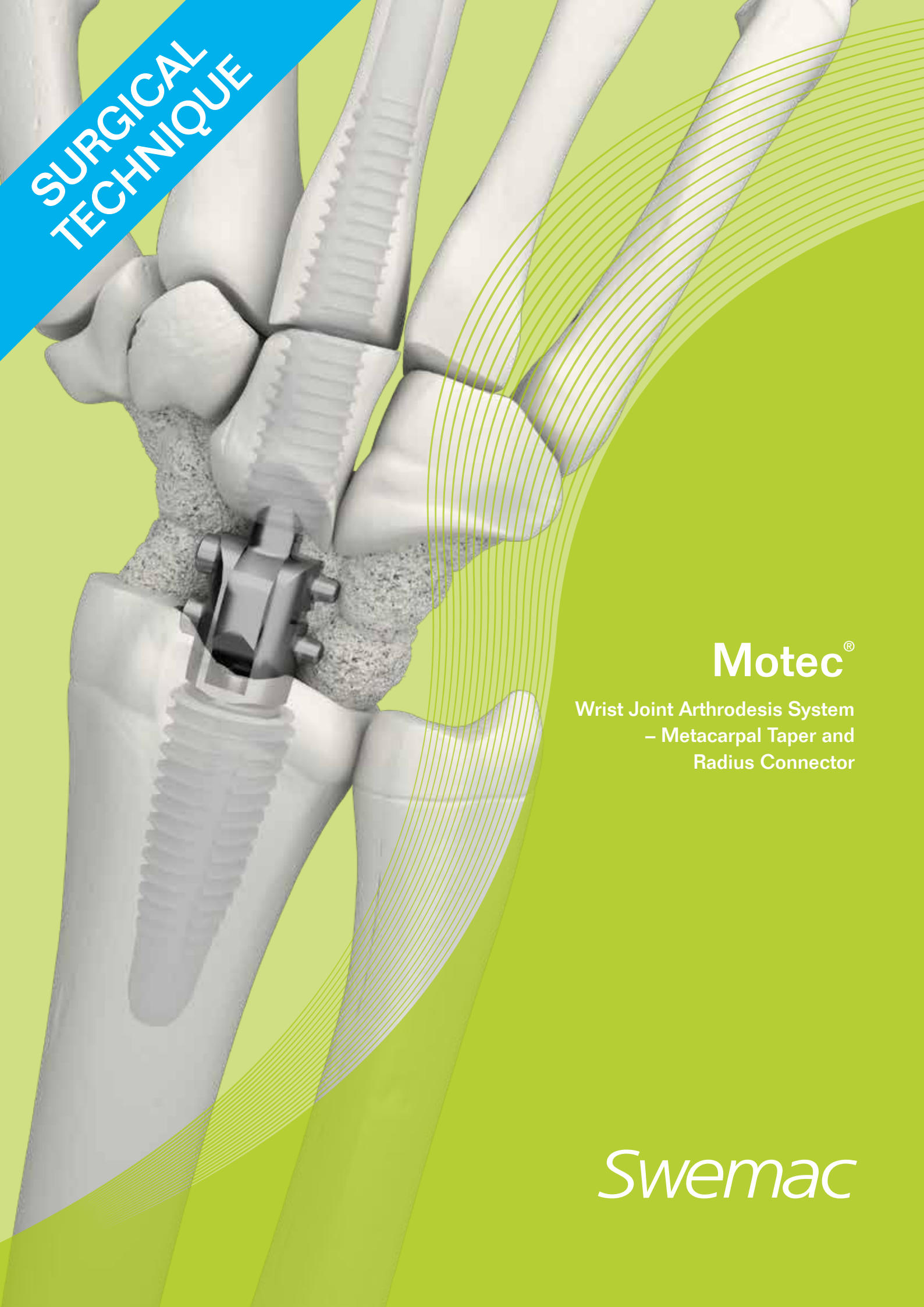


**SURGICAL
TECHNIQUE**



Motec[®]

Wrist Joint Arthrodesis System
– Metacarpal Taper and
Radius Connector

Swemac

Motec®

Wrist Joint Arthrodesis System

The system has been developed to enable easy conversion of the Motec® Wrist Joint Prosthesis to a total wrist arthrodesis.

