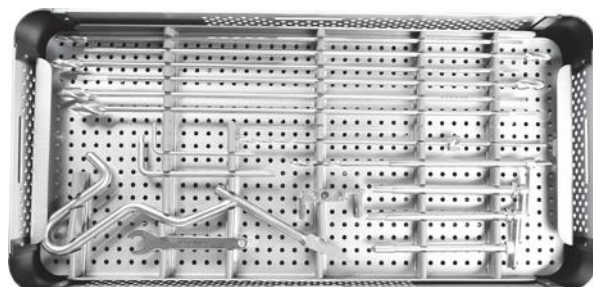
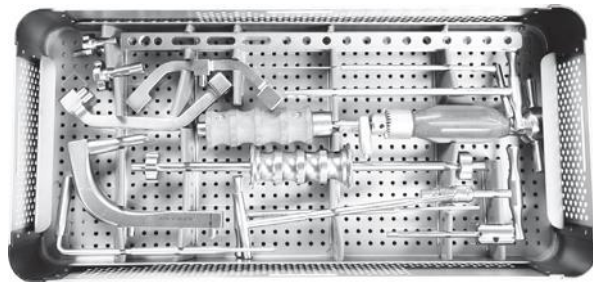
010.38 Proximal/Distal Locking Screw Fully Threaded



Stainless Steel	Titanium Alloy	Dia	Length
010.38.SS01	010.38.TI01	4.5	20
010.38.SS2.	010.38.TI2.	4.5	25
010.38.SS03	010.38.TI03	4.5	30
010.38.SS04	010.38.TI04	4.5	35
010.38.SS05	010.38.TI05	4.5	40
010.38.SS06	010.38.TI06	4.5	45
010.38.SS07	010.38.TI07	4.5	50
010.38.SS08	010.38.TI08	4.5	55
010.38.SS09	010.38.TI09	4.5	60
010.38.SS10	010.38.TI10	4.5	65
010.38.SS11	010.38.TI11	4.5	70
010.38.SS12	010.38.TI12	4.5	75

010.39 GEOORTHO Tibial Interlocking Nails Instruments

Code	Description	Sizes	QTY
010.39.0	Insertion Handle		1
1	Guide Rod		1
010.39.2.	Proximal Target Device		1
010.39.0	Distal Target Device		1
3	Nail Connector	6mm	1
010.39.0	U-type Locking bolt		1
4	Locking Rod		1
010.39.0	connecting screw	6mm	1
5	connecting screw(distal)		1
010.39.0	T handle with quick coupling		1
6	Reamer(quick coupling)	Ø8×450	1
010.39.0	Reamer(quick coupling)	Ø9.5×450	1
7	Reamer(quick coupling)	Ø10×450	1
010.39.0	Reamer(quick coupling)	Ø11×450	1
8	Flexible Reamer Start Front Cutting 9MM	9MM	1
010.39.0	Flexible Reamer Shaft 9MM use with Bits Dia 9	9	1
010.39.1	Flexible Reamer Shaft 9MM use with Bits Dia 9.5	9.5	1
010.39.1	Flexible Reamer Shaft 9MM use with Bits Dia 10	10	1
1	Flexible Reamer Shaft 9MM use with Bits Dia 10.5	10.5	1
010.39.1	Flexible Reamer Shaft 9MM use with Bits Dia 11	11	1
2	Flexible Reamer Shaft 9MM use with Bits Dia 11.5	11.5	1
010.39.1	Flexible Reamer Shaft 9MM use with Bits Dia 12	12	1
3	Flexible Reamer Shaft 10MM use with Bits Dia 12.5	12.5	1
010.39.1	Flexible Reamer Shaft 10MM use with Bits Dia 13	13	1
4	Flexible Reamer Shaft 10MM use with Bits Dia 13.5	13.5	1
010.39.1	Flexible Reamer Shaft 10MM use with Bits Dia 14	14	1
5	Shaft Reamer Type		1
010.39.1	Shaft Reamer Type II		1
6	Guide Wire with Olive Length 950MM	2	2
010.39.1	Guide Wire without Olive Length 950MM	2	2
7	Tissue Protector	1	1
010.39.1	Exchange Tube	1	1
8	Right Angle Locking Rod		1
010.39.1	Screws Extractor		1
9	Tap Ø6	Ø6	1
010.39.2	T handle screw driver SW3.5	SW3.5	1
1	Depth Gauge		1
010.39.2	Wrench SW12	SW12	1
2	Universal Adapter M6	M6	1
010.39.2	Sliding Hammer		1
3	L-type Hex Wrench SW5	SW5	1
010.39.2	L-type Hex Wrench SW3	SW3	1
4	AWL big size	big size	1
010.39.2	Guide Sleeve Ø8	Ø8	2
5	Drill Sleeve Ø4.0	Ø4.0	1
010.39.2	Trocar Ø8×140	Ø8×140	1
6	Drill Bit Ø4.0×300	Ø4.0×300	2
010.39.2	T-handle Drill Ø5.2	Ø5.2	1
7	Drill bit stopper Ø4.0	Ø4.0	1
010.39.2	Drill bit Ø5.2×300	Ø5.2×300	1
8	Drill Sleeve Ø5.2	Ø5.2	1
010.39.2	T Handle With Chuck		1
9	Aluminum Box		1
010.39.3			1
0			1



GEOORTHO Interlocking Nail System

010.40, 010.41, 010.42 GEOORTHO Humeral Interlocking Nail



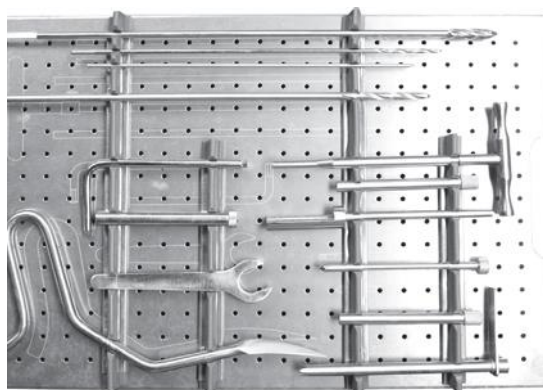
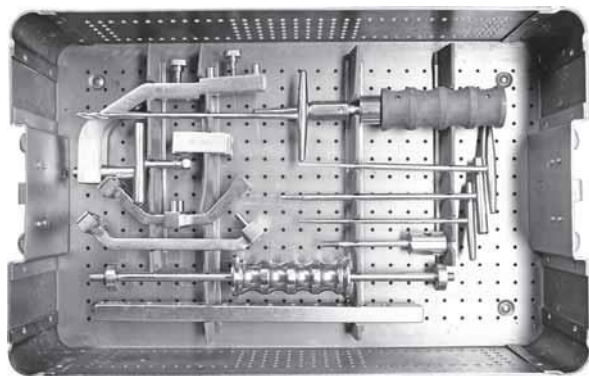
Stainless Steel	Titanium Alloy	Dia	Length
010.40.SS01	010.40.TI01	7	180
010.40.SS2.	010.40.TI2.	7	190
010.40.SS03	010.40.TI03	7	200
010.40.SS04	010.40.TI04	7	210
010.40.SS05	010.40.TI05	7	220
010.40.SS06	010.40.TI06	7	230
010.40.SS07	010.40.TI07	7	240
010.40.SS08	010.40.TI08	7	250
010.40.SS09	010.40.TI09	7	260
010.40.SS10	010.40.TI10	7	270
010.40.SS11	010.40.TI11	7	280
010.40.SS12	010.40.TI12	7	290
010.40.SS13	010.40.TI13	7	300
010.40.SS14	010.40.TI14	7	310
010.40.SS15	010.40.TI15	7	320
010.41.SS01	010.41.TI01	8	180
010.41.SS2.	010.41.TI2.	8	190
010.41.SS03	010.41.TI03	8	200
010.41.SS04	010.41.TI04	8	210
010.41.SS05	010.41.TI05	8	220
010.41.SS06	010.41.TI06	8	230
010.41.SS07	010.41.TI07	8	240
010.41.SS08	010.41.TI08	8	250
010.41.SS09	010.41.TI09	8	260
010.41.SS10	010.41.TI10	8	270
010.41.SS11	010.41.TI11	8	280
010.41.SS12	010.41.TI12	8	290
010.41.SS13	010.41.TI13	8	300
010.41.SS14	010.41.TI14	8	310
010.41.SS15	010.41.TI15	8	320
010.42.SS01	010.42.TI01	9	180
010.42.SS2.	010.42.TI2.	9	190
010.42.SS03	010.42.TI03	9	200
010.42.SS04	010.42.TI04	9	210
010.42.SS05	010.42.TI05	9	220
010.42.SS06	010.42.TI06	9	230
010.42.SS07	010.42.TI07	9	240
010.42.SS08	010.42.TI08	9	250
010.42.SS09	010.42.TI09	9	260
010.42.SS10	010.42.TI10	9	270
010.42.SS11	010.42.TI11	9	280
010.42.SS12	010.42.TI12	9	290
010.42.SS13	010.42.TI13	9	300
010.42.SS14	010.42.TI14	9	310
010.42.SS15	010.42.TI15	9	320

010.43 Proximal/ Distal Locking Screw

Stainless Steel	Titanium Alloy	Dia	Length
010.43.SS01	010.43.TI01	3.5	18
010.43.SS2.	010.43.TI2.	3.5	20
010.43.SS03	010.43.TI03	3.5	22
010.43.SS04	010.43.TI04	3.5	24
010.43.SS05	010.43.TI05	3.5	26
010.43.SS06	010.43.TI06	3.5	28
010.43.SS07	010.43.TI07	3.5	30
010.43.SS08	010.43.TI08	3.5	32
010.43.SS09	010.43.TI09	3.5	33
010.43.SS10	010.43.TI10	3.5	34
010.43.SS11	010.43.TI11	3.5	36
010.43.SS12	010.43.TI12	3.5	38
010.43.SS13	010.43.TI13	3.5	40
010.43.SS14	010.43.TI14	3.5	42
010.43.SS15	010.43.TI15	3.5	44
010.43.SS16	010.43.TI16	3.5	46
010.43.SS17	010.43.TI17	3.5	48
010.43.SS18	010.43.TI18	3.5	50



010.44 GEOORTHO Humeral Nail Instruments



Code	Description	Sizes	QTY
010.44.01	Connector for Proximal Target		1
010.44.2.	Proximal Target		1
010.44.03	Drill Sleeve		1
010.44.04	Extractor handle		1
010.44.05	Sliding Hammer		1
010.44.06	Universal Adapter		1
010.44.07	Extractor		1
010.44.08	AWL		1
010.44.09	Impactor and Extractor for inner nuts		1
010.44.10	Guide Pin		1
010.44.11	Screw Driver	Hex	1
010.44.12	Reamer	Ø8	1
010.44.13	Reamer	Ø9	1
010.44.14	Drill bit	Ø2.5	2
010.44.15	Aluminum Box		1

