Smith+Nephew

TITAN◊

Modular Shoulder System 2.5

Limit uncertainty

with a shoulder implant system that redefines modularity, addresses multiple indications

Design rationale

The TITAN◊ Modular Total Shoulder System was designed to be a preserving option for patients needing total or hemi shoulder arthroplasty. The modularity of the system allows the surgeon to independently select distal stems and proximal bodies that best match patient anatomy and bone quality utilizing diaphyseal fixation.

The system is fully interchangeable – allowing all primary and fracture bodies to be used with either press-fit or cemented stems and later converted to a reverse shoulder arthroplasty without removing a well-fixed stem. Modularity between the body and stem allows for the version to be altered during conversion.

- **Interchangeable proximal bodies and distal stems** to accommodate varying patient anatomy
- **Multiple fixation options** (press-fit vs cemented) to address varying bone quality
- Well-fixed stem provides an intraoperative **building platform and a pathway for revision**

System features

- Convertability from anatomic total shoulder arthroplasty to reverse shoulder arthroplasty with version adjustment
- Press-fit modular stem design
- Anatomic head sizing
- Bone-preserving modular primary and fracture bodies

Redefining modularity

- 26 Humeral Head Options
- 8 Primary Body Options
- 3 Fracture Body Options
- 11 Press-fit Stems
- 11 Cemented Stems
- 12 Glenoid Options

Humeral stems

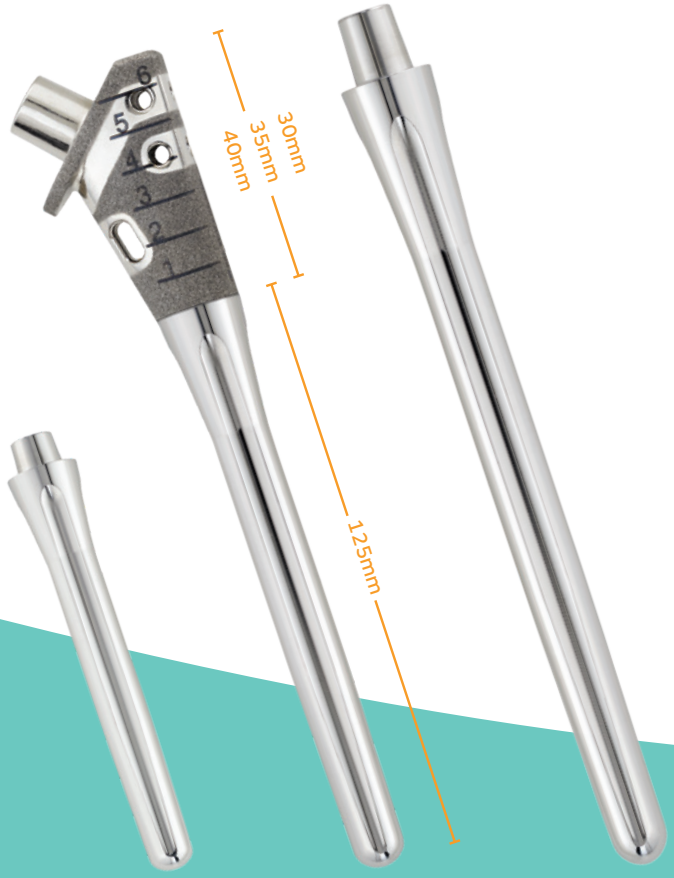
The TITAN◊ Modular Total Shoulder System offers press-fit and cemented stem humeral fixation options. The platform based system was designed to allow for conversion to a reverse shoulder arthroplasty without removing a well fixed stem. The version can be altered during a conversion from total shoulder to reverse shoulder prosthesis.

Press-fit stem options

- Eliminates the need to remove cement in case of revision
- 90mm lengths, 11 diameters (6-16mm) that increase in 1mm increments
- 12 splines on each stem designed for a strong press-fit fixation and to minimize rotation
- Height sustaining trials do not require outriggers or jigs to assess height or trial reduction

Cemented stem options

- Smooth, fluted stem designed for cement fixation and rotational control
- 90mm length, 5 diameters (6-14mm) that increase in 2mm increments to address varying humerus sizes
- 125mm and 165mm length cemented long stem options
- Tapered, polished distal stem for ease of insertion



Proximal humeral bodies

The TITAN◊ Modular Total Shoulder System provides multiple body heights and diameters to address varying patient anatomy in total shoulder arthroplasty, as well as hemiarthroplasty for proximal humeral fracture procedures. The system's modularity below the anatomic neck allows for:

- Intraoperative metaphyseal height manipulation, to simplify restoring the humeral head to tuberosity relationship
- Version adjustment when converting to a reverse shoulder arthroplasty without having to remove the well-fixed stem

Primary humeral body

- 135° neck angle
- 8 body options, providing multiple heights (30-40mm) and diameters (8-14mm)
- Modularity allows for intraoperative height adjustment
- Grit-blast surface designed to promote initial and long-term bone fixation
- Tuberosity height reference guide in 5mm increments

Fracture body options

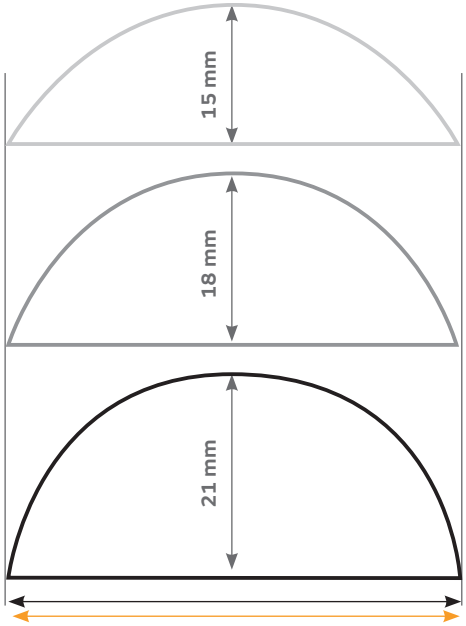
- 3 height options (30mm, 35mm, and 40mm), in 8mm diameter
- Polished medial and lateral suture holes for added bone and soft tissue fixation and to minimize suture abrasion
- Medial collar allows for body circumferential suture placement
- No jig or outrigger required, to simplify trialing process and humeral head to tuberosity height restoration

Anatomic humeral heads

TITAN◊ Humeral Head sizing is based on published anthropomorphic data to provide anatomic fit by respecting the varying radius of curvature.

- 26 eccentric and concentric humeral heads in various heights

Base width diameters:
(Drawings are not actual size)



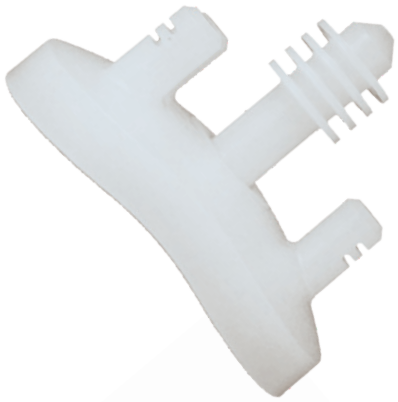
48mm
Titan base width diameter sizing:
48-15 / 48-18 / 48-21

Glenoid options

The TITAN◊ Modular Total Shoulder System offers multiple glenoid options for patients needing total shoulder replacement; incorporating a flexible Glenohumeral diametric mismatch between 4-8mm.

Fin-Lock Glenoid

- Fluted central peg to help enhance initial and secondary fixation



Pegged Glenoid

- In-line peg design for ease of insertion
- Grooved central peg designed to optimize cement fixation

Keeled Glenoid

- Designed for patients with poor glenoid bone quality
- Grooves and hole designed to allow for enhanced cement fixation

Indications

Total Shoulder Arthroplasty or Hemiarthroplasty is indicated for:

- Severely painful and/or disabled joint resulting from osteoarthritis, traumatic arthritis or rheumatoid arthritis
- Fracture-dislocations of the proximal humerus where the articular surface is severely comminuted, separated from its blood supply or where the surgeon's experience indicates that alternative methods of treatment are unsatisfactory
- Other difficult clinical problems where shoulder arthrodesis or resection arthroplasty are not acceptable (e.g. – revision of a failed primary component)

Shoulder Hemiarthroplasty is also indicated for:

- Ununited humeral head fractures
- Avascular necrosis of the humeral head
- Rotator cuff arthropathy
- Deformity and/or limited motion

The humeral component is intended for cemented or un-cemented use. The glenoid component is intended for cemented use only.

Contraindications

The following conditions are contraindications for total shoulder arthroplasty and hemiarthroplasty:

- Active local or systemic infection
- Inadequate bone stock in the proximal humerus or glenoid fossa for supporting the components.
- Poor bone quality, such as osteoporosis, where there could be considerable migration of the prosthesis and/or a chance of fracture of the humerus or glenoid
- Pregnancy
- Muscular, neurologic, or vascular deficiencies that compromise the affected extremity
- Known metal allergies

The following condition is a contraindication for total shoulder arthroplasty:

Absent, irreparable or nonfunctional rotator cuff or other essential muscles

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