The Motec Wrist Joint Arthrodesis System provides salvage options that limit unnecessary implant removal by taking advantage of pre-existing stable and osseointegrated implants from the Motec Wrist Joint Prosthesis. This preserves the bone available for arthrodesis by minimising bone loss which would otherwise occur during removal of well-fixed implants. The intramedullary system has been developed to reduce soft tissue irritation from hardware and the associated need for secondary implant removal.

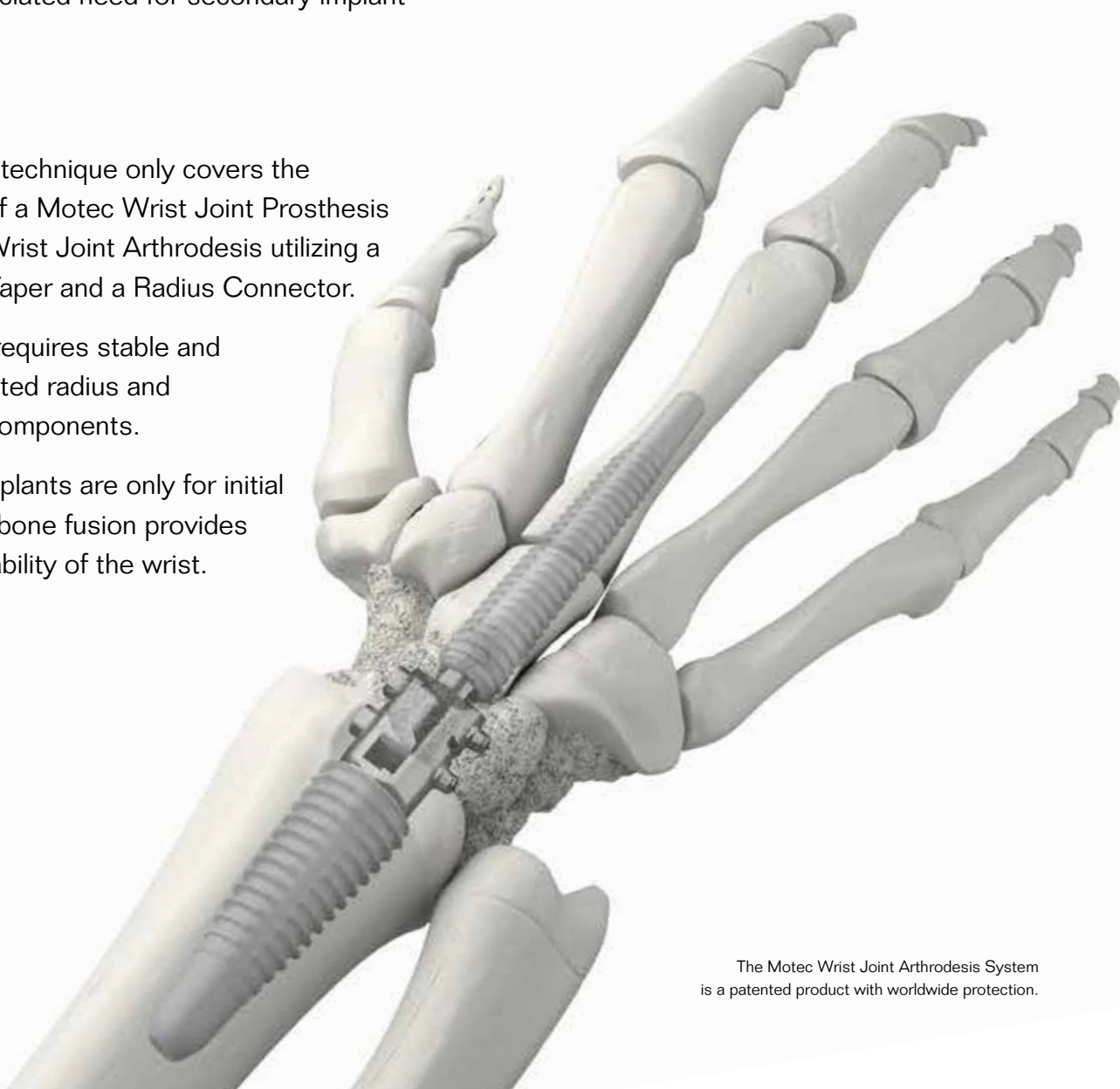
This surgical technique only covers the conversion of a Motec Wrist Joint Prosthesis to a Motec Wrist Joint Arthrodesis utilizing a Metacarpal Taper and a Radius Connector.