Interlocking Femoral Nail

Surgical Techniques

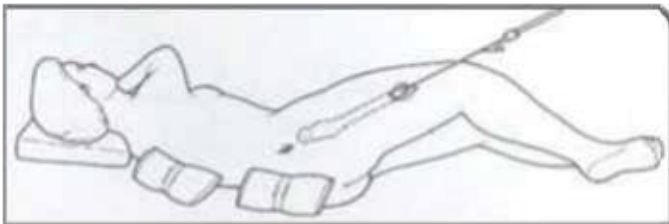
Preoperative planning:

Nail diameter and length can be established by means of the healthy extremity X-ray, keeping in mind D WR PDJQLFDWLRQ 6RPH VXUJHRQV XVH DQ LPDJH LQWHQVLHU VXSHULPSRVLQJ WKH QDLO WR WKH DI-IHFWHG H[WUHPLW WR HVWDEOLVK LWV OHQJWK DQG WR REWDLQ D VXUH GLVWDQFH ZLWKRXW DIIHFWLQJ WKH NQHH DQG KLS DUWLFXODWLRQ \$QRWKHU PHWKRG LV WR PHDVXUH IURP WKH JUHDWHU IHPRUDO WURFKDQWHU WLS WR WKH NQHH MRLQW OLVH VXEUDFWLQJ FP

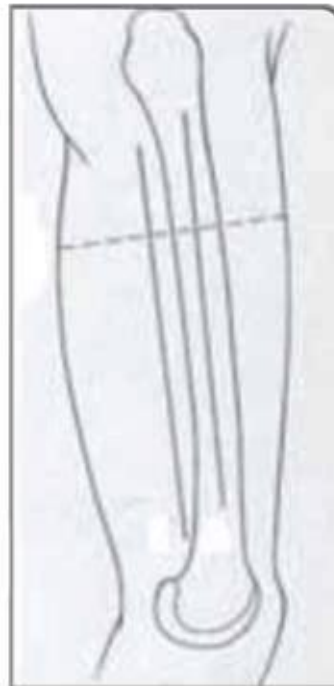
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Patient position:

3DWLHQW PXVW EH LQ ODWHUDO GHFXELWXV RU VXSLQH SRVLWLRQ GHSHQLQJ VXUJHRQV FRQYHQLHQFH DQG LI KH XVHV D WDEOH IRU IUDFWXUH UHGXFWRQ RU QRW WKH UHGXFWRQ FDQ EH SHUIRUP EA PHDQV RI GLUHFV YLVLQJ RU FORVH XV- LQJ D UDGLRVFRSLF FRQWURO 7KH H[WUHPLW WKDW ZLOO EH RSHUDWLRQ PXVW EH LQ D GHJUHVV NQHH ÀH[LQ DQG GHJUHVV KLS ÀH[LQ



Patient position



Surgical approach



Transversal cross-section

Interlocking Femoral Nail

Surgical Techniques

Nail placement in the instrumental set:

7KH QDLO PXVW EH LQVWDOOHG DQG FDOLEUDWHG SULRU WR XVH LQVLGH WKH IHPXU WR FRUURERUDWH EROWV IUHH SDVV DJH DQG H[DFW V\PPHWU\

1

3ODFH WKH QDLO LQ WKH LQVHUWLRQ KDQGOH FRLQLGLQJ ZLWK QRWFKHV ¿LQJ LW ZLWK WKH FODPS VFUHZ



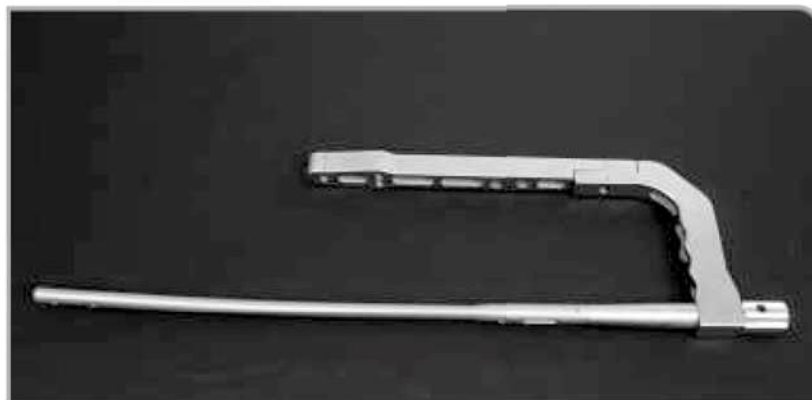
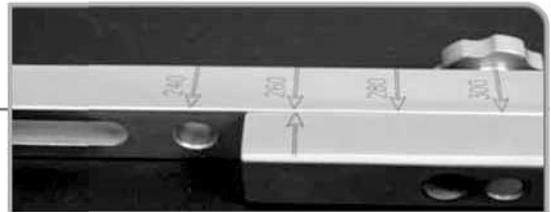
2

+ROG WKH QDLO RQ WKH LQVHUWLRQ KDQGOH ZLWK WKH ¿LQJ VFUHZ DQG WLJKWHQ WKH QDLO DVVLVWLQJ ZKLW D \$OOHQ ZUHQFK IRU OHYHUDJH HQWHULQJ LW WKURXJK WKH ORFNLQJ QXW KROHV



