Comprehensive®
Reverse Shoulder System

Proven. Versatile. Simple.

ZIMMER BIOMET
Moving You Forward.™

THE GOAL WAS SIMPLE

The Comprehensive Reverse Shoulder System was born from a desire to provide a complete shoulder arthroplasty solution to surgeons, without compromise.

Now, this spirit of innovation lives on through evolved solutions for challenging cases, including Comprehensive Vault Reconstruction System (VRS), Segmental Revision System (SRS) for reverse and anatomic, Augmented Baseplates and Mini Humeral Trays and Bearings.

Confidently approach clinical challenges with **proven**[1-12] technologies, **versatile** innovation and market-leading **simple** solutions in the Comprehensive Reverse Shoulder System.

PROVEN

The Comprehensive Reverse Shoulder has been trusted since 2008. It has a proven[1–12] clinical history, and combines materials that have been tested to withstand the demands of joint arthroplasty. Common clinical challenges such as scapular notching, a more demanding patient population and polyethylene wear were inputs of the original design rationale, and Comprehensive Reverse provides the answers.

CLINICAL CHALLENGE:

Scapular Notching

Scapular notching is caused by impingement of the humeral component during adduction. It is a common complication after reverse shoulder arthroplasty and is often associated with poor clinical outcomes.[5]

COMPREHENSIVE REVERSE ANSWER:

Versa-Dial Glenospheres

The Versa-Dial® Glenosphere allows for up to 4.5 mm of offset in any direction, enabling the baseplate to be positioned in available bone for optimal fixation. The glenosphere can then be "dialed down" inferiorly and/or lateralised to address the concerns of scapular notching.[5]

CLINICAL CHALLENGE:

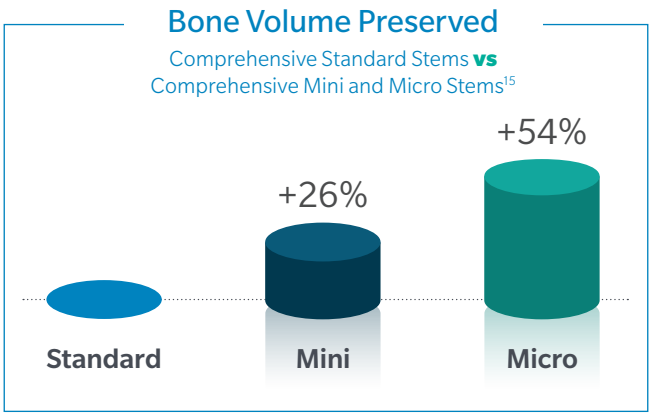
A More Demanding Patient Population

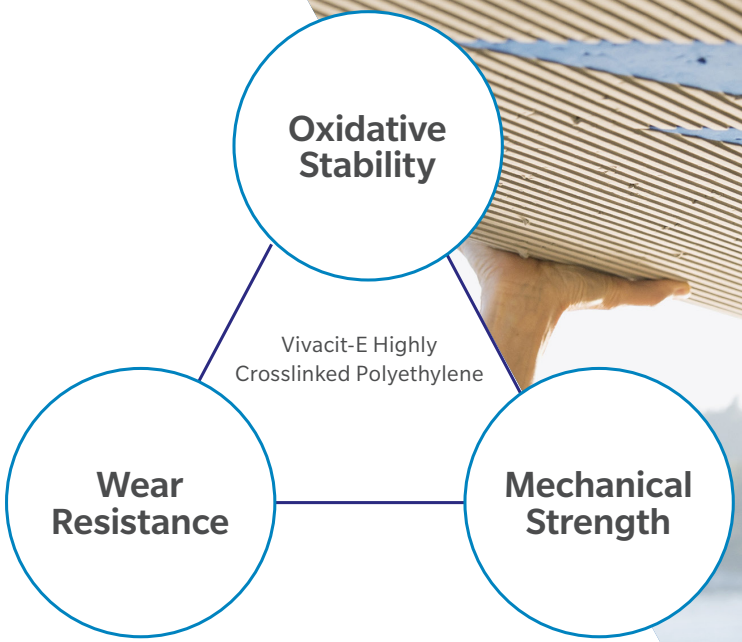
Shoulder arthroplasty is moving towards minimally invasive and bone preserving technologies.[6–8]

COMPREHENSIVE REVERSE ANSWER:

Micro and Mini Humeral Stems

The Comprehensive System is designed to preserve bone, with one of the most expansive bone-preserving stem portfolios on the market, including Micro and Mini Stems. Shorter stems are designed to facilitate an efficient operation while delivering clinical outcomes consistent with those reported in previous long stem studies.[6–12]