The system requires stable and osseointegrated radius and metacarpal components.

Note: The implants are only for initial fixation. The bone fusion provides long term stability of the wrist.

Features and benefits

- Fully compatible salvage procedure.
- Minimizes the need for unnecessary implant removal procedures.
- Minimally invasive.
- Less tension on soft tissue during surgery.
- Adjustable rotation angle.
- The angle of the arthrodesis can be set at 0°, 15° or 30° in extension (or 0°, 15° or 30° in flexion).
- The angle of arthrodesis can be decided at any stage in the operation procedure.
- Rigid permanent fixation.
- The Radius Connector is available in two sizes; Medium and Long.
- Manufactured from blasted Ti6Al4V to optimize osseointegration.



The Motec Wrist Joint Arthrodesis System is a patented product with worldwide protection.

Indication

- Conversion from a Motec Wrist Prosthesis

Contraindications

The physician's education, training and professional judgement must be relied upon to choose the most appropriate device and treatment. Conditions presenting an increased risk of failure include:

- Any active or suspected latent infection, sepsis or marked local inflammation in or around the surgical area.
- Severe osteoporosis, insufficient quantity or quality of bone/soft tissue.
- Material sensitivity, documented or suspected.
- Physical interference with other implants during implantation or use.
- Compromised vascularity, inadequate skin or neurovascular status.
- Compromised bone stock that cannot provide adequate support and/or fixation of the device due to disease, infection or prior implantation.
- Patients who are unwilling or incapable of following post-operative care instructions.
- Other physical, medical or surgical conditions that would preclude the potential benefit of surgery.
- Previous open fracture or infection in the joint.

Pre-operative planning

Ensure that the instrumentation sets for both the Motec Wrist Prosthesis and Motec Wrist Arthrodesis System are available in the operating theatre.

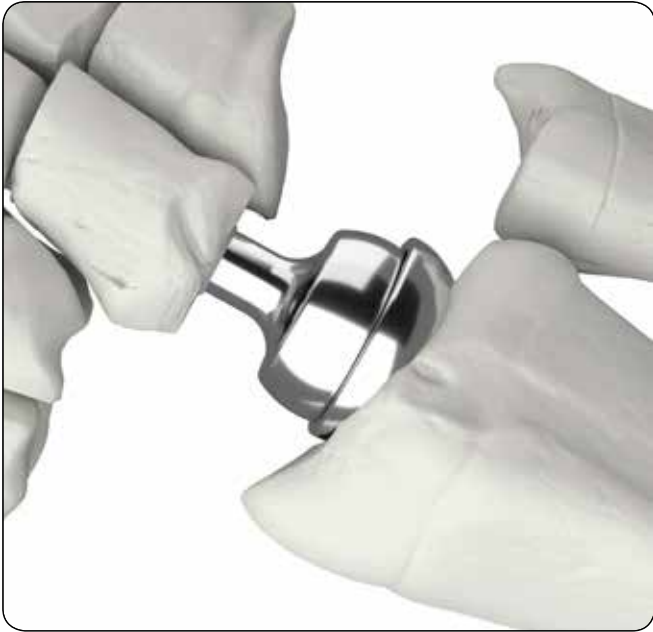
To use the Motec Wrist Arthrodesis system safely the surgeon is required to have extensive knowledge about the implant, the methods of application, instrumentation and the recommended surgical technique for the implant.

The surgeon should evaluate each patient scheduled for arthrodesis individually and choose the most appropriate device and treatment for each case. In otherwise healthy patients, optimal function in the wrist is usually achieved with the wrist fused in slight extension (10-30°). In cases of bilateral wrist fusions, one wrist should be fused in slight flexion to aid with personal hygiene care.