3

3ODFH WKH JXLGH DFFRUGLQJ WR QDLO OHQJWK FRLQLGLQJ WKH JULS KDQGOH DUURZV ZLWK WKH JXLGH DUURZV

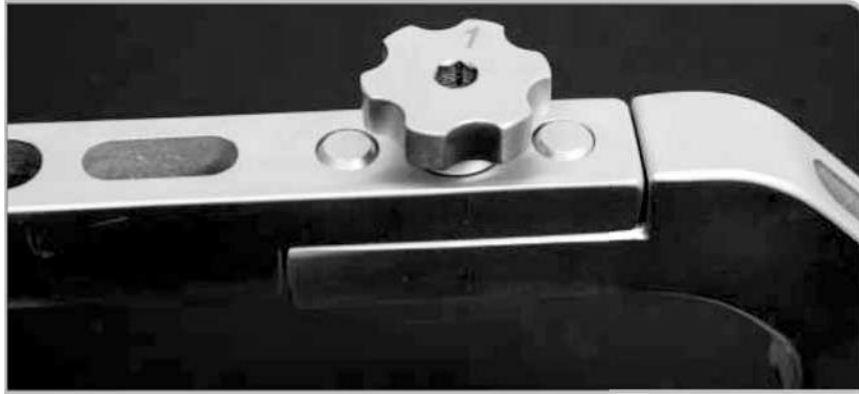


Interlocking Femoral Nail

Surgical Techniques

4

6HFYUH WKH JXLGH SUHVVLQJ ZLWK D \$OOHQ ZUHQFK WKH ORFNLQJ QXW



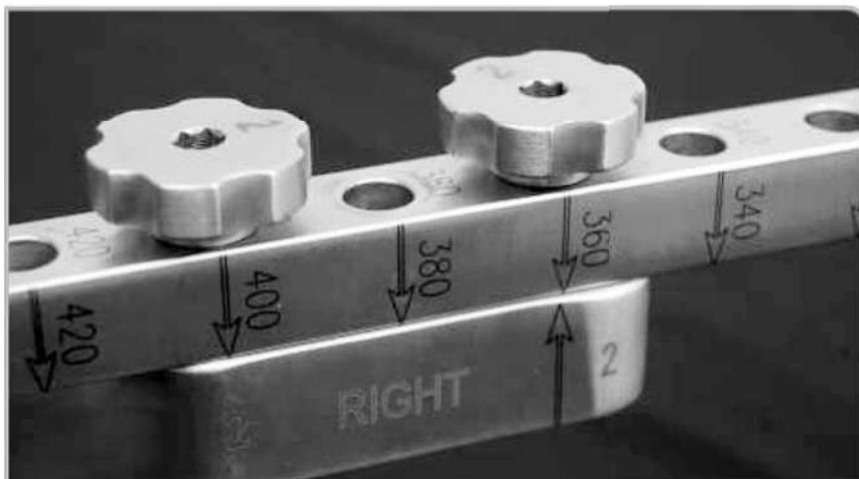
5

3ODFH WKH VHFRRG JXLGH GHSHQGLQJ ZKLFK OHJ LV EHLQJ RSHUDWHG ULJKW RU OHIW IROORZLQJ WKH DUURZ LQ WKH JXLGH



6

7LJKWHQ WZR QXPEHU VFUHZV DOZD\ PDWFKLQJ DUURZ ZLWK DUURZ DFFRUGLQJ FRUUHFV QDLO OHQJWK



Interlocking Femoral Nail

Surgical Techniques

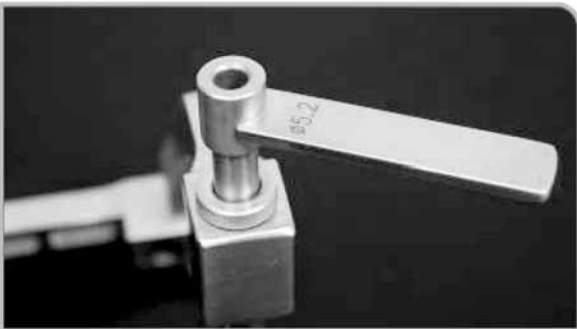
7

3ODFH WKH GLVWDO WDUJHW GHYLFH WLJKWHQLQJ LW ZLWK D QXPEHU VFUHZ



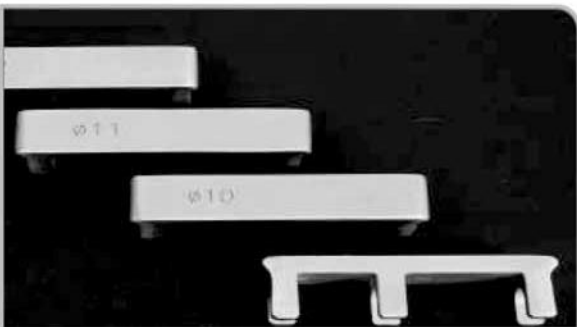
8

3ODFH WKH GLVWDO WDUJHW GHYLFH WLJKWHQLQJ LW ZLWK D QXPEHU VFUHZ



9

3ODFH WKH GLVWDO WDUJHW GHYLFH WLJKWHQLQJ LW ZLWK D QXPEHU VFUHZ



Interlocking Femoral Nail

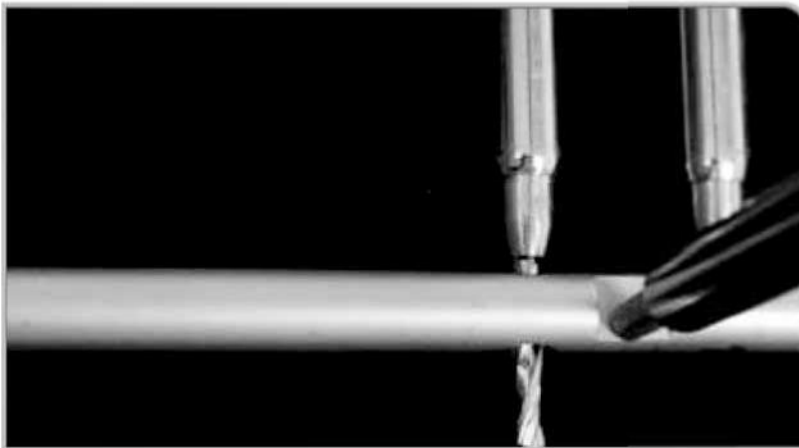
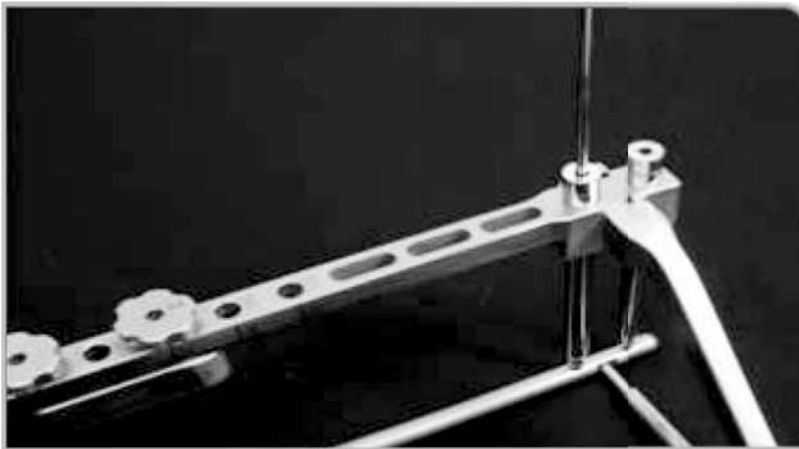
Surgical Techniques

10

3ODFH WKH VOHHYH DQG GLVWDO GULOO VOHHYH DQG YHULHG D PP GULOO ELW JRHV WKURXJK WKH KROHV ZLWKRXW WURXEOH

11

,QVHUW WKH VOHHYH DQG GULOO VOHHYH LQ WKH SUR[LPDO KROHV DQG YHULHG OLNHZLVH WKH GULOO ELW JRHV WKURXJK WKH SUR[LPDO KROHV ZLWKRXW WURXEOH

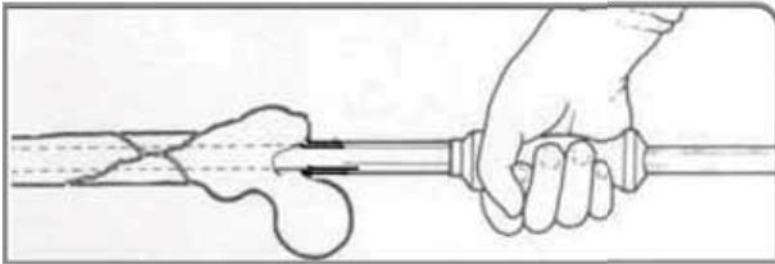


Interlocking Femoral Nail

Surgical Techniques

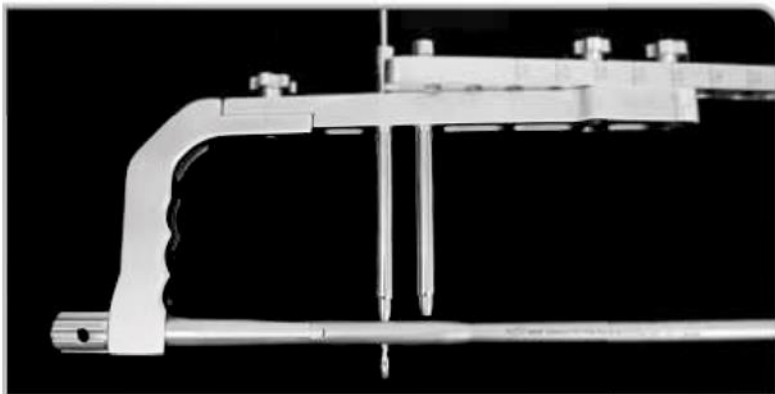
Nail insertion:

SHULMLQJ WKH VVWHP LV SURSHU\ FDOLEUDWHG SURFHGG WR LQVHUWK WKH QDLO LQ WKH IHPXU 5HPRYH WKH JXLGHV ZKHQ LW LV FRPSOHWHO\ LQVHUWHG LQ WKH SLULIRUPLV RU GLJLWDO IRVVD SUHYLRXV SODFHPHQW WKH LPSDFWLQJ KDQGOH DQG ZLWK VRIW KLWV LQVHUWK WKH QDLO HYHU\WKLRQJ ZLWK DQ LPDJH LQWHQVLY\HU YLVLRQ WKHQ SODFH WKH JXLGHV



Distal and proximal locking:

SODFH GLVWDO JXLGH SODFH JXLGH VOHHYH DQG SHUIRUP D VNLQ LQFLVLRQ LQ WKH WKLJK DQWHULRU VLGH LW LV LQ EOXQW IRUP GLVVHFHWG LQVHUWK WKH GULOO VOHHYH XS WR WKH IHPXU DQWHULRU FRUWLFDO ZLWK WURFDO KHOS LQVHUWK WKH PP GULOO ELW XS WR WKH QDLO LQVHUWK WKH ORFNLQJ URG DQG ORFN WKH ORFNLQJ EORFN DFFRUGLQJ WR WKH GLDPHWHU WKH 2UWKRSHGLF 6XUJHRQ FKRVH



SODFH WKH GULOO JXLGH VOHHYH LQ WKH WKLJK ODWHUDO VLGH DQG PDUN ZKHUH LQFLVLRQV ZLOO EH SHUIRUP LQFLVLRQV PXVW EH VPDOO RQ\ WR DOORZ WKH GULOO VOHHYH WR JR WKURXJK GLVVHFHW E\ SODQHV XQWLO ORFDWLQJ IHPXU ODWHUDO FRUWLFDO LQVHUWK WKH VOHHYH ZLWK WURFDO KHOS SODFH WKH GULOO VOHHYH DQG GULOO XS WR WKH VHFRRG FRUWLFDO ZLWK D PP GULOO ELW VWDUW ZLWK WKH JUHDWHVW GLVWDO KROH YHULHG E\ PHDQV RI LQVHUWLQJ WKH GULOO VOHHYH LI LW LV LQ WKH QDLO KROH 5HPRYH WKH GULOO ELW DQG WKH JXLGH LQVHUWK LQ WKH GHSWK JDXJH KDYLQJ WKH VFUHZ OHQJWK LQVHUWK WKH 7 KDQGOH GULOO XS WR GULOOHQJ WKH VHFRRG FRUWLFDO UHPRYH DQG SODFH ZLWK WKH ULJKW VFUHZGULYHU D PP VFUHZ YHULHG LW LV LQ WKH QDLO DQG JRHV WKURXJK WKH VHFRRG FRUWLFDO PP VFUHZ UHSHDW IRU GLVWDO SUR[LPDO KROH

7KH VHFRRG JXLGH FDQ RU FDOQRW EH UHPRYH 3URFHGG WR SHUIRUP WKH VDPH RSHUDWLQJ SUHYLRXV UHGXFWRQ DQG EROW ULJKW VLJH DFFRUGLQJ ZKHUH WKH\ ZHUH SODFH LV YHULHG 5HPRYH WKH VVWHP DQG SODFH DQ RFFOXVLRQ VFUHZ LQ QDLO SUR[LPDO VLGH VXWXUH E\ SODQHV RU ZLWK Q\ORQ WKH VNLQ DFFRUGLQJ WR 2UWKRSHGLF 6XUJHRQ SUHIHUHQFH WKH JDXJHV DQG HODVWLF EDQGDJHV DUH SODFH UHPRYH IUDFWXUH WDEOH

Interlocking Femoral Nail

Surgical Techniques



Postsurgical care:

OXVW EH SODFH D HODVWLF EDQGDJH IURP IRRW XS WR WLJKW QH DUHVV
RULJLQ LQJXLQDO UHJLRQ NHHSLQJ WKH H[WUHPLW HOHYDWHG WKH
SDWLHQW FDQ SHUIRUP IUHH WROHUDQFH AHJLRQ H[WHQVLRQ HDFK
RUWKRSHGLF VXUJHRQ PD\ FKRRVH KRZ DQDOJHVLFV DQG DQWLEL-
RWLFV DUH SUHVFULEHG

= DONLQJ DQG VXSSRUW ZLOO EH GHFLGHG E\ HDFK VXUJHRQ EXW
ZDONLQJ PD\ EH VWDUWHG ZLWK SDUWLDO VXSSRUW LQ WZR ZHHNV LI
LW LV DSSURYHG E\ UDGLRORJLFDO FRQWURO

5DGLRORJLFDO FRQWUROV PXVW EH WDNHQ HYHU\ IRXU ZHHNV
VWLWFKHV DUH UHPRYHG LQ WZR RU WKUHH ZHHNV KHDOLQJ PXVW
EH SHUIRUPHG RQ IUHH GHPDQG DV HDFK RUWKRSHGLF VXUJHRQ
SUHVFULEHV

'HSHQGLQJ RQ WKH IUDFWXUH FRQVROLGDWLRQ HYROXWLRQ QDLO

dynamization may be perform by removing one of proximal
VFUHZV UHPRYH WKH URXQG KROH VFUHZ LW LV ZKHQ D FRQVROL-
GDWLRQ RU QRQQLRQ UHWDUG

Reconstruction Femoral Nail

Surgical Techniques

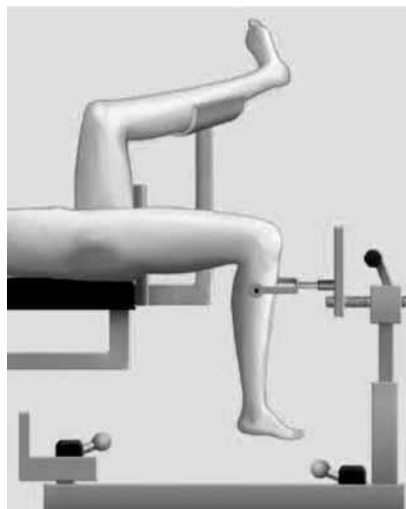
Preoperative Planning:

IDLO GLDPHWHU DQG OHQJWK FDQ EH VHW E\ ; UD\N RI WKH KHDOWK\ OLPE LI SRVVLEOH WR XVH DV WHPSODWHV WDNLQJ LQWR DFFRXQW WKH PDJQL\FDWLRQ AXFWXDWLQJ EHWZHHQ DQG 6RPH VXUJHRQV XVH WKH LPDJH LQWHQVL\HU RYHUOLQJ WKH QDLO WR DIIHFWHG OLPE WR VHW WKH OHQJWK DQG JHW D VDIHW\ GLVWDQFH IURP WKH MRLQW DV ZHOO DV WKH VXLWDEOH GLDSK\VHDO FHU\LFDO DQJOH

,Q YHU\ QDUURZ ERQH\ LW LV VXJJHVWHG WR SODFH WKH VPDOOHU GLDPHWHU QDLO XSRQ VXUJHRQV FKRLFH DQG GHSHOGLQJ RQ IUDFWXUH FRPLQDWLRQ DQG VWDELOLW\ LW LV UHFRPPHQGHG WR XVH D ODUJHU GLDPHWHU QDLO LQ RUGHU WR JHW PRUH VXSSRUW DQG VWDELOLW\

Patient position:

,W LV UHFRPPHQGHG WR SRVLWLRQ WKH SDWLHQW RQ WUDFWLRQ WDEOH RQ ODWHUDO GHFXELWXV SRVLWLRQ LQ RUGHU WR IDFLOLWDWH WKH IUDFWXUH UHGXFWRQ DQG VXUJLFDO DSSURDFK VRPH VXUJHRQV SUHIHU WR SRVLWLRQ WKH SDWLHQW RQ GRUVDQ GHFXELWXV SRVLWLRQ ZLWK KHDOWK\ OLPE LQ AH[LQ WR IDFLOLWDWH WKH LPDJH LQWHQVL\HU DFFHVV LQ WKH ODWHUDO DQG DQWURSRVWHULRU SODQH ,Q WKH DEVHQFH RI D WUDFWLRQ WDEOH D WUDQVWELDO WUDFWLRQ QDLO FDQ EH SODFHG RU DW VXUJHRQV IUHHO\ GLVFUHWLRQ WR SHUIRUP WKH PDQLSXODWLRQ RI ERWK SUR[LPDO DQG GLVWDO IUDJPHQV



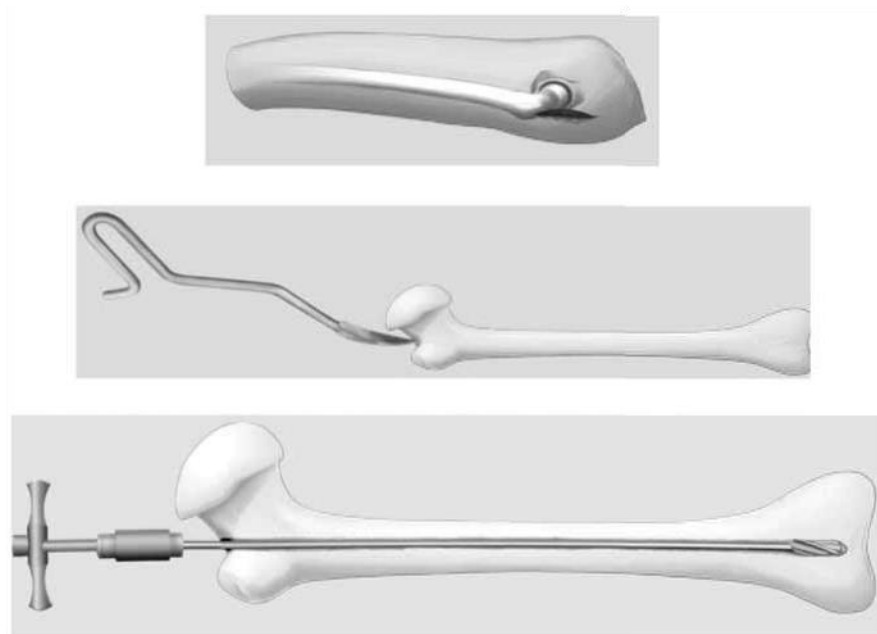
Reconstruction Femoral Nail

Surgical Techniques

Surgical Approach:

\$ ODWHUDO LQFLVLRQ LV PDGH MXVW DERYH WKH JUHDW WURFKDQWHU RI RU FP OHQJWK WKH DSSURDFK FDQ EH H[WHQGHG LQ FDUH RI REHVH SDWLHQWV LQ WKH GLUHFWLRQ RI WKH LQDFU FUVW RU SRVWHURODWHUDO WLS VHFWRQLQJ LQ WKH VDPH GLUHFWLRQ DV FXWDQHRXV LQFLVLRQ DQG H[SRVLQJ WKH PXVFOH EHUV ZKLFK DUH VHSUDWHG LQ D EOXQW PDQQHU LQ WKH ORQJWXGLQDO WURFKDQWHULF LQVHUWLRQ SODFLQJ DQ HQWU SRLQW DW WKH JUHDW WURFKDQWHU WLS LQ WKH FHQWHU QHLWKHU DQWHULRU QRU SRVWHULRU DGGUHVVHG WR WKH GLDSKVLV

7KH VWDUWHU SXQFK ZLOO EH LQWURGXFHG LQ WKH XSSHUPRVW SDUW RI WKH JUHDW WURFKDQWHU WLS IROORZLQJ D FXU- YDWHU ZKLFK LV FRUHFHWG ZKHQ LW LV LQWURGXFHG WR WKH PHGXODU FKDQQHO D JXLGH LV LQWURGXFHG WR FKHFN LI LW LV LQWR WKH FKDQQHO DQG LQ WKH HQWU SRLQW ZKHUH WKH KROH ZDV PDGH E WKH SXQFK WKH UHGXFWRQ RI IUDFWXUH IUDPHQWV LV PDGH WKH JXLGH LQWURGXFWRQ LV PDQLSXODWHG DQG REVHUYHG ZLWK WKH LPDJH LQWHQ- VLGHU DQG D PP GULOO LV XVHG ZKLFK LV LQWURGXFHG PP RYHU WKH JXLGH WKH GULOO DQG JXLGH DUH UHPRYHG WUHQJ WR PDLQWDLQ WKH IUDFWXUH UHGXFWRQ WKH H[SDQLQJ RI PHGXODU FKDQQHO LV SURJHVVLYOI VWDUWHG ZLWK RU PP ULPHV GHSHQLQJ RQ QDLO GLDPHWHU WR EH XVHG DW WKH RUWKRSHGLF VXUJHRQV GLVFWWRQ 7KH OHQJWK RI FKDQQHO H[SDQLQJ ZLOO EH GHWHUPLQHG XQWLO H[FHGH DW OHDVV WR PP RI WKH PRUH GLVWDO IUDFWXUH OLQH DIWHU UHGXFWRQ DVVHVVPHQW DQG GLVWDO IUDFWXUH OLQH REVHUYDWLRQ



Reconstruction Femoral Nail

Surgical Techniques

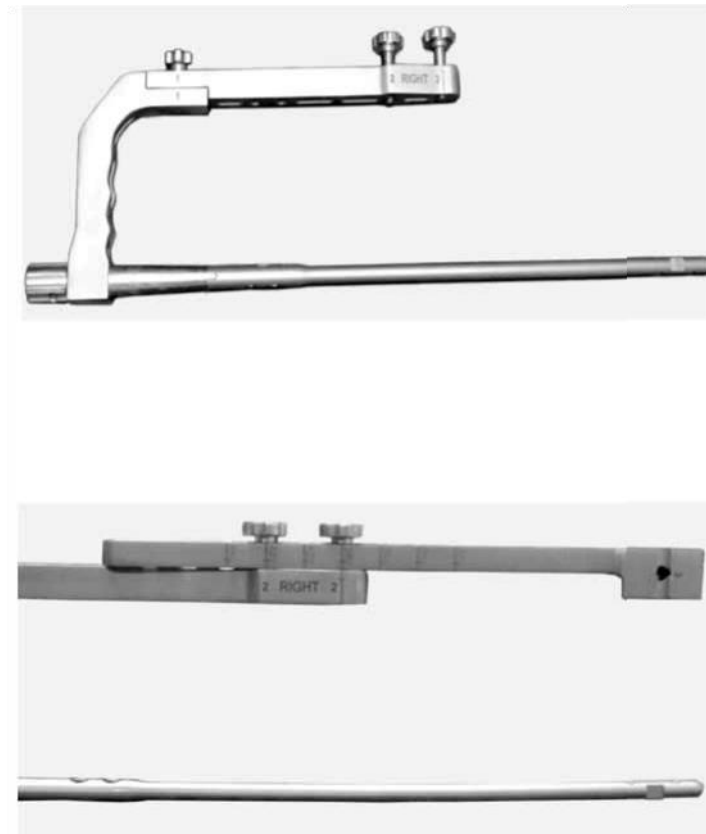
Nail Assembling in the instrumental set:

1

+ROG WKH QDLO LQ WKH ÀH[KDQGOH ZLWK WKH FODPSLQJ VFUHZ DQG WLJKWHQ WKH FUDQN DVVLVWLQJ ZLWK DQ \$OOHQ ZUHQFK IRU OHYHUDJH LQVHUWLQJ LW LQ WKH FUDQN KROHV

2

3ODFH WKH GLVWDO ORFNLQJ LQVHUWLQJ OHDG DFFRUGLQJ WR PDNLQJ WKH ÀH[KDQGOH WR PDWFK ZLWK WKH SUR[LPDO LQVHUWLQJ OHDG



3

(QVXUH WKH LQVHUWLQJ OHDG WLJKWHLQJ WKH EXWWHUÀ\ YDOYH DVVLVWLQJ ZLWK WKH \$OOHQ ZUHQFK

Reconstruction Femoral Nail

Surgical Techniques

4

7KH DQWHULRU VWDELOLJHU LV SODFHG YHULNLQJ WKDW IDOO LQWR WKH QDLO DQWHULRU ĀDW VLGH VSHFL\FDOO\ FUHDWHG IRU WKLV DQG WKH KROGHU ORFN LV SODFHG