CLINICAL CHALLENGE:

Poly Wear

The potential for polyethylene wear in reverse shoulder arthroplasty is substantial, given the relatively large surface area of contact.[13,14]

COMPREHENSIVE REVERSE ANSWER:

Vivacit-E Polyethylene

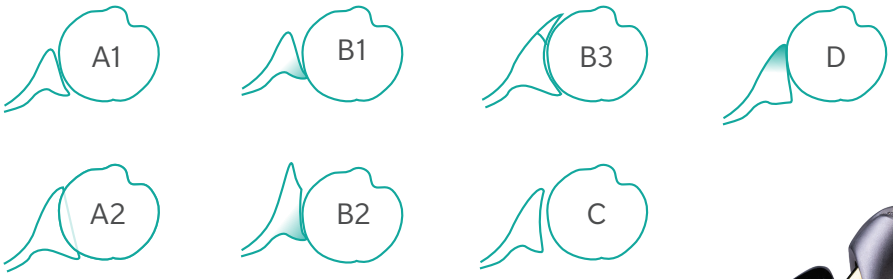
The Vivacit-E® polyethylene Humeral Bearings address the needs of demanding patients through a proprietary process that grafts Vitamin E directly to highly crosslinked polyethylene. The result is a polyethylene articulating surface material that is designed to optimise three characteristics: exceptional oxidative stability, ultra-low wear and improved mechanical strength compared to remelted highly crosslinked polyethylene (HXPE).[1–4]

VERSATILE

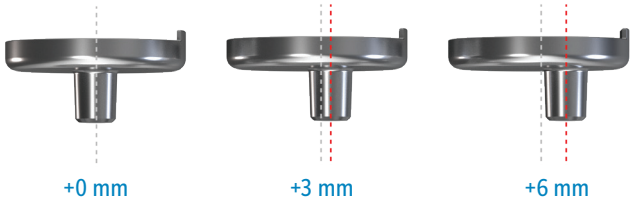
The Glenoid is traditionally the most difficult part of a reverse shoulder procedure due to poor visibility of the scapula for assessment of the glenoid vault and glenoid version, minimal bone for fixation of the implants and determination of deltoid tensioning. The surgery can become even more difficult with moderately to severely eroded glenoids.

Glenoid Solutions

In order to address a wide range of possible patient anatomies, the Comprehensive Reverse System provides one of the **most complete glenoid portfolios** on the market including Mini, Standard and Augmented Baseplates, Vault Reconstruction System and compatibility with Trabecular Metal™ Reverse System to solve any glenoid deficiency that comes your way.



Vault Reconstruction System for your most challenging eroded glenoids



Mini Humeral Trays with Offset Options

- 40 mm diameter humeral tray with lateral post-offset options designed to address medial overhang on smaller patients, allowing for greater range of motion.
- SIM-Loc™ technology secures the bearing to the humeral tray, and can be assembled with finger force for ease of assembly intra-operatively.

Expansive Stem Portfolio

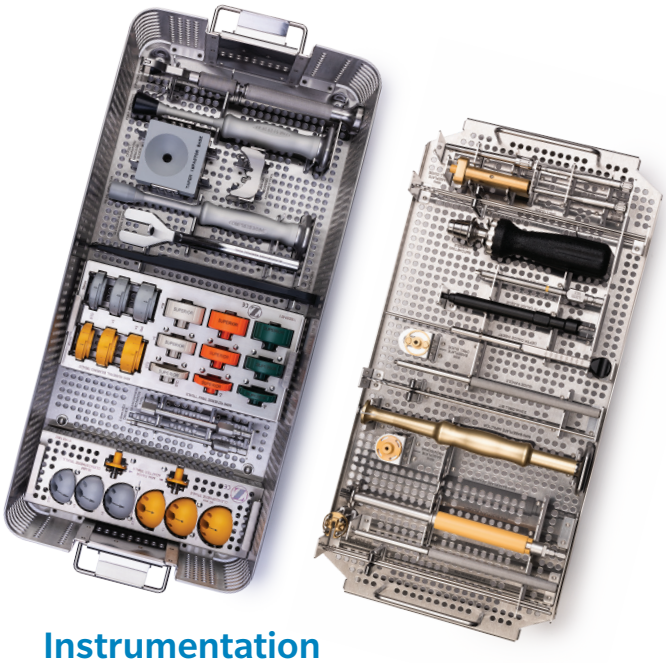
- Stem options to satisfy the needs of surgeons for any scenario: primary and revision, anatomic and reverse, conversion of anatomic to reverse and fracture.
- Segmental Revision System (SRS) for advanced humeral bone loss for either anatomic or reverse scenarios.