For detailed information about the patient positioning and incision see the Motec Wrist Prosthesis surgical technique.

Surgical Technique

1. Motec Wrist Prosthesis



For detailed information about the position of the patient, incision and the Motec Wrist Prosthesis, see the Motec Wrist Prosthesis system brochure and the surgical technique.

2. Remove the Metacarpal Head



Gently pull the hand downwards until the Metacarpal Head luxates from the Radius Cup.



Keep the wrist in maximum flexion and use the Impactor to release the Metacarpal Head from the Metacarpal Threaded Implant. Remove the Metacarpal Head.

3. Remove the Radius Cup



Use the Cup Remover to release the Radius Cup from the Radius Threaded Implant. The Cup Remover is compatible with both the metal and plastic Cups. Place the tips of the Cup Remover between the Radius Threaded Implant and the Radius Cup. If needed; remove bone to gain access to the neck of the Cup. Keep the Cup Remover perpendicular to the Radius Threaded Implant and tap gently with the Hammer.

The Radius Cup will release from the conical press-fit inside the Radius Threaded Implant. Remove the Radius Cup.



Remove any remaining cartilage and sclerotic bone between the carpal bones and the distal radius. The spongy bone surfaces provides optimal conditions for fusion of the wrist.

4. Trials



The Trials should be used to determine the correct size of implants for the joint.

The Radius Connector is available in size Medium and Long and together with the Metacarpal Taper Trial the right tension in the joint can be achieved. Start by inserting the shortest Trial, size Medium of the Radius Connector.

Note: Do not use the impactor when inserting the Trials.



The Metacarpal Taper Trial shall be used together with the Radius Connector Trial to get the right tension in the joint. The angle of the metacarpal side can also be tried out with the Trials.

5. Insert the Radius Connector



Before introducing the Radius Connector, make sure that the internal taper of the Radius Threaded Implant is clean.

Note: Place the countersunk holes on the radial side.



It is possible to adjust the Radius Connector by rotation before it is attached to the Radius Threaded Implant. When the orientation is definite, tap the connector gently with the Impactor to ensure firm seating.

6. Introduce the long Lock Screw



Assemble the Hex Driver Tip and the Tri-Lobe Handle. Use the screwdriver to lock the Radius Connector into the Radius Threaded Implant using the long Lock Screw.

Note: The long Lock Screw comes together with the Radius Connector and two short Lock Screws.



Occasionally a Metacarpal Threaded Implant, size Small, might be used for fixation in the radius bone. Those implants are missing the internal thread for tightening the long Lock Screw. In such special cases the fixation between the Threaded Implant and the Radius Connector achieved by the tapers will be enough.

7. Insertion of the Metacarpal Taper



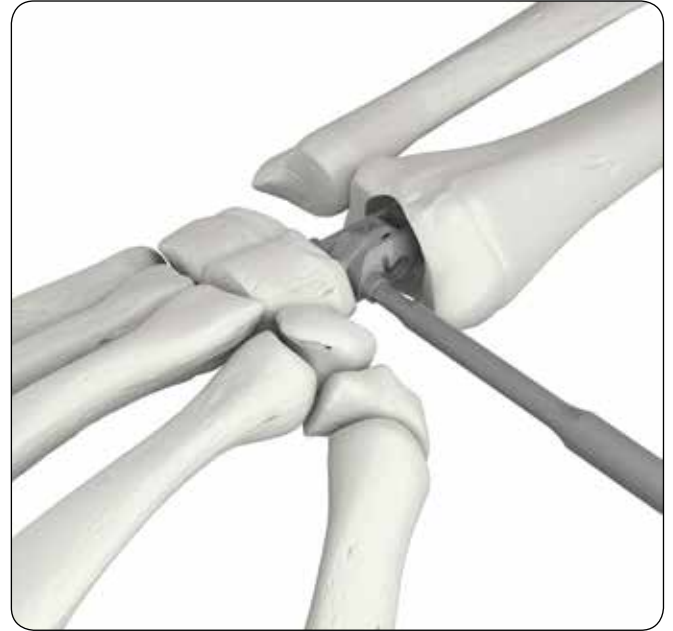
Before introducing the Metacarpal Taper, make sure that the internal taper of the Metacarpal Threaded Implant is clean. The Metacarpal Taper is then inserted into the Metacarpal Threaded Implant. Tap the Impactor gently to ensure firm seating.