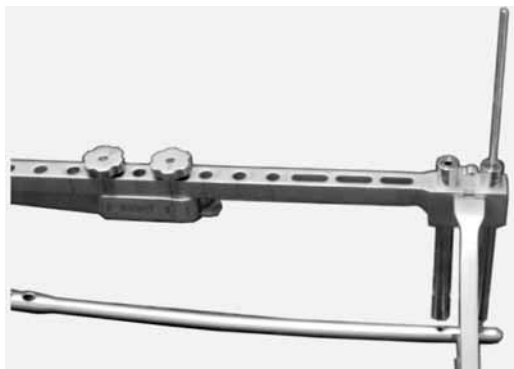


5

&DOLEUDWH WKH GLVWDO GULOO JXLGH ZKHQ WKH GULOO DQG VKLUVV JXLGH DUH SODFHG LQVHUWLRQ D PP GULOO WKDW PDWFK ZLWK QDLO GLVWDO KROHV

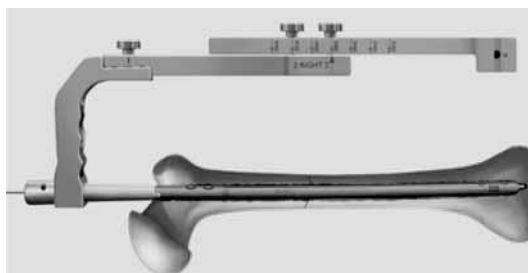
6

7KH VWDELOLJHU GULOO JXLGHV DQG LQVHUWLRQDU OHDGV DUH UHPRYHG DQG SURFHGG WR WKH LQVHUWLRQ RI QDLO LQWR IHPXU



Nail Insertion:

*XLGH LV LQVHUWHG LQWR WKH KROH PDGH LQ WKH WURFKDQWHU WLS REVHUYLRQ ZLWK WKH LPDJH LQVHUWLRQHU WKDW QDLO GRHV QRW FDXVH IUDPHQW GLDVWDVLV DVVLVWHG ZLWK WKH LPSDFWRU ZLWK JHQWO\ EXW FRQVWDQW WDSV XQWLO WR IXOO\ LQVHUW LW QRWLQJ WKH ORFDWLRQ RI QDLO SUR[LPDO VLGH PDWFKLRQ ZLWK WKH OHYHO RI WKH JUHDW WURFKDQWHU WLS



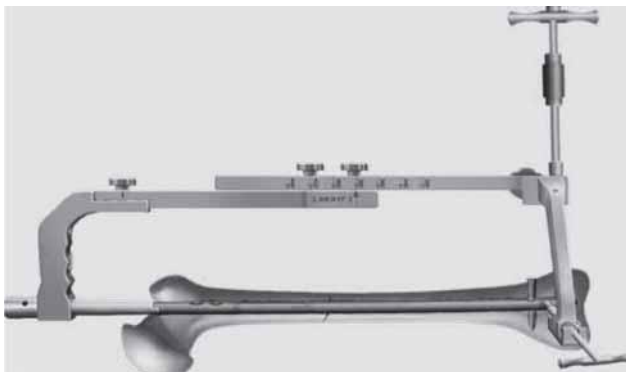
Reconstruction Femoral Nail

Surgical Techniques

Distal and Proximal Locking:



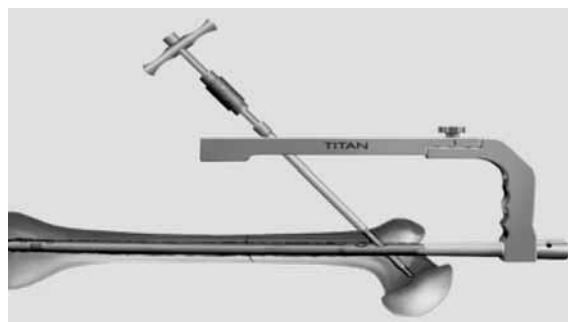
7KH ÀHJ KDQGOH PXVW EH FRPSOHWHO\ LQ D ODWHUDO SRVLWLRQ IRU D ORFNLQJ SURSHU\ SHUIRUPHG 5HPRYH WKH JXLGH DQG SODFH WKH VKLUW DQG PP GULOO JXLGH LQ WKH SURILPDO OHDG PDUNLQJ RQ WKH VNLQ WKH ORFDWLRQ ZKHUH WKHVH JXLGHV HQWHU PDNH DQ LQFLVLRQ RQ WKH VNLQ XQWLO WKH IHPXU ODWHUDO IDFH D .HOO\ FODPS LV LQVHUWHG XQWLO WKH ODWHUDO FRUWLFDO DQG D EOXQW GLVVHFWRU LV PDGH ZKHQ WKH FODPS LV RSHQ LQ WKH DQWHURODWHUDO DQG SURILPDO GLVWDO SODQH WKH GULOO JXLGH LV LQVHUWHG ZLWK WKH SXQFK GLVVHFWRU XQWLO FROOLGH ZLWK WKH FRUWLFDO WKH GULOO JXLGH LV SODFHG IRU D PP QDLO D KROH LV PDGH ZLWK D QDLO JXLGH DQG QDLO GLUHFWLRQ ORFDWLRQ DQG OHQJWK E\ WKH LPDJH LQWHQVL¿HU ZLWK DQWHURODWHUDO DQG REOLTXH SURMHFWLRQV OHDYLQJ PP IURP DUWLFXODU VXUIDFH RI IHPRUDO KHDG ZKLFK LV WDNHQ DV LGHDO VLJH IRU FDQFHORRXV VFUHZ PHDVXULQJ WKH SURILPDO VFUHZ VLJH WKH QDLO LV UHPRYHG DQG WKH GULOO JXLGH DQG WKH PP DUH LQVHUWHG XS WR PP EHIRUH WKH PHDVXUH DV WKH VKLUWV ZHUH LQVHUWHG XQWLO WKH ERQH LV ¿UPO\ FRQWDFWHG GULOODLQJ ZLWK WKH PP GULOO DVVLVWHG ZLWK WKH LPDJH LQWHQVL¿HU XS WR WKH UDGLDO FHQWUDO SDUW RI WKH IHPRUDO KHDG



Reconstruction Femoral Nail

Surgical Techniques

6KLUWV DUH UHPRYHG DQG WKH GLVWDO ORFNLOJ LQWHUOLQHDU OHDG LV SODFHG KROGLQJ LW ZLWK WKH EXWWHUÀ\ YDOYH DQG WLJKWHQHG ZLWK WKH \$OOHQ ZUHQFK WKH GLVWDO VKLUWV ORFDWLRQ LV PDUNHG RQ WKH VNLQ LQFLVLRQV RI DSSUR[-LPDWHO\ FP DUH PDGH WKH VFDOSHO LV LQVHUWHG XS WR WKH ODWHUDO FRUWLFDO RI IHPXU DQG D GLVVHFWRQ LV PDGH \$EOXQG GLVVHFWRQ LV PDGH ZLWK D .HOO\ FODPS ZKLFK LV LQVHUWHG LQWR WKH LQFLVLRQ DQG RSHQLQJ WKH WLSV WKH VKLUW DQG WKH SXQFK GLVVHFWRU DUH LQVHUWHG RQ DQWHUHVWVWHULRU DQG ODWHUDO ZD\ XS WR WRXFKHV WKH IHPXU FRUWLFDO ODWHUDO WKH PP GULOO JXLGH LV SODFHG WKH GULOOLOJ RI WKH PRVW GLVWDO KROH LV PDGH FURVVLQJ WKURXJK WKH WZR FRUWLFDOV WKH GULOO JXLGH LV UHPRYHG DQG WKH VFUHZ OHQJWK LV PHDVXUHG D FXUE LV SODFHG RQ WKH ODWHUDO FRUWLFDO WKH VFUHZ LV LQVHUWHG WKH VDPH PDQHYHU LV UHSHDWHG IRU WKH GLVWDO SUR[LPDO KROH WKH VKLUWV WKH VWULSV WKH ÀHJ KDQGOH DUH UHPRYHG DQG WKH FORVXUH VFUHZ LV LQVHUWHG



7KH LQFLVLRQV SHUIRUPHG DUH VXWXUHG ZLWK QORQ RU ZLWK WKH VXWXUH SUHIHUHG E\ WKH RUWKRSHGLF VXUJHRQ ZKHQ VXUJLFDO SURFHGXUH LV FRPSOHWHG GUHVVLQJ DQG HODVWLF EDQGDJH DUH SODFHG LQ WKH SHOYLF OLPE

Postsurgical Care:

*LYHQ WKH VWDELOLWÀ\ DIRUGHG WR ¿HG IUDFWXUH WKH H[WHUQDO VWDELOLJDLWRQ ZLOO QRW EH QHFHVVDU\ SKVLFDQ PHDQV FDQ EH SODFHG WR UHGXFH HGHPD DQG EOHGLOJ DW D VXUJHRQ GLVFUHWLRQ

7KH RSWLPDO WLPH WR LQLWLDWH PRYHPHQW DQG WKH SDUWLDO DQG WRWDO VXSSRUW RULJLQDOO\ DVVLVWHG LV DW WKH RUWKRSHGLF VXUJHRQV GLVFUHWLRQ DV ZHOO DV WKH VXWXUH SHUPDQHQLF WLPH

Interlocking Tibial Nail

Surgical Techniques

Preoperative planning:

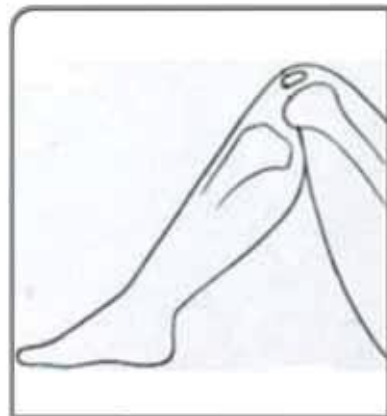
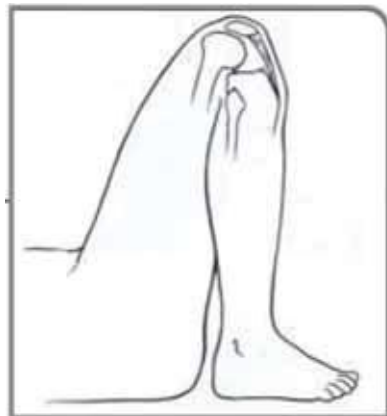
Nail diameter and length can be established by means of the healthy extremity x-ray, keeping in mind a

WR PDJQLFDWLRQ 6RPH VXUJHRQV XVH DQ LPDJH LQWHQVLHU VXSHULPSRVLQJ WKH QDLO WR WKH DIIHFWHG H[WUHPLW\ WR HVWDEOLVK LWV OHQJWK DQG WR REWDLQ D VXUH GLVWDQFH ZLWKRXW DIIHFWLQJ WKH DQNOH DUWLFXODWLRQ \$QRWKHU PHWKRG LV WR PHDVXUH IURP WKH WLELDO WXEHURLW\ SUR[LPDO SDUW WR WKH DQNOH LQWHUDUWLFXODU OLQH PP VKRXOG EH UHGXFHG RU PLQLPLJHG

