A **clinically proven** system that removes lipids/marrow elements and fluids from the cement interface to improve cement penetration and bond strength.

**CarboJet®**

**CO₂ Bone Preparation System**

- Increase Cement Penetration¹,²
- Increase Bone-Cement Interface Strength³
- Reduce Opportunity for Micro-Emboli⁴
- Essential for Tourniquetless TKA⁵,¹¹
- Reduce OR Time and Cost⁶

**A Better Way to Clean Bone**

Nozzles are available for use in TKA, UKA, THA, TSA, OCA and other cemented reconstructive applications.
Aseptic loosening is now recognized as the predominant failure mode in primary knee arthroplasty. A recent study of 938 primary knees found that aseptic loosening was the most common mechanism of failure, accounting for 28% of all failures. In UKA, aseptic loosening accounted for more than 60% of failures. These data underscore the importance of achieving optimal cement fixation via meticulous cleaning and drying of the bone bed.

CarboJet’s CO$_2$ gas jet quickly and thoroughly cleans and dries the bone bed by bringing blood, saline and, most importantly, lipids/fatty marrow elements to the surface where they are easily collected and removed. Cleaning and drying with CarboJet takes no more time than is typically required for drying with lap sponges. The superior cleaning achieved with CarboJet improves cement penetration depth and increased cement mantle toughness. Increased bone-cement interface strength is the result.

Saline lavage removes gross debris, but fluid remaining in the interstices of bone prevents thorough cleaning.

A compressed gas jet displaces fluid and fluid-suspended debris, thereby cleaning and drying porous structures.

Cement mantle toughness correlates with cement penetration depth. Bone-cement interface strength is 58% higher with CarboJet cleaning versus saline lavage.

Improved Cement Mantle

Essential for Tourniquetless TKA

Tourniquetless Total Knee Arthroplasty with Modern Perioperative Protocols Decreases Pain and Opioid Consumption in Females

A recent study,11 presented at AAOS 2018 by R. Michael Meneghini, M.D., demonstrates reduced opioid consumption in female patients when a tourniquet was not used in total knee arthroplasty (TKA). CarboJet was used to maximize cement interdigitation – an essential component of the tourniquetless TKA technique. The ability to reduce opioid consumption using this technique is significant, since opioid addiction has become a national crisis, and protocols that result in reduced patient pain are being sought.

Bone bed prepared with pulsatile saline lavage. Arrows indicate radiolucent lines.

Bone bed prepared with syringe saline lavage and CarboJet CO₂ Bone Preparation System.

Scan for Video of CarboJet in Tourniquetless TKA.

B/C FPO.

Do NOT print red dieline.
CarboJet CO₂ Bone Preparation System

25-100-2001 CarboJet CO₂ Tubeset, Sterile Packed (each)

Standard Instruments

25-200-0200 CarboJet Handpiece
25-200-0220 CarboJet Angled Tip Nozzle (peg holes, shoulder)
25-200-0230 CarboJet Wide-Angle Nozzle (knee)
25-200-0242 CarboJet Femoral Canal Suction Tube (12mm dia.)
25-200-0244 CarboJet Femoral Canal CO₂ Nozzle
25-200-0246 CarboJet 40 Degree Nozzle (knee, glenoid)
25-200-0300 CarboJet Sterilization Tray
25-200-0110 CarboJet Pressure Regulator (with CGA 940 pin-index yoke tank connection)

Surgeon Testimonials

“I use it on Uni Knees. We often get a lot of bone bleeding – even with a tourniquet during cementation. The CarboJet dries the bone superbly for implantation. Outstanding addition to my surgical technique!!”
Airell Nygaard, MD, Yosemite Joint Replacement, Sonora, CA, USA

“CarboJet provides my patients with a much cleaner, drier bone bed allowing for better cement penetration and hence a better mechanical interface between bone and implant for secure long-term fixation.”
Richard “Dickey” Jones, MD, Dallas, TX, USA

“I have made gas jet lavage with CarboJet the critical last step in bone preparation in all my cemented arthroplasty cases. The removal of additional marrow elements that could otherwise form embolic debris during cement pressurization is important to patient safety.”
H.M. “Mac” Reynolds, MD, Oakland, CA, USA, In Memoriam