Reduce the joint and evaluate stability using image intensification. Place the Metacarpal Taper in the slot of the Radius Connector.

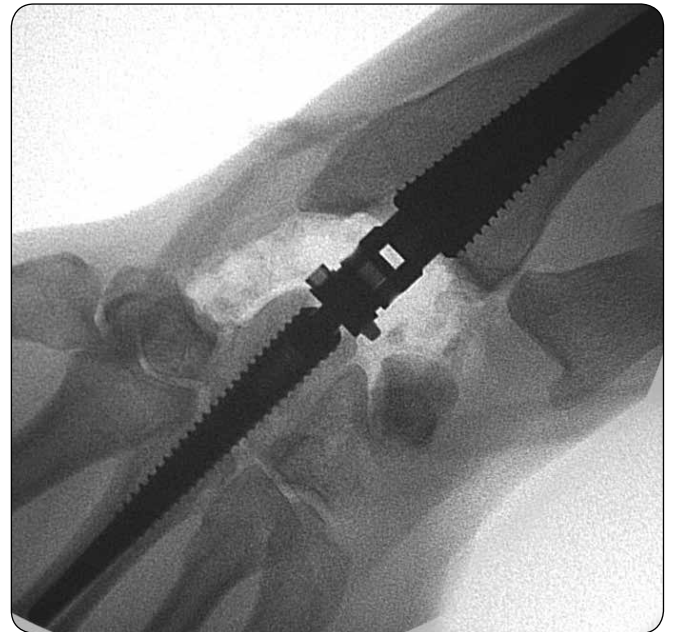
Note: Countersunk holes of the Radius Connector on the radial side.

8. Introduce the distal Lock Screw



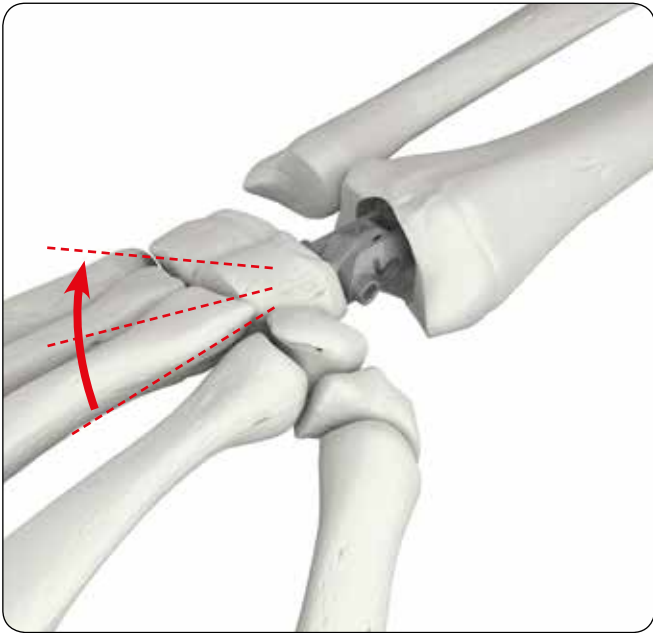
Align the distal holes of the Radius Connector and the Metacarpal Taper. Use the assembled screwdriver to introduce the distal Lock Screw into the distal hole, make sure the threads are engaged but do not tighten the screw.

Note: The distal and the proximal Lock Screws come together with the Radius Connector, and the long Lock Screw.



Leave the distal Lock Screw untightened until the angle of the Metacarpal Threaded Implant and the Metacarpal Taper, in relation to the Radius Connector, is set.