:KHQ RSHUDWLRQ YHU QDUURZ ERQHV WKH VPDOOHVW GLDPHWHU QDLO LV VXJHVVHG DV FKRVLQJ E\ WKH VXUJHRQ DQG GHSHQLQJ IUDFWXUH FRPPLQDWLRQ DQG VWDELOLW\ LV UHFRPPHQGHG D ELJHU GLDPHWHU QDLO WR REWDLQ EHW- WHU \LQJ DQG VWDELOLW\

Patient position:

3DWLHQW PXVW EH LQ VXSLQH SRVLWLRQ DQG WKH H[WUHPLW\ WKDW ZLOO EH RSHUDWHG LQ D GHJUHHV NQHH \LQHQW 7KHUH DUH DFFHVVURULHV WKDW KHOS NHHS WKH \LQ LI D OHJ WUDFWLRQ PXVW EH SHUIRUP LQ RUGHU WR PDNH D IUDFWXUH UHGXFWRQ WR GR VR WKH 2UWKRSGLVW 6XUJHRQ PD\ FKRRVH D WUDQVFDQFHDO 6WHLQDQW QDLO RU D IUHH HOHFWLRQ



Patient position:

\$ LQFLVLRQ LV SHUIRUPHG LQ WKH SDWHOOD GLVWDO SROH XQGHUVLGH PLGOLQH WR WKH WLELDO WXEHURLW\ DQWHULRU VLGH LW LV GLVVHFWHG E\ SODQH WKH SDWHOODU WHQGRQ is located and the peritendon is dissected, it is incised in its middle part, it LV VHSUDWHG E\ DQ XPELOLFDQ WDSH ,W PD\ DOVR EH DSSURDFK ODWHUDO WR PHGL- DOO WHQGRQ

(LWKHU RI WKHVH WZR RSWLRQV VKRXOG SURYLGH D FRPIRUWDEOH YLHZ RI WKH DQWH- ULRU VLGH EHWZHHQ WKH MRLQW HGJH DQG WKH DQWHULRU WLELDO WXEHURLW\

\$ WURFKDU LV LQVHVVHG LQ WKH WLELDO PHWDSKIVLQ LQ ULJKW DQJOH WKHQ OHDQ RYHU IROORZLQJ WKH SXQFK FXUYDWXUH WR UHDFK DQG ORFDWH WKH VSLQDO FDQDO SODFLQJ WKH OHJ WR GHJUHHV DQG LQVHUW WKH UHDPHUV SURJUHVVLYHO\ IURP PP GLDPHWHU WR DQ LQFK JUHDWHU WKDQ WKH QDLO FKRVLQJ E\ WKH 2UWKRSGLF 6XUJHRQ



Interlocking Tibial Nail

Surgical Techniques

Nail placement in the instrumental set:

7KH QDLO PXVW EH LQVWDOOHG DQG FDOLEUDWHG SULRU WR XVH LQVLGH WKH WLELDO WR FRUURERUDWH EROWV IUHH SDVVDJH DQG H[DFW VPPHWU

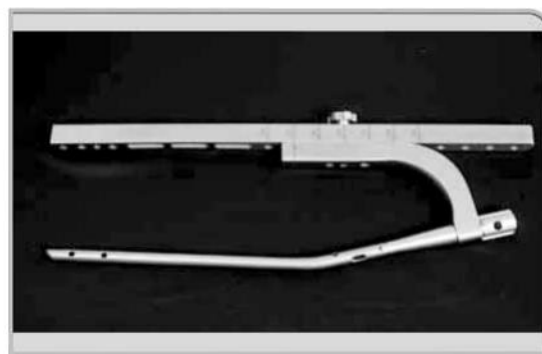
1

Place the nail in the insertion handle



2

+ROG WKH QDLO RQ WKH LQVHUWLRQ KDQGOH ZLWK WKH LQJ VFUHZ DQG WLJKWHQ WKH QDLO FRQ-QHFWRU DVVLVWLQJ ZKLW D DOOHQ ZUHQFK IRU OHYHUDJH HQWHULQJ LW WKURXJK WKH ORFNLQJ QXW KROHV



3

3ODFH WKH JXLGH DFFRUGLQJ WR QDLO OHQJWK FRLQLGLQJ WKH JULS KDQGOH DUURZV ZLWK WKH JXLGH DUURZV



4

6HFXUH WKH JXLGH SUHVVLQJ ZLWK D DOOHQ ZUHQFK WKH ORFNLQJ QXW

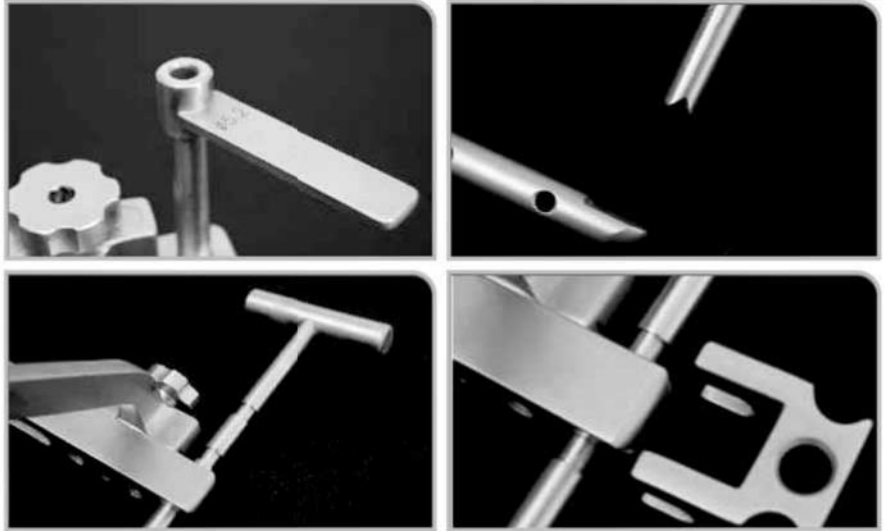


Interlocking Tibial Nail

Surgical Techniques

5

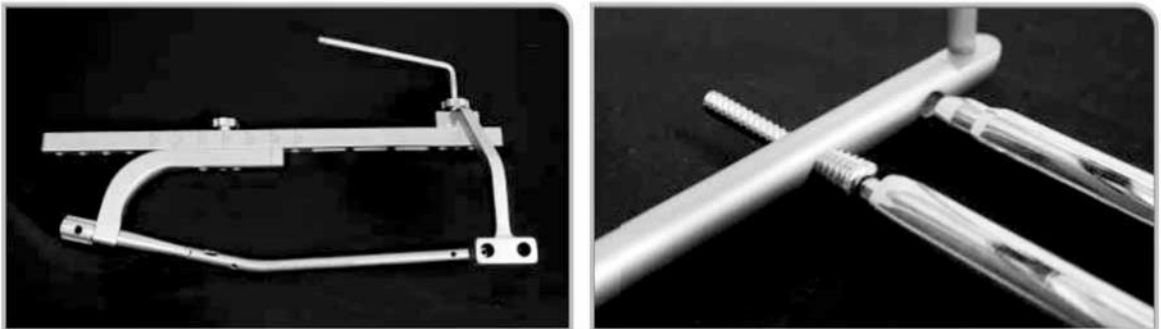
3ODFH D PP GULOO VOHHYH LQ WKH FDOL-
EUDWHG RUL&FH FHQWHULQJ WKH GLVWDO
ÀDW VLGH



5HPRYH WKH GULOO VOHHYH SODFH WKH 37
handled stabilizing rod and lock
WKH ORFNLQJ EORFN

6

7R FDOLEUDWH WKH GLVWDO SHUIRUDWLRQ GLVWDO JXLGH KROG LW RQ WKH JXLGH URG KROGLQJ LW ZKLW WKH ORFNLQJ QXW DQG
WLJKWHQ LW ZLWK WKH DOOHQ ZUHQFK WKH JXLGH VOHHYH DQG WKH PP GULOO VOHHYH DUH LQVHUWHG DQG PXVW EH YHUL-
&HG WKH HQWHU IUHHO\ LQWR WKH GLVWDO QDLO KROHV



7

6HFXUH RQFH PRUH DOO ORFNLQJ QXVV WLJKWHV DQG
UHPRYH WKH ORFNLQJ EORFN DQG WKH 37 KDQGOH VWDEL-
OLJLQJ URG



Interlocking Tibial Nail

Surgical Techniques

Nail insertion:

2QFH DVVHPEOHG WKH QDLO RQ WK LQVHUWLRQ KDQGOH DQG ZLWK WKH NQHH DW GHJUHHV DQG IRU WKH LQVHUWLRQ LQWR WKH WLELDO E\ WKH KROH PDGH LQ WKH DQWHULRU WLELDO WKH XQLYHUVDO DGDSWHU LV SODFH DQG ZLWK VRIW WDSV LV LQVHUWHG DORQJ WKH WLELDO VKDIW GLUHFWHG E\ WKH LPDJH LQWHQVLHU EHLQJ VXUH QRW WR KDYH

made a false passage, observing both anteroposterior and ODWHUDO LQ SURMHFWLRQ ZLWK DQJXODWLRQ WR DQWHULRU

3HUIRUP IUDFWXUH UHGXFWRQ DLGHG E\ WKH LPDJH LQWHQVLHU DQG VOLGH WKH QDLO XQWLO WKH SUR[LPDO PDUN H[FHHGV WKH EH-JLQQLQJ RUL¿FH &KHFN JXLGH LV DQDWRPLFDOO\ DOLJQ ZLWK WKH H[WUHPLW\ LW VKRXOG DOVR EH FHQWHUHG RQ WKH DQWHULRU WLELDO VSLQH



Distal and proximal locking:

SIWHU HQWHULQJ WKH QDLO SODFH WKH JXLGH LQ DFFRUGDQFH ZLWK WKH DVVHPEOH SHUIRUP D VNLQ LQFLVLRQ LQ WKH OHJ DQWHULRU VLGH ZKHUH LW PDUNV WKH JXLGH ODVW KROH LW LV LQ EOXQW IRUP GLVVHFWHG DQG WKH GULOO VOHHYH LV LQVHUWHG DOO WKH ZD\ XQWLO LW UHDFKHV WKH WLELDO DQWHULRU FRUWLFDO GULOO ZLWK D PP GULOO ELW XQWLO ORFDWLRQ WKH QDLO UHPRYH WKH GULOO VOHHYH DQG SODFH WKH ³⁷ KDQGOH VVDELOLJLQJ URG DQG ¿ WKH ORFNLQJ EORFN