Compatibility

- Comprehensive Reverse Shoulder is compatible with Trabecular Metal Reverse Shoulder, with both systems available in 36 and 40 mm glenospheres and bearings, designed to give surgeons the ability to mix systems to facilitate both Surgeon preferences as well as address unusual/difficult cases.
- Mini Humeral Trays are compatible with Segmental Revision System (SRS).

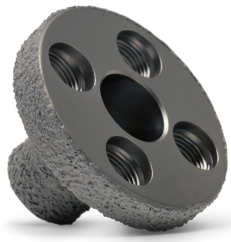
SIMPLE

Instrumentation can make big difference in a surgery. Good instrumentation should allow the **patient and implant to come into focus.** Comprehensive Reverse instrumentation was designed to be intuitive and complement the surgical work flow.



Instrumentation

- Intuitive instrumentation designed to facilitate ease of use in the Operating Room
- Instruments are laid out in the order of surgical flow



Baseplates

- Hydroxyapatite (HA) over PPS® porous plasma spray, over titanium substrate
- Low-profile 25 mm (Mini), 28 mm (Standard) diameters
- Four identical peripheral locking screw holes for optimal screw placement on the glenoid
- Modular design allows for proper orientation of peripheral screw holes prior to impaction
- Central boss provides for enhanced fixation and resistance to shear forces

Augmented Baseplates

- Designed with half-wedge to maximise bone preservation
- Available in small, medium and large
- Superiorly directed Augmented Baseplate to preserve subchondral bone and restore a natural, lateral centre of rotation to benefit soft tissue tensioning and stability

Screws

- Modular 6.5 mm Central “compression” Screw, in lengths of 20–50 mm, in 5 mm increments, made from Titanium
- 4.75 mm Fixed-Angle Locking and Variable-Angle Non-Locking Screws, in lengths of 15–45 mm, in 5 mm increments, made from Titanium
- Ability to target good bone with 12° of screw angulation with non-locking screws

Humeral Stems

- For use with or without bone cement, and made from Titanium with proximal PPS Porous Plasma Spray designed for enhanced biologic fixation. Convertible from anatomic (total) shoulder to the Comprehensive Reverse Humeral Tray and Bearing
- 45°/135° anatomic neck-shaft angle, available in 4 different lengths: Micro, Mini, Standard and Revision. Each length is available in 1 mm increment diameters from 4–20 mm. Fracture stem and SRS also available for specialty situations

Mini Humeral Trays & Bearings

- Mini Humeral Trays are 40 mm in diameter, and available in 3 heights (+0, +5, +10 mm), made from either Cobalt-Chrome or Titanium, with offset posts options (+0, +3, +6 mm) to allow for lateralisation of the Tray with respect to the Stem
- Mini Humeral Bearings are available in 3 options (+0, +3 or +3 mm Retentive), made from Vivacit-E or Prolong® Highly Cross-Linked Polyethylene. SIM-Loc technology allows for removal and exchange of the bearing without disruption of the humeral tray or stem. Final Humeral Tray/Bearing inclination angle is at 57°/147°

Glenospheres

- Constructed from Cobalt-Chrome or Titanium. Available in 36 mm or 40 mm diameter of curvature medialised or lateralised centre of rotation (Standard, +3 mm, +6 mm)
- Versa-Dial technology to provide infinite offset options between 0.5 and 4.5 mm and can be positioned in any direction*

* 36 Glenosphere offset is between 0.5 and 3.5 mm

PROVEN
Clinical History

The Comprehensive Reverse Shoulder has been trusted since 2008. It has a proven[1–12] clinical history, and combines materials that have been tested to withstand the demands of joint arthroplasty.

VERSATILE
Full Spectrum of Solutions

Glenoid Solutions

Expansive Portfolio of Stems

Mini Humeral Tray with Offset Options

Compatibility

SIMPLE
Instrumentation

Intuitive instrumentation designed to facilitate ease of use in the Operating Room. Instruments are laid out in the order of surgical flow.