9. Choose angle



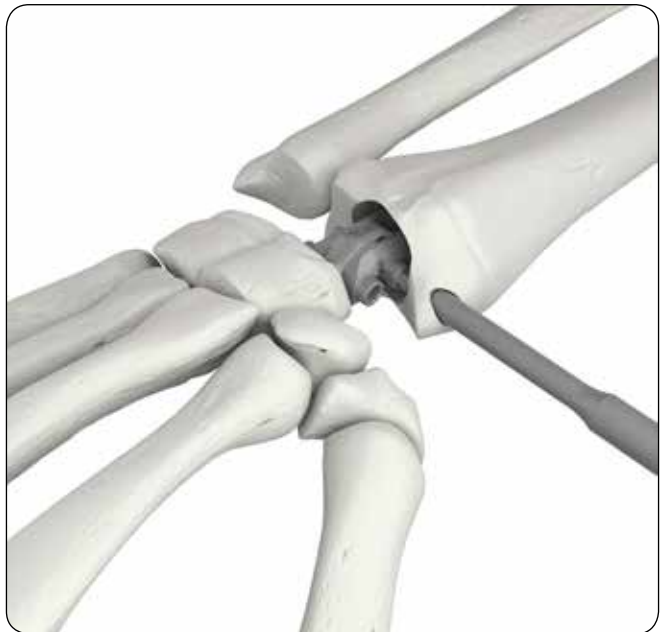
Decide which angle is best suited for the patient's needs (0°, 15° or 30° in extension).

Note: The Metacarpal Taper may be rotated 180° if necessary (0°, 15° or 30° in flexion).

10. Introduce the proximal Lock Screw

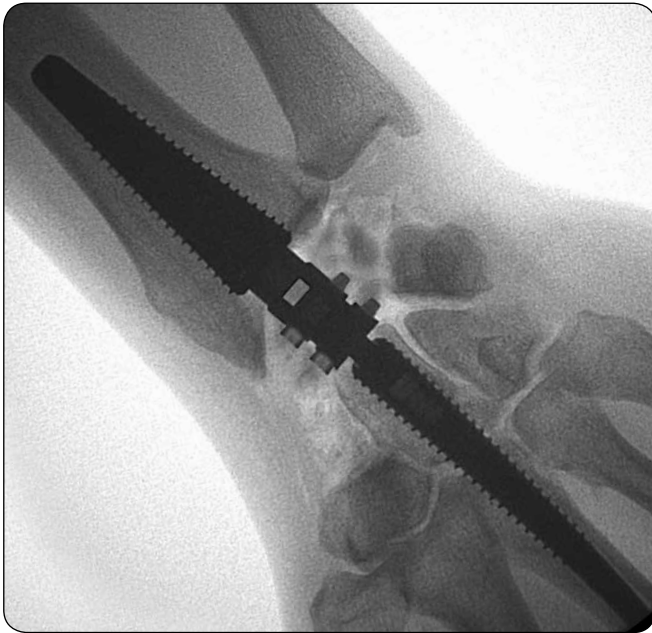


When the best suited angle is definite, introduce the proximal Lock Screw into the proximal hole of the Metacarpal Taper and Radius Connector, using the assembled screwdriver. Lock it in place using forward rotation. Finally tighten the distal Lock Screw.



If it is difficult to align the Screwdriver and the proximal Lock Screw because of radial impingement, it is possible to drill an access hole in the Radius using the 4mm drill sleeve and the 4mm drill. Make a small incision (1-2 cm) on the radial side. Drill through the Radial Styloid and then insert the Screwdriver in the cavity and connect to the proximal Lock Screw

11. Use bone to fill the wrist cavity



Make sure that the cartilage is removed both distally and proximally. Also remove the cartilage between the small bones in the joint, as in the traditional preparation of a wrist arthrodesis. All bone surfaces should be spongy. Fill the wrist cavity with bone graft to get maximum stability and optimal conditions for fusion.

Observe: The implant is only for initial fixation. The bone fusion provides long term stability of the wrist.

12. Closure



The dorsal capsule is closed. The extensor retinaculum is sutured back and a subcutaneous drainage is, if deemed necessary, introduced before the incision is closed.

Postoperative care

0-6 weeks: A short arm cast allowing free forearm rotation and finger function is recommended for 6 weeks (a plaster slab is used for the first 2 weeks). Depending on the surgeons judgement, additional weeks might be preferred. Start early hand therapy during the hospital stay, with finger, forearm, elbow and shoulder motion.