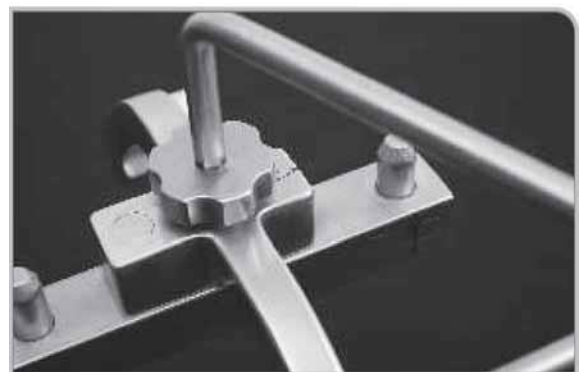
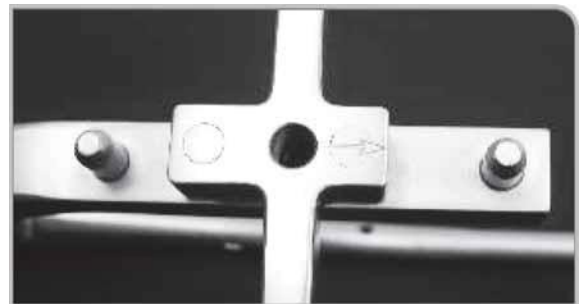
3ODFH WKH JXLGH IRU GLVWDO ORENLQJ WZR LQFLVLRQV DUH PDGH LQ WKH VNLQ DW ORENLQJ SRLQV LW LV GLVVHFWHG E\ SODQHV XQWLO LW UHDFKHV WKH WLELDO PHGLDO FRUWLFDO WKH JXLGH VOHHYH DQG WKH

mm drill sleeve are inserted, drillings are made, the drill sleeve is UHPRYH DQG WKH VFUHZV OHQJKW LV PHDVXUHG WKH 7 KDQGOH GULOO LV LQVHUWHG XQWLO GULOOHQJ ERWK FRUWLFDOV WKHQ VFUHZV DUH SODFHG 6FUHZV KHDG JRRG LQVHUWLRQ LV YHUL¿HG 7KH GLVWDO WDUJHW GHYLFH DQG WKH LQVHUWLRQ KDQGOH DUH UHPRYHG

5HPRYH WKH GLVWDO WDUJHW GHYLFH WKH SUR[LPDO WDUJHW GHYLFH LV SODFHG ¿LQJ LW ZLWK D EROW DQG WLJKWHQ LW ZLWK D DOOHQ ZUHQFK LQVHUW WKH VOHHYH JXLGH DQG WKH PP GULOO VOHHYH PHGLDO DQWHULRU DQG ODWHUDO LQFLVLRQV DUH PDGH LQ EOXQW IRUP GLVHFV XQWLO WKH FRUWLFDOV DUH ORFDWHG KROHV DUH PDGH WKH GULOO VOHHYH LV UHPRYHG DQG VFUHZV PHDVXUHPHQW LV GRQH LQVHUW WKH 7 KDQGOH GULOO DOO WKH ZD\ WKURXJK WKH VFRQG FRUWLFDO DQG LQVHUW WKH VFUHZ WKH PHGLDO RU ODWHUDO VFUHZ PXVW EH LQVHUWHG

7KH UHVW RI WKH VHW LV UHPRYHG E\ XQVFUHZLQJ IURP WKH QDLO WKH SUR[LPDO WDUJHW GHYLFH DQG SODFH WKH RFFOXVLRQ VFUHZ LQ WKH QDLO SUR[LPDO VLGH

6XWXUH ZLWK QORQ WKH SUR[LPDO DQG GLVWDO KROHV VXWXUH WKH SDWHOODU WHQGRQ WKH SHULWHQGRQ ZLWK YLFUO LI LW LV VR FKRVHQ E\ 2UWKRSGLF 6XUJHRQ DQG WKH VNLQ ZLWK QORQ



Interlocking Humeral Nail

Surgical Techniques

Preoperative planning:

IDLO GLDPHWHU DQG OHQJWK FDQ EH VHW E\ ; UD\ RI WKH KHDOWK\ OLPE LI SRVVLEOH WR XVH DV WHPSODWHV WDNLQJ LQWR DFRXQW WKH PDJQL\FDWLRQ AXFWXDWLQJ EHWZHHQ DQG 6RPH VXUJHRQV XVH WKH LPDJH LQWHQVLHU RYHU\LQJ WKH QDLO WR DIIHFWHG OLPE WR VHW WKH GLDPHWHU DQG JHW D VDIHW\ GLVWDQFH IURP WKH MRLQW DV ZHOO DV WKH QDLO LQVHUWLRQ SRLQW

,Q YHU\ QDUURZ ERQH V LW LV VXJJHVWHG WR SODFH WKH VPDOOHU GLDPHWHU QDLO XSQ VXUJHRQV FKRLFH DQG GHSHQGLQJ RQ IUDFWXUH FRPLQDWLRQ DQG VWDELOLW\ LW LV UHFRPPHQGHG WR XVH D ODUJHU GLDPHWHU QDLO LQ RUGHU WR JHW PRUH VXSSRUW DQG VWDELOLW\

Patient Position:

,W LV UHFRPPHQGHG WR SRVLWLRQ WKH SDWLHQW RQ IUDFWXUH WDEOH LQ 'EHDFK FKDLU' RQ ODWHUDO GHFXELWXV RU VX-SLQH SRVLWLRQ LQ RUGHU WR IDFLOLWDWH IUDFWXUH UHGXFWRQ DQG VXUJFDO DSSURDFK DW VXUJHRQV GLVFUHWLRQ

Surgical Approach:

\$ ODWHUDO LQFLVLRQ RI DFURPLRFODYLFXODU MRLQW RI WR FP OHQJWK WKH DSSURDFK FDQ EH H[WHQGHG LQ FDVH RI REHVH SDWLHQWV LQ WKH GLUHFWLRQ RI WKH DUP GLVVFHWLQJ E\ SODQH XS WR WKH WLS RI JUHDWHU WXEHRVLW\ GLV-VHFWLQJ WKH URWWRU FXII DQG UHDFKLQJ WKH WURFKLWHU WLS

7KH VWDUWLQJ EUDGDZO ZLOO EH LQWURGXFHG IROORZLQJ LWV FXUYDWXUH ZKLFK ZLOO EH FDOLEUDWHG ZKHQ HQWHULQJ WR PHGXOODU FKDQQHO WKHQ WKH DQG PP ULPD ZLOO EH XVHG WR HQODUJH WKH FKDQQHO GLDPHWHU GHSHQGLQJ RQ WKH GLDPHWHU FKRVHQ E\ RUWKRSHGLF VXUJHRQ

Interlocking Humeral Nail

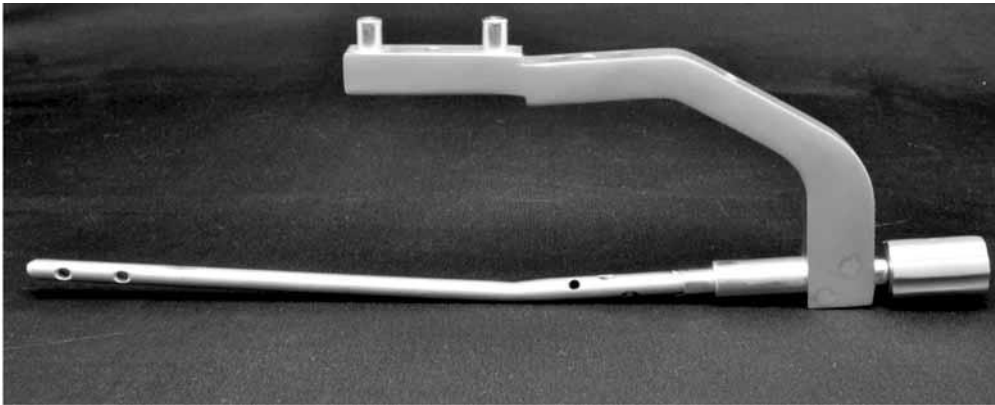
Surgical Techniques

Nail assembling in the instrument:

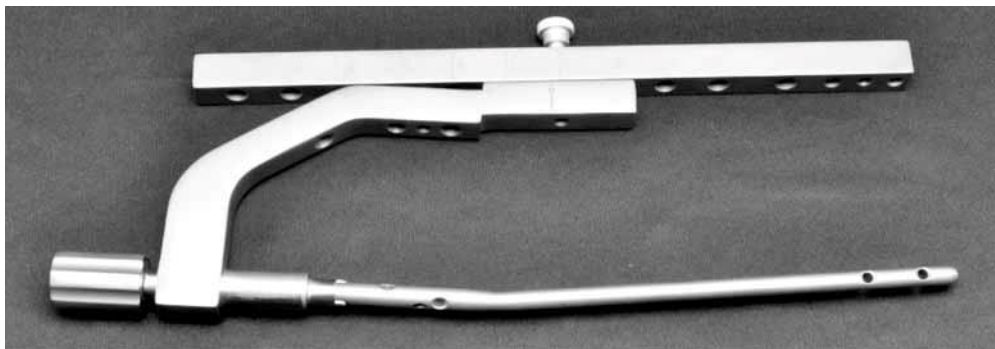
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1
3ODFH WKH QDLO LQ WKH FODPSLQJ ÀH[KDQGOH FRLQLGLQJ ZLWK QRWFKHV DQG WLJKWHQLQJ ZLWK FODPSLQJ VFUHZ

2
+ROG WKH QDLO LQ WKH ÀH[KDQGOH ZLWK WKH FODPSLQJ VFUHZ DQG WLJKWHQ WKH FUDQN DVVLVWLQJ ZLWK DQ \$OOHQ ZUHQFK IRU OHYHUDJH LQVHUWLQJ LQ WKH FUDQN KROHV