References

1. Vivacit-E Vitamin E Highly Crosslinked Polyethylene Long-Term Performance for High Demand Patients. Zimmer Technical Memo, 2014. Literature # 97-7255-181-00 Rev 1. (Laboratory studies are not necessarily indicative of clinical performance.)
2. Peiserich M, *et al.* Retention of Mechanical Properties in a Blended Vitamin E Polyethylene After Extreme Oxidative Challenge. Poster 1060, ORS 2013 Meeting. 2013. (Laboratory studies are not necessarily indicative of clinical performance.)
3. Mimnaugh,K. *et al.* 100 Million-Cycle Wear Evaluation of Crosslinked Vitamin E Grafted Polyethylene (VE-HXPE) Acetabular Liners. ORS 2016 Annual Meeting Paper No. 0403. (Laboratory studies are not necessarily indicative of clinical performance.)
4. Zimmer Prolong Highly Crosslinked Polyethylene Brochure. Literature #: 97-5952-101-00 Rev 2. (Laboratory studies are not necessarily indicative of clinical performance.)
5. Xinning L, Dines J, Warren R, Craig E, Dines D. Inferior Glenosphere Placement Reduces Scapular Notching in Reverse Total Shoulder Arthroplasty. Orthopedics. 2015; 38(2):e88-e93.
6. Jost, Patrick W, Dines, Joshua S, Griffith, Matthew H, Angel, Michael, Altcheck, David W, Dines, David M. Total Shoulder Arthroplasty Utilizing Mini-Stem Humeral Components: Technique and Short-Term Results. HSSJ (2011) 7:213-217.
7. Wagner, Eric R, Statz, Joseph M, Houdek, Mathew T, Cofield, Robert H, Sanchez-Sotelo, Joaquin, Sperling, John W. Use of a shorter humeral stem in revision reverse shoulder arthroplasty. *J Shoulder and Elbow Surg.* 2017.
8. S.A. Guiseffi, P Streubel, J. Sperling, J. Sanchez-Sotelo. Short-stem uncemented primary reverse shoulder arthroplasty. *The Bone & Joint Journal.* 2014; 96-B: 526-9.
9. Comprehensive Reverse Shoulder Post-Market Clinical Study (Protocol EX007). September 2018 Annual Report.
10. Werner B, Dines J, Dines D. Platform systems in shoulder arthroplasty. Curr Rev Musculoskeletal Med. 2016.
11. Williams P, Trehan S, Tsouris N, Dines J, Dines D, Edward C, Gulotta L, Warren R. Functional Outcomes of Modular Conversion of Hemiarthroplasty or Total to Reverse Total Shoulder Arthroplasty. *HSS Journal.* 2017.
12. Wiser K, Borbas P, Ek E, Meyer D, Gerber C. Conversion of Stemmed Hemi-or Total to Reverse Total Shoulder Arthroplasty: Advantages of a Modular Stem Design. Clin Orthop Relat Res; 2015; 473:651-660.
13. Judd S Day, PhD1,2, Daniel W MacDonald, MS1, Madeline Olsen1, Charles Getz, MD3, Gerald R Williams, MD3, and Steven M Kurtz, PhD.1,2. Polyethylene Wear in Retrieved Reverse Total Shoulder Components. *J Shoulder Elbow Surg.* 2012 May ; 21(5): 667–674. doi:10.1016/j.jse.2011.03.012.
14. Nam D, Kepler CK, Nho SJ, Craig EV, Warren RF, Wright TM. Observations on retrieved humeral polyethylene components from reverse total shoulder arthroplasty. *J Shoulder Elbow Surg.* 2010; 19:1003–12.10.1016/j.jse.2010.05.014 [PubMed: 20846620]
15. Zimmer Biomet volumetric analysis of Micro, Mini and Standard stems using computer aided design software.

Check for country product clearances and reference product specific instructions for use. For indications, contraindications, warnings, precautions, and potential adverse effects, see the package insert or contact your local representative; visit www.zimmerbiomet.com for written surgical techniques and additional information.

ZIMMER BIOMET
Moving You Forward.™

2165.1-ANZ-en-Issue Date 2021-09-21

Legal Manufacturer
Biomet Orthopedics
56 East Bell Drive
P.O. Box 587
Warsaw, Indiana 46581
USA

Legal Manufacturer
Zimmer, Inc.
1800 West Center Street
Warsaw, Indiana 46580
USA
1-800-348-2759 (US only)
1-574-3724999

For further information,please contact your Zimmer Biomet representative.

Zimmer Biomet Pty Ltd
Level 3, 12 Narabang Way,
Belrose, NSW 2085, Australia
Tel: +612.9483.5400
Fax: +612.9986.1453

Zimmer Biomet New Zealand Company
210 Khyber Pass Road, Grafton,
Auckland, New Zealand
Tel: +64.9925.5200
Fax: +64.9368.5360

www.zimmerbiomet.com/anz