At approximately 2 weeks the slab and sutures are removed and a circular cast applied for additional 4 weeks. If there is any problem with upper extremity motion the patient shall receive hand therapy.

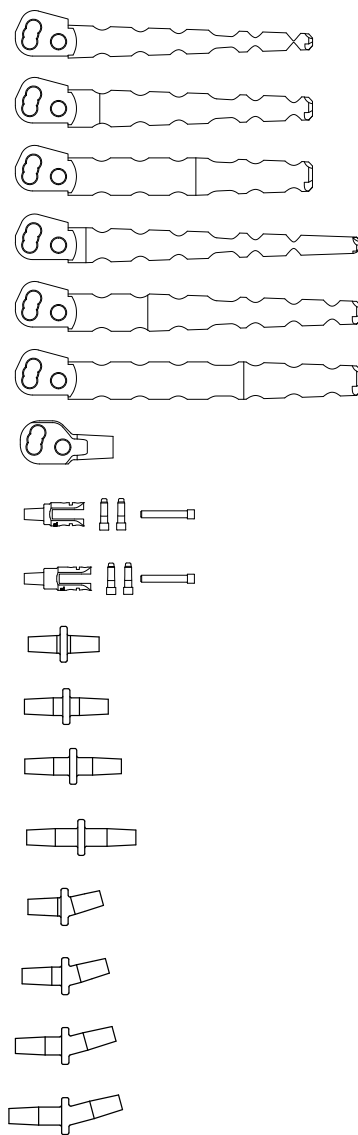
6 weeks: The cast is removed (and radiographs to evaluate bone fusion are taken). Start with limited weight bearing and gradually increase the weight. Free weight-bearing is allowed when radiographs confirm bone fusion.

Product information

● Needed for Metacarpal Taper and Radius Connector surgical technique.

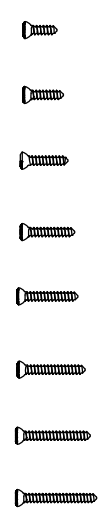
Implants

Metacarpal Nail Ø 3.3 mm Short	41-0602S
Metacarpal Nail Ø 4.7 mm Short	41-0604S
Metacarpal Nail Ø 6.1 mm Short	41-0606S
Metacarpal Nail Ø 3.3 mm Long	41-0612S
Metacarpal Nail Ø 4.7 mm Long	41-0614S
Metacarpal Nail Ø 6.1 mm Long	41-0616S
Metacarpal Connector/Taper	41-0712S
Radius Connector Medium (Including Lock Screws)	41-0724S
Radius Connector Long (Including Lock Screws)	41-0726S
Straight Double Taper Short	41-3001S
Straight Double Taper Medium	41-3002S
Straight Double Taper Long	41-3003S
Straight Double Taper Extra Long	41-3004S
Angled Double Taper 15° Short	41-3101S
Angled Double Taper 15° Medium	41-3102S
Angled Double Taper 15° Long	41-3103S
Angled Double Taper 15° Extra Long	41-3104S



Cortical screws

Cortical screw Ø 2,7 mm Ti6Al4V Length 10 mm	41-2710
Cortical screw Ø 2,7 mm Ti6Al4V Length 12 mm	41-2712
Cortical screw Ø 2,7 mm Ti6Al4V Length 14 mm	41-2714
Cortical screw Ø 2,7 mm Ti6Al4V Length 16 mm	41-2716
Cortical screw Ø 2,7 mm Ti6Al4V Length 18 mm	41-2718
Cortical screw Ø 2,7 mm Ti6Al4V Length 20 mm	41-2720
Cortical screw Ø 2,7 mm Ti6Al4V Length 22 mm	41-2722
Cortical screw Ø 2,7 mm Ti6Al4V Length 24 mm	41-2724