3
3ODFH WKH LQVHUWLQJ OHDG



4
(QVXUH WKH LQVHUWLQJ OHDG WLJKWHQLQJ WKH EXWWHUÀ\ YDOYH ZLWK DQ \$OOHQ ZUHQFK

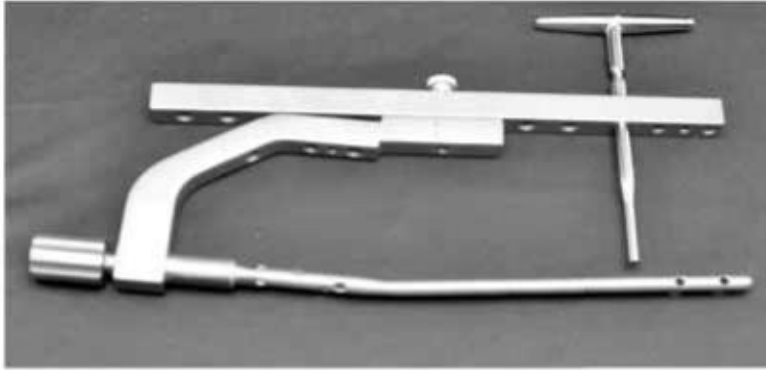


Interlocking Humeral Nail

Surgical Techniques

5

3ODFH WKH 37° VWDELOLJHU DQG LQVHUW WKH ORFN WR EH XVHG IRU WKH VWDELOLJHU KROHV



6

&DOLEUDWH WKH GLVWDO GULOO JXLGH ZLWK WKH EXWWHUÀ\ YDOYH DQG ùPO\ WLJKWHQLQJ ZLWK DQ\$OOHQ ZUHQFK PDN-LQJ VXUH WKDW WKH JXLGH VKLUWV SHUIHFWO\ PDWFKHV ZLWK QDLO GLVWDO KROHV



7

(QVXUH RQFH DJDLQ WKH VWUHQJWK RI DOO WKH EXWWHUÀ\ YDOYHV DQG UHPRYH WKH ORFN DQG 37° VWDELOLJHU

Interlocking Humeral Nail

Surgical Techniques

Nail insertion:

2QFH WKH QDLO LV DVVHPEOHG LQ WKH ÀHJ KDQGOH LQVHUW LW ùUPO\ IROORZLQJ WKH KXPHUDO VKDIW OHDGLQJ E\ WKH LPDJHV LQWHQVL¿HU PDNLQJ VXUH WKDW D IDOVH YLD KDV QRW EHHQ SHUIRUPHG 2EVHUYLQJ ERWK DQWHUR SRVWHULRU DQG ODWHUDO SURMHFWLRQ \RX FDQ KLW ZLWK WKH LPSDFWRU WR DOZDV LQWURGXFH ZLWK WKH ÀHJ KDQGOH JXLGH GLUHFVHG WRZDUG WKH DUP ODWHUDO VLGH

3HUIRUP IUDFWLRQ UHGXFWRQ DLGHG E\ WKH LPDJHV LQWHQVL¿HU DQG VOLGH WKH QDLO XQWLO WKH SUR[LPDO PDUN H[FHHGV WKH VWDUW RI WKH HQW\ KROH

&KHFN WKH DOLJPHQW RI WKH ÀHJ KDQGOH WR SHUIRUP WKH FRPSOHWHO\ ODWHUDO\ EORFNLQJ

7KH LQWHUOLQHDU OHDG LV SODFHG WR ORFDWH WKH GLVWDO KROHV DORQJ ZLWK WKH VWDELOLJHU DUP WKH VKLUW JXLGH LV SODFHG DQG D PDUN LV PDGH ZLWK WKH VKLUW JXLGH ZKHUH WKH LQFLVLRQ ZLOO EH SHUIRUPHG LQ ZKLFK WKH VWDEL-OLJHU ZLOO EH LQVHUWHG D PP GULOOHQJ LV PDGH ZLWK WKH VFDOSHO D .HOO\ FODPS LV LQVHUWHG DQG GLVHFVHG WR WKH OHQJWK DQG ZLGWK RI WKH LQFLVLRQ WKH VKLUW JXLGH LV LQVHUWHG ZLWK GLVHFWRU EUDGDZO XS WR UHDFK WKH DQWHULRU FRUWLFDO WKH EUDGDZO LV UHPRYHG WKH PP GULOO ELW JXLGH LV LQWURGXFHG D GULOOHQJ ZLWK WKLV GULOO ELW LV PDGH RI WKH KXPHUXV DQWHULRU FRUWLFDO ZDVWHV DUH UHPRYHG DQG FOHDQHG ZLWK WKH 37 IUHH GULOO ELW WKH DERYH VWDELOLJHU LV LQVHUWHG KROGLQJ LW ZLWK WKH ORFN

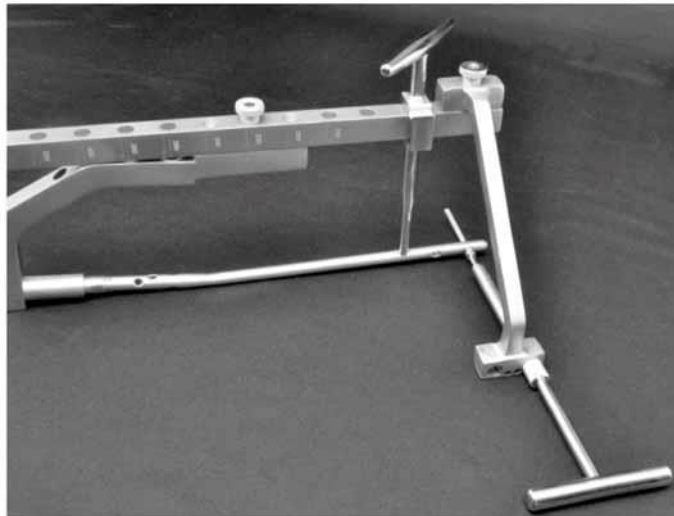


Interlocking Humeral Nail

Surgical Techniques

Distal and proximal locking:

3ODFH VKLUWV DQG GULOO ELW JXLGHV LQ WKH KROHV ZKHUH WKH QDLO GLVWDO EORFNLQJ ZLOO EH SHUIRUPHG WKH ORFD-
WLRQ LV PDUNHG RQ WKH VNLQ WZR LQFLVLRQV RI PP HDFK DUH PDGH WKH ZRXQG LV GLVVHFVHG WR WKH OHQJWK DQG
ZLGWK ZLWK WKH .HOO\ FODPS WKH VKLUW LV LQVHUWHG ZLWK WKH GLVVHFWRU EUDGDZO XS WR ODWHUDO FRUWLFDO ORFDWLRQ
EUDGDZO LV UHPRYHG WKH PP GULOO ELW JXLGH LV SODFHG KXPXUV GULOOHQJ LV PDGH WKH GULOO ELW DQG GULOO
ELW JXLGH DUH UHPRYHG WKH VFUHZ OHQJWK LV GHWHUPLQHG XVLQJ WKH GHSWK JDXJH WKH PP VFUHZ LV
LQVHUWHG WKH VDPH PDQHXYHU LV SHUIRUPHG IRU WKH PRUH SUR[LQDO KROHV RI WKH GLVWDO RQH

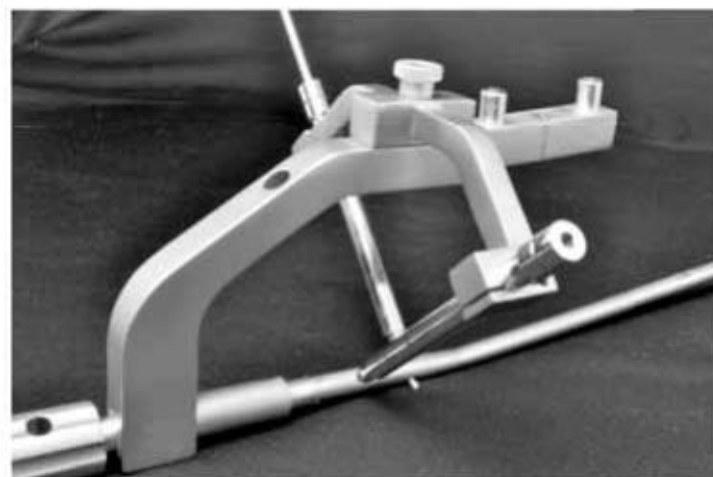


Interlocking Humeral Nail

Surgical Techniques

Distal and proximal locking:

3ODFH VKLUWV DQG GULOO ELW JXLGHV LQ WKH KROHV ZKHUH WKH QDLO GLVWDO EORFNLQJ ZLOO EH SHUIRUPHG WKH ORFD-
WLRQ LV PDUNHG RQ WKH VNLQ WZR LQFLVLRQV RI PP HDFK DUH PDGH WKH ZRXQG LV GLVVHFVHG WR WKH OHQJWK DQG
ZLGWK ZLWK WKH .HOO\ FODPS WKH VKLUW LV LQVHUWHG ZLWK WKH GLVVHFWRU EUDGDZO XS WR ODWHUDO FRUWLFDO ORFDWLRQ
EUDGDZO LV UHPRYHG WKH PP GULOO ELW JXLGH LV SODFHG KXPXUV GULOOHQJ LV PDGH WKH GULOO ELW DQG GULOO
ELW JXLGH DUH UHPRYHG WKH VFUHZ OHQJWK LV GHWHUPLQHG XVLQJ WKH GHSWK JDXJH WKH PP VFUHZ LV
LQVHUWHG WKH VDPH PDQHXVHU LV SHUIRUPHG IRU WKH PRUH SUR[LPDO KROHV RI WKH GLVWDO RQH



Interlocking Humeral Nail

Surgical Techniques

Distal and proximal locking:

7KH VDPH VWHSV WKDW ZHUH SHUIRUPHG IRU ORFDWLRQ GULOODLQJ DQG EORFNLOJ XVHG IRU GLVWDO KROHV WKH SURSHU OHQJWK VFUHZV DUH LQVHUWHG 7KH UHGXFWRQ DQG VFUHZ OHQJWK DUH YHULHG LI WKHUH LV QR SUREOHP WKH QDLO FODPS LV UHPRYHG WKH FORVXUH FDS LV LQVHUWHG LW FDQ EH FORVHG ZKHUH WKH URWDWRU FXII VHSDUDWLRQ ZDV PDGH WKH JUHDVH LV VXWXUHG ZLWK YLFUO DQG WKH VNLQ ZLWK QORQ GHSHQLQJ RQ WKH RUWKRSHGLF VXUJHRQV SUHIHUUHQFHV



7KH EDQGDJH DQG VKRXOGHU LPPRELOLJHU RU VSOLQW DUH SODFHG DQW WKH VXUJHU LV FRPSOHWHG

Postsurgical care:

*LYHQ WKH VWDELOLW\ DIIRUGHG WR 4HG IUDFWXUHV E\ WKH \$UJWW LQWUDPHGXOODU\ QDLO IRU KXPXUVV WKH HJWHUQDO VWDELOLJDWLRQ WKURXJK VSOLQWV ZLOO QRW EH QHFHVVDU\ 7KH SODFHPHQW RI SKVLFDO PHDQV WR UHGXFH HGHPD DV ZHOO DV WKH RSWLPDO WLPH WR LQLWLDWH PRYHPHQW WKH UHPRYDO RI VWLWFKHV LV DW WKH RUWKRSHGLF VXUJHRQ GLVFUHWLRQ