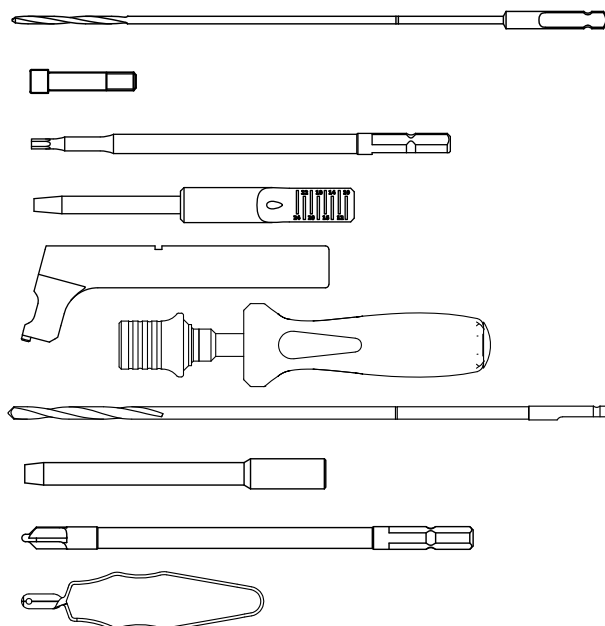
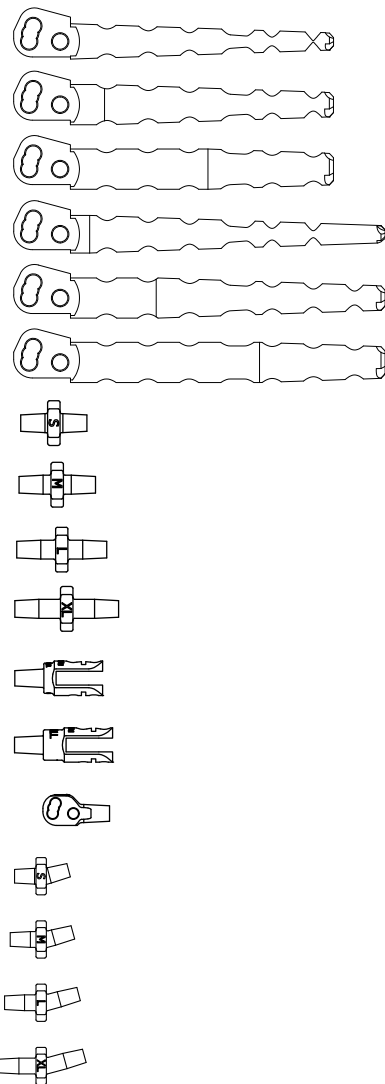


Trials

Metacarpal Nail Ø 3.3 mm Short	41-1702
Metacarpal Nail Ø 4.7 mm Short	41-1704
Metacarpal Nail Ø 6.1 mm Short	41-1706
Metacarpal Nail Ø 3.3 mm Long	41-1712
Metacarpal Nail Ø 4.7 mm Long	41-1714
Metacarpal Nail Ø 6.1 mm Long	41-1716
Straight Double Taper Short	41-1791
Straight Double Taper Medium	41-1792
Straight Double Taper Long	41-1793
Straight Double Taper Extra Long	41-1794
Radius Connector Medium	41-1724
Radius Connector Long	41-1726
Metacarpal Connector/Taper	41-1722
Angled Double Taper 15° Short	41-1795
Angled Double Taper 15° Medium	41-1796
Angled Double Taper 15° Long	41-1797
Angled Double Taper 15° Extra Long	41-1798

Instruments

Drill with AO-coupling Ø 2 mm	52-2207
Lock screw for Drill Guide	41-1720
Hex Driver Tip w. Quick-Lock 6k-2,5 mm	41-1740
Measurement Sleeve	41-1750
Drill Guide for Metacarpal Nail	41-1756
Handle Tri-Lobe with Quick-Lock	49-2504
Drill with AO-coupling Ø 4 mm	300.00.105
Drill Sleeve Ø4 mm	41-1752
Countersinker with Quick-Lock	41-1760
Tweezers for Cortical Screw	41-1730
Motec Wrist Arthrodesis Tray	41-1700
Complete Motec Wrist Prosthesis Instrumentation	



IFU

For the latest version of the Instruction For Use. Please visit:
<http://download.swemac.com/Motec-Wrist-Arthrodesis>

Swemac develops and promotes innovative solutions for fracture treatment and joint replacement. We create outstanding value for our clients and their patients by being a very competent and reliable partner.

Swemac

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